SECTION 011000
SUMMARY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Project information.
2. Work covered by Contract Documents.
3. Work by Owner.
4. Work under separate contracts.
5. Access to site.
6. Coordination with occupants.
7. Work restrictions.

1.2 PROJECT INFORMATION

A. Project Identification: Water Treatment Plant Upgrades

1. Project Location: Village of Rhinebeck

B. Owner: Village of Rhinebeck

1. Owner's Representative: Gary Bassett, Mayor, (845) 876-7015

C. Engineer: Delaware Engineering, D.P.C. – 28 Madison Ave Ext., Albany, NY 12203
1. Engineer Representative: Robert Flores, P.E. – (518) 452-1290, rflores@delawareengineering.com.

D. Project Coordinator for Multiple Contracts: The ENGINEER has been engaged by Owner to serve as Project coordinator.

1.3 WORK COVERED BY CONTRACT DOCUMENTS

A. The Work of Project is defined by the Contract Documents and consists of the following:
1. This project involves upgrades to an existing WTP. The scope encompasses general site improvements, demolition, utility enhancements, and abatement work. Additionally, it includes the construction of a new building complete with structural, architectural, mechanical, electrical, and HVAC work. Furthermore, the project scope includes upgrades to existing treatment equipment and the provision of new treatment equipment, such as clarification units, UV disinfection units, flocculation and mixing equipment, pumps, variable frequency drive (VFD) systems, chemical feed systems, SCADA enhancements, and monitoring equipment.

B. Type of Contract:

1. Project will include multiple prime contractors.

1.4 WORK BY OWNER

A. General: Cooperate fully with Owner so work may be carried out smoothly, without interfering with or delaying work under this Contract or work by Owner. Coordinate the Work of this Contract with operations performed by Owner. Owner operations need to be maintained during construction.

1.5 ACCESS TO SITE

A. Use of Site: Limit use of Project site to areas within the highway right-of-way indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.

1. Driveways, Roads, Walkways and Entrances: Keep driveways and entrances serving private property clear and available to the public, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or for storage of materials.

a. Schedule Work to minimize use of driveways and entrances by construction operations.
b. Schedule Work to minimize space and time requirements for storage of materials and equipment on-site.

B. Condition of Existing Work Site: Maintain portions of existing grounds, landscaping, and hardscaping affected by construction operations throughout construction period. Repair damage caused by construction operations.

1.6 COORDINATION WITH OCCUPANTS

1. Maintain access to existing walkways, driveways, and other adjacent occupied or used facilities. Do not close or obstruct walkways, driveways, or other occupied or used facilities without written permission from property owner and approval of authorities having jurisdiction.
2. Notify any property owner not less than 72 hours in advance of activities that will affect their operations.

1.7 WORK RESTRICTIONS

A. Work Restrictions, General: Comply with restrictions on construction operations.

1. Comply with limitations set by the Owner and other authorities having jurisdiction.

B. On-Site Work Hours: Limit work to daytime working hours of 7:00 a.m. to 4:00 p.m., Monday through Friday, unless otherwise indicated.

1. Weekend Hours: As approved by Owner and Engineer.

A. Existing Utility Interruptions: Do not interrupt any services and or operations of any utilities serving facilities occupied or owned by Owner or others unless permitted under the following conditions and then only after providing temporary utilities/services according to requirements indicated:

1. Notify Engineer and Owner not less than three days in advance of proposed interruptions.
2. Obtain Engineer's and Owner's written permission before proceeding with any interruptions.

B. Restricted Substances: Use of tobacco products and other controlled substances within the work area is not permitted.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

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SECTION 011010
SUMMARY OF WORK – 1G

PART 1. GENERAL

1.01 SUMMARY

A. This contract consists of:
   1. The summary of this work is described in Section 011010 and the Contract Drawings.
B. The scope of work identified in this section is intended to be a summary only. The Contractor shall assume responsibility for all costs of labor, materials, equipment, and supplies not specifically included in this section that are required to provide complete and functioning structures, utilities, and equipment.

1.02 PROJECT AND SITE CONDITIONS

A. Project and site conditions are generally illustrated on the Drawings. Contractor is responsible for inspecting all work locations and familiarizing himself with conditions affecting the work prior to submitting a bid for the work.
B. The approximate locations of known underground utilities are shown on Drawings for Contractor's information. This does not relieve Contractor from the requirement to locate and protect the public and private utilities including utility poles. Repair of damage resulting from the Contractor's negligence or lack of planning shall be the responsibility of the Contractor

1.03 COORDINATION WITH UTILITY COMPANIES

A. The Contractor shall notify UDig NY and pertinent utility companies 72 hours in advance of doing any work at or adjacent to said utilities. All requirements of NYCRR 53 & NYS Code Rule 753 are applicable to this contract.

1.04 DESIGN ENGINEER'S ESTIMATE OF QUANTITIES

A. Bid Items and estimated quantities are presented on the Bid Item Table included in these Contract Documents. The estimated quantities for unit price pay items are approximate only and are included solely for the purpose of comparison of bids.
B. The Owner does not expressly or by implication agree that the nature of the materials encountered below the surface of the ground or the actual quantities of materials encountered or required will correspond therewith and reserves the right to increase or decrease any quantity or to eliminate any quantity as Owner may deem necessary.
C. Contractor will not be entitled to any adjustment in a unit bid price as a result of any change in an estimated quantity and agrees to accept the aforesaid unit bid prices as complete and total compensation for any additions or deductions caused by a variation in quantities, as a result of more accurate field measurement or by any changes or alterations in the Work ordered by the Owner.
D. This Summary of Work is not intended to substitute for thorough review of all Contract Drawings and Specifications by the Contractor. Items not specifically included in the Summary of Work but shown on the Contract Drawings and Specifications are the responsibility of the Contractor to complete. The Contractor shall include the cost of completing these items in the Bid Item most closely associated to the work item in question. No additional compensation will be provided to the Contractor for any of these items.

1.05 UNIT PRICE WORK REQUIREMENTS INCLUDE

A. This section identifies Bid Items and method of measurement and payment.
B. Provide all labor, materials, equipment, supplies, supervision, overhead & profit, and all services necessary to furnish and install each Bid Item as required by Contract Documents.

1.06 MEASUREMENTS FOR PAYMENT

A. Bid Items
   1. For unit price items, the Contractor shall be paid based on actual quantities measured in the field, as shown on the pay limits of the contract plans and described in the bid form times the unit price on the bid item table. The measurement for each Bid Item is listed under Part 3-Execution of this specification.
   2. For lump sum items, the Contractor shall be paid either by partial payments or Lump Sum after the completion of the Bid Item. For partial payments, the Contractor shall submit for Engineer's review and approval a "schedule of values" that shall provide the basis for partial payments. The total costs of all components of work shall equal the Lump Sum bid for this Item.
      a. If a Lump Sum item is not completed, the Contractor will receive payment proportionate to the amount of work completed.

B. Contractor shall prepare monthly payment requests in a standard form as given by the Engineer. Contractor shall review a preliminary payment request with the Engineer prior to submittal of the formal request.

C. On a daily basis as required, Contractor shall review daily production and payment quantities with the Engineer.

D. After the completion of the project, the measurements for each bid item shall be re-measured where necessary. The remaining payments from the Owner to the Contractor shall be adjusted accordingly to the final measurements of the bid items.

PART 2. PRODUCTS

This section is not used. Refer to individual specification sections for more information on each bid item.

PART 3. EXECUTION

3.01 MOBILIZATION AND GENERAL CONSTRUCTION - **Bid Items: #1**

A. Mobilization and General Construction bid item for the project shall be no more than the maximum 3.0 percent of the total contract cost.

B. Measurement and Payment for these items will be made as progress payments against the Lump Sum Prices on the Bid Form included in the Contract Documents.

C. Payment under these Items shall be the same regardless of whether additional work is done or if the Contract is extended.
   1. Upon completion of mobilization as approved by the ENGINEER, two-third (2/3) of the items shall be considered complete and payments made.
   2. The remainder of the payments under these Items shall be made on a regular monthly basis that accounts for equal payment for General Construction Work throughout the Contract schedule, except that ENGINEER may withhold such payments for failure to complete General Construction work not specifically included elsewhere in the Documents, provided 10-days advance written notice has been provided to CONTRACTOR of the deficiency.

D. The lump sum bid shall include all costs for labor, materials, equipment, and supplies required to complete the work including:
   1. Pre-construction photos, Pre-construction survey of adjacent properties to Construction Site, Record Drawings, Project Photos, Project Videos, and etc.
   2. Coordination of all inspections.

3. Certified Payrolls, MWBE documents, and other project documentation.
4. Maintenance and documentation of project schedule.
5. Maintenance of temporary field facilities, including Engineer's field office.
6. Procurement and maintenance of required insurance and bonds.
7. Shop drawings and material submittals.
8. As-built drawings.
9. Health and Safety Plans.
10. Mobilization of equipment and work force.
11. All required building permits.
12. All other work required by the Contract Documents but not listed individually under other Bid Items.

3.02 GENERAL SEDIMENTATION AND EROSION CONTROL - **Bid Items: #2**

A. Measurement and Payment for general sedimentation and erosion controls shall be a Lump Sum cost spread out over the entire length of the project. These items must be installed and maintained in accordance with NYS Department of Environmental Conservation (NYS DEC) and with the Sediment and Erosion Control Plans. This lump sum cost shall include all items as detailed in the Sediment and Erosion Control Plans and/or shown on the Contract Plans. The payments under this Item shall be made on a regular monthly basis that accounts for equal payment for sedimentation and erosion controls throughout the Contract schedule, except that ENGINEER may withhold such payments for failure to complete erosion control work, provided 10-days advance written notice has been provided to CONTRACTOR of the deficiency.

B. Payment under these Items shall be the same regardless of whether additional work is done or if the Contract is extended.

C. The general sediment and erosion control shall include all costs associated with complying with the erosion control plans as shown on the Contract Plans. The lump sum price bid shall include all costs for labor, materials, equipment, and supplies required to complete the work including but not limited to:

1. Layout and site preparation
2. Furnish and installing silt fence, culvert inlet protective devices (stone & block drop inlet protection, curb drop inlet protection, grate filters (inlet), HDPE culvert inlet protection, combo silt fence/check dam inlet protection) as required by or shown on the Contract Plans.
3. Installing and maintaining all additional sediment and erosion control devices as required to maintain full compliance with NYSDEC stormwater discharge requirements. These control devices may not be shown on the Contract Plans as the dewatering methods are within the means and methods of the CONTRACTOR and the control devices are a function of the dewatering method. All costs for these control devices shall be included in as part of this bid price.
4. Furnish and completing all dust control, dewatering operations, and daily seeding, mulching, and rough grading.
5. Maintenance of all sediment and erosion control components during the entire construction phase.
6. General compliance with the sediment and erosion control plan.

3.03 BURIED UTILITY LOCATING - **Bid Items: #3**

A. Measurement for payment for this item will be made on a Lump Sum basis and no Measurement for Payment shall be made.

B. Payment for this item shall be made based on the Lump Sum bid on the Bid Forms in the Contract Documents. Partial payments shall be based on the approved schedule of values.
C. The lump sum price bid shall include all costs for labor, materials, equipment, and supplies required to complete the work including:
   1. The CONTRACTOR shall procure the services of a qualified utility locator to accurately locate all buried utilities. The utility locator shall locate all buried utilities within the grounds of the WTP.
   2. The utility locator shall accurately mark each utility in accordance with NYS Code Rule 753.
   3. The CONTRACTOR shall be responsible to maintain the utility markings (or demonstrate record keeping which allow for the utilities locations and type to remain known) for the duration of the project. In the event of the markings being lost, the CONTRACTOR shall procure the services of the utility locator to relocate the utilities at no additional cost to the OWNER. CONTRACTOR is responsible for providing OWNER with an AutoCAD 2023 compatible file that ENGINEER can insert into construction and as-built drawings
   4. Other appurtenant and incidental work

3.04 SITE EXCAVATION, BACKFILL, AND GRADING - **Bid Items: #4**

A. Measurement for payment for this item will be made on a Lump Sum basis and no Measurement for Payment shall be made. It is REQUIRED that the CONTRACTOR procure the services of a qualified engineer to develop an excavation, shoring and dewatering plan for this work. Payment for this item shall be made based on the Lump Sum bid on the Bid Forms in the Contract Documents. Partial payments shall be based on the approved schedule of values.
B. The lump sum price bid shall include all costs for labor, materials, equipment, and supplies required to complete the work including:
   1. Layout and field survey.
   2. Preparation and submission of a P.E. stamped excavation, shoring, and dewatering plan.
   3. Site preparation including all clearing and grubbing and the proper disposal of excess materials.
   4. Excavation, temporary sheathing, shoring, and bracing.
   5. Excavation of all excess materials on the site as required to bring the site to final grade.
   6. Import of all materials, backfill, and compaction as required to bring the site to final grade.
   7. Environmental controls and protection as required by the plans and permits.
   8. Excavation of materials to facilitate the installation of all new structures and utilities.
   9. Disposal of all excavated material which is unsuitable for unclassified backfill and disposal of all excess material per NYS DEC requirements
   10. Other appurtenant and incidental work.

3.05 SITE YARD IMPROVEMENTS - **Bid Items: #5**

A. Measurement for payment for this item will be made on a Lump Sum basis and no Measurement for Payment shall be made.
B. Payment for this item shall be made based on the Lump Sum bid on the Bid Forms in the Contract Documents. Partial payments shall be based on the approved schedule of values.
C. The lump sum price bid shall include all costs for labor, materials, equipment, and supplies required to complete the work including:
   1. Layout and field survey.

2. Site preparation including saw-cutting the street pavement, removing street pavement, curb and gutters, sidewalks, driveways, and the proper disposal of excess materials.
   a. All pavement, sidewalks, and curbs must be saw-cut before being removed by the CONTRACTOR. The CONTRACTOR cannot use his equipment to break up the pavement, sidewalks or curbs.
3. Excavation, temporary sheathing, shoring, and bracing.
4. Dewatering and environmental controls and protection as required by the plans and permits.
5. Select granular fill, unclassified backfill, subbase, pea stone, stone fill, and bedding, are included in this Bid Item. Note that any over-excavation and associated bedding and backfill required as result of the dewatering methods utilized shall be included in this item and the CONTRACTOR will receive no additional compensation for this work.
6. Furnishing and installing all buried piping including but not limited to:
   a. Test pit digging in coordination with the Owner and Engineer to located existing utilities as required to perform the Work.
   b. All underground piping, fittings, restrained couplings, restraints, connections, valves, thrust blocks, and etc. complete with bedding, backfill, subbase and compaction. Note that any over-excavation and associated bedding and backfill required as result of the dewatering methods utilized shall be included in this item and the CONTRACTOR will receive no additional compensation for this work.
   c. All connections.
   d. Complete water hydrant and isolation valve
   e. All pipe insulation where applicable
   f. Bedding and backfill for all existing pipes and conduits which are exposed during the execution of this work.
   g. All coring with link seals, neoprene boots, and all connections.
   h. All bacteria and pressure/leakage testing.
7. Complete water hydrant including:
   a. with lower barrel and inlet shoe. Provide barrel extension section as required for proper grade.
   b. Alignment and leveling of hydrant.
   c. Furnishing and installation of marker post.
   d. Installation of OWNER supplied hydrant marker ring.
   e. Pressure tests, leakage tests, disinfection and dechlorination, complete with verification of all main line and guard valves in the fully open position.
   f. The shut-off valves, anchor tee, and fittings shall be included in the bid item.
   g. Temporary support and maintenance of other utilities and structures affected by the work.
3. All proposed storm structures including all drainage piping for the new building, catch basins, and the garage/barn slim type trench drain.
4. Coated steel bollards with 3,000 psi concrete fill and 2” reflective tape.
5. Electrical kiosk.
6. All other appurtenant and incidental work.

3.06 SITE PAVING AND WALKWAYS - **Bid Items: #6**

A. Measurement for payment for this item will be made on a Lump Sum basis and no Measurement for Payment shall be made.

B. Payment for this item shall be made based on the Lump Sum bid on the Bid Forms in the Contract Documents. Partial payments shall be based on the approved schedule of values.

C. The lump sum price bid shall include all costs for labor, materials, equipment, and supplies required to complete the work including:
   1. Layout and field survey.
   2. Saw cutting for placement of utilities. This saw cutting is separate from and in addition to the saw cutting of the pavement for trenching restoration.
   3. All cleaning and surface preparation.
   4. Remove and dispose of all existing pavement per state and federal regulations.
   5. Prime coating of all applicable areas, including existing pavement edges.
   6. All fill as required to bring driveway/parking lot/walkways to final proposed grade.
   7. All subbase.
   8. All proof rolling and compaction.
   9. All Type 3 binder asphalt course.
   10. All Type 6 top asphalt course.
   11. All milling, keyways, and rebates.
   12. All tack coats.
   13. All concrete and reinforcement.
   14. All work as required to maintain existing or proposed drainage patterns.
   15. All ramps and walkways.
   16. Adjustment of valve boxes, manhole, and catch basin castings.
   17. Any repairs required due to asphalt installation, complete with "backing up" all new asphalt.
   18. Temporary protection, support and maintenance of other utilities and structures affected by the work.
   19. Asphalt paving resulting from trenching by other prime contractors.
   20. Other appurtenant and incidental work.

3.07 SITE DEMOLITION AND ABATEMENT WORK - **Bid Items: #7**

A. Measurement for payment for this item will be made on a Lump Sum basis and no Measurement for Payment shall be made.

B. Payment for this item shall be made based on the Lump Sum bid on the Bid Forms in the Contract Documents. Partial payments shall be based on the approved schedule of values.

C. The lump sum price bid shall include all costs for labor, materials, equipment, and supplies required to complete all demolition of existing structures, mechanical equipment, process piping and all other demolition, but not limited to:
   1. Layout and field survey.
   2. All environmental controls and protection as required by the plans.
   3. All components of the decommissioning of existing pipes, including cutting and capping and plugging pipes with hydraulic cement.
   4. Removal of any piping, structures, tanks, equipment, concrete, asphalt, curbing, sidewalks, architectural, misc. metals, buildings, and all required demolition as shown on the Contract Plans.
   5. The Contractor shall thoroughly review Exhibit E to this Project Manual and procure the services of a licensed asbestos designer to develop an asbestos abatement work plan following the requirements of NYSDOL Code Rule 56. This plan shall include all asbestos abatement at the sites. The Contractor shall submit 2 copies of this work plan which will be maintained by the Owner and Engineer for record only.

6. The Contractor shall be responsible for following all requirements of the work plan. The cost of all abatement work which requires the use of a licensed asbestos abatement contractor shall be included in the bid.
7. Complete removal of the existing 4,000 caustic tank including full compliance with the submitted Asbestos Abatement Work Plan. The Contractor shall note that should the asbestos abatement work require full isolation of the area, then the abatement contractor must remain on-call and assist the personnel with any adjustments or any other operational issues that may arise which require accessing the area.
8. All demolition and disposal of all material in accordance with these Contract Documents and all state and federal laws

3.08 FLOCCULATOR BAFFLES - **Bid Items: #8**

A. Measurement for payment for this item will be made on a Lump Sum basis and no Measurement for Payment shall be made.
B. Payment for this item shall be made based on the Lump Sum bid on the Bid Forms in the Contract Documents. Partial payments shall be based on the approved schedule of values.
C. The lump sum price bid shall include all costs for labor, materials, equipment, and supplies required to complete the work including:
   1. Layout
   2. Furnishing and installing FRP baffles at the influent and effluent at each flocculator tank (4 baffles) and all appurtenances as shown on the Contract Plans including but not limited to:
      - A complete design of the baffle system utilizing FRP materials following the typical details per the Contract Documents.
      - All connections, hardware, retrofitting, mounts, and supports.
   3. All other appurtenant and incidental work.

3.09 REHABILITATION OF EXISTING TRIDENT UNITS - **Bid Items: #9**

A. Measurement for payment for this item will be made on a Lump Sum basis and no Measurement for Payment shall be made.
B. Payment for this item shall be made based on the Lump Sum bid on the Bid Forms in the Contract Documents. Partial payments shall be based on the approved schedule of values.
C. The lump sum price bid shall include all costs for labor, materials, equipment, and supplies required to complete the work including:
   1. New complete in-kind replacement blowers, motors, and air piping.
   2. Removal, storing, and reuse of media. Media to be stored in sanitary fashion.
   3. Hand tooling all rust and full recoat including primer, stripe coat, and top coat.
   4. Replacement of existing media retention grating and gaskets.
   5. Repairs and replacement of piston and waste gate including connection to existing.
   6. Replacement of all electrically and manually actuated valves.
   7. Replacement of all pressure switches.
   8. Replacement of all pressure gauges.
   9. Replacement of all solenoid valves.
   10. Replacement of all float switches.
   11. Replacement of all level transducers.
   12. All other miscellaneous repairs, modifications, and replacements required to provide complete functioning units.

3.10 REHABILITATION OF CONVENTIONAL FILTRATION UNITS - **Bid Items: #10**

A. Measurement for payment for this item will be made on a Lump Sum basis and no Measurement for Payment shall be made.
B. Payment for this item shall be made based on the Lump Sum bid on the Bid Forms in the Contract Documents. Partial payments shall be based on the approved schedule of values.
C. The lump sum price bid shall include all costs for labor, materials, equipment, and supplies required to complete the work including:
    1. Replacement of all electrically and manually actuated valves in accordance with Contract Drawings.
    2. Other incidental work.

3.11 REHABILITATION OF EXISTING SETTLING TANKS - **Bid Items: #11**

A. Measurement for payment for this item will be made on a Lump Sum basis and no Measurement for Payment shall be made.
B. Payment for this item shall be made based on the Lump Sum bid on the Bid Forms in the Contract Documents. Partial payments shall be based on the approved schedule of values.
C. The lump sum price bid shall include all costs for labor, materials, equipment, and supplies required to complete the work including:
    1. Demolition and disposal of existing wooden baffle walls.
    2. In-kind replacement of existing wooden baffle walls in accordance with Contract Drawings.
    3. Other incidental work.

3.12 RAW WATER PUMP STATION UPGRADES - **Bid Items: #12**

A. Measurement for payment for this item will be made on a Lump Sum basis and no Measurement for Payment shall be made.
B. Payment for this item shall be made based on the Lump Sum bid on the Bid Forms in the Contract Documents. Partial payments shall be based on the approved schedule of values.
C. The lump sum price bid shall include all costs for labor, materials, equipment, and supplies required to complete the work including:
    1. Furnish, install, integrate, and startup VFDs for existing raw water pumps.
    2. Replacement of existing pumps and motors of second vacuum prime assembly. Integrate new equipment into existing system.
    3. Replacement of existing air release valves
    4. All required fittings, adaptors, valves, and pipe.
    5. All other appurtenant and incidental work.

3.13 POTASSIUM PERMANGANATE STATION UPGRADES - **Bid Items: #13**

A. Measurement for payment for this item will be made on a Lump Sum basis and no Measurement for Payment shall be made.
B. Payment for this item shall be made based on the Lump Sum bid on the Bid Forms in the Contract Documents. Partial payments shall be based on the approved schedule of values.
C. The lump sum price bid shall include all costs for labor, materials, equipment, and supplies required to complete the work including:
    1. Chemical dosing/mixing tank.
    2. Spill containment tank.
    3. All plumbing, drain plumbing, valves, and flow meters.
    4. Chemical mixer.

5. Complete chemical feed pumping system.
6. Backflow preventor – reduced pressure zone (RPZ) and discharge funnel.
7. Emergency shower and eyewash combination station.
8. All piping, fittings, adaptors, valves, anchors, hangers, supports, and other plumbing appurtenances.
9. All disinfection and pressure/leakage tests.
10. All taps and connections.
11. Other appurtenant and incidental work.

3.14 HIGH LIFT PUMPS - **Bid Items: #14**

A. Measurement for payment for this item will be made on a Lump Sum basis and no Measurement for Payment shall be made.

B. Payment for this item shall be made based on the Lump Sum bid on the Bid Forms in the Contract Documents. Partial payments shall be based on the approved schedule of values.

C. The lump sum price bid shall include all costs for labor, materials, equipment, and supplies required to complete the work including:
   1. Layout
   2. Furnishing and installing two (2) high lift pumps and all appurtenances as shown on the Contract Plans including but not limited to:
      a. All flanged piping, fittings, isolation and check valves.
      b. All pressure relief valves, pressure gauges with isolation valves.
      c. All connections.
      d. All taps including sample taps.
      e. All finishes and painting.
      f. All supports and equipment pads.
      g. All equipment start-up and testing.
   3. All other appurtenant and incidental work.

3.15 PROCESS PIPING - **Bid Items: #15**

A. Measurement for payment for this item will be made on a Lump Sum basis and no Measurement for Payment shall be made.

B. Payment for this item shall be made based on the Lump Sum bid on the Bid Forms in the Contract Documents. Partial payments shall be based on the approved schedule of values.

C. The lump sum price bid shall include all costs for labor, materials, equipment, and supplies required to complete the work including:
   1. Layout
   2. Furnishing and installing process piping in the existing building and new clarification unit building and all appurtenances as shown on the Contract Plans including but not limited to:
      a. All piping, fittings, valves (manual and electrical), restrained couplings, flanges, and all appurtenances.
      b. Air and pressure release valves, and pressure gauges.
      c. All static mixers, chemical injections quills.
      d. All connections and taps.
      e. Relocation of the existing chemical feed lines.
      f. All S.S. supports, concrete supports, and etc.
      g. All finishes and painting.
      h. All equipment start-up and testing.

3. All other appurtenant and incidental work.

3.16 NEW BUILDING FOR CLARIFICATION UNITS - STRUCTURAL CONCRETE - **Bid Items: #16**

A. Measurement for payment for this item will be made on a Lump Sum basis and no Measurement for Payment shall be made.

B. Payment for this item shall be made based on the Lump Sum bid on the Bid Forms in the Contract Documents. Partial payments shall be based on the approved schedule of values.

C. The lump sum price bid shall include all costs for labor, materials, equipment, and supplies required to complete the work including:
   1. Layout and field survey.
   2. The Contractor shall carefully review the available geotechnical data included in Exhibit F to this Project Manual.
   3. Furnishing and installing the following including but not limited to:
      a. All applicable structural fill, backfill, geotextile fabric and compaction.
      b. All design, furnishing and erection of shoring and bracing.
      c. All waterstops, anchor bolts, chamfer strips, wall sleeves, grating embedment, keyways and miscellaneous penetrations (CONTRACTOR shall coordinate all hardware locations with the applicable equipment supplier).
      d. All wall sleeves and castings.
      e. All reinforcement, concrete and grout.
      f. All applicable concrete sealants.
      g. All concrete fill, patches, and etc.
      h. All cutting and coring.
      i. All construction, contraction and expansion joints.
   4. Temporary support and maintenance of other utilities and structures affected by the work.
   5. Other appurtenant and incidental work.

3.17 NEW BUILDING FOR CLARIFICATION UNITS - BUILDING - **Bid Items: #17**

A. Measurement for payment for this item will be made on a Lump Sum basis and no Measurement for Payment shall be made.

B. Payment for this item shall be made based on the Lump Sum bid on the Bid Forms in the Contract Documents. Partial payments shall be based on the approved schedule of values.

C. The lump sum price bid shall include all costs for labor, materials, equipment, and supplies required to complete the work including but not limited to:
   1. Layout
   2. Furnishing and installing all architectural components of the new building for the clarification units building including but not limited to:
      a. All connections to walls and slabs.
      b. All walls complete with lintels, wall sleeves, door/equipment/window openings.
      c. All control joints.
      d. All roof trusses, sheathing, roof covering system, gutters, snow guards, and appurtenances.
      e. All building siding components.
      f. All doors and windows, complete with hardware including overhead doors.
      g. All finishes and sealants (the General Contractor shall be responsible for sealing all penetrations, including penetrations by other trades).
      h. All penetrations/lintels for HVAC/electrical components. General Contractor shall include all openings noted on H Drawings within this bid price.

i. Coordination with other trades for opening/wall sleeve size and locations.

3. Temporary support and maintenance of other utilities and structures affected by the work.
4. Other appurtenant and incidental work.

3.18 NEW TRIDENT CLARIFICATION UNITS - **Bid Items: #18**

A. Measurement for payment for this item will be made on a Lump Sum basis and no Measurement for Payment shall be made.
B. Payment for this item shall be made based on the Lump Sum bid on the Bid Forms in the Contract Documents. Partial payments shall be based on the approved schedule of values.
C. The lump sum price bid shall include all costs for labor, materials, equipment, and supplies required to complete the work including:
   1. Layout
   2. Furnishing and installing all components of the two (2) new clarification units with controls including but not limited to:
      a. All flanged piping, fittings, valves, restrained couplings, supports, spare parts and all appurtenances. This item includes all air, chemical, process, and etc.
      b. All control panels, instrumentation, pumps, blowers, and other equipment required to provide complete functional units.
      c. All air relief valves, pressure gauges with isolation valves.
      d. All coring with link seals.
      e. All connections.
      f. All supports and equipment pads.
      g. All finishes and painting.
      h. All equipment start-up and testing.
      i. All pressure and leakage testing.
   3. Other appurtenant and incidental work.

3.19 UV DISINFECTION UNITS - **Bid Items: #19**

A. Measurement for payment for this item will be made on a Lump Sum basis and no Measurement for Payment shall be made.
B. Payment for this item shall be made based on the Lump Sum bid on the Bid Forms in the Contract Documents. Partial payments shall be based on the approved schedule of values.
C. The lump sum price bid shall include all costs for labor, materials, equipment, and supplies required to complete the work including:
   1. Layout
   2. Furnishing and installing all components for the two (2) UV disinfection units including but not limited to:
      a. All lamps, instrumentation, spare parts, and appurtenances required to provide a complete functional unit.
      b. All connections.
      c. All supports, equipment pads, and pedestals.
      d. All finishes and painting.
      e. All disinfection and equipment start-up and testing.
      f. All pressure and leakage testing.
      g. Other appurtenant and incidental work.

3.20 POST-FILTER CHLORINATION FEED - **Bid Items: #20**

A. Measurement for payment for this item will be made on a Lump Sum basis and no Measurement for Payment shall be made.
B. Payment for this item shall be made based on the Lump Sum bid on the Bid Forms in the Contract Documents. Partial payments shall be based on the approved schedule of values.
C. The lump sum price bid shall include all costs for labor, materials, equipment, and supplies required to provide a complete connection of the gaseous chlorine feed line to the treatment plant's entry point piping.

3.21 INSTRUMENTATION - **Bid Items: #21**

A. Measurement for payment for this item will be made on a Lump Sum basis and no Measurement for Payment shall be made.
B. Payment for this item shall be made based on the Lump Sum bid on the Bid Forms in the Contract Documents. Partial payments shall be based on the approved schedule of values.
C. The lump sum price bid shall include all costs for labor, materials, equipment, and supplies required to complete the work including:
    1. Flow indicators.
    2. Pressure indicators.
    3. Streaming current analyzer.
D. Instrumentation required for the operation of specific equipment is included in the respective Bid Item of each piece of equipment. This Item refers to instrumentation not specifically included in other equipment or Items.

3.22 SUPERVISORY CONTROL AND DATA ACQUISITION (SCADA) - **Bid Items: #22**

B. Measurement for payment for this item will be made on a Lump Sum basis and no Measurement for Payment shall be made.
C. Payment for this item shall be made based on the Lump Sum bid on the Bid Forms in the Contract Documents. Partial payments shall be based on the approved schedule of values.
D. The lump sum price bid shall include all costs for labor, materials, equipment, and supplies required to complete the work including:
    1. Layout
    2. Furnishing and installing all components of all modifications, additions and new work regarding the SCADA system, including but not limited to:
        a. Furnishing and installation of all instrumentation equipment per Contract Documents.
        b. All design and execution of all PLC's, complete with all hardware, software and all other components as necessary to furnish a complete and functional SCADA system per the Contract Documents.
        c. All terminations and landings of all signal/control wiring (electrical contractor shall install the conduit and conductors).
        d. Coordination with the electrical contractor regarding conduits and conductors
        e. Furnishing and installing all new fiber optic cable (electrical contractor shall install the conduit)
        f. Furnishing and installation of all new control panels, complete with all necessary hardware, software and all other components as necessary to communicate with the SCADA system per the Contract Documents.
        g. All programming and associated work.
        h. Coordination with applicable equipment suppliers to ensure compatibility of equipment control panels with the new controls.
        i. Programming of all SCADA computers. All hardware, software and programming shall be included in this bid item.

j. All start up from factory trained instrumentation representative.

3. Temporary support and maintenance of other utilities and structures affected by the work.
4. Other appurtenant and incidental work

3.23 OFF-SITE WATER STORAGE TANK MIXER - **Bid Items: #23**

A. Measurement for payment for this item will be made on a Lump Sum basis and no Measurement for Payment shall be made.
B. Payment for this item shall be made based on the Lump Sum bid on the Bid Forms in the Contract Documents. Partial payments shall be based on the approved schedule of values.
C. The lump sum price bid shall include all costs for labor, materials, equipment, and supplies required to complete the work including:
   1. Layout
   2. Mixer with suspension kit, control panel and panel mount.
   3. All controls and connections.
   4. All coring and penetrations.
   5. Sealing of all wall penetrations.
   6. All equipment start-up and testing
   7. Furnishing and installing all other components of the tank mixer required to provide a complete functional unit.
   8. All other appurtenant and incidental work.

3.24 FINAL RESTORATION - **Bid Items: #24**

A. Measurement for payment for this item will be made on a Lump Sum basis and no Measurement for Payment shall be made.
B. Payment for this item shall be made based on the Lump Sum bid on the Bid Forms in the Contract Documents. Partial payments shall be based on the approved schedule of values.
C. The lump sum price bid shall include all costs for labor, materials, equipment, and supplies required to complete the work including:
   1. Replacement in kind of sidewalks, stairs, planters, walls, mailboxes, fences, and other items removed or damaged during the work.
   2. Rough grading of the area.
   3. Furnishing and placing acceptable topsoil on areas disturbed during the Work.
   4. Removing all stones over 1-inches in size for areas that will be mowed.
   5. Furnishing and applying grass seed on areas disturbed during the Work and irrigation and maintenance of newly seeded areas until accepted by the ENGINEER.
   6. Replacement of all shrubbery, trees, and other vegetation damaged or destroyed during the Work with comparable items. To the maximum extent practicable vegetative items shall be comparable in type, quality, and size.
   7. Removal and disposal of all surplus materials and packaging.
   8. Removal and disposal of all temporary utilities and services.
   9. Removal and disposal all temporary erosion and sediment control structures and materials used to control erosion and sediment losses.
   10. Brush-sweep all paved surfaces affected by the work.
   11. Other appurtenant and incidental work.

3.25 BACKWASH PUMP VFD UPGRADES - **Bid Items: #BA1**

A. Measurement for payment for this item will be made on a Lump Sum basis and no Measurement for Payment shall be made.
B. Payment for this item shall be made based on the Lump Sum bid on the Bid Forms in the Contract Documents. Partial payments shall be based on the approved schedule of values.
C. The lump sum price bid shall include all costs for labor, materials, equipment, and supplies required to complete the work including:
    1. Furnish, install, integrate, and startup VFDs for existing backwash water pumps.
    2. Other appurtenant and incidental work.

3.26 EPOXY COATING OF TREATMENT PLANT MAIN FLOOR - **Bid Items: #BA2**

A. Measurement for payment for this item will be made on a square-foot unit price basis.
B. Payment for this item shall be made based on the Unit Price for the corresponding Bid Item from the Bid Item Table included in the Contract Documents.
C. Each unit price shall include all costs labor, materials, equipment, overhead & profit, and supplies required to complete the work, including but not limited to:
    1. All surface preparation.
    2. A complete 100% epoxy industrial flooring system with a dry mill thickness of 62 mm.
    3. Other appurtenant and incidental work.

3.27 WTP GARAGE UPGRADES - **Bid Items: #BA3**

A. Measurement for payment for this item will be made on a Lump Sum basis and no Measurement for Payment shall be made.
B. Payment for this item shall be made based on the Lump Sum bid on the Bid Forms in the Contract Documents. Partial payments shall be based on the approved schedule of values.
C. The lump sum price bid shall include all costs for labor, materials, equipment, and supplies required to complete the work including:
    1. All demolition, excavation, and disposal work.
    2. Protection of existing utilities.
    3. Furnishing and installing of complete slab, curb, wall, and roof systems in accordance with the Contract Drawings.
    4. All structural, architectural, and finishing elements.
    5. All openings and screens.
    6. Other incidental and appurtenant work.

3.28 OFF-SITE VIOLET HILL PUMP STATION UPGRADES- **Bid Items: #BA4**

A. Measurement for payment for this item will be made on a Lump Sum basis and no Measurement for Payment shall be made.
B. Payment for this item shall be made based on the Lump Sum bid on the Bid Forms in the Contract Documents. Partial payments shall be based on the approved schedule of values.
C. The lump sum price bid shall include all costs for labor, materials, equipment, and supplies required to complete the work including:
    1. Replacement of the existing two (2) pumps as indicated in the Contract Drawings.
    2. Provision of all necessary adaptors, fittings, and miscellaneous plumbing required to provide a complete functional replacement.

END OF SECTION

SECTION 011020
SUMMARY OF WORK – 1E

PART 1. GENERAL

1.01 SUMMARY

A. This contract consists of:
   1. The summary of this work is described in Section 011010.

1.02 PROJECT AND SITE CONDITIONS

A. Project and site conditions are generally illustrated on the Drawings. Contractor is responsible for inspecting all work locations and familiarizing himself with conditions affecting the work prior to submitting a bid for the work.
B. The approximate locations of known underground utilities are shown on Drawings for Contractor's information. This does not relieve Contractor from the requirement to locate and protect the public and private utilities including utility poles. Repair of damage resulting from the Contractor's negligence or lack of planning shall be the responsibility of the Contractor

1.03 COORDINATION WITH UTILITY COMPANIES

A. The Contractor shall notify UDig NY and pertinent utility companies 72 hours in advance of doing any work at or adjacent to said utilities. All requirements of NYCRR 53 & NYS Code Rule 753 are applicable to this contract.

1.04 DESIGN ENGINEER'S ESTIMATE OF QUANTITIES

A. Bid Items and estimated quantities are presented on the Bid Item Table included in these Contract Documents. The estimated quantities for unit price pay items are approximate only and are included solely for the purpose of comparison of bids.
B. The Owner does not expressly or by implication agree that the nature of the materials encountered below the surface of the ground or the actual quantities of materials encountered or required will correspond therewith and reserves the right to increase or decrease any quantity or to eliminate any quantity as Owner may deem necessary.
C. Contractor will not be entitled to any adjustment in a unit bid price as a result of any change in an estimated quantity and agrees to accept the aforesaid unit bid prices as complete and total compensation for any additions or deductions caused by a variation in quantities, as a result of more accurate field measurement or by any changes or alterations in the Work ordered by the Owner.
D. This Summary of Work is not intended to substitute for thorough review of all Contract Drawings and Specifications by the Contractor. Items not specifically included in the Summary of Work but shown on the Contract Drawings and Specifications are the responsibility of the Contractor to complete. The Contractor shall include the cost of completing these items in the Bid Item most closely associated to the work item in question. No additional compensation will be provided to the Contractor for any of these items.

1.05 UNIT PRICE WORK REQUIREMENTS INCLUDE

A. This section identifies Bid Items and method of measurement and payment.
B. Provide all labor, materials, equipment, supplies, supervision, overhead & profit, and all services necessary to furnish and install each Bid Item as required by Contract Documents.

1.06 MEASUREMENTS FOR PAYMENT

A. Bid Items
   1. For unit price items, the Contractor shall be paid based on actual quantities measured in the field, as shown on the pay limits of the contract plans and described in the bid form

times the unit price on the bid item table. The measurement for each Bid Item is listed under Part 3-Execution of this specification.

2. For lump sum items, the Contractor shall be paid either by partial payments or Lump Sum after the completion of the Bid Item. For partial payments, the Contractor shall submit for Engineer's review and approval a "schedule of values" that shall provide the basis for partial payments. The total costs of all components of work shall equal the Lump Sum bid for this Item.
    a. If a Lump Sum item is not completed, the Contractor will receive payment proportionate to the amount of work completed.

B. Contractor shall prepare monthly payment requests in a standard form as given by the Engineer. Contractor shall review a preliminary payment request with the Engineer prior to submittal of the formal request.

C. On a daily basis as required, Contractor shall review daily production and payment quantities with the Engineer.

D. After the completion of the project, the measurements for each bid item shall be re-measured where necessary. The remaining payments from the Owner to the Contractor shall be adjusted accordingly to the final measurements of the bid items.

PART 2. PRODUCTS

This section is not used. Refer to individual specification sections for more information on each bid item.

PART 3. EXECUTION

3.01 MOBILIZATION AND GENERAL CONSTRUCTION - **Bid Items: #1**

A. Mobilization and General Construction bid item for the project shall be no more than the maximum 3.0 % of the total contract cost.

B. Measurement and Payment for these items will be made as progress payments against the Lump Sum Prices bid on the Bid Form included in the Contract Documents.

C. Payment under these Items shall be the same regardless of whether additional work is done or if the Contract is extended.

1. Upon completion of mobilization as approved by the ENGINEER, two-third (2/3) of the items shall be considered complete and payments made.
2. The remainder of the payments under these Items shall be made on a regular monthly basis that accounts for equal payment for General Construction Work throughout the Contract schedule, except that ENGINEER may withhold such payments for failure to complete General Construction work not specifically included elsewhere in the Documents, provided 10-days advance written notice has been provided to CONTRACTOR of the deficiency.

D. The lump sum bid shall include all costs for labor, materials, equipment, and supplies required to complete the work including:

1. Record Drawings and Project Photos.
2. Obtaining and maintaining all relevant permits.
3. Coordination and costs of all electrical inspections as required.
4. Obtaining all necessary certificates of occupancy.
5. Certified Payrolls, MWBE/SDVOB documents, and other project documentation.
6. Maintenance and documentation of project schedule.
7. Maintenance of temporary field facilities.

8. Procurement and maintenance of required insurance and bonds.
9. Shop drawings and material submittals
10. As-built drawings.
11. Health and Safety Plans
12. Mobilization of equipment and work force
13. All other work required by the Contract Documents but not listed individually under other Bid Items.

3.02 SITE EXCAVATION, BACKFILL, AND GRADING - **Bid Items: #2**

A. Measurement for payment for this item will be made on a Lump Sum basis and no Measurement for Payment shall be made. It is REQUIRED that the CONTRACTOR procure the services of a qualified engineer to develop an excavation, shoring and dewatering plan for this work. Payment for this item shall be made based on the Lump Sum bid on the Bid Forms in the Contract Documents. Partial payments shall be based on the approved schedule of values.

B. The lump sum price bid shall include all costs for labor, materials, equipment, and supplies required to complete the work including:
   1. Layout and field survey.
   2. Site preparation including saw-cutting the street pavement, removing street pavement, curb and gutters, sidewalks, driveways, and the proper disposal of excess materials.
      a. All pavement, sidewalks, and curbs must be saw-cut before being removed by the CONTRACTOR. The CONTRACTOR cannot use his equipment to break up the pavement, sidewalks or curbs.
   3. Site preparation including all clearing and grubbing and the proper disposal of excess materials.
   4. Excavation and trench restoration excluding asphalt paving.
   5. Import of all materials, backfill, and compaction as required to bring the site to final grade.
   6. Environmental controls and protection as required by the plans and permits.
   7. Excavation of materials to facilitate the installation of all new electrical utilities.
   8. Other appurtenant and incidental work.

3.03 SITE YARD IMPROVEMENTS - **Bid Items: #3**

A. Measurement for payment for this item will be made on a Lump Sum basis and no Measurement for Payment shall be made.

B. Payment for this item shall be made based on the Lump Sum bid on the Bid Forms in the Contract Documents. Partial payments shall be based on the approved schedule of values.

C. The lump sum price bid shall include all costs for labor, materials, equipment, and supplies required to complete the work including:
   1. Layout and field survey.
   2. Furnishing and installing all buried and exposed outdoor power and control conduit, conductors, pull-boxes, panels, poles and any other electrical equipment specified in the Contract Drawings.
   3. All other associated appurtenant and incidental work.

3.04 ELECTRICAL DEMOLITION - **Bid Items: #4**

A. Measurement for payment for this item will be made on a Lump Sum basis and no Measurement for Payment shall be made.

B. Payment for this item shall be made based on the Lump Sum bid on the Bid Forms in the Contract Documents. Partial payments shall be based on the approved schedule of values.
C. The lump sum price bid shall include all costs for labor, materials, equipment, and supplies required to complete all demolition of existing structures, mechanical equipment, process piping and all other demolition, but not limited to:
   1. All components of the decommissioning of existing electrical equipment.
   2. Removal of any conduit, conductors, panels, and other electrical equipment requiring demolition as shown on the Contract Drawings.
   3. Miscellaneous conduit and wire removals throughout the plant to support process additions and changes.

3.05 POWER **- BID ITEMS: #5, #6, #7, #8, #9, #10, #11, #12, #15, #BA1, #BA2, & #BA3**

A. Measurement for payment for this item will be made on a Lump Sum basis and no Measurement for Payment shall be made.
B. Payment for this item shall be made based on the Lump Sum bid for the respective bid item on the Bid Item Table in the Contract Documents. Partial payments shall be based on the approved schedule of values.
C. The lump sum price bid shall include all costs for labor, materials, equipment, and supplies required to complete the work including:
   1. Provide a 4" house-keeping pad for all new floor mounted electrical equipment.
   2. Furnish and install all power panels, disconnects, transformers, transfer switches, receptacles, grounding, and other power equipment as applicable per the Contract Drawings and Specifications.
   3. Provide and terminate all power wires/cables and conduit to all equipment provided by other prime contractors.
   4. Provide and terminate all power wires/cables, electrical power equipment, and connections for all temporary construction power needs of the owner and other prime contractor.
   5. Install all equipment panels provided by other prime Contractors.
   6. Furnish and install electrical components to all equipment provided by other prime Contractors.
   7. Other appurtenant and incidental work shown in the Contract Drawings

3.06 CONTROLS, INSTRUMENTATION, AND SCADA CONDUIT AND WIRE **- BID ITEMS: #6, #7, #8, #9, #10, #11, #12, #15, #BA1**

A. Measurement for payment for this item will be made on a Lump Sum basis and no Measurement for Payment shall be made.
B. Payment for this item shall be made based on the Lump Sum bid for the respective bid item on the Bid Item Table in the Contract Documents. Partial payments shall be based on the approved schedule of values.
C. The lump sum price bid shall include all costs for labor, materials, equipment, and supplies required to complete the work including:
   1. Provision and termination of all control wires/cables to all equipment and controls provided by other prime contractors.
   2. Install all control and equipment panels provided by other prime Contractors.
   3. Furnish and install electrical components to all equipment and instrumentation provided by other prime Contractors.
   4. Provide electrical terminations and connections for all instruments supplied by the SCADA vendor.

a. Furnish and install all conduits, conductors, network jacks, and network cables to provide the SCADA System described in the Contract Documents.
b. Install fiber optic cable provided by the SCADA vendor.

5. Other appurtenant and incidental work shown in the Contract Drawings

3.07 LIGHTING **- BID ITEMS: #13, #14, #15**

A. Measurement for payment for this item will be made on a Lump Sum basis and no Measurement for Payment shall be made.
B. Payment for this item shall be made based on the Lump Sum bid for the respective bid item on the Bid Item Table in the Contract Documents. Partial payments shall be based on the approved schedule of values.
C. The lump sum price bid shall include all costs for labor, materials, equipment, and supplies required to complete the work including:
   1. Temporary lighting for utilities and structures affected by the work and as required to perform the work.
   2. Furnishing and installation of all lighting fixtures, bulbs, switches, wiring, and conduit.
   3. Other appurtenant and incidental work shown in the Contract Drawings

1.01 FINAL RESTORATION **- BID ITEMS: #16**

A. Measurement for payment for this item will be made on a Lump Sum basis and no Measurement for Payment shall be made.
B. Payment for this item shall be made based on the corresponding Lump Sum Bid Item from the Bid Item Table included in the Contract Documents. Partial payments shall be based on the approved schedule of values.
C. This Lump Sum Bid Item shall include all costs for labor, materials, equipment, overhead & profit, and supplies required to complete the work, including but not limited to:
   1. Replacement in kind of items and areas affected or damaged by the work.
   2. Removal and disposal of all surplus materials and packaging.
   3. Removal and disposal of all temporary electrical utilities and services.
   4. Other appurtenant and incidental work.

END OF SECTION

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SECTION 011030
SUMMARY OF WORK – 1H

PART 1. GENERAL

1.01 SUMMARY

A. This contract consists of:
   1. The summary of this work is described in Section 011010.

1.02 PROJECT AND SITE CONDITIONS

A. Project and site conditions are generally illustrated on the Drawings. Contractor is responsible for inspecting all work locations and familiarizing himself with conditions affecting the work prior to submitting a bid for the work.
B. The approximate locations of known underground utilities are shown on Drawings for Contractor's information. This does not relieve Contractor from the requirement to locate and protect the public and private utilities including utility poles. Repair of damage resulting from the Contractor's negligence or lack of planning shall be the responsibility of the Contractor

1.03 COORDINATION WITH UTILITY COMPANIES

A. The Contractor shall notify UDig NY and pertinent utility companies 72 hours in advance of doing any work at or adjacent to said utilities. All requirements of NYCRR 53 & NYS Code Rule 753 are applicable to this contract.

1.04 DESIGN ENGINEER'S ESTIMATE OF QUANTITIES

A. Bid Items and estimated quantities are presented on the Bid Item Table included in these Contract Documents. The estimated quantities for unit price pay items are approximate only and are included solely for the purpose of comparison of bids.
B. The Owner does not expressly or by implication agree that the nature of the materials encountered below the surface of the ground or the actual quantities of materials encountered or required will correspond therewith and reserves the right to increase or decrease any quantity or to eliminate any quantity as Owner may deem necessary.
C. Contractor will not be entitled to any adjustment in a unit bid price as a result of any change in an estimated quantity and agrees to accept the aforesaid unit bid prices as complete and total compensation for any additions or deductions caused by a variation in quantities, as a result of more accurate field measurement or by any changes or alterations in the Work ordered by the Owner.
D. This Summary of Work is not intended to substitute for thorough review of all Contract Drawings and Specifications by the Contractor. Items not specifically included in the Summary of Work but shown on the Contract Drawings and Specifications are the responsibility of the Contractor to complete. The Contractor shall include the cost of completing these items in the Bid Item most closely associated to the work item in question. No additional compensation will be provided to the Contractor for any of these items.

1.05 UNIT PRICE WORK REQUIREMENTS INCLUDE

A. This section identifies Bid Items and method of measurement and payment.
B. Provide all labor, materials, equipment, supplies, supervision, overhead & profit, and all services necessary to furnish and install each Bid Item as required by Contract Documents.

1.06 MEASUREMENTS FOR PAYMENT

A. Bid Items
   1. For unit price items, the Contractor shall be paid based on actual quantities measured in the field, as shown on the pay limits of the contract plans and described in the bid form

times the unit price on the bid item table. The measurement for each Bid Item is listed under Part 3-Execution of this specification.

2. For lump sum items, the Contractor shall be paid either by partial payments or Lump Sum after the completion of the Bid Item. For partial payments, the Contractor shall submit for Engineer's review and approval a "schedule of values" that shall provide the basis for partial payments. The total costs of all components of work shall equal the Lump Sum bid for this Item.
    a. If a Lump Sum item is not completed, the Contractor will receive payment proportionate to the amount of work completed.

B. Contractor shall prepare monthly payment requests in a standard form as given by the Engineer. Contractor shall review a preliminary payment request with the Engineer prior to submittal of the formal request.

C. On a daily basis as required, Contractor shall review daily production and payment quantities with the Engineer.

D. After the completion of the project, the measurements for each bid item shall be re-measured where necessary. The remaining payments from the Owner to the Contractor shall be adjusted accordingly to the final measurements of the bid items.

PART 2. PRODUCTS

This section is not used. Refer to individual specification sections for more information on each bid item.

PART 3. EXECUTION

3.01 MOBILIZATION AND GENERAL CONSTRUCTION - **Bid Items: #1**

A. Mobilization and General Construction bid item for the project shall be no more than the maximum 3.0 % of the total contract cost.

B. Measurement and Payment for these items will be made as progress payments against the Lump Sum Prices bid on the Bid Form included in the Contract Documents.

C. Payment under these Items shall be the same regardless of whether additional work is done or if the Contract is extended.
    1. Upon completion of mobilization as approved by the ENGINEER, two-third (2/3) of the items shall be considered complete and payments made.
    2. The remainder of the payments under these Items shall be made on a regular monthly basis that accounts for equal payment for General Construction Work throughout the Contract schedule, except that ENGINEER may withhold such payments for failure to complete General Construction work not specifically included elsewhere in the Documents, provided 10-days advance written notice has been provided to CONTRACTOR of the deficiency.

D. The lump sum bid shall include all costs for labor, materials, equipment, and supplies required to complete the work including:
    1. Record Drawings and Project Photos.
    2. Obtaining and maintaining all relevant permits.
    3. Coordination and costs of all electrical inspections as required.
    4. Obtaining all necessary certificates of occupancy.
    5. Certified Payrolls, MWBE/SDVOB documents, and other project documentation.
    6. Maintenance and documentation of project schedule.
    7. Maintenance of temporary field facilities.

8. Procurement and maintenance of required insurance and bonds.
9. Shop drawings and material submittals
10. As-built drawings
11. Health and Safety Plans
12. Mobilization of equipment and work force
13. All other work required by the Contract Documents but not listed individually under other Bid Items.

3.02 HVAC EQUIPMENT - **Bid Items: #2, #3, #4, #5**

A. Measurement for payment for these items will be made on a per each basis.
B. Payment for this item shall be made based on the Unit Prices for the respective bid items on the Bid Item Table in the Contract Documents. No partial payments shall be made for each unit.
C. Each unit price shall include all costs for labor, materials, equipment, and supplies required to complete the work including:
   1. Layout and field survey
   2. Equipment per the schedules included in the Contract Drawings.
   3. Adapters, hardware, mounts, flashing, fittings, trim, insulation, wall penetrations, and any other additional labor and or materials needed to install units.
   4. Equipment start-up and operator training
   5. Warranty and spare parts
   6. Selected options listed on equipment schedules, accessories.
   7. Unit Controls.
   8. Other appurtenant and incidental work not shown in the Contract Drawings required to provide complete functional units.

END OF SECTION

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SECTION 012100 - ALLOWANCES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements governing allowances.

B. Types of allowances include the following:
   1. Contingency allowances.

1.2 DEFINITIONS

A. Allowance is a quantity of work or dollar amount established in lieu of additional requirements, used to defer selection of actual materials and equipment to a later date when direction will be provided to Contractor. If necessary, additional requirements will be issued by Change Order.

1.3 SELECTION AND PURCHASE

A. At the earliest practical date after award of the Contract, advise Engineer of the date when final selection, or purchase and delivery, of each product or system described by an allowance must be completed by the Owner to avoid delaying the Work.

B. At Engineer's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.

C. Purchase products and systems selected by Engineer from the designated supplier.

1.4 ACTION SUBMITTALS

A. Submit proposals for purchase of products or systems included in allowances in the form specified for Change Orders.

1.5 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.

1.6 CONTINGENCY ALLOWANCES

A. Use the contingency allowance only as directed by Engineer for Owner's purposes and only by work directives that indicate amounts to be charged to the allowance.

B. Contractor's overhead, profit, and related costs for products and equipment ordered by Owner under the contingency allowance are included in the allowance and are not part of the Contract Sum. These costs include delivery, installation, taxes, insurance, equipment rental, and similar costs.

C. Work directives authorizing use of funds from the contingency allowance will include Contractor's related costs and overhead and profit up to 15%.

D. At Project closeout, credit unused amounts remaining in the contingency allowance to Owner by Change Order.

1.7 ADJUSTMENT OF ALLOWANCES

A. Allowance Adjustment: To adjust allowance amounts, prepare a Change Order proposal based on the difference between purchase amount and the allowance, multiplied by final measurement of work-in-place where applicable. If applicable, include reasonable allowances for cutting losses, tolerances, mixing wastes, normal product imperfections, and similar margins.
   1. If requested, prepare explanation and documentation to substantiate distribution of overhead costs and other markups.
   2. Submit substantiation of a change in scope of Work, if any, claimed in Change Orders related to unit-cost allowances.
   3. Owner reserves the right to establish the quantity of work-in-place by independent quantity survey, measure, or count.

B. Submit claims for increased costs because of a change in scope or nature of the allowance described in the Contract Documents, whether for the purchase order amount or Contractor's handling, labor, installation, overhead, and profit.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

3.2 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.

3.3 SCHEDULE OF ALLOWANCES

A. Allowance No. 1G Contingency Allowance: Include a contingency allowance of $200,000.00 for use according to Engineer's written instructions.

B. Allowance No. 1E Contingency Allowance: Include a contingency allowance of $75,000.00 for use according to Engineer's written instructions.

C. Allowance No. 1H Contingency Allowance: Include a contingency allowance of $25,000.00 for use a solar array and other use according to Engineer's written instructions.

END OF SECTION 012100

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SECTION 013050
CONSTRUCTION SEQUENCING

PART 1 GENERAL

1.1 WORK INCLUDED

A. The Water Treatment Plant will continue to operate during execution of this Contract 24 hours per day, 7 days per week. Normal operating hours for the administration areas is 7:00 AM to 3:00 PM.
B. Demolition of existing facilities and construction of new facilities must be scheduled so as not to interrupt to plant operations. Plant operations includes all processes, equipment, power and controls necessary to maintain compliance with the facility's permit.
C. Coordination between the all prime contractors and their sub-contractors is a requirement of this project. This coordination is necessary in several areas to insure uninterrupted operations of the WTP. All contractors shall coordinate scheduling through the Engineer and Owner and the General Contractor will be the lead.
D. Except where specifically noted below, prime contractors are responsible for providing all temporary facilities required to maintain plant operation during the execution of this contract. The prime contractors shall provide a detailed construction sequence plan, including a schedule, covering the specific work tasks described below and any and all other tasks that may affect plant operations to the engineer prior to starting any work on this project.
E. All contractors will be required to attend scheduled construction meetings to discuss and resolve critical items.
F. The Contractor shall provide the Engineer with a minimum of 1 week notice of their intent to place any new structure or piece of equipment into operation.
G. No equipment shall be placed into temporary or permanent operation without prior approval of the Engineer. All equipment shall be placed into operation in the presence of a manufacturers' designated representative.
H. The Contractor shall include sufficient time in all construction sequencing to properly clean existing structures prior to initiating work.
I. The General Contractor shall be responsible for preparation of an overall construction schedule for the WTP. The schedule shall allow for sufficient time to complete all tasks required by each Prime Contractor and their subcontractors. The schedule will be reviewed by all Prime Contractors for verification of sufficient time to complete all tasks. The schedule will be subject to the approval of the Owner and Engineer and shall meet all the time frames outlined in the contract documents.
J. The General Contractor shall be responsible for maintaining the existing plant flows during the construction.

The General Contractor will be responsible for final cleaning / pressure washing of the tanks as required to complete their work.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

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SECTION 013100
PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

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

1. General coordination procedures
2. Coordination drawings
3. RFIs
4. Digital project management procedures
5. Project meetings

B. Each contractor shall participate in coordination requirements. Certain areas of responsibility are assigned to a specific contractor.

1.3 DEFINITIONS

A. RFI: Request for Information. Request from Owner, Engineer, or Contractor seeking information required by or clarifications of the Contract Documents.

1.4 INFORMATIONAL SUBMITTALS

A. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:

1. Name, address, telephone number, and email address of entity performing subcontract or supplying products.
2. Number and title of related Specification Section(s) covered by subcontract.
3. Drawing number and detail references, as appropriate, covered by subcontract.

B. Key Personnel Names: Within 15 days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and cellular telephone numbers and e-mail addresses. Provide names, addresses, and telephone numbers of individuals assigned as alternates in the absence of individuals assigned to Project.

1.5 GENERAL COORDINATION PROCEDURES

A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations included in different Sections that depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.

B. Coordination: Each contractor shall cooperate with Project coordinator who shall coordinate its construction operations with those of other contractors and entities to ensure efficient and orderly installation of each part of the Work. Each contractor shall coordinate its own operations with operations included in different Sections that depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components 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.

C. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.

1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.

D. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and scheduled activities of other contractors and direction of Project coordinator to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of Contractor's construction schedule.

2. Preparation of 3 week look ahead schedule.
3. Preparation of the schedule of values.
4. Installation and removal of temporary facilities and controls.
5. Delivery and processing of submittals.
6. Progress meetings.
7. Preinstallation conferences.
8. Project closeout activities.
9. Startup and adjustment of systems.

1.6 COORDINATION DRAWINGS

A. Coordination Drawings, General: Prepare coordination drawings according to requirements in individual Sections, and additionally where installation is not completely indicated on Shop Drawings, where limited space availability necessitates coordination, or if coordination is required to facilitate integration of products and materials fabricated or installed by more than one entity.

1. Content: Project-specific information, drawn accurately to a scale large enough to indicate and resolve conflicts. Do not base coordination drawings on standard printed data. Include the following information, as applicable:

a. Use applicable Drawings as a basis for preparation of coordination drawings. Prepare sections, elevations, and details as needed to describe relationship of various systems and components.
b. Coordinate the addition of trade-specific information to coordination drawings by multiple contractors in a sequence that best provides for coordination of the information and resolution of conflicts between installed components before submitting for review.
c. Indicate functional and spatial relationships of components of Architectural, structural, civil, mechanical, and electrical systems.
d. Indicate space requirements for routine maintenance and for anticipated replacement of components during the life of the installation.
e. Show location and size of access doors required for access to concealed dampers, valves, and other controls.
f. Indicate required installation sequences.
g. Indicate dimensions shown on Drawings. Specifically note dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternative sketches to Engineer indicating proposed resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.

B. Coordination Drawing Organization: Organize coordination drawings as follows:

1. Floor Plans and Reflected Ceiling Plans: Show Architectural and structural elements, and mechanical, plumbing, fire-protection, fire-alarm, and electrical Work. Show locations of visible ceiling-mounted devices relative to acoustical ceiling grid. Supplement plan drawings with section drawings where required to adequately represent the Work.
2. Plenum Space: Indicate subframing for support of ceiling, raised access floor, and wall systems, mechanical and electrical equipment, and related Work. Locate components within plenums to accommodate layout of light fixtures and other components indicated on Drawings. Indicate areas of conflict between light fixtures and other components.
3. Mechanical Rooms: Provide coordination drawings for mechanical rooms showing plans and elevations of mechanical, plumbing, fire-protection, fire-alarm, and electrical equipment.
4. Structural Penetrations: Indicate penetrations and openings required for all disciplines.
5. Slab Edge and Embedded Items: Indicate slab edge locations and sizes and locations of embedded items for metal fabrications, sleeves, anchor bolts, bearing plates, angles, door floor closers, slab depressions for floor finishes, curbs and housekeeping pads, and similar items.
6. Mechanical and Plumbing Work: Show the following:

a. Sizes and bottom elevations of ductwork, piping, and conduit runs, including insulation, bracing, flanges, and support systems.
b. Dimensions of major components, such as dampers, valves, diffusers, access doors, cleanouts and electrical distribution equipment.
c. Fire-rated enclosures around ductwork.

7. Electrical Work: Show the following:

a. Runs of vertical and horizontal conduit 1-1/4 inches in diameter and larger.
b. Light fixture, exit light, emergency battery pack, smoke detector, and other fire-alarm locations.
c. Panel board, switch board, switchgear, transformer, busway, generator, and motor-control center locations.
d. Location of pull boxes and junction boxes, dimensioned from column center lines.

8. Fire-Protection System: Show the following:

a. Locations of standpipes, mains piping, branch lines, pipe drops, and sprinkler heads.

9. Review: Engineer will review coordination drawings to confirm that in general the Work is being coordinated, but not for the details of the coordination, which are Contractor's responsibility. If Engineer determines that coordination drawings are not being prepared in sufficient scope or detail, or are otherwise deficient, Engineer will so inform Contractor, who shall make suitable modifications and resubmit.

1.7 REQUEST FOR INFORMATION (RFI)

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

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

B. RFI Forms: Software-generated form with substantially the same content as indicated above, acceptable to Engineer.

1. Attachments shall be electronic files in PDF format.

C. Engineer's Action: Engineer will review each RFI, determine action required, and respond. Allow seven working days for Engineer's response for each RFI. RFIs received by Engineer after 1:00 p.m. will be considered as received the following working day.

1. The following Contractor-generated RFIs will be returned without action:

a. Requests for approval of submittals.
b. Requests for approval of substitutions.

c. Requests for approval of Contractor's means and methods.
d. Requests for coordination information already indicated in the Contract Documents.
e. Requests for adjustments in the Contract Time or the Contract Sum.
f. Requests for interpretation of Engineer's actions on submittals.
g. Incomplete RFIs or inaccurately prepared RFIs.

2. Engineer's action may include a request for additional information, in which case Engineer's time for response will date from time of receipt by Engineer of additional information.
3. Engineer'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 Section 012600 "Contract Modification Procedures."

a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Engineer in writing within 10 days of receipt of the RFI response.

1.8 PROJECT MEETINGS

A. General: Schedule and conduct meetings and conferences at Project site unless otherwise indicated.

1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Engineer of scheduled meeting dates and times a minimum of 10 working days prior to meeting.
2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
3. Minutes: Entity responsible for conducting meeting will record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Engineer, within five days of the meeting.

B. Preconstruction Conference: Engineer will schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Engineer, but no later than 15 days after execution of the Agreement.

1. Attendees: Authorized representatives of Owner, Engineer, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Discuss items of significance that could affect progress, including the following:

a. Responsibilities and personnel assignments.
b. Tentative construction schedule.
c. Phasing.
d. Critical work sequencing and long lead items.
e. Designation of key personnel and their duties.
f. Lines of communications.
g. Use of web-based Project software.
h. Procedures for processing field decisions and Change Orders.
i. Procedures for RFIs.

j. Procedures for testing and inspecting.
k. Procedures for processing Applications for Payment.
l. Distribution of the Contract Documents.
m. Submittal procedures.
n. Work restrictions.
o. Working hours.
p. Owner's occupancy requirements.
q. Responsibility for temporary facilities and controls.
r. Procedures for disruptions and shutdowns.
s. Construction waste management and recycling.
t. Parking availability.
u. Office, work, and storage areas.
v. Equipment deliveries and priorities.
w. First aid.
x. Security.
y. Progress cleaning.

3. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.

C. Progress Meetings: Engineer will conduct progress meetings at regular intervals.
1. Attendees: In addition to representatives of Owner and Engineer, 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. Minutes: Entity responsible for conducting the meeting will record and distribute the meeting minutes to each party present and to parties requiring information.

a. Schedule Updating: Revise Contractor's construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

D. Coordination Meetings: Conduct Project coordination meetings at regular intervals. Project coordination meetings are in addition to specific meetings held for other purposes, such as progress meetings and preinstallation conferences.

1. Attendees: In addition to representatives of Owner and Engineer, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meetings shall be familiar with Project and authorized to conclude matters relating to the Work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

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SECTION 013300
SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

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

1.3 DEFINITIONS

A. Action Submittals: Written and graphic information and physical samples that require Engineer's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."

B. Informational Submittals: Written and graphic information and physical samples that do not require Engineer'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."

1.4 SUBMITTAL SCHEDULE

A. Submittal Schedule: Submit, as an action submittal, a list of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Engineer and additional time for handling and reviewing submittals required by those corrections.

1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.
2. Final Submittal: Submit concurrently with the first complete submittal of Contractor's construction schedule.

3. Format: Arrange the following information in a tabular format:

a. Scheduled date for first submittal.
b. Specification Section number and title.
c. Name of subcontractor.
d. Description of the Work covered.
e. Scheduled date for Engineer's final release or approval.

1.5 SUBMITTAL FORMATS

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

1. Project name.
2. Date.
3. Name of Engineer.
4. Name of Contractor.
5. Name of firm or entity that prepared submittal.
6. Names of subcontractor, manufacturer, and supplier.
7. Unique submittal number, including revision identifier. Include Specification Section number with sequential alphanumeric identifier; and alphanumeric suffix for resubmittals.
8. Number and title of Specification Section, with paragraph number and generic name for each of multiple items.
9. Drawing number and detail references, as appropriate.
10. Indication of full or partial submittal.
11. Location(s) where product is to be installed, as appropriate.
12. Other necessary identification.
13. Remarks.
14. Signature of transmitter.

B. Options: Identify options requiring selection by Engineer.

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

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

1.6 SUBMITTAL PROCEDURES

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

1. Email: Prepare submittals as PDF package, and transmit to Engineer by sending via email. Include PDF transmittal form. Include information in email subject line as requested by Engineer.

a. Engineer will return annotated file. Annotate and retain one copy of file as a digital Project Record Document file.

2. Paper: Prepare submittals in paper form, and deliver to Engineer.

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

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
4. Coordinate transmittal of submittals for related parts of the Work specified in different Sections so processing will not be delayed because of need to review submittals concurrently for coordination.

    a. Engineer reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Engineer's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.

1. Initial Review: Allow 10 working days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Engineer will advise Contractor when a submittal being processed must be delayed for coordination.
2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
3. Resubmittal Review: Allow 10 days for review of each resubmittal.

D. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.

1. Note date and content of previous submittal.
2. Note date and content of revision in label or title block and clearly indicate extent of revision.
3. Resubmit submittals until they are marked with approval notation from Engineer's action stamp.

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. Show distribution on transmittal forms.

F. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Engineer's action stamp.

1.7 SUBMITTAL REQUIREMENTS

A. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. If information must be specially prepared for submittal because standard published data are unsuitable for use, submit as Shop Drawings, not as Product Data.
2. Mark each copy of each submittal to show which products and options are applicable.
3. Include the following information, as applicable:

a. Manufacturer's catalog cuts.
b. Manufacturer's product specifications.
c. Standard color charts.
d. Statement of compliance with specified referenced standards.
e. Testing by recognized testing agency.
f. Application of testing agency labels and seals.
g. Notation of coordination requirements.
h. Availability and delivery time information.

4. For equipment, include the following in addition to the above, as applicable:

a. Wiring diagrams that show factory-installed wiring.
b. Printed performance curves.
c. Operational range diagrams.
d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.

5. Submit Product Data before Shop Drawings, and before or concurrent with Samples.

B. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.

1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:

a. Identification of products.
b. Schedules.
c. Compliance with specified standards.
d. Notation of coordination requirements.
e. Notation of dimensions established by field measurement.
f. Relationship and attachment to adjoining construction clearly indicated.
g. Seal and signature of professional engineer if specified.

2. Paper Sheet Size: Except for templates, patterns, and similar full-size Drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches, but no larger than 30 by 42 inches.

C. 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 Engineers and owners, and other information specified.

D. Design Data: Prepare and submit written and graphic information indicating compliance with indicated performance and design criteria in individual Specification Sections. Include list of assumptions and summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Number each page of submittal.

E. Certificates:

1. Certificates and Certifications Submittals: Submit a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity. Provide a notarized signature where indicated.

2. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
3. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
4. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
5. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
6. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification and Procedure Qualification Record on AWS forms. Include names of firms and personnel certified.

F. Test and Research Reports:

1. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.
2. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
3. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
4. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
5. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
6. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:

    a. Name of evaluation organization.
    b. Date of evaluation.
    c. Time period when report is in effect.
    d. Product and manufacturers' names.
    e. Description of product.
    f. Test procedures and results.
    g. Limitations of use.

1.8 DELEGATED-DESIGN SERVICES

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.

1. If criteria indicated are insufficient to perform services or certification required, submit a written request for additional information to Engineer.

B. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally signed PDF file and three paper copies of certificate, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.

1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

1.9 CONTRACTOR'S REVIEW

A. Action Submittals and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Engineer.

B. Contractor's Approval: Indicate Contractor's approval for each submittal with a uniform approval stamp. Include name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

1. Engineer will not review submittals received from Contractor that do not have Contractor's review and approval.

1.10 ENGINEER'S REVIEW

A. Action Submittals: Engineer will review each submittal, indicate corrections or revisions required, and return it.

1. PDF Submittals: Engineer will indicate, via markup on each submittal, the appropriate action.

B. Informational Submittals: Engineer will review each submittal and will not return it, or will return it if it does not comply with requirements. Engineer will forward each submittal to appropriate party.

C. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Engineer.

D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.

E. Engineer will discard submittals received from sources other than Contractor.

F. Submittals not required by the Contract Documents will be returned by Engineer without action.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

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SECTION 013400
APPLICATIONS FOR PAYMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Procedures for preparation and submittal of Applications for Payment.

1.02 RELATED SECTIONS

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

1.03 FORMAT

A. AIA G702 - Application and Certificate for Payment and Continuation Sheets G703 as the proper form for Application for Payment.

1.04 PREPARATION OF APPLICATIONS

A. Present required information in typewritten form or on electronic media printout.
B. Execute certification by signature of authorized officer.
C. Use data from approved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed and for stored products.
D. List each authorized Change Order as an extension on continuation sheet, listing Change Order number and dollar amount as for an original item of Work.
E. Prepare Application for Final Payment as specified in the Application for Payment Specification.

1.05 SUBMITTAL PROCEDURES

A. Submit three copies of each Application for Payment.
B. Submit an updated construction schedule with each Application for Payment.
C. Payment Period: Submit at intervals stipulated in the Agreement.
   1. Maximum of every 30 days
D. Submit under transmittal letter specified in Submittals Specification.

1.06 SUBSTANTIATING DATA

A. When Architect/Engineer requires substantiating information, submit data justifying dollar amounts in question.
B. Provide one copy of data with cover letter for each copy of submittal. Show Application number and date, and line item by number and description.

END OF SECTION

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SECTION 014000
QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for quality assurance and quality control.

B. Testing and inspection services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.

1. Specific quality-assurance and quality-control requirements for individual work results are specified in their respective Specification Sections. Requirements in individual Sections may also cover production of standard products.
2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and quality-control procedures that facilitate compliance with the Contract Document requirements.
3. Requirements for Contractor to provide quality-assurance and quality-control services required by Engineer, Owner, or authorities having jurisdiction are not limited by provisions of this Section.
4. Specific test and inspection requirements are not specified in 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 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. Field Quality-Control Tests: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

C. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, assembly, and similar operations.

1. Use of trade-specific terminology in referring to a trade or entity does not require that certain construction activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trade(s).

D. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria.

E. Product Tests: Tests and inspections that are performed by a nationally recognized testing laboratory (NRTL) according to 29 CFR 1910.7, by a testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program (NVLAP), or by a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.

F. Source Quality-Control Tests: Tests and inspections that are performed at the source; for example, plant, mill, factory, or shop.

G. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

H. 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.

I. 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 Engineer.

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 Engineer.

1.5 CONFLICTING REQUIREMENTS

A. Conflicting Standards and Other Requirements: If compliance with two or more standards or requirements are specified and the standards or requirements establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Engineer for direction before proceeding.

B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be 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 Engineer for a decision before proceeding.

1.6 ACTION SUBMITTALS

A. Delegated-Design Services Submittal: In addition to Shop Drawings, Product Data, and other required submittals, 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. Contractor's Quality-Control Plan: For quality-assurance and quality-control activities and responsibilities.

B. Qualification Data: For Contractor's quality-control personnel.

C. Contractor's Statement of Responsibility: When required by authorities having jurisdiction, submit copy of written statement of responsibility submitted to authorities having jurisdiction before starting work on the following systems:

1. Seismic-force-resisting system, designated seismic system, or component listed in the Statement of Special Inspections.
2. Main wind-force-resisting system or a wind-resisting component listed in the Statement of Special Inspections.

D. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

E. Schedule of Tests and Inspections: Prepare in tabular form and include the following:

1. Specification Section number and title.
2. Entity responsible for performing tests and inspections.
3. Description of test and inspection.
4. Identification of applicable standards.
5. Identification of test and inspection methods.
6. Number of tests and inspections required.
7. Time schedule or time span for tests and inspections.
8. Requirements for obtaining samples.
9. Unique characteristics of each quality-control service.

F. Reports: Prepare and submit certified written reports and documents as specified.

G. Permits, Licenses, and Certificates: For Owner's record, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents established for compliance with standards and regulations bearing on performance of the Work.

1.8 CONTRACTOR'S QUALITY-CONTROL PLAN

A. Quality-Control Plan, General: Submit quality-control plan within 10 days of Notice to Proceed, and not less than five days prior to preconstruction conference. Submit in format acceptable to Engineer. Identify personnel, procedures, controls, instructions, tests, records, and forms to be used to carry out Contractor's quality-assurance and quality-control responsibilities. Coordinate with Contractor's Construction Schedule.

B. Quality-Control Personnel Qualifications: Engage qualified personnel trained and experienced in managing and executing quality-assurance and quality-control procedures similar in nature and extent to those required for Project.

1. Project quality-control manager may also serve as Project superintendent.

C. Submittal Procedure: Describe procedures for ensuring compliance with requirements through review and management of submittal process. Indicate qualifications of personnel responsible for submittal review.

D. Testing and Inspection: In quality-control plan, include a comprehensive schedule of Work requiring testing or inspection, including the following:

1. Contractor-performed tests and inspections including Subcontractor-performed tests and inspections. Include required tests and inspections and Contractor-elected tests and inspections. Distinguish source quality-control tests and inspections from field quality-control tests and inspections.
2. Special inspections required by authorities having jurisdiction and indicated on the Statement of Special Inspections.
3. Owner-performed tests and inspections indicated in the Contract Documents.

E. Continuous Inspection of Workmanship: Describe process for continuous inspection during construction to identify and correct deficiencies in workmanship in addition to testing and inspection specified. Indicate types of corrective actions to be required to bring work into compliance with standards of workmanship established by Contract requirements and approved mockups.

F. Monitoring and Documentation: Maintain testing and inspection reports including log of approved and rejected results. Include work Engineer has indicated as nonconforming or defective. Indicate corrective actions taken to bring nonconforming work into compliance with requirements. Comply with requirements of authorities having jurisdiction.

1.9 REPORTS AND DOCUMENTS

A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:

1. Date of issue.
2. Project title and number.
3. Name, address, telephone number, and email address of testing agency.
4. Dates and locations of samples and tests or inspections.
5. Names of individuals making tests and inspections.

6. Description of the Work and test and inspection method.
7. Identification of product and Specification Section.
8. Complete test or inspection data.
9. Test and inspection results and an interpretation of test results.
10. Record of temperature and weather conditions at time of sample taking and testing and inspection.
11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
12. Name and signature of laboratory inspector.
13. Recommendations on retesting and reinspecting.

B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:

1. Name, address, telephone number, and email address of technical representative making report.
2. Statement on condition of substrates and their acceptability for installation of product.
3. Statement that products at Project site comply with requirements.
4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
6. Statement 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 whether conditions, products, and installation will affect warranty.
5. Other required items indicated in individual Specification Sections.

1.10 QUALITY ASSURANCE

A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units. As applicable, procure products from manufacturers able to meet qualification requirements, warranty requirements, and technical or factory-authorized service representative requirements.

C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

D. Installer Qualifications: A firm or individual experienced in installing, erecting, applying, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar in material, design, and extent to those indicated for this Project.

F. Specialists: Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.

1. Requirements of authorities having jurisdiction shall supersede requirements for specialists.

G. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspection indicated, as documented according to ASTM E 329; and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.

H. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

I. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

1.11 QUALITY CONTROL

A. 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 shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.

3. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspection will be performed.
4. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
5. Testing and inspection requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
6. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

B. 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.

C. Testing Agency Responsibilities: Cooperate with Engineer and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.

1. Notify Engineer 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.

D. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Section 013300 "Submittal Procedures."

E. 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.

F. Associated Contractor Services: Cooperate with agencies and representatives performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:

1. Access to the Work.
2. Incidental labor and facilities necessary to facilitate tests and inspections.
3. Adequate quantities of representative samples of materials that require testing and inspection. Assist agency in obtaining samples.
4. Facilities for storage and field curing of test samples.
5. Delivery of samples to testing agencies.

6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
7. Security and protection for samples and for testing and inspection equipment at Project site.

G. 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.

1.12 SPECIAL TESTS AND INSPECTIONS

A. Special Tests and Inspections: Conducted by a qualified testing agency as required by authorities having jurisdiction, as indicated in individual Specification Sections, 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 Engineer 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 Engineer 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 ACCEPTABLE TESTING AGENCIES

A. Determined upon review.

3.2 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 Engineer.
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 Engineer's reference during normal working hours.

1. Submit log at Project closeout as part of Project Record Documents.

3.3 REPAIR AND PROTECTION

A. General: On completion of testing, inspection, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 017300 "Execution."

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION

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SECTION 014200
REFERENCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 DEFINITIONS

A. General: Basic Contract definitions are included in the Conditions of the Contract.

B. "Approved": When used to convey Engineer's action on Contractor's submittals, applications, and requests, "approved" is limited to Engineer's duties and responsibilities as stated in the Conditions of the Contract.

C. "Directed": A command or instruction by Engineer. Other terms including "requested," "authorized," "selected," "required," and "permitted" have the same meaning as "directed."

D. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."

E. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.

F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.

G. "Install": Unload, temporarily store, unpack, assemble, erect, place, anchor, apply, work to dimension, finish, cure, protect, clean, and similar operations at Project site.

H. "Provide": Furnish and install, complete and ready for the intended use.

I. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

1.3 INDUSTRY STANDARDS

A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

B. Publication Dates: Comply with standards in effect as of date of the Contract Documents unless otherwise indicated.

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 indicated in Gale's "Encyclopedia of Associations: National Organizations of the U.S." or in Columbia Books' "National Trade & Professional Associations of the United States."

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

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

74. ECIA - Electronic Components Industry Association; www.eciaonline.org.
75. EIA - Electronic Industries Alliance; (See TIA).
76. EIMA - EIFS Industry Members Association; www.eima.com.
77. EJMA - Expansion Joint Manufacturers Association, Inc.; www.ejma.org.
78. ESD - ESD Association; (Electrostatic Discharge Association); www.esda.org .
79. ESTA - Entertainment Services and Technology Association; (See PLASA).
80. ETL - Intertek (See Intertek); www.intertek.com.
81. EVO - Efficiency Valuation Organization; www.evo-world.org.
82. FCI - Fluid Controls Institute; www.fluidcontrolsinstitute.org.
83. FIBA - Federation Internationale de Basketball; (The International Basketball Federation); www.fiba.com.
84. FIVB - Federation Internationale de Volleyball; (The International Volleyball Federation); www.fivb.org.
85. FM Approvals - FM Approvals LLC; www.fmglobal.com.
86. FM Global - FM Global; (Formerly: FMG - FM Global); www.fmglobal.com.
87. FRSA - Florida Roofing, Sheet Metal & Air Conditioning Contractors Association, Inc.; www.floridaroof.com.
88. FSA - Fluid Sealing Association; www.fluidsealing.com.
89. FSC - Forest Stewardship Council U.S.; www.fscus.org.
90. GA - Gypsum Association; www.gypsum.org.
91. GANA - Glass Association of North America; www.glasswebsite.com.
92. GS - Green Seal; www.greenseal.org.
93. HI - Hydraulic Institute; www.pumps.org.
94. HI/GAMA - Hydronics Institute/Gas Appliance Manufacturers Association; (See AHRI).
95. HMMA - Hollow Metal Manufacturers Association; (See NAAMM).
96. HPVA - Hardwood Plywood & Veneer Association; www.hpva.org.
97. HPW - H. P. White Laboratory, Inc.; www.hpwhite.com.
98. IAPSC - International Association of Professional Security Consultants; www.iapsc.org.
99. IAS - International Accreditation Service; www.iasonline.org.
100. IAS - International Approval Services; (See CSA).
101. ICBO - International Conference of Building Officials; (See ICC).
102. ICC - International Code Council; www.iccsafe.org.
103. ICEA - Insulated Cable Engineers Association, Inc.; www.icea.net.
104. ICPA - International Cast Polymer Alliance; www.icpa-hq.org.
105. ICRI - International Concrete Repair Institute, Inc.; www.icri.org.
106. IEC - International Electrotechnical Commission; www.iec.ch.
107. IEEE - Institute of Electrical and Electronics Engineers, Inc. (The); www.ieee.org.
108. IES - Illuminating Engineering Society; (Formerly: Illuminating Engineering Society of North America); www.ies.org.
109. IESNA - Illuminating Engineering Society of North America; (See IES).
110. IEST - Institute of Environmental Sciences and Technology; www.iest.org.
111. IGMA - Insulating Glass Manufacturers Alliance; www.igmaonline.org.
112. IGSHPA - International Ground Source Heat Pump Association; www.igshpa.okstate.edu.
113. ILI - Indiana Limestone Institute of America, Inc.; www.iliai.com.
114. Intertek - Intertek Group; (Formerly: ETL SEMCO; Intertek Testing Service NA); www.intertek.com.
115. ISA - International Society of Automation (The); (Formerly: Instrumentation, Systems, and Automation Society); www.isa.org.
116. ISAS - Instrumentation, Systems, and Automation Society (The); (See ISA).

117. ISFA - International Surface Fabricators Association; (Formerly: International Solid Surface Fabricators Association); www.isfanow.org.
118. ISO - International Organization for Standardization; www.iso.org.
119. ISSFA - International Solid Surface Fabricators Association; (See ISFA).
120. ITU - International Telecommunication Union; www.itu.int/home.
121. KCMA - Kitchen Cabinet Manufacturers Association; www.kcma.org.
122. LMA - Laminating Materials Association; (See CPA).
123. LPI - Lightning Protection Institute; www.lightning.org.
124. MBMA - Metal Building Manufacturers Association; www.mbma.com.
125. MCA - Metal Construction Association; www.metalconstruction.org.
126. MFMA - Maple Flooring Manufacturers Association, Inc.; www.maplefloor.org.
127. MFMA - Metal Framing Manufacturers Association, Inc.; www.metalframingmfg.org.
128. MHIA - Material Handling Industry of America; www.mhia.org.
129. MIA - Marble Institute of America; www.marble-institute.com.
130. MMPA - Moulding & Millwork Producers Association; www.wmmpa.com.
131. MPI - Master Painters Institute; www.paintinfo.com.
132. MSS - Manufacturers Standardization Society of The Valve and Fittings Industry Inc.; www.mss-hq.org.
133. NAAMM - National Association of Engineerural Metal Manufacturers; www.naamm.org.
134. NACE - NACE International; (National Association of Corrosion Engineers International); www.nace.org.
135. NADCA - National Air Duct Cleaners Association; www.nadca.com.
136. NAIMA - North American Insulation Manufacturers Association; www.naima.org.
137. NBGQA - National Building Granite Quarries Association, Inc.; www.nbgqa.com.
138. NBI - New Buildings Institute; www.newbuildings.org.
139. NCAA - National Collegiate Athletic Association (The); www.ncaa.org.
140. NCMA - National Concrete Masonry Association; www.ncma.org.
141. NEBB - National Environmental Balancing Bureau; www.nebb.org.
142. NECA - National Electrical Contractors Association; www.necanet.org.
143. NeLMA - Northeastern Lumber Manufacturers Association; www.nelma.org.
144. NEMA - National Electrical Manufacturers Association; www.nema.org.
145. NETA - InterNational Electrical Testing Association; www.netaworld.org.
146. NFHS - National Federation of State High School Associations; www.nfhs.org.
147. NFPA - National Fire Protection Association; www.nfpa.org.
148. NFPA - NFPA International; (See NFPA).
149. NFRC - National Fenestration Rating Council; www.nfrc.org.
150. NHLA - National Hardwood Lumber Association; www.nhla.com.
151. NLGA - National Lumber Grades Authority; www.nlga.org.
152. NOFMA - National Oak Flooring Manufacturers Association; (See NWFA).
153. NOMMA - National Ornamental & Miscellaneous Metals Association; www.nomma.org.
154. NRCA - National Roofing Contractors Association; www.nrca.net.
155. NRMCA - National Ready Mixed Concrete Association; www.nrmca.org.
156. NSF - NSF International; www.nsf.org.
157. NSPE - National Society of Professional Engineers; www.nspe.org.
158. NSSGA - National Stone, Sand & Gravel Association; www.nssga.org.
159. NTMA - National Terrazzo & Mosaic Association, Inc. (The); www.ntma.com.
160. NWFA - National Wood Flooring Association; www.nwfa.org.
161. PCI - Precast/Prestressed Concrete Institute; www.pci.org.
162. PDI - Plumbing & Drainage Institute; www.pdionline.org.

163. PLASA - PLASA; (Formerly: ESTA - Entertainment Services and Technology Association); http://www.plasa.org.
164. RCSC - Research Council on Structural Connections; www.boltcouncil.org.
165. RFCI - Resilient Floor Covering Institute; www.rfci.com.
166. RIS - Redwood Inspection Service; www.redwoodinspection.com.
167. SAE - SAE International; www.sae.org.
168. SCTE - Society of Cable Telecommunications Engineers; www.scte.org.
169. SDI - Steel Deck Institute; www.sdi.org.
170. SDI - Steel Door Institute; www.steeldoor.org.
171. SEFA - Scientific Equipment and Furniture Association (The); www.sefalabs.com.
172. SEI/ASCE - Structural Engineering Institute/American Society of Civil Engineers; (See ASCE).
173. SIA - Security Industry Association; www.siaonline.org.
174. SJI - Steel Joist Institute; www.steeljoist.org.
175. SMA - Screen Manufacturers Association; www.smainfo.org.
176. SMACNA - Sheet Metal and Air Conditioning Contractors' National Association; www.smacna.org.
177. SMPTE - Society of Motion Picture and Television Engineers; www.smpte.org.
178. SPFA - Spray Polyurethane Foam Alliance; www.sprayfoam.org.
179. SPIB - Southern Pine Inspection Bureau; www.spib.org.
180. SPRI - Single Ply Roofing Industry; www.spri.org.
181. SRCC - Solar Rating & Certification Corporation; www.solar-rating.org.
182. SSINA - Specialty Steel Industry of North America; www.ssina.com.
183. SSPC - SSPC: The Society for Protective Coatings; www.sspc.org.
184. STI - Steel Tank Institute; www.steeltank.com.
185. SWI - Steel Window Institute; www.steelwindows.com.
186. SWPA - Submersible Wastewater Pump Association; www.swpa.org.
187. TCA - Tilt-Up Concrete Association; www.tilt-up.org.
188. TCNA - Tile Council of North America, Inc.; www.tileusa.com.
189. TEMA - Tubular Exchanger Manufacturers Association, Inc.; www.tema.org.
190. TIA - Telecommunications Industry Association (The); (Formerly: TIA/EIA - Telecommunications Industry Association/Electronic Industries Alliance); www.tiaonline.org.
191. TIA/EIA - Telecommunications Industry Association/Electronic Industries Alliance; (See TIA).
192. TMS - The Masonry Society; www.masonrysociety.org.
193. TPI - Truss Plate Institute; www.tpinst.org.
194. TPI - Turfgrass Producers International; www.turfgrasssod.org.
195. TRI - Tile Roofing Institute; www.tileroofing.org.
196. UL - Underwriters Laboratories Inc.; http://www.ul.com.
197. UNI - Uni-Bell PVC Pipe Association; www.uni-bell.org.
198. USAV - USA Volleyball; www.usavolleyball.org.
199. USGBC - U.S. Green Building Council; www.usgbc.org.
200. USITT - United States Institute for Theatre Technology, Inc.; www.usitt.org.
201. WASTEC - Waste Equipment Technology Association; www.wastec.org.
202. WCLIB - West Coast Lumber Inspection Bureau; www.wclib.org.
203. WCMA - Window Covering Manufacturers Association; www.wcmanet.org.
204. WDMA - Window & Door Manufacturers Association; www.wdma.com.
205. WI - Woodwork Institute; www.wicnet.org.
206. WSRCA - Western States Roofing Contractors Association; www.wsrca.com.
207. WWPA - Western Wood Products Association; www.wwpa.org.

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

1. DIN - Deutsches Institut fur Normung e.V.; www.din.de.
2. IAPMO - International Association of Plumbing and Mechanical Officials; www.iapmo.org.
3. ICC - International Code Council; www.iccsafe.org.
4. ICC-ES - ICC Evaluation Service, LLC; www.icc-es.org.

D. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Information is subject to change and is up to date as of the date of the Contract Documents.

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

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

1. CFR - Code of Federal Regulations; Available from Government Printing Office; www.gpo.gov/fdsys.
2. DOD - Department of Defense; Military Specifications and Standards; Available from DLA Document Services; www.quicksearch.dla.mil.
3. DSCC - Defense Supply Center Columbus; (See FS).
4. FED-STD - Federal Standard; (See FS).

5. FS - Federal Specification; Available from DLA Document Services; www.quicksearch.dla.mil.

    a. Available from Defense Standardization Program; www.dsp.dla.mil.
    b. Available from General Services Administration; www.gsa.gov.
    c. Available from National Institute of Building Sciences/Whole Building Design Guide; www.wbdg.org/ccb.

6. MILSPEC - Military Specification and Standards; (See DOD).
7. USAB - United States Access Board; www.access-board.gov.
8. USATBCB - U.S. Engineerural & Transportation Barriers Compliance Board; (See USAB).

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

1. CBHF; State of California; Department of Consumer Affairs; Bureau of Electronic and Appliance Repair, Home Furnishings and Thermal Insulation; www.bearhfti.ca.gov.
2. CCR; California Code of Regulations; Office of Administrative Law; California Title 24 Energy Code; www.calregs.com.
3. CDHS; California Department of Health Services; (See CDPH).
4. CDPH; California Department of Public Health; Indoor Air Quality Program; www.cal-iaq.org.
5. CPUC; California Public Utilities Commission; www.cpuc.ca.gov.
6. SCAQMD; South Coast Air Quality Management District; www.aqmd.gov.
7. TFS; Texas A&M Forest Service; Sustainable Forestry and Economic Development; www.txforestservice.tamu.edu.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 015000
TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.

B. The Electrical Contractor shall be responsible for all Temporary Power.

C. The General Contractor shall be responsible for all other Temporary Facilities and Controls, including Temporary HVAC.

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, Engineer, occupants of Project, testing agencies, and authorities having jurisdiction.

B. Water and Sewer Service from Existing System: Water from Owner's existing water system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.

C. Electric Power Service from Existing System: Electric power from Owner's existing system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.

D. Sewer, Water, and Electric Power Service: Use charges are specified in Section "Multiple Contract Summary."

1.4 INFORMATIONAL SUBMITTALS

A. Site Utilization Plan: Show temporary facilities, temporary utility lines and connections, staging areas, construction site entrances, vehicle circulation, and parking areas for construction personnel.

B. Implementation and Termination Schedule: Within 15 days of date established for commencement of the Work, submit schedule indicating implementation and termination dates of each temporary utility.

C. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire-prevention program.

D. Moisture- and Mold-Protection Plan: Describe procedures and controls for protecting materials and construction from water absorption and damage and mold.

E. Dust- and HVAC-Control Plan: Submit coordination drawing and narrative that indicates the dust- and HVAC-control measures proposed for use, proposed locations, and proposed time frame for their operation. Include the following:

1. Locations of dust-control partitions at each phase of work.
2. HVAC system isolation schematic drawing.
3. Location of proposed air-filtration system discharge.
4. Waste-handling procedures.
5. Other dust-control measures.

1.5 QUALITY ASSURANCE

A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.

B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

1.6 PROJECT CONDITIONS

A. Temporary Use of Permanent Facilities: Engage Installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

PART 2 - PRODUCTS

2.1 MATERIALS

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

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

C. Dust-Control Adhesive-Surface Walk-Off Mats: Provide mats minimum 36 by 60 inches.

2.2 EQUIPMENT

A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

B. HVAC Equipment: Unless Owner authorizes use of permanent HVAC system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.

1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.
2. Heating Units: Listed and labeled for type of fuel being consumed, by a qualified testing agency acceptable to authorities having jurisdiction, and marked for intended location and application.
3. Permanent HVAC System: If Owner authorizes use of permanent HVAC system for temporary use during construction, provide filter with MERV of 8 at each return-air grille in system and remove at end of construction.

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.

1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. See other Sections for disposition of salvaged materials that are designated as Owner's property.

3.2 INSTALLATION, GENERAL

A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.

1. Locate facilities to limit site disturbance as specified in Section 011000 "Summary."

B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.3 TEMPORARY UTILITY INSTALLATION

A. General: Install temporary service or connect to existing service.

1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.

B. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully.

1. Connect temporary sewers to municipal system as directed by authorities having jurisdiction.

C. Water Service: Install water service and distribution piping in sizes and pressures adequate for construction.

D. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.

1. Toilets: Use of Owner's existing toilet facilities will be permitted, as long as facilities are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.

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 underground unless otherwise indicated.
2. Connect temporary service to Owner's existing power source, as directed by Owner.

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.

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 Engineer schedules Substantial Completion inspection. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.

B. Parking: Use designated areas of Owner's existing parking areas for construction personnel.

C. 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.

D. 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 Section 017300 "Execution."

E. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.

1. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.

F. Temporary Elevator Use: Use of elevators is not permitted.

G. Temporary Stairs: Until permanent stairs are available, provide temporary stairs where ladders are not adequate.

H. Temporary Use of Permanent Stairs: Use of new stairs for construction traffic will be permitted, provided stairs are protected and finishes restored to new condition at time of Substantial Completion.

3.5 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.

1. Where access to adjacent properties is required in order to affect protection of existing facilities, obtain written permission from adjacent property owner to access property for that purpose.

B. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.

1. Comply with work restrictions specified in Section 011000 "Summary."

C. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to undisturbed areas and to adjacent properties and walkways, according to NYSDEC Standards.

1. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross tree- or plant-protection zones.
2. Inspect, repair, and maintain erosion- and sedimentation-control measures during construction until permanent vegetation has been established.
3. Clean, repair, and restore adjoining properties and roads affected by erosion and sedimentation from Project site during the course of Project.
4. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

D. Stormwater Control: Comply with requirements of authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.

E. Tree and Plant Protection: Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.

F. Pest Control: Engage pest-control service to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests and to perform extermination and control procedures at regular intervals so Project will be free of pests and their residues at Substantial Completion. Perform control operations lawfully, using materials approved by authorities having jurisdiction.

G. Site Enclosure Fence: Prior to commencing earthwork, furnish and install site enclosure fence in a manner that will prevent people from easily entering site except by entrance gates.

1. Extent of Fence: As required to enclose entire Project site or portion determined sufficient to accommodate construction operations.
2. Maintain security by limiting number of keys and restricting distribution to authorized personnel.

H. Security Enclosure and Lockup: Install temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security. Lock entrances at end of each workday.

I. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.

J. Temporary Egress: Maintain temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction.

K. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.

1. Where heating or cooling is needed and permanent enclosure is incomplete, insulate temporary enclosures.

L. Temporary 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. Construct dustproof partitions with two layers of 6-mil polyethylene sheet on each side. Cover floor with two layers of 6-mil polyethylene sheet, extending sheets 18 inches up the sidewalls. Overlap and tape full length of joints. Cover floor with fire-retardant-treated plywood.

a. Construct vestibule and airlock at each entrance through temporary partition with not less than 48 inches between doors. Maintain water-dampened foot mats in vestibule.

3.6 MOISTURE AND MOLD CONTROL

A. Contractor's Moisture-Protection Plan: Describe delivery, handling, storage, installation, and protection provisions for materials subject to water absorption or water damage.

1. Indicate procedures for discarding water-damaged materials, protocols for mitigating water intrusion into completed Work, and replacing water-damaged Work.
2. Indicate sequencing of work that requires water, such as sprayed fire-resistive materials, plastering, and terrazzo grinding, and describe plans for dealing with water from these operations. Show procedures for verifying that wet construction has dried sufficiently to permit installation of finish materials.
3. Indicate methods to be used to avoid trapping water in finished work.

B. Exposed Construction Period: Before installation of weather barriers, when materials are subject to wetting and exposure and to airborne mold spores, protect as follows:

1. Protect porous materials from water damage.
2. Protect stored and installed material from flowing or standing water.
3. Keep porous and organic materials from coming into prolonged contact with concrete.
4. Remove standing water from decks.
5. Keep deck openings covered or dammed.

C. Partially Enclosed Construction Period: After installation of weather barriers but before full enclosure and conditioning of building, when installed materials are still subject to infiltration of moisture and ambient mold spores, protect as follows:

1. Do not load or install drywall or other porous materials or components, or items with high organic content, into partially enclosed building.
2. Keep interior spaces reasonably clean and protected from water damage.
3. Periodically collect and remove waste containing cellulose or other organic matter.
4. Discard or replace water-damaged material.
5. Do not install material that is wet.
6. Discard and replace stored or installed material that begins to grow mold.
7. Perform work in a sequence that allows wet materials adequate time to dry before enclosing the material in gypsum board or other interior finishes.

D. Controlled Construction Period: After completing and sealing of the building enclosure but prior to the full operation of permanent HVAC systems, maintain as follows:

1. Control moisture and humidity inside building by maintaining effective dry-in conditions.
2. Use temporary or permanent HVAC system to control humidity within ranges specified for installed and stored materials.
3. Comply with manufacturer's written instructions for temperature, relative humidity, and exposure to water limits.

    a. Hygroscopic materials that may support mold growth, including wood and gypsum-based products, that become wet during the course of construction and remain wet for 48 hours are considered defective and require replacing.
    b. Measure moisture content of materials that have been exposed to moisture during construction operations or after installation. Record readings beginning at time of exposure and continuing daily for 48 hours. Identify materials containing moisture levels higher than allowed. Report findings in writing to Engineer.
    c. Remove and replace materials that cannot be completely restored to their manufactured moisture level within 48 hours.

3.7 OPERATION, TERMINATION, AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.

B. Maintenance: Maintain facilities in good operating condition until removal.

1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.

C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.

D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.

1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.

END OF SECTION

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SECTION 015900
ENGINEER'S FIELD TRAILER

PART I GENERAL

1.01 SCOPE OF WORK

A The CONTRACTOR shall furnish and install an ENGINEER's field office at a location approved by the OWNER and ENGINEER. Provide functionally complete office within two weeks after receipt of Notice To Proceed.

B. Work also includes furnishing office supplies and equipment, and maintaining services for the trailer.

1.02 SUBMITTALS

A. The CONTRACTOR shall submit to the ENGINEER for approval the following:
   1. Name of all vendors that will provide services and/or supply equipment.
   2. Catalog cuts, specifications, or any other information required by the ENGINEER.
   3. Layout of the facilities for the field office.

B. CONTRACTOR shall submit all licenses and warranty information for all equipment provided.

C. All submittals shall be in accordance with the Specification.

PART 2 PRODUCTS

2.01 MATERIALS

A. ENGINEER's office shall be stocked with supplies (fax scanner paper/copier toner/paper) at all times during the period of construction. All keys to the trailer shall be in the possession of the ENGINEER.

B. ENGINEER's office shall be completely weather-tight and insulated.

C. Exterior finish acceptable to ENGINEER. A minimum of ten storm straps, 1/4 by 2 inches in cross section shall be provided. Dimensions, sizes, locations and in-ground anchors, if any shall be as approved by the ENGINEER.

D. All new, interior finishes acceptable to ENGINEER.

E. Resilient floor covering in new condition.

F. The ENGINEER's office shall be provided for the sole use of the ENGINEER. The office shall be a minimum of 600 square feet. Provide a minimum 80 square feet private office space.

G. A minimum of three windows with lockable and operable sash and screens shall be provided. The total window area shall be 10 percent of floor area.

H. Metal grate type entrance platforms and steps shall be provided at all exterior doors.

I. An electrical distribution panel, with eight circuit minimum, 120/240 Volt-100 Amp service shall be provided. The trailer shall be equipped with a minimum of six 110 Volt duplex convenience centers, at least one on each wall. Also, one outlet shall be dedicated to support the photocopy machine.

J. Trailer shall have automatic heating, cooling, and ventilating equipment capable of maintaining a minimum 68 F heating and 72 F cooling.

K. Dual exterior lamps, operated by a switch in the interior of the trailer, the lamps shall be installed on each of the two long sides of the trailer.

L. Install and maintain three separate telephone service lines. In addition, pay for all local and long distance and internet ISP (provider to be approved by ENGINEER) charges for the duration of the installation. Provide one touchtone phone with speaker accessory in private office. Provide one cordless touchtone phone with speaker accessory and equipped to record

and play back incoming messages. The CONTRACTOR is responsible for providing and maintaining telephone and ISP services to the trailer until the trailer is removed from the site.

M. Water cooler, functional hot and cold water taps, to be supplied with a minimum monthly supply of 5 commercial bottles of drinking water.
N. Private sanitary facilities with a minimum of one toilet. All supplies and services necessary to support the facilities are to be provided for the duration of the work. The facilities shall be serviced at a minimum of once per week.
O. Two (2) each five (5) drawer desks with matching swivel desk chairs.
P. Two (2) metal reference tables with two straight back chairs.
Q. One drafting table with built-in drawer, drafting stool and swivel light.
R. One wall mounted plan rack to hold 10 racks of drawings.
S. Two (2) size, four (4) drawer file cabinets with locks.
T. Book shelving and bookcase, minimum four (4) shelves, 36 inch width.
U. Two waste baskets.
V. One tack board 36 inches by 36 inches and one dry erase board 48 inches square.
W. Two each, 10 pound ABC rated Fire extinguishers. The fire extinguishers shall meet Underwriters' approval and shall be maintained by the CONTRACTOR in good working order, at full capacity, at all times throughout the duration of the project.
X. Identifying exterior sign acceptable to ENGINEER and OWNER.
Y. Two (2) First aid kits - (Johnson & Johnson Co., Model 25 or approved equal).
Z. One electronic photocopy/scanner machine with the following minimum requirements: maximum 100 second warm up time, maximum 6 second first copy out time, minimum 18 copies per minute, 720 sheet standard input, 3 standard paper trays including 11" X 17", automatic document feeder and collator. A maintenance agreement certificate shall be delivered to the ENGINEER at the time of delivery that ensures 24-hour service in the event of equipment faults.
AA. One electronic telephone facsimile machine with direct line phone. Maintenance shall include adequate supplies of paper, ink servicing, etc to provide full operation in accordance with the manufactures recommendations for the duration of the Work. A maintenance agreement certificate shall be delivered to the ENGINEER at the time of delivery that ensures prompt service in the event of equipment faults.
BB. Two Electric clocks with battery backup.
CC. Six protective helmets and Safety Glasses for use by ENGINEER, OWNER and visitors.
DD. Folding conference table.
EE. Twelve (12) folding chairs with cushions.
FF. One programmable automatic drip ten (10) cup coffee maker.
GG. One refrigerator with a minimum twelve (12) cubic feet storage space and a small freezer.
HH. One microwave oven with a minimum 1.0 cubic feet capacity.

PART 3 EXECUTION

3.01 ENGINEER'S OFFICE

A. Continuous maintenance of office and all services and consumable supplies. Cleaning shall not be at a frequency of less than twice per calendar month. Scheduling of cleaning and serving shall be at a time agreeable in advance to the ENGINEER.
B. Provide all necessary soap, paper towels, cleansers, janitorial service and miscellaneous implements to maintain offices in a sanitary condition.
C. Repair immediately any damage, leaks or defective service.

D. The CONTRACTOR shall install the trailer at a location in the vicinity of the work area to be determined by the ENGINEER. Installation of the trailer shall include site preparation, electrical, telephone and all other necessary hookups.

E. The CONTRACTOR shall provide and maintain a hard surface parking area for the use of the ENGINEER. A minimum of four (4) parking spaces shall be provided.

3.02 REMOVAL

A. Remove office upon final acceptance of the Work or when directed by ENGINEER. The trailer site shall be restored to a condition equal or better than original.

END OF SECTION

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SECTION 016500
STARTING OF SYSTEMS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Starting systems.
B. Demonstration and instructions.
C. Testing, adjusting, and balancing.

1.2 RELATED TOPICS

A. Quality Control: Manufacturers field reports.
B. Contract Closeout: System operation and maintenance data and extra materials.

1.3 STARTING SYSTEMS

A. Coordinate schedule for start-up of various equipment and systems.
B. Notify Engineer seven (7) days prior to start-up of each item.
C. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, or for other conditions which may cause damage.
D. Verify that tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.
E. Verify wiring and support components for equipment are complete and tested.
F. Execute start-up under supervision of applicable manufacturer's representative and/or Contractors' personnel (as specified in individual Sections) in accordance with manufacturers' instructions.
G. When specified in individual specification Sections, require manufacturer to provide authorized representative to be present at site to inspect, check, and approve equipment or system installation prior to start-up, and to supervise placing equipment or system in operation.
H. Submit a written report indicating that equipment or system has been properly installed and is functioning correctly.

1.4 DEMONSTRATION AND INSTRUCTIONS

A. Demonstrate operation and maintenance of products to Owner's personnel two (2) weeks prior to date of Substantial Completion.
B. Demonstrate project equipment and instruct in a classroom environment located at the site and instructed by a qualified manufacturers' representative who is knowledgeable about the project.
C. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Owners' personnel in detail to explain all aspects of operation and maintenance.
D. Demonstrate start-up, operation, control, adjustment, troubleshooting, servicing, maintenance, and shutdown of each item of equipment at agreed time, at equipment location.
E. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.
F. The amount of time required for instruction on each item of equipment and system is that specified in individual sections.
G. The Owner reserves the right to videotape any of the demonstrations or instructions provided under this section.

1.5 TESTING, ADJUSTING, AND BALANCING

A. Appoint, employ, and pay for services of an independent firm to perform testing, adjusting, and balancing.

B. Reports will be submitted y the independent firm to the Engineer indicating observations and results of tests and indicating compliance or non-compliance with the requirements of the Contract Documents.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 017300
EXECUTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:

1. Construction layout.
2. Field engineering and surveying.
3. Installation of the Work.
4. Cutting and patching.
5. Progress cleaning.
6. Starting and adjusting.
7. Protection of installed construction.

1.3 DEFINITIONS

A. Cutting: Removal of in-place construction necessary to permit installation or performance of subsequent work.

B. Patching: Fitting and repair work required to restore construction to original conditions after installation of subsequent work.

1.4 QUALITY ASSURANCE

A. 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, notify Engineer of locations and details of cutting and await directions from Engineer before proceeding. Shore, brace, and support structural elements during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection.
2. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety. Operational elements include the following:

a. Primary operational systems and equipment.
b. Fire separation assemblies.

c. Air or smoke barriers.
d. Fire-suppression systems.
e. Plumbing piping systems.
f. Mechanical systems piping and ducts.
g. Control systems.
h. Communication systems.
i. Fire-detection and -alarm systems.
j. Conveying systems.
k. Electrical wiring systems.
l. Operating systems of special construction.

B. 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 Engineer 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. General Contractor shall engage a utility location service to locate all such utilities by non-destructive means prior to starting any demolition.

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. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:

1. Description of the Work.
2. List of detrimental conditions, including substrates.
3. List of unacceptable installation tolerances.
4. Recommended corrections.

D. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Existing Utility Information: Furnish information to local utility and Owner 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 Engineer according to requirements in Section 013100 "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 Engineer promptly.

B. General: Engage a professional engineer 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 limits on use of Project site.
3. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
4. Inform installers of lines and levels to which they must comply.
5. Check the location, level and plumb, of every major element as the Work progresses.
6. Notify Engineer when deviations from required lines and levels exceed allowable tolerances.
7. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.

C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and rim and invert elevations.

D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.

E. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Engineer.

3.4 FIELD ENGINEERING

A. Identification: Owner will identify existing benchmarks, control points, and property corners.

B. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.

1. Do not change or relocate existing benchmarks or control points without prior written approval of Engineer. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to Engineer before proceeding.
2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.

C. Certified Survey: On completion of foundation walls, major site improvements, and other work requiring field-engineering services, prepare a certified survey showing dimensions, locations, angles, and elevations of construction and sitework.

D. Final Property Survey: Engage a professional engineering to prepare a final property survey showing significant features (real property) for Project. Include on the survey a certification,

signed by professional engineering, that principal metes, bounds, lines, and levels of Project are accurately positioned as shown on the survey.

1. Show boundary lines, monuments, streets, site improvements and utilities, existing improvements and significant vegetation, adjoining properties, acreage, grade contours, and the distance and bearing from a site corner to a legal point.
2. Recording: At Substantial Completion, have the final property survey recorded by or with authorities having jurisdiction as the official "property survey."

3.5 INSTALLATION

A. 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 78 inches in unoccupied spaces.

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. Sequence the Work and allow adequate clearances to accommodate movement of construction items on site and placement in permanent locations.

F. Tools and Equipment: Where possible, select tools or equipment that minimize production of excessive noise levels.

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 Engineer.
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. Repair or remove and replace damaged, defective, or nonconforming Work.

1. Comply with Section 017700 "Closeout Procedures" for repairing or removing and replacing defective Work.

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: Where interference with use of adjoining areas or interruption of free passage to adjoining areas is unavoidable, coordinate cutting and patching according to requirements in Section 011000 "Summary."

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 minimize 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. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.

1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
4. Excavating and Backfilling: Comply with requirements in applicable Sections where required by cutting and patching operations.

5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
6. Proceed with patching after construction operations requiring cutting are complete.

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. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.

    a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
    b. Restore damaged pipe covering to its original condition.

3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.

    a. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.

4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition and ensures thermal and moisture integrity of building enclosure.

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 OWNER-INSTALLED PRODUCTS

A. Site Access: Provide access to Project site for Owner's construction personnel.

B. Coordination: Coordinate construction and operations of the Work with work performed by Owner's construction personnel.

1. Construction Schedule: Inform Owner of Contractor's preferred construction schedule for Owner's portion of the Work. Adjust construction schedule based on a mutually agreeable timetable. Notify Owner if changes to schedule are required due to differences in actual construction progress.

2. Preinstallation Conferences: Include Owner's construction personnel at preinstallation conferences covering portions of the Work that are to receive Owner's work. Attend preinstallation conferences conducted by Owner's construction personnel if portions of the Work depend on Owner's construction.

3.8 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 Section 015000 "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 ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.9 STARTING AND ADJUSTING

A. Coordinate startup and adjusting of equipment and operating components.

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.

E. Manufacturer's Field Service: Comply with qualification requirements in Section 014000 "Quality Requirements."

3.10 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. Protection of Existing Items: Provide protection and ensure that existing items to remain undisturbed by construction are maintained in condition that existed at commencement of the Work.

C. Comply with manufacturer's written instructions for temperature and relative humidity.

END OF SECTION

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SECTION 017700
CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:

1. Substantial Completion procedures.
2. Final completion procedures.
3. Warranties.
4. Final cleaning.
5. Repair of the Work.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of cleaning agent.

B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.

C. Certified List of Incomplete Items: Final submittal at final completion.

1.4 CLOSEOUT SUBMITTALS

A. Certificates of Release: From authorities having jurisdiction.

B. Certificate of Insurance: For continuing coverage.

C. Field Report: For pest control inspection.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Schedule of Maintenance Material Items: For maintenance material submittal items specified in other Sections.

1.6 SUBSTANTIAL COMPLETION PROCEDURES

A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's punch list), indicating the value of each item on the list and reasons why the Work is incomplete.

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

1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
2. Submit closeout submittals specified in other Division 01 Sections, including project record documents, operation and maintenance manuals, damage or settlement surveys, property surveys, and similar final record information.
3. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
4. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Engineer. Label with manufacturer's name and model number.
5. Submit testing, adjusting, and balancing records.
6. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.

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

1. Advise Owner of pending insurance changeover requirements.
2. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
3. Complete startup and testing of systems and equipment.
4. Perform preventive maintenance on equipment used prior to Substantial Completion.
5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.
6. Advise Owner of changeover in utility services.
7. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
8. Complete final cleaning requirements.
9. Touch up paint and otherwise repair and restore marred exposed finishes to eliminate visual defects.

D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 10 days prior to date the Work will be completed and ready for final inspection and tests. On receipt of request, Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. Engineer will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Engineer, that must be completed or corrected before certificate will be issued.

1. Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for final completion.

1.7 FINAL COMPLETION PROCEDURES

A. Submittals Prior to Final Completion: Before requesting final inspection for determining final completion, complete the following:
   1. Certified List of Incomplete Items: Submit certified copy of Engineer's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Engineer. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
   2. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.

B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. Engineer will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

   1. Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.8 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.

   1. Organize list of spaces in sequential order,
   2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
   3. Include the following information at the top of each page:

      a. Project name.
      b. Date.
      c. Name of Engineer.
      d. Name of Contractor.
      e. Page number.

   4. Submit list of incomplete items in the following format:

      a. MS Excel electronic file. Engineer will return annotated file.

1.9 SUBMITTAL OF PROJECT WARRANTIES

A. Time of Submittal: Submit written warranties on request of Engineer for designated portions of the Work where warranties are indicated to commence on dates other than date of Substantial Completion, or when delay in submittal of warranties might limit Owner's rights under warranty.

B. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.

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.
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.

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 requesting 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 not planted, mulched, or paved to a smooth, even-textured surface.
d. Remove tools, construction equipment, machinery, and surplus material from Project site.
e. Remove snow and ice to provide safe access to building.

f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
h. Sweep concrete floors broom clean in unoccupied spaces.
i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain.
j. 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.
k. Remove labels that are not permanent.
l. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
m. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
n. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
o. Clean ducts, blowers, and coils if units were operated without filters during construction or that display contamination with particulate matter on inspection.

p. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency.
q. Leave Project clean and ready for occupancy.

3.2 REPAIR OF THE WORK

A. Complete repair and restoration operations before requesting 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 specified condition.

1. Remove and replace chipped, scratched, and broken glass, reflective surfaces, and other damaged transparent materials.
2. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that 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 and mercury vapor fixtures to comply with requirements for new fixtures.

END OF SECTION

SECTION 017830
PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for project record documents, including the following:

1. Record Drawings.

1.3 CLOSEOUT SUBMITTALS

A. Record Drawings: Comply with the following:

1. Number of Copies: Submit one set(s) of marked-up record prints.
2. Number of Copies: Submit copies of record Drawings as follows:

a. Initial Submittal:

1) Submit one paper-copy set(s) of marked-up record prints.
2) Engineer will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable.

b. Final Submittal:

1) Submit one paper-copy set(s) of marked-up record prints.
2) Submit record PDF files on a USB flash drive.
3) Plot each drawing file, whether or not changes and additional information were recorded.

1.4 RECORD DRAWINGS

A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.

1. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.

a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.

b. Accurately record information in an acceptable drawing technique.
c. Record data as soon as possible after obtaining it.
d. Record and check the markup before enclosing concealed installations.
e. Cross-reference record prints to corresponding photographic documentation.

2. Content: Types of items requiring marking include, but are not limited to, the following:

a. Dimensional changes to Drawings.
b. Revisions to details shown on Drawings.
c. Depths of foundations.
d. Locations and depths of underground utilities.
e. Revisions to routing of piping and conduits.
f. Revisions to electrical circuitry.
g. Actual equipment locations.
h. Duct size and routing.
i. Locations of concealed internal utilities.
j. Changes made by Change Order or Work Change Directive.
k. Changes made following Engineer's written orders.
l. Details not on the original Contract Drawings.
m. Field records for variable and concealed conditions.
n. Record information on the Work that is shown only schematically.

3. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
5. Mark important additional information that was either shown schematically or omitted from original Drawings.
6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

B. Record Digital Data Files: Immediately before inspection for Certificate of Substantial Completion, review marked-up record prints with Engineer. When authorized, prepare a full set of corrected digital data files of the Contract Drawings, as follows:
1. Format: Annotated PDF electronic file.
2. Incorporate changes and additional information previously marked on record prints. Delete, redraw, and add details and notations where applicable.
3. Refer instances of uncertainty to Engineer for resolution.
4. Engineer will furnish Contractor with one set of digital data files of the Contract Drawings for use in recording information.

PART 2 - PRODUCTS

PART 3 - EXECUTION

END OF SECTION

Division 02

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