SECTION 00011

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SECTION 01110

SUMMARY OF WORK

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the contract, including general and supplementary Conditions and other Division 1 Specification Sections.

1.02 SUMMARY

A. The Contractor shall furnish all labor, materials, equipment, incidentals, and other items necessary to complete the Structural Retrofit of B9 Beam at Farragut North Metrorail Station as required by the Contract documents.

B. The Project shall function as an integral part of and be fully compatible with the existing WMATA system.

1.03 GENERAL SUMMARY OF WORK DESCRIPTION

A. Gather all data necessary for the performance of the Work under this Contract that are needed in addition to Authority-furnished Contract Documents.

B. Perform all work in strict accordance with the manufacturers' recommendations and the sequence of construction approved by the Contracting Officer Representative (COR).

C. If existing construction suspected of containing hazardous materials is encountered, do not disturb hazardous materials and immediately notify the COR. Hazardous materials will be removed by the Authority under a separate contract.

D. Protect adjacent area and adjacent occupied areas. Provide required barriers to seal off hazardous materials from the adjacent areas.

E. Remove from the Authority's property all debris resulting from demolition to locations off the Authority's property and obtain written permits and release from the owners of the property where the materials will be deposited. This includes demolition and removal of all existing concrete, accessories and appurtenances shown on Contract drawings. Contractor is responsible for all offloading of materials from WMATA rail vehicles at rail yard and transporting off WMATA property.

F. At A02 Farragut North Metrorail Station, Beam B9, one of a series of cast-in-place (CIP) post tensioned (PT) beams above the Farragut North Station platform, is situated under the intersection of Connecticut Avenue and L Street and in close proximity to the Northwest Station Entrance. The beam supports approximately 15' of overburden and was configured to accommodate large diameter utilities within L Street. Beam B9, lying at a 66° skew to track alignment has a clear span of approximately 76 feet. The retrofit will consist of a permanent support installed at the mid-span of Beam B9. This support shall be structural steel columns with exterior cladding supported on concrete pedestals anchored on the station invert. Columns shall be preloaded using a controlled jacking procedure.

G. The retrofit work will commence such that there are minimal impacts to station operations both during construction and once work is complete. Work elements shall include reconfiguration of an air return at the base of a typical station platform granite bench, temporary replacement or protection of an air distribution pylon, removal and reinstallation of metal pan ceiling and support structure, and relocation of electrical/communication conduits as needed. Sections of the platform floor tile and floor slab will require demolition and restoration to install the cast in place reinforced concrete pedestals which comprise the bases of the new steel columns.

H. Repair/retrofit the existing WMATA structures as shown on the drawings. For description of work, applicable references, required submittals, quality assurance, materials, execution, see project specifications in addition to this section.

I. For details of existing structure, see reference drawings; WMATA, section a-3, Connecticut avenue route, June 1970 approved for construction June 17, 1970.

J. All applicable dimensions, locations, clearances and elevations of existing structures shown on the drawings and in the reference drawings shall be verified by the contractor in the field prior to preparation of shop drawings and commencement of any work. If discrepancies are discovered between existing conditions and the contract work, the contractor shall immediately notify the COR.

1.04 SUMMARY OF WORK DESCRIPTION

A. Construction work shall consist of, but not limited to:

1. Set barricades as applicable for construction (see schematic).

2. Remove, store and protect the existing granite bench and existing pylon within the vicinity of the retrofit. Store on the south end of the platform (see schematic).

a. Remove and retain the existing return air bench as indicated by removing the granite top and storing it in the temporary construction storage area at the south end of the platform.

b. Contractor to confirm operation of existing SCADA temperature monitoring sensor located at the underside of the bench scheduled to be relocated. Relocation of sensor shall be coordinated with COR, SMNT and PLNT as applicable.

c. Demolish the existing bench pedestal.

d. Remove return air ductwork to point indicated. Return air duct penetration through partition wall to remain for future new duct connection. Temporarily seal return air duct opening during construction to prevent dust/ debris infiltration.

e. Contractor to either remove the supply air pylon and store off-site or remove the supply air grill at the top of pylon and protect in-place.

3. Remove existing floor tiles as indicated.

a. Remove whole tiles and concrete setting bed to a minimum of 1'-0" outside the limits of the CFRP.

4. Install CFRP reinforcing strips and temporary wood supports as shown prior to platform removal.

5. Sawcut and remove existing platform to the limits shown for column installation and bench relocation. For slab removal & reconstruction details, see Sheet S-504.

a. Delineate sawcut limits to the dimensions shown and mark the plenum support wall prior to sawcutting.

b. Provide supports under the platform to support the proposed construction loading prior to sawcutting the platform.

c. Contractor is to provide additional ventilation measures as needed during demolition and welding operations to reduce dust and/or smoke.

d. Provide full depth sawcuts (including reinforcement) to within 6" of the plenum support wall.

e. Remaining platform adjacent to support wall is to be removed with no larger than a 30 lb. hand held hammer. Preserve the existing platform support wall and any projecting reinforcement.

(1) In the event a bonding strap is encountered during platform removal, the contractor shall replace the strap in-kind.

(2) Verify location of existing water line, fire standpipe, and plenum and escalator sump pump discharge lines. All shall remain functional throughout construction period. Relocate as required without loss of operation.

6. Remove and store existing ceiling panels and supporting elements.

a. A detailed survey is to be performed to determine the portion of the ceiling structure which is to be removed to facilitate the construction and is subject to approval by COR. All removed metal ceiling panels and support structure elements are to be stored and protected from damage. Contractor is responsible for all necessary replacement tiles or supporting elements.

7. Relocate mechanical and HVAC elements as applicable (see mechanical plans).

a. Contractor to provide temporary ductwork, filtration, etc., as required to facilitate operation of a balanced air conditioned ventilation system served by the return air grill and tunnel.

b. Contractor to protect existing chilled water supply and return lines.

c. Contractor to provide for temporary ductwork, fans, filtration, etc. as required to ensure continuous availability of under platform exhaust system.

d. Contractor shall keep clean the plenum space and any ductwork in the area of the work of all dirt and debris.

8. Clean and prepare invert slab for pedestals, install dowels and construct CIP concrete support pedestals.

a. Verify actual clear dimension in the field at each proposed column and detail all retrofit elements accordingly. Provide measured dimensions to the COR.

b. Ensure any encased water or electrical lines are not impacted by new concrete pedestal sections within plenum

9. Install steel column anchor bolts by use of a template or pre-formed holes.

10. Install top plate anchor rods into the existing Beam B9 as noted. Use a template for positioning the anchor rods.

a. Verify the location of the existing post-tensioning ducts in the vicinity of the proposed Hilti rods with a pachometer. Adjust Hilti rod locations as required to miss post-tensioning ducts prior to drilling holes in the top plate.

11. Install top plates and lock into position with hex nuts as indicated. Optionally use anchor rods to support bottom plates prior to column erection (see detail on Sheet S-503).

a. Mark top and bottom plates to identify the location of 9.65" diameter hydraulic jacks.

b. Ensure 100% contact between bottom of existing beam & top plate by means of grinding the beam or by grouting the voids between the two surfaces with non-shrink grout.

c. Weld all around stiffeners and columns to bottom plate.

d. Verify trueness of the bottom of the beam to be in contact with the top plates and provide accommodations for actual conditions. Provide existing condition information to the COR.

12. Erect steel column systems including columns, batten plates, bottom plates and stiffening assemblies. Install welded connections where applicable. Do not exceed loads noted in general notes, Item b.

    a. Column system including columns, batten plates, stiffener assemblies and bottom plate can be assembled in the shop to the extent that the contractor can deliver and erect within the platform, based on the site limitations and contractor means and methods. Do not exceed the weight limits shown on sheet S-002, Item b, loadings.

13. Install hydraulic jacks. Vertically jack the cylinders in unison to 145 tons/jack and lock-off. See jacking notes on sheet S-503 for additional information.

    a. Jack all four cylinders to a uniform load. The jacking operation is to be monitored as indicated in order to verify that excessive movements and/or unbalanced loading does not occur in the beam.

    b. In order to control the uniform loading, use a Enerpac SLCG-8 series lift system (or equivalent). The accuracy tolerance between leading and lagging cylinders is not to exceed 0.04".

    c. Jack each cylinder to 145 tons at increments of 25 tons/jack verify that all four jacks are loaded equally before adding additional load. Continue this process until 145 ton/jack in reached. Lock-off cylinders (to permanently remain).

    d. During the jacking operation, monitor the vertical movement of beam 9. If the beam moves 3/16" vertically prior to reaching 145 tons/jack, stop the operation and notify the COR.

    e. During the jacking operation, visually monitor the adjacent ceiling slabs supported from beam 9. If cracking of the slabs occur during this operation, stop work and notify the COR.

    f. After jacks are locked, install reinforcement & place non-shrink grout.

14. Install reinforcement around the hydraulic jacks as shown and place non-shrink grout to the limits identified.

15. Install fireproofing on all exposed structural steel.

    a. Provide sprayed cementitous fireproofing material on all structural intermediate support elements (1" minimum thickness). See contract specifications for additional information.

16. Install platform dowels and reinforcement, reconstruct platform and construct new bench pedestal.

17. Install lean concrete at the base of the columns as shown.

    a. Apply bond breaker around all exposed surfaces of base plates, anchor bolts, nuts and adjacent concrete prior to placing lean concrete.

18. Install cladding.

19. Re-install ceiling panels and modify panels and support elements as required to fit around column cladding.

20. Re-install bench and pylons to the locations indicated.

    a. Reconstruct the base of the relocated bench in accordance with the details on existing drawings FA3-A-021 and A03-S-127. Reconstruct the pedestal in the new bench location

with two new 11"x96" wire mesh screens and re-install the granite top. Use details from the as-built drawings for the reconstruction of the RA bench pedestal.

b. Provide and install new return air ductwork as necessary. Connect return air bench into existing return air tunnel.

c. See structural drawings for details on platform work.

d. Return/reinstall supply air pylon at original location and in working condition. Contractor to rebalance supply air pylon to original air flow.

e. Field fabricate RA duct connection between RA opening in under platform wall and point of connection to RA bench plenum box.

f. Grounding of exposed metallic structures shall be provided. The grounding system shall provide a low impedance path to ground for all exposed metallic structures.

21. Install platform tiles to the outside limits of the cladding & relocated bench

    a. For platform tile construction, follow WMATA architectural standard drawing ST-A-SW-001.

22. Remove barricades.

1.05 DAYS/HOURS OF WORK

A. The hours of work is defined in Section 01141, ACCESS TO SITE.

1.06 LOCATION

A. The Project is located in the District of Columbia.

B. The Contractor shall be properly licensed to do business in the District of Columbia prior to commencement of this project

1.07 PERMITS

A. The contractor shall be responsible for securing all permits that are required to complete the work.

1.08 SITE LOGISTICS

A. Coordinate Site access and egress with Contracting Officer Representative. The Contractor is cautioned that storage for materials and equipment in the immediate area of the passenger station is very limited. Likewise, access through the passenger entrance to the station for transport of materials and equipment is very limited. An area for Contractor materials will be made available for use by the Contractor as shown in the drawings.

    1. The majority of materials and equipment needed to perform the work must be moved over the rail system using rail-mounted equipment. Only limited windows of time will be made available for such movements. All such movements must be coordinated with the COR and must be made in accordance with procedures for such moves published by the Authority.

B. Coordinate with Contracting Officer Representative for staging of Construction equipment and materials within Authority Roadway and Authority property. At the completion of each allowable work period, the stations and tracks will be restored to normal service. The station work areas shall be left in a condition to permit such operation with no impact on the safety of passengers or the safe operation of trains

C. Parking

1. WMATA will not provide parking spaces for the Contractor.

D. Constraints on Construction

1. Work Sequence

a. Construction shall follow the specified directions provided in the contract drawings and technical specifications as applicable.

2. Special Events

a. Minimize risks to the public during special community events that are located in close proximity to the Project Site.

b. Construction activities shall be coordinated with the Authority to reduce construction impacts.

c. Maintain a Special Community Event List in coordination with the Authority for the duration of the Contract. The list shall identify local special holidays, parades, festivals, and other similar events that are within the proximity of the Project construction area and operations. The list shall include the following information: Refer to 01141 ACCESS TO SITE for additional information.

(1) Name and general description of the event

(2) Date, time of day, and duration

(3) Location(s)

E. Work Performed by Others:

1. WMATA contemplates to have the following construction work adjacent to the Work Site at the time of Contractor's Work. This is the best available information at the time of the IFB issuance. The work listed below, time and other details may change at a later time

Table 01110-02: Summary of Work by Others

Description	Anticipated Start Date	Principal Area of Work
Contact Rail Replacement	1st Quarter 2016	A04-A07
Mezzanine Lighting	4th Quarter 2016	A02 Station
Chiller Plant and Piping	1st Quarter 2016	Connecticut Avenue
Radio Infrastructure Replacement -T-Band Relocation Project	3rd Quarter 2016	Red Line

F. Coordination of Work with Others: Coordinate Work through the Contracting Officer Representative with the following:

1. Utilities and jurisdictional authorities affected by or having jurisdiction over the Project.

2. Other Contracting Officer Representatives, Authority consultants, and contractors associated with adjacent projects.

G. Survey Work: Perform as needed to execute the Project as specified in Section 1721, LAYOUT OF WORK AND FIELD ENGINEERING.

H. Safety: Establish and manage Project safety in accordance with Section 01114, SAFETY/ ENVIRONMENTAL REQUIREMENTS and Section 01115, SAFETY AND SECURITY CERTIFICATION.

I. Quality: Establish and manage a Quality System in accordance with Section 01470, QUALITY MANAGEMENT SYSTEM.

J. Inspection and Testing

1. Inspect the Work to ensure that construction is being performed in accordance with the contract documents. Maintain Inspectors Daily Reports and submit to the Contracting Officer Representative weekly.

2. Establish and perform component testing and system integration testing as specified in various specification sections and in accordance with Section 01470, QUALITY MANAGEMENT SYSTEM. Develop and implement a testing plan based on WMATA Testing Program Plan

3. Provide and manage the services of an independent testing agency that shall conduct material testing.

4. Provide and manage the services of independent inspectors for those disciplines required by jurisdictional authorities. Independent inspectors shall perform third party inspections necessary to certify that construction has been performed in accordance with contract documents. Independent inspectors shall have the qualifications required by jurisdiction authorities.

5. The independent testing agency and independent inspectors may be provided through a single entity.

K. As-Built Documents: Maintain a hard copy drawing and specification record of as-built conditions during construction phase, and provide As-Built Drawings and As-Built Specifications at the completion of the Project in accordance with Section 01775, CLOSEOUT.

L. Demonstration and Training: Demonstrate the use of equipment and systems and provide training to WMATA staff as indicated in Section 01820, DEMONSTRATION AND TRAINING.

M. Salvaging of Materials and Equipment

1. Maintain property control records for materials or equipment identified for reuse. The Contractor shall be responsible for the storage and protection of materials and equipment and shall replace materials and equipment, which are broken or damaged during construction operations as the result of negligence or while in the Contractor's care.

PART 2 – PRODUCTS (not used)

PART 3 – EXECUTION (not used)

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SECTION 01111

CONTRACTOR KEY STAFF

PART 1 – GENERAL

1.01 SUMMARY

A. This Section specifies key staff that forms the Contractor's team and identifies their basic functions.

1.02 REFERENCES

A. United States Green Building Council (USGBC)

1. Leadership in Environmental Engineering and Design (LEED)

a. New Construction and Major Renovation

B. Registrar Accreditation Board of the American Society for Quality (RABASQ)

C. Occupational Safety and Health Association (OSHA)

1. Construction Safety Training

2. First Aid/CPR/Blood Borne Pathogens Training

1.03 SUBMITTALS

A. Submit the following within 10 Days of Award in accordance with Section 01330, SUBMITTAL PROCEDURES:

1. Evidence of qualifications and experience of Key Staff.

1.04 CONTRACTOR

A. The Contractor shall responsible for constructing the Project and for furnishing and managing the services of Subcontractors and vendors, to perform all manufacture, fabrication, installation, and construction to complete the Project in accordance with the Contract Documents, all applicable jurisdictional codes and regulations, the approved Quality Management System; the approved Safety Plan; the approved Systems Integration Testing Plan, and environmental and other applicable requirements to achieve Acceptance in accordance with the approved Project Schedule.

B. All personnel involved in the performance of construction work shall be experienced and qualified to perform their trade, and all construction work shall be performed in a skilled and workmanlike manner.

C. Individuals holding these key staff positions shall not be changed without written Authority approval for substitutions of key staff.

D. Key Staff

1. Construction Project Manager

a. Shall have an undergraduate degree in engineering or construction management with a minimum of 15 years experience in managing complex multi-discipline heavy construction projects and a minimum of 10 years managing the construction of projects of a similar type and financial magnitude in the rapid transit industry.

b. Responsible for managing construction of all facets of the Project and has overall responsibility for its successful and timely completion.

c. Supervises the Key Staff, shall be the sole point of contact with the Contracting Officer Representative, shall be responsible for coordinating with outside agencies as required, shall be responsible for managing cost and maintaining schedule of the Project, shall be responsible for ensuring that QA/QC and Safety guidelines are followed, and shall be responsible for testing, commissioning, and close-out of the Project. Responsibilities include but are not limited to acquiring construction permits not furnished by the Authority; managing Subcontractors, independent testing companies, fabricators and Suppliers; development, management, and implementation of Project Schedule; preparation, submittal, and management of construction submittals; maintaining as-built documentation; and coordinating with outside agencies and Utility companies on construction related matters. The Construction Manager is responsible to ensure that construction is based on the Contract Documents and that all applicable codes and standards are complied with.

2. Construction General Superintendent

a. Shall have a minimum of 15 years experience in complex multi-discipline heavy construction, a minimum of 10 years in rapid transit industry, a minimum of 10 years experience in structural steel erecting, and a minimum of 5 years in a supervisory capacity supervising projects of a similar type and financial magnitude.

b. Responsible for oversight of day-to-day construction at the Site.

c. Responsibilities include but are not limited to supervising construction activity, overseeing coordination between Subcontractors, coordinating with Quality Manager and Safety Manager in the implementation of project Quality and Safety plans, and ensuring that construction is based on current Shop Drawings and Working Drawings. The Construction General Superintendent is also responsible for maintaining as-built documentation.

3. Quality Manager

a. A degreed engineer and trained as a Lead Auditor in a Registrar Accreditation Board of the American Society for Quality (RABASQ) approved course on the requirements of ISO 9001 and with a minimum of 10 years of related experience including a minimum of 5 years of management positions in a production, manufacturing, or construction environment performing QA/QC auditing. Transit industry experience is preferred.

b. Reports to one or more levels of management above the Contractor's Project Manager.

c. Responsible for the Quality Assurance (QA) and Quality Control (QC) for the Project and shall be fully familiar with the Federal Transit Agency's (FTA) Quality requirements.

d. Shall be a full time staff member of the Contractor and shall establish, implement, and maintain the Quality Management System, shall report directly to and be supervised by an Officer of the Contractor at a level above that of the Project Manager responsible for the Project, shall serve as a liaison officer with the Authority and the Jurisdictional Authorities on matters relating to the Contractor's quality system, shall be responsible for ensuring that the Quality Management System is effective in ensuring that the Contract requirements are satisfied, and shall be responsible for the oversight of onsite and offsite testing by the Contractor.

e. The Quality Manager may be approved as the Safety and Security Certification Manager as defined in Section 01115, SAFETY AND SECURITY CERTIFICATION.

f. Shall have some experience with LEED Rating System and be responsible for ensuring the LEED design and construction goals are met or exceeded where applicable.

4. Safety Superintendent

a. Shall have a degree in engineering or construction management with a minimum of 10 years experience in heavy industry construction safety practices and with a minimum of 5 years in rapid transit construction in operating conditions, and shall have completed OSHA Construction Safety Training and First Aid/CPR/Blood Borne Pathogens Training. Shall be a Certified Safety Professional (CSP).

b. Responsible for development of a construction safety plan.

c. Shall be a full time member of the Contractor and devotes full time to worksite safety in implementing, enforcing, and maintaining the safety program for the Contractor and Subcontractor forces. The Safety Superintendent shall have no duty other than safety supervision of persons, equipment, and property affected by Contract work. The Contractor shall employ and assign full-time a Safety Superintendent on Site at all times.

d. Shall have specialized training and experience in construction safety supervision and have a thorough knowledge of all OSHA regulations. The Safety Superintendent shall have the ability to develop and conduct safety-training courses. The Safety Superintendent shall be familiar with industrial hygiene equipment and testing as required for the protection of all personnel and the public.

PART 2 – PRODUCTS (not used)

PART 3 – EXECUTION (not used)

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SECTION 01114

SAFETY/ENVIRONMENTAL REQUIREMENTS

PART 1 – GENERAL

1.01 SUMMARY

A. This Section includes construction safety and security and environmental safety requirements for the Project including WMATA's Safety Awareness Program.

1.02 REFERENCES

A. WMATA Construction Safety and Environmental Manual (CSEM)

B. ANSI/ISEA 107 - American National Standard for High-Visibility Safety Apparel

C. Occupational Safety and Health Association (OSHA)

1. 29 CFR §1910
2. 29 CFR §1926
3. 49 CFR §172
4. 49 CFR §390-397

D. U.S. Army Corps of Engineers - Safety Manual EM-385-1-1

E. National Commission for the Certification of Crane Operators

F. Resource Conservation and Recovery Act (RCRA) of 1976 and amendments

G. Department of Bus Service Employee's Handbook

H. WMATA, Office of Rail Transportation Maintenance Operations Control, Administrative Procedure OAP 200-33, Site Specific Work Plan (SSWP)

I. WMATA Construction Safety and Environmental Manual

1.03 QUALITY ASSURANCE

A. Safety Superintendent: As specified in Section 01111, CONTRACTOR KEY STAFF

B. First Aid Attendant

1. Shall have current First Aid and CPR certification. A resume, certifications, and evidence of training shall be submitted documenting education and experience.
2. Shall be trained in Blood-borne Pathogens in accordance with CFR §1910.1030.

1.04 SUBMITTALS

A. Submit to the Contracting Officer Representative for approval in accordance with Section 01330, SUBMITTAL PROCEDURES, 60 Days prior to commencing construction, unless noted otherwise:

1. Documentation and Certifications of Safety Superintendent's and First Aid Attendant's, as applicable, experience in construction safety

2. Contractor's Organizational Health and Safety Program Plan that includes OSHA required plans listed below that are applicable to the Work

a. Site-specific Emergency Response Plan

b. Site-specific Temporary Fire Protection System Plan

c. Site-specific Waste Water Discharge Plan if wastewater is generated

d. Site-specific Pollution Control Program

e. Site-specific Dust and Debris Control Plan

f. Site-Specific Work Plans for all work that will be performed in the right-of-way and operational ancillary rooms within the station

g. Site-specific Fall Protection Plan

h. Bloodborne Pathogens Exposure Control Plan

i. Hearing Conservation Program if employees are exposed to continuous noise in excess of the OSHA Action Level

j. Respiratory Protection Program if employees are exposed to dust (including crystalline silica) or other toxic atmospheres in excess of the OSHA permissible exposure limits. If a respiratory program is required, provide documentation of training, medical clearance for respirator use, and respirator fit testing.

k. Hot Work Program including hot work permits

l. Lockout Tagout Program

3. Job Hazard Analysis submitted prior to each element of construction.

4. Documentation to show that all Confined Space entrants and attendants are trained in Confined Space Entry, including hands-on-training or Confined Space Awareness, as applicable, and possess applicable licenses and certifications.

5. Identity of all materials or chemicals to be used on Authority property (including welding rods), material safety data sheets (MSDSs) for these products, and a brief explanation of how they will be used and if wastes will be generated. Submit MSDS Review Request Forms prior to the use these materials or chemicals.

6. CCO certificates before crane operators work on the Site.

B. Submit to the Contracting Officer Representative for information in accordance with Section 01330, SUBMITTAL PROCEDURES, 60 Days prior to commencing construction, unless noted otherwise:

1. Certificates of Insurance for pollution liability coverage, if applicable, in accordance with Section 00877, INDEMNIFICATION AND INSURANCE REQUIREMENTS, for Contractor or

Subcontractors performing work involving hazardous materials, hazardous substances, hazardous wastes, or contaminated soil or water.

2. Results of noise monitoring, air monitoring, and soil, water or waste sampling submitted weekly during work activities.

3. Documentation of medical surveillance submitted monthly.

4. Identity of equipment that may generate toxic atmospheres such as gasoline or diesel-powered generators, welding, and cutting equipment

5. Documentation of licenses and certificates required for lead or asbestos abatement, UST removal, or installation, OSHA's Hazardous Waste Operations and Emergency Response Standard (HAZWOPER), or other work requiring licensing or certification such as welding.

6. Documentation of licenses, certificates, and U.S. EPA identification numbers required for transportation of hazardous materials, hazardous substances, or hazardous wastes.

7. Documentation of licenses, permits, and certificates required for disposal of hazardous wastes including the name and address of the waste disposal facility where hazardous waste materials are to be disposed.

8. Certification of Crane Operators Certificate before the crane operator works on the Site.

9. Identification of air monitoring devices that will be used to monitor air quality at the Work Site. Provide copies of most recent manufacturer calibration and all Contractor field calibration checks.

1.05 SAFETY REQUIREMENTS

A. The Contractor shall be responsible for all Subcontractors, Suppliers, and other persons working under its direction to comply with all requirements as noted herein, and shall disseminate these requirements to those personnel.

B. Cooperate with representatives of the Authority and federal, state, and local regulatory agencies during Site inspections or investigations. Inspection and investigation activities do not involve directing of Contractor's work, but may involve interviews with Contractor personnel. The Contracting Officer Representative will notify the Contractor if any operation that is not in compliance with federal, state, or local health and safety or environmental regulations or Authority policy and procedures, and that may require the Contractor to stop work on a specific task or operation.

C. Immediately report all accidents and incidents (including near misses) that occur during the performance of the Work to the Contracting Officer Representative.

D. The storage of hazardous and flammable materials (including such items as rags, mops, paper towels, or other combustible materials contaminated with hazardous or flammable products) on Authority property, is restricted. Contractors seeking to store hazardous or flammable materials on Authority property must obtain approval from the Authority by submitting material safety data sheet (MSDS) for each specific chemical and the quantity of each chemical to be stored on the Site. It may not always be possible to grant permission to store hazardous or flammable materials on Authority property. If permission is granted, store the materials in compliance with the jurisdictional codes and regulations. Acquire permits for use of hazardous materials as required by the jurisdictional Fire Marshal.

E. The use of explosives for the performance of Contract work will not be permitted without written Approval from the Contracting Officer Representative. Obtain all permits and approvals from the Jurisdictional Authorities.

F. Prior to performing any work on or above or under the right-of-way, arrangements shall be made through the Contracting Officer Representative for access rights and power outage in accordance with SOP No. 19 contained in the Metrorail Safety Rules and Procedures Handbook and OAP 200-33 (SSWP). All special requests for access, single tracking, power outages, escorts, and other Authority support shall be submitted in writing. Site Specific Work Plans shall be submitted for all Work conducted in Authority Right-of Way and any operational facility. Ensure that personnel complete safety training by Authority on the rules and procedures for working on the Right-of-Way before starting such work.

G. Employ and assign to the construction work a Safety Superintendent as specified in Section 01111, CONTRACTOR KEY STAFF, and a separate certified First Aid Attendant for on-site work activities. A first aid station shall be established and fully equipped to meet the needs of the anticipated work force. The certified First Aid Attendant shall be on duty in the first aid station at all times when construction work is in progress except when on emergency calls. In no event shall work at the Site be performed until the approved Safety Superintendent and First Aid Attendant are available to the Project.

H. If, at any time, the Work Site is without the services of an approved Safety Superintendent and First Aid Attendant for a period of 15 Days or more, the Work may be closed down at the discretion of the Contracting Officer Representative. The Safety Superintendent and First Aid Attendant shall be acceptable to the Contracting Officer Representative, and their performance will be reviewed and documented by the Contracting Officer Representative on a continuing basis. If the Safety Superintendent's and First Aid Attendant's effectiveness is below standard, the Contractor shall provide immediate replacement at the Contracting Officer Representative's direction. Once employed, the Safety Superintendent and First Aid Attendant shall not be changed without permission of the Contracting Officer Representative.

I. For all work within Confined Spaces, comply with all OSHA, state, and local Jurisdictional Authority rules and regulations for confined spaces defined by 29 CFR §1910.146. Confined spaces shall be classified as either non-permit confined space or permit-required confined space in accordance with OSHA regulations.

J. Prior to the initial entry into a confined space, coordinate entry with the Contracting Officer Representative and take air quality readings to establish base readings and conditions. At a minimum, oxygen, lower explosive limit, carbon monoxide, and hydrogen sulfide, shall be measured. Measurement of additional parameters may be required depending on the location of the space and potential for atmospheric hazards related to contamination or work activities.

K. Air quality and any additional parameter reading results shall be provided to the Contracting Officer Representative for recording purposes and shall determine if atmospheric hazards exist, which would classify the space as a permit-required confined space. Continuous and follow-up monitoring of air quality shall meet OSHA requirements, and all subsequent results shall be provided to the Contracting Officer Representative.

L. Prior to the start of any work involving non-permit confined spaces, submit the following:

1. Written Job Hazard Analysis for all work to be performed in the confined space, including MSDSs for chemicals to be used in the space. Submit MSDSs for all chemicals to be used on Authority property along with a brief description of how and where they will be used and if wastes will be generated. The MSDSs will be reviewed by Authority and if approved, the materials can be used in the system. If they are rejected, submit a substitute for Authority approval. The MSDSs must be recent (less than 3 years old) and comply with the OSHA Hazard Communication Standard 29 CFR §1910.1200. The Contractor is responsible for complying with the requirements of the MSDSs.

2. Written Emergency Response Plan, which identifies emergency responders for rescue operations.

3. Written plan for a temporary Fire Protection System as specified in Section 00740, PROTECTION OF PERSONS AND PROPERTY, for use during the term of the Contract, for Authority approval. Ensure that work activities do not adversely impact existing fire protection system(s) i.e., sprinklers, stand pipes, and portable extinguisher.

4. Identification of air monitoring devices that will be used to monitor air quality at the work Site. Provide copies of most recent manufacturer calibration and all Contractor field calibration checks. As a minimum, Authority requires field calibration checks on air monitoring instruments, each day (or shift) before use. The field calibration check information shall include the date, time, calibration check data, and the printed name and signature of the person performing the calibration check.

5. Documentation to show that all personnel working in or near non-permit confined spaces are trained in Confined Space Awareness.

M. Prior to the start of any work involving permit-required confined spaces, submit the following in addition to those items required for non-permit confined spaces:

1. Confined space permit for applicable space. Each permit is valid for a maximum of 24 hours.

2. Written Respiratory Protection Program.

3. Documentation to show that all personnel required to wear respiratory protection have received respiratory protection training, have been fit tested for the respirators they are required to wear (applies to tight fitting respirators) and have been medically evaluated to verify that they have no health problem that would interfere with their safe use of a respirator.

4. A warning sign to identify the work Site as a permit-required confined space requiring authorization to enter.

5. The Contractor is required to notify the State at least 24 hours prior to entering permit-required confined spaces or to employ State certified Safety personnel who will manage permit-required confined space access and who will perform the required record keeping.

N. Provide a Job Hazard Analysis prior to the start of each phase of work.

O. Work clothing consists of long pants, shirts with long or short sleeves, sturdy work boots, and appropriate personal protective equipment. Jewelry that hangs, loose clothing, or clothing with non-detachable hoods, drawstrings, or anything that can become entangled in machinery, shall not be worn on the work Site if machinery is in use on the work Site. Personal protective equipment such as hard hats and footwear shall meet the requirements of 29 CFR §1910.135 and §1910.136. Athletic-type footwear shall not be worn on the Site.

P. Smoking is prohibited in the Metrorail system, Metrobus system, other Authority facilities, and in Authority vehicles. The Contracting Officer Representative will select a designated smoking area outside the system or facilities and Contractor will be informed of its location. Contractor personnel found smoking in un-designated areas will be subject to removal from Authority property. The Contractor's Safety Superintendent shall be responsible for ensuring compliance.

Q. The OSHA Standard for Sanitation, 29 CFR §1910.141, shall be followed. Prior to starting work, furnish for the Contractor's staff, necessary toilet convenience secluded from public view. They should be kept in a clean and sanitary condition and shall comply with the requirements and regulations of the area in which the work is being performed. Potable drinking water shall be provided with individual cups and sanitary conditions for the water dispenser shall be maintained. A common drinking cup and other common utensils are prohibited.

R. For all work at heights above 6 feet, submit a detailed, site-specific Fall Protection Plan. Comply with the most stringent OSHA requirements for Walking-Working Surfaces (29 CFR Part 1910

Subpart D), Scaffolds (29 CFR Part 1926, Subpart L), and Fall Protection 29 CFR Part 1926, Subpart M.

S. Comply with 29 CFR §1910.95, Occupational Noise Exposure for all work on Authority property, including construction. This standard requires that employees exposed to continuous noise in excess of the OSHA Action Level, participate in a Hearing Conservation Program. Instruments used for noise measurements must be appropriate for the type of noise being measured (impact/impulse or continuous).

T. If the Work involves removal of paints or coatings, test the paint or coatings to determine if they contain heavy metals such as lead that require special handling and disposal considerations. As a minimum, testing shall be conducted for the eight metals (arsenic, barium, cadmium, chromium, lead, mercury, silver, and selenium) required by the Resource Conservation and Recovery Act (RCRA) of 1976 and amendments. If any of these are present, the components will require special handling and disposal to prevent exposure to workers, patrons, the community, and the environment. The Contractor's personnel performing lead-based paint abatement, removal, or control, shall have all licenses and accreditation required by the jurisdiction in which the work is performed. Jurisdictions that do not have their own state lead plans fall under the auspices of the Environmental Protection Agency (EPA). The Contractor shall provide medical monitoring to meet the requirements of 29 CFR §1910.1025 and §1926.62. As a minimum, medical monitoring shall consist of biological monitoring for lead and zinc protoporphyrin and shall include a physician's medical determination. As a minimum, biological monitoring shall be conducted immediately prior to working on Authority property where the employee may be exposed to lead, and immediately upon completion of this work. The Contractor shall provide training for lead workers and supervisors as required by the jurisdictional regulations. Documentation shall be submitted to the Contracting Officer Representative prior to commencement of work. All documentation shall be authentic and verifiable. All materials shall be handled and disposed of in compliance with the jurisdictional regulations. MSDSs for replacement paints/coatings must be approved by Authority prior to use on Authority property.

U. If the Work involves removal of insulation, flooring, cove base, mastic, ceiling tile, roofing materials, or any other material that is suspected of containing asbestos, the Contractor must have the materials sampled and analyzed to determine if they contain asbestos. If the Contractor will be handling or removing asbestos-containing materials, the Contractor shall have all licenses and accreditations required by the jurisdiction in which the work is performed. The Contractor s required to provide medical monitoring to meet the requirements of 29 CFR §1910.1001 and §1926.1101. The Contractor shall provide training for asbestos workers and supervisors as required by the jurisdictional regulations. Documentation shall be provided to the Contracting Officer Representative prior to commencement of work. All documentation shall be authentic and verifiable. All materials shall be handled and disposed of in compliance with the jurisdictional regulations. All replacement materials shall be free of asbestos.

V. Contractor's personnel shall not be exposed to asphalt fumes in excess of the National Institute for Occupational Safety and Health (NIOSH) recommended ceiling limit of 5 milligrams of asphalt fumes per cubic meter of air (5 mg/m^3), in any 15-minute period. NIOSH provides recommendations for control of asphalt fumes.

W. Work that generates visible dust requires submission of a Dust and Debris Control Plan to prevent exposure of employees, patrons, and the community to dust including crystalline silica dust. Be prepared to submit air-monitoring data to demonstrate effectiveness of dust control measures. If dust cannot be controlled, submit Respiratory Protection Program in compliance with 29 CFR §1926.103 or 29 CFR §1910.134, and submit evidence of air monitoring, training documentation, medical clearance for respirator use, and respirator fit tests for tight-fitting respirators.

X. Ensure that the level of exhaust emissions from equipment such as air compressors and generators, are within acceptable limits to comply with clean air regulations and that workers are not exposed

to exhaust fumes or gases (carbon monoxide, sulfur dioxide, nitrogen oxides, hydrogen sulfide, aldehydes) in excess of the most stringent of occupational exposure limits.

Y. For all work generating waste water, submit a Waste Water Discharge Plan that describes how the Contractor will treat and release wastewater generated by activities at the work Site, for all work that generates wastewater. Apply for Temporary Discharge Permit from local sewer authority, as required by specific site activities. Comply with Consolidated Plan prepared by Authority for Bus Divisions and Rail Yards.

Z. For Abrasive Blasting activities, all MSDSs for abrasives shall be submitted for Approval prior to abrasive blasting activities. Only abrasives containing less than 1 percent crystalline silica shall be used for abrasive blasting.

AA. For Hot Work activities, provide documentation on certification for personnel who perform welding on Authority property. Ventilation in accordance with OSHA regulations shall be provided for hot work such as welding, cutting, or brazing.

BB. At the Site of the work, a First Aid Kit shall be provided and fully equipped to meet the needs of the anticipated work force. Employees expected to render First Aid or CPR shall have the proper current certifications and be trained in Bloodborne Pathogens in accordance with 29 CFR §1910.1030.

CC. Work shall not be performed in any area in use by the public, unless specifically required by the Contract or directed in writing by the Contracting Officer Representative. Give at least 72 hours notice to the Contracting Officer Representative before beginning such work.

DD. In cases where the movement of Contractor's motorized equipment is necessary, flag persons shall be provided to warn and direct personnel and patrons away from the area of travel. Flag persons shall be certified as trained in proper flagging techniques and Contractor employees involved in traffic control and devices shall be certified as trained in traffic management as required by the State or local jurisdiction. Certification shall be documented.

EE. When it is necessary to maintain use of work areas involving stations, sidewalks, pedestrian bridges, elevators, platforms, bus shelters, vehicular roadways, building entrances, and corridors, protect the area with guardrails, substantial barricades, temporary fences, overhead protection, and temporary partitions as deemed necessary by the Contracting Officer Representative. Under no circumstances will yellow or orange tape strung between barricades, or the like, be acceptable as a substantial barricade. Open manholes, access openings, or other breaks in the normal walking surface shall be isolated from personnel and the public using barricades.

FF. Sidewalks, entrances, platforms, mezzanines, or any other location where personnel or the public traverses, shall always be kept clear of obstruction, tools, ladders, work debris, and excavation materials. When necessary, temporary sidewalks or pathways shall be provided for pedestrian traffic. Temporary sidewalks or pathways shall be free of tripping hazards and protected by proper guardrails and barricades. Temporary means of egress and access shall be marked for easy recognition. If work is required above sidewalks, overhead protection shall be provided. Protected walkways shall be Approved by the Authority.

GG. Appropriate warning signs and instructional safety signs shall be conspicuously posted in all areas involving construction activities. Work involving electrical systems or equipment in or near the area to which personnel or the public have access shall be isolated using barricades and partitions. Exposed, live circuits shall not be left accessible to personnel or the public or left dangling overhead. Before completion of the Work:

1. Ensure that all wiring is insulated and properly positioned.

2. Verify grounding, bonding, or both, of all metallic conduit, wiring or electrical equipment that is in the areas of contractual effort, and to which the public can make contact.

3. Notify the Contracting Officer Representative immediately in those instances where verification cannot be made.

4. Contractor's personnel working near the platform edge or in the right-of-way shall wear reflective safety vests with the tear-away feature, to identify them to passing trains, as directed by the Authority at the right-of-way safety training required in this Section. The safety vests shall comply with the ANSI/ISEA 107 guideline entitled American National Standard for High-Visibility Safety Apparel. All of the Contractor's personnel are required to attend safety training provided by the Authority before starting work near the platform edge or in the right-of-way.

HH. Use of Cranes and Derricks:

1. General Safety Requirements. Comply with the following:

   a. 29 CFR §1910.180 through §1910.189.

   b. 29 CFR §1926.550 through §1926.556

   c. U.S. Army Corps of Engineers, Safety Manual EM-385-1-1.

2. No part of any crane or derrick boom shall swing over Authority patrons, tracks, or stations without an Authority Approved shield or procedure.

3. Placement of crane or derrick shall be coordinated with the Contracting Officer Representative.

4. NOT USED

5. Hardhat requirements are enforced.

6. "Swing Stop" requirements may be instituted based on the hazards involved.

7. Use of cranes and derricks over common corridor railroads and highways is under the rules of the affected common corridor railroad or highway owner.

8. All cranes used for erecting components of precast concrete on the Project shall be equipped with Load Moment Indicating (LMI) devices or Rated Capacity Indicators (RCI), an anti-two-block device. All crane operators shall be certified to operate the type of crane used by the National Commission for the Certification of Crane Operators (CCO) and their CCO certificates shall be submitted to the Contracting Officer Representative. To increase the factor of safety when picking structural elements of the building, all cranes shall have load capacity charts reduced (de-rated) by a factor of 30 percent. Submit a lift plan showing all pertinent information demonstrating that the total load does not exceed 70 percent of the maximum before crane delivery to the Project Site.

II. All jobsite visits for visitors and tours shall be coordinated through Contracting Officer Representative in accordance with the WMATA Construction Safety and Environmental Manual, and Contractor insurance requirements.

1.06 ENVIRONMENTAL SAFETY REQUIREMENTS

A. Comply with the most stringent of federal, state, or local environmental regulations for air, water, land, and waste in order to maintain the safety and health of employees, Authority patrons, and the community.

B. If task requires specialized licenses or certifications, for example "lead or asbestos abatement contractor's license or certified tank installer/remover", show evidence of such registration prior to commencement of work. If the Work requires specialized training, for example lead or asbestos training, show evidence that employees have received such training prior to commencement of work.

C. If the Work requires transportation of hazardous materials or hazardous substances, provide evidence of Department of Transportation General Awareness Driver's Training in compliance with 49 CFR §172 and Commercial Driver's License in compliance with 49 CFR §390-397, prior to commencement of work.

D. All hazardous materials and hazardous substances shall be stored in "Performance Oriented Packaging" in compliance with 49 CFR §178, Subpart L.

E. If the Work requires disposal of hazardous wastes, disposal shall be to a Treatment/Storage/Disposal facility with a Part B Permit and the waste hauler shall have a state or local license and U.S. EPA identification number. Apply and pay for temporary EPA Generator ID number required to dispose of hazardous waste. Submit evidence of all applicable licenses and permits along with the name and address of the waste disposal facility where hazardous waste materials are to be disposed, prior to commencement of work.

F. If the Work involves response to spills of hazardous materials, hazardous substances or hazardous wastes, all personnel shall have appropriate training that complies with 29 CFR §1910.120.

PART 2 – PRODUCTS (not used)

PART 3 – EXECUTION (not used)

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SECTION 01115

SAFETY AND SECURTIY CERTIFICATION

PART 1 – GENERAL

1.01 SUMMARY

A. This Section includes the process used to certify that the WMATA system complies with the specified safety and security requirements.

1.02 REFERENCES

A. Federal Transit Administration

1. Handbook of Transit Safety and Security Certification

2. Guideline 5800.1 - Safety and Security Management Guide for Major Capital Projects

B. Transportation Safety Institute

C. WMATA Safety and Security Certification Program Plan

1.03 JOB CONDITIONS

A. The Certifiable Items List (CIL) that shall be completed by the Contractor throughout the Period of Performance of this Contract is provided as an attachment to this Specification Section. The design related entries in the CIL have been completed by the Authority. A sample CIL with all entries completed is also attached to this Specification Section.

1.04 SUBMITTALS

A. Submit the following documents for approval in accordance with Section 01330, SUBMITTAL PROCEDURES:

1. Safety and Security Certification Management Plan (SSCMP) within 60 Days of NTP.

2. Updated CIL for construction and testing every 60 Days for the duration of the Contract.

3. If design changes are proposed by Contractor, updated CIL submitted with each Contractor proposed design change.

4. If design changes are proposed by Contractor, updated Hazard and Vulnerability Resolution and Tracking System submitted with each Contractor proposed design change.

5. If design changes are proposed by Contractor, updated Hazard Analysis and Threat Vulnerability Assessment submitted with each Contractor proposed design change.

6. Final CIL for construction and testing component and Certification Report for construction and testing component in accordance with FTA Guideline 5800.1, Safety and Security Management Guidance for Major Capital Projects. Include design component of CIL and Certification Report if design changes were proposed by the Contractor and Approved by the Authority.

1.05 QUALITY

A. Contractor’s Certification Program Representative shall have, within the last 3 years, completed a recognized certification training course provided by Federal Transportation Administration (FTA),

Transportation Safety Institute (TSI), or other recognized Safety and Security Certification Training Agency.

1.06 GENERAL

A. The purpose of the Safety and Security Certification program is to ensure that:

1. Design changes proposed by Contractor, construction, fabrication, installation, testing, and commissioning of all safety critical facility and system elements have been evaluated for compliance with the safety and security requirements, including applicable codes and standards, and to verify their readiness for operational use.

2. WMATA's rail and bus facilities and systems are operationally safe and secure for customers, employees, and the public.

B. The objective is to achieve an acceptable level of safety and security risk through a systematic approach to safety hazard and security vulnerability management through adherence with the design criteria, compliance with technical specifications, and testing verification.

1.07 SECURITY AND SAFETY CERTIFICATION PROCESS

A. Participate in the WMATA Safety and Security Certification Program Plan for the duration of the Contract as follows:

1. Contractor's Certification Program Representative shall manage and oversee compliance with the WMATA Safety and Security Certification Program Plan requirements.

2. Participate in working groups with Authority Safety, Security, and Project Staff to establish the certification status of the items on the CIL.

3. Identify certifiable items for Contractor proposed design changes and complete development of the Authority provided CIL to address all Contract specific items requiring safety and security certification based on the construction and testing plan, and input from the working group.

4. Identify the safety and security design criteria, technical specifications, and testing requirements, including applicable codes and standards, for each certifiable item on the CIL that resulted from a Contractor proposed design change.

5. Demonstrate that the design complies with the identified safety and security requirements for those items on the CIL that resulted from a Contractor proposed design change.

6. Demonstrate that the construction, fabrication, and installation comply with the safety and security requirements for those items on the CIL.

7. Demonstrate through testing the compliance with the safety and security requirements for those items on the CIL.

8. If changes are proposed to the design, identify and categorize project hazards by their potential severity and probability of occurrence. Analyze each hazard for its potential impact to the Project.

9. If changes are proposed to the design, evaluate project for susceptibility to potential threats and identify design corrective actions that can reduce or mitigate the risk of serious consequences from a security incident. Analyze each identified threat for its potential impact to the Project.

10. Provide and update a tracking system for all hazards and threat vulnerabilities identified as a result of Contractor proposed design changes.

11. Maintain a document management system within the Authority's Project Management Software System (PMSS) that enables the retrieval of verification documentation that demonstrates compliance with the safety and security requirements in construction, fabrication, installation, and testing for each item in the CIL. Verification documentation may consist of drawings, reports, fabrication approvals, inspection, test results, certificates, or other supporting documents.

12. Complete the construction/installation, and testing sections of the CIL as compliance is achieved and provide the required CIL verification documentation to WMATA as the construction and testing progresses.

13. Prepare construction and testing component of Certification Report and include design component if design changes were proposed by the Contractor and Approved by the Authority.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION

3.01 CERTIFICATION PROGRAM REPRESENTATIVE

A. Appoint a Certification Program Representative with the qualifications noted in this Section to lead and coordinate the certification process.

3.02 SAFETY AND CERTIFICATION PROGRAM WORKSHOPS

A. Conduct Safety and Security workshops on a monthly basis for the duration of the Contract.

3.03 CIL AND FINAL REPORT

A. Prepare, update and complete CIL throughout the Period of Performance of the Contract and prepare final CIL and Certification Report prior to Acceptance of the Project.

ATTACHMENTS:

A. The design related entries in the CIL have been completed by the Authority.

B. A sample CIL with all entries completed

C. Template for SSCMP.

END OF SECTION

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SECTION 01116

IDENTIFICATION AND SECURITY

PART 1 – GENERAL

1.01 SUMMARY

A. This Section includes identification and security requirements for work on Authority Property.

1.02 DEFINITIONS

A. Authority Property: Includes the Authority's Rail and Bus Operating System and Authority administrative facilities, whether under construction or being rehabilitated.

1.03 SUBMITTALS

A. Forms necessary to initiate background check process, including color copy of the front and back of Contractor personnel's Driver License or other accepted form of identification.

1.04 PRE-EMPLOYMENT CRIMINAL BACKGROUND CHECK

A. Criminal background checks of all Contractor employees working at a WMATA facility on this Contract will be required pursuant to Metro Policy/Instruction 7.40/0, Background Screenings and Metro Policy/Instruction 6.10/5, Metro Employee Identification Cards, Section 5.04. Eligibility for access to WMATA property will be based on WMATA's pre-employment Criminal Background Check criteria. WMATA will provide the Contractor employees with background check consent forms that the Contractor's employees must complete and sign. The forms will require the Contractor employees to appear in person, provide their full legal names, including middle initials if applicable, as well as their Social Security numbers, in addition to other information that will be necessary to conduct the background checks. The operating hours are Monday through Friday from 0700 to 1530 except holidays. Upon receipt of the completed, signed forms, WMATA will conduct background checks including criminal court searches and Social Security Number verifications of the Contractor employees. If there is derogatory information that would disqualify a Contractor employee from receiving a badge to access WMATA property, the Contractor and its employee will be notified that the background check failed. The completed forms are secured in a locked file cabinet and are destroyed 1 year after the expiration date on the Contractor employee's badge. These background checks are expected to take 1 business day for processing. The Contractor employee must allow sufficient time for completion. The background check is free of charge.

B. Background checks are conducted to promote a safe work environment and to protect our company's most important assets: the people we serve and the people with whom we serve. This enables WMATA management to make prudent decisions and maintain a high quality workforce. Contractor employees who successfully complete the background checks are eligible to enter WMATA property once they are issued a Contractor badge. Contractor employees who do not authorize background checks or whose background checks are unsatisfactory will not be granted Contractor badges or access to WMATA property. The records generated by these background checks that contain private information will not be disclosed unless disclosure is required under the PARP/Privacy Policies.

1.05 IDENTIFICATION AND SECURITY CHECKS

A. All employees of the Contractor and its Subcontractors working on WMATA projects shall prominently display an identification badge issued by the Authority.

B. Contractor Photo ID Badges: Individuals requiring the Contractor photo ID badges are subject to the following identification and security checks

1. Provide valid and current photo identification, such as a State-issued Driver's License, State-issued Identification Card, U.S. Passport, or identification from the Immigration and Naturalization Service, such as a Permit to Work or a Permanent Residence Card (Green Card).

2. The individual's identification may be matched against the FBI Watch List and security clearance.

3. The photo identification will be matched against the Contractor's list of employees authorized to work on a particular job.

1.06 NON-CONFORMANCE

A. In the event any employee of the Contractor or its Subcontractors fails to adhere to the requirements of this Section, the employee or Subcontractor will be removed from the job until non-conformance is corrected. Such removal will not be grounds for any time extension or additional compensation.

1.07 ADMINISTRATION

A. Contractor Photo ID Badge:

1. A Contractor Photo ID badge will be required if the individual will be present on Authority Property. Issuance of the Contractor Photo ID badge will require the individual to schedule and report to the Authority's Jackson Graham Building at 600 Fifth Street, NW, Washington DC for processing.

2. Contractor Photo ID badge takes approximately 14 Days to obtain unless personnel have lived outside of the United States within the last year, in which case the background checking process will require additional time to complete.

3. It will be the Contractor's responsibility to immediately notify the Contracting Officer Representative if a worker loses his or her Contractor Photo ID badge. A fee will be charged for each lost badge.

4. All Contractor Photo ID badges shall be returned to the Contracting Officer Representative when they are no longer needed.

5. Contractor Photo ID badges shall be renewed on an annual basis.

PART 2 – PRODUCTS (not used)

PART 3 – EXECUTION (not used)

END OF SECTION

SECTION 01141

ACCESS TO SITE

PART 1 – GENERAL

1.01 SUMMARY

A. This Section specifies requirements for gaining access to Site and describes work hours the Contractor will be allowed in Authority Roadway and Operating Facilities.

1.02 DEFINITIONS:

A. Interlocking – area allowing trains to cross from one track to another using a turnout and a series of switches.

B. Non-Revenue Weekday – Monday to Friday when the Authority is not operating revenue service trains and the track is made available to the Contractor.

C. Roadway – Any location where roadway worker protection is required:

1. On at-grade track, all areas between the Roadway fences, except where an intermediate boundary fence exists.

2. On aerial structures, all areas between hand railings to include all safety walkways

3. In tunnel areas, all areas between tunnel walls to include all safety walk areas and shafts and ancillary areas that are open to the track.

4. In transition areas, all areas fence to fence, wall to wall, railing to railing, fence to wall, fence to railing, and wall to railing.

5. Maintenance shop aprons, yards and their tracks are excluded from the Roadway, and from the Roadway Worker Protection Rules, with the exception of the yard's arrival and departure tracks, and in areas where track repair work is being performed, in which case Roadway Worker Protection Rules will be put in place for the workers associated with that track work and its associated work zone. Embedded tracks within maintenance facilities are not considered part of the Roadway; however, carwash tracks are included. Station platforms are not considered part of the Roadway nor are the walkways beyond the station platform end-gates protected by handrails. However, any maintenance or construction, the use of tools, ladders, scaffolds or lifts that have the potential for fouling the track requires a Roadway Worker in Charge (RWIC) to use Roadway worker protection in accordance with the Roadway Worker Protection Manual (RWPM), even if performed behind the hand rails.

6. Individuals are considered off the Roadway if they are on the non-track side of the intermediate boundary fence. Walkways protected by handrails beyond the station platform end-gates are not considered part of the Roadway. All non-WMATA employees must be escorted and be granted permission by Rail Operations Control Center (ROCC) to go beyond station platform end-gates.

D. Outside of Roadway: Public and non-public areas of WMATA stations and facilities that do not encroach upon the operating rail system or the public. These areas can be given for the Work during revenue and non-revenue hours subject to prior coordination and approval of COR.

E. Access: The Contractor‘s right to work at the Site as approved by the Authority.

F. Invasive Activity: An activity performed by the Contractor on the platform that creates a problem for patrons or causes patron complaint, such as inability to hear station announcements, visual disturbance due to welding, dusty conditions or other similar activities as determined by the COR.

1.03 REFERENCES

A. The Contractor shall comply with the following Authority's Standard Operating Procedures:

1. Metrorail Safety Rules and Procedures Handbook (MSRPH) and Temporary Orders to MSRHP

2. WMATA, Office of Rail Transportation Maintenance Operations Control, Administrative Procedure OAP 200-33, Site Specific Work Plan (SSWP)

3. Roadway Worker Protection Manual (RWPM)

4. Revenue Service Adjustment Form

5. Red Tag Form

6. General Orders and Track Rights System (GOTRS) Request Form

7. Escort Request Form

8. Switch Order Form

9. Site Specific Work Plan (SSWP) Form

1.04 SUBMITTALS

A. Submit the following documents to the COR for approval to work in accordance with Section 01330, SUBMITTAL PROCEDURES:

1. An approved Site Specific Work Plan (SSWP) is required to perform Work on Authority property. Submit a SSWP request to the COR 90 Days prior to the planned start of Work date. The request shall include the completed SSWP Form and supporting documents as defined in Operational Administrative Procedure (OAP) 200-33, Site Specific Work Plan (SSWP). The Contractor must have received Authority SSWP approval prior to requesting track rights in the Authority GOTRS system.

2. Track Rights requests are required for all Roadway access including work which has a potential for fouling the tracks and Non-revenue access. Track rights requests by the Contractor must be submitted not later than 30 Days prior to Monday of the week when the Work is to start. The Authority will enter the request into the GOTRS system.

3. Switch Orders are required for all electrical switching. As part of Switch Order procedure the Contractor shall submit detailed information identifying the breaker and panel for the electrical work at the time of GOTRS request submission.

4. Submit Escort Request Form by Monday 12:00 for the following week's planned Work. All Work on WMATA property will require WMATA Escort support.

5. Submit requests to access the shop aprons, yards and yard tracks 7 Days in advance of requiring access to perform Work.

B. All requests are subject to approval by the Authority.

1.05 IDENTIFICATION CARDS

A. The Contractor and its Subcontractors working at the Site shall provide their personnel with WMATA Contractor Identification Badges showing the employer's name and the employee's name, number, and photo I.D. These badges shall be displayed in a prominent manner on each person while engaged on the Work. Access to the Site shall be granted only to properly accredited representatives of the Contractor and its Subcontractors.

B. The Contractor and Subcontractor requiring entry into the rail revenue operating system, including rail maintenance yards, for performance of the Work shall provide such employees requiring entry with photo identification cards issued by the Authority with a Roadway Worker Protection (RWP) training endorsement. RWP training, as administered by the Authority, will be required for the Contractor and Subcontractor employees prior to working in the rail revenue operating system and rail maintenance yards. Contractor's Safety Superintendent shall schedule the RWP training through the COR.

C. The Contractor shall obtain and be responsible for administering the use of WMATA contractor identification badges in accordance with Authority POLICY/INSTRUCTION No. 6.10/5 dated May18, 2011. The WMATA contractor identification badges are not valid for transportation on Metrobus or Metrorail and identification badges will be valid up to a maximum of one year. Should the Contractor’s and Subcontractor’s employees not have valid WMATA contractor identification badges, they will be dismissed from the Site and their work hours will not be compensated by WMATA.

1.06 WMATA HOURS OF OPERATION

A. Yard Operations are continuous 24 hours a day, 7 days a week.

B. Revenue hours are the hours during which train service is open to passenger traffic. Metrorail hours of train operation are published on the www.wmata.com website and are subject to change. Except when these hours are extended for special events or disrupted due to emergencies, they are:

1. Monday through Thursday: 05:00 to 24:00

2. Friday: 05:00 to 03:00 Saturday

3. Saturday: 07:00 to 03:00 Sunday

4. Sunday: 07:00 to 24:00

C. Rush hours are Monday through Friday 05:00 to 09:30 and 15:00 to 19:00.

D. Non-rush hours are the revenue hours during which train service is not designated as rush hour traffic:

1. Monday through Thursday: 09:30 to 15:00 and 19:00 to 24:00

2. Friday: 09:30 to 15:00 and 19:00 to 03:00 Saturday

3. Saturday and Sunday: All revenue hours

E. WMATA Non-revenue hours are defined as the hours during which train service is closed to passenger traffic:

1. Monday through Friday 00:00 to 05:00

2. Saturday and Sunday 03:00 to 07:00

F. It may be necessary to extend Metrorail revenue hours to accommodate special events. The Authority will inform the Contractor of special events as soon as practical that may impact work hours so that Work can be planned accordingly. A list of known special events is stated below in 1.08.

1.07 HOURS OF WORK

A. The Contractor shall work such hours per shift, as many shifts per day and as many days per week as necessary to complete the various parts of the Work. The Contractor shall complete the entire Work within the dates specified and within the restrictions listed below.

B. Work within Authority Roadway, on station platforms and within Authority operating facilities affecting revenue service shall be carried out during Non-Revenue Hours of Work and/or Revenue Service Adjustment (RSA) Hours of Work and shall be conducted under the oversight of Authority escorts.

C. The Contractor and Subcontractors shall not begin Work on any day until authorized to do so by the COR or the COR's appointed designee. If the Authority did not grant Access at the scheduled start time stated in Table 01141-01 due to Authority caused delay, the Contractor shall notify the COR or the COR's appointed designee in writing and by phone immediately.

D. The Contractor shall coordinate and schedule all Work with the COR to ensure that the Contractor's activities do not interfere with the operation of or access to the Authority's facilities.

E. On Site Contract Work shall be performed during four (4) general access categories as shown in Table 01141-01 below:

TABLE 01141-01: Hours of Work (Military Time)

Type	Work Hour Category	Report to Site Time	Access to Site Time	Off Site Time	Hours of Work	Description
Non-Revenue Hours of Work Track Rights Required (Daily)						
1	Non-Revenue Weekday	Mon-Fri 00:30	Mon-Fri 01:30	Mon-Fri 03:30	2	Any work within 5 feet of platform edge or which may have the potential to foul the tracks.
Non-Revenue Hours of Work Track Rights Not Required (Daily)						
2	Non-Revenue Weekday	Mon-Fri 00:00	Mon-Fri 00:30	Mon-Fri 04:30	4	Work occurring after all patrons have completely vacated the platform and the station has closed.
Hours of Work Track Rights Not Required and Within Barricades at Onset (Daily)						
3	Non-Revenue Weekday	Mon-Fri 22:00	Mon-Fri 22:30	Mon-Fri 04:30	6	Work may begin at 22:30 if all activities are entirely contained within the barricades. No work within 5 feet of platform edge or which may have the potential to foul the tracks will be permitted at any time.
Hours of Work Within Barricades Non-Invasive (Daily)						
4	Weekday	Mon-Fri 08:30	Mon-Fri 09:00	Mon-Fri 04:00	7	Work which is contained in its entirety within the temporary barricades. Work must be non-invasive and each planned activity reviewed and approved by COR. Work may be permitted to occur during revenue hours on a case by case base at the sole discretion of the COR. No work within 5 feet of platform edge or which may have the potential to foul the tracks will be permitted at any time.

F. The Authority reserves the first 60 (sixty) minutes following the identified “Report to Site” times to establish the required safety conditions within the Roadway when track rights are required (Type 1 only). The column in Table 01141-01 labeled “Access to Site Time” indicates the time the Contractor shall be granted access to the Work in the Roadway or the work location if outside of Roadway. The column labeled “Off Site Time” indicates the time the Contractor shall be off the Roadway which will give the Authority time to return the Roadway to revenue service, or off the work location if outside of Roadway. The Contractor shall be on Site no later than the time listed above in the column labeled “Report to Site”. If the Contractor is not on Site and prepared to begin Work at the “Report to Site” time, Access to the Roadway will not be granted.

G. Number of Type 1 Non-Revenue Hours of Work Track Rights Required Access.

A total of 25 Type 1 Non-Revenue Hours of Work Track Rights Required accesses will be provided to the Contractor throughout the Period of Performance of the Contract. Types 2, 3, or 4 Hours of Work may be utilized simultaneously with Type 1 work where applicable.

H. Type 4 Hours of Work Within Barricades Non-Invasive. The access to site time and off site time for this type of Work may deviate from the table 01141-01 on a case by case basis with advanced written request from Contractor and is subject to approval by COR.

1.08 TRACK RIGHTS AND HOURS OF WORK GUIDELINES AND RULES

A. The Contractor shall provide a written ninety (90) Day look ahead schedule, formatted as coordinated with the Authority and updated by the Contractor every month or more frequently as needed or as determined by the Authority, to forecast Contractor's upcoming Roadway access requirements. The Contractor shall refer to Section 01322, CONTRACT PROGRESS REPORTING for more information on schedule preparation.

B. Emergencies, excluding Acts of God, arise during the course of Metrorail operations that could cause the cancellation of a scheduled access. If an emergency occurs, then the affected access may be rescheduled.

C. If an emergency situation arises due to reasons including, but not limited to, loss of power, accident, terrorism, traffic overload, etc., the Contractor may be denied access to a previously approved Roadway access schedule. If the Contractor is already on site, Contractor may be directed to discontinue Work and clear the Roadway within fifteen (15) minutes.

D. For weather related delay the Contractor shall refer to Section 00727 TERMINATION FOR DEFAULT, DAMAGES FOR DELAY, AND TIME EXTENSIONS.

E. The Authority inspector or Authority escort may, on rare occasions, report to the Site later than planned due to other WMATA system requirements. If this impacts the Contractor’s scheduled Hours of Work, the Contractor may seek compensation as defined in Section 00841, CONSIDERATION AND BASIS FOR PAYMENT.

F. There are large events scheduled in the Washington, DC area that require special attention by the Authority. These events are typically scheduled no sooner than ninety (90) Days in advance of their occurrence. The Authority will notify the Contractor in writing of the scheduling of these events as soon as they become known. Contractor shall not make Non-Revenue Access requests that conflict with these events after being notified of event dates by the Authority. Contractor is to anticipate a minimum of 2 of these occurrences during the period of performance.

G. Track Rights requests may be restricted or denied during the following periods:

1. Presidential Inauguration: January 20, 2017 and the succeeding weekend
2. Cherry Blossom Festival: March 19 to April 17, 2016; March 18 to April 16, 2017
3. Race for the Cure: April 30-May 1, 2016; April 29-30, 2017
4. 4th of July: The 4th of July and the weekend preceding the 4th in 2016 and 2017
5. Marine Corps Marathon: October 22-23, 2016; October 28-29, 2017
6. Thanksgiving: Thanksgiving Eve through the following Monday
7. Christmas: Christmas Eve and Christmas Day
8. New Year: New Year’s Eve and New Year’s Day

H. There shall be no access requests starting prior to 02:00 on nights of regularly scheduled events such as sporting events, concerts, etc. The Contractor shall not make Non-Revenue Access requests that conflict with regularly scheduled sporting events.

I. Non-Revenue Weekday track rights will be needed for delivery of large equipment as well as any work within five (5) feet of trackway.

PART 2 – PRODUCTS (not used)

PART 3 – EXECUTION

3.01 DELIVERY OF SUPPLIES, EQUIPMENT AND COMPONENTS TO THE SITE

A. The Contractor shall be responsible for all necessary transport, loading and offloading, rigging, lifting, set up, and removal of equipment and materials to and from Authority property. Six (6) occasions will be provided to Contractor to deliver and remove items from the Work location via a WMATA furnished Prime Mover and Flat Car. The dimensions of a typical flat car open area for transporting of materials and equipment is 330 square feet or 8.5' x 39'. The height of materials and equipment being transported by rail shall not exceed the dynamic outline graphic parameters or height restrictions as directed by COR. Contractor must secure for transport all materials and equipment on WMATA Flat Car prior to transport to and from the site. If bins are required on Flat Cars for debris removal, Contractor shall provide and secure bins to the Flat Car.

B. WMATA rail yard addresses are listed below:

1. Shady Grove 15903 Somerville Rd., Rockville MD 20855
2. Brentwood 601 T St., NE, Washington DC 20018
3. Glenmont Yard 12750 Layhill Rd, Silver Spring MD 20906
4. West Falls Church 7251-B Idylwood Rd, Falls Church VA 22043
5. New Carrollton 4300 Garden City Dr, Landover MD 20785
6. Greenbelt 5801-A Sunnyside Ave, College Park MD 20740
7. Branch Ave 5700-AB Capital Gateway Dr, Suitland MD 20747
8. Alexandria 3201 Eisenhower Ave, Alexandria VA 22314

C. Large equipment requiring delivery by rail shall be delivered only during Non-Revenue Hours of Work and may only be loaded onto or offloaded from the WMATA system with prior authorization by COR.

D. The station platform at Farragut North will be made available to contractor for installation of temporary barriers and commencement of major construction operations on NTP + 75 calendar days. This date may be expedited at the discretion of COR if all contractor shop drawings and technical submittals are approved by WMATA. Minor survey and preparatory work may occur prior to NTP + 75 days with approval from COR.

3.02 APPLICABLE WMATA STANDARD PROCEDURES

A. All Work is subject to adequate prior scheduling of Work that complies with the time frames for approval of Work schedules as detailed above, and in those cases, compliance with Attachment to the RFP named "Metrorail Safety Rules and Procedures Handbook" for working within WMATA Metro Rail Stations or on the Roadway, will be strictly enforced.

B. The Contractor shall comply with the Authority's Standard Operating Procedures noted in Article 1.03.

END OF SECTION

SECTION 01180

PROJECT UTILITY INTERFACE

PART 1 – GENERAL

1.01 SUMMARY

A. This Section specifies the Contractor's responsibilities regarding interface with Utility companies and agencies.

1.02 SUBMITTALS

A. Submit sets of drawings and specifications to those Utilities and agencies affected by construction as required. Provide the Contracting Officer Representative with an electronic copy of all transmittal letters and other communications and replies thereto as each is sent to or received from a Utility or agency.

B. Complete list of affected Utilities and agencies to the Contracting Officer Representative:

C. Shop Drawings for utility connections and special facilities developed during construction.

1.03 UTILITIES AND AGENCIES

A. Comply with the requirements of each Utility and agency.

B. The Utilities and agencies listed hereinafter may not be all inclusive. Recommend additional agencies/utility companies as appropriate. Determine all affected Utilities including but not limited to the following agencies or their successor agencies and submit complete list to the Contracting Officer Representative:

1. Verizon
2. NOT USED
3. Washington Gas.
4. PEPCO.
5. Fairfax County Public Works and Environmental Services
6. Comcast.
7. Cox Cable.
8. Plantation Pipeline Company.
9. Other identified utility owner (cable, fuel lines, etc.) whose facility will be affected by the construction.

PART 2 – PRODUCTS

2.01 APPROVED PRODUCTS

A. All products to be utilized on any utility shall be as approved by that Utility.

PART 3 – EXECUTION

3.01 DESIGN, CONSTRUCTION, AND MAINTENANCE OF UTILITY FACILITIES

A. All work performed by the Contractor on any utility, if any, shall be performed in accordance with the requirements of that Utility and the full knowledge of the Contracting Officer Representative.

B. Contract Drawings indicate where Utilities will self-perform design, construction, and maintenance of their facilities in relation to this Contract. Coordinate the schedule and the interface for the Work of the Contract with the work done by Utility.

C. Provide the Utilities with detailed Shop Drawings for utility connections and special facilities during construction.

END OF SECTION

SECTION 01250

CONTRACT MODIFICATION PROCEDURES

PART 1 – GENERAL

1.01 SUMMARY

A. This Section specifies procedures for making Contract Modifications.

1.02 GENERAL

A. Out-of-Scope Items. Specific approval must be received from the Contracting Officer Representative prior to doing work, which may be considered to be outside the Scope of Work and for which additional reimbursement may be requested in accordance with the General Conditions.

B. Requests for additional work may be initiated by the Authority. Claims for an increase in Contract Price shall be thoroughly documented as specified in the General Conditions and directed to the Contracting Officer Representative who, upon Approval, will issue a Modification stating the amount of the increase in fee.

C. Should the Contractor be excused from the provision of certain services identified in this Scope of Work, the Contractor will be requested to give a credit to the Authority. The offer for the credit shall be documented and directed to the Contracting Officer Representative who, upon Approval at the appropriate level, will issue a Modification.

1.03 TIME AND MATERIALS WORK FOR THE CONSTRUCTION EFFORT

A. In the event equitable adjustment cannot be agreed to in a timely manner, the Authority reserves the right to order work on a time and materials basis as specified in the General Conditions. When work is ordered under this Section, notwithstanding the provisions of other Sections, compensation for the Work shall be determined as hereinafter provided and shall constitute the total compensation to be paid for the changes to the Work. The methods, labor, materials, and equipment used in the performance of such work shall be subject to the Approval of the Authority.

B. Work performed by or for the Contractor: labor, materials, services, and equipment shall be furnished by the Contractor or by a Subcontractor or by others on behalf of the Contractor. The Contractor will be paid therefor as hereinafter provided, except where agreement has been reached to pay in accordance with Article 1.03C. below.

1. Labor: The cost of labor used in performing the work, whether the employer is the Contractor, Subcontractor, or other forces, will be the sum of the following:

a. The gross actual wages paid including income tax withholding but not including any employer payments to or on behalf of workmen for health and welfare, pension, vacation, insurance, and similar purposes.

b. To the actual gross wages, as defined in Article 1.03B.1.a above, will be applied a percentage based upon current applicable labor rates concerning payments made to or on behalf of workmen other than actual wages, which percentage shall constitute full compensation for all payments other than actual gross wages as defined in Article 1.03B.1.a above and subsistence and travel allowance as specified in Article 1.03B.1.c below. The Contractor shall compute a separate percentage for each craft or a composite percentage for all crafts, if so approved by the Authority. All computed percentages shall be submitted to the Contracting Officer Representative for Approval within 30 Days after start of construction work

or as directed by the Contracting Officer Representative prior to time and materials work being performed.

c. Subsistence and travel allowance paid to such workmen if required by collective bargaining agreements. The charges for labor shall include all classifications through foremen when engaged in the actual and direct performance of the Work. They shall not include charges for such overhead personnel as assistant superintendents, superintendents, office personnel, timekeepers, and maintenance mechanics.

2. Materials: The cost of materials required for the accomplishment of the Work will be delivered cost to the purchaser, whether Contractor, Subcontractor, or other forces, from the Supplier thereof, except as the following are applicable:

   a. If a cash or trade discount by the actual supplier is offered or available to the purchaser, it shall be credited to the Authority notwithstanding the fact that such discount may not have been taken.

   b. If materials are procured by the purchaser by any method, which is not a direct purchase from and a direct billing by the actual supplier to such purchaser, the cost of such materials, including handling, shall be deemed to be the price to the actual Supplier as determined by the Contracting Officer Representative.

   c. If the materials are obtained from a supply or source owned wholly or in part by the purchaser, payment therefor will not exceed the price paid by the purchaser for similar materials furnished from said source on Contract items or the current wholesale price for such materials delivered to the job Site, whichever price is lower.

   d. The cost of such materials shall not exceed the lowest current wholesale price at which such materials are available in the quantities concerned, delivered to the job Site, less any discount as provided in Article 1.03B.2.a above.

   e. If the Contractor does not furnish satisfactory evidence of the cost of such materials from the actual supplier thereof, the cost shall then be determined in accordance with Article 1.03B.2.d above.

   f. The Contractor will not be compensated for indirect costs and profit on Authority-furnished materials.

3. Equipment: The Contractor will be paid for the use of equipment in accordance with the Contract. The Contractor shall furnish all data, which might assist the Authority in the establishment of such rates.

   a. Operators of equipment will be paid under Article 1.03B.1 above.

   b. Small tools (defined as equipment less than $2,000 in acquisition costs) are computed at a maximum of 5 percent of direct base labor wages.

4. Subcontracts: The cost for Subcontract work at any tier will be the actual cost to the Contractor/Subcontractor for work performed by a Subcontractor as computed in accordance with Articles 1.03B.1 through 1.03B.3 above. For the purposes of this Article, Subcontractor is defined as an individual, partnership, corporation, association, joint venture, or any combination thereof, who contracts with the Contractor to perform work or labor or render service on or about the work. The term Subcontractor shall not include those who supply materials only. When work paid for on a time and materials basis is performed by forces other than the Contractor's organization, the Contractor shall reach agreement with such other forces as to the distribution of the payment made

by the Authority for such work, and no additional payment therefore will be made by the Authority by reason of performance of the Work by a Subcontractor or by others.

5. To the totals, completed as indicated in Articles 1.03B.1 through 1.03B.4, shall be added field office overhead as follows:

   a. If the costs determined above do not exceed $100,000 and the adjustment in time for Contract performance is 10 Days or less, the markup shall be computed in accordance with Article 1.04 below.

   b. In all other cases, the most recent audited daily field office overhead rate will be used.

6. Home Office General and Administrative (G&A) costs will be determined using the most recent audited rate at the time the work was accomplished. A fixed rate of 3 percent will be used in the absence of an audited rate.

7. Profit will be negotiated as provided in Article 1.07 below.

8. A percentage for Contractor's bond, not to exceed 1 percent, may be added.

C. Special items of work: If the Contracting Officer Representative and the Contractor, by agreement, determine that either: an item of time and materials work does not represent a significant portion of the total Contract Price, or such item of work cannot be performed by the forces of the Contractor or the forces of any of its Subcontractors, or it is not in accordance with the established practice of the industry involved to keep the records, which the procedure outlined in Article 1.03B above would require, charges for such special time and materials work item may be made on the basis of invoices for such work without complete itemization of labor, materials, and equipment rental costs. To such invoiced price, less a credit to the Authority for any cash or trade discount offered or available, whether or not such discount may have been taken, will be added a negotiated amount not to exceed 5 percent of the discounted price, in lieu of the negotiated lump sum not to exceed the percentages provided for in Article 1.03B above.

D. Records: The Contractor shall maintain its separate records in such a manner as to provide a clear distinction between the direct costs of work paid for on a time and materials basis and the cost of other operations.

1. The Contractor shall prepare, and furnish to the Contracting Officer Representative one electronic copy of report sheets of each day's work paid for on a time and materials basis the day after such work was performed. The daily report sheet shall itemize the materials used, and shall cover the direct cost of labor and the charges for equipment rental, whether furnished by the Contractor, Subcontractor, or other forces, except for charges described in Article 1.03C above. The daily report sheet shall provide names or identifications and classifications of workmen, the hours worked, and the size, type, and identification number of equipment, and hours operated.

2. Material charges shall be substantiated by valid copies of vendor's invoices. Such invoices shall be submitted with the daily report sheets, or if not available, they shall be submitted with subsequent daily report sheets. Should said vendor's invoices not be submitted within 60 Days after the date of delivery of the material or 15 Days after acceptance of the Work, whichever comes first, the Authority reserves the right to establish the cost of such materials at the lowest current wholesale prices at which such materials are available in the quantities concerned delivered to the location of the Work less any discounts provided in Article 1.03B.2.a above.

3. Said daily report sheets shall be signed by the Contractor or its authorized agent.

4. The Contracting Officer Representative will compare the Authority's records with the Contractor's daily report sheets, make any necessary adjustment, and compile the costs of work paid for on a time and materials basis on daily time and materials work report forms furnished by the Authority. When these daily reports are agreed upon and signed by both parties, they shall become the basis of payment for the work performed, but shall not preclude subsequent adjustment based on a later audit. The use of any specific Authority form, such as the Daily Report – Labor, Materials, & Equipment Form C-113, to segregate change order costs does not, in and of itself, invoke the provisions of this Article 1.03 or other provision of this Contract.

E. Payment: Payment as provided in Articles 1.03B and 1.03C above shall constitute full compensation to the Contractor for performance of work paid for on a time and materials basis and no additional compensation will be allowed therefore.

1.04 EQUITABLE ADJUSTMENT FOR MINOR CONTRACT MODIFICATIONS FOR THE CONSTRUCTION EFFORT

A. When the Authority and Contractor agree to an additive or deductive amount for a Modification to this Contract made pursuant to this Contract when the fair and reasonable price in aggregate amount does not exceed $100,000, and further agree to an adjustment in the time for Period of Performance resulting from said Modification, which increases or decreases the completion date 10 or less Days, the equitable adjustment in Contract amount shall consist of the sum of the following:

1. Direct labor, material, and equipment costs as agreed to by the Authority and Contractor (small tools, defined as equipment less than $2,000 in acquisition costs, are included in equipment costs and computed at a maximum of 5 percent of direct base labor wages.)

2. Job Office Overhead costs, the sum of which shall be limited to a maximum of 10 percent of direct labor costs, including fringe benefits, but excluding FICA, FUTA, and State Unemployment Insurance (SUI); a maximum of 10 percent of direct material costs; a maximum of 5 percent of direct equipment costs (including small tools); and a maximum of 5 percent of Subcontract costs.

3. Home Office General and Administrative (G&A) costs are computed using the most recent audited rate or a fixed rate of 3 percent in the absence of an audited rate.

4. Profit will be determined in accordance with the guidelines specified in Article 1.06 below.

B. In using the above rates, the following shall apply:

1. Payroll Tax (FICA, FUTA, and SUI) amounts are added immediately after direct and indirect costs are totaled.

2. Subcontractors' indirect costs and profit shall be computed in the same manner as above.

3. Indirect costs shall not be duplicated in direct costs.

4. When the Period of Performance is increased, the change in Contract amount for direct and indirect costs computed by application of the above rates includes costs of impact and extended performance due to the time extension and no further consideration of costs arising from the specific Modification and cited pending change orders (PCOs) will be given. The Contractor will not receive both a percentage and a daily rate markup for job office overhead costs when a time extension to the Period of Performance is recognized.

5. Bond costs will be allowed at actual cost without markup.

C. Equipment rates shall be determined from prior Authority audits. In the absence of audited rates for equipment owned or controlled by the Contractor, hourly rates shall be computed in the same fashion as described in Article 1.07D.

1.05 COST OR PRICING DATA

A. The Contractor shall submit to the Contracting Officer Representative, either actually or by specific identification in writing an electronic copy of cost or pricing data under the conditions described in this Paragraph and certify that, to the best of the Contractor's knowledge and belief, the cost or pricing data submitted is accurate, complete, and current as of the date of execution, which date shall be as close as possible to the date of agreement on the negotiated price of the Contract Modification. The cost or pricing data shall be submitted at the time the Contractor submits its proposal for the pricing of any Modification to this Contract, whether or not cost or pricing data was required in connection with the initial pricing of the Contract, when the Modification involves aggregate increases or decreases in costs plus applicable profits expected to exceed $100,000, or less at the discretion of the Contracting Officer Representative.

B. The submittal of certified cost or pricing data will not be required if the price is based on adequate price competition, established catalog or market prices of commercial items sold in substantial quantities to the general public, or prices set by law or regulation. The Contractor agrees that the terms "adequate price competition" and "established catalog or market prices of commercial items sold in substantial quantities to the general public" will be determined by the Authority in accordance with the guidelines as set forth in Subpart 15.8 of the Federal Acquisition Regulations (48 CFR 15.8).

C. Cost or pricing data consists of all facts existing up to the time of agreement on price, which prudent buyers and sellers would reasonably expect to have a significant effect on the price negotiations for the Modification. The definition of cost or pricing data embraces more than historical accounting data; it also includes, where applicable, such factors as Subcontractor, Supplier, and vendor quotations, nonrecurring costs, changes in construction methods, unit cost trends such as those associated with labor efficiency and any management decisions which could reasonably be expected to have a significant bearing on costs under the proposed Modification and the Contract Work. Cost or pricing data consists of all facts, which can reasonably be expected to contribute to sound estimates of future costs as well as to the validity of costs already incurred. Cost or pricing data, being factual, is that type of information, which can be verified. Because the certificate pertains to cost or pricing data, it does not make representations as to the accuracy of the Contractor's judgment on the estimated portion of future costs or projections. The certificate does, however, apply to the data upon which the Contractor's judgment is based.

1.06 CONTRACT MODIFICATIONS, REQUIREMENTS FOR PROPOSALS, PRICE BREAKDOWN, NEGOTIATION OF PROFIT

A. The Contractor, in connection with any proposal it makes for a Contract Modification as specified in Section 00750, ACCOUNTING AND RECORD KEEPING, shall furnish a price breakdown, itemized as required by the Contracting Officer Representative. Unless otherwise directed, the breakdown shall be in sufficient detail to permit an analysis of all material, labor, equipment, Subcontract, and overhead costs, as well as profit, and shall cover all work involved in the Modification, whether such work was deleted, added, or changed. Any amount claimed for Subcontracts shall be supported by a similar price breakdown. In addition, if the proposal includes a time extension, a justification therefore shall also be furnished. The original and one electronic copy of the proposal, together with the price breakdown and time extension justification, shall be furnished by the date specified by the Contracting Officer Representative.

B. Where profit is negotiated as an element of price, with either the Contractor or Subcontractor, a reasonable profit will be negotiated for each Modification by using the following procedure as a guide:

1. Breakdown:

Factor	Rate	Weight	Value
Degree of risk	20		
Relative difficulty of work	15		
Size of job	15		
Period of performance	15		
Contractor's investment	5		
Assistance by Authority	5		
Subcontracting	25		
TOTAL	100%		

2. Based on the circumstances of each Modification, each of the above factors shall be weighted from 0.03 to 0.12 as indicated below. The value shall be obtained by multiplying the rate by the weight. From the value column when totaled the fair and reasonable profit can be determined under the circumstances of the particular Modification.

   a. Degree of risk: Where the modified work involves no risk or the degree of risk is very small, the weighting should be 0.03. As the degree of risk increases, the weighting should be increased up to a maximum of 0.12. Lump sum items will have generally a higher weighted value than unit price items for which quantities are provided. Other things to consider: The portion of the Work to be done by Subcontractors, nature of work, where work is to be performed, reasonableness of negotiated costs, amount of labor included in costs, and whether the negotiation is before or after performance of work.

   b. Relative difficulty of work: If the modified work is most difficult and complex, the weighting should be 0.12 and should be proportionately reduced to 0.03 on the simplest of jobs. This factor is tied in to some extent with the degree of risk. Things to consider: The nature of the Work, by whom it is to be done, the location, and the time schedule.

   c. Size of job: All modified work not in excess of $100,000 shall be weighted at 0.12. Work estimated between $100,000 and $5,000,000 shall be proportionately weighted from 0.12 to 0.05. Work from $5,000,000 to $10,000,000 shall be weighted at 0.04, and work in excess of $10,000,000 at 0.03.

   d. Period of performance: Modifications providing for an extension of time in excess of 30 Days shall be weighted at 0.12. Jobs of lesser duration shall be proportionately weighted to a minimum of 0.03 for jobs not to exceed 1 Day. No weight will be granted for this factor where there is no extension of the Period of Performance or interim dates due to work under this Modification.

e. Contractor's investment: Should be weighted from 0.03 to 0.12 on the basis of below average, average, and above average. Things to consider: Amount of Subcontracting, mobilization payment item, Authority-furnished property, and method of making progress payments.

f. Assistance by Authority: Should be weighted from 0.12 to 0.03 on the basis of average to above average. Things to consider: Use of Authority-owned property, equipment and facilities, and expediting assistance.

g. Subcontracting: Should be weighted inversely proportional to the amount of Subcontracting. Where 80 percent or more of the Work is to be Subcontracted, the weighting should to be 0.03, and such weighting proportionately increased to 0.12 where all the work is performed by the Contractor's own forces.

3. When considered necessary because of very unusual circumstances or local conditions, the range of weight may be increased to an upper limit of 0.15 if supported by adequate justification and Approved by the Authority.

4. When negotiations between the Contracting Officer or the Contracting Officer Representative and the Contractor are joined to determine an equitable adjustment for a Modification of this Contract, the Contractor shall encourage involved Subcontractor(s) to be present and to present their cost data and to participate in the resolution of a fair and equitable adjustment. In any event, if after reasonable effort, a negotiated settlement cannot be reached between the Contracting Officer or the Contracting Officer Representative and the Contractor and the Subcontractor(s) involved, then at the request of the Subcontractor(s) concerned, the Contracting Officer or the Contracting Officer Representative may process Part 1 of a two-part Modification to cover the direct costs only, as agreed upon or, if not agreed upon, as determined unilaterally by the Contracting Officer or the Contracting Officer Representative. Subcontractors(s) requests for a Part 1 Modification shall be submitted to the Contractor, and the Contractor shall forward such requests promptly to the Contracting Officer Representative. Any payments received by the Contractor under this procedure shall be passed along within 10 Days thereafter to the Subcontractor concerned.

C. Change orders: When the Contracting Officer directs a change in accordance with the provisions of this Contract, the Contractor shall identify in its proposal for equitable adjustment the network activities that precede and follow the change order work activities. If the change order work activities are performed concurrently with existing network activities, those concurrent network activities shall be identified. If the change order work activities restrain network activities, those restraints shall be identified.

1.07 PAYMENT FOR USE OF EQUIPMENT

A. The following methods of determination of equipment costs shall apply to all adjustments to Contract Prices arising under the provisions of the Contract except for Section 00728, TERMINATION FOR CONVENIENCE OF THE AUTHORITY, provisions thereunder.

B. Allowable ownership and operating expense for construction plant and equipment in sound workable condition, owned by the Contractor, Joint Venture, Partnership, organizations under common control, and any equipment under lease purchase or sale-lease back agreements, will be paid for at hourly rates applicable to the Period of Performance, published in the Rental Rate Blue Book for Construction Equipment (Blue Book) by PRIMEDIA Information, Inc., by applying the following formula: the Regular Hourly Rate shall be 75 percent of the sum of the monthly rate (area adjustment map not used) divided by 176 and the estimated operating cost per hour. Regular Hourly Rate shall be full compensation for equipment ownership and operating expenses and shall include the cost of fuel, oil, lubricants, supplies, spare parts, repairs and maintenance, major overhauls, mechanics and servicing labor, depreciation, storage, insurance, interest, taxes, record

keeping, and all incidentals. The cost of equipment operators is not included. For forward pricing, the Blue Book rates in effect at the time of negotiations shall apply. For retrospective pricing, the Blue Book rates in effect at the time the work was performed shall apply. Manufacturers ratings and manufacturer-approved modifications shall be used to classify equipment for the determination of the Regular Hourly Rate. The hourly rates are calculated as shown in the following example:

	Regular Hourly Rate	**Multi-shift Hourly Rate**	**Standby Hourly Rate**
Monthly Rental Cost	$6,070.00	$6,070.00	$6,070.00
Divided by Hours	176	176	176
Hourly Rental Cost	$34.49	$34.49	$34.49
Hourly Operating Cost	18.20	18.20	18.20
Subtotal	52.69	52.69	52.69
Adjustment	75%	75%	75%
Regular Hourly Rate	39.52	39.52	39.52
Status	100%	60%	40%
Payment Rate	$39.52	$23.71	$15.81

1. For Contractor owned equipment as identified in Article 1.07B, the first 8 hours, or fraction thereof, usage in any one day shall be paid for at the Regular Hourly Rate, and any additional time in excess of 8 hours, shall be considered to be an additional shift, or fraction thereof, and shall be paid for at 60 percent of the Regular Hourly Rate. Standby time, if authorized by the Contracting Officer Representative, will be paid for at 40 percent of the Regular Hourly Rate. Standby time shall be limited to the regular 8-hour shift and shall not exceed 40 hours in a week. Any usage time less than 30 minutes shall be considered to be 1/2 hour.

2. For third-party rented equipment, the Authority will accept rental rates actually paid and substantiated by certified reproduced copies of invoices or bills. Such invoices or bills shall indicate the amount of operating expenses and operator wages and fringes, if any, included in the rental rate. In no case shall the bare rental rate per hour (operating expense, and operator wages and fringes not included) exceed the appropriate Regular Hourly Rate. Where required, the operating costs per hour will be agreed upon between the Contractor and the Authority using operating costs per hour from the Blue Book for the same or similar equipment

3. When approved by the Contracting Officer Representative, use of equipment not listed in the Blue Book will be permitted. An equitable hourly rate for such equipment will be established by the Contracting Officer Representative based on Contractor furnished cost data and basic information concerning the equipment. Information required to

determine rates includes, but is not limited to, manufacturer, year, size, model, serial number, capacity, and weight. This information shall be furnished to the Contracting Officer Representative prior to the use of the equipment. Authority shall be granted audit access to verify information related to or pursuant to this Section.

4. The Regular Hourly Rate does not include “move-in” and “move-out” costs.

5. These equipment rates shall apply to equipment in sound workable condition. The equipment shall be of approved size and capacity to provide normal output or production required for the work to be done. Equipment not meeting these requirements may be used only with the Contracting Officer Representative’s approval and at agreed, reduced rates. Usage time or standby time will not be allowed while equipment is inoperative due to breakdown, and such equipment shall be removed from the jobsite at the direction of the Contracting Officer Representative.

C. Items of equipment with an acquisition cost of $2,000 or less shall be considered as small tools.

D. Equipment costs that are paid under the equipment use rate shall not be duplicated in the Contractor’s other direct or indirect costs.

PART 2 – PRODUCTS (not used)

PART 3 – EXECUTION (not used)

END OF SECTION

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SECTION 01310

PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.01 SUMMARY

A. This Section specifies general administrative, procedural and coordination requirements for the project including:

1. Project Management Plan
2. General Project Coordination Procedures
3. Coordination Drawings
4. Project Interface Management
5. Administrative and Supervisory Personnel
6. Correspondence

1.02 SUBMITTALS

A. Staff Names and Directory - Submit one electronic copy of a list of principal staff assignments, including Superintendent and other personnel in attendance at Project site at least 30 calendar days prior to the start of any construction work. 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. Post copies of list in Project meeting room, in temporary field office, and by each temporary telephone.

A. Project Management Plan - Within 20 Days after award of the contract the Contractor shall submit a Project Management Plan (PMP) that describes its approach to the Construction and Systems Installation and Integration work. The PMP shall follow the outline submitted with its Technical Proposal as specified in Section 00203 TECHNICAL AND PRICE PROPOSAL PROCEDURES AND EVALUATION FACTORS, AND INSTRUCTIONS, and as finally accepted in Section 00491 TECHNICAL PROPOSAL AS FINALLY ACCEPTED. The PMP shall include charts, narratives, plans and other requested information to describe the organization, relationships and responsibilities of project management. The original, six paper copies and one electronic copy of the PMP shall be submitted in accordance with Section 01330, SUBMITTAL PROCEDURES. The PMP shall be revised for major changes in organization or approach to the work as necessary during the progress of the work and specifically for safety program plans as specified in Section 01114, SAFETY/ENVIRONMENTAL REQUIREMENTS and for quality management plans as specified in Section 01470, QUALITY MANAGEMENT SYSTEM.

1.03 PROJECT MANAGEMENT PLAN

A. Overview/Executive Summary: Provide a narrative detailed Overview of the Project Control and Management System to be utilized for this Project. Identify critical areas, method of problem resolution, lines of communications and responsibility. Detail the overall management strategy for accomplishing all aspects of the required work. The Contractor shall demonstrate

understanding of the management techniques required for proper implementation and control of the work.

B. Organization: Provide a project organizational chart including a definition of the responsibilities shown therein. Show how this project management structure fits into the corporate management structure. Show the limits of authority and lines of authority of personnel to be assigned to the Contract. Include information regarding the positions they will fill and the percentage of time they are expected to devote to the work. In addition, identify who is responsible for project staffing, coordination with the Authority, jurisdictional inspectors/authorities and others, integrating construction aspects of the work, etc. Define who makes all major decisions pertaining to the overall project, including project staffing for construction management and who makes all day-to-day decisions. Identify who is the: Architect of Record, Structural Engineer of Record, Civil Engineer of Record, Electrical Engineer of Record, Mechanical Engineer of Record, and Systems Engineer of Record.

C. Project and Program Management and Control:

1. Subcontractor Management: Provide a narrative of procedures for coordinating, managing and controlling the work and the work of subcontractors: Identify who is responsible. Identify who reviews and approves subcontractor designs where applicable. Identify who reviews and approves subcontractor submittals. Identify who inspects and accepts subcontractor construction/installation work. Identify who reviews, verifies and approves subcontractor requests for equitable adjustment in subcontract price and period of performance. Identify who coordinates with the Authority, jurisdictional inspectors/authorities and others. Identify persons responsible for the procurement of construction materials and Systems equipment to be installed and for securing construction equipment to be utilized for the construction/installation, and include plans and procedures to ensure timely delivery of materials to achieve project schedule.

2. Quality Management: Quality Control/Quality Assurance - provide a narrative description of the quality control/assurance organization for this Contract including numbers, qualifications, duties, responsibilities and authority of personnel, as well as, a description of the methods by which the applicable quality requirements of the Contract will be regulated, maintained and monitored. In addition, describe your proposed Quality Control/Quality Assurance (QC/QA) Plans and Quality Program, and the responsible component of each organization involved in this work. Indicate how interfaces between various quality control organizations will be accomplished to ensure compliance with the overall quality control requirements. Identify who monitors all construction work for compliance with QC/QA Plans and supervises the construction QC/QA Staff. Identify who approves submittals. Identify who performs inspections and documents material/equipment testing. Identify who is responsible for managing and implementing the QC/QA Plans and maintaining contact with the Authority's Representative for the purpose of providing up-to-date, accurate construction status with emphasis given to deviations from the Contract Documents. Refer to Section 00722, QUALITY ASSURANCE/CONTROL and Section 01470, QUALITY MANAGEMENT SYSTEM for a detailed description of required quality management plans including Quality Plan and Proposed Interim Inspection and Test Plans and other quality requirements.

3. Systems Integration Management: NOT USED

4. Safety Program Management: Provide the information regarding your proposed safety program management for this Contract as defined in Section 01114, SAFETY AND REQUIREMENTS.

5. DBE Program Management: Identify who is responsible for assuring that the DBE Program in accordance with Authority policy as specified in Section 00453 DBE DATA and 49 CFR Part 23 and that the goals are being met.

6. Construction Management: Provide description of the construction support and project engineering services for furnishing required shop drawings and other submittals. Identify persons responsible for preparing and approving calculations, working drawings, shop drawings, operation and maintenance manuals, as-built drawings, as-built specifications, etc. Refer to SECTION 01111, CONTRACTOR KEY STAFF, for a detailed description of Construction Management requirements.

7. Temporary Facilities: Identify who is responsible for janitorial services, trash and snow removal, recycling and equipment repair/maintenance for the Contracting Officer Representative's Site Facility and for maintenance of parking areas associated with the COR's Site Facility, temporary access roads and storage/laydown areas as specified in Section 01520, TEMPORARY CONSTRUCTION FACILITIES.

8. Contract Administration: Identify who is responsible for the management of pending change and change orders and payment requests as specified in Section 00748, CHANGES, Section 01250, CONTRACT MODIFICATION PROCEDURES, Section 00830, DISPUTE RESOLUTION if applicable and Section 00844, METHOD OF PAYMENT and Section 00721, VALUE ENGINEERING INCENTIVE.

9. Permit and Regulatory Compliance: Identify who coordinates with the Authority, jurisdictional authorities and others for obtaining permits, approvals, etc. from the entities specified in Section 01410, REGULATORY REQUIREMENTS and Section 01420 REFERENCES.

1.04 COORDINATION

A. Coordinate construction operations and activities included in various Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate planning and construction operations, included in different Sections that depend on each other for proper installation, connection, and operation. Coordination extends to and includes the interfaces between this and other contracts and existing facilities within the system.

B. The Contractor shall coordinate its construction operations with those of other contractors and entities to ensure efficient and orderly installation of each part of the Work. Each subcontractor shall coordinate its operations with other 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 subcontractors to ensure maximum accessibility for required maintenance, service, and repair.

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

4. All work under this Contract shall be performed generally in accordance with the construction sequence and staging and maintenance of traffic requirements shown on the approved detailed plans of the work following a logical sequence developed by the Contractor as specified in Section 01530, TEMPORARY DECKING and in Section 01550, MAINTENANCE OF TRAFFIC, CONSTRUCTION SEQUENCE AND STAGING, ACCESS AND PARKING.

5. The Contractor shall conduct its work in a manner that will minimize interference with the operations of other contractors involved in the performance of related work.

6. The Contractor's particular attention is directed to the fact that both vehicular traffic and pedestrian traffic must be continuously maintained and remain unimpeded at all times throughout the duration of the work at the site(s) as specified in Section 01550, MAINTENANCE OF TRAFFIC, CONSTRUCTION SEQUENCE AND STAGING, ACCESS AND PARKING.

7. A method of staging shall be developed that specifically complies with all requirements pertaining to the maintenance of both vehicular and pedestrian traffic onsite and the use of all approved working and storage/laydown areas. The staging plan shall incorporate and comply with all limitations imposed elsewhere in this Project Manual, and six paper copies and one electronic copy of the staging plan shall be submitted to the Contracting Officer Representative for approval, working drawings including comprehensive sequence and staging plans in accordance with Section 01330, SUBMITTAL PROCEDURES. No work shall be started prior to approval by the Authority as specified in Section 01550, MAINTENANCE OF TRAFFIC, CONSTRUCTION SEQUENCE AND STAGING, ACCESS AND PARKING.

8. The Contractor's particular attention is directed to the fact that both vehicular and pedestrian traffic must be maintained on the various existing streets within and adjacent to the project site at all times during the duration of the Contract. The Contractor is responsible for coordinating access to the site from the public roadways, including, but not limited to, the delivery of all materials by the Contractor to the site from public roads. All such use of public roadways shall be coordinated with the jurisdictional authority(ies). The staging plan shall incorporate and comply with all limitations imposed elsewhere in this Project Manual, and shall be submitted to the Contracting Officer Representative for review, and shall also be submitted to the jurisdictional agency(ies) of the area(s) where the work is to be performed, for their (its) approval, working drawings including comprehensive sequence and staging plans in accordance with Section 01330, SUBMITTAL PROCEDURES. No work shall be started prior to approval by the jurisdictional agency(ies) as specified in Section 01530, TEMPORARY CONSTRUCTION and in Section 01550, MAINTENANCE OF TRAFFIC, ACCESS AND PARKING.

C. As necessary, 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. Prepare similar memoranda for Authority Representative and separate subcontractors if coordination of their Work is required.

D. The Contractor shall coordinate its construction activities if applicable, with governmental, public and private agencies and others. Such coordination shall include acquiring permits and approvals and attending conferences as may be authorized and required by the Agency. The Contractor shall prepare and submit to the Contracting Offer Representative within 7 days, one electronic copy of a memorandum of record of all such conferences attended. The Contractor shall promptly bring to the attention of the Contracting Offer Representative, by written notice, any betterments or other work considered to be a change requested by private and public agencies and property owners that have not already been authorized by the Authority.

E. Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other subcontractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of Contractor's cost-loaded schedules and updates as described in Section 01322, CONTRACT PROGRESS REPORTING.

2. Installation and removal of temporary facilities and controls as described in Section 01500 Temporary Facilities and Controls.

3. Delivery and processing of submittals as described in Sections 01330, 01780 and 01820 and elsewhere in this Project Manual.

4. Meetings, as described in Section 01312, PROJECT MEETINGS.

5. Safety, as described in Section 01114, SAFETY / ENVIRONMENTAL REQUIREMENTS and Safety Management as described in Section 00844.

6. Quality Management as described in Section 01470, QUALITY MANAGEMENT SYSTEM.

7. Not Used

8. Project closeout activities as described in Section 01775, CLOSEOUT.

1.05 CORRESPONDENCE

A. All correspondence shall be referenced to the Authority Contract number.

B. Three copies of matters relating to the Contract, change proposals, billings and other matters shall be addressed and sent to the Contracting Officer Representative.

C. Three copies of matters relating to the technical performance of the work and the schedule thereof shall be sent to the Design-Professional and the Contracting Officer Representative.

D. Three copies of correspondence between the Contractor and third parties shall be sent to the Contracting Officer Representative.

E. Copies of all correspondence are to be retained by the Contractor and forwarded to the Contracting Officer Representative as a complete correspondence file at the completion of the Contract as specified in Section 01775, CLOSEOUT.

PART 2 PRODUCTS [Not Applicable]

PART 3 EXECUTION

3.01 PERSONNEL

A. Provide administrative and supervisory personnel as required for proper performance of the Work and additional special personnel required for coordination of operations with subcontractors as needed. The Contractor shall provide personnel for the positions specifically identified by the Authority in this Contract as required Key Personnel (see Section 00203, TECHANICAL AND PRICE PROCEDURES;EVALUATION FACTORS, AND INSTRUCTIONS) and in addition, any other personnel essential for performance of the work as identified by the Contractor (see the Contractor’s TECHNICAL PROPOSAL AS FINALLY ACCEPTED, Section 00491), and for any other positions the Contractor deems necessary for the successful execution during performance of the Contract work.

B. If any subcontractor or person employed by the Contractor appears to the Authority to be incompetent or careless or to act in a disorderly or improper manner, that person's services in connection with the work shall be immediately terminated upon request by the Contracting Officer Representative and that person shall not again be employed on the Work.

END OF SECTION

SECTION 01312

PROJECT MEETINGS

PART 1 – GENERAL

1.01 SUMMARY

A. This Section specifies administrative and procedural requirements for Project meetings.

B. During the term of this Contract, attend meetings and conferences with officials of the Authority, governmental agencies, and others interested in the Work as may be directed by the Contracting Officer Representative. Meeting minutes, prepared by either the Contractor or the Contracting Officer Representative as specified herein, shall state the place and time of the meeting, the names and identification of those present, a brief description of the matters discussed, and the agreements reached.

C. Meetings shall be held in the Project office or at other locations in the Washington Metropolitan Area, as needed. Contractor and other concerned parties attending these meetings shall each be represented by persons thoroughly familiar with and authorized to conclude matters relating to the Work described in the Contract Documents.

1.02 PRE-CONSTRUCTION MEETINGS

A. Conduct pre-construction meetings at the Site prior to the start of construction activities that require special coordination for those activities that are deemed to require a separate meeting because of the technical nature of the installation.

B. The Contractor's Key Staff, Subcontractors, representatives of manufacturers and fabricators involved in or affected by the installation, coordination, or integration with their materials and installations that have preceded or will follow and the Authority, the Contracting Officer Representative, and other representatives of the Authority shall attend the meeting.

C. Notify the Authority in advance of the date, time, location, and topics for review and discussion at each pre-construction meeting. Ensure that other attendees are properly notified. Topics that may require pre-construction meetings include, but are not limited to the following:

1. Installation of equipment or systems

2. Items that require connection to existing Authority equipment or systems as applicable

3. Other pre-installation meetings as may be called by the Contractor or the Contracting Officer Representative

D. Agenda discussion items for the meeting may include, but are not limited to, the following:

1. Safety

2. QA/QC

3. ADAAG compliance

4. LEED Compliance-NOT USED

5. Temporary facilities

6. Space and access limitations

7. Shop Drawings, Working Drawings, Product Data, Quality Control Samples, Certifications, and Documentation
8. Purchases and deliveries
9. Manufacturers' recommendations
10. Inspection and testing requirements
11. Required performance results
12. Recording requirements
13. Possible conflicts and compatibility problems
14. Weather limitations
15. Schedule

E. Work shall not proceed if the meeting cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of work and schedule a follow-up meeting with the Authority at the earliest date.

F. Record meeting minutes and distribute copies to everyone in attendance and to others affected by decisions or actions resulting therefrom.

1.03 PROGRESS MEETINGS

A. Conduct progress meetings Bi-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 pre-construction meetings. A Three-Week Work Plan will be developed by the Contractor prior to the start of the meeting as specified in Section 01322, PROGRESS REPORTING, and will be discussed during the planning portion of the agenda. Additionally, discussions will address administrative and technical issues of concern, determining resolutions, and development of deadlines for resolution within allowable time frames.

B. Determine, together with the Contracting Officer Representative, who should attend the meeting in addition to the Contracting Officer Representative, other representatives of the Authority, the Contractor's Key Staff, and those Subcontractors, Suppliers, or other entities critical to the current progress or involved in planning, coordination, or performance of future activities that are part of the Work.

C. Contracting Officer Representative will publish an agenda prior to each meeting and will distribute copies to Contractor. Agenda items may include:

1. Review of minutes of the previous progress meeting
2. Contractor's construction schedule and construction sequence
3. Safety, including discussions of hazards and risks
4. QA/QC, including discussion of Non-Compliance Notices
5. ADAAG compliance
6. LEED Compliance-NOT USED
7. Temporary facilities and services

8. Site utilization, Site access needs and Hours of Work issues
9. Testing and systems integration testing
10. Updated submittals list and submittal priorities
11. Requests for Information
12. Documentation of information for payment requests
13. Pending Change Orders and Modifications
14. Resource allocation
15. Off-Site fabrication problems
16. Purchases and deliveries
17. Housekeeping

D. The Contracting Officer Representative will record meeting minutes and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting. Meeting minutes will document issues of significance including submittals, schedules, quality assurance/quality control, safety, problems encountered, and the assignment of responsibilities for future action.

1.04 PROGRESS AND QUALITY STATUS REPORT REVIEWS

A. A preliminary progress and quality status report meeting will be held on a monthly basis prior to the submittal of the Contractor's final Monthly Progress Report and associated documents. The purposes of the meeting are to review and determine the status of each activity in relation to the Contractor's draft Monthly Progress Report and any deficiencies based on the Quality System as specified in Section 01470, QUALITY MANAGEMENT SYSTEM, in order to develop an informal agreement on the monthly progress payment request.

B. The meetings shall be attended by the Contractor's Key Personnel, the Contracting Officer Representative, and other representatives of the Authority.

C. The Monthly Progress Report and associated documents, as specified in Section 01322, CONTRACT PROGRESS REPORTING, shall be updated on a monthly basis. Job progress shall specifically include actual start and completion dates for all activities completed during the reporting period, actual start dates and percent complete for activities started but not completed during the reporting period, estimated start dates for activities scheduled to start during the next period, approved changes in durations of activities, and separate tabulation of monthly earnings including a cumulative tabulation of monthly earnings to date. In computing the monthly earnings, no value will be allowed for partially completed activities.

D. Update the Monthly Progress Report and associated documents to incorporate all changes agreed to during the preliminary progress and quality status report meeting. A formal progress and quality status report meeting will be held prior to the submittal of the Contractor's progress payment request. The purpose of the meeting is to review and develop a formal joint agreement on the Monthly Progress Report, job progress, pay items, and quality certification. This meeting shall be held 5 working days after the preliminary progress and quality status report meeting.

E. Submit the approved Monthly Progress Report and the progress payment request in accordance with Section 00744, METHOD OF PAYMENT.

1.05 CHANGE MEETINGS

A. Separate meetings will be held in the Washington Metropolitan Area by either the Authority or the Contractor, on an ad hoc basis, to discuss and resolve change order issues as they arise during the course of construction.

B. This meeting shall be attended by the Contractor's Key Staff, Contracting Officer Representative, and those Subcontractors, Suppliers, or other entities critical to the resolution of any open issues. The parties shall each be represented by persons thoroughly familiar with and authorized to conclude matters relating to the Work described in the Contract Documents.

C. The Contracting Officer Representative will record meeting minutes and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting.

PART 2 – PRODUCTS (not used)

PART 3 – EXECUTION (not used)

END OF SECTION

SECTION 01321

CONSTRUCTION PHOTOGRAPHS

PART 1 – GENERAL

1.01 SUMMARY

A. This Section includes procedural requirements for photographic documentation, including digital images and video recordings.

1.02 SUBMITTALS

A. Make submittals in accordance with Section 01330, SUBMITTAL PROCEDURES, and as described in Section 01322, CONTRACT PROGRESS REPORTING.

B. Key Plan: Submit key plan 30 Days prior to start of construction. If vantage points are altered, submit key plan updates with corresponding photographic documentation submittal.

C. Digital Still Photographs: Submit with record of photographs indicating name of photographer, identification of vantage point, date of photograph and electronic file name. Submit the following types of still photographs:

1. Pre-Construction Photographs: Submit 30 Days prior to start of construction. No less than 100 pictures.

2. Monthly Construction Photographs: Submit every 30 Days. No less than 20 Pictures per month

3. Subject-specific construction photographs such as, but not limited to still photos showing potential change, non-conformance, quality, and property damage, and LEED-required photo documentation.

4. Completion of Construction Photographs: Submit within 30 Days of Notice of Substantial Completion.

D. Digital Video Recordings: Submit with a record of the contents of each segment of the video recording identifying name of photographer, location, time of day, viewing direction, traveling direction, and starting and ending points. Submit the following types of video recordings:

E. Pre-Construction Video Recording: Submit 30 Days prior to start of construction.

1. Monthly Video Recordings: Submit every 30 Days.

F. Photographer and Videographer Information: Submit a complete list of photographer names and contact information within 30 Days of Notice to Proceed.

G. Usage Rights Documentation: Obtain and transfer copyright usage rights from photographers to the Authority for unlimited reproduction of photographic documentation within 30 Days of Notice to Proceed.

1.03 QUALITY ASSURANCE

A. Qualifications:

1. Photographer Qualifications: Professional photographer experienced in construction photography for a minimum of 3 years.

2. Videographer Qualification: A professional firm experienced in audio-video documentation for construction or similar documentary projects for a minimum of 3 years.

PART 2 – PRODUCTS

2.01 KEY PLAN

A. Indicate project site with notation of vantage points marked for location and direction of each still photograph and video recording.

B. Include location and type and model of still and video camera(s).

C. Include description of vantage point indicating location, direction (by compass point), and elevation.

2.02 STILL PHOTOGRAPHS

A. Camera Specifications: Provide digital camera with sensor resolution of a minimum of 8 megapixels for producing color digital photographs.

B. Format:

1. Set camera to produce a digital stamp of the current date and time on each image.

2. Provide required images in .JPG format.

3. Digital photographic files shall be capable of producing standard commercial quality photographs, 8 inches by 10 inches in size.

4. Identification:

5. Electronically label each still photograph with the following information on the bottom left corner:

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

Project:_____ Contract No.:_____

Contractor _____

Photograph No. _____ Date: _____

Description: _____

2.03 DIGITAL VIDEO RECORDINGS

1. Camera Specifications: Provide digital video camera for producing color digital video images and meeting the following requirements: Capable of producing NTSC 1080 lines/60 fields

2. Resolution in the Y channel shall contain a minimum of 500 TV lines at center, utilizing no less than three charge-coupled-device (CCD) chips, each containing no less than 5 megapixels for optimum picture clarity

3. Format: Set camera to produce a digital stamp of the current date and time on each video sequence containing the month, day, year, hours, minutes, and seconds.

4. Provide high-resolution NTSC or agreed upon format.

B. Identification: Electronically label video recordings with the following information: location, project name, and municipality. With each submittal, provide the following information:

1. Name of Project
2. Contract Number
3. Name of Contractor
4. Video recording ID number
5. Date video recording was recorded
6. Description

PART 3 – EXECUTION

3.01 GENERAL

A. All photographic and video documentation shall be captured digitally. Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.

3.02 STILL PHOTOGRAPH REQUIREMENTS

A. Preconstruction Photographs:

1. Provide pre-construction still photographs at each site.
2. Take sufficient overlapping still photographs to show existing conditions of adjacent properties before starting the Work.
3. No construction shall begin prior to Contracting Officer Representative review and approval of the pre-construction photographs of the construction area.
4. Take still photos at locations to be disturbed or likely to be affected by construction and at locations designated by the Contracting Officer Representative.

B. Monthly Construction Photographs: Take still photos of construction during the progress of the Work.

1. Take a minimum of twenty still construction photos at each site every 30 Days starting after the pre-construction digital survey and continuing until Substantial Completion is achieved.

C. Subject-specific Construction Photographs:

1. If there are any evident changes in conditions, non-conformance in the Work, or signs of potential damage to property or constructed project, take sufficient photographs to document the conditions and no less than ten still photographs.
2. The photographer shall provide scale to the area/condition, such as a tape measure to substantiate cracking.
3. Provide construction photos as required to demonstrate compliance with established LEED design goals where applicable.

D. Final Completion Construction Photographs:

1. Take a minimum of twenty still photos at each site at Substantial Completion.

3.03 VIDEO RECORDING REQUIREMENTS

A. General:

1. Audio:

a. Begin each recording with the name of videographer, Project name, Contract number, date and start time, location, and direction of travel.

b. End recording with date and time.

c. Narration: Describe scenes on video recording by audio narration. Include description of items being viewed, recent events, and planned activities. At each change in location, describe vantage point, location, direction (by compass point), and elevation or story of construction.

2. Video:

a. Set to continuously record: transparent digital information shall include the date and time of recording.

B. Preconstruction Video Recordings:

1. Document the entire Project Site.

a. Include all surface features located within at least 300 feet of the construction site and accompany with appropriate audio description. Include all existing curbs, sidewalks, driveways, ditches, paved areas, landscaping, trees, culverts, headwalls, retaining walls and buildings.

2. Duration: approximately 120 minutes.

C. Monthly Construction Video Recordings: Select vantage points to show status of construction and progress since last video recordings were recorded. Minimum recording time shall be 30 minutes.

END OF SECTION

SECTION 01322

CONTRACT PROGRESS REPORTING

PART 1 – GENERAL

1.01 SUMMARY

A. This Section specifies the requirements for reporting progress and the development and maintenance of schedules and work plans for the construction of the Project.

B. The Contractor shall carefully monitor the progress of the Work during construction and provide the Authority with Monthly Progress Reports detailing the progress of that work.

C. The approved schedules shall be used by the Contractor to ensure adequate planning, scheduling, managing, and executing of the Work, to enable the Authority to evaluate work progress and progress payments, to identify actual or potential time impacts, and to assist with the determination of recovery and acceleration efforts. These approved schedules shall not be revised without the prior approval or direction of the Contracting Officer Representative.

1.02 REFERENCES

A. American Association of Construction Engineers (AACE)

B. Associated General Contractors of America (AGC) - Construction Planning and Scheduling Manual

C. Project Management Institute (PMI)

1.03 QUALITY ASSURANCE

A. Project Scheduler

1. The Contractor shall engage the services of a full time scheduler who is skilled in the time and cost application of scheduling using PDM network techniques for heavy construction projects. The scheduler shall be trained in the use of the specified scheduling software. The scheduler shall have a minimum of eight (8) years experience in preparing and maintaining schedules as well as analyzing delays and preparing time impact analyses.

2. Scheduler shall be certified as a Planning and Scheduling Professional (PSP) per AACE International or a Scheduling Professional (PMI-SP) per PMI.

3. The Contractor's scheduler may or may not be an independent consultant; however, the scheduler shall be available to the Contractor and Contracting Officer Representative to address schedule questions and shall attend all progress and schedule review meetings convened by the Contracting Officer Representative.

4. In the event that the scheduler is not found to be competent or to have sufficient relevant experience as determined by the Authority, the Authority will request that the Project scheduler be removed from the Project pursuant to Section 00709, PROJECT MANAGEMENT AND SUPERINTENDENCE AND KEY STAFF. In that event, the Contractor shall submit a new candidate for consideration within 10 Days for consideration and approval by the Authority.

1.04 SUBMITTALS

A. Make the following submittals in accordance with Section 01330, SUBMITTAL PROCEDURES:

B. Scheduler's resume and qualifications

C. Monthly Progress Status Report shall be submitted in electronic format in MS Word and Adobe (.PDF) and formatted to 8-1/2 by 11 inches or 11 by 17 inches in size.

D. All schedules and reports shall be prepared and submitted in electronic format and labeled in the header and/or footer with the Contract Number, Project name, Contractor's name, title identifying nature of the schedule or report, data date, update number, and page number out of the total number of pages. Additionally, schedules shall include Project start and finish date, run date and time, filter name, and legend (bar charts only).

E. Schedule submittals including Initial Schedule, Baseline Schedule, Monthly Update Schedules, Revised Baseline Schedules, Recovery Schedules, Acceleration Schedules, Fragnets, and As-built Schedules shall be generated in Oracle Primavera Project Planner P6, compatible with Version 8.2 for Windows, and formatted as follows:

1. Schedule Submittals: P6 XER file, Acrobat (.PDF) files, and a minimum of one (1) 11x17 inch paper hardcopy of each.

2. Schedule Narrative: PDF file format and a minimum of one (1) 8-1/2 x 11 inch paper hardcopy.

F. Schedule submittals including 90-Day Rolling Schedule, Three Week Work Plan, and Testing and Commissioning Schedule shall be generated in Primavera Project Planner P6 Version 8.2 (or compatible with) for Windows and formatted as follows:

1. Schedule Submittals: Acrobat (.PDF) files, and a minimum of one (1) 11x17 inch paper hardcopy of each.

2. Schedule Narrative: PDF file format and a minimum of one (1) 8-1/2 x 11 inch paper hardcopy.

G. For distribution at schedule meetings, provide additional hardcopies of schedule documents as requested by the Contracting Officer Representative.

H. Submit schedule documents for presentations and wall mounting on paper size no smaller than 24 inches wide by 36 inches long and no larger than 36 inches wide by 48 inches long.

I. Contractor's schedules and Monthly Progress Reports shall be submitted as specified in Table 01322-01. Contracting Officer Representative will review and return the Contractor's schedule submittal with comments in the number of Days specified in Table 01322-01 from the date of receipt:

Table 01322-01: Submission Dates and Review Times

Description	Submission Due	WMATA Review Time (Typical per submittal)
Initial Schedule	NLT 15 Days after Award	21 Days
Baseline Schedule	NLT 30 Days before conclusion of Initial Schedule Time Period	21 Days
Monthly Update Schedule (Draft)	NLT 5 Days after closing date of update period and NLT 5 Days prior to Application for Payment	5 Days
Monthly Update Schedule (Final)	NLT 5 Days after receiving the Authority's comments of Monthly Update Schedule (Draft)	5 Days
Monthly Progress Report	NLT 15 Days after closing date of the update period	7 Days
90-Day Rolling Schedule	Submit with Monthly Progress Report	7 Days
Three-Week Work Plan	Weekly, for Information Only	Weekly Meeting
Fragnet (Time Extension Request)	Provide written Notice of Delay within 10 Days of the start of potential delay event; follow-up with schedule Fragnet upon end of delay event.	14 Days
Testing & Commissioning	Per Equipment Specification Requirement	21 Days or per Spec Requirement
As-Built Schedule and Narrative	NLT 14 Days after Project Completion	14 Days

J. The Contractor shall make all corrections to the schedule requested by the Contracting Officer Representative and resubmit the schedule for approval. If the Contractor does not agree with the Contracting Officer Representative's comments, the Contractor shall provide written notice of disagreement within 5 Days from the receipt of the Contracting Officer Representative's comments for the Project Schedule. Contracting Officer Representative's comments to the schedules with which the Contractor disagrees shall be resolved in a meeting held for that purpose.

K. Resubmittals shall conform to the same requirements as original submittals.

L. Schedule Submission Package Requirements:

1. Initial Schedule Submission Package

    a. P6 XER File for Initial Baseline

    b. Layout Files (PDF and 1 hardcopy each): All Activities, organized by WBS/Start; Critical Path, organized by WBS/Start

    c. Float Report

    d. Predecessor-successor report

    e. Initial Schedule Development Narrative

2. Baseline Schedule Submission Package

a. P6 XER File for Project Baseline

b. Layout Files (PDF and 1 hardcopy): All Activities, organized by WBS/Start; Critical Path, organized by WBS/Start; Budgeted Cost, organized by Price Proposal Line Item

c. Float report

d. Predecessor-successor report

e. Baseline Schedule Development Narrative

3. Monthly Schedule Update Submission Package

a. P6 XER File for Progress Only + Others when required

b. Layout Files (PDF and 1 hardcopy each): All Activities by WBS/Start; Critical Path by WBS/Start; Budgeted–Earned Value Costs, by Price Proposal Line Item

c. Change Report (“Digger”) Report

d. Predecessor-successor report

e. Float report

f. Monthly Schedule Update Narrative

4. As-Built Schedule Submission Package

a. P6 XER File,

b. Layout Files PDF and 1 hardcopy: All Activities by WBS/Start

c. As Built Schedule Narrative

1.05 GENERAL REQUIREMENTS

A. The schedules must meet the Milestones specified in General Conditions Section 00824, PERIOD OF PERFORMANCE AND PROJECT SCHEDULE REQUIREMENTS.

B. CPM terminology, definitions and conventions as required herein shall be consistent with the technical portions of the latest edition of the Associated General Contractors Manual titled Construction Planning & Scheduling.

C. Scheduling Software

1. This project requires the use of a construction industry standard critical path method scheduling system that utilizes the precedence diagram method (PDM) of analysis and reporting. The scheduling software that shall be utilized is Oracle Primavera P6, Version 8.2 or shall be compatible with Version 8.2.

2. Sub-tier contractors may use other scheduling software satisfactory to the Contractor and major subcontractors, but it is the responsibility of the Contractor to incorporate and integrate the sub-tier contractor schedules into the Project Schedule.

1.06 SCHEDULE TECHNICAL REQUIREMENTS

A. Schedule Float - Definitions and Ownership

1. Definitions of Float

a. Free Float is the length of time the start of an activity can be delayed without delaying the start of a successor activity.

b. Total Float is the length of time along a given network path that the actual start and finish of an activity or activities can be delayed without delaying Project Milestones.

c. Project Float is the length of time between the Contractor early completion (Substantial Completion or similar activity) and the Contract completion date.

2. Ownership of Float

a. Float available in the schedule at any time shall not be considered for the exclusive use of either the Authority or the Contractor. During the course of contract execution, any float generated due to the efficiencies of either party is not for the sole use of the party generating the float; rather it is for the benefit of the Project. Efficiencies gained as a result of favorable weather within a calendar month, where the number of days of normally anticipated weather is less than expected, will also contribute to the reserve of float.

b. A schedule showing work completing in less time than the Contract duration, and accepted by the Authority, will be considered to have Project Float. Project Float will be a resource available to both the Authority and the Contractor.

c. Contractor acknowledges it has included in its bid or proposal overhead and administrative costs to cover the entire Period of Performance and that no additional compensation will be paid for such costs in the event the Contractor is unable for any reason to finish early.

d. No time extensions will be granted nor delay damages paid unless a delay impacts the Project's most critical path and:

(1) Consumes all available float or contingency time, including Project Float; and

(2) Extends the work beyond the Contract completion date

B. Work Breakdown Structure: All Project Schedule work activities shall be contained in a multilevel Work Breakdown Structure (WBS) structure, commensurate with the complexity of the project, for organization of the entire work effort. The WBS structure shall define and separate major phases of the project, work areas, and work types under which all activities will be placed. The WBS shall be established in detail down to the work package level; for the Initial Schedule, this requirement need only apply to the activities in the initial period; the WBS shall be expanded in full to the work package level for the Baseline Schedule.

C. Activity Data: The minimum required activity data that shall be maintained for each activity is listed below. This data shall be displayed in the required schedules as appropriate to the purpose of the schedule. The Contracting Officer Representative may require additional data such as total shifts or other resource data:

1. Activity ID: Logical nomenclature should be employed, using a prefix of the activity ID to categorize the overall project into more manageable sub-areas, with an incremented numerical value as a suffix. Once assigned, an activity ID shall not be changed; should the scope of the work activity be deleted or change significantly, the Contractor shall propose in his activity update the Activity to be deleted and, with approval, replace with a new Activity

2. Activity Description: Activity descriptions shall be brief but shall convey the scope of work described. Unusual abbreviations shall be explained in a legend or in the schedule narrative. If an activity includes work to be performed by a Disadvantaged Business Enterprise (DBE), that fact shall be identified in the activity description by inclusion of an appropriate parenthetical

entry as suffix “Activity Description + (DBE name).” Percentages shall not be used in activity descriptions, e.g., “Place West Footing (0—50 percent)” is not acceptable.

3. Original Duration: The number of workdays planned for the task activity. In preparation of schedule durations, the Contractor shall recognize that there are site access restrictions during WMATA train operational hours, and that durations need to be estimated to account for these restricted working hours (also see Calendar ID discussion below). The original duration, as assigned and approved in a Baseline Schedule submission, shall not be revised without WMATA approval. Justification shall be provided for making such changes in a schedule update.

4. Remaining Duration: For in-progress activities, the progress only remaining duration shall consider the physical percent complete of progress made to date, with the software generated calculated remaining duration. Changes to the calculated remaining duration shall be submitted for approval via a RECOVERY or REVISED UPDATE schedule.

5. Percent Complete: Shall be measured on a physical percent complete basis.

6. Early Start date/Early Finish date: As generated by the schedule software.

7. Late Start/Late Finish dates: As generated by the schedule software.

8. Baseline Start and Finish Dates: When required, baseline start and finish dates shall be shown to assess the current Monthly Update Schedule vs. the Baseline Schedule.

9. Calendar ID: All calendars and calendar assignments shall be in accordance with Section 01141, ACCESS TO SITE and subject to WMATA approval. Task activities and intermediate Contractor Milestones shall be assigned to work-day calendars. Contractual Finish Milestones shall be set to a 7-day calendar.

10. Total Float: A software calculated value, in workdays and/or in calendar days.

11. Predecessors and Successors: Listing of precedent activities logic-tied to the Start and those subsequent activities logic-tied to the Finish of the activity.

12. Budgeted Cost (total value): Monetary value assigned to an activity as budgeted labor, non-labor, or materials cost, or any combination thereof, as long as the cost amounts roll-up to the total activity cost, then to the assigned Schedule of Values, and ultimately to the Total Project Cost. Earned Value shall record the amount billable-to-date for the specific activity.

13. Resources: Crew description (size and work shift) and Equipment Usage

14. Activity Codes: For the purpose of providing additional organizing capabilities to facilitate understanding and analysis of the schedule, as a minimum, Global or Project Activity Codes shall be established for:

    a. Responsibility (Contractor, Subcontractors, WMATA, other Agencies)

    b. Schedule of Values (per the application for progress payment)

    c. Work Areas (e.g., Track ROW, Platform, Mezzanine, Substation, Communications Rooms)

    d. Work Shift (e.g., Day, Evening, Night, Weekend Outage)

    e. Applicable CSI Specification Number

    f. Contract Modification Number

g. Other Codes as may be requested by WMATA

D. Time-scaled Graphic Network or Bar Chart Diagram (Gantt chart):

1. Logic-tied activity network set to a timescale appropriate to the length of project or time period of schedule focus.

2. Activity bars shall have differentiating colors and format to distinguish between summary bars, task activities, level-of effort activities, and Milestones; Baseline Schedule vs. Previous Month Update vs. Current Monthly Update Schedule for actual duration and remaining duration.

3. Relationship lines defining predecessor and successor relationships. Each bar shall contain the following information positioned above, below or adjacent to it in a consistent and legible manner: Activity description and start and finish dates. Lag time in work days shall be displayed on each relationship line where it occurs. Relationship lines may be omitted in some schedules if so directed by the Authority.

E. Schedule Software Settings and Restrictions

1. Lags: Lags will not be used when the creation of an activity will perform the same function. Use of lags must be minimized and restricted to only those situations where it is not possible to properly define the start or finish of an activity by the use of a normal Finish-to-Start, Start-to-Start or Finish-to-Finish relationship. Negative lags are not permitted. The Contractor will identify any lag proposed and provide an explanation for the purpose of the lag in the narrative.

2. Activity Constraints: Date/time constraints, other than those required by the Contract, will not be allowed unless approved by the Contracting Officer Representative. The Contractor will identify any constraints proposed and provide an explanation for the purpose of the constraint in the schedule narrative.

3. Default Progress Data: Actual Start and Finish dates shall not be automatically updated by default mechanisms that may be included in the CPM scheduling software system. Actual Start and Actual Finish dates on the CPM schedule shall match the dates provided by the Access Utilization Reports. These reports will be the basis for updating the schedule. Remaining Durations for in-progress activities will be updated by actual measured or estimated work progression.

4. Schedule calculations and Out-of-Sequence progress (if applicable) setting shall be “Retained Logic”. “Progress Override” setting shall not be used. All activity durations and float values shall be shown in Days. Activity progress shall be shown using Remaining Duration. Date format will be DDMMMYY (i.e., 11DEC02). Default activity type shall be set to "Task."

5. Individual schedule activities shall not exceed 20 work days in durationcertain procurement and delivery activities, which may exceed 20 work days with the Approval of the Contracting Officer Representative. Activities exceeding 20 work days in duration shall be subdivided into multiple activities. When a calendar other than five work days per week is used, the elapsed time of a work activity from early start to early finish shall not exceed one month.

a. With the exception of the Contract Award, Start Project and End Project Milestone activities, no activities will be open-ended; each activity will have predecessor and successor ties. Once an activity exists on the schedule it may not be deleted or renamed, and must remain in the schedule, except with written Approval of the Contracting Officer Representative. No more than 25 percent of the activities may be critical or near critical. Critical will be defined as having zero days of Total Float. “Near critical” will be defined as having Total Float in the range of 1 to 10 work days.

b. Schedule activities shall be sufficiently described to include what is to be accomplished and identified by the applicable work areas. Activities shall be grouped to assist in the understanding of the activity sequence. Contractor shall group activities by category of work, work area and/or responsibility. Work that is to be performed by the Contractor and by subcontractors shall be clearly defined in the activity coding.

6. Procurement Activities: Tasks related to the procurement of material or equipment shall be included as separate activities in the schedules. Examples of procurement activities include, but are not limited to; material/equipment submittal preparation, submittal and approval of material/equipment; delivery of O&M manuals; material/equipment fabrication and delivery, delivery of spare parts and special tools, notification of owner furnished material/ equipment delivery requirement, etc. Where fabrication of major equipment will take more than 60 days, a separate activity will be shown for fabrication. It is recommended that procurement activities reference the Specification number associated with the item in their activity description.

7. Authority and Agency Activities: Authority and other agency activities that could impact progress shall be clearly identified. These activities include, but are not limited to; submittal reviews, Authority/agency conducted inspections and tests, environmental permit approvals by regulators, utility outages, Notice to Proceed and delivery of Authority furnished material/equipment. If applicable, show activities indicating Authority furnished materials/equipment utilizing delivery dates indicated in the General Provisions.

8. Construction Quality Management (CQM) Activities: CQM activities will identify the preparatory phase and initial phase for each definable feature of work identified in the Contractor's Quality Control Plan as described in the Quality Management System. These activities shall be included in the Baseline Schedule.

9. Construction Activities: Construction activities shall include, but are not limited to: Tasks related to mobilization or demobilization; the installation of temporary or permanent work by trades; testing and inspections of installed work by technicians, inspectors or engineers.

10. Commissioning Activities: Start-up and testing of equipment; commissioning of building and related systems; scheduling of specified manufacturer's representatives; Substantial Completion; Pre-Final Inspection; Final Acceptance Inspection; final clean-up; training to be provided; and administrative tasks necessary to start, proceed with, accomplish or finalize the contract as defined in the Special Conditions.

1.07 PROJECT SCHEDULE

A. Initial Schedule

1. The Initial Schedule shall describe the Contractor’s detail plan for permitting and critical submissions of long lead items, including equipment and materials to be employed on the project during the first 120 Days of the Contract. The Initial Schedule shall also contain sufficient information to define the early critical path of the Project, as mutually agreed to by the Contractor and the Contracting Officer Representative. The Initial Schedule shall incorporate commitments made in the Pre-award Schedule submitted with the Contractor’s technical proposal.

2. The Initial Schedule shall be cost loaded, logic based, time-scaled activity network schedule and may be submitted in Critical Path Method (CPM) format. The Initial Schedule shall include the same requirements as the Baseline Schedule with the exception of information that is not reasonably available in the first 120 Days of the Contract.

3. The Initial Schedule submittal shall be accompanied by a written narrative that describes the detailed schedule and the approach to the Work that the Contractor intends to employ during the initial 120-Day period of the Contract, and a general, less detailed schedule and approach planned for the remainder of the Period of Performance.

4. A schedule meeting will be held to discuss the requirements for the Initial and Project Schedules within 7-days of Notice to Proceed.

5. The Initial Schedule will be used to process progress payments for the 120-Day period following Notice to Proceed until the Baseline Schedule is Approved.

B. Baseline Schedule

1. Contractor shall expand the Initial Schedule with all required detail for the full Period of Performance of the Contract, and upon approval by the Authority, this will be referred to as the Baseline Schedule. The logic contained in the approved Initial Schedule, but without progress, shall be incorporated into the Baseline Schedule.

2. The Baseline Schedule is a time scaled, fully cost loaded, CPM network diagram schedule that shall be submitted to the Authority for review and Approval NLT 30 Days before the expiration of the Initial Schedule period.

3. The Initial Schedule will no longer be used to determine monthly progress payments subsequent to approval of the Baseline Schedule by the Authority.

4. The Baseline Schedule must meet all of the Milestones listed under Special Conditions Section 00824, PERIOD OF PERFORMANCE AND PROJECT SCHEDULE.

C. Monthly Update Schedule

1. Subsequent to the approval of the Baseline Schedule the Contractor shall submit a Monthly Update Schedule (Draft), by only incorporating the progress of the Work to date, such as activity's actual start date, percent completion and/or actual finish date. The Monthly Update Schedule (Draft) shall not be revised to include additional activities, deleted activities, revised activity original durations, revised network logic, or any other changes to the schedule. No activity budget cost change will be allowed without the approval from the Authority.

2. Monthly Update Schedule (Draft) shall be submitted no later than 5 Days after the closing date of the update period and no later than 5 Days prior to submittal of Application for Payment.

3. The Authority will review the Monthly Update Schedule (Draft) and provide comments no later than 5 Days after receipt or in the progress and quality status review meeting. Within 5 Days of receipt of the Authority's comments, Contractor shall provide a revised Monthly Update Schedule as part of the Monthly Progress Report that addresses the Authority's comments. Delay mitigation shall be demonstrated by applying Recovery Schedule or Acceleration Schedule procedures as indicated in Article 1.08 of this Section. Upon receipt of the Authority's review and Approval, the Monthly Update Schedule will become the basis of the next month's update.

4. The Monthly Update Schedule revision numbers shall be incremented with each monthly submission cycle.

D. Revised Baseline Schedule

1. Subsequent to the approval of the Baseline Schedule, if due to major scope change, contract milestone change, or access dates change, or if for reason other than recovery or acceleration the Contractor requests major change to the Baseline Schedule, upon the request of the Authority, the Contractor shall submit a Revised Baseline Schedule.

E. As-Built Schedule

1. Retain all monthly schedule updates until the Work has been accepted.

2. After all Contract work items are complete, and as a condition of Final Payment, the Contractor shall submit one copy of an As-Built Schedule showing actual start and finish dates for all work activities and milestones, based on the accepted monthly updates. The schedule submittals shall be in tabular and in time-scaled PDM plot formats. See Section 00744, METHOD OF PAYMENT, for additional retainage to be withheld until the As-Built Schedule is delivered to the Contracting Officer Representative, is reviewed, and is determined to be complete and accurate.

1.08 SUPPLEMENTAL SCHEDULES

A. Recovery Schedule

1. If according to the current Monthly Update Schedule - Draft, the Contractor is 30 or more Days behind the Contract completion date of any milestone, or the schedule contains 30 or more Days of negative float, considering all granted time extensions, and this delay is solely the responsibility of the Contractor, the Contractor shall submit a Recovery Schedule, showing a practical plan to complete the work within the Period of Performance of the Contract. The Contractor shall execute some or all of the following remedial actions: (i) increase construction labor in such quantities and crafts as necessary to eliminate the backlog of work; (ii) increase the number of working hours per shift, shifts per working day, working days per week, the amount of construction equipment or any combination to eliminate the backlog of work. The Authority may withhold progress payments until a revised schedule, acceptable to the Contracting Officer Representative, is submitted by the Contractor.

2. This requirement does not restrict the Contractor from submitting a Recovery Schedule for delays of less than 30 Days.

3. Written notification and explanation for the proposed changes in the form of a narrative shall accompany each submittal.

B. Acceleration Schedule

1. Should there be a need for the Authority to accelerate a project Milestone or Contract completion to an earlier finish than either the current forecasted contractual finish date or impacted finish date indicated, the Contractor, at the Authority's request, shall prepare an Acceleration Schedule and execute the Work utilizing additional resources, work hours, and/or equipment as may be required.

2. The Contractor, for its own benefit, may submit an Acceleration Schedule, subject to Authority Approval, however, the inability to finish earlier than the pre-accelerated Contract completion date, regardless of the reason for delays, shall not be a basis for a claim for additional time and cost. Also, such schedule rejection shall not be a basis for a claim for additional cost. Any acceleration taken without the Authority's written approval and agreement to pay is at the Contractor's expense.

C. Fragnet Schedule

1. Should the Monthly Update Schedule show any schedule activity or activities being impacted due to actions that are not the responsibility of the Contractor, for which Contractor submits a claim, the Contractor shall furnish a Fragnet Schedule identifying the delay as a part of any time extension request.

2. A Fragnet Schedule is defined as the sequence of new activities and/or activity revisions, logic relationships that are proposed to be added to the current Monthly Update Schedule to demonstrate the influence of impacts to the schedule.

3. The delay event, as a new activity, shall be inserted by the Contractor into a separate copy of the contemporaneous Monthly Update Schedule with appropriate logic ties over the period of the claimed delay. The delay event shall not be inserted as an activity into the logic of the Monthly Update Schedule however, it shall be described as a cause for delay in the narrative submitted with the contemporaneous Monthly Progress Report.

4. Fragnet Schedules will be evaluated by the Authority as part of the Time Impact Analysis. If accepted, the delay activity or activities shall be inserted into the subsequent Monthly Update Schedule of record following acceptance of the delay event.

D. Commissioning and Acceptance Schedules

1. Detailed schedules of factory and field testing and commissioning activities with activities as required per the applicable equipment specification.

2. Separate commissioning and acceptance schedules required in accordance with other sections of the contract documents shall be coordinated with, and integrated into, the schedules described in this specification. Commissioning activities, including commissioning reviews, , construction and acceptance phase activities, shall be included in the Project Schedule.

E. 90-Day Rolling Schedule

1. A schedule prepared by the Contractor depicting activities occurring in the upcoming 90-Day period in greater detail than specified in the Initial 120-Day and monthly updates of the Project Schedule. The logic shall follow the logic of the approved Baseline Schedule.

2. The schedule shall be time scaled and may be submitted in either bar chart or Critical Path Method (CPM) format.

3. Activities shall be 10 Days or less duration with particular focus on procurement, and associated activities to be performed in this time frame.

4. The 90-Day Rolling Schedule shall be updated and submitted monthly for review and Approval by the Contracting-Officer Representative.

5. This schedule will be included in the request for track access. Additionally, this schedule may be used as an attachment with the Site Specific Work Plan (SSWP) pending the scope and duration of an item work.

F. Three Week Work Plan

1. A schedule prepared by the Contractor in a calendar time-scaled bar chart format depicting the Contractor's past week's activities and the intended work activities for the upcoming two-week period. The Three Week Work Plan shall be submitted on a weekly basis due on the first working day of each week.

2. Deviations, including but not limited to sequences of work, timing, and durations of activities from the Initial Schedule or Monthly Update Schedule shall be noted and explained in writing.

3. The form of submittal may be formatted smaller than specified in Article 1.03 herein; however, the format shall not be less than 8-1/2 by 11 inches in size.

G. Daily Work Plan

1. Upon receipt of the Authority's approval of GOTRs, Switch Order and Escort Request, the Contractor shall submit a detailed Daily Work Plan, provide the following information: Date, Planned Start Time and Finish time, GOTRs ID,

Power Outage Requirement, Point of Contact, Emergency Contract, Detailed Work Planned Hour by Hour, Planned Deliverable and Productivity, Associated Activity ID from the current Monthly Schedule Update, Number of Crews, Crew Size and Crew Mix, Planned Equipment, Tools, and Material. If there is any known Ball Games and Events.

2. The Daily Work Plan shall be submitted no later than 5 Days prior to work start.

1.09 MONTHLY SCHEDULE UPDATE NARRATIVE

A. A written narrative shall accompany each Monthly Progress Report describing the Contractor's approach and methods for completion of the work. The narrative shall be adequate for the Contracting Officer Representative to understand the schedule and specifically identify the Critical Path, roles and activities of the Contractor, his major subcontractors, Authority, and key third parties.

B. The narrative shall include:

1. Overall Status of Milestone forecast completion dates vs. previous month (slip or gain, Project total float)

2. Progress made in each area of the project: activities completed, activities started

3. Discussion of the previous Critical path: Progress vs. Planned (per previous update) vs. Actual; with discussion of delayed activities, including the reasonfor the delayto the previously planned critical path activities in the current update period.

4. Discussion of the current forward-looking critical path

5. Changes in the following: New activities, logic interdependencies, Milestones, planned sequence of operations, critical path, and resource loading. All changes (i.e., remaining duration changes, logic changes, new logic, new activities, changes due to Modifications, changes in work sequence, entry of as-built relationship logic, etc.) shall be recorded. If using Primavera to develop the schedule narrative, add change notes to the activity notebook field (use the notebook category "Update Notes" to record changes). The log shall include as a minimum, the date and reason for the change, and description of the change.

6. The Contractor shall submit the calendar(s) used to calculate the CPM schedule, including: (i) the proposed number of work days per week; (ii) the planned number of shifts per day; (iii) the number of hours per shift; and (iv) all non-work days, including expected weather days as quantified in Section 00728, Termination for Default, Damages for Delay, and Time Extensions.

7. Explanation of percent completes progressing in reverse;

8. Explanation for failure to commence any activity that should have started but did not;

9. Changes to durations in excess of 25 percent of baseline durations, defined as actual duration plus remaining duration exceeding the Original Duration by 25 percent of the original duration; original durations will not be changed;

10. Pending items and status thereof, including permits, change orders, and time extensions;

11. Status of Final Completion and interim Milestones;

12. Current and potential delays (describe cause of the delay and corrective action(s)); and

13. Description and evaluation of the Critical Path(s) and any schedule problem areas not included above.

14. The descriptive information in the narrative shall cite the respective Activity ID and activity description when feasible. A computer generated log report shall accompany the narrative as support for item (2) above. If the computer software allows, explanation of changes may be incorporated into the schedule using the software's activity note keeping function. A computer generated report containing this information may be used to fulfill select portions of the narrative Report.

1.10 MONTHLY PROGRESS REPORT

A. The Monthly Progress Report shall include a narrative, monthly schedule updates, a Quality Compliance Certification and construction photographs as follows:

1. Monthly Schedule Update Narrative.

2. Schedules including the Initial Schedule, or Baseline Project, or the Monthly Update Schedule as appropriate; 90-Day Rolling Schedule; and a Three-Week Work Plan. Schedules shall clearly identify the critical path(s).

3. Project Financial Status with DBE Status Report, including cash flow curves indicating graphically the total percentage of work activity/event dollar value completed and scheduled to be in place on early finish, late finish, and actual finish on a monthly and cumulative basis.

4. Quality Compliance Certification as specified in Section 01470, QUALITY MANAGEMENT SYSTEM.

5. A summary of meetings or conferences held or attended during the report period.

6. A listing of actions or decisions required of the Authority with an indication of the date by which such action or decision is required to avoid any adverse impact on the schedule.

7. Utility/Jurisdictional Authority coordination and approvals report. Include telephone conversations and dates of contact made with each Utility/Jurisdictional Authority.

8. Construction photographs, as described in Section 01321, CONSTRUCTION PHOTOGRAPHS.

9. Project risk log and mitigation plans.

10. Action items from the Authority, Contractor, Subcontractors, material and equipment suppliers and vendors, with action plan and dates.

11. Monthly progress payment is contingent upon the Authority's approval of the Monthly Progress Report.

12. Monthly certified payroll

1.11 DAILY REPORT (FORM C-113)

A. A Daily Report shall be generated onsite by the Contractor and signed by both COR or COR's representative and the Contractor's field representative at the end of each shift. Detailed progress and achievement shall be documented in the report such as Report to Site Time, Actual Start Time, Actual Finish Time, Name of the Field Personnel and their company, Equipment used, Material used, Work completed, WMATA Staff Onsite, Delays, Safety Issues, etc.

PART 2 – PRODUCTS (not used)

PART 3 – EXECUTION

3.01 GENERAL

A. Scheduling and executing of the Project Work in accordance with the schedule are the responsibility of the Contractor.

B. The submittal of schedules shall be understood to be the Contractor's representation that the schedule meets the requirements of the Contract Documents and that the Work will be executed in the sequence and duration Indicated in the schedule.

C. All schedule submittals are subject to review and Approval by the Contracting Officer Representative. The Authority retains the right to withhold progress payments until the Contractor submits a Monthly Progress Report with all specified contents that is acceptable to the Contracting Officer Representative.

D. Scheduling Responsibilities

1. Schedule Development

a. Project Schedules shall be fully integrated to incorporate input from subcontractors of every tier.

b. Separate subcontractor schedules from subcontractors of any tier shall not be submitted and will bear no contractual significance.

c. All costs incurred by the Contractor in complying with the contract scheduling requirements shall be considered to be included in its price proposal including Acceleration Schedules initiated by the Contractor, Recovery Schedules and Fragnet modeling.

2. Schedule Certification

a. Submittal of the Baseline Schedule and subsequent Monthly Update Schedules will be understood to be the Contractor's certification that the submitted schedules meet the requirements of the Contract Documents, represent the Contractor's plan of how the work will be accomplished, and accurately reflects the work that has been accomplished.

3. Schedule Adherence

a. The schedule system shall be used as an ongoing project management tool to assist the Contractor in keeping the Work on schedule and for assisting the Contractor to complete the Work within the specified time. Regardless of data contained in the schedule system, the Contractor will be held responsible for the unjustified failure to complete the Work within the specified Period of Performance.

4. Planning and Implementation

a. The Contractor shall:

(1) Accurately represent to the Authority its schedule for execution of the Work; and,

(2) Utilize the schedules made available by the Contractor to the Authority without material deviation.

5. Schedule Approval

a. Approval of the schedule by the Authority is only for the purpose of establishing that the schedule complies with the Contract Documents.

b. Approval of the schedule by the Authority does not warrant, either expressly or implicitly, the feasibility, logic, and/or durations of activities. These matters are and remain the responsibility of the Contractor.

c. For the purposes of this specification, it is agreed the definition of “Approval” is: Receipt by the Authority with the understanding that the Contractor has fulfilled its duty to prepare a schedule that adheres to the specific requirements of the Contract specifications and complies with the general industry scheduling practices as a planning/management tool for the day-to-day direction of project resources. Review comments made by the Authority on the Contractor’s schedule(s) will not relieve the Contractor from compliance with requirements of the Contract Documents.

3.02 PROJECT SCHEDULE PREPARATION

A. The project schedules shall show clearly the sequence and interdependence of activities and shall include:

1. Milestone completion dates; phasing and staging of the work as specified shall be prominently identified.

2. Task activities of all Contractor’s and Subcontractor’s encompassing the entire scope of work and Interface, coordination, and dependencies with preceding, concurrent, and follow-on contractors and/or utility companies.

3. Activities by other agencies and entities that have necessary involvement in the prosecution of the work, including, but not limited to acquisition of permits and agreements, plan reviews, utility connections, and final inspections

4. Submittals and Authority review thereof

5. Procurement, fabrication, delivery, installation, and testing of major materials and equipment

6. Delivery of the Authority-furnished equipment, if any

7. Material, construction equipment and equipment restrictions, if any

8. Inspection of the work including pre-acceptance punch list and Acceptance

9. Closeout activities and Final Completion

B. Cost Loading

1. The Initial Schedule and Project Schedules shall be cost-loaded with the monetary value for Payment of each task activity indicated in the Project Schedule and shall be identified in a Table of Activity Data following the description.

2. The allocation of monetary values assigned to activities shall be subject to Authority approval and will contain, as close as can reasonably be determined, all labor, equipment, material and subcontractor cost plus its proportional share of all indirect costs.

3. Project mobilization costs and/or monthly administrative costs, where they are separate from finished work Schedule of Values (or bid items), shall be captured in a separate section of the schedule Work Breakdown Structure (WBS). If separate mobilization costs are not indentified in the Price Proposal Schedule, the Contractor shall submit a request to WMATA and the costs for mobilization shall be segregated from other Price Proposal Schedule line items in a manner acceptable to the Authority.

4. The total of all values allocated to the individual work activities shall equal the appropriate line items in the Bid PriceSchedule; the sum of all values shall equal the total Contract value. The Contractor shall coordinate with COR to set up schedule cost accounts to reflect the Authority grant application line items.

5. Should the Contractor intend to deliver materials and receive payment under the Material-on-Site provision of the contract, with the approval of the Contracting Officer Representative, a materials-on-site (MOS) delivery activity shall be incorporated into the schedule. The cost allocated to the installation activity shall be reduced by the approved MOS activity amount. The activity description will contain the MOS designation and a MOS activity code will be assigned.

6. The monetary value assigned to an MOS activity will be arrived at by considering only the monetary values of the specific materials' costs exclusive of the monetary values of the installation activities to which they relate. The monetary value of the delivery activity will equal the projected invoiced values of materials, as restricted above and in other relevant provisions of the Contract, to be delivered to the site. The Contractor shall submit a separate, detailed breakdown of the projected total of all MOS activities.

C. Float Sequestering: Use of float sequestering techniques such as preferential sequencing or logic (arranging critical path activities more susceptible to the Authority or third party-caused delay), unreasonable lead/lag logic restraint, extended activity times, expected finish dates, or imposed constraint dates other than the Milestones required by the Contract shall be cause for rejection of the schedule, revisions and/or updates.

3.03 MONTHLY PROGRESS REPORT AND PAYMENT

A. Submit Monthly Progress Report as indicated for Authority Approval. No Application for Payment will be processed without an Authority approved Monthly Progress Report.

B. The approved Project Schedule will be used as the basis for progress payments to the Contractor. Payments will be made by the Contracting Officer Representative only for activities that are 100 percent complete.

3.04 REQUEST FOR TIME EXTENSIONS

A. Request for Time Extensions

1. The Contractor is responsible for submitting a written request for any extensions of Period of Performance no later than 10 Days after the beginning of the impact or delay. Requests not submitted timely, in writing or submitted without the required documentation, will not be considered by the Contracting Officer.

2. The request shall include documentation with written justification for the extension of time, schedule activities affected, supporting evidence, and specific references to the Contract for which the basis of the request is being made.

3. When a directed change to the contract work results in a change to Milestones or Period of Performance, the Contractor shall submit proposed revisions to the Monthly Update Schedule with a Fragnet as defined in the time impact analysis method described below. The conformed Fragnet revisions to the Monthly Update Schedule activities shall be made in accordance with the resulting Contract Modification. Interim changes may be incorporated into the Monthly Update Schedule prior to execution of a Modification upon Approval of the Contracting Officer. Such changes are subject to adjustment pending the execution of the Modification. Financial data shall not be incorporated into the schedule until the Modification is executed by the Authority and the Contractor.

B. Time Impact Analysis

1. Time Impact Analysis shall be used by the Contracting Officer and Contractor in determining if a time extension or reduction to the Milestones or Period of Performance is justified. The Contractor shall provide a Time Impact Analysis to the Contracting Officer for any directed contract change and Claim or Request for Equitable Adjustment by the Contractor as well as support for a schedule related Value Engineering Proposal or Variance Request.

2. The Contractor shall submit a Time Impact Analysis illustrating the influence of each change or delay on the Milestones or Period of Performance. Unless the Contracting Officer requests an interim update to the schedule, the accepted monthly update of the Project Schedule just preceding the directive to proceed with the change or the start of the earliest impacted activity of a claim shall be used to display the impacts. Unless requested by the Contracting Officer, no other changes will be incorporated into the schedule being used to justify the change impact.

3. Each Time Impact Analysis shall include a Fragnet demonstrating how the Contractor proposes to incorporate the impact into the Project Schedule. The Fragnet shall identify the predecessors to the new activities and demonstrate the impacts to successor activities. The Time Impact Analysis will also include concurrent delays and impacts caused by the Contractor's own work during the impact period. Upon request or at its own discretion, the Contractor shall provide alternate Time Impact Analyses that reflect no-cost and/or extra-cost schedule changes that may be implemented to mitigate the delay.

4. The Contractor shall provide the Fragnet activities and relationships being added and also insert the Fragnet into the accepted current monthly Project Schedule update, run the schedule calculations and submit the impacted schedule with the proposal, claim, etc. Include a narrative report describing the effects of new activities and relationships to interim and contract completion dates, with each Time Impact Analysis. Submit time extension requests with a Time Impact Analysis and one hard copy of the Fragnet (in a graphic format), impacted schedule (with Fragnet loaded), Total Float Report, Narrative Report and Log Report.

5. If the Contracting Officer finds the Contractor is entitled to an extension of time of any completion date under the provisions of the contract, the Authority's determination of the total number of days extension will be granted only to the extent that equitable time adjustments for the activity or activities affected exceed the total float along the paths involved of the most critical path to project completion.

6. Critical delays, i.e., delays that may affect the activities on the current critical path, will be contemporaneously discussed and mutually agreed by all the parties involved. In case the quantum of delays or impact cannot be resolved, the background, issues, work performed, as well as start and finish dates of delays shall be well-documented in chronological order. The Contracting Officer's determination of merit for time extensions(s) will be awarded after the Authority finds entitlement to the Contractor's request and only after the alleged delays are demonstrated to impact the most critical path(s).

7. Following the Contractor's receipt of a contract modification on a Standard Form C-35 signed by the Authority, the revised Contract completion date mutually agreed to during final settlement shall be incorporated into the Project Schedule. Mutually agreed changes to the Project Schedule shall be made by the Contractor by the next monthly schedule update.

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SECTION 01330

SUBMITTAL PROCEDURES

PART 1 – GENERAL

1.01 SUMMARY

A. This Section specifies the general requirements and procedures for preparing and submitting required submittals and construction documents to the Authority and Jurisdictional Authorities for approval or for information. The submittals shall consist of, but not be limited to Shop Drawings; Working Drawings; product data; samples; documents, letters, certifications and reports; permit applications and Jurisdictional Authority approval documents; and other submittals.

1.02 DEFINITIONS

A. Schedule of Required Submittals: A compendium of all required design and construction related submittals identified throughout the Contract Documents.

B. Contract Document Submittal Log: A document indicating the status of all Required Submittals listed in the Schedule of Required Submittals.

1.03 SUBMITTAL SCHEDULE

A. Provide a preliminary Schedule of Required Submittals, as described in Section 00720, SUBMITTALS, within 14 Days after the effective date of Notice to Proceed (NTP) for the Authority's review. The preliminary Schedule of Required Submittals shall be updated through discussions with the Authority during weekly progress meetings or through special meetings subsequent to initial Authority approval.

B. Submit a Contract Document Submittal Log, as described in Section 00720, SUBMITTALS, within 30 Days after the effective date of NTP. The Contract Document Submittal Log, created in MS Excel or MS Access, shall consist of all submittals required by the Contract Documents. Populate the Contract Document Submittal Log with submittal data as the design and construction progresses. The Contract Document Submittal Log shall list all versions of a submittal, however only one version of a submittal may be in effect at any one time.

C. Submit a final Schedule of Required Submittals within 60 Days after the effective date of NTP.

D. Submittals made shall be arranged and maintained in a tabular format by specification Section as well as in chronological order by the dates required for construction. The log shall include:

1. Scheduled date for initial Submittal, review, and "need" date for acceptance in order to fabricate and install, corresponding to the Project Schedule activity.

2. Contract number, specification Section number and title

3. Name of Subcontractor

4. Type of Submittal (Shop Drawings, product data, samples, or other), description of the item, name of manufacturer, trade name, and model number

5. Highlight submittals that are on the critical path and require expedited review to meet the schedule. Indicate lead time to the date of fabrication and installation.

6. State if submitted for approval or information.

7. If a Submittal is a safety critical item based on the approved Certifiable Items List (CIL), include the "Item" number and "Section" (paragraph) number, as shown on the Certifiable Items List.

8. Re-submittals: Reason for change

9. Tested/Inspected By: Identify the entity performing the test

E. The Contract Document Submittal Log shall be updated and submitted on a monthly basis.

1.04 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

A. Submit one electronic copy in the format specified, unless noted otherwise, through the Authority's Project Management Software System (PMSS). The Contracting Officer's Representative will return one electronic copy through the PMSS.

1. PROJECT MANAGEMENT SOFTWARE SYSTEM

a. The Contractor shall use the Authority's internet based project management software system for submitting, reviewing and tracking documents of this Contract, The system is provided and administered by the Authority and is currently called "Procore".

b. The Contractor shall use this internet, web based project management software system to manage all the documents issued to the Authority. This system was selected by the Authority and is designed to address the record keeping and communications requirements for the Authority's contracts, including this Contract.

c. The Contractor is encouraged to include this requirement in contracts with its subcontractors to facilitate the flow of documentation. If a subcontract is executed without this requirement it shall not relieve the Contractor obligation to the Authority.

d. The Authority retains control and ownership of the system's database during the duration and upon completion of the Contract.

e. The Authority will provide informal training to Contractor's key project personnel in using the internet based project management software system. Training will be provided at the Authority's location that will be determined after the Contract award. The number of individuals that will be trained shall be limited to only those Contractor r's employees who will actively participate in the system.

f. The Authority reserves the right during the period of this Contract to expand the data that is to be entered into the internet based project management software system for document control. Should the Authority replace Procore with any other project management software system, the same requirements as listed in this Section 00894 shall remain valid.

B. Allow 21 Days for review of submissions and resubmissions.

C. The Contracting Officer's Representative will discard submittals received from sources other than the Contractor.

D. Prepare separate submittals for each item in a specification Section. Group them in the order listed, paragraph by paragraph, and package them together.

E. Transmit submittals of related parts of the Work concurrently such that processing will not be delayed for coordination. Incomplete submittals will be returned to the Contractor with no action taken by the Authority.

F. Place a permanent label or title block on each submittal item for identification.

1. Indicate Project name and Contract number, the date of submission, reference to the specification Section article, and drawing number and detail to which the submittal applies.

2. Indicate name of firm or entity that prepared each submittal.

3. Provide a blank space approximately 5 by 5 inches, in the lower right corner of each drawing just above the title block, to record the Contractor's review and approval markings and action taken by the Contracting Officer Representative.

G. All submittals shall be accompanied with a transmittal form containing the following minimum information.

1. Project name and Contract number, the date of submission, Subcontractor, Supplier, manufacturer name, and submittal number

2. Submittal purpose and description

3. Reference to the specification Section, drawing number, and title

4. Reference applicable standards, such as ASTM or Federal Specification numbers

5. Location(s) where product is to be installed, as appropriate

6. Identification of deviations from the Contract Documents

7. Notation that Submittal is a safety critical item, if identified on the "Certifiable Items List"

1.05 MEETING MINUTES

A. Prepare meeting minutes that are the responsibility of the Contractor immediately after each meeting. Submit draft copy to Contracting Officer Representative for review within 5 Days in MS Word format.

B. Submit final meeting minutes in Adobe (.PDF) format 3 Days after receipt of Authority review.

1.06 SHOP DRAWINGS

A. General:

1. Submit Shop Drawings in AutoCAD and Adobe (.PDF) formats.

2. Shop Drawings shall indicate all pertinent features of the products and the method of fabrication, connection, erection, or assembly with respect to the Work.

3. The first drawings submitted by Contractor, Subcontractor, or vendor will be reviewed for conformance with this Section. Once accepted, use the drawing format as a standard for subsequent drawings.

B. Dimensioning: Follow applicable dimensioning and tolerance practices as specified in ANSI/ASME Y14.5.

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

2. Provide sufficient dimensions on drawings so that size, shape, and location may be determined without calculation.

3. Show each dimension clearly so that only one interpretation is possible. Show each dimension for a feature once.

4. Text must be legible on 11 by 17-inch prints.

5. Include on the Shop Drawings details necessary for the installation, maintenance, and repair of all equipment provided.

1.07 WORKING DRAWINGS

A. Submit Working Drawings in AutoCAD and Adobe (.PDF) formats.

B. Working Drawings indicate the Contractor's plan for temporary structures that will not become part of the completed Project such as decking, temporary bulkheads, support of excavation, support of utilities, groundwater control systems, and forming and falsework for underpinning; and for such other work as may be required for construction.

C. Working Drawings and calculations shall be signed and sealed by a professional engineer registered in the jurisdiction where the work will be performed and shall convey, or be accompanied by information sufficient to completely explain the structure, machine, or system described and its intended manner of use.

1.08 PRODUCT DATA

A. Submit product data in Adobe (.PDF) format.

B. If information must be specially prepared for a submittal because standard published data is not suitable for use, submit as Shop Drawings, not as product data.

C. Modify manufacturers' standard drawings, catalog cuts, brochures, diagrams, schedules, performance charts, illustrations, calculations, printed installation, erection, application, and placing instructions, and other descriptive data to delete information that is not applicable to the Contract. Indicate dimensions, clearances, performance characteristics, capacities, wiring and piping diagrams, and controls. Supplement standard information with additional information applicable to this Contract.

D. Submit product data concurrent with samples.

1.09 SAMPLES

A. 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 submittals and actual components as delivered and installed.

B. Maintain sets of accepted samples at the Site, available for quality control comparisons throughout the course of construction activity. Sample sets may be used to determine conformance of construction associated with each set.

1. Samples that may be incorporated into the Work are indicated in individual specification Sections. Samples not incorporated into the Work, or otherwise designated as the Authority's property, are the property of Contractor.

C. Samples for Verification: Submit full-size units or samples of a size indicated, physically identical with material or the product proposed for use and that shows a 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.

D. Number of Samples: Submit 5 sets of Samples. The Contracting Officer Representative will retain 3 Sample sets; the remainder will be returned. Mark up and retain one returned Sample set as a project record sample.

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

E. If variations in color, pattern, texture, or other characteristics are inherent in the material or product represented by a sample, submit at least 3 sets of paired units that show approximate limits of variations.

1.10 CERTIFICATES AND CERTIFICATIONS

A. Submit original certificates and certifications in MS Word and Adobe (.PDF) formats.

B. Provide certificates and certifications that demonstrate proof of compliance with Contract specification requirements for products, materials, equipment, and systems.

C. Authority Approval of a certification shall not be construed as relieving the Contractor from furnishing products that meet the specified design intent.

1.11 REPORTS

A. Submit original reports, signed and sealed by a professional engineer in the jurisdiction that the Work is to be constructed, and any related drawings in MS Word, AutoCAD and Adobe (.PDF) formats.

B. Provide reports that demonstrate proof of compliance with Contract specification requirements. The reports include manufactured products, materials, research, equipment, systems, and test reporting in the field or laboratory.

C. Authority Approval of submitted reports shall not be construed as relieving the Contractor from furnishing products that meet the specified design intent.

1.12 DATA

A. Submit data and any related drawings in MS Word, AutoCAD and PDF formats.

B. Provide written and graphic information including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations that demonstrate proof of compliance with Contract specification requirements. Provide the name and version of software used for calculations.

C. Authority Approval of submitted data shall not be construed as relieving the Contractor from furnishing products that meet the specified design intent.

1.13 CONSTRUCTION PHOTOGRAPHS AND VIDEO

A. All still photographic documentation of the Work shall be provided by the Contractor in digital format.

B. Video documentation recordings of the Work, accompanied with audio recording, shall be provided by the Contractor in digital format.

C. For detailed submittal procedures see Section 01321, CONSTRUCTION PHOTOGRAPHS.

1.14 AS-BUILT DOCUMENTS

A. Maintain a record set of drawings and specifications that reflect as-built conditions and that are annotated to show all changes incorporated as Work progresses.

B. Submit As-Built Drawings in AutoCAD and bookmarked-by-discipline Adobe (.PDF) formats that can be plotted either as full-size or half-size drawings that are scalable.

C. Submit approved As-Built Documents for the completed Work as specified in Section 01775, CLOSEOUT, as elements of the Work are completed and before the scheduled date of Substantial Completion.

1.15 CONTRACTOR'S REVIEW

A. Review each submittal, including all those provided by Subcontractors and Suppliers of any tier, check for coordination with other Work and for compliance with the Contract Documents. Note inconsistencies with Contract Documents. Submittals shall bear the Contractor's approval stamp and initials of the reviewer before submitting to the Authority.

B. Each submittal transmittal form shall be signed by the Contractor with a statement, "Having checked this submission, we certify that it conforms to the requirements of the Contract in all respects, except as otherwise indicated".

C. Do not start work where submittals are required until submittal review is completed by the Authority and Approval, if required, has been received.

D. Identify approval methods of the various jurisdictional authorities and obtain their approvals as required.

1.16 AUTHORITY'S REVIEW

A. The Contracting Officer Representative shall receive construction submittals from the Contractor and will distribute them within the Authority for review.

1. Shop Drawings, samples, and other submission reviews by the Authority will not include checking of dimensions for potential conflicts.

2. Approval by the Authority of a specific item will not indicate Approval of an assembly of which the item is a component.

3. Incomplete submittals will be returned for resubmission without review.

B. Submittals that are reviewed by the Authority will be returned to the Contractor with one of the following approval codes:

1. Code 1: Approved Without Condition or Comment.

2. Code 2: Approved As Noted, Resubmittal Not Required. The Contractor shall comply with changes, conditions, or comments on the submittal.

3. Code 3: Disapproved. The entire submittal is disapproved and shall be resubmitted.

1.17 RESUBMISSIONS, DISTRIBUTION, AND USE

A. Make resubmissions in same form and number of copies as initial submittal. Note the date and content of previous submittal. Clearly indicate extent of revision.

B. Furnish copies of final submittals to manufacturers, Subcontractors, Suppliers, fabricators, installers, Jurisdictional Authorities, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

C. Retain complete copies of submittals on Site.

1.18 RFI ADMINISTRATIVE REQUIREMENTS

A. Submit one electronic copy on the RFI form provided by the Authority, through the Authority's Project Management Software System (PMSS). The Contracting Officer's Representative will return one electronic copy through the PMSS.

B. Allow 14 Days for the review of each RFI.

C. The Contracting Officer's Representative will discard RFIs received from sources other than the Contractor.

D. All submittals shall be accompanied with a transmittal form containing the following minimum information.

1. Project name and Contract number, the date of submission, and RFI number

2. Clear statement of the question to be addressed by the Authority

3. Reference to the specification Section, drawing number, and title that is the subject of the RFI

PART 2 – PRODUCTS (not used)

PART 3 – EXECUTION

A. All shop drawings, technical submittals, product and material submittals shall be submitted to WMATA at the 100% level of development by NTP + 75 cds.

END OF SECTION

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SECTION 01410

REGULATORY REQUIREMENTS

PART 1 – GENERAL

1.01 SUMMARY

A. This Section includes information required for conformance to regulatory requirements, such as building codes, mechanical codes, electrical codes, ADAAG regulations, or other regulations applicable to the Project.

1.02 GENERAL

A. Meet or exceed the WMATA Standard Specifications relevant for each element of the Work as these represent the standards to be used for construction. Comply with all Federal, state, and local laws and regulations that control the construction of the Project, and meet or exceed the laws and standards relevant for each element of the Work to be installed if they are more stringent than the WMATA Manual of Design Criteria and WMATA Standard Specifications.

1.03 THE JURISDICTIONAL AUTHORITIES, RAILROADS, UTILITIES, AND MISCELLANEOUS AGENCIES

A. Coordinate with the following entities as appropriate and relevant to the Project.

B. Federal agencies:

1. Environmental Protection Agency (EPA)
2. Federal Aviation Administration (FAA)
3. Federal Highway Administration (FHWA)
4. Federal Transit Administration (FTA)
5. General Services Administration (GSA)
6. Department of the Interior:
    a. National Park Service (NPS), National Capital Region
7. Occupational Safety and Health Administration (OSHA)
8. U.S. Army, Corps of Engineers (COE):
    a. Washington Aqueduct Division
    b. Baltimore District
    c. Norfolk
9. U.S. Coast Guard (USCG)
10. U.S. Navy, Naval Facilities Engineering Command (NAVFAC)
11. Architectural and Transportation Barriers Compliance Board (ATBCB):
    a. American with Disabilities Act Accessibility Guidelines (ADAAG)

12. Federal Emergency Management Agency (FEMA)
13. U.S. Army Engineer District
14. Department of Defense (DOD)

C. District of Columbia:

1. Department of Consumer and Regulatory Affairs:
    a. Building and Land Regulation Administration
2. Department of Environmental Services
3. Department of Health (Environmental Health Administration)
4. Department of Housing and Community Development:
    a. Redevelopment Land Agency
5. Department of Human Services
6. Department of Public Works:
    a. Bureau of Traffic Services
    b. Design and Engineering Construction Administration
    c. Bureau of Design, Engineering and Research
        (1) Traffic and Electrical Services Division
    d. Bureau of Engineering and Construction
        (1) Project Development Division
7. Department of Recreation and Parks
8. Department of Transportation:
    a. Office of Mass Transit
9. Fire Department
10. Metropolitan Police Department
11. Department of Sanitary Engineering
12. Department of Highway Facilities
13. Department of Planning

D. State of Maryland:

1. Department of Transportation
    a. State Highway Administration
    b. State Railroad Division

c. Office of Traffic

d. Office of the District Engineer (District #3)

2. Department of Natural Resources:

a. Water Resources

3. Department of Health and Mental Hygiene

4. Department of the Environment:

a. Industrial Waste Division

5. Department of Transportation

E. Montgomery County:

1. Department of Transportation

2. Storm Water Control

3. Department of Fire and Rescue Services

4. Department of Public Works

5. Soil Conservation District

6. Department of Environmental Protection:

a. Division of Pollution Control

b. Sediment Control Permit

7. Office of Architectural Service

8. Police Department

F. Prince George's County:

1. Department of Public Works and Transportation

2. Soil Conservation District

3. Health Department

4. Fire Department

5. Department of Environmental Resources

G. Commonwealth of Virginia:

1. Department of Public Works and Transportation

2. Virginia Department of Highways and Transportation

3. Virginia (Northern) Planning District Commission

4. Virginia (Northern) Park Authority

5. Virginia (Northern) Transportation Commission

6. Virginia State Water Control Board
7. Virginia State Highway Commissioner

H. City of Alexandria:

1. Department of Transportation and Environmental Services
2. Fire Department
3. Alexandria Sanitation Authority
4. Police Department

I. Arlington County:

1. Department of Public Works:
    a. Utilities Department
2. Arlington County Department of Environmental Services
3. Arlington County Fire Department
4. Arlington County Sheriff and Police Department
5. Highway Facilities
6. Fire Prevention Code

J. Fairfax County:

1. Water Authority
2. Park Authority
3. Fire and Rescue Services
4. Soil Conservation District
5. Department of Public Works and Environmental Services
6. Transportation Planning Branch
7. Police Department

K. City of Falls Church:

1. Water Authority
2. Department of Public Works
3. Department of Public Utility
4. Police Department

L. City of Greenbelt

M. City of College Park

N. Town of Riverdale

O. Town of Capital Heights

P. Town of Cheverly:

1. Building and Fire Prevention

2. Police Department

Q. Town of Seat Pleasant

R. Town of University Park

S. Town of Riverdale

T. Town of Berwyn Heights

U. City of Rockville

V. City of Fairfax

W. Railroads:

1. Consolidated Rail System Corporation

2. CSX Transportation:

a. Baltimore and Ohio Railroad

b. Chesapeake and Ohio Railroad

c. Richmond, Fredericksburg and Potomac Railroad Company

3. National Railroad Passenger Corporation (AMTRAK):

a. Washington Terminal Company

4. Southern Railway System

5. Norfolk Southern Corporation

6. Penn Central Transportation Company

7. Philadelphia, Baltimore & Washington Railroad Co.

X. Utilities: See Section 01180, PROJECT UTILITY SOURCES.

Y. Miscellaneous agencies:

1. Maryland-National Capital Park and Planning Commission

2. Metropolitan Washington Airports Authority

3. National Capitol Planning Commission

4. Washington Suburban Transit Commission

5. Metropolitan Washington Council of Governments

6. American Association of State Highway and Transportation Officials (AASHTO)

Z. Other

1. U.S. Green Building Council (USGBC)

PART 2 – PRODUCTS (not used)

PART 3 – EXECUTION (not used)

END OF SECTION

SECTION 01420

REFERENCES

PART 1 – GENERAL

1.01 SUMMARY

A. This Section lists the reference standards cited in the Contract Documents, the organizations or Jurisdictional Authorities whose standards are cited, and common acronyms used in the Contract Documents.

B. When reference is made to codes, regulations, reference standards, and specifications, the Work shall conform to the current edition as of the date of Award, unless it is superseded by Jurisdictional Authorities.

1.02 ABBREVIATIONS AND ACRONYMS

AAR	Association of American Railroads
AASHTO	American Association of State Highway and Transportation Officials
ABS	Acrylonitrile-Butadiene-Styrene
ac	Alternating Current
ACGIH	American Conference of Governmental Industrial Hygienists
ACI	American Concrete Institute
A/D	Analog to Digital
ADA	Americans with Disabilities Act
ADAAG	Americans with Disabilities Act Accessibility Guidelines
AHA	American Hardboard Association
AHDGA	American Hot Dip Galvanized Association, Inc
AI	Asphalt Institute
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AMCA	Air Moving and Conditioning Association
AMTRAK	National Railroad Passenger Corporation
ANSI	American National Standards Institute (synonymous with USASI-ASA)
API	American Petroleum Institute
AREMA	American Railway Engineering and Maintenance of Way Association
ARI	Air Conditioning and Refrigeration Institute
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASNT	American Society of Nondestructive Testing
ASTM	American Society of Testing and Materials
ATBCB	Architectural and Transportation Barriers Compliance Board
AT&T	American Telephone and Telegraph Company

AWG	American Wire Gauge (synonymous with Brown and Sharpe)
AWI	Architectural Woodwork Institute
AWWA	American Water Works Association
AWS	American Welding Society
AWPA	American Wood Preservers' Association
BG&E	Baltimore Gas and Electric Company
BIA	Brick Institute of America
BLS	Bureau of Labor Statistics
B&O	Baltimore & Ohio Railroad (Division of the CSX Transportation)
BOCA	Building Officials and Code Administrators International
BTU	British Thermal Unit
BTUH	British Thermal Units Per Hour
C	Celsius (Centigrade)
CAGI	Compressed Air and Gas Institute
CE	US Army, Corps of Engineers
cfm	Cubic Feet Per Minute
CISPI	Cast Iron Soil Pipe Institute
CMU	Concrete Masonry Unit
C&O	Chesapeake and Ohio Railroad (Division of the CSX Transportation)
CONRAIL	Consolidated Rail Corporation (formerly Penn Central)
CQCS	Contractor's Quality Control System
CRSI	Concrete Reinforcing Steel Institute
CSX	CSX Transportation (formerly Chessie System, B&O, C&O, and Chesapeake & Ohio)
CTI	Cooling Tower Institute
dB	Decibel(s)
dc	Direct Current
DFT	Dry Film Thickness
DILM	Ductile Iron Pipe, Cement-Lined and Coated, Mechanical Joint
DILP	Ductile Iron Pipe, Cement-Lined and Coated, Push-On-Joint
DPST	Double Pole, Single Throw
DTS	Data Transmission System
EPA	Environmental Protection Agency
EPR	Ethylene-Propylene-Rubber
F	Fahrenheit
FAA	Federal Aviation Administration
FCCCR	Foundation for Cross-Connection Control Research of the University of Southern California Engineering Center

FHWA	Federal Highway Administration
FM	Factory Mutual Associates
FS	Federal Specifications
FED STD	Federal Standard
FTA	Federal Transit Administration (formerly UMTA)
GPH	Gallons Per Hour
GSA	General Services Administration
HOA	HAND/OFF/AUTOMATIC
HP	Horsepower
HVAC	Heating, Ventilating and Air Conditioning
IBC;	International Building Code
ICEA	Insulated Cable Engineers Association
ICI	Industrial Coatings International
ID	Inside Diameter
IEEE	Institute of Electrical and Electronic Engineers
IPS	Iron Pipe Size
ISO	International Organization for Standardization
JGB	Jackson Graham Building 600 Fifth Street, N.W. Washington, D.C. 20001
kHz	Kilo Hertz
kV	Kilovolts
kVA	Kilovolts-amperes
kW	Kilowatts
LED	Light Emitting Diode
LEED	Leadership in Energy and Environmental Design
mV	1,000 volts
mVA	1,000 volts-amperes
MCM	1,000 Circular Mils
MCP	Motor Circuit Protector
MDNR	Maryland Department of Natural Resources
METRO	Logo for the Washington Metropolitan Area Transit Authority
MNCPPC	Maryland-National Capitol Park and Planning Commission
MS	Military Specification
MSG	Manufacturers' Standard Gauge
MIL STD	Military Standard
MSHA	Maryland State Highway Administration
MSS	Manufacturer's Standardization Society of the Valve and Fitting Industry

MTPD	Metro Transit Police Department
MUTCD	Manual of Uniform Traffic Control Devices
MWAA	Metropolitan Washington Airports Authority
MWRA	Maryland Water Resources Administration (Part of MDNR)
NAAMM	National Association of Architectural Metal Manufacturers
NACE	National Association of Corrosion Engineers
NAVFAC	Naval Facilities Engineering Command
NBGQA	National Building Granite Quarries Association
NBS	National Bureau of Standards
NC	Normally Closed
NCMA	National Concrete Masonry Association
NEBB	National Environmental Balancing Bureau
NEC	National Electrical Code
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association
NIOSH	National Institute for Occupational Safety and Health
NO	Normally Open
NPS	National Park Service
NTP	Notice to Proceed
NTIS	National Technical Information Service
OCCB	Operations Control Center Building 600 Fifth Street, N.W. Washington, D.C. 20001 (see JGB)
OD	Outside Diameter
OS&Y	Outside Stem and Yoke
OSHA	US Department of Labor, Occupational Safety and Health Administration
PCI	Prestressed Concrete Institute
PDI	Plumbing and Drainage Institute
PE	Polyethylene
PEI	Porcelain Enamel Institute
PEI	Petroleum Equipment Institute
PEPCO	Potomac Electric Power Company
PGFD	Prince Georges County, Fire Department
PGDPW&T	Prince Georges County, Department of Public Works and Transportation
PGSCD	Prince Georges County, Soil Conservation District
PPHM	Parts Per Hundred Million
PPM	Parts Per Million
psf	Pounds Per Square Foot

psi	Pounds Per Square Inch
psig	Pounds Per Square Inch Gauge
PVC	Polyvinyl Chloride
RCRA	Resource Conservation and Recovery Act
rms	Root Mean Square
rpm	Revolutions Per Minute
ROD	Revenue Operation Date
RQD	Rock Quality Designation
SDI	Steel Deck Institute or Steel Door Institute, depending upon context in which it occurs
SMACNA	Sheet Metal and Air-Conditioning Contractors National Association
S1S	Smooth One Side
S2S	Smooth Both Sides
SJI	Steel Joist Institute
SPDT	Single Pole, Double Throw
SPST	Single Pole, Single Throw
SSPC	Steel Structures Painting Council
TBM	Tunnel Boring Machine
TCA	Tile Council of America
TGA	Thermogravimetric Analysis
UFAS	Uniform Federal Accessibility Standards
UL	Underwriters Laboratories, Incorporated
UMTA	Urban Mass Transit Administration
UPS	Unit Price Schedule or Uninterruptible Power System, depending upon context in which it occurs
USBR	US Bureau of Reclamation
USCG	US Coast Guard
USCS	US Commercial Standard
USDA/SCS	US Department of Agriculture - Soil Conservation Service
USDOT	US Department of Transportation
USGBC	US Green Building Council
USN/CD	US Navy, Chesapeake Division
USPS	US Product Standard
USSG	United States Standard Gauge
WAD	Washington Aqueduct Division (Element of U.S. Army C.E., Baltimore District)
WSSC	Washington Suburban Sanitary Commission
XLPE	Cross-Linked Polyethylene

PART 2 – PRODUCTS (not used)

PART 3 – EXECUTION (not used)

END OF SECTION

SECTION 01470

QUALITY MANAGEMENT SYSTEM

PART 1 – GENERAL

1.01 SUMMARY

A. This Section specifies the Contactor's requirements to formalize a system that documents the structure, responsibilities, and procedures required to achieve effective quality management of the Work throughout the duration of the Contract in conformance and compliance with FTA-IT-90-5001-02.1; inclusive of all 15 required elements.

B. The Quality Management System shall be consistent with ISO 9001:2008 standard. The Contractor is not required to be ISO certified, however, certain Suppliers and manufacturers shall be certified as required in these specifications.

C. The Quality Management System shall include a Quality Plan, Inspection and Test Plans, and corresponding procedures and forms necessary to establish, document, maintain, and execute work that conforms to the Contract Documents.

D. Inspection and Testing shall be performed by qualified staff and laboratories as specified herein.

1.02 REFERENCES

A. Federal Transit Administration (FTA)

1. FTA-PA-27-5194-12.1, Quality Management System Guidelines

2. FTA-IT-90-5001-02.1, QA/QC Guidelines

B. International Organization for Standardization (ISO)

1. ISO 9001:2008 – Quality Management Systems

2. ISO 10013:2001 – Guidelines for Developing an ISO 9001 Quality Manual

C. U.S. national standards maintained by the U.S. National Institute of Standards and Technology (NIST) and the U.S. Naval Observatory.

1.03 SUBMITTALS

A. Make submittals in accordance with Section 01330, SUBMITTAL PROCEDURES, and as noted below. Submit plans, procedures, audit schedules and certifications for Approval. Remaining submittals are for information.

B. Project Specific Quality Plan: Project (Contract)-specific Quality Plan modeled after FTA-IT-90-5001-02.1 and ISO 9001:2008 within 30 Days of NTP and with each revision. As a minimum, the following quality elements shall be included in the Quality Plan.

1. Element 1: Management Responsibility

2. Element 2: Documented Quality Management System

3. Element 3: Design Control

4. Element 4: Document Control

5. Element 5: Purchasing

6. Element 6: Product Identification and Traceability
7. Element 7: Process Control
8. Element 8: Inspection and Testing
9. Element 9: Inspection, Measuring, and Test Equipment
10. Element 10: Inspection and Test Status
11. Element 11: Nonconformance
12. Element 12: Corrective Action
13. Element 13: Quality Records
14. Element 14: Quality Audits
15. Element 15: Training

C. Quality Procedures: Procedures for each of the quality elements in the Project Specific Quality Plan within 120 Days of NTP; to include Authority review and approval from the Office of Quality Assurance and Warranty (QAAW).

D. Inspection and Test Plans/Specific: Submit Work task or component specific Inspection and Test Plans a minimum 60 Days in advance of when the covered work is scheduled to begin.

E. Quality Reports: Submit the following reports in accordance with the approved Quality Plan and Quality Procedures.

1. Daily Quality Reports: Daily.
2. Test Status Reports: Monthly.
3. Review and Disposition of Nonconforming Product: With each occurrence.
4. Summary of Management Reviews: Monthly during the first 6 months after NTP and not less than quarterly thereafter.
5. Proposed audit schedule within 60 Days of NTP.
6. Report of audit results and completion of corrective actions within 30 Days of the completion of an Audit.
7. Quality Compliance Certification with each Monthly Progress Report

1.04 QUALITY MANAGEMENT SYSTEM REQUIREMENTS

A. Quality Management System

1. The Quality Management System and Project Specific Quality Plan shall be revised and updated to improve the quality system as necessary throughout the Period of Performance of the Contract which complies with FTA-IT-90-5001-02.1 to reflect changes determined to be necessary by Contractor management review, Contractor internal audit, and Authority audit. Each update of the Quality Management System or Project Specific Quality Plan requires Authority Approval.

2. During the Period of Performance, the contractor shall exercise positive control over all of the Work, including that of subconsultants, Subcontractors, fabricators, manufacturers, installers,

and Suppliers in accordance with the Quality Plan and Quality Procedures described within the approved Contractor Quality Management System and Project Specific Quality Plan.

3. The execution of the Quality Management System shall be subject to Authority audit throughout the Period of Performance of the Contract. The Authority QAAW Oversight & Compliance personnel shall have unimpeded access to all activities to include, but not limited to, documents, testing, meetings, drawings, transmissions, submittals

B. Quality Plan

1. The Project Specific Quality Plan shall include the signatures of the Officer(s) responsible for the Contractor indicating their approval of the Quality Management System. The Quality Manager shall certify the Project Specific Quality Plan is complete; to include a revision index.

2. Quality Manager

   a. Shall have the qualifications specified in Section 01111, CONTRACTOR KEY STAFF.

   b. Shall perform as the Contractor's Management Representative.

   c. Is responsible for implementing the Quality Management System and shall have the authority to stop the Work.

3. Document Control: Current version of all documents shall be managed in the Authority's Project Management Software System (PMSS). The database shall be kept current throughout the Period of Performance of the Contract. A revision matrix for all documentation revisions shall be maintained at all times and kept current.

4. Subcontracting and Purchasing

   a. Purchased material, equipment, and services shall be documented and controlled to ensure that they are properly integrated into the Work.

   b. Assure that Contractor's subconsultants, Suppliers, and Subcontractors satisfactorily demonstrate and document an adequate system for managing quality to the Contractor and requirements stated herein.

   c. Provide adequate surveillance of subconsultants, Subcontractors, and Suppliers to assure conformance with the Quality Management System and specification requirements. This surveillance shall include inspection and audit of off-Site activities of Contractor's subconsultants, Subcontractors, and Suppliers. Notification of any audit shall be presented to the Authority; QAAW at least 14 days in advance of any such audit.

5. Product Identification and Traceability: The Contractor's Quality Management System shall include provisions to identify and provide traceability of products and materials where appropriate and as required in the Contract Specifications.

6. Process Control: Establish a systematic and measurable approach to report to WMATA COR and QAAW describing how the Contractor is ensuring each process, which is required by the Quality Plan, is maintained at predictable, stable, on target, and consistent levels of performance throughout the project lifecycle.

7. Inspection and Testing/General

   a. Establish an Inspection and Test Plan that conforms to the Project Specific Quality Plan and the Contract Specifications and that allows for tracking of actual performance of inspections and tests.

b. The Inspection and Test Plan shall incorporate elements of the Authority furnished Inspection Guidelines, Part 2, as needed to meet the requirements of the Quality Plan.

c. Testing laboratories shall be certified as required by the Contract Specifications.

d. The Inspection and Test Plan shall be designed to assure that testing is performed to demonstrate that components and systems perform satisfactorily in service. Testing shall be performed by qualified and experienced personnel, and using certified in accordance with approved test procedures. Tests shall incorporate acceptance limits defined by industry codes and standards or by the Issued for Construction Specifications; the more restrictive standard shall take precedence. All test results shall be documented and submitted to the Authority for review.

e. Provide the Authority 14 working days notice of tests except when greater notice is required in these specifications.

f. Include instructions necessary to implement source inspections; receiving inspections; inspection of work in progress; hold point inspections, and completion inspections.

g. Forms for recording test results and authorized approval signatures shall be used for all tests. Each test form shall identify the applicable specification Section, Article, and Paragraph.

h. Subcontractors testing their own work shall be supervised and managed by the Contractor. The responsibility for testing and Subcontractor performance remains with the Contractor.

i. If tests or certifications conducted by the Authority disclose that work is not in conformance with the Contract Specifications, then the Authority will advise the Contractor as to the particular defects to be remedied. Upon correction of the defects, provide written notification to the Contracting Officer Representative, and additional testing or certification shall be conducted as necessary to result in a proven and certified system(s). Further, in the case of such non-conformance with the Contract Documents, provide details on the preventive action taken to avoid such non-conformance for remaining installations.

8. Inspection, Measuring, and Test Equipment: Ensure that test equipment used meets the specified requirements, and that the equipment and instruments are controlled, maintained, and calibrated by a nationally recognized certification entity/agency. Devices used to calibrate measuring and test equipment or other measurement standards shall be traceable to one or more of the following:

   a. U.S. national standards maintained by the U.S. National Institute of Standards and Technology (NIST) and the U.S. Naval Observatory.

   b. Fundamental or natural physical constants with values assigned or accepted by the U.S. NIST.

   c. National standards of other countries, which are correlated, with U.S. national standards.

   d. Comparison to consensus standards.

9. Inspection and Test Status: Require inspection and test schedules for the Authority's use in scheduling test witnessing and other quality assurance functions.

10. Review and Disposition of Nonconforming Product: The authority within the Contractor organization to review and provide disposition of nonconforming products shall be identified, documented and submitted to the Authority for review and approval. The disposition of product that does not conform to the Contract Documents segregated from all other product and identified immediately with notification to the Authority that such nonconformance exists. All

nonconformance products shall be subject to approval by the Contracting Officer Representative.

11. Corrective Action: Corrective action plans for each nonconformance shall be established, documented, and maintained. These shall include the investigation of the root cause of nonconforming work and the corrective action needed to prevent recurrence, and analysis to detect and eliminate potential causes of nonconforming work.

12. Control of Quality Records

    a. Quality records, document, and all testing results achieved (e.g. test data sheets, test reports, electronic test data, mill certifications, measurement verification sheets, batch tickets) shall be documented and stored in appropriate data files or provide evidence of activities performed (e.g. inspection reports, photos or videos, checklists with sign-offs).

    b. Establish and implement measures to identify, collect, index, file, and store. These procedures shall include a database to track and maintain control over all Quality Records generated by the Contract Work.

    c. Quality records shall be legible, reproducible, identifiable with the item involved, and contain the date of origination and identity of the originator, verifier, and responsible supervisor.

    d. Quality records generated by Subcontractors, Suppliers, fabricators, and test laboratories shall be traceable to the product, or service being supplied or fabricated and shall be provided in advance of shipment or shall be shipped with the product.

    e. All Quality records and documents shall be maintained and preserved for the duration of this contract to ensure compliance with statutory requirements.

13. Quality Audits

    a. Management reviews conducted by Contractor:

        (1) Management reviews shall occur monthly during the first 6 months of the Contract and not less than quarterly thereafter. Notification of such reviews shall be presented to the Authority QAAW at least 14 days in advance.

        (2) Written summaries of findings and all corrective actions shall be provided to the Contracting Officer Representative and QAAW within 5 Days of completion of each review.

    b. Internal quality audits conducted by Contractor:

        (1) Notification of any audit shall be presented to the Authority- QAAW at least 14 days in advance

        (2) Internal audits shall be performed at least quarterly.

        (3) Deficiencies in the Quality Management System, the causes of deficiencies in the Quality Management System, and the status of corrective action and preventive action, shall be recorded in the audit results.

        (4) Audit results shall be provided to the Contracting Officer Representative and QAAW within 14 Days of the audit with a plan for corrective and preventative action for each nonconformance.

        (5) Provide documented notification of completed corrective and preventative action. The Authority reserves the right to verify all corrective action.

14. Training: Establish, maintain, and provide the training needs for all personnel performing activities affecting quality. Refer to Section 01820, Demonstration and Training.

C. Inspection and Test Plans/Specific

1. As a minimum, Inspection Plans shall include the following information:

   a. A matrix of all inspections required by the Contract Specifications to be performed by Contractor, Suppliers, or Subcontractors and their frequency.

   b. Established hold points that require work stoppage until Authority action relative to that work activity is complete.

   c. Established witness points that identify when Authority notification is required for a Contractor work activity.

   d. Checklists to be utilized.

2. As a minimum, the Test Plans shall include the following information:

   a. A matrix of all tests required by the Contract Specifications to be performed by Contractor, Suppliers, or Subcontractors.

   b. Samples of test reports: the test reports shall meet the minimum requirements called for in the applicable test standards specified in the Contract Specifications.

   c. Provisions for coordinating onsite and offsite testing.

   d. Provisions for meeting the Authority notification criteria for planned tests and inspections specified to be witnessed by the Authority. Provide the Authority a minimum of 14 Days advance notice.

   e. Description of test

   f. Specification Section, Article, and Paragraph related to each test

   g. Type of test

   h. Applicable standard

   i. Test frequency

   j. Responsibility for test performance

   k. Completion status

   l. Means of tracking and recording corrective actions being taken to assure compliance with the Issued for Construction Specifications.

   m. Means for recording test results.

D. QUALITY REPORTS

1. Daily Quality Reports: Daily quality reports shall summarize the construction activities to the Authority, record the inspections and tests completed and the results, and record deficiencies identified, during the previous 24 hours of work. These reports shall be provided to the Contracting Officer Representative and Authority-QAAW daily.

2. Test Status Report: Track and report the status of testing. Revisions, updates, and additions the test status report shall be submitted to the Contracting Officer Representative and Authority-QAAW at least monthly.

3. Quality Compliance Certification: As specified in Section 00744, METHOD OF PAYMENT, the Quality Manager's Quality Compliance Certification shall be provided with each Monthly Progress Report stating that application of the Quality Management System has demonstrated that the items requested for payment have been constructed to meet the contract requirements and have been inspected and tested as required to comply with the Contract Documents. Work for which satisfactory records for design, testing, inspection, or other quality elements are not available, will not qualify for payment.

1.05 AUTHORITY QUALITY OVERSIGHT

A. The principal role of the Authority is to ensure the Contractor Project Specific Quality Plan is documented, implemented, executed, enforced and revised as necessary. The Authority QAAW Oversight and Compliance will monitor and audit the effectiveness and efficiency of the Project Specific Quality Plan, Quality Assurance, Quality Control and all related activities therein. The Authority reserves the right to conduct inspection and testing of all phases of construction by Authority field staff. Deficiencies discovered will be brought to the immediate attention of the Contractor including written follow-up notification.

B. If the Authority determines that the approved Quality Management System or plans, or any portion or feature thereof, are not controlling work sufficiently for the Work to conform to the Contract Documents or meeting the required quality standards, Contractor shall take immediate and appropriate action to correct such deficiencies. The Contracting Officer Representative may stop the Work activities if the Quality Management System is not functioning properly for any other Contract non-compliance.

C. Notwithstanding the above, Authority inspection, testing, or other actions shall not constitute Acceptance of work, nor shall it relieve the Contractor of its contractual responsibilities.

D. When Authority inspection is required, add to the purchasing document the following statement:

"Authority inspection is required prior to shipment from the plant. Upon receipt of this order, promptly notify the Contracting Officer Representative, in writing, so that appropriate planning for Authority inspection can be accomplished."

1.06 AUTHORITY AUDITS OF THE CONTRACTOR'S QUALITY MANAGEMENT SYSTEM

A. At its sole discretion, the Authority may conduct audits, tests, and inspections in addition to those performed by the Contractor.

B. There will be an ongoing review and evaluation of implementation of the Contractor's Quality Management System to verify that the Contractor is effectively controlling the quality of construction.

C. Audits include audits of fabricators, Subcontractors, subconsultants, Suppliers, and third-party audits (i.e., FTA audits, ISO audits, trade organization certification audits, and audits required to maintain laboratory or testing accreditation).

D. If the implementation of the Contractor's Quality Management System and Project Specific Quality Plan is determined to be ineffective by the Authority, the Authority, at its sole discretion, may withhold payment for any and all work it deems to be deficient or non-conforming to the Contract Documents. The Contractor will be expected to make whatever changes are necessary in the organization or in the Project Specific Quality Plan to provide effective control of the quality of the Work.

E. The Authority will perform audits at its sole discretion, to verify that the Contractor is effectively controlling the quality of the Work. The basis for the audits will be compliance with FTA-IT-90-5001-02.1, and compliance with contractual requirements.

PART 2 – PRODUCTS (not used)

PART 3 – EXECUTION

3.01 QUALITY SYSTEM MANAGER AND OTHER RESOURCES

A. The Contractor shall appoint a qualified full-time Quality Manager in accordance with Section 01111 Contractor Key Staff.

B. In the event that the Quality System Manager is not found to be competent or to have sufficient relevant experience, the Authority will request that the Quality System Manager be removed from the project pursuant to Section 00709, PROJECT MANAGEMENT, and SUPERINTENDENCE AND KEY STAFF. In that event, the Contractor shall submit a new candidate for consideration within 10 calendar days by submitting a resume.

C. In addition to the Quality System Manager, the Contractor shall assign additional trained and experienced staff to fulfill Contract and the Contractor requirements for meeting quality. The Contractor shall provide sufficient resources to effectively manage quality related functions including the following:

1. Quality Management System Administration

2. Construction Quality

3. Subcontractor Quality

5. Oversight of Quality Control

6. Configuration Management

7. System Testing

3.02 AUTHORITY QUALITY OVERSIGHT

A. The principal role of the Authority in the implementation of the Contractor Quality Program will be oversight of the effectiveness of the Contractor's Quality Management System including quality control and quality assurance activities. The Authority reserves the right to conduct inspection of any activity to include all phases of construction by Authority Quality personnel and Authority field staff. Deficiencies discovered will be brought to the immediate attention of the Contractor including written follow-up notification.

B. When the Authority determines that the approved Quality Management System or plans, or any portion or feature thereof, are not controlling work sufficiently for the Work to conform to required quality standards, Contract Documents, Contractor shall take appropriate action to correct such deficiencies. The Contracting Officer Representative may stop the Work activities if the Quality Management System is not functioning properly due to lack of Contractor's staff or for any other Quality or Contract non-compliance.

C. Notwithstanding the above, Authority inspection, testing, or other actions shall not constitute Acceptance of work, nor shall it relieve the Contractor of its contractual responsibilities.

D. When Authority inspection is required, add to the purchasing document the following statement:

"Authority inspection is required prior to shipment from the plant. Upon receipt of this order, promptly notify the Contracting Officer Representative, in writing, so that appropriate planning for Authority inspection can be accomplished."

3.03 AUTHORITY AUDITS OF THE CONTRACTOR'S QUALITY MANAGEMENT SYSTEM

A. At its sole discretion, the Authority may conduct audits, tests, and inspections of any subcontractor, consultant, supplier or supplier of services in addition to those performed by the Contractor.

B. There will be an ongoing review and evaluation of implementation of the Contractor's Quality Management System to verify that the Contractor is effectively controlling the quality of construction.

C. Audits include audits of fabricators, Subcontractors, subconsultants, Suppliers, and third-party audits (i.e., FTA Audits, ISO audits, trade organization certification audits, and audits required to maintain laboratory or testing accreditation).

D. If the implementation of the Contractor's Quality Management System is determined to be ineffective by the Authority, the Authority, at its sole discretion, may withhold payment for any and all work it deems to be deficient or non-conforming to the Contract Documents. The Contractor will be expected to make whatever changes are necessary in the organization or in the Quality Management System to provide effective control of the quality of the Work.

E. The Authority will perform audits to verify that the Contractor is effectively controlling the quality of the Work. The basis for the audits will be the contract documents.

3.04 INSPECTION AND TESTING

A. The Inspection and Test programs shall be designed by the Contractor to assure that testing is performed to demonstrate that systems or components perform satisfactorily in service. Testing shall be performed by qualified and experienced personnel in accordance with approved test procedures. These procedures shall incorporate acceptance limits defined by industry codes and standards or by the Specifications; the more restrictive standard shall take precedence. All test results shall be documented, and submitted to the Authority for review in accordance with Section 01330, SUBMITTAL PROCEDURES. Systems Inspection and Test Programs are further described in Section 01113, SYSTEMS INTEGRATION, Section 01820, DEMONSTRATION AND TRAINING.

B. Inspection and test equipment shall be controlled and maintained in serviceable condition and within correct calibration with primary standards traceable to the NIST, or an approved alternative, shall be maintained. The system shall assure the accuracy of equipment and tools used to support this procurement.

C. Subcontractors testing their own work shall be supervised and managed by the Contractor. Overall, responsibility for testing and subcontractor performance remains with the Contractor.

D. If tests or certifications conducted by the Authority disclose that work is not in conformance with the Contract Documents, then the Authority will advise the Contractor as to the particular defects to be remedied. Upon correction of the defects, Contractor shall provide written notification to the Authority Representative and additional testing or certification shall be conducted as necessary to result in a proven and certified system(s). Further, in the case of such non-conformance with the Contract Documents, the Contractor shall provide details on the preventive action taken consistent with the requirements of ISO 9001, Article 4.14 and the Contractor's approved Quality Management System.

3.05 STATEMENT OF COMPLIANCE QUALITY CERTIFICATION FOR PAYMENT VERIFICATION

A. The Contractor shall provide the original and six paper copies and an electronic copy of an approved QA/QC Manager's Statement of Compliance Quality Certification with each pay request as specified in Section 01290, PAYMENT PROCEDURES stating that the Quality System has effectively

ensured that the items requested for payment have been constructed to meet the design requirements, or have been inspected and tested as required to comply with Contract requirements including those of the Quality Management System reflecting the outcome of the Formal Progress Status Report Review as specified in Section 01312, PROJECT MEETINGS. Work for which satisfactory records for design, testing, inspection, or other quality elements are not available shall not qualify for payment.

END OF SECTION

SECTION 01510

TEMPORARY UTILITIES

PART 1 – GENERAL

1.01 SUMMARY

A. This Section specifies requirements for temporary utilities for use during construction.

B. Temporary utilities required include but are not limited to:

1. Water service and distribution.
2. Temporary electric power and light.
3. Telephone service.
4. Storm and sanitary sewer.

1.02 REFERENCES

A. American National Standards Institute (ANSI)

1. ANSI-A10 Series standards for Safety Requirements for Construction and Demolition

B. National Electrical Contractors Association (NECA)

1. NECA Electrical Design Library, Temporary Electrical Facilities

C. National Electrical Manufacturers Association (NEMA)

D. National Fire Protection Association (NFPA)

1. NFPA 70, National Electrical Code
2. NFPA 241, Standard for Safeguarding Construction, Alteration, and Demolition Operations

E. Occupational Safety and Health Administration (OSHA)

F. Underwriters Laboratories (UL)

1.03 SUBMITTALS

A. Submit the following in accordance with Section 01330, SUBMITTAL PROCEDURES, and with additional requirements as specified for each.

1. Reports for tests, inspections, meter readings, and similar procedures performed for temporary utilities.
2. Indicate the schedule for implementation and termination of each temporary utility as appropriate to the Authority as described in Section 01322, CONTRACT PROGRESS REPORTING.

1.04 QUALITY ASSURANCE

A. Comply with industry standards and applicable laws and regulations of Jurisdictional Authorities including but not limited to:

1. Building Code requirements

2. Health and safety regulations

3. Utility company regulations

4. Police, Fire Department, and Rescue Squad rules

5. Environmental protection regulations

B. Comply with NFPA Code 241, ANSI-A10, and NECA Electrical Design Library, Temporary Electrical Facilities. For electrical service, comply with NEMA, NECA, and UL standards and regulations for temporary electric service. Install service in compliance with NFPA 70.

C. Arrange for the inspection and testing of each temporary utility before use, and coordinate all requirements for certifications and permits. The Contracting Officer Representative shall be notified sufficiently in advance, but with no less than 24 hours notice, so as to be present at all planned inspections and onsite activities.

1.05 PROJECT CONDITIONS

A. Incorporate into the Project Schedule dates for implementation and termination of each temporary utility. At the earliest practicable time and when acceptable to the Authority, change over from use of temporary service to use of the permanent service.

B. Keep temporary services and facilities clean and neat in appearance. Temporary utilities shall operate in a safe and efficient manner. Take all necessary fire prevention measures and shall ensure that utilities are not overloaded or permitted to interfere with progress of the Work. Do not allow hazardous, dangerous, or unsanitary conditions, or public nuisances to develop or persist on the Site.

C. Determine temporary utility services requirements and shall make arrangements with utility companies and governmental agencies to obtain such services.

D. Provide temporary electrical service of sufficient capacity to serve the temporary requirements during the life of the Contract. The source of temporary power for testing may be the temporary service, portable generator, or other approved system, which will deliver power at the voltage and other characteristics required to accomplish testing as specified. Circuits and construction for temporary systems shall suit the needs of the Work and comply with NEC and the codes and regulations of the Jurisdictional Authorities.

E. Temporary services shall be furnished, installed, connected, and maintained by the Contractor as approved by the Contracting Officer Representative. Prior to completion of the Work, the Contractor shall remove all temporary services and restore affected areas as approved.

F. Shop drawings for all temporary utility and electrical services shall be submitted for approval. Power supply shall be of such quantity and type required to perform the Work. Maximum primary voltage shall be 600 volts, unless otherwise approved. Lighting equipment shall be of the type and quantity needed to provide illumination of all project areas. Materials for and installation of temporary services shall comply with OSHA requirements.

G.

1.06 ACCESS TO FIRE HYDRANTS AND FIRE ALARM BOXES

A. Whenever the Work is being carried out, free access must be given to each fire hydrant, fire alarm box and standpipe; when required, hydrants shall be extended by suitable tubes or piping to an accessible point as approved and to the satisfaction of the jurisdictional fire department. Obstructions shall not be piled at any time or placed within 10 feet of any fire hydrant or fire alarm box and, where materials are placed in the vicinity of a fire hydrant or fire alarm box and to such

height as to prevent the same from being readily seen, the position of such hydrants or fire alarm boxes shall be indicated by suitable signs and lights, both day and night.

B. Safeguard, maintain, and protect the wires, cables, ducts, manholes, posts, and poles, signals, and alarm boxes of fire departments. Do not cause interruption to the fire department fire alarm telegraph service, and in case of accident, shall promptly notify the fire department. No fire department wire, cable, duct, manhole, post or pole, signal, or fire alarm box shall be disturbed, except in the presence of a representative of the Bureau of Fire Alarm Telegraph. In case such wire, cable, duct, manhole, post or pole, signal, or fire alarm box is disturbed, the Contractor shall immediately notify the Contracting Officer Representative, and it shall be restored immediately to its original condition.

PART 2 – PRODUCTS (not used)

PART 3 – EXECUTION (not used)

END OF SECTION

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SECTION 01520

TEMPORARY CONSTRUCTION FACILITIES

PART 1 – GENERAL

1.01 SUMMARY

A. This Section includes requirements for temporary facilities for use during construction.

B. Temporary facilities required may include but are not limited to temporary heating and cooling field offices, Contracting Officer Representative's Project office (co-located with Contractor's field office), parking area, on-site plant, sanitary facilities and drinking water, waste disposal services, rodent and pest control, first aid station, storage sheds, storage and laydown areas, and miscellaneous services and facilities.

1.02 REFERENCES

A. American National Standards Institute (ANSI)

1. ANSI-A10 Series Standards for Safety Requirements for Construction and Demolition

B. International Building Code (IBC)

C. National Electrical Contractors Association (NECA)

1. NECA Electrical Design Library, Temporary Electrical Facilities

D. National Electrical Manufacturers Association (NEMA)

E. National Fire Protection Association (NFPA)

1. NFPA 70, National Electrical Code

2. NFPA 241, Standard for Safeguarding Construction, Alteration, and Demolition Operations

F. Occupational Safety and Health Administration (OSHA): 29 CFR § 1910

1.03 SUBMITTALS

A. Submit the following where applicable in accordance with Section 01330, SUBMITTAL PROCEDURES, and with additional requirements as specified for each.

1. Site plans indicating all temporary facilities, utility connections, traffic flows, and working drawings of temporary facilities for approval by Authority and applicable Jurisdictional Authorities within 14 Days of Notice to Proceed.

2. Reports of the results of tests, inspections, meter readings, and similar procedures performed for temporary facilities for the Authority's information and records.

3. A plan of the on-Site plant layout for approval 14 Days prior to the start of construction.

4. A schedule indicating implementation and termination of each temporary facility within 14 Days prior to the start of construction or other period as may be approved by the Contracting Officer Representative.

1.04 QUALITY ASSURANCE

A. Comply with industry standards and applicable laws and regulations of Jurisdictional Authorities, including but not limited to:

1. Building Code requirements - local and international as applicable

2. Health and safety regulations

3. Utility company regulations

4. Police, Fire Department and Rescue Squad rules

5. Environmental protection regulations

6. Governmental Agencies

B. Comply with NFPA Code 241, ANSI-A10 Construction Package, and NECA Electrical Design Library. For Electrical Service, comply with NEMA, NECA, and UL standards and regulations for temporary electric service. Install service in compliance with NFPA 70. Also comply with the IBC as applicable.

C. Arrange for the inspection and testing of each temporary facility before use and secure necessary certifications and permits. The Authority shall be kept informed of all planned inspections and onsite activities.

1.05 PROJECT CONDITIONS

A. Incorporate into the Project Schedule dates for implementation and termination of each temporary facility. At the earliest practicable time and when acceptable to the Authority, change over from use of temporary facilities to use of the permanent facilities if applicable.

B. Keep temporary facilities clean and neat in appearance. Temporary facilities shall be operated in a safe and efficient manner. Take the necessary fire prevention measures and do not overload facilities, or permit them to interfere with progress of the Work. Hazardous, dangerous, or unsanitary conditions and public nuisances shall not be allowed to develop or persist on the Site.

1.06 CONTRACTOR'S ON-SITE PLANT

A. All necessary construction in connection with the on-Site plant shall be done in a neat workmanlike manner to the Authority's satisfaction.

B. Sufficient construction plant shall be provided and maintained at points where work is in progress to adequately meet demands of the Work and with ample margin for emergencies or overload. The plant shall be of sufficient capacity, in the opinion of the Authority, to permit a rate of progress, which will ensure completion of the Work within the time specified in the Contract. The Authority shall have the right to reject or condemn any plant, apparatus, or staging, which in its opinion is unsafe, improper or inadequate. The Contractor is not relieved of its responsibility for the safe, proper, lawful construction, maintenance and use of such plant, apparatus, or staging, whether the Authority exercises this authority or not. Condemned plant or equipment shall be brought to acceptable condition or shall be removed from the Site.

C. The location of stationary equipment and the location of miscellaneous mobile equipment shall be subject to Authority Approval.

1.07 CONTRACTING OFFICER REPRESENTATIVE'S FACILITY NOT USED

1.08 SANITARY PROVISIONS

A. The OSHA standard for sanitation, 29 CFR § 1910.141 et. seq. shall be used. Prior to starting work, the Contractor shall furnish for use of its force on the Work necessary toilet conveniences secluded from public view. They shall be kept in a clean and sanitary condition and comply with the requirements and regulations of the area in which the work is performed. Potable water shall be provided with individual cups, and sanitary conditions for the water dispenser shall be maintained. A common drinking cup or other common utensils shall not be used.

1.09 WORK AND STORAGE/LAYDOWN AREA

A. The areas designated by the Authority as the Contractor's work and storage area will be provided to the Contractor without charge. Additional work and storage space, if required, shall be obtained by the Contractor. The Contractor's use of laydown areas other than those identified by the Authority must be approved by the Contracting Officer Representative prior to their use. The Contractor shall submit a materials storage plan as described in Section 01330, SUBMITTAL PROCEDURES, for approval 60 Days prior to the start of construction.

PART 2 – PRODUCTS (not used)

PART 3 – EXECUTION (not used)

END OF SECTION

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SECTION 01530

TEMPORARY DECKING

PART 1 – GENERAL

1.01 SUMMARY

A. This Section specifies requirements for temporary decking and pedestrian bridges that may be required for the purpose of maintaining the flow of vehicular and pedestrian traffic during the construction period. Temporary decking and pedestrian bridges includes their support system over excavated areas.

B. Decking and temporary grade crossing for vehicular traffic as applicable shall be constructed of suitable materials in accordance with Jurisdictional Authority requirements.

C. Bridges for pedestrians shall be constructed of suitable materials in accordance with Jurisdictional Authority and ADAAG requirements.

D. When the deck beams or other members supporting such deck are required to carry the support of excavation loads, these members shall also be in compliance with the requirements of Section 02260, SUPPORT OF EXCAVATION.

1.02 RELATED SECTIONS

A. Section 02260, SUPPORT OF EXCAVATION

B. Section 02845, TRAFFIC CONTROL DEVICES

1.03 REFERENCES

A. Americans with Disabilities Act Accessible Guidelines (ADAAG)

1. Standards for Accessible Design

B. American Association of State Highway and Transportation Officials (AASHTO):

1. AASHTO Standard Specification for Highway Bridges.

C. American Welding Society (AWS):

1. AWS D1.1 Structural Welding Code - Steel

D. ASTM International (ASTM):

1. ASTM D2555 Standard Practice for Establishing Clear Wood Strength Values

2. ASTM E274 Standard Test Method for Skid Resistance of Paved Surfaces Using a Full Scale Tire.

1.04 DESIGN CRITERIA

A. Base designs on WMATA Manual of Design Criteria as a minimum.

B. Design temporary decking and support system for AASHTO HS20 loading and impact, earth pressures, utility loads, and other applicable live impact and dead loads, including the Contractor's equipment, whether the temporary decking is intended for support of vehicular or pedestrian traffic.

C. When excavation or construction equipment is to be operated from decking, design decking using actual maximum loads in accordance with design criteria of referenced AASHTO specification, unless otherwise shown.

D. Design supporting members to allow clearance for existing and relocated utilities.

E. Provide suitable openings for access for servicing utilities and fire fighting. Provide flush covers for openings.

F. Bridges for pedestrians shall be constructed of approved suitable materials in accordance with local requirements, be provided with handrails or with sides tightly boarded in accordance with such requirements and shall have a minimum width of 4 feet or such greater minimum width as will accommodate the normal traffic flow at the particular location.

G. All designs shall comply with ADAAG regulations.

1.05 SUBMITTALS

A. Submit the following no less than 60 Days prior to the start of construction to the Authority for Approval as specified in Section 01330, SUBMITTAL PROCEDURES, and obtain Jurisdictional Authority approval for:

1. Working Drawings:

a. Prior to installation of elements for support of excavation, submit Working Drawings and design calculations for temporary decking and pedestrian bridges.

~~b.~~ Show proposed procedures and methods of constructing temporary structures including support system and necessary construction details.

2. Certifications:

a. If previously used materials are utilized, submit certified information concerning each previous use, such information shall include, but not be limited to, the following:

(1) Purpose

(2) Duration

(3) Type of loading

B. Submit to the Jurisdictional Authority of the area where the Work is to be performed, for its approval, Working Drawings including maintenance of traffic comprehensive staging and decking plans prior to the time public traffic pattern closures and changes are proposed as specified in Section 01550, MAINTENANCE OF TRAFFIC, CONSTRUCTION SEQUENCE AND STAGING, ACCESS AND PARKING. Jurisdictional Authority approval must be obtained at least 30 Days prior to installation of temporary decking.

1.06 JOB CONDITIONS:

A. Responsibilities:

1. Design, construction, maintenance, and removal of temporary construction including decking and support systems are the responsibility of the Contractor.

2. Perform work in accordance with construction sequence and maintenance of traffic schedules acceptable to the Authority and requirements of the Jurisdictional Authorities as specified in Section 01550, MAINTENANCE OF TRAFFIC, ACCESS AND PARKING.

3. Provide access to Authority personnel for inspections of temporary decking as requested by the Contracting Officer Representative.

4. Maintain vehicular and pedestrian access to buildings at levels existing prior to start of Contract work. Maintain persons with disabilities access in accordance with ADAAG.

5. Perform work in accordance with specified safety requirements as described in Section 01114, SAFETY/ENVIRONMENTAL REQUIREMENTS.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Timber, Steel, Concrete, and Other Materials:

1. Used materials are permitted in lieu of new materials provided they are sound and free from defects, which might impair their strength.

2. Timber: Structural lumber, visually graded in accordance ASTM D2555, minimum working stress: 1,100 psi.

B. Welding: Have welding performed by certified welders and in accordance with the requirements of the AWS D1.1.

PART 3 – EXECUTION

3.01 INSTALLATION

A. Comply with the requirements of Section 02260, SUPPORT OF EXCAVATION. Install and maintain decking at design elevations. Accessibility and decking surfaces and slopes shall be in accordance with ADAAG regulations.

B. Mechanically laminate decking elements in panels not less than 5 feet wide.

C. Fabricate, install, and maintain pedestrian bridges at design elevations and as shown on the approved Working Drawings and in accordance with local requirements. All profile grades and cross-slopes or other features required in an accessible path shall be provided and maintained to ADAAG requirements.

D. Provide and maintain skid-resistant surface.

E. If asphalt or asphaltic concrete is used on decking, mechanically bond asphalt or asphaltic concrete to decking.

F. Maintain decking free of snow, ice, water, mud, and debris.

G. Place premixed asphaltic patching material to provide smooth transitions between existing pavement surfaces and decking and between existing pavement surfaces and pedestrian bridges, and elsewhere as required to provide proper drainage and prevent ponding of water.

H. As removal of pavement and sidewalk progress, furnish and install barricades in accordance with Section 01560, TEMPORARY BARRIERS AND ENCLOSURES, and requirements of the Jurisdictional Authorities.

I. Along sides of decked areas for pedestrian walkways where such walkways are adjacent to vehicular traffic, install concrete barriers as specified in Section 01560, TEMPORARY BARRIERS AND ENCLOSURES, and Section 02845, TRAFFIC CONTROL DEVICES, as shown on approved

maintenance of traffic plan as specified in Section 01550, MAINTENANCE OF TRAFFIC, ACCESS AND PARKING.

J. Install wooden fence as specified in Section 01560, TEMPORARY BARRIERS AND ENCLOSURES, along sides of decked areas for pedestrian walkways where such walkways are adjacent to open areas, staging/storage areas, and other areas used by the Contractor. Paint barricades and fences and maintain in good repair as specified in Section 01560, TEMPORARY BARRIERS AND ENCLOSURES.

K. Erect and maintain load limit and other signs as specified in Section 01580, PROJECT SIGNS, to restrict loading on decking so that it does not exceed maximum design loading.

L. Remove temporary decking along with support systems when no longer required. Comply with the requirements of Section 02260, SUPPORT OF EXCAVATION, when removing support system.

3.02 FIELD QUALITY CONTROL

A. Allowable tolerances:

1. Maintain surface elevations at abutting elements within plus or minus 1/4 inch.

2. Do not allow horizontal gaps to exceed 3/8 inch or ADAAG requirements whichever is more stringent.

3. All profile grades and cross-slopes, curb ramps, ramps, or other features required in an accessible path shall be provided and maintained to ADAAG requirements

B. Skid-Resistant Surface. Provide skid-resistant surface having a Skid Number at 30 mph (SN 30) of no less than 35 when measured in accordance with ASTM E274, and skid resistance shall be in accordance with ADAAG regulations.

C. Protect existing vegetation, structures, utilities and improvements.

3.03 VENTILATION

A. When excavations are decked, provide ventilation as required by the applicable code requirements and Jurisdictional Authorities. Provide ventilation, which meets specified safety requirements as described in Section 01114, SAFETY/ENVIRONMENTAL REQUIREMENTS.

3.04 ILLUMINATION

A. In areas covered by decking, supply and maintain illumination of sufficient intensity to permit safe and expeditious conduct of all phases of construction and inspection of support system, lagging, bracing, and utilities maintained in place.

B. Provide illumination, which meets specified safety requirements as described in Section 01114, SAFETY/ENVIRONMENTAL REQUIREMENTS.

END OF SECTION

SECTION 01550

MAINTENANCE OF TRAFFIC, ACCESS, AND PARKING

PART 1 – GENERAL

1.01 SUMMARY

A. This Section includes requirements for maintenance of existing pedestrian and vehicular traffic onsite and offsite; construction sequence, and staging; maintaining access to and from the Site including construction areas, haul routes, and temporary roads with traffic control; and for Contractor parking.

1.02 REFERENCES

A. Manual of Uniform Traffic Control Devices (MUTCD)

1.03 SUBMITTALS

A. Submit the following Working Drawings in accordance with Section 01330, SUBMITTAL PROCEDURES, for Jurisdictional Authority approval such that approval is obtained 30 Days prior to start of the work. Submit to Authority for Approval prior to Jurisdictional Authority review.

1. Maintenance of Traffic Plan (MOT Plan)

B. Submit the following shop drawings in accordance with Section 01330, SUBMITTAL PROCEDURES, for Jurisdictional Authority approval such that approval is obtained prior to start of the work. Submit to Authority for Approval prior to Jurisdictional Authority review.

1. Plan showing locations of access points to fire hydrants and fire alarm boxes

2. Plan showing locations of staging, working, storage, and lay down areas

1.04 MAINTENANCE OF TRAFFIC

A. Maintain traffic and erect and maintain traffic control devices in accordance with the applicable MUTCD, and as required by the Jurisdictional Authority of the area where the Work is to be performed and as per Contract Documents including, but not limited to, the following for each construction sequence and maintenance of traffic stage:

1. Temporary directional and electrical warning and detour signs

2. Temporary barricades

3. Temporary lighting, overhead warning lights, flashing lights, and lanterns

4. Temporary paving and striping

B. Traffic control signs: Traffic control signs shall be standard signs of the Jurisdictional Authority. Each change in location of traffic shall be adequately posted with a minimum of two signs mounted on barricades or standard posts. All signing shall be constructed, maintained, and removed in accordance with the requirements of the latest published standard of the Jurisdictional Authority.

C. Striping: Provide all necessary temporary striping required in connection with all temporary street work. Remove or obliterate existing or temporary pavement markings whenever vehicular traffic is moved to newly available pavement areas or to different traffic patterns.

D. Redirecting traffic: Obtain approval from Jurisdictional Authority for channeling and shifting of traffic lanes as well as barricading of traffic in connection with this work.

E. Temporary closing: Prior to the temporary closing to traffic of part of any public street, sidewalk, or other access or prior to changing traffic patterns from those existing, obtain approval from the appropriate Jurisdictional Authority. Deviations from this shall be for a bona fide emergency only and as approved by the Jurisdictional Authority.

F. Contractor's surface operations: Schedule surface operations so as not to be working intermittently throughout the area. Excavation or construction activities shall be carefully scheduled and vigorously pursued to completion as required to permit opening of street areas to traffic as soon as possible without unnecessary delays.

G. Temporary walkways: In areas where the removal of existing sidewalks is necessary, access to adjacent businesses, entrances and properties shall be maintained by temporary walkways having a width of not less than 6 feet.

H. Intersections: Intersections shall be excavated and decked in stages as shown on Working Drawings and as approved by the Jurisdictional Authority. Construction shall be so staged that the required number of traffic lanes on each street shall be provided at all times during these operations. Upon completion of decking, traffic in all intersections shall be fully maintained.

I. Temporary pavement and patching: Construct, maintain, and remove temporary pavement and patching required to safely and expeditiously handle vehicular and pedestrian traffic within or adjacent to the Site. The temporary pavement composition and patch shall conform to the requirements of the Jurisdictional Authority. Construction, maintenance, and removal required by the Contractor's operations off the Site shall be included under this Section.

J. Contractor access to pedestrian bridge and Station areas: Pedestrian traffic must be maintained at all times in pedestrian bridge and Station areas. Contractor access routes to the platform shall be as directed, and all access to the Work sites shall be arranged through the Contracting Officer Representative. The Contractor shall familiarize itself with the Station layout. Use of the Station escalators by Contractor personnel for delivery and removal construction material is expressly prohibited. The combination of Contractor personnel and miscellaneous material loads shall conform to the load restrictions of Station elevators.

K. The use of staging, working, storage, and lay down areas must be as approved by the Contracting Officer Representative and the Jurisdictional Authority.

L. Jurisdictional Authority maintenance of traffic approval must be obtained at least 30 Days prior to the time public traffic pattern closures and changes are to be made and Authority maintenance of traffic Approval must be obtained 60 Days prior to start of construction on Authority property.

1.05 CONSTRUCTION SEQUENCE AND STAGING

A. All work under this Contract shall be performed in accordance with the approved detailed plan of the Work following a logical sequence developed by the Contractor.

B. The Contractor's particular attention is directed to the fact that both vehicular and pedestrian traffic must be maintained on the existing roads adjacent to the Site at all times for the duration of the Contract.

C. Structures constructed underground by cut-and-cover methods require the Contractor to provide temporary decking as specified in Section 01530, TEMPORARY DECKING, over open excavations for the maintenance of vehicular and pedestrian traffic. In order that disruptions to traffic may be kept to a minimum, perform the decking operations, the utility work, and the subsequent paving and restoration operations in stages.

D. A method of staging and requirements pertaining to the number of traffic lanes to be provided during rush hours and non-rush hours, shifting of traffic lanes, the use of working, storage and laydown areas, and other requirements pertaining to the maintenance of traffic as previously specified shall be developed by the Contractor as part of this Contract.

E. The sequence in which the various stages are to be performed shall be under the control of the Contractor, provided that stage work within the limits of one stage is completed before work in another stage is commenced; and provided that all other requirements pertaining to maintenance of traffic are approved by the Jurisdictional Authority. No work shall be started prior to approval.

1.06 ACCESS TO ADJACENT PROPERTY

A. Conduct construction operations in such a manner as to cause as little inconvenience as possible to owners of property affected by such operations. Convenient access to all property from roads and highways along line of work shall be maintained. When access to adjacent properties is temporarily cut off due to the Contractor's operations, render every assistance to provide access to the property and the transfer of commodities, including refuse, to and from the property.

1.07 ACCESS TO FIRE HYDRANTS AND FIRE ALARM BOXES

A. Refer to Section 01510, TEMPORARY UTILITIES, for access to fire hydrants and fire alarm boxes.

1.08 CONTRACTOR'S PERSONNEL AND CONTRACTOR'S SUBCONTRACTORS PARKING

A. Parking facilities for the Contractor's personnel and that of Subcontractors shall be the Contractor's responsibility, unless space is made available by the Authority. The storage/laydown and work facilities provided by the Authority, if any, shall not be used for parking by the Contractor or Contractor personnel.

PART 2 – PRODUCTS (not used)

PART 3 – EXECUTION (not used)

END OF SECTION

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SECTION 01560

TEMPORARY BARRIERS AND ENCLOSURES

PART 1 – GENERAL

1.01 SUMMARY

A. This Section includes requirements for temporary barriers and enclosures. This Section also includes facilities for protection of occupants entering or exiting spaces during construction.

1.02 GENERAL

A. Wherever necessary, shown or specified, erect and maintain signs, fences, barricades and pedestrian bridges for the protection of public travel, the work site, adjoining property and adjoining public places.

B. Take positive measures to prevent entry into the Site of the Work and storage areas by children, animals, and unauthorized adults and vehicles.

C. Appropriate warning signs and instructional safety signs as specified in Section 01580, PROJECT SIGNS, shall be conspicuously posted in all areas involving construction activities. Furnish signs and attach to, as applicable, the protective devices enclosing the Contractor's work, access, operating, and platform storage and site storage/laydown areas as applicable; pedestrian sidewalks, streets, and parking lots adjacent to the work area; and excavations and openings. The storage/laydown areas as designated by the Authority, if any, and as specified in Section 01520, TEMPORARY CONSTRUCTION FACILITIES, shall be fenced and signage shall be provided to prevent unauthorized entry. Stored materials shall be bundled or tied down by the Contractor.

D. Protective devices shall be in accordance with codes and regulations of Jurisdictional Authorities.

E. All work pertaining to this Section shall meet ADAAG requirements.

1.03 SUBMITTALS

A. Submit the following Shop Drawings in accordance with Section 01330, SUBMITTAL PROCEDURES.

1. Location and fence material of fencing for pedestrian access areas.

1.04 TEMPORARY FENCES

A. Provide temporary fencing within the construction area to fence off pedestrian sidewalks, streets and parking areas from operating, access and work areas and Site storage/laydown areas.

B. Temporary fences shall be substantially constructed in a neat appearance.

C. Working Area Wooden Fencing

1. Provide 8-foot high temporary working area wooden fencing as shown or as directed and as specified. Working area wooden fencing shall serve two purposes: to protect pedestrian access areas from hazardous construction activities, and to enclose the Contractor's work, access, storage, and operating areas. A 3 feet wide access door with a lock shall be installed on the fence. A sign stating the purpose of the fence, project name and contact info of accessing the fenced area shall be posted on the door. The Contracting Officer Representative shall be given the key to the fenced area. The location and size of the fenced area shall be approved by the Contracting Officer Representative. The exterior paint color of the fencing shall be approved by the Contracting Officer Representative.

2. The location of fence for pedestrian access areas adjacent to the Work area and for enclosing Contractor's work areas shall be as specified and consistent with the Contractor's approved Working Drawings for maintenance of traffic plans.

D. Working Area Chain-link Fencing

1. Provide 6-foot high temporary working area chain-link fencing as specified to fence off storage area from operating areas, and if necessary, to fence off pedestrian access areas.

2. The location of fence for pedestrian access areas adjacent to the Work area and to the storage areas shall be as specified and consistent with the Contractor's approved Working Drawings for maintenance of traffic plans.

1.05 PROTECTION OF UTILITIES

A. Protect existing utilities.

1.06 PROTECTION OF EXISTING STRUCTURES AND IMPROVEMENTS

A. Protect Existing Structures and Improvements.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Barricades shall be substantial in character, neat in appearance, and of approved size and arrangement.

B. Barricade materials shall be as approved. Lumber for barriers as applicable and working area wooden fencing shall be constructed of approved fire-retardant plywood, or coated with intumescent paint on all sides to achieve a Class A flame-spread rating. Exterior latex paint for barriers and working area wooden fencing shall be as specified in Section 09920, FIELD PAINTING. Color shall be as approved by the Contracting Officer Representative. Provide necessary fencing hardware, locks, gates and all other incidentals as approved.

C. All chain-link fencing shall be anti-climbing type, with plastic inserts, barbed wire (where indicated), and as specified in Section 02820, FENCING.

D. Temporary fencing on Authority property between adjacent tracks: Plastic safety fencing, orange in color, supported by oak stakes embedded a minimum of two feet below subgrade.

E. Warning signage shall be as specified in Section 01580, PROJECT SIGNS.

F. Structural lumber for decking shall be as specified in Section 01530, TEMPORARY CONSTRUCTION.

PART 3 – EXECUTION

3.01 INSTALLATION

A. As removal of pavement and sidewalk progresses as applicable and furnish and install barricades in accordance with requirements of the Jurisdictional Authorities. During the prosecution of the Work, barricade or close excavations and openings in floors, walls, and other parts of the structures and excavations while such openings are not in regular use as applicable. Barricade or close such openings before Acceptance of the Work. Barricades shall be anchored to the ground on all sides

of excavations. Work involving electrical systems or equipment in or near the area to which personnel or the public have access shall be isolated using barricades.

B. Flashing yellow lights shall be mounted and maintained on barricades at maximum intervals of 25 feet.

C. Fabricate and erect in accordance with local requirements pedestrian barriers as applicable and working area wooden fencing with a stud framework and a covering of tightly fitted plywood sheets. Paint with two coats of exterior latex paint. Install hardware, locks, gates, and all other incidentals. Furnish and install wooden fence along sides of decked areas for pedestrian walkways as applicable where such walkways are adjacent to open areas, staging/storage areas, and other areas used by the Contractor.

D. Erect chain-link fencing consisting of a post-and-rail framework with chain-link fabric; install hardware, locks, gates, and all other incidentals; and insert plastic inserts into the chain link fence.

E. Along sides of decked areas for pedestrian walkways as applicable, where such walkways are adjacent to vehicular traffic, install concrete barriers as shown on approved maintenance of traffic plan.

F. Erect, fabricate, attach, and maintain safety warning and other signs.

G. Protect existing vegetation, structures, utilities, and improvements.

H. Provide maintenance for all barricades, barriers, temporary fences, pedestrian bridges, signage, and existing vegetation, structures, utilities, and improvements protection as applicable for the duration of the Contract. Immediately prior to completion of the Contract, completely remove the items and restore the area.

END OF SECTION

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SECTION 01570

TEMPORARY CONTROLS

PART 1 – GENERAL

1.01 SUMMARY

A. This Section includes security, site, environmental, construction noise, vibration, pollution abatement, use of explosives, controls and management of historical and scientific specimens, required to allow construction to proceed.

1.02 REFERENCES

A. U.S. Code, Title 42 (The Public Health and Welfare):

1. Chapter 15B (Air Pollution Control), Section 1857, et seq., as amended by Pub. L. 91-604)

2. U.S. Code, Title 33 (Navigation and Navigable Waters):

3. Chapter 26 (Water Pollution Prevention and Control), Section 308 (33 U.S.C. 1251 et seq., as amended by Pub. L. 92-500)

B. Society of Automotive Engineers, Inc., SAE J366b and SAE J952b

1.03 SUBMITTALS

A. Submit the following for approval 60 Days prior to start of construction in accordance with Section 01330, SUBMITTAL PROCEDURES, and with the additional requirements as specified for each:

1. All necessary Working Drawings, specifications, permits, and certifications necessary to comply with local Jurisdictional Authority's erosion and sediment control statues, ordinances, and requirements including, but not limited to current DC Standards and Specifications for Soil Erosion and Sediment Control (DC E&S).

2. Required evidence that the governing air pollution criteria will be met. These criteria and related documents will be retained by the Authority for on-Site examination by FTA as applicable.

3. Program for pollution control prior to beginning operations

4. Proposed haul routes.

5. Plan indicating monitoring locations, including the timing of monitoring measurements to be taken at the construction Site boundaries and at nearby residential, commercial, and industrial property lines.

6. Report articles of historical or scientific value.

1.04 SITE SECURITY

A. Watchmen: Employ watchmen in adequate numbers to safeguard the Site during non-working hours, night-shift operations, and holidays. If the Authority at any time determines the staff insufficient or incompetent, personnel increases or replacements shall be provided immediately at no additional cost to the Authority.

1.05 POLLUTION ABATEMENT

A. Conduct operations in a manner to minimize pollution of the environment surrounding the area of work. Specific controls shall be applied as follows:

1. Material transport: Trucks leaving the Site and entering paved public streets shall be cleaned of mud and dirt clinging to the body and wheels of the vehicle. Trucks arriving and leaving the Site with materials shall be loaded so as to prevent dropping materials and debris on the streets. Trucks carrying dirt from the Site shall have their loads covered to minimize fugitive dust. Maintain a suitable vehicle cleaning installation and inspection installation with permanent crew for this purpose. Spills of materials in public areas shall be removed immediately.

2. Waste materials: No waste materials shall be allowed to enter natural or man-made water or sewage removal systems. Develop methods to control waste including such means as filtration, settlement, and manual removal.

3. Burning: No burning of waste will be allowed without written permission from the Authority. When permission is granted, burning shall be conducted in accordance with the regulations of the Jurisdictional Authority. Submit request to the affected jurisdiction for approval.

4. Dust control: By water sprinkling or by other approved methods, continuously control dust generated by construction operations.

5. Noise control: Refer to Article 1.08 below.

6. Submit evidence that the governing air pollution criteria will be met. These criteria and related documents will be retained by the Authority for on-Site examination by FTA as applicable.

7. Submit a program for pollution control that is in compliance with the Air Act and the Water Act prior to beginning operations.

8. Clean air and water:

a. The Contractor agrees as follows:

(1) To comply with all the requirements of Section 114 of the Clean Air Act, as amended (42 U.S.C. 1857, et seq., as amended by Pub. L. 91-604) and Section 308 of the Federal Water Pollution Control Act (33 U.S.C. 1251 et seq., as amended by Pub. L. 92-500), respectively, relating to inspection, monitoring, entry, reports and information, as well as other requirements specified in Section 114 and Section 308 of the Air Act and the Water Act, respectively, and all regulations and guidelines issued there under before the award of this Contract.

(2) That no portion of the Work required by this Contract will be performed in a Facility listed on the Environmental Protection Agency List of Violating Facilities on the date when this Contract was awarded unless and until the EPA eliminates the name of such Facility or Facilities from such listing.

(3) To use its best management practices to comply with clean air standards and clean water standards at the Facility in which or Site on which the Work is being performed.

b. The terms used in this Article have the following meanings:

(1) The term Air Act means the Clean Air Act, as amended (42 U.S.C. 1857 et seq., as amended by Pub. L. 91-604).

(2) The term Water Act means Federal Water Pollution Control Act, as amended (33 U.S.C. 1251 et seq., as amended by Pub. L. 92-500).

(3) The term Clean Air Standards means any enforceable rules, regulations, guidelines, standards, limitations, orders, controls, prohibitions or other requirements which are contained in, issued under or otherwise adopted pursuant to the Air Act or Executive Order 11738, an applicable implementation plan as described in Section 110(d) of the Clean Air Act (42 U.S.C. 1857c-5(d)), an approved implementation procedure or plan under Section 111(c) or Section 111(d), respectively, of the Air Act (42 U.S.C. 1857c-6(c) or (d)), or an approved implementation procedure under Section 112(d) of the Air Act (42 U.S.C. 1857c-7(d)).

(4) The term Clean Water Standards means any enforceable limitation, control, condition, prohibition, standard or other requirement, which is promulgated pursuant to the Water Act or contained in a permit issued to a discharger by the EPA or by a State under an approved program, as authorized by Section 402 of the Water Act (33 U.S.C. 1342), or by local government to ensure compliance with pretreatment regulations as required by Section 307 of the Water Act (33 U.S.C. 1317).

(5) The term compliance means compliance with Clean Air or Water Standards. Compliance shall also mean compliance with a schedule or plan ordered or approved by a court of competent jurisdiction, the EPA or an air or water pollution control agency in accordance with the requirements of the Air Act or Water Act and regulations issued pursuant thereto.

(6) The term Facility means any building, plant, installation, structure, mine, vessel, or other floating craft, location or site of operations, owned, leased, or supervised by Contractor or Subcontractor, to be utilized in the performance of a contract or subcontract. Where a location or site of operations contains or includes more than one building, plant installation, or structure, the entire location or site shall be deemed to be a Facility except where the Director, Office of Federal Activities, Environmental Protection Agency, determines that independent Facilities are co-located in one geographical area.

1.06 ENVIRONMENTAL CONTROL

A. Maintain temperature and humidity to protect the Work in progress and in place, as well as permanent equipment and materials, stored and installed, against damage from heat, cold, and dampness and take such steps as necessary to protect such work from other adverse conditions.

1.07 CONSTRUCTION NOISE CONTROL

A. Noise control: Take every action possible to minimize the noise caused by construction operations. When required by Jurisdictional Authorities, noise producing work shall be performed in less sensitive hours of the day or week as directed. Noise produced by the Work shall be maintained at or below the decibel levels specified and within the periods specified.

1. Protection of the public and employees:

a. Noise abatement measures and precautions shall be taken in order to reduce exposure to noise. Permissible noise exposure shall be calculated in accordance with the procedures established under the Walsh-Healy Public Contracts Act. Sound levels for public noise exposure due to construction will be measured at the property line of adjacent residential, commercial, or industrial property or at the property line of the public right-of-way, or 50 feet from the noise source, whichever is greatest, when work is in progress in the public right-of-way, while construction work is in progress. Employee noise exposure levels shall be measured at the employees' normal workstation. In either case sound levels shall not exceed the following:

Exposure per Day (hours)	Sound Level (dBA)
8	90
6	92
4	95
3	97
2	100
1-/12	102
1	105
1/2	110
1/4 or less	115

b. Above-ground, repetitive, high-level impact noise will be permitted only between 8:00 AM and 9:00 PM. Repetitive impact noises in the receiving property shall not exceed the following dB limitations:

Duration of Impact Noise	Commercial or Residential Zone	Industrial Zone
More than 12 minutes in any hour	70	77
Less than 30 seconds in any hour	85	92
Less than 3 minutes in any hour	80	87
Less than 12 minutes of any hour	75	82

c. In underground or tunnel construction work, where the above requirements may not be obtained, provide individual auditory protection.

2. Noise restrictions at affected property: In addition to the provisions of Article 1.02A.1 above, sound level for noise due to construction activities shall be monitored at the property line of property affected acoustically by the Contractor's operations and plant. Sound levels for noise from equipment shall be measured at the property line on the A-weighting network of a General Purpose sound level meter at slow response. To minimize the effect of reflective sound waves at buildings, measurements may be taken 3 to 6 feet in front of any building face.

   a. Construction equipment: Sound levels for unscheduled, intermittent, short-term noise from equipment shall not exceed the following dBA levels:

      (1) Residential Property

         (a) Daily, 7:00 AM to 9:00 PM: 75 dBA

         (b) Daily, 9:00 PM to 10:00 PM: 55 dBA

         (c) Daily, 10:00 PM to 7:00 AM: 50 dBA

      (2) Business, Industrial, and Commercial Property:

         (a) Daily, including Sundays and Legal Holidays, 7:00 AM to 9:00 PM: 82 dBA

(b) Daily, including Sundays and Legal Holidays, 9:00 PM to 7:00 AM: 62 dBA

b. Mobile equipment in the public right-of-way: Truck or other powered equipment, which moves off the Site in the public right-of-way and that produces a maximum sound level exceeding the following limits when moving in the public right-of-way shall not be used on this Contract. The sound level limits specified are referenced to a distance of 50 feet from the equipment. Sound levels shall be measured in conformity with the Standards and Recommended Practices established by the Society of Automotive Engineers, Inc., including the latest revisions to SAE J366b and SAE J952b.

(1) Mobile construction and industrial machinery as defined in Article 1.08A.3 below:

(a) Sound Level Limits

(i) Manufactured before July 1, 1975: 90 dBA

(ii) Manufactured after July 1, 1975: 80 dBA

(iii) Manufactured after July 1, 1982: 77 dBA

(2) Trucks:

(a) Sound Level Limits

(i) Manufactured before July 1, 1975: 88 dBA

(ii) Manufactured after July 1, 1975: 83 dBA

(iii) Manufactured after July 1, 1982: 80 dBA

c. Noise abatement measures: Provide such equipment and sound-deadening devices and take such noise abatement measures that are necessary to comply with the requirements of this Contract, consisting of, but not limited to the following:

(1) Shields or other physical barriers to restrict the transmission of noise.

(2) Soundproof housings or enclosures for noise-producing machinery.

(3) Efficient silencers on air intakes for equipment.

(4) Efficient intake and exhaust mufflers on internal combustion engines.

(5) Lining of hoppers and storage bins with sound-deadening material.

(6) Conducting truck loading, unloading and hauling operations so that noise is kept to a minimum.

(7) Routing of construction equipment and vehicles carrying spoil, concrete, or other materials over streets that will cause the least disturbance to residents in the vicinity of the Work. The Contracting Officer Representative shall be informed in writing in accordance with Section 01330, SUBMITTAL PROCEDURES, of the proposed haul routes prior to the Contractor's securing a permit from the local government.

(8) Siting of stationary equipment shall be subject to Approval in accordance with Section 01520, TEMPORARY CONSTRUCTION FACILITIES.

3. Definitions: The following definitions shall be used in differentiating mobile equipment from stationary equipment:

a. Mobile construction equipment: Any motorized vehicle powered by an internal combustion engine or electric drive, which is capable of being operated as a vehicle either on the construction Site or in the public right-of-way.

(1) Construction equipment is mobile equipment any time it is operated in an automotive mode when performing construction tasks. Such equipment includes compactors, paving machines, front-end loaders, back hoes, scrapers, pavers, ditchers, and trucks.

(2) Some construction equipment while in transit may have the characteristic of mobile equipment, but for the purposes of this definition are not to be so considered. Such equipment includes generators, power shovels, cranes, pile drivers, drilling rigs, concrete mixers, pumps, trash compactors, bar benders, and other similar truck-mounted devices.

b. Stationary construction equipment: Any device, tool, or other mechanical system powered by an internal combustion engine, pneumatic engine, or electric motor, which does not employ any of the above power sources for automotive propulsion for more than 10 minutes out of every working hour while engaged in construction tasks. Examples of such equipment include truck-mounted compressors, generators, power shovels, pile drivers, cranes, drilling rigs, concrete mixers, pumps, trash compactors, bar benders, augers, and other similar truck-mounted devices.

1.08 CONSTRUCTION VIBRATION CONTROL

A. Do not cause or permit, beyond the property line of a source, vibration of sufficient intensity to cause another person to be aware of the vibration by such direct means as sensation of touch or visual observation of moving objects. The observer shall be located at or within the property line of the receiving property when vibration determinations are made. Prepare and submit in accordance with Section 01330, SUBMITTAL PROCEDURES, a plan indicating monitoring locations, including the timing of monitoring measurements to be taken at the construction Site boundaries and at nearby residential, commercial, and industrial property lines. Comply with vibration limitation requirements of environmental reports, if provided.

1.09 EXPLOSIVES

A. The use of explosives for the performance of Contract work will not be permitted.

1.10 HISTORICAL AND SCIENTIFIC SPECIMENS

A. Articles of historical or scientific value, including, but not limited to, coins, fossils, and articles of antiquity, which may be uncovered by the Contractor during the progress of the Work, shall become the property of the Authority. Work in the area where discovered shall cease, and such findings shall be reported immediately to the Contracting Officer Representative in accordance with Section 01330, SUBMITTAL PROCEDURES, who will determine the method of removal, where necessary, and the final disposition thereof.

PART 2 – PRODUCTS (not used)

PART 3 – EXECUTION (not used)

END OF SECTION

SECTION 01580

PROJECT SIGNS

PART 1 – GENERAL

1.01 SUMMARY

A. This Section includes the requirements for Project signs that will be required at the Site during the construction of the Project.

1.02 PROJECT IDENTIFICATION SIGNS

A. Furnish Authority Project identification signs in the locations at the Site selected by the Contracting Officer Representative.

B. Sign size, content, lettering, and format for the large permanent-mount WMATA sign shall be as directed by the Authority and shall be shown on the Contractor's Working Drawings.

1. Refer to Contract Drawings for signage details.

2. Provide project identification sign of 4 feet x6 feet Aluminum with vinyl coating, as approved by the Authority

C. Signs shall be installed 20 Days after Notice to Proceed is given, shall be maintained during the Work, and shall be removed upon the completion of the Project.

1.03 WARNING SIGNS AND INSTRUCTIONAL SAFETY SIGNS

A. Provide "No Trespassing" signs, load limit on decking, and other warning and instructional safety aluminum signs with minimum 2-inch high Helvetica Medium style lettering and mount at locations on fencing/barriers/barricades/pedestrian bridges and on other areas as directed. Sign panel size and thickness shall be as directed. Mount the signs with stainless-steel cap screws with hex nuts and lock washers.

PART 2 – PRODUCTS (not used)

PART 3 – EXECUTION (not used)

END OF SECTION

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SECTION 01610

BASIC PRODUCT REQUIREMENTS

PART 1 – GENERAL

1.01 SUMMARY

A. This Section includes administrative and procedural requirements governing the Contractor's selection of products for use in construction of the Project.

B. Administrative procedures for handling requests for substitutions made after award of the Contract are included under Section 01630, PRODUCT SUBSTITUTION PROCEDURES.

1.02 DEFINITIONS

A. As used herein, the term brand name includes identification of products by make and model. If items called for in the Contract Documents have been identified by a brand name or equal description, such identification is intended to be descriptive, but not restrictive, and is to indicate the quality and characteristics of products that will be satisfactory. Contract Specifications identifying equal products including products of the brand name manufacturer other than the one described by brand name as specified in Section 01630, PRODUCT SUBSTITUTION PROCEDURES, will be considered if such products are clearly identified and are determined by the Designer and the Authority to meet fully the salient characteristics of the products specified in the Contract Documents.

1.03 SUBMITTALS

A. Submit for review an initial product list with 30 Days of NTP in accordance with Section 01330, SUBMITTAL PROCEDURES. A written explanation for omissions of data and for known variations from Contract requirements shall be included.

B. Submit for review and Approval a completed product list including a written explanation for omissions of data and for variations from Contract requirements within 30 Days after date of commencement of the construction work. Authority will notify Contractor of acceptance or rejection of the documentation within 21 Days of receipt of the submittal.

C. Authority Acceptance of the product list does not constitute a waiver of the requirement that products comply with the Contract Documents.

1.04 QUALITY ASSURANCE

A. Provide products of the same kind from a single source.

B. Except for required labels and operating data, the manufacturer's or producer's nameplates or trademarks shall not be attached or imprinted on exposed surfaces.

1. Labels: Locate required product labels and stamps on a concealed surface or, where required for observation after installation, on an accessible surface that is not conspicuous.

2. Equipment Nameplates: Provide a permanent nameplate on each item of service connected or power-operated equipment. The nameplate shall contain the following information and other essential operating data:

a. Name of product and manufacturer

b. Model and serial number

c. Capacity

d. Speed

e. Ratings

1.05 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. All products shall be delivered, stored, and handled in accordance with the manufacturer's recommendations so as to prevent damage, deterioration, loss, or invalidation of the manufacturer's warranty.

B. Schedule delivery to minimize long-term storage at the Site and to prevent overcrowding of construction storage and staging areas.

C. Coordinate the time of delivery with the installation schedule to ensure that hazardous, easily damaged, or those items sensitive to deterioration, theft, and other losses are stored for a minimum holding period.

D. Products shall be delivered to the Site in the manufacturer's original sealed container or other appropriate packaging, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.

E. Products shall be inspected upon delivery by the Contractor to ensure compliance with the Contract Documents, and to ensure that products are undamaged and properly protected. Documentation noting the time, date, and manner of delivery shall be maintained by the Contractor. A statement attesting to the inspection of the products at time of delivery shall be included in the documentation signed by the Contractor's authorized representative.

F. Products shall be stored at the Site in a manner that will facilitate inspection and measurement of quantity or counting of units. Heavy materials shall be stored in a manner that will not damage supporting construction. Products subject to damage by the elements shall be stored under cover in weather-tight enclosures with ventilation adequate to prevent condensation. Temperature and humidity shall be maintained within range required by manufacturer's instructions.

PART 2 – PRODUCTS

2.01 PRODUCT SELECTION

A. Provide products that comply with the Contract Documents. All products to be installed in the Work shall be undamaged and, unless otherwise permitted, unused at the time of installation. Products shall include all accessories, trim, finish, safety guards, and other devices and details needed for a complete installation and suitable for the intended use.

B. Unless otherwise specified, provide standard products of the type that have been produced and used successfully in similar situations on other Authority projects of a similar nature.

C. Procedures governing product selection include:

1. Where only a single product or manufacturer is named and the notation "no substitution is permitted" is included in the specification, provide the product indicated. No substitutions will be permitted.

2. Where two or more products or manufacturers are named followed by the notation "no substitutions are permitted" is included in the specification, provide one of the products indicated. No substitutions will be permitted.

3. Where the Contract Documents list products or manufacturers that are available and acceptable for incorporation into the Work, accompanied by the term ...or equal or ...or approved equal, the Contractor may propose any available product that complies with

Contract requirements. Comply with the requirement of Section 01630, PRODUCT SUBSTITUTION PROCEDURES, to obtain approval for use of an unnamed product.

4. Where the Contract Documents list the salient features that explicitly describe a product or assembly and a brand name is not included, provide a product or assembly that provides the listed features and otherwise complies with the Contract requirements.

5. Where the Contract Documents explicitly require compliance with performance requirements, and the product complies with those requirements based on the manufacturer's recommended use of the product for the application indicated in the Contract Drawings (as evidenced in published product literature, or by the manufacturer's certification of performance), the Contractor may submit the product for incorporation into the Work.

6. Where the Contract Documents require only compliance with an imposed code, standard, or regulation, the Contractor may select a product that complies with the standards, codes, or regulations specified.

7. Visual Matching: Where specifications require matching an established item, the Authority's decision will be final on whether a proposed product matches satisfactorily. Where no product is available that adequately matches adjacent products or complies with the other specified requirements, comply with provisions of Section 01630, PRODUCT SUBSTITUTION PROCEDURES, for selection of an alternate product.

8. Where specified product requirements include the phrase ...as selected from manufacturer's standard colors, patterns, textures..., select a manufacturer that provides a range of colors in a product that meets all other Contract Document requirements. In this situation, standard shall imply regularly or routinely produced.

PART 3 – EXECUTION

3.01 PRODUCT LIST

A. Prepare a product list in tabular form acceptable to the Authority showing products specified in the Contract Documents. Coordinate the timing of delivery of products on the product list with the Contractor's Project Schedule as specified in Section 01322, CONTRACT PROGRESS REPORTING, and Contract Document Submittal Log as specified in Section 01330, SUBMITTAL PROCEDURES. At a minimum, provide the following information for each product:

1. Related specification Section number

2. Generic name used in the Contract Documents.

3. Proprietary name, model number, and similar designation

4. Manufacturer's name and address

5. Supplier's name and address

6. Installer's name and address

7. Projected delivery date and length of delivery period

B. Within 14 Days of receipt of product list submittals, Contracting Officer Representative will notify the Contractor of Authority acceptance or rejection of the product list. If rejected, product list shall be corrected by the Contractor and resubmitted for review.

3.02 INSTALLATION OF PRODUCTS

A. Comply with the manufacturer's instructions and recommendations for installation of all products installed under this Contract unless otherwise specified. Products shall be accurately located, aligned with other elements of the Work, and securely installed in place. All exposed surfaces shall be clean as specified in Section 01740, CLEANING, and protected as necessary to prevent damage and deterioration as specified in Section 01723, PROTECTION OF ADJACENT CONSTRUCTION.

END OF SECTION

SECTION 01630

PRODUCT SUBSTITUTION PROCEDURES

PART 1 – GENERAL

1.01 SUMMARY

A. This Section includes administrative and procedural requirements for handling requests for substitutions made after award of the Contract.

B. Other requirements governing the Contractor's selection of products and product options are included under Section 01610, BASIC PRODUCT REQUIREMENTS.

1.02 DEFINITIONS

A. Definitions used in this Section are not intended to change the meaning of other terms used in the Contract Documents.

B. Contractor requests for changes in products, materials, equipment, and methods of construction as required or specified by Contract Documents are considered requests for substitutions. The following are not considered substitutions:

1. Revisions to Contract Documents requested by the Authority.

2. Specified options of products and construction methods included in Contract Documents. Note that products submitted under an or equal or not limited to provision are considered to be substitutions as specified in Section 00210, SUPPLEMENTARY INSTRUCTIONS TO BIDDERS.

3. The Contractor's determination of and compliance with governing regulations and orders issued by governing authorities.

1.03 SUBMITTALS

A. Requests for substitution from the Contractor during construction will be considered by the Authority if received with adequate time to allow for Authority review and Approval without delaying the Project Schedule. Requests received that may delay the Project Schedule will be considered or rejected at the sole discretion of the Authority.

1. Submit one electronic copy in Adobe (.PDF) file format of the Brand Name or Equal Form, Section 00433, BRAND NAME OR EQUAL FORM, for each request for substitution to the Contracting Officer Representative for consideration of the form and in accordance with procedures required for Change Order proposals as specified in Section 00748, CHANGES, as deemed appropriate by the Contracting Officer Representative.

2. In each substitution request, identify the product and fabrication or installation method to be replaced. The related WMATA Standard Specification Section or Contract Drawing numbers shall be referenced in the submittal. Complete documentation showing compliance with the requirements for substitutions shall also be submitted including the following information as appropriate:

a. Product Data, including drawings, fabrication, and installation procedures

b. Samples, where samples of the specified product are requested

c. A detailed comparison of significant qualities/salient features of the proposed substitution with those of the material or work specified. Significant qualities shall include elements

such as size, weight, durability, performance, visual effect, code compliance, maintenance requirements, energy usage, and environmental considerations.

d. Coordination information, including a list of changes or modifications made necessary to other parts of the Work and to construction performed by the Authority or separate contractors.

e. A statement indicating the substitution's effect on the Contractor's Construction Schedule. Indicate the effect of the proposed substitution on overall Period of Performance.

f. Cost comparison between the product specified and the requested substitution, including a proposal of the net change, if any in the Contract Price.

g. Certification by the Contractor that the substitution proposed is equal to or better in every respect to that required under the Contract, and that the product will perform as intended. Include a waiver of rights to additional payment or time that may subsequently become necessary should the product fail to perform adequately, or because of changes to other work were required as a consequence of the substitution.

h. Failure by the Contractor to include the above requirements in the submittal may be cause for rejection of the submittal in its entirety.

i. If deemed necessary and within 14 Days of receipt of the submittal, the Contracting Officer Representative may request additional information or documentation that, in its sole judgment is required for the evaluation of the substitution request. Within 21 Days of receipt of the original substitution request or of requested additional information or documentation, the Contractor will be notified of acceptance or rejection of the proposed substitution. If a decision on the use of a proposed substitute cannot be made or obtained within the time allocated, the product specified by name in the Contract Documents shall be used.

1.04 SUBSTITUTION PROCEDURE

A. The Contractor's request for substitution may be rejected by the Contracting Officer Representative if the substitution would involve:

1. Extensive revisions to Contract Documents

2. A proposed change not in keeping with the general intent of Contract Documents

3. An untimely request, not fully documented when submitted

4. A request that is directly related to an or equal clause or similar language in the Contract Documents

5. A product or method of construction that could not be provided within the Period of Performance

6. A product or method of construction that could not be approved by a governing authority

7. Additional responsibilities or expense to the Authority (including additional expenses for redesign and evaluation services, increased cost of related construction, and other similar considerations) that outweighs any advantage that is being offered to the Authority as a result of the substitution

8. A method of construction that cannot be provided in a manner that is compatible with other materials, the product cannot be coordinated with other materials, and a warranty cannot be provided for the product in accordance with the requirements of the Contract even though the Contractor expresses a willingness to certify that the apparent deficiencies can be corrected.

B. Neither the Contractor's submittal nor the Authority's review or Approval of Shop Drawings, product data, or samples that relate to a substitution constitutes an Approval of the requested substitution. Submission of Shop Drawing, product data, or sample submittals does not relieve the Contractor from fulfilling Contract requirements for substitutions.

PART 2 – PRODUCTS (not used)

PART 3 – EXECUTION (not used)

END OF SECTION

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SECTION 01711

ACCEPTANCE OF CONDITIONS

PART 1 – GENERAL

1.01 SUMMARY

A. This Section specifies basic requirements for determining acceptable conditions for installation.

1.02 SUBMITTALS

A. One electronic copy of the preconstruction inspection records

1.03 PRECONSTRUCTION INSPECTION REQUIREMENTS

A. Prior to beginning construction work, the Contractor shall inform the Authority of buildings or structures on which it intends to perform work or which performance of the Work will affect.

B. Conditional inspection of buildings or structures in the immediate vicinity of the Project, which may reasonably be expected to be affected by the Work, will be performed jointly by the Authority and the Contractor. This inspection will be conducted prior to the commencement of construction work to determine pre-existing conditions. After this inspection, the Authority will not assume any responsibility for damages arising from the Work performed and it shall be the responsibility of the Contractor to correct all damages caused by performance of the Work.

C. Examine substrates, areas, and conditions, with Authority personnel present, for compliance with requirements for installed tolerance and other conditions affecting performance. Record observations from the required preconstruction inspection.

D. Where a written inspection report requires listing conditions detrimental to performance of the Work, include the following:

1. Description of the Work

2. List of detrimental conditions, including substrates

3. List of unacceptable installation tolerances

4. Recommended corrections

1.04 EXAMINATION

A. General: Verify dimensions shown on existing work and dimensions required for work that is to connect with work not in place in accordance with Section 01721, LAYOUT OF WORK AND FIELD ENGINEERING.

B. Existing Conditions

1. The existence and location of Site improvements, above and below-ground utilities, and other construction indicated as existing are not guaranteed. Before beginning work, investigate and verify the existence and location of above and below-ground utilities, mechanical and electrical systems, and other construction affecting the Work. Verify the location and point of connection of utility services.

2. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, water service pipes, and electrical services.

3. Furnish location data for work related to the Project that must be performed by public utilities serving the Project Site.

C. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

D. Examine rough-in for mechanical and electrical systems to verify actual location of connections before equipment and fixture installation.

E. Examine new and existing facilities for suitable conditions where products and systems are to be installed.

1.05 ACCEPTANCE OF CONDITIONS

A. Examine substrates, areas, and conditions, with contract personnel present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.

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

a. Description of the Work

b. List of detrimental conditions, including substrates

c. List of unacceptable installation tolerances

d. Recommended corrections

2. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

3. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.

4. Examine new and existing facilities for suitable conditions where products and systems are to be installed.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

C. Proceeding with work indicates acceptance of surfaces and conditions.

PART 2 – PRODUCTS (not used)

PART 3 – EXECUTION (not used)

END OF SECTION

SECTION 01721

LAYOUT OF WORK AND FIELD ENGINEERING

PART 1 – GENERAL

1.01 SUMMARY

A. This Section includes general procedural requirements for layout of work and field engineering including, examination, preparation, construction layout, installation, survey personnel, equipment and calibration requirements, survey standards, surveys procedures, and formats for figures and reports.

1.02 RELATED SECTIONS

A. Section 01711 – ACCEPTANCE OF CONDITIONS

1.03 REFERENCES

A. DIN (Deutsches Institut fur Normung) 18723 – Specification for Theodolite Accuracy

B. Federal Geodetic Control Committee (FGCC):

1. Standards and Specifications for Geodetic Control Networks

C. National Oceanic and Atmospheric Administration (NOAA):

1. Manual National Ocean Survey (NOS), National Geodetic Survey (NGS) 3 Geodetic Leveling

D. National Society of Professional Surveyors (NSPS)

1. American Congress on Surveying and Mapping (ACSM).

1.04 SUBMITTALS

A. Survey personnel qualification data: Resumé and proof of certification or registration for all project surveyors. Resumés shall include information to demonstrate their capabilities and experience. Include lists of three completed projects with owner, project names, project duration, project description, project addresses, and phone numbers for the Survey Manager and survey crew chiefs.

B. Survey equipment: List of equipment and instruments to be used on the Project and include manufacturer specifications, date of purchase and last date of service for all instruments. Notify the Contracting Officer Representative when changes to equipment are made and submit an updated list of equipment and instruments.

C. Electronic distance measuring instruments: All measurements, computations, and results from the required calibration exercise.

D. Procedures for Control Surveys, Structural As-built Surveys, Movement Detection Surveys, Early Alignment As-built Surveys, and Hi-Lo Surveys, Post Construction Alignment As-built Surveys and Final Trackway Monumentation Surveys.

E. Horizontal and vertical trackway alignment revisions with supporting calculations and data.

F. Supporting documents, calculations, and data for required remedial actions.

G. Numbering sequence for trackway vertical control monumentation.

H. Log of layout control work. Record deviations from required lines and levels.

I. Survey data reduction and calculations for Bid Schedule items of work.

J. Post construction Monument Record Sheets.

1.05 QUALITY ASSURANCE

A. Verify and maintain records to document personnel certification; equipment maintenance, calibration and adjustment; and use of required procedures for field work and office computations. These records shall be maintained by the surveyor in responsible charge of the Work. Verification of compliance shall be included in the Contractor's overall Quality Assurance program and provided to the Contracting Officer Representative quarterly or upon request.

B. Survey Personnel

1. Ensure that all personnel are qualified to perform the Work.

2. Provide a Survey Manager to plan, execute, and verify all survey work (or survey work as established by the Contracting Officer Representative).

3. The Authority may choose to withhold payment for all construction work if the Contractor fails to provide qualified survey personnel.

4. All personnel performing or assisting in survey activities, including construction layout, shall be Certified Survey Technicians (CST) by and through the National Society of Professional Surveyors (NSPS) - American Congress on Surveying and Mapping (ACSM).

a. Each member of the Contractor's survey staff shall be certified in one or more of the Certified Survey Technician levels when assigned to a WMATA project. There are four levels of certification in the CST program. Certification is by experience and examination. Refer to NSPS Figure 1.05-1 for the levels of the CST Program.

b. The Authority will accept registration as a Land Surveyor or Property Line Surveyor, in Virginia, Maryland, or the District of Columbia in lieu of CST certification.

c. Survey consultants hired by the Contractor to provide survey services are bound by the same CST requirements contained in the Contract.

d. Surveyors working under the direction of a Licensed Surveyor or Property Line Surveyor are not exempt from the CST requirement.

e. Use of craft personnel as substitute for temporary survey staff is not acceptable unless they are a Certified Survey Technician.

f. With concurrence by the Contracting Officer Representative and WMATA Quality Assurance Manager, a Contractor's surveyor without CST certification may temporarily work on a WMATA contract prior to taking the CST exam, if the surveyor:

(1) Fulfills the minimum education and or experience requirements for the position held as described in the CST Program Book.

(2) Submits a copy of the CST application to the Contracting Officer Representative along with other documentation of education and or work experience.

(3) Is scheduled to take the next available CST exam.

(4) Requests in writing, a temporary waiver of the CST requirement pending the outcome of the results of the CST exam with the understanding that failure to pass the CST exam will result in said surveyor's removal from the WMATA Contract.

PART 2 – PRODUCTS (not used)

PART 3 – EXECUTION

3.01 GENERAL REQUIREMENTS

A. The Authority has established, or will establish, such general reference points including horizontal control points and vertical benchmarks as will enable the Contractor to proceed with the Work. If the Contractor finds that previously established reference points have been destroyed or displaced, or that none have been established, it shall promptly notify the Contracting Officer Representative.

B. The Contractor shall lay out its work from reference points established by previous construction or from established reference points shown in the Contract and shall be responsible for all measurements in connection therewith. The Contractor shall furnish stakes, templates, platforms, equipment, tools, materials, and labor as may be required in laying out any part of the Work from the reference points established by previous construction or by the Authority. The Contractor will be held responsible for the execution of the Work to such lines and grades as directed.

C. Protect and preserve the established reference points and shall make no changes in locations without approval by the Authority. Reference points lost, disturbed by construction, destroyed, or which require shifting because of necessary changes in grades or locations shall, subject to prior approval, be replaced and accurately located at the Contractor's expense by a registered surveyor in the area where the Work is to be performed or a qualified certified survey technician (CST Level IV). Reference points replaced by the Contractor's surveyor shall be done in accordance with the FGCC Standards and Specifications for Geodetic Control Networks using First Order, Class 1 specifications for horizontal control work and Second Order, Class 1 specifications for vertical control work.

D. For the purpose of this Section, the Contractor shall provide competent engineering services as necessary to execute the Work. It shall verify the dimensions shown before undertaking construction work and shall be responsible for the accuracy of the finished Work.

3.02 EXAMINATION

A. General: Dimensions shown on existing work and dimensions required for work that is to connect with work not in place shall be verified by the Contractor by actual measurement of the existing work. Discrepancies between the Contract Documents and the existing conditions shall be referred to the Contracting Officer Representative before work affected thereby has been performed.

1. The Contractor shall compare drawings and verify the dimensions before laying out the Work and shall be responsible for errors, which might have been avoided thereby.

2. Dimensions and descriptions given on the Contract Documents for adjacent work shall be verified by the Contractor. It is the responsibility of the Contractor to verify all as-built conditions and interface information by actual field measurement.

B. Existing Conditions: The existence and location of site improvements, utilities, both underground and above ground, and other construction indicated as existing are not guaranteed. Before beginning work, investigate and verify the existence and location of underground utilities, mechanical and electrical systems, and other construction affecting the Work. Call Miss Utility at 1-(800) 257-7777 before beginning any excavation or demolition project.

1. Before construction, verify the location and points of connection of utility services and the locations and invert elevations at points of connection of sanitary sewer, storm sewer, and water-service piping; and underground electrical services.

2. Furnish location data for work related to Project that must be performed by public utilities serving Project Site.

C. Acceptance of Conditions: In accordance with Section 01775, CLOSEOUT.

3.03 PREPARATION

A. Existing Utility Information: Furnish information to local Utility and the Contracting Officer Representative that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate and obtain approval from authorities having jurisdiction.

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

1. Notify the Contracting Officer Representative and Utility representative not less than 5 working days in advance of proposed utility interruptions.

2. Do not proceed with utility interruptions without written permission from the Utility and the Authority.

C. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

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

E. Review of Contract Documents and Field Conditions: Immediately upon discovery of the need for clarification of the Contract Documents, submit a Request for Information to the Contracting Officer Representative. Include a detailed description of the problem encountered, together with recommendations for changing the Contract Documents.

3.04 CONSTRUCTION LAYOUT

A. Verification: Before proceeding to lay out the Work, verify layout information shown on the Contract Drawings. If discrepancies are discovered, notify Contracting Officer Representative promptly.

B. General: Engage qualified Certified Survey Technician(s) to lay out the Work using accepted surveying practices.

1. Establish benchmarks and control points to set lines and levels at each stage of construction and elsewhere as needed to locate each element of the Project.

2. Establish dimensions within tolerances indicated. Do not scale Contract Drawings to obtain required dimensions.

3. Inform installers of lines and levels to which they must comply.

4. Check the location, level, and plumb, of every major element as the Work progresses.

5. Notify the Contracting Officer Representative when deviations from required lines and levels exceed allowable tolerances.

6. Close Site surveys with an error of closure equal to or less than the standard established or referenced herein.

C. The tolerances generally applicable in setting survey stakes or marks shall be as set forth below. These tolerances shall not supersede stricter tolerances required by the Contract Documents and shall not otherwise relieve the Contractor of responsibility for measurements in compliance therewith. The tolerances listed below are not to be used for setting or re-establishing primary and secondary control markers or final alignment monumentation.

1. Tolerances: Tolerances in setting survey stakes or markers shall not exceed the following:

Horizontal Survey Stakes or Markers	**Distance**	**Tangent**
Horizontal marks on hubs on centerline and offset centerlines.	1:35,000	0.02 ft.
Intermediate stakes or hubs on centerlines and offset centerlines.	1:35,000	0.02 ft.
Rough excavation and embankment for roads and other work not otherwise provided.	1:10,000	0.50 ft.
Trimming of excavation and embankment unless otherwise provided.	1:10,000	0.50 ft.
Structures-Building construction.	1:35,000	0.02 ft.
Trimming or preparation of earth subgrade for trackbeds, roadways, and concrete pipes.	1:20,000	0.04 ft.
Trackbed and roadway sub-base and base, steel pipe and other work not otherwise provided for.	1:20,000	0.04 ft.
Track invert and roadway surfacing, steel reinforcement, concrete pipe and other formed concrete.	1:35,000	0.02 ft.

Vertical Grade Stakes or Markers	Elevation (Plus/Minus)
Rough excavation and embankment for roads and other work not otherwise provided.	0.20 ft.
Trimming of excavation and embankment unless otherwise provided.	0.20 ft.
Structures-Building construction.	0.01 ft.
Trimming or preparation of earth sub-grade for trackbeds, roadways, concrete pipe and other concrete structures.	0.05 ft.
Trackbed and roadway sub-base and base, steel pipe and other work not otherwise provided for.	0.05 ft.
Track invert and roadway surfacing, steel reinforcement, concrete pipe and other formed concrete.	0.02 ft. (Track invert only minus 0.00 ft. high, plus 0.04 ft. low)
Equipment Installation.	As required by manufacturer.

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

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

F. 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 to the Contracting Officer Representative upon request.

3.05 FIELD ENGINEERING

A. Identification: Authority will provide and identify existing benchmarks and control points to be used for the duration of the Contract.

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

1. Do not change or relocate existing benchmarks or control points without prior written approval by the Contracting Officer Representative. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to the Contracting Officer Representative before proceeding.

2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.

C. Benchmarks: Establish and maintain permanent secondary control points on Project Site, referenced to data established by survey control points. Comply with WMATA Standard Drawing for Survey Monuments.

1. Record benchmark locations, with horizontal and vertical data, on record copy of Contract Drawings.

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. When the Contract Specifications require Bid Schedule items of work to be measured by surveying methods, perform all such surveys, including control surveys run for establishing the measurement reference lines. Perform all survey data reduction and calculations and supply the reduced survey data in an understandable and readable format.

3.06 INSTALLATION

A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.

1. Make vertical work plumb and make horizontal work level unless otherwise specified.

B. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for uniform spacing.

C. The Contractor's surveys are a part of the Work and may be checked by the Authority at any time. The Contractor shall be responsible for lines, grades, or measurements which do not comply with specified or proper tolerances, or which are otherwise defective, and for any resultant defects in the Work. The Contractor will be required to conduct re-surveys or check surveys to correct errors indicated by review of the Work.

3.07 SURVEY EQUIPMENT AND CALIBRATION REQUIREMENTS

A. Survey Equipment*:* All electronic distance measuring instruments (or total station theodolites) shall be checked by the Contractor against a National Geodetic Survey (NGS) range of known distances at least once every 6 months.

1. All distance measurements shall be computed using the procedures in NOS NGS-10, Use of Calibration Base Lines. The actual measurements shall be recorded, atmospheric corrections applied, and then adjusted by least squares to compute a constant, as well as, a relative correction factor (scale correction).

2. National Geodetic Survey has established specific calibration baselines for the purpose of comparing survey equipment to known monumentation to verify the instruments vertical angles, horizontal angles, and difference in elevation for compliance with the manufacturer's specifications. Verification of angle measurement and difference in elevation shall only be done by the Contractor if all other methods of verification acceptable to the Authority have been exhausted.

3. Bring each electronic distance meter (EDM) or total station theodolite to the Corbin, VA Geo-magnetic observatory (phone 703-373-7605) or similar NGS facility and compare their instrument(s) to known NGS values whenever there is any question as to the correct operation, accuracy and functionality of the Contractor's survey equipment. Minimally, this will be done every 6 months or after a damaged instrument has been repaired and before it is put back in service. The Contractor shall supply the Contracting Officer Representative with all appropriate documentation from this exercise.

4. All total station distance measuring devices and prisms shall be serviced every 6 months and checked frequently over lines of known distances. Generally, this exercise shall be conducted in the spring and fall.

5. Results of this calibration exercise shall be forwarded to the Authority. Correction factor's shall be posted in the Contractor's office computing area and applied as required to maintain the desired accuracy.

6. Adjustment and certification documents from a supplier or manufacture are not allowed as a substitution for the distance calibration exercise at a NGS or similar facility.

7. Records of instrument calibration and adjustment shall be maintained as a part of the Contractor's quality control program.

8. Use of the NGS baseline for checking distances is not intended to take the place of normal maintenance, cleaning, and adjustment of the Contractor's instruments.

9. Every 6 months, or whenever the difference between direct and reverse readings of the theodolite depart from 180 degrees by more than 30 seconds, the instrument shall be adjusted for collimation error. Readjustment of the crosshairs and level bubble shall be done whenever their misadjustments affect the instrument reading by the amount of the least count.

10. Instruments found to be in disrepair or out of adjustment shall be removed and repaired or replaced.

11. All steel tapes shall be compared with the Contractor's EDM at least every 6 months. The Contractor shall number all tapes and measuring chains, record comparisons, compute correction factors, and forward to the Authority upon request or whenever equipment is changed. In addition, tape correction information shall be posted in the Contractor's office computing area and applied as required to maintain the desired accuracy.

12. Provide and maintain the ability in-house to check and adjust all tribrachs for eccentricity. Adjustment checks shall be made weekly or as necessary. A record of adjustments to all tribrachs shall be kept current and made available to the Authority monthly or upon request. Each tribrach shall be numbered and tagged with the date of the last adjustment.

3.08 SURVEY STANDARDS

A. Maintain accuracy standards for all control surveys performed under the terms of this Contract in accordance with the following table:

Primary horizontal control surveys	First order
Primary vertical control surveys	Second order, Class I
Secondary horizontal control surveys	Second order, Class I
Secondary vertical control surveys	Second order, Class II

1. Primary control is defined as the original control provided to the Contractor at the start of the Contract. Secondary control is defined as the control established and used by the Contractor during construction. All secondary control traverse stations shall be set with permanent markers.

2. Control surveys and computations including surveys of main control lines to determine alignment of major structure components shall be performed in accordance with Second Order Class I requirements.

3. Unless specified, the Contractor will not be required to perform First-Order survey work unless Contractor destroys primary control points included in the Contract Documents or set by WMATA after contract NTP. GPS shall not be used by the Contractor to re-establish destroyed primary control unless approved by the Contracting Officer Representative.

4. The Contractor should expect all primary or secondary horizontal control traverses they perform to meet a 1:50,000 distance accuracy closure. All vertical control traverses shall have a closure accuracy that does not fall below that specified for Second Order, Class II surveys.

5. Survey procedures and accuracy are a function of the types of survey that is being performed. The Contractor is responsible for ensuring the use of proper procedures to maintain accuracy requirements contained in the Contract.

6. Use the closed traverse method in setting controls by starting at and ending at known or previously established traverse stations and benchmarks.

7. All distances over 100 feet shall be measured by the use of electronic distance measuring instrument (EDMI). Critical distances under 100 feet shall be checked with a distance meter.

B. Horizontal Traverse

1. Conventional traverse work shall be performed in accordance with the requirements defined in the FGCC Standards and Specifications for Geodetic Control Networks, Federal Geodetic Control Committee.

2. All survey field data shall be provided to the Authority upon request in a Star*Net digital input file format.

   a. All reduced horizontal traverse measurements shall be provided in a set reduction report in an ASCII text file format which clearly lists the following data:

      (1) Individual observations in an orderly format along with the mean angle from each direct and reverse observation.

      (2) Horizontal angle mean, vertical angle mean and slope distance mean for each set of observations.

      (3) Standard deviation of the observations, and maximum, minimum, range and collimation error for each set of observations. Refer to Figure 3.08-1 for a sample set reduction report.

3. Accuracy requirements:

   a. First Order control surveys:

      (1) Horizontal and vertical angle circle reading observation accuracy (standard deviation) of 0.5 seconds (DIN 18723) and read to 0.1 of a second.

      (2) Occupied station centering (eccentricity) accuracy of 1 mm.

      (3) Electronic distances measuring accuracy (standard deviation) of 1 mm plus or minus 1 ppm and read to 0.001 feet.

   b. Second Order control surveys:

      (1) Horizontal and vertical angle circle reading observation accuracy (standard deviation) of 1.0 second (DIN 18723) and read to 1.0 second or less if possible.

      (2) Occupied station-centering (eccentricity) accuracy of 1 mm.

(3) Electronic distances measuring accuracy (standard deviation) of 2 mm plus or minus 2 ppm and read to 0.001 feet.

(4) All horizontal traverse adjustments shall be performed using a minimally constrained Least Squares adjustment method which will produce the following output:

(a) Summary of unadjusted input observations

(b) Statistical summary

(c) Chi Square test

(d) Adjusted observations and residuals

(e) Residual summary

(f) Adjusted bearings and horizontal distances (grid and ground)

(g) Horizontal unadjusted traverse closures

(h) Adjusted coordinates

(i) Convergence angles and grid factors at stations

(j) Standard deviations, error propagation and error ellipses

(5) All horizontal traverse adjustment results shall be provided to the Authority upon request.

C. Vertical Traverse

1. Differential leveling shall be performed in accordance with the requirements for Second-Order, Class I geodetic leveling surveys as defined in the Standards and Specifications for Geodetic Control Networks, Federal Geodetic Control Committee (FGCC), and NOAA Manual NOS NGS 3 Geodetic Leveling, National Geodetic Survey (NGS).

a. The survey Subcontractor shall provide documentation of staff calibration, which includes certificates for expansion coefficient and length calibration.

2. All reduced vertical traverse data shall be provided to the Authority upon request in a Star*Net-Lev digital input file format.

a. All vertical traverse data shall be provided as a data reduction report in an ASCII text file format, which clearly lists the following data:

(1) Individual observations with the point identifier,

(2) Distance from instrument to staff (rod) for each observation,

(3) Backsight staff (rod) reading and foresight staff (rod) reading,

(4) Number of measurements taken and standard deviation per staff (rod) reading, and

(5) Cumulative station differences

3. Accuracy Requirements:

a. Differential leveling observation accuracy (standard deviation) of 0.4 mm and read to 0.0001 feet

4. The Contractor may use electronic digital levels and bar coded leveling staffs. The use of leveling staffs with ground plate (turning turtle) is required.

5. Use calibrated invar staffs (level rods) for all control work including final vertical monumentation installation.

6. Use semi-precise level rods or equal equipment for level work.

7. All vertical traverse adjustments shall be performed using a minimally constrained Least Squares adjustment method after a vertical traverse meets the minimum closure requirements referenced herein.

8. All vertical traverse adjustment results shall be provided to the Authority upon request.

3.09 SURVEYS AND PROCEDURES

A. Control Surveys

1. Verify Project primary control monumentation and provide adjustment computations to the Contracting Officer Representative.

2. Replace primary control monuments that have been destroyed or damaged and provide adjustment computations to the Contracting Officer Representative.

a. Provide Monument Record Sheets to the Contracting Officer Representative.

3. Establish secondary control monumentation along the Authority's construction project and provide adjustment computations to the Contracting Officer Representative.

a. Horizontal and vertical control discs shall be installed in accordance with WMATA Standards.

b. Horizontal and vertical control discs set on direct fixation trackways shall be recessed to protect them from disturbance.

c. Provide Monument Record Sheets to the Contracting Officer Representative.

B. Structural As-Builts

1. General Requirements: Structural as-builts are required to check for out-of-tolerance construction, which may impact other structures or compromise train clearances along the trackway.

a. All methods, equipment and procedures used by the Contractor to perform structural checks shall be approved by the Contracting Officer Representative prior to commencement of the Work.

b. This survey data must be analyzed by the Contractor and the Authority for compliance with construction and rail tolerances.

c. This survey data must be analyzed by the Contractor and the Authority to determine what remedial action, if any, may be required to address out-of-tolerance construction and the impact of structural misalignment on the final placement of other structures and rail.

(1) If the survey data reveals out-of-tolerance construction, which will impact the placement of other structures along the trackway, the Contractor shall take appropriate remedial action to comply with the Contract Documents.

(a) If minimally out-of-tolerance, perform horizontal and vertical alignment revisions to minimize the impact of the misalignment on the future placement of adjoining structures and rail along the trackway.

(b) If significantly out-of-tolerance and an acceptable alignment revision cannot be used to compensate for out-of-tolerance construction, then demolish and remove the structure and re-install.

(2) All alignment revisions and remedial actions shall be approved by the Contracting Officer Representative prior to commencement of the Work.

2. Verify existing primary horizontal and vertical controls and re-establish, if destroyed or disturbed, and provide adjustment computations to the Contracting Officer Representative.

3. Provide Monument Record Sheets to the Contracting Officer Representative.

4. Establish a secondary horizontal and vertical control system on the Authority's structures and reference to the approved project primary horizontal and vertical control system. The secondary control system established on or within trackway structures shall be used for detailed cross sections, Hi-Lo surveys and placement of final trackway monumentation. The secondary control system shall be adequately referenced so it can be readily recovered. Horizontal and vertical control discs shall be installed in accordance with WMATA standard.

a. Horizontal and vertical control discs set on direct fixation trackways shall be recessed to protect them from disturbance.

b. Provide Monument Record Sheets to the Contracting Officer Representative.

5. Verify structural concrete placement for compliance with Contract Documents, and provide the final results to the Contracting Officer Representative when requested.

C. Post Construction Alignment As-built Surveys

1. General Requirements: Post construction alignment as-built surveys are required to check trackway structures for compliance with Contract Documents and to check for out-of-tolerance construction, which may impact train clearance tolerances.

2. All methods, equipment, and procedures used by the Contractor to perform post construction alignment as-built surveys shall be approved by the Contracting Officer Representative prior to commencement of the Work.

a. This survey data must be analyzed by the Contractor and the Authority for compliance with construction and rail tolerances.

b. This survey data must be analyzed by the Contractor and the Authority to determine what remedial action, if any, may be required to address out-of-tolerance construction and the impact of structural misalignment on the final placement of the rail.

(1) If the survey data reveals out-of-tolerance construction, which will impact the placement of other structures along the trackway, the Contractor shall take appropriate remedial action to comply with the Contract Documents.

(a) If minimally out-of-tolerance, perform horizontal and vertical alignment revisions to minimize the impact of the misalignment on the future placement of adjoining structures and rail along the trackway.

(b) If significantly out-of-tolerance and an acceptable alignment revision cannot be used to compensate for out-of-tolerance construction, then demolish and remove the structure and re-install.

(2) All alignment revisions and remedial actions shall be approved by the Contracting Officer Representative prior to commencement of the Work.

3. Verify existing primary horizontal and vertical controls and re-establish, if destroyed or disturbed, and provide adjustment computations to the Contracting Officer Representative for approval. Provide Monument Record Sheets to the Contracting Officer Representative.

4. Establish a secondary horizontal and vertical control system on the Authority's structures and reference to the approved project primary horizontal and vertical control system. The secondary control system established on or within trackway structures shall be used for detailed as-built cross sections, hi-lo surveys, and placement of final trackway monumentation. The secondary control system shall be adequately referenced so it can be readily recovered.

   a. Horizontal and vertical control discs shall be installed in accordance with WMATA Standards.

   b. Horizontal and vertical control discs set on direct fixation trackways shall be recessed to protect them from disturbance.

   c. Provide Monument Record Sheets to the Contracting Officer Representative.

5. Provide a report to the Contracting Officer Representative comparing the as-built location of the structure to the plan location as well as the theoretical dynamic outline of the train along the tunnels, retained areas, and aerial structures.

   a. These cross sections must show computed clearances between the as-built location of the structure as well as the theoretical dynamic outline of the train.

   b. This data must be analyzed by the Contractor and the Authority for compliance with construction and train clearance tolerances.

   c. This data must be analyzed by the Contractor and the Authority to determine what remedial action, if any, may be required to address out-of-tolerance construction and the impact of structural misalignment on the final placement of the tracks.

6. Install and reference all permanent, secondary, and final monumentation required for construction, trackwork, and other system-wide facilities.

   a. Provide Monument Record Sheets to the Contracting Officer Representative.

7. Coordinate the post construction alignment as-built survey work with the Contracting Officer Representative.

3.10 FIGURES AND REPORT FORMATS

Figure 1.05-1

Levels of the Certified Survey Technician Program

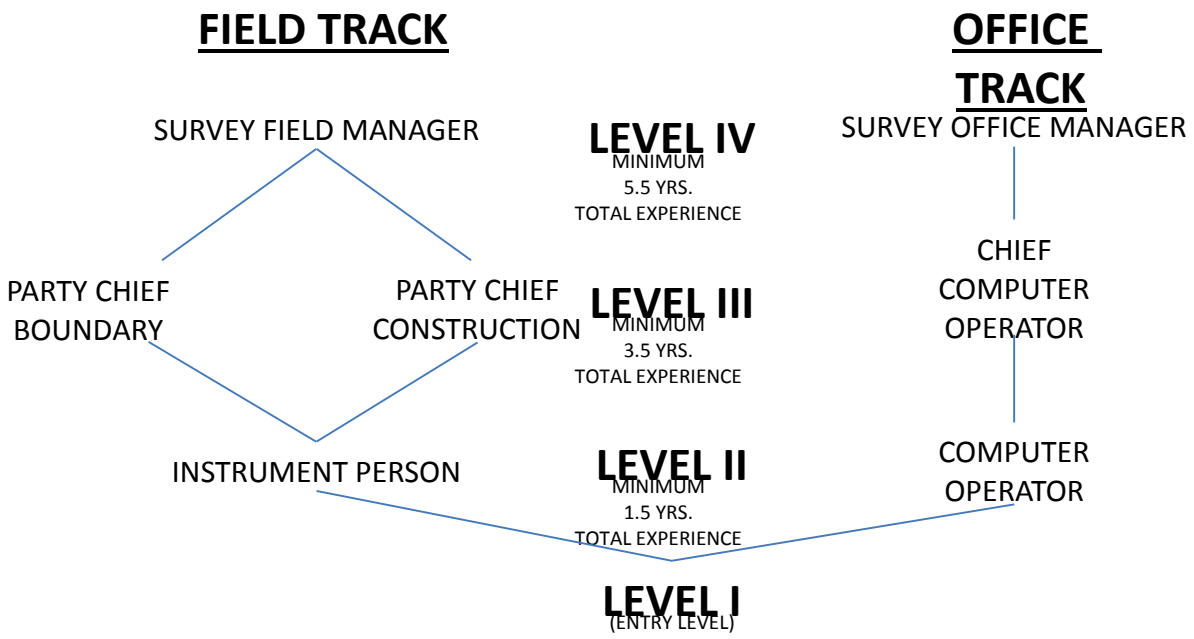

Figure 3.08-1

TRAVERSE SET REDUCTION

PR:METRO2.PRJ DT:05/01/01 ID:METRO CENTER NM:TRAVERSE

Occupied Station: Pt. No. 101, A-101 METRO B/D
Backsight: Pt. No. 100, A-100 METRO B/D
Foresight: Pt. No. 102, A-102 METRO B/D

HORIZONTAL ANGLE REDUCTION

Set Rejection Criterion: Deviation from Mean greater than 3 inches

Set No.	Face	Backsight	Foresight	Horiz. Angle	Mean Dev.
1	1	0-00-00.0	191-05-13.0		
	2	180-00-01.0	11-05-12.4		
	Mean	0-00-00.50	191-05-12.70	191-05-12.20	0-00-01.03
2	1	359-59-59.6	191-05-14.0		
	2	180-00-01.0	11-05-12.1		
	Mean	0-00-00.30	191-05-13.05	191-05-12.75	0-00-00.48
3	1	359-59-59.5	191-05-13.0		
	2	179-59-59.8	11-05-12.2		
	Mean	359-59-59.65	191-05-12.60	191-05-12.95	0-00-00.27
4	1	359-59-57.2	191-05-13.1		
	2	179-59-59.7	11-05-13.8		
	Mean	359-59-58.45	191-05-13.45	191-05-15.00	- 0-00-01.78

Mean Horiz. Angle: 191-05-13.23
Std. Deviation (obs): 0-00-01.23
Std. Deviation (mean): 0-00-00.61
Maximum: 191-05-15.00
Minimum: 191-05-12.20
Range: 0-00-02.80
Collimation Error: 0-00-02.5

BACKSIGHT ZENITH/SLOPE DISTANCE REDUCTION

Zenith Rejection Criterion: Deviation from Mean greater than 5 inches
Slope Distance Rejection Criterion: Deviation from Mean greater than 0.01 feet

Set No.	Face	Zenith	Mean Dev.	Slope Distance	Mean Dev.
5	1	90-27-40.6		215.316	
	2	269-32-20.3		215.316	
	Mean	90-27-40.15	0-00-00.08	215.316	0.00
6	1	90-27-41.7		215.316	
	2	269-32-20.5		215.316	
	Mean	90-27-40.60	0-00-00.53	215.316	0.00
7	1	90-27-40.4		215.316	
	2	269-32-21.5		215.316	
	Mean	90-27-39.45	0-00-00.61	215.316	0.00

Mean Zenith Angle: 90-27-40.07
Mean Slope Distance : 215.316
Std. Deviation (obs): 0-00-00.57
Std. Deviation (obs): 0.000
Std. Deviation (mean): 0-00-00.33
Std. Deviation (mean): 0.000
Maximum: 90-27-40.60
Minimum: 90-27-39.45
Range: 0-00-01.15
Collimation Error: 0-00-02.2

FORESIGHT ZENITH/SLOPE DISTANCE REDUCTION

Zenith Rejection Criterion: Deviation from Mean greater than 5 inches
Slope Distance Rejection Criterion: Deviation from Mean greater than 0.01 feet

Set No.	**Face**	**Zenith**	**Mean Dev.**	**Slope Distance**	**Mean Dev.**
5	1	89-29-50.9		275.692	
	2	270-30-10.5		275.691	
	Mean	89-29-50.20	0-00-01.01	275.692	0.00
6	1	89-29-52.1		275.692	
	2	270-30-09.3		275.691	
	Mean	89-29-51.40	0-00-00.18	275.692	0.00
7	1	89-29-52.6		275.692	
	2	270-30-08.5		275.691	
	Mean	89-29-52.05	0-00-00.83	275.692	0.00

END OF SECTION

SECTION 01722

MOBILIZATION

PART 1 – GENERAL

1.01 SUMMARY

A. This Section includes specifications for the following:

1. Organization and mobilization of Contractor's forces;

2. Design, fabrication, and transportation of construction plant and equipment to the Site and setting up of same;

3. Transporting various tools, materials, and equipment to the Site; and

4. Erection of temporary buildings and facilities required for staging and construction operations.

B. Mobilization shall include mobilization of all construction equipment, temporary facilities, materials, supplies, appurtenances, staffed and ready for commencing and prosecuting the Work; and the subsequent demobilization and removal from the Site of said equipment, appurtenances, and the like upon completion of the Work.

C. Mobilization shall also include assembly and delivery to the Site of plant, equipment, materials, and supplies necessary for the prosecution of work, which are not intended to be incorporated in the Work; the clearing of and preparation of the Contractor's work area; the complete assembly, in working order, of equipment necessary to perform the required work; personnel services preparatory to commencing actual work; and all other preparatory work required to permit commencement of the actual work on construction items for which payment is provided under the Contract.

D. The Contractor shall conduct its work in accordance with the safety requirements of Section 01114, SAFETY/ENVIRONMENTAL REQUIREMENTS. In case of a conflict between the various jurisdictional and WMATA or Contractor's organizational safety requirements, the more stringent requirements shall apply.

E. When separate payment for mobilization and preparatory work is provided in the Contract, payment will be made in the amount provided in the Unit Price Schedule. Payment of mobilization is detailed in 1.05 F.

F. When separate payment for mobilization and preparatory work is provided in the Contract, such payment will be a fixed lump sum Contract price for mobilization as shown in the Unite Price Schedule, as mobilization occurs per each part of the contract. The payment will be made in accordance with the unit price schedule.

G. Partial payments may be reduced by an amount determined by the Contracting Offer Representative if, in his/her determination, one or a combination of the following conditions applies:

1. The plant and equipment at the site are insufficient or are not suitable for the performance of the work.

2. The plant and equipment brought on the project are not being utilized or sufficiently utilized for prosecution of the work.

3. The plant and equipment brought on the project are committed to the work are removed from the project without permission of the Contracting Officer Representative.

H. In the event of such a reduction impartial payments, the remainder of the partial payments which are unpaid at the date of such reduction will be paid with subsequent progress payments as and when the conditions stated are rectified.

1.02 SUBMITTALS

A. Refer to Section 01330, SUBMITTAL PROCEDURES, for submittal requirements and procedures for the following submittals:

1. A layout of the construction sites including fences, roads, parking, buildings, staging, and storage areas, within 7 Days after the Notice to Proceed

2. Schedule for mobilization of field office within 7 Days after Notice to Proceed

PART 2 – PRODUCTS (not used)

PART 3 – EXECUTION

3.01 DELIVERY

A. Delivery to the jobsite of construction tools, equipment, materials, and supplies shall be accomplished in conformance with local governing ordinances and regulations.

3.02 TOOLS AND SUPPLIES

A. Provide construction tools, equipment, materials, and supplies of the types and quantities that will facilitate the timely execution of the Work.

B. Provide personnel, products, construction materials, equipment, tools, and supplies at the jobsite at the time they are scheduled to be installed or utilized.

3.03 PLANT LOCATION

A. Locate plant or plants appropriately close to the portion of the Work for which it will be used.

3.04 DEMOBILIZATION

A. Upon completion of the Work, remove construction tools, apparatus, equipment, unused materials, and supplies, plant, temporary facilities, and personnel from the jobsite.

B. Restore all areas utilized for the Contractor's temporary facilities and staging purposes to their original, natural state or, when called for in the Contract Documents, complete such areas as indicated.

END OF SECTION

SECTION 01723

PROTECTION OF ADJACENT CONSTRUCTION

PART 1 – GENERAL

1.01 SUMMARY

A. This Section specifies the appropriate methods for protection of adjacent construction when performing installations and improvements in and around existing facilities.

1.02 PROTECTION OF EXISTING SURFACES

A. Existing surfaces shall be carefully protected during construction operations under this Contract to avoid damaging existing surfaces.

1. Existing surfaces shall be protected by the Contractor from all possible damages including chipping, staining, and corroding during performance of the Work.

2. If damage occurs, the Contractor shall repair or replace to match original undisturbed conditions.

PART 2 – PRODUCTS (not used)

PART 3 – EXECUTION (not used)

END OF SECTION

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SECTION 01731

CUTTING AND PATCHING

PART 1 – GENERAL

1.01 SUMMARY

A. This Section specifies the appropriate methods for performing cutting and patching when installations occur in existing facilities or for improvements including selective demolition, salvaging of materials and equipment, and restoring of pavement and other surfaces and improved areas from damage caused by the Contractor's operations.

1.02 SUBMITTALS

A. Written Request: Submit a written request for approval by the Contracting Officer Representative prior to cutting and patching. A written request is required for any cutting or alteration, which affects:

1. The work of the Authority or any separate contractor,

2. The structural value or integrity of any element of the Project,

3. The integrity or effectiveness of weather exposed or moisture-resistant elements or systems,

4. Building aesthetic qualities for exterior areas or in occupied spaces, or

5. The efficiency, operation life, maintenance, or safety of operational systems.

B. Cutting and Patching Proposal: Include in written request the following:

1. Describe the extent of cutting and patching required. Show how it will be performed and indicate why if cannot be avoided.

2. Describe anticipated results in terms of changes to existing construction. Include changes to structural elements and operating components as well as changes in the building's appearance and other significant visual elements.

3. List utilities that will be disturbed or affected, including those that will be relocated and those that will be temporarily out-of-service. Indicate how long service will be disrupted.

C. Structural Elements: Where cutting and patching involves addition of reinforcement to structural elements, submit details and engineering calculations to show how reinforcement is integrated with the original structure to satisfy requirements.

D. Should conditions of work or schedule indicate change of materials or methods, submit written recommendations to the Contracting Officer Representative, including:

1. Conditions indicating change,

2. Recommendations for alternative materials or methods, and

3. Resubmittal as required for substitution.

E. Approval by the Contracting Officer Representative to proceed with cutting and patching work does not waive the Authority's right to later require complete removal and replacement of any part of the Work found to be unsatisfactory.

1.03 QUALITY ASSURANCE

A. Requirements for Structural Work: Do not cut and patch structural elements in a manner that would change their load carrying capacity or load deflection ratio. Obtain prior approval from the Contracting Officer Representative of the cutting and patching procedures proposed.

B. Operational Limitations: Do not cut and patch operating elements or related components in a manner that would result in reducing their capacity to perform as intended. Do not cut and patch operating elements or related components in a manner that would result in increased maintenance or decreased operational life or safety. Obtain prior approval from the Contracting Officer Representative of the cutting and patching procedures proposed.

C. Visual Requirements: Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in the Contracting Officer Representative's opinion, reduce the building's aesthetic qualities. Do not cut and patch construction in a manner that would result in visual evidence of cutting and patching.

1. If possible, retain the original installer or fabricator to cut and patch exposed Work. If it is impossible to engage the original installer or fabricator, engage another recognized experienced and specialized firm.

2. Remove and replace construction cut and patched in a visually unsatisfactory manner.

1.04 EMBEDDED ITEMS

A. When reinforcing steel, conduit or other items embedded in the concrete are encountered in a drilling or coring operation, the operation shall be stopped and the Contracting Officer Representative immediately notified. Determine whether the embedded item may be cut through and if determined to be permissible, obtain Contracting Officer Representative's concurrence before doing so. If it is not permissible to cut through the embedded item, holes shall be drilled in another location and the original holes patched as directed by Contracting Officer Representative.

1.05 PAVEMENT AND IMPROVED AREAS RESTORATION

A. As applicable, secure permits from the Jurisdictional Authority for all pavement restoration within the limits of said Jurisdictional Authority. Submit Working Drawings of such pavement restoration prepared in accordance with the requirements of the Contract Documents and the Jurisdictional Authority to the Jurisdictional Authority for approval.

B. During construction operations on this Contract, certain areas currently grassed, landscaped, or otherwise improved may be disturbed or damaged. Restore such areas as specified in Section 00736, PROTECTION OF EXISTING VEGETATION, STRUCTURES, UTILITIES AND IMPROVEMENTS.

C. Existing surfaces marred or damaged by operations under this Contract shall be repaired or replaced by the Contractor to the condition prior to being marred or damaged as approved by the Contracting Officer Representative.

PART 2 – PRODUCTS

2.01 MATERIALS

A. General: Use materials identical to existing materials. For exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible if identical materials are unavailable or cannot be used, use materials whose installed performance will equal or surpass that of existing materials.

PART 3 – EXECUTION

3.01 INSPECTION

A. Examine surfaces to be cut and patched and conditions under which cutting and patching is to be performed before cutting. If unsafe or unsatisfactory conditions are encountered, take corrective action before proceeding.

B. After uncovering work, inspect conditions affecting installation of new products.

C. Report unsatisfactory or questionable conditions to the Contracting Officer Representative in writing, and do not proceed with the Work until the Contracting Officer Representative has provided further instruction.

3.02 PREPARATION PRIOR TO CUTTING AND PATCHING

A. Temporary Support: Provide shoring, bracing, and support as required to maintain structural integrity of the affected portion of the Work.

B. Protection: Protect existing equipment during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of the Project that might be exposed during cutting and patching operations.

C. Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

3.03 PERFORMANCE

A. General: Employ skilled workmen to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time and complete without delay. Cut existing construction to provide for installation of other components or performance of other construction activities and the subsequent patching required to restore surfaces to their original condition.

B. Cutting: Cut existing construction using methods least likely to damage elements to be retained or elements adjoining construction. Where possible review proposed procedures with the original installer; comply with the original installer's recommendations.

1. In general, where cutting is required, use hand or small power tools designed for sawing or grinding, not hammering and chopping. Cut holes and slots neatly to size required with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.

2. To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces.

3. Cut through concrete and masonry using a cutting machine such as a carborundurn saw or diamond core drill.

4. By-pass utility services such as pipe or conduit, before cutting, where services are shown or required to be removed, relocated, or abandoned. Cut off pipe or conduit in walls or partitions to be removed. Cap, valve or plug and seal the remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after bypassing and cutting.

C. Patching: Patch with durable seams that are as invisible as possible. Comply with specified tolerances.

1. Where feasible, inspect and test patched areas to demonstrate integrity of the installation.

2. Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.

3. Where removal of walls or partitions extends from one finished area into another, patch and repair floor and wall surfaces in the new space to provide an even surface of uniform color and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary to achieve uniform color and appearance.

4. Where patching occurs within a smooth painted surface, apply a primer and second coat over the patched area and extend the final coat over the entire unbroken area containing the patch.

5. Patch, repair, or rehang existing ceilings as necessary to provide an even plane surface of uniform appearance.

3.04 CLEANING

A. General: Thoroughly clean areas and spaces where cutting and patching is performed or used as access. Completely remove paint, mortar, oils, putty and items of similar nature. Thoroughly clean piping, conduit and similar features before painting or other finishing is applied. Restore damaged pipe covering to its original condition.

END OF SECTION

SECTION 01740

CLEANING

PART 1 – GENERAL

1.01 SUMMARY

A. This Section includes specifications for furnishing all labor, materials, equipment, and services, and performing all operations necessary for, and properly incidental to, cleanup during construction and final cleaning of the facilities and site prior to Acceptance by the Authority.

1.02 RELATED SECTIONS

A. [Division 16, Electrical], for conduit cleaning.

PART 2 – PRODUCTS (not used)

PART 3 – EXECUTION

3.01 CLEANUP DURING CONSTRUCTION

A. Keep the entire Site in a neat and orderly condition at all times during construction. Conduct a general cleanup of the Site daily as a part of the Work. Provide general daily cleanup and disposal service for removal of waste and rubbish from the jobsite. Clean material as necessary prior to incorporating into the Work.

B. Dispose and recycle waste, trash, and debris in a safe, acceptable manner, in accordance with applicable laws and ordinances and as prescribed by Jurisdictional Authorities. Do not bury waste material and debris on the Site. Burning of trash and debris on the Site is prohibited.

C. Provide daily litter pickup within Project limits. Provide adequate number of trash receptacles for worker's lunches, cigarette butts, and other miscellaneous garbage.

3.02 FINAL CLEANING OF FACILITIES

A. Prior to final inspection by the Contracting Officer Representative, and after all construction work is essentially complete, thoroughly clean facilities utilizing professional facility cleaners.

B. Items to be cleaned include, but are not limited to, all glass, doors, opening frames, grilles, trim, exposed non-ferrous metal surfaces, floor coverings, light fixtures and plates, plumbing fixtures and trim, and all finish surfaces throughout the construction.

C. Vacuum-clean where appropriate and remove all spots, smears, dust, debris, hand prints, and defacements of every sort, including those of vandals. Use commercial cleaning compounds where necessary.

D. Follow the recommendations of the manufacturers of the materials and items to be cleaned for all cleaning, polishing, and treatment such as waxing or sealing.

E. Final cleaning shall be in accordance with the project's LEED objectives.

3.03 FINAL SITE CLEANUP

A. Prior to final inspection, thoroughly clean the entire Site so it is in a neat, acceptable condition. Remove from the entire Site all construction equipment and facilities, construction waste and unused materials, dunnage, loose rock and stones, excess earth, and debris of any description resulting from the Work.

B. Hose down and scrub clean where necessary all pavement and paved walks.

C. Thoroughly remove mortar droppings from concrete slabs and pavement. Hose down and scrub clean all concrete flatwork and exposed vertical surfaces of concrete and masonry. Clean all rail surfaces, special trackwork, track drains, handholes, and manholes.

D. All drainage systems shall be free and clear. All drainage systems and sewers shall be pressure cleaned and inspected, and all catch basins and sumps shall be cleaned.

E. All conduits shall be cleaned and openings protected as specified in [Division 16, Electrical].

F. All spare material shall be delivered to the Authority.

END OF SECTION

SECTION 01775

CLOSEOUT

PART 1 – GENERAL

1.01 SUMMARY

A. This Section includes specifications for performing all operations necessary for and incidental to closing out a Contract and assisting in the Authority's final inspection.

B. This Section includes procedures for closeout submittals including the following:

1. Operation and maintenance manuals;
2. As-Built Drawings and Specifications;
3. Spare parts list, delivery information, and distribution of spare parts;
4. Training manuals, lesson plans, and student's training manuals and electronic media of such, as applicable;
5. Survey record log;
6. Correspondence file;
7. Releases;
8. Vouchers;
9. Records for design (if provided by Contractor), inspection, testing and other quality elements;
10. Request for final payment;
11. Certifications, affidavits, and warranties and guarantees; and
12. Correction of deficiencies submittals as applicable

C. This Section establishes required actions by the Contractor for facility systems and subsystems commissioning that include the preparation of an asset database, the preparation of preventive maintenance instructions, and labeling and packaging of spare parts.

1.02 REFERENCES

1.03 CLOSEOUT SCHEDULE AND PROCEDURE

A. Changes from Original Conditions:

1. Upon completion of the Work and prior to Substantial Completion, the Contractor shall examine each property to determine changes from the original conditions established by the preconstruction inspection, and Section 01711, ACCEPTANCE OF CONDITIONS, and shall furnish a written description to the Contracting Officer Representative of measures taken to correct damage that may have resulted from performance of this Contract, and shall obtain a written release from each owner accepting condition of the building or structure, corrections, or both, thereby relinquishing any claim against the Contractor. In the event any owner refuses to furnish a release of claims, the Contractor shall notify the Contracting Officer Representative in writing.

2. The Authority will not assume responsibility for alleged damages arising from the Work performed under this Contract.

B. Requirements Preparatory to Final Inspection by the Authority:

1. Notify the Contracting Officer Representative to perform a preliminary final inspection for the purpose of determining the state of completion of the Work. Notify the Contracting Officer Representative at least 14 Days in advance of requested inspection. The Contracting Officer Representative will perform the inspection within 3 working days of the requested date. From the information gathered from this inspection, the Contracting Officer Representative will prepare a Punch List of work to be performed, corrected, or completed before the Work will be accepted. All work on the Punch List shall be completed by the Contractor prior to final inspection.

2. Temporary facilities, except as may be required during Punch List work, shall be removed from the Site.

3. Clean the Site and all applicable appurtenances and improvements as specified in Section 01740, CLEANING.

4. Properly mount operating instructions for equipment and post as specified or required.

C. Final Inspection by the Authority:

1. After all requirements preparatory to the final inspection have been completed as hereinbefore specified, notify the Contracting Officer Representative to perform the final inspection. Notice shall be given at least 14 Days in advance of the time the Work will be available for final inspection. The Contracting Officer Representative will perform the inspection within 3 working days of the requested date.

2. Contractor or its principal superintendent, authorized to act on behalf of the Contractor, shall accompany the Contracting Officer Representative on the final inspection, as well as any principal Subcontractors that the Contracting Officer Representative may request to be present.

3. If the Work has been completed in accordance with the Contract Documents, and no further corrective measures are required, the Contracting Officer Representative will accept the Work and will issue a Certificate of Completion as evidence of acceptance.

4. If the Work has been substantially completed in accordance with the Contract Documents, and the Work can be used for its intended purpose with only minor corrective measures required, the Contracting Officer Representative will conditionally accept the Work and will issue a Certificate of Substantial Completion based upon the Contractor's assurance that corrective measures will be completed within the shortest practicable time. A fixed schedule for such corrective measures shall be submitted to the Contracting Officer Representative for approval.

5. If the Work has not been substantially completed in accordance with the Contract Documents, and several or many corrective measures are still required, the Contracting Officer Representative will not issue a Certificate of Substantial Completion. Instead, a new Punch List will be prepared based on the information gathered from the final inspection, and the Contractor will be required to complete this work and then call for another final inspection, following the procedure outlined above.

D. Asset and Parts Databases:

1. Prepare an asset database listing system and subsystem assets with attribute data to include asset name, asset location, description, contract number and specification section, supplier/vendor, manufacturer name and contact information, make, model number, serial

number, year of manufacture, purchase price, expected useful life, installation date, acceptance date, Contractor and manufacturer's warranty period with start date, digital link to warranty documentation, digital link to Operation and Maintenance Manual, and special tools required to perform asset maintenance. Provide this asset database for assets as determined by Authority review of an asset list submittal prepared by Contractor. The asset list submittal shall be based on equipment and systems noted below.

2. Prepare a parts database listing parts for assets with attribute data to include parent asset name, part name, description, contract number and specification section, supplier/vendor, manufacturer name and contact information, illustrated parts catalog (IPC) drawing number, vendor catalog number, original equipment manufacturer (OEM) part number, model number, unit cost, unit of measure for the part(s), number of spare units provided, replacement lead time, forecasted usage, hazardous material designation, and storage and handling instructions. Provide this parts database for parts as determined by Authority review of a parts list submittal prepared by Contractor. The parts list submittal shall be based on the lowest maintainable parts for each asset as defined in the Operation and Maintenance Manuals.

3. Databases shall provide asset and parts information for applicable equipment and systems:

4. Sample asset table and parts table are attached at the end of this Section for the Contractor's guidance in preparing the asset database.

E. Preventive Maintenance Instructions:

1. Prepare preventive maintenance instructions for each asset, including asset name, asset location, manufacturer name, model number, serial number, maintenance instructions for each asset and each scheduled maintenance based on requirements of the associated Operations and Maintenance Manual, and identification of special test equipment required to test the asset subsequent to performing maintenance.

2. A sample preventive maintenance instruction is attached at the end of this Section for the Contractor's guidance in preparing the preventive maintenance instructions.

1.04 SUBMITTALS

A. Make all submittals in accordance with Section 01330, SUBMITTAL PROCEDURES, and as specified below.

B. Operation and Maintenance:

1. Furnish manuals for equipment and systems as required by the Contract Documents.

2. Data copy included from standard catalogs shall be edited to reflect only conditions pertinent to this Contract.

3. Data copy shall be suitable for dry-copy reproduction on standard office copy machines.

4. Hard copy manuals shall be prepared using the following materials:

a. Binder:

(1) One of following:

(a) Loose-leaf; three-ring with elliptical rings; stiff cover with covering resistant to oil, water, and wear; reinforced hinges; label holder on spine; mechanical device to open, close and lock rings; and sheet lifters. Size for 8-1/2-inch by 11-inch paper, 3-inch maximum capacity.

(b) Loose-leaf three-post binder conforming to FS UU-B-320, Type II, Class 2, with covering resistant to oil, water, and wear; label holder on spine; size for 8-1/2-inch by 11-inch paper; capacity as required, 4-inch maximum thickness.

(2) When the assembled data exceeds the capacity of one binder, provide additional binders as necessary.

b. Pages:

(1) Originals: White, 60-pound bond with plastic-reinforced binding edge.

(2) Catalog data: Offset-printed copy on white paper, with plastic-reinforced edge.

(3) Standard: 8-1/2 inches by 11 inches.

(4) Fold-out: 11 inches by 8-1/2 inches for binding portion of page plus 7-1/2 inches for each additional portion of folded page; title and page number visible without unfolding. Provide a filler at the binding edge of fold-out pages, equal in thickness to the folded portion.

(5) Holes punched for standard three-ring binder.

(6) Consecutively numbered.

5. Electronic Copies shall accompany the paper copies of all submittals of all manuals. These electronic copies shall be submitted in an editable, non-copyrighted Microsoft Office format. There shall be two electronic copies per submitted manual delivered one each to the programs office and to the applicable training department.

6. Manuals shall include the following data:

a. Table of contents.

b. Contractor's name, address and telephone number, with similar data for its 24-hour service organization.

c. Manufacturer's name, address and telephone number, with similar data for its local representative, distributor, and service agency.

d. Catalog, model, and serial number of equipment installed. Include WMATA unit numbers where applicable.

e. Description of equipment.

f. Detailed Theory of Operation of each system and subsystem to Lowest Repairable Unit (LRU)

g. Troubleshooting and Diagnostic Procedures for each piece of equipment delivered to LRU

h. Block Diagrams and Schematics of equipment as installed

i. Software administrative procedures for data input, failure diagnosis and system restoration

j. Statement of warranty as specified.

k. Description of modification, servicing and repairs performed prior to start of warranty.

l. Dates warranty begins and expires.

m. Standard starting, stopping and operating procedures.

n. Emergency and special operating procedures.

o. Routine maintenance procedures.

p. Servicing and lubrication schedule.

q. Manufacturer's printed operating and maintenance instructions, manufacturer's parts list, illustrations, and diagrams.

r. O&M data as required to meet LEED required design goals.

s. One copy of each wiring diagram.

t. List of spare parts, prices and recommended stock quantities for routine maintenance of the equipment for 1 year and list of spare parts that are considered critical and for which extended time frames for acquisition would create undesirable down-time for equipment.

u. List of special tools required to perform inspection, adjustment, maintenance, and repair. Special tools are those developed to perform a unique function related to the particular equipment and not available from commercial sources.

v. Copy of each approved Shop Drawing of equipment and system. Include drawings, which show outline dimensions, weights, and assembly data. Do not include drawings, which show manufacturing details.

7. Manuals submittal schedule:

   a. Four copies of sample formats and outlines of contents in draft form 120 Days prior to the time scheduled for operation inspection, testing, or acceptance of the equipment.

   b. Four copies of complete manual in final form 45 Days prior to the time scheduled for operation inspection, testing, or acceptance of the equipment.

   c. Four bound sets and electronic media of approved manual before the time scheduled for operation inspection, testing, or acceptance of the equipment.

      (1) Electronic copy files shall be in latest version of Adobe (.PDF) file format. Files shall be submitted in accordance with Section 01330, SUBMITTAL PROCEDURES.

      (2) Shop Drawings submitted with manuals shall be in AutoCAD (.DWG) file format. Line work shall be shown on designated layers in accordance with standard CAD layering guidelines as specified in the WMATA CAD Manual. Images shall be clear, sharp, and readily legible.

      (3) The Authority reserves the right to have any images, illustrations, diagrams, and drawings resubmitted until the Contracting Officer Representative approves their legibility.

   d. In addition to the other requirements of this Section, if manufacturer's hardcopy illustrations, diagrams, and drawings are also used in the preparation of Operation and Maintenance manual illustrations, diagrams, and drawings, they shall also be furnished in Adobe (.PDF) file formats.

8. If operation and maintenance training is included in the Contract, provide to each trainee, hard and electronic copies of approved operation and maintenance manuals for this purpose as specified in Section 01820, DEMONSTRATION AND TRAINING.

9. Furnish additional operation and maintenance manuals required for LEED Silver Certification in accordance with the quantity and documentation requirements for LEED for New Construction and Major Renovation.

C. As-Built Drawings and Specifications:

1. General:

a. As-Built Drawings shall include Shop Drawings, Working Drawings, and field prepared drawings.

b. Maintain a hard copy drawing and specification record of as-built conditions on a set of Contract Documents as the Work progresses. The Contract Documents shall be kept current with all Modifications issued by the Authority. The hard copy drawing and specification record shall be maintained at the Contractor's field office. Periodic review of the completeness of the hard copy record will be conducted by the Authority as deemed necessary to ensure the record is kept up to date.

2. As-Built Drawings:

a. Draft Deliverable: Submit to the Authority, for review and comment, separate sets of draft As-Built Drawings in both an AutoCAD (.DWG) file format and an Adobe (.PDF) file format (.PDF files shall be capable of printing full-size drawings.), in print quality black and white, with all fonts embedded. The latest versions of both file formats shall be used. All line work shall be shown in accordance with the WMATA CAD Manual. Images shall be clear, sharp, and readily legible. The Authority reserves the right to have drawing(s) resubmitted until the Contracting Officer Representative accepts the legibility of the drawing contained in the file. In addition, submit one set of full-size and two sets of half-size black ink on white paper copies of draft As-Built Drawings for review and comment by the Authority in accordance with Section 01330, SUBMITTAL PROCEDURES.

b. Upon return of one set of full-size black ink on white paper copy of the draft As-Built Drawings with Authority comments, incorporate additions and corrections resulting from Authority review comments. Contractor shall direct specific attention, by annotation on resubmitted As-Built Drawings, to revisions other than the corrections requested by the Contracting Officer Representative on previous submittals.

c. Final Deliverable: By the date scheduled for receipt of final approved As-Built Drawing deliverables in the Contract Schedule, separate sets of As-Built Drawings in both an AutoCAD (.DWG) file format and an Adobe (.PDF) file format, in print quality black and white, with all fonts embedded. Submit one set of full-size and two sets of half-size black ink on white paper copies, produced from the Adobe file, to the Contracting Officer Representative for review and Approval. If this submittal is found to be incomplete it will be returned to the Contractor with comments for re-submittal.

d. The completed As-Built Drawings do not require the signature of the Engineer or Architect of Record. Each completed As-Built Drawing produced in Adobe (.PDF) electronic format shall have the signature of an officer of the Contractor's organization, certifying compliance with as-built conditions, using a stamp as follows:

AS-BUILT

I CERTIFY THAT THIS DRAWING
ACCURATELY DEPICTS THE WORK
CONSTRUCTED AS OF

_____
(date)

_____
(an officer of the Contractor)

_____
Contractor's Name

3. As-Built Specifications:

   a. By the date scheduled for receipt of final approved As-Built Specification deliverables in the Contract Schedule, submit As-Built Specifications in both latest version of MSWord (.DOCX) file format with tracked changes and an Adobe (.PDF) file format, in print quality black and white. Submit two bound sets of black ink on white paper copies produced from the Adobe (.PDF) format to the Contracting Officer Representative for review and acceptance in accordance with Section 01330, SUBMITTAL PROCEDURES.

D. As-Built Project Schedule:

   1. Submit one electronic copy of the approved As-Built Project Schedule as required.

E. Spare Parts:

   1. This Contract includes the requirement for spare parts, either specifically identified in the price schedule or to be identified later during the term of the Contract. Ensure that all spare parts required by this Contract are provided and delivered in accordance with the following paragraphs.

   2. Submit to the Authority the one electronic copy of the list of required spare parts specifically identified in the Contract Documents. The list provided by the Contractor shall include part name, model number, part number, serial number, stock number, component name, location for use, manufacturer's name and contact information, unit cost, quantity, available packaging, special storage and handling instructions, replacement schedule, and anticipated annual usage. In addition, the spare parts listing shall include the following additional information as appropriate:

      a. Group the list by system and subsystem for inventory system identification. Include order and procurement information for subassemblies and components.

      b. Correlate the required quantities with the reliability requirements and lead time considering the following classifications:

         (1) Wear: Components which may be expected to require regular replacement under normal maintenance schedule and operations, such as mechanical parts subject to continuous operation within projected mean time between failure levels.

         (2) Consumables or expendables: Components which are consumed, used up, destroyed, or upon failure, are otherwise made unusable for their intended purpose and are economically unrecoverable except for inherent scrap value.

         (3) Recoverable or repairable: Components, which upon failure are capable of being repaired or remanufactured to a serviceable, operational condition and maintained available for use within their initial intended purpose. Such items shall be accounted for via appropriate asset records.

         (4) Long lead: Components, which are not available on short notice from commercial distributors or within 48 hours from the manufacturer, such as specially made or selected components.

(5) Cross referencing: Where replacement components are common to more than one system or subsystem, include a cross reference and indexing system in the replacement components list.

(6) Non-unique parts: In all components lists, items which are not unique to the system and have been manufactured by others shall be identified by the manufacturer's name and part number, as well as by the Contractor's component number, if any.

3. Within 30 Days after the Contractor submits the required spare parts listing, the Authority will provide the Contractor with shipping instructions and with WMATA stock numbers for each item the Contractor is required to furnish. Spare parts shall be packaged such that parts for a particular asset or a particular facility are grouped together. The Contractor shall ship, within a 25-mile radius of the Project, the required parts to the designated points specified by the Authority and shall include the Contract number, manufacturer part number, quantity, unit price, and WMATA part number on the shipping document.

4. The identification of the individual manufacturer's part numbers shall be cross referenced to the assigned WMATA stock numbers by including a column with appropriate heading adjacent to the manufacturer's part numbers in any parts manual or listing provided in accordance with Article 1.04D.2 above.

5. Parts furnished in accordance with this provision shall not be used to satisfy replacement needs under any warranty provision of this Contract.

6. Spare parts shall be the same in all respects as their counterparts furnished as part of the assembled equipment to be delivered under the terms of this Contract.

7. Unless otherwise specified in this Contract, the spare parts shall be delivered at the same time as the counterpart equipment delivery. The spare parts shall be properly packaged or crated so as to prevent damage during shipment and long-term storage. The spare parts shall be labeled in accordance with the instructions contained in Article 1.04D.2 above.

F. Asset and Parts Database submitted in MS Excel format.

1. Asset list based on equipment and systems specified for review and finalization by Authority.

2. Parts list based on lowest maintainable parts as defined in Operating and Maintenance Manuals for review and finalization by Authority.

3. Asset database tables based on the sample asset database table provided. Asset database shall be limited to the asset list approved by the Authority based on the submittal defined in 1.04.F.1.

4. Parts database tables based on the sample parts database table provided for each system specified. Parts database shall be limited to the parts list approved by the Authority based on the submittal defined in 1.04.F.2.

G. Preventive Maintenance Instructions as described above.

H. Survey Field Notes in accordance with Section 01330, SUBMITTAL PROCEDURES:

1. As applicable, submit electronic media of the following as specified in Section 01721, LAYOUT OF WORK AND FIELD ENGINEERING:

a. Survey Record Log.

I. Releases and Vouchers:

1. As applicable, submit one original hard copy and electronic media, in Adobe (.PDF) file format, of releases and vouchers.

J. Records for Inspection, Testing, and Other Quality Elements:

1. Submit one original hard copy and electronic media, in Adobe (.PDF) file format, of records for inspection, testing or other quality elements as more fully specified in Section 01470, QUALITY MANAGEMENT SYSTEM.

K. Request for Final Payment:

1. Submit one original hard copy and electronic media, in Adobe (.PDF) file format, of final payment request. Final Settlement will be made in accordance with Section 00744, METHOD OF PAYMENT.

L. Correction of Deficiencies Submittals:

1. As applicable, submit original hard copy and electronic media, in Adobe (.PDF) file format, of Schedule of Deficiency Corrections, Recommendation for Corrective Actions, together with supporting information, Data and Reports applicable to any correction, and a Technical and Cost Proposal to amend the Contract to permit acceptance of the affected materials, equipment, systems, or subsystems as specified in Section 00758, CORRECTION OF DEFICIENCIES.

M. Certifications, Affidavits, and Warranties and Guarantees:

1. Required Affidavits, Certificates, Written Descriptions and Releases and Warranties and Guarantees provided by the Contractor; i.e., Certificates of Acceptance and Compliance, Certification that all facilities were constructed in conformance with ADAAG regulations (Form attached at end of Section), of System Safety and Security, of Substantial Completion, and of Final Payment; Written Description of measures taken to correct damage that may have resulted from performance of this Contract; Written Releases; Contractor's executed Affidavit of Payment of All Applicable Taxes and License Fees in connection with the Contract and Affidavit of Payment of Debts and Claims; Consent of Surety Company to Final Payment; Warranties and Guarantees as specified in Section 00757, WARRANTY/GUARANTEE OF CONSTRUCTION, and Section 00758, CORRECTION OF DEFICIENCIES, and various Sections of the Contract Specifications as applicable: Submit the original hard copy and one electronic copy in Adobe (.PDF) file format.

PART 2 – PRODUCTS (not used)

PART 3 – EXECUTION (not used)

END OF SECTION

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SECTION 01820

DEMONSTRATION AND TRAINING

PART 1 – GENERAL

1.01 SUMMARY

A. This Section includes the general requirements for operation and maintenance training for equipment and systems provided by the Contractor and the general requirements for a Project performance demonstration.

1.02 DEFINITIONS

A. Acronyms used in this specification have the following definitions:

1. TSMT – Technical Skills and Maintenance Training
2. BUS – WMATA Department of BUS Services
3. TTDC – Technical Training Document Control

1.03 SUBMITTALS

A. Submit in accordance with Section 01330, SUBMITTAL PROCEDURES, the following at the times stated:

1. Training plan preliminary submittal: One electronic copy and one printed paper copy not later than 60 Days after commencement of construction work. Submittal shall include at a minimum:
    a. Instructional outline: A complete, accurate, and detailed listing of topics to be addressed in the instructional program using the specified content list.
    b. Specimens of instructional material to be used
    c. Descriptions of audio-visual material and equipment to be used
2. Training plan intermediate submittal: One electronic copy and one printed paper copy not later than 60 Days after approval of preliminary submittal.
    a. All material submitted for preliminary submittal incorporating or resolving comments.
    b. Complete instructional plans including audio-visual aids and descriptions of instructional techniques and procedures.
3. Training plan final submittal: One electronic copy and one printed paper copy not later than 30 Days prior to scheduled date for operation inspection, testing, or acceptance of the equipment.
    a. All material submitted for intermediate submittal incorporating or resolving comments.
4. Training contract closeout submittal: As specified in Section 01775, CLOSEOUT.
5. Training instructor's qualifications.
6. A complete set of all training manuals, handouts, aides and presentations, for instructor and student, shall be provided at the end of the vendor's first training class to each of the

audience's training groups (two sets when there are two supporting training groups, etc.) in an approved, editable electronic format, and free from copyright restrictions.

7. Printed copies of each student guide and student-learning materials (schematics, books of plans, etc., as determined useful) shall be prepared and bound by equipment's training provider. Provide one printed copy for each student to use during training and to keep after class completion

8. Printed copies of the instructor's guide, student guide, presentation, and all supplemental training materials for each of the audience group's training instructors (not to exceed five copies), free from copyright restrictions, shall be provided at the end of the first vendor training session.

9. Performance demonstration plan and procedures: submit for Approval as part of the final submittal package but no later than 90 Days prior to first performance demonstration.

10. Provide video documentation of demonstration and training classes to satisfy LEED requirements.

1.04 OPERATION AND MAINTENANCE TRAINING

A. General:

1. Where specified, develop and conduct a program to train selected Authority personnel in the operation and maintenance of equipment and systems furnished.

2. Furnish instructors, instructional materials, and audio-visual aids and equipment.

3. The Authority will furnish physical facilities.

B. Operations training:

1. Operations training shall be tailored specifically to the WMATA equipment being purchased and training shall be designed to teach all trainees the functional use of all of the major modes of equipment operation.

2. The training shall be sufficient in quality and scope to bring personnel to a level of operating proficiency such that vendor support is not needed during routine equipment operation in any mode or capacity.

C. Maintenance training:

1. Maintenance training shall be tailored specifically to the WMATA equipment being purchased and shall be designed to develop the knowledge and skills required to maintain and repair all item(s) delivered under the Contract. Maintenance training shall address the detailed theory of operation, maintenance, testing, repair, overhaul, replacement, alignment, and troubleshooting of the delivered equipment (hardware and software).

D. Other Training:

1. Any other training (as determined by WMATA) necessary to support the safe operation, use, or maintenance of the equipment.

E. Training Plan:

1. Training plan shall contain an organized summary of the events, and associated times, necessary for the completion of all materials necessary to successfully perform the required training. The plan shall be submitted to the applicable end user's training group(s) (TTDC, TSMT, or BUS currently) within a Contract specified period after NTP has been issued. The

training plan must address all deliverables using a timeline that includes periods for review, feedback, resubmission, approval, and delivery accomplishing all by a Contract-determined date related to the equipment being placed into service. The training plan shall include the following:

a. Course list including course title, duration, audience, audience size, and purpose

b. Instructor qualifications: A description of the instructor's qualifications for each class must be submitted to the end user's training group(s) (TTDC,TSMT, or BUS currently) for approval as part of the training plan. The description (resumé, curriculum vitae, or other description of instructional qualifications) shall document a thorough knowledge of the subject equipment, an understanding of the adult learning process, and demonstrated experience in vocational instruction.

c. Audience qualifications and prerequisites: For the purpose of course development and presentation, vendors shall assume all WMATA students are high school graduates (or equivalent)

d. Instruction and testing methods to be utilized

e. Summary of the strategies to be employed in the accomplishment of the training

f. Proposed schedule of delivery of materials and training

F. Instructor's Guide:

1. The instructor's guide for each course shall contain all the information and direction necessary for the instructor to make an effective presentation. The instructor's guides shall include adequate guidelines to conduct a comprehensive training program. Individual lessons within the course shall be organized as separate blocks (or modules), which may be taught as a unit. In some instances, the same standard operating procedures could be used for train operators, transportation supervisors, and central control supervisors. The instructor's guide shall contain, at a minimum:

   a. Program overview stating the overall program goals

   b. Training syllabus

   c. Lesson plans arranged as a session by session outline containing the following:

      (1) Overview of each lesson

      (2) Outline of major topics to be covered including timelines for each course, lesson, and topic

      (3) Outline of learning objectives for each major topic

      (4) Information regarding important subjects and terms to be emphasized during each section of the training

      (5) References to the associated Student Guide pages and presentation slides

   d. Suggested instructional methods/learning activities

   e. Required equipment or resources needed for effective instruction

   f. Test question pool(s) with each question referenced to the respective learning objective(s) and student guide or other instructional materials

2. A guide (FAQ) providing questions/problems and answers as related to course content

G. Student's Guides:

1. Student guides for each course that shall contain all the information and direction necessary the student to interact effectively in the learning environment. The student guides shall be written in a fully developed prose format, developed in the same modular format as the instructor's guides. The student's guides should contain, at a minimum:

a. Program overview/introduction

b. Statement of overall program goals

c. All major topics to be covered

d. Student learning objectives associated with each of the major topics stated in quantifiable terms

e. All illustrations, block diagrams, charts, schematics, wiring diagrams, logic flow diagrams, troubleshooting guides, graphics, and visual aids that may be used during course presentation to enhance presentation content and provide a seamless facilitation of instruction

f. Supplemental materials that may be necessary to facilitate theoretical discussions

H. Training Presentations:

1. Training Presentations shall be matched to the instructor guides and student guides and shall facilitate seamless, effective communication of the course information to the target audience.

2. Training Presentation format(s) shall be agreed upon by the target audience's training group(s) (TTDC, TSMTBUS, currently).

I. Training Aides:

1. Depending upon the equipment or system(s), a functional mockup or a functional representation may be required. These may be in the form of animated illustrations, animated schematics, model(s) of the equipment, actual device(s), interactive video training, or any accepted media format as determined by the audience's training group.

2. All mockups become the property of audience's training group after completion of the final scheduled training class. Supplemental materials shall be demonstrated as fully operable during the first training class. All necessary repairs to the supplemental materials are the responsibility of the vendor for the duration of vendor training sessions.

J. OEM Operator's Manual(s) describing the equipment's or system's operation in each mode and capacity of use.

1. OEM Technical Manuals describing the detailed theory of operation, maintenance, testing, repair, overhaul, replacement, alignment, and troubleshooting shall be delivered to the appropriate training groups.

1.05 MATERIALS AND INSTRUCTION

A. Training materials shall be provided and approved by audience's training groups (TTDC, TSMT or BUS) prior to the final acceptance of training schedule or training date(s).

B. Training materials updates are required when, in the scope of the Contract, changes or Modifications are made that affect the operation or maintenance of the contracted item(s).

C. Instruction shall include material covered in the operation and maintenance manuals as well as the following:

1. Detailed theory of operation to one level below Lowest Repairable Unit (LRU)
2. Practical aspects of operation
3. Description of system, equipment, and components
4. Functional characteristics of system, equipment, and components
5. Emergency operating procedures
6. Location, removal, and reinstallation of components
7. Maintenance procedures
8. Servicing intervals and schedules
9. Block diagrams of equipment hardware and software functionality as installed
10. Schematics of equipment hardware as installed
11. Diagnosis and problem solving (troubleshooting)
12. Repair
13. Overhaul

D. Daily class duration shall be a nominal 7-1/2-hour shift, with advantageous combinations of theoretical/classroom instruction and hands-on practice, utilizing operational equipment, presentations, mockups, and test equipment as applicable. For on-the-job training (OJT) at work locations as applicable, training shall include participation in installation activities, fault diagnosis, and equipment alignment/adjustment exercises.

E. Operating and maintenance training shall be completed prior to the time scheduled for operation inspection, testing, or acceptance of the equipment. In addition to the retainage specified in Section 00744, METHOD OF PAYMENT, payment will be withheld until training is complete and accepted.

F. Furnish to applicable training group, a minimum of four O&M Manuals as described in Section 01775, CLOSEOUT, for each piece of equipment and system, unless otherwise specified, and a minimum of one editable, non-copyrighted electronic copy in a Microsoft Office format, as specified.

1.06 PROJECT PERFORMANCE DEMONSTRATION

A. Integrated system testing shall culminate in a project performance demonstration that shall simulate all operations and shall exercise all systems and system elements. Prepare performance demonstration plan and procedures. Include testing of anticipated normal and abnormal operations, in addition to simulations of emergency operations. Performance demonstration plan shall delineate the following:

1. Tests to be performed
2. Date and time when each test is to be performed
3. An outline of the test parameters

4. Pass/fail criteria, which must be quantified and measurable

B. The project performance demonstration shall include those static and dynamic tests used to demonstrate that the Contractor installed the systems and subsystems according to the specification and the performance specified, and shall include:

1. All necessary functional and performance testing conducted during construction and manufacture of the system elements; and

2. Operational tests, which include integrated testing of system interfaces to assure that the Project as a whole is capable of operating as specified.

PART 2 – PRODUCTS (not used)

PART 3 – EXECUTION (not used)

END OF SECTION