The Authority Provided Specifications are available in both PDF and Microsoft Word. The PDF files are provided as a read only document reflecting all updates made to the specifications during 2014 while the Microsoft Word files, also updated with all changes made in 2014, are ready for editing.

To edit the attached specifications, the hidden text option must be enabled. This allows the specifications editor to view instructions throughout each specification section. To enable the hidden text option, in Word 2003, select “Tools” from the toolbar at top. Within “Tools”, select “Options”. Under “Options” select “View”. Look under “Formatting Marks” and make sure that the “Hidden Text” box is checked. Hidden text should now be visible within the document.

In Word 2008, click on upper left “Office Button”. Click on “Word Options” at bottom of menu. Click on “Display”. Under “always show these formatting marks on the screen” check the “Hidden Text” box. Hidden text should now be visible within the document. Should the A/E use “Track Changes”, please submit the specifications with the “Deletions Hidden” option activated in the Track Changes menu. The A/E should submit one (1) copy of the specifications at each submittal with track changes showing. To obtain electronic copies of the Authority Provided Specifications (Specs), please contact your Authority Contracting Officer or the Authority Contracting Officer’s Technical Representative (COTR).
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Instructions to the Editor are found in the following locations:

**Specification 007300 Supplementary Conditions**
Before Part 1 – General
Before 1.3
Before 1.4
Between 1.4 A and B
Between 1.5 B and C
Before 1.6
Before 1.6 A. 6
Before 1.6 B
Before 1.7
Before 1.9
Before 1.11 B
Before 1.11 I
Before 1.11 L
Before 1.12
Before 1.12 A
Before 1.12 B
Before 1.12 C
Before 1.12 D.1
Before 1.14 D
Before 1.16 B. 1
Before 1.16 F
Before 1.16 I
Before 1.16 K. 1
Before 1.16 K. 6
Before 1.16 P
Before 1.17 A
Before 1.18 A
Before 1.19
Before 1.20 A
Before 1.20 E
Before 1.20 F
Before 1.21
SECTION 007300 — SUPPLEMENTARY CONDITIONS

This Section supplements various articles of the contract provisions or the special provisions and shall be coordinated with these documents. The entire text of this Section, therefore, consists of project-specific example text that shall be modified or deleted to reflect unique conditions and requirements of each individual project. Please note that various Division 01 Sections make reference to this Section. If any Division 01 Section deletes any of the references to this document ensure that this document is modified.

Verify that Section titles referenced in this Section are correct for this Project's Specifications; Section titles may have changed.

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.

Delete below if not applicable. Revise if another contract is to be performed concurrent with this one.

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:

Modify below to suit project conditions, deleting inapplicable items and adding others as required.

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.

Use the above paragraph for Dulles Development Program projects and capital improvement projects at Ronald Reagan Washington National Airport. Use the following paragraph for Construction and Maintenance Improvement Programs (COMIP).

B. Comply with all requirements set forth in the Authority's “Building Codes Manual”. This manual describes Building Codes organization, Construction permitting process, Building Code
inspection process, Certificate of Occupancy requirements, and information regarding elevators, escalators, and moving walks.

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. Comply with requirements indicated in the Traffic Maintenance Plan provided in the contract documents. Obtain COTR's written approval prior to implementing any deviations from the provided plan.

Retain paragraph above and delete below if traffic maintenance plan provided by A/E. Delete paragraph above and retain below if is contractor required to submit his own version of the traffic maintenance plan.

C. 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”.

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

E. 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.

F. 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.

G. 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.

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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.
4. Routine aircraft maintenance.
5. Apron maintenance, snow removal and ice control.

Paragraph below is applicable for Washington Dulles International Airport only. Delete for projects at Ronald Reagan National Airport.


Choose within, nearby or within and nearby.

B. The Work, or a portion thereof, will be performed [within] [and] [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. Ground transportation arrivals/departures.
6. 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.

Delete “Tenant Operational Requirements” if no airport tenants are affected by project operations. Add "Authority offices" should project affect Authority occupied personnel space.

TENANT OPERATIONAL REQUIREMENTS

A. The Work of this Project will be performed in close proximity to tenant-occupied areas. Coordinate and conduct work activities in such fashion that public circulation, tenant operations, and access to the tenant spaces will not be impaired in any manner except as detailed on Contractor's Work Plans. COTR will review and approve in writing all Work Plans.
1.8 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. The removal and disposal of lead-based paint is part of this contract.

D. Aircraft deicing fluids will be encountered in the water (including utility manholes) and in the soils. Concentrations of aircraft deicing fluids in water and soils will range from non-detect to saturation. Aircraft deicing fluids are propylene based Type I and Type IV fluids. The fluids emit an unpleasant odor when the breakdown (biodegradation) is occurring. Follow OSHA requirements while working in aircraft deicing impacted areas. Coordinate with the COTR for obtaining Material Safety Data Sheet (MSDS) for aircraft deicing fluids.

E. Petroleum contaminated soils and water may be encountered during the construction of this project. Petroleum impacted soils range from saturated to 1.0 ppm. Petroleum impacted water ranges from free product to “non-detect.” Maintain the necessary health and safety requirements for all personnel in accordance with OSHA regulations.

1. Do not use petroleum-contaminated soils as backfill around new piping or utilities. Transport petroleum contaminated soils to a location identified by the COTR. Place the contaminated soils on two layers of reinforced 6 mil plastic sheeting, install and maintain sediment and erosion controls, and adequately cover the stockpile to prevent water infiltration.

Additional requirements below may apply if project could have adverse affect on significant archaeological or historical resources. Project designer shall be responsible for coordinating with the Authority and passing requirements on to contractor.

1.9 ARCHAEOLOGICAL AND HISTORICAL FINDINGS

A. Notify immediately, through the COTR, the PMC Archaeology/Historic Preservation Coordinator if subsurface structural features, concentrations of artifacts, rubble, bone/shell, or burnt material are uncovered or otherwise discovered. Prompt reporting will avoid potentially severe problems resulting from the destruction of significant resources and may limit the impact on construction operations and schedules.
1.10 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.

1.11 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 and Ronald Reagan Washington National Airport. [Contractor can expect up to two hours waiting time to clear construction vehicles into the AOA] [Contractor can expect possible short delays clearing 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.

Paragraph below is applicable to Washington Dulles International Airport only. Delete paragraph for projects at Ronald Reagan National Airport or for Washington Dulles International Airport projects not involving access to United States Customs restricted areas.

I. When Work involves need for access to restricted areas under jurisdiction of U.S. Customs & Border Protection (CBP), secure necessary special security clearances to operate in the International Arrivals Building areas as prescribed by the U.S. Customs & Border Protection. Each company working in the CBP area shall apply for and obtain a bond from the CBP.

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

K. 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.

Coordinate most recent information regarding O & Is with Authority Project Manager.

L. Conform to all Orders and Instructions pertaining to vehicle inspection. <Insert further information here.>

Modify below to indicate specific routes or entrance gates as required to suit project.

1.12 MATERIAL HAULING

The following paragraph is applicable at Washington Dulles International Airport and ONLY for work within the AOA.

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.

Edit paragraph below to suit project specific requirements. Coordinate with Authority Project Manager for specific hours of operation. Delete paragraph below for projects at Washington Dulles International Airport if not required.

B. Access and egress to and from the Airport for hauling operations shall be through the entrances indicated. Conduct hauling operations <Insert hours of operation and other requirements and restrictions>.

Edit below to suit project and coordinate with Authority Project Manager.
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.

Add the following subparagraphs when the work includes apron, taxiway or runway construction or reconstruction. Modify paragraph above to reflect the addition of these subparagraphs.

1. For taxiway closures of short duration, provide flagmen, with radio contact with the FAA Airport Traffic Control Tower and the Authority Ramp Control Tower, at taxiway crossing intersections. COTR will determine the number of flagmen required.
2. For long-term taxiway closures, clearly mark, light, and barricade the taxiway closures and haul routes in accordance with FAA and Airport Operations requirements.

E. Notify the COTR at least 72 hours in advance of all closure requirements for scheduled taxiway, taxi lane or roadway closures. Obtain the written approval of the Authority prior to closing or crossing a taxiway, taxi lane or 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. Clean wheels of trucks leaving the Project construction site of all soil and rocks. Provide a truck washing rack on the Project site to minimize the tracking of soil onto paved surfaces.

H. Be responsible for the cost of the immediate cleaning of earth tracking and spills on paved surfaces resulting from the Contractor's operations. Because of the potential for extreme damage to aircraft engines due to the ingestion of foreign objects, maintain on the project mechanical sweeper/vacuum (wet/dry) equipment with nylon brushes complete with operators. Maintain a water truck on site at all times in order to effectively control dust rising from construction activities.

I. Provide sweeper/vacuum equipment with a usable hopper capacity of 6 cubic yards and with a regenerative air capacity of 15,000 CFM. Provide equipment with gutter brooms of poly brush material so as not to damage airfield pavement markings; a dust control system that includes an external spray system with front mounted spray bar, nozzles located at each gutter broom; and an internal spray system with nozzles in the internal air stream. Maintain the equipment in good working order throughout the project and replace the brooms and or spray systems, as necessary, to ensure proper sweeping and vacuuming of paved surfaces.
1.13 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.

1.14 RADIO COMMUNICATIONS

A. Provide two-way radio communication between certain of the Contractor’s personnel on the job site. Provide radios with a minimum of 5 watts transmitting power. Select the frequency utilized for these transmissions. Submit proposed frequencies to COTR for approval in writing by the COTR. Frequencies shall not conflict with or overlay any of the Airports radio frequencies.

B. Provide, at a minimum, the following with radio equipment: The Project Superintendent, Foreman of all work groups physically separated from the general vicinity of the Project Superintendent, gate guards, and others who may be working in a separate and remote area. Provide two additional radios with the same frequencies to PMC for use by the COTR and the Lead Inspector.

C. Provide two-way radios capable of operating on both the "Ground" and "Ramp" frequencies for work adjacent to or affecting taxiways, Mobile Lounge roads, or Mobile Lounge docking areas. Such radios shall be either a handheld programmable type capable of operating off of vehicle power and antenna or a vehicle-mounted type, which operates solely off of the vehicle’s power, and antenna. Provide radios that provide a minimum of 3 watts transmitting power. Provide radios of sufficient power to communicate with the appropriate controller.

For work at Ronald Reagan Washington National Airport (DCA) add the following paragraph:

D. Cellular telephones are an acceptable alternative at Ronald Reagan Washington National Airport. For information purposes the Authority currently uses the Nextel system.

1.15 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.

1.16 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:

If only a Safety Engineer is required delete the first paragraph below. If a Safety Manager is required include both paragraphs. Contact the Authority Project Manager and the Program Safety Manager for guidance on which of the two paragraphs is required.

1. Safety Manager.

2. Safety Engineer.

C. Submit the résumés of individuals proposed to serve in the role of [Contractor’s Safety Manager,] 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, [the Contractor’s Safety Manager,] or the Contractor’s Safety Engineer(s).

E. Provide a full-time on-site Contractor Safety Manager for the duration of this Contract. The Safety Manager shall be responsible for all safety and health requirements as included herein and as required by the Authority’s Construction Safety Manual. Provide the services of at least one full-time on-site Contractor Safety Engineer per construction work shift with no other duties assigned who shall work under the direction of the Contractor Safety Manager.

If only a Safety Engineer is required delete the paragraph above. If a Safety Manager is required include both paragraphs but in paragraph below, omit sentences in brackets. Contact the Authority Project Manager and the Program Safety Manager for guidance on which of the two paragraphs is required.

F. [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.

G. The contractor shall submit the resumes of all proposed safety and health professionals who shall serve in the role of Contractor’s [Safety Manager and 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.

H. Comply with all requirements set forth in the Authority's "Construction Safety Manual." Provide during the Work the services of [Safety Manager(s) /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".

Delete the paragraph below if the project has no AOA activities.

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

J. 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.

K. Fire Safety: Conform to the following requirements:

Edit below to suit project. A/E through the Authority Project Manager shall determine if the use of explosives of any type will be allowed on project. If no blasting is authorized, delete all references to blasting in this Section and other sections of the specifications.
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.

Delete the subparagraph below if no blasting is authorized on the project.

6. Obtain a permit from the Office of the Authority Fire Marshal for the use, storage or handling of any explosives.

7. 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.

L. 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.

M. 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.

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

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

Delete the paragraph below if the project has no AOA activities.

P. 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.
15. Foreign object debris (FOD) control provisions.
16. Hazardous materials (HAZMAT) management.
17. Wildlife abatement.
18. NOTAM issuance.
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.
29. Coordination of plan with an FAA airport certification safety inspector.

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

1.17 HEIGHT LIMITATION

Coordinate actual height limitation per FAA part 77 requirements. Coordinate height limitations with Authority Project Manager.

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

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.

1.18 NOISE CONTROL

A/E shall coordinate noise and work hour restrictions on a project specific basis, depending upon location, anticipated types of noise, times and frequency of occurrence, and local regulations. The levels below are loosely based on Arlington County and Fairfax County ordinances. The nighttime limit below is based on County daytime limits for commercial areas, whereas the daytime limit is based on County daytime limits for industrial areas. Neither County permits nighttime construction. While the Authority and the airports are for practical purposes treated as a separate entity or “jurisdictional body,” the following limits are suggested to minimize unnecessary aggravation of the airport’s neighbors.
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.

Edit paragraph below for specific project requirements.

1.19 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.

1.20 AIRPORT SECURITY/VEHICLE INSPECTION PROCEDURE

Use the first paragraph for Ronald Reagan Washington National Airport and delete the remaining paragraphs. Delete the first paragraph below and retain the followings paragraphs for Washington Dulles International Airport.

A. The number of vehicular access points into secure areas at Ronald Reagan Washington National Airport has been reduced to an operational minimum. There is only one gate available for all vehicular traffic. Gate A.

B. 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.

C. 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.
D. 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.

Edit paragraph below after coordination with PMC, Airport Operations, and Transportation Security Agency.

E. 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.

Use the following paragraph for work at Washington Dulles International Airport. Delete the following paragraph for work at Ronald Reagan Washington National Airport and use the paragraph remaining.

F. 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.

G. 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 minor delays up at Gate A 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.

H. Prior approval from the Manager of Airport Operations or his/her designated representative is required for any exceptions to the above procedures [other than those listed below].

For projects at Ronald Reagan National Airport where work or any construction operations that will occur over, under, or within 25 feet of any Metro facility, use the following three paragraphs.

1.21 WORK ADJACENT TO METRO

A. Perform all work in accordance with the Washington Metropolitan Area Transit Authority (WMATA) "Adjacent Construction Design Manual," Revision NO. 1.

B. Be responsible for obtaining any necessary permits from WMATA. Comply with WMATA regulations in connection with construction over, around, or within WMATA right-of-way.

C. A WMATA inspector will be required while the Contractor is working over, around, or within WMATA right-of-way.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 007300
To edit the attached specifications, the hidden text option must be enabled. This allows the specifications editor to view instructions throughout each specification section.
To enable the hidden text option, in Word 2003, select “Tools” from the toolbar at top. Within “Tools”, select “Options”. Under “Options” select “View”. Look under “Formatting Marks” and make sure that the “Hidden Text” box is checked. Hidden text should now be visible within the document.
In Word 2008, click on upper left “Office Button”. Click on “word Options” at bottom of menu. Click on “Display”. Under “always show these formatting marks on the screen” check the hidden text box. Hidden text should now be visible within the document.

Instructions to the Editor are found in the following locations:

**Specification 007319 Safety and Health Requirements**
Before Part 1 – General
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This Section applies to tunnel work only and should only be used where tunnel work is a part of the project.

SECTION 007319 - HEALTH AND SAFETY 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.

B. Requirements included in this Section are the minimum acceptable and are in addition to the Authority’s Construction Safety Manual, as well as all Local, State, and Federal requirements. Where conflicts or discrepancies exist between requirements, the more stringent requirement shall govern.

C. Related Work Described Elsewhere:

1.2 SUMMARY

A. Provide safe and healthful working conditions on each operation at all times. 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 amended, and 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.

B. Stop work whenever a work procedure or a condition at a work site is deemed unsafe by the Contracting Officer’s Technical Representative (COTR), the Program Safety Manager (PSM), the Contractor’s Safety Manager, the Contractor’s Safety Engineer(s), or the Contractor’s Industrial Hygienist (IH).
C. Prior to the start of construction activities in the Airport Operations Area (AOA), the Contractor's Safety Manager, Safety Engineers and Industrial Hygienist shall tour airside with the Program Safety Manager.

D. Implement and conduct safety meetings, as indicated in the Authority’s Construction Safety Manual, with all subcontractors on the job site and all subcontractors anticipated to be on the job site from the previous safety meeting to the next safety meeting. The purpose of the safety meeting shall be safety coordination, review of safety procedures, and promoting safety awareness.

E. Fire Safety: Conform to the following requirements:
   1. Ensure adequate access to all construction areas for emergency response.
   2. Complete application and 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.
   3. Perform all utility outages in accordance with the requirements of Division 01 Section “Summary.”
   4. Be responsible for developing a site specific Hearing Conservation and Respiratory Protection Programs for all employees who may be exposed to health hazard associated with tunnel operations. The Program Safety Manager must approve these programs prior to beginning work that may expose employees to health hazards associated with tunnel operations. All employees exposed to airborne contaminates and/or noise must, at a minimum, have an audiogram and pulmonary function test.

1.3 SAFETY AND HEALTH MANAGEMENT

A. The requirements and personnel are in addition to the requirements in Section “Supplementary Conditions”.

B. Proposed Safety and Health Personnel

1. The Contractor shall provide a full-time on-site Contractor’s Safety Manager for the duration of this Contract, who shall be responsible for all safety and health requirements as included herein and as required by the Authority’s Construction Safety Manual. The Contractor shall also provide the services of at least one full-time on-site Contractor’s Safety Engineer per construction work shift, one full-time on-site certified Industrial Hygienist and at least one full-time first aid attendant, who shall work under the direction of the Contractor’s Safety Manager. The Contractor’s Safety Manager, Safety Engineer(s) and First Aid Attendant(s) shall all have a current Red Cross First Aid Certificate.

2. The Contractor shall submit the résumés of all proposed safety and health professionals who shall serve in the role of Contractor’s Safety Manager (CSM), Contractor’s Safety Engineers (CSE), Contractor’s Industrial Hygienist (IH) and all other Contractor’s Site Supervision to the COTR for approval. The resumes shall include but not 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 or contacts for
verification shall also be required. The COTR or PSM may reject the persons proposed for failure to have adequate qualifications or other reasonable and lawful causes.

3. Approval of the COTR is required, if at any time the Contractor seeks to remove or discharge the Contractor’s Safety Manager, Safety Engineer(s) and Industrial Hygienist.

C. Contractor’s Safety Manager

1. The Contractor’s Safety Manager shall be a full time on-site safety professional with a minimum of 10 years of experience managing safety programs on underground construction projects comparable to this Contract in size, scope and complexity (a CSP or CSM preferred). The Construction Safety Manager shall perform the duties and responsibilities as stated in the Authority’s “Construction Safety Manual.” The Construction Safety Manager shall be an OSHA authorized Outreach Trainer having passed the OSHA 500 Training Course in Occupational Safety and Health Standards for Construction Industry including any and all update training required to maintain a current active certification.

2. The Contractor’s Safety Manager shall be knowledgeable of all applicable safety and health codes, statutes and ordinances as well as best safety practices recognized by the construction industry. The Contractor’s Safety Manager shall be able to demonstrate knowledge and ability to ensure compliance with same. The Contractor’s Safety Manager shall not be the project manager, project engineer, superintendent or anyone else working on the Project and shall perform no other duties except those related to safety and health as directed by the COTR. The primary duties of the Safety Manager are to set up and administer the safety and health programs, run safety training courses, and to verify compliance by all of the Contractor’s employees and those of all subcontractors. When necessary the Safety Manager will be responsible for implementing any and all safety and health changes required by new legislation or as required by the COTR.

D. Contractor’s Safety Engineer

1. The Contractor’s Safety Engineer(s) (CSE) shall be full-time on-site safety professional with a minimum 5 years experience on underground construction, hired by the Contractor to manage only the safety efforts of construction. The Contractor’s Safety Engineers must be familiar with the type of work to be performed under this contract, which is cut and cover construction and underground NATM and TBM tunneling operations. The CSE shall perform the duties and responsibilities as stated in the Authority’s “Construction Safety Manual.”

2. The Contractor’s Safety Engineer(s) shall have, at a minimum, a certificate of completion, within the last two years, from either a 10-hour or 30-hour OSHA Training Course in the following areas; Hazardous Materials, Respiratory Protection and Permit-Required Confined Space Entry. Training shall be conducted by an instructor accredited to perform such instruction by the Occupational Safety and Health Administration.

3. The CSEs shall not be the project manager, engineer, superintendent or anyone else working on the project and shall have no other duties except those related to safety, unless otherwise approved by the COTR.

E. Contractor’s Industrial Hygienist

1. The Contractor’s Industrial Hygienist (IH) shall have a minimum of 10 years experience in managing construction related environmental conditions, including but not limited to contaminated or hazardous materials as defined in Section “Supplementary Provisions.”
The Industrial Hygienist shall be certified by the American Board of Industrial Hygienist (ABIH) and shall have received certification for taking and passing a 30-hour OSHA Training Course 521 - OSHA Guide to Voluntary Compliance in the Industrial Hygiene Area within the last two years. The Industrial Hygienist shall develop, implement and oversee the Contractors Environmental Response Plan and shall be responsible for ensuring compliance with the environmental requirements of the Authority and all local, state and Federal agencies. The Industrial Hygienist shall assist the Contractor’s Safety Manager and Safety Engineers in training the Contractor and Subcontractor’s personnel in recognizing and handling environmental problems.

F. Contractor’s Site Supervision (Superintendents and Foremen)
   1. Superintendents and Foremen shall have a minimum of 5 years experience in the supervision of underground and tunnel construction operations similar to the type of construction anticipated on this contract within the last 7 years.
   2. In addition to the above, the Superintendents and Foremen employed by the Contractor on the Project shall have, at a minimum,
      a. A certificate of completion from a 10-Hour OSHA Hazard Recognition Training Course within the past two years for the Notice-to-Proceed. An instructor accredited by the Occupational Safety and Health Administration to perform such instruction shall have conducted the course for which the certificate is offered.

G. Reference Codes, Standards and other Documents
   1. OSHA - US Department of Labor, Occupational Safety and Health Administration, Construction Standards and Interpretations, 29 CFR Parts 1910 and 1926.
   5. All other Federal, State and Local requirements and regulations in effect at the time of construction.
   6. MSHA - US Department of Labor, Mine Safety and Health Administration, Federal Mine Safety and Health Act of 1977, as amended.

1.4 SUBMITTALS
   A. Submit Safety and Health Program to COTR within 15 calendar days of Notice to Proceed and prior to the start of any construction activities. COTR must approve the Contractor’s Safety and Health Program prior to the start of any work.
   B. Submit Fire Risk Assessment to COTR prior to any and all underground construction.
   C. Submit résumés of the proposed Industrial Hygienist to COTR within 10 calendar days of Notice to Proceed.
   D. Submit qualifications of Contractor’s Site Supervision to COTR within 15 calendar days of employment at the project.
   E. Submit Inspection reports by Contractor’s Safety Manager to COTR weekly.
   F. Submit to COTR Weekly the following:
1. Meeting Minutes and attendance sheets of Safety Training
2. Weekly Safety Meetings and related communications by Contractors and Subcontractors.

G. Submit disciplinary action notices to COTR weekly.

H. Submit notices from public authorities to COTR as soon as possible but no later than 24 hours of receipt by Contractor.

I. Submit material Safety Data Sheets (MSDS) for all substances to COTR as received by Contractor along with written Hazard Communication Program.

J. Submit copy of Contractor’s chemical inventory list to COTR and the Authority Fire Marshal as developed and updated.

K. All equipment shall be inspected for possible safety problems and any safety problems found shall be corrected prior to piece of equipment being brought on to the project. All equipment shall be safety inspected monthly if not more often as directed by the COTR. Submit copies of these inspection reports to COTR within one week of the inspection.

L. Submit copies of the latest annual inspections as required by OSHA 1926.550 (Subpart N) to the COTR immediately upon any crane being brought on to the job site and within one week of any annual inspections that occur while that crane is on the project.

M. Submit a listing of all crane operators and their qualifications to the COTR for approval. Obtain approval in writing.

1.5 SAFETY PROGRAM ADMINISTRATION

A. Roles and Responsibilities: The Contractor shall be directly responsible for establishing and implementing a project-specific Contractor Safety and Health Program for the protection of its workers, the workers of its Subcontractors, the COTR, Architect/Engineer, the Metropolitan Washington Airports Authority (the Authority) and the general public. The Contractor shall ensure that the necessary resources for an effective program, as set forth in the contract documents and specifications, are provided at all times during the course of the Work. The Contractor shall require that its Subcontractors comply with all requirements of the Work and of the Contractor Safety and Health Program. The Contractor shall include documentation of safety and health program implementation and accident experience as criteria for evaluating performance of its individual project managers and site supervisors.

1. The Contractor’s Project Manager shall:
   a. Ensure the implementation and administration of the Contractor’s Safety and Health Program.
   b. Support the Contractor’s Safety Manager with the resources and authority to enable him/her to effectively administer and manage his/her designated portion(s) of the project safety effort.
   c. Ensure that the Contractor’s Safety Manager is assigned only work bearing directly on the safety and health of workers and members of the general public not activities which prevent the CSM from performing his/her primary function: safety inspections, training and enforcement. Although it may be appropriate for the Contractor’s Safety Manager to participate in functions such as site security,
insurance-related issues such as medical case management, general procurement, and similar functions, they shall not be considered safety related activities for purposes of these Specifications and they shall not be part of the CSM’s primary responsibilities.

d. Attend scheduled safety and health meetings conducted by the Contractor pursuant to administration of the project safety effort.

e. Cooperate with the COTR and PSM in enforcement of the Safety and Health Program responsibilities as set forth in these Specifications.

2. The Contractor’s Safety Manager shall:

   a. Administer and manage the Contractor’s Safety and Health Program.

   b. Cooperate with the COTR, PSM and OCWIP Safety Consultant in their administration, management and oversight of the Contractor’s Project Safety and Health Program.

   c. Attend scheduled safety and health meetings conducted by the Program Safety Manager.

   d. Prior to the start of work, conduct a physical survey of the job site(s) and make a survey of the work to be performed by reviewing the drawings and conducting discussions as applicable with the necessary parties toward identification of and planning for hazard controls. These activities shall be documented and submitted as a Project Safety and Health Survey to the COTR and PSM for review.

   e. At the initiation of the Work and throughout the course of the project, conduct and implement Job Hazard Analyses (JHAs) for operations deemed hazardous. The JHAs will identify potential hazards and actions required to control them. The JHAs will be submitted to the COTR and PSM for review.

   f. Be physically at the Project job site on a full-time basis for 8 hours per working day with minimal exceptions.

   g. Conduct physical inspections of the job site, equipment, materials and operations to detect and promptly eliminate unsafe acts and unsafe conditions. The frequency of the inspections shall be determined on the basis of site activities. Hazardous activities will require continuous inspection. In no case shall the above-described inspections be conducted less than once per shift.

   h. Document in a uniform, established format the findings of each inspection, including the nature of hazards identified, the corrective actions taken, and the person(s) exposed or potentially exposed to the hazard(s).

   i. Schedule and conduct safety orientations, meetings and hazard recognition training for all workers and visitors on the project.

   j. Develop and implement a program to readily identify individuals (i.e. Hard Hat Decals) who have completed the required safety and hazard training.

   k. Administer the disciplinary action policies and procedures set forth in the Contractor’s Project Safety and Health Program.

   l. Post and maintain the required safety information at appropriate locations on the project, including, but not limited to emergency action information (phone numbers, means of egress, etc), hazard warnings, hazard communication information, and injury and illness data.

   m. Conduct investigations of all accident events and near misses and document the findings of such investigations within 24 hours in accordance with applicable rules and regulations and the Contractor’s Project Safety and Health Program.

   n. Maintain written materials, such as codes, standards, references, hazard communication information, medical and exposure monitoring records and other
safety and health program-related documents in an orderly manner at the project, readily available for use by the Contractor’s personnel and review by the COTR and PSM.

o. Perform all safety and health-related tasks necessary to achieve the highest degree of safety that the nature of the Work permits.

p. Manage the trained Contractor’s Safety Engineer(s) working on all shifts.

q. Implement and manage a hotwork permit program, making sure that it complies with the Authority’s Fire Department rules and regulations.

r. Attend weekly walkthroughs with the COTR and PSM.

s. Attend project progress meetings as necessary or as required by the COTR.

3. The Contractor’s Safety Engineer(s) shall:

   a. Be present on the project for all working periods particularly during tunnel operations.

   b. Assist the Contractor’s Safety Manager during the shift when both are present at the project and perform all the duties associated with safety normally performed by the Contractor’s Safety Manager when the CSM is absent from the project.

4. The Contractor’s Site Supervisors (Superintendents and Foremen) shall:

   a. Be directly responsible for ensuring the work is performed in a safe and healthful manner. They shall be knowledgeable of the hazards attendant to the work, aware of the necessary hazard controls and authorized to effect prompt action to control or eliminate them.

   b. Assist the Contractor’s project management and safety staff in the inspection of job sites, equipment and materials, attending and participating in the Contractor’s safety meetings and training efforts, and enforcing safe work rules set forth in the Contractor’s Project Safety and Health Program.

   c. Ensure that each job has the necessary safety appliances and personal protective equipment.

   d. Monitor and report to the Contractor’s Safety Manager the safety performance of Subcontractors on the project to determine their level of compliance with the Contractor’s Project Safety and Health Program.

   e. Participate and cooperate fully with the COTR, PSM, OCWIP Safety Consultant and Contractor’s Safety Manager in the investigation of accidents and remediation of hazards.

   f. Report all accidents immediately and near misses as promptly as conditions permit, with written follow up reports within 24 hours after the occurrence, to the COTR, PSM, OCWIP Safety Consultant and Contractor’s Safety Manager.

5. Contractor’s employees shall be required by the Contractor to:

   a. Fully support the Contractor’s Project Safety and Health Program by assisting the COTR, PSM and Contractor’s Safety Manager in the inspection of the job site, equipment and materials to detect hazards and reporting unsafe acts and unsafe conditions immediately.

   b. Attend and actively participate in all orientation, safety and health training safety meetings and other functions for communication of safety and health prescribed by the Contractor’s Project Safety and Health Program.
c. Comply with the work rules set forth in the Contractor’s Project Safety and Health Program or as further established as a part of ongoing safety training and/or job hazard analysis.
d. Report to the Contractor’s Site Supervision any and all apparent unsafe acts or unsafe conditions.
e. Report any and all accidents, injuries, symptoms of illness and near miss events involving the worker to the Contractor’s Site Supervision immediately or as promptly as conditions permit.
f. Make recommendations for safety and health protection(s) that the worker has, from his or her own experience, observed to be successful on other projects.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 CONTRACTOR’S SAFETY AND HEALTH PROGRAM - GENERAL REQUIREMENTS

A. This Section serves to outline the key elements for the Contractor’s Safety and Health Program. This Section also includes a number of additional project specific requirements for the Contractor’s Safety and Health Program. In addition, reference is made to the minimum requirements set forth in the “Construction Safety Manual.”

B. The Contractor’s Safety and Health Program shall include as a framework for safety and health programming the following minimum basic elements:

1. A statement of the Contractor’s commitment to providing a safe and healthful project.
2. A statement of the Contractor’s responsibility for implementing its Safety and Health Program.
3. Detailed procedures for:
   a. Training of site supervision.
   b. Safety and Health Project Orientation for workers.
   c. Ongoing Safety and Health training for workers.
   d. Providing safety and health information to the general public.
4. Specific assignments of safety and health-related roles and responsibilities.
5. Safety and health inspections on the project.
6. Procedures for accident-related record keeping, investigation and surveillance.
7. A disciplinary action procedure.
8. Schedule of safety related meetings and training.
9. A set of general work rules addressing hazards common to all types of construction and a site-specific set of work rules addressing the hazards of the work at hand.
10. A list of required permits for specific construction operations.
11. An emergency action plan addressing all types of emergencies with which the Contractor may reasonably and predictably be confronted.
12. A procedure for identifying how and under what circumstances job hazard analyses shall be conducted.
13. Reporting formats for required reports and submissions.
14. Detailed site-specific procedures for conducting safe working conditions associated with:

   a. Drilling.
   b. NATM, TBM and/or other types of tunneling.
   c. Compressed air and gases.
   d. Concrete work.
   e. Confined spaces/permit-required confined spaces.
   f. Crane operations and maintenance.
   g. Rigging operations, equipment inspection and testing.
   h. Electrical hazards.
   i. Excavation and excavation support.
   j. Fall protection.
   k. Fire protection and prevention.
   l. First aid, CPR and blood borne pathogens.
   m. Hand and power tools.
   n. Hazard communication.
   o. Housekeeping.
   p. Scaffolding, ladders, and walking and working surfaces.
   q. Lockout/Control of Energy Sources.
   r. Materials handling and storage.
   s. Mechanized equipment.
   t. Construction health hazard monitoring.
   u. Personal protective equipment and clothing.
   v. Respiratory protection.
   w. Sanitation.
   x. Welding and cutting.

15. Detailed site-specific procedures shall, as a minimum, comply with the guidelines identified in the Section X “Construction Safety Manual.” All detailed site-specific procedures shall include requirements for mandatory eye and head protection and adherence to the 6-foot fall protection requirements. Site-specific procedures shall require all chainsaws used on-site to be equipped with kickback guards/breaks and require all other power tools to be equipped with all protective features as provided by the manufacturer.

16. Hazardous material handling.

17. A silica exposure plan to limit exposure of workers to silica dust. The plan shall include the applicable preventive measures recommended and contained in NIOSH ALERT: 1996 Publication 96-112 “Preventing Silicosis and Deaths in Construction Workers”.

18. All equipment, not just the underground tunneling equipment, shall be inspected on a regular basis (monthly if not more often as approved by the COTR) with copies of the inspection report being submitted to the COTR. The purpose of these inspections is to identify and document possible safety problems and repair these problems before someone is injured.

C. For all airside projects, a Safety Plan shall be attached to the Safety Program. The Safety Plan should include, to the extent applicable, provisions for the following:

1. Scope of work to be performed, including proposed duration of work.
2. Possible safety problems.
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.
15. Foreign object debris (FOD) control provisions.
16. Hazardous materials (HAZMAT) management.
17. Wildlife abatement.
18. NOTAM issuance.
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 fire fighting (ARFF) if deactivating water lines or fire hydrants, or if emergency access routes are rerouted or blocked.
29. The Safety Plans will be coordinated with the COTR and shall address all COTR concerns and review comments.

3.2 SPECIFIC CONTRACTOR’S PROJECT SAFETY AND HEALTH PROGRAM REQUIREMENTS

A. The Contractor’s Project Safety and Health Program shall incorporate all basic elements of the construction project safety and health program set forth in Article 3.01 above, Section X “Construction Safety Manual”, and the following project-specific program elements:

1. A written, project-specific Safety and Health Plan (Plan), incorporating job hazard analysis for tunneling and underground construction operations, encountering contaminated soil and water, detailed emergency action procedures and fire risk assessment shall be developed by the Contractor, for review by the COTR and PSM to point out deficiencies before the start of any underground construction. The Plan shall specifically address rescue operations, conditions affecting rescue operations, smoke venting procedures, back-up power supply and pumping systems, means of ingress and egress, communications, hotwork permitting procedures, and training, orientation and refresher training for workers, emergency responders and visitors.

2. A written fire risk assessment portion of the Plan shall detail potential fire hazards, means of dealing with those hazards, fire prevention, fire suppression and emergency evacuation measures that will be employed by the Contractor during the course of the Project. The fire risk assessment shall include documentation that the material selected for the
ventilation system ducting is in compliance with the specifications. The fire risk assessment shall be prepared and stamped by a registered fire protection engineer in the Commonwealth of Virginia.

3. The Plan shall be updated as substantive changes in the underground work environment occur. The Authority’s and local fire departments shall be provided with a copy of the most current Plan and advised of changes in the Plan as they are implemented. The fire departments will be requested to review and comment on the Plan and any changes that occur to the Plan.

4. The Contractor is required to send all project supervisory personnel to attend an Authority provided Orientation prior to the start of any work.

5. The Contractor’s Safety Manager shall train all underground workers and the COTR and his staff members in the details of the Plan.

6. In accordance with local and state regulations a permit system shall be used for all hotwork performed on the project. The Contractor’s Safety and Health Plan shall detail the permit system’s procedures. The permit system shall be implemented and supervised by the Contractor’s Safety Manager. The permits shall be made available for inspection by the Authority, the COTR and the local fire department(s). Open flames and fire shall be prohibited in all underground construction operations, except as permitted for welding, cutting and other hotwork operations pursuant to the Contractor’s Hotwork Permit System. Smoking shall be allowed only in areas free of fire and explosion hazards. Readily visible signs prohibiting smoking and open flames shall be posted in areas having fire or explosion hazards.

7. The Contractor shall provide for each of his/her underground workers and for ten (10) of the COTR’s staff personnel, NIOSH approved, oxygen-generating, self-rescuers.

8. The Contractor shall at all times, when work is being performed underground, provide rescue teams as set forth in Title 29 CFR, Part 1926.800 (g)(5), OSHA Rules and Regulations for Underground Construction. If the Contractor chooses to use the Authority’s Fire Department as one of his OSHA rescue teams, then any training, equipment, or staffing required shall be solely the responsibility of the Contractor and the Authority’s Fire Department. The Authority’s fire officials shall retain responsibility for incident command during an emergency within the limits of the project.

9. Emergency medical services and ambulance service provided in connection with serious injuries or illnesses on the job site are included in the OCWIP.

10. The Contractor in all cases shall request responses by the fire department(s) to Project-related emergencies involving members of the general public. The Contractor shall fully coordinate and cooperate with the Authority Fire and Rescue in its response to such emergencies.

11. The Contractor shall fully coordinate and cooperate with the Authority’s Risk Management and Authority Fire and Rescue in its response to such emergencies.

12. The Contractor shall make underground work areas accessible for training and familiarization purposes a minimum of two eight-hour periods, yearly, as mutually agreed upon by the Contractor and fire department(s) or as directed by the Authority or COTR, and as appropriate to tunnel conditions. Two additional visits a year shall be on a not-to-interfere basis with tunnel construction, such as Sundays or other days in which mining or lining of the tunnel is not taking place. The Contractor shall provide all necessary support personnel to accomplish all these training and familiarization sessions.

13. The Contractor shall make underground work areas accessible to the Authority’s Fire Department official and/or his designee on a weekly basis during all working hours. The Authority’s Fire Department official shall be accompanied by designated representatives
of the COTR and/or Contractor to ensure immediate action on issues raised during the visits.

14. The Contractor is required to obtain all permits required for the Contractor’s use of chemicals, and is responsible to meet all Federal, State and Local requirements. The Contractor shall develop a written chemical safety plan to address all chemicals used during construction. This safety plan shall include detailed procedures to prevent chemical accidents to the maximum extent possible during chemical transport, transfer, storage, use and disposal. The chemical safety plan shall include emergency response procedures, which identify all potential chemical emergencies and the recommended emergency response action to be taken for each incident. These procedures shall consider all potential chemical emergencies including chemical spills, incompatible reactions, fires and human exposures. Procedures shall describe methods to contain and isolate the accident, including the required protective clothing, equipment, first aid and response methods. Conduct, using Contractor’s staff emergency response training and drills to the extent necessary to control the specific chemicals used by the Contractor. The Contractor’s emergency response procedures shall be coordinated with support action from the Authority’s and local fire departments and hazardous material response teams, to provide for a comprehensive emergency response plan. This coordinated response shall be adequate to manage all chemical emergencies and provide for the health, safety and evacuation of all site personnel as well the community. The Authority’s and local fire departments shall be provided with a copy of the most current plan and be requested to review and comment on the plan. At all times when chemicals are on site, the Contractor shall maintain a trained emergency response staff, equipment, protective clothing and supplies as needed to implement the chemical safety plan.

15. The Contractor shall have at least one (1) employee on site at all times who is trained and qualified to administer first aid and cardiopulmonary resuscitation (CPR) for every 25 employees on site.

16. The Contractor shall comply with all requirements identified in OSHA regulation § 1926.50 relating to medical services and first aid.

17. The Contractor shall provide the on-site safety staff an appropriate office on the job site(s) to maintain safety records, up-to-date copies of all pertinent safety rules, regulations and governing legislation, material safety data sheets, and the site safety and health plan including information concerning foreseeable emergency conditions, location of emergency and telephone contacts for supportive action and for all required notifications.

18. No visitors will be allowed in tunnels without permission of the COTR.

19. The Contractor shall continuously monitor the air quality to assure that the air quality is in accordance with OSHA Standard 1910.120 and the approved safety and health plan.

20. Every location of underground construction shall have a check-in/check-out system that will ensure that the aboveground personnel can determine the identification of all underground personnel.

21. Oncoming shifts shall be informed of any hazardous occurrences or conditions that have affected or might affect employee safety, including but not limited to: liberation of gas; the encountering of petroleum/glycol impacted soils or water; equipment failures; earth or rock slides; cave-ins; flooding; fires; or explosions.

22. In situations where unassisted voice communication is inadequate, power-assisted means shall be used to provide communication among workers and support personnel.

23. Emergency equipment specified in the emergency plan shall be provided within 15 minutes of each portal or shaft entry. Inspections and workability tests of the equipment shall be made and documented monthly.
24. If there are less than twenty-five persons underground at any one time, provisions shall
be made for at least one 5-person rescue team to be either on the job site or within 30
minutes travel time from the underground entry point. This rescue team may be provided
by local emergency response services if approved by the COTR.
25. Provide a fully equipped first aid station and emergency transportation at each
underground construction site, regardless of the number of persons employed.

3.3 ACCIDENT REPORTING, INVESTIGATION AND SURVEILLANCE

A. Accident Reporting

1. Accidents are defined for purposes of this Specification as: “Any unplanned event which
results, or could have resulted, in an injury or illness to workers or the general public,
property loss or damage to the environment.” The Contractor shall, as promptly as
conditions permit, notify the COTR’s Safety Manager, the Authority’s Risk Management
Department and the designated local Public Safety official of the nature and
circumstances of the emergency. Provide such notice no later than 24 hours after the
event. Report all accident events in accordance with the following:

a. The COTR’s Safety Manager will establish and disseminate to the Contractor all
required accident reporting formats.
b. Ensure that all accidents involving scope of work on the project, including
Subcontractors are reported in the established format to the COTR’s Safety
Manager within twenty-four (24) hours of the event.
c. Develop a monthly summary of accident information and submit to COTR’s
Safety Manager no later than the tenth calendar day of the following month.

B. Accident Investigation

1. Investigate all accident events, as defined above and that occur on those portions of the
Project under the Contractor’s control, in accordance with the contract documents and
specifications.

a. Conduct a detailed investigation of any and all accidents.
b. Provide the COTR’s Safety Manager and the Authority’s Risk Management
Department with a detailed investigative report for any and all accidents.
c. Fully cooperate with the Authority’s Risk Management Department, COTR’s
Safety Manager and/or public authority having jurisdiction in the investigation of
accidents.
d. Report accident investigations in a complete manner on the accident reporting
format(s) designated by the COTR’s Safety Manager.

C. Accident Surveillance

1. The Authority’s OCWIP Safety Consultant and COTR’s Safety Manager seek to collect
accident information for purposes of identifying patterns, trends, performance and establishing
appropriate policies and procedures related to protection of safety and health. To that end
prepare and submit reports of accidents as detailed above.

END OF SECTION 007319
To edit the attached specifications, the hidden text option must be enabled. This allows the specifications editor to view instructions throughout each specification section.

To enable the hidden text option, in Word 2003, select “Tools” from the toolbar at top. Within “Tools”, select “Options”. Under “Options” select “View”. Look under “Formatting Marks” and make sure that the “Hidden Text” box is checked. Hidden text should now be visible within the document.

In Word 2008, click on upper left “Office Button”. Click on “word Options” at bottom of menu. Click on “Display”. Under “always show these formatting marks on the screen” check the hidden text box. Hidden text should now be visible within the document.

Instructions to the Editor are found in the following locations:

**Specification 011000 Summary**
Before Part 1 – General
Before 1.2 A. 1
Before 1.3 A
Before 1.3 D
After 1.3 D. 2
Before 1.5 A
Before 1.5 A. 1
Before 1.6 A
Before 1.6 B
Before 1.6 B. 1
Before 1.6 C
Before 1.6 C. 1
Before 1.6 D
Before 1.6 D. 1
Before 1.7 A
Before 1.8 A
Before 1.8 A. 1
Before 1.9 A
Before 1.9 C
After 1.9 C
Before 1.10 B
Before 1.10 B. 1
Before 1.13 A
Before 1.13 C
After Part 3 – Execution
After 3.1
SUMMARY 011000 - 2

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SECTION 011000 - SUMMARY

Much of this Section consists of Project-specific data. Examples given in the model text in the Evaluations illustrate possible Section content. Use model text to develop text for specific Project requirements. See Evaluations.

Verify that Section titles referenced in this Section are correct for this project’s Specifications; Section titles may have changed.

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:

Adjust list below to suit Project.

1. Work covered by the Contract Documents.
2. Type of the Contract.
3. Work phases.
4. Work under other contracts.
5. Products ordered in advance.
6. Authority-furnished products.
7. Use of premises.
8. The Authority’s occupancy requirements.
10. 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

This Article illustrates one method of summarizing the Work. Revise to accurately describe Project.

In four paragraphs and associated subparagraphs below, remove text enclosed in angle brackets and insert text to suit Project. See MASTERSPEC Evaluations for sample paragraphs of Project descriptions.

First paragraph and subparagraph below identify name and location of Project.

A. Project Identification: Project consists of <Insert brief Project description>.

1. Project Location: [Washington Dulles International Airport] [Ronald Reagan Washington National Airport].

B. Architect/Engineer Identification: The Contract Documents, dated <Insert date indicated on the Contract Documents>, were prepared for Project by <Insert name and address of Architect/Engineer>.

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."

In paragraph and first subparagraph below, include an abbreviated summary of the Work for Project described above. See MASTERSPEC Evaluations for examples of typical projects.

D. The Work consists of <Insert an abbreviated summary of Project>.

1. The Work includes <Insert a brief listing of major products and systems included in Project>.

2. For additional requirements for the examination of plans, specifications, and Project site see Section "Supplementary Conditions."

Insert additional paragraphs for other major items of work. See MASTERSPEC Evaluations for model text.
1.4 TYPE OF CONTRACT

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

1.5 WORK PHASES

Retain this Article if Project is conducted in separate phases. Delete if phased construction is not required. See MASTERSPEC Evaluations for discussion on phased construction.

Revise first paragraph below to suit Project conditions. See MASTERSPEC Evaluations for model text.

A. Conduct the Work in <Insert number> phases.

Retain below for each phase required. Remove text enclosed in angle brackets and insert text to suit that phase. Repeat subparagraph, revised as appropriate, for each separate phase. See MASTERSPEC Evaluations for model text.

1. Phase <Insert number>: <Briefly describe work of this phase> Work of this phase shall be substantially complete and ready for occupancy within <Insert number of days> of [the Notice to Proceed].

B. Work phasing indicated above is not intended to restrict Contractor to this specific phasing. Contractor may submit its own phasing schedule to COTR for review and written approval.

C. Schedule the execution of the Work according to the phasing sequence indicated and to avoid interference with normal functions of the Airport.

D. Before commencing Work of each phase, submit a schedule to COTR showing the sequence, the commencement and completion dates, and the move-out and move-in dates of personnel for the various phases of the Work.

E. On completion, each phase of the Work shall be fully operational.

1.6 WORK UNDER OTHER CONTRACTS

Retain this Article if work under this Contract depends on successful completion of work performed under other contracts and vice versa. See Evaluations.

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.
Retain paragraph and subparagraph below if work under other contracts is expected to be complete before work under this Contract begins. Revise to suit Project. See Evaluations for model text.

B. Preceding Work: Authority [has awarded] [will award] separate contract(s) for the following construction operations at Project site. Those operations are scheduled to be substantially complete before work under this Contract begins.

Copy and re-edit subparagraph below for each separate contract.

1. <Insert name of the Contract>: A separate contract [has been] [will be] awarded to <Insert name of separate Contractor> [to] [for] <Insert a brief description of work performed under separate contract>.

Retain paragraph and subparagraph below if work under other contracts will be conducted concurrently with work under this Contract. Revise to suit Project. See Evaluations for model text.

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

Copy and re-edit subparagraph below for each separate contract.

1. <Insert name of the Contract>: A separate contract [has been] [will be] awarded to <Insert name of separate Contractor> [to] [for] <Insert a brief description of work performed under separate contract>.

Retain paragraph and subparagraph below if work under future contracts depend on successful completion of work performed under this Contract; revise to suit Project. See Evaluations for model text.

D. Future Work: Authority [has awarded] [will award] separate contract(s) for the following additional work to be performed at site after Substantial Completion. Completion of that work will depend on successful completion of preparatory work under this Contract.

Copy and re-edit subparagraph below for each separate contract.

1. <Insert name of the Contract>: A separate contract [has been] [will be] awarded to <Insert name of separate Contractor> [to] [for] <Insert a brief description of work performed under separate contract>.

1.7 PRODUCTS ORDERED IN ADVANCE

This Article is an example of a requirement best described in this Section. Delete if the Authority does not order products or equipment in advance. See MASTERSPEC Evaluations for discussion on materials purchased or ordered in advance.

A. General: The Authority has negotiated Purchase Orders with suppliers of material and equipment to be incorporated into the Work. The Authority has assigned these Purchase Orders
to Contractor. Costs for receiving, handling, storage, and protection if required, and installation of material and equipment are included in the Contract Price.

1. Contractor's responsibilities are the same as if Contractor had negotiated Purchase Orders, including responsibility to renegotiate purchase and to execute final Purchase-Order agreements.
2. The Schedule of Products Ordered in Advance is included at the end of this Section.

1.8 AUTHORITY-FURNISHED PRODUCTS

This Article defines responsibilities of the Authority and Contractor for Authority-furnished products. Delete this Article if the project does not include AUTHORITY FURNISHED PRODUCTS.

Retain paragraph below if the Authority furnishes products for a project. Remove text enclosed in angle brackets and insert text to suit Project. Revise second sentence as appropriate, or delete entirely if not required. See MASTERSPEC Evaluations for model text.

A. The Authority will furnish <Insert a brief description of Authority-furnished products>. This Contract Work includes providing support systems to receive the Authority's equipment [and plumbing, mechanical, and electrical connections].

Retain subparagraphs below for all projects with Authority-furnished products.

1. The Authority will arrange for and deliver Shop Drawings, Product Data, and Samples to Contractor.
2. The Authority will arrange and pay for delivery of Authority-furnished items according to Contractor's Construction Schedule.
3. After delivery, the Authority will inspect delivered items for damage. Be present for and assist in the Authority's inspection.
4. If Authority-furnished items are damaged, defective, or missing, the Authority will arrange for replacement.
5. The Authority will arrange for manufacturer's field services and for delivery of manufacturer's warranties to Contractor.
6. The Authority will furnish Contractor the earliest possible delivery date for Authority-furnished products. Using Authority-furnished earliest possible delivery dates, designate delivery dates of Authority-furnished items in Contractor's Construction Schedule.
7. Review Shop Drawings, Product Data, and Samples and return them to COTR noting discrepancies or anticipated problems in use of product.
8. Be responsible for receiving, unloading, and handling Authority-furnished items at Project site.
9. Be responsible for protecting Authority-furnished items from damage during storage and handling, including damage from exposure to the elements.
10. Repair Authority-furnished items that are damaged as a result of Contractor's operations, repair or replace damaged items at Contractors expense.

B. Authority furnished products:
1. Insert description, in separate subparagraphs, for each Authority furnished product.

1.9 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.

Retain first subparagraph below on projects where necessary to describe areas of a site where work is permitted. Expand to indicate areas of site where incursions are forbidden under any circumstances. See MASTERSPEC Evaluations for model text and discussion.

1. Limits: Confine constructions operations to <Insert description of areas where work is permitted>.
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."

Insert other paragraphs, as appropriate, describing additional limitations on use of site by construction personnel. See MASTERSPEC Evaluations for model text.

Retain paragraph and subparagraph below if the Work involves existing occupied building. Otherwise, delete.

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."
Insert additional paragraphs specifying specific limitations on use of existing buildings. See
MASTERSPEC Evaluations for model text describing restrictions that might be required if work is
performed on an occupied building.

1.10 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.

Retain first paragraph below if the Authority might occupy completed portions of building before
Substantial Completion. Revise to suit Project.

B. Partial Authority Occupancy: The Authority reserves the right to occupy and to place and
install equipment in completed areas of building, before Substantial Completion, provided such
occupancy does not interfere with completion of the Work. Such placement of equipment and
partial occupancy shall not constitute acceptance of the total Work. Partial Authority
occupancy requirement are as follows:

Subparagraphs below describe procedures and requirements necessary before partial occupancy of
portions of Project.

1. COTR will prepare and obtain a Certificate of Substantial Completion for each specific
portion of the Work to be occupied before Authority occupancy.
2. Before partial Authority occupancy, mechanical and electrical systems shall be fully
operational, and required tests and inspections shall be successfully completed. On
occupancy, the Authority will operate and maintain mechanical and electrical systems
serving occupied portions of building.
3. On occupancy, the Authority will assume responsibility for maintenance and custodial
service for occupied portions of building.

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

1.11 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.
1.12 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.

1.13 MARKING UTILITY SERVICES

For projects at Ronald Reagan National Airport, include the following paragraphs.

A. Employ underground utilities location subcontractor to locate and mark the horizontal location of all utility lines, that might be impacted by construction activities, including but not limited to the following:

   1. Electric power lines.
   2. Natural gas lines.
   4. Storm Sewers.
5. FAA communications, signal, and security lines.
6. Runway lighting lines
7. Water supply piping.
8. 530 KHz AM radio line - Parking Lot Availability Notification System - buried cable parallel to the Airport access road. The system utilizes antennas on the Airport thus there are no buried cables for this system within the fenced portion of the Airport property.
10. Telephone lines.
11. Data lines.
13. High Temperature Hot Water (HTHW) and chilled water lines.

B. Contact the Airport Communications System (ACS) Help Desk at (703) 417-8300 a minimum of 72 hours prior to starting activities that include but are not limited to location and marking of horizontal locations of telephone and telecommunications lines belonging to the Authority as part of the Airport Communication System. Contact the Airport Communications System (ACS) Help Desk a minimum of 72 hours prior to beginning operations, that include but are not limited to excavating, boring, pile-driving, [blasting (if allowed on specific projects)], digging or planting. Note the ACS does not locate utilities. Location is the responsibility of the Contractor’s underground utilities location subcontractor. The Airport Communications System (ACS) is merely notified as indicated previously.

For projects at Washington Dulles International Airport, include the following paragraphs and delete the paragraphs above. Keep or delete “blasting” as necessary.

C. Employ underground utilities location subcontractor to locate and mark the horizontal location of all utility lines that might be impacted by construction activities, including, but not limited to, the following:

1. Electric power lines.
2. Natural gas lines.
4. Storm Sewers.
5. FAA communications, signal, and security lines.
6. Runway lighting lines
7. Water supply piping.
9. Telephone lines.
10. Data lines.
12. High Temperature Hot Water (HTHW) and chilled water lines.
13. Dedicated Fire System (DFS) lines.

D. Contact the Airport Communications System (ACS) Help Desk at (703) 417-8300 a minimum of 72 hours prior to starting activities that include but are not limited to location and marking of horizontal locations of telephone and telecommunications lines belonging to the Authority as part of the Airport Communication System. Contact the Airport Communications System (ACS) Help Desk a minimum of 72 hours prior to beginning operations, that include but are not limited to excavating, boring, pile-driving, [blasting (if allowed on specific projects)], digging
or planting. Note the ACS does not locate utilities. Location is the responsibility of the Contractor’s underground utilities location subcontractor. The Airport Communications System (ACS) is merely notified as indicated previously.

E. The information in the Contract Documents concerning the type and location of underground utilities is neither guaranteed nor inclusive. The Contractor is responsible for determining the type and location of underground utilities, regardless of whether such utilities are indicated or not, so as to avoid damage thereto.

F. Check and verify the horizontal and vertical location (coordinates and elevation) of all utility lines that may exist within the limits of new work, regardless of whether such utilities are indicated or not, by use of a Subsurface Utility Engineering company. Reconfirm such locations and verification of utilities discovered, regardless of whether such utilities are indicated or not, and submit to the COTR a dimensional survey with such notations.

G. Dig test pits by hand shovel in the vicinity of the discovered utilities. Excavate test holes utilizing a vacuum excavator.

H. Repair any damage to discovered utility lines due to construction operations at no expense to the Authority. The Authority will assist the Contractor by making available any known information.

I. Submit to the COTR, for written approval, the name of the independent subsurface utility engineering company to be used.

J. The individual who performs the utility detection and location work shall have as a minimum five (5) years of similar experience in the area of subsurface utility detection and location engineering.

K. Submit to COTR the following:

1. List of utility detection equipment along with product information and data sheets that will be used specifically for this contract.
2. List of employee qualifications and résumés of those individuals who will be assigned specifically to this contract.
3. Within 60 calendar days of Notice to Proceed, a survey of all subsurface utility engineering results indicating the horizontal and vertical location, coordinates and elevation of all utilities.
1.14 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.

B. Provide a suction/pump truck during all sanitary sewer line outages to support the disabled lift stations. Transport sewage to alternate lift stations located on the Airport and dispose of in accordance with Airport procedures. Provide a suction/pump truck with a capacity of 3,000 gallons or greater.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

Unless Project includes provisions for products ordered in advance, indicate that Part 3, as well as Part 2, is not used.

3.1 SCHEDULE OF PRODUCTS ORDERED IN ADVANCE

If products ordered in advance are included in Project, insert a schedule below. See MASTERSPEC Evaluations for information and a sample schedule.

END OF SECTION 011000
To edit the attached specifications, the hidden text option must be enabled. This allows the specifications editor to view instructions throughout each specification section. To enable the hidden text option, in Word 2003, select “Tools” from the toolbar at top. Within “Tools”, select “Options”. Under “Options” select “View”. Look under “Formatting Marks” and make sure that the “Hidden Text” box is checked. Hidden text should now be visible within the document. In Word 2008, click on upper left “Office Button”. Click on “word Options” at bottom of menu. Click on “Display”. Under “always show these formatting marks on the screen” check the hidden text box. Hidden text should now be visible within the document.

Instructions to the Editor are found in the following locations:

**Specification 012100 – Allowances**
Before Part 1 – General
Before 1.2 B. 1
Before 1.2 C. 1
Before 1.3 A
Before 1.4 A
Before 1.6 A
Before 1.7 A
Before 1.7 B
Before 1.8 A
Before 3.3 A
After 3.3 A
SECTION 012100 - ALLOWANCES

Much of this Section consists of Project-specific data. Examples given in the model text in the Evaluations illustrate possible Section content. Use model text to develop text for specific Project requirements. See Evaluations.

Verify that Section titles referenced in this Section are Correct for this project’s Specifications; Section titles may have changed.

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 governing allowances.

1. Certain materials and equipment are specified in the Contract Documents by allowances. In some cases, these allowances include installation. Allowances have been established in lieu of additional requirements and to defer selection of actual materials and equipment to a later date when additional information is available for evaluation. If necessary, additional requirements will be issued by Contract Modification.

B. Types of allowances include the following:

From list below, delete allowances not required.

1. Lump-sum allowances.
2. Unit-cost allowances.
3. Contingency allowances.
4. Quantity allowances.

C. Related Sections include the following:

Division 01 Section below contains requirements that relate directly to allowances. Delete if quantity allowances are not included.

1. Division 01 Section "Unit Prices" for procedures for using unit prices.
2. Divisions 02 through 33 Sections for items of Work covered by allowances.

1.3 SELECTION AND PURCHASE

Coordinate first paragraph below with Division 01 Section "Submittals." Indicate critical dates on both Contractor's Construction Schedule and Submittals Schedule.

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

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

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

1.4 SUBMITTALS

Retain first paragraph below because actual cost is seldom the same as allowance amount. This is good practice even if costs are identical (for example, zero-dollar Contract Modification).

A. Submit proposals for purchase of products or systems included in allowances, in the form specified for Contract Modifications.

B. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.

C. Coordinate and process submittals for allowance items in same manner as for other portions of the Work.

1.5 COORDINATION

A. Coordinate allowance items with other portions of the Work. Furnish templates as required to coordinate installation.

1.6 [LUMP-SUM] [UNIT-COST] [AND] [QUANTITY] ALLOWANCES

Requirements in this Article coordinate with AIA Document A201. Revise to suit Project and Authority Contract Requirements.

A. Allowance shall include cost to Contractor of specific products and materials ordered by Owner under allowance and shall include taxes, freight, and delivery to Project site.

B. Contractor's costs for receiving and handling at Project site, labor, installation, overhead and profit, and similar costs related to products and materials ordered by Owner under allowance shall be included as part of the Contract Sum and not part of the allowance.
1.7 CONTINGENCY ALLOWANCES

Delete this Article if contingency allowances are not used. See Evaluations.

A. Use the contingency allowance only as directed by COTR for Authority's purposes and only by Change Orders that indicate amounts to be charged to the allowance.

Retain first paragraph below because contingency allowances differ from lump sum and unit-cost allowances. When preparing the bid, the Contractor does not know how the Authority will use contingency allowances. First two paragraphs below provide an equitable way to reimburse Contractor for unknown costs associated with contingency allowances. Retain third paragraph to credit the Authority with unusual amounts remaining when Project is complete. See Evaluations.

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

C. Change Orders authorizing use of funds from the contingency allowance will include Contractor's related costs and reasonable overhead and profit margins.

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

1.8 UNUSED MATERIALS

Delete this Article if allowances are used for low-cost or single-unit items because retaining the requirement in these circumstances could be unnecessary. Specify requirements for extra materials (attic stock) in the Section that specifies the product covered by the allowance.

A. Return unused materials purchased under an allowance to manufacturer or supplier for credit to the Authority, after installation has been completed and accepted.

1. If requested by COTR, prepare unused material for storage by the Authority when it is not economically practical to return the material for credit. If directed by COTR, deliver unused material to the Authority's storage space. Otherwise, disposal of unused material is Contractor's responsibility.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

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

A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

3.3 SCHEDULE OF ALLOWANCES

Copy and re-edit paragraph below for each allowance required for Project. See samples of allowance descriptions in the Evaluations.

A. Allowance No. <Insert number>: Include <Insert allowance description> as specified in Division <Insert Division number> Section "<Insert Section title>"[and as shown on Drawings].

Repeat above as often as necessary to include all allowances for Project.

END OF SECTION 012100
To edit the attached specifications, the hidden text option must be enabled. This allows the specifications editor to view instructions throughout each specification section. To enable the hidden text option, in Word 2003, select “Tools” from the toolbar at top. Within “Tools”, select “Options”. Under “Options” select “View”. Look under “Formatting Marks” and make sure that the “Hidden Text” box is checked. Hidden text should now be visible within the document. In Word 2008, click on upper left “Office Button”. Click on “word Options” at bottom of menu. Click on “Display”. Under “always show these formatting marks on the screen” check the hidden text box. Hidden text should now be visible within the document.

Instructions to the Editor are found in the following locations:

**Section 012200 – Unit Prices**
Before Part 1 – General
Before 1.1 B
Before 1.2 B. 1
Before 1.3 A
Before 1.3 B
Before 1.4 B
Before 1.4 D
Before 3.1 A
After 3.1 A. 2
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SECTION 012200 - UNIT PRICES

Much of this Section consists of Project-specific data. Examples given in the model text in the Evaluations illustrate possible Section content. Use model text to develop text for specific Project requirements. See Evaluations.

Verify that Section titles referenced in this Section are Correct for this project’s Specifications; Section titles may have changed.

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.

It is the responsibility of the Architect/Engineer to provide the following schedule.

B. The Price Proposal Form can be found in Section III, "Schedule”.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for unit prices.

B. Related Sections include the following:

First Division 01 Section below contains requirements that relate directly to unit prices.

1. Division 01 Section "Allowances" for procedures for using unit prices to adjust quantity allowances.

2. Division 01 Section "Measurement and Payment" for procedures for measurement and payment for unit-price items.

1.3 DEFINITIONS

Use definition below only if Project is a lump-sum type contract with unit prices included for Contract Modification or alternates only. Do not use definition for "civil" projects that use unit prices exclusively.

A. Unit price is an amount proposed by offerors, stated on the Schedule as a price per unit of measurement for materials or services added to or deducted from the Contract Price by
appropriate modification according to the Contract Provision Payments. -Construction Contracts, Paragraph H, "Variation in Estimated Quantities," if estimated quantities of work required by the Contract Documents are increased or decreased.

Use definition below if Project is a "civil" project that uses unit prices.

B. A unit price is an amount proposed by offerors and stated on the Schedule as a price per unit of measurement for materials or services. An estimate of the quantities of work to be done and materials to be furnished under these specifications is given in Section III, "Schedule." It is given only as a basis for comparison of proposals and the award of the Contract. The Authority does not expressly or by implication agree that the actual quantities involved will correspond exactly therewith; nor shall Contractor plead misunderstanding or deception because of such estimates of quantities, or of the character, location, or other conditions pertaining to the work. Payment to Contractor will be made only for the actual quantities of work performed or materials furnished according to the plans and specifications. Refer to “Contract Provisions”, Section VII, Payments - Construction Contracts, Paragraph H, "Variation in Estimated Quantities."

1.4 PROCEDURES

A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, applicable taxes, overhead, and profit. The sum of all extended unit prices in the Section III, "Schedule," shall be deemed to include all work described in the Contract Documents including Drawings and Specifications.

Architects/Engineers refer to CSI Section Format™ for the PROPER location within the 3 PART CSI Format. Measurement and Payment paragraphs should be located in PART 1 – General and located in SUMMARY Article. DO NOT invent a Part 5 for Measurement and Payment.

B. Measurement and Payment: Refer to individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections and in Division 01 Section "Measurement and Payment."

C. The Authority reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured, at the Authority's expense, by an independent surveyor acceptable to Contractor.

Retain paragraph and subparagraph below and revise to suit Project. Delete subparagraph as necessary. Architect/Engineer, ensure that the following paragraph is true for each project. Certain projects list Unit Prices in Section III “Schedule” of the contract documents. Select either the first or second sentence in brackets. Sentence selected must agree with method used to designate “Unit Price” items.

D. List of Unit Prices: [A list of unit prices is included at the end of this Section.] [A list of unit prices is included in Section III “Schedule” of the Contract Documents] Specification Sections referenced in the Schedule contain requirements for materials described under each unit price.

1. The Price Proposal Form can be found in Section III, "Schedule," of the Contract Documents. If applicable, Specification Sections referenced in the Schedule contain requirements for materials and methods described under each unit price.
PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 LIST OF UNIT PRICES

Copy and re-edit paragraph and subparagraphs below for each unit price required for Project. See samples of unit-price descriptions in the Evaluations.

A. Unit Price No. <Insert unit-price number> - <Insert unit-price item>:

1. Description: <Insert unit-price item description> according to Division <Insert Division number> Section "<Insert Section title>.,"
2. Unit of Measurement: <Insert unit of measurement.>

Repeat above as often as necessary to include all unit prices required for Project.

END OF SECTION 012200
To edit the attached specifications, the hidden text option must be enabled. This allows the specifications editor to view instructions throughout each specification section.
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In Word 2008, click on upper left “Office Button”. Click on “word Options” at bottom of menu. Click on “Display”. Under “always show these formatting marks on the screen” check the hidden text box. Hidden text should now be visible within the document.

Instructions to the Editor are found in the following locations:

**Section 012210 – Measurement and Payment**
Before Part 1 – General
Before 1.2 D
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 governing methods of measurement and computations to be used in determination of quantities of material furnished and unit amount of Work performed under the Contract in order for Contractor to receive payment according to pre-established unit prices.

B. At the discretion of the COTR, payment may be reduced for any Work which is not in full compliance with the Contract Documents or which has been damaged or repaired by Contractor. Such action may be used when the end product may have a reduced service life or less than desirable aesthetic characteristics.

C. Descriptions of unit-price items are specified in Division 01 Section "Unit Prices."

Retain either paragraph above or below, depending on type of contract and method of payment. Above is for lump-sum contract and below for unit-price contract.


1.3 MEASUREMENT OF QUANTITIES

A. All volumes or quantities used to determine unit-price payment will be measured by COTR, or by COTR’s authorized representatives, using methods generally recognized as conforming to
good engineering practice. Unless otherwise indicated, measurement shall be in U.S. Customary Units of Measurement.

B. Unless otherwise indicated, longitudinal measurements for area computations will be made horizontally, and no deductions will be made for individual fixtures (or leave-outs) having an area of 9 sq. ft. or less. Unless otherwise indicated, transverse measurements for area computations will be the neat dimensions shown on Drawings.

1. Structures will be measured according to neat lines shown on the plans or as altered to fit field conditions.
2. Measure all Contract items measured by the linear foot, such as electrical ducts, conduits, pipe culverts, under drains, and similar items, parallel to the base of foundation on which such items are placed, unless otherwise indicated.
3. In computing volumes of excavation, use the average end area method or other acceptable method.

C. The thickness of plates and galvanized sheet used in the manufacture of corrugated metal pipe, metal plate pipe culverts and arches, and metal cribbing will be specified and measured in decimal fraction of inches.

D. Haul materials, to be measured by volume in the hauling vehicle, in approved vehicles and measured therein at the point of delivery. Vehicles for this purpose may be of any size or type acceptable to and approved in advance by COTR, provided that the body is of such shape that the actual contents may be readily and accurately determined. Load all vehicles to at least their water-level capacity. Level loads when the vehicles arrive at the point of delivery.

1. When requested by Contractor and approved by COTR in writing, material specified to be measured by the cubic yard may be weighed, and such weights will be converted to cubic yards for payment purposes. Factors for conversion from weight measurement to volume measurement will be determined by COTR and agreed to by Contractor before such method of measurement of pay quantities is used.
2. The term "ton" will mean the short ton consisting of 2000-lb avoirdupois. Weigh all materials, which are measured or proportioned by weights, on accurate, approved scales by competent, qualified personnel at locations designated by COTR.
   a. If material is shipped by rail, the car weight may be accepted, provided that only the actual weight of material will be paid for. However, car weights will not be acceptable for material to be passed through mixing plants.
   b. Weigh trucks used to haul material being paid for by weight empty daily at such times as COTR directs. Each truck shall bear a plainly legible identification mark.

E. Measure bituminous materials by the gallon or ton. When measured by volume, measure such volumes at 60 deg F or measure corrected to the volume at 60 deg F, using ASTM D 1250 for asphalts or ASTM D 633 for tars.

1. Net certified scale weights or weights based on certified volumes in the case of rail shipments will be used as a basis of measurement, subject to correction when bituminous material has been lost from the car or the distributor, wasted, or otherwise not incorporated into the Work.
2. When bituminous materials are shipped by truck or transport, net certified weights by volume, subject to correction for loss or foaming, may be used for computing quantities.
F. Concrete will be measured by the cubic yard in place, unless otherwise indicated.

G. The term "each" when used as an item of payment shall mean complete payment for the work described in the Contract.

   1. When a complete structure or structural unit is to be provided, and "each" is specified, as the unit of measurement, the unit will be construed to include all necessary fitting, accessories, and work incidental to the work item.

H. Rental of equipment will be measured by time in hours of actual working time and necessary traveling time of the equipment within the limits of the Work. Special equipment ordered by COTR in connection with "force account work" will be measured as agreed in Contract Modification authorizing such force account work as provided in the Contract Documents.

I. When standard manufactured items are specified such as fence, wire, plates, rolled shapes, pipe conduit, etc., and these items are identified by gage, unit weight, section dimensions, etc., such identification will be considered to be nominal weights or dimensions. Unless more stringently controlled by tolerances in cited Specifications, manufacturing tolerances established by the industries involved will be accepted.

J. When estimated quantities for a specific portion of the Work are designated as the pay quantities in the Contract, they shall be the final quantities for which payment for such specific portion of the Work will be made, unless the dimensions of said portions of the Work shown on Drawings are revised by Contract Modification signed by the Contracting Officer.

   1. If revised dimensions result in an increase or decrease in quantities of such Work, final quantities for payment will be revised in the amount represented by the authorized changes in the dimensions.

1.4 SCALES

A. Scales for weighing materials, which are required to be proportioned or measured and paid for by weight, shall be furnished, erected, and maintained by Contractor or be certified permanently installed commercial scales.

B. Scales shall be accurate within one-half percent of the current weight throughout the range of use. Contractor shall have scales checked under the observation of the inspector before beginning Work and at such other times as requested. The intervals shall be uniform in spacing throughout the graduated or marked length of the beam or dial and shall not exceed one-tenth of 1 percent of the nominal rated capacity of the scale, but not less than 1 lb. The use of spring balances will not be permitted.

   1. Beams, dials, platforms, and other scale equipment shall be so arranged that the operator and the inspector can safely and conveniently view them.
   2. Scale installations shall have available 10 standard 50-lb weights for testing the weighing equipment or suitable weights and devices for other approved equipment.
   3. Scales must be tested for accuracy and serviced before use at a new site. Platform scales shall be installed and maintained with the platform level and rigid bulkheads at each end.
   4. Scales "overweighing" (indicating more than correct weight) will not be permitted to operate, and all materials received subsequent to the last previous correct weighing-
accuracy test will be reduced by the percentage of error in excess of one-half of 1 percent.

5. In the event inspection reveals the scales have been "under-weighing" (indicating less than correct weight), they shall be adjusted, and no additional payment to Contractor will be allowed for materials previously weighted and recorded.

C. All costs in connection with furnishing, installing, certifying, testing, and maintaining scales; for furnishing check weights and scale house; and for all other items specified in this Section for the weighing of materials for proportioning or payment shall be included in the unit Contract prices for the various items of Project.

1.5 PAYMENT FOR MATERIALS ON HAND

A. Partial payments may be made to the extent of the delivered cost of materials to be incorporated into the Work, provided that such materials meet the requirements of the Contract, Drawings, and Specifications and are delivered to acceptable sites on the Airport property or at other sites in the vicinity that are acceptable to COTR. Such delivered costs of stored or stockpiled materials may be included in the next partial payment application after the following conditions are met:

1. COTR accepts the manner in which the material has been stored at or on an approved site.
2. Contractor provides COTR with acceptable evidence of quantity and quality of the materials.
3. Contractor provides COTR with acceptable evidence that the material and transportation costs have been paid.
4. Contractor provides the Authority legal title, free of liens or encumbrances of any kind, to the material so stored and stockpiled.
5. Contractor provides the Authority evidence that the material so stored or stockpiled is insured against loss by damage to or disappearance of such materials at anytime before use in the Work.
6. Contractor provides the Authority with manufacturer’s installation and maintenance information.

B. It is understood and agreed that the transfer of title and the Authority's payment for such stored or stockpiled materials shall in no way relieve Contractor of responsibilities for furnishing and placing such materials according to the requirements of the Contract Documents.

C. In no case will the amount of partial payments of materials on hand exceed the Contract price for the materials or the Contract price for the Contract item in which the material is intended to be used.

D. No partial payment will be made for living or perishable plant materials.

E. Contractor bears all costs associated with the partial payment of stored or stockpiled materials according to the provisions of this Section.
PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012210
To edit the attached specifications, the hidden text option must be enabled. This allows the specifications editor to view instructions throughout each specification section. To enable the hidden text option, in Word 2003, select “Tools” from the toolbar at top. Within “Tools”, select “Options”. Under “Options” select “View”. Look under “Formatting Marks” and make sure that the “Hidden Text” box is checked. Hidden text should now be visible within the document.

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Instructions to the Editor are found in the following locations:

**Section 012300 – Alternates**
Before Part 1 – General
Before 1.3 A
Before 1.4 A
Before 1.4 B
Before 3.1 A
After 3.1 A
SECTION 012300 - ALTERNATES

Much of this Section consists of Project-specific data. Examples given in the model text in the Evaluations illustrate possible Section content. Use model text to develop text for specific Project requirements. See Evaluations.

Verify that Section titles referenced in this Section are Correct for this project’s Specifications; Section titles may have changed.

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

Definition in this Article assumes the normal proposal situation applies, with offerers stating alternate amounts requested on the Proposal Form. It also assumes that the Authority will decide to accept or reject alternates before signing the Authority/Contractor Agreement.

Revise definition below to suit Project.

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

Make certain the Proposal Form clearly states that prices listed for each alternate include costs of related
coordination, modification, or adjustment. If not clearly stated, revise paragraph and subparagraph below
by stating this requirement.

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.

Retain first paragraph below for most projects. Failure to require notification could create problems later.

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

In paragraph below, remove text enclosed in angle brackets and insert text to suit Project. See
MASTERSPEC Evaluations for samples of alternate descriptions.

A. Alternate No. <Insert number>: <Insert description of alternate.>

Repeat above as often as necessary to include all alternates for Project.

END OF SECTION 012300
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Instructions to the Editor are found in the following locations:

**Section 012900 Application for Payment**
Before Part 1 – General
Before 1.2 B. 1
Before 1.4 A. 1. a
Before 1.4 A. 3
Before 1.4 B
Before 1.4 B. 1. a
Before 1.4 B. 2. a
Before 1.4 B. 7
Before 1.4 B. 8
Before 1.4 B. 9
Before 1.5 A
Before 1.5 B
Before 1.5 G. 1
Before 1.5 G. 13
Before 1.5 J. 1
SECTION 012900 – APPLICATION FOR PAYMENT

Much of this Section consists of Project-specific data. Examples given in the model text in the Evaluations illustrate possible Section content. Use model text to develop text for specific Project requirements. See Evaluations.

Verify that Section titles referenced in this Section are Correct for this project’s Specifications; Section titles may have changed.

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:

Changes to the Contract may involve close coordination between this Section and Sections listed in subparagraphs below.

1. Division 01 Section "Allowances" for procedural requirements governing handling and processing of allowances.
2. Division 01 Section "Unit Prices" for administrative requirements governing use of unit prices.
3. Division 01 Section "Measurement and Payment" for administrative requirements governing methods of measurement and determination of quantities of materials for use with unit prices.
4. Division 01 Section "Construction Progress Documentation" for administrative requirements governing preparation and submittal of Contractor's Construction Schedule and Submittals Schedule.
5. Division 01 Section “Project Closeout” for submittal of items required before final payment.
6. Division 01 Section “Project Record Documents” for procedural requirements governing the submission of Project Record Documents.
7. 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:

Revise list below to suit Project.

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.

Delete subparagraph below if phasing is not required. See MASTERSPEC Evaluations in Division 01 Section "Summary." For large projects, consider revising below to provide sub schedules for separate floors or large individual areas.

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.

Retain paragraph and subparagraphs below. Revise to suit Project. If desired, include a sample schedule of values at end of this Section.

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:

Revise list below to suit Project.
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:

Revise list below to suit Project.

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.

Delete subparagraph below if Specifications do not include unit-cost allowances. Do not confuse unit-cost allowances with unit prices. See MASTERSPEC Evaluations in Division 01 Section "Allowances"
for discussion on unit-cost allowances, including potential differences that can occur in dollar amounts between offerers as a result of different procedures in estimating quantities.

7. Allowances: Provide a separate line item in the Schedule of Values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.

See MASTERSPEC Evaluations for discussion on overhead distribution.

8. 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.

Revise subparagraph below to suit Project. As an alternate approach to method described, include each Contract Modification as a new line item or a separate sheet.

9. 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

See MASTERSPEC Evaluations for discussion on waiver of liens and other documentation involved.

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.

Retain first paragraph below when the Authority/Contractor Agreement stipulates payment dates. These dates might affect Contractor's need to have sufficient funds available to finance construction operations. If a potential problem arises, review dates in a pre-construction conference.

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:

Revise list below to suit Project.

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.
10. Initial progress report.

Delete items submitted before executing the Contract from those listed below.

13. Initial settlement survey and damage report if required.
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:

Delete from and add to list below to suit Project. Check with the Authority about the need for additional affidavits and other requirements.

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)

END OF SECTION 012900
To edit the attached specifications, the hidden text option must be enabled. This allows the specifications editor to view instructions throughout each specification section.
To enable the hidden text option, in Word 2003, select “Tools” from the toolbar at top. Within “Tools”, select “Options”. Under “Options” select “View”. Look under “Formatting Marks” and make sure that the “Hidden Text” box is checked. Hidden text should now be visible within the document.
In Word 2008, click on upper left “Office Button”. Click on “word Options” at bottom of menu. Click on “Display”. Under “always show these formatting marks on the screen” check the hidden text box. Hidden text should now be visible within the document.

Instructions to the Editor are found in the following locations:

**Specification 013100 – Project Management and Coordination**
Before Part 1 – General
Before 1.2 A. 1
Before 1.3 C. 1
Before 1.3 D
Before 1.5 A
Before 1.5 B
Before 1.5 C
Before 1.5 G. 8
Before 1.7 A. 3. a
Before 1.7 B. 3. a
Before 1.7 C. 3. a
Before 1.7 D. 3
Before 1.7 D. 3. b. 1
Much of this Section consists of Project-specific data. Examples given in the model text in the Evaluations illustrate possible Section content. Use model text to develop text for specific Project requirements. See Evaluations.

Verify that Section titles referenced in this Section are Correct for this project’s Specifications; Section titles may have changed.

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:

Delete requirements below not included. Insert special requirements to suit Project.

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:

Insert other administrative activities to suit Project.

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.

Insert specific conservation requirements in appropriate Sections.

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 Manager, 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)

Revise this Article to suit Project, special Owner requirements, and office practice.

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.

If needed, insert requirements for frivolous RFIs. Some owners and design professionals include a provision that assesses the cost of the design professional's time and materials to Contractor for unnecessary or frivolous RFIs.

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.

Retain one of first two paragraphs and associated subparagraph below.

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 [weekly] prior to progress meeting for inclusion in progress meeting minutes. [Include the following:] [Software log with not less than 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.

Retain one of two subparagraphs below.
   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:

Architect/Engineer to add or delete items as necessary and as coordinated with the Authority Project Manager.

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:

   Add items to suit Project. Coordinate this Section with the Authority Program Manager for provision of standard agenda format.

   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:

Delete unnecessary items from list below. Add items to suit Project.

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.
1. 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.

Retain first paragraph below if a project closeout conference is required. Revise number of days to suit
Project.

D. Project Closeout Conference: COTR will schedule and conduct a Project Closeout Conference
   no later than [90] <Insert number> days prior to the scheduled date of Substantial Completion.

Revise subparagraphs below if conducting conference is the responsibility of the Contractor.

   1. Conduct the conference to review requirements and responsibilities related to Project
      closeout.

   2. Attendees: Contracting Officer, COTR, Authority Design Project Manager, 
      Architect/Engineer, Contractor and its key personnel; major subcontractors; suppliers; 
      and other concerned parties shall attend the meeting. Participants at the meeting shall be 
      familiar with Project and authorized to conclude matters relating to the Work.

   3. Agenda: Discuss items of significance that could affect or delay Project closeout, 
      including the following:

Revise subparagraphs below to suit Project.

   a. Preparation of record documents.
   b. Procedures required prior to inspection for Substantial Completion and for final 
      inspection for acceptance.
   c. Submittal of written warranties.

Retain first subparagraph below for projects with LEED or other sustainable design documentation 
requirements.

d. Requirements for preparing sustainable design documentation.
e. Requirements for preparing operations and maintenance data.

f. Requirements for demonstration and training.
g. Preparation of Contractor's punch list.
h. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
i. Submittal procedures.

Retain first subparagraph below for projects with separate contracts that may impact Contractor's work and procedures at project closeout.

j. Coordination of separate contracts.
k. Owner's partial occupancy requirements.
l. Installation of Owner's furniture, fixtures, and equipment.
m. Responsibility for removing temporary facilities and controls.

4. Minutes: Entity conducting meeting will record and distribute meeting minutes.

E. 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.

Revise subparagraph and associated subparagraphs below to suit Project.

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:

Adjust list below to suit Project.

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.

F. 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
To edit the attached specifications, the hidden text option must be enabled. This allows the specifications editor to view instructions throughout each specification section.

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In Word 2008, click on upper left “Office Button”. Click on “word Options” at bottom of menu. Click on “Display”. Under “always show these formatting marks on the screen” check the hidden text box. Hidden text should now be visible within the document.

Instructions to the Editor are found in the following locations:

**Specification 013200A – Construction Progress Documentation**
Before Part 1 – General
Before 1.2 C. 1
Before 1.2 D. 1
After 3.5 A
SECTION 013200A - CONSTRUCTION PROGRESS DOCUMENTATION

Much of this Section consists of Project-specific data. Examples given in the model text in the Evaluations illustrate possible Section content. Use model text to develop text for specific Project requirements. See Evaluations.

Verify that Section titles referenced in this Section are correct for this Project’s Specifications; Section titles may have changed.

As a rule, 013200A should be used for small, uncomplicated projects of less than $5,000,000.

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:

Delete types of schedules below not required. Add new schedule types as necessary.

2. Submittals Schedule.
3. Schedule of Tests and Inspections.
4. Record, As-Built CPM Schedule.

D. Reports required include the following:

Delete types of reports below not required. Add new report types as necessary.

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).
10. Meter readings and similar recordings.
11. Emergency procedures.
12. Orders and requests of governing authorities.
14. Services connected, disconnected.
15. Equipment or system tests and startups.
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.

Other reports may be required and inserted.

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 affected 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
To edit the attached specifications, the hidden text option must be enabled. This allows the specifications editor to view instructions throughout each specification section.
To enable the hidden text option, in Word 2003, select “Tools” from the toolbar at top. Within “Tools”, select “Options”. Under “Options” select “View”. Look under “Formatting Marks” and make sure that the “Hidden Text” box is checked. Hidden text should now be visible within the document.
In Word 2008, click on upper left “Office Button”. Click on “word Options” at bottom of menu. Click on “Display”. Under “always show these formatting marks on the screen” check the hidden text box. Hidden text should now be visible within the document.

Instructions to the Editor are found in the following locations:

**Specification 013200B – Construction Progress Documentation**
Before Part 1 – General
Before 1.2 C. 1
Before 1.2 D. 1
After 3.6 A
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:

Delete types of schedules below not required. Add new schedule types as necessary.

   1. Preliminary 90-day, CPM cost-loaded Schedule and related narrative.
   2. Contract Construction Progress Schedule in CPM format and related narrative and cash flow projection curves.
   4. Schedule of Tests and Inspections.
   5. Record, As-Built CPM Schedule.

D. Reports required include the following:

Delete types of reports below not required. Add new report types as necessary.
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- and resource-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. Preliminary Schedule: A CPM schedule covering all Contractor activities to be started and/or completed within the first 90 days of the Contract Duration.

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

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

L. 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-and resource-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 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. Preliminary Schedule: The Preliminary Schedule and its related narrative as described in this Section shall be submitted at the pre-construction meeting. Within 14 calendar days, COTR will respond with approval or direction to change and Contractor shall resubmit within 7 calendar days, if required.

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

E. 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.

F. Record As-Built CPM Contract Schedule: A Record Contract 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.

G. Qualification Data: For Project Scheduler.

1.6 QUALITY ASSURANCE

A. Project Scheduler Qualifications: Minimum of three 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 will be 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 PRELIMINARY SCHEDULE

A. Contractor shall prepare a Preliminary Cost-Loaded Schedule covering the first 90 calendar
days of the Contract Duration. The Preliminary Schedule format shall be the critical path
method.

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.

B. The Preliminary Schedule shall show all significant work activities that occur in the first 90
days, including planning, mobilization, procurement, fabrication, submittals, and construction.
A comprehensive log of all submittals required by Contract shall accompany the Preliminary
Schedule. The Preliminary Schedule shall also include Contractor's conceptual plan for completion within the Contract Duration.

1. Acceptance of cost-loaded Preliminary Schedule by COTR shall not constitute acceptance of Schedule of Values for any cost-loaded activities.

C. A narrative describing Contractor's approach to mobilization, procurement, and construction during the first 90 days shall accompany the Preliminary Schedule. The narrative shall elaborate on the basis for durations, production rates, major equipment to be used, and shall identify all major assumptions used to develop the 90-day schedule.

1. Contractor shall assign cost to construction activities on the Preliminary 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. Activities shall be cost coded as directed by COTR.

3.3 CONTRACT CPM SCHEDULE

A. Scheduling Requirements: The Contract CPM Schedule shall be a computerized cost- and resource-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 and resource loaded to show the direct craft man-days and major equipment 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 and resource 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 non-working 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 3.3-A-7 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.

3.4 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).
10. Meter readings and similar recordings.
11. Emergency procedures.
12. Orders and requests of governing authorities.
14. Services connected, disconnected.
15. Equipment or system tests and startups.
17. Substantial Completions authorized.
18. Material deliveries.

3.5 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.

3.6 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.

Other reports may be required and inserted.

3.7 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.

3.8 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 problem(s) encountered and proposed solution(s) 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 3.3-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.

3.9 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.

3.10 RECORD, AS-BUILT CPM 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.
To edit the attached specifications, the hidden text option must be enabled. This allows the specifications editor to view instructions throughout each specification section.
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In Word 2008, click on upper left “Office Button”. Click on “word Options” at bottom of menu. Click on “Display”. Under “always show these formatting marks on the screen” check the hidden text box. Hidden text should now be visible within the document.

Instructions to the Editor are found in the following locations:

**Specification 013200C – Construction Progress Documentation**
Before Part 1 – General
Before 1.2 C. 1
Before 1.2 D. 1
After 3.6 A
SECTION 013200C - CONSTRUCTION PROGRESS DOCUMENTATION

Much of this Section consists of Project-specific data. Examples given in the model text in MASTERSPEC Evaluations illustrate possible Section content. Use the model text to develop text for specific Project requirements. See Evaluations.

Verify that Section titles referenced in this Section are correct for this Project's Specifications; Section titles may have changed.

In general, 013200C should be used for large projects, valued over $50,000,000, and or complicated by for example multiple phases.

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:

Delete types of schedules below not required. Add new schedule types as necessary.

1. Preliminary 90-day, CPM cost-loaded Schedule and related narrative.
2. Contract Construction Progress Schedule in CPM format and related narrative and cash flow projection curves.
4. Schedule of Tests and Inspections.
5. Record, As-Built CPM Schedule.

D. Reports required include the following:

Delete types of reports below not required. Add new report types as necessary.
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 Coordination and Meetings" 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- and resource-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. Preliminary Schedule: A CPM schedule covering all Contractor activities to be started and/or completed within the first 90 days of the Contract Duration.

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

J. 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.

K. Successor Activity: An activity that follows another activity in the network.
L. **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-and resource-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 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. **Preliminary Schedule:** The Preliminary Schedule and its related narrative as described in this Section shall be submitted at the preconstruction meeting. Within 14 calendar days, COTR will respond with approval or direction to change and Contractor shall resubmit within 7 calendar days, if required.

C. **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.

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

F. Record As-Built CPM Contract Schedule: A Record Contract 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.

G. Qualification Data: For Project Scheduler.

1.6 QUALITY ASSURANCE

A. Project Scheduler Qualifications: Minimum of three 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 shall be 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.
2. Project Scheduler shall be available on-site full time.
3. Time-impact analyses and special reports shall be provided at no additional cost to The Authority.

3.2 PRELIMINARY SCHEDULE

A. Contractor shall prepare a Preliminary Cost-Loaded Schedule covering the first 90 calendar days of the Contract Duration. The Preliminary Schedule format shall be the critical path method.

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.

B. The Preliminary Schedule shall show all significant work activities that occur in the first 90 days, including planning, mobilization, procurement, fabrication, submittals, and construction. A comprehensive log of all submittals required by Contract shall accompany the Preliminary
Schedule. The Preliminary Schedule shall also include Contractor's conceptual plan for completion within the Contract Duration.

1. Acceptance of cost-loaded Preliminary Schedule by COTR shall not constitute acceptance of Schedule of Values for any cost-loaded activities.

C. A narrative describing Contractor's approach to mobilization, procurement, and construction during the first 90 days shall accompany the Preliminary Schedule. The narrative shall elaborate on the basis for durations, production rates, major equipment to be used, and shall identify all major assumptions used to develop the 90-day schedule.

1. Contractor shall assign cost to construction activities on the Preliminary 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. Activities shall be cost coded as directed by COTR.

3.3 CONTRACT CPM SCHEDULE

A. Scheduling Requirements: The Contract CPM Schedule shall be a computerized cost- and resource-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 and resource loaded to show the direct craft man-days and major equipment 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 and resource 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 3.3-A-7 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.

3.4 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).
10. Meter readings and similar recordings.
11. Emergency procedures.
12. Orders and requests of governing authorities.
14. Services connected, disconnected.
15. Equipment or system tests and startups.
17. Substantial Completions authorized.
18. Material deliveries.

3.5 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.

3.6 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.

Other reports may be required and inserted.

3.7 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 three calendar days of an occurrence. Submit a copy to other parties affected by the occurrence.

3.8 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 3.3-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.

### 3.9 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.

3.10 RECORD CPM 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
To edit the attached specifications, the hidden text option must be enabled. This allows the specifications editor to view instructions throughout each specification section.

To enable the hidden text option, in Word 2003, select “Tools” from the toolbar at top. Within “Tools”, select “Options”. Under “Options” select “View”. Look under “Formatting Marks” and make sure that the “Hidden Text” box is checked. Hidden text should now be visible within the document.

In Word 2008, click on upper left “Office Button”. Click on “word Options” at bottom of menu. Click on “Display”. Under “always show these formatting marks on the screen” check the hidden text box. Hidden text should now be visible within the document.

Instructions to the Editor are found in the following locations:

**Specification – 013233 – Photographic Documentation**
Before Part 1 – General
Before 1.2 A. 1
Before 1.3 A
After 3.1 C
Before 3.2 A
Before 3.2 B
Before 3.2 C
Before 3.2 C. 2. a
Before 3.2 D. 1
Before 3.2 E. 3. a
Before 3.3 C
After 3.3 D
Before 3.4 A
Before 3.4 A. 1
Before 3.4 B
Before 3.4 C
Before 3.4 C. 1. a
SECTION 013233 - PHOTOGRAPHIC DOCUMENTATION

Much of this Section consists of Project-specific data. Examples given in the model text in the Evaluations illustrate possible Section content. Use model text to develop text for specific Project requirements. See Evaluations.

Verify that Section titles referenced in this Section are Correct for this project’s Specifications; Section titles may have changes.

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:

Adjust list below to suit Project. Construction video recordings may only be needed for very large projects.

1. Preconstruction photographs.
2. Periodic construction photographs.
3. Final Completion construction photographs.
4. Preconstruction video recordings.
5. Periodic construction video recordings.
6. Time-lapse sequence construction video recordings.

B. Related Sections include the following:

1. Division 01 Section "Unit Prices" for procedures for unit prices for extra photographs.
2. Division 01 Section "Submittals" for submitting construction photographs.
3. Division 01 Section "Project Closeout" for submitting photographic documentation as Project Record Documents at Project closeout.
4. Division 01 Section “Demonstration and Training” for submitting videotapes of demonstration of equipment and training of Authority’s personnel.
5. Division 02 Section "Structure Demolition" for photographic documentation before demolition operations commence.
6. Division 02 Section “Selective Structure Demolition” for photographic documentation before selective demolition operations commence.

1.3 UNIT PRICES

Retain this Article if unit prices apply to Work of this Section. Coordinate below with proposal forms.

A. Basis for Proposals: Base number of construction photographs on twenty photographs per month over the duration of Project.

1.4 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 [video recording]. Indicate elevation or story of construction. Include the same label information as the corresponding set of photographs [videotape].

C. Digital Photographs: Submit image files within [three] <Insert number> days of taking photographs.

   2. Format: Format: Minimum [3200 by 2400] <Insert resolution> pixels, in unaltered original files, with same aspect ratio as the sensor, uncropped, date and time stamped, in folder named by date of photograph, accompanied by key plan file.
   3. Identification: Provide the following information with each image description in file metadata tag:

      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.
      h. Unique sequential identifier keyed to accompanying key plan.

D. Construction Photographs: Submit four prints of each photographic view within five days of taking photographs.

   1. Format: 8-by-10-inch smooth-surface matte prints on single-weight commercial-grade photographic paper mounted on card stock to allow a 1-inch-wide margin and enclosed back to back in clear plastic sleeves that are punched for standard 3-ring binder.
2. Identification: On back of each print, provide a computer generated applied label with 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. Negatives: Submit a complete set of photographic negatives in protective envelopes with each submittal of prints. Identify date photographs were taken.

E. Video Recordings: Submit two copies of an authored DVD containing every second of the images contained on each of the mini DVs seven calendar days after recording.

1. Identification: On each DVD, provide a label printed directly on the DVD, no stick on labels are allowed, with 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 video recording was recorded.
   g. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.

2. Transcript: Prepared on 8-1/2-by-11-inch paper, punched and bound in heavy-duty, 3-ring, vinyl-covered binders. Mark appropriate identification on front and spine of each binder. Include a cover sheet with the same label information as the corresponding DVD. Include name of Project and date of video recording on each page.

1.5 QUALITY ASSURANCE

A. Photographer [and Videographer] 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 [and videographer's] services in the Contract Price.
1.6 COORDINATION

A. Auxiliary Services: Cooperate with photographer [and videographer]. 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.

1.7 USAGE RIGHTS

A. Obtain and transfer copyright usage rights from photographer [and videographer] to the Authority for unlimited reproduction of photographic [and video recording] documentation.

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

B. Video Recordings: Provide high-resolution, digital video disc in format acceptable to COTR. Finished product shall be an authored DVD.

C. Digital Images: Provide images in JPG format, produced by a digital camera with minimum sensor size of (8) <Insert number> mega pixels, and at an image resolution of not less than [3200 by 2400] <Insert resolution> pixels.

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.
Insert requirements for other procedures, such as lighting levels and the absence or presence of individuals.

3.2 CONSTRUCTION PHOTOGRAPHS

A. Digital Images: Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.
   1. Date and Time: Include date and time in file name for each image.
   2. Field Office Images: Maintain one set of images accessible in the field office at Project site, available at all times for reference. Identify images in the same manner as those submitted to COTR.

Delete the paragraph and subparagraphs below if not required to show preexisting conditions.

B. Preconstruction Photographs: Before starting construction, take color photographs of Project site and surrounding properties from different vantage points, as directed by COTR.
   1. Take [four] <Insert number> photographs to show existing conditions adjacent to the project before starting the Work.
   2. Take [four] <Insert number> photographs of existing buildings either on or adjoining the project to accurately record the physical conditions at the start of construction.

Retain one of first three paragraphs and associated subparagraphs below, or replace all with another method where Project requires greater service.

Requirements in paragraph below are minimal but adequate for many projects.

C. 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.

Retain first paragraph and subparagraphs below if Project circumstances justify extensive photographic requirements. Revise to suit Project. Requirements are more detailed than necessary for many projects.

D. Time-Lapse-Sequence Construction Photographs: Take [five] <Insert number> color photographs as indicated, to best show status of construction and progress since the last photographs were taken.
   1. Frequency: Take photographs monthly, coinciding with the cutoff date associated with each Application for Payment.
   2. Vantage Points: Following suggestions by COTR and Contractor, photographer shall select vantage points. During each of the following construction phases, take not less than [two] <Insert number> of the required shots from the same vantage point each time to create a time-lapse sequence as follows:

Revise phase descriptions below to suit Project.

a. Commencement of the Work, through completion of subgrade construction.
b. Above-grade structural framing.
c. Exterior building enclosure.
d. Interior Work, through date of Substantial Completion.

E. Final Completion Construction Photographs: Take [eight] <Insert number> color photographs after date of Substantial Completion for submission as Project Record Documents. COTR will direct photographer for desired vantage points.

Delete the subparagraph below if date stamp is required.

1. Do not include date stamp.

F. 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:

List below is an example only. Revise to suit Project.

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.

3.3 CONSTRUCTION VIDEO RECORDINGS, GENERAL

A. Videographer: Engage a qualified commercial videographer to record construction video recordings.

B. Recording: Mount camera on tripod before starting recording, unless otherwise necessary to show area of construction. Display continuous running time. At start of each video recording, record weather conditions from local newspaper or television and the actual temperature reading at Project site.

Delete two paragraphs below if not required. Requirements may be more extensive than necessary for many projects. If Owner requires original videotape to be unmodified, retain first option in first paragraph. Revise to suit Project.

C. Narration: Describe scenes on video recording by [audio narration by microphone while] [dubbing audio narration off-site after] video recording is recorded. Include description of items being viewed, recent events, and planned activities. Describe vantage point, indicating location, direction (by compass point), and elevation or story of construction.
D. Transcript: Provide a typewritten transcript of the narration. Display images and running time captured from video recording opposite the corresponding narration segment.

Insert requirements for other procedures, such as lighting levels and the absence or presence of individuals.

3.4 CONSTRUCTION VIDEO RECORDINGS

Delete paragraph below if not required to show preexisting conditions.

A. Preconstruction Video Recording: Before starting construction, record video recording of Project site and surrounding properties from different vantage points, as directed by COTR.

Revise subparagraphs below to suit Project.

1. Show existing conditions adjacent to Project site before starting the Work.
2. Show existing buildings either on or adjoining Project site to accurately record the physical conditions at the start of [construction] [demolition].
3. Show protection efforts by Contractor.

Retain one of first two paragraphs and associated subparagraphs below or replace both with another method if Project requires greater service.

Requirements in paragraph below are minimal but adequate for most projects.

B. Periodic Construction Video Recordings: Record video recording monthly, coinciding with the cutoff date associated with each Application for Payment. Following suggestions by COTR and Contractor, videographer shall select vantage points to best show status of construction and progress since the last video recording was recorded. Minimum recording time shall be [one] <Insert time> hour(s).

Retain paragraph and subparagraphs below if Project circumstances justify extensive video recording requirements. Revise to suit Project. Requirements are more detailed than necessary for many projects.

C. Time-Lapse-Sequence Construction Video Recordings: Record video recording to best show status of construction and progress.

1. Frequency: During each of the following construction phases, set up video recorder to automatically record one frame of video recording every [five] <Insert time> minutes, from the same vantage point each time, to create a time-lapse sequence as follows:

Revise phase descriptions below to suit Project.

a. Commencement of the Work, through completion of subgrade construction.
b. Above-grade structural framing.
c. Exterior building enclosure.

2. Timer: Provide timer to automatically start and stop video recorder so recording occurs only during daylight construction work hours.
3. Vantage Points: Following suggestions by COTR and Contractor, photographer shall select vantage points.
END OF SECTION 013233
To edit the attached specifications, the hidden text option must be enabled. This allows the specifications editor to view instructions throughout each specification section.

To enable the hidden text option, in Word 2003, select “Tools” from the toolbar at top. Within “Tools”, select “Options”. Under “Options” select “View”. Look under “Formatting Marks” and make sure that the “Hidden Text” box is checked. Hidden text should now be visible within the document.

In Word 2008, click on upper left “Office Button”. Click on “word Options” at bottom of menu. Click on “Display”. Under “always show these formatting marks on the screen” check the hidden text box. Hidden text should now be visible within the document.

Instructions to the Editor are found in the following locations:

**Specification 013300 – Submittals**
Before Part 1 – General
Before 1.2 B. 1
Before 1.4 A
Before 1.4 B. 2
Before 1.4 E. 4
Before 1.4 E. 6. a
Before 1.4 F. 3. a
Before 1.4 F. 3. h
Before 1.5 A
Before 2.1 B. 3. a
Before 2.1 C. 1. a
Before 2.1 C. 2
Before 2.1 C. 3
Before 2.1 E. 2. a
Before 2.1 E. 3. a
Before 2.1 E. 4
Before 2.1 E. 5
Before 2.1 F
Before 2.2 N
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SECTION 013300 - SUBMITTALS

Much of this Section consists of Project-specific data. Examples given in the model text in the Evaluations illustrate possible Section content. Use model text to develop text for specific Project requirements. See Evaluations.

Verify that Section titles referenced in this Section are correct for this Project’s Specifications; Section titles may have changed.

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:

Subparagraphs below include submittals usually specified in other Sections. Revise to suit Project.

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

See MASTERSPEC Evaluations for cautions on use of CAD Drawings, in first paragraph below, for submittals.

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.

Retain subparagraph and associated subparagraph below if one submittal has an impact on another submittal.

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.

Delete subparagraph below if not required.

4. Sequential Review: Where sequential review of submittals by COTR, or other parties is indicated, allow 21 calendar days for initial review of each submittal.
5. 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.

6. Notations on submittals that increase the Contract cost or time of completion shall be brought to COTR's attention before proceeding with the Work.

Insert list of submittals below requiring sequential review, or delete and identify submittals in Sections where they are specified. Structural, mechanical, plumbing, and electrical components are examples of the Work that often require sequential review.

a. <Insert list of Specification Sections requiring sequential review. >

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:

Revise list below to suit Project.

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.

Revise first subparagraph and associated subparagraph below to suit Project and office practice. See Evaluations.

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

Editor: Once the Section of the three options for “Construction Documentation” has been established, choose either [construction] (Section 013200A) or [90-day preliminary] (Sections 013200B and 013200C) for the paragraph below.

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 [90-day preliminary] [construction] schedule specified in Division 01 Section "Construction Progress.
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:

Revise list below to suit Project.

a. Manufacturer's written recommendations.
b. Manufacturer's product specifications.
c. Manufacturer's installation instructions.
d. Standard color charts.
e. Manufacturer's catalog cuts.
f. Wiring diagrams showing factory-installed wiring.
g. Printed performance curves.
h. Operational range diagrams.
i. Mill reports.
j. Standard product operating and maintenance manuals.
k. Compliance with recognized trade association standards.
l. Compliance with recognized testing agency standards.
m. Application of testing agency labels and seals.
n. 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:

Revise list below to suit Project.

   a. Dimensions.
   b. Identification of products.
   c. Fabrication and installation drawings.
   d. Roughing-in and setting diagrams.
   e. Wiring diagrams showing field-installed wiring, including power, signal, and control wiring. Differentiate between manufacturer-installed and field-installed wiring.
   f. Shopwork manufacturing instructions.
   g. Templates and patterns.
   h. Schedules.
   i. Design calculations.
   j. Compliance with specified standards.
   k. Notation of coordination requirements.
   l. Notation of dimensions established by field measurement.
   m. Relationship to adjoining construction clearly indicated.
   n. Seal and signature of professional engineer if specified.

Revise first subparagraph below to establish a standard sheet size and format.

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.

Revise number of copies as required by Project. Coordinate number of copies with Authority Project Manager.

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:

Revised list below to suit Project.

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.

Delete first subparagraph below if not required.

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.

Revised first two subparagraphs and associated subparagraphs below if Project requires a different procedure. Consider indicating Samples for initial selection as a separate item in the Submittals Schedule.

Delete subparagraph and associated subparagraph below if colors and other characteristics are pre-selected and specified or scheduled.

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.

Subparagraph below can be used with or without Samples for initial selection.
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.

Product schedule or list in paragraph below is different than product list requested at beginning of Project, which is specified in Division 01 Section "Product Requirements."

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.

Coordinate individual Specification Sections with first paragraph and subparagraphs below by including specific model code organization in that Section. If all are same, insert name below.

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 [and Videotapes]: 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] <Insert number> 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
SECTION 014000 - QUALITY REQUIREMENTS

Much of this Section consists of Project-specific data. Examples given in the model text in the Evaluations illustrate possible Section content. Use model text to develop text for specific Project requirements. See Evaluations.

Verify that Section titles referenced in this Section are Correct for this project’s Specifications; Section titles may have changed. NOTE: This guide specification covers the requirement for Quality Control (QC) for projects $200,000 and greater. It may be also used for smaller, complex projects at the discretion of the Authority. This Section requires specific editing of the QC requirements. Consult the Authority Quality Assurance Staff at 703-572-6290 on appropriate guide specification use. This Section, as edited, shall be reviewed and approved by the Authority QA Staff prior to the 100 percent design submittal.

This Section uses the term Contracting Officer and Contracting Officer's Technical Representative (COTR) in specific locations within this Section based on specific authorities granted each individual under the terms of the contract. Any changes in these terms at specific locations within these specifications must be coordinated with the Authority Project Manager.

Two options for the QCM duties have been incorporated into this guide specification. The first option allows the QCM to perform production related duties and the second option does not. Both options can include the use of QC specialists responsible for performing specialized work or QC for specific areas of work and for a specified requirement and frequency. Specify QC specialists for those areas of work that are of sufficient complexity or size to justify the expense.

Determine whether a full time QCM is justified or whether it would be more cost effective to allow the QCM to have other duties, such as the project superintendent, i.e. to act in a dual role. Consider these items when considering one person for a dual role:
1. Design and complexity of project;
2. Cost and type of Contract;
3. Manpower;
4. Work load;
5. Shift Work;
6. Characteristics of area construction labor market;
7. Amount and type of off and on site fabrication;
8. Duration of project;
9. In short, two major factors to consider are the project requirements and the work load. Is the QC Superintendent or the QC Manager able to conduct all required duties if there is a “dual-role” requirement? If that is the case, the responsibilities of the dual Superintendent/QC Manager will include, but not be limited to, meeting schedule, controlling and managing subcontractors, QC and Safety Meetings, Testing, Inspections, managing QC Program, Processes, and Procedures, documentation, etc…

When requiring the use of a Licensed Professional Engineer/Architect or a graduate Engineer/Architect for the QCM or QC specialist(s), keep in mind the additional cost. The over-specifying of expertise for QC personnel should be avoided.
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 00 Section “Supplementary Conditions”.
2. Division 01 Section “Project Management and Coordination”.
3. Division 01 Section “Construction Progress Documentation” for developing a schedule of required tests and inspections.
4. Division 01 Section “Submittals” for process required to submit the Contractor’s Quality Control Plan.
5. Division 01 Section “Execution”.
6. Division 01 Section “Cutting and Patching” for repair and restoration of construction disturbed by testing and inspecting activities.
7. Division 01 Section “Project Closeout”.

Specification 014000 – Quality Requirements (Identified in Red)
- Para 1.1/subpara B.11
- Para 1.2/subpara A.3.a.(1)
- Para 1.7/subpara B.17
- Para 1.9
- Para 1.9/subpara C.3.a
- Para 1.9/subpara C.3.a
- Para 1.9/subpara C.3.b
- Para 1.9/subpara C.4
- Para 1.9/subpara C.6
- Para 1.9/subpara C.9
- Para 1.9/subpara C.10
- Para 1.9/subpara C.11
- Para 1.9/subpara C.12
- Para 1.9/subpara C.13
- Para 1.9/subpara C.14
- Para 1.9/subpara C.15, C.16, and C.17
- Para 1.11/subpara E
- Para 1.12/subpara A
- Para 1.13/subpara A
- Para 1.13/subpara A
- Para 1.13/subpara A.4
- Para 1.14/subpara E
- Para 1.14/subpara F
- Para 1.14/subpara K
- Para 1.17/subpara B
- Para 1.19/subpara O
8. Division 01 Section “Operation and Maintenance Data”.
9. Division 01 Section “Project Record Documentation”.
10. Division 01 Section “Demonstration and Training”.
11. Divisions 02 through 34 Technical Specification Sections and Federal Aviation Administration (FAA) Specifications. Identify, whether there is a requirement for FAA specifications. If not remove “and Federal Aviation Administration (FAA) Specifications”.

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 Meeting.
   c. QC Plan.
   d. Coordination and Meeting of Mutual Understanding.
   e. QC meetings.
   f. Phases of Control.
   g. Submittal preparation, review, and approval.
   h. Operation & Maintenance data and Warranty receipt verification prior to product delivery.
   i. Material verification at delivery and material location reports as outlined in a formal Material Receiving Inspection Program.
   j. Inspection Program utilizing an Inspection Log and Sign-off Sheets.
   k. Testing and Inspections, completion inspections, QC certifications, accreditations, documentation, training, and requirements 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 (VUSBC). The Authority’s agent shall provide these Special Inspection services. However, the Contractor is responsible for establishing a Special Inspection schedule. This schedule shall be discussed at COTR’s weekly Progress Meetings and Contractor’s QC Meetings. The Contractor shall be responsible for all coordination and notification of requests for Code and Special Inspections with The Authority.

   a. Special inspections are required for, but are not necessarily limited to, the following:

      (1) As identified by the Engineer of Record. A/E should identify, per trade, all Special Inspection requirements as identified in the A/E’s VUSBC 1704 Special Inspections Requirement letter.
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 required QC documentation, all tests and inspection activities, reports, and procedures required in the Contract on a Section-by-Section basis. Additionally, Contractor shall include a pay line item specifically for Quality activities and QC Organizational personnel required by the General Conditions. Quality 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.

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.

9. The QC Plan does not repeat or summarize contract requirements. It describes the methods, processes, and procedures by which the Contractor will ensure Quality construction and compliance with the contract documents. Omissions in the QC Plan or the contractor’s Quality Control Program does not relieve the contractor of the responsibilities to provide work in accordance with the contract documents, applicable codes, regulations, and governing authorities. Approval of the QC Plan by The Authority does not guarantee Quality Control or Quality Production by the Contractor. These QC processes, procedures and programs are controlled and managed by the Contractor.

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)

2. METROPOLITAN WASHINGTON AIRPORT AUTHORITY
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 establish, manage, control, and document their own, their supplier’s, and their subcontractor’s activities to ensure Quality compliance with the contract requirements and the QC Plan.

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. Definable Feature of Work or Element of Work: A definable feature of work (DFOW) or Element of Work is a task that is separate and distinct from other tasks and has control requirements and work crews unique to that task.

F. QC Management System: The management and implementation of processes, procedures, and requirements that establish quality as identified in the QC Plan and mandated in the contract specifications. The Three Phases of Control are the core of the contractor’s Construction Quality Management System.

G. Mockups: If required by the contract, shall be full-size, physical example assemblies that are constructed on site to illustrate finishes, materials, assemblies, etc. Mockups are used to verify selections made under Sample submittals, to demonstrate aesthetic effects or details and, where indicated, qualities of materials, execution, to review construction, coordination, testing, inspection, or operation; they are not Samples. Mockups establish the Initial Standard of Control by which the work shall be judged and accepted for that Definable Feature or Element of Work. Mockups supersede samples in the approval and acceptance of the Work. Construct mockups away from the work site or in a location designated by the COTR. Do not use mockups as part of the work unless specifically approved by the COTR.

H. Experienced: When used with an entity, “experienced” means having successfully completed a minimum of ten (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 (2) or more 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 cases 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 twenty (20) calendar days after receipt of Notice to Proceed. The QC Plan shall include a preliminary submittal registry of all required submittals in the contract which shall be submitted in the first ninety (90) calendar days of construction. Once final submittal registry, accounting for all submittals, is approved by the COTR, insert registry into the QC Plan.

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, dependent upon successful implementation of a Quality Program as outlined in the QC Plan and Contract Specifications.” Omissions in the QC Plan do not relieve the contractor of the responsibilities to comply with the contract requirements. Immediately stop work if the QC Plan becomes disapproved or Quality as defined in the contractor’s Quality Program cannot be produced. 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 sample copies, for approval, of all report forms, as identified below, to the Contracting Officer or Representative during the Pre-Construction Conference. The report forms shall consist of the Quality Control Daily Report, Superintendent Daily Report, Material Receiving Inspection Report, Preparatory Phase Report, Initial Phase Report, Inspection Log and Sign-off Sheet, Deficiency Log, Testing Log, Monthly Summary Report of Tests and Inspections, and Monthly Quality Control Summary Report. Other reports referenced below, once approved, may be in formats customarily used by the Contractor, and shall contain the information required by the contract specifications for Testing Laboratories and Inspection Reports, Material Location Reports, Specialist Reports, etc.

B. Deliver the following listed items to the COTR via the Authority directed Document Control at the times specified below:

1. Quality Control Daily Report: one (1) original electronic or hard copy, delivered the next calendar day after work is performed.
2. Superintendent’s Daily Report: one (1) original electronic or hard copy, delivered the next calendar day after work is performed. Do not attach to the Quality Control Daily Report.
3. Material Receiving Inspection Report: one (1) original electronic or hard copy, delivered the next calendar day after work is performed. Do not attach to the Quality Control Daily Report.

4. Material Location Reports: one (1) original electronic or hard copy, delivered weekly. Do not attach to the Quality Control Daily Report.

5. Preparatory Phase Report: one (1) original electronic or hard copy, delivered the next calendar day after work is performed. Do not attach to the Quality Control Daily Report.

6. Initial Phase Report: one (1) original electronic or hard copy, delivered by the next calendar day after work is performed. Do not attach to the Quality Control Daily Report.

7. Field or Laboratory Test and Inspection Reports: one (1) original electronic or hard copy, delivered within two (2) workdays after the inspection and/or test is performed and, again delivered, at the end of the month with the Monthly Summary Report of Tests and Inspections. A certified technician performing all field tests and inspections shall sign all inspection and test reports. A certified testing laboratory manager performing all laboratory tests shall sign all test results. All reports will be reviewed, signed, and certified by a Professional Engineer, registered in the Commonwealth of Virginia, as complying with the contract specifications. Do not attach to the Quality Control Daily Report.

8. Monthly Summary Report of Tests and Inspections: one (1) original electronic or hard copy of all cumulative tests and inspections performed to date, delivered with all tests and inspection reports for each Definable Feature or Element of Work conducted that month. Deliver these reports within two (2) workdays of the end of the month. A certified technician performing all field tests and inspections shall sign all inspection reports. A certified testing laboratory manager performing all laboratory tests shall sign all test results. All reports will be reviewed, signed, and certified by a Professional Engineer, registered in the Commonwealth of Virginia, as complying with the contract specifications. Do not attach to the Quality Control Daily Report.

9. Inspection Log and Signoff Sheets for all Definable Features or Elements of Work: one (1) original electronic or hard copy, delivered within one (1) workday of the inspection or Signed-off activity. Do not attach to the Quality Control Daily Report.

10. Special Inspection Control Log: (If Special Inspections are required), one (1) original electronic or hard copy, delivered within two (2) workdays of the end of the month.

11. Testing Log: upon COTR’s request, deliver one (1) original electronic, or hard copy of a current up-to-date test log, documenting all performed tests, results, etc., do not attach to the Quality Control Daily Report.

12. Deficiency Log: one (1) original electronic or hard copy, delivered to the COTR at the weekly Progress Meeting. Do not attach to the Quality Control Daily Report.

13. Monthly Deficiency Report: one (1) original electronic or hard copy, delivered within two (2) workdays of the end of the month of all nonconforming work, tests, and inspections identified during construction. Do not attach to the Quality Control Daily Report.

14. QC Meeting Minutes: one (1) original electronic or hard copy, delivered within two (2) workdays after the meeting. Do not attach to the Quality Control Daily Report.

15. QC Certifications, Qualifications, and Accreditations: as required by contract specifications.

16. Monthly Quality Control Summary Report: one (1) original electronic or hard copy, delivered within two (2) workdays of the end of the month. Do not attach to a Quality Control Daily Report. This Executive Brief shall contain these items:
   a. Status of the Schedule (Monthly Progress Report) impact to schedule due to change notices, modifications, problems encountered, weather, and any other changes or items affecting the schedule since the previous month.
   b. Status of Submittals.
   c. Status of Testing and Inspections activities performed that particular month.
d. Status of Special Inspections (if required) performed that particular month.
e. Status of Preparatory meetings and Initial meetings performed that particular month.
f. Status of Deficiencies/Rework items and corrective actions.
g. Status of Non-compliances issued by COTR and corrective actions.
h. Status of Record Drawings.
i. Status or Identification of items affecting Quality.
j. Status of Training, Operation, Maintenance, and Warranty items.
k. Status of Safety and related events.
l. Other items as directed by the COTR.

17. **QC Specialist Reports**: one (1) original electronic or hard copy, delivered the next calendar day after work is performed. Do not attach to the Quality Control Daily Report. If a “Specialist” is not required for this contract, “remove” this paragraph.

1.8 QC PROGRAM REQUIREMENTS

A. The Contractor shall establish and maintain an approved QC Program as described in this Section. The QC Program shall consist of, but is not limited to, the following:

1. QC Organization.
2. QC Plan.
3. QC Plan Meeting.
4. Coordination and Meeting of Mutual Understanding.
5. QC meetings.
6. Phases of Control.
7. Submittal preparation, review, and approval.
8. Operations and Maintenance data.
9. Warranty receipt verification prior to product delivery.
10. Material verification at delivery and material location reports as outlined in a formal Material Receiving Inspection Program.
11. Inspection Program utilizing an Inspection Log and Sign-off Sheets.
12. Testing, inspections, completion inspections, QC certifications, accreditations, documentation, training, and requirements necessary to provide materials, equipment, workmanship, fabrication, construction, and operations that comply with the requirements of this Contract.
13. The QC Program shall cover on-site and off-site work and shall be keyed to the work sequence.
14. No work, testing, or inspections may be performed unless the QCM or a pre-approved alternate is on the work site.
15. At all times during performance of this contract and until the work is completed and accepted, the contractor shall directly superintend the work by an approved competent superintendent who is satisfactory to the Contracting Officer and has the authority to act for the Contractor.
16. The QCM shall report to an officer of the firm and shall not be subordinate to the Project Manager, Superintendent or any other member of the QC Organization.
17. The Quality Control Manager is the primary individual responsible for the management and implementation of processes, procedures, and requirements that establish quality in construction as identified in the QC Plan and mandated in the contract specifications. The QCM shall identify, track, and notify The Authority and Management of all weaknesses and deficiencies in this QC Management System. The Project Manager shall be responsible
for the overall quality in the contract. The Project Superintendent shall be held responsible for the quality of all work produced by the Contractor, manages the correction of all noted deficiencies, and ensures Quality is established and preserved in the construction process through the Three Phases of Control.

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 work or construction. The Contracting Officer reserves the right to require changes in the QC Plan, processes, procedures, and operations as necessary to ensure the specified quality of work is constructed as outlined in the contract. The Contracting Officer reserves the right to interview any member of the QC organization at any time during the contract period to verify contract compliance. All QC organizational 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 changes to the QC Plan, including changes in the QC organizational personnel, a minimum of seven (7) calendar days prior to a proposed change. Proposed changes shall be subject to acceptance by the Contracting Officer.

1.9 QC ORGANIZATION

A. The contractor’s QC Organization is responsible for establishing a committed unified team in a positive cooperative environment where all personnel and employees communicate, create, maintain, and verify the desired level of quality in all aspects of construction as established in the QC Plan and Contract Specifications.

NOTE: Qualifications of the QC organization and minimum staff size shall be coordinated among the designer, Authority Design/Engineering, Construction, and Quality Assurance Staff. The listed paragraphs below will assist in establishing qualifications for the minimum staff. Careful attention shall be given to submittals. If the project requires a large amount work, or very technical work, or a large number of submittals, or submittals technical in nature, the CQC organization should include a Submittal reviewer and/or a QC assistant and possibly a QC Administrative Assistant to support the CQM in Quality duties and responsibilities. The size, scope, complexity, and location of work shall be considered in specifying the minimum Quality Control staff. Only small routine type projects should allow the QCM to hold other duties, such as the Superintendent. No other duties will be allowed or approved. Please keep in mind when making this decision whether the Superintendent/QC Manager (Dual position); being one person, can accomplish all requirements and duties of this section and the contract specifications related to testing, inspections, submittals, reviews, meetings, documentation, material deliveries, etc…
B. 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 and qualified in that portion of the work.
2. In cases where multiple shifts are employed, the quality-control staff shall be increased to meet all personnel and quality requirements of this section and the contract specifications for each shift when work is performed.
3. In all cases, the QC Organizational staff shall not conduct escorting duties.

C. The following positions are key personnel as defined by the Authority in this and other Division 01 Specification Sections. The QC Organizational personnel shall be interviewed by Quality Department and the COTR. The COTR will approve all QC Organizational personnel.

1. Project Manager
   a. Duties: Responsible for overall Quality in Construction, project management control, planning, scheduling, cost, project administration, submittal management, and compliance with local and national codes.
   b. Qualifications: Fifteen (15) years of construction supervisory experience, with five (5) years of project management experience on projects of similar size, type, and complexity to this Project in which the individual had overall project responsibility.
   c. To enhance the effectiveness of the Quality Control Organization the Project Manager shall be intimately involved in Contractor 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. Project Superintendent
   a. Duties: Serves as the Contractor’s on-site production manager to plan, organize, coordinate, supervise, and observe all on-site construction activities. The Superintendent ensures compliance with the contract specifications while maintaining total control and responsibility for the Quality of work produced. The Superintendent monitors and supervises all field personnel to assure compliance with the Contract Specifications. The Superintendent corrects all noted deficiencies and ensures Quality is established and preserved in the construction process through the Three Phases of Control.
   b. Qualifications: Fifteen (15) years of construction supervisory experience, with five (5) years’ experience as Superintendent in a supervisory role coordinating various trades at multiple work areas.
   c. To enhance the effectiveness of the Quality Control Organization the Superintendent shall be intimately involved in Contractor Quality Control. To this end, the Superintendent shall have successfully completed the Army Corps of
3. Quality Control Manager (QCM)

a. Duties: 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 shall not be designated as the safety competent person as defined by Construction Safety manual. The QCM shall attend the QC Plan Meeting, shall prepare the QC Plan for COTR approval, shall conduct the Meeting of Mutual Understanding, conduct the QC meetings, perform and manage the Phases of Control, except for those phases of control designated to be performed by QC Assistant and/or QC specialists, perform submittal review and approval, ensure verification of materials, ensure all testing and inspections are coordinated and performed by trained, authorized and certified personnel and testing laboratories. The QCM shall provide and submit QC certifications, accreditations, reports, and documentation as required in the contract specifications. The QCM shall not prepare Submittals. The QCM is responsible for assuring contractor compliance with Quality Standards as established in the contract specifications. Select the appropriate requirement for QC Manager (subparagraphs “a”), whether a dual QC Manager role is needed (above), keeping in mind, when making this decision: the complexity of work, submittal requirements, technical requirements, Cost, Quality requirements outlined in the Technical Section of the Specifications, small or large contract, manpower requirements, duration of project, testing and inspection requirements, etc… Basically, can the QC Manager manage the requirements of testing, inspections, submittals, documentation, coordination with testing agencies, etc… and be able to Superintendent work while meeting these QC responsibilities? If not, select (“a”, below).

If a QC Assistant and/or QC Specialist are not needed, remove: “except for those phases of control designated to be performed by specialists”.

b. Qualifications: An individual with a minimum of five (5) years of construction experience as a Project Manager, Superintendent, QCM, Inspector, 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.

NOTE: Select “b.” above for small, easily manageable, and/or routine projects. Select “b” below for large or more complex projects. For qualifications in excess of options listed, consult the CQM Staff.

b. Qualifications: A graduate of a four (4) year ABET accredited college program in one of the following disciplines: Engineering, Architecture, Construction Management, Engineering Technology, Building Construction, Building Science, with a minimum of ten (10) years’ experience as a superintendent, QCM, project manager, 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 Authority Construction Safety Manual, and have experience in the areas of hazard identification and safety compliance.

c. To enhance the effectiveness of the Quality Control Organization the QCM be intimately involved in Contractor Quality Control. To this end, the QCM shall successfully complete the Army Corps of Engineers/NAVFAC Contractor Quality Control Course (details in Paragraph “Construction Quality Management Training”, below).

4. Construction Quality Management Training: If QC Assistant is not required, “remove” this person.

a. In addition to the above experience and education requirements, the Project Manager, Superintendent, QCM, QC Assistant, and Alternate QCM shall have completed the course entitled "Construction Quality Management for Contractors." If these individuals do 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@abdv.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.

5. Alternate QCM Duties and Qualifications

a. Duties: 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 thirty (30) workdays during a calendar year.

b. Qualifications: The qualification requirements for the Alternate QCM shall be the same as for the QCM.

6. Safety Representatives Duties and Qualifications: Identify what requirements are needed for Safety. Is a Safety Manager or Safety Engineer required?
a. Safety Manager:


(2) Qualifications: Ten (10) years of experience as Outlined in The Authority Construction Safety Manual.

(3) See Specification Section 007300 - Supplementary Conditions for further requirements.

b. Safety Engineer:


(2) Qualifications: Five (5) years of experience as Outlined in The Authority Construction Safety Manual.

(3) See Specification Section 007300 - Supplementary Conditions for further requirements.

7. Project Scheduler:

a. Duties: Provide 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. The Scheduler shall be an active participant at all meetings related to Project progress, alleged delays, and time impacts. Shall be available on-site full time. Time-impact analyses and special reports shall be provided at no additional cost to The Authority.

b. Qualifications: Minimum of two (2) years’ experience and not less than one (1) project of similar size and scope, with the capability to produce CPM reports and diagrams within twenty-four (24) hours of COTR’s request. The Project Scheduler shall be classified as one of the Contractor’s key personnel.

8. Erosion and Sediment Control Inspector

a. Duties: The Erosion and Sediment Control Inspector shall be responsible for inspecting the erosion and sediment controls, reporting requirements, and for ensuring conformance with the approved Storm Water Pollution Prevention Plan (SPPP). The Erosion and Sediment Control Inspector may have other duties, however, the designated individual shall be familiar with the requirements set forth in the Virginia Erosion and Sediment Control Handbook.

9. QC Assistant: Is a QC Assistant required? Depending on the scope of work, complexity or difficulty of work, number of submittals, technical knowledge, skill factors and requirements of submittals, number of subcontractors, trades, or Definable Features of Work, required testing or documentation…etc., All these items may dictate the need for a QC Assistant. If a QC Assistant is not required, delete this paragraph and related sub-paragraphs below.

a. Duties: Assist the QCM at the work site to perform submittal review, assist in performing, and managing the Phases of Control, assist with verification of materials, and assist in ensuring all testing and inspections are coordinated and
performed by trained, authorized, and certified personnel and testing laboratories. Assist in providing and submitting QC certifications, accreditations, reports, and documentation as required in this contract specifications. The QC Assistant shall not approve Submittals.

b. Qualifications: The QC Assistant shall be a graduate of a four (4) year ABET accredited college program in one of the following disciplines: Engineering, Architecture, Construction Management, Engineering Technology, Building Construction or Building Science, with a minimum of three (3) years’ experience. The individual shall be familiar with the requirements of the Authority Construction Safety Manual, and have experience in the areas of hazard identification and safety compliance.

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

10. QC Administrative Assistant: A QC Administrative Assistant is needed whenever there is a large amount of documentation, tests, submittals, reports, etc. that need to be managed, tracked or filed. If not, delete this paragraph and related sub-paragraphs below.

a. Duties: Primary duties at the work site shall be to assist the QCM in processing and maintaining files for submittals and preparing and publishing reports and meeting minutes. After primary duties are accomplished, other duties may be assigned provided the duties do not interfere with primary duties.

b. Qualifications: Basic understanding of construction activities, maintaining construction files, and knowledge of construction procedures and practices related to construction and the contract specifications; Basic understanding of the Construction Specifications Institute’s (CSI) MasterFormat organization for Specification Divisions.

11. QC Specialists Duties and Qualifications:

Specialist, are considered experts in their field. They have specialized training and experience in specific field.

Column 1 “Qualification/Experience in the Area of Responsibility - Identify what specific training or certifications you are requiring. How many years of experience do you require.

Column 2: Identify what “Area of Responsibility” you are requiring: Asphalt Inspection, Laydown Foreman, Steel Inspector, Concrete Foreman, etc.

Column 3: Identify the Frequency of the inspections or testing that you require. How often, how much, when required, etc… If a QC Specialist is not required, “delete” this paragraph

a. Duties: Provide a separate QC specialist at the work site for each of the areas of responsibilities, specified below, who shall assist and report to the QCM and who shall have no duties other than the assigned quality control duties. QC specialists are required to attend the Meeting of Mutual Understanding, QC meetings, and be physically present at the construction site to perform the Phases of Control and
prepare documentation for each definable feature or element of work in their area of responsibility at the frequency specified below.

<table>
<thead>
<tr>
<th>Qualification/Experience in Area of Responsibility</th>
<th>Area of Responsibility</th>
<th>Frequency</th>
</tr>
</thead>
</table>

12. Submittal Reviewer (s) Duties and Qualifications:
If there is a requirement for a Submittal reviewer; consider work load, number of submittals, type of submittals, technical requirements of the submittal, etc… Many times the QC Manager is not experienced with the type of work required for the contract. Again, consider if there is a requirement for a “Dual-role”. Consider if the QC Manager/Superintendent can complete all requirements and duties of the specifications?

a. Duties: Provide Submittal Reviewer(s), other than the QCM, qualified in the discipline(s) being reviewed, to review and certify that each and all submittals meet the requirements of the Contract prior to review and approval by the QCM.

b. Qualifications: Each submittal shall be reviewed by a registered Professional Engineer in the Commonwealth of Virginia with ten (10) years construction experience.

13. Professional Land Surveyor: Is a surveyor required in the contract? Remember, Section 017300, “Execution” specification usually requires a Land Surveyor requirement. There are usually other surveying requirements in the technical sections of the specifications. If no surveyor is required “delete” this paragraph.

a. Duties: Layout work using acceptable surveying practices. As requested by the COTR, submit surveying log, records, and certificates, signed and sealed by the Professional Land Surveyor certifying all survey work and records are complete and accurate and in full compliance with the contract specifications. All locations and elevations of improvements shall comply with the contract specifications. Record survey data as required in the contract specifications. Maintain a log of all survey, layout, datum, and control work. Record deviations from required lines and levels. Survey all work to 3rd Order Accuracy. 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, etc. and other information as directed by the COTR.

b. Qualifications: A registered professional land surveyor with ten (10) years’ experience, who is legally qualified to practice in the Commonwealth of Virginia and who is experienced in providing surveying services of the kind indicated in the contract specifications.
14. Registered Fire Protection Engineer (FPE): If there is a requirement for review, approval, coordination of fire protection systems, submittals, calculations, review of shop drawings; include this paragraph. If no requirement, “delete” this paragraph.

   a. Duties: Shall be an independent third party hired directly by the Contractor as an integral part of the prime construction Contractor's Quality Control Organization. The Registered FPE shall have no business relationships with the contractor (owner, partner, operating officer, distributor, salesman, or technical representative) or with any subcontractors involved with this project; or with any fire protection equipment device manufacturers, suppliers, or installers for any such equipment provided as part of this project. The Registered FPE shall be responsible for review, approval, and coordination of all fire protection system material submittals, calculations, shop drawings, etc.

   b. Qualifications: The Fire Protection Engineer shall be a registered Professional Engineer in the Commonwealth of Virginia who has had a minimum of ten (10) years’ experience as a fire protection engineer.

Keep the following paragraphs when the Project involves TUNNEL, UNDERGROUND WORK or related work. If not required, “delete” this paragraph.

Identify Duties and responsibilities for Professional Engineer with Geotechnical Specialty, Professional Geologist, and Support of Excavation Installer.

15. Professional Engineer with Geotechnical Specialty:

   a. Qualifications: Minimum of five (5) years of experience with observation and evaluation of temporary excavation support system installations; survey data; excavations in soil and rock; soil and rock sub grades; installation of instrumentation in and/or on rock; and instrumentation data. Professional Engineer registered in the Commonwealth of Virginia.

16. Professional Geologist

   a. Qualifications: Minimum of five (5) years of experience in providing evaluation and analysis of survey and geotechnical information; and in the design and development of instrumentation and monitoring programs. Professional Engineer registered in the Commonwealth of Virginia.

17. Support of Excavation Installer

   a. Qualifications: Minimum of five (5) years of experience in the installation of excavation support systems including soil nails, rock bolts, rock-anchors, micropiles, and instrumentation systems for monitoring excavation support performance.
1.10 QC PLAN MEETING

A. Within ten (10) calendar days of notice of award and prior to submission of the QC plan, meet with the COTR and QA Manager 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. The QC Manager shall prepare and 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 QC STAFF (subcontractors and consultants) INCLUDING INSPECTION AND TESTING AGENCIES
7. CERTIFICATIONS, QUALIFICATIONS, AND ACCREDITATIONS
8. TESTING AND INSPECTION PLAN, AND TESTING LOG
9. SUBMITTAL PROCEDURES, 90 DAY INITIAL SUBMITTAL REGISTER, AND FINAL SUBMITTAL REGISTER WHEN APPROVED BY COTR
10. LIST OF ALL DEFINABLE FEATURES OR ELEMENTS OF WORK
11. PROCEDURES FOR PERFORMING THE PHASES OF CONTROL
12. INSPECTION REQUIREMENTS, DUTIES, AND RESPONSIBILITIES OF SPECIAL INSPECTIONS, SPECIALISTS, SPECIALTY PERSONNEL, AND MANUFACTURERS REPRESENTATIVES
13. DOCUMENTATION REQUIREMENTS AND PROCEDURES
14. ESTABLISH A PROGRAM TO IDENTIFY, RECORD, TRACK, COMPLETE AND ELIMINATE DEFICIENCIES AND 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 specifications who, by name, shall review and approve submittals, who, by name, shall perform and document the Phases of Control, and who, by name, shall perform and document the testing and inspections.

E. Names and qualifications, in résumé format, for each person in the QC organization. Include the CQM course certifications for the Project Manager, Superintendent, QCM, QC Assistant, If there is not a requirement for QC Assistant, “delete” this position and Alternate QCM as required by the paragraphs entitled "Construction Quality Management Training" and "Alternate QCM Duties and Qualifications".
F. Identify 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, stating that they are responsible for implementing and managing the Contractor’s QC Program and is the primary individual responsible for the management and implementation of processes, procedures, and requirements that establish quality in construction identified in the QC Plan as mandated in the contract specifications. The QCM shall notify The Authority and Management of all failures and deficiencies in these QC management systems. 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 staff and specialists under their control outlining their duties, authorities, and responsibilities, as outlined in the QC Organization section of the contract specifications. Copies of the letters shall be included in the QC plan.

H. A listing of all sub-contractors employed by the General Contractor, a description of each subcontractor’s provided services, each subcontractor’s QC representative’s name, and contact phone numbers.

I. Testing laboratory information required by the paragraphs entitled "Accreditation Requirements" or "Construction Materials Testing Laboratory Requirements", as applicable. Include all certification and accreditation requirements required in the contract for each laboratory and testing technician.

J. Submit in this section all certifications, qualifications, and accreditations as required for each Section, Definable Feature or Element of Work in the Specifications.

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

L. Procedures for preparing, reviewing, approving, and managing submittals. Provide the name(s) of the person(s) in the QC organization authorized to prepare, review and certify submittals prior to approval. The QCM shall not prepare submittals. Provide the initial submittal register as specified in Section entitled "Submittals." Once final submittal registry, accounting for all submittals, is approved by the COTR, insert registry into the QC Plan.

M. List of Definable Features or Elements of Work. The list shall be cross-referenced to the contractor's Construction Schedule and all specification sections. For projects requiring a Progress Chart, the list of definable features or elements 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 or elements of work shall include but not be limited to all critical path activities. Include a chart of common deficiencies for all definable features or elements of work. Detail the control procedures that shall be employed to eliminate these common deficiencies. All elements of work and definable features of work in this contract shall be incorporated in the Three Phases of Control.

N. Procedures for Performing the Three Phases of Control. The primary purpose of the Three-Phases of Control is to require the contractor to plan and schedule each work activity to ensure quality is established, constructed, and maintained for each Definable Feature or Element of Work as required in the contract specifications. The contractor shall develop a plan for
incorporating each of the Definable Features or Elements of Work into a Quality Production effort. The Three Phases of Control are the core of the contractor’s Construction Quality Management System as outlined in the contractor’s QC Plan and contract specifications. The plan shall detail who shall be responsible for scheduling the phases, conducting the phases, as well as documenting the phases of work. The use of project specific checklists forms may be helpful. However, the QC Plan and the contract specifications requirements establish the quality, not just the checklists. The Preparatory and Initial Phases and meetings shall be conducted with a view towards establishing, achieving, and maintaining quality construction by planning ahead and identifying potential problems early for each Definable Feature or Element of work.

O. Establish an Inspection Program utilizing an Inspection Log and Signoff Sheets: The Contractor’s superintendent shall establish, coordinate, and maintain with all trades and personnel, for each Definable Feature or Element of Work, a system of inspections and signoff sheets to certify that all work under the superintendent’s control has been coordinated, constructed, and installed according to the plans and specifications. All work shall be documented as being inspected and signed-off by the contractor before starting and performing construction on the next Definable Feature or Element of Work. These inspections and sign-off sheets shall be incorporated into the Phases of Control.

P. Identify all inspection requirements, duties, and responsibilities of Specialists, Specialty Personnel, and Manufacturer’s Representatives. As outlined by the Engineer of Record, include a separate list of Special Inspections according to the requirements of the current Virginia Uniform Statewide Building Code (VUSBC).

Q. Documentation procedures and requirements, including proposed report formats, necessary to provide materials, equipment, workmanship, fabrication, construction and operations that comply with the requirements of this Contract.

R. Procedures to identify, record, track, complete, and eliminate deficiencies and rework items.

S. 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.

T. Submit, for approval, a complete set of report forms to be utilized on this project.

U. All applicable subcontractors and suppliers Quality Control Plans complete with Contactors’ CQC planned involvement.

1.12 MEETING OF MUTUAL UNDERSTANDING

A. After submission and approval of the QC Plan, and prior to the start of any physical construction, meet with the COTR and subcontractors to present the Contractor’s QC Program required by this Contract. The purpose of the meeting is to develop a mutual understanding of the contractor’s Quality Control Program, to include the contractor’s QC details, processes, and procedures to assure and control quality, including the requirements of 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 Project Manager and QC Manager shall be required to explain in detail how the QC Program works. Discuss the Phases
of Control and how it will be implemented for each definable feature or element 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, QC Assistant, QC Specialist(s) Delete QC Assistant and/or QC Specialist (s), if there are no requirements in Paragraph 1.9 of this Section, and Subcontractor Representatives for each Definable Feature or Element of Work. Include all Testing and Inspection Agencies required for the contract. Each subcontractor assigned to the contract shall have QC duties and responsibilities and shall have a principal of the firm at the meeting. Minutes of the meeting shall be prepared by the QCM and signed by the Project Manager. 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 weekly Select “Weekly” or “Bi-weekly”, depending on the complexity of work, size of the contract, number of Definable Features, schedule, Trades, number of tests, and inspections, shift work, number of submittals, Quality items to review and approve, etc… Most contracts will require “weekly”, if a QCM is required with no other duties at the work site with the Project Manager, Superintendent, QC Assistant, QC Specialist(s), “Delete” the QC Assistant and/or QC Specialist (s) if they are not requirements of paragraph 1.9 of this Section. Subcontractor’s Foremen, and Safety Representative. The QCM shall prepare the minutes of the meeting and provide a copy to the COTR within two (2) workdays after the meeting. The COTR may attend these meetings. The QCM shall notify the COTR at least two (2) workdays in advance of each meeting. To prepare, review, and address quality issues as outlined below and as addressed in the COTR’s Progress Meeting, the QCM shall conduct these meetings in advance of the COTR’s weekly progress meeting. As a minimum, the following shall be discussed and addressed at each QC meeting:

1. Review the minutes of the previous meeting.

2. Review the schedule and the status of work:
   a. Work, testing, or inspections accomplished since last meeting
   b. Special Inspections scheduled in the next two (2) weeks
   c. Inspection and Signoff schedules in the next two (2) weeks for each Definable Feature of Work
   d. Rework items and deficiencies identified since last meeting
   e. Rework items and deficiencies corrected 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 two (2) week(s) or three (3) weeks: Insert two (2) or three (3) weeks; depending on requirements, testing, personnel, safety, schedule, etc…and documentation requirements.
   a. Establish completion dates for rework items and deficiencies.
b. Update the schedule showing planned and actual dates of the preparatory, initial, and follow-up phases, including testing and any other inspections 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 or element of work.

d. Discuss status of off-site and on-site work for inspections and testing.

e. Documentation required for each construction activity and definable feature or element of work.

f. Discuss upcoming Job Hazard Analyses (JHAs).

5. Resolve QC and production problems and 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 processes, procedures, checklists, qualifications, accreditations, certifications, testing, inspections, etc…

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 or element of work. Managed by the contractor, with COTR approval, The Three Phases of Control are the core of the Construction Quality Management System.

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. Once material is received and inspected, submit Material Receiving Inspection Reports by the next calendar day after work is performed. Do not attach to the Quality Control Daily Report.

C. Material Location Reports: At weekly intervals, prepare a comprehensive list of materials delivered to and stored at the site. This report shall be cumulative in nature, showing all materials previously reported plus items recently delivered. Include with report 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 report to COTR at weekly intervals.

D. Inspection Program utilizing an Inspection Log and Signoff Sheets: The Contractor’s superintendent shall establish, coordinate, and maintain with all trades and personnel, for each Definable Feature or Element of Work, a system of inspections and signoff sheets to certify that all work under the superintendent’s control has been coordinated, constructed, and installed according to the plans and specifications. All work shall be documented as being inspected and signed-off by the contractor before starting and performing construction on the next Definable Feature or Element of Work. These inspections and sign-off sheets shall be incorporated into the Phases of Control.
E. Preparatory Phase: Notify the COTR at least two (2) workdays in advance of each preparatory phase. This phase shall include a meeting conducted by the QC Manager and attended by the superintendent, QC Assistant, QC Specialist(s). If there are no requirements for a QC Assistant or QC Specialist(s), “delete” these individuals. all subcontractor’s foremen responsible for the definable feature or element of work, the contractor’s Independent 3rd Party Testing, and inspection Agencies, and the Contractor’s Safety Representative. Preparatory meetings will not be conducted without having these individuals present at the meeting, having approved submittals, and approved JHAs. If all personnel are not present, or if submittals and JHAs are not approved, cancel Preparatory Phase meeting. Document the results of the preparatory phase actions in the daily Quality Control Daily Report and in the Preparatory Phase Checklist. As a minimum the following should be covered prior to beginning work on each definable feature or element 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. If submittals are not approved, cancel Preparatory Phase meeting.
4. Establish control to be utilized to assure work complies with the contract plans and specifications.
5. Review the testing and inspection plan and ensure that provisions have been made to provide the required QC testing and inspections.
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 or element of work.
9. Discuss control measures to ensure quality through a system of sign-off sheets and inspections. All work shall be inspected and signed-off by the contractor before starting construction on the next Definable Feature or Element of Work. These inspections shall be incorporated into the Phases of Control.
10. Review the safety plan and appropriate job hazard analysis (JHA) to ensure that applicable safety requirements are met, and that required Material Safety Data Sheets (MSDS) are submitted. If the JHA is not approved, cancel Preparatory Phase meeting.

F. Initial Phase: Notify the COTR at least two (2) workdays in advance of each initial phase. When the Standard of Quality for workmanship has been established for that definable feature or element of work, conduct the Initial Phase with the QC Manager, superintendent, QC Assistant, QC Specialist(s). If there are no requirements for a QC Assistant or QC Specialist(s), “delete” these individuals. all subcontractors’ foremen responsible for the definable feature or element of work’s quality standard, the contractor’s Independent 3rd Party Testing and Inspection Agencies, and the Contractor’s Safety Representative. Initial meetings will not be conducted without having these individuals present at the meeting, having approved submittals, and approved JHAs. If all personnel are not present, cancel Initial Phase meeting. Observe the initial segment of the definable feature or element 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 Checklist. 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 or element 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 Standard of Control for Quality required for workmanship as required in the specifications.
3. Resolve conflicts.
4. Ensure testing and inspections are performed by an approved Independent 3rd Party Testing and Inspection Agencies.
5. Discuss control measures to ensure quality through a system of sign-off sheets and inspections. All work will be inspected and signed-off by the contractor before starting construction on the next Definable Feature or Element of Work. These inspections shall be incorporated into the Phases of Control.
6. Check work procedures for compliance with the Safety Plan and the appropriate job hazard analysis to ensure that applicable safety requirements are met.

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

1. Ensure the work is in compliance with Contract requirements.
2. Maintain the Standard of Control for Quality of workmanship established at the Preparatory and Initial Phases.
3. Ensure that testing and inspections are performed by an approved Independent 3rd Party Testing Agency.
4. Ensure that rework items and deficiencies are being identified, tracked, and corrected.
5. All work will be inspected and signed-off by the contractor before starting construction on the next Definable Feature or Element of Work.
7. Perform safety inspections.

H. Code-Required Inspections:

1. Comply with the current edition, approved by the Commonwealth of Virginia of the VUSBC, "Special Inspections" or other agencies having jurisdiction.
2. Contractor is not responsible for Special Inspections according to requirements of the current Virginia Uniform Statewide Building Code (VUSBC). Special Inspections are to be performed by the Authority’s agent.
3. Contractor will maintain and submit monthly a Code and Special Inspection Control Log, chronologically recording each Code and Special Inspection notification to the COTR, testing and/or inspections performed under the VUSBC, or other agencies having jurisdiction on-site, including the nature of the tests or inspections, the date performed, the results, approval or causes for rejection, corrective action taken, and dates of subsequent tests, inspections and final acceptance.
4. Notice to COTR: Notify COTR, in writing, at least two (2) workdays 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.

I. Additional Preparatory and Initial Phases
1. Additional Preparatory and Initial Phase meetings shall be repeated for all definable features or elements of work where the Initial Standard of Control has changed or is not maintained; examples where Preparatories or Initial Meetings may need to be repeated are:

   a. Changes in the QC Organization, supervision, or changes to personnel performing the work.
   b. When the quality standards established at the Preparatory and Initial Meetings have changed or are no longer acceptable.
   c. Changes of materials.
   d. Changes in equipment.
   e. Changes in the Season.
   f. Changes in Weather.
   g. Changes to the Environment.
   h. If work is resumed after a substantial period of inactivity.
   i. When the standard of Quality is not recognized or understood by those producing the work as established in the specifications and the Three Phases of Control meetings.
   j. As required by the COTR in writing.

J. 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 QCM shall notify the COTR at least three (3) weeks prior to the start of the preparatory and initial phases.

K. Notification of Off-Site Inspections and Tests:
If Factory Witness Testing and Inspections are not required, “delete” this paragraph.

1. If Factory Witness Tests and Inspections are required for this project, follow procedures outlined in the technical specifications for scheduling, testing, and inspection requirements.

2. Identify these tests and inspections in the contractor’s QC Plan.

1.15 SUBMITTAL REVIEW AND APPROVAL

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

B. The QC Manager shall not prepare submittals, but shall review and approve submittals.
1.16 TESTING

A. Comply with all testing and inspection requirements as outlined in the technical specification sections of this contract, to include compliance with all applicable provisions and requirements of Division 1.

B. Independent Testing and Inspection Laboratory: When codes or requirements of the contract require tests or inspections by civil, mechanical, electrical, VUSBC, or other entities, a corporately and financially independent testing or inspection organization shall be contracted by the Contractor to perform these contractually required tests and inspections. These testing and inspection agencies shall function as an unbiased testing and inspection authority; professionally independent of the contractor, subcontractors, manufacturers, suppliers, and installers of equipment; or systems evaluated by the testing and inspection organizations for this contract. The various types of independent accrediting agencies and requirements are listed below:

C. Accreditation Requirements: Construction materials testing and inspection laboratories performing work on 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 or inspection and the testing technicians performing the tests and inspections, 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 (5) 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.netaworld.org/). This independent testing firm shall perform testing and inspections as required under the terms of this Contract.

E. Structural and Pipe Welding: An independent testing and inspection 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, inspections, 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" shall 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 or inspection methods and certifications required by the Contract. On and Off-site testing and inspection facilities shall submit a certified statement by the Supervising Professional Engineer, licensed in the Commonwealth of Virginia, as meeting the specification requirements and the following minimum ASTM standards listed below as appropriate to field and laboratory testing and inspection. Include all Testing Technician qualifications per accredited Laboratory and specification requirements.
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 and inspection methods required by the Contract.

H. Capability Check: The COTR retains the right to examine the laboratory equipment in the proposed laboratory, the laboratory's managers and testing technicians' qualifications, procedures, techniques, and other items 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 and Inspection Report Results: Cite applicable Contract requirements, tests, inspections, or analytical procedures used. Provide actual results and include a statement that the item tested, inspected, 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 certified testing laboratory manager performing all laboratory tests shall sign all test results. A certified technician performing all field tests and inspections shall sign all inspection reports. All test and inspection reports shall be reviewed, certified, and signed by a professional engineer, licensed in the Commonwealth of Virginia, as complying with the contract specifications, before submission to COTR. Submit within two (2) workdays after the tests or inspections are performed.

K. Control Tests: Outlines those tests and inspections conducted by the Contractor that assist in maintaining the standard of quality for all operations and procedures, for each Definable Feature or Element of Work, as identified in the Quality Control Plan and the Specifications. As described above, the Contractor shall procure the services of an independent commercial laboratory to perform the required control tests and inspections. The contractor shall identify these minimum Control Test and Inspection requirements:
1. Procedures, requirements, analytical procedures used, and criteria for all Testing and Inspections.
3. Number of control tests, inspections, and frequency of tests and inspections to be made for each Definable Feature or Element of Work.
4. Provide actual results and include a statement that the item tested, inspected, or analyzed conforms or fails to conform to specified requirements.
5. Identify testing or inspection agency performing testing and inspections.
6. Ensure proper certification and sign-off of all tests and inspections conducted and reviewed by Contractor Independent testing and inspecting Technicians, Managers, and Professional Engineers.
7. The QC Manager will ensure only accredited laboratories and certified technicians are performing testing and inspections as outlined in the contract specifications.
8. Notify COTR a minimum of two (2) workdays in advance of contractor performing any testing and inspections.

L. Acceptance or Validation Testing by The Authority: Contractor shall furnish to COTR the quantities of materials to be used for Acceptance or Validation testing as required in the Specifications. Acceptance or Validation 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 Acceptance or Validation testing. The Authorities Acceptance and Validation program does not relieve the contractor of its responsibility to fully comply with all regulations, standards, codes, and quality requirements of the contract specifications.

M. Staffing: All laboratory, inspection, and testing technician personnel shall work in an accredited laboratory 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. Coordinate language with Division 01 Section: “Application for Payment”.

C. Completion Certification:
1. Upon completion of work under this Contract, the QCM shall furnish a certification letter to the Contracting Officer attesting that "that all work required of the contract has been completed, inspected, tested and is in full compliance with the Contract Documents."

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 "Deficiency Log" 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 and staff shall make follow-on inspections to ascertain that all deficiencies have been corrected before requesting a Pre-Final Inspection. Once all deficiencies are corrected the Contractor shall notify the COTR that the facility or item is ready for The Authority's "Pre-Final Inspection."

B. Pre-Final Inspection: The Authority or Authority’s Representative will perform this inspection to verify that the facility is complete and ready to be inspected. An Authority "Pre-Final Punch-List" may be developed as a result of this inspection. 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. The QCM shall ensure that all items on the Punch-list are corrected prior to notifying the Authority of a request for a "Final" Acceptance Inspection.

C. Final Acceptance Inspection: The COTR, The Authorities Representatives, the QCM, the superintendent, and other personnel as deemed necessary by the COTR shall be in attendance for this inspection. The Contracting Officer based on corrections to the punch-lists on the “Pre-Final” inspection will formally schedule the Final Acceptance Inspection. The contractor shall give Written Notice to the COTR and CO, at least fourteen (14) calendar days prior to the Final Acceptance Inspection, stating that all contract work is completed and all items previously identified on the Punch-Out and Pre-Final Inspections have been corrected and are accepted by The Authority’s Representatives and COTR. The contractor will also furnish a Certification Letter, from the QC Manager to the COTR and CO, stating and attesting “that all work required of the contract has been completed, inspected, tested and is in full compliance with the Contract Documents.” Failure of the Contractor to give this Written Notice and Certification Letter to the COTR and CO shall be reason and grounds for the Contracting Officer to bill the Contractor for the Authority's additional inspection costs 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 and/or inspections have been performed, including type and number of tests and/or inspections involved; results of tests and/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 work) and shall include a statement that all supplies and materials incorporated into the work are in full compliance with terms of the Contract as documented in the Contractor’s materials receiving inspection program. Only Legible copies of these records shall be furnished, submitted, and delivered to COTR. The records shall cover all work placed subsequent to the previously furnished records and shall be verified by Contractor's QCM. Contractor shall document all tests and inspections as specified in the technical provisions of the Specifications. All specified records shall be readily 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 upon request.

1. All completed Preparatory and Initial Phase Reports, arranged by specification Section, Definable Feature, or Element of Work.
2. All milestone and required inspections, arranged by Activity/Event Number.
3. Special Inspection Control Log, arranged by Definable Feature or Element of Work and Trade.
4. A current up-to-date copy of the approved Testing and Inspection Plan, and supporting documentation that accounts for all testing and inspection requirements as listed in the specifications and the Monthly Summary Report of Tests and Inspections that documents all field tests, inspections, reports, and supporting documentation, arranged by date for each Definable Feature or Element of Work as identified in each specification section.
5. A current up-to-date copy of the Superintendent’s inspection logs and sign-off sheets for each Definable Feature or Element of Work.
6. Copies of all contract RFIs, arranged in numerical order.
7. Copies of all contract modifications, arranged in numerical order. Also include documentation that modified work was accomplished.
8. A current up-to-date comprehensive copy of the Deficiency Log and Noncompliance Log.

C. Report Forms - A copy of all approved 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 an approved QCM and shall contain the following information:
   a. Identify 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 or Element 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 or Element of Work. The Index Number is a cross reference to the Initial Phase Checklist. An example of the Index Number is: 0025-101, 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 or element of work, Specification Sections, etc. Indicate in the report for this definable feature or element of work that the work complies with the Contract as approved in the Initial Phase, work complies with safety requirements, and that required testing and inspections have been performed. Include a list of who performed the tests and inspections.

h. List the rework items and deficiencies identified, but not corrected by close of business, along with its associated Schedule Activity Number.

i. List the rework items and deficiencies corrected from the deficiency log 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 that day.
   (6) Acknowledgement that record drawings, specifications, O & M data, and Warranty Manuals, have been updated and/or submitted.
   (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. Superintendent Daily Report: This report shall be prepared anytime work or production is conducted or performed on or off site throughout the life of the contract. This Contractor’s Production Report is the primary document utilized by the Superintendent for documentation of all construction activities performed by the Contractor and/or their subcontractors. Sign-off sheets and Inspection logs will supplement and support this Daily Report. The reporting of work shall be identified by terminology consistent with the construction schedule and standard construction practices. Do not attach this report to the Quality Control Daily Report. The Superintendent Daily Reports are prepared, signed, and dated by an approved Superintendent and shall contain the following information:

   a. Identify Date of report, report number, Contract Number, Contract Title, and Location.
b. Identify Contractor’s name and Superintendent’s Name.

c. Identify whether work was performed A.M and/or P.M. Include Weather with Max
Temperatures (F°) and Min. Temperatures (F°), precipitation, winds, humidity and
dew point. Document any weather feature that may affect construction.

d. Enter Work Performed Today by Schedule Activity Number, Work Location and
Description of Work Activity, Employer, Number of workers, the Trade of the
workers and the hours of work conducted per each trade.

e. List Total of Work Hours on job site. Cumulative Total of Work Hours from
Previous Report and Total of Work Hours from Start of Construction

f. Identify Job Safety: If Safety Meetings were Held. Was there any lost time
Accidents? Was Crane/Man-lift/Trenching/Scaffold/HV Electric/High Work/or
Hazmat Work accomplished? Was Hazardous Material or Waste Released into the
Have Safety Requirements been met?

g. Identify by submittal number all Equipment and/or Material received that day to be
incorporated into the contract. Ensure all Equipment, Materials, and required
quantities received have been inspected and approved in comparison to approved
submittals. Give Description of Equipment and Material received; utilizing the
Material Verification at delivery checklist and Material Location Reports as
outlined in the contractors formal Material Receiving Inspection Program. The
Superintendent shall ensure all materials, products, quantities and equipment
incorporated in this contract are approved and are accepted before installation.

h. Identify Construction or Plant Equipment on the work site each day. Identify who
owns the equipment? Describe the Type, Make, quantity, and Model of the
Equipment and the hours utilized for each piece of equipment.

i. Remarks: Document construction activities, establishment, and maintenance of
quality processes and procedures, observations, correction to deficiencies, and
coordination of trades to ensure Quality Production. Document superintendent’s
utilization of sign-off sheets, inspection sheets, checklists, submittals, etc… to
install and establish Quality. Identify production shortfalls and construction
deficiencies and ways to correct these Deficiencies and short-falls on the
Superintendent Daily Report. Document all deficiencies and corrections to
Deficiencies on the Contractor’s Deficiency Log maintained by the QC manager.

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

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 or Element 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. The meeting is conducted by the QCM and
attended by the superintendent, all subcontractor’s foremen responsible for the
definable feature or element of work, the contractor’s Independent 3rd Party
Testing and Inspection Agencies, and the General Contractor’s Safety Representative. If all personnel are not present, cancel Preparatory Phase meeting.

d. Submittals: Indicate if submittals have been approved (Yes/No checkboxes), if no indicate what has not been submitted. If submittals are not approved, cancel Preparatory Phase meeting. 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 and Inspections: Identify who will perform tests and/or inspections, the frequency, and where tests and/or inspections are to occur. Review the testing and inspection plan, report abnormalities, and if the test and inspection facilities have been approved.

i. Discuss Control Procedures that shall be employed to consistently obtain the required specified quality; for example Sign-off sheets and Inspection logs.

j. Safety: Indicate if the job hazard analysis (JHA) has been approved (Yes/No checkboxes) and comment on the review of the applicable portions of the Construction Safety Manual. If the JHA is not approved, cancel Preparatory Phase meeting.

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.

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

a. Specification Section, date of report, and Contract number shall be entered.

b. Definable Feature or Element 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. This meeting is conducted by the QCM and attended by the superintendent, all subcontractor’s foremen responsible for the definable feature or element of work, the contractor’s Independent 3rd Party Testing and Inspection Agencies, and the General Contractor’s Safety Representative. If all personnel are not present, cancel the Initial Phase meeting.

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; for example Sign-off sheets and Inspection logs.
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 whether the Standard of Control was established and accepted. Identify where the initial Standard of Control work is located; if a sample panel or Mock-up 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, as a tracking device, all tests on the "Testing Log", the dates that tests were performed, the dates the test results were forwarded to the COTR, remarks and acknowledgement that an accredited or Contracting Officer approved testing laboratory was used, the dates that all failing or nonconforming tests were corrected, accepted, or approved. Forward a copy of the updated “Test Log” upon request of the COTR. Log shall be used as a management tool by the QCM to account and track all tests requirements of the QC Plan and contract specifications. Do not attach to the Quality Control Daily Report.

E. Deficiency Log: The QCM shall maintain a comprehensive list of all 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. All failed or nonconforming work, tests, and inspections will be documented in this Log. There is no requirement to report on the Deficiency Log a rework or deficient item that is corrected the same day it was discovered. Provide a copy of the comprehensive deficiency log weekly to the COTR at the weekly progress meeting and at the end of the month for the Deficiency Report. The Contractor shall be responsible for including on this log all items needing rework including those identified by the COTR and their staff. Do not attach to the Quality Control Daily Report.

F. Code and Special Inspection Control Log: The Contractor will maintain and submit monthly a Code and Special Inspection Control Log, chronologically recording each Code and Special Inspection notification to the COTR, tests and/or inspections performed under the VUSBC, or other agencies having jurisdiction on-site, including the nature of the test or inspection, the date performed, the results, approval or causes for rejection, corrective action taken, and dates of subsequent tests, inspections, and final acceptance.

G. Test and Inspection Reports: Contractor shall be responsible for establishing a system that shall record, on approved forms, all tests, and inspection results. Information on test and/or inspection designation, location, date of test and/or inspection, specification requirements, results and retest results, causes for rejection and recommended remedial actions shall be documented. A copy of the test and inspection results shall be sent directly from the Agency performing the testing services to the COTR. The COTR will be notified “IMMEDIATELY” of any failing tests and/or inspections. A certified technician performing all field tests and inspections shall sign all inspection reports. A certified testing laboratory manager performing all laboratory tests shall sign all test results. All test and/or inspection reports shall be reviewed, certified, and signed by a professional engineer, licensed in the Commonwealth of Virginia, as
complying with the contract specifications. Do not attach to the Quality Control Daily Report. Submit within two (2) workdays after the test and/or inspection is performed.

1. Test and Inspection Reports shall be submitted twice per month for each Definable Feature or Element of Work:
   a. Submitted two (2) days after the test and/or inspection is performed.
   b. Submitted within two (2) days from the end of the month with the Monthly Summary Report of Tests and Inspections.

H. Monthly Summary Report of Tests:

1. The QCM shall submit at the end of each month a current and up-to-date Monthly Summary Report of Tests and Inspections, per each Definable Feature or Element of Work, that includes and accounts for all testing and inspections performed to date for that specific Definable Feature or Element of Work in that month. Submit with each Monthly Summary Report of Tests and Inspections, all testing reports, and documentation pertaining to that month’s testing and inspections.
2. The Monthly Summary Report of Tests and Inspections will summarize, in detail, all information required of a Test and/or Inspection Report and contract specifications.
3. A Professional Engineer, licensed in the Commonwealth of Virginia, shall review, certify, and sign all Monthly Summary Report of Tests and Inspections as complying with the contract specifications.

I. Inspection Log and Signoff Sheets: The Contractor’s superintendent shall establish, coordinate, and maintain with all trades and personnel, for each Definable Feature or Element of Work, a system of inspections and signoff sheets to certify that all work under the superintendent’s control has been coordinated, constructed, and installed according to the plans and specifications. All work will be documented as being inspected and signed-off by the contractor before starting and performing construction on the next Definable Feature or Element of Work. These inspections and sign-off sheets shall be incorporated into the Phases of Control.

J. Monthly Deficiency Report: Contractor shall submit a monthly comprehensive deficiency report to COTR identifying all nonconforming work, substandard tests and inspections identified during the contract period 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. Do not attach to the Quality Control Daily Report.

K. 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.

L. 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.

M. Materials Receiving Inspection Report: Contractor shall establish a formal materials receiving inspection program to verify material compliance to approved Shop Drawings, approved submittals, and the contract plans and specifications. Do not attach to the Quality Control Daily Report.

N. Material Location Report: At weekly intervals, prepare a comprehensive list of materials delivered to and stored at the site. This report shall be cumulative, showing materials previously reported plus items recently delivered. Include with this report 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 report to COTR at weekly intervals.

O. Reports from the QC Specialist(s): Reports are required for each day that work is performed in their area of responsibility. QC specialist reports shall include the same documentation requirements as the Quality Control Daily Report for their area of responsibility. QC specialist reports are to be prepared, signed and dated by the QC specialists and shall not be attached to the Quality Control Daily Report prepared for the same day. If no specialists are required, “delete” this paragraph.

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 the receipt of such notice. Such notice, when delivered to the Contractor via the Authority provided Oracle Primavera Unifier project management system 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, the contract provisions, or the 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.

D. **Non-Compliance Notification:** The COTR will use the Authority provided web-based Oracle Primavera Unifier project management system (Unifier) to notify the Contractor on Non-Compliance work or material. Acknowledgement and corrective action by the Contractor shall be transmitted to the COTR through Unifier. The Authority will provide the Contractor a Unifier license(s) and training.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 014000
To edit the attached specifications, the hidden text option must be enabled. This allows the specifications editor to view instructions throughout each specification section.

To enable the hidden text option, in Word 2003, select “Tools” from the toolbar at top. Within “Tools”, select “Options”. Under “Options” select “View”. Look under “Formatting Marks” and make sure that the “Hidden Text” box is checked. Hidden text should now be visible within the document.

In Word 2008, click on upper left “Office Button”. Click on “Word Options” at bottom of menu. Click on “Display”. Under “always show these formatting marks on the screen” check the hidden text box. Hidden text should now be visible within the document.

Instructions to the Editor are found in the following locations:

**Specification 014200 – References**
Before Part 1 – General
Before 1.3 X
Before 1.4
After 1.4 E
After 1.5 A
After 1.5 B
After 1.5 C
Before 1.5 D
After 1.5 D
SECTION 014200 - REFERENCES

Much of this Section consists of Project-specific data. Examples given in the model text in the Evaluations illustrate possible Section content. Use model text to develop text for specific Project requirements. See Evaluations.

Verify that Section titles referenced in this Section are Correct for this project’s Specifications; Section titles may have changed.

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.

Generally retain first paragraph below; revise to suit Project. See MASTERSPEC Evaluations.

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.

The fact that a reference standard is listed below is not a requirement that the Work must comply with the standard. Individual sections should state required compliance with appropriate standard.

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.

Delete the entries below that are not referenced in Specifications. List has been checked against information obtained from the Internet and by direct telephone contact; it only includes those standards and regulations referenced in the Section Text in MASTERSPEC Sections. Insert abbreviations, acronyms, and names, such as standards and regulations from other Federal and state agencies, used in Specifications or added to the office master.

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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</tr>
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<tr>
<td>ADAAG</td>
<td>Americans with Disabilities Act (ADA)</td>
<td>(800) 872-2253</td>
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<td></td>
<td>Accessibility Guidelines for Buildings and Facilities</td>
<td>(202) 272-0080</td>
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<tr>
<td></td>
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<td>CRD</td>
<td>Handbook for Concrete and Cement (601) 634-2355 Available from Army Corps of Engineers Waterways Experiment Station <a href="http://www.wes.army.mil">www.wes.army.mil</a></td>
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</tr>
<tr>
<td>DOD</td>
<td>Department of Defense Military Specifications and Standards (215) 697-6257 Available from Department of Defense Single Stock Point <a href="http://www.dodssp.daps.mil">www.dodssp.daps.mil</a></td>
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<td>DSCC</td>
<td>Defense Supply Center Columbus (See FS)</td>
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<td>FED-STD</td>
<td>Federal Standard (See FS)</td>
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<td>FTMS</td>
<td>Federal Test Method Standard (See FS)</td>
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<td>MIL</td>
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<td>MS MIL</td>
<td>See MILSPEC</td>
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<td>MUTCD</td>
<td>Manual on Uniform Traffic Control Devices Department of Transportation Federal Highway Administration (See FHA. Located in Paragraph Federal Government Agencies”).</td>
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<tr>
<td>UFAS</td>
<td>Uniform Federal Accessibility Standards (800) 872-2253</td>
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</table>
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.

Delete the entries below that are not referenced in Specifications. List has been checked against information obtained from the Internet and by direct telephone contact; it only includes those organizations referenced in the Section Text in MASTERSPEC Sections. Insert abbreviations, acronyms, and names used in Specifications or added to the office master.

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<th>Abbr</th>
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<tr>
<td>AA</td>
<td>Aluminum Association, Inc. (The)</td>
<td>(202) 862-5100</td>
<td><a href="http://www.aluminum.org">www.aluminum.org</a></td>
</tr>
<tr>
<td>AAADM</td>
<td>American Association of Automatic Door Manufacturers</td>
<td>(216) 241-7333</td>
<td><a href="http://www.aaadm.com">www.aaadm.com</a></td>
</tr>
<tr>
<td>AABC</td>
<td>Associated Air Balance Council</td>
<td>(202) 737-0202</td>
<td><a href="http://www.aabchq.com">www.aabchq.com</a></td>
</tr>
<tr>
<td>AAMA</td>
<td>American Architectural Manufacturers Association</td>
<td>(847) 303-5664</td>
<td><a href="http://www.aamanet.org">www.aamanet.org</a></td>
</tr>
<tr>
<td>AASHTO</td>
<td>American Association of State Highway and Transportation Officials</td>
<td>(202) 624-5800</td>
<td><a href="http://www.transportation.org">http://www.transportation.org</a></td>
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<tr>
<td>AATCC</td>
<td>American Association of Textile Chemists and Colorists (The)</td>
<td>(919) 549-8141</td>
<td><a href="http://www.aatcc.org">www.aatcc.org</a></td>
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<tr>
<td>ABMA</td>
<td>American Bearing Manufacturers Association</td>
<td>(202) 367-1155</td>
<td><a href="http://www.abma-dc.org">www.abma-dc.org</a></td>
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<td>ACI</td>
<td>ACI International (American Concrete Institute)</td>
<td>(248) 848-3700</td>
<td><a href="http://www.aci-int.org">www.aci-int.org</a></td>
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<td>ACPA</td>
<td>American Concrete Pipe Association</td>
<td>(972) 506-7216</td>
<td><a href="http://www.concrete-pipe.org">http://www.concrete-pipe.org</a></td>
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<tr>
<td>AEIC</td>
<td>Association of Edison Illuminating Companies, Inc. (The)</td>
<td>(205) 257-2530</td>
<td><a href="http://www.aeic.org">www.aeic.org</a></td>
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<tr>
<td>AF&amp;PA</td>
<td>American Forest &amp; Paper Association</td>
<td>(800) 878-8878 (202) 463-2700</td>
<td><a href="http://www.afandpa.org">www.afandpa.org</a></td>
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<td>AGA</td>
<td>American Gas Association</td>
<td>(202) 824-7000</td>
<td><a href="http://www.gas.org">www.gas.org</a></td>
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<td>AGC</td>
<td>Associated General Contractors of America (The)</td>
<td>(703) 548-3118</td>
<td><a href="http://www.agc.org">www.agc.org</a></td>
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<td>AHA</td>
<td>American Hardboard Association</td>
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<td>(Now part of CPA)</td>
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<td>AHAM</td>
<td>Association of Home Appliance Manufacturers</td>
<td>(202) 872-5955</td>
<td><a href="http://www.aham.org">www.aham.org</a></td>
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<td>AI</td>
<td>Asphalt Institute</td>
<td>(859) 288-4960</td>
<td><a href="http://www.asphaltinstitute.org">http://www.asphaltinstitute.org</a></td>
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<td>AIA</td>
<td>American Institute of Architects (The)</td>
<td>(800) 242-3837</td>
<td><a href="http://www.aia.org">www.aia.org</a></td>
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<td>AISC</td>
<td>American Institute of Steel Construction</td>
<td>(800) 644-2400</td>
<td><a href="http://www.aisc.org">www.aisc.org</a></td>
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<td>AISI</td>
<td>American Iron and Steel Institute</td>
<td>(312) 670-2400</td>
<td><a href="http://www.steel.org">www.steel.org</a></td>
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<td>AITC</td>
<td>American Institute of Timber Construction</td>
<td>(202) 452-7100</td>
<td><a href="http://www.aitc-glulam.org">http://www.aitc-glulam.org</a></td>
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<td>ALCA</td>
<td>Associated Landscape Contractors of America</td>
<td>(800) 395-2522</td>
<td><a href="http://www.alca.org">www.alca.org</a></td>
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<td>ALSC</td>
<td>American Lumber Standard Committee, Incorporated</td>
<td>(703) 736-9666</td>
<td><a href="http://www.alsc.org">www.alsc.org</a></td>
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<td>AMCA</td>
<td>Air Movement and Control Association International, Inc.</td>
<td>(301) 972-1700</td>
<td><a href="http://www.amca.org">www.amca.org</a></td>
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<td>ANSI</td>
<td>American National Standards Institute</td>
<td>(202) 293-8020</td>
<td><a href="http://www.ansi.org">www.ansi.org</a></td>
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<td>AOSA</td>
<td>Association of Official Seed Analysts</td>
<td>(505) 522-1437</td>
<td><a href="http://www.aosaseed.com">http://www.aosaseed.com</a></td>
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<td>APA</td>
<td>APA - The Engineered Wood Association</td>
<td>(253) 565-6600</td>
<td><a href="http://www.apawood.org">http://www.apawood.org</a></td>
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<tr>
<td>APA</td>
<td>Architectural Precast Association</td>
<td>(239) 454-6989</td>
<td><a href="http://www.archiprecast.org">http://www.archiprecast.org</a></td>
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<td>API</td>
<td>American Petroleum Institute</td>
<td>(202) 682-8000</td>
<td><a href="http://www.api.org">www.api.org</a></td>
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<td>ARI</td>
<td>Air-Conditioning &amp; Refrigeration Institute</td>
<td>(703) 524-8800</td>
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<td>ARMA</td>
<td>Asphalt Roofing Manufacturers Association</td>
<td>(202) 207-0917</td>
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<tr>
<td>ASCE</td>
<td>American Society of Civil Engineers</td>
<td>(800) 548-2723</td>
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<td>ASHRAE</td>
<td>American Society of Heating, Refrigerating and Air-Conditioning Engineers</td>
<td>(800) 527-4723</td>
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<td>ASME</td>
<td>ASME International</td>
<td>(800) 843-2763</td>
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<td>ASSE</td>
<td>American Society of Sanitary Engineering</td>
<td>(440) 835-3040</td>
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<td>ASTM</td>
<td>ASTM International</td>
<td>(610) 832-9585</td>
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<td>AWCI</td>
<td>AWCI International</td>
<td>(703) 534-8300</td>
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<td>AWCMA</td>
<td>American Window Covering Manufacturers Association</td>
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<td>CRSI</td>
<td>Concrete Reinforcing Steel Institute</td>
<td><a href="http://www.crsi.org">www.crsi.org</a> (847) 517-1200</td>
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<td>CSA</td>
<td>CSA International (Formerly: IAS - International Approval Services)</td>
<td><a href="http://www.csa-international.org">http://www.csa-international.org</a> (800) 463-6727</td>
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<td>CSI</td>
<td>Construction Specifications Institute (The)</td>
<td><a href="http://www.csinet.org">www.csinet.org</a> (800) 689-2900</td>
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<td>CSSB</td>
<td>Cedar Shake &amp; Shingle Bureau</td>
<td><a href="http://www.cedarbureau.org">http://www.cedarbureau.org</a> (604) 820-7700</td>
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<td>CTI</td>
<td>Cooling Technology Institute (Formerly: Cooling Tower Institute)</td>
<td><a href="http://www.cti.org">www.cti.org</a> (281) 583-4087</td>
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<td>DHI</td>
<td>Door and Hardware Institute</td>
<td><a href="http://www.dhi.org">www.dhi.org</a> (703) 222-2010</td>
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<td>EIA</td>
<td>Electronic Industries Alliance</td>
<td><a href="http://www.eia.org">www.eia.org</a> (703) 907-7500</td>
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<td>EIMA</td>
<td>EIFS Industry Members Association</td>
<td><a href="http://www.eima.com/">http://www.eima.com/</a> (800) 294-3462</td>
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<tr>
<td>EJCDC</td>
<td>Engineers Joint Contract Documents Committee</td>
<td><a href="http://www.asce.org">www.asce.org</a> (800) 548-2723</td>
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<td>EJMA</td>
<td>Expansion Joint Manufacturers Association, Inc.</td>
<td><a href="http://www.ejma.org">www.ejma.org</a> (914) 332-0040</td>
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<td>ESD</td>
<td>ESD Association</td>
<td><a href="http://www.esda.org">www.esda.org</a> (315) 339-6937</td>
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<td>FCI</td>
<td>Fluid Controls Institute</td>
<td><a href="http://www.asphaltroofing.org">http://www.asphaltroofing.org</a> (216) 241-7333</td>
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<td>FGI</td>
<td>Fabricated Geomembrane Institute</td>
<td><a href="http://www.fabricatedgeomembrane.com">www.fabricatedgeomembrane.com</a> (217) 333-3929</td>
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<td>FMG</td>
<td>FM Global (Formerly: FM - Factory Mutual System)</td>
<td><a href="http://www.fmglobal.com">www.fmglobal.com</a> (401) 275-3000</td>
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<td>FRSA</td>
<td>Florida Roofing, Sheet Metal &amp; Air Conditioning Contractors Association, Inc.</td>
<td><a href="http://www.floridaroof.com">www.floridaroof.com</a> (407) 671-3772</td>
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<td>FSA</td>
<td>Fluid Sealing Association</td>
<td>(610) 971-4850</td>
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<td>FSC</td>
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<td>52 951 5146905</td>
<td><a href="http://www.fscoax.org">www.fscoax.org</a></td>
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<td>GA</td>
<td>Gypsum Association</td>
<td>(202) 289-5440</td>
<td><a href="http://www.gypsum.org">www.gypsum.org</a></td>
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<td>GANA</td>
<td>Glass Association of North America</td>
<td>(785) 271-0208</td>
<td><a href="http://www.glasswebsite.com">www.glasswebsite.com</a></td>
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<td>GS</td>
<td>Green Seal</td>
<td>(202) 872-6400</td>
<td><a href="http://www.greenseal.org">www.greenseal.org</a></td>
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<td>GSI</td>
<td>Geosynthetic Institute</td>
<td>(610) 522-8440</td>
<td><a href="http://www.geosynthetic-institute.org">www.geosynthetic-institute.org</a></td>
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<td>HI</td>
<td>Hydraulic Institute</td>
<td>(888) 786-7744 (973) 267-9700</td>
<td><a href="http://www.pumps.org">www.pumps.org</a></td>
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<td>HI</td>
<td>Hydronics Institute</td>
<td>(908) 464-8200</td>
<td><a href="http://www.gamanet.org">www.gamanet.org</a></td>
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<td>HMMA</td>
<td>Hollow Metal Manufacturers Association</td>
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<td>HPVA</td>
<td>Hardwood Plywood &amp; Veneer Association</td>
<td>(703) 435-2900</td>
<td><a href="http://www.hpva.org">www.hpva.org</a></td>
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<td>HPW</td>
<td>H. P. White Laboratory, Inc.</td>
<td>(410) 838-6550</td>
<td><a href="http://www.hpwhite.com">www.hpwhite.com</a></td>
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<td>IAS</td>
<td>International Approval Services</td>
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<td>ICEA</td>
<td>Insulated Cable Engineers Association, Inc.</td>
<td>(770) 830-0369</td>
<td><a href="http://www.icea.net">www.icea.net</a></td>
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<tr>
<td>ICRI</td>
<td>International Concrete Repair Institute, Inc.</td>
<td>(847) 827-0830</td>
<td><a href="http://www.icri.org">www.icri.org</a></td>
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<tr>
<td>IEC</td>
<td>International Electrotechnical Commission</td>
<td>41 22 919 02 11</td>
<td><a href="http://www.iec.ch">www.iec.ch</a></td>
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<td>IEEE</td>
<td>Institute of Electrical and Electronics Engineers, Inc. (The)</td>
<td>(212) 419-7900</td>
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<td>IESNA</td>
<td>Illuminating Engineering Society of North America</td>
<td>(212) 248-5000</td>
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<td>IGCC</td>
<td>Insulating Glass Certification Council</td>
<td>(315) 646-2234</td>
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<td><a href="http://www.igmaonline.org">www.igmaonline.org</a></td>
<td>(613) 233-1510</td>
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<td>ILI</td>
<td>Indiana Limestone Institute of America, Inc.</td>
<td><a href="http://www.iliai.com">www.iliai.com</a></td>
<td>(812) 275-4426</td>
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<tr>
<td>ISO</td>
<td>International Organization for Standardization</td>
<td><a href="http://www.iso.ch">www.iso.ch</a></td>
<td>41 22 749 01 11</td>
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<tr>
<td>ISSFA</td>
<td>International Solid Surface Fabricators Association</td>
<td><a href="http://www.issfa.net">www.issfa.net</a></td>
<td>(702) 567-8150</td>
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<tr>
<td>ITS</td>
<td>Intertek</td>
<td><a href="http://www.intertek.com">www.intertek.com</a></td>
<td>(800) 345-3851</td>
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<td>ITU</td>
<td>International Telecommunication Union</td>
<td><a href="http://www.itu.int/home">www.itu.int/home</a></td>
<td>41 22 730 51 11</td>
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<td>KCMA</td>
<td>Kitchen Cabinet Manufacturers Association</td>
<td><a href="http://www.kcma.org">www.kcma.org</a></td>
<td>(703) 264-1690</td>
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<td>LMA</td>
<td>Laminating Materials Association</td>
<td><a href="http://www.lma.org">www.lma.org</a></td>
<td>(201) 664-2700</td>
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<td>LPI</td>
<td>Lightning Protection Institute</td>
<td><a href="http://www.lightning.org">www.lightning.org</a></td>
<td>(800) 488-6864</td>
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<td>MBMA</td>
<td>Metal Building Manufacturers Association</td>
<td><a href="http://www.mbma.com">www.mbma.com</a></td>
<td>(216) 241-7333</td>
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<td>MFMA</td>
<td>Maple Flooring Manufacturers Association</td>
<td><a href="http://www.maplefloor.org">www.maplefloor.org</a></td>
<td>(847) 480-9138</td>
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<td>MFMA</td>
<td>Metal Framing Manufacturers Association</td>
<td><a href="http://www.metalframingmfg.org">www.metalframingmfg.org</a></td>
<td>(312) 644-6610</td>
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<td>MHIA</td>
<td>Material Handling Industry of America</td>
<td><a href="http://www.mhia.org">www.mhia.org</a></td>
<td>(800) 345-1815</td>
</tr>
<tr>
<td>MIA</td>
<td>Marble Institute of America</td>
<td><a href="http://www.marble-institute.com">www.marble-institute.com</a></td>
<td>(440) 250-9222</td>
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<tr>
<td>MPI</td>
<td>Master Painters Institute</td>
<td><a href="http://www.paintinfo.com">www.paintinfo.com</a></td>
<td>(888) 674-8937</td>
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<tr>
<td>MSS</td>
<td>Manufacturers Standardization Society of The Valve and</td>
<td></td>
<td>(703) 281-6613</td>
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<td>MWAA</td>
<td>Fittings Industry Inc.</td>
<td><a href="http://www.mss-hq.com">www.mss-hq.com</a></td>
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<td>NAAMM</td>
<td>National Association of Architectural Metal Manufacturers</td>
<td><a href="http://www.naamm.org">www.naamm.org</a></td>
<td>(312) 332-0405</td>
</tr>
<tr>
<td>NACE</td>
<td>NACE International (National Association of Corrosion Engineers International)</td>
<td><a href="http://www.nace.org">www.nace.org</a></td>
<td>(281) 228-6200</td>
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<tr>
<td>NADCA</td>
<td>National Air Duct Cleaners Association</td>
<td><a href="http://www.nadca.com">www.nadca.com</a></td>
<td>(202) 737-2926</td>
</tr>
<tr>
<td>NAIMA</td>
<td>North American Insulation Manufacturers Association (The)</td>
<td><a href="http://www.naima.org">www.naima.org</a></td>
<td>(703) 684-0084</td>
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<tr>
<td>NBGQA</td>
<td>National Building Granite Quarries Association, Inc.</td>
<td><a href="http://www.nbgqa.com">www.nbgqa.com</a></td>
<td>(800) 557-2848</td>
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<tr>
<td>NCMA</td>
<td>National Concrete Masonry Association</td>
<td><a href="http://www.ncma.org">www.ncma.org</a></td>
<td>(703) 713-1900</td>
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<td>NCPI</td>
<td>National Clay Pipe Institute</td>
<td><a href="http://www.ncpi.org">www.ncpi.org</a></td>
<td>(262) 248-9094</td>
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<td>NCTA</td>
<td>National Cable &amp; Telecommunications Association</td>
<td><a href="http://www.ncta.com">www.ncta.com</a></td>
<td>(202) 775-3550</td>
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<tr>
<td>NEBB</td>
<td>National Environmental Balancing Bureau</td>
<td><a href="http://www.nebb.org">www.nebb.org</a></td>
<td>(301) 977-3698</td>
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<td>NECA</td>
<td>National Electrical Contractors Association</td>
<td><a href="http://www.necanet.org/">http://www.necanet.org/</a></td>
<td>(301) 657-3110</td>
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<td>NeLMA</td>
<td>Northeastern Lumber Manufacturers' Association</td>
<td><a href="http://www.nelma.org">www.nelma.org</a></td>
<td>(207) 829-6901</td>
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<td>NEMA</td>
<td>National Electrical Manufacturers Association</td>
<td><a href="http://www.nema.org">www.nema.org</a></td>
<td>(703) 841-3200</td>
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<td>NETA</td>
<td>InterNational Electrical Testing Association</td>
<td><a href="http://www.netaworld.org">www.netaworld.org</a></td>
<td>(303) 697-8441</td>
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<td>NFPA</td>
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<td><a href="http://www.nfpa.org">www.nfpa.org</a></td>
<td>(800) 344-3555</td>
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<td>NFRC</td>
<td>National Fenestration Rating Council</td>
<td>(301) 589-1776</td>
<td><a href="http://www.nfrc.org">www.nfrc.org</a></td>
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<tr>
<td>NGA</td>
<td>National Glass Association</td>
<td>(703) 442-4890</td>
<td><a href="http://www.glass.org">www.glass.org</a></td>
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<tr>
<td>NHLA</td>
<td>National Hardwood Lumber Association</td>
<td>(800) 933-0318</td>
<td><a href="http://www.natlhardwood.org">www.natlhardwood.org</a></td>
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<tr>
<td>NLGA</td>
<td>National Lumber Grades Authority</td>
<td>(604) 524-2393</td>
<td><a href="http://www.nlga.org">www.nlga.org</a></td>
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<td>NOFMA</td>
<td>National Oak Flooring Manufacturers Association</td>
<td>(901) 526-5016</td>
<td><a href="http://www.nofma.org">www.nofma.org</a></td>
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<tr>
<td>NRCA</td>
<td>National Roofing Contractors Association</td>
<td>(800) 323-9545</td>
<td><a href="http://www.nrca.net">www.nrca.net</a></td>
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<tr>
<td>NRMCA</td>
<td>National Ready Mixed Concrete Association</td>
<td>(888) 846-7622</td>
<td><a href="http://www.nrmca.org">www.nrmca.org</a></td>
</tr>
<tr>
<td>NSF</td>
<td>NSF International (National Sanitation Foundation International)</td>
<td>(800) 673-6275</td>
<td><a href="http://www.nsf.org">www.nsf.org</a></td>
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<td>NSSGA</td>
<td>National Stone, Sand &amp; Gravel Association</td>
<td>(800) 342-1415</td>
<td><a href="http://www.nssga.org">www.nssga.org</a></td>
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<tr>
<td>NTMA</td>
<td>National Terrazzo &amp; Mosaic Association, Inc.</td>
<td>(800) 323-9736</td>
<td><a href="http://www.ntma.com">www.ntma.com</a></td>
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<tr>
<td>NTRMA</td>
<td>National Tile Roofing Manufacturers Association</td>
<td>(540) 751-0930</td>
<td>(See RTI)</td>
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<td>NWWD</td>
<td>National Wood Window and Door Association</td>
<td>(See WDMA)</td>
<td>(See WDMA)</td>
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<td>OPL</td>
<td>Omega Point Laboratories, Inc.</td>
<td>(800) 966-5253</td>
<td><a href="http://www.opl.com">www.opl.com</a></td>
</tr>
<tr>
<td>PCI</td>
<td>Precast/Prestressed Concrete Institute</td>
<td>(312) 786-0300</td>
<td><a href="http://www.pci.org">www.pci.org</a></td>
</tr>
<tr>
<td>PDCA</td>
<td>Painting &amp; Decorating Contractors of America</td>
<td>(800) 332-7322</td>
<td><a href="http://www.pdca.com">www.pdca.com</a></td>
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<tr>
<td>PDI</td>
<td>Plumbing &amp; Drainage Institute</td>
<td>(800) 589-8956</td>
<td><a href="http://www.pdionline.org">www.pdionline.org</a></td>
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<tr>
<td>PTI</td>
<td>Post-Tensioning Institute</td>
<td>(602) 870-7540</td>
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www.post-tensioning.org

RCSC  Research Council on Structural Connections  (800) 644-2400
www.boltcouncil.org  (312) 670-2400

RFCl  Resilient Floor Covering Institute  (301) 340-8580
www.rfci.com

RIS  Redwood Inspection Service  (888) 225-7339
calredwood.org  (415) 382-0662

RTI  Roof Tile Institute  (312) 670-4177
(Formerly: NTRMA - National Tile Roofing Manufacturers Association)
www.ntrma.org

SAE  SAE International  (724) 776-4841
www.sae.org

SDI  Steel Deck Institute  (847) 462-1930
www.sdi.org

SDI  Steel Door Institute  (440) 899-0010
www.steeldoor.org

SEFA  Scientific Equipment and Furniture Association  (516) 294-5424
www.sefalabs.com

SGCC  Safety Glazing Certification Council  (315) 646-2234
www.sgcc.org

SIA  Security Industry Association  (703) 683-2075
www.sefalabs.com

SIGMA  Sealed Insulating Glass Manufacturers Association  (843) 626-1995
(See IGMA)

SJI  Steel Joist Institute  (843) 626-1995
www.steeljoist.org

SMA  Screen Manufacturers Association  (561) 533-0991
www.smacentral.org

SMACNA  Sheet Metal and Air Conditioning Contractors' National Association  (703) 803-2980
www.smacentral.org

SPFA  Spray Polyurethane Foam Alliance  (800) 523-6154

REFERENCES
(Formerly: SPI/SPFD - The Society of the Plastics Industry, Inc.; Spray Polyurethane Foam Division)

www.sprayfoam.org

SPIB Southern Pine Inspection Bureau (The)

www.spib.org (850) 434-2611

SPI/SPFD Society of the Plastics Industry, Inc. (The)
Spray Polyurethane Foam Division
(See SPFA)

SPRI SPRI
(Single Ply Roofing Institute)

www.spri.org (781) 647-7026

SSINA Specialty Steel Industry of North America

www.ssina.com (800) 982-0355
(202) 342-8630

SSPC SSPC: The Society for Protective Coatings

www.sspc.org (877) 281-7772
(412) 281-2331

STI Steel Tank Institute

www.steeltank.com (847) 438-8265

SWI Steel Window Institute

www.steelwindows.com (216) 241-7333

SWRI Sealant, Waterproofing, & Restoration Institute

www.swrionline.org (816) 472-7974

TCA Tile Council of America, Inc.

www.tileusa.com (864) 646-8453

TIA/EIA Telecommunications Industry Association/Electronic Industries Alliance

www.tiaonline.org (703) 907-7700

TMS The Masonry Society

www.masonrysociety.org (303) 939-9700

TPI Truss Plate Institute, Inc.

www.tpinst.org (608) 833-5900

TPI Turfgrass Producers International

www.turfgrasssod.org (800) 405-8873
(847) 705-9898

UL Underwriters Laboratories Inc.

www.ul.com (800) 285-4476
(847) 272-8800

UNI Uni-Bell PVC Pipe Association

www.uni-bell.org (972) 243-3902

REFERENCES
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.

Delete the entries below if not referenced in Specifications. List has been checked against information obtained from the Internet and by direct telephone contact; it only includes those agencies referenced in the Section Text in MASTERSPEC Sections. Insert abbreviations, acronyms, and names used in Specifications or added to the office master.

USGBC  U.S. Green Building Council  (202) 828-7422  
www.usgbc.org

WASTEC  Waste Equipment Technology Association  (800) 424-2869  (202) 244-4700  
www.wastec.org

WCLIB  West Coast Lumber Inspection Bureau  (800) 283-1486  (503) 639-0651  
www.wclib.org

WCMA  Window Covering Manufacturers Association  
(See WCSC)

WCSC  Window Covering Safety Council  (800) 506-4636  (212) 661-4261  
(Formerly: WCMA - Window Covering Manufacturers Association)  
www.windowcoverings.org

WDMA  Window & Door Manufacturers Association  (800) 223-2301  (847) 299-5200  
(Formerly: NWWDA - National Wood Window and Door Association)  
www.wdma.com

WMMPA  Wood Moulding & Millwork Producers Association  (800) 550-7889  (530) 661-9591  
www.wmmpa.com

IAPMO  International Association of Plumbing and Mechanical Officials  (909) 472-4100  
www.iapmo.org

ICBO  International Conference of Building Officials  
(See ICC)

ICBO ES  ICBO Evaluation Service, Inc.  
(See ICC-ES)

ICC  International Code Council  (703) 931-4533  
(Formerly: CABO - Council of American Building Officials)  
www.iccsafe.org

ICC-ES  ICC Evaluation Service, Inc.  (800) 423-6587
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.

Delete the entries below if not referenced in Specifications. List has been checked against Congressional Quarterly's "Washington Information Directory 1999-2000" and information obtained from the Internet and by direct telephone contact; it only includes those agencies referenced in the Section Text in MASTERSPEC Sections. Insert abbreviations, acronyms, and names used in Specifications or added to the office master.

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<td>CE Army Corps of Engineers</td>
<td>(800) 638-2772</td>
<td>(301) 504-0990</td>
<td><a href="http://www.usace.army.mil">www.usace.army.mil</a></td>
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<td>DOC Department of Commerce</td>
<td>(202) 366-4000</td>
<td>(202) 225-5322</td>
<td><a href="http://www.doc.gov">www.doc.gov</a></td>
</tr>
<tr>
<td>EPA Environmental Protection Agency</td>
<td>(888) 463-6332</td>
<td>(410) 962-0093</td>
<td><a href="http://www.epa.gov">www.epa.gov</a></td>
</tr>
<tr>
<td>FAA Federal Aviation Administration</td>
<td>(888) 463-6332</td>
<td>(410) 962-0093</td>
<td><a href="http://www.faa.gov">www.faa.gov</a></td>
</tr>
<tr>
<td>FDA Food and Drug Administration</td>
<td>(202) 708-5082</td>
<td>(202) 708-1112</td>
<td><a href="http://www.fda.gov">www.fda.gov</a></td>
</tr>
<tr>
<td>GSA General Services Administration</td>
<td>(202) 708-5082</td>
<td>(202) 708-1112</td>
<td><a href="http://www.gsa.gov">www.gsa.gov</a></td>
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<tr>
<td>LBL Lawrence Berkeley Laboratory National Laboratory</td>
<td>(510) 486-4000</td>
<td>(510) 486-4000</td>
<td><a href="http://www.lbl.gov">www.lbl.gov</a></td>
</tr>
</tbody>
</table>
Consider adding state and local standards-producing agencies, such as state highway departments, soil conservation agencies, and similar environmental departments.

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.

Delete the entries below if not referenced in Specifications. List has been checked against information obtained from the Internet and by direct telephone contact; it only includes those agencies referenced in the Section Text in MASTERSPEC Sections. Insert abbreviations, acronyms, and names, such as state highway departments, used in Specifications or added to the office master.

DCR Virginia Department of Conservation and Recreation (804) 786-1712 http://www.dcr.state.va.us

VDH Virginia Department of Health Culpepper District (540) 829-7340 www.vdh.state.va.us

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
To edit the attached specifications, the hidden text option must be enabled. This allows the specifications editor to view instructions throughout each specification section.
To enable the hidden text option, in Word 2003, select “Tools” from the toolbar at top. Within “Tools”, select “Options”. Under “Options” select “View”. Look under “Formatting Marks” and make sure that the “Hidden Text” box is checked. Hidden text should now be visible within the document.
In Word 2008, click on upper left “Office Button”. Click on “word Options” at bottom of menu. Click on “Display”. Under “always show these formatting marks on the screen” check the hidden text box. Hidden text should now be visible within the document.

Instructions to the Editor are found in the following locations:

**Specification 015000 – Temporary Facilities and Controls**

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<tr>
<td>Before 2.2 C</td>
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SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

Much of this Section consists of Project-specific data. Examples given in the model text in the Evaluations illustrate possible Section content. Use model text to develop text for specific Project requirements. See Evaluations.

Verify that Section titles referenced in this Section are Correct for this project’s Specifications; Section titles may have changed.

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:

Adjust list below to suit. Coordinate available utilities with Authority Project Manager.

1. Sewers and drainage.
2. Water service and distribution.
3. Sanitary facilities, including toilets, wash facilities, and drinking-water facilities.
4. Heating and cooling facilities.
5. Ventilation.
6. Electric power service.
7. Telephone and other communication services.
8. Insert special temporary utility if required.

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

Adjust list below to suit Project. Coordinate availability with Authority Project Manager.

1. Temporary roads and paving.
2. Dewatering facilities and drains.
3. Project identification and temporary signs.
5. Field offices.
6. Storage and fabrication sheds.
7. Lifts and hoists.
8. Temporary elevator usage.
10. Construction aids and miscellaneous services and facilities.

Use subparagraph below only if a COTR trailer is required. This subparagraph will rarely be used. Coordinate this subparagraph with the Authority Program Manager. Should this paragraph be used please notify the Authority Project Manager of its use.

11. COTR trailer.
12. Insert special temporary support facility if required.

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

Adjust list below to suit Project.

1. Environmental protection.
2. Storm water control.
3. Tree and plant protection.
4. Pest control.
5. Site enclosure fence.
7. Barricades, warning signs, and lights.
8. Covered walkways.
10. Temporary partitions.
11. Fire protection.
12. Insert special temporary security and protection facility if required.

E. Related Sections include the following:

List below only products, construction, and equipment that the reader might expect to find in this Section, but are specified elsewhere.

1. Division 01 Section "Submittals" for procedures for submitting copies of implementation and termination schedule and utility reports.
2. Division 31 Section "Termite Control" for pest control.
3. 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:

Revise list below to suit Project. Add other known entities using temporary services and facilities.

1. The Authority’s construction forces.
2. Occupants of Project.
3. COTR.
5. Testing agencies.

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.

Delete paragraph below for projects of short duration and for small projects with few temporary utility requirements. If retaining, coordinate with Division 01 Section "Submittals."

C. Implementation and Termination Schedule: Within 15 calendar days of date established for submittal of Contractor's first Construction Schedule, submit a schedule indicating implementation and termination of each temporary utility.

Delete paragraph and subparagraphs below if no protective wall treatment required.

D. Samples for Verification: For protective wall treatment for temporary partitions as follows:
1. Protective Wall Covering: 24 inches square, mounted on gypsum wallboard with moldings and butt joints. Include 12-inch-long samples of inside and outside corner moldings.
2. Bumper Guards: 12 inches long including fastening devices and showing end treatment.
3. Corner Guards: 8 inches long, in full-size profile of each type.

Insert requirements for submitting installation Drawings of critical temporary utilities if required.

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.


First subparagraph below may avoid unnecessary use of high-cost labor.

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

Revise first paragraph and subparagraph below to minimize temporary use of permanent utilities, or insert exceptions to provisions. Discourage attempts to delay activation of standpipes and sprinklers.
A. Temporary Utilities: At earliest feasible time, when acceptable to COTR, change over from use of temporary service to use of permanent service.

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

B. 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.

Paragraph below is not required if all contractor personal parking is accomplished in the contractor’s staging area.

At Ronald Reagan Washington National Airport delete the two paragraphs above and use the two paragraphs below. Delete the two paragraphs below if project is at Washington Dulles International Airport.

C. Contractor is limited to the construction area as defined in the contract documents the parking and staging of both company-owned and personal vehicles will be limited to the construction area as defined in the contract documents. There is no other area available for contractor parking at Ronald Reagan Washington National Airport. Contractors are allowed to use “Employee Only” shuttle busses. Control and enforce these limitations for all personnel including Subcontractor's personnel.

D. If off-airport parking or storage of materials and equipment is required, Contractor will be responsible for the maintenance, security, safety, and operation of these facilities off-airport parking or storage of materials and equipment is required. This cost will be considered part of the Contractor's general conditions. Transportation of materials, equipment, and personnel to the Work site is the responsibility of the Contractor.
Delete paragraph below if a shuttle is not required.

E. 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.

Delete materials below not required. Add materials to suit Project.

B. Pavement: Comply with Division 32 [Section "Asphalt Paving." ] [Section "Concrete Paving."]

If Specification Sections in paragraph below are not included in Project, add requirements here.

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

Retain paragraph below for job-built office units or if gypsum-board temporary partitions for enclosure or dust control are specified.

D. 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.

Retain paragraph below for insulated temporary enclosures and partitions.

E. 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.

If Division 09 Section "Exterior Painting" and "Interior Painting" in first paragraph below is not included in Project, add requirements here. Select either one or both depending on Project Requirements.

F. Paint: Comply with requirements in Division 09 Sections "Exterior Painting." and "Interior Painting"

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

H. Water: Potable.

If there is no Division 31 Section “Storm Water Pollution Protection Plan” included with this project, include at the end of this paragraph pertinent information from Paragraph “Potential Pollution Sources” in the Authority provided specification Section “Storm Water Pollution Prevention Plan”

I. 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

Delete equipment below not required. Add equipment to suit Project.

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: [Prefabricated] [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.

Delete paragraph below if fixtures connected to previously installed water and sewer service must be used.

C. Self-Contained Toilet Units: Single-occupant units of chemical, aerated re-circulation, or combustion type; vented; fully enclosed with a glass-fiber-reinforced polyester shell or similar nonabsorbent material.

Retain first option in paragraph below if potable water is accessible from permanent or temporary lines. If potable water is not available, retain second option.

D. Drinking-Water Fixtures: [Drinking-water fountains] [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.

Revise first paragraph and subparagraphs below to suit Project. Liquid-propane-gas or fuel-oil heaters are commonly used. Steam or hot-water heaters, gas-fired space heaters, or electric unit heaters are also used.

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

Usually retain first subparagraph below. Gasoline-burning and salamander-type heating units are usually prohibited.

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.

F. 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.

G. 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.

H. 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

Revise below to indicate specific location if known in advance of project. Please note that the addition of the South Contractor Staging Area and the new Northwest Contractor Staging Area at Washington Dulles International Airport has created the need for additional requirements for the Contractor. Many of these requirements may also apply to Ronald Reagan Washington National Airport. Edit this Article for airport and project specific language for projects at Ronald Reagan Washington National Airport

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.

Add provisions for work not in the Contract but served by temporary facilities if required.

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.

Revise first subparagraph below to suit Project. See MASTERSPEC Evaluations.

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.

Retain subparagraph below if required. Revise to suit local requirements.

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 toilets, 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 toilet tissue, 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: Install self-contained toilet units, located as approved by COTR. Shield toilets to ensure privacy. Provide separate facilities for male and female personnel. Use of the Authority's existing toilet facilities will not be permitted.

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.

Retain subparagraph below if required by authorities having jurisdiction or recommended for health and safety reasons.

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.

Usually retain first subparagraph below.

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

5. Locate toilets and drinking-water fixtures so personnel need not walk more than [2 stories vertically] [or 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.

Retain subparagraph below if a minimum temperature in enclosed portions of building is required to prevent possibility of damage to completed construction.

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.
Insert gas or other utility services if required for Project. If natural gas is to be required provide meters by the Equimeter Company. Revise first paragraph and subparagraphs below to suit Project; include special power loads, such as continued operation of existing facility, while power changeover is being made.

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.

Include for Projects at IAD only:

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. Provide GFCI protection.

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.

Revise first subparagraph below to suit Project. Insert specific requirements, such as parking-lot lighting.

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 than 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.

Retain two subparagraphs below if required to suit Project. See MASTERSPEC Evaluations.

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

Include the following sub paragraph at Ronald Reagan Washington National Airport only. Delete for projects at Washington Dulles International Airport.

3. At the present time the Authority uses cell phones to communicate. The Authority uses Nextel service.

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.

Revise subparagraphs below to satisfy soil-conservation district requirements. See MASTERSPEC Evaluations.

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.

Add references to approved disposal methods to first paragraph below. Cross-reference Sections that specify handling of special waste materials. See MASTERSPEC Evaluations.

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.

Use paragraph below only if a COTR trailer is required. This paragraph will rarely be used. Coordinate this subparagraph with the Authority Project Manager.

F. COTR's Field Office:
   1. Provide, furnish, maintain, and provide weekly cleaning of new field office for exclusive use of COTR, a weatherproof building or buildings hereafter described, at locations approved by COTR. Unless otherwise approved, buildings shall be independent of any buildings used by Contractor. Turn keys to buildings over to COTR. COTR will designate location of building. Building shall remain on jobsite until released by COTR. New mobile units may be substituted with the approval of COTR.
2. COTR's field offices shall have ceiling height of not less than 7 feet, and floor space of not less than 400 sq. ft. Provide office with sufficient heat, natural and artificial light, and air conditioning. Equip doors and windows with locks approved by COTR. Suitable sanitary facilities separate from those for Contractor's personnel, and meeting Federal, State and Local Health Department requirements shall be provided, maintained clean and in good working condition, and stocked with lavatory and sanitary supplies at all times during the period of the Contract.

3. In addition, the following equipment and furniture, meeting COTR's approval, shall be furnished:
   
   a. Two desks and chairs.
   b. One drafting table and stool.
   c. Two file cabinets, letter size, four-drawer with independent locks.
   d. Six chairs.
   e. One equipment cabinet with lock.
   f. Two computer and printer stands.
   g. One carbon dioxide fire extinguisher (10-lb. rated capacity).
   h. One electric water cooler dispenser, with water supplied as needed.
   i. One telephone, with an exchange within the Authority’s service area as specified above.
   j. One plan rack.
   k. One six-shelf bookcase.
   l. One trash can.

4. Remove field office when no longer required by COTR, but not prior to 30 calendar days after completion of punch list work.

Revise paragraph below to suit Project.

G. 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.

Delete first paragraph below for low-rise construction of less than three stories.

H. Lifts and Hoists: Provide facilities for hoisting materials and personnel if greater than <insert number of feet> feet high or more than <insert number of floors> floors. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.

I. Temporary Elevator Usage: Refer to Division 14 Sections for temporary use of new elevators.
J. Temporary Stairs: Until permanent stairs are available, provide temporary stairs where ladders are not adequate. Cover finished permanent stairs with protective covering of plywood or similar material so finishes will be undamaged at time of acceptance.

Retain paragraph above or paragraph and subparagraph below. Indicate location of the Authority's existing stairs in Division 01 Section "Summary" or show on Drawings.

K. 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.

Individual Project circumstances may require use of other construction aids and miscellaneous facilities, such as scaffolds, platforms, swing stages, ramps and bridges, incidental sheeting and shoring, and demolition waste chutes. Add requirements to suit Project. See MASTERSPEC Evaluations.

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.

Include one of the following two paragraphs for projects that require Tree and Plant protection.

C. Tree and Plant Protection: Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from construction damage. Protect tree root systems from damage, flooding, and erosion. See Contract Provisions for additional requirements.

Retain paragraph above or below.

D. Tree and Plant Protection: Comply with requirements in Division 01 Section "Tree and Plant Protection."

Revise the first paragraph below if specific pests, such as termites or pigeons, are known to be a problem. Confirm with the Authority Project manager and the Authority Constructions Resident Engineer the inclusion of this paragraph.

E. Pest Control: Before deep foundation work has been completed, retain a local exterminator or pest-control company to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests. Engage this pest-control service to perform extermination and control.
procedures at regular intervals so Project will be free of pests and their residues at Substantial Completion. Obtain extended warranty for the Authority. Perform control operations lawfully, using environmentally safe materials.

F. 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.

G. Site Enclosure Fence: Before construction operations begin, provide portable chain-link site enclosure fence. Minimum 2-inch, 9-gage, 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 1-5/8-inch-OD top and bottom rails. Provide \textbf{concrete} bases for supporting posts. Contractor is responsible for providing support to protect against wind damage and meeting safety requirements.

1. Entrance into the site: Only through the lockable entrance gates.

Retain first option in first subparagraph below for security fencing; retain second option only for portable chain-link fencing.

2. Set fence posts in \textbf{compacted mixture of gravel and earth} bases.
3. Provide gates in sizes and at locations necessary to accommodate delivery vehicles and other construction operations.
4. Maintain security by limiting number of keys and restricting distribution to authorized personnel. \textbf{Provide COTR with three set of keys.}

H. 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.

I. 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.

Delete first paragraph and subparagraphs below where covered walkways are not required and area is sufficient to conduct operations, including delivery of materials. Include installation details on Drawings.

J. Covered Walkway: Erect a structurally adequate, protective, covered walkway for passage of persons along adjacent public streets and pedestrian walkways. Coordinate with entrance gates, other facilities, and obstructions. Comply with regulations of authorities having jurisdiction.

1. Construct covered walkways using scaffold or shoring framing.
2. Provide wood-plank overhead decking, protective plywood enclosure walls, handrails, barricades, warning signs, lights, safe and well-drained walkways, and similar provisions for protection and safe passage.
3. Extend back wall beyond the structure to complete enclosure fence.
4. Paint and maintain in a manner approved by COTR.
5. Submit to COTR designs for covered walkways, for review and approval of the Authority's Building Codes Department.

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

1. Where heating or cooling is needed and permanent enclosure is not complete, provide insulated temporary enclosures. Coordinate enclosure with ventilating and material drying or curing requirements to avoid dangerous conditions and effects.
2. Vertical Openings: Close openings of 25 sq. ft. or less with plywood or similar materials.
3. Horizontal Openings: Close openings in floor or roof decks and horizontal surfaces with load-bearing, wood-framed construction.
4. Install tarpaulins securely using fire-retardant-treated wood framing and other materials.
5. Use fire-retardant-treated wood and plywood for temporary enclosures. Use fire-retardant-treated material for framing and main sheathing.

L. Temporary Partitions: Erect and maintain dustproof partitions and temporary enclosures to limit dust and dirt migration and to separate areas from fumes and noise.

Retain or delete subparagraph below to suit Project. Revise construction to a fire-rated partition if necessary.

1. Construct dustproof partitions of not less than nominal 4-inch studs, 5/8-inch gypsum wallboard with joints taped on occupied side, and 1/2-inch fire-retardant plywood on construction side. Provide protective wall covering as required. Paint all gypsum board surfaces.

Retain subparagraph above or first subparagraph and associated subparagraph below. Retain below where containment of airborne particles and dust generated by construction activities is critical to occupants of other spaces in building.

2. Construct dustproof, floor-to-ceiling partitions of not less than nominal 4-inch studs, 2 layers of 3-mil polyethylene sheets, inside and outside temporary enclosure. Cover floor with 2 layers of 3-mil polyethylene sheets, extending sheets 18 inches up the side walls. Overlap and tape full length of joints. Cover floor with 3/4-inch fire-retardant plywood.
   a. Construct a vestibule and airlock at each entrance to temporary enclosure with not less than 48 inches between doors. Maintain water-dampened foot mats in vestibule.
3. Insulate partitions to provide noise protection to occupied areas.
4. Seal joints and perimeter. Equip partitions with dustproof doors and security locks.
5. Protect air-handling equipment.
7. Paint face of visible partitions a color acceptable to the Authority, and provide partitions with an applied base material likewise acceptable to the Authority. Finish walls with protective wall covering wainscot, bumper guards, and corner guards as specified below.

Coordinate two subparagraphs and associated subparagraphs below with Project requirements.
8. Provide 40 inches of protective wall treatment from floor for temporary partitions with exposed faces located in public spaces.

9. Protective wall treatment:

a. Protective Wall Covering: Minimum 0.060 inches thick; with trim shapes and formed corners in same color as wall covering, as required for complete installation.

1) Product and Manufacturer: "Acrovyn Fiber-Backed Wall Covering" by Construction Specialties, Inc., or as approved by the Authority. Surface texture "Pebbelette," with color as selected by COTR from manufacturer's full standard color range.

2) Fire-Resistance Ratings: Classified by UL according to ASTM E 84, with flame spread of 25 or less and smoke developed of 50 or less.

3) Adhesive: Mildew- and fungus-resistant, non-staining, removable type as recommended by wall covering manufacturer. Adhesive shall permit future removal of wall covering without damaging substrate.

4) Primer and Sealer: As recommended by wall covering manufacturer for each type of substrate.

b. Bumper Guards: Surface-mounted bumper guards, 4 inches high by approximately 13/16 inches deep; color, same color as wall covering. Provide bumper guards as a system of integral-colored vinyl/acrylic sheets with manufacturer's standard formed inside and outside corner trim, connectors, concealed mounting brackets, and end caps.

1) Product and Manufacturer: "Acrovyn Series SCR-40" by Construction Specialties, Inc., or as approved by the Authority.

c. Corner Guards: Surface-mounted corner guards, 3 inches by 3 inches by 40 inches high with 90-degree bend; color, same color as wall covering; consisting of abrasion-resistant, colored polycarbonate sheet, UV-stabilized against yellowing; complying with the following performance criteria:

1) Impact resistance: 16 lb./inch of notch, when tested according to ASTM D 256.

2) Yellowing Index: Less than 2.0 after 3 years' exposure, when tested according to ASTM D 1925.

3) Product and Manufacturer: "Acrovyn Series SM-20" by Construction Specialties, Inc., or as approved by the Authority.

4) Adhesive: Clear, non-staining, non-yellowing, as recommended by corner guard manufacturer for mounting corner guards to gypsum board.

M. 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.

N. 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.

When fire-suppression sprinkler systems or other permanent fire-protection systems are used, insert specific requirements.

Edit Article below for project specific staging area. Delete Article for projects at Ronald Reagan Washington National Airport

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 vendor. 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.

If there is no Division 31 Section “Storm Water Pollution Protection Plan” included with this project, include at the end of this paragraph pertinent information from Paragraph “Potential Pollution Sources” in the Authority provided specification Section “Storm Water Pollution Prevention Plan”
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.

Delete paragraph below if not required.

C. Operate Project-identification-sign lighting daily any time from dusk until dawn when personnel are on the site. Should no personnel be on the site after 12:00 midnight the project – identification lighting may be turned off at 12:00 midnight.

D. 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.

E. 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.

Consider inserting specific removal requirements, as illustrated in first subparagraph below.

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
To edit the attached specifications, the hidden text option must be enabled. This allows the specifications editor to view instructions throughout each specification section.

To enable the hidden text option, in Word 2003, select “Tools” from the toolbar at top. Within “Tools”, select “Options”. Under “Options” select “View”. Look under “Formatting Marks” and make sure that the “Hidden Text” box is checked. Hidden text should now be visible within the document.

In Word 2008, click on upper left “Office Button”. Click on “word Options” at bottom of menu. Click on “Display”. Under “always show these formatting marks on the screen” check the hidden text box. Hidden text should now be visible within the document.

Instructions to the Editor are found in the following locations:

**Specification 016000 – Product Requirements**
Before Part 1 – General
Before 1.3 A
Before 1.3 C
Before 1.4 A. 2
Before 1.4 B. 2. a
Before 1.6 A
Before 1.6 B
Before 1.6 B. 1
Before 1.7 A. 1
Before 2.1 A
Before 2.1 A. 1
Before 2.1 B. 3
Before 2.1 B. 5
Before 2.1 B. 7
Before 2.1 B. 8
Before 2.2 B. 1
SECTION 016000 - PRODUCT REQUIREMENTS

Much of this Section consists of Project-specific data. Examples given in the model text in the Evaluations illustrate possible Section content. Use model text to develop text for specific Project requirements. See Evaluations.

Verify that Section titles referenced in this Section are Correct for this project’s Specifications; Section titles may have changed.

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 "Allowances" for products selected under an allowance.
2. Division 01 Section "Alternates" for products selected under an alternate.
3. Division 01 Section "References" for applicable industry standards for products specified.
4. Divisions 02 through 33 Sections for specific requirements for warranties on products and installations specified to be warranted.

1.3 DEFINITIONS

Always retain this Article. These definitions refer specifically to contents of this Section and are not repeated in Division 01 Section "References."
A. Products: Items purchased for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.

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

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

See MASTERSPEC Evaluations for use of basis-of-design product specification below.

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.

Retain subparagraph and associated subparagraphs below only if specific data are required on each item.

2. Form: Tabulate information for each product under the following column headings:

a. Specification Section number and title.
b. Generic name used in the Contract Documents.
c. Proprietary name, model number, and similar designations.
d. Manufacturer's name and address.
e. Supplier's name and address.
f. Installer's name and address.
g. Projected delivery date or time span of delivery period.
h. Identification of items that require early submittal approval for scheduled delivery date.
i. Item Tag Number or similar ID if identified in the drawings.
j. Location (room number from the drawings)
k. Serial Number (once available)

3. 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.

4. 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.

5. 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.

6. 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:

   Retain and edit requirements below that are necessary and not included in the Supplementary Conditions.

   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

This Article eliminates need to include this information in each Section in Divisions 02 through 33. Limit use of this Article in each Section to unusual requirements.

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.

Revise subparagraphs below to suit Project.

B. Delivery and Handling:

Revise four subparagraphs below to suit Project.

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 away 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.
Warranty in first subparagraph below is manufacturer's standard and may have exclusions and limitations that do not suit Project. Check warranties and specify special warranties if manufacturers' warranties are not suitable.

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

This Article defines procedures for product selection. See MASTERSPEC Evaluations for a discussion of various specifying methods and a comparison of terms in MASTERSPEC with those in CSI's "Manual of Practice."

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.

Subparagraphs below are examples only; revise to suit Project.

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.
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.

Two subparagraphs below correspond to Closed Proprietary Specifications with optional products if no substitutions are permitted, as described in CSI's "Manual of Practice." If substitutions may be considered, they correspond to Open Proprietary Specifications with controlled substitutions or bidder-proposed substitutions, if the Instructions to Offerors so indicate.

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.

Two subparagraphs below correspond to nonrestrictive specifications described in CSI's "Manual of Practice" and require inclusion of requirements specifying salient features of products desired.

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.

First two subparagraphs below correspond to nonrestrictive specifications described in CSI's "Manual of Practice" and require specifying salient characteristics of desired products.

Retain subparagraph below only if Specifications also establish performance requirements, require compliance with an industry standard, or include some other method to establish product requirements. See Evaluations.

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.

Retain first subparagraph below if a single product is both named in individual Specification Sections or is indicated on Drawings as the basis of design, and a list of manufacturers' names offering comparable products is included.
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:

   Delete or revise unacceptable conditions below. If desired, insert more restrictive conditions to limit consideration of proposed substitutions.

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
To edit the attached specifications, the hidden text option must be enabled. This allows the specifications editor to view instructions throughout each specification section.

To enable the hidden text option, in Word 2003, select “Tools” from the toolbar at top. Within “Tools”, select “Options”. Under “Options” select “View”. Look under “Formatting Marks” and make sure that the “Hidden Text” box is checked. Hidden text should now be visible within the document.

In Word 2008, click on upper left “Office Button”. Click on “word Options” at bottom of menu. Click on “Display”. Under “always show these formatting marks on the screen” check the hidden text box. Hidden text should now be visible within the document.

Instructions to the Editor are found in the following locations:

**Specification 017300 – Execution**
Before Part 1 – General
Before 1.2 A. 1
Before 1.2 B. 1
Before 1.4 B
Before 3.1 A
Before 3.1 B
Before 3.1 C. 1
Before 3.2 A
Before 3.2 D
After 3.3 E
After 3.4 B. 2
After 3.4 D
After 3.5 I
Before 3.7 A
Before 3.7 I
Before 3.7 K
After 3.7 L
Before 3.9 A
After 3.10 E
SECTION 017300 - EXECUTION

Much of this Section consists of Project-specific data. Examples given in the model text in the Evaluations illustrate possible Section content. Use model text to develop text for specific Project requirements. See Evaluations.

Verify that Section titles referenced in this Section are Correct for this project’s Specifications; Section titles may have changed.

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:

Adjust list below to suit Project.

2. Field engineering and surveying.
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:

A/E list below, only procedures that the reader might expect to find in this Section, but are specified elsewhere. See Evaluations about first subparagraph below.

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 [land surveyors] [professional engineer].

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

C. Certified Surveys: Submit 2 copies signed and sealed by [land surveyor] [professional engineer].

D. 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. Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in the Commonwealth of Virginia and who is experienced in providing land-surveying services of the kind indicated.

Use either paragraph above or below as necessary. Both paragraphs may be used should the project require both a land surveyor and a professional engineer.

B. 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

Retain paragraph and subparagraph below for renovation work. Revise to suit Project.

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.

Revise first paragraph and subparagraphs below to suit Project. Verify with the Authority. Coordinate with Division 33 Sections.

B. Existing Utilities: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning site work, investigate and verify the existence and location of underground utilities and other construction affecting the Work.
1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; and underground electrical and communication services.
2. For additional requirements for locating and marking existing utilities, see Division 01 Section "Summary."

C. 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.

Delete first subparagraph and associated subparagraphs below if not required.

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

Revise first paragraph below to suit Project.

A. Existing Utility Information: Furnish information to COTR that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction.

B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

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

Revise paragraph below to suit Project and special Authority requirements.

D. 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 Registered 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 Definable Feature and Element of Work as the work progresses.
5. Notify COTR when deviations from required lines and levels exceed allowable tolerances.
6. Conduct closed site surveys with an error of closure equal to or greater accuracy than 1 part in 10,000; 3rd Order Class 1 accuracy, (e.g. 1:10,000) and \(10^"/\sqrt{n}\), where “n” equals the number of angles in the closed traverse.
7. Perform field survey work with sufficient precision to ensure the required accuracy of the specifications is achieved. The computed coordinate position of each horizontal control point used in compiling the plan shall be correct within the limits of 3rd Order Class 1 accuracy (that is, the horizontal error of closure shall not exceed 10 seconds times the square root of the number of instrument motions in the traverse, all before adjustment. The vertical error of closure of the control level circuit for the control Benchmarks shall not exceed plus or minus 12 millimeters times the square root of the length of the circuit in kilometers, before adjustment.). Both the horizontal and vertical measurements shall be expressed to the nearest millimeter.

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.

Insert special requirements for laying out the Work to suit Project.
3.4 FIELD ENGINEERING

A. Identification: Existing Horizontal Control points and Benchmarks 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 VA State Plane North Zone (NAD 83) and elevations shall be (NAVD 88).

Insert other special field-engineering requirements, such as damage surveys, settlement surveys and reports, and similar requirements, as needed.

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.
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.

Insert installation requirements to suit Project. See MASTERSPEC Evaluations.

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

This Article refers to regular cleaning operations conducted while construction is in progress. Requirements for final cleaning before Substantial Completion are included in Division 01 Section "Project Closeout."

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.

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.

First three paragraphs below reduce or eliminate the need for similar provisions in other Sections. Insert other provisions needed because of unusual Project conditions. Specify unusual provisions for specific work in the individual Section.
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.

If necessary, revise first paragraph below by adding a list of exposures. See MASTERSPEC Evaluations.

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.

L. Grass Mowing: Mow grass areas contained in Project site, or made inaccessible to the Authority's mowing contractors.

Special cleaning provisions are often required on projects that include alterations to existing buildings. See MASTERSPEC Evaluations.

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

Revise first paragraph below to suit Project conditions and special Authority requirements.

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.

Insert additional requirements to suit Project.

END OF SECTION 017300
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Instructions to the Editor are found in the following locations:

**Specification 017329 – Cutting and Patching**
Before Part 1 – General
Before 1.2 B. 1
Before 1.2 B. 3
Before 1.4 A
Before 1.4 A. 5
Before 1.5 B. 1
Before 1.5 C. 1
Before 1.5 D. 1
Before 1.5 E
Before 1.6 A
After 2.1 B. 1
Before 3.2 D
Before 3.3 B. 5
Before 3.3 B. 6
Before 3.3 C. 3
Before 3.3 C. 4
After 3.3 C. 5
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SECTION 017329 - CUTTING AND PATCHING

Much of this Section consists of Project-specific data. Examples given in the model text in the Evaluations illustrate possible Section content. Use model text to develop text for specific Project requirements. See Evaluations.

Verify that Section titles referenced in this Section are Correct for this project’s Specifications; Section titles may have changed.

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:

List below, only procedures that the reader might expect to find in this Section but are specified elsewhere.

Delete the first subparagraph below if alterations are not required and Division 02 "Selective Structure Demolition" Section is not used.

   1. Division 02 Section "Selective Structure Demolition" for demolition of selected portions of the building for alterations.

   2. Division 07 Section "Penetration Firestopping" for patching fire-rated construction.

Subparagraph below is appropriate to items in many other Sections. See Evaluations.

   3. 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

Delete this Article if not required. Revise to include other submittal requirements. See MASTERSPEC Evaluations.

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.

Delete the first subparagraph below if utilities are not affected by cutting and patching. Revise to include special requirements to suit Project.

5. Utility Services and Mechanical/Electrical Systems: List utilities that cutting and patching procedures will disturb or affect. List utilities that will be relocated and those that will be temporarily out of service. Indicate how long service will be disrupted. Before cutting/core drilling the slab, structural members, concrete walls, etc. X-ray the slab, beam, wall, etc. 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/core drilling will cut any 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. Refer to Division 01 Section “Summary” for utility outage requirements.

6. 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.
7. **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. *<Insert list of elements that might otherwise be overlooked as structural elements and that require COTR's approval of a cutting and patching proposal.>*

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:

List below is an example only. Revise to suit Project's operating systems.

1. Primary operational systems and equipment.
2. Air or smoke barriers.
3. Fire-suppression systems.
4. Control systems.
5. Communication systems.
6. Conveying systems.
7. Electrical wiring systems.
8. Operating systems of special construction in Division 13 Sections.
10. *<Insert other operating system.>*

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:

List below is an example only. Revise to suit Project.

1. Water, moisture, or vapor barriers.
2. Membranes and flashings.
3. Exterior curtain-wall construction.
4. Equipment supports.
5. Piping, ductwork, vessels, and equipment.
7. Insulating systems.
8. *<Insert other miscellaneous element.>*

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.

List below contains items that might be difficult for anyone but original Installer to cut and patch satisfactorily, or where warranties may be in effect. Edit to suit Project. Consider deleting woodwork and wall covering because they may be difficult for anyone to match.

1. Processed concrete finishes.
2. Stonework and stone masonry.
3. Ornamental metal.
5. Preformed metal panels.
6. Roofing.
7. Fire stopping.
8. Window wall system.
9. Stucco and ornamental plaster.
10. Terrazzo.
11. Finished wood flooring.
12. Fluid-applied flooring.
13. Aggregate wall coating.
14. Wall covering.
15. HVAC enclosures, cabinets, or covers.
16. <Insert other type of exposed construction.>

Revise paragraph below if cutting and patching are extensive or if careful coordination between several trades is necessary to avoid conflicts.

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

Delete this Article if no warranties exist that would be affected.

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.

Insert specific material requirements if not specified elsewhere. Material and installation requirements are better specified in individual Sections. See MASTERSPEC Evaluations.

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.

Retain paragraph below where the Authority or the Authority’s tenants continue to occupy other portions of an existing facility.

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] [Masonry]: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
4. Excavating and Backfilling: Should excavating and backfilling be required by cutting and patching operations comply with requirements in applicable Division 31 Sections.

Coordinate subparagraph below with Divisions 23 and 26 to avoid duplication or conflicts. If retaining, revise to suit Project.

5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting. Remove conductors back to source of supply.

Retain subparagraph below if required to prevent multiple cutting and patching in the same area. Add specific requirements for multiple contracts and special conditions requiring coordination.

6. Proceed with patching after construction operations requiring cutting are complete.

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.

Insert specific refinishing requirements for floors, walls, and ceilings. Revise subparagraph and associated subparagraph below to suit Project.

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.
Delete or revise first subparagraph below to suit Project.

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.

Insert specific installation requirements if not specified elsewhere. Specific installation requirements are better specified in individual Sections.

END OF SECTION 017329
SECTION 017700 - PROJECT CLOSEOUT

Much of this Section consists of Project-specific data. Examples given in the model text in the Evaluations illustrate possible Section content. Use model text to develop text for specific Project requirements. See Evaluations.

Verify that Section titles referenced in this Section are Correct for this project’s Specifications; Section titles may have changed.

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:

Adjust list to suit Project. Coordinate with "Related Sections" subparagraphs.

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.

Delete items below not applicable or revise to suit Project.

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.

For first two subparagraphs below, see MASTERSPEC Evaluations.

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. Make final changeover of permanent locks and deliver keys to COTR. Advise the Authority's personnel of changeover in security provisions.

10. Complete startup testing of systems.

11. Submit test/adjust/balance records.

Coordinate first subparagraph below with Division 08 Section “Door Hardware”.

PROJECT CLOSEOUT

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12. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
13. Advise the Authority of changeover in utilities.
14. Submit changeover information related to the Authority's occupancy, use, operation, and maintenance.
15. Instruct the Authority's personnel in operation, adjustment, and maintenance of products, equipment, and systems, as required by Division 01 Section "Demonstration and Training." [Submit demonstration and training videos.]

Delete subparagraphs below if Project does not include these items or if they are delayed until Final Acceptance.

16. Complete final cleaning requirements, including touchup painting.
17. 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.
10. [Submit pest-control final inspection report and warranty.]

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 first] [and] [proceeding from lowest to highest floor].
   2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
   3. Include the following information at the top of each page:
      a. 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.

3. Provide a digital version of the warranty manual on CD-ROM. This version shall consist of a scanned Adobe pdf file of each warranty document in the manual.

Coordinate below when Division 01 Section "Operation and Maintenance Data" is used

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:

   Below is a sample list of final cleaning requirements. Revise to suit Project.

   a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
   b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
   c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
   d. Remove tools, construction equipment, machinery, and surplus material from Project site.
   e. Remove snow and ice to provide safe access to building.
   f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
   g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
   h. Sweep concrete floors broom clean in unoccupied spaces.
   i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.
   j. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials.
Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.

k. Remove labels that are not permanent.

l. 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.

Revise seven subparagraphs below to suit Project. Check for conflict or duplication with provisions in other Sections, particularly Divisions 20 through 29.

m. Wipe surfaces of mechanical and electrical equipment, [elevator equipment,] and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.

n. Replace parts subject to unusual operating conditions.

o. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.

p. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.

First subparagraph below describes a major work item that may be disruptive to closeout procedures.

q. Clean ducts, blowers, and coils if units were operated without filters during construction.

r. 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.

s. Leave Project clean and ready for occupancy.

Two paragraphs below represent end of the Work specified in Division 01 Section "Temporary Facilities and Controls." Most projects require these actions at completion of construction. Insert a paragraph on termite inspection where required by local code or desired for Project.

C. Pest Control: Engage an experienced, licensed exterminator to make a final inspection and rid Project of rodents, insects, and other pests. Prepare and submit a report to COTR.

D. 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.

Insert an article on continuing inspections or consultations by Contractor if required. Possibly insert a schedule of approximate times for inspections.
END OF SECTION 017700
To edit the attached specifications, the hidden text option must be enabled. This allows the specifications editor to view instructions throughout each specification section.

To enable the hidden text option, in Word 2003, select “Tools” from the toolbar at top. Within “Tools”, select “Options”. Under “Options” select “View”. Look under “Formatting Marks” and make sure that the “Hidden Text” box is checked. Hidden text should now be visible within the document.

In Word 2008, click on upper left “Office Button”. Click on “word Options” at bottom of menu. Click on “Display”. Under “always show these formatting marks on the screen” check the hidden text box. Hidden text should now be visible within the document.

Instructions to the Editor are found in the following locations:

**Specification 017823 – Operation and Maintenance Data**
Before Part 1 – General
Before 1.2 B. 1
Before 1.3 A
Before 1.4 A
Before 2.2 D. 4
Before 2.3 A
Before 2.3 B. 1
Before 2.3 D. 1
Before 2.4 A
Before 2.4 A. 1
Before 2.4 B. 1
Before 2.5 A
Before 2.5 D. 1
Before 2.5 E. 1
Before 2.5 G
Before 2.6 B
Before 2.6 C. 1
Before 2.6 D. 1
Before 2.6 F. 1
Before 2.6 I
Before 2.6 J
Before 3.1 A
Before 3.1 G. 1
SECTION 017823 - OPERATION AND MAINTENANCE DATA

Much of this Section consists of Project-specific data. Examples given in the model text in the Evaluations illustrate possible Section content. Use model text to develop text for specific Project requirements. See Evaluations.

Verify that Section titles referenced in this Section are Correct for this project’s Specifications; Section titles may have changed.

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:

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:

Retain first subparagraph below to reference the Section that specifies preparation of material frequently included in operation and maintenance manuals.

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 5% 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

Definition in first paragraph below is from ASHRAE's "Technology Handbook."

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

Usually retain first paragraph below, which gives COTR an opportunity to review contents before Substantial Completion.

A. Operation and Maintenance Manual Format: Submit to COTR within 90 calendar days of Notice to Proceed one (1) draft paper copy and one (1) electronic 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 (1) 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 (4) printed draft printed copies of each Manual in the approved format, including four (4) copies on CD-ROM containing all information from the manuals in electronic format, at least 90 calendar days before requesting inspection for Substantial Completion. Include a copy of the 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 four (4) printed revised copies of each manual in final form, including four (4) copies on CD-ROM containing all the information from the manuals in electronic format, 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 six (6) printed copies of the Document Directory and six (6) printed copies of each corrected manual at least 15 calendar days before substantial completion or training whichever occurs first.

1. Provide four (4) 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.

2. All information must be legible in the digital versions. Instead of scanned images, Original files are required.

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. Table of Contents
3. List of systems and subsystems.
4. List of equipment.
5. List of Products

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.

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 Table of Contents, printed by a laser printer, for each volume, arranged according to the specification sections. 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 metal hinged 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 of binder, 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”. Indicate volume number for multiple-volume sets. The use of business labels is prohibited.

2. Dividers: Provide three-hole, heavyweight, and 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.

Second sentence in first subparagraph below provides protection for troubleshooting software diskettes used in some operation systems. Delete requirements if unnecessary.

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.

1. Approved Product: Bankers Box, “Liberty Plus,” Fast Fold, Item No. 12112 or other product as approved by the Authority.

2.3 EMERGENCY INFORMATION

Include emergency information that must be immediately available during emergency situations to protect life and property and to minimize disruptions to building occupants.
   A. Content: Organize information by Division into a separate section for each of the following:
1. Type of emergency.
2. Emergency instructions.
3. Emergency procedures.

B. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:

Revise list below to suit Project.

1. Fire.
2. Flood.
5. Fuel leak.
7. Water outage.
8. System, subsystem, or equipment failure.
9. Chemical release or spill.
10. Weather related events, thunderstorms, hurricanes, tornados, etc.

C. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of the Authority’s operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.

D. Emergency Procedures: Include the following, as applicable:

Revise list below to suit Project.

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

E. Provide a draft of the proposed Emergency Information Manual. Submit draft at least 90 calendar days before requesting inspection for Substantial Completion to COTR for approval in writing.

2.4 OPERATION INFORMATION

Include information needed for daily operations and management of systems and equipment.

A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information. Organize manuals into separate and distinct volumes by Division.

Revise list below to suit Project.
1. System, subsystem, and equipment descriptions.
2. Safety instruction and related issues.
3. Performance and design criteria if Contractor is delegated design responsibility.
4. Operating standards.
5. Operating procedures.
6. Operating logs.
7. Wiring diagrams, including color-coding and terminal designations. Include all factory preset or field-set dip switch and jumper settings for all electronic equipment.
8. Control diagrams.
10. Precautions against improper use.
11. License requirements including inspection and renewal dates.
12. Material Safety Data Sheets.

B. Operating Procedures: Include the following, as applicable:

Revise list below to suit Project.

1. Startup procedures.
2. Equipment or system break-in procedures.
3. Routine and normal operating instructions.
4. Regulation and control procedures.
5. Instructions on stopping.
7. Seasonal and weekend operating instructions.
8. Required sequences for electric or electronic systems.
9. Special operating instructions and procedures.
10. Procedures or operations that may void warranty.

C. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.

D. Piped Systems: Diagram piping as installed and color-coding shall be used where required for identification.

E. Provide a draft of the proposed Operation Information Manual. Submit draft at least 90 calendar days before requesting inspection for Substantial Completion to COTR for approval in writing.

2.5 PRODUCT MAINTENANCE INFORMATION

Revise first paragraph below to suit Project. For simple projects that require few manuals, this information may be included on Title Page.

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:

Revise list below to suit Project.

1. Product name and model number.
2. Manufacturer’s name.
3. Color, pattern, and texture.
5. Reordering information for specially manufactured products.
7. Material Safety Data Sheets.

E. Maintenance Procedures: Include manufacturer’s written recommendations and the following:

Revise list below to suit Project.

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.

Paragraph and subparagraphs below provide information if product fails. For specific products, additional information may be necessary.

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.

2.6 SYSTEMS AND EQUIPMENT MAINTENANCE INFORMATION

A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers’ maintenance documentation, preventative maintenance program, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below. Organize information into separate and distinct volumes by Division, and further divided into separate volumes by system (for example, HVAC systems and plumbing systems).

Revise first paragraph below to suit Project. For simple projects that require few manuals, this information may be included on Title Page.

B. Source Information: List each system, subsystem, and piece of equipment included in manual identified by product name and arranged to match manual’s table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.

C. Descriptions: Include the following:

Revise list below to suit Project.

1. Product name, model number, and location.
2. Manufacturer’s name.
3. Equipment identification with serial number of each component.
4. Equipment function.
5. Operating characteristics.
6. Limiting conditions.
7. Performance curves.
8. Engineering data and tests.
9. Complete nomenclature and number of replacement parts.
10. Charts of valve tag numbers, with the room number location and function of each valve.
11. Circuit directories of panelboards for electric and electronic systems, including the following:

   a. Electric service.
   b. Controls.
   c. Telecommunications.
   d. Computer network.
   e. Security.

D. Manufacturers’ Maintenance Documentation: Manufacturers’ maintenance documentation including the following information for each component part or piece of equipment:
Revise list below to suit Project.

1. Safety information.
2. Standard printed maintenance instructions and bulletins.
3. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
4. Identification and nomenclature of parts and components.
5. List of items recommended to be stocked as spare parts.

E. Preventative Maintenance Plan: Provide an annual preventative maintenance plan indicating when maintenance tasks should be performed, such that work is spread evenly as possible throughout the year. Preventative Maintenance should not be misconstrued as reconditioning, or major repairs or replacement of components, but designed to reveal through certain procedures and inspection the need for such actions in time to prevent malfunctions during operation.

F. Preventative Maintenance and Maintenance and Repair Procedures: Include the following information and items that detail essential preventative maintenance and maintenance and repair procedures:

Revise list below to suit Project.

1. Preventative Maintenance:

   a. Provide instructions and location diagrams for the following:

      1) Checking general condition of System and Components.
      2) Inspecting for accumulation of dust, dirt or any foreign matter, and clean as needed.
      3) Cleaning or replacing all filters and screens and adjust packing for pumps, valves, etc.
      4) Examining indicating lamps, gauges, thermometers, etc., and replace as required.
      5) Checking electrical primary, secondary, terminal blocks and contacts, for loose connections.
      6) Checking Operation of strainers, valves, instruments and control switches, including their contacts.
      7) Checking instrument transformers for proper condition and replace burned out fuses.
      8) Removing dust from all electrical insulators and insulation and inspecting bus bars and connections for proper condition, loose connection, and overheating or overloads.
      9) Examining safety interlocks, automatic shutters, dampers, valves, etc, and their operating mechanisms for proper operation.
     10) Checking space heaters, thermostats, and all controls for proper operation
     11) Lubricating mechanisms, contacts, and other moving component parts.
     12) Specific procedures applicable to specialized equipment and systems.
2. Maintenance and Repairs:

a. Include information and detailed diagnostic testing and inspection instructions, and procedures that detail essential system and equipment maintenance procedures including but not limited to:

1) Examination of shaft seal for excessive leakage.
2) Monitoring of systems for excessive bearing noise.
3) Checking equipment motor housing for excessive heat buildup.
4) Measuring and recording suction and discharge pressures.
5) Verifying lubrication requirements.
6) Realignment of shaft coupling.
7) Checking motor amperes drawn at full load.
8) Checking motor shaft run-out
9) Performing thermographic scanning of motor starters, motors, pumps, and all mechanical and electrical equipment that requires a connection.
10) Proper cleaning and corrosion control of drip pan and drainage lines.
11) Inspection of internal equipment components for unusual wear of failure.
12) Procedures for maintenance including precautions against improper maintenance.

b. Include the following information and items that detail essential system and equipment repair procedures:

1) Complete troubleshooting guide.
2) Complete repair instructions including equipment and component removal, disassembly, repair, and replacement; and reassembly instructions.
3) Aligning, adjusting, and checking instructions including noise, vibration, and efficiency adjustments.
4) Demonstration and training video, if such video, CD-ROM or DVD is provided by the manufacturer.

G. Maintenance Service Schedules

1. Provide recommended frequencies, inspections, service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and maintenance and service with standard time allotment.

a. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.

b. Maintenance and Service Record: Include manufacturers’ forms for recording maintenance.

H. Spare Parts List, Recommended Inventory Requirements, and Source Information: Include lists of replacement and repair parts, with parts identified, and cross-referenced to manufacturers’ maintenance documentation and local sources of maintenance materials and related services.
I. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.

Paragraph and subparagraphs below provide information if product fails. For specific products, additional information may be necessary.

J. Schedule of Products and Locations: Provide complete information, including reference drawings if necessary, in the Equipment and Systems manual on all products specified in Divisions 02 through 33.

K. Warranties and Bonds: Include 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.

L. 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.

2.7 WARRANTY 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 metal hinged 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 DubiLock 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, and 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

Delete directory in first paragraph below for less-complex projects.

A. Compile all required information, as it is approved, into volumes grouped first by specification Division and then by Section in accordance with the information requirements outlined in Part 2 of this specification section and the approved Operation and Maintenance Manual Format.

B. 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.

C. 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. Include the emergency information in the volume of the manual set to which it applies.

D. Product Maintenance Information: For Divisions that specify products (refer to definitions) 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. Provide sufficient information, and when applicable color samples, for all products to enable repair or replacement of matching products or finishes.

E. Operation and Maintenance Information: For Divisions that specify systems, sub-systems, and equipment (refer to definitions) assemble a complete set of operation and maintenance and repair data providing complete information for each system, subsystem, and piece of equipment. Include complete operation, preventative maintenance, maintenance and repair instructions, and parts listing with sources indicated; recommended parts inventory listing, and similar information. Include all diagnostic and repair information available to manufacturer’s and Installer’s maintenance personnel.

1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.

2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by the Authority’s operating personnel.

F. 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 is not provided by the manufacturer. Provide supplementary text where the information is necessary for proper operation and maintenance of equipment or systems.
G. 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. Prepare floor plans that show the location of equipment in the building.

Retain first subparagraph below. Including Record Drawings in operation and maintenance manuals is not recommended. See MASTERSPEC Evaluations in Division 01 Section "Project Record Documents."

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.”

H. Comply with Division 01 Section “Project Closeout” for a schedule for submitting operation and maintenance documentation.

END OF SECTION 017823
To edit the attached specifications, the hidden text option must be enabled. This allows the specifications editor to view instructions throughout each specification section.
To enable the hidden text option, in Word 2003, select “Tools” from the toolbar at top. Within “Tools”, select “Options”. Under “Options” select “View”. Look under “Formatting Marks” and make sure that the “Hidden Text” box is checked. Hidden text should now be visible within the document.
In Word 2008, click on upper left “Office Button”. Click on “word Options” at bottom of menu. Click on “Display”. Under “always show these formatting marks on the screen” check the hidden text box. Hidden text should now be visible within the document.

Instructions to the Editor are found in the following locations:

**Specification 017839 – Project Record Documents**
Before Part 1 – General
Before 1.2 A. 7
Before 1.3 B
Before 2.1 B
Before 2.1 E. 5
Verify that Section titles referenced in this Section are correct for this project’s Specifications; Section titles may have changed.

The A/E shall verify with the Project Manager what format the Record Drawings shall be prepared. The Contractor shall be required to prepare Record Drawings either as Red Line Mark-ups or as CADD 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.

Include subparagraph below for projects requiring Contractor to provide Record Drawings in a Computer Aided Design and Drafting format.

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 [Bentley Microstation [v7] [v8]] [and] [or] [Autodesk AutoCAD <insert version used>]

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.

If Record Drawings are required in CADD, delete the following subparagraph.

5. Notes and sketches printed by hand are acceptable but shall be neat, legible, and reproducible. Hand lettering shall be 3/8” high minimum.

6. 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.

7. 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
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 instructing the Authority's personnel, including the following:

Adjust list below to suit Project.

1. Demonstration of operation of systems, subsystems, and equipment.
2. Training in operation and maintenance of systems, subsystems, and equipment.

B. Related Sections include the following:

1. Division 01 Section “Application for Payment for cost values assigned to Demonstration and Training requirements.
2. Division 01 Section "Project Management and Coordination" for requirements for pre-instruction conferences.
3. Division 01 Section “Operation and Maintenance Data for preparing and submitting demonstration and training agenda and course of study.

1.3 SUBMITTALS

A. Instruction Program: Submit, 90 calendar days prior to request for substantial completion inspection, two copies of outline of instructional program for demonstration and training,
including a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.

1. Provide two separate sessions per module. One session per module shall be conducted after normal working hours.
2. At completion of training, submit six (6) complete set(s) of training manual(s) for the Authority's use.

B. Qualification Data: For firms and persons specified in "Quality Assurance" Article provide credentials 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. Provide credentials to demonstrate the capabilities and experience of firms required by this Section.

C. Attendance Record: For each training module, submit list of participants and length of instruction time.

D. Evaluations: For each participant and for each training module, submit results and documentation of performance-based test.

E. Demonstration and Training Video: Submit two copies at end of each training module on media that will play in a standard DVD player.

1.4 QUALITY ASSURANCE

A. Facilitator Qualifications: A firm or individual experienced in training or educating maintenance personnel in a training program similar in content and extent to that indicated for this Project. Provide 4 references for the Facilitator’s firm that will be used to determine if their training and education has indicated a record of successful learning performance.

B. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Division 01 Section "Quality Requirements," experienced in operation and maintenance procedures and training.

C. Videographer Qualifications: A videographer who is a trained professional with a minimum of five years’ experience in video recording training sessions.

D. Pre-instruction Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." Review methods and procedures related to demonstration and training including, but not limited to, the following:

Delete subparagraphs below if not required. If retaining, revise to include Authority-specific requirements. Insert additional requirements to suit Project.

1. Inspect and discuss locations and other facilities required for instruction.
2. Review and finalize instruction schedule and verify availability of educational materials, instructors' personnel, audiovisual equipment, and facilities needed to avoid delays.
3. Review required content of instruction.
4. Review weather, forecasted weather conditions, and procedures to follow if conditions are unfavorable for instruction that must occur outside.

1.5 COORDINATION

A. Coordinate instruction schedule with the Authority's operations. Adjust schedule as required to minimize disrupting the Authority's operations. Coordinate with COTR.

B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.

C. Coordinate content of training agenda with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by COTR.

D. Ensure that approved Operations and Maintenance Manuals are available prior to conducting any training.

PART 2 - PRODUCTS

2.1 INSTRUCTION PROGRAM

A. Program Structure: Develop an instruction program that includes individual training agenda for each system, sub system, and equipment. Develop an instruction program for equipment that is not part of a system or a subsystem, as required by individual Specification Sections, and as follows:

Systems and equipment in list below are examples only and list is not complete. Revise to suit Project and to add additional items as needed. See MASTERSPEC Evaluations.

1. Motorized doors, including [overhead coiling doors] [overhead coiling grilles] [and] [automatic entrance doors].
2. Equipment, including [loading dock equipment] [waste compactors] [food-service equipment] <Insert type of equipment>.
3. Fire-protection systems, including [fire alarm] [fire pumps] [and] [fire-extinguishing systems].
4. Intrusion detection systems.
5. Conveying systems, including [elevators] [wheelchair lifts] [escalators] [and] [cranes].
6. Fueling equipment, including fueling equipment and piping.
7. Heat generation, including [boilers] [feedwater equipment] [pumps] [steam distribution piping] [and] [water distribution piping].
8. Refrigeration systems, including [chillers] [cooling towers] [condensers] [pumps] [and] [distribution piping].
9. HVAC systems, including [air-handling equipment] [air distribution systems] [and] [terminal equipment and devices].
10. HVAC instrumentation and controls.
11. Electrical service and distribution, including [transformers] [switchboards] [panelboards] [uninterruptible power supplies] [and] [motor controls].
12. Packaged engine generators, including transfer switches.
13. Lighting equipment and controls.
14. Communication systems, including intercommunication, surveillance, clocks and programming, voice and data, and television equipment.
15. <Insert other systems and equipment.>

B. Training Agenda: Develop a learning objective and teaching outline for each agenda. Submit to COTR 45 calendar days prior to request for substantial completion inspection. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following:

Revise eight subparagraphs and associated subparagraphs below to suit Project.

1. Basis of System Design, Operational Requirements, and Criteria: Include the following:
   a. System, subsystem, and equipment descriptions.
   b. Performance and design criteria if Contractor is delegated design responsibility.
   c. Operating standards.
   d. Regulatory requirements.
   e. Equipment function.
   f. Operating characteristics.
   g. Limiting conditions.
   h. Performance curves.

2. Documentation: Review the following items in detail:
   a. Emergency manuals.
   b. Operations manuals.
   c. Maintenance manuals.
   d. Project Record Documents.
   e. Identification systems.
   f. Hazards/Material Safety Data Sheets.
   g. Warranties and bonds.
   h. Maintenance service agreements and similar continuing commitments.

3. Emergencies: Include the following, as applicable:
   a. Instructions on meaning of warnings, trouble indications, and error messages.
   b. Instructions on stopping.
   c. Shutdown instructions for each type of emergency.
   d. Operating instructions for conditions outside of normal operating limits.
   e. Sequences for electric or electronic systems.
   f. Special operating instructions and procedures.

4. Operations: Include the following, as applicable:
   a. Startup procedures.
   b. Equipment or system break-in procedures.
   c. Routine and normal operating instructions.
   d. Regulation and control procedures.
   e. Control sequences.
f. Safety procedures.
g. Instructions on stopping.
h. Normal shutdown instructions.
i. Operating procedures for emergencies.
j. Operating procedures for system, subsystem, or equipment failure.
k. Seasonal and weekend operating instructions.
l. Required sequences for electric or electronic systems.
m. Special operating instructions and procedures.

5. Adjustments: Include the following:
   a. Alignments.
   b. Checking adjustments.
   c. Noise and vibration adjustments.
   d. Economy and efficiency adjustments.

6. Troubleshooting: Include the following:
   a. Diagnostic instructions.
   b. Test and inspection procedures.

7. Maintenance: Include the following:
   a. Inspection procedures.
   b. Types of cleaning agents to be used and methods of cleaning.
   c. List of cleaning agents and methods of cleaning detrimental to product.
   d. Procedures for routine cleaning
   e. Procedures for preventive maintenance.
   f. Procedures for routine maintenance.
   g. Instruction on use of special tools.

8. Repairs: Include the following:
   a. Diagnosis instructions.
   b. Repair instructions.
   c. Disassembly; component removal, repair, and replacement; and reassembly instructions.
   d. Instructions for identifying parts and components.
   e. Review of spare parts needed for operation and maintenance.

Insert other requirements of the Authority, e.g., level of proficiency of participants after instruction, percentage of participants passing evaluation test, etc.

PART 3 - EXECUTION

3.1 PREPARATION

A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training agenda into a combined training manual.
B. Provide conditioned space with tables and chairs for conducting the classroom portion of all training.

C. Provide instructional equipment at instruction location.

3.2 INSTRUCTION

A. Facilitator: Engage a qualified facilitator to prepare instruction program and training agenda, to coordinate instructors, and to coordinate between Contractor and COTR for number of participants, instruction times, and location.

B. Engage qualified instructors to instruct the Authority's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.

1. Furnish an instructor, approved by COTR, to describe basis of each system designed for this project, operational requirements, criteria, and regulatory requirements.

2. COTR will furnish Contractor with names of training participants.

C. Scheduling: Provide instruction at mutually agreed on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.

1. Schedule training with COTR with at least 15 calendar days’ advance notice.

2. Submit a daily training agenda (module) to COTR for review and approval for each system/equipment no later than 15 calendar days prior to the scheduled system equipment startup. After granting the agenda approval, COTR shall provide a listing of dates, times, and places of the training programs for Contractor coordination.

Coordinate method of assessment in paragraph below with COTR.

D. Evaluation: At conclusion of each training module, assess and document each participant's mastery of module by use of **an oral** [a written] [a demonstration] performance-based test.

Delete first paragraph and subparagraphs below if not required.

E. Demonstration and Training Video: Record instruction of the Authority's personnel in the operation and maintenance of equipment and systems. Edit video to remove non-instructional conversation. Videographer shall select vantage points to best show equipment, systems, and procedures demonstrated. Provide movie file of each unique training session in its entirety. Record video at a recording quality Equal to or better than a standard DVD.

1. Record each training module separately. Include classroom instructions and demonstrations, board diagrams, and other visual aids, but not student practice.

2. At beginning of each training module, record each chart containing learning objective and lesson outline.

Coordinate options in paragraph below with COTR.
F. Cleanup: Collect used and leftover educational materials and [remove from Project site] [give to the Authority]. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

Insert a list of systems, subsystems, and equipment that require demonstration and training along with corresponding length of instruction time required. See MASTERSPEC Evaluations.

END OF SECTION 017900
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Instructions to the Editor are found in the following locations:

**Specification 024119 – Selective Structure Demolition**

Before Part 1 – General
Before 1.2 A. 1
Before 1.2 B. 1
Before 1.3 A
Before 1.3 B
Before 1.4 A
Before 1.4 A. 1
Before 1.4 B
Before 1.5 A
Before 1.5 B
Before 1.6 F
Before 1.6 G
Before 1.6 G. 1
After 1.6 G. 5
Before 1.7 A
Before 1.7 D
Before 1.8 A
Before 1.8 A. 1
Before 1.8 A. 1. a
After 2.1 B
Before 2.1 E
Before 2.1 F. 2
Before 3.2 B
Before 3.3 B
Before 3.4 E
Before 3.5
Before 3.5 A
Before 3.5 B
Before 3.5 E
Before 3.5 E. 1
Before 3.5 F
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Before 3.6 A. 3
Before 3.6 C
Before 3.8 A
Before 3.8 D
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SECTION 024119 - SELECTIVE STRUCTURE DEMOLITION

Much of this Section consists of Project-specific data. Examples given in the model text in the Evaluations illustrate possible Section content. Use model text to develop text for specific Project requirements. See Evaluations.

Verify that Section titles referenced in this Section are Correct for this project’s Specifications; Section titles may have changes.

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:

Adjust list below to suit Project.

   1. Demolition and removal of selected portions of building or structure.
   2. Demolition and removal of selected site elements.
   3. Salvage of existing items to be reused or recycled.

B. Related Sections include the following:

List below, only procedures that the reader might expect to find in this Section, but are specified elsewhere.

   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.
   6. Division 02 Section "Structure Demolition" for demolition of entire buildings, structures, and site improvements.
7. Division 31 Section "Site Clearing" for site clearing and removal of above- and below-grade improvements.
8. Division 22 Sections for demolishing, cutting, patching, or relocating plumbing items.
9. Division 23 Sections for demolishing, cutting, patching, or relocating HVAC items.
10. Division 26 Sections for demolishing, cutting, patching, or relocating electrical items.

1.3 DEFINITIONS

Retain definitions that remain after this Section has been edited.

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.

Salvage in first paragraph below may add cost to Project; verify with Authority Project Manager.

B. Remove and Salvage: Detach items from existing construction and deliver them to the Authority [ready for reuse].

C. Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.

D. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.4 MATERIALS OWNERSHIP

Delete references to historic items in this Article if not required.

A. Historic items, relics, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, <Insert description of other items,> antiques, and other items of interest or value to Owner that may be encountered during selective demolition remain Authority's property. Carefully remove and salvage each item or object in a manner to prevent damage and deliver promptly to Authority.

Revise subparagraph below to include special procedures; stating procedures allows bidders to estimate costs.

1. Coordinate with the Authority's Archaeologist and Historic Preservation Coordinator, who will establish special procedures for removal and salvage.

Revise subparagraph below to include special procedures; stating procedures allow offerors to estimate costs. Obtain procedures from the Authority Project Manager.

B. Archeological and Historical Findings: For additional requirements, see "Supplementary Conditions."

1.5 SUBMITTALS

Coordinate paragraph below with qualification requirements retained in "Quality Assurance" Article.
A. Qualification Data: For [demolition firm] [professional engineer] [refrigerant recovery technician].

Schedule below may be used to track Contractor's progress; it may also be used to determine that selective demolition will not interfere with Authority's operations. Delete schedule submittal if not required or if selective demolition will not interfere with Authority's operations.

B. Schedule of Selective Demolition Activities: Indicate the following:

1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Authority's [building manager's] [and] [other tenants'] on-site operations are uninterrupted.
2. Interruption of utility services. Indicate how long utility services will be interrupted.
3. Coordination for shutoff, capping, and continuation of utility services.
4. Use of elevator and stairs.
5. Locations of proposed dust- and noise-control temporary partitions and means of egress [, including for other tenants affected by selective demolition operations].
6. Coordination of Authority’s and Authority’s tenants continuing occupancy of portions of existing building and of Authority's and the Authority’s tenants partial occupancy of completed Work.
7. Means of protection for items to remain and items in path of waste removal from building.

C. Inventory: After selective demolition is complete, submit a list of items that have been removed and salvaged.

D. Pre-demolition [Photographs] [or] [Video Recordings]: Show existing conditions of adjoining construction and site improvements, including finish surfaces that might be misconstrued as damage caused by selective demolition operations. Comply with Division 01 Section "Photographic Documentation." Submit before Work begins.

1.6 QUALITY ASSURANCE

A. Demolition Firm Qualifications: An experienced firm that has specialized in demolition work similar in material and extent to that indicated for this Project.

B. Refrigerant Recovery Technician Qualifications: Certified by an EPA approved certification program.

C. Professional Engineer Qualifications: Comply with Division 1 Section "Quality Requirements."

D. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

E. Standards: Comply with ANSI A10.6, NFPA 241 and the USBC.

Delete paragraph below if Work of this Section is not extensive or complex enough to justify a pre-demolition conference. If retaining, coordinate with other Division 1 Sections.
F. Pre-demolition Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Coordination and Meetings." Review methods and procedures related to selective demolition including, but not limited to, the following:

Retain paragraph above if requirements in other Division 1 Sections are adequate for Project. Retain paragraph below if additional requirements are necessary; include information about conference. Identify specific participants not mentioned in other Division 1 Sections.

G. 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:

Delete subparagraphs below if not required. If retaining, revise to include product-specific requirements. Insert additional requirements to suit Project.

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.

Insert agenda items below not listed in Division 01 Section "Project Management and Coordination."

1.7 PROJECT CONDITIONS

Retain, revise, or delete paragraphs and subparagraphs in this Article to suit Project. Add other limitations if necessary, such as when adjacent floors will be occupied.

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] <Insert number> 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.
2. Before selective demolition, the Authority will remove the following items:

   a. <Insert items to be removed by the Authority.>
Retain one of two paragraphs and associated subparagraphs below, or remove all references to asbestos. Expand scope of Article to include PCBs or other materials if required.

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.

1.8 WARRANTY

Delete this Article if there are no existing warranties that would be affected.

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.

Delete subparagraph below for old buildings where it is unlikely that original Installer is available.

   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.

List below contains items that might be difficult for anyone but original Installer to cut and patch satisfactorily or where warranties may be in effect. Edit to suit Project. Consider deleting woodwork and wall covering because they may be difficult for anyone to match.

   a. Processed concrete finishes.
   b. Stonework and stone masonry.
   c. Ornamental metal.
   d. Matched-veneer woodwork.
   e. Preformed metal panels.
   f. Roofing.
   g. Firestopping.
   h. Window wall system.
   i. Stucco and ornamental plaster.
   j. Terrazzo.
   k. Finished wood flooring.
   l. Fluid-applied flooring.
   m. Aggregate wall coating.
   n. Wall covering.
   o. HVAC enclosures, cabinets, or covers.
   p. <Insert other type of exposed construction.>
1.9 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.

Insert specific material requirements if not specified elsewhere.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that utilities have been disconnected and capped.

B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.

C. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.

D. 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.

Usually retain first paragraph below. OSHA regulations require an engineering survey before selective demolition begins.

E. 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.

F. Survey of Existing Conditions: Record existing conditions by use of [measured drawings] [preconstruction photographs] [preconstruction videotapes] [and] [templates].
   1. Comply with requirements specified in Division 1 Section "Photographic Documentation."
Requirement in subparagraph below is for treatment of historic facilities.

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.

G. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS.

A. Existing Services/Systems: Maintain services/systems indicated to remain and protect them against damage during selective demolition operations.

1. Comply with requirements for existing services/systems interruptions specified in Division 1 Section "Summary."

Delete paragraph and subparagraphs below if not applicable. Or delete paragraph and subparagraphs below if the Authority arranges and performs work.

B. Service/System Requirements: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.

1. COTR will arrange to shut off indicated services/systems when requested by Contractor. For additional information concerning utility outages refer to “Supplementary Conditions”.
2. If services/systems are required to be removed, relocated, or abandoned, before proceeding with selective demolition provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
3. Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing. Remove conductors back to source of supply.

a. Where entire wall is to be removed, existing services/systems may be removed with removal of the wall.

3.3 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.”

Revise paragraph and subparagraphs above and paragraph and subparagraphs below to suit Project. Delete both if adequately covered 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. Cover and protect furniture, furnishings, and equipment that have not been removed.
5. Comply with requirement for temporary enclosures, dust control, heating, and cooling specified in Division I 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.

3.4 SELECTIVE DEMOLITION, GENERAL

A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:

1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, 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.
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 Salvaged Items: Comply with the following:
   1. Clean salvaged items.
   2. Pack or crate items after cleaning. Identify contents of containers.
   3. Store items in a secure area until delivery to the Authority.
   4. Transport items to the Authority's storage area designated by COTR.
   5. Protect items from damage during transport and storage.
   6. If items are lost or damaged, they shall be replaced at Contractor's expense.

D. 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. Pack or crate items after cleaning and repairing. Identify contents of containers.
   3. Protect items from damage during transport and storage.
   4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

In paragraph below, option for cleaning existing items to remain before reinstalling adds cost. Revise to suit Project.

E. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by COTR, items may be removed to a suitable, protected storage location during selective demolition [and cleaned] and reinstalled in their original locations after selective demolition operations are complete.

Seven paragraphs and associated subparagraph below are examples only. Revise to suit Project.

3.5 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

This Article is an example only. Revise to suit Project.

A. Concrete: Demolish in small sections. Cut concrete to a depth of at least 3/4 inch at junctures with construction to remain, using power-driven saw. Dislodge concrete from reinforcement at perimeter of areas being demolished, cut reinforcement, and then remove remainder of concrete indicated for selective demolition. Neatly trim openings to dimensions indicated.

Select paragraph above or first paragraph below. Below will provide neater openings with less risk of damage to remaining concrete, but may cost more.
B. Concrete: Demolish in sections. Cut concrete full depth at junctures with construction to remain and at regular intervals, using power-driven saw, then remove concrete between saw cuts.

C. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, then remove masonry between saw cuts.

D. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, then break up and remove.

Revise paragraph below to suit Project.

E. Resilient Floor Coverings: Remove floor coverings and adhesive according to recommendations in RFCI-WP and its Addendum.

Revise subparagraph below to suit Project. RFCI recognizes other methods besides removing adhesive, including covering substrate with trowelable or self-leveling cementitious underlayments. Removal of vinyl asbestos tile and vinyl composition tile differs.

1. Remove residual adhesive and prepare substrate for new floor coverings by one of the methods recommended by RFCI.

Revise first paragraph below to suit Project. Replace generic reference to Section title with actual type of roof membrane, such as "Built-up Asphalt Roofing."

F. Roofing: Remove no more existing roofing than can be covered in one day by new roofing. Refer to applicable Division 07 Section <Insert Section> for new roofing requirements.

1. Remove existing roof membrane, flashings, copings and roof accessories.
2. Remove existing roofing system down to substrate.

G. Air-Conditioning Equipment: Remove equipment without releasing refrigerants. Dispose of as required by OSHA and EPA.

If needed, insert requirements for other materials, products, equipment, and services.

3.6 DISPOSAL OF DEMOLISHED MATERIALS

Add other specific disposal, cleanup, or removal requirements to suit Project.

A. General: Except for items or materials indicated to be [recycled,] reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them 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.

Coordinate first subparagraph below with use of elevators, stairs, or building entries permitted by the Authority
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.

Add specific requirements for off-site disposal to suit Project.

C. Disposal: Transport demolished materials off the Authority's property and legally dispose of them.

3.7 CLEANING

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

3.8 SELECTIVE DEMOLITION SCHEDULE

Delete this Article if Drawings show all selective demolition notes and lists.

A. Existing [Items] [Construction] to be removed under this contract: <Insert description of items and construction to be removed.>

B. Existing Items to be removed and salvaged under this contract: <Insert description of items to be removed and salvaged.>

C. Existing Items to be removed and reinstalled under this contract: <Insert description of items to be removed and reinstalled.>

Below may be used to inform Contractor of items that are to remain, such as those that occur in, or are adjacent to, construction being demolished, but are not being removed and reinstalled. Delete if not required.

D. Existing Items to Remain: <Insert description of items to remain.>

END OF SECTION 024119
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Instructions to the Editor are found in the following locations:

**Specification 260513 – Medium Voltage Cables**

No Hidden Text in this Section
SECTION 26 05 13 – MEDIUM - VOLTAGE CABLES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes single conductor cables and splices, terminations, and accessories for electrical distribution systems nominally rated 5, 15 and 35 KV.

1.3 SUBMITTALS

A. Product data on cables and cable accessories including descriptions and detailed specifications.
B. Shop drawings of splices and terminations.
C. Product certificate signed by manufacturer that its products comply with the specified requirements.
D. Installer certificates signed by manufacturer of cable splicing and terminating products that Installers comply with training requirements specified under "Quality Assurance."
E. Installer certificates signed by Contractor certifying that the Installers of cable splices and terminations meet the experience qualifications specified under "Quality Assurance."
F. Product Test Reports: Certified reports of manufacturers' factory production and final tests indicating compliance of cable and accessories with referenced standards and this specification.
H. Maintenance data for cables and accessories for inclusion in Operation and Maintenance manual specified in Division 01."
1.4 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced Installer of medium-voltage electrical cable to perform the installation specified in this Section. Engage Installers who are experienced in cable splices and terminations for the specific types of cable and cable accessories specified in this Section. All persons engaged in preparing, splicing or terminating medium voltage cable shall be qualified. All splicers/terminators shall be approved by the COTR or have a certificate from a school which teaches splicing and terminating of solid dielectric cable with the types of splices and terminations specified below. At the option of the COTR the splicer/terminator may be required to prepare a representative sample splice and/or termination prior being permitted to make permanent connections on the project. Refer to Division 01 Section "References" for definition of experienced Installer.

B. Field Testing Organization Qualifications: To qualify for acceptance, an independent testing organization must demonstrate, based on evaluation of organization-submitted criteria conforming to ASTM E 699, that it has the experience and capability to conduct satisfactorily the testing indicated.

C. Electrical Component Standard: Components and installation shall comply with NFPA 70 "National Electrical Code."

D. IEEE Compliance: Comply with applicable IEEE standards including C2 "National Electrical Safety Code."

E. UL Compliance: Cables and components shall be listed and labeled by UL.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver medium-voltage cable on factory reels conforming to NEMA Standard WC 26, "Wire and Cable Packaging."

B. Store cables on reels on elevated platforms or on a hard surface in a clean, dry location. Stand reels vertically so that weight is supported by flanges.

C. Prevent impact damage by: aligning reels flange to flange, using guards across flanges when different reel sizes are stored together, maintain adequate aisles and barricades to prevent equipment from hitting the cable. Protect cable from liquid spills. Advise splicers, installers and handlers of special instructions.

D. Seal the ends of all cable stored outdoors, and reseal both ends when a length is cut from the reel.

E. Cable Inspection: 1) check for shipping damage prior to accepting cable, 2) confirm cable specified was received, and 3) reseal cable ends.

F. Handling: 1) remove nails and staples from reel flanges, 2) calculate and observe recommended bending radii, 3) use swivels and avoid overruns when unreeling.
1.6 WARRANTY

A. Special Project Warranty: Submit a written warranty, mutually executed by manufacturer and the principal Installer, and agreeing to repair or replace medium-voltage cables, splices, and terminations that fail in materials or workmanship within the special project warranty period specified below. This warranty shall be in addition to, and not a limitation of, other rights and remedies the Authority may have against the Contractor under the Contract Documents.

1. Special Project Warranty Period: 20 years beginning on the date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:

1. Cable:
   a. The Kerite Co.
   b. The Okonite Co.
   c. Pirelli Cable Corp.
   d. General Cable
   e. Rome
   f. Southwire

2. Cable Splicing and Terminating Products and Accessories:
   a. Electrical Products Division 3M.
   b. Elastimold
   c. Raychem Corp.
   d. RTE Components.
   e. Adalet - PLM
   f. Cooper Power Systems

3. Compression Connectors:
   a. AMP
   b. 3M Company
   c. Burndy
   d. Thomas & Betts
   e. Anderson Electrical Connectors

2.2 MEDIUM-VOLTAGE CABLE

A. General: Cable shall be single-conductor type, size and voltage as indicated. Cable shall conform to UL Standard 1072 Type MV-90 or MV-105, AEIC CS.8, ICEA S-93-639, and ASTM B-8.
B. Cable shall be ethylene propylene rubber (EPR) insulated.


D. Conductor Shield: Extruded layer of semi-conducting thermosetting compound. The shield shall be clean stripping from the conductor and bonded to overlying insulation.

E. Insulation: Shall be flexible thermosetting dielectric based on an ethylene propylene elastomer. The insulation shall limit degree of susceptibility to treeing experienced by crystalline materials. Insulation thickness at any cross-section of insulation shall not be less than 90% of the following minimum average thickness: 5 KV - 115 mil, 15 KV - 220 mil, 35 KV - 420 mil.

F. Insulation Shield: Clean stripping extruded semiconducting compound applied over insulation. Electrical and physical requirements conforming to ICEA S-93-639, AEIC CS.8 and UL 1072.

G. Metallic Shielding Metallic Shielding Copper shielding tape, 5 mil in thickness helically applied over the semi-conducting insulation shield, with 12-1/2% overlap. Jacket: Shall be black, sunlight resistant polyvinylchloride with minimum average thickness of 80 mils. Minimum thickness shall not be less than 64 mils.

H. Operating Temperature: 90C continuous, 130C emergency, 250C short circuit.

I. Production Tests: The cable shall be subjected to the following tests:
1. Conductor shall meet resistance requirements of ICEA-S-93-639,
2. Insulation resistance shall be tested in accordance with ICEA S-93-639 to be not less than 50,000 megohms - 1,000 feet,
3. High voltage AC and DC test performed per ICEA S-93-639, 4) full reel corona test performed per AEIC CS.8 (x-y recording graph shall be furnished showing test results).

2.3 SPLICING AND TERMINATING PRODUCTS

A. General: Comply with the following standards:
1. IEEE 48: “Standard Test Procedures and Requirements For High Voltage Alternating Current Cable Terminations 2.5 KV Through 765 KV."
3. IEEE 404: "Standard for Extruded and Laminated Dielectric Shielded Cable Joints Rated 2500 V to 500,000 V”.
4. IEEE 592: "Exposed Semi-conducting Shields on High Voltage Cable Joints and Separable Insulated Connectors."
5. UL 486A-486B: "Wire Connectors and Soldering Lugs for Use with Copper Conductors."

B. Types: Compatible with the cable materials. All current carrying components shall be copper.

C. Connectors/Lugs: Compression type, two hole, long barrel, seamless, tin plated copper, listed per UL486A-UL486B.
D. Splicing and Terminating Kits: As recommended by the manufacturer in writing for the specific sizes, ratings, and configurations of cable conductor, splices, and terminations specified. Kits shall contain all components required for a complete splice or termination including detailed instructions and shall be the product of a single manufacturer. Completed splices and terminations shall provide insulation equivalent to the insulation class of the cable it connects.

E. Splices shall be made with standard splicing kits and shall be one of the following types:

1. Heat shrink splice kit of uniform cross-section polymeric construction with outer heat shrink jacket.
2. Pre-molded, cold shrink rubber, in-line splice kit.
3. Separable insulated splice, 600 amp, 3 phase rated, with capacitive test point on molded T-body. Voltage rating of separable splice shall be 15KV for use on 5 KV and 15 KV systems and 35 KV for use on 35 KV systems.

F. Dead break Junctions: Dead break junctions shall have four 600A dead break interfaces bused together with copper bus and encapsulated in a precision molded peroxide cured EPDM insulated rubber body with a semiconductive outer shield. Junctions shall meet the requirements of ANSI/IEEE 386, and be equipped with stainless steel mounted bracket with 2 parking stands. When mated with a compatible product, the junction shall provide a completely shielded, submersible threaded connection. Unused interfaces shall be covered with insulated protective caps of the same manufacturer as the junctions.

G. Conductor Terminations, General: Comply with Class 1, IEEE Standard 48. Insulation class shall be equivalent to that of the cable upon which they are installed. Terminations for shielded cables shall include a shield grounding strap. Include an effective moisture seal for the end of the insulation whether or not this item is included in termination kits. Seal shall be silicone rubber tape, cold shrink rubber sleeve, or heat shrink plastic sleeve as recommended by the kit manufacturer. Termination kits shall be performance tested for compliance with IEEE Standard 48 and shall be of the following types:

1. Class 1 Termination for Shielded Cable: Modular type, furnished as a kit, with stress relief tube, multiple molded silicone rubber insulator modules, shield ground strap, and compression type connector.
2. Class 1 Termination for Shielded Cable: Heat shrinkable type with heat shrinkable inner stress control and outer non-tracking tubes, multiple molded non-tracking skirt modules, and compression type connector.
3. Separable insulated elbow connectors: Modular system, complying with IEEE Standard 386. System shall consist of disconnecting, 600A, 3 phase rated, single pole, cable terminators and matching stationary, plug-in, dead front terminals. System components shall be designed for the system voltage and for sealing against moisture. Elbows shall include voltage test points on molded connector body. Voltage rating of separable elbow connectors shall be 15 KV for use on 5 KV and 15 KV systems and 35 KV for use on 35 KV systems.

2.4 ARC-PROOFING MATERIALS

A. Arc-proofing tape shall consist of a UL-listed fire proofing tape. Tape shall be flexible, conformable, intumescent to 0.3-inches thick, and compatible with the cable jacket on which used. Tape shall be self-extinguishing and shall not support combustion.
B. Glass cloth tape shall be pressure-sensitive adhesive type, 1/2-inch wide.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine raceways, cable trays, pull boxes, manholes, junction boxes, and other cable installation locations for cleanliness of raceways, minimum bending radii of cables, and conditions affecting performance of cable. Pull a mandrel of not less than 80% of the diameter of the inside of the duct and a bristle brush through raceways to check for suitable conditions. Do not proceed with cable installation until unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

A. General: Install cable accessory items in accordance with manufacturer's written instructions and as indicated.

B. Notification: Notify COTR 24 hours prior to commencement of all cable pulls.

3.3 INSTALLATION OF CABLES

A. Pull conductors simultaneously where more than one cable is indicated in same raceway. Use UL listed and manufacturer approved pulling compound or lubricant where necessary. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values. Use dynamometer, capstan and two way communication to ensure this. Pulling shall not exceed 25 feet per minute. Never pull on middle of cable. Seal cable ends while pulling.

B. Use pulling means including, fish tape, cable, rope, and basket weave wire/cable grips that will not damage cables or raceways. Do not use rope hitches for pulling attachment to cable.

C. Do not install cable if ambient temperature is below -31°F. During cold weather installation, cable shall be pulled more slowly and trained in place the same day it is removed from storage. Do not impact, drop, kick or bend cable sharply in low temperatures.

D. Feed cable into conduit using a guide tube or a conveyor sheave assembly. Use single sheaves for guiding cable only. Do not exceed bend radii while pulling over a sheave. Set up cable reels so that cable comes off reel with its natural curvature. Do no reverse bend cable.

E. Install exposed cable parallel and perpendicular to surfaces of exposed structural members and follow surface contours where possible.

F. Bending Radii - Maintain 12X overall diameter or greater.

G. Train cable to avoid dragging on edge of raceway.

H. If using a basket grip, secure it in place with steel stripping and cut well behind the area it covers once the cable is in place.
I. In manholes, handholes, and cable vaults, train cables around walls by the longest route from entry to exit and support cables at intervals adequate to prevent sag. However, redundant circuits shall be racked on opposite sides of the manhole or vault.

3.4 INSTALLATION OF SPLICES AND TERMINATIONS

A. Install splices at pull points and elsewhere using a standard kit. Conform to kit manufacturer's written instructions.

B. Install terminations at ends of conductors using standard kits. Conform to manufacturer's written instructions. Comply with classes of terminations indicated.

C. Tighten electrical connectors and terminals in accordance with manufacturer's published torque tightening values. Where manufacturer's torquing requirements are not indicated, tighten connectors and terminals to comply with tightening torques specified in UL 486A-486B.

D. When splicing and terminating medium voltage cable:

1. Keep cable and work area clean and dry.
2. Do not cut insulation.
3. Completely remove semi-conducting insulation shield, but do not lift it at cut-off point.
4. Keep non-shielded conductors away from ground and other phase conductors.
5. Ensure cable bends are smooth.
6. Use skirted terminators outdoors or in contaminated areas.
7. Use minimum amount of cleaning solvent.

3.5 INSTALLATION OF CABLE ACCESSORIES

A. Arc-Proofing: Arc-proof medium-voltage cables individually in manholes and handholes. Apply as recommended by the manufacturer of the arc-proofing tape and the following:

1. Clean cable sheath.
2. Apply arc-proofing tape in one half-lapped layer with the coated side toward the cable.
3. Band the arc-proofing tape with 1-inch-wide bands of half-lapped adhesive glass-cloth tape 2 inches on center.

3.6 GROUNDING

A. Ground shields of shielded cable at terminations, splices, and separable insulated connectors. Ground metal bodies of terminators, splices, cable and separable insulated connector fittings, and hardware in accordance with manufacturer's written instructions. Use minimum of No. 4 AWG copper conductor and compression lugs.

3.7 IDENTIFICATION

A. Identify cable in accordance with Division 26 Section "Identification for Electrical Systems"
PART 4 - CONTRACTOR QUALITY CONTROL

4.1 FIELD QUALITY CONTROL


B. Preparation: Perform the following preparations in advance of independent tests:

1. Test cables' insulation resistance.
2. Test circuits' continuity.
3. Furnish a set of Contract Documents and manufacturer's recommendations to test organization.
4. Make power available at test locations.

C. Schedule tests and notify COTR at least one week in advance of schedule for test commencement.

D. Test procedure:

1. Independent Testing Organization: Arrange and pay for the services of an independent electrical testing organization in accordance with the requirements of Division 01 Section "Quality Requirements" to perform tests on medium-voltage cable.
2. Test Objectives: To assure cable installation is operational within industry and manufacturer's tolerances, is installed in accordance with Contract Documents, and is suitable for energizing.
3. Procedures: Comply with the INETA standard and IEEE 400. Upon satisfactory completion of tests, attach a label to tested components.

E. Reports: The testing organization shall maintain a written record of observations and tests, report defective materials and workmanship, and retest corrected defective items. Testing organization shall submit written reports to the COTR and Contractor.

END OF SECTION 260513
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Instructions to the Editor are found in the following locations:

**Specification 260553 – Identification for Electrical Systems**
No Hidden Text in this Section
SECTION 26 05 53 - IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section specifies electrical identification materials and includes requirements for electrical identification including but not limited to the following:

1. Identification labeling for raceways, cables, and conductors.
2. Operational instruction signs.
3. Warning and caution signs.
4. Equipment labels and signs.

B. Related Sections: The following Sections contain requirements that relate to this Section:

1. Refer to other Division 26 sections for additional specific electrical identification associated with specific items.

1.3 SUBMITTALS

A. Product Data for each type of product specified.

B. Schedule of all tags, markers, nameplates, signs, etc.

1.4 QUALITY ASSURANCE

A. Electrical Component Standard: Components and installation shall comply with NFPA 70 "National Electrical Code."

B. Comply with manufacturers instructions.
PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by the following:

1. American Engraving Co.
2. Seton Name Plate Co.
4. W.H. Brady, Co.
5. Almetek Industries
6. Tech Products, Inc.
7. William Frick & Company
8. Thomas & Betts

2.2 ELECTRICAL IDENTIFICATION PRODUCTS

A. Engraved, Plastic Laminated Labels, Signs, and Instruction Plates: Engraving stock melamine plastic laminate, 1/16-inch minimum thick for signs up to 20 square inches, or 8 inches in length; 1/8-inch thick for larger sizes. Drill holes for mechanical fasteners when mounted indoors.

B. Baked Enamel Warning and Caution Signs for Interior Use: Preprinted aluminum signs, punched for fasteners, with colors, legend, and size appropriate to the location.

C. Exterior Metal Backed Butyrate Warning and Caution Signs: Weather resistant, nonfading, preprinted cellulose acetate butyrate signs with 20-gage galvanized steel backing, with colors, legend, and size appropriate to the location. Provide 1/4-inch grommets in corners for mounting.

D. Fasteners for Plastic Laminated and Metal Signs: Self tapping stainless steel screws or number 10/32 stainless steel machine screws with nuts and flat and lock washers.

E. Cable Ties: Fungus inert, self extinguishing, one piece, self locking nylon cable ties, 0.18-inch minimum width, 50-lb minimum tensile strength, and suitable for a temperature range from minus 50 deg F to 350 deg F.

F. Cable Markers: Provide "E-Z Tag" as manufactured by Almetek Industries Inc., or "Everlast" tags as manufactured by Tech Products Inc. Tags shall consist of 1.0 inch high numerals or letters placed in a tag holder. Tags and holder shall be manufactured from U.V. stabilized non-conductive, non-corrosive polyethylene or equal. Tag holder shall be black and numerals and letters shall be black on yellow background. Numerals and letters shall be oriented either horizontally or vertically depending on orientation of cable.

G. Pressure Sensitive Markers for Outdoor Equipment: Provide markers as manufactured by Almetek Industries or William Frick & Company or equal. Provide minimum 1.0 inch high numerals or letters. On medium voltage equipment provide markers that are black on reflective yellow background. On low voltage equipment provide markers which are black on reflective silver background. Markers shall be resistant to U.V. light.
PART 3 - EXECUTION

3.1 INSTALLATION

A. Lettering and Graphics: Coordinate names, abbreviations, colors, and other designations with corresponding designations specified or indicated. Install numbers, lettering, and colors as approved in submittals and as required by code.

B. Install identification products in accordance with manufacturer's written instructions and requirements of NEC.

C. Sequence of Work: Where identification is to be applied to surfaces that require finish, install identification after completion of finish work.

D. Medium Voltage Cable Identification: In manholes indicate voltage, feeder number and phase letter on each cable. Inside equipment indicate phase letter on each cable. Install markers on cables after arc proofing is applied. Attach with cable ties.

E. Low Voltage Conductor Color-Coding: Provide color coding for as follows:

<table>
<thead>
<tr>
<th>208/120 Volts</th>
<th>Phase</th>
<th>480/277 Volts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>A</td>
<td>Yellow</td>
</tr>
<tr>
<td>Red</td>
<td>B</td>
<td>Brown</td>
</tr>
<tr>
<td>Blue</td>
<td>C</td>
<td>Orange</td>
</tr>
<tr>
<td>White</td>
<td>Neutral</td>
<td>Gray</td>
</tr>
<tr>
<td>Green</td>
<td>Ground</td>
<td>Green</td>
</tr>
</tbody>
</table>

F. Use low voltage conductors with color factory-applied the entire length of the conductors except as follows:

1. The following color-coding methods may be used in lieu of factory color-coded wire for sizes No. 4 AWG and Larger.
   a. Apply colored, pressure-sensitive plastic tape in half lapped turns for a distance of 6 inches from terminal points and in boxes where splices or taps are made. Apply the last two laps of tape with no tension to prevent possible unwinding.

G. Provide warning, caution, and instruction signs as follows:

1. Install warning, caution, or instruction signs where required by NEC, where indicated, or where required for safe operation and maintenance of electrical systems. Install engraved plastic laminated instruction signs where instructions or explanations are needed for system or equipment operation. Install butyrate signs with metal backing for outdoor items. Attach signs to outdoor equipment using two-part epoxy cement.

2. Emergency Operating Signs: Where required provide engraved laminate signs with white legend on red background with minimum 3/8-inch high lettering for emergency instructions.

H. Provide equipment/system, circuit/device identification as follows:
1. Provide engraved plastic laminate identification markers on electrical equipment. For 240V systems and below provide white lettering on black background. For 480/277V systems, use black lettering on yellow background. Text shall match terminology and numbering of the Contract Documents and shop drawings. Apply markers on all of the following:

   a. Panelboards, electrical cabinets, and enclosures.
   b. Electrical switchgear and switchboards.
   c. Electrical substations.
   d. Power transfer equipment.
   e. Contactors.
   f. Transformers.
   g. Disconnect switches.
   h. Control equipment.
   i. Circuit breakers

I. Circuit Schedules: For panelboards provide typed circuit schedules with identification of items controlled by each breaker.

J. Install labels, tags and markers at locations for best convenience of viewing without interference with operation and maintenance of equipment.

K. Pad Mounted Equipment: Place 1.0-inch high, black on reflective yellow marker indicating voltage and circuit number in upper left corner of exterior of door securing feeder compartment. Where two feeders enter a compartment, place marker on exterior of door along top edge opposite respective feeder.

L. Pad Mounted Transformers: Using 3.0-inch high, black on reflective yellow pressure sensitive markers, identify transformer size (i.e., 45KVA). Centrally locate marker on exterior of high voltage compartment door. Identify feeders per paragraph "K" and "D" above.

M. Raceway: Identify with pressure sensitive markers purpose of circuit (i.e., lighting, power, alarm, signal, PA, etc.). Place marker on junction boxes and along raceway on 150-foot centers. Markers shall be black on white background.

N. Pad Mounted Switches: Identify switch operating handles sequentially beginning with number 1. Use markers 1.0-inch high, pressure sensitive, black on reflective yellow background. Place marker adjacent to operating handle on exterior of enclosure.

END OF SECTION 26 05 53
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Instructions to the Editor are found in the following locations:

**Specification 312514 – Storm Water Pollution Prevention Plan**

Before Part 1 – General
Before 1.2 B
Before 1.4 D
Before 1.4 E
Before 1.4 G
Before 1.4 I. 2. a. 6
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SECTION 31 25 14 - STORM WATER POLLUTION PREVENTION

Delete and insert text to meet Project-specific requirements.

Verify that Section titles referenced in this Section are correct for this Project's Specifications; Section titles may have changed.

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings, Contract and Special Provisions, Supplementary Conditions, latest version of Virginia Erosion and Sediment Control Handbook and other Division-01 Specifications apply to this Section.

1.2 SUMMARY

A. This Section includes preparation for and submitting for approval for a Storm Water Pollution Prevention Plan (SPPP).

1. Provisions for furnishing, installing and removal of silt fence, filter boxes, storm drain inlet protection, straw bale barriers, construction entrances, sediment traps, diversion berm, dust control and other erosion control measures during construction, and temporary and permanent soil stabilization measures, as noted on the contract plans and in the approved SPPP. All measures and practices shall be in accordance with the latest version of the Virginia Erosion and Sediment Control Handbook and for preventing contamination of storm water from construction activities in accordance with the Commonwealth Of Virginia Regulation 9VAC 25-180 (i.e., temporary fuel storage, fueling operations, equipment maintenance, hazardous material and waste handling, good housekeeping practices, etc.).

Edit paragraph and subparagraph below to include project specific related sections.

B. Related Sections

1. Division 01 Section “Wetlands Restoration” for protection of wetlands.
2. Division 01 Section “Quality Requirements” for quality issues.
1.3 DEFINITIONS

A. **CWA-** Clean Water Act means the law passed by the Congress of the United States in 1972 controlling the Discharge of Pollutants into the Nation's waterways.

B. **BMP-** Best Management Practices are defined as any one or group of management practices, activities, policies, equipment, and structures that will: prevent pollutants from entering the environment, minimize pollutants from entering the environment, and mitigate, reduce, and treat prior to the pollutant entering the environment.

C. **NPDES-** National Pollutant Discharge Elimination System is the national program for issuing, modifying, revoking, reissuing, terminating, monitoring and enforcing permits pursuant to sections 402, 318, and 405 of the CWA.

D. **VDEQ-** Virginia Department of Environmental Quality is the agency of the Commonwealth of Virginia that manages the Commonwealth of Virginia's environmental regulations.

E. **VPDES-** Virginia Pollutant Discharge Elimination System is the Commonwealth of Virginia program and regulations that describe the proper management of discharges of pollutants into the waters of the Commonwealth.

F. **DCR-** The Commonwealth of Virginia Department of Conservation and Recreation, Division of Soil and Water Conservation, regulates land disturbing activities and erosion and sedimentation compliance.

1.4 Submittals

A. Storm water Pollution Prevention Plan (SPPP) - Prepare and submit for written approval by the Authority in accordance with the information provided below. Do not initiate ground-disturbing activities until the Authority has approved the SPPP. In addition, the SPPP will serve as the Soil Erosion and Sediment Control Plan required as a condition of the Authority's issuance of a Construction Permit by the Authority's Building Codes Department. Issuance of this Construction Permit is required prior to initiation of any project construction.

B. The SPPP may utilize plans, details, notes and other information provided in the construction documents, however, such information shall not, in itself, be construed to meet the requirements of this Section. Provide additional details to ensure that the SPPP accurately reflects means and methods for construction.

C. Prepare the SPPP on regular 8 ½ X 11 inch paper. Include attachments of the plans showing locations of erosion and sediment control devices and BMPs. Submit four bound copies to the COTR for review and approval.

Editor, use the following three paragraphs for Work at Washington Dulles International Airport

D. Plan Certification with Virginia Pollution Discharge Elimination System Regulation (9VAC 25-180) and DCR (4VAC50-30).

1. Submit with Plan Certification the following certification statement signed by an officer of the company of Contractor and signed by all its subcontractors:
"I certify under penalty of law that I understand the terms and conditions of the General Permit for Discharges from Construction Activities that authorizes the storm water discharges from construction activities associated with the site identified by the permit."

2. The above certification shall be executed on the Contractor's letterhead. Include the name, title, address, and telephone number of contractor and all subcontractors, and the date the certification is made. The Certification shall be attached to the SPPP and submitted to the COTR.

A/E is to ensure that $500 is the correct amount. Request most current permit cost from the Authority Project Manager. Add a line item in Section III – “Schedule” of the contract provisions.

E. Once the SPPP has been approved by the COTR, submit a Virginia Storm Water Management Program (VSMP) permit application to the Virginia Department of Conservation and Recreation (DCR) to obtain the VSMP permit. Submit payment of $500 with the permit application. The Contractor shall include the cost of the VSMP in his proposal.

F. Be responsible for submitting the Notice of Project Termination (NPT) shown in Appendix II for all construction activities within this particular construction project. Contractor shall notify the Authority and provide a copy to the COTR upon completion of this construction project.

Use the following paragraph for Work at Ronald Reagan Washington National Airport.

G. Apply for permit coverage under the Construction General Permit (CGP) prior to starting land disturbing activities. Complete and submit to the appropriate EPA NPDES permitting Authority a Notice of Intent (NOI) Form. To discontinue permit coverage, complete and submit to the appropriate EPA NPDES permitting Authority a Notice of Termination (NOT) Form upon satisfying the appropriate permit conditions described in the CGP.

H. Submit the name, and a copy of the certificate of competence issued by the Department of Conservation and Recreation for the person in charge of and responsible for carrying out the land-disturbing activity prior to conducting any land-disturbing activities.

I. Prepare the SPPP narrative and associated drawings in accordance with the following outline:

1. Site Description: A detailed description of the construction activities, physical features of the site, and other pertinent information shall be included in this Section.
   a. A description of the nature of the construction activities;
   b. A description of the intended sequence of major activities which disturb soils for major portions of the site (e.g. grubbing, excavation, grading);
   c. Estimate of the total area of land disturbing activities. Land disturbing areas greater than 2,500 square feet require the implementation and enforcement of a SPPP.
   d. Describe the quality of any discharge water from the site;
   e. A description of the existing vegetative cover at the site, include an estimate of the total buffer area that is covered by the vegetation before construction activities commence.
   f. The name of the receiving water(s), their tributaries, and the ultimate receiving water(s). A description of the aerial extent of wetlands present at the site and other
sensitive habitats present on site describe measures that will be used to protect wetlands.

g. Include in the plan a schedule of the planned start and completion of construction activities, major grading activities, and other activities that may require stabilization measures to be initiated at the site.

2. Potential Pollution Sources:

a. Describe potential pollution sources. Description should include, but not be limited to, the following:

1) Vehicle Fueling: A description of the location and number of all above ground storage tanks (ASTs) and any storage containers that will be used for the purpose of fueling vehicles or storing any materials used during construction activities (indicate location on the site map).

2) Storage Tanks: ASTs storing regulated substances and greater than 660 gallons shall be registered with the Department of Environmental Quality. All ASTs shall be properly equipped and follow the AST requirements. For example, requirements include that ASTs be double walled or have 110% secondary containment devices that will not collect rainwater. Tanks shall have spill containment buckets and be properly labeled, etc. Earthen berms shall not be permitted.

3) Materials Storage: A description of the storage location and a minimum quantity of all hazardous and non-hazardous materials that might pollute storm water. Pollutants such as, but not limited to, paints, solvents, hydraulic fluids, engine oil, form oil, etc. that will be used during the course of construction activities. All containers of materials of any size that are used on site and their associated secondary containment shall be covered to prevent rainwater from coming in contact with the containers. Earthen berms shall not be permitted. All drums and containers shall be removed from the site as they become empty.

4) Sanitary Waste Facility: A description of the location and the number of sanitary waste facilities (e.g. portable chemical toilets) and method of disposal for the subject waste during the course of construction activities on site.

5) Equipment Maintenance: A detailed description of how and where equipment will be maintained. This shall include fluid changes, servicing, breakdowns, etc. The plan shall provide a standard operating procedure that shall be used for the protection of the environment while maintaining the equipment.

If a batch plant is included with this project include the following subparagraph.

6) Concrete Batch Plants: Provide a maintenance plan for the concrete washout area. The plan shall include inspection and pumping procedures, as well as water, solid disposal, and recycling procedures. All batch plants shall have a valid VDEQ air permit. Obtain a General Virginia Pollutant Discharge Elimination System Permit (GVPDES) in accordance with 9 VAC 25-193-10 for the batch plant. Submit both the GVPDES and the VDEQ air permits with the Storm Water Pollution Prevention Plan (SPPP).
7) The SPPP shall include a drum and container management plan. The plan shall describe the methods and location for the containment, protection, and storage of all solvents, chemicals, petroleum products, and all toxic material as defined by the EPA brought on site. All drums and containers shall be stored within a secondary containment system and shall be covered to prevent rainwater from entering the secondary containment.

3. Best Management Practices (BMPs) And Control Measures. The purpose of this Section is to identify all appropriate BMPs and control measures that shall be implemented at the construction site. This Section of the plan shall clearly describe the construction activities in sequence and their associated BMPS, control measures, and Erosion and Sediment (E&S) controls that are applicable. This Section shall indicate the timing to achieve the above-referenced sequencing relative to the installation of BMPs, E&S, and the control measures.

a. The components of this Section of the plan shall, at a minimum, include but not be limited to the following:

1) Stabilization Practices: All stabilization practices, including interim and permanent stabilization measures as well as specific scheduling of the Implementation of the practices, shall be included in this Section. Where possible, this portion of the plan shall describe all existing vegetation that is preserved for the purpose of site stabilization. Stabilization measures include, but are not limited to the following:

a) Vegetative buffer strips
b) Sod stabilization
c) Geotextile
d) Mulching
e) Temporary Seeding
f) Permanent Seeding
g) Protection of trees
h) Preservation of mature vegetation
i) Other measures/stabilization practices

2) Structural BMPS: This Section shall adequately describe the structural BMPS and practices that will divert and mitigate storm water runoff from soils, sediments, exposed materials, ASTs, and containers of hazardous/non-hazardous materials. Structural BMPS include, but are not limited to the following list:

a) Silt fences
b) Earth dikes
c) Drainage swales
d) Sediment traps
e) Subsurface drains
f) Secondary containment for ASTs and containers
g) Pipe slope drains
h) Coverage for ASTs and containers
i) Level spreaders
j) Storm drain inlet protection
k) Reinforced soil retaining systems
l) Rock outlet protection/wheel washers
m) Gabions
n) Construction rock entrance
o) Temporary or permanent sediment basins
p) Other BMPs and structural controls.

3) The installation of these structural BMPs may be subject to the CWA Section 404 "Permitting Requirements". Be responsible for determination whether the above-permitting requirements apply to any of the structural BMPs.

4) Provide wheel washers and construction rock entrances for all projects where constructions traffic enters or exits paved surfaces. Be responsible for ensuring that all wheel washers and construction rock entrances are designed and constructed to adequately meet the expected construction traffic demand.

5) Temporary or Permanent Sediment Basins

a) If the project site involves common drainage areas that serve 3 acres or more of disturbed area(s), a temporary or permanent sediment basin is required. Such a basin shall provide 134 cubic feet of storage per acre drained. Where 134 cubic feet of storage per acre drained or equivalent is not attainable due to site constraints, smaller sediment basins and sediment traps shall be used as approved by the COTR on a case-by-case basis.

b) To prevent the movement and erosion of soils, structural measures should be placed on all upland areas.

4. Operational Practices (Good Housekeeping Practices). This Section shall include measures and BMPs including good housekeeping practices that address the following sources of pollution:

a. The plan shall contain measures that prevent trash, innocuous solid materials, building materials, garbage, and debris from entering the Authority's storm sewer system or directly into a stream or waterway.

b. Provide a daily program of vacuum or hand sweeping or other acceptable means of cleaning sediments that are tracked or transported onto the public roads from the construction sites shall be implemented. The roads may be washed only after the sediments have been removed.

5. Inspection And Maintenance of BMPs

a. Provide a schedule of inspection of all structural BMPs, the necessary maintenance and corrective action to correct all discrepancies found on site. Designate qualified personnel that have adequate knowledge of E&S requirements and storm water management and pollution prevention requirements, to inspect all structural control measures and BMPs at "least every seven calendar days and within 24 hours of the end of a storm event that is .5 inches or greater."

b. At a minimum develop a checklist for these inspections that conforms to the inspection checklist of Appendix I. Areas where final stabilization has been established need only be inspected once every month. Provide the completed
inspection checklist and a report summarizing the corrective actions taken by the contractor to the COTR according to the following schedule of frequencies:

c. Every seven calendar days: Under the normal circumstances.
d. Every 24 hours: After a rainfall of 0.5 inches or greater, of intensity.
e. Every 30 days: for the areas where final stabilization has been accomplished.
f. Correct any and all discrepancies immediately upon discovery. The SPPP shall be revised as necessary to reflect any modifications to strengthen the BMPs and other structural controls in order to address the discrepancies. The above inspections and findings shall be subject to Authority field verification. Be responsible for responding to all regulatory inquiries from the Virginia Department of Environmental Quality-Water Division (VDEQ-Water), Virginia Department of Conservation and Recreation (DCR), and the Environmental Protection Agency (EPA) Region III. Be responsible for addressing the outcome of all compliance monitoring inspections conducted by the above regulatory agencies. Take all corrective actions as required by VDEQ-Water, DCR or EPA Region III.

6. Non-Storm water Discharge. This SPPP is for the sole purpose of preventing pollution associated with storm water runoff (Act of God: rain, snow, etc.). Plan shall identify all non-storm water components, process waste water discharges, and any other non-storm water influent that may exist in this particular construction site. Plan shall ensure that all of the above non-storm water discharges are appropriately eliminated, permitted or addressed through other acceptable regulatory permitting mechanisms.

7. Detailed Composite SPPP Map. Prepare the following:

a. Drainage pattern and approximate slopes anticipated after completing major grading activities on site
b. Soil disturbance areas
c. Location of all Best Management Practices (BMPs), structural controls, non-structural controls, good housekeeping practices (GHP) and other erosion and sediment (E&$) control measures to be used during the course of construction activities
d. Locations where stabilization is expected to be used, including the types of vegetative cover which will be employed on site
e. Location of all receiving waters, including their tributaries and the ultimate receiving waters (including wetlands/sensitive habitats)
f. Location of all points of discharge to existing storm sewers and outfalls
g. Existing and planned paved areas, impervious surfaces, and buildings
h. Location of all post-construction BMPs and Storm water management practices that will address the long-term water quality improvement needs for the site, if applicable.
i. Location of any fuel storage, materials storage and sanitary waste and other potential pollution sources and their associated BMPs. shall be reflected on the site map.
j. Two site maps shall be developed, one indicating pre-construction and during construction site conditions and the second indicating final site conditions. Maps shall be to the same scale.

1.5 Quality Assurance

A. Prepare and submit the SPPP with input from each subcontractor.
PART 2 - PRODUCTS

2.1 General

A. Provide erosion and sediment control devices and products as indicated, in accordance with the SPPP and in accordance with the latest updated version of the Virginia Erosion and Sediment Control Handbook.

PART 3 - EXECUTION

3.1 Implementation

A. Implement and maintain the approved SPPP throughout the life of the contract in accordance with provisions of the Virginia Erosion and Sediment Control Handbook and applicable contract documents.

B. Exercise every reasonable precaution, including temporary and permanent measures, throughout the duration of the project to control erosion and prevent or minimize pollution of rivers, streams, lakes and other receiving waters. Apply siltation and stabilization control measures to material, subject to erosion, exposed by any activity associated with construction including but not limited to local material sources, stockpiles, disposal areas, and haul roads.

C. Initiate stabilization measures as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased but no later than 14 days after the construction activities have temporarily or permanently ceased. Except as provided in the following paragraphs:

1. If snow cover and or severe weather conditions preclude initiation of the stabilization measures by the 14th day after construction activities have ceased, either temporarily or permanently, the stabilization practices shall be initiated as soon as practicable.

2. If construction activities resume on a portion of the site within 21 days from the date that construction activities have temporarily ceased, then stabilization practices need not be initiated on that particular portion of the site by the 14th day after construction activities have temporarily ceased.

D. Be solely responsible for complying with the soil erosion, sedimentation control and good housekeeping requirements of this Contract, and for otherwise preventing contamination of storm water from construction activities. Be solely responsible for any and all fines, penalties or damage that result from the Contractor’s failure to comply.

3.2 Erosion and Siltation Control:

A. Control erosion and siltation through the use of the devices and measures specified herein, in the approved SPPP or as is otherwise necessary. The Authority reserves the right to require other temporary measures not specifically described herein to correct an erosion or siltation condition.
B. Maintenance: Maintain erosion and siltation control devices and measures in a functional condition at all times. Inspect temporary and permanent erosion and sedimentation control measures after each rainfall and at least daily during periods of prolonged rainfall. Correct deficiencies immediately. Make a daily review of the location of erosion and sediment control devices to ensure that they are properly located for effectiveness. Where deficiencies exist, make corrections immediately as approved or directed by the COTR.

PART 4 - CONTRACTOR’S QUALITY CONTROL

4.1 Field Quality Control

A. Conform to all applicable provisions of Division 01 Section “Quality Requirements”. Be responsible for periodic inspections for conformance with the approved SPPP. The results of the periodic inspections shall be submitted to the COTR upon completion.
APPENDIX I
# SPPP Inspection Checklist

<table>
<thead>
<tr>
<th>BMP</th>
<th>Proper Installation Yes, No, or NA</th>
<th>Proper Operation Yes or No</th>
<th>Housekeeping Practices Good-Poor</th>
<th>Potential Hazard Yes or No</th>
<th>Discharge: Storm water Non-storm water</th>
<th>Effectiveness of BMP</th>
<th>Observations</th>
<th>Comments</th>
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<tbody>
<tr>
<td>1.</td>
<td>Drainage Swale</td>
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<td>3.</td>
<td>Silt Fence</td>
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<td>Dry Pond</td>
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<td>5.</td>
<td>Cattle Grate</td>
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<td>6.</td>
<td>Earth Dike</td>
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<td>7.</td>
<td>Sediment Trap</td>
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<td>8.</td>
<td>Hay Bale</td>
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<td>9.</td>
<td>Subsurface Drains</td>
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<td>10.</td>
<td>Pipe Slope Drains</td>
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<td>11.</td>
<td>Level Spreaders</td>
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<td>12.</td>
<td>Storm Drain Inlet Protection</td>
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<td>13.</td>
<td>Reinforced Soil Retaining Basins</td>
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**SPPP INSPECTION CHECKLIST**

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<th>BMP</th>
<th>Proper Installation Yes, No or NA</th>
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<th>Observations</th>
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<tr>
<td>14. Temporary or Permanent Sediment Basins</td>
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<td>15. Construction Rock Entrance</td>
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<td>16. Rock Outlet Protection</td>
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<td>17. Secondary Containment for all ASTs</td>
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<td>18. Evidence of oil, fuel or other material spills or releases on site</td>
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<td>20. Other BMPs</td>
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</table>
Please list any discrepancies or items that are not in compliance in the space provided below.

__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________

Please list the corrective actions necessary to abate the above-listed discrepancies.

__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________

**Note:** All corrective actions must take place within 7 days of the discovery of the above discrepancies and non-compliance item(s).

Inspector:
Signature: ___________________________ Date: _________________
APPENDIX II
Metropolitan Washington Airports Authority
Notice of Project Termination
For
Storm water Discharges from Construction Activities

Note: This form shall be completed by the construction contractors upon final stabilization of the site, upon elimination of all storm water, or when the construction contractor has changed within the same construction project. The contractor shall submit a completed copy of this form to the Authority, at the address provided below and a copy to PMC's Resident Engineer within 30 days after final stabilization has been achieved or when it is no longer the construction contractor for this project. (An officer of the company shall sign this certification)

Completed form shall be submitted to:
Manager, Building Codes/Environmental Branch
Engineering Division
Ronald Reagan Washington National Airport
Washington, D.C. 20001

Copy to: Parsons Management Consultants

For DCA Projects
Hangar 6 Construction Management Program
Ronald Reagan Washington National Airport
Washington, D.C. 20001
Attn: Project's Resident Engineer

For IAD Projects
Parsons Management Consultants
23835 Wind Sock Drive
Chantilly, VA 20166
Attn: Project’s Resident Engineer
Contract Number:

**Contractor Information:**
Contractor's name and mailing address:

Subcontractor(s) name and mailing address:

**Location of Construction Site:**
Project Name
Address
City __________________________ State ______ Zip Code ____________
Latitude __________________________ Longitude __________________________

If there is a change in the contractor(s) please provide the new contractor's information here:

Certification:

"I certify under penalty of law that disturbed soils at the identified project have been finally stabilized and temporary erosion and sediment control measures have been removed or will be removed at an appropriate time and that all storm water discharges associated with construction activities in this project have been eliminated, or that I am no longer the contractor for this construction site."

Print name:
Title:
Signature:
Date:

(This certification shall be signed by an officer of the company)
METROPOLITAN WASHINGTON AIRPORTS AUTHORITY
RONALD REAGAN WASHINGTON NATIONAL AIRPORT
Hazardous Materials Spill Notification Checklist

Note: This checklist shall be completed by all tenants of Ronald Reagan Washington National Airport (DCA) in the event of a hazardous material spill (under CERCLA, CWA, CAA, TSCA and/or a release of hazardous waste under RCRA). It is the responsibility of the tenants to notify all pertinent regulatory agencies within the time frame prescribed under the respective statutes and regulations.

1. Tenant Name:
2. Facility location within DCA where spill occurred:
3. Facility Environmental Manager, Foreman, or person in charge:
4. Time and date of release:
5. Amount of release material:
6. Description of how the release occurred and whether material reached a floor drain (if the situation occurred, describe amount of material that entered drain):
7. Type of material released (include common and chemical name; attach MSDS and/or Waste Manifest):
   a. In the event of a release, verbal notification to DCA Fire Department and DCA Environmental Coordinator must be made immediately as follows:
      Fire Department: (703) 417-8250
      DCA Operations: (703) 417-8050
      Government Programs Engineer (703) 417-8071
      (703) 417-8099 (fax)
      Manager, Resource Support Division (703) 417-8072
      (703) 417-8099 (fax)
   b. Provide details of immediate actions taken to stop spill/release and subsequent clean-up:
8. The checklist and written copies of all notifications to the regulatory agencies shall be submitted to the following person within six (6) hours of the incident (on weekends, note time of submittal):
   Government Programs Engineer
   Engineering and Maintenance Division
   East Building
   Washington, DC 20001
   Fax: (703) 417-8099
   Submitted
   Not submitted
10. A report describing how the incident occurred, if it entered storm or sanitary drain, emergency response measures covered from the clean-up actions, and follow-up activities shall be submitted to the person in question assures the cleanup taken, post-emergency clean up actions, the storage and disposition of any materials re 9 within 48 hours of the emergency.

Submitted
Not submitted

Any questions regarding the use, completion, and scope of this checklist should be directed to the Authority’s Building Codes/Environmental Department.

FOR DCA USE ONLY
Please explain below the follow-up actions required with respect to this incident.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
Note: This checklist shall be completed by all tenants of Washington Dulles International Airport (IAD) in the event of a hazardous material spill (under CERCLA, CWA, CAA, TSCA and/or a release of hazardous waste under RCRA). It is the responsibility of the tenants to notify all pertinent regulatory agencies within the time frame prescribed under the respective statutes and regulations.

11. Tenant Name:
12. Facility location within IAD where spill occurred:
13. Facility Environmental Manager, Foreman, or person in charge:
14. Time and date of release:
15. Amount of release material:
16. Description of how the release occurred and whether material reached a floor drain (if this situation occurred, describe amount of material that entered drain):
17. Type of material released (include common and chemical name; attach MSDS and/or Waste Manifest):
18. In the event of a release, verbal notification to IAD Fire Department and IAD Environmental Coordinator must be made immediately as follows:
   Fire Department:
   (703) 572-2970
   IAD Government Programs Engineer
   (703) 572-0210

END OF SECTION 312514
To edit the attached specifications, the hidden text option must be enabled. This allows the specifications editor to view instructions throughout each specification section.
To enable the hidden text option, in Word 2003, select “Tools” from the toolbar at top. Within “Tools”, select “Options”. Under “Options” select “View”. Look under “Formatting Marks” and make sure that the “Hidden Text” box is checked. Hidden text should now be visible within the document.
In Word 2008, click on upper left “Office Button”. Click on “word Options” at bottom of menu. Click on “Display”. Under “always show these formatting marks on the screen” check the hidden text box. Hidden text should now be visible within the document.

Instructions to the Editor are found in the following locations:

**Specification 327200 – Wetlands Restoration**
No Hidden Text in this Section
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 DESCRIPTION OF WORK

A. This Section covers seeding of wetland areas distributed by project construction activities. All wetland areas temporarily impacted as a result of excavation /trenching or other ground disturbing activities associated with the installation of utilities shall be restored to previous contours and elevations prior to the application of seed and mulch material.

PART 2 - PRODUCTS

2.1 SEED

A. Seed mixture shall be as shown below or similar available mixture of no less than eight (8) wetland species each with a hydrophytic status of OBL or FACW. Any deviation from the seed mix presented in the table below must be approved by the COTR prior to the application of the seed.

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Percent of Mix</th>
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</thead>
<tbody>
<tr>
<td>Virginia Wild Rye</td>
<td><em>Elymus virginicus</em></td>
<td>20%</td>
</tr>
<tr>
<td>Sensitive Fern</td>
<td><em>Onoclea sensibilis</em></td>
<td>12%</td>
</tr>
<tr>
<td>Fox Sedge</td>
<td><em>Carex vulpinoidea</em></td>
<td>11%</td>
</tr>
<tr>
<td>Giant Bur Reed</td>
<td><em>Sparganium eurycarpum</em></td>
<td>8%</td>
</tr>
<tr>
<td>Blue Vervain</td>
<td><em>Verbena hastate</em></td>
<td>7%</td>
</tr>
<tr>
<td>Nodding Bur</td>
<td><em>Marigold Bidens cernua</em></td>
<td>6%</td>
</tr>
<tr>
<td>Wool Grass</td>
<td><em>Scirpus cyperinus</em></td>
<td>6%</td>
</tr>
<tr>
<td>Tearthumb</td>
<td><em>Polygonum arifolium</em></td>
<td>5%</td>
</tr>
<tr>
<td>Eastern Bur Reed</td>
<td><em>Sparganium americanum</em></td>
<td>5%</td>
</tr>
<tr>
<td>Flat Topped/Umbrella Aster</td>
<td><em>Aster umbellatus</em></td>
<td>4%</td>
</tr>
<tr>
<td>Soft Rush</td>
<td><em>Juncus effusus</em></td>
<td>4%</td>
</tr>
<tr>
<td>Common Milkweed</td>
<td><em>Asclepias syriaca</em></td>
<td>3%</td>
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<tr>
<td>Cosmos Sedge</td>
<td><em>Carex comosa</em></td>
<td>3%</td>
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<tr>
<td>Lurid Sedge</td>
<td><em>Carex lurida</em></td>
<td>3%</td>
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<tr>
<td>Hop Sedge</td>
<td><em>Carex lupulina</em></td>
<td>2%</td>
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<tr>
<td>Fringed Sedge</td>
<td><em>Carex crinita</em></td>
<td>1%</td>
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</tbody>
</table>

2.2 MULCH
   A. Mulch will be clean straw, free of noxious weed seed or other objectionable materials.

2.3 TOPSOIL
   A. The topsoil shall be the existing surface soil stripped and stockpiled onsite.

PART 3 - EXECUTION

3.1 SEEDING AND MULCHING
   A. Seeding will be accomplished between 15 April and 15 October. Seeding time other than the above shall require the approval of the Engineer.

3.2 APPLICATION
   A. Seed shall be thoroughly mixed and evenly sown at a rate of 15 bulk lb/acre over the prepared areas. Seed may be sown hydraulically. A thin layer of straw mulch will be applied immediately following seeding unless the seed mixture is applied by hydroseeding and a suitable mulch material is incorporated into the seed mix. Soil amendments (e.g., fertilizers, pH adjusters, etc.) shall not be incorporated into the seedbed.

   B. Mulching material shall be evenly placed over all seeded areas

3.3 WATERING SEED
   A. Watering shall be started immediately after completing the seeding of an area. After initial watering, water shall be applied to supplement rainfall at a rate sufficient to ensure moist soil conditions to a minimum 1-in. depth. Run-off and puddling shall be prevented. Watering trucks shall not be driven over seeded areas.

END OF SECTION 327200
To edit the attached specifications, the hidden text option must be enabled. This allows the specifications editor to view instructions throughout each specification section.
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Instructions to the Editor are found in the following locations:

**Specification 327300 – Wetlands Permit Requirements**
Before Part 1 – General
Before 1.3 C
PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings, Contract Provisions, Special Provisions, Supplementary Conditions, other Division 01 Specification Sections, apply to this Section. The following governmental requirements apply to this Section:

1. U.S. Army Corps of Engineers - Permit pursuant to Section 404 of the Clean Water Act.
2. Commonwealth of Virginia - Department of Environmental Quality - Virginia Water Protection Permit pursuant to the State Water Control Law and Section 401 of the Clean Water Act.

B. The necessary permits obtained by the Authority are included as part of the contract documents.

1.2 SUMMARY

A. This Section includes the following:

1. Work necessary to fulfill the requirements of the U.S. Army Corps of Engineers. These requirements pertain to work in the waters of the United States, namely Cub Run, Horsepen Run, Indian Creek and Dead Run.
2. Work necessary to fulfill the requirements of the Commonwealth of Virginia, Department of Environmental Quality. Specifically the Virginia Water Protection Permit issued pursuant to the State Water Control Law and Section 401 of the Clean Water Act.

B. Related Sections include the following:

1. Division 00 Section “Supplementary Conditions” for additional information for environmental protection.
2. Division 01 Section “Submittals” for submittal requirements of written reports.
3. Division 01 Section “Photographic Documentation” for Field Quality Control photographs.
4. Division 01 Section “Quality Requirements” for quality control.
5. Division 32 Section “Wetland Restoration” for restoration requirements.
6. Division 31 Section “Site Clearing” for topsoil stripping and stockpiling.
7. Division 31 Section “Dewatering” for lowering and disposing of ground water during construction.
8. Division 31 Section “Storm Water Pollution Prevention” for erosion and sedimentation control.

1.3 REFERENCES
B. Code of Virginia, Water Statutes, Chapter 2, Section 62.1-10
C. Clean Water Act, Section[s] 401 [and 404]
D. [The Rivers and Harbor Act of 1899, Section 10]
E. [Marine Protection, Research and Sanctuaries Act of 1972, Section 103]
F. State Water Control Law
G. Virginia Wetlands Act

1.4 QUALITY ASSURANCE
A. General Conditions
   1. Maintain the activity authorized by the permit in good condition and in conformance with the terms and conditions of the permit.
   2. Allow representatives from the Department of the Army, Norfolk District, Corps of Engineers to inspect the work at any time it is deemed necessary by the Corps of Engineers office to ensure that the work has been accomplished in accordance with the terms and conditions of the permit.
   3. On discovery immediately report to the COTR any fish kills or petroleum product spills.

1.5 SUBMITTALS
A. Construction Monitoring Report
B. Water Quality Report
C. Qualifications of laboratory to be used for testing water quality samples.

1.6 PROJECT CONDITIONS
A. Project Requirements
1. Do not disturb wetlands during construction. Minimize to the maximum extent practicable temporary disturbances to wetlands that are unavoidable during construction. Stabilize, restore to pre-construction conditions, and plant or seed with matching pre-disturbance wetland vegetation according to cover type (emergent, scrub/shrub, or forested) within 30 calendar days of disturbance. Refer to Division 32 Section “Wetlands Restoration Seeding” for additional information. Take all necessary measures to promote re-vegetation of temporarily disturbed wetland areas with wetland vegetation by the second year post-disturbance. Remove all temporary fills in their entirety and the affected area returned to pre-existing contours.

2. Place all materials (including fill, construction debris, excavated and woody materials) temporarily stockpiled in wetlands on mats or geotextile fabric, immediately stabilized to prevent entry in surface waters, managed such that leachate does not enter surface waters, and entirely removed within 30 days following completion of that construction activity. Return disturbed areas to original contours, stabilized within 30 days following removal of the stockpile, and restored to the original vegetated state.

3. Fill material shall consist of suitable material as specified in other sections or as directed by COTR.

4. Accomplish all construction, construction access (for example, cofferdams, sheet piling, and causeways), and demolition activities associated with the project in a manner that will prevent all construction or waste materials from entering surface waters.

5. Prohibit untreated storm water runoff from directly discharging into any surface waters.

6. No machinery may enter surface waters unless authorized by the permit/contract.

7. Prohibit wet or uncured concrete from entry into surface waters.

8. Clearly flag or demarcate all non-impacted surface waters within the project right-of-way limits that are within fifty feet of any project activities for the life of the construction activity within that area. The COTR will notify all contractors and subcontractors that these marked areas are surface waters where no activities are to occur.

9. Maintain continuous flow of perennial springs by the installation of spring boxes, French drains, or other similar structures.

10. Use and maintain in effective operating condition during construction appropriate erosion and siltation controls, and permanently stabilized at the earliest practicable date all exposed soil and other fills, as well as any work below the ordinary high water mark.

11. Conduct work performed under the permit in a manner so as to minimize any degradation of water quality and/or damage to aquatic life. Take precautions and employ measures to prevent spills of petroleum products from entering the waterway.

12. Place on mats or use other measures to support heavy equipment working in wetlands or temporarily impacted surface waters to minimize soil disturbance.

13. Failure to comply with the terms and conditions of the permit will result in financial penalties against the Contractor.

14. Place fill so as to minimize disturbance of the bottom or turbidity increases in the water that tend to degrade water quality and damage aquatic life.
PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 Standard Project Conditions

A. Include in construction schedule the start date and end date of work authorized by the permit prior to commencement of any work,

B. Execute work in a manner to eliminate any adverse impact on stream beneficial uses, as defined in Paragraph 62.1 – 10(b) of the Code of Virginia, Virginia DEQ Water Programs.

3.2 Field Quality Control

A. Division 01 Section “Quality Requirements” specifies the general requirements for the contractor’s quality control program.

B. Submit a Construction Monitoring Report to the COTR biannually, by April 15 and October 15, for the life of the permit or until construction activities are complete to document the progress of construction activities authorized by the permit. Construction Monitoring Reports shall include, but are not limited to, the following:

1. A written narrative stating whether work was performed, a description of the work performed at each impact area, when the work was initiated, and expected date of completion; a summary of activities conducted to comply with the permit conditions; a summary of permit non-compliance events or problems encountered, subsequent notifications, and corrective actions; a summary of anticipated work to be completed during the next reporting period; and an estimated date of project completion.

2. Dated monitoring photographs showing representative construction activities including, but not limited to, flagging non-impacted wetland areas, site grading, roadway and parking lot/garage construction, storm water management/best management practice facility construction and culvert installation. Take representative photographs pre-construction, during construction, and upon completion of construction from photographic monitoring points selected by the COTR. Monitoring points shall remain the same throughout the entire construction process. The photographic monitoring points shall be identified on a plan view map submitted with the first construction report. Refer to Division 01 Section “Photographic Documentation” for additional information of photographic requirements.

3. Each photograph shall be labeled to include the following information:

   a. Permit number
   b. Impact area
   c. Photo monitoring point number
   d. Date and time of the photograph
   e. Name of the person taking the photograph
   f. Photograph orientation
   g. Photograph subject description.
4. Provide 10 photographs per month for documentation.
5. Refer to Division 01 Section “Photographic Requirements”.

C. Conduct monitoring of water quality parameters during rerouting of flowing streams through the new channels in the following manner:

1. Locate a sampling station upstream and immediately downstream of the relocated channel.
2. Take Temperature, pH and dissolved oxygen (D.O.) measurements once every half-hour for at least three readings at each station prior to opening the new channels.
3. After opening the new channel, take temperature, pH and D.O. readings once every half-hour for at least three readings at each station within 24 hours of opening the new channel.
4. Submit data to COTR within seven calendar days of completing the activity.


END OF SECTION 327300
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Instructions to the Editor are found in the following locations:

**Specification 329200 – Turf and Grasses**

Before 1.2 A
Before 1.2 B
Before 1.2 C
Before 1.2 D
Before 1.3 D
Before 1.4 A
Before 1.6
Before 2.1
Before 2.2 A
Before 2.2 A. 1
Before 2.2 B
Before 2.4
Before 3.1 C. 2
Before 3.3
Before 3.4
Before 3.4 D
Before 3.4 F
Before 3.5
Before 3.5 A
Before 3.5 B
Before 3.6
Before 3.6 C
Before 3.8 B. 1
Before 3.8 F. 4
Before 3.9 B
Before 3.10 D
SECTION 329200 – TURF AND GRASSES

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

Modify paragraph below to suit project.

A. This Sections subsoil scarification, topsoil placement, application of soil amendments, final grading, fertilizing, turf seeding, mulching, and initial irrigation for the areas indicated on Drawings.

Delete or modify two paragraphs below to suit project requirement.

B. This Section also includes removing of topsoil from designated stockpiles, areas to be stripped on the site or from approved sources off the site and subsequent transporting of topsoil to area of placement on site.

Include relevant related sections. Sections that require general excavation, filling, or rough grading in areas to receive grass.

C. Related Sections:

1. <Insert Related Sections>

Retain one paragraph below as applicable. Coordinate with other "topsoil" requirements in this Section.
D. Topsoil has been (or will be) stockpiled for reuse in turf and grass areas. If quantity of stockpiled topsoil is insufficient, provide additional topsoil to complete turf and grass areas. Delete above and retain below if known that required quantity of suitable topsoil will not be available from stripping of site.

E. Sufficient topsoil for indicated turf areas is not available at site. Furnish additional topsoil from approved offsite source as specified under "Products", below.

1.3 SUBMITTALS

A. Submit the following to COTR in accordance with requirements of Division 01 Section, "Submittals."

B. Certification of Grass Seed: Seed vendor's signed statement of turf seed analysis, certifying that each lot of seed has been tested in accordance with requirements of the Commonwealth of Virginia within the previous 6 months by a recognized independent seed testing laboratory. This statement shall include:

1. Name and address of laboratory.
2. Date of analysis.
3. Origin and lot number for each type of seed variety.
4. Results of analysis, including, for each seed variety:
   a. Botanical and common name (species and variety).
   b. Percentage by weight of variety in overall mixture.
   c. Percentage of purity.
   d. Percentage of germination.
   e. Percentage by weight of weed content.
   f. Percentage by weight of inert content.

C. Topsoil Analysis Report: Report of analysis by an Authority approved soil testing laboratory stating percentages of silt, clay, sand and organic matter, soil pH, and the mineral and plant nutrient content of soil. Report shall indicate suitability of topsoil for healthy, vigorous growth of turf grasses. If not suitable, include recommended quantities for nitrogen, phosphorus, potash, limestone, aluminum sulphate, or other soil amendments that shall be added to make topsoil suitable.

Delete below if no sod required.

D. Sod Analysis: Notify COTR of sod source, including name and telephone number of supplier, and provide certification of seed mix of sod in accordance with sod certification requirements of the Commonwealth of Virginia.

1.4 PROJECT CONDITIONS

Modify permissible planting periods below as required or if sod is included

A. Planting time: Sow permanent seed in all areas of project in periods between March 15 to May 15, or between August 15 and October 1 unless otherwise approved in writing by the COTR.
B. Maintenance period: Correlate planting with specified maintenance periods to provide required maintenance from date of substantial completion.

1.5 SPECIAL PROJECT WARRANTY

A. Warranty turf areas through specified maintenance period and until final acceptance.

Guarantee periods longer than maintenance period are not feasible for turf. Retain article below if payment on a unit price basis is applicable (vs. lump sum).

1.6 MEASUREMENT AND PAYMENT

A. The quantity of seeding to be paid to the Contractor shall be paid based on the quantity of seeding completed by the number of completed and accepted acres, as measured on the ground surface.

B. Payment shall be made at the Contract Unit Price per acre or fraction thereof, which price and payment shall be full compensation for furnishing and placing all materials and for all labor, equipment, tool, and incidentals necessary to complete the work prescribed in this Section.

PART 2 - PRODUCTS

Materials compatible with northern Virginia climate and soil conditions are listed in paragraphs below. Modify or insert other materials as required to accommodate unique, site-specific conditions.

2.1 NEW TOPSOIL

A. Fertile, friable, naturally loamy, surface soil; free of subsoil, clay lumps, brush, weeds, and other litter; and free of roots, stumps, stones larger than 2 inches in any dimension, and other extraneous or toxic matter harmful to plant growth.

B. When tested in accordance with the methods of testing as recommended by the Association of Official Agricultural Chemists topsoil shall have a pH range of 5.5 to 7.6. Organic content shall not be less than 3 percent or more than 20 percent as determined by the wet-combustion method (chromic acid reduction). Not less than 20 percent or more than 80 percent of the topsoil material shall pass the 200 - mesh (0.075 mm) sieve, as determined by the wash test in accordance with ASTM C 117.

1. Natural topsoil may be amended by the Contractor with approved materials and methods to meet above requirements.

C. Obtain topsoil from local sources or from areas having similar soil characteristics to that found at site of work. Obtain topsoil from naturally well-drained sites where topsoil occurs at least 4 inches deep. Obtaining topsoil from bogs or marshes is prohibited.

2.2 SOIL AMENDMENTS

Below commonly used to neutralize acid soils. Coarser grinds are acceptable if application rate is increased.
A. Lime: Natural limestone, conforming to requirements of ASTM C 602, and containing at least 85 percent of total carbonates ground to such fineness that at least 90 percent passes a 10-mesh sieve and at least 50 percent passes a 100-mesh sieve.

Below also provides magnesium. Delete if not available or if not required.

1. Provide lime in form of dolomitic limestone.

Delete peat humus requirements below and insert requirements for other humus materials if preferred and if available.

B. Peat Humus: Finely divided or granular texture and with pH of 6.0 to 7.5 composed of moss peat (other than sphagnum), peat humus, or reed-sedge peat.

2.3 FERTILIZER

A. Complete, 10-20-10 commercial fertilizer of neutral character, with some elements derived from organic sources, conforming to requirements of Federal Specification O-F-241d and applicable laws of the Commonwealth of Virginia. Fertilizer to provide nitrogen in a form that will be available during initial period of turf growth.

Seed mix composition shall be according to the most current version of the Authority Design Manual

2.4 GRASS SEED MIXTURE

A. Grass Seed: Provide fresh, clean, new-crop seed complying with tolerance for purity and germination established by Official Seed Analysts of North America for lawn grasses. Seeds included in the mix shall be listed in the most current version of the Virginia Turfgrass Variety Recommendations. Seed mixtures shall be a blend of three standard varieties with no dwarf and shall consist of the following (by weight):

- 10% Kentucky Bluegrass
- 80% Tall Fescue
- 10% Perennial Rye

2.5 SOD

A. Machine-cut, strongly rooted, certified turfgrass sod, at least 2 years old and free of weeds and undesirable native grasses. Provide sod capable of vigorous growth and development when planted (viable, not dormant) and complying with the following requirements:

1. Type: Kentucky Bluegrass (Poa pratensis).

B. Sod Pad Size: Uniform thickness of 5/8 inch, plus or minus 1/4 inch, measured at time of cutting and excluding top growth and thatch. Provide in supplier's standard size of uniform length and width with maximum 5 percent allowable deviation in either length or width. Broken or torn pads or pads with uneven ends are not acceptable.
C. Sod Strength: Provide sod pads capable of supporting their own weight and retaining size and shape when supplier's standard size pad is suspended vertically from a firm grasp on upper 10 percent of the pad.

2.6 MULCH

A. Anti-Erosion Mulch: Clean, salt hay or threshed straw of wheat, rye, oats or barley. Mulch to be air-dry and free of mold and seeds of noxious grasses or weeds.

B. Seed Mulch: Peat moss in natural, shredded, or granulated form, of fine texture, with a pH of 4.0 to 6.0 and a water absorbing capacity of 1,100 to 2,000 percent.

PART 3 - EXECUTION

3.1 SOIL PREPARATION

A. Limit preparation to areas that will be planted within 72 hours.

B. Till sub grade to a minimum depth of 6 inches. Remove stones exceeding 2 inches in any dimension and sticks, roots, rubbish, and other extraneous matter including gravel or other inorganic deposits in excess of 4 stones per square foot (average).

1. Immediately after initial tilling, remove existing grass clumps, vegetation, and turf. Dispose of such material outside of Owner's property; do not turn over into soil being prepared for turfs.

2. Maintain grades in a true and even condition where grades to be provided with topsoil have been established by others.

3. Where grades have not yet been established, smooth-grade the areas to the prescribed elevations indicated and leave in a condition that is properly compacted and evenly graded to prevent formation of low areas where water may pond.

C. Spread topsoil mixture to depth required meeting thickness, grades, and elevations shown, after light rolling and natural settlement.

1. Provide minimum depth of 2 inches (50 mm) after compaction, unless otherwise indicated. Do not spread if either topsoil material or sub grade is frozen.

Delete below if no sodded turf areas.

2. Clean topsoil of roots, plants, sods, stones, clay lumps, and other extraneous materials harmful or toxic to plant growth.

3. Allow for sod thickness in areas to be sodded.

D. Add soil amendments to top surface of topsoil at rates specified and spread initial fertilizers at rate of 1500 lbs. per acre of topsoil.

1. Mix lime with dry soil before mixing in fertilizer.

2. Mix thoroughly into top 4 inches of topsoil prior to fine-grading.
3. Do not mix fertilizer with topsoil more than 72 hours in advance of seeding or sodding operations.
4. Till soil to a homogenous mixture of fine texture, free of lumps, clods, stones, roots, and other extraneous matter.

E. Fine-grade to a smooth, even surface with loose, uniformly fine texture. Roll and rake, remove ridges, and fill depressions to meet finish grades. After compaction rolling, leave surfaces at prescribed grades with uniform slope to drain and free from low areas where water might pond. Limit fine-grading to areas that can be planted within 72 hours. Remove trash, debris, stones larger than 2 inches in diameter, and other objects that may interfere with planting or maintenance operations.

F. Promptly remove topsoil or other materials falling on pavement as result of hauling or spreading of topsoil.

3.2 SEEDING

A. Restore prepared turf areas to specified condition if eroded or otherwise disturbed after fine-grading and before planting.

B. Moisten prepared turf areas before planting if soil is dry. Water thoroughly and allow surface to dry off before seeding operations. Do not create muddy soil.

C. Sow seed with a spreader or a seeding machine. Do not seed when wind velocity exceeds 5 miles per hour. Distribute seed evenly over entire area by sowing equal quantity in 2 directions at right angles to each other.

1. Do not use wet seed or seed that is moldy or otherwise damaged in transit or storage.
2. Sow no less than the quantity of seed specified.

D. Rake seed lightly into top 1/8 inch of soil, roll lightly, and water with fine spray.

Delete the article below if "hydroseeding" is not permitted. Delete article above and retain below if hydroseeding desired in lieu of dry broadcast seeding.

3.3 HYDROSEEDING

A. Mix specified seed, fertilizer, and pulverized mulch in water, using equipment specifically designed for hydroseed application. Continue mixing until uniformly blended into homogenous slurry suitable for hydraulic application.

B. Apply slurry uniformly to all areas to be seeded. Rate of application as required obtaining seed application rate equivalent to 6 pounds per 1000 sq. ft. (260 lbs. per acre).

Delete article below if no sodded areas.
3.4 SODDING

A. Lay sod within 24 hours of stripping. Do not lay dormant sod or if ground is frozen.

B. Lay sod to form solid mass with tightly fitted joints. Butt ends and sides of sod strips; do not overlap. Stagger strips to offset joints in adjacent courses. Work from boards to avoid damage to sub grade or sod.

C. Tamp or roll lightly to ensure contact with sub grade. Work sifted soil into minor cracks between pieces of sod; remove excess to avoid smothering adjacent grass.

Delete below if no slopes beyond 1:6.

D. Anchor sod on slopes with wood pegs as required to prevent slippage.

E. Water sod with fine spray immediately after planting. During first week, water daily or more frequently as necessary to maintain moist soil to depth of 4 inches.

Delete below if sodded area not exposed to jet blast.

F. The contractor shall secure sod from movement by water and jet blast. As a minimum, all sod shall be stapled as indicated. The gauge of the staple shall be sized to accommodate soil conditions and staple length. The staples shall be driven flush with the surface of the sod.

Coordinate mulches that follow below with previous selections in Part 2. Delete if not required.

3.5 MULCHING

Retain below if any slopes over 1:6 and add netting to Part 2 of this Section.

A. Protect seeded slopes against erosion with jute mesh erosion netting or other similar coverings acceptable to COTR.

Insert geo-textile fabric for severe erosion conditions (drainage swales, etc.)

Normally retain below for broadcast seeded areas. Below is based on peat moss; revise for other types of mulch and possibly delete if hydroseed application used.

B. Protect seeded areas against hot, dry weather or drying winds by applying specified mulch within 24 hours after completion of seeding operations. Presoak and scatter evenly to a depth of 1/8 inches to 3/16 inches thick and roll to a smooth surface. Do not mound.

Modify below as required.

3.6 RECONDITIONING EXISTING TURF AREAS

A. Recondition turf areas where settlement or washouts occur or where minor re-grading is required.
B. Recondition existing turf areas damaged by Contractor’s operations including storage of materials or equipment and movement of vehicles.

Delete below if none shown on drawings.

C. Recondition other existing turf areas as indicated.

D. Provide fertilizer, seed or sod, and soil amendments same as specified for new turf areas and as required to provide healthy stand of grass in reconditioned areas. Provide new topsoil as required to fill low spots and meet required finish grades.

E. Remove diseased or unsatisfactory grass clumps; do not bury into soil. Remove topsoil containing foreign materials resulting from Contractor’s operations including oil drippings, stone, gravel, and other construction materials; replace with new topsoil.

F. Where substantial turf remains (but is thin), mow, rake, aerate if compacted, fill low spots, remove humps, cultivate soil, apply lime, fertilizer, and sow specified seed at rate indicated. Remove weeds before seeding. If weeds are extensive, apply selective chemical weed killers as required. Apply seedbed mulch, if required, to maintain moist condition.

G. Water newly planted areas and keep moist until new grass is established.

3.7 PROTECTION

A. Erect barricades and warning signs as required to protect newly planted areas from traffic. Maintain barricades throughout the maintenance period. Maintain barricades until a substantial and healthy stand of grass is established.

B. Take necessary precautions as required to avoid damage to existing plants, turf, and structures.

3.8 MAINTENANCE

A. Obtain the services of a professional lawn and landscape firm to provide the required maintenance services of this Article. Do not use Contractor’s own forces to accomplish this maintenance.

B. Begin maintenance of grass areas immediately after each area is planted and continue for the periods required to establish acceptable stand of turf grass, but no less than the following:

Delete inapplicable type of turf below.

1. Seeded areas, at least 60 days, after date of Substantial Completion.
   a. If seeded in fall after September 1, provide minimum of 30 days maintenance in fall, and provide a minimum of 45 additional days continuing maintenance during following spring until acceptable turf is established.

2. Sodded areas, at least 30 days after date of Substantial Completion.
C. Maintain turf areas by watering, fertilizing, weeding, mowing, trimming, and other operations such as rolling, re-grading, and replanting as required to establish a smooth, acceptable turf, free of eroded or bare areas.

D. Re-mulch with new mulch in areas where mulch has been disturbed by wind or maintenance operations sufficiently to nullify its purpose. Anchor as required preventing displacement.

E. Replant bare areas with same materials specified for new turf.

F. Watering: Provide and maintain temporary piping, hoses and watering equipment to convey water from Authority's water source(s) location indicated and to keep turf areas uniformly moist as required for proper growth. Design temporary watering system to provide a minimum of 3/4 inch of water per day.
   1. Lay out temporary watering system and arrange watering schedule to prevent puddling, water erosion, and displacement of seed or mulch. Lay out temporary watering system to avoid necessity of walking over muddy or newly seeded areas.
   2. Begin watering immediately. Water on a daily basis for the following 10 days. Apply water uniformly, providing coverage over entire site nominally equivalent to 3/4 inches of rainfall per day. Reduce rate to nominal 1/2 inch of water per day after 5 days.
   3. At end of initial 10-day period, remove temporary irrigation system. Continue watering with conventional sprinkler watering system on an as-needed basis.

Delete following if area to be watered does not fall within safety zones for airfield pavement.

   4. Watering of areas within Runway/Taxiway/Apron Safety Zones shall be coordinated with COTR and Airport Operations. Watering of these areas shall be done during hours of restricted aircraft activity.

G. Mow grass as soon as there is 3 - 4 inches of top growth, cut grass with the mower blades set at 1-1/2" to 2" height. Repeat mowing as required to maintain specified height.
   1. Remove no more than 40 percent of grass leaf growth in initial or subsequent mowings. Do not delay mowing until grass blades bend over and become matted. Do not mow when grass is wet. Time initial and subsequent mowings to maintain following grass heights.
      a. Mow grass from 1-1/2 inches to 2 inches high. Do not mow to less than 1-1/2 inches.
   2. Apply second fertilizer application after first mowing and when grass is dry. Use fertilizer that will provide at least 1.0 lb. of actual nitrogen per 1,000 sq. ft. of turf area.

3.9 ACCEPTANCE

   A. When work is substantially completed, including maintenance, COTR will, upon request, make an inspection to determine acceptability.

Consider retention of below for large sites and/or sites where construction schedule may require phased planting. Delete if not applicable or desired.
B. Turf work may be inspected for acceptance in parts agreeable to the COTR, provided work offered for inspection is complete, including maintenance.

C. Replant rejected work and continue specified maintenance until re-inspected by COTR and found to be acceptable.

D. Seeded areas will be acceptable provided requirements, including maintenance, have been met and healthy, uniform close stand of specified grass has been established with an average of one healthy grass plant per square inch, free of weeds, with no bare spots in excess of 5 inches in diameter, and free of surface irregularities.

E. Sodded areas will be acceptable provided requirements, including maintenance, have been met and healthy, well-rooted, even-colored, viable turf has been established, free of weeds, open joints, bare areas, and surface irregularities.

3.10 CLEANUP

A. Promptly remove soil and debris created by turf work from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto surface of paved areas.

B. Maintain all areas neat and clean during seeding operations. On a daily basis, remove excess materials and debris to site location designated by COTR. At completion of Work, remove all such materials from site and dispose of in a legal manner.

C. Restore any damage caused by seeding operations to original condition.

Delete the following note if not applicable.

D. Remove all staples form sodded areas, upon acceptance.

END OF SECTION 329200
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Instructions to the Editor are found in the following locations:

**Specification 331116 – Site Water Utility Distribution Piping**
Before 2.3 A. 2
Before 2.5 A. 1
Before 2.5 A. 2
Before 2.6
Before 3.11 B. 2. a
PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes materials, methods, accessories and labor necessary to completely execute piping and specialties for the installation of underground, potable water distribution systems and water services.

1.3 SYSTEM PERFORMANCE REQUIREMENTS

A. Minimum Working Pressures: The following are minimum pressure requirements for piping unless otherwise indicated:


1.4 SUBMITTALS

A. Submittals shall be in accordance with the requirements of Division 01 Section “Submittals”.

B. Product Data and Shop Drawings: For the following:

1. Pipe and fittings
2. Valves and valve boxes
3. Post indicator valves and sectional valves
4. Fire hydrants
5. Service hardware
6. Meters
7. Pipe warning and identification tape.
C. Coordination Drawings: For piping and specialties including relation to other services in same area. Show piping and specialty sizes and valves, meter and specialty locations, and elevations.

D. Record Drawings: At Project closeout of installed domestic and fire protection water service piping according to Division 01, Section “Closeout Procedures.”

E. Purging and Disinfecting Reports.
   1. Maintenance Data: For specialties to include in the maintenance manuals specified in Division 01 Section "Operation and Maintenance Data" include data for the following:
      a. Valves
      b. Fire Hydrants

   2. Prepare and submit data for the Operation and Maintenance manual in accordance with the provisions of Section “Operation and Maintenance Data.”

F. Contractor Certification of Work: Upon completion of work on the Facility Water Distribution System, submit a statement signed by a professional engineer, licensed to practice in the Commonwealth of Virginia, stating that the work was completed in accordance with the approved drawings and the approved specifications.

1.5 QUALITY ASSURANCE

A. Product Options: Drawings indicate size, profiles, and dimensional requirements of water service piping specialties and are based on specific types and models indicated.

B. Comply with standards of authorities having jurisdiction and appropriate NFPA Standards for fire-protection water service piping including materials, hose threads, installation, and testing.

C. Comply with NFPA 24, "Installation of Private Fire Service Mains and Their Appurtenances," for materials, installations, tests, flushing, and valve and hydrant supervision.

D. Comply with NFPA 24 for pipe laying, coating and lining, protection against freezing and damage, and restraining.

E. Comply with ANSI/AWWA C600 “Installation of Ductile Iron Water Mains and Their Appurtenances.”

1.6 DELIVERY, STORAGE, AND HANDLING

A. Preparation for Transport: Prepare valves and fire hydrants according to the following:
   1. Ensure that valves and hydrants are dry and internally protected against rust and corrosion.
   2. Protect valves against damage to threaded ends and flange faces.
   3. Set valves in best position for handling. Set valves closed to prevent rattling.

B. During Storage: Use precautions for valves and hydrants according to the following:
   1. Do not remove end protectors, unless necessary for inspection; then reinstall for storage.
2. Protect from weather. Store indoors and maintain temperature higher than ambient dew-point temperature. Support off the ground or pavement in watertight enclosures when outdoor storage is necessary.

C. Handling: Use sling to handle valves whose size requires handling by crane or lift. Rig valves to avoid damage to exposed valve parts. Do not use hand wheels or stems as lifting or rigging points.

D. Deliver piping with factory-applied end-caps. Maintain end-caps through shipping, storage, and handling to prevent pipe-end damage and to prevent entrance of dirt, debris, and moisture.

E. Protect stored piping from moisture and dirt. Elevate above grade. Do not exceed structural capacity of floor when storing inside.

F. Protect flanges, fittings, and specialties from moisture and dirt.

1.7 SITE CONDITIONS

A. Perform site survey, research Authority utility records, and verify existing utility locations. Contact utility-locating service for area where Project is located.

B. Verify that water-service piping may be installed to comply with original design and referenced standards.

C. Interruption of Existing Water-Distribution Service: Do not interrupt service to facilities occupied by the Authority or tenants unless permitted by procedures indicated in Division 01 Section "Summary". Do not proceed with interruption of water-distribution service without COTR's written permission.

1.8 SEQUENCING AND SCHEDULING

A. Coordinate connections to existing water mains with COTR.

B. Coordinate with other utility work.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include the following:

1. Gate Valves:
   a. Mueller Company

2. Fire Hydrants:
a. Mueller Company

3. Valve Box:
   a. Shall be compatible with Mueller Company valves.

4. Reduced Pressure Back-flow Prevention Assembly:
   a. Watts

5. Double Check Back-flow Prevention Assembly:
   a. Watts

6. Water Meter:
   a. Badger

2.2 PIPES

A. Pipe greater than 3-inch diameter shall be cement lined ductile iron, Class 52 with push-on joints, manufactured in accordance with the requirements of ANSI/AWWA C111/A21.11 for /A21.51. Push-on joints for such pipe shall be in accordance with ANSI/AWWA C111/A21.11 “Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.” Pipe thickness shall be designed in accordance with ANSI/AWWA C150/A21.50 “Thickness Design of Ductile-Iron Pipe,” and shall be based on laying conditions and internal pressures as stated in the project plans and specifications.

B. Mechanical joint fittings and retainer glands shall be ductile iron in accordance with applicable requirements of ANSI/AWWA C110/A21.10 and AWWA C153.

C. Mechanical joint fittings shall be Griffin Class 52 or as approved by the Authority.

D. Push-on joints ductile iron claw “Super Lock Joints” for such fittings shall be in accordance with ANSI/AWWA C111/A21.11.

E. Cement mortar lining and seal coating for pipe and fittings shall be in accordance with ANSI/AWWA C104/A21.4. Asphaltic outside coating shall be in accordance with ANSI/AWWA C151/A21.51 for pipe and ANSI/AWWA C110/A21.10 or ANSI/AWWA C153/A21.53 for fittings.

F. 2½” and smaller copper pipe shall be seamless, type K and meet requirements of ASTM B88. Fittings shall be cast copper alloy pressure fitting per ASME B16.18 or wrought copper and copper alloy pressure fitting per ASME B16.22.

G. Copper-to-copper couplings shall be those couplings known as two-part type. The two-part type coupling consists of a tubing connection, a coupling nut and a friction ring. The copper tube end of the couplings shall be the flare type for connecting to type K copper service pipe. The opposite end, and all couplings nuts shall be threaded in accordance with AWWA C800. Brazed joints are permitted with lead free silver alloy filler metal.
2.3 JOINING MATERIALS

A. Flanged Ductile-Iron Piping: The following materials apply:

1. Flanged Joints: AWWA C115 ductile-iron or gray-iron pipe flanges, rubber gaskets, and high-strength steel bolts and nuts.

In areas where jet fuel or other contamination sources may be present in the ground, the A/E shall consider using gaskets resistant to these contaminants. An example of this is Nitrile (NBR) (Acrylonitrile Butadiene)

2. Gaskets: Rubber, flat face, 1/8 inch thick, unless otherwise indicated; and full-face or ring type, unless otherwise indicated.
3. Flange Bolts and Nuts: ASME B18.2.1, carbon steel, unless otherwise indicated.

2.4 VALVES

A. Non-rising-Stem, High-Pressure, Resilient-Seated Gate Valves, 3-Inch NPS and Larger: UL Listed, FM Approved, AWWA C509, ductile-iron body and bonnet; with bronze or ductile-iron gate, resilient seats, bronze stem, and stem nut. Include 250-psig minimum working-pressure design, 400 psig test pressure interior coating according to AWWA C550, and mechanical-joint ends. All valves shall be standardized to close when turned in clockwise direction.

1. Valves shall be gate valves conforming to the American Water Works Association Standard C-500.

B. Valve Boxes: Cast-iron box with top section and cover with lettering “WATER,” bottom section with base of size to fit over valve and barrel approximately 5 inches in diameter, and adjustable cast-iron extension of length required for depth of bury of valve.

1. Provide steel tee-handle operating wrench with each valve box. Include tee handle with one pointed end, stem of length to operate valve, and socket-fitting valve-operating nut.

2.5 FIRE HYDRANTS

A. Post Fire Hydrants:

Use the following Sub Paragraph for projects at Washington Dulles International Airport. Delete the Sub Paragraph that references Ronald Reagan Washington National Airport.

1. The fire hydrants shall be manufactured by Mueller Company, Super Centurion model, Series A-423, three way with two 2.5" hose nozzles and one 4.5" pumper connection with a 5.25" main valve opening. All fire hydrants must be UL Listed and FM Approved. Threads shall meet National Standard Thread requirements. Hydrants shall be color coded as indicated below.

Use the following Sub Paragraph for projects at Ronald Reagan Washington National Airport. Delete the Sub Paragraph that references Washington Dulles International Airport.
2. Fire hydrants shall be American Darling, Type B-62-B, or Kennedy "Guardian" (dry-barrel) traffic model with break away bolts, with a 1½" operating nut, two 2½" hose nozzles and a 4½" pumper connection.

3. Fire hydrants may be factory painted using safety yellow (PPG 6-308). Field painting is permissible. Glass beads conforming to Federal Specification TT-B-1325, Type I - Gradation A, shall be applied in conjunction with the paint. Glass beads shall be treated with adhesion promoting and/or flotation coatings as specified by the manufacturer of the paint. Application rate: 4 pounds of glass beads per gallon of paint.

Use the following Sub Paragraph for projects at Ronald Reagan Washington National Airport. Delete the Sub Paragraph that references Washington Dulles International Airport.

2.6 IDENTIFICATION

A. Metallic-Lined Plastic Underground Warning Tapes: Polyethylene plastic tape with metallic core, 6 inches wide by 4 mils thick. Include solid blue background with continuously printed caption in black letters.

1. Caption “CAUTION--BURIED WATER LINE BELOW.”

PART 3 - EXECUTION

3.1 EARTHWORK

A. Refer to Division 31 Sections “Excavation Support and Protection” and “Earth Moving” for excavation, bedding, and back filling. Trenching shall be as indicated.

3.2 PIPING APPLICATIONS

A. General: Use pipe, fittings, and joining methods for piping systems according to the following applications:

1. Transition couplings and special fittings with pressure ratings at least equal to piping pressure rating may be used in applications below, unless otherwise indicated.
2. Do not use flanges for underground piping.
3. Exception: Piping in boxes and structures, but not buried, may be joined with flanges or keyed couplings instead of joints indicated.
4. Flanges and special fittings may be used on aboveground piping.

3.3 VALVE APPLICATIONS

A. Drawings indicate valve types and sizes to be used. Where specific valve types are not indicated, the following requirements apply:

1. Underground Valves, 3-Inch NPS and Larger: AWWA, gate valves, non-rising stem, with valve box.
3.4 JOINT CONSTRUCTION


C. Flanged Joints: Align flanges and install gaskets. Assemble joints by sequencing bolt tightening. Use lubricant on bolt threads.

3.5 PIPING SYSTEMS - COMMON REQUIREMENTS

A. Locations and Arrangements: Drawings indicate location and arrangement of piping systems. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated, unless deviations to layout are approved on Coordination Drawings.

B. Install piping at indicated slope.

C. Install components with pressure rating equal to or greater than system operating pressure.

D. Install piping free of sags and bends.

E. Locate groups of pipes parallel to each other, spaced to permit valve servicing.

F. Install mechanical joint fittings with Megalug, or as accepted by the Authority, retainer glands for changes in direction and branch connections. Megalug retainer glands shall be installed in accordance to the manufacturer’s instructions.

3.6 PIPING INSTALLATION

A. Water-Main Connection: Connect to existing water main with mechanical joints and valves at locations shown on the plans. Hot taps, wet taps, saddle taps or service taps are not permitted.

B. Contractor shall apply for utility outages as required by Division 01 Section "Summary" prior to interruption of water services when making connections to existing water mains.

C. Comply with NFPA 24 for fire-protection water-service piping materials and installation.

D. Inspect pipe for cracks and defects before lowering into the trench. Faulty pipe and fittings shall be removed from the site. Install ductile-iron piping according to AWWA C600.

E. Pipes shall be installed in accordance with the profiles and grades shown on the contract plans, with top at least 12 inches below level of maximum frost penetration. All pipe, fittings, valves and hydrants shall be carefully lowered into the trench in such a manner as to prevent damage to the materials, protective coatings and linings. Under no circumstances shall materials be dropped or dumped into the trench.

F. Connections to water mains shall be provided with full mechanical tees.
G. At the end of each work day, the installed water mains shall be protected so that line remains free of dirt, mud and debris. At the start of the next work day, the line shall be inspected for tracked dirt, mud and debris. All lines failing the inspection shall be removed, cleaned, and replaced to the satisfaction of the COTR.

3.7 VALVE INSTALLATION

A. General Application: Use mechanical-joint-end valves for 3-inch and larger underground installation.

B. AWWA-Type Gate Valves: Comply with AWWA C600. Install underground valves with stem pointing straight up and with cast-iron adjustable roadway valve box. All underground valves shall be gate valves.

3.8 FIRE HYDRANT INSTALLATION

A. Install fire hydrants of types and features indicated with fire hydrant tees.

3.9 PIPE IDENTIFICATION TAPE INSTALLATION

A. Install continuous plastic underground warning and identification tape during back-filling of trench for underground water piping. Place the tape 18 inches directly above the piping.

3.10 METER INSTALLATION

A. Water meter shall be installed according to manufacturer's recommendations. A permanent meter by-pass pipe and valve shall be provided to facilitate meter removal for maintenance or periodic testing without interruption of water service. Meters shall be installed horizontally for accuracy and easy reading.

3.11 PROTECTION OF WATER SUPPLIES

A. During the course of construction the Contractor shall take proper steps to protect the potable water supply facilities from contamination within the limits of construction.

B. The following criteria shall be used to govern the installation of water lines in proximity of other utilities considered to be sources of contamination. Sources of contamination included sanitary lines, combination sewers, sanitary manholes, storm water lines, fuel lines, and other utilities indicated or included in the Project Specifications.

1. Parallel Separation: Except as specified hereinafter or otherwise permitted by the COTR, water lines shall be laid at least 10 feet horizontally from existing or proposed sources of contamination. This distance shall be measured edge to edge. If local conditions prevent a lateral separation of 10 feet, then the top of the source of contamination shall be at least 18 inches below the bottom of the water lines. Where this vertical separation cannot be obtained, the source of contamination shall be sleeved, encased, or shall be constructed of
mechanical joint water pipe and pressure tested in place to 50 psi without leakage prior to backfilling.

2. Crossings: Water and the source of contamination lines crossing each other shall be laid to provide a separation of at least 18 inches between the bottom of the water line and the top of the source of contamination line. Where this vertical separation cannot be obtained, the source of contamination shall be encased in concrete for a minimum distance of 10 feet from the water line on each side of the crossing.

Maximum deflection of the supported line shall be determined by the Architect/Engineer and inserted.

a. Sources of contamination lines crossing over a water line shall, in addition, have a vertical separation of at least 18 inches between the bottom of the sewer and the top of the water line. The contractor shall provide adequate structural support for the sewer to prevent excessive deflection of the joints and settling on and breaking the water line. Deflection shall not exceed [Insert Number Here]. Also, the water line shall be installed in a watertight steel sleeve, sealed at each end at a distance of 10 feet from the source of contamination.

b. Water lines shall not pass through nor come in contact with any part of a source of contamination.

c. During the course of construction should the Contractor become aware that the work will result in the violation of the criteria herein the Contractor shall immediately notify the COTR. Upon such notification, the COTR will issue instructions of remedial measures.

3.12 TESTING

A. Piping Tests: Conduct piping tests before joints are covered. [For lines 24" and larger the joints may be backfilled prior to hydrostatic testing] Fill pipeline 24 hours before testing and apply test pressure to stabilize system. Use only potable water. Testing shall be completed prior to connection to the existing water mains.

B. Water mains, appurtenances and materials shall be tested for leakage after installation. Such testing shall be performed under the observation of the COTR. The Contractor shall provide all backflow device, hydrant double check, plugs, equipment, tools, labor, materials and incidentals necessary to perform the testing. Water for testing is provided by the Authority through existing hydrants. In the event any section of main under test shows leakage in excess of that specified, the Contractor shall, at no additional cost to the Authority, make such repairs or replacements as are required and testing shall be repeated until satisfactory results are obtained. All visible leaks shall be repaired regardless of the amount of allowable leakage.

1. Hydrostatic Tests shall be conducted in accordance with NFPA 24, Chapter 10.10 “Testing of Pipe” and the following:

   a. Test at not less than 225 psig pressure for 2 hours.
   b. Increase pressure in 50-psig increments and inspect each joint between increments. Hold at test pressure for one hour; decrease to 0 psig. Slowly increase pressure again to test pressure and hold for one more hour. The allowable pressure drop during a 2 hour test shall not exceed 0 psig. Remake leaking joints with new materials and repeat test until accepted.
2. In addition to hydrostatic test, the contractor shall meet requirements of the local water provider.

C. Contractor shall submit as-built documentation in the form of plan and profile to the COTR for review and approval at the close of business each day. The as-built documentation shall include horizontal and vertical alignment data of the constructed utility. Alignment data to be taken at 50 foot intervals and at alignment changes. Use the sample table at the end of this section for recording as-built conditions.

D. Prepare and submit reports for testing activities.

E. Test gauges used for testing shall be as follows:
   1. Tests requiring a pressure 10 psi or less shall utilize a testing gauge having increments of 0.10 psi or less.
   2. Tests requiring a pressure greater than 10 psi but less than or equal to 100 psi or less shall utilize a testing gauge having increments of 1.0 psi or less.
   3. Tests requiring a pressure greater than 100 psi shall utilize a testing gauge having increments of 2.0 psi or less.

3.13 DISINFECTING WATER MAINS

A. Except as otherwise specified, all new, relocated, or modified water mains and accessories shall be disinfected prior to tie-ins in accordance with AWWA C651, which includes the following requirements:
   1. Preliminary Flushing of Mains: All mains shall be flushed prior to disinfection except when the tablet method of disinfection is used (AWWA C651, Section 7.3). The mains shall be flushed at a minimum velocity of 10.0 feet/second and all points in the main shall receive a minimum of five consecutive minutes of flushing at this velocity, until the water runs clear. The Authority shall furnish water, unless otherwise specified.
   2. Form of Chlorine to be used: Liquid chlorine, calcium hypochlorite or sodium hypochlorite may be used for disinfection. Liquid chlorine shall be used only when suitable equipment is available and only under the direct supervision of a person familiar with the physiological, chemical and physical properties of this material and who is properly trained and equipped to handle any emergency that may arise. Calcium hypochlorite and sodium hypochlorite shall be added to water to form a chlorine water solution before being used.
   3. Methods of Application: The chlorine shall be applied by continuous feed method or the tablet method and performed as specified hereinafter.
      a. Continuous Feed Method:
         1) The rate of water and chlorine shall be proportioned so that the chlorine concentration of water in the pipe is maintained at a minimum of 50 miligrams per liter available chlorinate. To assure that this concentration is maintained, the chlorine residual shall be measured at regular intervals.
         2) During the application of the chlorine, valves shall be manipulated to prevent the treatment dosage from flowing back into the line supplying the water. Chlorine application shall not cease until the entire main is filled with the chlorine solution.
3) The chlorinated water shall be retained in the main for at least 24 hours during which time all valves and hydrants, in the section treated, shall be operated in order to disinfect the appurtenances.

4) At the end of this 24-hour period, the treated water shall contain no less than 25 milligrams per liter of chlorine throughout the length of the main.

b. Tablet Method:

1) Tablet disinfection is best suited to extensions up to 2,500 feet and mains up to 12 inches in diameter; however, tablet method shall not be used if trench water or foreign material has entered the main or if the water is below 40°F.

2) When used, tablets shall be placed in each section of pipe and also in hydrant branches and other appurtenances. They shall be attached by an adhesive, except for the tablets placed in hydrants and in the joints between the pipe sections.

3) All the tablets within the main shall be at the top of the main. If the tablets are fastened before the pipe section is placed in the trench, their position shall be marked on the section to assure that there will be no rotation. In placing tablets in joints, they shall be crushed and placed on the inside annular space, or if the type of assembly does not permit, they shall be rubbed like chalk on the butt ends of the sections to coat them with calcium hypochlorite.

4) The Contractor shall obtain the COTR’s approval in writing the adhesive as recommended by the manufacturer or any alternative. There shall be no adhesive on the tablet except on the broad side next to the surface to which the tablet is attached.

5) When installation has been completed, the main shall be filled with water at a velocity of less than one foot per second. This water shall remain in the pipe for at least 24 hours. Valves shall be manipulated so that the strong chlorine solution in the line being treated will not flow back into the line supplying the water.

4. Modifying or Repairing Existing Water Mains: Liberal quantities of hypochlorite shall be applied to the opened trench (AWWA C651, Section 9) and all pipe and fittings used shall be swabbed or sprayed with a one percent hypochlorite solution before being installed. After completion of the modification or repair the systems shall be disinfected by the methods described herein.

5. Final Flushing:

a. After the applicable retention period, the heavily chlorinated water shall be flushed from the main until the chlorine concentration in the water leaving the main is no higher than that generally prevailing in the system or less than 1 milligram per liter. Chlorine residual determination shall be made to ascertain that the heavily chlorinated water has been removed from the pipeline. The contractor shall dispose of the heavily chlorinated water and flushing water in accordance with NFPA 24, Chapter 10.10.2. The Contractor shall provide written notification to the COTR of the place of disposal. Flushing shall conform to NFPA regulations.

6. Bacteriological Test:
a. After the chlorination and final flushing and before the water main is placed in service, a certified laboratory shall collect and analyze two water samples for bacteriological testing. The samples shall be collected at least 24 hours apart. The results of these samples must indicate no coliform contamination before the pipe, tanks, or equipment can be utilized as part of the waterworks. If contamination is indicated the disinfection procedure and bacteriological test shall be repeated and accepted before the system can be placed into service. Samples shall be collected in duplicate at the opposite end of the line from where the pipe was filled with water and at approximately one thousand foot intervals. Samples shall be taken using a sample tap. The sample tap shall consist of a corporation cock and a copper tub gooseneck assembly.

b. After samples are collected, the gooseneck assembly shall be removed. Samples shall be collected in sterile bottles treated with sodium thiosulfate. The treated bottles shall not be rinsed. The samples shall be collected by the following procedure: Flame the outlet of the sample tap; flame the mouth of the sample bottle; take the sample, being careful not to bring the mouth of the sample bottle in contact with the sample tap; flame the mouth of the sample bottle again and seal the bottle.

c. If the initial disinfection fails to produce satisfactory samples, disinfection shall be repeated until satisfactory samples have been obtained. After each group of samples is taken, the Contractor shall submit in writing to the COTR a report stating the results of the test.

PART 4 - CONTRACTOR'S QUALITY CONTROL

4.1 FIELD QUALITY CONTROL

A. Conform to the requirements specified in Division 01 Section “Quality Requirements”.

B. Contractor shall submit as-built documentation in the form of plan and profile to the COTR for review and approval at the close of business each day. The as-built documentation shall include horizontal and vertical alignment data of the constructed utility. Alignment data to be taken at least every 100-feet and at significant utility line geometry changes.

END OF SECTION 331116

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<th>DATE</th>
<th>STATION NO</th>
<th>Top of the Trench Elevation</th>
<th>Proposed Invert Pipe Elevation</th>
<th>Actual Invert Pipe Elevation</th>
<th>Difference</th>
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</tbody>
</table>
To edit the attached specifications, the hidden text option must be enabled. This allows the specifications editor to view instructions throughout each specification section. 

To enable the hidden text option, in Word 2003, select “Tools” from the toolbar at top. Within “Tools”, select “Options”. Under “Options” select “View”. Look under “Formatting Marks” and make sure that the “Hidden Text” box is checked. Hidden text should now be visible within the document.

In Word 2008, click on upper left “Office Button”. Click on “word Options” at bottom of menu. Click on “Display”. Under “always show these formatting marks on the screen” check the hidden text box. Hidden text should now be visible within the document.

Instructions to the Editor are found in the following locations:

**Specification 333117 – Site Sanitary Sewerage Piping**

Before 2.1 B. 3. a
After 2.1 B. 8
Before 2.4 A. 8
Before 2.4 A. 12
Before 2.3 A. 15
Before 3.8 H
SECTION 333117 - SITE SANITARY UTILITY SEWERAGE PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Provisions, Contract Provisions and Supplementary Conditions, and Division 1 Specifications, apply to this Section.

1.2 SUMMARY

A. This Section includes piping material, methods and specialties for the installation of sanitary gravity sewer systems and force main systems, and television inspection with video tapes of pipes 6 inches or larger.

1.3 REFERENCES

A. American National Standards Institute:

1. ANSI A 21.10, Ductile-Iron Fittings, 2 through 48 inches, for Water, Sewer and Other Liquids.
2. ANSI A 21.11, Rubber Gasket Joints for Cast Iron and Ductile Pressure Pipe and Fittings.
4. ANSI A 21.51, Ductile-Iron Pipe, Centrifugally Cast, in Metal Molds or Sand-Lined Molds for Water or Other Liquids.

B. American Society for Testing and Materials:

1. ASTM 746, Ductile Iron Pipe.
3. ASTM D 1785, Poly (Vinyl Chloride) (PVC) Plastic Pipe Schedules 40, 80 and 120.
5. ASTM D 2564, Solvent Cements for Poly (Vinyl Chloride) (PVC) Plastic Pipe and Fittings.
6. ASTM D 3034, Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
8. ASTM F 477, Elastomeric Seals (Gaskets) for Joining Plastic Pipe.
10. ASTM D 2321, Recommended Practice for Underground Installation of Flexible Thermoplastic Sewer Pipe.
11. ASTM F 1248, Environmental Stress Crack Resistance.

C. American Water Works Association:
   1. AWWA A21.4, Special Lining for Ductile Iron Pipe and Fittings for Sewage Pipe and Fittings.
   2. AWWA C104, Cement-Mortar Lining for Ductile Iron Pipe and Fittings for Water and Other Liquids.
   3. AWWA C110, Ductile-Iron Fittings, 3 inch through 48 inch, for Water, Sewer and Other Liquids.
   5. AWWA C150, Thickness Design of Ductile-Iron Pipe.
   6. AWWA C151, Ductile-Iron Pipe Centrifugally Cast in Metal Molds or Sand-Lined Molds for Water, Sewer or Other Liquids.
   7. AWWA C153, Ductile-Iron Compact Fittings, 3 inch through 24 inch and 54 inch through 64 inch.
   8. AWWA C600, Installation of Ductile Iron Water and Sewer Lines and their Appurtenances.

D. Commonwealth of Virginia
   1. 9 VAC 25-790, Sewage Collection and Treatment Regulations.

1.4 SUBMITTALS

A. Submittals shall be in accordance with the requirements of Division 01 Section “Submittals”.

B. Shop Drawings and Product Data: Furnish completely dimensioned shop drawings, catalog cut or other data as required to provide a complete description of piping, fittings and other appurtenances as follows but not limited to:

   1. Product Data
      a. Pipes, fittings, and gaskets
      b. Manholes frames and covers
      c. Manhole steps
      d. Pipe warning and identification tape

   2. Shop Drawings
      a. Pre-cast manholes and vaults
      b. Concrete mix designs

C. Certificates
1. Certified records or reports of results of shop tests, such records or reports to contain a sworn statement that shop tests have been made as specified.
2. Manufacturer's sworn certification that pipe will be manufactured in accordance with specified reference standards for each pipe type.

D. Television inspection reports and videotapes made after new pipe installation.

1.5 QUALITY ASSURANCE

A. Design Criteria

1. Use only one type and class of pipe in any continuous line of sewer between structures, unless otherwise indicated on the Drawings.
2. Use pipe and fittings designed to withstand imposed trench loadings and conditions at the various locations.
3. Laterals shall be connected to the system at manholes only. No in-line connections shall be allowed.

B. Source Quality Control

1. Shop Tests: The manufacturer shall factory test pipe materials listed in the following table. Each pipe manufacturer must have facilities to perform listed tests. COTR reserves the right to require the manufacturer to perform such additional number of tests, as COTR may deem necessary to establish the quality of the material offered for use.

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>CHAPTER 1 TEST METHOD</th>
<th>CHAPTER 2 NUMBER OF TESTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ductile Iron Pipe</td>
<td>ANSI A 21.51</td>
<td>As specified in ANSI A 21.51</td>
</tr>
<tr>
<td>Polyvinyl Chloride</td>
<td>ASTM D 3034</td>
<td>As specified in ASTM D 3034</td>
</tr>
</tbody>
</table>

C. Laboratory Tests: COTR reserves the right to require that laboratory tests also be conducted on materials that are shop tested. Furnish without compensation, labor, materials, and equipment necessary for collecting, packaging, and identifying representative samples of materials to be tested and the shipping of such samples to the Testing Laboratory. The contractor will pay the cost of these laboratory tests.

1.6 MATERIAL DELIVERY, STORAGE AND HANDLING

A. Transport, handle and store pipe materials and other Products specified herein in a manner recommended by the respective manufacturers to prevent damage and defects.

1.7 SITE CONDITIONS

A. Environmental Requirements

1. Keep trenches de-watered until pipe joints have been made and concrete cradle and encasement, if any, have cured.
2. Under no circumstances lay pipe in water or on bedding containing frost.
3. Do not lay pipe when weather conditions, as determined by COTR, are unsuitable for pipe laying work.
4. Do not lay pipe when weather conditions are unsuitable, as determined by the COTR, for pipe laying work.
5. Existing Utilities: For additional information regarding existing utilities and necessary outages, refer to Division 01 Section, “Summary”.

PART 2 - PRODUCTS

2.1 SEWER PIPE AND FITTINGS

A. For pipe joints, use rubber gaskets or fusion welds as required by manufacturer of piping material used.


1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following manufacturers:
   a. Griffin Pipe Products
   b. Clow Water Systems Corporation
   c. U.S. Pipe

3. Wall Thickness: ANSI/AWWA C150/A21.50, Class as follows:

Select the appropriate pipe class according to table below.

a. Exterior Below Grade Piping:

<table>
<thead>
<tr>
<th>Depth</th>
<th>Pipe Diameter</th>
</tr>
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<tr>
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<td>3”-14”</td>
</tr>
<tr>
<td>&lt;10'</td>
<td>52</td>
</tr>
<tr>
<td>10'-14'</td>
<td>52</td>
</tr>
<tr>
<td>&gt;14'</td>
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</tbody>
</table>

4. Fittings


b. Ductile Standard Fittings: ANSI/AWWA C110/A21.10, Class 250, diameters 18" through 24".

5. Joints

a. Buried Joints
2) Mechanical: ANSI/AWWA C111/A21.11.

b. Exposed/Interior Joints

1) Flanged: ANSI A21.15 with ANSI B16.21 1/16-inch thick cloth insertion rubber face gaskets. ANSI B18.2 nuts and bolts.

6. Pipe Lining: Ductile Iron pipe and fittings shall be coated inside in accordance with the following:

a. Sanitary Sewage Pipe and Fittings: Lining shall meet all quality requirements of ANSI C104 and AWWA A21.4. Lining thickness through 12 inch, shall be not less than 0.125 inches and over 12 inches shall be not less than 0.1875 inches and seal coated per ANSI/AWWA C104/A21.4

b. Other Liquid Pipe and Fittings: Lining shall be double coated cement mortar with a minimum thickness of 0.125 inches and seal coated per ANSI/AWWA C104/A21.4.


Ductile Iron Pipe: For Gravity Sanitary Sewers.

8. Class 50 conforming to the same applicable references and requirements for ductile iron force main specifications for pipe, joints, fittings and lining.

Gasketed joints per ASTM D3212, may be specified as an option, with prior written approval by the Authority.

Polyvinyl Chloride Pipe (PVC) - Schedule 40 per ASTM D2665 with solvent cement joints per ASTM D2564,

9. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. J. M. Manufacturing Co.
b. Extrusion Technologies, Inc.
c. Carlon – Lamson & Sessions

10. Fittings: Conforming to same applicable ASTM Specification requirements for pipe.
11. Joints: ASTM D3212 push-on joint with ASTM F477 elastomeric gasket. Gasket shall be locked in groove of bell to prevent displacement when pipes are joined.

2.2 PIPING SPECIALTIES

A. Flexible Pipe Coupling (for gravity sewers only):

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
2.3 BURIED WARNING AND IDENTIFICATION TAPE

A. Metallic-Lined Plastic Underground Warning Tapes: Polyethylene plastic tape with metallic core, 6 inches wide by 4 mils thick. Include solid green background with continuously printed caption in black letters.

B. Caption: “CAUTION--BURIED SEWER LINE BELOW.”

2.4 MANHOLES

A. Standard and Shallow Pre-cast Concrete Manholes: ASTM C 478, precast, reinforced concrete, of depth indicated, with provision for rubber gasket joints.

1. Inside Diameter: 48 inches minimum, unless otherwise indicated.
2. Base Section: 8-inch minimum thickness for floor slab and 5-inch minimum thickness for walls and base riser section, and having separate base slab or base section with integral floor.
3. Ballast: Increase thickness of precast concrete sections or add concrete to base section, as required to prevent flotation.
4. Riser Section: 5-inch minimum thickness and lengths to provide depth indicated.
5. Top Section: Eccentric cone type, unless concentric cone or flat-slab-top type is indicated.
7. Grade Rings: Include one 4-inch thick reinforced concrete ring that matches the 36-inch frame and cover.

A/E ensure that step details are provided on drawings.

8. Steps: Manufactured from material indicated. Include pattern designed to prevent lateral slippage off step. Cast or anchor into sidewalls with steps at 12 to 14 inch intervals. Omit steps for manholes less than 48 inches deep.
9. Pipe Connectors: ASTM C 923, resilient, of size required, for each pipe connecting to manhole (cast integral).
10. Bench and Channel: Install brick bench and channel in manhole base section with sewer brick set on edge to allow for smooth uninterrupted sewage flow through manhole.
11. Special Concrete and Brick Manhole: Construct of reinforced-concrete bottom, lower brick walls, with pre-cast riser and top; designed according to ASTM C 478, structural loading; of depth, shape, dimensions, as detailed on the drawings.

Determine the project specific loading criteria and specify the frame and cover accordingly.

12. MWAA Standard Frames and Covers:

   a. Landside: Suitable for H-20 Loading: ASTM A 536, Grade 60-40-18, ductile-iron castings or ASTM A48, Class 35B gray iron castings designed for heavy-duty
service. Include indented top of design with lettering “MWAA Sanitary Sewer” cast into cover.
b. Airside: Suitable for Heavy Duty Aircraft Loading. Include indented top of design with lettering “MWAA Sanitary Sewer” cast into cover.

2.5 CONCRETE

A. General: Cast-in-place concrete according to ACI 318, ACI 350R, and the following:
   1. Cement: ASTM C 150, Type II.
   4. Water: Potable

B. Structures: Portland Cement Design Mix - 4000-psi minimum, with 0.45 maximum water-cementitious materials ratio.
   2. Reinforcement Bars: ASTM A 615, Grade 60, deformed steel.

C. Structure Channels and Benches: Field formed from sewer brick.
   1. Channels: Brick invert or formed to same width as connected piping, with height of vertical sides to 3/4 of a pipe diameter. Form curved channels with smooth, uniform radius and slope.
      a. Invert Slope: 2 percent through manhole.
   2. Benches: Brick, sloped to drain into channel.
      a. Slope: 8 percent.

2.6 PROTECTIVE COATING

A. Description: Two coats, coal-tar epoxy; 15-mil minimum thickness, unless otherwise indicated; factory or field applied to the following surfaces:
   2. Manhole Frames and Covers: On surfaces that will be exposed to sewer gases.

2.7 CLEANOUTS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
   1. Neenah Foundry Model R-6016.

B. Gravity Clean-out: Provide 6-inch D.I.P. clean-out riser as detailed on the plans with cast-iron ferrule and countersunk brass clean-out screw plug with 12-inch diameter cast iron access frame.
and heavy duty cast iron cover suitable for [HS-20 loading] [heavy duty aircraft loading] and labeled "Sewer Clean-out," set in concrete pad as detailed on the plans.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Carefully examine each section of pipe and each pipe fitting before laying in conformance with the inspection requirements of the appropriate referenced standard.

B. Remove rejected pipe from the Project.

3.2 PREPARATION

A. Clean piping interior and mating surfaces of bell, spigot and gasket before laying. Maintain clean until completed work is accepted.

B. Touch-up chipped, cracked, or abraded surfaces and finished joints with two coats of the particular coating material.

C. Perform trenching for sewer pipe and place pipe bedding as specified in Division 31 Section “31 20 00”.

D. Dig bell holes sufficiently large to permit proper joint making and to insure pipe is firmly bedded full length of its barrel.

E. Excavate trenches in rock at least twenty-five (25) feet in advance of pipe laying. Protect pipe ends if blasting is allowed.

3.3 LAYING PIPE

A. General Requirements

1. Lay pipe proceeding upgrade true to line and grades given. Lay bell and spigot pipe with bell end upgrade unless shown otherwise on the drawings or directed by COTR.

2. Exercise care to insure that each length abuts against the next in such manner that no shoulder or unevenness of any kind occurs along inside bottom half of pipe-line.

3. Center spigot end in bell or socket end of previously laid pipe, shove tight and secure.

4. No wedging or blocking permitted in laying pipe unless by written order of COTR.

5. Before joints are made, bed each section of pipe full length of barrel with recesses excavated so pipe invert forms continuous grade with invert of pipe previously laid. Do not bring succeeding pipe into position until the preceding length is embedded and securely in place.

6. Walking or working on completed pipeline, except as necessary in tamping and back filling, is not permitted until trench is back-filled one-foot deep over top of pipes.

7. Take up and relay pipe that is out of alignment or grade, or pipe having disturbed joints after laying.
8. All pipe that is out of alignment or grade, or pipe having disturbed joints after placement shall be removed and re-installed at Contractor’s expense.
9. Take necessary precautions to prevent newly laid pipe from floating as a result water accumulation in the trench; or the collapse of the pipeline from any cause. Restore or replace pipe as necessary at Contractor’s expense.
10. Bed pipe using materials specified in Section - Trenching, Back-filling and Compacting. Gravity Sewer Pipe bedding shall conform to AASHTO T-99 to a density of 90% standard proctor or to AASHTO T-180 to a density of 90% modified proctor for airfield work.
11. Cut pipe using only equipment specifically designed for that purpose such as an abrasive wheel, rotary wheel cutter, a guillotine pipe saw or a milling wheel saw. The use of chisels or handsaws will not be permitted. Grind smooth cut ends and rough edges. Bevel slightly, cut end for push-on connections.
12. Where cutting of pipe is necessary, minimum-laying length shall be five (5) feet.
13. Install ductile iron pipe, and fittings, and assemble joints according to AWWA C600.
14. At the end of each work day, the installed water mains shall be protected so that line remains free of dirt, mud and debris. At the start of the next work day, the line shall be inspected for tracked dirt, mud and debris. All lines failing the inspection shall be removed, cleaned, and replaced to the satisfaction of the COTR.

A/E, determine Division and Section used to specify bedding material.

15. Install plastic pipe and fittings, and assemble joints according to ASTM D 2321 for Class 1 bedding material as specified in [Insert Division and Section for bedding material]

B. Joints

1. Make pipe and fitting joints according to pipe manufacturer's specifications and to specifications previously specified for pipe.

C. Alignment and Grade

1. Lay and maintain all pipe at the required lines and grades as shown on the Drawings. Place fittings and valves at the required locations with joints centered, spigots forced home, and all valve stems plumb.
2. Deflect pipe joints for force mains where indicated on the Drawings. Deflections shall not exceed pipe manufacturer's recommended maximum allowable deflection.
3. Do not change grade or alignment without COTR's approval.
4. Force main shall be installed on a continual increasing upgrade to its terminus. No high points will be accepted.

3.4 THRUST RESTRAINTS

A. General: Provide horizontal and vertical thrust restraint at all plugs, caps, tees and bends on pipelines.
B. Concrete Reaction Backing: Place concrete reaction backing between undisturbed solid ground and the fitting to be anchored. The backing unless otherwise shown or directed, shall be located as to contain the resultant thrust force and so that the pipe and fitting joints will be accessible for repair.

C. Install megalug retainer gland according to manufacturer's instructions.

D. Temporary Thrust Restraint: Provide temporary thrust restraint at temporary caps or plugs. Submit details of temporary restraint to COTR for approval.

3.5 BURIED WARNING AND IDENTIFICATION TAPE

A. Install continuous plastic underground warning identification tape during back-filling of trenches for gravity sewer piping. Place tape 18 inches directly over piping.

3.6 MANHOLE INSTALLATION

A. General: Install manholes, complete with appurtenances and accessories indicated.

B. Form continuous brick channels and benches between inlet and outlet.

C. Set tops of frames and covers flush with finished surface of pavement.

D. Install pre-cast concrete manhole sections with gaskets according to ASTM C 891.
   1. Provide rubber joint gasket complying with ASTM C 443 at joints of sections.
   2. Apply coat tar epoxy coating to exterior surfaces of manhole.

E. Construct cast-in-place drop connections to existing manholes as indicated.

3.7 CLEANOUT INSTALLATION

A. Install clean-outs and riser extension from sewer pipe to clean out at grade. Use ductile iron pipe fittings in sewer pipes at branches for gravity clean-outs. Install piping so clean-outs open in direction of flow in sewer pipe.

B. Set clean-out frames and covers in concrete or bituminous paving with tops flush with surface of paving.

3.8 FIELD QUALITY CONTROL

A. General Requirements: Conduct tests specified herein so that each pipeline and structure installed in Project is tested.
   1. Provide tools, materials (including water), apparatus and instruments necessary for pipeline testing.
   2. Conduct tests in the presence of and to the satisfaction of COTR.
   3. Test reports shall be submitted to the COTR before final invoice.
B. Alignment Tests General: Contractor shall submit as-built documentation in the form of plan and profile to the COTR for review and approval at the close of each work day. The as-built documentation shall include horizontal and vertical alignment data of the constructed utility. Alignment data to be taken at 50 foot intervals and at alignment changes. Use the table at the end of this section for recording as-built conditions.

C. Alignment Test for Gravity Sewers: After the mains have been laid, partially back-filled, invert elevations verified, and pipe bedding inspected and tested, a light shall be shined between manholes or manhole locations to determine whether the alignment of the sewer is true and whether any pipe has been displaced, broken or otherwise damaged subsequent to laying. Each sections (manhole to manhole of sewer shall show a full light circle throughout its length. Contractor shall correct all defects to the work to the satisfaction of COTR before work shall proceed. Payment for this work is contingent on the correction of all defects to the satisfaction of the COTR. Contractor shall conduct this test again after backfill and before final acceptance of the sewer work.

D. Initial Section Test for Gravity Lines: To demonstrate acceptability of installed pipe materials and workmanship, construct and air test one sewer section from manhole to manhole using the pipe provided in the Contract.
   1. Conduct Initial Section Test in same manner as Line Acceptance Test specified.
   2. Conduct Initial Section Test for each size and type pipe material used in the Project prior to continued installation of same pipe.
   3. Sewer sections successfully tested, as Initial Section Test will be retested under Line Acceptance Test.
   4. Initial Section Tests shall be incidental to the cost of the pipe installation. No separate payment will be made for these tests.

E. Line Acceptance Test for Gravity Lines (Leakage tests)
   1. After a section of sewer is constructed between adjacent manholes, successfully cleaned, and backfilled, leaving joints exposed perform a low pressure air Line Acceptance Test in accordance with ASTM C 828 and the following:
      a. Seal and brace sewer piping at upstream and downstream manholes and at all laterals. Test plug seal before actual use by testing plugs outside the trench in one length of pipe pressurized to maximum anticipated testing pressure. Plugs shall hold without bracing and show no movement. After plug is placed in pipe and sealed, brace or protect as insurance against blow out. Protect workers from potential of plug blow out.
      b. Introduce low-pressure air slowly into sealed sewer section until the internal air pressure is four psig greater than the average ground water pressure acting on the pipe, but in no case higher than 10 psig.
      c. To determine the internal air pressure for the test, add 3.5 psig to the height in feet of the ground water above the invert of the pipe divided by 2.3. However, the test pressure should not exceed 10 psig. For example, if ground water height is 6.9:
         \[ 3.5 + \left( \frac{6.9}{2.3} \right) = 6.5 \text{ psig} \]
      d. Allow no less than 3 minutes for air temperature and pressure to stabilize. Add air only to maintain required test pressure.
e. After the stabilization period, adjust the test pressure to the required test pressure, and disconnect the air supply. Then measure the time that is required to achieve a 1.0 psig pressure drop.

f. The line passes if there is zero psig pressure drop in the time designated in Table 1.

<table>
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<tr>
<th>Nominal Pipe Size (inches)</th>
<th>T = Time Minutes/100 feet</th>
<th>Nominal Pipe Size (inches)</th>
<th>T = Time Minutes/100 feet</th>
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<td>7.3</td>
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2. After laterals are installed, re-test line in accordance with the above procedure if line is initially tested before the installation of laterals.

3. Where lines are live and carry flow, perform Joint Acceptance Test by testing one joint at a time as described in paragraph 4, below.

4. Joint Acceptance Test shall test one joint at a time using test apparatus as approved by COTR. Test pressure shall be as determined in paragraph 3.8.D.1.c, above. Consider joint acceptable when the pressure loss is zero psig in one minute. Perform test after one-minute stabilization period.

F. Infiltration Test for Gravity Lines

1. Perform the infiltration test after backfill operations have been completed.

2. Measure the infiltration rate using a V-Notch Weir. Provide Weir and submit to COTR for written approval.
   a. Infiltration shall not exceed 100 gallons per day per inch diameter per mile of pipe for any section. Should leakage exceed the amount specified, correct the deficiency.

3. Replace faulty or damaged portions of work and retest.

4. Gravity Lines shall meet the above requirements before final acceptance will be granted by the COTR.

G. Exfiltration Test for Manholes

1. Manholes shall be tested by exfiltration
   a. Use inflatable stoppers to plug all lines into and out of the manhole being tested.
   b. Position stoppers in the lines far enough from manhole to ensure testing to those portions of the lines not air tested.
c. Fill manhole with water to the top of the manhole frame. A 24-hour soak shall be allowed.
d. The manhole shall be topped off and tested for 24 hours.
e. Leakage shall not exceed 0.25 gallon per hour per vertical foot of manhole. Should test fail, repair manhole and retest.

Delete the following paragraph and all subparagraphs if PVC pipe is not specified.

H. Deflection Test for PVC Gravity Lines

1. All manhole runs will be tested. If lines fail, a re-test shall be completed after satisfactory correction of failure.
2. In addition to air test, conduct deflection tests on PVC pipe. Test all PVC sewer main installed not less than 30 days following backfill.
3. Mandrel shall be cylindrical in shape, 95 percent of nominal pipe diameter and 4' long. Mandrel diameter achieved with no less than 8" arms evenly spaced at each end and in the middle of the mandrel.
4. Pull mandrel through pipe section manually. Powered pulling devices shall not be allowed. Pipe fails test if mandrel cannot be pulled through pipe. Note location of failure, excavate, and replace pipe section that failed, and re-test.

I. Hydrostatic Testing for Pressure Lines

1. Leakage Test Requirements
   a. The pipe shall be installed and partially back filled with the joints exposed for visual inspection during the test. All newly laid pipe, or any valved section thereof, shall be subjected to the greater of a pressure of 150 pounds per square inch, or 50% in excess of the normal working pressure.
   b. Leakage is defined as the quantity of water to be supplied into the newly laid pipe, or any valved section thereof, necessary to maintain the specified leakage test pressure after the pipe has been filled with water and the air expelled. No pipe installation will be accepted until the leakage is zero gallons per hour.

2. Duration of Test: The duration of the test under pressure shall be two hours.
   a. Procedure: Each valved section shall be slowly filled with water and the specified test pressure, based on the elevation of the lowest point of the line or section under test and corrected to the elevation of the test gauge, shall be applied by means of a pump connected to the pipe in a manner satisfactory to COTR. The pump, pipe connections, and all necessary apparatus, including gauges, shall be furnished by contractor and approved by COTR. Contractor will make all taps into the pipe, and furnish all necessary assistance for conducting the tests.

3. Expelling Air Before Test: Before applying the specified test pressure, all air shall be expelled from the pipe. If blowoffs are not available at high places, contractor shall make the necessary taps at points of highest elevation before the test is made and insert the plugs after the test has been completed, at no additional cost to Authority.

4. Variation from Permissible Leakage: Should any test of pipe laid disclose leakage greater than that specified above, contractor shall, at his own expense, locate, repair and
replace the defective joints, pipe or fittings until the leakage is within the specified allowance.

5. Time for Making Test

a. Where any section of a main is provided with concrete reaction backing, the hydrostatic pressure test shall not be made until at least five days have elapsed after the concrete reaction backing was installed. If high early strength cement is used in the concrete reaction backing, the hydrostatic pressure test shall not be made until at least two days have elapsed.

b. COTR shall be present during the operating of valves required to fill mains for pressure and leakage test.

c. Contractor shall advise COTR of any pressure test and leakage test at least 48 hours in advance. No testing will be authorized unless ambient air temperature is 35° or higher.

d. The pressure and leakage tests shall be witnessed by COTR.

e. Contractor shall furnish laboratory calibrated test gauges and measuring devices for the leakage test.

f. The section under test shall be brought back to test pressure at one-half hour intervals during the testing. COTR will record both the makeup water amount and pressure at each one-half hour re-pressurization.

6. Contractor is responsible for the supply and disposal of water used for testing.

J. Alignment Test for Pressure Lines

1. Prior to back filling of pressure lines, the joint alignment shall be inspected to assure the maximum deflection present in each joint does not exceed the manufacturer's recommendations.

2. Pressure lines that are a portion of a pump discharge system shall be inspected to assure the line is installed at a constant or increasing grade so as to eliminate the possibility for air accumulation at an intermediate high point.

3. Lines shall be installed to a tolerance of 0.01 feet of the lines and grades shown on the drawings.

4. Any and all defects shall be corrected by contractor at no additional cost to Authority prior to back filling.

K. Test gauges used for testing shall be as follows:

1. Tests requiring a pressure 10 psi or less shall utilize a testing gauge having increments of 0.10 psi or less.

2. Tests requiring a pressure greater than 10 psi but less than or equal to 100 psi shall utilize a testing gauge having increments of 1.0 psi or less.

3. Tests requiring a pressure greater than 100 psi shall utilize a testing gauge having increments of 2.0 psi or less.

L. Acceptance: Observation of successful testing of manholes, sewers or force mains by COTR does not constitute acceptance of the system or any portion thereof. Upon completion of any determined portion of a total system, and successful testing thereof, COTR may recommend final acceptance to Authority. Only upon final inspection by Authority or COTR, and upon written acceptance from COTR will the system or portion thereof be considered Substantially
Complete. Upon such acceptance, the warranty period as specified for the manholes, sewers or force main will commence.

1. If, during this final inspection, any irregularities are observed, the condition must be corrected at Contractor’s expense prior to acceptance.

3.9 TELEVISION INSPECTION

A. Upon completion of the installation of the sanitary sewer pipeline, experienced personnel trained in location breaks, pipe and joint defects, excessive pipe deflection, poor alignment, and/or infiltration/exfiltration shall inspect all sanitary sewer pipelines 6” in diameter and larger using remote televised cameras.

B. Video equipment must include a video monitor on-site to observe the operating camera unit. Any significant points of interest must be identified on the tape counter and noted in a logbook.

C. Video camera shall be capable of providing at least 420 lines of horizontal resolution.

D. Provide sufficient illumination so that the interior wall of the pipe can be seen, regardless of pipe size.

E. The camera view head shall have the capability to rotate full 360 degree clockwise or counter clockwise continuously in either direction or stopped at any position by remote control.

F. The camera shall have sufficient TV cable to provide viewing of an entire stretch of pipe from manhole to manhole.

G. Each videotape shall show plainly the location of the television inspection, date, and distance along the pipeline.

H. The composite videotape shall be on a standard videocassette cartridge.

I. Submit videotapes to COTR before final invoice.

J. Videotapes will remain the property of the Authority.

K. Repair all pipe and/or pipe joint deficiencies discovered by this TV inspection, after repair perform the TV inspection. Repeat process until no deficiencies are discovered.

L. The COTR will determine if any portion of the inspection tapes are of inadequate quality or coverage. Re-inspect and videotape all areas of inadequate quality or coverage at no additional expense to the Authority.

M. The finished tape shall be continuous over the entire length of the sewer pipe between two (2) manholes and be free of visual defects.
PART 4 - CONTRACTOR’S QUALITY CONTROL

4.1 FIELD QUALITY CONTROL

A. Section 01400 specifies general requirements for the Contractor’s Quality Control Program.

B. Field-testing shall conform to the requirements in Article 3.8.

C. Work shall conform to all requirements of 9 VAC 25-790, Sewage Collection and Treatment Regulations. Including all testing requirements.

D. Contractor shall submit as-built documentation in the form of plan and profile to the COTR for review and approval at the close of business each day. The as-built documentation shall include horizontal and vertical alignment data of the constructed utility. Alignment data to be taken at least every 100-feet and at significant utility line geometry changes.

END OF SECTION 333117

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