



NAVFAC MIDLANT, Public Works Department, Maine

eProjects#: 1340001

## SPECIFICATION

### DD#3 PROPULSOR

At the

PORTSMOUTH NAVAL SHIPYARD  
KITTERY, ME

PREPARED BY:

NAVFAC Midlant PWD ME  
Building 59  
Portsmouth Naval Shipyard  
Kittery, Maine 03801-2032

REQUEST FOR PROPOSAL PREPARED BY:

Architecture	NA	Electrical	NA
Civil	NA	Fire Protection	NA
Structural	Ian Bodwell, PE	Environmental	NA
Mechanical	NA	Estimating	NA

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Submitted By: Ian Bodwell, PE      Signature:      Date:

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Approved By: Amin Bahrour, PE      Signature:      Date:

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Design Manager: Ian Bodwell, PE      Signature:      Date:

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## SECTION 01 11 00

## SUMMARY OF WORK

08/11

## 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 E2114 (2008) Standard Terminology for Sustainability Relative to the Performance of Buildings

## 1.2 DEFINITIONS

Definitions pertaining to sustainable development are as defined in ASTM E2114, and as specified.

- a. "Environmentally preferable products" have a lesser or reduced effect on the environment in comparison to conventional products and services. This comparison may consider raw materials acquisition, production, manufacturing, packaging, distribution, reuse, operation, maintenance, or disposal of the product.
- b. "Indoor environmental quality" is the physical characteristics of the building interior that impact occupants, including air quality, illumination, acoustics, occupant control, thermal comfort, daylighting, and views.
- c. "Operational performance" is the functional behavior of the building as a whole or of the building components.
- d. "Sustainability" is the balance of environmental, economic, and societal considerations.

## 1.3 NOT USED

## 1.4 WORK COVERED BY CONTRACT DOCUMENTS

## 1.4.1 Project Description

The work includes the fabrication of new Propulsor Enclosure Structure at DD#3 and all incidental related work. The Project involves off-site fabrication that shall be delivered to PNS and installed on site, as well as the modification of existing fabricated units currently at PNS that shall be performed off-site.

## 1.4.2 Location

The work shall be located at the Portsmouth Naval Shipyard, Dry Dock #3,

approximately as indicated. The exact location will be shown by the Contracting Officer.

1.5 NOT USED

1.6 OCCUPANCY OF PREMISES

The site will be occupied during performance of work under this Contract. Before work is started, the Contractor shall arrange with the Contracting Officer a sequence of procedure, means of access, space for storage of materials and equipment, and use of approaches, corridors, and stairways.

1.7 EXISTING WORK

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

- a. Remove or alter existing work in such a manner as to prevent injury or damage to any portions of the existing work which remain.
- b. Repair or replace portions of existing work which have been altered during construction operations to match existing or adjoining work, as approved by the Contracting Officer. At the completion of operations, existing work shall be in a condition equal to or better than that which existed before new work started.

1.8 GOVERNMENT - INSTALLED WORK

1.9 SPECIAL INSPECTIONS

1.10 NOT USED

1.11 NOT USED

1.12 NOT USED

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

-- End of Section --

## SECTION 01 14 00.00 22

WORK RESTRICTIONS (PWD ME) [ALL PROJECTS]  
04/14

## PART 1 GENERAL

This specification applies to all Design Bid Build and Design Build projects.

## 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.

## NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 241 (2009) Standard for Safeguarding Construction, Alteration, and Demolition Operations

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

EM 385-1-1 (2008; Errata 1-2010; Changes 1-3 2010; Changes 4-6 2011; Change 7 2012) Safety and Health Requirements Manual

## 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. The following shall be submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

## SD-01 Preconstruction Submittals

List of Contact Personnel; G

Vehicle List; G

## 1.2.1 SPECIAL SCHEDULING REQUIREMENTS (PNSY)

- a. The facility will remain in operation during the entire construction period. The Contractor shall conduct his/her operations so as to cause the least possible interference with normal operations of the Portsmouth Naval Shipyard.
- b. Permission to interrupt any Portsmouth Naval Shipyard roads, railroads, and/or utility services shall be submitted to the Contracting Officer in writing a minimum of 15 calendar days prior to the desired date of interruption.
- c. Not Used.
- d. The project is located in Dry Dock #3 that will require special

Shipyards coordination and briefing. The Contractor shall coordinate work in these areas with Shipyards personnel. Areas are as indicated on the Plans.

- e. Coordinate the work with the sequencing/phasing requirements outlined in Section 01 11 00 SUMMARY OF WORK.

### 1.3 CONTRACTOR ACCESS AND USE OF PREMISES (PNSY)

Deliveries to Portsmouth Naval Shipyard are limited to 13 foot widths. Notify the Contracting Officer 30 days in advance for any wide loads exceeding 13 feet. The Contractor shall contact the Contracting Officer to determine if there are other access limitations at the Portsmouth Naval Shipyard.

Ensure that Contractor personnel employed on the Portsmouth Naval Shipyard become familiar with and obey Portsmouth Naval Shipyard regulations. Keep within the limits of the work and avenues of ingress and egress. Do not enter restricted areas unless required to do so and until cleared for such entry.

All Contractors' equipment shall be conspicuously marked for identification.

#### 1.3.1 Subcontractors and Personnel Contacts

Furnish a list of contact personnel of the Contractor and subcontractors including addresses and telephone numbers for use in the event of an emergency. As changes occur and additional information becomes available, correct and change the information contained in previous lists.

#### 1.3.2 Vehicle List

Submit an original list of vehicles to be utilized at the work site with the following information for each vehicle:

- a. Make
- b. Year
- c. Model
- d. License number
- e. Registered owner
- f. Current Base passes expiration date.

#### 1.3.3 Identification Badges and Installation Access

- a. Application for and use of badges will be as directed. Obtain access to the installation by participating in the Navy Commercial Access Control System (NCACS) or by obtaining passes each day from the Station's Pass and Identification/Security Office.

Costs for obtaining passes through the NCACS are the responsibility of the Contractor. One-day passes, issued through the Station's Pass and Identification Office, will be furnished without charge. Furnish

a completed EMPLOYMENT ELIGIBILITY VERIFICATION (DHS FORM I-9) form for all personnel requesting badges. This form is available at <http://www.uscis.gov/portal/site/uscis> by searching or selecting Employment Verification Form I-9. Report any instances of lost or stolen badges to the Contracting Officer immediately.

- b. NCACS Program: NCACS is a voluntary program in which Contractor personnel who enroll, and are approved, are subsequently granted access to the installation for a period up to one year, or the length of the contract, whichever is less, and are not required to obtain a new pass from the Station Pass and Identification Office for each visit. The Government performs background screening and credentialing. Throughout the year the Contractor employee must continue to meet background screening standards. Periodic background screenings are conducted to verify continued NCACS participation and installation access privileges. Under the NCACS program, no commercial vehicle inspection is required, other than for Random Anti-Terrorism Measures (RAM) or in the case of an elevation of Force Protection Conditions (FPCON).

Information on costs and requirements to participate and enroll in NCACS is available at:

<http://www.rapidgate.com/vendors/how-to-enroll>

Or by calling 1-877-727-4342. Contractors should be aware that the costs incurred to obtain NCACS credentials, or costs related to any means of access to a Navy Installation, are not reimbursable. Any time invested, or price(s) paid, for obtaining NCACS credentials will not be compensated in any way or approved as a direct cost of any contract with the Department of the Navy.

- c. All Contractors who possess a Navy Commercial Access Control (NCAC) System Card are required to present a second form of valid ID to the Gate Sentry, if requested, upon arrival at the Installation's Entrance Gate.

All Contractor personnel without CAC cards will need two forms of approved identification for success to the Installation.

See Attachment A for the list of acceptable identification documents.

- d. One-Day Passes: Participation in the NCACS is not mandatory, and if the Contractor chooses to not participate, the Contractor's personnel will have to obtain daily passes, be subject to daily mandatory vehicle inspection, and will have limited access to the installation. The Government will not be responsible for any cost or lost time associated with obtaining daily passes or added vehicle inspections incurred by non-participants in the NCACS.

#### 1.4 STATION REGULATIONS

##### 1.4.1 Radiological

##### 1.4.1.1 Radiological Indoctrination (PNSY)

All Contractors working at the Portsmouth Naval Shipyard are required to view a 15 minute video briefing on radiological postings and controls in

use at the Portsmouth Naval Shipyard. The briefing will be given at the Pass Office prior to issue of security badges and vehicle passes.

Any Contractor employee, who disregards, alters, moves, or otherwise tampers with a radiological posting, or who disobeys a radiological instruction, may be removed from the Portsmouth Naval Shipyard and denied future access.

#### 1.4.1.2 Yellow Materials (PNSY)

Contractors working at the Portsmouth Naval Shipyard shall not use yellow or orange-yellow colored materials for the following purposes: Protective clothing, hoods, sheeting, tarpaulins, polyethylene bottles or other containers, tapes, bags, banding, identification marks on tools, boundary markers, ribbons, vent ducts, temporary erosion control devices, survey ribbon, etc. The Contractor shall contact the Contracting Officer for a list of yellow items that have been approved for use on the Shipyard. Contractor generated yellow colored waste shall be disposed of by the Contractor off-yard. Shipyard refuse containers shall not be used for disposal of yellow colored waste materials. Yellow colored items such as described above are of special significance within the Shipyard and are subject to strict controls. Yellow colored contract generated debris shall be bagged in non-translucent containers, and promptly removed from Portsmouth Naval Shipyard.

#### 1.4.1.3 Smoke Detectors (PNSY)

Ionization type smoke detectors and duct smoke detectors contain radioactive material and are prohibited from use on the Portsmouth Naval Shipyard. Photoelectric smoke detectors are the only type authorized for use on the Shipyard.

#### 1.4.1.4 Radioactive Sources

All contracts involving radiation generating devices shall conform to the requirements listed in Section 01 35 26.00 22 GOVERNMENTAL SAFETY REQUIREMENTS (PWD ME) and U.S. Army Corps of Engineers Safety Manual EM 385-1-1. All requirements are to be submitted to the Contracting Officer at least 14 days prior to commencement of operations involving radiation generating devices. A requirements checklist will be provided by NAVFAC (COTs) Contractor Oversight Technician and also available on PWD Maine website:

[https://www.navfac.navy.mil/navfac\\_worldwide/atlantic/fecs/mid-atlantic/pwd\\_maine/about\\_us/construction.html](https://www.navfac.navy.mil/navfac_worldwide/atlantic/fecs/mid-atlantic/pwd_maine/about_us/construction.html)

#### 1.4.2 Laser Control

Contractor shall comply with laser safety requirements under 21 CFR 1040 and ANSI 2136.1-1986 for any work under this contract utilizing lasers.

#### 1.4.3 Energy Conservation

In cooperation with Government representatives, the Contractor shall participate in an active program directed toward the efficient use of energy. Government furnished utilities will not be provided for air conditioning of Contractor trailers or office areas.

#### 1.4.4 Fire Prevention (PNSY)

Contractor shall familiarize and require all their employees to become familiar with fire prevention regulations within the Portsmouth Naval Shipyard to include the proper method of turning in a fire alarm, storage of flammable and combustible materials and control of combustible waste and trash. Any HOT WORK (welding, burning, grinding, cutting, etc.) requires a HOT WORK PERMIT prior to commencing such work. This permit is obtained from the Portsmouth Naval Shipyard's Fire Department via the Contracting Officer.

#### 1.4.5 Identification and Control of Seamed (Welded) Pipe and Tubing

Submarine Safety regulations prohibit the use of seamed (welded) pipe or tubing within the Portsmouth Naval Shipyard, unless such pipe or tubing is identified and controlled so as to prevent its inadvertent substitution for seamless pipe or tubing. The following requirements apply and will be strictly enforced:

Any seamed (welded) copper-nickel, carbon steel, carbon-moly steel, stainless steel, nickel-chromium-iron alloy, or nickel-copper pipe or tubing the Contractor intends to use on the Shipyard shall be identified in the following manner PRIOR TO DELIVERY TO THE SHIPYARD:

Use a lead-free white paint, to mark a 24-inch long stripe and the word "welded" alternately along the entire length of the pipe or tubing. Apply a one-half inch wide stripe unless the size of the pipe or tubing requires use of a narrower stripe.

Contractor shall maintain positive control over seamed pipe or tubing until worked into place or removed from the Shipyard.

Seamless pipe or tubing may be substituted for any seamed (welded) pipe or tubing specified in the technical specifications.

The above requirements do not apply to square or rectangular tubing, copper or brass pipe or tubing, they also do not apply to piping or tubing which has been incorporated into equipment or fixtures prior to delivery to the Shipyard.

#### 1.4.6 Pesticide and Herbicide Control

Contractor shall not apply pesticides nor herbicides unless specifically required by this contract. Where application of pesticides or herbicides is required, provide the submittals required by the specification and obtain written approval prior to any application. Contracting Officer will require review and approval of pesticides or herbicides submittals.

#### 1.4.7 Smoking Policy

In accordance with NAVFAC policy, smoking is prohibited inside all buildings and other facilities except those areas specifically identified as smoking areas (e.g., smoking shelters). Smoking is not permitted within 20 feet of air intakes, doorways or windows.

#### 1.4.8 Portal Crane Clearance Zone (PNSY)

The Contractor shall ensure there is no construction debris or materials

within the Crane Clearance Zone (i.e., between the painted yellow lines on each side of the rail) unless a rail outage has been approved.

#### 1.5 WORKING HOURS (PNSY)

Regular working hours shall consist of a period established by the Contracting Officer between 7 AM and 3:30 PM, Monday through Friday, excluding Government holidays. The regular working hours shall be confirmed with the Contracting Officer.

##### 1.5.1 Work Outside Regular Hours (PNSY)

Work outside regular working hours requires Contracting Officer approval. Provide written requests fifteen (15) Calendar days prior to such work to allow arrangements to be made by the Government for inspecting the work in progress and to allow scheduling of full time escorts in the building(s) if required. During periods of darkness, the different parts of the work shall be lighted in a manner approved by the Contracting Officer.

Contractors that utilize NCACs are responsible to coordinate for the correct access times with the Contracting Officer and the RAPID Gate Operations Center. If a contractors attempts access outside of their approved times, access to the Shipyard will be denied.

#### 1.6 WORK IN OCCUPIED BUILDING(S)

Work under this contract may be located in an occupied building. Move unfixed furniture away from Contractor's working area as required to perform the work; protect; and replace in original locations upon completion of the work. Leave fixed equipment in place and protect against damage or temporarily disconnect, relocate, protect, and reinstall at completion of work. If determined necessary by the Contracting Officer, the Government will remove and relocate other Government property in the areas of the buildings scheduled to receive work. Allow 15 calendar days after written notification from the Contractor for the Government to relocate Government property.

#### 1.7 UTILITY CUTOVERS AND INTERRUPTIONS

Make utility cutovers and interruptions after normal working hours or on Saturdays, Sundays, and Government holidays as approved by the Contracting Officer. Conform to procedures required in the paragraph "Work Outside Regular Hours." Anticipated costs shall be included in the bid.

Ensure that new utility lines are complete, except for the connection, before interrupting existing service.

Interruption to Water, Sanitary Sewer, Storm Sewer, Telephone Service, Electric Service, Air Conditioning, Heating, Fire Alarm, Compressed Air, and other utilities shall be considered utility cutovers pursuant to the paragraph entitled "Work Outside Regular Hours." This time limit includes time for deactivation and reactivation.

Operation of Station Utilities: The Contractor shall not operate nor disturb the setting of control devices in the Station's utilities system, including water, sewer, electrical, and steam services. The Government will operate the control devices as required for normal

conduct of the work. The Contractor shall notify the Contracting Officer in writing within 15 calendar days when such operation is required depending on the utility.

#### 1.8 CRANE AND RAILROAD TRACKAGE INTERRUPTIONS (PNSY)

Crane and railroad trackage are considered utilities, and as such are subject to strict scheduling approvals. Where the following contract work is planned, submit written requests for outages a minimum of 15 calendar days prior to the desired date of interruption to the Contracting Officer:

Any excavation, that is within 10 feet of a rail that will extend below the grade of the cross ties.

Any work performed that will penetrate a track foundation.

Any work involving trackage replacement or repair.

Any work affecting the load bearing capacity of the trackage.

No work shall be conducted in affected areas until the Contractor receives written approval to the request for outage.

#### 1.9 WORK ADJACENT TO CIA SECURITY FENCING (PNSY)

Work adjacent to Portsmouth Naval Shipyard Controlled Industrial Area (CIA) fencing is strictly controlled to ensure security is maintained at all times.

Work which will breach CIA fencing is prohibited unless approval has been obtained from Head of Security Operations (Code 1720) and a Shipyard Police representative is at the worksite during the period that the fence has been breached.

A minimum of 30 calendar days prior to performing work which requires breaching the CIA security fence, arrange through the Contracting Officer to obtain Head of Security Operations approval and scheduling of the Shipyard Police representative. "Breaching the fence" is any repair, alteration, or other work which would allow access into the CIA either over, under, or through an opening in a CIA fence.

Conditions which breach the fence shall be eliminated during all non-work periods to the satisfaction of the Shipyard Police representative. Contractor shall not leave the worksite until such conditions are eliminated. All materials used to close openings in fencing and method of installation shall be the same type and construction as adjacent, undisturbed CIA fencing.

Except for temporary off-loading of materials, the 10-foot zone adjacent to CIA fencing shall remain clear of vehicles, materials, and equipment. Contractor personnel shall be at the site throughout the entire time of any off-loading.

#### 1.10 WORK ADJACENT TO AN OVERHEAD CRANE

Provide a minimum vertical clearance of three (3) inches between the highest point of the crane and the lowest overhead obstruction.

For buildings where truss sag becomes a factor, increase the clearance as necessary to maintain the minimum required clearance.

The horizontal clearance between the end of the crane and the building columns, knee braces or any other obstructions shall not be less than two (2) Inches with the crane centered on the runway rails. Pipes, conduits, etc. shall not reduce this clearance.

The vertical clearance beneath a bridge crane is to be at least three (3) inches. This clearance is not applicable to the hook block unless it is in its up most position.

For work involving installation, adjustment, or replacement of rail fasteners (e.g. clips/bolts), the Contractor shall verify the existing crane envelope and clearance measurements around the rail head prior to beginning work. The Contractor shall notify the Government if the work will reduce the clearance between the bridge crane and rail fasteners and ensure newly installed items will not obstruct bridge crane travel.

The Contractor shall notify the Government to verify that crane clearance has been maintained when the work performed may have changed any physical dimensions of objects or structures adjacent to the crane (e.g., changing or servicing lighting fixtures/pendant assemblies, removal and reinstallation of pipes, conduits, junction boxes, etc.). If the crane is not available (e.g., undergoing maintenance, inspection, etc.), the Contractor shall verify crane clearance by taking measurements using reference points (e.g., vertical and horizontal distance from the top of crane rail with respect to the crane envelope, vertical distance from the floor with respect to the crane envelope, etc.).

#### 1.11 FIRE PROTECTION

##### 1.11.1 Compliance (PNSY)

The Contractor shall comply with COE EM 385-1-1, NFPA 241, NAVSHIPYD PTSMH INST 11320.6 (latest revision Fire Safety Manual and NAVSHIPYD PTSMH INST 11300.9 (Latest revision) for work at the Portsmouth Naval Shipyard, Utility and Facility Outages, and Portsmouth Naval Shipyard fire regulations. Obtain approval from the Portsmouth Naval Shipyard Fire Chief via the Contracting Officer prior to commencement of hot work operations.

##### 1.11.2 Fired Kettles

Melt kettles for tar, asphalt, and similar materials shall not be closer than 25 feet to buildings or combustible materials. Provide a minimum of two 20 pound ABC all-purpose type extinguishers at the melting kettle and the area of hot material application. Equip kettles with proper heat controls and means of agitation to assure controlled uniform temperatures throughout contents to prevent spot heating. Do not heat contents above flash point.

##### 1.11.3 Notification of Fire (PNSY)

Post the Portsmouth Naval Shipyard fire poster in conspicuous locations and at telephones in construction shacks.

#### 1.12 SECURITY REQUIREMENTS

## 1.12.1 General

Contractor employees and representatives performing work under this contract are required to be United States citizens. If naturalized, the individual shall present his naturalization papers to the Security Officer for inspection. Foreign born personnel shall present evidence of citizenship regardless of citizenship of parents, as required by immigration laws.

## 1.12.2 Access to the Portsmouth Naval Shipyard (PNSY)

Contract Clause "FAR 52.204-2, Security Requirements and Alternate II" and the following apply:

Access to areas designated as "Red Badge" will require the Contractor to be escorted by a "Red Badged" Government Representative. The Contractor shall notify the Contracting Officer at least 14 Calendar Days in advance of the date access is required.

Obtain security badges and vehicle passes to enter the Portsmouth Naval Shipyard at the Portsmouth Naval Shipyard's Pass/Security Office. Contractor must furnish proof that employees are U.S. citizens to obtain badges to enter the Portsmouth Naval Shipyard.

Contractor must have a completed Department of Homeland Security Form I-9; Employment Eligibility Verification for each employee and furnish proof that employees are U.S. citizens to obtain badges to enter Portsmouth Naval Shipyard.

## 1.12.3 Application and Issue of Security Badges

"Temporary" Security Badges will be issued to Contractor personnel requiring access for less than two (2) work days upon satisfactory proof of U.S. citizenship, in the form of an original or certified birth certificate, passport, or naturalization papers. A picture ID is required in addition to satisfactory proof of citizenship.

"Permanent" (photo) Standard Access Control Badges will be issued to Contractor personnel requiring access for two (2) or more work days. Contractor personnel will be required to complete an authorization application form for local record check, and a personal information sheet. The forms will be furnished to the Contractor following award of any contract resulting from this solicitation, at time of pre-performance or pre-construction conference.

In the event the Contractor requires access to contract work areas not permitted by the level of security badge issued, such need shall be demonstrated and an escort obtained. The escort shall remain visible to the Contractor at all times within areas requiring escort.

STANDARD ACCESS CONTROL BADGES SHALL BE ATTACHED TO THE OUTER GARMENT AND DISPLAYED AT ALL TIMES WHILE ON THE STATION.

CONTRACTOR PERSONNEL SHALL NOT ENTER AREAS FOR WHICH THEY HAVE NOT BEEN CLEARED. WHERE A NEED HAS BEEN DEMONSTRATED TO ENTER SUCH AREAS, CONTRACTOR SHALL BE UNDER CONSTANT ESCORT BY PERSONNEL WHO HAVE BEEN CLEARED. FAILURE TO ADHERE TO POSTED SECURITY REQUIREMENTS MAY RESULT IN REMOVAL OF THE EMPLOYEE FROM THE STATION WITH FUTURE ACCESS DENIED.

#### 1.12.4 Application and Issue of Vehicle Passes (PNSY)

Vehicle passes will be issued upon satisfactory proof of a valid Operator's License, Vehicle Insurance, and State Vehicle Registration. Temporary passes will be issued for short term or single trip requirements on a case by case basis. All vehicles permitted to enter or park on the Portsmouth Naval Shipyard shall comply with the Portsmouth Naval Shipyard's traffic and parking regulations and shall only park in assigned areas, which may or may not be in the vicinity of the site of the contract work. No vehicle shall be parked in such a manner that crane tracks, railroad tracks, and vehicle access routes are blocked. Vehicles left unattended which are blocking such access routes are subject to towing and loss of vehicle passes. Parking on the Portsmouth Naval Shipyard may be in excess of one-half mile from the worksite.

#### 1.12.5 Application and Issue of Vehicle Passes for Entry into Portsmouth Naval Shipyard's Controlled Industrial Areas (CIA)

Contractor vehicular access to the CIA will be minimized and all vehicles shall comply with the following requirements:

Vehicles must visibly display a CIA vehicle entry pass and inspection pass from the Commercial Vehicle Inspection Station (CVIS), Building 386. CIA passes will only be issued to company owned or leased vehicles, rental vehicles rented in the company name, or privately owned vehicles the company has certified in writing, to be necessary in the performance of contracted work. A current license, registration, security badge, and decal number or temporary vehicle pass is required for a CIA vehicle entry pass. Contractor's company name must appear on the registration and on the vehicle. CIA passes will be issued on weekends and holidays at Building 29, from the Watch Supervisor. Contractors not possessing the level security badge required for CIA access must be accompanied by a properly badged escort to obtain the CIA vehicle pass.

Vehicles must clearly display an authorized company sign or logo, in the form of an exterior mounted magnetic signs or painted identifications on both sides of the vehicle. Paper or cardboard signs are not authorized.

Vehicles will only be allowed in the CIA for the transportation of Contractor's tools, parts, and materials to and from the worksite. An exception to this policy, Contractors may transport employees to and from the worksite if a specific security plan has been developed and approved by the Shipyard Security Officer.

Parking of privately-owned vehicles within the CIA is prohibited.

#### 1.12.6 Application and Issue of Crane Passes

(PNSY) Comply with EM 385-1-1.

For Cranes Passes at the Portsmouth Naval Shipyard to be valid, the Certificate of Compliance must be stamped with a red, Code 700 Access Review Date and Signature Stamp displaying the current date.

#### 1.12.7 Return of Badges and Vehicle Passes

Contractor shall ensure all vehicle access permits and personnel badges are returned to the Security Officer when the need has ended. Contractor shall account in writing for each missing pass or badge prior to final payment being made on the contract.

#### 1.12.8 Contractor Security Responsibilities (PNSY)

Contractor employees shall not transport, drink, or have in their possession any alcoholic beverages. Possession of any controlled substances without a physician's prescription is also prohibited. Any Contractor employee appearing to be under the influence of intoxicating liquor or narcotics will be apprehended by Shipyard Police, escorted off of the Portsmouth Naval Shipyard, and turned over to the local Police Department.

Any vehicle found to contain controlled substances, including usable residue, may be seized and impounded. Within 24 hours of the work day following any vehicle seizure, the Portsmouth Naval Shipyard Police will have determined whether forfeiture of the vehicle is required. If not, the vehicle will be returned to the owner or authorized agent. If the vehicle is determined to be appropriate for forfeiture, the Portsmouth Naval Shipyard's Legal Officer will notify the Drug Enforcement Administration of such seizure and impoundment, for initiation of forfeiture proceedings pursuant to Title 21, U.S. Code, Section 881. Such actions may be taken regardless of whether the owner/operator of the vehicle had knowledge of the presence of drugs in the vehicle. The Government may pursue criminal or other disciplinary actions pursuant to Title 18, U.S. Code, Section 1382.

Possession of firearms, ammunition and/or explosives is prohibited. In the event explosives are required for construction work, specific handling requirements and approvals shall be obtained from the Security Officer via the Contracting Officer.

Cameras, video equipment, or similar photographic equipment shall not be introduced into nor removed from the Portsmouth Naval Shipyard. In the event such equipment is required for performance of contract work, approvals shall be obtained from the Security Officer via the Contracting Officer.

Weapons (firearms, personal knives with blades 2-1/2 inch long or greater, Mace, Pepper Spray etc.) are not permitted aboard the shipyard.

Cell phones equipped with cameras are permitted aboard the Portsmouth Naval Shipyard outside NAVSEA controlled spaces such as the CIA, but using them to take pictures is not allowed. Cameras, or cell phones equipped with cameras, are not allowed in the CIA or in any NAVSEA space such as an NWA, CNIA or Security Island.

Laptop computers shall not be introduced into nor removed from the Portsmouth Naval Shipyard. If laptop computers are required to perform work, obtain approvals from the Security Officer via the Contracting Officer.

Driver use of a hand-held cellular phone in a moving vehicle on the Portsmouth Naval Shipyard is prohibited. This prohibition does not include hands-free cellular phone devices. Hands-free devices include console/dash-mounted or otherwise secured cellular phones with integrated features such as voice-activation, speed dial, speakerphone or other

similar technology for sending and receiving calls.

Driver use of any portable, personal listening device worn inside the aural canal, around or covering the driver's ear while operating a motor vehicle is prohibited. Listening devices include wired or wireless earphones and headphones (including blue tooth or similar technology), and do not include hearing aids or devices designed and required for hearing protection.

The use of radar or laser detection devices to indicate the presence of speed recording instruments or to transmit simulated erroneous speeds is prohibited in accordance with OPNAVINST 5100.2H.

The Contractor shall indoctrinate personnel on access limitations to ensure security control is maintained as an integral part of their work pattern and habit.

Contractor shall indoctrinate his/her personnel on escorting procedures and responsibilities.

Contractor personnel acting as escorts for other Contractor personnel assume full responsibility for their actions. Escorts shall be within sight of the persons being escorted at all times.

Contractor is advised that any unescorted personnel found in security areas requiring a higher level clearance than the level represented by the badge displayed will be removed from the area with possible confiscation of security badges and vehicle passes.

#### 1.13 MARINE ACTIVITIES (PNSY)

- a. The Contractor shall coordinate all marine vessel movements with the Contracting Officer's Representative and the Shipyard's Port Operations Department. The Contractor shall submit a weekly updated schedule showing proposed docking locations and vessel movements to the Contracting Officer's Representative. The Contractor shall meet with the Contracting Officer Representative and Shipyard Port Operations Representative weekly to review the vessel schedule.
- b. Any Contractor waterborne craft or vessel movements which will be adjacent to any naval vessels shall be made under the direction of the Shipyard's Pilot. The Contractor shall notify the Contracting Officer's Representative at least 14 calendar days in advance of any movements that will require the Shipyard Pilot.
- c. All Contractor waterborne craft shall at all times maintain a minimum of ten (10) feet clearance to any Government Barge in the vicinity of the work. This applies to subcontractors and materials suppliers as well as to the prime Contractor. This minimum clearance shall also take into account any materials or equipment present on the Contractor craft that could reduce this effective clearance distance. This restriction is in effect at all times 24/7 including overnight hours and weekends.
- d. All marine activities shall be completed to a manner that ensures the stability of caissons, piers, berths, bulkheads, fender systems, mooring hardware and other structures adjacent to the work site. The Contractor shall repair any damage caused by the Contractors operations or vessels.

- e. When not in use, the Contractor vessels shall be tied up at a location approved by the contracting Officer's Representative and the Shipyard's Port Operations Department.
- f. Any waterborne craft which is deemed to be unsafe by the Contracting Officer's Representative shall be prohibited from working at the Shipyard. Copies of all inspections and certificates shall be submitted to the Contracting Officer's Representative for approval prior to bringing any vessel to the Shipyard.

#### 1.14 CONSTRUCTION VEHICLES

The Contractor shall not utilize any vehicle that will exceed an HS20 wheel load. The use of "off road" vehicles which cannot be legally operated on State roadways or highways is prohibited.

#### PART 2 PRODUCTS

Not used.

#### PART 3 EXECUTION

Not used.

-- End of Section --

## ATTACHMENT A

### LISTS OF ACCEPTABLE DOCUMENTS

All documents must be unexpired

#### LIST A

Documents that Establish Both  
Identity and Employment  
Authorization

#### LIST B

Documents that Establish  
Identity

#### LIST C

Documents that Establish  
Employment Authorization

OR

AND

1. U.S. Passport or U.S. Passport Card	1. Driver's license or ID card issued by a State or outlying possession of the United States provided it contains a photograph or information such as name, date of birth, gender, height, eye color, and address	1. Social Security Account Number card other than one that specifies on the face that the issuance of the card does not authorize employment in the United States
2. Permanent Resident Card or Alien Registration Receipt Card (Form I-551)		
3. Foreign passport that contains a temporary I-551 stamp or temporary I-551 printed notation on a machine-readable immigrant visa	2. ID card issued by federal, state or local government agencies or entities, provided it contains a photograph or information such as name, date of birth, gender, height, eye color, and address	2. Certification of Birth Abroad issued by the Department of State (Form PS-545)
4. Employment Authorization Document that contains a photograph (Form I-766)	3. School ID card with a photograph	3. Certification of Report of Birth issued by the Department of State (Form DS-1350)
5. In the case of a nonimmigrant alien authorized to work for a specific employer incident to status, a foreign passport with Form I-94 or Form I-94A bearing the same name as the passport and containing an endorsement of the alien's nonimmigrant status, as long as the period of endorsement has not yet expired and the proposed employment is not in conflict with any restrictions or limitations identified on the form	4. Voter's registration card	4. Original or certified copy of birth certificate issued by a State, county, municipal authority, or territory of the United States bearing an official seal
	5. U.S. Military card or draft record	
	6. Military dependent's ID card	5. Native American tribal document
	7. U.S. Coast Guard Merchant Mariner Card	
	8. Native American tribal document	
6. Passport from the Federated States of Micronesia (FSM) or the Republic of the Marshall Islands (RMI) with Form I-94 or Form I-94A indicating nonimmigrant admission under the Compact of Free Association Between the United States and the FSM or RMI	9. Driver's license issued by a Canadian government authority	6. U.S. Citizen ID Card (Form I-197)
	For persons under age 18 who are unable to present a document listed above:	7. Identification Card for Use of Resident Citizen in the United States (Form I-179)
	10. School record or report card	
	11. Clinic, doctor, or hospital record	
	12. Day-care or nursery school record	8. Employment authorization document issued by the Department of Homeland Security

Illustrations of many of these documents appear in Part 8 of the Handbook for Employers (M-274)

## SECTION 01 20 00.00 20

PRICE AND PAYMENT PROCEDURES (PWD ME) [DESIGN BID BUILD PROJECTS]  
07/13

## 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)

EP-1110-1-8 (2009) Construction Equipment Ownership  
and Operating Expense Schedule

## 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. The following shall be submitted in accordance with Section

## 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Schedule of Prices; G

## 1.3 SCHEDULE OF PRICES

All progress payment amounts will be derived from and tied to the cost loaded schedule activities per Section 01 32 17.00 25 NETWORK ANALYSIS SCHEDULES (NAS) (PWD ME).

## 1.3.1 Data Required

Within 15 calendar days of notice of award, prepare and deliver to the Contracting Officer a Schedule of Prices (construction contract) as directed by the Contracting Officer. Provide a detailed breakdown of the contract price, giving quantities for each of the various kinds of work, unit prices, and extended prices. Provide labor, material, equipment for each line item. Costs shall be summarized and totals provided for each construction category.

## 1.3.2 Schedule Instructions

Payments will not be made until the Schedule of Prices has been submitted to and accepted by the Contracting Officer. Identify the cost for site work, and include incidental work to the 5 ft. line. Identify costs for the building(s), and include work out to the 5 ft. line. Work out to the 5 ft. line shall include construction encompassed within a theoretical line 5 ft. from the face of exterior walls and shall include attendant construction, such as pad mounted HVAC cooling equipment, cooling towers, and transformers placed beyond the 5 ft. line.

1.3.3 NOT USED

1.3.4 NOT USED

1.4 CONTRACT MODIFICATIONS

In conjunction with the Contract Clause "DFARS 252.236-7000, Modification Proposals-Price Breakdown," and where actual ownership and operating costs of construction equipment cannot be determined from Contractor accounting records, equipment use rates shall be based upon the applicable provisions of the EP-1110-1-8.

1.5 CONTRACTOR'S INVOICE AND CONTRACT PERFORMANCE STATEMENT

1.5.1 Content of Invoice

Requests for payment will be processed in accordance with the Contract Clause FAR 52.232-27, Prompt Payment Construction Contracts and FAR 52.232-5, Payments under Fixed-Price Construction Contracts. The requests for payment shall include the documents listed below.

- a. The Contractor's invoice, on NAVFAC Form 7300/30 furnished by the Government, showing in summary form, the basis for arriving at the amount of the invoice. Form 7300/30 shall include certification by Quality Control (QC) Manager as required by the contract.
- b. The Estimate for Voucher/ Contract Performance Statement on NAVFAC Form 7300/31 furnished by the Government, showing in detail: the estimated cost, percentage of completion, and value of completed performance for each of the construction categories stated in this contract. Use NAVFAC LANT Form 4-330/110 (New 7/84) on NAVFAC LANT contracts when a Monthly Estimate for Voucher is required.
- c. Updated Project Schedule and reports required by the contract.
- d. Contractor Safety Self Evaluation Checklist.
- e. Other supporting documents as requested.
- f. Updated copy of submittal register.
- g. Invoices not completed in accordance with contract requirements will be returned to the Contractor for correction of the deficiencies.
- h. Contractor's Monthly Estimate for Voucher (NAVFAC LANT Form 4-330/110 (New 7/84)) with Subcontractor and supplier payment certification.
- i. Affidavit to accompany invoice (NAVFAC LANT NORVA Form 4-4235/4 (Rev.5/81)).
- j. Materials on Site.
- k. Monthly Work-hour Report.
- l. Solid Waste Disposal Report.

### 1.5.2 Submission of Invoices

If NFAS Clause 5252.232-9301 is included in the contract, the documents listed in paragraph "CONTENT OF INVOICE" shall be provided in their entirety as attachments in Wide Area Work Flow (WAWF) for each invoice submitted. The maximum size of each WAWF attachment is two megabytes, but there are no limits on the number of attachments. If a document cannot be attached in WAWF due to system or size restriction it shall be provided as instructed by the Contracting Officer.

Monthly invoices and supporting forms for work performed through the anniversary award date of the contract shall be submitted to the Contracting Officer within 5 calendar days of the date of invoice. For example, contract award date is the 7th of the month, the date of each monthly invoice shall be the 7th and the invoice shall be submitted by the 12th of the month.

### 1.5.3 Final Invoice

- a. A final invoice shall be accompanied by the Contractor's Final Release. If the Contractor is incorporated, the Final Release shall contain the corporate seal. An officer of the corporation shall sign and the corporate secretary shall certify the Final Release.
- b. For final invoices being submitted via WAWF, the original Contractor's Final Release Form must be provided directly to the respective Contracting Officer prior to submission of the final invoice. Once receipt of the original Final Release Form has been confirmed by the Contracting Officer, the Contractor shall then submit final invoice and attach a copy of the Final Release Form in WAWF.
- c. Final invoices not accompanied by the Contractor's Final Release will be considered incomplete and will be returned to the Contractor.

## 1.6 PAYMENTS TO THE CONTRACTOR

Payments will be made on submission of itemized requests by the Contractor which comply with the requirements of this section, and will be subject to reduction for overpayments or increase for underpayments made on previous payments to the Contractor.

### 1.6.1 Obligation of Government Payments

The obligation of the Government to make payments required under the provisions of this contract will, at the discretion of the Contracting Officer, be subject to reductions and/or suspensions permitted under the FAR and agency regulations including the following in accordance with "FAR 32.503-6:

- a. Reasonable deductions due to defects in material or workmanship;
- b. Claims which the Government may have against the Contractor under or in connection with this contract;
- c. Unless otherwise adjusted, repayment to the Government upon demand for

overpayments made to the Contractor; and

- d. Failure to provide up to date record drawings not current as stated in Contract Clause "FAC 5252.236-9310, Record Drawings."

#### 1.6.2 Payment for Onsite and Offsite Materials

Progress payments may be made to the contractor for materials delivered on the site, for materials stored off construction sites, or materials that are in transit to the construction sites under the following conditions:

- a. FAR 52.232-5(b) Payments Under Fixed Price Construction Contracts.
- b. Materials delivered on the site but not installed, including completed preparatory work, and off-site materials to be considered for progress payment shall be major high cost, long lead, special order, or specialty items, not susceptible to deterioration or physical damage in storage or in transit to the construction site. Examples of materials acceptable for payment consideration include, but are not limited to, structural steel, non-magnetic steel, non-magnetic aggregate, equipment, machinery, large pipe and fittings, precast/pre-stressed concrete products, plastic lumber (e.g., fender piles/curbs), and high-voltage electrical cable. Materials not acceptable for payment include consumable materials such as nails, fasteners, conduits; gypsum board, glass, insulation, and wall coverings.
- c. Materials to be considered for progress payment prior to installation shall be specifically and separately identified in the Contractor's estimates of work submitted for the Contracting Officer's approval in accordance with Schedule of Prices requirement of this contract. Requests for progress payment consideration for such items shall be supported by documents establishing their value and that the title requirements of the clause at FAR 52.232-5 have been met.
- d. Materials are adequately insured and protected from theft and exposure.
- e. Provide a written consent from the surety company with each payment request for offsite materials.

#### PART 2 PRODUCTS

Not used.

#### PART 3 EXECUTION

Not used.

-- End of Section --

## SECTION 01 30 00

## ADMINISTRATIVE REQUIREMENTS (PWD ME)

06/14

## 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 (2008; Errata 1-2010; Changes 1-3 2010; Changes 4-6 2011) Safety and Health Requirements Manual

## 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. The following shall be submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES for Design Bid Build projects:

## SD-01 Preconstruction Submittals

Insurance; G

List of contact personnel; G

Progress and completion pictures; G

NAVFAC Red Zone Checklist/POAM; G

## 1.3 PROGRESS AND COMPLETION PICTURES

Photographically document site conditions prior to start of construction operations. Provide monthly, and within one month of the completion of work, showing the sequence and progress of work. Take a minimum of 20 digital photographs each week throughout the entire project from a minimum of ten views from points located by the Contracting Officer. Submit a view location sketch indicating points of view. Submit with the monthly invoice two sets of digital photographs each set on a separate CD-R, cumulative of all photos to date. Indicate photographs demonstrating environmental procedures. Photographs for each month shall be in a separate monthly directory and each file shall be named to indicate its location on the view location sketch. The view location sketch shall also be provided on the CD as digital file. All file names shall include a date designator. Cross reference submittals in the appropriate daily report. Photographs shall be provided for unrestricted use by the Government.

## 1.4 MINIMUM INSURANCE REQUIREMENTS

Procure and maintain during the entire period of performance under this

contract the following minimum insurance coverage:

- a. Comprehensive general liability: \$500,000 per occurrence
- b. Automobile liability: \$200,000 per person, \$500,000 per occurrence for bodily injury, \$20,000 per occurrence for property damage
- c. Workmen's compensation as required by Federal and State workers' compensation and occupational disease laws.
- d. Employer's liability coverage of \$100,000, except in States where workers compensation may not be written by private carriers,
- e. Others as required by State Law.

#### 1.5 CONTRACTOR PERSONNEL REQUIREMENTS

##### 1.5.1 Contractor Personnel Requirements

In case of conflict with other specification provisions, the requirements of this paragraph take precedence.

The following personnel shall be on site whenever work is being performed:

Project Superintendent  
Site Safety and Health Officer (SSHO)  
Quality Control Manager (QC Manager)

The following personnel need only be on site as their specified duties require:

Project Manager

##### 1.5.2 Subcontractors and Personnel

Furnish a list of contact personnel of the Contractor and subcontractors including addresses and telephone numbers for use in the event of an emergency. As changes occur and additional information becomes available, correct and change the information contained in previous lists.

##### 1.5.3 NOT USED

##### 1.5.4 Contractor Personnel Requirements

Failure to obtain entry approval or security badging will not affect the contract price or time of completion.

#### 1.6 SUPERVISION

Provide at least one (1) qualified Project Manager and one (1) on-site Project Superintendent per project capable of reading, writing, and conversing fluently in English to supervise the work at all times work is being performed. The Project Manager must have a minimum 10 years' experience as a Project Manager or Superintendent on projects like this contract or similar in size and complexity. The Project Superintendent

must have a minimum of 10 years' experience as a Superintendent on projects similar in size and complexity.

The Project Superintendent shall be on site during working hours. The Superintendent **cannot** be the Quality Control Manager nor the Site Safety and Health Officer (SSHO).

In addition to the above experience requirements, the Project Manager and on-site Project Superintendent shall complete the course entitled "Construction Quality Management for Contractors" prior to the start of construction.

The Project Manager in this context shall mean the individual with the responsibility for the overall management of the project and the Project Superintendent shall mean the individual with the responsibility for quality and production. Both the Project Manager and Project Superintendent are subject to removal by the Contracting Officer for non-compliance with requirements specified in the contract and for failure to manage the project to insure timely completion. Furthermore, the Contracting Officer may 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 shall be made the subject of claim for extension of time for excess costs or damages by the Contractor.

Approval of Project Manager and on-site Project Superintendent by the Contracting Officer is required prior to start of construction. Provide resumes for the proposed Project Manager and on-site Project Superintendent describing their experience with references and qualifications to the Contracting Officer for approval. The Contracting Officer reserves the right to interview the proposed Project Manager and on-site Project Superintendent at any time in order to verify the submitted qualifications.

#### 1.7 QUALITY CONTROL PERSONNEL:

##### 1.7.1 QC and Alternative QC Manager Qualifications

- a. Complete the course entitled "Construction Quality Management (CQM) for Contractors" and shall maintain a current certificate.
- b. Ten (10) years of combined experience as a Superintendent, QC Manager, Project Manager, or Project Engineer, and at least two years' experience as a QC Manager on similar size and type construction contracts.
- c. Familiar with requirements of USACE EM 385-1-1, and experience in the areas of hazard identification and safety compliance.

#### 1.8 PRECONSTRUCTION CONFERENCE

After award of the contract but prior to commencement of any work at the site, meet with the Contracting Officer to discuss and develop a mutual understanding relative to the administration of the value engineering and safety program, preparation of the schedule prices, shop drawings, and other submittals, scheduling programming, prosecution of the work, and clear expectations of the "Interim DD Form 1354" Submittal. Major subcontractors who will engage in the work shall also attend.

### 1.9 FACILITY TURNOVER PLANNING MEETINGS (NAVFAC Red Zone - NRZ)

Key personnel will meet to identify strategies to ensure the project is carried to expeditious closure and turnover to the Client. Start the turnover process at the Pre Construction Conference meeting and convene at the Facility Turnover Meetings once the project has reached approximately 75 percent completion or three to six months prior to Beneficial Occupancy Date (BOD), whichever comes first. The Contracting Officer's Representative will lead the meetings and guide discussions based on an agenda provided by the Government. The facility Turnover effort shall include the following:

- a. Pre-Construction Meeting - Contracting Officer's Technical Representative (COTR) will provide the NRZ Checklist and the Contractor, Client, and NAVFAC Representatives will compare Contractor's schedule to NRZ Checklist items.
- b. Facility Turnover Meetings
  1. Fill in the NRZ Checklist including Contractor, Client, and NAVFAC Checklist Items and assign a person responsible for each item and a due date. The Contractor's Representative will facilitate the assignment of responsibilities, and fill out the NRZ Checklist.
  2. Review the Contractor's updated schedule. The Contractor shall develop a Plan of Action and Milestones (POAM) for the completion of all Contractor, Client, and NAVFAC Checklist items.
  3. Confirm that all NRZ Checklist items will be completed on time for the scheduled Facility Turnover.
  4. The Contractor shall prepare the NAVFAC Red Zone Project Facility System & Equipment List included in Appendix A of this Section. The List shall include all facility systems and equipment provided as part of the project which will require future maintenance, inspections or certifications. The Contractor shall submit a preliminary list of items with the COTR at the initial Facility Turnover Meeting. The Contractor shall provide the final completed Project Facility System & Equipment List with all information required facility system/equipment information to the COTR at least sixty (60) calendar days prior to the project BOD.

See Appendix A of this Section for the Facility Turnover Planning Meeting Agenda, NRZ Checklist & POAM and the NAVFAC Red Zone Project Facility System & Equipment List.

### 1.10 CLEANUP

Leave premises "broom clean." Clean interior and exterior glass surfaces exposed to view; remove temporary labels, stains and foreign substances; polish transparent and glossy surfaces; vacuum carpeted and soft surfaces. Clean equipment and fixtures to a sanitary condition. Replace filters of operating equipment. Clean debris from roofs, gutters, catch basins, manholes, downspouts and drainage systems. Sweep paved areas and rake clean landscaped areas. Remove waste and surplus materials, rubbish and construction facilities from the site.

### 1.11 PARTNERING

To most effectively accomplish this contract, the Government requires the formation of a cohesive partnership within the Project Team whose members are from the Government, the Contractor and their Subcontractors. Key personnel from the Supported Command, the End User (who will occupy the facility), NAVFAC PWD ME Representatives, the Navy Region/Installation, the Contractor and Subcontractors, and the Designer of Record will be invited to participate in the Partnering process. The Partnership will draw on the strength of each organization in an effort to achieve a project that is without any safety mishaps, conforms to the Contract, and stays within budget and on schedule.

The Contracting Officer will provide Information on the Partnering Process and a list of key and optional personnel who should attend the Partnering meeting.

#### 1.11.1 Informal Partnering

The Contracting Officer will organize the Partnering Sessions with key personnel of the project team, including Contractor personnel and Government personnel.

The Initial Partnering session should be a part of the Pre-Construction Meeting. Partnering sessions will be held at a location agreed to by the Contracting Officer and the Contractor (typically a conference room provided by the PWD ME FEAD office or the Contractor).

The Initial Informal Partnering Session will be conducted and facilitated using electronic media provided by the Contracting Officer.

The Partners will determine the frequency of the follow-on sessions.

#### 1.12 AVAILABILITY OF CADD DRAWING FILES

After award and upon request, the electronic "Computer-Aided Drafting and Design (CADD)" drawing files included in the RFP will only be made available to the Contractor for use in preparation of construction data related to the referenced contract subject to the following terms and conditions.

Data contained on these electronic files shall 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 shall be at the sole risk of the Contractor and without liability or legal exposure to the Government.

The Contractor shall 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 sub consultants that may arise out of or in connection with the use of these electronic files. The Contractor shall, 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 CADD drawing files are not construction documents. Differences may exist between the CADD files and the corresponding construction documents. The Government makes no representation regarding

the accuracy or completeness of the electronic CADD files, nor does it make representation to the compatibility of these files with the Contractors hardware or software. In the event that a conflict arises between the signed and sealed construction documents prepared by the Government and the furnished CADD files, the signed and sealed construction documents shall govern. The Contractor is responsible for determining if any conflict exists. Use of these CADD files does not relieve the Contractor of 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 and/or modifies these electronic CADD files for use in producing construction drawings and data related to this contract, all previous indicia of ownership (seals, logos, signatures, initials and dates) shall be removed.

#### 1.13 ELECTRONIC MAIL (E-MAIL) ADDRESS

The Contractor shall establish and maintain electronic mail (e-mail) capability along with the capability to open various electronic attachments in Microsoft, Adobe Acrobat, and other similar formats. Within 10 days after contract award, the Contractor shall provide the Contracting Officer a single (only one) e-mail address for electronic communications from the Contracting Officer related to this contract including, but not limited to, contract documents, invoice information, request for proposals, and other correspondence. The Contracting Officer may also use email to notify the Contractor of base access conditions when emergency conditions warrant, such as hurricanes, terrorist threats, etc. Multiple email address will not be allowed.

It is the Contractor's responsibility to make timely distribution of all Contracting Officer initiated e-mail with its own organization including field office(s). The Contractor shall promptly notify the Contracting Officer, in writing, of any changes to this email address.

#### PART 2 PRODUCTS

Not used.

#### PART 3 EXECUTIONS

Not used.

-- End of Section --

**01 30 00 APPENDIX A****NAVFAC Red Zone  
Facility Turnover Planning Meeting****AGENDA****I. Introduction and Overview – Purpose** **CM**

The purpose of the Facility Turnover Planning Meeting is to address elements within the project team’s purview – schedule management, assure completed facility complies with contract requirements, and other contractual issues. Each member of the project delivery team (Client, NAVFAC, and the contractor) has critical responsibilities to ensure timely completion and turnover of the new facility and each member should execute the NRZ process to achieve this end. The NRZ process provides a final re-focusing of attention to details of those key elements critical for a successful construction contract completion. In implementing NRZ processes, the NAVFAC/Contractor/Client team take a collective “snapshot” of contract status, identifying remaining actions to be accomplished, and confirm required resources needed for successful contract completion and turnover to the Client.

The Facility Turnover Planning Meeting is a collaborative effort between the Client, NAVFAC, and the contractor and results in a completed “NRZ Checklist/POAM Items” list that identifies the major items (and their due dates) that must be completed by the Contractor, the Client and the NAVFAC team to ensure timely completion of the contract.

**II. Attendees**

NAVFAC Echelon IV (PM); NAVFAC FEAD/ROICC Team (AROICC, CM, ET/QA, Contracting Officer); Client Team (Project Manager, Program Coordinator, User/Tenant); Contractor Team (Project Manager, Project Superintendent, CQC Manager)

- |  |                    |
|--|--------------------|
| <b>III. Schedule to Completion (POAM)</b>                    | <b>Contractor</b>  |
| <b>IV. Schedule of Final Outfitting and Occupancy (POAM)</b> | <b>Client</b>      |
| <b>V. Critical feature(s) of project (POAM)</b>              | <b>CM</b>          |
| <b>VI. Transfer of Maintenance Responsibility</b>            | <b>CM</b>          |
| <b>VII. Systems training &amp; O&amp;M Manuals (POAM)</b>    | <b>CQC Manager</b> |
| <b>VIII. Other Items to include on NRZ checklists</b>        | <b>All</b>         |
| <b>IX. Summary of Required Actions and Responsibility</b>    | <b>CM</b>          |

***Guidelines for conducting Facility Turnover Planning Meeting are as follows:***

a. Meeting is held at approximately 75% construction contract completion or three to six months prior to BOD. NAVFAC representatives will include the Project Manager, Construction Manager/AROICC (CM) and Design Manager (DM), as appropriate. The contractor representatives include applicable prime contractor staff and decision-makers from major subcontractors. Design-Build contractors will have A-E representatives attending. The Client should include representatives from Public Works Officer (PWO) staff, a Client scope and financial decision maker, a user tenant representative, a facility start-up person, and others such as SPAWAR, NMCI, telephone, and furniture contractor, etc.

b. The purpose of the meeting is to plan the remaining work, identify critical project features that still need to be completed (such as “soft” construction contract requirements as shown on the NRZ Checklist/POAM Items), and to complete the filling out of the “NRZ Checklist/POAM Items”.

c. The contractor, client and NAVFAC provide a POC and due date for each item on their checklist. The team fills in the checklists by selecting items applicable to the project, selects due dates on each item, and appoints a person who has responsibility to ensure the item gets completed by the due date. The CM will be responsible to monitor the milestones.

### **NRZ Checklist/POAM Items**

The table below provides typical NRZ checklist items for contractor, Client, and NAVFAC actions. Items listed on the checklists are required to remain on the checklists if they are part of the project/contract or required by construction convention. Items not listed on the checklists, but required in the contract or by construction convention, must be added to the checklists by the contractor, Client and NAVFAC. Checklists are applicable to all contracts no matter what Category of Work.

The Point of Contact and due date shall initially be determined during the Facility Turnover Planning Meeting by the NAVFAC, client and contractor leads. During execution of the NRZ process, for each item on the entire list, the Construction Manager (CM) shall indicate date completed and initial to indicate completion of the item. If a party fails to complete an item by the due date, this should be noted on the checklist and new due date established and indicated. The completed NRZ Checklist/POAM shall be placed in the contract file.

NAVFAC Red Zone Facility Turnover Planning Meeting Checklist and POAM

Resp.	Checklist Items	Point of Contact	Due Date	Actual Complete Date	CM Initials	Notes
Client	Telephone service contract					
Client	Utilities service contract					
Client	Custodial service contract					
Client	Coordination of Intrusion Detection Systems and Physical Security Equipment					
Client	Coordination of IT and Communication Infrastructure and Devices					
Client	Delivery and installation of client furnished equipment					
Client	Delivery and installation of client furnished furniture					
Client	GFE status/delivery schedule (GFCI, GFGI)					
Client	Installation of communications for phones and computers					
Client	Modification to FSC or BOSC to maintain/service new facility					
Client	NMCI Installations or other networks					
Client	Process operating permits					i.e. generators
Client	Recycled/recovered materials report					

NAVFAC Red Zone Facility Turnover Planning Meeting Checklist and POAM

Client	Ribbon-cutting ceremony					
Client	User move-in					
Contractor	ACATS Controls Testing					
Contractor	Communications / IT Systems Testing					
Contractor	Conduct Second Seasons TAB					
Contractor	Coordination and Delivery of Facility Signage					
Contractor	Delivery of As-Built Drawings					
Contractor	Delivery of Internal Services Requirement List					60 days prior to BOD
Contractor	Delivery of O&M Manuals					
Contractor	Delivery of Spare Parts, Extra Stock, Special Tools, etc.					
Contractor	Duct Air Leakage Testing					
Contractor	Electrical Systems Testing					
Contractor	Elevator Certification(s)					
Contractor	EV Notebook submitted (Spec Sec Temp EV Controls - SWPP etc.)					

NAVFAC Red Zone Facility Turnover Planning Meeting Checklist and POAM

Contractor	Final Cleaning					
Contractor	Demob					
Contractor	Final Inspection and Acceptance					
Contractor	Final utility systems connections (power, water, etc.)					
Contractor	Fire Protection Systems Inspections and Performance Verification					
Contractor	HVAC System Test & Balance					
Contractor	Landscaping Complete					
Contractor	Notice of Termination (EV Permits)					
Contractor	O&M/OMSI Training of Navy Personnel					
Contractor	Other Specified Building Performance Requirements					i.e. leed
Contractor	Plumbing / Other Mechanical Testing					
Contractor	Pre-Final Inspection					
Contractor	Pre-warranty Conference					
Contractor	Project Close-out Meeting					

NAVFAC Red Zone Facility Turnover Planning Meeting Checklist and POAM

Contractor	Provide Interim DD1354					
Contractor	Punch List Completion					
Contractor	Replace Construction Lock Cores and Re-keying					
Contractor	Security Systems Testing					
Contractor	Site Restoration, if applicable					
Contractor	Specialized Equipment & Systems Inspections (Boilers, UPS, etc.)					
Contractor	Superchlorination of potable water systems					
NAVFAC	A-E and Construction Contractor Evaluations (ACASS/CCASS)					
NAVFAC	Client walk-thru prior to pre-final inspections, if appropriate					
NAVFAC	Closeout actions on construction permits (e.g., NPDES)					
NAVFAC	Complete Installed Property List and DD 1354					
NAVFAC	Confirm utilities availability for final connections by contractor					
NAVFAC	Mechanical Acceptance					
NAVFAC	Process final payment (w/ final release)					

NAVFAC Red Zone Facility Turnover Planning Meeting Checklist and POAM

NAVFAC	Process recycled/recovered materials report					
NAVFAC	Provide keying plan to contractor					
NAVFAC	Resolve contract modifications & requests for equitable adjustment					
NAVFAC	Return unobligated funds					
NAVFAC	Schedule client satisfaction post BOD follow-up					
NAVFAC	Schedule Government inspections of specialized equipment (e.g., Boiler/pressure vessels, elevators, UPS,					
NAVFAC	Sign & provide Interim DD1354 to activity Real Property Accountability Officer NLT BOD					
NAVFAC	Startup utilities					

## NAVFAC PWD Maine Follow-on Services List

Fire Suppression Requirements													
SHOPS / FSC Action	Location (BLDG-FLR-RM)	Features					Fire Pumps			Other Systems			
		Wet	Dry	Pre Activation	Deluge	D-Drip	Air Compressor	Diesel	Electric	Gas	Wet Chemical	Dry Chemical	Foam

  

HVAC										
SHOPS / FSC Action	Location (BLDG-FLR-RM)	Equipment Description	Manufacturer	Model Number	Serial Number	Tonnage/HP	# of Filters	Size of Filters	Belt Specs	Refrigerant

  

Boilers								
SHOPS / FSC Action	Location (BLDG-FLR-RM)	Number of Boilers	Manufacturer	Model	MBH	Fuel	Certification Expiration	National Board Number

  

Back Flow Preventers								
SHOPS / FSC Action	Location (BLDG-FLR-RM)	Unique Number	Manufacturer	Model Number	Serial Number	Size (1", 3" etc.)	Type of Back Flow (BLDG FEED, Heat Make up etc.)	Frequency
								<i>Annual</i>

  

Generator							
SHOPS / FSC Action	Location (BLDG-FLR-RM)	Manufacturer	Model number	Serial Number	KW	HP	Fuel Type

  

Water Coolers											
SHOPS / FSC Action	Location (BLDG-FLR-RM)	Building Description	EA	Floor	Outlet Location	Outlet #	Outlet Type (floor/wall mount)	Manufacturer	Model #	Serial Number	Filter Model Number

  

Gutters & Downspouts										
SHOPS / FSC Action	Location (BLDG-FLR-RM)	Material	Gutter Size 6" etc.	LF above 30'	LF below 30'	# of Drops	Downspout Size 4" etc.	LF above 30'	LF below 30'	#of Roof Drains

  

Overhead Doors							
SHOPS / FSC Action	Location (BLDG-FLR-RM)	Door Number	Width	Height	Manufacturer	Type (U-M RMP)	Condition

  

Elevator						
SHOPS / FSC Action	Location (BLDG-FLR-RM)	Speed (FPM)	Capacity (lbs.)	Manufacturer	MFG Date	Type (FE/H)

  

Lightning Protection		
SHOPS / FSC Action	Location (BLDG-FLR-RM)	*Attach drawing of system

  

Emergency Lighting		
SHOPS / FSC Action	Location (BLDG-FLR-RM)	Number of Emergency Lights

  

Janitorial/Waste					
SHOPS / FSC Action	Location (BLDG-FLR-RM)	Square Footage of Room	Use (Admin/ Bathroom etc.)	# of anticipated occupants	*Attach CAD file of building * Attach Finish Schedule

  

Electrical Distribution Equipment						
SHOPS / FSC Action	Location (BLDG-FLR-RM)	Type (CC OIL DRY etc.)	USS or PAD	Manufacturer	Serial Number	Rating

# NAVFAC PWD Maine Follow-on Services List

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<b>Refuse/Waste</b>
---------------------

SHOPS / FSC Action	Location (BLDG-FLR-RM)	Type of Dumpster	Number Required	Placement Location

<b>Pest Control</b>
---------------------

SHOPS / FSC Action	Location (BLDG-FLR-RM)	Total SQFT of Building	Food Service/Child Care/ or Medical Space SQFT

<b>Grounds</b>
----------------

SHOPS / FSC Action	Total SQFT of Grounds Maint Req	Mowing (Y/N)	Tree Trimming (Y/N)
Production			

<b>Storm Water Management Soil Filters, Ponds, etc.</b>
---

SHOPS / FSC Action			

<b>Miscellaneous Maintainable Items (e.g. Oil and Water Separators)</b>
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SHOPS / FSC Action			

## SECTION 01 32 17.00 25

## NETWORK ANALYSIS SCHEDULES (NAS) (PWD ME)

06/14

## PART 1 GENERAL

## 1.1 DESCRIPTION

The Contractor is responsible for scheduling procurement, Contractor quality control and construction, acceptance testing and training. Refer to Specification Section 01 33 00 SUBMITTAL PROCEDURES to determine if any items require Government approval prior to construction; if any are required, that submittal review time shall be included in the schedule.

The schedule is a tool to manage the project, both for Contractor and Government activities. It will also be used to report progress and evaluate time extensions. All progress payment amounts will be derived from and tied to the cost loaded schedule activities.

The Contractor shall use the Critical Path Method (CPM) and the Precedence Diagram Method (PDM) to satisfy time and cost applications. For consistency, when scheduling software terminology is used in this specification, the terms in Primavera's scheduling programs are used.

## 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. The following shall be submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

## SD-01 Preconstruction Submittals

Qualifications; G

Baseline Network Analysis Schedule (NAS); G SD-

## 07 Certificates

Monthly Network Analysis Schedule Update; G SD-

## 11 Closeout Submittals

As-Built Schedule; G

## 1.3 SCHEDULE ACCEPTANCE PRIOR TO START OF WORK

The Contracting Officer and Contractor shall participate in a preliminary meeting(s) to discuss the proposed schedule and requirements of this section prior to the Contractor preparing the Project Baseline Schedule.

Government review comments on the Contractor's schedule(s) shall not relieve the Contractor from compliance with requirements of the Contract Documents.

Only bonds shall be paid prior to acceptance of the Baseline Network Analysis Schedule (NAS).

The acceptance of a Baseline NAS is a condition precedent to:

1. The Contractor starting work on the demolition or construction stage(s) of the contract.
2. Processing Contractor's pay request(s) for construction activities/items of work.
3. Review of any schedule updates.

Submittal of the Baseline Network Analysis Schedule, and subsequent schedule updates, shall be understood to be the Contractor's certification that the submitted schedule meets all of the requirements of the Contract Documents, represents the Contractor's plan on how the work shall be accomplished, and accurately reflects the work that has been accomplished and how it was sequenced (as-built logic).

#### 1.4 SOFTWARE

Project schedules shall be prepared and maintained using Primavera P6 or equal scheduling software as approved by the Contracting Officer. Importing data into P6 using data conversion techniques or third party software will be cause for rejection of the submitted schedule.

A listing of Primavera P6 settings and parameters which shall be used in preparing the Baseline Schedule is contained later in this specification section. See Attachment A. Deviation from these settings and parameters, without prior consent of the Contracting Officer, will be cause for rejection of schedule submission.

#### 1.5 QUALIFICATIONS

The designated Scheduler for the project shall have prepared and maintained at least 3 previous schedules of similar size and complexity of this contract using SureTrak/P6 or current mandated scheduling program. A resume outlining the qualifications of the Scheduler shall be submitted for acceptance to the Contracting Officer. Payment will not be processed until an acceptable Scheduler is provided.

#### 1.6 NETWORK SYSTEM FORMAT

The system shall include time scaled logic diagrams and specified reports.

##### 1.6.1 Diagrams

Provide Time-scaled Logic Diagram printed in color on ANSI D size sheets. The diagram shall clearly show activities on the critical path. Include the following information for each activity:

- a. Activity ID
- b. Activity Description
- c. Original Duration in Work Days

- d. Remaining duration
- e. Percent Complete
- f. Late Start Date
- g. Late Finish Date
- h. Total Float

#### 1.6.2 Schedule Activity Properties and Level of Detail

The NAS shall identify all Government, Construction Quality Management (CQM), Construction activities planned for the project and all other activities that could impact project completion if delayed. Separate activities shall be created for each Phase, Area, Floor Level and Location the activity is occurring. Activity categories included in the schedule are specified below.

With the exception of the Contract Award and Contract Completion Date (CCD) milestone activities, no activity shall be open-ended; each activity shall have predecessor and successor ties. Once an activity exists on the schedule it may not be deleted or renamed to change the scope of the activity and shall not be removed from the schedule logic without approval from the Contracting Officer. The ID number for a deleted activity shall not be re-used for another activity. No more than 20 percent of the activities shall be critical or near critical. Critical is defined as having zero days of Total Float. "Near Critical" is defined as having Total Float of 1 to 14 days. Contractor activities shall be driven by calendars that reflect Saturdays, Sundays and all Federal Holidays as non-work days.

##### 1.6.2.1 Activity Categories

- a. Procurement Activities: Examples of procurement activities include, but are not limited to; Material/equipment submittal preparation, submittal and approval of material/equipment; material/equipment fabrication and delivery, and material/equipment on-site. As minimum, separate procurement activities will be provided for critical items, long lead items, items requiring Government approval and material/equipment procurement for which payment will be requested in advance of installation. The Contractor shall show each delivery with relationship tie to the Construction Activity specifically for the delivery.
- b. Government Activities: Government and other agency activities that could impact progress shall be clearly identified. Government activities include, but are not limited to; Government approved submittal reviews, Government conducted inspections/tests, environmental permit approvals by State regulators, utility outages, Design Start, Construction Start, (including Design/Construction Start for each Fast-Track Phase), Notice(s) to proceed and delivery of Government Furnished Material/Equipment.
- c. Quality Management (QM) Activities: CQM Activities shall identify the Preparatory Phase and Initial Phase for each Definable Feature of Work identified in the Contractor's Quality Control Plan. These activities shall be added to each Three-Week Look Ahead Schedule referenced in

the paragraph entitled "THREE-WEEK LOOK AHEAD SCHEDULE" and will also be included in each monthly update. The Follow-up Phase will be represented by the Construction Activities in the Baseline Schedule and in the schedule updates.

- d. Construction Activities: No on-site construction activity shall have a duration exceeding 20 working days. Separate construction activities shall be created for each Phase, Area, Floor Level and Location the activity is occurring. Contractor activities will be driven by calendars that reflect Saturdays, Sundays and all Federal Holidays as non-work days, unless otherwise defined in this contract.
- e. Turnover and Closeout Activities: Include a separate section with all items on the NAVFAC Red Zone Checklist/Plan of Action and Milestones (POAM) that are applicable to this project. The checklist will be provided at the Preconstruction Meeting. As a minimum, this will include all testing, specialized inspection activities, Pre-Final inspection, Punch List Completion, Final Inspection and Acceptance. Add a milestone for the Facility Turnover Planning Meeting at approximately 75 percent construction contract completion or three to six months prior to BOD, whichever is sooner.

#### 1.6.2.2 Contract Milestones and Constraints

- a. Project Start Date Milestones: The Contractor shall include as the first activity on the schedule a start milestone titled "Contract Award", which shall have a Mandatory Start constraint equal to the Contract Award Date.
- b. Projected Completion Milestone: The Contractor shall include an unconstrained finish milestone on the schedule titled "Projected Completion". Projected Completion is defined as the point in time the Government would consider the project complete and ready for its intended use. This milestone shall have the Contract Completion (CCD) milestone as its only successor.
- c. Contract Completion Date (CCD) Milestone: The Contractor shall include as the last activity on the schedule a finish milestone titled "Contract Completion (CCD)", which shall have a Mandatory Finish constraint equal to the current Contract Completion Date. Calculation of schedule updates shall be such that if the finish of the "Projected Completion" milestone falls after the contract completion date, then negative float will be calculated on the longest path and if the finish of the "Projected Completion" milestone falls before the contract completion date, the float calculation shall reflect positive float on the longest path. The only predecessor to the Contract Completion Date Milestone shall be the Projected Completion milestone.

#### 1.6.2.3 Activity Code

At a minimum, the Contractor shall establish activity codes identified in this specification and 3 additional activity codes identified by the Contracting Officer. Once established, activity codes and values cannot be changed without approval by the Contracting Officer.

- a. Phase: All activities shall be assigned a 4-digit code value based on the contract phase it occurs in.

- b. Area Code: All activities shall be assigned an area code value identifying the Area in which the activity occurs. Activities shall not belong to more than one area. Area is defined as a distinct space, function or activity category; such as, separate structure(s), site work, project summary, construction quality management, material/equipment procurement, etc.
- c. Work Item: All activities in the project schedule shall be assigned a 4-digit Work Item code value. Examples of Work Item code values include but are not limited to water lines, drain lines, building pad and foundation, slab on grade, walls and columns, suspended slab, roof structure, roofing, exterior finish systems, interior rough-in, and finishes, etc.
- d. Location 1: Assign a 4-digit Location 1 code value to activities associated with multistory structures. Code values are used to identify the floor level where an activity is occurring.
- e. Location 2: Assign a 4-digit Location 2 code value to all activities to identify the location within an Area, Work Item or Building Level that an activity is occurring.
- f. Responsibility Code: All activities in the project schedule shall be identified with the party responsible for completing the task. Activities shall not belong to more than one responsible party.

#### 1.6.2.4 Anticipated Weather Delays

The Contractor shall use the National Oceanic and Atmospheric Administration's (NOAA) historical monthly averages for the NOAA location closest to the project site or the following schedule of anticipated monthly non-work days due to adverse weather for projects located at Portsmouth Naval Shipyard as the basis for establishing a "Weather Calendar" showing the number of anticipated non-workdays for each month due to adverse weather, Saturdays, Sundays and all Federal Holidays as non-work days.

[MONTHLY ANTICIPATED ADVERSE WEATHER DELAYS - PNSY]											
[JAN]	[FEB]	[MAR]	[APR]	[MAY]	[JUN]	[JUL]	[AUG]	[SEP]	[OCT]	[NOV]	[DEC]
3	4	3	3	1	1	2	1	2	2	3	2

Assign the Weather Calendar to any activity that could be impacted by adverse weather. The Contracting Officer will issue a modification in accordance with the contract clauses, giving the Contractor a time extension for the difference of days between the anticipated and actual adverse weather delay if the number of actual adverse weather delay days exceeds the number of days anticipated for the month in which the delay occurs and the adverse weather delayed activities critical to contract completion. A lost workday due to weather conditions is defined as a day in which the Contractor cannot work at least 50 percent of the day on the impacted activity.

#### 1.6.2.5 Anticipated Security Delays

The contractor shall allow in the schedule a total of 5 [ ] lost workdays per calendar year for instances where base access is not permitted due to a security related closure which causes a delay in the work. A lost workday is defined as a day in which the Contractor cannot work at least 50 percent of the day on the closed installation. If the installation is closed for a period longer than 5 [ ] workdays per calendar year, the Contracting Officer will issue a no cost contract modification as applicable in accordance with the contract clauses extending the contract completion date where the critical path has been impacted.

#### 1.6.2.6 Cost Loading

- a. Cost Loading Activities: Material and Equipment Costs for which payment will be requested in advance of installation shall be assigned to their respective procurement activity (i.e., the material/equipment on-site activity). Cost for material/equipment paid for after installation, labor and construction equipment shall be assigned to their respective Construction Activities. The value of inspection/testing activities will not be less than 10 percent of the total costs for Procurement and Construction Activities. Evenly disperse overhead and profit to each activity over the duration of the project.
- b. Quantities and Units of Measure: Each cost loaded activity shall have a detailed quantity breakdown and unit of measure.

#### 1.6.3 Schedule Software Settings and Restrictions

- a. Activity Constraints: Date/time constraint(s), other than those required by the contract, will not be allowed unless accepted by the Contracting Officer. Identify any constraints proposed and provide an explanation for the purpose of the constraint in the Narrative Report.
- b. Default Progress Data Disallowed: Actual Start and Actual Finish dates on the CPM schedule shall match the dates on the Contractor Quality Control and Production Reports.
- c. Software Settings: Schedule calculations and Out-of-Sequence progress (if applicable) shall be handled through Retained Logic, not Progress Override. All activity durations and float values will be shown in days. Activity progress will be shown using Remaining Duration. Default activity type will be set to "Task Dependent".
- d. At a minimum, include the following settings and parameters in Baseline Schedule preparation:
  1. General: Calendars and Activity Codes are defined or established at the "Project" level, not the "Global" level.
  2. Admin Drop-Down Menu, Admin Preferences, Time Periods Tab:
    - a) Time periods for P6 should be set to 8.0 Hours/Day, 40.0 Hours/Week, 172.0 Hours/Month and 2000.0 Hours/Year.

Allow users to specify the number of work hours for each time period: Should be unchecked.

3. Project Level, Date Tab:
  - a) Set "Must Finish By" date to "Contract Completion Date".
4. Project Level, Default Tab:
  - a) Duration Type: Set to "Fixed Duration & Units".
  - b) Percent Complete Type: Set to "Physical".
  - c) Activity Type: Set to "Task Dependent".
  - d) Calendar: Set to "Standard 5 Day Workweek". Calendar shall reflect Saturday, Sunday and all Federal holidays as non-work days. Alternative calendars may be used with Contracting Officer approval.
5. Project Level, Calculations Tab:
  - a) Price/Unit: Set to "\$1/h".
  - b) Activity percent complete based on activity steps: Should be Checked.
  - c) Reset Remaining Duration and Units to Original: Should be Checked.
  - d) Subtract Actual from At Completion: Should be Checked.
  - e) Recalculate Actual units and Cost when duration % completes changes: Should be Checked.
  - f) Update units when costs change on resource assignments: Should be Unchecked.
  - g) Link Actual and Actual This Period Units and Cost: Should be Checked.
6. Project Level, Settings Tab:
  - a) Define Critical Activities: Check "Total Float is less than or equal to" and add "0d".
7. Work Breakdown Structure Level, Earned Value Tab:
  - a) Technique for Computing Performance Percent Complete: "Activity percent complete" is selected.
  - b) Technique for Computing Estimate to Complete (ETC): "PF = 1" is selected.

#### 1.6.4 Required Tabular Reports

The following reports shall be included with the schedule submittal:

- a. Log Report: Listing of all changes made between the previous schedule and current updated schedule.
- b. Narrative Report: Identify and justify;
  - 1) Progress made in each area of the project;
  - 2) Critical Path;
  - 3) Date/time constraint(s), other than those required by the contract;
  - 4) Changes in the following; added or deleted activities, original and remaining durations for activities that have not started, logic, milestones, planned sequence of operations, critical path, and cost loading;
  - 5) Any decrease in previously reported activity Earned Amount;
  - 6) Pending items and status thereof, including permits, changes orders, and time extensions;
  - 7) Status of Contract Completion Date and interim milestones;
  - 8) Current and anticipated delays (describe cause of delay and corrective actions(s)); and
  - 9) Description of current and future schedule problem areas. Each entry in the narrative report will cite the respective Activity ID and Activity Description, the date and reason for the change, and description of the change.
- c. Earned Value Report: Listing all activities having a budget amount cost loaded. Compilation of total earnings on the project from notice to proceed to current progress payment request. Group and sort activities as directed by the Contracting Officer. Show current budget, previous physical percent complete, to-date physical percent complete, previous earned value, to-date earned value and cost to complete on the report for each activity:
- d. 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. Revise Cash Flow S-Curves when the contract is modified, or as directed by the Contracting Officer.

## 1.7 SUBMISSION AND ACCEPTANCE

### 1.7.1 Baseline Schedule

The Baseline Schedule shall be submitted to the Contracting Officer no later than thirty 30 calendars days from the date of the contract award.

### 1.7.2 Monthly Network Analysis Updates

Contractor and Government representatives shall meet at monthly intervals to review and agree on the information presented in the

updated project schedule. The submission of an acceptable, updated schedule to the Government is a condition precedent to the processing of the Contractor's pay request. An acceptable, updated schedule shall be submitted to the Government regardless of whether a Contractor's pay request will be submitted for the given period. If a Schedule of Prices is the basis for progress payments, it shall be consistent with the logic and activity breakdowns on the progress schedule. If progress payments are based on a cost-loaded schedule, the Contractor and Government shall agree on percentage of payment for each activity progressed during the update period.

Provide the following with each Schedule submittal:

- a. Time Scaled Logic Diagram.
- b. Reports listed in paragraph entitled "Required Tabular Reports."
- c. Data disks containing the project schedule. Include the back-up native .xer file.

#### 1.7.3 As-Built Schedule

As a condition precedent to the release of retention and making final payment, submit an "As-Built Schedule," as the last schedule update showing all activities at 100 percent completion. This schedule shall reflect the exact manner in which the project was actually constructed.

#### 1.8 CONTRACT MODIFICATION

Submit a Time Impact Analysis with each cost and time proposal for a proposed change. Time Impact Analysis (TIA) shall illustrate the influence of each change or delay on the Contract Completion Date or milestones. No time extensions will be granted nor delay damages paid unless a delay occurs which consumes all available Project Float, and extends the Projected Finish beyond the Contract Completion Date.

- a. Each TIA shall be in both narrative and schedule form demonstrating the delay impact.
- b. Each TIA shall include a Fragmentary Network (fragment) demonstrating how the Contractor proposes to incorporate the impact into the most currently accepted schedule update. A fragment is defined as the sequence of new activities and/or activity revisions, logic relationships and resource changes that are proposed to be added to the existing schedule to demonstrate the influence of impacts to the schedule. The fragment shall identify the predecessors to the new activities and demonstrate the impacts to successor activities. The Contractor shall run the schedule calculations and submit the impacted schedule with the proposal or claim.
- c. Unless the Contracting Officer requests otherwise, only conformed contract modifications shall be added into the Project NAS.

## 1.9 PROJECT FLOAT

Project Float is the length of time between the Contractor's Projected Finish Milestone and the Contract Completion Date Milestone. Project Float available in the schedule, at any time shall not be for the exclusive use of either the Government or the Contractor.

## 1.10 THREE-WEEK LOOK AHEAD SCHEDULE

The Contractor shall prepare and issue a 3-Week Look Ahead schedule to provide a more detailed day-to-day plan of upcoming work identified on the Project Network Analysis Schedule. The work plans shall be keyed to NAS activity numbers and updated each week to show the planned work for the current and following two-week period. Additionally, include upcoming outages, closures, preparatory meetings, and initial meetings. Identify critical path activities on the Three-Week Look Ahead Schedule.

The detail work plans are to be bar chart type schedules, maintained separately from the Project NAS on an electronic spreadsheet program and printed on 8 ½ by 11 sheets as directed by the Contracting Officer. Activities shall not exceed 5 working days in duration and have sufficient level of detail to assign crews, tools and equipment required to complete the work. Three hard copies and one electronic file of the 3-Week Look Ahead Schedule shall be delivered to the Contracting Officer no later than 8 a.m. each Monday and reviewed during the weekly CQC Coordination Meeting.

## PART 2 PRODUCTS

Not used.

## PART 3 EXECUTION

Not used.

-- End of Section --

## Initial Project Schedule (IPS) Review Worksheet

Project Name: \_\_\_\_\_ Contract No.: \_\_\_\_\_

Contractor: \_\_\_\_\_ Contractor Scheduler: \_\_\_\_\_

NAVFAC IPS Reviewer: \_\_\_\_\_

Primavera Project ID: \_\_\_\_\_ Primavera Project Name: \_\_\_\_\_

NTP: \_\_\_\_\_ Contract Completion Date (CCD): \_\_\_\_\_

Interim or Phased Completion Contract Dates (if specified): \_\_\_\_\_

Total Contract Award: \$ \_\_\_\_\_

ITM	DESCRIPTION	Y	N
<b>IPS REPORTING &amp; SOFTWARE (2.4.1)</b>			
<i>Reports Submitted</i>			
1	P6 Project import file in Primavera Project Manager (.XER) 6.2 export file format. <b>(KTR)</b>		
2	Narrative Report		
3	Network Diagram (Schedule)		
4	Earned Value Report (If schedule cost loading specified)		
5	S-Curves (If schedule cost loading specified)		
6	All required submittals are provided by the contractor		
<i>Software</i>			
7	P6 was used to prepare the schedule <b>(KTR)</b>		
<b>GENERAL SCHEDULE INFORMATION (Run Primavera Schedule Report/Log) (2.4.2)</b>			
8	Start and Finish dated did not change after scheduling the project		
9	Retained Logic is used when scheduling progressed activities		
10	Critical activities defined as Total Float less than or equal to 0		
11	No activities have started or are in progress		
12	All Constraints are Contractually defined		
13	The only activity without predecessor(s) is the activity with the earliest start date		
14	The only activity without successor(s) is the activity with the latest finish date		
15	BLANK		
16	The Latest Early Finish Date is on or before the Contract Completion Date (CCD)		
17	No more than 20% of the activities are Critical or Near Critical; Activities with Total Float less than 14 working days are Near Critical		
<b>PROJECT REQUIREMENTS AND SETTINGS</b>			
<i>Schedule Dates (2.4.3)</i>			
18	The project Must Finish By date is set to the current CCD		
19	The Must Finish By Time is set to 5pm		
<i>Defaults (2.4.3)</i>			
20	Duration Type is set to Fixed Duration & Units		

## Initial Project Schedule (IPS) Review Worksheet

Project Name: \_\_\_\_\_

Contract No.: \_\_\_\_\_

21	Percent Complete Type is set to Physical		
22	Activity Type is set to Task Dependent		
23	The default Project Calendar reflects Saturday, Sunday and all Federal Holidays as non-work days		
<b>Settings (2.4.3)</b>			
24	Total Float less than or equal to 0 defines critical activity		
<b>Calculations (2.4.3)</b>			
25	Price/Unit is set to \$1/h		
26	Activity percent complete based on activity steps is checked		
27	Reset Remaining Duration and Units to Original is selected		
28	Subtract Actual from At Completion is selected		
29	Recalculate Actual Units and Cost when duration % complete changes is checked		
30	Update units when costs change on resource assignments is unchecked		
31	Link Actual and Actual This Period Units and Cost is checked		
<b>Earned Value (2.4.4)</b>			
Technique For Computing Performance Percent Complete			
32	Activity percent complete is selected		
Technique For Computing Estimate To Complete (ETC)			
33	PF = 1 is selected		
<b>Hours Per Time Period (2.4.5)</b>			
34	Verified with the contractor that the Time Periods established for P6 on the computer the project was created and maintained are set to 8.0 Hours/Day, 40.0 Hours/Week, 172.0 Hours/Month and 2000.0 Hours/Year		
35	Time Periods established for P6 on the Government computer matches the Time Periods established on the contractor computer		
36	Allow users to specify the number of work hours for each time period is unchecked		
<b>Project Calendars (2.4.6)</b>			
Standard Calendars			
37	Calendar(s) are defined at the Project level		
38	A 5-day workweek calendar is defined for the project that establishes Saturdays, Sundays and all federal holidays as non-work days		
39	A 6-day workweek calendar may be defined for the project. The 6-day workweek calendar establishes Sundays and all federal holidays as non-work days		
40	A 7-day workweek calendar may be defined for the project. If defined, it establishes Saturdays, Sundays and all federal holidays as workdays		
41	Total work hours/day for all defined calendars is set to 8		
42	Standard Calendars are correctly assigned to activities		
Weather Calendars			
43	A project level Weather Calendar is defined		
44	The weather calendar is based on the Standard 5-Day Workweek Calendar		

## Initial Project Schedule (IPS) Review Worksheet

Project Name: \_\_\_\_\_ Contract No.: \_\_\_\_\_

45	Anticipated non-work days due to adverse weather are assigned to normal workdays (Mon-Fri)		
46	The approved number of anticipated non-work days per month due to adverse weather is assigned		
47	The Weather Calendar is assigned to activities that could be delayed by adverse weather		
<b>Special Calendars</b>			
48	Special Calendar(s) defined for the project are properly set-up		
49	Special Calendar(s) are correctly assigned to activities		
<b>ACTIVITY CODES (2.4.7)</b>			
50	Activity Codes are established at the Project Level		
51	As a minimum, Activity Codes identified in the scheduling specification and/or established by the Contracting Officer are defined for the project		
<b>ACTIVITY DATA, SETTINGS AND ASSIGNMENTS</b>			
<b>Activity Detail (2.4.8)</b>			
52	Activity Type is set to Task Dependent, Duration Type is set to Fixed Duration & Units and % Complete Type is set to Physical for all activities		
53	Calendars are correctly assigned to activities		
<b>Description and Duration (2.4.9)</b>			
54	Activity Descriptions adequately define work scope		
55	Original activity durations are reasonable		
56	No on-site construction activity has a duration greater than 20 working days		
57	Actual Activity Start and Finish dates will be easy to determine/verify		
58	Work-in-Place percent complete for partially completed activities will be easy to determine/verify		
<b>Schedule Logic</b>			
59	No Negative Lags (KTR)		
60	Finish-To-Start relationships are all assigned 0 Lag (KTR)		
<b>Contract Milestone Activities (2.4.10)</b>			
61	Interim or Phased Completion Milestone Activity dates match Contract dates(if specified)		
<b>Activities Assigned Government Responsibility For Completing (2.4.11)</b>			
62	Responsibility for completing the activity is correctly assigned to the Government		
63	Durations comply with contract requirements		
<b>Longest Path (2.4.12)</b>			
64	Government activities are not arbitrarily placed on the Longest Path		
65	The Longest Path is made up of activities that you expect to drive project completion		
66	The Longest Path shows reasonable work flow and sequencing		
67	There are no time gaps between activities on the Longest Path		
<b>COST LOADING (2.4.13)</b>			
68	The total cost budget equals the contract value		
69	Activities that should have a cost budget are cost loaded		
70	Budget \$ are equitable spread throughout the Project – Not Front End Loaded		
71	Anomalies in monthly and cumulative Budgeted Cost distribution are explainable		

## SECTION 01 33 00

## SUBMITTAL PROCEDURES

11/13

## PART 1 GENERAL

## 1.1 DEFINITIONS

## 1.1.1 Submittal Descriptions (SD)

Submittals requirements are specified in the technical sections. Submittals are identified by Submittal Description (SD) numbers and titles as follows:

## SD-01 Preconstruction Submittals

Submittals which are required prior to or commencing work on site.

Certificates of insurance

Surety bonds

List of proposed Subcontractors

List of proposed products

Construction progress schedule

Network Analysis Schedule (NAS)

Submittal register

Schedule of prices

Health and safety plan

Work plan

Quality Control (QC) plan

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 are for use in producing the product, and are 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 by which the ensuring work can be judged. This includes assemblies or portions of assemblies which are to be incorporated into the project and those which will be removed at conclusion of the work.

## SD-05 Design Data

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

## SD-06 Test Reports

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. (Testing must have been within three years of date of contract award for the project.)

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

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

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 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 purpose of which is to further quality of orderly progression of a portion of the work by documenting procedures, acceptability of methods or personnel qualifications.

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 (MSDS) 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 must 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 that is furnished by the manufacturer, or the system provider, to the equipment operating and maintenance personnel, including manufacturer's help and product line documentation necessary to maintain and install equipment. This data is needed by operating and maintenance personnel for the safe and efficient operation, maintenance and repair of the item.

This data is intended to be 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.

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.

#### 1.1.2 Approving Authority

Office or designated person authorized to approve submitta

### 1.1.3 Work

As used in this section, on- 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.

## 1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for Contractor QC approval. Submit the following in accordance with this section.

### SD-01 Preconstruction Submittals

Submittal Register [; G][; G, [\_\_\_\_]]

## 1.3 SUBMITTAL CLASSIFICATION

Submittals are classified as follows:

### 1.4 FORWARDING SUBMITTALS REQUIRING GOVERNMENT APPROVAL

#### 1.4.1 Submittals Required from the Contractor

As soon as practicable after award of contract, and before procurement of fabrication, forward to the Contracting Officer submittals required in the technical sections of this specification, including shop drawings, product data and samples.

##### 1.4.1.1 O&M Data

The Contracting Officer will review and approve O&M Data to verify the submittals comply with the contract requirements; submit data specified for a given item within 30 calendar days after the item is delivered to the contract site.

In the event the Contractor fails to deliver O&M Data within the time limits specified, the Contracting Officer may withhold from progress payments 50 percent of the price of the item with which such O&M Data are applicable.

## 1.5 PREPARATION

### 1.5.1 Transmittal Form

Transmit submittals with transmittal form prescribed by Contracting Officer and standard for project. On the transmittal form identify Contractor, indicate date of submittal, and include information prescribed by transmittal form and required in paragraph entitled, "Identifying Submittals," of this section.

### 1.5.2 Identifying Submittals

When submittals are provided by a Subcontractor, the Prime Contractor is to prepare, review and stamp with Contractor's approval all specified submittals prior to submitting for Government approval.

Identify submittals, except sample installations and sample panels, with the following information permanently adhered to or noted on each separate component of each submittal and noted on transmittal form. Mark each copy of each submittal identically, with the following:

- a. Project title and location.
- b. Construction contract number.
- c. Date of the drawings and revisions.
- d. Name, address, and telephone number of subcontractor, supplier, manufacturer and any other subcontractor associated with the submittal.
- e. Section number of the specification section by which submittal is required.
- f. Submittal description (SD) number of each component of submittal.
- g. When a resubmission, add alphabetic suffix on submittal description, for example, submittal 18 would become 18A, to indicate resubmission.
- h. Product identification and location in project.

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

Shop drawings are not to be 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 other form is required. Drawings are to be suitable for reproduction and be of a quality to produce clear, distinct lines and letters with dark lines on a white background.

Present 8 1/2 by 11 inches sized shop drawings as part of the bound volume for submittals required by section. Present larger drawings in sets.

Include on each drawing the drawing title, number, date, and revision numbers and dates, in addition to information required in paragraph entitled, "Identifying Submittals," of this section.

Number drawings in a logical sequence. [Contractors may use their own number system.] Each drawing is to bear the number of the submittal in a uniform location adjacent to the title block. Place the Government contract number in the margin, immediately below the title block, for each drawing.

Reserve a blank space, on the right hand side of each sheet for the Government disposition stamp.

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.

Include the nameplate data, size and capacity on drawings. Also include applicable federal, military, industry and technical society

publication references.

#### 1.5.4 Format of SD-03 Product Data and SD-08 Manufacturer's Instructions

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

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

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

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. Should manufacturer's data require supplemental information for clarification, submit as specified for SD-07 Certificates.

Where equipment or materials are specified to conform to industry and technical society reference standards of the organizations such as American National Standards Institute (ANSI), ASTM International (ASTM), National Electrical Manufacturer's Association (NEMA), Underwriters Laboratories (UL), and 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.

Collect required data submittals for each specific material, product, unit of work, or system into a single submittal and 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 construction effort.

Submit manufacturer's instructions prior to installation.

#### 1.5.5 Format of SD-04 Samples

Furnish samples in sizes below, unless otherwise specified or unless the manufacturer has prepackaged samples of approximately 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 of Non-Solid Materials: Pint. Examples of non-solid 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.

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.

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

Recording of Sample Installation: Note and preserve the notation of area constituting sample installation but remove notation at final cleanup of project.

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

#### 1.5.6 Format of SD-05 Design Data and SD-07 Certificates

Provide design data and certificates on 8 1/2 by 11 inches paper. Provide a bound volume for submittals containing numerous pages.

#### 1.5.7 Format of SD-06 Test Reports and SD-09 Manufacturer's Field

Reports Provide reports on 8 1/2 by 11 inches paper in a complete bound volume.

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

#### 1.5.8 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.

#### 1.5.9 Format of SD-01 Preconstruction Submittals and SD-11 Closeout Submittals

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

### 1.6 QUANTITY OF SUBMITTALS

#### 1.6.1 Number of Copies of SD-02 Shop Drawings

Submit six copies of submittals of shop drawings requiring review and approval only by QC organization and seven copies of shop drawings requiring review and approval by Contracting Officer.

#### 1.6.2 Number of Copies of SD-03 Product Data and SD-08 Manufacturer's Instructions

Submit in compliance with quantity requirements specified for shop drawings.

#### 1.6.3 Number of Samples SD-04 Samples

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

#### 1.6.4 Number of Copies SD-05 Design Data and SD-07 Certificates

Submit in compliance with quantity requirements specified for shop drawings.

#### 1.6.5 Number of Copies SD-06 Test Reports and SD-09 Manufacturer's Field Reports

Submit in compliance with quantity and quality requirements specified for shop drawings other than field test results that will be submitted with QC reports.

#### 1.6.6 Number of Copies of SD-10 Operation and Maintenance Data

Submit three copies of O&M Data to the Contracting Officer for review and approval.

#### 1.6.7 Number of Copies of SD-01 Preconstruction Submittals and SD-11 Closeout Submittals

Unless otherwise specified, submit two sets of administrative submittals.

### 1.7 VARIATIONS

Variations from contract requirements require both Designer of Record (DOR) and Government approval pursuant to contract Clause FAR 52.236-21 and will be considered where advantageous to Government.

#### 1.7.1 Considering Variations

Discussion with Contracting Officer prior to submission, after consulting with the DOR, will help ensure functional and quality requirements are met and minimize rejections and re-submittals. When contemplating a variation which 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 deviations may result in the Government requiring rejection and removal of such work at no additional cost to the Government.

#### 1.7.2 Proposing Variations

When proposing variation, deliver 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, including the DOR's written analysis and approval. 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.

#### 1.7.3 Warranting That Variations Are Compatible

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

#### 1.7.4 Review Schedule Is Modified

In addition to normal submittal review period, a period of 10 working days will be allowed for consideration by the Government of submittals with variations.

### 1.8 SUBMITTAL REGISTER

Prepare and maintain submittal register, as the work progresses. Do not change data which is output in columns (c), (d), (e), and (f) as delivered by Government; retain data which is output in columns (a), (g), (h), and

(i) as approved. A submittal register showing items of equipment and materials for which submittals are required by the specifications is provided as an attachment. This list may not be all inclusive and additional submittals may be required. [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 No. and type,

e.g. SD-02 Shop Drawings) required in each specification section.

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

Column (f): Indicate approving authority for each submittal.

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

#### 1.8.1 Use of Submittal Register

Submit submittal register. Submit with QC plan and project schedule. Verify that all submittals required for project are listed and add missing submittals. Coordinate and complete the following fields on the register 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 approving authority to receive submittals.

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

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

#### 1.8.2 Contractor Use of Submittal Register

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

Column (b) Transmittal Number: Contractor assigned list of consecutive numbers.

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

Column (l) List date of submittal transmission.

Column (q) List date approval received.

#### 1.8.3 Approving Authority Use of Submittal Register

Update the following fields [in the Government-furnished submittal register program or equivalent fields in program utilized by Contractor].

Column (b) Transmittal Number: Contractor assigned list of consecutive numbers.

Column (l) List date of submittal receipt.

Column (m) through (p) List Date related to review actions.

Column (q) List date returned to Contractor.

#### 1.8.4 Action Codes

Entries for columns (j) and (o), are to be used as follows (others may be prescribed by Transmittal Form):

##### 1.8.4.1 Government Review Action Codes

"A" - "Approved as submitted"; "Completed"

"B" - "Approved, except as noted on drawings"; "Completed"

"C" - "Approved, resubmission required"; "Resubmit"

"D" - "Returned by correspondence"; "Completed"

"E" - "Disapproved (See attached)"; "Resubmit"

"F" - "Receipt acknowledged"; "Completed"

"G" - "Other (Specify)"; "Resubmit"

"X" - "Receipt acknowledged, does not comply"; "Resubmit"

#### 1.8.5 Copies Delivered to the Government

Deliver one copy of submittal register updated by Contractor to Government with each invoice request.

#### 1.9 SCHEDULING

Schedule and submit concurrently submittals covering component items forming a system or items that are interrelated. Include certifications to be submitted with the pertinent drawings at the same time. No delay damages or time extensions will be allowed for time lost in late submittals. An additional 14 calendar days will be allowed and shown on the register for review and approval of submittals for food service equipment and refrigeration and HVAC control systems.

- a. Coordinate scheduling, sequencing, preparing and processing of submittals with performance of work so that work will not be delayed by submittal processing. Allow for potential resubmittal of requirements.
- b. Submittals called for by the contract documents will be listed on the register. If a submittal is called for 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 which have been omitted from the register or marked "N/A."
- c. Re-submit register and annotate monthly by the Contractor with actual submission and approval dates. When all items on the register have been fully approved, no further re-submittal is required.

- d. Carefully control procurement operations to ensure that each individual submittal is made on or before the Contractor scheduled submittal date shown on the approved "Submittal Register."
- e. Except as specified otherwise, allow review period, beginning with receipt by approving authority, that includes at least 15 working days for submittals for QC Manager Approval and 20 working days for submittals for Contracting Officer approval. Period of review for submittals with Contracting Officer approval begins when Government receives submittal from QC organization.
- f. For submittals requiring review by fire protection engineer, allow review period, beginning when Government receives submittal from QC organization, of 30 working days for return of submittal to the Contractor.
- g. Period of review for each resubmittal is the same as for initial submittal.

#### 1.9.1 Reviewing, Certifying, Approving Authority

The QC organization is responsible for reviewing and certifying that submittals are in compliance with contract requirements. Approving authority on submittals is QC Manager unless otherwise specified for specific submittal. At each "Submittal" paragraph in individual specification sections, a notation "G," following a submittal item, indicates Contracting Officer is approving authority for that submittal item.

#### 1.9.2 Constraints

Conform to provisions of this section, unless explicitly stated otherwise for submittals listed or specified in this contract.

Submit complete submittals for each definable feature of work. Submit at the same time components of definable feature interrelated as a system.

When acceptability of a submittal is dependent on conditions, items, or materials included in separate subsequent submittals, submittal will be returned without review.

Approval of a separate material, product, or component does not imply approval of assembly in which item functions.

#### 1.9.3 QC Organization Responsibilities

- a. Note date on which submittal was received from Contractor on each submittal.
- b. Review each submittal; and check and coordinate each submittal with requirements of work and contract documents.
- c. Review submittals for conformance with project design concepts and compliance with contract documents.
- d. Act on submittals, determining appropriate action based on QC organization's review of submittal.

- (1) When QC Manager is approving authority, take appropriate action on submittal from the possible actions defined in paragraph entitled, "Approved [/Accepted] Submittals," of the section."
- (2) When Contracting Officer is approving authority or when variation has been proposed, forward submittal to Government with certifying statement or return submittal marked "not reviewed" or "revise and resubmit" as appropriate. The QC organization's review of submittal determines appropriate action.

- e. Ensure that material is clearly legible.
- f. Stamp each sheet of each submittal with QC certifying statement or approving statement, except that data submitted in bound volume or on one sheet printed on two sides may be stamped on the front of the first sheet only.

(1) When approving authority is Contracting Officer, QC organization will certify submittals forwarded to Contracting Officer with the following certifying statement:

"I hereby certify that the (equipment) (material) (article) shown and marked in this submittal is that proposed to be incorporated with contract Number [\_\_], is in compliance with the contract drawings and specification, can be installed in the allocated spaces, and is submitted for Government approval.

Certified by Submittal Reviewer \_\_\_\_\_, Date \_\_\_\_\_  
(Signature when applicable)

Certified by QC Manager \_\_\_\_\_, Date \_\_\_\_\_"  
(Signature)

(2) When approving authority is QC Manager, QC Manager will use the following approval statement when returning submittals to Contractor as "Approved" or "Approved as Noted."

"I hereby certify that the (material) (equipment) (article) shown and marked in this submittal and proposed to be incorporated with contract Number [\_\_], is in compliance with the contract drawings and specification, can be installed in the allocated spaces, and is approved for use.

Certified by Submittal Reviewer \_\_\_\_\_, Date \_\_\_\_\_  
(Signature when applicable)

Approved by QC Manager \_\_\_\_\_, Date \_\_\_\_\_"  
(Signature)

- g. Sign certifying statement or approval statement. The QC organization member designated in the approved QC plan is the person signing certifying statements. The use of original ink for signatures is required. Stamped signatures are not acceptable.
- h. Update submittal register [database] as submittal actions occur and maintain the submittal register at project site until final acceptance of all work by Contracting Officer.

- i. Retain a copy of approved submittals at project site, including Contractor's copy of approved samples.

#### 1.10 GOVERNMENT APPROVING AUTHORITY

When approving authority is Contracting Officer, the Government will:

- a. Note date on which submittal was received from QC Manager.
- b. Review submittals for approval within 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 entitled, "Review Notations," of this section and with markings appropriate for action indicated.

Upon completion of review of submittals requiring Government approval, stamp and date approved submittals. Three copies of the approved submittal will be retained by the Contracting Officer and two copies of the submittal will be returned to the Contractor.

##### 1.10.1 Review Notations

Contracting Officer Review will be completed within 21 calendar days after date of submission. Submittals will be returned to the Contractor with the following notations:

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

#### 1.11 DISAPPROVED SUBMITTALS

Contractor shall 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; notice as required under the clause entitled, "Changes," is to be given to the Contracting Officer. Contractor is responsible for the dimensions and design of connection details and construction of work.

Failure to point out deviations may result in the Government requiring rejection and removal of such work at the Contractor's expense.

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

#### 1.12 APPROVED SUBMITTALS

The Contracting Officer's approval or acceptance 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 will not relieve the Contractor of the responsibility for any error which may exist, as the Contractor under the Contractor Quality Control (CQC) requirements of this contract is responsible for dimensions, the design of adequate connections and details, and the satisfactory construction of all work.

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.

#### 1.13 APPROVED SAMPLES

Approval of a sample is only for the characteristics or use named in such approval and is not be construed to change or modify any contract requirements. Before submitting samples, the Contractor to assure 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 which may be damaged in testing, will be returned to the Contractor, at his expense, upon completion of the contract. Samples not approved 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 of that material. Government reserves the right to disapprove any material or equipment which previously has 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. Contractor to replace such materials or equipment to meet contract requirements.

Approval of the Contractor's samples by the Contracting Officer does not relieve the Contractor of his responsibilities under the contract.

### PART 2 PRODUCTS

Not Used

PART 3 EXECUTIONS

Not Used

-- End of Section --

## SECTION 01 35 26.00 22

## GOVERNMENTAL SAFETY REQUIREMENTS (PWD ME)

06/14

## PART 1 GENERAL

[This specification applies to all Design Bid Build and Design Build projects at the Portsmouth Naval Shipyard.]

## 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 SAFETY ENGINEERS (ASSE/SAFE)

ASSE/SAFE A10.32	(2004) Fall Protection
ASSE/SAFE A10.34	(2001; R 2005) Protection of the Public on or Adjacent to Construction Sites
ASSE/SAFE Z359.1	(2007) Safety Requirements for Personal Fall Arrest Systems, Subsystems and Components

## ASME INTERNATIONAL (ASME)

ASME B30.22	(2010) Articulating Boom Cranes
ASME B30.3	(2009) Tower Cranes
ASME B30.5	(2011) Mobile and Locomotive Cranes
ASME B30.8	(2010) Floating Cranes and Floating Derricks

## NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 10	(2010; Errata 2012) Standard for Portable Fire Extinguishers
NFPA 241	(2009) Safeguarding Construction, Alteration, and Demolition Operations
NFPA 51B	(2009; TIA 09-1) Fire Prevention during Welding, Cutting, and Other Hot Work
NFPA 70	(2011; Errata 2 2012) National Electrical Code
NFPA 70E	(2012; Errata 1) Electrical Safety in the Workplace

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

EM 385-1-1 (2008; Errata 1-2010; Changes 1-3 2010; Changes 4-6 2011) Safety and Health Requirements Manual

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 1910.146	Permit-required Confined Spaces
29 CFR 1910.147	Control of Hazardous Energy (Lock Out/Tag Out)
29 CFR 1915	Confined and Enclosed Spaces and Other Dangerous Atmospheres in Shipyard Employment
29 CFR 1919	Gear Certification
29 CFR 1926	Safety and Health Regulations for Construction
29 CFR 1926.16	Rules of Construction
29 CFR 1926.500	Fall Protection
CPL 2.100	(1995) Application of the Permit-Required Confined Spaces (PRCS) Standards, 29 CFR 1910.146.

U.S. NAVAL FACILITIES ENGINEERING COMMAND (NAVFAC)

NAVFAC P-307	(2012) Management of Weight Handling Equipment
ATTACHMENT "A"	"CONTRACTOR CRANE, MULTI-PURPOSE MACHINE, FORKLIFT, CONSTRUCTION EQUIPMENT, AND RIGGING GEAR REQUIREMENTS"
ATTACHMENT "B"	"PORTSMOUTH NAVAL SHIPYARD UTILITY LOCATING PROCEDURES"

The attachments are included following the end of this specification section. If attachments are missing from this copy of specification notify the Contracting Officer.

## 1.2 DEFINITIONS

- a. Competent Person for Fall Protection: A person who is capable of identifying hazardous or dangerous conditions in the personal fall arrest system or any component thereof, as well as their application and use with related equipment, and has the authority to take prompt corrective measures to eliminate the hazards of falling.
- b. High Visibility Accident: Any mishap which may generate publicity or

high visibility.

- c. Medical Treatment: Treatment administered by a physician or by registered professional personnel under the standing orders of a physician. Medical treatment does not include first aid treatment even though provided by a physician or registered personnel.
- d. Operating Envelope: The area surrounding any crane. Inside this "envelope" is the crane, the operator, riggers and crane walkers, rigging gear between the hook and the load, the load and the crane's supporting structure (ground, rail, etc.).
- e. Recordable Injuries or Illnesses: Any work-related injury or illness that results in:
  - (1) Death, regardless of the time between the injury and death, or the length of the illness;
  - (2) Days away from work (any time lost after day of injury/illness onset);
  - (3) Restricted work;
  - (4) Transfer to another job;
  - (5) Medical treatment beyond first aid;
  - (6) Loss of consciousness; or
  - (7) A significant injury or illness diagnosed by a physician or other licensed health care professional, even if it did not result in
    - (1) through (6) above.
- f. "USACE" property and equipment specified in USACE EM 385-1-1 should be interpreted as Government property and equipment.
- g. Weight Handling Equipment (WHE) Accident: A WHE 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 occur. 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, roll over, etc.). Any mishap meeting the criteria described above shall be documented in both the Contractor Significant Incident Report (CSIR) and using the NAVFAC prescribed Navy Crane Center (NCC) form submitted within five days both as provided by the Contracting Officer. Comply with additional requirements and procedures for accidents in accordance with NAVFAC P-307, Section 12.

### 1.3 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

Accident Prevention Plan (APP); G

Activity Hazard Analysis (AHA); G

Crane Critical Lift Plan; G

Proof of qualification for Crane Operators; G SD-

06 Test Reports

Notifications and Reports

Submit reports as their incidence occurs, in accordance with the requirements of the paragraph entitled, "Notifications and Reports."

Accident Reports; G

Monthly Exposure Report; G

Crane Reports; G

SD-07 Certificates

Confined Space Entry Permit; G

Hot work permit; G

License certificates; G

Contractor Safety Self-Evaluation Checklist; G

Accident Notification; G

[Third Party Certification of Barge-Mounted Mobile Cranes; G]

Certificate of Compliance (Crane); G

Submit one copy of each permit/certificate attached to each Daily Production or Quality Control Report

1.4 CONTRACTOR SAFETY SELF-EVALUATION CHECKLIST

Contracting Officer will provide a "Contractor Safety Self-Evaluation checklist" to the Contractor at the pre-construction conference. Complete the checklist monthly and submit with each request for payment voucher. An acceptable score of 90 or greater is required. Failure to submit the completed safety self-evaluation checklist or achieve a score of at least 90 may result in retention of up to 10 percent of the voucher. Additionally, 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. The Contracting Officer will submit a copy of the Contractor Safety Self-Evaluation and Monthly Exposure Report to the local safety and occupational health office.

#### 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 applicable 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)

The SSHO must meet with requirements of EM 385-1-1 Section 1 and ensure that the requirements of 29 CFR 1926.16 are met for this project. Provide a Safety oversight team that includes a minimum of one (1) Competent Person at each project site to function as the Safety and Health Officer (SSHO).

The SSHO or an equally-qualified designated representative/alternate shall be at the work site at all times to implement and administer the Contractor's safety program and government-accepted Accident Prevention Plan. The SSHO's training, experience, and qualifications shall be as required by EM 385-1-1 paragraph 01.A.17, entitled SITE SAFETY AND HEALTH OFFICER (SSHO), and all associated sub-paragraphs.

A Competent Person shall be provided for all of the hazards identified in the Contractor's Safety and Health Program in accordance with the accepted Accident Prevention Plan, and shall 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 acceptance in consultation with the Safety Office.

##### 1.6.1.2 Contractor Quality Control (QC) Manager

The Contractor Quality Control (QC) Manager can be the SSHO on this project.

##### 1.6.1.3 Competent Person for Confined Space Entry

Provide a "Competent Person" to supervise the entry into each confined space. That individual must meet the requirements and definition of Competent Person as contained in EM 385-1-1.

##### 1.6.1.4 Crane Operators

Meet the crane operators' requirements in USACE EM 385-1-1, Section 16 and Appendix I. In addition, for mobile cranes with Original Equipment Manufacturer (OEM) rated capacities of 2,000 pounds or greater, designate crane operators as 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.

In addition, the Contractor shall comply with Contractor Operated Crane Requirements included in the latest revision of document NAVFAC P-307 Section 1.7.2 "Contractor Operated Cranes," and Appendix P, Figure P-1 and with 29 CFR 1926, Subpart CC.

#### 1.6.2 Personnel Duties

##### 1.6.2.1 Site Safety and Health Officer

(SSHO) The SSHO shall:

- 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 or quality control report.
- b. Conduct mishap investigations and complete required reports. Maintain the OSHA Form 300 and Daily Production reports for prime and sub-contractors.
- c. Maintain applicable safety reference material on the job site.
- d. Attend the pre-construction conference, pre-work meetings including preparatory inspection meeting, and periodic in-progress meetings.
- e. Implement and enforce accepted APP's and AHA's.
- f. Maintain a safety and health deficiency tracking system that monitors outstanding deficiencies until resolution. Post a list of unresolved safety and health deficiencies on the safety bulletin board.
- g. Ensure sub-contractor compliance with safety and health requirements.
- h. Maintain a list of hazardous chemicals on site and their Safety Data Sheet (SDS).

Failure to perform the above duties will result in dismissal of the Project Superintendent, QC Manager, and/or SSHO, and a project work stoppage. The project work stoppage will remain in effect pending approval of a suitable replacement.

#### 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 shall attend the

preconstruction conference. This includes the Project Superintendent, Site Safety and 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 at the conference and an agreement will be reached between the Contractor and the Contracting Officer's representative as to which phases will require an analysis. In addition, establish a schedule for the preparation, submittal, review, and acceptance of AHAs to preclude project delays.
- c. Deficiencies in the submitted APP will be brought to the attention of the Contractor at the preconstruction conference, and the Contractor shall revise the plan to correct deficiencies and re-submit it for acceptance. Do not begin work until there is an accepted APP.

#### 1.6.3.2 Safety Meetings

Conduct and document meetings as required by EM 385-1-1. Attach minutes showing contract title, signatures of attendees and a list of topics discussed to the Contractors' daily production or quality control report.

#### 1.7 ACCIDENT PREVENTION PLAN (APP)

Use a qualified person to prepare the written site-specific APP. Prepare the APP in accordance with the format and requirements of USACE EM 385-1-1 and as supplemented herein. Cover all paragraph and subparagraph elements in USACE EM 385-1-1, Appendix A, "Minimum Basic Outline for Accident Prevention Plan". Specific requirements for some of the APP elements are described below. The APP shall be job-specific and address any unusual or unique aspects of the project or activity for which it is written. The APP shall interface with the Contractor's overall safety and health program. Include any portions of the Contractor's overall safety and health program referenced in the APP in the applicable APP element and made site-specific.

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 shall be signed by the person and firm (senior person) preparing the APP, the Contractor, the on-site superintendent, the designated Site Safety and Health Officer, the Contractor Quality Control Manager, and any designated CSP or CIH.

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 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 will be cause for stopping of work, at the discretion of the Contracting Officer, until the matter has been rectified.

Once work begins, changes to the accepted APP shall be made with the knowledge and concurrence of the Contracting Officer, Project Superintendent, SSSH and Quality Control Manager. Should any severe hazard exposure (i.e., imminent danger) become evident, stop work in the area, secure the area, and develop a plan to remove the exposure and control the hazard. Notify the Contracting Officer within 24 hours of discovery. Eliminate/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 ASSE/SAFE A10.34,) and the environment.

Copies of the accepted plan will be maintained at the Contracting Officer's office and at the job site.

Continuously review and amended the APP, as necessary, throughout the life of the contract. Incorporate unusual or high-hazard activities not identified in the original APP as they are discovered.

#### 1.7.1 EM 385-1-1 Contents

In addition to the requirements outlines in Appendix A of USACE EM 385-1-1, the following is required:

- a. Names and qualifications (resumes including education, training, experience and certifications) of all site safety and health personnel designated to perform work on this project to include the designated Site Safety and Health Officer and other competent and qualified personnel to be used such as CSPs, CIHs, STSs, CHSTs. 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; personal protective equipment and clothing to include selection, use and maintenance.
- c. Confined Space Entry Plan: Develop a confined and/or enclosed space entry plan in accordance with USACE EM 385-1-1, applicable OSHA standards 29 CFR 1910, 29 CFR 1915, and 29 CFR 1926, OSHA Directive CPL 2.100, and any other Federal, State and local regulatory requirements identified in this contract. Identify the qualified person's name and qualifications, training, and experience. Delineate the qualified person's authority to direct work stoppage in the event of hazardous conditions. Include procedure for rescue by Contractor personnel and the coordination with emergency responders. (If there is no confined space work, include a statement that no confined space work exists and none will be created.)
- d. Crane Critical Lift Plan: Prepare and sign weight handling critical lift plans for lifts over 75 percent of the capacity of the crane or hoist (or lifts over 50 percent of the capacity of a barge mounted

mobile crane's hoists) at any radius of lift; lifts involving more than one crane or hoist; lifts of personnel; and lifts involving non-routine rigging or operation, sensitive equipment, or unusual safety risks. Submit 15 calendar days prior to on-site work and include the requirements of USACE EM 385-1-1, paragraph 16.H. and the following:

- (1) For lifts of personnel, demonstrate compliance with the requirements of 29 CFR 1926.550(g).
  - (2) For barge mounted mobile cranes, barge stability calculations identifying barge list and trim based on anticipated loading; and load charts based on calculated list and trim. The amount of list and trim shall be within the crane manufacturer's requirements.
- e. Fall Protection and Prevention (FP&P) Program Documentation: The Program Documentation shall 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 in height. A qualified person for fall protection shall prepare and sign the Program Documentation. Include fall protection and prevention systems, equipment and methods employed for every phase of work, responsibilities, assisted rescue, self-rescue and evacuation procedures, training requirements, and monitoring methods. Revise the Fall Protection and Prevention Program Documentation 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 Program Documentation at the job site for the duration of the project. Include the Fall Protection and Prevention Program Documentation in the Accident Prevention Plan (APP).

The FP&P Plan shall include a Rescue and Evacuation Plan in accordance with USACE EM 385-1-1, Section 21.M. The plan shall include a detailed discussion of the following: methods of rescue; methods of self-rescue; equipment used; training requirement; specialized training for the rescuers; procedures for requesting rescue and medical assistance; and transportation routes to a medical facility. Include the Rescue and Evacuation Plan in the Fall Protection and Prevention (FP&P) Plan, and as part of the Accident Prevention Plan (APP).

#### 1.8 ACTIVITY HAZARD ANALYSIS (AHA)

The Activity Hazard Analysis (AHA) format shall be in accordance with USACE EM 385-1-1, Section 1. Submit the AHA for review at least 5 calendar days prior to the phase preparatory meeting. Format subsequent AHAs as amendments to the APP. The analysis should be used during daily inspections to ensure the implementation and effectiveness of the Portsmouth Naval Shipyard's safety and health controls.

The AHA list will be reviewed periodically (at least monthly) at the Contractor supervisory safety meeting and updated as necessary when procedures, scheduling, or hazards change.

Develop the activity hazard analyses using the project schedule as the basis for the activities performed. Any activities listed on the project schedule will require an AHA. The AHAs will be developed by the

Contractor, supplier or subcontractor and provided to the Prime Contractor for submittal to the Contracting Officer.

#### 1.9 DISPLAY OF SAFETY INFORMATION

Within one calendar day after 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, shall 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.06. Additional items required to be posted include:

- a. Confined space entry permit.
- b. Hot work permit.

#### 1.10 SITE SAFETY REFERENCE MATERIALS

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

#### 1.11 EMERGENCY MEDICAL TREATMENT

Contractors will arrange for their own emergency medical treatment. Government has no responsibility to provide emergency medical treatment.

#### 1.12 NOTIFICATIONS AND REPORTS

##### 1.12.1 Accident Notification

Notify the Contracting Officer as soon as practical, but not later than four hours after any accident meeting the definition of Recordable Injuries or Illnesses or High Visibility Accidents, property damage equal to or greater than \$2,000, or any weight handling equipment accident. Ensure positive contact is made with GDA as voice mail and e-mail is not acceptable as official notification. 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 (to include type of construction equipment used, PPE used, etc.). Preserve the conditions and evidence on the accident site until the Government investigation team arrives on-site and Government investigation is conducted.

##### 1.12.2 Accident Reports

- a. Conduct an accident investigation for recordable injuries and illnesses, for Medical Treatment defined in paragraph DEFINITIONS, property damage accidents resulting in at least \$20,000 in damages, and near misses as defined in EM 385-1-1, to establish the root cause(s) of the accident. Complete the applicable NAVFAC Contractor Incident Reporting System (CIRS), and electronically submit via the NAVFAC Enterprise Safety Applications Management System (ESAMS). The Contracting Officer will provide copies of any required or special forms.

- b. Near Misses: Complete the applicable documentation in NAVFAC Contractor Incident Reporting System (CIRS), and electronically submit via the NAVFAC Enterprise Safety Applications Management System (ESAMS).
- c. Conduct an accident investigation for any weight handling equipment accident (including rigging gear accidents) to establish the root cause(s) of the accident, complete the WHE Accident Report (Crane and Rigging Gear) 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 Crane Reports

Submit crane inspection reports required in accordance with USACE EM 385-1-1, Appendix I and as specified herein (Refer to ATTACHMENT "A"- "CONTRACTOR CRANE, MULTI-PURPOSE MACHINE, FORKLIFT, CONSTRUCTION EQUIPMENT, AND RIGGING GEAR REQUIREMENTS") with Daily Reports of Inspections.

#### 1.12.4 Certificate of Compliance

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

#### 1.12.5 Third Party Certification of Barge-Mounted Mobile Cranes

Certify barge-mounted mobile cranes in accordance with 29 CFR 1919 by an OSHA accredited person.

#### 1.13 HOT WORK

Submit and obtain a written permit prior to performing "Hot Work" (welding, cutting, etc.) or operating other flame-producing/spark producing devices, from the Portsmouth Naval Shipyard Fire Department. A permit is required from the Explosives Safety Office for work in and around where explosives are processed, stored, or handled. CONTRACTORS ARE REQUIRED TO MEET ALL CRITERIA BEFORE A PERMIT IS ISSUED. Provide at least one (1) 2A:20 BC rated extinguishers for normal "Hot Work". All extinguishers shall be current inspection tagged, approved safety pin and tamper resistant seal. It is also mandatory to have a designated FIRE WATCH for any "Hot Work" done at Portsmouth Naval Shipyard. The Fire Watch shall be trained in accordance with NFPA 51B and remain on-site for a minimum of 60 minutes after completion of the task or as specified on the hot work permit. Separate hot work permits will be issued for any Hot Asphalt roofing kettle.

When starting work in the facility, require personnel to familiarize themselves with the location of the nearest fire alarm boxes and place in memory the emergency Portsmouth Naval Shipyard Fire Department phone number. ANY FIRE, NO MATTER HOW SMALL, SHALL BE REPORTED TO THE PORTSMOUTH NAVAL SHIPYARD FIRE DEPARTMENT AND THE CONTRACTING OFFICER IMMEDIATELY.

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

#### 1.14 RADIATION SAFETY REQUIREMENTS

License Certificates and other applicable information for radiation materials and equipment shall be submitted to the Contracting Officer and Radiation Safety Office (RSO), and Contracting Oversight Technician (COT) for all specialized and licensed material and equipment that could cause fatal harm to construction personnel or to the construction project.

Complete list of requirements are available on the PWD Maine's Web site or available for the COTS representative.

[https://portal.navfac.navy.mil/portal/page/portal/navfac/navfac\\_ww\\_pp/navfac\\_navfacmidlant\\_pp/pwbl/maine/construction:general%20contractor%20information:tab3](https://portal.navfac.navy.mil/portal/page/portal/navfac/navfac_ww_pp/navfac_navfacmidlant_pp/pwbl/maine/construction:general%20contractor%20information:tab3)

Workers shall be protected from radiation exposure in accordance with 10 CFR 20, Standards for Protection against Radiation. Loss of radioactive material shall be reported immediately to the Contracting Officer.

Actual exposure of the radiographic film or un-shielding the source shall not be initiated until after 5 p.m. on weekdays.

In instances where radiography is scheduled near or adjacent to buildings or areas having limited access or one-way doors, no assumptions shall be made as to building occupancy. Where necessary, the Contracting Officer will direct the Contractor to conduct an actual building entry, search, and alert. Where removal of personnel from such a building cannot be accomplished and it is otherwise safe to proceed with the radiography, a fully instructed employee shall be positioned inside such building or area to prevent exiting while external radiographic operations are in process. Transportation of Regulated Amounts of Radioactive Material will comply with 49 CFR, Subchapter C, Hazardous Material Regulations. Local Fire authorities and the site Radiation Safety Officer (RSO) shall be notified of any Radioactive Material use.

Transmitter Requirements: The Portsmouth Naval Shipyard policy concerning the use of transmitters such as radios, cell phones, etc., must be adhered to by all Contractor personnel. They must also obey Emissions Control (EMCON) restrictions.

#### 1.15 FACILITY OCCUPANCY CLOSURE

Streets, walks, and other facilities occupied and used by the

Government shall not be closed or obstructed without written permission from the Contracting Officer.

#### 1.16 SEVERE STORM PLAN

In the event of a severe storm warning, the Contractor must:

- 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.
- d. Comply with requirements as per EM-385 1-1 Section 06.I INCLEMENT WEATHER. Contracting Officer will notify Contractor of COR (Condition of Readiness level 1-5) for severe storms.

#### 1.17 CONFINED SPACE ENTRY REQUIREMENTS.

Contractors entering and working in confined spaces while performing general industry work are required to follow the requirements of OSHA 29 CFR 1926 and comply with the requirements in Section 34 of EM 385-1-1 and OSHA 29 CFR 1910.146. Contractors entering and working in confined spaces while performing shipyard industry work are required to follow the requirements of OSHA 29 CFR 1915 Subpart B.

### PART 2 PRODUCTS

#### 2.1 CONFINED SPACE SIGNAGE

Provide permanent signs integral to or securely attached to access covers for new permit-required confined spaces. Signs wording: "DANGER--PERMIT-REQUIRED CONFINED SPACE - DO NOT ENTER -" in bold letters a minimum of one inch in height and constructed to be clearly legible with all paint removed. The signal word "DANGER" shall be red and readable from 5 feet.

### PART 3 EXECUTIONS

#### 3.1 CONSTRUCTION AND/OR OTHER WORK

Comply with USACE EM 385-1-1, NFPA 70, NFPA 70E, NFPA 241, the APP, the AHA, Federal and State OSHA regulations, and other related submittals and Portsmouth Naval Shipyard's 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 carried/available on each person.

Mandatory PPE includes:

- a. Hard Hat

b. Appropriate Safety Shoes

c. Reflective Vests

### 3.1.1 Hazardous Material Use

Each hazardous material must receive approval from the Contracting Officer or their designated representative prior to being brought onto the job site or prior to any other use in connection with this contract. Allow a minimum of 10 working days for processing of the request for use of a hazardous material.

### 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 USACE 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 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 Portsmouth Naval Shipyard.

### 3.1.3 Unforeseen Hazardous Material

The design should have identified materials such as PCB, lead paint, dust that could potentially be hazardous, and friable and non-friable asbestos and other OSHA regulated chemicals (i.e., 29 CFR Part 1910.1000). If additional material, not indicated, that may be hazardous to human health upon disturbance during construction operations is encountered, stop that portion of work and notify the Contracting Officer immediately. Within 14 calendar days the Government will determine if the material is hazardous. If material is not hazardous or poses no danger, the Government will direct the Contractor to proceed without change. If material is hazardous and handling of the material is necessary to accomplish the work, the Government will issue a modification pursuant to "FAR 52.243-4, Changes" and "FAR 52.236-2, Differing Site Conditions."

## 3.2 PRE-OUTAGE COORDINATION MEETING

Apply for utility outages at least 5 to 15 calendar days in advance depending on the utility. As a minimum, the request should include the location of the outage, utilities being affected, duration of outage and any necessary sketches. Special requirements for electrical outage requests are contained elsewhere in this specification section. Once approved, and prior to beginning work on the utility system requiring

shut down, attend a pre-outage coordination meeting with the Contracting Officer to review the scope of work and the lock-out/tag-out procedures for worker protection. No work will be performed on energized electrical circuits unless proof is provided that no other means exist and

Contracting Officer written approval is obtained.

### 3.3 CONTROL OF HAZARDOUS ENERGY (LOCKOUT/TAGOUT)

Ensure that each employee is familiar with and complies with these procedures and USACE EM 385-1-1, Section 12, Control of Hazardous Energy and 29 CFR 1910.147.

Contracting Officer will, at the Contractor's request, apply lockout/tag-out tags and take other actions that, because of experience and knowledge, are known to be necessary to make the particular equipment safe to work on.

No person, regardless of position or authority, shall operate any switch, valve, or equipment that has an official lockout/tag-out tag attached to it, nor shall such tag be removed except as provided in this section.

No person shall work on any equipment that requires a lockout/tag-out tag unless he, his immediate supervisor, project leader, or a subordinate has in his possession the stubs of the required lockout/tag-out tags.

When work is to be performed on electrical circuits, only qualified personnel shall perform work on electrical circuits.

A supervisor who is required to enter an area protected by a lockout/tag-out tag will be considered a member of the protected group provided he notifies the holder of the tag stub each time he enters and departs from the protected area.

Shipyards and NAVFAC Personnel use a red lock and a red tag to indicate personnel are working on the systems. Use of a red lock and a red tag is highly encouraged to maintain continuity throughout the installation. The use of another colored locks and tags (blue for Shipyards workers and Yellow for NAVFAC personnel) indicate that the system is out of service for some reason.

Identification markings on building light and power distribution circuits shall not be relied on for established safe work conditions.

Before clearance will be given on any equipment other than electrical (generally referred to as mechanical apparatus), the apparatus, valves, or systems shall be secured in a passive condition with the appropriate vents, pins, and locks.

Pressurized or vacuum systems shall be vented to relieve differential pressure completely.

Vent valves shall be tagged open during the course of the work.

Where dangerous gas or fluid systems are involved, or in areas where the environment may be oxygen deficient, system or areas shall be purged, ventilated, or otherwise made safe prior to entry.

#### 3.3.1 Tag Placement

Lockout/tag-out tags shall be completed in accordance with the regulations printed on the back thereof and attached to any device which, if operated, could cause an unsafe condition to exist.

If more than one group is to work on any circuit or equipment, the employee in charge of each group shall have a separate set of lockout/tag-out tags completed and properly attached.

When it is required that certain equipment be tagged, the Government will review the characteristics of the various systems involved that affect the safety of the operations and the work to be done; take the necessary actions, including voltage and pressure checks, grounding, and venting, to make the system and equipment safe to work on; and apply such lockout/tag-out tags to those switches, valves, vents, or other mechanical devices needed to preserve the safety provided. This operation is referred to as "Providing Safety Clearance."

### 3.3.2 Tag Removal

When any individual or group has completed its part of the work and is clear of the circuits or equipment, the supervisor, project leader, or individual for whom the equipment was tagged shall turn in his signed lockout/tag-out tag stub to the Contracting Officer. That group's or individual's lockout/tag-out tags on equipment may then be removed on authorization by the Contracting Officer.

## 3.4 FALL HAZARD PROTECTION AND PREVENTION PROGRAM

Establish a fall protection and prevention program, for the protection of all employees exposed to fall hazards. Within the program include company policy, identify 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.

### 3.4.1 Training

Institute a fall protection training program. As part of the Fall Hazard Protection and Prevention Program, provide training for each employee who might be exposed to fall hazards. Provide training by a competent person for fall protection in accordance with USACE EM 385-1-1, Section 21.B.

### 3.4.2 Fall Protection Equipment and Systems

Enforce use of the fall protection equipment and systems designated for each specific work activity in the Fall Protection and Prevention Plan and/or AHA at all times when an employee is exposed to a fall hazard. Protect employees from fall hazards as specified in EM 385-1-1, Section 21. In addition to the required fall protection systems, safety skiff, personal floatation devices, life rings etc., are required when working above or next to water in accordance with USACE EM 385-1-1, Paragraphs 21.N through 21.N.04. Personal fall arrest systems are required when working from an articulating or extendible boom, swing stages, or suspended platform. In addition, personal fall arrest systems are required when operating other equipment such as scissor lifts if the work platform is capable of being positioned outside the wheelbase. The need for tying-off in such equipment is to prevent ejection of the employee from the equipment during raising, lowering, or travel. Fall protection must comply with 29 CFR 1926.500, Subpart M, USACE EM 385-1-1 and ASSE/SAFE A10.32.

#### 3.4.2.1 Personal Fall Arrest Equipment

Personal fall arrest equipment, systems, subsystems, and components shall

meet ASSE/SAFE Z359.1. Only a full-body harness with a shock-absorbing lanyard or self-retracting lanyard is an acceptable personal fall arrest body support device. Body belts may only be used as a positioning device system (for uses such as steel reinforcing assembly and in addition to an approved fall arrest system). Harnesses shall have a fall arrest attachment affixed to the body support (usually a Dorsal D-ring) and specifically designated for attachment to the rest of the system. Only locking snap hooks and carabineers shall be used. Webbing, straps, and ropes shall be made of synthetic fiber. The maximum free fall distance when using fall arrest equipment shall not exceed 6 feet. The total fall distance and any swinging of the worker (pendulum-like motion) that can occur during a fall shall always be taken into consideration when attaching a person to a fall arrest system.

#### 3.4.3 Fall Protection for Roofing Work

Implement fall protection controls based on the type of roof being constructed and work being performed. Evaluate the roof area to be accessed for its structural integrity including weight-bearing capabilities for the projected loading.

##### a. Low Sloped Roofs:

- (1) For work within 6 feet of an edge, on low-slope roofs, protect personnel from falling by use of personal fall arrest systems, guardrails, or safety nets. A safety monitoring system is not adequate fall protection and is not authorized.
- (2) For work greater than 6 feet from an edge, erect and install warning lines in accordance with 29 CFR 1926.500 and USACE EM 385-1-1.

##### b. Steep-Sloped Roofs: Work on steep-sloped roofs requires a personal fall arrest system, guardrails with toe-boards, or safety nets. This requirement also includes residential or housing type construction.

#### 3.4.4 Existing Anchorage

Certified (or re-certified) by a qualified person for fall protection existing anchorages, to be used for attachment of personal fall arrest equipment in accordance with ASSE/SAFE Z359.1. Existing horizontal lifeline anchorages must be certified (or re-certified) by a registered professional engineer with experience in designing fall arrest anchorage systems.

#### 3.4.5 Horizontal Lifelines

Design, install, certify and use under the supervision of a qualified person horizontal lifelines for fall protection as part of a complete fall arrest system which maintains a safety factor of 2 (29 CFR 1926.500).

#### 3.4.6 Guardrails and Safety Nets

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

#### 3.4.7 Rescue and Evacuation Procedures

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

### 3.5 SHIPYARD REQUIREMENTS

All personnel who enter the Controlled Industrial Area (CIA) of Portsmouth Naval Shipyard shall wear mandatory personal protective equipment (PPE) at all times and comply with PPE postings of shops both inside and outside the CIA.

### 3.6 SCAFFOLDING

Provide employees with a safe means of access to the work area on the scaffold. A scaffolding competent person shall be present observing erecting, moving, altering, or dismantling any scaffold. Climbing of any scaffold braces or supports not specifically designed for access is prohibited. Access scaffold platforms greater than 20 feet maximum in height by use of a scaffold stair system. Do not use vertical ladders commonly provided by scaffold system manufacturers for accessing scaffold platforms greater than 20 feet maximum in height. The use of an adequate gate is required. Ensure that employees are qualified to perform scaffold erection and dismantling. Do not use scaffold without the capability of supporting at least four times the maximum intended load or without appropriate fall protection as delineated in the accepted fall protection and prevention plan. Stationary scaffolds must be attached to structural building components to safeguard against tipping forward or backward. Give special care to ensure scaffold systems are not overloaded. Side brackets used to extend scaffold platforms on self-supported scaffold systems for the storage of material are prohibited. The first tie-in shall be at the height equal to 4 times the width of the smallest dimension of the scaffold base. Place work platforms on mudsills. Scaffold or work platform erectors shall have fall protection during the erection and dismantling of scaffolding or work platforms that are more than six feet in height.

Delineate fall protection requirements when working above six feet or above dangerous operations in the Fall Protection and Prevention (FP&P) Plan and Activity Hazard Analysis (AHA) for the phase of work.

#### 3.6.1 Stilts

The use of stilts for gaining additional height in construction, renovation, repair or maintenance work is prohibited.

### 3.7 EQUIPMENT

#### 3.7.1 Material Handling Equipment

- a. Material handling equipment such as forklifts shall not be modified with work platform attachments for supporting employees unless specifically delineated in the manufacturer's printed operating instructions.

- b. The use of hooks on equipment for lifting of material must be in accordance with manufacturer's printed instructions. Additionally, when material handling equipment is used as a crane it must meet NAVFAC P-307 requirements in paragraphs entitled "Contractor Operated Cranes," an "Investigation and Reporting of Crane and Rigging Gear Accidents."
- c. Operators of forklifts or power industrial trucks shall be licensed in accordance with OSHA.

### 3.7.2 Weight Handling Equipment

- a. Equip cranes and derricks as specified in EM 385-1-1, Section 16.
- b. Notify the Contracting Officer 15 days in advance of any cranes entering the Portsmouth Naval Shipyard so that necessary quality assurance spot checks can be coordinated. Contractor's operator shall remain with the crane during the spot check. (Refer to ATTACHMENT "A" - "CONTRACTOR CRANE, MULTI-PURPOSE MACHINE, FORKLIFT, CONSTRUCTION EQUIPMENT, AND RIGGING GEAR REQUIREMENTS.")
- c. Comply with the crane 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. Comply with ASME B30.5 for mobile and locomotive cranes, ASME B30.22 for articulating boom cranes, ASME B30.3 for construction tower cranes, and ASME B30.8 for floating cranes and floating derricks.
- e. Under no circumstance shall a Contractor make a lift at or above 90 percent of the cranes rated capacity in any configuration.
- f. When operating in the vicinity of overhead transmission lines, operators and riggers shall be alert to this special hazard and follow the requirements of USACE EM 385-1-1 section 11 and ASME B30.5 or ASME B30.22 as applicable.
- g. Do not 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.
- h. Inspect, maintain, and recharge portable fire extinguishers as specified in NFPA 10, Standard for Portable Fire Extinguishers.
- i. All employees must keep clear of loads about to be lifted and of suspended loads.
- j. Use cribbing when performing lifts on outriggers.
- k. The crane hook/block must be positioned directly over the load. Side loading of the crane is prohibited.
- l. A physical barricade must be positioned to prevent personnel

from entering the counterweight swing (tail swing) area of the crane.

- m. Certification records which include the date of inspection, signature of the person performing the inspection, and the serial number or other identifier of the crane that was inspected shall always be available for review by Contracting Officer personnel.
- n. Written reports listing the load test procedures used along with any repairs or alterations performed on the crane shall be available for review by Contracting Officer personnel.
- o. Certify that all crane operators have been trained in proper use of all safety devices (e.g. anti-two block devices).
- p. Take steps to ensure that wind speed does not contribute to loss of control of the load during lifting operations. Prior to conducting lifting operations set a maximum wind speed at which a crane can be safely operated based on the equipment being used, the load being lifted, experience of operators and riggers, and hazards on the work site. This maximum wind speed determination shall be included as part of the activity hazard analysis plan for that operation.

### 3.7.3 Equipment and Mechanized Equipment

- a. Proof of qualifications for operator shall be kept on the project site for review.
- b. Manufacture specifications or owner's manual for the equipment shall 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.

### 3.7.4 USE OF EXPLOSIVES

Use of Explosives is not allowed on Portsmouth Naval Shipyard.

### 3.8 EXCAVATIONS

Perform soil classification by a competent person in accordance with 29 CFR 1926 and EM 385-1-1.

#### a. Trenching Machinery:

Operate trenching machines with digging chain drives only when the spotters/laborers are in plain view of the operator. Provide operator and spotters/laborers training on the hazards of the digging chain drives with emphasis on the distance that needs to be maintained when the digging chain is operating. Keep documentation of the training on file at the project site.

#### b. Shoring Systems:

Trench and shoring systems must be identified in the accepted safety plan and AHA. Manufacture tabulated data and specifications or registered engineer tabulated data for shoring or benching systems shall be readily available on-site for review. Job-made shoring or

shielding must have the registered professional engineer stamp, specifications, and tabulated data. Extreme care must be used when excavating near direct burial electric underground cables.

### 3.8.1 Utility Locations

All underground utilities in the work area must be positively identified by a third party, independent, private utility locating company (cannot be the Government's locating company) in addition to any Portsmouth Naval Shipyard location service and coordinated with the Portsmouth Naval Shipyard utility department.

For work completed at the Portsmouth Naval Shipyard, See Attachment B - "PORTSMOUTH NAVAL SHIPYARD UTILITY LOCATING PROCEDURES."

### 3.8.2 Utility Location Verification

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

### 3.8.3 Utilities Within and Under Concrete Slabs, Bituminous Asphalt and Other Impervious Surfaces

Utilities located within and under concrete slabs or pier structures, bridges, parking areas, and the like, are extremely difficult to identify. Whenever contract work involves chipping, saw cutting, or core drilling through concrete, bituminous asphalt or other impervious surfaces, the existing utility location must be coordinated with station utility departments in addition to location and depth verification by a third party, independent, private locating company. The third party, independent, private locating company shall locate utility depth by use of Ground Penetrating Radar (GPR), bore scope, or ultrasound prior to the start of demolition and construction. Outages to isolate utility systems must be used in circumstances where utilities are unable to be positively identified. The use of historical drawings does not alleviate the Contractor from meeting this requirement. Any markings made during the utility investigation must be maintained throughout the contract.

## 3.9 ELECTRICAL

### 3.9.1 Conduct of Electrical Work

Underground electrical spaces must be certified safe for entry before entering to conduct work. Cables that will be cut must be positively identified and de-energized prior to performing each cut. Positive cable identification must be made prior to submitting any outage request for

electrical systems. Arrangements are to be coordinated with the Contracting Officer and Portsmouth Naval Shipyard Utilities for identification. The Contracting Officer will not accept an outage request until the Contractor satisfactorily documents that the circuits have been clearly identified. Perform all high voltage cable cutting remotely using hydraulic cutting tool. When racking in or live switching of circuit breakers, no additional person other than the switch operator will be allowed in the space during the actual operation. Plan so that work near energized parts is minimized to the fullest extent possible. Use of electrical outages clear of any energized electrical sources is the

preferred method. When working in energized substations, only qualified electrical workers will be permitted to enter. When work requires Contractor to work near energized circuits as defined by the

NFPA 70, high voltage personnel must use personal protective equipment that includes, as a minimum, electrical hard hat, safety shoes, insulating gloves with leather protective sleeves, fire retarding shirts, coveralls, face shields, and safety glasses. In addition, provide electrical arc flash protection for personnel as required by NFPA 70E. Insulating blankets, hearing protection, and switching suits may also be required, depending on the specific job and as delineated in the Contractor's AHA.

### 3.9.2 Portable Extension Cords

Size portable extension cords in accordance with manufacturer ratings for the tool to be powered and protected from damage. Immediately remove from service all damaged extension cords. Portable extension cords shall meet the requirements of EM 385-1-1, NFPA 70E, and OSHA electrical standards.

### 3.10 WORK IN CONFINED SPACES

Comply with the requirements in Section 34 of USACE EM 385-1-1, OSHA 29 CFR 1910, OSHA 29 CFR 1910.146, OSHA Directive CPL 2.100 and OSHA 29 CFR 1926. Any potential for a hazard in the confined space requires a permit system to be used.

- a. Entry Procedures. Prohibit entry into a confined space by personnel for any purpose, including hot work, until the qualified person has conducted appropriate tests to ensure the confined or enclosed space is safe for the work intended and that all potential hazards are controlled or eliminated and documented. (See Section 34 of USACE EM 385-1-1 for entry procedures.) All hazards pertaining to the space shall be reviewed with each employee during review of the AHA.
- b. Forced air ventilation is required for all confined space entry operations and the minimum air exchange requirements must be maintained to ensure exposure to any hazardous atmosphere is kept below its' action level.
- c. Sewer wet wells require continuous atmospheric monitoring with audible alarms Oxygen, a Flammable gas (methane preferably), and Hydrogen sulfide or Carbon monoxide.

-- End of Section --

SECTION 01 35 26 – ATTACHMENT A  
CONTRACTOR CRANE, MULTI-PURPOSE MACHINE, FORKLIFT, CONSTRUCTION EQUIPMENT,  
AND RIGGING GEAR REQUIREMENTS

1 CONTRACTOR CRANE, MULTI-PURPOSE MACHINE, FORKLIFT, CONSTRUCTION EQUIPMENT, AND RIGGING GEAR REQUIREMENTS

1.1 The following is a list of requirements that contractors shall comply with for all contracts that may result in the use of a category 1 or 4 crane, multi-purpose machines, forklifts, construction equipment, and rigging gear when used on Navy property to lift suspended loads. Non-compliance with the requirements of this instruction may result in denial of access, stopping of operations, or removal from Navy property.

1.2 References:

1.2.1 NAVFAC P-307, Management of Weight Handling Equipment

1.2.2 American Society of Mechanical Engineers (ASME) B30.3 (tower cranes), B30.5 (mobile cranes), B30.8 (floating cranes), B30.9 (slings), B30.20 (below the hook lifting devices), B30.22 (articulating booms), B30.26 (rigging hardware); ANSI/ITSDF B56.6 (rough terrain forklifts); Safety Standards for Cableways, Cranes, Derricks, Hoists, Hooks, Jacks, and Slings

1.2.3 CFR, Title 29, Chapter XVII, Part 1917, Marine Terminals.

1.2.4 CFR, Title 29, Chapter XVII, Part 1926, Safety and Health Regulations for Construction

1.2.5 CFR, Title 29, Chapter XVII, Part 1915, Occupational Safety and Health Standards for Shipyard Employment

1.2.6 OPNAVINST 5100.23, Navy Safety and Occupational Health Program Manual

1.2.7 EM 385-1-1, Safety and Health Requirements Manual, U.S. Army Corps of Engineers

1.2.8 NAVFAC Guide Specification NFGS-01525D, Safety Requirements

1.3 These requirements are solely intended to provide for the protection of Government property and personnel and are not intended to, and do not, in any manner whatsoever, relieve the contractor of its responsibility, including, without limitation, its responsibility for the protection of its equipment and personnel.

1.4 Notification Requirement: Contractor shall notify the Contracting Officer 7 calendar days in advance of the intent of bringing a non-Navy owned crane onto Navy property or of any multi-purpose machines, material handling equipment, or construction equipment that may be used in a crane-like application to lift suspended loads. The contractor shall also specify when crane entry onto Navy property is scheduled during back shift, weekend, or holiday hours of operation. All entries shall be through a prearranged entry point. The following documentation shall be provided along with notification: a copy of the Certification of Compliance (reference 1.2.1) and objective evidence of operator qualifications for cranes with rated capacities of 2,000 lbs. or greater. Failure to schedule or provide necessary documentation may result in the crane being denied access to the facility.

1.5 The contractor shall comply with applicable reference 1.2.2 standards (e.g., B30.3 for construction tower cranes, B30.5 for mobile cranes, B30.8 for floating cranes, B30.9 for slings, B30.20 for below the hook lifting devices, and B30.22 for articulating boom cranes), B30.26 for rigging hardware, and ANSI/ITSDF B56.6 for rough terrain forklifts). For barge mounted mobile cranes, require a third party certification from an OSHA accredited organization (or from a state accredited organization for those states with OSHA approved state plans), a load indicating device, a wind-indicating device, and a marine type list and trim indicator readable in one-half degree increments. Third party certification is not required for barge-mounted mobile cranes at naval activities in foreign countries.

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### CONTRACTOR CRANE, MULTI-PURPOSE MACHINE, FORKLIFT, CONSTRUCTION EQUIPMENT, AND RIGGING GEAR REQUIREMENTS

1.6 Certification of Compliance (reference 1.2.1): The contractor shall complete a certificate of compliance that the crane (or other machine if used to lift suspended loads) and rigging gear meet applicable OSHA and ANSI/ASME regulations (with the contractor citing which OSHA regulations are applicable, e.g., cranes/multi-purpose machines used in cargo transfer shall comply with reference 1.2.3; cranes/multi-purpose machines used in construction, demolition, or maintenance shall comply with reference 1.2.4; cranes/multi-purpose machines used in ship repair shall comply with reference 1.2.5; slings shall comply with ASME B30.9; rigging hardware shall comply with ASME B30.26). For cranes (or other machine if used to lift suspended loads) and rigging equipment at naval activities in foreign countries, the contractor shall certify that the crane and rigging gear conform to the appropriate host country safety standards. The contractor shall also certify that all of its crane (or other machine) operators working on the naval activity have been trained not to bypass safety devices (e.g., anti-two block devices) during lifting operations, and that its operators, riggers, and company officials are aware of the actions required in the event of an accident as specified in the contract. Require that the certifications be posted on the crane. When a crane on Navy property is not authorized for use, the Certification of Compliance shall state, "Operation of this Crane is NOT Authorized."

1.7 The contractor shall certify (reference 1.2.1) that the crane or machine operator is qualified and trained for the operation of the crane to be used. For mobile and commercial truck mounted cranes with OEM rated capacities of greater than 2,000 pounds, the crane operator shall be designated as qualified by a source that qualifies crane operators (i.e., a union, a government agency, or an organization that tests and qualifies crane operators). Proof of current qualification shall be provided.

1.8 For multi-purpose machines, material handling equipment and construction equipment used to lift loads suspended by rigging equipment, the contractor shall have proof or authorization from the machine OEM that the machine is capable of making lifts of loads suspended by rigging equipment. The contractor shall demonstrate that the equipment is properly configured to make such lifts and is equipped with a load chart.

1.9 All hooks used on cranes, hoists, other machines, and rigging gear shall have self-closing latches or the throat opening shall be "moused" (secured with wire, rope, heavy tape, etc.) or otherwise secured to prevent the attached item from coming free of the hook under a slack condition. The following exceptions apply and shall be approved by the contractor's technical organization: items where the hook throat is fully obstructed and not available for manual securing and lifts where securing the hook throat increases the danger to personnel such as forge shop, dip tank, or underwater work.

#### 1.10 Loading Limitations:

CAUTION: Piers and waterfront areas such as along dry docks and quay walls may have load restrictions.

1.10.1 The contractor shall notify the Contracting Officer prior to moving a crane on a pier, dry dock, or other waterfront area. Provide the Contracting Officer with the crane make, model, and configuration in which it is to be used.

1.10.2 The contractor shall comply with crane access routes and load limitations issued with the contract.

1.10.3 Allowable Surface Loads. Loads transferred to soils and pavements shall be minimized to a desired maximum of 3000 pounds per square foot, by placement of cribbing or steel pads under rubber-tired crane outriggers and trailer stanchions/sand shoes, or by placement of mats under treads of crawler cranes. Visually inspect areas adjacent to cribbing or plates and report any unusual bituminous pavement surface conditions, irregularities, or cracking to the Contracting Officer.

1.10.3.1 Outriggers of rubber-tired cranes shall be landed on two layers of timbers of appropriate thickness, oriented at right angles to each other, or landed on properly designed steel pads. Treads of crawler cranes shall run on appropriate mats. Use and design of cribbing, plates and mats shall be in a manner consistent with general construction industry standards.

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### CONTRACTOR CRANE, MULTI-PURPOSE MACHINE, FORKLIFT, CONSTRUCTION EQUIPMENT, AND RIGGING GEAR REQUIREMENTS

1.10.3.2 Position loads that will remain on trailers detached from tractors to attain a distribution of 65 percent to rear axles and 35 percent to front support stanchions/sand shoes. For example, assuming an 83000 pound maximum gross weight and a soil bearing pressure of 3000 pounds per square foot, the required support under each sand shoe would be 2.5 feet x 2.5 feet. Accordingly, two tiers of timber cribbing at right angles, each 2.5 feet x 2.5 feet x 4 inches, or a properly designed 2.5 feet x 2.5 feet steel pad would be utilized under each trailer stanchion/sand shoe.

1.11 Prior to making any critical lift, the contractor shall provide a critical lift plan for each of the following lifts: lifts over 75 percent of the capacity of the crane, hoist, or other machine (50 percent of the capacity of a barge mounted mobile crane's hoists) at any radius of lift; lifts involving more than one crane, hoist, or other machine; lifts of personnel (lifts of personnel suspended by rigging equipment from multi-purpose machines, material handling equipment, or construction equipment shall not be permitted); lifts made in the vicinity of overhead power lines; erection of cranes; and lifts involving non-routine rigging or operation, sensitive equipment, or unusual safety risks. The plan shall include the following as applicable:

1.11.1 The size and weight of the load to be lifted, including crane (or other machine) and rigging equipment that add to the weight. The OEM's maximum load capacities for the entire range of the lift shall also be provided.

1.11.2 The lift geometry, including the crane (or other machine) position, boom length and angle, height of lift, and radius for the entire range of the lift. Applies to both single and tandem crane/machine lifts.

1.11.3 A rigging plan, showing the lift points, rigging equipment, and rigging procedures.

1.11.4 The environmental conditions under which lift operations are to be stopped.

1.11.5 For lifts of personnel, the plan shall demonstrate compliance with the requirements of reference

1.11.6 For barge mounted mobile cranes, barge stability calculations identifying crane placement/footprint; barge list and trim based on anticipated loading; and load charts based on calculated list and trim specific to the barge the crane is mounted on. The amount of list and trim shall be within the crane manufacturer's requirements.

1.11.7 For lifts in the vicinity of overhead power lines (i.e., if any part of the crane or other machine, including the fully extended boom of a telescoping boom crane or machine, or the load could approach the distances noted in figure 10-3 of reference 1.2.1 during a proposed operation), the plan shall demonstrate compliance to 29 CFR 1926.550(a)(15).

1.12 The following additional documentation is required for contractor provided tower cranes (those cranes defined by ASME B30.3).

1.12.1 Foundation design and requirements

1.12.2 Installation instructions 1.12.4

1.12.3 Assembly and disassembly instructions including climbing/jumping instructions if applicable

1.12.4 Operating manual, limitations, and precautions

1.12.5 Periodic inspection and maintenance requirements

1.13 Crane and Rigging Gear Accident Reporting and Record Keeping: Contractor's operating cranes on Navy property shall report all WHE accidents that occur incidental to an operation, project, or facility as

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prescribed by paragraphs (1.10.1) through (1.10.3) requirements below. Contractors shall report directly to their respective Contracting Officer. There are two general categories of accidents as defined below. Crane accidents are those that occur during operation of a crane. Rigging gear accidents are those that occur when gear is used by itself in weight handling operation i.e., without a crane.

1.13.1 Crane Accident: For the purpose of this definition, it is assumed there is an "operating envelope" around any crane, and inside the envelope are the following elements:

- The crane
- The operator
- The rigger(s) and crane walker
- Other personnel involved in the operation (supervisor, mechanic, tag line handler, engineer, etc.)
- The rigging gear between the hook and the load
- The load
- The crane's supporting structure (ground, rail, etc.)
- The lift procedure

1.13.1.1 Definition: A crane accident occurs when any one or more of the six elements in the operating envelope fails to perform correctly during operation, including operation during maintenance, or testing resulting in the following:

- Personnel injury or death. Minor injuries that are inherent in any industrial operation, including strains and repetitive motion related injuries, shall be reported by the normal personnel injury reporting process in lieu of these requirements.
- Material or equipment damage
- Dropped load
- Derailment
- Two-blocking
- Overload (This includes load tests when the test load tolerance is exceeded.)
- Collision, including unplanned contact between the load, crane, and/or other objects.

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, roll over, etc.). [Bullets] 3, 4, 5, 6, and 7 are considered crane accidents even though no material damage or injury occurs.

Exception: If a crane is used as an anchor point for a portable hoist/rigging gear, rigging gear accident as defined in paragraph 1.10.2 below is not considered a crane accident if the crane is not being operated (no functions are in motion) at the time of the rigging gear accident, unless the accident results in an overload or damage to the crane, in which case it shall be reported as a crane accident.

1.13.2 Rigging Gear Accidents: For the purpose of this definition, it is assumed there is an "operating envelope" around any weight handling operation, and inside the envelope are the following:

- Rigging gear and miscellaneous equipment
- The user of the gear or equipment
- Other personnel involved in the operation (supervisor, mechanic, tag line handler, engineer, etc.)
- The load
- The gear or equipment's supporting structure
- The load's rigging path

SECTION 01 35 26 – ATTACHMENT A  
CONTRACTOR CRANE, MULTI-PURPOSE MACHINE, FORKLIFT, CONSTRUCTION EQUIPMENT,  
AND RIGGING GEAR REQUIREMENTS

- The rigging procedure

1.13.2.1 Definition. A rigging gear accident occurs when any one or more of the five elements in the operating envelope fails to perform correctly during weight handling operations resulting in the following:

- Personnel injury or death. Minor injuries that are inherent in any industrial operation, including strains and repetitive motion related injuries, shall be reported by the normal personnel injury reporting process of the activity in lieu of these requirements.
- Material or equipment damage that requires the damaged item to be repaired because it can no longer perform its intended function. This does not include superficial damage such as scratched paint, damaged lagging, or normal wear on rigging gear.
- Dropped load.
- Two-blocking of cranes and powered hoists.
- Overload. (This includes load tests when the test load tolerance is exceeded.)

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 load, damaged load, etc.). [Bullets] 3, 4, and 5 are considered accidents even though no material damage or injury occurs.

1.13.3 The contractor shall notify the Contracting Officer as soon as practical, but not later than four hours, after any WHE accident. The contractor shall secure the accident site and protect evidence until released by the Contracting Officer. The contractor shall conduct an accident investigation to establish the root cause(s) of the accident. Crane operations shall not proceed until cause is determined and corrective actions have been implemented to the satisfaction of the Contracting Officer. The contractor shall provide the Contracting Officer within 30 days of any accident a Crane and Rigging Gear Accident Report using the form provided in reference 1.2.1 consisting of a summary of circumstances, an explanation of causes(s), photographs if available, and corrective actions taken. These notifications and reporting requirements are in addition to those promulgated by reference 1.2.6 and related claimant instructions.

1.14 Each contractor shall perform the following actions prior to conducting crane operations on Navy property:

1.14.1 Inspection Requirements: It shall be the sole responsibility of the contractor to assure the Contracting Officer and/or designated Navy personnel that the crane and associated rigging gear are in good working order and safe for use.

1.14.1.1 Crane Inspection: Perform pre-operational inspection of the crane in the presence of a representative of the Contracting Office of the crane prior to starting work on Navy property. Inspection shall meet all applicable reference 1.2.2, reference 1.2.7 (for NAVFAC construction contracts), and OSHA requirements.

1.14.1.2 Wire Rope Inspection: Perform a Wire Rope Inspection in the presence of a representative of the contracting office to applicable reference 1.2.2, reference 1.2.7 (for NAVFAC construction contracts), and OSHA requirements.

1.14.1.3 Rigging Gear Inspection: Perform a Rigging Gear Inspection in the presence of a representative of the contracting office to applicable reference 1.2.2, reference 1.2.7 (for NAVFAC construction contracts), and OSHA requirements.

**APPENDIX P – CONTRACTOR CRANE (OR ALTERNATE MACHINE USED TO  
LIFT SUSPENDED LOAD) AND RIGGING GEAR REQUIREMENTS**

<b>CERTIFICATE OF COMPLIANCE</b>	
This certificate shall be signed by an official of the company that provides cranes (or multi-purpose machines, material handling equipment, or construction equipment used to lift loads suspended by rigging gear) or rigging gear for any application under this contract. Post a completed certificate on each crane or alternate machine (or in the contractor's on-site office for rigging operations) brought onto Navy property.	
CONTRACTING OFFICER'S POINT OF CONTACT ( <b>Government Representative</b> )	PHONE
PRIME CONTRACTOR/PHONE	CONTRACT NUMBER
CRANE OR ALTERNATE MACHINE SUPPLIER/PHONE (if different from prime contractor)	CRANE OR ALTERNATE MACHINE NUMBER (i.e., ID number)
CRANE OR ALTERNATE MACHINE MANUFACTURER/TYPE/CAPACITY	
CRANE OR ALTERNATE MACHINE OPERATOR'S NAME(S)	
<p>I certify that</p> <ol style="list-style-type: none"> <li>1. The above noted crane or alternate machine and all rigging gear conform to applicable OSHA regulations (host country regulations for naval activities in foreign countries) and applicable ASME B30 standards. The following OSHA regulations and ASME standards apply: _____</li> <li>2. The operators noted above have been trained and are qualified for the operation of the above noted crane(s) or alternate machine(s).</li> <li>3. The operators noted above have been trained not to bypass safety devices during lifting operations.</li> <li>4. The operators, riggers and company officials are aware of the actions required in the event of an accident as specified in the contract.</li> </ol>	
COMPANY OFFICIAL SIGNATURE	DATE
COMPANY OFFICIAL NAME/TITLE	
<p><b>POST ON CRANE (OR ALTERNATE MACHINE)</b> (IN CAB OR VEHICLE) (or in the contractor's on-site office for rigging operations)</p>	

FIGURE P-1

SECTION 01 35 26 – ATTACHMENT A  
CONTRACTOR CRANE ENTRY CHECKLIST

1	Crane Company:	Date of Entry:		
	Crane Manufacturer/Crane Model/Crane Number:	Time of Entry:		
2	Date of Annual Inspection Expiration			
3	Date of Quadrennial Inspection Expiration			
4	Name & phone number of Contracting Official (or designated local representative)	Contracting Official		
		Phone Number		
5	Does the package include a routine or critical lift plan?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
6	Location of lift site?			
7	Duration crane will be continuously on the job site (hrs, days, weeks...)			
8	Does plan include certification from contractor that the crane complies with ASME B30 standard [B30.5 (mobile cranes), B30.8 (floating cranes), B30.22 (articulating boom cranes), or B30.3 (construction tower cranes)] as applicable?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
9	Does plan include a certificate of compliance?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
10	Which OSHA regulations does the certificate of compliance indicate? (For cranes used in cargo transfer, 29 CFR 1917 applies; for cranes used in construction, demolition, or maintenance, 29 CFR 1926 applies; for cranes used in shipbuilding, ship repair, or ship breaking, 29 CFR 1915 applies).			
11	Does plan include valid medical certificate and proof of operator qualification from a source that qualifies crane operators (union, governmental agency, or an organization that tests and qualifies crane operators)? Verify qualification for each back-up operator (if provided) on the certificate of compliance.	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
12	Does the plan designate a qualified Rigger-in-Charge	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
13	What is the weight of the heaviest load to be lifted?	lbs.		
14	What is the weight of the rigging gear?	lbs.		
15	What are the crane components (and their weights) that add to the weight of the load (hook, jib, etc.)?	Main Block	lbs.	
		Aux. Block	lbs.	
		Jib (Stowed)	lbs.	
		Jib (Erected)	lbs.	
		Other	lbs.	
16	What is the maximum total crane lift (sum of 13, 14 & 15 above)?	<b>TOTAL</b>	lbs.	
17	What is the capacity of the crane as configured	lbs.		
18	What percentage of crane capacity does this lift represent?	%		

FIGURE P-2

SECTION 01 35 26 – ATTACHMENT A  
CONTRACTOR CRANE ENTRY CHECKLIST

19	What is the main boom length? If a jib will be utilized, indicate the length and offset.	MAIN	JIB	OFFSET	
20	What are the minimum and maximum load radii?	Min		Max	
21	Does the plan include the manufacturer's load chart for entire range of lift(s)?			Yes <input type="checkbox"/>	No <input type="checkbox"/>
22	Does plan include ground loading and outrigger reaction data to determine cribbing requirements, or a Waterfront Operational Permit?			Yes <input type="checkbox"/>	No <input type="checkbox"/>
23	For crawler crane, does the plan indicate area restrictions for operation?			Yes <input type="checkbox"/>	No <input type="checkbox"/>
24	For floating crane, does plan include maximum allowable list?			Yes <input type="checkbox"/>	No <input type="checkbox"/>
25	For mobile crane mounted on barge, is crane equipped with load indicating device? Wind indicating device? Marine type list and trim indicator (readable in one-half degree increments)?			Yes <input type="checkbox"/>	No <input type="checkbox"/>
26	For mobile crane mounted on barge, does plan include revised load chart?			Yes <input type="checkbox"/>	No <input type="checkbox"/>
27	What are the environmental conditions under which crane operations are to be stopped?				
28	Will the crane perform critical lifts? (If no, skip items 29 –49.)			Yes <input type="checkbox"/>	No <input type="checkbox"/>
29	What circumstances require this lift to be classified as a critical lift? (Blind lift, 75% of chart, non-routine rigging, etc.)				
30	What are the exact dimensions of the load? (L x W x H)				
31	Does the plan indicate the crane position? (Overhead view)			Yes <input type="checkbox"/>	No <input type="checkbox"/>
32	What is the maximum lift height of the lift?				
33	What is the minimum boom angle?				
34	What is the maximum boom angle?				
35	What is the name of the operator?				
36	Indicate name(s) of backup operator (if required).				
37	Does the plan show lift points?			Yes <input type="checkbox"/>	No <input type="checkbox"/>
38	Does the plan describe the rigging procedures?			Yes <input type="checkbox"/>	No <input type="checkbox"/>
39	Does the plan indicate rigging hardware requirements?			Yes <input type="checkbox"/>	No <input type="checkbox"/>

FIGURE P-2

SECTION 01 35 26 – ATTACHMENT A  
CONTRACTOR CRANE ENTRY CHECKLIST

40	For personnel lifts, does the plan demonstrate compliance with 29 CFR 1926.550?	<b>Yes</b> <input type="checkbox"/>	<b>No</b> <input type="checkbox"/>	<b>N/A</b> <input type="checkbox"/>
41	Does EM 385-1-1 govern this lift?	<b>Yes</b> <input type="checkbox"/>	<b>No</b> <input type="checkbox"/>	<b>N/A</b> <input type="checkbox"/>
42	What are the coordination and communication requirements for the lift (e.g., radio and hand signals)?			
43	For tandem or tailing crane lifts, does the plan indicate the make and model of the crane, the line, boom, and swing speeds, and the requirement for an equalizer beam?	<b>Yes</b> <input type="checkbox"/>	<b>No</b> <input type="checkbox"/>	<b>N/A</b> <input type="checkbox"/>
44	For floating cranes, refer to questions 20-22?			
45	What is the name of the lift supervisor?			
56	Does the plan indicate the qualifications of the lift supervisor?	<b>Yes</b> <input type="checkbox"/>	<b>No</b> <input type="checkbox"/>	
47	What are the names of the riggers?			
48	Does the plan indicate the qualifications of the riggers?	<b>Yes</b> <input type="checkbox"/>	<b>No</b> <input type="checkbox"/>	
49	Did all involved personnel (Operator, Riggers, Lift Supervisor, etc.) sign the critical lift plan?	<b>Yes</b> <input type="checkbox"/>	<b>No</b> <input type="checkbox"/>	

Name	Organization	Signature	Date	Phone
Contracting Official:				
Wed By				

FIGURE P-2

FOR OFFICIAL USE ONLY

<b>CRANE AND RIGGING GEAR ACCIDENT REPORT</b>			
<b>Accident Category:</b> <input type="checkbox"/> Crane Accident <input type="checkbox"/> Rigging Gear Accident			
<b>From:</b>		<b>To:</b> Navy Crane Center Bldg 491 NNSY Portsmouth, VA 23709 Fax (757) 967-3808	
<b>UIC:</b> <b>Activity:</b>			<b>Report No.:</b>
<b>Crane No.:</b>	<b>Category:</b>	<b>Accident Date:</b>	<b>Time:</b> hrs
<b>Category of Service:</b> <input type="checkbox"/> SPS <input type="checkbox"/> GPS		<b>Crane Type:</b>	<b>Crane Manufacturer:</b>
<b>Was Crane/Rigging Gear Being Used in SPS?</b> Yes    No		<b>Was Crane/Rigging Gear Being Used in a Complex Lift/Critical non-crane rigging operation?</b> Yes    No	
<b>Location:</b>		<b>Weather:</b>	
<b>Crane Capacity:</b>		<b>Hook Capacity:</b>	<b>Weight of Load on Hook:</b>
<b>Fatality or Permanent Disability?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No		<b>Material/Property Cost Estimate:</b>	
<b>Reported to NAVSAFECEN?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No			
<b>Accident Type:</b> <input type="checkbox"/> Personal Injury <input type="checkbox"/> Overload <input type="checkbox"/> Derail <input type="checkbox"/> Damaged Rigging Gear <input type="checkbox"/> Load Collision <input type="checkbox"/> Two Blocked <input type="checkbox"/> Dropped Load <input type="checkbox"/> Damaged Crane <input type="checkbox"/> Crane Collision <input type="checkbox"/> Damaged Load <input type="checkbox"/> Other Specify _____			
<b>Cause of Accident:</b> <input type="checkbox"/> Improper Operation <input type="checkbox"/> Equipment Failure <input type="checkbox"/> Inadequate Visibility <input type="checkbox"/> Improper Rigging <input type="checkbox"/> Switch Alignment <input type="checkbox"/> Inadequate Communication <input type="checkbox"/> Track Condition <input type="checkbox"/> Procedural Failure <input type="checkbox"/> Other Specify _____			
<b>Chargeable to:</b> <input type="checkbox"/> Crane Walker <input type="checkbox"/> Rigger <input type="checkbox"/> Operator <input type="checkbox"/> Maintenance <input type="checkbox"/> Management/Supervision <input type="checkbox"/> Other Specify _____			
<b>Crane Function:</b> <input type="checkbox"/> Travel <input type="checkbox"/> Hoist <input type="checkbox"/> Rotate <input type="checkbox"/> Luffing <input type="checkbox"/> Telescoping <input type="checkbox"/> Other <input type="checkbox"/> N/A			
<b>Is this accident indicative of a recurring problem?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No			
<b>If yes, list Accident Report Nos.:</b> _____			
<b>ATTACH COMPLETE AND CONCISE SITUATION DESCRIPTION AND CORRECTIVE/PREVENTIVE ACTIONS TAKEN AS ENCLOSURE (1). Include probable cause and contributing factors. Assess damages and define responsibility. For equipment malfunction or failure, include specific description of the component and the resulting effect or problem caused by the malfunction or failure. List immediate and long term corrective/preventive actions assigned and respective codes.</b>			
<b>Preparer:</b>	<b>Phone and email</b>	<b>Code</b>	<b>Date</b>
<b>Conurrences:</b>			
		<b>Code</b>	<b>Date</b>
		<b>Code</b>	<b>Date</b>
<b>Certifying Official (Crane Accidents Only):</b>		<b>Code</b>	<b>Date</b>

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 FIGURE 12-1 (1 of 2)

#### CRANE AND RIGGING GEAR ACCIDENT REPORT INSTRUCTIONS

This form is designed for fax transmission without a cover page or by e-mail and, with enclosures and signatures, shall be the official document. Electronic submission will be accepted without signatures but the names of the preparer, concurring personnel, and certifying official (for crane accidents only) shall be filled in. The e-mail address is m\_nfsh\_ncc\_accident@navy.mil. The fax number is (757) 967-3808.

1. Accident Category: Indicate either crane accident or rigging gear accident.
2. From: The naval activity that is responsible for reporting the accident and UIC number.
3. Activity: The naval activity where the accident took place.
4. Report No.: The activity assigned accident number (e.g., 95-001).
5. Crane No.: The activity assigned crane number (e.g., PC-5), if applicable.
6. Category: Identify category of crane (i.e., 1, 2, 3, or 4), if applicable.
7. Accident Date: The date the accident occurred.
8. Time: The time (24 hour clock) the accident occurred (e.g., 1300).
9. Category of Service: Check the applicable service (SPS as defined by NAVSEA 0989-030-7000).
10. Crane Type: The type of crane involved in the accident (e.g., mobile, bridge), if applicable.
11. Crane Manufacturer: The manufacturer of the crane (e.g., Dravo, Grove, P&H), if applicable.
12. SPS: Was the crane or rigging gear being used in an SPS lift?
13. Complex lift: Was the crane or rigging gear being used in a complex lift?
14. Location: The detailed location where the accident took place (e.g., building 213, dry dock 5).
15. Weather: The weather conditions at time of accident (e.g., wind, rain, cold).
16. Crane Capacity: The certified capacity of the crane (e.g., 120,000 pounds), if applicable.
17. Hook Capacity: The capacity of the hook involved in the accident at the max radius of the operation, if applicable.
18. Weight of Load on Hook: If applicable, the weight of the load on the hook.
19. Fatality or Permanent Disability?: Check yes or no.
20. Material/Property Cost Estimate: Estimate total cost of damage resulting from the accident.
21. Reported to NAVSAFECEN?: Self-explanatory.
22. Accident Type: Check all that apply.
23. Cause of Accident: Check all that apply.
24. Chargeable to: Check all that apply.
25. Crane Function: Check all functions in operation at time of accident. Check N/A if a rigging gear accident.
26. Is this a recurring problem?: Check yes or no. Identify any other similar accidents.
27. Situation Description/Corrective Actions: Self-explanatory.
28. Preparer: Self-explanatory.
29. Concurrences: Self-explanatory.
30. Certifying Official (Crane Accidents Only): Self-explanatory.

FIGURE 12-1 (2 of 2)

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CRANE AND RIGGING GEAR NEAR MISS REPORT			
Near Miss Category: <input type="checkbox"/> Crane Near Miss <input type="checkbox"/> Rigging Gear Near Miss			
From:		To: Navy Crane Center Bldg 491 NNSY Portsmouth, VA 23709 Fax (757) 967-3808 nfcsh_ncc_accident@navy.mil	
UIC:		Report No:	
Activity:			
Crane/Equipment No:	Category:	Near Miss Date:	Time: hrs
Category of Service: <input type="checkbox"/> SPS <input type="checkbox"/> GPS	Crane/Equipment Type:	Crane/Equipment Manufacturer:	
Location:		Weather:	
Crane/Equipment Capacity:	Hook Capacity:	Weight of Load on Hook:	
Is this near miss indicative of a recurring problem? <input type="checkbox"/> Yes <input type="checkbox"/> No			
If yes, list report numbers: _____			
In the space below, include a brief description of the event and corrective actions taken to prevent recurrence:			
Preparer:	Phone and email	Code	Date

FIGURE 12-2 (1 of 2)

## CRANE AND RIGGING GEAR NEAR MISS INSTRUCTIONS

This form is designed for fax transmission without a cover page or by e-mail and, with enclosures and signatures, shall be the official document. Electronic submission will be accepted without signatures but the names of the preparer, concurring personnel, and certifying official (for crane accidents only) shall be filled in. The e-mail address is [nfsh\\_ncc\\_accident@navy.mil](mailto:nfsh_ncc_accident@navy.mil). The fax number is (757) 967-3808.

1. Near Miss Category: Indicate either crane or rigging gear near miss.
2. From: The naval activity that is responsible for reporting the near miss and UIC number.
3. Activity: The naval activity where the near miss took place.
4. Report No.: The activity assigned near miss number (e.g., 95-001).
5. Crane No.: The activity assigned crane number (e.g., PC-5), if applicable.
6. Category: Identify category of crane (i.e., 1, 2, 3, or 4), if applicable.
7. Near Miss Date: The date the near miss occurred.
8. Time: The time (24 hour clock) the near miss occurred (e.g., 1300).
9. Category of Service: Check the applicable service (SPS as defined by NAVSEA 0989-030-7000).
10. Crane Type: The type of crane involved in the near miss (e.g., mobile, bridge), if applicable.
11. Crane Manufacturer: The manufacturer of the crane (e.g., Dravo, Grove, P&H), if applicable.
12. Location: The detailed location where the near miss took place (e.g., building 213, dry dock 5).
13. Weather: The weather conditions at time of the near miss (e.g., wind, rain, cold).
14. Crane Capacity: The certified capacity of the crane (e.g., 120,000 pounds), if applicable.
15. Hook Capacity: The capacity of the hook involved in the near miss at the maximum radius of the operation, if applicable.
16. Weight of Load on Hook: If applicable, the weight of the load on the hook.
17. Is this a recurring problem?: Check yes or no. Identify any other similar near misses or accidents.
18. Situation Description/Corrective Actions: Self-explanatory.
19. Preparer: Self-explanatory.

FIGURE 12-2 (2 of 2)

## SECTION 01 35 26 - ATTACHMENT B

### PORTSMOUTH NAVAL SHIPYARD UTILITY LOCATING PROCEDURES

#### LOCATION OF UNDERGROUND FACILITIES

##### B1.1 General

Excavation or ground penetrating work is defined as any operation in which earth, rock or other material below ground is moved or otherwise displaced, by means of power and hand tools, power equipment which includes grading, trenching, digging, boring, auguring, tunneling, scraping and cable or pipe driving except tilling of soil, gardening or displacement of earth, rock or other material for agricultural purposes. Removal of bituminous concrete pavement or concrete is not considered excavation

Ground penetrating work may include but is not limited to installing fence posts, probes, borings, piles, sign posts, stakes or anchor rods of any kind that penetrates the soil more than 3".

The "Excavator" is defined as the person directly responsible for performing the excavation or ground penetrating work.

##### B1.2 Underground Utilities

The Contractor/Excavator shall fully comply with the State of Maine "DIG SAFE" law (Title 23, MRSA 3360-A).

Existing underground utilities shown on the plans are based on PNS Yard Plates and are shown in their approximate locations only.

The Excavator shall pre-mark the excavation area in "White Paint Only". (Field notes may be done in Pink paint).

The Excavator shall notify "DIG SAFE" (1-888-344-7233) at least within 14 calendar days, but no more than 30 calendar days prior to the commencement of the excavation or ground penetrating activity.

The Excavator shall prepare a PWD ME Dig Safe Utility Locate Request Format least within 14 calendar days prior to the commencement of the excavation or ground penetrating activity and submit the Form to the Contracting Officer. (The PDW ME Dig Safe Form is attached at the end of this Section.)

The Government will locate and mark the underground utilities within 14 calendar days of receiving the Dig Safe Notification.

Excavation or ground penetrating activities cannot commence until the utilities have been marked in the field and the PWD ME Dig Safe Utility Locate Form has been returned indicating the PWD ME Dig Safe review process has been completed and excavation has been approved by the Contracting Officer.

If the excavation or ground penetrating activities do not commence within 27 days of Dig Safe notification or the excavation work is expanded outside the location originally specified in the notification, the Excavator shall re-notify Dig Safe, the Contracting Officer and the PWD ME Dig Safe Coordinator.

## **PORTSMOUTH NAVAL SHIPYARD UTILITY LOCATING PROCEDURES**

The Contractor shall maintain the utility markings through out the contract period. If additional markings are required, the Excavator shall re-notify Dig Safe, the Contracting Officer and the PWD ME Dig Safe Coordinator. Re-markings will be completed at the Contractor's expense.

The Contractor shall contact the PWD ME Dig Safe Coordinator at 207-438-1082 if there are any questions regarding the underground utilities or the Dig Safe notification

SECTION 01 42 00

SOURCES FOR REFERENCE PUBLICATIONS  
08/10

PART 1 GENERAL

1.1 REFERENCES

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

1.2 ORDERING INFORMATION

The addresses of the standards publishing organizations whose documents are referenced in other sections of these specifications are listed below, and if the source of the publications is different from the address of the sponsoring organization, that information is also provided. Documents listed in the specifications with numbers which were not assigned by the standards producing organization should be ordered from the source by title rather than by number.

ALUMINUM ASSOCIATION (AA)  
National Headquarters  
1525 Wilson Boulevard, Suite 600  
Arlington, VA 22209  
Ph: 703-358-2960  
Fax: 703-358-2961  
Internet: <http://www.aluminum.org>

AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS (ACGIH)  
1330 Kemper Meadow Drive  
Cincinnati, OH 45240  
Ph: 513-742-2020 or 513-742-6163  
Fax: 513-742-3355  
E-mail: [mail@acgih.org](mailto:mail@acgih.org)  
Internet: <http://www.acgih.org>

AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)  
One East Wacker Drive, Suite 700  
Chicago, IL 60601-1802  
Ph: 312-670-2400  
Fax: 312-670-5403  
Publications: 800-644-2400 E-mail: [pubs@aisc.org](mailto:pubs@aisc.org)  
Internet: <http://www.aisc.org>

AMERICAN SOCIETY OF SAFETY ENGINEERS (ASSE/SAFE)  
1800 East Oakton Street  
Des Plaines, IL 60018-2187

Ph: 847-699-2929  
Fax: 847-768-3434  
E-mail: [customerservice@asse.org](mailto:customerservice@asse.org)  
Internet: <http://www.asse.org>

AMERICAN SOCIETY OF SANITARY ENGINEERING (ASSE)  
18927 Hickory Creek Drive, Suite 220  
Mokena, IL 60448  
Ph: 708-995-3019  
Fax: 708-479-6139  
E-mail: [info@asse-plumbing.org](mailto:info@asse-plumbing.org)  
Internet: <http://www.asse-plumbing.org>

AMERICAN WATER WORKS ASSOCIATION (AWWA)  
6666 West Quincy Avenue  
Denver, CO 80235  
Ph: 800-926-7337  
Fax: 303-347-0804  
E-mail: [smorrison@awwa.org](mailto:smorrison@awwa.org)  
Internet: <http://www.awwa.org>

AMERICAN WELDING SOCIETY (AWS)  
8669 NW 36 Street, #130550 N.W. LeJeune Road  
Miami, FL 33166-6672  
Ph: 800-443-9353 - 305-443-9353  
Fax: 305-443-7559  
E-mail: [info@aws.org](mailto:info@aws.org) or [customerservice@awspubs.com](mailto:customerservice@awspubs.com)  
Internet: <http://www.aws.org>

ASME INTERNATIONAL (ASME)  
Three Park Avenue, M/S 10E  
New York, NY 10016-5990  
Ph: 800-854-7179 or 800-843-2763  
Fax: 212-591-7674  
E-mail: [infocentral@asme.org](mailto:infocentral@asme.org)  
Internet: <http://www.asme.org>

ASTM INTERNATIONAL (ASTM)  
100 Barr Harbor Drive, P.O. Box C700  
West Conshohocken, PA 19428-2959  
Ph: 610-832-9585  
Fax: 610-832-9555  
E-mail: [service@astm.org](mailto:service@astm.org)  
Internet: <http://www.astm.org>

CALIFORNIA ENERGY COMMISSION (CEC)  
Media and Public Communications Office  
1516 Ninth Street, MS-29  
Sacramento, CA 95814-5512  
Ph: 916-654-4287  
Internet: <http://www.energy.ca.gov/>

FOUNDATION FOR CROSS-CONNECTION CONTROL AND HYDRAULIC RESEARCH  
(FCCCHR)  
University of South California  
Kaprielian Hall 200  
Los Angeles, CA 90089-2531  
Ph: 213-740-2032 or 866-545-6340

Fax: 213-740-8399  
E-mail: [fccchr@usc.edu](mailto:fccchr@usc.edu)  
Internet: <http://www.usc.edu/dept/fccchr>

GREEN SEAL (GS)  
1001 Connecticut Avenue, NW  
Suite 827  
Washington, DC 20036-5525  
Ph: 202-872-6400  
Fax: 202-872-4324  
E-mail: [green SEAL@green SEAL.org](mailto:green SEAL@green SEAL.org)  
Internet: <http://www.green SEAL.org>

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)  
445 Hoes Lane or 2001 L Street, NW, Suite 700  
Piscataway, NJ 08855-1331 or Washington, DC 20036-4910 USA  
Ph: 732-981-0060 or 800-701-4333  
Fax: 732-562-6380  
E-mail: [online support@ieee.org](mailto:online support@ieee.org) or [ieee usa@ieee.org](mailto:ieee usa@ieee.org)  
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Burnaby, BC CANADA V5C 6G7  
Ph: 1-888-674-8937  
Fax: 1-888-211-8708  
E-mail: [info@paintinfo.com](mailto:info@paintinfo.com), [jody@mpi.net](mailto:jody@mpi.net), [bgl@mpi.net](mailto:bgl@mpi.net)  
Internet: <http://www.paintinfo.com/mpi>

NATIONAL ASSOCIATION OF ARCHITECTURAL METAL MANUFACTURERS (NAAMM)  
800 Roosevelt Road, Bldg C, Suite 312  
Glen Ellyn, IL 60137  
Ph: 630-942-6591  
Fax: 630-790-3095  
E-mail: [wlewis7@cox.net](mailto:wlewis7@cox.net) (Vernon Lewis, technical consultant)  
Internet: <http://www.naamm.org>

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)  
1300 North 17th Street, Suite 1752  
Rosslyn, VA 22209  
Ph: 703-841-3200  
Fax: 703-841-5900  
Internet: <http://www.nema.org/>

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)  
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Quincy, MA 02169-7471  
Ph: 617-770-3000 or 800-344-3555  
Fax: 617-770-0700  
E-mail: [webmaster@nfpa.org](mailto:webmaster@nfpa.org)  
Internet: <http://www.nfpa.org>

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Emeryville, CA 94608  
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Fax: 510-452-8001  
Internet: <http://www.scs1.com>

SOCIETY OF AUTOMOTIVE ENGINEERS INTERNATIONAL (SAE)  
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Warrendale, PA 15096-0001  
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Fax: 724-776-0790  
E-mail: [customerservice@sae.org](mailto:customerservice@sae.org)  
Internet: <http://www.sae.org>

THE SOCIETY FOR PROTECTIVE COATINGS (SSPC)  
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for Fax and E-mail see below  
Internet: <http://www.epa.gov>  
--- Some EPA documents are available only from:  
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Alexandria, VA 22312

Ph: 703-605-6050 or 1-688-584-8332  
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FHWA, Office of Safety  
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Washington, DC 20590-  
Ph: 202-366-0411  
Fax: 202-366-2249  
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Ph: 215-697-6396 - for account/password issues  
Internet: <http://assist.daps.dla.mil/online/start/>; account  
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E-mail: [contactcenter@gpo.gov](mailto:contactcenter@gpo.gov)  
Internet: <http://www.gpoaccess.gov>

U.S. NAVAL FACILITIES ENGINEERING COMMAND (NAVFAC)  
1322 Patterson Ave. SE, Suite 1000  
Washington Navy Yard, DC 20374  
Ph: 757-322-4200  
Fax: 757-322-4416  
Internet: <http://www.navfac.navy.mil>

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

-- End of Section --

SECTION 01 45 00.00 20

QUALITY CONTROL (PWD ME)

6/14

PART 1 GENERAL

1.1 REFERENCES

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

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1 (2008; Errata 1-2010; Changes 1-3 2010; Changes 4-6 2011; Change 7 2012) Safety and Health Requirements Manual

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. 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

Construction Quality Control (QC) Plan; G

Submit a Construction QC Plan prior to start of construction.

1.3 INFORMATION FOR THE CONTRACTING OFFICER

Prior to commencing work on construction, the Contractor can obtain a single copy set of the current report forms from the Contracting Officer. The report forms will consist of the Contractor Production Report, Contractor Production Report (Continuation Sheet), Contractor Quality Control (CQC) Report, (CQC) Report (Continuation Sheet), Preparatory Phase Checklist, Initial Phase Checklist, Rework Items List, and Testing Plan and Log.

Deliver the following to the Contracting Officer during Construction:

- a. CQC Report: Mail or hand-carry the original (wet signatures) and one copy by 10:00 AM the next working day after each day that work is performed and for every seven consecutive calendar days of no-work.
- b. Contractor Production Report: Submit the report electronically by 10:00 AM the next working day after each day that work is performed and for every seven consecutive calendar days of no-work.
- c. Preparatory Phase Checklist: Submit the report electronically in the same manner as the CQC Report for each Preparatory Phase held.

- d. Initial Phase Checklist: Submit the report electronically in the same manner as the CQC Report for each Initial Phase held.
- e. QC Specialist Reports: Submit the report electronically by 10:00 AM the next working day after each day that work is performed.
- f. Field Test Reports: Mail or hand-carry the original within two working days after the test is performed, attached to the original CQC Report and one copy attached to each QC Report copy.
- g. Monthly Summary Report of Tests: Submit the report as an electronic attachment to the CQC Report at the end of each month.
- h. Testing Plan and Log: Submit the report as an electronic attachment to the CQC Report, at the end of each month. A copy of the final Testing Plan and Log shall be provided to the OMSI preparer for inclusion into the OMSI documentation.
- i. Rework Items List: Submit lists containing new entries daily, in the same manner as the CQC Report.
- j. CQC Meeting Minutes: Within two working days after the meeting is held, submit the report as an electronic attachment to the CQC Report.
- k. QC Certifications: As required by the paragraph entitled "QC Certifications."

#### 1.4 QC PROGRAM REQUIREMENTS

Establish and maintain a QC program as described in this section. This QC program is a key element in meeting the objectives of NAVFAC Commissioning. The QC program consists of a QC Organization, QC Plan, QC Plan Meeting(s), a Coordination and Mutual Understanding Meeting, QC meetings, three phases of control, submittal review and approval, testing, completion inspections, and QC certifications and documentation necessary to provide materials, equipment, workmanship, fabrication, construction and operations which comply with the requirements of this Contract. The QC program must cover on-site and off-site work and be keyed to the work sequence. No construction work or testing may be performed unless the QC Manager is on the work site. The QC Manager must report to an officer of the firm and not be subordinate to the Project Superintendent or the Project Manager.

The QC Manager, Project Superintendent and Project Manager must work together effectively. Although the QC Manager is the primary individual responsible for quality control, all individuals will be held responsible for the quality of work on the job.

##### 1.4.1 NOT USED

##### 1.4.2 Acceptance of the Construction Quality Control (QC) Plan

Acceptance of the QC Plan is required prior to the start of construction. The Contracting Officer reserves the right to require changes in the QC Plan and operations as necessary, including removal of personnel, to ensure the specified quality of work. The Contracting Officer reserves the right to interview any member of the QC organization at any time in order to verify the submitted qualifications. All QC organization personnel are subject to acceptance by the Contracting Officer. The Contracting Officer

may require the removal of any individual for non-compliance with quality requirements specified in the Contract.

#### 1.4.3 Preliminary Construction Work Authorized Prior to Acceptance

The only construction work that is authorized to proceed prior to the acceptance of the QC Plan is mobilization of storage and office trailers, temporary utilities, and surveying.

#### 1.4.4 Notification of Changes

Notify the Contracting Officer, in writing, of any proposed changes in the QC Plan or changes to the QC organization personnel, a minimum of 10 work days prior to a proposed change. Proposed changes are subject to acceptance by the Contracting Officer.

### 1.5 QC ORGANIZATION

#### 1.5.1 QC Manager

##### 1.5.1.1 Duties

Provide a QC Manager at the work site to implement and manage the QC program. In addition to implementing and managing the QC program, the QC Manager may perform the duties of SSHO. The QC Manager shall not perform the duties of Project Superintendent. The QC Manager is required to attend the partnering meetings, QC Plan Meetings, Coordination and Mutual Understanding Meeting, conduct the QC meetings, perform the three phases of control, except for those phases of control designated to be performed by QC Specialists, perform submittal review and approval, ensure testing is performed and provide QC certifications and documentation required in this Contract. The QC Manager is responsible for managing and coordinating the three phases of control and documentation performed by the QC Specialists, testing laboratory personnel and any other inspection and testing personnel required by this Contract. The QC Manager is the manager of all QC activities and shall not be the Special Inspector.

##### 1.5.1.2 Qualifications

An individual with a minimum of 10 years combined experience in the following positions: Project Superintendent, QC Manager, Project Manager, Project Engineer or Construction Manager on similar size and type construction contracts which included the major trades that are part of this Contract. The individual must have at least two years' experience as a QC Manager. The individual must be familiar with the requirements of EM 385-1-1, and have experience in the areas of hazard identification, safety compliance, and sustainability.

#### 1.5.2 NOT USED

#### 1.5.3 Construction Quality Management Training

In addition to the above experience and education requirements, the QC Manager must have completed the course entitled "Construction Quality Management (CQM) for Contractors." If the QC Manager does not have a current certification, they must obtain the CQM for Contractors course certification within 90 days of award. This course is periodically offered by the Naval Facilities Engineering Command and the Army Corps of

Engineers. Contact the Contracting Officer for information on the next scheduled class.

1.5.4 Alternate QC Manager Duties and Qualifications

Designate an alternate for the QC Manager at the work site to serve in the event of the designated QC Manager's absence. The period of absence may not exceed two weeks at one time, and not more than 30 workdays during a calendar year. The qualification requirements for the Alternate QC Manager must be the same as for the QC Manager.

1.5.5 NOT USED

1.5.6 QC Specialists Duties and Qualifications

Provide a separate QC Specialist at the work site for each of the areas of responsibilities, specified in Part 3, Execution, of the technical sections, who shall assist and report to the QC Manager and who will have no duties other than their assigned quality control duties. QC Specialists are required to attend the Coordination and Mutual Understanding Meeting, QC meetings and be physically present at the construction site to perform the three phases of control and prepare documentation for each definable feature of work in their area of responsibility[ at the frequency specified below].

Qualification/Experience in Area of Responsibility	Area of Responsibility	Frequency
[_____]	[_____]	[_____]

1.5.7 NOT USED

1.5.8 NOT USED

1.5.9 NOT USED

1.5.10 NOT USED

1.6 QUALITY CONTROL (QC) PLAN

1.6.1 Construction Quality Control (QC) Plan

1.6.1.1 Requirements

Provide, for acceptance by the Contracting Officer, a Construction QC Plan submitted in a three-ring binder that includes a table of contents, with major sections identified with tabs, with pages numbered sequentially, and that documents the proposed methods and responsibilities for accomplishing commissioning activities during the construction of the project:

- a. QC ORGANIZATION: A chart showing the QC organizational structure.

- b. NAMES AND QUALIFICATIONS: Names and qualifications, in resume format, for each person in the QC organization. Include the CQM for Contractors course certifications for the QC Manager and Alternate QC Manager as required by the paragraphs entitled "Construction Quality Management Training" and "Alternate QC Manager Duties and Qualifications".
- c. DUTIES, RESPONSIBILITY AND AUTHORITY OF QC PERSONNEL: Duties, responsibilities, and authorities of each person in the QC organization.
- d. OUTSIDE ORGANIZATIONS: A listing of outside organizations, such as architectural and consulting engineering firms, that will be employed by the Contractor and a description of the services these firms will provide.
- e. APPOINTMENT LETTERS: Letters signed by an officer of the firm appointing the QC Manager and Alternate QC Manager and stating that they are responsible for implementing and managing the QC program as described in this Contract. Include in this letter the responsibility of the QC Manager and Alternate QC Manager to implement and manage the three phases of control, and their authority to stop work which is not in compliance with the Contract.  
Letters of direction are to be issued by the QC Manager to all other QC Specialists outlining their duties, authorities, and responsibilities. Include copies of the letters in the QC Plan.
- f. SUBMITTAL PROCEDURES AND INITIAL SUBMITTAL REGISTER: Procedures for reviewing, approving, and managing submittals. Provide the name(s) of the person(s) in the QC organization authorized to review and certify submittals prior to approval. Provide the initial submittal of the Submittal Register as specified in Section 01 33 00 SUBMITTAL PROCEDURES.
- g. TESTING LABORATORY INFORMATION: Testing laboratory information required by the paragraphs entitled "Accreditation Requirements", as applicable.
- h. TESTING PLAN AND LOG: A Testing Plan and Log that includes the tests required, referenced by the specification paragraph number requiring the test, the frequency, and the person responsible for each test.  
Use Government forms to log and track tests.
- i. PROCEDURES TO COMPLETE REWORK ITEMS: Procedures to identify, record, track, and complete rework items. Use Government forms to record and track rework items.
- j. DOCUMENTATION PROCEDURES: Use Government form.
- k. LIST OF DEFINABLE FEATURES: A Definable Feature of Work (DFOW) is a task that is separate and distinct from other tasks and has control requirements and work crews unique to that task. A DFOW is identified by different trades or disciplines and is an item or activity on the construction schedule. Include in the list of DFOWs, but not be limited to, all critical path activities on the NAS. Include all activities for which this specification requires QC Specialists or specialty inspection personnel. Provide separate DFOWs in the Network Analysis Schedule for each design development

stage and submittal package.

1. PROCEDURES FOR PERFORMING THE THREE PHASES OF CONTROL: Identify procedures used to ensure the three phases of control to manage the quality on this project. For each DFW, a Preparatory and Initial phase checklist will be filled out during the Preparatory and Initial phase meetings. Conduct the Preparatory and Initial Phases and meetings with a view towards obtaining quality construction by planning ahead and identifying potential problems for each DFW.
  - m. PERSONNEL MATRIX: A personnel matrix showing for each section of the specification who will review and approve submittals, who will perform and document the three phases of control, and who will perform and document the testing.
  - n. PROCEDURES FOR COMPLETION INSPECTION: Procedures for identifying and documenting the completion inspection process. Include in these procedures the responsible party for punch out inspection, pre-final inspection, and final acceptance inspection.
  - o. TRAINING PROCEDURES AND TRAINING LOG: Procedures for coordinating and documenting the training of personnel required by the Contract.
  - p. ORGANIZATION AND PERSONNEL CERTIFICATIONS LOG: Procedures for coordinating, tracking and documenting all certifications on subcontractors, testing laboratories, suppliers, personnel, etc. QC Manager will ensure that certifications are current, appropriate for the work being performed, and will not lapse during any period of the contract that the work is being performed.
- 1.7 QC PLAN MEETINGS

Prior to submission of the QC Plan, the QC Manager will meet with the Contracting Officer to discuss the QC Plan requirements of this Contract. The purpose of this meeting is to develop a mutual understanding of the QC Plan requirements prior to plan development and submission and to agree on the Contractor's list of DFWs.

#### 1.8 COORDINATION AND MUTUAL UNDERSTANDING MEETING

After submission of the QC Plan, and prior to the start of construction, the QC Manager will meet with the Contracting Officer to present the QC program required by this Contract. When a new QC Manager is appointed, the coordination and mutual understanding meeting shall be repeated.

##### 1.8.1 Purpose

The purpose of this meeting is to develop a mutual understanding of the QC details, including documentation, administration for on-site and off-site work, design intent, environmental requirements and procedures, coordination of activities to be performed, and the coordination of the Contractor's management, production, and QC personnel. At the meeting, the Contractor will be required to explain in detail how three phases of control will be implemented for each DFW, as well as how each DFW will be affected by each management plan or requirement as listed below:

- a. Waste Management Plan.
- b. Not used
- c. Procedures for noise and acoustics management.
- d. Environmental Protection Plan.
- e. Environmental regulatory requirements.

#### 1.8.2 Coordination of Activities

Coordinate activities included in various sections to assure efficient and orderly installation of each component. Coordinate operations included under different sections that are dependent on each other for proper installation and operation.

#### 1.8.3 Attendees

As a minimum, the Contractor's personnel required to attend include an officer of the firm, the Project Manager, Project Superintendent, QC Manager, Alternate QC Manager, QC Specialists, A/E, Environmental Manager, and subcontractor representatives or approved by the approved by the Contracting Officer. Each subcontractor who will be assigned QC responsibilities shall have a principal of the firm at the meeting.

Minutes of the meeting will be prepared by the QC Manager and signed by the Contractor, the A/E and the Contracting Officer. Provide a copy of the signed minutes to all attendees and shall be included in the QC Plan.

#### 1.9 QC MEETINGS

After the start of construction, conduct weekly QC meetings by the QC Manager at the work site with the Project Superintendent, QC Specialists, the CA, and the foremen who are performing the work of the DFOWs. The QC Manager is to prepare the minutes of the meeting and provide a copy to the Contracting Officer within two working days after the meeting. The Contracting Officer may attend these meetings. As a minimum, accomplish the following at each meeting:

- a. Review the minutes of the previous meeting.
- b. Review the schedule and the status of work and rework.
- c. Review the status of submittals.
- d. Review the work to be accomplished in the next two weeks and documentation required.
- e. Resolve QC and production problems (RFI, etc.).
- f. Address items that may require revising the QC Plan.
- g. Review Accident Prevention Plan (APP).
- h. Review environmental requirements and procedures.

- i. Review Waste Management Plan.
- j. Review IAQ Management Plan.
- k. Review Environmental Management Plan.
- l. Review the status of training completion.

1.10 NOT USED

1.11 THREE PHASES OF CONTROL

Adequately cover both on-site and off-site work with the Three Phases of Control and include the following for each DFW.

1.11.1 Preparatory Phase

Notify the Contracting Officer at least two work days in advance of each preparatory phase meeting. The meeting will be conducted by the QC Manager and attended by the QC Specialists, the Project Superintendent, the CA, and the foreman responsible for the DFW or as approved by the Contracting Officer. When the DFW will be accomplished by a subcontractor, that subcontractor's foreman shall attend the preparatory phase meeting.

Document the results of the preparatory phase actions in the daily Contractor Quality Control Report and in the Preparatory Phase Checklist. Perform the following prior to beginning work on each DFW:

- a. Review each paragraph of the applicable specification sections.
- b. Review the Contract drawings.
- c. Verify that field measurements are as indicated on construction and/or shop drawings before confirming product orders, in order to minimize waste due to excessive materials.
- d. Verify that appropriate shop drawings and submittals for materials and equipment have been submitted and approved. Verify receipt of approved factory test results, when required.
- e. Review the testing plan and ensure that provisions have been made to provide the required QC testing.
- f. Examine the work area to ensure that the required preliminary work has been completed.
- g. Coordinate the schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.
- h. Arrange for the return of shipping/packaging materials, such as wood pallets, where economically feasible.
- i. Examine the required materials, equipment and sample work to ensure that they are on hand and conform to the approved shop drawings and submitted data.
- j. Discuss specific controls used and construction methods,

construction tolerances, workmanship standards, and the approach that will be used to provide quality construction by planning ahead and identifying potential problems for each DFW.

- k. Review the APP and appropriate Activity Hazard Analysis (AHA) to ensure that applicable safety requirements are met, and that required Material Safety Data Sheets (MSDS) are submitted.

#### 1.11.2 Initial Phase

Notify the Contracting Officer at least two work days in advance of each initial phase. When construction crews are ready to start work on a DFW, conduct the initial phase with the QC Specialists, the Project Superintendent, and the foreman responsible for that DFW. Observe the initial segment of the DFW to ensure that the work complies with Contract requirements. Document the results of the initial phase in the daily CQC Report and in the Initial Phase Checklist. Repeat the initial phase for each new crew to work on-site, or when acceptable levels of specified quality are not being met. Perform the following for each DFW:

- a. Establish the quality of workmanship required.
- b. Resolve conflicts.
- c. Ensure that testing is performed by the approved laboratory.
- d. Check work procedures for compliance with the APP and the appropriate AHA to ensure that applicable safety requirements are met.

#### 1.11.3 Follow-Up Phase

Perform the following for on-going work daily, or more frequently as necessary, until the completion of each DFW and document in the daily CQC Report:

- a. Ensure the work is in compliance with Contract requirements.
- b. Maintain the quality of workmanship required.
- c. Ensure that testing is performed by the approved laboratory.
- d. Ensure that rework items are being corrected.
- e. Assure manufacturers' representatives have performed necessary inspections if required and perform safety inspections.

#### 1.11.4 Additional Preparatory and Initial Phases

Conduct additional preparatory and initial phases on the same DFW if the quality of on-going work is unacceptable, if there are changes in the applicable QC organization, if there are changes in the on-site production supervision or work crew, if work on a DFW is resumed after substantial period of inactivity, or if other problems develop.

#### 1.11.5 Notification of Three Phases of Control for Off-Site Work

Notify the Contracting Officer at least two weeks prior to the start of the preparatory and initial phases.

1.12 SUBMITTAL REVIEW AND APPROVAL

Procedures for submission, review and approval of submittals are described in Section 01 33 00 SUBMITTAL PROCEDURES.

1.13 TESTING

Except as stated otherwise in the specification sections, perform sampling and testing required under this Contract.

1.13.1 Accreditation Requirements

Construction materials testing laboratories must be accredited by a laboratory accreditation authority and will be required to submit a copy of the Certificate of Accreditation and Scope of Accreditation. The laboratory's scope of accreditation must include the appropriate ASTM standards (E 329, C 1077, D 3666, D 3740, A 880, E 543) listed in the technical sections of the specifications. Laboratories engaged in Hazardous Materials Testing shall meet the requirements of OSHA and EPA. The policy applies to the specific laboratory performing the actual testing, not just the Corporate Office.

1.13.2 Laboratory Accreditation Authorities

Laboratory Accreditation Authorities include the National Voluntary Laboratory Accreditation Program (NVLAP) administered by the National Institute of Standards and Technology at <http://ts.nist.gov/ts/htdocs/210/214/214.htm>, the American Association of State Highway and Transportation Officials (AASHTO) program at <http://www.transportation.org/aashto/home.nsf/frontpage>, International Accreditation Services, Inc. (IAS) at <http://www.iasonline.org>, U. S. Army Corps of Engineers Materials Testing Center (MTC) at <http://www.wes.army.mil/SL/MTC/>, the American Association for Laboratory Accreditation (A2LA) program at <http://www.a2la.org/>, the Washington Association of Building Officials (WABO) at <http://www.wabo.org/>

(Approval authority for WABO is limited to projects within Washington State), and the Washington Area Council of Engineering Laboratories (WACEL) at <http://www.wacel.org/labaccred.html> (Approval authority by WACEL is limited to projects within Facilities Engineering Command (FEC) Washington geographical area).

1.13.3 Capability Check

The Contracting Officer retains the right to check laboratory equipment in the proposed laboratory and the laboratory technician's testing procedures, techniques, and other items pertinent to testing, for compliance with the standards set forth in this Contract.

1.13.4 Test Results

Cite applicable Contract requirements, tests or analytical procedures used. Provide actual results and include a statement that the item tested or analyzed conforms or fails to conform to specified

requirements. If the item fails to conform, notify the Contracting Officer immediately.

Conspicuously stamp the cover sheet for each report in large red letters "CONFORMS" or "DOES NOT CONFORM" to the specification requirements, whichever is applicable. Test results must be signed by a testing laboratory representative authorized to sign certified test reports.

Furnish the signed reports, certifications, and other documentation to the Contracting Officer via the QC Manager. Furnish a summary report of field tests at the end of each month, per the paragraph entitled "INFORMATION FOR THE CONTRACTING OFFICER".

#### 1.13.5 Test Reports and Monthly Summary Report of Tests

Furnish the signed reports, certifications, and a summary report of field tests at the end of each month to the Contracting Officer. Attach a copy of the summary report to the last daily Contractor Quality Control Report of each month. Provide a copy of the signed test reports and certifications to the OMSI preparer for inclusion into the OMSI documentation.

#### 1.14 QC CERTIFICATIONS

##### 1.14.1 CQC Report Certification

Contain the following statement within the CQC Report: "On behalf of the Contractor, I certify that this report is complete and correct and equipment and material used and work performed during this reporting period is in compliance with the contract drawings and specifications to the best of my knowledge, except as noted in this report."

##### 1.14.2 Invoice Certification

Furnish a certificate to the Contracting Officer with each payment request; signed by the QC Manager, attesting that as-built drawings are current, coordinated and attesting that the work for which payment is requested, including stored material, is in compliance with Contract requirements.

##### 1.14.3 Completion Certification

Upon completion of work under this Contract, the QC Manager shall furnish a certificate to the Contracting Officer attesting that "the work has been completed, inspected, tested and is in compliance with the Contract." Provide a copy of this final QC Certification for completion to the OMSI preparer for inclusion into the OMSI documentation.

#### 1.15 COMPLETION INSPECTIONS

##### 1.15.1 Punch-Out Inspection

Near the completion of all work or any increment thereof, established by a completion time stated in the Contract Clause entitled "Commencement, Prosecution, and Completion of Work," or stated elsewhere in the specifications, the QC Manager and the CA must conduct

an inspection of the work and develop a "punch list" of items which do not conform to the approved drawings, specifications and Contract. Include in the punch list any remaining items on the "Rework Items List", which were not corrected prior to the Punch-Out Inspection. Include within the punch list the estimated date by which the deficiencies will be corrected. Provide a copy of the punch list to the Contracting Officer. The QC Manager, or staff, must make follow-on inspections 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".

#### 1.15.2 Pre-Final Inspection

The Government and QCM will perform this inspection to verify that the facility is complete and ready to be occupied. A Government "Pre-Final Punch List" will be documented by the CQM as a result of this inspection. The QC Manager will ensure that all items on this list are corrected prior to notifying the Government that a "Final" inspection with the Client can be scheduled. Any items noted on the "Pre-Final" inspection must be corrected in a timely manner and be accomplished before the contract completion date for the work, or any particular increment thereof, if the project is divided into increments by separate completion dates.

#### 1.15.3 Final Acceptance Inspection

Notify the Contracting Officer at least 14 calendar days prior to the date a final acceptance inspection can be held. State within the notice that all items previously identified on the pre-final punch list will be corrected and acceptable, along with any other unfinished Contract work, by the date of the final acceptance inspection. The Contractor must be represented by the QC Manager, the Project Superintendent, the CA, and others deemed necessary. Attendees for the Government will include the Contracting Officer, other FEAD personnel, and personnel representing the Client.

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 the Contract Clause entitled "Inspection of Construction."

#### 1.16 DOCUMENTATION

Maintain current and complete records of on-site and off-site QC program operations and activities.

##### 1.16.1 Construction Documentation

Reports are required for each day that work is performed and must be attached to the Contractor Quality Control Report prepared for the same day. Maintain current and complete records of on-site and off-site QC program operations and activities. The forms identified under the paragraph "INFORMATION FOR THE CONTRACTING OFFICER" will be used. Reports are required for each day work is performed. Account for each calendar day throughout the life of the Contract. Every space on the forms must be filled in. Use N/A if nothing can be reported in one of the spaces. The Project Superintendent and the QC Manager must prepare and sign the Contractor Production and CQC Reports, respectively. The

reporting of work must be identified by terminology consistent with the construction schedule. In the "remarks" sections of the reports, enter pertinent information including directions received, problems encountered during construction, work progress and delays, conflicts or errors in the drawings or specifications, field changes, safety hazards encountered, instructions given and corrective actions taken, delays encountered and a record of visitors to the work site, quality control problem areas, deviations from the QC Plan, construction deficiencies encountered, meetings held. For each entry in the report(s), identify the Schedule Activity No. that is associated with the entered remark.

#### 1.16.2 Quality Control Validation

Establish and maintain the following in a series of three ring binders. Binders shall be divided and tabbed as shown below. These binders must be readily available to the Contracting Officer during all business hours.

- a. All completed Preparatory and Initial Phase Checklists, arranged by specification section.
- b. All milestone inspections, arranged by Activity Number.
- c. An up-to-date copy of the Testing Plan and Log with supporting field test reports, arranged by specification section.
- d. Copies of all contract modifications, arranged in numerical order. Also include documentation that modified work was accomplished.
- e. An up-to-date copy of the Rework Items List.
- f. Maintain up-to-date copies of all punch lists issued by the QC staff to the Contractor and Sub-Contractors and all punch lists issued by the Government.
- g. Commissioning documentation including Cx checklists, schedules, tests, and reports.

#### 1.16.3 Reports from the QC Specialist(s)

Reports are required for each day that work is performed in their area of responsibility. QC Specialist reports shall include the same documentation requirements as the CQC Report for their area of responsibility. QC Specialist reports are to be prepared, signed and dated by the QC Specialists and shall be attached to the CQC Report prepared for the same day.

#### 1.16.4 Testing Plan and Log

As tests are performed, the CA and the QC Manager will record on the "Testing Plan and Log" the date the test was performed and the date the test results were forwarded to the Contracting Officer.

Attach a copy of the updated "Testing Plan and Log" to the last daily CQC Report of each month, per the paragraph "INFORMATION FOR THE CONTRACTING OFFICER".

Provide a copy of the final "Testing Plan and Log" to the OMSI preparer

for inclusion into the OMSI documentation.

1.16.5 Rework Items List

The QC Manager must maintain a list of work that does not comply with the Contract, identifying what items need to be reworked, the date the item was originally discovered, the date the item will be corrected by, and the date the item was corrected. There is no requirement to report a rework item that is corrected the same day it is discovered. Attach a copy of the "Rework Items List" to the last daily CQC Report of each month. The Contractor is responsible for including those items identified by the Contracting Officer.

1.16.6 As-Built Drawings

The QC Manager is required to ensure the as-built drawings, required by Section 01 78 00 CLOSEOUT SUBMITTALS are kept current on a daily basis and marked to show deviations which have been made from the Contract drawings. Ensure each deviation has been identified with the appropriate modifying documentation (e.g. PC No., Modification No., Request for Information No., etc.). The QC Manager must initial each revision. Upon completion of work, the QC Manager will furnish a certificate attesting to the accuracy of the as-built drawings prior to submission to the Contracting Officer.

1.17 NOTIFICATION ON NON-COMPLIANCE

The Contracting Officer will notify the Contractor of any detected non-compliance with the Contract. Take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the work site, shall be deemed sufficient for the purpose of notification. If the Contractor fails or refuses to comply promptly, the Contracting Officer may 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 for excess costs or damages by the Contractor.

1.18 NOT USED

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 PREPARATION

Designate receiving/storage areas for incoming material to be delivered according to installation schedule and to be placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication. Store and handle materials in a manner as to prevent loss from weather and other damage. Keep materials, products, and accessories covered and off the ground, and store in a dry, secure area. Prevent contact with material that may cause corrosion, discoloration, or staining. Protect all materials and installations from damage by the activities of other trades.

-- End of Section --

## SECTION 01 57 19.00 22

TEMPORARY ENVIRONMENTAL CONTROLS - PORTSMOUTH NAVAL SHIPYARD (PWD ME)  
06/14

## 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. Note: This is not an all-inclusive list of publications and other references may be applicable.

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

29 CFR 1910.120	Hazardous Waste Operations and Emergency Response
40 CFR 112	Oil Pollution Prevention
40 CFR 241	Guidelines for Disposal of Solid Waste
40 CFR 243	Guidelines for the Storage and Collection of Residential, Commercial, and Institutional Solid Waste
40 CFR 258	Subtitle D Landfill Requirements
40 CFR 260	Hazardous Waste Management System: General
40 CFR 261	Identification and Listing of Hazardous Waste
40 CFR 262	Standards Applicable to Generators of Hazardous Waste
40 CFR 263	Standards Applicable to Transporters of Hazardous Waste
40 CFR 264	Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
40 CFR 265	Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
40 CFR 266	Standards for the Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste Management Facilities
40 CFR 268	Land Disposal Restrictions
40 CFR 270	EPA Administered Permit Programs: The Hazardous Waste Permit Program

40 CFR 272	Approved State Hazardous Waste Management Programs
40 CFR 273	Standards For Universal Waste Management
40 CFR 279	Standards for the Management of Used Oil
40 CFR 280	Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks (UST)
40 CFR 300	National Oil and Hazardous Substances Pollution Contingency Plan
40 CFR 355	Emergency Planning and Notification
40 CFR 372-SUBPART D	Specific Toxic Chemical Listings
40 CFR 761	Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions
40 CFR 82	Protection of Stratospheric Ozone
49 CFR 171	General Information, Regulations, and Definitions
49 CFR 172	Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, and Training Requirements
49 CFR 173	Shippers - General Requirements for Shipments and Packagings
49 CFR 178	Specifications for Packagings

**STATE OF MAINE REGULATIONS**

The following STATE OF MAINE REGULATIONS are available on the Internet at:  
<http://www.maine.gov/dep/permits.htm>

STATE OF MAINE Statutes are available on the internet at  
<http://www.mainelegislature.org/legis/statues/38/title38ch3sec0.html>

MAINE DEP AIR BUREAU CHAPTER 101 Visible Emissions Regulations;  
<http://www.maine.gov/dep/air/rules/index.html>

MAINE DEP AIR BUREAU CHAPTER 151 Architectural and Industrial Maintenance(AIM) COATINGS; <http://www.maine.gov/dep/air/rules/index.html>

MAINE DEP 38 MSRA 420-C Erosion and Sedimentation Control Law and Rules

MAINE DEP 38 MSRA 420-D Stormwater Management

MAINE 38 MRSR 439-B Contractors Certified in Erosion Control  
(Effective January 1, 2013)

MAINE DEP MSRA 481-490	Site Location of Development
MAINE 38 MSRA 850	Identification of Hazardous Waste
MAINE 38 MSRA 851	Standards for Generators of Hazardous Waste
MAINE 38 MSRA 852	Land Disposal Restrictions
MAINE DEPLW0738	Stormwater Management for Maine
MAINE DEPLW0588	Maine Erosion and Sediment Control Best Management Practices
MAINE 88 MRSA 480A-480Z	Natural Resources Protection Act
MAINE DEP AIR BUREAU CHAPTER 159 Control of Volatile Organic Compounds from Adhesives and Sealants; <a href="http://www.maine.gov/dep/air/rules/index.html">http://www.maine.gov/dep/air/rules/index.html</a>	

## 1.2 DEFINITIONS

### 1.2.1 Sediment

Soil and other debris that have eroded and have been transported by runoff water or wind.

### 1.2.2 Solid Waste

Garbage, refuse, debris, sludge, or other discharged material, including solid, liquid, semisolid, or contained gaseous materials resulting from domestic, industrial, commercial, mining, or agricultural operations. Types of solid waste typically generated at construction sites may include:

- a. Green waste: The vegetative matter from landscaping, land clearing and grubbing, including, but not limited to, grass, bushes, scrubs, small trees and saplings, tree stumps and plant roots. Marketable trees, grasses and plants that are indicated to remain, be re-located, or be re-used are not included.
- b. Surplus soil: Existing non-hazardous soil that is in excess of what is required for this work, including aggregates intended, but not used, for on-site mixing of concrete, mortars and paving.
- c. Debris: Non-hazardous solid material generated during the construction, demolition, or renovation of a structure which exceeds 2.5 inch particle size that is: a manufactured object; plant or animal matter; or natural geologic material (e.g. cobbles and boulders), broken or removed concrete, masonry, and rock asphalt paving; ceramics; roofing paper and shingles. Inert materials may be reinforced with or contain ferrous wire, rods, accessories and weldments. A mixture of debris and other material such as soil or sludge is also subject to regulation as debris if the mixture is comprised primarily of debris by volume, based on visual inspection.
- d. Wood: Dimension and non-dimension lumber, plywood, chipboard, hardboard. Treated and/or painted wood that meets the definition of lead contaminated or lead based contaminated paint is not included.

- e. Scrap metal: Scrap and excess ferrous and non-ferrous metals such as reinforcing steel, structural shapes, pipe and wire that are recovered or collected and disposed of as scrap. Scrap metal meeting the definition of hazardous material or hazardous waste is not included.
- f. Paint cans: Metal cans that are empty of paints, solvents, thinners and adhesives. If permitted by the paint can label, a thin dry film may remain in the can. NOTE: Aerosol (paint) cans are Hazardous Wastes and must not be disposed of as solid waste or be considered in any definition of "empty", "paint", or "metal" cans.
- g. Recyclables: Materials, equipment and assemblies such as doors, windows, door and window frames, plumbing fixtures, glazing and mirrors that are recovered and sold as recyclables.
- h. Hazardous Waste: By definition, to be a hazardous waste a material must first meet the definition of a solid waste. Hazardous waste and hazardous debris are special cases of solid waste. They have additional regulatory controls and must be handled separately. They are thus defined separately in this document.

Material not regulated as solid waste are: nuclear source or byproduct materials regulated under the Federal Atomic Energy Act of 1954 as amended; suspended or dissolved materials in domestic sewage effluent or irrigation return flows, or other regulated point source discharges; regulated air emissions; and fluids or wastes associated with natural gas or crude oil exploration or production.

- i. Special Waste: "Special waste" means any solid waste generated by sources other than household and typical commercial establishments that exists in such an unusual quantity or in such a chemical or physical state, or any combination thereof, that may disrupt or impair effective waste management or threaten the public health, human safety or the environment and requires special handling, transportation and disposal procedures. Special waste includes, but is not limited to:
  - (1) Ash;
  - (2) Industrial and industrial process waste;
  - (3) Sludge and dewatered septage;
  - (4) Debris from nonhazardous chemical spills and cleanup of those spills;
  - (5) Contaminated soils and dredge materials;
  - (6) Asbestos and asbestos-containing waste;
  - (7) Sand blast grit and non-liquid paint waste;
  - (8) High and low pH waste;
  - (9) Spent filter media residue; and
  - (10) Shredder residue.

### 1.2.3 Hazardous Debris

As defined in Solid Waste paragraph, debris that contains listed hazardous waste (either on the debris surface, or in its interstices, such as pore structure) per 40 CFR 261; or debris that exhibits a characteristic of hazardous waste per 40 CFR 261.

### 1.2.4 Chemical Wastes

This includes salts, acids, alkalies, herbicides, pesticides, and organic chemicals.

### 1.2.5 Garbage

Refuse and scraps resulting from preparation, cooking, dispensing, and consumption of food.

### 1.2.6 Hazardous Waste

Any discarded material, liquid, solid, or gas, which meets the definition of hazardous material or is designated hazardous waste by the Environmental Protection Agency or State Hazardous Control Authority as defined in 40 CFR Parts 260-273, as applicable.

The Resource Conservation and Recovery Act (RCRA) governs the management of hazardous wastes. There is no continuously updated, comprehensive list of hazardous waste, as hazardous waste identification is a process that involves many steps. By Regulation, to be considered a hazardous waste, a material first must be classified as a solid waste (40 CFR §261.2). If a waste is a solid waste, it must then be determined if it is hazardous waste (§262.11). Wastes are defined as hazardous by EPA if they are specifically named on one of four lists of hazardous wastes located in Subpart D of 40 CFR 261, or if they exhibit one of four characteristics located in Subpart C of Part 261 (characteristic wastes), which are: ignitability, corrosivity, reactivity and toxicity. Generators are responsible for characterizing their waste and must determine whether a waste exhibits a characteristic by either testing or applying knowledge of the hazardous waste characteristic of the waste (§262.11). Hazardous waste controls also apply to Universal Wastes.

### 1.2.7 Hazardous Materials

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

Hazardous material is any material that:

- a. Is regulated as a hazardous material per 49 CFR 173, or
- b. Requires a Material Safety Data Sheet (MSDS) per 29 CFR 1910.120, or
- c. During end use, treatment, handling, packaging, storage, transportation, or disposal meets or has components that meet or have potential to meet the definition of a hazardous waste as defined by 40 CFR 261 Subparts A, B, C, or D.

Designation of a material by this definition, when separately regulated or controlled by other instructions or directives, does not eliminate the need

for adherence to that hazard-specific guidance which takes precedence over this instruction for "control" purposes. Such material include ammunition, weapons, explosive actuated devices, propellants, pyrotechnics, chemical and biological warfare materials, medical and pharmaceutical supplies, medical waste and infectious materials, bulk fuels, radioactive materials, and other materials such as asbestos, mercury, and polychlorinated biphenyls (PCBs). Nonetheless, the exposure may occur incident to manufacture, storage, use and demilitarization of these items.

#### 1.2.8 Waste Hazardous Material (WHM)

Any waste material which because of its quantity, concentration, or physical, chemical, or infectious characteristics may pose a substantial hazard to human health or the environment and which has been so designated. Used oil not containing any hazardous waste, as defined above, falls under this definition.

#### 1.2.9 Oil or Oily Waste

Oil: Oil of any kind or in any form, including, but not limited to: fats, oils, or greases of animals, fish or marine mammal origin; vegetable oils, including oils from seeds, nuts, fruits, or kernels; and, other oils and greases, including petroleum fuel oil, sludge, synthetic oils, mineral oils, oil refuse or oil mixed with wastes other than dredged oil.

Oily Waste: Those materials which are, or were, mixed with used oil and have become separated from that used oil. Oily wastes also means materials, including wastewaters, centrifuge solids, filter residues or sludges, bottom sediments, tank bottoms, and sorbents which have come into contact with and have been contaminated by, used oil and may be appropriately tested and discarded in a manner which is in compliance with other State and local requirements.

This definition includes materials such as oily rags, "kitty litter" sorbent clay and organic sorbent material. These materials may be land filled provided that:

- a. It is not prohibited in other State regulations or local ordinances;
- b. The amount generated is "de minimus" (a small amount);
- c. It is the result of minor leaks or spills resulting from normal process operations; and
- d. All free-flowing oil has been removed to the practical extent possible.

Large quantities of this material, generated as a result of a major spill or in lieu of proper maintenance of the processing equipment, are a solid waste. As a solid waste, a hazardous waste determination must be performed prior to disposal. As this can be an expensive process, it is recommended that this type of waste be minimized through good housekeeping practices and employee education.

#### 1.2.10 Regulated Waste

Those solid waste that have specific additional Federal, State, or local controls for handling, storage, or disposal.

1.2.11 Ozone Depleting Substance (ODS)

Chlorofluorocarbons (CFCs), halons or chlorinated hydrocarbons (such as carbon tetrachloride and methyl chloroform), and hydrochlorofluorocarbon (HCFCs) which have been linked to depletion of the earth's ozone layer are all substances collectively known as ozone depleting substances or ODSs. Class I or Class II ODS substances are defined and listed in the Clean Air Act Section 602 and 40 CFR 82.

1.2.12 Universal Waste

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

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for Contractor Quality Control approval. The following shall be submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Preconstruction Survey; G

Solid Waste Management Plan; G

Regulatory Notifications; G

Environmental Management Plan; G

Dirt and Dust Control Plan; G

Contractor Hazardous Material Inventory Log; G

MEDEP Contractor Erosion Control Certification Documentation; G

SD-06 Test Reports

Laboratory Analysis; G

Disposal Requirements; G

Erosion and Sediment Control Inspection Reports; G

Solid Waste Management Report; G

SD-11 Closeout Submittals

Some of the records listed below are also required as part of other submittals. For the "Records" submittal, maintain on-site a separate three-ring Environmental Records binder and submit at

the completion of the project. Make separate parts to the binder corresponding to each of the applicable sub items listed below.

Storm Water Management and Erosion Control Compliance Notebook; G

Waste Determination Documentation; G

Disposal Documentation for Hazardous and Regulated Waste; G

Contractor 40 CFR Employee Training Records; G

Solid Waste Management Report; G

Contractor Hazardous Material Inventory Log; G

Maine General Permit "Notice of Termination"; G

Hazardous Waste/Debris Management; G

Regulatory Notifications; G

#### 1.4 ENVIRONMENTAL PROTECTION REQUIREMENTS

Provide and maintain, during the life of the contract, environmental protection as defined herein. Plan for and provide environmental protective measures to control pollution that develops during normal construction practice. Plan for and provide environmental protective measures required to correct conditions that develop during the construction of permanent or temporary environmental features associated with the project. Comply with Federal, State, and local regulations pertaining to the environment, including water, air, solid waste, hazardous waste and substances, oily substances, and noise pollution.

The Contractor may be required to promptly conduct tests and procedures for the purpose of assessing whether construction operations are in compliance with Applicable Environmental Laws. Analytical work shall be done by qualified laboratories; and where required by law, the laboratories shall be certified.

##### 1.4.1 Environmental Compliance Assessment Training and Tracking System (ECATTS)

The QC Manager is responsible for environmental compliance on projects unless an Environmental Manager is named. The QC Manager (and alternative QC Manager) or Environmental Manager shall complete ECATTS training prior to starting respective portions of on-site work under this contract. If personnel changes occur for any of these positions after starting work, replacement personnel shall complete ECATTS training within 14 days of assignment to the project.

Submit an ECATTS certificate of completion for personnel who have completed the required "Environmental Compliance Assessment Training and Tracking System (ECATTS)" training. This training is web-based and can be accessed from any computer with Internet access using the following instructions.

Register for NAVFAC Environmental Compliance Training and Tracking System, by logging on to <http://navfac.ecatts.com/>. Obtain the password

for registration from the Contracting Officer.

This training has been structured to allow Contractor personnel to receive credit under this contract and also to carry forward credit to future contracts. Contractors shall ensure that the QC Manager (and alternate QC Manager) or Environmental Manager review their training plans for new modules or updated training requirements prior to beginning work. Some training modules are tailored for specific State regulatory requirements; therefore, Contractors working in multiple states will be required to re-take modules tailored to the state where the contract work is being performed.

ECATTS is available for use by all Contractor and subcontractor personnel associated with this project. These other personnel are encouraged (but not required) to take the training and may do so at their discretion.

## 1.5 QUALITY ASSURANCE

### 1.5.1 Preconstruction Survey

Perform a Preconstruction Survey of the project site with the Contracting Officer, and when requested, take photographs showing existing environmental conditions in and adjacent to the site. Submit a report for the record with a copy provided to the Contracting Officer. The Contractor must obtain a camera pass from PNSY security (via Contracting Officer) prior to use of a camera at PNSY. Digital cameras only shall be used. All computer discs shall be turned over to PNSY security (via Contracting Officer) for review and clearance prior to use by the Contractor.

### 1.5.2 Regulatory Notifications

The Contractor is responsible for preparing all regulatory notification requirements in accordance with Federal, State and local regulations. Regulatory notifications shall be submitted by the Government unless otherwise directed by the Contracting Officer. The Contractor shall submit copies of all regulatory notifications to the Contracting Officer prior to commencement of work activities. Typically, regulatory notifications must be provided for the following (this listing is not all inclusive): demolition, renovation, remediation of controlled substances asbestos, hazardous waste, lead paint.

### 1.5.3 Environmental Brief

Attend an environmental brief prior to commencing any work on the Shipyard. The brief will be conducted by the Contracting Officer's Representative. The Contractor shall provide the following information: types, quantities, and use of hazardous materials that will be brought onto the activity; types and quantities of wastes/wastewater that may be generated during the contract; types and quantities of oil that will be brought onto the activity; and pollution control measures for spill prevention and control, and any bulk oil storage container information including quantity and type of product stored. Discuss the results of the Preconstruction Survey at this time.

Develop a mutual understanding relative to the details of environmental protection, including measures for protecting natural resources, required reports, required permits, specific permit

requirements, and other measures to be taken. Identify additional environmental concerns specific to the site (i.e. historic, archeological and natural resources, Installation Restoration, erosion and sediment control, spill prevention and control, soil management and disposal requirements, etc.)

#### 1.5.4 Environmental Manager

Appoint in writing an Environmental Manager for the project site. The Environmental Manager will be directly responsible for coordinating Contractor compliance with Federal, State, local, and Shipyard requirements. The Environmental Manager cannot perform the duties of the Project Superintendent or the SSHO. The Environmental Manager will ensure compliance with Hazardous Waste Program requirements (including hazardous waste handling, storage, manifesting, and disposal); implement the Environmental Management Plan; ensure that all environmental permits are obtained, maintained, and closed out; ensure compliance with Storm Water Program Management requirements; ensure compliance with Hazardous Materials (storage, handling, and reporting) requirements; and coordinate any remediation of regulated substances (lead, asbestos, PCB transformers).

This can be a collateral position; however, the person in this position must be trained to adequately accomplish the following duties: ensure waste segregation and storage compatibility requirements are met; inspect and manage Satellite Accumulation areas; ensure only authorized personnel add wastes to containers; ensure all Contractor personnel are trained in 40 CFR requirements in accordance with their position requirements; coordinate removal of waste containers; implement, inspect and maintain erosion and sediment controls as required by State law; and maintain the Environmental Records binder and required documentation, ensure compliance with all SPCC requirements, not limited to the proper storage of tanks and containers and their secondary containment, inspections, spill procedures, etc. including environmental permits compliance and close-out.

#### 1.5.5 Contractor 40 CFR Employee Training Records

Prepare and maintain employee training records throughout the term of the contract meeting applicable 40 CFR requirements. The Contractor shall ensure every employee completes a program of classroom instruction or on-the-job training that teaches them to perform their duties in a way that ensures compliance with Federal, State and local regulatory requirements for RCRA Large Quantity Generator. The Contractor will provide a Position Description for each employee, by subcontractor, based on the Davis-Bacon Wage Rate designation or other equivalent method, evaluating the employee's association with hazardous and regulated wastes. This Position Description will include training requirements as defined in 40 CFR 265 for a Large Quantity Generator facility. Submit these training records to the Contracting Officer at the conclusion of the project, unless otherwise directed.

#### 1.6 SOLID WASTE DISPOSAL PLAN

Provide a Solid Waste Disposal Plan in accordance with Paragraph 3.4.

#### PART 2 PRODUCTS

Not used.

#### PART 3 EXECUTION

3.1 ENVIRONMENTAL MANAGEMENT PLAN (EMP)

Prior to initiating any work on site, the Contractor shall meet with the Contracting Officer and the activity environmental staff to discuss the proposed Environmental Management Plan and develop a mutual understanding relative to the details of environmental protection required to be addressed in EMP, including measures for protecting natural resources and other measures to be taken. The Environmental Management Plan shall be submitted in the following format and shall include the elements specified below.

a. Description of the Environmental Management Plan

(1) General overview and purpose

(a) A brief description of each specific plan required by environmental permit or elsewhere in this contract.

(b) The duties and level of authority assigned to the person(s) on the job site that oversee environmental compliance.

(c) A copy of any standard or project specific operating procedures that will be used to effectively manage and protect the environment on the project site.

(d) Communication and training procedures that will be used to convey environmental management requirements to Contractor employees and subcontractors.

(e) Emergency contact information (office phone number, cell phone number, and e-mail address).

(2) General site information including a site plan showing haul routes, stockpile and material laydown and storage areas, dust control, construction trailers locations, sanitary facilities and all other construction facilities required for the work.

(3) A letter signed by an officer of the firm appointing the Environmental Manager and stating that he/she is responsible for managing and implementing the Environmental Program as described in this contract. Include in this letter the Environmental Manager's authority to direct the removal and replacement of non-conforming work.

b. Management of Natural Resources

(1) Land resources

(2) Tree protection

(3) Replacement of damaged landscape features

(4) Temporary construction

(5) Stream crossings

(6) Fish and wildlife resources

- (7) Wetland areas
- c. Protection of Historical and Archaeological Resources
  - (1) Objectives
  - (2) Methods
- d. Storm Water Management and Control
  - (1) Ground cover
  - (2) Erodible soils
  - (3) Temporary measures
    - (a) Mechanical retardation and control runoff
    - (b) Vegetation and mulch
  - (4) Effective selection, implementation and maintenance of Best Management practices (BMPs).
- e. Protection of the Environment from Waste Derived from Contractor Operations

- (1) Control and disposal of solid and sanitary waste.
- (2) Control and disposal of hazardous waste (Hazardous Waste Management Section)

This item will consist of the management procedures for all hazardous waste to be generated. The elements of those procedures will coincide with the Activity Hazardous Waste Management Plan will be provided by the Contracting Officer. As a minimum, include the following:

- (a) Procedures to be employed to ensure a written waste determination is made for appropriate wastes which are to be generated;
- (b) Sampling/analysis plan;
- (c) Methods of hazardous waste accumulation/storage (i.e., in tanks and/or containers);
- (d) Management procedures for storage, labeling, transportation, and disposal of waste (treatment of waste is not allowed unless specifically noted);
- (e) Management procedures and regulatory documentation ensuring disposal of hazardous waste complies with Land Disposal Restrictions (40 CFR 268);
- (f) Management procedures for recyclable hazardous materials such as lead-acid batteries, used oil, and the like;

- (g) Used oil management procedures in accordance with 40 CFR 279;
- (h) Pollution prevention\hazardous waste minimization procedures;
- (i) Plans for the disposal of hazardous waste by permitted facilities;
- (j) Procedures to be employed to ensure all required employee training records are maintained.

f. Prevention of Releases to the Environment

- (1) At a minimum, procedures to prevent releases to the environment will be made available, as well as what notifications to make in the event of a release to the environment.
- (2) A Spill Prevention, Control, and Countermeasures (SPCC) Plan is required if work is anticipated to extend beyond 6 months, AND will use bulk oil storage containers 55 gallons or greater, in accordance with 40 CFR 112. All SPCC plans must be approved by Code 106.3. Plans need not be certified by a Professional Engineer but must clearly demonstrate proper management of all tanks and containers on site.
- (3) Spill plans should at a minimum include the following:
  - a) Type of tank or container, quantity stored, type of product stored, location
  - b) Secondary containment required for tanks/containers 55 gallons or greater; double-wall tanks preferred
  - c) Tank inspection forms (industry standard, but prefer if they used the Shipyard inspection forms) Records shall be kept for 3 years or for the duration of the project. Tanks shall be inspected monthly.
    - i) Bulk storage containers (55 gallons or greater require monthly inspection)
    - ii) Inspection sheet for release of retained storm water from secondary containment.
  - d) Where spill kits are located
  - e) If transferring fuel: how often, what type of fuel, and where? The contractor must coordinate with Code 106.3 prior to transferring any fuel.
  - f) Who to notify in case of a spill (Central Dispatch, NRC, MEDEP as needed)
  - g) How to clean up a spill safely and how to properly dispose of spill cleanup waste (call for pickup at B357)

g. Regulatory Notification and Permits

List what notifications and permit applications must be made. Demonstrate that those permits have been obtained by including copies of all applicable, environmental permits.

### 3.1.1 Environmental Management Plan Review

Within thirty days after the Contract award date, submit the proposed Environmental Management Plan for further discussion, review, and approval. Commencement of work will not begin until the environmental management plan has been approved by the Navy Environmental Office.

### 3.1.2 NOT USED

## 3.2 PROTECTION OF NATURAL RESOURCES

Preserve the natural resources within the project boundaries and outside the limits of permanent work and as specified in the permits issued for the work. Restore to an equivalent or improved condition upon completion of work. Confine construction activities to within the limits of the work indicated or specified.

Do not disturb fish and wildlife. Do not alter water flows or otherwise significantly disturb the native habitat adjacent to the project and critical to the survival of fish and wildlife, except as indicated or specified.

Except in areas to be cleared, do not remove, cut, deface, injure, or destroy trees or shrubs without the Contracting Officer's permission. Do not fasten or attach ropes, cables, or guys to existing nearby trees for anchorages unless authorized by the Contracting Officer. Where such use of attached ropes, cables, or guys is authorized, the Contractor will be responsible for any resultant damage.

Protect existing trees which are to remain and which may be injured, bruised, defaced, or otherwise damaged by construction operations. Remove displaced rocks from uncleared areas. By approved excavation, remove trees with 30 percent or more of their root systems destroyed. Remove trees and other landscape features scarred or damaged by equipment operations, and replace with equivalent, undamaged trees and landscape features. Obtain Contracting Officer's approval before replacement. Tree wound paint shall not be used for tree cuts or stumps.

### 3.2.1 Erosion and Sediment Control Measures

- a. The State of Maine Erosion and Sediment Control Law requires persons undertaking activity involving filling, displacing or exposing soil or other earthen materials to take measures to prevent unreasonable erosion of soil or sediment beyond the project site or into a protected natural resource.

At the Portsmouth Naval Shipyard, the Piscataqua River, Upper Meade Pond and Lower Meade Pond are protected natural resources under State Law. Erosion control measures shall be in place before the activity begins, maintained and shall remain in place and functional until the site is permanently stabilized.

Temporary and permanent erosion control measures shall meet, at a

minimum, the construction standards presented in the Maine Erosion and Sediment Control Best Management Practices Manual, latest edition. Other techniques may be employed if the Contractor demonstrates to the Contracting Officer that the practice will achieve the required result of no release of sediment per State law.

- b. Site work including any filling, excavation; landscaping, and/or other earthwork in excess of one cubic yard of disturbance, shall comply with State of Maine requirements for certification in erosion and sediment control practices within a shoreland zone. A certified individual shall be responsible for management of erosion and sediment control practices at the site each day earth moving activities occur. A certified individual is required to visit the site every day to ensure proper erosion and sediment control practices are followed. As an alternative, the Contractor may choose to contract with a certified individual to supervise the Contractor's work in shoreland areas.

Under the State of Maine's Shoreland Zoning Statutes, the Portsmouth Naval Shipyard is located entirely within the state's Shoreland zone.

- c. Storm Water Management/Erosion and Sedimentation Control Plan

- (1) The Contractor shall submit a Storm Water Management/Erosion and Sedimentation Control Plan to the Contracting Officer, for review and approval. The Plan shall demonstrate effective selection, implementation and maintenance of Best Management Practices (BMPs) demonstrating compliance with the Shipyard's Maine Pollutant Discharge Elimination System's Multi-Sector General Permit for Stormwater Discharge Associated with Industrial Activity (MSGP) and the State of Maine Erosion and Sediment Control Law for projects in Maine.

The Contractor shall describe and ensure compliance with terms of state general permit for storm water discharge and terms and conditions specified in the approved permits issued for the work.

Provide plan details of chosen temporary erosion and sediment controls to be employed specific to the work site. Provide site plan showing locations for controls. Ensure proposed controls comply with MEDEP approved plans and State regulations.

The Plan shall:

- (a) Identify potential sources of pollution which may be reasonably expected to affect the quality of storm water discharge from the site.
- (b) Describe and ensure implementation of practices which will be used to reduce the pollutants in storm water discharge at the manufacturing, storage and lay down, and construction sites.
- (c) Describe and ensure full compliance with State of Maine General Permit - Construction Activity (No. DEPLW0801 latest edition) and permits issued by the MEDEP and ACOE specific to the project.
- (d) Describe and ensure compliance with MEDEP over winter stabilization and construction requirements.

- (e) Identify inspections and maintenance schedules for Best Management Practices demonstrating compliance with Maine standards. Maintenance procedures shall address regular cleaning of drainage structures and repair of temporary erosion control structures, as well as a final cleaning of all drainage structures and removal and reclamation of temporary erosion and sediment control BMP's upon completion of the project.
- (f) Select applicable management practices from Maine Erosion and Sediment Control BMPs. Present construction details for all proposed erosion and sediment controls.
- (g) Include documentation that the individual responsible for management of erosion and sediment control practices at the site is certified in accordance with the State of Maine DEP regulations.
- (h) Control of Manufactured Concrete Product Waste Plan

### 3.2.2 Dust Control

Dust control shall meet the requirements of MEDEP Erosion and Sediment Control BMPs. Keep dust down at all times, including during nonworking periods. Sprinkle or treat, with dust suppressants, the soil at the site, haul roads, and other areas disturbed by operations. Dry power brooming will not be permitted. Instead, use vacuuming, wet mopping, wet sweeping, or wet power brooming. Air blowing will be permitted only for cleaning nonparticulate debris such as steel reinforcing bars. Only wet cutting will be permitted for cutting concrete blocks, concrete, and bituminous concrete. Do not unnecessarily shake bags of cement, concrete mortar, or plaster.

When temporary dust control measures are employed, repetitive treatment shall be applied as needed to accomplish control.

Visible emissions from a fugitive emission source (including stockpiles and roadways) shall not exceed an opacity of 20 percent, except for no more than five (5) minutes in any 1-hour period.

### 3.2.3 Burnoff

Burnoff of the ground cover is not permitted.

### 3.2.4 Erosion and Sediment Control Inspection Reports

Inspection reports shall be kept on file at the project site and submitted electronically to the Contracting Officer upon request. The State of Maine requires inspections of disturbed and impervious areas, erosion and sediment control measures, areas used for storage that are exposed to precipitation, and locations where vehicles enter or exit the site. Inspections shall be performed at least once per week as well as BEFORE and AFTER a storm event. A storm event is any precipitation event with the potential to create runoff but at a minimum should be every storm greater than 0.5 inches of precipitation. Inspection reports shall document compliance with State requirements.

## 3.3 HISTORICAL AND ARCHAEOLOGICAL RESOURCES

Carefully protect in-place and report immediately to the Contracting Officer historical and archaeological items or human skeletal remains discovered in the course of work. Upon discovery, notify the Contracting Officer. Stop work in the immediate area of the discovery until directed by the Contracting Officer to resume work. The Government retains ownership and control over historical and archaeological resources.

If required for the project, a certified Maine Archeologist shall be on site to monitor excavation work. The qualifications of the Archeologist shall be submitted and approved by the Contracting Officer. A site monitoring report prepared by the Archeologist shall be submitted to the Contracting Officer within 21 calendar days of completing site excavation work.

### 3.4 SOLID WASTE MANAGEMENT PLAN

Provide a written Solid Waste Disposal Plan (SWDP) to the Contracting Officer, of intended licensed disposal sites for Government approval and for submission to State regulatory agencies. At a minimum, the SWDP shall contain, but not be limited to, the following wastes: stumps and grubblings, excess soil, construction debris, demolition debris, household solid waste, special waste, and industrial solid waste. The submission shall contain the name of the disposal facility, address, facility phone number, and the waste type and quantity to be disposed of at the facility.

If waste from the site is taken to a transfer station, identify the facility or facilities at which the waste is ultimately disposed. Government approval for the facility must be obtained prior to transporting wastes off Government property.

Provide to the Contracting Officer written notification of the quantity of solid waste/debris that is anticipated to be generated by construction. Include in the report the locations where various types of waste will be disposed or recycled. Include letters of acceptance or as applicable, submit one copy of a State license showing such agency's approval of the disposal plan before transporting wastes off Government property.

#### 3.4.1 Solid Waste Management Report

Monthly, submit a solid waste disposal report to the Contracting Officer. For each waste, the report shall state the classification (using the definitions provided in this section), amount, location, and name of the business receiving the solid waste.

The Contractor shall include copies of the waste handling facilities' weight tickets, receipts, bills of sale, and other sales documentation. In lieu of sales documentation, the Contractor may submit a statement indicating the disposal location for the solid waste which is signed by an officer of the Contractor firm authorized to legally obligate or bind the firm. The sales documentation or Contractor certification will include the receiver's tax identification number and business, EPA or State registration number, along with the receiver's delivery and business addresses and telephone numbers. For each solid waste retained by the Contractor for his/her own use, the Contractor shall submit on the solid waste disposal report the information previously described in this paragraph. Prices paid or received will not be reported to the Contracting Officer unless required by other provisions or specifications of this Contract or public law.

### 3.4.2 Control and Management of Solid Wastes

Pick up solid wastes, and place in covered containers which are regularly emptied. Do not prepare or cook food on the project site. Prevent contamination of the site or other areas when handling and disposing of wastes. At project completion, leave the areas clean. Recycling is encouraged and can be coordinated with the Contracting Officer and the Shipyard Recycling Coordinator. Remove all solid waste (including non-hazardous debris) from Government property and dispose off-site at an approved landfill. Solid waste disposal off-site must comply with most stringent local, State, and Federal requirements including 40 CFR 241, 40 CFR 243, and 40 CFR 258.

Manage spent hazardous material used in construction including, but not limited to, aerosol cans, waste paint, cleaning solvents, contaminated brushes, and used rags, as per environmental law and Shipyard requirements.

#### 3.4.2.1 Dumpsters

Equip dumpsters with a secure cover and paint the standard Shipyard color. Keep cover closed at all times, except when being loaded with trash and debris. Locate dumpsters behind the construction fence or out of the public view. Empty site dumpsters at least once a week or as needed to keep the site free of debris and trash. If necessary, provide 55 gallon trash containers painted the darker Shipyard color to collect debris in the construction site area. Locate the trash containers behind the construction fence or out of the public view. Empty trash containers at least once a day. For large demolitions, large dumpsters without lids are acceptable, but should not have debris higher than the sides before emptying.

### 3.5 WASTE DETERMINATION DOCUMENTATION

Complete a Waste Determination form (provided at the pre-construction conference) for all Contractor derived wastes to be generated. Base the waste determination upon either a constituent listing from the manufacturer used in conjunction with consideration of the process by which the waste was generated, EPA approved analytical data and/or laboratory analysis (Material Safety Data Sheets (MSDS) by themselves are not adequate).

Attach all support documentation to the Waste Determination form. As a minimum, a Waste Determination form must be provided for the following wastes (this listing is not all inclusive): oil and latex based painting and caulking products, solvents, adhesives, aerosols, petroleum products, and all containers of the original materials.

### 3.6 CONTRACTOR HAZARDOUS MATERIAL INVENTORY LOG

Submit the "Contractor Hazardous Material Inventory Log" (found at: <http://www.wbdg.org/ccb/NAVGRAPH/graphtoc.pdf>), which provides information required by EPCRA Sections 312 and 313 along with corresponding Material Safety Data Sheets (MSDS) to the Contracting Officer at the start and at the end of construction (30 days from final acceptance), and update no later than January 31 of each calendar year during the life of the contract. Documentation for any spills/releases, environmental reports or minimize the use of hazardous materials and the generation of hazardous waste.

### 3.7 POLLUTION PREVENTION/HAZARDOUS WASTE MINIMIZATION

Include procedures for pollution prevention/ hazardous waste minimization in the Hazardous Waste Management Section of the Environmental Management Plan. Consult with the Shipyard Environmental Office for suggestions and to obtain a copy of the installation's pollution prevention/hazardous waste minimization plan for reference material when preparing this part of the plan. If no written plan exists, obtain information by contacting the Contracting Officer. Describe the types of the hazardous materials expected to be used in the construction when requesting information.

### 3.8 WHM/HW MATERIALS PROHIBITION

No waste hazardous material or hazardous waste shall be disposed of on Government property. No hazardous material shall be brought onto Government property that does not directly relate to requirements for the performance of this contract.

Incidental materials used to support the contract including, but not limited to, aerosol cans, waste paint, cleaning solvents, contaminated brushes, rags, clothing, etc. may be hazardous wastes and shall be disposed by the Government as described in the Hazardous Waste Management Section. The list is illustrative rather than inclusive. Universal wastes must be managed with controls similar to those for hazardous waste.

The Contractor is not authorized to discharge any materials to sanitary sewer, storm drain, or to the Piscataqua River or conduct waste treatment or disposal on Government property without written approval of the Contracting Officer.

### 3.9 HAZARDOUS MATERIAL MANAGEMENT

No hazardous material shall be brought onto Government property that does not directly relate to requirements for the performance of this contract.

Include hazardous material control procedures in the Safety Plan. Address procedures and proper handling of hazardous materials, including the appropriate transportation requirements. Submit a MSDS and estimated quantities to be used for each hazardous material to the Contracting Officer prior to bringing the material on the Shipyard. Typical materials requiring MSDS and quantity reporting include, but are not limited to, oil and latex based painting and caulking products, solvents, adhesives, aerosol, and petroleum products. At the end of the project, provide the Contracting Officer with the maximum quantity of each material that was present at the site at any one time, the dates the material was present, the amount of each material that was used during the project, and how the material was used. Ensure that hazardous materials are utilized in a manner that will minimize the amount of hazardous waste that is generated. Ensure that all containers of hazardous materials have NFPA labels or their equivalent. Keep copies of the MSDS for hazardous materials on site at all times and provide them to the Contracting Officer at the end of the project. Certify that all hazardous materials removed from the site are hazardous materials and do not meet the definition of hazardous waste per 40 CFR 261.

### 3.10 PETROLEUM PRODUCTS AND REFUELING

Conduct the fueling and lubricating of equipment and motor vehicles in a manner that protects against spills and evaporation. Manage all used oil generated on site in accordance with 40 CFR 279. Determine if any used oil

generated while on-site exhibits a characteristic of hazardous waste. Used oil containing 1000 parts per million of solvents will be considered a hazardous waste and disposed of at Contractor's expense. Used oil mixed with a hazardous waste will also be considered a hazardous waste.

### 3.10.1 Oily and Hazardous Substances

Prevent oil or hazardous substances from entering the ground, drainage areas, or navigable waters. In accordance with 40 CFR 112, surround all temporary fuel oil or petroleum storage tanks with a temporary berm or containment of sufficient size and strength to contain the contents of the tanks, plus 10 percent freeboard for precipitation. The berm will be impervious to oil for 72 hours and be constructed so that any discharge will not permeate, drain, infiltrate, or otherwise escape before cleanup occurs.

### 3.10.2 Inadvertent Discovery of Petroleum Contaminated Soil or Hazardous Wastes

If petroleum contaminated soil or suspected hazardous waste is found during construction that was not identified in the contract documents, the Contractor shall immediately notify the Contracting Officer. The Contractor shall not disturb this material until authorized by the Contracting Officer.

### 3.11 FUEL TANKS

Petroleum products and lubricants required to sustain up to 30 days of construction activity may be kept on site. Storage and refilling practices shall comply with 40 CFR Part 112. Secondary containment shall be provided and be no less than 110 percent of the tank volume plus five inches of free-board. If a secondary berm is used for containment then the berm shall be impervious to oil for 72 hours and be constructed so that any discharge will not permeate, drain, infiltrate, or otherwise escape before cleanup occurs. Drips pans are required and the tanks must be covered during inclement weather.

### 3.12 RELEASES/SPILLS OF OIL AND HAZARDOUS SUBSTANCES

Exercise due diligence to prevent, contain, and respond to **ALL** spills of hazardous material, hazardous substances, hazardous waste, sewage, regulated gas, petroleum, lubrication oil, and other substances regulated by environmental law. In the event of a spill, take prompt, effective action to stop, contain, curtail, or otherwise limit the amount, duration, and severity of the spill/release. In the event of **ANY** releases of oil and hazardous substances, chemicals, or gases; immediately (within 15 minutes) notify the Shipyard Fire Department and the Shipyard's Command Duty Officer, and the Contracting Officer. If the Contractor's response is inadequate, the Navy may respond. If this should occur, the Contractor will be required to reimburse the Government for spill response assistance and analysis.

The Contractor is responsible for verbal and written notifications as required by the Federal 40 CFR 355, State, and local regulations and Navy Instructions. Spill response shall be in accordance with 40 CFR 300 and applicable State and local regulations. Contain and clean up these spills without cost to the Government. If Government assistance is requested or required, the Contractor will reimburse the Government for such

assistance. Provide copies of the written notification and documentation that a verbal notification was made within 20 days.

Maintain spill cleanup equipment and materials at the work site. Clean up all hazardous and non-hazardous (WHM) waste spills. The Contractor shall reimburse the Government for all material, equipment, and clothing generated during any spill cleanup. The Contractor shall reimburse the Government for all costs incurred including sample analysis materials, equipment, and labor if the Government must initiate its own spill cleanup procedures, for Contractor responsible spills, when:

- a. The Contractor has not begun spill cleanup procedure within one hour of spill discovery/occurrence, or
- b. If, in the Government's judgment, the Contractor's spill cleanup is not adequately abating life threatening situation and/or is a threat to any body of water or environmentally sensitive areas.

### 3.13 CONTROL AND MANAGEMENT OF HAZARDOUS WASTES

At the time of the pre-construction conference the Contractor will be briefed and provided written information regarding hazardous waste management. The Government will provide technical and oversight assistance in all aspects of hazardous waste management.

#### 3.13.1 General

All hazardous wastes generated within the confines of the Shipyard shall be disposed of by the Government. Accordingly, all hazardous wastes generated by the Contractor to accomplish requirements of this contract shall be considered Government-generated, and shall be disposed of by the Government. Contractor shall not bring hazardous wastes onto Government property. Hazardous wastes shall be handled in compliance with 40 CFR 260-268, 273, 279 and State of Maine MEDEP Regulations Chapter 850 to 855. For hazardous waste spills, the Contractor shall call the Shipyard Fire Department, extension 2333, immediately, then verbally notify the Contracting Officer.

#### 3.13.2 Containers

Contractor shall use only Government-furnished, Government-labeled containers for the packaging of hazardous soils and wastes. Containers will be delivered to the Contractor's work area following receipt and approval of the Management Plan required above.

- a. Contractor shall segregate hazardous and non-hazardous soils/wastes. Hazardous soils/wastes shall be placed into containers provided by the Government. Full containers shall be turned over to the Government at Building 357 (Code 106.3). While hazardous soils/wastes are in the control of the Contractor, such hazardous soils/wastes shall be handled in accordance with Shipyard requirements.
- b. Notify the Contracting Officer or the designated representative daily to ensure containers of hazardous and universal wastes are secured by the Government prior to the end of the shift or as arranged and approved by Code 106. All hazardous wastes shall be placed in a Government approved hazardous waste satellite accumulation area or turned over directly to Building 357.

Prior to Government acceptance of the containers, the Contractor shall provide the certification required by the "Submittals" paragraph of this Section, and such additional information regarding contents of the containers as may be required by the Government representative for proper classification of the wastes.

3.13.3 Facility Hazardous Waste Generator Status

Portsmouth Naval Shipyard is designated as a Large Quantity Generator. All work conducted within the boundaries of the Shipyard must meet the regulatory requirements of this generator designation. The Contractor shall comply with all provisions of Federal, State and local regulatory requirements applicable to this generator status regarding training and storage, handling, and disposal of all construction derived wastes.

3.13.4 Hazardous Waste/Debris Management

Identify all construction activities which will generate hazardous waste/debris and universal wastes. Provide a documented waste determination for all resultant waste streams. Hazardous waste/debris will be identified, labeled, handled, stored, and disposed of in accordance with all Federal, State, and local regulations including 40 CFR 261, 40 CFR 262, 40 CFR 263, 40 CFR 264, 40 CFR 265, 40 CFR 266, and 40 CFR 268.

Hazardous wastes and universal wastes will also be managed in accordance with the approved Hazardous Waste Management Section of the Environmental Protection Plan. Daily worksite accumulation of hazardous wastes and universal wastes shall be in approved containers in accordance with 49 CFR 173 and 49 CFR 178. Hazardous waste generated within the confines of Government facilities will be identified as being generated by the Government.

Prior to removal of any hazardous waste from Government property, all hazardous waste manifests must be signed by Shipyard personnel from the Shipyard Environmental Office. No hazardous waste will be brought onto Government property. Provide to the Contracting Officer a copy of waste determination documentation for any solid waste streams that have any potential to be hazardous waste or contain any chemical constituents listed in 40 CFR 372-SUBPART D. For hazardous wastes spills, verbally notify the Contracting Officer immediately.

3.13.4.1 Regulated Waste Storage/Satellite Accumulation/90 Day Storage Areas

If the work requires the temporary storage/collection of regulated or hazardous wastes, the Contractor will request the establishment of a Regulated Waste Storage Area, a Satellite Accumulation Area, or a 90 Day Storage Area at the point of generation.

The Contractor must submit a request in writing to the Contracting Officer providing the following information:

<u>Contract Number</u>	_____	<u>Contractor</u>	_____
<u>Haz/Waste or Regulated Waste POC</u>	_____	<u>Phone Number</u>	_____

Type of Waste \_\_\_\_\_ Source of Waste \_\_\_\_\_

Emergency POC \_\_\_\_\_ Phone Number \_\_\_\_\_

Location of the Site: \_\_\_\_\_  
(Attach Site Plan to the Request)

Attach a waste determination form. Allow ten working days for processing this request. The designated area where waste is being stored shall be barricaded and a sign identifying as follows:

"DANGER - UNAUTHORIZED PERSONNEL KEEP OUT"

3.13.4.2 Sampling and Analysis of HW

a. Waste Sampling

Sample waste in accordance with Navy Environmental Compliance Sampling and Field Testing Procedures Manual, NAVSEA T0300-AZ-PRO-010, 01 April 2013. Each sampled drum or container will be clearly marked with the Contractor's identification number and cross referenced to the chemical analysis performed; sampling shall be in accordance with NAVSHIPY PTSMH INST 5090.8 B

b. Laboratory Analysis

Follow the analytical procedure and methods in accordance with the EP-SLU-846. The Contractor will provide all analytical results and reports performed to the Contracting Officer, and Code 106.3 Environmental Sampling Project Manager.

All laboratory analysis for hazardous waste identification must be performed by a laboratory complaint with OPNAVINST 5090.1 Chapter 7-3.3. Proof of compliance must be made available upon request. All analyses provided by laboratories that are not compliant with the stated requirements will be rejected.

c. Analysis Type

Identify waste material/hazardous waste by analyzing for properties that are reasonably suspected of the waste. Soil and other materials may require specific analysis for acceptance to a disposal facility - please check with personnel at the HWSF before choosing parameters.

3.13.4.3 Asbestos Certification

Items, components, or materials disturbed by or included in work under this contract may involve asbestos. Other materials in the general area around where work will be performed may contain asbestos. All thermal insulation, in all work areas, should be considered to be asbestos unless positively identified by conspicuous tags or previous laboratory analysis certifying them as asbestos free.

Inadvertent discovery of non-disclosed asbestos that will result in an abatement action requires a change in scope before proceeding. Upon discovery of asbestos containing material not identified in the contract documents, the Contractor shall immediately stop all work

that would generate further damage to the material, evacuate the asbestos exposed area, and notify the Contracting Officer for resolution of the situation prior to resuming normal work activities in the affected area. The Contractor will not remove or perform work on any asbestos containing materials without the prior approval of the Contracting Officer. The Contractor will not engage in any activity, which would remove or damage such materials or cause the generation of fibers from such materials.

Asbestos containing waste shall be managed and disposed of in accordance with applicable environmental law. Asbestos containing waste shall be manifested and the manifest provided to the Contracting Officer. Disposal of asbestos-containing waste must be coordinated with the Navy.

#### 3.13.4.4 Hazardous Waste Disposal

Control of stored waste, packaging, sampling, analysis, and disposal will be determined by the details in the contract. The requirements for jobs in the following paragraphs will be used as the guidelines for disposal of any hazardous waste generated.

##### a. Responsibilities for Contractor's Disposal

Contractor responsibilities include any generation of WHM/HW requiring Contractor disposal of solid waste or liquid.

- (1) The Contractor agrees to provide all service necessary for the final treatment/disposal of the hazardous material/waste in accordance with all local, State and Federal laws and regulations, and the terms and conditions of the contract within sixty (60) days after the materials have been generated. These services will include all necessary personnel, labor, transportation; packaging, detailed analysis (if required for disposal, and/or transportation, including manifesting or completing waste profile sheets, equipment, and the compilation of all documentation is required).
- (2) Contain all waste in accordance with 40 CFR 260, 40 CFR 261, 40 CFR 262, 40 CFR 263, 40 CFR 264, 40 CFR 265, 40 CFR 266, 40 CFR 268, 40 CFR 270, 40 CFR 272, 40 CFR 273, 40 CFR 279, 40 CFR 280, and 40 CFR 761.
- (3) Obtaining a representative sample of the material generated for each job done to provide waste stream determination.
- (4) Analyzing for each sample taken and providing analytical results to the Contracting Officer. Provide two copies of the results.
- (5) Determine the DOT proper shipping names for all waste (each container requiring disposal) and will demonstrate how this determination is developed and supported by the sampling and analysis requirements contained herein to the Contracting Officer.

#### Contractor Disposal Turn-In Requirements

For any waste hazardous materials or hazardous waste generated which requires the Contractor to dispose of, the following conditions must be

complied with in order to be acceptable for disposal:

- a. Drums compatible with waste contents and drums meet DOT requirements for 49 CFR 173 for transportation of materials.
- b. Drums banded to wooden pallets. No more than three (3) 55 gallon drums to a pallet, or two (2) 85 gallon over packs.
- c. Band using 1-1/4 inch minimum band on upper third of drum.
- d. Recovery materials label (provided by Code 106.321) located in middle of drum, filled out to indicate actual volume of material, name of material manufacturer, other vendor information as available.
- e. Always have three (3) to five (5) inches of empty space above volume of material. This space is called 'outage'.
- f. Provide disposal documentation for hazardous and regulated waste.

### 3.13.5 Class I ODS Prohibition

Class I ODS as defined herein will not be used in the performance of this contract, nor be provided as part of the equipment. This prohibition will be considered to prevail over any other provision, specification, drawing, or referenced documents. Regulations related to the protection of stratosphere ozone may be found in 40 CFR 82.

Heating and air conditioning technicians must be certified through an EPA-approved program. Copies of certifications shall be maintained at the employees' place of business and be carried as a wallet card by the technician, as provided by environmental law. Accidental venting of a refrigerant is a release and shall be reported to the Contracting Officer.

#### 3.13.5.1 Universal Waste/e-Waste Management

Universal waste including but not limited to some mercury containing building products such florescent lamps, mercury vapor lamps, high pressure sodium lamps, CRTs, batteries, aerosol paint containers, electrical equipment containing PCBs, and consumed electronic devices, shall be managed in accordance with applicable environmental law.

### 3.14 DUST CONTROL

Dust control shall meet the requirements of MEDEP Erosion and Sediment Control BMPs. Keep dust down at all times, including during nonworking periods. Sprinkle or treat, with dust suppressants, the soil at the site, haul roads, and other areas disturbed by operations. Dry power brooming will not be permitted. Instead, use vacuuming, wet mopping, wet sweeping, or wet power brooming. Air blowing will be permitted only for cleaning nonparticulate debris such as steel reinforcing bars. Only wet cutting will be permitted for cutting concrete blocks, concrete, and bituminous concrete. Do not unnecessarily shake bags of cement, concrete mortar, or plaster. When temporary dust control measures are employed, repetitive treatment shall be applied as needed to accomplish control. Visible emissions from a fugitive emission source (including stockpiles and roadways) shall not exceed an opacity of 20 percent, except for no more than five (5) minutes in any 1-hour period.

3.14.1 Dirt and Dust Control Plan

Submit truck and material haul routes along with a plan for controlling dirt, debris, and dust on base roadways. As a minimum, identify in the plan the subcontractor and equipment for cleaning along the haul route and measure the reduce dirt, dust, and debris form roadways.

3.15 ABRASIVE AND/OR WET BLASTING

3.15.1 Blasting Operations

(a) Abrasive Blasting

The use of silica sand is prohibited in sandblasting.

Provide tarpaulin drop cloths and windscreens to enclose abrasive blasting operations to confine and collect dust, abrasive, agent, paint chips, and other debris.

Abrasive blasting shall take place in containments with emissions vented through bag house filters and emissions shall be limited to 10% opacity on a six minute block average. The bag houses must be used to control PM emission and operated properly at all times abrasive blasting is being performed.

(b) Wet Blasting

The use of wet blasting requires the capture and proper disposal of all wastes, including the blasting water, associated with the process.

3.15.2 Disposal Requirements

Submit analytical results of the wastes and/or debris generated from blasting operations per paragraph entitled Laboratory Analysis of this section. Hazardous waste generated from blasting operations will be managed in accordance with paragraph entitled "Hazardous Waste\Debris Management" of this section and with the approved HWMP. Concrete wash water and oily waste generated from blasting operations will be disposed of in accordance with the policy outlined in these specifications.

3.16 SPRAY PAINTING

3.16.1 Spray Painting Operations

Spray painting operations shall take place in containment. Emissions from spray painting shall vent through air filters and are limited to 10% opacity on a six minute block average. The air filters are used to control particulate emissions.

3.17 NOISE

Make the maximum use of low-noise emission products, as certified by the EPA or sound deadening enclosures to limit noise within the project site. Blasting or the use of explosives will not be permitted. Confine any operations that may generate excessive noise to the period between 7 a.m. and 5 p.m., Monday through Friday, exclusive of holidays, unless otherwise specified or approved by the Contracting Officer. The maximum permissible

sound pressure levels, as measured at the limits of the Navy Property boundary, shall not exceed the maximum noise levels as specified in the Town of Kittery's Ordinance and all applicable OSHA Regulations.

### 3.18 MERCURY MATERIALS

Mercury is prohibited in the construction of this facility, unless specified otherwise, and with the exception of mercury vapor lamps and fluorescent lamps. Dumping of mercury-containing materials and devices such as mercury vapor lamps, fluorescent lamps, and mercury switches, in rubbish containers is prohibited. Remove without breaking, pack to prevent breakage, and transport out of the activity in an unbroken condition for disposal as directed. Immediately report to the Shipyard Environmental Office and the Contracting Officer instances of breakage or mercury spillage. Clean mercury spill area to the satisfaction of the Contracting Officer. Cleanup of a mercury spill shall not be recycled and shall be managed as a hazardous waste for disposal.

### 3.19 CONCRETE WASH WATER

Concrete wash water shall be defined as water or storm water that has come into contact with cement, uncured concrete, concrete dust or other material of a similar nature generated during construction activities including, but not limited to, washing down ready-mix trucks, mixers and wheelbarrows, tools, concrete areas; masonry cutting operations; cleaning up of split mortar or block fill; hosing away excess materials.

#### 3.19.1 Concrete Wash Water

Concrete wash water shall be defined as water, pressure washing water, or storm water that has come into contact with cement, uncured concrete, concrete dust or other material of a similar nature generated during construction activities including, but not limited to, washing down ready-mix trucks, mixers and wheelbarrows, pre casting equipment, forms, manufactured cast concrete sections, tools, concrete areas; masonry cutting operations; cleaning up of split mortar or block fill; hosing away excess materials.

Water or storm water that has come into contact with pre casting equipment, forms, tools, etc which have been subjected to oil based form release agents will be considered an oily waste if a visual inspection indicates any signs of oil residual. Oily wastes shall be collected and disposed of in accordance with Shipyard policy.

#### 3.19.2 Pollution Prevention

Store dry and wet concrete supplies under cover away from drainage areas. Concrete wash water shall not be released to the storm drain system, sewer system, roadways or other uncontained impervious surfaces, or to natural waterways including the Piscataqua River and its tributaries. Contractor shall take all precautions necessary to prevent rainwater or stormwater runoff to come in contact with concrete wash water. Divert clean stormwater and roof runoff from contact with concrete wash water. Contractor shall take all measures necessary to minimize the volume of concrete wash water generated. Contractor shall protect all waterways, catch basins and storm drain structures from potential discharges of concrete wash water.

Contractor shall collect and control concrete wash water separately from waste water determined to be oily waste.

### 3.19.3 On-Shipyard Disposal

Small volumes of concrete wash water generated can be disposed on-site under certain conditions when approved by the Contracting Officer. When approved, small volumes of concrete wash water can be directed onto an area of open soil such as a trench or shallow pit to allow it to be absorbed and neutralized by the soil. The area shall be constantly monitored during filling operations to prevent overflow.

### 3.19.4 On-Shipyard Containment Structures

Concrete wash water shall be gathered and contained on site for removal and disposal at a facility designed and approved for disposal of concrete wash water. Under no circumstances shall clean water be added to concrete wash water for dilution purposes or any other reason. Containment structures shall be watertight and provide adequate freeboard to contain the wash water, solids, and rainfall to prevent overflow. Cover wash out structures prior to predicted rainfall events to prevent rainfall from entering the containment structure. Ensure that concrete washout containers are watertight and are designed to promote evaporation. Washout shall occur in designated areas only that have been approved by the Contracting Officer Representative.

Inspect all concrete washout facilities daily to determine filled capacity. Remove all materials from containment structures when 75% fill capacity has been reached. Remove liquids or cover structures before predicted rainstorms to prevent overflows and infiltration of rainwater. Inspect structures for holes and tears daily and repair to maintain watertight conditions.

Hardened solids can be removed from containment structures and recycled, reused, or disposed of per regulatory requirements. Liquids remaining in the containment structure shall be vacuumed and disposed of at a facility designated for disposal of concrete wash water.

### 3.19.5 Off-Shipyard Disposal

Contractor shall provide careful oversight to prevent improper dumping of concrete wash water. Contractor shall ensure companies use proper disposal facilities designated for concrete wash water disposal. The Contractor shall be responsible for any clean up resulting from improper control of concrete wash water.

## 3.20 DISPOSAL OF CHLORINATED WATER AND DECHLORINATION REQUIREMENTS

Chlorinated water created during disinfection procedures shall not be directly discharged to storm drains or sanitary sewers without prior dechlorination. Chlorinated water shall be neutralized by the controlled addition of a reducing chemical such as sodium thiosulfate, sodium bisulfate, sodium sulfite, sulfur dioxide or ascorbic acid (commonly known as Vitamin C). Dechlorination shall be sufficiently effective to reduce total residual chlorine concentration to existing water system chlorine levels (typically 1.2 to 1.5 mg/l).

-- End of Section --

SECTION 01 74 19.00 22

CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT (PWD ME)  
06/14

PART 1 GENERAL

1.1 GOVERNMENT POLICY

Government policy is to apply sound environmental principles in the design, construction and use of facilities. As part of the implementation of that policy the Contractor shall: (1) practice efficient waste management when sizing, cutting, and installing products and materials and (2) use all reasonable means to divert construction and demolition waste from landfills and incinerators and to facilitate their recycling or reuse.

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. The following shall be submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Waste Management Plan; G

SD-11 Closeout Submittals

Records

1.3 WASTE MANAGEMENT PLAN

A waste management plan shall be submitted within 15 calendar days after contract award and prior to initiating any site preparation work. The plan shall include the following:

- a. Name of individuals on the Contractor's staff responsible for waste prevention and management.
- b. Actions that will be taken to reduce solid waste generation, including coordination with subcontractors to ensure awareness and participation.
- c. Description of the regular meetings to be held to address waste management.
- d. Description of the specific approaches to be used in recycling/reuse of the various materials generated, including the areas and equipment to be used for processing, sorting, and temporary storage of wastes.
- e. Characterization, including estimated types and quantities, of the waste to be generated.
- f. Actions that will be taken to divert at least 50% of the non-hazardous solid wastes (including waste from construction and demolition operations) from the waste stream. Report actual diversion rates during construction and demolition.

- g. Name of landfill and/or incinerator to be used and the estimated costs for use, assuming that there would be no salvage or recycling on the project.
- h. Identification of local and regional reuse programs, including non-profit organizations such as schools, local housing agencies, and organizations that accept used materials such as materials exchange networks and Habitat for Humanity. Include the name, location, and phone number for each reuse facility to be used, and provide a copy of the permit or license for each facility.
- i. List of specific waste materials that will be salvaged for resale, salvaged and reused on the current project, salvaged and stored for reuse on a future project, or recycled. Recycling facilities that will be used shall be identified by name, location, and phone number, including a copy of the permit or license for each facility. Provide percentage of non-hazardous construction and demolition waste materials that have been diverted from the waste stream.
- j. Identification of materials that cannot be recycled/reused with an explanation or justification, to be approved by the Contracting Officer.
- k. Description of the means by which any waste materials identified in item (i) above will be protected from contamination.
- k. Anticipated net cost savings determined by subtracting Contractor program management costs and the cost of disposal from the revenue generated by sale of the materials and the incineration and/or landfill cost avoidance.
- l. Description of the means of transportation of the recyclable materials (whether materials will be site-separated and self-hauled to designated centers, or whether mixed materials will be collected by a waste hauler and removed from the site).

#### 1.4 RECORDS

Records shall be maintained to document the quantity of waste generated; the quantity of waste diverted through sale, reuse, or recycling; and the quantity of waste disposed by landfill or incineration. Quantities may be measured by weight or by volume, but must be consistent throughout. List each type of waste separately noting the disposal or diversion date.

Identify the landfill, recycling center, waste processor, or other organization used to process or receive the solid waste. Provide explanations for any waste not recycled or reused. With each application for payment, submit updated documentation for solid waste disposal and diversion, and submit manifests, weight tickets, receipts, and invoices specifically identifying the project and waste material. The records shall be made available to the Contracting Officer during construction, and a copy of the records shall be delivered to the Contracting Officer upon completion of the construction.

#### 1.5 DISPOSAL

Except as otherwise specified in other sections of the specifications, disposal shall be in accordance with the following:

1.5.1 Reuse

First consideration shall be given to salvage for reuse since little or no re-processing is necessary for this method, and less pollution is created when items are reused in their original form. Sale or donation of waste suitable for reuse shall be considered. Salvaged materials, other than those specified in other sections to be salvaged and reinstalled, shall not be used in this project.

1.5.2 Recycle

Waste materials not suitable for reuse, but having value as being recyclable, shall be made available for recycling whenever economically feasible.

1.5.3 Waste

Materials with no practical use or economic benefit shall be disposed at a landfill or incinerator.

1.6 Additional Reporting and Recording Requirements

Provide monthly cost and revenue data to the NAVFAC MIDLANT Integrated Solid Waste Management office. The report shall be submitted by e-mail to <mailto:IntegratedSolidWasteManagement@navy.mil> no later than the 3rd of each month. Data shall be reported on an excel document provided by the Contracting Officer. Comply with the requirements specified in Appendix 01 74 19-1, "Construction and Demolition Solid Waste Report".

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

-- End of section --

**CONSTRUCTION AND DEMOLITION SOLID WASTE REPORT**

**SITE:** \_\_\_\_\_ **Month:** \_\_\_\_\_

**Contractor's Company Name:** \_\_\_\_\_ **Contract #** \_\_\_\_\_

**Contractor's POC and Telephone or Email Address:** \_\_\_\_\_

**Project Description:** \_\_\_\_\_  
 \_\_\_\_\_

<b>SECTION 1</b>	<b>Tons</b>	<b>Cost</b>	<b>Revenue</b>	<b>Remarks</b>
<b>Recycled (tons)</b>				
Concrete(incl: brick & block)				
Wood				
Metal				
Asphalt				
Green waste(clearing debris)				
Dirt				
Sand				
Gravel/Rock				
Mixed				
Misc				
<b>Subtotal - Recycled</b>	<b>0.00</b>	<b>\$ -</b>	<b>\$ -</b>	
<b>SECTION 2</b>				
<b>Landfilled (tons)</b>				
Concrete(incl: brick & block)				
Wood				
Metal				
Asphalt				
Green Waste(clearing debris)				
General C&D				
Dirt				
Sand				
Gravel/Rock				
Mixed				
Misc				
<b>Subtotal - Landfilled</b>	<b>0.00</b>	<b>\$ -</b>	<b>\$ -</b>	
<b>Solid Waste (tons)</b>				
<b>Total Solid Waste</b>	<b>0.00</b>	<b>\$ -</b>	<b>\$ -</b>	

**REPORTING DEADLINE IS NO LATER THAN THE 3RD OF EACH MONTH**

SECTION 01 75 00

STARTING AND ADJUSTING  
05/12

PART 1 GENERAL

1.1 SUMMARY

Requirements of this Section apply to, and are a component part of, each section of the specifications.

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. 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

Verification of Prior Experience; G

Documentation of Manufacturer's Prior Experience; G

Quality Control Plan; G

Manufacturer's Sample Warranty; G

Operation and Maintenance Data; G

SD-02 Shop Drawings

Drawings, Diagrams and Schedules; G

Diagrams and Instructions; G

Coordination Drawings; G

SD-03 Product Data

Catalog Cuts; G

Samples of Warranty Language; G SD-

05 Design Data

Design Calculations; G

SD-06 Test Reports

Factory Tests; G

Functional Field Test; G

Final Acceptance Test; G

Test Procedures; G

SD-07 Certificates

Qualification of Manufacturer; G

Qualification of Installer; G

SD-08 Manufacturer's Instructions

Manufacturer's Administrative Requirements; G

Demonstration and Training Information; G

Manufacturer's Procedural Requirements; G

SD-09 Manufacturer's Field Reports

Documentation of the Testing and Verification Actions; G SD-

10 Operation and Maintenance Data

Operation and Maintenance Data; G

Safety and Security Data or Posters; G

1.2.1 Preconstruction and Pre-Testing Requirements

Deliver equipment and services to meet the requirements and specifications of their respective contract. Ensure all equipment is free of latent manufacturing and installation defects. The Government reserves the option to elect performance of acceptance testing by internal personnel, or a designated third party. Regardless of who performs the acceptance testing, ensure the requirements of acceptance are.

Submit the following for review and approval prior to the commencement of work and any testing, whether such testing is on site or elsewhere:

- a. Verification of prior experience and expertise with similar project scope
- b. Documentation of manufacturer's prior experience and expertise with similar project materials and systems
- c. Quality control plan
- d. Manufacturer's sample warranty and operation and maintenance data, with details regarding start-up procedures
- e. Manufacturer's administrative requirements
- f. Manufacturer's procedural requirements
- g. Demonstration and training information

Submit the following certifications:

- a. Provide evidence that products used within this specification are manufactured in the United States.
- b. Qualification of manufacturer, including current licenses and insurance.
- c. Qualification of installer, including licenses and insurance.

#### 1.2.2 Shop Drawings and Diagrams

Submit the following shop drawings, record drawings, and diagrams as required to correctly execute the installation of the work:

- a. Drawings, diagrams and schedules specifically prepared to illustrate the work.
- b. Diagrams and instructions from a manufacturer or fabricator for use in producing the product and as aids to the Contractor for integrating the product or system into the project
- c. Coordination drawings prepared by or for the Contractor to show how multiple systems and interdisciplinary work will be coordinated

#### 1.2.3 Product and Design Data

Submit all product data and any design calculations, mix designs, analyses or other data pertaining to the work to ensure a complete functional installation; including, but not limited to:

- a. Catalog cuts, illustrations, schedules, diagrams, performance charts, instructions and brochures illustrating size, physical appearance and other characteristics of materials, systems or equipment for some portion of the work
- b. Samples of warranty language when the contract requires product warranties
- c. Operation and maintenance data provided by the manufacturer to ensure the safe and efficient operation, maintenance and repair of the system or equipment provided
- d. Safety and security data or posters provided by the manufacturer to be posted in a conspicuous visible location for operational and maintenance personnel

#### 1.2.4 Tests Required

Perform tests to verify proper functioning of fire protection, fire suppression, HVAC, compressed air, electrical switchgear, protective relaying, fluid and gas systems, pump/motor combinations, boiler systems, hydraulic and pneumatic control, condition/performance monitoring systems, energy control and monitoring systems, and other assemblies and components that need to be tested as an interrelated whole.

##### 1.2.4.1 Factory Tests

Submit certified copies of required tests performed at the factory to verify proper build. These test results will be used in the "Final Acceptance Test" section to verify no shipping damage and proper installation.

1.2.4.2 Functional Field Test

Perform functional field tests test to verify that the system and components have been properly installed and are functioning properly. Perform test(s) in the presence of the Contracting Officer. Acceptance will be issued when system has performed per other sections and referenced industry standards.

Coordinate and submit 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][after] installation, to confirm compliance with manufacturer's standards or instructions.

1.2.4.3 Final Acceptance Test

Perform a formal test with full documentation using the approved recording form. Contracting Officer will witness this test and issue a written final acceptance. Provide final test data to the Contracting Officer with a cover letter clearly marked with the system name, date, and the words " Final Test Data - Forward to the Systems Engineer/Condition Monitoring Office/Predictive Testing Group for inclusion in the Maintenance Database."

1.2.4.4 Test Procedures

Submit test procedure and recording forms that document the test steps for approval to the Contracting Officer 21 calendar days prior to the proposed test date. Ensure procedures clearly state step by step instruction to verify system parameters, components, and functions.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

-- End of Section --

SECTION 01 78 00.00 22

CLOSEOUT SUBMITTALS (PWD ME)

06/14

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.

GREEN SEAL (GS)

GS-37 (2000; R 2005) Industrial and Institutional Cleaners

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. 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

As-Built Record of Equipment and Materials; G

Two (2) paper copies and one pdf copy of the record listing the as-built materials and equipment incorporated into the construction of the project.

Warranty Management Plan; G

One paper and one pdf set of the warranty management plan containing information relevant to the warranty of materials and equipment incorporated into the construction project, including the starting date of warranty of construction. Furnish with each warranty the name, address, and telephone number of each of the guarantor's representatives nearest to the project location.

Warranty Tags; G

Two (2) paper record copies and one pdf copy of the warranty tags showing the layout and design.

Final Cleaning; G

Two (2) copies of the listing of completed final clean-up items.

Spare Parts Data; G

Two (2) paper copies and one pdf copy of the list that indicates manufacturer's name, part number, nomenclature, and stock level

recommended for maintenance and repair. List those items that may be standard to the normal maintenance of the system.

SD-08 Manufacturer's Instructions

Preventative Maintenance; G and Condition Monitoring (Predictive Testing); G and Inspection; G schedules with instructions that state when systems should be retested.

Define within the schedule the anticipated length of each test, test apparatus, number of personnel identified by responsibility, and a testing validation procedure permitting the record operation capability requirements. On each test feature; e.g., gpm, rpm, psi, provide a signoff blank for the Contractor and Contracting Officer. Within a remarks column of the testing validation procedure include references to operating limits of time, pressure, temperature, volume, voltage, current, acceleration, velocity, alignment, calibration, adjustments, cleaning, or special system notes. Delineate procedures for preventative maintenance, condition monitoring (predictive testing) and inspection, adjustment, lubrication and cleaning necessary to prevent failure.

Posted Instructions; G

SD-10 Operation and Maintenance Data

Submit Operation and Maintenance Manuals; G in accordance with paragraph entitled, "Operation and Maintenance," of this section. Submit 2 paper copies, and one pdf copy on CD.

SD-11 Closeout Submittals

Record Drawings; G

Drawings showing final as-built conditions of the project. The final CADD record drawings must consist of one set of electronic CADD drawing files in the specified electronic format saved on a CD, one set of mylar drawings, 2 sets of blue-line prints of the mylars, and one set of the approved working Record drawings.

Red Zone Documents per Section 01 30 00; G

1.3 PROJECT RECORD DOCUMENTS

1.3.1 Record Drawings

This paragraph covers Record Drawings complete, as a requirement of the contract. The terms "drawings," "contract drawings," "drawing files," "working as-built record drawings," and "final record drawings" refer to contract drawings (hard copy and CADD) which are revised to be used for final record drawings reflecting current project as-built conditions.

1.3.1.1 Government Furnished Materials

One set of electronic CADD files in the specified software and format of the contract drawings will be provided by the Government at the

preconstruction conference for projects requiring Final Record Drawings in CADD format.

#### 1.3.1.2 Working Record and Final Record Drawings

Revise 2 sets of hard copy paper contract drawings by red-line process described herein to reflect the current as-built conditions during the prosecution of the project. The Contractor shall keep the working as-built drawings current and shall keep at least one set available on the jobsite for review at all times. Changes from the contract plans which are made in the work or additional information which might be uncovered in the course of construction must be accurately and neatly recorded as they occur by means of details and notes. After the completion of each definable feature of work as listed in the Contractor Quality Control Plan (Foundations, Utilities, Structural Steel, etc., as appropriate for the project) provide (1) set of working as-built drawings (CADD) in the specified software and format hard copy and electronic to the Contracting Officer. The working as-built drawings, hard copy and (CADD), will be jointly reviewed for accuracy, completeness and format by the Contracting Officer and the Contractor prior to submission of each monthly pay estimate. If the Contractor fails to maintain the working as-built drawings, hard copy and (CADD) as specified herein, the Contracting Officer will deduct from the monthly progress payment an amount representing the estimated cost of maintaining the record drawings. This monthly deduction will continue until an agreement can be reached between the Contracting Officer and the Contractor regarding the accuracy and completeness of updated drawings. Items to be shown on the working as-built drawings, hard copy and (CADD) are, but are not limited to, the following information:

- a. The actual location (horizontal and vertical position based on Shipyard datums), kinds and sizes of all sub-surface utility lines. In order that the location of these lines and appurtenances may be determined in the event the surface openings or indicators become covered over or obscured, as a back-up to the horizontal and vertical position, feature shall also be shown by offset dimensions to two permanently fixed surface features the end of each run including each change in direction. Locate valves, splice boxes and similar appurtenances by dimensioning along the utility run from a reference point. Also record the average depth below the surface of each run of pipe, fittings, valves, etc.
- b. The actual location (horizontal and vertical position based on Shipyard datums), kind and size of any sub-surface feature uncovered not accurately represented on the contract drawings.
- c. The location and dimensions of any changes within the building structure.
- d. Changes in grade, elevations, cross section, or alignment of roads, earthwork, structures or utilities.
- e. Changes in details of design or additional information obtained from working drawings specified to be prepared and/or furnished by the Contractor; including, but not limited to, fabrication, erection, installation plans and placing details, pipe sizes, insulation material, dimensions of equipment foundations, etc.
- f. The topography, invert elevations and grades of drainage installed or

affected as part of the project construction.

- g. Changes or modifications which result from the final inspection.
- h. Where contract drawings or specifications present options, identify the option selected for construction on the working as-built prints.
- i. If borrow material for this project is from sources on Government property, or if Government property is used as a spoil area, furnish a contour map of the final borrow pit/spoil area elevations.
- j. Systems designed or enhanced by the Contractor, such as HVAC controls, fire alarm, fire sprinkler, and irrigation systems.
- k. Modifications (include within change order price the cost to change working and final record drawings to reflect modifications) and compliance with the following procedures:
  - (1) Both sets of the hard copy paper contract working as-built drawings must be neat, legible and accurate. Any drawings damaged, lost or corrupted by the Contractor must be satisfactorily replaced by the Contractor at no expense to the Government.
  - (2) For text deletions/revisions; strikeout existing drawing text with a single line as to not obscure or make the original text unreadable. Place the new text adjacent, clearly annotating the intent of the change.
  - (3) For line work; strikeout entities with parallel lines drawn at 45 degrees to the object, not to obscure or make the original object unreadable. Place the new object in its correct location and clearly annotate the intent of the change.
  - (4) Place a Revision Symbol at the location of each modification on the drawing sheet along with descriptive annotations of the revision.
  - (5) For details, sections or schedules which are added to a drawing sheet, place a Revision Symbol by the detail, section or schedule title.
  - (6) For major changes to a drawing, place a Revision Symbol by the title of the affected plan, section, or detail at each location.
  - (7) For changes within schedules, place a Revision Symbol by the change in the schedule.
  - (8) The Revision Symbol shall be a Delta sized to allow for a capital letter to fit within. The letter shall have a height of not less than 1/8" when plotted.
  - (9) The revision symbol letter shall be consistent for all drawing modifications for each monthly billing cycle. Drawing modifications for the first monthly bill cycle shall be designated as "A" for all modifications throughout the drawing package. The next month's revisions shall be designated as "B" throughout the drawing package, and so on.

#### 1.3.1.3 Drawing Preparation

At project completion, provide 2 sets of the approved hard copy paper contract drawings modified to reflect the final as-built conditions of the project to the Contracting Officer. Modify the contract drawings as necessary to correctly show the features of the project as it has been constructed by bringing the contract drawings into agreement with the second set of approved working as-built drawings. The second set of approved working as-built drawings are also part of the permanent records of this project and must be returned to the Contracting Officer after final approval of the Record Drawings by the Government. Any drawings or drawing files damaged, lost or corrupted by the Contractor must be satisfactorily replaced by the Contractor at no expense to the Government.

#### 1.3.1.4 Computer Aided Design and Drafting (CADD) Drawings

Only employ personnel proficient in the preparation of CADD drawings to modify the contract drawings or prepare any additional drawings sheets required. Modifications, to the Record Drawings must be equal in quality and detail to that of the original contract drawings. Line colors, line weights, lettering, layering conventions, and symbols shall remain consistent throughout the record drawing set, regardless of either as-built or record drawing. The contractor shall modify the original contract drawing files to reflect the construction contract as-built conditions reviewed and accepted by **the Contracting Officer**. Each as-built condition added to a drawing file shall be encapsulated by a closed polygon or "revision cloud. A revision symbol shall be placed outside the "revision cloud" with the appropriate letter designating the revision sequence. The contractor shall annotate in the "revision block" of each drawing file modified as to the type of revisions made to the drawing file. The contract drawings are to be edited to reflect the as-built conditions only. No part of the original drawings shall be deleted, erased or rendered illegible. Parts of the contract drawing found to be in error or modified during construction, shall be over struck using methods described not to obscure the original drawing, and annotations will be added adjacent that clearly explain the modification, including accurate dimensions locating the feature. If additional drawings are required, the drawings shall be prepared using the specified electronic file format applying, the same graphic standards specified for original drawings. The title block and drawing border to be used for any new final record drawings shall be identical to that used to create the contract drawings. Modifications, additions and corrections to the contract drawings shall be made to the electronic AutoCAD file(s). The Contractor shall be furnished with the original contract drawing files in the AutoCAD software format currently in use by PWD-ME. The electronic files shall be supplied on compact disc, (CD). The Contractor shall provide all computer software and hardware necessary to prepare final record drawing set. The Contracting Officer shall review final record drawing set for accuracy and return them to the Contractor for required corrections, changes, additions, and deletions.

a. Provide Record Drawings (CADD) in the following format:

- (1) As-built Layering; follow original drawing layer naming conventions followed by "-AB".
- (2) Deletions (Cyan) - Over-strike deleted graphic items (lines), lettering in notes and leaders.

- (3) Additions (Cyan) - Added items, lettering in notes and leaders.
  - (4) Special (Cyan) - Items requiring special information, coordination, or special detailing or detailing notes.
  - (5) The Contractor shall furnish the contract record drawing files in the AutoCAD software format currently in use by PWD-ME.
- b. Drawing files modified for as-built condition shall be renamed by adding an underscore and the letters "AB" to the end of the existing file name. Drawing files where no modifications were required shall be renamed by adding an underscore and the letters "RD" to the end of the existing file name.
  - c. When final revisions have been completed to the record drawing set, add the wording "RECORD DRAWINGS / AS-BUILT CONDITIONS" followed by the name of the Contractor in letters at least 3/16 inch high in the lower left hand corner of the cover sheet drawing. Mark all other contract drawings in the same location and manner as either "Record Drawing" denoting no revisions on the sheet or "As built Drawing" denoting modifications, additions or corrections have been made to the drawing sheet. Modify the revision block to reflect either "record drawing", for no changes or "as built drawing", for changes and date for submittal.
  - d. Within 20 working days after Government approval of all of the working record drawings for a phase of work, prepare the CADD electronic files for that phase of work and submit for Government review and approval. The Government will promptly return one set of prints annotated with any necessary corrections. Within 10 working days revise the CADD files accordingly at no additional cost and submit one set of final prints for the completed phase of work to the Government.
  - e. Within 20 working days of substantial completion of all phases of work, submit the final record drawing package for the entire project. Submit one set of electronic files on compact disc, read-only memory (CD-ROM), one set of mylars and one set of the approved working record drawings. They must be complete in all details and identical in form and function to the contract drawing files supplied by the Government. Any transactions or adjustments necessary to accomplish this is the responsibility of the Contractor. The Government reserves the right to reject any drawing files it deems incompatible with the customer's CADD system. Paper prints, drawing files and storage media submitted will become the property of the Government upon final approval. Failure to submit final record drawing files and marked prints as specified will be cause for withholding any payment due the Contractor under this contract. Approval and acceptance of final record drawings must be accomplished before final payment is made to the Contractor.

#### 1.3.2 As-Built Record of Equipment and Materials

Furnish one copy of preliminary record of equipment and materials used on the project 15 working days prior to final inspection. This preliminary submittal will be reviewed and returned 5 working days after final inspection with Government comments. Submit two sets of final record of equipment and materials 10 working days after final

inspection. Key the designations to the related area depicted on the contract drawings. List the following data:

RECORD OF DESIGNATED EQUIPMENT AND MATERIALS DATA  
 RECORD OF DESIGNATED EQUIPMENT AND MATERIALS DATA

Description	Specification Section	Manufacturer and Catalog, Model, and Serial Number	Composition and Size	Where Used
-------------	--------------------------	---	-------------------------	---------------

1.3.3 Final Approved Shop Drawings

Furnish final approved project shop drawings 30 calendar days after transfer of the completed facility.

1.3.4 Construction Contract Specifications

Furnish final record (as-built) construction contract specifications, including modifications thereto, 30 calendar days after transfer of the completed facility.

1.3.5 Real Property Equipment

Furnish a list of installed equipment furnished under this contract. Include all information usually listed on manufacturer's name plate. In the "EQUIPMENT-IN-PLACE LIST" include, as applicable, the following for each piece of equipment installed: description of item, location (by room number), model number, serial number, capacity, name and address of manufacturer, name and address of equipment supplier, condition, spare parts list, manufacturer's catalog, and warranty. Furnish a draft list at time of transfer. Furnish the final list 30 calendar days after transfer of the completed facility.

1.4 SPARE PARTS DATA

Indicate manufacturer's name, part number, nomenclature, and stock level required for maintenance and repair. List those items that may be standard to the normal maintenance of the system.

Supply 2 items of each part for spare parts inventory. Provision of spare parts does not relieve the Contractor of responsibilities listed under the contract guarantee provisions.

1.5 PREVENTATIVE MAINTENANCE

Submit Preventative Maintenance and Condition Monitoring (Predictive Testing) and Inspection schedules with instructions that state when systems should be retested.

Define the anticipated length of each test, test apparatus, number of personnel identified by responsibility, and a testing validation procedure permitting the record operation capability requirements within the schedule. Provide a signoff blank for the Contractor and Contracting Officer for each test feature; e.g., gpm, rpm, psi. Include a remarks column for the testing validation procedure referencing operating limits of time, pressure, temperature, volume, voltage, current, acceleration, velocity, alignment, calibration, adjustments, cleaning, or special system notes. Delineate procedures for

preventative maintenance, inspection, adjustment, lubrication and cleaning necessary to minimize corrective maintenance and repair.

Repair requirements must inform operators how to check out, troubleshoot, repair, and replace components of the system. Include electrical and mechanical schematics and diagrams and diagnostic techniques necessary to enable operation and troubleshooting of the system after acceptance.

#### 1.6 CERTIFICATION OF EPA DESIGNATED ITEMS

Submit the Certification of EPA Designated Items as required by FAR 52.223-9, "Certification and Estimate of Percentage of Recovered Material Content for EPA Designated Items". Include on the certification form the following information: project name, project number, Contractor name, license number, Contractor address, and certification. The certification will read as follows and be signed and dated by the Contractor. "I hereby certify the information provided herein is accurate and that the requisition/procurement of all materials listed on this form comply with current EPA standards for recycled/recovered materials content. The following exemptions may apply to the non-procurement of recycled/recovered content materials:

- 1) The product does not meet appropriate performance standards;
- 2) The product is not available within a reasonable time frame;
- 3) The product is not available competitively (from two or more sources); and
- 4) The product is only available at an unreasonable price (compared with a comparable non-recycled content product)."

#### 1.7 WARRANTY MANAGEMENT

##### 1.7.1 Warranty Management Plan

Develop a warranty management plan which contains information relevant to the clause Warranty of Construction. At least 30 days before the planned pre-warranty conference, submit the warranty management plan for Government approval. Include within the warranty management plan all required actions and documents to assure that the Government receives all warranties to which it is entitled. The plan must be in narrative form and contain sufficient detail to render it suitable for use by future maintenance and repair personnel, whether tradesmen, or of engineering background, not necessarily familiar with this contract. The term "status" as indicated below must include due date and whether item has been submitted or was accomplished. Warranty information made available during the construction phase must be submitted to the Contracting Officer for approval prior to each monthly pay estimate. Assemble approved information in a binder and turn over to the Government upon acceptance of the work. The construction warranty period will begin on the date of project acceptance and continue for the full product warranty period. A joint 4 month and 9 month warranty inspection will be conducted, measured from time of acceptance, by the Contractor, Contracting Officer and the Customer Representative. Include within the warranty management plan, but not limited to, the following:

- a. Roles and responsibilities of all personnel associated with the warranty process, including points of contact and telephone numbers within the organizations of the Contractors,

subcontractors, manufacturers or suppliers involved.

- b. Listing and status of delivery of all Certificates of Warranty for extended warranty items, to include roofs, HVAC balancing, pumps, motors, transformers, and for all commissioned systems such as fire protection and alarm systems, sprinkler systems, lightning protection systems, etc.
- c. A list for each warranted equipment, item, feature of construction or system indicating:
  - 1. Name of item.
  - 2. Model and serial numbers.
  - 3. Location where installed.
  - 4. Name and phone numbers of manufacturers or suppliers.
  - 5. Names, addresses and telephone numbers of sources of spare parts.
  - 6. Warranties and terms of warranty. Include one-year overall warranty of construction. Items which have extended warranties must be indicated with separate warranty expiration dates.
  - 7. Cross-reference to warranty certificates as applicable.
  - 8. Starting point and duration of warranty period.
  - 9. Summary of maintenance procedures required to continue the warranty in force.
  - 10. Cross-reference to specific pertinent Operation and Maintenance manuals.
  - 11. Organization, names and phone numbers of persons to call for warranty service.
  - 12. Typical response time and repair time expected for various warranted equipment.
- d. The Contractor's plans for attendance at the 4 and 9 month post-construction warranty inspections conducted by the Government.
- e. Procedure and status of tagging of all equipment covered by extended warranties.
- f. Copies of instructions to be posted near selected pieces of equipment where operation is critical for warranty and/or safety reasons.

#### 1.7.2 Performance Bond

The Contractor's Performance Bond must remain effective throughout the construction period.

- a. In the event the Contractor fails to commence and diligently pursue any construction warranty work required, the Contracting Officer will have the work performed by others, and after completion of the work, will charge the remaining construction warranty funds of expenses incurred by the Government while performing the work, including, but not limited to administrative expenses.
- b. In the event sufficient funds are not available to cover the construction warranty work performed by the Government at the Contractor's expense, the Contracting Officer will have the right to recoup expenses from the bonding company.
- c. Following oral or written notification of required construction

warranty repair work, respond in a timely manner. Written verification will follow oral instructions. Failure of the Contractor to respond will be cause for the Contracting Officer to proceed against the Contractor.

1.7.3 Pre-Warranty Conference

Prior to contract completion, and at a time designated by the Contracting Officer, meet with the Contracting Officer to develop a mutual understanding with respect to the requirements of this section. Communication procedures for Contractor notification of construction warranty defects, priorities with respect to the type of defect, reasonable time required for Contractor response, and other details deemed necessary by the Contracting Officer for the execution of the construction warranty will be established/reviewed at this meeting. In connection with these requirements and at the time of the Contractor's quality control completion inspection, furnish the name, telephone number and address of a licensed and bonded company which is authorized to initiate and pursue construction warranty work action on behalf of the Contractor. This point of contact will be located within the local service area of the warranted construction, be continuously available, and be responsive to Government inquiry on warranty work action and status. This requirement does not relieve the Contractor of any of its responsibilities in connection with other portions of this provision.

1.7.4 Warranty Tags

At the time of installation, tag each warranted item with a durable, oil and water resistant tag approved by the Contracting Officer. Attached each tag with a copper wire and spray with a silicone waterproof coating. The date of acceptance and the QC signature must remain blank until the project is accepted for beneficial occupancy. Show the following information on the tag.

- a. Type of product/material\_\_\_\_\_.
- b. Model number\_\_\_\_\_.
- c. Serial number\_\_\_\_\_.
- d. Contract number\_\_\_\_\_.
- e. Warranty period\_\_\_\_\_ from\_\_\_\_\_ to\_\_\_\_\_.
- f. Inspector's signature\_\_\_\_\_.
- g. Construction Contractor\_\_\_\_\_.
- h. Address\_\_\_\_\_.
- i. Telephone number\_\_\_\_\_.
- j. Warranty contact\_\_\_\_\_.
- k. Address\_\_\_\_\_.
- l. Telephone number\_\_\_\_\_.
- m. Warranty response time priority code\_\_\_\_\_.

WARNING - PROJECT PERSONNEL TO PERFORM ONLY OPERATIONAL MAINTENANCE RECORD OF DESIGNATED EQUIPMENT AND MATERIALS DATA DURING THE WARRANTY PERIOD.

1.8.1 [Enter Appropriate Subpart Title Here]

1.9 1.9 OPERATION AND MAINTENANCE MANUALS

Submit 6 copies of the project operation and maintenance manuals 30 calendar days prior to testing the system involved. Update and resubmit data for final approval no later than 30 calendar days prior to contract completion.

1.9.1 Configuration

Operation and Maintenance Manuals must be consistent with the manufacturer's standard brochures, schematics, printed instructions, general operating procedures, and safety precautions. Bind information in manual format and grouped by technical sections. Test data must be legible and of good quality. Light-sensitive reproduction techniques are acceptable provided finished pages are clear, legible, and not subject to fading. Pages for vendor data and manuals must have 0.3937-inch holes and be bound in 3-ring, loose-leaf binders. Organize data by separate index and tabbed sheets, in a loose-leaf binder. Binder must lie flat with printed sheets that are easy to read. Caution and warning indications must be clearly labeled.

1.9.2 Training and Instruction

Submit classroom and field instructions in the operation and maintenance of systems equipment where required by the technical provisions. These services must be directed by the Contractor, using the manufacturer's factory-trained personnel or qualified representatives. Contracting Officer will be given 7 calendar days written notice of scheduled instructional services. Instructional materials belonging to the manufacturer or vendor, such as lists, static exhibits, and visual aids, must be made available to the Contracting Officer.

1.10 CLEANUP

Provide final cleaning in accordance with ASTM E1971 and submit two copies of the listing of completed final clean-up items. Leave premises "broom clean." Comply with GS-37 for general purpose cleaning and bathroom cleaning. Use only nonhazardous cleaning materials, including natural cleaning materials, in the final cleanup. Clean interior and exterior glass surfaces exposed to view; remove temporary labels, stains and foreign substances; polish transparent and glossy surfaces; vacuum carpeted and soft surfaces. Clean equipment and fixtures to a sanitary condition.

Replace filters of operating equipment and comply with the Indoor Air Quality (IAQ) Management Plan. Clean debris from roofs, gutters, downspouts and drainage systems. Sweep paved areas and rake clean landscaped areas. Remove waste and surplus materials, rubbish and construction facilities from the site. Recycle, salvage, and return construction and demolition waste from project in accordance with the Waste Management Plan. Promptly and legally transport and dispose of any trash. Do not burn, bury, or otherwise dispose of trash on the project site.

1.10.1 [Enter Appropriate Subpart Title Here]

1.11 NOT USED

1.12 NOT USED

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

-- End of Section --

## SECTION 01 78 23

## OPERATION AND MAINTENANCE DATA

07/06

## 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 E1971 (2005; R 2011) Stewardship for the Cleaning of Commercial and Institutional Buildings

## 1.2 SUBMISSION OF OPERATION AND MAINTENANCE DATA

Submit Operation and Maintenance (O&M) Data specifically applicable to this contract and a complete and concise depiction of the provided equipment, product, or system, stressing and enhancing the importance of system interactions, troubleshooting, and long-term preventative maintenance and operation. The subcontractors must compile and prepare data and deliver to the Contractor prior to the training of Government personnel. The Contractor must compile and prepare aggregate O&M data including clarifying and updating the original sequences of operation to as-built conditions.

Organize and present information in sufficient detail to clearly explain O&M requirements at the system, equipment, component, and subassembly level. Include an index preceding each submittal. Submit in accordance with this section and Section 01 33 00 SUBMITTAL PROCEDURES.

## 1.2.1 Package Quality

Documents must be fully legible. Poor quality copies and material with hole punches obliterating the text or drawings will not be accepted.

## 1.2.2 Package Content

Data package content shall be as shown in the paragraph titled "Schedule of Operation and Maintenance Data Packages." Comply with the data package requirements specified in the individual technical sections, including the content of the packages and addressing each product, component, and system designated for data package submission, except as follows.

## 1.2.3 Changes to Submittals

Manufacturer-originated changes or revisions to submitted data must be furnished by the Contractor if a component of an item is so affected subsequent to acceptance of the O&M Data. Submit changes, additions, or revisions required by the Contracting Officer for final acceptance of submitted data within 30 calendar days of the notification of this change requirement.

#### 1.2.4 Review and Approval

The Government must verify that the systems and equipment provided meet the requirements of the Contract documents and design intent, particularly as they relate to functionality, energy performance, water performance, maintainability, sustainability, system cost, indoor environmental quality, and local environmental impacts. This work is in addition to the normal review procedures for O&M data.

#### 1.2.5 O&M Database

Develop a database from the O&M manuals that contains the information required to start a preventative maintenance program.

### 1.3 TYPES OF INFORMATION REQUIRED IN O&M DATA PACKAGES

#### 1.3.1 Operating Instructions

Include specific instructions, procedures, and illustrations for the following phases of operation for the installed model and features of each system:

##### 1.3.1.1 Safety Precautions

List personnel hazards and equipment or product safety precautions for all operating conditions.

##### 1.3.1.2 Operator Prestart

Include procedures required to install, set up, and prepare each system for use.

##### 1.3.1.3 Startup, Shutdown, and Post-Shutdown Procedures

Provide narrative description for Startup, Shutdown and Post-shutdown operating procedures including the control sequence for each procedure.

##### 1.3.1.4 Normal Operations

Provide narrative description of Normal Operating Procedures. Include Control Diagrams with data to explain operation and control of systems and specific equipment.

##### 1.3.1.5 Emergency Operations

Include Emergency Procedures for equipment malfunctions to permit a short period of continued operation or to shut down the equipment to prevent further damage to systems and equipment. Include Emergency Shutdown Instructions for fire, explosion, spills, or other foreseeable contingencies. Provide guidance and procedures for emergency operation of all utility systems including required valve positions, valve locations and zones or portions of systems controlled.

##### 1.3.1.6 Operator Service Requirements

Include instructions for services to be performed by the operator such as lubrication, adjustment, inspection, and recording gage readings.

#### 1.3.1.7 Environmental Conditions

Include a list of Environmental Conditions (temperature, humidity, and other relevant data) that are best suited for the operation of each product, component or system. Describe conditions under which the item equipment should not be allowed to run.

#### 1.3.2 Preventive Maintenance

Include the following information for preventive and scheduled maintenance to minimize corrective maintenance and repair for the installed model and features of each system. Include potential environmental and indoor air quality impacts of recommended maintenance procedures and materials.

##### 1.3.2.1 Lubrication Data

Include preventative maintenance lubrication data, in addition to instructions for lubrication provided under paragraph titled "Operator Service Requirements":

- a. A table showing recommended lubricants for specific temperature ranges and applications.
- b. Charts with a schematic diagram of the equipment showing lubrication points, recommended types and grades of lubricants, and capacities.
- c. A Lubrication Schedule showing service interval frequency.

##### 1.3.2.2 Preventive Maintenance Plan and Schedule

Include manufacturer's schedule for routine preventive maintenance, inspections, tests and adjustments required to ensure proper and economical operation and to minimize corrective maintenance. Provide manufacturer's projection of preventive maintenance work-hours on a daily, weekly, monthly, and annual basis including craft requirements by type of craft.

For periodic calibrations, provide manufacturer's specified frequency and procedures for each separate operation.

##### 1.3.2.3 Cleaning Recommendations

Provide environmentally preferable cleaning recommendations in accordance with ASTM E1971.

#### 1.3.3 Corrective Maintenance (Repair)

Include manufacturer's recommended procedures and instructions for correcting problems and making repairs for the installed model and features of each system. Include potential environmental and indoor air quality impacts of recommended maintenance procedures and materials.

##### 1.3.3.1 Troubleshooting Guides and Diagnostic Techniques

Include step-by-step procedures to promptly isolate the cause of typical malfunctions. Describe clearly why the checkout is performed and what conditions are to be sought. Identify tests or inspections and test

equipment required to determine whether parts and equipment may be reused or require replacement.

#### 1.3.3.2 Wiring Diagrams and Control Diagrams

Wiring diagrams and control diagrams shall be point-to-point drawings of wiring and control circuits including factory-field interfaces. Provide a complete and accurate depiction of the actual job specific wiring and control work. On diagrams, number electrical and electronic wiring and pneumatic control tubing and the terminals for each type, identically to actual installation configuration and numbering.

#### 1.3.3.3 Maintenance and Repair Procedures

Include instructions and a list of tools required to repair or restore the product or equipment to proper condition or operating standards.

#### 1.3.3.4 Removal and Replacement Instructions

Include step-by-step procedures and a list required tools and supplies for removal, replacement, disassembly, and assembly of components, assemblies, subassemblies, accessories, and attachments. Provide tolerances, dimensions, settings and adjustments required. Instructions shall include a combination of text and illustrations.

#### 1.3.3.5 Spare Parts and Supply Lists

Include lists of spare parts and supplies required for maintenance and repair to ensure continued service or operation without unreasonable delays. Special consideration is required for facilities at remote locations. List spare parts and supplies that have a long lead-time to obtain.

#### 1.3.4 Corrective Maintenance Work-Hours

Include manufacturer's projection of corrective maintenance work-hours including requirements by type of craft. Corrective maintenance that requires completion or participation of the equipment manufacturer shall be identified and tabulated separately.

#### 1.3.5 Appendices

Provide information required below and information not specified in the preceding paragraphs but pertinent to the maintenance or operation of the product or equipment. Include the following:

##### 1.3.5.1 Product Submittal Data

Provide a copy of all SD-03 Product Data submittals required in the applicable technical sections.

##### 1.3.5.2 Manufacturer's Instructions

Provide a copy of all SD-08 Manufacturer's Instructions submittals required in the applicable technical sections.

##### 1.3.5.3 O&M Submittal Data

Provide a copy of all SD-10 Operation and Maintenance Data submittals required in the applicable technical sections.

#### 1.3.5.4 Parts Identification

Provide identification and coverage for all parts of each component, assembly, subassembly, and accessory of the end items subject to replacement. Include special hardware requirements, such as requirement to use high-strength bolts and nuts. Identify parts by make, model, serial number, and source of supply to allow reordering without further identification. Provide clear and legible illustrations, drawings, and exploded views to enable easy identification of the items. When illustrations omit the part numbers and description, both the illustrations and separate listing shall show the index, reference, or key number that will cross-reference the illustrated part to the listed part. Parts shown in the listings shall be grouped by components, assemblies, and subassemblies in accordance with the manufacturer's standard practice. Parts data may cover more than one model or series of equipment, components, assemblies, subassemblies, attachments, or accessories, such as typically shown in a master parts catalog

#### 1.3.5.5 Warranty Information

List and explain the various warranties and clearly identify the servicing and technical precautions prescribed by the manufacturers or contract documents in order to keep warranties in force. Include warranty information for primary components such as the compressor of air conditioning system.

#### 1.3.5.6 Personnel Training Requirements

Provide information available from the manufacturers that is needed for use in training designated personnel to properly operate and maintain the equipment and systems.

#### 1.3.5.7 Testing Equipment and Special Tool Information

Include information on test equipment required to perform specified tests and on special tools needed for the operation, maintenance, and repair of components.

#### 1.3.5.8 Testing and Performance Data

Include completed prefunctional checklists, functional performance test forms, and monitoring reports. Include recommended schedule for retesting and blank test forms.

#### 1.3.5.9 Contractor Information

Provide a list that includes the name, address, and telephone number of the General Contractor and each Subcontractor who installed the product or equipment, or system. For each item, also provide the name address and telephone number of the manufacturer's representative and service organization that can provide replacements most convenient to the project site. Provide the name, address, and telephone number of the product, equipment, and system manufacturers.

### 1.4 TYPES OF INFORMATION REQUIRED IN CONTROLS O&M DATA PACKAGES

Include Data Package 5 and the following for control systems:

- a. Narrative description on how to perform and apply all functions, features, modes, and other operations, including unoccupied operation, seasonal changeover, manual operation, and alarms.  
Include detailed technical manual for programming and customizing control loops and algorithms.
- b. Full as-built sequence of operations.
- c. Copies of all checkout tests and calibrations performed by the Contractor (not Cx tests).
- d. Electronic File:
  - (1) Assemble each manual into a composite electronically indexed file in PDF format. Provide HDD's, DVD's or CD's as appropriate, so that each one contains all maintenance and record files, and also the Project Record Documents and Training Videos, of the entire program for this facility.
  - (2) Name each indexed document file in composite electronic index with applicable item name. Include a complete electronically linked operation and maintenance directory.
  - (3) Link the index to separate files within the composite of files. Book mark maintenance and record files, that have a Table of Contents, according to the Table of Contents]

#### 1.5 SCHEDULE OF OPERATION AND MAINTENANCE DATA PACKAGES

Furnish the O&M data packages specified in individual technical sections. The required information for each O&M data package is as follows:

##### 1.5.1 Data Package 1

- a. Safety precautions
- b. Cleaning recommendations
- c. Maintenance and repair procedures
- d. Warranty information
- e. Contractor information
- f. Spare parts and supply list

##### 1.5.2 Data Package 2

- a. Safety precautions
- b. Normal operations
- c. Environmental conditions
- d. Lubrication data
- e. Preventive maintenance plan and schedule

- f. Cleaning recommendations
- g. Maintenance and repair procedures
- h. Removal and replacement instructions
- i. Spare parts and supply list
- j. Parts identification
- k. Warranty information
- l. Contractor information

#### 1.5.3 Data Package 3

- a. Safety precautions
- b. Operator prestart
- c. Startup, shutdown, and post-shutdown procedures
- d. Normal operations
- e. Emergency operations
- f. Environmental conditions
- g. Lubrication data
- h. Preventive maintenance plan and schedule
- i. Cleaning recommendations
- j. Troubleshooting guides and diagnostic techniques
- k. Wiring diagrams and control diagrams
- l. Maintenance and repair procedures
- m. Removal and replacement instructions
- n. Spare parts and supply list
- o. Product submittal data
- p. O&M submittal data
- q. Parts identification
- r. Warranty information
- s. Testing equipment and special tool information
- t. Testing and performance data

- u. Contractor information

#### 1.5.4 Data Package 4

- a. Safety precautions
- b. Operator prestart
- c. Startup, shutdown, and post-shutdown procedures
- d. Normal operations
- e. Emergency operations
- f. Operator service requirements
- g. Environmental conditions
- h. Lubrication data
- i. Preventive maintenance plan and schedule
- j. Cleaning recommendations
- k. Troubleshooting guides and diagnostic techniques
- l. Wiring diagrams and control diagrams
- m. Maintenance and repair procedures
- n. Removal and replacement instructions
- o. Spare parts and supply list
- p. Corrective maintenance man-hours
- q. Product submittal data
- r. O&M submittal data
- s. Parts identification
- t. Warranty information
- u. Personnel training requirements
- v. Testing equipment and special tool information
- w. Testing and performance data
- x. Contractor information

#### 1.5.5 Data Package 5

- a. Safety precautions

- b. Operator prestart
- c. Start-up, shutdown, and post-shutdown procedures
- d. Normal operations
- e. Environmental conditions
- f. Preventive maintenance plan and schedule
- g. Troubleshooting guides and diagnostic techniques
- h. Wiring and control diagrams
- i. Maintenance and repair procedures
- j. Removal and replacement instructions
- k. Spare parts and supply list
- l. Product submittal data
- m. Manufacturer's instructions
- n. O&M submittal data
- o. Parts identification
- p. Testing equipment and special tool information
- q. Warranty information
- r. Testing and performance data
- s. Contractor information

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

-- End of Section --

SECTION 02 41 00

DEMOLITION  
10/06

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 SAFETY ENGINEERS (ASSE/SAFE)

ASSE/SAFE A10.6 (2006) Safety Requirements for Demolition Operations

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1 (2003) Safety -- Safety and Health Requirements

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

40 CFR 61 National Emission Standards for Hazardous Air Pollutants

1.2 GENERAL REQUIREMENTS

Do not begin demolition or deconstruction until authorization is received from the Contracting Officer. The work of this section is to be performed in a manner that maximizes salvage and recycling of materials. The work includes demolition, , salvage of identified items and materials, and removal of resulting rubbish and debris. Remove rubbish and debris from Government property daily, unless otherwise directed. Store materials that cannot be removed daily in areas specified by the Contracting Officer. In the interest of occupational safety and health, perform the work in accordance with EM 385-1-1, Section 23, Demolition, and other applicable Sections.

1.3 SUBMITTALS

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

SD-01 Preconstruction Submittals

Existing Conditions; G

SD-07 Certificates

Demolition Plan; G

Notifications; G

Proposed salvage, demolition, and removal procedures for approval before work is started.

SD-11 Closeout

Submittals

Receipts

Receipts or bills of lading, as specified.

#### 1.4 REGULATORY AND SAFETY REQUIREMENTS

Comply with federal, state, and local hauling and disposal regulations.

In addition to the requirements of the "Contract Clauses," conform to the safety requirements contained in ASSE/SAFE A10.6.

##### 1.4.1 Notifications

###### 1.4.1.1 General Requirements

Furnish timely notification of demolition and renovation projects to Federal, State, regional, and local authorities in accordance with 40 CFR 61, Subpart M. Notify the State's environmental protection agency local air pollution control district/agency and the Contracting Officer in writing 10 working days prior to the commencement of work in accordance with 40 CFR 61, Subpart M.

##### 1.4.2 Receipts

Submit a shipping receipt or bill of lading for all containers of ozone depleting substance (ODS) shipped to the Defense Depot, Richmond, Virginia.

#### 1.5 DUST AND DEBRIS CONTROL

Prevent the spread of dust to occupied portions of the building and avoid the creation of a nuisance or hazard in the surrounding area. Do not use water if it results in hazardous or objectionable conditions such as, but not limited to, ice, flooding, or pollution. Sweep pavements as often as necessary to control the spread of debris that may result in foreign object damage potential to aircraft.

#### 1.6 PROTECTION

##### 1.6.1 Existing Conditions Documentation

Before beginning any demolition or deconstruction work, survey the site and examine the drawings and specifications to determine the extent of the work. Record existing conditions in the presence of the Contracting Officer showing the condition of structures and other facilities adjacent to areas of alteration or removal. Photographs sized 4 inch will be acceptable as a record of existing conditions. Include in the record the elevation of the top of foundation walls, finish floor elevations, possible conflicting electricla conduits, plumbing lines, alarms systes, the location and extent of existing cracks and other damage and description of surface conditions that exist prior to before starting work. It is the Contractor's responsibility to verify and document all required outages which will be required during the course

of work, and to note these outages on the record document.

#### 1.6.2 Items to Remain in Place

Take necessary precautions to avoid damage to existing items to remain in place, to be reused, or to remain the property of the Government. Repair or replace damaged items as approved by the Contracting Officer. Coordinate the work of this section with all other work indicated. Construct and maintain shoring, bracing, and supports as required. Ensure that structural elements are not overloaded. Increase structural supports or add new supports as may be required as a result of any cutting, removal, deconstruction, or demolition work performed under this contract. Do not overload structural elements. Provide new supports and reinforcement for existing construction weakened by demolition, deconstruction, or removal work. Repairs, reinforcement, or structural replacement require approval by the Contracting Officer prior to performing such work.

#### 1.6.3 Existing Construction Limits and Protection

Do not disturb existing construction beyond the extent indicated or necessary for installation of new construction. Provide temporary shoring and bracing for support of building components to prevent settlement or other movement. Provide protective measures to control accumulation and migration of dust and dirt in all work areas. Remove snow, dust, dirt, and debris from work areas daily.

#### 1.6.4 Utility Service

Maintain existing utilities indicated to stay in service and protect against damage during demolition and deconstruction operations. Prior to start of work, utilities serving each area of alteration or removal will be shut off by the Government and disconnected and sealed by the Contractor.

#### 1.6.5 Facilities

Protect electrical and mechanical services and utilities. Where removal of existing utilities and pavement is specified or indicated, provide approved barricades, temporary covering of exposed areas, and temporary services or connections for electrical and mechanical utilities. Floors, roofs, walls, columns, pilasters, and other structural components that are designed and constructed to stand without lateral support or shoring, and are determined to be in stable condition, must remain standing without additional bracing, shoring, or lateral support until demolished or deconstructed, unless directed otherwise by the Contracting Officer. Ensure that no elements determined to be unstable are left unsupported and place and secure bracing, shoring, or lateral supports as may be required as a result of any cutting, removal, deconstruction, or demolition work performed under this contract.

#### 1.6.6 Protection of Personnel

Before, during and after the demolition work the Contractor shall continuously evaluate the condition of the structure being demolished and take immediate action to protect all personnel working in and around the project site. No area, section, or component of floors, roofs, walls, columns, pilasters, or other structural element will be allowed to be left standing without sufficient bracing, shoring, or lateral support to prevent collapse or failure while workmen remove debris or perform other

work in the immediate area.

1.7 BURNING

The use of burning at the project site for the disposal of refuse and debris will not be permitted.

1.8 RELOCATIONS

Perform the removal and reinstallation of relocated items as indicated with workmen skilled in the trades involved. Items to be relocated which are damaged by the Contractor shall be repaired or replaced with new undamaged items as approved by the Contracting Officer.

1.9 REQUIRED DATA

Prepare a Demolition Plan. Include in the plan procedures for careful removal and disposition of materials specified to be salvaged, coordination with other work in progress, a disconnection schedule of utility services, a detailed description of methods and equipment to be used for each operation and of the sequence of operations. Identify components and materials to be salvaged for reuse or recycling with reference to paragraph Existing Facilities to be removed. Append tracking forms for all removed materials indicating type, quantities, condition, destination, and end use. Coordinate with Waste Management Plan. Provide procedures for safe conduct of the work in accordance with EM 385-1-1. Plan shall be approved by Contracting Officer prior to work beginning.

1.10 ENVIRONMENTAL PROTECTION

Comply with the Environmental Protection Agency requirements specified.

1.11 USE OF EXPLOSIVES

Use of explosives will not be permitted.

1.12 AVAILABILITY OF WORK AREAS

Areas in which the work is to be accomplished will be available in accordance with the following schedule be as directed by the Contracting Officer.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 EXISTING FACILITIES TO BE REMOVED

Inspect and evaluate existing structures on site for reuse. Existing construction scheduled to be removed for reuse shall be disassembled. Dismantled and removed materials are to be separated, set aside, and prepared as specified, and stored or delivered to a collection point for reuse, remanufacture, recycling, or other disposal, as specified. Materials shall be designated for reuse on site whenever possible.

3.1.1 Utilities and Related Equipment

#### 3.1.1.1 General Requirements

Do not interrupt existing utilities serving occupied or used facilities, except when authorized in writing by the Contracting Officer. Do not interrupt existing utilities serving facilities occupied and used by the Government except when approved in writing and then only after temporary utility services have been approved and provided. Do not begin demolition or deconstruction work until all utility disconnections have been made. Shut off and cap utilities for future use, as indicated.

#### 3.1.1.2 Disconnecting Existing Utilities

Remove existing utilities, as indicated and terminate in a manner conforming to the nationally recognized code covering the specific utility and approved by the Contracting Officer. When utility lines are encountered that are not indicated on the drawings, the Contracting Officer shall be notified prior to further work in that area. Remove meters and related equipment and deliver to a location in accordance with instructions of the Contracting Officer.

#### 3.1.2 Concrete

Saw concrete along straight lines to a depth of a minimum 2 inch. Make each cut in walls perpendicular to the face and in alignment with the cut in the opposite face. Break out the remainder of the concrete provided that the broken area is concealed in the finished work, and the remaining concrete is sound. At locations where the broken face cannot be concealed, grind smooth or saw cut entirely through the concrete.

#### 3.1.3 Miscellaneous Metal

Salvage shop-fabricated items such as access doors and frames, steel gratings, metal ladders, wire mesh partitions, metal railings, metal windows and similar items as whole units. Salvage light-gage and cold-formed metal framing, such as steel studs, steel trusses, metal gutters, roofing and siding, metal toilet partitions, toilet accessories and similar items. Scrap metal shall become the Contractor's property. Recycle scrap metal as part of demolition and deconstruction operations. Provide separate containers to collect scrap metal and transport to a scrap metal collection or recycling facility, in accordance with the Waste Management Plan.

### 3.2 DISPOSITION OF MATERIAL

#### 3.2.1 Title to Materials

Except for salvaged items specified in related Sections, and for materials or equipment scheduled for salvage, all materials and equipment removed and not reused or salvaged, shall become the property of the Contractor and shall be removed from Government property. Title to materials resulting from demolition and deconstruction, and materials and equipment to be removed, is vested in the Contractor upon approval by the Contracting Officer of the Contractor's demolition, deconstruction, and removal procedures, and authorization by the Contracting Officer to begin demolition and deconstruction. The Government will not be responsible for the condition or loss of, or damage to, such property after contract award. Showing for sale or selling materials and equipment on site is prohibited.

### 3.2.2 Reuse of Materials and Equipment

Remove and store materials and equipment indicated to be reused or relocated to prevent damage, and reinstall as the work progresses.

### 3.2.3 Salvaged Materials and Equipment

Remove materials and equipment that are indicated to be removed by the Contractor and that are to remain the property of the Government, and deliver to a storage site on the shipyard.

- a. Salvage items and material to the maximum extent possible.
- b. Store all materials salvaged for the Contractor as approved by the Contracting Officer and remove from Government property before completion of the contract. Material salvaged for the Contractor shall not be sold on the site.
- c. Remove salvaged items to remain the property of the Government in a manner to prevent damage, and packed or crated to protect the items from damage while in storage or during shipment. Items damaged during removal or storage must be repaired or replaced to match existing items. Properly identify the contents of containers. Deliver the items indicated reserved as property of the Government to areas on the Shipyard as directed by the Contracting Officer.
- d. Remove historical items in a manner to prevent damage. Deliver the following historical items to the Government for disposition: Corner stones, contents of corner stones, and document boxes wherever located on the site.

### 3.2.4 Unsalvageable and Non-Recyclable Material

Dispose of unsalvageable and non-recyclable combustible material off the site.

## 3.3 CLEANUP

Remove debris and rubbish from the project site. Remove and transport the in a manner that prevents spillage on streets or adjacent areas. Apply local regulations regarding hauling and disposal.

## 3.4 DISPOSAL OF REMOVED MATERIALS

### 3.4.1 Regulation of Removed Materials

Dispose of debris, rubbish, scrap, and other nonsalvageable materials resulting from removal operations with all applicable federal, state and local regulations off Government property. Storage of removed materials on the project site is prohibited.

### 3.4.2 Burning on Government Property

Burning of materials removed from demolished and deconstructed structures will not be permitted on Government property.

### 3.4.3 Removal to Spoil Areas on Government Property

Transport noncombustible materials removed from demolition and deconstruction structures to designated spoil areas on Government property.

3.4.4 Removal from Government Property

Transport waste materials removed from demolished and deconstructed structures, except waste soil, from Government property for legal disposal. Dispose of waste soil as directed.

3.5 REUSE OF SALVAGED ITEMS

Recondition salvaged materials and equipment designated for reuse before installation. Replace items damaged during removal and salvage operations or restore them as necessary to usable condition.

-- End of Section --

## SECTION 03 30 04

## CONCRETE FOR MINOR STRUCTURES

04/06

## 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.

## ACI INTERNATIONAL (ACI)

ACI 308.1	(2011) Specification for Curing Concrete
ACI 318/318R	(2011, Errata 1 2011, Errata 2 2012, Errata 3-4 2013) Building Code Requirements for Structural Concrete and Commentary
ACI 347	(2004, Errata 2012) Guide to Formwork for Concrete

## ASTM INTERNATIONAL (ASTM)

ASTM A 615/A 615M	(2014) Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
ASTM C 143/C 143M	(2012) Standard Test Method for Slump of Hydraulic-Cement Concrete
ASTM C 150	(2012) Standard Specification for Portland Cement
ASTM C 171	(2007) Standard Specification for Sheet Materials for Curing Concrete
ASTM C 172	(2014) Standard Practice for Sampling Freshly Mixed Concrete
ASTM C 231	(2010) Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method
ASTM C 260	(2010a) Standard Specification for Air-Entraining Admixtures for Concrete
ASTM C 309	(2011) Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete
ASTM C 33	(2013) Standard Specification for Concrete Aggregates
ASTM C 494/C 494M	(2013) Standard Specification for Chemical

Admixtures for Concrete

ASTM C 595	(2013) Standard Specification for Blended Hydraulic Cements
ASTM C 618	(2012a) Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete
ASTM C 685/C 685M	(2011) Concrete Made by Volumetric Batching and Continuous Mixing
ASTM C 94/C 94M	(2014) Standard Specification for Ready-Mixed Concrete

U.S. ARMY CORPS OF ENGINEERS (USACE)

COE CRD-C 400	(1963) Requirements for Water for Use in Mixing or Curing Concrete
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1.2 DEFINITIONS

1.2 Polymer Modified Portland Cement Mortar

A two-component polymer modified cementitious patching material to be used to resurface demolished concrete.

1.3 SUBMITTALS

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

SD-03 Product Data

Air-Entraining Admixture; G  
Water-Reducing or Retarding Admixture; G  
Curing Materials; G  
Reinforcing Steel; G  
Polymer Modified Portland Cement Mortar (PMC); G

Manufacturer's literature is available from suppliers which demonstrates compliance with applicable specifications for the above materials.

Batching and Mixing Equipment

Batching and mixing equipment will be accepted on the basis of manufacturer's data which demonstrates compliance with the applicable specifications.

Conveying and Placing Concrete

The methods and equipment for transporting, handling, depositing, and consolidating the concrete shall be submitted prior to the first concrete placement.

Formwork design shall be submitted prior to the first concrete placement.

#### SD-06 Test Reports

Polymer Modified Portland Cement Mortar (PMC) Strength (cylinder);  
G

#### Aggregates

Aggregates will be accepted on the basis of certificates of compliance and test reports that show the material(s) meets the quality and grading requirements of the specifications under which it is furnished.

#### Concrete Mixture Proportions

Ten days prior to placement of concrete, the contractor shall submit the mixture proportions that will produce concrete of the quality required. Applicable test reports shall be submitted to verify that the concrete mixture proportions selected will produce concrete of the quality specified.

#### SD-07 Certificates

##### Cementitious Materials

Certificates of compliance attesting that the concrete materials meet the requirements of the specifications shall be submitted in accordance with the Special Clause "CERTIFICATES OF COMPLIANCE".

Cementitious material will be accepted on the basis of a manufacturer's certificate of compliance, accompanied by mill test reports that the material(s) meet the requirements of the specification under which it is furnished.

##### Aggregates

Aggregates will be accepted on the basis of certificates of compliance and tests reports that show the material(s) meet the quality and grading requirements of the specifications under which it is furnished.

#### SD-08 Manufacturer's Instruction

Polymer Modified Portland Cement Mortar (PMC); G

Submit for mixing and applying.

### 1.4 DESIGN AND PERFORMANCE REQUIREMENTS

#### 1.4.1 Strength

Acceptance test results will be the average strengths of two specimens tested at 28 days (90 days if pozzolan is used). The strength of the concrete will be considered satisfactory so long as the average of three consecutive acceptance test results equal or exceed the specified compressive strength,  $f'c$ , and no individual acceptance test result

falls below f'c by more than 500 psi.

#### 1.4.2 Construction Tolerances

A Class "C" finish shall apply to all surfaces except those specified to receive a Class "D" finish. A Class "D" finish shall apply to all surfaces which will be permanently concealed after construction. The surface requirements for the classes of finish required shall be as specified in ACI 347.

#### 1.4.3 Concrete Mixture Proportions

Concrete mixture proportions shall be the responsibility of the Contractor. Mixture proportions shall include the dry weights of cementitious material(s); the nominal maximum size of the coarse aggregate; the specific gravities, absorptions, and saturated surface-dry weights of fine and coarse aggregates; the quantities, types, and names of admixtures; and quantity of water per cubic yard of concrete. All materials included in the mixture proportions shall be of the same type and from the same source as will be used on the project. Specified compressive strength f'c shall be 4000 psi at 28 days (90 days if pozzolan is used). The maximum nominal size coarse aggregate shall be 3/4 inch, in accordance with ACI 318/318R. The air content shall be between 4.5 and 7.5 percent. The slump shall be between 2 and 5 inches. The maximum water cement ratio shall be 0.40.

#### 1.4.4 Polymer Modified Portland Cement Mortar (PMC)

##### 1.4.4.1 Materials Manufacturer

Company specializing in manufacturing the products specified in this Section with minimum of ten years of documented experience.

##### 1.4.4.2 Approved Applicator

Company specializing in concrete repair with minimum of five years documented experience and is an approved applicator for the materials manufactured. The applicator shall provide the Contracting Officer with a minimum of 3 job references where they have successfully patched deteriorated concrete with PMC patches.

#### 1.5 DELIVERY, STORAGE, AND HANDLING

Inspect materials delivered to site for damage, unload and store with a minimum of handling. Deliver epoxy resin components and aggregate materials in original sealed containers and store in dry covered areas at temperatures below 90 degrees F. Remove from job site unused mixed materials which have reached end of working or pot life.

#### 1.6 WEATHER LIMITATIONS

Halt work when weather conditions detrimentally affect the quality of patching or bonding concrete. Apply epoxy resin materials only when the contact surfaces are completely dry and if the atmospheric and surface temperature ranges are suitable for the specified epoxy material. Follow manufacturer's instructions for weather conditions and temperature ranges.

#### 1.7 TRAFFIC CONTROL

Do not permit vehicular or heavy equipment traffic on the pavement in the

work area during the curing period. At the end of the curing period, light local traffic may be permitted on the pavement if approved by the Contracting Officer.

## 1.8 EQUIPMENT

Use a container recommended by the epoxy manufacturer as the mixing vessel. Use a power drive (air or spark-proof) propeller type blade for mixing except that hand mixing may be used for small batches. Use equipment specified by epoxy manufacturer for field mixing of aggregates and epoxy resin.

## PART 2 PRODUCTS

### 2.1 MATERIALS

#### 2.1.1 Cementitious Materials

Cementitious materials shall conform to the appropriate specifications listed:

##### 2.1.1.1 Portland Cement

ASTM C 150, Type I, IA, II, or IIA

##### 2.1.1.2 Blended Hydraulic Cement

##### 2.1.1.3 Pozzolan ISMS, or IPMS

Pozzolan shall conform to ASTM C 618, Class C or F, including requirements of Tables 1A and 2A.

#### 2.1.2 Aggregates

Fine and coarse aggregates shall meet the quality and grading requirements of ASTM C 33 Class Designations 4M or better "".

#### 2.1.3 Admixtures

Admixtures to be used, when required or approved, shall comply with the appropriate specification listed. Chemical admixtures that have been in storage at the project site for longer than 6 months or that have been subjected to freezing shall be retested at the expense of the contractor at the request of the Contracting Officer and shall be rejected if test results are not satisfactory.

##### 2.1.3.1 Air-Entraining Admixture

Air-entraining admixture shall meet the requirements of ASTM C 260.

##### 2.1.3.2 Accelerating Admixture

Accelerators shall meet the requirements of ASTM C 494/C 494M, Type C or E.

##### 2.1.3.3 Water-Reducing or Retarding Admixture

Water-reducing or retarding admixture shall meet the requirements of ASTM C 494/C 494M, Type A, B, or D.

2.1.4 Water

Water for mixing and curing shall be fresh, clean, potable, and free from injurious amounts of oil, acid, salt, or alkali, except that unpotable water may be used if it meets the requirements of COE CRD-C 400.

2.1.5 Polymer Modified Portland Cement Mortar (PMC)

The physical characteristics of the cured Polymer Modified Portland Cement Mortar (without aggregate) shall be:

Characteristic	Test Method	Requirements of Limits
Bond Strength	ASTM C 882	2200 psi min. @ 28 days
Tensile Strength	ASTM C 496	750 psi min. @ 28
days Compressive Strength	ASTM C 109/C 109M	6000 psi min. @ 28
days Flexural Strength	ASTM C 78	1900 psi min. @ 28
days		

2.1.6 Reinforcing Steel

Reinforcing steel bar shall conform to the requirements of ASTM A 615/A 615M, Grade 60. Welded steel wire fabric shall conform to the requirements of ASTM A 185/A 185M. Details of reinforcement not shown shall be in accordance with ACI 318/318R, Chapters 7 and 12.

2.1.7 Formwork

The design and engineering of the formwork as well as its construction, shall be the responsibility of the Contractor.

2.1.8 Form Coatings

Forms for exposed surfaces shall be coated with a nonstaining form oil, which shall be applied shortly before concrete is placed.

2.1.9 Curing Materials

Curing materials shall conform to the following requirements.

2.1.9.1 Impervious Sheet Materials

Impervious sheet materials, ASTM C 171, type optional, except polyethylene film, if used, shall be white opaque.

2.1.9.2 Membrane-Forming Curing Compound

ASTM C 309, Type 1-D or 2, Class A.

PART 3 EXECUTION

3.1 PREPARATION

### 3.1.1 General

Construction joints shall be prepared to expose coarse aggregate, and the surface shall be clean, damp, and free of laitance. Ramps and walkways, as necessary, shall be constructed to allow safe and expeditious access for concrete and workmen. Snow, ice, standing or flowing water, loose particles, debris, and foreign matter shall have been removed. Earth foundations shall be satisfactorily compacted. Spare vibrators shall be available. The entire preparation shall be accepted by the Government prior to placing.

### 3.1.2 Embedded Items

Reinforcement shall be secured in place; joints, anchors, and other embedded items shall have been positioned. Internal ties shall be arranged so that when the forms are removed the metal part of the tie will be not less than 2 inches from concrete surfaces permanently exposed to view or exposed to water on the finished structures. Embedded items shall be free of oil and other foreign matters such as loose coatings or rust, paint, and scale. The embedding of wood in concrete will be permitted only when specifically authorized or directed. All equipment needed to place, consolidate, protect, and cure the concrete shall be at the placement site and in good operating condition.

### 3.1.3 Formwork Installation

Forms shall be properly aligned, adequately supported, and mortar-tight. The form surfaces shall be smooth and free from irregularities, dents, sags, or holes when used for permanently exposed faces. All exposed joints and edges shall be chamfered, unless otherwise indicated.

### 3.1.4 Polymer Modified Portland Cement Mortar

#### 3.1.4.1 Marking Areas to be Resurfaced

The Contractor shall mark up all areas to be resurfaced in the presence of the Contracting Officer prior to proceeding with resurfacing.

#### 3.1.4.2 Surfaces for Concrete Resurfacing

In areas to be resurfaced, remove existing concrete such that areas to be patched are sound, unweathered clean and free of dirt, sealants, oils and other contaminants. Once sound concrete is found, removal shall continue when more than 25% of a reinforcing bar circumference is exposed. When more than 25% of a reinforcing bar circumference is exposed continue removal to a depth of 3/4-inch around the bar.

Removal shall be accomplished by mechanical means with hand held, high frequency chipping hammers weighting not more than 30 pounds or other approved hand tools.

### 3.1.5 Production of Concrete

#### 3.1.5.1 Ready-Mixed Concrete

Ready-mixed concrete shall conform to ASTM C 94/C 94M except as otherwise specified.

#### 3.1.5.2 Concrete Made by Volumetric Batching and Continuous Mixing

Concrete made by volumetric batching and continuous mixing shall conform to ASTM C 685/C 685M.

### 3.1.5.3 Batching and Mixing Equipment

The contractor shall have the option of using an on-site batching and mixing facility. The facility shall provide sufficient batching and mixing equipment capacity to prevent cold joints. The method of measuring materials, batching operation, and mixer shall be submitted for review.

## 3.2 CONVEYING AND PLACING CONCRETE

Conveying and placing concrete shall conform to the following requirements.

### 3.2.1 General

Concrete placement shall not be permitted when weather conditions prevent proper placement and consolidation without approval. When concrete is mixed and/or transported by a truck mixer, the concrete shall be delivered to the site of the work and discharge shall be completed within 1-1/2 hours. Concrete shall be conveyed from the mixer to the forms as rapidly as practicable by methods which prevent segregation or loss of ingredients.

Concrete shall be in place and consolidated within 15 minutes after discharge from the mixer. Concrete shall be deposited as close as possible to its final position in the forms and be so regulated that it may be effectively consolidated in horizontal layers 18 inches or less in thickness with a minimum of lateral movement. The placement shall be carried on at such a rate that the formation of cold joints will be prevented.

### 3.2.2 Consolidation

Each layer of concrete shall be consolidated by rodding, spading, or internal vibrating equipment. Internal vibration shall be systematically accomplished by inserting the vibrator through the fresh concrete in the layer below at a uniform spacing over the entire area of placement. The distance between insertions shall be approximately 1.5 times the radius of action of the vibrator and overlay the adjacent, just-vibrated area by a few inches. The vibrator shall penetrate rapidly to the bottom of the layer and at least 6 inches into the layer below, if such a layer exists. It shall be held stationary until the concrete is consolidated and then withdrawn slowly at the rate of about 3 inches per second.

### 3.2.3 Cold-Weather Requirements

No concrete placement shall be made when the ambient temperature is below 35 degrees F or if the ambient temperature is below 40 degrees F and falling. Suitable covering and other means as approved shall be provided for maintaining the concrete 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 shall not be mixed with the concrete to prevent freezing. Any concrete damaged by freezing shall be removed and replaced at the expense of the contractor.

### 3.2.4 Hot-Weather Requirements

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, provisions for windbreaks, shading, fog spraying, or covering with a light-colored material shall be made in advance of placement, and such protective measures shall be taken as quickly as finishing operations will allow.

### 3.3 FORM REMOVAL

Forms shall not be removed before the expiration of 24 hours after concrete placement except where otherwise specifically authorized. Supporting forms and shoring shall not be removed until the concrete has cured for at least 5 days. When conditions on the work are such as to justify the requirement, forms will be required to remain in place for longer periods.

### 3.4 FINISHING

#### 3.4.1 General

No finishing or repair will be done when either the concrete or the ambient temperature is below 50 degrees F.

#### 3.4.2 Finishing Formed Surfaces

All fins and loose materials shall be removed, and surface defects including tie holes shall be filled. All honeycomb areas and other defects shall be repaired. All unsound concrete shall be removed from areas to be repaired. Surface defects greater than 1/2 inch in diameter and holes left by removal of tie rods in all surfaces not to receive additional concrete shall be reamed or chipped and filled with dry-pack mortar. The prepared area shall be brush-coated with an approved epoxy resin or latex bonding compound or with a neat cement grout after dampening and filled with mortar or concrete. The cement used in mortar or concrete for repairs to all surfaces permanently exposed to view shall be a blend of Portland cement and white cement so that the final color when cured will be the same as adjacent concrete.

#### 3.4.3 Finishing Unformed Surfaces

All unformed surfaces that are not to be covered by additional concrete or backfill shall be float finished to elevations shown, unless otherwise specified. Surfaces to receive additional concrete or backfill shall be brought to the elevations shown and left as a true and regular surface. Exterior surfaces shall be sloped for drainage unless otherwise shown. Joints shall be carefully made with a jointing tool. Unformed surfaces shall be finished to a tolerance of 3/8 inch for a float finish and 5/16 inch for a trowel finish as determined by a 10 foot straightedge placed on surfaces shown on the plans to be level or having a constant slope. Finishing shall not be performed while there is excess moisture or bleeding water on the surface. No water or cement shall be added to the surface during finishing.

##### 3.4.3.1 Float Finish

Surfaces to be float finished shall be screeded and darbied or bullfloated to eliminate the ridges and to fill in the voids left by the screed. In addition, the darby or bullfloat shall fill all surface

voids and only slightly embed the coarse aggregate below the surface of the fresh concrete. When the water sheen disappears and the concrete will support a person's weight without deep imprint, floating should be completed.

Floating should embed large aggregates just beneath the surface, remove slight imperfections, humps, and voids to produce a plane surface, compact the concrete, and consolidate mortar at the surface.

#### 3.4.4 PMC Mortar

Prime surfaces with epoxy resin binder. Scrub prime coat into surface with a stiff bristle brush. Make coating approximately 20 mils thick. Place PMC mortar while primer is still tacky. Apply at a thickness recommended by the manufacturer. Work mortar into place and consolidate thoroughly so that contact surfaces are wetted by the mortar. Finish surface of mortar to the required texture. Do not feather edge PMC mortar onto adjacent surfaces.

#### 3.5 CURING AND PROTECTION

Beginning immediately after placement and continuing for at least 7 days, all concrete shall be cured and protected from premature drying, extremes in temperature, rapid temperature change, freezing, mechanical damage, and exposure to rain or flowing water. All materials and equipment needed for adequate curing and protection shall be available and at the site of the placement prior to the start of concrete placement. Preservation of moisture for concrete surfaces not in contact with forms shall be accomplished by one of the following methods:

- a. Continuous sprinkling or ponding.
- b. Application of absorptive mats or fabrics kept continuously wet.
- c. Application of sand kept continuously wet.
- d. Application of impervious sheet material conforming to ASTM C 171.
- e. Application of membrane-forming curing compound conforming to ASTM C 309, Type 1-D, on surfaces permanently exposed to view and Type 2 on other surfaces shall be accomplished in accordance with manufacturer's instructions.

The preservation of moisture for concrete surfaces placed against wooden forms shall be accomplished by keeping the forms continuously wet for 7 days. If forms are removed prior to end of the required curing period, other curing methods shall be used for the balance of the curing period. During the period of protection removal, the temperature of the air in contact with the concrete shall not be allowed to drop more than 25 degrees F within a 24 hour period.

Cure PMC materials in accordance with manufacturer's recommendations.

#### 3.6 TESTS AND INSPECTIONS

##### 3.6.1 General

The individuals who sample and test concrete as required in this specification shall have demonstrated a knowledge and ability to perform

the necessary test procedures equivalent to the ACI minimum guidelines for certification of Concrete Field Testing Technicians, Grade I.

### 3.6.2 Inspection Details and Frequency of Testing

#### 3.6.2.1 Preparations for Placing

Foundation or construction joints, forms, and embedded items shall be inspected in sufficient time prior to each concrete placement by the Contractor to certify that it is ready to receive concrete.

#### 3.6.2.2 Air Content

Air content shall be checked at least once during each shift that concrete is placed. Samples shall be obtained in accordance with ASTM C 172 and tested in accordance with ASTM C 231.

#### 3.6.2.3 Slump

Slump shall be checked once during each shift that concrete is produced. Samples shall be obtained in accordance with ASTM C 172 and tested in accordance with ASTM C 143/C 143M.

#### 3.6.2.4 Consolidation and Protection

The Contractor shall ensure that the concrete is properly consolidated, finished, protected, and cured.

### 3.6.3 Action Required

#### 3.6.3.1 Placing

The placing foreman shall not permit placing to begin until he has verified that an adequate number of acceptable vibrators, which are in working order and have competent operators, are available. Placing shall not be continued if any pile is inadequately consolidated.

#### 3.6.3.2 Air Content

Whenever a test result is outside the specification limits, the concrete shall not be delivered to the forms and an adjustment shall be made to the dosage of the air-entrainment admixture.

#### 3.6.3.3 Slump

Whenever a test result is outside the specification limits, the concrete shall not be delivered to the forms and an adjustment should be made in the batch weights of water and fine aggregate. The adjustments are to be made so that the water-cement ratio does not exceed that specified in the submitted concrete mixture proportion.

### 3.6.4 Reports

The results of all tests and inspections conducted at the project site shall be reported informally at the end of each shift and in writing weekly and shall be delivered within 3 days after the end of each weekly reporting period. See Section 01 45 00.00 20 CONTRACTOR QUALITY CONTROL.

-- End of Section --

SECTION 05 12 00

STRUCTURAL STEEL

07/06

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 INSTITUTE OF STEEL CONSTRUCTION (AISC)

AISC 201	(2006) AISC Certification Program for Structural Steel Fabricators
AISC 303	(2010) Code of Standard Practice for Steel Buildings and Bridges
AISC 325	(2011) Manual of Steel Construction
AISC 326	(2009) Detailing for Steel Construction
AISC 348	(2000) Structural Joints Using ASTM A325 or A490 Bolts
AISC 360	(2010) Specification for Structural Steel Buildings, with Commentary
AISC 810	(1997) Erection Bracing of Low-Rise Structural Steel Frames/Fisher and West
AISC FCD	(1995a) Quality Certification Program Description

AMERICAN WELDING SOCIETY (AWS)

AWS A2.4	(2012) Standard Symbols for Welding, Brazing and Nondestructive Examination
AWS D1.1/D1.1M	(2012; Errata 2011) Structural Welding Code - Steel

ASME INTERNATIONAL (ASME)

ASME B46.1	(2009) Surface Texture (Surface Roughness, Waviness and Lay)
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ASTM INTERNATIONAL (ASTM)

ASTM A 307	(2012) Standard Specification for Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength
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ASTM A 325	(2010) Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength
ASTM A 36/A 36M	(2012) Standard Specification for Carbon Structural Steel
ASTM A 490	(2012) Standard Specification for Structural Bolts, Alloy Steel, Heat Treated, 150 ksi Minimum Tensile Strength
ASTM A 500	(20010a) Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes
ASTM A 53/A 53M	(2012) Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
ASTM A 563	(2007a) Standard Specification for Carbon and Alloy Steel Nuts
ASTM A 6/A 6M	(2012) Standard Specification for General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling
ASTM A 992/A 992M	(2011) Standard Specification for Structural Steel Shapes
ASTM C 1107/C 1107M	(2007) Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink)
ASTM C 827	(2001a; R 2005) Change in Height at Early Ages of Cylindrical Specimens from Cementitious Mixtures
ASTM F 1554	(2007a, E 2011) Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength
ASTM F 436	(2011) Hardened Steel Washers
ASTM F 844	(2007a) Washers, Steel, Plain (Flat), Unhardened for General Use
ASTM F 959	(2009) Compressible-Washer-Type Direct Tension Indicators for Use with Structural Fasteners

THE SOCIETY FOR PROTECTIVE COATINGS (SSPC)

SSPC PA 1	(2000; E 2004) Shop, Field, and Maintenance Painting
SSPC PS 13.01	(1982; E 2004) Epoxy-Polyamide Painting System

SSPC Paint 25 (1997; 2004e1) Paint Specification No. 25 Zinc Oxide, Alkyd, Linseed Oil Primer for Use Over Hand Cleaned Steel Type I and Type II

SSPC SP 3 (2004e1) Power Tool Cleaning

SSPC SP 6 (2000; E 2004) Commercial Blast Cleaning

## 1.2 SYSTEM DESCRIPTION

Provide the structural steel system, including shop primer, complete and ready for use. Structural steel systems including design, materials, installation, workmanship, fabrication, assembly, erection, inspection, disassembly, transportation to a designated storage area on the shipyard, quality control, and testing shall be provided in accordance with AISC 316 and AISC 317 except as modified in this contract.

## 1.3 MODIFICATIONS TO REFERENCES

Conform to AISC 316, AISC 317, AISC 360, AISC 303, AISC 348, and AISC 325, except as modified in this section.

## 1.4 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-02 Shop Drawings

Erection Plan, including description of temporary supports; G

Fabrication drawings including description of connections; G

### SD-03 Product Data

Shop primer

Welding electrodes and rods

Load indicator washers

Non-Shrink Grout

Include test report for Class B primer.

### SD-06 Test Reports

Class B coating

Bolts, nuts, and washers

Supply the certified manufacturer's mill reports which clearly show the applicable ASTM mechanical and chemical requirements together with the actual test results for the supplied fasteners.

SD-07 Certificates

Steel; G

Bolts, nuts, and washers

AISC Quality Certification; G

Overhead, top running crane rail beam

Welding procedures and qualifications; G

1.5 AISC QUALITY CERTIFICATION

Work shall be fabricated in an AISC certified Category Sbd fabrication plant.

1.6 QUALITY ASSURANCE

1.6.1 Drawing Requirements

Submit fabrication drawings for approval prior to fabrication. Prepare in accordance with AISC 326, AISC 316 and AISC 317. Fabrication drawings shall not be reproductions of contract drawings. Include complete information for the fabrication and erection of the structure's components, including the location, type, and size of bolts, welds, member sizes and lengths, connection details, blocks, copes, and cuts. Use AWS A2.4 standard welding symbols. Member substitutions of details shown on the contract drawings shall be clearly highlighted on the fabrication drawings. Explain the reasons for any deviations from the contract drawings.

1.6.2 Certifications

1.6.2.1 Erection Plan

Submit for record purposes. Indicate the sequence of erection, temporary shoring and bracing, and a detailed sequence of welding, including each welding procedure required.

Indicate a sequence of disassembly that clearly indicates all bolts and other items that must be removed prior to removal of module or component of the structure. The disassembly sequence plan shall also include disassembly of gantry cranes, retractable roof components, and electrical and mechanical items. The plan shall also include requirements for the installation of temporary bracing and tie down requirements required for the picking, transporting and storage of the various structures.

1.6.2.2 Welding Procedures and Qualifications

Prior to welding, submit certification for each welder stating the type of welding and positions qualified for, the code and procedure qualified under, date qualified, and the firm and individual certifying the qualification tests.

Conform to all requirements specified in AWS D1.1/D1.1M.

PART 2 PRODUCTS

2.1 STEEL

2.1.1 Structural

Steel ASTM A 36/A 36M.

2.1.2 High-Strength Structural Steel

2.1.2.1 Low-Alloy Steel

ASTM A 572/A 572M , Grade 50. ASTM A 992/A 992M Grade 50.

2.1.3 Structural Shapes for Use in Building

Framing Wide flange shapes, ASTM A 992/A 992M.

2.1.4 Structural Steel

Tubing ASTM A 500, Grade B

(46 ksi)

2.1.5 Steel Pipe

ASTM A 53/A 53M, Type E or S, Grade B, weight class STD (Standard) unless noted otherwise on the drawings.

2.2 BOLTS, NUTS, AND WASHERS

Provide the following unless indicated otherwise.

2.2.1 Structural Steel

All bolts, nuts, and washers shall be hot dipped galvanized unless otherwise noted.

2.2.1.1 Bolts

ASTM A 307, Grade A; ASTM A 325, Type 1. The bolt heads and the nuts of the supplied fasteners must be marked with the manufacturer's identification mark, the strength grade and type specified by ASTM specifications.

2.2.1.2 Nuts

ASTM A 563, Grade and Style for applicable ASTM bolt standard recommended.

2.2.1.3 Washers

ASTM F 844 washers for ASTM A 307 bolts, and ASTM F 436 washers for ASTM A 325.

2.2.2 High-Strength Structural Steel and Structural Steel Tubing

2.2.2.1 Bolts

ASTM A 325, Type 1.

2.2.2.2 Nuts

ASTM A 563, Grade and Style as specified in the applicable ASTM bolt standard.

2.2.2.3 Washers

ASTM F 436, plain carbon steel.

2.2.3 Foundation Anchorage

2.2.3.1 Anchor Bolts

Expansion type anchor bolts shall have a minimum yield stress (Fy) of 120 ksi, a minimum ultimate stress of 150 ksi, and shall be in accordance with ASTM A-722. The entire assembly (bolt, nuts, anchor, coupler, plates and all hardware) shall be hot dipped galvanized. The annular space around the bolt shall be grouted after the bolt is pre-tensioned, tested, and accepted. Centralizers shall be used if required to ensure uniform grout cover around the bolt. The grout shall be installed with grout tubes and installed from the base of the hole first in a continual placement until clean grout is coming out of the bearing plate and/or the air hole provided in the bearing plate to bleed off the air.

The anchor bolts are permanent. When the structures are removed from the drydock, the stop type couplers shall be packed with grease and sealed with a flush steel cap plug. The anchors shall be set to avoid water from ponding over the couplers.

The non-expansion type anchor bolts shall have a minimum yield stress (Fy) of 55 ksi, a minimum ultimate stress of 75 ksi and shall be in accordance with ASTM F-1554, Grade 55. The entire assembly (bolt, nuts, and all hardware) shall be hot dipped galvanized.

2.2.4 Load Indicator Washers

ASTM F 959.

2.3 STRUCTURAL STEEL ACCESSORIES

2.3.1 Welding Electrodes and

Rods AWS D1.1/D1.1M.

2.3.2 Non-Shrink Grout

ASTM C 1107/C 1107M, with no ASTM C 827 shrinkage. Grout shall be nonmetallic.

2.3.3 Welded Shear Stud

Connectors AWS D1.1/D1.1M.

2.4 SHOP PRIMER

SSPC Paint 25, (alkyd primer) or SSPC PS 13.01 epoxy-polyamide, green primer (Form 150) type 1, except provide a Class B coating in accordance with AISC 316 and AISC 317 for slip critical joints. Primer shall conform to Federal, State, and local VOC regulations. If flash rusting occurs, re-clean the surface prior to application of primer.

## 2.5 FABRICATION

### 2.5.1 Markings

Prior to erection, members shall be identified by a painted erection mark. Connecting parts assembled in the shop for reaming holes in field connections shall be match marked with scratch and notch marks. Do not locate erection markings on areas to be welded. Do not locate match markings in areas that will decrease member strength or cause stress concentrations.

### 2.5.2 Shop Primer

Shop prime structural steel, except as modified herein, in accordance with SSPC PA 1. Do not prime steel surfaces embedded in concrete, galvanized surfaces, surfaces to receive epoxy coatings, or surfaces within 0.5 inch of the toe of the welds prior to welding (except surfaces on which metal decking is to be welded). Slip critical surfaces shall be primed with a Class B coating. Prior to assembly, prime surfaces which will be concealed or inaccessible after assembly. Do not apply primer in foggy or rainy weather; when the ambient temperature is below 45 degrees F or over 95 degrees F; or when the primer may be exposed to temperatures below 40 degrees F within 48 hours after application, unless approved otherwise by the Contracting Officer.

#### 2.5.2.1 Cleaning

SSPC SP 6, except steel exposed in spaces above ceilings, attic spaces, furred spaces, and chases that will be hidden to view in finished construction may be cleaned to SSPC SP 3 when recommended by the shop primer manufacturer. Maintain steel surfaces free from rust, dirt, oil, grease, and other contaminants through final assembly.

#### 2.5.2.2 Primer

Apply primer to a minimum dry film thickness of 2.0 mil except provide the Class B coating for slip critical joints in accordance with the coating manufacturer's recommendations. Repair damaged primed surfaces with an additional coat of primer.

### 2.5.3 Surface Finishes

ASME B46.1 maximum surface roughness of 125 for pin, pinholes, and sliding bearings, unless indicated otherwise.

## 2.6 DRAINAGE HOLES

Adequate drainage holes shall be drilled to eliminate water traps. Hole diameter shall be 1/2 inch and location shall be indicated on the detail drawings. Hole size and location shall not affect the structural integrity.

### PART 3 EXECUTION

#### 3.1 FABRICATION

Fabrication shall be in accordance with the applicable provisions of AISC 316. Fabrication and assembly shall be done in the shop to the greatest extent possible. The fabricating plant shall be certified under the AISC FCD for Category Conventional Steel Building Structures structural steelwork.

Compression joints depending on contact bearing shall have a surface roughness not in excess of 500 micro inch as determined by ASME B46.1, and ends shall be square within the tolerances for milled ends specified in ASTM A 6/A 6M.

Structural steelwork, except surfaces of steel to be encased in concrete, surfaces to be field welded, surfaces to be fireproofed, and contact surfaces of friction-type high-strength bolted connections shall be prepared for painting in accordance with endorsement "P" of AISC FCD and primed with the specified paint.

Shop splices of members between field splices will be permitted only where indicated on the Contract Drawings. Splices not indicated require the approval of the Contracting Officer.

##### 3.1.1 Fit-up Between Modules

The fabrication shall utilize a jig or template in the fabrication of the propulsor work enclosure and high rise modules to ensure proper fit-up and bearing of the connection plates between modules. Each module shall be connected to the next module in the shop and checked for fit-up between modules prior to acceptance and shipping.

#### 3.2 ERECTION

- a. Erection of structural steel, except as indicated in item b. below, shall be in accordance with the applicable provisions of AISC 316. Erection plan shall be reviewed, stamped and sealed by a licensed structural engineer.
- b. For low-rise structural steel buildings ( 60 feet tall or less and a maximum of 2 stories), the erection plan shall conform to AISC 303 and the structure shall be erected in accordance with AISC 810.

Provide for drainage in structural steel. After final positioning of steel members, provide full bearing under base plates and bearing plates using nonshrink grout. Place nonshrink grout in accordance with the manufacturer's instructions.

##### 3.2.1 STORAGE

Material shall be stored out of contact with the ground in such manner and location as will minimize deterioration.

#### 3.3 CONNECTIONS

Except as modified in this section, connections not detailed shall be designed in accordance with AISC 360 . Build connections into existing work. Do not tighten anchor bolts set in concrete with impact torque wrenches. Punch, subpunch and ream, or drill bolt holes perpendicular to the surface of the member. Holes shall not be cut or enlarged by burning. Bolts, nuts, and washers shall be clean of dirt and rust, and lubricated immediately prior to installation.

### 3.3.1 Common Grade Bolts

ASTM A 307 bolts shall be tightened to a "snug tight" fit. "Snug tight" is the tightness that exists when plies in a joint are in firm contact. If firm contact of joint plies cannot be obtained with a few impacts of an impact wrench, or the full effort of a man using a spud wrench, contact the Contracting Officer for further instructions.

### 3.3.2 High-Strength Bolts

ASTM A 325 and ASTM A 490 bolts shall be fully tensioned to 70 percent of their minimum tensile strength. Provide load indicator bolts or washers in all ASTM A 325M bolted connections, except provide only load indicator washers for slip critical connections. Direct tension indicator tightening, shall be the only acceptable tightening methods. Use only direct tension indicator tightening for slip critical connections. Bolts shall be installed in connection holes and initially brought to a snug tight fit. After the initial tightening procedure, bolts shall then be fully tensioned, progressing from the most rigid part of a connection to the free edges.

#### 3.3.2.1 Installation of Load Indicator Washers (LIW)

ASTM F 959. Where possible, the LIW shall be installed under the bolt head and the nut shall be tightened. If the LIW is installed adjacent to the turned element, provide a flat ASTM F 436 washer between the LIW and nut when the nut is turned for tightening, and between the LIW and bolt head when the bolt head is turned for tightening. In addition to the LIW, provide flat ASTM F 436 washers under both the bolt head and nut when ASTM A 490 bolts are used.

### 3.4 GAS CUTTING

Use of gas-cutting torch in the field for correcting fabrication errors will not be permitted on any major member in the structural framing. Use of a gas cutting torch will be permitted on minor members not under stress only after approval has been obtained from the Contracting Officers.

### 3.5 WELDING

AWS D1.1/D1.1M. Grind exposed welds smooth as indicated. Provide AWS D1.1/D1.1M qualified welders, welding operators, and tackers.

The Contractor shall develop and submit the Welding Procedure Specifications (WPS) for all welding, including welding done using prequalified procedures. Prequalified procedures may be submitted for information only; however, procedures that are not prequalified shall be submitted for approval.

3.5.1 Removal of Temporary Welds, Run-Off Plates, and Backing

Strips Remove only from finished areas.

3.6 SHOP PRIMER REPAIR

Repair shop primer in accordance with the paint manufacturer's recommendation for surfaces damaged by handling, transporting, cutting, welding, or bolting.

3.6.1 Field Priming

Field priming of steel exposed to the weather, or located in building areas without HVAC for control of relative humidity. After erection, the field bolt heads and nuts, field welds, and any abrasions in the shop coat shall be cleaned and primed with paint of the same quality as that used for the shop coat.

3.7 FIELD QUALITY CONTROL

Perform field tests, and provide labor, equipment, and incidentals required for testing. The Contracting Officer shall be notified in writing of defective welds, bolts, nuts, and washers within 7 working days of the date of weld inspection.

3.7.1 Welds

3.7.1.1 Visual Inspection

AWS D1.1/D1.1M. Furnish the services of AWS-certified welding inspectors for fabrication and erection inspection and testing and verification inspections. Welding inspectors shall visually inspect and mark welds, including fillet weld end returns.

3.7.1.2 Nondestructive Testing

AWS D1.1/D1.1M. Test locations shall be selected by the Contracting Officer. If more than 20 percent of welds made by a welder contain defects identified by testing, then all welds made by that welder shall be tested by radiographic or ultrasonic testing, as approved by the Contracting Officer. When all welds made by an individual welder are required to be tested, magnetic particle testing shall be used only in areas inaccessible to either radiographic or ultrasonic testing. Retest defective areas after repair.

- a. Testing frequency: Provide the following types and number of tests:

<u>Test Type</u>	<u>Number of Tests</u>
Ultrasonic	100% groove and butt welds
Magnetic Particle	20% fillet welds
Dye Penetrant	20% fillet welds

- b. The welded connection between the propulsor enclosure roof support

beam identified as fracture critical and the butt welds at midspan of the high bay roof structure shall be ultrasonic tested.

### 3.7.2 Load Indicator Washers

#### 3.7.2.1 Load Indicator Washer Compression

Load indicator washers shall be tested in place to verify that they have been compressed sufficiently to provide the 0.015 inch gap when the load indicator washer is placed under the bolt head and the nut is tightened, and to provide the 0.005 inch gap when the load indicator washer is placed under the turned element, as required by ASTM F 959.

### 3.7.3 High-Strength Bolts

#### 3.7.3.1 Testing Bolt, Nut, and Washer Assemblies

Test a minimum of 3 bolt, nut, and washer assemblies from each mill certificate batch in a tension measuring device at the job site prior to the beginning of bolting start-up. Demonstrate that the bolts and nuts, when used together, can develop tension not less than the provisions specified in AISC 348, Table 4, depending on bolt size and grade. The bolt tension shall be developed by tightening the nut. A representative of the manufacturer or supplier shall be present to ensure that the fasteners are properly used, and to demonstrate that the fastener assemblies supplied satisfy the specified requirements.

#### 3.7.3.2 Inspection

Inspection procedures shall be in accordance with AISC 348 , Section 9. Confirm and report to the Contracting Officer that the materials meet the project specification and that they are properly stored. Confirm that the faying surfaces have been properly prepared before the connections are assembled. Observe the specified job site testing and calibration, and confirm that the procedure to be used provides the required tension.

Monitor the work to ensure the testing procedures are routinely followed on joints that are specified to be fully tensioned.

The Contractor shall inspect proper preparation, size, gaging location, and acceptability of welds; identification marking; operation and current characteristics of welding sets in use; and calibration of torque wrenches for high-strength bolts.

#### 3.7.3.3 Testing

The Government has the option to perform nondestructive tests on 5 percent of the installed bolts to verify compliance with pre-load bolt tension requirements. The nondestructive testing will be done in-place using an ultrasonic measuring device or any other device capable of determining in-place pre-load bolt tension. The test locations shall be selected by the Contracting Officer. If more than 10 percent of the bolts tested contain defects identified by testing, then all bolts used from the batch from which the tested bolts were taken, shall be tested. Retest new bolts after installation.

-- End of Section --

SECTION 05 50 00

METAL: MISCELLANEOUS AND FABRICATIONS

04/06

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.

ALUMINUM ASSOCIATION (AA)

AA DAF45 (2003; Reaffirmed 2009) Designation System for Aluminum Finishes

AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)

AISC 303 (2010) Code of Standard Practice for Steel Buildings and Bridges

AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE)

ASCE 7 (2010; Errata 2011; Supp 1 2013) Minimum Design Loads for Buildings and Other Structures

AMERICAN SOCIETY OF SAFETY ENGINEERS (ASSE/SAFE)

ASSE/SAFE A10.3 (2013) Operations - Safety Requirements for Powder Actuated Fastening Systems

AMERICAN WELDING SOCIETY (AWS)

AWS D1.1/D1.1M (2010; Errata 2011) Structural Welding Code - Steel

ASME INTERNATIONAL (ASME)

ASME B18.2.1 (2012; Errata 2013) Square and Hex Bolts and Screws (Inch Series)

ASME B18.2.2 (2010) Nuts for General Applications: Machine Screw Nuts, Hex, Square, Hex Flange, and Coupling Nuts (Inch Series)

ASME B18.21.1 (2009) Washers: Helical Spring-Lock, Tooth Lock, and Plain Washers (Inch Series)

ASME B18.21.2M (1999; R 2014) Lock Washers (Metric Series)

ASME B18.22M (1981; R 2010) Metric Plain Washers

ASME B18.6.2 (1998; R 2010) Slotted Head Cap Screws,

Square Head Set Screws, and Slotted  
Headless Set Screws: Inch Series

ASME B18.6.3 (2013) Machine Screws, Tapping Screws, and  
Machine Drive Screws (Inch Series)

ASTM INTERNATIONAL (ASTM)

ASTM A123/A123M (2013) Standard Specification for Zinc  
(Hot-Dip Galvanized) Coatings on Iron and  
Steel Products

ASTM A153/A153M (2009) Standard Specification for Zinc  
Coating (Hot-Dip) on Iron and Steel  
Hardware

ASTM A283/A283M (2013) Standard Specification for Low and  
Intermediate Tensile Strength Carbon Steel  
Plates

ASTM A307 (2012) Standard Specification for Carbon  
Steel Bolts and Studs, 60 000 PSI Tensile  
Strength

ASTM A36/A36M (2012) Standard Specification for Carbon  
Structural Steel

ASTM A467/A467M (2007; R 2012) Standard Specification for  
Machine Coil Chain

ASTM A47/A47M (1999; R 2014) Standard Specification for  
Ferritic Malleable Iron Castings

ASTM A475 (2003a; E 2009; R 2009) Standard  
Specification for Zinc-Coated Steel Wire  
Strand

ASTM A48/A48M (2003; R 2012) Standard Specification for  
Gray Iron Castings

ASTM A500/A500M (2013) Standard Specification for  
Cold-Formed Welded and Seamless Carbon  
Steel Structural Tubing in Rounds and  
Shapes

ASTM A53/A53M (2012) Standard Specification for Pipe,  
Steel, Black and Hot-Dipped, Zinc-Coated,  
Welded and Seamless

ASTM A653/A653M (2013) Standard Specification for Steel  
Sheet, Zinc-Coated (Galvanized) or  
Zinc-Iron Alloy-Coated (Galvannealed) by  
the Hot-Dip Process

ASTM A780/A780M (2009) Standard Practice for Repair of  
Damaged and Uncoated Areas of Hot-Dip  
Galvanized Coatings

ASTM A786/A786M	(2005; R 2009) Standard Specification for Hot-Rolled Carbon, Low-Alloy, High-Strength Low-Alloy, and Alloy Steel Floor Plates
ASTM A924/A924M	(2013) Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process
ASTM B108/B108M	(2012; E 2012) Standard Specification for Aluminum-Alloy Permanent Mold Castings
ASTM B209	(2010) Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate
ASTM B209M	(2010) Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate (Metric)
ASTM B221	(2013) Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes
ASTM B221M	(2013) Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric)
ASTM B26/B26M	(2012) Standard Specification for Aluminum-Alloy Sand Castings
ASTM C1513	(2013) Standard Specification for Steel Tapping Screws for Cold-Formed Steel Framing Connections
ASTM D1187/D1187M	(1997; E 2011; R 2011) Asphalt-Base Emulsions for Use as Protective Coatings for Metal
ASTM D2047	(2011) Static Coefficient of Friction of Polish-Coated Floor Surfaces as Measured by the James Machine
ASTM E488/E488M	(2010) Standard Test Methods for Strength of Anchors in Concrete and Masonry Elements
ASTM F1267	(2012) Metal, Expanded, Steel
MASTER PAINTERS INSTITUTE (MPI)	
MPI 79	(Oct 2009) Alkyd Anti-Corrosive Metal Primer
NATIONAL ASSOCIATION OF ARCHITECTURAL METAL MANUFACTURERS (NAAMM)	
NAAMM MBG 531	(2009) Metal Bar Grating Manual
NAAMM MBG 532	(2009) Heavy Duty Metal Bar Grating Manual

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 211 (2013) Standard for Chimneys, Fireplaces, Vents, and Solid Fuel-Burning Appliances

THE SOCIETY FOR PROTECTIVE COATINGS (SSPC)

SSPC SP 3 (1982; E 2004) Power Tool Cleaning

SSPC SP 6/NACE No.3 (2007) Commercial Blast Cleaning

1.2 SUBMITTALS

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

SD-02 Shop Drawings

Fabrication drawings of steel service platform, stair towers, propulsor enclosure, and roof structure; G

Fabrication drawings of structural steel door frames; G

Fabrication drawings of aluminum gangways including design calculations stamped by a P.E.; G

Access doors and panels, installation drawings; G

Cover plates and frames, installation drawings; G

Gratings and Roof Walkways, installation drawings; G

Handrails, installation drawings; G

Ladders with safety cage, installation drawings; G

Roof hatch; G

Submit fabrication drawings showing layout(s), connections to structural system, and anchoring details as specified in AISC 303.

Submit templates, erection and installation drawings indicating thickness, type, grade, class of metal, and dimensions. Show construction details, reinforcement, anchorage, and installation with relation to the building construction.

SD-03 Product Data

Access doors and panels

Cover plates and frames

Gratings and roof walkways; G

Handrails

Roof safety tie-off anchor plates; G

Ladders with safety cage; G

Safety Posts; G

Steel stairs

Structural steel door frames

Roof hatch; G

#### SD-04 Samples

Samples shall be full size, taken from manufacturer's stock, and shall be complete as required for installation in the structure. Samples may be installed in the work, provided each sample is clearly identified and its location recorded.

### 1.3 QUALIFICATION OF WELDERS

Qualify welders in accordance with AWS D1.1/D1.1M. Qualify aluminum welders in accordance with AWS D1.2/D1.2M. Use procedures, materials, and equipment of the type required for the work.

### 1.4 DELIVERY, STORAGE, AND PROTECTION

Protect from corrosion, deformation, and other types of damage. Store items in an enclosed area free from contact with soil and weather. Remove and replace damaged items with new items.

## PART 2 PRODUCTS

### 2.1 MATERIALS

#### 2.1.1 Structural Carbon

Steel ASTM A 36/A 36M.

#### 2.1.2 Structural

Tubing ASTM A 500.

#### 2.1.3 Steel Pipe

ASTM A 53/A 53M, Type E or S, Grade B.

#### 2.1.4 Fittings for Steel Pipe

Standard malleable iron fittings ASTM A 47/A 47M.

#### 2.1.5 Aluminum

Aluminum extrusions shall be aluminum alloy 6061-T6. Alloy shall be

extruded in accordance with the requirements of applicable sections of Federal Specification QQ-A-200.

2.1.6 Hardware for gangway

All nuts, bolts, and washers shall be stainless steel ASTM Series 300, Type 316.

2.1.7 Gratings

a. Metal plank grating, non-slip requirement, aluminum ASTM B 209, 6061-T6; steel ASTM A 653/A 653M, G90.

b. Metal bar type grating NAAMM MBG 531.

2.1.8 Floor Plates, Patterned

Floor plate ASTM A 786/A 786M. Steel plate shall not be less than 14 gage.

2.1.9 Anchor Bolts

ASTM A 307. Where exposed, shall be of the same material, color, and finish as the metal to which applied.

2.1.9.1 Adhesive Anchors

Provide 3/4 in. diameter adhesive anchors with internally threaded inserts. Minimum concrete embedment shall be 8.25 in. Design values listed shall be as tested according to ASTM E 488.

a. Minimum allowable pullout value shall be 19,400 lb.

b. Minimum allowable shear value shall be 7,500 lb.

Internally threaded insert shall be 316 stainless steel with a minimum ultimate tensile strength of 74 ksi.

2.1.9.2 Lag Screws and Bolts

ASME B18.52.1, type and grade best suited for the purpose.

2.1.9.3 Toggle

Bolts ASME B18.52.1.

2.1.9.4 Bolts, Nuts, Studs and Rivets

ASME B18.2.2 and ASTM A 687 or ASTM A 307.

2.1.9.5 Powder Driven Fasteners

Follow safety provisions of ASSE A10.3.

2.1.9.6 Screws

ASME B18.52.1, ASME B18.6.2, and ASME B18.6.3.

#### 2.1.9.7 Washers

Provide plain washers to conform to ASME B18.22.1. Provide beveled washers for American Standard beams and channels, square or rectangular, tapered in thickness, and smooth. Provide lock washers to conform to ASME B18.21.1.

### 2.2 FABRICATION FINISHES

#### 2.2.1 Galvanizing

Hot-dip galvanize items specified to be zinc-coated, after fabrication where practicable. Galvanizing: ASTM A 123/A 123M, ASTM A 153/A 153M, ASTM A 653/A 653M or ASTM A 924/A 924M, G90, as applicable.

#### 2.2.2 Galvanize

Anchor bolts, grating fasteners, washers, and parts or devices necessary for proper installation, unless indicated otherwise.

#### 2.2.3 Repair of Zinc-Coated Surfaces

Repair damaged surfaces with galvanizing repair method and paint conforming to ASTM A 780 or by application of stick or thick paste material specifically designed for repair of galvanizing, as approved by Contracting Officer. Clean areas to be repaired and remove slag from welds. Heat surfaces to which stick or paste material is applied, with a torch to a temperature sufficient to melt the metallics in stick or paste; spread molten material uniformly over surfaces to be coated and wipe off excess material.

#### 2.2.4 Shop Cleaning and Painting

#### 2.2.5 Nonferrous Metal Surfaces

Protect by plating, anodic, or organic coatings.

#### 2.2.6 Aluminum Surfaces

##### 2.2.6.1 Surface Condition

Before finishes are applied, remove roll marks, scratches, rolled-in scratches, kinks, stains, pits, orange peel, die marks, structural streaks, and other defects which will affect uniform appearance of finished surfaces.

##### 2.2.6.2 Aluminum Finishes

Unexposed sheet, plate and extrusions may have mill finish as fabricated. Sandblast castings' finish, medium, AA DAF-45, or AA 46. Unless otherwise specified, all other aluminum items shall have standard mill finish. The thickness of the coating shall be not less than that specified for protective and decorative type finishes for items used in interior locations or architectural Class I type finish for items used in exterior locations in AA DAF-45. Items to be anodized shall receive a polished satin finish.

### 2.3 ACCESS DOORS AND PANELS

Provide flush type access doors and panels unless otherwise indicated. Fabricate frames for access doors of steel not lighter than 14 gage with welded joints and anchorage for securing into construction. Provide access doors with a minimum of 14 by 20 inches and of not lighter than 14 gage steel, with stiffened edges and welded attachments. Provide access doors hinged to frame and with a flush-face, turn-screw-operated latch. Provide exposed metal surface with a baked enamel finish.

### 2.4 COVER PLATES AND FRAMES

Fabricate cover plates of 1/4 inch thick rolled steel weighing not more than 100 pounds per plate with a selected raised pattern nonslip top surface. Plate shall be galvanized. Reinforce to sustain a live load of 100 pounds per square foot. Frames shall be structural steel shapes and plates, securely fastened to the structure as indicated. Miter and weld all corners. Butt joint straight runs. Allow for expansion on straight runs over 15 feet. Provide holes for lifting tools. Remove sharp edges and burrs from cover plates and exposed edges of frames. Weld all connections and grind top surface smooth. Weld bar stops every six inches. Provide 1/8 inch clearance at edges and between cover plates.

### 2.5 Gratings and Roof Walkways

Design steel grating in accordance with NAAMM MBG 531 for bar type grating or manufacturer's charts for plank grating. Galvanize steel floor gratings.

- a. Design floor gratings to support a live load of 250 pounds per square foot for the spans indicated, with maximum deflection of  $L/240$ .
- b. NAAMM MBG 531, band edges of grating with bars of the same size as the bearing bars. Weld banding in accordance with the manufacturer's standard for trim. Design tops of bearing bars, cross or intermediate bars to be in the same plane and match grating finish.
- c. Attach grating as per manufacturer's attachment system.
- d. Slip resistance requirements must exceed both wet and dry a static coefficient of friction of 0.5 as tested in accordance with ASTM F 1679.

### 2.6 HANDRAILS

Design handrails to resist a concentrated load of 200 lbs in any direction at any point of the top of the rail or 50 lbs per foot applied horizontally to top of the rail, whichever is more severe. NAAMM AMP 521, provide the same size rail and post.

#### 2.6.1 Steel Handrails, Including Carbon Steel Inserts

Provide steel handrails, including inserts in concrete, steel pipe conforming to ASTM A 53/A 53M. Provide steel railings of 1 1/2 inches nominal size. Railings to be hot-dip galvanized.

- a. Fabrication: Joint posts, rail, and corners by one of the following methods:

(1) Flush-type rail fittings of commercial standard, welded and ground smooth with railing splice locks secured with 3/8 inch hexagonal-recessed-head setscrews.

(2) Mitered and welded joints made by fitting post to top rail and intermediate rail to post, mitering corners, groove welding joints, and grinding smooth. Butt railing splices and reinforce them by a tight fitting interior sleeve not less than 6 inches long.

(3) Railings may be bent at corners in lieu of jointing, provided bends are made in suitable jigs and the pipe is not crushed.

- b. Provide removable sections as indicated.

## 2.7 LADDERS

Fabricate vertical ladders conforming to Section 7 of 29 CFR 1910.27. Use 3 by 3/4 inch steel plate for stringers and 3/4 inch diameter steel rods for rungs. Rungs to be not less than 16 inches wide, spaced one foot apart, plug welded or shouldered and headed into stringers. Install ladders so that the distance from the rungs to the insulated wall will not be less than 7 inches.

### 2.7.1 Ladder Cages

Conform to 29 CFR 1910.27. Fabricate 2 by 1/4 inch horizontal bands and 1 1/2 by 3/16 inch vertical bars. Provide attachments for fastening bands to the side rails of ladders or directly to the structure. Provide and fasten vertical bars on the inside of the horizontal bands. Extend cages not less than 27 inches or more than 28 inches from the centerline of the rungs, excluding the flare at the bottom of the cage, and not less than 27 inches in width. Clear the inside of the cage of projections.

### 2.7.2 Safety Posts

Safety post shall be constructed of hot dip galvanized components. Mounting hardware shall be stainless steel. Safety post shall be designed with a telescoping tubular section that automatically locks when fully extended.

## 2.8 MISCELLANEOUS PLATES AND SHAPES

Provide for items that do not form a part of the structural steel framework.

Provide angles and plates, ASTM A 36/A 36M, for embedment as indicated. Galvanize embedded items exposed to the elements according to ASTM A 123/A 123M.

## 2.9 SAFETY TREADS

NAAMM MBG 531 steel, Type W.

## 2.10 STEEL STAIRS

Provide steel stairs complete with stringers, nonskid metallic treads, landings, columns, handrails, and necessary bolts and other fastenings. Steel stairs and accessories to be hot-dip galvanized.

#### 2.10.1 Design Loads

Design stairs to sustain a live load of not less than 100 pounds per square foot, or a concentrated load of 300 applied where it is most critical. Conform to AISC 360 or AISC 350 with the design and fabrication of steel stairs, other than a commercial product.

#### 2.10.2 Materials

Provide steel stairs of welded construction except that bolts may be used where welding is not practicable. Screw or screw-type connections are not permitted.

- a. Structural Steel: ASTM A 36/A 36M.
- b. Gratings for Treads and Landings: NAAMM MBG 531 or Plank grating; ASTM A 653/A 653M, G-90 for steel; Provide gratings with nonslip nosings. Slip resistance shall exceed a static coefficient of friction, both wet and dry, of 0.5 as tested in accordance with ASTM F 1679.
- c. Support steel grating on angle cleats welded to stringers or treads with integral cleats, welded or bolted to the stringer. Close exposed ends. Exterior stairs shall have all exposed joints formed to exclude water.
- d. Before fabrication, obtain necessary field measurements and verify drawing dimensions.
- e. Clean metal surfaces free from mill scale, flake rust and rust pitting prior to shop finishing. Weld permanent connections. Finish welds flush and smooth on surfaces that will be exposed after installation.

#### 2.11 STRUCTURAL STEEL DOOR FRAMES

Provide frames of rolled shapes as indicated. Miter and weld heads to jambs, or have riveted clip angle connections concealed in the finished work. Provide frames for swinging doors with 5/8 by 1 1/2 inch solid bar stops secured to the frame by welding or by 1/4 inch diameter countersunk machine screws spaced not more than 12 inches on centers. Stiffen head openings greater than 3 feet sufficient to limit deflection to not more than 1/16 inch. Secure frames to masonry with zinc-coated metal anchors spaced not more than 30 inches on centers. Where necessary to engage the threads of machine screws for fastening hardware, back frames on inside faces with steel plates of suitable thickness; tap frames and reinforcing plates as necessary for the installation of hardware and other work. Countersink rivets and screw heads where exposed in the finished work. Grind welds smooth.

#### 2.12 Roof Safety Tie-Off Anchor Plates

Roof safety tie-off anchor plates shall be as manufactured by DBI SALA,

part number 8517422, or equal.

### PART 3 EXECUTION

#### 3.1 GENERAL INSTALLATION REQUIREMENTS

Install items at locations indicated, according to manufacturer's instructions. The Contractor shall verify all measurements and shall take all field measurements necessary before fabrication. Exposed fastenings shall be compatible materials, shall generally match in color and finish, and shall harmonize with the material to which fastenings are applied.

Materials and parts necessary to complete each item, even though such work is not definitely shown or specified, shall be included. Poor matching of holes for fasteners shall be cause for rejection. Fastenings shall be concealed where practicable. Thickness of metal and details of assembly and supports shall provide strength and stiffness. Joints exposed to the weather shall be formed to exclude water. Items listed below require additional procedures.

#### 3.2 WORKMANSHIP

Miscellaneous metalwork shall be well formed to shape and size, with sharp lines and angles and true curves. Drilling and punching shall produce clean true lines and surfaces. Welding shall be continuous along the entire area of contact except where tack welding is permitted. Exposed connections of work in place shall not be tack welded. Exposed welds shall be ground smooth. Exposed surfaces of work in place shall have a smooth finish, and unless otherwise approved, exposed riveting shall be flush. Where tight fits are required, joints shall be milled. Corner joints shall be coped or mitered, well formed, and in true alignment. Work shall be accurately set to established lines and elevations and securely fastened in place. Installation shall be in accordance with manufacturer's installation instructions and approved drawings, cuts, and details.

#### 3.3 ANCHORAGE, FASTENINGS, AND CONNECTIONS

Provide anchorage where necessary for fastening miscellaneous metal items securely in place. Include for anchorage not otherwise specified or indicated slotted inserts, expansion shields, and powder-driven fasteners, when approved for concrete; toggle bolts and through bolts for masonry; machine and carriage bolts for steel; through bolts, lag bolts, and screws for wood. Do not use wood plugs in any material. Provide non-ferrous attachments for non-ferrous metal. Make exposed fastenings of compatible materials, generally matching in color and finish, to which fastenings are applied. Conceal fastenings where practicable.

#### 3.4 BUILT-IN WORK

Form for anchorage metal work built-in with concrete or masonry, or provide with suitable anchoring devices as indicated or as required. Furnish metal work in ample time for securing in place as the work progresses.

#### 3.5 WELDING

Perform welding, welding inspection, and corrective welding, in accordance with AWS D1.1/D1.1M and AWS D1.2/D1.2M. Use continuous welds on all exposed connections. Grind visible welds smooth in the finished installation.

### 3.6 FINISHES

#### 3.6.1 Dissimilar Materials

Where dissimilar metals are in contact, protect surfaces with a coat conforming to MPI 79 to prevent galvanic or corrosive action. Where aluminum is in contact with concrete, plaster, mortar, masonry, wood, or absorptive materials subject to wetting, protect with ASTM D 1187, asphalt-base emulsion.

### 3.7 COVER PLATES AND FRAMES

Install the tops of cover plates and frames flush with floor.

### 3.8 HANDRAILS

Toeboards and brackets shall be installed where indicated. Splices, where required, shall be made at expansion joints. Removable sections shall be installed as indicated.

#### 3.8.1 Steel Handrail

Install by means of base plates bolted to stringers or structural steel frame work.

### 3.9 LADDERS

Install brackets as required for securing of ladders welded or bolted to structural steel or built into the masonry or concrete. In no case shall ends of ladders rest upon floor.

#### 3.9.1 Safety Post

Safety posts shall be suitable for commercial marine use and shall be similar to safety posts as manufactured by the Bilco Co., New Haven, CT; JL Industries, Bloomington, MN or Maxam Metal Products Ltd., Burnaby, B.C.

### 3.10 STEEL STAIRS

Provide anchor bolts, grating fasteners, washers, and all parts or devices necessary for proper installation. Provide lock washers under nuts.

### 3.11 ROOF HATCH (SCUTTLES)

Shall be of zinc-coated steel sheets not less than 14 gage, with 3 inch beaded flange, welded and ground at corner. Provide a minimum clear opening of 30 by 36 inches. Construction and accessories shall be as follows:

- a. Insulate cover and curb with one inch thick rigid fiberboard insulation covered and protected by zinc-coated steel liner not less than 26 gage. Curb shall be 12 inches high, formed with 3 inch mounting flange with holes provided for securing to the roof deck. Equip the curb with an integral metal cap flashing of the same gage and metal as the curb, full welded and ground at corners for weather tightness.
- b. Provide hatch completely assembled with pintle hinges,

compression spring operators enclosed in telescopic tubes, positive snap latch with turn handles on inside and outside, and neoprene draft seal. Provide fasteners for padlocking on the inside. Equip the cover with an automatic hold-open arm complete with grip handle to permit one-hand release. Cover action shall be smooth through its entire range with an operating pressure of approximately 30 pounds.

### 3.12 DOOR GUARD FRAME

Door guard frame shall be mounted over the glazed opening using 1/4 inch lag bolts on the interior of wood doors or tamperproof through bolts on the interior of metal doors.

### 3.13 STRUCTURAL STEEL DOOR FRAMES

Door frames shall be secured to the floor slab by means of angle clips and expansion bolts. Continuous door stops shall be welded to the frame or tap screwed with countersunk screws at no more than 18 inch centers, assuring in either case full contact with the frame. Any necessary reinforcements shall be made and the frames shall be drilled and tapped as required for hardware.

### 3.14 Gangways

Gangways shall be of a construction suitable for commercial marine use and shall be similar to truss type gangways as manufactured by Washington Aluminum Co. Inc., Baltimore Maryland; Ravens Marine, Kissimmee, Florida or Rampmaster Inc. Ft. Lauderdale, FL. The gangways shall be of aluminum construction with pipe handrails, treads and mounting bracket.

Aluminum assemblies shall be fabricated from marine grade aluminum alloy 6061-T6.

The deck shall be non-skid with either a raised rib profile with the ribs no higher than 1/4" and perpendicular to the flow of traffic or covered with a uniform carborundum surface.

Gangway shall be designed to support a 100 pound per square foot live load.

Handrails shall be aluminum pipe of not less than 1-1/2" in diameter and designed to withstand a 200 pound concentrated horizontal load applied at the top of the railing.

All dissimilar metals shall be separated by separation sheets or bushings not less than 1/16-inch thick. Separation sheets or bushings shall conform to military specification MIL-P-15035.

-- End of Section --

SECTION 09 90 00

PAINTS AND COATINGS

10/06

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 CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS (ACGIH)

ACGIH 0100Doc (2005) Documentation of the Threshold  
Limit Values and Biological Exposure  
Indices

ASME INTERNATIONAL (ASME)

ASME A13.1 (1996; R 2002) Scheme for the  
Identification of Piping Systems

ASTM INTERNATIONAL (ASTM)

ASTM D 523 (1989; R 1999) Standard Test Method for  
Specular Gloss

MASTER PAINTERS INSTITUTE (MPI)

MPI 101 (2004) Epoxy Anti-Corrosive Metal Primer  
MPI 107 (2004) Rust Inhibitive Primer (Water-Based)  
MPI 108 (2004) High Build Epoxy Coating, Low Gloss  
MPI 138 (2004) Interior High Performance Latex,  
MPI Gloss Level 2  
MPI 139 (2004) Interior High Performance Latex,  
MPI Gloss Level 3  
MPI 140 (2004) Interior High Performance Latex,  
MPI Gloss Level 4  
MPI 141 (2004) Interior High Performance Latex MPI  
Gloss Level 5  
MPI 161 (2006) Exterior W.B. Light Industrial  
Coating, MPI Gloss Level 3  
MPI 163 (2006) Exterior W.B. Light Industrial  
Coating, Semi-Gloss, MPI Gloss Level 5  
MPI 164 (2006) Exterior W.B. Light Industrial

	Coating, Gloss, MPI Gloss Level 6
MPI 23	(2004) Surface Tolerant Metal Primer
MPI 27	(2004) Exterior / Interior Alkyd Floor Enamel, Gloss
MPI 47	(2004) Interior Alkyd, Semi-Gloss, MPI Gloss Level 5
MPI 48	(2004) Interior Alkyd, Gloss, MPI Gloss Level 6
MPI 49	(2004) Interior Alkyd, Flat, MPI Gloss Level 1
MPI 51	(2004) Interior Alkyd, Eggshell, MPI Gloss Level 2
MPI 72	(2004) Polyurethane, Two Component, Pigmented, Gloss
MPI 77	(2004) Epoxy Gloss
MPI 79	(2004) Alkyd Anti-Corrosive Metal Primer
MPI 8	(2004) Exterior Alkyd, Flat, MPI Gloss Level I
MPI 9	(2004) Exterior Alkyd, Gloss, MPI Gloss Level 6
MPI 94	(2004) Exterior Alkyd, Semi-Gloss, MPI Gloss Level 5
MPI 95	(2004) Quick Drying Primer for Aluminum

SCIENTIFIC CERTIFICATION SYSTEMS (SCS)

SCS SP-01	(2000) Environmentally Preferable Product Specification for Architectural and Anti-Corrosive Paints
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THE SOCIETY FOR PROTECTIVE COATINGS (SSPC)

SSPC PA 1	(2000; E 2004) Shop, Field, and Maintenance Painting
SSPC PA Guide 3	(1982; E 1995) A Guide to Safety in Paint Application
SSPC SP 1	(1982; E 2004) Solvent Cleaning
SSPC SP 10	(2000; E 2004) Near-White Blast Cleaning
SSPC SP 12	(2002) Surface Preparation and Cleaning of Metals by Waterjetting Prior to Recoating

SSPC SP 2 (1982; E 2004) Hand Tool Cleaning  
SSPC SP 3 (2004e1) Power Tool Cleaning  
SSPC SP 6 (2000; E 2004) Commercial Blast Cleaning  
SSPC SP 7 (2000; E 2004) Brush-Off Blast Cleaning  
SSPC VIS 1 (2002) Guide and Reference Photographs for Steel Surfaces Prepared by Dry Abrasive Blast Cleaning  
SSPC VIS 3 (2004) Visual Standard for Power-and Hand-Tool Cleaned Steel  
SSPC VIS 4 (1998; E 2000) Guide and Reference Photographs for Steel Surfaces Prepared by Waterjetting

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1 (2003) Safety -- Safety and Health Requirements

U.S. GENERAL SERVICES ADMINISTRATION (GSA)

FED-STD-313 (Rev D; Am 1) Material Safety Data, Transportation Data and Disposal Data for Hazardous Materials Furnished to Government Activities

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

29 CFR 1910.1000 Air Contaminants

1.2 SUBMITTALS

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

The current MPI, "Approved Product List" which lists paint by brand, label, product name and product code as of the date of contract award, will be used to determine compliance with the submittal requirements of this specification. The Contractor may choose to use a subsequent MPI "Approved Product List", however, only one list may be used for the entire contract and each coating system is to be from a single manufacturer. All coats on a particular substrate must be from a single manufacturer. No variation from the MPI Approved Products List is acceptable.

Samples of specified materials may be taken and tested for compliance with specification requirements.

In keeping with the intent of Executive Order 13101, "Greening the Government through Waste Prevention, Recycling, and Federal Acquisition", products certified by SCS as meeting SCS SP-01 shall be given preferential consideration over registered products. Products that are registered shall

be given preferential consideration over products not carrying any EPP designation.

SD-02 Shop Drawings

Piping identification

Submit color stencil codes

SD-03 Product Data

Coating; G

Manufacturer's Technical Data Sheets; G

Indicate VOC content; G

SD-04 Samples

Color; G

Submit manufacturer's samples of paint colors. Cross reference color samples to color scheme as indicated.

SD-08 Manufacturer's Instructions

Application instructions

Manufacturer's Material Safety Data Sheets

Submit manufacturer's Material Safety Data Sheets for coatings, solvents, and other potentially hazardous materials, as defined in FED-STD-313.

SD-10 Operation and Maintenance Data

Coatings; G

Preprinted cleaning and maintenance instructions for all coating systems shall be provided.

1.3 REGULATORY REQUIREMENTS

1.3.1 Environmental Protection

In addition to requirements specified elsewhere for environmental protection, provide coating materials that conform to the restrictions of the local Air Pollution Control District and regional jurisdiction. Notify Contracting Officer of any paint specified herein which fails to conform.

1.3.2 Lead Content

Do not use coatings having a lead content over 0.06 percent by weight of nonvolatile content.

1.3.3 Chromate Content

Do not use coatings containing zinc-chromate or strontium-chromate.

1.3.4 Asbestos Content

Materials shall not contain asbestos.

1.3.5 Mercury Content

Materials shall not contain mercury or mercury compounds.

1.3.6 Silica

Abrasive blast media shall not contain free crystalline silica.

1.3.7 Human Carcinogens

Materials shall not contain ACGIH 0100Doc and ACGIH 0100Doc confirmed human carcinogens (A1) or suspected human carcinogens (A2).

1.4 PACKAGING, LABELING, AND STORAGE

Paints shall be in sealed containers that legibly show the contract specification number, designation name, formula or specification number, batch number, color, quantity, date of manufacture, manufacturer's formulation number, manufacturer's directions including any warnings and special precautions, and name and address of manufacturer. Pigmented paints shall be furnished in containers not larger than 5 gallons. Paints and thinners shall be stored in accordance with the manufacturer's written directions, and as a minimum, stored off the ground, under cover, with sufficient ventilation to prevent the buildup of flammable vapors, and at temperatures between 40 to 95 degrees F.

1.5 SAFETY AND HEALTH

Apply coating materials using safety methods and equipment in accordance with the following:

Work shall comply with applicable Federal, State, and local laws and regulations, and with the ACCIDENT PREVENTION PLAN, including the Activity Hazard Analysis as specified in Section 01 35 29 SAFETY AND OCCUPATIONAL HEALTH REQUIREMENTS and in Appendix A of EM 385-1-1. The Activity Hazard Analysis shall include analyses of the potential impact of painting operations on painting personnel and on others involved in and adjacent to the work zone.

1.5.1 Safety Methods Used during Coating Application

Comply with the requirements of SSPC PA Guide 3.

1.5.2 Toxic Materials

To protect personnel from overexposure to toxic materials, conform to the most stringent guidance of:

- a. The applicable manufacturer's Material Safety Data Sheets (MSDS) or local regulation.
- b. 29 CFR 1910.1000.

c. ACGIH 0100Doc, threshold limit values.

#### 1.6 ENVIRONMENTAL CONDITIONS

Comply, at minimum, with manufacturer recommendations for space ventilation during and after installation. Isolate area of application from rest of building when applying high-emission paints or coatings.

##### 1.6.1 Coatings

Do not apply coating when air or substrate conditions are:

- a. Less than 5 degrees F above dew point;
- b. Below 50 degrees F or over 95 degrees F, unless specifically pre-approved by the Contracting Officer and the product manufacturer. Under no circumstances shall application conditions exceed manufacturer recommendations.

#### 1.7 COLOR SELECTION

Colors of finish coats shall be as indicated or specified. Where not indicated or specified, colors shall be selected by the Contracting Officer. Manufacturers' names and color identification are used for the purpose of color identification only. Named products are acceptable for use only if they conform to specified requirements. Products of other manufacturers are acceptable if the colors approximate colors indicated and the product conforms to specified requirements.

Tint each coat progressively darker to enable confirmation of the number of coats.

#### 1.8 LOCATION AND SURFACE TYPE TO BE PAINTED

##### 1.8.1 Painting Included

Where a space or surface is indicated to be painted, include the following unless indicated otherwise.

- a. New exterior piping surfaces that require piping identification.

##### 1.8.2 Definitions and Abbreviations

###### 1.8.2.1 Qualification Testing

Qualification testing is the performance of all test requirements listed in the product specification. This testing is accomplished by MPI to qualify each product for the MPI Approved Product List, and may also be accomplished by Contractor's third party testing lab if an alternative to Batch Quality Conformance Testing by MPI is desired.

###### 1.8.2.2 Batch Quality Conformance Testing

Batch quality conformance testing determines that the product provided is the same as the product qualified to the appropriate product specification. This testing shall only be accomplished by MPI testing lab.

###### 1.8.2.3 Coating

A film or thin layer applied to a base material called a substrate. A coating may be a metal, alloy, paint, or solid/liquid suspensions on various substrates (metals, plastics, wood, paper, leather, cloth, etc.). They may be applied by electrolysis, vapor deposition, vacuum, or mechanical means such as brushing, spraying, calendaring, and roller coating. A coating may be applied for aesthetic or protective purposes or both. The term "coating" as used herein includes emulsions, enamels, stains, varnishes, sealers, epoxies, and other coatings, whether used as primer, intermediate, or finish coat. The terms paint and coating are used interchangeably.

1.8.2.4 DFT or dft

Dry film thickness, the film thickness of the fully cured, dry paint or coating.

1.8.2.5 DSD

Degree of Surface Degradation, the MPI system of defining degree of surface degradation. Five (5) levels are generically defined under the Assessment sections in the MPI Maintenance Repainting Manual.

1.8.2.6 EPP

Environmentally Preferred Products, a standard for determining environmental preferability in support of Executive Order 13101.

1.8.2.7 EXT

MPI short term designation for an exterior coating system.

1.8.2.8 INT

MPI short term designation for an interior coating system.

1.8.2.9 micron / microns

The metric measurement for 0.001 mm or one/one-thousandth of a millimeter.

1.8.2.10 mil / mils

The English measurement for 0.001 in or one/one-thousandth of an inch, equal to 25.4 microns or 0.0254 mm.

1.8.2.11 mm

The metric measurement for millimeter, 0.001 meter or one/one-thousandth of a meter.

1.8.2.12 MPI Gloss Levels

MPI system of defining gloss. Seven (7) gloss levels (G1 to G7) are generically defined under the Evaluation sections of the MPI Manuals. Traditionally, Flat refers to G1/G2, Eggshell refers to G3, Semigloss refers to G5, and Gloss refers to G6.

Gloss levels are defined by MPI as follows:

Gloss Level	Description	Units @ 60 degrees	Units @ 85 degrees
G1	Matte or Flat	0 to 5	10 max
G2	Velvet	0 to 10	10 to 35
G3	Eggshell	10 to 25	10 to 35
G4	Satin	20 to 35	35 min
G5	Semi-Gloss	35 to 70	
G6	Gloss	70 to 85	
G7	High Gloss		

Gloss is tested in accordance with ASTM D 523. Historically, the Government has used Flat (G1 / G2), Eggshell (G3), Semi-Gloss (G5), and Gloss (G6).

#### 1.8.2.13 MPI System Number

The MPI coating system number in each Division found in either the MPI Architectural Painting Specification Manual or the Maintenance Repainting Manual and defined as an exterior (EXT/REX) or interior system (INT/RIN). The Division number follows the CSI Master Format.

#### 1.8.2.14 Paint

See Coating definition.

#### 1.8.2.15 REX

MPI short term designation for an exterior coating system used in repainting projects or over existing coating systems.

#### 1.8.2.16 RIN

MPI short term designation for an interior coating system used in repainting projects or over existing coating systems.

### PART 2 PRODUCTS

#### 2.1 MATERIALS

Conform to the coating specifications and standards referenced in PART 3. Submit manufacturer's technical data sheets for specified coatings and solvents. Comply with applicable regulations regarding toxic and hazardous materials.

### PART 3 EXECUTION

#### 3.1 PROTECTION OF AREAS AND SPACES NOT TO BE PAINTED

Prior to surface preparation and coating applications, remove, mask, or otherwise protect, hardware, hardware accessories, machined surfaces, radiator covers, plates, lighting fixtures, public and private property, and other such items not to be coated that are in contact with surfaces to be coated. Following completion of painting, workmen skilled in the trades involved shall reinstall removed items. Restore surfaces contaminated by coating materials, to original condition and repair damaged items.

### 3.2 SURFACE PREPARATION

Remove dirt, splinters, loose particles, grease, oil, and other foreign matter and substances deleterious to coating performance as specified for each substrate before application of paint or surface treatments. Oil and grease shall be removed prior to mechanical cleaning. Cleaning shall be programmed so that dust and other contaminants will not fall on wet, newly painted surfaces.

### 3.3 PREPARATION OF METAL SURFACES

#### 3.3.1 Existing and New Ferrous Surfaces

- a. Ferrous Surfaces including Shop-coated Surfaces and Small Areas That Contain Rust, Mill Scale and Other Foreign Substances: Solvent clean or detergent wash in accordance with SSPC SP 1 to remove oil and grease. Where shop coat is missing or damaged, clean according to SSPC SP 2, SSPC SP 3, SSPC SP 6, or SSPC SP 10. Brush-off blast remaining surface in accordance with SSPC SP 7; Shop-coated ferrous surfaces shall be protected from corrosion by treating and touching up corroded areas immediately upon detection.
- b. Surfaces With More Than 20 Percent Rust, Mill Scale, and Other Foreign Substances: Clean entire surface in accordance with SSPC SP 6/SSPC SP 12 WJ-3.
- c. Metal Roof Surfaces to Receive Nonslip Coating: Clean in accordance with SSPC SP 10.

#### 3.3.2 Final Ferrous Surface Condition:

For tool cleaned surfaces, the requirements are stated in SSPC SP 2 and SSPC SP 3. As a visual reference, cleaned surfaces shall be similar to photographs in SSPC VIS 3.

For abrasive blast cleaned surfaces, the requirements are stated in SSPC SP 7, SSPC SP 6, and SSPC SP 10. As a visual reference, cleaned surfaces shall be similar to photographs in SSPC VIS 1.

For water jet cleaned surfaces, the requirements are stated in SSPC SP 12. As a visual reference, cleaned surfaces shall be similar to photographs in SSPC VIS 4.

#### 3.3.3 Non-Ferrous Metallic Surfaces

Aluminum and aluminum-alloy, lead, copper, and other nonferrous metal surfaces.

Surface Cleaning: Solvent clean in accordance with SSPC SP 1 and wash with mild non-alkaline detergent to remove dirt and water soluble contaminants.

### 3.4 APPLICATION

#### 3.4.1 Coating Application

Painting practices shall comply with applicable federal, state and local laws enacted to insure compliance with Federal Clean Air Standards. Apply

coating materials in accordance with SSPC PA 1. SSPC PA 1 methods are applicable to all substrates, except as modified herein.

At the time of application, paint shall show no signs of deterioration. Uniform suspension of pigments shall be maintained during application.

Unless otherwise specified or recommended by the paint manufacturer, paint may be applied by brush, roller, or spray. Use trigger operated spray nozzles for water hoses. Rollers for applying paints and enamels shall be of a type designed for the coating to be applied and the surface to be coated. Wear protective clothing and respirators when applying oil-based paints or using spray equipment with any paints.

Paints, except water-thinned types, shall be applied only to surfaces that are completely free of moisture as determined by sight or touch.

Thoroughly work coating materials into joints, crevices, and open spaces. Special attention shall be given to insure that all edges, corners, crevices, welds, and rivets receive a film thickness equal to that of adjacent painted surfaces.

Each coat of paint shall be applied so dry film shall be of uniform thickness and free from runs, drops, ridges, waves, pinholes or other voids, laps, brush marks, and variations in color, texture, and finish. Hiding shall be complete.

Touch up damaged coatings before applying subsequent coats. Interior areas shall be broom clean and dust free before and during the application of coating material.

- a. Drying Time: Allow time between coats, as recommended by the coating manufacturer, to permit thorough drying, but not to present topcoat adhesion problems. Provide each coat in specified condition to receive next coat.
- b. Primers, and Intermediate Coats: Do not allow primers or intermediate coats to dry more than 30 days, or longer than recommended by manufacturer, before applying subsequent coats. Follow manufacturer's recommendations for surface preparation if primers or intermediate coats are allowed to dry longer than recommended by manufacturers of subsequent coatings. Each coat shall cover surface of preceding coat or surface completely, and there shall be a visually perceptible difference in shades of successive coats.
- c. Finished Surfaces: Provide finished surfaces free from runs, drops, ridges, waves, laps, brush marks, and variations in colors.
- d. Thermosetting Paints: Topcoats over thermosetting paints (epoxies and urethanes) should be applied within the overcoating window recommended by the manufacturer.
- e. Rooves: For nonslip surfacing on rooves, as the intermediate coat is applied, cover wet surface completely with almandite garnet, Grit No. 36, with maximum passing U.S. Standard Sieve No. 40 less than 0.5 percent. When the coating is dry, use a soft bristle broom to sweep up excess grit, which may be reused, and vacuum up remaining residue before application of the topcoat. For nonslip

surfacing on ramps, provide MPI 77 with non-skid additive, applied by roller in accordance with manufacturer's instructions.

#### 3.4.2 Mixing and Thinning of Paints

Reduce paints to proper consistency by adding fresh paint, except when thinning is mandatory to suit surface, temperature, weather conditions, application methods, or for the type of paint being used. Obtain written permission from the Contracting Officer to use thinners. The written permission shall include quantities and types of thinners to use.

When thinning is allowed, paints shall be thinned immediately prior to application with not more than 1 pint of suitable thinner per gallon. The use of thinner shall not relieve the Contractor from obtaining complete hiding, full film thickness, or required gloss. Thinning shall not cause the paint to exceed limits on volatile organic compounds. Paints of different manufacturers shall not be mixed.

#### 3.4.3 Two-Component Systems

Two-component systems shall be mixed in accordance with manufacturer's instructions. Any thinning of the first coat to ensure proper penetration and sealing shall be as recommended by the manufacturer for each type of substrate.

#### 3.4.4 Coating Systems

- a. Systems by Substrates: Apply coatings that conform to the respective specifications listed in the following Tables:

##### Table

Division 5. Exterior Metal, Ferrous and Non-Ferrous Paint Table Division 5. Interior Metal, Ferrous and Non-Ferrous Paint Table

- b. Minimum Dry Film Thickness (DFT): Apply paints, primers, varnishes, enamels, undercoats, and other coatings to a minimum dry film thickness of 1.5 mil each coat unless specified otherwise in the Tables. Coating thickness where specified, refers to the minimum dry film thickness.

#### 3.5 COATING SYSTEMS FOR METAL

Apply coatings of Tables in Division 5 for Exterior and Interior.

- a. Apply specified ferrous metal primer on the same day that surface is cleaned, to surfaces that meet all specified surface preparation requirements at time of application.
- b. Inaccessible Surfaces: Prior to erection, use one coat of specified primer on metal surfaces that will be inaccessible after erection.
- c. Shop-primed Surfaces: Touch up exposed substrates and damaged coatings to protect from rusting prior to applying field primer.
- d. Surface Previously Coated with Epoxy or Urethane: Apply MPI 101, 1.5 mils DFT immediately prior to application of epoxy or urethane coatings.

- e. Pipes and Tubing: The semitransparent film applied to some pipes and tubing at the mill is not to be considered a shop coat, but shall be over coated with the specified ferrous-metal primer prior to application of finish coats.
- f. Exposed Nails, Screws, Fasteners, and Miscellaneous Ferrous Surfaces. On surfaces to be coated with water thinned coatings, spot prime exposed nails and other ferrous metal with latex primer MPI 107.

### 3.6 PIPING IDENTIFICATION

Piping Identification, Including Surfaces in Concealed Spaces: Provide in accordance with ASME A13.1. Place stenciling in clearly visible locations. On piping not covered by ASME A13.1, stencil approved names or code letters, in letters a minimum of 1/2 inch high for piping and a minimum of 2 inches high elsewhere. Stencil arrow-shaped markings on piping to indicate direction of flow using black stencil paint.

### 3.7 INSPECTION AND ACCEPTANCE

In addition to meeting previously specified requirements, demonstrate mobility of moving components, including swinging and sliding doors, cabinets, and windows with operable sash, for inspection by the Contracting Officer. Perform this demonstration after appropriate curing and drying times of coatings have elapsed and prior to invoicing for final payment.

### 3.8 WASTE MANAGEMENT

As specified in the Waste Management Plan and as follows. Do not use kerosene or any such organic solvents to clean up water based paints. Properly dispose of paints or solvents in designated containers. Close and seal partially used containers of paint to maintain quality as necessary for reuse. Store in protected, well-ventilated, fire-safe area at moderate temperature. Place materials defined as hazardous or toxic waste in designated containers.

### 3.9 PAINT TABLES

All DFT's are minimum values. Acceptable products are listed in the MPI Green Approved Products List, available at <http://www.specifygreen.com/APL/ProductIdxByMPInum.asp>.

#### 3.9.1 EXTERIOR PAINT TABLES

DIVISION 5: EXTERIOR METAL, FERROUS AND NON-FERROUS PAINT TABLE

STEEL / FERROUS SURFACES

- A. New Steel that has been hand or power tool cleaned to SSPC SP 2 or SSPC SP 3

STEEL / FERROUS

- 1. Alkyd  
New; MPI EXT 5.1Q-G5 (Semigloss) Existing; MPI REX 5.1D-G5

Primer: Intermediate: Topcoat:  
MPI 23 MPI 94 MPI 94  
System DFT: 5.25 mils

New; MPI EXT 5.1Q-G6 (Gloss) / Existing; MPI REX 5.1D-G6  
Primer: Intermediate: Topcoat:  
MPI 23 MPI 9 MPI 9  
System DFT: 5.25 mils

B. New Steel that has been blast-cleaned to SSPC SP 6:

2. Alkyd

New; MPI EXT 5.1D-G5 (Semigloss) / Existing; MPI REX 5.1D-G5  
Primer: Intermediate: Topcoat:  
MPI 79 MPI 94 MPI 94  
System DFT: 5.25 mils

New; MPI EXT 5.1D-G6 (Gloss) / Existing; MPI REX 5.1D-G6  
Primer: Intermediate: Topcoat:  
MPI 79 MPI 9 MPI 9  
System DFT: 5.25 mils

C. New and existing steel blast cleaned to SSPC SP 10:

1. Waterborne Light Industrial

MPI EXT 5.1R-G5 (Semigloss)  
Primer: Intermediate: Topcoat:  
MPI 101 MPI 108 MPI 163  
System DFT: 8.5 mils

MPI EXT 5.1R-G6 (Gloss)  
Primer: Intermediate: Topcoat:  
MPI 101 MPI 108 MPI 164  
System DFT: 8.5 mils

2. Pigmented Polyurethane

MPI EXT 5.1J-G6 (Gloss)  
Primer: Intermediate: Topcoat:  
MPI 101 MPI 108 MPI 72  
System DFT: 8.5 mils

D. Metal floors (non-shop-primed surfaces or non-slip deck surfaces) with non-skid additive (NSA), load at manufacturer's recommendations:

1. Alkyd Floor Enamel

MPI EXT 5.1S-G6 (Gloss)  
Primer: Intermediate: Topcoat:  
MPI 79 MPI 27 MPI 27 (+NSA)  
System DFT: 5.25 mils

EXTERIOR SURFACES, OTHER METALS (NON-FERROUS)

I. Aluminum, aluminum alloy and other miscellaneous non-ferrous metal items not otherwise specified except hot metal surfaces, roof surfaces, and new prefinished equipment. Match surrounding finish:

1. Alkyd

MPI EXT 5.4F-G1 (Flat)

Primer: Intermediate: Topcoat:  
MPI 95 MPI 8 MPI 8  
System DFT: 5 mils

MPI EXT 5.4F-G5 (Semigloss)  
Primer: Intermediate: Topcoat:  
MPI 95 MPI 94 MPI 94  
System DFT: 5 mils

MPI EXT 5.4F-G6 (Gloss)  
Primer: Intermediate: Topcoat:  
MPI 95 MPI 9 MPI 9  
System DFT: 5 mils

2. Waterborne Light Industrial Coating

MPI EXT 5.4G-G3(Eggshell)  
Primer: Intermediate: Topcoat:  
MPI 95 MPI 161 MPI 161  
System DFT: 5 mils

MPI EXT 5.4G-G5 (Semigloss)  
Primer: Intermediate: Topcoat:  
MPI 95 MPI 163 MPI 163  
System DFT: 5 mils

MPI EXT 5.4G-G6 (Gloss)  
Primer: Intermediate: Topcoat:  
MPI 95 MPI 164 MPI 164  
System DFT: 5 mils

F. Surfaces adjacent to painted surfaces; Mechanical, Electrical, and miscellaneous metal items not otherwise specified except floors, hot metal surfaces, and new prefinished equipment. Match surrounding finish:

1. Alkyd

MPI EXT 5.1D-G1 (Flat)  
Primer: Intermediate: Topcoat:  
MPI 79 MPI 8 MPI 8  
System DFT: 5.25 mils

MPI EXT 5.1D-G5 (Semigloss)  
Primer: Intermediate: Topcoat:  
MPI 79 MPI 94 MPI 94  
System DFT: 5.25 mils

MPI EXT 5.1D-G6 (Gloss)  
Primer: Intermediate: Topcoat:  
MPI 79 MPI 9 MPI 9  
System DFT: 5.25 mils

2. Waterborne Light Industrial Coating

MPI EXT 5.1C-G3(Eggshell)  
Primer: Intermediate: Topcoat:  
MPI 79 MPI 161 MPI 161  
System DFT: 5 mils

MPI EXT 5.1C-G5 (Semigloss)

Primer: Intermediate: Topcoat:  
MPI 79 MPI 163 MPI 163  
System DFT: 5 mils

MPI EXT 5.1C-G6 (Gloss)  
Primer: Intermediate: Topcoat:  
MPI 79 MPI 164 MPI 164  
System DFT: 5 mils

3.9.2 INTERIOR PAINT TABLES DIVISION 5:

INTERIOR METAL, FERROUS AND NON-FERROUS PAINT TABLE

INTERIOR STEEL / FERROUS SURFACES

A. Metal, Mechanical, Electrical, Surfaces adjacent to painted surfaces (Match surrounding finish), and miscellaneous metal items not otherwise specified except floors, hot metal surfaces, and new prefinished equipment:

1. High Performance Architectural Latex

MPI INT 5.1R-G2 (Flat)  
Primer: Intermediate: Topcoat:  
MPI 79 MPI 138 MPI 138  
System DFT: 5 mils

MPI INT 5.1R-G3 (Eggshell)  
Primer: Intermediate: Topcoat:  
MPI 79 MPI 139 MPI 139  
System DFT: 5 mils

MPI INT 5.1R-G5 (Semigloss)  
Primer: Intermediate: Topcoat:  
MPI 79 MPI 141 MPI 141  
System DFT: 5 mils

2. Alkyd

MPI INT 5.1E-G2 (Flat)  
Primer: Intermediate: Topcoat:  
MPI 79 MPI 49 MPI 49  
System DFT: 5.25 mils

MPI INT 5.1E-G3 (Eggshell)  
Primer: Intermediate: Topcoat:  
MPI 79 MPI 51 MPI 51  
System DFT: 5.25 mils

MPI INT 5.1E-G5 (Semigloss)  
Primer: Intermediate: Topcoat:

INTERIOR STEEL / FERROUS

MPI 79 MPI 47 MPI 47  
System DFT: 5.25 mils

MPI INT 5.1E-G6 (Gloss)  
Primer: Intermediate: Topcoat:  
MPI 79 MPI 48 MPI 48

System DFT: 5.25 mils

B. Metal floors (non-shop-primed surfaces or non-slip deck surfaces) with non-skid additive (NSA), load at manufacturer's recommendations:

1. Alkyd Floor Paint

MPI INT 5.1U-G6 (Gloss)

Primer: Intermediate: Topcoat:  
MPI 79 MPI 27 MPI 27 (+NSA)

System DFT: 5.25 mils

2. Epoxy

MPI INT 5.1L-G6 (Gloss)

Primer: Intermediate: Topcoat:  
MPI 101 MPI 77 MPI 77 (+NSA)

System DFT: 5.25 mils

C. Miscellaneous non-ferrous metal items not otherwise specified except floors, hot metal surfaces, and new prefinished equipment. Match surrounding finish:

1. High Performance Architectural Latex

MPI INT 5.4F-G2 (Flat)

Primer: Intermediate: Topcoat:  
MPI 95 MPI 138 MPI 138

System DFT: 5 mils

MPI INT 5.4F-G3 (Eggshell)

Primer: Intermediate: Topcoat:  
MPI 95 MPI 139 MPI 139

System DFT: 5 mils

MPI INT 5.4F-G4 (Satin)

Primer: Intermediate: Topcoat:  
MPI 95 MPI 140 MPI 140

System DFT: 5 mils

MPI INT 5.4F-G5 (Semigloss)

Primer: Intermediate: Topcoat:  
MPI 95 MPI 141 MPI 141

System DFT: 5 mils

2. Alkyd

MPI INT 5.4J-G2 (Flat)

Primer: Intermediate: Topcoat:  
MPI 95 MPI 49 MPI 49

System DFT: 5 mils

MPI INT 5.4J-G3 (Eggshell)

INTERIOR STEEL / FERROUS

Primer: Intermediate: Topcoat:  
MPI 95 MPI 51 MPI 51

System DFT: 5 mils

MPI INT 5.4J-G5 (Semigloss)

Primer: Intermediate: Topcoat:  
MPI 95 MPI 47 MPI 47

System DFT: 5 mils

MPI INT 5.4J-G6 (Gloss)

Primer:	Intermediate:	Topcoat:
MPI 95	MPI 48	MPI 48

System DFT: 5 mils

-- End of Section --

SECTION 09 96 00

HIGH-PERFORMANCE COATINGS

07/07

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.

MASTER PAINTERS INSTITUTE (MPI)

MPI (2004) Architectural Painting  
Specification Manual

THE SOCIETY FOR PROTECTIVE COATINGS (SSPC)

SSPC SP 7 (2007) Brush-Off Blast Cleaning

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

Submit Material, Equipment and Fixture List in accordance with paragraph entitled, "Delivery, Handling and Storage," of this section.

SD-03 Product Data

Submit manufacturer's catalog data for the following items including manufacturer's name and identification. Data shall include detailed analysis of each special coating material required for the project, with all the coating constituents measured as percentages of the total weight of the coating. Manufacturer's data concerning application, thinning, and average coverage per gallon shall be included.

Epoxy Coatings; G

SD-04 Samples

Submit sample Color Chips in accordance with paragraph entitled, "Delivery, Handling and Storage," of this section.

SD-07 Certificates

Submit certificates for following items showing conformance with the referenced standards contained in this section.

Epoxy Coatings; G

1.3 DELIVERY, HANDLING AND STORAGE

Special coating materials must be delivered to the project in their original containers bearing manufacturer's name, descriptive label, and coating formulations. Provide new and unopened containers.

Special coating materials must be stored in tightly closed containers in a covered, well-ventilated area where they will not be exposed to excessive heat, fumes, sparks, flame, or direct sunlight. Protect water-based coatings against freezing.

Solvents, thinners, and equipment cleaners must be stored with the same care as the coating materials with ambient temperatures continuously maintained at a minimum 45 degrees F.

Submit Material, Equipment and Fixture List consisting of a list of proposed equipment to be used in performance of construction work.

Submit three color chips 3 inch by 4 inch or manufacture pull-down of each finish color and gloss as scheduled.

1.4 FIELD TESTS

Government may take dry-film tests from time to time on finished surfaces. Apply additional coatings to surfaces where there is less than the minimum specified dry-film thickness.

1.5 PROTECTIONS AND SAFETY PRECAUTIONS

Protect adjacent materials and equipment against damage from spillage, dripping, and spatter of coating materials. Building materials and equipment must be left clean and with all damaged surfaces corrected. Provide "WET PAINT" signs to indicate newly painted surfaces.

Provide forced ventilation for interior spaces during application and drying of coatings to prevent the buildup of toxic or explosive concentrations of solvent vapors.

Provide fire extinguishers of the required quantity and correct type to combat flammable liquid fires.

Dispose of rags that are used to wipe up coating materials, solvents, and thinners by drenching them with water and placing in a covered metal container.

1.6 QUALITY ASSURANCE

Comply with Master Painters Institute (MPI) Standards indicated and listed in "MPI Approved Products List." Comply with the requirements in "MPI Architectural Painting Specification Manual" before any project is started.

PART 2 PRODUCTS

2.1 EPOXY COATINGS

2.1.1 General

Conform to MPI, No. 116 for epoxy coatings, as modified.

Vehicle resins for finish coats must be based on a polyamide-cured, epoxy-resin material. Apply finish coats with a dry-film thickness of not less than 4 mils per coat. Finish color and gloss must be as indicated.

2.1.2 Ferrous and Galvanized Metal Surface Coatings

Coatings on ferrous and galvanized metal surfaces must be a prime coat and not less than two finish coats. Comply with MPI, No. 101 for an epoxy zinc primer with a metallic-zinc pigment for the substrate to be coated and the end use of the coated surface. Resin solids and zinc pigment must not be less than 80 percent of the total weight of the coating material. Apply prime coat with a total dry-film thickness of not less than 4 mils. Provide an epoxy-based finished coat as specified.

2.1.3 Aluminum Surface Coatings

Apply an Epoxy Coating System in conformance with MPI, No. 80 and MPI, No. 77. Apply prime coat with a total dry-film thickness of not less than 4 mils.

PART 3 EXECUTION

3.1 SURFACE PREPARATION

3.1.1 Concrete Surfaces

3.1.1.1 Steel Substrates

Remove rust and loose mill scale. Clean using methods recommended in writing by coating manufacturer. Conform to SSPC SP 7 (NACE No. 4) for blast cleaning.

3.1.1.2 Galvanized-Metal Substrates

Remove grease and oil residue from galvanized sheet metal fabricated from coil stock by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied coatings.

3.1.1.3 Aluminum

Substrates Remove surface oxidation.

3.2 COATING MATERIAL PREPARATION

3.2.1 General

Mix and prepare coating materials in accordance with the coating manufacturer's printed instructions for the particular material and coat to be applied. Keep materials which are not in actual use in closed containers.

Coating materials that have been mixed with an automatic shaker must be

allowed to stand to let air bubbles escape; then given a final hand mixing before application. Stir materials so as to produce a mixture of uniform density. Stir at frequent intervals during application to prevent skinning. Do not stir film which may form on the surface of the material. Remove film and strain, if necessary.

### 3.2.2 Thinning

Thinning must be done in accordance with coating manufacturer's printed directions for the particular material and coat.

## 3.3 APPLICATION OF COATING MATERIALS

### 3.3.1 General

Do not perform exterior painting in damp or rainy weather. Interior painting must not be allowed until the building is enclosed and has thoroughly dried out. Do not allow painting below 50 degrees F and above 95 degrees F. Painting application must be in accordance with the coating manufacturer's recommendations, and as specified.

Application of coatings must be done by skilled applicators. Apply coatings to clean and properly prepared surfaces. Apply coatings carefully with clean, high-quality application equipment. Allow sufficient time between coats to ensure complete drying and curing. Surfaces must be sanded and dusted between coatings, as required, to produce a surface free of visible defects. High gloss coatings and clear finishes must be lightly sanded between coats to ensure bond of following coats.

Apply coats to the surfaces in an even film. Do not accept cloudiness, spotting, holidays, laps, application marks, runs, sags, and other similar surface imperfections. Remove defective coating applications and recoat as directed.

Coating lines such as wainscots must be sharp, true, and well-defined. Tape may be used to establish coating lines, providing tape is removed before ragging or saw tooth edges form.

Surfaces, including edges, corners, crevices, welds, and other similar changes in surface plane, must receive a dry-film thickness not less than specified.

### 3.3.2 Brush Application

Brushes must be clean and the proper size and type for high-quality application of the specified coating materials. Slow-dry coatings must be brushed out. Quick-dry coatings must be brushed only enough to spread out evenly.

### 3.3.3 Roller Application

Roller covers must be clean and of the proper nap length, nap texture, and material for high-quality application of the specified coating materials.

Roller application must be done carefully and must be equivalent in all respects to the same coats applied by high-quality brush application.

### 3.3.4 Spray Application

Spray application equipment must be limited to airless-spray equipment and electrostatic-spray equipment. Equipment must be clean and operated by workmen skilled in high quality application of coating materials.

Spray application of coatings must be limited to finish coats on metal frame works, siding, decking, wire mesh, and other surfaces where hand work would be inferior. Sprayed coatings must be carefully applied and equivalent in all respects to the same coats applied by high quality brush application. Each spray coat must be permitted to cure before the succeeding coat is applied. Do not permit doubling back with application equipment, for the purpose of building up film thickness of two coats in one operation.

Surfaces adjacent to areas to be spray coated shall be covered to prevent damage from overspray, coating rebound, and spray drift.

### 3.4 ACCEPTANCE PROVISIONS

#### 3.4.1 Repairing

Remove damaged and unacceptable portions of completed work and replace with new work to match adjacent surfaces at no additional cost to the Government.

#### 3.4.2 Cleaning

At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

After completing coating application, clean spattered surfaces. Remove spattered coatings by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

Application equipment must be cleaned promptly and thoroughly with a suitable solvent after each use and stored in a clean, covered, well-ventilated container.

Protect work of other trades against damage from coating operation. Correct damage by cleaning, repairing, replacing, and recoating, as approved by Architect, and leave in an undamaged condition. At completion of construction activities of other trades, touch up and restore damaged or defaced coated surfaces.

-- End of Section --

SECTION 10 00 01

RETRACTABLE ROOF  
10/06

PART 1 GENERAL

The retractable roof system consists of the following items, which are further defined and described in the paragraphs which follow.

- a. Wheelblock assembly.
- b. Gearmotor.
- c. Cam Followers.
- d. Bumpers.
- e. A new supply circuit.
- f. A control panel.
- g. End-of-travel limit switches.
- h. Conduit and wiring.
- i. Flexible cable loops.
- j. Local traction motor disconnect switches.
- k. Support rail protective cover limit switches.
- l. Portable flexible cables and plugs/connectors.

1.1 System Operation

The control devices (control switches, pushbuttons, and pilot lights) for each panel are located on the door of the system control panel. The following description is for one of the two roof panels, but applies equally to the other panel. Each roof panel operates independently; there is no interlocking between them.

The control circuits for the roof panel traction motors shall be configured for "two-wire control". Pressing and holding the roof panel's OPEN or CLOSE pushbutton shall cause the panel's traction motors to run in the opening or closing direction as appropriate. Releasing both pushbuttons shall cause the panel's traction motors to stop. The end-of-travel limit switches mounted on the roof panel for each direction of travel shall cause the traction motors to stop when the appropriate travel limit is reached, and shall prevent further movement in that direction (movement in the opposite direction shall be permitted). The support rail protective cover limit switches (propulsor enclosure roof only) shall prevent traction motors from operating when support rail covers are closed.

Both the control power switch and the emergency stop pushbutton shall be wired to directly remove control power from all motor starters. The control power switch shall also remove control power from all pilot lights.

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. The following shall be submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES.

Provide submittal of all retractable roof components and system wiring schematics, diagrams and portable cables/connectors; G

## PART 2 PRODUCTS

### 2.1 Wheelblock Assembly

Four wheel block assemblies shall be provided for each movable roof panel. Two driven and two free-wheel block assemblies shall be used for each movable roof panel.

#### 2.1.1 Driven Wheels

The driven wheels shall have an outside diameter of 7.874". Wheels shall be graphite impregnated cast iron. Wheels shall have no flanges.

#### 2.1.2 Wheelblock

The wheel block housing shall provide for top-type connection to the structure and connection with the custom weldment as shown. The wheel blocks shall have a 22,000 lb load capacity (minimum) with lubricated for life anti-friction wheel bearings.

#### 2.1.3 Custom Mounting Weldment

Each wheel block assembly shall be mounted to a custom mounting weldment.

High Bay Roof: The custom mounting weldments shall be welded directly to the HSS12X8 beams.

Propulsor Roof: The custom mounting weldments shall be welded directly to the HSS10X6 Beams "B".

#### 2.1.4 Shim Packs

Stainless steel shim packs shall be used between the wheel blocks and custom mounting weldments for vertical adjustments.

### 2.2 Gearmotor

Two gearmotors are required per movable roof panel. Each shall be mounted to "driven wheel blocks" with torque transmission accomplished through a splined shaft connection or similar positive connection.

The driven wheel block assemblies shall use gearmotors with integral brake and manual hand releases, 3/4 hp for 0.5 ft/sec roof panel movement speed. All gearing shall be totally enclosed, helical type, oil bath lubricated, with anti-friction bearings and be rated for 273 ft-lb of output torque (minimum).

Propulsor Roof: Gearmotors shall be mounted near the split between retractable panels or as indicated on the drawings.

### 2.3 Cam Followers

The cam followers shall be 2 ½" O.D. and 1 ½" wide and have minimum ratings of 16,540 lb static loading and 11,720 lb basic dynamic loading. Cam followers shall be chrome plated on rolling surfaces and sides of outer ring. Provide cadmium plating on all other exposed surfaces.

The fixed end of each movable roof panel shall include a pair of cam follower guides with integral eccentric adjustment and sealed bearings at each wheel block assembly. The cam followers shall be mounted to the custom weldment as shown on the Drawings.

The float end will not be fitted with guide rollers or flanges to allow for thermal expansion/contraction and misalignment.

High Bay Roof: Fixed end is the north rail. Float end is south rail. Propulsor Roof: Fixed end is the east rail. Float end is west rail.

#### 2.4 Bumpers

The split between the two movable panels shall include two marine fender type energy absorption bumpers with corresponding strike plates adjusted to contact prior to panel interference and after tripping the fully closed limit switch. The opposite ends of each movable panel shall also be fitted with two marine fender type energy absorption bumpers in case of over-travel.

#### 2.5 Supply Circuit

A new 480 volt, three-phase, three wire (plus ground) circuit shall be provided from an appropriate distribution source to each retractable roof control panel. A new circuit breaker or fused switch, as appropriate, shall be provided at the source to feed the new circuit. Circuit rating shall be as required, minimum 30 amperes.

#### 2.6 Control Panel

A control panel shall be provided to control the roof traction motors. The control panel shall contain the following components: one main circuit breaker with external flange mounted operating handle, individual branch circuit breakers for each roof motor (four total), individual reversing starters for each roof motor (four total), one control transformer, control relays as required, terminal blocks, control devices, internal wiring, and any other necessary components. All devices shall be connected and interlocked to provide for proper and safe operation of the roof panels, and to prevent dangerous operations.

The control panel, complete with all required devices, shall comply with UL 508A and NEC Article 409. Short circuit rating of the panel shall be as required based on the short circuit capacity of the supply circuit.

##### 2.6.1 Control panel enclosure

The control panel enclosure shall be a wall mounted NEMA 4X type 316 stainless steel disconnect type enclosure. Dimensions shall be as required to accommodate all required devices.

##### 2.6.2 Circuit Breakers

Main and branch circuit breakers shall be molded case type, sized per as required.

##### 2.6.3 Reversing starters

Reversing starters shall be NEMA type with melting alloy overload relays, sized as required (minimum NEMA 1). The contactors of each reversing pair shall be electrically and mechanically interlocked.

#### 2.6.4 Control transformer

The Control power transformer shall be a dry type 480:24 volt, single phase control transformer, sized as required. One line of the transformer secondary shall be grounded. Primary and secondary fusing shall be provided.

#### 2.6.5 Control relays

Control relays shall be provided as required to accomplish proper sequencing and control of the roof traction motors. A minimum of two complete spare relays shall be provided, installed in the control panel. Relays shall be NEMA machine tool type with field convertible contacts rated 10 amperes. The number of contacts per relay shall be as required, plus minimum two spare.

#### 2.6.6 Terminal blocks

Terminal blocks shall be heavy duty phenolic insulated rated 600 volts, with corrosion resistant copper box lugs. The number of terminals shall be as required, plus 10% (minimum four) spare. Terminal blocks shall be provided for all control conductors entering or leaving the control panel (power conductors shall terminate directly on their breaker or starter lugs).

#### 2.6.7 Control switches, pushbuttons, and pilot lights

Control switches, pushbuttons, and pilot lights shall be 30mm, heavy duty, oiltight and corrosion resistant type (NEMA 4X and 13). Contacts of switches and pushbuttons shall be rated 10 amperes. Pilot lights shall be push-to-test type with L.E.D. lamps. At a minimum, the devices listed below shall be provided, mounted in the door of the control panel. All devices shall be provided with engraved plastic nameplates. Devices shall be grouped together and clearly identified according to the roof panel that they are associated with.

- a. One keyed ON-OFF maintained two position control power switch (key removal in the OFF position only)
- b. One push-off-pull-on mushroom head red illuminated emergency stop pushbutton (illuminated when pressed)
- c. One green pilot light for MAIN POWER ON
- d. One green pilot light for CONTROL POWER ON
- e. One amber pilot light for each run direction (OPEN and CLOSE) for each roof panel (four total)
- f. One red overload pilot light for each overload relay (four total)
- g. One OPEN momentary pushbutton with extended height guard per roof panel (two total)
- h. One CLOSE momentary pushbutton with extended height guard per roof panel (two total)

Internal wiring shall be 600 volt type SIS stranded copper rated 90 Celsius. Minimum size shall be 14 AWG.

#### 2.7 Limit Switches

Two end-of-travel limit switches shall be provided for each roof panel for each direction of travel (eight total). The limit switches shall be heavy duty, factory sealed, submersible, lever arm switches rated NEMA 4X, 6P, and 13. Contacts shall be rated 10 amperes. Switch shall be rated for operation from -40 to +100 Celsius. Switch shall be provided with a factory attached flexible cable. NEMA 4X type 316 stainless steel junction boxes, with terminal blocks as required for the control panel, shall be provided as required for connecting the limit switch cables to the roof conduit system. Switch arms shall be stainless steel or other similarly corrosion resistant material.

Each limit switch shall contain at least one normally-open contact for indication, and one normally-closed contact for interlocking (motor shutoff). The contacts shall be electrically isolated from each other. The limit switches shall be wired together in redundant pairs for each roof panel and direction of travel; the normally-open indication contacts shall be wired in parallel, and the normally-closed interlocking contacts shall be wired in series.

The limit switches shall be installed such that they are reasonably protected from the weather and will provide proper operation in all likely condition.

Provide limit switches for support rail protective covers (one limit switch per cover (four total)). Limit switches shall prevent motorized roof from operating when support rail protective covers are closed.

## 2.8 Conduit and Wiring

Conduit and wiring shall be provided as required to interconnect all system components. Sizes of conduit and wiring shall be as required.

### 2.8.1 Rigid conduit

Rigid conduit shall be threaded, plastic coated, type RMC hot-dip galvanized steel complying with NEMA RN1. The exterior PVC coating shall be minimum 40 mils thick, and the interior urethane coating shall be minimum 2 mils thick. The conduit shall be UL Listed with the PVC coating as the primary corrosion protection, and shall be ETL verified to the Intertek ETL SEMKO High Temperature H2O PVC Coating Adhesion Test Procedure for 200 hours. Minimum size shall be 3/4 inch. Conduit shall be installed in accordance with the manufacturer's recommendations and procedures.

### 2.8.2 Flexible conduit

A minimum 18 inch length of flexible conduit shall be provided for final connection to each motor, and at additional locations where flexibility is required. A conduit body shall be provided on at least one side of all flexible conduits. Flexible conduits shall be type LFMC galvanized steel, with sunlight, oil, and weather resistant PVC jacket. Minimum size shall be 3/4 inch.

All conduit bodies, couplings, connectors, clamps, and other fittings shall be PVC coated as required above for rigid conduit. All bolts, threaded rod, nuts, washers, etc. shall be type 316 stainless steel. On the movable panels, conduits shall be supported at maximum 6 foot intervals. Elsewhere, conduits shall be supported at maximum 10 foot intervals.

### 2.8.3 Junction boxes

Junction boxes shall be NEMA 4X type 316 stainless steel. Junction boxes shall be provided and sized as required.

### 2.8.4 Wiring

Wiring shall be 600 volt type XHHW-2 stranded copper rated 90 Celsius. Minimum size shall be 12 AWG. The number of conductors in each conduit shall be as required, plus 10% spare (minimum two spare per conduit). Splices, where required, shall be on heavy duty terminal blocks as required for the control panel.

Separate conduits and junction boxes shall be provided for power and control conductors.

Each wire shall be assigned a unique wire number, and all wires shall be labeled with their number at all termination and splice points with machine printed weatherproof marking sleeves. Spare conductors shall be clearly identified as such.

An equipment grounding conductor shall be included in all conduits and cables. The size of the equipment grounding conductor shall be equal to that of the largest conductor in the conduit or cable.

## 2.9 Flexible Loop

Two flexible loops shall be provided, one for each movable roof panel, to provide for electrical connections between each roof panel and the fixed structure. Each loop shall consist of heavy duty type SOOW flexible cords. Cords shall be oil, sunlight, and weather resistant, with extra flexible copper conductors rated 600 volts and 90 Celsius. Number and size of conductors shall be as required; minimum size shall be 12 AWG. Separate cords shall be provided for power and control conductors, and the number of individual cords for each roof panel shall be as required.

Each cord shall be provided with quick-disconnect, multipin type plugs on each end. Plugs shall mate with matching receptacles, installed on junction boxes located on the movable roof panels and the fixed structure. Plugs and receptacles shall be appropriately rated for the circuits served. Each cord shall also be provided with stainless steel basket-weave type strain relief grips at each end. The grips shall be attached to the movable roof panels and the fixed structure with easily removable hardware of stainless steel, or similarly corrosion resistant material.

The fixed end of each loop shall be located at the "mid-travel" point for the corresponding roof panel, such that the loop is at minimum droop when the panel is at its fully open or fully closed position and at maximum droop when the panel is halfway between fully open and fully closed. Sufficient slack shall be provided to achieve approximately two to three feet of droop at the fully open and fully closed positions ("minimum droop").

Provide portable flexible cables from junction boxes located on fixed roof structure to retractable roof control panels located remotely (Dry Dock Floor area). Portable cables to contain all required power/control/status

wiring for roof mounted devices (ie roof motors, end-of-travel limit switches, support rail protective rail limit switches (propulsor roof only), etc.). Each portable cable to be provided with quick-disconnect, multipin type plugs on each end. Plugs to mate with matching receptacles installed on junction boxes on fixed roof structure and control panels. Retractable roof manufacturer to provide all plugs and receptacles including receptacles connected to portable power panelboards.

#### 2.10 Local Disconnect Switches

A local disconnect switch shall be provided for each traction motor, mounted adjacent to the motor served. Switches shall be heavy-duty, three pole, single throw, non-fused safety switches with external handles capable of being locked in the OFF position. Switch enclosures shall be NEMA 4X type 316 stainless steel with a viewing window located in the enclosure door over the switch contacts. Switch ratings shall be as required.

### PART 3 EXECUTION

Install in accordance with the manufacturer's instructions and as specified herein.

All work shall comply with the National Electrical Code (NEC), 2008 Edition. All materials and components shall be UL Listed or Recognized.

#### 3.1 Installation

The rails shall be set to be straight within  $\pm 1/8$ " from end to end and within  $\pm 1/16$ " per 20 feet of length. Rail elevation shall be within  $\pm 1/8$ " from end to end and within  $\pm 1/16$ " per 20 feet of length. Difference in elevation from one rail to the other rail shall be within  $\pm 1/32$ ". The rails shall be parallel within  $\pm 1/32$ ".

All wheel block axes shall be parallel within  $\pm 0.010$ ". Pairs of wheels on a common rail and roof panel shall be in line within a parallel offset of  $\pm 1/32$ ". All 4 wheels shall have centered (at 65oF ambient) and firm contact with their rail for the entire length of travel.

Special coatings offered by the manufacturer(s) shall be used for harsh environment applications.

-- End of Section --

SECTION 26 00 00.00 20

BASIC ELECTRICAL MATERIALS AND METHODS

07/06

PART 1 GENERAL

1.1 REFERENCES

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

ASTM INTERNATIONAL (ASTM)

ASTM D 709 (2001) Laminated Thermosetting Materials

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)

IEEE C2 (2005) National Electrical Safety Code

IEEE C57.12.28 (2005) Standard for Pad-Mounted Equipment - Enclosure Integrity

IEEE C57.12.29 (1999) Pad-Mounted Equipment - Enclosure Integrity for Coastal Environments

IEEE Std 100 (2000) The Authoritative Dictionary of IEEE Standards Terms

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

NEMA 250 (2003) Enclosures for Electrical Equipment (1000 Volts Maximum)

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70 (2005; TIA 2005) National Electrical Code

1.2 RELATED REQUIREMENTS

This section applies to certain sections of Division 02, EXISTING CONDITIONS Division 13, SPECIAL CONSTRUCTION, and Divisions 22 and 23, PLUMBING and HEATING VENTILATING AND AIR CONDITIONING. This section applies to all sections of Division 26 and 33, ELECTRICAL and UTILITIES, of this project specification unless specified otherwise in the individual sections. This section has been incorporated into, and thus, does not apply to, and is not referenced in the following sections.

Section 26 51 00 INTERIOR LIGHTING

1.3 DEFINITIONS

- a. Unless otherwise specified or indicated, electrical and electronics terms used in these specifications, and on the drawings, shall be as defined in IEEE Std 100.

- b. The technical sections referred to herein are those specification sections that describe products, installation procedures, and equipment operations and that refer to this section for detailed description of submittal types.
- c. The technical paragraphs referred to herein are those paragraphs in PART 2 - PRODUCTS and PART 3 - EXECUTION of the technical sections that describe products, systems, installation procedures, equipment, and test methods.

#### 1.4 ELECTRICAL CHARACTERISTICS

Electrical characteristics for this project shall be 480 volts, three phase and 120/208 volts, three phase, four wire, 60 Hz. Final connections to the power distribution system shall be made by the Government.

#### 1.5 ADDITIONAL SUBMITTALS INFORMATION

Submittals required in other sections that refer to this section must conform to the following additional requirements as applicable.

##### 1.5.1 Shop Drawings (SD-02)

Include wiring diagrams and installation details of equipment indicating proposed location, layout and arrangement, control panels, accessories, piping, ductwork, and other items that must be shown to ensure a coordinated installation. Wiring diagrams shall identify circuit terminals and indicate the internal wiring for each item of equipment and the interconnection between each item of equipment. Drawings shall indicate adequate clearance for operation, maintenance, and replacement of operating equipment devices.

##### 1.5.2 Product Data (SD-03)

Submittal shall include performance and characteristic curves.

#### 1.6 QUALITY ASSURANCE

##### 1.6.1 Regulatory Requirements

In each of the publications referred to herein, consider the advisory provisions to be mandatory, as though the word, "shall" had been substituted for "should" wherever it appears. Interpret references in these publications to the "authority having jurisdiction," or words of similar meaning, to mean the Contracting Officer. Equipment, materials, installation, and workmanship shall be in accordance with the mandatory and advisory provisions of NFPA 70 unless more stringent requirements are specified or indicated.

##### 1.6.2 Standard Products

Provide materials and equipment that are products of manufacturers regularly engaged in the production of such products which are of equal material, design and workmanship. Products shall have been in satisfactory commercial or industrial use for 2 years prior to bid opening. The 2-year period shall include applications of equipment and materials under similar circumstances and of similar size. The product shall have been on sale on

the commercial market through advertisements, manufacturers' catalogs, or brochures during the 2-year period. Where two or more items of the same class of equipment are required, these items shall be products of a single manufacturer; however, the component parts of the item need not be the products of the same manufacturer unless stated in the technical section.

#### 1.6.2.1 Alternative Qualifications

Products having less than a 2-year field service record will be acceptable if a certified record of satisfactory field operation for not less than 6000 hours, exclusive of the manufacturers' factory or laboratory tests, is furnished.

#### 1.6.2.2 Material and Equipment Manufacturing Date

Products manufactured more than 3 years prior to date of delivery to site shall not be used, unless specified otherwise.

### 1.7 WARRANTY

The equipment items shall be supported by service organizations which are reasonably convenient to the equipment installation in order to render satisfactory service to the equipment on a regular and emergency basis during the warranty period of the contract.

### 1.8 POSTED OPERATING INSTRUCTIONS

Provide for each system and principal item of equipment as specified in the technical sections for use by operation and maintenance personnel. The operating instructions shall include the following:

- a. Wiring diagrams, control diagrams, and control sequence for each principal system and item of equipment.
- b. Start up, proper adjustment, operating, lubrication, and shutdown procedures.
- c. Safety precautions.
- d. The procedure in the event of equipment failure.
- e. Other items of instruction as recommended by the manufacturer of each system or item of equipment.

Print or engrave operating instructions and frame under glass or in approved laminated plastic. Post instructions where directed. For operating instructions exposed to the weather, provide weather-resistant materials or weatherproof enclosures. Operating instructions shall not fade when exposed to sunlight and shall be secured to prevent easy removal or peeling.

### 1.9 MANUFACTURER'S NAMEPLATE

Each item of equipment shall have a nameplate bearing the manufacturer's name, address, model number, and serial number securely affixed in a conspicuous place; the nameplate of the distributing agent will not be acceptable.

#### 1.10 FIELD FABRICATED NAMEPLATES

ASTM D 709. Provide laminated plastic nameplates for each equipment enclosure, relay, switch, and device; as specified in the technical sections or as indicated on the drawings. Each nameplate inscription shall identify the function and, when applicable, the position. Nameplates shall be melamine plastic, 0.125 inch thick, white with black center core. Surface shall be matte finish. Corners shall be square. Accurately align lettering and engrave into the core. Minimum size of nameplates shall be one by 2.5 inches. Lettering shall be a minimum of 0.25 inch high normal block style.

#### 1.11 WARNING SIGNS

Provide warning signs for the enclosures of electrical equipment including substations, pad-mounted transformers, pad-mounted switches, generators, and switchgear having a nominal rating exceeding 600 volts.

- a. When the enclosure integrity of such equipment is specified to be in accordance with IEEE C57.12.28 or IEEE C57.12.29, such as for pad-mounted transformers, provide self-adhesive warning signs on the outside of the high voltage compartment door(s). Sign shall be a decal and shall have nominal dimensions of 7 by 10 inches with the legend "DANGER HIGH VOLTAGE" printed in two lines of nominal 2 inch high letters. The word "DANGER" shall be in white letters on a red background and the words "HIGH VOLTAGE" shall be in black letters on a white background. Decal shall be Panduit No. PPS0710D72 or approved equal.

#### 1.12 ELECTRICAL REQUIREMENTS

Electrical installations shall conform to IEEE C2, NFPA 70, and requirements specified herein.

#### 1.13 INSTRUCTION TO GOVERNMENT PERSONNEL

Where specified in the technical sections, furnish the services of competent instructors to give full instruction to designated Government personnel in the adjustment, operation, and maintenance of the specified systems and equipment, including pertinent safety requirements as required. Instructors shall be thoroughly familiar with all parts of the installation and shall be trained in operating theory as well as practical operation and maintenance work. Instruction shall be given during the first regular work week after the equipment or system has been accepted and turned over to the Government for regular operation. The number of man-days (8 hours per day) of instruction furnished shall be as specified in the individual section.

### PART 2 PRODUCTS

#### 2.1 FACTORY APPLIED FINISH

Electrical equipment shall have factory-applied painting systems which shall, as a minimum, meet the requirements of NEMA 250 corrosion-resistance test.

### PART 3 EXECUTION

### 3.1 FIELD APPLIED PAINTING

Paint electrical equipment as required to match finish of adjacent surfaces or to meet the indicated or specified safety criteria. Painting shall be as specified in the section specifying the associated electrical equipment.

### 3.2 FIELD FABRICATED NAMEPLATE MOUNTING

Provide number, location, and letter designation of nameplates as indicated. Fasten nameplates to the device with a minimum of two sheet-metal screws or two rivets.

### 3.3 WARNING SIGN MOUNTING

Provide the number of signs required to be readable from each accessible side, but space the signs a maximum of 30 feet apart.

-- End of Section --

## SECTION 26 20 00

## INTERIOR DISTRIBUTION SYSTEM

07/07

## PART 1 GENERAL

## 1.1 REFERENCES

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

## ASTM INTERNATIONAL (ASTM)

ASTM B 1	(2001) Standard Specification for Hard-Drawn Copper Wire
ASTM B 8	(2004) Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft
ASTM D 709	(2001) Laminated Thermosetting Materials

## INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)

IEEE C2	(2005) National Electrical Safety Code
IEEE Std 100	(2000) The Authoritative Dictionary of IEEE Standards Terms

## NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

NEMA 250	(2003) Enclosures for Electrical Equipment (1000 Volts Maximum)
NEMA C80.1	(2005) Standard for Electrical Rigid Steel Conduit (ERSC)
NEMA FU 1	(2002) Low Voltage Cartridge Fuses
NEMA ICS 1	(2000; R 2005) Standard for Industrial Control and Systems General Requirements
NEMA ICS 2	(2000; Errata 2002; R 2005; Errata 2006) Standard for Industrial Control and Systems: Controllers, Contractors, and Overload Relays Rated Not More than 2000 Volts AC or 750 Volts DC: Part 8 - Disconnect Devices for Use in Industrial Control Equipment
NEMA ICS 4	(2005) Industrial Control and Systems: Terminal Blocks
NEMA ICS 6	(2006) Standard for Industrial Controls

and Systems Enclosures

NEMA KS 1 (2001) Enclosed and Miscellaneous  
Distribution Equipment Switches (600 Volts  
Maximum)

NEMA WD 1 (1999; R 2005) Standard for General  
Requirements for Wiring Devices

NEMA WD 6 (2002) Standard for Wiring Devices -  
Dimensional Requirements

NEMA Z535.4 (2002) Product Safety Signs and Labels

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70 (2005; TIA 2005) National Electrical Code

NFPA 70E (2004; AMD 2004) Electrical Safety in the  
Workplace

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

29 CFR 1910.147 Control of Hazardous Energy (Lock Out/Tag  
Out)

UNDERWRITERS LABORATORIES (UL)

UL 1 (2005) Standard for Flexible Metal Conduit

UL 1010 (2006) Receptacle-Plug Combinations for  
Use in Hazardous (Classified) Locations

UL 1063 (2006) Standard for Safety Machine-Tools  
Wires and Cables

UL 198C (1986; Rev thru Feb 1998)  
High-Interrupting-Capacity Fuses, Current-  
Limiting Types

UL 198E (1988; Rev Jul 1988) Class R Fuses

UL 198H (1988; Rev thru Nov 1993) Class T Fuses

UL 360 (2003) Liquid-Tight Flexible Steel Conduit

UL 44 (2005; Rev thru Nov 2005)  
Thermoset-Insulated Wires and Cables

UL 486A-486B (2003; Rev thru Aug 2006) Standard for  
Wire Connectors

UL 486C (2004; Rev thru Aug 2006) Standard for  
Splicing Wire Connectors

UL 489 (2004; Rev thru Jun 2006) Standard for  
Molded-Case Circuit Breakers, Molded-Case

Switches and Circuit-Breaker Enclosures

- UL 498 (2001; Rev thru Mar 2006) Attachment Plugs and Receptacles
- UL 50 (2003; R 2005) Standard for Enclosures for Electrical Equipment
- UL 506 (2000; Rev thru May 2006) Specialty Transformers
- UL 508 (2005) Standard for Industrial Control Equipment
- UL 510 (2005; Rev thru Aug 2005) Polyvinyl Chloride, Polyethylene, and Rubber Insulating Tape
- UL 512 (1993; Rev thru Mar 1999) Fuseholders
- UL 514A (2005) Standard for Metallic Outlet Boxes
- UL 514B (2004; Rev thru Apr 2006) Standard for Conduit, Tubing and Cable Fittings
- UL 6 (2004e13) Standard for Electrical Rigid Metal Conduit-Steel
- UL 67 (1993; Rev thru Apr 2006) Standard for Panelboards
- UL 674 (2003; Rev thru Apr 2006) Standard for Electric Motors and Generators for Use in Division 1 Hazardous (Classified) Locations
- UL 698 (2006) Industrial Control Equipment for Hazardous (Classified) Locations
- UL 83 (2003; Rev thru Apr 2006) Standard for Thermoplastic-Insulated Wires and Cables
- UL 869A (2006) Reference Standard for Service Equipment
- UL 877 (1993; Rev thru Nov 1999) Circuit Breakers and Circuit-Breaker Enclosures for Use in Hazardous (Classified) Locations
- UL 886 (1994; Rev thru Nov 2005) Outlet Boxes and Fittings for Use in Hazardous (Classified) Locations
- UL 943 (2006) Ground-Fault Circuit-Interrupters

1.2 DEFINITIONS

Unless otherwise specified or indicated, electrical and electronics terms

used in these specifications, and on the drawings, shall be as defined in IEEE Std 100.

### 1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for Contractor Quality Control approval. The following shall be submitted in accordance with Section

01 33 00 SUBMITTAL PROCEDURES: SD-

#### 02 Shop Drawings

Panelboards; G

Include wiring diagrams and installation details of equipment indicating proposed location, layout and arrangement, control panels, accessories, piping, ductwork, and other items that must be shown to ensure a coordinated installation. Wiring diagrams shall identify circuit terminals and indicate the internal wiring for each item of equipment and the interconnection between each item of equipment. Drawings shall indicate adequate clearance for operation, maintenance, and replacement of operating equipment devices.

Marking strips drawings; G

#### SD-03 Product Data

Receptacles; G

Circuit breakers; G

Switches; G

Motor controllers; G

Submittals shall include performance and characteristic curves.

#### SD-06 Test Reports

600-volt wiring test; G

#### SD-07 Certificates

Fuses; G

#### SD-10 Operation and Maintenance Data

Electrical Systems, Data Package 5; G

Submit operation and maintenance data in accordance with Section 01 78 23, OPERATION AND MAINTENANCE DATA and as specified herein.

### 1.4 QUALITY ASSURANCE

#### 1.4.1 Fuses

Submit coordination data as specified in paragraph, FUSES of this section.

#### 1.4.2 Regulatory Requirements

In each of the publications referred to herein, consider the advisory provisions to be mandatory, as though the word, "shall" had been substituted for "should" wherever it appears. Interpret references in these publications to the "authority having jurisdiction," or words of similar meaning, to mean the Contracting Officer. Equipment, materials, installation, and workmanship shall be in accordance with the mandatory and advisory provisions of NFPA 70 unless more stringent requirements are specified or indicated.

#### 1.4.3 Standard Products

Provide materials and equipment that are products of manufacturers regularly engaged in the production of such products which are of equal material, design and workmanship. Products shall have been in satisfactory commercial or industrial use for 2 years prior to bid opening. The 2-year period shall include applications of equipment and materials under similar circumstances and of similar size. The product shall have been on sale on the commercial market through advertisements, manufacturers' catalogs, or brochures during the 2-year period. Where two or more items of the same class of equipment are required, these items shall be products of a single manufacturer; however, the component parts of the item need not be the products of the same manufacturer unless stated in this section.

##### 1.4.3.1 Alternative Qualifications

Products having less than a 2-year field service record will be acceptable if a certified record of satisfactory field operation for not less than 6000 hours, exclusive of the manufacturers' factory or laboratory tests, is furnished.

##### 1.4.3.2 Material and Equipment Manufacturing Date

Products manufactured more than 3 years prior to date of delivery to site shall not be used, unless specified otherwise.

#### 1.5 MAINTENANCE

##### 1.5.1 Electrical Systems

Submit operation and maintenance manuals for electrical systems that provide basic data relating to the design, operation, and maintenance of the electrical distribution system for the building. This shall include:

- a. Single line diagram of the "as-built" building electrical system.
- b. Schematic diagram of electrical control system (other than HVAC, covered elsewhere).
- c. Manufacturers' operating and maintenance manuals on active electrical equipment.

#### 1.6 WARRANTY

The equipment items shall be supported by service organizations which are reasonably convenient to the equipment installation in order to render satisfactory service to the equipment on a regular and emergency basis during the warranty period of the contract.

## PART 2 PRODUCTS

### 2.1 MATERIALS AND EQUIPMENT

Materials, equipment, and devices shall, as a minimum, meet requirements of UL, where UL standards are established for those items, and requirements of NFPA 70.

### 2.2 CONDUIT AND FITTINGS

Shall conform to the following:

#### 2.2.1 Rigid Metallic Conduit

##### 2.2.1.1 Rigid, Threaded Zinc-Coated Steel

Conduit NEMA C80.1, UL 6.

#### 2.2.2 Flexible Metal

Conduit UL 1.

##### 2.2.2.1 Liquid-Tight Flexible Metal Conduit,

Steel UL 360.

#### 2.2.3 Fittings for Metal Conduit and Flexible Metal Conduit

UL 514B. Ferrous fittings shall be cadmium- or zinc-coated in accordance with UL 514B.

##### 2.2.3.1 Fittings for Rigid Metal Conduit

Threaded-type. Split couplings unacceptable.

### 2.3 OUTLET BOXES AND COVERS

UL 514A, cadmium- or zinc-coated, if ferrous metal.

### 2.4 CABINETS, JUNCTION BOXES, AND PULL BOXES

Volume greater than 100 cubic inches, UL 50, hot-dip, zinc-coated, if sheet steel.

### 2.5 WIRES AND CABLES

Wires and cables shall meet applicable requirements of NFPA 70 and UL for type of insulation, jacket, and conductor specified or indicated. Wires and cables manufactured more than 12 months prior to date of delivery to site shall not be used.

### 2.5.1 Conductors

Conductors No. 8 AWG and larger diameter shall be stranded. Conductors No. 10 AWG and smaller diameter shall be solid, except that conductors for remote control, alarm, and signal circuits, classes 1, 2, and 3, shall be stranded unless specifically indicated otherwise. Conductor sizes and capacities shown are based on copper, unless indicated otherwise. All conductors shall be copper.

#### 2.5.1.1 Minimum Conductor Sizes

Minimum size for branch circuits shall be No. 12 AWG; for Class 1 remote-control and signal circuits, No. 14 AWG; for Class 2 low-energy, remote-control and signal circuits, No. 16 AWG; and for Class 3 low-energy, remote-control, alarm and signal circuits, No. 22 AWG.

### 2.5.2 Color Coding

Provide for service, feeder, branch, control, and signaling circuit conductors. Color shall be green for grounding conductors and white for neutrals; except where neutrals of more than one system are installed in same raceway or box, other neutrals shall be white with a different colored (not green) stripe for each. Color of ungrounded conductors in different voltage systems shall be as follows:

- a. 208/120 volt, three-phase
  - (1) Phase A - black
  - (2) Phase B - red
  - (3) Phase C - blue
- b. 480/277 volt, three-phase
  - (1) Phase A - brown
  - (2) Phase B - orange
  - (3) Phase C - yellow
- c. 120/240 volt, single phase: Black and red

### 2.5.3 Insulation

Unless specified or indicated otherwise or required by NFPA 70, power and lighting wires shall be 600-volt, Type THWN/THHN conforming to UL 83, except that grounding wire may be type TW conforming to UL 83; remote-control and signal circuits shall be Type TW or TF, conforming to UL 83. Where lighting fixtures require 90-degree Centigrade (C) conductors, provide only conductors with 90-degree C insulation or better.

### 2.5.4 Bonding Conductors

ASTM B 1, solid bare copper wire for sizes No. 8 AWG and smaller diameter; ASTM B 8, Class B, stranded bare copper wire for sizes No. 6 AWG and larger diameter.

## 2.6 SPLICES AND TERMINATION COMPONENTS

UL 486A-486B for wire connectors and UL 510 for insulating tapes. Connectors for No. 10 AWG and smaller diameter wires shall be insulated, pressure-type in accordance with UL 486A-486B or UL 486C (twist-on splicing connector). Provide solderless terminal lugs on stranded conductors.

## 2.7 DEVICE PLATES

Provide UL listed, one-piece device plates for outlets to suit the devices installed. For metal outlet boxes, plates shall be of cast metal having round or beveled edges. Plates shall be gasketed and UL listed for "wet locations."

## 2.8 SWITCHES

### 2.8.1 Breakers Used as Switches

For 120- and 277-Volt fluorescent fixtures, mark breakers "SWD" in accordance with UL 489.

### 2.8.2 Disconnect Switches

NEMA KS 1. Provide heavy duty-type switches where indicated, where switches are rated higher than 240 volts, and for double-throw switches. Fused switches shall utilize Class R fuse holders and fuses, unless indicated otherwise. Switches serving as motor-disconnect means shall be horsepower rated. Provide switches in NEMA enclosure as indicated per NEMA ICS 6.

## 2.9 FUSES

NEMA FU 1. Provide complete set of fuses for each fusible switch. Time-current characteristics curves of fuses serving motors or connected in series with circuit breakers or other circuit protective devices shall be coordinated for proper operation. Submit coordination data for approval. Fuses shall have voltage rating not less than circuit voltage.

### 2.9.1 Fuse holders

Provide in accordance with UL 512.

### 2.9.2 Cartridge Fuses, Current Limiting Type (Class R)

UL 198E, Class RK-1, RK-5, or time-delay type. Associated fuse holders shall be Class R only.

### 2.9.3 Cartridge Fuses, High-Interrupting Capacity, Current Limiting Type (Classes J, L, and CC)

UL 198C, Class J for zero to 600 amperes, Class L for 601 to 6,000 amperes, and Class CC for zero to 30 amperes.

### 2.9.4 Cartridge Fuses, Current Limiting Type (Class T)

UL 198H, Class T for zero to 1,200 amperes, 300 volts; and zero to 800 amperes, 600 volts.

## 2.10 RECEPTACLES

UL 498, hard use, heavy-duty, grounding-type. Ratings and configurations shall be as indicated. Bodies shall be of brown as per NEMA WD 1. Face and body shall be thermoplastic supported on a metal mounting strap. Dimensional requirements shall be per NEMA WD 6. Provide screw-type, side-wired wiring terminals. Connect grounding pole to mounting strap. The receptacle shall contain triple-wipe power contacts and double or triple-wipe ground contacts.

### 2.10.1 Weatherproof Receptacles

Provide in cast metal box with gasketed, weatherproof, cast-metal cover plate and gasketed cap over each receptacle opening. Provide caps with a spring-hinged flap. Receptacle shall be UL listed for use in "wet locations with plug in use."

### 2.10.2 Special Purpose Receptacles

Receptacles serving propulsor enclosure are special purpose. Provide in ratings, type and configuration indicated. Furnish one matching plug with each receptacle.

### 2.10.3 Plugs

Provide heavy-duty, rubber-covered three-, four-, or five-wire watertight/dusttight cords, receptacles/connectors and plugs of required size and attach to lighting/power circuitry between separable levels/landings of structures. Plugs shall be UL listed with receptacles, complete with grounding blades. Where portable power is to be provided by the Government, provide matching plugs and cord assemblies and turn over to the Government.

## 2.11 PANELBOARDS

UL 67 and UL 50 having a short-circuit current rating as indicated. Panelboards for use as service disconnecting means shall additionally conform to UL 869A. Panelboards shall be circuit breaker-equipped. Design shall be such that individual breakers can be removed without disturbing adjacent units or without loosening or removing supplemental insulation supplied as means of obtaining clearances as required by UL. "Specific breaker placement" is required in panelboards to match the breaker placement indicated in the panelboard schedule on the drawings. Use of "Subfeed Breakers" is not acceptable unless specifically indicated otherwise. Main breaker shall be "separately" mounted "above" or "below" branch breakers. Where "space only" is indicated, make provisions for future installation of breakers. Directories shall indicate load served by each circuit in panelboard. Directories shall also indicate source of service to panelboard (e.g., Panel PA served from Panel MDP). Type directories and mount in holder behind transparent protective covering. Panelboards shall be listed and labeled for their intended use. Panelboard shall have nameplates in accordance with paragraph FIELD FABRICATED NAMEPLATES.

### 2.11.1 Enclosure

Enclosures shall meet the requirements of UL 50. All cabinets shall be

rated as indicated. Cabinets (other than hazardous location type) shall be fabricated from sheet steel of not less than No. 10 gauge with full seam-welded box ends. Cabinets shall be hot-dipped galvanized after fabrication. Cabinets shall be painted in accordance with paragraph PAINTING. Cabinets (other than hazardous location type) shall be of NEMA 3R raintight with conduit hubs welded to the cabinet. Front edges of cabinets shall be form-flanged or fitted with structural shapes welded or riveted to the sheet steel, for supporting the panelboard front. All cabinets shall be so fabricated that no part of any surface on the finished cabinet shall deviate from a true plane by more than 1/8 inch. Flush doors shall be mounted on hinges that expose only the hinge roll to view when the door is closed. Each door shall be fitted with a combined catch and lock, except that doors over 24 inches long shall be provided with a three-point latch having a knob with a T-handle, and a cylinder lock. Two keys shall be provided with each lock, and all locks shall be keyed alike. Finished-head cap screws shall be provided for mounting the panelboard fronts on the cabinets.

#### 2.11.2 Panelboard Buses

Support bus bars on bases independent of circuit breakers. Main buses and back pans shall be designed so that breakers may be changed without machining, drilling, or tapping. Provide isolated neutral bus in each panel for connection of circuit neutral conductors. Provide separate ground bus identified as equipment grounding bus per UL 67 for connecting grounding conductors; bond to steel cabinet.

#### 2.11.3 Circuit Breakers

UL 489, thermal magnetic-type having a minimum short-circuit current rating equal to the short-circuit current rating of the panelboard in which the circuit breaker shall be mounted. Breaker terminals shall be UL listed as suitable for type of conductor provided. Series rated circuit breakers and plug-in circuit breakers are unacceptable.

##### 2.11.3.1 Multipole Breakers

Provide common trip-type with single operating handle. Breaker design shall be such that overload in one pole automatically causes all poles to open. Maintain phase sequence throughout each panel so that any three adjacent breaker poles are connected to Phases A, B, and C, respectively.

##### 2.11.3.2 Circuit Breaker With GFI

UL 943 and NFPA 70. Provide with "push-to-test" button, visible indication of tripped condition, and ability to detect and trip on current imbalance of 6 milliamperes or greater per requirements of UL 943 for Class A GFI devices, for personnel protection.

##### 2.11.3.3 Circuit Breakers for HVAC Equipment

Circuit breakers for HVAC equipment having motors (group or individual) shall be marked for use with HACR type and UL listed as HACR type.

#### 2.12 MOTOR CONTROLLERS

UL 508, NEMA ICS 1, and NEMA ICS 2, Controllers shall have thermal

overload protection in each phase and shall have one spare normally open and one spare normally closed auxiliary contact. Provide controllers for motors rated 1-hp and above with electronic phase-voltage monitors designed to protect motors from phase-loss, undervoltage, and overvoltage. Provide protection for motors from immediate restart by a time adjustable restart relay. Magnetic-type motor controllers shall have undervoltage protection when used with momentary-contact pushbutton stations or switches and shall have undervoltage release when used with maintained-contact pushbutton stations or switches. When used with pressure, float, or similar automatic-type or maintained-contact switch, controller shall have hand/off/automatic selector switch. Connections to selector switch shall be such that only normal automatic regulatory control devices are bypassed when switch is in "hand" position. Safety control devices, such as low and high pressure cutouts, high temperature cutouts, and motor overload protective devices, shall be connected in motor control circuit in "hand" and "automatic" positions. Control circuit connections to hand/off/automatic selector switch or to more than one automatic regulatory control device shall be made in accordance with indicated or manufacturer's approved wiring diagram. Selector switch shall have means for locking in any position. For each motor not in sight of controller or where controller disconnecting means is not in sight of motor location and driven machinery location, controller disconnecting means shall be capable of being locked in open position. As an alternative, provide a manually operated, lockable, nonfused switch which disconnects motor from supply source within sight of motor. Overload protective devices shall provide adequate protection to motor windings; be thermal inverse-time-limit type; and include manual reset-type pushbutton on outside of motor controller case. Cover of combination motor controller and manual switch or circuit breaker shall be interlocked with operating handle of switch or circuit breaker so that cover cannot be opened unless handle of switch or circuit breaker is in "off" position. Provide controllers with classifications as indicated.

#### 2.12.1 Control Wiring

All control wire shall be stranded tinned copper switchboard wire with 600-volt flame-retardant insulation Type SIS meeting UL 44, or Type MTW meeting UL 1063, and shall pass the VW-1 flame tests included in those standards. Hinge wire shall have Class K stranding. Current transformer secondary leads shall be not smaller than No. 10 AWG. The minimum size of control wire shall be No. 14 AWG. Power wiring for 480-volt circuits and below shall be of the same type as control wiring and the minimum size shall be No. 12 AWG. Special attention shall be given to wiring and terminal arrangement on the terminal blocks to permit the individual conductors of each external cable to be terminated on adjacent terminal points.

#### 2.12.2 Control Circuit Terminal Blocks

NEMA ICS 4. Control circuit terminal blocks for control wiring shall be molded or fabricated type with barriers, rated not less than 600 volts. The terminals shall be removable binding, fillister or washer head screw type, or of the stud type with contact and locking nuts. The terminals shall be not less than No. 10 in size and shall have sufficient length and space for connecting at least two indented terminals for 10 AWG conductors to each terminal. The terminal arrangement shall be subject to the approval of the Contracting Officer and not less than four (4) spare terminals or 10 percent, whichever is greater, shall be provided on each

block or group of blocks. Modular, pull apart, terminal blocks will be acceptable provided they are of the channel or rail-mounted type. The Contractor shall submit data showing that the proposed alternate will accommodate the specified number of wires, are of adequate current-carrying capacity, and are constructed to assure positive contact between current-carrying parts.

#### 2.12.2.1 Types of Terminal Blocks

- a. Short-Circuiting Type: Short-circuiting type terminal blocks shall be furnished for all current transformer secondary leads and shall have provision for shorting together all leads from each current transformer without first opening any circuit. Terminal blocks shall meet the requirements of paragraph CONTROL CIRCUIT TERMINAL BLOCKS above.
- b. Load Type: Load terminal blocks rated not less than 600 volts and of adequate capacity shall be provided for the conductors for NEMA Size 3 and smaller motor controllers and for other power circuits, except those for feeder tap units. The terminals shall be of either the stud type with contact nuts and locking nuts or of the removable screw type, having length and space for at least two indented terminals of the size required on the conductors to be terminated. For conductors rated more than 50 amperes, screws shall have hexagonal heads. Conducting parts between connected terminals shall have adequate contact surface and cross-section to operate without overheating. Each connected terminal shall have the circuit designation or wire number placed on or near the terminal in permanent contrasting color.

#### 2.12.3 Control Circuits

Control circuits shall have maximum voltage of 120 volts derived from control transformer in same enclosure. Transformers shall conform to UL 506, as applicable. Transformers, other than transformers in bridge circuits, shall have primaries wound for voltage available and secondaries wound for correct control circuit voltage. Size transformers so that 80 percent of rated capacity equals connected load. Provide disconnect switch on primary side. Provide fuses in each ungrounded primary feeder. One secondary lead shall be fused; other shall be grounded.

#### 2.12.4 Enclosures for Motor

Controllers NEMA ICS 6.

#### 2.12.5 Multiple-Speed Motor Controllers and Reversible Motor Controllers

Across-the-line-type, electrically and mechanically interlocked. Multiple-speed controllers shall have compelling relays and shall be multiple-button, station-type with pilot lights for each speed.

#### 2.12.6 Pushbutton Stations

Provide with "start/stop" momentary contacts having one normally open and one normally closed set of contacts, and red lights to indicate when motor is running. Stations shall be heavy duty, oil-tight design.

#### 2.12.7 Pilot and Indicating Lights

Provide LED cluster lamps.

#### 2.13 LOCKOUT REQUIREMENTS

Provide disconnecting means capable of being locked out for machines and other equipment to prevent unexpected startup or release of stored energy in accordance with 29 CFR 1910.147. Mechanical isolation of machines and other equipment shall be in accordance with requirements of Division 23, "Mechanical."

#### 2.14 HAZARDOUS LOCATIONS

Electrical materials, equipment, and devices for installation in hazardous locations, as defined by NFPA 70, shall be specifically approved by Underwriters' Laboratories, Inc., or Factory Mutual for particular "Class," "Division," and "Group" of hazardous locations involved. Boundaries and classifications of hazardous locations shall be as indicated. Equipment in hazardous locations shall comply with UL 877 for circuit breakers, UL 886 for outlet boxes and fittings, UL 1010 for receptacles, UL 674 for motors, and UL 698 for industrial controls.

#### 2.15 MANUFACTURER'S NAMEPLATE

Each item of equipment shall have a nameplate bearing the manufacturer's name, address, model number, and serial number securely affixed in a conspicuous place; the nameplate of the distributing agent will not be acceptable.

#### 2.16 FIELD FABRICATED NAMEPLATES

ASTM D 709. Provide laminated plastic nameplates for each equipment enclosure, relay, switch, and device; as specified or as indicated on the drawings. Each nameplate inscription shall identify the function and, when applicable, the position. Nameplates shall be melamine plastic, 0.125 inch thick, white with black center core. Surface shall be matte finish. Corners shall be square. Accurately align lettering and engrave into the core. Minimum size of nameplates shall be one by 2.5 inches. Lettering shall be a minimum of 0.25 inch high normal block style.

#### 2.17 WARNING SIGNS

Provide warning signs for flash protection in accordance with NFPA 70E and NEMA Z535.4 for switchboards, panelboards, industrial control panels, and motor control centers that are in other than dwelling occupancies and are likely to require examination, adjustment, servicing, or maintenance while energized. Provide field installed signs to warn qualified persons of potential electric arc flash hazards when warning signs are not provided by the manufacturer. The marking shall be clearly visible to qualified persons before examination, adjustment, servicing, or maintenance of the equipment.

#### 2.18 FACTORY APPLIED FINISH

Electrical equipment shall have factory-applied painting systems which shall, as a minimum, meet the requirements of NEMA 250 corrosion-resistance test and the additional requirements as specified herein. Interior and exterior steel surfaces of equipment enclosures shall be thoroughly cleaned and then receive a rust-inhibitive phosphatizing or

equivalent treatment prior to painting. Exterior surfaces shall be free from holes, seams, dents, weld marks, loose scale or other imperfections. Interior surfaces shall receive not less than one coat of corrosion-resisting paint in accordance with the manufacturer's standard practice. Exterior surfaces shall be primed, filled where necessary, and given not less than two coats baked enamel with semigloss finish. Equipment located indoors shall be ANSI Light Gray, and equipment located outdoors shall be ANSI Light Gray.

Provide manufacturer's coatings for touch-up work and as specified in paragraph FIELD APPLIED PAINTING.

### PART 3 EXECUTION

#### 3.1 INSTALLATION

Electrical installations, including weatherproof and hazardous locations and ducts, plenums and other air-handling spaces, shall conform to requirements of NFPA 70 and IEEE C2 and to requirements specified herein.

##### 3.1.1 Hazardous Locations

Work in hazardous locations, as defined by NFPA 70, shall be performed in strict accordance with NFPA 70 for particular "Class," "Division," and "Group" of hazardous locations involved. Provide conduit and cable seals where required by NFPA 70. Conduit shall have tapered threads.

##### 3.1.2 Wiring Methods

Provide insulated conductors installed in rigid steel conduit except where specifically indicated or specified otherwise or required by NFPA 70 to be installed otherwise. Grounding conductor shall be separate from electrical system neutral conductor. Provide insulated green equipment grounding conductor for circuit(s) installed in conduit and raceways. Minimum conduit size shall be 1/2 inch in diameter for low voltage lighting and power circuits. Vertical distribution in multiple story buildings shall be made with metal conduit in fire-rated shafts. Metal conduit shall extend through shafts for minimum distance of 6 inches. Conduit which penetrates fire-rated walls, fire-rated partitions, or fire-rated floors shall be firestopped.

###### 3.1.2.1 Pull Wire

Install pull wires in empty conduits. Pull wire shall be plastic having minimum 200-pound force tensile strength. Leave minimum 36 inches of slack at each end of pull wire.

##### 3.1.3 Conduit Installation

Keep conduit minimum 6 inches away from parallel runs of flues and steam or hot water pipes. Install conduit parallel with or at right angles to ceilings, walls, and structural members.

###### 3.1.3.1 Conduit Support

Support conduit by pipe straps, wall brackets, hangers, or ceiling trapeze. Fasten by concrete inserts or expansion bolts on concrete or brick; and by

machine screws, welded threaded studs, or spring-tension clamps on steel work. Threaded C-clamps may be used on rigid steel conduit only. Do not weld conduits or pipe straps to steel structures. Load applied to fasteners shall not exceed one-fourth proof test load. In partitions of light steel construction, use sheet metal screws. Supporting means shall not be shared between electrical raceways and mechanical piping or ducts. Installation shall be coordinated with mechanical systems to assure maximum accessibility to all systems. Support exposed risers in wire shafts of multistory buildings by U-clamp hangers at each floor level and at 10 foot maximum intervals. Where conduit crosses building expansion joints, provide suitable watertight expansion fitting that maintains conduit electrical continuity by bonding jumpers or other means. For conduits greater than 2 1/2 inches inside diameter, provide supports to resist forces of 0.5 times the equipment weight in any direction and 1.5 times the equipment weight in the downward direction.

#### 3.1.3.2 Directional Changes in Conduit Runs

Make changes in direction of runs with symmetrical bends or cast-metal fittings. Make field-made bends and offsets with hickey or conduit-bending machine. Do not install crushed or deformed conduits. Avoid trapped conduits. Prevent plaster, dirt, or trash from lodging in conduits, boxes, fittings, and equipment during construction. Free clogged conduits of obstructions.

#### 3.1.3.3 Locknuts and Bushings

Fasten conduits to sheet metal boxes and cabinets with two locknuts where required by NFPA 70, where insulated bushings are used, and where bushings cannot be brought into firm contact with the box; otherwise, use at least minimum single locknut and bushing. Locknuts shall have sharp edges for digging into wall of metal enclosures. Install bushings on ends of conduits, and provide insulating type where required by NFPA 70.

#### 3.1.3.4 Flexible Connections

Provide flexible steel conduit between 3 and 6 feet in length for equipment subject to vibration, noise transmission, or movement; and for motors. Install flexible conduit to allow 20 percent slack. Minimum flexible steel conduit size shall be 1/2 inch diameter. Provide liquidtight flexible conduit in wet and damp locations for equipment subject to vibration, noise transmission, movement or motors. Provide separate ground conductor across flexible connections.

#### 3.1.4 Boxes, Outlets, and Supports

Provide boxes in wiring and raceway systems wherever required for pulling of wires, making connections, and mounting of devices or fixtures. Boxes for metallic raceways shall be cast-metal, hub-type when located in wet and damp locations (including stair towers, propulsor enclosures and service platforms), when surface mounted on outside of exterior surfaces, or when installed in hazardous areas and when specifically indicated. Each box shall have volume required by NFPA 70 for number of conductors enclosed in box. Boxes for mounting lighting fixtures shall be minimum 4 inches square, or octagonal, except that smaller boxes may be installed as required by fixture configurations, as approved. Provide gaskets for cast-metal boxes installed in wet and damp locations and boxes. Fasten boxes and supports with bolts and expansion shields on concrete or brick, and with machine screws or welded studs on steel. In open overhead spaces, cast boxes threaded to raceways need not be separately

supported except where used for fixture support. Where bar hangers are used, attach bar to raceways on opposite sides of box, and support raceway with approved-type fastener maximum 24 inches from box. When penetrating reinforced concrete members, avoid cutting reinforcing steel.

#### 3.1.4.1 Boxes

Boxes for use with raceway systems shall be minimum 1 1/2 inches deep, except where shallower boxes required by structural conditions are approved. Boxes for other than lighting fixture outlets shall be minimum 4 inches square, except that 4 by 2 inch boxes may be used where only one raceway enters outlet.

#### 3.1.4.2 Pull Boxes

Construct of at least minimum size required by NFPA 70 of cast-metal. Provide boxes with screw-fastened covers. Where several feeders pass through common pull box, tag feeders to indicate clearly electrical characteristics, circuit number, and panel designation.

#### 3.1.5 Mounting Heights

Mount panelboards, circuit breakers, motor controller and disconnecting switches so height of operating handle at its highest position is maximum 78 inches above floor. Mount receptacles 18 inches above finished floor, unless otherwise indicated. Measure mounting heights of wiring devices and outlets to center of device or outlet.

#### 3.1.6 Conductor Identification

Provide conductor identification within each enclosure where tap, splice, or termination is made. For conductors No. 6 AWG and smaller diameter, color coding shall be by factory-applied, color-impregnated insulation.

For conductors No. 4 AWG and larger diameter, color coding shall be by plastic-coated, self-sticking markers; colored nylon cable ties and plates; or heat shrink-type sleeves.

##### 3.1.6.1 Marking Strips

White or other light-colored plastic marking strips, fastened by screws to each terminal block, shall be provided for wire designations. The wire numbers shall be made with permanent ink. The marking strips shall be reversible to permit marking both sides, or two marking strips shall be furnished with each block. Marking strips shall accommodate the two sets of wire numbers. Each device to which a connection is made shall be assigned a device designation in accordance with NEMA ICS 1 and each device terminal to which a connection is made shall be marked with a distinct terminal marking corresponding to the wire designation used on the Contractor's schematic and connection diagrams. The wire (terminal point) designations used on the Contractor's wiring diagrams and printed on terminal block marking strips may be according to the Contractor's standard practice; however, additional wire and cable designations for identification of remote (external) circuits shall be provided for the Government's wire designations. Prints of the marking strips drawings submitted for approval will be so marked and returned to the Contractor for addition of the designations to the terminal strips and tracings,

along with any rearrangement of points required.

#### 3.1.7 Splices

Make splices in accessible locations. Make splices in conductors No. 10 AWG and smaller diameter with insulated, pressure-type connector. Make splices in conductors No. 8 AWG and larger diameter with solderless connector, and cover with insulation material equivalent to conductor insulation.

#### 3.1.8 Covers and Device Plates

Install with edges in continuous contact with finished wall surfaces without use of mats or similar devices. Plaster fillings are not permitted. Install plates with alignment tolerance of 1/16 inch. Use of sectional-type device plates are not permitted. Provide gasket for plates installed in wet and damp locations.

#### 3.1.9 Grounding and Bonding

Provide In accordance with NFPA 70. Ground exposed, non-current-carrying metallic parts of electrical equipment, metallic raceway systems, grounding conductor in metallic raceways, and neutral conductor of wiring systems.

Interconnect all grounding media in or on the structure to provide a common ground potential.

#### 3.1.10 Equipment Connections

Provide power wiring for the connection of motors and control equipment under this section of the specification. Except as otherwise specifically noted or specified, automatic control wiring, control devices, and protective devices within the control circuitry are not included in this section of the specifications but shall be provided under the section specifying the associated equipment.

#### 3.2 FIELD FABRICATED NAMEPLATE MOUNTING

Provide number, location, and letter designation of nameplates as indicated. Fasten nameplates to the device with a minimum of two sheet-metal screws or two rivets.

#### 3.3 WARNING SIGN MOUNTING

Provide the number of signs required to be readable from each accessible side. Space the signs in accordance with NFPA 70E.

#### 3.4 FIELD APPLIED PAINTING

Paint electrical equipment as required to match finish of adjacent surfaces or to meet the indicated or specified safety criteria. Where field painting of enclosures for panelboards, load centers or the like is specified to match adjacent surfaces, to correct damage to the manufacturer's factory applied coatings, or to meet the indicated or specified safety criteria, provide manufacturer's recommended coatings and apply in accordance to manufacturer's instructions.

#### 3.5 FIELD QUALITY CONTROL

Furnish test equipment and personnel and submit written copies of test results. Give Contracting Officer 5 working days' notice prior to each tests.

3.5.1 Devices Subject to Manual Operation

Each device subject to manual operation shall be operated at least five times, demonstrating satisfactory operation each time.

3.5.2 600-Volt Wiring Test

Test wiring rated 600 volt and less to verify that no short circuits or accidental grounds exist. Perform insulation resistance tests on wiring No. 6 AWG and larger diameter using instrument which applies voltage of approximately 500 volts to provide direct reading of resistance. Minimum resistance shall be 250,000 ohms.

-- End of Section --

SECTION 26 51 00

INTERIOR LIGHTING  
07/07

PART 1 GENERAL

1.1 REFERENCES

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

CALIFORNIA ENERGY COMMISSION (CEC)

CEC Title 24 (1978; R 2005) California's Energy Efficiency Standards for Residential and Nonresidential Buildings

ILLUMINATING ENGINEERING SOCIETY OF NORTH AMERICA (IESNA)

IESNA HB-9 (2000; Errata 2004; Errata 2005) IES Lighting Handbook

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)

IEEE C2 (2005) National Electrical Safety Code

IEEE C62.41 (1991; R 1995) Recommended Practice for Surge Voltages in Low-Voltage AC Power Circuits

IEEE Std 100 (2000) The Authoritative Dictionary of IEEE Standards Terms

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

NEMA 250 (2003) Enclosures for Electrical Equipment (1000 Volts Maximum)

NEMA C78.42 (2004) Standard for High-Pressure Sodium Lamps

NEMA C78.81 (2005) Electric Lamps - Double-capped Fluorescent Lamps Dimensional and Electrical Characteristics

NEMA C78.901 (2005) Electric Lamps - Single Base Fluorescent Lamps Dimensional and Electrical Characteristics

NEMA C82.11 (2002) High-Frequency Fluorescent Lamp Ballasts

NEMA C82.4 (2002) Ballasts for High-Intensity-Discharge and Low-Pressure

Sodium Lamps (Multiple-Supply Type)

NEMA LL 1 (1997; R 2002) Procedures for Linear Fluorescent Lamp Sample Preparation and the TCLP Extraction

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 101 (2006) Life Safety Code, 2006 Edition

NFPA 70 (2005; TIA 2005) National Electrical Code

U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)

Energy Star (1992; R 2006) Energy Star Energy Efficiency Labeling System

UNDERWRITERS LABORATORIES (UL)

UL 1029 (1994; Rev thru Feb 2006) Standard for Safety High-Intensity-Discharge Lamp Ballasts

UL 1598 (2004; Rev thru May 2006) Luminaires

UL 595 (1985; Rev thru Sep 1991) Marine-Type Electric Lighting Fixtures

UL 844 (2006; Rev thru Jul 2006) Standard for Electric Lighting Fixtures for Use in Hazardous (Classified) Locations

UL 924 (2001; R 2005e8) Standard for Emergency Lighting and Power Equipment

UL 935 (2001; Rev thru Feb 2006) Standard for Fluorescent-Lamp Ballasts

1.2 RELATED REQUIREMENTS

Materials not considered to be lighting equipment or lighting fixture accessories are specified in Section 26 20 00 INTERIOR DISTRIBUTION SYSTEM. Lighting fixtures and accessories mounted on exterior surfaces of buildings are specified in this section.

1.3 DEFINITIONS

- a. Unless otherwise specified or indicated, electrical and electronics terms used in these specifications, and on the drawings, shall be as defined in IEEE Std 100.
- b. Average life is the time after which 50 percent will have failed and 50 percent will have survived under normal conditions.
- c. Total harmonic distortion (THD) is the root mean square (RMS) of all the harmonic components divided by the total fundamental current.

1.4 SYSTEM DESCRIPTION

1.5 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only or as otherwise designated. 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:

Data, drawings, and reports shall employ the terminology, classifications, and methods prescribed by the IESNA HB-9, as applicable, for the lighting system specified.

SD-03 Product Data

Fluorescent lighting fixtures; G

Fluorescent electronic ballasts; G

Fluorescent electromagnetic ballasts; G,

Fluorescent lamps; G

High-intensity-discharge (HID) lighting fixtures; G

HID ballasts; G

High-pressure sodium (HPS) lamps; G,

Exit signs; G

Emergency lighting equipment; G

Local/Regional Materials

Documentation indicating distance between manufacturing facility and the project site. Indicate distance of raw material origin from the project site. Indicate relative dollar value of local/regional materials to total dollar value of products included in project.

Energy Efficiency SD-

04 Samples

Lighting fixtures, complete with lamps and ballasts; G SD-

06 Test Reports

Submit test results as stated in paragraph entitled "Field Quality Control."

SD-10 Operation and Maintenance Data

Submit operation and maintenance data in accordance with Section 01 78 23 OPERATION AND MAINTENANCE DATA and as specified herein, showing all light fixtures, control modules, control zones, occupancy sensors, light level sensors, power packs, dimming ballasts, schematic diagrams and all interconnecting control wire, conduit, and associated hardware.

## 1.6 QUALITY ASSURANCE

### 1.6.1 Fluorescent Electronic Ballasts

Submit ballast catalog data as required in the paragraph entitled "Fluorescent Lamp Electronic Ballasts" contained herein. As an option, submit the fluorescent fixture manufacturer's electronic ballast specification information in lieu of the actual ballast manufacturer's catalog data. This information shall include published specifications and sketches, which covers the information required by the paragraph entitled "Fluorescent Lamp Electronic Ballasts" herein. This information may be supplemented by catalog data if required, and shall contain a list of vendors with vendor part numbers.

### 1.6.2 Lighting Fixtures, Complete With Lamps and Ballasts

Submit one sample of each fixture type for inspection, review, and approval. The sample shall be retained for comparison against the remainder of the fixtures. The sample may be used in the final fixture installation.

### 1.6.3 Regulatory Requirements

In each of the publications referred to herein, consider the advisory provisions to be mandatory, as though the word, "shall" had been substituted for "should" wherever it appears. Interpret references in these publications to the "authority having jurisdiction," or words of similar meaning, to mean the Contracting Officer. Equipment, materials, installation, and workmanship shall be in accordance with the mandatory and advisory provisions of NFPA 70 unless more stringent requirements are specified or indicated.

### 1.6.4 Standard Products

Provide materials and equipment that are products of manufacturers regularly engaged in the production of such products which are of equal material, design and workmanship. Products shall have been in satisfactory commercial or industrial use for 2 years prior to bid opening. The 2-year period shall include applications of equipment and materials under similar circumstances and of similar size. The product shall have been on sale on the commercial market through advertisements, manufacturers' catalogs, or brochures during the 2-year period. Where two or more items of the same class of equipment are required, these items shall be products of a single manufacturer; however, the component parts of the item need not be the products of the same manufacturer unless stated in this section.

#### 1.6.4.1 Alternative Qualifications

Products having less than a 2-year field service record will be acceptable if a certified record of satisfactory field operation for not less than

6000 hours, exclusive of the manufacturers' factory or laboratory tests, is furnished.

1.6.4.2 Material and Equipment Manufacturing Date

Products manufactured more than 3 years prior to date of delivery to site shall not be used, unless specified otherwise.

1.6.4.3 Energy Efficiency

Comply with National Energy Policy Act and Energy Star requirements for lighting products. Submit data indicating lumens per watt efficiency and color rendition index of light source.

1.7 WARRANTY

The equipment items shall be supported by service organizations which are reasonably convenient to the equipment installation in order to render satisfactory service to the equipment on a regular and emergency basis during the warranty period of the contract.

1.7.1 Electronic Ballast Warranty

Furnish the electronic ballast manufacturer's warranty. The warranty period shall not be less than 5 years from the date of manufacture of the electronic ballast. Ballast assembly in the lighting fixture, transportation, and on-site storage shall not exceed 12 months, thereby permitting 4 years of the ballast 5 year warranty to be in service and energized. The warranty shall state that the malfunctioning ballast shall be exchanged by the manufacturer and promptly shipped to the using Government facility. The replacement ballast shall be identical to, or an improvement upon, the original design of the malfunctioning ballast.

1.8 SUSTAINABLE DESIGN REQUIREMENTS

1.8.1 Local/Regional Materials

Use materials or products extracted, harvested, or recovered, as well as manufactured, within a 500 mile radius from the project site, if available from a minimum of three sources.

PART 2 PRODUCTS

2.1 FLUORESCENT LIGHTING FIXTURES

UL 1598. Fluorescent fixtures shall have electronic ballasts unless specifically indicated otherwise.

2.1.1 Fluorescent Lamp Electronic Ballasts

The electronic ballast shall as a minimum meet the following characteristics:

- a. Ballast shall comply with UL 935, NEMA C82.11, NFPA 70, and CEC Title 24 unless specified otherwise. Ballast shall be 100% electronic high frequency type with no magnetic core and coil components. Ballast shall provide transient immunity as recommended by IEEE C62.41.

Ballast shall be designed for the wattage of the lamps used in the indicated application. Ballasts shall be designed to operate on the voltage system to which they are connected.

- b. Power factor shall be 0.95 (minimum).
- c. Ballast shall operate at a frequency of 20,000 Hertz (minimum). Ballast shall be compatible with and not cause interference with the operation of occupancy sensors or other infrared control systems. Provide ballasts operating at or above 40,000 Hertz where available.
- d. Ballast shall have light regulation of plus or minus 10 percent lumen output with a plus or minus 10 percent input voltage regulation. Ballast shall have 10 percent flicker (maximum) using any compatible lamp.
- e. Ballast factor shall be between 0.85 (minimum) and 1.00 (maximum). Current crest factor shall be 1.7 (maximum).
- f. Ballast shall be UL listed Class P with a sound rating of "A."
- g. Ballast shall have circuit diagrams and lamp connections displayed on the ballast.
- h. Ballasts shall be programmed start unless otherwise indicated. Programmed start ballasts may operate lamps in a series circuit configuration. Provide series/parallel wiring for programmed start ballasts where available.
- i. Ballasts for compact fluorescent fixtures shall be programmed start.
- j. Ballasts for T-5 and smaller lamps shall have end-of-life protection circuits as required by NEMA C78.81 and NEMA C78.901 as applicable.
- k. Ballast shall be capable of starting and maintaining operation at a minimum of 0 degrees F unless otherwise indicated.
- l. Electronic ballast shall have a full replacement warranty of 5 years from date of manufacture as specified in paragraph entitled "Electronic Ballast Warranty" herein.

2.1.1.1 T-8 Lamp Ballast

- a. Total harmonic distortion (THD): Shall be 20 percent (maximum).
- b. Input wattage.
  - 1. 32 watts (maximum) when operating one F32T8 lamp
  - 2. 62 watts (maximum) when operating two F32T8 lamps
  - 3. 92 watts (maximum) when operating three F32T8 lamps
  - 4. 114 watts (maximum) when operating four F32T8 lamps
- c. Ballast efficacy factor.

1. 2.54 (minimum) when operating one F32T8 lamp
2. 1.44 (minimum) when operating two F32T8 lamps
3. 0.93 (minimum) when operating three F32T8 lamps
4. 0.73 (minimum) when operating four F32T8 lamps

2.1.1.2 F17T8 Lamp Ballast

- a. Total harmonic distortion (THD): Shall be 25 percent (maximum).
- b. Input wattage:
  1. 34 watts (maximum) when operating two F17T8 lamps.

2.1.2 Fluorescent Electromagnetic Ballasts

UL 935. Ballasts shall be high power factor type (0.9 minimum), and shall be designed to operate on the voltage system to which they are connected. Ballasts shall be Class P and shall have sound rating "A". Fixtures and ballasts shall be designed and constructed to limit the ballast case temperature to 90 degrees C when installed in an ambient temperature of 40 degrees C. Electromagnetic ballasts for T-8 and T-12 lamps shall be energy saving. Provide three lamp fixtures with two ballasts per fixture.

2.1.2.1 Electromagnetic Low Temperature Ballasts

Provide fluorescent ballasts having a minimum starting temperature of minus 20 degrees F for 800 milliampere, high output (HO) lamps in fixtures in unheated buildings as indicated.

2.1.3 Fluorescent Lamps

- a. T-8 rapid start low mercury lamps shall be rated 32 watts (maximum), 2800 initial lumens (minimum), CRI of 75 (minimum), color temperature of 3500 K, and an average rated life of 20,000 hours. Low mercury lamps shall have passed the EPA Toxicity Characteristic Leachate Procedure (TCLP) for mercury by using the lamp sample preparation procedure described in NEMA LL 1.
- b. T-8 rapid start lamp, 17 watt (maximum), nominal length of 24 inches, 1300 initial lumens, CRI of 75 (minimum), color temperature of 3500 K, and an average rated life of 20,000 hours.
- c. T-8 instant start lamp, 59 watts (maximum), nominal length of 96 inches, minimum CRI of 75, 5700 initial lumens, color temperature of 3500 K, and average rated life of 15,000 hours.
- d. T-12 slim line lamps shall be rated 60 watts (maximum), 5750 initial lumens (minimum), 12,000 hours average rated life.

Average rated life is based on 3 hours operating per start.

2.2 HIGH-INTENSITY-DISCHARGE (HID) LIGHTING

FIXTURES UL 1598.

### 2.2.1 HID Ballasts

UL 1029 and NEMA C82.4 and shall be constant wattage autotransformer (CWA) or regulator, high power factor type (minimum 90%). Provide single-lamp ballasts which shall have a minimum starting temperature of minus 30 degrees C. Ballasts shall be:

- a. Designed to operate on the voltage system to which they are connected.
- b. Designed for installation in a normal ambient temperature of 40 degrees C.
- c. Constructed so that open circuit operation will not reduce the average life.

High-pressure sodium (HPS) ballasts shall have a solid-state igniter/starter with an average life in the pulsing mode of 3500 hours at the intended ambient temperature. Igniter case temperature shall not exceed 90 degrees C in any mode.

### 2.2.2 High-Pressure Sodium (HPS)

Lamps NEMA C78.42 wattage as indicated.

## 2.3 FIXTURES FOR HAZARDOUS LOCATIONS

In addition to requirements stated herein, provide fluorescent fixtures for hazardous locations which conform to UL 844 or which have Factory Mutual certification for the class and division indicated. Fixture shall also conform to UL 595 for marine environments as indicated.

## 2.4 EXIT SIGNS

UL 924, NFPA 70, and NFPA 101. Exit signs shall be self-powered type. Exit signs shall use no more than 5 watts.

### 2.4.1 Self-Powered LED Type Exit Signs (Battery Backup)

Provide with automatic power failure device, test switch, pilot light, integral self-testing module and fully automatic high/low trickle charger in a self-contained power pack. Battery shall be sealed electrolyte type, shall operate unattended, and require no maintenance, including no additional water, for a period of not less than 5 years. LED exit sign shall have emergency run time of 1 1/2 hours (minimum). The light emitting diodes shall have rated lamp life of 70,000 hours (minimum).

## 2.5 EMERGENCY LIGHTING EQUIPMENT

UL 924, NFPA 70, and NFPA 101. Provide lamps in wattage indicated. Provide accessories required for remote-mounted lamps where indicated. Remote-mounted lamps shall be as indicated.

### 2.5.1 Emergency Lighting

Unit Provide as indicated.

## 2.6 EQUIPMENT IDENTIFICATION

### 2.6.1 Manufacturer's Nameplate

Each item of equipment shall have a nameplate bearing the manufacturer's name, address, model number, and serial number securely affixed in a conspicuous place; the nameplate of the distributing agent will not be acceptable.

### 2.6.2 Labels

Provide labeled luminaires in accordance with UL 1598 requirements. All luminaires shall be clearly marked for operation of specific lamps and ballasts according to proper lamp type. The following lamp characteristics shall be noted in the format "Use Only\_\_\_\_\_":

- a. Lamp diameter code (T-4, T-5, T-8, T-12), tube configuration (twin, quad, triple), base type, and nominal wattage for fluorescent and compact fluorescent luminaires.
- b. Lamp type, wattage, bulb type (ED17, BD56, etc.) and coating (clear or coated) for HID luminaires.
- c. Start type (preheat, rapid start, instant start) for fluorescent and compact fluorescent luminaires.
- d. ANSI ballast type (M98, M57, etc.) for HID luminaires.
- e. Correlated color temperature (CCT) and color rendering index (CRI) for all luminaires.

All markings related to lamp type shall be clear and located to be readily visible to service personnel, but unseen from normal viewing angles when lamps are in place. Ballasts shall have clear markings indicating multi-level outputs and indicate proper terminals for the various outputs.

## 2.7 FACTORY APPLIED FINISH

Electrical equipment shall have factory-applied painting systems which shall, as a minimum, meet the requirements of NEMA 250 corrosion-resistance test.

## PART 3 EXECUTION

### 3.1 INSTALLATION

Electrical installations shall conform to IEEE C2, NFPA 70, and to the requirements specified herein.

#### 3.1.1 Lamps

Lamps of the type, wattage, and voltage rating indicated shall be delivered to the project in the original cartons and installed just prior to project completion. Lamps installed and used for working light during construction shall be replaced prior to turnover to the Government if more than 15 percent of their rated life has been used. Lamps shall be tested for proper operation prior to turn-over and shall be replaced if necessary

with new lamps from the original manufacturer. Provide 10 percent spare lamps of each type from the original manufacturer.

### 3.1.2 Lighting Fixtures

Set lighting fixtures plumb, square, and level with ceiling and walls, in alignment with adjacent lighting fixtures, and secure in accordance with manufacturers' directions and approved drawings. Installation shall meet requirements of NFPA 70. Mounting heights specified or indicated shall be to the bottom of fixture for ceiling-mounted fixtures and to center of fixture for wall-mounted fixtures. Obtain approval of the exact mounting for lighting fixtures on the job before commencing installation and, where applicable, after coordinating with the type, style, and pattern of the ceiling being installed. Provide strut for lighting fixture support in this section.

### 3.1.3 Exit Signs and Emergency Lighting Units

Wire exit signs and emergency lighting units ahead of the switch to the normal lighting circuit located in the same room or area.

## 3.2 FIELD APPLIED PAINTING

Paint electrical equipment as required to match finish of adjacent surfaces or to meet the indicated or specified safety criteria. Painting shall be as specified in Section 09 90 00 PAINTS AND COATINGS.

## 3.3 FIELD QUALITY CONTROL

Upon completion of installation, verify that equipment is properly installed, connected, and adjusted.

-- End of Section --