



Arlington County Water Pollution Control Bureau

Biosolids Upgrades - General Requirements

Specifications

February 2023

HDR Project No. 10263882



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SECTION 01 11 00

SUMMARY OF WORK

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Location and description of Work and prior uses of the Site.
 - 2. Others retained by Owner for the Project.
 - 3. Work by others under Owner's control on other projects.
 - 4. Work by others not under Owner's control.
 - 5. Work by Owner.
 - 6. Sequence and progress of Work.
 - 7. Design Builder's use of the Site.
 - 8. Easements and rights-of-way.
 - 9. Partial utilization by Owner.
 - 10. Utility owners.
- B. Related Requirements:
 - 1. Include, but are not limited to, the following:
 - a. Section 01 14 16 - Coordination with Owner's Operations.
 - b. Section 01 14 19 - Use of Site.
 - c. Section 01 45 33 - Code-Required Special Inspections and Procedures
 - d. Section 01 71 33 - Protection of the Work and Property.

1.2 LOCATION AND DESCRIPTION OF WORK

- A. The Work is located at the Arlington Water Pollution Control Plant (WPCP), 3402 S. Glebe Road, Arlington, VA 22202.
- B. The Project includes designing and constructing the Work described in and in accordance with the Contract Documents, with all related appurtenances. The Design Builder is required to provide the Owner with fully functional facilities to achieve the objectives of the project regardless of the information presented in the RFP Plans or elsewhere in the Contract Documents.
- C. Contracting Method: The Project will be constructed under a Design Build Contract.
- D. Hazardous Environmental Conditions:
 - 1. A Hazardous Environmental Condition, described in reports provided to the Design Builder, will (or has reasonable potential to) affect the Work. The Design Builder shall verify the presence of hazardous environmental conditions prior to start of construction and shall be responsible for remediating such conditions impacted by the Work.

1.3 OTHERS RETAINED BY OWNER FOR THE PROJECT

- A. Program Manager:
 - 1. Program Manager is identified in the Agreement.
 - 2. Program Manager's responsibilities for the Project, relative to Design Builder, are indicated throughout the Contract Documents.
- B. Non-Professional Services Contracted by Owner: Design Builder shall coordinate and schedule the Work with, and cooperate with, the entities performing the following services for Owner.
 - 1. Code-Required Special Inspections and Testing:
 - a. Owner has, or will, retain the services of a qualified testing laboratory to perform code-required testing and special inspections for the Work, in accordance with Section 01 45

33 - Code-Required Special Inspections and Procedures, and selected other provisions of the Contract Documents related to field testing.

1.4 WORK BY OTHERS UNDER OWNER'S CONTROL - OTHER PROJECTS

- A. Other construction contracts have been or will be awarded by Owner that are in close proximity to or border on the Work of this Project. Work under these other contracts is briefly described in this Article.
- B. Gravity Thickener Rehabilitation:
 - 1. Principal Work Location: Gravity Thickeners and adjacent areas.
 - 2. Scope:
 - a. Rehabilitation of the existing gravity thickeners and gravity thickener building, including equipment and cover replacement.
 - 3. Contract times expected to start running in Fall 2023.
 - 4. Approximate Substantial Completion: Spring 2025.
 - 5. Approximate Final Completion: Summer 2025.
- C. PCS/SCADA Network Improvements:
 - 1. Principal Work Location: Throughout site.
 - 2. Scope: Install new fiber between buildings and replace PCS network switches to improve system reliability.
 - 3. Contract Time: Expected to start in Fall 2023.
 - 4. Approximate Substantial Completion: Winter 2024.
 - 5. Approximate Final Completion: Summer 2024.
- D. Renewable Natural Gas Interconnection
 - 1. Principal Work Location: To be determined in coordination with Design Builder.
 - 2. Scope:
 - a. Providing interconnect equipment and facilities for connecting renewable natural gas infrastructure to the natural gas utility.
 - 3. Contract times to be determined in coordination with Design Builder.

1.5 WORK BY OTHERS NOT UNDER OWNER'S CONTROL

- A. Work by Utility Owners and Transportation Facility Owners:
 - 1. Owner is not aware of any work to be performed at or adjacent to the Site by utility owners (not under Owner's control) or owners of transportation facilities (not under Owner's control).

1.6 WORK BY OWNER

- A. Owner will perform the following in connection with the Work:
 - 1. Operate all existing valves, flow-control gates, pumps, equipment, and appurtenances that will affect Owner's operations or facility processes, unless otherwise specified or indicated.

1.7 SEQUENCE AND PROGRESS OF WORK

- A. Sequencing:
 - 1. Incorporate sequencing of the Work into the Progress Schedule.
- B. Requirements for sequencing and coordinating with Owner's operations, including maintenance of facility operations during construction, and requirements for tie-ins and shutdowns, are in Section 01 14 16 - Coordination with Owner's Operations.

1.8 DESIGN BUILDER'S USE OF SITE

- A. Use of Site - General:
 - 1. Limits on Design Builder's use of the Site are indicated in Section 01 14 19 - Use of Site, and as may be shown on the Drawings.

2. Design Builder shall share use of the Site with other contractors and others specified in Articles 1.3 through 1.6 (inclusive) of this Section.
 3. Relocate stored materials and equipment that interfere with operations of Owner, other contractors, and others performing work for Owner.
 4. Comply with restrictions set forth in Section 01 14 19 - Use of Site.
- B. Owner will occupy the Site jointly with Design Builder during construction for performance of Owner's typical operations. Coordinate with Owner in all construction operations to minimize conflicts between Design Builder and Owner's employees and others under Owner's control. Owner will have Owner's suppliers for biosolids hauling, deliveries of chemicals, and other items accessing the Site from time to time. Possibly on a daily basis, Owner will need access for operations and maintenance of all existing equipment remaining in operation.

1.9 EASEMENTS AND RIGHTS-OF-WAY

- A. Easements and Rights-of-Way - General:
1. Confine construction operations within Owner's property, public rights-of-way, easements obtained by Owner, and limits shown, and property for which Design Builder has made arrangements directly with property owner(s).
 2. Use care in placing construction tools, machinery and equipment, excavated materials, and materials and equipment to be incorporated into the Work to avoid damaging property and interfering with traffic.
 3. Do not enter private property outside the construction limits without permission from the owner of the property.

1.10 UTILITY OWNERS

- A. Design Builder shall investigate all utilities (including Water Pollution Control Plant utilities) that may have Underground Facilities or other facilities in the vicinity of the Work.
- B. Utilities and their owners indicated in the Contract Documents are for Design Builder's convenience. Neither Owner nor Program Manager will be liable to Design Builder or any utility owner for failure to indicate utility, its owner, or complete and correct contact information in the Contract Documents where Design Builder's reasonable and ordinarily-exercised diligence would reveal the presence of the utility and its owner. Nothing in the Contract mitigates Design Builder's responsibilities under the General Conditions, Section 01 71 33 - Protection of the Work and Property, and Laws and Regulations, including "call before you dig" regulations.

1.11 PERMITS

- A. The Design Builder is responsible for obtaining all required permits for the Project (unless otherwise noted), including application development (including but not limited to exhibits, calculations, analysis, and data compilation), coordination as needed, submission of applications, and fees. The absence of a permit in the preliminary list does not relieve the Design Builder from obtaining the required permits for the Work.
1. The Owner will submit all VDEQ permits and is responsible for all direct communications with VDEQ and the Virginia Department of Health.
 2. The Design Builder will obtain, pay, complete permit submittal packages and provide the Owner with a copy of all required permits.
 3. Design Builder shall assist Owner with coordination and documentation required for VDEQ permits. This includes Certificate to Construct (CTC), Certificate to Operate (CTO), and Air Quality Permit.
- B. Demolition
1. Abatement of asbestos and lead in existing structures is required prior to any demolition work. The Design Builder is responsible for the testing of hazardous materials, as necessary.

1.12 WORK HOURS

- A. Unless authorized in advance by the Owner, on-site work shall be limited to 6:00 AM to 4:00 pm, Monday through Friday.
- B. On-site work shall comply with all local ordinances, including Chapter 15 of the Arlington County Code (Noise Control).
- C. The following are the Owner's legal holidays. Shutdown work is not permitted during the Owner's legal holidays.
 - 1. New Year's Day (January 1st).
 - 2. Martin Luther King, Jr. Day (3rd Monday in January).
 - 3. Presidents Day (3rd Monday in February).
 - 4. Memorial Day (Last Monday in May).
 - 5. Juneteenth (June 19th).
 - 6. Independence Day (July 4th).
 - 7. Labor Day (1st Monday in September).
 - 8. Veterans Day (November 11th).
 - 9. Thanksgiving Day (4th Thursday in November).
 - 10. Friday after Thanksgiving Day.
 - 11. Christmas Day (December 25th).

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION - (NOT USED)

END OF SECTION

SECTION 01 14 16

COORDINATION WITH OWNER'S OPERATIONS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Requirements for coordinating with Owner's operations during the Project.
 - 2. Requirements for tie-ins and shutdowns necessary to complete the Work without impact on Owner's operations except as allowed in this Specifications section.
- B. Scope:
 - 1. Design Builder shall provide all labor, materials, equipment, tools, and incidentals shown, specified, and required to coordinate with Owner's operations during the Work in accordance with this Specifications section.
 - 2. Except for shutdowns specified in this Specifications section, perform the Work such that Owner's facilities remain in continuous, satisfactory operation during the Project. Schedule and perform the Work such that the Work does not: impede Owner's production or processes, create potential hazards to operating equipment and personnel, reduce the quality of the facility's products or effluent, cause odors or other nuisances, affect the public health, safety, welfare, and convenience, and adversely affect the environment resulting in violation of Laws or Regulations.
- C. Related Requirements: Include but are not necessarily limited to:
 - 1. Section 01 11 00 - Summary of Work.
 - 2. Section 01 51 05 - Temporary Utilities.
 - 3. Section 01 75 00 - Start-up and Commissioning Procedures.

1.2 REFERENCES

- A. Terminology:
 - 1. Terminology indicated below are not defined terms and are not indicated with initial capital letters, but when used in this Specifications section, they have the meaning indicated below:
 - a. A "shutdown" is when a portion of the normal operation of Owner's facility, whether equipment, systems, or conduit (including piping and ducting), has to be temporarily suspended or taken out of service to perform the Work.
 - b. A "tie-in" is a connection of new Work to existing facilities, including connecting to existing conduits (including piping and ducting), electrical systems, structural elements, process/mechanical elements, and other physical connections. Some tie-ins may require that the tie-in be made without an associated shutdown.

1.3 SUBMITTALS

- A. Informational Submittals: Submit the following:
 - 1. Shutdown Planning Submittal:
 - a. For each shutdown and tie-in, submit an inventory of labor, materials, and equipment required to perform the shutdown and tie-in tasks, an estimate of time required to accomplish the complete shutdown including time for Owner to take down and start up existing equipment, systems, or conduits, and written description of steps required to complete the Work associated with the shutdown.
 - b. Furnish submittal to Owner not less than 30 days prior to proposed shutdown start date.
 - 2. Shutdown Notification:
 - a. After Owner's acceptance of shutdown planning Submittal and prior to starting the shutdown, submit written notification to Owner and Program Manager of date and time

each shutdown is to start. Submit notification not less than 7 days in advance of each shutdown.

1.4 GENERAL CONSTRAINTS

- A. The following constraints apply to coordination with Owner's operations:
1. Operational Access: Owner's personnel shall have access to equipment and areas of the facility that remain in operation.
 2. Temporary Partitions and Enclosures: Provide temporary partitions and enclosures necessary to maintain dust-free, heated, and ventilated spaces in areas of the facility that are adjacent to the Work and that must be kept operational. Comply with Section 01 51 05 - Temporary Utilities.
 3. Schedule and perform equipment and system start-ups in accordance with Section 01 75 00 – Start-up and Commissioning Procedures. Equipment and systems shall not be placed into operation on Friday, Saturday, Sunday, or holidays without prior approval of Owner.
 4. Dead End Valves or Conduits:
 - a. Provide blind flanges, watertight bulkheads, or valve at temporary and permanent terminuses of conduits, including piping and ducting.
 - b. Blind flanges and bulkheads shall be suitable for the service and braced and blocked, as required, or otherwise restrained as necessary or as required by Owner.
 - c. Temporary valves shall be suitable for their associated service. Where valve is provided at permanent terminus of conduit, including piping or ducting, also provide on downstream side of valve a blind flange with drain/flushing connection.
 5. Owner will assist Design Builder in dewatering process tanks, basins, conduits, and other work areas to be dewatered for shutdowns. Design Builder is responsible for confirming isolation and final cleaning. Flush, wash down, and clean tanks, basins, conduits (including piping), and other work areas.
 6. Maintain clean, dry work area by pumping and properly disposing of fluid and other material that accumulates in work areas.

1.5 TIE-INS

- A. Design Builder shall perform tie-ins necessary and required to complete the Work.

1.6 SHUTDOWNS

- A. Work requiring service interruptions for tie-ins shall be performed during scheduled shutdowns.
- B. Work that may interrupt normal operations shall be accomplished at times convenient to Owner unless otherwise indicated in the Contract Documents.
- C. If Design Builder's operations cause an unscheduled interruption of Owner's operations, immediately re-establish satisfactory operation for Owner.
- D. Fines and Penalties Imposed by Authorities Having Jurisdiction:
 1. Unscheduled shutdowns or interruptions of continued safe and satisfactory operation of Owner's facilities that result in fines or penalties by authorities having jurisdiction shall be paid solely by Design Builder if, in Owner's opinion, Design Builder did not comply with requirements of the Contract Documents, or was negligent in the Work, or did not exercise proper precautions in performing the Work and complying with applicable permits, Laws, and Regulations.
 2. Owner may deduct as set-offs such amounts from payments due Design Builder.
- E. Coordinate requirements for shutdowns with Design Professional, Program Manager and Owner. Where necessary, obtain Owner's interpretation or clarification before proceeding.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION

3.1 GENERAL PROVISIONS FOR COORDINATING WITH OWNER'S OPERATIONS

- A. When possible, combine multiple tie-ins into a single shutdown to reduce impacts on Owner's operations and processes.
- B. Operation of Existing Systems and Equipment during the Work:
 - 1. Do not shut off or disconnect existing operating systems or equipment, unless accepted by Owner in writing.
 - 2. Operation of existing systems and equipment will be by Owner unless otherwise specified or indicated.
 - 3. Where necessary for the Work, Design Builder shall seal or bulkhead Owner-operated gates and valves to prevent leakage that may affect the Work, Owner's operations, or both.
 - 4. Provide temporary watertight plugs, bulkheads, and line stops as necessary and as required. After completing the Work, remove seals, plugs, bulkhead, and line stops to satisfaction of Owner.
- C. Bypassing:
 - 1. Diversion of flows around treatment processes is not allowed.
- D. Performing the Work of this section constitutes Design Builder's approval of underlying work and field conditions prevailing at the time of the Work.

3.2 PREPARATION

- A. Shutdowns - General Preparation:
 - 1. Coordinate shutdowns with Owner and Program Manager.
 - 2. Submit shutdown planning Submittals and shutdown notification Submittals in accordance with this Specifications section's "Submittals" Article.
 - 3. Furnish at the Site, in close proximity to the shutdown and tie-in work areas, tools, materials, equipment, spare parts, both temporary and permanent, necessary to successfully perform the shutdown. Complete to the extent possible, prefabrication of piping and other assemblies prior to commencing the associated shutdown. Demonstrate to Owner's satisfaction that Design Builder has complied with such requirements before commencing the shutdown.
 - 4. Owner shall have no duty to Design Builder to advise Design Builder of inadequate preparations by Design Builder. Design Builder is solely responsible for the means, methods, procedures, techniques, and sequences of construction.
- B. Shutdowns of Electrical Systems:
 - 1. Comply with Laws and Regulations, including the National Electric Code.
 - 2. Design Builder shall lock out and tag circuit breakers and switches operated by Owner and shall verify that affected cables and wires are de-energized to ground potential before starting other Work associated with the shutdown.
 - 3. Upon completion of shutdown Work, remove the locks and tags and advise Owner that facilities are available for use.

3.3 DETAILED SHUTDOWN REQUIREMENTS

- A. Detailed shutdown requirements are provided below for the Early Work. Detailed shutdown requirements for other Work will be developed through the Design Implementation Stage.
- B. Centrate/Dewatering Building Drain Tie-in:
 - 1. General:
 - a. Equipment Out of Service During Shutdown: All process equipment in Dewatering Building.

- b. Procedure: Coordinate with Owner to shutdown dewatering facilities to perform tie-in.
 - c. Dates: No restriction other than during work week.
 - d. Time: Shutdown shall be performed at a time agreeable to the Owner.
 - 2. Prior to Shutdown:
 - a. Obtain Owner's acceptance of proposed shutdown planning Submittal and shutdown notification Submittal.
 - b. Bring necessary piping, couplings, valves, equipment, and appurtenances to the work areas.
 - c. Assist Owner in preparing to take equipment, tanks, basins, and conduits (including piping and ducting) temporarily out of service.
 - d. Coordinate other tie-ins to be performed simultaneously.
 - e. Install, check, and test the temporary pumping system.
 - 3. During Shutdown:
 - a. Provide necessary connections for the tie-in.
 - 4. Following Shutdown:
 - a. With Owner, return equipment and system to operation.
 - b. Verify functionality of new drain systems.
 - c. Verify that joints are watertight as applicable.
 - d. Repair joints that are not watertight.
- C. Centrate/Dewatering Building Drain Pump Bypass:
- 1. General:
 - a. After the temporary centrate/Dewatering Building drain is installed and operational and the existing centrate/Dewatering Building drain is decommissioned, provide temporary pumping (including all controls and piping) to pump centrate/Dewatering Building drains from the Dewatering Building to the Primary Clarifier Effluent channel for 2 events per year, 4 days per event.
 - b. Purpose: Temporary pumping of recycle streams to allow for raw influent sampling without recycles.
 - c. System Capacity: 500 GPM average, 1,000 GPM maximum. Design Builder to determine head requirements.
 - d. Fluid Pumped: Centrate/process drains.
 - e. Controls: Provide complete control system to prevent drain backup in the drain suction lines.
 - f. Suction Location: Centrate drain in Dewatering Building.
 - g. Discharge Location: Primary Clarifier effluent channel.
 - h. Flow Meter: Not required.
 - i. Provide provisions for accommodating foam from the pumped centrate, including containment.

END OF SECTION

SECTION 01 14 19

USE OF SITE

PART 1 - GENERAL

1.1 SUMMARY

1. Section Includes:
 1. Restrictions on Design Builder's use of the Site and premises.
 2. Restrictions on use of existing buildings and structures, including:
 - a. Permanent utilities and sanitary facilities.
 - b. Existing elevators.
 - c. Existing hoisting equipment.
 - d. Program Manager's and Design Builder field offices.
- B. Scope:
 1. Design Builder shall provide all labor, materials, equipment, tools, and incidentals shown, specified, and required to comply with restrictions on Design Builder's use of the Site and other areas.
- C. Related Requirements: Include but are not necessarily limited to:
 1. Section 01 51 05 - Temporary Utilities.
 2. Section 01 52 11 - Program Manager's and Design Builder Field Office.

1.2 QUALITY ASSURANCE

- A. Referenced Standards:
 1. American Society of Mechanical Engineers (ASME):
 - a. B30.2, Overhead and Gantry Cranes (Top Running Bridge, Single or Multiple Girder, Top Running Trolley Hoist).
 - b. B30.17, Overhead and Gantry Cranes (Top Running Bridge, Single Girder, Underhung Hoist).

1.3 SUBMITTALS

- A. Action Submittals: Submit the following:
 1. Shop Drawings:
 - a. Site plan showing proposed location of field offices, storage trailers, staging and laydown areas, temporary sanitary facilities, fuel and oil storage, fueling location, bottle gas storage facilities, and other areas Design Builder proposes to occupy.
 2. Testing Plans: Plan for load testing of Owner's hoisting equipment at the Site.
- B. Informational Submittals: Submit the following:
 1. Notices of Condition:
 - a. Notice of condition of Owner's existing hoisting equipment that Design Builder proposes to use, together with written evaluation of condition of equipment including condition of equipment's safety devices.
 2. Field Quality Control Submittals:
 - a. After completion of Design Builder's use of Owner's hoist(s), submit load test report, including copy of certifications of test weights.
 3. Hoist Manufacturer's Reports: Submit written report of results of each visit to Site by equipment manufacturer's service technician, including purpose and time of visit, tasks performed, and results obtained.
 4. Qualifications Statements:
 - a. Identification by name, qualifications, and experience of person that Design Builder proposes as Design Builder's operator of Owner's hoisting equipment.

1.4 USE OF PREMISES

- A. Limit use of premises at the Site to work areas shown or indicated on the Drawings and as specified in this Section. Do not disturb portions of the Site beyond areas of the Work.
 - 1. Limits:
 - a. Confine storage of materials and equipment, and locations of temporary facilities areas as follows:
 - 1) Design Builder's gang boxes and storage containers for tools in active use in the Work may be kept in reasonable quantity in the work areas as long as such items do not obstruct access to the facilities by Owner or occupants.
 - 2) Do not store items of any sort, whether temporarily or otherwise, in stairways and ramps, whether existing or under construction.
 - b. Do not enter the following areas:
 - 1) Passenger elevators at the Site, unless such use is expressly allowed by other provisions of this Specifications section.
 - 2. Prohibitions:
 - a. Do not use the Site for the following:
 - 1) Conducting Design Builder's business not related to the Project or other work for Owner.
 - 2) Overnight lodging or other, non-work use of the Site by workers or others for whom Design Builder is responsible, whether housed in recreational vehicles, other vehicles, tents, quarters in field offices or Design Builder-furnished temporary structures, or in work areas, is unacceptable.
- B. Use of Existing Buildings and Structures: Maintain existing buildings and structures in weather-tight condition throughout construction unless otherwise indicated in the Contract Documents. Protect buildings, structures, and occupants during construction.
 - 1. Use of Existing Utilities, Sanitary Facilities, and First-aid Facilities:
 - a. Refer to Section 01 51 05 - Temporary Utilities.
 - b. Do not use permanent sanitary facilities, whether provided under the Project or existing prior to the Project, at the Site.
 - c. Do not use permanent telephone, Internet, or other communications utilities and facilities at the Site, regardless of whether such services and facilities were provided under the Project or existed prior to the Project, except in cases of emergency.
 - d. Do not use Owner's or occupants' first-aid facilities, except in cases of medical emergency. Promptly replenish used items and supplies with items identical to those used.
 - 2. Use of Elevators:
 - a. Design Builder may use Owner's Dewatering Building Elevator for moving materials and equipment during construction. Elevators shall be available to Owner and occupants at all times unless otherwise arranged with Owner and Program Manager. Do not load elevators beyond posted capacity. Use of other elevators is not allowed.
 - 3. Use of Owner's Hoisting Equipment and Access to Work Areas for Loading:
 - a. General Provisions:
 - 1) For each of Owner's hoisting systems used by Design Builder, Design Builder shall thoroughly check the equipment and submit to Program Manager written certification that Design Builder believes the equipment is sufficient for the intended use and that all safety mechanisms are in place and operating. If existing equipment has one or more deficiencies, notify Program Manager before attempting to use such equipment.
 - 2) When one or more deficiencies are noted in existing hoisting equipment prior to Design Builder's use thereof, Owner may authorize Design Builder to perform remedial work on the hoisting equipment under a Change Order or allowance authorization (if any).

- 3) Design Builder's person operating Owner's hoisting equipment shall be experienced with and qualified in using such equipment. Assign one person to operate Owner's hoisting equipment and advise Program Manager in writing of the identity and experience of the designated person.
 - 4) Following completion of Design Builder's use of Owner's hoisting equipment, remedy damage and wear caused by Design Builder's use of equipment at no cost to Owner. Perform field quality control testing and inspections as indicated in Article 3.1 of this Specifications section; if not indicated in Article 3.1, perform field quality control tests as mutually agreed upon by hoisting equipment manufacturer's service technical and Program Manager. Submit results of field quality control testing to Program Manager.
 - 5) Design Builder may use the hoisting equipment for moving materials and equipment during construction. Hoisting equipment shall be available to Owner and occupants at all times unless otherwise arranged with Owner and Program Manager. Do not load hoisting equipment beyond posted capacity.
4. Program Manager and Design Builder's Field Offices:
 - a. Design Builder, Owner, and Program Manager shall agree on location of field offices during the Pre-Construction Services through the Design Builder's Site Logistics Plan.
 - b. The space of the existing field office complex is available for field office use. The Design Builder shall investigate adequacy of existing utilities, including water, sewer, and electrical for use with new field offices. If this space is to be reused, the existing temporary offices shall be removed and new facilities shall be provided.
- C. Promptly repair damage to premises, including existing structures, finishes, equipment, and other features, caused by construction operations. Upon completion of the Work, restore premises to specified condition; if condition is not specified, restore to pre-construction condition.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION - (NOT USED)

3.1 FIELD QUALITY CONTROL

- A. Site Tests of Owner's Hoisting Equipment after Use by Design Builder:
 1. After Design Builder has finished using Owner's hoisting equipment and associated controls, perform at the Site the following field quality controls, including load-test of Owner's hoisting equipment in accordance with this Article 3.1 and Laws and Regulations including applicable building code.
 2. Should testing indicate malfunction, make repairs and adjustments as necessary. Repeat testing and adjusting (at no additional cost to Owner) until, in Owner's opinion, Owner's hoisting equipment is functioning properly. Design Builder's obligations to remedy deficiencies in Owner's hoisting equipment will not be complete until field tests are successfully completed and acceptable documentation thereof is submitted to Program Manager.
 3. Load Test:
 - a. Perform load tests under supervision of hoisting equipment manufacturer's factory-trained service technician, in presence of Owner and Program Manager.
 - b. Weights used in load testing shall be certified by a state or local bureau of weights and measures. Submit weight certification as part of load test report.
 - c. Load testing shall comply with ASME B30.2 or ASME B30.17, as applicable, and the following:
 - 1) Power failure test with rated load: Load shall be held suspended when power is removed.

- 2) For Bridge Cranes: Bridge travel full length of runway with rated load, while verifying that all functions operate properly.
- 3) For Hoisting Equipment with Trolley: Trolley travel full length of rail or bridge (as applicable) with rated load, while verifying that all functions operate properly.
- 4) Hoist brake drift test with rated load: Lift weight, measure distance to floor, allow 5 minutes to elapse, and re-measure. Record the results measured. Criteria for Acceptance: No difference in measurements.
- 5) Motorized Hoists: Upper/lower limit switch test with no load.
- 6) Motorized Hoists: Emergency stop test with no load.
- d. Load Test Report: Submit results of load testing in a report that lists tests performed, data collected, results of each test, and corrective actions taken (if any). Test report shall be signed by manufacturer's service technician present during testing. Submittal shall include an affirmative statement that, to best of Design Builder's knowledge, information, and belief, the hoisting equipment is in equal or better condition than when Design Builder first used such hoisting equipment, and that hoisting equipment complies with Laws and Regulations and requirements of the Contract Documents.
4. Remedy damage to and wear imposed on Owner's hoisting equipment at no additional cost to Owner. Remedy equipment in accordance with the Contract Documents. If not addressed in the Contract Documents, remedy damage and defects to pre-construction conditions, in accordance with recommendations of hoisting equipment manufacturer's written recommendations, using parts in accordance with hoisting equipment manufacturer's written recommendations. Do not void warranties in effect.

END OF SECTION

SECTION 01 31 13
PROJECT COORDINATION AND DOCUMENTATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. General requirements for:
 - a. Project coordination.
 - b. Coordination meetings.
 - c. Coordination drawings and layout drawings.
 - d. Photographic documentation.
 - e. Project record documents.
- B. Scope:
 - 1. Design Builder shall coordinate the Work, whether performed by Design Builder's employees or by Subcontractors, Suppliers, or others for whom Design Builder is responsible, to provide Work in accordance with the Contract Documents.
 - 2. Coordinate the Work with testing entities and inspectors (whether hired by Design Builder, Owner, or others) employed on the Project, forces of Owner and other contractors retained by Owner, and other entities with which the Work needs to be coordinated.
 - 3. Requirements for preconstruction meetings are in Section 01 31 19 - Project Meetings.
 - 4. Requirements for construction progress meetings are in Section 01 31 19 - Project Meetings.
 - 5. Design Builder shall perform construction photography and submit construction photographic documentation, including providing all labor, materials, equipment, and services required.
 - 6. Design Builder shall provide all labor, materials, equipment, and services to establish, maintain, continuously update, and submit to Program Manager Project record documents in accordance with the Contract Documents.
- C. Related Requirements:
 - 1. Include, but are not necessarily limited to, the following:
 - a. Section 01 11 00 - Summary of Work.
 - b. Section 01 31 19 - Project Meetings.
 - c. Section 01 45 16 - Design Builder Construction Quality Control.

1.2 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordination – General:
 - a. In accordance with Section 01 11 00 - Summary of Work, Design Builder shall coordinate the Work with, and cooperate with, other contractors, utility owners and their contractors, Owner's workers at the Site, Program Manager, and other entities working at or adjacent to the Site.
 - 2. Advise other contractors (if any) of schedule for the Work to allow other contractors sufficient time to perform their work that must be performed prior to the Work. Coordinate and communicate with other contractors and other entities when the Work must be performed prior to the work of others and make good-faith efforts to avoid delaying work of others.
 - 3. Coordination, Inspection, and Observation to Ensure Quality:
 - a. Design Builder shall continuously inspect the Work throughout the Project to ensure that the Work complies with the Contract Documents. Quality Control requirements are detailed in Section 01 45 16 – Design Builder Construction Quality Control.

- b. Inspect (including testing, where required or necessary) substrates and surfaces on which the Work will be constructed, applied, adhered, or attached, to ensure substrate and surface conditions are appropriate for providing Work in accordance with the Contract Documents.
- B. Coordination Meetings:
 - 1. Design Builder's Coordination Meetings:
 - a. Schedule, attend, chair, and actively participate in coordination meetings deemed appropriate by Design Builder for purposes of coordinating the Work of Design Builder's employees, Subcontractors, Suppliers, and others for whom Design Builder is responsible.
 - b. Frequency, location, date, time, and duration of Design Builder's coordination meetings are at Design Builder's discretion. Record and distribute to attendees and other members of Design Builder's team a record of topics discussed, decisions made, and other relevant matters at Design Builder's coordination meetings.
 - c. Owner and Program Manager will not attend Design Builder's coordination meetings.
 - 2. Coordination Meetings with Other Contractors:
 - a. Coordination meetings between the Design Builder and separate contractors may be necessary while performing the Work. When such meetings are deemed necessary by Owner, either Owner or Program Manager will advise Design Builder in writing of the location, date, time, duration, and frequency of such coordination meetings.
 - b. Such coordination meetings, when held, are anticipated to be once per month or less-often, and held at the Site. During periods when increased coordination among the separate projects is necessary, such as when adjacent contractors are in close proximity to each other, the potential exists that more-frequent coordination meetings may be necessary, although such increased frequency is not anticipated to be for extended periods.
 - c. Design Builder's project manager and site superintendent shall attend such coordination meetings required by Owner.
 - d. Purpose of such coordination meetings will be to discuss scheduling and coordination of work by separate contractors and others as appropriate, sharing of space at the Site, and other coordination matters.
 - e. Owner and Program Manager will attend such coordination meetings.
 - f. Owner or Program Manager will chair the meetings and prepare and distribute to participants a record of the topics discussed and decisions made at such meetings.
- C. Coordination Drawings and Layout Drawings:
 - 1. With the Contract Documents and Shop Drawings, use coordination drawings and layout drawings for coordinating the Work of various trades.
 - 2. Where coordination drawings or layout drawings are to be prepared by Subcontractors, ensure that each Subcontractor maintains required personnel, implements, equipment, and systems at Subcontractor's office and at the Site (as deemed appropriate by Design Builder).
- D. Photographic Documentation:
 - 1. Coordinate construction photography with progress of the Work. Unless otherwise required by the Contract Documents, do not cover or conceal the Work until construction photographic documentation has been properly obtained.
 - 2. Coordinate dates and times for performing construction photography with Owner and Program Manager.
- E. Project Record Documents:
 - 1. Obtain necessary field measurements and record all data required for Project record documents before covering up the Work or building on subsequent phases of the Work.
 - 2. After obtaining measurements and information, promptly record the data and information on Project record documents.

3. Where a licensed, registered professional land surveyor is retained on the Project, whether by Design Builder or others, to perform field measurements and record other data for as-constructed Project or Site conditions, coordinate with such entity and schedule and perform the Work accordingly. Allow surveyor sufficient time and proper conditions for performing surveyor's work. Assist the surveyor as necessary in performance of surveyor's responsibilities.
4. Monthly Status Evaluation:
 - a. Not less than once per month, as a condition precedent to submitting Application for Payment, Design Builder's site superintendent will meet with either Program Manager at the Site to review status of Design Builder's Project record documents.
 - b. When Design Professional Program Manager directs corrections to Project record documents, promptly make such corrections on the Project record documents. Design Professional's or Program Manager's directions or lack thereof do not in any way relieve or mitigate Design Builder's sole responsibility for the accuracy, completeness, and clarity of Project record documents.

1.3 SUBMITTALS

- A. Informational Submittals: Submit the following:
 1. Preconstruction Photographic Documentation:
 - a. Submit Electronic Documents (still photographs and video).
 - b. Submit acceptable preconstruction photographic documentation prior to mobilizing to and disturbing the Site, and not later than the first progress payment request, unless other schedule for preconstruction photographic documentation is accepted by Program Manager.
 2. Construction Progress Photographic Documentation:
 - a. Submit Electronic Documents (still photographs and video).
 - b. Obtain construction progress photographic documentation at the frequency indicated in this Section. Coordinate submittal of construction progress photographic documentation with submittal of each progress payment requests.
 3. Qualifications Statements:
 - a. Photographer: When requested by Program Manager, prior to starting photographic documentation Work, submit photographer qualifications and record of experience. List of construction photography experience shall include for each project:
 - 1) Project name and location.
 - 2) Nature of construction.
 - 3) Photographer's client with contract information.
 - 4) Approximate duration of photographer's services.
- B. Closeout Submittals: Submit the following:
 1. Final Photographic Documentation:
 - a. Submit Electronic Documents (still photographs and video).
 - b. Submit acceptable final photographic documentation prior to requesting final inspection.
 2. Record Documentation:
 - a. Prior to readiness for final payment, submit to Program Manager one copy of Project's final record documents and obtain Program Manager's acceptance of same. Submit complete record documents; do not make partial Submittals without Program Manager's concurrence.
 - b. Submit the following Project record documents:
 - 1) Record Drawings, including those issued via Addenda, Change Orders, Work Change Directives, Field Orders, and allowance authorizations.
 - 2) Record project manual, including Specifications, indicating changes made via Addenda, Change Orders, Work Change Directives, Field Orders, and allowance authorizations.

- c. Submit record documents with transmittal letter on Design Builder's letterhead in accordance with requirements in Section 01 33 00 - Submittal Procedures.

1.4 CONSTRUCTION PHOTOGRAPHY – GENERAL

- A. Images - General:
 1. Photographic documentation shall be in color.
 2. Photographic images shall be suitably staged and set up ("framed"), focused, and have adequate lighting to illuminate the Work and conditions that are the subject of the photograph.
 3. For still photographs and video, use digital camera equipment with resolution of not less than 16.0-megapixels.
 4. Do not imprint date and time in the image.
- B. Photographic Electronic Documents:
 1. For each still photograph submitted, furnish high-quality, high-resolution digital image in JPEG (".jpg") file format compatible with Microsoft Windows 10 and higher operating systems.
 2. GPS geo-tagging enabled and recorded with each image.
 3. Image Resolution: Sufficient for clear, high-resolution digital images and prints. Minimum resolution shall be 600 dots per inch (dpi). Minimum size of digital images shall be:
 - a. Non-Aerial Still Photographs: 8 IN by 10 IN.
 - b. Aerial Photographs: 16 IN by 20 IN.
 4. Electronic Document image filename shall describe the image; do not submit filenames automatically created by camera. For example, acceptable Electronic Document image filenames are, "Equipment Bldg. – Looking West at Blower 2.jpg" and "Main St.-Elm St. Intersection – Looking North.jpg."
 5. Submittal of Electronic Documents Still Photographs:
 - a. When use of online document management system is required by the Contract Documents, also save copy of Electronic Documents of photographic documentation in a directory for Design Builder's photographic images. Each time photographs are obtained, save the associated Electronic Document files in a new subdirectory named for the date and basic subject of the photographs. For example, "2022-06-30 – Site Work" and "2023-03-21 – New Control Room".
 - b. Submit Electronic Documents of still photographs not more than 72 HRS after such images are obtained.

1.5 PRECONSTRUCTION PHOTOGRAPHIC DOCUMENTATION

- A. Preconstruction Photographic Documentation:
 1. Obtain and submit sufficient preconstruction photographic documentation to record conditions at the Site prior to construction. Photography shall document all work areas for the Project.
 2. Preconstruction photography is separate from construction progress photographic documentation required in this Section.
- B. Video:
 1. Record preconstruction video at same time preconstruction still photographs are taken.
 2. Preconstruction video shall show preconstruction conditions of all areas of the Project.
- C. If disagreement arises on the condition of the Site and insufficient preconstruction photographic documentation was submitted prior to the disagreement, restore the property in question to extent directed by Program Manager and to Program Manager's satisfaction.

1.6 CONSTRUCTION PROGRESS PHOTOGRAPHIC DOCUMENTATION

- A. Progress Photography:
 1. Take still photographs not less often than once per month.

2. Obtain and submit interior and exterior photographic documentation of each building and structure in the work area as directed by Program Manager at the time photographs are taken.

1.7 FINAL PHOTOGRAPHIC DOCUMENTATION

- A. Final Photography:
 1. Take still photographs at time and day acceptable to Program Manager. Do not take final photographs prior to Substantial Completion of the entire Project, removal of temporary facilities, and restoration. Work documented in final, still photographs shall be complete, including painting and finishing, furnishings, landscaping, and other visible Work.
 2. Obtain and submit aerial photographs of the Site following removal of temporary facilities and completion of restoration (including landscaping) using unmanned aerial vehicle (drone), with final photographic documentation Submittal. Submit one oblique photograph taken from each cardinal direction (i.e., north, south, east, and west). Obtain permits and approvals, as applicable, for required flyovers.
- B. Video:
 1. Record final video at same time final, still photographs are taken.
 2. Final video shall show final conditions of all areas of the Project.

1.8 MAINTENANCE OF RECORD DOCUMENTS

- A. Maintain in Design Builder's field office, in clean, dry, legible condition, complete sets of the following record documents:
 1. Drawings, Specifications, and Addenda;
 2. Shop Drawings, Samples, and other Submittals, including records of test results, approved or accepted as applicable, by Program Manager;
 3. Change Orders, Work Change Directives, Field Orders, allowance authorizations;
 4. copies of all interpretations and clarifications issued;
 5. photographic documentation;
 6. survey data; and
 7. all other documents pertinent to the Work.
- B. Provide files and racks for proper storage and easy access to Project record documents. File record documents in accordance with the edition of the Construction Specification Institute's *MasterFormat* used for organizing the project manual, unless otherwise accepted by Program Manager.
- C. Promptly make Project record documents available for observation and review upon request of Program Manager or Owner.
- D. Do not use Project record documents for any purpose other than serving as Project record. Do not remove Project record documents from Design Builder's field office without Program Manager's approval.

1.9 RECORDING INFORMATION ON PROJECT RECORD DOCUMENTS

- A. Recording Changes, Field Conditions, and Other Information – General:
 1. At the start of the Project, label each record document to be submitted as, "PROJECT RECORD" using legible, printed letters. Letters on record copy of the Drawings shall be 2 IN high.
 2. Keep record documents current consistent with the progress of the Work. Make entries on record documents within 2 working days of receipt of information required to record the change, field condition, or other pertinent information.
 3. Do not permanently conceal the Work until required information has been recorded for Project record documents.

4. Accuracy of record documents shall be such that future searches for items shown on the record documents may rely reasonably on information obtained from Design Professional-accepted Project record documents.
5. Marking of Entries:
 - a. Use erasable, colored pencils (not ink or indelible pencil) for marking changes, revisions, additions, and deletions to Project record documents.
 - b. Clearly describe the change by graphic line and make notations as required. Use straight-edge to mark straight lines. Writing shall be legible and sufficiently dark to allow scanning of record documents into legible electronic files in “portable document format” (.PDF) files.
 - c. Date each entry on record documents.
 - d. Indicate changes by drawing a “cloud” around the change(s) indicated.
 - e. Mark initial revisions in red. In the event of overlapping changes, use different colors for subsequent changes.

B. Drawings:

1. Record changes on copy of the Drawings. Submittal of Design Builder-originated or -produced drawings as a substitute for recording changes on a copy of the Drawings is unacceptable.
2. Record changes on plans, sections, elevations, schematics, schedules, and details as required for clarity, accuracy, and completeness, making reference dimensions and elevations (to Project datum) for complete record documentation.
3. Record actual construction including:
 - a. Depths of various elements of foundation relative to Project datum.
 - b. Horizontal and vertical location of Underground Facilities referenced to permanent surface improvements and Project elevation datum. For each Underground Facility, including pipe fittings, show and indicate dimensions to not less than two permanent, visible surface improvements.
 - c. Location of exposed utilities and appurtenances concealed in construction, referenced to visible and accessible features of structure and, where applicable, to Project elevation datum.
 - d. Changes in structural and architectural elements of the Work, including changes in reinforcing.
 - e. Field changes of dimensions, arrangements, and details.
 - f. Changes made in accordance with Addenda, Change Orders, Work Change Directives, Field Orders, and allowance authorizations.
 - g. Changes in details on the Drawings. Submit additional details prepared by Design Builder when required to document such changes.
4. Recording Changes for Schematic Layouts:
 - a. In some cases on the Drawings, arrangements of conduits, circuits, piping, ducts, and similar items are shown schematically and are not intended to portray physical layout. For such cases, the final physical arrangement shall be determined by Design Builder subject to acceptance by Program Manager.
 - b. Record on the Project record documents all revisions to schematics on the Drawings, including: piping schematics, ducting schematics, process and instrumentation diagrams, control and circuitry diagrams, electrical one-line diagrams, motor control center layouts, and other schematics when included in the Drawings. Show and indicate actual locations of equipment, lighting fixtures, in-place grounding system, and other pertinent data.
 - c. When dimensioned plans and dimensioned sections or elevations on the Drawings show the Work schematically, indicate on the Project record documents, by dimensions accurate to within 1 IN in the field, centerline location of items of Work such as conduit, piping, ducts, and similar items
 - 1) Clearly identify each item of the Work by accurate notations such as “cast iron drain”, “rigid electrical conduit”, “copper waterline”, and similar descriptions.

- 2) Show by symbol or by note the vertical location of each item of the Work; for example, “embedded in slab”, “under slab”, “in ceiling plenum”, “exposed”, and similar designations. For piping not embedded, also indicate elevation dimension relative to Project elevation datum.
 - 3) Descriptions shall be sufficiently detailed to be related to the Specifications.
 - d. Program Manager may furnish written waiver of requirements relative to schematic layouts shown on plans, sections, and elevations when, in Program Manager’s judgment, dimensioned layouts of Work shown schematically will serve no useful purpose. Do not rely on such waiver(s) being issued.
- 5. Supplemental Drawings:
 - a. In some cases, drawings produced during construction by Design Professional or Design Builder supplement the Drawings and shall be included with Project record documents submitted by Design Builder. Supplemental record drawings shall include drawings or sketches that are part of Change Orders, Work Change Directives, Field Orders, and allowance authorizations and that cannot be incorporated into the Drawings because of space limitations.
 - b. Supplemental drawings submitted with record drawings shall be integrated with the Drawings and include necessary cross-references between drawings. Supplemental record drawings shall be on sheets the same size as the Drawings.
- C. Specifications and Addenda:
 - 1. Mark each Specifications section to record:
 - a. Manufacturer, trade name, catalog number, and Supplier of each material and equipment item actually furnished.
 - b. Changes made by Addendum, Change Orders, Work Change Directives, Field Orders, and allowance authorizations.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION - (NOT USED)

END OF SECTION

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SECTION 01 31 19

PROJECT MEETINGS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Preconstruction, progress and other project meetings during the Construction Implementation Stage.

1.2 PRECONSTRUCTION MEETING

- A. Meet with the Owner and Program Manager for a pre-construction conference at a time mutually agreed upon after the contract is awarded but before any work is performed.
- B. The Program Manager will schedule a meeting of the Owner, Design Builder, Design Builder's Subcontractors, and their respective representatives.
 - 1. The purpose of the meeting will be to clarify construction contract administration procedures, establish lines of authority and communication, and identify duties and responsibilities of the parties.
- C. The Program Manager will schedule the pre-construction conference after receipt of the Design Builder's draft proposed schedule.
- D. Agenda:
 - 1. Procedural and Administrative:
 - a. Personnel and Teams:
 - 1) Designation of roles and personnel.
 - 2) Limitations of authority of personnel, including personnel who will sign Contract modifications and make binding decisions.
 - 3) Subcontractors and Suppliers in attendance.
 - 4) Authorities having jurisdiction.
 - b. Procedures for communications and correspondence, including electronic communication protocols.
 - c. Copies of the Contract Documents and availability.
 - d. The Work and Scheduling:
 - 1) General scope of the Work.
 - 2) Contract Times, including Milestones (if any).
 - 3) Phasing and sequencing.
 - 4) Preliminary Progress Schedule.
 - 5) Critical path activities.
 - e. Safety:
 - 1) Responsibility for safety.
 - 2) Design Builder's safety representative.
 - 3) Emergency procedures and accident reporting.
 - 4) Emergency contact information.
 - 5) Confined space entry permits.
 - 6) Hazardous materials communication program.
 - 7) Impact of Project on public safety.
 - 8) Site-specific hazards.
 - 9) Hot work procedures.
 - f. Permits.
 - g. Review of insurance requirements and insurance claims.
 - h. Coordination:
 - 1) Coordination of Subcontractors and Suppliers.

- 2) Construction coordinator (for projects with multiple prime construction contracts).
- 3) Coordination with Owner's operations.
- 4) Progress meetings – schedule and frequency.
- 5) Coordination meetings.
- i. Submittals:
 - 1) Current critical Submittals:
 - a) Preliminary Schedule of Submittals.
 - b) Other schedules (Progress Schedule, Schedule of Values).
 - c) Preconstruction photographic documentation.
 - d) List of proposed Subcontractors and Suppliers.
 - e) List of emergency contact information.
 - f) Notice of elements of Design Builder's safety program with which Owner and Program Manager are to comply.
 - g) Site use plan.
 - h) Form of Design Builder's site superintendent's daily reports.
 - 2) Work not eligible for payment without approved or accepted Submittals (as applicable).
 - 3) Submittal procedures.
 - a) Compliance with accepted Schedule of Submittals, including review of submittals requiring Owner review.
 - b) Actions required of Design Builder prior to furnishing Shop Drawings and other Submittals.
 - c) Design Builder's Submittal approval stamp required; Design Builder's coordination of Submittals.
 - d) Furnishing of Submittals.
 - e) Submittal types and meaning of Owner's, Program Manager's, and Design Professional's action on each.
 - f) Resubmittals—responsibility for, limitations on quantity.
 - 4) Identification of initial, critical Shop Drawings and product data.
 - 5) Construction photographic documentation.
- j. Substitutes, Design Changes and "Or-Equals":
 - 1) Product options.
 - 2) Procedures for proposing "or-equals".
 - 3) Procedures for proposing substitutes.
- k. Contract Modification Procedures:
 - 1) Requests for Interpretation.
 - 2) Written clarifications.
 - 3) Design Change Notifications (DCNs).
 - 4) Field Orders.
 - 5) Proposal Requests.
 - 6) Change Proposals.
 - 7) Work Change Directives.
 - 8) Contingency Authorizations.
 - 9) Allowance Change Authorizations.
 - 10) Change Orders.
 - 11) Differing site conditions or discovery of Hazardous Environmental Condition.
 - 12) Substantiating and documenting Change Proposals and Claims.
 - 13) Claims.
- l. Progress Payment:
 - 1) Owner's Project financing and funding, as applicable.
 - 2) Owner's tax-exempt status.
 - 3) Preliminary Schedule of Values.
 - 4) Procedures for measuring for payment (Unit Price Work).
 - 5) Retainage.

- 6) Progress payment procedures; documents to accompany Applications for Payment.
- 7) Payment for stored items not yet installed.
- 8) Date of Owner's payments; payment is due.
- 9) Prevailing wage requirements and interviews.
- m. Subcontractors and Suppliers:
 - 1) List of proposed Subcontractors and Suppliers; monthly updates.
 - 2) Coordination and management.
 - 3) Subcontracts and purchase orders.
- n. Testing and inspections:
 - 1) Owner-hired and Design Builder-hired.
 - 2) Identification of Design Builder-hired special inspectors.
 - 3) Responsibility for advising testing entity and special inspectors of need for services.
 - 4) Results of code-required special inspections and tests.
 - 5) Prompt remedy of apparent defects.
 - 6) Notice of defective Work.
 - 7) Remedy of defective Work.
 - 8) Defective Work not eligible for payment.
 - 9) Covering up defective Work.
 - 10) Cost responsibility for defective Work and retesting/re-inspection.
- o. Envision update.
- p. Disposal of demolition materials.
- q. Record documents.
- r. Preliminary discussion of Contract closeout:
 - 1) Procedures for Substantial Completion.
 - 2) Partial utilization procedures; property insurance.
 - 3) Contract closeout requirements.
 - 4) Correction period; duration of Design Builder's general warranty and guarantee.
 - 5) Duration of bonds and insurance.
- 2. Code Officials:
 - a. Municipal licenses.
 - b. Municipal permits required.
 - 1) Permits required and status.
 - 2) Inspections for building code official.
 - c. Right-of-way work permits; status of occupancy permit(s).
 - d. Environmental permits:
 - 1) Stormwater discharges during construction.
 - 2) Erosion and sediment control permit.
 - 3) Spill prevention control and countermeasures plan (40 CFR 112).
 - 4) Air quality permitting.
- 3. Site Mobilization (if not covered in a separate meeting):
 - a. Working days, working hours, and overtime.
 - b. Use of Site and other areas; use of existing facilities; delivery coordination.
 - c. Coordination with other projects.
 - d. Field offices, storage trailers, and staging areas.
 - e. Temporary facilities.
 - f. Temporary utilities and limitations on utility use.
 - g. Utility company coordination.
 - h. Access to Site, access roads, and parking for construction vehicles.
 - i. Traffic controls.
 - j. Temporary controls:
 - 1) Erosion and sediment control; stormwater pollution prevention plans.
 - 2) Dust control and air pollution control (including emissions control).
 - 3) Water control (stormwater, surface water, groundwater).

- 4) Water pollution control; spill prevention control and countermeasures plan.
 - 5) Solid waste control.
 - 6) Pest control.
 - 7) Other temporary controls.
 - k. Security; temporary security fencing (where required).
 - l. Storage of materials and equipment to be incorporated into the Work.
 - m. Protection of the Work and property; protective barriers.
 - n. Field engineering:
 - 1) Reference points and benchmarks.
 - 2) Surveys and layouts.
 - 3) Professional services for Design Builder's means and methods (not delegated design).
 - 4) Design Builder's site superintendent's daily records and submittal requirements.
 - o. Site maintenance during the Project:
 - 1) Progress cleaning; removal of trash and debris.
 - 2) Snow and ice removal.
 - 3) Maintenance and cleaning of existing access roads and parking areas.
 - p. Restoration.
 - 4. Next meeting.
 - 5. Site visit, as necessary.
- E. The Design Builder shall compile meeting minutes from the transcribed record of the meeting and electronically distribute copies to all participants.
- F. Pre-Construction Conference Submittals:
- 1. The names and telephone numbers of Design Builder's Superintendent and Office Manager.
 - 2. List of personnel authorized to sign change orders, allowance change authorizations, and receive progress payments.
 - 3. The name, address and telephone numbers of two or more persons employed by the Design Builder who can be reached at any time of the day or night to handle emergency matters.
 - 4. A list of all subcontractors that will work on the project, a description of work they will perform, and a contact list for each subcontractor with phone numbers and address.
 - 5. A draft proposed Construction Schedule.
 - 6. Safety Data Sheets for all hazardous chemical products to be used by the Design Builder on this project.
 - 7. Temporary Erosion and Sediment Controls Plan.
 - 8. Traffic Control Plan.

1.3 PROGRESS MEETINGS

- A. Monthly progress meetings will be held at a location determined by the Program Manager, unless otherwise arranged.
- B. Attendees will include the Owner, Program Manager, Design Builder, subcontractors, and suppliers' representatives as may be needed, other Contractors working at the site, and other interested or affected parties. Meetings shall be led by the Design Builder.
- C. Preliminary Agenda: Be prepared to discuss in detail the topics indicated below. Revised agenda, if any, will be furnished to Design Builder prior to associated progress meeting(s). Progress meeting agenda may be modified by Program Manager during the Project as necessary.
 - 1. Review, comment, and amendment (if necessary) of minutes of previous progress meeting.
 - 2. Review of progress since the previous progress meeting.
 - 3. Planned progress through next progress meeting.
 - 4. Review of Progress Schedule:
 - a. Review of the Contract Times; Design Builder's ability to comply with Contract Times.
 - b. Identification of critical path activities.
 - c. Schedules for fabrication and delivery of materials and equipment.

- d. Corrective measures, if necessary, including recovery schedule(s).
 - 5. Submittals:
 - a. Review status of critical Submittals.
 - b. Review revisions to Schedule of Submittals.
 - 6. Contract Modifications:
 - a. Requests for interpretation.
 - b. Written clarifications.
 - c. DCNs.
 - d. Field Orders.
 - e. Proposal Requests.
 - f. Change Proposals.
 - g. Work Change Directives.
 - h. Allowance Change Authorizations.
 - i. Change Orders.
 - j. Claims.
 - 7. Applications for progress payments:
 - a. Status and deadline for submittal.
 - b. Stored materials and equipment; observation by Program Manager; documents required.
 - c. Set-offs to which Owner is entitled (as applicable).
 - d. Other matters related to progress payments.
 - 8. Problems, conflicts, and observations.
 - 9. Quality standards, testing, and inspections.
 - 10. Coordination between Project participants.
 - 11. Site management issues, including vehicular access and parking, traffic control, security, status of temporary controls and temporary utilities, site maintenance and cleaning, and other Site matters.
 - 12. Safety and protection.
 - 13. Permits.
 - 14. Construction photographic documentation.
 - 15. Record documents status.
 - 16. Completion matters (as appropriate):
 - a. Status of checkout, start-up, field quality control activities.
 - b. Status of training of facility O&M personnel and O&M manuals.
 - c. Partial utilization; inspection for Substantial Completion.
 - d. Punch list status (as applicable).
 - e. Other closeout matters (if any).
 - 17. Other business.
- D. Bring a 6-week look ahead schedule to each meeting, including the following items:
- 1. Work completed last 2 weeks.
 - 2. Work anticipated for the next 4 weeks ("Look Ahead").
 - 3. Subcontractors on-site the prior week.
 - 4. Subcontractors scheduled on-site for the next 4 weeks.
 - 5. Contract document deficiencies or questions noted during prior week.
 - 6. Anything that could impede the progress of the work or affect the critical path on the project schedule.
 - 7. Corrective measures and procedures planned to regain planned schedule, cost or quality assurance, if necessary.
 - 8. Report of any accidents, and any site safety issues that need to be addressed.
- E. Other Agenda items to be discussed:
- 1. Review and revise as necessary and approve minutes of previous meetings.
 - 2. Status of submittals of equipment and shop drawings.
 - 3. Identify problems that impede planned progress.

4. Other current business.
- F. Revision of Minutes:
 1. Unless revisions to published minutes are in writing prior to the next regularly scheduled progress meeting, the minutes will be accepted as properly stating the activities and decisions of the meeting.
 2. Revisions to minutes shall be settled as priority item of "old business" at the next regularly scheduled meeting.
- G. Minutes of Meeting:
 1. The Design Builder shall compile minutes of each project meeting and electronically distribute copies to all participants.

1.4 OTHER MEETINGS

- A. Other meetings will be required to facilitate progress of the Work. These include, but are not limited to the following:
 1. Weekly Plant Coordination Meetings:
 - a. Coordinate and schedule with the Owner and Program Manager weekly plant operations coordination meetings.
 - b. Develop a standing agenda, to include at a minimum the following topics:
 - 1) Safety – identify areas of current focus.
 - 2) Upcoming schedule – 2 week look-ahead.
 - 3) Utility tie-ins, shutdowns, road closures, and other plant impacts.
 - 4) Security and site maintenance.
 - 5) Coordination with other companies and contracts.
 - 6) Quality control.
 - 7) Training and commissioning.
 - 8) Action items.
 - c. Meetings shall be no more than 1-hour in duration.
 2. Quality Control Meetings. See Section 01 45 16.
 3. Facility Start-up Planning and Coordination Meeting. See Section 01 75 00.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION - (NOT USED)

END OF SECTION

SECTION 01 32 16

CONSTRUCTION PROGRESS SCHEDULE

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
1. Administrative and procedural requirements for Design Builder's construction Progress Schedules and related Submittals, including:
 - a. Administrative requirements regarding progress Schedules.
 - b. Qualifications of Progress Schedule preparer and related personnel.
 - c. Submittals of Progress Schedules and associated schedule-related Submittals.
 - d. Initial Progress Schedules.
 - e. Look-ahead schedules.
 - f. Progress Schedule updates.
 - g. Narrative reports.
 - h. Cost-loading of Progress Schedules.
 - i. Time impact analyses.
 - j. Recovery schedules.
- B. Scope:
1. Design Builder shall prepare and submit to Program Manager required Progress Schedules and related Submittals, as required by this Section and elsewhere in the Contract Documents. Maintain and update Progress Schedules and related Submittals throughout the Project.
 2. Progress Schedule shall be cost-loaded.
 3. Owner, Program Manager, and others involved with the Project have the right to rely on accuracy of Design Builder-prepared Progress Schedule.
 4. Program Manager's review or acceptance of the Progress Schedule or related Submittals, and Program Manager's comments on and expressed opinions concerning activities in the Progress Schedule and related Submittals, and progress of the Work, does not control Design Builder's independent judgment concerning construction means, methods, techniques, sequences and procedures, unless the associated means, method, technique, sequence, or procedure is required by the Contract Documents. Design Builder is solely responsible for complying with the Contract Times.
- C. Related Requirements: Include, but are not necessarily limited to:
1. Section 01 11 00 - Summary of Work.
 2. Section 01 14 16 - Coordination with Owner's Operations.
 3. Section 01 31 19 - Project Meetings.

1.2 REFERENCES.

- A. Defined Terms and Terminology:
1. Defined terms, indicated with initial capital letters, are indicated in the General Conditions, as may be modified by the Supplementary Conditions.
 2. Terminology: The following are not defined terms and are not indicated with initial capital letters but, when used in this Section, have the meaning indicated below, whether applied to the singular or plural thereof.
 - a. "Activity" is an element of the Work that has the following specific characteristics: consumes time, requires resources, has a definable start and finish, is assignable, and is measurable.
 - b. "Baseline Progress Schedule" means, in addition to the General Conditions' definition of "Progress Schedule", the version of the Progress Schedule (for the entire Project)

initially accepted by the Program Manager. In the event of subsequent modifications to the Project, Design Builder, and Program Manager may mutually agree that a subsequent revision of the Progress Schedule constitutes a new baseline Progress Schedule that supersedes the prior baseline Progress Schedule.

- c. “Constraint” means an imposed date on the Progress Schedule or an imposed time between activities. The Contract Times are constraints.
- d. “CPM Progress Schedule” means, in addition to the General Conditions’ definition of “Progress Schedule”, a computerized Progress Schedule in critical path method (CPM) format, for the entire Work, indicating interrelationships between elements of the Work; indicates sequences, dates, and durations for Work performed to date; indicates sequences, dates, and duration for incomplete Work yet to be performed; indicates constraints; and indicates the critical path for the Work.
- e. “Critical path” is the continuous chain of activities, from start to completion of the Work, with the longest duration for completion within the Contract Times.
- f. “Early finish” means the earliest date an activity can finish according to the assigned relationships among the activities in the Progress Schedule.
- g. “Early start” means the earliest possible date an activity can start according to the assigned relationships among activities in the Progress Schedule.
- h. “Float” means the time difference between the calculated duration of an activity chain on the Progress Schedule and the critical path.
- i. “Late finish” means the latest date an activity on the Progress Schedule can finish without extending the Contract Times.
- j. “Late start” means the latest date an activity on the Progress Schedule can start without extending the Contract Times.
- k. “Network diagram” means a time-scaled logic diagram showing the durations and relationships of the activities on the Progress Schedule.
- l. “Schedule date” (and similar terms, whether used in this Section or Project communications related to Progress Schedules) mean the “early start” and “early finish” date for the associated activity. “Late start” and “late finish” dates are for determining float and do not represent the schedule dates.
- m. “Total float” means the total number of days an activity (or chain of activities) on the Progress Schedule can be delayed without affecting the Contract Times.
- n. “Work areas” and “work system” means a logical breakdown of the Work elements or a group of activities which, when collectively assembled, are readily identifiable on the Project (for example: yard piping, a structure or building, a treatment process, or other logical grouping).

1.3 ADMINISTRATIVE REQUIREMENTS

- A. General Provisions on Progress Schedules:
 - 1. This Section augments requirements for the Progress Schedule, and Design Builder’s control of the Work, indicated in the General Conditions, as may be augmented by the Supplementary Conditions.
- B. Use of Float:
 - 1. Float belongs to the Project and may be used by Design Builder or Owner to accommodate changes in the Work, or to mitigate the effect of events delaying the Work or compliance with the Contract Times.
 - 2. Changes or delays that influence activities that have float and do not extend the critical path do not justify changes in the Contract Times.
 - 3. Float Suppression: Pursuant to float sharing requirements of this Section, use of float suppression techniques in Progress Schedules, such as preferential sequencing logic, special lead/lag logic restraints, and extended activity durations are unacceptable.

C. Factors Affecting the Progress Schedule:

- a. In preparing and updating the Progress Schedule, take into consideration the following and other factors that have the potential to affect completion of the Work within the Contract Times:
 - 1) preparing and signing subcontracts and purchase orders,
 - 2) complying with Submittal requirements and Submittal review times,
 - 3) fabricating materials and equipment,
 - 4) source quality control (including required shop tests and inspections),
 - 5) shipping and deliveries,
 - 6) field quality control (including required field tests and inspections at the Site),
 - 7) Work by Subcontractors,
 - 8) coordination with others (such as other contractors including those indicated in Section 01 11 00 – Summary of Work, utility owners, and owners of transportation facilities),
 - 9) compliance with Laws and Regulations and permits,
 - 10) availability of construction equipment and machinery,
 - 11) abilities of workers,
 - 12) weather conditions,
 - 13) condition of the Site,
 - 14) seasonal restrictions,
 - 15) restrictions in operations at the Site and coordination with Owner's operations,
 - 16) training of facility operation and maintenance personnel,
 - 17) checkout,
 - 18) start-up, and
 - 19) adjusting and balancing.

D. Scheduling Workshop Conferences:

1. Prior to preparing the preliminary Progress Schedule, Design Builder shall participate with Program Manager and Owner in one workshop conference, up to 4 HRS in duration, to discuss technical requirements relative to sequencing and organizing the Work, Progress Schedule development, and Progress Schedule procedures.
2. Design Builder and Program Manager will mutually agree on the date, time, and location of scheduling workshop conference(s).
3. Required Attendees:
 - a. Design Builder's project manager, site superintendent, and Progress Schedule preparer.
 - b. Program Manager
 - c. Owner may attend scheduling workshop conferences.
4. Program Manager will prepare minutes of the scheduling workshop conferences and distribute minutes to conference attendees and others as deemed appropriate by Program Manager.

1.4 QUALITY ASSURANCE

A. Qualifications:

1. Progress Schedule Preparer:
 - a. Design Builder shall retain services of a scheduling consultant to, or shall self-perform, preparation and updating of the Progress Schedule using qualified personnel experienced in: (1) construction scheduling, (2) the scheduling software required for the Project, and (3) serving as Progress Schedule preparer on construction projects of similar type, size, and complexity as the Project.
 - b. Progress Schedule preparer shall have not less than 5 years' experience using the required schedule software on construction projects of similar type, size, and complexity as the Project.

- c. Prior to engaging a scheduling consultant or using a qualified, experienced employee, submit to Program Manager the following qualifications information:
 - 1) Name, employer, and business address of proposed Progress Schedule preparer and names, employer(s), and business address(es) of personnel who will be assigned to assist the preparer in developing and updating the Progress Schedule.
 - 2) Information sufficient to demonstrate that proposed Progress Schedule preparer and scheduling assistant personnel possess qualifications complying with this Section. For each person assigned, submit list of similar type, size, complexity, and construction contract amount for each project, together with project name, owner, location, and dates, and name(s) of scheduling personnel involved.
- d. Program Manager's Review of Qualifications:
 - 1) Program Manager will complete review of Progress Schedule preparer qualifications within 3 business days of Program Manager's receipt of such qualifications.
 - 2) If qualifications are unacceptable, submit qualifications of acceptable personnel within 3 business days of Design Builder's receipt of Program Manager's non-acceptance.
 - 3) Program Manager's acceptance or non-acceptance of qualifications does not reduce or mitigate Design Builder's obligations under the Contract Documents.
- e. If Design Builder intends to replace any Progress Schedule preparer personnel previously acceptable to Program Manager, submit qualifications of proposed replacement(s) in accordance with this Article.

1.5 SUBMITTALS

- A. Informational Submittals: Submit the following:
 - 1. Qualifications Statements:
 - a. Submit qualifications of Progress Schedule preparer, and other personnel that will assist Progress Schedule preparer in preparing and updating the Progress Schedule.
 - b. Obtain Program Manager's acceptance of qualifications prior to starting preparation of preliminary Progress Schedule.
 - 2. Planned Work Schedule:
 - a. Submit initial and updated (as necessary) planned work schedule, in accordance with this Section's "Progress Schedule" Article.
 - 3. Progress Schedule:
 - a. Preliminary Progress Schedule with associated narrative report.
 - b. Acceptable Progress Schedule ("baseline Progress Schedule") with associated narrative report.
 - 4. Look-Ahead Schedules:
 - a. Submit 6-week look-ahead schedule at each construction progress meeting, in accordance with this Section's "Look-Ahead Schedules" Article.
 - 5. Progress Schedule Updates:
 - a. Progress Schedule updates shall comply with requirements of this Section, and shall include updated Progress Schedule and narrative report.
 - b. Submit updated Progress Schedule prior to each associated construction progress meeting. When a Progress Schedule remains unchanged from one construction progress meeting to the next, submit written statement expressly so stating. In addition to monthly Progress Schedule update Submittals, also bring to construction progress meetings the number of paper copies of the updated Progress Schedule indicated in Section 01 31 19 - Project Meetings.
 - 6. Time Impact Analyses: Submit in accordance with this Section.
 - 7. Recovery Schedules: Submit in accordance with this Section.

1.6 INITIAL CONSTRUCTION IMPLEMENTATION STAGE PROGRESS SCHEDULES

- A. Applicability of this Article:
 - 1. This Article addresses the initial Progress Schedules and selected, related Submittals required at the outset of the Project's early work and/or construction phase, through Program Manager's acceptance of the Progress Schedule and its related Submittals.
 - 2. Subsequent Progress Schedule Submittals, including Progress Schedule updates, recovery schedules, and other schedule-related Submittals, shall comply with software, type, organization, content, and similar requirements of this Article.
- B. Type and Organization of Progress Schedules:
 - 1. Prepare Progress Schedules using Oracle Primavera P6 software, unless other scheduling software is acceptable to Program Manager.
 - 2. Sheet Size: 22 IN by 34 IN, unless otherwise accepted by Program Manager.
 - 3. Time Scale: Indicate first date of each work week.
 - 4. Activity Assignments and Designations:
 - a. Limit activities, where possible, excluding fabrication of materials and equipment, to durations not longer than 20 days. Activities shall be definable and measurable. For example, an activity described only as "Concrete" will likely be unacceptable.
 - b. Assign to each activity an appropriate, unique numerical designation and description.
 - c. Numerical designation shall incorporate the associated Specifications section number.
 - d. Activity description shall include sufficient detail to clearly communicate the intended activity. Descriptions shall include identifiers for physical locations of work area or work system, such as (where appropriate) column lines, stationing (for linear projects), and elevations. Indicate unique description for each activity.
 - e. Group deliveries of materials and equipment into a separate sub-schedule that is part of the Progress Schedule.
 - f. Group construction into work area sub-schedules (that are part of the Progress Schedule) by activity.
 - g. Clearly indicate, as activities separate from installation, necessary and required curing periods.
 - 5. Organization of Progress Schedules:
 - a. Indicate interfaces and dependencies with preceding, concurrent, and follow-on activities, including those associated with the Work, other contractors at the Site, Owner, Program Manager, authorities having jurisdiction, and others as appropriate. Clearly indicate activities not under Design Builder's control.
 - b. Progress Schedules shall be CPM Progress Schedules.
 - c. Indicate on the separate Schedule of Submittals dates for submitting and reviewing design submittals, Shop Drawings, product data Submittals, Samples, and other required Submittals. Coordinate Progress Schedule with the Schedule of Submittals.
 - d. Clearly indicate the critical path on the Progress Schedule.
- C. Planned Work Schedule:
 - 1. Within 30 days of the GMP Amendment, indicate to Program Manager the work days and hours proposed by Design Builder. Also indicate planned non-work days, such as Design Builder's holidays, weekends, and the like.
 - 2. Enforce Subcontractors' and Suppliers' (when at the Site) compliance with Design Builder's work schedule submitted to Program Manager.
 - 3. In the event of changes, submit to Program Manager revised work schedule. Furnish such Submittal not less than 3 days prior to changing Design Builder's work schedule, except in event of unanticipated emergency.
- D. Preliminary Progress Schedule:
 - 1. Within 10 days after the GMP amendment, Design Builder shall submit to Program Manager the preliminary Progress Schedule covering the entire Project, with associated schedule-related Submittals required in this Section's "Submittals" Article.

2. Submit preliminary Progress Schedule in accordance with Section 01 33 00 - Submittal Procedures. Also submit preliminary Progress Schedule in its native (executable) format generated by the scheduling software.
 3. Program Manager will perform timely review of the preliminary Progress Schedule.
 4. Preliminary Progress Schedule shall comply with the Contract Documents relative to Progress Schedules, but need not be cost-loaded.
- E. Initial Acceptance of Progress Schedule:
1. Not less than 10 days before submission of the first Application for Payment during the Construction Implementation Stage, a scheduling conference attended by Design Builder, Progress Schedule preparer, Program Manager, and others as appropriate will be held at the Site to review for acceptability to Program Manager the preliminary Progress Schedule and associated schedule-related Submittals. Following the scheduling conference, Design Builder shall have 10 days to make corrections and adjustments and to complete and resubmit the Progress Schedule and associated schedule-related Submittals. Design Builder will not be eligible for first progress payment until acceptable Progress Schedule and associated schedule-related Submittals are submitted to Program Manager and are acceptable to Program Manager.
 2. Submit acceptable Progress Schedule, together with associated schedule-related Submittals in accordance with this Section's "Submittals" Article and Section 01 33 00 - Submittal Procedures. Also submit acceptable form of Progress Schedule in its native (executable) format generated by the scheduling software.
 3. The Progress Schedule will be acceptable to Program Manager if it provides an orderly progression of the Work to completion within the Contract Times, in accordance with the Contract Documents.
 4. Initially-accepted Progress Schedule shall be identified as the baseline Progress Schedule.
 5. Basis for Payments:
 - a. For Lump Sum Work:
 - 1) After the cost-loaded Progress Schedule is accepted by Program Manager, each of Contractor's progress payment request, for Work compensated on a lump sum basis will be on the basis of earned revenue as indicated in updates of the cost-loaded Progress Schedule and other relevant provisions of the Contract Documents.
 - 2) Until cost-loaded Progress Schedule is acceptable to Program Manager, basis for Contractor's progress payment requests for lump sum Work will be manually determined by Contractor, subject to Program Manager's recommendation to Owner, based on the Schedule of Values accepted by Program Manager.
 - b. Unit Price Work and Cost-Plus-a-Fee:
 - 1) Determination of amounts eligible for payment for Unit Price Work and Work compensated on the basis of cost-plus-a-fee will be in accordance with the applicable provisions of the Contract Documents. Payment for such Work will not be determined using the cost-loaded Progress Schedule accepted by Program Manager.
- F. Planned Completion Different from the Contract Times:
1. If the Progress Schedule accepted by Program Manager indicates completion date(s) different than the Contract Times, the Contract Times are not thereby changed.
 2. Where the Progress Schedule accepted by Program Manager indicates date(s) by which the Work, or designated portion thereof, will (a) achieve a Contractually stipulated Milestone, or (b) be substantially complete, or (c) all the Work will be complete and ready for final payment, earlier than the Contract Times ("early completion date"), Design Builder shall, not less than 180 days prior to the associated Contract Time, prepare and submit a Change Proposal setting forth Design Builder's request to modify the Contract Times to an earlier date, which may or may not be the same as the scheduled early completion date. The Contract Times can be modified only via a Change Order.

3. In the event the Progress Schedule accepted by Program Manager indicates one or more early completion dates and the Contract Times have not been reduced, Owner may, at Owner's option, use available float without Owner being liable for Design Builder's costs to remain on-site, mobilized, and working (whether on the original scope of the Work or for modified Work) beyond the scheduled early completion date(s), as long as the Work will be completed within the Contract Times.
4. When the Work will not be completed within the Contract Times, the Contract Documents' provisions concerning delays and changes in the Contract Times govern.

1.7 LOOK-AHEAD SCHEDULES

A. Look-Ahead Schedules – General:

1. Look-ahead schedules are short-duration, often more-detailed, time-based schedules for the Work to be performed during the coming month or other required span of the look-ahead schedule.
2. Purpose of look-ahead schedules is to present for Project stakeholders, including Owner, Program Manager, Owner-hired testing and inspection entities, other contractors working at or adjacent to the Site, utility owners, transportation facility owners, and others as necessary, the Design Builder's detailed, time-based plan for performing the Work during the period covered by the time span of the look-ahead schedule.
3. This Section's "Submittals" Article indicates the required span and frequency of look-ahead schedules.
4. Each look-ahead schedule shall be fully coordinated and consistent with the current Progress Schedule update.
5. Submit look-ahead schedules concurrent with construction progress meetings and Section 01 33 00 - Submittal Procedures. Also submit look-ahead schedules in native (executable) format.
6. As handouts, bring to each construction progress meeting the quantity of paper copies of the new look-ahead schedule indicated in Section 01 31 19 - Project Meetings. If quantity is not indicated in Section 01 31 19 - Project Meetings, furnish quantity equal to typical number of attendees of progress meetings.

B. Organization and Content of Look-Ahead Schedules:

1. Look-ahead schedules shall be prepared from the current Progress Schedule update, of the same type, using the same software, content, and organization required in this Section for initial Progress Schedules.
2. Activity designations on look-ahead schedules shall incorporate the associated activity designations from the Progress Schedule.
3. Sheet Size: Format look-ahead schedules to sheet size of 11 IN by 17 IN, unless other sheet size is acceptable to Program Manager.
4. Look-ahead schedules should generally be more-detailed than the Progress Schedule. Activity durations on look-ahead schedules should not exceed 5 days.

1.8 PROGRESS SCHEDULE UPDATES

A. Updates – General: The procedures below apply to both Design Implementation Stage and Construction Implementation Stage schedule updates.

1. Update the Progress Schedule not less-often than once per month. If during progress of the Work events develop that necessitate changes in the initially accepted Progress Schedule (baseline Progress Schedule), identify updated Progress Schedules sequentially as "Progress Schedule Revision "1", "2", "3", and continuing in sequence as required. Number the Progress Schedule submittals in accordance with Section 01 33 00 - Submittal Procedures.
2. Progress Schedule updates shall comply with this Section's requirements for initial progress Schedule, relative to type, required software, organization, content, and related matters.
3. Starting with first Progress Schedule update, and continuing with each subsequent update, indicate on the Progress Schedule the actual start and finish dates of each activity that is completed or is currently underway. Inaccurate representation of completed or in-progress

activities will be grounds for Program Manager's non-acceptance of the Progress Schedule update.

4. Design Builder's Progress Schedule update shall include a narrative report in accordance with this Section. Narrative report shall include description of: progress achieved to date and status of each work area of the Project, planned progress for the upcoming period, identification of the critical path, current or potential delays, Change Orders (pending and approved since the previous Progress Schedule update), and other problems associated with performing the Work in accordance with the baseline Progress Schedule and complying with the Contract Documents, including the Contract Times. Indicate in the narrative report delays that have occurred since the previous updated Progress Schedule.
 5. The update to the Progress Schedule shall be based on retained logic. Progress override logic is not allowed.
 6. Submit to Program Manager updated Progress Schedule, together with associated schedule-related Submittals, in accordance with this Section's "Submittals" Article and Section 01 33 00 - Submittal Procedures. Also submit updated Progress Schedule in its native (executable) format generated by the scheduling software.
- B. Monthly Construction Implementation Stage Schedule Meeting:
1. During the month, utilizing the previous month's look-ahead schedule. Design Builder shall record the percent complete, start and finish dates of each scheduled activity with the remaining duration for each activity started but not completed, including activities associated with procurement of materials and equipment.
 2. On the same day each month, not less than 1 week prior to a progress meeting, Design Builder, Progress Schedule preparer, Program Manager, and others as appropriate shall meet at the Site to tour the Work to review and recommend updates to the Progress Schedule and progress information gathered by Design Builder during the month. After discussion of Design Builder's current progress information and attendees' review of the current status of the Work, Progress Schedule preparer shall appropriately and accurately update the Progress Schedule.

1.9 NARRATIVE REPORTS

A. Narrative Reports – General:

1. Prepare and include with the preliminary Progress Schedule Submittal and each subsequent Progress Schedule Submittal, written narrative report describing the schedule-related constraints required by the Contract Documents and Design Builder's plan and schedule for complying with such requirements. Narrative reports shall also include required content indicated above in this Section's "Progress Schedule Updates" Article.
2. Narrative report shall describe the methods of sequencing and operation, resources to be employed, time frames for the construction of each of the major work area or work system on the Project, and time frames for complying with the Contract Times and Design Builder's interim schedule milestones.
3. Prepare narrative reports on Design Builder's company letterhead and clearly indicate the Progress Schedule revision and date associated with the narrative report.
4. Narrative reports shall be written in English and typed. Use clear, concise, complete, and accurate language in narrative reports. Clearly indicate in narrative report the name of person preparing the narrative report and date of preparation
5. Narrative report Submittals do not constitute contractual Change Proposals, nor are they notice of a Claim.
6. Program Manager's receipt, review, and acceptance of narrative reports does not mitigate or reduce Design Builder's obligations to furnish contractually required notices.

1.10 COST-LOADING REPORTS

A. Cost Loading:

1. Assign to each activity a total monetary amount commensurate with its value relative to the associated line item in the Schedule of Values accepted by Program Manager.

2. Use of cost-loaded Progress Schedule as basis for determining amounts eligible for progress payments is addressed in this Section's "Initial Progress Schedules" Article, in the provision on cost-loaded progress Schedules. Submit cost reports for the initially accepted cost-loaded (baseline) Progress Schedule and each subsequent update of the Progress Schedule.

1.11 TIME IMPACT ANALYSIS

A. Time Impact Analyses – General:

1. Prepare and submit time impact analysis when one or more of the following occurs: (a) Change Proposal is prepared; (b) Work Change Directive is issued that will affect the Progress Schedule; or (c) when delays occur.
2. Time impact analysis shall illustrate influence of each Change Order, Work Change Directive, allowance authorization, or delay, as applicable, on Design Builder's ability to comply with the Contract Times and Progress Schedule constraints.
3. In performing time impact analysis, use Progress Schedule having revision date closest to and prior to the event giving rise to the delay or other change in the Work.
4. Indicate in time impact analysis activities on the Project's critical path prior to the event giving rise to the delay or other Change in the Work; activities added, extended, or deleted as a result of the delay or change in the Work; and impact of such changes on the Project's critical path activities.
5. Indicate in time impact analysis activities not within Design Builder's control.
6. Time impact analysis shall demonstrate the time impact, based on date the Change Order, Work Change Directive, or allowance authorization was given to Design Builder or, as applicable, date the delay started to occur; the status of the Work at that time; and activity duration of affected activities. Activity duration used in time impact analysis shall be those included in most recent Progress Schedule update accepted by Program Manager, closest to start of the delay or start of the Change Order, Work Change Directive, or allowance authorization as adjusted by mutual, written agreement of the parties and Program Manager.
7. If resource constraints are a part of the time impact analysis, the Program Manager reserves the right to require a full resource loaded schedule for comparison purposes.
8. Timing of Time Impact Analysis:
 - a. Submit time impact analysis with Change Proposal.
 - b. When time impact analysis is not part of a Change Proposal, submit each time impact analysis within 30 days after the following, as applicable:
 - 1) Start of the delay.
 - 2) After Design Builder's receipt of Work Change Directive.
 - c. When Design Builder does not submit time impact analysis for a specific change or delay, within the specified period for such submittal, such non-submittal will indicate extension of the Contract Times is not needed.

B. Evaluation by Program Manager and Acceptance:

1. Program Manager's evaluation of each time impact analysis comprised of complete information will be completed in a timely manner (in accordance with the Contract Documents) after Program Manager's receipt.
2. When time impact analysis is incomplete or otherwise inappropriate, Program Manager will furnish comments to Design Builder. When time impact analysis is complete and apparently appropriate, its acceptability will be indicated by associated Contract modification or allowance authorization.
3. Changes in the Contract Times will be made only by Change Order.
4. When mutual agreement is reached between the parties on effect of the change or delay in the Project, incorporate into the next Progress Schedule and update the associated fragments illustrating the influence of changes and delays.

1.12 RECOVERY SCHEDULES

- A. Recovery Schedules – General:
 - 1. When updated Progress Schedule indicates the ability to comply with the Contract Times falls 14 days or more behind schedule, and there is no excusable delay, Change Order, or Work Change Directive to support an extension of the Contract Times, Design Builder shall prepare and submit to Program Manager Design Builder’s recovery schedule.
 - 2. Recovery schedule is a Progress Schedule demonstrating Design Builder’s plan to accelerate the Work to achieve compliance with the Contract Times. If achieving the Contract Times is not feasible, Design Builder’s recovery schedule shall indicate Design Builder’s plan to recover as much of the lost time as possible to complete the Work as close as possible to the Contract Times.
 - 3. Submit recovery schedule within 10 days after submittal of updated Progress Schedule where need for recovery schedule is indicated.
- B. Recovery Schedule Report:
 - 1. With each recovery schedule Submittal, include recovery schedule narrative report, manually prepared by Design Builder, on Design Builder’s company letterhead, indicating name of person responsible for preparing the recovery schedule and report.
 - 2. Recovery schedule report shall verbally indicate Design Builder’s plan for accelerating the Work and recovering lost time, and shall indicate the total number of days expected to be recovered by Design Builder’s implementation of the recovery schedule. Clearly indicate how the intended actions will recover lost time.
 - 3. Design Builder is fully responsible for complying with the Contract Documents, including the Contract Times.
- C. Implementation of Recovery Schedule:
 - 1. At no additional cost to Owner, do one or more of the following, as appropriate: (a) furnish additional labor, (b) provide additional construction equipment and machinery, (c) provide suitable materials to accelerate the Work, (d) employ additional work shifts, (e) expedite procurement of materials and equipment to be incorporated into the Work or otherwise expedite delivery of such items, (f) provide other needed resources, and (g) provide other measures necessary to complete the Work within the Contract Times.
 - 2. Upon acceptance of recovery schedule by Program Manager, incorporate recovery schedule into the next Progress Schedule update.
- D. Design Builder’s Failure to Recover Lost Time:
 - 1. Design Builder’s refusal, failure, or neglect to take appropriate measures to recover lost time, or to submit a recovery schedule, shall constitute reasonable evidence that Design Builder is not prosecuting the Work, or designated part of the Work, with diligence to ensure completion in accordance with the Contract Times. Such action or inaction by Design Builder shall constitute sufficient basis for Owner to exercise remedies available to Owner under the Contract Documents.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION - (NOT USED)

END OF SECTION

SECTION 01 33 00

SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Definition of various types of Submittals.
 - 2. Coordination requirements for Submittals.
 - 3. General provisions concerning Submittals.
 - 4. Schedule of Submittals.
 - 5. Design Builder's preparation of Submittals, including:
 - a. Numbering.
 - b. Marking.
 - c. Organization and content.
 - d. Proposed "or-equals", substitutes, and deviations from Contract requirements.
 - e. Electronic Documents Submittals.
 - f. Design Builder's review and approval of each Submittal.
 - g. Resubmittals.
 - 6. Design Builder's transmittal of Submittals, including transmittal letters, transmittal and delivery method, and delivery of Samples, Closeout Submittals, and Maintenance Materials Submittals.
 - 7. Owner and Program Manager's review, including:
 - a. Timing.
 - b. Meaning of Program Manager's Submittal action code(disposition) assigned.
 - c. Delivery of Program Manager's responses on Submittals.
- B. Scope:
 - 1. Design Builder shall provide all labor, materials, equipment, tools, services, incidentals, and other effort necessary to furnish Shop Drawings, product data Submittals, Samples, and other Submittals in accordance with the Contract Documents.
 - 2. This Section's Article, "General Provisions Concerning Submittals" includes a summary of the Contract Documents' locations of Submittals requirements.
 - 3. Shop Drawings, product data Submittals, Samples, and other Submittals, whether or not approved or accepted by Owner, are not Contract Documents. Owner's review or comment on submittals, as applicable, of a Submittal does not alter or modify the Contract Documents.
 - 4. Owner has the right to rely on Design Builder's representations and certifications made regarding each Submittal.
- C. Related Requirements: Include but are not limited to:
 - 1. Section 01 32 16 - Construction Progress Schedule.

1.2 REFERENCES

- A. References – Introduction:
 - 1. This Article presents definitions and terminology used in this Section and throughout the Contract Documents.
 - 2. Applicability of the Term "Submittals": Where reference is made to Shop Drawings, product data Submittals, Samples, or other Submittals in this Section and elsewhere in the Contract Documents, the term "Submittals", as defined in the Contract Documents, is intended. The foregoing applies regardless of whether such term is indicated with an initial capital letter, unless context of the subject provision clearly indicates otherwise.

3. Types of Submittals:
 - a. Submittal types are classified as follows: (1) Action Submittals, (2) Informational Submittals, (3) Closeout Submittals, and (4) Maintenance Materials Submittals.
 - b. Type of each required Submittal is indicated in the associated Specifications section. When Submittal type is not clearly indicated in the associated Specifications section, Submittal will be classified as indicated in this Article. Submit request for interpretation when Design Builder is uncertain of required Submittal type.
 4. Design Implementation Stage submittals are not included herein. Refer to Attachment A to the Agreement (Scope of Work) for definition and review of Design Implementation Stage submittals.
- B. Action Submittals:
1. Action Submittals require an explicit, written approval or other appropriate action by Design Professional or Owner (or other entity to whom the Submittal is required to be furnished, in accordance with the Contract Documents) before Design Builder may release the associated item(s) for raw materials procurement, fabrication, production, and shipping.
 2. Unless otherwise indicated in the Contract Documents, Action Submittals include the following:
 - a. Shop Drawings.
 - b. Product data.
 - c. Samples.
 - d. Testing plans for quality control activities required by the Contract Documents.
 - e. Delegated Designs: Delegated Submittals required by the Contract Documents.
 3. General Conditions' requirements for Shop Drawings and Samples hereby apply to all Action Submittals.
 4. Prior to the start of construction activities, Design Builder shall submit a list of all action submittals for Owner and Program Manager review. From this list of action submittals, the Owner will identify Critical Action Submittals that require joint Owner and Design Professional review prior to final Design Professional approval of the Action Submittal. Design Builder shall acknowledge agreement with the Critical Submittal Review through indicating such submittals on the final submittal list. Critical Action Submittals may include but are not limited to the following:
 - a. Concrete mix designs.
 - b. Hazardous material mitigation.
 - c. Samples.
 - d. Testing Plans.
 - e. Delegated Designs, including earth retention and pipe stress analysis.
 - f. Painting and Coatings.
 - g. HVAC Equipment.
 - h. Electrical Equipment.
 - i. Process Control .
 - j. Process equipment.
 5. All Action Submittals not identified as Critical Action Submittals by the Owner shall be treated as Information Submittals for the Owner. Documentation of Design Professional review and approval for all Action Submittals (whether Critical or not) is required.
- C. Informational Submittals:
1. Informational Submittals are so indicated in the Contract Documents. Unless otherwise indicated, Informational Submittals include certifications, evaluation reports, results of source quality control activities, results of field quality control activities, Supplier instructions, reports of Suppliers' visits to the Site, sustainable design Submittals (that are not Closeout Submittals), delegated design Submittals that are not "instruments of service" Submittals, qualifications statements, and others.

2. Informational Submittals, when submitted in accordance with the Contract and indicating full compliance with the Contract Documents, do not require explicit response from Program Manager or Owner (or other entity to whom the Submittal is to be delivered).
 3. When Informational Submittal does not indicate full compliance with the Contract Documents, Program Manager (or other entity to which Submittal is to be delivered) will indicate the non-compliance in a written response to Design Builder.
 4. Any specification reference requiring the Design Builder to submit information that is not specifically included under a Submittal heading shall be treated as an Informational Submittal.
- D. Closeout Submittals:
1. Closeout Submittals are so indicated in the Contract Documents and are, in general, required before the associated Work is completed, unless earlier submittal is required by the Contract Documents.
 2. Unless indicated otherwise in the Contract Documents, Closeout Submittals include maintenance contracts, operation and maintenance data, warranties, bonds (other than performance and payment bonds required prior to the start of construction), record documents, sustainable design closeout Submittals, software, keys, and others.
 3. Closeout Submittals are processed in the same manner as described above for Informational Submittals.
- E. Maintenance Materials Submittals:
1. Maintenance materials include spare parts, extra materials, tools, and similar items required to be furnished in accordance with the Contract Documents.
 2. Furnish required physical maintenance materials, delivered to Owner at the location(s) indicated in the Contract Documents, for the corresponding required Maintenance Materials Submittals.
 3. Maintenance Materials Submittals are documentation of delivery to Owner, and their acceptance of, required physical maintenance materials.
 4. Maintenance Materials Submittals are processed in the same manner as described above for Informational Submittals.
- F. Additional Terms:
1. The following terms have the meanings indicated below, regardless of whether such terms are indicated using initial capital letters, and apply to singular and plural of each:
 - a. "Product data" means illustrations, standard schedules, performance charts, Supplier's published instructions, brochures, diagrams, and other information furnished by Design Builder to illustrate or describe materials or equipment for some portion of the Work. In general, product data are manufacturers' pre-published information on the items proposed to be incorporated into the Work. Product data include manufacturer's catalog pages and similar documents with Design Builder-made markings and indications of proposed products and proposed options.
 - b. The term "Shop Drawings", defined in the General Conditions, is supplemented by the following: Shop Drawings include: (1) fabrication and assembly drawings, usually having a title block, or (2) schedules, prepared specifically for the Project. Here, "schedules" means a Project-specific summary of systems and components, such as a schedule of HVAC equipment, schedules of doors and door hardware, or windows, or a schedule of paint systems by room and surface, or other similar Project information in a tabular format. In contrast, construction Progress Schedules, Schedules of Submittals, and Schedules of Values are not Shop Drawings.

1.3 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
1. Furnish Submittals well in advance of need for the associated material or equipment, or procedure (as applicable), in the Work and with ample time necessary for delivery of

- materials and equipment and to implement procedures following Design Professional's and Owner's approval or acceptance of the associated Submittal.
2. Work covered by a Submittal will not be included in payments by Owner until approval or acceptance (as applicable) of related Submittals has been obtained in accordance with the Contract Documents.

1.4 GENERAL PROVISIONS CONCERNING SUBMITTALS

- A. Locations of Requirements:
1. Requirements concerning Submittals are generally located as follows:
 - a. General Conditions, as may be modified by the Supplementary Conditions, applicable to the Project.
 - b. This Section, which presents general requirements for Submittals applicable to the Project.
 - c. Other Division 01 Specifications that include general requirements for certain types of Submittals, Section 01 78 23 - Operation and Maintenance Data, and others.
 - d. The "Submittals" Article of the various Specifications sections, which indicates the required Submittals for the associated Work. Furnish all Submittals required by the Contract Documents regardless of whether explicitly indicated in the associated Specifications' "Submittals" Article.
- B. This Section augments and supplements the requirements of the General Conditions, as may be modified by the Supplementary Conditions, relative to Submittals.

1.5 SCHEDULE OF SUBMITTALS

- A. Informational Submittals: Submit the following:
1. Schedule of Submittals:
 - a. Timing:
 - 1) Furnish Schedule of Submittals within time frames indicated in the General Conditions, as may be modified by the Supplementary Conditions.
 - 2) Submit updated Schedule of Submittals with each submittal of the updated Progress Schedule.
 - b. Content: In accordance with the General Conditions, as may be modified by the Supplementary Conditions, and this Section. Requirements for content of preliminary Schedule of Submittals and subsequent Submittals of the Schedule of Submittals are identical. Identify on Schedule of Submittals all Submittals required in the Contract Documents. Updates of Schedule of Submittals shall show scheduled dates and actual dates for completed tasks. Clearly indicate Submittals that are on the Project's critical path. Indicate the following for each Submittal:
 - 1) Date by which Submittal will be received by Design Professional and/or Owner.
 - 2) Whether Submittal will be for a substitution or "or-equal".
 - 3) Date by which Design Professional's and/or Owner's response is required. Allow not less than 28 days for Owner review, starting on Owner's actual receipt of each Submittal. Allow increased time for large or complex Submittals.
 - 4) For Submittals for materials or equipment, date by which material or equipment must be at the Site to avoid delaying the Work and to avoid delaying the work of others (if any).
 - 5) Identification of Critical Action Submittals that require joint Owner and Design Professional review prior to final Design Professional approval of the Action Submittal.
 - c. Prepare Schedule of Submittals using same software, and in same format as construction progress schedule, specified for Progress Schedules in Section 01 32 16 - Construction Progress Schedule.
 - d. Coordinate Schedule of Submittals with the Progress Schedule.
 - e. Schedule of Submittals that is not compatible with the Progress Schedule, or that does not indicate Submittals on the Project's critical path, or that places extraordinary

demands on Program Manager for time and resources, is unacceptable. Do not include Submittals not required by the Contract Documents.

- f. In preparing Schedule of Submittals:
 - 1) Considering the nature and complexity of each Submittal, allow sufficient time for reviews and revisions.
 - 2) Allow reasonable time for: Owner's review and processing of Submittals, for Submittals to be revised and resubmitted, and for returning Submittals to Design Builder.
 - 3) Identify and accordingly schedule Submittals that are expected to have long anticipated review times.

1.6 PREPARATION OF SUBMITTALS

- A. Prior to Submittal Preparation:
 1. The General Conditions, as may be modified by the Supplementary Conditions, address Design Builder's responsibility for submitting for Owner's acceptance identification of Subcontractors and Suppliers. Obtain Owner's acceptance before entering into subcontracts and purchase orders for the Work.
 2. Comply with the Contract Documents relative to terms and conditions of subcontracts and purchase orders for the Work.
- B. Submittal Identification:
 1. Submittal Number: Shall be a unique number assigned to each individual Submittal. Assign Submittal numbers as follows:
 - a. First part of Submittal number shall be the applicable Specifications section number, followed by a hyphen.
 - b. Second part of Submittal number shall be a three-digit number (sequentially numbered from 001 through 999) assigned to each separate Submittal furnished under the associated Specifications section.
 - c. Example: Submittal number for the third Submittal furnished for Section 10 14 00 - Signage, would be "10 14 00-003".
 2. Review Cycle Number: Each resubmittal of a given Submittal shall be indicated with an upper-case letter designation:
 - a. Use capital letter "A" for the initial (first) submittal of the Submittal number.
 - b. "B" shall indicate first resubmittal of the Submittal number.
 - c. "C" shall indicate second resubmittal of the Submittal number.
 3. Examples:

EXAMPLE DESCRIPTION	SUBMITTAL IDENTIFICATION	
	SUBMITTAL NO.	REVIEW CYCLE
Initial (first) review cycle of the third Submittal furnished under Section 10 14 00 – Signage	10 14 00-003-	A
Second review cycle (first resubmittal) of third Submittal furnished under Section 10 14 00 - Signage	10 14 00-003-	B

- C. Marking of Submittals:
 1. Mark on each page of each Submittal and each individual component submitted with Submittal number and applicable Specifications paragraph.
 2. Mark each page of each Submittal with the Submittal page number.
 3. Each Shop Drawing sheet shall have title block with complete identifying information satisfactory to Program Manager.

4. For product data Submittals, operation and maintenance data Submittals, and other Submittals:
 - a. Mark options to be furnished using broad, dark arrows or “clouds” clearly drawn around the relevant text or diagrams. Do not use highlighter for indicating options and features.
 - b. Indicate options and features not furnished using clear strikeouts through the text or diagrams.
- D. Submittal Organization and Content – General:
1. Page or Sheet Size; Furnish Submittals with one or more of the following page or sheet sizes: (a) 8.5 IN by 11 IN; (b) 11 IN by 17 IN; (c) 22 IN by 34 IN; unless another sheet size is acceptable to Design Professional.
 2. Language: All parts of each Submittal shall be in the English language.
 3. Units of Measurement: Clearly indicate units of measurement on Shop Drawings, product data Submittals, record documentation, and operation and maintenance data Submittals.
 4. Organize each Submittal logically to facilitate ease of understanding and review.
 5. To the extent practicable, arrange Submittal information in same order as requirements are written in the associated Specifications section.
 6. Each Submittal shall cover Work under only one Specifications section.
 7. To the extent practicable, package together Submittals for the same Specifications section. Do not furnish required information piecemeal.
 8. For large or complex Submittals, include a title page and table of contents.
 9. Include appropriately labeled fly sheets to separate distinct parts of each Submittal.
 10. Ensure legibility of all pages in each Submittal.
 11. Minimize extraneous and unnecessary information in Submittals for materials and equipment. Do not submit information not relevant to the Submittal and associated requirements of the Contract Documents.
 12. Design Builder’s, Subcontractor’s, and Supplier’s written comments on Shop Drawings and product data diagrams shall be colored green.
 13. Do not submit under Specifications sections with title that include “Basic Requirements”, unless the subject material or equipment is specified, in total, in a Specifications section with the words, “Basic Requirements” in its title.
- E. Electronic Documents Submittals:
1. Format: Electronic Documents Submittals shall be “portable document format” (.PDF) files unless expressly required otherwise by applicable provisions of the Contract Documents.
 2. Electronic Documents Submittals must be electronically searchable when delivered to Design Professional and other recipients.
 3. Organization and Content:
 - a. Each Electronic Documents Submittal shall be one file; do not divide individual Submittals into multiple Electronic Documents files each unless file size will exceed 25 MB.
 - b. When Submittal is large or contains multiple parts, furnish PDF file with suitably titled electronic bookmark for each section of the Submittal.
 - c. Content shall be identical to paper or other original Submittal. First page of each Electronic Documents Submittal shall be the transmittal letter required in this section’s Paragraph 1.7.A.
 4. Quality and Legibility: Electronic Documents Submittal files shall be made from the original and shall be clear and legible. Markings applied by Design Builder, Subcontractor, or Supplier shall be clear, distinct, and readily apparent. Electronic Documents file shall be full size of original documents. Properly orient all pages for convenient reading on a computer display; do not furnish pages sideways or upside-down.
 5. Provide sufficient internet service, software, and systems for Design Builder with capability appropriate for transmitting the necessary files and receiving responses from Design Professional, Owner, or other entities.

6. Check not less than once per day for distribution of Electronic Documents Submittals responses and related Electronic Documents correspondence.
- F. Proposed “Or-Equals”, Substitutes, Design Changes and Deviations from Contract Requirements:
1. “Or-Equals”:
 - a. The meaning of “or-equal” is addressed in the General Conditions.
 - b. Design Builder’s request for approval of “or-equals” is to be presented via the associated Action Submittal(s).
 - c. Expressly and prominently indicate, “Proposed Or-Equal” on the associated Action Submittals when Submittal is for an “or-equal”.
 - d. Submittals requesting approval of an “or-equal” but not accompanied by the required, supplemental information will be deemed incomplete by Owner and returned to Design Builder without approval.
 2. Substitutes: In addition to the requirements of the General Conditions, the following substitution procedures shall be followed:
 - a. Submitting Substitution Requests:
 - 1) Design Builder’s substitution requests will be considered by Owner only during a period of 120 days after the Notice to Proceed for Construction Implementation, unless otherwise indicated. Submit Design Professional’s concurrence with any proposed substitute request.
 - 2) Allow not less than 21 days for Owner’s review of each substitute. Allow longer for larger, more-complex substitutes.
 - 3) Owner has no obligation to approve any substitute.
 - 4) Substitution requests will be accepted for consideration by Owner after the time limit indicated in the paragraph above this, when materials or equipment shown or indicated, and all associated “or-equals”, are either:
 - a) Unavailable; or
 - b) Despite Design Builder’s due diligence, are unavailable in time for the Work to be completed within the Contract Times.
 - 3) The foregoing notwithstanding, substitutes will not be approved when received after Design Builder has commenced the associated Work at the Site, where approval of the substitute would require rework or removing Work already installed.
 - b. Design Builder’s request for approval of substitute is separate from the associated Action Submittal(s). Action Submittals that request approval of a substitute when a separate, formal substitution request (furnished in accordance with the Contract Documents) was not previously furnished to Program Manager, followed by formal approval via an appropriate contract modification (typically either a Field Order or Change Order), will be deemed by Program Manager as non-compliant with the Contract Documents and will be returned to Design Builder without approval.
 - c. Design Builder is solely responsible for delays incurred due to substitutes proposed via Submittals that have not been previously duly approved via an appropriate Contract modification.
 - d. Action Submittals for items or procedures approved via an appropriate Contract modification shall include a copy of the Contract modification in which the substitute was approved.
 3. Design Changes:
 - a. Submitting Design Change Requests:
 - 1) Submit any change to the design from the approved Issued for Construction documents to the Owner for approval through a Design Change Notification (DCN).
 - 2) Include with the DCN fully documented and compelling justification of the design change.

- 3) The Design Builder assumes all risks associated with obtaining Owner approval of any design change.
 - 4) If a DCN requires a material change from what was reflected in permit applications to Code Officials, the DCN must also be approved by the appropriate Code Official if required by Laws and Regulations.
 - 5) Design clarifications are not considered design changes. All design clarifications shall be documented by the Design Professional with copies provided to the Owner and Program Manager.
- b. Design Professional:
- 1) Design Professional is responsible for design of the completed Project as a functioning whole and has responsible charge of the Project except for Work for which design responsibility is expressly delegated by the Contract Documents.
 - 2) Do not retain services of any third-party design professional to prepare modifications of Design Professional's design of the completed Project as a functioning whole without Design Professional's express, written consent setting forth appropriate performance and design criteria for delegating the design of the substitute.
 - 3) Demonstrate Design Professional approval of any submitted DCN.
- c. Owner Requested Changes:
- 1) The Owner shall have the right to request changes to the design at any time prior to Final Completion per the General Conditions.
4. Submittals with Proposed Deviations from Contract Requirements:
- a. When Submittal proposes deviations from requirements of the Contract Documents and Design Builder's approved Issued for Construction Documents, the Submittal shall clearly and expressly indicate each proposed deviation.
 - b. Also comply with this Section's provision, in the Article below, on Design Builder's transmittal letter expressly alerting Design Professional and Owner to the proposed deviations.
 - c. Comply with requirements of the Contract regarding substitutes and "or-equals".
 - d. When deviation is proposed, also appropriately revise text of Design Builder's approval, from that required below in this Article.
 - e. When Submittal includes deviations from Contract requirements and either the Submittal itself, Design Builder's transmittal letter, or both, do not comply fully with Contract requirements for indicating deviations in Submittals and giving separate written notice thereof, Design Professional's approval of such deviations will be deemed null and void unless Design Professional's written response to the Submittal has expressly acknowledged such deviation and indicated Design Professional's and Owner's approval thereof. The Design Builder is responsible for obtaining Owner's approval for such deviations, even if the submittal is not identified as a Critical Action Submittal.
 - f. Design Builder is solely responsible for delays and costs incurred due to any and all Submittals with deviations from Contract requirements that were not properly, expressly indicated and approved in accordance with the Contract Documents. Deviations not duly approved in accordance with the Contract Documents may be deemed defective Work. Design Builder is solely responsible for remedying defective Work and all associated cost and time impacts.
- G. Design Builder's Approval of Submittals:
1. Design Builder's and their subcontractor shall confirm they have reviewed the submittals before transmitting Submittals to Program Manager and Owner. The Design Builder and their subcontractor shall review each Submittal to:
 - a. Ensure proper coordination of the Work.
 - b. Determine that each Submittal is in accordance with Design Builder's desires.
 - c. Verify that Submittal contains sufficient information for Design Professional and/or Owner to determine compliance with the Contract Documents.

2. Incomplete or inadequate Submittals will be returned without detailed review by Design Professional and/or Owner.
3. Design Builder's Approval Stamp and Signature:
 - a. Each Submittal furnished shall bear Design Builder's approval stamp (or facsimile thereof) and signature, as evidence that the Submittal has been reviewed and approved by Design Builder and verified as complete and in accordance with the Contract Documents.
 - b. Submittals without Design Builder's approval and signature (as required by the contract Documents) will be returned to Design Builder without further review by Design Professional and/or Owner and deemed incomplete.
 - c. Owner reserves the right to reject as incomplete Submittals where Design Builder's approval signature appears computer-generated or reproduced without the active involvement or review of Design Builder's signatory.
 - d. Design Builder and subcontractor shall each provide approval containing the following text:

Project Name: _____
 Design Builder's Name: _____
 Contract Designation: _____
 Date: _____

----- *Reference* -----

Submittal Title: _____
 Specifications: _____
 Section: _____
 Page No.: _____
 Paragraph No.: _____
 Drawing No.: _____ of _____
 Location of Work: _____

Submittal No. and Review Cycle: _____
 Coordinated by Design Builder with Submittal Nos.: _____

I hereby certify that Design Builder has satisfied Design Builder's obligations under the Contract Documents relative to Design Builder's review and approval of this Submittal, including: (1) reviewed and coordinated the Submittal with other Submittals and with the requirements of the Work and the Contract Documents; (2) determined and verified all: field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect to the Submittal, (b) the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work, and (c) all information relative to Design Builder's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto; (3) confirmed the Submittal is complete with respect to all related data included in the Submittal; and (4) clearly and expressly indicated all proposed deviations (if any) from the requirements of the Contract Documents both in the Submittal itself and in the Submittal's transmittal letter. Accordingly, this Submittal is hereby approved for Design Builder by:

Approved for Design Builder by: _____

H. Resubmittals:

1. Design Builder shall furnish Submittals with such completeness, accuracy, and compliance with the Contract Documents to obtain Design Professional's and/or Owner's approval or acceptance, as applicable, without the total quantity of Submittals furnished, including all initial Submittals and all resubmittals, exceeding 150 percent of the number of Submittals indicated on the Schedule of Submittals initially accepted by Owner, plus a corresponding percentage of the quantity of Submittals required by Change Orders, Work Change Directives, and Field Orders.
2. Do not increase the scope of prior review cycle of the same Submittal.
3. Indicate on Design Builder's transmittal letter how Submittal was revised from previous review cycle of the Submittal and where the revisions or corrections are located within the resubmittal.
4. Expressly address and provide response for all components previously transmitted by Design Professional and/or Owner on prior review cycles of the subject Submittal. Where resubmittal lacks complete response to prior comments, such resubmittal may be deemed as incomplete and returned to Design Builder without further review.
5. Where part of the Submittal's prior review cycle was expressly approved or accepted, as applicable, do not include such items in subsequent resubmittals.
6. Indicate, "Not Yet Resolved—To Be Resubmitted at a Later Date" for any items not approved in prior review cycle of the Submittal for items not included in the subject resubmittal. Design Professional and/or Owner reserve the right to deem incomplete Submittals "Not Approved" or "Revise and Resubmit". Furnishing incomplete or partial resubmittals is discouraged.
7. After all Owner, Program Manager, and Design Professional's comments have been addressed, submit a complete Record submittal of the entire submittal.
8. Resubmittal of Previously Approved or Accepted Items:
 - a. Do not resubmit on a given item previously approved or accepted, without Design Professional's and Owner's advance consent. Consent will be given for bona-fide unavailability of a previously approved or accepted item where Design Builder has acted in good faith in a timely manner with due diligence to comply with the Contract Times.
 - b. Destroy or conspicuously mark "SUPERSEDED" on all documents having previously received approval or acceptance, as applicable, that are superseded by a resubmittal.

1.7 TRANSMITTAL OF SUBMITTALS BY DESIGN BUILDER

A. Design Builder's Transmittal Letters for Submittals:

1. Furnish separate transmittal letter with each Submittal. Transmittal letter's shall be consistently formatted for all submittals.
2. At beginning of each transmittal, include a reference heading indicating: Design Builder's name, Owner's name, Project designation, Contract designation, transmittal number, and Submittal number (with review cycle).
3. "Or-Equals": When the Submittal is proposing an "or-equal", expressly so indicate on transmittal form submitted by Design Builder.
4. Proposed Deviations from Contract Requirements: When the Submittal proposes deviations from requirements of the Contract Documents, transmittal letter shall specifically describe each proposed deviation.

B. Submittal Specification:

1. A copy of the submittal specification section with each paragraph check-marked to indicate specification compliance or marked to indicate requested deviations from specification requirements shall be provided with every submittal.

C. Submittal Delivery Method:

1. This provision presents general requirements for delivery of all Submittals unless otherwise required elsewhere in the Contract Documents.

2. Furnish Submittals as Electronic Documents.
 3. Furnish Submittals to Design Professional, Owner, and each other entity indicated in the Contract Documents as receiving a Submittal directly from Design Builder.
- D. Samples - Transmittal and Delivery:
1. Provide electronic documentation of all sample submittals. Include photographs of all samples submitted and (upon acceptance) clearly call out which samples were approved.
 2. Labeling and Tagging Samples:
 - a. Securely label or tag each Sample with Submittal identification number.
 - b. Label or tag shall include clear space at least 4 IN by 4 IN in size for affixing Owner's review stamp indicating disposition assigned by Owner.
 - c. Label or tag shall not cover, conceal, or alter Sample's appearance or features.
 - d. Label or tag shall not be separated from the Sample.
 3. Timing: Deliver required Samples concurrently with other Action Submittals required for the same element of the Work, unless other delivery time frame is indicated in the Schedule of Submittals accepted by Owner.
 4. Quantity Required:
 - a. Where the Contract Documents require a Sample as a field mock-up, provide Sample at the Site or in the Work at location acceptable to Owner. Provide the quantity of field mock-ups required by the contract Documents.
 - b. For reasonably portable Samples, deliver the quantity of Samples required in the associated Specifications. If quantity of Samples is not indicated in the associated Specifications section, deliver to Owner not less than three identical Samples of each item for which Sample is required.
 - c. Samples will not be returned to Design Builder. If Design Builder requires Sample(s) for Design Builder's use, so advise Owner in writing and furnish additional copies of the Sample. Design Builder is responsible for furnishing, shipping, and transporting additional Samples.
 5. Locations for Delivery of Reasonably Portable Samples for Review:
 - a. Deliver all physical Samples to Program Manager's field office at the Site.
- E. Closeout Submittals –Transmittal and Delivery:
1. Furnish the following Closeout Submittals in accordance with general requirements for transmitting and delivering Submittals indicated above in this Article: maintenance contracts; warranty bonds (when required) and other bonds required for specific materials, equipment, or systems; warranty documentation; and sustainable design closeout documentation (when required). On documents such as maintenance contracts and bonds, include on each document furnished original ("wet") signature of entity issuing said document. When original "wet" signatures are required, furnish such Submittals to Owner both on original paper and as Electronic Documents, and to other entities furnish as indicated above in this Article for general requirements for Submittals.
 2. Operations and Maintenance Manuals: Submit in accordance with Section 01 78 23 - Operation and Maintenance Data.
 3. Record Documents: Submit in accordance with Section 01 31 13 Project Coordination and Documentation.
 4. Software: In addition to software installed on Owner's computer system, furnish number of copies of software required in the Specifications section where the software is specified. Preferred means of transmittal is via secure file transfer directly to Owner via secure file transfer method mutually acceptable to software developer and the receiving entity. When secure file transfer is used, submit to Program Manager documentation signed or electronically acknowledged by Owner that the files were received. Where such software is available only on the software developer's portable media, furnish such software on software developer's original, portable media, sealed in software developer's original, unopened, clearly labeled packaging.

- F. Maintenance Materials Submittals – Delivery:
 - 1. Deliver physical maintenance materials required by the Contract Documents in accordance with applicable provisions of the Contract.
 - 2. Submit documentation of delivery of Maintenance Materials Submittals in accordance with general requirements for Submittals as indicated in this Section.

1.8 OWNER’S REVIEW OF SUBMITTALS

- A. This Article applies to review of all Submittals by Owner or other entity to whom the Contract Documents require such Submittal be furnished.
- B. Procedures for Design Professional’s Review of Submittals shall be documented in the Design Specifications.
- C. Timing:
 - 1. Timing of Owner’s review will be in accordance with the Schedule of Submittals accepted by Owner.
 - 2. When Submittal is delivered to Owner on a date other than that indicated in the Schedule of Submittals accepted by Owner, duration of Owner’s review may differ from that indicated in the Schedule of Submittals, based on Owner’s and Program Manager’s availability and resources. Owner will make good-faith effort to furnish responses to Submittals in a timely manner.
 - 3. Design Builder is responsible for communicating to Owner when a Submittal is on the Project’s critical path.
- D. Owner’s Review:
 - 1. Markings:
 - a. Comments or responses marked directly on Submittal by Owner (or other entity reviewing Submittal) will be colored blue.
 - b. Owner may also present narrative comments on a comment sheet inserted by Owner or Program Manager into the Submittal. Such comments will be in blue text. When a separate comment sheet is included by Owner, such sheet will be clearly identified as Owner’s and Program Manager’s comments.
 - 2. Owner’s review and disposition assigned to Submittal are subject to the following:
 - a. Submittal disposition is subject to: Owner’s comments on the Submittal; disclaimer language on Owner’s Submittal transmittal letter; Owner’s Submittal review stamp (when used) or equivalent (when used); and this provision.
 - b. Owner’s review is only for general compatibility with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents, and for general compliance with the information given in the Contract Documents.
 - c. Design Builder shall be solely responsible for complying with the Contract Documents, as well as with Supplier instructions consistent with the Contract Documents, Owner’s directions, and Laws and Regulations. Design Builder is solely responsible for obtaining, correlating, confirming, and correcting dimensions at the Site; quantities; information and choices pertaining to fabrication processes; means, methods, sequences, procedures, and techniques of construction; safety precautions and programs incident thereto; and for coordinating the work of all trades.
 - d. Owner is not responsible for resubmittals not yet furnished by Design Builder or tracking Design Builder’s progress on resubmittals.
 - 3. Documents not required by the Contract Documents but nonetheless furnished by Design Builder as submittals will not be reviewed by Owner or Program Manager.
- E. Meaning of Submittal disposition Assigned by Owner:
 - 1. Critical Action Submittals:
 - a. “Reviewed”: Upon return of Submittal marked “Reviewed” and with Design Professional’s Approval, order, ship, or fabricate materials and equipment included in

- the Submittal or otherwise proceed with the Work in accordance with the Submittal and the Contract Documents.
- b. “Reviewed as Noted”: Upon return of Submittal marked “Reviewed as Noted” and with Design Professional’s Approval, order, ship, or fabricate materials and equipment included in the Submittal or otherwise proceed with the Work in accordance with the Submittal and the Contract Documents, and in accordance with Owner’s comments and notes indicated in Owner’s Submittal response
 - c. “Revise and Resubmit”: Upon return of Submittal marked “Revise and Resubmit”, make the revisions necessary and indicated and resubmit to Owner.
 - d. “Not Approved”: This disposition indicates material or equipment that cannot be approved. “Not Approved” disposition may also be applied to Submittals that are incomplete. Upon return of Submittal marked “Not Approved”, repeat initial submittal procedure utilizing approvable material or equipment, with a complete Submittal clearly indicating all information required.
2. Informational, Closeout, and Maintenance Materials Submittals:
 - a. “Accepted”: Information included in Submittal complies with the applicable requirements of the Contract Documents and is acceptable. No further action by Design Builder is required relative to such Submittal, and the Work covered by the Submittal may proceed. Materials and equipment with Submittals with this disposition may be shipped or operated, as applicable. Submittals assigned “Accepted” by Owner (or other reviewing entity) does not indicate Owner’s acceptance of the associated Work.
 - b. “Not Acceptable”: Submittal, or part thereof, does not indicate full compliance with applicable requirements of the Contract Documents and is not acceptable. Provide labor, materials, equipment, services, and incidentals necessary to properly and accurately revise Submittal and resubmit to indicate acceptability and compliance with the Contract Documents.
 3. Other:
 - a. “Submittal Not Reviewed”: Documents so marked by Owner are not required by the Contract Documents. Submittals may also be marked with this disposition when information in the document was previously reviewed and approved or accepted by Owner, as applicable.
- F. Distribution of Owner Responses:
1. Unless otherwise indicated in the Contract Documents, Owner, through the Program Manager, will distribute written responses (as Electronic Documents) to Submittals to the following:
 - a. Design Builder.
 - b. Owner.
 - c. Program Manager’s file.
 2. Paper copies of Owner’s Submittal responses will not be distributed unless otherwise required by the Contract Documents or otherwise agreed to by Owner.
 3. Design Builder is responsible for forwarding Owner’s Submittals responses to Subcontractors and Suppliers as appropriate, and for coordinating the Work of all trades.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION - (NOT USED)

END OF SECTION

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SECTION 01 35 43.13
ENVIRONMENTAL PROCEDURES FOR HAZARDOUS MATERIALS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. General responsibilities and enforcement concerning Constituents of Concern at the Site.
 - 2. Notifying Owner of Constituents of Concern at the Site.
 - 3. Hazard communication plan.
 - 4. Emergency/spill response plan.
 - 5. Storage of materials containing Constituents of Concern and storage of non-hazardous materials.
 - 6. Area for storing materials containing Constituent(s) of Concern.
 - 7. Verification of compliance.
- B. Scope:
 - 1. Design Builder's responsibilities for remediating a known Hazardous Environmental Condition.
 - 2. Design Builder shall provide all labor, materials, equipment, tools, services, and incidentals necessary and required to comply with requirements of this Section and related provisions of the General Conditions.
 - 3. In this Section's title, "hazardous materials" mean "Constituents of Concern", defined as: Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), lead-based paint (as defined by the HUD/EPA standard), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to Laws and Regulations regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.
- C. Related Requirements:
 - 1. Include, but are not necessarily limited to:
 - a. Section 01 35 44 - Spill Prevention Control and Countermeasures Plan.

1.2 BASIC RESPONSIBILITIES AND ENFORCEMENT REGARDING CONSTITUENTS OF CONCERN AT THE SITE

- A. Scope – Basic Responsibilities:
 - 1. Design Builder shall develop, implement, and maintain throughout the Project a hazardous materials management program (HMMP) in accordance with Laws and Regulations and the Contract Documents.
 - 2. Constituents of Concern Brought to Site by Design Builder:
 - a. Transport, handle, store, label, use, and dispose of materials containing Constituents of Concern in accordance with this Section, other applicable provisions of the Contract Documents, and Laws and Regulations.
 - 3. Constituents of Concern Generated by Design Builder:
 - a. Materials containing Constituents of Concern shall be properly handled, stored, labeled, transported and disposed of by Design Builder in accordance with Laws and Regulations, and this Section.
 - b. If Design Builder will generate or has generated materials containing Constituents of Concern at the Site or adjacent areas, obtain a USEPA identification number listing Design Builder's name and address of the Site as generator of the Constituents of Concern. Obtain identification number from state environmental agency or other

authority having jurisdiction at the Site. Submit identification number within time limit indicated in this Section's "Submittals" Article.

- c. Design Builder is responsible for identifying, analyzing, characterizing, labeling, storing, transporting, and disposing of Constituents of Concern generated by Design Builder.
4. Cost Responsibility:
 - a. Fines and civil penalties imposed on Owner or facility manager (if other than Owner) for Design Builder's violations, whether at the Site or other locations, and other costs incurred by Owner and facility manager associated with cleanup of a Hazardous Environmental Condition created or exacerbated by Design Builder shall be paid by Design Builder.
 - b. If Design Builder has exacerbated a Hazardous Environmental Condition existing at the Site prior to the start of the Work, Design Builder shall pay Design Builder's appropriate share of costs associated with fines, civil penalties, and cleanup costs in proportion equal to the extent of costs for which Design Builder caused or exacerbated the Hazardous Environmental Condition and fines and civil penalties associated therewith.
 - c. If Design Builder fails or refuses to pay such costs, Owner may pay the costs and deduct from payments due Design Builder a reasonable set-off.
- B. Owner's Environmental Representative:
 1. Owner's environmental representative is the Pretreatment Program Coordinator, Arlington Water Pollution Control Bureau.
- C. Enforcement of Laws and Regulations Regarding Constituents of Concern and Hazardous Environmental Conditions:
 1. To extent practicable, avoid creating or exacerbating situations causing or contributing to injury to persons, spills and emissions of Constituents of Concern, contamination of the Site and other areas, and damage (to property and the environment) caused by Hazardous Environmental Conditions.
 2. When Owner is aware of or suspects violations may have occurred or may occur, Owner will notify Design Builder, and authorities having jurisdiction, when Owner reasonably believes doing so is necessary or appropriate. However, no such right of Owner, or any entity for whom Owner is responsible, including Program Manager (or its consultants and subcontractors), is for benefit of Design Builder. Owner and any entity for whom Owner is responsible, including Program Manager, are not obligated to monitor presence of, use of, storage or handling of, Constituents of Concern at the Site or other areas, or present of a potential Hazardous Environmental Condition (except those known to Owner prior to the start of construction of the Project), or to act on behalf of Design Builder or anyone for whom Design Builder is responsible.

1.3 SUBMITTALS

- A. Informational Submittals: Submit the following to the entity(ies) indicated for each:
 1. Indication of Constituents of Concern (including Chemicals) Proposed for Use at the Site:
 - a. Submit to Owner's environmental representative.
 - b. Submit the information required in sufficient time for Owner's review and acceptance not later than 3 days before bringing associated Constituent of Concern to the Site.
 - c. Submittal Content:
 - 1) Current (dated within the past 2 years) safety data sheets (SDS, formerly "material safety data sheets") in accordance with 29 CFR 1910.1200 (OSHA Hazard Communication Standard).
 - 2) Manufacturer of material or equipment containing such substance.
 - 3) Supplier (if other than manufacturer).
 - 4) Container sizes and number of containers proposed to be at the Site.
 - 5) Minimum and maximum volume of material intended to be stored at the Site.

- 6) Description of process or procedures in which Constituent(s) of Concern will be used at the Site.
2. Material Containing Constituents of Concern Generated at the Site:
 - a. Submit to Owner's environmental representative.
 - b. Submit the information required prior to generating each associated Constituent of Concern at the Site or adjacent areas. Submit within not less than 48 HRS after Design Builder's receipt of associated analytical results.
 - c. Submittal Content:
 - 1) For each Constituent of Concern generated at the Site or adjacent areas:
 - a) USEPA identification number.
 - b) Laboratory analysis results.
 - c) Quantity, size, and location of storage containers at the Site or adjacent areas.
3. Permits:
 - a. Submit to Owner's environmental representative.
 - b. Submit within 48 HRS of obtaining each associated permit.
 - c. Submittal Content:
 - 1) Copies of each permit obtained for storing, handling, using, transporting, and disposing of materials containing Constituents of Concern, obtained from authorities having jurisdiction.
4. Other Documents Required for the HMMP:
 - a. Submit to Owner's environmental representative.
 - b. Submit requested documents within 72 HRS of Design Builder's receipt of such request.
 - c. Submittal Content:
 - 1) Submit requested HMMP documents, which may include emergency/spill response plan, communication plan, and other documents.

1.4 HAZARDOUS MATERIALS MANAGEMENT

- A. Obtain Owner's environmental representative's acceptance before bringing to the Site each material containing a Constituent of Concern.
- B. Hazard Communication Plan:
 1. Develop and implement a communication plan relative to materials containing one or more Constituents of Concern.
 2. Safety Data Sheet (SDS) Notebooks:
 - a. Maintain at the Site not less than two notebooks containing:
 - 1) Inventory of materials containing a Constituent of Concern (including all chemicals).
 - 2) Current (dated within the past 2 years) SDS for all materials being used to accomplish the Work, whether or not defined as a Constituent of Concern.
 - b. Keep one notebook in Design Builder's field office at the Site; keep second notebook at location acceptable to Owner's environmental representative.
 - c. Keep notebooks up-to-date as materials are brought to and removed from the Site.
- C. Emergency/Spill Response Plans:
 1. Develop, implement, and maintain an emergency/spill response plan, for each Constituent of Concern or each class or group of material containing a Constituent(s) of Concern, as applicable.
 2. Response plan shall include not less than the following:
 - a. Description of materials and equipment available at the Site to contain or respond to emergencies related to or spills of the materials containing one or more Constituents of Concern.
 - b. Procedures for notifying, and contact information for:
 - 1) Authorities having jurisdiction.
 - 2) Emergency responders.

- 3) Owner.
 - 4) Program Manager
 - 5) Design Professional.
 - 6) The public, as applicable.
 - 7) Other entities as necessary or required.
 - c. Response coordination procedures between Design Builder, Owner, and others as appropriate.
 - d. Site plan showing proposed locations of Constituents of Concern storage areas and location of spill containment/response materials and equipment, and location of stormwater drainage inlets, catch basins, and drainage routes, including storm sewers, ditches and swales, and surface waters.
 - e. Description of Constituent of Concern handling and emergency/spill response training provided to Design Builder's and Subcontractors' workers, in accordance with 29 CFR 1926.21(b) ("Employer Responsibility") and other Laws and Regulations.
 - f. Comply with Section 01 35 44 - Spill Prevention Control and Countermeasures Plan.
- D. Storage of Materials Containing Constituents of Concern and Storage of Non-Hazardous Materials:
1. Vessels containing materials with a Constituent of Concern shall bear applicable, clearly visible NFPA hazard diamonds.
 2. Container Labeling:
 - a. Properly label each container of combustible materials, whether or not classified as containing a Constituent of Concern.
 - b. Stencil Design Builder's name and, as applicable, Subcontractor's name, on:
 - 1) Each vessel containing a Constituent of Concern; and
 - 2) For non-hazardous materials, on each container over 5-GAL capacity.
 - c. Each container shall have securely-attached label clearly identifying contents. Also label containers that are filled from larger containers.
 - d. If Owner becomes aware of unlabeled containers at the Site, Owner's environmental representative will so advise Design Builder, although Owner's personnel are not obligated to do so. Properly label each container within 1 HR of receipt of such notice from Owner, or remove container from the Site and adjacent areas.
 - e. Properly dispose of materials containing Constituents of Concern, in accordance with Laws and Regulations, at a location other than the Site and adjacent areas.
 3. To greatest extent possible, store at off-site location materials containing a Constituent of Concern until required for use in the Work.
- E. Area for Storing Materials Containing Constituent(s) of Concern:
1. Maintain designated storage area for materials containing one or more Constituents of Concern. Storage area shall include secondary containment to prevent release of spilled or leaking substances. Storage area shall include barriers to prevent vehicles from colliding with storage containers, and shall include protection from environmental effects such as elements, temperature, sunlight, and other environmental effects.
 2. Provide signage in accordance with Laws and Regulations, clearly identifying the storage area.
- F. Verification of Compliance:
1. Not less than monthly, Design Builder's safety representative shall meet with Owner's environmental representative at the Site to:
 - a. Review Design Builder's HMMP documents.
 - b. Review HMMP procedures.
 - c. Inspect storage areas and the Site in general, to verify compliance with this Section.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION - (NOT USED)

END OF SECTION

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SECTION 01 35 44
SPILL PREVENTION CONTROL AND COUNTERMEASURES PLAN

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
1. Requirements for Design Builder's spill prevention control and countermeasures, in accordance with 40 CFR 112 and other Laws and Regulations.
- B. Scope:
1. Design Builder shall provide all labor, materials, equipment, tools, professional services (when necessary or required), and incidentals as shown, specified, and required to comply with Laws and Regulations regarding spill prevention, control, and countermeasures (SPCC) planning and compliance, including 40 CFR 112.
 2. Design Builder shall determine whether a SPCC plan is necessary. If SPCC plan is necessary, Design Builder shall prepare, implement, and maintain SPCC plan in accordance with Laws and Regulations.
 3. Existing SPCC Plan: Owner's existing facility has an existing SPCC plan, administered and maintained by Owner. Design Builder's SPCC plan shall be consistent with facility's existing SPCC plan. Copy of facility's existing SPCC plan and related documents (if any) are available upon request to the Owner.

1.2 REFERENCES

- A. Terminology:
1. Terminology indicated below are not defined terms and are not indicated with initial capital letters, but when used in this Section have the meaning indicated below:
 - a. "Oil" has the meaning set forth in Laws or Regulations and generally includes petroleum products, fuel oil, hydraulic fluid, oil sludge, oil refuse, oil mixed with wastes other than dredged material, synthetic oil, vegetable oil, animal fats and oils, and other oils defined in Laws and Regulations.
 - b. "Navigable waters of the United States" includes navigable waters of the United States, contiguous zones, and associated shorelines, as set forth in Laws and Regulations.
 - c. "SPCC" means "spill prevention control and countermeasures".
 - d. "SPCC plan" means a SPCC plan complying with this Section and Laws and Regulations.

1.3 DETERMINATION OF NEED FOR SPCC PLAN FOR PROJECT

- A. Determination of Need for SPCC Plan:
1. Design Builder shall determine need for SPCC plan for the Project.
 2. On-site oil storage thresholds at which a SPCC plan is necessary are indicated in this Article.
 3. Depending on Site conditions and oil storage at the Site and other factors, the Project may:
 - (a) not need a SPCC plan, or
 - (b) need a SPCC plan prepared by a Design Builder-hired professional engineer, or
 - (c) need part of the SPCC plan prepared by a Design Builder-hired professional engineer. When Design Builder-hired professional engineer is not necessary for all or part of a required SPCC plan, Design Builder may self-prepare and self-certify SPCC plan elements not prepared by Design Builder's professional engineer.
 4. Design Builder's Professional Engineer:
 - a. If the Site will include storage of more than 10,000 GAL of oil, as defined in Laws and Regulations, in aboveground storage, or if the Site does not comply with oil discharge history criteria of 40 CFR 112, Design Builder shall retain a qualified professional engineer to determine need for SPCC plan for the Project and, if SPCC plan is

- necessary, Design Builder's professional engineer shall prepare or supervise preparation of Design Builder's SPCC plan.
- b. Qualifications requirements and basic responsibilities of Design Builder's professional engineer are set forth in this Section's "Quality Assurance" Article.
 - c. If a professional engineer is not required to prepare the entirety of the Project's SPCC plan, but the SPCC plan includes environmentally-equivalent SPCC measures (as set forth in Laws or Regulations), or impracticality determinations (in accordance with Laws or Regulations), then Design Builder shall retain a qualified professional engineer to prepare and certify those portions of the SPCC plan dealing with environmentally equivalent measures and impracticality determinations; the balance of the SPCC plan may be prepared by and be self-certified by Design Builder.
5. Submit to Program Manager letter presenting results of evaluation of whether a SPCC plan is necessary for the Project, in accordance with Laws and Regulations.
- B. SPCC plan is necessary when the Project activities at the Site meet the following criteria:
1. The Site and activities thereon are not exempt from Laws and Regulations relative to SPCC planning and implementation.
 2. Oil is stored, used, transferred, or otherwise handled at the Site, unless otherwise exempted by Laws or Regulations.
 3. Maximum oil storage capacity at the Site equals or exceeds either of the following thresholds: 42,000 GAL of completely-buried capacity, or 1,320 GAL of aboveground capacity. Capacity includes total storage tank volume and operational storage volume at the Site for Design Builder, other prime contractors, and Subcontractors, including bulk storage tanks, containers with 55-GAL storage capacity and larger, mobile tanks located at the Site, and other containers covered by Laws or Regulations. Exempt from the storage capacity determination are motive storage containers, such as those integral to construction equipment and vehicles.
 4. There is reasonable expectation, based on location of the Site, that oil spill would reach navigable waters of the United States (or contiguous zones or adjoining shorelines).
- C. Reassessment of Need for SPCC Plan after Initial Determination that SPCC Plan is not Needed:
1. After initial determination that SPCC plan is not necessary, Design Builder shall ensure that conditions that preclude the need for SPCC plan for the Project, including the activities of Design Builder, all other prime contractors (if any), and Subcontractors working on the Project at the Site, are maintained throughout the Project's duration.
 2. Should changes that affect the storage, use, or handling of oil at the Site occur, reassess the need for SPCC plan for the Project at no additional cost to Owner and submit written reassessment to Program Manager.

1.4 QUALITY ASSURANCE

- A. Qualifications:
1. Design Builder's Professional Engineer:
 - a. When required by Laws and Regulations, engage a licensed, registered professional engineer legally qualified to practice in the jurisdiction where the Site is located and experienced in performing engineering services of the type required. Submit qualifications data.
 - b. Responsibilities include but are not necessarily limited to:
 - 1) Carefully reviewing Laws and Regulations relative to SPCC.
 - 2) Preparing written requests for interpretations of the Contract Documents relative to SPCC for submittal to Program Manager by Design Builder, and obtaining from authorities having jurisdiction clarifications regarding Laws and Regulations as required.
 - 3) Preparing or supervising the preparation of letter-report evaluation of need for Design Builder's SPCC plan in accordance with the Contract Documents.

- Evaluation shall include professional engineer's seal or stamp, registration number, and original signature.
- 4) When Design Builder's SPCC plan is necessary, preparing, supervising the preparation of, or reviewing Design Builder's SPCC plan (or designated portions thereof when oil storage at the Site will be less than the threshold indicated in this Section or Laws and Regulations) in accordance with the Contract Documents. Design Builder's SPCC plan (or designated portions thereof) shall include professional engineer's seal or stamp, registration number, and original signature.
 - 5) Periodically re-evaluating the need for Design Builder's SPCC plan and issuing findings as letter-reports with seal or stamp, license number, and signature. When Design Builder's SPCC plan is required, periodically evaluating Design Builder's SPCC plan and providing recommendations for compliance with Laws and Regulations, in accordance with the Contract Documents.
 - 6) Certifying that:
 - a) it is familiar with the Laws and Regulations, including 40 CFR 112, and
 - b) it has visited, examined, and is familiar with the Site, planned modifications to the Site under the Project as such modifications pertain to SPCC Laws and Regulations, and
 - c) it has performed the evaluations and prepared Design Builder's SPCC plan in accordance with the Contract Documents, and
 - d) procedures for required testing and inspections have been established, and
 - e) the said evaluations and Design Builder's SPCC plan are adequate for the Project, and
 - f) the said evaluations and Design Builder's SPCC plan comply with Laws and Regulations, applicable industry standards, and to prevailing standards of practice.

1.5 SUBMITTALS

- A. Furnish Submittals required under this Section to Owner's environmental representative indicated in Section 01 35 43.13 - Environmental Procedures for Hazardous Materials.
- B. Submittals: Submit the following:
 1. Certifications:
 - a. With each evaluation letter and Design Builder's SPCC plan Submittal, include certification signed by preparer of Submittal that the Submittal complies with the Contract Documents and Laws and Regulations. Signature on all certifications shall be original.
 2. Evaluations:
 - a. Submit letter presenting results of evaluation of whether Design Builder's SPCC plan is required for the Project. Submit evaluation not later than 14 days after the Contract Times commence running, unless longer time is allowed (in writing) by Owner or Program Manager.
 - b. Submit updated evaluations as required when conditions at the Site change. Submit updated evaluation not later than 7 days after the conditions at the Site changed, or within 7 days of Owner's or Program Manager's request, unless longer time is allowed (in writing) by Owner or Program Manager.
 - c. Owner and Program Manager have no responsibility for completeness, accuracy, or appropriateness of Design Builder's evaluations, and Design Builder and Subcontractors (as applicable) have full responsibility and all liability associated therewith.
 3. Design Builder's SPCC Plan: When SPCC Plan is required:
 - a. Submit jointly to Owner. Submit within 14 days of Owner's acceptance of evaluation Submittal.

- b. Limitations Regarding Reviews:
 - 1) Reviews and comments (if any) by Owner on Design Builder's SPCC plan Submittal are not for benefit of Design Builder, Subcontractors, or anyone else for whom Design Builder may be responsible.
 - 2) Such reviews and comments (if any) shall not impose on Owner or Program Manager any obligation to evaluate the completeness, accuracy, or appropriateness of Design Builder's SPCC plan.
 - 3) Design Builder, together with Subcontractors (as applicable), bears full responsibility and all liability for completeness, accuracy, and appropriateness of Design Builder's SPCC plan.
- 4. Record of Distribution of Design Builder's SPCC Plan:
 - a. When Design Builder's SPCC plan is required, submit copies of letters transmitting Design Builder's SPCC plan and amendments (if any) to other prime contractors and Subcontractors working at the Site.
- 5. Qualifications Statements:
 - a. Submit qualifications of Design Builder's professional engineer, when requested by Owner or Program Manager.

1.6 DESIGN BUILDER'S SPCC PLAN AND IMPLEMENTATION

- A. When Design Builder's SPCC plan is required, develop the SPCC plan and submit for acceptance to entity indicated in this Section's "Submittals" Article. Design Builder's SPCC plan shall be specific to the Site and the Project and shall include the following:
 - 1. Seal or stamp, original signature, date, and license number of Design Builder's professional engineer, when self-certification by Design Builder is not allowed by Laws and Regulations.
 - 2. Site plan identifying the name (or tag number) and location of each tank and container that will contain a substance regulated in 40 CFR 112 and other Laws and Regulations, including aboveground and buried tanks. Site plan shall indicate general directions of stormwater runoff, including storm sewers, drainage inlets, and catch basins. Show arrows indicating directions of stormwater flow. Show and label all storm sewer outfall locations.
 - 3. For each tank and container shown or indicated on the Site plan, include a table indicating tank or container's name and tag number, type of oil stored therein, and maximum storage capacity in gallons. Indicate total storage capacity of all regulated tanks and containers at the Site covered by SPCC Laws and Regulations.
 - 4. Predictions of direction, rate of flow, and total quantity of oil that could be discharged from the Site as result of storage tank or container failure.
 - 5. Operating procedures that prevent oil spills, including procedures for oil handling, details of secondary containment structures at fuel and oil transfer areas, and details and descriptions of equipment to be used for oil handling, including piping.
 - 6. Control Structures and Secondary Containment:
 - a. Show details of and indicate descriptions of control measures to be provided at the Site by Design Builder to prevent spill from reaching navigable waters of the United States, including secondary containment and diversionary structures.
 - b. For on-shore Sites, use not less than one of the following: dikes, berms, or retaining walls; curbing; culverts, gutters, or other drainage systems; weirs, booms, or other barriers; spill diversion ponds; retention ponds; or sorbent materials or methods.
 - c. Where appropriate, Design Builder's SPCC plan shall clearly demonstrate that containment or diversionary structures or equipment are not practical.
 - d. Include brittle fracture evaluation, where necessary, for field-constructed aboveground storage containers undergoing repair, alteration, construction, or change in service.
 - 7. Plans for countermeasures to contain, clean up, and mitigate effects of oil spills that reach navigable waters of the United States, including written commitment of manpower, equipment, and materials to quickly control and remove spilled oil. Include estimation of time required to contain spills after spill occurs.

8. Contact list and telephone numbers for facility response coordinator, National Response Center, cleanup Subcontractors, and all appropriate federal, state, and local authorities having jurisdiction to be contacted in event of spill or discharge.
 9. Program for monthly inspections of the Site by Design Builder for compliance with Design Builder's SPCC plan and Owner's SPCC plan (as applicable). Advise Owner in writing of each inspection not less than 72 HRS prior to each inspection.
 10. Measures for Site security relative to oil storage.
 11. Procedures for safely handling mobile containers such as totes and drums, and procedures for refueling vehicles and construction equipment and machinery at the Site.
 12. Procedures and schedules for periodic testing of integrity of tanks and containers, and associated piping and valves.
 13. Plans for bulk storage container compliance with Laws and Regulations and the Contract Documents.
 14. Plans for personnel training and oil spill prevention briefings.
 15. For SPCC plans that do not follow the format indicated in Laws and Regulations, provide cross-reference to requirements of Laws and Regulations, including 40 CFR 112.7.
- B. Obtain acceptance of Design Builder's SPCC plan by entity indicated in this Section's "Submittals" Article, for coordination with Owner's Site-specific SPCC plan, if any.
 - C. Design Builder's SPCC plan shall be reviewed by Design Builder's professional engineer (when professional engineer is required) and Owner every 5 years, as applicable, unless more-frequent reviews or updates are required by Laws or Regulations. Design Builder shall perform updates and revisions of Design Builder's SPCC plan as necessary and submit same in accordance with the provisions of this Section for submittal and acceptance of Design Builder's initial SPCC plan.
 - D. Post a copy of Design Builder's accepted, certified SPCC plan in conspicuous location at the Site and furnish copies to Owner and Subcontractors as appropriate. All contractors shall comply with Design Builder's SPCC plan.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION

3.1 SPILL OR VIOLATION OF CONTRACTOR'S SPCC PLAN

- A. In event of violation of Design Builder's SPCC plan or release of oil attributable to construction or related activities, Design Builder shall:
 1. Notifications:
 - a. Immediately issue oral advisories and written notifications to Owner and other authorities in accordance with Laws and Regulations, including 40 CFR 110 and 40 CFR 112.
 - b. When required by Laws and Regulations, report to National Response Center, USEPA, and other authorities having jurisdiction, if any.
 2. Perform spill cleanup promptly and in accordance with Laws and Regulations, Design Builder's SPCC plan, and requirements of authorities having jurisdiction.
 3. Pay fines and civil penalties (or responsible portion thereof) imposed on Owner by authorities having jurisdiction, and pay costs associated with cleanup of spills. If Design Builder fails to promptly pay such costs, Owner may withhold such amounts from payments due Design Builder, as one or more set-offs.
- B. Should cleanup of spills attributable to Design Builder be necessary, Design Builder will not be entitled to any associated increase in the Contract Price or Contract Times. Should Design Builder share responsibility for spill and cleanup with another entity, changes in Contract Price and Contract Time, if any, will be proportionate to other entity's responsibility.

END OF SECTION

SECTION 01 41 26
STORMWATER POLLUTION PREVENTION PLAN AND PERMIT

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Requirements for compliance with the Project's Stormwater Pollution Prevention Plan (SWPPP) and its revisions, Laws and Regulations, and permit(s) applicable to the Project, including:
 - a. Design Builder's general responsibilities for stormwater discharges associated with construction activity.
 - b. Inspection, during construction, of stormwater controls and temporary erosion and sediment controls, and associated repair and maintenance.
- B. Scope:
 - 1. Design Builder shall provide all labor, materials, tools, equipment, services, and incidentals necessary and required to fulfill Design Builder's responsibilities under this Section, including complying with the applicable Virginia Pollution Discharge Elimination System (VPDES) general permit for stormwater discharges associated with construction activity ("stormwater permit") administered by Virginia Department of Environmental Quality for the Project.
 - 2. Requirements of this Section are in addition to, and do not supersede or conflict with, requirements of other Specifications, including:
 - a. Section 01 57 05 - Temporary Controls, including requirements for controlling stormwater during construction and temporary erosion and sediment controls.
- C. Related Requirements:
 - 1. Include, but are not necessarily limited to:
 - a. Section 01 57 05 - Temporary Controls.

1.2 REFERENCES

- A. Relevant Documents:
 - 1. Stormwater Permit for the Project:
 - a. Application for the Project's stormwater permit shall be prepared by Design Builder's Engineer for the Owner and, prior to construction, and submitted to the authority having jurisdiction.
 - b. Any revisions, modifications, administration, and all other miscellaneous requirements associated with the permit shall be the Design Builder's responsibility.
 - 2. Erosion and Sediment Control Permit:
 - a. Application for the Project's erosion and sediment control permit shall be prepared by the Design Builder's Engineer for the Owner and, prior to construction, shall be submitted to Arlington County Permit Office, which is the authority having jurisdiction over erosion and sediment control during construction.
 - b. Erosion and sediment control permit are part of the Contract Documents and is an attachment to this Section.

1.3 DESIGN BUILDER'S GENERAL RESPONSIBILITIES UNDER THIS SECTION

- A. The Contract Price includes all labor, material, tools, equipment, services, and incidental costs necessary for:
 - 1. Preparing SWPPP and other documents.
 - 2. Installing and maintaining structural and non-structural items used in complying with the SWPPP and its revisions.

3. Other administrative Work required.
 4. Clean-up, disposal, and repairs following precipitation events or spills caused by Design Builder (including all subcontractors).
 5. Implementing and maintaining “best management practices”, as defined in applicable permits and Laws or Regulations, to comply with requirements that govern stormwater discharges at the Site.
 6. Complying with other requirements of this Section.
- B. Stormwater Pollution Prevention and Approval of System Owner:
1. Prevent erosion on the Site and discharge of sediment to surface waters, drainage routes, streets and rights-of-way, and private property, including dewatering operations.
 2. Prevent on-site trash, debris, and other pollutants from leaving the Site via stormwater runoff.
 3. Provide berms, swales, and other appropriate methods of directing stormwater around work areas to appropriate drainage routes.
 4. Prior to starting the Work associated with such discharge of stormwater, construction-related discharges to publicly-owned conveyance or treatment systems shall be approved by owner of system to which the discharge will be directed.
- C. Water Quality:
1. Do not cause or contribute to a violation of water quality standards, Laws or Regulations, or the Project’s stormwater permit.
 2. Notify Program Manager of revisions to the SWPPP, update the SWPPP, and implement SWPPP changes necessary to prevent any violations of the stormwater permit.
- D. Liability for Costs Incurred due to Violations:
1. Design Builder shall pay civil penalties and other costs incurred by Owner, including additional engineering and inspection services, associated with non-compliance with applicable permits related to stormwater discharges associated with construction activity and erosion and sediment controls associated with the Project.
 2. Owner may deduct such amounts, as one or more set-offs, from payments due Design Builder for the Project.
- E. Inspections and Recordkeeping:
1. Perform inspections of stormwater, and erosion and sediment controls.
 2. Prepare and maintain records of stormwater inspections.
 3. Maintain records of maintenance of stormwater controls and temporary erosion and sediment controls, SWPPP Revisions, and other records required and shall keep these records and copies of all documents that make up the SWPPP at the construction site and available to the Owner, Program Manager, and authority having jurisdiction that may need to review them.
- F. Coordination:
1. Coordinate requirements of this Section with Project requirements, such as, earthwork, temporary erosion and sediment controls, demolition, etc.
 2. Implement SWPPP controls and practices prior to starting other Work at the Site.

1.4 QUALITY ASSURANCE

- A. Regulatory Requirements:
1. Comply with Laws and Regulations, including federal, state, and local, relative to stormwater discharges associated with construction activity, and associated restoration. Comply with applicable permits.

1.5 SUBMITTALS

- A. Informational Submittals: Submit the following:
1. Documentation of stormwater permit.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION

3.1 INSPECTIONS AND REPAIRS

- A. Perform site inspections and assessments of the Site as required by the Project's stormwater permit. Inspections and assessments shall be by Design Builder's personnel.
- B. Maintain at the Site a copy of stormwater Site plans from each stormwater inspection and submit each stormwater Site plan to Program Manager. Design Builder shall maintain at the Site a log book with a copy of each Stormwater Inspection Report.
- C. Cooperate with representatives of authorities having jurisdiction during their periodic visits to the Site, and promptly furnish information requested by authorities having jurisdiction.
- D. Repair physical controls of stormwater pollution, including (but not limited to temporary erosion and sediment controls), in accordance with contract requirements and to the satisfaction of the authority having jurisdiction.

END OF SECTION

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SECTION 01 45 16
DESIGN BUILDER CONSTRUCTION QUALITY CONTROL

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: General requirements for Design Builder Construction Quality Control system, include responsibilities for inspections, tests, certificates and reports.
- B. Related Specification Sections include but are not necessarily limited to:
 - 1. Division 01 - General Requirements.
- C. The Design Builder is responsible for quality control and shall establish and maintain an effective quality control system in compliance with these specifications. The Design Builder Quality Control (DBQC) system shall consist of plans, procedures, and organization necessary to provide materials, equipment, workmanship, fabrication, construction, and operations, both on-site and off-site, that complies with contract requirements and is keyed with the construction schedule. The Design Builder shall review and certify as correct and complete, and in compliance with contract requirements, all shop drawings and lists of materials, fixtures, and equipment as required by technical specifications.
- D. Quality Control is the sole responsibility of the Design Builder. The Owner (through the Program Manager) will perform Quality Assurance to verify compliance with the Design Builder's Quality Control Plan.
- E. Recurring Deficiencies: If recurring deficiencies indicate that the DBQC System is not adequate, corrective action shall be taken as directed by the Owner. Progress payments may be withheld until such corrective action has been completed.

1.2 QUALITY ASSURANCE

- A. Referenced Standards:
 - 1. ASTM C1077 – Standard Practice for Laboratories Testing Concrete and Concrete Aggregate for Use in Construction and Criteria for Laboratory Evaluation.
 - 2. ASTM D3740 – Evaluation of agencies engaged in Testing and/or Inspection of soil and rock as used in engineering design and construction.
 - 3. ASTM E 329 – Evaluation of testing and inspection agencies as used in construction.
- B. Referenced Specifications:
 - 1. USACE United Facilities Guide Specification 01 45 00.00 10 (as used for construction projects)
- C. The Design Builder shall perform internal Quality Assurance audits on a regular basis, no less than semi-annually.
 - 1. Audits shall be conducted by senior level quality control representative not regularly affiliated with the project.
 - 2. Audits shall review compliance with the project DBQC Plan.
 - 3. Submit the results of the audit to the Owner for review.
 - a. Identify corrective actions required and dates required for completion.
 - 4. If recurring deficiencies occur and if directed by the Owner, the Design Builder shall conduct audits on a quarterly basis.

1.3 DEFINITIONS

- A. Definable Feature of Work (DFOW): A DFOW is a task which is separate and distinct from other tasks, has separate control requirements, and may be identified by different trades or disciplines, or it may be work by the same trade in a different environment. Although each

section of the specifications may generally be considered as a definable feature of work, there are frequently more than one definable feature under a particular section.

- B. Quality Control (QC) system: The QC system consists of plans, procedures, and organization necessary to produce an end product which complies with the contract requirements.

1.4 SUBMITTALS

- A. See Specification Section 01 33 00 for requirements for the mechanics and administration of the submittal process.
- B. Submit Design Builder's Quality Control (DBQC) Plan describing the administration of the DBQC program. The DBQC shall be submitted during the Pre-Construction Phase. Include the following:
 - 1. The procedures, instruction, and reports that will be used to assure compliance with the Contract Documents. As a minimum, include the following:
 - a. Description of the Design Builder's quality control organization.
 - b. An organizational chart showing responsibilities and lines of authority.
 - c. Authority of DBQC staff to implement quality control for this project.
 - 2. For each person assigned QC responsibilities on this project, identify the following:
 - a. Name.
 - b. Qualifications (in resume format).
 - c. Project duties and responsibilities.
 - d. Authorities.
 - 3. A "Letter of Authorization" signed by an officer of the firm appointing the DBQC manager for the project:
 - a. Describe DBQC manager's specific responsibilities for this project.
 - b. Delegate sufficient authorities to the DBQC manager to enable that person to perform the assigned duties.
 - c. Include the authority to "Stop Work" when it is not in compliance with the Contract Requirements.
 - 4. Copies of "Letters of Direction" from the DBQC manager to each of the various QC representatives outlining their individual duties and responsibilities.
 - 5. Outside organizations that will assist the Design Builder with implementation of the DBQC plan. This should include consulting engineers, testing laboratories, architects, etc:
 - a. Provide the name and address of each organization.
 - b. Identify the specific services provided by each firm.
 - 6. Each major subcontractor that will be used on the project:
 - a. Provide the name and address.
 - b. Describe the services to be provided.
 - 7. A detailed description of the procedures that will be followed to ensure that shop drawings, samples, product data, administrative submittals and similar items meet the Contract requirements:
 - a. Identify the name(s) of personnel authorized to review submittals.
 - b. Identify the name(s) of personnel authorized to certify for the Design Builder that submittals meet with the Contract requirements.
 - 8. Identify the following for each specification section:
 - a. Personnel authorized to review submittals.
 - b. Personnel who will inspect Work provided.
 - c. Personnel or firms that will perform on-site, laboratory or factory testing.
 - 9. A detailed description of the procedures that will be used to document quality control operations, inspections, and testing. Include a copy of all forms and reports used for these purposes.
 - 10. A testing plan that addresses facilities, processes, equipment and material. Identify all tests required by the Contract Documents.

11. Procedures for tracking preparatory, initial, and follow-up control phases and control, verification, and acceptance tests including documentation.
 12. Procedures for tracking construction deficiencies from identification through acceptable corrective action. Establish verification procedures that identified deficiencies have been corrected.
 13. Reporting procedures, including proposed reporting formats.
 14. A list of the definable features of work.
 15. Develop and maintain a submittal status log for the duration of the project:
 - a. List all required submittals by Specification Section.
 - b. Identify actions required by the Design Builder, the Design Professional, the Owner, and the Program Manager.
 - c. Submit an updated log with each payment application.
 16. The Owner shall accept the DBQC plan prior to the Design Builder beginning construction work:
 - a. Acceptance of the DBQC plan shall be conditional, predicated upon satisfactory performance during the Work.
 - b. Owner may require changes in the plan, including the replacement of QC personnel, in order to obtain the specified quality of Work.
 - c. The Design Builder shall notify the Owner in writing at least 7 days prior to changing the approved DBQC plan. Such changes shall be subject to the acceptance of the Owner.
- C. Quality Control Daily Reports including:
1. Submit electronically within 24 HRS of the date covered by the report. No detailed report is required to be submitted for days on which no work is performed. Indicate in electronic project management system those days for which no work was performed (including weekends and holidays).
 2. Include a statement that equipment and materials incorporated in the work and workmanship comply with the contract.
 3. Electronically submitted by the DBQC Manager and time stamped with date of submittal.
 4. Include:
 - a. Subcontractor and their area of responsibility:
 - 1) Describe the trades working on the project.
 - b. Description of the work performed each day:
 - 1) Provide location and identify the personnel performing the work.
 - 2) Include both conforming and non-conforming work.
 - c. Total number of personnel working on the project each day:
 - 1) Total number of personnel by craft.
 - 2) Separate totals for office, supervisory, and direct labor personnel.
 - d. Weather conditions each day and identify any delays encountered.
 - e. Major construction equipment used on the work each day. Separate all idle construction equipment.
 - f. Test and/or control activities performed with results and reference specifications/drawing requirements:
 - 1) Identify control phase (Preparatory, Initial, Follow-up).
 - 2) List deficiencies noted with corrective action.
 - g. Quantity of materials and equipment received at the site with statement as to acceptability, storage, and reference to specifications/drawing requirements.
 - h. Submittals and deliverables reviewed, with contract reference, by whom, and action taken.
 - i. Off-site surveillance activities, including actions taken.
 - j. Job safety evaluations stating what was checked, the results, and any instructions or corrective actions taken.
 - k. Instructions given/received and conflicts in Contract Documents.

- I. Records:
 - 1) Daily test information sheets.
 - 2) Factory test results.
 - 3) Off-site inspection reports.
 - 4) Manufacturer's certifications.
 - 5) Field test and laboratory results.
 - 6) Documentation required elsewhere in the Contract Documents.
- D. Maintain DBQC records on-site in a central location:
 1. Identify each record and ensure that it is traceable to a specific requirement cited on either the Drawings or in the Specifications.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 GENERAL REQUIREMENTS

- A. Establish and maintain an effective quality control (QC) system:
 1. The project superintendent will be held responsible for the quality of work and is subject to removal by the Owner for non-compliance with the quality requirements specified in the contract.
 2. In this context the highest-level manager responsible for the overall construction activities at the site, including quality and production, is the project superintendent.
 3. The project superintendent must maintain a physical presence at the site at all times and is responsible for all construction and related activities at the site, except as otherwise acceptable to the Owner.

3.2 PRELIMINARY DBQC COORDINATION MEETING

- A. DBQC representative shall meet with the Owner and Program Manager before construction begins and at least 5 days after submitting the final DBQC plan to discuss quality control requirements for the project and develop a mutual understanding of the Design Builder's overall approach to quality control.
- B. Establish the following during the meeting:
 1. Schedule for future DBQC meetings (bi-weekly, monthly, or as required by the Owner or Program Manager).
 2. Procedures for submitting reports, records, and other required documents.
 3. Agree upon DFOV.
 4. Special Inspection coordination (refer to Section 01 45 33).
- C. The DBQC representative shall develop an agenda for each DBQC meeting and distribute copies to the Owner and Program Manager for review at least 5 calendar days prior to the meeting.
- D. The DBQC representative shall develop minutes for each DBQC meeting. Distribute copies to all in attendance within 5 calendar days of the meeting.

3.3 DESIGN BUILDER QUALITY CONTROL ORGANIZATION

- A. General:
 1. The requirements for the DBQC organization are a DBQC Manager, Safety and Health Manager, and sufficient number of additional qualified personnel to ensure safety and contract compliance.
 2. The Safety and Health Manager must receive direction and authority from the DBQC Manager and serve as a member of the DBQC staff.
 3. Personnel possessing specialized skills to assure the required work is being performed properly will also be included as part of the DBQC organization.

4. The DBQC staff must maintain a presence at the site at all times during progress of the work and have complete authority and responsibility to take any action necessary to ensure contract compliance.
 5. The DBQC staff will be subject to acceptance by the Owner.
 6. Provide adequate office space, filing systems, and other resources as necessary to maintain an effective and fully functional DBQC organization.
 7. Promptly complete and furnish all letters, material submittals, shop drawing submittals, schedules, and all other project documentation to the DBQC organization.
 8. The DBQC organization shall be responsible to maintain these documents and records at the site at all times.
- B. DBQC Manager:
1. Identify as DBQC Manager an individual within the on-site work organization who is responsible for overall management of DBQC and have the authority to act in all DBQC matters for the Design Builder.
 2. The DBQC Manager must have a minimum of 10 years construction experience on construction similar to this contract.
 3. The DBQC Manager must be on the site at all times during construction and be employed by the Design Builder.
 4. The DBQC Manager must be assigned no other duties.
 5. The DBQC Manager must not report directly to any field personnel. The DBQC Manager must report through an off-site executive of the Design Builder.
 6. Identify in the plan an alternate to serve in the event of the DBQC Manager's absence. The requirements for the alternate are the same as the DBQC Manager.
- C. DBQC Personnel:
1. In addition to DBQC personnel specified elsewhere in the contract, provide as part of the DBQC organization specialized personnel to assist the DBQC Manager for the following areas: process, electrical, mechanical, civil, structural, and architectural.
 2. These individuals must: be directly employed by the Design Builder and may not be employed by a supplier or subcontractor on this project; be responsible to the DBQC Manager; be physically present at the construction site during work on their areas of responsibility; have the necessary education and/or experience in accordance with the experience matrix listed herein.
 3. These individuals may perform other duties but must be allowed sufficient time to perform their assigned quality control duties as described in the DBQC Plan.
 4. A single person may cover more than one area provided that they are qualified to perform DBQC activities in each designated area and that workload allows.
- D. Organizational Changes:
1. Maintain the DBQC staff at full strength at all times.
 2. When it is necessary to make changes to the DBQC staff, revise the DBQC Plan to reflect the changes and submit the changes to the Owner for acceptance.

3.4 PHASES OF CONTROL

- A. At least three phases of control must be conducted by the DBQC Manager for each DFOW as follows:
- B. Preparatory Phase: This phase is performed prior to beginning work on each DFOW, after all required plans/documents/materials are approved/accepted, and after copies are at the work site, including:
1. A review of each paragraph of applicable specifications, reference codes, and standards. Make available during the preparatory inspection a copy of those sections of referenced codes and standards applicable to that portion of the work to be accomplished in the field. Maintain and make available in the field for use by Owner until final acceptance of the work.

2. Review of the contract drawings.
 3. Check to ensure that all materials and/or equipment have been tested, submitted, and approved.
 4. Review of provisions that have been made to provide required control inspection and testing.
 5. Examination of the work area to assure that all required preliminary work has been completed and is in compliance with the contract.
 6. Examination of required materials, equipment, and sample work to assure that they are on hand, conform to approved shop drawings or submitted data, and are properly stored.
 7. Review of the appropriate activity hazard analysis to ensure safety requirements are met.
 8. Discussion of procedures for controlling quality of the work including repetitive deficiencies. Document construction tolerances and workmanship standards for that feature of work.
 9. Discussion of the initial control phase.
 10. The Owner must be notified at least 72 HRS in advance of beginning the preparatory control phase.
 11. Include a meeting conducted by the DBQC Manager and attended by the superintendent, other DBQC personnel (as applicable), and the foreman responsible for the definable feature.
 - a. Document the results of the preparatory phase actions by separate minutes prepared by the DBQC System Manager and attach to the daily DBQC report.
 - b. Instruct applicable workers as to the acceptable level of workmanship required in order to meet contract documents.
- C. Initial Phase: This phase is accomplished at the beginning of a DFOW. Accomplish the following:
1. Check work to ensure that it is in full compliance with contract requirements. Review minutes of the preparatory meeting.
 2. Verify adequacy of controls to ensure full contract compliance. Verify required control inspection and testing.
 3. Establish level of workmanship and verify that it meets minimum acceptable workmanship standards. Compare with required sample panels as appropriate.
 4. Resolve all differences.
 5. Check safety to include compliance with and upgrading of the safety plan and activity hazard analysis. Review the activity analysis with each worker.
 6. The Owner must be notified at least 24 HRS in advance of beginning the initial phase.
 7. Prepare separate minutes of this phase by the DBQC Manager and attach to the daily DBQC report.
 - a. Indicate the exact location of initial phase for future reference and comparison with follow-up phases.
 8. The initial phase should be repeated for each new crew to work on-site, or any time acceptable specified quality standards are not being met.
- D. Follow-up Phase:
1. Perform daily checks to assure control activities, including control testing, are providing continued compliance with contract requirements, until completion of the particular feature of work.
 2. Record the checks in the DBQC documentation.
 3. Conduct final follow-up checks and correct all deficiencies prior to the start of additional features of work which may be affected by the deficient work.
 4. Do not build upon nor conceal non-conforming work.
- E. Additional Phases: Conduct additional preparatory and initial phases on the same DFOW if:
1. The quality of ongoing work is unacceptable.
 2. There are changes in the applicable DBQC staff, on-site production supervision or work crew.

3. Work on a definable feature is resumed after a substantial period of inactivity.
4. Or other problems develop.

3.5 TESTS

- A. Refer to Section 01 45 33 for Special Inspection requirements and coordination.
- B. Testing Procedure:
 1. Perform specified or required tests to verify that control measures are adequate to provide a product which conforms to contract requirements.
 2. Provide at least 24 HRS' notice to Program Manager prior to when specified testing is required.
 3. Upon request, furnish to the Owner duplicate samples of test specimens for possible testing by the Owner.
 - a. Owner will make test results available to Design Builder.
 - b. Testing to satisfy Design Builder's internal Quality Control procedures shall be Design Builder's responsibility.
 4. Provide labor and materials, and necessary facilities at the site as required by the Owner and the testing laboratory
 5. Testing includes operation and/or acceptance tests when specified. Refer to Section 01 75 00.
 6. Perform vibration monitoring per Section 01 71 33 – Protection of the Work and Property.
- C. Perform the following activities and record and provide the following data:
 1. Verify that testing procedures comply with contract requirements.
 2. Verify that facilities and testing equipment are available and comply with testing standards.
 3. Check test instrument calibration data against certified standards.
 4. Verify that recording forms and test identification control number system, including all of the test documentation requirements, have been prepared.
 5. Record results of all tests taken, both passing and failing on the DBQC report for the date taken:
 - a. Include specification paragraph reference, location where tests were taken, and the sequential control number identifying the test.
 - b. If approved by the Owner, actual test reports may be submitted later with a reference to the test number and date taken.
 - c. Provide an information copy of tests performed by an off-site or commercial test facility directly to the Owner.
 - d. Failure to submit timely test reports as stated may result in nonpayment for related work performed and disapproval of the test facility for this contract.
- D. Testing Agency:
 1. Use an independent commercial testing laboratory for all testing to demonstrate compliance with the Contract Documents.
 2. The laboratory shall have performed previous satisfactory work for the Owner or be certified by the National Voluntary Laboratory Accreditation Program, Telephone (301) 975-4016 or the Washington Area Council of Engineering Laboratories Inc., Telephone (301) 588-8668.
 3. The independent testing agency performing electrical inspections and tests shall be a member of the National Electrical Testing Association.
 4. Testing agencies shall be approved by the Owner prior to use.

3.6 MANUFACTURER'S FIELD SERVICES

- A. Require supplier and manufacturer to provide qualified personnel to observe field conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust and balance of equipment as applicable, and to make appropriate recommendations.

- B. Representative shall submit written report to the Owner listing observations and recommendations. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturer's written instructions.

3.7 OWNER'S RIGHTS

- A. The Owner, the Program Manager, and Code Officials have the right to inspect all material and equipment at all stages of development or fabrication.
 - 1. They shall be allowed unrestricted access to the site and to the Design Builder's and Supplier's shops to conduct such inspections.
 - 2. On-site work will be subjected to continual inspection.
 - 3. Inspection by the Owner or others will not release the Design Builder from responsibility or liability with respect to material or equipment.
 - 4. The Owner shall provide the Design Builder a minimum of 24 HRS' notice prior to unscheduled off-site inspections.
- B. Through the Program Manager, the Owner will designate a dedicated Quality Assurance (QA) Manager for the Work. The DBQC team shall fully cooperate with the Owner's QA Manager, including, but not limited to:
 - 1. Allowing unimpeded access to all areas of the Work.
 - 2. Providing real-time access to all QC documents developed by the QC team.
 - 3. Providing reasonable advance notice of all QC activities, including compliance with the notice requirements given herein.
 - 4. Establishing procedures for identifying and documenting non-conforming work.
 - 5. Developing and utilizing an appropriate escalation process to resolve disagreements between field personnel.
- C. When local codes or laws require approval and inspection of the Work by other agencies or organizations before installation or operation, the Design Builder shall obtain such approval and submit one signed original and three copies of the approval to the Program Manager.

END OF SECTION

SECTION 01 45 33
SPECIAL INSPECTIONS AND TESTING PROGRAM

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Design Builder responsibilities for special inspection and testing.
 - 2. Special Inspection program and reporting requirements.
 - 3. Attachment A to this Specification Section includes Special Inspector qualifications, reporting requirements, and material specific inspections and tests.
 - a. This information is for the Contractor reference only and is not part of the Contract Documents.
 - b. It is included to assist the Contractor in understanding the Owner-provided Services so that those services may be factored into the Contractor's pricing and schedule.
 - c. The Service Provider(s) responsible for the Owner-provided Services will be selected after Contract award.
- B. Purpose:
 - 1. This Document was developed to address the requirements of the 2018 Virginia Uniform Statewide Building Code (VUSBC), section 1704, including:
 - a. One or more special inspectors will be hired by the Owner or the Owner's Agent to provide inspections during constructions on the types of work listed under Section 1704.
 - 2. A Statement of Special Inspections shall be submitted to the Building Code Official by the Design Professional as a condition for permit issuance. Refer to the Arlington County Department of Community Planning, Housing, and Development Inspection Services Division Pre-Construction Manual. Attachment A includes a list of the minimum qualifications of the individuals, approved agencies or firms intended to be retained for conducting such inspections.
- C. Related Specification Sections include but are not necessarily limited to:
 - 1. 01 45 16 – Design Builder Construction Quality Control.

1.2 DEFINITIONS

- A. Special Inspector: Representative of the Owner approved inspection agency designated for that portion of the work.
- B. Testing Agency: Approved agency, not affiliated or hired by the Contractor, which is responsible for the materials testing requirements of the project including but not limited to concrete cylinder breaks, soils testing, and masonry materials testing.
- C. Statement of Special Inspections: Document provided to the Building Code Official outlining special inspections and tests to be done on the project and frequency of required test.
- D. Soils Engineer or Geotechnical Engineer: For the purposes of Special Inspection "Soils Engineer," "Geotechnical Engineering," and "Special Inspector" shall be interchangeable as pertains to the Design Professional specifications.
- E. NICET: National Institute for Certification in Engineering Technologies.

1.3 DESIGN BUILDER'S RESPONSIBILITIES

- A. Cooperate with testing agency personnel, special inspector, and agents of the Building Code Official and provide access to the work.
 - 1. Providing access to the work shall include all labor and facilities to perform inspections and tests as listed in the specifications for the duration of the inspections or tests involved.
 - 2. Provide means to obtain and handle samples taken on-site.
 - 3. Provide a Statement of Responsibility as described by Chapter 17 of the Building Code.
 - 4. Provide two printed copies of approved documents (submittals, details, etc.) to the testing agency personnel at the time of inspection.
- B. Attend a pre-construction meeting to coordinate and clarify inspection and testing procedures, requirements.
- C. Notify special inspector and/or testing agency of work to be inspected/tested minimum of 24 HRS prior.
- D. Work for which special inspections are required shall remain accessible and exposed for the purposes of special inspections until completion of required special inspections.
- E. Any portion of work that is not in conformance shall be corrected and re-inspected. Such portions of the work shall not be covered or concealed until authorized by Owner's Representative.
- F. Work to be inspected should be complete prior to inspector's arrival on-site.
- G. Special Inspection is intended to be an independent quality assurance. Special Inspections shall not relieve the Design Builder of any quality assurance, quality control, workmanship, or warranty responsibilities. Design Builder's own personnel shall review all work to be inspected for conformance with Contract Documents prior to calling for inspection.

1.4 QUALITY ASSURANCE

- A. Regulatory Requirements:
 - 1. Comply with Laws and Regulations and applicable codes relative to Special Inspections. Comply with applicable permits.

1.5 REPORTING DUTIES AND AUTHORITY

- A. A pre-construction meeting to coordinate and clarify inspection, testing, and procedural requirements will be held.
 - 1. The meeting is to be attended by:
 - a. Owner.
 - b. Design Professional.
 - c. Program Manager.
 - d. Building Code Official or designee.
 - e. Testing Agency and Special Inspectors.
 - f. Design Builder.
 - g. Appropriate Sub-contractor(s).
- B. Special Inspector shall report all deficient work to the Design Builder and Program Manager as soon as possible.
 - 1. Deficient work that has been covered up or concealed prior to re-inspection shall be reported to the Design Professional, Program Manager and the Building Code Official.
- C. Special Inspector does not have authority to stop work or modify the requirements of the Contract Documents.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION - (NOT USED)

END OF SECTION

ATTACHMENT A TO SECTION 01 45 33
SPECIAL INSPECTIONS, INSPECTOR QUALIFICATIONS AND REPORTING
REQUIREMENTS

PART 1 - GENERAL

1.1 QUALIFICATIONS

- A. Qualifications stated here are the minimum recommended. If the Building Code Official or Design Professional have more stringent qualifications, the more stringent qualifications will take precedence.
- B. All Special Inspections and Testing to be done under the direction of a Professional Engineer or Registered Architect registered in the Commonwealth of Virginia herein referred to as Registered Professional for Special Inspections (RPSI).
- C. Soil, concrete, masonry, mortar, grout, steel and aluminum related testing.
 - 1. The Testing Agency shall have a minimum of 10 years' experience in the testing of these materials.
 - 2. The Testing Agency's technician(s) conducting this testing:
 - a. Shall have a minimum of 5 years' experience in the testing of soil, concrete, mortar, grout, steel and aluminum as appropriate.
 - 3. Concrete related work:
 - a. International Code Council certification for Reinforced Concrete and American Concrete Institute Concrete Field Testing Technician – Grade 1.
- D. Special Structural Inspections:
 - 1. Professional Engineers or Architects, licensed in the Commonwealth of Virginia, may perform special inspections in accordance with their license qualifications.
 - 2. Other individuals, working under the direct supervision of a licensed engineer and meeting the following qualifications, may perform special inspections.
 - 3. Soils related work:
 - a. NICET Level II Certification in geotechnical engineering technology/construction; or
 - b. Registered Geologist; or
 - c. Engineer Intern under the direct supervision of a Licensed Professional Engineer.
 - 4. Concrete related work:
 - a. International Code Council certification for Reinforced Concrete Special Inspector or American Concrete Institute Concrete Construction Special Inspector.
 - b. Alternatively, may be an Engineer Intern under the direct supervision of a Licensed Professional Engineer.
 - 5. Precast concrete erection related work:
 - a. Engineer Intern under the direct supervision of a Licensed Professional Engineer.
 - 6. Precast concrete erection welding:
 - a. American Welding Society as a Certified Welding Inspector; or
 - b. International Code Council Structural Steel and Welding Certification and American Welding Society Qualified and 1 year of related experience; or
 - c. NDT Level II or II Certificate (for non-destructive testing only).
 - 7. Masonry related work:
 - a. Shall be certified by the International Code Council or American Concrete Institute for structural masonry and 1 year of related experience.
 - b. Alternatively, may be an Engineer Intern with a minimum of 2 years appropriate training.
 - 8. Steel and aluminum related work:
 - a. Frame and material verification.

- b. Welding:
 - 1) American Welding Society as a Certified Welding Inspector; or
 - 2) International Code Council Structural Steel and Welding Certification and American Welding Society Qualified and 1 year of related experience; or
 - 3) NDT Level II or II Certificate (for non-destructive testing only).
- c. High strength bolting:
 - 1) International Code Council Structural Steel and Welding Certification and 1 year related experience.
 - 2) Alternatively, may be an Engineer Intern with appropriate training.
- d. Spray-applied fireproofing related work:
 - 1) International Code Council Spray-Applied Fireproofing Certification; or
 - 2) Alternatively, may be an Engineer Intern with appropriate training.
- 9. Fire resistive coating (intumescent paint) related work:
 - a. International Code Council Spray-Applied Fireproofing Certification and 3 years of related experience; or
 - b. International Code Council Fire Inspector 1 Certification and 3 years of related experience.
- 10. Other equivalent certifications will not be acceptable unless approved by the Engineer.

1.2 REPORTING DUTIES AND AUTHORITY

- A. Special Inspector shall report all deficient work to the Design Builder as soon as possible.
 - 1. Deficient work that has been covered up or concealed prior to re-inspection shall be reported to the Design Professional, Program Manager, and the Building Code Official.
- B. Special Inspector does not have authority to stop work or modify the requirements of the Contract Documents.

1.3 MATERIAL SPECIFIC SPECIAL INSPECTIONS AND TESTS

- A. Material specific requirements for special inspection and testing shall be listed in the Design Professional's technical specifications. Special inspection and testing requirements shall be located in each appropriate technical specification under "SOURCE QUALITY CONTROL," "FIELD QUALITY CONTROL" and/or "QUALITY ASSURANCE" as appropriate for each material.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION - (NOT USED)

END OF ATTACHMENT A

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SECTION 01 51 05

TEMPORARY UTILITIES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Temporary electricity.
 - 2. Temporary lighting.
 - 3. Temporary communications.
 - 4. Temporary heating, cooling, ventilating, and temporary enclosures.
 - 5. Temporary water supply.
 - 6. Temporary sanitary facilities.
 - 7. Temporary first-aid facilities.
 - 8. Temporary fire protection.
- B. Scope:
 - 1. Design Builder shall provide all temporary utilities and temporary facilities required for the Project, including those indicated in this Specifications section.
 - 2. Make all arrangements with utility owners for temporary utilities and with others as appropriate for temporary facilities. Obtain required permits and approvals for temporary utilities and temporary facilities.
 - 3. Pay all service costs for utilities and facilities indicated in this Specifications section as Design Builder's responsibility, including cost of electricity, water, fuel, and other utility services and temporary facilities required for the Work.
 - 4. Continuously maintain adequate temporary utilities and temporary facilities for all purposes for the Project, until removal of temporary utilities and temporary facilities. At minimum, provide and maintain temporary utilities and temporary facilities through Substantial Completion and removal of temporary field offices and sheds unless otherwise approved in writing by Program Manager.
 - 5. Maintain, including cleaning, temporary utilities and temporary facilities, and continuously provide consumables as necessary.
 - 6. Temporary utilities and temporary facilities shall be adequate for personnel using the Site and the needs of the Project.
 - 7. Provide temporary utilities and temporary facilities in compliance with Laws and Regulations and requirements of authorities having jurisdiction and, when applicable, requirements of utility owners.

1.2 REQUIREMENTS FOR TEMPORARY UTILITIES AND TEMPORARY FACILITIES

- A. Temporary Electricity:
 - 1. Provide temporary electric service necessary for the Work, including continuous power for temporary field offices and sheds. Provide temporary outlets with circuit breaker protection and ground fault protection.
 - 2. Temporary Electricity for Field Offices and Sheds:
 - a. Design Builder may restore and reuse the existing electrical feed for temporary power for field offices and sheds. Design Builder is responsible for field investigations and confirmation of power availability.
 - b. Provide temporary electric service and convenience outlets in Program Manager's field office in accordance with Section 01 52 11 - Program Manager's and Design Builder's Field Office.
 - 3. Temporary Electricity for Work in Existing Buildings:
 - a. Contractor may use existing 120 V convenience receptacles in Owner's existing building spaces for items such as small hand tools.

- b. Contractor shall provide its own temporary electric power source independent of Owner's system for uses such as welding and other temporary electricity demands requiring greater than 120 V, single-phase power, and during times when power to existing facility is completely shut down.
- B. Temporary Lighting:
 - 1. Provide temporary lighting at the Site of not less than the greater of (1) Laws and Regulations, and (2) the following:
 - a. Five foot-candles for open areas, 10 foot-candles for shops, and 25 foot-candles for stairs.
 - b. Provide not less than one 300 W lamp every 15 FT in indoor work areas.
 - c. Where temporary lighting is required in office or laboratory areas occupied by Owner: 40 foot-candles at a height of 2.5 FT above the finished floor.
 - d. Night Security Lighting: Five foot-candles within 50 FT of all parts of the Site during hours of darkness, controlled by photocell.
 - 2. Do not work in areas with insufficient lighting. Where lighting is insufficient for the work activities to be performed, provide additional temporary lighting.
 - 3. Provide temporary lighting sufficient for observation of the Work by Program Manager and inspection by Design Builder, entities performing code-required tests and special inspections, and authorities having jurisdiction. Where required by Program Manager, provide additional temporary lighting.
 - 4. Provide temporary lighting for Program Manager's field office in accordance with Section 01 52 11 - Program Manager's and Design Builder's Field Office.
- C. Temporary Communications:
 - 1. Provide temporary internet service and communications for Program Manager's field office in accordance with Section 01 52 11 - Program Manager's and Design Builder's Field Office.
- D. Temporary Heating, Cooling, Ventilating, and Enclosures:
 - 1. Provide sufficient temporary heating, cooling, and ventilating and temporary enclosures to ensure safe working conditions and prevent damage to existing property and the Work.
 - 2. Except where otherwise specified, temporary heating shall maintain temperature of the space served between 50 DegF and maximum design temperature of building or facility and its contents.
 - 3. Maintain temperature of areas occupied by Owner's personnel or electronic equipment, including offices, lunch rooms, locker rooms, toilet rooms, and rooms containing computers, microprocessors, and control equipment, between 65 DegF and 75 DegF with relative humidity less than 65 percent.
 - 4. Required temperature range for storage areas and certain elements of the Work, including preparation of materials and surfaces, installation or application, and curing as applicable, shall be in accordance with Supplier's recommended temperature and humidity ranges for storage, application, or installation, as appropriate.
 - 5. Provide temporary ventilation sufficient to prevent accumulation in construction areas and areas occupied by Owner of hazardous and nuisance levels or concentrations of dust and particulates, mist, fumes, vapors, odors, and gases, associated with construction. Similarly, provide temporary ventilation for building or structure spaces temporarily without ventilation due to the Work.
 - 6. Temporary Enclosures:
 - a. Provide temporary enclosures and partitions required to maintain required temperature and humidity.
 - b. Temporary enclosures shall be sufficiently sturdy and durable for the intended use and duration. Maintain and repair temporary enclosures as necessary.
 - 7. Provide temporary heating, cooling, and ventilating for Program Manager's field office in accordance with Section 01 52 11 - Program Manager's and Design Builder's Field Office.

- E. Temporary Water:
1. General:
 - a. Provide temporary water service and facilities including piping, valves, meters if not provided by owner of existing waterline, backflow preventers, pressure regulators, and other appurtenances. Provide freeze-protection as necessary to prevent freezing of temporary services.
 - b. Continuously maintain adequate water flow and pressure for all purposes during the Project, until removal of temporary water systems.
 2. Water for Construction Purposes:
 - a. Provide water for Site maintenance and cleaning and, water necessary for construction activities, and water for disinfecting and testing of systems.
 - b. Design Builder may use existing hose bibs for short-term wash-downs and intermittent use of water for work areas in existing building and existing structures. Obtain consent of Program Manager and Owner if connections to existing hose bibs and similar existing connections will be used for more than 1 day at a time. Hose bibbs may be connected to plant effluent and should not be considered potable water.
 3. Water for Human Consumption and Sanitation:
 - a. Provide potable water in accordance with Laws and Regulations for consumption by personnel at the Site, for field offices, and for sanitary facilities.
 - b. When necessary, provide bottled, potable water for use and consumption by personnel at the Site, including Design Builder, Program Manager, and visitors to the Site.
 - c. Provide temporary water for Program Manager's field office in accordance with Section 01 52 11 - Program Manager's and Design Builder's Field Office.
- F. Temporary Sanitary Facilities:
1. Provide suitably-enclosed chemical or self-contained toilets for Design Builder's employees, Subcontractors, Suppliers, and visitors to the Site. Location of temporary toilets shall be acceptable to Owner and Program Manager.
 2. Refer to Paragraph 1.2.E of this Specification Section for requirements for temporary water service intended for human consumption during construction.
 3. Provide suitable temporary washing facilities for employees and visitors.
 4. Provide temporary sanitary facilities for Program Manager's field office in accordance with Section 01 52 11 - Program Manager's and Design Builder's Field Office.
- G. Temporary First-aid Facilities:
1. Provide temporary first-aid stations at or immediately adjacent to the Site's work areas, and inside Design Builder's field office. At least one first aid location should include an Automated External Defibrillator (AED). Locations of temporary first-aid stations shall be determined by Design Builder's safety representative. Replenish supplies in first-aid stations as items are used, prior to expiration of items, and as necessary. Monitor and log inventory of supplies in temporary first-aid stations.
 2. Provide list of emergency telephone numbers at each hardwired telephone at the Site.
- H. Temporary Fire Protection:
1. Provide temporary fire protection in accordance with Laws and Regulations and the requirements of this Specifications section.
 2. For work areas without standpipe fire protection systems, during construction provide portable fire extinguishers rated not less than 2A or 5B in accordance with NFPA 10 – Portable Fire Extinguishers, for each temporary building and for every 3,000 SQFT of floor area under construction.
 3. Provide Class A (ordinary combustibles), Class B (combustible liquids and gases), and Class C (electrical equipment) fire extinguishers as necessary.
 4. Comply with NFPA 241 – Standard for Safeguarding Construction, Alteration, and Demolition Operations, and requirements of fire marshals and authorities having jurisdiction at the Site.

5. Provide temporary fire protection for Program Manager's field office in accordance with Section 01 52 11 - Program Manager's and Design Builder's Field Office.

1.3 USE OF OWNER'S SYSTEM

- A. Existing Utility Systems: Do not use systems in existing buildings or structures for temporary utilities without Owner's written permission and mutually acceptable basis agreed upon by the parties for proportionate sharing of costs between Owner and Design Builder.
- B. Use of Permanent Utility Systems Provided Under the Project:
 1. Permanent electrical, lighting, water, heating, ventilating, and fire protection systems and first-aid facilities may be used to provide temporary utilities and temporary facilities if the following are met:
 - a. Obtain Owner's written permission to use permanent systems.
 - b. Permanent systems to be used for temporary utilities or temporary facilities shall be substantially complete, including complete functionality of all controls.
 - c. Design Builder shall pay all costs while using permanent system, including operation, maintenance, replacement of consumables, and provide replacement parts.
 2. Do not use the following permanent facilities:
 - a. Telephone and communication facilities.
 - b. Sanitary facilities.

PART 2 - PRODUCTS

2.1 MATERIALS AND EQUIPMENT

- A. Materials and equipment for temporary utilities and temporary facilities:
 1. May be new or used but, if used, shall be in good condition;
 2. Shall be adequate for purposes intended;
 3. Shall not create unsafe or unsanitary conditions; and
 4. Shall comply with Laws and Regulations.
- B. Provide required materials, equipment, and facilities, including piping, cabling, supports, controls, and appurtenances.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install temporary utilities and temporary facilities in neat, orderly, manner, and make structurally, mechanically, and electrically sound throughout.
- B. Location of Temporary Utilities and Temporary Facilities:
 1. Locate temporary systems for proper function and service.
 2. Temporary systems shall not interfere with or provide hazards or nuisances to: the Work under this and other contracts, movement of personnel, traffic areas, materials handling, hoisting systems, storage areas, finishes, and work of utility owners and others.
 3. Do not install temporary utilities on the ground, with the exception of temporary extension cords, hoses, and similar systems in place for short durations.
- C. Modify and extend temporary systems as required by progress of the Work.

3.2 USE

- A. Maintain temporary systems to provide safe, continuous service as necessary and as required.
- B. Properly supervise operation of temporary systems:
 1. Enforce compliance with Laws and Regulations.
 2. Enforce safe practices.

3. Prevent abuse of services.
 4. Prevent nuisances and hazards caused by temporary systems and their use.
 5. Prevent damage to finishes.
 6. Ensure that temporary systems and equipment do not interrupt continuous progress of construction.
- C. At end of each work day, check temporary systems and verify that sufficient consumables are available to maintain operation until work is resumed at the Site. Provide additional consumables if the supply on hand is insufficient for continuous operation.

3.3 REMOVAL

- A. Completely remove temporary utilities, temporary facilities, equipment, and materials when no longer required. Repair damage caused by temporary systems and their removal and restore the Site to condition required by the Contract Documents; if restoration of damaged areas is not otherwise specified, restore to preconstruction condition.
- B. Where temporary utilities are disconnected from existing utility, provide suitable, watertight or gastight (as applicable) cap or blind flange, as applicable, on service line, in accordance with requirements of utility owner. If utility owner will perform such work, coordinate with and pay utility owner for such work.
- C. Where permanent utilities and systems were used for temporary utilities, upon Substantial Completion replace all consumables such as filters and light bulbs and parts used during the Work.

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SECTION 01 52 11
PROGRAM MANAGER'S AND DESIGN BUILDER'S FIELD OFFICE

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Requirements for Program Manager's field office at the Site, provided by Design Builder, including:
 - a. Physical requirements for field office and related site improvements.
 - b. Utilities, environmental controls, and similar services for field office.
 - c. Furniture and furnishings for Program Manager's field office.
 - d. Requirements for Design Builder's field office.
 - e. Removal of field offices and associated restoration.
- B. Scope:
 - 1. Design Builder shall provide temporary field office with furniture, furnishings, equipment, services, consumables, and other requirements of this Section, for Program Manager's sole use during the Project's construction.
 - 2. Program Manager's field office shall be complete and fully functional 30 days prior to start of Early Work construction.
 - 3. Obtain and pay for required permits and utilities.
- C. Related Requirements:
 - 1. Section 01 51 05 - Temporary Utilities.
 - 2. Section 01 55 13 - Vehicular Access and Parking.
 - 3. Section 01 71 33 - Protection of the Work and Property.

1.2 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate with Owner, other Design Builders, and others using the Site, the location of Program Manager's field office and related temporary facilities.
 - 2. Location of Program Manager's field office is addressed in this Section's Article 3.1 ("Installation").
- B. Staffing:
 - 1. Not less than one Design Builder staff member shall be reasonably present at, or in reasonable proximity to, Design Builder's field office during normal working hours when work is in progress.
 - 2. When Design Builder's staff are absent from, and not within reasonable proximity to, Design Builder's field office, provide clearly legible sign, each entrance to Design Builder's field office, indicating specific location on-site of Design Builder's site superintendent, together with (a) valid mobile phone number of Design Builder's site superintendent, and (b) Design Builder's 24-hour, 7-day per week emergency contact telephone number.

1.3 SUBMITTALS

- A. Action Submittals: Obtain Program Manager's approval of the following prior to installing Program Manager's field office at the Site and prior to obtaining furniture, furnishings, and equipment required by this Section:
 - 1. Field Office Submittal: Submit all of the following as one Submittal which shall include:
 - a. Site plan indicating proposed location of Program Manager's field office, parking for Program Manager's field office, facilities related to Program Manager's field office, and material of both field office parking and sidewalk or walkway to Program Manager's field office.

- b. Layout and Physical Attributes Shop Drawings of Program Manager's Field Office:
 - 1) Information on proposed field office size, construction, exterior appearance, interior finishes, and field office security measures.
 - 2) Proposed layout of interior of Program Manager's field office, showing location of offices, common areas, restroom, closet, other areas required (if any), with dimensions indicated for each. Show locations of interior partition walls, doors (including direction of opening), and windows.
- c. Exterior Sign Shop Drawing:
 - 1) Indication of size, material, and thickness of exterior sign for Program Manager's field office.
 - 2) Proposed layout of field office exterior sign, showing all text, font, character sizes, colors, and graphics (if any).
- d. Utilities:
 - 1) Proposed type of internet service; name of proposed internet service provider; and product data and technical information on equipment required for internet service.
- e. Furniture and Furnishings: Product data and technical information for:
 - 1) Desks.
 - 2) Chairs (desk chairs, office chairs, folding chairs).
 - 3) Tables.
 - 4) File cabinets and storage cabinet.
 - 5) Racks.
 - 6) Field office safety items and equipment required in this Section.
- f. Equipment: Product data and technical information for:
 - 1) Copier-printer-scanner.
 - 2) Weather monitoring equipment.
 - 3) Microwave oven.
 - 4) Refrigerator.
 - 5) Dishwasher.
 - 6) Coffee maker.
 - 7) Other equipment required in this Section.

PART 2 - PRODUCTS

2.1 FIELD OFFICE CONSTRUCTION AND SITE REQUIREMENTS

- A. Site Requirements at Field Office:
 - 1. Vehicle Parking:
 - a. Allocate total of six reserved parking spaces for use by Program Manager and Owner in close proximity to Program Manager's field office.
 - b. Vehicle parking spaces shall be not less than 9 FT wide.
 - c. Parking area shall be paved with crushed stone, asphalt concrete, concrete, or other material approved by Program Manager.
 - d. Comply with Section 01 55 13 - Vehicular Access and Parking. Provide reasonably smooth surface for vehicles.
 - e. Provide parking area with safe layout, suitable for vehicle entry to temporary or permanent travelled ways, as applicable, with sufficient space for reasonable vehicle maneuvering.
 - f. Parking area shall be properly drained and free of standing water during wet weather.
 - 2. Walkway or Sidewalk to Field Office Entrance:
 - a. Provide sidewalk or walkway, not less than 4 FT wide, of crushed stone, asphalt concrete, concrete, or other material approved by Program Manager.
 - b. Provide sidewalk or walkway for full distance between parking area and entrance to Program Manager's field office.

2.2 DESIGN BUILDER'S FIELD OFFICE AND WORK SHEDS

- A. Establish at site of Project.
- B. Design Builder's field office(s) shall be located in the area approved by Owner during the Design Implementation Stage.
- C. Equipment: As required by the Design Builder to comply with the Contract Documents and to execute the Work.
- D. Ensure attendance at this office during the normal working day.
- E. At this office, maintain complete field file of Shop Drawings, posted Contract Drawings and Specifications, and other files of field operations including provisions for maintaining "As Recorded Drawings."
- F. Furnishings and Equipment:
 - 1. Sign for Field Office(s):
 - a. Provide on exterior of Design Builder's field office, at location plainly visible for visitors, an identification sign displaying Design Builder's company name.
 - b. Maximum size of sign shall be 4 FT by 3 FT.
 - c. Provide highly visible, plainly legible, text on contrasting background color.
 - d. Sign shall be suitable for outdoor use for the duration of the Project.
 - 2. Conference Facilities:
 - a. Provide in Design Builder's field office conference area with conference table and chairs sufficient for 16 people, unless Design Builder requires greater space and furniture for Design Builder's purposes.
 - 3. Provide other furnishings and equipment deemed necessary and appropriate by Design Builder.
 - 4. Personal Protective Equipment for Use by Visitors:
 - a. Furnish and maintain at Design Builder's field office 10 protective helmets (hard hats and other appropriate personal protective equipment (including disposable hearing protection) deemed necessary by Design Builder, for use by visitors to the Site.
- G. Storage and Work Sheds – General:
 - 1. Provide storage and work sheds sized, furnished, and equipped to accommodate personnel, materials, and equipment used in the Work, including temporary utility services and facilities necessary for environment and sufficient for personnel, materials, and equipment.
 - 2. Provide in accordance with Laws and Regulations.
 - 3. Storage sheds used for storing materials and equipment to be incorporated into the Work shall comply with Section 01 66 00 – Product Storage and Handling Requirements, and other requirements of the Contract Documents.

2.3 PROGRAM MANAGER'S FIELD OFFICE

- A. One field office at location approved by Owner and Program Manager.
- B. Separate from Design Builder's field office.
- C. General Construction:
 - 1. New or reconditioned mobile office trailer.
 - 2. Baked enamel aluminum siding.
 - 3. 3-1/2 IN foil-backed fiberglass insulation throughout.
 - 4. Interior paneling.
 - 5. Vinyl tile flooring.
 - 6. 8 FT high acoustic tile ceiling.
 - 7. Four private office areas, a clerk/reception/file area, a conference room area, and a plan room (size of two offices).

8. Kitchen area the minimum size of one private office consisting of a stainless steel sink with hot and cold running water, Formica countertops with a minimum of 18 sf of surface area, and a minimum of 84 cf of cabinet space.
 9. Private restroom (ADA compliant) with four-drawer sink base unit with stainless steel sink and Formica top, two double wall-mounted cabinets above sink/utility area.
 10. Windows:
 - a. Minimum one per office and plan room.
 - b. Minimum two in conference room.
 - c. Combination screen-storm windows.
 - d. Provide horizontal louver blinds on each window.
 11. Nominal 64 FT long and 24 FT wide.
 12. Two exterior doors (with cylinder deadbolt locks) with outer screens, exterior lights and exterior aluminum or wood landing, stairs and handrail to meet OSHA requirements.
 13. Anchored to withstand 110 mile per hour wind.
 14. Provide security system with intrusion and smoke alarms that is monitored continuously by the Design Builder.
- D. Electrical System:
1. All fixtures, outlets, and wiring of Underwriters Laboratories, Inc. (UL) approved devices.
 2. All circuits protected by circuit breakers; fuses are not acceptable.
 3. Electrical system shall meet requirements of the latest National Electric Code (NEC).
 4. System suitable for 220 V, 3 PH service.
 5. Any transformers or other devices required to match this supply to the mobile office shall be provided and connected.
 6. Provide a circuit breaker for the incoming service.
 7. Each interior room except the washroom shall have at least four (4) 110 V duplex electrical convenience outlets.
 8. Kitchen area to have a minimum of two 20 amp circuits.
- E. Central Combination Electric Heating, Air-Conditioning System:
1. One at each end of trailer with two thermostats.
 - a. Fan-forced air.
 - b. Thermostatically controlled.
 2. Individual room units are not acceptable.
 3. Freeze protect and insulate all piping.
 4. System sized to maintain 75 DegF constant temperature in each room.
- F. Lighting System:
1. LED type producing 100 foot-candles at desk top height.
 2. Ample ceiling fixtures provided to ensure adequate lighting throughout.
- G. Standard Washroom:
1. Flush toilet, sink, hot and cold running water.
 2. Electric water heater.
 3. Mirror.
 4. Electric ceiling or wall vent.
 5. Sound insulated partitions.
- H. Furnishings:
1. For each office, plan room, and reception area:
 - a. Double pedestal desk. Size 60 IN by 30 IN.
 - b. Book case, 36 IN wide, 48 IN high, 12 IN deep with two moveable shelves.
 - c. Ergonomic swivel chair with arm rests and two guest chairs.
 2. Conference room table, 16 FT long with eighteen conference room chairs.
 3. One book case, 36 IN wide, 84 IN high, 12 IN deep with six moveable shelves.
 4. Four 36 IN x 72 IN folding tables; eight 36 IN x 24 IN folding tables.

5. One 48 IN x 60 IN and eight 36 IN x 24 IN liquid marking boards with minimum four-color set of compatible markers.
 6. Five 36 IN X 24 IN cork boards.
 7. Eight four-drawer legal size vertical filing cabinets.
 8. Four four-drawer legal size lateral file cabinets 42 IN wide.
 9. Ten folding chairs.
 10. Two drawing/drafting tables and two drawing stools.
 11. Two rolling stand plan racks with 12 hangers and clamps, height adjustment up to 60 IN and a depth of 43 IN, holds up to 1200 sheets.
 12. Three supply storage cabinets, 24 IN wide x 66 IN high x 14 IN deep.
 13. Twelve single pocket wall files.
 14. One PVC shelving unit, 36 IN wide x 72 IN high x 14 IN deep with five shelves.
 15. Twelve wire stackable side load letter trays.
 16. Two 12 IN diameter quartz movement battery powered wall clocks.
 17. Twelve coat hooks and hangers.
 18. One storage cabinet, 36 IN wide x 42 IN high x 18 IN deep.
 19. One upright refrigerator/freezer, 20 cubic feet capacity minimum.
 20. One microwave oven, 1.5 cubic feet minimum.
 21. One coffee maker, 10 cup minimum and supplies.
 22. Ten PVC waste receptacles, two of which are to be tall kitchen.
- I. Communications:
1. Provide independent internet service with minimum 300 Mbps download speed, 16 port network switch, hardwire connection to each office, reception area, and plan room, and wireless internet router for computers.
- J. Safety Equipment.
1. One 10 LB ABC dry powder fire extinguisher, upright and fully charged, in an easily accessible location.
- K. Consumables: Provide the following consumables as needed:
1. Paper towels, anti-bacterial liquid soap, toilet tissue, and cleaning supplies for field office restroom.
 2. Batteries for smoke detectors and other battery-powered items furnished by Design Builder.
 3. Replace fire extinguishers upon expiration.
- L. Maintenance:
1. Design Builder shall provide all maintenance and upkeep of trailer and equipment.
 - a. Equipment breakdowns shall be repaired promptly by Design Builder.
 2. Janitorial service.
 - a. Weekly:
 - 1) Floor sweeping using dust suppressing compound.
 - 2) Wet mopping with floor detergent.
 - 3) Clean and sanitize washroom.
 - b. Inclement weather: Conduct weekly requirements on daily basis.
 - c. Monthly: Wash windows and clean window blinds.
 - d. Provide normal and customary toilet supplies.
 3. Pay all utilities costs.
 4. Maintain at least until acceptance of the entire work by the Owner.
- M. Exterior Sign for Program Manager's Field Office:
1. Provide exterior sign for Program Manager's field office, approved by Program Manager. Sign shall be durable, weatherproof, suitable for long-term exposure to sunlight, precipitation, wind, windborne grit, and other local atmospheric elements.
 2. Exterior sign shall be not less than 3 FT high by 4 FT wide, installed at location determined by Program Manager at the Site.
 3. Sign shall be in color, as presented in the layout below.

4. Sign layout and general proportions shall be as presented below. Text of first line and last line shall be Arial font. Text size and size of graphic shall be proportionate to the layout below. Program Manager will furnish to Design Builder Electronic Documents file(s) of Program Manager's "third party logo package" for use in preparing the sign, together with Program Manager's standard, published instructions on use of Program Manager's logo. Design Builder shall comply with Program Manager's written instructions for using Program Manager's logo.



- N. Comply with Section 01 51 05 - Temporary Utilities.
- O. Should actions of utility owner(s) delay completion of Program Manager's field office, Design Builder shall provide temporary electricity, heat, water, sanitary facilities, and communications service as necessary at no additional cost to Owner.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Location:
 1. Locate Program Manager's field office in accordance with decisions made during Pre-construction Services.
 2. Provide Program Manager's field office nearby Design Builder's field office.
 3. Provide field office with convenient, nearby parking for Program Manager, in accordance with Section 01 55 13 - Vehicular Access and Parking.
 4. Location of Program Manager's field office shall be acceptable to Program Manager.
- B. Preparation:
 1. Prepare the site where Program Manager's field office will be installed as necessary and required by the Contract Documents. Minimize extent of site disturbance for Program Manager's field office. Where site preparation for Program Manager's field office results in disturbance of existing ground cover, comply with Laws and Regulations, required permits, and requirements of the Contract Documents regarding soil disturbances and temporary erosion and sediment controls.
 2. Provide firm, compacted subgrade for Program Manager's temporary field office.
 3. Provide temporary utilities in accordance with Section 01 51 05 - Temporary Utilities, and requirements of utility owner.

C. Installation:

1. Install Program Manager's temporary field office and related facilities in accordance with Laws and Regulations. Install Program Manager's field office level and in structurally sound manner.
2. Install materials and equipment, including prefabricated structures, in accordance with manufacturer's instructions.
3. Verify operation of all systems, including electrical power supply to lighting and convenience receptacles in field office; proper operation of field office's heating, ventilating, and air conditioning system; proper plumbing with freeze protection (where necessary); and proper operation of all other equipment provided by Design Builder for Program Manager's field office.
4. Install in Program Manager's field office furniture, furnishings, equipment, and appurtenances required in this Section. Install at locations directed by or otherwise acceptable to Program Manager.
5. Remove from Program Manager's field office packing materials and boxes for furniture, furnishings, and equipment.
6. Where furniture, furnishings, and equipment provided by Design Builder will become Owner's property, temporarily store original packaging and boxes for such items and deliver such items to Owner in such boxes and packaging, where appropriate.

3.2 REMOVAL AND RESTORATION

A. Removal:

1. Do not remove Program Manager's field office or Design Builder's field office until after Substantial Completion of the entire Work, unless otherwise approved by Program Manager.
2. On date acceptable to Program Manager, fully remove Program Manager's field office, Design Builder's field office(s) and restore areas prior to final inspection.
3. When required by the Contract Documents to deliver to Owner or facility manager certain equipment provided for Program Manager's field office, carefully remove such items, return to original boxes, and deliver to Owner or facility manager (as applicable) at location indicated by Owner or facility manager. Deliver such items complete with all accessories and manufacturer's operation and maintenance instructions.

B. Restoration:

1. Restore areas occupied by Program Manager's field office, Design Builder's field office(s) and related facilities. Restore areas damaged or disturbed during installation, maintenance, and removal of Program Manager's field office and related facilities.
2. Restore to condition in accordance with the Contract Documents. If not expressly required otherwise, restore to preconstruction condition.
3. Restore subject to approval of the owner of affected property. Remedy damage in accordance with Section 01 71 33 - Protection of the Work and Property, and other provisions of the Contract Documents.

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SECTION 01 55 13

VEHICULAR ACCESS AND PARKING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. General requirements for:
 - a. Design Builder's access to the Site.
 - b. Design Builder's use of existing access roads and parking areas.
 - c. Traffic controls for access roads and parking areas.
 - d. Maintenance of vehicle access roads and parking areas.
 - e. Off-site haul routes.
 - f. Removals and restoration.
- B. Scope:
 - 1. Design Builder shall provide temporary signage on existing access roads, construction roads, walks, parking areas, and appurtenances necessary and required during the Project for use by Design Builder, Owner and entities for which they are responsible, and emergency vehicles.
 - 2. Temporary access roads and parking areas shall be designed and maintained by Design Builder and shall be fully passable to vehicles in all weather conditions.
 - 3. After the entire Project is substantially complete, existing access roads and parking areas may be used by Design Builder when such use does not impair or restrict operations at the Site by Owner.
 - 4. Design Builder shall make arrangement for off-site haul routes and shall comply with restrictions on haul routes imposed by authorities having jurisdiction and the Contract Documents.
- C. Related Requirements:
 - 1. Include but are not necessarily limited to:
 - a. Section 01 14 19 - Use of Site.
 - b. Section 01 57 05 - Temporary Controls.
 - c. Section 01 71 33 - Protection of the Work and Property.

1.2 SUBMITTALS

- A. Informational Submittals: Submit the following:
 - 1. Map of proposed off-site haul routes, together with list of right-of-way owner for each roadway proposed as off-site haul routes and indication of other authorities, if any, having jurisdiction over off-site haul routes. Furnish such Submittal, acceptable to Program Manager, prior to furnishing the Submittals indicated immediately below this paragraph.
 - 2. Written permit or permission for use of off-site haul routes, issued by authorities having jurisdiction. Furnish such Submittals acceptable to Program Manager prior to commencing use of off-site haul routes.

PART 2 - PRODUCTS

2.1 TEMPORARY ACCESS ROADS AND PARKING AREAS

- A. Materials:
 - 1. Temporary access roads and parking areas shall be of materials that are either new or of good quality and sufficient for the intended purpose, load-bearing capacity, and frequency and duration of use.

2. Use materials that limit emissions of dust to be consistent with air quality Laws and Regulations and to avoid creating nuisances, inconvenience, and undue additional maintenance requirements on-site, on adjacent properties, and at downwind properties.
3. Where deemed necessary by the Design Professional, provide temporary geotextile or other appropriate materials to stabilize subgrade and subbase of temporary access roads and parking areas.

2.2 TEMPORARY TRAFFIC CONTROLS FOR ACCESS ROADS AND PARKING AREAS

- A. Traffic controls shall comply with requirements of authorities having jurisdiction. When such authority is Owner, and no other applicable requirements are indicated in the Contract Documents or applicable permits, comply with:
 1. Standard specifications of Arlington County and Virginia Department of Transportation (VDOT); and
 2. Manual of Uniform Traffic Control Devices (MUTCD), by the United States Department of Transportation (USDOT) Federal Highway Administration (FHWA).

2.3 TEMPORARY ACCESS GATES

- A. Temporary Access Gates – General:
 1. Provide temporary gates appropriate for construction of the Project and passage of necessary construction vehicles, construction equipment and machinery, deliveries of temporary facilities, and deliveries of materials and equipment to be incorporated into the Work.

PART 3 - EXECUTION

3.1 ACCESS TO THE SITE

- A. Site Access – General:
 1. Light Vehicles:
 - a. Access to Site for Design Builder’s workers’ personal vehicles and Design Builder’s light vehicles (including Subcontractors and Suppliers) shall be via an existing access gate agreed upon during Pre-construction Services (referenced herein as, “light vehicle gate”). Post temporary signage at this gate reading, “Project Staff Entrance” or other wording acceptable to Program Manager.
 - b. Weight limit for access via the light vehicle gate is a total loaded vehicle weight of 5 tons.
 2. Heavy Vehicles:
 - a. Design Builder’s construction equipment and vehicles that exceed the weight limit for or exceed the space available at the light vehicle gate, and deliveries of materials and equipment to be incorporated into the Work, shall be via an existing access gate agreed upon during Pre-construction services. Post temporary signage at this gate reading, “Project Truck Deliveries” or similar wording acceptable to Program Manager.
 - b. Weight Limit: Design Builder and Owner will agree on weight limit (per axle) for access to the Site via the heavy vehicle gate.
 3. Design Builder is responsible for coordinating deliveries, whether Light Vehicles or Heavy Vehicles, through the appropriate gate. Design Builder is responsible for establishing proper addresses to manage such deliveries.

3.2 USE OF EXISTING ACCESS ROADS AND PARKING AREAS

- A. Existing Access Roads and Parking Areas – General:
 1. Use of Existing Access Roads:
 - a. Design Builder is allowed to use Owner’s existing access roads, starting on the Effective Date of the Contract and after complying with other Contract requirements relative to starting the Work at the Site.

2. Existing Parking Areas for Use by Design Builder:
 - a. Design Builder is allowed use of the existing East 31st Street S. Parking Lot (approximately 0.4 acres) for parking of Design Builder's workers' vehicles and construction vehicles. If designated existing parking area is insufficient for Design Builder's purposes, either provide temporary parking at the Site or parking at off-site location. Do not park outside of designated parking areas.
3. Restrictions:
 - a. Prevent interference with traffic on existing access roads and parking areas. Always keep access roads and entrances serving the Site clear and available to Owner and their respective employees, suppliers, and consultants; emergency vehicles; and other contractors.
 - b. Do not use access roads or Site entrances for parking or storage of materials or equipment.
 - c. Obey posted speed limits. If the Site has no posted speed limit, restrict traffic of Design Builder's personnel, construction vehicles and equipment, deliveries, and haul-trucks to maximum speed of 15 miles per hour on access roads at the Site.
 - d. Schedule deliveries to minimize use of existing access roads and Site entrances.
 - e. Use only rubber-tire vehicles on existing roads and parking areas. Do not use tracked (caterpillar-type) vehicles or equipment on existing pavement unless such pavement will be replaced by Design Builder. Maintain existing pavement for safe access by Owner and their respective employees, suppliers, and consultants; emergency vehicles; and other contractors.
 - f. Remedy damage to existing access roads and parking areas caused by Design Builder's operations.
4. Design Builder shall indemnify and hold harmless Owner, Program Manager, and their respective consultants and subcontractors from expenses and losses caused by Design Builder's operations over existing access roads and parking areas.

3.3 TEMPORARY ACCESS ROADS AND PARKING AREAS

- A. Temporary Access Roads and Parking Areas – General:
 1. Show proposed locations of temporary access roads and parking areas on site plan. Indicate number of proposed parking spaces and changes (if any) to site maintenance procedures. Indicate the scheduled dates the temporary access roads and parking areas will be established, in use, and removed. Indicate proposed measures for restoring such areas after removal of temporary access roads and parking areas.
 2. Where temporary access roads or parking areas connect to existing public road or highway, obtain approval of right-of-way owner prior to constructing the associated access road or connection to the existing pavement. Comply with Laws and Regulations and requirements of authorities having jurisdiction.
- B. Temporary Access Roads and Parking in Areas Different from Permanent Pavement:
 1. Provide temporary access roads and parking areas adequate to support and withstand traffic loads during the Project. Locate temporary access roads and parking areas within the construction limits shown or indicated in the Contract Documents.
 2. Perform clearing and grubbing as required and properly dispose of resulting materials. Stockpile at the Site existing topsoil appropriate for use in restoring disturbed areas.
 3. Provide reasonably-level, graded, well-drained subgrade of satisfactory soil material, compacted to not less than 95 percent of maximum dry density in the upper 6 IN.
 4. To support loads and provide separation between subgrade and subbase materials, provide geosynthetic separation fabric for all temporary access roads and parking areas outside of locations of permanent pavement.
 5. Subbase:
 - a. Provide subbase material not less than 6 IN thick, roller-compacted to a level, smooth, dense surface.

- b. Subbase for temporary access roads and parking areas traveled by construction vehicles shall be adequate for loads and traffic served.
- C. Temporary Access Roads and Parking in Same Areas as Permanent Pavement:
 - 1. Provide temporary access roads and parking areas adequate to support and withstand traffic and construction loads during the Project. Locate temporary access roads and parking areas in same locations as permanent access roads and parking areas. Extend temporary access roads and parking areas, within construction limits shown or indicated in the Contract Documents, as necessary for construction operations.
 - 2. Coordinate elevations of temporary access roads and parking areas with permanent roads and parking areas.
 - 3. Prepare subgrade, subbase, and base for temporary access roads and parking areas in accordance with the Contract Documents' requirements for areas of permanent pavement.
 - 4. Provide geosynthetic separation fabric on compacted subgrade for subbase support and separation of subbase and subgrade materials.
 - 5. Re-condition granular subbase of temporary access roads and parking areas, including removing and properly disposing of granular material that has become intermixed with soil, re-grading, proof-rolling, compacting, and testing.

3.4 TRAFFIC CONTROLS FOR ACCESS ROADS AND PARKING AREAS

- A. On-site Traffic Controls – General:
 - 1. Provide temporary traffic controls at intersections of temporary access roads and parking areas with each other, including intersections with other temporary access roads, intersections with public roads, and intersections with permanent access roads at the Site.
 - 2. Provide temporary warning signs on permanent access roads, and provide temporary stop signs for traffic on temporary access roads where required and at entrances to permanent pavement.
 - 3. Comply with requirements of authorities having jurisdiction. When such authority is the Owner, and no other requirements are indicated in the Contract Documents or applicable permits, comply with the standard specifications of the applicable state or provincial (as applicable) department of transportation and the MUTCD.
 - 4. Provide temporary signs indicated maximum allowable speed limit on temporary access roads.

3.5 MAINTENANCE OF VEHICLE ACCESS AND PARKING AREAS

- A. Maintenance of Vehicle Access and Parking Areas – General:
 - 1. Maintain temporary access roads and parking areas to continuously provide at the Site access for construction vehicles and trucks, Owner's vehicles, deliveries for Owner, emergency vehicles, and parking areas for Owner's personnel.
 - 2. Public roads shall be passable at all times unless a road closure is allowed in writing by authority having jurisdiction.
 - 3. Refer to cleaning and dust control provisions of this Article.
- B. Maintenance of Existing Access Roads and Parking Areas Used by Design Builder:
 - 1. Unless otherwise indicated in the Contract Documents, Owner will perform routine maintenance of access roads and parking areas, existing prior to the start of construction, during the Project. Design Builder is responsible for dust control and cleaning existing paved areas used by Design Builder.

- C. Maintenance of Temporary Access Roads and Parking Areas:
1. Design Builder is fully responsible for maintaining temporary access roads and parking areas until either; (a) temporary access roads and parking areas are removed, or (b) when Owner has indicated in writing that temporary access roads and parking areas may remain following final payment, Design Builder shall maintain such areas until final payment becomes due under the Contract.
 2. When temporary access roads or parking areas become muddy, remove the mud and soil material down to hard, competent surface as often as necessary. Avoid nuisances and unnecessary tracking of mud and dirt onto permanent pavement.
 3. When granular material of temporary access roads and parking areas without hard surfacing becomes intermixed with soil, or when temporary access roads otherwise create a nuisance, remove intermixed granular-and-soil material and replace with clean granular material as necessary and required.
 4. Provide snow and ice removal for temporary access roads and parking areas. Properly dispose of such materials, in accordance with Laws and Regulations. Do not create traffic hazards, such as areas of reduced visibility, caused or exacerbated by locations of displaced snow and ice. Dispose of such materials off of existing pavement and off of temporary access roads and parking areas.
- D. Cleaning and Dust Control – All Vehicle Access and Parking Used by Design Builder:
1. Cleaning:
 - a. Clean paved surfaces over which construction vehicles, construction equipment, and construction machinery travel.
 - b. Clean paved areas using vacuum powered street sweeper, when visible soil materials are tracked onto pavement.
 - c. Clean the following surfaces:
 - 1) Roads within limits of the Project.
 - 2) Permanent roads at the Site between the Site entrance and work areas, and between the Site entrance and construction parking and areas used for staging, storage, and laydown.
 - 3) Public roads that require sweeping and cleaning due to construction operations.
 2. Dust Control:
 - a. Control dust resulting from construction activities to prevent nuisances, violations of air quality Laws or Regulations, and adverse health effects at and adjacent to the Site and in downwind areas.
 - b. Comply with Section 01 57 05 - Temporary Controls.
- E. Protection of Underground Facilities:
1. Regarding construction traffic, vehicles, construction equipment and machinery, and parking and protection of Underground Facilities, comply with the General Conditions, as may be modified by the Supplementary Conditions, Section 01 71 33 - Protection of the Work and Property, and other requirements of the Contract Documents.
 2. Where existing Underground Facilities are close to the ground surface over which construction equipment or machinery, other construction vehicles, or traffic will pass, protect the Underground Facilities, including providing temporary bridging, as necessary.

3.6 OFF-SITE HAUL ROUTES

- A. Off-site Haul Routes – General:
1. Submit to Program Manager recommended haul routes, including copy of each permit or written permission necessary for use of off-site haul routes.
 2. Where required by Laws or Regulations, or by one or more authorities having jurisdiction, obtain, pay for, and comply with permits and orders of authorities having jurisdiction regarding use of off-site haul routes.
 3. Unless expressly allowed otherwise by authorities having jurisdiction or the express provisions of the Contract Documents, to the extent practicable, avoid routing construction

traffic through residential areas and other areas sensitive to noise, vibration and vehicle exhaust emissions.

4. Restrict use of off-site haul routes to days and hours of construction allowed.
 5. Coordinate with authorities having jurisdiction on traffic haul routes prior to establishing a guaranteed maximum price. Coordination activities include but are not limited to, use of haul routes, temporary traffic measures and control, other planned work, permits, and other miscellaneous restrictions required by the authority(ies) having jurisdiction.
 6. In transporting spoil and waste materials from the Site and transporting materials and equipment to the Site, avoid creating or contributing to potential Hazardous Environmental Conditions. Properly secure loads to prevent airborne particulates, liquids, slurries, and solid matter from discharging from Design Builder's vehicles along haul routes. Design Builder's responsibilities for Hazardous Environmental Condition caused by Design Builder are set forth in the General Conditions, as may be modified by the Supplementary Conditions, and may be further augmented elsewhere in the Contract Documents.
- B. Remedy of Damaged Existing Paving:
1. Comply with Section 01 71 33 - Protection of the Work and Property, and other applicable provisions of the Contract Documents.
 2. Design Builder shall indemnify and hold harmless Owner, facility manager (if other than Owner), Program Manager, and their respective consultants and subcontractors from expenses and losses caused by Design Builder's operations on off-site haul routes.
- C. Project-Specific Haul Routes:
1. Design Builder shall arrange off-site haul routes.

3.7 REMOVAL AND RESTORATION

- A. Removals: When no longer needed for the Project and prior to eligibility for final inspection:
1. Remove temporary access roads, walks, and parking areas that are not intended for, or acceptable for, integration into permanent pavement. Return areas of temporary access roads, walks, and parking to preconstruction condition unless otherwise required by the Contract Documents.
 2. Remove temporary gates, fencing, and traffic controls associated with Design Builder's vehicular access and parking areas.
 3. Where areas of temporary access roads and parking will be permanently landscaped, remove pavement, granular subbase, geosynthetic materials, soil, and other materials that do not comply with the Contract Documents regarding fill, subsoil, and landscaping.
 4. Remove and properly dispose of all materials contaminated with oil, bitumen, or other petrochemical compounds resulting from Design Builder's operations, and other substances. These substances are considered contaminants and may impair growth of plants and lawns or quality of soil or groundwater.
- B. Restoration:
1. Restore to preconstruction conditions existing roads, walks, and parking areas damaged by Design Builder, subject to approval of the owner of affected roads, walks, and parking areas. Remedy damage in accordance with Section 01 71 33 - Protection of the Work and Property, and other provisions of the Contract Documents.

END OF SECTION

SECTION 01 57 05

TEMPORARY CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Requirements for temporary controls during construction, including:
 - a. Temporary erosion and sediment controls.
 - b. Noise control.
 - c. Dust control.
 - d. Temporary pest and rodent controls.
 - e. Water control, including stormwater, surface water, and groundwater.
 - f. Pollution control, including solid waste, water pollution, atmospheric pollution, and other types of pollution.
 - g. Odor control.
- B. Scope:
 - 1. Design Builder shall provide and maintain materials, equipment, labor, services, and temporary construction as necessary and required to control environmental conditions at the Site and adjacent areas during construction.
 - 2. Design Builder shall pay all costs, including fines and civil penalties, if any, for failure to implement and maintain temporary controls in accordance with the Contract Documents and Laws and Regulations. Design Builder is not eligible for increase in Contract Price or Contract Times due to failure to comply with requirements for temporary controls.
 - 3. Maintain temporary controls until no longer necessary or required. Provide temporary controls at all times when Design Builder is working at the Site.

1.2 QUALITY ASSURANCE

- A. Regulatory Requirements:
 - 1. Comply with applicable provisions and recommendations of the following:
 - a. Erosion and sediment control requirements of Code Officials.
 - b. Chapter 15 of Arlington County Code (Noise Control).
 - c. Other local Laws or Regulations applicable to temporary controls.

1.3 SUBMITTALS

- A. Action Submittals:
 - 1. Submit the following:
 - a. Shop Drawings:
 - 1) Plan for construction staging and maintenance of the Site relative to erosion and sediment controls. Indicate on a site plan approximate areas of planned disturbance of soils and soil cover over time during the Project. For areas not indicated in the Contract Documents as being disturbed and that Design Builder proposes to disturb, Shop Drawing shall include proposed erosion and sediment control measures for the additional areas.
 - 2) Location and details of each temporary settlement basin.
 - b. Product Data:
 - 1) Silt fencing materials.
 - 2) Other materials proposed for temporary erosion and sediment controls, when requested by Design Professional or Program Manager.

- B. Informational Submittals:
 - 1. Submit the following:
 - a. Procedural Submittals:
 - 1) Proposed dust control measure, when Submittal is requested by Program Manager.
 - b. Field Quality Control:
 - 1) When requested by Program Manager, promptly obtain and submit results of field measurements and field test data substantiating compliance of Design Builder's temporary controls with the Contract Documents.

PART 2 - PRODUCTS

2.1 MATERIALS FOR TEMPORARY EROSION AND SEDIMENT CONTROLS

- A. Materials for temporary erosion and sediment controls shall be as shown or indicated on the Design Professional's Drawings and Specifications.

PART 3 - EXECUTION

3.1 NOISE CONTROL

- A. Noise Control – General:
 - 1. Design Builder's vehicles, construction equipment, and machinery shall minimize noise emissions to greatest degree practicable. When necessary, provide mufflers and silencers on construction equipment, machinery, and vehicles, and provide temporary sound barriers sound-absorbing blankets, sound-reducing enclosures, modified backup alarms, and other mitigation measures when necessary.
 - 2. Noise threshold levels shall comply with Laws and Regulations, including (a) OSHA requirements and recommendations, and (b) local ordinances including Chapter 15 of Arlington County Code or other Laws or Regulations.
 - 3. Noise emissions shall not interfere with the work of Owner or others. The use of noise-producing signals, including horns, whistles, alarms, and bells shall be for safety warning and emergency purposes only.
 - 4. Music or entertainment systems, including personal and vehicle radios, media players, and the like, when used, shall not be audible at the property line and shall not disturb others at the Site.
 - 5. Field Quality Control of Noise:
 - a. If Owner or Program Manager believes potential exists that allowable noise levels are being exceeded, Design Builder will be required to, and shall promptly perform, appropriate noise monitoring in presence of Owner or Program Manager and shall submit written results to Program Manager.
 - b. Owner and Program Manager reserve the right to perform independent noise monitoring at any time during the Work.
 - 6. If noise level exceeds allowable maximum, Design Builder shall immediately cease the activity emitting the excessive noise and promptly implement noise-mitigating measures to comply with noise limitations.

3.2 DUST CONTROL

- A. Dust Control – General:
 - 1. Control objectionable dust caused by Design Builder's operation of vehicles and construction equipment and machinery, site clearing, demolition, cleaning, and other actions. To minimize airborne dust, apply water or use other methods subject to acceptance of Program Manager and approval of authorities having jurisdiction.
 - 2. Design Builder shall prevent blowing and movement of dust from exposed soil surfaces and access roads to reduce on-site and off-site damage, inconvenience, nuisances, and health hazards associated with dust emissions from Design Builder's activities.

- B. Dust Control Methods:
1. Dust control may be accomplished by irrigation in which the dust-prone work activity or area of the Site is sprinkled with water until the surface is moist.
 2. Apply dust controls as frequently as necessary or required without creating inconveniences, nuisances, or hazards, such as excessive mud and ponding of water at or adjacent to the Site. Do not use water for dust control when water will cause hazardous or objectionable conditions such as ice, mud, ponds, and pollution.
 3. Provide dust control that is non-polluting and does not contribute to tracking-out of dirt, mud, and dust onto pavement.
 4. Do not allow water used for dust control to discharge to stormwater drainage system or surface waters.
 5. Where appropriate, reduce travel speed of construction vehicles and construction equipment to reduce the potential for dust emissions arising from vehicle and equipment passage.
 6. Where appropriate, apply gravel or other appropriate binder to access roads and parking areas.
- C. Removal of Dust and Dirt from Pavement and Other Travelled Ways:
1. Remove dust, mud, and dirt from roads, parking areas, and other travelled ways.
 2. Perform dust and dirt removal from travelled ways by mechanical wet vacuum sweeping or other method acceptable to Program Manager.
 3. Remove mud from roads, parking areas, and other travelled ways by appropriate means, including scraping. Avoid damaging surface of travelled way. Remedy damage to roads, parking areas, and travelled ways resulting from mud removal activities.
- D. Removal of Dust and Dirt from Buildings and Structures:
1. When dust and dirt from Design Builder's activities has accumulated to a noticeable or objectionable extent (compared with preconstruction conditions) on buildings or structures, remove the dust and dirt caused by Design Builder's operations by appropriate methods, including power-washing using mild detergent. Remedy damage caused by dust, dirt, and power-washing.
 2. Dust in sensitive equipment, such as electrical and control panels, instruments, HVAC systems and other equipment shall be cleaned by a Subcontractor specializing in cleaning such items.
 3. During the Project, remove objectionable and noticeable dust, dirt, and mud in areas occupied by Owner or facility manager, and Design Builder's work areas, resulting from Design Builder's activities. Owner and facility manager will take reasonable measures to avoid tracking dust, dirt, and mud into their occupied areas.

3.3 PEST AND RODENT CONTROL

- A. Pest and Rodent Control – General:
1. Provide pest and rodent controls as necessary to prevent infestation of the Site, storage areas, and adjacent areas.
 2. Pests and rodents include, but are not limited to: flies, mosquitoes, gnats, midges, stinging insects, other insects and the like, worms, rats, mice, moles, voles, and similar animals, objectionable numbers and species of birds, and others.
 3. Implement appropriate pest and rodent controls when pests, rodents, or both are apparent at the Site or off-site storage, staging, or laydown areas.
 4. Control or remove pests and rodents from adjacent properties when Design Builder's activities have fostered or exacerbated pest or rodent problems. For example, ground vibration, such as that associated with horizontal directional drilling, may cause migrations of subterranean animals such as moles and voles. Coordinate with affected property owners regarding appropriate control methods, materials, equipment, and disposal techniques.
- B. Methods, Materials, and Equipment for Pest and Rodent Control during Construction:
1. Employ methods and use materials and equipment for pest and rodent control that do not adversely affect conditions at the Site or on adjacent and nearby properties.

2. Do not use control methods or poisons injurious to household pets or animals other than targeted pests and rodents.
 3. Avoid control methods that present hazards to humans, including children.
- C. Disposal of Pests and Rodents:
1. In accordance with Laws and Regulations, promptly and properly dispose of pests and rodents trapped or otherwise controlled. Do not bury or dispose of deceased animals at the Site or in adjacent areas.

3.4 WATER CONTROL

- A. Water Control – General:
1. During the Project, provide methods to appropriately control stormwater, surface water, water from excavations and structures, groundwater flows altered by Design Builder’s activities, and groundwater discharges from the Site, to prevent damage to the Work, the Site, adjacent properties, and downstream properties.
 2. Control trenching, filling, and grading to direct water away from excavations, pits, tunnels and other construction areas, and prevent water from entering existing buildings and structures.
 3. Properly manage and control stormwater, surface water, and groundwater entering the Site from upstream, where such flows or discharges have potential to affect the Work or to be exacerbated by Design Builder’s activities.
 4. Avoid ponding of water on-site, except in specially-designated, temporary settlement basins. Where water ponding occurs during construction, perform rough grading to eliminate ponding.
 5. Prevent water from discharging onto roads, parking areas, paved or finished areas, and other travelled ways. Prevent stormwater runoff from discharging across access roads and parking areas.
- B. Materials, Equipment, and Facilities for Water Control:
1. Provide, operate, and maintain materials, equipment, and facilities of adequate size, materials, and capacity to control stormwater, surface water, groundwater, and discharges from tanks.
- C. Discharge and Disposal of Water during Construction:
1. Discharge stormwater, surface water, and groundwater from the Site, and discharges of clean water from tanks, to proper discharge locations, in accordance with Laws and Regulations and the Contract Documents.
 2. Prevent damage and nuisances arising from water discharges on the Site and discharges from the Site.
 3. Dispose of water in manner that avoids flooding, erosion, sediment transport, and other damage, in accordance with Laws and Regulations.
 4. Avoid overland discharges from the Site and construction activities to adjacent properties,
 5. Water discharges from the Site and construction activities shall be via a stormwater drainage route or conduit with sufficient capacity for the flow under associated weather and flow conditions and in accordance with requirements of authorities having jurisdiction
 6. Do not discharge stormwater, surface water, groundwater, or clean water from tanks, into sanitary sewers. Obtain consent of sewerage system owner before discharging such flows into existing combined sewers.
 7. Obtain sewerage system owner’s consent and approval before discharging polluted water to sewerage system.

3.5 POLLUTION CONTROL

- A. Pollution Control – General:
1. Provide means, methods, and facilities necessary and required to prevent contamination of soil, water, and atmosphere caused by accumulation or discharge of substances and

materials that are either noxious, polluting, or both, from or caused by construction and related activities.

2. Construction equipment and machinery shall comply with Laws and Regulations.
3. Comply with Section 01 35 43.13 - Environmental Procedures for Hazardous Materials.

B. Spills and Contamination:

1. Perform emergency containment, cleanup, and remedy of spills and contamination resulting from construction and related activities. Promptly remove and properly dispose of contaminated soils and liquids.
2. Excavate contaminated material and properly dispose of off-site, and replace with suitable compacted fill and appropriate cover.
3. Comply with Section 01 35 44 - Spill Prevention Control and Countermeasures Plan.

C. Protection of Surface Water and Groundwater:

1. Provide and maintain appropriate, temporary measures to prevent harmful substances from entering surface water, groundwater, and drinking water. Prevent disposal of wastes, effluents, chemicals, and the like into or adjacent to groundwater, surface water, drainage routes (including swales, ditches, and storm sewers) and drinking water.
2. Obtain sewerage system owner's consent and approval prior to discharging into sanitary sewers or combined sewers. Do not discharge pollutants not in accordance with Laws and Regulations into combined sewers, or sewers tributary to combined sewers, when wet weather overflows to receiving waters may occur.

D. Atmospheric Pollutants:

1. Provide and maintain temporary controls for atmospheric pollutants resulting from construction and related activities, whether to outdoor or indoor atmospheres.
2. Prevent harmful dispersal of pollutants into atmosphere.
3. Do not discharge exhaust from internal combustion engines or combustion operations into buildings, structures, or near ventilation intakes for buildings or structures.
4. Prevent toxic and noxious concentrations of chemicals, fumes, and vapors.

E. Solid Waste:

1. Provide and maintain temporary controls for managing solid waste related to the Work.
2. Prevent solid waste from:
 - a. Becoming airborne or blowing in the wind.
 - b. Being inadvertently transmitted to adjacent, off-site properties, and areas of the Site not part of the Project.
 - c. Being deposited in or discharging to surface waters, open process tanks, and drainage routes.
3. Properly handle and dispose of solid waste. Burning or burying solid waste, including unused materials, at the Site or adjacent areas is prohibited.
4. Do not mix or store in the same container solid waste containing Constituents of Concern (and constitutes, or may constitute, a Hazardous Environmental Condition) with solid waste that does not contain Constituents of Concern.
5. Store solid waste in appropriate, covered, containers.
6. Promptly, and at regular intervals, remove solid waste from the Site for transport and disposal in accordance with Laws and Regulations.

3.6 ODOR CONTROL DURING CONSTRUCTION

A. Odors – General:

1. Avoid discharges of unpleasant or noxious odors from construction and related activities, including temporary operations. When nature of the Work is such that odor generation is unavoidable, provide appropriate temporary controls for odors.

2. Give priority to avoiding odor generation, followed by:
 - a. Counteracting (treating the cause of) odors.
 - b. Containing odors.
 - c. Odor masking as the last resort for odor control.

3.7 EROSION AND SEDIMENT CONTROLS

- A. Installation and Maintenance of Temporary Erosion and Sediment Controls – General:
 1. General Provisions:
 - a. Provide temporary erosion and sediment controls as shown and indicated on the Drawings and as indicated in this Section and elsewhere in the Contract Documents, and as necessary for compliance with Laws and Regulations.
 - b. Provide erosion and sediment controls as the Work progresses into areas where ground cover was previously undisturbed.
 - c. Use necessary and required methods to appropriately control erosion and sediment transport in stormwater runoff, including using soil conservation-oriented construction practices (including scheduling and sequencing), vegetative measures, and temporary physical controls.
 - d. Use best management practices (BMP) in accordance with Laws and Regulations, and regulatory requirements indicated in this Section's "Quality Assurance" Article (unless more-stringent requirement are shown or indicated in the Contract Documents), to control erosion and sediment transport in stormwater runoff during the Project.
 - e. Plan and execute disturbances of soils and soil cover, and earthwork by methods to control stormwater runoff from exposed soil (including stockpiles, borrow areas, and spoil disposal areas), banks of surface waters affected by the Work, and discharges of groundwater, to prevent erosion and sediment transport.
 - f. Where areas must be cleared for storage of materials or equipment, or for temporary facilities, provide measures for regulating stormwater discharges and controlling erosion and sediment transport. When plans for temporary erosion and sediment controls were sealed and signed by Design Professional, such methods are subject to Design Professional's approval or acceptance, as applicable.
 - g. Provide erosion and sediment controls, including stabilization of soils, at the end of each workday.
 2. Coordination:
 - a. Coordinate temporary erosion and sediment controls with this Section's requirements on water control and Section 01 41 26 - Stormwater Pollution Prevention Plan and Permit.
 - b. Coordinate temporary erosion and sediment controls with construction of permanent drainage facilities, permanent erosion controls and soil stabilization (if any), and other Work, to the extent necessary for effective and continuous erosion and sediment controls.
 3. Before commencing activities that will disturb soil or soil cover at the Site or other areas to be occupied by Design Builder during the Project, provide all appropriate temporary erosion and sediment controls required by the Contract Documents for the areas where soil or soil cover will be disturbed.
 4. Vegetation Removal and Disturbance:
 - a. Remove only those shrubs, grasses, trees, and other vegetation that must be removed for construction.
 - b. Protect undisturbed vegetation. Do not wantonly or unnecessarily drive construction vehicles and equipment over undisturbed vegetation and soil cover.
 - c. Promptly stabilize exposed soil where vegetation or soil cover was unnecessarily disturbed. Fill and restore ruts and damage to vegetation and soil cover caused by wanton or unnecessary passage of construction vehicles and equipment.

5. Access Roads and Parking Areas:
 - a. When possible, locate and construct temporary access roads and parking areas to avoid adverse effects on the environment.
 - b. Provide measures to regulate drainage, avoid erosion and sediment transport in stormwater runoff, and minimize damage to vegetation and soil cover.
6. Earthwork and Temporary Controls:
 - a. Perform excavation, fill, and related activities in accordance with the Design Professional's specifications.
 - b. Temporary erosion and sediment control measures may include, but are not limited to, using berms, swales and ditches, silt fencing, straw bale sediment barriers, gravel or crushed stone, mulching and soil stabilization, slope drains, and other methods. Apply such temporary measures to erodible soils and other erodible materials exposed by construction activities.
 - c. Minimize areas of bare soil exposed at one time. Provide fills and spoil areas by selectively placing fill and spoil materials to reduce or eliminate exposed erodible soils.
 - d. Exercise special care on and above steep slopes, where disturbance of vegetation and soil cover shall be minimized to greatest extent reasonably practicable.
 - e. Protect stockpile storage not in active use by providing suitable, durable covering to prevent sediment transport in stormwater runoff and windblown transport. Covering shall be suitable for outdoor exposure.
7. Inspection and Maintenance:
 - a. Periodically inspect areas of non-stabilized, erodible soils, including all areas of soil cover disturbance and stockpiles, for evidence of start of erosion and sediment transport. Promptly implement corrective action as necessary and appropriate to control erosion and sediment transport. Continue inspections and corrective action until soils are permanently stabilized and permanent vegetation has been appropriately established.
 - b. Inspect not less often than the frequency indicated in Section 01 41 26 - Stormwater Pollution Prevention Plan and Permit.
 - c. Repair or replace damaged erosion and sediment controls within 24 HRS of Design Builder becoming aware of such damage.
 - d. Periodically remove sediment that has accumulated in or behind sediment and erosion controls. Remove sediment not less often than when sediment is at approximately one-half of storage capacity of associated control element, unless more-frequent interval is indicated elsewhere in the Contract Documents. Properly dispose of sediment.
8. Duration of Temporary Erosion and Sediment Controls:
 - a. Maintain temporary erosion and sediment controls in effective, working condition until soil cover of the associated stormwater drainage area has been permanently stabilized.
9. Work Stoppage:
 - a. If the Work is temporarily stopped or suspended for any reason, Design Builder shall provide additional temporary controls necessary to prevent environmental damage to the Site and adjacent areas while the Work is stopped or suspended.
 - b. When temporary erosion and sediment controls remain in place during periods of stopped or suspended Work, continue to perform Design Builder's obligations relative to periodic inspection and maintenance of temporary erosion and sediment controls, including removal of accumulated sediment.
10. Failure to Provide Adequate Temporary Erosion and Sediment Controls:
 - a. If Design Builder repeatedly fails to satisfactorily control erosion and sediment transport in stormwater runoff, Owner reserves the right to use Owner's own forces or employ a third-party contractor for temporary erosion and sediment control. Owner's costs for such work, including engineering and inspection costs, will be deducted from amounts due Design Builder, as set-offs in accordance with the Contract Documents.

B. Erosion and Sediment Control Permit:

1. Comply with permit requirements in the Erosion and Sediment Control permit.

3.8 REMOVAL OF TEMPORARY CONTROLS

A. Removals – General:

1. Unless otherwise indicated elsewhere in this Section in requirements for respective temporary controls, upon completion of the associated Work and when temporary controls are no longer necessary, remove temporary controls and restore the Site to condition in accordance with the Contract Documents; if condition is not shown or indicated, restore the Site to pre-construction condition.
2. After soils are permanently stabilized, remove from the Site temporary erosion and sediment controls.

END OF SECTION

SECTION 01 61 00
COMMON PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
1. Common requirements for materials and equipment.
 2. Compatibility of materials and equipment.

1.2 REQUIREMENTS FOR MATERIALS AND EQUIPMENT

- A. Furnish materials and equipment that:
1. Have not been previously incorporated into another project or facility; and
 2. have not changed ownership after initial shipment from the manufacturer's factory or facility; and
 3. if stored since their manufacture or fabrication, have, while in storage, been properly maintained and serviced in accordance with the manufacturer's recommendations for long-term storage; submit documentation as required by Program Manager that such maintenance and service has been performed; and
 4. that the item(s) have not been subject to degradation or deterioration since manufacture; and
 5. are the current model(s) or type(s) furnished by the Supplier.
- B. To the extent possible, furnish from a single source manufacturer those materials and equipment that are of the same generic kind and/or type. This includes but are not limited to:
1. Piping;
 2. Valve types;
 3. Valve actuators;
 4. Instrumentation; and
 5. Equipment.
- C. Furnish materials and equipment complete with accessories, trim, finish, fasteners, and other items shown, indicated, or required for a complete installation for the indicated use and performance.
- D. Visual Matching: Furnish materials and equipment that match existing construction and are approved by Program Manager and Owner.
- E. Where the Contract Documents include the phrase "as selected" for color of materials or equipment, finish pattern, option, or similar phrase, furnish materials and equipment selected by Program Manager and Owner.
- F. Safety guards – Provide for all belt or chain drives, fan blades, couplings, or other moving or rotary parts. Cover rotating parts on all sides. Design such parts for easy installation and removal.
- G. Special tools, accessories, and spare parts:
1. Furnish to the Owner all accessories required to place each item of equipment in full operation. These accessory items include, but are not limited to, adequate oil and grease (as required for first year of lubrication of equipment after field testing), light bulbs, fuses, wrenches, valve keys, belts, special tools, and manufacturer recommended spare parts.
- H. Lubricants:
1. Provide initial lubricant recommended by equipment manufacturer in sufficient quantity to fill lubricant reservoirs and to replace consumption during testing, start-up, and operation until final Owner acceptance.
 2. Lubricants shall require no more than weekly maintenance during continuous operation.

3. Locate drains to allow convenient collection of oil during oil changes without removing equipment from its installed position.
 4. Provide constant-level oilers or oil-level indicators for oil lubrication systems.
 5. For grease-type bearings, which are not easily accessible, provide and install stainless steel tubing; protect and extend tubing to a convenient location with suitable grease fitting.
- I. Equipment Layout:
1. Provide a minimum clearance of 3 FT between equipment in other structures, walls, equipment, piping, and appurtenances.
 2. In addition to the minimum clearance, provide adequate clearance for equipment removal and maintenance activities.
 3. Prepare PDF packages for facilities that are red lined illustrating proper clearances have been designed for equipment, valves, and instrumentation. Show how equipment is removed from the facility and how maintenance is achieved. As part of the PDF packages, attach documentation from the manufacturer stating the required maintenance and clearances required.

1.3 COMPATIBILITY

- A. Similar materials and equipment by the same Supplier shall be compatible with each other, unless otherwise indicated in the Contract Documents or approved by Program Manager.
- B. Furnish materials and equipment compatible with items previously selected or installed on the Project.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION - (NOT USED)

END OF SECTION

SECTION 01 66 00
PRODUCT STORAGE AND HANDLING REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. General requirements for:
 - a. Payment considerations for stored materials and equipment.
 - b. Handling of materials and equipment.
 - c. Storage of materials and equipment, including:
 - 1) General provisions for storage.
 - 2) Storage locations.
 - 3) Protection of stored items.
 - 4) Storage of items containing Constituents of Concern.
 - 5) Outdoor, uncovered storage.
 - 6) Outdoor, covered storage.
 - 7) Fully-protected storage.
 - 8) Removal of temporary storage facilities and restoration of storage areas.
 - d. Maintenance of storage.
- B. Scope:
 - 1. Design Builder shall provide all labor, materials, equipment, tools, services, lands, and incidentals necessary and required to store and handle materials and equipment to be incorporated into the Work, and other materials and equipment at the Site, adjacent areas, and off-site storage areas.
 - 2. Comply with Section 01 71 33 - Protection of the Work and Property, relative to handling and storing materials and equipment.
- C. Related Requirements: Include but are not limited to:
 - 1. Section 01 35 43.13 - Environmental Procedures for Hazardous Materials.
 - 2. Section 01 55 13 - Vehicular Access and Parking.
 - 3. Section 01 57 05 - Temporary Controls.
 - 4. Section 01 71 33 - Protection of the Work and Property.

1.2 PRICE AND PAYMENT PROCEDURES

- A. Measurement and Payment:
 - 1. Materials and equipment delivered but not suitably stored and protected will not be eligible for payment.
 - 2. Program Manager may recommend reduction in payment, and Owner may reduce payments to Design Builder ("set-offs") by an appropriate amount when stored items are subsequently revealed to be improperly stored or protected.
 - 3. Payment for Suitably Stored Items:
 - a. Requirements for payment for materials and equipment delivered and suitably stored, but not yet incorporated into the Work, are in the General Conditions.
 - b. Materials and equipment delivered and suitably stored, but not yet incorporated into the Work, will not be eligible for payment until the inspection upon delivery, is completed and Program Manager concurs that such items generally appear to be in good condition, in accordance with the Contract Documents, and are of the required quality and quantity.

1.3 SUBMITTALS

- A. Informational Submittals: Submit the following:
 - 1. Affidavits of Inspection and Maintenance Performed on Mechanical and Electrical Equipment in Long-Term Storage:
 - a. Submit in accordance with requirements of Article 3.1 of this Section.
 - 2. Other Records of Inspection and Maintenance of Stored Materials and Equipment:
 - a. Establish and maintain such records as required by this Section.
 - b. Submit to Program Manager or Owner (as applicable) within 3 days of Design Builder's receipt of such request.

1.4 HANDLING

- A. Handling of Materials and Equipment – General:
 - 1. Handle materials and equipment to be incorporated into the Work in accordance with the Contract Documents and manufacturer's written instructions.
 - 2. During handling and assembling of materials and equipment:
 - a. Maintain validity of manufacturers' warranties.
 - b. Comply with:
 - 1) Section 01 71 33 - Protection of the Work and Property.
 - c. Do not drop, drag (without appropriate rollers or skids), or scrape materials and equipment.
 - d. Use proper construction equipment and machinery, and tools, operated by sufficient number of qualified personnel.
 - e. Maintain materials and equipment in neutral position.
 - f. Do not exert undue stress on materials and equipment.
 - g. Do not deform, bend, or damage materials and equipment.
 - h. Do not deform or mar shafts, bearings, or other parts.
- B. Additional Requirements for Hoisting and Lifting:
 - 1. When lifting or hoisting, support materials and equipment from appropriate lifting points using proper hooks and suitable nylon lifting straps, chains, and cables. Do not mar or scrape surfaces of materials and equipment during handling.
 - 2. For work in existing facilities, comply with Section 01 14 19 - Use of Site, regarding use of Owner's existing hoisting equipment and elevators, as applicable.
 - 3. Do not support rigging from building or structure without written approval of Design Professional.
 - 4. Design Builder is responsible for and shall remedy damage to building, structure, and existing hoisting equipment and elevators, resulting from Design Builder's operations, in accordance with Section 01 71 33 - Protection of the Work and Property.

1.5 STORAGE

- A. Storage – General:
 - 1. Design Builder shall make all arrangements and provide all measures necessary and required for, and pay all costs associated with, storing materials and equipment.
 - 2. Store materials and equipment in accordance with the Contract Documents and manufacturer's written instructions. In event of conflict between the Contract Documents and manufacturer's written instructions regarding storage and protection, comply with the more stringent, more protective requirements.
 - 3. Comply with Section 01 71 33 - Protection of the Work and Property.
 - 4. Records:
 - a. Establish and maintain up-to-date account of materials and equipment in storage, to facilitate preparation of progress payment requests, if the Contract Documents provide for payment for materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing.

- b. Submit affidavits of inspection and maintenance of mechanical and electrical equipment in long-term storage in accordance with this Section's Article 3.1 ("Maintenance of Storage").
 - 5. Arrange stored materials and equipment to allow easy access for observation or inspection by Owner, Program Manager, Owner-hired testing and inspection entities, and authorities having jurisdiction.
 - 6. Inspect and maintain stored materials and equipment in accordance with this Section's Article 3.1 ("Maintenance of Storage").
- B. Storage Location:
 - 1. Area(s) available at the Site for storing materials and equipment are addressed in Section 01 14 19 - Use of Site.
 - 2. When on-site storage is insufficient, Design Builder shall provide additional lands for storage facilities as necessary and required for the Work.
 - 3. Restrictions on Storage Locations:
 - a. Do not store materials or equipment in structures being constructed unless approved by Program Manager in writing.
 - b. Do not use lawns, landscaped areas, or private property for storage without written permission of property owner.
 - c. Comply with:
 - 1) Section 01 14 19 - Use of Site.
 - 2) Section 01 55 13 - Vehicular Access and Parking.
 - 3) Section 01 71 33 - Protection of the Work and Property.
- C. Protection of Stored Items – General:
 - 1. Store materials and equipment indicated below to ensure preservation of quality and fitness for intended uses in the Work, including proper protection against damage and deterioration resulting from: water (including precipitation, flood, and other), moisture, humidity, wind, dust, freezing, and outdoor ambient air high temperature as high as 105 DegF. Temperature and humidity inside crates, containers, storage structures, and packaging may be significantly higher than outdoor ambient air temperature.
 - 2. Store in indoor, climate-controlled storage all materials and equipment subject to damage or deterioration by water, moisture, humidity, heat, cold, and other elements, unless otherwise acceptable to Owner and Program Manager.
 - 3. Do not open manufacturer's crates, containers, and packaging until time of installation, unless recommended by the manufacturer or otherwise required in the Contract Documents.
 - 4. Store all materials and equipment off the ground (or floor) on raised supports such as skids or pallets.
 - 5. Electrical Equipment, Instrumentation and Controls, Items Containing Computer Chips, Solid-State Devices, and Other Electronics:
 - a. Design Builder shall obtain, coordinate, and comply with specific temperature, humidity, and environmental limitations on materials and equipment, because temperature inside cabinets and components stored in warm temperatures can approach 200 DegF.
 - b. Protect from water, moisture, humidity, dust, heat, cold, and other potentially harmful elements and environments. Space heaters provided in equipment shall be connected and operating at all times until equipment is connected to active, permanent, electrical power.
 - c. Provide inside each electrical panel, control panel, and other enclosures with electronic device(s) each of the following: (1) desiccant, (2) volatile corrosion inhibitor (VCI) blocks, (3) moisture indicator, and (4) maximum- and minimum-indicating thermometer.
 - d. Check panels and equipment not less than once per month. Replace desiccant, VCI, and moisture indicator the earlier of: (1) as often as necessary, or (2) every 6 months.

- e. Establish and maintain certified record of daily maximum and minimum temperature and humidity in storage facility. Such records shall be available for Program Manager's and Owner's inspection upon request. Certified record of monthly inspection, noting maximum and minimum temperature for month, condition of desiccant, VCI, and moisture indicator, shall be available to Program Manager and Owner upon request.
 - 6. Finished Surfaces:
 - a. Protect finished surfaces against impact, abrasion, discoloration, and other damage.
 - b. Remedy, in accordance with requirements of item manufacturer and finishing system manufacturer damaged, marred, or deteriorated finishes, to Program Manager's satisfaction.
 - 7. Design Builder is fully responsible for loss, damage, and deterioration, including theft and vandalism, to stored materials and equipment.
- D. Storage of Materials or Equipment Containing Constituents of Concern:
- 1. Prevent contamination of personnel, storage areas, the Site, and adjacent areas.
 - 2. Comply with Laws and Regulations, Section 01 35 43.13 - Environmental Procedures for Hazardous Materials, and other provisions of the Contract Documents relative to Constituents of Concern and Hazardous Environmental Conditions.
- E. Uncovered Storage:
- 1. The following materials may be stored outdoors without cover on supports, so there is no contact with the ground:
 - a. Reinforcing steel.
 - b. Precast concrete materials.
 - c. Structural steel.
 - d. Metal stairs.
 - e. Handrails and railings.
 - f. Grating.
 - g. Checker plate.
 - h. Metal access hatches, such as floor doors, roof hatches, and the like.
 - i. Castings.
 - j. Fiberglass items.
 - k. Rigid electrical conduit, except PVC-coated conduit.
 - l. Fencing intended for permanent, outdoor installation.
 - m. Piping, except PVC or chlorinated PVC (CPVC) pipe.
- F. Covered Storage:
- 1. The following materials and equipment may be stored outdoors on supports and completely covered with covering impervious to water:
 - a. Grout and mortar materials.
 - b. Masonry units.
 - c. Metal decking.
 - d. Rough lumber.
 - e. Soil materials and granular materials such as aggregate.
 - f. PVC and CPVC pipe.
 - g. PVC-coated electrical conduit.
 - h. Filter media.
 - i. Plastic media, such as used in odor control scrubbers.
 - 2. Properly and fully secure covers against coming loose in strong winds.
 - 3. Install coverings properly sloped to prevent accumulation of water.
 - 4. Loose Soil Material and Loose Granular Material:
 - a. Store such materials in well-drained areas.
 - b. Prevent mixing of such materials with foreign matter. Provide underlying separation layer or store on solid, impervious surface, where appropriate.

- c. Provide temporary erosion and sediment controls for stockpiled soil materials in accordance with Section 01 57 05 - Temporary Controls.
- G. Fully Protected Storage:
 - 1. Store all materials and equipment not indicated in the provisions above regarding uncovered storage and covered storage on supports, in buildings, trailers, or other suitable temporary storage facility with concrete or wood flooring, solid and impervious roof, and fully closed walls on all sides.
 - 2. Covering with visqueen plastic sheeting or similar material in storage space without floor, roof, and walls is unacceptable.
 - 3. Provide heated storage for materials and equipment that could be damaged or deteriorate by low temperatures or freezing.
 - 4. Provide air-conditioned storage for materials and equipment that could be damaged or deteriorate by high temperature or humidity.
 - 5. Protect mechanical and electrical equipment from being contaminated by dust, dirt, and moisture.
 - 6. Maintain temperature and humidity at levels recommended by materials and equipment manufacturers.
 - 7. Prevent infestation of stored items by pests and rodents. Promptly and properly remedy such infestation when apparent.
- H. Removal of Temporary Storage Facilities and Restoration of Storage Areas:
 - 1. Completely remove temporary storage facilities when no longer necessary for the Work.
 - 2. Restore areas used for storage and areas occupied by temporary storage facilities, in accordance with the Contract Documents, including Section 01 71 33 - Protection of the Work and Property.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION

3.1 MAINTENANCE OF STORAGE

- A. On a scheduled basis, periodically inspect stored materials and equipment to ensure that:
 - 1. Condition and status of storage facilities is adequate to provide required storage conditions.
 - 2. Required environmental conditions are maintained on continuing basis.
 - 3. Materials and equipment exposed to weather elements or other environment are not adversely affected.
- B. Mechanical and Electrical Equipment in Long-Term Storage:
 - 1. Meaning of the term “long-term storage” is as established in written instructions of manufacturer of associated materials or equipment.
 - 2. Mechanical and electrical equipment requiring long-term storage shall have complete manufacturer’s written instructions for servicing each item, with notice of enclosed instructions shown on exterior of crate, container, or packaging.
 - 3. Frequency of inspections and maintenance of stored items shall be in accordance with manufacturer’s written instructions.
 - 4. For mechanical equipment with bearings and shafts, manually rotate shaft during inspection and maintenance, as recommended by equipment manufacturer.
 - 5. Space heaters that are part of electrical equipment shall be connected and operated continuously until equipment is connected to permanent electrical power supply.
 - 6. Other requirements for maintenance during storage of electrical equipment, instrumentation and controls, items with computer chips, solid-state devices and other electronics are in this Section’s provision on general protection during storage.

C. Affidavits:

1. Submit to Program Manager affidavit for each time maintenance and inspection was performed on materials and equipment in long-term storage. Affidavit shall be signed by Design Builder and entity performing the inspection and maintenance on the stored items.
2. Indicate on affidavit:
 - a. Date of inspection.
 - b. Personnel involved and employer of each.
 - c. Condition of storage environment.
 - d. Specific stored items inspected, equipment condition, problems observed, problems corrected, maintenance tasks performed, and other relevant information.
 - e. Signature of Design Builder's person responsible for the inspection and maintenance.
 - f. Signed and notarized statement by items' manufacturer indicating whether storage conditions and tasks performed are suitable for continued compliance with manufacturer's warranties.
3. Submit each affidavit, complete, not later than 7 days after performing associated inspection and maintenance.

END OF SECTION

SECTION 01 71 33
PROTECTION OF THE WORK AND PROPERTY

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
1. General requirements for protecting the Work and property, including:
 - a. Accessing or entering property.
 - b. Temporary barricades and temporary warning lights and signs.
 - c. Responsibility to remedy damaged property.
 - d. Protecting natural habitats, including trees, plants, lawns and meadows, and wildlife.
 - e. Protecting Underground Facilities.
 - f. Protecting existing surface structures.
 - g. Protecting floors, walls, and roofs.
 - h. Protecting other installed items and landscaping.
 - i. Vibration and Movement Limits and Monitoring.
 - j. General requirements for security during the Project.
 - k. Site access security procedures.
 - l. Temporary security fencing.
- B. Scope:
1. This Section augments requirements of the General Conditions as may be modified by the Special Conditions regarding protection of the Work and property, including Underground Facilities.
 2. Design Builder shall provide all labor, materials, equipment, tools, services, and incidentals necessary and required for protecting the Work and property in accordance with the Contract Documents.
- C. Related Requirements: Include, but are not necessarily limited to:
1. Section 01 55 13 - Vehicular Access and Parking.
 2. Section 01 57 05 - Temporary Controls.
 3. Section 01 66 00 - Product Storage and Handling Requirements.

1.2 PROTECTION – GENERAL

- A. Design Builder shall provide all precautions and programs and perform all actions necessary to protect personnel health and safety, and to protect the Work and all public and private property and facilities from damage, in accordance with the Contract Documents, Laws and Regulations, and other applicable requirements.
- B. To prevent damage, injury, and loss, Design Builder's actions shall include the following:
1. Providing measures for safety of all personnel at and adjacent to the Site, whether engaged in performing the Work, operating or maintaining the facility, or performing other functions for Owner or others.
 2. Storing construction equipment, machinery, tools, and similar items, materials and equipment to be incorporated into the Work, supplies, and other items in an orderly, safe manner that does not unduly interfere with progress of the Work or work of others, including Owner and facility manager (if other than Owner).
 3. Suitably storing materials and equipment to be incorporated into the Work, in accordance with the Contract Documents, including Section 01 66 00 - Product Storage and Handling Requirements.
 4. Placing upon the Work or any part thereof only loads consistent with the safety and integrity of that portion of the Work and existing construction and facilities.

5. Frequently removing and disposing of rubbish, scrap materials, and debris from Design Builder's operations.
6. Providing temporary controls, including controlling pests and rodents, in accordance with the Contract Documents, including Section 01 57 05 - Temporary Controls.

1.3 GENERAL PROVISIONS FOR SECURITY DURING THE PROJECT

A. Security – General:

1. Design Builder shall safely guard all the Work, the Project, materials, equipment, and property from loss, theft, damage, and vandalism by any and all persons and cause, until all Design Builder demobilizes off-site or unless otherwise agreed upon by Owner and Design Builder.
2. Design Builder's duty includes safely guarding Owner's property in vicinity of the Work and Project, and other private property in the vicinity of the Project, from injury and loss in connection with performance of the Project, theft, vandalism, and other causes.
3. Employ security personnel as necessary to provide required security and prevent unauthorized entry to the work areas.
4. Provide temporary fencing in accordance with the Contract Documents.
5. Design Builder's security measures shall be at least equal to those usually provided by Owner to protect existing facilities during normal operation.

B. Existing Security at the Site:

1. Owner's facility includes a perimeter security fence and a guardhouse at Gate 6 and Gate 8, staffed during normal business hours. Owner's security personnel record entry to and departure from the facility of all visitors, and obtain Owner's approval for allowing visitors on-site.
2. All other gates are normally closed and allow entry through automated gate cards only.

C. Restrictions:

1. At all times when Design Builder's workers and personnel are at the Site or adjacent areas, no weapons, explosives, drugs, alcohol, stolen goods or criminal activity are allowed.
2. Design Builder's personnel shall not access the Site outside normal working hours without express knowledge of and consent of Site security personnel and Design Builder.

1.4 SUBMITTALS

A. Action Submittals:

1. Submit the following:
 - a. Shop Drawings:
 - 1) Temporary Fencing: Submit site plan drawings showing proposed locations and extent of temporary site security fencing and each opening therein.
 - b. Product Data:
 - 1) Temporary Fencing: Manufacturer's literature, specifications, and installation instructions for temporary site security fencing proposed.

B. Informational Submittals:

1. Submit the following:
 - a. Employee Information:
 - 1) Submit to Owner the following:
 - a) Format of employee background data and proposed approach for performing employee background checks.
 - b) Background data for employees to whom identification badges will be issued.
 - c) Updated listing of personnel to whom identification badges have been issued. Submit updated listing within 24 HRS of a change in the list or change in an employee's Site access status.

- b. Security Plan:
 - 1) Submit the following to Owner:
 - a) Design Builder's initial security plan Submittal, in accordance with Paragraph C of this Section's Article, "Design Builder's Site Access and Security Procedures".
 - b) Updates to Design Builder's security plan, as required in this Section.

1.5 DESIGN BUILDER'S SITE ACCESS AND SECURITY PROCEDURES

- A. Comply with Section 01 55 13 - Vehicular Access and Parking.
- B. Comply with Owner's security procedures and access restrictions at the Site throughout the Project. Comply with the following:
 - 1. Personnel Identification:
 - a. All Design Builder personnel, including Subcontractors, Suppliers, and others associated with the Project, shall wear badge, hard hat, or other means identifying their company and their name.
 - 2. Vehicle Identification:
 - a. While at the Site, all Design Builder, Subcontractor, and Supplier vehicles, including workers' personal vehicles and all mobile construction equipment, shall display vehicle identification.
 - 3. Parking:
 - a. Do not park outside of designated Design Builder parking areas.
 - b. Personal vehicles are not allowed outside the contractor parking area.
- C. Security Plan:
 - 1. Submit to Owner a written narrative-type security plan addressing the following:
 - a. Project name and description.
 - b. Design Builder name and contact information.
 - c. List of proposed Subcontractors and Suppliers that will access the Site.
 - d. List of all vehicles and construction equipment that will remain on-site during the Work.
 - e. Design Builder's emergency contact information for 24-HR use.
 - f. Site layout plan drawing.
 - g. Design Builder's planned work schedule (days and hours) and Progress Schedule required in Section 01 32 16 - Construction Progress Schedule.
 - h. Design Builder's security plan, personnel responsible for security, and proposed actions in event of security breach. Describe probable effect on facility's security (such as need for increased patrols) and how security breaches will be evaluated and the process improved.
 - 2. Updates:
 - a. Updated listing of personnel to whom identification badges have been issued. Submit updated listing within 24 HRS of a change in the list or change in an employee's Site access status.
 - b. Submit updated list of vehicles for which vehicle identification has been issued.

PART 2 - PRODUCTS

2.1 TEMPORARY BARRICADES

- A. Materials and Construction:
 - 1. Temporary barricades shall be of materials that are either new or of good quality and sufficient for the intended purpose, exposure, and duration of use.
 - 2. Provide temporary barricades of sturdy materials of grade, thickness, and durability sufficient for the probable loads to which they will be subject. Temporary barricades intended for fall prevention, such as railings and handrails on temporary stairs and

temporary walkways and at openings, shall be in accordance with Laws and Regulations, including the applicable building and safety codes.

3. Color: Use appropriately colored and reflective barricades, or paint barricades accordingly, to be visible at night and during periods of low visibility.
4. Where owner of transportation right-of-way or transportation facility having jurisdiction or other authority having jurisdiction requires compliance with standards more stringent than the Contract Documents, comply with both the Contract Documents and requirements of the authorities having jurisdiction.

2.2 TEMPORARY FENCING

- A. When security fencing or barriers are breached or temporarily removed for the Project, provide temporary security fencing in manner satisfactory to Program Manager and Owner.
- B. Provide other security fencing deemed necessary by Design Builder, such as for Design Builder's material and equipment storage areas. Such fencing, when not protecting Owner's or facility manager's property, shall be as deemed appropriate by Design Builder for Design Builder's purposes.

PART 3 - EXECUTION

3.1 ACCESSING OR ENTERING PROPERTY

- A. Accessing or Entering Property – General:
 1. Use and occupy only lands and easements furnished by Owner, unless appropriate consent from property owner and occupants is obtained by Design Builder.
 2. The foregoing applies to personnel, construction equipment and machinery, tools, vehicles, materials or equipment to be incorporated into the Work, supplies, temporary facilities, and other items or obstructions.
 3. Limitations, if any, on accessing the Site are indicated in Section 01 55 13 - Vehicular Access and Parking.

3.2 BARRICADES

- A. Temporary Barricades and Temporary Warning Lights and Signs – General:
 1. All Work Areas:
 - a. Provide temporary barricades, warning lights, and warning signs for both indoor and outdoor Work, in accordance with Laws and Regulations and requirements of owners of affected property and facilities.
 - b. Warning Lights and Signage: From 30 minutes before terrestrial sunset to 30 minutes after terrestrial sunrise, provide and maintain not less than one temporary flashing light at each vehicle barricade and at other barriers and barricades as necessary.
 - c. Promptly replace temporary barricades that are damaged or are otherwise no longer capable of serving their intended function.
 2. Where the Work is performed on or adjacent to roadway, access road, other area travelled by motor vehicles, railroad, or similar transportation right-of-way, or public place:
 - a. Provide temporary barricades, temporary fences, temporary guard rails, temporary lights and warning signs, temporary danger signals, and other precautions for protecting persons, property, vehicles, and the Work.
 - b. Provide sufficient temporary barricades to keep vehicles from being driven on or into excavations and the Work under construction.
 3. Temporary Barriers for Areas Not Subject to Vehicular Traffic:
 - a. Provide temporary barriers around:
 - 1) Openings.
 - 2) Scaffolding.
 - 3) Temporary stairs and ramps.
 - 4) Around excavations.

- 5) Around elevated walkways, slabs, and platforms.
- 6) Other areas that may present a fall-hazard or hazard to persons and property.
- b. Provide appropriate temporary barriers, warning signs and, where necessary, warning lights, at ground level and other low elevations, and at higher elevations. Protect persons and property from fall-hazards and protect persons and property at lower elevations from falling objects.
- 4. Duration of Temporary Barriers, Barricades, Signs, and Warning Lights:
 - a. Design Builder's responsibility for maintaining temporary barriers, barricades, signs, warning lights shall continue until the associated Work is substantially complete in accordance with the Contract Documents, unless other provision for protection are agreed to by the parties.
 - b. After Substantial Completion, protect Work and property during periods when Design Builder is on-site: completing the remaining Work, performing correction period work, and performing warranty work.

3.3 TEMPORARY FENCING

- A. Installation:
 - 1. Provide temporary security fencing for site security so that integrity of site security is maintained throughout the Project.
 - 2. Install temporary security fencing in accordance with the Contract Documents and fence Supplier's instructions.
- B. Maintenance:
 - 1. Maintain temporary security fencing throughout the Project, until removal.
 - 2. Promptly repair damage to temporary security fencing and replace fencing when necessary to preserve Site security.
- C. Removal:
 - 1. Remove temporary security fencing when permanent site security fencing is in place and fully functional, or when otherwise acceptable to Program Manager.
 - 2. Remove required temporary security fencing at Site perimeter and other temporary security fencing required by the Contract prior to inspection for Substantial Completion.

3.4 RESPONSIBILITY TO REMEDY DAMAGED PROPERTY

- A. Design Builder to Remedy Damage:
 - 1. Design Builder has full responsibility for preserving public and private property and facilities on and adjacent to the Site.
 - 2. Direct or indirect damage done by, or on account of, any act, omission, neglect (including inadvertent acts), or misconduct by Design Builder (including any person or entity for whom contractor is responsible) in performing the Work, shall be promptly remedied by Design Builder, at Design Builder's expense, in accordance with the Contract Documents.
 - 3. If the Contract Documents do not show or indicate the required restoration, or remedy, restore or remedy the damage to condition equal or better than that existing before damage was done.
- B. Owner May Remedy:
 - 1. Should Design Builder fail to protect and safeguard property and the Work after requests from Program Manager or Owner, Owner reserves the right to implement measures to protect property and the Work.
 - 2. Cost of such Owner-implemented measures shall be paid by Design Builder. Owner may deduct from payments due Design Builder such amounts as set-offs in accordance with the Contract Documents.
 - 3. Such right, however, does not obligate Owner or Program Manager to continuously monitor or have responsibility for protection of property and the Work, which responsibility is exclusively Design Builder's.

4. In exercising its rights under this provision, Owner will endeavor to give Design Builder sufficient notice to allow Design Builder to remedy the damage or defect within a reasonable time. However, if Owner or Program Manager deems that the situation requires prompt remedy, Owner may act as quickly as Owner deems appropriate, without infringing on or mitigating Owner's rights under this provision and elsewhere in the Contract Documents.
- C. Protection of Lawns and Meadows:
1. Protect lawns and meadows from unnecessary damage during performance of the Work.
 2. To extent practicable, do not drive vehicles, construction equipment, machinery, or wheeled items such as carts and wheelbarrows, across lawns and meadows.
 3. When existing lawn or meadow areas are disturbed, promptly stabilize exposed soil in accordance with Section 01 57 05 - Temporary Controls.
 4. Remedy damaged lawns and meadows in accordance with the Contract Documents. If not otherwise addressed in the Contract Documents, restore to preconstruction condition or better with the same or substantively similar species.

3.5 PROTECTION OF UNDERGROUND FACILITIES

- A. Underground Facilities – General:
1. Information shown for Underground Facilities is the best available to Owner but is not guaranteed to be correct or complete.
 2. Comply with Laws and Regulations regarding notification of utility owners prior to performing the Work, including necessary “call before you dig” notifications.
 3. Design Builder shall explore ahead of trenching and excavating Work and shall sufficiently uncover Underground Facilities that will or may interfere with the Work to determine their location, to prevent damage to Underground Facilities, and to prevent service interruption to structures and properties served by Underground Facilities.
 4. If Design Builder damages an Underground Facility, Design Builder shall promptly restore the damaged Underground Facility in accordance with requirements of the owner of the damaged facility and the Contract Documents. If the Contract Documents do not address repair or remedy of the damaged facility, restore to not less than preconstruction condition.
- B. Protection of Underground Facilities under Roads and Parking Areas:
1. Provide temporary, heavy-duty steel roadway plates to protect existing manholes, handholes, valve boxes, vaults, and other Underground Facilities near to, or visible at, the ground surface.
 2. Avoid imparting heavy loads, especially stationary loads (such as with cranes) and transitory loading (such as heavy truck traffic), vibration forces, and impact loads on Underground Facilities that are close to the ground surface and below-grade work areas. Provide temporary bridging or other appropriate protection where traffic must pass over Underground Facilities in close proximity to the ground surface.
- C. Temporary Support of Underground Facilities:
1. Where Design Builder exposes or excavates around or under one or more existing Underground Facilities, provide appropriate and adequate temporary supports for the associated Underground Facilities.
 2. Do not allow Underground Facilities exposed by Design Builder's operations to remain exposed without temporary support necessary to properly protect the Underground Facility. Where joint of Underground Facility is exposed by excavation, provide temporary support for each exposed joint and other temporary support as necessary.
 3. Design of Temporary Supports:
 - a. Where necessary or where expressly required by the Contract Documents, retain services of professional engineer to design the temporary supports. Such professional engineer shall be experienced with the type and size of subject Underground Facility, structural engineering, and geotechnical engineering sufficient for the foundations of the temporary supports.

- b. Temporary supports are not delegation of professional design responsibility unless expressly so indicated in the Contract Documents.
- c. Responsibilities of Design Builder's professional engineer shall include, but are not necessarily limited to, the following:
 - 1) Advising Design Builder on investigations necessary to obtain information for design of temporary supports. Reviewing and considering results of such investigations in the design of temporary supports.
 - 2) Visiting the Site to make personal observations as needed.
 - 3) Identifying appropriate design criteria for temporary supports.
 - 4) Preparing necessary calculations, design drawings, and design specifications (sealed and signed when required by Contract or Laws or Regulations), appropriately based on the associated soil conditions and subsurface conditions, considering the consequences of failure of the temporary supports and associated potential for damage or failure of the existing subject Underground Facility.
 - 5) Designing temporary supports with a safety factor of not less than 2.0.
 - 6) Reviewing and approve or take other appropriate action on submittals of shop drawings and product data for the temporary supports and related materials.
 - 7) Making periodic visits to the Site during erection of the temporary supports and at appropriate intervals thereafter to inspect the temporary supports during performance of other, adjacent Work.
 - 8) Issuing to Design Builder written recommendations for repairs and improvements necessary for the proper protection of the associated Underground Facility.
 - 9) Submitting to Design Builder detailed, written recommendations for backfilling the excavation underneath and adjacent to the Underground Facility and for removing the temporary supports.
- d. Design Builder shall comply with the professional engineer's design of the temporary supports.
- e. Owner may require and, in such event, Design Builder shall submit, design documents, shop drawings, product data, and reports by Design Builder-hired professional engineer. When such documents are furnished to Owner, the Owner has no obligation to perform any review of such documents and Owner's possession of such documents does not impart on Owner or Program Manager any responsibility for or professional liability associated with design of such temporary supports and consequences of implementing such designs. Owner and Program Manager are not obligated in any way to implement recommendations of Design Builder's professional engineer.

3.6 PROTECTION OF EXISTING SURFACE STRUCTURES

A. Surface Structures – General:

- 1. Surface structures are existing buildings, structures, and other facilities at or extending above ground surface, including their foundations and any extension below ground surface. Surface structures include, but are not limited to, buildings, tanks, walls, roads, open drainage routes, exposed piping and utilities, poles, exposed wires and cabling, posts, signs, markers, curbs, walks, fencing, and other facilities visible at or above ground surface.
- 2. Protect surface structures as necessary and promptly remedy damage and defects resulting or arising from Design Builder's operations. Unless expressly shown or indicated otherwise in the Contract Documents, protect such items regardless of whether shown or indicated on the Drawings or elsewhere in the Contract Documents.
- 3. Protection of Overhead Utilities:
 - a. Protect visible, overhead utilities, including electrical power, communications, and piped utilities, and related supports, regardless of whether such items are shown or indicated in the Contract Documents.
 - b. When required by the Contract Documents or when acceptable to owner of such utility or facility, temporarily relocate overhead utilities or facilities as necessary perform the Work.

- c. Provide temporary barriers, barricades, and warning signs identifying overhead utilities within reach of Design Builder's construction equipment, machinery, or operations.
- B. Temporary Removals of Surface Structures:
 - 1. Existing surface facilities, including but not limited to guard rails, handrails, posts, guard cables, signs, poles, markers, curbs, and fencing, that are temporarily removed to facilitate the Work shall be replaced and restored promptly after the associated Work is performed.
 - 2. Replace and restore such items in accordance with the Contract Documents. If not addressed in the Contract Documents, replace and restore such items to preconstruction condition or better.
 - 3. Remedy damage to all items temporarily removed and later replaced and restored.
 - 4. All such temporary relocations, replacement, and restoration is at Design Builder's cost.
- C. Protection of Surface Structures:
 - 1. Sustain in their original location and protect from direct and indirect injury all surface structures located within or adjacent to the Site. Such sustaining and supporting shall be done carefully and as required by the party owning or controlling such structure or facility.
 - 2. Before proceeding with the Work of sustaining and supporting such structure or facility, Design Builder shall, upon Program Manager's request, promptly satisfy Program Manager that methods and procedures to be used have been approved by party owning the surface structure or facility.
 - 3. Regardless of approval or acceptance by owner of property, structure, or facility, responsibility for protecting the Work and property is solely Design Builder's.

3.7 PROTECTION OF FLOORS, WALLS, AND ROOFS

- A. Protection of Floors, Walls, and Roofs – General:
 - 1. Use proper protective covering when moving equipment, handling materials or other loads, when painting, handling mortar or grout, and when cleaning walls, ceilings, or structure contents.
 - 2. Use metal pans to collect oil and cuttings from piping, conduits, and rod threading machines, and under metal cutting machines.
 - 3. Maintain at the Site and use spill kits and absorbent pads for remedying spills.
 - 4. Do not load concrete floors less than 28 days after concrete placement without Design Professional's written permission.
 - 5. Do not load slabs, floors, walls, or roofs in excess of design loading.
 - 6. Do not load roofs without Design Professional's written permission.
 - 7. Restrict access to roofs, and keep Design Builder's workers and personnel off existing roofs, except as necessary for the Work.
 - 8. If access to roofs is necessary, roofing, parapets, openings, and all other construction on or adjacent to roof shall be protected with suitable plywood, barricades, or other appropriate means.

3.8 PROTECTION OF INSTALLED MATERIALS, EQUIPMENT, AND LANDSCAPING

- A. General:
 - 1. Protect existing facilities and installed Work to prevent damage from subsequent operations.
 - 2. Remove protective items when no longer needed, prior to Substantial Completion of the associated Work.
 - 3. Where work will continue in adjacent area(s) after Substantial Completion of a portion of the Work, protect the substantially completed Work until all work in the area is complete.
- B. Control traffic (foot traffic, wheeled items such as carts, vehicles, and other traffic) to prevent damage to equipment, materials, and surfaces.
- C. Coverings:
 - 1. Provide temporary coverings to protect materials and equipment from damage.

2. Cover: projections, wall corners and jambs, sills, and soffits of openings, in areas used for traffic and for passage of materials and equipment in subsequent work.
3. Fasten protective items without harming the Work. Use tape or adhesives that do not leave residue when removed.

3.9 VIBRATION AND MOVEMENT LIMITS AND MONITORING

- A. Conduct all activities on the project in such a manner to prevent damage to adjacent pipes, structures, property and work, and consistently maintain ground vibrations and ground and structure displacements below the maximum levels specified herein.
 1. Blasting will not be permitted.
 2. Provide the services of an Independent Specialist:
 - a. To prepare a Monitoring Plan showing the location and type of all settlement monitoring points.
 - b. To provide settlement monitoring equipment and engineering seismographs.
 - 1) Engineering seismographs shall be capable of measuring vibration levels from 0.02 to 10 IN per second, at frequencies from 2 to 200 Hz, and of continually recording readings for a period of 24 HRS.
 - c. To monitor vibration and movement throughout the major construction activities for this project.
 3. Provide the services of a surveyor licensed in the Commonwealth of Virginia to perform the baseline survey of structure elevations and perform settlement survey readings.
 4. Monitoring Plan:
 - a. Submit Monitoring Plan, settlement and movement monitoring equipment manufacturer's data, and structure examination report prior to performing the work. Identify structures to be monitored during construction.
 5. Structure Examination:
 - a. Prior to starting work, the Design Builder, Owner, and Program Manager shall make a joint inspection of the existing structures within 150 FT of the work area to examine and document present conditions.
 - b. Take photographs to record any cracks or other evidence of structural distress in the structure.
 - c. Perform a baseline survey of structure elevations prior to the start of construction activity.
 - 1) Establish a system of reference points on or about structures that may be affected by excavation or demolition performed as part of Work.
 - 2) Provide sufficient points to permit detection of both horizontal and vertical movement.
 - 3) Accurately reference all readings to one benchmark, sufficiently remote as to be unaffected by any construction activity.
 - d. Prepare a report documenting all pre-existing conditions for each structure, verified by the photographs.
 - 1) Submit in accordance with Section 01 33 00.
- B. Movement and Vibration Limits at Existing Structures and Utilities:
 1. Design Professional or Independent Specialist shall establish maximum vibrations that shall not be exceeded as a result of excavation, demolition, pile driving or other activities of the Design Builder. Submit recommended peak particle velocity (PPV) to Program Manager for acceptance for:
 - a. Occupied Structures.
 - b. Concrete and Utility Structures.
 - c. Buried pipelines or other buried utilities.

2. Design Professional or Independent Specialist shall establish maximum movements that shall not be exceeded as a result of excavation, demolition, or other activities of the Design Builder. Submit recommended maximum settlement or heave to Program Manager for acceptance for:
 - a. All structures and pavement at the site.
 - b. Buried pipelines or other buried utilities.
 3. Actions if threshold or limiting values are exceeded:
 - a. Stop all work in the vicinity of the exceedance until a meeting takes place between the Design Builder, Design Professional, Owner, Program Manager, and the Design Builder's Independent Specialist to assess the cause of the exceedance.
 - b. Within 24 HRS of notification of the exceedance, submit to the Owner a report indicating the activity causing the exceedance and the steps the Design Builder has taken and will take to prevent further exceedances of the threshold limit.
 - c. Do not restart work in the vicinity of the exceedance until the submittal is reviewed and accepted by the Owner.
- C. Monitoring Schedule
1. Perform settlement monitoring weekly when excavation, demolition, and construction activities are more than 100 FT from a monitored structure.
 2. Perform settlement monitoring daily when any construction activities are within 100 FT of a monitored structure.
 3. When excavation, demolition and construction activities are within 20 FT of a monitored structure, settlement monitoring may be conducted several times during the day, as directed by the Design Builder's Independent Specialist.
 4. Provide movement detection survey reports to the Owner within 24 HRS after the survey is made.

END OF SECTION

SECTION 01 75 00
START-UP AND COMMISSIONING PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Administrative and procedural requirements for start-up and commissioning of equipment, systems, and facilities, including Demonstration and Performance Tests.
- B. Scope:
 - 1. Requirements of this Section are intended to be the minimum requirements for Start-up, Testing, and Commissioning the Work and shall supplement the Design Professional's detailed requirements. The Design Professionals requirements shall not supersede requirements listed herein, unless approved by the Owner.
 - 2. Design Builder shall initially check out, start-up, and place equipment and systems installed under the Contract into successful operation, in accordance with the material and equipment manufacturers' written instructions, Suppliers' recommendations at the Site, and the Contract Documents.
 - 3. Successful completion of Demonstration and Performance tests are required prior to receiving Substantial Completion.
 - 4. Provide the following:
 - a. All labor, tools, materials, and equipment required to complete equipment and system checkout and start-up.
 - b. Chemicals, lubricants, and other required operating fluids necessary for checkout, start-up, and initial operation of the Work.
 - c. Filters and other temporary or consumable items necessary for checkout, start-up, and initial operation of the Work.
 - d. Fuel, electricity, water, and other temporary utilities and temporary facilities necessary for checkout and start-up of equipment and systems, unless otherwise specified.
 - 5. The General Conditions and Section 01 77 19 - Closeout Requirements, address requirements for documenting Substantial Completion.
- C. Related Sections include but are not necessarily limited to:
 - 1. Section 01 78 23 - Operation and Maintenance Data.
 - 2. Section 01 77 19 - Closeout Requirements.

1.2 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate checkout, start-up and commissioning with other subcontractors and equipment suppliers, as necessary.
 - 2. Do not start-up equipment or system(s) for continuous operation until all components of that equipment item or system, including instrumentation and controls, have been tested to the extent practicable and proven to be operable as intended by the Contract Documents.
 - 3. Subject to the constraints of this Specifications section, Owner will furnish sufficient personnel to assist Design Builder in starting up equipment and system(s), but responsibility for proper operation of the Work is Design Builder's.
 - 4. Supplier shall be present during checkout, start-up, and initial operation, unless otherwise acceptable to Design Professional and Program Manager or otherwise required by the Contract Documents.
 - 5. For start-up of heating equipment, air conditioning equipment, and other equipment and systems that provide temperature control, that are dependent upon the time of year, return to

- the Site at beginning of next heating or cooling season (as applicable) to recheck and start the appropriate equipment and system(s).
6. Do not start-up equipment and system(s), without submitting acceptable preliminary operations and maintenance manuals by Design Builder in accordance with the Contract Documents.
- B. Start-up and Commissioning Plan:
1. A conceptual Start-up and Commissioning Plan is required during the Design Implementation Stage. This conceptual Plan shall be updated and submitted for review at least 180 days prior to the initial system start-up.
 - a. The plan shall be updated a second time and submitted 30 days prior to initial start-up.
 2. Update all information included in the conceptual Plan. In addition, provide detailed checkout and start-up procedures for all individual systems. Separate Plans may be provided for specific systems. At a minimum, include the following with the detailed Start-up and Commissioning Plan:
 - a. Detailed processes and procedures for all phases of testing, including templates for review forms for all stages of testing, including verification that all testing requirements have been met.
 - b. Detailed start-up sequencing, including procedures for process ramp up and transition from existing solids handling processes.
 - c. Analytical methods, calculations, and other techniques to ensure that requirements of testing are met.
 - d. Procedures for communicating and responding to unsuccessful test results.
 - e. Start-up and commissioning planning meetings required, including number of meetings, timing of meetings, and specific objectives of each meeting.
- C. Start-up and Commissioning Meetings:
1. Design Builder, with appropriate Subcontractors and Suppliers, shall attend and participate in meetings with Owner, Program Manager, and Design Professional to discuss planning, scheduling, and coordination of start-up and commissioning activities as defined in the Start-up and Commissioning Plan.
- D. Sequencing:
1. Comply with Section 01 14 16 - Coordination with Owner's Operations and the Design Builder's Maintenance of Plant Operations Plan, regarding staging (phasing) of the Work and allowable shutdowns.
- E. Scheduling:
1. Progress Schedule:
 - a. Clearly indicate in the Progress Schedule planned and actual dates for checkout, start-up, and field quality control activities, including all demonstration and performance testing activities addressed in this Specifications section and elsewhere in the Contract Documents. Separately indicate checkout, start-up, and field quality control activities for each equipment item and system.
 2. Restrictions for Scheduling:
 - a. Checkout of materials, equipment, and systems by Design Builder that do not involve or require Owner's personnel may be performed at any time during normal working hours. Where required by the Contract Documents or requested by Program Manager, perform checkout in the presence of Program Manager.
 - b. Start-up, including initial operation of materials, equipment, and systems, shall not be initiated on: Monday, Friday, Saturday, Sunday, Owner's holidays, the day immediately prior to a holiday, or the day immediately following a holiday, unless otherwise acceptable to Owner or Program Manager.
 - c. Unless otherwise indicated in the Contract Documents or acceptable to Owner, perform all start-up during normal working hours of the day shift.

- d. To the extent practicable, where extended duration start-up or field quality control activities are required by the Contract, avoid having such activities extend into evening, night, weekend, or holiday hours.
 - e. Owner reserves the right to require a minimum 7 days' notice of rescheduled start-up when Design Builder cannot perform the associated activities as scheduled.
- 3. Operation and Maintenance Data:
 - a. Comply with Section 01 78 23 - Operation and Maintenance Data.
 - b. A preliminary copy of all operation and maintenance manuals shall be received by Program Manager prior to the start of the demonstration period.
- 4. Training:
 - a. Comply with Contract Documents.
- 5. Spare Parts, Tools, and Extra Materials.
 - a. Coordinate spare parts requirements with the Owner during the Design Implementation Stage. Provide spare parts, tools, and materials as required by the Design Professional's specifications.
 - b. Deliver to Owner all required spare parts, tools, and extra materials prior to commencing the demonstration period, unless earlier delivery is required elsewhere in the Contract Documents.

1.3 QUALITY ASSURANCE

- A. Regulatory Requirements:
 - 1. Do not start-up equipment or systems or place into initial operation until required operating permits are obtained from authorities having jurisdiction.
 - 2. Where Owner has applied for and obtained initial approvals or permits necessary for operation, Design Builder shall furnish information and assistance to Owner for Owner to secure final approvals from authorities having jurisdiction for required operating permits.

1.4 DEFINITIONS

- A. The following defined terms are used in this Specifications Section:
 - 1. Instrumentation Supplier: Entity retained by Design Builder, Subcontractor, or Supplier to furnish instrumentation or controls that will be part of the completed Work, including manufacturers, manufacturer representatives, wholesalers, retailers, and others, including entities retained to perform systems integration Work.
 - 2. Project Facility Group (PFG): An established, distinct part of the Project, consisting of an arrangement of items, such as equipment, structures, components, piping, cabling, materials, and incidentals, so related or connected to form an identifiable, unified, functional, operational, safe, and independent system. PFGs will be defined during the Design Implementation Stage.
 - 3. Pre-Demonstration Period: The period of time, of unspecified duration after initial construction and installation activities during which Design Builder, with assistance from manufacturer's representatives, performs in the following sequence:
 - a. Finishing construction work to ensure the Project or each PFG has reached a state of Substantial Completion.
 - b. Equipment start-up.
 - c. Personnel training.
 - 4. Demonstration Period: A period of time, of specified duration, following the Pre-Demonstration Period, during which the Design Builder initiates process flow through the facility and starts up and operates the facility, without exceeding specified downtime limitations, to prove the functional integrity of the mechanical and electrical equipment and components and the control interfaces of the respective equipment and components comprising the facility.
 - 5. Performance Tests: A period of advanced testing that proves the reliability of the facility as a whole to meet the design intent as evidence of Substantial Completion.

1.5 SUBMITTALS

- A. Action Submittals: Submit the following:
 - 1. Final Start-up and Commissioning Plan.
 - 2. Data collection and reporting log for each required Demonstration Period.
- B. Informational Submittals: Submit the following:
 - 1. Progress Schedules indicating dates for checkout, start-up, and field quality control activities.
 - 2. Completed checkout and start-up log required in Paragraph 3.2.C of this Specifications section.
 - 3. Manufacturer's installation check letters (also known as Manufacturer's Field Services Report) required in Paragraph 3.2.C of this Specifications section.
 - 4. Instrumentation Supplier's Instrumentation Installation Certificate, required in Paragraph 3.2.C of this Specifications section.
 - 5. Letter verifying completion of all pre-demonstration start-up activities, required in Paragraph 3.2.C of this Specifications section.
 - 6. Report of data collected during each required Demonstration Period.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION

3.1 CHECKOUT AND START-UP – GENERAL

- A. Facility Start-up Divided into Three Periods:
 - 1. Pre-Demonstration Period including:
 - a. Obtain Program Manager's approval or acceptance (as applicable) of Submittals required prior to checkout and start-up, including all Shop Drawings, Samples, source quality control (shop testing) Submittals, preliminary operation and maintenance manuals, and other Submittals required by the Contract Documents, other than Submittals that cannot be furnished until after start-up.
 - b. Complete the Work to a point ready for checkout and start-up, including operation available in all manual, automatic, and other modes.
 - c. Checkout and initial field quality control activities that can be performed prior to start-up of the equipment or system.
 - d. Start-up of the associated Work.
 - e. Field quality control activities for the subject Work as indicated elsewhere in the Specifications and other Contract Documents, other than this section.
 - f. Training of operations and maintenance personnel.
 - 2. Demonstration Period, including:
 - a. Demonstration of functional integrity of equipment, system, or PFG. There may be multiple Demonstration Periods.
 - 3. Performance Tests:
 - a. Demonstration of various components of the PFG's ability to meet the design intent. There will be multiple Performance Tests.

3.2 PRE-DEMONSTRATION PERIOD

- A. Prior to the Pre-Demonstration Period, complete the Work to the point where it is ready for checkout and start-up.
- B. Checkout:
 - 1. Comply with Design Professional's provisions and equipment manufacturer's requirements concerning installation checks and procedures.

C. Start-up:

1. Comply with requirements for start-up of materials, equipment, and systems indicated in the associated Specification sections, equipment manufacturer's requirements, and elsewhere in the Contract Documents.
2. Prepare the Work so it will operate properly and safely and be ready to demonstrate functional integrity during the Demonstration Period.
3. Perform start-up to extent possible without introducing process flow.
4. Test tanks, pumping and similar equipment requiring a fluid, using clean water. Non-potable water will be provided to Design Builder at no charge by the Owner.
5. Dispose of water used for Equipment Start-up as directed by the Owner.
6. Procedures include but are not necessarily limited to the following:
 - a. Test or check and correct deficiencies of:
 - 1) Power, control, and monitoring circuits for continuity prior to connection to power source.
 - 2) Voltage of all circuits.
 - 3) Phase sequence.
 - 4) Cleanliness of connecting piping systems.
 - 5) Alignment of connected machinery.
 - 6) Vacuum and pressure of all closed systems.
 - 7) Lubrication.
 - 8) Valve orientation and position status for manual operating mode.
 - 9) Watertight testing of tanks, cake bins and chutes, valves, gates, and other equipment for integrity using clean water. Watertight testing shall be completed to confirm all listed items are watertight and there are no visible leaks.
 - 10) Pumping equipment using clean water.
 - 11) Instrumentation and control signal generation, transmission, reception, and response (open and closed loop testing).
 - 12) Tagging and identification systems.
 - 13) Proper connections, alignment, calibration and adjustment.
 - b. Calibrate safety equipment.
 - c. Manually rotate or move moving parts to ensure freedom of movement.
 - d. "Bump-start" electric motors to verify proper rotation.
 - e. Perform other tests, checks, and activities required to make the Work ready for Demonstration Period.
 - f. Checkout and Start-up Log:
 - 1) Prepare a log showing each equipment item and system requiring checkout and start-up. Indicate in the log activities to be accomplished during checkout and start-up.
 - 2) Provide a place for Design Builder to record date and person performing required checkout and start-up. Indicate associated date(s), personnel, and employer of each.
 - 3) Submit completed checkout and start-up log to Program Manager and obtain Program Manager's acceptance.
7. Obtain Suppliers' certifications of the installed and operational Work, without restrictions, and submit to Program Manager:
 - a. Manufacturer's installation check letters (sometimes referred to as Manufacturer's Field Services Report).
 - b. Instrumentation Supplier's Instrumentation Installation Certificate.
8. Letter verifying completion of all pre-demonstration start-up activities including receipt of all specified items from Suppliers as final item prior to initiation of Demonstration Period.
9. Personnel Training shall be completed in accordance with the Contract Documents.

3.3 DEMONSTRATION PERIOD

A. Demonstration Period – General:

1. Demonstrate the operation and performance of mechanical, electrical, instrumentation, and control interfaces of the Work undergoing the Demonstration Period, in accordance with the Contract Documents.
2. Duration of Demonstration Period: 168 consecutive HRS.
3. If, during the Demonstration Period, the aggregate time used for repair, alteration, or unscheduled adjustments to any part of the Work that renders the affected Work inoperative or operation outside of recommended ranges exceeds 5 percent of the Demonstration Period, the demonstration of operation and performance will be deemed unacceptable and Design Builder shall provide appropriate adjustments and remedies and re-perform the Demonstration Test, at no additional cost to Owner, until acceptable results are obtained. Re-performance of the Demonstration Period shall comply with the same requirements as the original Demonstration Period.
4. Perform the demonstration of operation and performance of the Work under full operational conditions.
5. Owner's Personnel:
 - a. Owner will make available operations personnel to make process decisions affecting facility performance and compliance with applicable operating permits.
 - b. Owner's assistance will be available only for process decisions.
 - c. Design Builder will perform all other functions associated with the Demonstration Period including but not limited to equipment operation and maintenance until successful completion of the Demonstration Period in accordance with the Contract Documents.
6. Owner reserves the right to simulate operational variables, equipment failures, routine maintenance scenarios, and similar actions and events during the Demonstration Period to verify the operation and performance of the Work in automatic, manual, and other types of operating modes, backup systems, and alternate operating modes.
7. Demonstration by PFG:
 - a. Design Builder may demonstrate by PFG, either individually or a combination of two or more PFG. Design Builder is responsible for properly disposing of any unstabilized solids generated during the Demonstration Period.
8. Prior to Starting Demonstration Period:
 - a. Prepare data collection and reporting log for sampling, analytical data, and data to be obtained by manually recording data from field or panel indicators. Not less than 30 days prior to the start of the Demonstration Period, submit the data collection and reporting log to Program Manager for acceptance.
9. Timing of Start and End of Demonstration Period:
 - a. Schedule the end of the Demonstration Period at a convenient time such as midnight, so the Owner or facility manager can assume operational responsibility on a new day beginning immediately after completion of the Demonstration Period.
 - b. Time of beginning and ending Demonstration Period shall be agreed upon by Design Builder, Owner, and Program Manager in advance of initiating Demonstration Period.

B. Baseline Testing: Conduct a series of baseline tests during the Demonstration Period to provide an assessment of the equipment in a new condition. Include the following baseline tests.

1. Vibration testing: Using an independent firm, complete vibration testing on all rotating and reciprocating equipment with a motor of 50HP or greater. Submit report of findings to the Program Manager.
2. Natural frequency analysis: Using an independent firm, complete a natural frequency analysis on all rotating and reciprocating equipment with motor of 50 HP or greater after the equipment has been mounted. The firm must employ a registered professional engineer with experience in finite element analysis, rotordynamic analysis, and experimental modal analysis. Submit report of findings to the Program Manager.

3. Infrared thermography testing: Using an independent firm, infrared thermography testing on all rotating and reciprocating equipment with motor of 50 HP or greater. Also test all associated electrical panels, new or modified motor control centers, and new or modified switchgear. Correct all hot spots found during the testing and retest to ensure the issue has been corrected. Submit report of findings to the Program Manager.
 4. Baseline testing of pumps: For all pumps with a motor of 5 HP or greater, complete a series of tests to measure flowrate, pressure, and power consumption at various conditions that can be used by the Owner in subsequent years to determine pump condition.
- C. Demonstration Period, Evaluation, and Acceptance:
1. Throughout the Demonstration Period, provide knowledgeable personnel to answer Owner's questions, provide final field instruction on select systems (where appropriate) and to respond to problems or failures of the Work.
 2. Responsibilities for Sampling and Data Collection:
 - a. Use the data collection and reporting log format accepted by Program Manager. Indicate data clearly and legibly.
 3. Responsibilities for Data Reporting:
 - a. Submit data collected to Program Manager for evaluation of acceptability of results.
 4. Data Evaluation:
 - a. Program Manager, in consultation with Owner as necessary, will evaluate the data collected during the Demonstration Period and other information obtained during the Demonstration Period for compliance with the Contract Documents.
 - b. Owner will advise Design Builder in writing of whether the data and information obtained indicate that the Demonstration Period was successfully completed.

3.4 PERFORMANCE TESTS

- A. Performance Tests – General:
1. Following successful completion of the Demonstration Period, demonstrate compliance with Performance Guarantees and compliance with Design Criteria Standards through Performance Tests.
 2. Performance Guarantees and Design Criteria Standards will be defined in the Design Builder Guaranteed Maximum Price Amendment.
- B. Performance Tests – Reports:
1. Submit results of the Performance Tests to the Owner for Acceptance within 30 days following completion of each Performance Test.
 2. Reports shall be certified as a true, complete and correct record of the Performance Tests by the Design Builder and Design Professional.
 3. Include a description of each system and subsystem test conducted, the results of the tests, and the level to which the results met or exceeded the applicable Performance Guarantees.
 4. Include copies of original data sheets, log sheets, and calculations.
 5. Include all laboratory sampling and test results.
- C. Concurrence with Certification of Performance Tests:
1. The Owner shall determine within 14 days following receipt of the certified test reports whether it concurs with such certification.
 2. If the Owner concurs with the certification, the Performance Test will be accepted and deemed completed on the final date when the testing was actually performed.
 3. If the Owner does not concur with the certification, written notice shall be sent to the Design Builder.
- D. Corrective Actions:
1. In the event of failure of any Performance Test, the Design Builder shall take all action necessary to make corrections to the failed system to meet the Performance Guarantees and Design Criteria Standards.

2. Submit all corrective actions to the Program Manager for review. Any change to the system performance or design shall follow the Substitution requirements specified in Section 01 33 00.
3. Provide a minimum of 3 days written notice prior to repeating any Performance Test.

END OF SECTION

SECTION 01 77 19

CLOSEOUT REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Administrative and procedural requirements for:
 - 1. Substantial Completion.
 - 2. Final inspection.
 - 3. Request for final payment and acceptance of the Work.

1.2 SUBSTANTIAL COMPLETION

- A. Substantial Completion – General:
 - 1. Prior to requesting inspection for Substantial Completion, perform the following for the substantially completed Work:
 - a. Materials and equipment for which Substantial Completion is requested shall be fully ready for their intended use, including full operating and monitoring capability in automatic, manual, and other operating modes set forth in the Contract Documents.
 - b. Permanent provisions for safety and protection, shown and indicated in the Contract Documents and associated with the substantially completed Work or for personnel accessing and using the substantially completed Work, shall be in place and ready for their intended use.
 - c. Complete field quality control Work, including inspections and testing at the Site, indicated in Specifications sections for individual materials and equipment items and related Contract Documents. Submit results of, and obtain Owner and Program Manager's acceptance of, field quality control tests and inspections required by the Contract Documents.
 - d. Complete checkout and start-up in accordance with Section 01 75 00 – Start-up and Commissioning Procedures, requirements of the Design Professional's Specifications for the various materials and equipment in the substantially completed Work, and related Contract Documents.
 - e. Cleaning for Substantial Completion shall be completed in accordance with –Design Professional and Owner requirements.
 - f. Spare parts, tools, and extra materials shall be delivered and accepted in accordance with the Contract Documents and documentation of Owner's acceptance thereof has been submitted to Program Manager in acceptable form.
 - g. Training of the facility's operations and maintenance personnel shall be completed in accordance with the Contract Documents.
 - h. Submit and obtain Program Manager's acceptance of final operations and maintenance manuals in accordance with Section 01 78 23 - Operation and Maintenance Data.
 - i. Obtain and submit to Program Manager all required permits, inspections, and approvals of authorities having jurisdiction for the substantially completed Work to be occupied and used by Owner.
 - j. Complete other tasks that the Contract requires be completed prior to Substantial Completion.
 - k. Successfully complete all Performance Tests.
 - 2. Procedures for requesting and documenting Substantial Completion are in the General Conditions.

1.3 FINAL INSPECTION

- A. Final Inspection – General:
 - 1. Prior to requesting final inspection, verify that all the Work is fully complete and ready for final payment.
 - 2. Procedures for requesting and documenting the final payment are in the General Conditions.

1.4 REQUEST FOR FINAL PAYMENT AND ACCEPTANCE OF THE WORK

- A. Procedure:
 - 1. After successful completion of the final inspection, submit request for final payment in accordance with the Agreement and General Conditions.
- B. Request for final payment shall include:
 - 1. Documents required in the General Conditions.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION - (NOT USED)

END OF SECTION

SECTION 01 78 23
OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Requirements for Design Builder-furnished, manufacturers' operation and maintenance (O&M) data, including:
 - a. Required operation and maintenance data groupings into maintenance manuals and timing of such Submittals.
 - b. Requirements for paper copies of operation and maintenance data and related Electronic Documents.
 - c. Content of operation and maintenance data Submittals.
 - 2. Requirements for furnishing program code and configuration files.
- B. Scope:
 - 1. Requirements of this Section are intended to be the minimum requirements for Operation and Maintenance Data and shall supplement any requirements by the Design Professional. The Design Professionals requirements shall not supersede requirements listed herein, unless approved by the Owner.
 - 2. Design Builder shall submit operation and maintenance data, and related information, in accordance with this Section and requirements elsewhere in the Contract Documents, as instructional and reference information for use by: (a) Owner's operation and maintenance personnel, and (b) others retained by or working for Owner.
 - 3. In addition to operation and maintenance data expressly required elsewhere in the Contract Documents, also submit operation and maintenance data for:
 - a. All equipment and systems, including facility equipment, conveying equipment, fire suppression systems, plumbing equipment, HVAC equipment, electrical equipment, communications equipment, electronic safety and security systems, utility equipment, and process equipment, and other equipment.
 - b. Valves, gates, actuators, and related accessories.
 - c. Instrumentation and control devices and systems.
 - d. Building materials, systems, and finishes that need post-construction troubleshooting, cleaning, or maintenance, such as roofing, doors, windows, louvers, flooring, paint and coatings, other finishes, and other items.
- C. Related Requirements:
 - 1. Section 01 33 00 - Submittal Procedures.
 - 2. Section 01 75 00 - Start-up and Commissioning Procedures.

1.2 SUBMITTALS

- A. Closeout Submittals: Submit the following:
 - 1. Operation and Maintenance Data:
 - a. Submit operation and maintenance data, required by the Contract Documents, grouped into operation and maintenance manual Submittals by process area.
 - b. For each required operation and maintenance manual Submittal, furnish preliminary Submittal and final Submittal. Timing of preliminary and final operation and maintenance manual Submittals, and differences between preliminary and final Submittals, are indicated in this Section.

2. Program Code and Configuration Files:
 - a. Submit as Electronic Documents, program code for programmable logic controllers, human-machine interfaces, operator interface terminals, and other programmable controllers, and configuration files, in accordance with requirements of this Section.
 - b. Program Manager's review of such Electronic Documents will be only to verify required Submittals were furnished. Program Manager is not responsible for verifying completeness or accuracy of program code and configuration file Submittals.
- B. Timing of Submittals and Quantity Required:
1. Preliminary Operation and Maintenance Manual Submittals:
 - a. Paper Copies: Three copies, exclusive of copies required for Design Builder's use.
 - b. Electronic Documents.
 - c. Submit to entity indicated in Section 01 33 00 – Submittal Procedures, by the earlier of: 90 days following approval of Shop Drawings and product data Submittals, or 14 days prior to starting training of operation and maintenance personnel, or 14 days prior to field quality control testing at the Site.
 - d. Do not perform checkout, start-up, and training without Program Manager's acceptance of preliminary operation and maintenance data Submittals for the associated Work.
 2. Final Operation and Maintenance Manual Submittals: Furnish final Submittal prior to Substantial Completion of the associated Work, unless submittal is required prior to an interim Milestone.
 - a. Paper Copies: Three copies, exclusive of copies required for Design Builder's use.
 - b. Electronic Documents: through e-Builder.
 - c. Work will not be eligible for Substantial Completion until associated, required final operation and maintenance data Submittals are accepted by Program Manager.
 3. Program code and Configuration Files:
 - a. Paper Copies: Not required.
 - b. Electronic Documents: transmit as agreed to by Owner and Program Manager. Submit Electronic Documents in both of the following formats:
 - 1) Portable document format (".pdf") files.
 - 2) Operable code and configuration files suitable for Owner's use in modifying program code and configuration with Owner's own personnel.
 - c. Work will not be eligible for Substantial Completion until associated, required program code and configuration Electronic Documents Submittals are accepted by Program Manager.
 - d. If Design Builder (whether or not via Subcontractor or Supplier), revises program code or configuration files between acceptance of Submittal by Program Manager and end of the Contract's correction period and Design Builder's general warranty obligation, furnish updated program code and configuration files to Owner. Before modifying program code and configuration files after Substantial Completion, verify that Owner modifications of program code or configuration files were incorporated into the modified files, subject to the provisions of this Section.

1.3 PAPER COPIES OF O&M MANUALS

- A. Binding and Cover:
1. Bind each operation and maintenance manual in durable, permanent, stiff-cover binder(s), comprising one or more volumes per copy, as necessary.
 2. Binders shall be not less than 1 IN wide and maximum of 3 IN wide. Binders for each copy of each volume shall be same size and color.
 3. Binders shall be locking three-ring ("D"-ring) type, or three-post type. Three-ring binders shall be riveted to back cover and include plastic sheet lifter (page guard) at front and back of each volume.
 4. Do not overfill binders.
 5. Covers shall be oil-, moisture-, and wear-resistant, including identifying information on cover and spine of each volume.

6. Indicate the following information on cover of each volume:
 - a. Title: "OPERATING AND MAINTENANCE INSTRUCTIONS". For submittal of preliminary operation and maintenance data, include the word, "PRELIMINARY" in the title.
 - b. Name or type of material or equipment covered in the manual.
 - c. Volume number, if more than one volume is submitted, listed as "Volume ___ of ___", with appropriate volume-designating numbers filled in.
 - d. Name of Project and, when applicable, Contract name and number.
 - e. Name of building or structure, as applicable.
 - f. Relevant specification section(s).
 - g. Equipment tag numbers.
 7. Provide the following information on spine of each volume:
 - a. Title: "OPERATING AND MAINTENANCE INSTRUCTIONS". For submittal of preliminary operation and maintenance data, include the word, "PRELIMINARY" in the title.
 - b. Name or type of material or equipment covered in the manual.
 - c. Volume number, when more than one volume is submitted, listed as "Volume ___ of ___", with appropriate volume-designating numbers filled in.
 - d. Project name and building or structure name.
 - e. Relevant specification section(s).
 - f. Equipment tag numbers.
- B. Pages:
1. Print pages in paper copies of operation and maintenance manuals on 30-LB (minimum) paper, 8.5-IN by 11-IN size.
 2. Reinforce binding holes in each individual paper sheet with plastic, cloth, or metal. When published, separately bound booklets or pamphlets are part of manuals, reinforcing of pages within booklet or pamphlet is not required.
 3. Furnish each page with binding margin not less than 3/4-IN wide.
 4. Properly punch each paper page with holes suitable for associated binding. Provide not less than 3/8-IN of paper between outer edge of punched holes and edge of paper. Manuals with improperly punched holes will be returned to Design Builder as unacceptable.
 5. In paper copies of manuals, each page in each copy shall be properly bound-through by the binder's rings or posts. Paper manuals where some pages are not so bound will be returned to Design Builder as unacceptable.
- C. Drawings:
1. Bind into operation and maintenance manuals drawings, diagrams, and illustrations up to and including 11-IN by 17-IN size (engineer folded to 8.5 by 11-IN) with reinforcing and punched holes specified for paper pages.
 2. Drawings or sheets larger than 11-IN by 17-IN shall be:
 - a. Paper Copies: Neatly folded and inserted into clear plastic pockets bound into the manual. Neatly and permanently label each pocket with printed text indicating content and drawing numbers. Include not more than two drawings or sheets per pocket.
 - b. Electronic Documents Copies: Included in electronic file at appropriate location.
- D. Copy Quality and Document Clarity:
1. Provide original-quality copies. Documents in operation and maintenance manuals shall be either original manufacturer-printed documents or first-generation photocopies indistinguishable from originals. If original is in color, copies shall be in color. Manuals with copies that are unclear, not completely legible, off-center, skewed, or where text or drawings are cut by binding holes, are unacceptable. Pages that contain approval or date stamps, comments, or other markings that cover text or drawing are unacceptable.
 2. Clearly indicate all components of materials and equipment on catalog pages for ease of identification. In standard or pre-printed documents, indicate options furnished and cross out inapplicable content. Using highlights to so indicate options furnished is unacceptable.

E. Organization:

1. Indexed tabs between major categories of information, such as operating instructions, preventive maintenance instructions, and other major subdivisions of data in each manual.

1.4 ELECTRONIC DOCUMENTS O&M MANUALS

A. Electronic Documents of Operation and Maintenance Manuals:

1. Each Electronic Document copy of operation and maintenance data shall include all information included in the corresponding paper copy.
2. Submit Electronic Documents operation and maintenance data in accordance with Section 01 33 00 - Submittal Procedures.
3. File Format:
 - a. Unless otherwise required by Section 01 33 00 - Submittal Procedures, operation and maintenance data Electronic Documents shall be "portable document format" (PDF) files.
 - b. Electronic Documents shall be electronically searchable upon delivery.
 - c. Electronic Documents shall not be password-protected and shall not be protected against Owner's copying and printing such files for Owner's use in operating and maintaining the facility.
 - d. Electronic Documents shall open to its first page.
 - e. Submit each operation and maintenance manual as a single Electronic Document file, unless file size is over-large, in which case divide into as few separate files, each with similar filename, as possible.
 - f. Within each Electronic Document, provide bookmarks for the following:
 - 1) Each chapter and subsection indicated in the corresponding printed copy document's table of contents.
 - 2) Each figure.
 - 3) Each table.
 - 4) Each appendix and attachment.

1.5 CONTENT OF OPERATION AND MAINTENANCE MANUALS

A. Operation and Maintenance Manual Content – General:

1. Prepare each operation and maintenance manual specifically for the Project. Include in each manual all pertinent instructions, as-constructed drawings as applicable, bills of materials, technical information, installation and handling requirements, maintenance and repair instructions, and other information required for complete, accurate, and comprehensive data for safe and proper operation, maintenance, and repair of materials and equipment furnished for the Project. Include in manuals specific information required in the Specification Section for the material or equipment, data required by Laws and Regulations, and data required by authorities having jurisdiction.
2. Provisions of this Article were written for equipment. Where operation and maintenance data are required for building products, such as finishes, openings, thermal and moisture protection, and similar items, comply with this Article to the extent practical and reasonable for the associated item.
3. Completeness and Accuracy:
 - a. Operation and maintenance manuals that include language stating or implying that the manual's content may be insufficient or stating that the manual's content is not guaranteed to be complete and accurate are unacceptable.
 - b. Operation and maintenance manuals shall be complete and accurate.
 - c. Operation and maintenance manuals shall indicate the specific alternatives and features furnished, and the specific operation and maintenance provisions for the material or equipment furnished.
4. Indexing System: Coordinate with Program Manager and Owner to develop comprehensive, practical, and consistent indexing system for operation and maintenance data. Program

Manager will review indexing system before preliminary operation and maintenance manual Submittals are furnished.

5. Provide dividers and include manufacturer's information, diagrams, schematics, and equipment cutaways. Avoid submitting catalog excerpts unless they are the only document available showing identification or description of particular component of the equipment. Where published documents, included in operation and maintenance data, pertain to multiple models or types, mark the literature to indicate specific material or equipment supplied. Marking may be in the form of checking, arrows, or underlining to indicate pertinent information, or by crossing out or other means of obliterating information that does not apply to the materials and equipment furnished.
 6. Identify each equipment item consistent with names and identification numbers shown or indicated in the Contract Documents, rather than manufacturer's model numbers.
 7. Neatly type data not furnished in computer-printed text. Handwriting, except for strikeouts, arrows, and the like, is unacceptable.
 8. Include copy of warranty in accordance with the Contract Documents.
 9. Include copy of proposed service contract, when applicable.
 10. When copyrighted material is used in operation and maintenance manuals, obtain copyright holder's written permission to use such material in the operation and maintenance manual.
- B. Differences Between Preliminary and Final Operation and Maintenance Manuals:
1. In preliminary operation and maintenance manuals, include flysheet or placeholder for information to be included in final operation and maintenance manual Submittal.
 2. In final operation and maintenance manuals, include information such as the following, as applicable for the associated materials and equipment:
 - a. Equipment data that requires collection after start-up, for example: (1) system and equipment balancing reports, including those for HVAC systems; and (2) final settings for electrical switchgear, automatic transfer switches, and circuit breakers; and (3) materials and equipment field testing results.
 - b. Equipment start-up reports and Suppliers' field service reports.
- C. Initial Documents in Operation and Maintenance Manuals:
1. Table of Contents:
 - a. Provide table of contents in each volume of each operation and maintenance manual.
 - b. In table of contents and not less than once in each chapter or section, identify materials and equipment by their functional names. Thereafter, abbreviations and acronyms may be used if their meaning is clearly indicated in a table bound at or near beginning of each volume. Using material or equipment model or catalog designations for identifying items is unacceptable.
 2. Equipment Record:
 - a. Provide "Equipment Record" section of operation and maintenance manual immediately following the table of contents. "Equipment Record" section is not required for operation and maintenance data for other than equipment (such as building materials and finishes).
 - b. Provide "Equipment Record" on forms included as this Section's Attachments 1, 2, and 3.
 - c. For instrumentation and control equipment, International Society of Automation (ISA) data sheets are acceptable in lieu of the forms included as this Section's Attachments 1, 2, and 3.
 - d. This Section's Attachments 1, 2, and 3 are available from Program Manager as "fillable PDF forms".
 - e. Complete in detail each section of "Equipment Record". Merely referencing the associated equipment's operation and maintenance data for nameplate, maintenance, spare parts, lubricants, or other required information, is unacceptable.
 - f. For equipment or systems with multiple, separate components (for example, motor and gearbox), fully completed "Equipment Record" is required for each component.

- g. Operation and maintenance data Submittals without complete and accurate “Equipment Record” sheets are unacceptable.
- 3. Supplier’s Field Service Reports:
 - a. Include in final operation and maintenance manuals copies of associated Supplier’s field services reports in accordance with Section 01 75 00 – Start-up and Commissioning Procedures.
 - b. Include Supplier’s completed field service reports in operation and maintenance manual in section immediately following “Equipment Record” section.
- D. Operation and Maintenance Instructions:
 - 1. Safety Considerations:
 - a. Submit written descriptions of safety considerations relating to operation and maintenance procedures for materials and equipment.
 - b. Describe safety devices and alarms provided with materials and equipment and proper operation and use.
 - c. Indicate procedures for proper, safe operating and maintenance of materials and equipment furnished, including manufacturer’s recommended personal protection equipment, apparatus, and devices not furnished under the Contract.
 - d. Describe recommended safety-related training for personnel operating and maintaining the subject materials or equipment.
 - e. Include in appendix to operation and maintenance manual manufacturers’ relevant “safety data sheets” (SDS), formerly “material safety data sheets” (MSDS).
 - f. Program Manager’s review of operation and maintenance data expressly does not extend to adequacy, completeness, and accuracy of SDS or other safety and protection practices and procedures indicated in the operation and maintenance data.
 - 2. Operation:
 - a. Include in operation and maintenance data Submittals complete, detailed written operating instructions for each material or equipment item including: function; operating characteristics; limiting conditions; and regulation and control. Also include, as applicable, written descriptions of alarms generated by equipment and proper responses to such alarm conditions.
 - b. Include pre-start-up instructions and checklists and complete start-up instructions for each material and equipment item.
 - c. Indicate recommended operating instructions for all operating modes and conditions, with associated recommendations for safe operation.
 - d. Explain available controls and instrumentation and associated function(s).
 - e. Indicate required shutdown checklists and procedures for: normal shutdown, emergency shutdown, and long-term shutdowns.
 - f. Troubleshooting instructions.
 - 3. Maintenance – General:
 - a. Include in operation and maintenance data complete, written instructions for necessary and recommended maintenance, including mechanical maintenance and electrical/instrumentation and controls maintenance, as applicable.
 - b. Include in operation and maintenance data complete instructions for necessary assembly, disassembly, installation, re-installation, storage, and shipping for materials and equipment.
 - c. Tools: Include list of required maintenance tools and equipment.
 - d. Spare Parts and Extra Materials:
 - 1) Submit complete instructions for ordering replaceable parts, including reference numbers (such as shop order number or serial number) that will expedite the ordering process.
 - 2) Submit manufacturer’s recommended inventory levels for spare parts, extra stock materials, and consumable supplies for the initial 2 years of operation. Consumable supplies are items consumed or worn by operation of materials or equipment, and items used in maintaining the operation of material or equipment,

- including items such as lubricants, seals, reagents, and testing chemicals used for calibrating or operating the equipment. Include estimated delivery times, shelf life limitations, and special storage requirements.
- 3) Also refer to this Article's provision, "Bills of Materials", below, for additional requirements regarding ordering replacement parts.
 4. Routine and Preventative Maintenance:
 - a. Submit complete, detailed, written instructions for routine and preventive maintenance including all information and instructions to keep materials, equipment, and systems properly lubricated, adjusted, and maintained so that materials, equipment, and systems function economically throughout their expected service life. Instructions shall include:
 - 1) Written explanations with illustrations for each routine and preventive maintenance task such as inspection, adjustment, anchor bolt torque checks, lubrication, calibration, cleaning, replacement of filters, and the like.
 - 2) Recommended schedule for each routine and preventive maintenance task.
 - 3) Lubricants:
 - a) Provide lubrication charts indicating recommended types of lubricants, frequency of application or change, and where each lubricant is to be used or applied.
 - b) Table of alternative lubricants.
 5. Major Maintenance:
 - a. Include detailed, written instructions and illustrations for required periodic (non-routine, non-preventative) maintenance.
 - b. Indicate relative level of training and expertise required to perform such maintenance and recommended tools and equipment.
 6. Special Maintenance:
 - a. Include maintenance instructions for long-term shutdowns and storage.
- E. Bills of Materials:
1. Include in operation and maintenance manuals complete bills of material or parts lists for materials and equipment furnished. Lists or bills of material may be furnished on a per-drawing or per-equipment assembly basis. Bills of material shall indicate:
 - a. Manufacturer's name, physical address, telephone number, internet website address.
 - b. Manufacturer's local service representative's or local parts supplier's name, physical address, telephone number, internet website address, and e-mail addresses.
 - c. Manufacturer's shop order and serial number(s) for materials, equipment or assembly furnished.
 2. For each part or piece include the following information:
 - a. Parts cross-reference number. Cross-reference number shall be used to identify the part on assembly drawings, Shop Drawings, or other type of graphic illustration where the part is clearly shown or indicated.
 - b. Part name or description.
 - c. Manufacturer's part number.
 - d. Quantity of each part used in each assembly.
 - e. Current unit price of the part at the time the operation and maintenance manual is submitted. Price list shall be dated.
- F. Record Copy of Shop Drawings, Product data, and Other Previously Approved and Accepted Submittals:
1. Submit original-quality copies of each approved and accepted (as applicable) Shop Drawing, product data Submittal, written results of source quality control activities, and other Submittals, updated to indicate as-installed condition. Do not include prior Submittals that were not approved or were not accepted. Reduced drawings are acceptable only when reduction is to not less than one-half original size and all lines, dimensions, lettering, and text are completely legible on the reduction.

- G. Electrical Schematics, Diagrams, and Information:
 - 1. Submit complete electrical schematics and wiring diagrams, including complete point-to-point wiring and wiring numbers or colors between all terminal points.
 - 2. Include as-constructed drawings of layouts of electrical panels (such as switchgear and motor control centers) and control panels.
- H. NFPA 70 (National Electric Code) Documentation:
 - 1. Include in operation and maintenance manuals for electrically powered equipment documented calculations of: (1) arc-fault current, equipment available fault current and (2) short-circuit current rating (SCCR), provided as part of equipment Submittals.

1.6 COPIES OF PROGRAM CODE AND CONFIGURATION FILES

- A. Copies of Program Code and Configuration Files – General:
 - 1. Submit as Electronic Documents only. Paper Submittals are not required for program code and configuration files.
 - 2. File Types: As indicated in this Section’s “Submittals” Article.
 - 3. Timing: Submit not later than time indicated in this Section’s “Submittals” Article.
 - 4. In accordance with the Contract Documents, following Substantial Completion, Owner shall have right to: (a) modify program code and configuration files, (b) update software and firmware, (c) revise system security settings, such as passwords, IP addresses, and other security settings, and (d) implement related modifications, without restriction or interference from Design Builder, Subcontractor, Supplier, and others.
 - 5. Owner agrees to use program code and configuration files only with Owner’s facilities, as may be transferred to Owner’s successors and assigns.
 - 6. Owner will not be subject to any Supplier-requested non-disclosure agreement that is not part of the Contract Documents.
 - 7. Program Manager agrees to not distribute program code and configuration files obtained under the Project, except in exchanging such files with Owner or their successors and assigns. Program Manager will not be party to any Supplier-requested non-disclosure agreement.
- B. Configuration Files:
 - 1. Submit copies of system configuration prepared for the Project, such as setpoints for programmable controllers, facility SCADA display configurations, and similar configuration files.
 - 2. Submit as separate files configuration files for each separate control and monitoring device for which configuration files are furnished. Clearly distinguish the device(s) associated with each file.
 - 3. Design Builder (including Subcontractors and Suppliers) is not responsible for configurations and control setpoints subsequently changed by Owner or others for whom either is responsible, not in accordance with Supplier’s written recommendations and operation and maintenance instructions.
- C. Program Code:
 - 1. Submit copies of program code for programmable logic controllers (PLC), human-machine interfaces (HMI), operator interface terminals (OIT), and other programmable controllers, subject to the following:
 - a. Submit for all PLCs, HMI, OITs, and other programmable controllers furnished as part of the Work, including Original Equipment Manufacturer (OEM) provided controllers and where Owner’s existing devices were modified as part of the Work, regardless of whether such program code is manufacturer’s standard, or developed specifically for the Project, or a combination of manufacturer’s standard program code and Project-specific program code. Design Builder and associated Subcontractors and Suppliers are not responsible for unauthorized program code modifications made by Owner (or third-parties retained by Owner) that result in improper operation of materials, equipment, or

- systems or that invalidate applicable warranties and manufacturer's recommended operating instructions.
- b. Third-party, licensed, commercially available software (such as, but not limited to, Microsoft operating system software sold at retail, and commercial SCADA system software platforms) is excluded from requirements of this Article. Furnish copies of commercially available, licensed, third-party software, where required, in accordance with the Contract Documents.
2. Submit complete logic listings in format approved by the Owner.
 3. Format Requirements:
 - a. For ladder diagram logic, include complete cross-referencing of all logic elements. Annotate all elements with clearly understandable tags or descriptive labels.
 - b. For function block diagram, label each function block with understandable tags or descriptive labels. Describe purpose and action of each function block.
 - c. For sequential function chart, include extensive comments for each step to describe program step function.
 - d. For instruction list and structured text, include extensive comments for each program line to describe program line function.
 4. Submit complete programmable logic controller listing of all input/output address assignments, tag assignments, and pre-set constant values, with functional point descriptions.
 5. Submit complete manufacturer's program code manuals.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION

3.1 ATTACHMENTS

- A. The following, bound after this Section's "End of Section" designation, are part of this Section:
 1. Attachment 1 - Equipment Data and Spare Parts Summary form (one page)
 2. Attachment 2 - Recommended Maintenance Summary form (one page)
 3. Attachment 3 - Lubrication Summary form (one page)

END OF SECTION

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ATTACHMENT 1

Equipment Record

Equipment Data and Spare Parts Summary

Project Name					Specification Section:				
Equipment Name					Year Installed:				
Project Equipment Tag No(s).					Equipment Location:				
Equipment Manufacturer					Project/Order No.				
Address					Phone				
Website					E-mail				
Local Representative/Service Center									
Address					Phone				
Website					E-mail				
MECHANICAL NAMEPLATE DATA									
Equip.					Serial No.				
Make					Model No.				
ID No.	Frame No.	HP	RPM	Cap.					
Size	TDH	Imp. Size	CFM	PSI					
Other:									
ELECTRICAL NAMEPLATE DATA									
Equip.					Serial No.				
Make					Model No.				
ID No.	Frame No.	HP	V.	Amp.	Hertz	PH	RPM	SF	
Duty	Code	Ins. Cl.	Type	NEMA	C Amb.	Temp. Rise	Rating		
Other:									
SPARE PARTS PROVIDED PER CONTRACT									
Part No.	Part Name							Quantity	
RECOMMENDED SPARE PARTS									
Part No.	Part Name							Quantity	

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ATTACHMENT 2

Equipment Record

Recommended Maintenance Summary

Equipment Description	Project Equip. Tag No(s).								
RECOMMENDED BREAK-IN MAINTENANCE (FIRST OIL CHANGES, ETC.)	INITIAL COMPLETION * FOLLOWING START-UP								
	D	W	M	Q	S	A	RT	Hours	
RECOMMENDED PREVENTIVE MAINTENANCE	PM TASK INTERVAL *								
	D	W	M	Q	S	A	RT	Hours	

* D = Daily W = Weekly M = Monthly Q = Quarterly S = Semiannual A = Annual Hours = Run Time Interval

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ATTACHMENT 3

Equipment Record

Lubrication Summary

Equipment Description	Project Equip. Tag No(s).
-----------------------	---------------------------

Lubricant Point						
Lubricant Type	Manufacturer		Product	AGMA #	SAE #	ISO
	1					
	2					
	3					
	4					
	5					
Lubricant Point						
Lubricant Type	Manufacturer		Product	AGMA #	SAE #	ISO
	1					
	2					
	3					
	4					
	5					
Lubricant Point						
Lubricant Type	Manufacturer		Product	AGMA #	SAE #	ISO
	1					
	2					
	3					
	4					
	5					
Lubricant Point						
Lubricant Type	Manufacturer		Product	AGMA #	SAE #	ISO
	1					
	2					
	3					
	4					
	5					
Lubricant Point						
Lubricant Type	Manufacturer		Product	AGMA #	SAE #	ISO
	1					
	2					
	3					
	4					
	5					
Lubricant Point						
Lubricant Type	Manufacturer		Product	AGMA #	SAE #	ISO
	1					
	2					
	3					
	4					
	5					

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SECTION 01 81 13

ENVISION VERIFICATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. This Section provides an overview of the Envision requirements of the Work by the Design Builder. Envision is a sustainability rating system tailored for infrastructure projects. The Envision rating system evaluates, grades, and gives recognition to projects based on its level of achievement of credits in five categories: Quality of Life (QL), Leadership (LD), Resource Allocation (RA), Natural World (NW), and Climate and Resilience (CR). The Owner will be pursuing approximately 55 credits for the overall program. Identified, Design Builder- involved credits include, but are not limited to, the 15 listed in the Design Builder Envision Action Plan (EAP). Refer to Attachment A: Envision Scorecard Snapshot for the credit levels of achievement (LOA) for the Program.
 - 2. It is the goal of the Owner, as much as is feasible and practical, to construct a “green” infrastructure project that meets the Institute for Sustainable Infrastructure’s (ISI) Envision Rating System as follows:
 - a. Envision Version 3.
 - b. Rating Goal: Gold.

1.2 QUALITY ASSURANCE

- A. Reference Standards:
 - 1. References, resources and information as noted on the Institute for Sustainable Infrastructure website: www.sustainableinfrastructure.org.
 - 2. An Envision Guidance Manual (Version 3) will be provided to the Design Builder.
- B. The Owner has elected to pursue Envision verification for the Project, with a goal of Gold level verification.

1.3 DEFINITIONS

- A. Envision:
 - 1. Envision is a sustainability framework and rating system that evaluates, grades, and gives recognition to infrastructure projects that make exemplary progress and contribute to a more sustainable future. In this regard, Envision assesses not only individual project performance, but how well projects contribute to the efficiency and long-term sustainability of the communities they serve. The Envision rating system is composed of 64 sustainability indicators, called credits, that cover the full dimensions of infrastructure sustainability. Each credit in the Envision system includes an intent statement and metric, levels of achievement, a description, ways to improve performance, evaluation criteria and documentation guidance, and related Envision credits. The credits are organized into five categories and 14 subcategories by subject matter:
 - a. Quality of Life – Wellbeing, Mobility, Community.
 - b. Leadership – Collaboration, Planning, Economy.
 - c. Resource Allocation – Materials, Energy, Water.
 - d. Natural World – Siting, Conservation, Ecology.
 - e. Climate and Resilience – Emissions, Resilience.
- B. Envision Credit Levels of Achievement (LOA):
 - 1. The credit levels of achievement represent the degree to which the project achieves the credit intent. Envision offers a range of sustainability accomplishment from slightly above

conventional to exceptional (restoring systems). The levels of achievement benchmark the relative impact of project sustainability and encourage stretching the project goals toward higher levels of sustainability. The achievement scale from Improved to Restorative is not linear, incentivizing greater sustainability progress. In most credits, the lower levels must be met in order to achieve higher levels.

- a. Conventional – The state of the practice.
- b. Improved – Performance that is above conventional. Slightly exceeds regulatory requirements.
- c. Enhanced – Sustainable performance that is on the right track. There are indications that superior performance is within reach.
- d. Superior – Sustainable performance at a very high level.
- e. Conserving – Performance that has achieved essentially zero negative impact.
- f. Restorative – Performance that restores natural or social systems. Such performance receives the highest award possible and is celebrated as such. The Restorative level is not applicable to all objectives.

C. Envision Sustainability Professional (ENV SP):

1. Envision Sustainability Professionals (ENV SPs) are trained and credentialed in the use of Envision. They work in the project team to document project sustainability accomplishments. The Program Manager will serve as the Lead ENV SP for the Program. While not required, it is recommended that the Design Builder also have an ENV SP in the coordination role for the Design Builder's responsibilities related to Envision.

D. Recycled Materials (Related To RA1.2 Use Recycled Materials):

1. The percentage of recycled content shall be determined by cost. Refer to Attachment C for guidance and forms.
2. "Post-Consumer" material is defined as waste material generated by residential, commercial, or institutional facilities in their role as end users of the product, which can no longer be used for its intended purpose.
3. "Post Industrial" (or "Pre Consumer") recycled content is defined as material in a product that is recycled from manufacturing waste. Materials such as rework, regrind, or scrap generated in a process and reclaimed within the same process are excluded.
4. Mechanical, electrical, water equipment, and their components may be excluded from the calculations.

1.4 SUBMITTALS

A. Procedures: Section 01 33 00 – Submittal Procedures:

1. The Design Builder shall submit a copy of this specification section, with addendum updates included, and all referenced and applicable sections, with each paragraph check-marked to indicate compliance or marked to indicate requested deviations.
2. The Design Builder shall complete activities and provide documentation for Envision credits as noted in Table 2: Design Builder EAP. This includes, but is not limited to, the plans and forms listed in Table 1. Documentation shall be submitted through e-Builder.

TABLE 1: PLANS AND FORMS INCLUDED AS ENVISION SUBMITTALS

	SUBMITTAL	RELATED CREDIT(S)
1	Design Builder EAP – as furnished in Table 2	Multiple credits
2	Project Execution Plan or Safety Plan	QL1.3 Improve Construction Safety
3	Construction Management Plan (CMP) See Attachment B for CMP Guidance	Multiple credits, see CMP Guidance
4	Site and Project Security Plan	QL1.3 Improve Construction Safety
5	Construction Noise Management Plan	QL1.6 Minimize Construction Impacts
6	Reused/Recycled Materials Summary Form See Attachment C for RA1.2 Guidance and Forms	RA1.2 Use Recycled Materials
7	Construction Waste Management Plan (CWMP) See Attachment B for CWMP Guidance	RA1.4 Reduce Construction Waste
8	Construction Waste Diversion Summary Form Spreadsheet See Attachment D for RA1.4 Guidance and Forms	RA1.4 Reduce Construction Waste
9	Spill and leak prevention and response plan	NW2.4 Protect Surface and Groundwater Quality

1.5 DESIGN BUILDER RESPONSIBILITIES

- A. The Owner has elected to pursue Envision verification for the Project. The Design Builder shall endeavor to obtain target LOA and suggest methods of achieving higher scores. Identified, Design Builder-involved credits include, but are not limited to, those listed in Table 2: Design Builder EAP. The Design Builder shall provide documentation for credits as identified in the Envision Guidance Manual that are related to the Design Builder's scope of Work. If Design Builder is not able to meet the criteria and documentation requirements, Design Builder shall contact the Owner for direction.
- B. Envision Alignment Meeting:
 1. Design Builder's Envision Liaison and team involved in Envision coordination and documentation shall attend an Envision Alignment Meeting (alignment meeting) held by the Owner and Program Manager at the beginning of the design phase. This meeting is intended as time for the Owner and Program Manager to introduce the program's sustainability commitment and overall Envision strategy and respond to questions from the Design Builder about the Design Builder EAP.
- C. Design Builder EAP:
 1. Identified Design Builder-involved credits include, but are not limited to, credits listed in the Table 2: Design Builder EAP. The plan provides a description of many, but not all, activities that relate to accomplishing Program's Envision requirements, LOA for each credit, including design activities, construction practices, and necessary documentation for each Envision credit that involves Design Builder actions. The Design Builder EAP will be refined and updated throughout the Program's design and construction phases as the project components evolve.
 2. Design Builder should review and add the following to Table 2 prior to submitting the plan as confirmation of understanding:
 - a. Name of Envision Point of Contact, individual(s) responsible for providing required documentation.
 - b. Design Builder comments.
- D. Envision Project Management and Coordination:
 1. Prior to the Envision alignment meeting, Design Builder shall identify and assign one person on Design Builder's staff to be the Envision Liaison who shall be responsible for Envision compliance and coordination.

- a. Envision Point of Contact:
 - 1) The Design Builder's Envision Liaison shall be familiar with third-party rating systems and implementation of sustainable design. An ENV SP or sustainability professional is preferred.
- b. Responsibilities:
 - 1) Design Builder shall review the Contract for Envision requirements, coordinate work of trades, subcontractors, and suppliers to ensure compliance with the Design Builder EAP; provide guidance related to Envision documentation; and oversee Project Envision Goals.
- c. Administrative Requirements:
 - 1) Design Builder shall be responsive to questions and information/data requests from the Owner and/or the Program Manager regarding Envision credits for which the Design Builder is responsible, provides documentation, or that depend on product selection or product qualities, until ISI has authenticated the Project's Envision verification application even if the Envision verification process extends beyond Final Completion, for a period of time up to 1 year beyond Final Completion.

PART 2 - PRODUCTS

(NOT USED)

PART 3 - EXECUTION

3.1 MEETINGS

- A. Include Envision update as a topic in the construction progress meeting agendas. Coordinate with Section 01 31 19 – Project Meetings.

3.2 COMPLETION OF DOCUMENTATION

- A. Design Builder shall be responsible for providing required information and documentation for noted credits as outlined in the Design Builder EAP to support the Program Manager's Envision team in completing credit packages per Envision requirements for verification submittal. This includes responding to all applicable comments received from the Owner, Program Manager and ISI during the verification process.
- B. Design Builder shall include Envision as an agenda item to regularly record the status of documentation requirements outlined in the Design Builder EAP and report progress to the Owner and Program Manager throughout the design and construction phases.

3.3 DESIGN BUILDER ENVISION ACTION PLAN

- A. Activities to meet requirements for pursued Envision credits, as identified in Table 2: Design Builder EAP, shall be Contract requirements and shall be incorporated in full compliance with the Envision Guidance Manual.
- B. The Design Builder EAP is based on Envision Guidance Manual language and requirements associated with criteria related to Design Builder activities for credits that the Owner has elected to pursue.

Table 2: Design Builder Envision Action Plan

Note: Items underlined and in [blue](#) are also noted in Table 1. Plans and Forms included as Envision Submittals.

CREDIT NO. AND TITLE	TARGET LOA & RELEVANT CRITERIA (PTS)	DESIGN BUILDER RESPONSIBILITIES				DB POC	DB COMMENTS
		DESIGN-RELATED CRITERIA	DESIGN RESPONSIBILITIES <i>Reference: Envision Guidance Manual</i>	CONSTRUCTION-RELATED CRITERIA	CONSTRUCTION RESPONSIBILITIES <i>Reference: Envision Guidance Manual</i>		
QL1.1 Improve Community Quality of Life	Restorative (26) A+B+C+D+E+F+G	D+E	Design and provide documentation: <ul style="list-style-type: none">Document ways that stakeholder engagement/ community input influenced and was incorporated during design.Document strategies incorporated into design to mitigate negative social impacts.	-	-		
QL1.3 Improve Construction Safety	Conserving (14) A+B+C+D+E	B	Design and provide documentation: <ul style="list-style-type: none">Specifications include requirements regarding construction/site health and safety.Include requirement in project execution for internal documentation that tracks health and safety performance and corrects deficiencies or promotes best practices during construction.Project Execution Plan	A+B+C+D+E	Provide documentation: <ul style="list-style-type: none">Safety commitments.Safety rewards program (examples available, if needed).Subcontractor safety requirements.Documentation showing that senior construction managers are engaged in the project safety program and conduct safety observations and inspections.Project Execution Plan or similar document.Health and safety performance tracking.Injury management system.Incident Review process.Examples of incident reporting / “lessons learned.”Safety and security training requirements and programs.Site-Specific Safety Plan.Documentation of construction health and/or well-being programs. Documentation may include item’s like: <ul style="list-style-type: none">Site inspection checklist.Jobsite Hazard Assessment forms.Incident reporting form.Safety violation notice(s).		
QL1.4 Minimize Noise and Vibration	Conserving (10) A+B+C+D+E	A+B+C+D+E	Design and provide documentation: <ul style="list-style-type: none">Conduct noise assessment to establish operational noise baseline.Design and document strategies to mitigate noise and/or vibrations during operations to not increase noise within the surrounding community beyond existing conditions found in noise assessment.Document how the project team followed a mitigation hierarchy related to minimizing noise and vibration.Plans/drawings, specifications related to noise mitigation measures.	-	-		
QL1.5 Minimize Light Pollution	Improved (1) A+B Discuss Conserving (10) A+E	A+B Potential for A+E	Design and provide documentation: <ul style="list-style-type: none">Conduct exterior lighting needs assessment.Design strategies to reduce light pollution.Determine lighting zone and consider BUG rated lighting for exterior lighting needs.Document following a mitigation hierarchy.Plans/drawings, specifications related to exterior lighting.	-	-		

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		DESIGN-RELATED CRITERIA	DESIGN RESPONSIBILITIES <i>Reference: Envision Guidance Manual</i>	CONSTRUCTION-RELATED CRITERIA	CONSTRUCTION RESPONSIBILITIES <i>Reference: Envision Guidance Manual</i>		
QL1.6 Minimize Construction Impacts	Conserving (8) A+B+C+D+E+F	A+B+C+D+E+F	Design and provide documentation: <ul style="list-style-type: none">Specifications include requirements for reducing negative construction impacts related to noise/vibration control, lighting requirements and limitations to reduce light spillage during night-time.Specifications include requirements that direct construction consideration for safety/wayfinding as well as alternative modes of access to reduce road traffic due to construction vehicles and materials to be brought on-site.Plans/drawings, specifications related to construction impacts.	A+B+C+D+E+F	Develop a construction management plan that addresses: noise, safety/wayfinding, access/mobility, and lighting during construction; and includes feedback mechanisms and related performance monitoring and reporting. Refer to Attachment B: Construction Management Plan Guidance for more information. Provide Documentation: <ul style="list-style-type: none">Construction Management Plan (CMP)Construction Noise Management PlanExamples of feedback mechanisms, monitoring and reporting.		
QL2.3 Improve Access and Wayfinding	Enhanced (5) A+B	A+B	Design and provide documentation: <ul style="list-style-type: none">Design accommodates incident management for users and emergency personnel.Design of access routes, safety features, and signage to reduce negative impact on surroundings due to vehicle or pedestrian traffic.Design of clear signage and wayfinding.Plans/drawings, specifications.	-	-		
QL3.3 Enhance Views and Local Character	Conserving (11) A+B+C+D+E	A+B+C	Design and provide documentation: <ul style="list-style-type: none">Design features that preserve or enhance views and local character, and are informed by the stakeholder consultation process.Design to existing facility guidelines to preserve or enhance views and local character. Illustrate how the aesthetic quality of the project is important.Plans/drawings, specifications.Meeting minutes discussing views/character elements.Reports outlining views/character elements.	D	Provide Documentation: <ul style="list-style-type: none">CMP includes information about protecting any character features or landscape features during construction.		
LD1.1 Provide Effective Leadership and Commitment	Conserving (18) A+B+C+D	A+B+C+D	Sign project commitment to project sustainability. Provide documentation: <ul style="list-style-type: none">Meeting minutes and/or reports showing discussion of and/or progress toward sustainability goals.Examples of the Design Builder's organizational sustainability commitments. Documentation of sustainability commitment may include item's like: <ul style="list-style-type: none">Organizational sustainability Policies.Sustainability reports.Sustainability strategy.Project descriptions.Awards.Sustainability training.Examples of initiatives to improve sustainable performance.Third-party organizational recognition or commitments. **Include information for all organizations that are a part of the design-build entity.	A+B+C+D	Provide documentation of organizational commitments for any key team members brought on during construction.		

Table 2: Design Builder Envision Action Plan

Note: Items underlined and in [blue](#) are also noted in Table 1. Plans and Forms included as Envision Submittals.

CREDIT NO. AND TITLE	TARGET LOA & RELEVANT CRITERIA (PTS)	DESIGN BUILDER RESPONSIBILITIES				DB POC	DB COMMENTS
		DESIGN-RELATED CRITERIA	DESIGN RESPONSIBILITIES <i>Reference: Envision Guidance Manual</i>	CONSTRUCTION-RELATED CRITERIA	CONSTRUCTION RESPONSIBILITIES <i>Reference: Envision Guidance Manual</i>		
LD1.2 Foster Collaboration and Teamwork	Conserving (18) A+ B+C+D	B+C+D	Work with Owner and project team to implement Envision. Provide documentation of commitment to sustainability and Envision: <ul style="list-style-type: none">Meeting minutes.Reports.Assessments.	B+C+D	Work with Owner and project team to implement Envision. Provide documentation of commitment to sustainability and Envision: <ul style="list-style-type: none">Meeting minutes.Reports.Assessments.		
LD1.3 Provide For Stakeholder Involvement	Restorative (18) A+B+C+D+E+F	B+C+D+E	Participate in stakeholder engagement activities, as needed. Provide documentation: <ul style="list-style-type: none">Showing that stakeholder feedback was evaluated and prioritized, and when and how it impacted project decision making or design elements.Evidence that stakeholder feedback was treated fairly and equitably.Stakeholder feedback, if received.	-	Reference QL1.6 Minimize Construction Impacts and related CMP guidance.		
LD1.4 Pursue Byproduct Synergies	Restorative (18) A+B+E	E	Provide documentation: Plans/specifications illustrating process for creating beneficial waste streams - biosolids, biogas.	-	-		
LD2.1 Establish A Sustainability Management Plan	Superior (12) A+B+C+D	D	The Sustainability Management Plan (SMP) will be provided by the Program Manager to the DB during DB Envision alignment meeting. The SMP outlines how sustainability and Envision tracking and implementation will be documented during design and construction. Work with Owner and project team to implement Envision.	D	The SMP will be provided by the Program Manager to the DB during DB Envision alignment meeting. The SMP outlines how sustainability and Envision tracking and implementation will be documented during design and construction. Work with Owner and project team to implement Envision.		
LD2.3 Plan For Long-Term Monitoring and Maintenance	Conserving (12) A+B+C+D+E	A+B+C	Design and provide documentation: <ul style="list-style-type: none">Plans/specifications showing strategies to reduce maintenance impacts, i.e., better design, durable longer-lasting materials, or ease of access for maintenance and repair with minimal disruption to users and affected communities.Monitoring and maintenance plan, as incorporated as part of Operation and Maintenance Manuals.Meet with operations, monitoring, and maintenance staff to explain and discuss the operations and maintenance plan. Provide meeting minutes from these discussions.	-	-		
LD2.4 Plan For End-of-Life	Improved (2) A+B	A+B	Provide input, as requested.	-	-		
LD3.1 Stimulate Economic Prosperity and Development	Superior (12) A+B+C+D	A	Provide documentation: <ul style="list-style-type: none">Information on the types of design jobs, number of local workers, and work reports to provide evidence of manhours/number of workers employed.	A	Provide documentation: <ul style="list-style-type: none">Information on the types of construction jobs, number of local workers, and work reports to provide evidence of manhours/number of workers employed.		
LD3.2 Develop Local Skills and Capabilities	Improved (2) A to Enhanced (4) A+B	A (+B) Depending on final LOA	<ul style="list-style-type: none">Provide Evidence of training programs associated with the project.Provide any information related to training targeted at skill gaps in workforce.	A (+B) depending on final LOA	<ul style="list-style-type: none">Provide Evidence of training programs associated with the project.Provide any information related to training targeted at skill gaps in workforce.		

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Note: Items underlined and in [blue](#) are also noted in Table 1. Plans and Forms included as Envision Submittals.

CREDIT NO. AND TITLE	TARGET LOA & RELEVANT CRITERIA (PTS)	DESIGN BUILDER RESPONSIBILITIES				DB POC	DB COMMENTS
		DESIGN-RELATED CRITERIA	DESIGN RESPONSIBILITIES <i>Reference: Envision Guidance Manual</i>	CONSTRUCTION-RELATED CRITERIA	CONSTRUCTION RESPONSIBILITIES <i>Reference: Envision Guidance Manual</i>		
RA1.1 Support Sustainable Procurement	Project is considering pursuing this credit, LOA to be determined.	B If pursued	<ul style="list-style-type: none">If a sustainable procurement program is put into place for this project, assist in collecting information from suppliers and manufacturers to document their sustainable business practices and the associated materials, supplies and equipment associated with those firms.	B If pursued	<ul style="list-style-type: none">If a sustainable procurement program is put into place for this project, assist in collecting information from suppliers and manufacturers to document their sustainable business practices and the associated materials, supplies and equipment associated with those firms.		
RA1.2 Use Recycled Materials	Improved (4) A	A	Design and provide documentation: <ul style="list-style-type: none">Assess what types of materials will be used in project that could contain recycled content and which will. Will any changes be made based on assessment?Calculate estimated percentage of recycled/reused materials vs. overall materials. Provide calculations estimate by weight, volume, or cost.Specifications include requirements to document materials containing recycled content.Provide feedback if the LOA could be increased from Improved (5% of recycled materials including materials with recycled content and/or reused existing structures or materials) to Enhanced = 15% or Superior = 25%.Specifications showing recycled materials requirements.	A	Implement specified recycled materials requirements. Provide documentation: <ul style="list-style-type: none">Cost estimates.Cut sheets of recycled content materials.Reused/Recycled Materials Summary Form. (Attachment C), recording the amount of recycled-content or reused materials. It is anticipated that the project will meet the Improved LOA based on types of materials that will be specified. Documentation provided will be used by the Program Manager's Envision team to calculate the overall percentage used in the Program.		
RA1.3 Reduce Operational Waste	Conserving (14) A+B	A	Provide input, as requested.	-	-		
RA1.4 Reduce Construction Waste	Superior (10) A+B During construction at least 75% of waste materials are recycled, reused, and/or salvaged.	A+B	Design and provide documentation: <ul style="list-style-type: none">Assess what types of waste will be generated during construction.Calculate (est) percentage of recycled and reused C&D waste vs. overall C&D waste. Provide calculations estimated by weight, volume, or cost.Specifications include requirements to meet construction waste diversion target and document construction waste disposal.	A+B	Develop a construction waste management plan that identifies materials to be diverted, plans for sorting / managing materials on-site, and facilities for recycled materials. Fill out and submit forms to support waste diversion activities and provide data for diversion calculation. Provide documentation: <ul style="list-style-type: none">Construction waste management plan.Construction Waste Diversion Summary Form (Attachment D), recording the amount of waste that is recycled, reused, or salvaged.Load tickets from landfill, recycling center or salvage facility.		
RA1.5 Balance Earthwork On Site	Improved (2) A	A	Design and provide documentation: <ul style="list-style-type: none">Balance earthwork on-site to the extent possible.Reuse soil on-site as feasible.Determine cost implications of on-site use and reasonable nearby locations to meet criteria requirements.Cut and fill calculations, showing how the project balanced cut and fill on-site and calculations of the percentage of excavated materials remaining on-site.Information on locations/distances for sourcing and/or disposing of fill materials.	A	Implement and provide documentation: <ul style="list-style-type: none">Cut and fill calculations.Information on locations/distances for sourcing and/or disposing of fill materials.		
RA2.1 Reduce Operational Energy Consumption	Improved (6) A+B	A+B	Provide documentation: <ul style="list-style-type: none">Calculate estimated annual energy consumption of the project.	-	-		

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RA2.2 Reduce Construction Energy Consumption	Enhanced (4) A+B	A+B	Design and provide documentation: <ul style="list-style-type: none">Conduct a review to identify and analyze potential options for reducing energy consumption during construction. Provide meeting minutes from discussion.Specifications include requirements to implement two energy reduction strategies on the construction site and/or construction vehicles, including providing calculations showing that the implemented strategies meet related percentage energy reduction goals, as outlined in the Envision Guidance Manual (RA2.2 Reduce Construction Energy Consumption).	A+B	Implement and provide documentation: <ul style="list-style-type: none">Evidence that at least two (2) energy reduction strategies are used on the construction site and/or construction vehicles.Calculations showing that the implemented strategies meet related percentage energy reduction goals / Completed RA2.2 Credit calculator for implemented strategies.Information on how strategies are monitored, measured and documented through construction.		
RA2.3 Use Renewable Energy	Restorative (24) A	A	Provide input, as requested.	-	-		
RA2.4 Commission and Monitor Energy Systems	Enhanced (6) A+B	A+B	Design and provide documentation: <ul style="list-style-type: none">Design includes energy monitoring equipment and/or software to facilitate performance monitoring during operation.Plans/specifications outlining energy monitoring equipment/software.Specifications outline initial commissioning of energy systems.	-	-		
RA3.1 Preserve Water Resources	Enhanced (5) A+B+C	B+C	Provide documentation: <ul style="list-style-type: none">Estimate water use and wastewater generation over the life of the project.Project features intended to reduce negative impacts of water usage, and/or improve watershed-scale issues.	-	-		
RA3.3 Reduce Construction Water Consumption	Improved (1) A+B	A+B	Design and provide documentation: <ul style="list-style-type: none">Conduct a review to identify and analyze potential options for reducing water consumption during construction. Provide meeting minutes from discussion.Specifications include requirements to implement one potable water reduction strategy on the construction site, including providing calculations showing that the implemented strategies meet related percentage reduction goals, as outlined in the Envision Guidance Manual (RA3.3 Reduce Construction Water Consumption).	A+B	Implement and provide documentation: <ul style="list-style-type: none">Evidence that at least one (1) potable water reduction strategy is used on the construction site.Calculations showing that the implemented strategies meet related percentage reduction goals.Information on how strategies are monitored, measured and documented through construction.		
RA3.4 Monitor Water Systems	Enhanced (3) A	A	Design and provide documentation: <ul style="list-style-type: none">Design includes water monitoring equipment and/or software to facilitate performance monitoring during operation.Plans/specifications outlining water monitoring equipment/software.Documentation showing the percentage of water use that is being monitored.	-	-		

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NW2.3 Reduce Pesticide and Fertilizer Impacts	Conserving (9) C	C	Design and provide documentation: <ul style="list-style-type: none">Specifications include requirements to direct that fewer, little, or no fertilizers or pesticides will be used on the project site during construction.Design landscaping with plant species that do not require pesticides or fertilizers.Plans/specifications showing plantings and plant types.Information about any integrated and pest management approaches that will be used for the project.	C	Implement project as directed in plans and specifications.		
NW2.4 Protect Surface and Groundwater Quality	Improved (2) A+B	[A]+B	Design and provide documentation: <ul style="list-style-type: none">Determine potential impacts to surface water or groundwater quality, including temperature, during construction and operations.Specifications include requirements for a spill and leak prevention and response plan during construction.If applicable, specify placement of materials storage piles and handling of potentially polluting runoff.		Provide documentation: <ul style="list-style-type: none">Information included in CMP.Spill and leak prevention and response plan for construction.		
NW3.4 Control Invasive Species	Superior (6) A+B+C	A+C	Design provide documentation: <ul style="list-style-type: none">Design landscaping utilizing noninvasive species / landscape/planting plans and specifications, showing incorporation of noninvasive species.Specifications include requirements to ensure that construction materials and equipment used on-site are free of invasive species and seeds, and provide guidance for handling containment or suppression activities during construction for major infestations of invasive species found on-site.Specifications include requirements to establish and implement a program that controls minor infestations of invasive species on-site before and throughout construction.	A+C	Provide documentation: <ul style="list-style-type: none">Information included in CMP.Establish and implement a program that controls minor infestations of invasive species on-site before and throughout construction.		
CR1.3 Reduce Air Pollutant Emissions	Improved (2) A+B+C	B	Provide documentation: <ul style="list-style-type: none">Documentation of strategies deployed to reduce air pollutant emissions.	-	-		
CR2.3 Evaluate Risk and Resilience	Conserving (26) A+B+C+D+E+F	F	Participate in risk evaluation.	F	Participate in risk evaluation.		
CR2.4 Establish Resilience Goals and Strategies	Conserving (20) A+B+C+D	B+C	Collaborate in developing risk management goals strategies that meet project performance goals and increase project resilience.	B+C	Collaborate in developing risk management goals strategies that meet project performance goals and increase project resilience.		
CR2.5 Maximize Resilience	Enhanced (15) A+B+C	B	Design and provide documentation: <ul style="list-style-type: none">Design strategies that increase resilience / document approach to implementing resilience strategies.	B	Implement project as directed in plans and specifications.		

Design Builder Envision Action Plan Confirmation

Due 30 days after Envision Design Builder Alignment Meeting.

I understand that it is the goal of this Project to meet requirements of the Envision Sustainable Infrastructure Framework and pursue Envision verification for the Project, with a goal of Gold-level verification. I have reviewed the credits noted in the Design Builder Envision Action Plan and will provide documentation as needed to meet Envision requirements. This includes information for the initial submittal to ISI, as well as requested follow-up documentation or requests for clarification until the project verification process is completed.

Authorized Signature

Printed Name

Date

This document should be submitted at the beginning of the project for confirmation of project understanding and used throughout the construction process to verify compliance with project requirements.

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ATTACHMENT A
ENVISION SCORECARD SNAPSHOT

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ENVISION SCORECARD SNAPSHOT

Credit levels of achievement are based on projections for the ReGen project, but actual levels of achievement may vary depending on available documentation and the verifier's review. Credits included in the Design Builder EAP are highlighted in yellow.

Category	Credit	N/A	None	Improved	Enhanced	Superior	Conserving	Restorative
QUALITY OF LIFE	QL1.1 Improve Community Quality of Life	0	0	2	5	10	20	26
	QL1.2 Enhance Public Health and Safety	0	0	2	7	12	16	20
	QL1.3 Improve Construction Safety	0	0	2	5	10	14	-
	QL1.4 Minimize Noise and Vibration	0	0	1	3	6	10	12
	QL1.5 Minimize Light Pollution	0	0	1	3	6	10	12
	QL1.6 Minimize Construction Impacts	0	0	1	2	4	8	-
	QL2.1 Improve Community Mobility and Access	0	0	1	3	7	11	14
	QL2.2 Encourage Sustainable Transportation	0	0	-	5	8	12	16
	QL2.3 Improve Access and Wayfinding	0	0	1	5	9	14	-
	QL3.1 Advance Equity and Social Justice	0	0	3	6	10	14	18
	QL3.2 Preserve Historic and Cultural Resources	-18	0	-	2	7	12	18
	QL3.3 Enhance Views and Local Character	0	0	1	3	7	11	14
	QL3.4 Enhance Public Space and Amenities	0	0	1	3	7	11	14
	QL0.0 Innovation		2					
	POINTS	Max	200	Applicable	182	Low	106	High
LEADERSHIP	LD1.1 Provide Effective Leadership and Collaboration	0	0	2	5	12	18	-
	LD1.2 Foster Collaboration and Teamwork	0	0	2	5	12	18	-
	LD1.3 Provide for Stakeholder Involvement	0	0	3	6	9	14	18
	LD1.4 Pursue Byproduct Synergies	0	0	3	6	12	14	18
	LD2.1 Establish a Sustainability Management Plan	0	0	4	7	12	18	-
	LD2.2 Plan for Sustainable Communities	0	0	4	6	9	12	16
	LD2.3 Plan for Long-Term Monitoring and Maintenance	0	0	2	5	8	12	-
	LD2.4 Plan for End-of-Life	0	0	2	5	8	14	-
	LD3.1 Stimulate Economic Prosperity and Development	0	0	3	6	12	20	-
	LD3.2 Develop Local Skills and Capabilities	0	0	2	4	8	12	16
	LD3.3 Conduct a Life-Cycle Economic Evaluation	0	0	5	7	10	12	14
	LD0.0 Innovation		6					
POINTS	Max	182	Applicable	182	Low	135	High	150
RESOURCE ALLOCATION	RA1.1 Support Sustainable Procurement	0	0	3	6	9	12	-
	RA1.2 Use Recycled Materials	0	0	4	6	9	16	-
	RA1.3 Reduce Operational Waste	0	0	4	7	10	14	-
	RA1.4 Reduce Construction Waste	0	0	4	7	10	16	-
	RA1.5 Balance Earthwork On Site	0	0	2	4	6	8	-
	RA2.1 Reduce Operational Energy Consumption	0	0	6	12	18	26	-
	RA2.2 Reduce Construction Energy Consumption	0	0	1	4	8	12	-
	RA2.3 Use Renewable Energy	0	0	5	10	15	20	24
	RA2.4 Commission and Monitor Energy Systems	0	0	3	6	12	14	-
	RA3.1 Preserve Water Resources	0	0	3	5	7	9	12
	RA3.2 Reduce Operational Water Consumption	-22	0	4	9	13	17	22
	RA3.3 Reduce Construction Water Consumption	0	0	1	3	5	8	-
	RA3.4 Monitor Water Systems	-12	0	1	3	6	12	-
	RA0.0 Innovation		4					
	POINTS	Max	196	Applicable	196	Low	81	High

Category	Credit	N/A	None	Improved	Enhanced	Superior	Conserving	Restorative	
NATURAL WORLD	NW1.1 Preserve Sites of High Ecological Value	-22	0	2	6	12	16	22	
	NW1.2 Provide Wetland and Surface Water Buffers	-20	0	2	5	10	16	20	
	NW1.3 Preserve Prime Farmland	-16	0	-	2	8	12	16	
	NW1.4 Preserve Undeveloped Land	0	0	3	8	12	18	24	
	NW2.1 Reclaim Brownfields	-22	0	11	13	16	19	22	
	NW2.2 Manage Stormwater	0	0	2	4	9	17	24	
	NW2.3 Reduce Pesticide and Fertilizer Impacts	0	0	1	2	5	9	12	
	NW2.4 Protect Surface and Groundwater Quality	0	0	2	5	9	14	20	
	NW3.1 Enhance Functional Habitats	-18	0	2	5	9	15	18	
	NW3.2 Enhance Wetland and Surface Water Functions	-20	0	3	7	12	18	20	
	NW3.3 Maintain Floodplain Functions	-14	0	1	3	7	11	14	
	NW3.4 Control Invasive Species	0	0	1	2	6	9	12	
	NW3.5 Protect Soil Health	0	0	-	3	4	6	8	
	NW0.0 Innovation		0						
	POINTS	Max	232	Applicable	100	Low	35	High	35
CLIMATE AND RESILIENCE	CR1.1 Reduce Net Embodied Carbon	0	0	5	10	15	20	-	
	CR1.2 Reduce Greenhouse Gas Emissions	0	0	8	13	18	22	26	
	CR1.3 Reduce Air Pollutant Emissions	0	0	2	4	9	14	18	
	CR2.1 Avoid Unsuitable Development	-16	0	3	6	8	12	16	
	CR2.2 Assess Climate Change Vulnerability	0	0	8	14	18	20	-	
	CR2.3 Evaluate Risk and Resilience	0	0	11	18	24	26	-	
	CR2.4 Establish Resilience Goals and Strategies	0	0	-	8	14	20	-	
	CR2.5 Maximize Resilience	0	0	11	15	20	26	-	
	CR2.6 Improve Infrastructure Integration	0	0	1	5	9	13	18	
	CR0.0 Innovation (earn up to 5 points)		2						
	POINTS	Max	190	Applicable	174	Low	96	High	127
	TOTAL POINTS		Max	1000	Applicable	834			
		Low	453	High	516				
			Platinum		Platinum				

ATTACHMENT B

CONSTRUCTION MANAGEMENT AND CONSTRUCTION WASTE MANAGEMENT PLANS GUIDANCE

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GUIDANCE FOR
CONSTRUCTION MANAGEMENT PLAN ENVISION REQUIREMENTS
AND CONSTRUCTION WASTE MANAGEMENT PLAN

PART 1 - COMPREHENSIVE CONSTRUCTION MANAGEMENT PLAN ENVISION REQUIREMENTS

1.1 SUMMARY

- A. The Design Builder shall develop a comprehensive Construction Management Plan (CMP). Elements of the CM shall address the project's construction impacts, including but not limited to the following:
1. Noise and/or Vibrations:
 - a. Outline the anticipated noise impacts and describe the approach to minimize construction noise and/or vibrations impacts to the extent feasible. Note local construction noise ordinance, and how plans for minimizing construction noise and vibration will meet or exceed local requirements. Include details on the expected sources of significant noise and vibration, how the effects of those sources will be minimized, how noise and vibration will be monitored, and what corrective actions will be taken if specified levels are exceeded.
 - b. Provide a Construction Noise Management Plan (CNMP), separate from the CMP, that includes stakeholder engagement and mechanisms for communities to report complaints. Explain how corrective actions applied in response to stakeholder reporting will be recorded and/or documented.
 2. Public Safety and Wayfinding:
 - a. Outline how the Design Builder will address safety and wayfinding for pedestrians and vehicles during construction.
 3. Maintaining Access to Public Space and Amenities:
 - a. Outline strategies the Design Builder will use to:
 - 1) Limit disruption and maintain access to public space and amenities during construction within the boundaries of safety.
 - 2) Limit interruption of service.
 - b. Provide evidence of stakeholder understanding and acceptance of construction impacts to public space/amenities, specifically access, during construction.
 4. Construction Lighting:
 - a. Outline how the Design Builder will minimize distracting or intrusive lighting during construction.
 5. Public Feedback:
 - a. Describe how the Design Builder will support the Program Manager (PM) to work with adjacent properties to understand construction plans as well as monitoring and corrective action programs.
 - b. Support the PM on programs to monitor and inform impacted stakeholders on project performance in addressing construction impacts.
 6. Construction Energy Reduction:
 - a. Outline potential strategies for reducing energy consumption during construction.
 - b. Outline how the Design Builder intends implement a minimum of two energy conservation strategies during construction.
 - c. Outline how implementation will meet related percentage energy reduction goals, as outlined in the Envision Guidance Manual (RA2.2 Reduce Construction Energy Consumption).

- d. Describe how the energy reduction will be monitored, measured and documented through construction.
- 7. Construction Water Reduction:
 - a. Outline potential strategies for reducing potable water consumption during construction.
 - b. Outline how the Design Builder intends to implement a minimum of one potable water reduction strategy during construction.
 - c. Outline how implementation will meet related percentage reduction goals, as outlined in the Envision Guidance Manual (RA3.3 Reduce Construction Water Consumption).
 - d. Describe how the potable water reduction will be monitored, measured and documented through construction, so that the project team can document a calculation of potable water saved as compared to not implementing the strategy over the construction duration.
- 8. Spill and Leak Protection:
 - a. Confirm and provide evidence that spill and leak prevention and response plans, separate from the CMP, are in place.
 - b. Outline placement and management of materials storage piles and handling of potentially polluting runoff, if applicable.
- 9. Control Invasive Species:
 - a. Describe how the Design Builder will prevent the introduction of invasive species, including best practices to ensure that construction materials and equipment used onsite are free of invasive species and seeds.
 - b. Outline control, containment or suppression activities that will be used during construction for any major infestations of invasive species that are found on-site.
- B. Construction Safety:
 - 1. Monitoring and Improving health and safety
 - a. Describe the Design Builder's commitments to safety and that it is a core concern.
 - b. Outline how the Design Builder will implement a proactive safety rewards program to support outstanding safety performance.
 - c. Outline programs/requirements to ensure that subcontractors maintain a high level of safety per the contract.
 - d. Describe how the Design Builder's senior managers are engaged in the project safety program and conduct safety observations and inspections as part of their standard duties.
 - 2. Incident Feedback Mechanism:
 - a. Outline the Design Builder's investigative process, focusing on root cause and corrective actions vs. disciplinary actions and financial penalties.
 - b. Describe Design Builder's proactive injury management system that supports efficient, effective and timely treatment of their employees injured on the job site.
 - c. Outline Design Builder's incident review process, including how it involves all levels of management to validate corrective measures to minimize future injuries and incidents on the job site
 - d. Provide information describing how the Design Builder develops "lessons learned" reports and how that information is conveyed to other Design Builders and/or projects to implement processes and procedures to minimize similar incidents in the future.
 - 3. Safety or Security Training:
 - a. Outline safety competency training programs for field personnel, including type of training provided and how they specifically target health and safety. Training may include task-specific safety training or general awareness training.
 - b. Describe minimum training requirements for health and safety programs such as occupational safety and health, first aid, CPR, emergency response, active shooter training, or equivalent.
 - c. Outline security training for personnel, if applicable.

4. Comprehensive Security Plan:
 - a. Confirm and provide evidence of a specific site and Project Security Plan (PSP), separate from the CMP. This plan may include, but is not limited to, Design Builder background checks on personnel working on the project, and 24-hour security monitoring on the project (physical/electronic).
5. Health and/or Wellbeing Programs:
 - a. Outline the Design Builder's health and/or well-being programs beyond the specific activities associated with project delivery. This may include, but is not limited to, health screenings for workers, nutrition or exercise workshops, and/or free vaccinations.
- C. Use Recycled Materials:
 1. Confirm understanding of the project's recycled material goals and compliance with documentation/submittal requirements.
 2. Project goal is to use at least 25 percent of recycled materials including materials with recycled content and/or reused existing structures or materials.

PART 2 - CONSTRUCTION WASTE MANAGEMENT PLAN

2.1 SUMMARY

- A. The Design Builder shall provide a Construction Waste Management Plan (CWMP), separate from the CMP, including submittal/reporting mechanism to provide evidence of implementation. Refer to Attachment D for forms required.
- B. The project has set a target goal for construction waste diversion, for at least 75 percent of waste materials to be recycled, reused, and/or salvaged. Diversion may be a combination of waste-reduction measures and sourcing waste to other facilities for recycling or reuse.
- C. The CWMP shall include:
 1. The waste diversion target and methodology to reach the target.
 2. A general description of each type/category of construction and demolition materials generated, location of receiving agent, and quantity of waste diverted (by category) in weight (tons) or volume (cubic yards/meters).
 3. Plan for submitting calculations of total waste reduction measures and percentage of materials diverted to recycling or reuse. The percentage of diverted waste shall be calculated as the ratio of material diverted from landfills against the total waste generated during construction. Calculations may be done by weight (tons) or volume (cubic yards/meters) but must remain consistent.
 4. Design Builder shall use the forms outlined in Attachment D for calculations. Forms and corresponding load tickets shall be submitted with monthly submittal.
 5. Waste deemed hazardous shall not be included in the total waste calculations and shall be disposed of according to local, state, and federal law.

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ATTACHMENT C

RA1.2 RECYCLED MATERIALS – GUIDANCE AND FORMS

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ARLINGTON RE-GEN COMPREHENSIVE BIOSOLIDS UPGRADES: PHASE 10
RA1.2 - USE RECYCLED MATERIALS - OVERVIEW AND INSTRUCTIONS

OVERVIEW

1. Consider which project materials may include recycled materials (both materials with recycled content and/or reuse of existing structures or materials) and/or regional materials.

WORKBOOK INSTRUCTIONS

2. Document inclusion of **recycled content or material reuse**.

- Use the *Material Content Form* in this workbook to inventory materials, to calculate the inclusion of recycled content and existing materials or structures that have been reused on the site.
- List Product/material description, vendor or manufacturer, quantity and units (tons, cy), total cost/value, and percentage of reuse or recycled content.
- **Include all materials** (see notes below for exclusions), even if the percentage of recycled or reused is 0%, so the percentage of recycled/reused can be calculated against total materials.
- Submit form and it will be compiled with other forms to calculate the total recycled/reused materials.
- Calculations for recycled materials do not include plants, soils, or water.
- If product cut sheets are available that provide information about the recycled content, provide as supplemental documentation. If available online, links to the information can be provided.

NOTES

- Mechanical, electrical, water equipment, and their components may be excluded from the calculations.
- Calculations are based on cost or replacement value.
- Materials reused on-site can be considered "reused" under recycled materials and regional because the distance traveled

**The Arlington Re-Gen Program is pursuing an Improved level of achievement (LOA)
for RA1.2 Use Recycled Materials.
The target goal for materials with recycled content and/or reused existing structures or
materials is at least 25%.**

RESOURCES

[CalRecycle Recycled Content Construction Products Catalog](https://www.calrecycle.ca.gov/condemo/products) - <https://www.calrecycle.ca.gov/condemo/products>

[EPA Comprehensive Procurement Guideline \(CPG\) Program](https://www.epa.gov/smm/comprehensive-procurement-guideline-cpg-program) - <https://www.epa.gov/smm/comprehensive-procurement-guideline-cpg-program>

[LEED Recycled content credit](https://www.usgbc.org/credits/new-construction/v20/mrc41-42) - <https://www.usgbc.org/credits/new-construction/v20/mrc41-42>

ARLINGTON RE-GEN COMPREHENSIVE BIOSOLIDS UPGRADES: PHASE 10
RA1.2 - USE RECYCLED MATERIALS - OVERALL SUMMARY



Envision RA1.2 Use Recycled Materials

The goal of this credit is to reduce construction waste and divert waste streams from disposal to recycling and reuse. Project teams can improve performance by considering the ability of waste generated during construction to be recycled or beneficially reused, implementing waste management plans to capture waste, and identifying possible recycling centers with appropriate capabilities.

Waste deemed hazardous should not be included in the total waste calculations and should be disposed of according to local, state/provincial, and federal law.

Quantity Total Reused Materials	\$ -
Quantity Total Recycled-content Materials	\$ -
Total Materials	\$ -

*Fields will fill in automatically
based on totals from corresponding tabs.*

Percentage of materials diverted to recycling or reuse	#DIV/0!
--	---------

Material Content Form

[illegible]

ARLINGTON RE-GEN COMPREHENSIVE BIOSOLIDS UPGRADES: PHASE 10
RA1.2 - USE RECYCLED MATERIALS - RA1.2 CREDIT DETAILS



RESOURCE ALLOCATION: MATERIALS

RA1.2 Use Recycled Materials

16
POINTS

INTENT

Reduce the use of virgin natural resources and avoid sending useful materials to landfills by specifying reused materials, including structures, and material with recycled content.

METRIC

Percentage of project materials that are reused or recycled. Plants, soil, rock, and water are not included in this credit.

LEVELS OF ACHIEVEMENT

IMPROVED	ENHANCED	SUPERIOR	CONSERVING	RESTORATIVE
A	A	A	A	Not Available
(4) At Least 5% From Recycled	(6) At Least 15 % From Recycled	(9) At Least 25% From Recycled	(16) At Least 50% From Recycled	
(A) At least 5% (by weight, volume, or cost) of recycled materials including materials with recycled content and/or reused existing structures or materials.	(A) At least 15% (by weight, volume, or cost) of recycled materials including materials with recycled content and/or reused existing structures or materials.	(A) At least 25% (by weight, volume, or cost) of recycled materials including materials with recycled content and/or reused existing structures or materials.	(A) At least 50% (by weight, volume, or cost) of recycled materials including materials with recycled content and/or reused existing structures or materials.	

DESCRIPTION

The purpose of this credit is to reduce the use of virgin natural resources and avoid sending useful materials to landfills. Using recycled, reused, and renewable materials and products, including existing structures and materials on site, reduces demand for virgin materials and the embodied carbon emissions and environmental degradation attributed to their extraction and processing. Using these materials also reduces waste and supports the market for recycled and reused materials. Project teams should consider how salvaging or repurposing existing materials or structures can significantly reduce demand for new construction materials as well as project costs. The reuse of existing materials or elements may also have a significant cultural or aesthetic value, such as street lamps, sidewalk pavers, bridges, and more.

PERFORMANCE IMPROVEMENT

Improved – Conserving: Levels in this credit are distinguished by the percentage of total materials that are reused or recycled. Calculations of recycled materials can be done by weight, volume, or cost, but must remain consistent within the credit. Calculations should compare the total quantity of recycled materials and reused structures with the total quantity of materials on the project. Products that contain a percentage of recycled material should be factored according to the percentage of material that is recycled.

Recycled content is defined in accordance with ISO 14021 as the portion of materials used in a product that have been diverted from the solid waste stream and used in part or whole in place of a new primary material. Material eligible for consideration can also be defined as pre-existing material on site, or from another site, that was previously a product or piece of equipment that is now being repurposed or reused. To

be considered “reused,” the project team must demonstrate some intention or effort to reclaim, salvage, or repurpose the materials or structures in keeping with the credit intent.

Natural materials such as soil and rock when used as backfill do not count toward this credit but are addressed in RA 1.5 Balance Earthwork On Site. If natural resources on the site are harvested and manufactured in order to take the place of new or primary materials, such as pulverizing stone in order to produce aggregate, project teams are responsible for demonstrating that the actions truly replace a new primary material. Likewise, when claiming the reuse of existing structures or materials, project teams must clearly demonstrate that a conscious decision was made to salvage those materials from demolition and disposal. Materials cannot be counted as recycled if, in standard practice, they would not otherwise have been removed. For example, when repairing a road, project teams cannot claim the entirety of the remaining road as “recycled,” as that material would not typically have been removed.

Project teams must always ensure that all project materials meet the necessary quality and performance criteria required for the intended application, whether recycled or not. Materials must also meet all state or local solid waste agency requirements for using recycled materials in construction. Any recycled materials used must not pose unacceptable risks to human health and safety or the environment.

Applicability: This credit is applicable to all projects that include the use or consumption of physical materials in construction or operation.

ARLINGTON RE-GEN COMPREHENSIVE BIOSOLIDS UPGRADES: PHASE 10
RA1.2 - USE RECYCLED MATERIALS - RA1.2 CREDIT DETAILS

**EVALUATION CRITERIA AND
DOCUMENTATION GUIDANCE**

A. To what extent has the project team used recycled materials, including materials with recycled content and/or reused existing structures or materials?

1. Total quantity of materials used on the project by weight, volume, or cost.
2. Inventory of **specifications** for materials containing recycled content. Inventory should include the name of the product, the name of the manufacturer, the weight, volume, or cost of the material, and the percentage of recycled content (either post-industrial or post-consumer recycled content).
3. Calculations of percentage of reused or recycled materials by weight, volume, or cost.

To calculate materials with recycled content, multiply the material weight, volume, or cost by the percentage of recycled content.

Mechanical, electrical, water equipment, and their components may be excluded from the calculations. In these instances, the most efficient equipment should be specified.

Calculations do not include plants, soils, rocks, or water.

4. Inventory of existing materials or structures that have been reused.

Design documents showing the location and weight, volume, or cost of reused structures or materials. In determining weight, volume, or cost, the project team may refer to standard equivalents.

In order to meet the intent of this credit, the project team must be able to demonstrate an intentional choice to salvage materials or structures that might otherwise have been sent to landfills and/or replaced. In addition, they must demonstrate that such action is within the scope of the project. For example, a project to resurface an airport runway cannot claim the entirety of the surrounding airport as "reused" materials. However, a project that intentionally chooses to refurbish an existing bridge, rather than replace it, may count the retained components of the existing bridge as "reused."

RELATED ENVISION CREDITS

LD1.4 Pursue Byproduct Synergies

NW1.4 Preserve Undeveloped Land

CR1.1 Reduce Net Embodied Carbon

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ATTACHMENT D

RA1.4 REDUCE CONSTRUCTION WASTE – GUIDANCE AND FORMS

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OVERVIEW

1. Draft Construction Waste Management Plan to include identifying:

- Waste streams involved in project's demolition and construction efforts.
 - o Note: Soils and rocks are not included in this waste calculation.
 - o Note: Waste deemed hazardous shall not be included in the total waste calculations and shall be disposed of according to local, state, and federal law.
- Recycling facilities available for project waste streams. These can include, but are not limited to:
 - o Paving – concrete or asphalt
 - o Milling, concrete slough and grindings
 - o Metals – structural steel, steel rebar, metal guardrails, pipes, luminaires, signs, aluminum, various household metals
 - o Plastic – waste plastic pipes
 - o Wood – various wood construction materials, pallets, packaging
 - o Cardboard, paper products – packaging materials, copy paper, paper products
 - o Glass
- Demolition materials to be reused in project construction or at another site. These can include, but are not limited to:
 - o Concrete – crushed and reused in project construction
 - o Asphalt – crushed and recycled into new asphalt
- Collection methods for demolition and construction waste streams.
 - o Determine if materials will be separated as they are collected on-site or commingled and separated off-site
 - o Locate and label collection waste bins on the project site
 - o Provide guidance on waste collection and diversion goals to project team and construction workers on site

2. Document waste diversion efforts

- Document waste brought to recycling facilities and return with waste tickets for each delivery; include manifests, weight tickets, receipts, and invoices, as applicable for recycled and landfilled materials with submittal of spreadsheet.
- Document demolition materials housed and prepped for reuse on site.
 - Document waste reduction measures and quantify impact (example – reuse of existing structures that were planned to be demolished and rebuilt).
 - Use the Reduce Construction Waste Diversion Summary Form to document all related efforts.

WORKBOOK INSTRUCTIONS

- o Record waste tickets on corresponding "Recycled" and "Landfill" tabs, by date, listing material description, receiving agent, quantity and units (tons, cy)
- o Record information on corresponding "Reused" tab, listing material description, location and/or type of reuse, quantity and

The Arlington Re-gen Program is pursuing a superior level of achievement (LOA) for RA1.4 Reduce Construction Waste.

The target goal for construction waste diversion is for at least 75% of waste materials to be

ARLINGTON RE-GEN COMPREHENSIVE BIOSOLIDS UPGRADES: PHASE 10
RA1.4 - REDUCE CONSTRUCTION WASTE - SUMMARY



Envision RA1.4 Reduce Construction Waste Diversion Summary

The goal of this credit is to reduce construction waste and divert waste streams from disposal to recycling and reuse. Project teams can improve performance by considering the ability of waste generated during construction to be recycled or beneficially reused, implementing waste management plans to capture waste, and identifying possible recycling centers with appropriate capabilities.

Waste deemed hazardous should not be included in the total waste calculations and should be disposed of according to local, state/provincial, and federal law.

Calculations may be done by weight (tons) or volume (cubic yards) but must remain consistent.

Quantity Total Waste to Recycling	0
Quantity Total Waste to Reuse	0
Quantity Total Waste to Landfill	0
Total Waste	0

*Fields will fill in automatically
based on totals from corresponding tabs.*

Percentage of materials diverted to recycling or reuse	#DIV/0!
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Waste figures measured in volume can be converted to weight using the conversion factors for construction debris. Tools available to assist in this effort include those provided by the United Nations Environment Programme (UNEP), CalRecycle, or other state/provincial or national authorities.

[United Nations Environment Programme \(UNEP\)](#)
[CalRecycle](#)

Waste to Recycling Record

Indicate receipt and acceptance of waste by recycling facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices, as applicable, with submittal of spreadsheet.

[illegible]

Quantity Total Waste to Recycling	0	0
-----------------------------------	---	---

Waste to Reuse Record

Insert rows as needed				
Date	Material Description	Location and/or Type of Reuse	QTY	Units
			0	
Quantity Total Waste to Reuse			0	0

Waste to Landfill Record

ARLINGTON RE-GEN COMPREHENSIVE BIOSOLIDS UPGRADES: PHASE 10
RA1.4 - REDUCE CONSTRUCTION WASTE - RECEIVING AGENT LOCATIONS

Receiving Agent Locations

*Corresponds with receiving agents listed on each tab - recycled, reused, landfill.
Only list each receiving agent once on this list.*

	Receiving Agent/Disposal Facility Name	Type of Material (Recycled, Reused, Landfill)	Street Address	City	State	Zip
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
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