

# **SPECIFICATIONS**

## **(For Construction Contract)**

**Solicitation Number W9128F23R0014**

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# **Intake Gantry Crane Rail Replacement Big Bend Dam, SD**

February 2023



**US Army Corps  
of Engineers**  
Omaha District

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## SECTION 01 12 00

## CONSTRUCTION GENERAL

## PART 1 GENERAL

## 1.1 SCOPE

The work covered in this section is outlined as a statement of construction requirements common to all the work. Specific requirements for materials and installations are provided under the Technical Sections herewith. No claims for extras shall be made on account of items presumed to have been omitted from this section.

## 1.2 CONSTRUCTION RIGHT-OF-WAY

The Contractor will be assigned working areas or working right-of-way limits for use in the prosecution of work under this contract, subject to the SECTION 00 72 00, GENERAL CONDITIONS (CONTRACT CLAUSES) clause entitled "Operations and Storage Areas."

## 1.3 PROTECTION OF EXISTING FACILITIES AND WORKS

The Contractor shall be responsible for the protection of the work area from damage and upon completion of the work shall leave existing works in a condition equal to that which existed when the work started. All work, storage of materials, and construction plant shall be kept within the limits of the areas assigned. Prior to construction operations, the Contractor shall confer with the Contracting Officer's representative to determine the proximity of any possible under-ground obstructions, pipe or equipment which could be damaged as a result of construction operations. Existing utility lines that are shown on the drawings or the locations are otherwise made known to the Contractor shall be protected from damage, and if damaged, shall be repaired by the Contractor at no additional expense to the Government. In the event that the Contractor damages any existing utility lines that are not shown or the locations of which have not been made known to the Contractor, the Contractor shall immediately notify the Contracting Officer. The Contracting Officer will review the information and discuss with the Contractor how to proceed. The Contractor will be responsible for the protection of structures from any structural damage during the construction operations. Roads and surfaces shall be protected from damage by the work or if damaged shall be repaired with equal materials at no additional expense to the Government. At all times the plant and work areas shall be kept in a condition conducive to safety of workmen and the public and neat in appearance. Waste or surplus materials shall not be allowed to accumulate in the construction areas.

## 1.3.1 Protection of Appurtenances from Bituminous Material Applications

It shall be the responsibility of the Contractor to cover and protect the surfaces of roadway appurtenances, structures and installations by approved methods in advance of any bituminous material application adjacent thereto. Damages or defacement thereof shall be corrected as directed, by and at the expense of the Contractor.

#### 1.4 CARE OF WATER

Full responsibility for care of water shall be borne by the Contractor until completion of work under this contract. The Contractor shall provide the materials and equipment and perform all work necessary to facilitate construction, protect the work from damage by water, and protect the water from and construction equipment, material, or debris. The Contractor shall make the needed investigations and determinations of conditions, both existing and anticipated concerning care of water. Plans for care of water are subject to approval by the Contracting Officer prior to construction. Facilities shall be removed upon completion of the work.

#### 1.5 DISPOSITION OF CONSTRUCTION FACILITIES

All buildings and facilities constructed by the Contractor shall be maintained in a satisfactory condition with strict observance of the rules of sanitation, safety and order as may be established by the Contracting Officer. Prior to final payment under the contract, all buildings and facilities constructed by the Contractor for the Contractor's use shall be removed from the site by the Contractor.

#### 1.6 ACCESS ROADS AND HAUL ROADS

##### 1.6.1 Access Roads

Access roads as required for the prosecution of the work shall be maintained (including sprinkling for dust control, safety personnel, and traffic control) within the work areas assigned to the Contractor. Consideration shall be given to the avoidance of interference with others, safety and frequency of traffic, subject to review and approval prior to construction. Access road areas shall be restored to their original or suitable condition upon completion of this contract. The Contractor shall be responsible for repair of damage to existing roads caused by the Contractor's operation.

#### 1.7 PUBLIC ROADS

##### 1.7.1 Lane Closure

One lane of the road must remain open at all times. The Contractor shall determine an appropriate method for the specific Temporary Traffic Control (TTC) zone one-lane, two-ways traffic control method in accordance with MUTCD and South Dakota DOT requirements. The Contractor shall furnish all necessary personnel and traffic control devices, perform routine day and night inspections of TTC elements, and maintain all furnished traffic control devices to provide safety for motorists, bicyclists, pedestrians, workers, enforcement/emergency officials, and equipment as required by MUTCD. The Contractor is required to coordinate the road/lane closure with the SDDOT and USACE.

##### 1.7.2 Traffic Control Devices

All traffic control devices (signs, arrow boards, barricades, lighting etc) by the Contractor, must conform with the U.S. Department of Transportation, Federal Highway Administration, Manual on Uniform Traffic

Control Devices.

### 1.7.3 Temporary Traffic Control (TTC)

The Contractor shall be responsible for the safe control of traffic on all haul and access roads used primarily for the work under these specifications and at their crossings with roads used by others. The Contractor shall, at the Contractor's own expense, furnish all personnel, and traffic control devices necessary for the safe movement of all road users through or around Temporary Traffic Control zone. Traffic control plans, including a listing of equipment and its employment, shall be submitted for review and approval prior to construction.

### 1.7.4 Operations

When operations are being conducted near a U. S. or State Highway or when construction equipment is being used on or adjacent to such highway, the Contractor shall furnish all necessary traffic control devices and personnel to provide safe and effective movement of all road users through or around Temporary Traffic Control zone as required by MUTCD and South Dakota DOT. All required state and/or local permits shall be obtained at the Contractor's expense in advance and shall be provided to the COR. The highways and streets shall be kept open at all times.

#### 1.7.4.1 Flaggers

The Contractor shall provide flaggers when:

- a) Construction equipment and/or vehicles are blocking the roadway making it difficult for vehicles to pass or see or due to terrain.
- b) One-way traffic is required thru a construction zone.
- c) Trucks are pulling onto and/or off of a roadway or operating at a reduced speed causing a hazardous situation for drivers.
- d) Anytime the Contractor feels that road users are at risk due to Construction activity.

Flagger shall have all qualifications, high-visibility safety apparel, and appropriate hand-signaling devices in accordance with MUTCD and South Dakota DOT requirements. The flagger shall be properly trained as required by the state. The Contractor shall furnish all necessary traffic control devices to establish appropriate TTC zone when the Flagger Control is utilized.

### 1.7.5 Road Closure

At each location designated by the Contracting Officer and where safe operation requires the closing of roads, streets or other travel arteries leading to the work under this contract, the Contractor shall furnish all appropriate traffic control devices to provide safety for motorists, bicyclists, pedestrians, workers, enforcement/emergency officials, and equipment during construction as required by MUTCD and South Dakota DOT. Arrangements for closure of roads, streets or other travel arteries shall be made by the Contractor with local State, County or City officials. The Contractor shall notify the appropriate official in writing at least ten (10) days in advance of the date desired to close a road to traffic and shall furnish a copy of the agreement and approved Temporary Traffic Control plans to the Contracting Officer prior to closure.

#### 1.7.6 State and Federal Highways

Where the Contractor hauls across or on State or Federal highways, the Contractor shall enter into all agreements with the State Highway Commission and shall comply with any restrictions they may impose relative to load limits, care of traffic and cleanup. Such agreements shall clearly relieve the Government of any responsibility for damages resulting from hauling across or on State highways. Copies of such agreements shall be furnished to the Contracting Officer before the Contractor begins hauling on these highways.

#### 1.7.7 State and Local Public Roads

##### (a) Load Limits:

The South Dakota Department of Transportation and local County Road Commissions restrict the load weights of haul vehicles using highways and county roads during the spring thaw period. The load restrictions are usually imposed from 1 April through June depending on actual weather conditions.

##### (b) Hauling Regulations:

Prior to start of hauling operations on public roads, the Contractor shall furnish evidence to the Contracting Officer that an agreement has been consummated with State and County officials on the use of public roads and bridges. Such agreements shall clearly relieve the Government of any responsibility for damage resulting from hauling across or on these roads.

#### 1.7.8 City Streets

Where the Contractor intends to cross or to use city streets for haul roads the Contractor shall enter into an agreement with the City and shall comply with any restrictions the City may impose relative to load limits, care of traffic and cleanup. Such agreements shall clearly relieve the Government of any responsibility for damage resulting from hauling across or on these highways. A copy of all such agreements shall be furnished the Contracting Officer before the Contractor begins hauling in city streets.

#### 1.8 COOPERATION WITH OTHER CONTRACTORS

The Contractor shall cooperate and coordinate work with that of the State and others (public and private) working in the area during the life of this contract. The Contractor shall coordinate work with others to avoid undue interference and shall conduct operations, other than approved required access, within the limits of the assigned construction area or construction right-of-way limits. The Contractor shall cooperate with others as necessary in the interest of timely completion of all work and in the event of disagreement the decision of the Contracting Officer shall be final.

#### 1.9 COORDINATION AND OUTAGES

The Contractor's employees shall not open, close or tamper with switches, valves or control devices for existing installed equipment. Only Government operating personnel will be authorized to open or close existing switches, valves and control devices to enable the Contractor to make connections or modifications to existing equipment. Work shall be

coordinated and scheduled to reduce the "Down" time of operating equipment or systems to a minimum.

The contractor shall start on south end of powerhouse and only work on rails adjacent to bays 7 & 8 initially and once those are completed, proceed onto bays 6 - 1. At some point during the installation, the crane will be transferred from the old rails to the new rails. The COE needs about one day of time per unit for maintenance or 8 days total and will work from unit 8 back to unit 1 ahead of the contractor.

#### 1.10 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 shall be submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

##### SD-01 Preconstruction Submittals

Proposed Methods of Operation; G-AO

Construction Right-of-Way

(Right-of-Way Agreements)

State and Federal Highways

(Agreements for hauling on highways)

State and Local Public Roads

(Agreements for hauling on roads)

Temporary Traffic Control (TTC); G, AO

##### SD-02 Shop Drawings

Care of Water; G-AO

##### SD-11 Closeout Submittals

Warranty of Construction

(List of warranties with copy of each)

#### 1.11 WARRANTY OF CONSTRUCTION (MAR 1994)

(a) In addition to any other warranties in this contract, the Contractor warrants, except as provided in paragraph (i) of this clause, that work performed under this contract conforms to the contract requirements and is free of any defect in equipment, material, or design furnished, or workmanship performed by the Contractor or any subcontractor or supplier at any tier.

(b) This warranty shall continue for a period of 1 year from the date of final acceptance of the work. If the Government takes possession of any part of the work before final acceptance, this warranty shall continue for a period of 1 year from the date the Government takes possession.

(c) The Contractor shall remedy at the Contractor's expense any failure to conform, or any defect. In addition, the Contractor shall remedy at the Contractor's expense any damage to Government-owned or controlled real or personal property, when that damage is the result of--

(1) The Contractor's failure to conform to contract requirements; or

(2) Any defect of equipment, material, workmanship, or design furnished.

(d) The Contractor shall restore any work damaged in fulfilling the terms and conditions of this clause. The Contractor's warranty with respect to work repaired or replaced will run for 1 year from the date of repair or replacement.

(e) The Contracting Officer shall notify the Contractor, in writing, within a reasonable time after the discovery of any failure, defect, or damage.

(f) If the Contractor fails to remedy any failure, defect, or damage within a reasonable time after receipt of notice, the Government shall have the right to replace, repair, or otherwise remedy the failure, defect, or damage at the Contractor's expense.

(g) With respect to all warranties, express or implied, from subcontractors, manufacturers, or suppliers for work performed and materials furnished under this contract, the Contractor shall--

(1) Obtain all warranties that would be given in normal commercial practice;

(2) Require all warranties to be executed, in writing, for the benefit of the Government, if directed by the Contracting Officer; and

(3) Enforce all warranties for the benefit of the Government, if directed by the Contracting Officer.

(h) In the event the Contractor's warranty under paragraph (b) of this clause has expired, the Government may bring suit at its expense to enforce a subcontractor's, manufacturer's, or supplier's warranty.

(i) Unless a defect is caused by the negligence of the Contractor or subcontractor or supplier at any tier, the Contractor shall not be liable for the repair of any defects of material or design furnished by the Government nor for the repair of any damage that results from any defect in Government-furnished material or design.

(j) This warranty shall not limit the Government's rights under the Inspection and Acceptance clause of this contract with respect to latent defects, gross mistakes, or fraud. (FAR 52.246-21)

## 1.12 TELEPHONE/INTERNET

The Contractor is responsible for arranging telephone/Internet service for the Contractor's trailer through the local telephone company.

## 1.13 USE OF GOVERNMENT EQUIPMENT

## 1.13.1 Gantry Crane Operation

Government personnel only will operate the gantry crane. The Contractor will be responsible for furnishing and performing all rigging for all lifts. The Government must inspect and approve all rigging prior to performing the lift. The Contractor will be responsible for all off-loading, movement, and loading of required construction equipment and materials.

## 1.13.2 Working Hours

The Contractor shall properly prepare and plan all lifts such that Government operators are required for a minimum number of occasions. Use of the crane will only be during normal Government working hours. A crane operator will not be furnished on a standby basis. The Contractor shall coordinate with the powerplant superintendent, in writing 24 hours in advance, the need for a crane operator. The Government will operate the crane during the normal daytime working hours of 6:30 am to 4:00 pm Monday thru Thursday.

## 1.14 PORTABLE TOILETS

Toilet facilities will not be available for Contractor's use. The Contractor shall provide and maintain portable toilets for use by the Contractor's staff. Toilet(s) shall be placed at the location directed by the Contracting Officer. To prevent overturning by high winds, all portable toilets shall be anchored down.

## 1.15 FEDERAL HOLIDAYS AND WORKING HOURS

The Contractor will have access to the facility for work during normal plant business hours from 0630 to 1700 hrs Monday through Friday, excluding any federally recognized holidays or observance days. The Contractor shall plan all work accordingly. These hours will be strictly adhered to unless the Government determines work outside this time is beneficial to the Government or a bilateral modification for extended working hours is executed.

The following Federal legal holidays are observed by this installation:

New Year's Day	1 January
Martin Luther King's Birthday	Third Monday in January
President's Day	Third Monday in February
Memorial Day	Last Monday in May
Juneteenth	19 June
Independence Day	4 July
Labor Day	First Monday in September
Columbus Day	Second Monday in October
Veterans Day	11 November

Thanksgiving Day  
Christmas Day

Fourth Thursday in November  
25 December

If the wage determination has a discrepancy with the above list of observed Federal holidays, then the wage determination takes precedence.

PART 2 NOT USED

PART 3 NOT USED

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## SECTION 01 22 00.00 10

## PRICE AND PAYMENT PROCEDURES

## PART 1 GENERAL

## 1.1 SINGLE JOB PAYMENT ITEMS

Payment items for the work of this contract for which contract job payments will be made are listed in the BIDDING SCHEDULE and described below. All costs for items of work, which are not specifically mentioned to be included in a particular job or unit price payment item, are included in the listed job item most closely associated with the work involved. The job price and payment made for each item listed constitutes full compensation for furnishing all plant, labor, materials, and equipment, and performing any associated Contractor quality control, environmental protection, meeting safety requirements, tests and reports, and for performing all work required for which separate payment is not otherwise provided.

## 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 the BIDDING SCHEDULE and described below. The unit price and payment made for each item listed constitutes full compensation for furnishing all plant, labor, materials, and equipment, and performing any associated Contractor quality control, environmental protection, meeting safety requirements, tests and reports, and for performing all work required for each of the unit price items.

## 1.3 BIDDING SCHEDULE

## 1.3.1 0001 INTAKE CRANE RAIL REPLACEMENT

## 1.3.1.1 Payment

Payment will be made for costs associated with construction of the Intake crane rail removal and installation.

## 1.3.1.2 Unit of Measure

Unit of measure: Job.

## 1.3.2 0002 Mobilization and Demobilization

## 1.3.2.1 Payment

Payment will be made for costs associated with mobilization and demobilization, as defined in Special Clause PAYMENT FOR MOBILIZATION AND DEMOBILIZATION.

## 1.3.2.2 Unit of Measure

Unit of measure: job.

1.4 0003 All Remaining Work

1.4.1 Payment

Payment for all work not covered by CLINS 0001 and 0002 will be made as a lump sum under CLIN 0003. Price and payment shall constitute full compensation for all material, equipment, and labor to provide all miscellaneous work including but not limited to the spall and monolith joint repair.

1.4.2 Unit of Measure

Unit of measure: job.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 CONTRACT COST BREAKDOWN

The Contractor must furnish within 30 calendar days after the date of Notice to Proceed, and prior to the submission of its first partial payment estimate, a breakdown of its single job apay item or items which will be reviewed by the Contracting Officer as to propriety of distribution of the total cost to the various accounts. Any unbalanced items as between early and late payment items or other discrepancies will be revised by the Contracting Officer to agree with a reasonable cost of the work included in the various items. This contract cost breakdown will then be utilized as the basis for progress payments to the Contractor.

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PART 2 NOT USED

PART 3 NOT USED

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## SECTION 01 30 00.24

## OTHER ADMINISTRATIVE AND SPECIAL REQUIREMENTS

## PART 1 GENERAL

## Attachments:

## 1.1 EQUIPMENT OWNERSHIP AND OPERATING EXPENSE SCHEDULE

In accordance with FAR 31.105(d)(2)(i)(b), for the predetermined schedule of construction equipment use rates, use Engineer Pamphlet (EP) 1110-1-8, Construction Equipment Ownership and Operating Expense Schedule. Copies of each regional schedule may be obtained through the following internet site:

<https://www.publications.usace.army.mil/USACE-Publications/Engineer-Pamphlets/>

## 1.2 CONTRACTOR SUPPLY AND USE OF ELECTRONIC SOFTWARE FOR PROCESSING CONSTRUCTION WAGE RATE REQUIREMENTS STATUTE CERTIFIED LABOR PAYROLLS

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

b. Obtain and provide 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 for the Contractor to comply with the Wage Rate Requirements statute. Use the electronic payroll service to prepare, process, and maintain the relevant payrolls and basic records during all work under this construction contract. The electronic payroll service must be capable of preserving these payrolls and related basic records for the required three years after contract completion. Obtain and provide electronic system access to the Government, as required to comply with the Wage Rate Requirements over the duration of the construction contract.

c. The Contractor's 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 FAR;
- (3) able to accommodate the required numbers of employees and subcontractors planned to be employed under the contract;
- (4) capable of producing an Excel spreadsheet-compatible electronic output of weekly payroll records for export into an Excel spreadsheet to be

imported into the contractor's mode of Resident Management System 3.0;

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

(6) ability to produce Contractor-certified electronic versions of weekly payroll data;

(7) ability to identify erroneous entries and track the data/time of all versions of the certified Wage Rate Requirements statute payrolls submitted to the government over the life of the contract;

(8) capable of generating a durable record copy in a Compact Disc (CD) or Digital Versatile Disc (DVD) and Portable Document Format (PDF) file record of data from the system database at the end of the contract closeout. This durable record copy of data from the electronic payroll processing system must be provided to the Government during contract closeout.

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

### 1.3 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:

- U.S. Department of Labor Veterans' Employment and Training Service (VETS):  
<https://www.dol.gov/vets/>
- Federal Veteran Employment Information: <https://www.fedshirevets.gov/>
- Veterans Opportunity to Work (VOW) Program:  
<https://www.benefits.va.gov/vow/>
- U.S. Army Warrior Transition Command Employment Index:  
<https://wct.army.mil/modules/employers/index.html>
- Hiring Our Heroes: <https://www.uschamberfoundation.org/hiring-our-heroes>

### 1.4 CONTRACTOR PERFORMANCE EVALUATIONS

See Federal Acquisition Regulation (FAR) Subpart 42.1502(e) for the requirements on past performance evaluations for construction contracts. For construction contracts valued at or above \$750,000.00, including all modifications, the USACE will evaluate Contractor's performance using the web-based Contractors Performance Assessment Reporting System (CPARS). After the USACE drafts an evaluation (interim or final), the Contractor will have the opportunity to access, review, comment and either concur or non-concur with the evaluation in the CPARS system for a period of 60

days. Access to the CPARS system requires either specific software called PKI certification (recommended method) or a username and password. The PKI certification is a Department of Defense recommendation and to provide security in electronic transactions. The certification software could cost approximately \$110 - \$125 per certificate per year and may be purchased from an External Certificate Authorities (ECA) vendor. Current information about the PKI certification process and contacting vendors can be found on the web site: <https://www.cpars.gov>.

#### 1.5 ANTITERRORISM (AT)/OPERATIONS SECURITY (OPSEC) PROVISIONS

**1. General security requirements and guidance:** The security requirements described below apply to all contract personnel (including employees of the prime Contractor ("Contractor") and all subcontractor employees) supporting the performance requirements of this contract. The Contractor is responsible for compliance with these security requirements. Questions regarding security matters shall be addressed to the designated Government representative (e.g., Contracting Officer Representative (COR), Requiring Activity (RA) representative, or Contracting Officer (if a COR or other RA representative is not appointed)). Contract personnel are critical to the overall security and safety of US Army Corps of Engineers (USACE) installations, facilities and activities, and security awareness training contributes to those efforts. The Department of Defense (DoD) and Army security training requirements specified below, if applicable, are performance requirements; all applicable contract personnel shall complete initial training within 30 days of contract award or the date new contract personnel begin performance on the contract. Within five business days from the completion of training, the Contractor shall provide written documentation (e.g., email or memorandum) to the Government representative. The documentation shall include the names of contract personnel trained and which training they completed; the Contractor shall maintain training records as part of their contract files and be prepared to provide copies of training certificates to the Government representative. Contractor personnel and vehicles are subject to search when entering federal installations. Additionally, all contract personnel shall comply with Force Protection Condition (FPCON) measures, Random Antiterrorism Measures (commonly referred to as "RAMs"), and Health Protection Condition (HPCON) measures. The Contractor is responsible for meeting performance requirements during elevated FPCON and/or HPCON levels in accordance with applicable RA plans and procedures-this includes identifying mission essential and non-mission essential personnel. In addition to the changes otherwise authorized by the changes clause of this contract, should the FPCON or HPCON levels at any individual facility or installation change, the Government may implement security changes that affect contract personnel. The Contractor shall ensure all contract personnel are aware of their security responsibilities, including any site-specific requirements identified in local policies or procedures.

**2. Antiterrorism (AT) Level I training:** All contract personnel requiring routine access to Army installations, facilities, and controlled access areas, or requiring network access shall complete initial and annual refresher AT Level I awareness training. Online AT Level I awareness training is available at <https://jko.jten.mil/courses/AT-level1/launch.html>.

**3. Physical security and access control requirements:** All contract personnel requiring physical access to a federal installation or facility shall comply with the access control procedures of that location. Contract personnel requiring unescorted access to meet contract performance

requirements on a DoD installation in the US shall be vetted by the installation/facility Provost Marshal/Directorate of Emergency Services/Security Office using the National Crime Information Center-Interstate Identification Index (commonly referred to as "NCIC-III") and Terrorist Screening Database (commonly referred to as "TSDB"). Contract personnel shall comply with all personal identity verification requirements specified in installation/facility policies and procedures. Contract personnel who do not meet requirements for unescorted access to USACE facilities shall coordinate escorted access with the Government representative, as needed. Contract personnel who receive keys, access cards, or lock combinations that provide access to government-owned property shall comply with key and lock control procedures of the RA. NOTE: To comply, fingerprint cards will need to be obtained for all onsite employees and given to COR for evaluation and approval by USACE security personnel.

**4. Contract personnel requiring a common access card (CAC):** Contract personnel will be issued a common access card (CAC) only if duties involve one of the following: (1) both physical access to a DoD facility and access to DoD information systems or networks; (2) remote access to a DoD information system or network using DoD-approved remote access procedures; or (3) physical access to multiple DoD facilities or multiple non-DoD federally controlled facilities on behalf of the DoD on a recurring basis for a period of 6 months or more. Before CAC issuance, contract personnel must have, at a minimum, a favorably adjudicated Tier 1 investigation or an equivalent or higher investigation in accordance with applicable Army regulations and Homeland Security Presidential Directive-12 (HSPD-12). At the discretion of the RA, an initial CAC may be issued based on a favorable review of a fingerprint check and a successfully scheduled Tier 1 investigation with the National Background Investigations Bureau. The RA provides contract personnel with additional information and forms to initiate the CAC issuance process, and/or to initiate background investigations, when required. Contract personnel shall complete these processes within established timelines to avoid delays.

**6. Suspicious Activity Reporting training (e.g. iWATCH, CorpsWatch, or See Something, Say Something):** All contract personnel shall receive initial and annual refresher training from the RA representative on the local suspicious activity reporting program. This locally developed training provides contract personnel with general information on suspicious behavior, and guidance on reporting suspicious activity to the project manager, security representative or law enforcement entity.

**14. Pre-screen candidates using E-Verify Program:** Contractors shall comply with the requirements set forth in FAR clause 52.222-54 Employment Eligibility Verification and FAR Subpart 22.18 in using the E-Verify Program at (<https://www.e-verify.gov/>) (website subject to change) to meet the contract employment eligibility requirements. Contractors are encouraged to cooperate with Federal and State agencies responsible for enforcing labor requirements to include eligibility for employment under United States immigration laws in accordance with FAR 22.102-1(i). An initial list of verified/eligible candidates shall be provided to the COR no later than three business days after the initial contract award. When contracts are with individuals, the individuals will be required to complete a Form I-9, Employment Eligibility Verification, and submit it to the Contracting Officer to become part of the official contract file.

## 1.6 COMPUTING COMPLETION DATES FOR NON-WORK PERIOD

No work will be required at the construction site during the period 15 November through 15 May inclusive. The days in this period have been included in computing the calendar days for completion of the work. The Contractor may perform work at the site during all or any part of this period upon giving prior written notice to the Contracting Officer. Working during this non-work period requires approval by the Contracting Officer. No time extensions will be granted for delays during this period.

## 1.7 CONTRACT DRAWINGS AND SPECIFICATIONS

### 1.7.1 SETS FURNISHED

Utilize the bid drawings and specifications as amended in the performance of the work until the electronic Adobe Acrobat.pdf conformed specifications and contract drawings (i.e., bid drawings that have been posted with all amendment changes) are sent electronically to the Contractor. The work must conform to the contract drawings, set out in the drawing index, all of which form a part of these specifications. The work must also conform to any of the standard details bound or referenced herein. The Contractor shall be responsible for making copies of all plans and specifications as needed for the duration of the contract.

### 1.7.2 DISTRIBUTION

The Government will provide the Contractor with a CD-ROM or DVD-ROM or sent electronically containing Adobe Acrobat.pdf contract drawings and conformed specification sets and editable CAD file drawings (format defined in Section 01 78 39.00 24 AS-BUILT DRAWINGS). Prepare final record or as-built drawings as defined in Section 01 78 39.00 24 AS-BUILT DRAWINGS.

### 1.7.3 NOTIFICATION OF DISCREPANCIES

Check all drawing files furnished by the Government immediately upon their receipt and promptly notify the Contracting Officer of any discrepancies. Follow dimensions marked on drawings in lieu of scale measurements. Enlarged plans and details govern where the same work is shown at smaller scales. All scales shown are based on a standard drawing size of 22" x 34". If any other size drawings are furnished or plotted adjust the scales accordingly. Advise sub-contractors of the above. Compare all drawings and verify the figures before laying out the work and take responsibility for any errors which might have been avoided thereby.

### 1.7.4 OMISSIONS

Omissions from the drawings or specifications or the misdescription of details of work which are manifestly necessary to carry out the intent of the drawings and specifications, or which are customarily performed, does not relieve the Contractor from performing such omitted or misdescribed details of the work but work must be performed as if fully and correctly set forth and described in the drawings and specifications.

## 1.8 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 items below in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

AT Level I Training Sign In Sheets; G-PO

Sign-in sheets for all employee training required for AT Level I training per section 1.5, paragraph 2.

Security Personnel List; G-PO

Security Personnel list and fingerprint cards per section 1.5, paragraph 3.

iWATCH and/or CorpsWatch Training Sign In Sheets;

Sign-in sheets for all employee training required for iWATCH and/or CorpsWatch training per section 1.5, paragraph 6.

E-Verify;

Provide E-verify completion sheets required per section 1.5, paragraph 4.

1.9 PAYMENT

1.9.1 PROMPT PAYMENT ACT

Pay requests authorized in GENERAL CONDITIONS (CONTRACT CLAUSES) clause: "Payments Under Fixed-Price Construction Contracts", will be paid pursuant to the clause, "Prompt Payment for Construction Contracts". Submit pay requests on ENG Form 93 and 93a, "Payment Estimate-Contract Performance" and "Continuation". All information and substantiation required by the identified contract clauses must be submitted with the ENG Form 93, and the required certification included on the last page of the ENG Form 93a, signed by an authorized contractor official and dated when signed. The designated billing office is the Office of the Area Engineer.

1.9.2 PAYMENT FOR MATERIALS STORED OFFSITE

a. As allowed under (FAR) 52.232-5 "Payments Under Fixed Price Construction Contracts", the Administrative Contracting Officer, at their discretion, may authorize progress payments for any material stored off-site provided:

- (1) The Contractor furnishes satisfactory evidence that it has acquired title to such material and that the material will be used to perform this contract,
- (2) Material is stored in such a manner to protect it from damage, fire, theft, etc.
- (3) The Contractor provides evidence of insurance for material, and,
- (4) Material is clearly identified and delineated by contract

number for use on the applicable project.

b. The Administrative Contracting Officer reserves the right to inspect any off-site material prior to authorizing progress payments. Provide paid invoices listing the value of material and labor incorporated in the items.

#### 1.10 AVAILABILITY AND USE OF UTILITY SERVICES

Use of public and private utilities will be as found available. Make arrangements for use of public and private utilities.

#### 1.11 TIME EXTENSIONS FOR UNUSUALLY SEVERE WEATHER

a. This provision specifies the procedure for the determination of time extensions for unusually severe weather in accordance with the GENERAL CONDITIONS (CONTRACT CLAUSES) clause entitled "Default: (Fixed-Price Construction)." In order for the Contracting Officer to award a time extension under this clause, the following conditions must be satisfied:

(1) The weather experienced at the project site during the contract period must be found to be unusually severe, that is, more severe than the adverse weather anticipated for the project location during any given month.

(2) The unusually severe weather must actually cause a delay to the completion of the project. The delay must be beyond the control and without the fault or negligence of the contractor.

b. The following schedule of monthly anticipated adverse weather delays is based on National Oceanic and Atmospheric Administration (NOAA) or similar data for the project location and will constitute the base line for monthly weather time evaluations. The Contractor's progress schedule must reflect these anticipated adverse weather delays in all weather dependent activities.

#### MONTHLY ANTICIPATED ADVERSE WEATHER DELAY WORK DAYS BASED ON (5) DAY WORK WEEK

Jan	14
Feb	12
Mar	8
Apr	4
May	4
Jun	5
Jul	3
Aug	3
Sep	3
Oct	3
Nov	5
Dec	13

c. Upon acknowledgment of the Notice to Proceed (NTP) and continuing throughout the contract, the contractor will record on the RMS daily CQC report, any occurrence of adverse weather and resultant impact to normally scheduled work, within 24 hours of the event. Actual adverse weather delay days must prevent work on critical activities for 50 percent or more

of the contractor's scheduled work day. Describe in the RMS daily CQC reports the critical path item that is being affected and provide the critical path activity number(s) from the current schedule. The COR must acknowledge and accept the agreed upon occurrence of each adverse weather delay in RMS for the delays to be considered as adverse weather delays.

At the end of each month, identify the number of actual adverse weather delay days that includes days impacted by actual adverse weather (even if adverse weather occurred in previous month), calculated chronologically from the first to the last day of each month, and recorded as full days. If the number of actual adverse weather delay days exceeds the number of days anticipated in paragraph b. above, the Contracting Officer will convert any qualifying delays to calendar days, giving full consideration for equivalent fair weather work days, and issue a modification in accordance with the GENERAL CONDITIONS (CONTRACT CLAUSES) clause entitled "Default (Fixed Price Construction)". (ER 415-1-15)

1.12 INSURANCE REQUIRED

In accordance with GENERAL CONDITIONS (CONTRACT CLAUSES) clause: "Insurance Work on a Government Installation," procure the following minimum insurance:

Type	Amount
Workmen's Compensation and Employer's Liability Insurance	\$100,000
General Liability Insurance	\$500,000 per occurrence
Automobile Liability Insurance	
Bodily injury	\$200,000 per person and \$500,000 per occurrence
Property damage	\$ 20,000 per occurrence

(Coverages per FAR 28.307-2)

1.13 CONTRACTOR QUALITY CONTROL (CQC)

See Section 01 45 00.00 10 QUALITY CONTROL.

1.14 NONDOMESTIC CONSTRUCTION MATERIALS

The list of excepted nondomestic construction materials or their components referenced in the Buy American Construction Material Contract Clauses includes the list set forth in paragraph 25.104 of the Federal Acquisition Regulation.

1.15 DAILY WORK SCHEDULES AND WEEKLY COORDINATION MEETINGS

In order to closely coordinate work under this contract, prepare a written agenda/meeting minutes and attend a weekly coordination meeting with the Contracting Officer and Using Service at which time the Contractor must submit for coordination and approval, their proposed daily work schedule for the next two week period. Provide a copy of modifications (MODs), Serial Letters, Requests for Information (RFIs) and any other information that is needed in the minutes of the meeting. Include required temporary utility services, time and duration of interruptions, and protection of adjoining areas with the Contractor's

proposed 2-week work schedule. At this meeting, the Contractor must also submit their schedule of proposed dates and times of all preparatory inspections to be performed during the next 2 weeks. All schedules shall be developed in accordance with Section 01 32 01.00 10 PROJECT SCHEDULE Coordination action by the Contracting Officer relative to these schedules will be accomplished during these weekly meetings. Daily reports must be completed and given to the Contracting Officer or Representative within 24 hours of work. All official correspondence such as serial letters and RFIs, with attachments are to be provided in one hardcopy original with original signatures and one electronic (Adobe pdf format) copy by email. The Government will consider the correspondence to be received when the official hardcopy or electronic copy is received by the designated office.

#### 1.16 AS-BUILT DRAWINGS

See SECTION 01 78 39.00 24 - AS-BUILT DRAWINGS

#### 1.17 PARTNERING

To most effectively accomplish this Contract, the Contractor and Government must form a cohesive partnership with the common goal of drawing on the strength of each organization in an effort to achieve a successful project without safety mishaps, conforming to the Contract, within budget and on schedule. The partnering team must consist of personnel from both the Government and Contractor including project level and corporate level leadership positions. Key Personnel from the supported command, end user, Contractor, key subcontractors and the Designer of Record are required to participate in the Partnering process.

##### 1.17.1 Team-Led (Informal) Partnering

- a. The Contracting Officer will coordinate the initial Team-Led (Informal) Partnering Session with key personnel of the project team, including Contractor and Government personnel. The Partnering Session will be co-led by the Government Construction Manager and Contractor's Project Manager.
- b. The Initial Team-led Partnering session may be held concurrently with the Pre-Construction meeting. Hold partnering sessions at a location mutually agreed to by the Contracting Officer and the Contractor, typically at a conference room on-base or at the Contractor's temporary trailer.
- c. Conduct the Initial Team-Led Partnering Session and facilitate using electronic media (a video and accompanying forms) provided by the Contracting Officer.
- d. The Partners will determine the frequency of the follow-on sessions.
- e. Participants will bear their own costs for meals, lodging and transportation associated with Partnering.

#### 1.18 PROFIT

a. Use the weighted guidelines method of determining profit on any equitable adjustment change order or modification issued under this contract. The profit factors must be as follows:

Factor	Rate	Weight	Value
Degree of Risk	20	See Item	
Relative difficulty of work	15	b. below	
Size of Job	15		
Period of performance	15		
Contractor's investment	5		
Assistance by Government	5		
Subcontracting	25		
	100		

b. Based on the circumstances of each procurement action, each of the above factors must be weighted from .03 to .12 as indicated below. Obtain the value by multiplying the rate by the weight. The value column when totaled indicates the fair and reasonable profit percentage under the circumstances of the particular procurement.

(1) Degree of Risk. Where the work involves no risk or the degree of risk is very small, the weighting should be .03; as the degree of risk increases, the weighting should be increased up to a maximum of .12. Lump sum items will have, generally, a higher weighted value than the unit price items for which quantities are provided. Other things to consider: the portion of the work to be done by subcontractors, nature of work, where work is to be performed, reasonableness of negotiated costs, amount of labor included in costs, and whether the negotiation is before or after performance of work.

(2) Relative Difficulty of Work. If the work is most difficult and complex, the weighting should be .12 and should be proportionately reduced to .03 on the simplest of jobs. This factor is tied in to some extent with the degree of risk. Some things to consider: the nature of the work, by whom it is to be done, where, and what is the time schedule.

(3) Size of Job. All work not in excess of \$100,000 shall be weighted at .12. Work estimated between \$100,000 and \$5,000,000 shall be proportionately weighted from .12 to .05.

(4) Periods of Performance. Jobs in excess of 24 months are to be weighted at .12. Jobs of lesser duration are to be proportionately weighted to a minimum of .03 for jobs not to exceed 30 days. No weight where additional time not required.

(5) Contractor's Investment. To be weighted from .03 to .12 on the basis of below average, average, and above average. Things to consider: amount of subcontracting, mobilization payment item, Government furnished property, equipment and facilities, and expediting assistance.

(6) Assistance by Government. To be weighted from .12 to .03 on the basis of average to above average. Things to consider: use of Government-owned property, equipment and facilities, and expediting assistance.

(7) Subcontracting. To be weighted inversely proportional to the amount of subcontracting. Where 80 percent or more of the work is to be subcontracted, the weighting is to be .03 and such weighting proportionately increased to .12 where all the work is performed by the Contractor's own forces.

## 1.19 LABOR CONDITIONS APPLICABLE TO TEMPORARY FACILITIES

It is the position of the Department of Defense that the Davis-Bacon Act, 40 U.S.C. 276a is applicable to temporary facilities such as job headquarters, tool yards, batch plants, borrow pits, sandpits, rock quarries, and similar operations, provided they are dedicated exclusively, or nearly so, to performance of the contract or project, and provided they are adjacent or virtually adjacent to the site of the work and are established after receipt of the proposal or bid. Clause "Payrolls and Basic Records" of the GENERAL CONDITIONS (CONTRACT CLAUSES) is applicable to such operations.

## 1.20 DRAWING SCALES

All scales shown are based on a standard drawing size of 22" x 34". If any other size drawings are furnished or plotted, the contractor adjust the scales accordingly. The Contractor must also advise their sub-contractors of the above.

PART 2 NOT USED

PART 3 NOT USED

-- End of Section --

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## SECTION 01 32 01.00 10

## 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.

## AACE INTERNATIONAL (AACE)

AACE 29R-03 (2011) Forensic Schedule Analysis  
AACE 52R-06 (2006) Time Impact Analysis - As Applied  
in Construction

## 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 Contractor Quality Control approval. Submit the following in accordance with Section 01 33 00  
SUBMITTAL PROCEDURES:

## SD-01 Preconstruction Submittals

Project Scheduler Qualifications; G, AO

Preliminary Project Schedule; G, AO

Initial Project Schedule; G, AO

Periodic Schedule Update; G, AO

## 1.3 PROJECT SCHEDULER QUALIFICATIONS

Designate an authorized representative to be responsible for the preparation of the schedule and all required updating and production of reports. The authorized representative must have a minimum of 2-years experience scheduling construction projects similar in size and nature to this project with scheduling software that meets the requirements of this specification. Representative must have a comprehensive knowledge of CPM scheduling principles and application.

## PART 2 PRODUCTS

## 2.1 SOFTWARE

The scheduling software utilized to produce and update the schedules

required herein must be capable of meeting all requirements of this specification.

#### 2.1.1 Government Default Software

The Government default software is Primavera P6.

#### 2.1.2 Contractor Software

Scheduling software used by the contractor must be commercially available from the software vendor for purchase with vendor software support agreements available. The software routine used to create the required sdef file must be created and supported by the software manufacturer.

##### 2.1.2.1 Primavera

If Primavera P6 is selected for use, provide the "xer" export file in a version of P6 importable by the Government system.

##### 2.1.2.2 Other Than Primavera

Use of software other than Primavera P6 must be approved by the Contracting Officer. If a different software system is approved, the Contracting Officer may require the Contractor to provide for the Government's use up to two licenses, two computers, and training for two Government employees in the use of the software. These computers will be stand-alone and not connected to Government network. Computers and licenses will be returned at project completion.

### PART 3 EXECUTION

#### 3.1 GENERAL REQUIREMENTS

Prepare for approval a Project Schedule, as specified herein, pursuant to FAR Clause 52.236-15 Schedules for Construction Contracts. Show in the schedule the proposed sequence to perform the work and dates contemplated for starting and completing all schedule activities. The scheduling of the entire project is required. The scheduling of construction is 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. Provide a schedule that is a forward planning as well as a project monitoring tool. Use the Critical Path Method (CPM) of network calculation to generate all Project Schedules. Prepare each Project Schedule using the Precedence Diagram Method (PDM).

#### 3.2 BASIS FOR PAYMENT AND COST LOADING

The schedule is the basis for determining contract earnings during each update period and therefore the amount of each progress payment. The aggregate value of all activities coded to a contract CLIN must equal the value of the CLIN.

##### 3.2.1 Activity Cost Loading

Activity cost loading must be reasonable and without front-end loading. Provide additional documentation to demonstrate reasonableness if requested by the Contracting Officer.

### 3.2.2 Withholdings / Payment Rejection

Failure to meet the requirements of this specification may result in the disapproval of the preliminary, initial or periodic schedule updates and subsequent rejection of payment requests until compliance is met.

In the event that the Contracting Officer directs schedule revisions and those revisions have not been included in subsequent Project Schedule revisions or updates, the Contracting Officer may withhold 10 percent of pay request amount from each payment period until such revisions to the project schedule have been made.

## 3.3 PROJECT SCHEDULE DETAILED REQUIREMENTS

### 3.3.1 Level of Detail Required

Develop the Project Schedule to the appropriate level of detail to address major milestones and to allow for satisfactory project planning and execution. Failure to develop the Project Schedule to an appropriate level of detail will result in its disapproval. The Contracting Officer will consider, but is not limited to, the following characteristics and requirements to determine appropriate level of detail:

### 3.3.2 Activity Durations

Reasonable activity durations are those that allow the progress of ongoing activities to be accurately determined between update periods. Less than 2 percent of all non-procurement activities may have Original Durations (OD) greater than 20 work days or 30 calendar days.

### 3.3.3 Procurement Activities

Include activities associated with the critical submittals and their approvals, procurement, fabrication, and delivery of long lead materials, equipment, fabricated assemblies, and supplies. Long lead procurement activities are those with an anticipated procurement sequence of over 90 calendar days.

### 3.3.4 Mandatory Tasks

Include the following activities/tasks in the initial project schedule and all updates.

- a. Submission, review and acceptance of SD-01 Preconstruction Submittals (individual activity for each).
- b. Submission, review and acceptance of features require design completion
- c. Submission of mechanical/electrical/information systems layout drawings.
- d. Long procurement activities
- e. Submission and approval of O & M manuals.
- f. Submission and approval of as-built drawings.
- g. Submission and approval of DD1354 data and installed equipment lists.

- h. Submission and approval of testing and air balance (TAB).
- i. Submission of TAB specialist design review report.
- j. Submission and approval of fire protection specialist.
- k. Submission and approval of Building Commissioning Plan, test data, and reports: Develop the schedule logic associated with testing and commissioning of mechanical systems to a level of detail consistent with the contract commissioning requirements. All tasks associated with all building testing and commissioning will be completed prior to submission of building commissioning report and subsequent contract completion.
- l. Air and water balancing.
- m. Building commissioning - Functional Performance Testing.
- n. Controls testing plan submission.
- o. Controls testing.
- p. Performance Verification testing.
- q. Other systems testing, if required.
- r. Contractor's pre-final inspection.
- s. Correction of punch list from Contractor's pre-final inspection.
- t. Government's pre-final inspection.
- u. Correction of punch list from Government's pre-final inspection.
- v. Final inspection.

### 3.3.5 Government Activities

Show Government and other agency activities that could impact progress. These activities include, but are not limited to: approvals, environmental permit approvals by State regulators, inspections, utility tie-in, Government Furnished Equipment (GFE) and Notice to Proceed (NTP) for phasing requirements.

### 3.3.6 Standard Activity Coding Dictionary

Use the activity coding structure defined in the Standard Data Exchange Format (SDEF) in ER 1-1-11. This exact structure is mandatory. Develop and assign all Activity Codes to activities as detailed herein. A template SDEF compatible schedule backup file is available on the web site: <http://rms.usace.army.mil>.

The SDEF format is as follows:

Field	Activity Code	Length	Description
1	WRKP	3	Workers per day
2	RESP	4	Responsible party
3	AREA	4	Area of work
4	MODF	6	Modification Number
5	BIDI	6	Bid Item (CLIN)
6	PHAS	2	Phase of work
7	CATW	1	Category of work
8	FOW	20	Feature of work*
<p>*Some systems require that FEATURE OF WORK values be placed in several activity code fields. The notation shown is for Primavera P6. Refer to the specific software guidelines with respect to the FEATURE OF WORK field requirements.</p>			

3.3.6.1 Workers Per Day (WRKP)

Assign Workers per Day for all field construction or direct work activities, unless directed otherwise by the Contracting Officer. Workers per day is based on the average number of workers expected each day to perform a task for the duration of that activity.

3.3.6.2 Responsible Party Coding (RESP)

Assign responsibility code for all activities to the Prime Contractor, Subcontractor(s) or Government agency(ies) responsible for performing the activity.

- a. Activities coded with a Government Responsibility code include, but are not limited to: Government approvals, Government design reviews, environmental permit approvals by State regulators, Government Furnished Property/Equipment (GFP) and Notice to Proceed (NTP) for phasing requirements.
- b. Activities cannot have more than one Responsibility Code. Examples of acceptable activity code values are: DOR (for the designer of record); ELEC (for the electrical subcontractor); MECH (for the mechanical subcontractor); and GOVT (for USACE).

3.3.6.3 Area of Work Coding (AREA)

Assign Work Area code to activities based upon the work area in which the activity occurs. 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. Examples of Work Area Coding include different areas within a floor of a building, different floors within a

building, and different buildings within a complex of buildings. Activities cannot have more than one Work Area Code.

Not all activities are required to be Work Area coded. A lack of Work Area coding indicates the activity is not resource or space constrained.

#### 3.3.6.4 Modification Number (MODF)

Assign a Modification Number Code to any activity or sequence of activities added to the schedule as a result of a Contract Modification, when approved by Contracting Officer. Key all Code values to the Government's modification numbering system. An activity can have only one Modification Number Code.

#### 3.3.6.5 Bid Item Coding (BIDI)

Assign a Bid Item Code to all activities using the Contract Line Item Schedule (CLIN) to which the activity belongs, even when an activity is not cost loaded. An activity can have only one BIDI Code.

#### 3.3.6.6 Phase of Work Coding (PHAS)

Assign Phase of Work Code to all activities. Examples of phase of work are procurement phase and construction phase. Each activity can have only one Phase of Work code.

- a. Code proposed fast track design and construction phases proposed to allow filtering and organizing the schedule by fast track design and construction packages.
- b. If the contract specifies phasing with separately defined performance periods, identify a Phase Code to allow filtering and organizing the schedule accordingly.

#### 3.3.6.7 Category of Work Coding (CATW)

Assign a Category of Work Code to all activities. Category of Work Codes include, but are not limited to construction submittal, procurement, fabrication, weather sensitive installation, non-weather sensitive installation, start-up, and testing activities. Each activity can have no more than one Category of Work Code.

#### 3.3.6.8 Feature of Work Coding (FOW)

Assign a Feature of Work Code to appropriate activities based on the Definable Feature of Work to which the activity belongs based on the approved QC plan.

Definable Feature of Work is defined in Section 01 45 00.00 10 QUALITY CONTROL. An activity can have only one Feature of Work Code.

#### 3.3.7 Contract Milestones and Constraints

Milestone activities are to be used for significant project events including, but not limited to, project phasing, project start and end activities, or interim completion dates. The use of artificial float constraints such as "zero free float" or "zero total float" are prohibited.

Mandatory constraints that ignore or effect network logic are prohibited. No constrained dates are allowed in the schedule other than those specified herein. Submit additional constraints to the Contracting Officer for approval on a case by case basis.

#### 3.3.7.1 Project Start Date Milestone and Constraint

The first activity in the project schedule must be a start milestone titled "NTP Acknowledged," which must have a "Start On" constraint date equal to the date that the NTP is acknowledged.

#### 3.3.7.2 End Project Finish Milestone and Constraint

The last activity in the schedule must be a finish milestone titled "End Project."

Constrain the project schedule to the Contract Completion Date in such a way that if the schedule calculates an early finish, then the float calculation for "End Project" milestone reflects positive float on the longest path. If the project schedule calculates a late finish, then the "End Project" milestone float calculation reflects negative float on the longest path. The Government is under no obligation to accelerate Government activities to support a Contractor's early completion.

#### 3.3.7.3 Interim Completion Dates and Constraints

Constrain contractually specified interim completion dates to show negative float when the calculated late finish date of the last activity in that phase is later than the specified interim completion date.

##### 3.3.7.3.1 Start Phase

Use a start milestone as the first activity for a project phase. Call the start milestone "Start Phase X" where "X" refers to the phase of work.

##### 3.3.7.3.2 End Phase

Use a finish milestone as the last activity for a project phase. Call the finish milestone "End Phase X" where "X" refers to the phase of work.

#### 3.3.8 Calendars

Schedule activities on a Calendar to which the activity logically belongs. Develop calendars to accommodate any contract defined work period such as a 7-day calendar for Government Acceptance activities, concrete cure times, etc. Develop the default Calendar to match the physical work plan with non-work periods identified including weekends and holidays. Develop sSeasonal Calendar(s) and assign to seasonally affected activities as applicable.

If an activity is weather sensitive it should be assigned to a calendar showing non-work days on a monthly basis, with the non-work days selected at random across the weeks of the calendar, using the anticipated adverse weather delay work days provided in the Special Contract Clauses . Assign non-work days over a seven-day week as weather records are compiled on seven-day weeks, which may cause some of the weather related non-work days to fall on weekends.

### 3.3.9 Open Ended Logic

Only two open ended activities are allowed: the first activity "NTP Acknowledged" may have no predecessor logic, and the last activity -"End Project" may have no successor logic.

Predecessor open ended logic may be allowed in a time impact analyses upon the Contracting Officer's approval.

### 3.3.10 Default Progress Data Disallowed

Actual Start and Finish dates must not automatically update with default mechanisms included in the scheduling software. Updating of the percent complete and the remaining duration of any activity must be independent functions. Disable program features that calculate one of these parameters from the other. Activity Actual Start (AS) and Actual Finish (AF) dates assigned during the updating process must match those dates provided in the Contractor Quality Control Reports. Failure to document the AS and AF dates in the Daily Quality Control report will result in disapproval of the Contractor's schedule.

### 3.3.11 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 Contracting Officer. Propose logic corrections to eliminate out of sequence progress or justify not changing the sequencing for approval prior to submitting an updated project schedule. Address out of sequence progress or logic changes in the Narrative Report and in the periodic schedule update meetings.

### 3.3.12 Added and Deleted Activities

Do not delete activities from the project schedule or add new activities to the schedule without approval from the Contracting Officer. Activity ID and description changes are considered new activities and cannot be changed without Contracting Officer approval.

### 3.3.13 Original Durations

Activity Original Durations (OD) must be reasonable to perform the work item. OD changes are prohibited unless justification is provided and approved by the Contracting Officer.

### 3.3.14 Leads, Lags, and Start to Finish Relationships

Lags must be reasonable as determined by the Government and not used in place of realistic original durations, must not be in place to artificially absorb float, or to replace proper schedule logic.

- a. Leads (negative lags) are prohibited.
- b. Start to Finish (SF) relationships are prohibited.

### 3.3.15 Retained Logic

Schedule calculations must retain the logic between predecessors and successors ("retained logic" mode) even when the successor activity(s) starts and the predecessor activity(s) has not finished (out-of-sequence

progress). 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") are not be allowed.

### 3.3.16 Percent Complete

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

### 3.3.17 Remaining Duration

Update the remaining duration for each activity based on the number of estimated work days it will take to complete the activity. Remaining duration may not mathematically correlate with percentage found under paragraph entitled Percent Complete.

### 3.3.18 Cost Loading of Closeout Activities

Cost load the "Correction of punch list from Government pre-final inspection" activity(ies) not less than 1 percent of the present contract value. Activity(ies) may be declared 100 percent complete upon the Government's verification of completion and correction of all punch list work identified during Government pre-final inspection(s).

#### 3.3.18.1 As-Built Drawings

If there is no separate contract line item (CLIN) for as-built drawings, cost load the "Submission and approval of as-built drawings" activity not less than \$35,000 or 1 percent of the present contract value, whichever is greater, up to \$200,000. Activity will be declared 100 percent complete upon the Government's approval.

#### 3.3.18.2 O & M Manuals

Cost load the "Submission and approval of O & M manuals" activity not less than \$20,000. Activity will be declared 100 percent complete upon the Government's approval of all O & M manuals.

### 3.3.19 Early Completion Schedule and the Right to Finish Early

An Early Completion Schedule is an Initial Project Schedule (IPS) that indicates all scope of the required contract work will be completed before the contractually required completion date.

- a. No IPS indicating an Early Completion will be accepted without being fully resource-loaded (including crew sizes and manhours) and the Government agreeing that the schedule is reasonable and achievable.
- b. The Government is under no obligation to accelerate work items it is responsible for to ensure that the early completion is met nor is it responsible to modify incremental funding (if applicable) for the project to meet the contractor's accelerated work.

### 3.4 PROJECT SCHEDULE SUBMISSIONS

Provide the submissions as described below. The files, reports, and network diagrams required for each submission are contained in paragraph SUBMISSION REQUIREMENTS. If the Contractor fails or refuses to furnish the information and schedule updates as set forth herein, then the Contractor will be deemed not to have provided an estimate upon which a progress payment can be made.

Review comments made by the Government on the schedule(s) do not relieve the Contractor from compliance with requirements of the Contract Documents.

#### 3.4.1 Preliminary Project Schedule Submission

Within 15 calendar days after the NTP is acknowledged submit the Preliminary Project Schedule defining the planned operations detailed for the first 90 calendar days for approval. The approved Preliminary Project Schedule will be used for payment purposes not to exceed 90 calendar days after NTP. Completely cost load the Preliminary Project Schedule to balance the contract award CLINS shown on the Price Schedule. The Preliminary Project Schedule may be summary in nature for the remaining performance period. It must be early start and late finish constrained and logically tied as specified. The Preliminary Project Schedule forms the basis for the Initial Project Schedule specified herein and must include all of the required plan and program preparations, submissions and approvals identified in the contract (for example, Quality Control Plan, Safety Plan, and Environmental Protection Plan) as well as design activities, planned submissions of all early design packages, permitting activities, design review conference activities, and other non-construction activities intended to occur within the first 90 calendar days. Government acceptance of the associated design package(s) and all other specified Program and Plan approvals must occur prior to any planned construction activities. Activity code any activities that are summary in nature after the first 90 calendar days with Bid Item (CLIN) code (BIDI), Responsibility Code (RESP) and Feature of Work code (FOW).

#### 3.4.2 Initial Project Schedule Submission

Submit the Initial Project Schedule for approval within 42 calendar days after notice to proceed is issued. The schedule must demonstrate a reasonable and realistic sequence of activities which represent all work through the entire contract performance period. No payment will be made for work items not fully detailed in the Project Schedule.

#### 3.4.3 Periodic Schedule Updates

Update the Project Schedule routinely at an interval approved by the Contracting Officer or designated representative. Provide a draft Periodic Schedule Update for review at the schedule update meetings as prescribed in the paragraph PERIODIC SCHEDULE UPDATE MEETINGS. These updates will enable the Government to assess Contractor's progress.

- a. Update information including Actual Start Dates (AS), Actual Finish Dates (AF), Remaining Durations (RD), and Percent Complete is subject to the approval of the Government at the meeting.
- b. AS and AF dates must match the date(s) reported on the Contractor's Quality Control Report for an activity start or finish.

### 3.5 SUBMISSION REQUIREMENTS

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

#### 3.5.1 Submission

Submit the current project schedule, the narrative report and all required schedule reports electronically using the project submittal/transmittal process or by serialized letter. Each schedule must have a unique file name and use project specific settings.

#### 3.5.2 Narrative Report

Provide a Narrative Report with each schedule submission. The Narrative Report is expected to communicate to the Government the thorough analysis of the schedule output and the plans to compensate for any problems, either current or potential, which are revealed through that analysis. Include the following information as minimum in the Narrative Report:

- a. Identify and discuss the work scheduled to start in the next update period.
- b. A description of activities along the two most critical paths where the total float is less than or equal to 20 work days.
- c. 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.
- d. Identify and explain why activities based on their calculated late dates should have either started or finished during the update period but did not.
- e. Identify and discuss all schedule changes by activity ID and activity name including what specifically was changed and why the change was needed. Include at a minimum new and deleted activities, logic changes, duration changes, calendar changes, lag changes, resource changes, and actual start and finish date changes.
- f. Identify and discuss out-of-sequence work.

#### 3.5.3 Schedule Reports

The format, filtering, organizing and sorting for each schedule report will be as directed by the Contracting Officer or designated representative. Typically, reports 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. Provide the reports electronically in .pdf format. The following reports are required for schedule submission reviews unless directed otherwise by the Contracting Officer.

##### 3.5.3.1 Activity Report

List of all activities sorted according to activity number.

### 3.5.3.2 Logic Report

List of detailed predecessor and successor activities for every activity in ascending order by activity number.

### 3.5.3.3 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.

### 3.5.3.4 Earnings Report by CLIN

A compilation of the Total Earnings on the project from the NTP to the data date, which reflects the earnings of activities based on the agreements made in the schedule update meeting defined herein. Provided a complete schedule update has been furnished, this report serves as the basis of determining progress payments. Group activities by CLIN number and sort by activity number. Provide a total CLIN percent earned value, CLIN percent complete, and project percent complete. The printed report must contain the following for each activity: the Activity Number, Activity Description, Original Budgeted Amount, Earnings to Date, Earnings this period, Total Quantity, Quantity to Date, and Percent Complete (based on cost).

### 3.5.3.5 Schedule Log

Provide a Scheduling/Leveling Report generated from the current project schedule being submitted.

### 3.5.3.6 Critical Path

Provide an Adobe .pdf report showing the critical path.

### 3.5.4 Network Diagram

The Network Diagram is required for the Preliminary, 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 Contracting Officer will use, but is not limited to, the following conditions to review compliance with this paragraph:

#### 3.5.4.1 Continuous Flow

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.

#### 3.5.4.2 Project Milestone Dates

Show dates on the diagram for start of project, any contract required interim completion dates, and contract completion dates.

#### 3.5.4.3 Critical Path

Show all activities on the critical path. The critical path is defined as the longest path.

#### 3.5.4.4 Banding

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

#### 3.5.4.5 Cash Flow / Schedule Variance Control (SVC) Diagram

With each schedule submission, provide a SVC diagram showing 1) Cash Flow S-Curves indicating planned project cost based on projected early and late activity finish dates, and 2) Earned Value to-date.

### 3.6 PERIODIC SCHEDULE UPDATE

#### 3.6.1 Periodic Schedule Update Meetings

Conduct periodic schedule update meetings for the purpose of reviewing the proposed percent complete, Periodic Schedule Update, Narrative Report, Schedule Reports, and progress payment. Conduct meetings at least monthly and within five days of the proposed schedule data date. The Contractor may be requested to provide a computer with the scheduling software loaded and a projector which allows all meeting participants to view the proposed schedule during the meeting. The Contractor's authorized scheduler must organize, group, sort, filter, perform schedule revisions as needed and review functions as requested by the Contractor and/or Government. The meeting is a working interactive exchange which allows the Government and Contractor the opportunity to review the updated schedule on a real time and interactive basis. The meeting will last no longer than 8 hours. The Contractor's Project Manager and scheduler must attend the meeting with the authorized representative of the Contracting Officer. Superintendents, foremen and major subcontractors must attend the meeting as required to discuss the project schedule and work. Following the periodic schedule update meeting, make updates to the draft submission. Include only those items approved by the Government in the submission. Upon Government approval of the schedule submission, submit an invoice for payment.

#### 3.6.2 Update Submission Following Progress Meeting

Submit the complete Periodic Schedule Update of the Project Schedule containing all approved progress, revisions, and adjustments, pursuant to paragraph SUBMISSION REQUIREMENTS not later than 4 work days after the periodic schedule update meeting.

### 3.7 WEEKLY PROGRESS MEETINGS

Conduct a weekly meeting with the Government (or as otherwise mutually agreed to) between the meetings described in paragraph entitled PERIODIC SCHEDULE UPDATE MEETINGS for the purpose of jointly reviewing the actual progress of the project as compared to the as planned progress and to review planned activities for the upcoming two weeks. Use the current approved schedule update for the purposes of this meeting and for the production and review of reports. At the weekly progress meeting, address the status of RFIs, RFPs and Submittals.

### 3.8 REQUESTS FOR TIME EXTENSIONS

Provide a justification of delay to the Contracting Officer in accordance

with the contract provisions and clauses for approval within 10 days of a delay occurring. Also prepare a time impact analysis for each Government request for proposal (RFP). All time impact analysis must be resource loaded and to the same level of detail as the schedule.

### 3.8.1 Justification of Delay

Provide a description of the event(s) that caused the delay and/or impact to the work. As part of the description, identify all schedule activities impacted. Show that the event that caused the delay/impact was the responsibility of the Government. Provide a time impact analysis that demonstrates the effects of the delay or impact on the project completion date or interim completion date(s). Evaluate multiple impacts chronologically; each with its own justification of delay. With multiple impacts consider any concurrency of delay. A time extension and the schedule fragnet becomes part of the project schedule and all future schedule updates upon approval by the Contracting Officer.

### 3.8.2 Time Impact Analysis (Prospective Analysis)

Prepare a time impact analysis for approval by the Contracting Officer based on industry standard AACE 52R-06. Utilize a copy of the last approved schedule prior to the first day of the impact or delay for the time impact analysis. If Contracting Officer determines the time frame between the last approved schedule and the first day of impact is too great, prepare an interim updated schedule to perform the time impact analysis. Unless approved by the Contracting Officer, no other changes may be incorporated into the schedule being used to justify the time impact.

### 3.8.3 Forensic Schedule Analysis (Retrospective Analysis)

Prepare an analysis for approval by the Contracting Officer based on industry standard AACE 29R-03.

### 3.8.4 Fragmentary Network (Fragnet)

Prepare a proposed fragnet for time impact analysis consisting of a sequence of new activities that are proposed to be added to the project schedule to demonstrate the influence of the delay or impact to the project's contractual dates. Clearly show how the proposed fragnet is to be tied into the project schedule including all predecessors and successors to the fragnet activities. The proposed fragnet must be approved by the Contracting Officer prior to incorporation into the project schedule.

### 3.8.5 Time Extension

The Contracting Officer must approve the Justification of Delay including the time impact analysis before a time extension will be granted. No time extension will be granted unless the delay consumes all available Project Float and extends the projected finish date ("End Project" milestone) beyond the Contract Completion Date. The time extension will be in calendar days.

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 an extension to the performance period, completion date, or any interim milestone date.

### 3.8.6 Impact to Early Completion Schedule

No extended overhead will be paid for delay prior to the original Contract Completion Date for an Early Completion IPS unless the Contractor actually performed work in accordance with that Early Completion Schedule. The Contractor must show that an early completion was achievable had it not been for the impact.

### 3.9 FAILURE TO ACHIEVE PROGRESS

Should the progress fall behind the approved project schedule for reasons other than those that are excusable within the terms of the contract, the Contracting Officer may require provision of a written recovery plan for approval. The plan must detail how progress will be made-up to include which activities will be accelerated by adding additional crews, longer work hours, extra work days, etc.

#### 3.9.1 Artificially Improving Progress

Artificially improving progress by means such as, but not limited to, revising the schedule logic, modifying or adding constraints, shortening activity durations, or changing calendars in the project schedule is prohibited. Indicate assumptions made and the basis for any logic, constraint, duration and calendar changes used in the creation of the recovery plan. Any additional resources, manpower, or daily and weekly work hour changes proposed in the recovery plan must be evident at the work site and documented in the daily report along with the Schedule Narrative Report.

#### 3.9.2 Failure to Perform

Failure to perform work and maintain progress in accordance with the supplemental recovery plan may result in an interim and final unsatisfactory performance rating and may result in corrective action directed by the Contracting Officer pursuant to FAR 52.236-15 Schedules for Construction Contracts, FAR 52.249-10 Default (Fixed-Price Construction), and other contract provisions.

#### 3.9.3 Recovery Schedule

Should the Contracting Officer find it necessary, submit a recovery schedule pursuant to FAR 52.236-15 Schedules for Construction Contracts.

### 3.10 OWNERSHIP OF FLOAT

Except for the provision given in the paragraph IMPACT TO EARLY COMPLETION SCHEDULE, float available in the schedule, at any time, may not be considered for the exclusive use of either the Government or the Contractor including activity and/or project float. Activity float is the number of work days that an activity can be delayed without causing a delay to the "End Project" finish milestone. Project float (if applicable) is the number of work days between the projected early finish and the contract completion date milestone.

### 3.11 TRANSFER OF SCHEDULE DATA INTO RMS

Once the schedule is approved by the Government via submittal or serialized letter, upload the schedule data (SDEF) into the Resident

Management System - Contractor Module (RMS CM) unless directed otherwise by the Contracting Officer. The contractor will then create the invoice and complete the Prompt Payment certificate and submit to the Government. After this is complete, create the invoice, complete the Prompt Payment certificate and submit to the Government. This data is considered to be additional supporting data in a form and detail required by the Contracting Officer pursuant to FAR 52.232-5 Payments under Fixed-Price Construction Contracts and FAR 52.232-27 Prompt Payment for Construction Contracts.

### 3.12 PRIMAVERA P6 MANDATORY REQUIREMENTS

The following settings are mandatory and required in all schedule submissions to the Government, if Primavera P6 is used:

- a. Activity Codes must be Project Level, not Global or EPS level.
- b. Calendars must be Project Level, not Global or Resource level.
- c. Activity Duration Types must be set to "Fixed Duration & Units".
- d. Percent Complete Types must be set to "Physical".
- e. Time Period Admin Preferences must remain the default "8.0 hr/day, 40 hr/week, 172 hr/month, 2000 hr/year". Set Calendar Work Hours/Day to 8.0 Hour days.
- f. Set Schedule Option for defining Critical Activities to "Longest Path".
- g. Set Schedule Option for defining progressed activities to "Retained Logic".
- h. Set up cost loading using a single lump sum labor resource. The Price/Unit must be \$1/hr, Default Units/Time must be "8h/d", and settings "Auto Compute Actuals" and "Calculate costs from units" selected.
- i. Activity ID's must not exceed 10 characters.
- j. Activity Names must have the most defining and detailed description within the first 30 characters.

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## SECTION 01 33 00

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## SECTION 01 33 00

## SUBMITTAL PROCEDURES

## PART 1 GENERAL

## 1.1 SUMMARY

## 1.1.1 Submittal Information

The Contractor is responsible for total management of their work including, but not limited to, approval, scheduling, control, certification of all submittals and compliance with all applicable Buy-American and Trade Agreement clauses. The submittal management system provided in these specifications is intended to be a complete system for the Contractor to use to control the quality of materials, equipment and workmanship provided by manufacturers, fabricators, suppliers and subcontractors. Review each submittal for contract compliance.

**Compliance with all applicable Buy American and Trade Agreement Clauses is to be included in this review. The Contractor must provide the country of origin on ENG Form 4025 for each item submitted.** The Submittal Register (ENG Form 4288) will be utilized to log and monitor all submittal activities.

The Contracting Officer may request submittals, in addition to those specified, when deemed necessary to adequately describe the work covered in the respective sections. Each submittal is to be complete and in sufficient detail to allow ready determination of compliance with contract requirements.

Units of weights and measures used on all submittals are to be the same as those used in the contract drawings.

## 1.1.2 Project Type

The Contractor's Quality Control (CQC) System Manager is to check and approve all items before submittal and stamp, sign, and date indicating action taken. Clearly identify proposed deviations from the contract requirements. Include within submittals 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 items.

## 1.1.3 Submission of Submittals

Schedule and provide submittals requiring Government approval, after notice to proceed (NTP). Provide ample lead time to ensure the submittal's processing by the Government and any lead time needed by the manufacturer upon ordering after approval. 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.

## 1.2 DEFINITIONS

### 1.2.1 Submittal Descriptions (SD)

Submittal requirements are specified in the technical sections. Examples and descriptions of submittals identified by the Submittal Description (SD) numbers and titles follow:

#### SD-01 Preconstruction Submittals

Submittals that are required prior to or at the start of construction (work) or the next major phase of the construction on a multiphase contract.

Preconstruction Submittals include schedules and a tabular list of locations, features, and other pertinent information regarding products, materials, equipment, or components to be used in the work.

The Government reserves the right to handle pre-construction submittals (listed below) as administrative submittals via a Serial Letter, as directed by the Project, Area or Resident Office. When directed by the Project, Area or Resident Office (as directed), submit administrative submittals for acceptance by the Government. Format for the Serial Letter will be as directed by the Project, Area or Resident Office.

Certificates Of Insurance

Surety Bonds

List Of Proposed Subcontractors

List Of Proposed Products

Baseline Network Analysis Schedule (NAS)

Submittal Register

Schedule Of Prices Or Earned Value Report

Accident Prevention Plan

Work Plan

Quality Control (QC) plan

Permits

Environmental Protection Plan

#### SD-02 Shop Drawings

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

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.

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

#### SD-03 Product Data

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.

Samples of warranty language when the contract requires extended product warranties.

#### SD-04 Samples

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.

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.

Field samples and mock-ups constructed on the project site establish standards ensuring work can be judged. Includes assemblies or portions of assemblies that are to be incorporated into the project and those that 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

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 accord with specified requirements. Unless specified in another section, testing must have been within three years of date of contract award for the project.

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

Report that 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.

Investigation reports

Daily logs and checklists

Final acceptance test and operational test procedure

#### SD-07 Certificates

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

Document required of Contractor, or of a manufacturer, supplier, installer or Subcontractor through Contractor. The document purpose is to further promote the orderly progression of a portion of the work by documenting procedures, acceptability of methods, or personnel qualifications.

Confined space entry permits

Text of posted operating instructions

#### SD-08 Manufacturer's Instructions

Preprinted material describing installation of a product, system or material, including special notices and (SDS) concerning impedances, hazards and safety precautions.

#### SD-09 Manufacturer's Field Reports

Documentation of the testing and verification actions taken by manufacturer's representative at the job site, in the vicinity of the job site, or on a sample taken from the job site, on a portion of the work, during or after installation, to confirm compliance with manufacturer's standards or instructions. The documentation must be signed by an authorized official of a testing laboratory or agency and state the test results; and indicate whether the material, product, or system has passed or failed the test.

Factory test reports.

#### SD-10 Operation and Maintenance Data

Data provided by the manufacturer, or the system provider, including manufacturer's help and product line documentation, necessary to maintain and install equipment, for operating and maintenance use by facility personnel.

Data required by operating and maintenance personnel for the safe and efficient operation, maintenance and repair of the item.

Data incorporated in an operations and maintenance manual or control system.

#### SD-11 Closeout Submittals

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

Submittals required for Guiding Principle Validation (GPV) or Third Party Certification (TPC).

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

submittal requirements necessary to properly close out a major phase of construction on a multi-phase contract.

1.2.2 Approving Authority

Office or designated person authorized to approve the submittal.

1.2.3 Work

As used in this section, on-site and off-site construction required by contract documents, including labor necessary to produce submittals, construction, materials, products, equipment, and systems incorporated or to be incorporated in such construction. In exception, excludes work to produce SD-01 submittals.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having any 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 this section. When directed by the Government, the submittal register may be submitted via Section of 01 45 00.15 10 RESIDENTIAL MANAGMENT SYSTEM CONTRACTOR MODE (RMS-CM) in lieu of the copy attached to this section. SpecsIntact is the software system used by Government to generate the Submittal Register that is loaded into RMS-CM.

SD-01 Preconstruction Submittals

Submittal Register; G-AO

1.3.1 Action Codes

1.3.1.1 Contractor Action Codes

DESIGN BID BUILD SUBMITTALS			
Submittal Classifications shown in UFGS Sections	Submittal Classification	Corresponding SpecsIntact Submittal Register Code which is populated in the SI Submittal Register. Software Limitations: (The software shows one character delineation in the SpecsIntact Submittal Register)	RMS - The following Submittal Classifications are populated in RMS when the SpecsIntact Submittal Data File is pulled into RMS)
G	Submittal requires Government Approval	G	GA

DESIGN BID BUILD SUBMITTALS			
BLANK	Submittal is For Information Only (FIO)	BLANK	FIO

1.3.1.2 Government Reviewer Designations

Following the Submittal Classification designation "G", the following reviewer designations may be included:

- RO - Resident Office
- AO - Area Office
- DO - District Office

Additional information will be provided at the pre-design and/or pre-construction conference.

1.4 SUBMITTAL CLASSIFICATION

1.4.1 Government Approved (G)

Government approval is required for extensions of design, critical materials, variations, equipment whose compatibility with the entire system must be checked, and other items as designated by the Government.

Within the terms of the Contract Clause SPECIFICATIONS AND DRAWINGS FOR CONSTRUCTION, submittals are considered to be "shop drawings."

1.4.2 For Information Only

Submittals not requiring Government approval will be for information only. Within the terms of the Contract Clause SPECIFICATIONS AND DRAWINGS FOR CONSTRUCTION, they are not considered to be "shop drawings."

1.5 PREPARATION

1.5.1 Transmittal Form

Use the ENG Form 4025 transmittal form for submitting both Government-approved and information-only submittals. Submit 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. Properly complete this form by filling out all the heading blank spaces and identifying each item submitted. If there are multiple Item numbers listed on a particular ENG Form 4025 submittal, combine all submitted items for review into a single Adobe file with bookmarks (for ease of review). Exercise special care to ensure proper listing of the specification paragraph and sheet number of the contract drawings pertinent to the data submitted for each item.

### 1.5.2 Submittal Format

#### 1.5.2.1 Format of SD-01 Preconstruction Submittals

When the submittal includes a document that is to be used in the project, or is to become part of the project record, other than as a submittal, do not apply the Contractor's approval stamp to the document itself, but to a separate sheet accompanying the document.

Provide data in the unit of measure used in the contract documents.

#### 1.5.2.2 Format for SD-02 Shop Drawings

Provide shop drawings not less than 8 1/2 by 11 inches nor more than 30 by 42 inches, except for full-size patterns or templates. Prepare drawings to accurate size, with scale indicated, unless another form is required. Ensure drawings are suitable for reproduction and of a quality to produce clear, distinct lines and letters, with dark lines on a white background.

- a. Include the nameplate data, size, and capacity on drawings. Also include applicable federal, military, industry, and technical society publication references.
- b. Dimension drawings, except diagrams and schematic drawings. Prepare drawings demonstrating interface with other trades to scale. Use the same unit of measure for shop drawings as indicated on the contract drawings. Identify materials and products for work shown.

Submit an electronic copy of drawings in PDF format.

##### 1.5.2.2.1 Drawing Identification

Include on each drawing the drawing title, number, date, and revision numbers and dates, in addition to information required in paragraph IDENTIFYING SUBMITTALS.

Number drawings in a logical sequence. Each drawing is to bear the number of the submittal in a uniform location next to the title block. Place the Government contract number in the margin, immediately below the title block, for each drawing.

#### 1.5.2.3 Format of SD-03 Product Data

Present product data submittals for each section. Include a table of contents, listing the page and catalog item numbers for product data.

Indicate, by prominent notation, each product that is being submitted; indicate the specification section number and paragraph number to which it pertains.

##### 1.5.2.3.1 Product Information

Supplement product data with material prepared for the project to satisfy the submittal requirements where product data does not exist. Identify this material as developed specifically for the project, with information and format as required for submission of SD-07 Certificates.

Provide product data in units used in the Contract documents. Where product data are included in preprinted catalogs with another unit, submit

the dimensions in contract document units, on a separate sheet.

#### 1.5.2.3.2 Standards

Where equipment or materials are specified to conform to industry or technical-society reference standards of such organizations as the American National Standards Institute (ANSI), ASTM International (ASTM), National Electrical Manufacturer's Association (NEMA), Underwriters Laboratories (UL), or Association of Edison Illuminating Companies (AEIC), submit proof of such compliance. The label or listing by the specified organization will be acceptable evidence of compliance. In lieu of the label or listing, submit a certificate from an independent testing organization, competent to perform testing, and approved by the Contracting Officer. State on the certificate that the item has been tested in accordance with the specified organization's test methods and that the item complies with the specified organization's reference standard.

#### 1.5.2.3.3 Data Submission

Collect required data submittals for each specific material, product, unit of work, or system into a single submittal that is marked for choices, options, and portions applicable to the submittal. Mark each copy of the product data identically. Partial submittals will not be accepted for expedition of the construction effort.

Submit the manufacturer's instructions before installation.

#### 1.5.2.4 Format of SD-04 Samples

##### 1.5.2.4.1 Sample Characteristics

Furnish samples in the following sizes, unless otherwise specified or unless the manufacturer has prepackaged samples of approximately the same size as specified:

- a. Sample of Equipment or Device: Full size.
- b. Sample of Materials Less Than 2 by 3 inches: Built up to 8 1/2 by 11 inches.
- c. Sample of Materials Exceeding 8 1/2 by 11 inches: Cut down to 8 1/2 by 11 inches and adequate to indicate color, texture, and material variations.
- d. Sample of Linear Devices or Materials: 10 inch length or length to be supplied, if less than 10 inches. Examples of linear devices or materials are conduit and handrails.
- e. Sample Volume of Nonsolid Materials: Pint. Examples of nonsolid materials are sand and paint.
- f. Color Selection Samples: 2 by 4 inches. Where samples are specified for selection of color, finish, pattern, or texture, submit the full set of available choices for the material or product specified. Sizes and quantities of samples are to represent their respective standard unit.
- g. Sample Panel: 4 by 4 feet.

h. Sample Installation: 100 square feet.

#### 1.5.2.4.2 Sample Incorporation

Reusable Samples: Incorporate returned samples into work only if so specified or indicated. Incorporated samples are to be in undamaged condition at the time of use.

Recording of Sample Installation: Note and preserve the notation of any area constituting a sample installation, but remove the notation at the final clean-up of the project.

#### 1.5.2.4.3 Comparison Sample

Samples Showing Range of Variation: Where variations in color, finish, pattern, or texture are unavoidable due to nature of the materials, submit sets of samples of not less than three units showing extremes and middle of range. Mark each unit to describe its relation to the range of the variation.

When color, texture, or pattern is specified by naming a particular manufacturer and style, include one sample of that manufacturer and style, for comparison.

#### 1.5.2.5 Format of SD-05 Design Data

Provide design data and certificates on 8 1/2 by 11 inch page size.

#### 1.5.2.6 Format of SD-06 Test Reports

By prominent notation, indicate each report in the submittal. Indicate the specification number and paragraph number to which each report pertains.

#### 1.5.2.7 Format of SD-07 Certificates

Provide design data and certificates on 8 1/2 by 11 inch page size.

#### 1.5.2.8 Format of SD-08 Manufacturer's Instructions

Present manufacturer's instructions submittals for each section. Include the manufacturer's name, trade name, place of manufacture, and catalog model or number on product data. Also include applicable federal, military, industry, and technical-society publication references. If supplemental information is needed to clarify the manufacturer's data, submit it as specified for SD-07 Certificates.

Submit the manufacturer's instructions before installation.

#### 1.5.2.8.1 Standards

Where equipment or materials are specified to conform to industry or technical-society reference standards of such organizations as the American National Standards Institute (ANSI), ASTM International (ASTM), National Electrical Manufacturer's Association (NEMA), Underwriters Laboratories (UL), or Association of Edison Illuminating Companies (AEIC), submit proof of such compliance. The label or listing by the specified organization will be acceptable evidence of compliance. In lieu of the

label or listing, submit a certificate from an independent testing organization, competent to perform testing, and approved by the Contracting Officer. State on the certificate that the item has been tested in accordance with the specified organization's test methods and that the item complies with the specified organization's reference standard.

#### 1.5.2.9 Format of SD-09 Manufacturer's Field Reports

By prominent notation, indicate each report in the submittal. Indicate the specification number and paragraph number to which each report pertains.

#### 1.5.2.10 Format of SD-10 Operation and Maintenance Data (O&M)

Comply with the requirements specified in Section 01 78 23 OPERATION AND MAINTENANCE DATA for O&M Data format.

#### 1.5.2.11 Format of SD-11 Closeout Submittals

When the submittal includes a document that is to be used in the project or is to become part of the project record, other than as a submittal, do not apply the Contractor's approval stamp to the document itself, but to a separate sheet accompanying the document.

Provide data in the unit of measure used in the contract documents.

### 1.5.3 Source Drawings for Shop Drawings

#### 1.5.3.1 Source Drawings

The entire set of source drawing files (DWG or DGN) will not be provided to the Contractor. Request the specific Drawing Number for the preparation of shop drawings. Only those drawings requested to prepare shop drawings will be provided. These drawings are provided only after award.

#### 1.5.3.2 Terms and Conditions

Data contained on these electronic files must not be used for any purpose other than as a convenience in the preparation of construction data for the referenced project. Any other use or reuse is at the sole risk of the Contractor and without liability or legal exposure to the Government. The Contractor must make no claim, and waives to the fullest extent permitted by law any claim or cause of action of any nature against the Government, its agents, or its subconsultants that may arise out of or in connection with the use of these electronic files. The Contractor must, to the fullest extent permitted by law, indemnify and hold the Government harmless against all damages, liabilities, or costs, including reasonable attorney's fees and defense costs, arising out of or resulting from the use of these electronic files.

These electronic source drawing files are not construction documents. Differences may exist between the source drawing files and the corresponding construction documents. The Government makes no representation regarding the accuracy or completeness of the electronic source drawing files, nor does it make representation to the compatibility of these files with the Contractor hardware or software. The Contractor is responsible for determining if any conflict exists. In the event that

a conflict arises between the signed and sealed construction documents prepared by the Government and the furnished source drawing files, the signed and sealed construction documents govern. Use of these source drawing files does not relieve the Contractor of the duty to fully comply with the contract documents, including and without limitation the need to check, confirm and coordinate the work of all contractors for the project. If the Contractor uses, duplicates or modifies these electronic source drawing files for use in producing construction data related to this contract, remove all previous indication of ownership (seals, logos, signatures, initials and dates).

#### 1.5.4 Electronic File Format

Provide submittals in electronic format, with the exception of material samples required for SD-04 Samples items. Compile the submittal file as a single, complete document, to include the Transmittal Form described within. Name the electronic submittal file specifically according to its contents, and coordinate the file naming convention with the Contracting Officer. Electronic files must be of sufficient quality that all information is legible. Use PDF as the electronic format, unless otherwise specified or directed by the Contracting Officer. All documents must make use of optical character recognition (OCR) routines to make text searchable and selectable, so that the text can be copied. Index and bookmark files exceeding 30 pages to allow efficient navigation of the file. When required, the electronic file must include a valid electronic signature.

E-mail electronic submittal documents smaller than 10MB to an e-mail address as directed by the Contracting Officer, unless directed otherwise by COR. Provide electronic documents over 10 MB on an optical disc or through an electronic file sharing system, such as secure ftp site or DoD SAFE located at the following website: <https://safe.apps.mil/>. Use of the Government web application must be initiated by the Government, unless Contractor has a Government CAC card. This Government web application restricts the number of days files are available to download.

#### 1.6 QUANTITY OF SUBMITTALS

Submittals are to be transmitted electronically, unless directed otherwise.

##### 1.6.1 Number of SD-04 Samples

- a. Submit two samples, or two sets of samples showing the range of variation, of each required item. One approved sample or set of samples will be retained by the approving authority and one will be returned to the Contractor.
- b. Submit one sample panel or provide one sample installation where directed. Include components listed in the technical section or as directed.
- c. Submit one sample installation, where directed.
- d. Submit one sample of nonsolid materials.

#### 1.7 INFORMATION ONLY SUBMITTALS

Submittals without an action code must be certified by the QC manager and submitted to the Contracting Officer for information-only. Approval of

the Contracting Officer is not required on information only submittals. The Contracting Officer will mark "receipt acknowledged" on submittals for information and will return only the transmittal cover sheet to the Contractor. Normally, submittals for information only will not be returned. However, the Government reserves the right to return unsatisfactory submittals and 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 Contracting Officer 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.

#### 1.8 PROJECT SUBMITTAL REGISTER

A sample Project Submittal Register showing submittals required by the specifications is attached to this section as "Project Submittal Register."

##### 1.8.1 Submittal Management

Prepare and maintain a submittal register, as the work progresses. Do not change data that is output in columns (c), (d), (e), and (f) as delivered by Government; retain data that is output in columns (a), (g), (h), and (i) as approved. As an attachment, provide a submittal register showing items of equipment and materials for which submittals are required by the specifications. This list may not be all-inclusive and additional submittals may be required. Maintain a submittal register for the project in accordance with Section 01 45 00.15 10 RESIDENT MANAGEMENT SYSTEM CONTRACTOR MODE(RMS CM). The Government will provide the initial 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 Number. and type, e.g., SD-02 Shop Drawings) required in each specification section.

Column (e): Lists one principal paragraph in each 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 the project requirements.

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

##### 1.8.2 Preconstruction Use of Submittal Register

Submit the submittal register as an electronic database, using the submittal management program furnished to Contractor, unless directed otherwise by COR. Include the QC plan and the project schedule. Verify that all submittals required for the project are listed and add missing

submittals. Coordinate and complete the following fields on the register database submitted with the QC plan and the project schedule:

Column (a) Activity Number: Activity number from the project schedule.

Column (g) Contractor Submit Date: Scheduled date for the approving authority to receive submittals.

Column (h) Contractor Approval Date: Date that Contractor needs approval of submittal.

Column (i) Contractor Material: Date that Contractor needs material delivered to Contractor control.

#### 1.8.3 Contractor Use of Submittal Register

Update the following fields in the Government-furnished submittal register program or equivalent fields in the program used by the Contractor with each submittal throughout the contract.

Column (b) Transmittal Number: List of consecutive, Contractor-assigned numbers.

Column (j) Action Code (k): Date of action used to record Contractor's review when forwarding submittals to QC.

Column (l) Date submittal transmitted.

Column (q) Date approval was received.

#### 1.8.4 Approving Authority Use of Submittal Register

Update the following fields:

Column (b) Transmittal Number: List of consecutive, Contractor-assigned numbers.

Column (l) Date submittal was received.

Column (m) through (p) Dates of review actions.

Column (q) Date of return to Contractor.

#### 1.8.5 Action Codes

See paragraph Action Codes above.

#### 1.8.6 Delivery of Copies

Submit an updated electronic copy of the submittal register to the Contracting Officer with each invoice request, unless a paper copy is requested by the Contracting Officer. Provide an updated Submittal Register monthly regardless of whether an invoice is submitted.

#### 1.9 VARIATIONS

Variations from contract requirements require Contracting Officer approval pursuant to contract Clause FAR 52.236-21 Specifications and Drawings for

Construction, and will be considered where advantageous to the Government.

#### 1.9.1 Considering Variations

Discussion of variations with the Contracting Officer before submission will help ensure that functional and quality requirements are met and minimize rejections and resubmittals. For variations that include design changes or some material or product substitutions, the Government may require an evaluation and analysis by a licensed professional engineer hired by the contractor. When contemplating a variation that results in lower cost, consider submission of the variation as a Value Engineering Change Proposal (VECP).

Specifically point out variations from contract requirements in transmittal letters. Failure to point out variations may cause the Government to require rejection and removal of such work at no additional cost to the Government.

#### 1.9.2 Proposing Variations

When proposing variations, deliver a written request to the Contracting Officer, with documentation of the nature and features of the variation and why the variation is desirable and beneficial to Government. If lower cost is a benefit, also include an estimate of the cost savings. In addition to documentation required for variation, include the submittals required for the item. Clearly mark the proposed variation in all documentation.

Check the column "variation" of ENG Form 4025 for submittals that include variations proposed by the Contractor. Set forth in writing the reason for any variations and note such variations on the submittal. The Government reserves the right to rescind inadvertent approval of submittals containing unnoted variations.

#### 1.9.3 Warranting that Variations are Compatible

When delivering a variation for approval, the Contractor warrants that this contract has been reviewed to establish that the variation, if incorporated, will be compatible with other elements of work.

#### 1.9.4 Review Schedule Extension

In addition to the normal submittal review period, a period of 14 calendar days will be allowed for the Government to consider submittals with variations.

#### 1.10 SCHEDULING

Schedule and submit concurrently product data and shop drawings covering component items forming a system or items that are interrelated. Submit pertinent certifications at the same time. 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. The Contractor is responsible for additional time required for Government reviews resulting from required resubmittals. The review period for each resubmittal is the same as for the initial submittal.

- b. Submittals required by the contract documents are listed on the submittal register. If a submittal is listed in the submittal register but does not pertain to the contract work, the Contractor is to include the submittal in the register and annotate it "N/A" with a brief explanation. Approval by the Contracting Officer does not relieve the Contractor of supplying submittals required by the contract documents but that have been omitted from the register or marked "N/A."
- c. Resubmit the submittal register and annotate it monthly with actual submission and approval dates. When all items on the register have been fully approved, no further resubmittal is required.

Contracting Officer review will be completed within 20 calendar days after the date of submission.

The Government review period for each construction submittal does not begin until the submittal is delivered via RMS CM. Contract compliance for all submittals are the Contractor's responsibility. Government acceptance or receipt acknowledged does not remove this responsibility for contract compliance on any construction submittal.

#### 1.11 GOVERNMENT APPROVING AUTHORITY

When the approving authority is the Contracting Officer, the Government will:

- a. Note the date on which the submittal was received.
- b. Review submittals for approval within the scheduling period specified and only for conformance with project design concepts and compliance with contract documents.
- c. Identify returned submittals with one of the actions defined in paragraph REVIEW NOTATIONS and with comments and markings appropriate for the action indicated.

Upon completion of review of submittals requiring Government approval, stamp and date submittals. An electronic copy of the submittal will be retained by the Contracting Officer and an electronic copy of the submittal will be returned to the Contractor. The Government may process submittals in the RMS CM System.

##### 1.11.1 Review Notations

Submittals will be returned to the Contractor with the following notations:

- a. Submittals marked "approved" or "accepted" authorize proceeding with the work covered.
- b. Submittals marked "approved as noted" or "approved, except as noted, resubmittal not required," authorize proceeding with the work covered provided that the Contractor takes no exception to the corrections.
- c. Submittals marked "not approved," "disapproved," or "revise and resubmit" indicate incomplete submittal or noncompliance with the contract requirements or design concept. Resubmit with appropriate changes. Do not proceed with work for this item until the resubmittal

is approved.

- d. Submittals marked "not reviewed" indicate that the submittal has been previously reviewed and approved, is not required, does not have evidence of being reviewed and approved by Contractor, or is not complete. A submittal marked "not reviewed" will be returned with an explanation of the reason it is not reviewed. Resubmit submittals returned for lack of review by Contractor or for being incomplete, with appropriate action, coordination, or change.
- e. Submittals marked "receipt acknowledged" indicate that submittals have been received by the Government. This applies only to "information-only submittals" as previously defined.

#### 1.12 DISAPPROVED SUBMITTALS

Make corrections required by the Contracting Officer. If the Contractor considers any correction or notation on the returned submittals to constitute a change to the contract drawings or specifications, give notice to the Contracting Officer as required under the FAR clause titled CHANGES. The Contractor is responsible for the dimensions and design of connection details and the construction of work. Failure to point out variations may cause the Government to require rejection and removal of such work at the Contractor's expense.

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

#### 1.13 APPROVED SUBMITTALS

The Contracting Officer's approval of submittals is not to be construed as a complete check, and indicates only that the general method of construction, materials, detailing, and other information are satisfactory.

Approval or acceptance by the Government for a submittal does not relieve the Contractor of the responsibility for meeting the contract requirements or for any error that may exist, because under the Quality Control (QC) requirements of this contract, the Contractor is responsible for ensuring information contained within each submittal accurately conforms with the requirements of the contract documents.

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

#### 1.14 APPROVED SAMPLES

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

Match the approved samples for materials and equipment incorporated in the

work. If requested, approved samples, including those that may be damaged in testing, will be returned to the Contractor, at its expense, upon completion of the contract. Unapproved samples will also be returned to the Contractor at its expense, if so requested.

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 as that material. The Government reserves the right to disapprove any material or equipment that has previously proved unsatisfactory in service.

Samples of various materials or equipment delivered on the site or in place may be taken by the Contracting Officer for testing. Samples failing to meet contract requirements will automatically void previous approvals. Replace such materials or equipment to meet contract requirements.

1.15 WITHHOLDING OF PAYMENT

Payment for materials incorporated in the work will not be made if required approvals have not been obtained.

1.16 CERTIFICATION OF SUBMITTAL DATA

Certify the submittal data as follows on Form ENG 4025: "I certify that the above submitted items had been reviewed in detail and are correct and in strict conformance with the contract drawings and specifications except as otherwise stated.

\_\_\_\_\_NAME OF CONTRACTOR \_\_\_\_\_ SIGNATURE OF CONTRACTOR

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

-- End of Section --

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**SUBMITTAL REGISTER**

CONTRACT NO. \_\_\_\_\_

TITLE AND LOCATION  
**BB Intake Crane Rail Replacement Big Bend Dam, South Dakota**

CONTRACTOR \_\_\_\_\_

ACTIVITY NO	TRANSMITTAL NO	SPEC SECT	DESCRIPTION ITEM SUBMITTED	PARAGRAPH	GOVT CLASSIFICATION	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
		01 12 00	SD-01 Preconstruction Submittals															
			Proposed Methods of Operation		G AO													
			Construction Right-of-Way	1.2														
			State and Federal Highways	1.7.6														
			State and Local Public Roads	1.7.7														
			Temporary Traffic Control (TTC)	1.7.3	G AO													
			SD-02 Shop Drawings															
			Care of Water	1.4	G AO													
			SD-11 Closeout Submittals															
			Warranty of Construction	1.11														
		01 30 00.24	SD-01 Preconstruction Submittals															
			AT Level I Training Sign In Sheets		G PO													
			Security Personnel List		G PO													
			iWATCH and/or CorpsWatch Training Sign In Sheets															
			E-Verify															
		01 32 01.00 10	SD-01 Preconstruction Submittals															
			Project Scheduler Qualifications	1.3	G AO													
			Preliminary Project Schedule	3.4.1	G AO													
			Initial Project Schedule	3.4.2	G AO													
			Periodic Schedule Update	3.6.2	G AO													
		01 33 00	SD-01 Preconstruction Submittals															
			Submittal Register	1.8	G AO													
		01 35 26	SD-01 Preconstruction Submittals															

**SUBMITTAL REGISTER**

CONTRACT NO.

TITLE AND LOCATION

BB Intake Crane Rail Replacement Big Bend Dam, South Dakota

CONTRACTOR

ACTIVITY NO	TRANSMITTAL NO	SPEC SECT	DESCRIPTION ITEM SUBMITTED	PARAGRAPH	GOVT CLASSIFICATION	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
		01 35 26	ACCIDENT PREVENTION PLAN (APP)	1.7.1	G AO													
			SD-06 Test Reports															
			Monthly Exposure Reports	1.4														
			Notifications and Reports	1.12														
			Accident Reports	1.12.2	G AO													
			LHE Inspection Reports	1.12.3														
			SD-07 Certificates															
			Crane Operators/Riggers	1.6.1.4														
			Standard Lift Plan	1.7.3.1	G AO													
			Critical Lift Plan	1.7.3.2	G AO													
			Activity Hazard Analysis (AHA)	1.8														
			Hot Work Permit	1.9.1														
			Certificate of Compliance	1.12.4														
			License Certificates	1.14														
		01 45 00.00 10	SD-01 Preconstruction Submittals															
			Contractor Quality Control (CQC) Plan	3.2	G AO													
			SD-06 Test Reports															
			Verification Statement	3.9														
		01 57 20.00 10	SD-01 Preconstruction Submittals															
			Environmental Protection Plan	1.7	G													
		01 78 39.00 24	SD-03 Product Data															
			100 Percent Preliminary As-Built Drawings	1.7.2	G DO													
			SD-11 Closeout Submittals															

**SUBMITTAL REGISTER**

CONTRACT NO.

TITLE AND LOCATION

BB Intake Crane Rail Replacement Big Bend Dam, South Dakota

CONTRACTOR

ACTIVITY NO	TRANSMITTAL NO	SPEC SECT	DESCRIPTION ITEM SUBMITTED	PARAGRAPH	GOVT CLASSIFICATION	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
		01 78 39.00 24	Final As-Built Drawings	1.7.3	G DO												
		03 60 00.01 26	SD-01 Preconstruction Submittals														
			Removal and Disposal Plan	3.4.1	G HDC												
			Saw Cutting Procedure	3.4.3	G HDC												
			Core Drilling Procedure	3.4.4	G HDC												
			Concrete Imaging Report	3.4.8	G HDC												
			Repair Procedure of Concrete Surfaces	3.4.12	G HDC												
			SD-06 Test Reports														
			Preliminary ground wire investigations	3.4.1	G HDC												
		41 22 14.33 26	SD-01 Preconstruction Submittals														
			Rail Replacement Work Plan	1.6	G HDC												
			Initial Visual Inspection And Rail Alignment Survey Report	1.7	G HDC												
			SD-02 Shop Drawings														
			Shop Drawings	1.5	G HDC												
			New Anchor Bolt	3.3.1													
			SD-03 Product Data														
			Crane Rail	2.1.1	G HDC												
			Rail clips	2.1.2	G HDC												
			Nuts and Washers	2.1.2	G HDC												
			Joint bars	2.1.3	G HDC												
			Crane Rail Joint Bar Bolts, Nuts, And Washers	2.1.4	G HDC												

# SUBMITTAL REGISTER

CONTRACT NO.

TITLE AND LOCATION

BB Intake Crane Rail Replacement Big Bend Dam, South Dakota

CONTRACTOR

ACTIVITY NO	TRANSMITTAL NO	SPEC SECT	DESCRIPTION ITEM SUBMITTED	PARAGRAPH	GOVT CLASSIFICATION	CONTRACTOR: SCHEDULE DATES			CONTRACTOR ACTION		APPROVING AUTHORITY					REMARKS		
						SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	ACTION CODE	DATE OF ACTION	DATE FWD TO APPR AUTH/ 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	
																		(g)
		41 22 14.33 26	exothermic weld kit, equipment, and manufacturer's instructions;	3.5.4	G HDC													
			Base Plate	2.2.1	G HDC													
			Non-shrink Grout	2.2.2	G HDC													
			Polyurethane Grout	2.2.5.1	G HDC													
			Polyurethane Grout Primer	2.2.5.2	G HDC													
			Concrete Anchor Bolts	2.2.3	G HDC													
			Epoxy Adhesive For Concrete Anchors	2.2.4	G HDC													
			Closed-Cell Backer Rod	2.3.1	G													
			Low Pressure Injected Elastomeric Polyurethane	2.3.2	G HDC													
			Elastomeric Polyurethane Sealant	2.3.3	G HDC													
			SD-06 Test Reports															
			Rail Alignment And Visual Inspection Prior To Grout Placement	3.9.1	G HDC													
			Completion Alignment Survey and Report	3.9.4	G HDC													
			Grout Inspection And Grout Testing	3.9.2	G HDC													
			Concrete Repair And Anchor Location Inspection Report	3.3.1														
			Operational Test Report After Completion Of Rail Installation	3.9.3	G HDC													

U.S. Army Corps of Engineers (USACE) <b>TRANSMITTAL OF SHOP DRAWINGS, EQUIPMENT DATA, MATERIAL SAMPLES, OR          MANUFACTURER'S CERTIFICATES OF COMPLIANCE</b> For use of this form, see ER 415-1-10; the proponent agency is CECW-CE.	DATE	TRANSMITTAL NO.
---	------	-----------------

**SECTION I - REQUEST FOR APPROVAL OF THE FOLLOWING ITEMS** *(This section will be initiated by the contractor)*

TO:	FROM:	CONTRACT NO.	CHECK ONE: <input type="checkbox"/> THIS IS A NEW TRANSMITTAL <input type="checkbox"/> THIS IS A RESUBMITTAL OF TRANSMITTAL _____
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SPECIFICATION SEC. NO. <i>(Cover only one section with each transmittal)</i>	PROJECT TITLE AND LOCATION	THIS TRANSMITTAL IS FOR: <i>(Check one)</i> <input type="checkbox"/> FIO <input type="checkbox"/> GA <input type="checkbox"/> DA <input type="checkbox"/> CR <input type="checkbox"/> DA/CR <input type="checkbox"/> DA/GA
--	----------------------------	---

ITEM NO. <small>(See Note 3)</small>  a.	DESCRIPTION OF SUBMITTAL ITEM <small>(Type size, model number/etc.)</small>  b.	SUBMITTAL TYPE CODE <small>(See Note 8)</small>  c.	NO. OF COPIES  d.	CONTRACT DOCUMENT REFERENCE		CONTRACTOR REVIEW CODE  g.	VARIATION <small>Enter "Y" if requesting a variation (See Note 6)</small>  h.	USACE ACTION CODE <small>(Note 9)</small>  i.
				SPEC. PARA. NO.  e.	DRAWING SHEET NO.  f.			

REMARKS	I certify that the above submitted items had been reviewed in detail and are correct and in strict conformance with the contract drawings and specifications except as otherwise stated.		
	<table style="width:100%;"> <tr> <td style="width:50%;">NAME OF CONTRACTOR</td> <td style="width:50%;">SIGNATURE OF CONTRACTOR</td> </tr> </table>	NAME OF CONTRACTOR	SIGNATURE OF CONTRACTOR
NAME OF CONTRACTOR	SIGNATURE OF CONTRACTOR		

**SECTION II - APPROVAL ACTION**

ENCLOSURES RETURNED <i>(List by item No.)</i>	NAME AND TITLE OF APPROVING AUTHORITY	SIGNATURE OF APPROVING AUTHORITY	DATE
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## INSTRUCTIONS

1. Section I will be initiated by the Contractor in the required number of copies.
2. Each Transmittal shall be numbered consecutively. The Transmittal Number typically includes two parts separated by a dash (-). The first part is the specification section number. The second part is a sequential number for the submittals under that spec section. If the Transmittal is a resubmittal, then add a decimal point to the end of the original Transmittal Number and begin numbering the resubmittal packages sequentially after the decimal.
3. The "Item No." for each entry on this form will be the same "Item No." as indicated on ENG FORM 4288-R.
4. Submittals requiring expeditious handling will be submitted on a separate ENG Form 4025-R.
5. Items transmitted on each transmittal form will be from the same specification section. Do not combine submittal information from different specification sections in a single transmittal.
6. If the data submitted are intentionally in variance with the contract requirements, indicate a variation in column h, and enter a statement in the Remarks block describing the detailed reason for the variation.
7. ENG Form 4025-R is self-transmitting - a letter of transmittal is not required.
8. When submittal items are transmitted, indicate the "Submittal Type" (*SD-01 through SD-11*) in column c of Section I.  
Submittal types are the following:  
SD-01 - Preconstruction      SD-02 - Shop Drawings      SD-03 - Product Data      SD-04 - Samples      SD-05 - Design Data      SD-06 - Test Reports  
SD-07 - Certificates      SD-08 - Manufacturer's Instructions      SD-09 - Manufacturer's Field Reports      SD-10 - O&M Data      SD-11 - Closeout
9. For each submittal item, the Contractor will assign Submittal Action Codes in column g of Section I. The U.S. Army Corps of Engineers approving authority will assign Submittal Action Codes in column i of Section I. The Submittal Action Codes are:  

A -- Approved as submitted.	F -- Receipt acknowledged.
B -- Approved, except as noted on drawings. Resubmission not required.	X -- Receipt acknowledged, does not comply with contract requirements, as noted.
C -- Approved, except as noted on drawings. Refer to attached comments. Resubmission required.	G -- Other action required ( <i>Specify</i> )
D -- Will be returned by separate correspondence.	K -- Government concurs with intermediate design. ( <i>For D-B contracts</i> )
E -- Disapproved. Refer to attached comments.	R -- Design submittal is acceptable for release for construction. ( <i>For D-B contracts</i> )
10. Approval of items does not relieve the contractor from complying with all the requirements of the contract.

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## SECTION 01 35 26

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## SECTION 01 35 26

## 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 SOCIETY OF MECHANICAL ENGINEERS (ASME)

ASME B30.3	(2020) Tower Cranes
ASME B30.5	(2018) Mobile and Locomotive Cranes
ASME B30.8	(2020) Floating Cranes and Floating Derricks
ASME B30.9	(2018) Slings
ASME B30.20	(2018) Below-the-Hook Lifting Devices
ASME B30.22	(2016) Articulating Boom Cranes
ASME B30.26	(2015; R 2020) Rigging Hardware

## AMERICAN SOCIETY OF SAFETY PROFESSIONALS (ASSP)

ASSP A10.34	(2021) Protection of the Public on or Adjacent to Construction Sites
ASSP Z359.0	(2018) Definitions and Nomenclature Used for Fall Protection and Fall Arrest
ASSP Z359.1	(2020) The Fall Protection Code
ASSP Z359.2	(2017) Minimum Requirements for a Comprehensive Managed Fall Protection Program
ASSP Z359.3	(2019) Safety Requirements for Lanyards and Positioning Lanyards
ASSP Z359.4	(2013) Safety Requirements for Assisted-Rescue and Self-Rescue Systems, Subsystems and Components
ASSP Z359.6	(2016) Specifications and Design Requirements for Active Fall Protection Systems
ASSP Z359.7	(2019) Qualification and Verification Testing of Fall Protection Products

ASSP Z359.11	(2014) Safety Requirements for Full Body Harnesses
ASSP Z359.12	(2019) Connecting Components for Personal Fall Arrest Systems
ASSP Z359.13	(2013) Personal Energy Absorbers and Energy Absorbing Lanyards
ASSP Z359.14	(2014) Safety Requirements for Self-Retracting Devices for Personal Fall Arrest and Rescue Systems
ASSP Z359.15	(2014) Safety Requirements for Single Anchor Lifelines and Fall Arresters for Personal Fall Arrest Systems
ASSP Z359.16	(2016) Safety Requirements for Climbing Ladder Fall Arrest Systems
ASSP Z359.18	(2017) Safety Requirements for Anchorage Connectors for Active Fall Protection Systems

## NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 10	(2018; ERTA 1-2 2018) Standard for Portable Fire Extinguishers
NFPA 51B	(2019; TIA 20-1) Standard for Fire Prevention During Welding, Cutting, and Other Hot Work
NFPA 70	(2020; ERTA 20-1 2020; ERTA 20-2 2020; TIA 20-1; TIA 20-2; TIA 20-3; TIA 20-4) National Electrical Code
NFPA 70E	(2021) Standard for Electrical Safety in the Workplace
NFPA 241	(2019) Standard for Safeguarding Construction, Alteration, and Demolition Operations

## U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1	(2014) Safety and Health Requirements Manual
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## U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

10 CFR 20	Standards for Protection Against Radiation
29 CFR 1910	Occupational Safety and Health Standards
29 CFR 1910.1000	Air Contaminants
29 CFR 1926	Safety and Health Regulations for

## Construction

29 CFR 1926.16

Rules of Construction

29 CFR 1926.450

Scaffolds

29 CFR 1926.500

Fall Protection

29 CFR 1926.1400

Cranes and Derricks in Construction

## 1.2 DEFINITIONS

## 1.2.1 Competent Person (CP)

The CP is a person designated in writing, who, through training, knowledge and experience, is capable of identifying, evaluating, and addressing existing and predictable hazards in the working environment or working conditions that are dangerous to personnel, and who has authorization to take prompt corrective measures with regards to such hazards.

## 1.2.2 Competent Person, Cranes and Rigging

The CP, Cranes and Rigging, as defined in EM 385-1-1 Appendix Q, is a person meeting the competent person requirements, who has been designated in writing to be responsible for the immediate supervision, implementation and monitoring of the Crane and Rigging Program, who through training, knowledge and experience in crane and rigging is capable of identifying, evaluating and addressing existing and potential hazards and, who has the authority to take prompt corrective measures with regard to such hazards.

## 1.2.3 Competent Person, Fall Protection

The CP, Fall Protection, is a person meeting the competent person requirements as defined in EM 385-1-1 Appendix Q and in accordance with ASSP Z359.0, who has been designated in writing by the employer to be responsible for immediate supervising, implementing and monitoring of the fall protection program, who through training, knowledge and experience in fall protection and rescue systems and equipment, is capable of identifying, evaluating and addressing existing and potential fall hazards and, who has the authority to take prompt corrective measures with regard to such hazards.

## 1.2.4 Competent Person (CP) Trainer

A competent person trainer as defined in EM 385-1-1 Appendix Q, who is qualified in the training material presented, and who possesses a working knowledge of applicable technical regulations, standards, equipment and systems related to the subject matter on which they are training Competent Persons. A competent person trainer must be familiar with the typical hazards and the equipment used in the industry they are instructing. The training provided by the competent person trainer must be appropriate to that specific industry. The competent person trainer must evaluate the knowledge and skills of the competent persons as part of the training process.

## 1.2.5 High Risk Activities

High Risk Activities are activities that involve work at heights, crane and rigging, excavations and trenching, scaffolding, electrical work, and

confined space entry.

#### 1.2.6 High Visibility Accident

A High Visibility Accident is any mishap which may generate publicity or high visibility.

#### 1.2.7 Load Handling Equipment (LHE)

LHE is a term used to describe cranes, hoists and all other hoisting equipment (hoisting equipment means equipment, including crane, derricks, hoists and power operated equipment used with rigging to raise, lower or horizontally move a load).

#### 1.2.8 Medical Treatment

Medical Treatment is 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 when provided by a physician or registered personnel.

#### 1.2.9 Near Miss

A Near Miss is a mishap resulting in no personal injury and zero property damage, but given a shift in time or position, damage or injury may have occurred (e.g., a worker falls off a scaffold and is not injured; a crane swings around to move the load and narrowly misses a parked vehicle).

#### 1.2.10 Operating Envelope

The Operating Envelope is the area surrounding any crane or load handling equipment. Inside this "envelope" is the crane, the operator, riggers and crane walkers, other personnel involved in the operation, rigging gear between the hook, the load, the crane's supporting structure (i.e. ground or rail), the load's rigging path, the lift and rigging procedure.

#### 1.2.11 Qualified Person (QP)

The QP is a person designated in writing, who, by possession of a recognized degree, certificate, or professional standing, or extensive knowledge, training, and experience, has successfully demonstrated their ability to solve or resolve problems related to the subject matter, the work, or the project.

#### 1.2.12 Qualified Person, Fall Protection (QP for FP)

A QP for FP is a person meeting the definition requirements of EM 385-1-1 Appendix Q, and ASSP Z359.2 standard, having a recognized degree or professional certificate and with extensive knowledge, training and experience in the fall protection and rescue field who is capable of designing, analyzing, and evaluating and specifying fall protection and rescue systems.

#### 1.2.13 Recordable Injuries or Illnesses

Recordable Injuries or Illnesses are 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;
- d. Transfer to another job;
- e. Medical treatment beyond first aid;
- f. Loss of consciousness; or
- g. A significant injury or illness diagnosed by a physician or other licensed health care professional, even if it did not result in (a) through (f) above

#### 1.2.14 Government Property and Equipment

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

#### 1.2.15 Load Handling Equipment (LHE) Accident or Load Handling Equipment Mishap

A LHE accident occurs when any one or more of the eight elements in the operating envelope fails to perform correctly during operation, including operation during maintenance or testing resulting in personnel injury or death; material or equipment damage; dropped load; derailment; two-blocking; overload; or collision, including unplanned contact between the load, crane, or other objects. A dropped load, derailment, two-blocking, overload and collision are considered accidents, even though no material damage or injury occurs. A component failure (e.g., motor burnout, gear tooth failure, bearing failure) is not considered an accident solely due to material or equipment damage unless the component failure results in damage to other components (e.g., dropped boom, dropped load, or roll over). Document an LHE mishap using the Crane High Hazard working group mishap reporting form (Available at local USACE Safety Office).

### 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. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

ACCIDENT PREVENTION PLAN (APP); G, AO

SD-06 Test Reports

Monthly Exposure Reports

Notifications and Reports

Accident Reports; G, AO

LHE Inspection Reports

SD-07 Certificates

Crane Operators/Riggers

Standard Lift Plan; G, AO

Critical Lift Plan; G, AO

Activity Hazard Analysis (AHA)

Hot Work Permit

Certificate of Compliance

License Certificates

#### 1.4 MONTHLY EXPOSURE REPORTS

Provide a Monthly Exposure Report and attach to the monthly billing request. This report is a compilation of employee-hours worked each month for all site workers, both Prime and subcontractor. Failure to submit the report may result in retention of up to 10 percent of the voucher.

#### 1.5 REGULATORY REQUIREMENTS

In addition to the detailed requirements included in the provisions of this Contract, comply with the most recent edition of USACE EM 385-1-1, and the following federal, state, and local laws, ordinances, criteria, rules and regulations. Submit 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 govern.

#### 1.6 SITE QUALIFICATIONS, DUTIES, AND MEETINGS

##### 1.6.1 Personnel Qualifications

##### 1.6.1.1 Site Safety and Health Officer (SSHO)

Provide an SSHO that meets the requirements of EM 385-1-1 Section 1. The SSHO must ensure that the requirements of 29 CFR 1926.16 are met for the project. Provide a Safety oversight team that includes a minimum of one person at each project site to function as the Site Safety and Health Officer (SSHO). The SSHO or an equally-qualified Alternate 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 and Alternate SSHO must have the required training, experience, and qualifications in accordance with EM 385-1-1 Section 01.A.17, and all associated sub-paragraphs.

If the SSHO is off-site for a period longer than 24 hours, an

equally-qualified alternate SSHO must be provided and must fulfill the same roles and responsibilities as the primary SSHO. 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 that the DR is a collateral duty safety position, with safety duties in addition to their full time occupation.

#### 1.6.1.1.1 Additional Site Safety and Health Officer (SSHO) Requirements and Duties

The SSHO may also serve as the Quality Control Manager. The SSHO may also serve as the Superintendent. The Quality Control Manager and Project superintendent must be separate individuals.

#### 1.6.1.2 Competent Person Qualifications

Provide Competent Persons in accordance with EM 385-1-1, Appendix Q and herein. Competent Persons for high risk activities include confined space, cranes and rigging, excavation/trenching, fall protection, and electrical work. The CP for these activities must be designated in writing, and meet the requirements for the specific activity (i.e. competent person, fall protection).

The Competent Person identified in the Contractor's Safety and Health Program and accepted Accident Prevention Plan, 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) to the Contracting Officer for information in consultation with the Safety Office.

#### 1.6.1.2.1 Competent Person for Fall Protection

Provide a Competent Person for Fall Protection who meets the requirements of EM 385-1-1, Section 21.C.04, 21.B.03, and herein.

#### 1.6.1.3 Qualified Trainer Requirements

Individuals qualified to instruct the 40 hour contract safety awareness course, or portions thereof, must meet the definition of a Competent Person Trainer, and, at a minimum, possess a working knowledge of the following subject areas: EM 385-1-1, Electrical Standards, Lockout/Tagout, Fall Protection, Confined Space Entry for Construction; Excavation, Trenching and Soil Mechanics, and Scaffolds in accordance with 29 CFR 1926.450, Subpart L.

Instructors are required to:

- a. Prepare class presentations that cover construction-related safety requirements.
- b. Ensure that all attendees attend all sessions by using a class roster signed daily by each attendee. Maintain copies of the roster for at least five years. This is a certification class and must be attended 100 percent. In cases of emergency where an attendee cannot make it to a session, the attendee can make it up in another class session for the same subject.
- c. Update training course materials whenever an update of the EM 385-1-1

becomes available.

- d. Provide a written exam of at least 50 questions. Students are required to answer 80 percent correctly to pass.
- e. Request, review and incorporate student feedback into a continuous course improvement program.

#### 1.6.1.4 Crane Operators/Riggers

Provide Operators, Signal Persons, and Riggers meeting the requirements in EM 385-1-1, Section 15.B for Riggers and Section 16.B for Crane Operators and Signal Persons. In addition, for mobile cranes with Original Equipment Manufacturer (OEM) rated capacities of 50,000 pounds or greater, designate crane operators qualified by a source that qualifies crane operators (i.e., union, a Government agency, or an organization that tests and qualifies crane operators). Provide proof of current qualification.

#### 1.6.2 Personnel Duties

##### 1.6.2.1 Duties of the Site Safety and Health Officer (SSHO)

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 Contractors' daily production report.
- b. Conduct mishap investigations and complete required accident reports. Report mishaps and near misses.
- c. Use and maintain OSHA's Form 300 to log work-related injuries and illnesses occurring on the project site for Prime Contractors and subcontractors, and make available to the Contracting Officer upon request. Post and maintain the Form 300A on the site Safety Bulletin Board.
- d. Maintain applicable safety reference material on the job site.
- e. Attend the pre-construction conference, pre-work meetings including preparatory meetings, and periodic in-progress meetings.
- f. Review the APP and AHAs for compliance with EM 385-1-1, and approve, sign, implement and enforce them.
- g. Establish a Safety and Occupational Health (SOH) Deficiency Tracking System that lists and monitors outstanding deficiencies until resolution.
- h. Ensure subcontractor compliance with safety and health requirements.
- i. Maintain a list of hazardous chemicals on site and their material Safety Data Sheets (SDS).
- j. Maintain a weekly list of high hazard activities involving energy, equipment, excavation, entry into confined space, and elevation, and be prepared to discuss details during QC Meetings.

- k. Provide and keep a record of site safety orientation and indoctrination for Contractor employees, subcontractor employees, and site visitors.

Superintendent, QC Manager, and SSHO are subject to dismissal if the above or any other required duties are not being effectively carried out. If either the Superintendent, QC Manager, or SSHO is 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.

### 1.6.3 Meetings

#### 1.6.3.1 Preconstruction Conference

- a. Contractor representatives who have a responsibility or significant role in accident prevention on the project must attend the preconstruction conference. This includes the project superintendent, Site Safety and Occupational Health Officer, quality control manager, 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).
- b. 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 and an agreement will be reached between the Contractor and the Contracting Officer as to which phases will require an analysis. In addition, establish a schedule for the preparation, submittal, and Government review of AHAs to preclude project delays.
- c. Deficiencies in the submitted APP, identified during the Contracting Officer's review, must be corrected, and the APP re-submitted for review prior to the start of construction. Work is not permitted to begin until an APP is established that is acceptable to the Contracting Officer.

#### 1.6.3.2 Safety Meetings

Conduct safety meetings to review past activities, plan for new or changed operations, review pertinent aspects of appropriate AHA (by trade), establish safe working procedures for anticipated hazards, and provide pertinent Safety and Occupational Health (SOH) training and motivation. Conduct meetings at least once a month for all supervisors at the project location. The SSHO, supervisors, foremen, or CDSOs must conduct meetings at least once a week for the trade workers. Document meeting minutes to include the date, persons in attendance, subjects discussed, and names of individual(s) who conducted the meeting. Maintain documentation on-site and furnish copies to the Contracting Officer on request. Notify the Contracting Officer of all scheduled meetings 7 calendar days in advance.

### 1.7 ACCIDENT PREVENTION PLAN (APP)

#### 1.7.1 ACCIDENT PREVENTION PLAN (APP)

A qualified person must prepare the written site-specific APP. Prepare the APP in accordance with the format and requirements of EM 385-1-1, Appendix A, and as supplemented herein. Cover all paragraph and

subparagraph elements in EM 385-1-1, Appendix A. The APP must be job-specific and address any unusual or unique aspects of the project or activity for which it is written. The APP must interface with the Contractor's overall safety and health program referenced in the APP in the applicable APP element, and made site-specific. Describe the methods to evaluate past safety performance of potential subcontractors in the selection process. Also, describe innovative methods used to ensure and monitor safe work practices of subcontractors. The Government considers the Prime Contractor to be the "controlling authority" for all work site safety and health of the subcontractors. Contractors are responsible for informing their 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. The APP must be signed by an officer of the firm (Prime Contractor senior person), the individual preparing the APP, the on-site superintendent, the designated SSHO, the Contractor Quality Control Manager, and any designated Certified Safety Professional (CSP) or Certified Health Physicist (CIH). The SSHO must provide and maintain the APP and a log of signatures by each subcontractor foreman, attesting that they have read and understand the APP, and make the APP and log available on-site to the Contracting Officer. If English is not the foreman's primary language, the Prime Contractor must provide an interpreter.

Submit the APP to the Contracting Officer 15 calendar days prior to the date of the preconstruction conference for acceptance. Work cannot proceed without an accepted APP. Once reviewed and accepted by the Contracting Officer, the APP and attachments will be enforced as part of the Contract. Disregarding the provisions of this Contract or the accepted APP is cause for stopping of work, at the discretion of the Contracting Officer, until the matter has been rectified. Continuously review and amend the APP, as necessary, throughout the life of the Contract. Changes to the accepted APP must be made with the knowledge and concurrence of the Contracting Officer, project superintendent, SSHO and Quality Control Manager. Incorporate unusual or high-hazard activities not identified in the original APP as they are discovered. 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 Contracting Officer within 24 hours of discovery. Eliminate and remove the hazard. In the interim, take all necessary action to restore and maintain safe working conditions in order to safeguard onsite personnel, visitors, the public (as defined by ASSP A10.34), and the environment.

#### 1.7.2 Names and Qualifications

Provide plans in accordance with the requirements outlined in Appendix A of EM 385-1-1, including the following:

- a. Names and qualifications (resumes including education, training, experience and certifications) of 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 of qualified persons. As a minimum, designate and submit qualifications of competent persons 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; and personal protective equipment and clothing to include selection, use and maintenance.

### 1.7.3 Plans

Provide plans in the APP in accordance with the requirements outlined in Appendix A of EM 385-1-1, including the following:

#### 1.7.3.1 Standard Lift Plan (SLP)

Plan lifts to avoid situations where the operator cannot maintain safe control of the lift. Prepare a written SLP in accordance with EM 385-1-1, Section 16.A.03, using Form 16-2 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 conjunction with the associated AHA. Signature on the AHA constitutes acceptance of the plan. Maintain the SLP on the LHE for the current lift(s) being made. Maintain historical SLPs for a minimum of three months.

#### 1.7.3.2 Critical Lift Plan - Crane or Load Handling Equipment

Provide a Critical Lift Plan as required by EM 385-1-1, Section 16.H.01, using Form 16-3. In addition, Critical Lift Plans are required for the following:

- a. Lifts over 50 percent of the capacity of barge mounted mobile crane's hoist.
- b. When working around energized power lines where the work will get closer than the minimum clearance distance in EM 385-1-1 Table 16-1.
- c. For lifts with anticipated binding conditions.
- d. When erecting cranes.

##### 1.7.3.2.1 Critical Lift Plan Planning and Schedule

Critical lifts require detailed planning and additional or unusual safety precautions. Develop and submit a critical lift plan to the Contracting Officer 30 calendar days prior to critical lift. Comply with load testing requirements in accordance with EM 385-1-1, Section 16.F.03.

##### 1.7.3.2.2 Lifts of Personnel

In addition to the requirements of EM 385-1-1, Section 16.H.02, for lifts of personnel, demonstrate compliance with the requirements of 29 CFR 1926.1400 and EM 385-1-1, Section 16.T.

##### 1.7.3.3 Multi-Purpose Machines, Material Handling Equipment, and Construction Equipment Lift Plan

Multi-purpose machines, material handling equipment, and construction equipment used to lift loads that are suspended by rigging gear, require proof of authorization from the machine OEM that the machine is capable of making lifts of loads suspended by rigging equipment. Written approval from a qualified registered professional engineer, after a safety analysis

is performed, is allowed in lieu of the OEM's approval. Demonstrate that the operator is properly trained and that the equipment is properly configured to make such lifts and is equipped with a load chart.

#### 1.7.3.4 Fall Protection and Prevention (FP&P) Plan

The plan must be in accordance with the requirements of EM 385-1-1, Section 21.D and ASSP Z359.2, be site specific, and address all fall hazards in the work place and during different phases of construction. 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 must prepare and sign the plan documentation. Include fall protection and prevention systems, equipment and methods employed for every phase of work, roles and responsibilities, assisted rescue, self-rescue and evacuation procedures, training requirements, and monitoring methods. Review and revise, as necessary, the Fall Protection and Prevention Plan documentation as conditions change, but at a minimum 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 documentation at the job site for the duration of the project. Include the Fall Protection and Prevention Plan documentation in the Accident Prevention Plan (APP).

#### 1.7.3.5 Rescue and Evacuation Plan

Provide a Rescue and Evacuation Plan in accordance with EM 385-1-1 Section 21.N and ASSP Z359.2, and include in the FP&P Plan and as part of the APP. 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.

### 1.8 ACTIVITY HAZARD ANALYSIS (AHA)

Before beginning each activity, task or Definable Feature of Work (DFOW) involving a type of work presenting hazards not experienced in previous project operations, or where a new work crew or subcontractor is to perform the work, the Contractor(s) performing that work activity must prepare an AHA. AHAs must be developed by the Prime Contractor, subcontractor, or supplier performing the work, and provided for Prime Contractor review and approval before submitting to the Contracting Officer. AHAs must be signed by the SSHO, Superintendent, QC Manager and the subcontractor Foreman performing the work. Format the AHA in accordance with EM 385-1-1, Section 1 or as directed by the Contracting Officer. Submit the AHA for review at least 15 working days prior to the start of each activity task, or DFW. The Government reserves the right to require the Contractor to revise and resubmit the AHA if it fails to effectively identify the work sequences, specific anticipated hazards, site conditions, equipment, materials, personnel and the control measures to be implemented.

AHAs must identify competent persons required for phases involving high risk activities, including confined entry, crane and rigging, excavations, trenching, electrical work, fall protection, and scaffolding.

#### 1.8.1 AHA Management

Review the AHA list periodically (at least monthly) at the Contractor

supervisory safety meeting, and update as necessary when procedures, scheduling, or hazards change. Use the AHA during daily inspections by the SSHA to ensure the implementation and effectiveness of the required safety and health controls for that work activity.

#### 1.8.2 AHA Signature Log

Each employee performing work as part of an activity, task or DFOV must review the AHA for that work and sign a signature log specifically maintained for that AHA prior to starting work on that activity. The SSHA must maintain a signature log on site for every AHA. Provide employees whose primary language is other than English, with an interpreter to ensure a clear understanding of the AHA and its contents.

### 1.9 DISPLAY OF SAFETY INFORMATION

#### 1.9.1 Safety Bulletin Board

Prior to commencement of work, erect a safety 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 Contracting Officer, that is accessible and includes all mandatory information for employee and visitor review, may 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 01.A.07. Additional items required to be posted include:

- a. Hot work permit.

#### 1.9.2 Safety and Occupational Health (SOH) Deficiency Tracking System

Establish a SOH deficiency tracking system that lists and monitors the status of SOH deficiencies in chronological order. Use the tracking system to evaluate the effectiveness of the APP. A monthly evaluation of the data must be discussed in the QC or SOH meeting with everyone on the project. The list must be posted on the project bulletin board and updated daily, and provide the following information:

- a. Date deficiency identified;
- b. Description of deficiency;
- c. Name of person responsible for correcting deficiency;
- d. Projected resolution date;
- e. Date actually resolved.

#### 1.10 SITE SAFETY REFERENCE MATERIALS

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

#### 1.11 EMERGENCY MEDICAL TREATMENT

Contractors must arrange for their own emergency medical treatment in

accordance with EM 385-1-1. Government has no responsibility to provide emergency medical treatment.

## 1.12 NOTIFICATIONS and REPORTS

### 1.12.1 Mishap Notification

Notify the Contracting Officer as soon as practical, but no more than twenty-four hours, after any mishaps, including recordable accidents, incidents, and near misses, as defined in EM 385-1-1 Appendix Q, any report of injury, illness, or any property damage. For LHE or rigging mishaps, notify the Contracting Officer as soon as practical but not more than four hours after mishap. The Contractor is responsible for obtaining appropriate medical and emergency assistance and for notifying fire, law enforcement, and regulatory agencies. Immediate reporting is required for electrical mishaps, to include Arc Flash; shock; uncontrolled release of hazardous energy (includes electrical and non-electrical); load handling equipment or rigging; fall from height (any level other than same surface); and underwater diving. These mishaps must be investigated in depth to identify all causes and to recommend hazard control measures.

Within notification include Contractor name; Contract title; type of Contract; name of activity, installation or location where accident occurred; date and time of accident; names of personnel injured; extent of property damage, if any; extent of injury, if known, and brief description of accident (for example, type of construction equipment used and PPE used). Preserve the conditions and evidence on the accident site until the Government investigation team arrives on-site and Government investigation is conducted. Assist and cooperate fully with the Government's investigation(s) of any mishap.

### 1.12.2 Accident Reports

- a. Conduct an accident investigation for recordable injuries and illnesses, property damage, and near misses as defined in EM 385-1-1, to establish the root cause(s) of the accident. Complete the applicable USACE Accident Report ENG Form 3394, and provide the report to the Contracting Officer within 5 calendar days of the accident. The Contracting Officer will provide copies of any required or special forms.
- b. Near Misses: For Army projects, report all "Near Misses" to the GDA, using local mishap reporting procedures, within 24 hrs. The Contracting Officer will provide the Contractor the required forms. Near miss reports are considered positive and proactive Contractor safety management actions.
- c. Conduct an accident investigation for any load handling equipment accident (including rigging accidents) to establish the root cause(s) of the accident. Complete the LHE Accident Report (Crane and Rigging Accident Report) form and provide the report to the Contracting Officer within 30 calendar days of the accident. Do not proceed with crane operations until cause is determined and corrective actions have been implemented to the satisfaction of the Contracting Officer. The Contracting Officer will provide a blank copy of the accident report form.

### 1.12.3 LHE Inspection Reports

Submit LHE inspection reports required in accordance with EM 385-1-1 and as specified herein with Daily Reports of Inspections.

### 1.12.4 Certificate of Compliance and Pre-lift Plan/Checklist for LHE and Rigging

Provide a FORM 16-1 Certificate of Compliance for LHE entering an activity under this Contract and in accordance with EM 385-1-1. Post certifications on the crane.

Develop a Standard Lift Plan (SLP) in accordance with EM 385-1-1, Section 16.H.03 using Form 16-2 Standard Pre-Lift Crane Plan/Checklist for each lift planned. Submit SLP to the Contracting Officer for approval within 15 calendar days in advance of planned lift.

## 1.13 HOT WORK

### 1.13.1 Permit and Personnel Requirements

Submit and obtain a written permit prior to performing "Hot Work" (i.e. welding or cutting) or operating other flame-producing/spark producing devices, from the Contracting Officer's representative. Provide at least two 20 pound 4A:20 BC rated extinguishers for normal "Hot Work". The extinguishers must be current inspection tagged, and contain an approved safety pin and tamper resistant seal. It is also mandatory to have a designated FIRE WATCH for any "Hot Work" done at this activity. The Fire Watch must be trained in accordance with NFPA 51B and remain on-site for a minimum of one hour after completion of the task or as specified on the hot work permit.

When starting work in the facility, require personnel to familiarize themselves with the location of the nearest fire alarm boxes and knowledge of emergency response plan and emergency phone numbers/contacts. REPORT ANY FIRE, NO MATTER HOW SMALL, TO THE RESPONSIBLE FIRE DEPARTMENT OR CONTRACTING OFFICER IMMEDIATELY.

### 1.13.2 Work Around Flammable Materials

Obtain permit approval from a NFPA Certified Marine Chemist, or Certified Industrial Hygienist for "HOT WORK" within or around flammable materials (such as fuel systems or welding/cutting on fuel pipes) or confined spaces (such as sewer wet wells, manholes, or vaults) that have the potential for flammable or explosive atmospheres.

Whenever these materials, except beryllium and chromium (VI), are encountered in indoor operations, local mechanical exhaust ventilation systems that are sufficient to reduce and maintain personal exposures to within acceptable limits must be used and maintained in accordance with manufacturer's instruction and supplemented by exceptions noted in EM 385-1-1, Section 06.H

## 1.14 RADIATION SAFETY REQUIREMENTS

Submit License Certificates, employee training records, and Leak Test Reports for radiation materials and equipment to the Contracting Officer and Radiation Safety Office (RSO) for all specialized and licensed material and equipment proposed for use on the construction project

(excludes portable machine sources of ionizing radiation including moisture density and X-Ray Fluorescence (XRF)). Maintain on-site records whenever licensed radiological materials or ionizing equipment are on Government property.

Protect workers from radiation exposure in accordance with 10 CFR 20, ensuring any personnel exposures are maintained As Low As Reasonably Achievable.

#### 1.15 SEVERE STORM PLAN

In the event of a severe storm warning, the Contractor must comply with the applicable Storm Plan and:

- a. Secure outside equipment and materials and place materials that could be damaged in protected areas.
- b. Check surrounding area, including roof, for loose material, equipment, debris, and other objects that could be blown away or against existing facilities.
- c. Ensure that temporary erosion controls are adequate.

#### PART 2 PRODUCTS

Not Used

#### PART 3 EXECUTION

##### 3.1 CONSTRUCTION AND OTHER WORK

Comply with EM 385-1-1, NFPA 70, NFPA 70E, NFPA 241, the APP, the AHA, Federal and State OSHA regulations, and other related submittals and activity fire and safety regulations. The most stringent standard prevails.

PPE is governed in all areas by the nature of the work the employee is performing. Use personal hearing protection at all times in designated noise hazardous areas or when performing noise hazardous tasks. Safety glasses must be worn or carried/available on each person. Mandatory PPE includes:

- a. Hard Hat
- b. Long Pants
- c. Appropriate Safety Shoes
- d. Appropriate Class Reflective Vests

##### 3.1.1 Worksite Communication

Employees working alone in a remote location or away from other workers must be provided an effective means of emergency communications (i.e., cellular phone, two-way radios, land-line telephones or other acceptable means). The selected communication must be readily available (easily within the immediate reach) of the employee and must be tested prior to the start of work to verify that it effectively operates in the area/environment. Develop an employee check-in/check-out communication

procedure to ensure employee safety.

### 3.1.2 Hazardous Material Exclusions

Notwithstanding 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, lead-based paint, and hexavalent chromium, are prohibited. The Contracting Officer, upon written request by the Contractor, may consider exceptions to the use of any of the above excluded materials. Low mercury lamps used within fluorescent lighting fixtures are allowed as an exception without further Contracting Officer approval. Notify the Radiation Safety Officer (RSO) prior to excepted items of radioactive material and devices being brought on base.

### 3.1.3 Unforeseen Hazardous Material

Contract documents identify materials such as PCB, lead paint, and friable and non-friable asbestos and other OSHA regulated chemicals (i.e. 29 CFR 1910.1000). If material(s) that may be hazardous to human health upon disturbance are encountered during construction operations, stop that portion of work, notify the Contracting Officer immediately and 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 FAR 52.243-4 Changes and FAR 52.236-2 Differing Site Conditions.

## 3.2 FALL PROTECTION PROGRAM

Establish a fall protection program, for the protection of all employees exposed to fall hazards. Within the program include company policy, identify roles and responsibilities, 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 in accordance with ASSP Z359.2 and EM 385-1-1, Sections 21.A and 21.D.

### 3.2.1 Training

Institute a fall protection training program. As part of the Fall Protection Program, provide training for each employee who might be exposed to fall hazards and using personal fall protection equipment. Provide training by a competent person for fall protection in accordance with EM 385-1-1, Section 21.C. Document training and practical application of the competent person in accordance with EM 385-1-1, Section 21.C.04 and ASSP Z359.2 in the AHA.

### 3.2.2 Fall Protection Equipment and Systems

Enforce use of personal fall protection equipment and systems designated (to include fall arrest, restraint, and positioning) for each specific work activity in the Site Specific Fall Protection and Prevention Plan and 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, Section 21.

Provide personal fall protection equipment, systems, subsystems, and components that comply with EM 385-1-1 Section 21.I, 29 CFR 1926.500 Subpart M, ASSP Z359.0, ASSP Z359.1, ASSP Z359.2, ASSP Z359.3, ASSP Z359.4, ASSP Z359.6, ASSP Z359.7, ASSP Z359.11, ASSP Z359.12, ASSP Z359.13, ASSP Z359.14, ASSP Z359.15, ASSP Z359.16 and ASSP Z359.18.

#### 3.2.2.1 Additional Personal Fall Protection Measures

In addition to the required fall protection systems, other protective measures such as safety skiffs, personal floatation devices, and life rings, are required when working above or next to water in accordance with EM 385-1-1, Sections 21.0 through 21.0.06. Personal fall protection systems and equipment are required when working from an articulating or extendible boom, swing stages, or suspended platform. In addition, personal fall protection systems are required when operating other equipment such as scissor lifts. The need for tying-off in such equipment is to prevent ejection of the employee from the equipment during raising, lowering, travel, or while performing work.

#### 3.2.2.2 Personal Fall Protection Equipment

Only a full-body harness with a shock-absorbing lanyard or self-retracting lanyard is an acceptable personal fall arrest body support device. The use of body belts is not acceptable. 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. Snap hooks and carabineers must be self-closing and self-locking, capable of being opened only by at least two consecutive deliberate actions and have a minimum gate strength of 3,600 lbs in all directions. Use webbing, straps, and ropes made of synthetic fiber. The maximum free fall distance when using fall arrest equipment must not exceed 6 feet, unless the proper energy absorbing lanyard is used. Always take into consideration the total fall distance and any swinging of the worker (pendulum-like motion), that can occur during a fall, when attaching a person to a fall arrest system. Equip all full body harnesses with Suspension Trauma Preventers such as stirrups, relief steps, or similar in order to provide short-term relief from the effects of orthostatic intolerance in accordance with EM 385-1-1, Section 21.I.06.

#### 3.2.3 Horizontal Lifelines (HLL)

Provide HLL in accordance with EM 385-1-1, Section 21.I.08.d.2. Commercially manufactured horizontal lifelines (HLL) must be designed, installed, certified and used, under the supervision of a qualified person, for fall protection as part of a complete fall arrest system which maintains a safety factor of 2 (29 CFR 1926.500). The competent person for fall protection may (if deemed appropriate by the qualified person) supervise the assembly, disassembly, use and inspection of the HLL system under the direction of the qualified person. Locally manufactured HLLs are not acceptable unless they are custom designed for limited or site specific applications by a Registered Professional Engineer who is qualified in designing HLL systems.

#### 3.2.4 Guardrails and Safety Nets

Design, install and use guardrails and safety nets in accordance with EM 385-1-1, Section 21.F.01 and 29 CFR 1926 Subpart M.

### 3.2.5 Rescue and Evacuation Plan and 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 or assisted-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 Activity Hazard Analysis (AHA) for the phase of work, in the Fall Protection and Prevention (FP&P) Plan, and the Accident Prevention Plan (APP). The plan must be in accordance with the requirements of EM 385-1-1, ASSP Z359.2, and ASSP Z359.4.

## 3.3 EQUIPMENT

### 3.3.1 Material Handling Equipment (MHE)

- a. Material handling equipment such as forklifts must not be modified with work platform attachments for supporting employees unless specifically delineated in the manufacturer's printed operating instructions. Material handling equipment fitted with personnel work platform attachments are prohibited from traveling or positioning while personnel are working on the platform.
- b. The use of hooks on equipment for lifting of material must be in accordance with manufacturer's printed instructions. Material Handling Equipment Operators must be trained in accordance with OSHA 29 CFR 1910, Subpart N.
- c. Operators of forklifts or power industrial trucks must be licensed in accordance with OSHA.

### 3.3.2 Load Handling Equipment (LHE)

The following requirements apply. In exception, these requirements do not apply to commercial truck mounted and articulating boom cranes used solely to deliver material and supplies (not prefabricated components, structural steel, or components of a systems-engineered metal building) where the lift consists of moving materials and supplies from a truck or trailer to the ground; to cranes installed on mechanics trucks that are used solely in the repair of shore-based equipment; to crane that enter the activity but are not used for lifting; nor to other machines not used to lift loads suspended by rigging equipment. However, LHE accidents occurring during such operations must be reported.

- a. Equip cranes and derricks as specified in EM 385-1-1, Section 16.
- b. Notify the Contracting Officer 15 working days in advance of any LHE entering the activity, in accordance with EM 385-1-1, Section 16.A.02, so that necessary quality assurance spot checks can be coordinated. Contractor's operator must remain with the crane during the spot check. Rigging gear must be in accordance with OSHA, ASME B30.9 Standards and federal, state, and local safety standards.
- c. Comply with the LHE manufacturer's specifications and limitations for erection and operation of cranes and hoists used in support of the work. Perform erection under the supervision of a designated person

(as defined in ASME B30.5). Perform all testing in accordance with the manufacturer's recommended procedures.

- d. As applicable, comply with ASME B30.5 for mobile and locomotive cranes, ASME B30.22 for articulating boom cranes, ASME B30.3 for construction tower cranes, ASME B30.8 for floating cranes and floating derricks, ASME B30.9 for slings, ASME B30.20 for below the hook lifting devices and ASME B30.26 for rigging hardware.
- e. As applicable, when operating in the vicinity of overhead transmission lines, operators and riggers must be alert to this special hazard and follow the requirements of EM 385-1-1 Section 11, and ASME B30.5 or ASME B30.22 as applicable.
- f. Do not use crane suspended personnel work platforms (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. Do not lift personnel with a line hoist or friction crane. Additionally, submit a specific AHA for this work to the Contracting Officer. Ensure the activity and AHA are thoroughly reviewed by all involved personnel.
- g. Inspect, maintain, and recharge portable fire extinguishers as specified in NFPA 10, Standard for Portable Fire Extinguishers.
- h. All employees must keep clear of loads about to be lifted and of suspended loads, except for employees required to handle the load.
- i. Use cribbing when performing lifts on outriggers.
- j. The crane hook/block must be positioned directly over the load. Side loading of the crane is prohibited.
- k. A physical barricade must be positioned to prevent personnel access where accessible areas of the LHE's rotating superstructure poses a risk of striking, pinching or crushing personnel.
- l. Maintain inspection records in accordance by EM 385-1-1, Section 16.D, including shift, monthly, and annual inspections, the signature of the person performing the inspection, and the serial number or other identifier of the LHE that was inspected. Records must be available for review by the Contracting Officer.
- m. Maintain written reports of operational and load testing in accordance with EM 385-1-1, Section 16.F, listing the load test procedures used along with any repairs or alterations performed on the LHE. Reports must be available for review by the Contracting Officer.
- n. Certify that all LHE operators have been trained in proper use of all safety devices (e.g. anti-two block devices).
- o. Take steps to ensure that wind speed does not contribute to loss of control of the load during lifting operations. At wind speeds greater than 20 mph, the operator, rigger and lift supervisor must cease all crane operations, evaluate conditions and determine if the lift may proceed. Base the determination to proceed or not on wind calculations per the manufacturer and a reduction in LHE rated capacity if applicable. Include this maximum wind speed determination as part of the activity hazard analysis plan for that operation.

- q. When lightning is observed, all LHE operations shall stop. A determination shall be made as to proximity to operation being performed. (Use a lightning detector or once lightning is seen, count the number of seconds until you hear thunder. Divide number of seconds by 5 to get the distance the lightning is away from you). If lightning is 10 miles away or less, work must stop until 30 minutes after the last audible thunder or visible flash of lightning. Plan work activities according to the latest weather forecast and be prepared to stop operations, until bad weather has safely passed.

### 3.3.3 Machinery and Mechanized Equipment

- a. Proof of qualifications for operator must be kept on the project site for review.
- b. Manufacture specifications or owner's manual for the equipment must be on-site and reviewed for additional safety precautions or requirements that are sometimes not identified by OSHA or USACE EM 385-1-1. Incorporate such additional safety precautions or requirements into the AHAs.

### 3.3.4 Use of Explosives

Explosives must not be used or brought to the project site.

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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 D3740 (2019) Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction

ASTM E329 (2021) Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection

1.2 PAYMENT

Separate payment will not be made for providing and maintaining an effective Quality Control program. Include all associated costs in the applicable Pricing Schedule item.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" classifications; submittals not having a "G" classification are for information only. When used, a code following the "G" classifications 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

Contractor Quality Control (CQC) Plan; G, AO

SD-06 Test Reports

Verification Statement

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 GENERAL REQUIREMENTS

Establish and maintain an effective quality control (QC) system that complies with FAR 52.246-12 "Inspection of Construction." QC consist of

plans, procedures, and organization necessary to produce an end product which complies with the Contract requirements. The QC system covers all construction operations, both onsite and offsite, and must be keyed to the proposed construction sequence. The project superintendent will be held responsible for the quality of work and is subject to removal by the Contracting Officer 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 and is responsible for all construction and related activities at the site, except as otherwise acceptable to the Contracting Officer.

### 3.2 CONTRACTOR QUALITY CONTROL (CQC) PLAN

Submit no later than 10 calendar days after receipt of notice to proceed, the Contractor Quality Control (CQC) Plan proposed to implement the requirements of FAR 52.246-12 "Inspection of Construction." The Government will consider an interim plan for the first 30 days of operation. 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 accepted interim plan will not be permitted to begin until acceptance of a CQC Plan or another interim plan containing the additional 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, and purchasing agents:

- a. A description of the quality control organization, including a chart showing lines of authority and acknowledgment that the CQC staff will implement the three phase control system for all aspects of the work specified.
- b. The name, qualifications (in resume format), duties, responsibilities, and authorities of each person assigned a CQC function.
- 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 will be issued by the CQC System Manager. Furnish copies of these letters to the Contracting Officer.
- 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. (Laboratory facilities approved by the Contracting Officer are required to be used.)

- 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 is identified by different trades or disciplines, or it is work by the same trade in a different environment. Although each section of the specifications can 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 Plan

Acceptance of the Contractor's 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 Contractor Quality Control(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 Contracting Officer in writing of any proposed change. Proposed changes are subject to acceptance by the Contracting Officer.

### 3.3 COORDINATION MEETING

After the Preconstruction Conference, before start of construction, and prior to acceptance by the Government of the CQC Plan, meet with the Contracting Officer and discuss the Contractor's quality control system. Submit the CQC Plan 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, signed by both the Contractor and the Contracting Officer and will become a part of the contract file. There can be occasions when subsequent conferences will be called by either party to reconfirm mutual understandings or address deficiencies in the CQC system or procedures which can require corrective action by the Contractor.

### 3.4 QUALITY CONTROL ORGANIZATION

#### 3.4.1 Personnel Requirements

The requirements for the CQC organization are a Safety and Health Manager, CQC System Manager, and sufficient number of additional qualified personnel to ensure safety and Contract compliance. The Safety and Health Manager reports directly to a senior project (or corporate) official independent from the CQC System Manager. The Safety and Health Manager will also serve as a member of the CQC Staff. Include personnel identified in the technical provisions as requiring specialized skills to assure the required work is being performed properly as part of the CQC organization. The Contractor's CQC staff maintains 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. The CQC staff will be subject to acceptance by the Contracting Officer. Provide adequate office space, filing systems and other resources as necessary to maintain an effective and fully functional CQC organization. Promptly complete and furnish all letters, material submittals, shop drawing submittals, schedules and all other project documentation to the CQC organization. The CQC organization is responsible to maintain these documents and records at the site at all times, except as otherwise acceptable to the Contracting Officer.

#### 3.4.2 CQC System Manager

Identify as CQC System Manager an individual within the onsite work organization that is responsible for overall management of CQC and has the authority to act in all CQC matters for the Contractor. The CQC System Manager is required to be a construction person with a minimum of 5 years in related work. This CQC System Manager is on the site at all times during construction and is employed by the prime Contractor. The CQC System Manager is assigned as CQC System Manager, but may have duties as SSHO in addition to quality control and meets the qualifications for each position. Identify in the plan an alternate to serve in the event of the CQC System Manager's absence. The requirements for the alternate are the same as the CQC System Manager.

#### 3.4.3 CQC Personnel

**ALTERNATE 2:** ]Maintain a staff under the direction of the CQC system manager to perform all QC activities. The staff must be of sufficient size to ensure adequate QC coverage of all work phases, work shifts, and work crews involved in the construction. These personnel may perform other duties, but must be fully qualified by experience and technical training to perform their assigned QC responsibilities and must be allowed sufficient time to carry out these responsibilities. Clearly state the duties and responsibilities of each staff member in the QC Plan. Other technical specifications may specify individuals for maintaining quality control for specific areas of work.

#### 3.4.4 Assignment of CQC System Manager, Project Superintendent, and SSHO Responsibilities

The Site Safety and Health Officer (SSHO) may have other duties such as CQC System Manager provided that experience requirements for the positions are met. However, the CQC System Manager and Project Superintendent

cannot be the same person.

#### 3.4.5 Construction Quality Management Course- COVID-19 Restrictions

In addition to the above experience and education requirements, the Contractor Quality Control(CQC) System Manager and Alternate CQC System Manager are required to have completed the Construction Quality Management (CQM) for Contractors course.

Contractor personnel who otherwise fulfill all requirements for designation as a CQC Manager, but have not had the opportunity to obtain a CQM certificate due to COVID-19 restrictions, shall be permitted to serve as Quality Control Managers conditioned upon obtaining a CQM-C certificate within 120 days of USACE lifting current in person learning restrictions.

CQC Managers who were in possession of valid CQM certificate (i.e. not delinquent on the 5 year course renewal requirement) as of 01-Mar-2020 will have a grace period for obtaining the CQM renewal training of 6-months from the lifting of COVID-19 restrictions and USACE being able to provide face to face CQM training.

This course is periodically offered at offices indicated at the following web site:

<http://www.nwo.usace.army.mil/BusinessWithUs/Contracting/QualityManagement.aspx>

The exact date and location for the sessions will be determined approximately 30 calendar days in advance by the trainer (POC). Cost varies by location per student.

The Construction Quality Management Training certificate expires after 5 years. If the CQC System Manager's certificate has expired, retake the course to remain current.

The Government reserves the right to recognize certificates issued as a result of virtual training by a certified instructor as valid.

#### 3.4.6 Construction Quality Management Course - Post-COVID-19 Restrictions

In addition to the above experience and education requirements, the Contractor Quality Control(CQC) System Manager and Alternate CQC System Manager are required to have completed the Construction Quality Management (CQM) for Contractors course. If the CQC System Manager does not have a current certification, obtain the CQM for Contractors course certification within 90 days of award. This course is periodically offered at offices indicated at the following web site:

<http://www.nwo.usace.army.mil/BusinessWithUs/Contracting/QualityManagement.aspx>

The exact date and location for the sessions will be determined approximately 30 days in advance by the trainer (POC). Cost varies by location per student.

The Construction Quality Management Training certificate expires after 5 years. If the CQC System Manager's certificate has expired, retake the course to remain current.

### 3.4.7 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 Contracting Officer for acceptance.

### 3.5 SUBMITTALS AND DELIVERABLES

Submittals, if needed, have to comply with the requirements in Section 01 33 00 SUBMITTAL PROCEDURES. The CQC organization is responsible for certifying that all submittals and deliverables are in compliance with the contract requirements. When Section 01 91 00.15 10 TOTAL BUILDING COMMISSIONING are included in the contract, the submittals required by those sections have to be coordinated with Section 01 33 00 SUBMITTAL PROCEDURES to ensure adequate time is allowed for each type of submittal required.

### 3.6 CONTROL

CQC 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 of control are required to be conducted by the CQC System Manager for each definable feature of the construction work as follows:

#### 3.6.1 Preparatory Phase

This phase is 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. A review of each paragraph of applicable specifications, reference codes, and standards. Make available during the preparatory inspection a copy of those sections of referenced codes and standards applicable to that portion of the work to be accomplished in the field. Maintain and make available in the field for use by Government personnel until final acceptance of the work.
- b. Review of the Contract drawings.
- c. Check to assure that all materials and 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. 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 Contracting Officer.
- j. Discussion of the initial control phase.
- k. The Government needs to be notified at least 48 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. Document the results of the preparatory phase actions by separate minutes prepared by the CQC System Manager and attach to the daily CQC report. Instruct applicable workers as to the acceptable level of workmanship required in order to meet contract specifications.

### 3.6.2 Initial Phase

This phase is 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 are in compliance with the contract.
- 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. The Government needs to be notified at least 48 hours in advance of beginning the initial phase for definable feature of work. Prepare separate minutes of this phase by the CQC System Manager and attach to the daily CQC report. Indicate the exact location of initial phase for definable feature of work for future reference and comparison with follow-up phases.
- g. The initial phase for each definable feature of work is repeated for each new crew to work onsite, or any time acceptable specified quality standards are not being met.

### 3.6.3 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 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.

#### 3.6.4 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.

### 3.7 TESTS

#### 3.7.1 Testing Procedure

Perform specified or required tests to verify that control measures are adequate to provide a product which conforms to contract requirements. Upon request, furnish to the Government duplicate samples of test specimens for possible testing by the Government. Testing includes operation and acceptance tests when specified. Procure the services of a Corps of Engineers approved testing laboratory 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. Specification paragraph reference, location where tests were taken, and the sequential control number identifying the test. If approved by the Contracting Officer, actual test reports are 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 Contracting Officer. Failure to submit timely test reports as stated results in nonpayment for related work performed and disapproval of the test facility for this Contract.

#### 3.7.2 Testing Laboratories

All testing laboratories must be validated by the USACE Material Testing Center (MTC) for the tests to be performed. Information on the USACE MTC with web-links to both a list of validated testing laboratories and for the laboratory inspection request for can be found at:  
<https://mtc.erdc.dren.mil/>

Click on "Lab Validation"  
Search for a Validation

### 3.7.2.1 Capability Check

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. Laboratories utilized for testing soils, concrete, asphalt, and steel is required to meet criteria detailed in ASTM D3740 and ASTM E329.

### 3.7.2.2 Capability Recheck

If the selected laboratory fails the capability check, the Contractor will be assessed the actual cost for the recheck to reimburse the Government for each succeeding recheck of the laboratory or the checking of a subsequently selected laboratory. Such costs will be deducted from the Contract amount due the Contractor.

### 3.7.3 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 COMPLETION INSPECTION

### 3.8.1 Punch-Out Inspection

Conduct an inspection of the work by the CQC System Manager near the end of the work, or any increment of the work established by a time stated in FAR 52.211-10 "Commencement, Prosecution, and Completion of Work", or by the specifications. Prepare and include in the CQC documentation a punch list of items which do not conform to the approved drawings and specifications, as required by paragraph DOCUMENTATION. Include within the list of deficiencies the estimated date by which the deficiencies will be corrected. Make a second inspection by the CQC System Manager or staff 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.

### 3.8.2 Pre-Final Inspection

The Government will perform the pre-final inspection to verify that the facility is complete and ready to be occupied. A Government Pre-Final Punch List may be developed as a result of this inspection. 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 need to 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.

### 3.8.3 Final Acceptance Inspection

The Contractor's Quality Control Inspection personnel, plus the superintendent or other primary management person, and the Contracting Officer's Representative is required to 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 can also be in attendance. The final acceptance inspection will be formally scheduled by the Contracting Officer based upon results of the Pre-Final inspection. Notify the Contracting Officer 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 Contracting Officer to bill the Contractor for the Government's additional inspection cost in accordance with FAR 52.246-12 "Inspection of Construction".

### 3.9 DOCUMENTATION

Maintain current records providing factual evidence that required quality control activities and 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:

- a. The name and area of responsibility of the Contractor/Subcontractor.
- b. Operating plant/equipment with hours worked, idle, or down for repair.
- c. 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.
- d. Test and control activities performed with results and references to specifications/drawings requirements. Identify the control phase (Preparatory, Initial, Follow-up). List of deficiencies noted, along with corrective action.
- e. Quantity of materials received at the site with statement as to acceptability, storage, and reference to specifications/drawings requirements.
- f. Submittals and deliverables reviewed, with Contract reference, by whom, and action taken.
- g. Offsite surveillance activities, including actions taken.
- h. Job safety evaluations stating what was checked, results, and instructions or corrective actions. Include information identified by the "Responsible Individual(s)" for Safety as outlined in Section 01 35 26 GOVERNMENTAL SAFETY REQUIREMENTS.
- i. Instructions given/received and conflicts in plans and/or specifications.
- k. Verification Statement.

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. Furnish the original and one copy of these records in report form to the Contracting Officer's

Representative on the first day following the date(s) covered by the report, except that reports need not be submitted for days on which no work is performed. The Government may elect to process these records electronically. Coordinate with the Contracting Officer's Representative. As a minimum, prepare and submit one report for every 7 days of no work and on the last day of a no work period. All calendar days need to be accounted for throughout the life of the contract. The first report following a day of no work will be for that day only. Reports need to be signed and dated by the Contractor Quality Control(CQC) System Manager. Include copies of test reports and copies of reports prepared by all subordinate quality control personnel within the CQC System Manager Report.

### 3.10 SAMPLE FORMS

Generate daily quality control reports using the Government-furnished Construction Contractor Module of RMS specified in Section 01 45 00.15 10 RESIDENT MANAGEMENT SYSTEM CONTRACTOR MODE(RMS CM).

### 3.11 NOTIFICATION OF NONCOMPLIANCE

The Contracting Officer 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, will be deemed sufficient for the purpose of notification. If the Contractor fails or refuses to comply promptly, the Contracting Officer can issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to such stop orders will be made the subject of claim for extension of time or for excess costs or damages by the Contractor.

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## RESIDENT MANAGEMENT SYSTEM CONTRACTOR MODE (RMS CM)

## PART 1 GENERAL

## 1.1 REFERENCES

The publications listed below form a part of this section 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 and Health Requirements Manual

## 1.2 MEASUREMENT AND PAYMENT

The work of this section is not measured for payment. The Contractor is responsible for the work of this section, without any direct compensation other than the payment received for contract items.

## 1.3 CONTRACT ADMINISTRATION

The Government will use the Resident Management System (RMS) to assist in its monitoring and administration of this contract. The Government accesses the system using the Government Mode of RMS (RMS GM) and the Contractor accesses the system using the Contractor Mode (RMS CM). The term RMS will be used in the remainder of this section for both RMS GM and RMS CM. The joint Government-Contractor use of RMS facilitates electronic exchange of information and overall management of the contract. The Contractor accesses RMS to record, maintain, input, track, and electronically share information with the Government throughout the contract period in the following areas:

- Administration
- Finances
- Quality Control
- Submittal Monitoring
- Scheduling
- Closeout
- Import/Export of Data

## 1.3.1 Correspondence and Electronic Communications

For ease and speed of communications, exchange correspondence and other documents in electronic format to the maximum extent feasible. Some correspondence, including pay requests and payrolls, are also to be provided in paper format with original signatures. Paper documents will govern, in the event of discrepancy with the electronic version.

## 1.3.2 Other Factors

Other portions of this document have a direct relationship to the

reporting accomplished through RMS. Particular attention is directed to FAR 52.236-15 Schedules for Construction Contracts; FAR 52.232-27 Prompt Payment for Construction Contracts; FAR 52.232-5 Payments Under Fixed-Priced Construction Contracts; Section 01 32 01.00 10 PROJECT SCHEDULE; Section 01 33 00 SUBMITTAL PROCEDURES; Section 01 35 26 GOVERNMENTAL SAFETY REQUIREMENTS; and Section 01 45 00.00 10 QUALITY CONTROL.

#### 1.4 RMS SOFTWARE

RMS is a web based application. Download, install and be able to utilize the latest version of RMS within 7 calendar days of receipt of the Notice to Proceed. RMS software, user manuals, access and installation instructions, program updates and training information are available from the RMS website (<https://rms.usace.army.mil>). The Government and the Contractor will have different access authorities to the same contract database through RMS. The common database will be updated automatically each time a user finalizes an entry or change.

#### 1.5 CONTRACT DATABASE - GOVERNMENT

The Government will enter the basic contract award data in RMS prior to granting the Contractor access. The Government entries into RMS will generally be related to submittal reviews, correspondence status, and Quality Assurance(QA)comments, as well as other miscellaneous administrative information.

#### 1.6 CONTRACT DATABASE - CONTRACTOR

Contractor entries into RMS establish, maintain, and update data throughout the duration of the contract. Contractor entries generally include prime and subcontractor information, daily reports, submittals, RFI's, schedule updates and payment requests. RMS includes the ability to import attachments and export reports in many of the modules, including submittals. The Contractor responsibilities for entries in RMS typically include the following items:

##### 1.6.1 Administration

###### 1.6.1.1 Contractor Information

Enter all current Contractor administrative data and information into RMS within 7 calendar days of receiving access to the contract in RMS. This includes, but is not limited to, Contractor's name, address, telephone numbers, management staff, and other required items.

###### 1.6.1.2 Subcontractor Information

Enter all missing subcontractor administrative data and information into RMS CM within 7 calendar days of receiving access to the contract in RMS or within 7 calendar days of the signing of the subcontractor agreement for agreements signed at a later date. This includes name, trade, address, phone numbers, and other required information for all subcontractors. A subcontractor is listed separately for each trade to be performed.

###### 1.6.1.3 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" or "RFP".

#### 1.6.1.4 Equipment

Enter and maintain a current list of equipment planned for use or being used on the jobsite, including the most recent and planned equipment inspection dates.

#### 1.6.1.5 Reports

Track the status of the project utilizing the reports available in RMS. The value of these reports is reflective of the quality of the data input. These reports include the Progress Payment Request worksheet, Quality Control (QC) comments, Submittal Register Status, and Three-Phase Control worksheets.

#### 1.6.1.6 Request For Information (RFI)

Create and track all Requests For Information (RFI) in the RMS Administration Module for Government review and response.

### 1.6.2 Finances

#### 1.6.2.1 Pay Activity Data

Develop and enter a list of pay activities in conjunction with the project 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 assigned to a CLIN equals the amount of each CLIN.

#### 1.6.2.2 Payment Requests

Prepare all progress payment requests using RMS. Update the work completed under the contract at least monthly, measured as percent or as specific quantities. After the update, generate a payment request and prompt payment certification using RMS. Submit the signed prompt payment certification and payment request as well as supporting data either electronically or by hard copy. Unless waived by the Contracting Officer, a signed paper copy of the approved payment certification and request is also required and will govern in the event of discrepancy with the electronic version.

### 1.6.3 Quality Control (QC)

Enter and track implementation of the 3-phase QC Control System, QC testing, transferred and installed property and warranties in RMS. Prepare daily reports, identify and track deficiencies, document progress of work, and support other Contractor QC requirements in RMS. Maintain all data on a daily basis. Insure that RMS reflects all quality control methods, tests and actions contained within the Contractor Quality Control (CQC) Plan and Government review comments of same within 7 calendar days of Government acceptance of the CQC Plan.

#### 1.6.3.1 Quality Control (QC) Reports

The Contractor's Quality Control (QC) Daily Report in RMS is the official report. The Contractor can use other supplemental formats to record QC data, but information from any supplemental formats are to be consolidated and entered into the RMS QC Daily Report. Any supplemental information may be entered into RMS as an attachment to the report. QC Daily Reports must be finalized and signed in RMS within 24 hours after the date covered by the report. Provide the Government a printed signed copy of the QC Daily Report, unless waived by the Contracting Officer.

#### 1.6.3.2 Deficiency Tracking.

Use the QC Daily Report Module to enter and track deficiencies. Deficiencies identified and entered into RMS by the Contractor or the Government will be sequentially numbered with a QC or QA prefix for tracking purposes. Enter each deficiency into RMS the same day that the deficiency is identified. Monitor, track and resolve all QC and QA entered deficiencies. A deficiency is not considered to be corrected until the Government indicates concurrence in RMS.

#### 1.6.3.3 Three-Phase Control Meetings

Maintain scheduled and actual dates and times of preparatory and initial control meetings in RMS. Worksheets for the three-phase control meetings are generated within RMS.

#### 1.6.3.4 Labor and Equipment Hours

Enter labor and equipment exposure hours on a daily basis. Roll up the labor and equipment exposure data into a monthly exposure report.

#### 1.6.3.5 Accident/Safety Reporting

Both the Contractor and the Government enter safety related comments in RMS as a deficiency. The Contractor must monitor, track and show resolution for safety issues in the QC Daily Report area of the RMS QC Module. In addition, follow all reporting requirements for accidents and incidents as required in EM 385-1-1, Section 01 35 26 GOVERNMENTAL SAFETY REQUIREMENTS and as required by any other applicable Federal, State or local agencies.

#### 1.6.3.6 Definable Features of Work

Enter each feature of work, as defined in the approved CQC Plan, into the RMS QC Module. A feature of work may be associated with a single or multiple pay activities, however a pay activity is only to be linked to a single feature of work.

#### 1.6.3.7 Activity Hazard Analysis

Import activity hazard analysis electronic document files into the RMS QC Module utilizing the document package manager.

#### 1.6.4 Submittal Management

Enter all current submittal register data and information into RMS within 7 calendar days of receiving access to the contract in RMS. The information shown on the submittal register following the specification

Section 01 33 00 SUBMITTAL PROCEDURES will already be entered into the RMS database when access is granted. Group electronic submittal documents into transmittal packages to send to the Government, except very large electronic files, samples, spare parts, mock ups, color boards, or where hard copies are specifically required. Track transmittals and update the submittal register in RMS on a daily basis throughout the duration of the contract. Submit hard copies of all submittals unless waived by the Contracting Officer.

#### 1.6.5 Schedule

Enter and update the contract project schedule in RMS by either manually entering all schedule data or by importing the Standard Data Exchange Format (SDEF) file, based on the requirements in Section 01 32 01.00 10 PROJECT SCHEDULE.

#### 1.6.6 Closeout

Closeout documents, processes and forms are managed and tracked in RMS by both the Contractor and the Government. Ensure that all closeout documents are entered, completed and documented within RMS.

### 1.7 IMPLEMENTATION

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

### 1.8 NOTIFICATION OF NONCOMPLIANCE

Take corrective action within 7 calendar days after receipt of notice of RMS non-compliance by the Contracting Officer.

## PART 2 PRODUCTS

Not Used

## PART 3 EXECUTION

Not Used

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## SECTION 01 57 20.00 10

## ENVIRONMENTAL PROTECTION

## 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)

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

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

33 CFR 328 Definitions of Waters of the United States

40 CFR 261 Identification and Listing of Hazardous Waste

40 CFR 262 Standards Applicable to Generators of Hazardous Waste

40 CFR 279 Standards for the Management of Used Oil

49 CFR 171 - 178 Hazardous Materials Regulations

## 1.2 DEFINITIONS

## 1.2.1 Environmental Pollution and Damage

Environmental pollution and damage is the presence of chemical, physical, or biological elements or agents which 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 and/or historically.

## 1.2.2 Environmental Protection

Environmental protection is the prevention/control of pollution and habitat disruption that may occur to the environment 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.

### 1.2.3 Contractor Generated Hazardous Waste

Contractor generated hazardous waste means materials that, if abandoned or disposed of, may meet the definition of a hazardous waste. These waste streams would 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 etc.), waste thinners, excess paints, excess solvents, waste solvents, and excess pesticides, and contaminated pesticide equipment rinse water.

### 1.2.4 Waters of the United States

All waters which are under the jurisdiction of the Clean Water Act, as defined in 33 CFR 328.

## 1.3 GENERAL REQUIREMENTS

Minimize environmental pollution and damage that may occur as the result of construction operations. The environmental resources within the project boundaries and those affected outside the limits of permanent work must be protected during the entire duration of this contract. Comply with all applicable environmental Federal, State, and local laws and regulations. Any delays resulting from failure to comply with environmental laws and regulations will be the Contractor's responsibility.

## 1.4 SUBCONTRACTORS

Ensure compliance with this section by subcontractors.

## 1.5 PAYMENT

No separate payment will be made for work covered under this section. Payment of fees associated with environmental permits, application, and/or notices obtained by the Contractor, and payment of all fines/fees for violation or non-compliance with Federal, State, Regional and local laws and regulations are the Contractor's responsibility. All costs associated with this section must be included in the contract price.

## 1.6 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 Protection Plan; G

## 1.7 ENVIRONMENTAL PROTECTION PLAN

Prior to commencing construction activities or delivery of materials to the site, submit an Environmental Protection Plan for review and approval by the Contracting Officer. The purpose of the Environmental Protection Plan is to present a comprehensive overview of known or potential

environmental issues which the Contractor must address during construction. Issues of concern must be defined within the Environmental Protection Plan as outlined in this section. Address each topic at a level of detail commensurate with the environmental issue and required construction task(s). Topics or issues which are not identified in this section, but are considered necessary, must be identified and discussed after those items formally identified in this section. Prior to submittal of the Environmental Protection Plan, meet with the Contracting Officer for the purpose of discussing the implementation of the initial Environmental Protection Plan; possible subsequent additions and revisions to the plan including any reporting requirements; and methods for administration of the Contractor's Environmental Plans. The Environmental Protection Plan must be current and maintained onsite by the Contractor.

#### 1.7.1 Compliance

No requirement in this Section will relieve the Contractor of any applicable Federal, State, and local environmental protection laws and regulations. During Construction, the Contractor will be responsible for identifying, implementing, and submitting for approval any additional requirements to be included in the Environmental Protection Plan.

#### 1.7.2 Contents

Include in the environmental protection plan, but not limit it to, the following:

- a. Name(s) of person(s) within the Contractor's organization who is(are) responsible for ensuring adherence to the Environmental Protection Plan.
- b. Name(s) and qualifications of person(s) responsible for training the Contractor's environmental protection personnel.
- c. Description of the Contractor's environmental protection personnel training program.
- d. Description of the Contractor's plan to prevent debris from falling into the river. Debris that falls into the river may prevent the Emergency bulkhead gates, Intake gates and Draft tube gates from sealing. Plan should also include method of preventing debris from entering the intake deck drainage system.

- e. An air pollution control plan detailing provisions to assure that dust, debris, materials, trash, etc., do not become air borne and travel off the project site.
- f. A contaminant prevention plan that: identifies potentially hazardous substances to be used on the job site; identifies the intended actions to prevent introduction of such materials into the air, water, or ground; and details provisions for compliance with Federal, State, and local laws and regulations for storage and handling of these materials. In accordance with EM 385-1-1, a copy of the Material Safety Data Sheets (MSDS) and the maximum quantity of each hazardous material to be onsite at any given time must be included in the contaminant prevention plan. Update the plan as new hazardous materials are brought onsite or removed from the site.

### 1.7.3 Appendix

Attach to the Environmental Protection Plan, as an appendix, copies of all environmental permits, permit application packages, approvals to construct, notifications, certifications, reports, and termination documents.

### 1.8 PROTECTION FEATURES

This paragraph supplements the Contract Clause PROTECTION OF EXISTING VEGETATION, STRUCTURES, EQUIPMENT, UTILITIES, AND IMPROVEMENTS. Prior to start of any onsite construction activities, the Contractor and the Contracting Officer will make a joint condition survey. Immediately following the survey, the Contractor will prepare a brief report including 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. This survey report will be signed by both the Contractor and the Contracting Officer upon mutual agreement as to its accuracy and completeness. The Contractor must protect those environmental features included in the survey report and any indicated on the drawings, regardless of interference which their preservation may cause to the work under the contract. The survey report should also include verifying which (if any) of the intake deck drains are plugged prior to the start of any work on the intake deck.

### 1.9 ENVIRONMENTAL ASSESSMENT OF CONTRACT DEVIATIONS

Any deviations from the drawings, plans and specifications, requested by the Contractor and which may have an environmental impact, will be subject to approval by the Contracting Officer and may require an extended review, processing, and approval time. The Contracting Officer reserves the right to disapprove alternate methods, even if they are more cost effective, if

the Contracting Officer determines that the proposed alternate method will have an adverse environmental impact.

#### 1.10 NOTIFICATION

The Contracting Officer 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 Environmental Protection plan. After receipt of such notice, the Contractor will inform the Contracting Officer of the proposed corrective action and take such action when approved by the Contracting Officer. The Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No time extensions will be granted or equitable adjustments allowed for any such suspensions. This is in addition to any other actions the Contracting Officer may take under the contract, or in accordance with the Federal Acquisition Regulation or Federal Law.

#### PART 2 PRODUCTS

NOT USED

#### PART 3 EXECUTION

##### 3.1 WATER RESOURCES

Monitor all water areas affected by construction activities to prevent pollution of surface and ground waters. Do not apply toxic or hazardous chemicals to soil or vegetation unless otherwise indicated. For construction activities immediately adjacent to impaired surface waters, the Contractor must be capable of quantifying sediment or pollutant loading to that surface water when required by State or Federally issued Clean Water Act permits.

###### 3.1.1 Wetlands

DO not enter, disturb, destroy, or allow discharge of contaminants into any wetlands.

##### 3.2 AIR RESOURCES

Equipment operation, activities, or processes will be in accordance with all Federal and State air emission and performance laws and standards.

###### 3.2.1 Particulates

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 which would cause the Federal, State, and local air pollution standards to be exceeded or which would cause a hazard or a nuisance. Sprinkling, chemical treatment of an approved type, baghouse, scrubbers, electrostatic precipitators or other methods will be permitted to control particulates in the work area. Sprinkling, to be efficient, must be repeated to keep the disturbed area

damp at all times. Provide sufficient, competent equipment available to accomplish these tasks. Perform particulate control as the work proceeds and whenever a particulate nuisance or hazard occurs. Comply with all State and local visibility regulations.

### 3.2.2 Odors

Odors from construction activities must be controlled at all times. The odors must be in compliance with State regulations and/or local ordinances and may not constitute a health hazard.

### 3.2.3 Sound Intrusions

Keep construction activities under surveillance and control to minimize environment damage by noise. Comply with the provisions of the State of South Dakota rules.

### 3.2.4 Burning

Burning is prohibited on the Government premises.

## 3.3 CHEMICAL MATERIALS MANAGEMENT AND WASTE DISPOSAL

Disposal of wastes will be as directed below, unless otherwise specified in other sections and/or shown on the drawings.

### 3.3.1 Solid Wastes

Place solid wastes (excluding clearing debris) in containers which are emptied on a regular schedule. Handling, storage, and disposal must be conducted to prevent contamination. Employ segregation measures so that no hazardous or toxic waste will become co-mingled with solid waste. Transport solid waste off Government property and dispose of it in compliance with Federal, State, and local requirements for solid waste disposal. A Subtitle D RCRA permitted landfill will be the minimum acceptable offsite solid waste disposal option. Verify that the selected transporters and disposal facilities have the necessary permits and licenses to operate.

### 3.3.2 Chemicals and Chemical Wastes

Dispense chemicals ensuring no spillage to the ground or water. Perform and document periodic inspections of dispensing areas to identify leakage and initiate corrective action. This documentation will be periodically reviewed by the Government. Collect chemical waste in corrosion resistant, compatible containers. Collection drums must be monitored and removed to a staging or storage area when contents are within 6 inches of the top. Wastes will be classified, managed, stored, and disposed of in accordance with Federal, State, and local laws and regulations.

### 3.3.3 Contractor Generated Hazardous Wastes/Excess Hazardous Materials

Hazardous wastes are defined in 40 CFR 261, or are as defined by applicable State and local regulations. Hazardous materials are defined in 49 CFR 171 - 178. At a minimum, manage and store hazardous waste in compliance with 40 CFR 262 in accordance with the Project Office hazardous waste management plan. Take sufficient measures to prevent spillage of hazardous and toxic materials during dispensing. Segregate hazardous waste from other materials and wastes, protect it from the weather by

placing it in a safe covered location, and take precautionary measures such as berming or other appropriate measures against accidental spillage. Storage, describing, packaging, labeling, marking, and placarding of hazardous waste and hazardous material in accordance with 49 CFR 171 - 178, State, and local laws and regulations is the Contractor's responsibility. Transport Contractor generated hazardous waste off Government property within 60 days in accordance with the Environmental Protection Agency and the Department of Transportation laws and regulations. Dispose of hazardous waste in compliance with Federal, State and local laws and regulations. Spills of hazardous or toxic materials must be immediately reported to the Contracting Officer. Cleanup and cleanup costs due to spills are the Contractor's responsibility. The disposition of Contractor generated hazardous waste and excess hazardous materials are the Contractor's responsibility. Coordinate the disposition of hazardous waste with the Project Office's Hazardous Waste Manager and the Contracting Officer.

#### 3.3.4 Fuel and Lubricants

Storage, fueling and lubrication of equipment and motor vehicles must be conducted in a manner that affords the maximum protection against spill and evaporation. Manage and store fuel, lubricants and oil in accordance with all Federal, State, Regional, and local laws and regulations. Used lubricants and used oil to be discarded must be stored in marked corrosion-resistant containers and recycled or disposed in accordance with 40 CFR 279, State, and local laws and regulations. Storage of fuel on the project site is not allowed. Fuel must be brought to the project site each day that work is performed. Storage of fuel on the project site will be in accordance with all Federal, State, and local laws and regulations.

#### 3.3.5 Waste Water

Disposal of waste water will be as specified below.

- a. Waste water from construction activities, such as onsite material processing, concrete curing, foundation and concrete clean-up, water used in concrete trucks, forms, etc. will not be allowed to enter water ways or to be discharged prior to being treated to remove pollutants. Dispose of the construction related waste water off-Government property in accordance with all Federal, State, Regional and Local laws and regulations.
- b. For discharge of ground water, the Contractor shall obtain a State or Federal permit specific for pumping and discharging ground water prior to surface discharging.

#### 3.4 PREVIOUSLY USED EQUIPMENT

Clean all previously used construction equipment prior to bringing it onto the project site. Ensure that the equipment is free from soil residuals, egg deposits from plant pests, noxious weeds, and plant seeds. Consult with the USDA jurisdictional office for additional cleaning requirements.

#### 3.5 MAINTENANCE OF POLLUTION FACILITIES

Maintain permanent and temporary pollution control facilities and devices

for the duration of the contract or for that length of time construction activities create the particular pollutant.

### 3.6 TRAINING OF CONTRACTOR PERSONNEL

The Contractor's personnel must be trained in all phases of environmental protection and pollution control. Conduct environmental protection/pollution control meetings for all personnel prior to commencing construction activities. Additional meetings must be conducted for new personnel and when site conditions change. Include in the training and meeting agenda: methods of detecting and avoiding pollution; familiarization with statutory and contractual pollution standards; installation and care of devices, vegetative covers, and instruments required for monitoring purposes to ensure adequate and continuous environmental protection/pollution control; anticipated hazardous or toxic chemicals or wastes, and other regulated contaminants; recognition and protection of archaeological sites, artifacts, wetlands, and endangered species and their habitat that are known to be in the area.

### 3.7 POST CONSTRUCTION CLEANUP

The Contractor will clean up all areas used for construction in accordance with Contract Clause: "Cleaning Up". Unless otherwise instructed in writing by the Contracting Officer, obliterate all signs 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. The disturbed area must be graded, filled and the entire area seeded unless otherwise indicated.

-- End of Section --

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ATTACHMENTS:

Modifications and Title Block Examples

-- End of Section Table of Contents --

## SECTION 01 78 39.00 24

AS-BUILT DRAWINGS  
02/22

## PART 1 GENERAL

Attachments: Modifications and Title Block Examples

## 1.1 DEFINITIONS

The definitions listed below form a part of this specification.

## 1.1.1 Red-Line Drawings

Contract drawings marked-up during construction to show actual work performed to include necessary sketches, modification drawings, shop drawings and notes.

## 1.1.2 As-Built Drawings

Professionally-finished bond paper drawings and Electronic CAD Files developed from the contract drawings that include all of the information from the redline drawings and suitable for half-size reproduction.

## 1.1.3 Black-Line Drawings

Paper drawings reproduced from electronic CAD files or high quality reproducible drawings.

## 1.1.4 Full-Size Drawings

22 inches x 34 inches nominal size drawings with all details visually readable so that half-size plot will fit on 11 inches x 17 inches cut sheets.

## 1.1.5 Modification Circle

A circle with a horizontal line through the center to identify modification changes on the drawings. The top half will contain the letter "R" with the bottom half containing the Modification number, unless directed otherwise. The lettering standard will be 1/8-inch Arial.ttf.

## 1.1.6 Electronic CAD Files

Electronic CAD files in Bentley (.dgn) in accordance with appropriate CAD standard. The CAD standard will include level on/off status, special characters, line weights, font, and size requirements.

## 1.2 REFERENCES

U.S. ARMY CORPS OF ENGINEERS (USACE)

ERDC/ITL TR-19-7

(2019) A/E/C CAD Standard - Release 6.1

### 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. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-03 Product Data

100 Percent Preliminary As-Built Drawings; G-DO

SD-11 Closeout Submittals

Final As-Built Drawings; G-DO

### 1.4 GENERAL REQUIREMENTS

#### 1.4.1 As-built Drawings

Upon award of this contract, the Government will provide the Contractor PDFs of the Contract drawings. Once the Contractor makes hardcopy distribution of these drawings in accordance with Section 01 30 00.24 OTHER ADMINISTRATIVE AND SPECIAL REQUIREMENTS, the Government will provide the Contractor with Government-furnished electronic CAD Files.

Maintain electronic CAD files and Red-Line Drawings showing As-Built conditions. Use the ERDC/ITL TR-19-7 USACE A/E/C CAD Standard for the As-Built drawings. Obtain the A/E/C Standards in effect at time of Contract Award. The A/E/C Standards are available at:

<https://cadbimcenter.erdcdren.mil/>

(New users will be required to register. See "New User Registration" at the website indicated above.)

Obtain the required CAD software for Contractor use. **Do not convert electronic drawing files from one software language to another.** Show the transmittal requirements for the As-built Drawings as activities on the Contractor-prepared project schedule.

Show all changes from the contract drawings on the as-builts. Accurately and neatly record all changes on the As-built drawings using the same symbols, terminology, and general quality as the original set of contract drawings. Show all changes on all drawings that are affected by the change. Changes include: actual work performed, deviations resulting from Government responses to Requests for Information or Serial letters, surveys, shop drawings, descriptive changes, sketch changes, and modifications to the contract. Show all systems designed or enhanced by the Contractor such as HVAC control system, fire alarm system fire sprinkler system, and irrigation sprinkler system, on the As-built drawings. Where contract drawings or specifications allow for options, only show the option selected and actually constructed on the As-Built Drawings.

#### 1.4.2 Red-Line Drawings

Update Red-Line Drawings throughout the construction phase of the contract showing all changes that will be shown on the final as-builts. Place all

as-built conditions on the Red-Line Drawings **within two (2) days** after completing the work activity or it shall be entered on the deficiency tracking system (see Section 01 45 00.00 10, QUALITY CONTROL). The Government will consider the Contractor to not be making satisfactory progress and will withhold funds from progress payments if the Contractor does not completely and accurately update the as-built drawings.

Provide red-line drawings in an electronic format.

#### 1.4.2.1 Electronic Red-Lines

Make electronic red-line drawings available to the COR at all times through a Local Area Network (LAN) or Internet connection. The connection shall have a download transfer rate not less than 10 Megabit/second (~1.250 Megabytes/second) and an upload transfer rate of not less than 1 Megabit/second (~124 kilobytes/second) in order to facilitate the timely access of drawing files. Make backups of all the electronic drawings at the close of business on the final day of work each week on a durable digital media such as removable hard-drive, tape drive, or optical disk. Preserve each weekly file system backup over the course of the project and do not overwrite; label the file folders or individual media with the date of backup. Store the weekly backup media in a fireproof and waterproof safe in a locked room of the Contractor's trailer. Electronically provide the COR with updated PDF drawings on a monthly basis. Show all changes to the electronic drawings with clouding and in accordance with ERDC/ITL TR-19-7.

#### 1.5 PAYMENT

In accordance with the clause "Payment Under Fixed - Price Construction Contracts", \$35,000 or 1 percent of the present contract value, which ever is greater, up to \$200,000. This amount will be withheld from payment for the creation of As-Built Drawings until Final As-Built Drawings are delivered to and accepted by the COR.

#### 1.6 CONTRACTOR PERFORMANCE RATING

The Government will evaluate the Contractor's performance in CPARS (Contractor Performance Assessment Reporting System) at intervals of no more than 365 days during the period of performance and complete the final evaluation within 120 days of completion of the project. The timeliness and quality of As-Built drawings submittals, Final As-built Drawings, Red-line drawings will be an important factor in determining the assigned rating for the Schedule evaluation area. If the Contractor fails to submit complete and accurate Final As-Built Drawings within sixty (60) calendar days of turning the completed project over to the Using Service, this failure will be noted in the comments under the Schedule evaluation area and may result in a lower rating for this area. Repeated failure to submit correct and accurate As-Built drawings submittals, Final As-built Drawings, Red-line drawings may also result in lower ratings for the Quality and Management evaluation areas.

#### 1.7 TRANSMITTAL OF AS-BUILT DRAWINGS

##### 1.7.1 Optional As-built Drawings Sample

Optionally submit a sample of preliminary as-built drawings to the Omaha District Office that will be reviewed for formatting purposes. Include five distinct sheets from the project drawings in this submittal. Send

this optional submittal on approved digital media to the Omaha District Office (ATTN: Patricia Lambert, CENWO-CDS-C) and include the following:

- a. Electronic CAD/BIM/CIM Files
- b. Individual PDF Drawings
- c. One (1) Combined Set of full-size PDF Drawings with bookmarks for each sheet

#### 1.7.2 100 Percent Preliminary As-Built Drawings

The 100 Percent Preliminary As-Built Drawings include all changes to the drawings as specified. The 100 Percent Preliminary As-Built Drawings will be reviewed for technical content and formatting requirements. Within thirty (30) days after the final inspection, submit 100 Percent Preliminary As-Built Drawings indicating all as-built changes with "clouding" on all of the project drawings. Submit all drawings contained in the complete project set of drawings plus any additional drawings with the 100 Percent Preliminary As-Built Drawings. The COR may grant the Contractor additional time if the Contractor is making reasonable progress on the as-builts, in the sole judgment of the COR. Do not submit the Final As-Built Drawings until the 100 Percent Preliminary As-Built Drawings are approved. Include the following on the approved digital media for the 100 Percent Preliminary As-Built Drawings (ATTN: Patricia Lambert, CENWO-CDS-C):

- a. Electronic CAD Files.
- b. Individual PDF's of Drawings.
- c. Combined Set of PDF Drawings with bookmarks for each sheet.
- d. Current electronic red-lines for reviewing purposes.

Also include one hardcopy set of half-size black-line drawings on bond paper.

#### 1.7.3 Final As-Built Drawings

Produce Final As-Built Drawings without "clouding". Include all changes shown on the 100 Percent Preliminary As-Built Drawings plus any additional required changes on the Final As-Built Drawings. Submit all drawings contained in the complete project set of drawings plus any additional drawings with the Final As-Built Drawings. Submit the Final Drawings no later than ten days after the 100 Percent Preliminary As-Built Drawing submittal is approved. The COR may grant additional time if the Contractor is making reasonable progress on the as-builts. Send the following to the COR:

Three approved digital media containing the following:

- a. Electronic CAD Files.
- b. Individual PDF's of Drawings.
- c. Combined Set of PDF Drawings with bookmarks for each sheet.
- d. Current electronic red-lines for reviewing purposes.

Include one hardcopy set of half-size black-line drawings on bond paper in documents sent to COR.

Send one copy of the digital media only to the Omaha District Office (ATTN: Patricia Lambert, CENWO-CDS-C).

## 1.8 AS-BUILT DRAWINGS FORMAT REQUIREMENTS

### 1.8.1 General Formatting

Prepare As-built Drawings in accordance with ERDC/ITL TR-19-7 requirements and/or match the detail shown on the contract drawings. Include all of the requirements below on the drawings:

- a. Update the drawing index when drawings are added.
- b. When opened, ensure the view is zoomed to fit the border.
- c. Reference a border supplied by the CAD/BIM Technology Center (<https://cadbimcenter.erdcdren.mil/>) placed in the layout/sheet model at a scale of 1 at the location (0,0) in all files.
- d. Delete all unnecessary information outside the border.
- e. Purge/compress all files.
- f. Include all reference files and ensure they are 'Bound' (AutoCAD) or 'Attached' (Microstation) to the CAD files in which the files are referenced.
- g. Use the Arial.ttf font for all text.
- h. Provide an ASCII text file with the following information: the name and phone number of the person we need to contact if we have problems, and the version of the CAD software used to create and/or work on the drawings.
- i. (CAD only) Supply pen tables for plotting.
- j. (CAD only) Provide each sheet/design with its own file and file name with only one layout/sheet per design file.
- k. (CAD only) Accomplish half toning by using the color 8 and setting the pen table to plot color 8 to half tone.
- l. The file name is the project code followed by the sheet identification number. Include the file name in the border on every sheet and match the name of the file on the Digital Media. The project code is BB00102.
- m. Include the File number in the border on every sheet. The file number is: (the Contract number, to be provided at award).
- n. Change the cover sheet from "Contract Award Set" to "As-Built Record Set" with month & year completed.
- o. Show drawing changes by "clouding" the affected area in layer "G-ANNO-REVS" (CAD only) in the drawing file of all preliminary as-builts and redlines. For BIM, accomplish clouding commensurate with the available tools.
- p. Place all submitted Electronic CAD Files and PDF drawings under a folder labeled "As-Built" on the submitted Digital Media.
- q. Include the name of the project, location, project code, solicitation number, contract number, and words detailing which submittal it is on both the Digital Media case and Digital Media. Title the Final As-builts Drawings "As-Built Record Set".
- r. Do not use zipped or compressed folders on any of the As-built submittals.
- s. On the cover sheet add or revise text to read "This folio includes all reissued and descriptive amendments, RFIs, and modifications."
- t. Place the Electronic CAD native design files and PDF drawings in separate folders on the Digital Media.

### 1.8.2 Title Block

Fill in and correct all information in the title block. Include all the requirements below in the title block.

- a. Add "RECORD DRAWING" text below the title block on the right side

of the drawing on all sheets.

- b. Add the date in the revision box for modifications from Block 3 of Form SF-30.
- c. State "REVISED TO SHOW AS-BUILT CONDITIONS" and date the top line of the revision box. Use a "-" for the "Mark".
- d. Enter the month and year as-builts were completed in the date box.
- e. Insert the initials "PEL" in the approved box.
- f. Show the contract number and the solicitation number (if available) on all sheets.
- g. Properly identify additional word abbreviations, not found on the abbreviation sheet but necessary to describe the work, and incorporate with the other standard word abbreviations.
- h. Properly note modifications in the title block in accordance with paragraph "Modification Changes" below.

### 1.8.3 Modification Changes

Include all modification changes on the as-built drawings. At a minimum, include all revised and reissued sheets, descriptive changes, sketches, etc. Change other sheets as appropriate with any modification change that also affects other sheets other than the one referenced with the modification. Typically, modification changes can be done by following the descriptive change included with the modification, but may require additional effort depending on the change and level of detail of the modification change. Post modifications in accordance with the following:

- a. Follow directions in the modification for posting all changes.
- b. Post all modifications to the contract in chronological order.
- c. Show the last modification number completed on the sheet with the modification circle in the top right corner of the "Project Title" and "Project Location" box.
- d. Place a modification number in the revision box over column entitled "Mark" for all modifications to plans, sections, or details. Use the statement "GENERAL REVISIONS" when applicable.
- e. Make the Modification Circle size 1/2-inch diameter unless the area where the circle is located is crowded. Use a smaller size circle for crowded areas.
- f. Place a Modification Circle at the location of each deletion.
- g. For all new details or sections that are added to a drawing, place a Modification Circle by the detail or section title.
- h. For changes to a drawing, place a Modification Circle by the title of the affected plan, section or detail titles (each location).
- i. For changes to schedules on drawings, place a Modification Circle either by the schedule heading or by the change in the schedule.

### 1.8.4 Legends

Do not use symbols which conflict with those on the original contract legend sheet. Properly identify and add to the legend sheet or supplemental legend additional symbols necessary to depict any additional work items. Those projects that do not have legend sheets may use supplemental legends on each sheet where symbol is shown.

## PART 2 PRODUCTS (NOT APPLICABLE)

## PART 3 EXECUTION

## 3.1 GENERAL

Make revisions to and maintain the red-line and as-built drawings to the same level of detail as shown on the original contract drawings. Provide any additional drawings as required to display all details.

## 3.2 SITE WORK

## 3.2.1 Utilities

Show all utilities whether active or abandoned on the as-built drawings and include all those shown on the original contract drawings or found on-site. Show the type of utility, location, general direction, size, material make-up and depth. Show the location and description of any utility line or other installations of any kind known to exist within the construction area. Include dimensions to permanent features as part of the location. Locate during installation all new underground utility lines (including electrical power and communications, gas, water, sanitary sewer, storm drains, roof drains and culverts). Survey pipe invert of gas, water, sanitary sewer, storm drains, roof drains and culverts and top of duct bank of electrical power and communications lines and associated fixtures (valves, manholes, test points, meters, cathodic protection points, tanks, ground points, and all point features along the new utility lines). Survey storm drains and sanitary sewer lines where pipes enter manholes and inlets and at 100-foot maximum intervals along the line. Survey the inverts of all cleanouts and tees. Survey inverts at each end of culverts. Survey electrical power, communications, gas and water lines at all manholes, tees, valves, corners, changes in direction and at intervals along the line to accurately depict the location of the line in both horizontal and vertical directions (50-foot maximum interval). Make the horizontal and vertical accuracy such that 100% of the points are + 0.25' of their absolute position. Show new underground utility lines as 3-dimensional elements in a Bentley.dgn file.

## 3.2.2 Structures

Show structures above and below ground. Show the size, material make-up, location, height, and/or depth. Show rim elevation and invert elevations as applicable at manholes. Show electrical equipment, guy wires, and voltage rating on power poles.

## 3.2.3 Grades

Correct grade or alignment of roads, structures, or utilities if any changes were made from the contract drawings. Correct elevations if changes were made in site grading. If any grades were finalized outside of the respective grades tolerances, show that new grade on the as-builts.

## 3.3 STRUCTURAL

## 3.3.1 Steel/Concrete

Incorporate shop drawings that deviate from the contract drawings in the As-Built Drawings.

### 3.4 MECHANICAL

#### 3.4.1 Ductwork

Show ductwork to reflect actual installation and duct size. Show ductwork routing changes.

#### 3.4.2 Plumbing

Show piping and fixtures to reflect the type of material, size and the route or location.

### 3.5 ELECTRICAL

#### 3.5.1 PANELS

Revise all contract drawing panel schedules to show as-built conditions. Ensure home-run circuit designation on electrical drawings accurately correspond to the as-built panel schedules.

#### 3.5.2 Controls

Revise all control diagrams in contract drawings to reflect as-built conditions and setpoints.

### 3.6 CONTRACTOR SHOP DRAWINGS

Incorporate contractor shop drawings, which supersede data on the contract plans and/or additional drawings, prepared by the Contractor, into the As-Built Drawings. Include the designer's name on the As-Built Drawings for any design plans prepared by the Contractor.

-- End of Section --

**DEFINITIONS OF REVISIONS:**

1. LAST ENTRY IN DESCRIPTION BOX SHALL APPLY TO AS-BUILT CONDITIONS
2. REVISIONS BY MODIFICATION. (AFTER AWARD OF CONSTRUCTION CONTRACT).
3. METHOD OF ADDING NEW DRAWING BY MODIFICATION.
4. REVISIONS BY AMENDMENT WHEN WRITTEN "WORD DESCRIPTIVE" AMENDMENT IS ISSUED AND DRAWINGS ARE POSTED FROM WRITTEN DESCRIPTIONS AFTER THE ISSUE DATE.
5. REVISIONS BY AMENDMENT WHEN DRAWING IS TO BE RE-ISSUED.
6. METHOD OF ADDING NEW DRAWING BY AMENDMENT.  
NOTE: DELTA NUMBER MATCHES AM. NUMBER

**INSTRUCTIONS FOR NOTING REVISIONS:**

1. ADD THE REVISION DESCRIPTION (EITHER CHANGE ORDER, AMENDMENT OR MODIFICATION DESCRIPTION AS APPLICABLE).
2. ADD THE PROPER REVISION SYMBOL TO THE LEFT OF THE REVISION NOTATION.
3. ADD THE PROPER AMENDMENT OR MOD. SYMBOL NEAR EACH REVISED ITEM IN THE BODY OF THE DRAWING.
4. ADD ARCHITECT-ENGINEERS INITIALS IN APPROVED BLOCK WHEN A-E IS RESPONSIBLE FOR AMENDMENT OR MODIFICATION.
5. WHEN ADDING A NEW DRAWING TO SHOW SUPPLEMENTAL DATA, USE SAME DRAWING NUMBERS AS DRAWING WITH SIMILAR SUBJECT MATTER AND ADD AN ALPHABETICAL SUFFIX TO THE SHEET NO. THIS DRAWING SHOULD BE ADDED TO THE INDEX OF DRAWINGS IN ITS PROPER PLACE ACCORDING TO THE SHEET NUMBER.
6. FOR MODIFICATION ONLY:  
ADD A 1/2 INCH ENCIRCLED  INSIDE OF TITLE BLOCK SHOWING THE LAST MOD NUMBER COMPLETED. ALSO USE THIS NEAR EACH REVISED ITEM IN THE BODY OF THE DRAWING.

**REVISION DESCRIPTIONS - FOR AMEDMENTS AND/OR MODIFICATIONS:**

- CHANGE ORDER #000X (DESCRIPTION & REASON FOR CHANGE ARE THE SAME AS AMENDMENTS LISTED BELOW)
- AM. #000X REISSUED FOR CLARITY (DRAWING IS HARD TO READ - BLURRY)
- AM. #000X GENERAL REVISIONS (THIS WOULD BE FOR ANY RE-ISSUED DRAWINGS, TYPICAL CHANGES OR CORRECTIONS)
- AM. #000X REVISED AND REDRAWN (MAJOR OVERHAUL OF THE DRAWING, TOO MANY CHANGES TO INDICATE INDIVIDUALLY)
- AM. #000X NEW DRAWING ADDED (DRAWING THAT WAS NOT ORIGINALLY INCLUDED IN THE ADVERTISED SET)
- REVISED IN ACCORDANCE WITH AM. #000X (THIS IS FOR DESCRIPTIVE CHANGES THAT WENT OUT IN THE AMENDMENT - DRAWING IS NOT RE-ISSUED - AND THE CHANGES ARE THEN LATER POSTED TO THE DRAWINGS AS IT BECOMES A CONTRACT SET)
- (DASH) REVISED TO SHOW AS-BUILT CONDITIONS

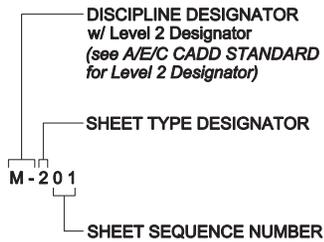
RECORD DRAWING

SHEET IDENTIFICATION NUMBER	PROJECT TITLE PROJECT LOCATION Y Y	 5	U. S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS		DESIGNED BY:	DATE:									
	DWN BY: CKD BY:		SOLICITATION NO.:		SUBMITTED BY:		CONTRACT NO.:								
	FILE NAME:		FILE NUMBER:												
	SIZE:	PLOT SCALE:	PLOT DATE:												
								 R-4  R-1  A  A  A MARK	REVISD TO SHOW AS-BUILT CONDITIONS GENERAL REVISIONS NEW DRAWING ADDED REVISED IN ACCORDANCE WITH AM. NO. 0007 AM. #0003 GENERAL REVISIONS AM. #0001 NEW DRAWING ADDED CHG. ORDER #0001 GENERAL REVISIONS	08-14-2012 06-17-2012 03-27-2012 03-17-2012 02-27-2012 02-17-2012 02-08-2012	APPR.	MARK	DESCRIPTION	DATE	APPR.



### TITLE BLOCK INFORMATION KEY

**SHEET IDENTIFICATION NUMBER:**



**A/E NAME AND LOCATION INFORMATION**

**ADDITIONAL PROJECT INFORMATION  
IF NEEDED**

**DRAWING TITLE**

<b>DESIGNED BY:</b> INITIALS OF DESIGNER		<b>DATE:</b> CURRENT DATE: MONTH AND YEAR EXAMPLE: JUNE 2012	
<b>DWN BY:</b> INITIALS OF CAD TECH. OR DESIGNER	<b>CKD BY:</b> INITIALS OF REVIEWER	<b>SOLICITATION NO.:</b> THIS NUMBER IS ASSIGNED BY CONTRACTING AND ADDED TO TITLE BLOCK AT THE TIME OF PLOTTING ADVERTISEMENT DRAWINGS	
<b>SUBMITTED BY:</b> INITIALS OF REVIEWER/DISCIPLINE SECTION CHIEF		<b>CONTRACT NO.:</b> THIS NUMBER IS ASSIGNED BY CONTRACTING AND ADDED TO TITLE BLOCK AT THE TIME OF PLOTTING CONTRACT AWARD DRAWINGS	
<b>FILE NAME:*</b> NAME OF CADD FILE: FILE NAMES SHOULD BEGIN WITH THE PROJECT CODE ASSIGNED BY THE CAD MANAGER. SEE A/E/C CADD STANDARDS FOR SHEET FILE NAMING CONVENTION		<b>FILE NUMBER:**</b> THIS NUMBER IS ASSIGNED BY PROJECT COORDINATOR AND ADDED TO TITLE BLOCK AT THE BEGINNING OF THE PROJECT	
<b>SIZE:</b> AUTO GENERATED INFO. DO NOT EDIT	<b>PLOT SCALE:</b> AUTO GENERATED INFORMATION DO NOT EDIT	<b>PLOT DATE:</b> AUTO GENERATED INFORMATION DO NOT EDIT	

- \* PROJECT CODE:  
FOR A/E DESIGN PROJECTS  
THIS DESIGNATION IS FOUND  
IN THE SCOPE OF WORK
- \*\* FILE NUMBER:  
FOR A/E DESIGN PROJECTS THIS NUMBER IS FOUND  
IN THE SCOPE OF WORK
- \* PROJECT CODE:  
FOR DESIGN BUILD PROJECTS  
THIS DESIGNATION IS FOUND IN THE R.F.P.
- \*\* FILE NUMBER:  
FOR DESIGN BUILD PROJECTS THIS NUMBER IS  
FOUND IN THE R.F.P.

-	REVISION SYMBOL AND/OR NUMBER: SEE EXAMPLE ABOVE AND/OR AMENDMENT/MOD EXAMPLE DRAWING FOR CLARIFICATION	DATE OF REVISION	INITIALS (IF REQUIRED) BY REVIEWER/DISCIPLINE SECTION CHIEF
R-5	REVISED AND REDRAWN	07-03-2012	
R-4	GENERAL REVISIONS	06-17-2012	
R-1	NEW DRAWING ADDED	03-27-2012	
△	REVISED IN ACCORDANCE WITH AM. NO. 0007	03-17-2012	
△	AM. #0003 GENERAL REVISIONS	02-27-2012	
△	AM. #0001 NEW DRAWING ADDED	02-17-2012	
△	CHG. ORDER #0001 GENERAL REVISIONS	02-12-2012	R.W.S.
<b>MARK</b>	<b>DESCRIPTION</b>	<b>DATE</b>	<b>APPR.</b>

**REVISION SYMBOL AND/OR NUMBER:  
SEE EXAMPLE ABOVE AND/OR  
AMENDMENT/MOD EXAMPLE DRAWING FOR CLARIFICATION**

**INDICATES REVISION TYPE AND DESCRIPTION:  
SEE EXAMPLE ABOVE AND/OR  
AMENDMENT/MOD EXAMPLE DRAWING FOR CLARIFICATION**

**DATE OF REVISION**

**INITIALS (IF REQUIRED) BY REVIEWER/DISCIPLINE SECTION CHIEF**

RECORD DRAWING

SHEET IDENTIFICATION NUMBER <b>X</b>	PROJECT TITLE PROJECT LOCATION Y Y <b>X</b>	U. S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS  <b>X</b> <b>X</b> <b>X</b>	DESIGNED BY: <b>X</b> DWN BY: <b>X</b> CKD BY: <b>X</b> SUBMITTED BY: <b>X</b> FILE NAME: <b>X</b> SIZE: <b>X</b> PLOT SCALE: <b>X</b> PLOT DATE: <b>X</b>	DATE: <b>X</b> SOLICITATION NO.: <b>X</b> CONTRACT NO.: <b>X</b> FILE NUMBER: <b>X</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>MARK</th> <th>DESCRIPTION</th> <th>DATE</th> <th>APPR.</th> <th>MARK</th> <th>DESCRIPTION</th> <th>DATE</th> <th>APPR.</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;"><b>X</b></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td style="text-align: center;"><b>X</b></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td style="text-align: center;"><b>X</b></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td style="text-align: center;"><b>X</b></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	MARK	DESCRIPTION	DATE	APPR.	MARK	DESCRIPTION	DATE	APPR.	<b>X</b>								<b>X</b>								<b>X</b>								<b>X</b>								US ARMY CORPS OF ENGINEERS 
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DIVISION 03 - CONCRETE

SECTION 03 60 00.01 26

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-- End of Section Table of Contents --

## SECTION 03 60 00.01 26

## CONCRETE, ASPHALT, AND MISC DEMOLITION FOR RAIL REPLACEMENT

## PART 1 GENERAL

## 1.1 GENERAL INFORMATION

The work covered by this Section consists of furnishing all material, labor, and equipment, and performing all work for the removal of concrete, crane rails and crane rail substructure from the intake deck, the restoration of the concrete surfaces to the required lines and grades, and placement of equipment foundations in locations required. The Contractor is required to provide protection from concrete dust and water damage to existing and new equipment. Take effective measures to control gas, vapor, fumes, dust, slurry and mist during concrete removal operations. Additional control measure requirements are provided in SECTION 01 57 20.00 10 ENVIRONMENTAL PROTECTION PLAN. Accomplish work described in this Section in accordance with and under limitations stated within this contract.

## 1.2 REFERENCES

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

## ASTM INTERNATIONAL (ASTM)

ASTM C928/C928M (2013) Packaged, Dry, Rapid-Hardening  
Cementitious Materials for Concrete Repairs

## U.S. ARMY CORPS OF ENGINEERS (USACE)

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

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

29 CFR 1910 Occupational Safety and Health Standards

29 CFR 1926 Safety and Health Regulations for  
Construction

## 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. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Removal and Disposal Plan; G, HDC

Saw Cutting Procedure; G, HDC

Core Drilling Procedure; G, HDC

Concrete Imaging Report; G, HDC

Repair Procedure of Concrete Surfaces; G, HDC

SD-06 Test Reports

Preliminary ground wire investigations; G, HDC

#### 1.4 REMOVAL LOCATIONS

Locations of concrete removal areas are shown on the drawings and as described as follows:

- a. Drilling of holes for concrete anchors for new rail anchors.
- b. Asphalt and grout as needed to facilitate rail replacement.
- c. Saw cutting performed to prepare monolith joints for sealing.

#### PART 2 PRODUCTS

See 41 22 14.33 26.

#### PART 3 EXECUTION

##### 3.1 GENERAL SAFETY

###### 3.1.1 General

Accomplish all site work in compliance with EM 385-1-1, 29 CFR 1910 and 29 CFR 1926, as applicable.

###### 3.1.2 Electrical Hazards

The work areas may be in proximity of energized electrical equipment. Formally train and document safety training for all workers required to work in this area. Spray over onto live equipment is hazardous to workers and equipment and is not permitted. Provide CO with signed safety training sheets documenting worker safety training.

##### 3.2 GAS, VAPOR, FUME, DUST, SLURRY AND MIST CONTROL IN POWERHOUSE

Take all necessary measures to effect maximum control of all gases, vapors, fumes, dust, slurry and mists created by Contractor operations under this contract, including crystalline silica. To the maximum extent possible, remove all dust and dirt by vacuum cleaning and mopping, unless otherwise directed by the CO. The required dust and debris control measures include but are not limited to the following:

- a. Provision of exhaust ducts which discharge outside the powerhouse structure where mechanical ventilation is used. Comply with requirements of 29 CFR 1910.94 and 29 CFR 1926.57 for ventilation systems.
- b. Controlled operation of power-driven tools.
- c. Providing and removal of approved dust preventatives in areas that cannot be properly rendered free from excessive dusting by vacuum cleaning and mopping or other methods.
- d. Vacuum cleaning and mopping (or other acceptable method) of spaces within the powerhouse where dust accumulates.
- e. Only air, electrical, propane, or battery-driven equipment may be used inside the powerhouse.

f. The powerhouse is pressurized to prevent dust infiltration from the outside. Keep all doors closed when not in use.

g. Do not block doors for extended periods unless agreed upon in writing by the CO.

h. Methods to prevent exposure of employees to inhalation, ingestion, skin absorption, or contact with any material or substance at concentrations above those specified in 29 CFR 1910.1000, 29 CFR 1926.55 and 29 CFR 1926.58.

### 3.3 TEMPORARY BARRIER

Construct temporary barriers for the control of dust and debris as required by the CO. Submit the design of the barriers for approval, as part of the Concrete Removal and Disposal Plan and must be consistent with SECTION 01 57 20.00 10 ENVIRONMENTAL PROTECTION PLAN.

### 3.4 REMOVAL METHOD

#### 3.4.1 General

Submit a written Removal and Disposal Plan showing equipment to be used, expected noise levels and duration. Submit removal and disposal plan for approval within 60 calendar days after receiving Notice to Proceed. Do not commence any removal without Contracting Officer (CO) approval. All material removed is the property of the Contractor and is required to be disposed of in accordance with applicable regulations. Remove material in a manner that will not fracture the surrounding concrete. Maintain a safety ground from the powerhouse ground system to the frame of the concrete cutting tool during cutting operations to avoid electrical shock hazards. Reinforced concrete removal is required to result in flush, level smooth surface at the lines and grades shown on the drawings. Take care not to damage reinforcing bar in the existing concrete. Explosive or chemical demolition will not be allowed. Provide adequate equipment to remove the pieces of concrete safely and without damage to the surrounding structure. Confine slurry or tailings generated from sawing or drilling operations to the immediate area, and dispose of by vacuuming and mopping. Prevent damage to ground wires and electrical conduit. The existing grounds must not be damaged and will be reused with the new rail. Use the existing reference drawings to plan for Preliminary ground wire investigations which must be discussed in the removal and disposal plan. Submit ground investigation findings for approval prior to further demolition activities. If during any cutting or core drilling activity copper tailings are produced, report such findings in writing to the GQAR. Implement additional dust control measures per paragraph GAS, VAPOR, FUME, DUST, SLURRY AND MIST CONTROL IN POWERHOUSE for work inside the powerhouse.

#### 3.4.2 Recommended Procedure

Saw cutting, core-drilling, wire cutting or any combination thereof is the recommended method for the concrete removal to be done as part of this contract. In addition to cutting, chipping or grinding may be used to bring the concrete profile to the final finished grade. When the portion of concrete to be removed is of such a magnitude that it cannot be extracted in a single piece, perform additional cutting to allow the concrete to be removed in several convenient sized sections.

### 3.4.3 Saw Cutting

Prior to saw cutting, research the area to avoid and identify existing embedded reinforcing, ground wires, conduit, piping and raceways. Securely ground all saw cutting equipment during cutting operations to avoid electrical shock hazards. Submit Saw Cutting Procedure 60 days prior to commencement of saw cutting work for approval; submit together with Concrete Imaging Report. Do not commence any saw cutting without an approved Saw Cutting Procedure and CO approval. No saw cutting is permitted without COR approval. Perform saw cutting at the locations shown on the contract drawings. Use a diamond-bladed saw to make the saw cuts. Saw cuts must be straight and uniform.

### 3.4.4 Core Drilling

Core drilling is not expected on this project. Prior to core drilling, research the area to avoid and identify existing embedded reinforcing, ground wires, conduit, piping and raceways. Refer to reference drawings to assure drill patterns are likely to miss existing reinforcing, ground wires and conduit. Adjust the drill pattern to miss embedded obstructions. Securely ground all core drilling equipment during cutting operations to avoid electrical shock hazards. Submit Core Drilling Procedure 60 days prior to commencement of core drilling work for approval; submit together with Concrete Imaging Report. No core drilling is permitted without COR approval. After core drilling is completed, a Government representative will inspect all cores for copper ground wires before the Contractor disposes of cores.

### 3.4.5 Chipping

When required, bring concrete removed by saw cutting, core drilling, or stitch drilling to the final required lines and grades by using lightweight chipping hammers, bush hammers, grinding or other approved means. Perform chipping operations such that the over breakage does not exceed 2 inches or extend below the existing grade.

### 3.4.6 Existing Concrete Strength

The existing concrete to be removed may be expected to range in strength from about 3,000 to over 6,000 psi. The nominal aggregate size of the concrete is unknown.

### 3.4.7 Existing Embedded Items

Embedded items in the path of the concrete cutting or drilling operations may include, but are not limited to:

- a. Reinforcing steel and minor embedded steel at various distances from the concrete faces.
- b. Steel anchors and form tie backs used in placement of the existing concrete. The number and kind are unknown.
- c. Electrical conduit.
- d. Ground wires.
- e. Grounding wires.

#### 3.4.8 Research of Embedded Items and Concrete Imaging

Prior to concrete demolition, research the area to avoid and identify existing embedded reinforcing, ground wires, conduit, piping and raceways. Refer to as-constructed reference drawings to assure drill patterns are likely to miss existing reinforcing, ground wires and conduit. Research of the area may include concrete imaging techniques such as radiographic imaging, ground penetrating radar, or electromagnetic field detection. Submit a Concrete Imaging Report for approval 7 days prior to commencement of core drilling work and drilling holes for post-installed concrete anchors; submit with Core Drilling Procedure, Saw Cutting Procedure, and Concrete Removal and Disposal Plan. Mark, in a non permanent method, the surface of members in the same pattern as any embedded items identified in the vicinity of concrete removal. Do not remove markings until concrete removal is complete. Adjust drill pattern for coring and for anchor installation to miss embedded items and obstructions to the maximum extent practicable. Include the following in the Concrete Imaging Report at a minimum:

- a. Description of the findings.
- b. Proposed penetration location and purpose of penetration.
- c. Show the proposed concrete to be removed on a dimensioned concrete outline drawing of the area.
- d. Photo or sketch showing:
  - (1) Embedded Items.
  - (2) Proposed penetration location.
  - (3) Dimensions.

#### 3.4.9 Concrete Cutting Tolerances

- a. Accurately locate the concrete cut through the existing concrete. Locate wire or saw cuts within 1/8-inch of plan dimensions.
- b. Accurately locate and drill the core drill holes through existing concrete. Minimize the drill wobble during the drilling operation to assure a true and straight hole meeting specified tolerances.

#### 3.4.10 Quality Control

Establish and maintain a quality control system for the concrete cutting operation. Use a system sufficient to maintain tolerances such that the final concrete cutting conforms to the tolerances outlined in this section of the specifications. The Government reserves the right to inspect this control system to determine if the tolerances are being adhered to, and direct the Contractor to correct and repair any deviations from these tolerances.

#### 3.4.11 Disposal Of Waste Water And Concrete Debris

Use a method in disposing of waste water employed in cutting, washing, and rinsing of concrete surfaces that does not stain, discolor, or affect exposed surfaces of the structure and does not allow waste water to enter the river or reservoir. As some Project drains lead to the river, do not

dispose of waste water in Government drains. Dispose waste water as per the written Concrete Removal Plan. Do not allow debris to enter the river or reservoir and include methods to prevent this in the written Concrete Removal Plan.

#### 3.4.12 Repair Of Concrete Surfaces

Restore concrete surfaces to the required lines and grades shown using a Government approved method. Submit Repair Procedure of Concrete Surfaces for approval 30 calendar days prior to performing repair. Do not commence repair work without an approved procedure. In the repair procedure, include detailed information on all materials and methods used.

- a. If piping, conduit or ground wires are damaged during core drilling or concrete excavation, excavate a sufficient area of the concrete to allow the ground wire, conduit, or piping to be repaired by saw cutting the perimeter of the area to a depth of 1-1/2 to 2 inches, and then complete the remaining excavation needed using hand tools or a bush hammer taking care to preserve embedded reinforcing steel intact. Repair piping, conduit or ground wires per approved methods.
- b. Removal of equipment must leave behind a smooth, level surface at the same grade as the surrounding concrete. Should equipment removal damage the concrete substrate or reveal irregularities that cannot practicably be ground smooth, outline the existing concrete by saw-cutting to prevent over-breakage and remove to a uniform depth of 0.5 to 1.5 inches taking care to avoid damage to embedded reinforcing bar and patch with grout suitable for unconfined concrete repair.
- c. In all areas where concrete removal will leave transverse reinforcing steel exposed, coat the reinforcing and the local area around the bar with an approved epoxy coating unless otherwise indicated.
- d. Repair any anchor holes made in concrete which are to be abandoned following completion of work with non-shrink grout.

#### 3.4.13 Concrete Spall Repair

Repair spall area in structural concrete near grout pocket with ASTM C928/C928M. Cut perimeter of spall area matching the spall depth without damaging existing reinforcement and remove loose material. Clean and prepare the area that receives repair as per manufacturer recommendation. Install new material as per manufacturer recommendation.

#### 3.4.14 Concrete Crack Repair

Repair cracks in structural concrete or grout within the rail pocket with epoxy resin having an appropriate viscosity for the application. Assure that there is no spall around the cracks by sounding the vicinity of the crack with hammer. Cracks are not to be excavated or "V" notched by grinding. Inject low pressure injection grout through drill holes drilled into the crack and fitted with ports. Seal the surface of the crack with a dam of epoxy resin that is bonded at the surface. Products conforming to these requirements and used in the past for these types of repair include: Symons 303N Super Low Viscosity Epoxy Injection Resin and Sikadur 31 Hi-Mod Low Viscosity Crack Cap Seal with Sikadur 35 Hi-Mod Low Viscosity.

-- End of Section --



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## SECTION 41 22 14.33 26

## CRANE RAIL REPLACEMENT

## PART 1 GENERAL

## 1.1 GENERAL INFORMATION

This section covers all work pertaining to replacement of the existing intake crane rail at The Big Bend Powerhouse. This work will include but is not limited to: existing rail and grout bed removal, monolith joint sealing, spall and crack repair, new rail installation, rail alignment, and grouting. All concrete demolition required for this work will be as shown, as per requirements of SECTION 03 60 00.01 26, and as specified herein.

## 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 INTERNATIONAL (ACI)

ACI 308R (2016) Guide to Curing Concrete

## AMERICAN RAILWAY ENGINEERING AND MAINTENANCE-OF-WAY ASSOCIATION (AREMA)

AREMA Eng Man (2010) Manual for Railway Engineering

## ASME INTERNATIONAL (ASME)

ASME B18.2.2 (2015) Nuts for General Applications: Machine Screw Nuts, Hex, Square, Hex Flange, and Coupling Nuts (Inch Series)

## ASTM INTERNATIONAL (ASTM)

ASTM A3 (2012) Standard Specification for Steel Joint Bars, Low, Medium, and High Carbon (Non-Heat-Treated)

ASTM A1 (2000; R 2010) Standard Specification for Carbon Steel Tee Rails

ASTM A183 (2003; R 2009) Standard Specification for Carbon Steel Track Bolts and Nuts

ASTM A193/A193M (2016) Standard Specification for Alloy-Steel and Stainless Steel Bolting Materials for High-Temperature Service and Other Special Purpose Applications

ASTM A194/A194M (2017a) Standard Specification for Carbon

Steel, Alloy Steel, and Stainless Steel  
Nuts for Bolts for High-Pressure or  
High-Temperature Service, or Both

ASTM A325	(2010) Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength
ASTM A36/A36M	(2014) Standard Specification for Carbon Structural Steel
ASTM A436	(1984; R 2015) Standard Specification for Austenitic Gray Iron Castings
ASTM A563	(2015) Standard Specification for Carbon and Alloy Steel Nuts
ASTM C109/C109M	(2016a) Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or (50-mm) Cube Specimens)
ASTM C881/C881M	(2015) Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete
ASTM C882/C882M	(2013a) Bond Strength of Epoxy-Resin Systems Used with Concrete by Slant Shear
ASTM C920	(2018) Standard Specification for Elastomeric Joint Sealants
ASTM C928/C928M	(2013) Packaged, Dry, Rapid-Hardening Cementitious Materials for Concrete Repairs
ASTM C1107/C1107M	(2014a) Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Non-shrink)
ASTM D695	(2010) Standard Test Method for Compressive Properties of Rigid Plastics
ASTM F1554	(2015; E 2016; E 2017) Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength

CRANE MANUFACTURERS ASSOCIATION OF AMERICA (CMAA)

CMAA 70	(2015) Specification for Multiple Girder Cranes
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U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1	(2014) Safety and Health Requirements Manual
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### 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. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Rail Replacement Work Plan; G, HDC

Initial Visual Inspection And Rail Alignment Survey Report; G, HDC

SD-02 Shop Drawings

Shop Drawings; G, HDC

New Anchor Bolt;

SD-03 Product Data

Crane Rail; G, HDC

Rail clips; G, HDC

Nuts and Washers; G, HDC

Joint bars ; G, HDC

Crane Rail Joint Bar Bolts, Nuts, And Washers; G, HDC

exothermic weld kit, equipment, and manufacturer's instructions;  
G, HDC

Base Plate; G, HDC

Non-shrink Grout;G, HDC

Polyurethane Grout;G, HDC

Polyurethane Grout Primer;G, HDC

Concrete Anchor Bolts; G, HDC

Epoxy Adhesive For Concrete Anchors; G, HDC

Closed-Cell Backer Rod; G

Low Pressure Injected Elastomeric Polyurethane; G, HDC

Elastomeric Polyurethane Sealant; G, HDC

SD-06 Test Reports

Rail Alignment And Visual Inspection Prior To Grout Placement; G,  
HDC

Completion Alignment Survey and Report; G, HDC

Grout Inspection And Grout Testing; G, HDC

## Concrete Repair And Anchor Location Inspection Report(s)

Operational Test Report After Completion Of Rail Installation; G,  
HDC

## 1.4 DELIVERY, STORAGE, AND HANDLING

Deliver assembled items, and other materials to the job site in an undamaged condition. Handle and store materials to protect against damage before and after delivery.

## 1.5 SHOP DRAWINGS

Provide shop drawings of all rail work being performed.

## 1.6 RAIL REPLACEMENT WORK PLAN

Submit a work plan for rail replacement for Government approval 90 days prior to start of work. In the work plan, address containment and disposal of debris, venting of fumes, protection of the powerhouse, and worker safety. In the work plan, at the minimum, indicate required crane outages due to rail work activities, the timeline of work and describe in sufficient detail the following items:

- a. Work Sequence to include but not limited to initial surveying, removal and replacement of rails and rail appurtenances, monolith joint sealing, spall and crack repair, installation of new grout, etc. as per plans and specifications.
- b. Initial Visual Inspection and Rail Alignment Survey Report.
- c. Concrete and rail removal and disposal including but not limited to saw cutting procedure, concrete and grout removal, rail and track fitting removal, and removal of existing anchors. Include estimated quantities, procedures, and equipment to be used for all work to remove existing crane rails. See also SECTION 03 60 00.01 26 for concrete removal requirements. Indicate how the end stop will be removed, stored, and installed.
- d. Concrete Imaging and Inspection for Concrete spalls and cracks.
- e. Spall and crack repair procedure for concrete surfaces to include low viscosity epoxy crack repair of newly replaced concrete grout. Include all equipment and methods to be used for concrete removal and all material, methods and equipment to be used for concrete repair. See also SECTION 03 60 00.01 26 for concrete removal requirements.
- f. Monolith joint sealing in grout pocket. Include equipment, methods, and material required for complete installation.
- g. Installation Plan for crane rail to include estimated quantities, procedures, and equipment to be used for all work to install and align new crane rails.
- h. Rail alignment and visual inspection prior to grout placement.
- i. Operational test report at completion.
- j. Completion alignment survey and report.

k. Grout Inspection and testing.

l. Safety measures complying with EM 385-1-1, including methods and equipment to be used during execution of work.

m. Site Access and Protection of Work.

n. Methods used to protect intake deck drains from debris, to include functionality testing before and after rail work completion.

#### 1.7 INITIAL VISUAL INSPECTION AND RAIL ALIGNMENT SURVEY REPORT

Inspect existing anchors, rail, rail fittings, foundations, mechanical rail splice locations, rail lengths, and construction joint locations by means of a visual survey and identify and correct defects likely to impact satisfactory operation of the crane(s). Perform an optical survey of alignment, gage, and grade of the existing rail to CMAA 70 precision standards. Prepare and submit a report of the visual inspection and alignment survey report findings as item B of the RAIL REPLACEMENT WORK PLAN. In the report, include a detailed chart of measurements taken at each location, clearly and accurately identify the locations of deviation or defect, and provide a recommendation for best fit alignment to suit the site conditions and be as close to CMAA 70 alignment requirements as is practicable. Establish datum line off which to base alignment of new rails at each bay.

### PART 2 PRODUCTS

#### 2.1 GANTRY CRANE RAIL MATERIALS

Provide new track materials.

##### 2.1.1 Crane Rail

###### 2.1.1.1 Rail Section Weight and Hardness

Provide rails which comply with AREMA Eng Man and ASTM A1 and are 132 pounds per yard in weight, head hardened, control-cooled, 320 minimum Brinell hardness carbon steel referred to herein as 132-CR. Provide rails in sections as long as practical, but in no case less than 20 feet long.

###### 2.1.1.2 Metallurgical Composition

Provide steel crane rail with chemical composition meeting the requirements of ASTM A1.

###### 2.1.2 Rail Clips and Nuts and Washers

Provide new steel rail clips that are standard one piece single bolt type 62 crane rail clips suitable for use with existing track features. These clips will be used with 132 crane rail. Provide heavy hex nuts, over-sized heavy duty washers, and lock-washers 3/8" for 1 inch diameter concrete anchors. See drawings for rail arrangement and track fitting requirements.

###### 2.1.3 Joint Bars

Provide new joint bars (splice bars) complying with ASTM A3 for 132CR.

Provide splice bars with holes drilled to match hole locations in the new crane rails. Provide new splice bars for both butt-joints and diagonal joints.

#### 2.1.4 Crane Rail Joint Bar Bolts, Nuts, and Washers

Provide splice bar track bolts conforming to ASTM A325, be 1" diameter and be suitable for use with new crane rail and splice bars. Provide heavy hex nuts and lock-washers matching the bolts. See drawings for rail arrangement and rail and splice bar configuration requirements.

### 2.2 FOUNDATION MATERIAL

#### 2.2.1 Base Plate

Provide base plates as shown conforming to the requirements of ASTM A36/A36M having a minimum width of 4 inches and a minimum thickness of 1/2 inch. Minimum length of plates to be as per contract drawings. Minimum edge distance for holes as indicated. Provide holes for 1 inch diameter anchor bolts. Bolt holes must be accurately located, smooth, perpendicular to the member, and cylindrical.

#### 2.2.2 Non-shrink Grout

Provide non-shrink grout which is inorganic, non-metallic, non-gas-liberating cement-based meeting all requirements of ASTM C1107/C1107M; with a minimum 28-day compressive strength of 5,000 pounds per square inch (psi); and with no shrinkage (0.0 percent) and a maximum 2.0 percent expansion in the hardened state.

#### 2.2.3 Concrete Anchor Bolts

New anchor bolts provided to be 1 inch diameter ASTM A193/A193M grade B7 anchors or ASTM F1554 grade 105. Provide 8 inch minimum embedment length for new anchor bolts. Provide concrete anchor nuts conforming to ASTM A194/A194M Grade 2H for ASTM A193/A193M anchors and ASTM A563 Grade DH for ASTM F1554 anchors and conform to the provisions of ASME B18.2.2. Provide washers conforming to ASTM A436 and ASME B18.2.2.

#### 2.2.4 Epoxy Adhesive for Concrete Anchors

Provide two component 100% solids epoxy based system. Conform to the minimum requirements of ASTM C881/C881M for Type IV, Grade 2, or 3, Class A, B, or C and develop a minimum ASTM D695 compressive yield strength of 12,000-psi after 7 day cure, and minimum ASTM C882/C882M bond strength of 1800-psi after 7 day cure. A product meeting this specification is HILTI HIT RE 500 Epoxy Adhesive from HILTI, Inc (US) at 1(800)897-8000.

#### 2.2.5 Elastomeric Polyurethane Grout

To assure compatibility of materials, all of the polyurethane, including primer must be products of the same manufacturer.

##### 2.2.5.1 Polyurethane Grout

Place elastomeric polyurethane grout as shown on the drawings. Provide polyurethane that is 85 durometer, shore A, two part, air-cured, moisture insensitive, cast-in-place material. A product meeting these requirements is FX-587 Polyurethane grout as manufactured by Fox Industries, 3100 Falls

Cliff Road, Baltimore, Maryland 21211, 1-888-760-0369. Other products that comply are BASF Elastocast CUBK 440 polyurethane, or Dural 435 elastomeric polyurethane.

#### 2.2.5.2 Polyurethane Grout Primer

Provide primer as recommended by the manufacturer of the elastomeric polyurethane grout. The bonding agent must be designed to improve the bond between the surrounding concrete and metal surfaces. The primer must be designed to improve the bond of the polyurethane joint seal to the concrete joint faces.

#### 2.2.6 GROUT AND MORTAR FOR UNCONFINED CONCRETE PLACEMENT AND SPALL REPAIR

Provide commercially available prepackaged NS grout or mortar needing only the addition of water and pea gravel (depending on the size of the repair) and consisting of a commercial formulation suitable for the application proposed and meeting the requirements for ASTM C928/C928M. The use of metallic iron in the grout will not be acceptable.

#### 2.2.7 EPOXY ADHESIVE GROUT

For concrete crack repair, provide two part epoxy adhesive grout meeting all requirements of ASTM C881/C881M.

#### 2.2.8 Epoxy Adhesive Grout Crack Injection

Repair small stable cracks in structural concrete and foundation grout with ASTM C881/C881M structural injection epoxy resin having viscosity suitable for use in sealing and filling the concrete cracks.

### 2.3 MONOLITH SEAL MATERIAL

#### 2.3.1 Closed-Cell Backer Rod

Closed-cell backer rod is required to be expandable, closed-cell polyethylene foam designed for use as filler or with cold-applied sealant. Provide backer rod with diameter sized 2-1/2 x the width of the monolith joint that is used in.

#### 2.3.2 Low Pressure Injected Elastomeric Polyurethane

a. Provide low pressure injectable elastomeric polyurethane that has the following performance properties:

- (1) Low viscosity, able to penetrate into cracks >0.2mm in width.
- (2) When cured, permanently elastic, inert and chemically-resistant.
- (3) Polyurethane injectable resin.
- (4) No shrinkage in subsequent dry conditions.
- (6) Solvent-free, environmentally friendly.

b. A product meeting these requirement is Sika Injection-201-CE.

### 2.3.3 Elastomeric Polyurethane Sealant

Provide elastomeric polyurethane sealant meeting ASTM C920 Class 100/50, grade NS. A product meeting these requirement is Sikaflex 2c NS.

## PART 3 EXECUTION

### 3.1 WORKMANSHIP

Handle fittings, rails, and accessories to avoid kinking or other damage. Maintain tracks in proper grade, alignment, curvature, and gage.

### 3.2 RAIL REMOVAL

Complete rail demolition per the requirements of SECTION 03 60 00.01 26, the contract drawings and as specified herein. Remove all existing grout, crane rails, rail clips, anchor bolt nuts, joint bars, joint bar bolts and nuts, and base plates to become property of the contractor. Perform only minimal rail cutting on site; dismantle rail track sections at bolted joints unless the rail segment is longer than 20-feet, or as approved by the COR. The existing crane rails and accessories consist of the following items according to the reference drawings:

- a. Crane Rail - 132# Crane Rail
- b. Rail Clips - No. CR-62
- c. Concrete anchors - Gage of 8 1/2" center to center and a spacing of 24 inches. Embedded portions of the existing concrete anchors are to remain after cutting flush.
- d. Splice Bars - splice bars for 132# crane rail.
- e. Base Plates - 1/2" thick by 4" wide by 12" long.

#### 3.2.1 Concrete Removal

- a. Follow the requirements of SECTION 03 60 00.01 26 and the following additional requirements.
- b. For all concrete removal around the rails, saw cut outline cuts perpendicular to the finished surface of the intake deck and aligned with the sides of the existing rail pockets. Use chipping to remove the remaining concrete. The use of large skid-steer mounted jackhammer for removal of concrete or grout inside grout pocket is not permitted. Use of handheld jackhammer or chipping tool is recommended. Prior to any concrete demolition beyond the existing rail grout bed, research the area to avoid and identify existing embedded reinforcing, ground wires, conduit, piping and raceways. Do not damage embedded ground wires and conductors. Repair any damaged ground conductor at no additional cost to the Government. Report damaged ground conductors to the GQAR immediately and submit repair procedure for approval.

#### 3.2.2 Existing Anchors

The existing concrete anchors should be cut flush at the bottom of the pocket after asphalt and grout removal, and surveying.

### 3.2.3 Disposal of Removed Materials

All existing crane rail and crane rail fitting designated for removal become the property of the Contractor and be removed from the Government property for legal disposal. Title to materials resulting for demolition and items to be removed is vested in the Contractor upon approval by the CO of the Contractor's demolition and removal procedures, and authorization by the Contracting Officer to begin demolition. The Government will not be responsible for the condition, loss of, or damage to such property after contract award. Showing for sale or selling materials and equipment on site is prohibited.

## 3.3 CONCRETE REPAIR AND ANCHOR INSTALLATION

### 3.3.1 Concrete Repair and Anchor Location Inspection Report

For each Bay, following removal of all grout, concrete, existing rail and track fittings, perform a visual inspection for spalls, cracks, and missing anchors. Mark in a non-permanent method, the surface outlining all spalls to be repaired, cracks to be injection repaired, and locations of new anchors. Perform Concrete Imaging and use results to locate new anchors to miss existing reinforcing bars. Submit New Anchor Bolt placement drawing showing location of existing embedded anchor bolts, existing reinforcement, and proposed locations of new epoxy anchor bolts. Contractor shall perform inspection with Government witness and repair locations must be approved by COR at site during the performance of the inspection. Provide 5 days written notice of when such inspections are planned to occur.

### 3.3.2 Spall and Crack Repair

Repair concrete spalls as shown, in the locations approved by the COR, and as per requirements of SECTION 03 60 00.01 26. Quantities and typical spalls are shown on the contract drawings.

### 3.3.3 Anchor Installation

Install new anchors as shown. Install new anchors a minimum distance of 4 inches from existing anchor locations. Prior to installation of new anchor bolt perform concrete imaging as per spec section 03 60 00.01 26. Install new concrete anchor bolts with epoxy adhesive specified herein. Provide drilled hole sizes and epoxy anchor installation method as per manufacturer's instruction. Assure anchor holes are clean and dry prior to epoxy installation. Gage and longitudinal spacing to be as indicated on the drawings. After approval of the new rail installation survey and prior to grouting, cut the existing anchors flush with the top of the nut.

## 3.4 MONOLITH SEAL INSTALLATION

### 3.4.1 Preparation of Monolith Joints

Completely remove old joint sealant, joint backer, spalled concrete, rust and dirt from the existing grout pocket monolith joints that are to receive new seal. Clean joints with saw cutting or other means as recommended by manufacturer of product. Do not pour solvents, greases, oils, or environmentally harmful cleaning agents into monolith joints as these joints are hydraulically connected to the river. After removal of all old sealant and foreign material from a monolith joint, vacuum to remove all loose deleterious material or the clean the joint clean using

compressed air. Do not damage embedded steel angles, or adjacent deck sealing media to remain intact. Should any sealing media be damaged, Contractor is required to repair at no further cost to the Government. Inspect with Government witness all cleaned joints before placing new sealing materials.

#### 3.4.2 Installing Closed-Cell Backer Rod

Before installation of the closed-cell backer rod, ensure the joint is clear of all excess joint stopping material that may interfere with a uniform and complete application of the seal material. After cleaning, compress the closed-cell backer rod into position at the depth indicated on the drawings. Ensure the backer rod is continuous in the joint with no breaks or gaps.

#### 3.4.3 Injecting Low Pressure Elastomeric Polyurethane

Inject the material into position by using increasing pressure to ensure material completely fills the joint. Install Material from bottom to top. Do not increase the application pressure beyond that necessary to achieve grout flow throughout the joint. Allow curing time as per manufacturer recommendations. Strictly follow the manufacturer's recommendations for application; specially during extreme temperatures. Provide means to verify joint is filled completely.

#### 3.4.4 Installing Elastomeric Polyurethane Sealant

Install material into position as shown on the drawings. Install material from bottom to top. Ensure material completely fills the joint. Allow drying time as per manufacturer recommendations. Strictly follow the manufacturer's recommendations for application; specially during extreme temperatures. Provide means to verify joint is filled completely.

#### 3.4.5 Removing Excess Material and Cleaning

Remove excess material prior to the material curing to the maximum extent practicable. For material which has cured, remove with scraping knives, grinding wheels or wire wheels without damaging adjacent intact existing seal media. Removal and cleaning methodologies to minimize damage to existing concrete and steel finishes.

#### 3.4.6 Matching Existing Surrounding Seal On Top of Intake Deck

After installation of rail and grout, install additional material on the top of intake deck surrounding the grout pocket to match the existing seal in color and texture. Within grout pocket, cover the surface sealant with durable, construction tape in order to protect the sealant from the elastocast urethane grout.

### 3.5 INSTALLATION OF CRANE TRACK AND FITTINGS

#### 3.5.1 Crane Rails

Install crane rails and fitting to meet CMAA 70 alignment standards for crane span and straightness as given in CMAA 70 Table 1.4.2-1 and as modified in the approved RAIL REPLACEMENT WORK PLAN. Completely lay out and mark in the field and have approval by the Contracting Officer before any portion of crane rail alignment is installed.

### 3.5.2 Bolted Rail Joints

Provide bolted rail joints to connect crane rail to crane rail fittings. Chamfer rail head at joints in accordance with AREMA Eng Man. No more than one rail splice is permitted in between monolith separation joints. Provide individual rail segments a minimum of 20-feet in length.

#### 3.5.2.1 Joint Bars

Install joint bars with the full number of bolts, nuts and washers. After track has been tested as provided for herein check and tighten bolts prior to installing grout. The openings between railheads must not deviate more than 1/8 inch from the opening recommended for a given temperature. Vertical or horizontal mismatch at joints must not exceed 1/16 inch. Joints must conform to applicable AREMA Eng Man. Tighten joint bar bolts to a tension no less than the proof load given in ASTM A183. Perform tightening with a properly calibrated wrench or by turn of the nut method.

### 3.5.3 Base Plates

Install as indicated on the drawings and as specified herein. Install base plates level to support rail. Stagger rail joints and base plate joints. Base plates are not permitted to span monolith contraction joints. Furnish plates with holes drilled to match new anchor spacing; use as template for setting new anchor bolts. In no case can bolt holes be enlarged in the field. Do not torch, cut holes. Provide finished plate free of bows, bends, and lips, and cleaned of grease and oil. Vertically align base plates to within plus or minus 1/8 inch of the profile grade elevation indicated by adjustment of base leveling nut underneath plates.

### 3.5.4 Ground Straps

Install new ground straps from rail piece to rail piece when replacing the crane rail. Re-establish the connection from rails to powerhouse ground wire. Provide 2/0 AWG ground straps to match the existing ground straps. Exothermically weld the ground straps or connect via irreversible pressure connection listed for the use. Submit for approval the manufacturer's data for the exothermic weld kit, equipment, and manufacturer's instructions. Install exothermic welds using a qualified personnel with previous experience successfully installing exothermic welds.

### 3.5.5 Rail End Stops

Remove and save the existing end stops during rail demolition. Store the end stops so they are not damaged during construction activities. Install the end stops in the previous location once the new rail is placed but prior to grouting. Entomb the end stop base and rail with elastomeric grout the length of the end stop plus a minimum of 6" on either side.

## 3.6 NON-SHRINK GROUT AND REPAIR MORTAR PLACEMENT

### 3.6.1 Preparation

Prior to placing cementitious products, thoroughly clean the area to be grouted to remove all dust, debris, rust, scale, soil and standing water. Contain debris per requirements of 01 57 20.00 25 ENVIRONMENTAL PROTECTION and as per SECTION 03 60 00.01 26 CONCRETE DEMOLITION, REPAIR OF CONCRETE SURFACES, AND EQUIPMENT FOUNDATIONS.

### 3.6.2 Installation

Mix, place, and cure all cementitious products as per manufacturer's recommendations. Apply non-shrink grout to clean surfaces only. Apply grout evenly with full coverage throughout the grout bed. Ensure that grouting methods do not leave voids underneath the base plates. Provide drilled grout ports in the base plate to increase ease and success of grout installation as necessary.

#### 3.6.2.1 Cold Weather Requirements

Do not place cementitious products when the ambient temperature is below 35 degrees F or if the ambient temperature is below 40 degrees F and falling. Provide suitable covering and other means as approved for maintaining the grout at a temperature of at least 50 degrees F for not less than 72 hours after placing and at a temperature above freezing for the remainder of the curing period. Salt, chemicals, or other foreign materials cannot be mixed with the grout to prevent freezing. Remove and replace any cementitious products damaged by freezing at the expense of the Contractor.

#### 3.6.2.2 Hot Weather Requirements

Do not place cementitious materials at temperatures exceeding 80 degrees F. When the rate of evaporation of surface moisture, as determined by use of Figure 1 of ACI 308R, is expected to exceed 0.2 psf per hour, make provisions for windbreaks, shading, fog spraying, or covering with a light-colored material in advance of placement, as quickly as finishing operations allows.

### 3.7 POLYURETHANE GROUT PLACEMENT

#### 3.7.1 Preparation

Clean concrete and steel surfaces prior to primer application per manufacturer's instructions prior to primer application. Clean by initial sandblasting followed by compressed air cleaning immediately prior to primer application. Where sandblasting is not practical or would damage finished work, scrape and wire-brush unpainted steel to remove loose mill scale. Do not apply either primer or polyurethane grout if moisture is observed in the grout bed.

#### 3.7.2 Installation

Ambient air and concrete temperature within the grout bed must be at minimum 50 degrees Fahrenheit and rising at the time of polyurethane grout placement. Follow all manufacturer's recommendations regarding the storage, mixing, pot life, tools and application methods used in applying primer and polyurethane grout. Devise and propose a method as part of the installation plan which will prevent the monolith construction joints from being filled with the polyurethane grout.

### 3.8 CLEANUP

Upon completion of the work, clear job site of equipment, surplus material, and debris. Dispose of such material off Government property and as required in Section 01 57 19.00 25 TEMPORARY ENVIRONMENTAL CONTROLS.

### 3.9 FIELD QUALITY CONTROL

#### 3.9.1 Rail Alignment and Visual Inspection Prior to Grout Placement

Inspect new rail, rail fittings, mechanical rail splice locations, rail lengths, and construction joint locations by means of a visual survey and identify and correct defects likely to impact satisfactory operation of the cranes prior to operational test and prior to grout placement. Perform an optical survey of alignment, gage, and grade of the new rail to CMAA 70 precision standards. Prepare and submit a visual inspection and the alignment survey report of findings from the visual inspection and the alignment survey. Rail work is performed in segments. Perform and submit the required inspection and survey for each segment prior to grouting that segment. Correct all defects identified prior to grouting at no additional cost to the Government.

#### 3.9.2 Grout Inspection and Grout Testing

##### 3.9.2.1 Grout Inspection

The non-shrink grout bed will be inspected by the GQAR for the proper rate of cure and signs of shrinkage as exhibited by cracking. Remove, waste, and replace any non-shrink grout exhibiting any of these deficiencies prior to final acceptance, at no further cost to the government.

##### 3.9.2.2 Grout Testing

Verify nonmetallic, nonshrink grout strength during placement of grout at daily intervals by molding and testing standard cubes of samples taken at the job site. Take three test cubes each day for grout placed that day. Mold and cure test specimens in accordance with ASTM C109/C109M. Furnish necessary labor, materials, and facilities for molding the samples and for handling and storing the cubes at the site of the work. Transport cubes to the laboratory not sooner than 24 hours after molding. Test specimens for compressive strength in accordance with ASTM C109/C109M. For evaluation of grout strength, each strength test result shall be the average of the strengths of specimens tested at 3 days.

#### 3.9.3 Operational Test Report After Completion of Rail Installation

Perform the operational test and submit a report after the rail is installed. The operational test for the crane rail consisting of the gantry crane traversing the entire length of the new track work. The crane must operate without difficulty, without binding of crane wheel flanges, or without visible rail deflection. Coordinate with GQAR to schedule test. Correct or replace any defective items found during the test and correct the causes of excessive deflection, re-survey and retest, and resubmit the report as directed by the GQAR, at no additional cost to the Government.

#### 3.9.4 Completion Alignment Survey and Report

At completion of crane rail replacement, perform an optical survey of alignment, gage, and grade of the new rail to CMAA 70 precision standards. Prepare and submit a report of findings after completion of rail installation and at least 30 days prior to completion of contract. Include a detailed chart of measurements taken at each location in the written report.

3.9.5 Retesting

Retest corrected and replaced items and materials at no additional cost to the government.

-- End of Section --

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