US Army Corps
of Engineers ®
Portland District

SOLICITATION
W9127N24XXXXX

Bonneville Lock and Dam
Multnomah County, OR

SPILLWAY ROCK MITIGATION - PHASE I

Project Manual

PROJECT TABLE OF CONTENTS

-- End of Project Table of Contents --

SECTION TABLE OF CONTENTS

DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01 10 00.00 25

CONTRACT ADMINISTRATION DATA

-- End of Section Table of Contents --

SECTION 01 10 00.00 25

CONTRACT ADMINISTRATION DATA

PART 1 GENERAL

1.1 REFERENCES

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

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1	(2014) Safety -- Safety and Health Requirements Manual
EP 1110-1-8	(2021) Engineering and Design -- Construction Equipment Ownership and Operating Expense Schedule

1.2 MEANING OF TERMS

a. Specification Sections of this Contract are generally written in the imperative mood. In sentences using the imperative mood, the subject, "the Contractor," is implied. Also implied in this language are "shall," "shall be," "must," or similar words and phrases. In material specifications, the subject may also be the supplier, fabricator, or manufacturer supplying material, products, or equipment for use on the project.

b. Wherever "directed," "required," "prescribed," or other similar words are used, the "direction," "requirement," or "order" of the Contracting Officer (CO) is intended. Similarly, wherever "approved," "acceptable," "suitable," "satisfactory," or similar words are used, the words mean "approved by," "acceptable to," or "satisfactory to" the CO.

c. The word "will" generally pertains to decisions or actions of the CO.

1.3 CONTRACTING OFFICER

The CO who signed this Contract is the primary CO for the Contract. Nevertheless, any CO assigned to the Portland District and acting within his/her authority may take formal action on this Contract when a Contract action needs to be taken and the primary CO is unavailable. All correspondence must be through the CO or, upon notification, their authorized Representative (COR).

1.4 SERIAL LETTER CORRESPONDENCE

All letters must be electronically submitted to the Government and must be sent to designated parties via email and exported via the RMS interface. All letters must be signed in accordance with the letters of authority. Send any documents requiring original hardcopy/signatures to: Bonneville

Resident Office, PO Box 70, Cascade Locks, OR 97014.

1.4.1 Numbering

All serial letter correspondence must be independently numbered sequentially with no numbers missing or duplicated, commencing with number one. Each letter must show the Contract number, description, and subject matter. Only one subject should be covered in the same letter.

1.4.2 Subcontractors

Subcontractors must not correspond with either the Resident or District offices; the Prime Contractor must handle all correspondence.

1.4.3 Transmittals

Transmittals of signed pay estimates, payrolls, submittals, and other similar correspondence will not require a Serial Letter.

1.5 EM 385-1-1 SAFETY AND HEALTH REQUIREMENTS MANUAL

The latest version in effect on the date of the Solicitation for this Contract (in accordance with EM 385-1-1 Paragraph 4 General, will be contractually binding as part of this Contract. The latest version, including all errata and changes, must be used for this Contract and is obtainable at http://www.publications.usace.army.mil/Portals/76/Publications/EngineerManuals/EM_385-1-1.pdf.

1.6 PROJECT-SPECIFIC MANAGEMENT PLAN

Submit SD-01, Preconstruction Submittals (listed on the submittal register, Attachment A1, and defined in Section 01 33 00, SUBMITTAL PROCEDURES). The listed components of the Project-Specific Management Plan (PSMP) must be submitted separately under the appropriate specifications section. Upon approval, the components must be combined into a single PSMP binder that will be kept onsite. Update the PSMP whenever the plans contained within are updated or amended. The COR will periodically review the onsite copy of the PSMP. If a current version of the PSMP is not available and up to date, site work may be stopped until deficiencies are corrected. Acceptance of the PSMP is required prior to mobilization.

The PSMP must include:

a. Section I - Accident Prevention Program.

(1) Accident Prevention Plan (EM 385-1-1 and Section 01 35 26.00 25, GOVERNMENTAL SAFETY REQUIREMENTS).

(2) Drug-free workplace policy.

(3) Global Harmonization program (EM 385-1-1).

(4) Activity hazard analysis (EM 385-1-1).

(5) Equipment certification.

b. Section II - Environmental Protection Plan (Section 01 57 19.00 25,

TEMPORARY ENVIRONMENTAL CONTROLS).

c. Section III - Construction Quality Control System (Section 01 45 00.00 25, QUALITY CONTROL).

(1) Contractor's quality control (CQC) plan.

(2) CQC Daily Report form.

d. Project Work Plan. The following are examples:

(1) Roadway Access Agreement.

(2) Temporary electrical systems.

(3) Welder qualifications.

(4) Welding procedures.

(5) Bolt pre-tensioning procedure.

e. Schedule for Construction.

f. Submittal Register.

1.7 LETTERS OF AUTHORITY

a. To authenticate actions required under terms of this Contract, furnish a letter of authority to the CO and Resident Engineer that indicates the names of individual or individuals who are authorized to perform the following functions on behalf of the company:

(1) Sign progress payment estimates.

(2) Sign final payment estimate.

(3) Accept Government-furnished property (if applicable).

(4) Sign Contract modifications, supplemental agreements and consent of surety.

(5) Monitor and report on the environmental protection plan, management plan, quality control plan, and safety plan.

(6) Supervise the field activities.

(7) Sign Release of Claims.

(8) Sign Correspondence.

b. This letter of authority must bear the typewritten names and the handwritten signatures of each individual and be signed by the person whose signature appears on the final Contract.

1.8 LABOR STANDARDS

Comply with the following labor standards, statutes, and regulations: Davis-Bacon Act; Contract Work Hours and Safety Standards Act; Copeland Act; Secretary of Labor's regulations (Parts 3 and 5, Subtitle A, Title

29, Code of Federal Regulations). Submit a serial letter identifying the crafts and wage rates for all Prime and subcontractor employees to whom the Contract's construction wage rate requirements apply. The Government will review these crafts and rates for conformance with the wage determination.

1.8.1 Coverage

Contract provisions relating to wages, overtime, payroll deductions, and other labor standards requirements cover foremen, laborers, and mechanics, including owner-operators of other than hauling equipment and other individual enterprises performing the duties of a laborer or mechanic. Bona fide owner-operators of hauling equipment, such as trucks, who are independent contractors, are not covered, and the certified payrolls, including the names of such owner-operators, need not show hours worked nor rates paid, but only the notation "owner-operator".

1.8.2 Wages

Wages must be paid at least once a week and be computed at hourly rates not less than those set forth in the Contract wage schedule, as set by the Davis-Bacon Act wage determinations, for the particular classifications of work performed.

1.8.3 Overtime

Pay overtime for work in excess of 40 hours in any workweek at not less than 1-1/2 times the basic rate of pay. Rates paid for fringe benefits are excluded in the computations of overtime.

1.8.4 Deductions

Deductions from wages earned may be only those that are permitted by the Copeland Act (Anti-Kickback) regulations.

1.8.5 Apprentices

Comply with the requirements of 29 CFR 5.5(a)(4)(i) with respect to apprentices.

1.8.6 Payrolls

Prepare and submit correct Weekly Payrolls, including those of subcontractors. Incorrect and delinquent payrolls will delay processing of partial payment estimates.

1.8.7 Supply and Use of Electronic Software for Processing Wage Rate Requirements

a. Use a commercially-available electronic system to process and submit certified payrolls electronically to the Government is encouraged. The requirements for preparing, processing and providing certified labor payrolls are established by the Wage Rate Requirements statute.

b. If an electronic payroll processing system, then the Contractor is responsible for obtaining and providing for all access, licenses, and other services required to provide for receipt, processing, certifying, electronically transmitting to the Government, and storing

weekly payrolls and other data required to comply with the Wage Rate Requirements statute. If an electronic payroll system is used, the electronic payroll service must be used to prepare, process, and maintain the relevant payrolls and basic records during all work under this contract and the electronic payroll service shall be capable of preserving these payrolls and related basic records for the required three years after contract completion. If an electronic payroll system is not used, then the Contractor must obtain and provide electronic system access to the Government, over the duration of this Contract. The access must include electronic review access by the Government to the electronic payroll processing system used by the Contractor.

c. Provision and use of an electronic payroll processing system must meet the following basic functional criteria:

(1) commercially available;

(2) compliant with appropriate Wage Rate Requirements statute payroll provisions in the Federal Acquisition Regulation (FAR);

(3) able to accommodate the required numbers of employees for both the prime and all subcontractors planned to be employed under the contract;

(4) capable of producing electronic versions of weekly payroll data and capable of exporting weekly payroll records for uploading into the RMS CM) 3.0;

(5) demonstrated security of data and data entry rights;

(6) ability to identify erroneous entries and track the date/time of all versions of the certified Wage Rate Requirements statute payrolls submitted to the Government over the life of the contract and to make corrections prior to submission to the Government.

d. All incurred costs related to the provision and use of an electronic payroll processing service shall be included in the price for the overall work under the Contract. The costs for compliance with the Wage Rate Requirements statute by using electronic payroll processing services shall not be a separately bid or reimbursed item under this Contract.

1.8.8 Records

Maintain payroll and Employment Records during the course of work and for three years thereafter. They are subject to inspection by the CO and the U.S. Department of Labor.

1.8.9 Job Interviews

A Government representative will interview Contractor and subcontractor employees from time to time during working hours on the job.

1.9 VETERANS EMPLOYMENT EMPHASIS FOR U.S. ARMY CORPS OF ENGINEERS CONTRACTS

In addition to complying with the requirements outlined in FAR Part 22.13, FAR Provision 52.222-38, FAR Clause 52.222-35, FAR Clause 52.222-37, DFARS 222.13 and Department of Labor regulations, U.S. Army Corps of Engineers

(USACE) Contractors and subcontractors at all tiers are encouraged to promote the training and employment of U.S. veterans while performing under a USACE Contract. While no set-aside, evaluation preference, or incentive applies to the solicitation or performance under the resultant Contract, USACE Contractors are encouraged to seek out highly qualified veterans to perform services under this Contract. The following resources are available to assist USACE Contractors in their outreach efforts:

a. U.S. Department of Labor Veterans employment: www.vets.gov/

b. Federal veteran employment information: www.fedshirevets.gov/index.aspx

c. Veterans' Employment and Training Service (VETS): http://www.dol.gov/vets/

d. Veterans Opportunity to Work (VOW) Program: http://benefits.va.gov/vow/

e. Hiring Our Heroes initiative: www.uschamberfoundation.org/hiring-our-heroes

1.10 PARTNERING

a. The Government intends to encourage the foundation of a cohesive partnership with the Contractor and its subcontractors. This partnership will be structured to draw on the strengths of each organization to identify and achieve reciprocal goals. Among the objectives are effective and efficient Contract performance and are intended to achieve completion within budget, on schedule, and in accordance with the plans and specifications; and to develop a single cooperative management team focused on the success of the project to mutual benefit of all stakeholders. This partnership will be bilateral in makeup, and participation will be totally voluntary. Any cost associated with effectuating this partnership will be agreed to by both parties, and will be shared equally with no change to the Contract price. An integral aspect of partnering is the resolution of disputes in a timely, professional, and non-adversarial manner through the use of issue clarification and problem solving. Alternate Dispute Resolution (ADR) methodologies will be encouraged in place of the more formal dispute resolution procedures. ADR will assist in promoting and maintaining an amicable working relationship to preserve the partnership. ADR is a voluntary, non-binding procedure available for use by the parties to this Contract to resolve any dispute that may arise during performance.

b. Should the Contractor elect to participate in partnering, key on-site and home office management personnel will be required to attend a full day partnering session as directed by the Government with an outside facilitator. The cost of this facilitated session is anticipated to be around $5,000 and will be shared equally between the Contractor and the Government.

1.11 EQUIPMENT OWNERSHIP AND OPERATING EXPENSE SCHEDULE

a. This special contract requirement does not apply to terminations. See FAR Part 49.

b. Allowable cost for construction and marine plant and equipment in

sound workable condition owned or controlled and furnished by a contractor or subcontractor at any tier shall be based on actual cost data for each piece of equipment or groups of similar serial and series for which the Government can determine both ownership and operating costs from the contractor's accounting records. When both ownership and operating costs cannot be determined for any piece of equipment or groups of similar serial or series equipment from the contractor's accounting records, costs for that equipment shall be based upon the applicable provisions of EP 1110-1-8, Construction Equipment Ownership and Operating Expense Schedule, Region VIII. Working conditions shall be considered to be average for determining equipment rates using the schedule unless specified otherwise by the contracting officer. For equipment not included in the schedule, rates for comparable pieces of equipment may be used or a rate may be developed using the formula provided in the schedule. For forward pricing, the schedule in effect at the time of negotiations shall apply. For retroactive pricing, the schedule in effect at the time the work was performed shall apply.

c. Equipment rental costs are allowable, subject to the provisions of FAR 31.105(d)(ii) and FAR 31.205-36, Rental Costs. Rates for equipment rented from an organization under common control, lease-purchase arrangements, and sale-leaseback arrangements, will be determined using the schedule, except that actual rates will be used for equipment leased from an organization under common control that has an established practice of leasing the same or similar equipment to unaffiliated lessees.

d. When actual equipment costs are proposed and the total amount of the pricing action exceeds the SAT, the contracting officer shall request the contractor to submit either certified cost or pricing data, or partial/limited data, as appropriate. The data shall be submitted on Standard Form 1411, Contract Pricing Proposal Cover Sheet.

1.12 BASIS FOR SETTLEMENT OF PROPOSALS

a. Actual costs will be used to determine equipment costs for a settlement proposal submitted on the total cost basis.

b. In evaluating a termination settlement proposal using the total cost basis, the following principles will be applied to determine allowable equipment costs:

(1) Actual costs for each piece of equipment, or groups of similar serial or series equipment, need not be available in the contractor's accounting records to determine total actual equipment costs.

(2) If equipment costs have been allocated to a contract using predetermined rates, those charges will be adjusted to actual costs.

(3) Recorded job costs adjusted for unallowable expenses will be used to determine equipment operating expenses.

(4) Ownership costs (depreciation) will be determined using the contractor's depreciation schedule (subject to the provisions of Federal Acquisition Regulation (FAR) 31.205-11).

(5) License, taxes, storage and insurance costs are normally recovered as an indirect expense and unless the contractor charges these costs directly to contracts, they will be recovered through the indirect expense rate.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01 10 10.00 25

CONTRACTOR'S OPERATIONS AND REQUIREMENTS

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

-- End of Section Table of Contents --

SECTION 01 10 10.00 25

CONTRACTOR'S OPERATIONS AND REQUIREMENTS

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

This Section covers general requirements applicable to specific Contractor's operations and equipment.

1.2 REFERENCES

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

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1	(2024) Safety -- Safety and Health Requirements Manual
EP 310-1-6A	(2006) Sign Standards Manual, VOL 1

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)

AASHTO LRFD	(8th Edition; 2017) Bridge Design Specifications

U.S. ARMY (DA)

DA AR 25-2	(2007; RAR 2009) Information Assurance
DA AR 380-67	(1988; RAR 2011) Personnel Security Program

U.S. DEPARTMENT OF DEFENSE (DOD)

DoD 8570.01	(2004) Information Assurance Training, Certification, and Workforce Management
DoD 8570.01-M	(2012) Information Assurance Workforce Improvement Program

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. Submit the following in accordance with Section 01 33 00, SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Access Agreements and Work Areas; G

Security Procedures; G

Security Training; G

Temporary Electrical Wiring Plan; G

Contractor's Planned Equipment Methods; G

Plant and Equipment List; G

Loading Diagram; G

1.4 IN-WATER WORK

1.4.1 In-Water Work (IWW) Periods

The Government has established interim construction completion date, described as "in-water work periods," coinciding with the annual cycles of fish migration and related allowed maintenance periods. In general, this is a work period that allows for work in the water, on the water, and adjacent to the water where the work might affect fish passage (usually a 50-foot rule from the work site to the water). The IWW period established for this Contract is: 1 December through 28 February.

1.4.2 In-Water Work Activities

For purposes of this Contract, work items that must be restricted to the IWW period, along with further work restrictions, are described below:

a. All work involving barges or other floating plant.

b. All work in an active streambed.

1.5 INCLEMENT WEATHER CONSTRUCTION

The Contractor's schedule must reflect adverse weather days in all weather dependent activities as defined in Contract Clause 52.236-4, PHYSICAL DATA. Protect work areas from inclement weather, wind damage, and precipitation so that no delay in the prosecution of critical work items, or damage to Government property occurs. No time extensions will be authorized for materials, work in place, or equipment damaged due to negligence during periods of inclement weather.

1.6 WORK BY THE GOVERNMENT CONCURRENT WITH CONTRACTOR WORK

The Government will limit interference with the Contractor's work to the maximum reasonable extent and the Government and Contractor will coordinate as necessary.

1.6.1 Fish Ladder Entrances

All Contractor equipment shall be located between Bays 3 and 4 and Bays 11 and 12 for the north barrier structure and south barrier structure, respectively. Floating plant shall not be stationed near or block the flow from any operating Fish Ladder entrance.

1.6.2 Spillway Operations

During construction normal river flows shall be passed through the Powerhouse; however, emergency spills through the spillway may be required. Flow through the spillway will occur when the total river exceeds the Powerhouse capacity. All work must be completed with sufficient time to allow for cure time such that spill for juvenile fish passage which uses all 18 spillway bays can begin on April 10th.

a. Seasonal River Flows:

(1) A forced spill operation can occur during seasonal river flows when the capacity of the Powerhouse is exceeded and the balance of the flow shall be passed over the spillway. During the in-water work period (IWW) for this Contract, the expected Powerhouse hydraulic capacity at Bonneville Dam will range from 170 thousand cubic feet per second (kft3/s) to 215 kft3/s depending on unit availability. The following flows have statistically occurred between 1976 and 1999:

Month	December	January	February	March
Average (kft3/s)	159.0	175.0	150.0	160.0
Maximum (kft3/s)	340.0	379.0	245.0	295.0
Minimum (kft3/s)	76.0	75.2	110.0	90.0

(2) The goal is not to spill but it should be anticipated that spill will occur during this Contract. A daily coordination meeting will be required between the Contractor and the Government to forecast river conditions at 13:30 PST.

(3) Interim spill patterns will be developed to minimize hydraulic loads on equipment. The Contractor should plan on estimated velocities on the floating equipment to range from zero to 3 knots during the interim spill. The interim spill patterns will be adjusted as the Contractor moves equipment. The Contractor shall have no personnel on any floating plant in the spillway channel during spill, except for fish ladder attraction spill which occurs through Bays 1 and 18, approximately 1500 ft3/s per bay. The velocities in the work area are expected to range from zero to one knot with fish ladder attraction spill.

b. High Season River Flows and Emergency Condition:

(1) If during this Contract, a requirement arises for the Bonneville Project to execute an emergency spill, the Contractor will be immediately notified by the Government of this emergency spill requirement. The Contractor shall immediately cease work and evacuate all personnel only (i.e. no equipment) from the Spillway BRZ. The Bonneville Operators plan is to start spill after 10 MINUTES from the Contractor notification. The Government

will be in communication with the Contractor during evacuation. The evacuation locations can be to the Navigation Lock Downstream Dock Area (most preferable) or downstream of the Project outer BRZ (less preferable) or the Powerhouse 2 BRZ area around the north downstream end of Cascade Island (least preferable).

(2) If during this Contract a planned or directed spill is scheduled, the Contractor will be given notice by the Government and will have a minimum of 24 hours to evacuate personnel and equipment.

1.6.3 Stage Duration Curves

Tailwater stage duration curves are provided as Attachment A7. The curves provide information regarding water surface elevation exceedances for the period of time indicated. The stage (water surface elevation) is based on historical information and is based on historical operations of Bonneville Project.

1.6.4 Columbia River Flows at Bonneville Lock and Dam

The Columbia River at Bonneville Lock and Dam is a run of the river project and conditions are not controlled or set by specific operations or manipulations of the series of dams on the Columbia River. Flow conditions are dynamic but coordination with RCC/BPA will provide flow forecasting. Due to power peaking and biological operational constraints there is significant fluctuation in project discharge and resulting tailwater in any 24 hours. Discharge will typically vary 50 to 60 Kcfs in 24 hours but can vary as much as 120 Kcfs. Flows are generally lower and flatter on the weekends and holidays due to lower power demands. The tailwater will typically vary 4 to 5 feet, generally less on weekends and holidays, but can very as much as 3 feet per hour and 12 feet in 24 hours during the in-water-work period for this Contract.

1.7 WEEKLY COORDINATION MEETINGS

Weekly coordination meetings must be held between the Contractor and the Government. Meetings should be attended by a representative of the NWD Reservoir Control Center (RCC) to coordinate spillway operations during construction. This meeting will be used to discuss Contractor's safety, Quality Control Program, joint risk management, submittals, deficiencies, Contract administration, schedule, actual progress in the last week, and work planned in the upcoming two weeks. Any work requiring Project support or potential impacts to Project operations or maintenance must be noted. During the Preconstruction Meeting, the Government will determine responsibility of running this meeting. If the Government elects to run the coordination meeting, the Contractor must provide a two week look ahead, with the previous week progress, 48 hours before each weekly meeting to the Government representative. The responsible party must prepare and distribute, by e-mail, the coordination meeting agenda with a two week look ahead no later than 24 hours before each meeting. A meeting time and place will be mutually agreed upon for the same time each week. Distribute weekly coordination meeting minutes no later than the close of business the next business day.

1.8 CONTRACTOR EMPLOYEES

Ensure that all employees are capable of demonstrating adequate knowledge

of tools, supplies, equipment, and techniques necessary to competently perform the work. All personnel employed by the Contractor must be fully qualified in their respective fields to render the services necessary. The Government may require the Contractor to discontinue using any employee in the performance of the work specified in this Contract determined by the Government to be unsatisfactory. Contractor employees will not be permitted to bring guests, family members, or non-employees to the job site at any time.

1.9 ACCESS AGREEMENTS AND WORK AREAS

1.9.1 Access Agreements

a. Submit access procedures to and from the work site after the Contractor, the CO, and the Project's Representative have coordinated and determined the most advantageous access to, and staging of, the Contractor's assets deployed to the work site.

b. The right-of-way for the work (or delivery site) and access thereto will be furnished as stated in this Paragraph subject to mutual agreement between the Contractor and the Government concerning the specific route the Contractor is to use. Such mutual agreement must be reached prior to initiation, construction, or delivery.

c. The existing access roadway and any associated access roads on the Project, must not be closed as a result of construction or delivery activities associated with this Contract unless previously coordinated and approved by the Government. Traffic delays will only be permitted in accordance with the provisions of this Section.

d. When necessary to operate on or to cross existing highways or roads, all necessary permits must be obtained from the appropriate private or public authority.

e. In accordance with Contract Clause 52.236-13 Alt I, ACCIDENT PREVENTION - ALTERNATE I, and EM 385-1-1, flaggers, signs, lights, and/or other safeguards must be provided to safely control and direct the flow of traffic when necessary for equipment to operate on or to cross access roads, arterial roads, or highways.

f. Spillage on Project roads and state or county roads will not be permitted, and the spillage must be immediately cleaned up at the expense of the Contractor.

g. No cleated or crawler-type equipment can be operated on paved surfaces.

h. Damage to all roads caused by the Contractor's operations must be repaired to pre-existing conditions at the expense of the Contractor.

i. Photograph the existing condition of all staging areas prior to mobilization and submit all photographs in the Access Agreements submittal. Failure to properly document existing conditions will result in a Government determination of necessary repairs.

1.9.2 Work Areas

a. Drawings showing the layout of the area proposed for use must be submitted for review and approval and comply with Contract Clause 52.236-10 OPERATIONS AND STORAGE AREAS. The drawing(s) must show the location of the principal components: offices, access roads, parking, storage facilities and disposal areas, which the Contractor proposes to construct within the designated limits.

b. Only Contractor and subcontractor parts trailers and lunch trailers may be allowed in the Contractor work areas and these must be subject to CO and Project approval. All Contractor and subcontractor trailers are required to be adequately and physically anchored to prevent overturning due to high winds.

c. Should additional working space or lands within the Government right-of-way be required for material yards, job offices, or other purposes obtain prior Government approval in writing. When directed at any time during the progress of the work when space is needed within the right-of-way for other purposes, any part of the grounds that have been in use must be promptly vacated and cleaned up. However, it is not the intent to require the Contractor's plant or material to be removed from an area while such plant, material, or area is still being actively used.

d. The Project staff will brief the Contractor on security procedures. Any such procedures will not be the basis for claims for additional money or time. The Project areas off limits to Contractor personnel will also be designated.

1.9.3 Employee Access and Parking

Contractor's employee private vehicle parking areas must be restricted to the area as agreed upon before construction or delivery. All Contractor vehicles used for prosecuting the work must have a Contractor sign or other permanent identification and must carry the required insurance. Private vehicles not owned by the Prime Contractor or subcontractors must not be used for prosecuting the work. Private vehicles of the Contractor and its employees must enter and leave the project as directed. Keep the parking areas free of litter and debris. An adequate number and size of trash receptacles must be placed in the parking areas and emptied, as necessary to avoid overflowing. Trash receptacles must be adequately secured to provide protection from the wind and animals.

1.9.4 Avian Carrier Line Removal and Replacement

The Contractor shall coordinate through the Contract Officer's Representative for avian carrier line removal and replacement. The Contractor shall be responsible for towing and securing the carrier line to the Washington shore for the duration of the work.

1.10 SECURITY PROCEDURES

1.10.1 Project Security

a. The Bonneville Project is open to the public during daylight hours. After dusk the outer security gates are locked and unmanned. Several internal gates are locked at all times, to prevent visitors from entering non-public areas. After passing through any gate that is locked and unattended, all personnel are required to wait for the gate

to close before proceeding. Notify the Control Room if the gate fails to close.

b. Arrangement and scheduling of working hours and crews must be coordinated through the CO with the Project Staff. The working hours of the Project Staff are Mondays through Thursdays from 6:30 a.m. until 5:00 p.m. Fridays are non-working days. Working hours that extend past 5:00 p.m. weekdays or on weekends and holidays must be coordinated through the CO. Submit the intended working hours of staff on site and identify any employees working in any capacity in accordance with Subparagraph IDENTIFICATION OF EMPLOYEES.

c. Security of the Contractor's property and items furnished under this Contract, until the Government accepts items, are the Contractor's responsibility.

d. All Contractor personnel, subcontractor personnel, suppliers, etc. must comply with the Project's security policies.

(1) Access to the Contractor's work areas will be available from the highway gate closest to the work area: I-84 for work at Powerhouse 1 or on the Oregon shore, Washington SR14 via Dam Access Road for work at Powerhouse 2 or on the Washington shore.

(2) The nearest access points to cross the Columbia River are the Bridge of the Gods in Cascade Locks (toll bridge, 4 miles east) and the I-205 bridge in Portland (45 miles west).

(3) The Contractor must escort all deliveries from the guard gate to the delivery site and back. For all deliveries going to either Powerhouse, the driver must obtain an Escorted Visitor badge, and the escort must be a person who is authorized for unescorted Powerhouse access.

e. Salespersons, personnel seeking employment, and personal visitors are not authorized to enter non-public areas of the Project.

f. Signs may be erected outside the project containing instructions for personnel seeking the Contractor. The content and location of the signs will be approved by the CO prior to erection. Posts or other means of support, if required, must be provided by the Contractor and removed when the Contract is completed. Any open post holes must be suitably backfilled, prior to the end of the shift in which posts are removed, and any other damage must be repaired to preconstruction conditions.

1.10.2 Contractor's General Personnel

Prepare an organizational chart and revise whatever organizational changes occur. Maintain a complete organizational chart of all positions that will be working on the project.

1.10.3 Verification of Employment Eligibility

The Contractor is responsible to pre-screen Contractor and subcontractor personnel using the E-Verify Program at http://www.uscis.gov/E-verify to

meet the established employment eligibility requirements. Two valid forms of Government issued identification will be required per individual to ensure the correct information is entered into the E-verify system. Submit a roster of Contractor and subcontractor personnel with verified or eligible employment eligibility to the CO within three days of Notice to Proceed.

1.10.4 Identification of Employees

a. Submit a complete, dated and signed, list of all Contractor and subcontractor personnel and their titles who will be working on the project at the Weekly Coordination Meeting. This listing must be revised and resubmitted when personnel changes occur.

b. Each person requiring access for this Contract must obtain Government-prescribed ID/access cards (and keys if applicable) from the Project security office. Submit a Project-approved access request form and all accompanying documents to the Project security office not less than one week prior to the date when access is needed for any employee requiring access. For Contracts requiring access for more than 10 employees starting in the same week, provide all documents not less than two weeks prior to the date when access is required.

c. Return of Government-prescribed cards/keys:

(1) Notify the Project security office immediately in the event of a termination for cause, reassignment, or a lost or stolen security item.

(2) Within 24 hours of personnel changes or the release of any employee and within seven days of the end of construction completion or termination of Contract, collect and return all Government-prescribed cards/keys to the Project Security Office. Failure to return any Government-prescribed cards or keys will result in a $5000 per item charge to the Contractor and may delay final payment. These fees will be deducted from the Contractor's monthly payment at no additional cost to the Government.

(3) Contractor personnel who will be on site intermittently (less than once per week) must return their security items to the Project security office for safekeeping when offsite.

d. Personnel Identity Verification (PIV) - All personnel, including visitors, must provide positive verification of individual identity, in the form of a valid Government-issued photo ID prior to being granted access to non-public areas. Driver licenses that do not comply with the REAL ID Act of 2005 cannot be used as the sole source for identity proofing, and a second form of photo ID will be required. For details and current information, see the Department of Homeland Security website https://www.dhs.gov/secure-drivers-licenses.

e. Personally Identifiable Information (PII) - Encrypt or password protect all transmissions containing PII must be encrypted or the document(s) containing PII must be encrypted or password protected. Send all documents containing PII ll directly to the Project RCC and/or Security Specialist.

1.10.5 Non-US Citizens

Submit a scanned legible color copy of the Permanent Resident Card and passport to the CO of all personnel who are non-US citizens working on this Contract. If a passport is not available, a minimum of a seven year criminal background check with the state patrol office must be performed from all states of residence and employment, for the past seven years must be submitted. The CO will provide the Portland District Security Office the submitted copies at least one month (30 calendar days) in advance of the start of work by the employees. Contractor personnel who are non-US citizens will not be permitted access to the Project until the Foreign Visitor Authorization is received from U.S. Army Corps of Engineers Headquarters. Contractor personnel who are non-US citizens will not be permitted to work on the Contract at all until Foreign Visitor Authorization is received.

1.10.6 Identification of Contractor Vehicles

a. Each Contractor vehicle must display a Government-furnished Project parking tag at all times while on the Project. Obtain the parking tags from the Project security office.

b. Obtaining parking tags for each Contractor vehicle prior to its use on site, and requiring each vehicle engaged in the work to display such identification, is the responsibility of the Contractor.

c. Immediately return all Government-furnished Project parking tags to the Government for cancellation upon permanent removal of any Contractor vehicle from the Project. Failure to return any Government-furnished parking tag will result in a charge of $250 per item to the Contractor and may delay final payment. This fee will be deducted from the Contractor's monthly payment at no additional cost to the Government.

1.11 SECURITY TRAINING

Costs associated with the following execution of training and verification requirements must be at the expense of the Contractor. Facilitate the following training and submit the following:

a. AT Level 1 Training - Thirty calendar days prior to mobilization, all Contractor employees, to include subcontractor employees, requiring access to army installations, facilities, and controlled access areas must complete AT Level 1 Training. Submit a roster of training completion for each Contractor employee and subcontractor employee to the CO within five calendar days after completion of training of all employees and subcontractor personnel. Obtain training DVD from the CO through the Portland District Security Office. (Estimated training time is ten minutes per individual).

b. iWATCH or CorpsWatch Training - Thirty calendar days prior to mobilization, all Contractor employees, to include subcontractor employees, requiring access to army installations, facilities, and controlled access areas must complete iWatch or CorpsWatch Training. Submit a roster of training completion for each Contractor employee and subcontractor employee to the CO within five calendar days after completion of training of all employees and subcontractor personnel. Obtain training DVD from the CO through the Portland District Security Office. (Estimated training time is five minutes per individual).

c. Operations Security (OPSEC) Training - Thirty calendar days prior to mobilization, all Contractor employees, to include subcontractor employees, requiring access to army installations, facilities, and controlled access areas must complete OPSEC Training. Submit a roster of training completion for each Contractor employee and subcontractor employee to the CO within five calendar days after completion of training of all employees and subcontractor personnel. Obtain training DVD from the CO through the Portland District Security Office. (Estimated training time is 15 minutes per individual).

d. Access to Government Information Systems - Register all Contractor, to include subcontractor, employees with access to a Government info system in the ATCTS (Army Training Certification Tracking System) at commencement of services. Each employee and Contractor personnel must complete the following items prior to access to the information systems and annually thereafter in accordance with DA AR 380-67 (Personnel Security Program) and Homeland Security Presidential Directive 12 (Policy for a Common Identification Standard for Federal Employees and Contractors).

(1) Obtain written permission from the Project.

(2) A minimum of seven days prior to engaging in work submit, to the CO or Project POC, a Personnel Risk Assessment (PRA) for each employee.

(a) Have a PRA performed which includes a personnel identity verification and local agency criminal check for the prior seven years. A minimum of a seven-year criminal background check with the state patrol office must be performed from all states of residence and employment, for the past seven years.

(b) Identity Verification - Contractor employees must provide positive verification of individual identity prior to authorized unescorted access to the Powerhouse. Acceptable forms of identity verification are documents issued by a Federal Government agency that include: the individual's photograph, name, and date of birth, such as a passport or military identification (ID) card. Additionally, a state issued driver's license or ID card is acceptable for identity verification.

e. Information Assurance/Information Technology Training and Certification - For Contractor, to include subcontractor, employees who need network access and/or working IA/IT functions, complete the following items and submit completion certificate to CO prior to issuance of network access and annually thereafter. All Contractor employees working IA/IT functions must comply with DoD and Army training requirements in DoD 8570.01, DoD 8570.01-M, Contract Clause 252.239-7001, Information Assurance Contractor Training and Certification, and DA AR 25-2 within six months of employment.

(1) Obtain written permission from the Project.

(2) A minimum of seven days prior to engaging in work submit, to the CO or Project POC, a Personnel Risk Assessment (PRA) for each employee.

(a) Have a PRA performed which includes a personnel identity verification and local agency criminal check for the prior seven years. A minimum of a seven-year criminal background checkwith the state patrol office must be performed from all states of residence and employment, for the past seven years.

(b) Identity Verification - Contractor employees must provide positive verification of individual identity prior to authorized unescorted access to the Powerhouse. Acceptable forms of identity verification are documents issued by a Federal Government agency that include: the individual's photograph, name, and date of birth, such as a passport or military identification (ID) card. Additionally, a state issued driver's license or ID card is acceptable for identity verification.

(3) Take the NERC CIP Training for Cyber Access. The NERC CIP training covers the proper use and access controls for the Generic Data Acquisition and Control System (GDACS), and the procedures that have been implemented to safeguard GDACS at the Project. The Project Security Officer or CO will furnish the training curriculum, materials, and supplies. A minimum of seven days prior to engaging in work, submit a complete, signed and dated, listing of all personnel who have successfully completed the annual NERC Mandated Cyber Infrastructure Protection Training.

1.12 DECK ACCESS RESTRICTIONS

Do not block operational areas of the deck gantry crane at any time. With prior coordination and approval, the deck gantry crane may be blocked for a period no longer than four hours. One lane of traffic must be left open at all times.

1.13 CONSTRUCTION PROJECT IDENTIFICATION SIGN

Fabricate and install one construction project identification sign in accordance with EP 310-1-6A, Attachment A3, within three days of beginning site work.

1.14 UTILITIES

Provide utilities required for the performance of work under this Contract, except Government-furnished electrical power, and water as described below.

1.14.1 Sanitary Facilities

Use of the Project restroom by Contractor personnel will not be permitted. Provide portable, temporary sanitary facilities in accordance with EM 385-1-1.

1.14.2 Electrical Power

1.14.2.1 General

Government-furnished or public utility electrical power is not available for the Contractor's use.

1.14.2.2 Temporary Electrical Wiring

Submit a Temporary Electrical Wiring Plan for temporary electrical wiring. Install all temporary electrical wiring in accordance with EM 385-1-1 and as approved. All temporary electrical wiring must be removed prior to completion of the Contract. Include load calculations to ensure conduit capacity is not exceeded.

1.15 CONTRACTOR'S EQUIPMENT

1.15.1 Contractor's Planned Equipment Methods

Submit proposed methods of transportation and operation of cranes and other heavy equipment for approval prior to commencement of those operations. Submittals must include the type, size, loadings of equipment, placement of outriggers, and the proposed transportation routes and work areas to be used on the project. Operation of heavy equipment adjacent to existing structures must be avoided when possible. Testing requirements and operation of cranes and other heavy equipment must be in accordance with EM 385-1-1. All cranes, rigging, lifts, operators, vehicles, and other necessary means to move equipment or items must be Contractor-furnished as required to pursue and complete the work and must comply with EM 385-1-1.

1.15.2 Plant and Equipment List

Within seven days prior to commencing site operations, provide a complete list of all plant and equipment to be used on the job site, exclusive of shop equipment. Throughout the life of the Contract, submit an up-to-date plant and equipment list with each progress payment request. Include rented equipment as well as lease purchase or sale leaseback equipment on the lists. Initial list and the revised monthly lists must indicate dates equipment is assigned to or removed from the project; deadline dates for repairs and returned for use; dates of the most recent and planned inspections; and adequate identification or description of each item of equipment including manufacturer's name (abbreviated), model number, manufacturer's serial number, year of manufacture, and Contractor's assigned serial or record number.

1.15.3 Movement of Equipment by the Contractor

a. Unless otherwise noted, any vehicle crossing a project bridge is limited to AASHTO LRFD, HL-93 vehicle and load requirements. Submit a loading diagram for approval showing wheel loads, wheel spacing, and travel speed a minimum of 30 days prior to operating any equipment or vehicles whose loading conditions are in excess of a HL-93 vehicle. Prior coordination and approval for such loads must be obtained before proceeding. No exclusion trucks, multi-axle specialized hauling vehicles (SHV) or mobile cranes will be allowed on a bridge deck without prior review and approval. At a minimum, the loading diagram must include but not be limited to the following information:

(1) A typical section and plan view of the bridge, the position of the wheel loads and wheel spacing of the truck or crane.

(2) The GVW of the vehicle and all axle weights.

(3) For cranes, the location and weight of axles before and after

counter weights are installed, all outrigger loads, required crane boom length, weight and location of center of gravity. This should also include the effects of guy lines, upper spreader and jib mast. If using a jib, show the length, weight, and location of the center of gravity.

b. Any SHV's authorized to drive on the bridge deck must have all lift axles lowered and fully engaged while the vehicle has any load. For cranes, all specialized boom trailers must be engaged until a final set up with the outriggers are made and approved.

1.16 CONTRACTOR USE OF GOVERNMENT CRANES

Use of Government cranes for any work or access is not allowed. Use Contractor-furnished equipment to facilitate installation or handling of items and equipment for this Contract.

1.17 DAMAGED EQUIPMENT OR ABNORMAL CONDITIONS

Inform the CO immediately upon finding any damaged equipment or other abnormal conditions involving additional work in which the Contractor believes it has no responsibility. The failure or abnormality must not be disturbed until witnessed by the CO. Prior to proceeding further with work, the Contractor and the Government must agree in writing as to the responsibility for the damage or abnormality. Any damage or abnormal conditions not reported as specified above must also be corrected.

1.18 USE OF EXPLOSIVES

Use of explosives will not be permitted.

1.19 DAILY CLEANUP AND DISPOSAL

Keep all work areas reasonably neat on a daily basis. Collect, remove, and dispose of all debris resulting from the work, such as waste metalwork, packing cases, scrap lumber, and other debris off-site at least once per week. Do not use the Government's trash cans, dump boxes, and other containers. Do not dispose of liquid waste in Project drains. All costs of removing debris must be incidental to the work and therefore no separate payment will be made.

1.20 DISPOSAL OF EQUIPMENT AND MISCELLANEOUS MATERIALS

Title to all materials and equipment to be disposed of, excepting materials salvaged for the Government, will be vested in the Contractor when beginning disassembly work or when such materials and equipment are designated as scrap. The Government will not be responsible for the condition, loss, or damage to such property after title transfer. The Contractor may retain these items in usable form and take possession of them providing that there is no subsequent cost or inconvenience to the Government. The Government does not guarantee that these items are complete or in working order and the Contractor must assume responsibility for any damages caused by their use immediately upon taking possession of them.

1.21 PROTECTION OF MATERIAL AND WORK

All materials, supplies, tools, equipment and Government property (including all tools, equipment, and special devices supplied by the Contractor and to be turned over to the Government at the end of the Contract) must at all times be protected and preserved in an approved manner. If material, equipment, supplies, and work performed are not adequately protected, such property may be protected by the Government and the cost thereof will be charged to the Contractor or deducted from any payment due.

1.22 PROTECTION OF EXISTING UTILITIES

Protect existing utilities in accordance with Contract Clause 52.236-9, PROTECTION OF EXISTING VEGETATION, STRUCTURES, EQUIPMENT, UTILITIES, AND IMPROVEMENTS. Repairs must be made immediately and at Contractor's expense.

1.23 PROTECTION AND RESTORATION OF EXISTING FACILITIES

Protect all existing facilities whether or not shown on the drawings or referenced in the specifications. Upon completion of the work, all the existing facilities, not included as a portion of the work, must be left in a condition equal to the original condition prior to the Contract. Costs for repair and restoration of any facilities must be considered to be incidental to the work and included in the Contract price.

1.24 RESTORATION OF PROJECT ROADS

Project roads used for construction access will be evaluated and must be restored to their original condition by the Contractor as required. Repair and restoration must be made at the expense of the Contractor.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01 11 00

SUMMARY OF WORK

-- End of Section Table of Contents --

SECTION 01 11 00

SUMMARY OF WORK

PART 1 GENERAL

1.1 WORK COVERED BY CONTRACT DOCUMENTS

1.1.1 Project Description

The work includes construction of two concrete stuctural barriers on the north and south portions of the spillway apron. The purpose of the structural barriers is to prevent migration of rock debris from reaching the stilling basin and damaging the existing concrete.

1.1.2 Location

The work is located at the Bonneville Dam spillway apron, as shown in the Contract Drawings.

1.2 EXISTING WORK

In addition to FAR 52.236-9 Protection of Existing Vegetation, Structures, Equipment, Utilities, and Improvements:

a. Remove or alter existing work in such a manner as to prevent injury or damage to any portions of the existing work which remain.

b. Repair or replace portions of existing work which have been altered during construction operations to match existing or adjoining work, as approved by the Contracting Officer. At the completion of operations, existing work must be in a condition equal to or better than that which existed before new work started.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01 22 00.00 25

MEASUREMENT AND PAYMENT

-- End of Section Table of Contents --

SECTION 01 22 00.00 25

MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.1 GENERAL INFORMATION

In each instance, the Contract price for an item will constitute full compensation as herein specified, as shown, or as otherwise approved. The Contract price and payment will also constitute full compensation for all work incidental to completion of the item, unless such work is otherwise specifically mentioned for separate payment under another line item. In the event any work is required by the specifications Sections or by the Drawings and not specifically mentioned in the Paragraphs MEASUREMENT and PAYMENT, separate or direct payment will not be made and all costs thereof are incidental to the work and included in the Contract prices and payments for all Contract Line Item Numbers (CLIN) listed in the price schedule.

1.2 UNIT PRICE PAYMENT ITEMS

Payment items for the work of this Contract on which the Contract unit price payments will be made are listed in Section 00 10 00, PRICE SCHEDULE, and described below. The unit price and payment made for each item listed will constitute full compensation for furnishing all plant, labor, materials, and equipment; performing all associated Contractor quality control, environmental protection, commissioning, preparation of working as-built drawing redlines, O&M manuals, tests and reports, meeting safety requirements; and for performing all work required for each of the unit price items.

1.3 JOB PAYMENT ITEMS

Payment items for the work of this Contract for which Contract job payments will be made are listed in Section 00 10 00, PRICE SCHEDULE, and described below. All costs for items of work, which are not specifically mentioned to be included in a particular job item, must be included in the listed job item most closely associated with the work involved. The job price and payment made for each item listed will constitute full compensation for furnishing all plant, labor, materials, and equipment; performing all associated Contractor quality control, environmental protection, commissioning, preparation of working as-built drawing redlines, O&M manuals, tests and reports, meeting safety requirements; and for performing all work required for which separate payment is not otherwise provided. Provide a schedule of values for job items prior to the first pay request. Update with each subsequent payment request.

MANDATORY ITEMS

1.4 MEASUREMENT AND PAYMENT

1.4.1 Mobilization and Demobilization, CLIN 0001

a. Measurement: Measurement will be made as a job for mobilizing and demobilizing all plant, equipment, fuel, supplies, materials, and

personnel to and from the job site. This Contract Line Item Number (CLIN) applies to the Prime Contractor and all subcontractor mobilization and demobilization.

b. Payment: Payment will be made at the Contract amount under CLIN 0001 as stated in Contract Clause 252.236-7004, PAYMENT FOR MOBILIZATION AND DEMOBILIZATION (Dec 1991). Submit a schedule of mobilization and demobilization costs prior to submitting the first request for payment.

1.4.2 North Barrier Structure, CLIN 0002

a. Measurement: Measurement will be made as a job for construction of the north barrier. North barrier construciton work is to include all necessary work required for construction of the formwork, plant, equipment, fuel, supplies, materials, and personnel necessary to construct the north barrier. This CLIN applies to the Prime Contractor and all subcontractor north barrier construction activities.

b. Payment: Payment will be made at the Contract amount under CLIN 0002.

1.4.3 South Barrier, CLIN 0003

a. Measurement: Measurement will be made as a job for construction of the south barrier. South barrier construciton work is to include all necessary work required for construction of the formwork, plant, equipment, fuel, supplies, materials, and personnel necessary to construct the south barrier. This CLIN applies to the Prime Contractor and all subcontractor south barrier construction activities.

b. Payment: Payment will be made at the Contract amount under CLIN 0003.

OPTIONAL ITEMS

1.4.4 Rock Removal From Stilling Basin (Optional), CLIN 004

a. Measurement: Measurement and payment for this bid item will be considered complete and full compensation for the effort and cost to remove all material greater than three inches in diameter from the identified locations on the Contract drawings in accordance with Section 35 20 23.00 82, DREDGING AND CHANNEL CLEARING, including water quality monitoring, and will be paid at the Contract unit price (tons of dredged material) for this item.

b. Payment: Payment will be made at the Contract amount under CLIN 004.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01 32 01.00 25

PROJECT SCHEDULE

-- End of Section Table of Contents --

SECTION 01 32 01.00 25

PROJECT SCHEDULE

PART 1 GENERAL

1.1 REFERENCES

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

U.S. ARMY CORPS OF ENGINEERS (USACE)

ER 1-1-11 (2017) Administration -- Project Schedules

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. Submit the following in accordance with Section 01 33 00, SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Initial Schedule; G ECCC

1.3 QUALITY CONTROL

Designate an authorized representative who must be responsible for the preparation of the schedule and all required updating (activity status) and preparation of reports. The authorized representative must be experienced in scheduling projects similar in nature and complexity to this project and must be experienced in the use of the scheduling software that meets the requirements of this specification.

1.4 GENERAL REQUIREMENTS

a. Prepare for approval a Project Schedule, as described herein, pursuant to Contract Clause 52.236-15, SCHEDULES FOR CONSTRUCTION CONTRACTS. Show in the schedule the sequence in which the Contractor proposes to perform the work and dates on which the Contractor contemplates starting and completing all schedule activities. The scheduling of the entire project is required. Scheduling of construction are the responsibility of the Contractor. Contractor management personnel must actively participate in its development. Subcontractors and suppliers working on the project must also contribute in developing and maintaining an accurate Project Schedule. Coordinate with other Contractor's work at or near the site of the work under this Contract in accordance with Contract Clause 52.236-8, OTHER CONTRACTS.

b. The approved Project Schedule must be used to measure the progress of the work, to aid in evaluating time extensions, and to provide the basis of all progress payments.

1.5 BASIS FOR PAYMENT AND COST LOADING

Use the schedule as the basis for determining Contract earnings during each update period and therefore the amount of each progress payment. Lack of an approved schedule update, or qualified scheduling personnel, will result in the inability of the Contracting Officer (CO) to evaluate Contractor's progress for the purposes of payment. Failure of the Contractor to provide all required information will result in the disapproval of the initial and subsequent schedule updates. In the event schedule revisions have been directed by the CO and those revisions have not been included in subsequent revisions or updates, the CO may hold retainage up to the maximum allowed by Contract, each payment period, until such revisions to the Project Schedule have been made. Activity cost loading must be reasonable, as determined by the CO. The aggregate value of all activities coded to a Contract Line Item Number (CLIN) must equal the value of the CLIN on the Schedule.

1.6 SOFTWARE REQUIREMENTS

The schedule must be compatible with Primavera P6 Professional v16.2.

1.6.1 Critical Path Method

Use the Critical Path Method (CPM) of network calculation to generate the Project Schedule. Prepare the Project Schedule using the Precedence Diagram Method (PDM).

1.6.2 Milestones

Include milestone activities for each significant project event including but not limited to: Notice to Proceed (NTP), milestone activities for each fast track design package released for construction, design complete, contractually required work windows, construction complete, and Contract complete.

1.6.3 Level of Detail Required

Include an appropriate level of detail in the Project Schedule. Failure to develop or update the Project Schedule or provide data at the appropriate level of detail, as determined by the CO, will result in its disapproval. The CO will consider, but is not limited to, the following characteristics and requirements to determine the appropriate level of detail:

1.6.3.1 Activity Durations

Submissions must follow the direction of the CO regarding reasonable activity durations. Reasonable durations are those that allow the progress of activities to be accurately determined between payment periods. Procurement activities are defined herein. Less than two percent of all non-procurement activities must have Original Durations (OD) greater than 20 work days or 30 calendar days.

1.6.3.2 Procurement Activities

Include activities associated with the submittal, approval, procurement, fabrication and delivery of long lead materials, equipment, fabricated assemblies, and supplies. Long lead materials and equipment are those materials that have a procurement cycle of over 90 calendar days. A

typical procurement sequence includes the string of activities: submit, approve, procure, fabricate, and deliver.

1.6.3.3 Critical Activities

The following must be included and properly scheduled:

a. Submission and approval of O&M manuals.

b. Submission and approval of Record (As-built) drawings.

c. Submission and approval of all required testing and commissioning (i.e. systems, fire protection, TAB, and HVAC).

d. Testing and commissioning (i.e. systems, fire protection, TAB, and HVAC).

e. Contractor's punch-out inspection.

f. Correction of punchlist from Contractor's punch-out inspection.

g. Government's pre-final inspection.

h. Correction of punch list from Government's pre-final inspection.

i. Final acceptance inspection.

1.6.3.4 Government Activities

Government and other agency activities that could impact progress must be shown. These activities include, but are not limited to: submittal reviews, approvals, environmental permit approvals, inspections, lockout/tagout procedures, utility tie-in, Government-Furnished Equipment (GFE), and NTP for phasing requirements.

1.6.3.5 Responsibility

Identify all activities in the Project Schedule by the party responsible to perform the work. Responsibility includes, but is not limited to: the subcontractor, the Prime Contractor, or Government agency performing a given task. The responsible party for each activity must be identified by the Responsibility Code. Activities must not have more than one Responsibility Code.

1.6.3.6 Work Areas

Identify all activities in the Project Schedule by the work area in which the activity occurs. Activities must not be allowed to cover more than one work area. Define work areas based on resource constraints or space constraints that would preclude a resource, such as a particular trade or craft work crew, from working in more than one work area at a time due to restraints on resources or space. The work area of each activity must be identified by the Work Area Code and activities must not have more than one Work Area Code.

1.6.3.7 Contract Line Item Number (CLIN)

Code all activities to the CLIN on the Contract Line Item Schedule to which the activity belongs. CLIN Item code all activities, even when an

activity is not cost loaded. An activity must not contain more than one CLIN Item Code.

1.6.3.8 Phase of Work

Identify all activities in the Project Schedule by the phase of work in which the activity occurs. Code construction phases proposed by the Contractor to allow filtering and organizing the schedule by construction packages. Activities must not contain work in more than one phase of work. Each activity must be identified with a single project phase and have only one Phase of Work code.

1.6.3.9 Category of Work

Assign a Category of Work Code to all Activities based upon the category of work to which the activity belongs. Category of work refers, but is not limited, to the procurement chain of activities including such items as construction submittals, approvals, procurement, fabrication, delivery, weather sensitive installation, non-weather sensitive installation, start-up, and testing. Assign a Category of Work Code to each activity. Each activity must have only one Category of Work Code.

1.6.3.10 Definable Features of Work

Assign a Definable Feature of Work Code to appropriate activities based on the definable feature of work to which the activity belongs. Definable Feature of Work is defined in Specification Section 01 45 00.00 25, QUALITY CONTROL. An activity must not have more than one Definable Feature of Work Code. Not all activities are required to be Definable Feature of Work Coded.

1.6.3.11 Modification or Claim Number

Assign an Activity code to any activity or sequence of activities added to the schedule as a result of a Contract Modification, when approved by the CO. Any activity that is added or changed by Contract modification or used to justify claimed time must be identified by a Mod or Claim Number that changed the activity. Activities must not belong to more than one modification or claim item. Approval to add these activities does not necessarily mean the Government accepts responsibility and, therefore, liability for such activities and any associated impacts to the schedule, but rather the Government recognizes such activities are appropriately added to the schedule for the purposes of maintaining a realistic and meaningful schedule. Such activities must not be Responsibility Coded to the Government unless approved. Existing activities must not normally be changed to reflect modifications.

1.6.4 Scheduled Project Completion and Activity Calendars

The schedule interval must extend from NTP date to the required final physical completion and Contract end dates. The Contract completion activity (End Project) must finish based on the required Contract duration in the accepted Contract proposal, as adjusted for any approved Contract time extensions. The first scheduled work period must be the day after NTP is received by the Contractor. Schedule activities on a calendar to which the activity logically belongs. Activities may be assigned to a seven-day calendar when the Contract assigns calendar day durations for the activity such as a Government Acceptance activity. If the Contractor intends to perform physical work less than seven days per week, schedule

the associated activities on a calendar with non-work periods identified including weekends and holidays. Assign the Category of Work Code - Weather Sensitive Installation to those activities that are weather sensitive. Original durations must account for anticipated normal adverse weather. The Government will interpret all work periods not identified as non-work periods on each calendar as meaning the Contractor intends to perform work during those periods.

1.6.4.1 Project Start Date

Start the schedule no earlier than the date on which the NTP was acknowledged. Include as the first activity in the Project Schedule an activity called "Start Project." The "Start Project" activity must have an early start "ES" constraint date, equal to the date that the NTP was acknowledged, and a zero-day duration.

1.6.4.2 Constraint of Last Activity

Completion of the last physical activity in the schedule must be constrained by final construction physical completion date. Submission and acceptance of the last transmittal in the schedule must be constrained by the Contract end date. Schedule calculations must result in a negative float when the calculated early finish date of the last activity is later than the Contract end date. Include as the last activity in the Project Schedule an activity called "End Project". The "End Project" activity must have a late finish "LF" constraint date equal to the Contract end date for the project, and a zero-day duration or by using the "project must finish by" date in the scheduling software. The schedule must have no constrained dates other than those specified in the Contract. There must only be two open ended activities: Start Project (or NTP) with no predecessor logic and End Project with no successor logic.

1.6.4.3 Early Project Completion

In the event the Project Schedule shows completion of the project prior to the final construction physical completion and/or Contract end date, identify those activities that it intends to accelerate and/or those activities that are scheduled in parallel to support the Contractor's "early" completion. Specifically address each of the activities noted in the narrative report at every Project Schedule update period to assist the CO in evaluating the Contractor's ability to actually complete prior to the Contract period. The last activity must have a late finish constraint equal to the Contract end date and the schedule must calculate positive float. The Government will not approve an early completion schedule with zero float on the longest path. The Government is under no obligation to accelerate activities for which it is responsible to support a proposed early Contract completion.

1.6.5 Interim Completion Dates

Contractually specified interim construction completion dates must be constrained to show negative float if the early finish date of the last activity in that phase falls after the interim construction completion date.

1.6.5.1 Start Phase

Include as the first activity for a project phase an activity called "Start Phase X" where "X" refers to the phase of work. The "Start Phase

X" activity must have an "ES" constraint date equal to the date on which the NTP was acknowledged, and a zero-day duration.

1.6.5.2 End Phase

Include as the last activity in a project phase an activity called "End Phase X" where "X" refers to the phase of work. The "End Phase X" activity must have an "LF" constraint date equal to the date on which the NTP was acknowledged, and a zero-day duration.

1.6.5.3 Phase "X" Hammock

Include a hammock type activity for each project phase called "Phase X" where "X" refers to the phase of work. The "Phase X" activity must be logically tied to the earliest and latest activities in the phase.

1.6.6 Default Progress Data Disallowed

Actual Start and Finish dates must not be automatically updated by default mechanisms that may be included in the scheduling software systems. Actual Start (AS) and Actual Finish (AF) dates assigned during the updating process must match those dates provided from Contractor Quality Control Reports. Failure of the Contractor to document the AS and AF dates on the Daily Quality Control Report for every in-progress or completed activity, and failure to ensure that the data contained on the Daily Quality Control reports is the sole basis for schedule updating must result in the disapproval of the Contractor's schedule and the inability of the CO to evaluate Contractor progress for payment purposes. Updating of the percent complete and the remaining duration of any activity must be independent functions. Program features which calculate one of these parameters from the other must be disabled.

1.6.7 Out-of-Sequence Progress

Activities that have progressed before all preceding logic has been satisfied (Out-of-Sequence Progress) will be allowed only on a case-by-case basis subject to approval by the CO. Propose logic corrections to eliminate all out of sequence progress or justify not changing the sequencing for approval prior to submitting an updated Project Schedule. Correct out of sequence progress that continues for more than two update cycles by logic revision, as approved by the CO.

1.6.8 Negative Lags and Start to Finish Relationships

Lag durations contained in the Project Schedule must not have a negative value. Do not use Start to Finish (SF) relationships.

1.6.9 Calculation Mode

Schedule calculations must retain the logic between predecessors and successors even when the successor activity starts and the predecessor activity has not finished. Software features that in effect sever the tie between predecessor and successor activities when the successor has started and the predecessor logic is not satisfied ("progress override") will not be allowed.

1.7 SUBMISSIONS

Provide the submissions as described below. The data, reports, and

network diagrams required for each submission must be in accordance with Paragraph entitled SUBMISSION REQUIREMENTS.

1.7.1 Initial Schedule

a. Submit the Initial Schedule for approval within 30 calendar days after NTP. Provide a reasonable and realistic sequence of activities which represent all work through the entire Contract performance period. The Initial Schedule must be at a reasonable level of detail as determined by the CO.

b. Periodic Schedule Updates - Based on the result of progress meetings, specified in Paragraph entitled PERIODIC PROGRESS MEETINGS, submit periodic schedule updates. These submissions will enable the CO to assess Contractor's progress. If the Contractor fails or refuses to furnish the information and Project Schedule data, which in the judgment of the CO is necessary for verifying the Contractor's progress, the Contractor must be deemed not to have provided an estimate upon which progress payment may be made.

1.7.2 Standard Activity Coding Dictionary

Use the activity coding structure defined in the Standard Data Exchange Format (SDEF) in ER 1-1-11, Appendix A. This exact structure is mandatory, even if some fields are not used. A template SDEF compatible schedule backup file (sdef.prx) is available on the RMS website: http://rms.usace.army.mil/. The SDEF format is as follows:

SDEF Format			
Field	Activity Code	Length	Description
1	WRKP	3	Workers per Day
2	RESP	4	Responsible Party (e.g. GC, subcontractor, USACE)
3	AREA	4	Area of Work
4	MODF	6	Modification or REA number
5	BIDI	6	Bid Item (CLIN)
6	PHAS	2	Phase of Work
7	CATW	1	Category of Work
8	FOW1	10	Feature of Work (used up to 10 characters in length)
9	FOW2	10	Feature of Work (used up to 20 characters in length)
10	FOW3	10	Feature of Work (used up to 30 characters in length)

1.8 SUBMISSION REQUIREMENTS

Submit the following items for the Initial Schedule, and every Periodic Schedule update throughout the life of the project:

1.8.1 Data Submission

Provide the Project Schedule via email or file transfer site as required by the COR. Name files indicating the type of schedule: (Initialor Update), Contract number, and Data Date.

1.8.2 Narrative Report

Provide a Narrative Report with the initial and each update of the Project Schedule, as the basis of the Contractor's progress payment request. Include: a description of activities along the two most critical paths, a description of current and anticipated problem areas or delaying factors and their impact, and an explanation of corrective actions taken or required to be taken. The narrative report is expected to communicate to the Government the Contractor's thorough analysis of the schedule output and its plans to compensate for any problems, either current or potential, which are revealed through that analysis. Identify and explain why any activities that, based on their calculated late dates, should have either started or finished during the update period, but did not.

1.8.3 Approved Changes Verification

Include only those project schedule changes in the schedule submission that have been previously approved by the CO. Specifically reference, on an activity by activity basis, all changes made since the previous period and relate each change to documented, approved schedule changes.

1.8.4 Schedule Reports

The format for each activity for the schedule reports listed below must contain: Activity Numbers, Activity Description, Original Duration, Remaining Duration, Early Start Date, Early Finish Date, Late Start Date, Late Finish Date, Total Float, Actual Start Date, Actual Finish Date, and Percent Complete. The following lists typical reports that will be requested, of which one or more may be requested for each schedule submission:

1.8.4.1 Activity Report

A list of all activities sorted according to activity number.

1.8.4.2 Logic Report

A list of detailed Preceding and Succeeding activities for every activity in ascending order by activity number.

1.8.4.3 Total Float Report

A list of all incomplete activities sorted in ascending order of total float. List activities which have the same amount of total float in ascending order of Early Start Dates. Do not show completed activities on this report.

1.8.4.4 Earnings Report by CLIN

A compilation of the Contractor's Total Earnings on the project from the NTP to the data date. This report must reflect the Earnings of specific activities based on the agreements made in the field and approved between

the Contractor and CO at the most recent Monthly Progress Meeting. Provided that the Contractor has provided a complete schedule update, this report must serve as the basis of determining Contractor progress payments. Group activities by CLIN and sorted by activity numbers. This report must: sum all activities coded to a particular CLIN and provide a CLIN item percent earned value, and complete and sum all CLIN items to provide a total project percent complete. Printed report must contain, for each activity: the Activity Number, Activity Description, Original Budgeted Amount, Total Quantity, Quantity to Date, Percent Complete (based on cost), and Earnings to Date.

1.8.5 Gantt Chart

The gantt chart is required for the Initial and Periodic Updates. Depict and display the order and interdependence of activities and the sequence in which the work is to be accomplished. The CO will use, but is not limited to, the following conditions to review compliance with this Paragraph:

1.8.5.1 Continuous Flow

Diagrams must show a continuous flow from left to right with no arrows from right to left. Show the activity number, description, duration, and estimated earned value on the diagram.

1.8.5.2 Project Milestone Dates

Show dates on the diagram for start of project, any Contract required interim completion dates, and final construction physical completion and Contract end dates.

1.8.5.3 Critical Path

Clearly show the two critical paths.

1.8.5.4 Banding

Organize activities as directed to assist in the understanding of the activity sequence. Typically, this flow will group activities by category of work, work area, and/or responsibility.

1.8.5.5 S-Curves

Show earnings curves for projected early and late earnings and earnings to date.

1.9 PERIODIC PROGRESS MEETINGS

Progress meetings to discuss payment must include a monthly onsite meeting or other regular intervals as determined by CO. During this meeting describe, on an activity by activity basis, all proposed revisions and adjustments to the Project Schedule required to reflect the current status of the project. The CO will approve activity progress, proposed revisions, and adjustments as appropriate. The Contractor's Project Manager and Authorized Scheduler must attend the meeting with the CO.

1.9.1 Update Submission Following Progress Meeting

If required by the CO, submit a schedule update, not later than four

working days after the monthly progress meeting. Include a complete update of the Project Schedule containing all approved progress, revisions, and adjustments, based on the regular progress meeting, reflecting only those changes made during the previous update meeting.

1.9.2 Status of Activities

Update information, including Actual Start (AS) Dates, Actual Finish (AF) Dates, Remaining Durations (RD), and Percent Complete will be subject to the approval of the CO. As a minimum, address the following items on an activity by activity basis during each progress meeting:

1.9.2.1 Start and Finish Dates

Accurately show the status of the Actual Start (AS) and Actual Finish (AF) dates for each activity currently in-progress or completed since the last update. Only assign AS dates when actual progress occurs on an activity.

1.9.2.2 Remaining Duration

Update the estimated Remaining Duration for each activity in-progress. Base time-based progress calculations on Remaining Duration for each activity.

1.9.2.3 Cost Completion

Update the earnings for each activity started. Payment will be based on earnings for each in-progress or completed activity. Payment for individual activities will not be made for work that contains quality defects. A portion of the overall project amount may be retained based on delays of activities.

1.9.2.4 Percent Complete

Update the percent complete for each activity started based on the realistic assessment of earned value. Activities which are complete except for remaining minor punch list work and which do not restrain the initiation of successor activities may be declared 100 percent complete.

1.9.2.5 Logic Changes

Specifically identify and discuss all logic changes pertaining to NTP on change orders, change orders to be incorporated into the schedule, Contractor proposed changes in work sequence, corrections to schedule logic for out-of-sequence progress, lag durations, and other changes that have been made pursuant to Contract provisions. The Government will only approve logic revisions for the purpose of keeping the schedule valid in terms of its usefulness in calculating a realistic completion date, correcting erroneous logic ties, and accurately sequencing the work.

1.9.2.6 Other Changes

Other changes required due to delays in completion of any activity or group of activities include:

a. Delays beyond the Contractor's control, such as strikes and unusual weather.

b. Delays encountered due to submittals, Government Activities,

deliveries, or work stoppages which make re-planning the work necessary.

c. Changes required to correct a schedule which does not represent the actual or planned prosecution and progress of the work.

1.10 REQUESTS FOR TIME EXTENSIONS

In the event the Contractor believes it is entitled to an extension of the Contract performance period, final construction physical completion date, Contract end date, or any interim milestone date, furnish the following for a determination by the CO: justification, Project Schedule data, and supporting evidence as the CO may deem necessary. Submission of proof of excusable delay, based on revised activity logic, duration, and costs (updated to the specific date that the delay occurred) is obligatory to any approvals by the Government. In response to each Request For Proposal issued by the Government, submit a schedule impact analysis demonstrating whether or not the change contemplated by the Government impacts the critical path.

1.10.1 Justification of Delay

The Project Schedule must clearly display that the Contractor has used, in full, all the float time available for the work involved with this request. The CO's determination as to the number of allowable days of Contract extension must be based upon the Project Schedule updates in effect for the time period in question, and other factual information. Actual delays that are found to be caused by the Contractor's own actions, which result in a calculated schedule delay, will not be a cause for a time extension to the performance period, final construction physical completion date, Contract end date, or any interim milestone date.

1.10.2 Extension Submission Requirements

a. Submit a justification for each request for a change in the final construction physical completion and Contract end dates of less than two weeks based upon the most recent schedule update at the time of the NTP or constructive direction issued for the change. Such a request must be in accordance with the requirements of other appropriate Contract Clauses and must include, as a minimum:

(1) A list of affected activities, with their associated Project Schedule activity number.

(2) A brief explanation of the causes of the change.

(3) An analysis of the overall impact of the changes proposed.

(4) A sub-network of the affected area.

b. Identify activities impacted by a unique activity code contained in the required data file.

1.10.3 Additional Submission Requirements

For any requested time extension of over two weeks, the CO may request an interim update with revised activities for a specific change request. Provide this within four days of the CO's request.

1.11 DIRECTED CHANGES

If the NTP is issued for changes prior to settlement of price and/or time, submit proposed schedule revisions within seven calendar days of the NTP being issued. The proposed revisions to the schedule will be approved by the Government prior to inclusion of those changes within the Project Schedule. If the Contractor fails to submit the proposed revisions, the CO may furnish the Contractor with suggested revisions to the Project Schedule. Include these revisions in the Project Schedule until revisions are submitted and final changes and impacts have been negotiated. If the Contractor has any objections to the revisions furnished by the CO, advise the CO within one week of receipt of the revisions. Regardless of the objections, continue to update the schedule with the CO's revisions until a mutual agreement in the revisions is reached. If the Contractor fails to submit alternative revisions within one week of receipt of the CO's proposed revisions, the Contractor will be deemed to have concurred with the CO's proposed revisions.

1.12 OWNERSHIP OF FLOAT

Float available in the schedule, at any time, must not be considered for the exclusive use of either the Government or the Contractor.

1.13 PAYMENT

Include an updated schedule with each progress payment request submitted. The updated schedule will be used as a basis to evaluate the Contractor's progress for purposes of payment. Lack of an updated schedule will result in an inability of the CO to perform a full evaluation of the Contractor's progress. Failure to provide all information, as specified, must result in the disapproval of the entire Project Schedule submission. The CO may withhold payment until the Contractor's schedule has been approved by the Government. In the case where Project Schedule revisions have been directed by the CO and those revisions have not been included in the Project Schedule, the CO may hold retainage up to the maximum allowed by Contract, each payment period, until revisions to the Project Schedule have been made.

1.14 TRANSFER OF SCHEDULE DATA INTO RMS CM

Download and upload the schedule data into the Resident Management System Contractor MODE (RMS CM), Section 01 45 00.15 25 RESIDENT MANAGEMENT SYSTEM CONTRACTOR MODE (RMS CM), prior to databases being transferred to the Government and is considered to be additional supporting data in a form and detail required by the CO pursuant to Contract Clause 52.232-5, PAYMENTS UNDER FIXED-PRICE CONSTRUCTION CONTRACTS. The receipt of a proper payment request pursuant to Contract Clause 52.232-27, PROMPT PAYMENT FOR CONSTRUCTION CONTRACTS, is contingent upon the Government receiving both acceptable and approvable hard copies and electronic export from RMS CM of the application for progress payment.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01 33 00

SUBMITTAL PROCEDURES

Processing of Information Only Submittals

SUBMITTAL COORDINATION

Submittal Coordination Meeting

Submittal Register ENG Form 4288-R

Submittal Register Updates

SCHEDULING

TRANSMITTAL FORM (ENG FORM 4025-R)

CROSS-REFERENCE (ENG FORM 4288-R/ENG FORM 4025-R)

SUBMITTAL PROCEDURES

e-Submittals

Approval of Submittals by the Contractor

Drawings

Printed Material

SAMPLES REQUIRING LABORATORY ANALYSIS

SAMPLES REQUIRING VISUAL INSPECTION

FIELD TEST REPORTS

PURCHASE ORDERS

CERTIFICATES OF COMPLIANCE

DISAPPROVED SUBMITTALS

SECTION 01 33 00

SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 GENERAL INFORMATION

a. Make submittals as required by the Specifications. The Contracting Officer (CO) may request submittals in addition to those specified when deemed necessary to adequately describe the work covered in the respective Sections.

b. Use the same units of weights and measures on all submittals as those used in the Contract Drawings.

c. Each submittal must be complete and in sufficient detail to allow ready determination of compliance with Contract requirements.

d. The Contractor's Quality Control (CQC) System Manager must check and approve all items prior to submittal and stamp, sign, and date indicating action taken. Proposed deviations from the Contract requirements must be clearly identified. Submittals must include items such as: Contractor's, manufacturer's, or fabricator's drawings; descriptive literature including (but not limited to) catalog cuts, diagrams, operating charts or curves; test reports; test cylinders; samples; O&M manuals (including parts list); certifications; warranties; and other such required submittals.

e. Submittals requiring Government approval must be scheduled and approved prior to the acquisition of the material or equipment covered thereby.

f. Pick up and dispose of samples not incorporated into the work in accordance with manufacturer's Safety Data Sheets (SDS) and in compliance with existing laws and regulations.

g. Submittals requiring professional licensure, signature, and stamp must comply with all State professional licensing and registration requirements.

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. Submit the following in accordance with this Section:

SD-01 Preconstruction Submittals

Submittal Register; G

SD-07 Certificates

Authorized Shop Drawing Approvers

1.3 DEFINITIONS

1.3.1 Submittal Descriptions (SD)

Submittal requirements are specified in the technical Sections and in the preliminary submittal register (ENG Form 4288-R, Attachment A1). Submittals are identified by Submittal Description (SD) numbers and titles as follows:

SD-01 Preconstruction Submittals

a. Submittals required prior to start of construction work. Includes, but not limited to: schedules, tabular list of data, or tabular list including location, features, or other pertinent information regarding products, materials, equipment, or components to be used in the work.

b. Certificates of insurance.

c. Surety bonds.

d. List of proposed subcontractors.

e. List of proposed products.

f. Construction Progress Schedule.

g. Submittal register.

h. Schedule of prices.

i. Health and safety plans.

j. Work plan.

k. Contractor Quality Control (CQC) plan.

l. Environmental protection plan.

SD-02 Shop Drawings

a. Drawings, diagrams, and schedules specifically prepared to illustrate some portion of the work.

b. Diagrams and instructions from a manufacturer or fabricator for use in producing the product and as aids to the Contractor for integrating the product or system into the project.

c. Drawings prepared by or for the Contractor to show how multiple systems and interdisciplinary work will be coordinated.

SD-03 Product Data

a. Catalog cuts, illustrations, schedules, diagrams, performance charts, instructions and brochures illustrating size, physical appearance, and other characteristics of materials, systems, or equipment for some portion of the work.

b. Warranty language when the Contract requires extended product warranties.

SD-04 Samples

a. Fabricated or unfabricated physical examples of materials, equipment, or workmanship that illustrate functional and aesthetic characteristics of a material or product and establish standards by which the work can be judged.

b. Color samples from the manufacturer's standard line (or custom color samples if specified) to be used in selecting or approving colors for the project.

c. Field samples and mock-ups constructed on the project site establish standards by which the ensuing work can be judged. Includes assemblies or portions of assemblies which are to be incorporated into the project and those which will be removed at conclusion of the work.

SD-05 Design Data

Design calculations, mix designs, analyses, or other data pertaining to a part of work.

SD-06 Test Reports

a. Report signed by authorized official of testing laboratory that a material, product, or system identical to the material, product, or system to be provided has been tested in accordance with specified requirements. (Testing must have been within three years of date of Contract award for the project.)

b. Report which includes findings of a test required to be performed by the Contractor on an actual portion of the work or prototype prepared for the project before shipment to job site.

c. Report which includes finding of a test made at the job site or on sample taken from the job site, on portion of work during or after installation.

d. Investigation reports.

e. Daily logs and checklists.

f. Final acceptance test and operational test procedure.

g. Any reports required by the CO or designated representative to assure successful completion of tasks during the life of the Contract.

SD-07 Certificates

a. Statements printed on the manufacturer's letterhead and signed by responsible officials of manufacturer of product, system, or material attesting that product, system, or material meets specification requirements. Must be dated after award of project Contract and clearly name the project.

b. Document required of Contractor, or of a manufacturer, supplier, installer, or subcontractor through Contractor, the purpose of which is to further quality of orderly progression of a portion of the work by documenting procedures, acceptability of methods or personnel

qualifications.

c. Confined space entry permits.

d. Text of posted operating instructions.

SD-11 Closeout Submittals

a. Documentation to record compliance with technical or administrative requirements or to establish an administrative mechanism.

b. Special requirements necessary to properly close out a construction Contract. For example, Record Drawings and as-built drawings.

1.3.2 Approving Authority

Office or designated person authorized to approve submittal.

1.3.3 Work

As used in this Section, on- and off-site construction required by Contract documents, including labor necessary to produce submittals (except those SD-01 Pre-Construction Submittals noted above) construction, materials, products, equipment, and systems incorporated or to be incorporated in such construction.

1.4 SUBMITTAL DESIGNATION

Submittals are classified as follows:

a. Government Approved (G). Government approval is required for critical materials, deviations, an "or equal" decision, equipment whose compatibility with the entire system must be checked, and other items as designated by the CO.Within the terms of Section Contract Clause 52.236-21, SPECIFICATIONS AND DRAWINGS FOR CONSTRUCTION, they are considered to be "shop drawings".

b. Information Only. Submittals not requiring Government approval will be for information only. Within the terms of the Contract Clause 52.236-21, SPECIFICATIONS AND DRAWINGS FOR CONSTRUCTION, these submittals are not considered to be "shop drawings".

1.5 SUBMITTAL REGISTER

1.5.1 Maintain Submittal Register

a. Prepare and maintain Submittal Register, ENG Form 4288-R, see Section 01 45 00.15 25, RESIDENT MANAGEMENT SYSTEM CONTRACTOR MODE (RMS CM), as the work progresses. Do not change data which is output in columns (c), (d), (e), and (f) as delivered by Government; retain data which is output in columns (a), (g), (h), and (i) as approved. This list may not be all inclusive and additional submittals may be required. Do not preassign transmittal numbers when preparing the submittal register. The preliminary and then the approved submittal register will become the scheduling documents and will be updated monthly and used to control submittals throughout the life of the Contract.

b. The Government will provide the preliminary submittal register in

electronic format with the following fields completed, to the extent that will be required by the Government during subsequent usage.

Column (c): Lists Specification Section in which submittal is required.

Column (d): Lists each submittal description (SD No. and type, e.g. SD-02 Shop Drawings) required in each Specification Section.

Column (e): Lists one principal paragraph in Specification Section where a material or product is specified. This listing is only to facilitate locating submitted requirements. Do not consider entries in column (e) as limiting project requirements.

c. Thereafter, track all submittals by maintaining a complete list, including completion of all data columns, including dates on which submittals are received and returned by the Government.

1.5.2 Use of Submittal Register

Submit submittal register with project schedule and QC plan. Verify that all submittals required for work are listed and add missing submittals. Coordinate, update, and complete the fields on the submitted register in RMS CM with the project schedule and QC plan.

1.5.3 Government Approved Submittals

1.5.3.1 Quantity of Submittals

SD-01, SD-02, SD-03, and SD-05 through SD-11 submittals: Upload submittals with corresponding ENG 4025-R transmittal forms (Attachment A2) as outlined in Paragraph entitled E-SUBMITTALS. SD-04 submittals: Submit two samples of "G" submittals with two corresponding ENG 4025-R transmittal forms, unless otherwise specified. Upon completion of review, "G" submittal copies will be marked with an action code, dated, electronically signed, and electronically returned to the Contractor as specified below:

1.5.3.2 Processing of "G" Submittals.

a. Submittals will be reviewed and processed as follows:

(1) Approved as Submitted (Action Code "A"): Submittals which can be approved without correction will be stamped "Approved" and returned electronically to the Contractor.

(2) Approved, Except as Noted on Drawings (Action Code "B"): Submittals which have only minor discrepancies will be annotated in red to indicate necessary corrections. Marked material will be stamped "Approved Except as Noted" and returned electronically to the Contractor for correction.

(3) Approved, Except as Noted on Drawings, Resubmission Required (Action Code "C"): Submittals which are incomplete or require more than minor corrections will be annotated in red to indicate necessary corrections. Marked material will be stamped "Approved Except as Noted - Resubmission Required" and returned electronically to the Contractor for correction. Resubmittal of only those items needing correction required.

(4) Will be Returned by Separate Correspondence (Action Code "D"): Submittals will be addressed by Serial Letter and the Contractor must respond according to instructions in the letter.

(5) Disapproved (Action Code "E"): Submittals which are fundamentally in error, cover wrong equipment or construction, or require extensive corrections, will be returned to the Contractor stamped "Disapproved." Submittal will be returned electronically to the Contractor and an explanation will be furnished on the submitted material or on ENG Form 4025-R indicating reason for disapproval. Complete resubmittal required.

(6) Receipt Acknowledged (Action Code "F"): Submittals stamped "Receipt Acknowledged" are complete and returned electronically to the Contractor.

(7) Other (Specify) (Action Code "G"): Submittals requiring other specific action will be stamped "Other (Specify)" and returned with a description in the Remarks section. Submittal will be returned electronically to the Contractor. Resubmittal of only those items needing correction required.

(8) Receipt Acknowledged, Does Not Comply (Action Code "X"): Submittals which have been received but do not comply with Contract requirements. Submittal will be returned electronically to the Contractor stamped "Receipt Acknowledged, Does Not Comply" and an explanation will be furnished. Corrective action and resubmittal required.

b. Resubmittal will not be required for approved submittals unless subsequent changes are made by Contractor or by Contract modification. For submittals required to be resubmitted, make corrections required, note any changes by dating the revisions to correspond with the change request date, and promptly resubmit the corrected material. Resubmittals must be associated with the "parent" by use of sequential numbers (for example, resubmittal of transmittal 8 will be 8.1, 8.2, etc). Government costs incurred after the first resubmittal may be charged to the Contractor.

1.5.4 Information Only Submittals

1.5.4.1 General

Upload submittal with corresponding ENG 4025 forms as outlined in Paragraph entitled E-SUBMITTALS. Normally information only submittals will not be returned. Government approval is not required on information only submittals. These submittals will be used for information purposes. The Government reserves the right to require the Contractor to resubmit any item found not to comply with the Contract. This does not relieve the Contractor from the obligation to furnish material conforming to the plans and specifications; will not prevent the CO from requiring removal and replacement of nonconforming material incorporated in the work; and does not relieve the Contractor of the requirement to furnish samples for testing by the Government laboratory or for check testing by the Government in those instances where the technical specifications so prescribe.

1.5.4.2 Processing of Information Only Submittals

Submit information only submittals electronically prior to delivery of the material or equipment to the job site. ENG Form 4025-R must be marked with the words "Contractor approved - information copy only" in the REMARKS block of the form. Submittals will be monitored and spot checks made. When such checks indicate noncompliance, the Contractor will be notified by the same method used for Government Approval submittals. Resubmittal of nonconforming information only submittals must be reclassified Government Approval ("G") and re-submitted electronically for approval.

1.6 SUBMITTAL COORDINATION

1.6.1 Submittal Coordination Meeting

Meet with the CO, after the preconstruction conference and before any submittals are sent to the CO, to further develop the preliminary submittal register (ENG Form 4288-R). During the meeting identify and group all required items into the categories as shown in Paragraph entitled SUBMITTAL DESIGNATION.

1.6.2 Submittal Register ENG Form 4288-R

Coordinate the submittal register with the progress schedule and submit within 30 days of Notice to Proceed. In preparing the final document, allow a minimum of 30 days for review and approval, and possible resubmittal of each item on the register.

1.6.3 Submittal Register Updates

The CQC System Manager must review the listing at least every 30 days and take appropriate action to maintain an effective system. Submit copies of updated or corrected listings to the CO at least every 30 days in the quantity specified.

1.7 SCHEDULING

Schedule and submit concurrently submittals covering component items forming a system or items that are interrelated. Adequate time (a minimum of 30 calendar days) must be allowed and shown on the register for Government review and approval. No delay damages or time extensions will be allowed for time lost in late submittals.

a. Coordinate scheduling, sequencing, preparing, and processing of submittals with performance of work so that work will not be delayed by submittal processing. Allow for potential resubmittal of requirements.

b. Submittals called for by the Contract documents must be listed on the register. Approval by the CO does not relieve the Contractor of supplying submittals required by the Contract documents but which have been omitted from the register.

c. Re-submit register and annotate monthly with actual submission and approval dates. When all items on the register have been fully approved, no further re-submittal is required.

d. Carefully control procurement operations to ensure that each

individual submittal is made on or before the Contractor scheduled submittal date shown on the approved "Submittal Register".

1.8 TRANSMITTAL FORM (ENG FORM 4025-R)

Use the sample transmittal form (ENG Form 4025-R, Attachment A2) for submitting both Government Approval and Information Only submittals in accordance with the instructions on the reverse side of the form. These forms are included in the RMS CM software that the Contractor is required to use for this Contract, per Section 01 45 00.15 25, RESIDENT MANAGEMENT SYSTEM CONTRACTOR MODE (RMS CM). Fill forms in completely prior to submittal. Exercise special care to ensure proper listing of the specification paragraph number(s) and Contract Drawing sheet number(s) pertinent to the data submitted for each item. List each submittal item separately on the form, naming subcontractor, supplier, or manufacturer; applicable specification paragraph number(s); drawing/sheet number; pay item number; and any other information needed to identify the item, define its use, and locate it in the work. One or more ENG 4025-R forms may be used per Specification Section, however, DO NOT include more than one Specification Section per transmittal.

1.9 CROSS-REFERENCE (ENG FORM 4288-R/ENG FORM 4025-R)

To provide a cross-reference between the approved submittal register and transmittal forms, the Contractor must record the "transmittal numbers" assigned when submitting items in column "Transmittal No." of the ENG Form 4288-R. The numbers in column "Transmittal No." of the submittal register must correspond to the column "Item No." on ENG Form 4025-R.

1.10 SUBMITTAL PROCEDURES

Upload submittals in accordance with subparagraphs entitled Government Approved Submittals and Information Only Submittals, unless indicated otherwise in the technical specifications. Submit a complete collated "reviewers copy" with one ENG 4025-R form and attachments (not originals). Submit hard copy and electronic copies of Record (as-built) Drawings and O&M Manuals in accordance with the applicable Specification Sections.

1.10.1 e-Submittals

The intent of electronic submittals is to expedite the construction process by reducing paperwork, improving information flow, and decreasing turnaround time. Transmit all submittals, including either an electronically signed or signed scanned copy of form ENG 4025, to the Government electronic (PDF) format via email or other secure internet accessible service such as ShareFile, ProCore, Submittal Exchange, or a FTP site that utilize 256-bit SSL encryption and hosted as SAS70 Type II compliant data centers. Submittals must be entered and tracked using RMS CM (see Section 01 45 00.15 25, RESIDENT MANAGEMENT SYSTEM CONTRACTOR MODE (RMS CM). At completion of Contract closeout, provide a minimum of two archival discs (DVD-R) that include all documents and tracking logs. Color samples, color charts, or physical material samples shall not be transmitted electronically. E-Submittals will not relieve the Contractor from following all applicable requirements within this and other Specifications Sections and Contract Clauses.

1.10.2 Approval of Submittals by the Contractor

a. Submit names and titles of Contractor Authorized Shop Drawing

Approvers to the CO with the ENG Form 4288-R. Supplier or subcontractors certifications are not acceptable as meeting this requirement.

b. Before submittal to the CO, the Contractor's Authorized Shop Drawing Approvers must review and correct shop drawings prepared by subcontractors, suppliers, and itself, for completeness and compliance with Drawings and Specifications. Do not use red markings for correcting material to be submitted. Red markings are reserved for CO's use.

c. Submittals for Government Approval must first be Contractor-approved and stamped, see Paragraph entitled CONTRACTOR APPROVAL STAMP.

d. Submittals not conforming to the requirements of this Section will be returned to the Contractor for correction and resubmittal.

1.10.3 Drawings

Each drawing must be not larger than D size (22 inches high by 34 inches wide), include a title block in lower right hand corner, and a 3- by 4-inch clear area adjacent. The title block must contain vendor's name, Contract number, description of item(s), Contract line item number, and a revision block. Separate drawings are required for each Contract line item. Where drawings are submitted for assemblies of more than one piece of equipment or systems, of components dependent on each other for compatible characteristics, complete information must be submitted on all such related components at the same time. The information must be complete and the sequence of drawing submittal must be such that all information is available for reviewing each drawing. Drawings for all items and equipment, of special manufacture or fabrication, must consist of complete assembly and detail drawings. All revisions after initial submittal must be shown by number, date, and subject in revision block. Any drawing submitted, that is not of satisfactory quality, will be returned and must be corrected and re-submitted.

1.10.3.1 Printed Material

All requirements for shop drawings apply to catalog cuts, illustrations, printed specifications, or other data submitted, except the 3- by 4-inch clear area adjacent to the title block is not mandatory. Mark out inapplicable portions of the documents. Applicable items such as model numbers, sizes, and accessories must be indicated by arrow or highlighted.

1.11 SAMPLES REQUIRING LABORATORY ANALYSIS

See Section 01 45 00.00 25, QUALITY CONTROL, for procedures and address for samples requiring Government testing.

1.12 SAMPLES REQUIRING VISUAL INSPECTION

Coordinate samples requiring only physical inspection for appearance and suitability with the on-site Government Quality Assurance Representative (GQAR).

1.13 FIELD TEST REPORTS

Deliver routine tests such as soil density, concrete deliveries, and

repetitive pressure testing to the GQAR with the daily Quality Control reports. See Section 01 45 00.00 25, QUALITY CONTROL.

1.14 PURCHASE ORDERS

a. Each purchase order issued by the Contractor for materials and equipment to be incorporated into the work must:

(1) Clearly identify the applicable Contract number

(2) Carry an identifying number

(3) Be in sufficient detail to identify the material being purchased

(4) Indicate a definite delivery date.

b. Furnish copies of purchase orders to the CO when the Contractor requests assistance for expediting deliveries of equipment or materials, or when requested by the CO for the purpose of quality assurance review.

1.15 CERTIFICATES OF COMPLIANCE

Submit an electronic copy of certificates required for demonstrating proof of compliance of materials with specification requirements. Each certificate must be signed by an official authorized to certify on behalf of the manufacturing company, contain the name and address of the Contractor, the project name and location, and the quantity and date or dates of shipment or delivery to which the certificates apply. Copies of laboratory test reports submitted with certificates must contain the name and address of the testing laboratory and the date or dates of the tests to which the report applies. Certification shall not be construed as relieving the Contractor from furnishing satisfactory material if, after tests are performed on selected samples, the material is found not to meet the specific requirements.

1.16 DISAPPROVED SUBMITTALS

a. Make all corrections required by the CO and promptly furnish a corrected submittal in the form specified for the initial submittal. If the Contractor considers any correction or notation on the returned submittals to constitute a change to the Contract drawings or Specifications; notice as required under Contract Clause 52.243-4, CHANGES, is to be given to the CO. The Contractor must be responsible for the dimensions and design of connection details and construction of work. Failure to point out deviations may result in the Government requiring rejection and removal of such work at the Contractor's expense.

b. If changes are necessary to submittals, make such revisions and re-submit the submittals in accordance with the procedures above. No item of work requiring a submittal change is to be accomplished until the changed submittals are approved.

1.17 APPROVED SUBMITTALS

a. The CO's approval or acceptance of submittals shall not be construed as a complete check, and indicates only that the general

method of construction, materials, detailing, and other information are satisfactory.

b. Approval or acceptance will not relieve the Contractor of the responsibility for any error which may exist, as the Contractor under the Contractor Quality Control (CQC) requirements of this Contract must be responsible for dimensions, the design of adequate connections and details, and the satisfactory construction of all work.

c. After submittals have been approved by the CO, no resubmittal for the purpose of substituting materials or equipment will be considered unless accompanied by an explanation of why a substitution is necessary.

1.18 APPROVED SAMPLES

a. Approval of a sample is only for the characteristics or use named in such approval and must not be construed to change or modify any Contract requirements. Before submitting samples, ensure that the materials or equipment will be available in quantities required. No change or substitution will be permitted after a sample has been approved.

b. If requested, approved and/or disapproved samples, including those which may be damaged in testing, will be returned at the expense of the Contractor upon completion of the Contract.

c. Failure of any materials to pass the specified tests will be sufficient cause for refusal to consider, under this Contract, any further samples of the same brand or make of that material. Government reserves the right to disapprove any material or equipment which previously has proved unsatisfactory in service.

d. Samples of various materials or equipment delivered on the site or in place may be taken by the CO for testing. Samples failing to meet Contract requirements will automatically void previous approvals. Contractor must replace such materials or equipment to meet Contract requirements.

e. Approval of the Contractor's samples by the CO does not relieve the Contractor of his/her responsibilities under the Contract.

1.19 CONTRACTOR'S FILES

Maintain "Approved as Accepted" and "Approved, Except as Noted on Drawings" (Action Codes "A" and "B") shop drawing files in fabrication shops and at field sites for Government use.

1.20 PAYMENT

Separate payment will not be made for submittals, and all costs associated therein must be included in the applicable unit prices or job prices contained in the Price Schedule. Payment will not be made for any material or equipment which does not comply with Contract requirements.

1.21 WITHHOLDING OF PAYMENT

Payment for materials incorporated in the work will not be made if required approvals have not been obtained. No payment will be made for

any materials incorporated into the work for Information Only submittals found to contain errors.

1.22 CONTRACTOR APPROVAL STAMP

Stamps used by the Contractor on the submittal data to certify that the submittal meets Contract requirements must be similar to the following:

CONTRACTOR
(Firm Name)
_____ Approved
_____ Approved with corrections as noted on submittal data and/or attached sheets(s).
SIGNATURE: _____
TITLE: _____
DATE: _____

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01 35 26.00 25

GOVERNMENTAL SAFETY REQUIREMENTS

-- End of Section Table of Contents --

SECTION 01 35 26.00 25

GOVERNMENTAL SAFETY REQUIREMENTS

PART 1 GENERAL

1.1 REFERENCES

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

AMERICAN BUREAU OF SHIPPING (ABS)

ABS 152	(2021) Guide for Certification of Lifting Appliances

AMERICAN PETROLEUM INSTITUTE (API)

API Spec 2C	(2020) Offshore Pedestal-mounted Cranes

AMERICAN SOCIETY OF SAFETY PROFESSIONALS (ASSP)

ASSP A10.28	(2018) Safety Requirements for Work Platforms Suspended from Cranes or Derricks - American National Standard for Construction and Demolition Operations
ASSP A10.34	(2021) Protection of the Public on or Adjacent to Construction Sites
ASSP Z359.1	(2020) The Fall Protection Code
ASSP Z490.1	(2016) Criteria for Accepted Practices in Safety, Health, and Environmental Training

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

ASME B30-PKG	Load Handling Equipment
ASME B30.8	(2020) Floating Cranes and Floating Derricks

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 10	(2022; ERTA 1 2021) Standard for Portable Fire Extinguishers
NFPA 241	(2022) Standard for Safeguarding Construction, Alteration, and Demolition Operations
NFPA 51B	(2024) Standard for Fire Prevention During Welding, Cutting, and Other Hot Work
NFPA 70	(2023; ERTA 4 2023; ERTA 5 2023; ERTA 6

	2023) National Electrical Code
NFPA 70E	(2024) Standard for Electrical Safety in the Workplace

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1	(2024) Safety -- Safety and Health Requirements Manual
ER 385-1-100	(2014) Safety and Occupational Health: Arc Flash Hazard Program
ER 385-1-31	(2009) Safety and Occupational Health: The Control of Hazardous Energy

U.S. ARMY CORPS OF ENGINEERS - PORTLAND DISTRICT (NWP)

CENWP-OD-SAF-385-1	(2019) CENWP-OD Standing Safety Procedure 385-1, SAFETY, Portland District Supplement (Fixed Plant) to USACE, Hazardous Energy Control Program

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1910	Occupational Safety and Health Standards
29 CFR 1910.146	Permit-required Confined Spaces
29 CFR 1915	Confined and Enclosed Spaces and Other Dangerous Atmospheres in Shipyard Employment
29 CFR 1926	Safety and Health Regulations for Construction
CPL 02-00-147	The Control of Hazardous Energy - Enforcement Policy and Inspection Procedures

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Crane Operators; G

Training Plan; G

Hazardous Energy Control Plan and HEC Procedures Training Certification; G

Accident Prevention Plan (APP); G

Fall Prevention and Protection Plan; G

Fatigue Management Plan (FMP); G

Activity Hazard Analysis (AHA); G

Inclement Weather and Heat/Cold Stress Management Plans; G

Arc Flash Hazard (AFH) Program; G

SD-06 Test Reports

Regulatory Citations, Violations, and Corrective Action

Drug and Alcohol Use Prevention Program

Accident or Mishap Reports

Crane Testing Reports

SD-07 Certificates

Arc Flash Hazard (AFH) Training Certificate

Confined Space Entry Permit

Hot Work Permit

Third Party Certification of Barge-Mounted Mobile Cranes and Mobile Equipment

Certificate of Compliance

1.3 DEFINITIONS

1.3.1 High Visibility Mishap

Any mishap which may generate publicity and/or high visibility. Report the following high visibility mishaps immediately:

a. Uncontrolled release of hazardous energy, including Arc Flash, Electrical, and other energy sources (such as pressurized gas, fluids, etc.)

b. Load Handling Equipment and Rigging

c. Fall-from-Height

d. Underwater diving

1.3.2 Medical Treatment

Treatment administered by a physician or by registered professional personnel under the standing orders of a physician. Medical treatment does not include first aid treatment even though provided by a physician or registered personnel.

1.3.3 Recordable Injuries or Illnesses

Any work-related injury or illness that results in:

a. Death, regardless of the time between the injury and death, or the length of the illness

b. Days away from work (any time lost after day of injury/illness onset)

c. Restricted work or transfer to another job

d. Medical treatment beyond first aid

e. Loss of consciousness

f. A significant injury or illness diagnosed by a physician or other licensed health care professional, even if it did not result in (a) through (e) above.

1.3.4 Government Property

Interpret "USACE" property and equipment specified in EM 385-1-1 as Government property and equipment.

1.4 REGULATORY REQUIREMENTS

a. In addition to the detailed requirements included in the provisions of this Contract, comply with the edition of EM 385-1-1 in effect on the date of the Solicitation for this Contract, and applicable Federal, State, and local laws, ordinances, criteria, rules and regulations. Submit regulatory citations, violations, and corrective action and matters of interpretation of standards to the appropriate administrative agency for resolution before starting work. Where the requirements of this specification, applicable laws, criteria, ordinances, regulations, and referenced documents vary, the most stringent requirements apply.

b. Contact the Contracting Officer (CO) immediately of any OSHA or other regulatory agency inspection or visit, and provide the CO with a copy of each citation, report, and Contractor response. Correct violations and citations promptly and provide written corrective action plan to the CO.

1.5 DRUG AND ALCOHOL USE PREVENTION PROGRAM

Conduct a proactive drug and alcohol use prevention program for all workers, Prime and subcontractor, on the site, to include administrative action for employees failing the program. Ensure that no employee uses illegal drugs, in accordance with Federal law, or consumes alcohol during work hours. Ensure no employees are under the influence of drugs or alcohol during work hours. Ensure all employees are fit for duty. During the Contract period, submit a copy of tests, including results of random testing, to the CO. Only submit numbers of individuals tested and results of tests, not personal data.

1.6 SITE QUALIFICATIONS, DUTIES, AND MEETINGS

1.6.1 Personnel Qualifications

1.6.1.1 Site Safety and Health Officer (SSHO)

a. Provide a Safety oversight team that includes a minimum of one

Competent Person to function as the SSHO. The SSHO must meet the requirements of EM 385-1-1, Section 2-3.b, and ensure that the requirements of 29 CFR 1926 are met for the project. The SSHO must be at the work site at all times to implement and administer the Contractor's safety program and Government-accepted Accident Prevention Plan. The SSHO's training, experience, and qualifications are as required by EM 385-1-1.

b. Provide a Competent Person for all of the hazards identified in the Contractor's Safety and Health Program in accordance with the accepted Accident Prevention Plan. The Competent Person must be on-site at all times when the work that presents the hazards associated with their professional expertise is being performed. Provide the credentials of the Competent Persons(s) for acceptance by the CO in consultation with the Safety Office.

c. The SSHO must have no duties other than SSHO. The SSHO must meet the following requirements:

(1) A minimum of five years of continuous construction industry safety experience in supervising/managing general construction (managing safety programs or processes or conducting hazard analyses and developing controls) on similar projects.

(2) Thirty-hour OSHA Construction safety class or equivalent within the last four years.

(3) SSHOs must maintain competency through having taken eight hours of documented formal, on-line, or self-study safety and health related coursework every year.

(4) Competent Person training as needed.

1.6.1.2 Alternate SSHO and Designated Representative (DR)

a. The Alternate SSHO must meet the same requirements and assume the responsibilities of the project SSHO. Assistant SSHO's may be necessary during the main shift along with the lead SSHO, but are primarily intended to be on-site during the times that the lead SSHO is absent from the work site. The assistant SSHO may have other duties on the jobsite.

b. If the SSHO is off-site for a period longer than 24 hours, provide an alternate to fulfill the same roles and responsibilities as the primary SSHO.

c. When the SSHO is temporarily (up to 24 hours) off-site, a Designated Representative (DR), as identified in the AHA may be used in lieu of an Alternate SSHO, and must be on the project site at all times when work is being performed.

Note: DRs are collateral duty safety personnel, with safety duties in addition to their full-time occupation.

d. If an activity, or task contains multiple sites and has been assessed and given an activity Risk Assessment Code (RAC) of low or medium, a DR must be appointed for each site where remote work locations are more than 45 minutes travel time from the SSHO's duty location.

(1) DRs must perform safety program tasks as designated by the SSHO and report safety findings to the SSHO.

(2) A DR may not be assigned to projects that have a RAC level of high or extremely high.

1.6.1.3 Staffing for USACE Dredging Contracts

a. Dredging contracts may include several project sites; this Contract will require a minimum of one full-time SSHO(s) assigned per project site. SSHO may be collateral SSHO duties in specific conditions listed below.

b. Example of one dredging project site is reflected in each of the following:

(1) A mechanical dredge, tug(s) and scow(s), scow route, and material placement site; or

(2) A hydraulic pipeline dredge, attendant plant, and material placement site; or,

(3) A hopper dredge (include land-based material placement site - if applicable.)

c. Individual dredging project sites with work force less than eight employees, the SSHO may be a collateral duty, with the same responsibilities of a full-time SSHO.

d. Hopper dredges with United States Coast Guard Documented crews may designate an officer as a collateral-duty SSHO instead of having a full-time SSHO if the officer meets the SSHO training and experience requirements.

1.6.1.4 SSHO Requirements for Dredging

a. In addition to requirements stated elsewhere in this specification, the SSHO must be present at the project site, located so they have full mobility and reasonable access to all major work operations, for at least one shift in each 24 hour period when work is being done. The SSHO, or Alternate SSHO, must be available during all shifts for immediate verbal consultation and notification, either by phone or radio. The SSHO must be a full-time, dedicated position, except as noted above, Paragraph STAFFING FOR USACE DREDGING CONTRACTS. The SSHO must report to a senior project (or corporate) officials.

b. The SSHO must inspect all work areas and operations during initial set-up and at least monthly observe and provide personal oversight on each shift during dredging operations for projects with many work sites, more often for those with less work sites.

c. For projects with multiple shifts or when SSHO is temporarily off-site, an Alternate SSHO must be assigned to ensure SSHO coverage for the project at all times work activities are conducted. The Alternate SSHO must meet the same requirements and assume the responsibilities of the project SSHO. The Alternate SSHO position may be a collateral duty.

d. If the SSHO is off-site for a period longer than 24 hours, a qualified replacement SSHO must be provided and must fulfill the same roles and responsibilities as the primary/initial SSHO.

1.6.1.5 Designated Representative (DR) Requirements for Dredging

a. DRs are collateral duty safety personnel, with safety duties in addition to their full-time occupation, and support and supplement the SSHO efforts in managing, implementing, and enforcing the Contractor's Safety and Health Program. DRs must be individual(s) with work oversight responsibilities, such as masters, mates, fill foremen, and superintendents. DRs must not be positions requiring continuous mechanical or equipment operations, such as equipment operators.

b. Appoint a DR for all remote work locations more than 45 minutes travel time from the SSHO's duty location, typically including dredged material placement sites, towing and scow operations, and other operations.

c. The DRs must perform safety program tasks as designated by the SSHO and report safety findings to the SSHO/Alternate SSHO. The SSHO must document results of safety findings and provide information for inclusion in the Contractor's Quality Control (CQC) reports to the Government Representative.

1.6.1.6 Safety Personnel Training Requirements for Dredging

a. The SSHO, Alternate SSHO, and DR for dredging contracts must take either the OSHA 30-hour Construction Safety Course or an equivalent 30 hours of formal safety and health training covering the subjects of the OSHA 30-hour Course (see EM 385-1-1 Appendix A) applicable to dredging work and given by qualified instructors.

b. The SSHOs must also have taken eight hours of formal classroom or online safety and health related coursework in the past four years. Hours spent as an instructor in such courses will be considered the same as attending them, but each course only gets credit once.

c. The SSHO, Alternate SSHO, and DR must have a minimum of three years continuous experience within the past five years in supervising/ managing dredging, marine or land-based construction, work managing safety programs or processes, or conducting hazard analyses and developing controls in activities or environments with similar hazards. This is in lieu of the construction experience required by EM 385-1-1.

1.6.1.7 Crane Operators

Meet the crane operator's training and medical requirements in EM 385-1-1 Chapter 16; ASME B30-PKG; 29 CFR 1910; and 29 CFR 1926. Submit documentation for all crane operators including certification, qualifications, and designation in writing.

1.6.1.8 Competent Person for the Health Hazard Control and Respiratory Protection Program

Provide a Competent Person meeting the requirements of EM 385-1-1 who is:

a. Capable by education, specialized training and/or experience of

anticipating, recognizing, and evaluating employee exposure to hazardous chemical, physical and biological agents in accordance with EM 385-1-1.

b. Capable of specifying necessary controls and protective actions to ensure worker health.

1.6.2 Personnel Duties

1.6.2.1 Site Safety and Health Officer (SSHO)

Superintendent, QC Manager, and SSHO are subject to dismissal if the above duties are not being effectively carried out. If the Superintendent, QC Manager, or SSHO are dismissed project work will be stopped and will not be allowed to resume until a suitable replacement is approved and the above duties are again being effectively carried out. The SSHO must:

a. Conduct daily safety and health inspections and maintain a written log which includes area/operation inspected, date of inspection, identified hazards, recommended corrective actions, estimated and actual dates of corrections. Attach safety inspection logs to the Daily Contractor Quality Control Report.

b. Conduct mishap investigations and complete required reports. Maintain the OSHA Form 300 and Daily Contractor Quality Control Report for Prime and subcontractors.

c. Maintain applicable safety reference material on the job site.

d. Attend the Preconstruction Conference, pre-work meetings including the Contractor Quality Control Preparatory Phase inspection meeting, Initial Phase inspection meetings, Follow-up Phase, additional Preparatory and Initial Phase meetings, and periodic in-progress meetings.

e. Implement and enforce accepted APPs and AHAs.

f. Maintain a safety and health deficiency tracking system that monitors outstanding deficiencies until resolution. Post a list of unresolved safety and health deficiencies on the Safety and Health Bulletin Board.

g. Ensure subcontractor compliance with safety and health requirements.

h. Maintain a list of hazardous chemicals on site and their safety data sheets (SDS).

1.6.3 Meetings

1.6.3.1 Preconstruction Conference

a. The purpose of the Preconstruction Conference is for the Contractor and the CO to become acquainted and explain the functions and operating procedures of their respective organizations.

b. Contractor representatives required to attend this Preconstruction Conference include anyone who has a responsibility or significant role in accident prevention on the project. This includes the project superintendent, SSHO, quality control supervisor, or any other

assigned safety and health professionals who participated in the development of the APP (including the Activity Hazard Analyses (AHAs) and special plans, program and procedures associated with it).

c. Discuss the details of the submitted APP to include incorporated plans, programs, procedures, and a listing of anticipated AHAs that will be developed and implemented during the performance of the Contract. This list of proposed AHAs will be reviewed at the Conference and an agreement will be reached between the Contractor and the CO as to which phases will require an analysis. In addition, establish a schedule for the preparation, submittal, review, and acceptance of AHAs to preclude project delays.

d. Deficiencies in the submitted APP will be brought to the attention of the Contractor at the Preconstruction Conference. Revise the plan to correct deficiencies and re-submit it for acceptance. Work will not begin until there is an accepted APP.

1.6.3.2 Safety Meetings

Conduct weekly safety meetings at the project site for all employees as required by EM 385-1-1. Inform and invite the CO to the meeting in advance. Attach minutes showing Contract title, signatures of attendees, and a list of topics discussed to the Daily Contractor Quality Control Report.

1.6.3.3 Work Phase Meetings

Discuss appropriate AHAs during Contractor's Quality Control (CQC) work phase meetings as required in Section 01 45 00.00 25 QUALITY CONTROL.

1.7 TRAINING

1.7.1 New Employee Indoctrination

Inform new employees (Prime and subcontractor) of specific site hazards before they begin work. Keep documentation of this orientation on file at the project site.

1.7.2 Periodic Training

Provide Safety and Health Training in accordance with EM 385-1-1 and the accepted APP. Ensure all required training has been accomplished for onsite employees.

1.7.3 Training Plan

Prior to beginning a new phase, provide training to all affected employees to include a review of the AHA to be implemented. Contractors can choose to utilize Job Hazard Analyses (JHA) in lieu of AHAs as long as the JHA meets the requirements of an AHA to include a Risk Assessment.

1.7.4 Hazardous Energy Control Plan and HEC Procedures Training Certification

a. Provide annual Hazardous Energy Control Plan and Procedure Affected Person (AP) training to all Contractor and subcontractor personnel working under, or in the vicinity of, clearances as defined in CENWP-OD-SAF-385-1.

b. All costs for this training must be considered incidental to the work, and therefore, no additional payment will be made. Cost for the training is approximately $55 per individual. Training is provided by Vivid Learning Systems and is available on line at http://contractor.vividlms.com/.

c. Submit the training completion certification a minimum of seven days prior to the individuals arrival at site. Maintain training documentation on site, including the individual's name and date of training completion, in accordance with CENWP-OD-SAF-385-1.

1.7.5 Fall Protection Training Program

Institute a fall protection training program. As part of the Fall Hazard Protection and Prevention Program, provide training for each employee who might be exposed to fall hazards, see Paragraph FALL HAZARD PROTECTION AND PREVENTION PROGRAM. Provide training by a Competent Person for fall protection in accordance with EM 385-1-1. Document and retain training evaluations for fall protection and rescue for the current training program per ASSP Z359.1.

1.7.6 Arc Flash Hazard (AFH) Training Certificate

All Contractor personnel working in or around equipment with a potential for an Arc Flash Hazard must have completed Arc Flash Hazard Training as defined in ER 385-1-100. Maintain training certification on site, including the individual's name and date of training, instructor's name, and outline of training content. Show certification of training annually for qualified individuals. Show certification for unqualified personnel within three years.

1.8 ACCIDENT PREVENTION PLAN (APP)

1.8.1 General Information

a. Use a Qualified Person to prepare the written site-specific APP. See EM 385-1-1 for definition of Qualified Person. Prepare the APP in accordance with the format and requirements of EM 385-1-1 and as supplemented herein. Cover all Paragraph and Subparagraph elements in EM 385-1-1, Section 2-7.b. Specific requirements for some of the APP elements are described below:

(1) The APP is job-specific and address any unusual or unique aspects of the project or activity for which it is written.

(2) Interface the Contractor's overall safety and health program with the APP. Include any portions of the Contractor's overall safety and health program referenced in the APP in the applicable APP element and made site-specific.

(3) The Government considers the Prime Contractor to be the "controlling authority" for all work site safety and health of the subcontractors.

(4) Inform subcontractors of the safety provisions under the terms of the Contract and the penalties for noncompliance, coordinating the work to prevent one craft from interfering with or creating hazardous working conditions for other crafts, and inspecting

subcontractor operations to ensure that accident prevention responsibilities are being carried out.

(5) Sign the APP by the person and firm (senior person) preparing the APP, the Contractor, the on-site superintendent, and the designated SSHO.

b. Submit the APP to the CO 15 calendar days after Notice to Proceed for acceptance. Work cannot proceed without an accepted APP. The CO will review and comment on the Contractor's submitted APP and accept it when it meets the requirements of the Contract provisions.

c. Once accepted by the CO, the APP and appendices will be enforced as part of the Contract. Disregarding the provisions of this Contract or the accepted APP will be cause for stoppage of work, at the discretion of the CO, until the matter has been rectified.

d. Once work begins, changes to the accepted APP must be made with the knowledge and concurrence of the CO, project superintendent, SSHO, and quality control manager. Should any severe hazard exposure (i.e. imminent danger), become evident, stop work in the area, secure the area, and develop a plan to remove the exposure and control the hazard. Notify the CO, both verbally and in writing, within 24 hours of discovery. In the interim take all necessary actions to restore and maintain safe working conditions in order to safeguard on-site personnel, visitors, the public (as defined by ASSP A10.34), and the environment.

e. Maintained copies of the APP at the CO's office and at the work site. Continuously review and amend the APP, as necessary, throughout the life of the Contract. Incorporate unusual or high-hazard activities not identified in the original APP in the plan as they are discovered.

1.8.2 EM 385-1-1 Contents

In addition to the requirements above and those outlined in Section 2-7.b of EM 385-1-1, the following is required:

a. Names and qualifications (resumes including education, training, experience and certifications) of all site safety and health personnel designated to perform work on this project to include the designated site safety and health officer and other Competent and Qualified personnel to be used. Specify the duties of each position.

b. Qualifications of Competent and Qualified Persons. As a minimum, designate Competent Persons and submit qualifications for each of the following major areas: excavation; scaffolding; fall protection; hazardous energy; confined space; health hazard recognition, evaluation and control of chemical, physical and biological agents; personal protective equipment and clothing to include selection, use and maintenance.

c. Confined Space Entry Plan. Develop a confined space entry plan in accordance with EM 385-1-1, applicable OSHA standards 29 CFR 1910, 29 CFR 1910.146, 29 CFR 1915, and 29 CFR 1926, and any other Federal, State, and local regulatory requirements identified in this Contract. Identify the Qualified Person's name and qualifications, training, and experience. Delineate the Qualified Person's authority to direct work

stoppage in the event of hazardous conditions. Include procedure for rescue by Contractor personnel and the coordination with emergency responders. (If there is no confined space work, include a statement that no confined space work exists and none will be created.)

d. Health Hazard Control Program. Designate a Competent and Qualified Person to establish and oversee a Health Hazard Control Program in accordance with EM 385-1-1. The program must ensure that employees, on-site Government representatives, and others, are not adversely exposed to chemical, physical, and biological agents and that necessary controls and protective actions are instituted to ensure health.

e. A Drug and Alcohol Use Prevention Program. Provide description of the on-site prevention program.

f. Training Records and Requirements. List of mandatory training and certifications which are applicable to this project (e.g. explosive actuated tools, confined space entry, fall protection, crane operation, hazardous energy control, vehicle operator, forklift operators, personal protective equipment, arc flash); list of requirements for periodic retraining/certification; outline requirements for supervisory and employee safety meetings.

g. Fall Prevention and Protection Plan. The plan must be site specific and address all fall hazards in the work place and during different phases of construction (Paragraph entitled FALL HAZARD PROTECTION AND PREVENTION PROGRAM). Address how to protect and prevent workers from falling to lower levels when they are exposed to fall hazards above 6 feet. A Competent Person or Qualified Person For Fall Protection prepare and sign the plan. See EM 385-1-1 for definitions of Competent and Qualified Person for Fall Protection. Include fall protection and prevention systems, equipment and methods employed for every phase of work, responsibilities, self-rescue, rescue and escape equipment and operations, evacuation procedures, training requirements, and monitoring methods. For Horizontal Lifelines, see EM 385-1-1, Chapter 21 and ASSP Z359.1. Revise the Fall Protection and Prevention Plan every six months for lengthy projects, reflecting any changes during the course of construction due to changes in personnel, equipment, systems, or work habits. Keep and maintain the accepted Fall Protection and Prevention Plan at the job site for the duration of the project.

k. Site Safety and Health Plan. The safety and health aspects prepared in accordance with EM 385-1-1.

n. Crane Critical Lift Plans. Critical lifts require detailed planning and additional or unusual safety considerations. Before making a critical lift, develop a critical lift plan. Critical lifts are detailed in EM 385-1-1, Chapter 16. A non-mandatory Critical Lift Plan form can be found in EM 385-1-1, Chapter 16.

k. Critical Lifts are defined as:

(1) Lifts involving hazardous materials (e.g., explosives, highly volatile substances);

(2) Hoisting personnel with Load Handling Equipment (LHE);

(3) Lifts made with more than one LHE

(4) Lifts where the center of gravity could change;

(5) Lifts made when the load weight is 75 percent of the rated capacity of the LHE load chart or more (not applicable to gantry, overhead, or bridge cranes);

(6) Lifts without the use of outriggers using rubber tire load charts;

(7) Lifts using more than one hoist on the same LHE;

(8) Lifts involving Multiple Lift Rigging (MLR) Assemblies or other non-routine or technically difficult rigging arrangements;

(9) Lifts involving submerged loads.

Exception: if hand signals used by a signal person in view of the operator or radio communications are available and in use, load does not exceed two tons AND is determined a routine lift by the supervisor;

(10) Load Tests;

(11) When land-based LHE mounted on barges, pontoons or other means of flotation are required to travel while lifting the load;

(12) Any lift the operator believes should be considered critical.

o. Prepare and sign weight handling critical lift plans for lifts over 75 percent of the capacity of the crane or hoist (or lifts over 50 percent of the capacity of a barge mounted mobile crane's hoists) at any radius of lift; lifts involving more than one crane or hoist; lifts of personnel; and lifts involving non-routine rigging or operation, sensitive equipment, or unusual safety risks. Submit 15 calendar days prior to on-site work and include the requirements of EM 385-1-1, Chapter 16, ASME B30-PKG, and the following:

(1) For lifts of personnel, demonstrate compliance with the requirements of EM 385-1-1 in the plan.

(2) For barge mounted mobile cranes, perform a Naval Architectural Analysis (NAA) to determine barge stability calculations identifying barge list and trim based on anticipated loading; and load charts based on calculated list and trim. Calculate the amount of list and trim to be within the crane manufacturer's requirements.

p. Standard Lift Plan. For all crane activities prepare a written standard lift plan (SLP) for every lift or series of lifts (if duty cycle or routine lifts are being performed). The SLP must be developed, reviewed and accepted by all personnel involved in the lift in accordance with EM 385-1-1, Chapter 16.

q. Fatigue Management Plan (FMP). Complete a FMP as part of the APP whenever work hours:

(1) exceed 10 hours a day for more than four consecutive days;

(2) exceed 50-hours in a seven day work week;

(3) exceed 12-hours a day for more than three consecutive days, or

(4) exceed 58-hours a week for sedentary (to include office) work.

1.9 ACTIVITY HAZARD ANALYSIS (AHA)

1.9.1 General

a. Format the Activity Hazard Analysis (AHA) in accordance with EM 385-1-1. Submit the AHA for review at least 15 calendar days prior to the start of each phase. Format subsequent AHAs as amendments to the APP. Use the analysis during daily inspections to ensure the implementation and effectiveness of the activity's safety and health controls. Develop an AHA for every operation involving a type of work presenting hazards not experienced in previous project operations or where a new work crew or subcontractor is to perform work. The analysis must identify and evaluate hazards and outline the proposed methods and techniques for the safe completion of each phase of work. At a minimum, define activity being performed, sequence of work, specific safety and health hazards anticipated, control measures (to include personal protective equipment) to eliminate or reduce each hazard to acceptable levels, equipment to be used, inspection requirements, training requirements for all involved, and the Competent and Qualified Persons in charge of that phase of work. For work with fall hazards, include fall hazards associated with scaffold erection and removal, identify the appropriate fall arrest systems. For work with materials handling equipment, address safeguarding measures related to materials handling equipment. For work requiring excavations, include requirements for safeguarding excavations. For work on or near energized electrical equipment, address arc flash hazards and control procedures. For work with commissioning, address safeguarding measures related to commissioning.

b. An activity requiring an AHA cannot proceed until the AHA has been accepted by the CO and a meeting has been conducted by the Contractor to discuss its contents with everyone engaged in the activity, including on-site Government representatives. Document meeting attendance at the preparatory, initial, and follow-up phases of quality control inspection.

c. Continuously review and, when appropriate, modify the AHA to address changing site conditions or operations.

d. Develop the activity hazard analyses using the project schedule as the basis for the activities performed. Any activities listed on the project schedule will require an AHA. The AHAs will be developed by the Contractor, supplier, or subcontractor and provided to the Prime Contractor for submittal to the CO.

e. Contractor may use Job Hazard Analyses, Job Safety Analyses, or similar Risk Management procedures in lieu of an AHA, provided the data collected is the same as that required by the AHA.

1.9.2 Periodic AHA Review and Updating

Review the AHAs periodically (at least monthly) at the Contractor supervisory safety meeting and update when procedures, scheduling, or hazards change. The on-site superintendent, SSHO, and Competent Persons used to develop the AHAs, including updates, must sign and date the AHAs before they are implemented.

1.10 DISPLAY OF SAFETY INFORMATION

Within one calendar day after commencement of on-site work, erect a Safety and Health Bulletin Board at the job site. Where size, duration, or logistics of project do not facilitate a bulletin board, an alternative method, acceptable to the CO, that is accessible and includes all mandatory information for employee and visitor review, will be deemed as meeting the requirement for a bulletin board. Include and maintain information on safety bulletin board as required by EM 385-1-1, Section 2-8.f. Additional items required to be posted include:

a. Confined space entry permit.

b. Hot work permit.

c. Marine Chemist Certificate (Marine Activities).

1.11 SITE SAFETY REFERENCE MATERIALS

Maintain safety-related references applicable to the project, including those listed in Paragraph entitled REFERENCES. Maintain applicable equipment manufacturer's manuals.

1.12 EMERGENCY MEDICAL TREATMENT

Emergency medical treatment for Contract employees is the responsibility of the Contractor.

1.13 PROJECT SAFE CLEARANCE PROCEDURE

1.13.1 General

Prior to beginning work, submit a Hazardous Energy Control Plan in accordance with EM 385-1-1 and CENWP-OD-SAF-385-1. Ensure that each employee is familiar with and complies with the Lockout/Tagout Safe Clearance procedures in EM 385-1-1, CPL 02-00-147, ER 385-1-31, and Government-furnished Hazardous Energy Control Program Supplemental Procedures, as practiced by the U.S. Army Corps of Engineers, Portland District, CENWP-OD-SAF-385-1. Provide HEC instruction and training for personnel that have any involvement with electrical equipment or lines; mechanical equipment; pressure systems; and vessels and lines containing dangerous or hazardous material which can be energized, pressurized, activated, or released remotely or inadvertently. This requirement also applies to any interface of ongoing Project operations and local procedures. Coordinate all work requiring a clearance under EM 385-1-1 and Project Specific Safe Clearance Procedures with the Government at least 24 hours in advance. No work is to proceed until the proper clearances have been obtained from the Government for the work authorized and the Contractor has signed and locked onto the principal authorized clearance. Where the requirements of this specification and referenced documents vary, the most stringent requirements apply.

1.13.2 Safe Clearance Procedure System

A safe clearance system is used by Project Personnel to ensure continuity of service and safety to personnel and equipment. Any work, service, or delivery performed which requires taking Project operating equipment out of service must be done only after a formal clearance is obtained through the Project POC. Do not violate clearance. Any violation of Safe Clearance Procedures will be grounds for removal of the offender(s) from the project. The use of locks and tags is required in the Projects Safe Clearance Procedure for all clearance points that locks can be applied. Where locks cannot be applied, apply Project Clearance Tags. Equipment locks, keys, and a lockbox will be supplied and installed by the Government. The keys to the Government-supplied locks will be placed in the lockbox and locked with a Government lock; the Contractor must provide keyed lock(s) for this lockbox for Contractor personnel working under Safe Clearance. The use of personal locks for individuals working under Safe Clearance is required by CPL 02-00-147 and CENWP-OD-SAF-385-1.

1.14 THIRD PARTY CERTIFICATION OF BARGE-MOUNTED MOBILE CRANES AND MOBILE EQUIPMENT

Barge-mounted mobile cranes must be certified in accordance with the following standards: ASME B30.8, ABS 152, and API Spec 2C. Include Naval Architectural Analysis in accordance with EM 385-1-1, Chapter 16.

1.15 REPORTS

1.15.1 Accident Notification

Notify the CO as soon as practical, but no more than four hours, after any mishap meeting the definition of Recordable Injuries or Illnesses or High Visibility Mishap; meeting EM 385-1-1, Chapter 1, to include property damage equal to or greater than $5,000. In conjunction with Contract Clause 52.236-13 Alt I, ACCIDENT PREVENTION - ALTERNATE I, and EM 385-1-1, report to the Government monthly the total man-hours expended at the project site by all employees (supervisory as well as labor) together with those of all subcontractors. The reporting period will start at 12:01 a.m. the first day of each month and end as of midnight on the last day of each month. Report by telephone to the CO and Resident Engineer's office prior to the fifth day of the following month.

1.15.2 Accident or Mishap Reports

All accidents involving property damage, fires, personal equipment, and all injuries to the public, regardless of degree, must be reported to the CO and Resident Engineer on ENG Form 3394 and according to the schedule which follows:

a. Investigation and Reporting

(1) Conduct a mishap investigation for recordable injuries and illnesses, for Medical Treatment as defined in Paragraph DEFINITIONS, property damage accidents resulting in at least $5,000 in damages, and near misses as defined in EM 385-1-1, to establish the root cause(s) of the accident. Complete the accident or mishap reports form, ENG Form 3394, and provide the report to the CO within five calendar days of the accident.

(2) Conduct an accident investigation for any of the following High Visibility Mishap: (1) Electrical, (2) Load Handling Equipment and Rigging, (3) Fall-from-Height, (4) Underwater Diving to establish the root cause(s) of the accident. Make the initial report within four hours, and provide a completed ENG Form 3394 to the CO within five calendar days of the accident. Do not proceed with further operations until cause is determined and corrective actions have been implemented to the satisfaction of the CO.

(3) The CO and Resident Engineer must be notified by the most expeditious means available of all fatal and permanent total disability injuries, three or more persons hospitalized, all property damage of $500,000 or more, and structural damage involving a question of structural adequacy. All incidents involving disabling injury or an injury which may result in an employee's lost time, or property damage of $5,000 or more must be reported to the CO and Resident Engineer by telephone as soon as possible and in all cases within four hours.

(4) In all accidents enumerated in sub-item (3), investigate the circumstances before the scene of the accident is changed, take corrective action, and within 48 hours forward to the CO and Resident Engineer four copies of ENG Form 3394.

(5) In the event of an accident involving a fatality, permanent total disability, hospitalization of one or more persons, or property damage of $500,000 or more, the Contractor must promptly suspend all operations at the scene of the accident and notify the CO and Resident Engineer of the occurrence. Immediately provide for the rescue and/or care of the injured. Restrict access to the area except in situations where safety may be compromised. Leave the scene undisturbed until investigated by a Government appointed board of investigation and until the Contractor is authorized to resume operations.

(6) If property damage and injury result from the same accident, the consequence may be noted on the same ENG Form 3394. If more than one person is injured in a single accident, ENG Form 3394 must be submitted for each person injured. The Resident Office staff will provide the required forms and assist in their preparation immediately upon notification of an accident.

b. Types of Accidents and Reports. For each accident that results in a consequence or combination of the consequences listed below, a complete report on ENG Form 3394 must be furnished to the CO and Resident Engineer. Please note that these reports cannot be used for any purpose other than accident reporting.

(1) Disabling injury (including death) is an injury that renders a person unable to perform a regularly established job on the day following the injury or on any subsequent day. Known suicide or deaths from natural causes are not reportable.

(2) Damage of $5,000 or more to the Contractor's property or equipment, including motor vehicles and fire and/or damage to other property caused by the Contractor while executing the Contract.

(3) Accidents occasioned by flood, hurricane, tornado, fire,

navigation, wind, ice, etc., and structural failure in excess of $5,000.

1.15.3 Crane Testing Reports

Submit crane inspection reports required in accordance with Chapter 16 of EM 385-1-1, ASME B30-PKG, and as specified herein with the daily reports of inspections.

1.15.4 Certificate of Compliance

Provide a Certificate of Compliance for each crane entering an activity under this Contract (see CO for a blank certificate). State within the certificate that the crane and rigging gear meet applicable OSHA regulations (with the Contractor citing which OSHA regulations are applicable, e.g., cranes used in construction, demolition, or maintenance comply with 29 CFR 1926 and EM 385-1-1 Chapter 16. Certify on the Certificate of Compliance that the crane operator(s) is qualified and trained in the operation of the crane to be used. Also certify that all of its crane operators have been trained in the proper use of all safety devices (e.g., anti-two block devices). Post certifications on the crane.

1.16 HOT WORK

a. Submit and obtain a written permit prior to performing "Hot Work" (i.e. welding or cutting, etc.) or operating other flame-producing/spark producing devices. Submit one copy of each permit attached to each Daily Contractor Quality Control Report (Section 01 45 00.00 25 QUALITY CONTROL. Contractors are required to meet all criteria before a permit is issued. In accordance with EM 385-1-1, a fully charged fire extinguisher, minimum ten lbs. are required to be readily available in the immediate area of Hot Work. All extinguishers must have current inspection tag, approved safety pin, and tamper resistant seal. It is also mandatory to have a designated FIRE WATCH for any "Hot Work" done. Train the Fire Watch in accordance with NFPA 51B and remain on-site for a minimum of 60 minutes after completion of the task or as specified on the hot work permit.

b. When starting work in the facility, require personnel to familiarize themselves with the location of the nearest fire alarm boxes and know the emergency phone number. Report any fire, no matter how small, to the Fire Department and CO immediately.

c. For floating plant, obtain services from a NFPA Certified Marine Chemist for "HOT WORK" within or around flammable materials (such as fuel systems, welding/cutting on fuel pipes) or confined spaces (such as sewer wet wells, manholes, vaults, etc.) that have the potential for flammable or explosive atmospheres.

1.17 FACILITY OCCUPANCY CLOSURE

Streets, walks, and other facilities occupied and used by the Government are prohibited be closed or obstructed without written permission from the CO.

1.18 INCLEMENT WEATHER AND HEAT/COLD STRESS MANAGEMENT

In the event of a severe storm warning:

a. Secure outside equipment and materials and place materials that could be damaged in protected areas.

b. Check surrounding area for loose material, equipment, debris, and other objects that could be blown away or against existing work.

c. Ensure that temporary erosion controls are adequate.

d. Provide an INCLEMENT WEATHER AND HEAT/COLD STRESS MANAGEMENT PLANS for removing or securing plant and evacuation of personnel for floating plants in emergencies. Include this plan as part of the the AHA and meet the requirements of EM 385-1-1.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 CONSTRUCTION AND OTHER WORK

3.1.1 General

Comply with EM 385-1-1, NFPA 241, ASME B30-PKG, the APP, the AHA, Federal and/or State OSHA regulations, and other related submittals and activity fire and safety regulations. The most stringent standard will prevail.

3.1.2 Hazardous Material Exclusions

Not withstanding any other hazardous material used in this Contract, radioactive materials or instruments capable of producing ionizing/non-ionizing radiation (with the exception of radioactive material and devices used in accordance with EM 385-1-1 such as nuclear density meters for compaction testing and laboratory equipment with radioactive sources) as well as materials which contain asbestos, mercury or polychlorinated biphenyls, di-isocyanates, and lead-based paint are prohibited. The CO, upon written request by the Contractor, may consider exceptions to the use of any of the above excluded materials.

3.1.3 Unforeseen Hazardous Material

The design should have identified materials such as PCB, lead-based paint, friable and non-friable asbestos, and other OSHA regulated chemicals (i.e. 29 CFR 1910). If material, not indicated, that may be hazardous to human health upon disturbance during construction operations is encountered, stop that portion of work and notify the CO immediately. Within 14 calendar days the Government will determine if the material is hazardous. If material is not hazardous or poses no danger, the Government will direct the Contractor to proceed without change. If material is hazardous and handling of the material is necessary to accomplish the work, the Government will issue a modification pursuant to Contract Clauses 52.243-4, CHANGES, and 52.236-2, DIFFERING SITE CONDITIONS.

3.2 FALL HAZARD PROTECTION AND PREVENTION PROGRAM

3.2.1 General

Designate a Competent or Qualified Person for Fall Protection to establish, prepare, and sign a fall protection and prevention (FP&P) plan for the protection of all employees exposed to fall hazards in accordance

with ASSP Z359.1 and EM 385-1-1. Establish a fall protection and prevention program, for the protection of all employees exposed to fall hazards. The plan will include: company policy, identify responsibilities, qualifications, education and training requirements, fall hazard identification, prevention and control measures, inspection, storage, care and maintenance of fall protection equipment, and rescue and evacuation procedures; and submit in the APP. Use definitions and nomenclature in accordance with ASSP Z359.1. Identify Competent/Qualified Persons, as required, for fall protection and maintain a list of current certificates and completed training courses for each person. Qualified and Competent Persons (See EM 385-1-1) requirements are as follows:

a. A Qualified Person must have a recognized degree or professional certificate that relates to fall protection and rescue and with extensive knowledge, training, and experience in the fall protection and rescue field and capable of designing, analyzing, evaluating, specifying, inspecting, and assembling fall protection and rescue equipment and systems. The Qualified Person must also have working knowledge of current fall protection regulations and standards, physical sciences, engineering principles, and meet the qualifications of a Competent Person.

b. A Competent Person, designated in writing by the Contractor, will be responsible for the immediate supervision, implementation, and monitoring of the Contractor's managed Fall Hazard Protection and Prevention Program, who through training and knowledge in the fall protection and rescue field, is capable of identifying, evaluating, and addressing existing and potential fall hazards, and who has the authority to take necessary corrective measures. To be qualified as a Competent Person for Fall Protection, the individual must have a minimum of 24 hours of Competent Person for Fall Protection training, with a combination of formal classroom and practical documented training. Training will be performed by a Competent Person training or a Qualified Person trainer conforming to the requirements of ASSP Z490.1, Criteria for Accepted Practices in Safety, Health and Environmental Training. In addition, conduct Competent Person refresher training at least every two years to stay current with fall protection and rescue educational industry requirements, or when new fall protection systems are used or installed, or new fall hazards are encountered per ASSP Z359.1. A Qualified Person may perform the duties and responsibilities of a Competent Person if their training meets the above minimum training requirements.

3.2.2 Fall Protection Equipment and Systems

3.2.2.1 General

Enforce use of the fall protection equipment and systems designated for each specific work activity in the Fall Protection and Prevention Plan and/or AHA at all times when an employee is exposed to a fall hazard. Protect employees from fall hazards as specified in EM 385-1-1, Chapter 21. In addition to the required fall protection systems, safety skiff, personal floatation devices, and life rings etc., are required when working above or next to water in accordance with EM 385-1-1, Chapters 05 and 21. Personal fall arrest systems are required when working from an articulating or extendible boom, swing stages, or suspended platforms. Safety requirements for work platforms suspended from cranes or derricks must comply with ASSP A10.28. In addition, personal fall restraint systems are required when operating other equipment such as scissor

lifts. Fall protection must comply with EM 385-1-1, and ASSP Z359.1.

3.2.2.2 Personal Fall Arrest Equipment

Personal fall arrest equipment, systems, subsystems, and components must meet ASSP Z359.1. Only a full-body harness with a shock-absorbing lanyard or self-retracting lanyard is an acceptable personal fall arrest body support device. Body belts are prohibited, to include use in Fall Restraint. Harnesses must have a fall arrest attachment affixed to the body support (usually a Dorsal D-ring) and specifically designated for attachment to the rest of the system. Only locking snap hooks and carabiners may be used meeting the 3,600 lb. gate strength requirement. Webbing, straps, and ropes must be made of synthetic fiber. The maximum free fall distance when using fall arrest equipment cannot exceed six feet. The total fall distance and any swinging of the worker (pendulum-like motion) that can occur during a fall must always be taken into consideration when attaching a person to a fall arrest system. All harnesses must be equipped with Trauma Suspension Straps or similar to provide short-term relief from the effects of orthostatic intolerance. Equip all energy absorbers with a deployment indicator.

3.2.3 Work Over Water

Work over water must conform to requirements set forth in the Bonneville Lock and Dam, Boat Restricted Zone Entry Procedure, see Attachment [_____] and EM 385-1-1.

3.2.4 Existing Anchorage

Existing anchorages, to be used for attachment of personal fall arrest equipment, must be certified (or re-certified) by a Qualified Person for fall protection in accordance with ASSP Z359.1. Exiting horizontal lifeline anchorages must be certified (or re-certified) by a registered professional engineer with experience in designing horizontal lifeline systems.

3.2.5 Horizontal Lifelines

Design, install, certify, and use under the supervision of a Qualified Person horizontal lifelines for fall protection as part of a complete fall arrest system in compliance with ASSP Z359.1 and EM 385-1-1, Chapter 21.

3.2.6 Guardrails and Safety Nets

Design, install, and use guardrails and safety nets in accordance with EM 385-1-1, Chapters 21 and 19 (Marine).

3.2.7 Rescue and Evacuation Procedures

When personal fall arrest systems are used, ensure that the mishap victim can self-rescue or can be rescued promptly should a fall occur. Prepare a Rescue and Evacuation Plan and include a detailed discussion of the following: methods of rescue; methods of self-rescue; equipment used; training requirement; specialized training for the rescuers; procedures for requesting rescue and medical assistance; and transportation routes to a medical facility. Include the Rescue and Evacuation Plan within the AHA for the phase of work, in the FP&P Plan, and the APP.

3.2.8 Aerial Lift Equipment and Movable Work Platforms

In addition to the guardrail provided, equip equipment with anchorages meeting ASSP Z359.1. A restraint system must be used in addition to guardrails and the lanyards sufficiently short to prohibit workers from climbing out of, or being ejected from the platform.

3.2.9 Safety Monitoring System

The use of a safety monitoring system as a fall protection method is prohibited.

3.2.10 Controlled Access Zones

The use of Controlled Access Zones as a fall protection method is prohibited.

3.3 EQUIPMENT

3.3.1 Load Handling Equipment (LHE)

Load Handling Equipment (LHE) must comply with ASME B30-PKG and the following:

a. Do not modify Load Handling Equipment such as forklifts with work platform attachments for supporting employees unless specifically delineated in the manufacturer's printed operating instructions.

b. The use of hooks on equipment for lifting of material must be in accordance with manufacturer's printed instructions.

c. Operators of forklifts or power industrial trucks must be licensed in accordance with OSHA.

3.3.2 Cranes, Hoists, and Rigging

a. LHE as specified in EM 385-1-1, Chapter 16.

b. Comply with the LHE manufacturer's specifications and limitations for erection and operation of LHE used in support of the work. Perform erection under the supervision of a designated person (as defined in ASME B30-PKG). Perform all testing in accordance with the manufacturer's recommended procedures.

c. Comply with ASME B30-PKG, OSHA and the EM 385-1-1 for all cranes.

d. When operating in the vicinity of overhead transmission lines, operators and riggers be alert to this special hazard and follow the requirements of EM 385-1-1, Chapter 11, and ASME B30-PKG.

e. Do not use personnel work platforms (man-baskets) unless the Contractor proves that using any other access to the work location would provide a greater hazard to the workers or is impossible. Hoisting personnel must be allowed by the LHE Manufacturer. This activity is a critical lift and a critical lift plan is required.

f. Inspect, maintain, and recharge portable fire extinguishers as specified in NFPA 10, Standard for Portable Fire Extinguishers.

g. All employees must keep clear of loads about to be lifted and of suspended loads.

h. Use cribbing when performing lifts on outriggers.

i. Position the LHE hook/block directly over the load. Side loading of LHE is prohibited unless allowed by the manufacturer.

j. Position a physical barricade to prevent personnel from entering the counterweight swing (tail swing) area of the crane.

k. Certification records which include the date of inspection, signature of the person performing the inspection, and make the serial number or other identifier of the LHE that was inspected available onsite at all times.

l. Written reports listing the load test procedures used along with any repairs or alterations performed on the crane must be available onsite.

m. Certify that all LHE operators have been trained in proper use of the equipment they are authorized by type, class and capacity.

n. Certify that all LHE meet the manufactures requirements by completing and submitting the certification of compliance (COC)for in the EM 385-1-1 prior to the start of work.

o. A physical if required by the EM 385-1-1, and must be signed by a Medical Doctor (MD) or Doctor of Osteopathy (DO), for all LHE operators.

p. Plan all lifts with LHE in advance by developing a Standard lift plan (SLP) per the EM 385-1-1.

3.4 EXCAVATIONS

3.4.1 Soil Classification

Perform soil classification by a Competent Person in accordance with EM 385-1-1.

3.4.2 Utility Locations

All underground utilities in the work area must be positively identified by a third party, independent, private utility locating company in addition to any station locating service and coordinated with the station utility department.

3.4.3 Utility Location Verification

Physically verify underground utility locations, including utility depth, by hand digging using wood or fiberglass handled tools when any adjacent construction work is expected to come within three feet of the underground system.

3.4.4 Utilities Within and Under Concrete, Bituminous Asphalt, and Other Impervious Surfaces

Utilities located within and under concrete slabs or pier structures,

bridges, parking areas, and the like, are extremely difficult to identify. Whenever Contract work involves chipping, saw cutting, or core drilling through concrete, bituminous asphalt or other impervious surfaces, the existing utility location must be coordinated with station utility departments in addition to location and depth verification by a third party, independent, private locating company. The third party, independent, private locating company must locate utility depth by use of Ground Penetrating Radar (GPR), X-ray, bore scope, or ultrasound prior to the start of demolition and construction. Use outages to isolate utility systems in circumstances where utilities are unable to be positively identified. The use of historical drawings does not alleviate the Contractor from meeting this requirement.

3.5 ELECTRICAL

3.5.1 Conduct of Electrical Work

Certify underground electrical spaces safe for entry before entering to conduct work. Positively identify cables that will be cut, and de-energize prior to performing each cut. Positive cable identification must be made prior to submitting any outage request for electrical systems. Arrangements are to be coordinated with the CO and Station Utilities for identification. The CO will not accept an outage request until the Contractor satisfactorily documents that the circuits have been clearly identified. Perform all high voltage cable cutting remotely using hydraulic cutting tool. When racking in or live switching of circuit breakers, no additional person other than the switch operator will be allowed in the space during the actual operation. Plan so that work near energized parts is minimized to the fullest extent possible. Use of electrical outages clear of any energized electrical sources is the preferred method. When working in energized substations, only qualified electrical workers must be permitted to enter. When work requires Contractor to work near energized circuits as defined by the NFPA 70, high voltage personnel must use personal protective equipment that includes, as a minimum, electrical hard hat, safety shoes, insulating gloves with leather protective sleeves, fire retarding shirts, coveralls, face shields, and safety glasses. In addition, provide electrical arc flash protection for personnel as required by NFPA 70E. Insulating blankets, hearing protection, and switching suits may also be required, depending on the specific job and as delineated in the Contractor's AHA.

3.5.2 Arc Flash Hazard (AFH) Program

a. Develop an AFH Program as described in ER 385-1-100. The AFH Program, at a minimum, must:

(1) Be supplemental to Engineering Regulations

(2) Identify an AFH Coordinator

(3) Identify AFH Qualified Personnel

(4) Identify personnel roles and responsibilities

(5) Provide details on and contain AFH analyses

(6) Procedures to address DC, single-phase and high voltage

(7) Define appropriate hazard mitigation

(8) Provide for integration of controls into work activities

(9) Provide Personal Protective Equipment (PPE) policies and procedures

(10) Describe labeling procedures

(11) Provide training procedures and methods

(12) Describe inspections and program review procedures

(13) Detail mishap reporting procedures

(14) Describe documentation and recordkeeping procedures

(15) Be made available to all personnel with potential exposure to AFHs

(16) Include provisions:

(a) that violators of the policy will be subject to appropriate disciplinary action

(b)for reporting violations of AFH Program and/or procedures

(17) Include facility-specific information

b. Prior to beginning work on any equipment where an AFH exists, attend a coordination meeting with the CO and the Government AFH coordinator to review the Contractor AFH Program.

3.6 DUST CONTROL

In addition to the dust control measures required elsewhere in the Contract documents, dry cutting of brick or masonry is prohibited. Address control of water runoff for wet cutting.

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01 35 27.00 25

DIVING

-- End of Section Table of Contents --

SECTION 01 35 27.00 25

DIVING

PART 1 GENERAL

1.1 GENERAL INFORMATION

This Section covers the general requirements for Contract diving operations to be performed as specified within this Contract. Diving must be performed in accordance with the latest edition of the U.S. Army Corps of Engineers Safety and Health Requirements Manual, EM 385-1-1 referenced in Contract Clause 52.236-13 Alt I, ACCIDENT PREVENTION - ALTERNATE I; the Portland District Diving Regulation, NWPR 385-1-93; the U.S. Navy Diving Manuals, NAVSEA 0994-LP001-0910 and NAVSEA 0994-LP001-0920; 29 CFR 1910, Subpart T; and ADCI Consensus Standards inclusive of all other references listed therein. All diving operations must be considered incidental to the work specified elsewhere herein. No separate payment for diving work will be made.

1.2 REFERENCES

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

ASSOCIATION OF DIVING CONTRACTORS INTERNATIONAL (ADCI)

ADCI	(2014) Consensus Standards for Commercial Diving and Underwater Operations, 6th Edition

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1	(2014) Safety and Health Requirements Manual

U.S. ARMY CORPS OF ENGINEERS (PORTLAND DISTRICT)

NWPR 385-1-93	(2009) Engineering Regulation, Diving Operation by Contract

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1910, Subpart T	Commercial Diving Operations

U.S. NAVAL SEA SYSTEMS COMMAND (NAVSEA)

NAVSEA 0994-LP001-0910	U.S. Navy Diving Manual
NAVSEA 0994-LP001-0920	U.S. Navy Diving Manual

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. The

following must be submitted in accordance with Sections 01 33 00, SUBMITTAL PROCEDURES, and 01 35 26.00 25, GOVERNMENTAL SAFETY REQUIREMENTS.

SD-01 Preconstruction Submittals

Dive Team Personnel; G

Dive Plan and General Schedule; G

Equipment Certification; G

Emergency Management Plan; G

Activity Hazard Analysis; G

Company Safe Practice Manual For Diving; G

1.4 PRE-QUALIFIED DIVE COMPANIES AND DIVE TEAM PERSONNEL

a. Effective 1 May 2008, the U.S. Army Corps of Engineers Portland District will no longer utilize its Dive Pre-Qualification Program.

b. As a result, any domestic commercial dive Contractor meeting the minimum standards set forth in the most recent edition of the USACE Safety and Health Requirements Manual, EM 385-1-1, and in the Portland District's Dive Safety Regulation, NWPR 385-1-93 (see Appendix A of this Section), will be eligible to compete for routine diving work. The Dive Contractor must have no State or Federal OSHA safety violations within the 12 months preceding the due date of the bid or proposal.

c. Once awarded, Contract performance is contingent upon the Contractor's submission of an acceptable Dive Plan, Activity Hazard Analysis, and Emergency Management Plan for the specific diving operation to be conducted. It is the Contractor's responsibility to ensure that all diver credentials and equipment certifications meet the standards outlined in the most recent edition of EM 385-1-1 and NWPR 385-1-93.

1.5 DIVING ENVIRONMENT

a. The estimated maximum working depth is approximately 50 feet below water surface.

b. The estimated maximum depth (distance from water surface to bottom) the diver(s) will be exposed to is approximately 75 feet below water surface.

c. Turbidity may limit visibility to 5 feet or less.

d. The current water velocity through the work area is estimated to be approximately 1 knots.

e. Water temperature(s) are estimated to vary between 42 and 52 degrees F.

f. Underwater operations will not require diver(s) to perform work within confined spaces and/or enclosed areas or areas with an overhead.

g. The overall work site is a restricted access area and is not open to commercial and private vessels.

1.6 DIVE PLAN AND GENERAL SCHEDULE

a. No later than 21 working days prior to the first planned diving operation, the Dive Plan and General Schedule must be submitted to coordinate unit outages at the Project and other concurrent work. The Dive Plan and General Schedule must detail dive locations and must be flexible enough to accommodate conflicts with allowable unit outages. Personnel and equipment certification must be included in the plan. A site specific Emergency Management Plan must be included in the Dive Plan in accordance with NWPR 385-1-93. A job specific Activity Hazard Analysis (AHA) must be prepared in accordance with NWPR 385-1-93 and EM 385-1-1, Paragraph 01.A.09, and must be included in the Dive Plan. Adjustments must be coordinated with the Contracting Officer (CO). Dive locations and schedules must be submitted in accordance with Section 01 33 00, SUBMITTAL PROCEDURES, for approval.

b. Scheduling Individual Dives. The Contractor must notify the COR in writing a minimum of seven calendar days in advance of each scheduled dive. Failure to give the full seven days notice may result in delays to the work if a DSI is not available. The Government is not liable for delays if the Contractor fails to give the required seven days written notice.

c. In the event it becomes necessary to cancel or reschedule a dive, the Contractor is required to notify the Government at least two work days prior to the first day of the scheduled dive during normal business hours (Monday through Friday excluding holidays). Failure to provide such notification will make the Contractor liable for the daily rate for the DSI from the date of the cancellation until the dive commences; the Contactor will not be charged for more than seven days delay for each dive cancellation. However, each time a dive is cancelled or rescheduled, it is treated as a new dive for purposes of scheduling DSI's and determining delay costs. When computing delay costs, a partial day is considered a full day; DSI delay costs will be permanently deducted from the Contractor's pay at the rate of $1000.00 per day.

1.7 COMPANY SAFE PRACTICE MANUAL FOR DIVING

Submit a Company Safe Practice Manual for Diving. If this manual is already on file with U.S. Army Corps of Engineers, Portland District, Office of Dive Safety an additional copy is not required.

1.8 NWP DIVE SAFETY INSPECTOR

EM 385-1-1 requires the Portland District Dive Safety Office to provide a Dive Safety Inspector (DSI) to be onsite at all times during diving operations. A DSI will be provided based on the Contractor's submitted Dive Plan and General Schedule. The Dive Plan and General Schedule must include anticipated dive schedules and durations. Any changes to the dive schedule must be provided to the COR with no less than seven calendar days notice.

1.9 RESOLUTION OF CONFLICT

EM 385-1-1 and NWPR 385-1-93, as applied by the USACE Portland District

Office of Dive Safety, or supplemental waiver or applicable Memorandum of Agreement (MOA) must be the controlling authority(s) for implementation of all Contract diving policy.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 DIVE TEAM COMPOSITION AND DIVE EQUIPMENT

Minimum dive team staffing must, unless a waiver is approved by the Portland District Office of Dive Safety, be comprised of personnel levels as required by EM 385-1-1 and NWPR 385-1-93: a single diver requires a five-man crew as defined in this reference and for two in-water working divers, a seven-man crew must be required, which includes the addition of one stand-by diver and one tender. For depths exceeding 100 feet, a six-man crew is required. Any use of breathing gas with oxygen content more than 21 percent is considered mixed gas diving. A minimum six-man crew is required for all mixed gas diving. SCUBA Diving is allowable only with prior permission obtained from the USACE Portland District Office of Dive Safety. In addition to the dive team personnel addressed in the above references, minimum required certified chamber crew personnel must be provided as diving operations dictate. If a crane is used, a certified crane operator who must not be included as a dive-team member must be exclusively dedicated to crane operations. Surface-supplied air diving equipment with two-way voice communication must be used by divers and standby divers. An independent reserve air system (bailout bottle) for all divers is required as specified by EM 385-1-1 and NWPR 385-1-93. As a minimum, all diver surface air supply compressors, tanks, helmets, and other related equipment must comply with the requirements of EM 385-1-1. All dive team members must meet the requirements as listed in EM 385-1-1, Section 30.A.06 through 10, and NWPR 385-1-93.

3.2 CONTRACTOR-PROVIDED DIVING SUPPORT EQUIPMENT

A dual lock recompression chamber(s) capable of recompression to a minimum of 165 FSW must be provided on-site and available for immediate use for divers working at all depths unless a waiver is granted by the Portland Office of Dive Safety. Sufficient on-site chamber facilities must be provided to service multiple divers working simultaneously on differing recompression schedules. All recompression treatment tables must comply with the most recent edition of the U.S. Navy Dive Manual. Unless waived by the Portland Office of Dive Safety, diving in water less than 46 degrees F for bottom times exceeding 45 minutes of accumulated bottom time or less than 36 degrees F for bottom times exceeding 20 minutes of accumulated bottom time must require hot water diving systems. Unless waived by the Portland District of Dive Safety, variable-volume dry suits with appropriate thermal protection must be utilized by divers working in waters 60 degrees F, or less. A dive vessel, or a floating or suspended dive platform from which diving operations will be staged, must at all times provide a portable toilet unit and a heated shelter for all dive team members when temperature and/or wind-chill factor is below 60 degrees F. Man-basket(s) must be provided for each working diver as needed. All necessary top-side equipment such as cranes, trucks, personnel vehicles, and appropriately-powered underwater hand and power tools must be furnished by the Contractor to enable accomplishment of all required dive work.

3.3 CONTRACTOR-PROVIDED SPECIAL UNDERWATER EQUIPMENT

Provide all appropriate tools, equipment, and materials needed to accomplish the tasks as stated in Paragraph DIVING WORK DESCRIPTION.

3.4 SAFE CLEARANCE PROCEDURES

A safe clearance Lock-out/Tag-out system is used by USACE Portland District project personnel to insure continuity of service and safety to personnel and equipment in accordance with Section 01 35 26.00 25, GOVERNMENTAL SAFETY REQUIREMENTS. Any work performed which requires taking Project operating equipment out of service must be done only after formal clearance is obtained from the Government. Clearances will be issued only by the Project Control Room and the Chief of Operations. The Government will furnish a checklist of clearance lock-out/tag-out items implemented for each clearance action and the Contractor dive supervisor must accompany Government personnel during the verification of the lock-out/tag-out process. The Government Diving Safety Inspector will keep the Project control room informed of all diving activity underway. Clearances violated by Contractor personnel will be cause to immediately and permanently ban the person(s) from the project site. See NWPR 385-1-93, portion E of Appendix A, for Procedures for Corrective Actions.

3.5 BOAT RESTRICTED ZONE

3.5.1 General

Each USACE Portland District Project requires compliance with its site-specific Boat Restricted Zone (BRZ) Policy, where any work on or over water near the dam structures will be planned and coordinated with Project Operations personnel before approaching the dam. Obtain and follow the latest site-specific edition of the appropriate Project's BRZ Policy.

3.5.2 Permission

a. The applicant wishing to enter the BRZ is required to make a written request for access to the Operations Project Manager (OPM) two weeks in advance of the anticipated work date(s). The request must include a schedule and written work plan. The schedule and work plan will be approved by the OPM prior to any "work from the water" or "entry in the BRZ." Coordination with the OPM must include the CO, The Operations Project Manager (OPM) or their representative.

b. The applicant wishing to enter the BRZ must include a written job and activity hazard analysis. These analyses will be reviewed and approved by the OPM prior to any in-water work.

c. A pre-work safety meeting must be held at the Project prior to the anticipated work dates. The safety meeting must be attended by the Task/Work Leader or Supervisor of the work crew. In addition, evidence must be provided to the OPM that the applicant seeking access has all of the requirements listed on the attached boating safety equipment memorandum.

d. Immediately prior to engaging in the work within the BRZ boundaries, the applicant must call in and acquire Project Control Room approval to enter the BRZ. This will enable any real time event information to be passed to the BRZ entrants. The applicant must call and advise the Project when leaving the BRZ.

3.5.3 Flows and Site Conditions

a. Should the applicant wish to enter within 600 feet of the Powerhouse or spillway, Project equipment will be positioned so that flows are eliminated or reduced to acceptable levels for the boats being used in the BRZ and for the safety of personnel should they fall overboard. This equipment will be placed under the appropriate clearance so that it cannot be operated while boats are in the inner BRZ. No boat must enter the area until the clearances are issued and approval has been granted from the Project control room.

b. Permission to enter the BRZ may be withdrawn due to operational concerns at a moments notice by the Project Manager or his/her representative.

3.5.4 Safety Requirements

The following safety items must be met prior to entry into the BRZ:

a. The requirements of EM 385-1-1.

b. As a minimum, each vessel must meet Coast Guard safety standards for boat day and night operation. Included are fire extinguishing capability, personal safety devices, running and anchor lights and audible warning device capable of being heard anywhere within the BRZ. In addition, each boat wishing to enter the BRZ must display a current State inspection sticker on the boat demonstrating the equipment meets current state safety standards.

c. A marine band radio capable of communication with the control room on channel 14 must be available to the boat operator. Failure to maintain communication with the control room during the period boats are operating within the BRZ is cause for removal from the BRZ and for future BRZ access denial.

d. The boat operator must remain at the boat controls and have no other duties while inside the BRZ.

e. A rescue line must be available in a throw bag. The rescue line length must be of sufficient length to reach personnel which have gone overboard. A minimum length of 75 feet is recommended. Line which is constructed of a buoyant material is also recommended.

f. A spotlight which can be easily operated by the boat operator must be available.

g. A second boat of sufficient size, capable of safely removing "ALL" personnel from the work zone, must be standing by for rescue purposes. Both boats must remain in radio contact with each other and the Project control room. The rescue boat is not to perform any work. It is to be manned by a boat operator and at least one rescue individual.

h. Both boats must be powered by engines capable of motoring upstream at twice the speed of the quickest flow that will be encountered inside the BRZ while fully loaded and operational.

i. Each boat must have two motors and be of sufficient size to safely

remove ALL personnel from the work zone.

j. Each motor must have a separate fuel system to isolate any fuel contamination problems.

k. Each boat must have an adequate size tow line capable of towing a disabled boat to safety.

l. The Project will issue identification flags for all vessels that are granted permission to enter the BRZ. These flags must be displayed clearly and prominently at all times the boat is in the BRZ. If diving, a one-meter square Code Alpha Flag as well as a "Diver Down" flag must be flown a minimum of five feet above the vessel's highest point.

m. All boat operators must present their credentials prior to initiation of work. This must include all licenses, certifications, and a resume of appropriate experience. Each operator must be approved by the Operations Project Manager (or their Representative) prior to beginning work.

n. Boat operators must have and review latest river charts in the BRZ area.

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01 42 00

SOURCES FOR REFERENCE PUBLICATIONS

-- End of Section Table of Contents --

SECTION 01 42 00

SOURCES FOR REFERENCE PUBLICATIONS

PART 1 GENERAL

1.1 REFERENCES

Various publications are referenced in other sections of the specifications to establish requirements for the work. These references are identified in each section by document number, date and title. The document number used in the citation is the number assigned by the standards producing organization (e.g. ASTM B564 Standard Specification for Nickel Alloy Forgings). However, when the standards producing organization has not assigned a number to a document, an identifying number has been assigned for reference purposes.

1.2 ORDERING INFORMATION

The addresses of the standards publishing organizations whose documents are referenced in other sections of these specifications are listed below, and if the source of the publications is different from the address of the sponsoring organization, that information is also provided.

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)
444 North Capital Street, NW, Suite 249
Washington, DC 20001
Ph: 202-624-5800
Fax: 202-624-5806
E-Mail: info@aashto.org
Internet: https://www.transportation.org/

AMERICAN BUREAU OF SHIPPING (ABS)
ABS Plaza
1701 City Plaza Drive
Spring, TX 77389 United States
Ph: 281-877-6000
Fax: 281-877-5976
E-Mail: ABS-WorldHQ@eagle.org
Internet: https://ww2.eagle.org/

AMERICAN CONCRETE INSTITUTE (ACI)
38800 Country Club Drive
Farmington Hills, MI 48331-3439
Ph: 248-848-3700
Fax: 248-848-3701
Internet: https://www.concrete.org/

AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)
130 East Randolph, Suite 2000
Chicago, IL 60601
Ph: 312-670-5444
Fax: 312-670-5403
Steel Solutions Center: 866-275-2472

E-mail: solutions@aisc.org
Internet: https://www.aisc.org/

AMERICAN PETROLEUM INSTITUTE (API)
1220 L Street, NW
Washington, DC 20005-4070
Ph: 202-682-8000
Internet: https://www.api.org/

AMERICAN SOCIETY OF SAFETY PROFESSIONALS (ASSP)
520 N. Northwest Highway
Park Ridge, IL 60068
Ph: 847-699-2929
Internet: https://www.assp.org/

AMERICAN WELDING SOCIETY (AWS)
8669 NW 36 Street, #130
Miami, FL 33166-6672
Ph: 800-443-9353
Internet: https://www.aws.org/

ASTM INTERNATIONAL (ASTM)
100 Barr Harbor Drive, P.O. Box C700
West Conshohocken, PA 19428-2959
Ph: 610-832-9500
Fax: 610-832-9555
E-mail: service@astm.org
Internet: https://www.astm.org/

CONCRETE REINFORCING STEEL INSTITUTE (CRSI)
933 North Plum Grove Road
Schaumburg, IL 60173-4758
Ph: 847-517-1200
Fax: 847-517-1206
Internet: http://www.crsi.org/

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)
1 Batterymarch Park
Quincy, MA 02169-7471
Ph: 800-344-3555
Fax: 800-593-6372
Internet: https://www.nfpa.org

NATIONAL READY MIXED CONCRETE ASSOCIATION (NRMCA)
Manager, Customer Service
900 Spring Street
Silver Spring, MD 20910
Ph: 240-485-1165
E-mail: jjenkins@nrmca.org (Jacques Jenkins)
Internet: https://www.nrmca.org/

PRECAST/PRESTRESSED CONCRETE INSTITUTE (PCI)
200 West Adams St., 2100
Chicago, IL 60606
Ph: 312-786-0300
Bookstore: 312-428-4946
Internet: https://www.pci.org/

U.S. ARMY (DA)
Army Publishing Directorate
9301 Chapek Rd., Bldg 1458
Fort Belvoir, VA 22060-5447
Ph: 703-614-3727
E-mail: usarmy.pentagon.hqda-apd.mbx.customer-service@mail.mil
Internet: https://armypubs.army.mil/

U.S. ARMY CORPS OF ENGINEERS (USACE)
CRD-C DOCUMENTS available on Internet:
http://www.wbdg.org/ffc/army-coe/standards
Order Other Documents from:
Official Publications of the Headquarters, USACE
E-mail: hqpublications@usace.army.mil
Internet: http://www.publications.usace.army.mil/
or
https://www.hnc.usace.army.mil/Missions/Engineering-Directorate/TECHINFO/

U.S. DEPARTMENT OF DEFENSE (DOD)
Order DOD Documents from:
Room 3A750-The Pentagon
1400 Defense Pentagon
Washington, DC 20301-1400
Ph: 703-571-3343
Fax: 215-697-1462
E-mail: customerservice@ntis.gov
Internet: https://www.ntis.gov/
Obtain Military Specifications, Standards and Related Publications from:
Acquisition Streamlining and Standardization Information System (ASSIST)
Department of Defense Single Stock Point (DODSSP)
Document Automation and Production Service (DAPS)
Building 4/D
700 Robbins Avenue
Philadelphia, PA 19111-5094
Ph: 215-697-6396 - for account/password issues
Internet: https://assist.dla.mil/online/start/; account registration required
Obtain Unified Facilities Criteria (UFC) from:
Whole Building Design Guide (WBDG)
National Institute of Building Sciences (NIBS)
1090 Vermont Avenue NW, Suite 700
Washington, DC 20005
Ph: 202-289-7800
Fax: 202-289-1092
Internet:
https://www.wbdg.org/ffc/dod/unified-facilities-criteria-ufc

U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)
1200 Pennsylvania Avenue, N.W.
Washington, DC 20004
Ph: 202-564-4700
Internet: https://www.epa.gov
--- Some EPA documents are available only from:
National Technical Information Service (NTIS)
5301 Shawnee Road
Alexandria, VA 22312

Ph: 703-605-6060 or 1-800-363-2068
Fax: 703-605-6880
TDD: 703-487-4639
E-mail: info@ntis.gov
Internet: https://www.ntis.gov/

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)
8601 Adelphi Road
College Park, MD 20740-6001
Ph: 866-272-6272
Internet: https://www.archives.gov/
Order documents from:
Superintendent of Documents
U.S. Government Publishing Office (GPO)
732 N. Capitol Street, NW
Washington, DC 20401
Ph: 202-512-1800 or 866-512-1800
Bookstore: 202-512-0132
Internet: https://www.gpo.gov/

U.S. NAVAL SEA SYSTEMS COMMAND (NAVSEA)
Commander Naval Sea Systems Command
1333 Isaac Hull Ave., SE
Washington Navy Yard, DC 20376
Ph: 202-781-0000
Internet: https://www.navsea.navy.mil/

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01 45 00.00 25

QUALITY CONTROL

-- End of Section Table of Contents --

SECTION 01 45 00.00 25

QUALITY CONTROL

PART 1 GENERAL

1.1 REFERENCES

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

ASTM INTERNATIONAL (ASTM)

ASTM C1077	(2017) Standard Practice for Laboratories Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation
ASTM C1093	(2009) Standard Practice for Accreditation of Testing Agencies for Masonry
ASTM D3666	(2013) Standard Specification for Minimum Requirements for Agencies Testing and Inspecting Road and Paving Materials
ASTM D3740	(2012a) Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction
ASTM E329	(2014) Standard Specification for Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following must be submitted in accordance with Section 01 33 00, SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Contractor Quality Control Plan; G

Construction Quality Management for Contractors

1.3 LABORATORY VALIDATION

For tests performed under this Contract, use a testing laboratory validated by the Corps of Engineers Material Testing Center (MTC). See Paragraph entitled TESTS.

1.4 PAYMENT

Separate payment will not be made for providing and maintaining an effective Quality Control system, and all associated costs will be included in the applicable unit prices or lump-sum prices contained in the Price Schedule.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 GENERAL REQUIREMENTS

3.1.1 Quality Control System

Establish and maintain an effective quality control (QC) system in compliance with Contract Clause 52.246-12, INSPECTION OF CONSTRUCTION. The quality control system must consist of plans, procedures, and organization necessary to produce an end product which complies with the Contract requirements. The QC system must cover all construction operations, both onsite and offsite, and be keyed to the proposed construction sequence.

3.1.2 Project Superintendent

Identify an individual, within the onsite work organization, as Project Superintendent. The Project Superintendent must be a Journeyman with a minimum of five years experience in a verifiable Project Superintendent role on jobs similar to this Contracts. The designated Project Superintendent must be acceptable to the CO. The Project Superintendent must be held responsible for the quality of work on the job and is subject to removal by the Contracting Officer (CO) for non-compliance with the quality requirements specified in the Contract. In this context the highest level manager responsible for the overall construction activities at the site, including quality and production is the Project Superintendent. The Project Superintendent must maintain a physical presence at the site at all times, except as otherwise acceptable to the CO, and must be responsible for all construction and construction related activities at the site. The Project Superintendent must have no other duties; they may not perform the duties of an equipment operator, flagger, laborer, or any other position. Identify an alternate for the Project Superintendent to serve in the event of the Project Superintendent's absence and/or to cover work performed on additional shift. The requirements for the alternate are the same as the designated Project Superintendent.

3.2 CONTRACTOR QUALITY CONTROL PLAN

Submit no later than 30 days after receipt of Notice to Proceed, the Contractor Quality Control (CQC) Plan proposed to implement the requirements of Contract Clause 52.246-12, INSPECTION OF CONSTRUCTION. Construction will be permitted to begin only after acceptance of the CQC Plan or acceptance of an interim plan applicable to the particular feature of work to be started. Work outside of the features of work included in an accepted interim plan will not be permitted to begin until acceptance of a CQC Plan or another interim plan containing the additional features of work.

3.2.1 Content of the CQC Plan

Include, as a minimum, the following to cover all construction operations, both onsite and offsite, including work by subcontractors, fabricators, suppliers, purchasing agents:

a. A description of the quality control organization, including a chart showing lines of authority and acknowledgment that the CQC staff must implement the three phase control system for all aspects of the work specified. Include in the staff a CQC System Manager.

b. The name, qualifications (in resume format), duties, responsibilities, and authorities of each person assigned a CQC function; see Paragraph entitled QUALITY CONTROL ORGANIZATION.

c. A copy of the letter to the CQC System Manager signed by an authorized official of the firm which describes the responsibilities and delegates sufficient authorities to adequately perform the functions of the CQC System Manager, including authority to stop work which is not in compliance with the Contract. Letters of direction to all other various quality control representatives outlining duties, authorities, and responsibilities must be issued by the CQC System Manager. Copies of these letters must be furnished to the Government.

d. Procedures for scheduling, reviewing, certifying, and managing submittals, including those of subcontractors, offsite fabricators, suppliers, and purchasing agents. These procedures must be in accordance with Section 01 33 00, SUBMITTAL PROCEDURES.

e. Control, verification, and acceptance testing procedures for each specific test to include the test name, specification paragraph requiring test, feature of work to be tested, test frequency, and person responsible for each test. (Use laboratory facilities approved by the CO.)

f. Procedures for tracking preparatory, initial, and follow-up control phases and control, verification, and acceptance tests including documentation.

g. Procedures for tracking construction deficiencies from identification through acceptable corrective action. Establish verification procedures that identified deficiencies have been corrected.

h. Reporting procedures, including proposed reporting formats.

i. A list of the definable features of work. A definable feature of work 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 features under a particular Section. This list will be agreed upon during the coordination meeting.

3.2.2 Acceptance of CQC Plan

Acceptance of the CQC plan is required prior to the start of

construction. Acceptance is conditional and will be predicated on satisfactory performance during the construction. The Government reserves the right to require the Contractor to make changes in the CQC Plan and operations including removal of personnel, as necessary, to obtain the quality specified.

3.2.3 Notification of Changes

After acceptance of the CQC Plan, notify the CO in writing of any proposed change. Proposed changes are subject to acceptance by the CO.

3.3 COORDINATION MEETING

After the Preconstruction Conference, before start of construction and prior to acceptance by the Government of the CQC Plan, the Contractor must meet with the CO and discuss the Contractor's quality control system. Submit the CQC Plan for review a minimum of 10 calendar days prior to the Coordination Meeting. During the meeting, a mutual understanding of the system details must be developed, including the forms for recording the CQC operations, control activities, testing, administration of the system for both onsite and offsite work, and the interrelationship of Contractor's Management, and control with the Government's Quality Assurance. Minutes of the meeting will be prepared by the Government and signed by both the Contractor and the CO and will become a part of the Contract file. There may be occasions when subsequent conferences will be called by either party to reconfirm mutual understandings and/or address deficiencies in the CQC system or procedures which may require corrective action by the Contractor.

3.4 QUALITY CONTROL ORGANIZATION

3.4.1 Personnel Requirements

The requirements for the CQC organization are a CQC System Manager and sufficient number of additional qualified personnel to ensure Contract compliance. Personnel identified in the technical provisions as requiring specialized skills to assure the required work is being performed properly must be included as part of the CQC organization. The Contractor's CQC 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. All CQC staff members must be subject to acceptance by the CO. Promptly complete and furnish all letters, material submittals, shop drawing submittals, schedules, and all other project documentation to the CQC organization. The CQC organization must maintain these documents and records at the site at all times, except as otherwise acceptable to the CO.

3.4.2 CQC System Manager Qualifications

Identify an individual, within the onsite work organization, as CQC System Manager who must be responsible for writing and executing a complete CQC plan, overall management of CQC, and have the authority to act in all CQC matters for the Contractor. The CQC System Manager must have a minimum of five years of experience in a verifiable CQC role on jobs similar to this Contract. This CQC System Manager must be on the site at all times during construction and be employed by the Prime Contractor. The CQC System Manager must be assigned no other duties. Identify in the plan an alternate for the CQC System Manager to serve in the event of the CQC System Manager's absence and/or to cover work performed on additional

shifts. The requirements for the alternate are the same as the designated CQC System Manager.

3.4.3 Construction Quality Management for Contractors

The CQC System Manager and Alternate CQC System Manager must have successfully completed the course entitled "Construction Quality Management For Contractors." This course is periodically offered by the Associated Builders and Constructors, Inc., or Associated General Contractor, Inc. and must be retaken every five years. The course has been coordinated with the Navy and certificates from the Navy will be accepted. For further information regarding courses in the Portland area contact: Associated General Contractors, Oregon-Columbia Chapter at (503) 682-3363 or http://www.agc-oregon.org/education-and-training/army-corps-of-engineers/. Furnish documentation that the Contractor Quality Control System Manager has completed the course.

3.4.4 Organizational Changes

Maintain the CQC staff at full strength at all times. When it is necessary to make changes to the CQC staff, revise the CQC Plan to reflect the changes and submit the changes to the CO for acceptance.

3.5 FAILURE TO COMPLETE PERSONNEL DUTIES

Superintendent and QC Manager are subject to dismissal if the above duties are not being effectively carried out. If the Superintendent and QC Manager are dismissed project work will be stopped and will not be allowed to resume until a suitable replacement is approved and the above duties are again being effectively carried out.

3.6 SUBMITTALS AND DELIVERABLES

Submittals, if needed, must comply with the requirements in Section 01 33 00, SUBMITTAL PROCEDURES. The CQC organization must be responsible for certifying that all submittals and deliverables are in compliance with Contract requirements.

3.7 QUALITY CONTROL

Contractor Quality Control is the means by which the Contractor ensures that the construction, to include that of subcontractors and suppliers, complies with the requirements of the Contract. At least three phases (Preparatory, Initial, and Follow-up) of control must be conducted by the CQC System Manager for each definable feature of the construction work as follows:

3.7.1 Preparatory Phase

This phase must be performed prior to beginning work on each definable feature of work, after all required plans/documents/materials are approved/accepted, and after copies are at the work site. This phase includes:

a. Review 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 Government personnel until final acceptance of the work.

b. Review of the Contract drawings.

c. Check to assure that all materials and/or equipment have been tested, submitted, and approved.

d. Review of provisions that have been made to provide required control inspection and testing.

e. Examination of the work area to assure that all required preliminary work has been completed and is in compliance with the Contract.

f. Physical 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.

g. Review of the appropriate activity hazard analysis to assure safety requirements are met.

h. Discussion of procedures for controlling quality of the work including repetitive deficiencies. Document construction tolerances and workmanship standards for that feature of work.

i. Check to ensure that the portion of the plan for the work to be performed has been accepted by the CO.

j. Discussion of the initial control phase.

k. Notify the Government at least 24 hours in advance of beginning the preparatory control phase. Include a meeting conducted by the CQC System Manager and attended by the superintendent, other CQC personnel (as applicable), and the foreman responsible for the definable feature. The CQC System Manager must prepare and document the results of the preparatory phase actions by separate minutes, and attach to the daily CQC report. Instruct applicable workers as to the acceptable level of workmanship required in order to meet Contract specifications.

3.7.2 Initial Phase

This phase must be accomplished at the beginning of a definable feature of work. Accomplish the following:

a. Check work to ensure that it is in full compliance with Contract requirements. Review minutes of the preparatory meeting.

b. Verify adequacy of controls to ensure full Contract compliance. Verify required control inspection and testing.

c. Establish level of workmanship and verify that it meets minimum acceptable workmanship standards. Compare with required sample panels as appropriate.

d. Resolve all differences.

e. Check safety to include compliance with and upgrading of the safety

plan and activity hazard analysis. Review the activity analysis with each worker.

f. Notify the Government at least 24 hours in advance of beginning the initial phase. Document separate minutes of this phase, prepared by the CQC System Manager, and attach to the daily CQC report. Indicate exact location of initial phase for future reference and comparison with follow-up phases.

g. Repeat the initial phase for each new crew to work onsite, or any time acceptable specified quality standards are not being met.

3.7.3 Follow-up Phase

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. Record the daily checks in the CQC documentation. 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. Do not build upon nor conceal non-conforming work.

3.7.4 Additional Preparatory and Initial Phases

Conduct additional preparatory and initial phases on the same definable features of work if: the quality of on-going work is unacceptable; if there are changes in the applicable CQC staff, onsite production supervision, or work crew; if work on a definable feature is resumed after a substantial period of inactivity; or if other problems develop.

3.8 TESTS

3.8.1 Testing Procedure

Perform specified or required tests to verify that control measures are adequate to provide a product that conforms to Contract requirements. Report all test results using industry standard forms at the frequency specified in the Contract. Upon request, furnish to the Government duplicate samples of test specimens for QA verification testing by the Government. Procure the services of a Corps of Engineers approved testing laboratory, as described in Subparagraph entitled TESTING LABORATORIES, or establish an approved testing laboratory at the project site. Perform the following activities and record and provide the following data:

a. Verify that testing procedures comply with Contract requirements.

b. Verify that facilities and testing equipment are available and comply with testing standards.

c. Check test instrument calibration data against certified standards.

d. Verify that recording forms and test identification control number system, including all of the test documentation requirements, have been prepared.

e. Record results of all tests taken, both passing and failing, on the CQC report for the date taken. Include Specification paragraph reference, location where tests were taken, and the sequential control number identifying the test. If approved by the CO, actual test

reports may be submitted later with a reference to the test number and date taken. Provide an information copy of tests performed by an offsite or commercial test facility directly to the CO. 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.

3.8.2 Testing Laboratories

The Government reserves the right to check laboratory equipment in the proposed laboratory for compliance with the standards set forth in the Contract specifications and to check the laboratory technician's testing procedures and techniques.

a. Validation. The validation of a testing laboratory is site-specific and cannot be transferred to a facility at a different location. Costs for validation by the Corps of Engineers MTC must be borne by the laboratory and/or the Contractor. Validation is granted only for the specific testing procedures requested to be validated. The laboratory may select the testing procedures to be validated, except for the Quality Assurance requirements of the applicable ASTM standards listed in this Paragraph.

b. Validation Procedures. Validation of a testing laboratory consists of either an inspection or audit, as defined below:

(1) Inspection must be performed by the MTC to verify compliance with the applicable provisions of ASTM C1077, ASTM C1093, ASTM D3666, ASTM D3740, and ASTM E329.

(2) An audit would be performed by the MTC in lieu of an inspection for laboratories holding a current AASHTO accreditation. Inspection by the MTC may be required after auditing if critical testing procedures required in the Contract were not included in the applicable CCRL or AMRL inspections.

c. Validation Schedule. For aggregate, concrete, bituminous materials, soil, rock, riprap, and metal components, the frequency of validation inspections or audits is once every two years. For water quality and sediment testing the validation schedule is every 18 months. When conditions change substantially from the time of the last validation, laboratories must be re-validated.

d. Validation Process. For information on the validation process and costs contact the MTC at (601) 634-2496. Procedures for validation, including forms requesting validation may be obtained from the MTC web site at: https://mtc.erdc.dren.mil/. The Contractor is cautioned that the validation process is lengthy and that it requires immediate action. Keep the CO informed about the validation process as it proceeds in a timely manner.

3.8.3 Onsite Laboratory

The Government reserves the right to utilize the Contractor's control testing laboratory and equipment to make assurance tests, and to check the Contractor's testing procedures, techniques, and test results at no additional cost to the Government.

3.8.4 Furnishing or Transportation of Samples for Testing

Costs incidental to the transportation of samples or materials must be borne by the Contractor. Samples of materials for test verification and acceptance testing by the Government must be delivered to the Portland District contract commercial Laboratory in the District area. Coordination for each specific test, exact delivery location, and dates must be made through the Portland District Resident Office.

3.9 COMPLETION INSPECTION

3.9.1 Punch-Out Inspection

The CQC Manager must conduct an inspection of the work near the end of the work, or any increment of the work established by a time stated in the specifications, or the Contract Clause 52.211-10, COMMENCEMENT, PROSECUTION, AND COMPLETION OF WORK. As required by Paragraph DOCUMENTATION, prepare and include in the CQC documentation a punch list of items which do not conform to the approved drawings and specifications. Include within the list of deficiencies the estimated date by which the deficiencies will be corrected. The CQC System Manager or staff must make a second inspection to ascertain that all deficiencies have been corrected. Once this is accomplished, notify the Government that the facility is ready for the Government Pre-Final inspection.

3.9.2 Pre-Final Inspection

The Government will perform the pre-final inspection to verify that the work is complete. A Government Pre-Final Punch List may be developed as a result of this inspection. The Contractor's CQC System Manager must ensure that all items on this list have been corrected before notifying the Government, so that a Final inspection with the customer can be scheduled. Correct any items noted on the Pre-Final inspection in a timely manner. These inspections and any deficiency corrections required by this Paragraph must be accomplished within the time slated for completion of the entire work or any particular increment of the work if the project is divided into increments by separate completion dates.

3.9.3 Final Acceptance Inspection

The Contractor's Quality Control Inspection personnel, plus the superintendent or other primary management person, and the CO must be in attendance at the final acceptance inspection. Additional Government personnel including, but not limited to, those from Base/Post Civil Facility Engineer user groups and major commands may also be in attendance. The final acceptance inspection will be formally scheduled by the CO based upon results of the Pre-Final inspection. Notify the CO at least 14 days prior to the final acceptance inspection and include the Contractor's assurance that all specific items previously identified to the Contractor as being unacceptable, along with all remaining work performed under the Contract, will be complete and acceptable by the date scheduled for the final acceptance inspection. Failure of the Contractor to have all Contract work acceptably complete for this inspection will be cause for the CO to bill the Contractor for the Government's additional inspection cost in accordance with Contract Clause 52.246-12, INSPECTION OF CONSTRUCTION.

3.10 DOCUMENTATION

Daily CQC Report:

a. Maintain current records providing factual evidence that required quality control activities and/or tests have been performed. Include in these records the work of subcontractors and suppliers on an acceptable form that includes, as a minimum, the following information:

(1) Contractor/subcontractor and their area of responsibility.

(2) Operating plant/equipment with hours worked, idle, or down for repair.

(3) Work performed each day, giving location, description, and by whom. When Network Analysis (NAS) is used, identify each phase of work performed each day by NAS activity number.

(4) Test and/or control activities performed with results and references to specifications/drawings requirements. Identify the control phase (Preparatory, Initial, or Follow-up). List of deficiencies noted, along with corrective action.

(5) Quantity of materials received at the site with statement as to acceptability, storage, and reference to specifications/drawings requirements.

(6) Submittals and deliverables reviewed, with Contract reference, by whom, and action taken.

(7) Offsite surveillance activities, including actions taken.

(8) Job safety evaluations stating what was checked, results, and instructions or corrective actions.

(9) Instructions given/received and conflicts in plans and/or specifications.

(10) Contractor's verification statement.

(11) Deficiency Tracking System. Maintain a cumulative list of deficiencies identified for the duration of the project. Deficiencies to be listed include those failures, Government oral observations, and Notifications of Noncompliance. Maintain the list at the project site. Submit copies of updated listings to the Government at least every 30 days.

b. Indicate a description of trades working on the project; the number of personnel working; weather conditions encountered; and any delays encountered. Cover both conforming and deficient features and include a statement that equipment and materials incorporated in the work and workmanship comply with the Contract. Electronically submit daily reports and a signed, printed copy of these records to the Government within 24 hours after the date covered by the report, except that reports need not be submitted for days on which no work is performed. As a minimum, prepare and submit one report for every seven days of no work and on the last day of a no work period. All calendar days must be accounted for throughout the life of the Contract. The first report following a day of no work must be for that day only. Reports

must be signed and dated by the CQC System Manager. Include copies of test reports and copies of reports prepared by all subordinate quality control personnel within the Daily CQC Report.

3.11 NOTIFICATION OF NONCOMPLIANCE

The CO will notify the Contractor of any detected noncompliance with the foregoing requirements. Take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the work site, must be deemed sufficient for the purpose of notification. If the Contractor fails or refuses to comply promptly, the CO may issue an order stopping all or part of the work until satisfactory corrective action has been taken. The Contractor must make no part of the time lost due to such stop orders the subject of claim for extension of time or for excess costs or damages.

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01 45 00.15 25

RESIDENT MANAGEMENT SYSTEM CONTRACTOR MODE (RMS CM)

-- End of Section Table of Contents --

SECTION 01 45 00.15 25

RESIDENT MANAGEMENT SYSTEM CONTRACTOR MODE (RMS CM)

PART 1 GENERAL

1.1 REFERENCES

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

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1	(2014) Safety and Health Requirements Manual

1.2 CONTRACT ADMINISTRATION

The Government will use the Resident Management System (RMS) to assist in its monitoring and administration of this contract. There is no separate payment for establishing and maintaining the RMS database; costs associated will be included in the contract pricing for the work. The Contractor uses the Government-furnished Construction Contractor Mode of RMS, referred to as RMS CM, to record, maintain, and submit various information throughout the contract period. The Contractor mode user manuals, updates, and training information can be downloaded from the RMS web site. The joint Government-Contractor use of RMS facilitates electronic exchange of information and overall management of the contract. RMS CM provides the means for the Contractor to input, track, and electronically share information with the Government in the following areas:

a. Administration

b. Finances

c. Quality Control

d. Submittal Monitoring

e. Scheduling

f. Import/Export of Data

1.2.1 Correspondence and Electronic Communications

For ease and speed of communications, exchange correspondence and other documents in electronic format to the maximum extent feasible between the Government and Contractor.

1.3 RMS SOFTWARE

The RMS CM software can be downloaded from: https://rms.usace.army.mil . The Contractor must download, install and use the latest version of the RMS software from the Government's RMS Internet Website immediately after

award of contract. Any program updates of RMS will be made available to the Contractor via the Government RMS Website as the updates become available.

1.4 RMS USER GUIDE

After Contract award, download instructions for the installation and use of RMS from the Government RMS Internet Website.

1.5 RMS HELPDESK

The RMS Helpdesk is available 24 hours a day, seven days a week. The phone number is (442) 333-1011.

1.6 CONTRACT DATABASE

After Contract Award, the Government will provide the Contractor with basic contract award data to use for RMS. The Government will provide data updates to the Contractor as needed. These updates will generally consist of submittal reviews, correspondence status, Quality Assurance(QA) comments, and other administrative and QA data.

1.7 DATABASE MAINTENANCE

Establish, maintain, and update data in the RMS database throughout the duration of the contract at the Contractor's site office. Submit data updates to the Government (e.g., daily reports, submittals, RFI's, schedule updates, payment requests) using RMS. The RMS database typically includes current data on the following items:

1.7.1 Administration

1.7.1.1 Contractor Information

Contain within the database the Contractor's name, address, telephone numbers, management staff, and other required items. Within seven calendar days of receipt of RMS software from the Government, deliver Contractor administrative data in electronic format in RMS.

1.7.1.2 Subcontractor Information

Contain within the database the name, trade, address, phone numbers, and other required information for all subcontractors. A subcontractor is listed separately for each trade to be performed. Assign each subcontractor/trade a unique Responsibility Code, provided in RMS. Within seven calendar days of receipt of RMS software from the Government, deliver subcontractor administrative data in electronic format.

1.7.1.3 Correspondence

Identify all Contractor correspondence to the Government with a serial number. Prefix correspondence initiated by the Contractor's site office with "S". Prefix letters initiated by the Contractor's home (main) office with "H". Letters are numbered starting from 0001. (e.g., H-0001 or S-0001). The Government's letters to the Contractor will be prefixed with "C".

1.7.1.4 Equipment

Contain within the Contractor's RMS database a current list of equipment planned for use or being used on the jobsite, including the most recent and planned equipment inspection dates.

1.7.1.5 Management Reporting

RMS includes a number of reports that Contractor management can use to track the status of the project. The value of these reports is reflective of the quality of the data input, and is maintained in the various sections of RMS. Among these reports are: Progress Payment Request worksheet, Quality Assurance/Quality Control (QA/QC) comments, Submittal Register Status, and Three-Phase Control checklists.

1.7.1.6 Request For Information (RFI)

Exchange all Requests For Information (RFI) using the Built-in RFI generator and tracker in RMS.

1.7.2 Finances

1.7.2.1 Pay Activity Data

Include within the RMS database a list of pay activities that the Contractor develops in conjunction with the construction schedule. The sum of pay activities equals the total contract amount, including modifications. Each pay activity must be assigned to a Contract Line Item Number (CLIN). The sum of the activities equals the amount of each CLIN. The sum of all CLINs equals the contract amount.

1.7.2.2 Payment Requests

Prepare all progress payment requests using RMS. Complete the payment request worksheet, prompt payment certification, and payment invoice in RMS. Update the work completed under the contract, measured as percent or as specific quantities, at least monthly. After the update, generate a payment request report using RMS. Submit the payment request, prompt payment certification, and payment invoice with supporting data using RMS CM. A signed electronic copy of the approved payment request is also required.

1.7.3 Quality Control (QC)

RMS provides a means to track implementation of the 3-phase QC Control System, prepare daily reports, identify and track deficiencies, document progress of work, and support other Contractor QC requirements. Maintain this data on a daily basis. Entered data will automatically output to the RMS generated daily report. Provide the Government a Contractor Quality Control (CQC) Plan within the time required in Section 01 45 00.00 25 QUALITY CONTROL. Within seven calendar days of Government acceptance, submit a RMS update reflecting the information contained in the accepted CQC Plan: schedule, pay activities, features of work, submittal register, QC requirements, and equipment list.

1.7.3.1 Daily Contractor Quality Control (CQC) Reports

RMS includes the means to produce the Daily CQC Report. The Contractor can use other formats to record basic Quality Control(QC) data. However,

the Daily CQC Report generated by RMS must be the Contractor's official report. Summarize data from any supplemental reports by the Contractor and consolidate onto the RMS-generated Daily CQC Report. Submit daily CQC Reports as required by Section 01 45 00.00 25 QUALITY CONTROL. Electronically submit reports to the Government within 24 hours after the date covered by the report. Also provide the Government a signed, printed copy of the daily CQC report if requested by the GQAR.

1.7.3.2 Deficiency Tracking

Use RMS to track deficiencies. Deficiencies identified by the Contractor will be numerically tracked using its Quality Control (QC) punch list items. Maintain a current log of its QC punch list items in the RMS database. The Government will log the deficiencies it has identified using its Quality Assurance (QA) punch list items. The Government's QA punch list items will be included in its export file to the Contractor. Regularly update the correction status of both QC and QA punch list items.

1.7.3.3 QC Requirements

Develop and maintain a complete list of QC testing and required structural and life safety special inspections required by the International Code Council (ICC), transferred and installed property, and user training requirements in RMS. Update data on these QC requirements as work progresses, and promptly provide the information to the Government via RMS.

1.7.3.4 Three-Phase Control Meetings

Maintain scheduled and actual dates and times of preparatory and initial control meetings in RMS.

1.7.3.5 Labor and Equipment Hours

Log labor and equipment exposure hours on a daily basis. The labor and equipment exposure data must be rolled up into a monthly exposure report.

1.7.3.6 Accident/Safety Reporting

The Government will issue safety comments, directions, or guidance whenever safety deficiencies are observed. The Government's safety comments will be provided via RMS CM. Regularly update the correction status of the safety comments. In addition, utilize RMS to advise the Government of any accidents occurring on the jobsite. A brief supplemental entry of an accident is not to be considered as a substitute for completion of mandatory reports, e.g., ENG Form 3394 and OSHA Form 300.

1.7.3.7 Features of Work

Include a complete list of the features of work in the RMS database. A feature of work is associated with multiple pay activities. However, each pay activity (see Subparagraph PAY ACTIVITY DATA of Paragraph FINANCES) will only be linked to a single feature of work.

1.7.3.8 Hazard Analysis

Use RMS CM to develop a hazard analysis for each feature of work included in the CQC Plan. The Activity Hazard Analysis will include information required by EM 385-1-1, Paragraph 01.A.13.

1.7.4 Submittal Management

The Government will provide the initial submittal register in electronic format. Thereafter, maintain a complete list of submittals, including completion of data columns. Dates when submittals are received and returned by the Government will be included. Use RMS CM to track and transmit submittals. ENG Form 4025, submittal transmittal form, and the submittal register update is produced using RMS. RMS will be used to update, store and exchange submittal registers and transmittals. In addition to requirements stated in Section 01 33 00 SUBMITTAL PROCEDURES, actual submittals are to be stored in RMS CM, with electronic or hard copies also provided. Exception will be where the Contracting Officer (CO) specifies only hard copies required, where size of document cannot be saved in RMS CM, and where samples, spare parts, color boards, and full size drawings are to be provided.

1.7.5 Schedule

Develop a construction schedule consisting of pay activities in accordance with Section 01 32 01.00 25 PROJECT SCHEDULE. Input and maintain in the RMS database the schedule either manually or by using the Standard Data Exchange Format (SDEF) (see Section 01 32 01.00 25 PROJECT SCHEDULE). Include with each pay request the updated schedule. Provide electronic copies of transmittals.

1.7.6 Import/Export of Data

RMS includes the ability to import schedule data using SDEF.

1.8 IMPLEMENTATION

Use of RMS CM as described in the preceding Paragraphs is mandatory. Ensure that sufficient resources are available to maintain contract data within the RMS CM system. RMS CM is an integral part of the Contractor's management of quality control.

1.9 MONTHLY COORDINATION MEETING

a. Update the RMS CM database each workday. At least monthly, generate and submit a schedule update. At least one week prior to submittal, meet with the Government representative to review the planned progress payment data submission for errors and omissions.

b. Make required corrections prior to Government acceptance of the export file and progress payment request. Payment requests accompanied by incomplete or incorrect data submittals will not be accepted. The Government will not process progress payments until all required corrections are processed.

1.10 NOTIFICATION OF NONCOMPLIANCE

The CO will notify the Contractor of any detected noncompliance with the requirements of this Specification. Take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the work site, will be deemed sufficient for the purpose of notification.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01 57 19.00 25

TEMPORARY ENVIRONMENTAL CONTROLS

-- End of Section Table of Contents --

SECTION 01 57 19.00 25

TEMPORARY ENVIRONMENTAL CONTROLS

PART 1 GENERAL

1.1 GENERAL INFORMATION

This section includes requirements for preventing and controlling environmental pollution and minimizing environmental impacts to the site and surroundings during the work. The control of environmental pollution requires consideration of sound levels, air, water, and land resources; the proper management and use of petroleum products and hazardous materials; and the disposal of solid and hazardous wastes. The project site lies within the State of Oregon and Washington. Conform to all applicable state regulations.

1.2 REFERENCES

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

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1	(2014) Safety -- Safety and Health Requirements Manual

U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)

EPA 800-R-11-002	(2011) Environmentally Acceptable Lubricants

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1910.120	Hazardous Waste Operations and Emergency Response
29 CFR 1926.52	Occupational Noise Exposure
29 CFR 1926.101	Hearing Protection
40 CFR 50	National Primary and Secondary Ambient Air Quality Standards
40 CFR 61	National Emission Standards for Hazardous Air Pollutants
40 CFR 112	Oil Pollution Prevention
40 CFR 122.26	Storm Water Discharges (Applicable to State NPDES Programs, see section 123.25)
40 CFR 260	Hazardous Waste Management System: General
40 CFR 261	Identification and Listing of Hazardous

	Waste
40 CFR 261.7	Residues of Hazardous Waste in Empty Containers
40 CFR 262	Standards Applicable to Generators of Hazardous Waste
40 CFR 268	Land Disposal Restrictions
40 CFR 273	Standards for Universal Waste Management
40 CFR 279	Standards for the Management of Used Oil
40 CFR 300	National Oil and Hazardous Substances Pollution Contingency Plan
40 CFR 302	Designation, Reportable Quantities, and Notification
49 CFR 171	General Information, Regulations, and Definitions
49 CFR 172	Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, and Training Requirements
49 CFR 173	Shippers - General Requirements for Shipments and Packagings

1.3 DEFINITIONS

1.3.1 Contractor-Generated Hazardous Waste

Contractor-generated hazardous waste is material that, if abandoned or disposed of, may meet the definition of a hazardous waste. These waste streams typically consist of material brought on site by the Contractor to execute work, but are not fully consumed during the course of construction. Examples include, but are not limited to, excess paint thinners (i.e. methyl ethyl ketone, toluene), waste thinners, excess paints, excess solvents, waste solvents, excess pesticides, and contaminated pesticide equipment rinse water. The cleanup of Contractor spills of hazardous materials or petroleum products may also result in the generation of Contractor-generated hazardous waste.

1.3.2 Electronics Waste

Electronics waste is discarded electronic devices intended for salvage, recycling, or disposal.

1.3.3 Environmental Pollution and Damage

Environmental pollution and damage is the presence of chemical, physical, or biological elements or agents that adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to humankind; or degrade the environment aesthetically, culturally or historically.

1.3.4 Environmental Protection

Environmental protection is the prevention/control of pollution and habitat disruption that may occur during construction. The control of environmental pollution and damage requires consideration of land, water, and air; biological and cultural resources; and includes management of visual aesthetics; noise; solid, chemical, gaseous, and liquid waste; radiant energy and radioactive material as well as other pollutants.

1.3.5 Hazardous Debris

Hazardous debris is debris that contains listed hazardous waste (either on the debris surface, or in its interstices, such as pore structure) in accordance with 40 CFR 261. Hazardous debris also includes debris that exhibits a characteristic of hazardous waste in accordance with 40 CFR 261.

1.3.6 Hazardous Materials

a. Hazardous materials as defined in 49 CFR 171 and listed in 49 CFR 172.

b. Hazardous material is any material that: Is regulated as a hazardous material in accordance with 49 CFR 173; or requires a Safety Data Sheet (SDS) in accordance with 29 CFR 1910.120; or during end use, treatment, handling, packaging, storage, transportation, or disposal meets or has components that meet or have potential to meet the definition of a hazardous waste as defined by 40 CFR 261 Subparts A, B, C, or D. Designation of a material by this definition, when separately regulated or controlled by other sections or directives, does not eliminate the need for adherence to that hazard-specific guidance which takes precedence over this section for "control" purposes. Such material includes ammunition, weapons, explosive actuated devices, propellants, pyrotechnics, chemical and biological warfare materials, medical and pharmaceutical supplies, medical waste and infectious materials, bulk fuels, radioactive materials, and other materials such as asbestos, mercury, and polychlorinated biphenyls (PCBs).

1.3.7 Hazardous Waste

Hazardous Waste is any material that meets the definition of a solid waste and exhibits a hazardous characteristic (ignitability, corrosivity, reactivity, or toxicity) as specified in 40 CFR 261, Subpart C, is listed in40 CFR 261, Subpart D, or is a mixture of a solid waste and one or more hazardous wastes listed in 40 CFR 261, Subpart D.

1.3.8 Land Application

Land Application means spreading or spraying discharge water at a rate that allows the water to percolate into the soil.

1.3.9 Oily Waste

a. Oily wastes are materials that are, or were, mixed with Petroleum, Oils, and Lubricants (POLs) and have become separated from the POLs. Oily wastes also refers to materials, including wastewaters, centrifuge solids, filter residues or sludges, bottom sediments, tank bottoms, and sorbents which have come into contact with and have been contaminated by POLs.

b. This definition includes materials such as oily rags, "kitty litter" sorbent clay and organic sorbent material. These materials may be land filled provided that: It is not prohibited in other state regulations or local ordinances; the amount generated is "de minimis" (a small amount); it is the result of minor leaks or spills resulting from normal process operations; and free-flowing oil has been removed to the practicable extent possible. Large quantities of this material, generated as a result of a major spill or in lieu of proper maintenance of the processing equipment, are a solid waste. As a solid waste, perform a hazardous waste determination prior to disposal. As this can be an expensive process, it is recommended that this type of waste be minimized through good housekeeping practices and employee education.

1.3.10 Petroleum, Oils, and Lubricants (POLs)

POL products include flammable or combustible liquids, such as gasoline, diesel, lubricating oil, used engine oil, hydraulic oil, mineral oil, and cooking oil.

1.3.11 Regulated Waste

Regulated wastes are solid wastes that have specific additional federal, state, or local requirements for handling, storage, or disposal.

1.3.12 Sediment

Sediment is soil or other debris that has eroded and has been transported by runoff water or wind.

1.3.13 Solid Waste

Solid waste is a solid, liquid, semi-solid or contained gaseous waste. A solid waste can be a hazardous waste, non-hazardous waste, or non-Resource Conservation and Recovery Act (RCRA) regulated waste. Types of solid waste typically generated at construction sites may include:

1.3.13.1 Construction Debris

Construction debris is non-hazardous solid material generated during the construction, demolition, or renovation of a structure that exceeds 2.5-inchparticle size that is: a manufactured object; plant or animal matter; or natural geologic material (e.g., cobbles and boulders), broken or removed concrete, masonry, rebar, and rock asphalt paving; ceramics; roofing paper and shingles. A mixture of debris and other material is also subject to regulation as debris if the mixture is comprised primarily of debris by volume, based on visual inspection.

1.3.13.2 Non-Hazardous Waste

Non-hazardous waste is waste that is excluded from, or does not meet, hazardous waste criteria in accordance with 40 CFR 262.

1.3.13.3 Recyclables

Recyclables are materials, equipment, and assemblies such as metal parts, wiring, insulated/non-insulated copper wire cable, wire rope, and structural components that are recovered and sold as recyclable. It also

includes clean polyethylene terephthalate bottles, cooking oil, used fuel oil, high-grade paper products and corrugated cardboard, stackable pallets in good condition, clean crating material, and clean rubber/vehicle tires. Metal containing lead or lead-based paint may be included as recyclable if sold to a scrap metal company with full disclosure of the presence of lead or other metal contaminants. Paint cans that meet the definition of empty containers in accordance with 40 CFR 261.7 may be included as recyclable if sold to a scrap metal company.

1.3.13.4 Surplus Soil

Surplus soil is existing soil that is in excess of what is required for this work, including aggregates intended, but not used, for on-site mixing of concrete, mortars, and paving. Contaminated soil meeting the definition of hazardous material or hazardous waste is not included and must be managed in accordance with Paragraph HAZARDOUS WASTE/DEBRIS MANAGEMENT.

1.3.13.5 Scrap Metal

This includes scrap and excess ferrous and non-ferrous metals such as reinforcing steel, structural shapes, pipe, and wire that are recovered or collected and managed as scrap. Scrap metal meeting the definition of hazardous material or hazardous waste is not included.

1.3.14 Surface Discharge

Surface discharge means discharge of water into drainage ditches, storm sewers, creeks or "waters of the United States". Surface discharges are discrete, identifiable sources and require a permit from the governing agency. Comply with federal, state, and local laws and regulations.

1.3.15 Stormwater

Stormwater is any portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, or other features of a stormwater drainage system into a defined surface waterbody, or a constructed stormwater management facility.

1.3.16 Wastewater

Wastewater is any water used or generated during construction, including groundwater, that contains contaminants, pollutants, or hazardous substances and that must be managed to prevent discharge to waters of the United States or waters of the State.

1.3.17 Waters of the United States

Waters of the United States means federal jurisdictional waters, including wetlands, that are subject to regulation under Section 404 of the Clean Water Act or navigable waters, as defined under the Rivers and Harbors Act.

1.3.18 Wetlands

Wetlands are areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

1.3.19 Universal Waste

The universal waste regulations streamline collection requirements for certain hazardous wastes in the following categories: batteries, pesticides, mercury-containing equipment (e.g., thermostats), lamps (e.g., fluorescent bulbs) and aerosol cans. The rule is designed to reduce hazardous waste in the municipal solid waste (MSW) stream by making it easier for universal waste handlers to collect these items and send them for recycling or proper disposal. These regulations can be found at 40 CFR 273.

1.4 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Environmental Preconstruction Survey

Environmental Protection Plan; G

SD-06 Test Reports

Swpp Modifications; G

SD-11 Closeout Submittals

Environmental Records Binder; G

1.5 GENERAL ENVIRONMENTAL PROTECTION REQUIREMENTS

Comply with federal, state, and local regulations pertaining to the environment, including water, air, solid waste, hazardous waste and substances, oily substances, and noise pollution. Tests and procedures assessing whether construction operations comply with applicable environmental laws must be performed by qualified laboratories, and where required by law, the laboratories must be certified.

1.6 ENVIRONMENTAL PERMITS AND COMMITMENTS

Obtain all permits and licenses required for this project as stated in this Section and in accordance with FAR 52.236-7 Permits and Responsibilities. Provide an electronic copy of each permit or license obtained by the Contractor to the Government. Comply with all environmental permits and commitments required by federal, state, regional, and local environmental laws and regulations.

1.7 QUALITY CONTROL

1.7.1 Environmental Preconstruction Survey

a. Prior to the start of any onsite construction activities, perform an Environmental Preconstruction Survey of the project site with the Contracting Officer (CO), and take photographs showing existing environmental conditions in and adjacent to the site as described in

Paragraph titled Documentation of Environmental Conditions. Submit a report for the record. Include in the report a plan describing the features requiring protection under the provisions of the Contract Clauses, which are not specifically identified on the drawings as environmental features requiring protection along with the condition of trees, shrubs and grassed areas immediately adjacent to the site of work and adjacent to the Contractor's assigned storage area and access route(s), as applicable. The Contractor and the CO will sign this survey report upon mutual agreement regarding its accuracy and completeness. Protect those environmental features included in the survey report and any indicated on the drawings, regardless of interference that their preservation may cause to the work under the Contract.

b. Provide photographs of all typical vegetation at sites planned for disturbance (i.e. grassland, wetland, forest). These photographs will be used as reference for sites planned for revegetation. Photographs must adequately reflect "foliar densities" at pre-construction conditions.

1.7.2 Environmental Coordination Meeting

a. Prior to initiating any work on site, meet with the CO to discuss the proposed Environmental Protection Plan (EPP). Submit the EPP 14 calendar days before the Environmental Coordination meeting. Develop a mutual understanding relative to the details of environmental protection, including measures for protecting natural and cultural resources, required reports, required permits, permit requirements (such as mitigation measures), and other measures to be taken.

b. Provide the following information for the meeting agenda: types, quantities, and use of hazardous materials that will be brought onto the project site; and types and quantities of wastes/wastewater that may be generated during the Contract. Discuss the results of the Environmental Preconstruction Survey at this time.

1.7.3 Non-Compliance Notifications

The CO will notify the Contractor in writing of any observed noncompliance with federal, state or local environmental laws or regulations, permits, and other elements of the Contractor's EPP. After receipt of such notice, inform the CO of the proposed corrective action and take such action when approved by the CO. The CO may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No time extensions will be granted nor equitable adjustments allowed for any such suspensions. This is in addition to any other actions the CO may take under the Contract, or in accordance with the Federal Acquisition Regulation or federal law.

1.8 ENVIRONMENTAL PROTECTION PLAN

a. The purpose of the EPP is to present an overview of known or potential environmental issues that must be considered and addressed during construction. Revise the EPP throughout the project to include any reporting requirements, changes in site conditions, or Contract modifications that change the project scope of work in a way that may have an environmental impact. No requirement in this section will relieve the Contractor of any applicable federal, state, and local environmental protection laws or regulations. During Construction,

identify, implement, and submit for approval any additional Environmental Protection Plan requirements to be included in the EPP. Maintain the current version onsite.

b. The EPP must include the following elements:

1.8.1 General Overview and Purpose

A brief description of each specific plan required by applicable environmental permit or elsewhere in this Contract such as the Erosion and Sediment Control Plan, Stormwater Pollution Prevention Plan, Spill Prevention and Control Plan, and Solid Waste Management Plan.

1.8.1.1 Procedures

A copy of any standard or project-specific operating procedures that will be used to effectively manage and protect the environment on the project site.

1.8.1.2 Communications

Communication and training procedures that will be used to convey environmental management requirements to Contractor employees and subcontractors.

1.8.2 Environmental Manager Qualifications

Include in the EPP a letter signed by an officer of the firm appointing the Environmental Manager and stating that person is responsible for managing and implementing the Environmental Program as described in this Contract. Include in this letter the Environmental Manager's authority to direct the removal and replacement of non-conforming work and emergency contact information (office phone number, cell phone number, and e-mail address). The Environmental Manager is directly responsible for coordinating contractor compliance with federal, state, and local requirements. The Environmental Manager may have other duties on the jobsite; however, the person in this position must be trained to adequately accomplish the following duties:

a. Ensure compliance with Hazardous Waste Program requirements (including hazardous waste handling, storage, manifesting, and disposal).

b. Implement the EPP and ensure its compliance.

c. Ensure environmental permits are obtained, maintained, and closed out.

d. Ensure compliance with Stormwater Program requirements.

e. Ensure compliance with Hazardous Materials (storage, handling, and reporting) requirements; and coordinate any remediation of regulated substances (lead, asbestos, PCBs).

f. Be responsible for spill prevention and cleanup and training personnel on spill response procedures.

g. Be responsible for manifesting hazardous waste to be removed from the site (if applicable).

h. Be responsible for training the Contractor's environmental protection personnel.

j. Ensure waste segregation and storage compatibility requirements are met.

k. Ensure only authorized personnel add wastes to containers.

l. Ensure Contractor personnel are trained in 40 CFR requirements in accordance with their position requirements.

m. Coordinate removal of waste containers.

n. Maintain the Environmental Records Binder and required documentation, including environmental permits compliance and close-out.

q. Be responsible for the implementation of protective measures for marine mammals during construction.

1.8.3 Regulatory Notification and Permits

List all notifications and permit applications that must be made by the Contractor as required by this section, if any. Demonstrate that those permits have been obtained or applied for by including copies of applicable environmental permits. The EPP will not be approved until the permits have been obtained.

1.8.4 General Site Information

1.8.4.1 Drawings

Drawings showing locations of proposed temporary excavations or embankments for haul roads, stream crossings, jurisdictional wetlands and proposed wetland protection measures, material storage areas, Contractor staging areas, structures, sanitary facilities, storm drains and conveyances, and stockpiles of excess soil.

1.8.4.2 Work Area

Include in the EPP a Work Area Plan showing the proposed activity in each portion of the area and identify the areas of limited use or nonuse. Include measures for marking the limits of use areas, including methods for protection of features to be preserved within authorized work areas and methods to control runoff and to contain materials on site, and a traffic control plan.

1.8.5 Documentation of Environmental Conditions

Describe existing conditions and identify procedures to be implemented to ensure protection of existing environmental conditions for the following categories as applicable:

a. Protection of Natural Resources

b. Stormwater

c. Surface and Groundwater

d. Cultural Resources

e. Air Resources

f. Waste Minimization

g. Waste Management and Disposal

h. Hazardous Material Management

i. Petroleum, Oils, and Lubricants (POLs) Storage and Fueling

1.8.6 Protection of the Environment from Waste Derived from Contractor Operations

If hazardous wastes are anticipated to be generated by the Contractor, identify and describe the procedures to be implemented for the management and disposal of hazardous waste and debris. As a minimum, include the following:

a. List of the types of hazardous wastes expected to be generated

b. Procedures to ensure a written waste determination is made for appropriate wastes that are to be generated

c. Sampling/analysis plan, including laboratory method(s) that will be used for waste determinations and copies of relevant laboratory certifications

d. Methods and proposed locations for hazardous waste accumulation/storage (that is, in tanks, drums, or other containers)

e. Management procedures for storage, labeling, transportation, and disposal of waste (treatment of waste is not allowed unless specifically noted)

f. Management procedures and regulatory documentation ensuring disposal of hazardous waste complies with Land Disposal Restrictions (40 CFR 268)

g. Management procedures for recyclable hazardous materials such as lead-acid batteries, used oil, and similar

h. Used oil management procedures in accordance with 40 CFR 279

i. Hazardous waste minimization procedures

j. Plans for the disposal of hazardous waste at permitted facilities

1.8.7 Spill Prevention and Control Plan

Include in the Spill Prevention and Control Plan the procedures, instructions, and reports to be used in the event of an unforeseen spill of a substance regulated by 40 CFR 112, 40 CFR 302, and/or regulated under state or local laws and regulations. The Spill Prevention and Control Plan supplements the requirements of EM 385-1-1. This plan must include as a minimum:

a. Measures to be implemented to prevent spills of petroleum products and hazardous substances to the environment.

b. Name of the individual who reports any spills or hazardous substance releases and follows up with complete documentation. This individual must immediately notify the CO and Facility Response Personnel in addition to the legally required federal, state, and local reporting channels (including the National Response Center (NRC) 1-800-424-8802) if a reportable quantity is released to the environment.

(1) The plan must contain a list of the required reporting channels and telephone numbers.

(2) The 24-hour spill notification telephone numbers including NRC, County, and local police and/or Emergency Response organization as appropriate and required. The plan must include 24-hour emergency number for the Government Quality Assurance Representative (GQAR), Project Engineer, and Resident Engineer. The Oregon Emergency Response System (OERS) must also be notified. The Washington Emergency Management Division, appropriate Department of Ecology regional office at website https://ecology.wa.gov/About-us/Get-involved/Report-an-environmental-issue/Report-a-spill must also be notified.

c. Name(s) and qualifications of the individual(s) responsible for implementing and supervising the containment and cleanup.

d. Training requirements for Contractor's personnel and methods of accomplishing the training.

e. List of materials and equipment to be immediately available at the job site, tailored to cleanup work of the potential hazard(s) identified. For all work in or adjacent to water, a 200-foot-long minimum containment boom, skimming equipment, and a cleanup kit must be available at the job-site. To determine the number of required floating plants, consider the logistics, time required to begin containment and cleanup of a spill, accessibility, number of remote work areas, and number and location of floating plants on the river. Materials and equipment for other cleanup work must be tailored to the potential hazards involved.

f. Names and locations of suppliers of containment materials and locations of additional fuel oil recovery, cleanup restoration, and material-placement equipment available in case of an unforeseen spill emergency.

g. Methods and procedures to be used for expeditious contaminant cleanup.

h. Include a hazardous material Spill Emergency Initial Report Form, similar to Attachment A4. Ensure that all of the elements shown on the sample form are provided and submitted within 24 hours of a spill.

1.8.8 Clean Air Act Compliance

1.8.8.1 Dirt and Dust Control Plan

Include a Dirt and Dust Control Plan in the EPP showing proposed activities and identify measures to minimize dust. Include truck and material haul routes along with measures for controlling dirt, debris, and dust. As a minimum, identify in the plan any equipment for cleaning along the haul route and measures to reduce dirt, dust, and debris from roadways.

1.8.8.2 Pollution Generating Equipment

Identify air pollution generating equipment or processes that may require federal, state, or local permits under the Clean Air Act.

1.8.8.3 Refrigerants

Identify management practices to ensure that heating, ventilation, and air conditioning (HVAC) work involving refrigerants complies with state and federal requirements. Technicians must be certified, maintain copies of certification on site, use certified equipment and log work that requires the addition or removal of refrigerant. Any refrigerant reclaimed is the property of the Government. Coordinate with the USACE Environmental Compliance Coordinator to determine the appropriate turn in location.

1.8.8.4 Air Pollution-Generating Processes

Identify planned air pollution-generating processes and management control measures (including, but not limited to, spray painting, abrasive blasting, demolition, material handling, fugitive dust, and fugitive emissions).

1.8.8.5 Compliant Materials

Materials must be compliant with all Clean Air Act regulations for emissions including solvent and volatile organic compound contents, and applicable National Emission Standards for Hazardous Air Pollutants requirements of 40 CFR 61.

1.8.8.6 Safety Data Sheets (SDS)

Include in the EPP an SDS and estimated quantity to be used for each hazardous material brought onto the site. State how the hazardous material will be used and why it is required for the performance of this Contract.

1.9 ENVIRONMENTAL RECORDS BINDER

a. Create and maintain a three-ring binder of documents that demonstrate compliance with the environmental permits in this Contract. The binder must include, but is not limited to, the following items:

(1) Employee Training records

(2) Relevant environmental permits

(3) Waste Determination Documentation

(4) Solid Waste Management Report

(5) Hazardous Waste/Debris Management Report

b. Maintain the binder on-site and submit an electronic copy of the binder to the CO at the completion of the project. The binder must be available for review at all times.

1.9.1 Employee Training Records

a. Prepare and maintain Employee Training Records throughout the term of the Contract meeting applicable 40 CFR requirements. Keep Employee Training Records in the Environmental Records Binder. Ensure every employee completes a program of classroom instruction or on-the-job training that teaches them to perform their duties in a way that ensures compliance with federal, state and local regulatory requirements.

b. Train personnel to meet regulatory requirements for environmental, biological and cultural resources and provide an attendance roster documenting the names of personnel trained and the dates training occurred. Conduct environmental protection/pollution control meetings for personnel prior to commencing construction activities. Conduct additional meetings for new personnel and when site conditions change. Include in the training and meeting agenda the following:

(1) the methods of detecting and avoiding pollution;

(2) familiarization with statutory and contractual pollution standards;

(3) installation and care of devices, vegetative covers, and instruments required for monitoring purposes to ensure adequate and continuous environmental protection/pollution control;

(4) anticipated hazardous or toxic chemicals or wastes, and other regulated contaminants;

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 PROTECTION OF NATURAL RESOURCES

a. Protect the natural resources at and near the project site. Prevent disturbance and damage to fish, wildlife, and plants, including their habitats. The protection of rare, threatened, and endangered animal and plant species identified, including their habitats, is the Contractor's responsibility.

b. Prior to commencing construction activities, mark (or fence) the limits of disturbance noted on the plans. If no limit is indicated, mark the limits of the work indicated and specified. Mark isolated areas within the limits of disturbance that are not to be disturbed. Markers must be highly visible. Personnel must be knowledgeable of the purpose for marking and protecting particular objects. Confine all construction activities within the marked limits of disturbance.

3.1.1 Fish

Work in the water, on the water, and adjacent to the water where the work might affect fish passage is restricted to the In-Water Work (IWW) period. The IWW period is provided in Section 01 10 10.00 25 CONTRACTOR'S OPERATIONS AND REQUIREMENTS.

3.1.2 Streams

a. Do not alter water flows or otherwise significantly disturb the native habitat adjacent to the project and critical to the survival of fish and wildlife, except as specified and permitted.

b. Stream crossings must allow movement of materials or equipment without violating water pollution control standards of the federal, state, and local governments.

c. The CO's approval and appropriate permits are required before any equipment will be permitted to ford live streams. In areas where frequent crossings are required, install temporary culverts or bridges. Obtain CO's approval prior to installation. Remove temporary culverts or bridges upon completion of work, and repair the area to its original condition unless otherwise required by the CO.

3.1.3 Wetlands and Other Sensitive Areas

Provide BMPs to protect wetlands and other sensitive areas. Locate BMPs to provide a minimum 50-feet buffer between the sensitive area and construction activity, unless noted otherwise on the plans.

3.1.4 Vegetation

Except in areas designated to be cleared, do not remove, cut, deface, injure, or destroy trees, shrubs, or other vegetation. Unless otherwise noted in the plans and specifications, protect trees larger than 6 inches in diameter with a minimum 5 foot high fence around the dripline of the trees to protect the tree's root zone from damage. Tree diameter is measured at 4.5 feet above the highest point of ground at the tree's base. Do not fasten or attach ropes, cables, or guys to existing nearby trees for anchorages unless authorized by the CO. Where such use of attached ropes, cables, or guys is authorized, the Contractor is responsible for any resultant damage.

3.2 OREGON STORMWATER POLLUTION PREVENTION

Erosion and sediment control, including stormwater pollution prevention measures, must be provided for the work site regardless of the ground disturbance area.

3.2.1 BMP Monitoring and Maintenance

a. During construction, erosion controls, streams, and adjacent water bodies must be monitored and BMPs maintained daily during the rainy season and weekly during the dry season as necessary to ensure controls are properly functioning.

b. If monitoring shows that the erosion controls are ineffective at preventing visible sediment discharge, the project must stop to evaluate erosion control measures. Repairs, replacements or the

installation of additional erosion control measures must be completed before the project resumes.

c. Proper maintenance includes removal of sediment and debris from erosion controls such as silt fences or wattles once it has reached one-third of the exposed height of the control.

3.2.2 Erosion and Sediment Control Measures

Provide erosion and sediment control measures in accordance with state and local laws and regulations. Preserve vegetation to the maximum extent practicable.

3.2.3 Contractor Facilities and Work Areas

Place field offices, staging areas, stockpile storage, and temporary buildings within the work areas shown on the drawings. Move or relocate the Contractor facilities only when approved by the Government. Provide erosion and sediment controls for onsite borrow and spoil areas to prevent sediment from entering nearby waters. Control temporary excavation and embankments for work areas to protect adjacent areas.

3.3 WASHINGTON STORMWATER POLLUTION PREVENTION

Erosion and sediment control, including stormwater pollution prevention measures, must be provided for the work site regardless of the ground disturbance area.

3.3.1 Stormwater Pollution and Prevention Plan (SWPPP)

Prepare and submit a draft Stormwater Pollution and Prevention Plan (SWPPP) to the Contracting Officer for review at least 30 days prior to the commencement of work and implement the approved plan. The SWPPP must describe the types and locations of best management practices (BMPs) to be implemented during all construction activities to minimize soil erosion and prevent sediment from entering streams or water bodies. The BMPs must be consistent with Ecology's Stormwater Management Manual for Western Washington.

a. The SWPPP must meet the requirements of 40 CFR 122.26 and the Ecology Construction Stormwater General Permit for stormwater discharges from construction sites.

b. The SWPPP must include practices to minimize erosion and sedimentation associated with all aspects of the project (e.g., staging areas, stockpiles, grading; to prevent construction debris from dropping or otherwise entering any stream or waterbody; and to prevent and control hazardous material spills.

c. Include in the SWPPP an inspection program that includes a list of the BMPs to be inspected, frequency of inspections, and corrective actions to be taken if BMPs are deficient.

d. Update or modify the SWPPP as needed to represent actual BMPs being used on the site and include the type and location of the erosion and sediment controls being used. Submit the SWPP Modifications to the CO for review and approval.

e. Maintain an approved copy of the SWPPP at the onsite construction

office in the Environmental Records Binder, and continually update as regulations require and reflecting current site conditions and actual BMPs being used.

3.3.2 BMP Monitoring and Maintenance

a. During construction, erosion controls, streams, and adjacent water bodies must be monitored and BMPs maintained daily during the rainy season and weekly during the dry season as necessary to ensure controls are properly functioning.

b. If monitoring shows that the erosion controls are ineffective at preventing visible sediment discharge, the project must stop to evaluate erosion control measures. Repairs, replacements or the installation of additional erosion control measures must be completed before the project resumes.

c. Proper maintenance includes removal of sediment and debris from erosion controls such as silt fences or wattles once it has reached one-third of the exposed height of the control.

3.3.3 Erosion and Sediment Control Measures

Provide erosion and sediment control measures in accordance with state and local laws and regulations. Preserve vegetation to the maximum extent practicable.

3.3.4 Contractor Facilities and Work Areas

Place field offices, staging areas, stockpile storage, and temporary buildings within the work areas shown on the drawings. Move or relocate the Contractor facilities only when approved by the Government. Provide erosion and sediment controls for onsite borrow and spoil areas to prevent sediment from entering nearby waters. Control temporary excavation and embankments for work areas to protect adjacent areas.

3.4 SURFACE AND GROUNDWATER

3.4.1 Cofferdams, Diversions, and Dewatering

a. Construction operations for dewatering and removal of cofferdams must be constantly controlled to maintain compliance with existing state water quality standards and designated uses of the surface water body. Comply with state water quality standards and anti-degradation provisions. Do not discharge excavation ground water to the sanitary sewer, storm drains, or to surface waters without prior specific authorization in writing from the CO. Discharge of hazardous substances will not be permitted under any circumstances. Use sediment control BMPs to prevent construction site runoff from directly entering any storm drain or surface waters.

b. If the construction dewatering is noted or suspected of being contaminated, it must not be released to the storm drain system or surface water unless specifically permitted. Obtain authorization for any contaminated groundwater release in advance from the federal or state authority, as applicable.

3.4.2 Waters of the United States

Do not enter, disturb, destroy, or allow discharge of contaminants into waters of the United States unless otherwise noted on specifications.

3.4.3 Invasive Species Prevention Measures for Boat Operations

Prevent contaminating the waters of the United States with invasive species, particularly zebra mussels. Zebra mussels can be transported by boats, trailers, outboard motors and other equipment such as tractors, bulldozers, water pumps, ropes and nets that are used in areas that zebra mussels inhabit. Zebra mussels have been found in several lakes and river systems. If equipment is not properly inspected and treated to prevent the spread of zebra mussels and other aquatic nuisance species, they can be introduced into areas not currently infested. To assist in preventing the introduction and spread of aquatic nuisance species, the following precautions must be taken:

a. Prior to transporting to site, visually inspect all equipment for zebra mussels and other aquatic nuisance species. Remove all trash, mud, vegetation, suspected zebra mussels, place in plastic bags, and properly dispose of in land-based receptacles.

b. All construction equipment and supplies intended for use in water that has been exposed to other lake or stream water must be thoroughly washed with a power washed or be allowed to dry an appropriate length of time in accordance with state guidance. Water being used for power washing must be at least 160 degrees F when leaving the spray nozzle and 140 degrees F when contacting the equipment being decontaminated. All contaminated runoff must be adequately contained and disposed of properly.

c. Treat pumps, equipment, and supplies that cannot be thoroughly drained, cleaned, and dried with a 200 ppm bleach solution for 20 minutes, deactivate with sodium thiosulfate, and rinse according to Table 1 below.

d. Conduct an onsite inspection of all vessels, equipment, pumps, and supplies to be used in or around the water before work begins. Coordinate the date and time of this onsite inspection with the CO seven days in advance of inspection.

e. Inspect vessels and equipment upon removal from any body of water. Clean hulls, anchors, moorings, trailers, etc. of all mud, vegetation, and any noticeable attached zebra mussels before leaving the site. Remove any suspected zebra mussels, report to the CO, and contain them for verification.

f. Wash or appropriately dry all vessels and construction equipment removed from waters currently infested with zebra mussels or other aquatic invasive species as described above.

Table 1:

Disinfectant Amounts to Make Needed Concentrations					
Disinfectant	1 gallon	2 gallons	5 gallons	20 gallons	100 gallons
200 ppm Chlorine (household bleach, 5.25% Chlorine)	0.5 ounce (15 ml)	1.0 ounce (30 ml)	2.5 ounces (75 ml)	11.0 ounces (300 ml)	6 1/3 cups (1.5 L)
800 ppm Sodium Thiosulfate	0.1 ounce (3 g)	0.2 ounce (6 g)	0.5 ounce (15 g)	2.1 ounces (60 g)	10.6 ounces (300 g)

Notes:

(1) Zebra mussel juveniles, called veligers, are microscopic and invisible to the naked eye.

(2) Air drying and hot water are most effective when used in conjunction with each other because their effectiveness is highly dependent upon ambient temperatures and contact times.

(3) Household bleach (5.25 percent chlorine) and vinegar can be purchased from grocery or convenience stores. Sodium Thiosulfate can be purchased at pool supply stores or chemical companies.

(4) All bilges and hidden areas under boat decks must be thoroughly treated as described above.

(5) For instructions on cleaning and decontaminating specific types of equipment use the following link to access the Inspection and Cleaning Manual for Equipment and Vehicles to Prevent the Spread of Invasive Species: http://www.usbr.gov/mussels/prevention/docs/EquipmentInspectionandCleaningManual2010.pdf

3.5 CULTURAL RESOURCES

3.5.1 Archaeological Resources

If, during excavation or other construction activities, any previously unidentified or unanticipated historical, archaeological, or cultural resources are discovered or found, activities that may damage or alter such resources will be suspended. Resources covered by this paragraph include, but are not limited to: any human skeletal remains or burials; artifacts; shell, midden, bone, charcoal, or other deposits; rock or coral alignments, pavings, wall, or other constructed features; and any indication of agricultural or other human activities. Upon such discovery or find, immediately notify the CO so that the appropriate authorities may be notified and a determination made as to their significance and what, if any, special disposition of the finds should be made. Cease all activities that may result in impact to or the destruction of these resources. Secure the area and prevent employees or other persons from

trespassing on, removing, or otherwise disturbing such resources. The Government retains ownership and control over archaeological resources.

3.6 AIR RESOURCES

Equipment operation, activities, or processes must be in accordance with applicable federal and state air emission and performance laws and standards. To reduce air emissions, equipment must not remain idle for longer than 15 minutes.

3.6.1 Burning

Burning is prohibited on the Government premises.

3.6.2 Dust and Particulate Control

Control dust at all times, including during non-working periods. Dust particles, aerosols and gaseous by-products from construction activities, and processing and preparation of materials (such as from asphaltic batch plants) must be controlled at all times, including weekends, holidays, and hours when work is not in progress. Maintain excavations, stockpiles, haul roads, permanent and temporary access roads, plant sites, spoil areas, borrow areas, and other work areas within or outside the project boundaries free from particulates that would exceed 40 CFR 50, state, and local air pollution standards or that would cause a hazard. Sprinkling or other methods will be permitted to control particulates in the work area. Sprinkling, to be effective, must be repeated to keep the disturbed area damp. Perform particulate control as the work proceeds and whenever a particulate hazard occurs. Comply with state and local visibility regulations.

3.6.3 Odors

Control odors from construction activities. The odors must be in compliance with state regulations and local ordinances and may not constitute a health hazard.

3.7 WASTE MINIMIZATION

Minimize the use of hazardous materials and the generation of waste. Include procedures for pollution prevention/hazardous waste minimization in the Hazardous Waste Management Section of the EPP. Describe the anticipated types of the hazardous materials to be used during construction.

3.7.1 Salvage, Reuse and Recycle

a. Identify anticipated materials and waste for salvage, reuse, and recycling. Describe actions to promote material reuse, resale or recycling. To the extent practicable, all scrap metal must be sent for reuse or recycling and will not be disposed of in a landfill.

b. Include the name, physical address, and telephone number of the hauler, if transported by a franchised solid waste hauler. Include the destination and, unless exempted, provide a copy of the state or local permit (cover) or license for recycling.

3.8 WASTE MANAGEMENT AND DISPOSAL

3.8.1 Waste Determination Documentation

Complete a Waste Determination form for all anticipated Contractor-derived solid and hazardous wastes to be generated. All potentially hazardous waste streams that are not subject to a specific exclusion or exemption from the hazardous waste regulations (e.g. scrap metal) or subject to special rules, (lead-acid batteries and precious metals) must be characterized in accordance with the requirements of 40 CFR 261 or corresponding applicable state or local regulations. Base the waste determination on user knowledge of the processes and materials used, and analytical data when necessary. Attach support documentation to the Waste Determination form. At a minimum, provide a Waste Determination form for the following wastes (this listing is not inclusive): oil- and latex-based painting and caulking products, solvents, adhesives, aerosols, petroleum products, and containers of the original materials. Include Waste Determination Documentation in the Environmental Records Binder.

3.8.2 Solid Waste Management

3.8.2.1 Solid Waste Management Report

Prepare a Solid Waste Management Report following completion of construction and include the report in the Environmental Records Binder. For each waste, the report must state the classification (using the definitions provided), amount in cubic yards, pounds or tons, location, and name of the business receiving the solid waste. Provide copies of the waste handling facilities' weight tickets, receipts, and bills of sale and other sales documentation. In lieu of sales documentation, a statement indicating the disposal location for the solid waste that is signed by an employee authorized to legally obligate or bind the firm may be submitted. The sales documentation must include the receiver's tax identification number and business, EPA or state registration number, along with the receiver's delivery and business addresses and telephone numbers. For each solid waste retained for the Contractor's own use, submit the information previously described in this paragraph on the solid waste management report. Prices paid or received do not have to be reported to the CO unless required by other provisions or specifications of this Contract or public law.

3.8.2.2 Control and Management of Solid Wastes

a. Prevent contamination of the site or other areas when handling and disposing of wastes. Employ segregation measures so that no hazardous or toxic waste will become co-mingled with non-hazardous solid waste. Transport solid waste off Government property and dispose of it in compliance with 40 CFR 260, state, and local requirements for solid waste disposal. A Subtitle D RCRA permitted landfill is the minimum acceptable offsite solid waste disposal option. Verify that the selected transporters and disposal facilities have the necessary permits and licenses to operate. Solid waste disposal offsite must comply with most stringent local, state, and federal requirements.

b. Manage hazardous material used in construction, including but not limited to, aerosol cans, waste paint, cleaning solvents, contaminated brushes, and used rags, in accordance with 49 CFR 173.

3.8.3 Control and Management of Hazardous Waste

Do not dispose of hazardous waste on Government property. Do not discharge any waste to a sanitary sewer, storm drain, or to surface waters or conduct waste treatment or disposal on Government property without written approval of the CO. Provide the documentation required in this subsection in the Hazardous Waste/Debris Management Report of the Environmental Records Binder.

3.8.3.1 Hazardous Waste/Debris Management

a. Prepare a Hazardous Waste/Debris Management Report that identifies the hazardous waste or debris, and the quantities of each, that were generated by construction activities. Include a documented waste determination for resultant waste streams. Identify, label, handle, store, and dispose of hazardous waste or debris in accordance with federal, state, and local regulations, including 40 CFR 261, 40 CFR 262, and 40 CFR 268. Include the Hazardous Waste/Debris Management Report in the Environmental Records Binder.

b. Manage hazardous waste in accordance with the approved EPP. Store hazardous wastes in approved containers in accordance with 49 CFR 173. Hazardous waste generated within the confines of Government facilities is identified as being generated by the Government. Do not bring hazardous waste onto Government property.

3.8.3.2 Hazardous Waste Disposal

The following applies to disposal of any hazardous waste:

a. Use, or propose for use, materials which may be considered environmentally friendly in that waste from such materials is not regulated as a hazardous waste or is not considered harmful to the environment.

b. Documentation for analysis, sampling, transportation, and disposal of all hazardous waste generated during this Contract must be in accordance with 40 CFR 260-262.

c. Remove all Contractor-generated hazardous wastes from the project for proper disposal within 90 days of waste generation or at the completion of on-site work. Package, label, and mark all hazardous waste in accordance with 49 CFR 172 and 40 CFR 262. Store all hazardous waste in accordance with 40 CFR 262.

d. Transportation of Contractor hazardous material must be in accordance with 49 CFR 171, 49 CFR 172, and 49 CFR 173.

e. Use the Contractor's Environmental Protection Agency (EPA) identification number to dispose of all hazardous waste generated by the Contractor and its subcontractors under this Contract. This is construed to mean all hazardous waste the Contractor or subcontractors generate from materials brought on the site for the purpose of performing work under the terms of the Contract.

f. The Government will dispose of all hazardous waste generated from Government-owned facilities on the project. This is construed to mean hazardous wastes generated from the repair, demolition, or removal of any existing materials and buildings from the Government facilities

and is not intended to include any wastes generated by the Contractor in the performance of its work.

g. The GQAR will notify the project Environmental Compliance Coordinator (ECC) when Government owned wastes are generated. The project ECC will ensure that the wastes are labeled correctly. The GQAR will notify the project ECC when waste containers are full. The project ECC will then arrange for movement of the waste to a designated Government waste collection area.

h. It is the responsibility of the Contractor to prepare hazardous waste manifests for Contractor-generated hazardous waste. The Government will review the Contractor's hazardous waste manifest to ensure the use of the Contractor's own EPA identification number. Include copies of the Hazardous Waste Manifests for all Contractor-generated hazardous wastes disposed off-site in the Environmental Records Binder.

i. Recycle Contractor-generated hazardous or dangerous waste to the maximum extent possible. Placing hazardous or dangerous waste in a permitted hazardous waste landfill must be the last resort.

j. Follow state and local hazardous waste requirements.

3.8.3.3 Universal Waste Management

a. Manage universal waste in accordance with 40 CFR 273 and federal, state, and local requirements.

b. Mercury is prohibited in the construction of this facility, unless specified otherwise, and with the exception of mercury vapor lamps and fluorescent lamps. Dumping of mercury-containing materials and devices such as mercury vapor lamps, fluorescent lamps, or mercury switches in rubbish containers is prohibited. Remove without breaking, pack to prevent breakage, and transport out of the activity in an unbroken condition for disposal as directed.

3.8.3.4 Electronics End-of-Life Management

Recycle or dispose of electronics waste, including, but not limited to, used electronic devices such computers, monitors, hard-copy devices, televisions, mobile devices, in accordance with 40 CFR 260-262, state, and local requirements.

3.8.4 Releases/Spills of Oil and Hazardous Substances

Exercise due diligence to prevent, contain, and respond to spills of hazardous material, hazardous substances, hazardous waste, sewage, regulated gas, petroleum, lubrication oil, and other substances regulated in accordance with 40 CFR 300. Maintain spill cleanup equipment and materials at the work site. In the event of a spill, take prompt, effective action to stop, contain, curtail, or otherwise limit the amount, duration, and severity of the spill/release.

3.8.5 Mercury Materials

a. Immediately report to the Environmental Compliance Coordinator and the CO instances of breakage or mercury spillage. Clean mercury spill area to the satisfaction of the CO.

b. Do not recycle a mercury spill cleanup; manage it as a hazardous waste for disposal.

3.8.6 Wastewater

3.8.6.1 Treatment

Do not allow wastewater from construction activities, such as onsite material processing, concrete curing, foundation and concrete clean-up, water used in concrete trucks, and forms to enter waterways or to be discharged prior to being treated to remove pollutants. Dispose of the construction-related waste water by collecting and placing it in a drum or tank where suspended material can be settled out or the water can evaporate to separate pollutants from the water. The site for the drum or tank must be coordinated and approved with the CO. The residue left in the drum or tank, prior to completion of the project must be removed, tested, and disposed of off Government property in accordance with federal, state, and local laws and regulations.

3.8.6.2 Sanitary Sewer Discharge

Discharges to sanitary sewers are not allowed unless the Contractor has obtained all applicable permits for those discharges.

3.8.6.3 Surface Discharge

Surface discharge of wastewater to land or waterways is not permitted unless the Contractor has obtained all applicable NPDES permits for that discharge.

3.8.6.4 Land Application

Do not allow sheeting action, soil erosion, discharge into storm sewers, discharge into defined drainage areas, or discharge into the "waters of the United States". Comply with federal, state, and local laws and regulations.

3.9 HAZARDOUS MATERIAL MANAGEMENT

Include hazardous material control procedures in the Safety Plan, in accordance with Section 01 35 26.00 25 GOVERNMENTAL SAFETY REQUIREMENTS. Address procedures and proper handling of hazardous materials, including the appropriate transportation requirements. Do not bring hazardous material onto Government property that does not directly relate to requirements for the performance of this Contract. Typical materials requiring SDS and quantity reporting include, but are not limited to, oil and latex based painting and caulking products, solvents, adhesives, aerosol, and petroleum products. Use hazardous materials in a manner that minimizes the amount of hazardous waste generated. Containers of hazardous materials must have National Fire Protection Association labels or their equivalent. Certify that hazardous materials removed from the site do not meet the definition of hazardous waste, in accordance with 40 CFR 261.

3.10 PREVIOUSLY USED EQUIPMENT

Clean previously used construction equipment prior to bringing it onto the project site. Equipment must be free from soil residuals, egg deposits

from plant pests, noxious weeds, and plant seeds. Consult with the U.S. Department of Agriculture jurisdictional office for additional cleaning requirements.

3.11 PETROLEUM, OILS, AND LUBRICANTS (POLs) STORAGE AND FUELING

Utilize environmentally acceptable lubricants including hydraulic fluid as in accordance with EPA 800-R-11-002 when operating equipment below Ordinary High Water and work over water. Store POL products in a manner that affords the maximum protection against spills into the environment. Fuel equipment and motor vehicles in a manner that affords the maximum protection against spills into the environment. Use secondary containments, dikes, curbs, and other barriers, to prevent POL products from spilling and entering the ground, storm or sewer drains, stormwater ditches or canals, or navigable waters of the United States. Describe in the EPP (see Paragraph ENVIRONMENTAL PROTECTION PLAN) how POL tanks and containers must be stored, managed, and inspected and what protections must be provided.

a. Inspect all equipment, vehicles, and power tools for fluid leaks before they arrive onto the project site.

b. Before operation within 150 feet of any body of water, and as often as necessary during operation, thoroughly clean all equipment, vehicles, and power tools to keep them free of external fluids and grease and to prevent leaks and spills from entering the water.

c. Maintain and protect generators, cranes, or other stationary heavy equipment operated within 150 feet of any waterbody as necessary to prevent leaks and spills from entering the water.

3.11.1 Used Oil Management

Manage used oil generated on site in accordance with 40 CFR 279. Determine if any used oil generated while onsite exhibits a characteristic of hazardous waste. Used oil containing 1,000 parts per million of solvents is considered a hazardous waste and disposed of at the Contractor's expense. Used oil mixed with a hazardous waste is also considered a hazardous waste. Dispose in accordance with Paragraph HAZARDOUS WASTE DISPOSAL.

3.11.2 Oil Storage Including Fuel Tanks

a. Provide secondary containment and overfill protection for POL storage tanks and refueling onsite. Use drip pans during oil transfer operations. Cover tanks and drip pans during inclement weather. Provide procedures and equipment to prevent overfilling of tanks.

b. Monitor and remove any rainwater that accumulates in open containment pans, dikes, or berms. Inspect the accumulated rainwater prior to draining from a containment dike to the environment, to determine there is no oil sheen present. If oil sheen is present, treat and dispose of accumulated rainwater in an environmentally-protective manner approved by the CO.

3.12 INADVERTENT DISCOVERY OF PETROLEUM-CONTAMINATED SOIL OR HAZARDOUS WASTES

If petroleum-contaminated soil, or suspected hazardous waste is found

during construction that was not identified in the Contract documents, immediately notify the CO. Do not disturb this material until authorized by the CO.

3.13 NOISE CONTROL

3.13.1 General

Keep construction activities under surveillance and control to minimize environmental damage by noise. Noise control and noise levels must conform to requirements set forth in the appropriate regulations, including EM 385-1-1 Section 05.C, 29 CFR 1926.52, and 29 CFR 1926.101. The most conservative requirement will govern.

3.13.2 Noise Limitations

Follow local noise requirements. In the absence of local requirements, the noise levels, as measured from the nearest dwelling, must not exceed 50 decibels during the hours from 2200 hours to 0700 hours.

3.14 POST CONSTRUCTION CLEANUP

Clean up areas used for construction. Unless otherwise instructed in writing by the CO, remove traces of temporary construction facilities such as haul roads, work area, structures, foundations of temporary structures, stockpiles of excess or waste materials, and other vestiges of construction prior to final acceptance of the work. Grade parking area and similar temporarily used areas to conform with surrounding contours.

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01 78 39.10 25

AS-BUILT DRAWINGS

-- End of Section Table of Contents --

SECTION 01 78 39.10 25

AS-BUILT DRAWINGS
09/2019

PART 1 GENERAL

1.1 GENERAL INFORMATION

This Section covers as-built drawings complete, as a requirement of the Contract. As-built drawings are redlined Contract drawings and Contractor prepared drawings showing as-built conditions. As-built drawings showing final as-built conditions of the work are defined, but not limited to:

a. Contract Drawings - Drawings created by the Government specifically for this Contract and provided to the Contractor upon Award. As-built redline drawings are copies of Contract drawings that are revised to show additions and changes occurring during construction, eventually becoming final record drawings.

b. Contractor-Prepared Drawings - Drawings created by the Contractor during execution of this Contract. Drawings must include shop drawings, diagrammatic, and design information provided by the Contractor and the Contractor's subcontractors, vendors, or suppliers.

1.2 REFERENCES

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

AMERICAN CONCRETE INSTITUTE INTERNATIONAL (ACI)

ACI SP-66	(2004) ACI Detailing Manual

AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)

AISC 326	(2009) Detailing for Steel Construction

U.S. ARMY CORPS OF ENGINEERS (USACE)

ERDC/ITL SR-24-3	(2024) AEC Computer-Aided Design (CAD) Standards, Release 6.2

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following must be submitted in accordance with Section 01 33 00, SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

As-Built Drawings Execution Plan; G

Working As-Built Redline Drawings

SD-11 Closeout Submittals

Final Working As-Built Redline Drawings; G

Final Contractor-prepared CAD Drawings; G

Digital Images; G

1.4 AS-BUILT DRAWINGS EXECUTION PLAN

1.4.1 General Requirements

Submit for approval a discussion detailing how the Contract requirements for As-built Drawings, as set forth in this Section, will be met. Identify Contractor personnel who must be responsible for maintaining marked up as-built conditions during the prosecution of the work and identify an authorized Contractor representative who will certify the monthly review in conjunction with periodic progress payments. Identify Contractor personnel who must be responsible for meeting the Final Working As-Built Redline Drawings submittal requirements at the time of Final Inspection(s), and describe the process of how these requirements will be met.

1.4.2 Project Schedule

Time required to accomplish the requirements of this Section must be included in the Project Schedule in accordance with Section 01 32 01.00 25, PROJECT SCHEDULE.

1.5 WORKING AS-BUILT REDLINE DRAWINGS

1.5.1 General

a. During the execution of the work, mark up an electronic set of Contract, and Contractor-prepared Drawings in accordance with this Section to show the current as-constructed conditions. Working as-built redline drawings must be accessible to the Government at all times through a secure internet accessible service. Submittals must include digital images identified below for verification of redlines. Keep working as-built redline drawings current on a continuous basis and available on the job site at all times. By means of details and notes, accurately and neatly record changes, as they occur, from the Contract drawings that are made in the work and additional information uncovered in the course of construction. Mark up the electronic copy of the working as-built redline drawings, including details and notes, in accordance with the U.S. Army Corps of Engineers (USACE), Portland District As-built CAD standards. Clearly identify changes related to RFIs and Contract modifications.

b. Working as-built redline drawings are part of the permanent records of this Contract and will be retained by the Government upon approval. As-built drawings must include, but not be limited to:

(1) Contract Drawings - Use working as-built redline Contract drawings, and additional drawings or sketches which may be required to thoroughly describe deviations or additions to the

Contract drawings, to provide the required redlined Contract drawings. Mark out Contract drawings and/or portions of Contract drawings superseded by Contractor-prepared drawings and provide reference(s) on superseded Contract Drawings to applicable Contractor-prepared drawing(s). Additional Contractor sketches must be provided if sufficient space is not available on the Contract Drawings. See Contract drawing index Sheet G-001 for Project Record Action Codes.

(2) Contractor-prepared Drawings - Incorporate working as-built redline Contractor-prepared drawings reflecting field conditions into the Final Contractor Prepared CAD Drawings to ensure the ability to cross-reference between Contract, and Contractor-prepared Drawings. Contractor must complete all CAD updates to Contractor-prepared drawings. See Contract drawing index sheet G-001 for Project Record Action Codes. Contractor-generated drawings are Action Code 2.

1.5.2 Weekly Redline Verification

Add redline review and status update to the weekly construction coordination meeting agenda. At a minimum discuss the following:

a. Redlines are present and accurate on an electronic set of drawings.

b. Changes originating from requests for information or Contract modifications are included in the redlines.

c. Adequate construction photographing is being completed prior to embedment, cover, or other actions that will preclude future access for verification.

1.5.3 Monthly Meeting

Coordinate and schedule a monthly meeting with the Contracting Officer (CO) to review the current working as-built redline drawings for accuracy and completeness.

1.6 DIGITAL IMAGES

Provide digital images in JPEG Format with a minimum of 300 pixels per inch (PPI) documenting the as-constructed state of the completed project for verification of redlines. Provide images for buried or concealed work that can not otherwise be verified, and all electrical panels (to include all wire labels). Images must be provided for each plan, section, elevation, and detail drawing (including all Contractor-prepared Drawings). Organize images into folders by feature.

1.7 FINAL WORKING AS-BUILT REDLINE DRAWINGS

Submit a complete electronic set of as-built redlines drawings marked "Draft" (including digital images). Allow 30 calendar days for Government review and approval. The CO will review the draft final working as-built redline drawings for accuracy and completeness and return them to the Contractor for required corrections, changes, additions, and deletions. If changes are required, make such revisions within 15 calendar days, and re-submit a complete set to the Government for review and approval. Final

inspection cannot proceed until the Government has completed reviewing final working as-built drawings and determined they are acceptable.

1.8 FINAL CONTRACTOR-PREPARED CAD DRAWINGS

Within 15 calendar days of final construction physical completion submit a complete set of as-built Contractor-prepared CAD drawings including electronic PDF and CAD files marked "Draft" (including Digital Images). Allow 30 calendar days for Government review and approval. The CO will review final CAD drawings for accuracy and completeness and return them to the Contractor for required corrections, changes, additions, and deletions. If changes are required, make such revisions within 15 calendar days, and resubmit to the Government for review and approval. Once approved, submit a complete set of electronic PDF and CAD files.

1.8.1 CAD STANDARDS

a. The CAD standard mandated by US Army Corps of Engineers and this Contract is ERDC-ITL-SR-24-3. In addition to ERDC-ITL-SR-24-3, structural drawings must be in accordance with ACI SP-66 and AISC 326. ERDC-ITL-SR-24-3 is available, under the District CADD Standards, at the following web link: https://cadbimcenter.erdc.dren.mil/default.aspx?p=a&t=1&i=7. The web link contains the guides, libraries, and templates that must be utilized by the Contractor to produce CAD files that are compliant with the CAD standards required in this Contract. The digital support files in this web link are in DGN format (MicroStation).

b. Computer-Aided Design (CAD) work for this Contract must be accomplished with personnel that are knowledgeable and experienced with ERDC-ITL-SR-24-3. Employ proficient personnel for the creation of CAD files.

1.9 PAYMENT

a. Working as-built redline drawings will be jointly inspected for accuracy and completeness by the CO and an authorized representative of the Contractor prior to submission of the monthly pay estimate. Failure to keep working as-built redline drawings maintained on a current basis, in accordance with Paragraph WORKING AS-BUILT REDLINE DRAWINGS, will be sufficient justification to withhold up to ten percent of the monthly pay estimate.

b. Separate payment will not be made for compliance with this Section for the preparation of the working as-built Contract and/or Shop Drawing redline drawings. All costs associated with the working as-built drawing requirements of this Section are considered incidental to the work.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 03 - CONCRETE

SECTION 03 30 00

CAST-IN-PLACE CONCRETE

-- End of Section Table of Contents --

SECTION 03 30 00

CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.1 SUMMARY

This specification section addresses the requirements for underwater concrete placement operations at the project to construct the rock mitigation barriers on the spillway apron. It is the contractor's responsibility to ensure that all products, construction means & methods and submittals are acceptable for use throughout the apron floor including, but not limited to, the flat and sloped segments of the floor. Due to the complexity of the concrete placements, the contractor may anticipate the need to perform underwater work, such as formwork installation, to satisfy the tolerances, slopes and elevations specified in the contract plans and specifications.

1.2 REFERENCES

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

AMERICAN CONCRETE INSTITUTE (ACI)

ACI 121R	(2008) Guide for Concrete Construction Quality Systems in Conformance with ISO 9001
ACI 301	(2016) Specifications for Structural Concrete
ACI 211.1	(1991; R 2009) Standard Practice for Selecting Proportions for Normal, Heavyweight and Mass Concrete
ACI 214R	(2011) Evaluation of Strength Test Results of Concrete
ACI SP-66	(2004) ACI Detailing Manual
ACI 304R	(2000; R 2009) Guide for Measuring, Mixing, Transporting, and Placing Concrete
ACI 318	(2014; Errata 1-2 2014; Errata 3-5 2015; Errata 6 2016; Errata 7-9 2017) Building Code Requirements for Structural Concrete (ACI 318-14) and Commentary (ACI 318R-14)
ACI 347R	(2014; Errata 1 2017) Guide to Formwork for Concrete
ACI SP-15	(2011) Field Reference Manual: Standard Specifications for Structural Concrete ACI 301-05 with Selected ACI References

ASTM INTERNATIONAL (ASTM)

ASTM A615/A615M	(2022) Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
ASTM C31/C31M	(2022) Standard Practice for Making and Curing Concrete Test Specimens in the Field
ASTM C33/C33M	(2018) Standard Specification for Concrete Aggregates
ASTM C39/C39M	(2021) Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
ASTM C94/C94M	(2022a) Standard Specification for Ready-Mixed Concrete
ASTM C138/C138M	(2017a) Standard Test Method for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete
ASTM C143/C143M	(2020) Standard Test Method for Slump of Hydraulic-Cement Concrete
ASTM C172/C172M	(2017) Standard Practice for Sampling Freshly Mixed Concrete
ASTM C232/C232M	(2021) Standard Test Method for Bleeding of Concrete
ASTM C260/C260M	(2010a; R 2016) Standard Specification for Air-Entraining Admixtures for Concrete
ASTM C403/C403M	(2008) Standard Test Method for Time of Setting of Concrete Mixtures by Penetration Resistance
ASTM C494/C494M	(2019; E 2022) Standard Specification for Chemical Admixtures for Concrete
ASTM C618	(2022) Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete
ASTM C1064/C1064M	(2017) Standard Test Method for Temperature of Freshly Mixed Hydraulic-Cement Concrete
ASTM C1611/C1611M	(2021) Standard Test Method for Slump Flow of Self-Consolidating Concrete
ASTM C1077	(2017) Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation

ASTM C1602/C1602M	(2022) Standard Specification for Mixing Water Used in Production of Hydraulic Cement Concrete

CONCRETE REINFORCING STEEL INSTITUTE (CRSI)

CRSI 10MSP	(2018) Manual of Standard Practice

U.S. ARMY CORPS OF ENGINEERS (USACE)

COE CRD-C 61	(1989A) Test Method for Determining the Resistance of Freshly Mixed Concrete to Washing Out in Water

NATIONAL READY MIXED CONCRETE ASSOCIATION (NRMCA)

NRMCA CPMB 100	(2000; R 2006) Concrete Plant Standards

1.3 SUBMITTALS

Government approval is required for submittals with a "G" or "S" classification. Submittals not having a "G" or "S" classification are for information only. When used, a code following the "G" classification identifies the office that will review the submittal for the Government. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Demonstration Work Plan; G, DS

Concrete Quality Control Program; G

SD-02 Shop Drawings

Formwork

Reinforcing Steel; G

SD-03 Product Data

Formwork Materials

Cementitious Materials;

Admixtures

SD-04 Samples

Underwater Tremie Concrete Demonstration; G

SD-05 Design Data

Formwork Calculations

Tremie Concrete Mix Design; G, DS

SD-06 Test Reports

Fly Ash

Pozzolan

Aggregates

Compressive Strength Tests; G

Reinforcing Bars

Water

Concrete Test Reports

SD-07 Certificates

Safety Data Sheets

1.4 TREMIE CONCRETE MIX DESIGN

The contractor shall develop the underwater concrete mix design. The concrete mix design and concrete mixture requirements shall be submitted for review at least 60 days prior to the underwater tremie concrete demonstration.

It is the Contractor's responsibility to ensure the tremie concrete mix design is acceptable for use and placement throughout the apron floor.

All tremie mixtures shall be trial batched before Government mixture approval. This shall include but not be limited to testing for initial set time, final set time, washout for mixtures containing anti-washout admixture (AWA), slump flow, temperature and have compressive strength specimens cast to match the contractual frequency of compressive strength testing. Air content shall also be tested and recorded for informational purposes only. If during/after trial batching any test fails, the trial batch shall be repeated until passing results are obtained. No material shall be used until notice of acceptance has been given by the Contracting Officer. The Contractor will not be entitled to any additional payment or extension of time due to failure of any material to meet project requirements, or for any additional sampling or testing required.

1.5 CONCRETE QUALITY CONTROL

The objective of the Concrete Quality Control Program is for the Contractor to outline the procedures that will be used to place underwater concrete and construct barriers that meet the project criteria. The Contractor shall develop and submit for approval a Concrete Quality Control Program in accordance with the guidelines of ACI 121R and as specified herein. The plan shall include Government-approved laboratories. If concrete cylinders tested during production indicate inadequate strength, or inadequate mixing, then the Government reserves the right to require the Contractor to extract concrete core samples from the hardened concrete for analysis at Contractor's expense to assure that the quality of the concrete as placed and cured will satisfy the project criteria. Maintain a copy of ACI SP-15 and CRSI 10MSP at the project site.

1.6 UNDERWATER TREMIE CONCRETE DEMONSTRATION

Prior to the first concrete production placement, the Contractor shall perform a field demonstration of the underwater tremie concrete placement in the presence of Government representatives including, but not limited to, the Contracting Officer and Engineer of Record. The contractor shall provide a Demonstration Work Plan. The tremie concrete demonstation will be at a location of the contractor's choosing not on the Project site. The field demonstration shall be directly reflective of the final concrete production placements including, but not limited to means and methods, equipment, and materials. The Contractor shall be fully responsible for planning and performing the work under this contract in accordance with the contract drawings and specifications. The Contractor shall be fully responsible for determining the methods to perform the work in accordance with the contract documents. The Government reserves the right to verify that the Contractor's proposed methods, equipment and materials will be acceptable.

For the demonstration, the Contractor shall prepare a work plan and submit for review and approval by Contracting Officer. As part of the demonstration, the Contractor is responsible to perform the required construction of the demonstration specimen and sample and test the concrete in accordance to the testing requirements outlined herein.

The demonstrations required herein will not relieve the Contractor from performing the work required under this contract in an acceptable manner. Any portion of work found not in compliance with the contract documents shall be cause of rejection. The Contractor shall remove the rejected work, revise means and methods, and perform additional demonstrations. Proposed corrective plans and procedures, for any work not in compliance with the contract documents, shall be submitted to the Contracting Officer, for approval.

1.6.1 Key Personnel

The Contractor shall use key personnel during performance of the demonstration work who will subsequently be employed in the performance of the actual work. The Contractor's CQC team shall be present during testing to discuss issues and solutions to problems revealed during subsequent testing.

1.6.2 TESTING REQUIREMENTS

The results of all concrete tests shall be submitted in accordance with applicable testing requirements of this section. Testing of concrete shall be as specified herein and as otherwise required in the actual work as specified in the applicable Paragraphs of this Specification Section. Results of all testing shall be furnished to the Contracting Officer as specified in the applicable Paragraphs of this Specification Section. The Government reserves the right to require additional testing of the demonstration placements. All documentation (all media) shall become the property of the Government.

1.6.2.1 Concrete Placement Characteristics

The primary intents of the demonstration are (1) to verify the capability of the proposed concrete mixtures to physically perform underwater as designed, and (2) to verify the Contractor's equipment and procedures as

proposed for the construction. Specifically, the intended concrete placement characteristics to be demonstrated are as follows:

1) All underwater concrete mixture placed must flow freely and flow around and fully embed the protruding steel anchors and reinforcing steel mat that will be part of the final underwater concrete slab without substantial voids, laitance, segregation, and washout.

2) The concrete materials must be capable of filling the entire segment and bonding onto the embedded steel materials.

3) The surface of the tremie concrete shall be as shown on the drawings with a tolerance of plus 2 inches.

1.6.3 Contractor's Records

The Contractor shall keep detailed records, including written notes, photos and videos, to document all operations of the construction and testing of the demonstration concrete placements, indicating date, time, ambient conditions and location of the work or test being performed. Photographic and video imagery records of the demonstration concrete placements shall be considered construction progress photos.

1.6.4 Concrete Sampling and Testing

The Contractor shall develop procedures for sampling, inspection and testing of the concrete mixture placed during the demonstration. The procedures shall be made part of the demonstration work plan. All demonstration test reports specified herein shall be compiled and a copy of the reports provided to the Contracting Officer for approval prior to commencement of final concrete production.

1.6.4.1 On-site Testing of Fresh Concrete

The demonstration concrete to be placed shall be sampled and tested for slump, slump flow, air content, unit weight measurements, bleed tests, washout tests, time of set, and preparation of concrete cylinders for strength evaluation. The test methods and concrete performance shall comply with all requirements specified herein.

1.6.4.2 Compressive Strength Test

The Contractor shall conduct compressive strength tests in accordance with ASTM C39/C39M. The test shall include 7, 28, and 90 day strength of the concrete cylinders sampled from fresh concrete, and 28 and 90 day strength of the concrete core samples taken from the hardened concrete specimens.

1.6.4.3 Visual Inspections

The demonstration underwater tremie concrete shall be visually inspected after it has cured a minimum of 7 days. Portions of the concrete will be removed at various locations to expose the bond conditions at the interface between the tremie concrete and reinforcing steel and/or steel anchors. The location of the exposed concrete sections shall be as directed by the Contracting Officer. The Contractor shall be responsible for cutting and removing the specified sections. The Contractor shall also be responsible for cleaning the surfaces of the areas to be inspected using a pressure washer for thorough inspection.

1.6.4.4 Underwater Inspection Report

The demonstration underwater tremie concrete shall be inspected underwater using diving teams. The concrete will be visually inspected after it has cured a minimum of 7 days. The Contractor is responsible to obtain detailed records of the underwater inspections including photos and videos of the placed concrete. All photographic and video imagery records of the underwater inspection shall be submitted to the Contracting Officer as part of the underwater inspection report.

1.7 GENERAL REQUIREMENTS FOR UNDERWATER TREMIE CONCRETE

1.7.1 Batching Tolerances

Except as otherwise specified herein, tolerances for concrete batching and mixture properties shall be in accordance with NRMCA CPMB 100.

1.7.2 Compressive Strength

Specified compressive strength (f'c) of the underwater tremie concrete shall be 5000-psi at 28-days.

Compressive strength of tremie concrete shall be determined in accordance with ASTM C39/C39M and the test procedures shall conform with all other requirements specified herein. If investigation of low-strength compressive test results and load tests is required, the Government may require additional analysis at Contractor's expense.

1.7.3 Water-Cement Ratio

The water-cementitious materials ratio (w/c) for the tremie concrete shall be determined by Contractor as part of the submitted mix design and shall not exceed 0.42. The w/c required for the underwater tremie concrete may cause higher compressive strength that the required strength in Paragraph 1.7.1. The maximum w/c required will be the equivalent w/c as determined by conversion from the weight ratio of water to cement plus pozzolan, silica fume, and ground granulated blast furnace slab (GGBF slag) by the weight equivalency method as described in ACI 211.1. In the case where silica fume or GGBF slab or fly ash is used, the weight of the silica fume, GGBF slag, and fly ash shall be included in the equations of ACI 211.1 for the term P which is used to denote the weight of pozzolan. The minimum cementitious content for the underwater concrete mix shall be 675 lb/yd^3. The total weight of water shall be used to calculate w/c, and shall include the water batched, ice, aggregate moisture, and the water in admixtures and silica fume slurry, if used.

1.7.4 Slump and Slump Flow Retention

Adequate slump and slump flow shall be maintained over time to accommodate the potential time delay in mixing, transport, and placement of the concrete.

1.7.5 Washout

Washout of the tremie concrete shall be tested in accordance with COE CRD-C 61. The acceptable test results for the concrete mixture is eight (8) percent washout by mass or less.

1.7.6 Bleed Water

Bleeding of concrete placed underwater shall be tested in accordance with ASTM C232/C232M, Method A. Bleed water for the tremie concrete shall be restricted to a maximum of 0.5 percent when tested over a period of 8 hours.

1.7.7 Time of Set

Setting of concrete placed underwater shall be tested in accordance with ASTM C403/C403M. Initial time of set for tremie concrete shall be restricted to a range of 4 hours to 18 hours. Final set shall be achieved in less than 24 hours. In addition, the time of set shall be appropriate to accommodate mixing, transport, and placement of concrete.

1.7.8 Concrete Temperature

The temperature of the concrete as delivered to the point of placement shall be between 60 degrees F and 90 degrees F, when tested in accordance with ASTM C1064/C1064M.

1.7.9 Drawings

Fabrication Drawings for concrete formwork, reinforcement materials, precast elements, wall forms, and bulkhead forms must indicate concrete pressure calculations with both live and dead loads, along with material types. Provide design Formwork Calculations by a registered Civil or Structural Engineer.

Design, fabricate, erect, support, brace, and maintain formwork so that it is capable of supporting without failure all vertical and lateral loads that may reasonably be anticipated to be applied to the formwork.

Follow guidelines outlined in ACI 347R for formwork design. Include design calculations indicating arrangement of forms, sizes and related components. Indicate placement schedule, construction, and location and method of forming control joints. Include locations of inserts, pipe work, conduit, sleeves, and other embedded items.

1.7.9.1 Formwork

Prior to commencing work, submit drawings for approval showing details of formwork.

Design, fabricate, erect, support, brace, and maintain formwork so that it is capable of supporting without failure all vertical and lateral loads that may reasonably be anticipated to be applied to the formwork.

Follow guidelines outlined in ACI 347R for formwork design. Include design calculations indicating arrangement of forms, sizes, formwork materials and related components. Indicate placement schedule, construction, and location and method of forming control joints.

1.7.9.2 Reinforcing Steel

Reinforcing steel shop drawings shall comply with the requirements of ACI SP-66. Provide bending and cutting diagrams, assembly diagrams, splicing placement and laps of bars, shapes, dimensions, and details of

bar reinforcing, accessories, and concrete cover. Do not scale dimensions from structural drawings to determine lengths of reinforcing bars. Only complete drawings will be accepted.

1.7.9.3 Construction and Expansion Joints

Submit a plan indicating the type and location of each joint as shown on the contract drawings and/or determined based on the tremie partitions. Final joint locations are subject to Government approval.

1.7.10 Pre-Construction Submittals

1.7.10.1 TREMIE CONCRETE MIX DESIGN

At least 60 days prior to the underwater tremie concrete demonstration, the contractor shall submit a complete mix design for review and approval. The mix design developed by the consultant shall meet or exceed the requirements specified in the contract plans or herein. Provide a detailed report of materials and methods used, test results, and the field test strength (fcr) for underwater tremie concrete required to meet structural and durability requirements.

The underwater tremie concrete mix shall be proportioned to be cohesive and flow with minimal segregation. Viscosity modifying admixtures are permitted for underwater concrete. Proportioning guidance in ACI 304R shall be considered. Concrete mixtures shall be qualified for tremie placement methods based on the field demonstration.

The submitted mix design shall include details as follows:

1) Strength of final design mix

2) Water-Cement Ratio of final design mix

3) Slump of final design mix

4) Slump flow of final design mix

5) Washout properties of design mix

6) Aggregates

7) Admixtures

1.7.10.2 Work Platform Drawings

The Contractor shall furnish and install a tremie work platform that will be used for tremie concrete operations. The contractor shall develop a complete tabulation of expected load cases and structural analyses for review by the Contracting Officer. Drawings shall identify all necessary materials for construction of the platform and shall indicate the weight of these materials. The extent of the work platforms as shown may be expanded during the progress of the work to accommodate the various construction operations. Additions/revisions to the work platform during later phases of the work shall also be supported with detailed drawings and computations. If the Contractor select to use tremie work platforms that are the lift frames, the Contractor shall submit detailed drawings and supporting structural calculations for these platforms.

1.7.10.3 Concreting Plan

At least 90 days prior to any underwater tremie concrete placement, the contractor shall submit a concreting plan for review and approval by the Contracting Officer. The plan shall describe the equipment and methods proposed for each area of placement.

A single plan for all flat areas of placement or a separate plan for each placement may be submitted. In addition to the plan(s) for all flat areas, the Contractor shall submit a separate plan(s) for all sloped areas of placement. The content of the plan(s) shall show and describe the equipment and methods proposed and shall include, but not be limited to, the following:

1) Preparation of base foundation prior to tremie concrete placement.

2) Tremie partitions and Tremie Pipe Layout.

3) Concrete production plan including the timing and sequence of the introduction of the concrete constituents, and temperature and moisture control of the concrete constituents, mixing speed and duration

4) Concrete delivery system layout. The system layout shall include complete drawings that show the layout of the batch plant (if used), concrete delivery system, and details of all equipment used in the delivery.

5) Transportation and conveyance of concrete to the point of placement.

6) Procedures and locations for sampling and testing of concrete.

7) Placement procedure, sequence, schedule, and monitoring of tremie placement progress, including the sounding method and frequency, and diving inspection plan.

8) A contingency plan for dealing with unanticipated interruption to concrete placements.

9) Means and methods for removal of the tremie work platform and finish of any exposed tremie concrete surfaces.

10) Protection of fresh concrete.

11) Identification of defective concrete (NDT Testing).

12) Repair of defective concrete, if any.

12) Types and locations of concrete joints.

The timing and sequence of the various steps shall be described in detail. The overall plan shall be of sufficient detail to demonstrate that equipment and methods are appropriate for the tremie concrete of structural grade, and that the work conforms to the general requirements specified in contract plans and herein. The plan will be subject to review and approval by the Contracting Officer. Once approved, the Contractor shall follow all procedures set forth in the plan. Any modifications,

revisions or changes to the plan shall be submitted to the Contracting Office for subsequent review and approval.

1.7.10.4 Preconstruction Testing of Materials

All sampling and testing shall be performed by, and at the expense of, the Contractor. Use a Government approved commercial laboratory or, for cementitious materials and chemical admixtures, a laboratory maintained by the manufacturer of the material. No material shall be used until notice of acceptance has been given. The Contractor will not be entitled to any additional payment or extension of time due to failure of any material to meet project requirements, or for any additional sampling or testing required. Additional tests may be performed by the Government at the discretion of the Contracting Officer; such Government testing will not relieve the Contractor of any testing responsibilities.

1.7.10.5 Material Safety Data Sheets

Submit Material Safety Data Sheets (SDS) for all materials that are regulated for hazardous health effects. Prominently post the SDS at the construction site.

1.7.11 Sampling

The Contractor shall be responsible for conducting concrete production process control sampling and testing in compliance with this specification.

1.7.12 Reporting

1.7.12.1 Daily Inspection Reports

Contractor shall prepare daily inspection reports for all activities including, but not limited to preparation, CQC personnel present, formwork preparation, reinforcement installation, concrete placement log, and temperature control activities. Submit sample forms and describe the procedure used to organize, archive, and retrieve inspection records in the Quality Program submittal.

1.7.12.2 Weekly Inspection Reports

Contractor shall prepare daily inspection reports for all activities including, but not limited to preparation, CQC personnel present, formwork preparation, reinforcement installation, concrete placement log, and temperature control activities. Submit sample forms and describe the procedure used to organize, archive, and retrieve inspection records in the Quality Program submittal.

1.7.12.3 Non-conforming materials

The exact location of non-conforming concrete as placed shall be identified and the Contracting Officer and Engineer of Record shall be notified immediately. There are numerous possible indicators that the as-placed concrete is non-conforming including, but not limited to excessive compressive strength, inadequate compressive strength, excessive slump, excessive voids and honeycombing, and concrete delivery records that indicate excessive time between mixing and placement and/or excessive water was added to the mixture during delivery and placement. Any of these indicators alone are sufficient reason for the Contracting Officer

to request additional sampling, testing, and service life modeling to quantify the concrete properties. If justified, cores may be extracted for testing, and an investigation into the cause for non-conformance shall be conducted.

Investigations into non-conforming materials shall be conducted at the Contractor's expense. The Contractor shall be responsible for the investigation and shall make written recommendations to adequately mitigate or remediate the non-conforming material. The Contracting Officer may accept, accept with reduced payment, require mitigation, or require removal and replacement of non-conforming material at no additional cost to the Government.

PART 2 PRODUCTS

2.1 Cementitious Materials

2.1.1 Portland Cement

Submit Manufacturer's certificates of compliance, accompanied by mill test reports, attesting that the concrete materials meet the requirements of the specifications in accordance with the Special Clause "CERTIFICATES OF COMPLIANCE". Also, certificates for all material conforming to EPA's Comprehensive Procurement Guidelines (CPG), in accordance with 40 CFR 247. Provide cementitious materials that conform to the appropriate specifications listed.

2.1.2 Pozzolan

Submit Manufacturer's certificates of compliance, accompanied by mill test reports, attesting that the concrete materials meet the requirements of the specifications in accordance with the Special Clause "CERTIFICATES OF COMPLIANCE". Also, certificates for all material conforming to EPA's Comprehensive Procurement Guidelines (CPG), in accordance with 40 CFR 247. Provide cementitious materials that conform to the appropriate specifications listed.

2.1.2.1 Fly Ash

Provide pozzolan that conforms to ASTM C618,Class F or Class C. Submit Pozzolan certifications.

2.2 AGGREGATES

Aggregates shall meet the quality and grading requirements ofASTM C33/C33M Class 4S, except as modified herein. The maximum allowable coarse aggregate size shall be ASTM #7. Submit certificates of compliance and test reports for aggregates showing the material(s) meets the quality and grading requirements of the specifications under which it is furnished. Course aggregate shall be sourced from granite, basalt, or high quality limestone. If limestone is used, the aggregate shall be subject to government review as part of the submittal process.

2.3 WATER

Mixing and curing water in compliance with the requirements of ASTM C1602/C1602M; free of injurious amounts of oil, acid, salt, or alkali. Submit test report showing water complies with ASTM C1602/C1602M

2.4 ADMIXTURES

a. Provide certifications that chemical admixtures comply with the requirements shown in Table 1 and are compatible with each other. Use admixtures in accordance with manufacturer's recommendations, as appropriate for the climatic conditions and construction needs.

b. Do not use calcium chloride or admixtures containing chloride ion content in more than trace amounts from impurities in admixture ingredients or potable water.

c. Provide anti-washout or viscosity modifying admixtures for underwater concrete placement meeting the requirements listed in Paragraph 2.4.6. Provide certification that the admixture is compatible with the cementitious materials and other chemical admixtures in the proposed concrete mixture. The anti-washout shall be designed to prevent the loss of cement and fine aggregate during the placement of underwater concrete. The admixture shall reduce cement washout and laitance formation when concrete containing AWA is placed underwater by the tremie method.

The anti-washout admixture shall require approval by the Contracting Officer and have a proven record of performance with a minimum of five similar projects. When the admixture is used at the manufacturer's recommended dosage, the concrete shall meet the wash out test requirements as specified previously in this specification section. Test per COE CRD-C 61 to determine cumulative mass loss shall be performed once for each 100 cubic yards of underwater concrete and results submitted to Contracting Officer for approval prior to continued use.

d. The total alkali contribution of chemical admixtures shall not increase the total sodium-oxide equivalent content of the concrete mixture by more than 0.5 lb/yd3.

2.4.1 Air Entraining

Air-entraining admixtures must conform to ASTM C260/C260M.

2.4.2 Accelerating

An accelerating concrete admixture shall not be used.

2.4.3 Retarding

Retarding admixture shall meet the requirements of ASTM C494/C494M, Type B, D, or G.

2.4.4 Water Reducing

Water-reducing admixture shall meet the requirements of ASTM C494/C494M, Type A, E, or F.

2.4.5 High-Range Water Reducing

High Range Water Reducer (HRWR)admixture shall meet the requirements of ASTM C494/C494M

2.4.6 Anti-Washout

Anti-washout admixture shall meet the requirements of ASTM C494/C494M Type S.

2.5 FORMWORK

Design and engineer the formwork as well as its construction in accordance with ACI 301and ACI 347R. Stay-in-place formwork is acceptable for use and if selected, shall be subject to Government approval. Submit formwork design at least 60 days prior to the first concrete placement.

2.6 REINFORCEMENT

2.6.1 Reinforcing Bars

Provide reinforcing bars conforming to the requirements of ASTM A615/A615M, Grade60.Detail reinforcement not indicated in accordance with ACI 301 and ACI SP-66.

PART 3 EXECUTION

3.1 CONCRETE PRODUCTION

3.1.1 General

The Contractor may select to use a floating batch plant to produce concrete for placements. Alternatively, the Contractor may select to use the south shore adjacent to the spillway tailrace as shown on the Contract Plans to transport concrete using transit mixers on a barge that will transport it to the placement areas. Last alternative for the execution of the concrete placement would be mixing the concrete onshore and transporting it to the placement areas using a system of pump(s) and pump line(s). The Contractor shall submit mixers product data to the Government.

The Contractor shall develop and submit for Government approval a Concrete Production Plan for the selected method. The proposed production plan shall include proper means and methods for preventing loss of cementitious materials, such as installation of dust seals, and for controlling the effects of moisture variations in aggregates. At least 60 days before the first placement of underwater concrete, the Contractor shall conduct a trial run using the selected production method and equipment to prove that the concrete meets all the requirements specified previously in this specification section. The Contractor shall anticipate an increase in the required mixing time for production of concrete containing an anti-washout admixture. The trial run shall be observed by the Government and reviewed/approved by the Contracting Officer.

3.1.2 Time Interval Between Mixing and Placing

Tremie concrete shall be placed within 60 minutes after introduction of the cement to water. The concrete shall be discharged to tremie pipes within 30 minutes after mixing or agitating has ceased.

3.1.3 Requirements for Use of Transit Mixers

The Contractor may select to dry-batch materials on shore and deliver the materials to one or more mixers on barge near the point of placement. If the Contractor selects to use transit mixers to produce the tremie concrete, the materials, equipment, and procedure shall conform with the requirements of ASTM C94/C94M and as specified herein. Each transit mixer shall conform to applicable NRMCA standard and shall have a minimum drum size of 10 cubic yards.

At the Contractor's discretion, all concrete ingredients except for cementitious materials (Portland cement, GGBF slag, fly ash, and silica fume), chemical admixtures, and water may be delivered to the dam site by transit mixers. Portland cement, GGBF slag, and fly ash shall be stored in separate bins or compartments on barge near the mixers. These bins shall have a dust seal between the bin and the weight hopper. Power-operated gates shall be used to charge the cementitious materials and have a suitable "dribble" control to obtain the desired weighing accuracy. Cement, fly ash,and GGBF slag may be batched cumulatively provided that cement is batched first. Water shall be batched separately from other concrete ingredients.

Cementitious materials, admixtures, and water shall be introduced to the mixers immediately prior to mixing operations. The time period between completion of concrete mixing and placing shall conform with the requirements in Paragraph 3.1.2.

Tolerance limits for measuring materials for concrete production shall conform to and ASTM C94/C94M,except that the requirements for "Total Water" shall be revised from plus-or-minus 3.0 percent to plus-or-minus 2.0 percent. Water batcher filling and discharging valves shall be so interlocked that the discharge valve cannot be opened before the filling valve is fully closed. Water batcher shall be checked and calibrated at least once per every 8-hour shift.

The required minimum mixing time shall be established in accordance with the Paragraph 3.2 "TRANSPORT OF CONCRETE." The Contractor shall anticipate a possible increase in the required mixing time due to difference in mixing efficiency between transit mixers and a stationary mixer for production of mass tremie concrete.

An accurate mechanical device for measuring and dispensing each chemical admixture shall be provided. Each dispenser for chemical admixtures shall be interlocked with the batching and discharging operation of the water so that each admixture is separately batched and discharged automatically in a manner to obtain uniform distribution throughout the batch in the specified mixing period. Admixtures shall be added into the stream of mixing water being batched into the mix. Admixtures shall not be combined prior to introduction to the mixers.

3.1.4 Trial Production

At least 60 days prior to concrete production, a test of the batching plant and mixing and delivery systems shall be made in the presence of the Contracting Officer to check the adequacy of the systems and operating procedures. At least 30 cubic yards of concrete shall be produced and delivered to the placement area in the lock under conditions and in time periods similar to those expected during the tremie placement

construction. The slump and slump flow of the concrete mixture shall be measured at the point where the tremie placement will take place during construction. The concrete produced in the test shall be disposed of. All deficiencies found in plant operation, mixing operation, and delivery operation shall be corrected prior to the start of concrete placing operations. No separate payment will be made to the Contractor for labor or materials required by provisions of this paragraph. The Contractor shall notify the Contracting Officer of the trial operation not less than 10 business days prior to the start of the trial operation.

3.1.5 Environmental Protection

The Contractor shall establish and maintain quality control for prevention of environmental pollution as the result of concrete production and placement operations. The Contractor shall not discharge into the river fuels, oils, bitumens, garbage, or other waste materials that may be harmful to plants, fish and wildlife. All aggregates used for production of concrete shall be washed on shore. No washing of aggregates or other concrete materials will be permitted on barge. Water used to wash and clean equipment used to mix, contain, produce and convey tremie concrete at the work areas shall not be discharged overboard or to the river, nor shall the equipment be washed in locations which would permit wash water to flow overboard or into the river. Wash water contaminated by cement, concrete, oil, or other pollutants shall be retained in suitable containers, transported off the work area and discharged to the designated disposal area. The contractor shall comply with all applicable environmental permit conditions and federal, state, and local rules and regulations.

3.2 TRANSPORTING CONCRETE

3.2.1 General

Tremie concrete shall be conveyed from the point of mixing to the point of placement by methods that will prevent segregation or loss of concrete, excessive delay, loss of concrete workability, and excessive temperature change. When a transit mixer is used for mixing and transporting concrete, concrete shall be discharged to tremie pipes within 60 minutes after the cement is in contract with mixing water or before the mixer drum has revolved 300 revolutions, whichever comes first. In addition, concrete shall be placed within 30 minutes after it has been discharged from a mixer to a non-agitating container. Conveying equipment shall be thoroughly cleaned after each operation and prior to initiation of an operation. The Contractor shall submit Conveying Equipment product data to the Government.

3.2.2 Mixing

a. Mix concrete in accordance with ASTM C94/C94M, ACI 301 and ACI 304R.

b. Machine mix concrete. Begin mixing within 30 minutes after the cement has been added to the aggregates. Place concrete within 90 minutes of

either addition of mixing water to cement and aggregates or addition of cement to aggregates if the concrete temperature is less than 84 degrees F.

c. Place concrete within 60 minutes if the concrete temperature is greater than 84 degrees F except as follows: if set retarding admixture is used and slump requirements can be met, limit for placing concrete may remain at 90 minutes. Additional water may be added, provided that both the specified maximum slump and submitted water-cementitious material ratio are not exceeded and the required concrete strength is still met. When additional water is added, an additional 30 revolutions of the mixer at mixing speed is required.

d. If the entrained air content falls below the specified limit, add a sufficient quantity of admixture, within the manufacturer's recommended dosage, to bring the entrained air content within the specified limits. Dissolve admixtures in the mixing water and mix in the drum to uniformly distribute the admixture throughout the batch. Do not reconstitute concrete that has begun to solidify.

3.2.3 Transporting by buckets or hoppers

The tremie concrete may be delivered to other conveying devices by means of a bucket or a gated hopper. Concrete shall not be held in a non-agitating transfer hopper or bucket for more than 30 minutes.

3.2.4 Transport by Belt Conveyor

Transportation of tremie concrete by belt conveyor shall not be permitted.

3.2.5 Transport by Pump

The tremie concrete may be delivered to a hopper over a tremie pipe by pumping. Pumping concrete directly into water will not be permitted. Pump lines for delivery of concrete shall be insulated and, in hot climate, painted with reflective paint.

3.3 STEEL REINFORCEMENT

Reinforcement must be free from loose, flaky rust and scale, and free from oil, grease, or other coating which might destroy or reduce the reinforcement's bond with the concrete.

Contractor shall prepare reinforcement in the dry and confirm it meets all applicable specifications prior to placing it underwater and preparing for placement

3.4 Fabrication

Shop fabricate steel reinforcement in accordance with ACI 318 and ACI SP-66. Provide shop details and bending in accordance with ACI 318.

3.5 Splicing

Perform splices in accordance with ACI 318.

3.6 Supports

Secure reinforcement in place by the use of metal or concrete supports, spacers, or ties.

3.7 EQUIPMENT

3.7.1 Work Platform

Work platforms for placement of tremie concrete will generally be lift frames. Alternatively, the Contractor may select to design tremie work platforms other than the lift frames. The alternative design shall be submitted to the Contracting Officer for approval. The platforms shall be designed to support all loads imposed by the tremie equipment and all other load conditions expected during construction. The Contractor shall develop a complete tabulation of expected loads and analyses for review by the Contracting Officer. The Contractor shall also select all necessary materials for construction of work platform. A complete set of detail drawings of the work platform shall be submitted for the Contracting Officer's review. The extent and configuration of the platform may be expanded during the progress of the work to accommodate the construction. Additions and/or revisions to the work platform during later phases of the work shall also be supported with detailed drawings and computations and be approved by the Contracting Officer.

3.7.2 Tremie Equipment

The tremie pipe shall be of heavy-gauge steel pipe (minimum 1/2 inch thick) with an inside diameter greater than (8) times the nominal maximum aggregate size. The size of the tremie pipe shall be 8 inches to accommodate placement inside of reinforcement cage. The tremie shall have a uniform diameter and smooth internal wall surface. All splices and joints shall be flush on the inside. Joints between tremie pipe sections shall begasketed and bolted or by other method as approved by the ContractingOfficer so as to be watertight throughout the tremie placement. The contractor may utilize rubber boots at section joints to ensure the joints are watertight. Under no circumstance shall the tremie pipe be sharply bent to accommodate concreteplacement. Aluminum pipe or equipment shall not be used for placingconcrete.

Funnel-shaped hoppers at the top of all tremie pipes shall be of sufficient size and not be less than 2 cubic yards. Hoppers shall be of a size capable of receiving and passing the concrete into the tremie pipe at the capacity rate of the batching, mixing, and conveying equipment.

Each section of tremie pipe shall be suitably secured together and a gasket used at each joint to prevent leakage. The tremie pipe shall be marked to allow quick determination of the distance from the surface of the water to the mouth of the tremie.

Tremie pipe spacing and arrangement shall be submitted for approval by the Contracting Officer. The spacing and arrangement of the tremie pipes shall be such as to allow the concrete mix to flow laterally through and around steel reinforcement, rock anchors, and other embedded items. The tremie pipes and hoppers shall be supported on a stable frame or platform to keep their vertical positions and to prevent horizontal movement during concrete placement. The platform shall be capable of supporting the tremie pipe while sections are being removed from the upper end of the tremie.

A power hoist shall be provided to raise the tremie pipe in a controlled manner. Hoisting equipment for raising and lowering tremie pipes as the concrete is placed and tools used for connecting the pipe sections shall be readily available and on-hand throughout the placements.

A crane or other lift equipment shall be available at the site for complete removal of tremie pipe

3.7.3 Pumps

The pumping equipment shall be piston or squeeze-pressure positive displacement type. Pneumatic placing equipment shall not be used, unless otherwise approved. The pipeline shall be rigid-steel pipe or heavy-duty flexible hose. Aluminum pipe shall not be used. The inside diameter of the pipe shall be at least four (4) times the nominal maximum size of the coarse aggregate and not less than 4 inches. The nominal maximum size coarse aggregates shall not be reduced to accommodate the pumps. The distance to be pumped shall not exceed limits recommended by the pump manufacturer.

The concrete shall be supplied to the pump continuously. When pumping is completed, concrete remaining in the pipeline shall be ejected without contamination of concrete in place. After each operation, equipment shall be thoroughly cleaned. Flushing water shall be wasted in one or more holding containers without spilling to the barge deck, the river, or the concrete that has already been placed.

3.7.4 Hoppers and Buckets

Hoppers on the top of tremie pipes shall have a size of at least 2 cubic yards capacity, and the interior hopper slope shall not be less than 58 degrees from the horizontal. The bucket gates shall be essentially grout tight when closed and shall be hydraulically operated in order to provide means for positive regulation of the amount and rate of deposit of concrete in each dumping position. The minimum dimension of the clear gate opening shall be at least five times the nominal maximum size aggregate and the area of the gate opening shall not be less than two square feet. The maximum dimension of the gate opening shall not be greater than twice the minimum dimension.

3.7.5 Chutes

When concrete can not be placed in hoppers directly from a transporting vehicles, chutes attached to this equipment may be used. A discharge deflector shall be used when required by the Contracting Officer. Separate chutes and other similar equipment will not be permitted for conveying concrete.

3.7.6 PREPARATION FOR PLACEMENTS

The Contractor shall ensure that the bottom reinforcing steel does not obstruct the bottom of the tremie concrete placement pipe from resting on the prepared surface beneath the bottom reinforcing steel. All platforms, tremie pipes, ramps and walkways, as required, shall be completed prior to any tremie placement in order to allow safe and expeditious access for concrete and workmen. Snow, ice, flowing water, loose particles, debris and foreign matter shall have been removed. Reinforcement shall be secured in place; anchors and other embedded items shall have been positioned and anchored. The entire preparation shall be accepted by the Contracting

Officer prior to preceding to tremie concrete placement. To allow for Contracting Officer review, provide video footage of the prepared placement areas. Concrete placements shall commence immediately after final inspection of the area of placement, reinforcing steel and embedded items.

3.8 PLACING REQUIREMENTS

3.8.1 General

Underwater concrete shall be placed by gravity feed using the tremie method. All procedures for placement of tremie concrete shall be included in the Contractor's Concreting Plan. The proposed concrete placement method will be subject to review and approval of the Contracting Officer. Concreteplacements will not be permitted when, in the opinion of the Contracting Officer, weather conditions prevent proper transport and placement.

The tremie concrete placement shall ensure that the concrete flows out in acontinuous and smooth manner that ensures against detrimental turbulence,water dilution, and segregation of the concrete. The tremie concrete shallbe placed in a continuous operation until the concrete completely fills each tremie partition.

The tremie concrete shall be conveyed from the mixer to the placing equipment as rapidly as practicable and by methods which prevent segregation or loss of concrete. Sufficient placing capacity shall be provided so that concrete placement can be kept plastic and free of horizontal cold joints while concrete is being placed.

Throughout the tremie placement, the tip of the tremie pipe shall remain embedded in the fresh concrete at all times. At no time shall concrete be allowed to fall through water. The tremie pipe shall not be moved horizontally. To relocate, the tremie shall be lifted from the water, resealed, relocated and restarted. If the tremie pipe loses the seal during concrete placement, the placement shall be halted immediately, the tremie pipe be removed, resealed, and the placement restarted.

The underwater concrete for the floor slab shall be placed using methods that achieve a level alignment with a tolerance of plus 2 inches from the final thickness depicted in the contract plans.The contractor will be responsible for the means and methods used to sound or measure the final depths of freshly placed concrete to determine whether or not an area may require additional concrete. These measurements will also serve as an indicator of proper concrete flow and full embedment of the protruding steel anchors and reinforcing steel mats. This information shall be included in the Contractor's Concreting Plan.

Sampling of fresh concrete shall be performed at the point of placement or as directed by the Contracting Officer.

3.8.2 Prerequisite of Work

Coordination meetings will be held prior to all major phases of the work during construction of dam segments. A pre-construction meeting with the Contracting Officer will be required at least 14 days prior to beginning the tremie concrete placement. The Contractor shall be responsible for calling the meeting; the Contractor's management staff, superintendent(s), and active quality control and installation personnel shall be present.

Weekly progress meetings with the Contracting Officer will be required as the tremie concrete placement progresses. The Contractor shall be responsible for calling the meeting; the Project Engineer, Concrete Superintendent and active installation personnel shall be present

3.8.3 Concrete Placement Temperatures

Tremie concrete at the point of placement shall have a temperature of neither less than 60 degrees F nor more than 90 degrees F. Heating of the mixing water or aggregates shall not be permitted until the temperature of the concrete has decreased to 65 degrees F, and the heated concrete temperature shall not exceed 90 degrees F. The materials shall be free from ice, snow, and frozen lumps before entering the mixer. All placing equipment and methods shall be subject to review and inspection by the Contracting Officer. The temperature of concrete shall not exceed 90 degrees F. In hot weather, cooling of the mixing water and aggregates, and adding ice or Nitrogen may be required to obtain an adequate placing temperature. The Contractor shall make provisions with the concrete equipment to accommodate the temperature-control cooling method as planned to use.

3.8.4 Concrete Workability at the Point of Placement

The point of placement is defined as the location of the tremie hopper. If the concrete at the point of placement does not have the required slump and slump flow, the concrete will be rejected at no cost to the Government. Retempering of the concrete with water to achieve the required slump will not be permitted. Addition of water-reducing admixture for re-mixing concrete at the point of placement may be permitted upon approval of the Contracting Officer.

3.8.5 Initiation of Tremie Concrete Placement

Before initiation of tremie concrete placement, the bottom foundation directly beneath the tremie hole on the lock floor shall be prepared and any obstruction shall be removed to accommodate insertion of a tremie pipe. The tremie pipe shall be a "dry" pipe and have an end plate at its tip with gaskets to completely seal the pipe and prevent water running into the pipe. If there is not concrete at the location of the tremie pipe, the pipe shall be inserted through the tremie holes and seated onto the prepared foundation. Then, the dry pipe shall be filled with concrete up to 60 percent of the water depth. The pipe shall then be raised 4 to 6 to inches to allow concrete to flow out of the pipe. In the meantime, concrete shall be continuously fed into the hopper above the tremie pipe at the placement rate as specified in the paragraph 3.8.8 "Placement Sequence and Rate".

3.8.6 Weather Conditions for Placements

Concrete placement shall not be permitted when weather conditions prevent proper placement and consolidation, or when conditions will adversely affect the quality of the concrete. Unless otherwise specified or approved, the ambient temperature of the placement area shall be above 32 degrees F and the water temperature shall be above 32 degrees F

3.8.7 Consolidation

Underwater tremie concrete shall be self-compacting by gravity without segregation or excessive bleeding and laitance.

3.8.8 Placement Sequence and Rate

The Contractor shall place tremie concrete to completely fill each tremie partition proposed, reviewed and approved in the submitted concreting plan.

Tremie concrete placement within each proposed tremie partition shall be continuous. Concrete can be fed into tremie pipes in different locations inside of each tremie partition. The tremie pipe placement is allowed to proceed to an adjacent tremie pipe only after the adjacent pipe has immersed in concrete by at least 16 inches.

The rate of tremie concrete placement shall be controlled within the range of 0.75 to 2.0 foot of concrete rise per hour. The placement rate shall be controlled by the rate of concrete delivered to the tremie hopper. The rate of delivering concrete to each individual tremie pipe shall not exceed 90 cubic yards per hour. The Contractor may select use of multiple pumps to deliver concrete to several tremie pipes.

3.8.9 Placement Operations

Throughout placement, the tip of the tremie pipe shall remain embedded in the fresh concrete at least 16 inches at all times. At no time shall concrete be allowed to fall through the water.

During the placement, the tremie shall be relocated in accordance with the placement plan and on the basis of the concrete flow as indicated by soundings. When soundings dictate that the concrete has arisen to the required elevation as shown on the contract drawings, the tremie concrete placement may proceed to the next partition. The tremie pipes shall be withdrawn from the lift frame, resealed with end plates and gaskets, and relocated to new locations for the next stage of tremie placement.

Restarting the tremie placement shall follow the standard procedure for initiation of the tremie placement as specified in paragraph 3.8.5 "Initiation of Tremie Concrete Placement".

3.8.10 Construction Joints

Make and locate joints not indicated on the contract plans so as to not impair strength of the structure. All construction joints shall be vertical and perpendicular to the main reinforcement. Reinforcement must be continued and developed across all construction joints. Submit location of the joints as part of the concreting plan for approval.

Concrete surfaces to which additional concrete is to be bonded shall be prepared for receiving the next placement by cleaning the construction joint surface with air-water cutting, high-pressure water jet, or other approved method. Mechanical methods may also be used where there is exposed rebar and other embeds, provided the methods do not remove or damage sound concrete. Air-water cutting shall not be used on formed surfaces or surfaces congested with reinforcing steel. Regardless of method used, the previously placed concrete shall achieve adequate set and hardness and the surfaces shall be free from all laitance and inferior concrete so that clean surfaces of well bonded coarse aggregate are exposed. The edges of the coarse aggregate shall not be undercut. Divers utilizing suitable underwater camera equipment appropriate for use in sediment-laden water shall be used to confirm that all sediment and

laitance or otherwise poor quality concrete are removed immediately prior to placement of subsequent concrete.

3.9 CONTINGENCY PLAN

1) Breakdown of Batch Plant and/or other means of concrete delivery.

2) Breakdown of Tremie Equipment.

3) Plugging of the Tremie Pipe.

4) Breakdown of Concrete Conveying systems.

5) Weather and other acts of God.

3.10 FIELD QUALITY CONTROL

The Contractor shall perform the inspection and tests described below and, based upon the results of these inspections and tests, shall take the actions required. Report the results of all tests and inspections conducted at the project site informally at the end of each shift. Submit written reports weekly. Deliver within three days after the end of each weekly reporting period.

When, in the opinion of the Contracting Officer, the concreting operation is out of control, concrete placement shall halt and the operation shall be corrected. Materials may be subjected to check testing by the Government from samples obtained at the manufacturer's site, at transfer points, or at the project site. The Government reserves the right to inspect the laboratory, equipment, and test procedures prior to start of concreting operations and may also inspect them during the construction for conformance with ASTM C1077.

3.10.1 Concrete Testing

All concrete test reports shall be identified by a sequantial report identification code. At a minimum, each report shall identify the placement date, placement location, weather, name of testing technician, time of sampling, batch ticket number, fresh concrete test results, and hardened concrete test result.

3.10.1.1 Slump Test and Slump Flow Testing

Slump and slump flow tests in accordance with ASTM C143/C143M and ASTM C1611/C1611M shall be made when strength test specimens are fabricated. At least three slump and slump flow tests shall be made every 20 cubic yardsof concrete to be placed. Additional tests shall be made when excessive variation in workability/flowability is reported by the placing foreman or inspector.

Concrete for the tests shall be sampled in accordance with ASTM C172/C172M. Test results shall be plotted on control charts which shall at all times be readily available to the Government and shall be submitted as outlined in this specification section. Copies of the current control charts shall be kept in the field by testing crews and results plotted as tests are made. When a single slump or slump flow test reaches or goes beyond either the upper or lower limit as specified in this section, a second test shall immediately be made. The results of the two tests shall be averaged and this average used as the slump/slump flow of the batch to plot on both the

control charts for slump/slump flow and the chart for range, and for determining need for any remedial action.

Limits shall be set on separate control charts for slump/slump flow for each type of mixture. The upper warning limit shall be set at 1/2 inch below the maximum allowable slump/slump flow for each type of concrete and an upper action limit line and lower action limit line shall be set at the maximum and minimum allowable slumps/slump flows, respectively. The range between each consecutive slump and slump flow test for the mixture shall be plotted on a single control chart for range on which an upper action limit is set at 2 inches. Samples for slump and slump flow shall be taken at the mixer. However, the Contractor is responsible for delivering the concrete to the placement site at the stipulated slump and slump flow. If the Contractor's materials or transportation methods cause slump and slump flow loss between the mixer and the placement, correlation samples shall be taken at the placement site as required by the Contracting Officer, and the slump and slump flow at the mixer controlled as directed.

3.10.1.2 Slump/Slump Flow Corrective Action

Whenever points on the control charts for slump or slump flow reach the upper or lower warning limit, an adjustment shall immediately be made in the admixture doses. The adjustments are to be made so that the total water content does not exceed that amount allowed by the maximum w/c ratio specified in this section. If the adjustments to the admixture doses do not satisfactorily produce the required slump/slump flow, the Contracting Officer may require adjustment of the mixture proportions if the fine-aggregate moisture content is stable and within the required limits. When a single slump or slump flow reaches the upper or lower action limit, no further concrete shall be delivered to the placing site until proper adjustments have been made. Immediately after each adjustment, another slump/slump flow test shall be made to verify the correctness of the adjustment. Whenever two consecutive individual slump or slump flow tests, made during a period when there was no adjustment of batch weights, produce a point on the control chart for range at or above the upper, or below the lower action limit, the Contractor shall immediately take appropriate steps to bring the slump under control. Additional slump and slump flow tests shall be made as directed by the Contracting Officer.

3.10.1.3 Temperature Tests

The temperature of the concrete shall be measured in accordance with ASTM C1064/C1064M when concrete specimens for strength tests are fabricated. Additional tests shall be made when excessive variation in workability/flowability is reported by the placing foreman or inspector or as directed by the Contracting Officer. The temperature shall be reported along with the compressive strength data

3.10.1.4 Compressive Strength Tests

At least one set of test specimens shall be made for compressive strengths for every 200 cubic yards of tremie concrete produced. At least three sets of test specimens shall be made on randomly selected batches for concrete produced during each 8-hour shift. Additional sets of test specimens shall be made, as directed by the Contracting Officer, when the mixture proportions are changed or when property variations have been detected.Concrete for the tests shall be sampled in accordance with ASTM C172/C172M. A truly random (not haphazard) sampling plan shall be developed by the Contractor and approved by the Contracting Officer prior

to the start of construction. The plan shall assure that sampling is done in a completely random and unbiased manner. A set of test specimens shall consist of seven (7) specimens, two tested at 7 days, two at 28 days, two at 90 days, and one held in reserve. Test specimens shall be molded and cured in accordance withASTM C31/C31Mand tested in accordance with ASTM C39/C39M for test cylinders. Results of all strength tests shall be reported immediately to the Contracting Officer. Quality control charts shall be kept for individual strength tests moving average of last 3 tests for strength, and moving average for range of the last 3 tests for each mixture. The charts shall be similar to those found in ACI 214R.

3.10.1.5 Moisture Content Testing

3.10.1.5.1 Fine Aggregate

The moisture content shall be continuously monitored during each production shift by a Microwave Meter and once before the shift by the oven dry and/or infrared method. An additional test shall be made whenever the slump is shown to be out of control or excessive variation in workability is reported by the placing foreman. When an electric moisture meter is used, at least two direct measurements of moisture content shall be made per week to check the calibration of the meter. The results of tests for moisture content shall be used to adjust the added water during batching operations.

3.10.1.5.2 Coarse Aggregate

The moisture content shall be tested once prior to the start of a concrete production shift using the towel dry method. An additional test shall be made whenever the slump is shown to be out of control or excessive variation in workability is reported by the placing foreman.

3.10.1.6 Moisture Content Corrective Action

Whenever the moisture content of coarse or fine aggregate changes by 0.5 percent or more, the scale setting for the coarse or fine aggregate batcher and the water batcher shall be adjusted to compensate for this.

3.10.1.7 Unit Weight of Structural Concrete

The unit weight of the concrete shall be measured in accordance with ASTM C138/C138M when test specimens are fabricated.

3.10.1.8 Washout Testing

The amount of concrete lost due to washout shall be tested for the first batch of concrete produced on each shift and, afterwards, at a frequency of at least one test for every 200 cubic yards of tremie concrete produced. Additional tests shall be made, as directed by the Contracting Officer, when the mixture proportions are changed or when property variations have been detected. The Contractor shall conduct the test in accordance with COE CRD-C 61. Only with the Contracting Officer's approval, the Contractor may conduct the test in accordance with COE CRD-C 61 with the following modifications: the mass of the concrete sample is not

weighed and recorded between the three consecutive drops through the washout tube; and the concrete sample container is held still above water for only 15 seconds between the three consecutive drops rather than 2 minutes specified in COE CRD-C 61

3.10.1.9 Washout Corrective Action

Whenever the amount of washout is determined to be in excess of the maximum limit of eight (8) percent as required in this specifications, mixture proportions shall be adjusted to reduce the amount of washout by increasing the amount of anti-washout admixture, silica fume, and/or limestone powder. Any changes to the concrete mixture design shall be approved by the Contracting Officer.

3.10.1.10 Dimensional Testing

Contractor Quality Control shall be responsible for measurement and testing of the tremie concrete continuously during placement to ensure both adequate flow and required elevations have been achieved.

3.10.1.11 Mixer Uniformity

Text3.10.1.11.1 Mixer Equipment

Mixer blades and paddles shall be inspected for wear every 30 days. When 10 percent or more of the blade or paddle is worn in any dimension, the blades or paddles shall be replaced before any concrete production continues. The Contractor shall be responsible for ensuring that mixer blades or paddles are replaced in a timely fashion, and no additional time extension will be granted for such work.

3.10.1.11.2 Stationary Mixers

Prior to the start of concrete placing and at least once every 3 months when concrete is being placed, uniformity of concrete shall be determined in accordance with COE CRD-C 55. Additional testing shall be performed if directed by the Contracting Officer when there is visible evidence of possible improper mixer performance. Results of all uniformity tests shall be reported in writing.

3.10.1.11.3 Truck Mixers

Prior to the start of concrete placing, uniformity of concrete shall be determined in accordance with COE CRD-C 55. The truck mixer shall be selected randomly for testing. When satisfactory performance is found in one truck mixer, the performance of mixers of substantially the same design and condition of the blades may be regarded as satisfactory. Results of all uniformity tests shall be reported in writing.

3.10.1.12 Mixer Uniformity Corrective Action

When a mixer fails to meet mixer uniformity requirements, either the mixing time shall be increased, batching sequence changed, batch size reduced, or adjustments shall be made to the mixer until compliance is achieved.

3.10.1.13 Government Quality Assurance, Inspection and Testing

The Government reserves the right to request additional sampling, sample, test concrete during construction as considered appropriate to determine compliance with the specifications. The Contractor shall provide facilities and labor as may be necessary for procurement of representative test samples. Representative test samples may be sent to a private laboratory, by the Contractor, for testing. Samples may be taken at the mixer or at the point of placement in accordance with ASTM C31/C31M

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 03 - CONCRETE

SECTION 03 45 33

PRECAST STRUCTURAL CONCRETE

-- End of Section Table of Contents --

SECTION 03 45 33

PRECAST STRUCTURAL CONCRETE

PART 1 GENERAL

1.1 REFERENCES

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

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)

AASHTO T 259	(2002; R 2017) Standard Method of Test for Resistance of Concrete to Chloride Ion Penetration

AMERICAN CONCRETE INSTITUTE (ACI)

ACI 318	(2019; R 2022) Building Code Requirements for Structural Concrete (ACI 318-19) and Commentary (ACI 318R-19)

AMERICAN WELDING SOCIETY (AWS)

AWS D1.1/D1.1M	(2020; Errata 1 2021) Structural Welding Code - Steel
AWS D1.4/D1.4M	(2011) Structural Welding Code - Reinforcing Steel

ASTM INTERNATIONAL (ASTM)

ASTM A27/A27M	(2020) Standard Specification for Steel Castings, Carbon, for General Application
ASTM A36/A36M	(2019) Standard Specification for Carbon Structural Steel
ASTM A47/A47M	(1999; R 2022; E 2022) Standard Specification for Ferritic Malleable Iron Castings
ASTM A123/A123M	(2017) Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
ASTM A153/A153M	(2023) Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
ASTM A307	(2021) Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60

	000 PSI Tensile Strength
ASTM A325	(2014) Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength
ASTM A563	(2021; E 2022a) Standard Specification for Carbon and Alloy Steel Nuts
ASTM A615/A615M	(2022) Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
ASTM A706/A706M	(2022a) Standard Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement
ASTM A767/A767M	(2016) Standard Specification for Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement
ASTM A775/A775M	(2022) Standard Specification for Epoxy-Coated Steel Reinforcing Bars
ASTM A780/A780M	(2020) Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings
ASTM A934/A934M	(2022) Standard Specification for Epoxy-Coated Prefabricated Steel Reinforcing Bars
ASTM A996/A996M	(2016) Standard Specification for Rail-Steel and Axle-Steel Deformed Bars for Concrete Reinforcement
ASTM A1064/A1064M	(2022) Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete
ASTM C33/C33M	(2023) Standard Specification for Concrete Aggregates
ASTM C94/C94M	(2023) Standard Specification for Ready-Mixed Concrete
ASTM C150/C150M	(2022) Standard Specification for Portland Cement
ASTM C260/C260M	(2010a; R 2016) Standard Specification for Air-Entraining Admixtures for Concrete
ASTM C295/C295M	(2019) Standard Guide for Petrographic Examination of Aggregates for Concrete
ASTM C311/C311M	(2022) Standard Test Methods for Sampling and Testing Fly Ash or Natural Pozzolans for Use in Portland-Cement Concrete

ASTM C330/C330M	(2017a) Standard Specification for Lightweight Aggregates for Structural Concrete
ASTM C494/C494M	(2019; E 2022) Standard Specification for Chemical Admixtures for Concrete
ASTM C595/C595M	(2023) Standard Specification for Blended Hydraulic Cements
ASTM C618	(2023; E 2023) Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete
ASTM C989/C989M	(2022) Standard Specification for Slag Cement for Use in Concrete and Mortars
ASTM C1107/C1107M	(2020) Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink)
ASTM C1157/C1157M	(2023) Standard Performance Specification for Hydraulic Cement
ASTM C1202	(2022; E 2022) Standard Test Method for Electrical Indication of Concrete's Ability to Resist Chloride Ion Penetration
ASTM C1218/C1218M	(2020c) Standard Test Method for Water-Soluble Chloride in Mortar and Concrete
ASTM C1240	(2020) Standard Specification for Silica Fume Used in Cementitious Mixtures
ASTM C1260	(2023) Standard Test Method for Potential Alkali Reactivity of Aggregates (Mortar-Bar Method)
ASTM C1567	(2023) Standard Test Method for Potential Alkali-Silica Reactivity of Combinations of Cementitious Materials and Aggregate (Accelerated Mortar-Bar Method)
ASTM C1602/C1602M	(2022) Standard Specification for Mixing Water Used in Production of Hydraulic Cement Concrete
ASTM D5759	(2012; R 2020) Characterization of Coal Fly Ash and Clean Coal Combustion Fly Ash for Potential Uses
ASTM F436	(2011) Hardened Steel Washers
ASTM F844	(2019) Standard Specification for Washers, Steel, Plain (Flat), Unhardened for General Use

PRECAST/PRESTRESSED CONCRETE INSTITUTE (PCI)

PCI MNL-116	(2021) Manual for Quality Control for Plants and Production of Structural Precast Concrete Products, 5th Edition
PCI MNL-120	(2021) PCI Design Handbook - Precast and Prestressed Concrete, 8th Edition
PCI MNL-135	(2000) Tolerance Manual for Precast and Prestressed Concrete Construction

1.2 MODIFICATION TO REFERENCE

In the ACI publications, reference to the "Building Official," the "Structural Engineer" and the "Architect/Engineer" must be interpreted to mean the Contracting Officer.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" or "S" classification. Submittals not having a "G" or "S" classification are for information only. When used, a code following the "G" classification identifies the office that will review the submittal for the Government. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Drawings of Precast Members; G

SD-03 Product Data

Lifting Inserts and devices

SD-05 Design Data

Precast Concrete Members Design Calculations; G

Concrete Mix Design; G

SD-06 Test Reports

Concrete Mix Design; G

Fly Ash

Pozzolan

Ground Granulated Blast-Furnace Slag

Aggregates

Concrete and Aggregate Quality Control Testing

Water

SD-07 Certificates

Quality Control Procedures

Construction Records; G

Epoxy-Coated Steel Bars

Erector's Post Audit Declaration

SD-11 Closeout Submittals

Concrete Batch Ticket Information

Recycled Content for Fly Ash and Pozzolan; S

Recycled Content for Ground Iron Blast-Furnace Slag; S

Recycled Content for Silica Fume

1.4 QUALITY ASSURANCE

1.4.1 Qualifications

1.4.1.1 Manufacturer Qualifications

PCI MNL-116. Plants must be certified by the PCI Plant Certification Program for Category C1 work. At the Contracting Officer's option, PCI Plant quality control program records must be available for review.

PCI MNL-116. Where panels are manufactured by specialists in plants not currently enrolled in the PCI "Quality Control Program," provide a product quality control system in accordance with PCI MNL-116 and perform concrete and aggregate quality control testing using an approved, independent commercial testing laboratory. Submit test results to the Contracting Officer.

1.4.1.2 Erector Certification

Erector with erecting organization and all erecting crews certified and designated by PCI's Certificate of Compliance to erect Category S1 (Simple Structural Systems).

1.4.1.3 Erector Qualifications

A precast erector that is not certified by PCI must retain a PCI-Certified Field Auditor, at the erector's expense, to conduct a field audit of a project in the same category as this project prior to start of precast concrete erection and must submit the Erector's Post Audit Declaration to be considered qualified.

1.4.1.4 Welding Qualifications

Provide AWS D1.1/D1.1M qualified welders who are currently certified at contract award date and have maintained their certificates over the past year.

1.4.2 Regulatory Requirements

Provide precast members in conformance with ACI 318 and PCI MNL-120.

1.4.3 Concrete Mix Design

ACI 318. The minimum compressive strength of concrete at 28 days must be 5000 psi , unless otherwise indicated. Add air-entraining admixtures at the mixer to produce between 4 and 6 percent air by volume. For marine exposure, ensure a dense concrete free of shrinkage cracks, with a minimum degree of permeability. The maximum water cement ratio must be 0.40.

Sixty days minimum prior to concrete placement, submit a mix design for each strength and type of concrete. Submit a complete list of materials including type; brand; source and amount of cement, complementary cementitious materials, polypropylene fibers, and admixtures; and applicable reference specifications. Submit mill test and all other test for cement, complementary cementitious materials, aggregates, and admixtures. Provide documentation of maximum nominal aggregate size, gradation analysis, percentage retained and passing sieve, and a graph of percentage retained verses sieve size. Provide mix proportion data using at least three different water-cementitious material ratios for each type of mixture, which produce a range of strength encompassing those required for each type of concrete required. If source material changes, resubmit mix proportion data using revised source material. Provide only materials that have been proven by trial mix studies to meet the requirements of this specification, unless otherwise approved in writing by the Contracting Officer. Indicate clearly in the submittal where each mix design is used when more than one mix design is submitted. Resubmit data on concrete components if the qualities or source of components changes. For previously approved concrete mix designs used within the past twelve months, the previous mix design may be re-submitted without further trial batch testing if accompanied by material test data conducted within the last six months. Obtain mix design approval from the contracting officer prior to concrete placement.

1.4.4 Certificates: Record Requirement

ASTM C94/C94M. Submit mandatory batch ticket information for each load of ready-mixed concrete.

1.5 DELIVERY, STORAGE, AND HANDLING

1.5.1 Transportation

1.5.1.1 Transporting Members

Transport members in a manner to avoid excessive stresses that could cause cracking or other damage.

1.5.1.2 Lateral Deflection or Vibration

Any noticeable indication of lateral deflection or vibration during transportation must be corrected by rigid bracing between members or by means of lateral trussing.

1.5.2 Storage

1.5.2.1 Storage Areas

Storage areas for precast members must be stabilized, and suitable foundations must be provided, so differential settlement or twisting of members will not occur.

1.5.2.2 Stacked Members

Stack members with adequate dunnage and bracing to control cracking, distortion, warping or other physical damage. Stack members such that lifting devices will be accessible and undamaged.

1.5.3 Handling of Members

The location of pickup points for handling of the members and details of the pickup devices must be shown in shop drawings. Members must be handled only by means of approved devices at designated locations. Members must be maintained in an upright position at all times and picked up and supported as shown in approved shop drawings.

PART 2 PRODUCTS

2.1 SYSTEM DESCRIPTION

The work includes the provision of precast non-prestressed concrete herein referred to as precast members Precast members must be the product of a manufacturer specializing in the production of precast concrete members.

2.1.1 Design Requirements

Design precast members in accordance with ACI 318 and the PCI MNL-120. Design precast members (including connections) for the design load conditions and spans indicated, and handling and erection stresses, and for additional loads imposed by openings and supports of the work of other trades. Design precast members for handling without cracking in accordance with the PCI MNL-120.

2.1.1.1 Loads

Loadings for members and connections must include all dead load, live load, applicable lateral loads such as wind and earthquake, applicable construction loads such as handling, erection loads, and other applicable loads.

2.1.1.2 Drawing and Design Calculation Information

Submit drawings and design calculations indicating complete information for the fabrication, handling, and erection of the precast member. Include a cover page with the design calculations, signed and sealed by the registered design professional who prepared the design. Drawings must not be reproductions of contract drawings. Design calculations, drawings of precast members, and including connections must be made by a registered professional engineer experienced in the design of precast concrete members, and submitted for approval prior to fabrication. The drawings must indicate, as a minimum, the following information:

a. Plans, elevations and other drawing views showing the following:

(1) Member piece marks locating and defining products furnished by the manufacturer.

(4) Relationships to adjacent material.

(5) Joints and openings between members and between members and other construction.

(7) Erection sequences and handling requirements

(8) Areas receiving toppings and magnitude of topping thickness. Identify areas where topping is an integral part of the structural capacity of the precast members.

(9) Lifting and erection inserts

b. Elevations, sections and other details for each member showing the following:

(1) Connections between members and connections between members and other construction.

(2) Connections for work of other trades and cast-in items and their relation to other trades.

(3) Dimensioned size and shape for each member with quantities, position and other details of reinforcing steel, anchors, inserts and other embedded items.

(4) Lifting, erection and other handling devices and inserts.

(5) Surface finishes of each member.

d. Strength properties for concrete, steel and other materials.

e. Methods for storage and transportation.

f. Description of loose, cast-in and field hardware.

g. All dead, live, handling, erection and other applicable loads used in the design.

h. Signature and seal of the registered design professional who prepared the design.

2.2 MATERIALS

2.2.1 Material Sustainability Criteria

For products in this section, where applicable and to extent allowed by performance criteria, provide and document the following in accordance with Section 01 33 29 SUSTAINABILITY REQUIREMENTS AND REPORTING:

a. Recycled content for fly ash and pozzolan

b. Recycled content for Ground Iron Blast-Furnace Slag

c. Recycled content for Silica Fume

2.2.2 Cementitious Materials

For exposed concrete, use one manufacturer and one source for each type of cement, ground slag, fly ash, and pozzolan.

2.2.2.1 Fly Ash

ASTM C618, Class F, except that the maximum allowable loss on ignition must not exceed 3 percent.

Add with cement. Fly ash content must be a minimum of 15 percent by weight of cementitious material, provided the fly ash does not reduce the amount of cement in the concrete mix below the minimum requirements of local building codes. Where the use of fly ash cannot meet the minimum level, provide the maximum amount of fly ash permittable that meets the code requirements for cement content. Report the chemical analysis of the fly ash in accordance with ASTM C311/C311M. Evaluate and classify fly ash in accordance with ASTM D5759.

2.2.2.2 Raw or Calcined Natural Pozzolan

Natural pozzolan must be raw or calcined and conform to ASTM C618, Class N, including the optional requirement for uniformity.

2.2.2.3 Ultra Fine Fly Ash and Ultra Fine Pozzolan

Ultra Fine Fly Ash (UFFA) and Ultra Fine Pozzolan (UFP) must conform to ASTM C618, Class F or N, and the following additional requirements:

a. The strength activity index at 28 days of age must be at least 95 percent of the control specimens.

b. The average particle size must not exceed 6 microns.

c. The sum of SiO_2 + Al_2O_3 + Fe_2O_3 must be greater than 77 percent.

2.2.2.4 Ground Granulated Blast-Furnace Slag

ASTM C989/C989M, Grade 100. Slag content must be a minimum of 70 percent by weight of cementitious material.

2.2.2.5 Silica Fume

Silica fume must conform to ASTM C1240, including the optional limits on reactivity with cement alkalis. Silica fume may be furnished as a dry, densified material or as slurry. Proper mixing is essential to accomplish proper distribution of the silica fume and avoid agglomerated silica fume which can react with the alkali in the cement resulting in premature and extensive concrete damage. Supervision at the batch plant, finishing, and curing is essential. Provide at the Contractor's expense the services of a manufacturer's technical representative, experienced in mixing, proportioning, placement procedures, and curing of concrete containing silica fume. This representative must be present on the project prior to and during at least the first 4 days of concrete production and placement using silica fume. A High Range Water Reducer (HRWR) must be used with silica fume.

2.2.2.6 Portland Cement

Provide cement that conforms to ASTM C150/C150M, Type I, including false set requirements with tri-calcium aluminates (C_3A) content less than 10 percent and a maximum cement-alkali content of 0.80 percent Na_2O_e (sodium oxide) equivalent. Use one brand and type of cement for formed concrete having exposed-to-view finished surfaces.

For portland cement manufactured in a kiln fueled by hazardous waste, maintain a record of source for each batch. Supplier must certify that no hazardous waste is used in the fuel mix or raw materials. Supplier must certify that the hazardous waste is neutralized by the manufacturing process and that no additional pollutants are discharged.

2.2.2.7 Blended Cements

a. Blended cements must conform to ASTM C595/C595M Type IP, IS, IL, IT, IP (MS), IS (MS), IL (MS), IT (MS), IP (MH), IS (MH), IL (MH) IT (MH), IP (LH), IS (LH), IL (LH), IT (LH), IP (HS), IS (HS), IL (HS), IT (HS), IP (HE), IS (HE), IL (HE), IT(HE), or ASTM C1157/C1157M Type GUMS MH HE.

b. Slag cement added to the Type IS blend must meet ASTM C989/C989M.

c. The pozzolan added to the Type IP blend must be ASTM C618 Class F, Class C, or Class N and must be interground with the cement clinker. The manufacturer must state in writing that the amount of pozzolan in the finished cement will not vary more than plus or minus 5 mass percent of the finished cement from lot-to-lot or within a lot. The percentage and type of pozzolan used in the blend must not change from that submitted for the aggregate evaluation and mixture proportioning.

2.2.3 Water

Water must comply with the requirements of ASTM C1602/C1602M. Minimize the amount of water in the mix. Improve workability by adjusting the grading rather than by adding water. Water must be potablefrom rainwater collection; free from injurious amounts of oils, acids, alkalis, salts, organic materials, or other substances deleterious to concrete. Submit test report showing water complies with ASTM C1602/C1602M.

2.2.4 Aggregates

ASTM C33/C33M, except as modified herein. Furnish aggregates for exposed concrete surfaces from one source. Provide aggregates that do not contain any substance which may be deleteriously reactive with the alkalies in the cement. Submit test report showing compliance with ASTM C33/C33M.

Fine and coarse aggregates must show expansions less than 0.08 percent at 28 days after casting when testing in accordance with ASTM C1260. Should the test data indicate an expansion of 0.08 percent or greater, reject the aggregate(s) or perform additional testing using ASTM C1567 using the Contractor's proposed mix design. In this case, include the mix design low alkali portland cement and one of the following supplementary cementitious materials:

a. GGBF slag at a minimum of 40 percent of total cementitious

b. Fly ash or natural pozzolan at a minimum of total cementitious of

(1) 30 percent if (SiO_2 plus Al_2O_3 plus Fe_2O_3) is 65 percent or more,

(2) 25 percent if (SiO_2 plus Al_2O_3 plus Fe_2O_3) is 70 percent or more,

(3) 20 percent if (SiO_2 plus Al_2O_3 plus Fe_2O_3) is 80 percent or more,

(4) 15 percent if (SiO_2 plus Al_2O_3 plus Fe_2O_3) is 90 percent or more.

c. Silica fume at a minimum of 7 percent of total cementitious.

If a combination of these materials is chosen, the minimum amount must be a linear combination of the minimum amounts above. Include these materials in sufficient proportion to show less than 0.08 percent expansion at 28 days after casting when tested in accordance with ASTM C1567.

Aggregates must not possess properties or constituents that are known to have specific unfavorable effects in concrete when tested in accordance with ASTM C295/C295M.

2.2.4.1 Aggregates for Lightweight Concrete

ASTM C330/C330M.

2.2.5 Grout

2.2.5.1 Nonshrink Grout

ASTM C1107/C1107M.

2.2.5.2 Cementitious Grout

Must be a mixture of portland cement, sand, and water. Proportion one part cement to approximately 2.5 parts sand, with the amount of water based on placement method. Provide air entrainment for grout exposed to the weather.

2.2.6 Admixtures

2.2.6.1 Air-Entraining

ASTM C260/C260M.

2.2.6.2 Accelerating

ASTM C494/C494M, Type C or E.

2.2.6.3 Water Reducing

ASTM C494/C494M, Type A, E, or F.

2.2.7 Reinforcement

2.2.7.1 Reinforcing Bars

ASTM A615/A615M, Grade 60; ASTM A706/A706M, Grade 60; or ASTM A996/A996M, Grade 60.

Epoxy-coated steel bars must comply with the requirements of ASTM A775/A775MASTM A934/A934M, including written certifications for coating material and coated bars, sample of coating material, and 0.5 pounds of patching material. Submit written certification with the delivery of the bars.

Zinc-coated (galvanized) bars must comply with the requirements of

ASTM A767/A767M, Class II coating, galvanized after fabrication.

2.2.7.2 Wire

ASTM A1064/A1064M.

2.2.7.3 Welded Wire Reinforcement

ASTM A1064/A1064M.

2.2.7.4 Supports for Concrete Reinforcement

Include bolsters, chairs, spacers, and other devices necessary for proper spacing, supporting, and fastening reinforcement bars and wire in place.

Ensure legs of supports in contact with formwork for sections that will be exposed to weather are hot-dip galvanized after fabrication, plastic coated, or corrosion-resistant steel bar supports.

2.2.8 Metal Accessories

Provide ASTM A123/A123M or ASTM A153/A153M galvanized.

2.2.8.1 Inserts

ASTM A47/A47M, Grade 32510, or ASTM A27/A27M Grade 60-30. Submit product data.

2.2.8.2 Structural Steel

ASTM A36/A36M.

2.2.8.3 Bolts or lifting attachments

ASTM A307; ASTM A325.

2.2.8.4 Nuts

ASTM A563.

2.2.8.5 Washers

ASTM F844 washers for ASTM A307 bolts, and ASTM F436 washers for ASTM A325 bolts.

2.3 PRODUCTION QUALITY CONTROL PROCEDURES

PCI MNL-116 unless specified otherwise. Submit quality control procedures established in accordance with PCI MNL-116 by the precast manufacturer.

2.3.1 Forms

Brace forms to prevent deformation. Forms must produce a smooth, dense surface. Use forms and form-facing materials that are nonreactive with concrete such as wood, metal, plastic, or other approved materials. Conform to the shapes, lines, and dimensions indicated and are within the limits of the specified fabrication tolerances. Chamfer exposed edges of columns and beams 3/4 inch, unless otherwise indicated. Provide threaded or snap-off type form ties.

2.3.2 Tolerances

Fabricate structural precast concrete members of shapes, lines and dimensions indicated, so each finished member complies with PCI MNL-135 product tolerances as well as position tolerances for cast-in items.

2.3.3 Reinforcement Placement

ACI 318 and PCI MNL-116 for placement and splicing. Place and secure steel bars, welded-wire reinforcement, and other reinforcement by means of metal bar supports and spacers. Reinforcement may be preassembled before placement in forms. Provide exposed connecting bars, or other approved connection methods, between precast and cast-in-place construction. Remove any excess mortar that adheres to the exposed connections. Provide curvature or drape of the prestressing strands using approved hold-down devices.

2.3.4 Lifting Devices

Provide lifting devices designed for 100-percent impact, and of materials sufficiently ductile to ensure visible deformation before fracture.

2.3.5 Identification Markings

Clearly mark each structural section in a permanent manner to indicate its location and orientation on the apron floor and the pickup points.

Ensure each structural section has the date of casting plainly indented in the unexposed face of the concrete.

2.3.6 Concrete

2.3.6.1 Concrete Mixing

ASTM C94/C94M. Mixing operations must produce batch-to-batch uniformity of strength, consistency, and appearance.

2.3.6.2 Concrete Placing

PCI MNL-116.

2.3.6.3 Concrete Curing

PCI MNL-116.

2.3.7 Acceptance/Rejection of Defects

2.3.7.1 Minor Defects

All honeycombed areas, chipped corners, air pockets over 1/4 inch in diameter, and other minor defects involve less than 36 square inches of concrete must be repaired. Form offsets of fins over 1/8 inch must be ground smooth. All unsound concrete must be removed from defective areas prior to repairing. All surfaces permanently exposed to view must be repaired by a blend of portland cement and white cement properly proportioned so that the final color when cured will be the same as adjacent concrete. Precast members containing hairline cracks which are visible and are less than 0.01 inches in width, may be accepted, except

that cracks larger than 0.005 inches in width for surfaces exposed to the weather must be repaired.

2.3.7.2 Major Defects

Major defects are those which involve more than 36 square inches of concrete or expose stressing tendons or reinforcing steel. If one or more major defects appear in a member, it will be rejected. Cracks of a width of more than 0.01 inch will be cause for rejection of the member.

2.4 TESTS, INSPECTIONS, AND VERIFICATIONS

2.4.1 Chloride Ion Concentration Test

Sampling and determination of water soluble chloride ion content in accordance with ASTM C1218/C1218M. Maximum water soluble chloride ion concentrations in hardened concrete at ages from 28 to 42 days contributed from the ingredients including water, aggregates, cementitious materials, and admixtures must not exceed 0.06 percent by weight of cement.

2.4.2 Chloride Ion Penetration Test

To ensure the durability of concrete in marine environment, concrete must be proportioned to have the chloride ion penetration test in accordance with ASTM C1202, and be below 1500 coulombs for concrete specimens tested at 28 days. Alternatively, a ponding test in accordance with AASHTO T 259 may be performed to validate chloride ion penetration in accordance with ASTM C1202.

2.4.3 Factory Inspection

At the option of the Contracting Officer, precast units may be inspected by the Contracting Officer precastunits must be inspected by the QC Representative prior to being transported to the job site. The Contractor must give notice 14 days prior to the time the units will be available for plant inspection. Neither the exercise nor waiver of inspection at the plant will affect the Government's right to enforce contractual provisions after units are transported or erected.

PART 3 EXECUTION

3.1 EXAMINATION

Prior to erection, and again after installation, precast members must be checked for damage, such as cracking, spalling, and honeycombing. As directed by the Contracting Officer, precast members that do not meet the surface finish requirements specified in paragraph SURFACE FINISH must be repaired, or removed and replaced with new precast members.

3.2 ERECTION

Precast members must be erected after the concrete has attained the specified compressive strength, unless otherwise approved by the precast manufacturer. Erect in accordance with the approved shop drawings. PCI MNL-135 for tolerances. Provide a 1:500 tolerance, if no tolerance is specified. Brace precastmembers, unless design calculations submitted with the shop drawings indicate bracing is not required. Follow the manufacturer's recommendations for maximum construction loads. Place precast members level, plumb, square, and true within tolerances. Align

member ends.

3.3 WELDING

AWS D1.1/D1.1M, AWS D1.4/D1.4M for welding connections and reinforcing splices. Protect the concrete and other reinforcing from heat during welding. Weld continuously along the entire area of contact.Grind smooth visible welds in the finished installation. Welding of epoxy-coated reinforcing is not allowed.

3.4 GALVANIZING REPAIR

Repair damage to galvanized coatings using ASTM A780/A780M zinc rich paint for galvanized surfaces damaged by handling, transporting, cutting, welding, bolting, or acid washing. Do not heat surfaces to which repair paint has been applied.

3.5 SEALANTS

Provide as indicated and as specified in Section 07 92 00 JOINT SEALANTS.

3.6 PROTECTION AND CLEANING

Protect exposed-to-view surfaces against staining and other damage until completion of the work.

Upon completion of installation, swept clean and leave ready slab surfaces to receive concrete floor topping, roofing, or other covering.

3.7 CONCRETE TOPPING

Provide as indicated and as specified in Section 03 30 00 CAST-IN-PLACE CONCRETE.

3.8 CONSTRUCTION RECORDS

Complete construction records must be kept of the manufacturing, handling, and erection of the precastconcrete members and submitted. Records must be kept for, but not limited to, the following items:

a. Specifications of material used in the manufacture of the members.

b. Time-temperature history of the concrete members from casting to the transfer of the prestress force.

c. Records of the tendon stressing operation including initial prestress force, measured elongation, how it was measured, and how the tendons were stressed and destressed.

d. Records of inspection of the members before and after the prestress force is transferred to the members.

e. Records of the inspection of the members each time they are moved.

f. Records of any defects in the member and any corrective measures taken.

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 31 - EARTHWORK

SECTION 31 23 00.00 20

ROCK REMOVAL

-- End of Section Table of Contents --

SECTION 31 23 00.00 20

ROCK REMOVAL

PART 1 GENERAL

1.1 SUMMARY

The work includes removal of loose rock in the stilling basing between the flow deflectors and the baffle blocks between the Bays and on the spillway apron as indicated on the Contract Drawings. This effort is to include all associated works required and described within this Contract package.

1.2 Submittals

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. The following shall be submitted 15 days prior to starting work and in accordance with SECTION 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Rock Removal Plan; G

Submit a Rock Removal Plan for approval at least 30 days prior to performing any rock removal work. Include descriptions. Include descriptions of proposed equipment and methods of operation that will be used for removing the rock. Submit a plan indicating the proposed disposal location of the excavated rock debris. Mobilization of rock removal equipment shall not begin until this plan has been approved.

SD-11 Closeout Submittals

Post-Excavation Hydrosurvey; G

PART 2 PRODUCTS

2.1 BATHYMETRIC INFORMATION

[The bathymetry shown on the Plans is from multi-beam hydrosurvey performed in TBD]. The results of the most recent surveys are shown in the Contract Plans. Arrangements for obtaining the digital file for this data can be made through the Contracting Officer. Although interpretations have been made of this data, it is the responsibility of the Contractor to review and make their own conclusions from the data.

PART 3 EXECUTION

3.1 HYDROGRAPHIC SURVEYS

3.1.1 Method and Equipment

Sounding depths derived from surveys utilizing multi-beam swath methods are required to be run prior to starting and after completion of rock removal. Multi-beam swaths will be conducted to ensure full coverage including side slopes. The density of the data file at a minimum

will provide data in 1-foot by 1-foot bins. Accuracy(ies) will be in accordance with stated quality control values in EM 1110-2-1003. The following survey equipment will be used by the Survey Crew during the collection of sounding data and will be considered the standard for which data is obtained: Kongsberg EM 3002 Multibeam echo sounder: Applanix POS MV V4 ODOM CV100 Echosounder AML Oceanographics Minos X AML Oceanographics Micro SV. This data will be used for Government information and not used as a method of acceptance.

3.1.2 Data

Survey data, including drawings or charts, obtained by the Contractor shall be made available to the Government at any time during the life of the Contract.

3.1.3 Control

Primary control and RTK GPS base station will be located on point 01-1406, an aluminum cap located in the weeds on the West end of Cascades Island at Northing 725146.962, Easting 7832530.037, and elevation 75.22. A second point used to check RTK position accuracy is 01-1404, an aluminum cap adjacent to the gravel road on the West end of Cascades Island at Northing 725012.814, Easting 7832160.906, and elevation 50.68. A third point used to check RTK position accuracy is S. CONTROL, a brass disk adjacent to the Sternwheeler dock at Northing 723014.571, Easting 7833566.437, and elevation 97.11.

3.2 EXTENT OF ROCK REMOVAL

The rock removal limits presented in the Plans are approximate. The maximum depth of removal is approximately -35 feet MSL.

3.3 Rock Debris Removal

a. The Contractor shall include the method, materials, and equipment necessary to satisfy these requirements in the Rock Removal Plan. Remove rock debris in a manner that will not damage the existing concrete structure. All excavated materials shall be hauled offsite and properly disposed of at an approved site as specified in the Rock Removal Plan.

b. Perform a Post-Excavation Hydrosurvey

-- End of Section --

SUBMITTAL REGISTER

CONTRACT NO.

TITLE AND LOCATION
Bonneville Spillway Rock Mitigation (Phase I)

CONTRACTOR

ACTIVITY NO	TRANSMITTAL NO	SPEC SECT	DESCRIPTION ITEM SUBMITTED	PARAG # RAPH	CLASSIFICATION	GOVT OR A/E REVWR	CONTRACTOR: SCHEDULE DATES			CONTRACTOR ACTION			APPROVING AUTHORITY					MAILED TO CONTR/ DATE RCD FRM APPR AUTH	REMARKS
							SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	ACTION CODE	DATE OF ACTION	DATE FWD TO APPR AUTH/ DATE RCD FROM CONTR	DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTH REVIEWER	ACTION CODE	DATE OF ACTION		
(a)	(b)	(c)	(d)	(e)	(f)		(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)		(q)	(r)
		01 10 10.00 25	SD-01 Preconstruction Submittals																
			Access Agreements and Work	1.9	G														
			Areas																
			Security Procedures	1.10	G														
			Security Training	1.11	G														
			Temporary Electrical Wiring Plan	1.14.2.2	G														
			Contractor's Planned Equipment	1.15.1	G														
			Methods																
			Plant and Equipment List	1.15.2	G														
			Loading Diagram	1.15.3	G														
		01 32 01.00 25	SD-01 Preconstruction Submittals																
			Initial Schedule	1.7.1	GECCC														
		01 33 00	SD-01 Preconstruction Submittals																
			Submittal Register	1.5	G														
			SD-07 Certificates																
			Authorized Shop Drawing	1.10.2															
			Approvers																
		01 35 26.00 25	SD-01 Preconstruction Submittals																
			Crane Operators	1.6.1.7	G														
			Training Plan	1.7.3	G														
			Hazardous Energy Control Plan	1.7.4	G														
			and HEC Procedures Training																
			Certification																
			Accident Prevention Plan (APP)	1.8	G														
			Fall Prevention and Protection	1.8.2	G														
			Plan																

SUBMITTAL REGISTER

CONTRACT NO.

TITLE AND LOCATION
Bonneville Spillway Rock Mitigation (Phase I)

CONTRACTOR

ACTIVITY NO	TRANSMITTAL NO	SPEC SECT	DESCRIPTION ITEM SUBMITTED	PARAG # RAPH	CLASSIFICATION	GOVT OR A/E REVWR	CONTRACTOR: SCHEDULE DATES			CONTRACTOR ACTION			APPROVING AUTHORITY						
							SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	ACTION CODE	DATE OF ACTION	DATE FWD TO APPR AUTH/ DATE RCD FROM CONTR	DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTH REVIEWER	ACTION CODE	DATE OF ACTION	MAILED TO CONTR/ DATE RCD FRM APPR AUTH	REMARKS
(a)	(b)	(c)	(d)	(e)	(f)		(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
		01 35 26.00 25	Fatigue Management Plan (FMP)	1.8.2	G													
			Activity Hazard Analysis (AHA)	1.9	G													
			Inclement Weather and	1.18	G													
			Heat/Cold Stress Management															
			Plans															
			Arc Flash Hazard (AFH) Program	3.5.2	G													
			SD-06 Test Reports															
			Regulatory Citations, Violations,	1.4														
			and Corrective Action															
			Drug and Alcohol Use Prevention	1.5														
			Program															
			Accident or Mishap Reports	1.15.2														
			Crane Testing Reports	1.15.3														
			SD-07 Certificates															
			Arc Flash Hazard (AFH) Training	1.7.6														
			Certificate															
			Confined Space Entry Permit	1.10														
			Hot Work Permit	1.10														
			Third Party Certification of	1.14														
			Barge-Mounted Mobile Cranes and															
			Mobile Equipment															
			Certificate of Compliance	1.15.4														
		01 35 27.00 25	SD-01 Preconstruction Submittals															
			Dive Team Personnel	1.4	G													
			Dive Plan and General Schedule	1.6	G													
			Equipment Certification	1.6	G													

SUBMITTAL REGISTER

CONTRACT NO.

TITLE AND LOCATION
Bonneville Spillway Rock Mitigation (Phase I)

CONTRACTOR

ACTIVITY NO	TRANSMITTAL NO	SPEC SECT	DESCRIPTION ITEM SUBMITTED	PARAGRAPH #	CLASSIFICATION	GOVT OR A/E REVWR	CONTRACTOR: SCHEDULE DATES			CONTRACTOR ACTION			APPROVING AUTHORITY					MAILED TO CONTR/ DATE RCD FRM APPR AUTH	REMARKS
							SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	ACTION CODE	DATE OF ACTION	DATE FWD TO APPR AUTH/ DATE RCD FROM CONTR	DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTH REVIEWER	ACTION CODE	DATE OF ACTION		
(a)	(b)	(c)	(d)	(e)	(f)		(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)		(q)	(r)
		01 35 27.00 25	Emergency Management Plan	1.6	G														
			Activity Hazard Analysis	1.6	G														
			Company Safe Practice Manual	1.7	G														
			For Diving																
		01 45 00.00 25	SD-01 Preconstruction Submittals																
			Contractor Quality Control Plan	3.2	G														
			Construction Quality	3.4.3															
			Management for Contractors																
		01 57 19.00 25	SD-01 Preconstruction Submittals																
			Environmental Preconstruction	1.7.1															
			Survey																
			Environmental Protection Plan	1.8	G														
			SD-06 Test Reports																
			Swpp Modifications	3.3.1	G														
			SD-11 Closeout Submittals																
			Environmental Records Binder	1.9	G														
		01 78 39.10 25	SD-01 Preconstruction Submittals																
			As-Built Drawings Execution Plan	1.4	G														
			Working As-Built Redline	1.5															
			Drawings																
			SD-11 Closeout Submittals																
			Final Working As-Built Redline	1.7	G														
			Drawings																
			Final Contractor-prepared CAD	1.8	G														
			Drawings																
			Digital Images	1.6	G														

SUBMITTAL REGISTER

CONTRACT NO.

TITLE AND LOCATION
Bonneville Spillway Rock Mitigation (Phase I)

CONTRACTOR

ACTIVITY NO	TRANSMITTAL NO	SPEC SECT	DESCRIPTION ITEM SUBMITTED	PARAG # RAPH	CLASSIFICATION	GOVT OR A/E REVWR	CONTRACTOR: SCHEDULE DATES			CONTRACTOR ACTION			APPROVING AUTHORITY					MAILED TO CONTR/ DATE RCD FRM APPR AUTH	REMARKS
							SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	ACTION CODE	DATE OF ACTION	DATE FWD TO APPR AUTH/ DATE RCD FROM CONTR	DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTH REVIEWER	ACTION CODE	DATE OF ACTION		
(a)	(b)	(c)	(d)	(e)	(f)		(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
		03 30 00	SD-01 Preconstruction Submittals															
			Demonstration Work Plan	1.6	G	DS												
			Concrete Quality Control Program	1.5	G													
			SD-02 Shop Drawings															
			Formwork	1.7.9.1														
			Reinforcing Steel	1.7.9.2	G													
			SD-03 Product Data															
			Formwork Materials	1.7.9.1														
			Cementitious Materials	2.1														
			Admixtures	1.7.10.1														
			Admixtures	2.4														
			SD-04 Samples															
			Underwater Tremie Concrete	1.6	G													
			Demonstration															
			SD-05 Design Data															
			Formwork Calculations	1.7.9														
			Tremie Concrete Mix Design	1.4	G	DS												
			Tremie Concrete Mix Design	1.7.10.1	G	DS												
			SD-06 Test Reports															
			Fly Ash	2.1.2.1														
			Pozzolan	2.1.2														
			Pozzolan	2.1.2.1														
			Aggregates	1.7.10.1														
			Aggregates	2.2														
			Compressive Strength Tests	1.6.4.2	G													
			Compressive Strength Tests	3.10.1.4	G													

SUBMITTAL REGISTER

CONTRACT NO.

TITLE AND LOCATION
Bonneville Spillway Rock Mitigation (Phase I)

CONTRACTOR

ACTIVITY NO	TRANSMITTAL NO	SPEC SECT	DESCRIPTION ITEM SUBMITTED	PARAGRAPH #	CLASSIFICATION	GOVT OR A/E REVWR	CONTRACTOR: SCHEDULE DATES			CONTRACTOR ACTION			APPROVING AUTHORITY					MAILED TO CONTR/ DATE RCD FRM APPR AUTH	REMARKS
							SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	ACTION CODE	DATE OF ACTION	DATE FWD TO APPR AUTH/ DATE RCD FROM CONTR	DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTH REVIEWER	ACTION CODE	DATE OF ACTION		
(a)	(b)	(c)	(d)	(e)	(f)		(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)		(q)	(r)
		03 30 00	Reinforcing Bars	2.6.1															
			Water	2.3															
			Concrete Test Reports	3.10.1															
			SD-07 Certificates																
			Safety Data Sheets	1.7.10.5															
			Safety Data Sheets	1.7.10.5															
		03 45 33	SD-02 Shop Drawings																
			Drawings of Precast Members	2.1.1.2	G														
			SD-03 Product Data																
			Inserts	2.2.8.1															
			SD-05 Design Data																
			Design Calculations	2.1.1.2	G														
			Concrete Mix Design	1.4.3	G														
			SD-06 Test Reports																
			Concrete Mix Design	1.4.3	G														
			Fly Ash	2.2.2.1															
			Pozzolan	2.2.2.2															
			Ground Granulated Blast-Furnace Slag	2.2.2.4															
			Aggregates	2.2.4															
			Concrete and Aggregate Quality Control Testing	1.4.1.1															
			Water	2.2.3															
			SD-07 Certificates																
			Quality Control Procedures	2.3															
			Construction Records	3.8	G														

SUBMITTAL REGISTER

CONTRACT NO.

TITLE AND LOCATION
Bonneville Spillway Rock Mitigation (Phase I)

CONTRACTOR

ACTIVITY NO	TRANSMITTAL NO	SPEC SECT	DESCRIPTION ITEM SUBMITTED	PARAGRAPH #	CLASSIFICATION	GOVT OR A/E REVWR	CONTRACTOR: SCHEDULE DATES			CONTRACTOR ACTION			APPROVING AUTHORITY					MAILED TO CONTR/ DATE RCD FRM APPR AUTH	REMARKS
							SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	ACTION CODE	DATE OF ACTION	DATE FWD TO APPR AUTH/ DATE RCD FROM CONTR	DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTH REVIEWER	ACTION CODE	DATE OF ACTION		
(a)	(b)	(c)	(d)	(e)	(f)		(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)		(q)	(r)
		03 45 33	Epoxy-Coated Steel Bars	2.2.7.1															
			Erector's Post Audit Declaration	1.4.1.3															
			SD-11 Closeout Submittals																
			Batch Ticket	1.4.4															
			Recycled Content for Fly Ash and	2.2.1	S														
			Pozzolan																
			Recycled Content for Ground Iron	2.2.1	S														
			Blast-Furnace Slag																
			Recycled Content for Silica Fume	2.2.1															
		31 23 00.00 20	SD-01 Preconstruction Submittals																
			Rock Removal Plan	3.3	G														
			Rock Removal Plan	3.3	G														
			SD-11 Closeout Submittals																
			Post-Excavation Hydrosurvey	3.3	G														