Banneker Pool Concession Stand

DESIGN APPROACH

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SPECIFICATIONS AND CUTSHEETS

6 November 2015

95% CONSTRUCTION DOCUMENT

Quinn Evans Architects

HISTORY

DESIGN APPROACH

SPECIFICATIONS

END OF SPECIFICATIONS

SECTION 11 4000 – FOODSERVICE EQUIPMENT

PART 1 - GENERAL

1.1 DESCRIPTION

A. Scope: Furnish all labor, materials, services, equipment and appliances required to provide and deliver all foodservice equipment hereinafter specified into the building, uncrate, assemble, hang, set-in-place, level, and completely install, exclusive of final utility connections.

B. Related Work Specified Elsewhere:

1. All plumbing, electrical and ventilating work required in conjunction with commercial foodservice equipment including rough-in to points indicated on mechanical drawings, and final connections from rough-in points, electrical service to points of connection and final connections shall be by Divisions 22, 23 and 26.
2. Refrigeration work will be done by the Kitchen Equipment Contractor except for electrical and plumbing connections to and between compressors, blower coils, controls, etc. These final connections shall be by Divisions 22 and 26.
3. All traps, steam traps, grease traps, line strainers, tail pieces, valves, stops, shut-offs, and fittings necessary for equipment specified will be furnished and installed under mechanical contract by Division 22 unless specifically called for otherwise under each item.
4. All line and disconnect switches, safety cut-offs and fittings, convenience boxes or other electrical controls, fittings and connections will be furnished and installed under electrical contract by Division 26, unless specifically indicated otherwise in the item specifications. Starting switches for certain specified pieces of foodservice equipment are to be provided by Kitchen Equipment Contractor. Those starting switches, if furnished loose as standardized by Foodservice Manufacturers (other than fabricated items), shall be mounted and wired complete under Division 26.
5. Any sleeves or conduit required for refrigeration, syrup tubing, or carbonation tubing will be furnished and installed under Division 22.
6. Unless specifically called for in the Item Specifications, ventilating fans and all duct work between same and ceiling rough-in openings, and from same to discharge opening in building will be furnished and installed by Division 22.

1.2 DEFINITIONS

A. All references to the terms "Contractor", "Kitchen Equipment Contractor", or "K.E.C." in the specifications and/or on the drawings shall be defined to mean the Kitchen Equipment Contractor.

B. All references to the term "Owner" in the specifications and/or on the drawings shall be defined to mean the Owner or Owner's designated representative and the Foodservice Equipment Consultant.

C. All references to the term "Consultant" or "Foodservice Equipment Consultant" in the specifications and/or on the drawings shall be defined to mean **NYIKOS ASSOCIATES, INC.** its employees, and authorized representatives and is referred to throughout the contract documents as if singular in number and masculine in gender.

D. The phrase "The K.E.C. shall" or "by the K.E.C.", as applicable, is understood to be included as a part of each sentence, paragraph or article of these specifications unless otherwise indicated or specified.

1.3 QUALITY ASSURANCE

A. Qualification of Suppliers:

1. Commercial foodservice equipment suppliers shall submit satisfactory evidence of compliance with the following qualifications and conditions to be approved.

    a. Successful completion of jobs of comparable scope.
    b. Have manufacturer's authorization to distribute and install specified factory items of equipment.
    c. Maintain a permanent staff experienced in the installation of foodservice equipment and preparation of professional style rough-in drawings and brochures.
    d. Maintain or have access to fabrication shop meeting N.S.F. requirements. If other than foodservice equipment suppliers own fabrication shop, obtain Consultant approval of fabrication shop desired to be used.
    e. Maintain or have access to a readily available stock of repair and replacement parts, together with authorized service personnel.

B. Qualification of Fabricators:

1. Fabricators shall be an N.S.F. approved organization with trained personnel and facilities to properly design, detail and fabricate equipment in accordance with the specifications and standard details contained herein.
2. Custom fabricated equipment shall bear the National Sanitation Foundation seal of approval and listed as such under N.S.F. Standards No. 2 and No. 33.
3. Only one (1) fabricator shall be used for this project, and all equipment will be fabricated at the same shop. When units cannot be fully shop-fabricated, complete fabrication at project site.
4. Acceptable fabricators are:

    a. Pro Stainless, Inc.; Keyser, WV
    b. Commercial Stainless, Inc.; Bloomsburg, PA
    c. Keystone Custom Fabricators, Inc., Elizabeth, PA
    d. Southern Equipment Fabricators, Inc.; Columbia, SC
    e. Stainless Unlimited, Inc.; Waldorf, MD
    f. Other fabricators, as approved by Consultant.

C. Qualification of Manufacturers:

1. Manufacturers shall be regularly engaged in the production of items furnished and shall have demonstrated the capability to furnish similar equipment that performs the functions specified or indicated herein.

    a. Standard Products:

        1) Materials, products, and equipment furnished under this contract shall be the standard items of manufacturers regularly engaged in the production of such materials, products, and equipment and shall be of the manufacturer's latest design that complies with the specifications which have been produced and used successfully on other projects and in similar applications.
        2) Discrepancies within contract documents should immediately be brought to the attention of the Consultant in writing for clarification prior to fabrication or ordering of standard items.

1.4 PLANS & SPECIFICATIONS

A. Specifications and drawings have been prepared to form the basis for procurement, erection, start-up and adjustment of all equipment in this contract. Plans and specifications shall be considered as mutually explanatory and work required by one, but not the other, shall be performed as though required by both. Items required by one, but not by the other shall be provided as though required by both. Work shall be accomplished as called for in specifications and shown on drawings, so that all items of equipment shall be completely functional for purpose for which they were designed. When there is any discrepancy between drawings and specifications, drawings shall govern. Bidders should seek clarification of any discrepancies from the Consultant prior to bidding.

1.5 SUBMITTALS

A. General Requirements:

1. Within six (6) weeks or earlier, as required, assemble and submit all shop drawings, rough-in drawings, brochures, color samples, etc. as a complete package. There will be no review of partial submittals.
2. Any and all costs, to all trades and parties involved, arising from delay of project due to non-submittal of the complete package by the K.E.C. within a reasonable time period shall be borne solely by the K.E.C.
3. Identify each submittal by project name, date, contractor, submittal name, and any other necessary information to distinguish it from other submittals.

B. Shop Drawings:

1. Submit shop drawings electronically in PDF format on sheets equal in size to Contract Documents of equipment specified for custom fabrication including all accessories attached to each item.
2. Drawings shall be detailed and fully dimensioned to a minimum scale of 3/4"=1'-0" for plan and elevation views, and 1-1/2"=1'-0" for sections, based on the floor plan(s) and following item specifications. Drawings will be checked for thoroughness, accuracy, completeness, neatness, and returned for corrections, if necessary.

C. Rough-in Drawings:

1. Submit rough-in drawings electronically in PDF format on sheets equal in size to Contract Documents of detailed arrangement plans professionally prepared from architects dimensioned plans (not traced from Contract Documents) at a minimum scale of 1/4"=1'-0".
2. Equipment Layout Plan showing arrangement of all items specified and identified on schedule of equipment listing item number, description, quantity, manufacturer, model number, and remarks.
3. Ventilation Plan showing dimensioned locations of all duct openings for ventilators and dishmachines identifying size, c.f.m. required (exhaust and supply), static pressures, and connection heights.
4. Plumbing/Electrical Plans showing dimensioned locations, sizes, elevations and capacities of all utility services required for each item of equipment in relation to finished walls, columns, and heights above finished floor.
5. Special Conditions Plan showing exact dimensions and details of all masonry bases, floor depressions, critical partition locations/heights, wall openings, reinforcing for wall and/or ceiling mounted equipment, and conduit locations for soda and compressed gas lines.

D. Equipment Brochures:

1. Submit electronic files in PDF format of manufacturer's illustrations and technical data for approval prior to procurement. All items of Standard Manufacture shall be submitted, including items purchased to be built into fabricated equipment. Each illustration shall be marked to accurately describe the item to be furnished as specified. Include all deviations from standard information (i.e., voltage, phase, load, etc.).
2. Include a separate information sheet ahead of each illustration sheet showing all service connection sizes, electrical requirements, loads, consumptions, and all accessories specified.
3. Manufacturer's suggested schematic drawings for connection of mechanical and electrical services for such items as booster heaters, disposers, or any other item of equipment that may require the same.

E. Miscellaneous Shop Drawings:

1. Submit electronic files in PDF format of manufactured equipment specified requiring clarification and approval such as, walk-in cooler/freezer drawings, ventilator drawings, utility raceway drawings, and refrigeration system drawings.

F. Operation and Maintenance Manuals:

1. Submit electronic files in PDF format for all mechanically operated equipment of standard manufacture. Include operating and cleaning/maintenance instructions, parts listing, recommended parts inventory listing and purchase source, copy of warranties, and similar applicable information.
2. Brochure covers shall bear the job name, date, and name of contractor.

G. Manufacturer's List:

1. The K.E.C. shall submit in writing a list of all manufacturer's representatives of the food service equipment such as convection ovens, ranges, etc., and their authorized service

agencies' addresses and telephone numbers; to be presented after submission of manufacture data.

H. Samples:

1. Samples of materials, products, and fabrication methods, shall be submitted for approval upon request at no additional cost, before proceeding with work.

I. Re-submission Requirements:

1. Shop Drawings:

a. Revise initial drawings as required and resubmit in accordance with submittal procedures.
b. Indicate on drawings all changes which have been made in addition to those requested by Consultant.

2. Product Data and Samples:

a. Submit new data and samples as required for initial submittal.
b. Make all re-submittals within fourteen (14) working days from date of Consultants previous action.

J. Approvals:

1. After approval of the submittals listed above, furnish as many prints and copies as are required for the various trades, the Owner, the Architect, and the Consultant.
2. The approval of the shop drawings will be general and shall not relieve the K.E.C. of responsibility for proper fitting, finishing, quantities, and erection of work in strict accordance with the contract requirements, nor does it relieve him of the responsibility of furnishing material and workmanship not indicated on approved shop drawings but required for the completion of his work.
3. Approval by the Consultant and/or Owner of the manufacturer's data submitted by the K.E.C. does not waive the responsibility of K.E.C. to furnish each item of equipment in complete compliance with the specifications and drawings. Discrepancies between Contract Documents and furnished equipment shall be corrected even after approval and installation of this equipment at no additional cost to the Owner.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Delivery:

1. Equipment shall be delivered to the job site only after the building is weather-safe and vandal-safe.

B. Storage:

1. Store equipment in an area convenient to the point of installation in such a way that it can be protected from the weather and job hazards.

C. Protection:

1. Wrapping and protective coatings shall remain on all items until ready for use and in the case of stainless steel items, until installation is complete and the job is ready for cleaning.

D. Damage:

1. All responsibility shall rest with the K.E.C. for any damage or loss incurred prior to final acceptance. Such items as may be lost or damaged shall immediately be replaced or repaired to a new condition to the complete satisfaction of and at no additional cost to the Owner.

1.7 JURISDICTION TRADE AGREEMENTS AND RESTRICTIONS

A. Include the work specified, shown or reasonably inferable as part of foodservice equipment. Portions of this work may be subcontracted to those qualified to do such work, as may be necessary because of jurisdictional trade agreements and restrictions.

1.8 REGULATIONS AND CODES

A. Except as otherwise indicated, each item of equipment shall comply with the latest current edition of the following standards as applicable to the manufacture, fabrication, and installation of the work in this section.

1. N.S.F. Standards: Comply with National Sanitation Foundation Standards and criteria, and provide N.S.F. "Seal of Approval" on each manufactured item and major items of custom-fabricated work.
2. U.L. Standards: For electrical components and assemblies, provide either U.L. labeled products or, where no labeling service is available, provide a complete index of the components used as selected from the U.L. "Recognized Component Index".
3. A.N.S.I. Standards: For gas-burning equipment, comply with A.N.S.I. Z21-Series standards. Comply with A.N.S.I. B57.1 for compressed gas cylinder connections and with applicable standards of the Compressed Gas Association for water connection air gaps and vacuum breakers.
4. A.G.A.: All gas-fired equipment shall be A.G.A. Approved, equipped to operate on the type gas available at the job site and shall contain 100% automatic safety shut-off devices.
5. N.F.P.A. Standards: Comply with N.F.P.A. Bulletin 96 for exhaust systems and with N.F.P.A. Bulletins 17 & 96, and U.L. 300 for fire extinguishing systems.
6. A.S.M.E. Code: Comply with A.S.M.E. boiler code requirements for steam generating and steam heated equipment. Provide A.S.M.E. inspection, stamps, and certification of registration with National Board.
7. National Electric Code: Comply with N.E.C. Volume 5 for electrical wiring and devices included with foodservice equipment.
8. All authorities having jurisdiction over this type of equipment and/or installation.
9. Where specifications and/or drawings require mechanical, electrical or refrigeration work to be performed, such work shall be done in strict conformance to other portions of the Base Building Specification which sets forth standards for this type of work.

10. Where there exists two standards or codes for one type of work, the stricter method shall govern.

1.9 WARRANTIES

A. Warrantee in writing all equipment and fabrication against defects and workmanship for a period of two (2) years from date of acceptance.

1. Each piece of mechanical equipment shall be listed, together with the authorized service and repair agency whom the Owner will call should malfunctions occur within the two-year (2) guarantee period.

B. Refrigeration system compressors shall be warrantied for five (5) years by the manufacturer. Free refrigeration service, including parts and labor, shall be furnished for two (2) years from date of acceptance, unless otherwise specified.

1.10 JOB CONDITIONS

A. Visit the job site to field check actual wall dimensions and roughing-in and shall be responsible for fabricating and installing the equipment in accordance with the available space and utility services as they exist on the job site.

B. Check all door openings, passageways, elevators, etc., to be sure that the equipment can be conveyed to its proper location within the building and if necessary, check the possibility of holding wall erection, placement of doorjambs, windows, etc. for the purpose of moving the equipment to its proper location with the Contractor. Any removal and rebuilding of walls, partitions, doorjambs, etc. necessary to place the equipment, or if caused by incorrect information on the Contractor's drawings, shall be done at the expense of the K.E.C., at no additional cost to the Owner.

C. Notify the Consultant and Owner before fabrication of equipment of any discrepancies between plans and specifications and actual conditions on the job.

D. Before finished floors, walls, and/or ceilings are in place, physically check the location of all "rough-ins" at the job site. Report discrepancies in writing.

E. Any changes required after fabrication has been started to ensure equipment accurately fitting the space as it exists and conforming to actual field dimensions on the job shall be made at no additional cost to the Owner.

F. If special hoisting equipment and operators are required, include such cost as part of the bid for this work.

1.11 CHANGES IN THE WORK

A. The Owner reserves the right to require reasonable modification to be made in the routing of work and relocation of equipment. This specifically refers to conditions where interference occurs or where more desirable accessibility can be obtained or whose materials cannot be

installed because of structural or mechanical conditions encountered. Such changes shall be made at no additional cost to the Owner.

1.12 PATENTS

A. Hold harmless and save the Owner and its officers, consultants, servants and employees from liability of any nature or kind, including costs and expenses for or on account of any copyrighted, patented, or un-patented invention, process, trademark, design, device, material, article, or appliance manufactured or used in the performance of the contract, including its use by the Owner, unless otherwise specifically stipulated in the Contract Documents.

B. If the Contractor has information that the process or article specified is an infringement of a patent, he shall be responsible for such loss unless he promptly gives such information to the Owner in writing. The contract price shall include all royalties or costs arising from the use of any or all of the above which are, in any way, involved in the contract.

1.13 CONTRACTOR'S WARRANTY

A. The Contractor represents and warrants:

1. That he is financially solvent and that he is experienced in and competent to perform the types of work or to furnish the plans, materials, supplies or equipment, to be so performed or furnished by him.
2. That he is familiar with all Federal, State, municipal, and department laws, ordinances, orders, and regulations, which may, in any way, affect the work of those employed therein, including, but not limited to, any special acts relating to the work or to the project of which it is a part.
3. That such temporary and permanent work required by the contract as is to be done by him can be satisfactorily constructed and used for the purpose for which it is intended and that such construction will not injure any person or damage any property.
4. That he has carefully examined the plans, specifications, addenda, if any, and the site of the work and that, from his own investigations, he has satisfied himself as to the nature and location of the work, the character, quality, and quantity of materials likely to be encountered, the character of equipment and other facilities needed for the performance of the work, the general and local conditions, and all other materials which may, in any way, affect the work or its performance.
5. That he has satisfied himself as to the existing openings and accesses to the foodservice area through which his equipment shall be required to pass and that he is responsible for his equipment being delivered in as many sections as necessary to conform to the available space dictated by these existing limitations.

1.14 SUBSTITUTIONS

A. Bids submitted shall be for the specific manufacturer and model, size, capacity, and accessories, as specified or shown on the drawings.

B. The K.E.C. may quote upon brands and models of equipment other than those specified as a substitute, but he must also bid the primary item. In the event that it is desired to request

approval of substitute material, product, article, process, or item of equipment in lieu of that which is specified, submit a written request at the time of submitting bid on a separate sheet attached to, but not part of, the base bid, setting forth the proposed substitution in detail, including an itemized analysis of the addition or deduction in the amount of the contract, if any, which will result if the substitution is approved. Each such request shall include a complete description of the proposed substitute, the name of the material or equipment for which it is to be substituted, drawings, cuts, performance and test data and any other data or information necessary for a complete evaluation.

C. The Contractor shall be held responsible for additional costs to himself or any other prime contractor for changes required to install materials, devices, equipment, etc., which the Contractor has substituted for that specified.

D. The Owner reserves the right to award a contract or contracts based upon the inclusion or exclusion of one or more of the alternate estimates. The description of all workmanship and materials under the various headings of the specifications shall have the same meaning and force when applied to similar workmanship and materials in the alternate. If the descriptions are not specific, the workmanship shall be the best quality and the materials the best commercial grade.

E. Whenever any product is specified in the Contract Documents by reference to the name, trade name, make, or catalog number of any manufacturer or supplier, the intent is not to limit competition but to establish a standard of quality which is necessary for the project. Products of other manufacturers meeting the established criteria will be considered. However, please take note that the plumbing, electrical, steam, heating, ventilating, and air-conditioning drawings prepared by the consulting engineers, have been engineered based on the first product named under each item number designation. Therefore, any other product which is submitted for approval in lieu of the primary item specified, shall conform to the rough-in requirements established for the first product named, as well as physical size and building construction requirements.

F. Any equipment listed which is not in accordance with the provisions of these specifications will be rejected. If the Contractor fails to submit for approval within the specified time the list of equipment as required herein, the Consultant shall then have the right to make the final equipment selection. The selection made by the Consultant shall strictly conform to these specifications and will be final and binding, and the items shall be furnished and installed by the Contractor without change in the contract price at the time of completion.

G. It shall be the responsibility of the K.E.C. to prove that substitutions are equal to specified items. **NYIKOS ASSOCIATES, INC**. as the Owner's representative, shall be the determining authority as to the acceptability or equality of the substitutions. No substitutions shall be approved after bids are received.

1.15 DESIGN/MODEL CHANGE, DISCONTINUED ITEMS

A. All equipment specified shall be of latest design. Any improvements made in design and construction of prefabricated items before equipment is actually delivered to the project site, shall be incorporated in equipment, at no additional cost, provided such incorporation does not delay delivery date of equipment.

B. In the event of an item being discontinued after specified and prior to delivery to project site, the K.E.C. shall be responsible for notifying the Consultant in writing of the discontinued item and request an alternate of equal performance, including all accessories, at no additional cost to the Owner.

PART 2 - PRODUCTS

2.1 GENERAL

A. The equipment and its component parts shall be new and unused. All items of standard manufactured equipment shall be current models at the time of delivery. All parts subject to wear, breakage, or distortion shall be accessible for adjustment, replacement, and repair.

B. Means shall be provided to ensure adequate lubrication for all moving parts. All oil holes, grease fittings, and filler caps shall be accessible without the use of tools.

C. The design of the equipment shall be such as to provide for safe and convenient operation. Covers or other safety devices shall be provided for all items of equipment presenting safety hazards. Such guards or safety devices shall not present substantial interference to the operation of the equipment. All guards shall provide easy access to the guarded parts.

D. Trim shall not be an acceptable substitute for accuracy and neatness. When trim is required and accepted by the Consultant and the Owner in lieu of rejection of items of equipment, it shall be the K.E.C.'s responsibility to provide same at no additional cost.

E. Unless otherwise specified herein, no material lighter than #20 gauge shall be incorporated into the work. All gauges for sheet iron and sheet steel shall be U.S. Standard Gauges, and finished equipment gauge thickness shall not vary more than 5% plus or minus from the thickness indicated below.

GAUGE	THICKNESS	GAUGE	THICKNESS
#10	0.1406	#16	0.0625
#12	0.1094	#18	0.0500
#14	0.0781	#20	0.0375

F. Materials or work described in words which have a well known and acceptable trade meaning shall be held to refer to such accepted meanings.

2.2 MATERIALS

A. Refrigeration Systems:

1. Self-contained:

a. Whether the units be top-mounted or cabinet-mounted, they shall be started by the K.E.C. and shall be tested for maintenance of temperature.
b. All units shall be furnished with condensate evaporators.

2. Remote: Provide and install complete refrigeration system(s), charged, started, and operating properly, according to the Item Specifications and the following.

    a. Single stage compressors with air-cooled condensers operating within the recommended range of suction discharge pressure of economical operation and within the required capacity.
    b. All units shall be new and factory assembled, to operate with the refrigerant specified. Refrigerant R-404 shall be used for all medium and low temperature applications. Due to the unsettled nature of refrigerants, no refrigerant shall be used with a phase-out date of less than ten (10) years from the date of installation.
    c. Compressors shall be accessible hermetic type, Copeland or approved equal, and shall be equipped with high-low pressure control, liquid line drier, sight glass, suction and discharge vibration eliminator, and head pressure control.
    d. The system shall have a factory mounted and pre-wired control panel complete with main fused disconnect, compressor circuit breakers, contactors, and time clocks wired for single point power connection.
    e. The supporting frame shall be constructed of structural steel, fully welded, and protected against rust and corrosion with one (1) coat primer, and two (2) coats paint, unless otherwise specified.
    f. Systems specified for outdoor installation shall be fully protected in a weather-proofed housing with louvered front panel and hinged top, constructed to resist rust and corrosion, and furnished with low ambient controls. Crankcase heater shall be provided with every compressor.

3. Where specifications call for pre-piped lines (i.e., from a fixture to a valve compartment, etc.), provide such work in strict conformance with other sections of the specifications which set forth standards for this type of work or in conformity with the requirements of the Board of Fire Underwriters or ASHRAE Standards, whichever is greater.
4. Each refrigeration item specification is written to provide minimum specifications and scope of work. All refrigeration equipment shall be designed and installed to maintain the following general temperatures unless otherwise specified.

TYPE	REFRIGERATORS	FREEZERS
a. Walk-In	+35° F./1.7° C.	-10° F./-23.3° C.
b. Reach-In	+35° F./1.7° C.	-10° F./-23.3° C.
c. Undercounter	+35° F./1.7° C.	-10° F./-23.3° C.
d. Fabricated	+35° F./1.7° C.	-10° F./-23.3° C.
e. Cold Pans	+0° F./-17.8° C.	
f. Work Rooms	+50° F./10° C.	

5. Provide (including payment if subcontracted) all electrical and refrigeration components needed by the completed system and complete (or have completed by the respective trades) all connections of and to said components.
6. An evaporator coil defrost system shall be provided and installed by the K.E.C. on all refrigeration systems designed to operate at an evaporator coil temperature of less than +35° F. Evaporator coil units provided without electric defrost feature shall be installed with a solenoid valve in the liquid line, controlled by the time clock so as to shut off the flow of refrigerant and allow the compressor to pump down and shut off by activation of the pressure control switch.

7. Verify the requirements of and provide any or all additional refrigeration specialty(s) or component(s) required or recommended by the manufacturer for proper operation under the specific operating conditions and location of each system specified.
8. Verify and provide manufacturer's certification that the equipment selection hereinafter specified for each refrigeration system is properly sized and shall meet the operating requirements set forth for each system regarding maintaining specified operating temperature, hours of compressor running time, and system pressures and velocities as recommended by the equipment manufacturer(s).
9. All refrigeration systems shall be installed and wired in strict conformance with the manufacturer's instructions and recommendations.

B. Motors and Heating Elements:

1. Motors up to and including 1/2 HP shall be wired for 120 volt, single phase service. Motors larger than 1/2 HP shall be wired for 208 volt, single or three phase service as indicated. Motors shall be of the drip-proof, splash-proof, or totally enclosed type, having a continuous duty cycle and ball bearings, except small timing motors which may have sleeve bearings. All motors shall have windings impregnated to resist moisture. Motors located where subject to deposits of dust, lint, or other similar matter shall be of the totally enclosed type. Motors shall have ample power to operate the machines for which designated under full load operating conditions without exceeding their nameplate ratings. Insulation shall be N.E.M.A. Class B or better.
2. Heating elements having a connected load up to and including 1,000 watts shall be wired for 120 or 208 volt, single phase service, or as indicated on the drawings.

    a. Any heating element larger than 1,000 watts or any combination of elements in one fixture totaling more than 1,000 watts shall be wired for 208 volt single or three phase service, as indicated on the drawings.
    b. Fixtures having multiple heating elements may be wired for three phase service with the load balanced as equally as possible within the fixture.

C. Switches and Controls:

1. Provide recognized commercial grade signals, "on-off" pushbuttons or switches, and other speed and temperature controls as required for operation of each item, complete with pilot lights and permanent graphics, conspicuously labeled, to assist the user of each item.
2. Mount switches and controls directly adjacent the piece of equipment for which it involves, on operator's side of counter body apron, out of view to the public.
3. Provide on or for each motor-driven appliance or electrical heating or control unit, a suitable control switch or starter of the proper type and rating and in accordance with Underwriter's Code wherever such equipment is not built in. All other line switches, safety cut-outs, control panels, fuse boxes, other control fittings and connections, when not an integral part of the unit or furnished loose by the manufacturer will be furnished and installed by the Electrical Contractor, unless otherwise specified. All electrical controls, switches, or devices provided loose for field installation as a part of the item specified shall be installed in the field by the Contractor unless otherwise specified.
4. Appliances shall be furnished complete with motors, driving mechanisms, starters, and controllers, including master switches, timers, cut-outs, reversing mechanisms, and other electrical equipment if and as applicable.

D. Cover Plates:

1. All controls mounted on vertical surfaces of fixtures shall be set into recessed die stamped stainless steel cups, or mounted onto removable cover plates in such a fashion as to not protrude or interfere with the operation of each item.
2. Cover plates shall be furnished and installed for all electrical outlets, receptacles, switches and controls furnished by the K.E.C., and shall match the material and finish of the equipment to which they will be fastened.

E. Wiring and Conduit:

1. Wiring shall be properly protected in N.E.M.A. and U.L. approved metal enclosures. Only rigid steel conduit shall be used, zinc coated where unexposed and chrome plated where exposed. All wiring shall be run concealed wherever possible.
2. All equipment furnished under this contract shall be so wired, wound, or constructed so as to conform with the electrical characteristics at the job site.
3. Wiring and connection diagrams shall be furnished with electrically operated machines and for all electrically wired fabricated equipment.
4. Furnish all foodservice equipment completely wired internally using wire and conduit suitable for a wet location. Where an Electrician's services are required, the work shall be done in the K.E.C.'s factory or at his expense at the job site at no additional cost to the Owner. Provide all electrical outlets and receptacles required to be mounted on or in fabricated equipment and interconnect to a master circuit breaker panel with all wires neatly tagged showing item number, voltage characteristics, and load information. Final connection shall be made by the Electrical Contractor.

F. Cords, Plugs, and Receptacles:

1. The Electrical Contractor shall provide three- or four-wire, grounding-type receptacles for all wall and floor mounted outlets to be used for plug-in equipment with characteristics as noted on the drawings. Provide Hubbell three-wire or four-wire grounding-type connectors and neoprene cords installed on each item of plug-in equipment, as indicated on drawings and item specifications.
2. K.E.C. shall coordinate with the Electrical Contractor so that the receptacles provided will match the specific plugs provided as part of the plug-in equipment. Any changes in cords and plugs required in the field due to lack of coordination between the Electrical Contractor and the K.E.C. shall be the latter's responsibility.
3. Reduce the length of all cords furnished with the specified equipment to a suitable or appropriate length so they do not interfere with other equipment or operations.
4. Pedestal receptacles that are part of fabricated equipment exposed to view, shall be similar to T&S Model No. B-1508DD single face, single gang or Model No. B-1528DD single face, double gang.

G. Water Inlets:

1. Water inlets shall be located above the positive water level wherever possible to prevent siphoning of liquids into the water supply system. Wherever conditions shall require a submerged inlet, a suitable type of check valve (except in jurisdictions where check valves are prohibited) and vacuum breaker shall be placed on the fixture to form a part of same to prevent siphoning. Where exposed to view, piping and fittings shall be chrome-plated.

H. Drain Lines:

1. Plumbing Contractor shall provide and install indirect waste lines from equipment which will discharge into floor drains or safe wastes in accordance with Plumbing Rough-In Plans, chrome-plated where exposed. Extend to a point at least 1" (or as required by local codes) above the rim of the floor drain, cut bottom on 45° angle and secure in position.
2. All horizontal piping lines shall be run at the highest possible elevation and not less than 6" above finished floor, through equipment where possible.
3. No exposed piping in or around fixtures or in other conspicuous places shall show tool marks of more than one thread at the fitting.
4. All steam operating valves on or in fabricated and purchased foodservice equipment shall be provided with composition hand wheels, which shall remain reasonably cool in service.
5. Provide suitable pressure regulating valves for all equipment with such components that might reasonably be expected to be affected over a period of time by adverse pressure conditions.

I. Faucets, Valves and Fittings:

1. All sinks shall be fitted with chromium plated, swing spout faucets of same manufacturer throughout as follows, or otherwise specified in Item Specifications.

a. Prep and Utility Sinks:

1) Splash-Mounted:

a) T&S Brass and Bronze Works, Inc., Model B-231.
b) Fisher Manufacturing Company, Model 3253.

2) Deck-Mounted:

a) T&S Brass and Bronze Works, Inc., Model B-221.
b) Fisher Manufacturing Company, Model 3313.

b. Pot Sinks:

1) Splash-Mounted:

a) T&S Brass and Bronze Works, Inc., Model B-290.
b) Fisher Manufacturing Company, Model 5214.

2. Pre-Rinse Assemblies:

a. Splash-Mounted:

1) T&S Brass and Bronze Works, Inc., Model B-133 with B-109 wall bracket.
2) Fisher Manufacturing Company, Model 2210 with 2902-12 wall bracket.

b. Deck-Mounted:

1) T&S Brass and Bronze Works, Inc., Model B-143 with B-510 mixing valve and B-109 wall bracket.
2) Fisher Manufacturing Company, Model 2810 with 2805-CV mixing valve and 2902-12 wall bracket.

3. Vacuum Breakers:

a. General Use:

1) Fisher Manufacturing Company, Model 3990-8000.

b. Disposers:

1) Splash-Mounted:

a) T&S Brass and Bronze Works, Inc., Model B-455.
b) Fisher Manufacturing Company, Model 3990.

2) Deck-Mounted:

a) T&S Brass and Bronze Works, Inc., Model B-456.
b) Fisher Manufacturing Company, Model 3991.

4. Trough Inlets:

a. Fisher Manufacturing Company, Model No. 2905.

5. Other specialty faucets, pre-rinse assemblies, vacuum breakers, and trough inlets, as specified under Item Specifications.
6. All sink compartments shall be fitted with 2" NPT male, chrome-plated, brass rotary waste valves complete with overflow assemblies and stainless steel strainers.

a. Prep and General Utility Sinks:

1) Fisher Manufacturing Company, Model No. 6100.

b. Pot Sinks:

1) Fisher Manufacturing Company, Model No. 6102.

7. Refer to Division 22 for all other fittings.

J. Metals and Alloys:

1. Stainless steel sheets shall conform to ASTM 240, Type 302, Condition A, 18-8, of U.S. Standard Gauges as previously indicated under paragraph 2.1.E.

a. All exposed surfaces shall have a No. 4 finish. A No. 2B finish shall be acceptable on surfaces of equipment not exposed to view.
b. All sheets shall be uniform throughout in color, finish, and appearance.
c. Rolled shapes shall be of cold rolled type conforming to ASTM A36.

2. Stainless steel tubing and pipe shall be Type 304, 18-8, having a No. 4 finish, and shall conform to either ASTM A213 if seamless or ASTM A249 if welded.
3. Where galvanized metal is specified, it shall be copper-bearing galvanized iron, cold-rolled, stretcher leveled, bonderized, re-rolled to insure a smooth surface, and used in the largest possible sizes with as few joints as necessary.
4. Galvanizing shall be applied to rolled shapes in conformance with ASTM A123, and to sheets in conformance with ASTM A526, coating designation G-90.

K. Castings:

1. Castings shall consist of corrosion resisting metal (white metal) containing not less than 30% nickel. All castings shall be rough ground, polished, and buffed to bright lustre and free from pit marks, runs, checks, burrs, and other imperfections. In lieu of corrosion resisting metal castings, die-stamped or cast 18-8 stainless steel will be acceptable.

L. Hardware and Casters:

1. All hardware shall be of heavy duty type, satin finished chromium plated brass, cast or forged or highlighted stainless steel of uniform design. All hardware shall be a well known brand, and shall be identified by the manufacturer's name and model number for easy replacement of broken or worn parts.
2. Casters on custom built equipment shall be heavy duty type, ball bearing, solid or disc wheel, with grease-proof rubber, neoprene, or polyurethane tire. Wheel shall be 5" diameter, minimum width of tread 1-3/16", minimum capacity per caster 250 pounds, unless otherwise noted.

    a. Solid material wheels are to be provided with stainless steel rotating wheel guard.
    b. All casters shall have sealed wheel and swivel bearings, polished plated finish and be N.S.F. approved.
    c. All equipment specified with casters shall have a minimum of two (2) with brakes installed on opposite corners, unless otherwise noted.

M. Locks:

1. When specified, doors and drawers of all custom fabricated or manufactured equipment shall be provided with cylinder locks, disc tumbler type with stainless steel faceplate as manufactured by Standard-Keil Mfg. Co., or approved equal.

    a. Provide two (2) sets of keys for each lock.
    b. All locks shall be keyed alike, except at cashiers stations or unless otherwise specified.

N. Thermometers:

1. All fabricated refrigerated compartments shall be fitted with exterior mounted, adjustable, dial or digital thermometers with flush bezels, and shall be calibrated after installation.

O. Sealants:

1. Sealant, wherever required, shall conform to ASTM C 920; Type S Grade NS, Class 25, Use Nt, with characteristics that when fully cured and washed meets requirements of

Food and Drug Administration Regulation 21 CFR 177.2600 and N.S.F. RTV-732 for use in areas where it comes in contact with food.

2. Dow-Corning #780 or General Electric "Silastic", or approved equal, in either clear or approved color to match surrounding surfaces and applied in accordance with sealant manufacturers recommendations for a smooth, sealed finish.

2.3 FABRICATION AND MANUFACTURE

A. Materials and Workmanship:

1. Unless otherwise specified or shown on drawings, all materials shall be new, of best quality, perfect, and without flaws. Material shall be delivered and maintained on the job in an undamaged condition.
2. Fabrication shall be equal to the standards of manufacture used by all first class equipment manufacturers, performed by qualified, efficient, and skilled mechanics of the trades involved.
3. All items of standard equipment shall be the latest model at time of delivery.
4. All fabricated work shall be the product of one manufacturer of uniform design and finish.
5. Each fabricated item of equipment shall include all necessary reinforcing, bracing, and welding with the proper number and spacing of uprights and cross members for strength.
6. Wherever standard sheet sizes will permit, the tops of all tables, shelves, exterior panels of cabinet type fixtures, and all doors and drainboards shall be constructed of a single sheet of metal.
7. Except where required to be removable, all flat surfaces shall be secured to vertical and horizontal bracing members by welding or other approved means to eliminate all buckle, warp, rattle, and wobble. All equipment not braced in a rigid manner and which is subject to rattle and wobble shall be unacceptable, and the K.E.C. shall add additional bracing in an approved manner to achieve acceptance.

B. Sanitary Construction:

1. All fabricated equipment shall be constructed in strict compliance with the standards of the National Sanitation Foundation as outlined in their Bulletin on Food Service Equipment entitled "Standard No. 2" dated October 1952, and in compliance with the local and State Public Health Regulations in which the installation will occur.
2. All fabricated equipment shall bear the N.S.F. "Seal of Approval".

C. Construction Methods:

1. Welding:

a. All welding shall be the heliarc method with welding rod of the same composition as the sheets or parts welded. Welds shall be complete, strong, and ductile with excess metal ground off and joints finished smooth to match adjoining surfaces; free of mechanical imperfections such as gas holes, pits, cracks, etc., and shall be continuously welded so that the fixtures shall appear as one-piece construction. Butt welds made by spot solder and finished by grinding shall not be acceptable.

b. Spot welds shall have a maximum spacing of 3". Tack welds shall be of at least 1/4" length, and spaced no greater than 4" from center to center. Weld spacing at the ends of the channel battens shall not exceed 2" centers.
c. In no case shall soldering be considered as a replacement for welding, nor shall any soldering operation be done where dependence is placed on stability and strength of the joint.
d. Fixtures shall be shop fabricated of one piece and shipped to the job completely assembled wherever possible. Equipment too large to transport or enter the building in one piece shall be constructed so that the field joints can be welded at the job site.
e. All exposed joints shall be ground flush with adjoining material and finished to harmonize therewith. Whenever material has been sunk or depressed by welding operation, depression shall be suitably hammered and peened flush with the adjoining surface and ground to eliminate low spots. In all cases the grain of rough grinding shall be removed by successive fine polishing operations.
f. All unexposed welded joints on undershelves of tables or counters of stainless steel shall be suitably coated at the factory with an approved metallic-based paint.
g. After galvanized steel members have been welded, all welds and areas where galvanizing has been damaged shall have a zinc dust coating applied in conformance with Military Specification Number MIL-P-26915.

2. Joints:

a. Butt joints and contact joints, wherever they occur, shall be close fitting and shall not require a filler. Wherever break bends occur, they shall be free of undue extrudence and shall not be flaky, scaly, or cracked in appearance; where such breaks do mar the uniform surface appearance of the material, all such marks shall be removed by suitable grinding, polishing, and finishing. Wherever sheared edges occur, they shall be free of burrs, fins, and irregular projections and shall be finished to obviate all danger of laceration when the hand is drawn over them. In no case shall overlapping materials be acceptable where miters or bullnosed edges occur.
b. Field welded joints shall be ground smooth without dips and irregularities and finished to match original finish.

3. Bolt, Screw and Rivet Construction:

a. All exposed surfaces shall be free from bolt and screw heads. When bolts are required, they shall be of the concealed type and be of similar composition as the metal to which they are applied.
b. Where bolt or screw threads on the interior of fixtures are visible or may come into contact with hands or wiping cloths, they shall be capped with a stainless steel or chrome acorn nut and stainless steel lock washer.
c. If rivets are used to fasten rear paneling to the body of the fixture, such rivets shall be stainless steel. In no case shall iron rivets be used.

4. Sound Deadening:

a. Schnee Butyl-Sealant 1/2" wide rope continuously between all frame members and underside of stainless steel table tops, overshelves and undershelves.
b. Tighten stud bolts for maximum compression of sealant.

5. Hi-Liting:

    a. All horizontal edges of stainless steel tops, splashes, tops of raised rolled rims, and edges of all exposed doors, handles and shelf edges shall be hi-lited, in uniform design by grinding with abrasive not coarser than #240 grit, then polishing with compound to a uniform mirror finish.

6. Polishing:

    a. The grain of polishing shall run in the same direction on all horizontal and on all vertical surfaces of each item of fabricated equipment except in the case where the finish of the horizontal sections of each shall terminate in a mitered edge.
    b. Where sinks and adjacent drainboards are equipped with backsplash, the grain of the polishing shall be consistent in direction throughout the length of the backsplash and sink compartment.

7. Finishes:

    a. Paint and coatings shall be of an N.S.F. approved type suitable for use in conjunction with foodservice equipment. Such paint or coating shall be durable, non-toxic, non-dusting, non-flaking and mildew resistant, shall comply with all governing regulations, and shall be applied in accordance with the manufacturers recommendations.
    b. All exterior, galvanized parts, exposed members of framework, and wrought steel pipe where specified to be painted shall be cleaned, primed with rust inhibiting primer, de-greased, and finished with two (2) coats of glossy enamel grey hammertone paint, unless otherwise noted.
    c. Where baked enamel finishes are specified, they shall be oven baked on the fixtures for a minimum of 1-1/2 hours at a minimum temperature of 300° Fahrenheit.
    d. Fabricated equipment shall be spray coated with plastic suitable for protecting the equipment during transport and installation. The coating shall be easily removable after the equipment installation is complete at the job site, and final clean-up has begun.

D. Construction:

1. Legs:

    a. All tubular stands for open base tables, sinks, or dishtables shall have legs constructed of 1-5/8" O.D. stainless steel tubing, with 1-1/4" O.D., #16 gauge stainless steel crossbracing running between legs at a point 10" above finished floor.
    b. All joints between legs and crossbracing shall be welded and ground smooth, full 360°.
    c. The top end of legs shall be closely fitted into fully-enclosed stainless steel conical gussets no less than 3" high, similar to Klein #481-58 or #483-58, or approved equal.
    d. Gussets shall be fully welded to framing reinforcing members, so that, set screw is not visible from front.
    e. Legs without crossrails will not be accepted.

f. Legs shall be spaced at not more than 5'-6" on centers, unless otherwise specified.

2. Feet:

a. All tubular legs will be swedged for appearance and close fit to United Show Case #BF-158, or approved equal, fully enclosed, stainless steel bullet-shaped foot.

1) The foot shall be threaded into a collar and completely welded inside the tubular leg to permit a maximum adjustment of 2" without any thread exposure.
2) Threads shall be National Course Series Class 2 fit or better, machined to prevent end play when foot is at maximum adjustment.
3) The bullet-shaped foot shall have slightly rounded bottom to protect the floor, and a minimum bearing surface of 3/4" diameter of stainless steel-to-floor contact.
4) Bottom of tubular leg shall be finished off smoothly to provide a sanitary fitting and prevent the accumulation of grease or other debris.

b. Cabinet type fixtures shall be mounted on 8" high die-stamped, sanitary, two-piece stainless steel legs no less than 3" in diameter at the top, United Show Case #CM-68B, or approved equal.

1) The bottom fully enclosed, stainless steel, bullet-shaped foot threads up into the inside of the upper member, with a male threaded 5/8" bushing to permit maximum adjustment of 2" without thread exposure.
2) The upper section shall be stamped in a neat design with a flared inverted shoulder and fully welded to a base plate designed for anchoring to the channel underbracing.

3. Table Tops:

a. Tables shall be constructed of stainless steel, and of a thickness not less than #14 gauge with 1-3/4" by 120° rolled edges, or as otherwise specified and detailed.
b. All corners shall be bull-nosed and of the same radius as rolled edges.
c. Joints where required shall be butt-welded and ground smooth to present a uniform one-piece appearance.
d. All tops shall be reinforced on the underside with a fully welded framework of 1-1/2"x1-1/2"x1/8" galvanized steel angles with the framing extending around the top perimeter and crossbraced on 24" maximum centers.
e. 1"x4"x1" galvanized or stainless steel, fully welded, cross channel, closed end members placed at each pair of legs with one (1) channel running lengthwise will also be acceptable.
f. All tops shall be reinforced so that there will be no noticeable deflection.
g. Metal tops where adjacent to walls or other items of equipment, shall be constructed with integral, coved, back and/or endsplashes as required and specified in accordance with the standard details contained herein. Close all ends of splashes.

4. Enclosed Bases:

a. All enclosed bases or cabinet bodies shall be of seamless #18 gauge stainless steel construction, enclosed on the ends and sides as required and called for under each item.
b. Ends of body shall terminate at front or operator's side in a 2" wide mullion, vertical, and completely enclosed. All intermediate mullions shall be completely enclosed.
c. The bases shall be reinforced at the top with a framework of 1-1/2"x1-1/2"x1/8" galvanized angles, with all corners mitered and welded solid.
d. Underside of top shall be reinforced with channels and gussets where necessary. Additional angles and cross members shall be provided to reinforce shelves and support tops under heavy tabletop equipment.
e. Where sinks or other drop-in equipment occur, provide additional reinforcing extending crosswise, both sides of opening.
f. In the case of fixtures fitting against or between walls, the bodies shall be set in 1" or 2" from the wall line, with the tops continuing to the wall line with integral, coved splashes as specified. Extend vertical face of body to the wall line only. This will permit adjustment to wall irregularities. Vertical trim strips will not be accepted.
g. Bodies shall be fitted with counter style stainless steel legs as hereinbefore specified.

5. Drawers:

a. Drawers, where specified, shall have removable pan inserts of #18 gauge stainless steel, and shall be approximately 20"x20"x5" deep unless otherwise specified.

1) Perimeter top edge shall be flanged out 1/2".
2) All interior horizontal corners shall be rounded on a 1" radius, and all interior vertical corners shall be rounded on a 2" radius.

b. Fronts shall be double pan #16 gauge stainless steel construction, 1" thick, insulated with a semi-rigid, fiberglass board, un-faced, having a three-pound density.

1) The top of the drawer face shall be formed as an integral pull by breaking the front pan back on a 45° angle 1", then straight up 1", back to front 1", and then down at the front 3/4".
2) Drawer front shall have all edges and corners ground smooth with a radius edge pull.
3) Provide hard rubber button bumpers attached to rear of drawer face at each corner.

c. The drawer shall have an all welded frame of 1"x1", #16 gauge stainless steel angles sized to fit the removable pan insert.
d. Drawers shall operate on #14 gauge full-extension slides with stainless steel roller bearings with hardened and ground raceways, Component Hardware, S52 Series, or approved equal. Slides shall be pitched approximately 3/8" per foot to permit self closing action.
e. Drawers shall be adequately and neatly fitted to the guides to permit easy operation without rattle or binding.

f. Slides and frame shall be reinforced to support a dead weight of 150 pounds when drawer is fully extended.
g. Adjustable stops shall be provided for each drawer at the fully-opened position, and be readily liftable by hand for easy removal of drawer.
h. All drawers not mounted inside a cabinet body shall be completely enclosed in an #18 gauge stainless steel box-type enclosure and suspended from angle framing under the fixture top. The housing bottom shall be flanged and welded to an #18 gauge stainless steel reinforcing channel extending across the open end.

6. Sliding Doors:

a. Sliding doors shall be of the double pan type, with the exterior pan constructed of #18 gauge stainless steel with all four sides channeled and corners welded. The interior pan shall be similarly constructed of #20 gauge stainless steel, set into the exterior pan, and welded in place.
b. All doors shall be insulated with semi-rigid fiberglass board, un-faced, having a three-pound density. Styrofoam shall not be acceptable.
c. Doors 18" wide or greater, shall have internally welded 4" wide reinforcing channels to prevent warpage.
d. Each door shall be fitted with a positive flush-type stainless steel pull, Standard-Kiel #1262-1014-1283 recessed handle, or approved equal.
e. In the back of each door install a 1"x1", #16 gauge stainless steel angle stop welded in a suitable location to prevent the doors from overpassing the flush pulls.
f. Doors in the closed position shall overlap each other by no more than 2".
g. Each door shall be fitted with two (2), 1-3/8" ball bearing sheaves fastened to 1"x1/8" stainless steel bar stock welded to the top corners of each door for suspending on an overhead #16 gauge stainless steel channel track. The hangers shall be tapped for 1/4"-20 thumb screw vertical locks which prevent the doors from jumping the track in operation while permitting easy removal for cleaning without tools.
h. Insure that the bottom of the doors are positively and continuously guided to assure proper alignment and passing regardless of the position of each door.
i. Provide hard rubber bumpers for doors to close against to insure quiet operation.

7. Hinged Doors:

a. Hinged doors shall be of the same materials and construction as sliding doors previously specified.
b. Hinges shall be heavy duty, stainless steel, removable type, and fastened by tapping into 1/4"x3/4" stainless steel bar stock inside the door pan and behind the door jamb.
c. The door face shall be flush with the cabinet body when fully closed.
d. Size widths of doors equally when installed in pairs, or in series with other pairs, with no door being greater than 36" in width.
e. Doors shall be held closed by permanent magnetic closure devices of an approved type and of sufficient strength to hold the doors shut. Install two (2) per door (minimum), mounted to the door jamb, top and bottom, with opposing chrome-plated steel plates securely fastened to the inner panel of the doors.

8. Undershelves:

a. All open base tables shall be provided with full-length undershelves of #16 gauge stainless steel fully welded to legs with all joints ground smooth and polished.
b. Front edge shall turn down 1-1/2" and under 1/2".
c. Turn up rear and ends 2", with integral coved radius, when specified.
d. If required by width, provide 1-1/2"x1-1/2"x1/8" galvanized angle bracing mounted to underside, full length.

9. Interior Shelves:

a. All interior shelves within cabinet bodies, enclosed bases and overhead cabinets, shall be of #16 gauge stainless steel.
b. Removable shelves shall be constructed in equal sections, and rest in 1-1/2"x1-1/2"x1/8" stainless steel angle frame. Cove all horizontal corners in accordance with N.S.F. requirements.
c. Stationary shelves shall have 2" turn-up on back and ends, and continuously welded to cabinet body, polished and ground smooth to form a one-piece interior free of any crevices.
d. Front edge shall turn down 1-1/2" and under 1/2", and finished with "z" bar forming completely enclosed edge for maximum strength and sanitation.
e. Provide 1-1/2"x1-1/2"x1/8" angle bracing mounted to underside, full length.

10. Elevated Shelves:

a. Shelves over equipment not adjacent to a wall shall be mounted on 1" diameter #16 gauge stainless steel tubular standards neatly fitted with stainless steel base flanges, unless otherwise specified.
b. The top of the tubular standards shall be completely welded to #14 gauge stainless steel support channels, full width of overshelf.
c. Inside the tubular standard, and welded to same, provide 1/2" diameter steel tension rod extended through countertop and securely anchored to lower framework reinforcing with nuts and lock washers in such a manner as to assure a stable, sway-free structure.
d. If required by width, provide 1-1/2"x1-1/2"x1/8" stainless steel angle bracing mounted to underside, full length.
e. Cantilevered shelves, when called for, shall be #16 gauge stainless steel supported on #14 gauge stainless steel brackets welded to 1-5/8" O.D. stainless steel tubular standards extending through the backsplash, and fully welded to the table framework. Provide Klein #481-SH welded sleeves where standards penetrate backsplash.

11. Wall Shelves:

a. Open wall shelves shall be constructed of #16 gauge stainless steel with back and ends turned up 2", positioned 2" out from face of wall, with all corners welded, and supported on #14 gauge stainless steel brackets.
b. Brackets shall be flanged inward beneath the shelf and at the wall 1-1/2" with intersecting flanges completely welded, and attached to shelf with studs welded to the underside and bolted with stainless steel lock washers and chrome-plated cap nuts.
c. Each bracket shall be fastened to the wall with a minimum of two (2) 1/4"-20 stainless steel bolts anchored securely by means of toggles or expansion shields.

12. Sinks:

    a. All sinks shall be the size and shape as shown on drawings, and constructed of #14 gauge stainless steel with backs, bottoms and fronts formed of one continuous sheet and the ends welded in place.
    b. Sinks shall have all corners, both vertical and horizontal, coved on a 3/4" radius electrically welded, ground smooth and polished. Solder in filleted corners will not be acceptable.
    c. Multiple compartment sinks shall be divided with double wall, #14 gauge stainless steel partitions with a 1/2" radius on top and all corners rounded as other corners, continuously welded, ground smooth and polished.
    d. The bottom of each compartment shall be creased to a die stamped recess, tapered and shaped to receive a lever type waste without the use of solder, rivets, or welding.
    e. Provide #14 gauge stainless steel waste lever angle bracket mounted to underside of compartment at front.
    f. The front and exposed ends of sinks shall be fabricated with a 1-1/2", 180° rolled edge. The back and ends adjacent to walls or other fixtures shall be turned up with integral coved edge 12" high and returned 2-1/2" at the top on a 45° angle. Cap ends of all exposed splashes.
    g. Unless otherwise specified, two (2) faucet holes on 8" centers shall be provided, located over the center line of partitions between compartments, 2-1/2" down from splash break.
    h. Gussets for legs shall be fully welded all around to #12 gauge stainless steel triangular plates fully welded to underside of sink.
    i. Sinks fabricated into working surfaces shall be constructed of the same material and in like manner to sinks specified above, except rolled edge and backsplash shall be omitted and the bowl shall be completely welded integral and flush with the working surface. Where basket type wastes are called for, they shall be fitted with removable seats.
    j. Where sink bowls are exposed, the exterior shall also be polished to a #4 finish.

13. Sink Drainboards:

    a. Drainboards shall be constructed of the same material as the sinks and shall be welded integral to same.
    b. The front portion of drainboards shall continue the 1-1/2", 180° rolled edge of sink bowls on a continuous and level horizontal plane.
    c. The surface of the drainboard shall pitch from 2-1/2" at the end furthest from the sink, to 3" at the bowl; or 1/8" per foot. In addition, the bottom surface shall be dished toward the center for complete drainage.
    d. The backsplash of the drainboard shall match the rear of the sink contour and shall be welded integral thereto, running parallel to the floor.
    e. Drainboards shall be reinforced on the underside with a framework of 1"x4"x1" stainless steel channel underbracing placed at each pair of legs, with exposed ends capped, and one (1) channel running lengthwise.
    f. Where disposer cones are fabricated into drainboards, additional 1"x4"x1" stainless steel channels shall be welded into the top framing, spanning the drainboard from front-to-back on both sides of the cone and located not more than 3" to either side.
    g. Disposer control panels or switches shall be supported beneath drainboards, when specified, by means of a #12 gauge stainless steel mounting bracket.

14. Dishtable Tops:

    a. Dishtables shall be constructed of #14 gauge stainless steel with all corners, both vertical and horizontal, coved on a 3/4" radius electrically welded, ground smooth and polished. Solder in filleted corners will not be acceptable.
    b. Fronts and exposed ends shall be fabricated with a 3" high, 1-1/2", 180° rolled edge with rounded corners. The back and ends adjacent to walls or other fixtures shall be turned up with integral coved edge 12" high and returned 2-1/2" at the top on a 45° angle. Cap ends of all exposed splashes.
    c. All tops shall slope 1/8" per foot (minimum).
    d. Dishtables shall be reinforced on the underside with a framework of 1"x4"x1" stainless steel channel underbracing placed at each pair of legs, with exposed ends capped, and one (1) channel running lengthwise fully welded between front-to-back channels.
    e. Where tops fit into dishmachines, they shall turn down and into, forming a sealed watertight fit, and attached according to dishmachine manufacturers instructions.
    f. On each side of dishmachine, tables shall be provided with integral splash shields as part of the backsplash.
    g. Silicon filling of gaps caused by poor fit will not be acceptable.
    h. On corner-type door machines, provide #14 gauge stainless steel wall-mounted, splash panel to protect adjacent wall, full width of door opening.

15. Cafeteria Style Counters:

    a. All counters shall be constructed as previously specified under Enclosed Bases.
    b. Provide top and bottom framing for each counter food pan, cold pan, coffee urn, ice cream unit, ice bin, dish dispenser, etc., whether a drop-in unit or a cutout for a portable unit.
    c. Where plate shelves occur, frame horizontally 8-1/2" back from counter edge or as design dictates, and at bottom of shelf at counteredge.
    d. The countertop shall be constructed of #14 gauge stainless steel, as previously specified, with all joints welded, ground and polished.
    e. Fronts and exposed ends shall be stainless steel, plastic laminate or other material as noted in the Item Specifications.
    f. All display glass shelving shall be 1/4" polished plate glass and fully trimmed with #18 gauge stainless steel formed channels. Top shelves shall be the same width as the shelf below. Shelves shall be supported on 5/8" square, #16 gauge stainless steel perimeter tubing fully welded to 1-1/4" square, #16 gauge stainless steel tubing uprights.
    g. Provide appropriate adjustable glass sneeze or breath guards trimmed in stainless steel along front, entire length, mounted in Klein 4465-A brackets.
    h. Protector shelf over hot food wells shall be #16 gauge stainless steel supported on 1-1/4" square, #16 gauge stainless steel tubing uprights, with 1/4" polished plate glass front and end panels trimmed in #18 gauge stainless steel channels. When specified for self-service, mount bottom edge of front panel 8" above countertop.
    i. All display and protector shelves shall be furnished with full-length fluorescent lights wired to on/off switch in counter apron, with lamps and protective shields. Conceal all wiring in tubular uprights.
    j. Refer to Item Specification for changes, as required.
    k. Counter shall be internally wired complete by the K.E.C., and in such a way as to meet the requirements of the Electrical Code of the job location.

2.4 EQUIPMENT

A. All items listed on the Contract Documents under the heading "Equipment Schedule" shall be furnished in strict accordance with the foregoing specifications and with the following detailed Itemized Specifications.

B. Manufacturer's names and model numbers are shown establishing quality, size, and finish required, representing the Owner's and Consultant's requirements and basis for bid. Equipment is listed hereinafter with same item numbers as shown on Contract Documents.

PART 3 - EXECUTION

3.1 INSPECTION

A. Before beginning the installation of foodservice equipment, the spaces and existing conditions shall be examined by the K.E.C. and any deficiencies, discrepancies, or unsatisfactory conditions for proper installation of foodservice equipment shall be reported to the Architect in writing.

1. Do not proceed with installation until unsatisfactory conditions have been corrected in a manner satisfactory to the installer.
2. Beginning installation shall constitute acceptance of the area.

3.2 PREPARATION

A. Foodservice equipment drawings are diagrammatic and intended to show layout, arrangement, mechanical and electrical requirements.

B. Field verify all measurements at the building prior to fabrication of custom equipment. Coordinate measurements and dimensions with rough-in and space requirements.

3.3 INSTALLATION

A. The K.E.C. shall coordinate his delivery schedule with the Contractor to ensure adequate openings in the building to receive the equipment.

B. Equipment shall be uncrated, fully assembled and set level in position for final connections. Parts shipped loose but required for connection shall be properly tagged and shall be accompanied by the necessary installation instructions.

C. Provide a competent, experienced foreman to supervise installation and final connections with other trades.

D. Remote Refrigeration Systems:

1. All refrigeration work where applicable to this contract shall be accomplished in an approved manner, using finest quality fittings, controls, valves, etc.

2. Refrigeration items shall be started up, tested, adjusted, and turned over to the Owner in first class condition and left running in accordance with the manufacturer's instructions.
3. Refrigeration lines and hook-ups shall be completed by the K.E.C. with the exception of electric, water, and drain line final connections unless otherwise specified.
4. All copper tubing shall be refrigerant grade A.C.R. or type "L".
5. Silver solder and/or Sole-Phase shall be used for all refrigerant piping. Soft solder is not acceptable.
6. All refrigerant lines in pipe sleeves or conduit shall be effectively caulked at ends to prevent entrance of water or vermin and at penetrations through walls or floors.
7. All tubing shall be securely anchored with clamps, and suspended lines shall be supported with adjustable hangers at 6'-0" o.c. maximum.
8. Wrap drain line in freezer compartment(s) with approved heat-tape for final connection by Electrical Contractor.

E. Sealing and Caulking:

1. Prior to the application of sealant, all surfaces shall be thoroughly cleaned and degreased.
2. Apply around each unit of permanent installation at all intersections with walls, floors, curbs or other permanent items of equipment.
3. Joints shall be air-tight, water-tight, vermin-proof, and sanitary for cleaning purposes.
4. In general, joints shall be not less than 1/8" wide, with backer rod to shape sealant bead properly at 1/4" depth. Shape exposed surfaces of sealant slightly concave, with edges flush with faces of materials at joint.
5. At internal corner joints, apply sealant or gaskets to form a sanitary cove, of not less than 3/8" radius.
6. Provide sealant-filled joints up to 3/4" in joint width. Trim strips for wider joints shall be set in a bed of sealant and attached with stainless steel fasteners, 48" o.c., or less, to insure suitable fastening and prevent buckling of the metals fastened.

F. Cutting:

1. All cutting, fitting, or patching required during installation shall be accomplished by the K.E.C., at his own expense, so as to make the work conform to the plans and specifications.
2. The K.E.C. shall not cut or otherwise alter, except with the consent of the Owner, the work of any other Contractor.
3. Provide cut-outs in foodservice equipment where required to run plumbing, electric, or steam lines through equipment items for final connections.

3.4 FIELD QUALITY CONTROL

A. Inspection:

1. Provide access to shop fabrication areas during normal working hours to facilitate inspection of the equipment, during construction, by the Architect or his authorized representative.
2. Errors found during these inspections shall be corrected to the extent required within the scope of the plans, specifications, and approved drawings.

B. Start-Up and Testing:

1. Delay start-up of foodservice equipment until service lines have been tested, balanced, and adjusted for pressure, voltage, and similar considerations; and until water and steam lines have been cleaned and treated for sanitation.
2. Before testing, lubricate each equipment item in accordance with manufacturer's recommendations.
3. Supply a trained person or persons who shall start up all equipment, test and make adjustments as necessary, resulting in each item of equipment, including controls and safety devices, performing in accordance with the manufacturer's specifications.
4. All gas-fired equipment shall be checked by the local gas company as to calibration, air adjustments, etc., and adjustments made as required.
5. Repair or replace any equipment found to be defective in its operation, including items which are below capacity or operating with excessive noise or vibration.

C. Demonstration:

1. Provide an operating demonstration of all equipment at a time of Owner's convenience, to be held in the presence of authorized representatives of the Architect and Owner.
2. Demonstration shall be performed by manufacturer's representative knowledgeable in all aspects of his equipment.
3. During the demonstration, instruct the Owner's operating personnel in the proper operation and maintenance of the equipment.
4. Furnish complete, bound, operation/maintenance manuals and certificates of warranty for all items of equipment provided, in accordance with Article 1.5 Submittals, Paragraph F, at this demonstration time.

3.5 ADJUST AND CLEAN

A. Upon completion of installation and tests, clean and sanitize foodservice equipment, and leave in condition ready for use in food service.

B. Remove all protective coverings, and thoroughly clean equipment both internally and externally.

C. Make and check final adjustments required for proper operation of the equipment.

D. Restore finishes marred during installation to remove abrasions, dents, and other damages. Polish stainless steel surfaces, and touch-up painted surfaces with original paint.

E. Clean up all refuse, rubbish, scrap materials, and debris caused by the work of this Section, and put the site in a neat, orderly, and broom-clean condition.

(END OF FOODSERVICE GENERAL CONDITIONS)

ITEM #1: REACH-IN REFRIGERATOR/FREEZER, MOBILE

QUANTITY:	One (1)
MANUFACTURER:	Continental Refrigerator
MODEL NO.:	DL2RFS-SA (N058)
PERTINENT DATA:	Two-Section, Self-Contained, Stainless Steel Exterior/Aluminum Interior, Shallow Depth
UTILITIES REQ'D:	6.9A, 120V, 1PH (Refrigerator)/7.6A, 120V, 1PH (Freezer)
ALTERNATE MFRS.:	Beverage-Air

Furnish and set-in-place per Equipment Plan, Sheet CS-1; Manufacturer's Instructions and the following:

1. Full-height solid doors hinged per Equipment Plan.

2. Cylinder door locks keyed-alike.

3. Standard vinyl coated wire shelves; six (6) per section, twelve (12) total.

4. Exterior mounted digital thermometer.

5. Set of four (4) heavy-duty, 5" diameter polyurethane swivel-type locking casters with brakes.

6. Cord and plug set.

ITEM #2: THREE-COMPARTMENT SINK

QUANTITY:	One (1)
MANUFACTURER:	Eagle Group
MODEL NO.:	FN2048-3-24-14/3-FDOT-MOD (N058)
PERTINENT DATA:	7'-6" Long x 2'-6" Wide x 2'-10" High, Spec-Master FN Series, #14 GA Stainless Steel Top
UTILITIES REQ'D:	(2) 3/4" HW, (2) 3/4" CW, (3) 2" IW
ALTERNATE MFRS.:	Select Stainless

Fabricate and set-in-place per Equipment Plan, Sheet CS-1; Manufacturer's Shop Drawings and the following:

1. Kit “E” consisting of:
   -- Two (2) T&S #313293 splash-mounted faucets.
   -- Three (3) twist handle drains with rear-connected over-flows and stainless steel twist handle brackets welded to underside of sink.

2. Accessories:
   -- 13" high stainless steel back and right end splash with 1" turn-down.
   -- One (1) #E41A disposal provision package consisting of weldment of cone & control panel bracket, holes for pre-rinse & vacuum breaker.
   -- One (1) T&S #B-0133 backsplash-mounted pre-rinse spray with built-in back flow preventer and #B-109 wall bracket.
   -- Sound-deaden underside of sinks and drainboards with NSF-approved sound dampening material.

ITEM #2: (Continued)

3. Attach backsplash to wall with factory-supplied z-clips.

4. Item will remain shrink-wrapped until ready for final connection by Plumbing Contractor. Immediately following completion of final connections, K.E.C. shall re-shrink-wrap tubs or provide removable panel to avoid use by construction trades. Post sign on wall above sink tubs in English and Spanish stating: WARNING! NOT TO BE USED BY CONSTRUCTION TRADES. FAILURE TO COMPLY WILL RESULT IN $500.00 FINE AND ALL COSTS TO REPLACE ITEM WITH NEW.

ITEM #2A: DISPOSER

QUANTITY: One (1)
MANUFACTURER: In-Sink-Erator
MODEL NO.: SS-100-12C-AS101 (N058)
PERTINENT DATA: 12" Diameter Cone Assembly
UTILITIES REQ'D: 1.0 HP, 208V, 1PH; 1/2" CW, 1-1/2" W
ALTERNATE MFRS.: Salvajor

Furnish and install per Equipment Plan, Sheet CS-1; Manufacturer's Instructions and the following:

1. #AS-101 Aqua saver control mounted on 14 GA stainless steel bracket.

2. Weld cone to underside of right-hand drainboard, Item #2.

3. Accessories:
   -- One (1) T&S Model #B-455 vacuum breaker in lieu of standard unit.

ITEM #3: GREASE INTERCEPTOR -- (N.I.K.E.C. - SPECIFIED BY PLUMBING)

QUANTITY: One (1)

ITEM #4: HAND SINK

QUANTITY: One (1)
MANUFACTURER: Eagle Foodservice Equipment Company
MODEL NO.: HSA-10-FAW-LRS (N058)
PERTINENT DATA: Wall Mounted, Wrist Action Faucet
UTILITIES REQ'D: 1/2" HW, 1/2" CW, 1-1/2" W
ALTERNATE MFRS.: Advance/Tabco; Universal

Furnish and set-in-place per Equipment Plan, Sheet CS-1; Manufacturer's Instructions and the following:

1. Complete sink assembly consisting of: gooseneck faucet, p-trap, tailpiece and basket drain.

ITEM #4: (Continued)

2. Accessories:
   -- #606215 skirt assembly.
   -- Integral right and left stainless steel splash shield.

ITEM #5: SOAP & TOWEL DISPENSER

QUANTITY: One (1)
MANUFACTURER: Bobrick Washroom Equipment, Inc.
MODEL NO.: B-5050/B-262 (N058)
PERTINENT DATA: Surface Wall Mounted, Stainless Steel Finish (400) C-Fold Capacity
UTILITIES REQ'D: ----
ALTERNATE MFRS.: None

Furnish and set-in-place per Equipment Plan, Sheet CS-1; Manufacturer's Instructions and the following:

1. Mount units above hand sink and seal perimeter to wall.

ITEM #6: WORKTABLE

QUANTITY: One (1)
MANUFACTURER: Eagle Group
MODEL NO.: T3072SE-BS (N058)
PERTINENT DATA: 6'-0" Long x 2'-6" Wide x 3'-0" High, Spec-Master Series, 14GA Type 304 Stainless Steel Top, With Undershelf and Backsplash
UTILITIES REQ'D: ----
ALTERNATE MFRS.: Select Stainless

Fabricate and set-in-place per Equipment Plan, Sheet CS-1; Manufacturer's Shop Drawing and the following:

1. Accessories:
   -- One (1) #502946 NSF drawer assembly with lock.
   -- Sound-deaden underside of tabletop with NSF-approved sound dampening material.

ITEM #7: SPARE NUMBER

ITEM #8: SPARE NUMBER

ITEM #9: REFRIGERATED MERCHANDISER, MOBILE

QUANTITY: One (1)
MANUFACTURER: True Food Service Equipment, Inc.
MODEL NO.: GDM-41SL-LD (N058)
PERTINENT DATA: Two-Section, Self-Contained, With Glass Sliding Doors & LED Lights
UTILITIES REQ'D: 8.2A, 120V, 1PH
ALTERNATE MFRS.: Beverage-Air

Furnish and set-in-place per Equipment Plan, Sheet CS-1; Manufacturer's Instructions and the following:

1. Cylinder door locks, keyed-alike.

2. Set of four (4) heavy-duty, 5" diameter polyurethane swivel-type locking casters with brakes.

3. Cord and plug set.

ITEM #10: FRYER, MOBILE

QUANTITY: One (1)
MANUFACTURER: Frymaster Corporation
MODEL NO.: RE14 (N058)
PERTINENT DATA: High Efficiency, 50-Pound Capacity, Full Pot
UTILITIES REQ'D: 1.0A, 120V, 1PH (Controls); 39.0A, 208V, 3PH
ALTERNATE MFR.: Pitco

Furnish and set-in-place per Equipment Plan, Sheet CS-1; Manufacturer's Instructions and the following:

1. Stainless steel pot, door, and cabinet sides.

2. Accessories:
   -- One (1) #8063068 full-pot cover.
   -- One (1) #8030113 full-pot sediment tray.
   -- One (1) #8030271 twin-size basket.
   -- Heavy-duty 5" diameter swivel casters, front (2) with brakes.

3. Cord and plug set.

ITEM #11: GRIDDLE, MOBILE

QUANTITY: One (1)
MANUFACTURER: Garland
MODEL NO.: ED-24G (N058)
PERTINENT DATA: Thermostatic Controls, Medium-Duty, Counter Model, 1/2" Griddle Plate
UTILITIES REQ'D: 33.0A, 208V, 1PH
ALTERNATE MFRS.: None

ITEM #11: (Continued)

Furnish and set-in-place per Equipment Plan, Sheet CS-1; Manufacturer's Instructions and the following:

1. Accessories:
   -- Stainless steel back and bottom.
   -- One (1) #SS-CSD-24 stainless steel stand with undershelf and swivel casters with front brakes.

2. Cord and plug set.

ITEM #12: VENTILATOR

QUANTITY:	One (1)
MANUFACTURER:	Captive-Aire Systems, Inc.
MODEL NO.:	5430-ND2 (N058)
PERTINENT DATA:	Wall Mounted, Captrate Solo Filter, With Fire Protection System
UTILITIES REQ'D:	1,200 CFM Exhaust; 350W, 120V, 1PH (Lights); 20A, 120V, 1PH, 24-Hour Dedicated Service (Fire Protection System)
ALTERNATE MFRS.:	Avtec; Gaylord

Furnish and install per Equipment Plan, Sheet CS-1; Ventilator Detail Drawing, Sheet CS-5; Manufacturer's Instructions and the following:

1. 4'-6" Wide x 6'-0" Long x 2'-6" High with bottom edge mounted at 6'-8" A.F.F. Length comprised of one (1) 6'-0" section. Entire unit constructed of 18 GA stainless steel with liquid tight all welded external continuous seams and joints per N.F.P.A. 96, U.L. and District of Columbia Codes.

2. One (1) U.L. Listed, NSF-Approved, 48" long twin-tube recessed LED light fixture. Bulbs furnished and installed by K.E.C.

3. Matching stainless steel perimeter closure panels to finished ceiling by K.E.C; verify ceiling height.

4. Surface fire protection system nozzles and piping to be factory installed, chrome plated or stainless steel where exposed, ready for final connections by fire protection system sub-contractor.

5. Hanger rods and support system from structure above by General Contractor. K.E.C. to coordinate method and location with other trades.

6. Stainless steel hanger brackets.

7. Semi-concealed internal sloped grease trough with removable s/s cup at each end.

8. U.L. Classified stainless steel 20" captrate solo filters with hook.

9. 3" integral stand-off @ rear end for semi-combustible compliance.

10. Factory System Design Verification (SDV) shall be performed after all inspections are complete. SDV report shall be available once completed.

ITEM #12: (Continued)

11. Accessories:
    -- #18GA stainless steel wall flashing from bottom edge of hood to top of finish floor base. Extend full-length of hood body. Attach to wall with non-exposed fasteners.
    -- 12" wide utility cabinet mounted on right end with factory pre-piped Ansul R-102 fire suppression system and electrical pre-wire package #SC-010110FP with light and fan switches.
    -- One (1) Ansul Model #K01-2 hand-held fire extinguisher, 1.6 gallon, wall-mounted.

ITEM #13: FRY WARMING STATION

QUANTITY: One (1)
MANUFACTURER: Hatco Corporation
MODEL NO.: GRFFB (N058)
PERTINENT DATA: Countertop, Top & Bottom Heat, With Thermo Controlled Base
UTILITIES REQ'D: 6.3A, 120V, 1PH
ALTERNATE MFRS.: None

Furnish and set-in-place per Equipment Plan, Sheet CS-1; Manufacturer's Instructions and the following:

1. Accessories:
    -- One (1) #ST PAN 2 food pan and #TRIVET SS wire trivet.

2. Cord and plug set.

ITEM #14: HOT DOG GRILL

QUANTITY: One (1)
MANUFACTURER: Star Manufacturing International, Inc.
MODEL NO.: 20C (N058)
PERTINENT DATA: (20) Hot Dogs Capacity, Roller-Type
UTILITIES REQ'D: 7.8A, 120V, 1PH
ALTERNATE MFRS.: None

Furnish and set-in-place per Equipment Plan, Sheet CS-1; Manufacturer's Instructions and the following:

1. Accessories:
    -- One (1) #RGLK leg kit.
    -- One (1) #20SG-1D sneeze guard.

2. Cord and plug set.

ITEM #15: WORKCOUNTER

QUANTITY: One (1)
MANUFACTURER: Eagle Foodservice Equipment, Inc.
MODEL NO.: Custom Spec-Master, Open Base with Backsplash, #14 GA S/S Top (N058)
PERTINENT DATA: 10'-0" Long x 3'-0" Wide x 3'-0" High
UTILITIES REQ'D: ----
ALTERNATE MFRS.: Select Stainless

Fabricate and set-in-place per Equipment Plan, Sheet CS-1; Manufacturer's Shop Drawing and the following:

1. Accessories:
   -- 6" high stainless steel legs with adjustable bullet feet.
   -- 6" high stainless steel back and right end splash.
   -- Cut-outs in top with grommet for power cord access to receptacle in floor.
   -- Sound-deaden underside of countertop with NSF-approved sound dampening material.

2. Attach backsplash to wall with factory-supplied z-clips.

ITEM #16: SPARE NUMBER

ITEM #17: HEATED DISPLAY MERCHANDISER

QUANTITY: One (1)
MANUFACTURER: Hatco Corporation
MODEL NO.: MDW-1X (N058)
PERTINENT DATA: Countertop, 1-Door, Thermostat Control, With (3) Adjustable Shelves
UTILITIES REQ'D: 3.9A, 120V, 1PH
ALTERNATE MFRS.: None

Furnish and set-in-place per Equipment Plan, Sheet CS-1; Manufacturer's Instructions and the following:

1. Accessories:
   -- Black designer color inset panels.
   -- One (1) #MDW-TRAY 12.38"x12.38" aluminum tray.

2. Cord and plug set.

ITEM #18: UNDERCOUNTER FREEZER, MOBILE

QUANTITY: One (1)
MANUFACTURER: Continental Refrigerator
MODEL NO.: UCF27-GD (N058)
PERTINENT DATA: Single Section, Self-Contained, Front-Breathing; 7.4 Cu. Ft. Capacity
UTILITIES REQ'D: 6.9A, 120V, 1PH
ALTERNATE MFRS.: Beverage-Air #UCR-27SD

ITEM #18: (Continued)

Furnish and set-in-place per Equipment Plan, Sheet CS-1; Manufacturer's Instructions and the following:

1. Accessories:
   -- Cylinder door lock.
   -- 3" diameter swivel casters.
   -- Solid door in lieu of glass door.

2. Cord and plug set.

ITEM #19: SPARE NUMBER

ITEM #20: SPARE NUMBER

ITEM #21: CASH REGISTER - - (N.I.C. - FURNISHED BY OWNER)

QUANTITY: One (1)

ITEM #22: BOTTLE COOLER, MOBILE

QUANTITY: One (1)
MANUFACTURER: Krowne Metal Corporation
MODEL NO.: MB-1830 (N058)
PERTINENT DATA: Insulated, 30" Long x 18-1/2" Wide x 30" High, 12" Deep Bin, Stainless Steel Construction, With Casters
UTILITIES REQ'D: 1" IW
ALTERNATE MFRS.: Glastender

Furnish and set-in-place per Equipment Plan, Sheet CS-1; Manufacturer's Instructions and the following:

1. Accessories:
   -- #MB-SC stainless steel sliding cover.

ITEM #23: FLY FAN

QUANTITY: One (1)
MANUFACTURER: Mars Air Doors
MODEL NO.: N242-1UA (N058)
PERTINENT DATA: 42" Long, Wall-Mounted
UTILITIES REQ'D: 1/2HP, 120V, 1PH
ALTERNATE MFRS.: Berner

Furnish and install per Equipment Plan, Sheet CS-1; Manufacturer's Instructions and the following:

ITEM #23: (Continued)

1. Accessories:
   -- Plunger-type micro-switch.

2. Attach to wall with expansion bolts centered over door opening.

END OF SECTION 11 4000

SECTION 01 10 00 - SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Project information.
2. Work covered by Contract Documents.
3. Type of Contract.
4. Phased construction.
5. Work by District of Columbia Government (District).
6. Work under separate contracts.
7. Purchase contracts.
8. District-furnished products.
9. Contractor-furnished, District-installed products.
10. Access to site.
11. Coordination with occupants.
12. Work restrictions.
13. Specification and drawing conventions.
14. Miscellaneous provisions.

1.3 DEFINITIONS

A. District and District Representatives: Refer to General Conditions of Contract for Construction for District’s administration of construction contract.

B. COTR is Contracting Officer's Technical Representative, and where context requires, term "COTR" means "District." The COTR is responsible for technical aspects of project and technical liaison with Contractor as well as final inspection and acceptance as specified in Contract. The COTR is not authorized to make any commitments or otherwise obligate District or authorize any changes which affect contract price, terms, or conditions.

1. District may appoint other entities to manage day-to-day activities for the execution of the Project.
2. Where term "Architect" or "Engineer" is used in Contract Documents, it shall be construed to mean "COTR."
3. Where term "Construction Manager" or "CM" is used in Contract Documents, it shall be construed to mean "COTR."

1.4 PROJECT IDENTIFICATION

A. Project Identification: Banneker Pool Concession Stand

1. Project Number:

2. Project Location: 2500 Georgia Ave, NW, Washington DC

3. Ward: Ward 1

B. Owner: District of Columbia Department of General Services (DGS), at the following location:

1. The Reeves Center, 2000 14th Street, NW, Suite 800, Washington, DC 20009.

C. Architect: Quinn Evans Architects, 2121 Ward Place, NW, 4th Flr, Washington DC 20037

1. Architect's Consultants: The Architect has retained the following design professionals who have prepared designated portions of the Contract Documents:

a. Mechanical Electrical: JVP 5101 Wisconsin Ave NW, Washington DC 20016
b. Kitchen: Nyikos Assoc, 18219A Flower Hill Way, Gaithersburg, MD 20879

D. Construction Manager: <**Insert name and contact information for Construction Manager**>.

1. Construction Manager has been engaged for this Project to serve as an extension to the COTR role, to advise the District, and to provide assistance in administering the Contract including, but not limited to, field quality control administration.

E. Electronic Project Management (ePM) System: An Electronic Project Management system administered by [**Architect**] [**District**] [**Construction Manager**] [**Contractor**] will be used for purposes of managing communication and documents during the construction stage.

1. See Section 013100 "Project Management and Coordination." for requirements for [**establishing**] [**administering**] [**and**] using the ePM.

1.5 WORK COVERED BY CONTRACT DOCUMENTS

A. The Work of Project is defined by the Contract Documents and consists of the following:

1. Convert the locker room (old pump room) into a concession stand fitted out with a commercial kitchen appliances such as refrigerators, sinks, griddle and fryers and a hood with an exhaust through the roof. The space will be conditioned for use between April and October. There will be work on the pool deck to pull power from the main building. Two concession windows with awnings will be constructed at the north door and west wall to function as pass-throughs. The space will be conditioned(at times minimally) throughout the year. Four historic windows shall be restored.

1.6 TYPE OF CONTRACT

A. Project will be constructed under a single prime contract.

1.7 EXISTING CONDITIONS

A. Contractor: Responsible to determine existing conditions on Project site by examination, whether shown on Drawings or not.

B. In addition to demolition which is specified in other Sections and that which may be specifically shown on Drawings, cut, move or remove items as necessary to allow Work to proceed. Provide such items as:

1. Repair or removal of unsafe or unsanitary conditions.
2. Removal of abandoned items and items serving no useful purpose, such as abandoned piping, conduit, wiring and electrical devices.
3. Removal of unsuitable or extraneous materials such as abandoned furnishings and equipment, and debris such as rotten wood, rusted metals and deteriorated concrete.

4. Cleaning of surfaces and removal of surface finishes as needed to install new work and finishes.

1.8 WORK BY DISTRICT

A. General: Cooperate fully with District so work may be carried out smoothly, without interfering with or delaying work under this Contract or work by District. Coordinate the Work of this Contract with work performed by District.

B. Concurrent Work: District anticipates it will perform the following construction operations at Project site. Those operations will be conducted simultaneously with work under this Contract.

1. None known at this time.

1.9 WORK UNDER OTHER CONTRACTS

A. Provide items shown in Contract Documents unless specifically shown in Contract Documents as excluded from Work.

B. General: Cooperate fully with separate contractors so work on those contracts may be carried out smoothly, without interfering with or delaying work under this Contract. Coordinate the Work of this Contract with work performed under separate contracts.

C. Concurrent Work: District may award separate contract(s) for the following construction operations at Project site. Those operations will be conducted simultaneously with work under this Contract.

1. None known

1.10 ACCESS TO SITE

A. General: Contractor shall have full use of site for construction operations during construction period. Contractor's use of site is limited only by District's right to perform work or to retain other contractors on portions of Project.

1. Contractor Parking: Vehicle parking for Contractor and construction personnel shall be the responsibility of the Contractor.

B. Use of Site: Limit use of site to areas within the Contract limits indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated. Site has very limited lay down area.

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

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

C. Access to the Project. Contractor shall comply with the following:

1. The area available to the contractor for performance of the Work is shown on the Drawings. If the District or the Occupant continues to occupy portions of the Project during construction, Contractor shall schedule and conduct the Work so as to cause the least interference with the operations of the District or Occupants.
2. When the following must be interrupted, provide alternate facilities acceptable to the COTR or schedule the interruption for a time when occupancy will not be impaired:

a. Emergency means of egress.
b. Utilities and building systems which must remain in operation to allow safe and useful occupancy.

1.11 DISTRICT'S OCCUPANCY REQUIREMENTS

A. District Occupancy of Completed Areas of Construction: District reserves the right to occupy and to place and install equipment in completed areas of building, before Final Completion, provided such occupancy does not interfere with completion of the Work. Such placement of equipment and partial occupancy shall not constitute acceptance of the total Work.

1. Upon completion of the Work and written request from the Contractor, COTR will prepare a Certificate of Substantial Completion for each specific portion of the Work to be occupied before District occupancy.
2. Certificate of Occupancy from authorities having jurisdiction shall be obtained by Contractor before District occupancy.
3. Before partial occupancy, required inspections, commissioning and employee training for the fire alarm and sprinkler systems, mechanical systems, and electrical systems shall be

fully operational. Upon occupancy, District will operate and maintain mechanical and electrical systems serving occupied portions of building.

4. Upon occupancy, District will assume responsibility for maintenance and custodial service for occupied portions of building.
5. Partial Acceptance: For the purpose of installation of Data Rooms, FF&E, and Security, Partial Acceptance of the areas may be granted by the COTR to allow contracted installers access to perform their work.

1.12 WORK RESTRICTIONS

A. On-Site Work Hours: Work shall be generally performed during normal business work hours of 7:00 a.m. to 7:00 p.m., Monday through Friday, except otherwise allowed by District and authorities having jurisdiction (AHJ).

B. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by District or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:

1. Notify District not less than two (2) work days in advance of proposed utility interruptions.
2. Do not proceed with utility interruptions without District's written permission.

C. Noise, Vibration, and Odors: Coordinate with the COTR operations that may result in high levels of noise and vibration, odors, or other disruption to District occupancy.

1. Notify Construction Manager not less than work days in advance of proposed disruptive operations.
2. Obtain Construction Manager's written permission before proceeding with disruptive operations.
3. Obtain required approvals from authorities having jurisdiction.

D. Nonsmoking Building: Smoking is not permitted within the building or within 25 feet of entrances, operable windows, or outdoor-air intakes.

E. Controlled Substances: Use of tobacco products and other controlled substances on Project site is not permitted.

F. No eating or drinking is allowed in the building at any phase during Construction.

G. Employee Identification: If required by the Contract, Contractor shall provide identification badges for Contractor personnel working on Project site. Require personnel to use identification tags at all times.

1.13 PERMITS AND RESPONSIBILITIES

A. Permits: The Contractor shall, without additional expense to the District, be responsible for obtaining any necessary licenses, fees, inspections, and permits, other than the building permit, and for complying with any federal, and municipal laws, codes, and regulations applicable to the performance of the work. The Contractor shall also be responsible for all damages to

persons or property that occur as a result of the Contractor's fault or negligence, and shall take proper safety and health precautions to protect the work, the workers, the public, and the property of others. The Contractor shall also be responsible for all materials delivered and work performed until completion and acceptance of the entire work, except for any completed unit of work which may have been accepted under the contract.

B. The Contractor shall not load or permit any part of the construction or site to be loaded so as to endanger its safety.

C. When required for the safety of the Work or adjoining structures, the Contractor shall shore up, brace, underpin and protect foundations and other portions of existing structures which are in any way affected by the Work. The Contractor, before commencement of any part of the Work, shall give any notice to the District.

1.14 SPECIFICATION FORMATS AND CONVENTIONS

A. Specification Format: The Specifications are organized into Divisions and Sections using the 50-division format and CSI/CSC's "MasterFormat" numbering system.

1. Section Identification: The Specifications use Section numbers and titles to help cross-referencing in the Contract Documents. Sections in the Project Manual are in numeric sequence; however, the sequence is incomplete because all available Section numbers are not used. Consult the table of contents at the beginning of the Project Manual to determine numbers and names of Sections in the Contract Documents.
2. Division 01: Sections in Division 01 govern the execution of the Work of all Sections in the Specifications.

B. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

1. Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be inferred as the sense requires. Singular words shall be interpreted as plural, and plural words shall be interpreted as singular where applicable as the context of the Contract Documents indicates.
2. Imperative mood and streamlined language are generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by Contractor. Occasionally, the indicative or subjunctive mood may be used in the Section Text for clarity to describe responsibilities that must be fulfilled indirectly by Contractor or by others when so noted.

    a. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.

C. Where performance type specifications are used within Specifications or where pre-engineered or Contractor designed systems, elements, equipment or components are called for, District shall have right to rely on Contractor's design. Approval by District of Contractor's Design Submittals shall be limited to acknowledgment that design was prepared with intent of meeting specified performance criteria, but neither District's review or approval shall constitute review

of design itself, of designer's calculations, or of effectiveness of design in actually satisfying specified criteria.

D. Work under this Contract may be specified by combination of descriptive, performance, reference standard and name brand specifications. Where Specifications define characteristics of Contractor designed systems, items or components, Contractor responsible to design, engineer, manufacture, and install systems, items and components to meet specified functional requirements, performance requirements, quality standards, durability standards, and conditions of use as well as all applicable codes, regulations and referenced trade or industry standards. Contractor: Perform such design by employing engineers licensed by pertinent jurisdiction and require engineers to seal and sign designs necessary to perform Work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 10 00

SECTION 01 31 00 - PROJECT MANAGEMENT AND COORDINATION

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SECTION INCLUDES

A. Administrative and supervisory requirements necessary for coordinating construction operations including, but not limited to:

1. Electronic Project Management (ePM) system.
2. General project coordination procedures.
3. Pre Installation Conferences.
4. Progress Meetings.
5. Required Reporting.
6. Closeout Conference.
7. Coordination Meetings.
8. Administrative and supervisory personnel qualifications.
9. Request for Interpretation / Information (RFI).
10. Phasing Plan.

1.3 SUBMITTALS

A. The following documents shall be submitted, discussed, issued, and tracked using the Contract Project Management Software through the ePM system to keep traditional paper-based modifications to minimum:

1. Minor Changes in Work.
2. Requests for Proposals (RFP).
3. Change Order Requests.
4. Change Orders.
5. Price Determined Later (PDL) Change Order, also known as Basic Change Directive (BCN), Construction Change Directive.

B. Qualifications: Provide qualifications of personnel identified in this Section under Quality Assurance Article.

C. Key Personnel: Provide names, addresses and qualifications of key personnel within 5 days after Award of Contract. Include name of individual who is designated to sign documents.

1. Contractor is restricted from changing personnel identified on this list without the approval of the COTR.

2. Changes in Contractor's officer authorized to sign documents shall be submitted immediately to the COTR.

1.4 QUALTY ASSURANCE

A. On-Site Superintendent: Shall have minimum 5 years experience on projects of similar size and scope as the Project.

B. ePM Administrator: Proficient user of project management software system used by Contractor or successfully completed a minimum of 1 project using the software system prior.

1.5 CONTRACT PROJECT MANAGEMENT SOFTWARE

A. District will implement procedure to provide Project communications on internet-based system. System used is Prolog® Manager software by Meridian Systems. District will provide one copy of licensed contract project management software. Contractor shall be responsible for additional license purchase.

B. Use internet-based Prolog® software system to facilitate contract administration communications. The list below indicates the documents that require use of the electronic communications. All correspondence requires a cover sheet.

1. Schedules.
2. Submittals (except samples)
3. RFI's
4. Requests for Payment
5. Change Order Directives
6. Meeting Minutes.
7. Daily reports.
8. Other correspondence and reports necessary as required by contract.

D. To alleviate redundancy and confusion, internet-based communications and submittals will be used exclusively by the District and Contractor, including CM and A/E when applicable. There shall not be a mix of hard-copy and electronic communications on the Project. Only hard-copy submittals requiring samples for initial selection or verification will be accepted by the COTR.

1.6 COORDINATION

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

1.7 COMMISSIONING

A. Selected Building Equipment and System shall be commissioned. Participate in commissioning process as defined in Section 01 91 13 "General Building Commissioning Requirements."

B. Commissioning Process shall be directed by Commissioning Authority; Contractor shall fully participate in the Commissioning Processing by committing resources and subcontractors. Provide services of qualified personnel to co-operate and coordinate with Commissioning Authority

1.8 ADMINISTRATIVE AND SUPERVISORY PERSONNEL

A. In addition to Project Manager and Project Superintendent, provide other administrative and supervisory personnel as required for proper performance of the Work.

1.9 PREINSTALLATION CONFERENCES

A. Conduct Pre-Installation Conference at Project Site before each construction activity that requires coordination with other construction. Invite COTR, Construction Manager, and Architect/Engineer of Record to participate in conferences.

B. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by installation, and its coordination or integration with other materials and installations that have preceded or will follow.

1. Contractor shall record significant discussions and agreements and disagreements of each conference, and approved schedule. Promptly distribute record of meeting to everyone concerned, including COTR using Contract Project Management software.

1.10 PROGRESS MEETINGS

A. Schedule District’s Progress Meetings at Project Site weekly to keep project on schedule, to review progress, and to solve or avert potential problems. Notify COTR of scheduled meeting dates.

1. Coordinate dates of meetings with preparation of Request for Payment application.

B. Attendees: In addition to representatives of COTR, subcontractors as appropriate, or others as requested by COTR with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings.

1. COTR, or designated person, will chair District’s progress meeting, record and update and maintain, and distribute the meeting minutes.

C. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

1. Contractor's Construction Schedule: Review progress since last meeting. Determine where each activity is in relation to Contractor's Construction Schedule, whether on time or ahead or behind schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to insure that current and subsequent activities will be completed within Contract Time.

2. Review present and future needs of each entity present, including, but not limited to, following:

   a. Interface requirements.
   b. Time.
   c. Sequences.
   d. Status of submittals.
   e. Deliveries.
   f. Off-site fabrication problems.
   g. Access.
   h. Site utilization.
   i. Temporary facilities and services.
   j. Hours of work.
   k. Safety - Hazards and risks.
   l. Housekeeping.
   m. Quality and work standards.
   n. Requests for Information.
   o. Change Orders.
   p. Documentation of information for payment requests.
   q. Detailed Construction Schedule.
   r. Three-Week Look-Ahead Schedule.

D. Reporting: Within reasonable time after each meeting, COTR, or designated person, will distribute minutes of meeting using Electronic Project Management (ePM) software, including brief summary in narrative form of progress since previous meeting and distribute to each party present and to parties who should have been present. When District elects to prepare minutes of meeting, any other purported minutes are void.

1.11 REPORTING REQUIREMENTS

A. Contractor shall be responsible for reporting to the District through the COTR all daily, weekly, and monthly reports in accordance with the Contract Documents, which may or may not be specified in other Sections. The list below may include, but may not be limited to, the required forms. Contractor shall review all Contract Documents to meet requirements for reporting. This Article does not include the regular submittals, certificates, schedules, bonds, and payment requisitions as specified in other Sections. All reports shall be submitted in editable electronic format.

DAILY REPORTS	WEEKLY REPORTS	MONTHLY REPORTS	OTHER REPORTING PERIODS
Daily Construction Reports (Refer to Section 01 32 00)	Weekly Statement of Compliance (Form No. DC 2640-11) Due: Within 7 days after payment date of payroll period.	Application for Payments (Refer to Section 01 29 00) and All Required Attachments	Apprentices and Trainees Employment Report (20 CFR 5.a.4(c) Send Initial Report + One Report Every 3 Months.
	Weekly Payroll Records showing compliance with 40 USC 276a-276a 7 (Davis-Bacon Act)	Material Location Reports (Refer to Section 01 32 00)	Field Correction Reports. As needed. (Refer to Section 01 32 00)

DAILY REPORTS	WEEKLY REPORTS	MONTHLY REPORTS	OTHER REPORTING PERIODS
	Weekly Statement of Compliance, required under the Copeland Regulations of the Secretary of Labor (29 CFR, Part 3)	Copy of First Source Agreement Contract Compliance Report (due not later than 10th of the month; original goes to DOES)	Site Utilization Plan (15 days after NTP): 1 time only. See Section 01 50 00 "Temporary Facilities & Controls."
		Monthly Progress Reports: Including: • Progress Narrative • Schedule Narratives • Cost Update • PCN/CO's • RFI's • Safety Narrative • Inspections by Third Parties • LEED Compliance • Progress Photographs • Start-up & Commissioning	
		Monthly CBE Compliance Report	
		Waste Reduction Report (See Section 01 74 19 "Construction Waste Management)	
		Quality Assurance Reports (See Section 01 79 90 "Quality Assurance Reporting")	
		Waste Reduction Report (See Section 01 74 19 "Construction Waste Management & Disposal."	

B. Some forms listed above may be specified in other Sections. Refer to other Sections for requirements.

C. Other forms as may be requested by the COTR and not specified in the Construction Documents.

1.13 CLOSEOUT CONFERENCE

A. Schedule Project Closeout conference with sufficient time to prepare for requesting Substantial Completion.

B. Attendees: Contractor shall invite COTR, subcontractors, installers, fabricators (as necessary).

C. Agenda: Contractor shall prepare agenda and include the following and items for discussion that are required by other Sections:

1. Start-up of facilities and systems.
2. Status of Building Commissioning.
3. Operations and maintenance manuals.
4. Testing, adjusting, and balancing.
5. System demonstration and observation.
6. Operation and maintenance instructions for the District's personnel.
7. Contractor's inspection of work.
8. District's inspection.
9. Inspections by authorities having jurisdiction.
10. Certificate of occupancy.
11. Closeout submittals, including Record Drawings, Record Submittals, BIM Reports.
12. Spare parts and maintenance materials.
13. Turnover of permanent lockset cores and keys.
14. Transfer of Utility accounts.
15. Final application for payment.
16. Final cleaning.
17. Contractor's Demobilization Plan.
18. Warranty Communication Procedure.
19. Status of LEED Application.

1.14 COORDINATION MEETINGS

A. Supplement progress meetings and pre-installation meetings with coordination meetings as required to ensure careful coordination of various activities involved.

B. Request representation at each meeting by every party currently involved in coordination or planning for construction activities involved.

C. Notify COTR of coordination meetings.

D. Record meeting results and distribute copies using Contract Project Management software to everyone in attendance and to others affected by decisions or actions resulting from each meeting.

1.15 REQUEST FOR INTERPRETATION / INFORMATION (RFI)

A. Where possible, request clarifications at next appropriate project meeting, with response entered into meeting minutes. Where clarification at meeting is not possible, either because of urgency of need or complexity of item, prepare and submit RFI.

B. Contractor shall submit to the COTR all RFI's from subcontractor or material supplier. Contractor shall review and sign each RFI prior to submittal.

1. RFI from subcontractor or material supplier submitted directly to the COTR will be returned unanswered.

C. Do not submit RFI for following:

1. To request approval of submittals. Comply with Section 01 33 00 "Submittal Procedures."
2. To request approval of substitutions. Comply with Section 01 60 00 "Product Requirements."
3. To request coordination of various materials and systems indicated on Contract Documents with field conditions and with each other. Comply with Section 01 31 00 "Project Management and Coordination."
4. To provide information required by Record Documents specified in Section 01 78 39 "Project Record Documents."
5. To request changes which are known to entail additional cost or credit. Comply with Section 01 26 00, "Contract Modification Procedure."

D. If Contractor believes response to RFI results in change in Contract Sum, Contract Time, or both, comply with Section 01 26 00, "Contract Modification Procedure."

E. Submit, track and respond to RFI's using Electronic Project Management (ePM) system to keep traditional paper-based RFIs to minimum.

1. Cooperate and use his best efforts to implement the internet-based RFI procedure.
2. Ensure that all RFI data is ultimately captured on internet-based system.

F. Number RFIs sequentially using only next sequential number; include date submitted.

1. Renumber RFIs if directed by COTR.
2. Include RFI numbers on all attachments.
3. Identify Drawing, detail and Specification Section.
4. Identify supportable time response information is required to avoid impact on Construction Schedule and Cost.

G. Contractor should attempt to include proposed written and graphic solutions. Include a recommended solution as applicable.

H. Improper or Frivolous RFI: Will be returned unanswered.

I. Maintain current and accurate Request for Information Log as follows:

1. Maintain for duration of Contract.
2. Indicate current status of RFI's at all times; submit log as requested COTR.

PART 1 PRODUCTS (Not Used)

PART 2 EXECUTION (Not Used)

END OF SECTION 01 31 00

SECTION 01 31 15 - COORDINATION DRAWINGS

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. This Section includes requirements for Contractor to coordinate drawings with installers, fabricators and subcontractors prior to installation.

B. Refer to other Sections where Submittal Requirements include Coordination Drawings.

1.3 COORDINATION

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

1. Coordinate installation of different components with other contractors to ensure maximum accessibility for required maintenance, service, and repair.
2. Coordinate scheduling, submittals, and Work of various Sections to assure efficient and orderly sequence of installation of interdependent elements, in particular long lead and critical items.
3. Make adequate provisions to accommodate items scheduled for later installation.

B. If necessary, prepare memoranda for distribution to each party involved outlining special procedures required for coordination. Include such items as required notices, reports, and attendance at meetings.

1. Prepare similar memoranda for installers, fabricators and subcontractors where coordination of their work is required.

C. Equipment: Verify characteristics of elements of interrelated operating equipment are compatible; coordinate work of various Sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.

1. Spaces: Coordinate space requirements and installation of mechanical, electrical, and other Work indicated diagrammatically.

a. Resolve routing and space allocations before Work is started in order to prevent interference and loss of time. Prepare coordination drawings and hold pre-installation conferences when appropriate.

b. Assist in apportioning space conditions to make satisfactory adjustments where installed work in close proximity to work of other contractors will interfere with other work.

2. Follow routing indicated for pipes, ducts, and conduits as closely as practicable, with due allowance for available physical space. Make runs parallel with lines of building. Utilize space efficiency to maximize accessibility for other installations, for maintenance, and for repairs.

   a. Adjust location of pipes, equipment, fixtures, and like, to avoid encountered and anticipated interference.
   b. Determine exact route and location of each pipe and piece of equipment prior to installation.
   c. Make offsets, transitions and changes in direction of pipes as required to maintain proper headroom and pitch of sloping lines. Provide air vents and drains as required to effect offsets, transitions, and changes in direction.

3. Layout of plumbing, fire protection, mechanical, electrical, and communications systems, equipment, fixtures, piping, ductwork, conduit, specialty items, and accessories indicated on Drawings is diagrammatic. Variations in alignment, elevation, and details required to avoid interferences and satisfy architectural and structural limitations are not necessarily indicated.

   a. Prior to installation of material and equipment, review and coordinate Work of all Drawings to establish exact space conditions.
   b. Prepare coordination drawings where required to coordinate Work.
   c. Where available space is inadequate or where reasonable modifications are not possible, request information from Contracting Officer's Technical Representative (COTR) before proceeding.

4. Coordinate installation to prevent conflicts and cooperate in making, without extra charge, reasonable modifications in layout as needed.
5. Provide clear access to control points, valves, strainers, control devices, and specialty items of every nature related to such systems and equipment to obtain maximum head room. Provide adequate clearances as necessary for operation and maintenance.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

END OF SECTION 01 31 15

SECTION 01 32 00 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

B. Coordinate the Schedule with the Application for Payment; refer to Section 01 29 00 "Payment Procedures."

1.2 SUMMARY

A. Administrative and procedural requirements for schedules and reports required for proper performance of Work.

B. Contractor's Responsibility shall include but not be limited to the following for providing, coordinating, and managing Construction Progress Documents:

1. Ensure timely execution of Work using critical path method schedule, because timely Contractor performance is essential to this Contract.
2. Allow District to monitor Contractor's Contract Schedule continuously so that District may audit Contractor's management of Contract Schedule via comparison to the approved Contract Schedule under District's control.
3. Use approved Contract Schedule for management of entire Work and make no change, modification, or updating of logic and/or durations in Contract Schedule without prior written concurrence from District.
4. Ensure adequate planning, scheduling, and reporting during execution of Work so it may be executed in orderly and expeditious manner within specified time constraints.
5. Ensure coordination of self-performed work with work of:

    a. all elements of Contractor's organization, including subcontractors.
    b. between subcontractors and vendors at all tiers.
    c. District personnel and District consultants.
    d. Separate contractors.

C. Required Scheduling Software: District will provide Contractor with one (1) login for District's version of software; additional logins shall be acquired by the Contractor and assigned to the District for the purpose of the Project.

1. Utilize Primavera (P6) Enterprise Project Portfolio Management.
2. Set adjustable settings, including those pertaining to float calculation and progress/logic override, in accordance with District’s instructions, which shall require most conservative available settings.

D. At the request of the COTR in writing the Contractor shall be required to participate in meetings necessary to reach a mutual agreement and acceptance of the Detailed Construction Schedule (DCS), or the Cash Flow Projections.

1.3 PRE-SCHEDULE MEETING

A. The Contractor and the delegated Scheduler shall meet with the District representatives within <**Insert Number of Days Here**> days after Notice to Proceed and before the detailed CPM schedule is developed, to address questions regarding this Section and to discuss the District's requirements to facilitate the expeditious preparation, review, and acceptance of the Schedule.

1.4 DEFINTIONS

A. DCS: Detailed Construction Schedule.

B. Data Date: Last Work Day of each month, for months between NTP and Acceptance, in accordance with schedule update requirements of this specification.

C. Work: Entirety of work to be performed by Contractor under this Contract.

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

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

E. Cost Loading: The allocation of the schedule of values for the completion of an activity as scheduled. The sum of costs for all activities must equal the total Contract Sum unless otherwise approved by Architect.

F. CPM: Critical Path Method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of Project.

G. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.

H. Milestone: The starting or ending point of an activity.

I. Float: The measure of leeway in starting and completing an activity. Float time is not for the exclusive use or benefit of either District or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.

J. Fragnet: A partial or fragmentary network that breaks down activities into smaller activities for greater detail.

K. Major Area: A story of construction, a separate building, or a similar significant construction element.

L. Network Diagram: A graphic diagram of a network schedule, showing activities and activity relationships.

M. Resource Loading: The allocation of manpower and equipment necessary for the completion of an activity as scheduled.

N. Network: A network diagram is a graphic representation showing the relationship of activities and events in the correct sequences required to complete the Project with the Contract Time.

O. Resource Loading: The allocation of manpower and equipment necessary for the completion of an activity as scheduled.

P. Day: Calendar day unless otherwise noted. Contract uses calendar days.

1.5 SUBMITTALS

A. Detailed Construction Schedule (DCS): Submit to District within 10 calendar days following NTP, 2 hard copies in color and editable-electronic copy of detailed time-scaled precedence format network graphics and reports of proposed DCS in a format and level of detail approved by the COTR containing following:

1. Narrative of Contractor's proposed methodology, including proposed general sequencing plan.
2. Activity number, description, duration, cost loading, resource loading, coding structure and total float for each activity.
3. Sequence of operations for Work and order and interdependencies of Work activities. Indicate major points of interface or interrelation of such activities with activities of District and/or other contractors.
4. Conformance with and identification of Milestone durations and/or dates specified.
5. Contractor shall develop and include interim milestones in the CPM.
6. Delivery of District-furnished material and/or equipment, if applicable.
7. Primary, Secondary and Tertiary Critical path (or paths).

B. Three-Week Look-Ahead Schedule.

C. Qualifications: Provide qualifications for Scheduler assigned to the project. Within 5 days after Award of Contract, provide the following:

1. Name and address of proposed Scheduler.
2. List of prior construction projects and 3 selected Primavera network samples that the proposed scheduler has prepared. The 3 CPM schedules shall be for projects similar in complexity and magnitude of this Project.

D. Daily Construction Reports. As described in this Section.

1.6 QUALITY ASSURANCE

A. Scheduler Qualifications: Experienced in CPM scheduling and reporting, with capability of producing CPM reports and diagrams.

1. Scheduler shall be proficient in scheduling software used by the Contractor and shall have successfully completed a project similar to size and scope of this Project using scheduling software.

B Prescheduling Conference: Conduct conference at Project site to comply with requirements in Section 01 31 00 "Project Management and Coordination." Review methods and procedures related to Schedules and Reports, including, but not limited to, following:

1. Review software limitations and content and format for reports.
2. Review time required for review of submittals and resubmittals.
3. Review time required for completion and startup procedures.

1.7 COORDINATION

A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate contractors.

B. Coordinate Contractor's Construction Schedule with the Schedule of Values, list of subcontracts, Submittals Schedule, progress reports, payment requests, and other required schedules and reports.

1. Secure time commitments for performing critical elements of the Work from parties involved.
2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

1.8 MILESTONES

A. Milestones listed in Contract Documents represent only major items of work or interface dates. Milestones are considered essential to satisfactory performance of this Contract and to coordination of work on Project. Indicate Milestones in Detailed Construction Schedule (DCS) as either start or finish milestones with anticipated finish dates.

B. Milestones represent latest allowable completion durations, measured from Contract’s initial District-issued Notice to Proceed (NTP). Unless specifically excepted by Change Order, Alternates, or Options, if any, and if exercised by District, work shall be performed by Contractor within durations set out below. Coordinate application of following Milestones with contents of this specification and Work. All milestones will be of zero duration and tied to activities.

Code	Milestone Description	Calendar Days from NTP

Code	Milestone Description	Calendar Days from NTP
1	***Construction NTP***	0
2	Demo Complete	<**Insert Day Here**>
3	Front-end Submittals approved	<**Insert Day Here**>
4	Excavation complete	<**Insert Day Here**>
5	Foundation complete	<**Insert Day Here**>
6	Substructure complete	<**Insert Day Here**>
7	Complete coordinated shop-drawings	<**Insert Day Here**>
8	Superstructure complete	<**Insert Day Here**>
9	Building Dry-in	<**Insert Day Here**>
10	Permanent Power / systems	<**Insert Day Here**>
11	Start Commissioning	<**Insert Day Here**>
12	All Interior Finishes complete	<**Insert Day Here**>
13	Commissioning complete	<**Insert Day Here**>
14	Substantial Completion (Certificate of Occupancy Permit)	<**Insert Day Here**>
15	Project Final Acceptance/Completion	<**Insert Day Here**>

1.9 ACTIVITY LEADS AND LAGS

A. The District acknowledges that the establishment of activity "leads" and "lags" might be a useful planning tool in some specific cases. However, the use of "leads" and "lags" shall be limited to the cases where they are necessary. Each "lead" and "lag" shall be justified by the Contractor and accepted by the District as part of the baseline schedule. When justified and approved, activity "leads" and "lags" shall be maintained in the same way activities are maintained. Changes in a "leads" or "lags" shall be identified, justified and accepted in each update.

1.10 WORK DAYS

A. Work Days: Defined as days in calendar during period of Work performance, excluding Saturdays, Sundays and legally-mandated federal employee holidays which apply to area in which Work is performed. Work days are considered fully available for Contractor to perform work indicated in pertinent activities in Contract Schedule, unless, upon Contractor request, authorized District's representative:

1. Contemporaneously annotates Contractor's daily report with acknowledgement that day reported upon was unavailable to Contractor for excusable causes, such as unusual severe weather or immitigable effects thereof.
2. Identifies specific activities by number so affected.
3. Identifies extent of such impact for each affected activity (i.e. percentage reduction of crew or equipment effectiveness and/or progress).

B. Recognized Holidays: New Years Day, Inaugural Day, Martin Luther King's Birthday, President's Day, Memorial Day, Independence Day, Emancipation Day, Labor Day, Columbus Day, Veterans Day, Thanksgiving Day and Christmas Day.

1.11 WEATHER DAYS

A. Weather Day: The table below includes the inclement weather calendar (in work days) for the local region to be utilized for the Project. Non-compensable time extensions shall be granted by the District for days in excess of the days listed below for each month and only when the schedule critical path is directly impacted by the inclement weather.

Month	Work Days		Month	Work Days
January	4		July	2
February	4		August	3
March	4		September	2
April	5		October	3
May	5		November	4
June	2		December	4

1.12 SCHEDULER RESPONSIBILITIES

A. Contractor shall designate an authorized representative of his firm who shall be responsible for assisting in the preparation of the CPM schedule and review/report progress of the project with COTR using scheduling software approved by COTR. The Contractor's representative shall have direct project control and complete authority to act on behalf of the Contractor in fulfilling requirements of this Section and such authority will not be interrupted throughout the duration of the project.

B. Scheduler shall have use of software and computer facilities capable of delivering detailed graphic and tabular printouts, as well as electronic transfer of data. When requested by the COTR, Scheduler shall be able to produce reports within 48 hours of request.

1.13 DETAILED CONSTRUCTION SCHEDULE (DCS) CRITERIA

A. Contract Schedule: Document that controls Contractor's timely execution of Work. It is initially defined by number of Work Days listed in Contract Documents for completion of each Milestone and for completion (in calendar days) of Work, until District approves Detailed CPM Schedule which will be identified as "Detailed Construction Schedule" or "DCS" by the COTR and the District. Upon acceptance of the DSC by the District, the DCS becomes the Contract Schedule.

1. Upon approval by District of mutually agreed Change Orders that amend the DCS, the most current such approved amended version of DCS becomes the Contract Schedule.

B. Special Constraints: Minimize special constraints and add none during execution of Work without District’s express approval. Clearly identify and explain proposed special constraints including:

1. Finish-to-finish, start-to-start, start-to-finish, and finish-to-start leads and lags.
2. Starts-on, starts-no-earlier, finishes-on and finishes-no-earlier date constraints.

3. Special calendars, beyond approved standard five day and seven day calendars.
4. Resource caps.

C. Duration and Cost Limits: Ensure that level of detail of Contractor's DCS is function of complexity of work involved. Ensure that activities have duration of not more than 15 Work Days and have value equal or less than $50,000.00, unless District expressly authorizes exception. In assessing proposed exceptions, District will take into account special attributes of Work, such as long-lead equipment with extended engineering, fabrication and delivery schedules.

D. Key Items Procurement Report required during construction phase for "key" (major equipment and materials and long-lead (over eight weeks, from order placement to delivery)) items fabricated or supplied for Work. Include in DCS activities for submittal, submittals review, fabrication, in-plant testing, shipment and delivery, field installation, field testing, commissioning, functional performance testing, acceptance and O&M manuals for key items.

E. Schedule reports indicating activity numbers, description, estimated duration in Work Days, early start and finish dates, late start and finish dates, total and free float available for each and every activity and responsibility code for each activity.

F. Cost reports including following activity information, sorted by labor category:

1. Activity number and appropriate description.
2. Total cost proposed for each activity.
3. Computer-produced cash-flow analysis and graphics generated by both early start and late start activity dates.

G. Labor and Equipment Allocation Report: Narrative report indicating anticipated allocation of labor and equipment resources and work shifts to be utilized on Work. Identify with particularity equipment that is shared by activities such as hoisting and level of need of each such item of equipment for pertinent activities.

H. Details of Each Calendar. Base schedule on standard workweek consisting of five, 8-hour days (Monday through Friday), subject to Government holidays described above. Contractor may propose working outside of normal work hours, including multiple shifts, working holidays and weekends, and other non-standard calendars, provided Contractor obtains District approval minimum of five work days in advance of proposed occurrence of work outside of normal hours. Contractor’s Schedule Calendars: Indicate Government holidays as non-working days, unless District expressly approves otherwise.

I. Activity Details: Incorporate following elements and requirements in proposed DCS:

1. Use clear and concise activity descriptions, designed to ensure that beginning and end of each activity shall be readily observable and verifiable during execution of Work.
2. Restrict each activity to single performing organization including Contractor self-performing work organization(s), subcontractors, manufacturers, fabricators, and time-sensitive suppliers. Involve such performing organizations in development of Contract Schedule and secure their individual and collective express commitment to satisfy requirements of Contract Schedule proposed by Contractor to District. Cause said commitment from said

performing organizations to be represented in form of signed acceptance by such parties, included with DCS submittal.

3. Code activities in DCS that are District responsibility to execute as District responsibility activities. Include such activities as review and acceptance of documentation (including DCS schedule), submittals, issuance of NTP's and other District activities. Allow adequate duration for District review activities and as noted in other sections of Contract, but never less than seven working days unless District expressly approves otherwise.
4. In addition to identification of responsible organization, each activity shall have codes identifying areas of work. Ensure that areas of work are planned and scheduled in DCS in manageable increments. Code such increments and assign code to each activity.
5. Distribute Contract Price over activities (cost loading). Mobilization, bond and insurance costs may be indicated separately on individual activities; however, prorate other general requirement costs, such as overhead and profit, throughout activities. Divide each activity's cost loading into each of labor, material, and equipment where Contractor desires to receive payment for uninstalled material delivered to project site separate from labor and/or equipment expenditure on activities concerned.
6. Activities for each of permits, notices, tests and inspections for pertinent activities and phases.
7. Build schedule to reflect incremental completion of project (by floor/by area/by systems/equipment). Include appropriate time for Contractor and District for inspection and development of incomplete and/or deficient work (IDW) lists, as well as correction and verification of IDW. Include time for re-inspection and re-correction where appropriate.
8. Submittals, in coordination with level of detail indicated in key items procurement report.
9. Include adequate activities to allow District to track LEED certification process.

J. Resource Analyses:

1. Prepare manpower leveling analysis, derived directly from proposed DCS. Submit subject analysis with proposed DCS, in graphic format depicting manpower by principal disciplines. Analysis: Span entire Work duration and include separate graphs for each of a) manpower by discipline per Work Day, and b) man-hour usage by discipline or trade in form of cumulative S-curve. Subject Manpower Leveling Analysis: Include discipline-by-discipline manpower leveling using Contractor-imposed caps for each labor category, which coordinate with Milestone requirements. Through use of such resource caps, identify and correct peaks or troughs in each discipline manpower usage distribution. Present evidence of leveling iterations to District with DCS submission.
2. Present evidence that Contractor's proposed DCS: Not (a) be controlled by limitations in quantities such resources or (b) propose plan for management by Contractor of each resource type that has potential to control critical path or paths at any time during execution of Work.

K. Acceptance of DCS:

1. District's acceptance of Contractor's DCS is condition precedent to progress payments to Contractor.
2. Upon District's acceptance of cost-loaded values, use such values as sole basis for determining progress payments.
3. District's acceptance of proposed DCS signifies only that District's summary review of DCS leads the District to believe that Contractor has met general requirements of this specification pertaining to DCS format and content. Acceptance by District of DCS does not relieve

Contractor of any of its responsibility whatsoever for accuracy or feasibility of Contractor's plan for execution of Work, or to perform Work within specified time constraints. Such acceptance does not expressly or impliedly warrant, acknowledge or admit reasonableness of activities, logic, durations, manpower, cost or equipment loading of Contractor's proposed or accepted Contract Schedule.

4. District's acceptance in no way makes District or its representatives insurers of success of Contractor's time performance or liable for time or cost overruns flowing from shortcomings of Contractor-authored Contract Schedule. District disclaims and Contractor waives any District obligation or liability by reason of District's active or passive acceptance of or acquiescence to Contractor's schedule submissions.
5. Should Contractor fail to properly define any element of Work, activity or logic and District review does not detect this omission or error, such omission or error, when discovered by Contractor or District, shall be corrected by Contractor before next monthly schedule update and shall not be cause for delay of completion of Work within specified time constraints. Contractor acknowledges that District is not required or otherwise obligated to discover errors or omissions in Contractor's proposed Contract Schedule.

1.14 UPDATES

A. Update Contract Schedule every two weeks and in coordination with Contractor’s requests for progress payments.

B. On working day (designated data date) approximately five working days preceding time designated for monthly payment, meet with District for purpose of reviewing Contractor's report of actual progress. Submit Contractor's up-to-date and accurate progress data as of Data Date.

C. Submit computer reports and network graphics that reflect progress of Work with respect to both cost and time, in accordance with requirements of initial Contractor-proposed DCS. Adjust selection and sort sequence, format and content of reports as directed by District.

D. Contractor acknowledges that updating Contract Schedule to reflect actual progress made as of date of update is not modification to Contract Schedule’s Milestone requirements.

E. Submit progress report indicating activities (and portions of activities by percentage) completed during reporting period, actual start dates for those activities currently in progress, actual finish dates for those activities which were completed since last update, and progress along and deviations from critical path in terms of days ahead or days behind each individual Milestone date.

F. Submit narrative report which includes description of status of schedule, problem areas if any, current and anticipated delaying factors and their known and/or forecast impact, and explanation of corrective actions taken and planned.

1. Submit list of actual number of personnel (or man-hours) by discipline by working day by activity actually engaged on Work during reporting period, with such total stated separately as to on-site office (project work location), administrative management personnel and on-site supervisory personnel.

G. Submit two updated copies of network.

1. First Copy: Updated version of Contract Schedule, excluding Contractor-proposed changes.
2. Second Copy: Updated version of Contract Schedule, including Contractor-proposed changes and any activity logic changes. Submit with second copy list of proposed modifications, additions, deletions and changes in activity logic and/or durations to approved Contract Schedule, including time-recovery steps and actions required by "Responsibility for Completion" provisions of this specification. Include written justification for each such proposal.

H. If, as result of monthly update, it appears Contract Schedule no longer represents actual prosecution and progress of Work, submit revision to Contract Schedule. Include proposed adjustments in activity durations, logic changes, and resource usage or cost loading. Any negative float indicated in Contractor's proposed updates must be presented to District by Contractor with bona fide Contractor-authored plan for elimination of such negative float.

I. District will respond in writing to each schedule update. District's response may include questions and/or requests for revisions. Respond in writing within seven calendar days, answering questions, and either agreeing with District's proposed revisions and submitting modified update, or setting forth justification why such revisions should not be implemented. If Contractor's justification for not implementing revision is acceptable, in District's sole judgment, such revision will be waived. If District does not accept Contractor's justification, incorporate District-directed revisions into Contract Schedule, and execute Work accordingly.

1.15 THREE-WEEK LOOK-AHEAD SCHEDULE

A. Contractor shall provide an up to date three-week look-ahead schedule every week at the Weekly Project Meetings. The three-week look-ahead schedule shall include the timeline of activities for the upcoming two weeks as well as the previous one-week of work completed. The Schedule shall be generated form the approved project schedule or be provided in such other form as directed by the COTR.

1.16 PROGRESS PAYMENTS

A. Refer to Section 01 29 00 "Payment Procedures" for coordination of the Application for Payment and this Section.

1.17 REQUESTED TIME ADJUSTMENT SCHEDULE (RTAS)

A. Updated Contract Schedule submitted by Contractor shall not indicate completion date later than specified time constraints, subject to time extensions approved by District. If Contractor believes it is entitled to time extension, submit to District, within deadlines set out herein and with each contemporaneous monthly update, separate schedule analysis entitled Requested Time Adjustment Schedule (RTAS). Indicate, in said analysis, in addition to requirements of General Conditions, proposed adjustments in Contract Schedule which, in opinion of Contractor, should be made due to changes, delays or conditions occurring during past month or previously, or which are expected or contended by Contractor. Time-scale said analysis utilizing computer generated and computer drawn network. This paragraph shall not relieve Contractor of its obligation to provide proper and timely separate written notice of impacts to schedule. Contractor acknowledges that its preparation

of RTASs is not extra work to Contract and preparation by Contractor of RTASs shall not be cause for Contractor to receive any additional time for performance of Work or additional compensation.

B. Subject to float sharing requirements defined herein, time extensions will be granted only to extent of equitable and mutually acceptable time adjustments to activity or activities affected by Change Order(s), or where delay consumes total (positive or zero) float of critical activity (or path) and extends Milestone dates, using approved update of Contract Schedule that is current as of issue of District's written request for Contractor proposal connected with potential Change Order or other District-accountability potential schedule effect.

C. Submit RTAS within 20 calendar days after initiation of thing(s) or event(s) which Contractor contends may lead to potential District-accountability delay in performance of Work, or from time of District's issuance of written request for Contractor proposal connected with potential change order (or documents of like effect), even if such issuance precedes notice to proceed for change order(s) concerned, whichever is later. Other District-caused potential impacts of any category shall be considered to have been initiated upon written initial District direction connected therewith, including direction provided through duly recorded meetings.

D. Within 14 calendar days following submittal by Contractor to District of RTAS, in proper format and including specified content, District will meet with Contractor to review submittal. Revise and resubmit RTAS within three working days of such meeting, adjusting RTAS to consider issues raised by District in above meeting. District will respond with written decision within seven calendar days following Contractor resubmittal of RTAS. Upon approval, copy of RTAS signed by District will be returned to Contractor and thereafter incorporated into Contract via Change Order. Incorporate results of each approved RTAS in update of Contract Schedule that immediately follows such approval.

E. Contractor waives its right to submit requests for time extension and to receive time extension unless it meets above requirements for RTASs. Contractor waives any claim for acceleration due to refusal by District to grant time extensions should Contractor fail to comply with submission and justification requirements described herein for RTASs. Contractor's submission of RTASs shall not constitute basis for adjustment in specified time constraints unless approved by District. Actively pursue timely completion of activities pending such approval.

1.18 RESPONSIBILITY FOR COMPLETION

A. Provide sufficient forces, offices, materials, facilities, plant and equipment, to ensure completion of Work in accordance with most current approved Contract Schedule update. Upon District's written advice that Contractor is behind schedule, as result of inexcusable causes, immediately remediate such time loss by increasing hours of work, number of shifts, overtime operations and/or amount of plant and equipment, without additional cost to District. Contractor acknowledges that such remedial action by Contractor is not compensable acceleration of performance of Work. Provisions of this paragraph shall not be construed as prohibiting work on Saturdays, Sundays, and holidays, if Contractor so elects and gives written notice to District two working days in advance of it.

1.19 GENERAL CONTRACTOR EVALUATION FORM

A. General Contractor evaluations will be conducted by the COTR at each indicated construction completion state. The evaluation forms will be utilized by the COTR to determine the performance of the Contractor, including but not limited to, any decision to release partial retention. The General Contractor Evaluation forms may also serve as "Past Performance" reference report on the Contractor for future work sought by the Contractor with the District.

1.20 REQUIRED REPORTS

A. Daily Construction Reports: Prepare daily construction report and submit on internet-based Contract Project Management software. Submit daily construction report by noon of following workday. Required information concerning events at site includes, but is not limited to, following:

1. List of subcontractors at site.
2. List of separate contractors at site.
3. Approximate count of personnel at site.
4. High and low temperatures, general weather conditions.
5. Accidents.
6. Meetings and significant decisions.
7. Unusual events (refer to special reports).
8. Stoppages, delays, shortages, and losses.
9. Meter readings and similar recordings.
10. Emergency procedures.
11. Orders and requests of governing authorities.
12. Change Orders received, implemented.
13. Minor changes received and implemented.
14. Services connected, disconnected.
15. Equipment or system tests and startups.
16. Partial Completions, occupancies.
17. Completions authorized.

B. Special Reports: Submit special reports directly to COTR within one day of reported occurrence. Submit copies to other parties affected by occurrence.

1. Reporting Unusual Events: When event of unusual and significant nature occurs at site, prepare and submit special report. List chain of events, persons participating, response by Contractor's personnel, evaluation of results or effects and similar pertinent information. Advise COTR in advance when such events are known or predictable.
2. Submittal of reports is condition precedent to issuance and payment of subsequent Applications for Payment.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 32 00

SECTION 01 32 33 - PHOTOGRAPHIC DOCUMENTATION

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This section includes administrative and procedural requirements for the following:

1. Existing Site Condition Photographs.
2. Progress Photographs.
3. Finished Project Photographs.

B. Digital Images: '.jpg' format' or other approved format.

1.3 SUBMITTALS

A. Qualification Data: For firms and persons specified in “Quality Assurance” Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

B. Key Plan: Submit key plan of Project site and building with notation of vantage points marked for location and direction of each item of photographic documentation. Indicate elevation or story of construction. Include same label information as corresponding item of photographic documentation.

C. Existing Site Condition Photographs: Submit within 5 days of taking photographs.

1. Digital Images: Submit complete set of digital image electronic files with each submittal of prints on CD-ROM in format specified. Identify electronic media with date photographs were taken. Submit images that have same aspect ratio as sensor, uncropped.

D. Progress Photographs: On 15th day of each month provide progress photographs of the site at each work area, at the direction of the COTR.

E. Finished Project Photographs: When Project is ready for Final Acceptance by the District, submit perspective view of the Project and 3 photographs of areas designated by the COTR.

1.4 QUALITY ASSURANCE

A. Photographer Qualifications: Individual of acceptable to Contracting Officer's Technical Representative (COTR).

1.5 USAGE RIGHTS

A. Obtain and transfer copyright usage rights from photographer to District for unlimited reproduction of photographic documentation.

PART 2 PRODUCTS

2.1 PHOTOGRAPHIC MEDIA

A. Digital Images: Provide images in '.jpg' format, with minimum sensor size of 8 megapixels, and at an image resolution of not less than 3200 by 2400 pixels.

PART 3 EXECUTION

3.1 PHOTOGRAPHS, GENERAL

A. Date Stamp: Unless otherwise indicated, date and time stamp each photograph as it is being taken so stamp is integral to photograph.

B. Field Office Prints: Retain copy of photographic documentation in field office at Project site, available at all times for reference.

1. Identify photographs same as for those submitted to COTR.

3.2 CONSTRUCTION PHOTOGRAPHS

A. Existing Site Condition Photographs: Before starting construction, take photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points, as directed by COTR.

1. Flag construction limits before taking construction photographs.
2. Take 20 photographs to show existing conditions adjacent to property before starting the Work.
3. Take 20 photographs of existing buildings either on or adjoining property to accurately record physical conditions at start of construction.
4. Take additional photographs as required to record settlement or cracking of adjacent structures, pavements, and improvements.

B. Periodic Construction Photographs:

1. COTR will instruct photographer with regard to vantage points. Photographer shall select actual vantage points and take photographs to best show status of construction and progress since last photographs were taken.
2. Medium: Color.
3. Interval: Monthly, coinciding with cutoff date associated with each Application for Payment.

C. Final Completion Construction Photographs: After Project is complete and ready for Final Acceptance, photographer shall take one perspective view of project and photographs of 3 other areas directed by the COTR.

1. Medium: Color.
2. Date stamp photographs.

D. Additional Photographs: COTR may issue requests for additional photographs, in addition to periodic photographs specified. Additional photographs will be paid for by Change Order and are not included in Contract Sum.

1. Photographer will be given three (3) days' notice, where feasible.
2. In emergency situations, photographer shall take additional photographs within 24 hours of request.
3. Circumstances that could require additional photographs include, but are not limited to:

    a. Special events planned at Project site.
    b. Immediate follow-up when on-site events result in construction damage or losses.
    c. District's request for special publicity photographs.

END OF SECTION 01 32 33

SECTION 01 33 00 - SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Administrative and procedural requirements for submitting:

1. Shop Drawings.
2. Product Data.
3. Samples.
4. Miscellaneous submittals.
5. Substitution Request Procedures.

B. Contractor shall utilize the Electronic Project Management (ePM) system for transmitting submittals to the COTR. Only exception will be samples for color selection or verification. Coordinate initiation of software and internet setup with COTR.

1.3 DEFINITIONS

A. Action Submittals: Written and graphic information that requires Contracting Officer’s Technical Representative’s (COTR'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 COTR'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."

C. Electronic Project Management (ePM): System used to transfer project documents between the Contractor and District using standard software which has been approved by the COTR for the project.

D. File Transfer Protocol (FTP): Communications protocol that enables transfer of files to and from another computer over a network and that serves as the basis for standard Internet protocols. An FTP site is a portion of a network located outside of network firewalls within which internal and external users are able to access files.

E. Portable Document Format (PDF): An open standard file format licensed by Adobe Systems used for representing documents in a device-independent and display resolution-independent fixed-layout document format.

1.4 QUALITY ASSURANCE

A. Perform no portion of Work requiring submittal and review of Shop Drawings, Product Data, Samples, or similar submittals until respective submittal has been approved by COTR.

1.5 SUBMITTAL ADMINISTRATIVE REQUIREMENTSA.

A Architect's Digital Data Files: Electronic digital data files of the Contract Drawings will[**not**] be provided by Architect for Contractor's use in preparing submittals.

1. Architect will furnish Contractor one set of digital data drawing files of the Contract Drawings for use in preparing Shop Drawings and Project record drawings.

    a. Architect makes no representations as to the accuracy or completeness of digital data drawing files as they relate to the Contract Drawings.
    b. Digital Drawing Software Program: The Contract Drawings are available in Autocad 15.
    c. Contractor shall execute a data licensing agreement in the form of Agreement form acceptable to Owner and Architect.
    e. The following digital data files will by furnished for each appropriate discipline:

        1) Floor plans.
        2) Reflected ceiling plans.
        3) other as needed.

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 different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
    a. Architect and Construction Manager reserve the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Construction Manager'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 15 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Construction Manager 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 15 days for review of each resubmittal.
   4. Sequential Review: Where sequential review of submittals by Architect's consultants, Owner, or other parties is indicated, allow 21 days for initial review of each submittal.
   5. Concurrent Consultant Review: Where the Contract Documents indicate that submittals may be transmitted simultaneously to Architect and to Architect's consultants, allow 15 days for review of each submittal. Submittal will be returned to before being returned to Contractor.

1.6 SUBMITTAL SCHEDULE

A. After development and COTR's acceptance of Contractor’s Construction Schedule, prepare complete Schedule of Submittals. Submit Schedule of Submittals to COTR within 10 days of date of Notice to Proceed. The submittal schedule shall clearly identify/include long-lead and critical early submittals required for the project.

   1. Coordinate Submittal Schedule with list of subcontracts, Schedules of Values, and list of products as well as Contractor’s Construction Schedule.

B. Include each type item for which Contractor’s drawings, Shop Drawings, coordination drawings, Product Data, Samples, certificates of compliance, manufacturer’s certificates, warranties, and other types of submittals are required.

C. Coordinate preparation of submittal schedule with COTR, allowing more than average for overly complicated submittals and less time than average for those less complicated. Submittal schedule shall prioritize long lead along with early use submittals.

D. Where submittal is concurrent with or overlaps submittals currently being reviewed, indicate priority of each outstanding submittal.

E. Prepare schedule in chronological order. Provide following information:

   1. Scheduled date for first submittal.
   2. Related Section number.
   3. Submittal category.
   4. Name of subcontractor.
   5. Description of part of Work covered.
   6. Scheduled date for resubmittal.

7. Number of Contractor's drawings, Shop Drawings, or coordination drawings anticipated within each submittal.
8. Scheduled date for COTR's final release or approval.

F. Distribution: Following corrections resulting from COTR's response to initial submittal, print and distribute copies to COTR, subcontractors, and other parties required to comply with submittal dates indicated. Post in internet-based Contract Project Management software system.

1. Post copies in Project meeting room and temporary field office.
2. When revisions are made, distribute to same parties and post in same locations. Delete parties from distribution when they have completed their assigned part of Work and are no longer involved in construction activities.
3. Adhere to accepted schedule except when specifically otherwise permitted.

G. Schedule Updating: Using standard scheduling software approved by the COTR, revise schedule after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with report of each meeting.

1.7 SUBMITTAL PROCEDURES

A. General: Electronic copies of CAD Drawings of Contract Drawings will be provided by Architect for Contractor's use in preparing submittals, subject to completion and return of District's release form provided at end of this section.

B. Contractor cannot submit a "Product Substitution" using the submittal process. Contractor shall submit product substitutions in accordance with this Section.

C. Coordination: Coordinate preparation and processing of submittals with performance of construction activities. Contractor shall use approved Electronic Project Management (ePM) system to transfer submittals.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
2. Coordinate transmittal of different types of submittals for related parts of Work so processing will not be delayed because of need to review submittals concurrently for coordination.

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

D. Processing Time: Allow enough time for submittal review, including time for resubmittals, as follows. Time for review shall commence on COTR's receipt of submittal.

1. Initial Review: Allow 10 days for initial review of each submittal. Allow additional time if processing must be delayed to permit coordination with subsequent submittals. COTR will advise Contractor when submittal being processed must be delayed for coordination.
2. Concurrent Review: Where concurrent review of submittals by COTR's consultants, Contracting Officer, or other parties is required, allow 10days for initial review of each submittal.
3. Extended Review: Allow20 days for initial review of the following submittals:

    a. HVAC temperature controls.
    b. HVAC balancing report.
    c. Coordination drawings.
    d. Entrances and storefronts.
    e. Windows and curtain wall.
    f. Point supported glazing systems.
    g. Door hardware.
    h. Laboratory casework.
    i. Laboratory equipment.
    j. Electronic security systems.
    k. If more than five (5) shop drawings of a single trade are received in one week.

4. If intermediate submittal is necessary, process in same manner as initial submittal.
5. Allow 10 days for processing each resubmittal.

E. Identification: Place permanent label or title block on each submittal for identification.

1. Indicate name of firm or entity that prepared each submittal on label or title block.
2. Provide space approximately four by five inches on label or beside title block to record Contractor's review and approval markings and action taken by COTR.
3. Include following information on label for processing and recording action taken:

    a. Project name.
    b. Date.
    c. Name and address of Contractor.
    d. Name and address of subcontractor.
    e. Name and address of supplier.
    f. Name of manufacturer.
    g. Unique identifier, including revision number.
    h. Number and title of appropriate Specification Section.
    i. Drawing number and detail references, as appropriate.
    j. Other necessary identification.

F. Deviations: Highlight, encircle, or otherwise identify deviations from Contract Documents on submittals.

G. Additional Copies: Unless additional copies are required for final submittal, and unless COTR observes noncompliance with provisions of Contract Documents, initial submittal may serve as final submittal.

H. Transmittal: Package each submittal individually and appropriately for transmittal and handling. Transmit each submittal using transmittal form. Submittals received from sources other than Contractor will be returned by COTR without review.

1. On attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by COTR on previous submittals, and deviations from requirements of Contract Documents, including minor variations and limitations. Include same label information as related submittal.
2. Include Contractor's certification stating that information submitted complies with requirements of Contract Documents.
3. Transmittal Form: Submit on Electronic Project Management system.

I. Resubmittals:

1. Make resubmittals using original submittal number and designation.
2. Subject to same terms and conditions as original submittal.
3. COTR will accept not more than one (1) resubmittal.

J. Distribution: Furnish copies of final submittals to COTR, subcontractors, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

K. Use for Construction: Use only final submittals with mark indicating action taken by COTR in connection with construction.

1.9 SUBSTITUTION PROCEDURES

A. No substitutions except as approved by COTR.

PART 2 PRODUCTS

2.1 TIMING OF SUBMITTALS

A. Contractor shall transmit each submittal at or before the time indicated on the approved Submittal Schedule.

B. Contractor shall deliver each action submittal requiring approval in time to allow for adequate review and processing time, including resubmittals if necessary. Schedule shall allow for one resubmittal for each item action submittal. Failure of the Contractor in this respect will not be considered as grounds for an extension of the time for performance of the Contract.

C. Contractor shall deliver each informational submittal prior to start of the Work involved unless the submittal is of a type which cannot be prepared until after commencement of the Work. In such a case, submit promptly.

D. If a submittal must be processed within a certain time in order to maintain the progress of the Work, Contractor shall so state clearly on the submittal.

E. Submittals will be reviewed within a minimum of 5 days for the first processing of each submittal; more time when submittals must be coordinated with later submittals.

F. Re-submittals will be reviewed within a minimum of 5.

G. If a submittal must be delayed for coordination with other submittals not yet submitted, the COTR may at its option either return the submittal with no action or notify the Contractor of the other submittals which must be received before the submittal can be reviewed.

2.2 COORDINATING PRODUCT DATA

A. Contractor shall submit Product Data action submittals for each system or unit of Work as one submittal.

B. When Product Data action submittals are prepared specifically for this Project (in the absence of standard printed information) Contractor shall submit such information as Shop Drawings and not as product data submittals.

2.3 ACTION SUBMITTALS

A. General: Prepare and submit Action Submittals required by individual Specification Sections.

1. Furnish copies of returned submittal for distribution, project record documents, and operation and maintenance manuals.

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

1. If information must be specially prepared for submittal because standard printed data are not suitable 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 following information, as applicable:

    a. Manufacturer's written recommendations.
    b. Manufacturer's product specifications.
    c. Manufacturer's installation instructions.
    d. Standard color charts.
    e. Manufacturer's catalog cuts.

f. Wiring diagrams showing factory-installed wiring.
g. Printed performance curves.
h. Operational range diagrams.
i. Mill reports.
j. Standard product operating and maintenance manuals.
k. Compliance with recognized trade association standards.
l. Compliance with recognized testing agency standards.
m. Application of testing agency labels and seals.
n. Approval numbers of organizations or agencies as required by agencies having jurisdiction.
o. Notation of dimensions verified by field measurement.
p. Notation of coordination requirements.

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

1. Preparation: Include following information, as applicable:

a. Dimensions.
b. Identification of products.
c. Fabrication and installation drawings.
d. Roughing-in and setting diagrams.
e. Wiring diagrams showing field-installed wiring, including power, signal, and control wiring.
f. Shopwork manufacturing instructions.
g. Templates and patterns.
h. Schedules.
i. Design calculations.
j. Compliance with specified standards.
k. Notation of coordination requirements.
l. Notation of as-built conditions.
m. Notation of dimensions established by field measurement.

2. Wiring Diagrams: Differentiate between manufacturer-installed and field-installed wiring.
3. 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 40 inches.

D. Samples: Prepare physical units of materials or products and transmit via U.S. Postal Service or other carrier, including following:

1. Comply with requirements in Section 01 40 00 "Quality Requirements" for mockups if applicable.
2. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
3. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for Work, cured and finished in manner specified, and physically

identical with product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to

a. Partial sections of manufactured or fabricated components.
b. Small cuts or containers of materials.
c. Complete units of repetitively used materials.
d. Swatches showing color, texture, and pattern.
e. Color range sets.
f. Components used for independent testing and inspection.

4. Preparation: Mount, display, or package Samples in manner specified to facilitate review of qualities indicated. Prepare Samples to match COTR's sample where so indicated. Attach label on unexposed side that includes following:

   a. Generic description of Sample.
   b. Product name or name of manufacturer.
   c. Sample source.

5. Additional Information: On attached separate sheet, prepared on Contractor's letterhead, provide following:

   a. Size limitations.
   b. Compliance with recognized standards.
   c. Availability.
   d. Compliance with governing regulations.
   e. Statement of acceptable uses or statement indicating suitability of product specified for proposed use.
   f. Delivery time.

6. Submit Samples for review of kind, color, pattern, and texture for final check of these characteristics with other elements and for comparison of these characteristics between final submittal and actual component as delivered and installed.

   a. If variation in color, pattern, texture, or other characteristic is inherent in product represented by Sample, submit at least three sets of paired units that show approximate limits of variations.
   b. Refer to individual Specification Sections for requirements for Samples that illustrate workmanship, fabrication techniques, details of assembly, connections, operation, and similar construction characteristics.

7. Number of Samples for Initial Selection: Submit two (2) full set of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. COTR will return submittal with options selected.
8. Number of Samples for Verification: Submit five (5) sets of Samples. COTR will retain three (3) Sample sets; remainder will be returned.

   a. Submit single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.

9. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.

    a. Samples that may be incorporated into Work are indicated in individual Specification Sections. Such Samples must be in undamaged condition at time of use.
    b. Samples not incorporated into Work, or otherwise designated as District's property, are property of Contractor.

2.4 INFORMATIONAL SUBMITTALS

A. General: Prepare and submit Informational Submittals required by other Specification Sections. Copies will not be returned to Contractor unless resubmittal is required.

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

C. Test and Inspection Reports: Comply with Section 01 40 00 "Quality Requirements."

D. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

E. Product Certificates: Prepare written statements on manufacturer's letterhead certifying that product complies with requirements.

F. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements. Submit record of Welding Procedure Specification (WPS) and Procedure Qualification Record (PQR) on AWS forms. Include names of firms and personnel certified.

G. Installer Certificates: Prepare written statements on manufacturer's letterhead certifying that installer complies with requirements and, where required, is authorized for this specific Project.

H. Manufacturer Certificates: Prepare written statements on manufacturer's letterhead certifying that manufacturer complies with requirements. Include evidence of manufacturing experience where required.

I. Material Test Reports: Prepare reports written by qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements.

J. Preconstruction Test Reports: Prepare reports written by 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.

K. Compatibility Test Reports: Prepare reports written by 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.

L. Field Test Reports: Prepare reports written by qualified testing agency, on testing agency's standard form, 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.

M. Product Test Reports: Prepare written reports indicating current product produced by manufacturer complies with requirements. Base reports on evaluation of tests performed by manufacturer and witnessed by qualified testing agency, or on comprehensive tests performed by qualified testing agency.

N. Research/Evaluation Reports: Prepare written evidence, from model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include following information:

1. Name of evaluation organization.
2. Date of evaluation.
3. Time period when report is in effect.
4. Product and manufacturers' names.
5. Description of product.
6. Test procedures and results.
7. Limitations of use.

O. Maintenance Data: Prepare written and graphic instructions and procedures for operation and normal maintenance of products and equipment. Comply with Section 01 78 23 "Operation and Maintenance Data."

P. Design Data: Prepare written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

Q. Manufacturer's Instructions: Prepare written or published information that documents manufacturer's recommendations, guidelines, and procedures for installing or operating product or equipment. Include name of product and name, address, and telephone number of manufacturer. Include following, as applicable:

1. Preparation of substrates.
2. Required substrate tolerances.
3. Sequence of installation or erection.
4. Required installation tolerances.
5. Required adjustments.
6. Recommendations for cleaning and protection.

R. Manufacturer's Field Reports: Prepare written information documenting factory-authorized service representative's tests and inspections. Include following, as applicable:

1. Name, address, and telephone number of factory-authorized service 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 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.

S. Insurance Certificates and Bonds: Prepare written information indicating current status of insurance or bonding coverage. Include name of entity covered by insurance or bond, limits of coverage, amounts of deductibles, if any, and term of coverage.

T. Photographic Documentation: Comply with Section 01 32 33 "Photographic Documents."

U. Material Safety Data Sheets: Retain one copy on-site in binder in a location for ready access.

2.5 DELEGATED-DESIGN SERVICES

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

1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.

B. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally signed PDF electronic file 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.

C. BIM File Incorporation: Incorporate delegated-design drawing and data files into Building Information Model established for Project.

1. Prepare delegated-design drawings in the following format: Same digital data software program, version, and operating system as the original Drawings

2.6 OTHER REQUIRED SUBMITTALS

A. When required by other local entities and authorities having jurisdiction, comply with requests for submittals in number and as format to the agencies. These submittals shall appear in the Submittal Schedule sent to COTR with notation of who will review.

PART 3 EXECUTION

3.1 CONTRACTOR'S REVIEW

A. Review each submittal and check for compliance with Contract Documents. Note corrections and field dimensions. Mark with review stamp before submitting to COTR.

B. Contractor’s Stamp: Stamp each submittal with uniform, review stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor’s review, stamp, and statement certifying that submittal has been reviewed, and checked for compliance with Contract Documents.

C. Contractor Signed Stamp: Indicates that Contractor has:

1. Verified field dimensions and quantities.
2. Verified field construction criteria, materials, catalog numbers and similar data.
3. Reviewed and coordinated submittal data with requirements of Work and Contract Documents.
4. Certifies that submittal complies with Contract Documents.

3.2 COTR'S ACTION

A. General: COTR will not review submittals that do not bear Contractor's review stamp and will return them without action.

B. Except for submittals for record or for information, where action and return of submittals is required, COTR will review each submittal, mark to indicate action taken, and return.

1. Compliance with specified characteristics is Contractor's responsibility and not considered part of COTR's review and indication of action taken.

2. Acceptance of submittals with deviations shall not relieve Contractor from responsibility for additional costs of changes required to accommodate such deviations. Deviations included in submittals without prior acceptance are excepted from review of submittals whether noted or not on returned copy.
3. Review of separate item shall not indicate acceptance of assembly of which item is part.
4. Make only those revisions required or accepted by COTR.
5. Notations by COTR which increase Contract Cost or Contract Time shall be brought to COTR's attention, in writing, before proceeding with affected Work.
6. When professional certification of performance criteria of materials, systems or equipment is required by Contract Documents, COTR shall be entitled to rely upon accuracy and completeness of such calculations and certifications.

C. Action Submittals: COTR will review each submittal, make marks to indicate corrections or modifications required, and return submittal. COTR will stamp each submittal with action stamp and will mark stamp appropriately to indicate action taken, as follows:

1. Reviewed, No Exceptions: Means fabrication, manufacture, or construction may proceed providing submittal complies with Contract Documents.
2. Reviewed, Exceptions Noted, Resubmission Not Required: Means fabrication, manufacture, or construction may proceed providing submittal complies with COTR's notations and Contract Documents. If Contractor cannot comply with notations, make revisions and resubmit as described for submittals stamped Reviewed, Exceptions Noted, Resubmission Required.
3. Reviewed, Exceptions Noted, Resubmission Required: Means fabrication, manufacture, or construction may proceed, however; submittal did not fully demonstrate full extent of all conditions, details and coordination with other surrounding work and, therefore requires additional information, and rework as noted. Resubmit shop drawings for 'Reviewed, No Exceptions' or 'Reviewed, Exceptions Noted, Resubmission Required'. Do not fabricate, manufacture or construct specific areas requiring additional information prior to resubmittal.
4. Rejected, Resubmission Required: Means submittal does not comply with design intent of Contract Documents. Do not use submittals stamped Rejected, Resubmission Required. Make revisions and resubmit.
5. Other: Means documents have not been reviewed by COTR and submittal is returned to Contractor for several possible reasons, including, but not limited to following: submittal not requested, submittal not complete, submittal not coordinated, or submittal bears no resemblance to design intent.

D. Informational Submittals: COTR will review and return each submittal marked either "For Information Only" or indicating that submittal does not comply with requirements.

E. Submittals not required by Contract Documents will not be reviewed and may be discarded.

END OF SECTION 01 33 00

SEE CONDITIONS OF USE AGREEMENT FORM THAT FOLLOWS

ELECTRONIC DATA TRANSFER AGREEMENT

The CADD electronic files of the Contract Documents for the <**Insert Name of Project Here**> project, prepared for the District, a list of which is attached hereto (the "Files"), are being provided to <**Insert Name of Contractor Here**>as an accommodation to <**Insert Note Here:** i.e., assist in the limited production of partial details of Contract Documents -- or make the inspection on the project more convenient for client's personnel -- or facilitate contractor's preparation of shop drawings on the project - etc.>. It is acknowledged that only the Contract Documents should be relied on for accuracy. The Files are not warranted to be fit for the purpose or intended use, or to be complete, or free from defect. Due to the potential that the information set forth in the Files can be modified by subsequent users, unintentionally or otherwise, or altered by the computer system itself, all indications of [Architect/Engineer] (or its subconsultants) involvement have been removed from each electronic display. In consideration of the foregoing and by accepting the Files, <**Insert Name of Contractor Here**>agrees that:

1. It will not reenter in the Files, or any print made from the Files, any indication of the Files' source of origin;
2. It will be solely responsible for verification of the validity and correctness of the Files (i.e., to check the Files against the Contract Documents);
3. It releases the District from, and accepts responsibility for, any liability or damages arising in any manner from its use of the Files;
4. It acknowledges that the Files are owned by the District and/or the above stated client and that the Files, including any portion of the data contained therein, will not be used for any purpose other than stated above, and that it will not otherwise use the Files or data therein for its own profit; and

In consideration for the District's providing the Files, the foregoing premises and conditions are hereby acknowledged and accepted.

By: _____ Date: <**Insert Date Here**>

Printed Name: <**Insert Name Here**>

Title: <**Insert Title of Contractor Here**>

SECTION 01 50 00 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes minimum requirements for temporary facilities and controls, including temporary utilities, support facilities, and security and protection facilities. Nothing is this section is intended to limit type and amounts of temporary work required, and no omission from this section will be recognized as an indication that such temporary activity is not required for successful completion of the work and compliance with requirements of the Contract Documents.

B. Temporary utilities include, but are not limited to the following:

1. Sewers and drainage.
2. Water service and distribution.
3. Sanitary facilities, including toilets, wash facilities, and drinking-water facilities.
4. Heating and cooling facilities.
5. Ventilation.
6. Electric power service.
7. Lighting
8. Telephone service.

C. Support facilities include, but are not limited to the following:

1. Temporary roads and paving.
2. Dewatering facilities and drains.
3. Project identification and temporary signs.
4. Waste disposal facilities.
5. Field Offices
6. Storage and fabrication sheds
7. Lifts and hoists
8. Temporary elevator usages
9. Temporary stairs
10. Scaffolding.
11. Construction aids and miscellaneous services and facilities.

D. Security and protection facilities include, but are not limited to the following:

1. Environmental protection.
2. Stormwater control.
3. Tree and plant protection.
4. Pest control.
5. Site enclosure fence.
6. Security enclosure and lockup
7. Barricades, warning signs and lights
8. Covered walkways
9. Temporary enclosures
10. Temporary partitions
11. Fire protection
12. Personnel and public safety.

1.3 INFORMATIONAL SUBMITTALS

A. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.

B. Erosion- and Sedimentation-Control Plan: Show compliance with requirements of EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent.

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-Protection Plan: Describe procedures and controls for protecting materials and construction from water absorption and damage, including mold growth.

1. Describe delivery, handling, and storage provisions for materials subject to water absorption or water damage.
2. Indicate procedures for discarding water-damaged materials, protocols for mitigating water intrusion into completed Work, and replacing water-damaged Work.
3. 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.
4. Submit Mold Prevention and Maintenance Plan During Construction Phase. Submit certificate at "Substantial Completion" that project is free of 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. Identify further options if proposed measures are later determined to be inadequate. 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.

G. Site Utilization Plan: Within 10 days from NTP, submit a site utilization plan indicating locations of construction fencing, temporary buildings, lay-down areas, vehicle circulation and construction entrances. Show temporary utility lines and connections. Show use of airspace over adjacent properties.

H. Project Identification and Temporary Signs: Show fabrication and installation details for project identification and temporary signs, including plans, elevations, details, layouts, typestyles, graphic elements and message content.

I. Scaffold Plan: List of areas and types of scaffolds for each area.

J. Fall Protection Plan: Lists of areas assigned fall protection devices and types of devices.

1.4 QUALITY ASSURANCE

A. Regulations: Comply with industry standards and applicable laws and regulations of authorities having jurisdiction including, but not limited to, following:

1. Building code requirements.
2. Health and safety regulations.
3. Utility company regulations.
4. Police, fire department, and rescue squad rules.
5. Environmental protection regulations.
6. Regulations for air rights over adjacent properties.

B. Standards: At a minimum, comply with CFR 29, Part 1910 “Occupational Safety and Health Standards,” Part 1926 “Safety and Health Regulations for Construction,” and NFPA 241 "Standard for Safeguarding Construction, Alterations, and Demolition Operations," ANSI A10 Series standards for "Safety Requirements for Construction and Demolition," and NECA Electrical Design Library "Temporary Electrical Facilities."

1. Electrical Service: Comply with NEMA, NECA, and UL standards and regulations for temporary electric service. Install service in compliance with NFPA 70 "National Electric Code."
2. Scaffolding: Erect adequate scaffold as required to perform the work in accordance with the Safety Code of the D.C. Minimum wage and Industrial Safety Board requirements.

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

1.5 PROJECT CONDITIONS

A. Temporary Utilities: The Contractor is responsible for all costs, including usage costs, for utilities throughout the Contract until Substantial Completion by the District. The Contractor shall prepare schedule indicating dates for implementation and termination of each temporary utility. At earliest feasible time, when acceptable to District, change over from use of temporary service to use of permanent service.

B. Conditions of Use: Keep temporary services and facilities clean and neat in appearance. Operate in safe and efficient manner. Relocate temporary services and facilities as Work progresses. Do not overload facilities or permit them to interfere with progress. Take necessary fire-prevention measures. Do not allow hazardous, dangerous, or unsanitary conditions, or public nuisances to develop or persist on-site.

1.6 DEFINITIONS

A. Permanent Enclosure: As determined by the District, permanent or temporary roofing is complete, insulated, and weather-tight; exterior walls are insulated and weathertight; and all openings are closed with permanent construction or substantial temporary closures.

1.7 USE CHARGES

A. General: Cost or use charges for temporary facilities are not chargeable to District and shall be included in the Contract Sum. Allow other entities to use temporary services and facilities without cost, including, but not limited to the following:

1. District's construction forces
2. Occupants of building
3. Testing Agencies
4. Personnel of Authorities Having Jurisdiction

B. Sewer Service: Pay all costs associated with sewer service by all entities engaged in construction activities at the project site until Final Acceptance by the District.

C. Water Service: Pay all costs associated with water service, whether metered or otherwise, for water used by all entities engaged in construction activities at the project site until Final Acceptance by the District.

D. Electric Power Service: Pay all costs associated with electric service, whether metered or otherwise, for electricity used by all entities engaged in construction activities at the project site until Final Acceptance by the District.

1.8 SCAFFOLDING

A. Contractor shall erect adequate scaffolds as required to perform the work in accordance with OSHA requirements. COTR may have use of scaffold to inspect Work.

1. Do not erect scaffolds until required to be ready for use.
2. Contractor shall promptly remove the scaffolding upon acceptance of the Work.

B. Wherever possible, use swinging scaffolds for exterior Work. Where swinging scaffolds are not practicable, Contractor may be permitted to use other types of scaffolds provided that:

1. Contractor prepares a list of areas and gives the types of scaffold(s) recommended for use of each area.

2. The list shall be submitted not later than 10 days after the Contract is awarded.

1.9 ENVIRONMENTAL PROCEDURES

A. Use care to prevent pollution of air, water, and soil, including but not limited to the following:

1. Comply with environmental protection regulations.
2. Do not dump contaminates in areas that will result in contamination.
3. In partially occupied facilities where Work is to be performed, provide dustproof partitions to isolate Contractor's work activities from building occupants and the public.
4. All access corridors requiring use by the Occupant shall be maintained in a clean condition and free of construction materials and debris.

B. Minimize discharge of effluent and rainwater runoff into sewers, including but not limited to the following actions:

1. Control sediment discharge into sewers; filter out construction debris, soil, and contaminants.
2. Comply with regulations and orders of public utilities regarding use of sewers.
3. Where disposal of effluent or rainwater by means of sewers is not lawful or is not possible, provide alternative methods of disposal.

C. Prevent erosion due to rainwater runoff.

D. Control windblown dust; prevent erosion to Site and nuisance to neighbors.

E. Prevent flooding of excavations, below-grade construction, and adjacent properties due to rainwater runoff or water table.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Provide new materials. If acceptable to Contracting Officer’s Technical Representative (COTR), Contractor may use undamaged, previously used materials in serviceable condition. Provide materials suitable for use intended.

B. Lumber: DOC PS 20 and applicable rules of lumber grading agencies certified by American Lumber Standards Committee Board of Review.

1. For job-built temporary offices, shops, and sheds within construction area, provide UL-labeled, fire-treated lumber for framing.

C. Plywood: DOC PS 1:

1. For job-built temporary offices, shops, and sheds within construction area, provide UL-labeled, fire-treated plywood for sheathing and siding.

2. For signs and directory boards, provide exterior-type, Grade B-B high-density concrete form overlay plywood of sizes and thicknesses required.
3. For safety barriers, and similar uses, provide minimum 5/8 inch thick exterior plywood.

D. Paint: Paint exposed surfaces. Do not paint prefinished items, concealed surfaces, finished metal surfaces, operating parts, and labels. Provide primers, undercoats, and finish coat materials that are compatible with one another and substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.

1. For job-built temporary offices, shops, sheds, fences, and other exposed lumber and plywood, provide exterior-grade acrylic-latex emulsion over exterior primer.
2. For sign panels and applying graphics, provide exterior-grade alkyd gloss enamel over exterior primer.
3. For interior walls of temporary offices, provide two coats interior latex-flat wall paint.

E. Tarpaulins: Provide waterproof, fire-resistant, UL-labeled tarpaulins with flame-spread rating of 15 or less. For temporary enclosures, provide translucent, nylon-reinforced, laminated polyethylene or polyvinyl chloride, fire-retardant tarpaulins.

F. Water: Provide potable water approved by local health authorities.

G. Chain-Link Fencing: Minimum 2-inch, 0.148-inch galvanized steel, chain-link fabric fencing; minimum 8 feet high with galvanized steel pipe posts and rails.

2.2 EQUIPMENT

A. General: Provide new equipment. If acceptable to COTR, Contractor may use undamaged, previously used equipment in serviceable condition. Provide equipment suitable for use intended.

B. Water Hoses: Provide 3/4-inch, heavy-duty, abrasion-resistant, flexible rubber hoses, with pressure rating greater than maximum pressure of water distribution system. Provide adjustable shutoff nozzles at hose discharge.

C. Electrical Outlets: Provide properly configured, NEMA-polarized outlets to prevent insertion of 110- to 120-Volt plugs into higher voltage outlets. Provide receptacle outlets equipped with ground-fault circuit interrupters, reset button, and pilot light for connection of power tools and equipment.

D. Electrical Power Cords: Provide grounded extension cords. Use hard-service cords where exposed to abrasion and traffic. Provide waterproof connectors to connect separate lengths of electric cords if single lengths will not reach areas where construction activities are in progress. Do not exceed safe length-voltage ratio.

E. Lamps and Light Fixtures: Provide general service fluorescent lamps of wattage required for adequate illumination. Provide guard cages or tempered-glass enclosures where exposed to breakage. Provide exterior fixtures where exposed to moisture.

F. Heating and Cooling Units: Provide temporary heating and cooling units that have been tested and labeled by UL, FM, or another recognized trade association related to type of fuel being consumed.

G. Temporary Offices: Provide prefabricated or mobile units or similar job-built construction with lockable entrances, operable windows, and serviceable finishes. Provide heated and air-conditioned units on foundations adequate for normal loading.

H. Temporary Toilet Units: Where self-contained units used, provide self-contained, single-occupant toilet units of chemical, aerated recirculation, or combustion type. Provide units properly vented and fully enclosed with glass-fiber-reinforced polyester shell or similar nonabsorbent material.

I. Fire Extinguishers: Provide hand-carried, portable, UL-rated, Class A fire extinguishers for temporary offices and similar spaces. In other locations, provide hand-carried, portable, UL-rated, Class ABC, dry-chemical extinguishers or combination of extinguishers of NFPA-recommended classes for exposures.

1. Comply with NFPA 10 and NFPA 241 for classification, extinguishing agent, and size required by location and class of fire exposure.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Use qualified personnel for installation of temporary facilities. Locate facilities where they will serve Project adequately and result in minimum interference with performance of Work. Relocate and modify facilities as required.

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

3.2 TEMPORARY UTILITY INSTALLATION

A. General:

1. Arrange with utility company, District, and existing users, as appropriate for time when service can be interrupted, if necessary, to make connections for temporary services.
2. Provide adequate capacity at each stage of construction. Prior to temporary utility availability, provide trucked-in services.
3. Obtain easements to bring temporary utilities to site where District's easements cannot be used for that purpose.

B. Water Service: Provide water service and distribution piping of sizes and pressures adequate for construction until permanent water service is in use.

1. Provide potable water approved by local health authorities.
2. Sterilization: Sterilize temporary water piping prior to use.

3. Pumping: Where water pressure is inadequate, provide pumps to supply minimum of 30 psi static pressure at the highest point. Equip pumps with surge and storage tanks and automatic controls to supply water uniformly at reasonable pressures.
4. Engage appropriate local utility company to install temporary service or connect to utility company's source of supply as directed by servicing utility company. Where utility company provides only part of service, provide remainder with matching, compatible materials and equipment.
5. Comply with recommendations of utility company. Provide meter, pay connection charges, and pay charges for water used during construction period.

C. Temporary Electric Power Service: Provide weatherproof, grounded electric power service and distribution system of sufficient size, capacity, and power characteristics during construction period. Include meters, transformers, overload-protected disconnects, automatic ground-fault interrupters, and main distribution switch gear.

1. Install electric power service underground, except where overhead service must be used.
2. Power Distribution System: Install wiring overhead and rise vertically where least exposed to damage. Where permitted, wiring circuits not exceeding 125 Volts, ac 20 Ampere rating, and lighting circuits may be nonmetallic sheathed cable where overhead and exposed for surveillance.
3. Engage appropriate local utility company to install temporary service or connect to utility company's source of supply as directed by servicing utility company. Where utility company provides only part of service, provide remainder with matching, compatible materials and equipment.
4. Comply with recommendations of utility company. Provide meter, pay connection charges, and pay charges for electricity used during construction period.

D. Temporary Lighting: When overhead floor or roof deck has been installed, provide temporary lighting with local switching.

1. Install and operate temporary lighting that will fulfill security and protection requirements without operating entire system. Provide temporary lighting that meets or exceeds minimum foot-candles of intensity as required by OSHA 1925.56 and will provide adequate illumination for construction operations, traffic conditions, observations, and inspections.

E. Temporary Heat and Cooling: Provide temporary heat and cooling required by construction activities for curing or drying of completed installations or for protection of installed construction from adverse effects of low temperatures or high humidity. Select safe equipment that will not have harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize consumption of energy.

1. Provide temporary heat and cooling necessary for execution of Work. Install, maintain and operate temporary heating and cooling apparatus in manner to facilitate Work, so Work can continue and so finished Work will not be damaged.
2. Mold Prevention: Provide heating and ventilation as necessary to keep mold growth products dry during construction operations until Completion.

    a. Heat and ventilate as required to dissipate excessive humidity.

b. Heat and ventilate as required to properly cure and dry materials.
c. Heat and ventilate as required to dry wet areas and materials before installation of materials susceptible to moisture damage. Exception: Exterior skin of exterior enclosure assemblies. Use moisture meter to confirm that materials are sufficiently dry.

3. Provide temporary enclosures necessary for holding temporary heat and cooling for masonry and concrete work, and for thawing frozen ground.
4. Use of gasoline-burning space heaters, open flame, or salamander heating units is prohibited.

F. Use of Permanent System as Temporary Heat and Cooling:

1. After building is substantially enclosed, glazing or temporary closure of exterior openings completed, permanent or temporary doors on exterior openings and permanent heating system installed and capable of being adequately controlled, permanent heating and cooling system may be used to provide heat and cooling for building, if acceptable to the District.
2. In using permanent heating and cooling system, assume complete responsibility for proper operation and for damage which may occur to heating and cooling apparatus or any phase of Work except such wear and tear which would ordinarily result from normal usage.
3. At completion and before Work is accepted by District, clean air vents and coils, clean cleanable filters and replace replacement air filters.
4. Pay for gas and electricity used in connection with operation of permanent system to date of completion of Work.
5. If permanent heating and cooling system is used during construction, remain responsible for full mechanical warranty from date of Notice of Acceptance of total Project by District.

G. Sanitary facilities include temporary toilets and wash facilities. Comply with regulations and health codes for type, number, location, operation, and maintenance of fixtures and facilities. Install where facilities will best serve Project's needs.

1. Provide toilet tissue, paper towels, and similar disposable materials for each facility. Provide covered waste containers for used material.
2. Shield toilets to ensure privacy. Use of pit-type privies not allowed.

a. Provide separate facilities for male and female personnel.

3. Install wash facilities supplied with potable water at convenient locations for personnel involved in handling materials that require wash-up for healthy and sanitary condition. Dispose of drainage properly. Supply cleaning compounds appropriate for each condition.

a. Provide safety showers, eyewash fountains, and similar facilities for convenience, safety, and sanitation of personnel when required by authorities or recommended for health and safety reasons.

H. Drinking Water: Provide drinking-water fountains or containerized, tap-dispenser, bottled-water drinking-water units, including paper supply.

1. Where power is accessible, provide electric water coolers to maintain dispensed water temperature at 45 to 55 deg F.

I. Sewers and Drainage: If sewers are not available or cannot be used, provide drainage ditches, dry wells, stabilization ponds, and similar facilities. If neither sewers nor drainage facilities can be lawfully used for discharge of effluent, provide containers to remove and dispose of effluent off-site in lawful manner.

1. Filter out excessive amounts of soil, construction debris, chemicals, oils, and similar contaminants that might clog sewers or pollute waterways before discharge.
2. Connect temporary sewers to municipal system, as directed by sewer department officials.
3. Maintain temporary sewers and drainage facilities in clean, sanitary condition. Following heavy use, restore normal conditions promptly.

J. Janitorial Services: Provide outside janitorial services on weekly basis for temporary offices, first aid stations, toilets, wash facilities, and similar areas.

3.3 SUPPORT FACILITIES INSTALLATION

A. Locate field offices, storage sheds, and other temporary construction and support facilities for easy access.

1. Maintain support facilities until near Completion. Remove prior to Completion.

B. Where acceptable to COTR provide incombustible construction for offices, shops, and sheds located within construction area or within 30 feet of building lines. Comply with requirements of NFPA 241.

C. Contractor's Field Offices: Provide and maintain temporary field office for Contractor's personnel and representatives. Field offices shall be provided through project completion.

D. Storage and Fabrication Sheds: Install storage and fabrication sheds sized, furnished, and equipped to accommodate materials and equipment involved, including temporary utility service. Sheds may be open shelters or fully enclosed spaces within building or elsewhere on-site.

3.4 TEMPORARY CONTROLS AND EQUIPMENT

A. Dewatering Facilities and Drains: For temporary drainage and dewatering facilities and operations not directly associated with construction activities included under individual Sections. Where feasible, utilize same facilities. Maintain the site, excavations, and construction free of water.

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

1. Where heat or cooling is needed and permanent building enclosure is not complete, provide temporary enclosures where there is no other provision for containment of heat or cooling. Coordinate enclosure with ventilating and material drying or curing requirements to avoid dangerous conditions and effects.

2. Mold Prevention: Provide temporary weathertight exterior enclosures as required to keep dry during construction operations.
3. Install tarpaulins securely, with fire-retardant treated wood framing and other materials. Close openings of 25 square feet or less with plywood or similar materials.
4. Close openings through floor or roof decks and horizontal surfaces with load-bearing, wood-framed construction.

C. Temporary Lifts and Hoists: Provide facilities for hoisting materials and employees. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.

D. Provide final protection and maintain conditions, in manner acceptable to elevator manufacturer, that ensure elevators are without damage or deterioration at time of Completion.

E. Project Identification and Temporary Signs: Prepare project identification and other signs. Install signs to inform public and persons seeking entrance to Project. Support on posts or framing of preservative-treated wood or steel. Do not permit installation of unauthorized signs, and signs not approved by District of Columbia.

1. Project Identification Signs: Engage experienced sign painter to apply graphics.

   a. Details: As indicated, or if not indicated, as directed by COTR.

2. Temporary Signs: Prepare signs to provide directional information to construction personnel and visitors.
3. Size: As indicated, or if not indicated, as directed by COTR.
4. Location: As indicated, or if not indicated, as directed by COTR.

F. Temporary Exterior Lighting: Install exterior yard and sign lights so signs are visible when Work is being performed.

3.5 SITE CLEANING

A. Cleaning During Construction: Execute periodic cleaning to keep building, site, and adjacent properties free of accumulations of waste materials, debris, rubbish, and wind blown debris resulting from construction operations.

1. Broom clean and vacuum interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.
2. Schedule cleaning operations so that dust and other contaminants will not fall on or adhere to wet or newly-coated surfaces.
3. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing space.

B. Collection and Disposal of Waste: Collect waste from construction areas and elsewhere daily. Comply with requirements of NFPA 241 for removal of combustible waste material and debris. Enforce requirements strictly. Handle hazardous, dangerous, or unsanitary waste materials separately from other waste by containerizing properly. Dispose of material lawfully.

1. Comply with Section 01 74 19 "Construction Waste Management and Disposal."

3.6 MOLD PREVENTION

A. Presence of Mold: If mold is discovered during construction operations before completion, retain qualified independent Environmental Consultant to determine type of mold and recommend remediation procedures.

1. Submit qualifications of Environmental Consultant to COTR for approval by District.
2. Only retain Environmental Consultant approved by District.
3. Contractor: Pay for services of Environmental Consultant.

B. Removal of Mold: Remove sources of mold and mold as recommended by Environmental Consultant.

1. Take measures to eliminate sources of moisture before replacement of materials and removal of mold.
2. Remove materials with evidence of mold as recommended by Environmental Consultant.
3. Superficial cleaning of mold not allowed.
4. Obtain documented approval, from Environmental Consultant at conclusion of mold remediation. Submit documented approval to COTR in accordance with Section 01 17 00 “Closeout Procedures”.

3.7 PEST MANAGEMENT

A. Rodent and Pest Control: Before foundation work has been completed, retain local exterminator or pest control company to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests. Employ this service to perform extermination and control procedures at regular intervals so Project will be free of pests and their residues at Completion. Perform control operations lawfully, using environmentally safe materials.

B. Contractor shall provide pest control throughout all construction phases.

C. Provide pest control final inspection field report, showing project is free of pests, prior to Completion.

3.8 PROTECTION OF INSTALLED EQUIPMENT AND FINISHES

A. Stairs: Until permanent stairs are available, provide temporary stairs where ladders are not adequate. Cover finished permanent stairs with protective covering of plywood or similar material so finishes will be undamaged at time of acceptance.

B. Protect installed Work in manner to prevent damage from subsequent construction operations.

1. Provide special protection where specified in individual Specification sections.
2. Provide temporary and removable materials for protection of installed products. Control activity in immediate work area to minimize damage.
3. Ensure materials, systems, and components will be without damage or deterioration at time of Final Completion.

4. Protect finished Work from damage, defacements, stains, scratches, and wear.
5. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
6. Protect finished floors, stairs, and other surfaces from traffic dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.
7. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
8. Prohibit traffic from lawn and landscaped areas.

3.9 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Except for use of permanent fire protection as soon as available, do not change over from use of temporary security and protection facilities to permanent facilities until Completion as requested by COTR.

B. Temporary Fire Protection: Until fire-protection needs are supplied by permanent facilities, install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 10 "Standard for Portable Fire Extinguishers" and NFPA 241 "Standard for Safeguarding Construction, Alterations, and Demolition Operations."

1. Locate fire extinguishers where convenient and effective for their intended purpose, but not less than 1 extinguisher on each floor at or near each usable stairwell.
2. Store combustible materials in containers in fire-safe locations.
3. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire-protection facilities, stairways, and other access routes for fighting fires. Prohibit smoking in hazardous fire-exposure areas.
4. Provide supervision of welding operations, combustion-type temporary heating units, and similar sources of fire ignition.
5. Provide temporary standpipes for fire protection.

C. Barricades, Warning Signs, and Lights: Comply with standards and code requirements for erection of structurally adequate barricades. Paint with appropriate colors, graphics, and warning signs to inform personnel and public of hazard being protected against. Where appropriate and needed, provide lighting, including flashing red or amber lights.

D. Enclosure Fence: Maintain existing enclosure fence with lockable entrance gates. Maintain in manner that will prevent people, dogs, and other animals from easily entering site, except by entrance gates. Remove fence at completion of Work.

E. Security Enclosure and Lockup: Install substantial temporary enclosure of partially completed areas of construction. Provide locking entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security.

1. Storage: Where materials and equipment must be stored, and are of value or attractive for theft, provide secure lockup. Enforce discipline in connection with installation and release of material to minimize opportunity for theft and vandalism.

F. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations, and minimize possibility that air, waterways, and subsoil might be contaminated or polluted or that other undesirable effects might result. Avoid use of tools and equipment that produce harmful noise. Restrict use of noise-making tools and equipment to hours that will minimize complaints from persons or firms near site.

G. Dust Control/Street Cleaning: Provide appropriate dust control/street cleaning operations for paved and unpaved areas utilized during construction operations to satisfaction of District. Dust Control: Wetting or other approved methods. Obtain approval by District for street cleaning method.

H. Storm Water Control: Provide earthen embankments and similar barriers in and around excavations and subgrade construction, sufficient to prevent flooding by runoff of storm water from heavy rains.

I. Site Security: Security of the site is solely the responsibility of the General Contractor until Final Acceptance by the District.

J. Site-parked mobile equipment and operable machinery, and parts of new construction subject to mischief, shall be kept locked or otherwise made inoperable whenever left unattended.

3.10 OPERATION, TERMINATION, AND REMOVAL

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

B. Maintenance: Maintain facilities in good operating condition until removal. Protect from damage by freezing temperatures and similar elements.

1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
2. Protection: Prevent water-filled piping from freezing. Maintain markers for underground lines. Protect from damage during excavation operations.

C. Termination and Removal: Unless COTR requests that it be maintained longer, remove each temporary facility when need has ended, when replaced by authorized use of 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 Contractor's property. District reserves right to take possession of project identification signs.
2. Prior to Substantial Completion, clean and renovate permanent facilities used during construction period including, but not limited to, the following:
   a. Replace air filters and clean inside of ductwork and housings.
   b. Replace significantly worn parts and parts subject to unusual operating conditions.
   c. Replace lamps burned out or noticeably dimmed by hours of use.

END OF SECTION 01 50 00

SECTION 01 60 00 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the following administrative and procedural requirements: selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; product substitutions; and comparable products.

B. Related Sections include the following:

1. Section 01 33 00 "Submittal Procedures."

1.3 DEFINITIONS

A. Products: Items purchased for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.

1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation, shown or listed in manufacturer's published product literature, that is current as of date of the Contract Documents.
2. New Products: Items that have not previously been incorporated into another project or facility, except that products consisting of recycled-content materials are allowed, unless explicitly stated otherwise. Products salvaged or recycled from other projects are not considered new products.
3. Comparable Product: Product that is demonstrated and approved through submittal process, or where indicated as a product substitution, to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

B. Substitutions: Section 01 33 00 "Submittal Procedures."

C. Basis-of-Design Product Specification: Where a specific manufacturer's product is named and accompanied by the words "basis of design," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of other named manufacturers.

D. Manufacturer's Warranty: Preprinted written warranty published by individual manufacturer for a particular product and specifically endorsed by manufacturer to District.

E. Special Warranty: Written warranty required by or incorporated into the Contract Documents, either to extend time limit provided by manufacturer's warranty or to provide more rights for District.

1.4 SUBMITTALS

A. Product List: Submit a list, in tabular from, showing specified products. Include generic names of products required. Include manufacturer's name and proprietary product names for each product.

1. Coordinate product list with Contractor's Construction Schedule and the Submittals Schedule.
2. Form: Tabulate information for each product under the following column headings:

    a. Delete and add headings below to suit Project. See Evaluations.
    b. Specification Section number and title.
    c. Generic name used in the Contract Documents.
    d. Proprietary name, model number, and similar designations.
    e. Manufacturer's name and address.
    f. Supplier's name and address.
    g. Installer's name and address.
    h. Projected delivery date or time span of delivery period.
    i. Identification of items that require early submittal approval for scheduled delivery date.

3. Initial Submittal: Within 30 days after date of commencement of the Work, submit 3 copies of initial product list. Include a written explanation for omissions of data and for variations from Contract requirements.

    a. Revise subparagraph below to suit Project.
    b. At Contractor's option, initial submittal may be limited to product selections and designations that must be established early in Contract period.

4. Completed List: Within 10 days after date of commencement of the Work, submit three (3) copies of completed product list. Include a written explanation for omissions of data and for variations from Contract requirements.

5. COTR's Action: COTR will respond in writing to Contractor within 15 days of receipt of completed product list. COTR's response will include a list of unacceptable product selections and a brief explanation of reasons for this action. COTR's response, or lack of response, does not constitute a waiver of requirement that products comply with the Contract Documents.

B. Substitution Requests: Refer to Division 01 Section 01 33 00 "Submittal Procedures."

1.5 QUALITY ASSURANCE

A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, product selected shall be compatible with products previously selected, even if previously selected products were also options.

B. COTR's Approval: Wherever the terms "or equal", or "or approved equal", or "or approved", are used in specifying products or naming manufacturers in the various specification sections, the COTR is the sole judge of equality and acceptability of products and manufacturers submitted as equals to the specified products and manufacturers.

C. Nameplates: Except for required labels and operating data, do not attach or imprint manufacturer's or producer's nameplates or trademarks on exposed surfaces of products which will be exposed to view in occupied spaces or on the exterior.

1. Equipment Nameplates: Provide a permanent nameplate on each item of service-connected or power-operated equipment. Locate on an easily accessible surface which is inconspicuous in occupied spaces. The nameplate shall contain the following information and other essential operating data:

a. Name of product and manufacturer.
b. Model and serial number.
c. Capacity.
d. Speed.
e. Ratings.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

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

1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
4. Inspect products on delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.
5. Store products to allow for inspection and measurement of quantity or counting of units.
6. Store materials in a manner that will not endanger Project structure.
7. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
8. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
9. Protect stored products from damage.

B. Storage: Provide a secure location and enclosure at Project site for storage of materials and equipment by District's construction forces. Coordinate location with District.

C. District reserves the right to protect stored materials to prevent damage and deterioration if the Contractor fails to protect the materials in a proper manner. The costs incurred by the District shall be paid by the Contractor.

1.7 PRODUCT WARRANTIES

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

B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution. Submit a draft for approval before final execution.

1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
2. Specified Form: Forms are included with the Specifications. Prepare a written document using appropriate form properly executed.

C. Submittal Time: Comply with requirements in Division 1 Section 01 77 00 "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT OPTIONS

A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged, and unless otherwise indicated, that are new at time of installation.

1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
3. District reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
4. Where products are accompanied by the term "as selected," COTR will make selection.
5. Where products are accompanied by the term "match sample," sample to be matched is COTR's.

6. Descriptive, performance, and reference standard requirements in the Specifications establish "salient characteristics" of products.

7. Or Equal: Where products are specified by name and accompanied by the term "or equal" or "or approved equal" or "or approved," comply with provisions in "Comparable Products" Article to obtain approval for use of an unnamed product.

B. Product Selection Procedures: Procedures for product selection include the following:

1. Product: Where Specification paragraphs or subparagraphs titled "Product" name a single product and manufacturer, provide the product named.

   a. Substitutions may be considered, unless otherwise indicated.

2. Manufacturer/Source: Where Specification paragraphs or subparagraphs titled "Manufacturer" or "Source" name single manufacturers or sources, provide a product by the manufacturer or from the source named that complies with requirements.

   a. Substitutions may be considered, unless otherwise indicated.

3. Products: Where Specification paragraphs or subparagraphs titled "Products" introduce a list of names of both products and manufacturers, provide one of the products listed that complies with requirements.

   a. Substitutions may be considered, unless otherwise indicated.

4. Manufacturers: Where Specification paragraphs or subparagraphs titled "Manufacturers" introduce a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements.

   a. Substitutions may be considered, unless otherwise indicated.

5. Available Products: Where Specification paragraphs or subparagraphs titled "Available Products" introduce a list of names of both products and manufacturers, provide one of the products listed or another product that complies with requirements. Comply with provisions in "Comparable Products" Article to obtain approval for use of an unnamed product.

6. Available Manufacturers: Where Specification paragraphs or subparagraphs titled "Available Manufacturers" introduce a list of manufacturers' names, provide a product by one of the manufacturers listed or another manufacturer that complies with requirements. Comply with provisions in "Comparable Products" Article to obtain approval for use of an unnamed product.

7. Product Options: Where Specification paragraphs titled "Product Options" indicate that size, profiles, and dimensional requirements on Drawings are based on a specific product or system, provide either the specific product or system indicated or a comparable product or system by another manufacturer. Comply with provisions in "Product Substitutions" Article.

8. Basis-of-Design Products: Where Specification paragraphs or subparagraphs titled "Basis-of-Design Product" are included and also introduce or refer to a list of manufacturers' names, provide either the specified product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with provisions in "Comparable Products" Article to obtain approval for use of an unnamed product.

    a. Substitutions will not be considered, unless otherwise indicated.

9. Visual Matching Specification: Where Specifications require matching an established Sample, select a product (and manufacturer) that complies with requirements and matches COTR's sample. COTR's decision will be final on whether a proposed product matches satisfactorily.

    a. If no product available within specified category matches satisfactorily and complies with other specified requirements, comply with provisions of the Contract Documents on "substitutions" for selection of a matching product.

10. Visual Selection Specification: Where Specifications include the phrase "as selected from manufacturer's colors, patterns, textures" or a similar phrase, select a product (and manufacturer) that complies with other specified requirements.

    a. Standard Range: Where Specifications include the phrase "standard range of colors, patterns, textures" or similar phrase, COTR will select color, pattern, or texture from manufacturer's product line that does not include premium items.
    b. Full Range: Where Specifications include the phrase "full range of colors, patterns, textures" or similar phrase, COTR will select color, pattern, or texture from manufacturer's product line that includes both standard and premium items.

2.2 PRODUCT SUBSTITUTIONS

A. General: Refer to Section 01 33 00 "Submittal Procedures."

2.3 COMPARABLE PRODUCTS

A. Where products or manufacturers are specified by name, submit the following, in addition to other required submittals, to obtain approval of an unnamed product:

1. Evidence that the proposed product does not require extensive revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
3. Evidence that proposed product provides specified warranty.
4. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.
5. Samples, if requested.

2.4 PAINT PRODUCTS

A. Environmentally Preferable Products Goals

1. The District is seeking contractors to provide environmentally preferable and effective paint products that support the District's environmentally preferable purchasing (EPP) contracting initiative.
2. Environmentally preferable products are products and services that have a lesser or reduced effect on human health and the environment when compared with competing products or services that serve the same purpose. This comparison considers the life cycle of the product from raw material acquisition, production, manufacturing, packaging, distribution, re-use, operation, maintenance and disposal.

B. The requirements and restrictions contained in this clause shall apply to all architectural and anti-corrosive paints used during the course of this contract.

C. Due to the documented health risks associated with high Volatile Organic Compound (VOCs) levels, the Contractor shall use only paint and paint products that do not exceed the maximum allowable VOC content in the table below for each type of paint:

Product Type	**Type of Paint**	**VOCs (grams/liter)**	**VOCs (pounds/gallon)**
Category I	Interior		
	Architectural		
	a. Flat	50 g/l	0.42 lb/gal
	b. Non-Flat	150 g/l	1.25 lb/gal
Category II	Exterior		
	Architectural		
	a. Flat	100 g/l	0.83 lb/gal
	b. Non-Flat	200 g/l	1.66 lb/gal
Category III	Anticorrosive		
	a. Flat	250 g/l	2.1 lb/gal
	b. Semi-Gloss	250 g/l	2.1 lb/gal
	c. Gloss	250 g/l	2.1 lb/gal

D. Prohibited Paint Components: Paints often contain inorganic and organo-metallic components used as preservatives, additives and pigments. The following is a list of organic compounds and components prohibited under this contract:

Trichloroethane	Formaldehyde
Dichlorobenzene	Hexavalent chromium

Acrolein	Isophorone
Acrylonitrile	Lead
Antimony	Mercury
Benzene	Methylene chloride
Butyl benzyl phthalate	Methyl ethyl ketone
Cadmium	Mehtyl isobutyl ketone
Di (2-ethylhexyl) phthalate	Naphthalene
Dimethyl phthalate	Toluene (Methylbenzene)
Di-n-butyl phthalate	Vinyl Chloride
Ethylbenzene	

E. Packaging: Paint cans and their components shall not be fabricated with lead.

F. Product Safety: Contractor shall be responsible for:

1. Any damage to personnel, buildings, furniture or equipment directly traceable to their use of prohibited paint**.**
2. Evacuating and warning individuals that might be affected by any spills or leakages directly traceable to their use of prohibited paint**.**
3. Any spills or leaks that occur during the use or transportation of their products**.**
4. Paying the clean up cost for any spills or leaks that occur while they are unloading, transporting or otherwise using their products.

2.5 SOLVENT PRODUCTS

A. Environmentally Preferable Products Goals

1. The District is seeking contractors to provide environmentally preferable and effective solvent products that support the District’s environmentally preferable purchasing (EPP) contracting initiative.
2. Environmentally preferable products are products and services that have a lesser or reduced effect on human health and the environment when compared with competing products or services that serve the same purpose.
3. This comparison considers the life cycle of the product from raw material acquisition, production, manufacturing, packaging, distribution, re-use, operation, maintenance and disposal.

B. Environmentally Preferable Solvent Products

1. Solvents are fluids or a mixture of fluids capable of dissolving substances to produce compositions for industrial value.
2. Solvent products subject to the requirements of this clause include, but are not limited to, the following classes:

    a. Alcohols are solvents that dissolve substances such as shellacs, vinyls, acrylics, epoxies and silicones.
    b. Aliphatic hydrocarbons are solvents often found in coatings and insecticides. Commonly used as degreasers and solvents for acrylics and epoxies. Common

aliphatics include mineral spirits, paint thinner, petroleum distillates, VM&P Naphtha, kerosene, gasoline and heptane (all of which are extremely flammable).

c. Aromatic hydrocarbons are substances used in printing, fiberglass-reinforced products, glues and veneers. Common aromatics include toluene (toluol), xylene (xylol), coal-tar naphtha, styrene and benzene.
d. Chlorinated hydrocarbons are commonly used degreasers, dry cleaning agents, rubber solvents and paint strippers found in coatings, resins and tars. Common chemicals in this class include perchloroethylene, methylene chloride, carbon tetrachloride, methyl chloroform and trichloroethylene.
e. Glycols, which are water-soluble solvents used as lubricants, are found in cosmetics, coatings, resins and dyes. Glycol ethers include butyl cellusolve (2-butoxyethanol), cellusolve (2- ethoxyethanol), methyl cellusolve (2-methoxyethanol), and cellusolve acetate (2-ethoxyethyl acetate). Most common glycol ethers are combustible.
f. Esters have differing chemical properties depending on their use including methyl formate, ethyl acetate, isopropyl acetate, methyl acetate, secamylacetate, and isoamyl acetate (banana oil).
g. Ethers are ingredients in dyes, resins, waxes, cellulose nitrate and fuels, including ethyl ether, tetrahydrofuran, dioxane and isopropyl ether.
h. Ketones are solvents for dyes, resin and waxes that are used to manufacture plastics, synthetic fibers, explosives, cosmetics and medicines. Some examples of ketones include acetone, methyl ethyl ketone, cyclohexanon and isophorone.
i. Other types of solvents include freon, turpentine, dimethylformamide and carbon disulfide.

C. Solvent Environmental Requirements - The Contractor shall avoid the following hazards when using solvent products during the performance of this contract:

1. Health Hazards:

a. Bodily Contact: Contractor shall not use solvent products that irritate or harm the skin, eyes, nose and throat from direct contact with the solvents;
b. Inhalation: Contractor shall not use solvent products that when inhaled causes headaches, nausea, vomiting and dizziness from contact with the solvents; and,
c. Ingestion: Contractor shall not use solvent products that if ingested or exposed to for a period of time cause damage to the brain, liver, kidney, respiratory system and nervous systems.

2. Physical Hazards:

a. Flammable materials are substances that will easily ignite, burn and serve as fuel for a fire. The flash point is the lowest temperature at which a liquid gives off enough vapors which, when mixed with air, can be easily ignited by a spark. The lower the flash point, the greater the risk of fire or explosion.
b. Contractor shall not use solvent products that are a potential fire hazard or have a low flash point. A solvent is flammable and a serious fire hazard if its flash point is below 37.8C (100F).

D. Prohibited Solvents: The following solvent products are recognized by the National Institute for Occupational Safety and Health (NIOSH) as carcinogens, ozone-depleting solvents or as reproductive hazards in the workplace and shall not be used:

Benzene	Carbon tetrachloride
Trichloroethylene	1,1,2,2-tetrachloroethane
2-methoxyethanol	2-ethoxyethanol
Methyl chloride	Trichlorotrifluoroethane
Chlorinated Fluorocarbon Compounds	

E. Packaging Reduced/Recyclable: If possible, Contractor shall use products that are in reusable, refillable, or recyclable containers or are otherwise made from recycled content products.

1. No products shall be delivered in aerosol cans.
2. All products must be available in non-aerosol containers such as ready-to-use pump action sprays, air-charged refillable containers, or spray bottles.

F. Product Safety: Contractor shall be responsible for:

1. Any damage to personnel, buildings, furniture or equipment directly traceable to their use or transportation of prohibited products.
2. Any spills or leaks that occur during the use or transportation of their products.
3. Evacuating and warning individuals that might be affected by any spills or leaks that occur when their products are being used or transported.
4. Paying the clean up cost for any spills or leaks that occur while they are using or transporting their products.

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 60 00

SECTION 01 73 00 - EXECUTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

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

1. General installation of the Work.
2. Cutting and patching.
3. Progress cleaning.
4. Site Documentation Requirements.
5. Starting and adjusting.
6. Protection of installed construction.
7. Correction of the Work.

B. Related Sections include the following:

1. Section 01 33 00 "Submittal Procedures" for final survey submittal requirements.
2. Section 0131 00 "Project Management and Coordination" for procedures for coordinating field engineering with other construction activities.
3. Section 01 78 39 "Project Record Documents" for submittal requirements of work and record survey data.

1.3 INFORMATIONAL SUBMITTALS

A. Qualification Data: For land surveyor or professional engineer to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

B. Certificates: Submit certificate signed by land surveyor or professional engineer certifying that location and elevation of improvements comply with requirements.

C. Cutting and Patching Plan: Submit plan describing procedures at least 10 days prior to the time cutting and patching will be performed. Include the following information:

1. Extent: Describe reason for and extent of each occurrence of cutting and patching.

2. Changes to In-Place Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building appearance and other significant visual elements.
3. Products: List products to be used for patching and firms or entities that will perform patching work.
4. Dates: Indicate when cutting and patching will be performed.
5. Utilities and Mechanical and Electrical Systems: List services and systems that cutting and patching procedures will disturb or affect. List services and systems that will be relocated and those that will be temporarily out of service. Indicate length of time permanent services and systems will be disrupted.

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

D. Landfill Receipts: Submit copy of receipts issued by a landfill facility, licensed to accept hazardous materials, for hazardous waste disposal.

1.4 QUALITY ASSURANCE

Revise below if necessary to comply with local requirements. See Evaluations.

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 COTR of locations and details of cutting and await directions from COTR 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. Mechanical systems piping and ducts.
    f. Control systems.
    g. Communication systems.
    h. Fire-detection and -alarm systems.
    i. Electrical wiring systems.

3. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety. Other construction elements include but are not limited to the following:

a. Water, moisture, or vapor barriers.
b. Membranes and flashings.
c. Equipment supports.
d. Piping, ductwork, vessels, and equipment.

4. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in COTR's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

B. Cutting and Patching Conference: Before proceeding, meet at Project site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

C. 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.

1.5 SITE DOCUMENTATION REQUIREMENTS

A. Contractor shall maintain one current, updated copy of the following documents:

1. Issued for Construction Drawings, including separate 3-ring binder for supplemental details.
2. Specifications.
3. Written interpretations and supplemental instructions.
4. Addenda or Amendments to Contract Documents.
5. Reviewed, approved shop drawings, samples, and product data.
6. Certifications.
7. Field Test Records.
8. Permits for Construction.
9. Correspondence Files.
10. Full set of updated Record Drawings (As-Built Drawings) and Record Specifications.

B. Document Keeping Requirements: Maintain required documents as follows:

1. Contractor shall store documents in field office apart from documents used for field construction.
2. Contractor shall provide files and racks for document storage.
3. Contractor shall file documents in format in accordance with Division numbering indicated in Specifications Table of Contents.
4. Contractor shall maintain documents in clean, dry legible conditions.
5. Contractor shall not use the documents in the field.
6. Contractor shall provide access to documents at all times for inspection by COTR.

C. Contractor shall keep Record Documents current. Make documents available for inspection at all times and as part of monthly progress/payment meeting.

D. Contractor shall not permanently conceal Work until specified information has been recorded.

E. Legibly mark reproducible drawings to record manufacturer, trade name, catalog number, and supplier for each product and item of equipment actually installed.

F. Comply with Section 01 78 39 "Project Record Documents" for recording, format, and delivery of Record Documents at end of Construction.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Comply with requirements specified in other Sections.

1. For projects requiring compliance with sustainable design and construction practices and procedures, use products for patching that comply with requirements in Section 01 81 13 "Sustainable Design Requirements."

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 COTR for the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Identification: Contracting Officer’s Technical Representative (COTR) will identify existing control points and property line corner stakes.

B. Verify layout information indicated, in relation to property survey and existing benchmarks, before proceeding to lay out Work. Locate and protect existing benchmarks and control points. Preserve permanent reference points during construction.

1. Do not change or relocate benchmarks or control points without prior written approval of COTR. Promptly report lost or destroyed reference points or requirements to relocate reference points because of necessary changes in grades or locations.
2. Promptly replace lost or destroyed Project control points. Base replacements on original survey control points.

C. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities, mechanical and electrical systems, and other construction affecting the Work.

1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; underground electrical services, and other utilities.
2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.

D. Existing Utilities and Equipment: Existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify existence and location of underground utilities and other construction.

1. Prior to construction, verify location and invert elevation at points of connection as indicated on Drawings.

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

a. Description of the Work.
b. List of detrimental conditions, including substrates.
c. List of unacceptable installation tolerances.
d. Recommended corrections.

2. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
3. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
4. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.

F. 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 District 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. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by District or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:

1. Notify District not less than two days in advance of proposed utility interruptions.
2. Do not proceed with utility interruptions without District's written permission.

C. 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.

D. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

E. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to COTR. Include a detailed description of problem encountered, together with recommendations for changing the Contract Documents.

3.3 PINSTALLATION

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 8 feet in spaces without a suspended ceiling.

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 Final Completion.

D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.

E. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.

F. 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 COTR.
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.

G. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.

H. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.

I. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.4 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: 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.

3.5 PROGRESS CLEANING

A. General: Clean Project site and work areas daily, including common areas. Coordinate progress cleaning for joint-use areas where more than one installer has worked. 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 materials more than 7 days during normal weather or 3 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.
4. Comply with Section 01 74 19 "Construction Waste Management and Disposal" for sorting and recycling.

B. Site: Maintain Project site free of waste materials and debris.

C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.

1. Remove liquid spills promptly.

2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

F. Exposed Surfaces: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Final Completion.

G. Cutting and Patching: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials.

1. Thoroughly clean piping, conduit, and similar features before applying paint or other finishing materials. Restore damaged pipe covering to its original condition.

H. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted. Comply with waste disposal requirements in Section 01 74 19 "Construction Waste Management and Disposal."

I. 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 Final Completion.

J. 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.

K. 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. Where applicable, such exposures include, but are not limited to, the following:

1. Excessive static or dynamic loading.
2. Excessive internal or external pressures.
3. Excessively high or low temperatures.
4. Thermal shock.
5. Excessively high or low humidity.
6. Pollution and air contamination.
7. Water or ice.
8. Chemicals and solvents.

9. Light.
10. Radiation.
11. Puncture.
12. Abrasion.
13. Heavy traffic.
14. Soiling, staining, and corrosion.
15. Mold or mildew.
16. Rodent and insect infestation.
17. Combustion.
18. Electrical current.
19. High-speed operation.
20. Improper lubrication.
21. Unusual wear or other misuse.
22. Contact between incompatible materials.
23. Destructive testing.
24. Misalignment.
25. Excessive weathering.
26. Unprotected storage.
27. Improper shipping or handling.
28. Theft or vandalism.

3.6 STARTING AND ADJUSTING

A. Coordinate startup and adjusting of equipment and operating components with requirements in Section 01 91 13 "General Commissioning Requirements."

B. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.

C. Adjust operating components for proper operation without binding. Adjust equipment for proper operation.

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: If a factory-authorized service representative is required to inspect field-assembled components and equipment installation, comply with qualification requirements in Section 01 40 00 "Quality Requirements."

3.7 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Final Completion.

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

C. District reserves the right to protect installed Work to prevent damage and deterioration if the Contractor fails to protect the installed Work in a proper manner. The costs incurred by the District shall be paid by the Contractor.

3.8 CORRECTION OF THE WORK

A. Repair or remove and replace defective construction. Restore damaged substrates and finishes.

1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.

B. Restore permanent facilities used during construction to their specified condition.

C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.

D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.

E. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

END OF SECTION 01 73 00

SECTION 01 77 00 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Administrative and procedural requirements for Final Completion and Final Acceptance.

1. Closeout requirements for specific construction activities are included in appropriate Sections in Divisions

1.3 ACTION SUBMITTALS

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

1.4 CLOSEOUT CONFERENCE

Comply with Section 01 31 00 “Project Management and Coordination” for closeout conference.

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.

D. Warranty Information: Provide product and system warranties in binder. Refer to Section 01 78 00 "Warranties."

G. All Record Drawings, Specifications, and other requirements specified in Section 01 78 39 "Project Record Documents."

1.5 PRELIMINARY PROCEDURES

A. Before requesting inspection for determining date of Substantial Completion, complete following, as appropriate to Project.

1. Obtain and submit releases permitting District unrestricted use of Work and access to services and utilities. Include final inspections, operating certificates, and similar releases.
2. Submit draft copies of warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
3. Advise COTR of pending insurance changeover requirements.
4. Request and complete a Punch List walk-through meeting with COTR and his designee's. Resolve all material items included on the list.
5. Deliver tools, spare parts, extra materials, and similar items, as required by Specification Section 017861, to location designated by COTR. Label with manufacturer's name and model number, and cross reference to equipment schedule where appropriate.
6. Prepare Operation and Maintenance Manuals in accordance with specification section 017823. Include equipment list in spreadsheet format advised by COTR.
7. Contact manufacturer to start process of the changeover of permanent locks and request delivery of cores and keys to District. Advise COTR in writing.
8. Submit Project Record Documents in accordance with Section 01 78 39 "Record Documents."
9. Complete installation of all signage, as required by the contract documents including, but not limited to, directional, emergency egress, ADA and room number signs. Install dedication plaque provided by the district or as specified in the contract documents.
10. Provide copies of closure reports for environmental abatement work performed by the contractor. This shall include, but not limited to, asbestos, lead paint, contaminated soil, PCB's, etc.
11. Submit changeover information related to District's occupancy, use, operation, and maintenance, including utility services.
12. Ensure all project communication regarding RFIs, contract modifications, and meeting minutes are contained within internet-based Contract Project Management software system.
13. Touch up 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, COTR will either proceed with inspection or notify Contractor of unfulfilled requirements. COTR will prepare the Certificate of Substantial Completion after inspection and will notify Contractor of items, either on Contractor's list or additional items identified by COTR, that must be completed or corrected before certificate will be issued

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

2. In addition to 1.5.A, above, the following items shall be completed prior to issuance of the Certificate of Substantial Completion.

    a. Warranty documents, maintenance agreements and bonds updated to include term start date to be date of Substantial Completion.

b. Final utility meter readings as of day set for Substantial Completion.

c. Four hard copies and two electronic copies of all documents identified in paragraph 1.5.A above unless advised otherwise by COTR.

d. Make final changeover of permanent locks and deliver keys to COTR. Label with manufacturer's name and model number where applicable.

e. Clean and renovate permanent facilities used during construction period, in accordance with Section 01 50 00

f. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements, unless approved to remain by COTR.

3. Results of completed inspection will form the basis of requirements for final completion.

E. Notwithstanding the above, the Certificate of Substantial Completion shall not be granted until the Certificate of Occupancy is granted by the authority having jurisdiction, the Building Commissioning, including all training and submission of Operations and Maintenance manuals is considered complete by the District's Commissioning Agent, and all material punch list items are resolved to the satisfaction of the District.

1.7 FINAL COMPLETION PROCEDURES

A. Submittals Prior to Final Completion: Before requesting final inspection for determining final completion, complete the following:

1. Submit a final Application for Payment according to Section 01 29 00 "Payment Procedures."
2. Submit closeout submittals specified in other Division 01 Sections, including project record documents, final completion construction photographic documentation, damage or settlement surveys, property surveys, and similar final record information.
3. Punch List: Submit certified copy of COTR's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by COTR. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
4. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
5. Submit pest-control final inspection report and warranty.
6. Terminate and remove all remaining temporary facilities from Project site, along with mockups, construction tools, and similar elements.
7. Complete final cleaning requirements, including touchup painting.
8. Make final changeover of permanent locks and deliver keys to COTR. Label with manufacturer's name and model number where applicable.
9. Complete broken, chipped, dented, or otherwise marred finish surfaces as described in "Repair of the Work" Article of this Section.
10. Submit Contractor's Certificate of Final Completion on form attached to end of this Section.

11. Submit final project photographs, damage or settlement surveys, property surveys, and similar final record information.

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, COTR will either proceed with inspection or notify Contractor of unfulfilled requirements. COTR 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. Reinspection: 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, [starting with exterior areas first] [and] [proceeding from lowest floor to highest floor].
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 Architect.
    d. Name of Contractor.
    3. Page number.

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

    a. MS Excel electronic file. Architect , through COTR, will return annotated file.
    b. PDF electronic file. Architect, through COTR, will return annotated file.
    c. Three paper copies. Architect, through COTR, will return two copies.

1.9 SUBMITTAL OF PROJECT WARRANTIES

A. Refer to Section 01 78 70 "Warranties" for proper procedure for submitting warranties.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 CERTIFICATE OF FINAL COMPLETION

A. Contractor shall complete the "Contractor's Certificate of Final Completion" form found at the end of this Section or if approved by the Contracting Officer, may use the Certificate of Final Completion found in the Electronic Project Management system used on the Project.

B. Substantial Completion will be granted when the Certificate of Occupancy is granted by the authority having jurisdiction; the Building Commissioning is considered complete by the District's Commissioning Authority, including training of District's employees and the Operation and Maintenance Manuals are delivered; and all material punch-list items are resolved to the satisfaction of the District.

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.

3.3 COMPLETION OF PUNCH LIST

A. Contractor shall begin performance of Punch List corrections immediately after receipt of the notice of the Punch List Work.

B. Period to complete Punch List Work will be determined by the COTR. The time period for completion of the Punch List Work begins the first work day after the Punch List is provided to the Contractor. The COTR may extend the period to complete Punch List Work for specific Work which requires the receipt of long lead-time materials. However, all other Punch List Work shall be completed as required by this Section.

1. Failure of the Contractor to begin the Punch List Work prior to the expiration of 3 calendar days after receipt of Punch List will be construed as failure to prosecute the Work of the Contract and shall be completed within 30 days.

C. Punch List Work shall be continuously prosecuted once begun. Gap of 3 calendar days during which Punch List Work is not being performed on the job site will be construed as failure to prosecute the Work of the Contract.

3.4 SCHEDULE OF DOCUMENTS NEEDED FOR CLOSE-OUT PROCEEDURE

SPECIFICATION SECTION	TITLE OF DOCUMENT REQUIRED	WHEN TO SUBMIT	RECIPIENT
<Insert specification reference>	O&M Manuals	Substantial Completion	COTR
<Insert specification reference>	Punch-List Items Resolved	Substantial Completion	COTR
<Insert specification reference>	Certificate of Occupancy	Substantial Completion	COTR

END OF SECTION 01 77 00

Contractor's Certificate of Final Completion follows.

CONTRACTOR'S CERTIFICATE OF FINAL COMPLETION

PROJECT: _____

CONTRACT FOR: _____

TO COTR: _____

CONTRACT DATE: _____

This is to certify that I am an authorized official of the Contractor, and have been properly authorized by said firm or corporation to certify following:
I know of my own personal knowledge, and do hereby certify on behalf of Contractor that the Work has been reviewed and inspected for compliance with Contract Documents, that it has been completed in accordance with Contract Documents, that all equipment and systems have been tested and are operating as required by the contract, that all Contract Closeout requirements have been completed and submitted.
Attached are three copies of the following documents, which are required prior to final payment:

[ ] Certificates of inspections indicating compliance with requirements of Government authorities, including Certificate of Occupancy, have been obtained and are attached hereto.

[ ] Certificate of site conformance by licensed land surveyor.

[ ] List of Subcontractors and equipment suppliers.

I understand that acceptance of final payment by the Contractor, a Subcontractor or material supplier shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at time of final Application for Payment.

CONTRACTOR: _____

BY: _____ Subscribed and sworn to me this

TITLE: _____ ____ day of _____, 20____.

DATE: _____

NOTARY PUBLIC _____

My commission expires: _____

DISTRIBUTION: CONTRACTING OFFICER AND COTR.

SECTION 01 78 23 - OPERATION AND MAINTENANCE DATA

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Administrative and procedural requirements for preparing operation and maintenance manuals including, but not limited to:

1. Operation and maintenance documentation directory.
2. Operation manuals for systems, subsystems, and equipment.
3. Maintenance manuals for care and maintenance of products, materials, finishes, and systems and equipment, as required by other Sections.

B. Commissioning of the Facility depends heavily on the contents of the O&M Manual for performing testing of the systems. Final O&M Manuals that have been reviewed and approved by the COTR shall be delivered to the Commissioning Authority prior to start of Commissioning.

1.3 DEFINITIONS

A. System: Organized collection of parts, equipment, or subsystems united by regular interaction.

B. Subsystem: Portion of system with characteristics similar to system.

1.4 SUBMITTALS

A. Initial Submittal: Submit two (2) draft copies of each manual. Include a complete operation and maintenance directory. COTR will return one (1) copy of draft and mark whether general scope and content of manual are acceptable.

B. Final Submittal: Submit one (1) copy of each manual in final format. COTR will return copy with comments within 15 days.

C. Provide four (4) hard copies and one (1) electronic copy of each Final Operation and Maintenance Manual to the COTR.

1.5 QUALITY ASSURANCE

A. In preparation of operation and maintenance data, use personnel thoroughly trained and experienced in operation and maintenance of equipment or system involved.

1. Where manuals require written instructions, use personnel skilled in technical writing where necessary for communication of essential data.

2. Where maintenance manuals require drawings or diagrams, use draftsmen capable of preparing drawings clearly in understandable format.

1.6 COORDINATION

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

PART 2 - PRODUCTS

2.1 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY

A. Organization: Include section in directory for each of following:

1. List of documents.
2. List of systems.
3. List of equipment.
4. Table of contents.

B. List of Systems and Subsystems: List systems alphabetically. Include references to operation and maintenance manuals that contain information about each system.

C. List of Equipment: List equipment for each system, organized alphabetically by system. For pieces of equipment not part of system, list alphabetically in separate list. Provide list in spreadsheet format as directed by COTR.

D. Tables of Contents: Include table of contents for each emergency, operation, and maintenance manual.

E. Identification: In documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in Contract Documents. If no designation exists, assign designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

2.2 MANUALS, GENERAL

A. Organization: Unless otherwise indicated, organize each manual into separate section for each system and subsystem, and separate section for each piece of equipment not part of system. Each Manual: Contain following materials, in order listed:

1. Title page.
2. Table of contents.
3. Manual contents.

B. Title Page: Enclose title page in transparent plastic sleeve. Include following information:

1. Subject matter included in manual.
2. Name and address of Project.
3. Name and address of District government agency.
4. Date of submittal.
5. Name, address, and telephone number of Contractor.
6. Cross-reference to related systems in other operation and maintenance manuals.

C. Table of Contents: List each product included in manual, identified by product name, indexed to content of volume, and cross-referenced to Specification Section number in Project Manual.

1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of set.

D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into single binder.

1. Binders: Heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2 by 11 inch paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.

    a. If two or more binders are necessary to accommodate data of system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary to provide essential information for proper operation or maintenance of equipment or system.
    b. Identify each binder on front and spine, with printed title **OPERATION AND MAINTENANCE MANUAL**, Project title or name, and subject matter of contents including specification section or sections, as applicable. Indicate volume number for multiple-volume sets.

2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in section on each divider, cross-referenced to Specification Section number and title of Project Manual.
3. Where computerized electronic equipment requires diagnostic software diskettes, provide protective transparent protective sleeve of same overall size as binder contents. Punch and bind sleeve in appropriate manual.

4. Supplementary Text: Prepared on 8-1/2 by 11 inch, 20 psf white bond paper.
5. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.

    a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
    b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.
    c. Provide specially prepared drawings where necessary to supplement manufacturer's printed data to illustrate relationship of component parts of equipment or systems or to provide control or flow diagrams. Coordinate specially prepared drawings with information contained in project record drawings specified in Section 017839 to assure correct illustration of completed installation.

        1) Do not use original record documents as part of operation maintenance manuals.

6. Specifications: Component or system specifications section copied and inserted complete with modifications. In addition, provide (1) electronic copy of updated "as-built" specifications on a CD.

2.3 OPERATION MANUALS

A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and following information:

1. System, subsystem, and equipment descriptions.
2. Performance and design criteria if Contractor is delegated design responsibility.
3. Operating standards.
4. Operating procedures.
5. Operating logs.
6. Wiring diagrams.
7. Control diagrams.
8. Piped system diagrams.
9. Precautions against improper use.
10. License requirements including inspection and renewal dates.

B. Descriptions: Include following:

1. Product name and model number.
2. Manufacturer's name.
3. Equipment identification with serial number of each component.
4. Equipment function.
5. Operating characteristics.
6. Limiting conditions.

7. Performance curves.
8. Engineering data and tests.
9. Complete nomenclature and number of replacement parts.

C. Operating Procedures: Include following, as applicable:

1. Startup procedures.
2. Equipment or system break-in procedures.
3. Routine and normal operating instructions.
4. Regulation and control procedures.
5. Instructions on stopping.
6. Normal shutdown instructions.
7. Seasonal and weekend operating instructions.
8. Required sequences for electric or electronic systems.
9. Special operating instructions and procedures.

D. Systems and Equipment Controls: Describe sequence of operation, and diagram controls as installed.

E. Piped Systems: Diagram piping as installed, and identify color-coding where required for identification.

2.4 PRODUCT MAINTENANCE MANUAL

A. Content: Organize manual into separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.

B. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.

C. Product Information: Include the following, as a minimum as applicable:

1. Product name and model number.
2. Manufacturer's name.
3. Color, pattern, and texture.
4. Material and chemical composition.
5. Reordering information for specially manufactured products.

D. Maintenance Procedures: Include manufacturer's written recommendations and following:

1. Inspection procedures.
2. Types of cleaning agents to be used and methods of cleaning.
3. List of cleaning agents and methods of cleaning detrimental to product.
4. Schedule for routine cleaning and maintenance.
5. Repair instructions.

E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.

F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

1. Include procedures to follow and required notifications for warranty claims.

2.5 SYSTEMS AND EQUIPMENT MAINTENANCE MANUAL

A. Content: For each system, subsystem, and piece of equipment not part of system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.

B. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.

1. Provide separate listing or include on title page, at Contractor’s option.

C. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including following information for each component part or piece of equipment:

1. Standard printed maintenance instructions and bulletins.
2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.

    a. If system’s control drawing is not adequate, provide simplified, professionally drawn, single line system diagrams on minimum 8-1/2 by 11 inch, 20 psf white bond paper.

3. Identification and nomenclature of parts and components.
4. List of items recommended to be stocked as spare parts.

D. Maintenance Procedures: Include following information and items that detail essential maintenance procedures:

1. Test and inspection instructions.
2. Troubleshooting guide.
3. Precautions against improper maintenance.
4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
5. Aligning, adjusting, and checking instructions.
6. Demonstration and training videotape, if required.
7. List of special tools required to service or maintain equipment.

E. Preventive Maintenance Instructions: Manufacturer's written instructions for weekly, monthly, quarterly, annual, and other regularly scheduled maintenance prepared by mechanical subcontractor with assistance from equipment supplier.

F. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.

1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.

G. Control Drawings: Include control drawings for equipment and components, including sequence of operation. Control Drawings: Prepared by controls contractor and included here and in controls contractor's Operation and Maintenance Manual submittal.

H. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.

I. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.

J. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

1. Include procedures to follow and required notifications for warranty claims.

PART 3 - EXECUTION

3.1 MANUAL CONTENT

A. Include information required by the Contract Documents in the form of Data Packages. Develop data packages for each building component, piece of equipment and system based on level of complexity and as specified. Provide data packages in accordance with Schedule at end of Part 3 of this Section. Applicability of data packages is as follows:

1. Data Package 1: General building materials and components such as sealants, light fixtures, door hardware, etc.
2. Data Package 2: Simple operating components such as valves, hatches, louvers, plumbing fixtures
3. Data Package 3: Minor equipment such as small pumps and fans
4. Data Package 4: Major and complex equipment such as AHU's, package AC units, large pumps and motors, chillers, boilers, switch gear, elevators, control systems, engine generators, harmonic cancellation systems, fire alarm systems, etc.

B. Provide Data Package information as follows:

1. Data Package 1, at a minimum:

   a. Manufacturer’s product information
   b. Supplier information
   c. Warranty information
   d. Commissioning Documentation

2. Data Package 2: Data Package 1 information plus at a minimum:

   a. Safety precautions
   b. Maintenance & repair procedures
   c. Replacement parts identification & installation
   d. Commissioning Documentation

3. Data Package 3: Data Package 2 information plus at a minimum:

   a. Normal operating instructions
   b. Lubrication data
   c. Preventive maintenance plan/schedule
   d. Alignment, adjusting and checking information
   e. Removal and replacement instructions
   f. Parts identification
   g. Wiring diagrams
   h. Commissioning Documentation

4. Data Package 4:Data Package 3 information plus at a minimum:

   a. Equipment or System Description including:

      1) Equipment or System Function
      2) Operating characteristics
      3) Safety precautions
      4) Environmental and limiting conditions
      5) Performance curves
      6) Engineering data and tests
      7) Complete nomenclature and number of replacement parts
      8) Supplier and vendor information

   b. Manufacturer's Information including:

1) Assembly drawings and diagrams required for maintenance
2) List of items recommended to be stocked as spare parts
3) Wiring and control diagrams

c. Maintenance Procedures detailing essential maintenance procedures including:

1) Printed operation and maintenance instructions
2) Routine operations
3) Troubleshooting guide & diagnostic techniques
4) Disassembly, repair and reassemble
5) Alignment, adjusting and checking
6) Lubrication data
7) Consumable information such as belts and filters
8) Testing equipment & special tool information

d. Operating Procedures including:

1) Start up and shut down procedures
2) Equipment or system break-in
3) Routine and normal operating instructions
4) Regulation and control procedures
5) Emergency procedures
6) Summer and winter operating instructions
7) Required sequences for electric or electronic systems
8) Special operating instructions
9) Operator service requirements

C. Software: Specified program listings, interface control documents, source code listing, and copies of the operating programs on media appropriate to use as backup for the system software. Include instructions for loading the operating software onto the system.

D. Additional requirements:

1. For each system, general system or equipment description. Include size, weight, power consumption, power requirements, and outline drawings.
2. Copies of applicable Shop Drawings, Product Data, Drawings, and Schematics for the equipment systems.
3. Theory of Operation: Description of technical operating characteristics of the system and individual equipment using standard phraseology; descriptions of interface requirements including operating protocols; equipment displays and screens; make reference to installation drawings, schematics and equipment displays as required for technical understanding.

E. Identification Legends:

1. Piping and equipment: Provide a computer-generated legend to correspond with identification devices installed on piping and equipment. List the identifying device, its location, a brief description of the devices function, capacity and the I.D. number.

2. Panel boards and switchboards: Provide a computer-generated legend for each panel board and switchboard installed in the project. This information shall be a duplicate of the legend placed in the panel board.
3. Valve Tags and Schedule: Provide a computer-generated schedule of all valve tags. Include valve type, manufacturer, equipment location and size for all newly installed valves.

F. Organize the manual into separate Sections, by system as described in paragraph "O&M Manual Sections by Building System" of this Article, for each system or piece of related equipment.

1. Title Page: Provide a title page in a transparent, plastic envelope as the first sheet of each manual. Provide the following information:

   a. Subject matter covered by the manual
   b. Name and address of the Project
   c. Date of submittal
   d. Name, address, and telephone number of the D/B
   e. Cross-reference to related systems in other operation and maintenance manuals

2. Table of Contents: After the title page, include a computer-generated table of contents for each volume, arranged systematically according to the Project Manual format. Include a list of each product incorporated, identified by product name and other appropriate identifying symbol and indexed to the content of the volume. Each Data Package shall be tabbed and separately listed in the Table of Contents. Where multiple volumes are required to accommodate data, provide a comprehensive table of contents for all volumes in each volume of the set.
3. General Information: Provide a general information Section immediately following table of contents, listing each product included in the manual, identified by product name. Under each product, list the name, address, and telephone number of the subcontractor or installer and the maintenance contractor where applicable. Clearly delineate the extent of responsibility of each of these entities. Include a local source for replacement parts and equipment.
4. Product Data: Where the manuals include manufacturer's standard printed data, include only sheets that are pertinent to the part or product installed. Mark each sheet to identify each part or product included in the installation. Where the Project includes more than one item in a tabular format, identify each item, using appropriate references from the Contract Documents. Identify data that is applicable to the installation, and delete references to information that is not applicable.
5. Written Text: Prepare written text to provide necessary information where manufacturer's standard printed data are not available, and the information is necessary for proper operation and maintenance of equipment or systems. Prepare written text where it is necessary to provide additional information or to supplement data included in the manual. Organize text in a consistent format under separate headings for different procedures. Where necessary, provide a logical sequence of instruction for each operation or maintenance procedure.
6. Drawings: Provide specially prepared drawings where necessary to supplement manufacturer's printed data to illustrate the relationship of component parts of equipment or systems or to provide control or flow diagrams. Coordinate these drawings with information contained in Project Record Drawings to ensure correct illustration of the completed installation.
7. Warranties, Bonds, and Service Contracts: Provide a copy of each warranty, bond, or service contract tabbed in a separate binder. Provide written data outlining procedures to follow in

the event of product failure. List circumstances and conditions that would affect the validity of a warranty or bond.

G. O&M Manual Sections by Building System. This is the format to follow when preparing the Table of Contents but not limited to the list shown.

SECTION	DESCRIPTION
1	General Building Information
2	Exterior Closure
3	Roofing
4	Interior Construction
5	Interior Finishes
6	Plumbing Systems
7	HVAC Systems
8	Electrical Systems
9	Communication Systems

END OF SECTION 01 78 23

SECTION 01 78 39 - PROJECT RECORD DOCUMENTS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

B. Final Record Drawings will be prepared by the COTR using Pre-Final Record Drawings that have been updated monthly by the Contractor and as inspected during construction by the A/E of Record.

1.2 SUMMARY

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

1. Record Drawings.
2. Record Specifications.
3. Record Product Data.
4. Miscellaneous record submittals.

B. Project Record Documents record changes in the Work relative to the way the Work was shown and specified in the original Contract Documents. They also provide important information for the District's records that was not shown in the original Contract Documents but was produced during the construction stage of the Project. As such, they form an invaluable record for future reference for concealed conditions, facilities management processes, and future additions and renovations.

C. Maintenance of Record Documents and Samples: Store record documents and Samples in field office apart from Contract Documents used for construction. Do not use Project Record Documents for construction purposes.

D. Maintain record documents in good order and in clean, dry, legible condition. Make documents and Samples available at all times for Contracting Officer’s Technical Representative's (COTR’s) review.

E. Record information immediately after it's obtained on the red-line pencil Record Documents. Contractor shall make all pre-final Record Documents available to COTR at all times at the Job Site.

1.3 RECORD DRAWINGS

A. Markup Procedure: During construction, maintain set of blue- or black-line white prints of Contract Drawings and Shop Drawings for Project Record Document purposes.

1. Mark Drawings to show actual installation where installation varies from installation shown originally. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later. As applicable to Project, items required to be marked include, but are not limited to, following:

    a. Dimensional changes to Drawings.
    b. Revisions to details shown on Drawings.
    c. Locations and depths of underground utilities.
    d. Actual routing of piping and conduits.
    e. Revisions to electrical circuitry.
    f. Actual equipment locations.
    g. Duct size and routing.
    h. Locations of concealed internal utilities.
    i. Changes made by change order.
    j. Changes made following the COTR's instructions for Minor Change in Work.
    k. Details not on original Contract Drawings.

2. Mark record prints of Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. Where Shop Drawings are marked, show cross-reference on Contract Drawings location.
3. Mark record sets with red erasable colored pencil. Use other colors to distinguish between changes for different categories of Work at same location.
4. Mark important additional information that was either shown schematically or omitted from original Drawings.
5. Note alternate numbers, change-order numbers, and similar identification.

B. Responsibility for Markup: Individual or entity, who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, shall incorporate “as-built” information onto electronic CADD version of drawings.

1. Accurately record information in electronic format using software system approved by the COTR. Use the file naming convention established by the Construction Drawings.
2. Copies of Red-Line As-Builts in electronic form (example: PDF, JPEG, etc.) are not acceptable.

C. Copies and Distribution: After completing preparation of editable electronic version of record drawings, print one copy for review/approval by COTR. Include appropriate identification, including titles, dates, and other information on cover sheets.

1. Upon approval by the COTR, submit electronic and 3 copies of the record set to COTR.

D. Newly Prepared Record Drawings: Prepare new drawings instead of following procedures specified for preparing record drawings where new drawings are required, and COTR determines

that neither original Contract Drawings nor Shop Drawings are suitable to show actual installation. New drawings may be required when change order is issued as result of accepting alternate, substitution, or other modification.

1. Consult with COTR for proper scale and scope of detailing and notations required to record actual physical installation and its relation to other construction. When completed and accepted, integrate newly prepared Drawings with procedures specified for organizing, copying, binding and submitting record drawings.

1.4 RECORD SPECIFICATIONS

A. During construction period, maintain electronic and 3 copies of Project Specifications, including addenda and modifications issued, for Project Record Document purposes.

1. Mark Specifications to indicate actual installation where installation varies from that indicated in Specifications and modifications issued. Note related project record drawing information, where applicable. Give particular attention to substitutions, selection of product options, and information on concealed installations that would be difficult to identify or measure and record later. Incorporate all revisions into electronic version of specifications.

    a. In each Specification Section where products, materials, or units of equipment are specified or scheduled, mark copy with proprietary name and model number of product furnished.
    b. Record name of manufacturer, supplier, installer, and other information necessary to provide record of selections made and to document coordination with record Product Data submittals and maintenance manuals.
    c. Note related record Product Data, where applicable. For each principal product specified, indicate whether record Product Data has been submitted in maintenance manual instead of submitted as record Product Data.

2. Upon completion of electronic version of Record Specifications, print one copy of complete set and provide to COTR for review/approval. Upon approval, submit electronic, editable copy and 3 hard copies of Specifications to COTR for District’s records.

1.5 RECORD PRODUCT DATA

A. During construction period, maintain one PDF copy and 3 hard copies of each Product Data submittal for Project Record Document purposes.

1. Mark Product Data to indicate actual product installation where installation varies substantially from that indicated in Product Data submitted. Include significant changes in product delivered to site and changes in manufacturer's instructions and recommendations for installation.
2. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
3. Note related Change Orders and markup of record Drawings, where applicable.

4. Upon completion of markup, submit complete set of record Product Data to COTR for District's records.
5. Where record Product Data is required as part of maintenance manuals, submit marked-up Product Data as insert in manual instead of submittal as record Product Data.

1.6 RECORD SAMPLE SUBMITTAL

A. Immediately prior to date of Substantial Completion meet with COTR, and District's personnel at site to determine which Samples maintained during construction period shall be transmitted to District for record purposes. Comply with COTR's instructions for packaging, identification marking, and delivery to District's Sample storage space. Dispose of other Samples in manner specified for disposing surplus and waste materials.

1.8 MISCELLANEOUS RECORD SUBMITTALS

A. Refer to other Specification Sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities. Immediately prior to Completion, complete miscellaneous records and place in good order, properly identified and bound or filed, ready for use and reference. Submit to COTR for District's records.

1. As applicable to Project, categories of requirements resulting in miscellaneous records include, but are not limited to, following:

a. f. Authorized measurements utilizing unit prices or allowances.
b Testing and qualification of tradesmen.
c Documented qualification of installation firms.
d Load and performance testing.
e Inspections and certifications by governing authorities.
f Leakage and water-penetration tests.
g Fire-resistance and flame-spread test results.
h Final inspection and correction procedures.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION

3.1 RECORDING

A. Post changes and modifications to red-line Documents as they occur. Do not wait until end of Project.

END OF SECTION 01 78 39

SECTION 01 78 70 - WARRANTIES

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Administrative and procedural requirements for warranties required by Contract Documents, including manufacturers standard warranties on products and special warranties.

1. Refer to General Conditions of the Contract for Construction for terms of Contractor's period for correction of Work.

B. Contractor shall issue warranty for a period of 1 year after date of Substantial Completion as established in the District's written notification, to repair or replace Work in which defects in material or workmanship appear within 1 year and to repair or replace Work damaged by reasons thereof, to the satisfaction of the COTR and without cost to the District of Columbia.

C. Refer to Section 01 23 00 "Alternates" for 2-year warranty on HVAC systems.

1.3 DEFINITIONS

A. Standard Product Warranties: Preprinted written warranties published by individual manufacturers for particular products and are specifically endorsed by manufacturer to District.

B. Special Warranties: Written warranties required by or incorporated in Contract Documents, either to extend time limits provided by standard warranties or to provide greater rights for District.

1.4 WARRANTY REQUIREMENTS

A. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of warranty on Work that incorporates products. Manufacturer's disclaimers and limitations on product warranties do not relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with Contractor.

B. Related Damages and Losses: When correcting failed or damaged warranted construction, remove and replace construction that has been damaged as a result of such failure or must be removed and replaced to provide access for correction of warranted construction.

C. Reinstatement of Warranty: When Work covered by warranty has failed and been corrected by replacement or rebuilding, reinstate warranty by written endorsement. Reinstated Warranty: Equal to original warranty with equitable adjustment for depreciation.

D. Replacement Cost: Upon determination that Work covered by warranty has failed, replace or rebuild Work to acceptable condition complying with requirements of Contract Documents. Contractor: Responsible for cost of replacing or rebuilding defective Work regardless of whether District has benefited from use of Work through portion of its anticipated useful service life.

E. District's Recourse:

1. Expressed Warranties made to District: In addition to implied warranties and not limit duties, obligations, rights, and remedies otherwise available under law. Not deprive District of other rights District may have under other provisions of Contract Documents and are in addition to and run concurrent with other warranties made by Contractor under requirements of Contract Documents.
2. Expressed Warranty Periods: Not interpreted as limitations on time in which District can enforce such other duties, obligations, rights, or remedies.
3. Rejection of Warranties: District reserves right to reject warranties and to limit selection to products with warranties not in conflict with requirements of Contract Documents.

F. Where Contract Documents require special warranty, or similar commitment on Work or part of Work, District reserves right to refuse to accept Work, until Contractor presents written evidence that entities required to countersign such commitments have done so or are willing to do so.

1.5 SUBMITTALS

A. Submit written warranties to Contracting Officer's Technical Representative (COTR) prior to date certified for Substantial Completion. Warranty periods specified in individual specification sections begin on date of Substantial Completion as determined by District.

B. When Contract Documents require Contractor, or Contractor and subcontractor, supplier or manufacturer to execute special warranty, prepare written document that contains appropriate terms and identification, ready for execution by required parties. Submit draft to COTR, for approval prior to final execution.

1. Refer to other sections for specific content requirements and particular requirements for submitting special warranties.

C. Form of Submittal: At Substantial Completion compile two (2) copies of each required warranty properly executed by Contractor, or by Contractor, subcontractor, supplier, or manufacturer. D. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.

1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.

3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
4. Warranty Electronic File: Scan warranties and bonds and assemble complete warranty and bond submittal package into a single indexed electronic PDF file with links enabling navigation to each item. Provide bookmarked table of contents at beginning of document.

E. Provide additional copies of each warranty to include in operation and maintenance manuals.

1.5 SPECIAL WARRANTIES

A. Contractor shall provide written warranty for Work performed under the Contract for the following, where such product or system is installed on the Project:

2. Heating and Air Conditioning Equipment: With the exception of expendable components such as filters, for 5 years (or 10 full operating seasons) or the equivalent thereof against all conditions except vandalism or improper maintenance.
3. Roofing and Flashing Systems: 20 years by the manufacturer of the roofing material.

B. Contractor shall provide written warranties for Work performed under the Contract as detailed in other Sections

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

END OF SECTION 01 78 70

SECTION 02 4119 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Demolition and removal of selected portions of building or structure.
2. Salvage of existing items to be reused or recycled.

1.3 DEFINITIONS

A. Remove: Detach items from existing construction and dispose of them off-site unless indicated to be salvaged or reinstalled.

B. Remove and Salvage: Detach items from existing construction, in a manner to prevent damage, and deliver to Owner ready for reuse.

C. Remove and Reinstall: Detach items from existing construction, in a manner to prevent damage, prepare for reuse, and reinstall where indicated.

D. Existing to Remain: Leave existing items that are not to be removed and that are not otherwise indicated to be salvaged or reinstalled.

E. Dismantle: To remove by disassembling or detaching an item from a surface, using gentle methods and equipment to prevent damage to the item and surfaces; disposing of items unless indicated to be salvaged or reinstalled.

1.4 MATERIALS OWNERSHIP

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

B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.

1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

1.5 PREINSTALLATION MEETINGS

A. Predemolition Conference: Conduct conference at Project site.

1. Inspect and discuss condition of construction to be selectively demolished.
2. Review structural load limitations of existing structure.
3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
5. Review areas where existing construction is to remain and requires protection.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For refrigerant recovery technician.

B. Schedule of Selective Demolition Activities: Indicate the following:

1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's on-site operations are uninterrupted.
2. Interruption of utility services. Indicate how long utility services will be interrupted.
3. Coordination for shutoff, capping, and continuation of utility services.

C. Predemolition Photographs or Video: Show existing conditions of adjoining construction, including finish surfaces, that might be misconstrued as damage caused by demolition operations. Submit before Work begins.

D. Warranties: Documentation indicating that existing warranties are still in effect after completion of selective demolition.

1.7 FIELD CONDITIONS

A. Owner will occupy portions of site immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.

B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.

1. Before selective demolition, Owner will remove the following items:

a. <**Insert items to be removed by Owner**>.

C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.

D. Hazardous Materials: It is not expected that hazardous materials may be encountered in the Work.

1. If suspected hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.

E. Storage or sale of removed items or materials on-site is not permitted.

F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.

1. Maintain fire-protection facilities in service during selective demolition operations.

1.8 WARRANTY

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials and using approved contractors so as not to void existing warranties.

B. Notify warrantor on completion of selective demolition, and obtain documentation verifying that existing system has been inspected and warranty remains in effect. Submit documentation at Project closeout.

1.9 COORDINATION

A. Arrange selective demolition schedule so as not to interfere with Owner's operations.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

B. Standards: Comply with ASSE A10.6 and NFPA 241.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that utilities have been disconnected and capped before starting selective demolition operations.

B. Review Project Record Documents of existing construction or other existing condition and hazardous material information provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in Project Record Documents.

C. Verify that hazardous materials have been remediated before proceeding with building demolition operations.

D. Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs or video.

3.2 PREPARATION

A. Refrigerant: Before starting demolition, remove refrigerant from mechanical equipment according to 40 CFR 82 and regulations of authorities having jurisdiction.

3.3 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

A. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off utility services and mechanical/electrical systems serving areas to be selectively demolished.
   1. Arrange to shut off utilities with utility companies.
   2. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
   3. Disconnect, demolish, and remove fire-suppression systems, plumbing, and HVAC systems, equipment, and components indicated on Drawings to be removed.

      a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
      b. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material and leave in place.
      c. Equipment to Be Removed: Disconnect and cap services and remove equipment.
      d. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
      e. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.
      f. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.
      g. Ducts to Be Abandoned in Place: Cap or plug ducts with same or compatible ductwork material and leave in place.

3.4 PROTECTION

A. Temporary Protection: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.

   1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
   2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.

3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
4. Cover and protect furniture, furnishings, and equipment that have not been removed.

B. Temporary Shoring: Design, provide, and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.

1. Strengthen or add new supports when required during progress of selective demolition.

C. Remove temporary barricades and protections where hazards no longer exist.

3.5 SELECTIVE DEMOLITION, GENERAL

A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:

1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping. Temporarily cover openings to remain.
3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
5. Maintain fire watch during and for at least 2 hours after flame-cutting operations.
6. Maintain adequate ventilation when using cutting torches.
7. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
8. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
9. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
10. Dispose of demolished items and materials promptly

B. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

C. Work in Historic Areas: Selective demolition may be performed only in areas of Project that are not designated as historic. In historic spaces, areas, and rooms, or on historic surfaces, the terms "demolish" or "remove" shall mean historic "removal" or "dismantling" as specified in here.

D. Removed and Salvaged Items:

1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers.
3. Store items in a secure area until delivery to Owner.
4. Transport items to Owner's storage area designated by Owner.
5. Protect items from damage during transport and storage.

E. Removed and Reinstalled Items:

1. Clean and repair items to functional condition adequate for intended reuse.
2. Pack or crate items after cleaning and repairing. Identify contents of containers.
3. Protect items from damage during transport and storage.
4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

F. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition[**and cleaned**] and reinstalled in their original locations after selective demolition operations are complete.

3.6 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

A. Concrete: Demolish in small sections. Using power-driven saw, cut concrete to a depth of at least 3/4 inch at junctures with construction to remain. Dislodge concrete from reinforcement at perimeter of areas being demolished, cut reinforcement, and then remove remainder of concrete. Neatly trim openings to dimensions indicated.

B. Concrete: Demolish in sections. Cut concrete full depth at junctures with construction to remain and at regular intervals using power-driven saw, and then remove concrete between saw cuts.

C. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, and then remove masonry between saw cuts.

3.7 DISPOSAL OF DEMOLISHED MATERIALS

A. Remove demolition waste materials from Project site [and dispose of them in an EPA-approved construction and demolition waste landfill acceptable to authorities having jurisdiction.] [and recycle or dispose of them according to Section 017419 "Construction Waste Management and Disposal."]

1. Do not allow demolished materials to accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
4. Comply with requirements specified in Section 017419 "Construction Waste Management and Disposal."

B. Burning: Do not burn demolished materials.

3.8 CLEANING

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

END OF SECTION 02 4119

SECTION 040322 - HISTORIC BRICK UNIT MASONRY REPAIR

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes historic treatment work consisting of repairing historic clay brick masonry as follows:

1. Repairing unit masonry, including replacing units.
2. Removing abandoned anchors.
3. Painting steel uncovered during the work.

1.3 DEFINITIONS

A. Low-Pressure Spray: 100 to 400 psi; 4 to 6 gpm .

B. Rebuilding (Setting) Mortar: Mortar used to set and anchor masonry in a structure, distinct from pointing mortar installed after masonry is set in place.

C. Saturation Coefficient: Ratio of the weight of water absorbed during immersion in cold water to weight absorbed during immersion in boiling water; used as an indication of resistance of masonry units to freezing and thawing.

1.4 SEQUENCING AND SCHEDULING

A. Order sand and gray portland cement for colored mortar immediately after approval of mockups. Take delivery of and store at Project site a sufficient quantity to complete Project.

B. Work Sequence: Perform masonry historic treatment work in the following sequence, which includes work specified in this and other Sections:

1. Remove plant growth.
2. Inspect masonry for open mortar joints and repair before cleaning to prevent the intrusion of water and other cleaning materials into the wall.
3. Remove paint.
4. Clean masonry.
5. Rake out mortar from joints surrounding masonry to be replaced and from joints adjacent to masonry repairs along joints.
6. Repair masonry, including replacing existing masonry with new masonry materials.
7. Rake out mortar from joints to be repointed.

8. Point mortar and sealant joints.
9. After repairs and repointing have been completed and cured, perform a final cleaning to remove residues from this work.
10. Where water repellents are to be used on or near masonry work, delay application of these chemicals until after pointing and cleaning.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
2. Include recommendations for product application and use. Include test data substantiating that products comply with requirements.

B. Samples for Initial Selection: For the following:

1. Colored Mortar: Submit sets of mortar that will be left exposed in the form of sample mortar strips, 6 inches long by 1/4 inch wide, set in aluminum or plastic channels.

    a. Have each set contain a close color range of at least three Samples of different mixes of colored sands and cements that produce a mortar matching the existing, cleaned mortar when cured and dry.

2. Sand Types Used for Mortar: Minimum 8 oz. of each in plastic screw-top jars.

    a. For blended sands, provide Samples of each component and blend. Identify blend ratio.
    b. Identify sources, both supplier and quarry, of each type of sand.

3. Include similar Samples of accessories involving color selection.

C. Samples for Verification: For the following:

1. Each type of masonry unit to be used for replacing existing units. Include sets of Samples to show the full range of shape, color, and texture to be expected.

    a. For each brick type, provide straps or panels containing at least four bricks. Include multiple straps for brick with a wide range.

2. Each type of patching compound in the form of briquettes, at least 3 inches long by 1-1/2 inches wide. Document each Sample with manufacturer and stock number or other information necessary to order additional material.
3. Accessories: Each type of anchor, accessory, and miscellaneous support.

1.6 QUALITY ASSURANCE

A. Quality-Control Program: Prepare a written quality-control program for this Project to systematically demonstrate the ability of personnel to properly follow methods and use

materials and tools without damaging masonry. Include provisions for supervising worker performance and preventing damage.

B. Mockups: Prepare mockups of historic treatment on existing surfaces to demonstrate aesthetic effects and to set quality standards for materials and execution, and for fabrication and installation.

1. Masonry Repair: Prepare sample areas for each type of masonry material indicated to have repair work performed. If not otherwise indicated, size each mockup not smaller than two adjacent whole units or approximately 48 inches in least dimension. Construct sample areas in locations in existing walls where directed by Architect unless otherwise indicated. Demonstrate quality of materials, workmanship, and blending with existing work. Include the following as a minimum:

2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver masonry units to Project site strapped together in suitable packs or pallets or in heavy-duty cartons and protected against impact and chipping.

B. Deliver packaged materials to Project site in manufacturer's original and unopened containers, labeled with manufacturer's name and type of products.

C. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.

D. Store hydrated lime in manufacturer's original and unopened containers. Discard lime if containers have been damaged or have been opened for more than two days.

E. Store lime putty covered with water in sealed containers.

F. Store sand where grading and other required characteristics can be maintained and contamination avoided.

G. Handle masonry units to prevent overstressing, chipping, defacement, and other damage.

1.8 FIELD CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit repair work to be performed according to product manufacturers' written instructions and specified requirements.

B. Temperature Limits, General: Repair masonry units only when air temperature is between 40 and 90 deg F and is predicted to remain so for at least seven days after completion of the Work unless otherwise indicated.

C. Cold-Weather Requirements: Comply with the following procedures for masonry repair unless otherwise indicated:

1. When air temperature is below 40 deg F, heat mortar ingredients, masonry repair materials, and existing masonry walls to produce temperatures between 40 and 120 deg F.
2. When mean daily air temperature is below 40 deg F, provide enclosure and heat to maintain temperatures above 32 deg F within the enclosure for seven days after repair.

D. Hot-Weather Requirements: Protect masonry repair when temperature and humidity conditions produce excessive evaporation of water from mortar and repair materials. Provide artificial shade and wind breaks, and use cooled materials as required to minimize evaporation. Do not apply mortar to substrates with temperatures of 90 deg F and above unless otherwise indicated.

E. For manufactured repair materials, perform work within the environmental limits set by each manufacturer.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Source Limitations: Obtain each type of material for repairing historic masonry (face brick, cement, sand, etc.) from single source with resources to provide materials of consistent quality in appearance and physical properties.

2.2 OWNER-FURNISHED MATERIAL

A. Salvaged brick.

2.3 MASONRY MATERIALS

A. Face Brick: Provide face brick, including molded, ground, cut, or sawed shapes where required to complete masonry repair work.

1. Brick Matching Existing: Provide units with colors, color variation within units, surface texture, size, and shape to match existing brickwork and with physical properties within 10 percent of those determined from preconstruction testing of selected existing units.

a. For existing brickwork that exhibits a range of colors or color variation within units, provide brick that proportionally matches that range and variation rather than brick that matches an individual color within that range.

B. Salvaged Brick: Obtain salvaged brick from location shown on Drawings. Clean off residual mortar.

2.4 MORTAR MATERIALS

A. Portland Cement: ASTM C 150/C 150M, Type I or Type II; white[**or gray or both**] where required for color matching of mortar.

1. Provide cement containing not more than 0.60 percent total alkali when tested according to ASTM C 114.

B. Hydrated Lime: ASTM C 207, Type S.

C. Factory-Prepared Lime Putty: ASTM C 1489.

D. Quicklime: ASTM C 5, pulverized lime.

E. Mortar Sand: ASTM C 144 unless otherwise indicated.

1. Match size, texture, and gradation of existing mortar sand as closely as possible. Blend several sands if necessary to achieve suitable match.
2. Colored Mortar: Provide natural sand or ground marble, granite, or other sound stone of color necessary to produce required mortar color.
3. For exposed mortar, provide sand with rounded edges.

F. Water: Potable.

2.5 ACCESSORY MATERIALS

A. Masking Tape: Nonstaining, nonabsorbent material; compatible with mortar, joint primers, sealants, and surfaces adjacent to joints; and that easily comes off entirely, including adhesive.

B. Antirust Coating: Fast-curing, lead- and chromate-free, self-curing, universal modified-alkyd primer according to MPI #23 (surface-tolerant, anti-corrosive metal primer).

1. Surface Preparation: Use coating requiring no better than SSPC-SP 2, "Hand Tool Cleaning" SSPC-SP 3, "Power Tool Cleaning" surface preparation according to manufacturer's literature or certified statement.
2. VOC Limit: Use coating with a VOC content of 400 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

C. Other Products: Select materials and methods of use based on the following, subject to approval of a mockup:

1. Previous effectiveness in performing the work involved.
2. Minimal possibility of damaging exposed surfaces.
3. Consistency of each application.
4. Uniformity of the resulting overall appearance.
5. Do not use products or tools that could do the following:

a. Remove, alter, or harm the present condition or future preservation of existing surfaces, including surrounding surfaces not in Contract.
b. Leave residue on surfaces.

2.6 MORTAR MIXES

A. Preparing Lime Putty: Slake quicklime and prepare lime putty according to appendix to ASTM C 5 and manufacturer's written instructions.

B. Measurement and Mixing: Measure cementitious materials and sand in a dry condition by volume or equivalent weight. Do not measure by shovel; use known measure. Mix materials in a clean, mechanical batch mixer.

C. Colored Mortar: Produce mortar of color required by using specified ingredients. Do not alter specified proportions without Architect's approval.

1. Mortar Pigments: Where mortar pigments are indicated, do not add pigment exceeding 10 percent by weight of the cementitious or binder materials, except for carbon black which is limited to 2 percent, unless otherwise demonstrated by a satisfactory history of performance.

D. Do not use admixtures in mortar unless otherwise indicated.

E. Mixes: Mix mortar materials in the following proportions:

1. Rebuilding (Setting) Mortar by Volume: ASTM C 270, Proportion Specification, [**1 part portland cement, 2 parts lime, and 7 parts sand**] [**1 part portland cement, 4 parts lime, and 12 parts sand**] <**Insert proportions**>.
2. Rebuilding (Setting) Mortar by Type: ASTM C 270, Proportion Specification, [**Type N**] [**Type O**] <**Insert type**> unless otherwise indicated; with cementitious material limited to portland cement and lime.
3. Rebuilding (Setting) Mortar by Property: ASTM C 270, Property Specification, [**Type N**] [**Type O**] <**Insert type**> unless otherwise indicated; with cementitious material limited to portland cement and lime.
4. Rebuilding (Setting) Mortar by ASTM C 1713 Composition: ASTM C 1713, with binder material limited to [**portland cement and lime**] <**Insert binder(s)**>, and with a volume ratio of [**1 part portland cement, 1 part lime, and 6 parts sand**] <**Insert proportions**>.
5. Colored Mortar: Add mortar pigments to produce exposed, setting (rebuilding) mortar of colors required.

PART 3 - EXECUTION

3.1 PROTECTION

A. Prevent mortar from staining face of surrounding masonry and other surfaces.

1. Cover sills, ledges, and other projecting items to protect them from mortar droppings.

2. Keep wall area wet below rebuilding and pointing work to discourage mortar from adhering.
3. Immediately remove mortar splatters in contact with exposed masonry and other surfaces.

B. Remove gutters and downspouts and associated hardware adjacent to immediate work area, and store during masonry repair work. Reinstall when repairs are complete.

1. Provide temporary rain drainage during work to direct water away from building.

3.2 MASONRY REPAIR, GENERAL

A. Repair Appearance Standard: Repaired surfaces are to have a uniform appearance as viewed from 20 feet away by Architect.

3.3 PAINTING STEEL UNCOVERED DURING THE WORK

A. Notify Architect if steel is exposed during masonry removal. Where Architect determines that steel is structural, or for other reasons cannot be totally removed, prepare and paint it as follows:

1. Surface Preparation: Remove paint, rust, and other contaminants according to SSPC-SP 2, "Hand Tool Cleaning" or SSPC-SP 3, "PowerCleaning" , as applicable to comply with paint manufacturer's recommended preparation.
2. Antirust Coating: Immediately paint exposed steel with two coats of antirust coating, following coating manufacturer's written instructions and without exceeding manufacturer's recommended rate of application (dry film thickness per coat).

B. If on inspection and rust removal, the thickness of a steel member is found to be reduced from rust by more than 1/16 inch, notify Architect before proceeding.

3.4 FINAL CLEANING

A. After mortar has fully hardened, thoroughly clean exposed masonry surfaces of excess mortar and foreign matter; use wood scrapers, stiff-nylon or -fiber brushes, and clean water, applied by low-pressure spray.

1. Do not use metal scrapers or brushes.
2. Do not use acidic or alkaline cleaners.

B. Clean adjacent nonmasonry surfaces. Use detergent and soft brushes or cloths.

C. Clean mortar and debris from roof; remove debris from gutters and downspouts. Rinse off roof and flush gutters and downspouts.

D. Remove masking materials, leaving no residues that could trap dirt.

3.5 MASONRY-WASTE DISPOSAL

A. Salvageable Materials: Unless otherwise indicated, excess masonry materials are Contractor's property.

B. Masonry Waste: Remove masonry waste and legally dispose of off Owner's property.

END OF SECTION 040322

SECTION 061053 - MISCELLANEOUS ROUGH CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:
   1. Rooftop equipment bases and support curbs.
   2. Wood blocking and nailers.
   3. Wood furring
   4. Utility shelving.
   5. Plywood backing panels.

1.3 DEFINITIONS

A. Boards or Strips: Lumber of less than 2 inches nominal size in least dimension.

B. Dimension Lumber: Lumber of 2 inches nominal or greater size but less than 5 inches nominal size in least dimension.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

   1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.
   2. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.

1.5 INFORMATIONAL SUBMITTALS

A. Evaluation Reports: For the following, from ICC-ES:

   1. Preservative-treated wood.
   2. Power-driven fasteners.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Stack lumber flat with spacers beneath and between each bundle to provide air circulation. Protect lumber from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.

1. Factory mark each piece of lumber with grade stamp of grading agency.
2. For exposed lumber indicated to receive a stained or natural finish, mark grade stamp on end or back of each piece.

B. Maximum Moisture Content of Lumber: 15 percent for 2-inch nominal thickness or less, 19 percent for more than 2-inch nominal thickness unless otherwise indicated.

2.2 WOOD-PRESERVATIVE-TREATED MATERIALS

A. Preservative Treatment by Pressure Process: AWPA U1; Use Category UC2 for interior construction not in contact with ground, Use Category UC3b for exterior construction not in contact with ground, and Use Category UC4a for items in contact with ground.

1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.[Do not use inorganic boron (SBX) for sill plates.]

B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or does not comply with requirements for untreated material.

C. Application: Treat all miscellaneous carpentry unless otherwise indicated.

1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
2. Wood sills, sleepers, blocking, furring, stripping, and similar concealed members in contact with masonry or concrete.

2.3 MISCELLANEOUS LUMBER

A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:

1. Blocking.
2. Nailers.

3. Rooftop equipment bases and support curbs.
4. Cants.
5. Furring.
6. Grounds.
7. Utility shelving.

B. Utility Shelving: Lumber with 19 percent maximum moisture content of any of the following species and grades:
1. Hem-fir or hem-fir (north), Select Merchantable or No. 1 Common grade; NLGA, WCLIB, or WWPA.
2. Spruce-pine-fir (south) or spruce-pine-fir, Select Merchantable or No. 1 Common grade; NeLMA, NLGA, WCLIB, or WWPA.

C. For blocking not used for attachment of other construction, Utility, Stud, or No. 3 grade lumber of any species may be used provided that it is cut and selected to eliminate defects that will interfere with its attachment and purpose.

D. For blocking and nailers used for attachment of other construction, select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.

E. For furring strips for installing plywood or hardboard paneling, select boards with no knots capable of producing bent-over nails and damage to paneling.

2.4 PLYWOOD BACKING PANELS

A. Equipment Backing Panels: Plywood, DOC PS 1, Exposure 1, C-D Plugged, in thickness indicated or, if not indicated, not less than nominal thickness.

2.5 FASTENERS

A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.

1. Where carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M.

B. Nails, Brads, and Staples: ASTM F 1667.

C. Power-Driven Fasteners: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.

2.6 MISCELLANEOUS MATERIALS

A. Adhesives for Gluing Furring to Concrete or Masonry: Formulation complying with ASTM D 3498 that is approved for use indicated by adhesive manufacturer.

B. Flexible Flashing: Composite, self-adhesive, flashing product consisting of a pliable, rubberized-asphalt compound, bonded to a high-density polyethylene film, aluminum foil, or spunbonded polyolefin to produce an overall thickness of not less than 0.025 inch.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.

B. Set carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit carpentry accurately to other construction. Locate furring, nailers, blocking,and similar supports to comply with requirements for attaching other construction.

C. Install plywood backing panels by fastening to studs; coordinate locations with utilities requiring backing panels.

D. Do not splice structural members between supports unless otherwise indicated.

E. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim.

1. Provide metal clips for fastening gypsum board or lath at corners and intersections where framing or blocking does not provide a surface for fastening edges of panels. Space clips not more than 16 inches o.c.

F. Sort and select lumber so that natural characteristics do not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.

G. Comply with AWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.

1. Use inorganic boron for items that are continuously protected from liquid water.
2. Use copper naphthenate for items not continuously protected from liquid water.

H. Where wood-preservative-treated lumber is installed adjacent to metal decking, install continuous flexible flashing separator between wood and metal decking.

I. Securely attach carpentry work to substrate by anchoring and fastening as indicated, complying with the following:

1. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code.
2. Table R602.3(1), "Fastener Schedule for Structural Members," and Table R602.3(2), "Alternate Attachments," in ICC's International Residential Code for One- and Two-Family Dwellings.
3. ICC-ES evaluation report for fastener.

J. Use steel common nails unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood. Drive nails snug but do not countersink nail heads unless otherwise indicated.

3.2 WOOD BLOCKING AND NAILER INSTALLATION

A. Install where indicated and where required for screeding or attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.

B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces unless otherwise indicated.

C. Provide permanent grounds of dressed, pressure-preservative-treated, key-beveled lumber not less than 1-1/2 inches wide and of thickness required to bring face of ground to exact thickness of finish material. Remove temporary grounds when no longer required.

3.3 WOOD FURRING INSTALLATION

A. Install level and plumb with closure strips at edges and openings. Shim with wood as required for tolerance of finish work.

3.4 PROTECTION

A. Protect wood that has been treated with inorganic boron (SBX) from weather. If, despite protection, inorganic boron-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

B. Protect miscellaneous rough carpentry from weather. If, despite protection, miscellaneous rough carpentry becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION 061053

SECTION 062013 - EXTERIOR FINISH CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Exterior wood trim.

B. Related Requirements:

1. Section 061000 "Rough Carpentry" for furring, blocking, and other carpentry work not exposed to view and for framing exposed to view.
2. Section 099113 "Exterior Painting" for priming and backpriming of exterior finish carpentry.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product. Indicate component materials, dimensions, profiles, textures, and colors and include construction and application details.

1. Include data for wood-preservative treatment from chemical-treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained. Include chemical-treatment manufacturer's written instructions for finishing treated material.
2. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced before shipment to Project site to levels specified.

B. Samples for Initial Selection: For each type of product involving selection of colors, profiles, or textures.

1.4 INFORMATIONAL SUBMITTALS

A. Compliance Certificates:

1. For lumber that is not marked with grade stamp.
2. For preservative-treated wood that is not marked with treatment-quality mark.

B. Evaluation Reports: For the following, from ICC-ES:

1. Wood-preservative-treated wood.

C. Sample Warranties: For manufacturer's warranties.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Stack lumber, plywood, and other panels flat with spacers between each bundle to provide air circulation. Protect materials from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

1.6 FIELD CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecast weather conditions permit work to be performed and at least one coat of specified finish can be applied without exposure to rain, snow, or dampness.

B. Do not install finish carpentry materials that are wet, moisture damaged, or mold damaged.

1. Indications that materials are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
2. Indications that materials are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated.

B. Factory mark each piece of lumber with grade stamp of inspection agency, indicating grade, species, moisture content at time of surfacing, and mill.

1. For exposed lumber, mark grade stamp on end or back of each piece

C. Softwood Plywood: DOC PS 1.

D. Hardboard: ANSI A135.4.

2.2 WOOD-PRESERVATIVE-TREATED MATERIALS

A. Water-Repellent Preservative Treatment by Nonpressure Process: AWPA N1; dip, spray, flood, or vacuum-pressure treatment.

1. Preservative Chemicals: 3-iodo-2-propynyl butyl carbamate (IPBC), combined with an insecticide containing chloropyrifos (CPF).

2. Use chemical formulations that do not bleed through or otherwise adversely affect finishes. Do not use colorants in solution to distinguish treated material from untreated material.
3. Application: Exterior trim.

B. Preservative Treatment by Pressure Process: AWPA U1; Use Category [**UC3a**] [**UC3b**].

1. Kiln dry lumber and plywood after treatment to a maximum moisture content of 19 and 18 percent, respectively.
2. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.
3. For exposed items indicated to receive transparent finish, do not use chemical formulations that contain colorants or that bleed through or otherwise adversely affect finishes.
4. Do not use material that is warped or does not comply with requirements for untreated material.

2.3 EXTERIOR TRIM --(MATCH EXISTING MATERIAL)

A. Lumber Trim for Painted Finish:
1. Species and Grade: Hem-fir, Prime or D finish; NLGA, WCLIB, or WWPA.
2. Species and Grade: Eastern white pine, eastern hemlock-balsam fir-tamarack, eastern spruce, or white woods, D Select (Quality); NeLMA, NLGA, WCLIB, or WWPA.
3. Maximum Moisture Content: 19 percent.
4. Finger Jointing: Not allowed.
5. Face Surface: Surfaced (smooth).
6. Factory Priming: Factory coated on faces and edges, with exterior primer compatible with topcoats specified.

B. Moldings for Painted Finish: MMPA WM 4, P-grade wood moldings. Made from kiln-dried stock to patterns included in MMPA's "WM/Series Wood Moulding Patterns."

1. Species: Redwood Eastern white, Idaho white, lodgepole, ponderosa, radiata, or sugar pine .
2. Finger Jointing: Not allowed.
3. Factory Priming: Factory coated on faces and edges, with exterior primer compatible with topcoats specified.

2.4 MISCELLANEOUS MATERIALS

A. Fasteners for Exterior Finish Carpentry: Provide nails or screws, in sufficient length to penetrate not less than 1-1/2 inches into wood substrate.
1. For prefinished items, provide matching prefinished aluminum fasteners where face fastening is required.
2. For pressure-preservative-treated wood, provide hot-dip galvanized-steel fasteners.
3. For applications not otherwise indicated, provide hot-dip galvanized-steel fasteners.

B. Wood Glue: Waterproof resorcinol glue recommended by manufacturer for exterior carpentry use.

C. Adhesive for Cellular PVC Trim: Product recommended by trim manufacturer.

D. Flashing: Comply with requirements in Section 076200 "Sheet Metal Flashing and Trim" for flashing materials installed in exterior finish carpentry.

2.5 FABRICATION

A. Back out or kerf backs of standing and running trim wider than 5 inches, except members with ends exposed in finished work.

B. Ease edges of lumber less than 1 inch in nominal thickness to 1/16-inch radius and edges of lumber 1 inch or more in nominal thickness to 1/8-inch radius.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Examine finish carpentry materials before installation. Reject materials that are wet, moisture damaged, and mold damaged.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean substrates of projections and substances detrimental to application.

B. Prime lumber and moldings to be painted, including both faces and edges, unless factory primed. Cut to required lengths and prime ends. Comply with requirements in Section 099113 "Exterior Painting."

3.3 INSTALLATION, GENERAL

A. Do not use materials that are unsound, warped, improperly treated or finished, inadequately seasoned, or too small to fabricate with proper jointing arrangements.

1. Do not use manufactured units with defective surfaces, sizes, or patterns.

B. Install exterior finish carpentry level, plumb, true, and aligned with adjacent materials. Use concealed shims where necessary for alignment.

1. Scribe and cut exterior finish carpentry to fit adjoining work. Refinish and seal cuts as recommended by manufacturer.

2. Install to tolerance of 1/8 inch in 96 inches for level and plumb. Install adjoining exterior finish carpentry with 1/32-inch maximum offset for flush installation and 1/16-inch maximum offset for reveal installation.
3. Coordinate exterior finish carpentry with materials and systems in or adjacent to it. Provide cutouts for mechanical and electrical items that penetrate exterior finish carpentry.

3.4 STANDING AND RUNNING TRIM INSTALLATION

A. Install flat-grain lumber with bark side exposed to weather.

B. Install trim with minimum number of joints as is practical, using full-length pieces from maximum lengths of lumber available. Do not use pieces less than 24 inches long, except where necessary.

1. Use scarf joints for end-to-end joints.
2. Stagger end joints in adjacent and related members.

C. Fit exterior joints to exclude water. Cope at returns and miter at corners to produce tight-fitting joints, with full-surface contact throughout length of joint. Plane backs of casings to provide uniform thickness across joints, where necessary for alignment.

D. Where face fastening is unavoidable, countersink fasteners, fill surface flush, and sand unless otherwise indicated.

3.5 ADJUSTING

A. Replace exterior finish carpentry that is damaged or does not comply with requirements. Exterior finish carpentry may be repaired or refinished if work complies with requirements and shows no evidence of repair or refinishing. Adjust joinery for uniform appearance.

3.6 CLEANING

A. Clean exterior finish carpentry on exposed and semiexposed surfaces. Touch up factory-applied finishes to restore damaged or soiled areas.

3.7 PROTECTION

A. Protect installed products from damage from weather and other causes during construction.

B. Remove and replace finish carpentry materials that are wet, moisture damaged, and mold damaged.

1. Indications that materials are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
2. Indications that materials are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 062013

SECTION 072100 - THERMAL INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:
   1. Polyisocyanurate foam-plastic board.

B. Related Requirements:

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.4 INFORMATIONAL SUBMITTALS

A. Product Test Reports: For each product, for tests performed by a qualified testing agency.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Protect insulation materials from physical damage and from deterioration due to moisture, soiling, and other sources. Store inside and in a dry location. Comply with manufacturer's written instructions for handling, storing, and protecting during installation.

B. Protect foam-plastic board insulation as follows:

   1. Do not expose to sunlight except to necessary extent for period of installation and concealment.
   2. Protect against ignition at all times. Do not deliver foam-plastic board materials to Project site until just before installation time.
   3. Quickly complete installation and concealment of foam-plastic board insulation in each area of construction.

PART 2 - PRODUCTS

2.1 POLYISOCYANURATE FOAM-PLASTIC BOARD

A. Polyisocyanurate Board, Foil Faced ASTM C 1289, foil faced, Type I, Class 1 or 2.

B. Basis of Design: John Manville AP foil faced, 3" for R19 insulation

1. Fire Propagation Characteristics: Passes NFPA 285 testing as part of an approved assembly.

2.2 INSULATION FASTENERS (attaching to historic rafters with wd trim pieces)

A. Insulation-Retaining Washers: Self-locking washers formed from 0.016-inch- thick galvanized-steel sheet, with beveled edge for increased stiffness, sized as required to hold insulation securely in place, but not less than 1-1/2 inches square or in diameter.

1. Protect ends with capped self-locking washers incorporating a spring steel insert to ensure permanent retention of cap in the following locations:
   a. Ceiling plenums.

B. Insulation Standoff: Spacer fabricated from galvanized mild-steel sheet for fitting over spindle of insulation anchor to maintain air space of 1 inch between face of insulation and substrate to which anchor is attached.

2.3 ACCESSORIES

A. Adhesive for Bonding Insulation: Product compatible with insulation and air and water barrier materials, and with demonstrated capability to bond insulation securely to substrates without damaging insulation and substrates.

PART 3 - EXECUTION

3.1 PREPARATION

A. Clean substrates of substances that are harmful to insulation, including removing projections capable of puncturing insulation or vapor retarders, or that interfere with insulation attachment.

3.2 INSTALLATION, GENERAL

A. Comply with insulation manufacturer's written instructions applicable to products and applications.

B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed to ice, rain, or snow at any time.

3.3 PROTECTION

A. Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes. Provide temporary coverings or enclosures where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

END OF SECTION 072100

SECTION 079200 - JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Silicone joint sealants.
2. Latex joint sealants.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site

1.4 ACTION SUBMITTALS

A. Product Data: For each joint-sealant product.

B. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.

C. Samples for Verification: For each kind and color of joint sealant required, provide Samples with joint sealants in 1/2-inch- wide joints formed between two 6-inch- long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified testing agency.

B. Product Test Reports: For each kind of joint sealant, for tests performed by manufacturer and witnessed by a qualified testing agency

C. Preconstruction Laboratory Test Schedule: Include the following information for each joint sealant and substrate material to be tested:

1. Joint-sealant location and designation.
2. Manufacturer and product name.
3. Type of substrate material.

D. Preconstruction Laboratory Test Reports: From sealant manufacturer, indicating the following:

1. Materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with joint sealants.
2. Interpretation of test results and written recommendations for primers and substrate preparation are needed for adhesion.

E. Sample Warranties: For special warranties.

1.6 QUALITY ASSURANCE

A. Product Testing: Test joint sealants using a qualified testing agency.

1. Testing Agency Qualifications: Qualified according to ASTM C 1021 to conduct the testing indicated.

1.7 FIELD CONDITIONS

A. Do not proceed with installation of joint sealants under the following conditions:

1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer
2. When joint substrates are wet.
3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.8 WARRANTY

A. Special Installer's Warranty: Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: Two years from date of Substantial Completion.

B. Special warranties specified in this article exclude deterioration or failure of joint sealants from the following:

1. Movement of the structure caused by stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression.
2. Disintegration of joint substrates from causes exceeding design specifications.
3. Mechanical damage caused by individuals, tools, or other outside agents.
4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

PART 2 - PRODUCTS

2.1 JOINT SEALANTS, GENERAL

A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.

B. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

2.2 SILICONE JOINT SEALANTS

A. Silicone, S, NS, 100/50, NT: Single-component, nonsag, plus 100 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 100/50, Use NT.

2.3 NONSTAINING SILICONE JOINT SEALANTS

A. Nonstaining Joint Sealants: No staining of substrates when tested according to ASTM C 1248.

B. Silicone, Nonstaining, S, NS, 100/50, NT: Nonstaining, single-component, nonsag, plus 100 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 100/50, Use NT.

2.4 LATEX JOINT SEALANTS

A. Acrylic Latex: Acrylic latex or siliconized acrylic latex, ASTM C 834, Type OP, Grade NF.
1. Franklin
2. Pecora
3. Tremco

2.5 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.

C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:

1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
2. Clean porous joint substrate surfaces by brushing, grinding, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include the following:
    a. Masonry.
3. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:

    a. Metal.
    b. Glass.

B. FlooringMasking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.

B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

C. Install sealants using proven techniques that comply with the following and at the same time backings are installed:

1. Place sealants so they directly contact and fully wet joint substrates.
2. Completely fill recesses in each joint configuration.

3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

D. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.

1. Remove excess sealant from surfaces adjacent to joints.
2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
3. Provide concave joint profile per Figure 8A in ASTM C 1193 unless otherwise indicated.
4. Provide flush joint profile according to Figure 8B in ASTM C 1193.
5. Provide recessed joint configuration of recess depth and according to Figure 8C in ASTM C 1193.

a. Use masking tape to protect surfaces adjacent to recessed tooled joints.

3.4 FIELD QUALITY CONTROL

3.5 CLEANING

A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.6 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out, remove, and repair damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

END OF SECTION 079200

SECTION 080351.23 - HISTORIC TREATMENT OF STEEL WINDOWS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes historic treatment of steel windows in the form of the following:

1. Repairing steel windows and trim.
2. Reglazing.
3. Repairing, refinishing, and replacing hardware.

1.3 ALLOWANCES

A. Replace steel sash in Window No. 1 as part of "REPLACE Steel Windows"

1.4 DEFINITIONS

A. Glazing: Includes glass, glazing clips, glazing tapes, glazing sealants, and glazing compounds.

B. Window: Includes window frame, sash, hardware, and insect screens unless otherwise indicated by context.

C. Steel Window Component Terminology: Steel window components for historic treatment work are welded together from steel shapes and include the following classifications:

1. Subframe: Steel anchorage, usually built into wall construction.
2. Window-Frame Members: Head, jambs, and sill.
3. Sash Members: Stiles, rails, and muntins.

1.5 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference on historic treatment of steel windows at Project site.
1. Review methods and procedures related to historic treatment of steel windows

1.6 SEQUENCING AND SCHEDULING

A. Perform historic treatment of steel windows in the following sequence, which includes work specified in this and other Sections:

1. Label each window frame with permanent opening-identification number in inconspicuous location.
2. Tag existing window sash and detachable insect screens with opening-identification numbers.
3. Remove window sash, dismantle hardware, and tag hardware with opening-identification numbers.
4. Remove window frames, if required, and tag with opening-identification numbers.
5. Remove caulking and sealant residue from perimeter masonry and concrete.
6. Dismantle unused window accessory hardware from masonry or concrete and repair holes according to requirements in other Sections.
7. Install temporary protection and security at window openings.
8. In the shop, label each removed item with permanent opening-identification number in inconspicuous location and remove site-applied tags.
9. Sort units by condition, separating those that need extensive repair.
10. Clean surfaces.
11. General Steel-Repair Sequence:

    a. Remove rust and paint to bare steel. Prime immediately. Verify and strip lead-based paint according to regulatory requirements.
    b. Align and straighten sash and frame to close completely and fit snugly around entire perimeter of sash.
    c. Repair steel by patching or removing severely corroded areas and welding or brazing steel of matching cross section. Spot prime immediately.
    d. If thicker-than-original glass is required, provide modified glazing clips to secure glass.

12. Repair and refinish hardware; replace missing hardware.
13. Apply second coat of primer on surfaces that will be concealed when window is reinstalled.
14. Remove temporary protection and security at window openings.
15. Reinstall and adjust units.
16. Install glazing.
17. Apply finish coats.
18. Install hardware.
19. Install weather stripping if any.
20. Seal perimeter joints between frames and masonry or concrete according to requirements in other Sections.

1.7 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include recommendations for product application and use.

B. Shop Drawings: Include plans, elevations, and sections showing locations and extent of repair and replacement work, with enlarged details of replacement parts indicating materials, profiles, connections, reinforcing, method of splicing into or attaching to existing steel window, accessory items, and finishes. Include field-verified dimensions and the following:

1. Schedule of window and sash repairs, using same reference number for openings as those on Contract Drawings.
2. Full-size shapes and profiles with complete dimensions for replacement components and their connections, showing relationship of existing components to new components.
3. Identification of each new unit and its corresponding window locations in the building on annotated plans and elevations.
4. Provisions for sealant joints and flashing as required for location.

C. Samples for Initial Selection: For each type of exposed finish.

1. Include Samples of hardware and accessories involving color selection.

D. Samples for Verification: For the following products in manufacturer's standard sizes unless otherwise indicated, finished as required for use in the Work:

1. Replacement Units: 12-inch- long, full-size frame mullion sash and insect screen sections with shop-applied finish.
2. Repaired Steel Window Members: Prepare Samples using steel window members from salvage sources, repaired and prepared for refinishing.

    a. Additional Samples that show welding or brazing techniques, materials, and finishes as requested by Architect.

3. Refinished Steel Window Members: Prepare Samples using steel window members from salvage sources, repaired and refinished.
4. Hardware: Full-size units with each shop-applied or restored finish.
5. Weather Stripping: 12-inch- long section of mated steel members with weather stripping.
6. Glass: Full-size units of each type and appearance.

1.8 INFORMATIONAL SUBMITTALS

A. Qualification Data: For steel-repair-material manufacturer.

1.9 QUALITY ASSURANCE

A. Historic Treatment Specialist Qualifications: A qualified historic steel window specialist, experienced in repairing, refinishing, and replacing steel windows in whole and in part. Experience only in fabricating and installing new steel windows is insufficient experience for steel window historic treatment work.

B. Steel-Patching-Compound Manufacturer Qualifications: A firm regularly engaged in producing steel-patching compound that has been used for similar historic-metal-repair applications with successful results.

C. Mockups: Prepare mockups of historic treatment repair processes to demonstrate aesthetic effects and to set quality standards for materials and execution, and for fabrication and installation. Prepare mockups so they are as inconspicuous as practicable.

1. Locate mockups in locations that enable viewing under same conditions as the completed Work.
2. Steel Window Repair: Prepare one entire window unit to serve as mockup to demonstrate samples of each type of repair of steel window members, including frame, sash, glazing, and hardware.
3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.10 DELIVERY, STORAGE, AND HANDLING

A. Pack, deliver, and store products in suitable packs, heavy-duty cartons, or wooden crates; surround with sufficient packing material to ensure that products will not be deformed, broken, or otherwise damaged.

B. Store products inside a well-ventilated area and protected from weather, moisture, soiling, abrasion, extreme temperatures, and humidity, and where environmental conditions comply with manufacturer's requirements

1.11 FIELD CONDITIONS

A. Weather Limitations: Proceed with historic treatment of steel windows only when existing and forecasted weather conditions are within the environmental limits set by each manufacturer's written instructions and specified requirements.

PART 2 - PRODUCTS

2.1 STEEL-REPAIR MATERIALS

A. Steel: Steel shapes from the following: Use available salvage sources before using new steel materials.

1. Salvage Sources: Sound steel with no rust or only surface rust, straight, and with cross-sectional shapes matching existing steel shapes.
2. New Steel Plate, Shapes, and Bars: ASTM A 36/A 36M.

B. Steel-Patching Compound: Two-part, metal-filled epoxy resin, steel-patching compound; knife-grade formulation as recommended in writing by manufacturer for types of repair indicated, tooling time required for the detail of work, and site conditions. Compound shall be produced for filling metal that has deteriorated due to corrosion. Filler shall be capable of filling deep holes and spreading to featheredge.

1. Source Limitations: Obtain steel-patching compound from single source from single manufacturer.

2.2 GLAZING MATERIALS

A. Glass: match existing.

B. Traditional Glazing Products: Glazing clips and oil-based glazing putty or latex glazing compound.
   1. DAP products
   2. Sarco Putty Companay
   3. United Gilsonite Laboratory

C. Modern Glazing Products: Glazing clips and single-component polyurethane glazing compound; ASTM C 920, Type S, Grade NS, Class 25, Use G; struck uniformly to match taper of existing glazing putty (removed); colored as required to match painted sash.

D. Modern Glazing with Stops: Custom-retrofitted, wedge-shaped galvanized-steel stops (matching taper of existing glazing putty), painted to match painted sash, and mechanically attached at equal intervals maximum 12 inches on centers; with mitered corners and butyl glazing tape on both sides of glass.

E. Primers and Cleaners for Glazing: As recommended in writing by glazing material manufacturer.

2.3 HARDWARE

A. Window Hardware: Provide complete sets of window hardware consisting of hinges, pulls, latches, and accessories indicated for each window or required for proper operation. Sets shall include replacement hardware to complement repaired and refinished existing hardware. Window hardware shall smoothly operate, tightly close, and securely lock steel windows and be sized to accommodate sash weight and dimensions.

B. Replacement Hardware: Replace existing damaged or missing hardware with hardware from salvage sources or newly manufactured hardware.

C. Material and Design:

   1. Material: match existing
   2. Design: Match type and appearance of existing hardware.
   3. Replacement Window Hardware: Match existing window hardware of the following types:

      a. Casement window hinges.
      b. Window latch.
      c. Handle.

D. Hardware Finishes: Comply with BHMA A156.18 for base material and finish requirements indicated by the following: match existing.

1. BHMA 605: Bright brass, clear-coated; brass base metal.
2. BHMA 606: Satin brass, clear-coated; brass base metal.
3. BHMA 611: Bright bronze, clear-coated; bronze base metal.
4. BHMA 612: Satin bronze, clear-coated; bronze base metal.
5. BHMA 613: Dark-oxidized satin bronze, oil-rubbed; bronze base metal.
6. BHMA 624: Dark-oxidized statuary bronze, clear-coated; bronze base metal.
7. BHMA 628: Satin aluminum, clear anodized; aluminum base metal.
8. BHMA 630: Satin stainless steel; stainless-steel base metal.
9. BHMA 689: Aluminum painted; over any base metal.

2.4 WEATHER STRIPPING MATERIALS

A. Sealant: Multicomponent, nonsag, neutral-curing silicone joint sealant; ASTM C 920, Type M, Grade NS, for Use NT; color to match window frame.

B. Bond-Breaker Strip: Polyethylene tape or other plastic tape to which sealant does not adhere, as recommended in writing by sealant manufacturer; width as required to fully cover mating joint between sash and frame.

2.5 MISCELLANEOUS MATERIALS

A. Detergent Solution: Solution prepared by mixing 2 cups of tetrasodium pyrophosphate (TSPP), 1/2 cup of laundry detergent that contains no ammonia, 5 quarts of 5 percent sodium hypochlorite bleach, and 15 quarts of warm water for each 5 gal. of solution required.

B. Rust Remover: Manufacturer's standard phosphoric acid-based gel formulation, also called "naval jelly," for removing corrosion from iron and steel.

C. Antirust Coating: Fast-curing, lead- and chromate-free, self-curing, universal modified-alkyd primer according to MPI #23 (surface-tolerant, anti-corrosive metal primer) or SSPC-Paint 20 or SSPC-Paint 29 .

1. Surface Preparation: Use coating requiring no better than SSPC-SP 2, "Hand Tool Cleaning" or SSPC-SP 3, "Power Tool Cleaning" [**or**] surface preparation according to manufacturer's literature or certified statement.
2. VOC Limit: Use coating with a VOC content of 400 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

D. Fasteners: Use fastener metals that are noncorrosive and compatible with each material joined.

1. Match existing fasteners in material and type unless otherwise indicated.
2. Use concealed fasteners to attach items to other work unless exposed fasteners are unavoidable or the existing fastening method.
3. For fastening metals, use fasteners of same basic metal as fastened metal unless otherwise indicated.
4. For exposed fasteners, use Phillips-type machine screws of head profile flush with metal surface unless otherwise indicated.
5. Finish exposed fasteners to match finish of metal fastened unless otherwise indicated.

E. Anchors, Clips, and Accessories: Fabricate anchors, clips, and window accessories of nonmagnetic stainless steel or hot-dip zinc-coated steel complying with requirements in ASTM B 633 for SC 3 (Severe) service condition.

2.6 STEEL WINDOW FINISHES

A. Shop-Primed Replacement Units: Manufacturer's standard shop-prime coat on exposed surfaces; compatible with indicated finish coating.

B. Shop-Finished Units: Alkyd finish system consisting of primer and two finish coats on exposed exterior and interior surfaces.

1. Finish Coats: Match intermediate coat and topcoat products used for adjacent, repaired steel windows

C. Color and Gloss: Match existing Architect to select from full range provided by Contractor.

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect adjacent materials from damage by historic treatment of steel windows.

B. Clean steel windows of mildew, algae, moss, plant material, loose paint, grease, dirt, and other debris by scrubbing with bristle brush or sponge and detergent solution. After cleaning, rinse thoroughly with fresh water. Allow to dry before repairing or painting.

3.2 HISTORIC TREATMENT OF STEEL WINDOWS, GENERAL

A. Historic Treatment Appearance Standard: Completed work is to have a uniform appearance as viewed by Architect from the window interior at 5 feet away and from the window exterior at 20 feet away.

B. General: In treating historic items, disturb them as minimally as possible and as follows:

1. Stabilize and repair steel windows to reestablish structural integrity and weather resistance while maintaining the existing form of each item.
2. Remove coatings from accessible surfaces
3. Repair items in place where possible, unless otherwise indicated.

C. Mechanical Abrasion: Do not use abrasive methods, such as sanding, wire brushing, or power tools, except as indicated as part of the historic treatment program and as approved by Architect.

D. Repair and Refinish Existing Hardware: Dismantle window hardware; strip paint, repair, and refinish it to match finish samples; and lubricate moving parts just enough to function smoothly.

E. Repair Steel Windows: Match existing materials and features, retaining as much original material as possible to perform repairs.

1. Unless otherwise indicated, repair steel windows by patching, splicing, or otherwise reinforcing steel with new or salvaged steel members.
2. Where indicated, repair steel windows by limited replacement matching existing material.

F. Protection of Openings: Where sash or windows are indicated for removal, cover resultant openings with temporary enclosures so that openings are weathertight during repair period.

G. Identify removed windows, frames, sash, and components with numbering system corresponding to window locations to ensure reinstallation in same location. Key windows, sash, and components to Drawings showing location of each removed unit. Permanently label units in a location that will be concealed after reinstallation.

3.3 STEEL WINDOW STRAIGHTENING

A. Remove glass, weather stripping, and interfering hardware from sash. Remove paint buildup from between sash and frame.

B. Using shims and gentle pressure, align and straighten sash and frame to close completely and snugly against each other, around entire perimeter of sash.

C. Straighten and adjust hinges, latches, and other hardware so that sash and frame remain snugly against each other along entire perimeter of sash in closed and latched position.

3.4 RUST REMOVAL

A. Chemical Rust Removal:

1. Remove loose rust scale with tools and abrasives to sound metal or firmly adhered rust residue. Vacuum debris from cavities.
2. Apply rust remover with brushes or as recommended in writing by manufacturer.
3. Allow rust remover to remain on surface for period recommended in writing by manufacturer or as determined by preconstruction testing. Do not allow extended dwell time.
4. Wipe off residue with mineral spirits and either steel wool or soft rags, or clean with method recommended in writing by manufacturer to remove residue.
5. Dry immediately with clean, soft cloths. Follow direction of grain in metal.
6. Prime immediately to prevent rust. Do not touch cleaned metal surface until primed.

B. Mechanical Rust Removal:

1. Remove rust with tools and abrasives. Vacuum debris from cavities.
2. Wipe off residue with mineral spirits and either steel wool or soft rags.
3. Dry immediately with clean, soft cloths. Follow direction of grain in metal.
4. Prime immediately to prevent rust. Do not touch cleaned metal surface until primed.

C. In-Shop Rust and Paint Removal: Remove rust and paint in shop by chemical or mechanical methods.

1. Dry immediately with clean, soft cloths. Follow direction of grain in metal.
2. Prime immediately to prevent rust. Do not touch cleaned metal surface until primed.

3.5 STEEL WINDOW PATCH-TYPE REPAIR

A. General: Patch steel members that exhibit depressions, nonstructural holes, and corrosion.

1. Remove sash and screens from frame before performing patch-type repairs at meeting surfaces unless otherwise indicated.
2. Verify that surfaces are sufficiently clean and free of paint residue according to steel-patching-compound manufacturer's written instructions prior to patching.

B. Remove rust down to sound, rust-free material.

C. Apply steel-patching compound to fill depressions, nicks, cuts, and other voids created by rusted, removed, or missing steel.

1. Mix only as much patching compound as can be applied according to manufacturer's written instructions.
2. Apply patching compound in layers as recommended in writing by manufacturer until the void is completely filled.
3. Finish patch surface smooth and flush with adjacent steel, without voids in patch material, and matching contour of steel member.
4. Clean spilled compound from adjacent materials immediately.

D. Verify that patch repairs do not interfere with snug fit of sash and frame against each other along entire perimeter of sash in closed and latched position. If not, modify the patch repair or restraighten window as required.

3.6 STEEL WINDOW MEMBER-REPLACEMENT REPAIR

A. General: Replace parts of or entire steel window members at locations where damage is too extensive to patch

1. Remove sash and screens from windows before performing member-replacement repairs unless otherwise indicated.
2. Verify that surfaces are sufficiently clean and free of paint residue prior to repair.
3. Straighten window as specified in "Steel Window Straightening" Article.
4. Remove rust and broken steel down to sound, rust-free material.
5. Cut out structurally weakened sections.
6. Custom fabricate new steel of same size, thickness, and shape as cut-out material to replace missing steel; either replace entire steel member or splice new steel part into existing member.
7. Weld or braze replacement material in place, and grind the repair smooth and flush with adjoining metal or filled metal as applicable.

8. If replacement metal sections of original cross section cannot be found from salvage sources, weld flat plates into a built-up section.

B. Repair remaining depressions, holes, or similar voids with patch-type repairs.

C. Clean spilled materials from adjacent surfaces immediately.

D. Glazing: Provide replacement glazing clips coordinated with glazing system indicated.

E. Reinstall units removed for repair into original openings.

F. Verify that member-replacement repairs do not interfere with snug fit of sash and frame against each other along entire perimeter of sash in closed and latched position. If not, modify the member-replacement repair or restraighten window as required.

3.7 SHOP REPAIR OF WINDOWS FRAMES AND SUBFRAME REPAIR

A. Remove window frames and sash from wall before performing window straightening, rust removal, patch-type repairs, and member-replacement repairs as required.

B. Remove rust in shop.

C. Perform other required historic treatment work.

D. Subframe: On site, examine subframe exposed by window frame removal. Protect adjacent materials, and remove rust from exposed subframe.

1. Prepare and paint exposed subframe on-site as follows:

a. Surface Preparation: Remove paint, rust, and other contaminants according to SSPC-SP 2, "Hand Tool Cleaning," SSPC-SP 3, "Power Tool Cleaning," as applicable according to coating manufacturer's written instructions.
b. Antirust Coating: Immediately paint exposed steel with two coats of antirust coating, following coating manufacturer's written instructions and without exceeding manufacturer's recommended rate of application (dry-film thickness per coat).

2. Clean spilled materials from adjacent surfaces immediately.

E. If on inspection and rust removal, the thickness of a steel member is found to be reduced from rust by more than 1/16 inch, notify Architect before proceeding.

3.8 GLAZING

A. Comply with combined written instructions of manufacturers of glass, glazing system, and glazing materials unless more stringent requirements are indicated.

B. Remove cracked and damaged glass and glazing materials from openings, and prepare surfaces for reglazing.

C. Remove existing glass and glazing and prepare surfaces for reglazing..

D. Prime steel, including glazing rabbets, with finish-paint primer before installing glass.

E. Size glass as required by Project conditions to provide necessary bite on glass and minimum edge and face clearances with reasonable tolerances.

F. Apply primers to joint surfaces where required for adhesion of glazing system, as determined by preconstruction testing.

G. Install setting bead, side beads, and back bead against stop in glazing rabbets before setting glass.

H. Install glass with proper orientation so that coatings, if any, face exterior or interior as required.

I. Install glazing clips or stops as required for glazing system.

J. Disposal of Removed Glass: Protect unbroken lites and deliver as salvage to Owner for storage where directed unless otherwise indicated.

3.9 STEEL WINDOW UNIT REPLACEMENT

A. General: Replace existing window frame and sash units with replicated steel units to match existing at locations where damage is too extensive to repair

B. Install units, hardware, accessories, and other components.

C. Install units level, plumb, square, true to line, without distortion or impeding movement, anchored securely in place to structural support, and in proper relation to wall flashing and other adjacent construction.

D. Metal Protection: Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action at points of contact with other materials.

E. Anchor Concealment: Fill screw head depressions flush and smooth with paintable putty after window installation, spot prime, and paint.

F. Disposal of Removed Units: Deliver as salvage to Owner for storage where directed .

3.10 WEATHER STRIPPING INSTALLATION

A. General: Install weather stripping for tight seal between sash and frame as determined by preconstruction testing and demonstrated in mockup.

B. Application: Apply continuous bead of sealant to window frame surface against which sash frame closes. Cover applied sealant with bond-breaker strip, fully close sash, and latch in closed position. Remove extruded sealant if any.

C. Curing: Allow sealant to cure in closed-window joint for 28 days unless otherwise recommended in writing by sealant manufacturer.

D. Removing Bond-Breaker Strip: After curing time, gently open window and remove bond-breaker strip. Verify that weather stripping is continuous and neat, without spillage on other surfaces. Remove spillage if any. Wipe down joint sides with damp cloth and close sash. Verify full closure.

3.11 ADJUSTMENT

A. Adjust existing and replacement operating sash, insect screens, hardware, weather stripping, and accessories for a tight fit at contact points and weather stripping for smooth operation and weathertight closure. Lubricate hardware and moving parts.

3.12 CLEANING AND PROTECTION

A. Protect window surfaces from contact with contaminating substances resulting from construction operations. Monitor window surfaces adjacent to and below exterior concrete and masonry during construction for presence of dirt, scum, alkaline deposits, stains, or other contaminants. If contaminating substances contact window surfaces, remove contaminants immediately.

B. Clean exposed surfaces immediately after historic treatment of steel windows. Avoid damage to coatings and finishes. Remove excess sealants, glazing and repair materials, dirt, and other substances.

C. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during construction period.

END OF SECTION 080351.23

SECTION 081113 - HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes hollow-metal door and metal dutch door.

B. Related Requirements:
   1. Section 087100 "Door Hardware" for door hardware for hollow-metal doors.

1.3 DEFINITIONS

A. Minimum Thickness: Minimum thickness of base metal without coatings according to NAAMM-HMMA 803 or SDI A250.8.

1.4 COORDINATION

A. Coordinate anchorage installation for hollow-metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

1.5 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.6 ACTION SUBMITTALS

A. Product Data: For each type of product.

   1. Include construction details, material descriptions, core descriptions, and finishes.

B. Shop Drawings: Include the following:

   1. Elevations of each door type.
   2. Details of doors, including vertical- and horizontal-edge details and metal thicknesses.
   3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
   4. Locations of reinforcement and preparations for hardware.
   5. Details of each different wall opening condition.

6. Details of anchorages, joints, field splices, and connections.
7. Details of accessories.
8. Details of moldings, removable stops, and glazing.
9. Details of conduit and preparations for power, signal, and control systems.

C. Samples for Initial Selection: For units with factory-applied color finishes.

D. Schedule: Provide a schedule of hollow-metal work prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings. Coordinate with final Door Hardware Schedule.

1.7 INFORMATIONAL SUBMITTALS

A. Product Test Reports: For each type of hollow-metal door and frame assembly, for tests performed by a qualified testing agency.

B. Oversize Construction Certification: For assemblies required to be fire rated and exceeding limitations of labeled assemblies.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver hollow-metal work palletized, packaged, or crated to provide protection during transit and Project-site storage. Do not use nonvented plastic.

1. Provide additional protection to prevent damage to factory-finished units.

B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.

C. Store hollow-metal work vertically under cover at Project site with head up. Place on minimum 4-inch- high wood blocking. Provide minimum 1/4-inch space between each stacked door to permit air circulation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers:
1. Ceco Door
2. North American Door Corp
3. Republic Doors
4. Steelcraft

B. Source Limitations: Obtain hollow-metal work from single source from single manufacturer.

2.2 EXTERIOR HOLLOW-METAL DOORS AND FRAMES

A. Construct exterior doors and frames to comply with the standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.

B. Commercial Doors and Frames: NAAMM-HMMA 861

1. Physical Performance: Level A according to SDI A250.4.
2. Doors:

    a. Type: As indicated in the Door and Frame Schedule.
    b. Thickness: 1-3/4 inches
    c. Face: Metallic-coated steel sheet, minimum thickness of 0.053 inch, with minimum G60A60 coating.
    d. Edge Construction: Continuously welded with no visible seam.
    e. Core: Steel stiffened.

3. Frames:

    a. Materials: Metallic-coated steel sheet, minimum thickness of 0.067 inch, with minimum G60A60 coating.
    b. Construction: Face welded.

4. Exposed Finish: Prime.

2.3 FRAME ANCHORS

A. Jamb Anchors:

1. Masonry Type: Adjustable strap-and-stirrup or T-shaped anchors to suit frame size, not less than 0.042 inch thick, with corrugated or perforated straps not less than 2 inches wide by 10 inches long; or wire anchors not less than 0.177 inch thick.

B. Floor Anchors: Formed from same material as frames, minimum thickness of 0.042 inch, and as follows:

1. Monolithic Concrete Slabs: Clip-type anchors, with two holes to receive fasteners.
2. Separate Topping Concrete Slabs: Adjustable-type anchors with extension clips, allowing not less than 2-inch height adjustment. Terminate bottom of frames at finish floor surface.

2.4 MATERIALS

A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B; suitable for exposed applications.

B. Hot-Rolled Steel Sheet: ASTM A 1011/A 1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.

C. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B.

D. Frame Anchors: ASTM A 879/A 879M, Commercial Steel (CS), 04Z coating designation; mill phosphatized.

1. For anchors built into exterior walls, steel sheet complying with ASTM A 1008/A 1008M or ASTM A 1011/A 1011M, hot-dip galvanized according to ASTM A 153/A 153M, Class B.

E. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A 153/A 153M.

F. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hollow-metal frames of type indicated.

G. Grout: ASTM C 476, except with a maximum slump of 4 inches, as measured according to ASTM C 143/C 143M.

H. Mineral-Fiber Insulation: ASTM C 665, Type I (blankets without membrane facing); consisting of fibers manufactured from slag or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively; passing ASTM E 136 for combustion characteristics.

I. Glazing: Comply with requirements in Section 088000 "Glazing."

J. Bituminous Coating: Cold-applied asphalt mastic, compounded for 15-mil dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.

2.5 FABRICATION

A. Fabricate hollow-metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for metal thickness. Where practical, fit and assemble units in manufacturer's plant. To ensure proper assembly at Project site, clearly identify work that cannot be permanently factory assembled before shipment.

B. Hollow-Metal Doors:

1. Steel-Stiffened Door Cores: Provide minimum thickness 0.026 inch, steel vertical stiffeners of same material as face sheets extending full-door height, with vertical webs spaced not more than 6 inches apart. Spot weld to face sheets no more than 5 inches o.c. Fill spaces between stiffeners with glass- or mineral-fiber insulation.
2. Vertical Edges for Single-Acting Doors: Provide beveled or square edges at manufacturer's discretion].
3. Top Edge Closures: Close top edges of doors with inverted closures, except provide flush closures at exterior doors of same material as face sheets.
4. Bottom Edge Closures: Close bottom edges of doors where required for attachment of weather stripping with end closures or channels of same material as face sheets.
5. Exterior Doors: Provide weep-hole openings in bottoms of exterior doors to permit moisture to escape. Seal joints in top edges of doors against water penetration.

6. Coordinate with window installed into the door(basis of design CRL)

C. Hollow-Metal Frames: Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.
   1. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
   2. Grout Guards: Weld guards to frame at back of hardware mortises in frames to be grouted.
   3. Floor Anchors: Weld anchors to bottoms of jambs with at least four spot welds per anchor; however, for slip-on drywall frames, provide anchor clips or countersunk holes at bottoms of jambs.
   4. Jamb Anchors: Provide number and spacing of anchors as follows:
      a. Masonry Type: Locate anchors not more than 16 inches from top and bottom of frame. Space anchors not more than 32 inches o.c., to match coursing, and as follows:
         1) Two anchors per jamb up to 60 inches high.
         2) Three anchors per jamb from 60 to 90 inches high.
      b. Compression Type: Not less than two anchors in each frame.
      c. Postinstalled Expansion Type: Locate anchors not more than 6 inches from top and bottom of frame. Space anchors not more than 26 inches o.c.
   5. Head Anchors: Two anchors per head for frames more than 42 inches wide and mounted in metal-stud partitions.
   6. Door Silencers: Except on weather-stripped frames, drill stops to receive door silencers as follows. Keep holes clear during construction.
      a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.
   7. Terminated Stops: Terminate stops 6 inches above finish floor with a 45 -degree angle cut, and close open end of stop with steel sheet closure. Cover opening in extension of frame with welded-steel filler plate, with welds ground smooth and flush with frame.

D. Fabricate concealed stiffeners and edge channels from either cold- or hot-rolled steel sheet.

E. Hardware Preparation: Factory prepare hollow-metal work to receive templated mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to SDI A250.6, the Door Hardware Schedule, and templates.
   1. Reinforce doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.
   2. Comply with applicable requirements in SDI A250.6 and BHMA A156.115 for preparation of hollow-metal work for hardware.

F. Stops and Moldings: Provide stops and moldings around glazed lites and louvers where indicated. Form corners of stops and moldings with butted or mitered hairline joints.

1. Single Glazed Lites: Provide fixed stops and moldings welded on secure side of hollow-metal work.
2. Multiple Glazed Lites: Provide fixed and removable stops and moldings so that each glazed lite is capable of being removed independently.
3. Provide fixed frame moldings on outside of exterior and on secure side of interior doors and frames.
4. Provide loose stops and moldings on inside of hollow-metal work.
5. Coordinate rabbet width between fixed and removable stops with glazing and installation types indicated.

2.6 STEEL FINISHES

A. Prime Finish: Clean, pretreat, and apply manufacturer's standard primer.

1. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with SDI A250.10; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.

B. Factory Finish: Clean, pretreat, and apply manufacturer's standard two-coat, baked-on finish consisting of prime coat and thermosetting topcoat, complying with SDI A250.3.

1. Color and Gloss: As selected by Architect from manufacturer's full range .

2.7 ACCESSORIES

A. Louvers: Provide louvers for interior doors, where indicated, which comply with SDI 111C, with blades or baffles formed of 0.020-inch- thick, cold-rolled steel sheet set into 0.032-inch-thick steel frame.

1. Sightproof Louver: Stationary louvers constructed with inverted-V or inverted-Y blades.

B. Mullions and Transom Bars: Join to adjacent members by welding or rigid mechanical anchors.

C. Grout Guards: Formed from same material as frames, not less than 0.016 inch thick.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Examine roughing-in for embedded and built-in anchors to verify actual locations before frame installation.

C. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces.

B. Drill and tap doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.

3.3 INSTALLATION

A. General: Install hollow-metal work plumb, rigid, properly aligned, and securely fastened in place. Comply with Drawings and manufacturer's written instructions.

B. Hollow-Metal Frames: Install hollow-metal frames for doors, transoms, sidelites, borrowed lites, and other openings, of size and profile indicated. Comply with SDI A250.11 or NAAMM-HMMA 840 as required by standards specified.

1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces, leaving surfaces smooth and undamaged.
    a. Where frames are fabricated in sections because of shipping or handling limitations, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces.
    b. Install frames with removable stops located on secure side of opening.
    c. Install door silencers in frames before grouting.
    d. Remove temporary braces necessary for installation only after frames have been properly set and secured.
    e. Check plumb, square, and twist of frames as walls are constructed. Shim as necessary to comply with installation tolerances.
    f. Field apply bituminous coating to backs of frames that will be filled with grout containing antifreezing agents.

2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with postinstalled expansion anchors.

    a. Floor anchors may be set with power-actuated fasteners instead of postinstalled expansion anchors if so indicated and approved on Shop Drawings.

3. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with grout.
4. Installation Tolerances: Adjust hollow-metal door frames for squareness, alignment, twist, and plumb to the following tolerances:

    a. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
    b. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.

c. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
d. Plumbness: Plus or minus 1/16 inch, measured at jambs at floor.

C. Hollow-Metal Doors: Fit hollow-metal doors accurately in frames, within clearances specified below. Shim as necessary.

1. Non-Fire-Rated Steel Doors:

a. Between Door and Frame Jambs and Head: 1/8 inch plus or minus 1/32 inch.
b. At Bottom of Door: 5/8 inch plus or minus 1/32 inch.
c. Between Door Face and Stop: 1/16 inch to 1/8 inch plus or minus 1/32 inch.

D. Glazing: Comply with installation requirements in Section 088000 "Glazing" and with hollow-metal manufacturer's written instructions.

1. Secure stops with countersunk flat- or oval-head machine screws spaced uniformly not more than 9 inches o.c. and not more than 2 inches o.c. from each corner.

3.4 ADJUSTING AND CLEANING

A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow-metal work that is warped, bowed, or otherwise unacceptable.

B. Remove grout and other bonding material from hollow-metal work immediately after installation.

C. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.

D. Metallic-Coated Surface Touchup: Clean abraded areas and repair with galvanizing repair paint according to manufacturer's written instructions.

E. Factory-Finish Touchup: Clean abraded areas and repair with same material used for factory finish according to manufacturer's written instructions.

F. Touchup Painting: Cleaning and touchup painting of abraded areas of paint are specified in painting Sections.

END OF SECTION 081113

SECTION 087100 - DOOR HARDWARE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the following:
   1. Commercial door hardware for the following:
      a. Swinging doors.
   2. Cylinders for doors specified in other Sections.

B. Products furnished, but not installed, under this Section include the following. Coordinating, purchasing, delivering, and scheduling remain requirements of this Section.
   1. thresholds weather stripping specified in other Sections.

1.3 S UBMITTALS

A. Product Data: Include construction and installation details, material descriptions, dimensions of individual components and profiles, and finishes.

B. Qualification Data: For Installer.

C. Product Test Reports: Based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency, for locks latches and closers.

D. Maintenance Data: For each type of door hardware to include in maintenance manuals. Include final hardware and keying schedule.

E. Warranty: Special warranty specified in this Section.

F. Other Action Submittals:
   1. Door Hardware Sets: Prepared by or under the supervision of Installer, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final door hardware sets with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
      a. Format: Use same scheduling sequence and format and use same door numbers as in the Contract Documents.
      b. Content: Include the following information:
         1) Identification number, location, hand, fire rating, and material of each door and frame.
         2) Type, style, function, size, quantity, and finish of each door hardware item. Include description and function of each lockset and exit device.

3) Complete designations of every item required for each door or opening including name and manufacturer.
4) Fastenings and other pertinent information.
5) Location of each door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
6) Explanation of abbreviations, symbols, and codes contained in schedule.
7) Mounting locations for door hardware.
8) Door and frame sizes and materials.
9) List of related door devices specified in other Sections for each door and frame.

c. Submittal Sequence: Submit initial draft of final schedule along with essential Product Data to facilitate the fabrication of other work that is critical in Project construction schedule. Submit the final door hardware sets after Samples, Product Data, coordination with Shop Drawings of other work, delivery schedules, and similar information has been completed and accepted.

2. Keying Schedule: Prepared by or under the supervision of Installer, detailing Owner's final keying instructions for locks. Include schematic keying diagram and index each key set to unique door designations.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: An employer of workers trained and approved by lock manufacturer.
1. Installer's responsibilities include supplying and installing door hardware and providing a qualified Architectural Hardware Consultant available during the course of the Work to consult with Contractor, Architect, and Owner about door hardware and keying.
2. Scheduling Responsibility: Preparation of door hardware and keying schedules.

B. Source Limitations: Obtain each type and variety of door hardware from a single manufacturer, unless otherwise indicated.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Inventory door hardware on receipt and provide secure lock-up for door hardware delivered to Project site.

B. Tag each item or package separately with identification related to the final door hardware sets, and include basic installation instructions, templates, and necessary fasteners with each item or package.

C. Deliver keys and permanent cores to Owner by registered mail or overnight package service.

1.6 COORDINATION

A. Templates: Distribute door hardware templates for doors, frames, and other work specified to be factory prepared for installing door hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

B. Existing Openings: Where new hardware components are scheduled for application to existing construction or where modifications to existing door hardware are required, field verify existing conditions and coordinate installation of door hardware to suit opening conditions and to provide for proper operation.

1.7 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period.
   1. Failures include, but are not limited to, the following:
      a. Structural failures including excessive deflection, cracking, or breakage.
      b. Faulty operation of operators and door hardware.
      c. Deterioration of metals, metal finishes, and other materials beyond normal weathering and use.
   2. Warranty Period: Three years from date of Substantial Completion, except as follows:
      a. Manual Closers: 10years from date of Substantial Completion.

1.8 MAINTENANCE SERVICE

A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

B. Maintenance Service: Beginning at Substantial Completion, provide six months' full maintenance by skilled employees of door hardware Installer. Include quarterly preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper door hardware operation. Provide parts and supplies same as those used in the manufacture and installation of original products.

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

A. General: Provide door hardware for each door to comply with requirements in this Section and door hardware sets indicated in Part 3 "Door Hardware Sets" Article.
   1. Door Hardware Sets: Provide quantity, item, size, finish or color indicated, and products equivalent in function and comparable in quality to named products.

B. Designations: Requirements for design, grade, function, finish, size, and other distinctive qualities of each type of door hardware are indicated in Part 3 "Door Hardware Sets" Article. Products are identified by using door hardware designations, as follows:
   1. Named Manufacturers' Products: Manufacturer and product designation are listed for each door hardware type required for the purpose of establishing minimum requirements. Manufacturers' names are abbreviated in Part 3 "Door Hardware Sets" Article.
   2. References to BHMA Standards: Provide products complying with these standards and requirements for description, quality, and function.

C. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
   1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.
   2. Manufacturers: Subject to compliance with requirements, provide products by the manufacturers specified.

2.2 HINGES, GENERAL

A. Quantity: Provide the following, unless otherwise indicated:
   1. Three Hinges: For doors with heights 61 to 90 inches (1549 to 2286 mm).

B. Template Requirements: Except for hinges and pivots to be installed entirely (both leaves) into wood doors and frames, provide only template-produced units.

C. Hinge Weight: Unless otherwise indicated, provide the following:
   1. Entrance Doors: Heavy-weight hinges.
   2. Doors with Closers: Antifriction-bearing hinges.

D. Hinge Base Metal: Unless otherwise indicated, provide the following:
   1. Exterior Hinges: Brass, with stainless-steel pin body and brass protruding heads.

E. Hinge Options: Where indicated in door hardware sets or on Drawings:
   1. Nonremovable Pins: Provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for outswinging exterior doors
   2. Corners: Square.

F. Fasteners: Comply with the following:
   1. Machine Screws: For metal doors and frames. Install into drilled and tapped holes.
   2. Screws: Phillips flat-head; machine screws (drilled and tapped holes) for metal doors wood screws for wood doors and frames. Finish screw heads to match surface of hinges.

2.3 HINGES

A. Butts and Hinges: BHMA A156.1. Listed under Category A in BHMA's "Certified Product Directory."

B. Template Hinge Dimensions: BHMA A156.7.

C. Available Manufacturers:
   1. Baldwin Hardware Corporation (BH).
   2. Hager Companies (HAG).
   3. Stanley Commercial Hardware; Div. of The Stanley Works (STH).

2.4 LOCKS AND LATCHES, GENERAL

A. Accessibility Requirements: Where indicated to comply with accessibility requirements, comply with the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG)."<
1. Provide operating devices that do not require tight grasping, pinching, or twisting of the wrist and that operate with a force of not more than 5 lbf (22 N).

B. Latches and Locks for Means of Egress Doors: Comply with NFPA 101. Latches shall not require more than 15 lbf (67 N) to release the latch. Locks shall not require use of a key, tool, or special knowledge for operation.

C. Lock Trim:
1. Levers: Cast.
   a. Style Monroe with Escutcheon plate
2. Escutcheons: Forged.
3. Lockset Designs: YMM100 series

D. Lock Throw: Comply with testing requirements for length of bolts required for labeled fire doors, and as follows:
1. Mortise Locks: Minimum 3/4-inch (19-mm) latchbolt throw.

E. Backset: 2-3/4 inches (70 mm), unless otherwise indicated.

F. Strikes: Manufacturer's standard strike with strike box for each latchbolt or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, and as follows:
1. Strikes for Mortise Locks and Latches: BHMA A156.13.

2.5 LOCK CYLINDERS

A. Standard Lock Cylinders: BHMA A156.5, Grade 1.

B. Cylinders: Manufacturer's standard tumbler type, constructed from brass or bronze, stainless steel, or nickel silver, and complying with the following:
1. Number of Pins: Six.
2. Mortise Type: Threaded cylinders with rings and straight- or clover-type cam.

C. Permanent Cores: Manufacturer's standard; finish face to match lockset; complying with the following:
1. Interchangeable Cores: Core insert, removable by use of a special key; usable with other manufacturers' cylinders.

D. Manufacturer: Same manufacturer as for locks and latches.

E. Available Manufacturers:
1. ABLOY Security, Inc.; an ASSA ABLOY Group company (ABL).
2. Arrow USA; an ASSA ABLOY Group company (ARW).
3. ASSA, Inc.; an ASSA ABLOY Group company (ASA).
4. Best Access Systems; Div. of The Stanley Works (BAS).
5. Corbin Russwin Architectural Hardware; an ASSA ABLOY Group company (CR).

6. Schlage Commercial Lock Division; an Ingersoll-Rand Company (SCH).
7. Yale Commercial Locks and Hardware; an ASSA ABLOY Group company (YAL).

2.6 KEYING

A. Keying System: Factory registered, complying with guidelines in BHMA A156.28, Appendix A. Incorporate decisions made in keying conference, and as follows:
   1. Existing System: Master key or grand master key locks to Owner's existing system.

B. Keys: Nickel silver.
   1. Stamping: Permanently inscribe each key with a visual key control number and include the following notation:
      a. Notation: Information to be furnished by Owner.
   2. Quantity: In addition to one extra key blank for each lock, provide the following:
      a. Cylinder Change Keys: Three.
      b. Master Keys: Five.

2.7 CLOSERS

A. Accessibility Requirements: Where handles, pulls, latches, locks, and other operating devices are indicated to comply with accessibility requirements, comply with the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG)."Insert local regulation.

B. Door Closers for Means of Egress Doors: Comply with NFPA 101. Door closers shall not require more than 30 lbf (133 N) to set door in motion and not more than 15 lbf (67 N) to open door to minimum required width.

C. Size of Units: Unless otherwise indicated, comply with manufacturer's written recommendations for size of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Provide factory-sized closers, adjustable to meet field conditions and requirements for opening force.

D. Surface Closers: BHMA A156.4, Grade 1. Listed under Category C in BHMA's "Certified Product Directory." Provide type of arm required for closer to be located on non-public side of door, unless otherwise indicated.
   1. Available Manufacturers:
      a. Corbin Russwin Architectural Hardware; an ASSA ABLOY Group company (CR).
      b. DORMA Architectural Hardware; Member of The DORMA Group North America (DAH).
      c. Dor-O-Matic; an Ingersoll-Rand Company (DOR).
      d. LCN Closers; an Ingersoll-Rand Company (LCN).
      e. Norton Door Controls; an ASSA ABLOY Group company (NDC).
      f. Rixson Specialty Door Controls; an ASSA ABLOY Group company (RIX).
      g. SARGENT Manufacturing Company; an ASSA ABLOY Group company (SGT).
      h. Yale Commercial Locks and Hardware; an ASSA ABLOY Group company (YAL).

E. Coordinators: BHMA A156.3.

2.8 PROTECTIVE TRIM UNITS

A. Size: 1-1/2 inches (38 mm) less than door width on push side and 1/2 inch (13 mm) less than door width on pull side, by height specified in door hardware sets.

B. Fasteners: Manufacturer's standard machine or self-tapping screws.

C. Metal Protective Trim Units: BHMA A156.6; beveled top and 2 sides; fabricated from material indicated in door hardware sets.

D. Silencers for Metal Door Frames: BHMA A156.16, Grade 1; neoprene or rubber, minimum diameter 1/2 inch (13 mm); fabricated for drilled-in application to frame.

E. Available Manufacturers:
1. Architectural Builders Hardware Mfg., Inc. (ABH).
2. Baldwin Hardware Corporation (BH).
3. Door Controls International (DCI).
4. DORMA Architectural Hardware; Member of The DORMA Group North America (DAH).
5. Dor-O-Matic; an Ingersoll-Rand Company (DOR).
6. Glynn-Johnson; an Ingersoll-Rand Company (GJ).
7. Hager Companies (HAG).
8. IVES Hardware; an Ingersoll-Rand Company (IVS).
9. Rixson Specialty Door Controls; an ASSA ABLOY Group company (RIX).
10. SARGENT Manufacturing Company; an ASSA ABLOY Group company (SGT).
11. Stanley Commercial Hardware; Div. of The Stanley Works (STH).
12. Trimco (TBM).

2.9 DOOR GASKETING

A. Standard: BHMA A156.22. Listed under Category J in BHMA's "Certified Product Directory."

B. General: Provide continuous weather-strip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated or scheduled. Provide noncorrosive fasteners for exterior applications and elsewhere as indicated.
1. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.
2. Door Bottoms: Apply to bottom of door, forming seal with threshold when door is closed.

C. Air Leakage: Not to exceed 0.50 cfm per foot (0.000774 cu. m/s per m) of crack length for gasketing other than for smoke control, as tested according to ASTM E 283.

D. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.

E. Gasketing Materials: ASTM D 2000 and AAMA 701/702.

F. Available Manufacturers:
1. Hager Companies (HAG).
2. M-D Building Products, Inc. (MD).

3. National Guard Products (NGP).
4. Pemko Manufacturing Co. (PEM).
5. Reese Enterprises (RE).
6. Sealeze; a unit of Jason Incorporated (SEL).
7. Zero International (ZRO).

2.10 THRESHOLDS

A. Standard: BHMA A156.21. Listed under Category J in BHMA's "Certified Product Directory."

B. Accessibility Requirements: Where thresholds are indicated to comply with accessibility requirements, comply with [the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG)."] [ANSI A117.1.] [FED-STD-795, "Uniform Federal Accessibility Standards."] <Insert local regulation.>
1. Bevel raised thresholds with a slope of not more than 1:2. Provide thresholds not more than 1/2 inch (13 mm) high.

C. Thresholds for Means of Egress Doors: Comply with NFPA 101. Maximum 1/2 inch (13 mm) high.

D. Available Manufacturers:
1. Hager Companies (HAG).
2. M-D Building Products, Inc. (MD).
3. National Guard Products (NGP).
4. Pemko Manufacturing Co. (PEM).
5. Reese Enterprises (RE).
6. Rixson Specialty Door Controls; an ASSA ABLOY Group company (RIX).
7. Sealeze; a unit of Jason Incorporated (SEL).
8. Zero International (ZRO).

2.11 FABRICATION

A. Manufacturer's Nameplate: Do not provide products that have manufacturer's name or trade name displayed in a visible location except in conjunction with required fire-rated labels and as otherwise approved by Architect.
1. Manufacturer's identification is permitted on rim of lock cylinders only.

B. Base Metals: Produce door hardware units of base metal, fabricated by forming method indicated, using manufacturer's standard metal alloy, composition, temper, and hardness. Furnish metals of a quality equal to or greater than that of specified door hardware units and BHMA A156.18. Do not furnish manufacturer's standard materials or forming methods if different from specified standard.

C. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to commercially recognized industry standards for application intended, except aluminum fasteners are not permitted. Provide Phillips flat-head screws with finished heads to match surface of door hardware, unless otherwise indicated.

1. Concealed Fasteners: For door hardware units that are exposed when door is closed, except for units already specified with concealed fasteners. Do not use through bolts for installation where bolt head or nut on opposite face is exposed unless it is the only means of securely attaching the door hardware. Where through bolts are used on hollow door and frame construction, provide sleeves for each through bolt.
2. Steel Through Bolts: For the following fire-rated applications unless door blocking is provided:
   a. Surface hinges to doors.
   b. Closers to doors and frames.
   c. Surface-mounted exit devices.
3. Spacers or Sex Bolts: For through bolting of hollow-metal doors.

2.12 FINISHES

A. Standard: BHMA A156.18, as indicated in door hardware sets.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.

B. Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Mounting Heights: Mount door hardware units at heights indicated as follows unless otherwise indicated or required to comply with governing regulations.
   1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."

B. Install each door hardware item to comply with manufacturer's written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface

protective trim units with finishing work specified in Division 09 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.

1. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.
2. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.

C. Key Control System: Tag keys and place them on markers and hooks in key control system cabinet, as determined by final keying schedule.

D. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 07 Section "Joint Sealants."

3.3 ADJUSTING

A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

1. Spring Hinges: Adjust to achieve positive latching when door is allowed to close freely from an open position of 30 degrees.
2. Door Closers: Unless otherwise required by authorities having jurisdiction, adjust sweep period so that, from an open position of 70 degrees, the door will take at least 3 seconds to move to a point 3 inches (75 mm) from the latch, measured to the leading edge of the door.

B. Occupancy Adjustment: Approximately three months after date of Substantial Completion, Installer's Architectural Hardware Consultant shall examine and readjust, including adjusting operating forces, each item of door hardware as necessary to ensure function of doors, door hardware, and electrified door hardware.

3.4 CLEANING AND PROTECTION

A. Clean adjacent surfaces soiled by door hardware installation.

B. Clean operating items as necessary to restore proper function and finish.

C. Provide final protection and maintain conditions that ensure that door hardware is without damage or deterioration at time of Substantial Completion.

3.5 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain door hardware and door hardware finishes. Refer to Division 01 Section "Demonstration and Training."

3.6 DOOR HARDWARE SETS

A .Legend of listed manufacturers:
HA Hager
BE Best
VDVon Duprin
YA Yale
National Guard
LCN LCN

B The items listed in the following "Schedule of Finish Hardware" shall conform throughout to the requirements of the foregoing specification. The last column of letters in the Hardware Schedule refers to the manufacturer abbreviation listed above.

C. The Door Schedule on the Drawings indicates which Hardware Set is used with door.

HW-01: Door: exterior (Entrance Function)
Each opening shall have:

3 ea	Hinges	BB1168 4.5 x 4.5	612 HA
1 ea	Lockset	8832-Monroe	612 YA
1 ea	Closer	3300ST	612YA
1	sweep/seal		NA
1	Door stop		

END OF SECTION 087100

SECTION 09 5000 ACOUSTIC CEILINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

Drawings and general conditions of Contract, including General and Supplementary Conditions and Divisions-1 Specification sections apply to work of this section.

1.2 SUMMARY

A. Section Includes

1. Acoustical ceiling panels
2. Exposed grid suspension system
3. Wire hangers, fasteners, main runners, cross tees, and wall angle moldings
4. Perimeter Trim

B. Related Selections

6. Divisions 23 - HVAC Air Distribution
7. Division 26 - Electrical

1.5 SUBMITTALS

A. Product Data: Submit manufacturer's technical data for each type of acoustical ceiling unit and suspension system required.

B. Samples: Minimum 6 inch x 6 inch samples of specified acoustical panel; 8 inch long samples of exposed wall molding and suspension system, including main runner and 4 foot cross tees.

C. Shop Drawings: Layout and details of acoustical ceilings show locations of items that are to be coordinated with, or supported by the ceilings.

D. Certifications: Manufacturer's certifications that products comply with specified requirements, including laboratory reports showing compliance with specified tests and standards. For acoustical performance, each carton of material must carry an approved independent laboratory classification of NRC, CAC, and AC.

E. If the material supplied by the acoustical subcontractor does not have an Underwriter's Laboratory classification of acoustical performance on every carton, subcontractor shall be required to send material from every production run appearing on the job to an independent or NVLAP approved laboratory for testing, at the architect's or owner's discretion. All products not conforming to manufacturer's current published values must be removed, disposed of and replaced with complying product at the expense of the Contractor performing the work.

1.6 QUALITY ASSURANCE

A. Single-Source Responsibility: Provide acoustical panel units and grid components by a single manufacturer.

1. Fire Performance Characteristics: Identify acoustical ceiling components with appropriate markings of applicable testing and inspecting organization.

2. Surface Burning Characteristics: As follows, tested per ASTM E 84 and complying with ASTM E 1264 Classification.

3. Fire Resistance: As follows tested per ASTM E119 and listed in the appropriate floor or roof design in the Underwriters Laboratories Fire Resistance Directory

B. Acoustical Panels: As with other architectural features located at the ceiling, may obstruct or skew the planned fire sprinkler water distribution pattern through possibly delay or accelerate the activation of the sprinkler or fire detection systems by channeling heat from a fire either toward or away from the device. Designers and installers are advised to consult a fire protection engineer, NFPA 13, or their local codes for guidance where automatic fire detection and suppression systems are present.

C. Coordination of Work: Coordinate acoustical ceiling work with installers of related work including, but not limited to building insulation, gypsum board, light fixtures, mechanical systems, electrical systems, and sprinklers.

1.7 DELIVERY, STORAGE AND HANDLING

A. Deliver acoustical ceiling units to project site in original, unopened packages and store them in a fully enclosed space where they will be protected against damage from moisture, direct sunlight, surface contamination, and other causes.

B. Before installing acoustical ceiling units, permit them to reach room temperature and a stabilized moisture content.

C. Handle acoustical ceiling units carefully to avoid chipping edges or damaged units in any way.

1.8 PROJECT CONDITIONS

A. Space Enclosure:

HumiGuard Plus Ceilings: Building areas to receive ceilings shall be free of construction dust and debris. Products with HumiGuard Plus performance and hot dipped galvanized steel, aluminum or stainless steel suspension systems can be installed up to 120°F (49°C) and in

spaces before the building is enclosed, where HVAC systems are cycled or not operating. Cannot be used in exterior applications where standing water is present or where moisture will come in direct contact with the ceiling.

1.9 ALTERNATE CONSTRUCTION WASTE DISPOSAL

A. Ceiling material being reclaimed must be kept dry and free from debris

B. Contact the Armstrong Recycle Center a consultant will verify the condition of the material and that it meets the Armstrong requirements for recycling. The Armstrong consultant with provide assistance to facilitate the recycling of the ceiling.

1.10 WARRANTY

A. Acoustical Panel: Submit a written warranty executed by the manufacturer, agreeing to repair or replace panels that fail within the warranty period. Failures include, but are not limited to the following:

1. Acoustical Panels: Sagging and warping
2. Grid System: Rusting and manufacturer's defects

B. Warranty Period:

1. Acoustical panels: Ten (10) years from date of substantial completion.
2. Grid: Ten (10) years from date of substantial completion.
3. Acoustical panels and grid systems with HumiGuard Plus or HumiGuard Max performance supplied by one source manufacturer is Thirty (30) years from date of substantial completion.

C. The Warranty shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and will be in addition to and run concurrent with other warranties made by the Contractor under the requirements of the Contract Documents.

1.11 MAINTENANCE

A. Extra Materials: Deliver extra materials to Owner. Furnish extra materials described below that match products installed. Packaged with protective covering for storage and identified with appropriate labels.

1. Acoustical Ceiling Units: Furnish quality of full-size units equal to 5.0 percent of amount installed.

2. Exposed Suspension System Components: Furnish quantity of each exposed suspension component equal to 2.0 percent of amount installed.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Ceiling Panels:

1. Armstrong World Industries, Inc.

B. Suspension Systems:

1. Armstrong World Industries, Inc.

C: Perimeter Systems

1. Armstrong World Industries, Inc.

2.2. ACOUSTICAL CEILING UNITS

A. Acoustical Panels Type AP

1. Surface Texture: Smooth
2. Composition: Mineral Fiber
3. Color: White
4. Size: 24IN x 24IN
5. Edge Profile: Square Lay-In 15/16IN for interface with Prelude XL 15/16" Exposed Tee grid.
6. Noise Reduction Coefficient(NRC):
7. Ceiling Attenuation Class (CAC) : ASTM C 1414; Classified with UL label on product carton 33.
8. Sabin: N/A
9. Articulation Class (AC):
10. Flame Spread: ASTM E 1264; Class A (UL)
11. Light Reflectance White Panel: ASTM E 1477; 0.89
12. Dimensional Stability: HumiGuard Plus
13. Recycle Content: Post-Consumer - 2% Pre-Consumer Waste - 34%
14. Acceptable Product: Kitchen Zone, 673 as manufactured by Armstrong World Industries

2.3. METAL SUSPENSION SYSTEMS

A. Components: Main beams and cross tees, base metal and end detail, fabricated from commercial quality hot dipped galvanized steel complying with ASTM A 653. Main beams and cross tees are double-web steel construction with exposed flange design. Exposed surfaces chemically cleansed, capping prefinished galvanized steel in baked polyester paint. Main beams and cross tees shall have rotary stitching.

a. Structural Classification: ASTM C 635 Intermediate Duty
b. Color: White and match the actual color of the selected ceiling tile, unless noted otherwise.

c. Acceptable Product: Prelude XL 15/16" Exposed Tee as manufactured by Armstrong World Industries

B. Attachment Devices: Size for five times design load indicated in ASTM C 635, Table 1, Direct Hung unless otherwise indicated.

C. Wire for Hangers and Ties: ASTM A 641, Class 1 zinc coating, soft annealed, with a yield stress load of at least time three design load, but not less than 12 gauge.

D. Edge Moldings and Trim: 7800 - 12ft Wall Molding

PART 3 - EXECUTION

3.1 EXAMINATION

A. Do not proceed with installation until all wet work such as concrete, terrazzo, plastering and painting has been completed and thoroughly dried out, unless expressly permitted by manufacturer's printed recommendations. (Exception: HumiGuard Max Ceilings)

3.2 PREPARATION

A. Measure each ceiling area and establish layout of acoustical units to balance border widths at opposite edges of each ceiling. Avoid use of less than half width units at borders, and comply with reflected ceiling plans. Coordinate panel layout with mechanical and electrical fixtures.

3.3 INSTALLATION

A. Follow manufacturer installation instructions.

B. Install suspension system and panels in accordance with the manufacturer's instructions, and in compliance with ASTM C 636 and with the authorities having jurisdiction.

C. Suspend main beam from overhead construction with hanger wires spaced 4-0 on center along the length of the main runner. Install hanger wires plumb and straight.

D. Install wall moldings at intersection of suspended ceiling and vertical surfaces. Miter corners where wall moldings intersect or install corner caps.

E. For reveal edge panels: Cut and reveal or rabbet edges of ceiling panels at border areas and vertical surfaces.

F. Install acoustical panels in coordination with suspended system, with edges resting on flanges of main runner and cross tees. Cut and fit panels neatly against abutting surfaces. Support edges by wall moldings.

3.4 ADJUSTING AND CLEANING

A. Replace damaged and broken panels.

B. Clean exposed surfaces of acoustical ceilings, including trim, edge moldings, and suspension members. Comply with manufacturer's instructions for cleaning and touch up of minor finish damage. Remove any ceiling products that cannot be successfully cleaned and or repaired. Replace with attic stock or new product to eliminate evidence of damage

END OF SECTION 095000

SECTION 099113 - EXTERIOR PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes surface preparation and the application of paint systems on the following exterior substrates:
   1. Steel and iron.
   2. Galvanized metal.
   3. Wood.

1.3 DEFINITIONS

A. MPI Gloss Level 1: Not more than five units at 60 degrees and 10 units at 85 degrees, according to ASTM D 523.

B. MPI Gloss Level 3: 10 to 25 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D 523.

C. MPI Gloss Level 4: 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees, according to ASTM D 523.

D. MPI Gloss Level 5: 35 to 70 units at 60 degrees, according to ASTM D 523.

E. MPI Gloss Level 6: 70 to 85 units at 60 degrees, according to ASTM D 523.

F. MPI Gloss Level 7: More than 85 units at 60 degrees, according to ASTM D 523.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product. Include preparation requirements and application instructions.

   1. Include printout of current "MPI Approved Products List" for each product category specified, with the proposed product highlighted.
   2. Indicate VOC content.

B. Samples for Initial Selection: For each type of topcoat product.

C. Samples for Verification: For each type of paint system and each color and gloss of topcoat.

1. Submit Samples on rigid backing, 8 inches square.
2. Apply coats on Samples in steps to show each coat required for system.
3. Label each coat of each Sample.
4. Label each Sample for location and application area.

D. Product List: Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules. Include color designations.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Paint: 5 percent, but not less than 1 gal. of each material and color applied.

1.6 QUALITY ASSURANCE

A. Mockups: Apply mockups of each paint system indicated and each color and finish selected to verify preliminary selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Architect will select one surface to represent surfaces and conditions for application of each paint system.

    a. Vertical and Horizontal Surfaces: Provide samples of at least 100 sq. ft..
    b. Other Items: Architect will designate items or areas required.

2. Final approval of color selections will be based on mockups.

    a. If preliminary color selections are not approved, apply additional mockups of additional colors selected by Architect at no added cost to Owner.

3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.

1. Maintain containers in clean condition, free of foreign materials and residue.
2. Remove rags and waste from storage areas daily.

1.8 FIELD CONDITIONS

A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F.

B. Do not apply paints in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers:
1. Behr
2. Benjamin Moore
3. Duron
4. Sherwin Williams
5. Or Equal.

B. Products: Subject to compliance with requirements, provide product available products that may be incorporated into the Work include, but are not limited to products listed in the Exterior Painting Schedule for the paint category indicated.

2.2 PAINT, GENERAL

A. MPI Standards: Products shall comply with MPI standards indicated and shall be listed in its "MPI Approved Products Lists."

B. Material Compatibility:

1. Materials for use within each paint system shall be compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
2. For each coat in a paint system, products shall be recommended in writing by topcoat manufacturers for use in paint system and on substrate indicated.

C. Colors: As selected by Architect from manufacturer's full range Match Architect's samples.

1. percent of surface area will be painted with deep tones.

2.3 SOURCE QUALITY CONTROL

A. Testing of Paint Materials: Owner reserves the right to invoke the following procedure:

1. Owner will engage the services of a qualified testing agency to sample paint materials. Contractor will be notified in advance and may be present when samples are taken. If paint materials have already been delivered to Project site, samples may be taken at Project site. Samples will be identified, sealed, and certified by testing agency.

2. Testing agency will perform tests for compliance with product requirements.
3. Owner may direct Contractor to stop applying paints if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying paint materials from Project site, pay for testing, and repaint surfaces painted with rejected materials. Contractor will be required to remove rejected materials from previously painted surfaces if, on repainting with complying materials, the two paints are incompatible.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
   1. Wood: 15 percent.

C. Verify suitability of substrates, including surface conditions and compatibility, with existing finishes and primers.

D. Proceed with coating application only after unsatisfactory conditions have been corrected.

   1. Application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates and paint systems indicated.

B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.

   1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection.

C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.

   1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.

D. Wood Substrates:

   1. Scrape and clean knots. Before applying primer, apply coat of knot sealer recommended in writing by topcoat manufacturer for exterior use in paint system indicated.

2. Sand surfaces that will be exposed to view, and dust off.
3. Prime edges, ends, faces, undersides, and backsides of wood.
4. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.

3.3 APPLICATION

A. Apply paints according to manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual."

1. Use applicators and techniques suited for paint and substrate indicated.
2. Paint surfaces behind movable items same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed items with prime coat only.
3. Paint both sides and edges of exterior doors and entire exposed surface of exterior door frames.
4. Paint entire exposed surface of window frames and sashes.
5. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
6. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.

B. Tint undercoats same color as topcoat, but tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Provide sufficient difference in shade of undercoats to distinguish each separate coat.

C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.

D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

E. Painting Fire Suppression, Plumbing, HVAC, Electrical, Communication, and Electronic Safety and Security Work:

1. Paint the following work where exposed to view:

a. Equipment, including panelboards and switch gear.
b. Uninsulated metal piping.
c. Uninsulated plastic piping.
d. Pipe hangers and supports.
e. Metal conduit.
f. Plastic conduit.
g. Tanks that do not have factory-applied final finishes.

3.4 FIELD QUALITY CONTROL

A. Dry Film Thickness Testing: Owner may engage the services of a qualified testing and inspecting agency to inspect and test paint for dry film thickness.

1. Contractor shall touch up and restore painted surfaces damaged by testing.
2. If test results show that dry film thickness of applied paint does not comply with paint manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with paint manufacturer's written recommendations.

3.5 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.6 EXTERIOR PAINTING SCHEDULE

A. Steel and Iron Substrates: (vents, doors , frames, flashings, etc)

1. Alkyd System MPI EXT 5.1D MPI EXT 5.1Q:

a. Prime Coat: Primer, alkyd, anticorrosive, for metal

b. Prime Coat: Shop primer specified in Section where substrate is specified.
c. Prime Coat: Primer, metal, surface tolerant, MPI #23.

d. Intermediate Coat: Exterior, alkyd enamel, matching topcoat.

e. Topcoat: Alkyd, exterior, semi-gloss (MPI Gloss Level 5), MPI #94.

B. Wood Substrates: Wood trim

1. Alkyd System

a. Prime Coat: Primer, alkyd for exterior wood[**,** MPI **#5**].

b. Intermediate Coat: Exterior, alkyd enamel, matching topcoat.

c. Topcoat: Alkyd, exterior, gloss (MPI Gloss Level 6)[**,** MPI **#9**].

END OF SECTION 099113

SECTION 099123 - INTERIOR PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes surface preparation and the application of paint systems on interior substrates.
   1. Steel and iron. at doors
   2. Galvanized metal.
   3. Wood.
   4. Plastic.

1.3 DEFINITIONS

A. MPI Gloss Level 5: 35 to 70 units at 60 degrees, according to ASTM D 523.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product. Include preparation requirements and application instructions.

   1. Include Printout of current "MPI Approved Products List" for each product category specified, with the proposed product highlighted.
   2. Indicate VOC content.

B. Samples for Initial Selection: For each type of topcoat product.

C. Samples for Verification: For each type of paint system and in each color and gloss of topcoat.

   1. Submit Samples on rigid backing, 8 inches square.
   2. Apply coats on Samples in steps to show each coat required for system.
   3. Label each coat of each Sample.
   4. Label each Sample for location and application area.

D. Product List: Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules. Include color designations.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Paint: 5 Insert number percent, but not less than 1 pt of each material and color applied.

1.6 QUALITY ASSURANCE

A. Mockups: Apply mockups of each paint system indicated and each color and finish selected to verify preliminary selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Architect will select one surface to represent surfaces and conditions for application of each paint system.

a. Vertical and Horizontal Surfaces: Provide samples of at least 100 sq. ft..
b. Other Items: Architect will designate items or areas required.

2. Final approval of color selections will be based on mockups.

a. If preliminary color selections are not approved, apply additional mockups of additional colors selected by Architect at no added cost to Owner.

3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.

1. Maintain containers in clean condition, free of foreign materials and residue.
2. Remove rags and waste from storage areas daily.

1.8 FIELD CONDITIONS

A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F.

B. Do not apply paints when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manurfacturers:
1. Behr

2. Benjamin Moore
3. Duron, Inc.
4. Sherwin Williams
5. or equal

B. Products: Subject to compliance with requirements, provide one of the products available products that may be incorporated into the Work include, but are not limited to products listed in the Interior Painting Schedule for the paint category indicated.

2.2 PAINT, GENERAL

A. MPI Standards: Products shall comply with MPI standards indicated and shall be listed in its "MPI Approved Products Lists."

B. Material Compatibility:

1. Materials for use within each paint system shall be compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
2. For each coat in a paint system, products shall be recommended in writing by topcoat manufacturers for use in paint system and on substrate indicated.

C. Colors: Match Architect's samples

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

3.2 PREPARATION

A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates and paint systems indicated.

B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.

1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.

C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.

1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.

D. Steel Substrates: Remove rust, loose mill scale, and shop primer, if any. Clean using methods recommended in writing by paint manufacturer

E. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and areas where shop paint is abraded. Paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.

F. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.

3.3 APPLICATION

A. Apply paints according to manufacturer's written instructions and to recommendations in "MPI Manual."

1. Use applicators and techniques suited for paint and substrate indicated.
2. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
3. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
4. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.

B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats to match color of topcoat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.

C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.

D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

E. Painting Fire Suppression, Plumbing, HVAC, Electrical, Communication, and Electronic Safety and Security Work:

1. Paint the following work where exposed in equipment rooms:

a. Equipment, including panelboards and switch gear.
b. Uninsulated metal piping.
c. Uninsulated plastic piping.
d. Pipe hangers and supports.
e. Metal conduit.
f. Plastic conduit.
g. Tanks that do not have factory-applied final finishes.
h. Duct, equipment, and pipe insulation having cotton or canvas insulation covering or other paintable jacket material.

2. Paint the following work where exposed in occupied spaces:

    a. Equipment, including panelboards.
    b. Uninsulated metal piping.
    c. Uninsulated plastic piping.
    d. Pipe hangers and supports.
    e. Metal conduit.
    f. Plastic conduit.
    g. Duct, equipment, and pipe insulation having cotton or canvas insulation covering or other paintable jacket material.
    h. Other items as directed by Architect..

3. Paint portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets that are visible from occupied spaces.

3.4 FIELD QUALITY CONTROL

A. Dry Film Thickness Testing: Owner may engage the services of a qualified testing and inspecting agency to inspect and test paint for dry film thickness.

1. Contractor shall touch up and restore painted surfaces damaged by testing.
2. If test results show that dry film thickness of applied paint does not comply with paint manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with paint manufacturer's written recommendations.

3.5 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.6 INTERIOR PAINTING SCHEDULE

A. Steel Substrates:

1. High-Performance Architectural Latex System MPI INT 5.1R MPI INT 5.1RR:

    a. Prime Coat: Primer, alkyd, anti-corrosive, for metal, MPI #79.

b. Intermediate Coat: Latex, interior, high performance architectural, matching topcoat.

c. Topcoat: Latex, interior, high performance architectural, semi-gloss (MPI Gloss Level 5), MPI #141.

B. Galvanized-Metal Substrates:

1. High-Performance Architectural Latex System MPI INT 5.3M:

a. Prime Coat: Primer, galvanized, water based, MPI #134.

b. Intermediate Coat: Latex, interior, high performance architectural, matching topcoat.

c. Topcoat: Latex, interior, high performance architectural (MPI Gloss Level 2), MPI #138.

d. Topcoat: Latex, interior, high performance architectural, semi-gloss (MPI Gloss Level 5), MPI #141.

END OF SECTION 099123

SECTION 099600 - HIGH-PERFORMANCE COATINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes surface preparation and the application of high-performance coating systems[.]

1. Interior Substrates:

a. Concrete, horizontal surface(floor)
b. Clay masonry. (walls)

1.3 DEFINITIONS

A. MPI Gloss Level 5: 35 to 70 units at 60 degrees, according to ASTM D 523.

B. MPI Gloss Level 6: 70 to 85 units at 60 degrees, according to ASTM D 523.

C. MPI Gloss Level 7: More than 85 units at 60 degrees, according to ASTM D 523.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product. Include preparation requirements and application instructions.

1. Include printout of current "MPI Approved Products List" for each product category specified, with the proposed product highlighted.
2. Indicate VOC content.

B. Samples for Initial Selection: For each type of topcoat product indicated.

C. Samples for Verification: For each type of coating system and each color and gloss of topcoat indicated.

1. Submit Samples on rigid backing, 8 inches square.
2. Apply coats on Samples in steps to show each coat required for system.
3. Label each coat of each Sample.
4. Label each Sample for location and application area.

D. Product List: Cross-reference to coating system and locations of application areas. Use same designations indicated on Drawings and in schedules. Include color designations.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Coatings: 5 percent, but not less than 1 gal. of each material and color applied.

1.6 QUALITY ASSURANCE

A. Mockups: Apply mockups of each coating system indicated to verify preliminary selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Architect will select one surface to represent surfaces and conditions for application of each coating system.

a. Wall and Ceiling Surfaces: Provide samples of at least 100 sq. ft..
b. Other Items: Architect will designate items or areas required.

2. Final approval of color selections will be based on mockups.

a. If preliminary color selections are not approved, apply additional mockups of additional colors selected by Architect at no added cost to Owner.

3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.

1. Maintain containers in clean condition, free of foreign materials and residue.
2. Remove rags and waste from storage areas daily.

1.8 FIELD CONDITIONS

A. Apply coatings only when temperature of surfaces to be coated and ambient air temperatures are between 50 and 95 deg F.

B. Do not apply coatings when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

C. Do not apply exterior coatings in snow, rain, fog, or mist.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Products: Subject to compliance with requirements, provide one of the products available products that may be incorporated into the Work include, but are not limited to products listed in the Exterior High-Performance Coating Schedule or Interior High-Performance Coating Schedule for the coating category indicated.
1. Behr Process Coproartion
2. Benjamine Moore & Co.
3. Sherwin Williams Co.
4. or equal

2.2 HIGH-PERFORMANCE COATINGS, GENERAL

A. MPI Standards: Products shall comply with MPI standards indicated and shall be listed in its "MPI Approved Products Lists."

B. Material Compatibility:

1. Materials for use within each paint system shall be compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
2. For each coat in a paint system, products shall be recommended in writing by topcoat manufacturers for use in paint system and on substrate indicated.
3. Products shall be of same manufacturer for each coat in a coating system.

C. Colors: As selected by Architect from manufacturer's full range.

2.3 SOURCE QUALITY CONTROL

A. Testing of Coating Materials: Owner reserves the right to invoke the following procedure:
1. Testing agency will perform tests for compliance with product requirements.
2. Owner may direct Contractor to stop applying coatings if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying coating materials from Project site, pay for testing, and recoat surfaces coated with rejected materials. Contractor will be required to remove rejected materials from previously coated surfaces if, on recoating with complying materials, the two coatings are incompatible.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:

1. Concrete: 12 percent.
2. Masonry (Clay and CMUs): 12 percent.
3. Wood: 15 percent.

C. Verify suitability of substrates, including surface conditions and compatibility, with existing finishes and primers.

D. Proceed with coating application only after unsatisfactory conditions have been corrected.

1. Application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates and coating systems indicated.

B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.

1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.

C. Clean substrates of substances that could impair bond of coatings, including dust, dirt, oil, grease, and incompatible paints and encapsulants.

1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce coating systems indicated.

D. Concrete Substrates: Remove release agents, curing compounds, efflorescence, and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces to be coated exceeds that permitted in manufacturer's written instructions.

1. Clean surfaces with pressurized water. Use pressure range of 1500 to 4000 psi at 6 to 12 inches.
2. Abrasive blast clean surfaces to comply with SSPC-SP 7/NACE No. 4.

E. Masonry Substrates: Remove efflorescence and chalk. Do not coat surfaces if moisture content, alkalinity of surfaces, or alkalinity of mortar joints exceeds that permitted in manufacturer's written instructions.

1. Clean surfaces with pressurized water. Use pressure range of 100 to 600 psi at 6 to 12 inches.

3.3 APPLICATION

A. Apply high-performance coatings according to manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual."

1. Use applicators and techniques suited for coating and substrate indicated.
2. Coat surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, coat surfaces behind permanently fixed equipment or furniture with prime coat only.
3. Coat backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
4. Do not apply coatings over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.

B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of the same material are to be applied. Tint undercoats to match color of finish coat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.

C. If undercoats or other conditions show through final coat, apply additional coats until cured film has a uniform coating finish, color, and appearance.

D. Apply coatings to produce surface films without cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections. Produce sharp glass lines and color breaks.

3.4 FIELD QUALITY CONTROL

A. Dry Film Thickness Testing:

1. Contractor shall touch up and restore coated surfaces damaged by testing.

3.5 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

B. After completing coating application, clean spattered surfaces. Remove spattered coatings by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from coating operation. Correct damage to work of other trades by cleaning, repairing, replacing, and recoating, as approved by Architect, and leave in an undamaged condition.

D. At completion of construction activities of other trades, touch up and restore damaged or defaced coated surfaces.

3.6 INTERIOR HIGH-PERFORMANCE COATING SCHEDULE

A. Concrete Substrates, Horizontal Surfaces.

1. Pigmented Polyurethane System MPI INT 3.2D: BOD Sherwin Williams FastTop S

a. Prime Coat: Epoxy, gloss, MPI #77.

b. Intermediate Coat: Polyurethane, two component, pigmented, gloss, matching topcoat.

c. Topcoat: Polyurethane, two component, pigmented, gloss (MPI Gloss Level 6), MPI #72.

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B. Clay Masonry Substrates:

1. Epoxy System MPI INT 4.1F: BOD: Sherwin Williams Saniglaze

a. Prime Coat: Epoxy, matching topcoat.
b. Intermediate Coat: Epoxy, matching topcoat.
c. Topcoat: Epoxy, gloss, MPI #77.

END OF SECTION 099600

SECTION 10 7313 AWNINGS (COMMERCIAL CANOPIES)

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Delegated design of fabric awnings.

B. Fixed Awning Support System.

C. Awning fabric.

1.2 SUBMITTALS

A. Qualification Data: For Installer, fabricator and design engineer.

B. Delegated-Design Submittal: For assemblies indicated to comply with performance requirements and design criteria, including analysis data and drawings signed and sealed by the qualified professional engineer responsible for their preparation including:
1. Plans, elevations, sections, mounting heights, and frame assembly details
2. Frame member sizes and required wall thicknesses.
3. Welding requirements.
4. Details of bolted and pin connections for frame assembly.
5. Required sizes of bolts, pins, plates and tubing.
6. Verify the fabric meets minimum engineering requirements.
7. Details fabric attachment methods.

C. Product Data: Provide product criteria, characteristics, accessories, jointing and seaming methods, and termination conditions.

D. Shop Drawings:
1. Include plans, elevations, sections, mounting heights, and frame assembly details.
2. Preliminary member sizes with wall thickness.
3. Show intended fabric attachment hardware and details.
4. Identify direction, details and locations of fabric seams.
5. Show details of fabric dimensions including length of spans, sag curvature and actual shaded area.

E. Samples:
1. Awning Fabric: 8.5 inch x 11 inch samples of fabric for appearance, texture, finish and light transmittance.
2. Structure Finish: Manufacturer's standard sample size on metal for color, texture and gloss.
3. Accessories: One of each exposed accessory in selected color and finish.

F. Manufacturer's Installation Instructions: Indicate special preparation of substrate, attachment methods, and perimeter conditions requiring special attention.

G. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

H. Maintenance Data: For awnings including:
1. Methods for maintaining awning fabrics and finishes.
2. Precautions about cleaning materials and methods that could be detrimental to fabrics, finishes, and performance.

1.3 QUALITY ASSURANCE

A. Fabric Manufacturer's Qualifications: Company specializing in manufacturing the products specified in this section with minimum 5 years of documented experience in awning fabric manufacture.

B. Designer Qualifications: Professional Structural Engineer with 5 years of documented experience in design of this work and licensed in the location of the project.

C. Fabricator/Installer Qualifications: Company specializing in performing the work of this section with minimum 5 years experience on projects of similar size, complexity and fabric.

1.4 DELIVERY, STORAGE, AND HANDLING

A. As required by the manufacturer for a warrantable installation of the installed products to meet the Performance and Design Criteria.

1.5 WARRANTY

A. Fabric Manufacturer Warranty: Provide manufacturer's standard 15 year material replacement warranty for water resistance and tearing of fabric.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Design is based on awnings being designed, engineered, by one of the following manufacturers.

B. Specification is based on products by members in good standing of the Industrial Fabric Association International (IFAI) and Professional Awning Manufactures Association.
1. Capital Canopies Inc.
2. Clark Associates
3. A. Hoffman Awning Co.
4. Or equal.

2.2 DESCRIPTION

A. Engineering, fabrication and installation of fabric awnings, attachment of awning to building structure, structure supporting awnings, and all associated accessories. The structure shall be installed into existing masonry joints only.

2.3 PERFORMANCE AND DESIGN CRITERIA

A. General: Design awning that complies with project specific codes indicated on drawings.

B. Design awning support system to be self supporting and not rely on fabric for structural stability.

C. Design awning support system:
1. To withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated according to ASCE/SEI 7 including but not limited to live load, dead load, snow load, seismic loads, and wind loads.
2. In accordance with fabric manufacturer's requirements for warranted installation.
3. To allow for thermal movements from ambient and surface temperature changes of 120 deg F, ambient; 180 deg F, material surfaces.
4. To limit corrosion and prevent galvanic action by isolating metals and other materials from direct contact with incompatible materials.
5. The frame shall be attached at mortar joints in the historic brick surfaces.
6. To provide criteria on which the design is based:
    a. Expected Fabric Life: 20 years.

2.4 MATERIALS

A. Awning Support System:
1. General: Provide structural components and accessories in accordance with fabricator/installers standard practice unless specified otherwise. Provide shapes and profiles indicated.
2. Design structure with steel, stainless steel or aluminum in accordance with delegated design of awning.
3. The frame shall be attached at mortar joints in the historic brick surfaces.
4. Features:
    a. Profile: As selected from options available from the manufacturer
    b. Final Finish Color: To be selected by Architect from manufacturer's full range.
    c. Finish:
        1) Fabricator/Installers standard finish.

B. Awning Fabric:
1. Comparable and substituted products will be judged based on the specified performance and design criteria, features, warranty, and qualifications.
    a. Performance Criteria:
        1) Fire-Test-Response Characteristics: Flame-Resistance Ratings: Passes NFPA 701.
        2) Surface Burning Characteristics: Class A; Flame Spread Index of 25, maximum; Smoke Developed Index of 450, maximum; when whole system is tested in accordance with ASTM E84.
        3) Maximum Tensile Strength per ASTM D4851:
            a) Warp: 456 pounds per inch
            b) Weft: 456 pounds per inch.
    b. Features:
        1) Product Contents: PVC Free.
        2) Fabric Material: ePTFE (e polytetrafluorethylene).
        3) Coating Material: 100% Fluoropolymer.
        4) Thickness: 0.002 Inch
        5) Weight: 31.9 oz/square yard.
        6) UV-resistant and colorfast.
        7) Plasticizer Free.

8) Dirt and Water Repellent.
9) Color: TBD
10) Manufactured in the United States.

2.5 ACCESSORIES

A. All accessory materials required by the manufacturer for a warrantable installation of the installed products in a manner that meets the Performance and Design Criteria.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify existing conditions meet the manufacturer's requirements before starting work.

3.2 PREPARATION

A. Prepare surfaces to receive work in accordance with manufacturer's instructions.

3.3 INSTALLATIO

A. General: Install all materials in accordance with manufacturer's instructions based on conditions present.

B. Awning Support System:
1. Fit and shop assemble components in largest practical sizes, for delivery to site.
2. Fabricate components with joints tightly fitted and secured.
3. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.
4. Supply setting templates to the appropriate entities for structural support items required to be installed prior to building cladding.
5. Install items plumb and level, accurately fitted, free from distortion or defects.
6. The frame shall be attached at mortar joints in the historic brick surfaces.
7. Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.
8. Obtain approval prior to site cutting or making adjustments not scheduled.

C. Awning Fabric: Install in accordance with delegated design documents and manufacturer's instructions.

3.4 INSTALLATION TOLERANCES

A. Maximum Variation From Plumb: 1/2 inch per story, non-cumulative.

B. Maximum Offset From True Alignment: 1/2 inch.

C. Maximum Out-of-Position: 1/2 inch.

3.5 PROTECTION

A. Protect installed work as required by the manufacturer to maintain product performance, design criteria and warranty.

END OF SECTION