SPECIFICATIONS

FOR

MAIN TERMINAL COMMISSIONING, PHASE 2 - WINDOW WALL REHABILITATION
IT1113

AT

METROPOLITAN WASHINGTON AIRPORTS AUTHORITY
WASHINGTON DULLES INTERNATIONAL AIRPORT

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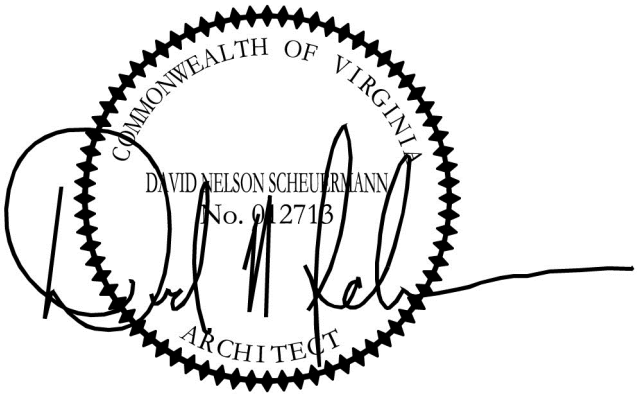

JULY 12, 2012

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PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings, Contract Provisions, Special Provisions, and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. The articles and paragraphs of this Section represent supplements or additions to the Contract Provisions or the Special Provisions.

1.3 WORK UNDER OTHER CONTRACTS

A. During the period of this Project, the Authority anticipates that other construction contracts may be underway at or near the site of work of this Contract. A list of adjacent construction activities follows:

1. Hourly Parking Lot Administration Building Construction
2. Main Terminal Expansion Joint Replacement
3. Main Terminal East and West Baggage Basements EDS In-line High Volume Baggage Screening

1.4 PERMITTING

A. Comply with all requirements set forth in the Authority's "Building Codes Manual". This manual describes Building Codes organization, Building Code inspection process, Certificate of Occupancy requirements, and information regarding elevators, escalators, and moving walks. The Authority will file for and provide the construction permit.

1.5 MAINTENANCE OF PEDESTRIAN AND VEHICULAR TRAFFIC

A. Maintain adequate pedestrian and vehicular traffic flow and safety along the service roads, sidewalks, parking lots and other roadways on Airport property. In addition, this requirement applies to crossroads, approaches, and entrances affected by or made necessary by the Work. Coordinate activities throughout the project in a manner that allows emergency access, without delays to emergency response vehicles, to all areas of the Project that are occupied by employees.

B. Prior to starting construction operations affecting pedestrian, vehicular, or aircraft traffic movement, submit and obtain the COTR's written approval of a Traffic Maintenance Plan. Develop plan in accordance with the safety requirements of the FAA, Airport Operations, and the Commonwealth of Virginia Department of Transportation's *"Manual of Uniform Traffic Control Devices"*. Utilize the form indicated in the latest edition of the Virginia Department of Transportation's *"Virginia Work Area Protection Manual – Standards and Guidelines*".

C. Provide and maintain temporary signage, "Jersey barriers," and such other traffic control devices or personnel as required complying with approved Traffic Maintenance Plan.

D. Maintain the construction operations affecting pedestrian, vehicular, or aircraft traffic movement from the beginning of construction operations until final acceptance of the project. The maintenance shall constitute continuous and effective work prosecuted day by day with adequate equipment and forces to the end of project to ensure that roadways and structures are maintained in satisfactory condition at all times, including barricades and warning signs as necessary for performance of the work.

E. Keep the portions of the project being used by public, pedestrian, aircraft, [mobile lounges] and vehicular traffic, whether it is through or local traffic, in such condition that traffic will be adequately accommodated. Remove snow and control all ice within the project boundaries. Removal of snow and ice for the benefit of the traveling public will be performed by the Authority. Bear all cost of maintenance work during construction and before the project receives a Certificate of Occupancy for constructing and maintaining approaches, crossings, intersections and other features as may be necessary.

F. Keep the portions of the road and aircraft pavement surfaces being used by the public free from irregularities, obstructions, mud, dirt, snow, ice, and any characteristic that might present a hazard or annoyance to traffic in such condition that traffic will be adequately accommodated. Maintain a vacuum/sweeper and flusher truck at the site at all times to clean roadway and aircraft surfaces affected by construction traffic at the request of Airport Operations or the COTR. `

1.6 AIRFIELD AND TERMINAL BUILDING OPERATIONAL REQUIREMENTS

A. The Work, or a portion thereof, will be performed in proximity to the Air Operations Area (AOA), including, active runways, taxiways, and aprons. Normal airport operations will continue adjacent to the Work during all phases of the Project. These activities include:

1. Aircraft movement on runways, taxiways, aprons; aircraft landing and takeoff operations.
2. Aircraft parking, refueling and other aircraft servicing.
3. Baggage handling.
4. Routine aircraft maintenance.
5. Apron maintenance, snow removal and ice control.
6. Mobile lounge and Plane mate operations.

B. The Work, or a portion thereof, will be performed nearby the public Terminal or Concourse buildings. Normal airport operations and public activities will continue adjacent to the Work during all phases of the Project. These include:

1. Passenger enplaning and deplaning.
2. Passenger baggage deposit/retrieval.
3. Passenger ticketing operations.
4. Food/Concession services.
5. Maintenance, custodial and support activities.

C. Phase construction activities as necessary to accommodate all airport operations without disruption. Adhere to all current Airport Orders and Instructions (O & Is), Airport Bulletins,

and Airport Advisories. The Authority will provide relevant Orders and Instructions to Offerors in the Solicitation Package. Bulletins and Advisories will be provided to the offeror by the Authority as they are issued.

1.7 ENVIRONMENTAL PROTECTION

A. Comply with all Federal, state and local laws and regulations controlling pollution of the environment. Take necessary precautions to prevent pollution of streams, rivers, lakes, ponds, and reservoirs with fuels, oils, bitumens, chemicals, or other harmful materials and to prevent pollution of the atmosphere from particulate and gaseous matter.

B. Notify COTR immediately in the event that abnormalities, discolorations, odors, oil, or other signs of potential contamination by hazardous materials are encountered during excavation or other construction activities. Follow with written notice within 24 hours, indicating date, time, and location of potential contaminants encountered. The COTR will provide further direction to Contractor regarding disposition of materials encountered.

C. All painted surfaces are assumed to contain lead-based paint. The Contractor shall maintain the necessary health and safety requirements for all personnel in accordance with OSHA regulations to work in these conditions. Contractor air monitoring activities and employee protection and monitoring is part of this Contract. No additional payment will be made for demolition or renovation work that disturbs lead-based painted surfaces. The Contractor shall comply with the OSHA Lead Construction Standard 29 CFR 1926.62.

D. General: Contractor shall conduct work activities in a manner which meets all requirements of OSHA regulations set forth in Title 29, Sections 1926.62, Lead in Construction,1910.1025, lead exposure, 1910.134, respiratory protection. The Contractor is responsible for conformance to all applicable worker protection regulations including but not limited to respiratory protection, air monitoring, and medical surveillance.

E. The Contractor shall provide lead awareness training to all employees or agents who may be required to demolish/dismantle lead-based paint containing building components, to disturb or handle lead-containing surface coatings or lead-containing waste materials for abatement, transportation, disposal, and auxiliary purposes, and to all supervisory personnel who may be involved in planning, execution, or inspection of projects.

F. Asbestos-Containing Roofing Material: The Contractor shall reference the Part B Documents for the removal and disposal of asbestos-containing roofing materials.

1.8 DAMAGES AND PRE-EXISTING CONDITIONS

A. Be responsible for all damages caused by Contractor’s construction activities. Provide all labor, materials, etc. to return any damaged areas, systems or equipment to their original condition at no additional cost to the Authority.

B. Perform a survey of pre-existing conditions in the vicinity of Contractor’s construction activities, utilizing photographs and other means as necessary to document existing damage or conditions. Submit two copies of this survey to the Contracting Officer within 21 calendar days after Notice-to-Proceed. This survey will assist in resolving any damage claims against the Contractor during and after construction.

C. Preserve all roadways, pedestrian and directional signage. Deliver all signs removed and not required for reinstallation to the Authority as directed by the COTR.

D. Replace or repair lost or damaged signs at no cost to the Authority.

1.9 SECURITY DURING CONSTRUCTION

A. Maintain the integrity of the Airport Security fence. Maintain the integrity of doors and walls between public areas and Air Operations Area (AOA) at all times. Comply with Title 49 Code of Federal Regulations, Parts 1500, 1540, 1542 and 1544.

B. Possession of and display of a proper and current Airport Identification Badge, issued by Airport Operations is required for all Contractor personnel passing into the AOA. Refer to "Airport Orders and Instructions" attached as part of the Contract for specific requirements. Security requirements have increased significantly at Washington Dulles International Airport. Contractor can expect up to two hours waiting time to clear construction vehicles into the AOA. Offerors shall become intimately familiar with all TSA and Authority security requirements. No increase in contract price will be provided to the Contractor should the contractor not be aware of any security procedure in place at time of submitting their offer that leads to increased time and inconvenience to accomplish the work.

C. Pay all fines levied by the Transportation Security Administration for penalties resulting from security infractions perpetrated by or caused by Contractor’s personnel or work forces of Contractor’s subcontractors or suppliers.

D. Establish and maintain the security of Contractor’s staging areas, equipment and materials.

E. Provide escort for delivery vehicles transporting materials and supplies to or from the Contractor's staging or work areas into the AOA, in accordance with requirements stated in "Airport Orders and Instructions" attached as part of the Contract.

F. Do not park within 300 feet of a terminal building unless specifically authorized by Airport Operations.

G. All workers in the sterile areas, which are defined as areas accessible to ticketed passengers only, may utilize tools in their work provided that:

1. Tools are essential and necessary to the Work.
2. Keep tools controlled at all times.
3. Do not leave tools unattended.
4. Store tools in locked boxes.

H. No knives will be permitted in the sterile areas.

I. No firearms or weapons of any type are allowed on the airport.

J. No cartridge style nail guns, nor any tools that use a cartridge or any explosive charge, are allowed without prior written notification of COTR. Obtain written approval from the COTR before bringing such tools on the project.

K. Conform to all Orders and Instructions pertaining to vehicle inspection.

1.10 MATERIAL HAULING

A. Restrict deliveries and removal of bulk materials, supplies, waste soils and equipment to and from the Project site to the Authority-designated roads and haul routes indicated on the Drawings.

B. Access and egress to and from the Airport for hauling operations shall be through the entrances indicated. Conduct hauling operations during non-restricted hours. Hauling is not allowed between 2:00 PM and 8:00 PM.

C. The designated haul routes for hauling operations will not require vehicles crossing and/or utilizing existing taxi lanes or taxiways. Under no conditions shall the Contractor plan use of taxiways and taxi lanes for hauling equipment. Haul routes for this project are as indicated.

D. Schedule, phase, and sequence work operations to minimize the number and duration of taxiway closures. Submit a detailed Work Plan for Contractor's entire operations to the COTR for approval prior to commencing work. Obtain written approval from the COTR of the Work Plan. Identify clearly on Work Plan each operation requiring coordination with Airport Operations.

E. Notify the COTR at least 72 hours in advance of his requirement for scheduled taxiway, taxi lane or roadway closures. Obtain the written approval of the Authority prior to closing or crossing a roadway.

F. Bear all costs associated with establishing, maintaining, signing, lighting and marking haul routes and taxiway crossings. These costs are considered incidental to the pay items of this Contract.

G. Use load covers on all dump trucks. Load dump trucks so that no spillage occurs during transit on the State, municipal, or Airport roadways, taxiways, and aprons.

1.11 PORTABLE LIGHTING

A. Portable lighting: If used for Contractor operations, aim and shield portable lighting at all times to eliminate glare that could impair runway, taxiway, apron, ground operations, and Airport Traffic Control Tower operations. Equip portable lighting with reflectors and glare shields to prevent spillover of light into operational areas.

1.12 SPECIAL AUTHORITY CONSULTANT

A. The Contractor is hereby advised of the involvement of Parsons Management Consultants (PMC) as Program Management Support Services Consultant to the Authority for the capital construction programs at Ronald Reagan Washington National Airport and Washington Dulles International Airport. PMC will have a continuing role in this project by assisting the Authority in specialized areas.

1. PMC will provide administrative support during design, solicitation, and construction.
2. PMC will coordinate Contractor requests for technical information and receive, review and manage all Contractor submittals.
3. PMC has reviewed technical submittals during design, including drawings, specifications, cost estimates, construction phasing plans, and technical reports.

4. PMC will be responsible for review of technical submittals during construction, including selected shop drawings, certifications, test reports, calculations and samples.
5. PMC will conduct field inspections of the Work in progress and inspect for Substantial Completion and Final Acceptance. PMC inspection does not relieve Contractor of responsibilities of performing Contract required inspections as required by contract documents.

B. All other contract management is the sole responsibility of the Authority.

1.13 SAFETY

A. Comply with all requirements set forth in the most current edition of the Authority *Construction Safety Manual"*. Offerors are provided with the most recent addition when obtaining contract documents prior to proposal. Requirements included in this Section are in addition to the Authority's *Construction Safety Manual*. Comply with all local, State and Federal requirements. Where conflicts or discrepancies exist between requirements, the more stringent requirement shall govern. For additional information see Division 01 Section "Quality Requirements".

B. Contractor Safety Organization:

1. Safety Engineer.

a. Duties: Outlined in The Authority *Construction Safety Manual.*
b. Qualifications: Outlined in The Authority *Construction Safety Manual.*

C. Submit the résumés of individuals proposed to serve in the role of Contractor's Safety Engineer to the COTR for approval in writing. In addition to indicating the qualifications in the Authority *Construction Safety Manual* résumés shall include but not be limited to such items as: work experience, education, safety and health training completed, memberships in professional associations, professional certifications, professional registrations and professional references confirming the qualifications and personal references of contacts for verification shall also be required.

D. Provide safe and healthful working conditions on each operation at all times during execution the work of this Contract. Conduct the various operations connected with the Work so that they will not be injurious to safety or health. Comply with all provisions, regulations and recommendations issued pursuant to the Occupational Safety and Health Act of 1970 and the Construction Safety Act of 1969, as well as amendments to these laws. Comply with laws, rules and regulations of other authorities having jurisdiction, with regard to all matters relating to the safety and health of workers and the general public. Compliance with government requirements is mandated by law and considered only a minimum level of safety performance. Perform all work in accordance with best safe work practices recognized by the construction industry. Stop work whenever a work procedure or a condition at a work site is deemed unsafe by the either of the following individuals: COTR, Program Safety Manager (PSM), the Contractor's Project Manager, the Contractor's Foreman, or the Contractor's Safety Engineer(s).

E. Provide a full-time on-site Contractor Safety Engineer for the duration of this Contract with no other duties assigned. The Safety Engineer shall be responsible for all safety and health requirements as included herein and as required by the Authority's Construction Safety Manual.

F. The contractor shall submit the resumes of all proposed safety and health professionals who shall serve in the role of Contractor's Safety Engineer(s) to the COTR for approval. The resumes shall include, but not be limited to such items as: work experience, education, safety and health training completed, memberships in professional associations, professional certifications, professional registrations, and professional references confirming the qualifications shall also be required. Documentation confirming the qualifications and personal references of contacts for verification shall also be required.

G. Comply with all requirements set forth in the Authority's "Construction Safety Manual." Provide during the Work the services of Safety Engineer(s) as outlined in the Authority's "Construction Safety Manual" and in Division 01 Section "Quality Requirements". The Safety Engineer shall undertake the duties and responsibilities as stated in the Authority's "Construction Safety Manual".

H. Prior to start of construction activities in the Air Operations Area (AOA), the Contractor's Safety Engineer(s) shall tour the AOA with the Authority Safety Program Manager.

I. Flagmen Training: The Authority will sponsor Flagman training sessions. Contractor's personnel who will be assigned flagmen duties on the Airport for this project shall attend training sessions.

J. Fire Safety: Conform to the following requirements:

1. Obtain a permit to perform any welding, cutting, or hot work from the Office of the Authority Fire Marshal.
2. Ensure adequate access to all construction areas for emergency response.
3. Obtain a permit from the Office of the Authority Fire Marshal to store, handle, or use any hazardous material, including but not limited to fuels for equipment. Complete an application prior to issuance.
4. Remove combustible debris from the site daily.
5. Provide at least seven (7) days notice for any request for inspections, tests, permits, etc., required of personnel from the Office of the Authority Fire Marshal.

6. Provide to the Office of the Authority Fire Marshal a list of emergency contact numbers for the COTR and the Contractor prior to the commencement of Work.

K. Submit Site-Specific Safety and Health Plans to COTR within 15 calendar days of Notice to Proceed and prior to the start of any construction activities. Prepare this plan using the Authority's Guidelines as defined in the Authority's "*Construction Safety Manual*" and as supplemented by these specifications for each and every work zone as shown on the drawings or as anticipated by the Contractor. COTR must approve the Site-Specific Safety Plan prior to the start of any work.

L. Be responsible for the safe operation of all job site motor vehicles. Provide a "spotter" or flagman for all backing operations of construction vehicles with restricted rear vision.

M. All motorized equipment and vehicles working on or entering MWAA construction project work areas shall be equipped with functional audible backup alarms.

N. Crane Operators. On Airports Authority projects, Crane Operators shall be certified to operate the equipment by an approved independent certifying agency.

O. For all airside projects attach a Safety Plan to the Safety Program. Include in the Safety Plan, to the extent applicable, provisions for the following:

1. Scope of work performed by Contractor, including proposed duration of work.
2. Possible safety problems (job hazard analysis program).
3. Work control measures.
4. Limitations on equipment height.
5. Location of airport operational areas.
6. Location of and access to stockpiled construction materials and equipment.
7. Inspection requirements.
8. Trenches and excavations, and cover requirements.
9. Threshold marking and lighting.
10. Closed runway marking.
11. Vehicle operation and pedestrian access in airport movement areas.
12. Construction site access and haul roads, includes maintenance of and keeping open ARFF access routes.
13. Limitations on construction.
14. Radio communications.
15. Foreign object debris (FOD) control provisions.
16. Hazardous materials (HAZMAT) management.
17. Wildlife abatement.
18. NOTAM issuance.
19. Vehicle identification.
20. Vehicle parking.
21. Use of temporary visual aids.
22. Obstacle-free zones (OFZ).
23. Approach clearance to runways.
24. Runway and taxiway safety areas.
25. Procedures and equipment, such as barricades (identify type) for closing portions of the movement area.
26. Required compliance of contractor personnel.
27. Procedures for notification of aircraft rescue firefighting (ARFF) if deactivating water lines or fire hydrants, or if emergency access routes are rerouted or blocked.
28. Emergency notification for fire, medical, and police response.
29. Coordination of plan with an FAA airport certification safety inspector.

P. Comply with sample safety plan as designated in the MWAA Construction Safety Manual.

1.14 HEIGHT LIMITATION

A. For all demolition and construction within the Airport, limit the height of Contractor's equipment to a maximum of 120 feet.

B. Prior to beginning any work coordinate with the COTR the height of all cranes, boom trucks, scaffolds or similar vehicles of construction. Properly mark all construction equipment with safety flags and warning lights in accordance with current FAA and Airport Operations requirements. Submit FAA Form 7460, provided by COTR, for all variations on approved crane heights.

1.15 NOISE CONTROL

A. The Authority recognizes and can tolerate a normal level of noise created by a majority of construction activity. However, in the interest of the Authority's neighbors, the maximum acceptable noise level between the hours of 5:00 pm and 7:00 am the following morning is limited to 55 decibels. During daytime hours of 7:00 am through 5:00 pm, the maximum acceptable noise level for sustained or repetitive noises is 72 decibels. Measure the noise level using an "A" scale at a point 4'-0" above ground at property line nearest noise source.

B. Secure advance written approval from the COTR prior to scheduling any activity that is anticipated to produce a sustained or repetitive noise level higher than the decibel limits indicated above.

C. In and around terminal facilities and buildings whose normal occupancy is from 7 a.m. to 7 p.m., perform work that causes noise that is disruptive to the airport’s tenants or the traveling public between the hours of 11:00 pm and 5:00 am. Measure noise for this situation using an “A” scale at a point 4’-0” above ground at the closest point to airport tenants or the traveling public.

1.16 EXAMINATION OF PLANS, SPECIFICATIONS AND SITE OF WORK

A. The offeror is expected to examine carefully the site of the proposed work, the proposal, plans, specifications, solicitation provisions, contract provisions, special provisions and contract forms before submitting a proposal. The submission of a proposal will be considered conclusive evidence that the offeror has made such examination and is satisfied as to the conditions to be encountered in performing the work as to the requirements of the Contract.

1.17 AIRPORT SECURITY/VEHICLE INSPECTION PROCEDURE

A. The number of vehicular access points into secure areas at IAD has been reduced to an operational minimum. Those gates that remain open are divided into two categories:

1. Vehicular gates for approved vehicles and individuals who hold appropriate and valid airport access media and do not require escorts.
2. Vehicular gates for those vehicles that have invalid or no airport access authorization and/or the vehicle operator and passenger(s) do not have valid access authorization media and require escorts.

B. The access points for vehicle operator and passenger(s) who have appropriate and valid airport access media are Gates 127 and 141. Vehicles that require escorts of any type are prohibited at those gates.

C. All vehicles and personnel that will require an escort shall enter the AOA via Gates 313, Gate 317, Gate 141, or Gate 118. The vehicle gates at Gate 118 and Gate 141 are designated as AOA entry points for vehicles and persons that require an escort and their primary work site is located

on the north side of the airport. Gate 313 is designated as large equipment contractor/construction access point, and Gate 317 is to be used by contractors and employees whose primary work site is located on the south side of the airport. These access gates are as indicated.

D. Other access gates through which the contractor may gain access to a specific project site are as indicated and must be approved by Airport Operations and the Transportation Security Agency.
   1. Main Terminal East Plaza Gate
   2. Main Terminal West Plaza Gate

E. The following procedures will be utilized for all escorted vehicles and AOA approved vehicles with non-badged passengers seeking entry to the AOA:

   1. All vehicles are searched.
   2. Coordinate all vehicle deliveries with the COTR in advance. Provide the vehicle license plate number and expected delivery time for all vehicle deliveries. Contractor may compile the expected daily delivery schedule on one sheet for submission to the COTR.
   3. The vehicle operator shall have in his or her possession a commercial manifest, which identifies the contents of the vehicle and/or trailer.
   4. An escort from the company for whom the shipment is intended shall respond to the vehicle access gate and remain with the vehicle until the vehicle exits the secured area.
   5. A vehicle search will be conducted and once cleared, vehicles will be permitted escorted access to their delivery point.
   6. Contractors should expect delays up to 2 hours at Gate 313 as a result of these security provisions.
   7. Priority consideration may be offered to concrete trucks with resulting delays estimated to be 20 minutes. To receive priority consideration, schedule concrete deliveries with Airport Operations and COTR at time of batching.

F. Prior approval from the Manager of Airport Operations or his/her designated representative is required for any exceptions to the above procedures**.**

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 007300

SECTION 011000 - SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings, Contract Provisions, Special Provisions, Supplementary Conditions, and other Division 01 Specification Sections apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Work covered by the Contract Documents.
2. Type of the Contract.
3. Work phases.
4. Work under other contracts.
5. Use of premises.
6. The Authority's occupancy requirements.
7. Work restrictions.
8. Specification formats and conventions.

B. Related Sections include the following:

1. Division 01 Section "Temporary Facilities and Controls" for limitations and procedures governing temporary use of the Authority's facilities.

1.3 WORK COVERED BY CONTRACT DOCUMENTS

A. Project Identification: Project consists of **Main Terminal Commissioning, Phase 2 - Window Wall Rehabilitation**.

1. Project Location: Washington Dulles International Airport.

B. Architect/Engineer Identification: The Contract Documents, dated July 12, 2012, were prepared for Project by The Sheward Partnership, 1016 Morton Street, Baltimore, MD 21201.

C. Construction Manager: Parsons Management Consultants has been engaged as Construction Manager for this Project to serve as an advisor to the Authority and to provide assistance in administering the Contract for Construction between the Authority and Contractor, according to a separate contract between the Authority and Construction Manager.

1. For additional functions of Parsons Management Consultants, see "Supplementary Conditions."

D. The Work consists of rehabilitation of window wall, exterior soffit, and roof expansion joints of the Main Terminal Building.

1. The extent of Work is limited to the areas indicated:

a. Window Wall: East and west outermost eight window bays - airside and landside.
b. Exterior Soffit – Stucco Rehabilitation: East and west ends of terminal.
c. Exterior Soffit – Joint Sealant Replacement: Landside and airside soffits.
d. Roof Expansion Joints: East and west ends of terminal.

2. The Work includes replacement of exterior wall expansion control systems and joint sealants, cleaning and repair of exterior portland cement plasterwork on metal lath and monolithic concrete, miscellaneous concrete repair, field painting of exterior finishes, and installation of roof expansion joints,.
3. For additional requirements for the examination of plans, specifications, and Project site see Section "Supplementary Conditions."

1.4 TYPE OF CONTRACT

A. Project will be constructed under a general construction contract.

1.5 WORK UNDER OTHER CONTRACTS

A. 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.

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

1. Hourly Parking Lot Administration Building Construction: A separate contract will be awarded for construction of an administrative building at the east end of the Hourly Parking Lot.
2. Main Terminal Expansion Joint Replacement: A separate contract will be awarded for replacement of floor expansion joint assemblies in the Main Terminal building.
3. Main Terminal East and West Baggage Basements EDS In-line High Volume Baggage Screening.

1.6 USE OF PREMISES

A. Use of Site: Limit use of premises to work in areas indicated. Do not disturb portions of site beyond areas in which the Work is indicated.

1. Limits: Confine construction operations to the roof of the Main Terminal Building, designated areas of the adjacent departures curb, and the Main Terminal Observation Deck East and West.

2. Authority Occupancy: Allow for Authority occupancy of site and day-to-day use by tenants, air carriers, and the public.
3. Contractor shall have full use of premises for construction operations within the Contract Limit Lines indicated during construction period, during the hours indicated, and as directed by COTR. Contractor's use of premises is limited only by the Authority's right to perform work or to retain other contractors on portions of Project.
4. Driveways and Entrances: Keep driveways and entrances serving premises clear and available to the Authority, the Authority's employees, tenants, air carriers, and emergency vehicles at all times. Do not use driveways and entrances 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.

B. Utilize areas designated for Contractor staging, storage, and parking, as indicated. For additional requirements, see Section "Supplementary Conditions."

C. Use of Existing Buildings: Maintain existing buildings in a weather tight condition throughout construction period. Repair damage caused by construction operations. Protect buildings and their occupants during construction period.

1. For additional requirements for airfield and terminal buildings, see Section "Supplementary Conditions."

1.7 OCCUPANCY REQUIREMENTS

A. Full Authority Occupancy: The Authority and/or its tenants will occupy site and existing building during entire construction period. Cooperate with COTR during construction operations to minimize conflicts and facilitate Authority usage, and perform the Work so as not to interfere with day-to-day Airport operations.

B. For additional requirements for tenant operational requirements, see Section "Supplementary Conditions."

1.8 CONTRACTOR HOURS OF OPERATION

A. Contractor Working Hours: The Authority anticipates that the Contractor may be required to work multiple shifts to accomplish the work of this Contract within the established schedule. Contractor will be allowed and may be required by the nature of the Project to work 24 hours a day, seven days a week in the performance of the Work. Work is subject to restrictions of the Airport operational requirements. Notify the COTR 24-hours in advance of any change to the work schedule.

1.9 SPECIFICATION FORMATS AND CONVENTIONS

A. Specification Format: With the exception of Federal Aviation Administration (FAA) standard specifications and Virginia Department of Transportation standard specifications the

Specifications are organized into Divisions and Sections using the 33-Division format using the CSI/CSC's "MasterFormat 2004" numbering system.

1. Section Identification: The Specifications use Section titles to help with cross-referencing in the Contract Documents. Sections in the Project Manual are in numeric sequence; however, the sequence is incomplete as all available Sections and Section numbers are not used and the CSI numbering system is not sequentially complete. Consult the table of contents at the beginning of the Project Manual to determine numbers and names of sections in the Contract Documents.

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. Interpret words and meanings as appropriate. Infer words implied, but not stated, as the sense requires. Interpret singular words as plural, and plural words as singular where applicable as the context of the Contract Documents indicates.
2. Imperative mood and streamlined language are used in these Specifications. This imperative language is directed to the Contractor, unless specifically noted otherwise. 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.

1.10 UTILITY OUTAGES

A. Prior to any utility outage/interruption, prepare a schedule of such outage. Include in outage schedule duration, identification of the service affected, temporary utility service to be provided, identification of available service alternative, and the action to be taken in any emergency. Apply for all outages of utility systems in writing. Fully coordinate outage requests with COTR. Obtain approval in writing by COTR. Schedule all outages at least three (3) weeks in advance with a 96-hour notification provided by the Contractor confirming date, time, and duration. Outages will normally be scheduled to occur between the hours of 11:00 pm and 5:30 am, Tuesday through Thursday.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 011000

SECTION 012300 - ALTERNATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings, Contract Provisions, Special Provisions, Supplementary Conditions, and other Division 01 Specification Sections apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for alternates.

1.3 DEFINITIONS

A. Alternate: An amount proposed by offerors and stated on the Proposal Form for certain work defined in the Proposal Requirements that may be added to or deducted from the Base Proposal amount if the Authority decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.

1. The cost or credit for each alternate is the net addition to or deduction from the Contract Price to incorporate alternate into the Work. No other adjustments are made to the Contract Price.

1.4 PROCEDURES

A. Coordination: Modify or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.

1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.

B. Notification: Immediately following award of the Contract, The Authority will notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated modifications to alternates.

C. Execute accepted alternates under the same conditions as other work of the Contract.

D. Schedule: A Schedule of Alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

A. Alternate No. 1: Installation of roof parapet flashing at locations indicated in drawings.

END OF SECTION 012300

SECTION 012900 – APPLICATION FOR PAYMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings, Contract Provisions, Special Provisions, Supplementary Conditions, and other Division 01 Specification Sections apply to this Section.

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements necessary to prepare and process Applications for Payment.

1. Coordinate the Schedule of Values and Applications for Payment with Contract CPM Schedule, List of Subcontracts, and Submittal Log.

B. Related Sections include the following:
1. Division 01 Section "Construction Progress Documentation" for administrative requirements governing preparation and submittal of Contractor's Construction Schedule and Submittals Schedule.
2. Division 01 Section “Project Closeout” for submittal of items required before final payment.
3. Division 01 Section “Project Record Documents” for procedural requirements governing the submission of Project Record Documents.
4. Division 01 Section “Operation and Maintenance Data” for submittal of items required before final payment.

1.3 DEFINITIONS

A. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Price to various portions of the Work and once accepted, to be used as the basis for reviewing Contractor's Applications for Payment.

1.4 SCHEDULE OF VALUES

A. Coordination: Coordinate preparation of the Schedule of Values with preparation of Contractor's Construction Schedule.

1. Correlate line items in the Schedule of Values with other required administrative forms and schedules, including the following:

a. Application for Payment forms with Continuation Sheets.
b. Submittals Schedule.
c. Contract CPM Schedule.

d. List of products.
e. List of principal suppliers and fabricators.

2. Submit the Schedule of Values to Contracting Officer at earliest possible date, but no later than 21 calendar days after the date of the Notice to Proceed.

a. On projects requiring cost-loaded CPM Schedules, the accepted cost loading will satisfy the requirements for the Schedule of Values.

3. Sub schedules: Where the Work is separated into phases requiring separately phased payments, provide sub schedules showing values correlated with each phase of payment.

B. Format and Content: Use the Project Manual table of contents as a guide to establish line items for the Schedule of Values. Provide at least one line item for each Specification Section.

1. Identification: Include the following Project identification on the Schedule of Values:

a. Project name and location.
b. Name of COTR.
c. Name of Architect/Engineer.
d. The Authority's Project number.
e. Contractor's name and address.
f. Date of submittal.

2. Arrange the Schedule of Values in tabular form with separate columns to indicate the following for each item listed:

a. Related Specification Section or Division.
b. Description of the Work.
c. Name of subcontractor.
d. Name of manufacturer or fabricator.
e. Name of supplier.
f. Contract Modifications (numbers) that affect value.
g. Dollar value.

1) Percentage of the Contract Price to nearest one-hundredth percent, adjusted to total 100 percent.

3. Provide a breakdown of the Contract Price in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual table of contents. Provide several line items for principal subcontract amounts, where appropriate. Include separate line items under required principal subcontracts for the following items. The value assigned to the total of these line items shall be 5 percent of the Contract Price:

a. Testing and commissioning activities.
b. Operation and Maintenance manuals.
c. Punch list activities.
d. Project Record Documents.
e. Bonds and warranties.
f. Demonstration and training.

4. Round amounts to nearest whole dollar. Total shall equal the Contract Price.
5. Provide a separate line item in the Schedule of Values for each part of the Work where Application for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.

    a. Differentiate between potential items stored on-site and items stored off-site. Include evidence of insurance or bonded warehousing if required.

6. Provide separate line items in the Schedule of Values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
7. Each item in the Schedule of Values and Application for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.

    a. At COTR's option, temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the Schedule of Values or distributed as general overhead expense.

8. Schedule Updating: Update and resubmit the Schedule of Values with the next Applications for Payment when Contract Modifications result in a change in the Contract Price.

1.5 APPLICATION FOR PAYMENT

A. Each Application for Payment shall be consistent with previous applications and payments as certified by Contracting Officer and paid for by the Authority.

1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.

B. Payment Application Times: Application for Payment shall coincide with CPM schedule monthly update, or as otherwise indicated in the Agreement between the Authority and Contractor. The period covered by each Application for Payment starts on the day following the end of the preceding period and shall not exceed one calendar month, unless otherwise approved by COTR.

C. Payment Application Forms: Use forms provided by the Contracting Officer, but supplied by COTR, for Application for Payment.

D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. The Authority will return incomplete applications without action.

1. Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedules if revisions were made.
2. Include amounts of Contract Modifications issued before last day of construction period covered by application.

E. Transmittal: Submit one original and four copies of Application for Payment to the address indicated in the Section VII - Contract Provision, paragraph 04.B, each one signed and notarized. Include waivers of lien and similar attachments if required.

1. Transmit Applications for Payment with a transmittal form listing attachments and recording appropriate information about application in a manner acceptable to Contracting Officer.

F. Waivers of Mechanic's Lien: With Final Application for Payment, submit waivers of mechanic's liens from subcontractors, sub-subcontractors, and suppliers.

1. The Authority reserves the right to designate which entities involved in the Work must submit waivers.
2. Waiver Forms: Submit waivers of lien on forms, executed in a manner acceptable to the Authority.

G. Initial Application for Payment: Administrative actions and submittals that shall precede or coincide with submittal of first Application for Payment include the following:

1. List of subcontractors.
2. Schedule of Values.
3. Contractor's Construction Schedule (preliminary if not final).
4. Schedule of unit prices.
5. Submittals Schedule (preliminary if not final).
6. List of Contractor's staff assignments.
7. List of Contractor's principal consultants.
8. Copies of building permits.
9. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
10. Initial progress report.
11. Report of pre-construction conference.
12. Performance and payment bonds.
13. Initial settlement survey and damage report if required.
14. Submittal and approval of Contractor Safety Plan.
15. Subcontractor Payment Form: (Form J, "Contract Conditions," Section IX, "LDBE").

H. Monthly Application for Payment: Administrative actions and submittals that shall accompany the submittal of Contractor's monthly Application for Payment include the following:

1. Subcontractor Payment Form.
2. Monthly Progress Report, prepared according to requirements specified in Division 01 Section "Construction Progress Documentation."
3. Evidence of payment for material on-site if reimbursement for such material is being requested.
4. Update of Contract Record Documents.

I. Application for Payment at Substantial Completion: After issuance of the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.

1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Price.
2. This application shall reflect Certificates of Partial Substantial Completion issued previously for Authority occupancy of designated portions of the Work, if applicable.

3. Advise COTR of change-over in security provisions.

J. Final Payment Application: Submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:

1. Evidence of completion of Project closeout requirements.
2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
3. Updated final statement, accounting for final changes to the Contract Price.
4. Evidence that claims have been settled.
5. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when the Authority took possession of and assumed responsibility for corresponding elements of the Work.
6. Final, liquidated damages settlement statement.
7. Return of all Airport identification badges and keys.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

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SECTION 013100 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings, Contract Provisions, Special Provisions, Supplementary Conditions, and other Division 01 Specification Sections apply to this Section.

1.2 SUMMARY

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

1. General project coordination procedures.
2. Conservation.
3. Coordination drawings.
4. Administrative and supervisory personnel.
5. Project meetings.

    a. Pre-award conference.
    b. Pre-construction conference.
    c. Pre-installation conference.
    d. Progress meetings.
    e. Partnering meetings.

B. Related Sections include the following:

1. Division 01 Section: "Execution" for the coordination of general installation and field-engineering services, including establishment of benchmarks and control points.
2. Division 01 Section "Project Closeout" for coordinating Contract closeout.

1.3 COORDINATION

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

1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components with other contractors to ensure maximum accessibility for required maintenance, service, and repair.
3. Where availability of space is limited, coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair of all components, mechanical, electrical, and otherwise. Contractor is cautioned

that, where specific dimensions are not indicated or where Drawings are schematic in nature, as with most Electrical and Mechanical Drawings, Contractor shall have sole responsibility to coordinate the work to meet this requirement. Prepare and submit Coordination Drawings to COTR for review and approval as provided in "Coordination Drawings" Paragraph in "Submittals" Article of this Section.

4. Make adequate provisions to accommodate items scheduled for later installation.

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

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

C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work and completion within the specified Contract duration. Such administrative activities include, but are not limited to, the following:

1. Preparation of Contractor's Construction Schedule.
2. Preparation of the Schedule of Values.
3. Installation and removal of temporary facilities and controls.
4. Delivery and processing of submittals.
5. Progress meetings.
6. Pre-installation conferences.
7. Start-up, check-out, and final acceptance of systems.
8. Project closeout activities.
9. Protection of existing and new work.

D. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.

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

E. Temporary Utility Outages: Comply with requirements in Division 01 Section "Summary."

1.4 SUBMITTALS

A. Coordination Drawings: Before start of the Work, prepare Coordination Drawings for areas with limited space availability that necessitate maximum utilization of space for efficient installation of different components, and areas requiring coordination for installation of products and materials fabricated by separate entities.

1. Indicate relationship of components shown on separate Shop Drawings.
2. Indicate all dimensions provided on Contract Drawings and make specific note of dimensions that appear to be in conflict with submitted equipment, minimum clearance requirements, amounts of equipment and material to be installed, or other requirements. Provide alternate sketches for resolution of such conflicts to COTR for review. Minor

dimension changes and difficult installations shall not be considered changes to the Contract.

3. Indicate required installation sequences.
4. Comply with requirements contained in Division 01 Section "Submittals."
5. Prepare coordination drawings of involved trades in a scale of not less than 1/4 inch = 1 foot or larger for integration of different construction elements. Show sequences and relationships of separate components to avoid conflicts in use of space. Any Work installed prior to review of coordination drawings will be at the Contractor's risk and subsequent relocation require to avoid interference shall be made at no additional cost to the Authority.

B. Key Personnel Names: At the pre-construction meeting, submit a list of Contractor's key personnel assignments. Key personnel shall include but not necessarily be limited to Project Manager, Project Superintendent, Safety Engineer, Quality Control Manager, Project Scheduler, Soil Excavation Engineers, and other personnel in attendance at Project site along with alternates. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home and office telephone numbers. Provide names, addresses, and telephone numbers of individuals assigned as standbys in the absence of individuals assigned to Project.

1. Post copies of list in Project meeting room, in temporary field office, and by each temporary telephone. Keep the list current at all times.

1.5 REQUESTS FOR INFORMATION (RFIs)

A. Procedure: Immediately on discovery of the need for interpretation of the Contract Documents, prepare and submit an RFI in the form specified.

1. RFIs shall originate with Contractor. RFIs submitted by entities other than Contractor will be returned with no response.
2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.

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

1. Contract Name
2. Contract Number
3. Date.
4. Name of Contractor.
5. Name of Resident Engineer
6. Name of Task Manager
7. RFI number, numbered sequentially.
8. Specification Section number and title and related paragraphs, as appropriate.
9. Drawing number and detail references, as appropriate.
10. Field dimensions and conditions, as appropriate.
11. Contractor's suggested solution(s). If Contractor's solution(s) impact the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
12. Contractor's signature.

13. Attachments: Include drawings, descriptions, measurements, color photos, Product Data, Shop Drawings, and other information necessary to fully describe items needing interpretation.

    a. Supplementary drawings prepared by Contractor shall include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments.

C. Hard-Copy RFIs:

1. Identify each page of attachments with the RFI number and sequential page number.

D. Software-Generated RFIs: Software-generated form with substantially the same content as indicated above.

1. Attachments shall be electronic files in Adobe Acrobat PDF format.
2. RFI must be signed and scanned for electronic transmission.
3. Hard-Copy RFI shall follow Software-Generated RFI for the record.

E. COTR's Action: COTR will review each RFI, determine action required, and return it. Allow seven calendar days for COTR's response for each RFI. RFIs received after 1:00 p.m. will be considered as received the following working day.

1. The following RFIs will be returned without action:

    a. Requests for approval of submittals.
    b. Requests for approval of substitutions.
    c. Requests for coordination information already indicated in the Contract Documents.
    d. Requests for adjustments in the Contract Time or the Contract Sum.
    e. Requests for interpretation of Architect's actions on submittals.
    f. Incomplete RFIs or RFIs with numerous errors.

2. COTR's action may include a request for additional information, in which case COTR's time for response will start again.
3. COTR's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal.

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

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

G. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log bi-weekly prior to progress meeting for inclusion in progress meeting minutes. Include the following:

1. Project name.

2. Name and address of Contractor.
3. Name of COTR.
4. RFI number including RFIs that were dropped and not submitted.
5. RFI description.
6. Date the RFI was submitted.
7. Date COTR's response was received.
8. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.

1.6 ADMINISTRATIVE AND SUPERVISORY PERSONNEL

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

1.7 PROJECT MEETINGS

A. Pre-award Conference:

1. General: At the request of the Contracting Officer, a pre-award conference with Contractor may be held before actual award of the Contract. The meeting will review Contractor's understanding of the Contract Documents, cost and pricing data, contractual requirements, and Contractor's capabilities, financial standing, and past experience prior to award.

    a. Minutes: COTR will record and distribute meeting minutes to all attendees and all relevant parties.

2. Attendees: Contracting Officer, COTR, Authority Design Project Manager, Architect/Engineer, Contractor and its key personnel nominated for assignment to the Contract, and major subcontractors if so requested by the Contracting Officer. Concerned parties shall each be represented by persons thoroughly familiar with and authorized to conclude matters relating to the work described in the Contract Documents. The Contracting Officer will chair the pre-award meeting.

3. Agenda: Significant discussion items that could affect award include, but are not limited to, the following:

    a. Provision and acceptability of payment and performance bonds.
    b. LDBE/MBE/WBE/DBE participation.
    c. Qualifications of key individuals.
    d. Quality-control experience.
    e. Percentage of work performed by own forces.
    f. Contractor's experience with similar work, including previous Authority contracts.
    g. Scheduling capabilities of Contractor.
    h. Financial standing of Contractor.
    i. Mobilization plan.
    j. Understanding of work described in the Contract Documents and the physical constraints associated with work at the Airport.
    k. Equipment and manpower availability.

l. Cost and pricing data.

4. Representations and commitments made by Contractor or its subcontractors shall be construed as binding to the Contract.

B. Pre-construction Conference:

1. General: COTR will schedule pre-construction conference and organizational meeting with Contractor after the Contracting Officer issues a notice of intent to award, or actually awards the Contract. The meeting will review the parties' responsibilities and personnel assignments.

a. Minutes: COTR will record and distribute meeting minutes to all attendees and relevant parties.

2. Attendees: Contracting Officer, COTR, Architect/Engineer, and their sub-consultants; Contractor and its superintendent; major subcontractors; manufacturers; suppliers; and other concerned parties. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.

3. Agenda: Discuss items of significance that could affect progress, including the following:

a. Airport security.
b. LBDE/MBE/WBE/DBE participation and certifications.
c. Authority-controlled wrap-up insurance program.
d. Airport Operations coordination.
e. Preliminary construction schedule.
f. Phasing.
g. Critical work sequencing.
h. Designation of key personnel.
i. Procedures for processing field decisions and Contract Modifications.
j. Procedures for processing Applications for Payment.
k. Distribution of the Contract Documents.
l. Authority Construction guidelines.
m. Submittal procedures.
n. Preparation of Record Documents.
o. Use of the premises.
p. Responsibility for temporary facilities and controls.
q. Parking availability.
r. Office, work, and storage areas.
s. Equipment deliveries and priorities.
t. Safety procedures.
u. Quality-control requirements.
v. First aid.
w. Progress cleaning.
x. Working hours.
y. Authority Building Code requirements/permits.

4. Refer to Contract Provision "Pre-construction Requirements" for required submittals due at the pre-construction conference.

C. Pre-installation Conferences:

1. General: COTR will conduct a pre-installation conference at Project site before each construction activity that requires coordination with other construction.

   a. Minutes: COTR will record and distribute meeting minutes.

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

3. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:

   a. Contract Documents.
   b. Options.
   c. Related Contract Modifications.
   d. Purchases.
   e. Deliveries.
   f. Submittals.
   g. Review of mockups.
   h. Possible conflicts.
   i. Compatibility problems.
   j. Time schedules.
   k. Weather limitations.
   l. Manufacturer's written recommendations.
   m. Warranty requirements.
   n. Compatibility of materials.
   o. Acceptability of substrates.
   p. Temporary facilities and controls.
   q. Space and access limitations.
   r. Governing regulations and permits.
   s. Safety.
   t. Testing and inspecting requirements.
   u. Required performance results.
   v. Recording requirements.
   w. Protection of construction and personnel.
   x. Review material selection.
   y. Fabrication and installation procedures.
   z. Coordination of involved trades.

4. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.

D. Weekly Progress Meetings:

1. General: COTR will conduct progress meetings weekly at regularly scheduled times convenient for all parties involved. Progress meetings are in addition to specific meetings held for other purposes, such as coordination and special pre-installation

meetings. Additionally, discussions will address administrative and technical issues of concern, determining resolutions, and development of deadlines for resolution within allowable time frames.

a. Minutes: COTR will record and distribute meeting minutes.

2. Attendees: As may be required by COTR, in addition to representatives of the Authority and Contractor, each subcontractor, supplier, Contractor's Project Scheduler, and other entities concerned with current progress or involved in planning, coordination, or performance of future activities. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
3. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
b. Review present and future needs of each entity present, including the following:

1) Safety and Security.
2) Interface requirements.
3) Time.
4) Sequence of operations.
5) Status of submittals.
6) Deliveries.
7) Off-site fabrication.
8) Storage Areas
9) Access.
10) Site utilization.
11) Requests for information.
12) Submittals.
13) Noncompliance notices.
14) Temporary facilities and controls.
15) Work hours.
16) Resource allocation.
17) Hazards and risks.
18) Progress cleaning.
19) Quality and work standards.
20) Contract Modifications.
21) Documentation of information for payment requests.
22) Preparation of Record Documents.

4. Submit at the weekly progress meeting, a two-week look-ahead schedule. This schedule shall include a three-week period, one week showing actual progress from the previous week and two weeks showing planned work for the two weeks after the meeting date. Include in the schedule all activities in sufficient detail as approved by COTR. A two-week look-ahead schedule form will be distributed at the pre-construction conference.

Submit a list of subcontractors identifying dates of when subcontractors will be on-site or off-site. A form for this information will be provided by COTR.

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

E. Schedule Update Meetings:

1. Conduct schedule update meetings before submittal of Contractor's Application for Payment. Determine where each activity is, in relation to Contractor's CPM Schedule. Ensure the incorporation of all changes made to the sequence of work and all change notices issued by the Contracting Officer. Submit the narrative and information specified in Division 01 Section "Construction Progress Documentation" if applicable.
2. Attendees: COTR, Contractor's Project manager or superintendent, the Contractor's Project Scheduler, and the Authority's representative.
3. Submit the updated schedule, as bilaterally agreed on, along with the Application for Payment.
4. Present delay claims for discussion and, when possible, resolution.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013100

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SECTION 013200 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings, Contract Provisions, Special Provisions, Supplementary Conditions, and other Division 01 Specification Sections apply to this Section.

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements for various CPM schedules and reports required for proper performance of the Work.

B. All costs incurred by Contractor to correctly implement and update the schedule shall be borne by Contractor and are part of this Contract.

C. Schedules required include the following:

1. Contract Construction Progress Schedule in CPM format and related narrative and cash flow projection curves.
2. Submittals Schedule.
3. Schedule of Tests and Inspections.
4. Record, As-Built CPM Schedule.

D. Reports required include the following:

1. Daily Construction Reports.
2. Material Location Reports.
3. Field Correction Reports.
4. Special Reports.
5. Monthly Progress Reports.
6. Contractor Quality Control Reports.

E. Related Sections include the following:

1. Division 01 Section "Application for Payment" for Schedule of Values.
2. Division 01 Section "Project Management and Coordination" for Project meeting minutes.
3. Division 01 Section "Quality Requirements" for test and inspection reports.
4. Division 01 Section "Product Requirements" for Product List.

1.3 DEFINITIONS

A. Activity: The fundamental unit of work in a Project plan and schedule. Each activity has defined geographical boundaries and a detailed estimate of resources required to construct the

task. Each activity is assigned a unique description, activity number, activity codes, and dollar value.

B. CPM Network: The structure of the schedule. The network is the representation that defines the construction logic in terms of all the activities with their logical dependencies.

C. Contract CPM Schedule: A cost-loaded CPM schedule covering the entire Contract Duration from the Notice to Proceed through Final Acceptance of the Work.

D. Contract Duration/Time: The total time, in calendar days identified in Section III, "Schedule," representing the duration necessary for completion of all physical and administrative requirements under this Contract and any authorized extension thereof.

E. Critical Path: The critical path is the longest connected chain of interdependent activities in a CPM network that impacts the completion of the Project.

F. Excusable Delay: An unforeseeable delay, beyond the control of Contractor, experienced due to no fault or negligence by Contractor, its subcontractors, or suppliers.

G. Predecessor Activity: An activity that precedes another activity in the network.

H. Cost Loading: The allocation of the Schedule of Values for the completion of an activity as scheduled. The sum of costs for all activities shall equal the total Contract Price, unless otherwise approved by COTR.

I. Successor Activity: An activity that follows another activity in the network.

J. Total Float: The amount of time an activity can be delayed from its earliest start date without delaying the end of Project.

1. Float time is not for the exclusive use or benefit of either the Authority or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.
2. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the successor activity.

1.4 PLANNING

A. The total Contract Duration and intermediate milestones if applicable, as indicated in Section III, "Schedule," are the Contract requirements.

B. Contractor shall prepare a practical work plan to complete the Work within the Contract Duration, and complete those portions of work relating to each intermediate milestone date and other Contract requirements. Contractor shall generate a computerized cost-loaded CPM schedule in Precedence Diagram Method (PDM) format for the Work.

C. Failure to include any work item required for performance of this Contract shall not excuse Contractor from completing all work within applicable completion dates, regardless of COTR approval of the Schedule.

D. Failure of Contractor to comply with requirements of this Section may be considered cause for withholding progress payments or termination for default.

1.5 SUBMITTALS

A. General: Contractor shall provide all schedule submittals on computer disk media as well as tabular printouts, resource curves and histograms, and 24-by-36-inch time-scaled logic diagrams. The latest version of Primavera P3 or SureTrak scheduling software shall be used. All costs incurred by Contractor to correctly implement, computerize and update the CPM Schedule shall be borne by Contractor and are included in the Contract Price. The number of copies of each submittal shall be as described in this Section or as may be requested by COTR.

B. Contract CPM Schedule: The Contract CPM Schedule and its related narrative as described in this Section shall be submitted along with the projected cash-flow curve as early as practicable after the Notice to Proceed, but in no event later than 30 calendar days after the Notice to Proceed. Within 15 calendar days, COTR will respond with approval or direction to change and Contractor shall resubmit within 10 calendar days, if required.

C. Daily Progress Report: Submit duplicate copies to COTR by noon on the day following the date of actual progress.

D. Monthly Progress Report: All components of the Monthly Progress Report described in this Section shall be submitted as attachments to Contractor's monthly Application for Payment.

E. Record As-Built CPM Schedule: A Record CPM Schedule accurately reflecting actual progress of Work shall be submitted, as part of this Contract's Record Documents. All activities shall have actual dates that are true and accurate.

F. Qualification Data: For Project Scheduler.

1.6 QUALITY ASSURANCE

A. Project Scheduler Qualifications: Minimum of two years experience and not less than one project of similar size and scope, with capability to produce CPM reports and diagrams within 24 hours of COTR's request. Project Scheduler is classified as one of Contractor's key personnel.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 PROJECT SCHEDULER

A. Engage a project scheduler, either as Contractor's employee or as Contractor's consultant, to provide planning, evaluation, and reporting using CPM scheduling, and to prepare required schedules.

1. Project Scheduler shall be an active participant at all meetings related to Project progress, alleged delays, and time impact.

3.2 CONTRACT CPM SCHEDULE

A. Scheduling Requirements: The Contract CPM Schedule shall be a computerized cost-loaded, time-scaled CPM Schedule in PDM format that includes the following:

1. The order, sequence, and interdependence of all significant work items including mobilization, demobilization, testing and commissioning, construction, procurement, fabrication, and delivery of critical or special materials and equipment; utility interruption coordination; submittals and approvals of critical Samples, Shop Drawings, procedures, or other reasonable requirements that may be requested by COTR.
2. Work by the Authority, or utility agencies, and other third parties that may affect or be affected by Contractor's activities.
3. Adequate referencing of all work items to identify subcontractors or other performing parties.
4. Activity Coding may be provided by the COTR to establish minimum requirements for structure and values for the first 5 code fields.
5. Activity durations not in excess of 14 calendar days, except nonconstruction activities such as procurement and fabrication. Activities shall be broken down in the level of detail prescribed by COTR.
6. Activities that are cost loaded to show the direct costs required to perform the Work, including work by subcontractors.
7. A narrative that explains the basis for Contractor's determination of construction logic, estimated durations, cost allocations, estimated quantities and production rates, hours per shift, workdays per week, and types, numbers, and capacities of major construction equipment to be used. A listing of nonworking days and holidays incorporated into the schedule shall be provided.

B. Critical Path Activities: The Contract CPM Schedule shall be prepared to include the data for the total Contract and the critical path activities shall be identified, including critical paths for interim completion dates. Scheduled start or completion dates imposed on the schedule by Contractor shall be consistent with Contract milestone dates. Milestone dates shall be the scheduled dates specified in Section III, "Schedule," if applicable, and shall be prominently identified. The Contract CPM Schedule shall accurately show all as-built activities completed from the issuance of the Notice to Proceed up to the submittal of this schedule.

C. Assignment of Costs to Activities for Progress Payments:

1. Contractor shall assign cost to construction activities on the Contract CPM Schedule. Costs shall not be assigned to submittal activities unless specified otherwise but may, with COTR's approval, be assigned to fabrication and delivery activities. Costs shall be assigned to testing and commissioning activities, O&M manuals, punchlist activities, and Project Record Documents.
2. Each activity cost shall reflect an accurate value subject to approval by COTR.
3. The total cost assigned to activities shall equal the total Contract Price.
4. Activities shall be cost coded as directed by COTR.

D. Required Submittals: On a monthly basis, Contractor shall submit five copies of each of the following components of the Contract CPM Schedule:

1. A time-scaled plot of the schedule network in PDM format showing logic ties for all activities including submittals and procurement activities.
2. Computer-generated CPM Schedule Reports that contain the following data for each work item: activity identification number, description, resource loading, duration, early start and early finish calendar dates, late start and late finish calendar dates, and total float in calendar days. The reports shall also show the logic ties of successor and predecessor work items. The reports shall be sorted as follows, or other sorts as required by COTR:

    a. By activity identification.
    b. By total float x early start.
    c. By early start x early finish x total float.

3. The narrative described in Subparagraph 3.2-A-6 above.
4. A cash-flow report showing monthly expenditures projected over the life of the Contract. A cumulative cash-flow curve based on early and late schedule events shall also be submitted. These reports shall be derived from the Contract CPM Schedule.

3.3 DAILY CONSTRUCTION REPORTS

A. Prepare a daily construction report, recording the following information concerning events at the site, coordinate with requirements in Division 01 Section "Quality Requirements," and submit duplicate copies to COTR by noon of the day following day of actual progress:

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

3.4 MATERIAL LOCATION REPORTS

A. At weekly intervals, prepare a comprehensive list of materials delivered to and stored at the site. List shall be cumulative, showing materials previously reported plus items recently delivered.

Include with list a statement of progress on and delivery dates for all materials or items of equipment being fabricated or stored away from the building site. Submit copies of list to COTR at weekly intervals.

3.5 FIELD CORRECTION REPORT

A. When the need to take corrective action that requires a departure from the Contract Documents arises, prepare a detailed report including a statement describing the problem and recommended changes. Indicate reasons the Contract Documents cannot be followed. Submit a copy to COTR immediately.

3.6 SPECIAL REPORTS

A. When an event of unusual or significant nature occurs at the site, prepare and submit a special report. List the chain of events, persons participating, response by Contractor's personnel, an evaluation of the results or effects, and similar pertinent information. Advise COTR in advance when such events are known or predictable.

1. Include tabular CPM reports, time-scaled logic diagrams, resource curves and histograms, and narratives as requested by COTR.

B. Submit special reports directly to COTR within seven calendar days of an occurrence. Submit a copy to other parties affected by the occurrence.

3.7 MONTHLY PROGRESS REPORTING

A. General: Approval of Contractor's monthly Application for Payment shall be contingent, among other factors, on the submittal of a satisfactory monthly schedule update.

B. Monthly Schedule Update Meetings: Monthly schedule updates shall be the product of joint review meetings between Contractor, COTR, and major active subcontractors. The joint review shall focus on actual progress for the preceding month, planned progress for the upcoming month supported by a Contractor-prepared Four-Week Look-Ahead Schedule, impact to schedule if any due to change notices issued, adverse weather, and any effected changes to the Construction CPM Schedule. The agreed on progress, and changes, if any, shall be incorporated into the schedule update to be submitted. The update shall always represent the actual history of accomplishment of all activities, and will form the basis for Contractor's Application for Payment. Contractor's delay claims shall be presented for discussion and, when possible, resolution.

C. Required Submittals: On a monthly basis, Contractor shall submit two copies in electronic format of the updated CPM schedule and five copies of each of the following components of the Monthly Progress Report:

1. A monthly progress narrative, the content of which shall be prescribed by COTR, but shall include as a minimum a description of overall progress for the preceding month, a critical path analysis, a discussion of problems encountered and proposed solution thereof, delays experienced and proposed recovery measures, a monthly reconciliation of

weather impact, the status and impact of contract modifications, documentation of any logic changes, and any other changes made to the schedule since the previous monthly update.

2. CPM schedule reports listing completed activities, activities in progress, and remaining activities in the format requested by COTR. For each activity, Contractor shall provide those details identified in Subparagraph 3.2-D-2.
3. Monthly and cumulative cash-flow curves that show actual vs. planned cash-flow status.
4. Documentation of delivered material in the form of paid invoices or other evidence that Contractor has clear title for the material delivered.

D. If critical activities of the schedule are delayed and such delay is not excusable as defined in this Section, the remaining sequence of activities and/or duration thereof shall be adjusted by Contractor through such measures as additional manpower, additional shifts, or the implementation of concurrent operations until the schedule produced indicates Work will be completed on schedule. Except as provided elsewhere in the Contract, all costs incurred by Contractor to recover from inexcusable delays shall be borne by Contractor.

E. The monthly schedule update shall form the basis for Contractor's Application for Payment. The progress payment for an activity shall be based on its agreed on percentage of completion. On unit-priced contracts, the approval of Contractor's monthly requisition is contingent on the submittal of a satisfactory monthly schedule update; however, the basis of payment will be the actual measurement of COTR-accepted, in-place units of work.

3.8 DELAYS AND REQUESTS FOR EXTENSION OF TIME

A. The determination for an extension of the Contract Time will be made by the Contracting Officer according to the Contract Provision "Default."

B. Contractor acknowledges and agrees that delays in activities, irrespective of the party causing the delay, which according to the computer mathematical analysis do not affect any critical activity or milestone dates on the CPM network at the time of the delay, shall not become the basis for an extension of the Contract Time. The only basis for any extension of time will be the demonstrated impact of an excusable delay on the critical path. In demonstrating such impact, Contractor shall provide adequate detail as required by the Contract, and Contractor shall prove that:

1. An event occurred.
2. Contractor was not responsible for the event in that the event was beyond the control of Contractor, and was without fault or negligence of Contractor, subcontractor, or supplier, and the event was unforeseeable.
3. The event was the type for which an excuse is granted according to the "Default" provision of this Contract.
4. Activities on the critical path of the Work were delayed.
5. The event in fact caused the delay of the Work.
6. The requested additional time is an appropriate and reasonable extension of the Contract Time, given the actual delay encountered.

C. Time Extensions for Unusually Severe Weather:

1. If unusually severe weather conditions are the basis for a request for an extension of the Contract Time, such request shall be documented by data substantiating that weather conditions were abnormal for the period of time and could not have been reasonably anticipated, and that weather conditions had an adverse effect on the critical activities of the scheduled construction.
2. The schedule of anticipated adverse weather below will constitute the base line for monthly (or a prorated portion thereof) weather/time evaluation by the Contracting Officer. On issuance of the Notice to Proceed and continuing throughout the Contract on a monthly basis, actual adverse weather days will be recorded by Contractor on a calendar day basis (include weekends and holidays) and compared to the monthly anticipated adverse weather days set forth below.

    a. For purposes of this clause, the term "actual adverse weather days" shall include days that can be demonstrated to have been impacted by adverse weather.
    b. Monthly Anticipated Adverse Weather Calendar Days:

        1) January - 7.
        2) February - 5.
        3) March - 6.
        4) April - 6.
        5) May - 8.
        6) June - 6.
        7) July - 6.
        8) August - 7.
        9) September - 5.
        10) October - 5.
        11) November - 5.
        12) December - 6.

    c. The number of actual adverse weather days shall be calculated chronologically from the first to the last day in each month. Contractor shall not be entitled to any claim for time extension based on adverse weather unless the number of actual adverse weather days exceeds the number of anticipated adverse weather days, and unless such adverse weather days prevent work for 50 percent or more of Contractor's workday. In preparing the Contract Schedule, Contractor shall reflect the above anticipated adverse weather days on all weather-dependent activities. Weather-caused delays shall not result in any additional compensation to Contractor.

3. On days where adverse weather is encountered, Contractor shall list all critical activities under progress and shall indicate the impact adverse weather had, if any, on the progress of such activities. This information shall be presented at the end of the adverse weather day to COTR or its authorized representative for its review and approval.
4. If Contractor is found eligible for an extension of the Contract Time, the Contracting Officer will issue a modification extending the time for Contract completion. The extension of time will be made on a calendar day basis.

D. Required Submittals:

1. Provide time-impact analysis that illustrates impact during update period in which event occurred, that event has been mitigated to greatest possible extent, and that event still impacts overall completion of Project.
2. Include with request, two copies of submittal of impacted schedule, in electronic format, and photocopies of all relevant documents that support the claim.
3. Submit all required items within the following time periods:

    a. 10 calendar days of event occurrence.
    b. 10 calendar days of Contractor's knowledge of impact.
    c. 14 calendar days of written request by COTR.

4. Expiration of time periods without submittal shall constitute forfeiture of rights for these specific impacts.

3.9 RECORD SCHEDULE

A. After all Contract work items are complete, and as a condition of final payment, Contractor shall submit three copies of a Record, As-Built CPM Schedule showing actual start and finish dates for all work activities and milestones, based on the accepted monthly updates. These schedule submittals shall be in tabular and in time-scaled PDM plot formats.

END OF SECTION 013200

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SECTION 013233 - PHOTOGRAPHIC DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings, Contract Provisions, Special Provisions, 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. Preconstruction photographs.
2. Periodic construction photographs.
3. Final Completion construction photographs.

B. Related Sections include the following:

1. Division 01 Section "Submittals" for submitting construction photographs.
2. Division 01 Section "Project Closeout" for submitting photographic files as Project Record Documents at Project closeout.
3. Division 02 Section “Selective Structure Demolition” for photographic documentation before selective demolition operations commence.

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 including a detailed description of each project area with notation of vantage points marked for location and direction of each photograph. Indicate elevation or story of construction. Include the same label information as the corresponding set of photographs.

C. Construction Photographs: Submit digital files of each photographic view within five days of taking photographs.

1. Format: 8-by-10-inch format.
2. Identification: The file properties of each individual photographic file shall include the following information:

a. Name of Project.
b. Name and address of photographer.
c. Name of COTR.

d. Name of Architect/Engineer.
e. Name of Contractor.
f. Date photograph was taken.
g. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.

3. Files: Submit a complete set of photographic files on a read-only CD with each submittal. Affix a computer generated identification label to the disk.

1.4 QUALITY ASSURANCE

A. Photographer Qualifications:

1. Photographer: Individual of established reputation who has been regularly engaged as a professional construction photographer for not less than three years.
2. Videographer: Individual of established reputation who has been regularly engaged as a professional construction videographer for not less than three years.

B. Costs: Include photographer's services in the Contract Price.

1.5 COORDINATION

A. Auxiliary Services: Cooperate with photographer**.** Provide auxiliary services requested, including access to Project site and use of temporary facilities including temporary lighting required to produce clear, well-lighted photographs without obscuring shadows.

1.6 USAGE RIGHTS

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

1.7 EXTRA PRINTS

A. Extra Prints: If requested by COTR, photographer shall prepare extra prints of photographs. Contractor will not be responsible for the cost of such additional prints.

PART 2 - PRODUCTS

2.1 PHOTOGRAPHIC MEDIA

A. Photographic Film: Digital Single Lens Reflex camera using 35 mm 100, 200 or 400 ISO color film equivalent settings. Do not use point and shoot cameras. Use lenses with focal length of either 50 mm or 55 mm.

PART 3 - EXECUTION

3.1 PHOTOGRAPHS, GENERAL

A. Photographer: Engage a qualified commercial photographer to take construction photographs.

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

C. Field Office Prints: Retain one set of prints of progress photographs in the field office at Project site, available at all times for reference. Identify photographs the same as for those submitted to COTR.

3.2 CONSTRUCTION PHOTOGRAPHS

A. Preconstruction Photographs: Before starting construction, take color photographs of Project site and surrounding properties from different vantage points, as directed by COTR.

1. Take eight photographs to show existing conditions adjacent to the project before starting the Work.
2. Take eight photographs of existing buildings either on or adjoining the project to accurately record the physical conditions at the start of construction.

B. Periodic Construction Photographs: Take a minimum of 10 color photographs monthly, coinciding with the cutoff date associated with each Application for Payment. The COTR will select vantage points to best show status of construction and progress since the last photographs were taken.

C. Final Completion Construction Photographs: Take eight color photographs after date of Substantial Completion for submission as Project Record Documents. COTR will direct photographer for desired vantage points.

1. Do not include date stamp.

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

1. Photographer will be given three 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, the following:

a. Special events planned at Project site.
b. Immediate follow-up when on-site events result in construction damage or losses.
c. Photographs to be taken at fabrication locations away from Project site. These photographs are not subject to unit prices or unit-cost allowances.
d. Substantial Completion of a major phase or component of the Work.

e. Extra record photographs at time of final acceptance.
f. COTR's request for special publicity photographs.

END OF SECTION 013233

SECTION 013300 - SUBMITTALS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings, Contract Provisions, Special Provisions, Supplementary Conditions, and other Division 01 Specification Sections apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other miscellaneous submittals.

B. Related Sections include the following:
   1. Division 01 Section "Project Closeout" for submitting warranties.
   2. Division 01 Section "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
   3. Divisions 02 through 33 Sections for specific requirements for submittals in those Sections.

1.3 DEFINITIONS

A. Action Submittals: Written and graphic information that requires COTR's responsive action.

B. Informational Submittals: Written information that does not require COTR's approval. Submittals may be rejected for not complying with requirements.

1.4 SUBMITTAL PROCEDURES

A. General: COTR will provide electronic copies of CADD electronic files of the drawings for Contractor's use in preparing submittals.

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 requires sequential activity.
   2. 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. Without change to the Contract Duration, COTR reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

C. Submittals Schedule: Comply with requirements in Division 01 Section "Construction Progress Documentation" for list of submittals and time requirements for scheduled performance of related construction activities.

D. Contractor's Responsibilities: Contractor is responsible for the scheduling and submission of all submittals. Submit to COTR all required Submittals. The COTR will forward submittals to the appropriate parties for review.

E. Processing Time: Allow enough time for submittal review, including time for re-submittals, as follows. Time for review shall commence on COTR'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 re-submittals.

1. Initial Review: Allow 15 calendar days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. COTR will advise Contractor when a submittal processed must be delayed for coordination. Allow an additional 45 calendar days for submittals related to fire-protection systems.
2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
3. Re-submittal Review: Allow 15 calendar days for review of each re-submittal.
4. No extension of the Contract Time will be authorized because of failure to transmit submittals to COTR enough in advance of the Work to permit processing. Processing of incomplete or unacceptable submissions by COTR shall not reduce the number of calendar days specified above for COTR's review. Resubmissions shall be treated the same as initial submissions relative to review time.
5. Notations on submittals that increase the Contract cost or time of completion shall be brought to COTR's attention before proceeding with the Work.

F. Identification: Place a 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 a space approximately 6 by 8 inches on label or beside title block to record Contractor's review and approval markings and action taken by COTR and Architect.
3. Include the following information on label for processing and recording action taken:

    a. Contract name and number.
    b. Date.
    c. Name and address of Architect/Engineer.
    d. Name and address of Contractor.
    e. Name and address of subcontractor, if applicable.
    f. Name and address of supplier, if applicable.
    g. Name of manufacturer, if applicable.
    h. Submittal number or other unique identifier, including revision identifier.

        1) Submittal number shall use Specification Section number followed by a dash and then a sequential number (e.g., 061000-001 or 070150.19-001). Re-submittals shall include an alphabetic suffix after another dash (e.g., 061000-001-A or 070150.19-001-A).

    i. Alphanumeric project Identifier. Identifier is shown on the Project Drawings cover sheet.

j. Number and title of appropriate Specification Section.
k. Drawing number and detail references, as appropriate.
l. Location(s) where product is to be installed, as appropriate.
m. Transmittal number.
n. Allow 15 calendar days for processing each re-submittal.

G. Resubmissions: Re-submittal procedure shall follow the same procedures and same number as the initial submittal with the following exceptions:

1. Transmittal shall contain the same information as the first transmittal and the submission number shall indicate second, third, etc., submission. The drawing number/description shall be identical to the initial submission and the date shall be the revised date for that submission.
2. No new material shall be included on the same transmittal for a resubmission.
3. COTR rejection shall not warrant a claim by Contractor for additional time or cost.

H. Deviations: Highlight, encircle, or otherwise specifically identify deviations from the Contract Documents on submittals. Where significant deviations from the Contract requirements exist, follow the guidelines set forth in Division 01 Section "Product Requirements" for substitutions.

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

1. Additional copies submitted for Operations and Maintenance manuals will be marked with action taken and will be returned.

J. Transmittal: Package each submittal individually and appropriately for transmittal and handling. Transmit each submittal from Contractor to COTR using the approved transmittal form provided by COTR. COTR will return submittals, without review**,** received from sources other than Contractor.

1. Transmittal Form: Use transmittal forms and follow other submittal procedures according to information provided to Contractor at the preconstruction meeting.

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

1. Bear all costs incurred for such reproduction and distribution. Prints of all reviewed Shop Drawings may be made from transparencies that carry the appropriate review stamps.

L. Use for Construction: Use only final submittals with mark indicating “approved” by COTR in connection with construction.

1.5 SUBMITTAL LOG

A. Prepare a log that contains a complete listing of all submittals required by Contract. Submit the log at the preconstruction meeting along with Contractor's construction schedule specified in

Division 01 Section "Construction Progress Documentation." Organize the submittal log by Section number. Assign each submittal a sequential number for identification and tracking purposes.

1. Coordinate the submittal log with Division 01 Section "Construction Progress Documentation." The submittal log shall be submitted for COTR's review. Include the following information:

    a. Title of submittal/description.
    b. Submittal number (sequential).
    c. Scheduled date for the first submittal.
    d. Drawing number, if applicable.
    e. Applicable Section number.
    f. Name of subcontractor/vendor.
    g. Scheduled date of COTR's final release or approval.

PART 2 - PRODUCTS

2.1 ACTION SUBMITTALS

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

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

1. If information must be specially prepared for submittal because standard 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 the 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. Standard product operating and maintenance manuals.
    g. Compliance with recognized trade association standards.
    h. Compliance with recognized testing agency standards.
    i. Application of testing agency labels and seals.
    j. Notation of coordination requirements.

4. Submit Product Data before or concurrent with Samples.
5. Number of Copies: Submit six copies, in addition to the number of copies to be returned to Contractor. Provide one additional copy for submittals related to fire-protection system.
6. Do not submit Product Data until compliance with requirements of the Contract Documents has been confirmed.

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

1. Preparation: Include the following information, as applicable:

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

2. 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.
3. Number of Copies: Submit one reproducible transparency and two black-line prints of each submittal. Provide one additional black-line print for items related to fire-protection systems. COTR will return the marked up reproducible transparency for Contractor's distribution.

   a. Both the reproducible transparency and the prints shall bear Contractor's approval stamp on each sheet.

D. Coordination Drawings:

1. Coordination Drawings are Shop Drawings prepared by Contractor that detail the relationship and integration of different construction elements that require careful coordination during fabrication or installation. Preparation of Coordination Drawings is specified in Division 01 Section "Project Management and Coordination."
2. Submit Coordination Drawings for integration of different construction elements. Show sequences and relationships of separate components to avoid conflicts in use of space.

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

1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
2. Identification: Attach label on unexposed side of Samples that includes the following:

   a. Generic description of Sample.
   b. Product name and name of manufacturer.
   c. Sample source.
   d. Number and title of appropriate Specification Section.

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

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

4. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.

   a. Number of Samples: Submit three full set(s) 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.

5. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.

   a. Number of Samples: Submit three sets of Samples. COTR will retain two Sample sets; remainder will be returned.

      1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
      2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.

F. Product Schedule or List: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:

1. Type of product. Include unique identifier for each product.
2. Number and name of room or space.
3. Location within room or space.
4. Number of Copies: Submit three copies of product schedule or list, unless otherwise indicated. COTR will return two copies.

   a. Mark up and retain one returned copy as a Project Record Document.

G. Submittals Schedule: Comply with requirements in Division 01 Section "Construction Progress Documentation."

H. Application for Payment: Comply with requirements in Division 01 Section "Application for Payment."

I. Schedule of Values: Comply with requirements in Division 01 Section "Application for Payment."

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

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

K. Contractor Warranty Letter: Comply with requirements in Contract Provision "Warranty of Construction." Provide the dates of warranty coverage and provide point of contact information for warranty service.

L. Special Warranty Letters: Provide dates of warranty coverage and provide point of contact information for warranty service for special warranties required in Division 02 through 33 Sections.

2.2 INFORMATIONAL SUBMITTALS

A. General: Prepare and submit Informational Submittals required by other Specification Sections.

1. Number of Copies: Submit four copies of each submittal, unless otherwise indicated. COTR will not return copies.
2. Certificates and Certifications: Provide a notarized statement that includes signature of entity responsible for preparing certification. An officer shall sign certificates and certifications or other individual authorized to sign documents on behalf of that entity.
3. Test and Inspection Reports: Comply with requirements in Division 01 Section "Quality Requirements."

B. Contractor's Construction Schedule: Comply with requirements in Division 01 Section "Construction Progress Documentation."

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

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

E. 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.

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

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

H. Material Certificates: Prepare written statements on manufacturer's letterhead certifying that material complies with requirements.

I. Material Test Reports: Prepare reports written by a 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 a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements.

K. Compatibility Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.

L. Field Test Reports: Prepare reports written by a 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 a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.

N. Research/Evaluation Reports: Prepare written evidence from a model code organization acceptable to the Authority that product complies with USBC. Include the 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 requirements in Division 01 Section "Operation and Maintenance Data."

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

Q. Manufacturer's Instructions: Prepare written or published information that documents manufacturer's recommendations, guidelines, and procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of manufacturer. Include the 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 the 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 a statement of whether observed performance complies with requirements.
6. Statement on whether conditions, products, and installation will affect warranty.
7. Other required items indicated in individual Specification Sections.

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

T. Manufacturers' warranties.

U. Construction Photographs: Comply with requirements in Division 01 Section "Photographic Documentation."

V. Material Safety Data Sheets: Submit information directly to COTR.

2.3 DELEGATED DESIGN

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 COTR.

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

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.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

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

1. In checking Shop Drawings and Product Data, verify all dimensions and field conditions and check and coordinate Shop Drawings and Product Data of any Section or trade with the requirements of other sections or trades as related thereto, as required for proper and complete installation of the Work.

B. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents, which shall include dimensions, clearances, compatibility, and coordination with Shop Drawings and Product Data submitted for other work.

C. If Contractor has not checked the submittals carefully, even though stamped as checked and approved, submittals shall be returned to Contractor for proper checking before further processing or review by COTR regardless of any urgency claimed by Contractor. In such a situation, Contractor will be responsible for any resulting delays to the scheduled Contract completion. Furthermore, Contracting Officer may hold Contractor responsible for increased Authority costs resulting from Contractor's failure to comply with the requirements set forth herein.

3.2 COTR'S ACTION

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

B. COTR Responsibilities: The review of Shop Drawings and other submittals by COTR will be for general conformance with the Contract only, and the review shall not be interpreted as a checking of detailed dimensions, quantities, or approval of deviations from the Contract Documents. COTR review shall not relieve Contractor of its responsibility for accuracy of Shop Drawings nor for the furnishing and installation of materials or equipment according to the Contract requirements.

1. Approval of Shop Drawings or other submittals is not to be interpreted as approval of a substitute material. Approval of substitutions will be accomplished according to requirements set forth in Division 01 Section "Product Requirements."

C. Action Submittals: COTR will review each submittal, make marks to indicate corrections or modifications required, and return it. COTR will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken, as follows. Do not permit submittals marked "Revise and Resubmit" or "Rejected" to be used at Project site, or elsewhere where Work is in progress.

1. Approved: Means fabrication/installation may be undertaken. Approval does not authorize changes to the Contract Price or the Contract Time.
2. Approved as Corrected: Same as "Approved," providing Contractor complies with corrections noted on submittal. Resubmission required only if Contractor is unable to comply with noted corrections.
3. Revise and Resubmit: Fabrication and/or installation may not be undertaken. Make appropriate revisions and resubmit, limiting corrections to items marked.
4. Rejected: Submittal does not comply with requirements. Fabrication and/or installation may not be undertaken. Prepare a new submittal according to requirements and submit without delay.

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

E. Partial submittals are not acceptable, will be considered non-responsive, and will be returned without review.

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

END OF SECTION 013300

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SECTION 014000 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and Contract Provisions, Special Provisions, Supplementary Conditions, and other Division 01 Specification Sections apply to this Section.

B. Related Sections:

1. Division 01 Section “Submittals” for process required to submit the Contractor’s Quality Control Plan.
2. Division 01 Section “Construction Progress Documentation” for developing a schedule of required tests and inspections.
3. Division 01 “Project Management and Coordination”
4. Division 01 Section “Operation And Maintenance Data”
5. Division 01 Section “Project Closeout”
6. Division 01 Section “Cutting and Patching” for repair and restoration of construction disturbed by testing and inspecting activities.
7. Divisions 02 through 33 Sections for specific test and inspection requirements.

1.2 SUMMARY

A. This Section includes the following:

1. Administrative and procedural requirements for Contractor to provide and maintain an effective Quality-Control Program that complies with this Section and with requirements of the "Contract Provisions," Section VII, "Inspection of Construction and Final Inspection and Acceptance."
2. Establish a QC Program that consists of the following:

    a. QC Organization
    b. QC Plan
    c. QC Plan Meeting
    d. Coordination and Mutual Understanding Meeting
    e. QC meetings
    f. Phases of Control
    g. Submittal review and approval
    h. Operation & Maintenance data and Warranty receipt verification prior to product delivery
    i. Material verification at delivery
    j. Testing, completion inspections, and QC certifications and documentation necessary to provide materials, equipment, workmanship, fabrication, construction and operations that comply with the requirements of this Contract.

3. Contractor is not responsible for Special Inspections according to requirements of the current Virginia Uniform Statewide Building Code (USBC). The Authority's agent shall provide these Special Inspection services. Special Inspections coordination should be discussed at weekly progress meetings and scheduled dates for Special Inspections carried on the two-week look ahead. Contractor shall be responsible for coordination of and notification to the Authority for the following Special Inspections.
4. Specific quality-control requirements for individual construction activities are specified in the Sections that require those activities. Requirements in those Sections may also cover production of standard products.
5. Schedule of Values: Contractor shall include all test and inspection activities in its CPM and establish a Schedule of Values for all quality test and inspection activities; and all required reports, and procedures required in the Contract on a Section-by-Section basis. Additionally, Contractor shall include a pay line item specifically for CQC activities and QCM position(s) required by the General Conditions. CQC activities shall be reported per Division 01 Section "Applications for Payment."
6. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of its responsibilities for compliance with the Contract Document requirements.
7. Specified tests, inspections, and related actions do not limit Contractor's quality-control procedures that facilitate compliance with the Contract Document requirements.
8. The provisions of this Section shall not limit requirements for Contractor to provide quality-control services required by the Authority or other agencies having jurisdiction.

1.3 REFERENCES

A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

1. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

   a. ASTM C 1077 Laboratories Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation latest edition.
   b. ASTM D 3666 Minimum Requirements for Agencies Testing and Inspecting Road and Paving Materials latest edition.
   c. ASTM D 3740 Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction latest edition.
   d. ASTM E 329 Agencies engaged in the Testing and/or Inspection of Materials Used in Construction latest edition. ASTM E 543 Agencies Performing Nondestructive Testing latest edition.
   e. ASTM E 543 Agencies performing Nondestructive Testing latest edition.

2. METROPOLITAN WASHINGTON AIRPORT AUTHORITY

   a. *Construction Safety Manual,* most current edition

1.4 DEFINITIONS

A. Quality: Conformance to the requirements established by the contract specifications and drawings.

B. Control: To guide and have influence over.

C. Contractor Quality Control (CQC): The construction contractor's system to manage, control, and document their own, their supplier's, and their subcontractor's activities to comply with the contract requirements.

D. Contracting Officers Technical Representative (COTR). Primary on-site representative of the Contracting Officer for technical matters. Duties and responsibilities of the COTR will be transmitted to the contractor via letter from the Contracting Officer.

E. Quality-Assurance Services: Activities, actions, and procedures performed by the Authority before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirement. Additionally, the Authority fulfills its responsibility to be certain that the CQC is functioning and the specified end product is achieved.

F. Mockups: Full-size, physical example assemblies that are constructed on site to illustrate finishes and materials. Mockups are used to verify selections made under Sample submittals, to demonstrate aesthetic effects or details and, where indicated, qualities of materials and execution, and to review construction, coordination, testing, or operation; they are not Samples. Mockups establish the standard by which the Work shall be judged. Mockups supersede samples in the approval and acceptance of the Work. Construct mockups away from the work. Do not use mockups as part of the work.

G. Definable Feature of Work: A definable feature of work (DFOW) is a task, which is separate and distinct from other tasks, has the same control requirements and work crews.

H. Experienced: When used with an entity, "experienced" means having successfully completed a minimum of 10 projects similar in size and scope to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction. Specific experience requirements enumerated in these specifications supersede this requirement.

1.5 CONFLICTING REQUIREMENTS

A. General: If compliance with two standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to the COTR for a decision before proceeding. This paragraph refers to industry and government standards. In case of a difference between drawings and the specifications, the specifications shall govern.

1.6 SUBMITTALS

A. Submit the following in accordance with Division 01 Section, "Submittals."

1. Action Submittals.

    a. Quality Control (QC) Plan.

B. NOTE: Coordinate the submittal requirement dates with the submittal dates in Division 01 Section “Construction Progress Documentation”.

C. Submit a QC plan within 20 calendar days after receipt of Notice to Proceed. The QC Plan shall include a preliminary submittal of the list of definable features of work that shall cover the first 90 calendar days of construction.

1. Submit at this time résumés of key personnel to be assigned to this contract and the limits of their authority. Show how this project management structure fits into the Contractor’s corporate management structure.

D. Any approval by the COTR of the QC Plan shall be treated as “accepted, predicated upon successful implementation.” Stop work if the QC Plan becomes disapproved. The exception is the work authorized in the paragraph entitled "Preliminary Work Authorized Prior to Approval," shall stop.

1.7 INFORMATION FOR THE CONTRACTING OFFICER

A. Provide a sample copy set of report forms to the Contracting Officer during the Pre-Construction Conference. The report forms shall consist of the Quality Control Daily Report, Preparatory Phase Report, Initial Phase Report, and Project Quality Control Monthly Summary. These forms may be edited to support the project. Other reports referenced below may be in formats customarily used by the Contractor, Testing Laboratories, etc. and shall contain the information required by this specification.

B. Deliver the following listed items to the COTR at the times specified:

1. Quality Control Daily Report: 1 original electronic or hard copy, turned in by the next calendar day after work is performed.
2. Superintendent’s Daily Report: 1 original electronic or hard copy, turned in by the next calendar day after work is performed, do not attach to the Quality Control Daily Report.
3. Material Receiving Inspection Report: 1 original electronic or hard copy, turned in by the next calendar day after work is performed, do not attach to the Quality Control Daily Report.
4. Preparatory Phase Report: 1 original electronic or hard copy, turned in by the next calendar day after work is performed, do not attach to the Quality Control Daily Report.
5. Initial Phase Report: 1 original electronic or hard copy, turned in by the next calendar day after work is performed, do not attach to the Quality Control Daily Report.
6. Field Test Reports: 1 Original electronic or hard copy, within 2 working days after the test is performed, do not attach to the Quality Control Daily Report.
7. Monthly Summary Report of Tests: 1 Original electronic or hard copy, do not attach to a Quality Control Daily Report.
8. Project Quality Control Monthly Summary Report: 1 Original electronic or hard copy, do not attach to a Quality Control Daily Report.
9. Inspection Log and Signoff Sheets: one copy, submitted daily within 1 day of the inspection.

10. Testing Plan and Log: 1 Original electronic or hard copy, submitted within 2 working days of the end of the month.
11. Deficiency List: 1 Original electronic or hard copy, submitted to the COTR weekly.
12. Monthly Deficiency Report: 1 Original electronic or hard copy, submitted within two working days of the end of the month.
13. QC Meeting Minutes: 1 Original electronic or hard copy, submitted within 2 working days after the meeting.
14. QC Certifications: As required by paragraph entitled "QC Certifications."

1.8 QC PROGRAM REQUIREMENTS

A. Establish and maintain a QC Program as described in this Section. The QC Program consists of but is not limited to the following:

1. QC Organization.
2. QC Plan.
3. QC Plan Meeting.
4. Coordination and Mutual Understanding Meeting
5. QC meetings.
6. Phases of Control.
7. Submittal review and approval.
8. Operations and Maintenance data.
9. Warranty receipt verification prior to product delivery.
10. Material verification at delivery.
11. Testing.
12. Completion inspections.
13. QC certifications and documentation necessary to provide materials, equipment, workmanship, fabrication, construction and operations that comply with the requirements of this Contract.
14. The QC Program shall cover on-site and off-site work and shall be keyed to the work sequence.
15. No work or testing may be performed unless the QCM or a pre-approved alternate is on the work site.
16. The QCM shall report to an officer of the firm and shall not be subordinate to the Project Superintendent or the Project Manager.
17. Quality Control Manager is the primary individual responsible for quality control. The QCM, Project Superintendent and Project Manager shall be responsible for the quality of work on the job. Project Superintendent shall be held responsible for the quality of production.

B. Preliminary Work Authorized Prior to Approval

1. The only work that is authorized to proceed prior to the approval of the QC Plan is mobilization of storage and office trailers, temporary utilities, and surveying.

C. Approval

1. Approval of the QC Plan is required prior to the start of any construction. The Contracting Officer reserves the right to require changes in the QC Plan and operations as necessary, including but not limited to removal of personnel, to ensure the specified

quality of work. The Contracting Officer reserves the right to interview any member of the QC organization at any time in order to verify the submitted qualifications. All QC organization personnel shall be subject to acceptance by the Contracting Officer. The Contracting Officer may require the removal of any individual for non-compliance with quality requirements specified in the contract.

D. Notification of Changes

1. Notify the COTR, in writing, of any proposed change, including changes in the QC organization personnel, a minimum of seven calendar days prior to a proposed change. Proposed changes shall be subject to acceptance by the Contracting Officer.

1.9 QC ORGANIZATION

A. Staffing Levels: Provide sufficient qualified quality-control personnel to monitor each work activity at all times. Scheduling and coordinating of all inspections and testing shall match the type and pace of work activity.

1. In cases where multiple trades, disciplines, or subcontractors are on site at same time, each activity shall be tested and inspected by personnel skilled in that portion of the work.
2. In cases where multiple shifts are employed, the quality-control staff shall be increased as required to monitor the work on each shift.

B. The following positions are key personnel as defined by the Authority in this and other Division 01 Specification Sections.

1. Project Manager

a. To enhance the effectiveness of the Quality Control Organization Project Manager shall be intimately involved in Quality Control. To this end, the Project manager shall have successfully completed the Army Corps of Engineers/NAVFAC Contractor Quality Control Course (details in Paragraph “Construction Quality Management Training” below).

2. Quality Control Manager (QCM)

a. Duties

1) Provide a QCM at the work site to implement and manage the QC Program. In addition to implementing and managing the QC Program, the QCM may perform the duties of project superintendent. The QCM is required to attend the QC Plan Meeting, attend the Coordination and Mutual Understanding Meeting, conduct the QC meetings, perform the Phases Control, perform submittal review and approval, ensure testing is performed and provide QC certifications and documentation required in this contract. The QCM is responsible for managing and coordinating the Phases Control and documentation performed by Testing Laboratory personnel and any other inspection and testing personnel required by this Contract.

b. Qualifications

1) An individual with a minimum of 5 years experience as a superintendent, inspector, QCM, project manager, project engineer or construction manager on similar size and type construction contracts which included the major trades that are part of this Contract. The individual shall be familiar with the requirements of the Construction Safety Manual, and have experience in the areas of hazard identification and safety compliance. The QCM shall be interviewed by PMC QA Dept and the COTR. The COTR will approve the QC Manager.

c. Construction Quality Management Training

1) In addition to the above experience and education requirements, the QCM shall have completed the course entitled "Construction Quality Management for Contractors." If the QCM does not have a current certification, they shall obtain the CQM course certification within 60 - calendar days of award. This short course is periodically offered in alternate months by: (1) the Maryland Chapter, Associated General Contractors (AGC), 410-321-7870; agcmd@aol.com and by (2) the Virginia Chapter, Associated Builders and Contractors (ABC), 703-968-6205, joanna@abdva.org; mervin@abc.org. The training uses Army Corps of Engineers course content. The course is facilitated by instructors from Army Corps of Engineers, North Atlantic Division, Baltimore District, and by instructors from the Naval Facilities Engineering Command, Engineering Field Activity Chesapeake.

3. Alternate QCM Duties and Qualifications

a. Designate an alternate for the QCM at the work site to serve in the event of the designated QCM's absence. The period of absence may not exceed two weeks at one time, and not more than 30 workdays during a calendar year. The qualification requirements for the Alternate QCM shall be the same as for the QCM.

4. Project Engineer/Scheduler

a. Qualifications: Refer to Division 01 Section “Construction Progress Documentation”.

1.10 QC PLAN MEETING

A. Within 10 calendar days of notice of award and prior to submission of the QC plan, meet with the COTR to discuss the QC plan requirements of this Contract. The purpose of this meeting is to communicate expectations and facilitate understanding of the QC plan requirements prior to plan development and submission.

1.11 QUALITY CONTROL (QC) PLAN

A. Provide, for approval by the COTR, a QC plan submitted in a 3-ring binder with pages numbered sequentially that covers both on-site and off-site work and includes but may not necessarily be limited to the following:

B. A table of contents listing the major sections identified with tabs in the following order:

1. QC ORGANIZATION
2. PERSONNEL MATRIX
3. NAMES AND QUALIFICATIONS
4. DUTIES, RESPONSIBILITY AND AUTHORITY OF QC PERSONNEL
5. APPOINTMENT LETTERS
6. OUTSIDE ORGANIZATIONS INCLUDING BOCA INSPECTION COMPANIES
7. TESTING LABORATORY INFORMATION AND CERTIFICATIONS
8. TESTING PLAN AND LOG
9. SUBMITTAL PROCEDURES AND INITIAL SUBMITTAL REGISTER
10. LIST OF DEFINABLE FEATURES
11. PROCEDURES FOR PERFORMING THE PHASES OF CONTROL
12. SPECIAL INSPECTIONS
13. DOCUMENTATION PROCEDURES
14. PROCEDURES TO COMPLETE REWORK ITEMS
15. PROCEDURES FOR COMPLETION INSPECTION
16. FORMS
17. ATTACHMENTS

C. A chart showing the QC organizational structure.

D. A personnel matrix showing for each Section of the specification who shall review and approve submittals, who shall perform and document the Phases Control, and who shall perform and document the testing.

E. Names and qualifications, in résumé format, for each person in the QC organization. Include the CQM course certifications for the QCM and Alternate QCM as required by the paragraphs entitled "Construction Quality Management Training" and "Alternate QCM Duties and Qualifications".

F. Duties, responsibilities and authority of each person in the QC organization.

G. Letters signed by an officer of the firm appointing the QCM and Alternate QCM and stating that they are responsible for implementing and managing the QC Program as described in this contract. Include in this letter the responsibility of the QCM and Alternate QCM to implement and manage the three phases of quality control, and their authority to stop work that is not in compliance with the contract. The QCM shall issue letters of direction to all other QC specialists outlining their duties, authorities, and responsibilities. Copies of the letters shall be included in the QC plan.

H. A listing of outside organizations such as, architectural and consulting engineering firms that will be employed by the Contractor and a description of the services these firms will provide.

I. Testing laboratory information required by the paragraphs entitled "Accreditation Requirements" or "Construction Materials Testing Laboratory Requirements", as applicable.

J. A Testing Plan and Log that includes the tests required, referenced by the specification paragraph number requiring the test, the frequency, the desired results and the person responsible for each test and shall be identified as a scheduled (CPM) activity.

K. Procedures for reviewing, approving and managing submittals. Provide the name(s) of the person(s) in the QC organization authorized to review and certify submittals prior to approval. Provide the initial submittal of the Submittal Register as specified in Section entitled "Submittals."

L. List of definable features of work. The list shall be cross-referenced to the contractor's Construction Schedule and the specification sections. For projects requiring a Progress Chart, the list of definable features of work shall include but not be limited to all items of work on the schedule. For projects requiring a Network Analysis Schedule, the list of definable features of work shall include but not be limited to all critical path activities. Include a chart of common deficiencies for the Definable Feature of work. Detail the control procedures that shall be employed to eliminate this common deficiency.

M. Procedures for Performing the Phases of Control. The contractor shall develop a plan for incorporating each of the control phases into the work. The plan shall detail who shall be responsible for scheduling the phases, conducting the phase as well as documenting the phase. The use of project specific forms may be helpful. However, the entire plans and specifications establish the quality and not just the checklists. The Preparatory and Initial Phases and meetings shall be conducted with a view towards obtaining quality construction by planning ahead and identifying potential problems for each definable feature of work.

N. Include all activities for which this specification requires QC specialists or Specialty Inspection Personnel, and for any specific definable features of work as identified in the QC Plan.

O. Documentation procedures, including proposed report formats.

P. Procedures to identify, record, track and complete rework items.

Q. Procedures for Identifying and Documenting the Completion Inspection process. Include in these procedures the responsible party for punch out inspection, pre-final inspection, and final acceptance inspection.

R. A complete set of report forms to be utilized on this project.

S. All applicable subcontractors and suppliers Quality Control Plans complete with Contactor’s CQC planned involvement.

1.12 COORDINATION AND MUTUAL UNDERSTANDING MEETING

A. After submission of the QC Plan, and prior to the start of any physical construction, meet with the COTR to present the QC Program required by this Contract. The purpose of this meeting is to develop a mutual understanding of the QC details, including documentation, administration for on-site and off-site work, and the coordination of the Contractor's management, production

and QC personnel. At the meeting, the Contractor shall be required to explain in detail how Phases Control shall be implemented for each definable feature of work. As a minimum, the Contractor's personnel required to attend shall include an officer of the firm, the project manager, project superintendent, QCM, Alternate QCM**,** A/E, and subcontractor representatives. Each subcontractor who shall be assigned QC responsibilities shall have a principal of the firm at the meeting. Minutes of the meeting shall be prepared by the QCM and signed by the Contractor. The Contractor shall provide a copy of the signed minutes to all attendees.

1.13 QC MEETINGS

A. After the start of construction, the QCM shall conduct QC meetings once every two weeks at the work site with the project superintendent. The QCM shall prepare the minutes of the meeting and provide a copy to the COTR within 2 working days after the meeting. The COTR may attend these meetings. The QCM shall notify the COTR at least 48 hours in advance of each meeting. These meetings shall be scheduled to precede or follow the regular weekly progress meeting. As a minimum, the following shall be accomplished at each meeting:

1. Review the minutes of the previous meeting
2. Review the schedule and the status of work:

    a. Work or testing accomplished since last meeting
    b. Rework items identified since last meeting
    c. Rework items completed since last meeting;

3. Review the status of submittals, O & M data and Warranty Manuals:

    a. Submittals, O & M data and Warranties reviewed and approved since last meeting
    b. Submittals, O & M data and Warranties required in the near future;

4. Review the work to be accomplished in the next 2 week(s) and documentation required:

    a. Establish completion dates for rework items
    b. Update the schedule showing planned and actual dates of the preparatory, initial and follow-up phases, including testing and any other inspection required by this contract
    c. Discuss construction methods and the approach that shall be used to provide quality construction by planning ahead and identifying potential problems for each definable feature of work
    d. Discuss status of off-site work or testing
    e. Documentation required;
    f. Discuss upcoming Activity Hazard Analyses.

5. Resolve QC and production problems, assist in resolving Request for Information issues;
6. Address items that may require revising the QC plan:

    a. Changes in QC organization personnel
    b. Changes in procedures.

7. Review health and safety plan

1.14 PHASES OF CONTROL

A. The Phases of Control shall adequately cover both on-site and off-site work and shall include the following for each definable feature of work.

B. Material Receiving Inspection: Contractor shall establish a formal material receiving inspection program to verify material compliance to approved Shop Drawings, approved submittals, and the contract plans and specifications.

C. Preparatory Phase: Notify the COTR at least 2 workdays in advance of each preparatory phase. This phase shall include a meeting conducted by the QCM and attended by the superintendent, and the foreman responsible for the definable feature. Document the results of the preparatory phase actions in the daily Quality Control Daily Report and in the Preparatory Phase Report. As a minimum the following should be covered prior to beginning work on each definable feature of work:

1. Review each paragraph of the applicable specification sections.
2. Review the project drawings.
3. Verify that appropriate shop drawings, O & M data, Warranties, and submittals for materials and equipment have been submitted and approved. Verify receipt of approved factory test results, when required.
4. Establish control to be utilized to assure work complies with the contract plans and specifications.
5. Review the testing plan and ensure that provisions have been made to provide the required QC testing.
6. Examine the work area to ensure that the required preliminary work has been completed.
7. Examine the required materials, equipment and sample work to ensure that they are on hand and conform to the approved shop drawings and submitted data.
8. Discuss construction methods, construction tolerances, workmanship standards, and the approach that shall be used to provide quality construction by planning ahead and identifying potential problems for each definable feature of work.
9. Review the safety plan and appropriate activity hazard analysis to ensure that applicable safety requirements are met, and that required Material Safety Data Sheets (MSDS) are submitted.

D. Initial Phase: Notify the COTR at least 2 workdays in advance of each initial phase. When construction crews are ready to start work on a definable feature of work, conduct the initial phase with the superintendent, and the foreman responsible for that definable feature of work. Observe the initial segment of the definable feature of work to ensure that the work complies with Contract requirements. Document the results of the initial phase in the daily Quality Control Daily Report and in the Initial Phase Report. Repeat the initial phase for each new crew to work on-site, or when acceptable levels of specified quality are not being met. As a minimum the following should be covered for each definable feature of work:

1. Ensure controls established during Preparatory Phase are adequate to allow work to proceed in compliance with the plans and specifications.
2. Establish the quality of workmanship required.
3. Resolve conflicts.
4. Ensure that testing is performed.
5. Check work procedures for compliance with the Safety Plan and the appropriate activity hazard analysis to ensure that applicable safety requirements are met.

E. Follow-Up Phase: Perform the following for on-going work daily, or more frequently as necessary until the completion of each definable feature of work and document in the daily Quality Control Daily Report:

1. Ensure the work is in compliance with Contract requirements.
2. Maintain the quality of workmanship required.
3. Ensure that testing is performed by the approved laboratory.
4. Ensure that rework items are being corrected.
5. Perform safety inspections.

F. Code-Required Inspections:

1. Comply with current edition approved by the Commonwealth of Virginia of the USBC, "Special Inspections" or other agencies having jurisdiction. Special Inspections are to be performed by the Authority's agent. Perform and document all tests, inspections, notifications to the Authority, coordination with the Authority's agent and other activities listed in the USBC or other agencies having jurisdiction.
2. Notice to COTR: Notify COTR, in writing, at least 48 hours in advance of all code-required inspections. COTR should be apprised in advance of every preparatory and initial inspection. All preparatory, initial, and follow-up inspections shall be made a matter of record in Contractor's quality-control documentation.

G. Additional Preparatory and Initial Phases

1. Additional Preparatory and Initial Phases shall be conducted on the same definable features of work if the quality of on-going work is unacceptable, if there are changes in the applicable QC organization, if there are changes in the on-site production supervision or work crew, if work on a definable feature is resumed after substantial period of inactivity, or if other problems develop as directed by the COTR in writing.

H. Notification of Phases of Control for Off-Site Work

1. On determination by COTR that an item shall require surveillance by the Authority at the point of production, manufacture, or shipment, Contractor shall be notified, in writing, of such determination. Contractor shall furnish to COTR three copies of all purchase orders or subcontracts, for all tiers of subcontractors or suppliers for each item. In addition, copies of documented quality-control operations, tests, and inspections shall be made available to the Authority's representative at the point of production, manufacture, or shipment. The CQC shall notify the COTR at least two weeks prior to the start of the preparatory and initial phases.

1.15 SUBMITTAL REVIEW AND APPROVAL

A. Procedures for submission, review and approval of submittals are described in Division 01 Section "Submittals".

1.16 TESTING

A. Except as stated otherwise in the technical specification sections, perform sampling and testing required under this Contract.

B. Independent Testing Laboratory: When tests are required by civil, electrical, USBC and other codes in effect, a corporately and financially independent testing organization that can function as an unbiased testing authority, professionally independent of manufacturers, suppliers, and installers of equipment, or systems evaluated by the testing organization shall be contracted by the Contractor to perform the contractually required tests. The various types of independent laboratories and their requirements are listed below:

C. Accreditation Requirements: Construction materials testing laboratories performing work for Authority construction contracts shall be accredited by one of the laboratory accreditation authorities. The laboratory's scope of accreditation shall include the ASTM standards listed in the paragraph titled "Construction Materials Testing Laboratory Requirements" as appropriate to the testing field. The policy applies to the specific laboratory performing the actual testing, not just the "Corporate Office".

D. Electrical testing of components, equipment and systems: The testing firm shall be regularly engaged in the testing of electrical equipment, devices, installations, and systems. The testing firm shall have at least five years experience in the testing of electrical equipment of the type, rating, and voltage used on this Project. The testing laboratories shall be a current full-member company of the International Electrical Testing Association (http://www.neta.org/). This independent testing firm shall perform duties as required under the terms of this Contract.

E. Structural and Pipe Welding: An independent testing firm shall perform all structural and pipe welding examinations as required by this Contract. The inspectors employed by the firm shall hold current certification as an AWS Certified Welding Inspector (CWI) for visual weld examinations and ASNT-TC-1A Certification for nondestructive examination of welds. ASNT-TC-1A certifications shall be by an ASNT-TC-1A ACCP Level III.

F. Construction Materials Testing Laboratory Requirements: Provide an independent construction material testing laboratory accredited by an acceptable laboratory accreditation authority to perform sampling and tests required by this Contract. Testing laboratories that have obtained accreditation by an acceptable laboratory accreditation authority listed in the paragraph entitled "Laboratory Accreditation Authorities" submit with the Quality Control Plan, a copy of the Certificate of Accreditation and Scope of Accreditation. The scope of the laboratory's accreditation shall include the test methods required by the Contract. On-site testing facilities shall submit a certified statement by the Supervising Professional Engineer, licensed in the Commonwealth of Virginia, as meeting the requirements of the following minimum ASTM standards listed below as appropriate to the testing field.

1. Laboratories engaged in testing of construction materials shall meet the requirements of ASTM E 329.
2. Laboratories engaged in testing of concrete and concrete aggregates shall meet the requirements of ASTM C 1077.
3. Laboratories engaged in testing of bituminous paving materials shall meet the requirements of ASTM D 3666.
4. Laboratories engaged in testing of soil and rock, as used in engineering design and construction, shall meet the requirements of ASTM D 3740.

5. Laboratories engaged in nondestructive testing (NDT) shall meet the requirements of ASTM E 543.
6. Laboratories engaged in Hazardous Materials Testing shall meet the requirements of OSHA and EPA.

G. Laboratory Accreditation Authorities: Laboratory Accreditation Authorities are the National Voluntary Laboratory Accreditation Program (NVLAP) administered by the National Institute of Standards and Technology, the American Association of State Highway and Transportation Officials (AASHTO) program, ICBO Evaluation Service, Inc. (ICBO ES), and the American Association for Laboratory Accreditation (A2LA) program and the Washington Area Council of Engineering Laboratories (WACEL). Furnish to the COTR, a copy of the current Certificate of Accreditation and Scope of Accreditation. The scope of the laboratory's accreditation shall include the test methods required by the Contract.

H. Capability Check: The COTR retains the right to check laboratory equipment in the proposed laboratory and the laboratory technician's testing procedures, techniques, and other items pertinent to testing, for compliance with the standards set forth in this Contract.

I. Capability Recheck: If non-conformities are discovered during the capability check or any succeeding recheck, Contractor shall be assessed a charge of $750.00 to reimburse the Authority for each recheck of the laboratory or the checking of a subsequently selected laboratory. These charges shall be deducted from the total amount due Contractor.

J. Test Results: Cite applicable Contract requirements, tests or analytical procedures used. Provide actual results and include a statement that the item tested or analyzed conforms or fails to conform to specified requirements. If the item fails to conform, notify COTR immediately. Conspicuously stamp the cover sheet for each report in large red letters "CONFORMS" or "DOES NOT CONFORM" to the specification requirements, whichever is applicable. A testing laboratory representative authorized to sign certified test reports shall sign test results. Furnish the signed reports, certifications, and other documentation to the COTR via the QCM. Furnish a summary report of field tests at the end of each month. All Monthly Summary Test Reports shall be reviewed and signed by a professional engineer, licensed in the Commonwealth of Virginia.

K. Test Reports and Monthly Summary Report of Tests:

1. The QCM shall furnish the signed reports, certifications, and a summary report of field tests at the end of each month to the COTR.

L. Control and Verification Tests: Control tests are those tests made for Contractor under the Quality Control Plan to assist Contractor in maintaining control of his operations. As described above, Contractor shall procure the services of an independent commercial laboratory to perform the required control tests. The Specifications contain the minimum of the following:

1. Testing criteria
2. Frequency of testing
3. Procedures
4. Methods of construction
5. Number of control tests to be made for each phase of the Work.

6. Notify COTR a minimum of 24 hours in advance of the time samples shall be taken by Contractor for quality control testing. COTR shall then notify its own testing laboratory contractor so that verification test samples may be taken.

M. Check Tests: Contractor shall furnish to COTR the quantities of materials to be used for check testing as required in the Specifications. Check testing shall be performed by the Authority at an independent laboratory at no cost to Contractor. No direct payment shall be made to Contractor for the furnishing of materials used for check testing.

N. Staffing: All laboratory personnel shall work under the supervision of a Professional Engineer licensed in the Commonwealth of Virginia.

1.17 QC CERTIFICATIONS

A. Quality Control Daily Report Certification

1. Each Quality Control Daily Report shall contain the following statement:

a. “On behalf of (Name of Contractor), I certify that this report and the Inspector's Daily Reports are complete and correct, and that all materials and equipment used, as well as work performed during this reporting period are in compliance with Drawings, Specifications, and Contract provisions, except as noted in this report or attached reports.”

B. Application for Payment Certification

1. Refer to Division 01 Section "Application for Payment" for address to which the Applications shall be sent.

C. Completion Certification:

1. Upon completion of work under this Contract, the QCM shall furnish a certificate to the Contracting Officer attesting that "the work has been completed, inspected, tested and is in compliance with the Contract."

1.18 COMPLETION INSPECTIONS

A. Punch-Out Inspection: Near the completion of all work or any increment thereof established by a completion time stated in the Contract Clause entitled "Commencement, Prosecution, and Completion of Work," or stated elsewhere in the specifications, the QCM shall conduct an inspection of the work and develop a "punch list" of items which do not conform to the approved drawings and specifications. Include in the punch list any remaining items on the "Rework Items List" which were not corrected prior to the Punch-Out Inspection. The punch list shall include the estimated date by which the deficiencies will be corrected. A copy of the punch list shall be provided to the COTR. The QCM or staff shall make follow-on inspections to ascertain that all deficiencies have been corrected. Once this is accomplished the Contractor shall notify the COTR that the facility is ready for the Authority "Pre-Final Inspection."

B. Pre-Final Inspection: The Authority will perform this inspection to verify that the facility is complete and ready to be occupied. An Authority "Pre-Final Punch List" may be developed as a result of this inspection. The QCM shall ensure that all items on this list are corrected prior to notifying the Authority that a "Final" inspection with the customer can be scheduled. Any items noted on the "Pre-Final" inspection shall be corrected in timely manner and shall be accomplished before the contract completion date for the work or any particular increment thereof if the project is divided into increments by separate completion dates.

C. Final Acceptance Inspection: The QCM, the QC specialists, the superintendent or other primary contractor management personnel shall be in attendance at this inspection. The COTR will be in attendance at this inspection. Additional Authority personnel may be in attendance. The Contracting Officer based upon results of the “Pre-Final” inspection will formally schedule the final acceptance inspection. Notice shall be given to the COTR at least 14 calendar days prior to the final inspection stating that all specific items previously identified to the Contractor, as being unacceptable, along with all the remaining work performed under the contract, shall be complete and acceptable by the date scheduled for the final acceptance inspection. Failure of the Contractor to have all contract work acceptably complete for this inspection shall be cause for the Contracting Officer to bill the Contractor for the Authority's additional inspection cost in accordance with the clause in the Contract Provisions entitled "Inspection of Construction." When the Contracting Officer takes possession of partially completed work, it shall be in accordance with clause in the Contract Provisions entitled "Use and Possession Prior to Completion".

1.19 DOCUMENTATION

A. Contractor shall maintain current quality control records, on approved forms, of all control activities, production, tests and inspections performed. These records shall include factual evidence that required tests or inspections have been performed, including type and number of tests or inspections involved; results of tests or inspections; nature of defects, causes for rejection, etc.; proposed remedial action; and corrective actions taken. These records shall cover both conforming and defective or deficient features (non-conforming) and shall include a statement that all supplies and materials incorporated into the Work are in full compliance with terms of the Contract. Legible copies of these records shall be furnished to COTR daily. The records shall cover all work placed subsequent to the previously furnished records and shall be verified by Contractor's QCM. Contractor shall document tests and inspections as specified in the technical provisions of the Specifications, and these records shall be available for review by COTR throughout the life of the Contract.

B. Maintain current and complete records of on-site and off-site QC Program operations and activities. Establish and maintain the following in a series of 3 ring binders. Binders shall be divided and tabbed as shown below. These binders shall be readily available to the Authority's Quality Assurance Team during normal business hours.

1. All completed Preparatory and Initial Phase Reports, arranged by specification Section.
2. All milestone inspections, arranged by Activity/Event Number.
3. A current up-to-date copy of the Testing Plan and Log with supporting field test reports, arranged by specification section.
4. Copies of all contract modifications, arranged in numerical order. Also include documentation that modified work was accomplished.
5. A current, up-to-date copy, of the Deficiency List.

C. Report Forms - The contractor shall design all forms to be used in the Quality Control Program. A copy of all forms shall be included with the Quality Control Plan. The forms shall be designed to assist in the control of the quality. The following minimum requirements are listed for specific reports:

1. Quality Control Daily Report: Reports are required for each day that work is performed and for every seven consecutive calendar days of no work and on the last day of a no-work period. Account for each calendar day throughout the life of the Contract. The reporting of work shall be identified by terminology consistent with the construction schedule. Quality Control Daily Reports are to be prepared, signed and dated by the QCM and shall contain the following information:

   a. Date of report, report number, Contract Number, and Contract Title.
   b. Identify Schedule Activity No., Submittal # and list equipment/material received each day that is incorporated into the job.
   c. Indicate if Preparatory Phase work was performed today (Yes/No checkboxes).
   d. If Preparatory Phase work was performed today (including on-site and off-site work), identify its Schedule Activity Number and Definable Feature of Work. The Index number is a cross reference to the Preparatory Phase Checklist. An example of the Index number is: 0025-P01, where "0025" is the Quality Control Daily Report Number, "P" indicates Preparatory Phase, and "01" is the Preparatory Phase Checklist number(s) for this date. Each entry in this Section shall be accompanied with a corresponding Preparatory Phase Checklist.
   e. Indicate if Initial Phase work was performed today (Yes/No checkboxes).
   f. If Initial Phase work was performed today (including on-site and off-site work), identify its Schedule Activity Number and Definable Feature of Work. The Index Number is a cross reference to the Initial Phase Checklist. An example of the Index Number is: 0025-I01, where "0025" is the Quality Control Daily Report Number, "I" indicates Initial Phase, and "01" is the Initial Phase Checklist number(s) for this date. Each entry in this Section shall be accompanied with a corresponding Initial Phase Checklist.
   g. Results of the Follow-up Phase inspections held today (including on-site and off-site work), including Schedule Activity Number, location of definable feature of work, Specification Sections, etc. Indicate in the report for this definable feature of work that the work complies with the Contract as approved in the Initial Phase, work complies with safety requirements, and that required testing has been performed. Include a list of who performed the tests.
   h. List the rework items identified, but not corrected by close of business, along with its associated Schedule Activity Number.
   i. List the rework items corrected from the rework items list along with the corrective action taken and its associated Schedule Activity Number.
   j. Include a "remarks" section in this report that shall contain pertinent information including but not limited to:

      1) Directions received.
      2) Quality control problem areas.
      3) Deviations from the QC plan.
      4) Construction deficiencies encountered.
      5) QC meetings held,.
      6) Acknowledgement that record drawings, specifications, O & M data, and Warranty Manuals, have been updated.

7) Corrective direction given by the QC Organization and corrective action taken by the Contractor.
8) For each remark given, identify the Schedule Activity Number that is associated with the remark.

k. Quality Control Daily Report certification, signature and date.

2. Preparatory Phase Report: Each Definable Feature of Work that is in the Preparatory Phase shall have this report filled out for it. The report shall be identified by terminology consistent with the construction schedule. Do not attach to the Quality Control Daily Report.

a. Specification Section, date of report, and Contract number shall be filled out. Duplicate this information in the header of the second page of the report.
b. Definable Feature of Work, Schedule Activity Number and Index Number entry and format shall match entry in the Preparatory Phase section of the Quality Control Daily Report. Duplicate this information in the header of the second page of the report.
c. Personnel Present: Indicate the number of hours of advance notice that was given to the COTR and indicate (Yes/No checkboxes) whether or not the COTR was notified. Indicate the Names of Preparatory Phase Meeting attendees, their position and their company affiliation.
d. Submittals: Indicate if submittals have been approved (Yes/No checkboxes), if no indicate what has not been submitted. Are materials on hand (Yes/No checkboxes) and if not, what items are missing. Check delivered material/equipment against approved submittals and comment as required.
e. Material Storage: Indicate if materials/equipment is stored properly (Yes/No checkboxes) and if not, what action is/was taken.
f. Specifications: Review and comment on Specification Paragraphs that describe the material/equipment, procedure for accomplishing the work and clarify any differences.
g. Preliminary Work & Permits: Ensure preliminary work is in accordance with the contract documents and necessary permits are on file, if not, describe the action taken.
h. Testing: Identify who performs tests, the frequency, and where tests are to occur. Review the testing plan, report abnormalities, and if the test facilities have been approved.
i. Discuss Control Procedures that shall be employed to consistently obtain the required specified quality.
j. Safety: Indicate if the activity hazard analysis has been approved (Yes/No checkboxes) and comment on the review of the applicable portions of the Construction Safety Manual.
k. Meeting Comments: Note comments and remarks during the Preparatory Phase Meeting that was not addressed in previous sections of this checklist.
l. Other Items or Remarks: Note any other remarks or items that were a result of the Preparatory Phase.
m. QCM shall sign and date the report.

3. Initial Phase Report: Complete this report for each Definable Feature of Work that is in the Initial Phase. The report shall be identified by terminology consistent with the construction schedule. Do not attach to the Quality Control Daily Report.

a. Specification Section, date of report, and Contract number shall be entered.
b. Definable Feature of Work, Schedule Activity Number and Index Number entry and format shall match entry in the Initial Phase section of the Quality Control Daily Report.
c. Personnel Present: Indicate the number of hours of advance notice that was given to the COTR and indicate (Yes/No checkboxes) whether or not the COTR was notified. Indicate the Names of Initial Phase Meeting attendees, their position and company/Authority they are with.
d. Control Procedures: Comment on control procedures identified at Preparatory Phase of Control and assurance that work is in accordance with plans, specifications and submittals. Control procedures not producing the required compliance shall be adjusted until the procedures consistently obtain the required quality.
e. Preliminary Work: Ensure preliminary work being placed is in compliance and if not, what action is/was taken.
f. Workmanship: Identify where initial work is located; if a sample panel is required (Yes/No checkboxes); is the initial work the sample (Yes/No checkboxes); and if Yes, describe the panel location and precautions taken to preserve the sample.
g. Resolution: Comment on any differences and the resolutions reached.
h. Check Safety: Comment on the safety review of the job conditions.
i. Other: Note any other remarks or items that were a result of the Initial Phase.
j. QCM shall sign and date the report.

D. Testing Log: As tests are performed, the QCM shall record on the "Testing Log" the date the test was conducted, the date the test results were forwarded to the COTR, remarks and acknowledgement that an accredited or Contracting Officer approved testing laboratory was used. Forward a copy of the updated "Testing Plan and Log" on the last day of each month. Do not attach to the Quality Control Daily Report.

E. Deficiency Log: The QCM shall maintain a list of work that does not comply with the Contract, identifying what items need to be reworked, the date the item was originally discovered, the date the item shall be corrected by, and the date the item was corrected. There is no requirement to report a rework item that is corrected the same day it is discovered. Provide a copy of the deficiency log to the COTR at the weekly progress meeting. The Contractor shall be responsible for including on this list items needing rework including those identified by the COTR.

F. Special Inspection Control Log: Contractor shall maintain a Special Inspection Control Log chronologically recording each Special test and inspection performed under the USBC, or other agencies having jurisdiction on-site, including the nature of the test or inspection, the date performed, the results, causes for rejection, corrective action taken, and dates of subsequent tests and final acceptance.

G. Test Reports: Contractor shall be responsible for establishing a system that shall record all tests results. Information on test designation, location, date of test, specification requirements, results and retest results, causes for rejection and recommended remedial actions shall be documented. A copy of the test results shall be sent directly from the Agency performing the testing services to COTR. A copy of any failing report shall be sent immediately. All test reports shall be reviewed and signed by a professional engineer, licensed in the Commonwealth of Virginia.

H. Signoff Sheets: Contractor shall be responsible for establishing a system of signoff sheets certifying that all work required before the construction or startup of critical work elements has been constructed and installed according to the plans and specifications.

I. Monthly Deficiency Report: Contractor shall submit a monthly deficiency report to COTR identifying all substandard tests and inspections taken during the month including the nature of the test or inspection, location and nature of defects, causes for rejection, and remedial actions taken or proposed for any open items on prior deficiency reports including the date scheduled for resolution of the item.

J. Record Drawings: The QCM is required to ensure the record drawings, required by Division 01 Section "Project Record Documents," are kept current on a daily basis and marked to show deviations which have been made from the construction drawings. Ensure each deviation has been identified with the appropriate modifying documentation (e.g. CN No., Modification No., Request for Information No., etc.). The QCM shall initial each deviation and each revision. Upon completion of work, the QCM shall furnish a certificate attesting to the accuracy of the record drawings prior to submission to the COTR.

K. Operation, Maintenance, and Warranty Manuals: The QCM shall ensure that the Operation and Maintenance data required by Division 01 Section “Operation and Maintenance Data” and the Warranties specified in Division 01 Section “Project Closeout” are inserted on a daily basis in the appropriate sections of the approved formatted manuals after they have been approved by the COTR.

L. Materials Receiving Inspection Report: Contractor shall establish a formal materials receiving inspection program to verity material compliance to approved Shop Drawings, approved submittals, and the contract plans and specifications.

1.20 NOTIFICATION ON NON-COMPLIANCE

A. The COTR will notify the Contractor of any detected non-compliance with the foregoing requirements. The Contractor shall take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the work site, shall be deemed sufficient for the purpose of notification. If the Contractor fails or refuses to comply promptly, the Contracting Officer may:

1. Issue an order stopping all or part of the work until satisfactory corrective action has been taken. The Contractor shall make no part of the time lost due to such stop orders the subject of a claim for extension of time for excess costs or damages.
2. Repair, replace or otherwise remedy the defective work at the Contractor’s expense. Cost incurred by the Authority to correct defective work shall be deducted from the total amount due the Contractor.
3. Withhold an amount from the payment due the Contractor as may be deemed necessary at the discretion of the Contracting Officer.
4. Terminate the Contractor’s right to proceed for Default after providing required notice.

B. In cases where implementation of the Quality Control Program does not comply with the Contractor’s Quality Control Plan or the contract provisions. Or Contractor fails to properly operate and maintain an effective Quality Control Program, the Contracting Officer may:

1. Order the Contractor to replace ineffective or unqualified Quality Control Personnel or subcontractors.
2. Issue an order stopping all or part of the work until acceptable personnel are on site and a new Quality Control Plan is approved by the COTR. The Contractor shall make no part of the time lost due to such stop orders the subject of claim for extension of time for excess costs or damages.
3. Take a credit from the contract for Quality Control Activities not performed.
4. Terminate the Contractors right to proceed for Default after providing required notice.

C. The Contractor shall maintain a detailed record of every non-compliance and corrective action taken.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 014000

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SECTION 014200 - REFERENCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings, Contract Provisions, Special Provisions, Supplementary Conditions, and other Division 01 Specification Sections apply to this Section.

1.2 SUMMARY

A. This Section defines many of the terms used elsewhere in the Construction Documents and lists complete names and telephone numbers for many of the associations and agencies identified elsewhere in the Construction Documents by their acronym.

B. Abbreviations, where not defined in the Contract Documents, will be interpreted by the Contracting Officer to mean the normal construction industry terminology.

C. Plural words will be interpreted as singular and singular words will be interpreted as plural where applicable for context of the Contract Documents.

1.3 DEFINITIONS

A. General: Basic Contract definitions are included in Sections I and II of the Authority Solicitation Offer and Award. Certain terms used in the Contract Documents are defined generally in this Article. Definitions and explanations contained in this Section are not necessarily either complete or exclusive, but are general for the Work to the extent that they may not be stated more explicitly in another element of the Contract Documents.

B. Approve: The term "approved," where used in regard to COTR's action on Contractor's submittals, applications, and requests, is limited to COTR's duties and responsibilities as delegated by the Contracting Officer in the Contract and Special Provisions.

C. Architect/Engineer: For the purpose of this Project, the "Design Professional of Record." To distinguish from the Contracting Officer and Contracting Officer's Technical Representative (COTR).

D. Authority: Metropolitan Washington Airports Authority

E. Award: The acceptance, by the Authority, of the successful offeror's proposal.

F. Award Date: The date on which the Authority gives notice of acceptance to the successful offeror.

G. AOA (or A.O.A.): Air Operations Area. The area of the Airport used or intended to be used for landing, taking off, surface maneuvering, loading, unloading, or servicing aircraft. This security area requires security badging. Workers in this area are required to obtain and display an AOA

photo I.D. credential. Drivers in this area are required to obtain an Airport Vehicle Operator's Permit for the Air Operations Area.

H. Beneficial Use: Use by the Authority prior to 100 percent completion and final acceptance.

I. Contract Documents: Documents containing requirements of the Work. These include all Contract provisions and attachments made thereto or referenced therein.

J. Contract Provisions: The administrative and procedural requirements starting at Award Date and ending at Final Acceptance, as provided for in Section VII, "Contract Provisions."

K. Contract Time or Duration (Time Limit): The number of calendar days established in Section III, "Schedule," indicating the time allowed for the completion of all physical and administrative work contemplated in the Contract, including any authorized extensions thereto.

L. Contracting Officer's Technical Representative (COTR): The Contracting Officer's designated representative, as defined in Section VII, "Contract Provisions."

M. Contractor: Individual, partnership, corporation or joint venture under Contract to the Authority for performance of prescribed Work.

N. Drawings: Erection/installation/construction plans, or any other supplementary plans or similar graphic data, illustrating work to be performed that are provided to Contractor as part of the Contract Documents.

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

P. Final Acceptance: Refer to Division 01 Section "Project Closeout."

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

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

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

T. "Install": Operations at Project site including unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.

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

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

1. Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to trades people of the corresponding generic name.

W. "Experienced": When used with an entity, "experienced" means having successfully completed a minimum of ten previous projects similar in size and scope to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

X. "Project Site": Space available for performing construction activities. The extent of Project site is indicated.

Y. Punch list Work: Minor corrective actions required to achieve "Final Acceptance." Occurs after "Substantial Completion" of the Work in strict compliance with quality-control requirements.

Z. Roadway: General term denoting a public way for purposes of vehicular travel, including the entire area within the right-of-way.

AA. Special Provisions: For the purpose of this Contract, the directions and requirements provided for in Section VI of the Contract Documents.

BB. Shop Drawings: Refer to Division 01 Section "Submittals."

CC. Specifications: General term comprising all directions, provisions and requirements contained herein, together with any other contractual requirements such as may be added or adopted as the Contract Provisions, Special Provisions, or Supplementary Conditions, all of which are necessary for the proper performance of the Contract.

DD. Substantial Completion: Refer to Division 01 Section "Project Closeout."

EE. Factory-Authorized Service Representative: An authorized representative of a manufacturer who is trained and approved by the manufacturer to inspect and approve the installation of manufacturer’s products and that are similar in material, design, and extent to those indicated for this Project and who is authorized by the manufacturer to confirm the issuance of appropriate warranties.

1.4 INDUSTRY STANDARDS

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

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

C. Conflicting Requirements: Refer to Division 01 Section "Quality Requirements" for additional information regarding conflicting requirements.

1. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to COTR for a decision before proceeding.

D. Copies of Standards: Each entity engaged in construction on Project shall be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.

1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source and make them available on request.

E. Abbreviations and Acronyms for Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the standards and regulations in the following list. Names, telephone numbers, and Web site addresses are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

ADAAG	Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities Available from Access Board www.access-board.gov	(800) 872-2253 (202) 272-0080
CFR	Code of Federal Regulations Available from Government Printing Office www.access.gpo.gov/nara/cfr	(888) 293-6498 (202) 512-1530
FED-STD	Federal Standard (See FS)	
FS	Federal Specification Available from General Services Administration www.fss.gsa.gov	 (202) 501-1021
FTMS	Federal Test Method Standard (See FS)	
ICC-ES	ICC Evaluation Service, Inc. www.icc-es.org	(800) 423-6587
UFAS	Uniform Federal Accessibility Standards Available from Access Board www.access-board.gov	(800) 872-2253 (202) 272-0080

1.5 ABBREVIATIONS AND ACRONYMS

A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web site addresses are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

AA	Aluminum Association, Inc. (The) www.aluminum.org	(202) 862-5100
AAMA	American Architectural Manufacturers Association www.aamanet.org	(847) 303-5664
ACI	ACI International (American Concrete Institute) www.aci-int.org	(248) 848-3700
AGC	Associated General Contractors of America (The) www.agc.org	(703) 548-3118
AIA	American Institute of Architects (The) www.aia.org	(800) 242-3837 (202) 626-7300
AISC	American Institute of Steel Construction www.aisc.org	(800) 644-2400 (312) 670-2400
AISI	American Iron and Steel Institute www.steel.org	(202) 452-7100
ANSI	American National Standards Institute www.ansi.org	(202) 293-8020
ARMA	Asphalt Roofing Manufacturers Association http://www.asphaltroofing.org	(202) 207-0917
ASTM	ASTM International (American Society for Testing and Materials International) www.astm.org	(610) 832-9585
AWS	American Welding Society www.aws.org	(800) 443-9353 (305) 443-9353
CLFMI	Chain Link Fence Manufacturers Institute http://www.asphaltroofing.org	(301) 596-2583
CRSI	Concrete Reinforcing Steel Institute www.crsi.org	(847) 517-1200
CSA	CSA International (Formerly: IAS - International Approval Services) http://www.csa-international.org	(800) 463-6727 (416) 747-4000

CSI	Construction Specifications Institute (The) www.csinet.org	(800) 689-2900 (703) 684-0300
EJMA	Expansion Joint Manufacturers Association, Inc. www.ejma.org	(914) 332-0040
FMG	FM Global (Formerly: FM - Factory Mutual System) www.fmglobal.com	(401) 275-3000
GANA	Glass Association of North America www.glasswebsite.com	(785) 271-0208
IAS	International Approval Services (See CSA)	
ICRI	International Concrete Repair Institute, Inc. www.icri.org	(847) 827-0830
IGCC	Insulating Glass Certification Council www.igcc.org	(315) 646-2234
IGMA	Insulating Glass Manufacturers Alliance (The) www.igmaonline.org	(613) 233-1510
ISO	International Organization for Standardization www.iso.ch	41 22 749 01 11
MFMA	Metal Framing Manufacturers Association www.metalframingmfg.org	(312) 644-6610
MPI	Master Painters Institute www.paintinfo.com	(888) 674-8937
NAAMM	National Association of Architectural Metal Manufacturers www.naamm.org	(312) 332-0405
NEMA	National Electrical Manufacturers Association www.nema.org	(703) 841-3200
NFPA	NFPA www.nfpa.org	(800) 344-3555 (617) 770-3000
NGA	National Glass Association www.glass.org	(703) 442-4890
NRCA	National Roofing Contractors Association www.nrca.net	(800) 323-9545 (847) 299-9070
NRMCA	National Ready Mixed Concrete Association	(888) 846-7622

	www.nrmca.org	(301) 587-1400
PDCA	Painting & Decorating Contractors of America www.pdca.com	(800) 332-7322 (314) 514-7322
RCSC	Research Council on Structural Connections www.boltcouncil.org	(800) 644-2400 (312) 670-2400
SGCC	Safety Glazing Certification Council www.sgcc.org	(315) 646-2234
SIGMA	Sealed Insulating Glass Manufacturers Association (See IGMA)	
SPRI	SPRI (Single Ply Roofing Institute) www.spri.org	(781) 647-7026
SWRI	Sealant, Waterproofing, & Restoration Institute www.swrionline.org	(816) 472-7974
UL	Underwriters Laboratories Inc. www.ul.com	(800) 285-4476 (847) 272-8800

B. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web site addresses are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

ICBO	International Conference of Building Officials (See ICC)	
ICBO ES	ICBO Evaluation Service, Inc. (See ICC-ES)	
ICC	International Code Council (Formerly: CABO - Council of American Building Officials) www.iccsafe.org	(703) 931-4533
ICC-ES	ICC Evaluation Service, Inc. www.icc-es.org	(800) 423-6587 (562) 699-0543

C. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web site addresses are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

CE	Army Corps of Engineers www.usace.army.mil

CPSC	Consumer Product Safety Commission www.cpsc.gov	(800) 638-2772 (301) 504-0990
DOC	Department of Commerce www.doc.gov	(202) 482-2000
EPA	Environmental Protection Agency www.epa.gov	(202) 260-2090
FAA	Federal Aviation Administration www.faa.gov	(202) 366-4000
FCC	Federal Communications Commission www.fcc.gov	(202) 225-5322
FDA	Food and Drug Administration www.fda.gov	(888) 463-6332
FHA	Federal Highway Administration www.fhwa.dot.gov	(410) 962-0093
GSA	General Services Administration www.gsa.gov	(202) 708-5082
HUD	Department of Housing and Urban Development www.hud.gov	(202) 708-1112
LBL	Lawrence Berkeley Laboratory National Laboratory www.lbl.gov	(510) 486-4000
NIST	National Institute of Standards and Technology www.nist.gov	(301) 975-6478
OSHA	Occupational Safety & Health Administration www.osha.gov	(800) 321-6742 (202) 693-1999
PBS	Public Building Service (See GSA)	
PHS	Office of Public Health and Science phs.os.dhhs.gov	(202) 690 7694
TRB	Transportation Research Board www.nas.edu/trb	(202) 334-2934
TSA	Transportation Security Administration www.tsa.gov/public/index.jsp	1(866)-289-9673
USDA	Department of Agriculture www.usda.gov	(202) 720-2791

USPS	United States Postal Service www.usps.com	(202) 268-2000

D. State Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web site addresses are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

DCR	Virginia Department of Conservation and Recreation http://www.dcr.state.va.us	(804) 786-1712
VDH	Virginia Department of Health Culpepper District www.vdh.state.va.us	(540) 829-7340
USBC	The Virginia Statewide Building Code (USBC) The Commonwealth of Virginia – Uniform Statewide Building Code	(804) 371- 7160
VDHCD	Virginia Department of Housing and Community Development Division of Building and Fire Regulation 501 North 2nd Street Richmond, VA 23219-1321	
VDOT	Virginia Department of Transportation www.virginiadot.org	(703) 383-8368
VDEQ	Virginia Department of Environmental Quality www.deq.state.va.us	1-800-592-5482

1.6 GOVERNING REGULATIONS/AUTHORITIES

A. Contact authorities having jurisdiction directly for information and decisions having a bearing on the work. Names and addresses are subject to change; they are believed to be but are not assured to be accurate and up to date as of the date of the Contract Documents.

B. Codes: The contractor shall adhere to all applicable portions of code standards and specifications in the construction of the work. Unless otherwise noted (reference Division 01 Section “Quality Requirements”), the Authority will review the Contractor’s submittals and construction of the work for code compliance. The Authority’s acceptance of completed construction does not relieve the Contractor from strict compliance with all applicable regulations and codes.

1. Definition: The Metropolitan Washington Airports Authority has a “building department” recognized by the Commonwealth of Virginia. This department is charged with enforcing the Virginia Uniform Statewide Building Code (VUSBC). Where the words “code official”, “department having jurisdiction” or “agency having jurisdiction” is referenced

in any code, including the VUSBC or its adopted model codes (ICC), those terms shall mean the Authority Building Official and/or his designated representative.

2. Standards that influence the construction of the project include, but are not limited to, all applicable federal and Commonwealth laws, all applicable codes, rules, regulations and standards applicable to this project.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 014200

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and Contract Provisions, Special Provisions, Supplementary Conditions, and other Division 01 Specification Sections apply to this Section.

1.2 SUMMARY

A. This Section includes requirements for temporary facilities and controls, including temporary utilities, support facilities, security, and protection facilities for Contractor staging area.

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

1. Sewers and drainage.
2. Water service and distribution.
3. Heating and cooling facilities.
4. Ventilation.
5. Electric power service.
6. Telephone and other communication services.

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

1. Project identification and temporary signs.
2. Waste disposal facilities.
3. Field offices.
4. Storage and fabrication sheds.
5. Lifts and hoists.
6. Construction aids and miscellaneous services and facilities.

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

1. Environmental protection.
2. Site enclosure fence.
3. Security enclosure and lockup.
4. Barricades, warning signs, and lights.
5. Covered walkways.
6. Temporary enclosures.
7. Temporary partitions.
8. Fire protection.

E. Related Sections include the following:

1. Division 01 Section "Submittals" for procedures for submitting copies of implementation and termination schedule and utility reports.

2. Divisions 02 through 33 Sections for temporary heat, ventilation, and humidity requirements for products used in those Sections.

1.3 DEFINITIONS

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

1.4 USE CHARGES

A. General: Temporary utilities are available from the Authority at no charge unless otherwise noted. Provide necessary labor and materials to connect to the Authority's utilities at points designated by COTR and extend utilities to trailers, offices, sheds, etc.

1. Provide COTR approved meters for water, natural gas, electricity, and each other utility used for Project. Supply utilities to Subcontractors' temporary facilities through Contractor's meters. The requirement to provide meters for utilities does not imply that the Contractor will be charged for these utilities, except under provisions outlined in this and other Sections.
2. Report consumption of each utility to COTR each month. Contractor is expected to consume reasonable amounts of each utility. Should Contractor, in COTR's opinion, use excessive amounts of any utility or waste a utility, Contractor may be required to pay for temporary utilities.

B. Allow other entities to use temporary services and facilities without cost, including, but are not limited to, the following:

1. The Authority’s construction forces.
2. Occupants of Project.
3. COTR.
4. Architect/Engineer.
5. Testing agencies.
6. Personnel of authorities having jurisdiction.

1.5 SUBMITTALS

A. Shop Drawings: Submit to COTR, for the Authority's review and approval, site plans indicating all temporary facilities, support and security; utility connections and traffic flows. Provide detailed drawings of utility connections and special facilities.

B. Temporary Utility Reports: Submit reports of tests, inspections, meter readings, and similar procedures performed on temporary utilities at both staging area and the Project site. Make all structures weather proof when heated and air-conditioned. Should Contractor, in COTR's opinion fail to keep the heated and cooled structures sealed and weather proof, Contractor may be required to pay for temporary utilities.

1.6 QUALITY ASSURANCE

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

1. Building Code requirements.
2. Health and safety regulations.
3. Police and Fire Department regulations.
4. Environmental protection regulations.
5. ADA Compliance: All temporary facilities shall be ADA compliant.

B. Standards: Comply with ANSI A10.6, NECA's "Temporary Electrical Facilities," and NFPA 241.

1. Trade Jurisdictions: Assigned responsibilities for installation and operation of temporary utilities are not intended to interfere with trade regulations and union jurisdictions.
2. Electrical Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electrical service. Install service to comply with NFPA 70.

C. Tests and Inspections: Arrange for the Authority's Building Codes/Environmental Department to test and inspect each temporary utility before use. Coordinate with the Authority's Building Codes/Environmental Department for requirements for certifications, permits, and inspections.

1. Obtain permits from the Authority's Building Codes/Environmental Department for temporary construction and temporary utilities.

D. Fire-retardant and Flame Spread Requirements: Unless otherwise noted, fire – retardant treat all wood and wood composition products utilized in the Project and preservative treat all wood utilized on the exterior of any building. Preservative treat all wood utilized on other items indicated or specified with preservative treatment. Provide lumber and plywood with an Underwriters' Laboratory (UL) stamp certifying a value of 25 or less flame spread and a value of 200 or less smoke development. Fire retardant lumber shall not be ripped or milled.

1.7 PROJECT CONDITIONS

A. Conditions of Use: The following conditions apply to use of temporary services, permanent services, and facilities by all parties engaged in the Work:

1. Keep temporary services and facilities clean and neat.
2. Relocate temporary services and facilities as required by progress of the Work.
3. Take necessary fire-prevention measures.
4. Do not overload facilities.
5. Do not allow hazardous, dangerous, or unsanitary conditions, or public nuisances to develop or persist on-site.

1.8 CONTRACTOR PERSONNEL PARKING

A. The Contractor's personnel will be allowed to park their personal vehicles in staging areas or in areas designated by COTR. Such designated parking areas are not necessarily fenced or

otherwise protected, and temporary fencing for such parking areas is a requirement of this Contract.

B. Display a Vehicle special, non-transferable parking permit available from the Authority on all vehicles parked in such area. Each employee will be required to obtain and pay for their own parking permit and shall be responsible for fines for not displaying permit or for parking in other than designated contractor parking areas. The COTR will provide application forms and explain method of obtaining parking permits at the Pre-Construction Conference.

C. Contractor is responsible for busing his employees from the off airport parking lot to the Contractor's Staging areas or work areas.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Provide new materials. Undamaged, previously used materials in serviceable condition may be used if approved by COTR. Provide materials suitable for use intended.

B. Lumber and Plywood: Comply with requirements in Division 06 Section "Miscellaneous Rough Carpentry."

C. Gypsum Board: Minimum 1/2 inch thick by 48 inches wide by maximum available lengths; regular-type panels with tapered edges. Comply with ASTM C 36.

D. Insulation: Un-faced mineral-fiber blanket, manufactured from glass, slag wool, or rock wool; with maximum flame-spread and smoke-developed indices of 25 and 50, respectively.

E. Paint: Comply with requirements in Division 09 Sections "Painting."

F. Tarpaulins: Fire-resistive labeled with flame-spread index of 15 or less.

G. Water: Potable.

H. Temporary Fuel Tanks: For requirements for temporary fuel tanks see Division 31 Section “Storm Water Pollution Protection Plan.” Comply with applicable safety and environmental regulations for temporary surface fuel tanks. Location and installation of tanks will be subject to review and approval of COTR and the Authority's Fire Marshal.

2.2 EQUIPMENT

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

B. Field Offices: Mobile units with lockable entrances, operable windows, and serviceable finishes; heated and air conditioned; on foundations adequate for normal loading, and provided with proper tie-downs.

C. Drinking-Water Fixtures: Containerized, tap-dispenser, bottled-water drinking-water units, including paper cup supply.

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

D. Heating Equipment: Unless COTR authorizes use of permanent heating system, provide temporary heating units with individual space thermostatic control.

1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.
2. Heating Units: Listed and labeled, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use for type of fuel being consumed.

E. Electrical Outlets: Properly configured, NEMA-polarized outlets that will prevent insertion of 110v or 120v plugs into higher-voltage outlets, and equipped with ground-fault circuit interrupters with reset button.

F. Power Distribution System Circuits: Where permitted, overhead, and visible wiring circuits, not exceeding 125-V ac, 20-A rating, and lighting circuits may be nonmetallic-sheathed cable.

G. Electrical Power Cords: Provide grounded extension cords; use hard-service as defined by NFPA 70, Article 400, where exposed to abrasion and traffic. If single lengths of extension cords will not reach areas where construction activities are in progress provide waterproof connectors to connect separate lengths of electrical extension cords.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Prior to installation of temporary facilities and utilities, submit to the COTR a site layout providing locations and details of the facilities and utilities.

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

C. 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 CONTRACTOR STAGING AREA - GENERAL

A. Contractor will be allowed to store and stage his materials in a staging area located on Airport property as indicated or as designated by the COTR for such purposes. Space is limited to area indicated. COTR and Contractor will make a joint site visit to document condition of staging area prior to occupancy. Take photos for the record.

B. Erect and maintain an 8-foot high chain link fence topped with 3-strands of barbed wire around perimeter of staging area when the fence serves as an AOA barrier as required by the FAA/TSA. A 6-foot high fence as described above, including barbed wire will be acceptable for all other applications. Protect all stored equipment from the weather. The Authority accepts no responsibility for items stored in this area.

C. Upon completion of Construction, remove all temporary staging area facilities and return the areas to their original condition.

D. Park construction equipment in the storage site or storage area identified by the COTR when equipment is not engaged in construction activity.

E. Do not stockpile construction materials, spoils, debris or refuse in any area other than that specifically approved for such purpose by the COTR.

F. Constrain stockpiled material in a manner to prevent its movement by wind, jet blast or propeller wash.

3.3 TEMPORARY UTILITY INSTALLATION

A. General: Provide temporary service for each utility required. Comply with requirements of the Authority's Building Codes Manual, the Authority's Construction Safety Manual, and the requirements of all Sections of these specifications.

1. Arrange with COTR for time when service can be interrupted, if necessary, to make connections for temporary services. For additional information on utility outages see Division 01 Section, "Summary."
2. Provide adequate capacity at each stage of construction. Before temporary utility is available, provide trucked-in services.
3. Perform work associated with utilities owned by the Authority as approved by the Authority.
4. See additional information in Contract Provisions entitled "Availability and Use of Utility Service."

B. Sewers and Drainage: If sewers are available, provide temporary connections to remove effluent that can be discharged lawfully. 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 a lawful manner.

C. When using Authority sewers:

1. Filter out excessive soil, construction debris, chemicals, oils, and similar contaminants that might clog sewers or pollute waterways before discharge.
2. Connect temporary sewers to the Authority's system as directed by COTR.
3. Maintain temporary sewers and drainage facilities in a clean, sanitary condition. After heavy use, restore normal conditions promptly.
4. Provide temporary filter beds, settlement tanks, separators, and similar devices to purify effluent to levels acceptable to authorities having jurisdiction.

D. Water Service: Provide temporary water service and distribution piping in sizes and pressures adequate for construction until permanent water service is in use. Sterilize temporary water piping before use. Provide Badger Recordall, Turbo II Utility type water meter to meter all water usage for 2-inch water feed lines and above. Provide Badger Recordall bronze disc water meter for to meter all water usage for water feed lines under 2-inches. COTR will approve water meters, in writing prior to installation of water meters. Do not install water meters until written approval has been received from COTR. Provide Watts Model 909, Type RPZ backflow preventers. Do not install backflow preventers until written approval of backflow preventers has been received from the COTR.

E. Sanitary Facilities: Provide temporary wash facilities, and drinking-water fixtures. Comply with regulations and health codes for type, number, location, operation, and maintenance of fixtures and facilities.

1. Disposable Supplies: Provide paper towels, paper cups, and similar disposable materials for each facility. Maintain adequate supply. Provide covered waste containers for disposal of used material.
2. Toilets: Contractor’s personnel will be permitted to use the Authority's existing toilet facilities within the Main Terminal building.
3. Wash Facilities: Install wash facilities supplied with potable water at convenient locations for personnel who handle materials that require wash up. Dispose of drainage properly. Supply cleaning compounds appropriate for each type of material handled.

    a. Provide safety showers, eyewash fountains, and similar facilities for convenience, safety, and sanitation of personnel.

4. Drinking-Water Facilities: Provide bottled-water, drinking-water units.

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

5. Locate drinking-water fixtures so personnel need not walk more than 200 feet horizontally to facilities.

F. Heating and Cooling: Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment from that specified that would not have a harmful effect on completed installations or elements being installed.

1. Maintain a minimum temperature of 50 deg F in permanently enclosed portions of building for normal construction activities, and 65 deg F for finishing activities and areas where finished Work has been installed.

G. Ventilation and Humidity Control: Provide temporary ventilation and humidity control required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment from that specified that would not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption. Provide and operate either exhaust or supply fans/blowers, or both, sufficient to ventilate work areas adequately.

H. 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 disconnecting means, automatic ground-fault interrupters, and main distribution switchgear. Provide kilowatt-hour meters with demand capability.

1. Install electric power service underground, unless overhead service is authorized by COTR.

2. Connect temporary service to the Authority's existing power source, as directed by COTR.

3. Install power distribution wiring overhead and rise vertically where least exposed to damage

I. Electrical Distribution: Provide receptacle outlets adequate for connection of power tools and equipment.

1. Provide waterproof connectors to connect separate lengths of electrical power cords if single lengths will not reach areas where construction activities are in progress. Do not exceed safe length-voltage ratio.
2. Provide warning signs at power outlets other than 110 to 120 V.
3. Provide metal conduit, tubing, or metallic cable for wiring exposed to possible damage. Provide rigid steel conduits for wiring exposed on grades, floors, decks, or other traffic areas.
4. Provide metal conduit enclosures or boxes for wiring devices.
5. Provide 4-gang outlets, spaced so 100-foot extension cord can reach each area for power hand tools and task lighting. Provide a separate 125-V ac, 20-A circuit for each outlet.

J. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations and traffic conditions.

1. Provide and operate temporary lighting that fulfills security and protection requirements without operating entire system.
2. Provide exterior-yard site lighting that will provide adequate illumination for construction operations, traffic conditions, and signage visibility when the Work is being performed. Provide exterior yard and site lighting aligned as directed by the COTR. Provide lighting so as not to interfere with ground, air traffic and air traffic control.
3. Install lighting for Project identification signs.

K. Telephone Service: Provide temporary telephone service for key personnel engaged in construction activities, throughout the construction period. Install telephones on separate lines for each temporary office and first aid station. Where an office has more that two occupants, install a telephone for each additional occupant or pair of occupants. Provide telephones with exchanges within the Metropolitan Washington service area. The Authority owns and operates an airport-wide Airport Communication System (ACS). This system accommodates all normal telecommunications service requirements, i.e., local, long distance, fax, data, etc. The Contractor may obtain information about and choose to utilize this service by contacting the ACS Help Desk at (703) 417-8300.

1. At each telephone, post a list of emergency telephone numbers approved by COTR.

2. Provide a portable cellular telephone for superintendent's use in making and receiving telephone calls when away from field office.

3.4 SUPPORT FACILITIES INSTALLATION

A. General: Comply with the following:

1. Locate field offices, storage sheds, sanitary facilities, and other temporary construction and support facilities for easy access.
2. Provide incombustible construction for offices, shops, and sheds located within construction area or within 30 feet of building lines. Comply with NFPA 241 and USBC.

B. Dewatering Facilities and Drains: Comply with requirements in applicable Division 31 and Division 32 Sections for temporary drainage and dewatering facilities and operations not directly associated with construction activities included in individual Sections. Where feasible, use same facilities. Maintain Project site, excavations, and construction free of water.

1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining property nor endanger permanent Work or temporary facilities.
2. Before connection and operation of permanent drainage piping system, provide temporary drainage where roofing or similar waterproof deck construction is completed.
3. Remove snow and ice as required to minimize accumulations.

C. Project Identification and Temporary Signs: Prepare Project identification and other signs in sizes indicated. Install signs where indicated or where directed by COTR to inform public and persons seeking entrance to Project. Provide two Project signs.

1. Engage an experienced sign painter to apply graphics for Project identification signs. Comply with details indicated.
2. Prepare temporary signs to provide directional information to construction personnel and visitors.
3. Construct signs of exterior-type, Grade B-B, high-density concrete form overlay plywood in sizes and thickness indicated. Support on nominal 4-inch-by-4-inch-by-10-foot-long posts or framing of preservative-treated wood or steel.
4. Paint sign panel and applied graphics with exterior-grade alkyd gloss enamel over exterior primer.
5. The following signs will be allowed on the Project:

    a. Identifying captions over offices.
    b. Other signs as required by the Contract Documents.

6. Take necessary steps to prevent installation of unauthorized signs and, should any appear, remove them immediately. Repair and repaint damage caused thereby at no additional cost to the Authority.
7. No more that two Project Identification Signs will be permitted. Project identification signs are the only signs on which the Contractors name and logo will be permitted.

D. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Containerize and clearly label hazardous, dangerous, or

unsanitary waste materials separately from other waste. Comply with Division 01 Section "Execution " for progress cleaning requirements.

1. If required by COTR, provide separate containers, clearly labeled, for each type of waste material to be deposited.
2. Develop a waste management plan for Work performed on Project. Indicate types of waste materials Project will produce and estimate quantities of each type. Provide detailed information for on-site waste storage and separation of recyclable materials. Provide information on destination of each type of waste material and means to be used to dispose of all waste materials.

E. Janitorial Services: Provide janitorial services on a daily basis for temporary offices, first-aid stations, toilets, wash facilities, lunchrooms, and similar areas.

F. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment involved, including temporary utility services. Sheds may be open shelters or, if permitted by COTR, fully enclosed spaces within building or elsewhere on-site subject to approval of COTR.

1. Construct framing, sheathing, and siding using fire-retardant-treated lumber and plywood.
2. Paint exposed lumber and plywood with exterior-grade acrylic-latex emulsion over exterior primer.
3. Submit the design of storage structures of more than 150 sq. ft. to COTR for review and approval by the Authority's Building Codes/Environmental Department.

G. Existing Stair Usage: Use of the Authority's existing stairs will be permitted, as long as stairs are cleaned and maintained in a condition acceptable to COTR. At Substantial Completion, restore stairs to condition existing before initial use.

1. Provide protective coverings, barriers, devices, signs, or other procedures to protect stairs and to maintain means of egress. If, despite such protection, stairs become damaged, restore damaged areas so no evidence remains of correction work.

3.5 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects. Avoid using tools and equipment that produce harmful noise. Restrict use of noisemaking tools and equipment to hours of 11:00 p.m. to 5:00 a.m., unless directed otherwise by the COTR, which will minimize complaints from persons or firms near Project site.

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

C. Security Fencing:

1. Minimum 2-inch, 0.148-inch-thick, galvanized steel, chain-link fabric fencing; minimum 8 feet high with galvanized steel pipe posts; minimum 2-3/8-inch-OD line posts and 2-7/8-inch-OD corner and pull posts, with 3 galvanized barbed-wire top strands, unless otherwise indicated.

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

E. Barricades, Warning Signs, and Lights: Comply with standards and code requirements for erecting structurally adequate barricades. Paint with appropriate colors, graphics, and warning signs to inform personnel and public of possible hazard. Where appropriate and needed, provide lighting, including flashing red or amber lights. See the Authority's Construction Safety Manual for additional requirements.

F. 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 241 and VUSBC.

1. Provide fire extinguishers, installed on walls on mounting brackets, visible and accessible from space being served, with sign mounted above.

    a. Field Offices: Class A, stored-pressure, water-type extinguishers.
    b. Other Locations: Class ABC, dry-chemical extinguishers or a combination of extinguishers of NFPA-recommended classes for exposures.
    c. Locate fire extinguishers per NFPA 10 and where convenient and effective for their intended purpose; provide not less than one 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 firefighting. Prohibit smoking in hazardous fire-exposure areas.
4. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition.
5. Permanent Fire Protection: At earliest feasible date in each area of Project, complete installation of permanent fire-protection facility, including connected services, and place into operation and use. Instruct key personnel on use of facilities.
6. Develop and supervise an overall fire-prevention and first-aid fire-protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.
7. Provide temporary standpipes with fire hose valve connections for fire protection.

G. Storage: Where materials and equipment are 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.

3.6 UTILITY PROVISIONS AT [SOUTH STAGING AREA] [NORTHWEST STAGING AREA]

A. EXISTING CONDITIONS

1. The Authority will provide at each lot in the South Staging area the following:

    a. Two 2" conduits from the utility sheds, to the limits of the lot, one electrical and one telecommunications. The conduits will be capped below grade and signified by a 4" x 4" x 4' wood stake at the limits of the lot.
    b. Each lot will be allocated 100 A, 480 v 3 phase, 3 wire power.
    c. The power is available at the utility shed. Provide necessary conductors as indicated in the "TELECOMMUNICATIONS" and "ELECTRICAL POWER" paragraphs below.
    d. Domestic water service will be available at the limit of the lot, identified with a blue painted stake.

B. GENERAL REQUIREMENTS

1. Contractor is responsible for subdividing telecommunications, electrical and water within their assigned lot in a coordinated fashion upon mobilization. Provide a site plan for COTR review and approval. Maintain site plan up-to-date throughout the Project. Indicate on site plan trailer locations, proposed conduit runs, proposed telecom and electrical backboards, proposed water distribution and any other pertinent information. Locate and indicate existing utilities on site plan.
2. Install fence around Contractors allotted area and remove fence upon completion of Contractor's Work. Refer to other paragraphs of this section for fencing requirements.
3. Contractor employee parking will be limited to within the allotted staging area. Provide transportation for Contractor's employees between the work site and the staging area.
4. Water tank fill station is located on the south side of the entrance road to the Staging Area. Do not use the fire hydrants along the main staging area road for obtaining water.
5. Restore lot to its original condition upon contract conclusion.

C. TELECOMMUNICATIONS

1. The Airport Communications System (ACS) vendor will provide a pedestal or telecom backboard at the limits of the Contractor's lot. The pedestal or telecom backboard is supplied via a communications cable installed by the ACS from the nearest utility shed to the limits of the Contractor's lot. As the electrical and telecommunications are adjacent, excavation at the lot limits for both utilities should be completed at the same time. Determining the routing of all conduits from the telecom pedestal at the lot limits to each subcontractor trailer to avoid future cut cables. Originate all feeds within a lot at the pedestal location. Contractor's attention is called to the fact that all telecommunications work between the utility sheds and the lot limits is the responsibility of the ACS. Should the Contractor perform any telecommunications work between the utility sheds and the lot limits, the ACS will remove work and the ACS will charge the Contractor for any cost associated with this removal of the work.
2. Provide all conduit installations either above or below ground in accordance with the Virginia Uniform Statewide Building Code and the applicable Division 26 Sections of the specification.

    a. Communications cable:

1) Cable must be 24 gauge with solid, annealed, bare copper conductors
2) Conductors shall have polyolefin insulation, color coded to telephone industry standards
3) Cable must have a black polyethylene outer jacket
4) Cable must have an aluminum or copper shield.
5) Cable must be Gel filled
6) Install in schedule 40 PVC conduits a minimum of 2" in diameter.
7) Advise the COTR of the total number of required telecom cable pairs, including his subcontractor's requirements, prior to any communications cable work within the lot.

3. Special telecom provisions— T1 service is available in the South Contractors lot at Contractor's expense. T1 or DSL service will be available in the Northwest Contractors Lot at the contractor's expense. Telecom services can be ordered through the Airport Communications System vender. Please call Louise Epps at 703/417-8605 to order these services.

D. ELECTRICAL POWER

1. Conduit is provided from one of four sheds, to a location just inside each contractor lot. Extend the conduit, as required, to serve all facilities on Contractor's site and provide cable back to shed. If power requirements greater than 100 ampere, at 480v, three phase, three – wire are required; requests for additional power will be considered on a case-by-case basis.

   a. Transformers:

      1) Suitable for outdoor use
      2) Pad mounted with fused safety switches on the primary and secondary sides of the transformer.

2. The Contractor is required to advise the COTR of the estimated electrical consumption including that of his subcontractors prior to provision of cable.

E. PLUMBING

1. Provide a Watts Model 909, Type RPZ backflow prevention device at each trailer. Remove plumbing work in place upon contract completion. There are no sanitary sewer provisions, use above ground tanks specifically designed for sewage holding. The Contractor at his option may use chemical or electrical toilets. Clean, pump and haul sanitary waste. Maintain a clean and odor free lot.

F. MAINTENANCE REQUIREMENTS STAGING AREA

1. Unauthorized soil and concrete stockpiles are prohibited.
2. Cover all containers and drums of any size that are stored on site and their required secondary containment to prevent rainwater from coming in contact with the containers. Earthen berms are not permitted. Clearly label all drums and containers used to hold trash and debris "Trash". Empty drums and containers when full. Remove all unused empty drums and containers from the site.
3. Include Contractor's lot in the South Staging Area in the SPPP.

4. Store all fuel, petroleum based products and products potentially detrimental to the environment in aboveground tanks.
5. Aboveground storage tanks:

    a. Double walled and approved for the use intended.
    b. Submit manufacturer's literature to COTR for approval in writing for each such storage tank intended for use by Contractor.

6. Store all trash, construction debris, and other debris in metal containers specifically designed for such use. Do not keep trash containers on the site for more than 90 calendar days.
7. Storage of used tires and batteries is prohibited.
8. Storage of waste oil is prohibited.
9. Only routine light equipment maintenance shall be permitted. Should Contractor require more than routine maintenance to be performed on site, submit a work execution plan to COTR, for written approval, describing the type of maintenance and the procedures that will be implemented to protect the environment.

3.7 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 caused by freezing temperatures and similar elements.

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

C. Temporary Facility Changeover: Unless Contractor is able to utilize permanent fire protection, do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.

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

1. Properly recondition and restore those portions of the site occupied by temporary facilities and controls to condition acceptable to COTR, at least equal to condition at time of start of Work, unless otherwise authorized in writing by COTR.
2. Materials and facilities that constitute temporary facilities are the property of Contractor. Owner reserves right to take possession of Project identification signs.
3. Remove temporary paving not intended for or acceptable for integration into permanent paving. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated

with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace roadway paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.

4. At Substantial Completion, clean and renovate permanent facilities used during construction period. Comply with final cleaning requirements in Division 01 Section "Project Closeout."

END OF SECTION 015000

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SECTION 016000 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings, Contract Provisions, Special Provisions, 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.

1. This Section includes substitutions made for "or as approved by the Authority" items.

B. Related Sections include the following:
1. Division 01 Section "Alternates" for products selected under an alternate.
2. Division 01 Section "References" for applicable industry standards for products specified.
3. Divisions 02 through 33 Sections for specific requirements for warranties on products and installations specified to be warranted.

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. 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: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.

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.

1.4 SUBMITTALS

A. Product List: Submit a list, in tabular form acceptable to COTR, 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 Submittals Schedule.

2. Initial Submittal: Within 90 calendar days after the Notice to Proceed, submit 3 copies of initial product list. Include a written explanation for omissions of data and for variations from the Contract requirements.
3. COTR's Action: COTR will respond in writing to Contractor within 15 calendar days of receipt of initial 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.
4. Updated submittal: Submit updated product list every 90 days following initial submittal. The updated list shall be submitted in approved electronic spread sheet format with additional fields as required by COTR.
5. Completed List: Submit 10 hard copies and one electronic copy of completed product list 90 calendar days before requesting inspection for substantial completion. Include a written explanation for omissions of data and for variations from the Contract requirements.

B. Substitution Requests: Submit six copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Section number and title and Drawing numbers and titles.

1. Substitution Request Form: Submit requests in the form and according to procedures required for Contract Modification proposals supplied to Contractor at the pre-construction meeting or as directed by COTR. Do not submit requests for substitutions as "Requests for Information" (RFIs).
2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:

a. Statement indicating why specified material or product cannot be provided.
b. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by the Authority and separate contractors that will be necessary to accommodate proposed substitution.
c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.

e. Samples, where applicable or requested.
f. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
g. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
h. Research/evaluation reports evidencing compliance with building code in effect for Project, from a model code organization acceptable to authorities having jurisdiction.
i. Detailed comparison of Contractor's Construction Schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating lack of availability or delays in delivery.
j. Cost information, including a proposal of change, if any, in the Contract Price.
k. Contractor's certification that proposed substitution complies with requirements in the Contract Documents and is appropriate for applications indicated.
l. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
m. Failure by Contractor to include the above requirements in the submittal may cause rejection of the submittal in its entirety.

3. COTR's Action: If necessary, COTR will request additional information or documentation for evaluation within 15 calendar days of receipt of a request for substitution. COTR will notify Contractor of acceptance or rejection of proposed substitution within 15 calendar days of receipt of request, or two weeks of receipt of additional information or documentation, whichever is later.

a. Form of Acceptance: Change notice.
b. Use product specified if COTR couldn’t make a decision on use of a proposed substitution within time allocated.

C. Comparable Product Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. COTR’s Action: If necessary, COTR will request additional information or documentation for evaluation within 7 working days of receipt of a comparable product request. COTR will notify Contractor of approval or rejection of proposed comparable product request within 15 calendar days of receipt of request, or 7 calendar days of receipt of additional information or documentation, whichever is later.

a. Form of Approval: As specified in Division 01 Section "Submittals."
b. Use product specified if COTR couldn’t make a decision on use of a comparable product request within time allocated.

D. Basis-of-Design Product Specification Submittal: Comply with requirements in Division 01 Section "Submittals." Show compliance with requirements.

1.5 QUALITY ASSURANCE

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

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.

B. Delivery and Handling:

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

C. Storage:

1. Store products to allow for inspection and measurement of quantity or counting of units.
2. Store materials in a manner that will not endanger Project structure.
3. Store products that are subject to damage by the elements, under cover in a weather tight enclosure above ground, with ventilation adequate to prevent condensation.
4. Comply with product manufacturers written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
5. Store foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
6. Store cementitious products and materials on elevated platforms.
7. Protect stored products from damage.
8. Replace products and materials damaged by the elements due to improper storage at no additional cost to the Authority. This damage can be, but not limited to, oxidization, mold, mildew, warping, and rust.

1.7 PRODUCT WARRANTIES

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

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

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: When specified forms are included with the Specifications, prepare a written document using appropriate form properly executed.
3. Refer to Divisions 02 through 33 Sections for specific content requirements and particular requirements for submitting special warranties.

C. Submittal Time: Comply with requirements in Division 01 Section "Project Closeout."

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. The Authority 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 as approved by the Authority": Note that products submitted under an "or as approved by the Authority" provision are considered to be substitutions. Substitutions shall follow the requirements of Paragraph VII-42 of Contract Provisions and provisions in "Comparable Products" Article to obtain approval for use of an unnamed product.

B. Product Selection Procedures:

1. Product: Where Specifications name a single product and manufacturer, provide the named product that complies with requirements.
2. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements.

3. Products: Where Specifications include a list of names of both products and manufacturers, provide one of the products listed that complies with requirements.
4. Manufacturers: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements.
5. Available Products: Where Specifications include a list of names of both products and manufacturers, provide one of the products listed, or an unnamed product, that complies with requirements. Comply with provisions in Part - 2 "Comparable Products" Article for consideration of an unnamed product.
6. Available Manufacturers: Where Specifications include a list of manufacturers, provide a product by one of the manufacturers listed, or an unnamed manufacturer, that complies with requirements. Comply with provisions in Part - 2 "Comparable Products" Article for consideration of an unnamed product.
7. Product Options: Where Specifications indicate that sizes, profiles, and dimensional requirements on Drawings are based on a specific product or system, provide the specified product or system. Comply with provisions in Part 2 "Product Substitutions" Article for consideration of an unnamed product or system.
8. Basis-of-Design Product: Where Specifications name a product and include a list of manufacturers, provide 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 Part 2 "Comparable Products" Article for consideration of an unnamed product by the other named manufacturers.
9. Visual Matching Specification: Where Specifications require matching an established Sample, select a product that complies with requirements and matches COTR's sample. COTR's decision will be final on whether a proposed product matches.

    a. If no product available within specified category matches and complies with other specified requirements, comply with provisions in Part 2 "Product Substitutions" Article for proposal of 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 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, density, 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, density, or texture from manufacturer's product line that includes both standard and premium items.

2.2 PRODUCT SUBSTITUTIONS

A. Timing: COTR will consider requests for substitution if received within 60 calendar days after issuance of the Notice to Proceed. Requests received after that time may be considered or rejected at the sole discretion of the Contracting Officer.

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

1. Requested substitution does not require extensive revisions to the Contract Documents.
2. Requested substitution is consistent with the Contract Documents and will produce indicated results.
3. Substitution request is fully documented and properly submitted.
4. Requested substitution will not adversely affect Contractor's Construction Schedule.
5. Requested substitution has received necessary approvals of authorities having jurisdiction.
6. Requested substitution is compatible with other portions of the Work.
7. Requested substitution has been coordinated with other portions of the Work.
8. Requested substitution provides specified warranty.
9. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

C. Contractor's submittal and COTR's review or approval of Shop Drawings, Product Data, or Samples that relate to a substitute does not by itself constitute a final approval of the requested substitution, nor does it relieve Contractor from fulfilling existing Contract requirements.

D. If a substitution offers a substantial advantage to the Authority, in terms of cost, time, energy conservation, or other considerations of merit, after deducting offsetting responsibilities the Authority may be required to bear, the substitution shall be submitted as a Value Engineering Change Proposal.

2.3 COMPARABLE PRODUCTS

A. Conditions: COTR will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, COTR will return requests without action, except to record noncompliance with these requirements:

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

PART 3 - EXECUTION (Not Used)

END OF SECTION 016000

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SECTION 017300 - EXECUTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings, Contract Provisions, Special Provisions, 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. Construction layout.
2. Field engineering and surveying.
3. General installation of products.
4. Coordination of Authority-installed products.
5. Progress cleaning.
6. Starting and adjusting.
7. Protection of installed construction.
8. Correction of the Work.

B. Related Sections include the following:

1. Division 01 Section "Project Management and Coordination" for procedures for coordinating field engineering with other construction activities.

1.3 SUBMITTALS

A. Qualification Data: Submit qualification data for professional engineer.

B. Certificates: Submit certificate signed and sealed by professional engineer certifying that location and elevation of improvements comply with requirements.

C. Project Record Documents: Submit a record of Work performed (materials tests, inspections, acceptance tests, etc.) and record survey data as required under provisions in Division 01 Sections "Submittals" and "Project Closeout."

1.4 QUALITY ASSURANCE

A. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in the Commonwealth of Virginia experienced in the area for which he is utilized.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Existing Conditions: The existence and location of site improvements, utilities, and other construction indicated as existing are not guaranteed. Before beginning work, investigate and verify the existence and location of mechanical and electrical systems and other construction affecting the Work, including all site utility systems.

1. Before construction, verify the location and points of connection of utility services.

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

3.2 PREPARATION

A. 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.

B. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

C. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information (RFI) to COTR.

Include a detailed description of problem encountered, together with recommendations for changing the Contract Documents.

3.3 CONSTRUCTION LAYOUT

A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify COTR promptly.

B. General: Engage a land surveyor to layout the Work using accepted surveying practices.

1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
2. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
3. Inform installers of lines and levels to which they must comply.
4. Check the location, level and plumb, of every major element as the Work progresses.
5. Notify COTR when deviations from required lines and levels exceed allowable tolerances.
6. Close site surveys with an error of closure equal to or less than one inch in 10,000 feet.

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

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

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

3.4 FIELD ENGINEERING

A. Identification: Existing control points and property line corner stakes are as identified on the Contract Documents.

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

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

C. Benchmarks: Establish and maintain a minimum of two permanent benchmarks on Project site, referenced to data established by survey control points. Comply with the Authority for type and size of benchmark.

1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
2. Where the actual location or elevation of layout points cannot be marked, provide temporary reference points sufficient to locate the Work.
3. Remove temporary reference points when no longer needed. Restore marked construction to its original condition.

D. Certified Survey: On completion of foundation walls, major site improvements, and other work requiring field-engineering services, including utilities, prepare a certified survey showing coordinates, dimensions, locations, angles, and elevations of construction and site work. Coordinates shall be ACS and elevations shall be NGVD 29.

3.5 INSTALLATION

A. Inspection of Conditions: Require Installer of each major component to inspect both the substrate and conditions under which Work is to be performed. Proceed only after unsatisfactory conditions have been corrected in a manner acceptable to COTR. Coordinate this requirement with Division 01 Section "Quality Requirements."

B. 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.
5. Roughing-in of utilities in areas with vaulted or domed roofs shall follow contour of roof lines.

C. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

D. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.

E. 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.

F. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels. For additional requirements see Section "Supplementary Conditions."

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.

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.

H. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints as directed by COTR. Fit exposed connections together to form hairline joints.

I. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.6 AUTHORITY-INSTALLED PRODUCTS

A. Site Access: Provide access to Project site for the Authority's construction forces.

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

1. Construction Schedule: Inform COTR of Contractor's preferred construction schedule for the Authority's portion of the Work. Adjust construction schedule based on a mutually agreeable timetable. Notify COTR if changes to schedule are required due to differences in actual construction progress.
2. Pre-installation Conferences: Include the Authority's construction forces at pre-installation conferences covering portions of the Work that are to receive the Authority's work. Attend pre-installation conferences conducted by the Authority's construction forces if portions of the Work depend on the Authority's construction.

3.7 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. Remove combustible debris from the site daily.
3. 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.
4. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.

B. Site: Maintain Project site free of waste materials and debris.

C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.

1. Remove liquid spills promptly.
2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

F. Exposed Surfaces: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

G. 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-airport property will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.

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 Substantial 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.

3.8 STARTING AND ADJUSTING

A. Follow equipment manufacturer's startup procedures, unless otherwise directed by COTR.

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 Division 01 Section "Quality Requirements."

3.9 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure that installed Work is without damage or deterioration at time of Substantial Completion.

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

3.10 CORRECTION OF THE WORK

A. Repair or remove and replace defective construction. Restore damaged substrates and finishes. Comply with requirements in Division 01 Section "Cutting and Patching."

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 017300

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SECTION 017329 - CUTTING AND PATCHING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings, Contract Provisions, Special Provisions, Supplementary Conditions, and other Division 01 Specification Sections apply to this Section.

1.2 SUMMARY

A. This Section includes procedural requirements for cutting and patching.

B. Related Sections include the following:

1. Division 02 Section "Selective Structure Demolition" for demolition of selected portions of the building for alterations.
2. Divisions 02 through 33 Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.

1.3 DEFINITIONS

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

B. Patching: Fitting and repair work required to restore surfaces to original conditions after installation of other Work.

1.4 SUBMITTALS

A. Cutting and Patching Proposal: Submit a proposal, requesting approval from COTR to proceed, describing procedures at least 10 days before the time cutting and patching will be performed,. Include the following information:

1. Extent: Describe cutting and patching, show how they will be performed, and indicate why they cannot be avoided.
2. Changes to Existing Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building's appearance and other significant visual elements.
3. Products: List products to be used and firms or entities that will perform the Work.
4. Dates: Indicate when cutting and patching will be performed.
5. Structural Elements: Where cutting and patching involve adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with original structure. When cutting and patching involves welding or open flame cutting, obtain the approval of the Authority's Fire Marshal for such work

prior to its start. Before cutting or drilling a structural element, X-ray the element to determine whether any embedded items such as conduit and reinforcing steel would be cut or disturbed and provide X-rays to COTR. If the cutting/drilling will cut any rebar or conduits, notify the COTR to re-locate the opening or take other action as required. If reinforcing steel is encountered, notify the COTR to either re-locate the opening or evaluate the effect of cutting the reinforcement. Perform this evaluation by a registered professional engineer licensed in the Commonwealth of Virginia.

6. COTR's Approval: Obtain COTR's approval in writing of cutting and patching proposal before cutting and patching. Approval does not waive COTR's right to later require removal and replacement of unsatisfactory work.

1.5 QUALITY ASSURANCE

A. Structural Elements: Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.

1. Structural steel curtain wall mullions.

B. Operational Elements: Do not cut and patch the following 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. Obtain COTR's written approval of the cutting and patching of the following operating elements or safety related items:

1. Air or smoke barriers.
2. Control systems.
3. Communication systems.
4. Electrical wiring systems.
5. Security systems including CCTV and duress alarms.

C. Miscellaneous Elements: Do not cut and patch miscellaneous elements or related 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. Miscellaneous elements include the following:

1. Water, moisture, or vapor barriers.
2. Membranes and flashings.
3. Exterior curtain-wall construction.
4. Insulating systems.

D. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces 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.

1. Processed concrete finishes.
2. Ornamental metal.
3. Preformed metal panels.
4. Roofing.

5. Fire stopping.
6. Window wall system.
7. Stucco and ornamental plaster.

E. 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.

1.6 WARRANTY

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during cutting and patching operations, by methods and with materials so as not to void existing warranties.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Comply with requirements specified in other Sections of these Specifications.

B. Existing Materials: Use materials identical to existing materials. For exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.

1. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of existing materials.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.

1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Temporary Support: Provide temporary support of Work to be cut.

B. Protection: Protect existing 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.

C. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

D. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned; bypass such services/systems before cutting to prevent interruption to occupied areas.

3.3 PERFORMANCE

A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.

1. Cut existing 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. Cutting: Cut existing 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 as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
2. Existing 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.

C. 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 possible. Provide materials and comply with installation requirements specified in other Sections of these Specifications.

1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.
2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
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 existing 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, apply primer and intermediate paint coats 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 re-hang existing 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 weather tight condition.

END OF SECTION 017329

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SECTION 017700 - PROJECT CLOSEOUT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings, Contract Provisions, Special Provisions, Supplementary Conditions, and other Division 01 Specification Sections apply to this Section.

1.2 SUMMARY

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

1. Inspection procedures.
2. Warranties.
3. Final cleaning.

B. Related Sections include the following:

1. Division 01 Section “Quality Requirements” for final requirements of the Warranty Manual.
2. Division 01 Section "Photographic Documentation" for submitting Final Acceptance construction photographs and negatives.
3. Division 01 Section "Project Record Documents" for submitting Record Drawings, Record Specifications, Record Product Data, and other Record Documents.
4. Division 01 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
5. Divisions 02 through 33 Sections for specific closeout and special cleaning requirements for products of those Sections.

1.3 SUBSTANTIAL COMPLETION

A. Definition*:* "Substantial Completion" is the stage in the progress of the work when COTR determines that all the Work, or a designated portion thereof, is sufficiently complete and functional according to the Contract Documents so that the Authority can occupy or utilize the Work for its intended use. The only remaining physical work shall be the completion of punch list work prior to Final Acceptance.

B. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete in request.

1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, reasons why the Work is not complete, and a schedule for completing punch list work according to Section III of the Contract.

2. Ensure previously outstanding technical submittals and Shop Drawings have been submitted and approved.
3. Advise COTR of pending insurance changeover requirements.
4. Submit warranties required by Contract Documents, workmanship bonds, maintenance service agreements, final certifications, and similar documents.

    a. Submit Contractor Warranty Letter, for review and approval, a minimum of 60 days before requesting inspection for determining date of Substantial Completion. After date of Substantial Completion has been determined revise the Contractor's Warranty Letter to include that date as start of Warranty period.

5. Obtain and submit releases permitting the Authority unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
6. Prepare and submit Project Record Documents except Record Contract CPM Schedule; also prepare and submit Operation and Maintenance manuals, Final Completion construction photographs and photographic negatives, damage or settlement surveys, and similar final record information.
7. Prepare and submit proof that specified testing and code inspections have been completed, accepted and certified, including, but not limited to, structural work, sprinkler piping systems, fire alarm and FPS systems, bacteriological testing of domestic lines, back-flow prevention, electrical system testing, and hydrostatic pressure testing of sanitary lines. Submit approvals of Health Department or the FDA as applicable.
8. Deliver tools, spare parts, extra materials, and similar items to location designated by COTR. Label with manufacturer's name and model number where applicable.
9. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
10. Submit changeover information related to the Authority's occupancy, use, operation, and maintenance.
11. Complete final cleaning requirements, including touchup painting.
12. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

C. Inspection: Submit a written request for inspection for Substantial Completion. 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 or 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. Re-inspection: Request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Punch list work must be completed within the duration specified in Section III, "Schedule." Failure to complete the punch list work within the duration specified may result in the Contracting Officer ordering the work to be completed by others at the cost to Contractor.
3. Results of completed inspection will form the basis of requirements for Final Acceptance.

1.4 FINAL COMPLETION AND ACCEPTANCE

A. Definition: "Final Completion" is the stage in the Contract when the Contracting Officer determines that all Work has been 100 percent completed according to the terms and conditions of the Contract Documents, including administrative obligations. The date of Final Acceptance is the date of execution by the Contracting Officer of a Certificate of Final Acceptance.

B. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:

1. Submit a final Application for Payment according to Division 01 Section "Application for Payment."
2. Submit certified copy of COTR's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by COTR. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
3. Submit a Contractor/COTR joint statement evidencing that all Record Documents, Operation and Maintenance Manuals, warranties, and similar required submittals have been approved.
4. Complete demobilization and removal of temporary facilities from the site including construction equipment and facilities, mockups, and other similar elements. Restore areas to previously existing condition, if applicable.
5. Execute final Contract Modification and submit final Subcontractor Payment Form.
6. Return all AOA badging and all Authority Ids.
7. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
8. Submit Record Contract CPM Schedule.
9. Submit warranty book.

C. Inspection: Submit a written request for final inspection for acceptance. 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. Re-inspection: Request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.5 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Preparation: Submit four copies 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 on landside of building first and proceeding around the perimeter of the building.
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. Contract name and number.
b. Date.
c. Name of COTR.
d. Name of Architect/Engineer.
e. Name of Contractor.
f. Page number.

1.6 WARRANTIES

A. Submittal Time: Submit one draft copy of proposed Warranty Manual Specified below within 90 days of Notice to Proceed. COTR will return comments to the Contractor no later than 30 calendar days after receipt.

1. Provide Manufacturer's Standard Warranties, made out to the Authority, and statement of willingness to provide any applicable Special Warranties required by the Contract Documents 14 calendar days prior to shipping of materials and equipment. Products and Equipment shall not be considered delivered (for payment purposes) until the approved warranties have been received.
2. Submit written warranties on request of COTR for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated.

B. Partial Occupancy: Submit properly executed warranties within 15 days of completion of designated portions of the Work that are completed and occupied or used by the Authority during construction period by separate agreement with Contractor.

C. Warranty Manual: Organize warranty documents into an orderly sequence based on the table of contents of the Contract Specifications. Warranty documents include Contractor and major subcontractors warranty letters, special warranty documents, and manufacturer's warranties.

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. Binders shall not be filled beyond 75 percent of their rated capacity. Binders shall also have boomerang plastic sheet lifters, metal backbone, concealed rivet construction, and three-trigger position locking mechanism (lock, unlock, open) on top and bottom. Binder color shall be black unless another color is selected by COTR.

a. Provide maximum 3-inch binder thickness.
b. Identify each binder on front and spine, with printed title "PROJECT WARRANTIES," Contract number and name, and subject matter of contents. If identification cannot be attached to the front include it as the first page in the manual. Indicate volume number for multiple-volume sets. The use of business labels is prohibited.

2. Dividers: Provide three-hole, heavyweight, plastic tabbed dividers, (, or as approved by the Authority) for each separate section. Provide laser printed description for each tabbed section on the front and back of tabs. Tabs shall indicate the appropriate Specification Section. Provide a description of the warranty or heading for sub tabs using the same

laser printed format on the dividers. Provide an index of the contents in each section on the first page behind each section divider. The index shall be generated using a word processor and printed on a laser printer. Include a matching master table of contents for each volume using the same indexing system. Install a colored sheet between each different warranty within a tabbed section.

D. Provide additional copies of each warranty that shall be included in Operation and Maintenance Manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cleaning Agents: For final cleaning, use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with Authority requirements, local laws and ordinances and Federal and local environmental and antipollution regulations. General cleaning during construction is included in Division 01 Section "Execution."

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:

    a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
    b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
    c. Remove tools, construction equipment, machinery, and surplus material from Project site.
    d. Remove snow and ice to provide safe access to building.
    e. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
    f. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.

g. Sweep concrete floors broom clean in unoccupied spaces.
h. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
i. Remove labels that are not permanent.
j. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.

1) Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.

k. Wipe surfaces of mechanical and electrical equipment, [elevator equipment,] and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
l. Replace parts subject to unusual operating conditions.
m. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and high intensity discharge fixtures to comply with requirements for new fixtures.
n. Leave Project clean and ready for occupancy.

C. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on the Authority's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

1. Where extra materials of value remaining after completion of associated Work have become the Authority's property, arrange for disposition of these materials as directed by COTR.

END OF SECTION 017700

SECTION 017823 - OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings, Contract Provisions, Special Provisions, Supplementary Conditions, and other Division 01 Specification Sections apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:

1. Operation and Maintenance Documentation Directory and formatting.
2. Manuals, General and formatting
3. Emergency Information Manuals and formatting.
4. Operation Information Manuals and formatting for systems, subsystems, and equipment.
5. Maintenance Information Manuals and formatting for the care and maintenance of products, materials, finishes, systems, and equipment.

B. Related Sections include the following:

1. Division 01 Section “Application for Payment” for values assigned to Operation and Maintenance Manuals
2. Division 01 Section “Quality Requirements” for ensuring the development and continuing update of the Operation and Maintenance Documentation Directory and Operation and Maintenance Manual.
3. Division 01 Section “Submittals” for submitting copies of submittals for operation and maintenance manuals.
4. Division 01 Section “Project Closeout” for submitting operation and maintenance manuals.
5. Division 01 Section “Project Record Documents” for preparing Record Drawings for operation and maintenance manuals.
6. Divisions 02 through 33 Sections for specific operation and maintenance manual requirements for products in those Sections.

C. For purposes of payment, O & M and Material and Finishes Manuals are to be valued at 3% of Contract.

D. Payment for materials and equipment will be withheld if complete O & M manual material is not received from the contractor at time of material or equipment delivery. Namely, instruction sheets, operation manuals, installation instructions, and other documents received from the manufacturer at the time of delivery.

1.3 DEFINITIONS

A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.

B. Subsystem: A portion of a system with characteristics similar to a system.

C. Equipment: An instrument or appliance designed for a specific operation.

D. Product: 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.

E. Location: A defined area such as roof, room, hallway, ceiling, pavement, wall, or floor that has special maintenance requirements that are documented in the Operation and Maintenance Data.

1.4 SUBMITTALS

A. Operation and Maintenance Manual Format: Submit to COTR within 90 calendar days of Notice to Proceed one draft copy of the proposed Operation and Maintenance Manual Format. Format shall include a table of contents and be as specified in Part 2 of this Section. COTR will return comments regarding the Operation and Maintenance Manual Format and planned contents of the completed manual within 30 calendar days of receipt. Throughout the construction period of the project, Operation and Maintenance data shall be continually inserted in the appropriate sections/parts of the Manual as it is approved.

B. Operation and Maintenance Documentation Directory: Submit to COTR within 90 calendar days of Notice to Proceed one draft copy of the Operation and Maintenance Documentation Directory. Format shall be as specified in Part 2 of this section. COTR will return comments regarding the Directory and planned contents of the completed manual set within 30 calendar days of receipt of submittal. Throughout the construction period of the project, the Directory shall be updated to reflect changes resulting from other submittal approvals.

C. Operation and Maintenance Manuals Initial Submittal: Submit four draft copies of each Manual in the approved format at least 90 calendar days before requesting inspection for Substantial Completion. Include a complete Operations and Maintenance Directory. COTR will return a copy of draft within 30 calendar days of receipt, and mark whether general scope and content of Manuals are acceptable.

D. Operation and Maintenance Manuals Revised Submittals: Submit 4 revised copies of each manual in final form, including one CD containing electronic O & M documentation, at least 45 calendar days before substantial completion or training, whichever occurs first. COTR will return a copy with comments within 15 calendar days after receipt.

E. Operation and Maintenance Manuals Final Submittal: Correct or modify each manual to comply with COTR’s comments. Submit 6 copies of the Document Directory and each corrected manual at least 15 calendar days before substantial completion or training whichever occurs first.

1. Provide four copies of all Operation and Maintenance Data in electronic format on CD-ROM consistent with the organization and format in the "Manuals, General" section. All electronic files shall be in Adobe PDF format and limited to 10 megabytes in size per file.

1.5 COORDINATION

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

PART 2 - PRODUCTS

2.1 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY

A. Provide the Operation and Maintenance Documentation Directory in separate binder from operation and maintenance information. Binders, dividers and all portions of the Directory shall comply with requirements of "Manuals, General" as applicable. Size of binder for directory shall be appropriate for quantity of contents. Information in O & M Directory shall be in alphabetical order with references to contract Division and Specification Section.

B. Organization: Include a section in the directory for each of the following:

1. General Information.
2. List of systems and subsystems.
3. List of equipment.
4. List of Products
5. Table of contents.

C. General Information: Include documents that are pertinent to the project, including, but not limited to, a detailed description of the facility or project, general safety information and a users guide to the project operation and maintenance manuals.

D. List of Systems and Subsystems: List systems alphabetically. Include references to operation and maintenance manuals that contain information about each system.

E. 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. Include references to operation and maintenance manuals that contain information about each system.

F. List of Products: List products alphabetically to include all products not part of a system, subsystem, or component of equipment. Include references to operation and maintenance manuals that contain information about each product.

G. Tables of Contents: Include a complete table of contents for each volume of the Operation and Maintenance Manuals.

H. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment and products with the same

designation used by the Authority. If no designation is provided for equipment, systems, subsystems, or equipment assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

I. Provide a draft of the proposed "Operation and Maintenance Documentation Directory" at least 90 calendar days before requesting inspection for Substantial Completion. Submit draft to COTR for approval in writing.

2.2 MANUALS, GENERAL

A. Organization: Unless otherwise indicated, organize information by Division and then into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following in the order listed:

1. Title page.
2. Table of contents.
3. Manual contents.

B. Title Page: Enclose title page in transparent plastic sleeve. Include the following information on the title page:

1. Specific subject matter included in manual such as Division number and title, Specification Section number and title, equipment, systems and subsystems.
2. Name and number of the Contract.
3. Date of submittal.
4. Name, address, telephone number, and contact person of Contractor, Subcontractor, and supplier.
5. Name and address of Architect/Engineer.
6. Cross-reference to related systems in other portions of the Operation and Maintenance Manuals.

C. Table of Contents: Include a printed, printed by a laser printer, table of contents for each volume, arranged according to the specification format. List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in the Contract Documents.

1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.

D. Manual Contents: Organize into sets of manageable size. Arrange contents by Division then by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.

1. Binders: Heavy-duty, 3-ring thermoplastic 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. Binders shall not be filled beyond 75 percent of their rated capacity. Binders shall also have boomerang plastic sheet lifters, concealed rivet construction, and three-trigger position Dublock mechanism (lock, unlock, open) on

top and bottom of binders. Binder color shall be black unless another color is selected by COTR.

a. Provide maximum 3 inch binder thickness. Smaller binders are acceptable as long as 75 percent rated binder capacity is not exceeded.
b. If two or more binders are necessary to accommodate data for a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary to provide essential information for proper operation or maintenance of equipment or system.
c. Identify each binder on front (If Identification cannot be placed on the front provide as the first page) and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Contract number and name, and specific subject matter of contents, such as "Division 23 Heating Ventilating and Air Conditioning," to include Specification Section. Indicate volume number for multiple-volume sets. The use of business labels is prohibited.

2. Dividers: Provide three-hole, heavyweight, plastic tabbed dividers, for each separate section. Provide laser printed description for each tab section (front and back of tabs), to indicate the appropriate Specification Section. Provide a description of the product or heading for sub tabs using the same laser printed format on the dividers.
3. Provide a typed index describing each product, equipment, and subject addressed in each section on the first page behind each section divider. Include a matching master table of contents for each volume using the same indexing system. Install a colored sheet between major topics and each different device within a tabbed section.

4. Protective Plastic Sleeves: Provide protective transparent plastic sheet protectors to enclose the Title Page, all Table of Content pages, and photographs.

a. For CD-ROMs, provide transparent plastic three-ring sleeves designed to accommodate CD-ROMs.

5. Text: Prepared on 8-1/2-by-11-inch, 20-lb/sq. ft. white bond paper. Copies of faxed materials may be rejected. Two-sided text shall be provided on 24-lb/sq. ft. white bond paper to eliminate "bleed through" of text with a minimum brightness of 96.
6. 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 transparent envelopes and bind envelopes with text. Insert typewritten pages indicating drawing titles, descriptions of contents, in the transparent envelopes along with drawings. Drawings shall cross-reference the appropriate manual volume and Specification Section. Drawing holding envelopes are not acceptable.
c. Provide operation and maintenance material on CD-ROM.

E. Transfer Cases: Manuals shall be submitted in durable, multiple thickness fiberboard transfer boxes (legal-size boxes, 15 inches wide by 24 inches long by 10 inches high) with plastic tote handles string and button closures, reinforced poly edge, and a large labeling area that accurately describes the contents. Banker box, Fast Hold Liberty Plus P-12112 or as approved by the Authority.

2.3 PRODUCT MAINTENANCE INFORMATION MANUAL

A. This Section shall contain information for all products with the exception of Systems and Equipment, which shall be provided as indicated elsewhere in this Section.

B. Content: Organize information into a separate section for each product, material, and finish. Provide one section for architectural products, including applied materials and finishes, and a second for products designed for moisture protection and products exposed to the weather. Include source information, product information, maintenance procedures, repair materials and sources, schedule of products, location of products and warranties and bonds, as described below.

C. Source Information: List each product included in manual identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.

D. Product Information: Include the following, as applicable:

1. Product name and model number.
2. Manufacturer's name.
3. Color, pattern, and texture.
4. Material and chemical composition.
5. Reordering information for specially manufactured products.
6. Fire/flame-spread test certificates.
7. Material Safety Data Sheets.

E. Maintenance Procedures: Include manufacturer's written recommendations and the following:

1. Inspection procedures.
2. Types of cleaning agents to be used and methods of cleaning.
3. List of cleaning agents and methods of cleaning detrimental to product.
4. Schedule for routine cleaning and maintenance.
5. Repair instructions.

F. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.

G. Schedule of Products and Locations: Provide complete information, including reference drawings, in the materials and finishes manual on all products specified in Divisions 02 through 33.

H. Warranties and Bonds: Provide copies of all applicable 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. Clearly indicate commencement and expiration dates.

I. Provide a draft of the proposed Product Maintenance Information Manual. Submit draft at least 90 calendar days before requesting inspection for Substantial Completion to COTR for approval in writing.

2.4 WARRANTY INFORMATION MANUAL

A. Organize warranty documents into an orderly sequence based on the table of contents of the Contract Specifications. Warranty documents include Contractor and Major Subcontractors warranty letters, special warranty documents, and manufacturer's warranties.

B. Binders: Heavy-duty, 3-ring thermoplastic 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. Binders shall not be filled beyond 75 percent of their rated capacity. Binders shall also have boomerang plastic sheet lifters, metal backbone, concealed rivet construction, and three-trigger position DublLock mechanism (lock, unlock, open) on top and bottom. Binder color shall be black unless another color is selected by COTR.

C. Identify each binder on front (If identification can not be attached to the front include it as the first page in the manual) and spine, with printed title "PROJECT WARRANTIES," Contract number and name. The use of business labels is prohibited.

D. Dividers: Provide three-hole, heavyweight, tabbed dividers, for each separate section. Provide laser printed description front and back of tabs, to indicate the appropriate Specification Section. Provide a typed index of the contents in each section on the first page behind each section divider. Include a matching master table of contents for the manual using the same indexing system. Install a colored sheet between each different warranty within a tabbed section.

E. Provide additional copies of each warranty to include in operation and maintenance manuals.

F. Provide a draft of the proposed Warranty Manual. Submit draft at least 90 calendar days before requesting inspection for Substantial Completion to COTR for approval in writing.

PART 3 - EXECUTION

3.1 MANUAL PREPARATION

A. For the first Directory Submittal, prepare a separate manual that provides an organized reference to the complete manual set. Subsequent submittals of the Directory shall integrate this information by Division.

B. Emergency Information: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by the Authority’s operating personnel for types of emergencies indicated.

C. Product Maintenance Information: Assemble a complete set of maintenance data indicating manufacturer’s product information, part numbers, description and care and maintenance instructions for each product, material, and finish incorporated into the Work.

D. Manufacturers’ Data: Where manuals contain manufacturers’ standard printed data, include only sheets pertinent to product or component installed. Mark each sheet with black arrows to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract

Documents. Identify data applicable to the Work and delete references to information not applicable.

1. Provide supplementary text if manufacturers' standard printed data are not provided by the manufacturer. Provide supplementary text where the information is necessary for proper operation and maintenance of equipment or systems.

E. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams and their relation to the structure or facility. Coordinate these drawings with information contained in Record Drawings to ensure correct illustration of completed installation.

1. Do not use original Project Record Documents as part of Operation and Maintenance Manuals.
2. Comply with requirements of newly prepared Record Drawings in Division 01 Section "Project Record Documents."

F. Comply with Division 01 Section "Project Closeout" for a schedule for submitting operation and maintenance documentation.

END OF SECTION 017823

SECTION 017839 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings, Contract Provisions, Special Provisions, Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for Project Record Documents, including the following:

1. Record Drawings.
2. Record Specifications
3. Record Product Data.
4. Record Samples.
5. Record Schedule.
6. Miscellaneous Record Submittals.
7. Computer Aided Design and Drafting (CADD) requirements for Record Drawings.

B. Related Sections include the following:

1. Division 01 Section “Construction Progress Documentation" for construction schedules as basis for Record Schedule.
2. Division 01 Section “Quality Requirements” for ensuring the record drawings and specifications are kept current on a daily basis and marked to show deviations which have been made from the original Contract documents
3. Division 01 Section "Project Closeout " for general closeout procedures
4. Division 01 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
5. Divisions 02 through 33 Sections for specific requirements for Project Record Documents of products in those Sections.

1.3 SUBMITTALS

A. CADD Record Drawings. Comply with the following:

1. Submit copies of CADD Record Drawings as follows:

a. Initial Submittal: Submit one set of complete, full-sized, CADD Record Drawings. Additional sets of drawings are not to be copied and submitted until after substantial completion to insure all changes are shown on the drawings. The COTR will facilitate review of drawings and indicate whether the CADD Record Drawings are acceptable. The COTR will return review comments indicating any

corrections that need to be made to the drawings. The corrected CADD Record Drawings may then be reproduced, and organized into sets, printed, bound, and submitted as final submittal.

b. Final Submittal: After construction is complete and changes are recorded, submit six complete, full-sized, printed sets of CADD Record Drawings. Include each sheet, whether or not changes and additional information were recorded. Submit two copies of the CADD Record drawings in the approved electronic format. In addition, submit the original set of marked-up record drawings onto which the mark-ups were made.

B. Record Specifications: Submit two copies of Project Specifications, including addenda and contract modifications.

C. Record Product Data: Submit one copy of each Product Data submittal at the direction of the COTR.

1. Where Record Product Data is required as part of operation and maintenance manuals, submit marked-up Product Data as an insert in the manual instead of submittal as Record Product Data.

D. Record Samples: Submit Record Samples as specified.

E. Record Schedule: Submit three copies of Record Schedule.

F. Miscellaneous Record Submittals: Submit miscellaneous Record Submittals as specified.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

A. Record Prints: During construction, maintain one complete, full sized, set of blue- or black-line prints of the Drawings, applicable shop drawings, and coordination drawings for record purposes. These drawings shall be updated periodically, by the contractor, in CADD to replace the hand mark-ups. The mark-ups shall be preserved for the record. A complete set of Conformed Drawings in CADD will be provided to the Contractor for his use in maintaining the CADD Record Drawings. The CADD files will be provided in Autodesk AutoCAD**.**

1. Maintenance of Drawings: Maintain the drawings in a clean, dry, legible condition. Keep drawings available during normal working hours for inspection by the COTR.
2. Preparation: Routinely mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to prepare the mark-ups on the record set.

a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later especially underground structures.
b. Record information in an understandable drawing technique. Ensure mark-ups are legible and reproducible.

c. Record data as soon as possible after obtaining it. Record and check markups before enclosing concealed installations.

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

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

4. Mark the Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. If Shop Drawings are marked, insert them into drawing set and assign an appropriate sheet number (one that follows the number sequence of the contract drawings). Show cross-references to the new sheets on the Drawings. Update drawing index as needed to reflect new sheets.
5. Mark record drawings with red pen that will reproduce clearly. Use different colors to distinguish between changes for different categories of the Work at the same location.
6. Mark important additional information that was either shown schematically or not indicated on the original Drawings.
7. Note applicable Construction Change Notices, Requests for Information, Technical Support Requests, and similar identification numbers, where applicable. Copies of change documentation shall be inserted into the set for clarification but are not a substitute for mark-ups. If identification numbers for documentation are marked on the drawing when no change resulted, indicate "No Change".

B. Newly Prepared Project Record Drawing Sheets: The contractor may add new sheets with supporting sketches and change documentation instead of marking original sheets when neither the original Drawings nor Shop Drawings are suitable to show actual installation or if the new sheets can show the changes more clearly or additional space is required for markup information.

1. Assign a number to each new sheet and cross-reference on the appropriate related sheets.
2. Consult with COTR for proper scale and scope of detailing and notations required to record the actual physical installation and its relation to other construction.
3. Integrate newly prepared sheets into Record Drawing sets and update drawing index to reflect new sheets.

C. Format:

1. Identify and date each Record Drawing. Include the designation “PROJECT RECORD DRAWING” in a prominent location on each sheet.
2. Cover Sheet shall have the designation “PROJECT RECORD DRAWINGS”, Date, Name of Contractor, and signature.
3. Record CADD Drawings:

    a. CADD files provided by COTR and utilized for recording of record mark-ups shall maintain the format of the files provided. Place electronic mark-ups in a newly created layer on each drawing.
    b. CADD files created by Contractor: Organize CADD information into separate electronic files that correspond to each sheet of the Record Drawing set. Name each file with the sheet identification. Include identification in each CADD file.

4. Include the following identification on newly prepared Project Record Drawing Sheets:

    a. Project name.
    b. Date.
    c. Designation "PROJECT RECORD DRAWING."
    d. Name of Architect/Engineer (if applicable).
    e. Name of Contractor.
    f. Initials of person incorporating the change.
    g. Drawing identification number. (Ixx/Dxx)

5. Organization of Newly Prepared Project Record Drawing Prints: Organize newly prepared Record Drawings into manageable sets. Include any contract required coordination drawings and applicable shop drawings. Bind each set with durable paper cover sheets. Include identification on cover sheets.

D. ADDITIONAL REQUIREMENTS FOR RECORD DRAWINGS

1. When there are multiple copies of the same sheet with different mark-ups on each copy, the General Contractor is responsible for consolidating all mark-ups onto a single copy of each individual sheet.
2. The information from all RFI's, Change Notices, Design Clarifications, field adjustments, or any other changes, must be noted on the appropriate drawing. These mark-ups must include enough information to clearly show the actual constructed conditions resulting from the change. The information may be drawn onto the drawing, copied onto the drawing or copied onto a new full size sheet. Every change in construction must have RFI’s, Change Orders or similar supplementary documents; therefore they must be copied in original size and attached to the back of the preceding drawing or at the end of the drawing set, as an appendix, as a full size sheet, same in size as the drawing set. Multiple RFI’s, CN’s and other supplemental documents may be copied in each single sheet.
3. All changes made on the drawings shall reference the appropriate RFI, Change Notices, Design Clarification, or details from the contractor prepared shop drawings. If the mark-up is due to a field adjustment, it shall be indicated as such.

4. Additional Sheets such as shop drawings and sheets showing copies of applicable change documentation must be inserted into the set as necessary. Such sheets shall have a title block.
5. All shop drawings showing information not on the construction drawings (with the exception of concrete embedded steel reinforcement bending drawings and steel reaction and fabrication drawings) shall be marked up and included in the record drawing set. They shall be the same size (changes in scale noted) as all other drawings, include a title block, and clearly indicate that they are record shop drawings. When the shop drawings more accurately show locations and conditions, they may be marked in lieu of referenced on the original drawings. This does not relieve the contractor from the shop drawing inclusion requirements in the Operation and Maintenance Manuals that are a separate item
6. Include contract required coordination drawings in the record drawing set.

2.2 RECORD SPECIFICATIONS

A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications. Print marked specifications, addenda, and contract modifications on paper any color but white and ensure that black font is clearly legible on the color chosen. Use the same paper color throughout the project. Use black font for these changes.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Mark copy with the brand name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
3. Record the name of the manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
4. For each principal product, indicate whether Record Product Data has been submitted in operation and maintenance manuals instead of submitted as Record Product Data.
5. Note related Change Orders, Record Drawings, and Product Data where applicable.

2.3 RECORD PRODUCT DATA

A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
3. Note related Change Orders, Record Drawings, and Product Data where applicable.
4. Upon completion of mark-up, submit a complete set of record Product Data to COTR for the Authority's records.
5. Where Record Product Data is required as part of maintenance manuals, submit marked-up product data as an insert in the manual.

2.4 RECORD SAMPLE SUBMITTAL

A. Prior to date of Substantial Completion, the Contractor shall meet the Authority's personnel at the site to determine which of the samples maintained during the construction period shall be transmitted to the Authority for record purposes. Comply with the COTR's instructions for packaging, identification marking, and delivery to the Authority's sample storage space. Dispose of other samples in manner specified for disposal of surplus and waste materials.

2.5 RECORD SCHEDULE

A. Record Schedule Submittal: Immediately prior to date of inspection for Final Acceptance, submit a copy of the As-built Contract CPM Schedule (if applicable) to the COTR.

B. Mark the Contractor’s Construction Schedule to show actual start and finish dates for all work activities and milestones, based on the accepted monthly updates. This Record Schedule shall be in same format as Contractor’s Construction Schedule. This Record Schedule shall be in tabular and in time-scaled PDM plot formats.

2.6 MISCELLANEOUS RECORD SUBMITTALS

A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference. Submit to COTR.

1. Categories of requirements resulting in miscellaneous records include, but are not limited to the following:

a. Field records on excavations and foundations.
b. Field records on underground construction and similar Work.
c. Survey showing locations and elevations of underground lines.
d. Invert elevations of drainage piping.
e. Surveys establishing building lines and levels.
f. Authorized measurements utilizing unit prices or allowances.
g. Records of plant treatment.
h. Ambient and substrate condition tests.
i. Certifications received in lieu of labels on bulk products.
j. Batch mixing and bulk delivery records.
k. Testing and qualification of tradesmen.
l. Documented qualification of installation firms.
m. Load and performance testing.
n. Inspections and certifications by governing authorities.
o. Leakage and water-penetration tests.
p. Fire resistance and flame spread test results.
q. Final inspection and correction procedures.
r. Summary letter from Special Inspector indicating structural work was completed in accordance with applicable standards.
s. Report of potable water testing.

t. Backflow prevention certificates.
u. Final inspections of all trades.
v. Certificates for piping for fire protection systems and FPS supervisory systems.
w. Approvals of Health Department or FDA as applicable.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

A. Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and modifications to Project Record Documents as they occur.

B. Maintenance of Record Documents and Samples: Store Record Documents and Samples in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Repair or reproduce torn or dirty sheets. Provide access to Project Record Documents for COTR's reference during normal working hours.

END OF SECTION 017839

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SECTION 024119 - SELECTIVE STRUCTURE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings, Contract Provisions, Special Provisions, Supplementary Conditions, and other Division 1 Specification Sections apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Demolition and removal of selected portions of building or structure.

B. Related Sections include the following:

1. Division 01 Section "Summary" for use of the premises and phasing requirements.
2. Division 01 Section "Photographic Documentation" for pre-construction photographs taken before selective demolition.
3. Division 01 Section "Temporary Facilities and Controls" for temporary construction and environmental-protection measures for selective demolition operations.
4. Division 01 Section “Quality Requirements” for professional engineer qualifications.
5. Division 01 Section "Cutting and Patching" for cutting and patching procedures for selective demolition operations.

1.3 DEFINITIONS

A. Remove: Detach items from existing construction and legally dispose of them off airport property, unless indicated to be removed and salvaged or removed and reinstalled.

B. Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.

C. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.4 MATERIALS OWNERSHIP

1. Coordinate with the Authority's Archaeologist and Historic Preservation Coordinator, who will establish special procedures for removal and salvage.

B. Pre-demolition Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." Review methods and procedures related to selective demolition including, but not limited to, the following:

1. Inspect and discuss condition of construction to be selectively demolished.
2. Review structural load limitations of existing structure and evaluate structural safety.
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.

1.5 PROJECT CONDITIONS

A. The Authority and tenants will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so the Authority's and tenants' operations will not be disrupted. Provide not less than 72 hours' notice to COTR of activities that will affect the Authority's and tenants' operations.

B. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities.

1. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from COTR.

C. The Authority assumes no responsibility for condition of areas to be selectively demolished.

1. The Authority as far as practical will maintain conditions existing at time of inspection for proposal purposes.

D. Hazardous Materials: For additional information regarding hazardous materials refer to Section “Supplementary Conditions”. In addition coordinate with the Authority’s Building Codes/Environmental Department through the Authority Project Manager.

E. Storage or sale of removed items or materials on airport property 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.

1.6 WARRANTY

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials so as not to void existing warranties.

1. If possible, retain original installer or fabricator to patch the exposed Work listed below that is damaged during selective demolition. If it is impossible to engage original installer or fabricator, engage another recognized experienced and specialized firm.
   a. Roofing.
   b. Window wall system.
   c. Stucco and ornamental plaster.

1.7 DAMAGES AND PRE-EXISTING CONDITIONS

A. For additional requirements regarding damages and pre-existing conditions, see "Supplementary Conditions."

PART 2 - PRODUCTS

2.1 REPAIR MATERIALS

A. Use repair materials identical to existing materials.

1. If identical materials are unavailable or cannot be used for exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.
2. Use materials whose installed performance equals or surpasses that of existing materials.

B. Comply with material and installation requirements specified in individual Specification Sections.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.

B. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.

C. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to COTR.

D. Engage a professional engineer to survey condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective demolition operations.

E. Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs.

1. Comply with requirements specified in Division 1 Section "Photographic Documentation."
2. Before selective demolition or removal of existing building elements that will be reproduced or duplicated in final Work, make permanent record of measurements, materials, and construction details required to make exact reproduction.

F. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities

3.2 PREPARATION

A. 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.

1. Comply with requirements for access and protection specified in Division 01 Section "Temporary Facilities and Controls."

B. Temporary Facilities: 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. Comply with requirement for temporary enclosures, dust control, heating, and cooling specified in Division 1 Section "temporary Facilities and Controls."

C. Temporary Shoring: Provide and maintain shoring, bracing, or structural support to preserve stability and prevent movement, settlement, or collapse of construction 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, as designed by Contractor's professional engineer.

3.3 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, to minimize disturbance of adjacent surfaces. 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 fire watch and portable fire-suppression devices during flame-cutting operations at all levels exposed to cutting operations and debris.

5. Obtain written approval from COTR before use of open flame. Obtain a welding/cutting permit from the Code Enforcement Division of the Metropolitan Washington Airports Authority Fire and Rescue Department before use of open flame.
6. Maintain adequate ventilation when using cutting torches.
7. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off of Airport property.
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.
11. Return elements of construction and surfaces that are to remain to condition existing before selective demolition operations began.

B. Existing Facilities: Comply with the Authority's requirements for using and protecting elevators, stairs, walkways, loading docks, building entries, and other building facilities during selective demolition operations.

C. Removed and Reinstalled Items: Comply with the following:

1. Clean and repair items to functional condition adequate for intended reuse. Paint equipment to match new equipment.
2. Protect items from damage during transport and storage.
3. 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.

D. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition.

3.4 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

A. Window-wall components: Remove aluminum head cover using existing fasteners. Female receptors are to be re-used in place, so care must be exercises to avoid damaging threads.

B. Flexible Flashings: Remove flexible flashings once any and all restraining items (cover plates, etc) are removed. Use hand tools to remove from reglets.

3.5 DISPOSAL OF DEMOLISHED MATERIALS

A. General: Except for items or materials indicated to be, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill.

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 Division 1 Section "Construction Waste Management."

B. Burning: Do not burn demolished materials.

C. Disposal: Transport demolished materials off the Authority's property and legally dispose of them.

3.6 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 024119

SECTION 030130 - MAINTENANCE OF CAST-IN-PLACE CONCRETE

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. Removal of deteriorated concrete and subsequent replacement and patching where rebar has become exposed at the expansion joints.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product. Include construction details, material descriptions, chemical composition, physical properties, test data, and mixing, preparation, and application instructions.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For installers and manufacturers.

B. Material Certificates: For each type of portland cement aggregate supplied for mixing or adding to products at Project site.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Each cementitious patching-mortar manufacturer shall employ factory-trained technical representatives who are available for consultation and Project-site inspection and assistance at no additional cost.

B. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer to apply packaged patching-mortar materials.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Comply with manufacturer's written instructions for minimum and maximum temperature requirements and other conditions for storage.

B. Store cementitious materials off the ground, under cover, and in a dry location.

C. Store aggregates covered and in a dry location; maintain grading and other required characteristics and prevent contamination.

1.7 FIELD CONDITIONS

A. Cold-Weather Requirements for Cementitious Materials: Do not apply unless concrete-surface and air temperatures are above 40 deg F and will remain so for at least 48 hours after completion of Work.

B. Hot-Weather Requirements for Cementitious Materials: Protect repair work when temperature and humidity conditions produce excessive evaporation of water from patching materials. Provide artificial shade and wind breaks, and use cooled materials as required. Do not apply to substrates with temperatures of 90 deg F and above.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Source Limitations: Obtain each color, grade, finish, type, and variety of product from single source with resources to provide products of consistent quality in appearance and physical properties.

B. VOC Content: Provide materials that comply with VOC limits of authorities having jurisdiction.

2.2 BONDING AGENTS

A. Mortar Scrub Coat: Mix consisting of 1 part portland cement and 1 part fine aggregate complying with ASTM C 144 except 100 percent passing a No. 16 sieve.

2.3 PATCHING MORTAR

A. Patching Mortar, General:

1. Only use patching mortars that are recommended by manufacturer for each applicable horizontal, vertical, or overhead use orientation.

B. Job-Mixed Patching Mortar: 1 part portland cement and 2-1/2 parts fine aggregate complying with ASTM C 144, except 100 percent passing a No. 16 sieve.

C. Cementitious Patching Mortar: Packaged, dry mix for repair of concrete.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. BASF Construction Chemicals - Building Systems.
b. CGM, Incorporated.
c. Kaufman Products, Inc.
d. Sika Corporation; Construction Product Division.

D. Polymer-Modified, Cementitious Patching Mortar: Packaged, dry mix for repair of concrete and that contains a non-redispersible latex additive as either a dry powder or a separate liquid that is added during mixing.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. CGM, Incorporated.
b. Kaufman Products, Inc.
c. Sika Corporation; Construction Product Division.

2.4 OTHER MATERIALS

A. Corrosion-Inhibiting Treatment: Waterborne solution of alkaline corrosion-inhibiting chemicals for concrete-surface application that penetrates concrete by diffusion and forms a protective film on steel reinforcement.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
a. CGM, Incorporated.
b. Kaufman Products, Inc.
c. Sika Corporation; Construction Product Division

2.5 MIXES

A. General: Mix products, in clean containers, according to manufacturer's written instructions.

1. Do not add water, thinners, or additives unless recommended by manufacturer.
2. When practical, use manufacturer's premeasured packages to ensure that materials are mixed in proper proportions. When premeasured packages are not used, measure ingredients using graduated measuring containers; do not estimate quantities or use shovel or trowel as unit of measure.
3. Do not mix more materials than can be used within time limits recommended by manufacturer. Discard materials that have begun to set.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Notify COTR seven days in advance of dates when areas of deteriorated or delaminated concrete and deteriorated reinforcing bars will be located.

B. Locate areas of deteriorated or delaminated concrete using hammer or chain-drag sounding and mark boundaries. Mark areas for removal by simplifying and squaring off boundaries.

C. Perform surveys as the Work progresses to detect hazards resulting from concrete-maintenance work.

3.2 PREPARATION

A. Preparation for Removal of Deteriorated Concrete: Examine construction to be repaired to determine best methods to safely and effectively perform concrete maintenance work. Examine adjacent work to determine what protective measures will be necessary. Make explorations, probes, and inquiries as necessary to determine condition of construction to be removed in the course of repair.

B. Protect persons, motor vehicles, surrounding surfaces of building being restored, building site, plants, and surrounding buildings from harm resulting from concrete maintenance work.

1. Comply with each product manufacturer's written instructions for protections and precautions. Protect against adverse effects of products and procedures on people and adjacent materials, components, and vegetation.
2. Use only proven protection methods appropriate to each area and surface being protected.
3. Provide barricades, barriers, and temporary directional signage to exclude public from areas where concrete maintenance work is being performed.
4. Erect temporary protective covers over walkways and at points of pedestrian and vehicular entrance and exit that must remain in service during course of concrete maintenance work.
5. Contain dust and debris generated by concrete maintenance work and prevent it from reaching the public or adjacent surfaces.
6. Use water-mist sprinkling and other wet methods to control dust only with adequate, approved procedures and equipment that ensure that such water will not create a hazard or adversely affect other building areas or materials.
7. Protect adjacent surfaces and equipment by covering them with heavy polyethylene film and waterproof masking tape. If practical, remove items, store, and reinstall after potentially damaging operations are complete.
8. Neutralize and collect alkaline and acid wastes for disposal off Owner's property.
9. Dispose of debris and runoff from operations by legal means and in a manner that prevents soil erosion, undermining of paving and foundations, damage to landscaping, and water penetration into building interiors.

C. Concrete Removal:
1. Remove deteriorated and delaminated concrete by breaking up and dislodging from reinforcement.

2. Remove additional concrete if necessary to provide a depth of removal of at least 1/2 inch over entire removal area.
3. Where half or more of the perimeter of reinforcing bar is exposed, bond between reinforcing bar and surrounding concrete is broken, or reinforcing bar is corroded, remove concrete from entire perimeter of bar and to provide at least a 3/4-inchclearance around bar.
4. Test areas where concrete has been removed by tapping with hammer, and remove additional concrete until unsound and disbonded concrete is completely removed.
5. Provide surfaces with a fractured profile of at least 1/8 inch that are approximately perpendicular or parallel to original concrete surfaces. At columns and walls, make top and bottom surfaces level unless otherwise directed.
6. Thoroughly clean removal areas of loose concrete, dust, and debris.

D. Reinforcing-Bar Preparation: Remove loose and flaking rust from reinforcing bars by wire brushing until only tightly adhered light rust remains.

E. Surface Preparation for Corrosion-Inhibiting Treatment: Clean concrete to remove dirt, oils, films, and other materials detrimental to treatment application.
1. Allow surface to dry before applying corrosion-inhibiting treatment.

3.3 APPLICATION

A. General: Comply with manufacturer's written instructions and recommendations for application of products, including surface preparation.

B. Mortar Scrub Coat for Job-Mixed Patching Mortar and Concrete Dampen repair area and surrounding concrete 6 inches beyond repair area. Remove standing water and apply scrub coat with a brush, scrubbing it into surface and thoroughly coating repair area. If scrub coat dries, recoat before placing patching mortar or concrete.

C. Placing Patching Mortar: Place as follows unless otherwise recommended in writing by manufacturer:

1. Provide forms where necessary to confine patch to required shape.
2. Wet substrate and forms thoroughly and then remove standing water.
3. Pretreatment: Apply specified mortar scrub coat General Placement: Place patching mortar by troweling toward edges of patch to force intimate contact with edge surfaces. For large patches, fill edges first and then work toward center, always troweling toward edges of patch. At fully exposed reinforcing bars, force patching mortar to fill space behind bars by compacting with trowel from sides of bars.
4. Vertical Patching: Place material in lifts of not more than 1 inch nor less than 1/8 inch Do not feather edge.
5. Overhead Patching: Place material in lifts of not more than 1 inch nor less than 1/8 inch Do not feather edge.
6. Consolidation: After each lift is placed, consolidate material and screed surface.
7. Multiple Lifts: Where multiple lifts are used, score surface of lifts to provide a rough surface for placing subsequent lifts. Allow each lift to reach final set before placing subsequent lifts.
8. Finishing: Allow surfaces of lifts that are to remain exposed to become firm and then finish to a surface matching adjacent concrete.

9. Curing: Wet-cure cementitious patching materials, including polymer-modified cementitious patching materials, for not less than seven days by water-fog spray or water-saturated absorptive cover.

D. Corrosion-Inhibiting Treatment: Apply by brush, roller, or airless spray in two coats at manufacturer's recommended application rate. Remove film of excess treatment by high-pressure washing before patching treated concrete.

PART 4 - CONTRACTOR'S QUALITY CONTROL REQUIREMENTS

4.1 GENERAL

A. Comply with applicable provisions of Division 01 Section "Quality Requirements" for requirements for Contractor's Quality Control Program.

END OF SECTION 030130

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. Mineral-wool insulation at window head.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Sample: For each type of product indicated.
   1. 12”x 12” sample of blanket insulation
   2. Example of typical insulation fasteners

1.4 INFORMATIONAL SUBMITTALS

A. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for each product.

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.

1.6 QUALITY ASSURANCE

A. Mockups: Install Insulation in one full window bay as shown on Drawings.

   1. Approved mockups may become part of the completed Work if approved by COTR
   2. Installation of Window Head Flashing may not proceed until insulation mock-up is approved by COTR.

B. Preinstallation Conference: Conduct conference at Project site.

1. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
2. Review methods and procedures related to Insulation installation, including manufacturer's written instructions.
3. Examine existing conditions for compliance with requirements, including suitability for fastening/adhesion as shown on the Drawings.

PART 2 - PRODUCTS

2.1 MINERAL-WOOL BLANKET INSULATION

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Fibrex Insulations Inc.
2. Owens Corning.
3. Roxul Inc.

B. Reinforced-Foil-Faced, Mineral-Wool Blanket Insulation: ASTM C 665, Type III (reflective faced), Class A (faced surface with a flame-spread index of 25 or less per ASTM E 84); Category 1 (membrane is a vapor barrier), faced with foil scrim, foil-scrim kraft, or foil-scrim polyethylene.

2.2 INSULATION FASTENERS

A. Adhesively Attached, Spindle-Type Anchors: Plate welded to projecting spindle; capable of holding insulation of specified thickness securely in position indicated with self-locking washer in place.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. AGM Industries, Inc.; Series T TACTOO Insul-Hangers.
b. Gemco; Spindle Type.

B. Anchor Adhesive: Product with demonstrated capability to bond insulation anchors securely to substrates indicated without damaging insulation, fasteners, and substrates.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. AGM Industries, Inc.; TACTOO Adhesive.
b. Gemco; Tuff Bond Hanger Adhesive.

PART 3 - EXECUTION

3.1 PREPARATION

A. Clean substrates of substances that are harmful to insulationor that interfere with insulation attachment.

3.2 INSTALLATION, GENERAL

A. Comply with insulation manufacturer's written instructions applicable to products and applications indicated.

B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed to ice, rain, or snow at any time.

C. Extend insulation to envelop entire area to be insulated. Cut and fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.

D. Provide sizes to fit applications indicated and selected from manufacturer's standard thicknesses, widths, and lengths. Apply single layer of insulation units to produce thickness indicated unless multiple layers are otherwise shown or required to make up total thickness.

3.3 INSTALLATION OF INSULATION FOR CONCRETE SUBSTRATES

A. Install board insulation on concrete substrates by adhesively attached, spindle-type insulation anchors as follows:

1. Fasten insulation anchors to concrete substrates with insulation anchor adhesive according to anchor manufacturer's written instructions. Space anchors according to insulation manufacturer's written instructions for insulation type, thickness, and application indicated.
2. Apply insulation standoffs to each spindle to create cavity width indicated between concrete substrate and insulation.
3. After adhesive has dried, install board insulation by pressing insulation into position over spindles and securing it tightly in place with insulation-retaining washers, taking care not to compress insulation below indicated thickness.
4. Where insulation will not be covered by other building materials, apply capped washers to tips of spindles.

3.4 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.

PART 4 - CONTRACTOR'S QUALITY CONTROL REQUIREMENTS

4.1 GENERAL

A. Comply with applicable provisions of Division 01 Section "Quality Requirements" for requirements for Contractor's Quality Control Program.

END OF SECTION 072100

SECTION 077129 - MANUFACTURED ROOF EXPANSION JOINTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Bellows-type roof expansion joints.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For roof expansion joints.

1. Include plans, elevations, sections, and attachment details.
2. Include details of splices, intersections, transitions, fittings, method of field assembly, and location and size of each field splice.
3. Provide isometric drawings of intersections, terminations, and changes in joint direction or planes, depicting how components interconnect with each other and adjacent construction to allow movement and achieve waterproof continuity.

C. Samples: For each exposed product and for each color specified, 6 inches (150 mm) in size.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Sample Warranties: For special warranties.

1.6 WARRANTY

A. Special Warranty: Manufacturer and Installer agree to repair or replace roof expansion joints and components that leak, deteriorate beyond normal weathering, or otherwise fail in materials or workmanship within specified warranty period.

1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. General: Roof expansion joints shall withstand exposure to weather, remain watertight, and resist the movements indicated without failure, rattling, leaking, or fastener disengagement due to defective manufacture, fabrication, installation, or other defects in construction.

B. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes to prevent buckling, opening of joints, hole elongation, overstressing of components, failure of joint seals, failure of connections, and other detrimental effects.

1. Temperature Change: 120 deg F (67 deg C), ambient; 180 deg F (100 deg C) material surfaces.

2.2 BELLOWS-TYPE ROOF EXPANSION JOINTS

A. Source Limitations: Obtain bellows-type roof expansion joints approved by roofing manufacturer and that are part of roofing membrane warranty.

B. Extruded Bellows Roof Expansion Joint : Manufactured, continuous, waterproof, joint-cover assembly; consisting of elastomeric seal; splicing units, adhesives, and other components as recommended by roof-expansion-joint manufacturer for complete installation. Fabricate each assembly specifically for installation configuration indicated on Drawings.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. C/S Group.
b. GAF.
c. MM Systems Corporation.

2.3 MATERIALS

A. Fabric-Reinforced Thermoplastic Polyolefin Sheet: ASTM D 6878, internally fabric or scrim reinforced, uniform, flexible TPO sheet.
1. Thickness: 55 mil
2. Color: white

B. Aluminum: ASTM B 209 (ASTM B 209M) for sheet and plate, ASTM B 221 (ASTM B 221M) for extrusions; alloy as standard with manufacturer for finish required, with temper to suit forming operations and performance required.

1. Apply manufacturer's standard protective coating on aluminum surfaces to be placed in contact with cementitious or preservative-treated wood materials.
2. Mill Finish: As manufactured.

C. Adhesives: As recommended by roof-expansion-joint manufacturer and with a VOC content of **70** g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

D. Adhesives: As recommended by roof-expansion-joint manufacturer and that comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

E. Fasteners: Manufacturer's recommended fasteners, suitable for application and designed to withstand design loads.

1. Exposed Fasteners: Gasketed. Use screws with hex washer heads matching color of material being fastened.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, to verify actual locations, dimensions, and other conditions affecting performance of the Work.

B. Examine roof-joint openings, inside surfaces of parapets, and expansion-control joint systems that interface with roof expansion joints, for suitable conditions where roof expansion joints will be installed.

C. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Comply with manufacturer's written instructions for handling and installing roof expansion joints.

1. Anchor roof expansion joints securely in place, with provisions for required movement. Use fasteners, protective coatings, sealants, and miscellaneous items as required to complete roof expansion joints.
2. Install roof expansion joints true to line and elevation; with limited oil-canning and without warping, jogs in alignment, buckling, or tool marks.

3. Provide for linear thermal expansion of roof expansion joint materials.
4. Provide uniform profile of roof expansion joint throughout its length; do not stretch or squeeze membranes.
5. Provide uniform, neat seams.
6. Install roof expansion joints to fit substrates and to result in watertight performance.
7. Torch cutting of roof expansion joints is not permitted.
8. Do not use graphite pencils to mark aluminum surfaces.

B. Splices: Splice roof expansion joints with materials provided by roof-expansion-joint manufacturer for this purpose, to provide continuous, uninterrupted, and waterproof joints.

C. Metal Protection: Protect metals against galvanic action by separating dissimilar metals from contact with each other or with corrosive substrates by painting contact surfaces with bituminous coating or by other permanent separation as recommended by manufacturer.

3.3 PROTECTION

A. Protect roof expansion joints from foot traffic, displacement, or other damage.

B. Remove and replace roof expansion joints and components that become damaged by moisture or otherwise.

PART 4 - CONTRACTOR'S QUALITY CONTROL REQUIREMENTS

4.1 GENERAL

A. Comply with applicable provisions of Division 01 Section "Quality Requirements" for requirements for Contractor's Quality Control Program.

4.2 PERFORMANCE REQUIREMENTS

A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.

B. Field Quality-Control Testing: Perform the following test on roof expansion joints.

1. Water-Spray Test: Expansion joint shall be exposed to a continuous stream of water (min 35 psi) and shall not evidence water penetration.
   a. Perform tests in each test area as directed by COTR Perform at least four tests.

C. Prepare test and inspection reports.

END OF SECTION 077129

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. Preformed joint sealants.

1.3 PRECONSTRUCTION TESTING

A. Preconstruction Compatibility and Adhesion Testing: Submit to joint-sealant manufacturers, for testing indicated below, samples of materials that will contact or affect joint sealants.

1. Use manufacturer's standard test method to determine whether priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of joint sealants to joint substrates.
2. Submit not fewer than eight pieces of each kind of material, including joint substrates, shims, joint-sealant backings, secondary seals, and miscellaneous materials.
3. Schedule sufficient time for testing and analyzing results to prevent delaying the Work.
4. For materials failing tests, obtain joint-sealant manufacturer's written instructions for corrective measures including use of specially formulated primers.
5. Testing will not be required if joint-sealant manufacturers submit joint preparation data that are based on previous testing, not older than 24 months, of sealant products for adhesion to, and compatibility with, joint substrates and other materials matching those submitted.

B. Preconstruction Field-Adhesion Testing: Before installing sealants, field test their adhesion to Project joint substrates as follows:

1. Locate test joints where indicated on Project or, if not indicated, as directed by Architect.
2. Conduct field tests for each application indicated below:

    a. Each kind of sealant and joint substrate indicated.

3. Notify Architect seven days in advance of dates and times when test joints will be erected.
4. Arrange for tests to take place with joint-sealant manufacturer's technical representative present.

a. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.

1) For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.

5. Report whether sealant failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. For sealants that fail adhesively, retest until satisfactory adhesion is obtained.
6. Evaluation of Preconstruction Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from testing, in absence of other indications of noncompliance with requirements, will be considered satisfactory. Do not use sealants that fail to adhere to joint substrates during testing.

1.4 ACTION SUBMITTALS

A. Product Data: For each joint-sealant product indicated.

B. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants Delete "Samples for Initial Selection" Paragraph above if colors and other characteristics are preselected and specified or scheduled. Retain first paragraph below with or without above.

C. Samples for Verification: For each kind and color of joint sealant required, provide Samples with joint sealants in 1/2-inch wide joints formed between two 6-inch long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.

D. Joint-Sealant Schedule: Include the following information:

1. Joint-sealant application, joint location, and designation.
2. Joint-sealant manufacturer and product name.
3. Joint-sealant formulation.
4. Joint-sealant color.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified Installer.

B. Product Certificates: For each kind of joint sealant and accessory, from manufacturer.

C. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, indicating that sealants comply with requirements.

D. Preconstruction Field-Adhesion Test Reports: Indicate which sealants and joint preparation methods resulted in optimum adhesion to joint substrates based on testing specified in "Preconstruction Testing" Article.

E. Field-Adhesion Test Reports: For each sealant application tested.

F. Warranties: Sample of special warranties.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.

B. Source Limitations: Obtain each kind of joint sealant from single source from single manufacturer.

C. Product Testing: Test joint sealants using a qualified testing agency.

1. Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1021 to conduct the testing indicated.

D. Mockups: Install sealant in mockups of assemblies specified in other Sections that are indicated to receive joint sealants specified in this Section. Use materials and installation methods specified in this Section.

E. Preinstallation Conference: Conduct conference at Project site.

1.7 PROJECT 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: Manufacturer's standard form in which Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: Two years from date of Substantial Completion.

B. Special Manufacturer's Warranty: Manufacturer's standard form in which joint-sealant manufacturer agrees to furnish joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: 2 years from date of Substantial Completion.

C. Special warranties specified in this article exclude deterioration or failure of joint sealants from the following:
   1. Disintegration of joint substrates from natural causes exceeding design specifications.
   2. Mechanical damage caused by individuals, tools, or other outside agents.
   3. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

PART 2 - PRODUCTS

2.1 MATERIALS, 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. Liquid-Applied Joint Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied joint sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.

C. Stain-Test-Response Characteristics: Where sealants are specified to be nonstaining to porous substrates, provide products that have undergone testing according to ASTM C 1248 and have not stained porous joint substrates indicated for Project.

D. Colors of Exposed Joint Sealants: As selected by COTR from manufacturer's full range.

2.2 SILICONE JOINT SEALANTS

A. Single-Component, Nonsag, Neutral-Curing Silicone Joint Sealant: ASTM C 920, Type S, Grade NS, Class 100/50, for Use NT.

   1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

      a. Dow Corning Corporation; 790
      b. GE Advanced Materials - Silicones; SilPruf LM SCS2700.
      c. Sika Corporation, Construction Products Division; SikaSil-C990.
      d. Tremco Incorporated; Spectrem 1

2.3 PREFORMED JOINT SEALANTS

A. Preformed Foam Joint Sealant: Pre-coated, preformed, pre-compressed, self-expanding, sealant system. Expanding foam to be cellular foam impregnated with a water-based, non-drying, 100% acrylic dispersion. Seal shall combine factory-applied, low-modulus silicone and a backing of acrylic-impregnated expanding foam into a unified hybrid sealant system.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

    a. MM Systems; ColorJoint / SIF Series.
    b. EMSEAL Joint Systems, Ltd.; Seismic Colorseal.
    c. Watson Bowman Acme.; Seismic WeatherSeal

2.4 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 joint-sealant performance.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:

1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
2. Clean porous joint substrate surfaces by brushing, grinding, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include the following:

    a. Concrete.

3. Remove laitance and form-release agents from concrete.
4. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:

    a. Metal.
    b. Glass.
    c. Porcelain enamel.

B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.

B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

C. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

1. Do not leave gaps between ends of sealant backings.
2. Do not stretch, twist, puncture, or tear sealant backings.
3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.

D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:

1. Place sealants so they directly contact and fully wet joint substrates.
2. Completely fill recesses in each joint configuration.
3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form

smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.

1. Remove excess sealant from surfaces adjacent to joints.
2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
3. Provide concave joint profile per Figure 8A in ASTM C 1193, unless otherwise indicated.

    a. Use masking tape to protect surfaces adjacent to recessed tooled joints.

G. Installation of Preformed Foam Sealants: Install each length of sealant immediately after removing protective wrapping. Do not pull or stretch material. Produce seal continuity at ends, turns, and intersections of joints. For applications at low ambient temperatures, apply heat to sealant in compliance with sealant manufacturer's written instructions.

3.4 FIELD QUALITY CONTROL

A. Field-Adhesion Testing: Field test joint-sealant adhesion to joint substrates as follows:

1. Extent of Testing: Test completed and cured sealant joints as follows:

    a. Perform 10 tests for the first 1000 feet of joint length for each kind of sealant and joint substrate.
    b. Perform 1 test for each 1000 feet of joint length thereafter or 1 test per each floor per elevation.

2. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.

    a. For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.

3. Inspect tested joints and report on the following:

    a. Whether sealants filled joint cavities and are free of voids.
    b. Whether sealant dimensions and configurations comply with specified requirements.
    c. Whether sealants in joints connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. Compare these results to determine if adhesion passes sealant manufacturer's field-adhesion hand-pull test criteria.

4. Record test results in a field-adhesion-test log. Include dates when sealants were installed, names of persons who installed sealants, test dates, test locations, whether joints were primed, adhesion results and percent elongations, sealant fill, sealant configuration, and sealant dimensions.

5. Repair sealants pulled from test area by applying new sealants following same procedures used originally to seal joints. Ensure that original sealant surfaces are clean and that new sealant contacts original sealant.

B. Evaluation of Field-Adhesion Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.

3.5 CLEANING

A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.6 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

3.7 JOINT-SEALANT SCHEDULE

A. Single-Component, Nonsag, Neutral-Curing Silicone Joint Sealant: ASTM C 920, Type S, Grade NS, Class 100/50, for Use NT:
   1. Basis-of-Design Product: Sika Corporation, Construction Products Division; SikaSil-C990
   2. Applications:
      a. In conjunction with Preformed Foam Joint Sealant and
      b. Exterior conditions as indicated on the drawings

B. Preformed Foam Joint Sealant
   1. Basis-of-Design Product: EMSEAL Joint Systems, Ltd; Seismic Colorseal

   2. Applications:
      a. Existing Expansion Joints.

PART 4 - CONTRACTOR'S QUALITY CONTROL REQUIREMENTS

4.1 GENERAL

A. Comply with applicable provisions of Division 01 Section "Quality Requirements" for requirements for Contractor's Quality Control Program.

B. The following describes the minimum inspection and testing required in the Contractor's Quality Control (CQC) Plan and Program for the work of this Section and is for CQC only. The implementation of the Contractor Quality Control Program does not relieve the Contractor from their responsibility to provide the work in accordance with the Contract Documents, applicable codes, regulations, and governing authorities. The CQC Plan and Program shall include, but not be limited to, the following testing and inspection elements. The Contractor shall engage an independent testing agency to perform the sampling, testing, and inspection specified below.

4.2 SUBMITTALS

A. Qualification Data: For testing agency.

B. Field-Adhesion Test Reports: For each sealant application tested.

4.3 QUALITY ASSURANCE

A. Testing Agency Qualifications: An independent testing agency qualified according to ASTM C1021 to conduct the testing indicated.

4.4 FIELD QUALITY CONTROL

A. Field-Adhesion Testing: Field test joint-sealant adhesion to joint substrates as follows:

1. Extent of Testing: Test completed and cured sealant joints as follows:

    a. Perform 10 tests for the first 1000 feet (300 m) of joint length for each kind of sealant and joint substrate.
    b. Perform 1 test for each 1000 feet (300 m)of joint length thereafter or 1 test per each floor per elevation.

2. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.

    a. For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.

3. Inspect tested joints and report on the following:

a. Whether sealants filled joint cavities and are free of voids.
b. Whether sealant dimensions and configurations comply with specified requirements.
c. Whether sealants in joints connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. Compare these results to determine if adhesion passes sealant manufacturer's field-adhesion hand-pull test criteria.

4. Record test results in a field-adhesion-test log. Include dates when sealants were installed, names of persons who installed sealants, test dates, test locations, whether joints were primed, adhesion results and percent elongations, sealant fill, sealant configuration, and sealant dimensions.
5. Repair sealants pulled from test area by applying new sealants following same procedures used originally to seal joints. Ensure that original sealant surfaces are clean and that new sealant contacts original sealant.

B. Evaluation of Field-Adhesion Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.

END OF SECTION 079200

SECTION 079500 - WINDOW HEAD FLASHING

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 window head flashing systems.

B. Related Requirements:
   1. Section 079200 "Joint Sealants" for liquid-applied joint sealants and for elastomeric sealants without metal frames.

1.3 ACTION SUBMITTALS

A. Shop Drawings: For each window head flashing system specified. Include plans, elevations, sections, details, splices, blockout requirement, attachments to other work, and line diagrams showing entire route of each window head flashing system. Where window head flashing systems change planes, provide isometric or clearly detailed drawing depicting how components interconnect.

B. Samples: For each exposed window head flashing system, and for each color and texture specified, full width by 6 inches (150 mm) long in size.

C. Product Schedule: Prepared by or under the supervision of the supplier. Include the following information in tabular form:

   1. Manufacturer and model number for each window head flashing system.
   2. Window head flashing system location cross-referenced to Drawings.
   3. Nominal joint width.
   4. Movement capability.
   5. Materials, colors, and finishes.
   6. Product options.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.

B. Mockups: Install Window Head Flashing in one full window bay as shown on Drawings.

1. Approved mockups may become part of the completed Work if approved by COTR

C. Preinstallation Conference: Conduct conference at Project site.

1. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
2. Review methods and procedures related to Flashing installation, including manufacturer's written instructions.
3. Examine existing conditions for compliance with requirements, including suitability for fastening as shown on the Drawings.

PART 2 - PRODUCTS

2.1 SYSTEM DESCRIPTION

A. General: Provide window head flashing systems of design, basic profile, materials, and operation indicated. Provide units with capability to accommodate variations in adjacent surfaces.

1. Furnish full-length units for each window bay. Install with hairline mitered corners where window head flashing systems change direction or abut other materials.
2. Include factory-fabricated closure materials and transition pieces, T-joints, corners, curbs, cross-connections, and other accessories as required to provide continuous window head flashing systems.

2.2 EXTERIOR WINDOW HEAD FLASHING SYSTEMS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
1. Construction Specialties, Inc.
2. MM Systems Corporation.
3. Schul International Company, Inc.
4. Tremco Incorporated.
5. Watson Bowman Acme Corp.; a BASF Construction Chemicals business.

B. Source Limitations: Obtain window head flashing systems from single source from single manufacturer.

C. Wall-to-Soffit

1. Basis-of-Design Product: FGS by MM Systems Corporation
2. Design Criteria:
   a. Movement Capability: As indicated on Drawings

2.3 MATERIALS

A. Aluminum: ASTM B 221 (ASTM B 221M), Alloy 6063-T5 for extrusions; ASTM B 209 (ASTM B 209M), Alloy 6061-T6 for sheet and plate.

1. Apply manufacturer's standard protective coating on aluminum surfaces to be placed in contact with cementitious materials.
2. Provide holes for fasteners as indicated.
3. Provide rounded edge.

B. Fasteners:
1. General: Unless otherwise indicated, provide Type 304 stainless-steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B 633 or ASTM F 1941 (ASTM F 1941M), Class Fe/Zn 5, at exterior walls. Select fasteners for type, grade, and class required.
   a. Provide stainless-steel fasteners for fastening aluminum.
2. Stainless-Steel Bolts and Nuts: Regular hexagon-head annealed stainless-steel bolts, ASTM F 593 (ASTM F 738M); with hex nuts, ASTM F 594 (ASTM F 836M); and, where indicated, flat washers; Alloy Group 1 (A1).
3. Anchor Bolts: ASTM F 1554, Grade 36, of dimensions indicated; with nuts, ASTM A 563; and, where indicated, flat washers.

4. Hot-dip galvanize or provide mechanically deposited, zinc coating where item being fastened is indicated to be galvanized.
5. Machine Screws: ASME B18.6.3 (ASME B18.6.7M).
6. Plain Washers: Round, ASME B18.22.1 (ASME B18.22M).
7. Lock Washers: Helical, spring type, ASME B18.21.1 (ASME B18.21.2M).

C. Accessories: Manufacturer's standard anchors, clips, fasteners, adhesives,set screws, spacers, and other accessories compatible with material in contact, as indicated or required for complete installations.

D. Elastomeric membrane - continuous fabric reinforced 60-mil uncured neoprene.

1.	Tensile strength :	1000 (psi)
2.	Elongation :	250%
3.	Fabric Reinforcement:	4 ounce polyester cloth
4.	Temperature Range:	-30F to +200F
5.	Hardness Shore A:	70 +/-5
6.	Tear Strength, die C	150 (ppi)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine surfaces where window head flashing systems will be installed for installation tolerances and other conditions affecting performance of work.

1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Prepare substrates according to window head flashing system manufacturer's written instructions.

B. Coordinate and furnish anchorages, setting drawings, and instructions for installing window head flashing systems. Provide fasteners of metal, type, and size to suit type of construction indicated and to provide for secure attachment of window head flashing systems.

3.3 INSTALLATION

A. Comply with manufacturer's written instructions for storing, handling, and installing window head flashing systems and materials unless more stringent requirements are indicated.

B. Metal Frames: Perform cutting, drilling, and fitting required to install window head flashing systems.

1. Install in true alignment and proper relationship to joints and adjoining finished surfaces measured from established lines and levels.
2. Adjust for differences between actual structural gap and nominal design gap due to ambient temperature at time of installation. Notify COTR where discrepancies occur that will affect proper window head flashing system installation and performance.
3. Cut and fit ends to accommodate thermal expansion and contraction of metal without buckling of frames.
4. Repair or grout blockout as required for continuous frame support using nonmetallic, shrinkage-resistant grout.
5. Install frames in continuous contact with adjacent surfaces.

3.4 PROTECTION

A. Do not remove protective covering until finish work in adjacent areas is complete. When protective covering is removed, clean exposed metal surfaces to comply with manufacturer's written instructions.

B. Protect the installation from damage by work of other Sections. Where necessary due to heavy construction traffic, remove and properly store cover plates or seals and install temporary protection over window head flashing systems. Reinstall cover plates or seals prior to Substantial Completion of the Work.

PART 4 - CONTRACTOR'S QUALITY CONTROL REQUIREMENTS

4.1 GENERAL

A. Comply with applicable provisions of Division 01 Section "Quality Requirements" for requirements for Contractor's Quality Control Program

END OF SECTION 079500

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SECTION 092400 - PORTLAND CEMENT PLASTERING

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. Repair of Exterior portland cement plasterwork (stucco) on metal lath.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Samples for Verification: 12 by 12 inches, and prepared on rigid backing.

1.4 QUALITY ASSURANCE

A. Mockups: Repair one area for review and acceptance prior to continuing repairs. Demonstrate aesthetic effects and set quality standards for materials and execution.
   1. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

B. Preinstallation Conference: Conduct conference at Project site.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Store materials inside under cover and keep them dry and protected against damage from weather, direct sunlight, surface contamination, corrosion, construction traffic, and other causes.

1.6 PROJECT CONDITIONS

A. Comply with ASTM C 926 requirements.

B. Exterior Plasterwork:

   1. Apply and cure plaster to prevent plaster drying out during curing period. Use procedures required by climatic conditions, including moist curing, providing coverings, and providing barriers to deflect sunlight and wind.
   2. Apply plaster when ambient temperature is greater than 40 deg F.

3. Protect plaster coats from freezing for not less than 48 hours after set of plaster coat has occurred.

PART 2 - PRODUCTS

2.1 MISCELLANEOUS MATERIALS

A. Water for Mixing: Potable and free of substances capable of affecting plaster set or of damaging plaster, lath, or accessories.

B. Bonding Compound: ASTM C 932.

2.2 PLASTER MATERIALS

A. Portland Cement: ASTM C 150, Type II.

1. Color for Finish Coats: White.

B. Lime: ASTM C 206, Type S; or ASTM C 207, Type S.

C. Sand Aggregate: ASTM C 897.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
   a. QUIKCRETE; QUIKCRETE Finish Coat Stucco, No. 1201.
   b. SonoWall, BASF Wall Systems, Inc.; Thoro Stucco.
   c. USG Corporation; Oriental Exterior Finish Stucco.

2.3 PLASTER MIXES

A. General: Comply with ASTM C 926 for applications indicated.

1. Fiber Content: Add fiber to base-coat mixes after ingredients have mixed at least two minutes. Comply with fiber manufacturer's written instructions for fiber quantities in mixes, but do not exceed 1 lb of fiber/cu. yd. of cementitious materials.

B. Base-Coat Mixes for Use over Metal Lath: Scratch and brown coats for three-coat plasterwork as follows:

1. Portland Cement Mixes:

   a. Scratch Coat: For cementitious material, mix 1 part portland cement and 3/4 to 1-1/2 parts lime. Use 2-1/2 to 4 parts aggregate per part of cementitious material.
   b. Brown Coat: For cementitious material, mix 1 part portland cement and 3/4 to 1-1/2 parts lime. Use 3 to 5 parts aggregate per part of cementitious material, but not less than volume of aggregate used in scratch coat.

C. Job-Mixed Finish-Coat Mixes:

1. Portland Cement Mix: For cementitious materials, mix 1 part portland cement and 1-1/2 to 2 parts lime. Use 1-1/2 to 3 parts aggregate per part of cementitious material.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and substrates, with Installer present, and including welded hollow-metal frames, cast-in anchors, and structural framing, for compliance with requirements and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

C. Identify areas of loose stucco

3.2 PREPARATION

A. Protect adjacent work from soiling, spattering, moisture deterioration, and other harmful effects caused by plastering.

B. Prepare solid substrates for plaster that are smooth or that do not have the suction capability required to bond with plaster according to ASTM C 926.

C. Remove areas of loose or damaged stucco.

3.3 PLASTER APPLICATION

A. General: Comply with ASTM C 926.

1. Do not deviate more than plus or minus 1/4 inch in 10 feet from a true plane in finished plaster surfaces, as measured by a 10-foot straightedge placed on surface.
2. Finish plaster flush with metal frames and other built-in metal items or accessories that act as a plaster ground unless otherwise indicated. Where casing bead does not terminate plaster at metal frame, cut base coat free from metal frame before plaster sets and groove finish coat at junctures with metal.
3. Provide plaster surfaces that are ready to receive field-applied finishes indicated.

B. Plaster Finish Coats: Apply to provide finish to match existing construction.

3.4 PLASTER REPAIRS

A. Repair or replace work to eliminate cracks, dents, blisters, buckles, crazing and check cracking, dry outs, efflorescence, sweat outs, and similar defects and where bond to substrate has failed.

3.5 PROTECTION

A. Remove temporary protection and enclosure of other work. Promptly remove plaster from door frames, windows, and other surfaces not indicated to be plastered. Repair floors, walls, and other surfaces stained, marred, or otherwise damaged during plastering.

PART 4 - CONTRACTOR'S QUALITY CONTROL REQUIREMENTS

4.1 GENERAL

A. Comply with applicable provisions of Division 01 Section "Quality Requirements" for requirements for Contractor's Quality Control Program.

END OF SECTION 092400

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. Exterior portland cement plaster (stucco).

B. Related Requirements:
   1. Section 099600 "Portland Cement Plastering" for exterior stucco.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product. Include preparation requirements and application instructions.

B. Samples for Verification: For each type of paint system and each color and gloss of topcoat.

   1. Submit Samples on rigid backing, 8 inches square.
   2. Step coats on Samples to show each coat required for system.
   3. Label each coat of each Sample.
   4. Label each Sample for location and application area.

C. Product List: For each product indicated, include the following:

   1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.
   2. Printout of current "MPI Approved Products List" for each product category specified, with the proposed product highlighted.
   3. VOC content.

1.4 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 5 gal. of each material and color applied.

1.5 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 specified in Part 3.

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.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.

1. Maintain containers in clean condition, free of foreign materials and residue.
2. Remove rags and waste from storage areas daily.

1.7 FIELD CONDITIONS

A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F

B. Do not apply paints 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: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
1. Benjamin Moore & Co.
2. M.A.B. Paints.
3. PPG Architectural Finishes, Inc.

2.2 PAINT, GENERAL

A. MPI Standards: Provide products that comply with MPI standards indicated and that are listed in its "MPI Approved Products List."

B. Material Compatibility:

1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.

C. VOC Content: Provide materials that comply with VOC limits of authorities having jurisdiction.

D. Colors: To match adjacent construction.

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. Portland Cement Plaster: 12 percent.

C. Portland Cement Plaster Substrates: Verify that plaster is fully cured.

D. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.

E. Proceed with coating application only after unsatisfactory conditions have been corrected.

1. Application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. 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.

B. Concrete Substrates: Remove release agents, curing compounds, efflorescence, and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer's written instructions.

C. Aluminum Substrates: Remove loose surface oxidation.

3.3 APPLICATION

A. Apply paints according to manufacturer's written instructions and recommendations in "MPI Manual."

1. Use applicators and techniques suited for paint and substrate indicated.
2. 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.

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. Portland Cement Plaster Substrates **(PT-1)** :

1. Primer: Acrylic Primer, matching topcoat.
   a. Basis of Design: 90-712 DTM White Primer by PPG
2. Second Coat: Enamel
   a. Basis of Design: 90-474 DTM Satin Enamel by PPG
   b. Color: Modac “Dulles Gray” Musel equivalent 3.8y 8.7/0.3
3. Third Coat: Same as Second Coat

PART 4 - CONTRACTOR’S QUALITY CONTROL REQUIREMENTS

4.1 GENERAL

A. Comply with applicable provisions of Division 01 Section “Quality Requirements” for requirements for Contractor’s Quality Control Program.

END OF SECTION 099113

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