NAVFAC MIDLANT, Public Works Department, Maine

CONTRACT NO.
N4008523R2622 -
eProjects WO #1387709

FINAL SPECIFICATIONS

Bridge 2 Structural Steel Recoating and Repairs

At the

Portsmouth Naval Shipyard Kittery, Maine

PREPARED BY:

APPLEDORE MARINE - CH2M
Joint Venture

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STATE OF MAINE
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LICENSED PROFESSIONAL ENGINEER
3/24/2023

REQUEST FOR PROPOSAL PREPARED BY:

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Design Manager: Brian Stoddard, P.E.	Signature	Date: March 24, 2023

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SUMMARY OF WORK (PWD ME)
05/21

PART 1 GENERAL

This Section applies to Design-Bid-Build projects at the Portsmouth Naval Shipyard and PWD ME AOR Facilities.

1.1 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

Work Sequencing and Preparation Plan; G

Salvage Plan; G

1.2 WORK COVERED BY CONTRACT DOCUMENTS

1.2.1 Project Description

The work includes all labor, material, equipment, transportation, supervision, and incidental related work required to recoat and perform repairs to Bridge 2 at the Portsmouth Naval Shipyard located in Kittery, Maine.

Project Options Include:

Option A: Installation of a vehicle barrier on both the east and west sides of the bridge.

1.2.2 Project Sequencing Requirements

The bridge will remain in operation during all phases of the work. All work must be carefully phased and coordinated with the Contracting Officer.

1.2.2.1 Phased Construction Requirements

a. Stage work to ensure that one side of the bridge span is clear of all obstructions and equipment to allow the continuous safe navigation of vessels at all times.

b. Phase work accordingly in order to maintain boat traffic in the river during construction operations.

c. Bridge 2 will remain operational for the duration of construction. Phase all work to maintain vehicle traffic as shown in the contract drawing. Above deck work activities during inbound and outbound traffic hours must be limited to avoid impacting normal traffic flow through the work site.

d. Pedestrian traffic across the bridge shall be maintained at all times (24 hrs per day, 7 days per week).

e. Work activities that require full bridge closure must be scheduled to be completed on a weekend and coordinated with the Contracting Officer a minimum of 15 calendar days in advance. The work activity must be sufficiently complete to allow for normal traffic pattern to resume by Monday morning. No closure of traffic flow is permitted except during the daily and weekend shut down periods or as noted otherwise. Any work that affects the flow of traffic cannot be performed during the following traffic hours:

Inbound/Outbound: 0530 - 0800

Inbound/Outbound: 1430 - 1700

1.2.2.2 Above Deck - Phase 1

Phase 1 of the above deck work involves repairing all elements along the east side of the bridge.

1.2.2.3 Above Deck - Phase 2

Phase 2 of the above deck work involves repairing all elements along the west side of the bridge.

1.2.2.4 Underdeck - Phase A

Phase 1 of the underdeck work involves repairing all elements on the south side of the bridge.

1.2.2.5 Underdeck - Phase B

Phase 2 of the underdeck work involves repairing all elements on the north side of the bridge.

The following restrictions apply to the sequencing of the work:

a. Provide daily cleanup as specified in Section 02 41 00 DEMOLITION and as directed by the Contracting Officer.

b. Construction sequencing plans have been developed in coordination with the Government. Develop an independent construction phasing plan and construction schedule in coordination with the Contracting Officer.

1.2.3 Location

The work is located at Bridge 2 at the Portsmouth Naval Shipyard, Kittery, Maine.

1.3 PROJECT SEQUENCING REQUIREMENTS

Provide Work Sequencing and Preparation Plan indicating how the work is to be accomplished and incorporating Government directives. The intent of this Plan is to show the Government that a complete understanding of the project requirements are understood including Subcontractors. The Plan must be carefully prepared and must include every aspect of the project

including outages that will be requried to support the construction and how it is to be accomplished with an absolute minimum of disruption to Government operations. The plan must also cover how the steel repairs will be performed without affecting the load carrying capacity of the bridge. No work may begin on the project until this plan is reviewed and approved by the Contracting Officer.

1.4 PROJECT ENVIRONMENTAL GOALS

Distribute copies of the Environmental Goals to each Subcontractor and the Contracting Officer. The overall goal for design, construction, and operation is to produce a project that meets the functional program needs and incorporates sustainability principles. Specifically:

a. Avoid site degradation and erosion. Minimize on & offsite environmental impact.

b. Use the minimum amount of energy, water, and materials feasible to meet the design intent. Select energy and water efficient equipment and strategies.

c. Use environmentally preferable products and decrease toxicity level of materials used.

d. Optimize operational performance (through commissioning efforts) in order to ensure energy efficient equipment operates as intended. Consider the durability, maintainability, and flexibility of building systems.

e. Manage construction site and storage of materials to ensure no negative impact on the indoor environmental quality of the building.

f. Reduce construction waste through reuse, recycling, and supplier take-back.

1.5 EXISTING WORK

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

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

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

1.6 LOCATION OF UNDERGROUND UTILITIES

Verify location of underground utilities in accordance with Section 01 35 26.00 22 GOVERNMENTAL SAFETY REQUIREMENTS (PWD ME).

1.6.1 Notification Prior to Excavation

Notify the Contracting Officer at least two (2) working days prior to starting excavation work. See Section 01 35 26.00 22 GOVERNMENTAL SAFETY REQUIREMENTS (PWD ME) Attachment B for Dig Safe requirements.

1.7 SALVAGE MATERIAL AND EQUIPMENT

Items designated by the Contracting Officer to be salvaged remain the property of the Government. Segregate, itemize, deliver and off-load the salvaged property at the Government designated storage area located on the Postsmouth Naval Shipyard.

Provide a salvage plan, listing material and equipment to be salvaged, and their storage location. Maintain property control records for material or equipment designated as salvage. Use a system of property control that is approved by the Contracting Officer. Store and protect salvaged materials and equipment until disposition by the Contracting Officer.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

-- End of Section --

SECTION 01 14 00.00 22

WORK RESTRICTIONS (PWD ME)
08/22

PART 1 GENERAL

This Section applies to Design-Bid-Build and Design-Build projects at the Portsmouth Naval Shipyard only.

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	(2022) Standard for Safeguarding Construction, Alteration, and Demolition Operations

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1	(2014) Safety -- Safety and Health Requirements Manual
APPENDIX A	"Bridge 2 Final Load Rating Report", dated December 13, 2023, prepared by Weston and Sampson.

Appendix A is provided as a separate document in the contract documents. If the appendix is missing from the contract documents notify the Contracting Officer.

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

List of Contact Personnel; G

Construction Loading Analysis; G

1.3 SPECIAL SCHEDULING REQUIREMENTS (PNSY)

a. The facility will remain in operation during the entire construction period. Conduct 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, crane rail, railroads, and/or utility services must be submitted to the Contracting Officer in writing a minimum of 15 calendar days prior to the desired date of interruption.The Outage process (Instruction

11300.9) is used for this purpose, as discussed under UTILITY CUTOVERS AND INTERRUPTIONS.

c. The project is located in and adjacent to restricted areas. The Contractor is not allowed in these areas without continuous Government escorts. See the Scope of Work to determine if the project limits include any restricted areas in or adjacent to the work area.

d. Coordinate the work with the sequencing/phasing requirements outlined in the scope of work and as outlined in the Construction Drawings.

1.4 ACCESS AND USE OF PREMISES (PNSY)

1.4.1 Portsmouth Naval Shipyard Regulations

Notify the Contracting Officer 30 days in advance for any wide loads. Contact the Contracting Officer to determine if there are other access limitations at the Portsmouth Naval Shipyard.

Ensure that personnel employed on the Portsmouth Naval Shipyard become familiar with and obey Portsmouth Naval Shipyard regulations including safety, fire, traffic, and security regulations. Keep within the limits of the work and avenues of ingress and egress. Wear appropriate personal protective equipment (PPE). Do not enter restricted areas unless required to do so and until cleared for such entry.

All equipment must be conspicuously marked with company signage for identification.

1.4.1.1 Subcontractors and Personnel Contacts

Provide a list of contact personnel to include 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.

1.4.1.2 Identification Badges and Installation Access

a. Application for and use of badges will be as directed. Obtain access to the Portsmouth Naval Shipyard by submitting the SECNAV Form 5512-NSNPT Jul 2019 (Attachment C) a minimum of 7-10 working days in advance for vetting and approval, or by obtaining passes each day from the Portsmouth Naval Shipyard's Pass and Identification/Security Office. One-day passes, issued through the Portsmouth Naval Shipyard's Pass and Identification Office, will be furnished without charge. Report any instances of lost or stolen badges to the Contracting Officer immediately.

b. All Contractors who possess a Commercial Access Control (CAC) System Card are also required to submit an access request (5512) to support a valid purpose to be on the Portsmouth Naval Shipyard. A second form of valid ID may also be required, if requested, upon arrival at the Portsmouth Naval Shipyard's Entrance Gate. All personnel without CAC cards will need two (2) forms of approved identification for access to the Portsmouth Naval Shipyard.

c. One-Day Passes: Participation in the vetting process is mandatory, unless a valid emergency exists. Then it is possible to utilize an escort from the department effected. If the Contractor chooses to not

participate in the vetting process, they will not be allowed on the Portsmouth Naval Shipyard. The Government will not be responsible for any cost or lost time associated with obtaining daily passes or added vehicle inspections.

d. PNS has an online appointment system. Appointments may be made using https://kiosk.na4.qless.com/kiosk/app/home/191.

1.5 PORTSMOUTH NAVAL SHIPYARD (PNS) REGULATIONS

1.5.1 Radiological

1.5.1.1 Radiological Indoctrination (PNSY)

All personnel 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 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.

1.5.1.2 Yellow Materials (PNSY)

Do not use yellow or orange-yellow colored materials at the Portsmouth Naval Shipyard 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. Contact the Contracting Officer for a list of yellow items that have been approved for use on the Portsmouth Naval Shipyard. Dispose of generated yellow colored waste off of the Portsmouth Naval Shipyard. Portsmouth Naval Shipyard refuse containers must not be used for disposal of yellow colored waste materials. Yellow colored items such as described above are of special significance within the Portsmouth Naval Shipyard and are subject to strict controls. Yellow colored Contract generated debris must be bagged in non-translucent containers, and promptly removed from the Portsmouth Naval Shipyard.

1.5.1.3 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 Portsmouth Naval Shipyard.

1.5.1.4 Radioactive Sources (PNSY)

All Contracts involving radiation generating devices must 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.

1.5.2 Laser Control

Comply with laser safety requirements under 21 CFR 1040 and ANSI 2136.1-1986 for any work under this Contract utilizing lasers.

1.5.3 Energy Conservation

In cooperation with Government representatives, participate in an active program directed toward the efficient use of energy.

1.5.4 Fire Prevention (PNSY)

Require 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 and must be submitted at least three(3) working days prior to commencing any Hot Work.

1.5.5 Identification and Control of Seamed (Welded) Pipe and Tubing (PNSY)

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 intended for use on the Portsmouth Naval Shipyard must be identified in the following manner PRIOR TO DELIVERY TO THE PORTSMOUTH NAVAL 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.

Maintain positive control over seamed pipe or tubing until worked into place or removed from the Portsmouth Naval 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, or to piping or tubing which has been incorporated into equipment or fixtures prior to delivery to the Portsmouth Naval Shipyard.

1.5.6 Pesticide and Herbicide Control

Do 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. The Contracting Officer will be required to review and approve pesticides or herbicides submittals.

1.5.7 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.

1.5.8 Portal Crane Clearance Zone (PNSY)

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/securement has been approved.

1.6 WORKING HOURS (PNSY)

Regular working hours must 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 must be confirmed with the Contracting Officer.

1.6.1 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 must be lighted in a manner approved by the Contracting Officer.

As part of the requests, provide the specific dates, hours, location(s), type(s) of work to be performed, Contract number, and project title. Based on the justification provided, the Contracting Officer may approve work outside regular hours.

Working on Weekends/Holidays: Any request to work on a weekend must be submitted to the Contracting Officer no later than two (2) working days prior to the requested work weekend/Holiday.

1.7 WORK IN OCCUPIED AND EXISTING BUILDING(S)

Work under this Contract may be located in an occupied building. Move unfixed furniture away from working area(s) 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. After providing written notification, allow 15 calendar days for the Government to relocate Government property.

1.8 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 entitled WORK OUTSIDE REGULAR HOURS (PNSY) herein. Anticipated costs must be included in the bid.

Ensure that new utility lines are complete, except for the connection,

before interrupting existing services.

Interruption to Water, Sanitary Sewer, Storm Sewer, Telephone Service, Electric Service, Air Conditioning, Heating, Fire Alarm, Compressed Air, and other utilities must be considered utility cutovers pursuant to the paragraph entitled WORK OUTSIDE REGULAR HOURS (PNSY) herein. This time limit includes time for deactivation and reactivation.

Operation of Portsmouth Naval Shipyard Utilities: Do not operate nor disturb the setting of control devices in the Portsmouth Naval Shipyard's utilities system, including water, sewer, electrical, air and steam services. The Government will operate the control devices as required for normal conduct of the work. Notify the Contracting Officer in writing within 15 calendar days when such operation is required. The Contracting Officer will provide the Outage Request Form.

Any Outage requests denied due to incomplete information required to support the requested outages, will not be justification for a delay claim. The Contractor must review any planned outage with the NAVFAC Construction Management Team prior to submitting a outage request to ensure the necessary information is included with the request to avoid any delays

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 1122) and a Portsmouth Naval 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 Portsmouth Naval 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 must be eliminated during all non-work periods to the satisfaction of the Portsmouth Naval Shipyard Police representative. Do not leave the worksite until such conditions are eliminated. All materials used to close openings in fencing and method of installation must be the same type and construction as adjacent, undisturbed CIA fencing.

Except for temporary off-loading of materials, the clear zone (10 ft on the inside & outside of the security fence) adjacent to CIA fencing must remain clear of vehicles, materials, equipment or tools. Contractor personnel must be at the location throughout the entire time of any off-loading or work. Under no circumstances shall vehicles, materials, equipment, or tools be left unattended in the clear zone. Any work within the clear zones requires approval from Portsmouth Naval Shipyard Security. Any requests to work in the clear zone must be provided to the Contracting Officer at least five (5) working days in advance.

The contractor shall be responsible for all costs associated with the staffing required by Naval Security Force (NSF) for

any opening in the fence-line due to maintenance, repairs, or construction or the need for NSF to man a gate or any CIA perimeter crossing. Requests must be submitted to the Contracting Officer a minimum of 30 days in advance of the scheduled work.

If the Contractor violates the security requirements related to the CIA Fencing, Security will issue a Security Deficiency Log (SDL). Upon receiving a SDL, the Contractor must take immediate corrective actions as directed in the SDL including responding to the SDL with documentation of the corrective actions taken and what actions are being taken to prevent recurrence of any further voilations.

If a second offense occurs, the Contractor will have a Security Stand Down in which all staff including subcontractor will need to be present for full review of the PNSY Security Requirements.

If a third offense occurs, the Project Superintendent is subject to removal by the Contracting Officer for non-compliance with security requirements specified in the Contract. 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 Stand Downs, stop work orders, or removal of the Project Superintendent are acceptable as the subject of claim for extension of time for excess costs or damages by the Contractor.

1.9.1 CIA Lighting

Any CIA lighting outages must be approved through Code 1122 and temporary lighting must be provided at the contractor's expense. The lighting is required to be provided shall be equal to or greater than the current foot-candle rating of the area. The request must be submitted at least five (5) working days in advance.

1.10 FIRE PROTECTION

1.10.1 Compliance (PNSY)

Comply with COE EM 385-1-1, NFPA 241, and Portsmouth Naval Shipyard fire regulations. Obtain approval no later than two (2) working days from the Portsmouth Naval Shipyard Fire Chief via the Contracting Officer prior to commencement of hot work operations.

1.10.2 Fire Lanes

1.10.2.1 Fire Lane Width

Fire lanes shall be a minimum of Twenty (20) feet in width.

1.10.2.2 Vertical Clearance for Fire Lane

Fire lanes shall have a minimum of Thirteen (13) feet Six (6) inches nominal vertical clearance shall be provided and maintained over the full width of the fire lane.

1.10.2.3 Angle of Approach/Departure

Minimum inside turn radius shall be Twenty-Five (25) feet and minimum outside turn radius shall be Fifty (50) feet.

1.10.2.4 Waiver Request for Fire Lane size and dimensions

Due to existing infrastructure, some requirements of this section may not be achievable. The Contractor shall submit a Waiver Request to the Fire Department for review. Additional provisions may be required for the approval of the waiver.

1.10.2.5 Parking in or blocking fire lanes

Parking in or blocking fire lanes is expressly prohibited for any reason without prior approval. Vehicles left unattended in fire lanes are subject to towing. Contractors will be issued a Non-Compliance Notice for vehicles left unattended in fire lanes.

General Process:

Parking in or obstructing a fire lane
a. First Offense: The Contractor will remove the vehicle from the Project site immediately and the vehicle will not be allowed to return to the Project site for Seven (7) Days. The contractor will perform a safety stand down within three (3) days of the incident and the Fire Department shall be invited to attend the safety stand down.

b. Second Offense: Contractor and Sub-Contractors vehicles will be permanently barred from the Project site and a Non-Compliance Notice will be issued. Individuals performing deliveries in support of the Project will be allowed but are expected to be on site for the shortest duration required to perform the delivery, and the driver/operator shall remain in the immediate vicinity of the vehicle at all times.

1.10.2.6 Approval to Temporarily Block a Roadway/Fire Lane

The Contractor may request approval to temporarily block a roadway/fire lane as part of a Road Outage to complete work associated with the Project. Approval may only be given by the Fire Chief or his/her assigned representatives. The request will be submitted using the established Outage Request Process and must be submitted fifteen (15) days prior to the planned work and must contain the following to be considered:

a. Description of the work to be completed and duration

b. Alternative analysis that discusses whether a practical alternative to the outage exists. The analysis must address the activity purpose and need, and why the activity cannot be completed by:

I. Utilizing, managing, or expanding the work area to avoid the fire lane
II. Reducing the size, scope, configuration or density of the activity as proposed (phasing)

c. Illustration showing the location of contractor equipment during the proposed outage

d. Provisions for emergency access (i.e. a steel plate shall be kept with 10 feet of the excavation.

e. Additional provisions may be required by the Fire Department on a site by site basis.

1.11 SECURITY REQUIREMENTS

1.11.1 General

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

1.11.2 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 restricted NAVSEA spaces will require an escort by a Government Representative. 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. Furnish proof that employees are U.S. citizens to obtain badges to enter the Portsmouth Naval Shipyard.

Complete 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.

1.11.3 Application and Issue of Security Badges

"Temporary" Security Badges will be issued to Contractor personnel requiring access to the shipyard for less than 90 days. Badge(s) will be issued 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. See Attachment B.

"Permanent" (photo) Standard Access Control Badges will be issued to Contractor personnel requiring access to the shipyard for 90 or more 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 access is required to Contract work areas not permitted by the level of security badge issued, such need must be demonstrated and an escort obtained.

STANDARD ACCESS CONTROL BADGES MUST BE ATTACHED TO THE OUTER GARMENT AND DISPLAYED ABOVE THE WAISTLINE AT ALL TIMES WHILE ON THE PORTSMOUTH NAVAL SHIPYARD.

PERSONNEL MUST NOT ENTER AREAS FOR WHICH THEY HAVE NOT BEEN CLEARED. WHERE A NEED HAS BEEN DEMONSTRATED TO ENTER SUCH AREAS, PERSONNEL WILL 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

PORTSMOUTH NAVAL SHIPYARD WITH FUTURE ACCESS DENIED.

1.11.4 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 must comply with the Portsmouth Naval Shipyard's traffic and parking regulations and must only park in assigned areas, which may or may not be in the vicinity of the site of the Contract work. Do not park a vehicle 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.

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

Vehicular access to the CIA must be minimized and all vehicles must 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. CIA passes will be issued on weekends and holidays at Building 29, from the Watch Supervisor. Personnel 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 will only be allowed in the CIA for the transportation of tools, parts, and materials to and from the worksite. An exception to this policy, employees may be transported to and from the worksite after full vehicle inspection at CVIS if a specific security plan has been developed and approved by the Portsmouth Naval Shipyard Security Officer.

Parking of privately owned or company owned vehicles not utilized in the execution of construction activities (e.g. not a working truck or specialty vehicle) within the CIA or in any project laydown space is prohibited.

For Vehicles remaining in the CIA for more than 24 hours: Obtain a CIA Overnight Parking Permit from the PWD ME Construction ET. Vehicles without this pass are subject to being towed. Passes will only be issued to those demonstrating a valid reason as determined by Portsmouth Naval Shipyard Security.

1.11.6 Application and Issue of Crane Passes (PNSY)

Comply with EM 385-1-1. For Crane Passes at the Portsmouth Naval Shipyard to be valid, the Certificate of Compliance (FORM 16-1) must be completed and accepted.

1.11.7 Return of Badges and Vehicle Passes

Ensure all vehicle access permits and personnel badges are returned to the Portsmouth Naval Shipyard Security Officer when the need has ended.

Account in writing for each missing pass or badge prior to final payment being made on the Contract. Any vehicle passes issued must be returned to Portsmouth Naval Shipyard Security daily.

1.11.8 Security Responsibilities (PNSY)

Employees must 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 employee appearing to be under the influence of intoxicating liquor or narcotics will be apprehended by Portsmouth Naval 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 must be obtained from the Portsmouth Naval Shipyard Security Officer via the Contracting Officer.

Cameras, video equipment, or similar photographic equipment must not be introduced into nor removed from the Portsmouth Naval Shipyard. In the event such equipment is required for performance of Contract work, approvals must be obtained from the Portsmouth Naval Shipyard 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 Portsmouth Naval Shipyard.

The following are the penalties for any personnel that are found to be in possession of a camera or cell phone equipped with a camera taking photographs inside & outside NAVSEA spaces:

Camera/Camera Equipped Cell Phone Outside a NAVSEA Space

The following are the penalties for any Contractor personnel or Subcontractor personnel that are found to be in possession of a camera or cell phone equipped with a camera taking pictures outside of NAVSEA spaces:

1st offense with pictures: Full investigation with security forces and NCIS, camera or cell phone confiscation, and depending on results of investigation 30 days restriction.

2nd Offense with pictures: The offender will be permanently barred from access to NAVSEA spaces.

Camera/Camera Equipped Cell Phone Inside a NAVSEA Space

Cameras, or cell phones equipped with cameras, are not allowed in any NAVSEA space such as the CIA, NWA, CNIA or restricted areas. If a Contractor is found with a camera equipped cell phone in a NAVSEA space, the Standard Access Control Badge (SACB) and Defense Biometric Identification System card (DBIDS) will be confiscated. Access to the installation will be denied and a Security Deficiency Log (SDL) will be issued.

The following are the penalties for any Contractor personnel or Subcontractor personnel that are found to be in possession of a camera or cell phone with & without photos of NAVSEA Spaces:

Camera/Cell phones with no pictures of NAVSEA spaces:

1st Offense: SDL will be written to document with a 10-day deadline for completion. Credentials will be reissued to the offender once the SDL response is received from the contracting company and reviewed/accepted by the Security office.

2nd Offense: The offender will be permanently barred from access to NAVSEA spaces.

Camera/Cell phones with pictures of NAVSEA spaces:

1st offense: The offender will be permanently barred from access to NAVSEA spaces.

At a minimum, all Superintendents, QC Manager and SSHO (and anyone acting in this capacity) must have a CIA compliant mobile phone on their persons any time while work is occurring at the Contract jobsite(s). The phone number(s) associated with these phones must be provided during the pre-con meeting and work will not be allowed to proceed without one.

Laptops and any other computer, regardless of form factor, must not be introduced nor removed from the Portsmouth Naval Shipyard without authorization. Only business use computers are allowed. Personally owned computers are not authorized on the Portsmouth Naval Shipyard. If a computer is required to perform work on the Portsmouth Naval Shipyard, a Visitors Portable Computer Equipment Registration form must be completed and submitted for approval. These forms can be obtained and completed at the pass office upon entrance to the Portsmouth Naval Shipyard or through the Portsmouth Naval Shipyard POC.

Any computing devices that also have or had an installed camera, must follow the same requirements as cell phones. If the computing device is visiting a NAVSEA space, it cannot have a camera. If the device has a camera, the only acceptable remediation is that the camera be professionally removed or drilled out and the resulting void must be filled with an opaque epoxy.

In the event that a camera is required for the performance of the Contracted work, approval must be obtained from the C1120 Security Office. In the event of any deviation from the requirement to remove and epoxy the camera, authorization must be sought from C1120. All requests for camera use and deviations must come to C1120 through the Contracting Officer's Representative or Portsmouth Naval Shipyard Point of Contact (POC). Authorizations and approved computer registrations must remain with the

devices and be presentable upon request. Devices without a documented approval or observed being used in a manner that violates the terms of the Visitor Portable Computer Equipment Registration agreement are subject to search and seizure.

Basic guidance for use of Portable Electronic Devices (PED) at Portsmouth Naval Shipyard: Inform the Contracting Officer of their use, or intent to use, of any portable electronic device which has the capability to record, copy, store, export and transmit data, photography, digital images, video or audible information, inside the CIA or any NAVSEA controlled spaces. Provide the manufacturer’s data describing the electronic capabilities of the device(s).

Use of wireless networking and communication on the Portsmouth Naval Shipyard requires prior authorization. Communication devices such as cellular hotspots and wireless routers must also be registered using the same Visitors Portable Computer Equipment Registration. This does not include air-cards and straight cellular data. It does include any device that transmits or broadcasts Wi-Fi, including cellular phones with the personal hot-spot feature enabled.

Broadband internet connections must be authorized prior to use on the Portsmouth Naval Shipyard. All requests for physical cable service from an internet service provider (ISP) must be authorized and coordinated through C109. Work through the COR to request broadband access.

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.

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

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.

1.11.9 Access to Unclassified Information

Access to U.S. Navy technical information manuals, documents, drawings, plans, specifications, and other information (e.g., photos, presentations, renderings, papers, etc.) is Government property and restricted to an official need-to-know basis. Handle, control, and safeguard to prevent oral, visual, and documentary disclosure to the public, to foreign sources, and to personnel not having an official need-to-know.

1.11.10 Disclosure of Information

a. Do not release to anyone outside the Contractor's organization any unclassified information, regardless of medium (e.g., hard copies, computer files, film, tape, document), pertaining to any part of this Contract or any program related to this Contract, unless the Contracting Officer has given prior written approval.

b. Requests for approval under paragraph (a) must identify the specific information to be released, the medium to be used, and the purpose for the release. Submit the request to the Contracting Officer at least 10 business days before the proposed date for release.

c. The Contractor agrees to include a similar requirement, including this paragraph (c), in each subcontract under this Contract. Subcontractors must submit requests for authorization to release through the Prime Contractor to the Contracting Officer.

1.11.11 Portsmouth Naval Shipyard Operations Security Statement

During the course of this Contract, in addition to those restrictions, instructions, and guidelines delineated in the Contract Statement of Work, Contract Data Requirements List (CDRL), and/or other references provided, adhere to the following minimum requirements in support of the Portsmouth Naval Shipyard (PNS) OPSEC Program:

Introduction of personal electronic devices, laptops, tablet PCs, cellular phones, cameras, recording devices, and data recording/storage devices into Government spaces is STRICTLY controlled and forbidden in most cases. Company issued equipment required for the performance of work must be approved by the PNS Code 1120 Security Office. Photography and recording is not allowed except for official use and by permit only. Photographs will be reviewed by Code 1123.2 to ensure sensitive information is not revealed.

Do not discuss Government operations in public or over unprotected or unencrypted communications. Do not post to company websites, publications, newsletters or other media, any images, data, or information that reveal sensitive Government operations, personnel, equipment, and/or classified or controlled unclassified information. When in doubt, company press releases related to this Contract must be coordinated through the Contracting Officer's Representative (COR) or Technical Point of Contact, as applicable, and in conjunction with PNS Public Affairs Office (PAO).

Due to observation of events, operations, physical changes, etc. which may reveal National Security Information or Naval Nuclear Propulsion Information (NNPI), specific restrictions are needed to preclude unintentional release of this information to unauthorized parties. (Unauthorized disclosure and transfer of National Security Information is punishable under 18 USC § 793.) Therefore, do not disclose to unauthorized third parties or post to unofficial sites (including Social Networking sites) any images, data or information, or observed events that reveal sensitive Government operations, personnel, equipment, including, but not limited to:

Tactics, techniques and procedures, production or work schedules, any visible or concealed modifications, upgrades, additions to vessels, weapons or equipment; increases, changes, or decreases in work/deployment frequency

or Government personnel, vehicle, vessel movements; specialized equipment orders, deliveries, shipments, etc. Unauthorized disclosures and attempts to solicit this type of information by unauthorized third parties or others not affiliated with this Contract must be reported to PNS Code 1120 Security and/or PNS Police Department. Non-Disclosure requirements remain in effect during the duration of this Contract and indefinitely thereafter.

Government issued badges and identification must be removed and/or concealed from plain sight when off PNS and must not be left in vehicles or unprotected. Badges and passes may not be duplicated, copied, or loaned to others. Lost or stolen identification badges, vehicle passes, etc., must be immediately reported to PNS Code 1120 Security Office and/or PNS Police Department.

It is strongly recommended the Contractor mark and protect related internal production schedules, deliverables, inventories and shortages, and identified vulnerabilities related to production of Government material. Internal company markings (e.g., Business Sensitive, etc.) are appropriate for identifying the aforementioned as sensitive information.
All Government information must be destroyed at Contract termination of returned to the Government at the Government's discretion.

1.12 MARINE ACTIVITIES (PNSY)

a. Coordinate all marine vessel movements with the Contracting Officer's Representative and the Portsmouth Naval Shipyard's Port Operations Department. Submit a weekly updated schedule showing proposed docking locations and vessel movements to the Contracting Officer's Representative. Meet with the Contracting Officer's Representative and Portsmouth Naval Shipyard Port Operations Representative weekly to review the vessel schedule.

b. Any waterborne craft or vessel movements which will be adjacent to any naval vessels must be made under the direction of the Portsmouth Naval Shipyard's Pilot. Notify the Contracting Officer's Representative at least 14 calendar days in advance of any movements that will require the Portsmouth Naval Shipyard Pilot.

c. All Contract activities must maintain a minimum standoff from submarines of 100 feet for in-water work and 50 feet for landside work. All waterborne craft must, at all times, maintain a minimum of twenty-five (25) 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 must also take into account any materials or equipment present on the 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 must 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. Repair any damage caused by operations or vessels required to complete the work.

e. When not in use, vessels must be tied up at a location approved by the Contracting Officer's Representative and the Portsmouth Naval Shipyard's Port Operations Department.

f. Any waterborne craft which is deemed to be unsafe by the Contracting

Officer's Representative will be prohibited from working at the Portsmouth Naval Shipyard. Copies of all inspections and certificates must be submitted to the Contracting Officer's Representative for approval prior to bringing any vessel to the Portsmouth Naval Shipyard.

1.13 CONSTRUCTION VEHICLES

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

1.14 EMPLOYEE PARKING

Employees must park privately owned vehicles in the Jamaica Island Parking Lot only. Parking is not allowed in any other parking lot or area on the Portsmouth Naval Shipyard. Employee parking must not interfere with existing and established parking requirements of the Portsmouth Naval Shipyard. If a privately owned vehicle is found parked outside the Jamaica Island parking lot, the vehicle will be subject to towing, a non-compliance notice will be issued and may reflect poorly on the Prime Contractor's performance rating (CPARS) and noted in their final performance evaluation.

1.15 PORTSMOUTH NAVAL SHIPYARD 6010 TRAINING

Personnel working inside of or within 10 feet of the coping of the dry dock and its associated structures must have Portsmouth Naval Shipyard 6010 training. Associated structures include pumpwells, service tunnels, altar pits, etc. This training will be provided, at the Portsmouth Naval Shipyard, at no cost and is approximately 4 hours in duration. Coordinate training schedule with the Contracting Officer.

Personnel that complete 6010 training can serve as an escort for 6010 purposes. The escort must be within 10 feet or audio range, whichever is closer, and is responsible for the safety of the personnel they are escorting in an emergency situation.

1.16 CONSTRUCTION LOADING ANALYSIS

Submit complete design drawings and calculations, stamped by a professional engineer, for the construction loads and phasing of work which include an analysis of the loads which will be added to the structure by the construction equipment and activities and confirmation that the phasing of work will not reduce the capacity of the bridge.

The plan must provide calculations that assure the structural integrity of the bridge during the phasing of repair work and under the loading conditions and must confirm the bridge loading capacity is not exceeded or compromised. Loading conditions must include but not be limited to all equipment, materials, and other systems. The calculations and drawings must be prepared, signed, and sealed by a qualified Licensed Professional Engineer.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

-- End of Section --

ARE YOU A CONTRACTOR, VENDOR, OR SUPPLIER WHO NEEDS BASE ACCESS?

IF YES, please read below:

Effective 14 August 2017, NCACS credentials will no longer be accepted for base access. Please read below:

- If you applied for an NCACS credential **PRIOR to 17 April 2017**, your NCACS credential will remain in effect for base access through 14 August 2017, when NCACS credentials will no longer be accepted.

- If you applied for an NCACS credential **BETWEEN 17 April and 31 May 2017** you will also be required to obtain a DBIDS credential in order to obtain base access.

- **AFTER 31** May no new NCACS applications will be accepted. All new contractors, vendors and/or suppliers requesting base access will be required to obtain a DBIDS credential.

- **AFTER 14 August 2017 only DBIDS credentials will be accepted for base access.**

- There is no cost to obtaining a DBIDS credential.

FOR MORE INFORMATION VISIT:

https://www.cnic.navy.mil/om/dbids.html

DBIDS ACCESS REQUEST FORM (NAVSHIPYD PTSMH 5500)

1. FIRST NAME:
2. LAST NAME:
3. COMPANY NAME:
4. TITLE:
5. PHONE NUMBER:
DBIDS INFORMATION:
ARE YOU THE PRIMARY DBIDS COMPANY:
DO YOU SUB TO A GC: ☐ No ☐ Yes If yes who:
COMPANY INFORMATION:
COMPANY NAME:
COMPANY ADDRESS:
COMPANY PHONE NUMBER:
PRIMARY POINT OF CONTACT:
FACILITY: ***PORTSMOUTH NAVAL SHIPYARD***
ACCESS TIMEFRAME REQUIRED: : ☐ 0600-1800, ☐ 1400-2300, ☐ 24/7
SPONSOR INFORMATION (MUST BE SHIPYARD PERSONNEL):
SPONSOR ORGANIZATION:
SPONSOR OR NAME:
SPONSOR PHONE NUMBER:
SPONSOR TITLE:
SPONSOR EMAIL ADDRESS:
CONFIRM SPONSOR EMAIL ADDRESS:
CONTRACT NUMBER:
CONTRACT EXPIRATION DATE:
NUMBER OF EMPLOYEE REGISTERING AT THIS FACILITY:

All applications will be submitted to CNI_DBIDS@navy.mil

If you have any questions please contact CAPT Capozzi at 207-438-2147.

installation.

(2) Persons requesting access who are not in possession of an approved, government issued credential listed in paragraph 1204.b. shall provide an unexpired document for identity proofing purposes listed in Table 12-1. Any fraudulent information passed during the process may lead to prosecution under appropriate legal authorities.

(3) Authorized government representatives shall, prior to acceptance, visually and tactilely (by touch or feel) inspect documents for evidence of tampering, alteration, or other indications of falsified/fraudulent documents. Authorized government representatives will not accept documents that appear to be fraudulent, forged, or counterfeit and follow the CO's directed standards for response actions to include detention of persons attempting to provide fraudulent documents. Indications of tampered documents include:

(a) Strange text, fonts, slightly altered text, incomplete letters, misaligned words, strange spacing and errors in punctuation or spelling.

(b) Texture or physical indication the photograph has been glued over the original.

Table 12-1. List of Identity Proofing Documents

Documents that Establish Identity
1. U.S. Passport or Passport Card
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 (MRIV)
4. Employment Authorization Document (Card) that contains a photograph (Form I-766)
5. In the case of a nonimmigrant alien authorized to work for a specific employer incident to status: (a) Foreign passport; and (b) Form I-94 or Form I-94A has the following: (1) Bearing the same name as the passport; and (2) 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.
6. Driver's license or ID card issued by a RealID Act compliant state or outlaying possession of the U.S., provided it contains

a photograph and biographic information such as name, date of birth, gender, height, eye color, and address. Licenses or IDs possessing "NOT APPLICABLE FOR FEDERAL PURPOSES" will not be accepted.
7. State-issued Enhanced Driver's licenses
8. Driver's license issued by the U.S. Department of State
9. Border Crossing Card (From DSP-150)
10. Identification card issued by Federal, State, or local government agencies, provided it contains a photograph and biographic information such as name, date of birth, gender, height, eye color, and address.
11. Veteran Health Identification Card (VHIC) issued by the Department of Veterans Affairs
12. Department of Homeland Security "Trusted Traveler" Cards (Global Entry, NEXUS, SENTRI, FAST)
13. U.S. Certificate of Naturalization or Certificate of Citizenship (Form N-550)
14. School identification card with a photograph
15. Persons under the age of 18 who are unable to present a document listed above may present one of the below documents. (a) School record or report card (b) Day care or nursery school record (c) Birth certificate (original or certified copy)
16. Native American Tribal Photo ID cards
17. U.S. Coast Guard Merchant Mariner Credential (MMC) or Merchant Mariner's Documents (MMD)
18. Other documents that may be provide for identity proofing purposes, but must be accompanied by a second form of ID with photograph and biographical information.
a. Social Security Number card
b. Original or certified copy of a birth certificate issued by a state, county, municipal authority, or outlying possession of the U.S. bearing an official seal.
c. Certification of birth Abroad issued by the U.S. Department of State (Form FS-545)
d. Certification of Report of Birth issued by the U.S. Department of State (Form DS-1350
e. Voter's Registration Card

d. Outside the Continental United States (OCONUS)

(1) NSF will utilize appropriate identity proofing credentials such as a passport or nationally issued identity card, or other COCOM approved ID.

(2) ISO will codify approved non-U.S. identity proofing

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DEPARTMENT OF THE NAVY LOCAL POPULATION ID CARD/BASE ACCESS PASS REGISTRATION

PRIVACY ACT STATEMENT:

AUTHORITY: 10 U.S.C. 5013, Secretary of the Navy; 10 U.S.C. 5041, Headquarters, Marine Corps; OPNAVINST 5530.14E, Navy Physical Security; Marine Corps Order 5530.14A, Marine Corps Physical Security Program Manual; and E. O. 9397 (SSN), as amended, SORN NM05512-2.
PURPOSE(S): To control physical access to Department of Defense (DoD), Department of the Navy (DON) or U.S. Marine Corps Installations/Units controlled information, installations, facilities, or areas over which DoD, DON, or U.S. Marine Corps has security responsibilities by identifying or verifying an individual through the use of biometric databases and associated data processing/information services for designated populations for purposes of protecting U.S./Coalition/allied government/national security areas of responsibility and information; to issue badges, replace lost badges, and retrieve passes upon separation; to maintain visitor statistics; collect information to adjudicate access to facility; and track the entry/exit times of personnel.
ROUTINE USE(S): To designated contractors, Federal agencies, and foreign governments for the purpose of granting Navy officials access to their facility.
DISCLOSURE: Providing registration information is voluntary. Failure to provide requested information may result in denial of access to benefits, privileges, and DoD installations, facilities and buildings.

IDENTITY PROOFING AND APPLICANT INFORMATION

1. LAST NAME:	2. FIRST NAME:	3. MIDDLE NAME:	4. NAME SUFFIX: ☐ Jr. ☐ Sr. ☐ I ☐ II ☐ III ☐ IV

5. HISPANIC OR LATINO *(Check one)*: ☐ YES ☐ NO

6. RACE *(Check one or more)*: ☐ WHITE ☐ AFRICAN AMERICAN OR BLACK ☐ ASIAN ☐ AMERICAN INDIAN OR ALASKIN NATIVE ☐ NATIVE HAWAIIAN OR OTHER PACIFIC ISLANDER

7. GENDER *(Check one)*: ☐ MALE ☐ FEMALE	8. DATE OF BIRTH:	9. CITY OF BIRTH:	10. STATE OF BIRTH:	11. BIRTH COUNTRY:

12. US CITIZEN *(Check)*: ☐ YES ☐ NO

13. DUAL CITIZENSHIP: ☐ YES ☐ NO
CITIZENSHIP IF OTHER THAN US *(Country)* :

U.S. Citizen Minimum Documentation Required:
By Birth - Social Security No and/or State ID/Drivers License.
Naturalized - Certification Number, Petition Number, Date, Place and Court, United States passport number, Social Security No and/or State ID/Drivers License.
Derived - Parent's certification number, Social Security No and/or State ID/Drivers License.

Alien Minimum Documentation Required:
Registration Number, Expiration date, Date of entry, Port of entry.

14. IDENTITY SOURCE DOCUMENTS PRESENTED:	15. DOCUMENT NUMBER:	16. ISSUED BY STATE/COURT:	17. ISSUED BY COUNTRY:	18. ISSUED:	19. EXPIRES:
☐ Social Security No.			United States		
☐ State ID/Drivers License			United States		
☐ Passport No.					
☐ Certification Number and Petition Number					
☐ Derived - Parent's Certification Number:			United States		
☐ Alien Registration No.			United States		
		Date of Entry:	Port of Entry:		

OTHER APPROVED IDENTITY SOURCE DOCUMENTS:

☐					
☐					

20. WEIGHT *(Pounds)*:	21. HEIGHT *(Inches)*:	22. HAIR COLOR *(Check one)*:	23. EYE COLOR *(Check one)*:
		☐ Blond ☐ Brown ☐ Black ☐ Gray ☐ Red ☐ White ☐ Silver ☐ Auburn ☐ Bald	☐ Brown ☐ Green ☐ Blue ☐ Hazel ☐ Black ☐ Gray ☐ Violet ☐ Unknown

24. HOME ADDRESS *(Include city, state, zip code)*:	HOME PHONE *(Include Area Code)*:
25. BASE SPONSOR'S NAME:	SPONSOR PHONE *(Include Area Code)*:

EMPLOYMENT ACTIVITY INFORMATON

26. EMPLOYER NAME AND ADDRESS *(Include city/state/zip code)*:	EMPLOYER PHONE *(Include Area Code)*:
27. SUPERVISOR NAME AND ADDRESS *(Include city/state/zip code)*:	SUPERVISOR PHONE *(Include Area Code)*:

FOR OFFICIAL USE ONLY WHEN FILLED - PRIVACY SENSITIVE:
Any misuse or unauthorized disclosure of this information may result in both criminal and civil penalties.

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28. Check the applicable box for WORK HOURS box or check the OTHER box and enter the work hours, then check the applicable for WORK DAYS:

WORK HOURS: ☐ 0600-1800 ☐ 0800-1700 ☐ OTHER _____ WORK DAYS: ☐ SN ☐ M ☐ T ☐ W ☐ TH ☐ F ☐ ST

PRIOR FELONY CONVICTIONS

29. Have you ever been convicted of a Felony? ☐ YES ☐ NO _____ *Initial*

REQUIREMENT TO RETURN LOCAL POPULATION ID CARD

30. I understand that I am required to return my Local Population Identification Card to the Base Pass Office when it expires or if my employment is terminated for any reason. _____ *(initial)*

AUTHORIZATION AND RELEASE AND CERTIFICATION

31. I hereby authorize the DOD/DON and other authorized Federal agencies to obtain any information required from the Federal government and/or state agencies, including but not limited to, the Federal Bureau of Investigation (FBI), the Defense Security Service (DSS), the U.S. Department of Homeland Security (DHS).

I have been notified of DON right to perform minimal vetting and fitness determination as a condition of access to DON installation/facilities. I understand that I may request a record identifier; the source of the record and that I may obtain records from the State Law Enforcement Office as may be available to me under the law. I also understand that this information will be treated as privileged and confidential information.

I release any individual, including records custodians, any component of the U.S. Government or the individual State Criminal History Repository supplying information, from all liability for damages that may result on account of compliance, or any attempts to comply with this authorization. This release is binding, now and in the future, on my heirs, assigns, associates, and personal representative(s) of any nature. Copies of this authorization that show my signature are as valid as the original release signed by me.

FALSE STATEMENTS ARE PUNISHABLE BY LAW AND COULD RESULT IN FINES AND/OR IMPRISONMENT UP TO FIVE YEARS.

BEFORE SIGNING THIS FORM, REVIEW IT CAREFULLY TO MAKE SURE YOU HAVE ANSWERED ALL QUESTIONS FULLY AND CORRECTLY.

I DECLARE UNDER PENALTY OF PERJURY THAT THE STATEMENTS MADE BY ME ON THIS FORM ARE TRUE, COMPLETE AND CORRECT

DATE _____ SIGNATURE _____

FINAL DETERMINATION ON YOUR ACCESS: The Base Commanding Officer has final authority for determination on granting physical access to DON controlled installations/facilities under his/her jurisdiction.

BELOW COMPLETED BY BASE REGISTRAR PERSON CONDUCTING IDENTY PROOFING and NCIC CHECK

32. INFORMATION VERIFIED BY:	33. ENTERED IN C/S SYSTEM BY:	34. PASS ISSUE DATE:	35. PASS EXPIRATION DATE:

36. NCIC CHECK PERFORMED BY:	37. RESULTS OF NCIC CHECK:	38. RESULTS OF LOCAL RECORDS CHECK:
	☐ NO RECORDS ☐ RECORD IDENTIFIER RECORD NUMBER:	☐ NO RECORDS ☐ RECORD IDENTIFIER RECORD NUMBER:

Office of Under Secretary of Defense Directive-Type Memorandum (DTM) 09-012, "Interim Policy Guidance for DoD Physical Access Control," December 8, 2009. DTM 09-012 requires that DoD installation government representatives query the National Crime Information Center (NCIC) and Terrorist Screening Database to vet the claimed identity and to determine the fitness of non-federal government and non-DoD-issued card holders (i.e. visitors) who are requesting unescorted access to a DoD installation. The minimum criteria to determine the fitness of a visitor is: 1) not on a terrorist watch list; 2) not on an DoD installation debarment list; and 3) not on a FBI National Criminal Information Center (NCIC) felony wants and warrants list. Additionally, SECNAV Memo, Policy for Sex Offender Tracking and Assignment and Access Restrictions within the Department of the Navy, of 7 Oct 08 and OPNAVINST 1752.3 established the Navy's policy on sex offenders, requiring Region Commanders (REGCOMs) and Installation Commanding Officers (COs) to prohibit sex offender access to DoN facilities and Navy owned, leased or PPV housing. This form describes the authority and purpose to collect and share the required information; and identifies the applicant/visitor and sponsor; and authorizes the DoD to perform the minimum vetting and fitness determination criteria. A favorable response on the vetting and fitness determination is required to receive access to DOD-controlled installation/facilities.

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Instruction for completing the Local Population Access Registration Form

INSTRUCTIONS: Please complete all information in black ink (printed) or by typing. By voluntarily providing your Personal Information, you agree to the following terms and restrictions:
RESTRICTIONS: Local Population Identification Card/Base Access Pass may only be used by person to whom they are issued and for the specific business/purpose issued. Applicants are reminded that soliciting (i.e., door-to-door sales) is prohibited on the base, and that such activity is grounds for cancellation of the Pass. Additionally, such action may result in debarment from the base and legal action. The Base Commanding Officer has discretion over specifying the period of validity for any Local Population ID Cards/Base Access Passes that are issued under his/her jurisdiction.
Review the Privacy At Statement that is printed at the top of the form

Block 1: Enter the Last Name.
Block 2: Enter the First Name.
Block 3: Enter the Middle Name.
Block 4: If applicable, check the box for Name Suffix.
Block 5: Check the applicable box for Hispanic or Latino.
Block 6: Check the applicable box for Race.
Block 7: Check the applicable box for Gender.
Block 8: Enter Date of Birth.
Block 9: Enter City of Birth.
Block 10: Enter State of Birth.
Block 11: Enter Country of Birth.
Block 12: Check the applicable box for US Citizenship.
Block 13: If not a US Citizen, enter the name of the Country of Citizenship.
Block 14: Two forms of identity source documents from the list of acceptable documents listed below must be presented to the base registrar with this completed form. Check the box for the type of Documents that will be presented for identity proofing. If the document type is not listed, use the two rows under Other Approved Identity Source Documents to enter the type of document(s) that you will present.
Block 15: Enter the Document Number located on the Identity Proofing Source document that was checked in Block 14.
Block 16: Enter the State that issued the Identity Source Document.
Block 17: Enter the Country that issued the Identity Source Document.
Block 18: Enter the Date that the Identity Source Document was issued.
Block 19: Enter the Date that the Identity Source Document will expire.
Block 20: Enter Weight in pounds.
Block 21: Enter Height in inches.
Block 22: Check the applicable box for Hair Color.
Block 23: Check the applicable box for Eye Color.
Block 24: Enter Home Address Including City, State, Zip Code, and Home Telephone Number.
Block 25: Enter Name of Registrant's Base Sponsor and Base Sponsor's Telephone Number.
Block 26: Enter Employer Name and address including City, State, Zip Code, and Employer's Telephone Number.
Block 27: Enter Supervisor's Name including City, State, Zip Code, and Supervisor's Telephone Number.
Block 28: Check the applicable box for Work Hours box or check the OTHER box and enter the work hours, then check applicable boxes for Work Days. Block 28: Check the applicable answer if you have been convicted of Felony and enter initials.
Block 29: Check the applicable box for felony conviction.
Block 30: Enter initials to accept terms for returning Local Population Identification Card.
Block 31: Sign and date the form to attest that the foregoing information is true and complete to best of your knowledge.

LIST OF ACCEPTABLE DOCUMENTS - All documents must not be expired.

Must present one selection from List A or a combination of one selection from List B and one selection from List C.

List A - Documents that Establish Identity and Employment Authorization OR **List B - Documents that Establish Identity** AND **List C - Documents that Establish Employment Authorization**

1. U.S. Passport or U.S. Passport Card.
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.
4. Employment Authorization Document that contains a photograph (Form I-766).
5. For a nonimmigrant alien authorized to work for a specific employer because of his or her status:
   a. Foreign Passport; and
   b. Form I-94 or Form I-94A that has the following:
      (1) The same name as the passport; and
      (2) An endorsement of the alien's nonimmigrant status as long as that period of endorsement has not yet expired and the proposed employment is not in conflict with and restrictions or limitations identified on form.
6. Passport from the Federal States of Micronesia (FSM) or the Republic of the Marshal Islands (RM) with Form I-94 or Form I-94A indicating nonimmigrant admission under the Compact of Free Association Between the United Stated and FSM or RM.

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.
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.
3. School ID card with a photograph
4. Voter's registration card.
5. U.S. Military card or draft record.
6. Military dependent's ID card.
7. U.S. Coast Guard Merchant Mariner Card.
8. Native American tribal document.
9. Driver's license issued by a Canadian government authority.

For persons under age 18 who are unable to present a document listed above:

10. School record or report card.
11. Clinic, doctor, or hospital record.
12 Day-care or nursery school record.

1. A Social Security Account Number card, unless the card includes one of the following restrictions:
   (1) NOT VALID FOR EMPLOYMEMT
   (2) VALID FOR WORK ONY WITH INS AUTHORIZATION.
   (3) VALID FOR WORK ONLY WITH DHS AUTHORIZATION.
2. Certification of Birth Abroad issued by the Department of State (Form FS-545).
3. Certification of Birth issued by the Department of State (Form DS-1360).
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. Native American tribal document.
6. U.S. Citizen ID Card (Form I-197).
7. Identification Card for Use of Resident Citizen in the United States (Form I-179).
8. Employment authorization document issued by the Department of Homeland Security.

The remainder of the form will be completed by the Base Registrar Person conducting Identify Proofing process and NCIC check.

AGENCY DISCLOSURE STATEMENT:

The public reporting burden for this collection of information is estimated to average 10 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden, to the Department of Defense, Washington Headquarters Services, Executive Services Directorate, Information Management Division, 4800 Mark Center Drive, East Tower, Suite 02G09, Alexandria, VA 22350-3100 OMB 0703-0061. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

PLEASE DO NOT RETURN COMPLETED FORM TO THE ABOVE ADDRESS.
Completed form should be submitted to the Base Registrar.

SECTION 01 20 00.00 22

PRICE AND PAYMENT PROCEDURES (PWD ME)
05/22

PART 1 GENERAL

This Section applies to Design-Bid-Build and Design-Build projects at Portsmouth Naval Shipyard and PWD ME AOR Facilities.

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	(2016) 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. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Schedule of Prices; G

1.3 SCHEDULE OF PRICES

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. Contractor overhead and profit including salaries for field office personnel, if applicable, must be proportionately spread over all pay items and not included as individual pay items. Summarize costs and for each construction category.

1.3.2 Payment Schedule Instructions

Payments will not be made until the Schedule of Prices has been submitted to and accepted by the Contracting Officer.

For Fast-Tracked or Critical Path Submittals of construction projects, the Schedule of Prices must include detailed construction line items for each fast-tracked/critical path phase(s), submitted to and accepted by the Contracting Officer during the Post Award Kickoff Meetings and confirmed prior to starting construction work in that phase.

Additionally, the Schedule of Prices must be separated as follows:

a. Primary Facilities Cost Breakdown:

Defined as work on the primary facilities out to the 5 foot line. Work out to the 5 foot line includes construction encompassed within a theoretical line 5 foot from the face of exterior walls and includes attendant construction, such as pad mounted HVAC cooling equipment, cooling towers, and transformers placed beyond the 5 foot line.

b. Supporting Facilities Cost Breakdown:

Defined as site work, including incidental work, outside the 5 foot line.

If as-built drawings, eOMSI, or operations and maintenance manuals are required, payments for either will not be made until complete and final submissions are approved by the Contracting Officer. The following minimum amounts must be included as Schedule of Prices line items:

Minimum Schedule of Prices values for complete final approved as-built drawings (based on awarded Contract amount: $0-$150K 4%; $150k-$700k 3%; $700k - $2.49M 2%; $2.5M + 2% (max $200k))

Minimum Schedule of Prices value for complete final approved Operation and Maintenance Manuals (based on awarded Contract amount: $0-$150K 2%; $150k-$700k 2%; $700k - $2.49M 1%; $2.5M + 1% (max $200k))

Minimum Schedule of Prices value for complete final approved eOMSI Workbook (based on awarded Contract amount: $0-$150K 2%; $150k-$700k 2%; $700k - $2.49M 1%; $2.5M + 1% (max $200k))

1.3.3 Real Property Assets

The Government will provide the Draft DD Form 1354, Transfer and Acceptance of Military Real Property filled in with the appropriate Real Property Unique Identifiers (RPUID) and related construction Category Codes to summarize the designed real property assets that apply to this Contract. Meet with the Contracting Officer and the Real Property Accounting Officer during the Pre-Construction Meeting and the Project Closeout Meetings to modify and include any necessary changes to the DD Form 1354. Provide the Interim DD Form 1354 that uses the appropriate division of the RPUIDs/Category Codes to represent the final constructed facility and include all associated cost. Coordinate the Price and Payment structure with the structure of the RPUIDs/Category Codes.

Divide detailed asset breakdown into the RPUIDs and related construction Category Codes and populate associated costs which represent all aspects of the work. Where assets diverge into multiple RPUID/Category Codes, divide the asset and provide the proportion of the assets in each RPUID/Category Code. Assets and related RPUID/Category Codes may be modified by the Contracting Officer as necessary during course of the work. Coordinate identification and proportion of these assets with the Government Real Property Accounting Officer.

Cost data accumulated under this Section are required in the preparation of DD Form 1354.

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 accounting records, equipment use rates must 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. Invoices not completed in accordance with Contract requirements will be returned to the Contractor for correction of the deficiencies. The requests for payment must include the documents listed below.

a. The Contractor's invoice, on NAVFAC Form 4330 furnished by the Government, showing in summary form, the basis for arriving at the amount of the invoice. Form 4330 must include certification by the Quality Control (QC) Manager as required by the Contract.

b. The Estimate for Voucher/ Contract Performance Statement on NAVFAC Form 4330 furnished by the Government. Use NAVFAC Form 4330, unless otherwise directed by the Contracting Officer, on NAVFAC Contracts when a Monthly Estimate for Voucher is required.

c. Contractor's Monthly Estimate for Voucher and Contractors Certification (NAVFAC Form 4330) with Subcontractor and supplier payment certification. Other documents, including but not limited to, that need to be received prior to processing payment include the following submittals as required. These items are still required monthly even when a pay voucher is not submitted.

d. Monthly Work-hour report.

e. Updated Construction Progress Schedule and tabular reports required by the Contract.

f. Contractor Safety & QC Self Evaluation Checklist.

g. Updated submittal register.

h. Solid Waste Disposal Report.

i. Certified payrolls.

j. Updated testing logs.

k. Other supporting documents as requested.

1.5.2 Submission of Invoices

If DFARS Clause 252.232-7006 Wide Area Work Flow Payment Instructions is included in the Contract, provide the documents listed in above paragraph CONTENT OF INVOICE 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, provide it as instructed by the Contracting Officer.

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

1.5.3 Final Invoice

a. A final invoice must be accompanied by the Final Release. If incorporated, the Final Release must contain the corporate seal. An officer of the corporation must sign and the corporate secretary must 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, submit the final invoice and attach a copy of the Final Release Form in WAWF.

c. Final invoices not accompanied by the Final Release will be considered incomplete and will be returned.

1.6 PAYMENTS TO THE CONTRACTOR

Payments will be made on submission of itemized requests 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 32.103 Progress Payments Under Construction Contracts:

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 FAR 52.236.21.

1.6.2 Payment for Onsite and Offsite Materials

Progress payments may be made 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 must 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 must be specifically and separately identified in the 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 must be supported by documents establishing their value and that the title requirements of the clause at FAR 52.232-5 "Payments Under Fixed-Price Construction Contracts" 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.

f. Materials to be considered for progress payments prior to installation must be stored within 50 miles of the Installation (Portsmouth Naval Shipyard). Other locations are subject to written approval by the Contracting Officer.

g. Materials in transit to the job site or storage site are not acceptable for payment.

h. Provide written consent allowing the Govt. access to the remote storage location for inspection of the stored materials.

i. Materials shall be separated from other stored materials and be clearly identifying the contract number where the materials will be used.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

-- End of Section --

SECTION 01 30 00.00 22

ADMINISTRATIVE REQUIREMENTS (PWD ME)
08/22

PART 1 GENERAL

This Section applies to Design-Bid-Build and Design-Build projects at Portsmouth Naval Shipyard and PWD ME AOR Facilities.

1.1 REFERENCES

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

U.S. ARMY CORPS OF ENGINEERS (USACE)

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

SD-01 Preconstruction Submittals

NAVFAC PWD ME Internal Service Requirements List; G

Facility Turnover Planning Meeting Agenda And Red Zone (Rz) Checklist-Poam; G

1.3 MINIMUM INSURANCE REQUIREMENTS

Provide the minimum insurance coverage required by FAR 28.307-2 LIABILITY, during the entire period of performance under this Contract. Provide other insurance coverage as required by State law.

1.4 SUPERVISION

1.4.1 Minimum Communication Requirements

Have at least one qualified superintendent, or competent alternate, capable of reading, writing, and conversing fluently in the English language, on the job-site at all times during the performance of Contract work. In addition, if a Quality Control (QC) representative is required on the Contract, then that individual must also have fluent English communication skills.

1.4.2 Superintendent Qualifications

Provide project superintendent with a minimum of 10 years experience in construction with at least 5 of those years as a superintendent on projects similar in size and complexity. The individual must be familiar with the requirements of EM 385-1-1 and have experience in the areas of hazard

identification and safety compliance. The individual must be capable of interpreting a critical path schedule and construction drawings. The qualification requirements for the alternate superintendent are the same as for the project superintendent. The Contracting Officer may request proof of the superintendent's qualifications at any point in the project if the performance of the superintendent is in question.

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

1.4.2.1 Duties

The project superintendent is primarily responsible for managing Subcontractors and coordinating day-to-day production and schedule adherence on the project. The superintendent is required to attend NAVFAC Red Zone meetings, partnering meetings, Preparatory meetings and quality control meetings. The superintendent or qualified alternate must be on-site at all times during the performance of this Contract until the work is completed and accepted.

1.4.3 Non-Compliance Actions

The Project Superintendent is 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 is acceptable as the subject of claim for extension of time for excess costs or damages by the Contractor.

1.5 PRECONSTRUCTION MEETING

Notify the Construction Manager assigned to this project to arrange and hold a preconstruction meeting with all interested parties prior to start of work. **The Pre-Construction meeting must be held no later than 30 Calendar days from receiving the Signed Contract or Task Order from the Contracting Officer, but prior to commencement of any work at the site.** The purpose of this meeting is to discuss and develop a mutual understanding of the administrative requirements of the Contract including but not limited to: daily reporting, invoicing, value engineering, safety, Base-access, outage requests, hot work permits, schedule requirements, quality control, schedule of prices , shop drawings, submittals, cybersecurity, prosecution of the work, Government acceptance, final inspections, and Contract close-out. Contractor must present and discuss their basic approach to scheduling the construction work and any required phasing. For Design-Build projects, the Preconstruction Meeting is to be held upon completion of the projects design and design acceptance by the Government.

1.5.1 Attendees

Contractor attendees must include the Project Manager, Superintendent, Site Safety and Health Officer (SSHO), Quality Control Manager, and major Subcontractor.

The following Preconstruction submittals must be submitted to the Contracting Officer fifteen (15) calendar days prior to the pre-construction meeting:

Specification	Description
01 32 16.00 20	Construction Schedule
01 32 16.00 20	Construction Schedule (3-Week Look Ahead)
01 32 16.00 20	Construction Schedule (Outages)
01 32 17.00 20	Baseline Network Analysis Schedule (NAS)
01 32 17.00 20	Three-Week Look Ahead Schedules
01 32 17.00 20	Outages Schedule
01 35 26.00 22	Accident Prevention Plan (APP)
01 45 00.00 22	Construction Quality Control (QC) Plan

The following Pre-construction submittals must be submitted to the Contracting Officer at the pre-construction meeting:

Specification	Description
01 14 00.00 22	List of Contact Personnel
01 20 00.00 22	Schedule of Prices
01 30 00.00 22	NAVFAC Red Zone Facility Turnover Planning Meeting Checklist and POAM
01 30 00.00 22	NAVFAC PWD ME Internal Service Requirements List
01 31 23.13 20	List of Personnel (eCMS)
01 33 00	Submittal Register
01 33 10.05 20	Consolidated RFP Documents
01 33 00.05 20	Submittal Register (DB)
01 50 00.00 22	Construction site plan

The following Pre-construction submittals must be submitted to the Contracting Officer prior to the start of construction:

Specification	Description
01 50 00.00 22	Traffic control plan
01 57 19.00 22	Preconstruction Survey
01 57 19.00 22	Solid Waste Management Plan
01 57 19.00 22	Regulatory Notifications
01 57 19.00 22	Environmental Management Plan (EMP)
01 57 19.00 22	Dirt and Dust Control Plan
01 57 19.00 22	Contractor Hazardous Material Inventory Log
01 57 19.00 22	Storm Water Management/Erosion and Sedimentation Control Plan
01 57 19.00 22	Spill Prevention, Control, and Countermeasures (SPCC) Plan
01 74 19	Waste Management Plan

Confirm, in writing, the construction start date with the Contracting Officer Representative at least two (2) working days prior to start date.

Prepare and distribute minutes of all meetings to the attendees within three (3) working days of the preconstruction meeting.

1.6 FACILITY TURNOVER PLANNING MEETINGS (NAVFAC Red Zone - RZ)

Meet with the Government 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 Meeting with a discussion of the Red Zone (RZ) process and convene at regularly scheduled RZ Meetings beginning at approximately 75 percent of construction completion. Include the following in the facility Turnover effort:

1.6.1 NRZ Checklist

See Appendix A of this Section for an example of the Facility Turnover Planning Meeting Agenda and Red Zone (RZ) Checklist-POAM. Contracting Officer's Representative (COR) will provide the Contractor a copy of the Red Zone Checklist template in advance of the RZ turnover meeting.

At the initial Red Zone Facility Turnover meeting, NAVFAC, the Client and Contractor will modify the Red Zone Checklist template by adding or deleting critical activities applicable to the project and assign planned completion dates for each activity. This becomes the Red Zone POAM which will be utilized through to the contract completion.

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. The Contracting Officer may request additional activities be added to the Red Zone Checklist at any time as necessary. Checklists are applicable to all Contracts no matter what Category of Work. The Point of Contact and due date must 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) must indicate date completed and initial to indicate completion of the item. If a party fails to complete an item by the due date, this must be noted on the checklist and a new due date established and indicated.

1.6.2 Meetings

a. Upon Government acceptance of the RZ Checklist-POAM, the COR will send out the accepted RZ Checklist-POAM to all attendees. The Project Superintendent is required to lead regular Red Zone Meetings beginning at approximately 75 percent project completion, or three (3) to six (6) months prior to Beneficial Occupancy Date (BOD), whichever comes first.

b. The Contracting Officer will determine the frequency of the meetings, which is expected to increase as the project completion draws nearer. At the beginning, Red Zone meetings may be every two weeks then increase to weekly towards the final month of the project.

c. Using RZ Checklist-POAM as a Plan of Action and Milestones (POAM) and basis for discussion, review upcoming critical activities and strategies to ensure work is completed on time.

d. Discuss and coordinate with the CM/ET for upcoming activities that require Government involvement.

e. All parties will maintain their copy of the RZ Checklist-POAM documenting the actual completion dates as work is completed and update the RZ Checklist-POAM with revised planned completion dates as necessary to match progress. The CM will maintain the master RZ Checklist-POAM, periodically distributing a scanned copy of the current RZ Checklist-POAM to attendees via email after significant progress is made.

1.6.3 NAVFAC PWD ME Internal Service Requirements List

An initial, pre-edited draft of the NAVFAC PWD ME Internal Service Requirements List is included in Appendix B of this Section.

Include all information usually listed on manufacturer's name plate. The Internal Service Requirements List must include, as applicable, the following for each piece of equipment installed: description of item, location (by room number), manufacturer, model number, serial number, capacity, floor coverings, wall and ceiling surfaces; types and square footage of coverage, lighting fixtures, bathroom fixtures, windows, and HVAC filters.

Submit a preliminary Internal Service List to the COR at the initial Facility Turnover Meeting. Provide the final completed Internal Service List with all required facility system/equipment information to the COR at least ninety (90) calendar days prior to the project BOD.

1.7 PARTNERING

To most effectively accomplish this Contract, the Contractor and Government must form a cohesive partnership with the common goal of drawing on the strength of each organization in an effort to achieve a successful project without safety mishaps, conforming to the Contract, within budget, and on schedule. The partnering team must consist of personnel from both the Government and Contractor including project level and corporate level leadership positions. Key Personnel from the supported command, end user (who will occupy the facility), NAVFAC, PWD Maine Design and Construction team and Subject Matter Experts (SME's), FEAD, Design Manager (DM), Construction Manager (CM), Engineering Technician (ET), Contractor, key Subcontractors, and the Designer of Record are required to participate in the Partnering process.

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

1.8 ELECTRONIC MAIL (E-MAIL) ADDRESS

Establish and maintain electronic mail (e-mail) capability along with the capability to open various electronic attachments as text files, pdf files, and other similar formats. Within 10 days after Contract award, 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 or terrorist threats. Multiple email addresses are not 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). Promptly notify the Contracting Officer, in writing, of any changes to this email address.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

-- End of Section --

Resource for Red Zone BMS Process B-1.6.11
18 March 2008
Date

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)

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

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.

Edit the document to remove Facility Delivery items that are not in the contract.
To delete the rows highlight the row(s) and use Control - (minus sign).
To insert additional rows use Control + (plus sign).

Resp.	Critical Activities	Point of Contact	Due Date	Actual Complete Date	CM Initials	Notes
	Required for Facility Delivery					
KTR	Electrical Systems Testing					
NAVFAC	Transformer Performance Verification					
KTR	Generator Testing					
NAVFAC	Generator Performance Verification					
KTR	Final Electrical Connections					
NAVFAC	Coordinate Final Electrical Connections					Coordinate w/PW Shops
KTR	Final Gas Connections					
NAVFAC	Coordinate Final Gas Connections					Coordinate w/PW Shops
KTR	Final Water Connections					
KTR	Superchlorination of Potable Water Systems					
KTR	Plumbing/Backflow Testing					
NAVFAC	Coordinate Final Water Connections					Coordinate w/PW Shops
KTR	Critical System Start-up: (Edit accordingly)					
KTR	Duct Air Leakage Testing (DALT)					
NAVFAC	DALT Field Acceptance					
KTR	Air Barrier Testing					

Resp.	Critical Activities	Point of Contact	Due Date	Actual Complete Date	CM Initials	Notes
KTR	Elevator Testing					
NAVFAC	Elevator Certification					Notify ML elev inspector 30 days prior to required site visit.
KTR	Boiler/UPV Testing					
NAVFAC	Boiler/UPV Certification					Notify ML boiler inspector 30 days prior to required site visit.
KTR	Crane Testing					
C700	Crane Certification					Notify C700 30 days prior to required testing.
KTR	Fire Alarm/Sprinkler Testing					
NAVFAC	FA & FP test results to ML & DOR					days prior to acceptance testing by FPE
NAVFAC	Fire Alarm/Sprinkler Acceptance Test					Notify ML FPE 30 days prior to required testing.
KTR	Keying Plan Meeting					
Client	Keying Plan Meeting					
NAVFAC	Keying plan to NAVFAC Locksmith					
KTR	Deliver Lockset Cores to CM/ET					
NAVFAC	Lockset cores & keys and installed					Locksmith
KTR	NMCI Connections/IT Systems Testing					
Client	NMCI Install or other networks (C109)					
Client	Secure Network Installations					

Resp.	Critical Activities	Point of Contact	Due Date	Actual Complete Date	CM Initials	Notes
KTR	IDS & SCIF Testing					
Client	IDS & SCIF Security Insp & Acceptance					
NAVFAC	IDS & SCIF Insp & Test					
KTR	Telecommunications Connections & Test					
Client	Telecommunication install (BCO phones)					
Client	Mod service contracts for Phone/Utilities/ Custodial/Grounds					
KTR	Commissioning Functional Performance Testing (FPT)					
KTR	TAB (Air and Water Balancing)					
KTR	TAB Proportional Balancing Report					
NAVFAC	Proportional Balanc'g TAB Field Accept					
KTR	TAB Field Acceptance Testing					
KTR	TAB Season 1 Report*					
KTR	TAB Field Acceptance Testing					
NAVFAC	1st Season TAB Field Acceptance					
KTR	DDC Trend Logs / Endurance Testing					
KTR	Performance Verification Testing (PVT) Controls					
NAVFAC	Performance Verification Testing (PVT) Controls NAVFAC Acceptance					
KTR	Facility-Related Control System Cybersecurity Commissioning					

Resp.	Critical Activities	Point of Contact	Due Date	Actual Complete Date	CM Initials	Notes
NAVFAC	Completed Cyber Hygiene Checklist					
NAVFAC	Completed RMF Step 4 Validation					
Client	GFE status/delivery schedule (GFCI, GFGI)					
Client	Client provided equipment KTR installed					
Client	Client provided equipment SELF installed					
NAVFAC	Training Coordinated/Scheduled with FMS					
KTR	System Training of Navy Personnel					
Client	Attend Training					
KTR	Provide As-Built floor plans in CAD					
NAVFAC	CM to Submit floor plan As-Builts to CAD Dept.					RQ'd for Fire Bill - RQ'd before BOD(A)
KTR	Submit sample as-built drawings for CAD review					Submit 3 drawings from ea. discipline for review
NAVFAC	CM to submit to DM who must review and submit Sample As-Built documents to CAD					
KTR	Pre-Warranty Conference					
KTR	Contractor’s Pre Final Punch List Complete					
KTR	Pre Final Inspection					
NAVFAC	Client walk-thru Inspection					
KTR	Pre-Final Inspection					

Resp.	Critical Activities	Point of Contact	Due Date	Actual Complete Date	CM Initials	Notes
NAVFAC	Pre-Final Inspection					
KTR	Punch List					
KTR	Final Inspection					
NAVFAC	Final Inspection					
NAVFAC	BOD/Use and Possession					
Client	Ribbon-cutting ceremony					
Client	Planned User Move-in					
KTR	Delivery of O&M Manuals					Must be provided before BOD
NAVFAC	CM to submit to DM who must review and submit to NAVFAC PWD ME Requirements					
KTR	Delivery of Product Warranties					Must be provided before BOD
NAVFAC	CM to submit Warranties to NAVFAC PWD ME Requirements FMS					
KTR	As-Built Drawings					Must be provided before BOD
NAVFAC	CM to submit to DM who must review and submit As-Built documents to CAD Dept.					
KTR	Submit eOMSI Facility Data Workbook					Must be provided before BOD
NAVFAC	CM to submit to the DM who must review and submit to the NAVFAC PWD ME FOS.					
KTR	Submit the Internal Service Requirement List (ISRL)					Must be provided before BOD
NAVFAC	CM to submit to the DM who must review and submit to the NAVFAC PWD ME FSC.					

Resp.	Critical Activities	Point of Contact	Due Date	Actual Complete Date	CM Initials	Notes
	Required for Contract Close-out:					
NAVFAC	Warranty documentation to FMS					Must be provided before CCD
KTR	Site Restoration					
KTR	Final Landscaping					
KTR	Spare Parts, Extra Stock, Special Tools, etc					
KTR	Final Demobilization and Clean-up					
KTR	Temp Construction Fence Removed					
KTR	Project Close-out Meeting					
KTR	Complete DD1354					
NAVFAC	DD 1354 Signed & turned over to RPAO					
KTR	Closeout & submit permits and inspection reports					Notice of Termination (NOT); Storm water insp rpts; Stoemwater BMP Install rpts; Archaelogical Monitor'g rpts and artifacts, salvaged mat. etc.
KTR	Seasonal/Deferred Commissioning FPT					
KTR	2nd Season TAB Report					
NAVFAC	2nd Season TAB Field Accept Testing					
KTR	Annual Elevator Maintenance Complete					
NAVFAC	Authority to Operate delivered to client					
KTR	Commissioning 10-Month/Warranty Visit					
NAVFAC	Inform PM of BOD					

Resp.	Critical Activities	Point of Contact	Due Date	Actual Complete Date	CM Initials	Notes
NAVFAC	BOD (A) entered into eContracts					
NAVFAC	BOD Letter to Contractor					
NAVFAC	Acceptance Letter to Client					
NAVFAC	Process recycled/recovered materials report					
NAVFAC	Contractor Evaluations (CPARS) Complete					
NAVFAC	Finalize Outstanding Contract Mods					

* INFO / DIRECTIONS
- The NRZ Checklist/POAM is a tool to track the status of critical activities required for BOD to help ensure their timely completion to prevent delays with the facility acceptance and turnover.
- The critical activities are organized by section according to the requirement (e.g. NMCI & BCO acceptance and connections)
- Critical items missing from this list should be added as necessary to ensure the list is comprehensive. Likewise, unnecessary items should be deleted.
- Any critical items left off the NRZ Checklist that are later identified after initial NRZ meeting is conducted should be added immediately so their progress can be tracked.
- A copy of the NRZ Checklist/POAM shall be maintained in the contract file.

SECTION 01 31 23.13 20

ELECTRONIC CONSTRUCTION AND FACILITY SUPPORT CONTRACT MANAGEMENT SYSTEM
05/17, CHG 6: 02/21

PART 1 GENERAL

1.1 CONTRACT ADMINISTRATION

Utilize the Naval Facilities Engineering Command's (NAVFAC's) Electronic Construction and Facility Support Contract Management System (eCMS) for the transfer, sharing and management of electronic technical submittals and documents. The web-based eCMS is the designated means of transferring technical documents between the Contractor and the Government. Paper media or e-mail submission, including originals or copies, of the documents identified in Table 1 are not permitted, except where eCMS is unavailable, non-functional or specifically requested in addition to electronic submission. When specifically requested to provide documents outside of eCMS, upload all final project documentation (e.g. documents that are signed and/or adjudicated by the Government) mentioned in Table 1 into the subject eCMS document management folders that are associated with that document type. Include the identification number of the document, type of document; the name/subject or title; and for daily reports the date (day of work) with format YYYY/MM/DDin the filename. For example for RFI’s 0011_RFI_Roof_Leaking.doc; For submittals 0032a_Submittals_Light_Fixture.pdf; For Daily Reports 0132_Daily_Report_20190504.xls. Contact the Contracting Officer's Representative (COR) regarding availability of eCMS training and reference materials.

1.2 USER PRIVILEGES

The Contractor will be provided access to eCMS. All technical submittals and documents must be transmitted to the Government via the COR. Project roles and system roles will be established to control each user's menu, application, and software privileges, including the ability to create, edit, or delete objects.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" or "S" classification. Submittals not having a "G" or "S" classification are for Contractor Quality Control approval. When used, a code following the "G" classification identifies the office that will review the submittal for the Government. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

List of Contractor's Personnel; G

1.4 SYSTEM REQUIREMENTS AND CONNECTIVITY

1.4.1 General

The eCMS requires a web-browser (platform-neutral) and Internet connection. Obtain from an approved vendor an External Certification Authority (ECA), Primary Key Infrastructure (PKI) certificate, or other

similar digital identification to support two-factor authentication and access to eCMS. Provide and maintain computer hardware and software for the eCMS access throughout the duration of the contract for all Contractor-designated users. Provide connectivity, speed, bandwidth, and access to the Internet to ensure adequate functionality. Neither upgrading of the Contractor's computer system nor delays associated from the usage of the eCMS will be justification or grounds for a time extension or cost adjustment to the Contract.

1.4.2 Contractor Personnel List

Within 20 calendar days of contract award, provide to the Contracting Officer a list of Contractor's personnel who will have the responsibility for the transfer, sharing and management of electronic technical submittals and documents and will require access to the eCMS. Project personnel roles to be filled in the eCMS include the Contractor's Project Manager, Superintendent, Quality Control (QC) Manager, and Site Safety and Health Officer (SSHO). Personnel must be capable of electronic document management. Notify the COR immediately of any personnel changes to the project. The Contracting Officer reserves the right to perform a security check on all potential users. Provide the following information:

First Name
Last Name
E-mail Address
Office Address
Project Role (e.g. Project Manager, QC Manager, Superintendent)

1.5 SECURITY CLASSIFICATION

In accordance with Department of Navy guidance, all military construction contract data are unclassified, unless specified otherwise by a properly designated Original Classification Authority (OCA) and in accordance with an established Security Classification Guide (SCG). Refer to the project's OCA when questions arise about the proper classification of information.

The eCMS must only be used for the transaction of unclassified information associated with construction projects. In conformance with the Freedom of Information Act (FOIA), DoD INSTRUCTION 5200.48 CONTROLLED UNCLASSIFIED INFORMATION (CUI), and DoD requirements, any unclassified project documentation uploaded into the eCMS must be designated either "U - UNCLASSIFIED" (U) or "CUI - CONTROLLED UNCLASSIFIED INFORMATION" (CUI). Project Photos must not be uploaded to eCMS. All photos must be reviewed by PNS Security prior to any public release.

1.6 ECMS UTILIZATION

Establish, maintain, and update data and documentation in the eCMS throughout the duration of the contract.

Personally Identifiable Information (PII) transmittal is not permitted in the eCMS.

1.6.1 Information Security Classification/Identification

The eCMS must be used for the transmittal of the following documents. This requirement supersedes conflicting requirements in other sections, however, submittal review times in Section 01 33 00 SUBMITTAL PROCEDURES remain applicable. Table 1 - Project Documentation Types provides the appropriate

U and CUI designations for various types of project documents. Construction documents requiring CUI status must be marked accordingly. Apply the appropriate markings before any document is uploaded into eCMS. Markings are not required on U documents.

Table 1 also identifies which eCMS application is to be used in the transmittal of data (these are subject to change based on the latest software configuration). If a designated application is not functional within 4 hours of initial attempt, defer to the Submittal application and submit the required data as an uploaded portable document (e.g. PDF), word processor, spreadsheet, drawing, or other appropriate format. Hard copy or e-mail submission of these items is acceptable only if eCMS is documented to be not available or not functional or specifically requested in addition to electronic submission. After uploading documents to the Submittal application, transmit the submittals and attachments to the COR via the Transmittal application. For Submittals, select the following:

Preparation by = Contractor personnel assigned to prepare the submittal
Approval by = Contracting Officer Representative (COR)
Returned by = Design Lead/Manager
Forwarded to = Contractor project manager

Table 1 - Project Documentation Types

SUBJECT/NAME	DESIG	REMARKS	ECMS APPLICATION
As-Built Drawings	U	Locations of sensitive areas must be labeled as either "Controlled Area" or "Restricted Area" and may be shown on unclassified documents with the approval from Site Security Manager	Submittals and Transmittals
Building Information Modeling (BIM)	U	1. Locations of sensitive areas must be labeled as either "Controlled Area" or "Restricted Area" and may be shown on unclassified documents with the approval from Site Security Manager 2. Design reviews will be performed in existing "Dr Checks"	Submittals and Transmittals
Construction Permits	U	Refer to rules of the issuing activity, state or jurisdiction	Submittals and Transmittals
Construction Schedules (Activities and Milestones)	U	After the schedule submittal is approved by the COR, import the schedule file into the scheduling application, and select "Approve" to establish a new schedule baseline	Submittals, Transmittals and Scheduling App

SUBJECT/NAME	DESIG	REMARKS	ECMS APPLICATION
Construction Schedules (Cost-Loaded)	U	After the schedule submittal is approved by the COR, import the schedule file into the scheduling application, and select "Approve" to establish a new schedule baseline	Submittals, Transmittals and Scheduling App
Construction Schedules (3-Week Lookahead)	U	Import the schedule file into the scheduling application, and select "Approve" to establish a new schedule baseline	Scheduling App
DD 1354 Transfer of Real Property	U		Submittals and Transmittals
Daily Production Reports	U	Provide weather conditions, crew size, man-hours, equipment, and materials information	Daily Report
Daily Quality Control (QC) Reports	U	Provide QC Phase, Definable Features of Work Identify visitors	Daily Report
Designs and Specifications	U	1. Locations of sensitive areas must be labeled as either "Controlled Area" or "Restricted Area" and may be shown on unclassified documents with the approval from Site Security Manager 2. Design reviews will be performed in existing "Dr Checks"	Submittals and Transmittals
Environmental Notice of Violation (NOV), Corrective Action Plan	U	Refer to rules of the issuing activity, state or jurisdiction	Submittals and Transmittals
Environmental Protection Plan (EPP)	U		Submittals and Transmittals
Invoice (Supporting Documentation)	U	Applies to supporting documentation only. Invoices are submitted in Wide-Area Workflow (WAWF)	Submittals and Transmittals
Jobsite Documentation, Bulletin Board, Labor Laws, SDS	U		Submittals and Transmittals

SUBJECT/NAME	DESIG	REMARKS	ECMS APPLICATION
Meeting Minutes	U		Meeting Minutes
Modification Documents	U	Provide final modification documents for the project. Upload into "Modifications -	Document Management
Operations & Maintenance Support Information (OMSI/eOMSI), Facility Data Worksheet	U	1. Locations of sensitive areas must be labeled as either "Controlled Area" or "Restricted Area" and may be shown on unclassified documents with the approval from Site Security Manager 2. Design reviews will be performed in existing "Dr Checks"	Submittals and Transmittals
Photographs		MUST NOT BE SAVED TO ECMS. ALL PHOTOS MUST BE REVIEWED BY SECURITY	Submittals and Transmittals
QCM Initial Phase Checklists	U		Checklists (Site Management)
QCM Preparatory Phase Checklists	U		Checklists (Site Management)
Quality Control Plans	U		Submittals and Transmittals
QC Certifications	U		Submittals and Transmittals
QC Punch List	U		Punch Lists (Testing Logs)
Red-Zone Checklist	U		Checklists (Site Management)
Rework Items List	U		Punch Lists (Testing Logs)
Request for Information (RFI) Post-Award	U		RFIs
Safety Plan	U		Daily Report
Safety - Activity Hazard Analyses (AHA)	U		Daily Report

SUBJECT/NAME	DESIG	REMARKS	ECMS APPLICATION
Safety - Mishap Reports	U		Daily Report
SCIF/SAPF Accreditation Support Documents	CUI	Note: Some Construction Security plans may be classified as Secret. Classified information must not be uploaded into eCMS. Refer to the Site Security Manager, as applicable.	Submittals and Transmittals
Shop Drawings	U	Locations of sensitive areas must be labeled as either "Controlled Area" or "Restricted Area" and may be shown on unclassified documents with the approval from Site Security Manager	Submittals and Transmittals
Storm Water Pollution Prevention (Notice of Intent - Notice of Termination)	U	Refer to rules of the issuing activity, state or jurisdiction	Submittals and Transmittals
Submittals and Submittal Log	U		Submittals and Transmittals
Testing Plans, Logs, and Reports	U		Submittals and Transmittals
Training/Reference Materials	U		Submittals and Transmittals
Training Records (Personnel)	U		Submittals and Transmittals
Utility Outage/Tie-In Request/Approval	U		Submittals and Transmittals
Warranties/BOD Letter	U		Submittals and Transmittals
Quality Assurance Reports	U		Checklists (Government initiated)
Non-Compliance Notices	U		Non-Compliance Notices (Government initiated)
Other Government-prepared documents	U		GOV ONLY

SUBJECT/NAME	DESIG	REMARKS	ECMS APPLICATION
All Other Documents	U	Refer to FOIA guidelines and contact the FOIA official to determine whether exemptions exist	As applicable

1.6.2 Markings on CUI documents

a. Only CUI documents being electronically uploaded into the eCMS (.docx, .xlsx, .pptx, .pdf, .jpg, .zip, and others as appropriate), and associated paper documents described in the paragraph CONTRACT ADMINISTRATION require CUI markings as indicated in the subparagraphs below.

b. CUI documents that are originally created within the eCMS application using the web-based forms (RFIs, Daily Reports, and others as appropriate) will be automatically watermarked by the eCMS software, and these do not require additional markings.

c. CUI documents must be marked "CONTROLLED UNCLASSIFIED INFORMATION" at the bottom of the outside of the front cover (if there is one), the title page, the first page, and the outside of the back cover (if there is one).

d. CUI documents must be marked on the internal pages of the document as "CONTROLLED UNCLASSIFIED INFORMATION" at top and bottom.

e. Where Installations require digital photographs to be designated CUI, place the markings on the face of the photograph.

f. For visual documentation, other than photographs and audio documentation, mark with either visual or audio statements as appropriate at both the beginning and end of the file.

1.7 QUALITY ASSURANCE

Requested Government response dates on Transmittals and Submittals must be in accordance with the terms and conditions of the Contract. Requesting response dates earlier than the required review and response time, without concurrence by the Government COR, may be cause for rejection.

Incomplete submittals will be rejected without further review and must be resubmitted. Required Government response dates for resubmittals must reflect the date of resubmittal, not the original submittal date.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

-- End of Section --

SECTION 01 32 17.00 20

NETWORK ANALYSIS SCHEDULES (NAS)
05/18, CHG 3: 08/20

PART 1 GENERAL

1.1 DEFINITIONS

The cost-loaded Network Analysis Schedule (NAS) is a tool to manage the project, both for Contractor and Government activities. The NAS is also used to report progress, evaluate time extensions, and provide the basis for progress payments.

For consistency, when scheduling software terminology is used in this Section, the terms in Primavera's scheduling programs are used.

1.2 SCHEDULE REQUIREMENTS PRIOR TO THE START OF WORK

1.2.1 Preliminary Scheduling Meeting

Before preparation of the Project Baseline Schedule, and prior to the start of work, meet with the Contracting Officer to discuss the proposed schedule and the requirements of this Section. Propose projected data dates for monthly update schedules for the project and incorporate each monthly update submittal into submittal register. Discuss required forms, terminology, and submittal requirements of this Section and other requirements related to schedule management for this Contract.

1.2.2 Project Baseline Schedule

Submit the Baseline NAS within 30 calendar days after Contract award. Data date must be set to Contract award date and no progress statused for any activity. Only bonds may be paid prior to acceptance of the Baseline NAS. The acceptance of a Baseline NAS is a condition precedent to:

a. The Contractor starting demolition work or construction stage(s) of the Contract.

b. Processing Contractor's invoices(s) for any items other than bonds.

c. Review of any schedule updates.

Submittal of the Baseline NAS is the Contractor's certification that the submitted schedule meets the requirements of the Contract Documents and represents the Contractor's plan on how the work will be accomplished. Provide all items listed in paragraph REQUIRED TABULAR REPORTS AND NATIVE P6 XER FILES with baseline NAS submittal.

1.3 THREE-WEEK LOOK AHEAD SCHEDULE

1.3.1 Weekly CQC Coordination and Production Meeting

Deliver electronic file of 3-Week Look Ahead Schedule to the Contracting Office at least 24 hours prior to the weekly scheduled CQC Coordination and Production Meeting. Contractor is required to provide all attendees at the CQC Coordination and Production Meeting with a hard copy of the 3-Week Look Ahead Schedule.

1.3.2 Look Ahead Schedule Requirements

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. Requirements include:

a. For each Look Ahead schedule activity, identify parent NAS activity number(s). The parent NAS activity is the activity in the NAS that would incorporate the Look Ahead schedule activity requirement and or scope of work.

b. Update schedule each week to show the planned work for the current and following two-week period. Also include previous week, as-built work, showing actual start and finish dates.

c. Include upcoming outages, closures, preparatory meetings, and initial meetings, testing, and Special Inspections including any required Government QA inspections.

d. Clearly identify longest path activities on the Three-Week Look Ahead Schedule. Include a key or legend that distinguishes longest path activities. Include all Longest Path activity NAS start/finish dates exceeded and/or occurring during this period.

e. The detail work plans are to be bar chart type schedules, derived from but maintained separately from the Project NAS on an electronic spreadsheet program and printed on 11 by 17 inch sheets as directed by the Contracting Officer.

f. Activities must not exceed 5 working days in duration and have sufficient level of detail to assign crews, tools, and equipment required to complete the work.

1.4 MONTHLY NETWORK ANALYSIS

Submittal of Monthly NAS is the Contractor's certification that the submitted schedule meets the requirements of the Contract Documents and represents the Contractor's plan on how the work will be accomplished. Provide all items listed in paragraph REQUIRED TABULAR REPORTS AND NATIVE P6 XER FILES with the monthly NAS submittal.

1.4.1 Monthly Network Analysis Updates

a. Regardless of whether an invoice is being submitted monthly, an updated schedule must be submitted monthly to the Government. The Monthly NAS update must be submitted within 10 calendar days of the data date.

b. Provide all items listed in paragraph REQUIRED TABULAR REPORTS AND NATIVE P6 XER FILES, with each monthly NAS update submittal.

c. Meet with Government representative(s) at monthly intervals to review and agree on the information presented in the updated project schedule. The submission of an accepted, updated schedule to the Government is a condition precedent to the processing of the Contractor's invoice.

d. Activity progress must incorporate as-built events as they occurred and correspond to records including but not limited to submittals and daily

production and quality control reports. Software Settings: Handle schedule calculations and Out-of-Sequence progress (if applicable) through Retained Logic, not Progress Override. Show all activity durations and float values in days. Show activity progress using Remaining Duration. Set default activity type to "Task Dependent".

e. Update schedule must reflect current Contract Completion Date (CCD) and Contract value in accordance with all conformed Contract modifications issued prior to data date of NAS update.

1.4.2 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 must reflect the exact manner in which the project was actually constructed.

1.5 CORRESPONDENCE AND TEST REPORTS

Reference Schedule activity IDs that are being addressed in each correspondence (e.g., letters, Requests for Information (RFIs), e-mails, meeting minute items, Production and QC Daily Reports, material delivery tickets, photographs), and test report (e.g., concrete, soil compaction, weld, pressure).

1.6 ADDITIONAL SCHEDULING REQUIREMENTS

Other specification Sections may include additional scheduling requirements, including systems to be inspected, tested and commissioned, and submittal procedures. Those schedule requirements must be incorporated into the NAS schedule.

1.7 SUBMITTALS

Government approval/acceptance is required for submittals with a "G" classification. Submittals not having a "G" classification are for Contractor Quality Control approval. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Baseline NAS; G

Designated Project Scheduler; G

SD-07 Certificates

Three-Week Look Ahead Schedule; G

Monthly Network Analysis Updates; G

SD-11 Closeout Submittals

As-Built Schedule; G

1.8 SOFTWARE

Prepare and maintain project schedules using Primavera P6 software in a version compatible with Government's current version. Importing data into

P6 using data conversion techniques or third party software is cause for rejection of the submitted schedule. Schedules with Performing Organizational Breakdown Structure (POBS) data is cause for rejection.

1.9 DESIGNATED PROJECT SCHEDULER

Within 30 calendar days of Contract award, submit to the Contracting Officer for approval an individual who will serve as the Designated Project Scheduler. Include a copy of the candidate's resume with qualifications. The Contracting Officer may remove the Designated Project Scheduler, and require replacement, if the scheduler does not effectively fulfill their duties in accordance with the Contract requirements. Payment request will not be processed without an approved Designated Project Scheduler.

1.9.1 Qualifications

The Designated Project Scheduler must have prepared and maintained at least three previous construction schedules, of similar size and complexity to this Contract, using Primavera P6.

1.9.2 Duties

Duties of the Designated Project Scheduler:

a. Prepare Baseline NAS.

b. Prepare monthly schedule updates.

c. Prepare tabular reports.

d. Prepare Time Impact Analysis (TIA) as necessary.

e. Provide certification that NAS and TIA submittals conform to the Contract requirements.

f. Participate with the Prime Contractor and Government Representative in a monthly meeting at the job site in-person, and scheduled with sufficient time to support the Monthly Network Analysis Updates process, to discuss project status, schedule updates, critical activities, potential delays, and Contract modifications impacting the schedule. Have a computer with P6 software available during the meeting.

1.10 NETWORK SYSTEM FORMAT

Prepare the schedule in accordance with the following Primavera P6 settings and parameters. Deviation from these settings and parameters, without prior consent of the Contracting Officer, is cause for rejection of schedule submission.

1.10.1 Schedule Activity Properties and Level of Detail

1.10.1.1 Activity Identification and Organization

a. Identify construction activities planned for the project and other activities that could impact project completion if delayed in the NAS.

b. Each activity must have a unique name.

c. Identify administrative type activity/milestones, including all pre-construction submittal and permit requirements prior to demolition or construction stage.

d. Include times for procurement, Contractor quality control and construction, acceptance testing, and training in the schedule.

e. Include the Government approval time required for the submittals that require Government Approval prior to construction, as indicated in Section 01 33 00 SUBMITTAL PROCEDURES.

f. Create separate activities for each Phase, Area, Floor Level, and Location the activity is occurring.

g. Do not use construction category activity to represent non-work type reference (e.g. Serial Letter, Request for Information) in NAS. Place Non-work reference within the P6 activity details notebook.

Activity categories included in the schedule are specified below.

1.10.1.2 Activity Logic

a. With the exception of the Contract Award and Contract Completion Date (CCD) milestone activities, activity must not be open-ended; each activity must have at least one predecessor and at least one successor.

b. Activities must not have open start or open finish (dangling) logic.

c. Do not use lead or lag logic without Contracting Officer prior approval.

d. Minimize redundant logic ties.

e. Once an activity exists on the schedule it must not be deleted or renamed to change the scope of the activity and must not be removed from the schedule logic without approval from the Contracting Officer.

(1) While an activity cannot be deleted, where said activity is no longer applicable to the schedule, but must remain within the logic stream for historical record, change the activity original and remaining duration to zero and clearly label "(NO LONGER REQUIRED)" after the activity name. Actual finish date for activity that falls behind the data date. Redistribute accordingly any remaining budget associated with that activity, to other remaining appropriate activity.

(2) Document any such change in the activities' "Notebook," including a date and explanation for the change.

(3) The ID number for a "NO LONGER REQUIRED" activity must not be re-used for another activity.

1.10.1.3 Longest Path Activity Baseline Limitation

For P6 settings, critical activities are defined as being on the Longest Path. Longest Path (Critical) Activities must not make up more than 30 percent of all activity within the Construction Baseline Schedule.

1.10.1.4 Assigned Calendars

All NAS activity must be assigned calendars that reflect required and anticipated non-work days.

1.10.1.5 Activity Categories

1.10.1.5.1 Pre-construction Activities

Examples of pre-construction activities include, but are not limited to, bond approval, permits, and pre-construction submittals and approvals. Include pre-construction activities that are required to be completed prior to the Contractor starting the demolition or construction stage of work.

1.10.1.5.2 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 a minimum, separate procurement activities must 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. Show each delivery with relationship tie to the Construction Activity specifically for the delivery.

1.10.1.5.3 Government Activities

Government and other agency activities that could impact progress must 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, and delivery of Government Furnished Material/Equipment. The Government will provide a list of QA inspections and testing at the pre-construction meeting. These inspections may vary based on the Contractor's performance and are subject to change throughout the duration of the project. (Note: These inspections are to be performed by the Government's QA Team and are separate from any special inspections required to be performed by the Contractor as part of the contract.) The Contractor shall include the Government QA Inspection items in the Project Schedule and highlighted in the 3-Week Look Ahead schedule. The Contractor's QC Manager shall coordinate these inspections with the Contracting Officer's Representative to ensure the inspections do not cause any construction delays.

1.10.1.5.4 Construction Quality Management (CQM) Activities

The Preparatory and Initial Phase meetings for each Definable Feature of Work identified in the Contractor's Quality Control Plan must be included in the Three-Week Look Ahead Schedule. Preparatory and Initial phase meetings are not required in the NAS, but can be represented by a start milestone linked to successor parent Construction Activity. The Follow-up Phase must be represented by the Construction Activities themselves in the NAS.

1.10.1.5.5 Construction Activities

On-site construction activities must not have a duration in excess of 20 working days. Contractor activities must be driven by calendars that reflect Saturdays, Sundays, and all Federal Holidays as non-work days,

unless otherwise defined in this Contract.

1.10.1.5.6 Turnover and Closeout Activities

Include activities or milestones for items on the NAVFAC Red Zone Checklist/POAM that are applicable to this project. As a minimum, include required Contractor testing, required Government acceptance inspections on equipment, Pre-Final Inspection, Punch List Completion, Final Inspection and Acceptance. Add an unconstrained start milestone for the initial NAVFAC Red Zone - Facility Turnover Planning Meeting at approximately 75 percent construction Contract completion or six months prior to Contract Completion Date (CCD), whichever is sooner.

1.10.1.6 Contract Milestones and Constraints

1.10.1.6.1 Project Start Date Milestones

Include as the first activity on the schedule a start milestone titled, "Contract Award", which must have a Mandatory Start constraint equal to the Contract Award Date.

1.10.1.6.2 Pre-Construction Meeting Milestone

Include an unconstrained finish milestone on the schedule titled, "Pre-Construction Meeting". The Pre-Construction meeting may be a single day, or it may range over several days. The intent to cover all the Pre-Con topics, including Partnering and DD1354.

1.10.1.6.3 Preconstruction Submittals Finish Milestone

Include an unconstrained finish milestone on the schedule titled, "Preconstruction Submittals". This milestone is complete when all required preconstruction submittals have been reviewed and approved by the Government.

1.10.1.6.4 Contractor Mobilization Finish Milestone

Include an unconstrained finish milestone on the schedule titled, "Contractor Mobilization".

1.10.1.6.5 NAVFAC Red Zone - Facility Turnover Planning Meeting Milestones

See paragraph TURNOVER AND CLOSEOUT ACTIVITIES above.

1.10.1.6.6 Substantial Completion Milestone

Include an unconstrained finish milestone on the schedule titled "Substantial Completion." Substantial Completion is defined as the point in time the Government would consider the project ready for beneficial occupancy wherein by mutual agreement of the Government and Contractor, Government use of the facility is allowed while construction access continues in order to complete remaining items (e.g. punch list and other close out submittals). Include a separate Substantial Completion Milestone for each phase if the Contract requires construction to be completed in phases.

1.10.1.6.7 DD-1354 Finish Milestone

Add unconstrained finish milestone, titled "DD-1354" and scheduled 30

calendar days prior to Substantial Completion, whenever a Form DD-1354 is required in accordance with Section 01 20 00.00 PRICE AND PAYMENT PROCEDURES (PWD ME).

1.10.1.6.8 Projected Completion Milestone

Include an unconstrained finish milestone on the schedule titled "Projected Completion." Projected Completion is defined as the point in time all Contract requirements are complete and verified by the Government with a successful Final Inspection in accordance with Section 01 45 00.00 22 QUALITY CONTROL (PWD ME). This milestone must have the Contract Completion Date (CCD) milestone as its only successor.

1.10.1.6.9 Contract Completion Date (CCD) Milestone

Last schedule entry must be an unconstrained finish milestone titled "Contract Completion (CCD: DD-MM-YY)." DD-MM-YYYY is the current Contract completion date at data date, day-month-year corresponding to P6 Must Finish By Date. NAS milestone updates of Project Completion finish date for longest path must reflect calculated float as positive or negative based on CCD. Calculation of schedule updates must be such that if the finish of the "Projected Completion" milestone falls after the Contract completion date, then negative float is calculated on the longest path. If the finish of the "Projected Completion" milestone falls before the Contract completion date, the float calculation must reflect positive float on the longest path.

1.10.1.6.10 Additional Milestones

Provide up to 5 additional milestones as required by Contracting Officer.

1.10.1.7 Work Breakdown Structure & Activity Code

At a minimum, establish a Work Breakdown Structure (WBS) and provide activity codes identified as follows:

1.10.1.7.1 Work Breakdown Structure (WBS)

Group all activities and milestones within appropriate WBS categories including, at a minimum, the following:

a. Project Milestones:

(1) Management Milestones

(2) Project Administrative Meetings

(3) Permits

b. Pre-Construction Phase:

(1) Submittals and Reviews

(2) Procurement

(3) Mobilization

c. Construction Phase: Create multiple sub-sections in accordance with project specific categories of work including in WBS descending order

as follows:

(1) General Area

(a) Type of Work Item

1. Location

di. Project Closeout: Include activity items such as, but not limited to, Punchlist, Demobilization, O&M, eOMSI, As-built Drawings, Training, Special Inspections Final Report and As-built NAS.

dii. Modifications: Create sub-category of Conformed and Non-Conformed under Modification WBS. Create multiple sub-sections as the project progresses identified by issue and Fragnet placed in Conformed for modifications issued prior data date, or Non-Conformed for issues not modified to Contract prior data date.

diii. Removed Activity: Activity is "removed" by remaining within logic sequence, eliminating duration and adding "(NO LONGER REQUIRED)" after Activity Name in Activity Table.

1.10.1.7.2 Responsibility Code

All activities in the project schedule must be identified with the resource for completing the task. Activities must not belong to more than one responsible party.

1.10.1.7.3 Activity Category Code

Provide user defined "CAT" codes for Project Level activity codes. Use the following codes:

a. Assign "PROC" value to Procurement type activity

b. Assign "PRE-CON" value to Pre-construction activity

c. Assign "CONS" value to Construction type activity

d. Assign "TEST" value to dedicated testing type activities

e. Assign "CX" value to dedicated Commissioning type activities

f. Assign "CLOS" value to dedicated Close Out type activity

g. Assign "OTHR" to other activity not otherwise designated

1.10.1.7.4 Construction Specification Institute (CSI) Masterformat Code

Provide up to an additional five activity codes as required by the Contracting Officer.

1.10.1.7.5 Drawing Code

Identify all activities in the project schedule with its respective Drawing Code. The Drawing Code is the Sheet Number on the primary project drawing which indicates work to be performed. If an activity does not have an applicable Drawing Code (e.g. Mobilize), the code must be "0000".

1.10.1.8 Adverse Weather Lost Work Days

Use the National Oceanic and Atmospheric Administration's (NOAA) Summary of Monthly Normals report to obtain the historical average number of days each month with precipitation, using a nominal 30-year, greater than 0.10 inch precipitation amount parameter, as indicated on the Station Report for the NOAA location closest to the project site as the basis for establishing a "Weather Calendar" showing the number of anticipated non-workdays for each month due to adverse weather, in addition to Saturdays, Sundays, and all Federal Holidays as non-work days.

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 only 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 are on the longest path to Contract completion in the period when delay occurred. 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. Impacts resulting from adverse weather must be documented in Narrative Report for the month that it occurred.

Make changes to P6 project calendars to reflect as-built conditions where work occurred where originally anticipated as non-work days, and where work did not occur (lost work day).

1.10.1.9 Anticipated Restricted Delays

Unless otherwise noted or defined in Section 01 14 00.00 22 WORK RESTRICTIONS (PWD ME), allow in the schedule seven (7) lost workdays per calendar year for instances where Base access is not permitted or where work areas are temporarily not accessible for security reasons which causes a delay in the work. Use Anticipated Restricted Delays as basis for establishing a "Security Calendar" showing the number of anticipated non-workdays for each month due to anticipated restrictions, in addition to anticipated adverse weather, Saturdays, Sundays, and all Federal Holidays as non-work days. Assign the Security Calendar to any activity that could be impacted by restriction delays. 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 lost work days if the number of actual restriction delay days exceeds seven (7) calendar per calendar year. A lost workday due to restriction delay is defined as a day in which the Contractor cannot work at least 50 percent of the day on the impacted activity.

Impacts resulting from restriction delays must be documented in Narrative Report for the month that it occurred.

Make changes to P6 project calendars to reflect as-built conditions where work occurred where originally anticipated as non-work days, and where work did not occur (lost work day).

1.10.1.10 Cost Loading

The Project Network Analysis Schedule (NAS) must be cost-loaded and will provide the basis for progress payments. Earned Value Reports must be derived from and correspond to cost loaded NAS. Use the Critical Path

Method (CPM) and the Precedence Diagram Method (PDM) to satisfy time and cost applications.

1.10.1.10.1 Cost Loading Activities

Assign material and equipment costs, including their quantities, for which payment will be requested in advance of installation, to their respective procurement activity. Assign labor costs, including their quantities, for material and equipment paid for after installation to their respective construction activities. Include all typical mobilization costs dispersed over early construction activities. Costs for mobilization will not be paid as individual pay items with the exception of batch plant set-up, mobilization of dredging equipment or other similar labor-intensive situations. The value of commissioning, testing, and closeout WBS section may not be less than 10 percent of the total costs for procurement and construction activities. ALL activities assigned Government responsibility will have Zero Cost. No Contractor cost should be assigned to an activity designated as a Government responsibility. Do not include field overhead positions as individual pay items. Evenly disperse overhead costs and profit to each activity over the duration of the project.

1.10.1.10.2 Partial Payment

Breakdown unit of measure and cost must be defined within P6 Activity Detail Expenses for partial payment of any cost loaded activity. Lump sum cost loaded activity will not be partially paid.

1.10.2 Schedule Software Settings and Restrictions

a. Activity Constraints: Date/time constraint(s), other than those required by the Contract, are not 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 as described in paragraph REQUIRED TABULAR REPORTS.

b. Default Progress Data Disallowed: Actual Start is date work begins on activity with intent to pursue work to substantial completion. Actual Finish is date work is substantially complete to point where successor activity can begin. Actual dates on the CPM schedule must correspond with activity dates reported on the Contractor Quality Control and Production Reports.

c. At a minimum, include the following settings and parameters in P6 Schedule preparation:

(1) General: Define or establish Calendars and Activity Codes at the "Project" level, not the "Global" level.

(2) Admin Drop-Down Menu, Admin Preferences, Time Periods Tab:

(a) Set time periods for P6 to 8.0 Hours/Day, 40.0 Hours/Week, 172.0 Hours/Month and 2000.0 Hours/Year.

(b) Use assigned calendar to specify the number of work hours for each time period: Must be checked.

(3) Admin Drop-Down Menu, Admin Preferences, Earned Value Tab:

(a) Earned Value Calculation: Use "Budgeted values with current

dates".

(4) Project Level, Dates Tab:

(a) Set "Must Finish By" date to "Contract Completion Date", and set "Must Finish By" time to 05:00pm.

(5) Project Level, Defaults 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 must reflect Saturday, Sunday, and all Federal holidays as non-work days. Alternative calendars may be used with Contracting Officer approval.

(6) Project Level, Calculations Tab:

(a) Default Price/Unit for activities without resource or role Price/Units: Set to "$1/h".

(b) Activity percent complete based on activity steps: Must be Checked.

(c) Link Budget and At Completion for not started activities: Must be Checked.

(d) Reset Remaining Duration and Units to Original: Must be Selected.

(e) Subtract Actual from At Completion: Must be Selected.

(f) Recalculate Actual units and Cost when duration percent complete changes: Must be Checked.

(g) Update units when costs change on resource assignments: Must be Unchecked.

(h) Link Actual to Date and Actual This Period Units and Cost: Must be Checked.

(7) Project Level, Settings Tab:

(a) Define Critical Activities: Check "Longest Path".

(8) 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.

1.10.3 Required Tabular Reports and Native P6 XER Files

Include the following reports with the Baseline, Monthly Update and any other required schedule submittals:

a. Time Scaled Logic Schedule

Provide formatted 11 by 17-inch Time-scaled Logic Schedule in color and landscape-oriented with each schedule submittal. Clearly show activities on the longest path setting Gantt chart longest path activity bars to red. Group activities by WBS and sort by finish date in ascending order. Include the following information in column form for each activity and include accompanying Gantt chart:

(1) Activity ID

(2) Activity Name

(3) Original Duration

(4) Remaining duration

(5) Physical Percent Complete

(6) Start Date

(7) Finish Date

(8) Total Float

b. Previous Monthly Update Comparison Time Scaled Logic Schedule (Submit with all Monthly Update Schedule Submittals).

Provide formatted 11 by 17-inch Time-scaled Logic Schedule in color and landscape-oriented with each monthly update schedule submittal. Clearly show activities on the current month longest path setting Gantt chart longest path activities bars to red. Show previous month activities as yellow bars and previous month milestones in yellow within Gantt chart. Sort by finish date in ascending order. Filter activities for longest path. Maintain and assign the accepted previous month update or the accepted baseline schedule for the first update submittal as the baseline and primary baseline in P6 before printing the schedule. Include the following information in column form for each activity and include accompanying Gantt chart:

(1) Activity ID

(2) Activity Name

(3) Original Duration

(4) Current Month Remaining Duration

(5) Current Month Start Date

(6) Previous Month Update Start Date (BL Project Start)

(7) Start Date Delta between Current Month and Previous Month (Variance - BL Project Start Date)

(8) Current Month Finish Date

(9) Previous Month Finish Date (BL Project Finish)

(10) Finish Date Delta between Current Month and Previous Month (Variance - BL Project Start Date)

(11) Current Month Total Float

c. P6 native XER file: Include the back-up native .xer program file compatible with the Government version of P6. Each native schedule file must have a unique file name to include project name and data date using (yyyy-mm-dd) convention. Each native schedule must have a unique Project ID and Project Name.

d. Log Report: P6 Scheduling/Leveling Report.

e. Narrative Report: Identify and justify:

(1) Provide Project Summary Data in format below:

(a) Data Date _____

(b) Award Date: _____

(c) Original Project Duration: _____ days post Award Date

(d) Current Project Duration: _____ days post Award Date

(e) Time percent elapsed: _____ percent at data date

(f) Original CCD: _____

(g) Current CCD: _____ (thru MOD _____)

(h) Anticipated CCD: _____ (___ calendar days early/late)

(i) Original Contract Value: $_____

(j) Current Contract Value: $_____

(k) Invoiced Amount: $_____ (____ percent)

(l) Cost Growth: ____ percent

(m) Schedule Growth: ____ percent

(n) There are a total of _____ activities, _____ activities complete (____ percent), ____ activities in progress (____ percent), _____ activities not started (____ percent). Of the in progress and not started activities; ____ (____ percent) are on the longest path. The longest path has duration of _____ calendar days from data-date to anticipated project completion.

(2) Progress made in each area of the project;

(3) Longest Path;

(4) Date/time constraint(s), other than those required by the Contract

(5) Listing of all changes made between the previous schedule and current updated schedule include: added or deleted activities, original and remaining durations for activities that have not started, logic (sequence constraint lag/lead), milestones, planned sequence of operations, longest path, calendars or calendar assignments, and cost loading;

(6) Any decrease in previously reported activity Earned Amount;

(7) Pending items and status thereof, including permits, changes orders, and time extensions;

(8) Status of Contract Completion Date and interim milestones;

(9) Status of Projected Completion Milestone and account of difference in calendar days between previous update Projected Completion Milestone

(10) Current and anticipated delays listing Activity Names and IDs for impacted activities(describe cause of delay and corrective actions(s) and mitigation measures to minimize);

(11) Description of current and potential future schedule problem areas;

(12) Identification of any weather and restricted lost time as compared to anticipated weather for the month and anticipated restricted days for which the update is submitted. Impacts resulting from adverse weather must be documented in tabular form showing the calendar month (or billing period) with the days on which construction activity incurred Lost Work Days due to adverse weather. In narrative form, describe the adverse weather cause such as precipitation measurement, temperature, wind or other influencing factors, and why work was impacted. Describe the construction activity(s) that was (were) scheduled, impacted.

Each entry in the narrative report must cite the respective Activity ID and Activity Name, the date and reason for the change, and description of the change.

f. Earned Value Report: Derive from and correspond to P6 cost loaded schedule. List all activities having a budget amount cost loaded. Compile total earnings on the project from notice to proceed to current progress payment request. Show current budget, previous physical percent complete, to-date physical percent complete, previous earned value, to-date earned value, cost this period and cost to complete on the report for each activity.

g. Schedule Variance Control (SVC) Diagram: With each schedule submission, provide a SVC diagram showing 1) A Cash Flow Curve indicating planned project cost based on each of projected early and projected late activity finish dates and 2) one curve for Earned Value to-date. Revise Cash Flow Curves when the Contract is modified, or as directed by the Contracting Officer Include a legend on report clearly indication 3 curves: early finish, late finish, and earned-value to date.

Use the following settings in Activity Usage Profile Options:

(1) In the Data section, under Display, the radio box for Cost must be selected.

(2) In the Data section, under Filter for Bars/Graphs, the checkbox for Total must be checked.

(3) In the Show Bars/Curves section:

(a) Under the By Date column, the checkboxes for Baseline, Actual and Remaining Late must be checked. The checkboxes for Budgeted and Remaining Early must be unchecked.

(b) Under the Cumulative column, the checkboxes for Baseline, Actual and Remaining Late must be checked. The checkboxes for Budgeted and Remaining Early must be unchecked.

(c) Set the color for Baseline to green.

(d) Set the color for Actual to blue.

(e) Set the color for Remaining Late to red.

(4) In the Show Earned Value Curves section, the checkboxes for Planned Value Cost, Earned Value Cost, and Estimate at Completion must be unchecked.

h. Logic Diagram showing timescale from data date to 60 days after data date with filter for longest path. Leave Group By selection blank and sort by finish date in ascending order.

i. Baseline or Monthly Update Checklist as applicable completed and certified by Qualified Scheduler. Baseline Project Schedule and Monthly Update Schedule Checklists can be found on the Whole Building Design Guide website at https://www.wbdg.org/ffc/dod/unified-facilities-guide-specifications-ufgs/ufgs-01-32-17-00-20

j. Screen shot PDF of P6 Time Periods Settings referenced in paragraph SCHEDULE SOFTWARE SETTINGS AND RESTRICTIONS, list item d.(2): ADMIN DROP-DOWN MENU, ADMIN PREFERENCES, TIME PERIODS TAB.

k. Daily Reported Production Activity: Submit on a monthly basis, in electronic spreadsheet (format provided by the Government), summary of daily reported production activity for the reporting month in the update schedule. Use the following columns for reporting:

(1) Date

(2) Activity ID

(3) Work Description

(4) Contractor

(5) Billable Hours

1.11 CONTRACT MODIFICATION

1.11.1 Time Impact Analysis (TIA)

Submit a Time Impact Analysis with each cost and time proposal for a proposed change. TIA must 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, impacts the longest path, and extends the Projected Completion beyond the Contract Completion Date.

a. Each TIA must be in both narrative and schedule form. The narrative must define the scope and conditions of the change; provide start and finish dates of impact, successor and predecessor activity to impact period, responsible party; describe how it originated, and how it impacts the schedule's longest path. The schedule submission must consist of three native XER files:

(1) Fragnet used to define the scope of the changed condition.

(2) Most recent accepted schedule update as of the time of the impact start date. Update this schedule to show all activity progress as of the time of the impact start date. The impact start date is identified as the time when an existing activity is impeded for either starting or finishing.

(3) The impacted schedule that has the fragnet inserted in the updated schedule and the schedule "run" so that the new completion date is determined.

b. For claimed as-built project delay, the inserted fragnet TIA method must be modified to account for as-built events known to occur after the data date of schedule update used. Updated schedules for periods following the impact start date will be used to evaluate how the project progressed (as-built) through the finish of impact. Impact to longest path must be determined for each following update period.

c. All TIAs must include any mitigation, and must determine the apportionment of the overall delay assignable to each individual delay. Apportionment must provide identification of delay type and classification of delay by compensable and non-compensable events. The associated narrative must clearly describe analysis methodology used, and the findings in a chronological listing beginning with the earliest delay event.

(1) Identify and classify types of delay defined as follows:

(a) Force majeure delay (e.g. weather delay): Any delay event caused by something or someone other than the Government or the Contractor, or the risk of which has not been assigned solely to the Government or the Contractor. If the force majeure delay is on the longest path, in absence of other types of concurrent delays, the Contractor is granted an extension of Contract time, classified as a non-compensable event.

(b) A Contractor-delay: Any delay event caused by the Contractor, or the risk of which has been assigned solely to the Contractor. If the Contractor-delay is on the longest path, in absence of other types of concurrent delays, Contractor is not granted

extension of Contract time, and classified as a non-compensable event. Where absent other types of delays, and having impact to project completion, Contractor must provide to Contracting Officer a Corrective Action Plan identifying plan to mitigate delay.

(c) A Government-delay: Any delay event caused by the Government, or the risk of which has been assigned solely to the Government. If the Government-delay is on the longest path, in absence of other types of concurrent delays, the Contractor is granted an extension of Contract time, and classified as a compensable event.

(2) Functional concurrency must be used to analyze concurrent delays, where: separate delay issues delay project completion, do not necessarily occur at same time, rather occur within same monthly schedule update period at minimum, or within same as-built period under review. If a combination of functionally concurrent delay types occurs, it is considered Concurrent Delay, which is defined in the following combinations:

(a) Government-delay concurrent with Contractor-delay: excusable time extension, classified non-compensable event.

(b) Government-delay concurrent with force majeure delay: excusable time extension, classified non-compensable event.

(c) Contractor-delay concurrent with force majeure delay: excusable time extension, classified non-compensable event.

(3) Pacing delay reacting to another delay (parent delay) equally or more critical than paced activity must be identified prior to pacing. Contracting Officer will notify Contractor prior to pacing. Contractor must notify Contracting Officer prior to pacing. Notification must include identification of parent delay issue, estimated parent delay time period, paced activity(s) identity, and pacing reason(s). Pacing Concurrency is defined as follows:

(a) Government-delay concurrent with Contractor-pacing: excusable time extension, classified compensable event.

(b) Contractor-delay concurrent with Government-pacing: inexcusable time extension, classified non-compensable event

d. Submit electronic file containing the narrative and the source schedule files used in the time impact analysis.

1.12 PROJECT FLOAT

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

The use of Resource Leveling or other techniques used for the purpose of artificially adjusting activity durations to consume float and influence longest path is prohibited.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

-- End of Section --

SECTION 01 33 00

SUBMITTAL PROCEDURES
05/22

PART 1 GENERAL

This Section applies only to Design-Bid-Build projects at the Portsmouth Naval Shipyard and PWD ME AOR Facilities.

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

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

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

Outages Schedule

Network Analysis Schedule (NAS)

Submittal Register

Schedule of Prices or Earned Value Report

Accident Prevention Plan (APP)

Work Plans

Quality Control (QC) Plan

Environmental Management Plan

SD-02 Shop Drawings

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

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

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

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 ensuing work can be judged. Includes assemblies or portions of assemblies which are to be incorporated into the project and those which will be removed at conclusion of the work.

SD-05 Design Data

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

SD-06 Test Reports

Report signed by authorized official of testing laboratory that a material, product, or system identical to the material, product, or system to be provided has been tested in accordance with specified requirements. Unless specified in another Section, 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 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 document purpose is to further promote the orderly progression of a portion of the work by documenting procedures, acceptability of methods, or personnel qualifications.

Confined space entry permits.

Text of posted operating instructions.

SD-08 Manufacturer's Instructions

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

SD-10 Operation and Maintenance Data

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

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

This data is intended to be incorporated in an operations and maintenance manual or control system.

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

eOMSI submittals per Section 01 78 24.00 20 FACILITY ELECTRONIC OPERATION AND MAINTENANCE SUPPORT INFORMATION (eOMSI).

SD-11 Closeout Submittals

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

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

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

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

DD Form 1354 with cost breakout for all assets 30 days prior to facility turnover.

Red Zone documents per Section 01 30 00.00 22 ADMINISTRATIVE REQUIREMENTS (PWD ME).

Special Inspections comprehensive final report per Section 01 45 35 SPECIAL INSPECTIONS.

1.1.2 Approving Authority

Office or designated person authorized to approve the submittal.

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. In exception, excludes work to produce SD-01 submittals.

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 this Section:

SD-01 Preconstruction Submittals

Submittal register; G

Other submittals required for Gov't approval prior to beginning any work include, but are not limited to, the following:

Certificates of Insurance
Surety Bonds
List of Proposed Subcontractors
List of Proposed Products
Network Analysis Schedule (NAS)
Construction Progress Schedule
Schedule of Prices or Earned Value Report
Outages Schedule
List of Contact Personal
Qualifications
Work Plans
Quality Control (QC) Plan
Environmental Management Plan
Solid Waste Management Plan and Permit
Storm Water Pollution Protection Plan
Accident Prevention Plan (APP)
Activity Hazard Analysis (AHA)
Crane Critical List Plan
Crane Operator Qualifications
Construction Site Plan
Traffic Control Plan
Dirt and Dust Control

Construction Hazardous Material Inventory Log

The following Preconstruction submittals must be submitted to the Contracting Officer fifteen (15) calendar days prior to the pre-construction meeting:

Specification Section	**SD #**	**SD Description**	**Item Submitted**	**Paragraph #**
01 32 16.00 20	01	Preconstruction Submittals	Construction Schedule	1.2
01 32 16.00 20	01	Preconstruction Submittals	Construction Schedule (3 week)	1.6
01 32 16.00 20	01	Preconstruction Submittals	Construction Schedule (Outages)	1.8
01 32 17.00 20	01	Preconstruction Submittals	Baseline Network Analysis Schedule (NAS)	1.2.3.1
01 32 17.00 20	01	Preconstruction Submittals	Three-Week Look Ahead Schedules	1.3
01 32 17.00 20	01	Preconstruction Submittals	Outages Schedule	?
01 35 26.00 22	01	Preconstruction Submittals	Accident Prevention Plan (APP)	1.7
01 45 00.00 22	01	Preconstruction Submittals	QC Plan	1.6

The following Preconstruction submittals must be submitted to the Contracting Officer at the pre-construction meeting:

Specification Section	**SD #**	**SD Description**	**Item Submitted**	**Paragraph #**
01 14 00.00 22	01	Preconstruction Submittals	List of Contact Personnel	1.2.1
01 20 00.00 22	01	Preconstruction Submittals	Schedule of Prices	1.3
01 30 00.00 22	01	Preconstruction Submittals	NAVFAC Red Zone Checklist	1.6.1
01 30 00.00 22	01	Preconstruction Submittals	NAVFAC PWD ME Internal Service Requirements List	1.6.4
01 31 23.13 20	01	Preconstruction Submittals	List of Personnel (eCMS)	1.4.2
01 33 00	01	Preconstruction Submittals	Submittal Register	1.7
01 33 10.05 20	01	Preconstruction Submittals	Consolidated RFP Documents	2.1

Specification Section	SD #	SD Description	Item Submitted	Paragraph #
01 33 00.05 20	01	Preconstruction Submittals	Submittal Register (DB)	1.5.5
01 50 00.00 22	01	Preconstruction Submittals	Construction Site Plan	1.4

The following Preconstruction submittals must be submitted to the Contracting Officer prior to the start of construction:

Specification Section	SD #	SD Description	Item Submitted	Paragraph #
01 50 00.00 22	01	Preconstruction Submittals	Traffic Control Plan	3.3.1
01 57 19.00 22	01	Preconstruction Submittals	Preconstruction Survey	1.5.1
01 57 19.00 22	01	Preconstruction Submittals	Solid Waste Management Plan	3.4
01 57 19.00 22	01	Preconstruction Submittals	Regulatory Notifications	1.5.2
01 57 19.00 22	01	Preconstruction Submittals	Environmental Management Plan (EMP)	3.1
01 57 19.00 22	01	Preconstruction Submittals	Dirt and Dust Control Plan	3.14.1
01 57 19.00 22	01	Preconstruction Submittals	Contractor Hazardous Material Inventory Log	3.6
01 57 19.00 22	01	Preconstruction Submittals	Storm Water Management/Erosion and Sedimentation Control Plan	3.2.1
01 57 19.00 22	01	Preconstruction Submittals	Spill Prevention, Control, and Countermeasures (SPCC) Plan	3.1.f.2
01 74 19	01	Preconstruction Submittals	Waste Management Plan	1.3

1.3 PACKAGING AND SUBMISSION OF SUBMITTALS

Prepare and submit submittals required by each individual Specification Section. Each required submittal as listed in the submittal register must be packaged and submitted individually so that it can be tracked, reviewed, and returned in a concise and orderly fashion.

1.4 SUBMITTAL CLASSIFICATION

Submittals are classified as follows:

1.4.1 Government Approved (G)

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

Government approval is required for any variations from the Solicitation or the Accepted Proposal and for other items as designated by the Government.

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

1.4.2 For Information Only

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

1.5 FORWARDING SUBMITTALS REQUIRING GOVERNMENT APPROVAL

1.5.1 Submittals Required from the Contractor

As soon as practicable after award of Contract, and before procurement of fabrication, forward to NAVFAC PWD ME submittals required in the technical Sections of this Specification, including shop drawings, product data, and samples. In addition, forward a copy of the submittals to the Contracting Officer.

The Architect-Engineer for this project and NAVFAC will review and approve for the Contracting Officer those submittals reserved for Contracting Officer approval to verify submittals comply with the Contract requirements.

1.5.1.1 O&M Data

The Architect-Engineer for this project and NAVFAC will review and approve for the Contracting Officer 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.

a. 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 items to which such O&M Data apply.

1.5.1.2 Submittals Reserved for NAVFAC MIDLANT Approval

a. All fire protection and fire alarm systems submittals are to be reviewed by:

   NAVFAC MIDLANT CI45 Fire Protection
   Attn: NAVFAC FPE
   Bldg Z-140, RM 126
   9742 Maryland Avenue
   Norfolk, VA 23511

1.6 PREPARATION

1.6.1 Transmittal Form

Transmit each submittal, except sample installations and sample panels to the office of approving authority using the transmittal form prescribed by the Contracting Officer. Include all information prescribed by the transmittal form and required in paragraph IDENTIFYING SUBMITTALS. Use the submittal transmittal forms to record actions regarding samples.

Use the transmittal form provided by the Contracting Officer at the Pre-Con for submitting both Government-approved and information-only submittals. Submit in accordance with the instructions on the reverse side of the form. These forms will be furnished to the Contractor. Properly complete this form by filling out all the heading blank spaces and identifying each item submitted. Exercise special care to ensure proper listing of the specification paragraph and sheet number of the Contract drawings pertinent to the data submitted for each item.

1.6.2 Identifying Submittals

The Contractor's Quality Control Manager must prepare, review, and stamp submittals, including those provided by a Subcontractor, before submittal to the Government.

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 by which submittal is required.

f. Submittal description (SD) number of each component of submittal.

g. For 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.

1.6.3 Submittal Format

1.6.3.1 Format of SD-01 Preconstruction Submittals

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

Provide data in the unit of measure used in the Contract Documents.

1.6.3.2 Format for SD-02 Shop Drawings

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

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

b. Dimension drawings, except diagrams and schematic drawings. Prepare drawings demonstrating interface with other trades to scale. Use the same unit of measure for shop drawings as indicated on the Contract drawings. Identify materials and products for work shown.

Submit an electronic copy of drawings in PDF format.

1.6.3.2.1 Drawing Identification

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

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

Reserve a blank space, no smaller than 3 by 4 inches on the right-hand side of each sheet for the Government disposition stamp.

1.6.3.3 Format of SD-03 Product Data

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

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

1.6.3.3.1 Product Information

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

Provide product data in units used in the Contract Documents. Where product data are included in preprinted catalogs with another unit, submit the dimensions in Contract Document units, on a separate sheet.

1.6.3.3.2 Standards

Where equipment or materials are specified to conform to industry or technical-society reference standards of such organizations as the American

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

1.6.3.3.3 Data Submission

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

Submit the manufacturer's instructions before installation.

1.6.3.4 Format of SD-04 Samples

1.6.3.4.1 Sample Characteristics

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

a. Sample of Equipment or Device: Full size.

b. Sample of Materials Less Than 2 by 3 inches: Built up to 8 1/2 by 11 inches.

c. Sample of Materials Exceeding 8 1/2 by 11 inches: Cut down to 8 1/2 by 11 inches and adequate to indicate color, texture, and material variations.

d. Sample of Linear Devices or Materials: 10 inch length or length to be supplied, if less than 10 inches. Examples of linear devices or materials are conduit and handrails.

e. Sample Volume of Nonsolid Materials: Pint. Examples of nonsolid materials are sand and paint.

f. Color Selection Samples: 2 by 4 inches. Where samples are specified for selection of color, finish, pattern, or texture, submit the full set of available choices for the material or product specified. Sizes and quantities of samples are to represent their respective standard unit.

g. Sample Panel: 4 by 4 feet.

h. Sample Installation: 100 square feet.

1.6.3.4.2 Sample Incorporation

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

condition at the time of use.

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

1.6.3.4.3 Comparison Sample

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

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

1.6.3.5 Format of SD-05 Design Data

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

1.6.3.6 Format of SD-06 Test Reports

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

1.6.3.7 Format of SD-07 Certificates

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

1.6.3.8 Format of SD-08 Manufacturer's Instructions

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

Submit the manufacturer's instructions before installation.

1.6.3.8.1 Standards

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

1.6.3.9 Format of SD-09 Manufacturer's Field Reports

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

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

Comply with the requirements specified in Section 01 78 23 OPERATION AND MAINTENANCE DATA for O&M Data format. Refer to Section 01 78 24.00 20 FACILITY ELECTRONIC OPERATION AND MAINTENANCE SUPPORT INFORMATION (eOMSI) for additional requirements.

1.6.3.11 Format of SD-11 Closeout Submittals

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

Provide data in the unit of measure used in the Contract Documents.

1.6.4 Source Drawings for Shop Drawings

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

1.6.4.1 Terms and Conditions

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

These electronic source drawing files are not construction documents. Differences may exist between the source drawing files and the corresponding construction documents. The Government makes no representation regarding the accuracy or completeness of the electronic source drawing files, nor does it make representation to the compatibility of these files with the Contractor hardware or software. The Contractor is responsible for determining if any conflict exists. In the event that a conflict arises between the signed and sealed construction documents prepared by the Government and the furnished source drawing files, the signed and sealed construction documents govern. Use of these source drawing files does not relieve the Contractor of duty to fully comply with the Contract Documents, including and without limitation, the need to check, confirm, and coordinate the work of all Contractors for the project. If the Contractor uses, duplicates, or modifies these electronic source drawing files for use in producing construction data related to this Contract, remove all previous indication of ownership (seals, logos,

signatures, initials, and dates).

1.6.5 Electronic File Format

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

Email electronic submittal documents fewer than 10MB to an email address as directed by the Contracting Officer. Provide electronic documents over 10MB on an optical disc, or through an electronic file sharing system such as the DoD SAFE Web Application located at the following website: https://safe.amrdec.army.mil/safe/.

Provide hard copies of submittals when requested by the Contracting Officer. Up to three (3) additional hard copies of any submittal may be requested at the discretion of the Contracting Officer, at no additional cost to the Government.

1.7 QUANTITY OF SUBMITTALS

Make use of electronic media for submittals to the greatest extent possible except for operation and maintenance manuals and associated submittals to be forwarded to the NAVFAC PWD ME located at Portsmouth Naval Shipyard, Kittery, Maine. Refer to Section 01 31 23.13 22 ELECTRONIC CONSTRUCTION AND FACILITY SUPPORT CONTRACT MANAGEMENT SYSTEM (if applicable) for additional requirements.

1.7.1 Number of SD-01 Preconstruction Submittal Copies

Unless otherwise specified, submit three (3) sets of administrative submittals.

1.7.2 Number of Copies of SD-02 Shop Drawings

Submit six (6) copies of submittals of shop drawings requiring review and approval only by QC organization and seven (7) copies of shop drawings requiring review and approval by Contracting Officer.

1.7.3 Number of Copies of SD-03 Product Data

Submit in compliance with quantity requirements specified for shop drawings.

1.7.4 Number of Samples SD-04 Samples

a. Submit two (2) samples, or two (2) sets of samples showing range of variation, of each required item. One (1) approved sample or set of samples will be retained by approving authority and one (1)

will be returned to the Contractor.

b. Submit one (1) sample panel or provide one (1) sample installation where directed. Include components listed in technical Sections or as directed.

c. Submit one (1) sample installation, where directed.

d. Submit one (1) sample of non-solid materials.

1.7.5 Number of Copies SD-05 Design Data

Submit in compliance with quantity requirements specified for shop drawings.

1.7.6 Number of Copies SD-06 Test Reports

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

1.7.7 Number of SD-07 Certificate Copies

Submit in compliance with quantity requirements specified for shop drawings.

1.7.8 Number of SD-08 Manufacturer's Instructions Copies

Submit in compliance with quantity requirements specified for shop drawings.

1.7.9 Number of SD-09 Manufacturer's Field Report Copies

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

1.7.10 Number of Copies of SD-10 Operation and Maintenance Data

Submit three (3) copies of O&M Data to the Contracting Officer for review and approval.

1.7.11 Number of Copies of SD-11 Closeout Submittals

Unless otherwise specified, submit two (2) sets of administrative submittals.

1.8 INFORMATION ONLY SUBMITTALS

Submittals without a "G" designation must be certified by the QC manager and submitted to the Contracting Officer for information-only. Approval of the Contracting Officer is not required on information only submittals. The Contracting Officer will mark "receipt acknowledged" on submittals for information and will return only the transmittal cover sheet to the Contractor. Normally, submittals for information only will not be returned. However, the Government reserves the right to return unsatisfactory submittals and require the Contractor to resubmit any item found not to comply with the Contract. This does not relieve the Contractor from the obligation to furnish material conforming to the plans and specifications; will not prevent the Contracting Officer from requiring

removal and replacement of nonconforming material incorporated in the work; and does not relieve the Contractor of the requirement to furnish samples for testing by the Government laboratory or for check testing by the Government in those instances where the technical specifications so prescribe.

1.9 PROJECT SUBMITTAL REGISTER

1.9.1 Submittal Management

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. The attached Submittal Register may not be all inclusive and additional submittals may be required. **The Contractor must review the plans and specifications and ensure all required submittals are included in the Project Submittal Register which must be submitted to the Contracting Officer with the QC Plan and Project Schedule**.

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.

The Contractor must 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.

1.9.2 Preconstruction Use of Submittal Register

Submit the submittal register. Include the QC plan and project schedule. Verify that all submittals required for the project are listed and add missing submittals. The attached submittal register may not be complete. The Contractor must include all required submittals including any submittals that are required on the plans and specifications. 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 that Contractor needs approval of submittal.

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

1.9.3 Contractor Use of Submittal Register

Update the following fields with each submittal throughout Contract.

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

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

Column (l) Date submittal transmitted.

Column (q) Date approval was received.

1.9.4 Approving Authority Use of Submittal Register

Update the following fields.

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

Column (l) Date submittal was received.

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

Column (q) Date of return to Contractor.

1.9.5 Action Codes

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

1.9.5.1 Government Review Action Codes

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

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

"C" - "Approved, except as noted on drawings; resubmission required"; "Resubmit"

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

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

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

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

"X" - "Receipt acknowledged, does not comply with Contract requirements"; "Resubmit"

1.9.6 Delivery of Copies

Submit an updated submittal register to the Contracting Officer with each invoice request. Provide an updated Submittal Register monthly regardless of whether an invoice is submitted.

1.10 VARIATIONS

Variations from Contract requirements require both Designer of Record (DOR) and Contracting Officer approval pursuant to Contract Clause FAR 52.236-21 SPECIFICATIONS AND DRAWINGS FOR CONSTRUCTION and will be considered where advantageous to Government.

1.10.1 Considering Variations

Discussion of variations with the Contracting Officer before submission, after consulting with the DOR, will help ensure functional and quality requirements are met and minimize rejections and re-submittals. For variations that include design changes or some material or product substitutions, the Government may require an evaluation and analysis by a licensed professional engineer hired by the Contractor. When contemplating a variation 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 a transmittal letter. Failure to point out variations may cause the Government to require rejection and removal of such work at no additional cost to the Government.

1.10.2 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 the 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.

1.10.3 Warranting that Variations are Compatible

When delivering a variation for approval, the 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.

1.10.4 Review Schedule Extension

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

1.11 SCHEDULING

Schedule and submit concurrently product data and shop drawings covering component items forming a system or items that are interrelated. Submit pertinent certifications at the same time. No delay damages or time extensions will be allowed for time lost in late submittals.

a. Coordinate scheduling, sequencing, preparing, and processing of submittals with performance of work so that work will not be delayed by submittal processing. The Contractor is responsible for additional time required for Government reviews resulting from required resubmittals. The review period for each resubmittal is the same as for the initial submittal.

b. Submittals required by the Contract Documents are listed on the submittal register. If a submittal is listed in the submittal register but does not pertain to the Contract work, the Contractor is to include the submittal in the register and annotate it "N/A" with a brief explanation. Approval by the Contracting Officer does not relieve the Contractor of supplying submittals required by the Contract Documents but that have been omitted from the register or marked "N/A".

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

d. Except as specified otherwise, allow a review period, beginning with receipt by the approving authority, that includes at least 15 working days for submittals for QC Manager approval and 20 working days for submittals where the Contracting Officer is the approving authority. The period of review for submittals with Contracting Officer approval begins when the Government receives the submittal from the QC organization.

e. For submittals requiring review by a Government fire protection engineer, allow a review period, beginning when the Government receives the submittal from the QC organization, of 30 working days for return of submittal to the Contractor.

1.11.1 Reviewing, Certifying, and Approving Authority

The QC Manager is responsible for reviewing all submittals and certifying that they are in compliance with Contract requirements. The approving authority on submittals is the QC Manager unless otherwise specified. At each "Submittal" paragraph in individual specification Sections, a notation "G," following a submittal item indicates that the Contracting Officer is the approving authority for that submittal item. Provide an additional copy of the submittal to the Government approving authority.

1.11.2 Constraints

a. Conform to provisions of this Section, unless explicitly stated otherwise for submittals listed or specified in this Contract.

b. Submit complete submittals for each definable feature of the work. At the same time, submit components of definable features that are interrelated as a system.

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

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

1.11.3 QC Organization Responsibilities

a. Review submittals for conformance with project design concepts and compliance with Contract Documents.

b. Process submittals based on the approving authority indicated in

the submittal register.

(1) When the QC manager is the approving authority, take appropriate action on the submittal from the possible actions defined in paragraph APPROVED SUBMITTALS.

(2) When the Contracting Officer is the approving authority or when variation has been proposed, forward the submittal to the Government, along with a certifying statement, or return the submittal marked "not reviewed" or "revise and resubmit" as appropriate. The QC organization's review of the submittal determines the appropriate action.

c. Ensure that material is clearly legible.

d. Stamp each sheet of each submittal with a QC certifying statement or an approving statement, except that data submitted in a bound volume or on one sheet printed on two sides may be stamped on the front of the first sheet only.

(1) When the approving authority is the Contracting Officer, the 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 the QC Manager, the QC Manager will use the following approval statement when returning submittals to the 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)

e. Sign the 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.

f. Update the submittal register as submittal actions occur, and maintain the submittal register at the project site until final

acceptance of all work by the Contracting Officer.

g. Retain a copy of approved submittals and approved samples at the project site.

1.12 GOVERNMENT APPROVING AUTHORITY

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

a. Note the date on which the submittal was received from the QC Manager.

b. Review submittals for approval within the scheduling period specified and only for conformance with project design concepts and compliance with Contract Documents.

c. Identify returned submittals with one of the actions defined in paragraph REVIEW NOTATIONS herein and with comments and markings appropriate for action indicated.

Upon completion of review of submittals requiring Government approval, stamp and date submittals. Two (2) copies of the submittal will be retained by the Contracting Officer and the remaining copies of the submittal will be returned to the Contractor. If the Government performs a conformance review of other Designer of Record approved submittals, the submittals will be identified and returned, as described above.

1.12.1 Review Notations

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

a. Submittals marked "approved" or "accepted" authorize proceeding with the work covered.

b. Submittals marked "approved as noted" or "approved except as noted, resubmittal not required" authorize proceeding with the work covered provided that the Contractor takes no exception to the corrections.

c. Submittals marked "not approved" or "disapproved," or "revise and resubmit" indicate an incomplete submittal or noncompliance with the Contract requirements or design concept. Resubmit with appropriate changes. Do not proceed with work for this item until the resubmittal is approved.

d. Submittals marked "not reviewed" indicate that the submittal has been previously reviewed and approved, is not required, does not have evidence of being reviewed and approved by the Contractor, or is not complete. A submittal marked "not reviewed" will be returned with an explanation of the reason it is not reviewed. Resubmit submittals returned for lack of review by Contractor or for being incomplete, with appropriate action, coordination, or change.

e. Submittals marked "receipt acknowledged" indicate that submittals have been received by the Government. This applies only to "information-only submittals" as previously defined.

1.13 DISAPPROVED SUBMITTALS

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

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

1.14 APPROVED SUBMITTALS

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

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

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

1.15 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, provide assurance that the materials or equipment will be available in quantities required in the project. No change or substitution will be permitted after a sample has been approved.

Match the approved samples for materials and equipment incorporated in the work. If requested, approved samples, including those which may be damaged in testing, will be returned to the Contractor, at its expense, upon completion of the Contract. Unapproved samples will also be returned to the Contractor at its expense, if so requested.

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

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

Approval of the samples by the Contracting Officer does not relieve the Contractor of its responsibilities under the Contract.

1.16 WITHHOLDING OF PAYMENT

Payment for materials incorporated in the work will not be made if required approvals have not been obtained. No payment for materials incorporated in the work will be made unless all required DOR approvals or required Government approvals have been obtained. No payment will be made for any materials incorporated into the work for any conformance review submittals or information-only submittals found to contain errors or deviations from the Solicitation or Accepted Proposal.

1.17 CERTIFICATION OF SUBMITTAL DATA

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

_____NAME OF CONTRACTOR _____ SIGNATURE OF CONTRACTOR

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

-- End of Section --

TITLE:	Bridge 2 Structural Steel Recoating and Repairs
JOB NAME:	
LOCATION:	PNSY
CONTRACT NO:	
CONTRACTOR:	

SUBMITTAL REGISTER

									CONTRACTOR SCHEDULE DATES			CONTRACTOR ACTION			APPROVING AUTHORITY					
	(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
Line	Activity #	Transmittal #	Specification Section	SD #	Submittal Description	Item Submitted	Paragraph #	Classification: GOVT or A/E Reviewer	Submit	Approval Needed By	Material Needed By	Action Code	Date Of Action	Date FWD to APPR / Auth Date RCD From CONTR	Date FWD To Other Revwr	Date RCD From Other Reviewer	Action Code	Date Of Action	Mailed To CONTR/ Date RCD From APPR Authority	Remarks
1			01 11 00.00 22	1	Preconstruction Submittals	Work Sequencing and Preparation Plan	1.3	G												
2			01 11 00.00 22	1	Preconstruction Submittals	Salvage Plan	1.7	G												
3			01 14 00.00 22	1	Preconstruction Submittals	List of Contact Personnel	1.4.1.1	G												
4			01 14 00.00 22	1	Preconstruction Submittals	Construction Loading Analysis	1.16	G												
5			01 20 00.00 22	1	Preconstruction Submittals	Schedule of Prices	1.3	G												
6			01 30 00.00 22	1	Preconstruction Submittals	NAVFAC PWD ME Internal Service Requirements List	1.6.3	G												
7			01 30 00.00 22	1	Preconstruction Submittals	Facility Turnover Planning Meeting Agenda And Red Zone (Rz) Checklist-Poam	1.6.1	G												
8			01 31 23.13 20	1	Preconstruction Submittals	List of Contractor's Personnel	1.4.2	G												
9			01 32 17.00 20	1	Preconstruction Submittals	Baseline NAS	1.2.2	G												
10			01 32 17.00 20	1	Preconstruction Submittals	Designated Project Scheduler	1.9	G												
11			01 32 17.00 20	7	Certificates	Three-Week Look Ahead Schedule	1.3	G												
12			01 32 17.00 20	7	Certificates	Monthly Network Analysis Updates	1.4.1	G												
13			01 32 17.00 20	11	Closeout Submittals	As-Built Schedule	1.4.2	G												
14			01 33 00	1	Preconstruction Submittals	Submittal register	1.9	G												
15			01 35 26.00 22	1	Preconstruction Submittals	APP - Construction	1.8.1	G												
16			01 35 26.00 22	1	Preconstruction Submittals	Dive Operations Plan	1.18	G												
17			01 35 26.00 22	6	Test Reports	Monthly Exposure Reports	1.4	G												
18			01 35 26.00 22	6	Test Reports	Notifications and Reports	1.13	G												
19			01 35 26.00 22	6	Test Reports	Accident Reports	1.13.2	G												
20			01 35 26.00 22	6	Test Reports	LHE Inspection Reports	1.13.3	G												
21			01 35 26.00 22	7	Certificates	Contractor Safety Self-Evaluation Checklist	1.5	G												
22			01 35 26.00 22	7	Certificates	Crane Operators/Riggers	1.7.1.6	G												
23			01 35 26.00 22	7	Certificates	Standard Lift Plan	1.8.3.2	G												
24			01 35 26.00 22	7	Certificates	Critical Lift Plan	1.8.3.3	G												
25			01 35 26.00 22	7	Certificates	Naval Architecture Analysis	1.8.3.4	G												
26			01 35 26.00 22	7	Certificates	Activity Hazard Analysis (AHA)	1.9	G												
27			01 35 26.00 22	7	Certificates	Confined Space Entry Permit	1.10.1	G												
28			01 35 26.00 22	7	Certificates	Hot Work Permit	1.10.1	G												
29			01 35 26.00 22	7	Certificates	Certificate of Compliance	1.13.4	G												

									CONTRACTOR SCHEDULE DATES			CONTRACTOR ACTION			APPROVING AUTHORITY					
	(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
30			01 35 26.00 22	7	Certificates	Third Party Certification of Floating Cranes and Barge-Mounted Mobile Cranes	1.13.5	G												
31			01 35 26.00 22	7	Certificates	License Certificates	1.15	G												
32			01 35 26.00 22	7	Certificates	Radiography Operation Planning Work Sheet	1.15.1	G												
33			01 44 00.00 22	1	Preconstruction Submittals	Archaeologist Qualifications	1.4	G												
34			01 44 00.00 22	6	Test Reports	Draft Archaeological Monitoring Report	3.2.1	G												
35			01 44 00.00 22	6	Test Reports	Final Draft archaeological Monitoring Report	3.2.1	G												
36			01 44 00.00 22	6	Test Reports	Final Archaeological Monitoring Report	3.2.1	G												
37			01 44 00.00 22	6	Test Reports	Curated Artifacts	3.3	G												
38			01 45 00.00 22	1	Preconstruction Submittals	Construction Quality Control (QC) Plan	1.6.1	G												
39			01 45 00.00 22	1	Preconstruction Submittals	QC Manager	1.5.1	G												
40			01 45 00.00 22	1	Preconstruction Submittals	QC Specialists	1.5.4	G												
41			01 45 35	1	Preconstruction Submittals	Written NDT Practices	3.1.2	G												
42			01 45 35	6	Test Reports	Daily Reports	3.1.2	G												
43			01 45 35	6	Test Reports	Daily Reports	3.1.2	G												
44			01 45 35	6	Test Reports	Biweekly Reports	3.1.1	G												
45			01 45 35	7	Certificates	Special Inspector	1.5	G												
46			01 45 35	7	Certificates	Qualification Records	3.1.2	G												
47			01 45 35	11	Closeout Submittals	Interim Report	3.1.2	G												
48			01 45 35	11	Closeout Submittals	Comprehensive Final Report	3.1.2	G												
49			01 50 00.00 22	1	Preconstruction Submittals	Construction site plan	1.3	G												
50			01 50 00.00 22	1	Preconstruction Submittals	Traffic control plan	3.3.1	G												
51			01 50 00.00 22	1	Preconstruction Submittals	Haul Road Plan	2.2.1	G												
52			01 50 00.00 22	1	Preconstruction Submittals	Contractor Computer Cybersecurity Compliance Statements	1.5.1.4	G												
53			01 50 00.00 22	1	Preconstruction Submittals	Contractor Temporary Network Cybersecurity Compliance Statements	1.5.6	G												
54			01 50 00.00 22	1	Preconstruction Submittals	Temporary Safety Railing Inspection Schedule	2.5.2	G												
55			01 50 00.00 22	1	Preconstruction Submittals	TemporarySafety Railing Installation Sequencing Plan	2.5.1	G												
56			01 50 00.00 22	2	Shop Drawings	Temporary Safety Railing Shop Drawings	2.5.1	G												
57			01 50 00.00 22	5	Design Data	Temporary Safety Railing Design Calculations	2.5.1	G												
58			01 57 19.00 22	1	Preconstruction Submittals	Preconstruction Survey	1.5.1	G												
59			01 57 19.00 22	1	Preconstruction Submittals	Solid Waste Management Plan	3.4	G												
60			01 57 19.00 22	1	Preconstruction Submittals	Regulatory Notifications	1.5.2	G												
61			01 57 19.00 22	1	Preconstruction Submittals	Environmental Management Plan (EMP)	3.1	G												
62			01 57 19.00 22	1	Preconstruction Submittals	Dirt and Dust Control Plan	3.14.1	G												
63			01 57 19.00 22	1	Preconstruction Submittals	Contractor Hazardous Material Inventory Log	3.6	G												
64			01 57 19.00 22	1	Preconstruction Submittals	Stormwater Management/Erosion and Sedimentation Control Plan	3.2.1	G												
65			01 57 19.00 22	1	Preconstruction Submittals	Spill Prevention, Control, and Countermeasures (SPCC) Plan	3.1	G												

									CONTRACTOR SCHEDULE DATES			CONTRACTOR ACTION			APPROVING AUTHORITY					
	(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
66			01 57 19.00 22	6	Test Reports	Laboratory Analysis	3.13.4.2	G												
67			01 57 19.00 22	6	Test Reports	Disposal Requirements	3.15.2	G												
68			01 57 19.00 22	6	Test Reports	Erosion and Sediment Control Inspection and Corrective Action	3.2.3	G												
69			01 57 19.00 22	6	Test Reports	Solid Waste Management Report	3.4.1	G												
70			01 57 19.00 22	11	Closeout Submittals	Stormwater Management and Erosion Control Compliance Notebook	3.2.1	G												
71			01 57 19.00 22	11	Closeout Submittals	Waste Determination Documentation	3.5	G												
72			01 57 19.00 22	11	Closeout Submittals	Disposal Documentation for Hazardous and Regulated Waste	3.13.4.4	G												
73			01 57 19.00 22	11	Closeout Submittals	Contractor 40 CFR Employee Training Records	1.5.5	G												
74			01 57 19.00 22	11	Closeout Submittals	Solid Waste Management Report	3.4.1	G												
75			01 57 19.00 22	11	Closeout Submittals	Contractor Hazardous Material Inventory Log	3.6	G												
76			01 57 19.00 22	11	Closeout Submittals	Hazardous Waste/Debris Management	3.13.4	G												
77			01 57 19.00 22	11	Closeout Submittals	Regulatory Notifications	1.5.2	G												
78			01 57 19.00 22	11	Closeout Submittals	Asbestos Free Certification Form	3.13.4.3	G												
79			01 58 00	2	Shop Drawings	Preliminary Drawing Indicating Layout And Text Content	1.3.1	G												
80			01 74 19	1	Preconstruction Submittals	Construction Waste Management Plan	1.7	G												
81			01 74 19	11	Closeout Submittals	Final Construction Waste Diversion Report	1.9	G												
82			01 78 00.00 22	3	Product Data	Warranty Management Plan	1.6.1													
83			01 78 00.00 22	3	Product Data	Warranty Tags	1.6.4													
84			01 78 00.00 22	3	Product Data	Final Cleaning	3.4													
85			01 78 00.00 22	3	Product Data	Spare Parts Data	1.5													
86			01 78 00.00 22	8	Manufacturer's Instructions	Preventative Maintenance	1.8	G												
87			01 78 00.00 22	8	Manufacturer's Instructions	Condition Monitoring (Predictive Testing)	1.8	G												
88			01 78 00.00 22	8	Manufacturer's Instructions	Inspection	1.8	G												
89			01 78 00.00 22	8	Manufacturer's Instructions	Instructions	1.6.1													
90			01 78 00.00 22	10	Operation and Maintenance Data	Operation and Maintenance Manuals	1.6.1	G												
91			01 78 00.00 22	11	Closeout Submittals	As-Built Drawings	3.1	G												
92			01 78 00.00 22	11	Closeout Submittals	Record Drawings	3.2	G												
93			01 78 00.00 22	11	Closeout Submittals	Record Drawings	3.3.1	G												
94			01 78 00.00 22	11	Closeout Submittals	As-Built Record of Equipment and Materials	1.6.1													
95			01 78 00.00 22	11	Closeout Submittals	As-Built Record of Equipment and Materials	1.7.1													
96			01 78 00.00 22	11	Closeout Submittals	Certification of EPA Designated Items	2.1	G												
97			01 78 00.00 22	11	Closeout Submittals	Interim DD FORM 1354	3.5.1	G												
98			01 78 00.00 22	11	Closeout Submittals	Checklist for DD FORM 1354	3.5.2	G												
99			01 78 00.00 22	11	Closeout Submittals	Red Zone Documents	1.7.5	G												
100			01 78 00.00 22	11	Closeout Submittals	eOMSI, Final Submittal	1.7.6	G												
101			01 78 23	10	Operation and Maintenance Data	Training Plan	3.1.1	G												
102			01 78 23	10	Operation and Maintenance Data	Training Outline	3.1.3	G												
103			01 78 23	10	Operation and Maintenance Data	Training Content	3.1.2	G												

									CONTRACTOR SCHEDULE DATES			CONTRACTOR ACTION			APPROVING AUTHORITY					
	(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
104			01 78 23	11	Closeout Submittals	Training Video Recording	3.1.4	G												
105			01 78 23	11	Closeout Submittals	Validation of Training Completion	3.1.6	G												
106			01 78 24.00 22	11	Closeout Submittals	eOMSI, Progress Submittal	1.4.1	G												
107			01 78 24.00 22	11	Closeout Submittals	eOMSI, Prefinal Submittal	1.4.2	G												
108			01 78 24.00 22	11	Closeout Submittals	eOMSI, Final Submittal	1.4.3	G												
109			02 41 00	1	Preconstruction Submittals	Demolition and Deconstruction Plan	1.2.2	G												
110			02 41 00	1	Preconstruction Submittals	Existing Conditions	1.9													
111			02 41 00	1	Preconstruction Submittals	Temporary Support System	3.1.1	G												
112			02 41 00	7	Certificates	Notification	1.6	G												
113			02 83 00.00 22	1	Preconstruction Submittals	Competent Person	1.5.1.1	G												
114			02 83 00.00 22	1	Preconstruction Submittals	Training Certification	1.5.1.2	G												
115			02 83 00.00 22	1	Preconstruction Submittals	Occupational and Environmental Assessment Data Report	1.5.2.4	G												
116			02 83 00.00 22	1	Preconstruction Submittals	Medical Examinations	1.5.2.5	G												
117			02 83 00.00 22	1	Preconstruction Submittals	Lead, Cadmium, and Chromium Waste Management Plan	1.5.2.9	G												
118			02 83 00.00 22	1	Preconstruction Submittals	Licenses, Permits and Notifications	1.5.4	G												
119			02 83 00.00 22	1	Preconstruction Submittals	Lead, Cadmium, and Chromium Compliance Plan	1.5.2.2	G												
120			02 83 00.00 22	1	Preconstruction Submittals	Lead, Cadmium, and Chromium Compliance Plan Checklist	1.5.2.3	G												
121			02 83 00.00 22	1	Preconstruction Submittals	Waste Characterization Sampling Plan	1.5.2.10	G												
122			02 83 00.00 22	1	Preconstruction Submittals	Sample Results	3.4.1.1	G												
123			02 83 00.00 22	3	Product Data	Respirators	1.6.1	G												
124			02 83 00.00 22	3	Product Data	Vacuum Filters	1.6.4	G												
125			02 83 00.00 22	3	Product Data	Negative Air Pressure System	1.6.7	G												
126			02 83 00.00 22	3	Product Data	Materials and Equipment	2.1	G												
127			02 83 00.00 22	3	Product Data	Expendable Supplies	2.1.1	G												
128			02 83 00.00 22	3	Product Data	Local Exhaust Equipment	3.1.1.3	G												
129			02 83 00.00 22	3	Product Data	Pressure Differential Automatic Recording Instrument	3.1.1.3	G												
130			02 83 00.00 22	3	Product Data	Pressure Differential Log	3.1.1.4	G												
131			02 83 00.00 22	6	Test Reports	Sampling and Analysis	1.3.3	G												
132			02 83 00.00 22	6	Test Reports	Occupational and Environmental Assessment Data Report	1.5.2.4	G												
133			02 83 00.00 22	6	Test Reports	Sampling Results	1.5.2.4	G												
134			02 83 00.00 22	6	Test Reports	Pressure Differential Recordings For Local Exhaust System	1.5.3	G												
135			02 83 00.00 22	7	Certificates	Testing Laboratory	1.5.1.3	G												
136			02 83 00.00 22	7	Certificates	Third Party Consultant Qualifications	1.5.1.4	G												
137			02 83 00.00 22	7	Certificates	Notification of the Commencement of Work Impacting Lead, Cadmium, or Chromium	3.1.1.1	G												
138			02 83 00.00 22	7	Certificates	Clearance Certification	3.5.1.1	G												
139			02 83 00.00 22	11	Closeout Submittals	Turn-In Documents or Weight Tickets	3.5.2.1	G												
140			03 01 00	1	Preconstruction Submittals	Repair Plan	1.6.5	G												
141			03 01 00	1	Preconstruction Submittals	Quality Control Plan	1.6.2	G												
142			03 01 00	1	Preconstruction Submittals	Quality Control Plan	3.3	G												

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	(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
143			03 01 00	1	Preconstruction Submittals	Testing Agencies Qualifications	1.6.3.1	G												
144			03 01 00	1	Preconstruction Submittals	Quality Control Personnel Qualifications	1.6.3.2	G												
145			03 01 00	1	Preconstruction Submittals	Contractor Qualifications	1.6.3.3	G												
146			03 01 00	1	Preconstruction Submittals	Worker Qualifications	1.6.3.4	G												
147			03 01 00	1	Preconstruction Submittals	Field Testing Technicians And Testing Agency	1.6.3.5	G												
148			03 01 00	1	Preconstruction Submittals	Test Reports	2.7.1.1	G												
149			03 01 00	1	Preconstruction Submittals	Placement And Compaction Equipment	2.2.3	G												
150			03 01 00	1	Preconstruction Submittals	Protection Plan	3.2.1.2	G												
151			03 01 00	1	Preconstruction Submittals	Procedures To Repair Defective Work	3.3.5	G												
152			03 01 00	1	Preconstruction Submittals	Corrective Action Work Plan	1.10.1	G												
153			03 01 00	1	Preconstruction Submittals	Defect Plan	1.6.4	G												
154			03 01 00	3	Product Data	Miscellaneous Materials And Equipment	2.6	G												
155			03 01 00	3	Product Data	Repair Materials	2.5	G												
156			03 01 00	5	Design Data	Repair Procedures	1.6.1	G												
157			03 01 00	5	Design Data	Mixture Proportioning	2.7	G												
158			03 01 00	6	Test Reports	Mixture Proportioning	2.7	G												
159			03 01 00	6	Test Reports	Miscellaneous Materials And Equipment	2.6	G												
160			03 01 00	6	Test Reports	Lab Test Reports	3.3.6	G												
161			03 01 00	7	Certificates	Reinforcement And Reinforcement Supports	2.4	G												
162			03 01 00	7	Certificates	Batch Tickets	2.7.2	G												
163			03 01 00	8	Manufacturer's Instructions	Equipment For Concrete Preparation	2.2	G												
164			03 15 13.00	2	Shop Drawings	Shop Drawings	1.4	G												
165			03 15 13.00	3	Product Data	Shapes And Plates	2.1	G												
166			03 15 13.00	3	Product Data	Stud Shear Connectors	2.3	G												
167			03 15 13.00	3	Product Data	Compression Seals	2.2	G												
168			03 15 13.00	3	Product Data	Lubricant Adhesive	2.4	G												
169			03 15 13.00	3	Product Data	Sealant	2.5	G												
170			03 30 00	1	Preconstruction Submittals	Concrete Curing Plan	1.6.3.1													
171			03 30 00	1	Preconstruction Submittals	Quality Control Plan	1.6.5	G												
172			03 30 00	1	Preconstruction Submittals	Quality Control Personnel Certifications	1.6.6	G												
173			03 30 00	1	Preconstruction Submittals	Quality Control Organizational Chart	1.6.6													
174			03 30 00	1	Preconstruction Submittals	Laboratory Accreditation	1.6.8	G												
175			03 30 00	1	Preconstruction Submittals	Form Removal Schedule	1.6.2.1	G												
176			03 30 00	1	Preconstruction Submittals	Construction Joints	2.2.5	G												
177			03 30 00	1	Preconstruction Submittals	Movement Joints Location And Detail	2.2.5	G												
178			03 30 00	1	Preconstruction Submittals	Mitigation Or Remediation Plan	3.11.2.6	G												
179			03 30 00	2	Shop Drawings	Formwork	1.6.2.1													
180			03 30 00	2	Shop Drawings	Reinforcing Steel	1.6.2.2	G												
181			03 30 00	3	Product Data	Joint Sealants	2.4.4													
182			03 30 00	3	Product Data	Joint Filler	2.4.3													
183			03 30 00	3	Product Data	Formwork Materials	2.1													

									CONTRACTOR SCHEDULE DATES			CONTRACTOR ACTION			APPROVING AUTHORITY					
	(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
184			03 30 00	3	Product Data	Cementitious Materials and Admixtures	2.3.1													
185			03 30 00	3	Product Data	Concrete Curing Materials	2.4.1													
186			03 30 00	3	Product Data	Reinforcement	2.6													
187			03 30 00	3	Product Data	Mechanical Reinforcing Bar Connectors	2.6.1													
188			03 30 00	3	Product Data	Waterstops	2.2.2													
189			03 30 00	3	Product Data	Biodegradable Form Release Agent	2.2.3													
190			03 30 00	3	Product Data	Nonshrink Grout	2.4.2													
191			03 30 00	4	Samples	Mock Up	3.5	G												
192			03 30 00	5	Design Data	Concrete Mix Design	1.6.1.1	G												
193			03 30 00	6	Test Reports	Concrete Mix Design	1.6.1.1	G												
194			03 30 00	6	Test Reports	Fly Ash	1.6.4.1													
195			03 30 00	6	Test Reports	Pozzolan	1.6.4.1													
196			03 30 00	6	Test Reports	Aggregates	1.6.4.2													
197			03 30 00	6	Test Reports	Compressive Strength Tests	3.11.2.3	G												
198			03 30 00	6	Test Reports	Unit Weight of Structural Concrete	3.11.2.5													
199			03 30 00	6	Test Reports	Air Content	3.11.2.4													
200			03 30 00	6	Test Reports	Slump Tests	3.11.2.1													
201			03 30 00	6	Test Reports	Water	2.3.2													
202			03 30 00	7	Certificates	VOC Content for Form Release Agents, Curing Compounds, and Concrete Penetrating Sealers	1.6.3.2													
203			03 30 00	7	Certificates	Safety Data Sheets	1.6.3.3													
204			03 30 00	7	Certificates	Field Testing Technician and Testing Agency	1.6.6.2													
205			03 30 00	8	Manufacturer's Instructions	Joint Sealants	2.4.4													
206			03 30 00	8	Manufacturer's Instructions	Curing Compound	2.4.1													
207			05 05 23.16	1	Preconstruction Submittals	Welding Quality Assurance Plan	3.3	G												
208			05 05 23.16	3	Product Data	Welding Procedure Qualifications	1.3	G												
209			05 05 23.16	3	Product Data	Welder, Welding Operator, and Tacker Qualification	1.3.4													
210			05 05 23.16	3	Product Data	Previous Qualifications	1.3.2													
211			05 05 23.16	3	Product Data	Pre-Qualified Procedures	1.3.3	G												
212			05 05 23.16	3	Product Data	Welding Electrodes and Rods	2.2													
213			05 05 23.16	6	Test Reports	Nondestructive Testing	3.4													
214			05 05 23.16	6	Test Reports	Weld Inspection Log	3.3													
215			05 05 23.16	7	Certificates	Certified Welding Procedure Specifications (WPS)	1.3.1													
216			05 05 23.16	7	Certificates	Certified Procedure Qualification Records (PQR)	1.3.1													
217			05 05 23.16	7	Certificates	Certified Welder Performance Qualifications (WPQ)	1.3.1													
218			05 05 23.16	7	Certificates	Certified Welding Inspector	1.3.5													
219			05 05 23.16	7	Certificates	Nondestructive Testing Personnel	1.3.5													
220			05 05 23.16	7	Certificates	Inspector And Ndt Personnel Requirements	3.6.1	G												
221			05 12 00	1	Preconstruction Submittals	Erection and Erection Bracing Drawings	1.3.1.1	G												

									CONTRACTOR SCHEDULE DATES			CONTRACTOR ACTION			APPROVING AUTHORITY					
	(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
222			05 12 00	2	Shop Drawings	Fabrication Drawings	1.3.2	G												
223			05 12 00	3	Product Data	Direct Tension Indicator Washers	2.3.2.3													
224			05 12 00	3	Product Data	Non-Shrink Grout	2.4.1													
225			05 12 00	3	Product Data	Beam C-Clamps	2.5	G												
226			05 12 00	5	Design Data	Shoring and Temporary Bracing	1.3.2	G												
227			05 12 00	6	Test Reports	Bolts, Nuts, and Washers	2.3													
228			05 12 00	6	Test Reports	Bolt Testing Reports	3.6.1.1													
229			05 12 00	6	Test Reports	Embrittlement Test Reports	3.6.2													
230			05 12 00	7	Certificates	Steel	2.2													
231			05 12 00	7	Certificates	Bolts, Nuts, and Washers	2.3													
232			05 12 00	7	Certificates	Galvanizing	2.6													
233			05 14 00.13	1	Preconstruction Submittals	Certified Welding Procedure Specifications (WPS)	1.4.1	G												
234			05 14 00.13	1	Preconstruction Submittals	Certified Procedure Qualification Records (PQR)	1.4.1	G												
235			05 14 00.13	1	Preconstruction Submittals	Certified Welder Performance Qualifications (WPQ)	1.4.2	G												
236			05 52 00	1	Preconstruction Submittals	Reflectorized Flexible Guardrail Markers	2.3.1	G												
237			05 52 00	1	Preconstruction Submittals	Reflectorized Beam Guardrail Delineators	2.3.2	G												
238			05 52 00	2	Shop Drawings	Hardware	3.2	G												
239			05 52 00	2	Shop Drawings	Fabrication And Installation Drawings	2.1	G												
240			05 52 00	2	Shop Drawings	Shapes, Plates, Bars, And Strips	3.2	G												
241			05 52 00	2	Shop Drawings	Guardrail Marker Plan	3.3	G												
242			05 52 00	3	Product Data	Protective Coating	2.1.1	G												
243			05 52 00	3	Product Data	Posts	2.2.1	G												
244			05 52 00	3	Product Data	Railing	2.2.2	G												
245			05 52 00	3	Product Data	Plates	2.2.3	G												
246			05 52 00	3	Product Data	Extrusions	2.2.4	G												
247			05 52 00	4	Samples	Color Chip	2.1.1	G												
248			05 52 00	8	Manufacturer's Instructions	Installation Instructions	3.2													
249			09 97 13.27	3	Product Data	Joint Sealant	2.1	G												
250			09 97 13.27	1	Preconstruction Submittals	Hazardous Waste Accumulation Plan	1.4.6	G												
251			09 97 13.27	3	Product Data	Epoxy Intermediate Coat	2.2.2	G												
252			09 97 13.27	3	Product Data	Polyurethane Topcoat	2.2.3	G												
253			09 97 13.27	3	Product Data	Zinc-Rich Epoxy Primer Coat	2.2.1	G												
254			09 97 13.27	4	Samples	Color Chip	2.2.3	G												
255			09 97 13.27	5	Design Data	Containment System	1.4.7.1													
256			09 97 13.27	5	Design Data	Inspection Access Plan	1.4.4	G												
257			09 97 13.27	6	Test Reports	Joint Sealant Qualification Test Reports	1.4.8.1													
258			09 97 13.27	6	Test Reports	Coatings Qualification Test Reports	1.4.8.2													
259			09 97 13.27	6	Test Reports	Metallic Abrasive Qualification Test Reports	1.4.8.3													
260			09 97 13.27	6	Test Reports	Coating Sample Test Reports	3.2.3													
261			09 97 13.27	6	Test Reports	Abrasive Sample Test Reports	3.2.4													
262			09 97 13.27	6	Test Reports	Inspection Report Forms	3.10.2.2													

									CONTRACTOR SCHEDULE DATES			CONTRACTOR ACTION			APPROVING AUTHORITY					
	(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
263			09 97 13.27	6	Test Reports	Daily Inspection Reports	3.10.2.3													
264			09 97 13.27	6	Test Reports	Recycled Metallic Abrasive Field Test Reports (Daily and Weekly)	1.4.8.4													
265			09 97 13.27	7	Certificates	Contract Errors, Omissions, and Other Discrepancies	1.4.1													
266			09 97 13.27	7	Certificates	Corrective Action Procedures	1.4.2.1													
267			09 97 13.27	7	Certificates	Coating Work Plan	1.4.3													
268			09 97 13.27	7	Certificates	Qualifications of Certified Industrial Hygienist (CIH)	1.4.9.1													
269			09 97 13.27	7	Certificates	Qualifications Of Individuals Performing Abrasive Blasting	1.4.9.5													
270			09 97 13.27	7	Certificates	Qualifications of Certified Protective Coatings Specialist (PCS)	1.4.9.2													
271			09 97 13.27	7	Certificates	Qualifications of Coating Inspection Company	1.4.9.3													
272			09 97 13.27	7	Certificates	Qualifications of QC Specialist Coating Inspector	1.4.9.4													
273			09 97 13.27	7	Certificates	Qualifications of Testing Laboratory for Coatings	1.4.9.6													
274			09 97 13.27	7	Certificates	Qualifications of Testing Laboratory for Abrasive	1.4.9.7													
275			09 97 13.27	7	Certificates	Qualifications of Coating Contractors	1.4.9.8													
276			09 97 13.27	7	Certificates	Joint Sealant Materials	1.4.9.9													
277			09 97 13.27	7	Certificates	Coating Materials	1.4.9.10													
278			09 97 13.27	7	Certificates	Metallic Abrasive	1.4.9.12													
279			09 97 13.27	7	Certificates	Coating System Component Certification	1.4.9.11	G												
280			09 97 13.27	8	Manufacturer's Instructions	Joint Sealant Instructions	1.7.1													
281			09 97 13.27	8	Manufacturer's Instructions	Coating System Instructions	1.7.2													
282			09 97 13.27	11	Closeout Submittals	Disposal of Used Abrasive	3.6.10													
283			09 97 13.27	11	Closeout Submittals	Inspection Logbook	3.10.2.4	G												
284			26 05 00.00 40	1	Preconstruction Submittals	Certification	1.13	G												
285			26 05 00.00 40	2	Shop Drawings	Marking Strips	3.2.6.1	G												
286			26 05 00.00 40	2	Shop Drawings	Shop Drawings	1.11	G												
287			26 05 00.00 40	3	Product Data	Conduits	2.1.1	G												
288			26 05 00.00 40	3	Product Data	Wire and Cable	2.2.1	G												
289			26 05 00.00 40	3	Product Data	Splices and Connectors	3.2.5	G												
290			26 05 00.00 40	3	Product Data	Switches	2.2.3	G												
291			26 05 00.00 40	3	Product Data	Receptacles	2.2.4	G												
292			26 05 00.00 40	3	Product Data	Outlet Boxes, Pull Boxes and Junction Boxes	2.1.2	G												
293			26 05 00.00 40	3	Product Data	Circuit Breakers	2.1.3	G												
294			26 05 00.00 40	3	Product Data	Device Plates	2.2.2	G												
295			26 05 00.00 40	3	Product Data	Product Data	1.12	G												
296			26 05 00.00 40	6	Test Reports	Continuity Test	3.3	G												
297			26 05 00.00 40	6	Test Reports	Phase-Rotation Tests	3.3	G												
298			26 05 00.00 40	6	Test Reports	Insulation Resistance Test	3.3	G												
299			26 05 00.00 40	6	Test Reports	600-Volt Wiring Test	3.3	G												
300			26 05 00.00 40	6	Test Reports	Insulation-Resistance Test	3.3	G												
301			26 05 00.00 40	8	Manufacturer's Instructions	Manufacturer's Instructions	1.13													

									CONTRACTOR SCHEDULE DATES			CONTRACTOR ACTION			APPROVING AUTHORITY					
	(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
302			26 05 00.00 40	8	Manufacturer's Instructions	Manufacturer's Instructions	3.1													
303			31 23 00.00 22	1	Preconstruction Submittals	Shoring and Sheeting Plan	3.1.1	G												
304			31 23 00.00 22	1	Preconstruction Submittals	Dewatering Work Plan	1.11.2	G												
305			31 23 00.00 22	1	Preconstruction Submittals	Excavation and Trenching Plan	1.11.1	G												
306			31 23 00.00 22	1	Preconstruction Submittals	Excess Soil Disposal & Soil Sampling Plan	1.1	G												
307			31 23 00.00 22	1	Preconstruction Submittals	Archeologists Qualifications	1.11.4	G												
308			31 23 00.00 22	6	Test Reports	Pervious Granular Fill	3.11.2.3	G												
309			31 23 00.00 22	6	Test Reports	Borrow Materials	2.4	G												
310			31 23 00.00 22	6	Test Reports	Fill and backfill	3.11.2.1	G												
311			31 23 00.00 22	6	Test Reports	Select material	3.11.2.2	G												
312			31 23 00.00 22	6	Test Reports	Density tests	3.11.2.4	G												
313			31 23 00.00 22	6	Test Reports	Moisture Content	3.4	G												
314			32 12 16.16	1	Preconstruction Submittals	Moisture Meter	3.4.2.3	G												
315			32 12 16.16	1	Preconstruction Submittals	Membrane Manufacturer►s Written Requirements	3.4.6	G												
316			32 12 16.16	2	Shop Drawings	Placement Plan	2.1	G												
317			32 12 16.16	3	Product Data	Mix Design	2.5	G												
318			32 12 16.16	3	Product Data	Contractor Quality Control	3.1	G												
319			32 12 16.16	3	Product Data	High Performance Waterproofing Membrane	2.8	G												
320			32 12 16.16	4	Samples	Aggregates	2.3													
321			32 12 16.16	4	Samples	Asphalt Cement Binder	2.4													
322			32 12 16.16	6	Test Reports	Aggregates	2.3	G												
323			32 12 16.16	6	Test Reports	QC Monitoring	3.1.4.11													
324			32 12 16.16	6	Test Reports	Material Acceptance	3.12	G												
325			32 12 16.16	6	Test Reports	Moisture Test Results	3.4.2.3	G												
326			32 12 16.16	7	Certificates	Asphalt Cement Binder	2.4	G												
327			32 12 16.16	7	Certificates	Testing Laboratory	3.1.3	G												
328			32 12 16.16	7	Certificates	Certificate Of Calibration	3.4.2.3	G												
329			32 12 16.16	7	Certificates	Manufacturer Certified Applicator	3.1.2	G												
330			32 17 23	1	Preconstruction Submittals	Pavement Marking Plan	1.4.3	G												
331			32 17 23	3	Product Data	Surface Preparation Equipment List	2.1.1.1	G												
332			32 17 23	3	Product Data	Application Equipment List	2.1.2	G												
333			32 17 23	3	Product Data	Exterior Surface Preparation	3.2													
334			32 17 23	3	Product Data	Safety Data Sheets	1.4.1	G												
335			32 17 23	3	Product Data	Polyurea Paint	2.2.1	G												
336			32 17 23	6	Test Reports	Test Reports	3.4.1													
337			32 17 23	7	Certificates	Qualifications	1.4.2	G												
338			32 17 23	7	Certificates	Volatile Organic Compound	1.4.1	G												
339			32 17 23	8	Manufacturer's Instructions	Polyurea Paint Manufacturer's Application Guidance	3.3.1	G												
340			33 71 02	2	Shop Drawings	Precast Underground Structures	1.4.1	G												
341			33 71 02	3	Product Data	Live End Caps	2.5	G												
342			33 71 02	3	Product Data	Precast Concrete Structures	2.10.2.1	G												
343			33 71 02	3	Product Data	Sealing Material	2.10.2.4													
344			33 71 02	3	Product Data	Pulling-In Irons	3.4.3													

									CONTRACTOR SCHEDULE DATES			CONTRACTOR ACTION			APPROVING AUTHORITY					
	(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
345			33 71 02	3	Product Data	Manhole Frames and Covers	2.10.3	G												
346			33 71 02	3	Product Data	Handhole Frames and Covers	2.10.4	G												
347			33 71 02	3	Product Data	Composite/Fiberglass Handholes	2.10.5	G												
348			33 71 02	3	Product Data	Cable Supports	2.11	G												
349			33 71 02	6	Test Reports	Field Acceptance Checks and Tests	3.15.1	G												
350			33 71 02	6	Test Reports	Cable Installation Plan and Procedure	3.3	G												
351			33 71 02	7	Certificates	Cable Installer Qualifications	1.4.2	G												
352			34 71 13.19	2	Shop Drawings	Installation	3.1	G												
353			34 71 13.19	2	Shop Drawings	Equipment	3.1	G												
354			34 71 13.19	2	Shop Drawings	Electrical Work	2.3	G												
355			34 71 13.19	2	Shop Drawings	System Drawing Package	1.7	G												
356			34 71 13.19	3	Product Data	Barrier System	1.2													
357			34 71 13.19	3	Product Data	Spare Parts Package	1.5													
358			34 71 13.19	3	Product Data	Noise Mitigation Measures	2.1.1.4	G												
359			34 71 13.19	5	Design Data	Data Package	1.8	G												
360			34 71 13.19	6	Test Reports	Field Testing	3.7													
361			34 71 13.19	10	Operation and Maintenance Data	Operation And Maintenance Manuals	1.6	G												

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GOVERNMENTAL SAFETY REQUIREMENTS (PWD ME)
08/22

PART 1 GENERAL

This Section applies to Design-Bid-Build and Design-Build projects at the Portsmouth Naval Shipyard and AOR Facilities. Specific information throughout the Section requires coordination and editing.

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 PROFESSIONALS (ASSP)

ASSP A10.22	(2007; R 2017) Safety Requirements for Rope-Guided and Non-Guided Workers' Hoists
ASSP A10.34	(2021) Protection of the Public on or Adjacent to Construction Sites
ASSP A10.44	(2020) Control of Energy Sources (Lockout/Tagout) for Construction and Demolition Operations
ASSP Z244.1	(2016) The Control of Hazardous Energy Lockout, Tagout and Alternative Methods
ASSP Z359.0	(2018) Definitions and Nomenclature Used for Fall Protection and Fall Arrest
ASSP Z359.1	(2020) The Fall Protection Code
ASSP Z359.11	(2014) Safety Requirements for Full Body Harnesses
ASSP Z359.12	(2019) Connecting Components for Personal Fall Arrest Systems
ASSP Z359.13	(2013) Personal Energy Absorbers and Energy Absorbing Lanyards
ASSP Z359.14	(2014) Safety Requirements for Self-Retracting Devices for Personal Fall Arrest and Rescue Systems
ASSP Z359.15	(2014) Safety Requirements for Single Anchor Lifelines and Fall Arresters for Personal Fall Arrest Systems
ASSP Z359.16	(2016) Safety Requirements for Climbing Ladder Fall Arrest Systems
ASSP Z359.18	(2017) Safety Requirements for Anchorage

	Connectors for Active Fall Protection Systems
ASSP Z359.2	(2017) Minimum Requirements for a Comprehensive Managed Fall Protection Program
ASSP Z359.3	(2019) Safety Requirements for Lanyards and Positioning Lanyards
ASSP Z359.4	(2013) Safety Requirements for Assisted-Rescue and Self-Rescue Systems, Subsystems and Components
ASSP Z359.6	(2016) Specifications and Design Requirements for Active Fall Protection Systems
ASSP Z359.7	(2019) Qualification and Verification Testing of Fall Protection Products

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

ASME B30.20	(2018) Below-the-Hook Lifting Devices
ASME B30.22	(2016) Articulating Boom Cranes
ASME B30.23	(2022) Personnel Lifting Systems Safety Standard for Cableways, Cranes, Derricks, Hoists, Hooks, Jacks, and Slings
ASME B30.26	(2015; R 2020) Rigging Hardware
ASME B30.3	(2020) Tower Cranes
ASME B30.5	(2021) Mobile and Locomotive Cranes
ASME B30.7	(2021) Winches
ASME B30.8	(2020) Floating Cranes and Floating Derricks
ASME B30.9	(2018) Slings

ASTM INTERNATIONAL (ASTM)

ASTM F855	(2019) Standard Specifications for Temporary Protective Grounds to Be Used on De-energized Electric Power Lines and Equipment

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)

IEEE 1048	(2016) Guide for Protective Grounding of Power Lines
IEEE C2	(2023) National Electrical Safety Code

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

NEMA Z535.2	(2011; R 2017) Environmental and Facility Safety Signs

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 10	(2022; ERTA 1 2021) Standard for Portable Fire Extinguishers
NFPA 241	(2022) Standard for Safeguarding Construction, Alteration, and Demolition Operations
NFPA 306	(2019) Standard for the Control of Gas Hazards on Vessels
NFPA 51B	(2019; TIA 20-1) Standard for Fire Prevention During Welding, Cutting, and Other Hot Work
NFPA 70	(2023) National Electrical Code
NFPA 70E	(2021) Standard for Electrical Safety in the Workplace

TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA)

TIA-222	(2018H; Add 1 2019) Structural Standard for Antenna Supporting Structures and Antennas and Small Wind Turbine Support Structures
TIA-1019	(2012; R 2016) Standard for Installation, Alteration and Maintenance of Antenna Supporting Structures and Antennas

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1	(2014) Safety -- 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	The Control of Hazardous Energy (Lock Out/Tag Out)
29 CFR 1910.333	Selection and Use of Work Practices
29 CFR 1915	Confined and Enclosed Spaces and Other Dangerous Atmospheres in Shipyard Employment

29 CFR 1915.89	Control of Hazardous Energy (Lockout/Tags-Plus)
29 CFR 1919	Gear Certification
29 CFR 1926	Safety and Health Regulations for Construction
29 CFR 1926.1400	Cranes and Derricks in Construction
29 CFR 1926.16	Rules of Construction
29 CFR 1926.450	Scaffolds
29 CFR 1926.500	Fall Protection
29 CFR 1926.552	Material Hoists, Personal Hoists, and Elevators
29 CFR 1926.553	Base-Mounted Drum Hoists
49 CFR 173	Shippers - General Requirements for Shipments and Packagings
CPL 2.100	(1995) Application of the Permit-Required Confined Spaces (PRCS) Standards, 29 CFR 1910.146
ATTACHMENT A	"CONTRACTOR CRANE, LHE,CONSTRUCTION EQUIPMENT, AND RIGGING GEAR REQUIREMENTS"
ATTACHMENT B	"PORTSMOUTH NAVAL SHIPYARD UTILITY LOCATING PROCEDURES"

The attachments are included at the end of this Section. If the attachments are missing, notify the Contracting Officer.

1.2 DEFINITIONS

1.2.1 Competent Person (CP)

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

1.2.2 Competent Person, Confined Space

The CP, Confined Space, is a person meeting the competent person requirements as defined EM 385-1-1 Appendix Q, with thorough knowledge of OSHA’s Confined Space Standard, 29 CFR 1910.146 and 29 CFR 1926 Subpart AA, and designated in writing to be responsible for the immediate supervision, implementation, and monitoring of the confined space program, who through training, knowledge, and experience in confined space entry is capable of identifying, evaluating, and addressing existing and potential confined space hazards and, who has the authority to take prompt corrective measures with regard to such hazards.

1.2.3 Competent Person, Cranes and Rigging

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

1.2.4 Competent Person, Excavation/Trenching

A CP, Excavation/Trenching, is a person meeting the competent person requirements as defined in EM 385-1-1 Appendix Q and 29 CFR 1926, who has been designated in writing to be responsible for the immediate supervision, implementation, and monitoring of the excavation/trenching program, who through training, knowledge, and experience in excavation/trenching is capable of identifying, evaluating, and addressing existing and potential hazards and, who has the authority to take prompt corrective measures with regard to such hazards.

1.2.5 Competent Person, Fall Protection

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

1.2.6 Competent Person, Scaffolding

The CP, Scaffolding is a person meeting the competent person requirements in EM 385-1-1 Appendix Q, and designated in writing by the employer to be responsible for immediate supervising, implementing, and monitoring of the scaffolding program. The CP for Scaffolding has enough training, knowledge, and experience in scaffolding to correctly identify, evaluate and address existing and potential hazards and also has the authority to take prompt corrective measures with regard to these hazards. CP qualifications must be documented and include experience on the specific scaffolding systems/types being used, assessment of the base material that the scaffold will be erected upon, load calculations for materials and personnel, and erection and dismantling. The CP for scaffolding must have a documented, minimum of 8-hours of scaffold training to include training on the specific type of scaffold being used (e.g. mast-climbing, adjustable, tubular frame), in accordance with EM 385-1-1 Section 22.B.02.

1.2.7 Competent Person (CP) Trainer

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

that specific industry. The competent person trainer must evaluate the knowledge and skills of the competent persons as part of the training process.

1.2.8 High Risk Activities

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

1.2.9 High Visibility Accident

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

1.2.10 Load Handling Equipment (LHE)

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

1.2.11 Medical Treatment

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

1.2.12 Near Miss

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

1.2.13 Operating Envelope

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

1.2.14 Qualified Person (QP)

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

1.2.15 Qualified Person, Fall Protection (QP for FP)

A QP for FP is a person meeting the requirements of EM 385-1-1 Appendix Q, and ASSP Z359.0, with a recognized degree or professional certificate and with extensive knowledge, training, and experience in the fall protection and rescue field who is capable of designing, analyzing, and evaluating and specifying fall protection and rescue systems.

1.2.16 Recordable Injuries or Illnesses

Recordable Injuries or Illnesses are any work-related injury or illness that results in:

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

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

c. Restricted work;

d. Transfer to another job;

e. Medical treatment beyond first aid;

f. Loss of consciousness; or

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

1.2.17 USACE Property and Equipment

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

1.2.18 Load Handling Equipment (LHE) Accident or Load Handling Equipment Mishap

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

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

APP - Construction; G

Dive Operations Plan; G

SD-06 Test Reports

Monthly Exposure Reports; G

Notifications and Reports; G

Accident Reports; G

LHE Inspection Reports; G

SD-07 Certificates

Contractor Safety Self-Evaluation Checklist; G

Crane Operators/Riggers; G

Standard Lift Plan; G

Critical Lift Plan; G

Naval Architecture Analysis; G

Activity Hazard Analysis (AHA); G

Confined Space Entry Permit; G

Hot Work Permit; G

Certificate of Compliance; G

Third Party Certification of Floating Cranes and Barge-Mounted Mobile Cranes; G

License Certificates; G

Radiography Operation Planning Work Sheet; G

1.4 MONTHLY EXPOSURE REPORTS

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

1.5 CONTRACTOR SAFETY SELF-EVALUATION CHECKLIST

Contracting Officer will provide a "Contractor Safety Self-Evaluation checklist" to the Contractor at the pre-construction meeting. 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. The Contractor Safety Self-Evaluation checklist can be found on the Whole Building Design Guide website at www.wbdg.org/ffc/dod/unifiedfacilities-guide-specifications-ufgs/ufgs-01-35-26.

1.6 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.

1.6.1 Subcontractor Safety Requirements

For this Contract, neither Contractor nor any Subcontractor may enter into Contract with any Subcontractor that fails to meet the following requirements. The term Subcontractor in this and the following paragraphs means any entity holding a Contract with the Contractor or with a Subcontractor at any tier.

1.6.1.1 Experience Modification Rate (EMR)

Subcontractors on this Contract must have an effective EMR less than or equal to 1.10, as computed by the National Council on Compensation Insurance (NCCI) or if not available, as computed by the state agency's rating bureau in the state where the Subcontractor is registered, when entering into a subcontract agreement with the Prime Contractor or a Subcontractor at any tier. The Prime Contractor may submit a written request for additional consideration to the Contracting Officer where the specified acceptable EMR range cannot be achieved. Relaxation of the EMR range will only be considered for approval on a case-by-case basis for special conditions and must not be anticipated as tacit approval. Contractor's Site Safety and Health Officer (SSHO) must collect and maintain the certified EMR ratings for all Subcontractors on the project and make them available to the Government at the Government's request.

1.6.1.2 OSHA Days Away from Work, Restricted Duty, or Job Transfer (DART) Rate

Subcontractors on this Contract must have a DART rate, calculated from the most recent, complete calendar year, less than or equal to 3.4 when entering into a subcontract agreement with the Prime Contractor or a Subcontractor at any tier. The OSHA Dart Rate is calculated using the following formula:

(N/EH) x 200,000

where:

N = number of injuries and illnesses with days away, restricted work, or job transfer

EH = total hours worked by all employees during most recent, complete calendar year

200,000 = base for 100 full-time equivalent workers (working 40 hours per week, 50 weeks per year)

The Prime Contractor may submit a written request for additional consideration to the Contracting Officer where the specified acceptable OSHA Dart rate range cannot be achieved for a particular Subcontractor. Relaxation of the OSHA DART rate range will only be considered for approval on a case-by-case basis for special conditions and must not be anticipated as tacit approval. Contractor's Site Safety and Health Officer (SSHO) must

collect and maintain self-certified OSHA DART rates for all Subcontractors on the project and make them available to the Government at the Government's request.

1.7 SITE QUALIFICATIONS, DUTIES, AND MEETINGS

1.7.1 Personnel Qualifications

1.7.1.1 Site Safety and Health Officer (SSHO)

Provide an SSHO that meets the requirements of EM 385-1-1 Section 1. The SSHO must ensure that the requirements of 29 CFR 1926.16 are met for the project. Provide a Safety oversight team that includes a minimum of one (1) person at each project site to function as the Site Safety and Health Officer (SSHO). The SSHO or an equally-qualified Alternate SSHO must be at the work site at all times to implement and administer the Contractor's safety program and Government-accepted Accident Prevention Plan. The SSHO and Alternate SSHO must have the required training, experience, and qualifications in accordance with EM 385-1-1 Section 01.A.17, and all associated sub-paragraphs. Note the "Project Site" is the specific area of construction within the limits of work as defined by the contract documents.

If the SSHO is off-site for a period longer than 24 hours, an equally-qualified alternate SSHO must be provided and must fulfill the same roles and responsibilities as the primary SSHO. When the SSHO is temporarily (up to 24 hours) off-site, a Designated Representative (DR), as identified in the AHA may be used in lieu of an Alternate SSHO, and must be on the project site at all times when work is being performed. The DR may not relieve an Alternate SSHO. Note that the DR is a collateral duty safety position, with safety duties in addition to their full time occupation. The primary SSHO may not be absent from the site for more than two weeks at one time and not more than 30 work days in a calendar year.

1.7.1.2 Quality Control (QC) Manager:

The Quality Control Manager cannot be the SSHO on the project.

1.7.1.3 Competent Person Qualifications

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

The Competent Person identified in the Contractor's Safety and Health Program and accepted Accident Prevention Plan, must be on-site at all times when the work that presents the hazards associated with their professional expertise is being performed. Provide the credentials of the Competent Persons(s) to the the Contracting Officer for information in consultation with the Portsmouth Naval Shipyard Safety Office.

1.7.1.3.1 Competent Person for Confined Space Entry

Provide a Confined Space Competent Person (CP) who meets the requirements of EM 385-1-1, Appendix Q, and herein. The CP for Confined Space Entry must supervise the entry into each confined space in accordance with

EM 385-1-1, Section 34.

If work involves marine operations that handle combustible or hazardous materials, this person must have the ability to understand and follow through on the air sampling, Personal Protective Equipment (PPE), and instructions of a Marine Chemist, Coast Guard authorized persons, or Certified Industrial Hygienist. Confined space and enclosed space work must comply with NFPA 306, OSHA 29 CFR 1915, Subpart B, "Confined and Enclosed Spaces and Other Dangerous Atmospheres in Shipyard Employment," or as applicable, 29 CFR 1910.147 for general industry.

1.7.1.3.2 Competent Person for Scaffolding

Provide a Competent Person for Scaffolding who meets the requirements of EM 385-1-1, Section 22.B.02 and herein.

1.7.1.3.3 Competent Person for Fall Protection

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

1.7.1.4 Qualified Trainer Requirements

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

a. Ensure that all attendees attend all sessions by using a class roster signed daily by each attendee. Maintain copies of the roster for at least five (5) years. This is a certification class and must be attended 100 percent. In cases of emergency where an attendee cannot make it to a session, the attendee can make it up in another class session for the same subject.

b. Update training course materials whenever an update of the EM 385-1-1 becomes available.

c. Provide a written exam of at least 50 questions. Students are required to answer 80 percent correctly to pass.

d. Request, review, and incorporate student feedback into a continuous course improvement program.

1.7.1.5 Dredging Contract Requirements

1.7.1.5.1 NOT USED

1.7.1.5.2 SSHO Requirements for Dredging

a. In addition to requirements stated elsewhere in this specification, an individual serving as a SSHO must be present at the project site, located so that they have full mobility and reasonable access to all major work operations, for at least one shift in each 24 hour period when work is being performed. The SSHO must be available during their shift for immediate verbal consultation and notification, either by

phone or radio.

b. The SSHO is a full-time, dedicated position, except as noted above, who must report to a senior project (or corporate) official. When the SSHO is permitted to be a collateral duty, the SSHO is not permitted to be in another position requiring continuous mechanical or equipment operations, such as equipment operators.

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

1.7.1.5.3 Collateral Duty Safety Officer (CDSO) Requirements for Dredging

a. A CDSO is an individual who is assigned collateral duty safety responsibilities in addition to their full-time occupation, and who supports and supplements the SSHO efforts in managing, implementing and enforcing the Contractor's Safety and Health Program. The assigned CDSO must be an individual(s) with work oversight responsibilities, such as master, mate, fill foreman, or superintendent. A CDSO must not be an employee responsible for continuous mechanical or equipment operations, such as an equipment operator.

b. A CDSO performs safety program tasks as assigned by the SSHO and must report safety findings to the SSHO. The SSHO must document results of safety findings and provide information for inclusion in the CQC reports to the Contracting Officer.

1.7.1.5.4 Safety Personnel Training Requirements for Dredging

A SSHO and a CDSO for dredging Contracts must take either a formal classroom or online OSHA 30-hour Construction Safety Course, or an equivalent 30 hours of formal classroom or online safety and health training covering the subjects of the OSHA 30-hour Course in accordance with EM 385-1-1 Appendix A, paragraph 3.d.(3), applicable to dredging work, and given by qualified instructors. In exception to EM 385-1-1, Section 01.A.17, comply with the following:

a. The SSHO must maintain competency through having taken 8 hours of formal classroom or online safety and health related coursework every year. Hours spent as an instructor in such courses will be considered the same as attending them, but each course only gets credit once (for example, instructing a 1-hour asbestos awareness course five times in a year provides one hour credit for training).

b. The SSHO and a CDSO must have a minimum of three years of experience within the past five years in one of the following:

(1) Supervising/managing dredging activities

(2) Supervising/managing marine construction activities

(3) Supervising/managing land-based construction activities

(4) Work managing safety programs or processes

(5) Conducting hazard analyses and developing controls in activities

or environments with similar hazards

1.7.1.6 Crane Operators/Riggers

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

1.7.2 Personnel Duties

1.7.2.1 Duties of the Site Safety and Health Officer (SSHO)

The SSHO must:

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

b. Conduct mishap investigations and complete required accident reports. Report mishaps and near misses.

c. Use and maintain OSHA's Form 300 to log work-related injuries and illnesses occurring on the project site for Prime Contractors and Subcontractors, and make available to the Contracting Officer upon request. Post and maintain the Form 300 on the site Safety Bulletin Board.

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

e. Attend the pre-construction meeting, pre-work meetings including preparatory meetings, and periodic in-progress meetings.

f. Review the APP and AHAs for compliance with EM 385-1-1, and approve, sign, implement, and enforce them.

g. Establish a Safety and Occupational Health (SOH) Deficiency Tracking System that lists and monitors outstanding deficiencies until resolution.

h. Ensure Subcontractor compliance with safety and health requirements.

i. Maintain a list of hazardous chemicals on site and their associated Safety Data Sheets (SDS).

j. Maintain a weekly list of high hazard activities involving energy, equipment, excavation, entry into confined space, and elevation, and be prepared to discuss details during QC Meetings.

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

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

either the Superintendent, QC Manager, or SSHO are dismissed, project work will be stopped and will not be allowed to resume until a suitable replacement is approved and the above duties are again being effectively carried out. The dismissal of the Superintendent, QC Manager, and/or SSHO will not be cause for claims for a Contract modification(s) for an extension to the Contract duration or for additional compensation.

1.7.3 Meetings

1.7.3.1 Preconstruction Meeting

a. Contractor representatives who have a responsibility or significant role in accident prevention on the project must attend the preconstruction meeting. This includes the Project Superintendent, Site Safety and Occupational Health Officer, Quality Control Manager, or any other assigned safety and health professionals who participated in the development of the APP (including the Activity Hazard Analyses (AHAs) and special plans, program, and procedures associated with it).

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

c. Deficiencies in the submitted APP, identified during the Contracting Officer's review, must be corrected, and the APP re-submitted for review prior to the start of construction. Work is not permitted to begin until an APP is established that is acceptable to the Contracting Officer.

1.7.3.2 Safety Meetings

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

1.8 ACCIDENT PREVENTION PLAN (APP)

1.8.1 APP - Construction

A qualified person must prepare the written site-specific APP. Prepare the APP in accordance with the format and requirements of EM 385-1-1, Appendix A, and as supplemented herein. Cover all paragraph and subparagraph elements in EM 385-1-1, Appendix A. The APP must be job-specific and address any unusual or unique aspects of the project or activity for which it is written. The APP must interface with the Contractor's overall safety

and health program referenced in the APP in the applicable APP element, and made site-specific. Describe the methods to evaluate past safety performance of potential Subcontractors in the selection process. Also, describe innovative methods used to ensure and monitor safe work practices of Subcontractors. The Government considers the Prime Contractor to be the "controlling authority" for all work site safety and health of the Subcontractors. Contractor's 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 trade/craft from interfering with or creating hazardous working conditions for other trades/crafts, and inspecting Subcontractor operations to ensure that accident prevention responsibilities are being carried out. The APP must be signed by an officer of the firm (Prime Contractor senior person), the individual preparing the APP, the on-site superintendent, the designated SSHO, the Contractor Quality Control Manager, and any designated Certified Safety Professional (CSP) or Certified Health Physicist (CIH). The SSHO must provide and maintain the APP and a log of signatures by each Subcontractor foreman, attesting that they have read and understand the APP, and make the APP and log available on-site to the Contracting Officer. If English is not the foreman's primary language, the Prime Contractor must provide an interpreter.

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

1.8.2 Names and Qualifications

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

a. Names and qualifications (resumes including education, training, experience, and certifications) of site safety and health personnel designated to perform work on this project to include the designated Site Safety and Health Officer and other competent and qualified personnel to be used. Specify the duties of each position.

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

maintenance.

1.8.3 Plans

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

1.8.3.1 Confined Space Entry Plan

Develop a confined or enclosed space entry plan in accordance with 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).

1.8.3.2 Standard Lift Plan (SLP)

Plan lifts to avoid situations where the operator cannot maintain safe control of the lift. Prepare a written SLP in accordance with EM 385-1-1, Section 16.A.03, using Form 16-2 for every lift or series of lifts (if duty cycle or routine lifts are being performed). The SLP must be developed, reviewed, and accepted by all personnel involved in the lift in conjunction with the associated AHA. Signature on the AHA constitutes acceptance of the plan. Maintain the SLP on the LHE for the current lift(s) being made. Maintain historical SLPs for a minimum of three (3) months.

1.8.3.3 Critical Lift Plan - Crane or Load Handling Equipment

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

a. Lifts over 50 percent of the capacity of barge mounted mobile crane's hoist.

b. When working around energized power lines where the work will get closer than the minimum clearance distance in EM 385-1-1 Table 16-1.

c. For lifts with anticipated binding conditions.

d. When erecting cranes.

1.8.3.3.1 Critical Lift Plan Planning and Schedule

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

1.8.3.3.2 Lifts of Personnel

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

1.8.3.4 Barge Mounted Mobile Crane Lift Plan

Provide a Naval Architecture Analysis and include an LHE Manufacturer's Floating Service Load Chart in accordance with EM 385-1-1, Section 16.L.03.

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

Multi-purpose machines, material handling equipment, and construction equipment used to lift loads that are suspended by rigging gear, require proof of authorization from the machine OEM that the machine is capable of making lifts of loads suspended by rigging equipment. Written approval from a qualified registered professional engineer, after a safety analysis is performed, is allowed in lieu of the OEM's approval. Demonstrate that the operator is properly trained and that the equipment is properly configured to make such lifts and is equipped with a load chart.

1.8.3.6 Fall Protection and Prevention (FP&P) Plan

The plan must be in accordance with the requirements of EM 385-1-1, Section 21.D and ASSP Z359.2, be site specific, and address all fall hazards in the work place and during different phases of construction. Address how to protect and prevent workers from falling to lower levels when they are exposed to fall hazards above 6 feet. A competent person or qualified person for fall protection must prepare and sign the plan documentation. Include fall protection and prevention systems, equipment and methods employed for every phase of work, roles and responsibilities, assisted rescue, self-rescue and evacuation procedures, training requirements, and monitoring methods. Review and revise, as necessary, the Fall Protection and Prevention Plan documentation as conditions change, but at a minimum every six (6) months, for lengthy projects, reflecting any changes during the course of construction due to changes in personnel, equipment, systems, or work habits. Keep and maintain the accepted Fall Protection and Prevention Plan documentation at the job site for the duration of the project. Include the Fall Protection and Prevention Plan documentation in the Accident Prevention Plan (APP).

1.8.3.7 Rescue and Evacuation Plan

Provide a Rescue and Evacuation Plan in accordance with EM 385-1-1 Section 21.N and ASSP Z359.2, and include in the FP&P Plan and as part of the APP. Include a detailed discussion of the following: methods of rescue; methods of self-rescue; equipment used; training requirement; specialized training for the rescuers; procedures for requesting rescue and medical assistance; and transportation routes to a medical facility.

1.8.3.8 Hazardous Energy Control Program (HECP)

Develop a HECP in accordance with EM 385-1-1 Section 12, 29 CFR 1910.147, 29 CFR 1910.333, 29 CFR 1915.89, ASSP Z244.1, and ASSP A10.44. Submit this HECP as part of the Accident Prevention Plan (APP). Conduct a preparatory meeting and inspection with all effected personnel to coordinate all HECP activities. Document this meeting and inspection in accordance with EM 385-1-1, Section 12.A.02. Ensure that each employee is familiar with and complies with these procedures.

1.8.3.9 Excavation Plan

Identify the safety and health aspects of excavation and provide and prepare the plan in accordance with EM 385-1-1, Section 25.A and Section 31 23 00.00 22 EXCAVATION AND FILL (PWD ME).

1.8.3.10 Lead, Cadmium, and Chromium Compliance Plan

Identify the safety and health aspects of work involving lead, cadmium, and chromium, including occupant protection and prepare in accordance with Section 02 83 00.00 22 MANAGEMENT OF LEAD, CADMIUM, AND CHROMIUM DURING RENOVATION, DEMOLITION, REMOVAL, AND ABATEMENT (PNS PROJECTS).

1.8.3.11 Asbestos Hazard Abatement Plan

If asbestos containing materials are suspected to be uncovered stop work and report to the Contracting Officer for further guidance.

1.8.3.12 Site Demolition Plan

Identify the safety and health aspects, and prepare in accordance with Section 02 41 00 DEMOLITION and referenced sources. Include engineering survey as applicable.

1.9 ACTIVITY HAZARD ANALYSIS (AHA)

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

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

1.9.1 AHA Management

Review the AHA list periodically (at least monthly) at the Contractor supervisory safety meeting, and update as necessary when procedures, scheduling, or hazards change. Use the AHA during daily inspections by the SSHO to ensure the implementation and effectiveness of the required safety and health controls for that work activity.

1.9.2 AHA Signature Log

Each employee performing work as part of an activity, task, or DFOW must review the AHA for that work and sign a signature log specifically maintained for that AHA prior to starting work on that activity. The SSHO

must maintain a signature log on site for every AHA. Provide employees whose primary language is other than English, with an interpreter to ensure a clear understanding of the AHA and its contents.

1.10 DISPLAY OF SAFETY INFORMATION

1.10.1 Safety Bulletin Board

Prior to commencement of work, erect a safety bulletin board at the job site. Where size, duration, or logistics of project do not facilitate a bulletin board, an alternative method, acceptable to the Contracting Officer, that is accessible and includes all mandatory information for employee and visitor review, may be deemed as meeting the requirement for a bulletin board. Include and maintain information on safety bulletin board as required by EM 385-1-1, Section 01.A.07. Additional items required to be posted include:

a. Confined space entry permit.

b. Hot work permit.

1.10.2 Safety and Occupational Health (SOH) Deficiency Tracking System

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

a. Date deficiency identified;

b. Description of deficiency;

c. Name of person responsible for correcting deficiency;

d. Projected resolution date; and

e. Date actually resolved.

1.11 SITE SAFETY REFERENCE MATERIALS

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

1.12 EMERGENCY MEDICAL TREATMENT

Contractors must arrange for their own emergency medical treatment in accordance with EM 385-1-1. Government has no responsibility to provide emergency medical treatment.

1.13 NOTIFICATIONS AND REPORTS

1.13.1 Mishap Notification

Notify the Contracting Officer as soon as practical, but no more than twenty-four (24) hours, after any mishaps, including recordable accidents, incidents, and near misses, as defined in EM 385-1-1 Appendix Q, any report

of injury, illness, or any property damage. For LHE or rigging mishaps, notify the Contracting Officer as soon as practical but not more than four (4) hours after the mishap.

The Contractor is responsible for obtaining appropriate medical and emergency assistance and for notifying fire, law enforcement, and regulatory agencies. Immediate reporting is required for electrical mishaps, to include Arc Flash; shock; uncontrolled release of hazardous energy (includes electrical and non-electrical); load handling equipment or rigging; fall from height (any level other than same surface); and underwater diving (if applicable). These mishaps must be investigated in depth to identify all causes and to recommend hazard control measures.

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

1.13.2 Accident Reports

a. Conduct an accident investigation for recordable injuries and illnesses, property damage, and near misses as defined in EM 385-1-1, to establish the root cause(s) of the accident. Complete the applicable NAVFAC Contractor Significant Incident Report (CSIR). The Contracting Officer will provide copies of any required or special forms.

b. Near Misses: The Contracting Officer will provide the required forms. Near miss reports are considered positive and proactive Contractor safety management actions.

c. Conduct an accident investigation for any load handling equipment accident (including rigging gear accidents) to establish the root cause(s) of the accident. Complete the LHE 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.

1.13.3 LHE Inspection Reports

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

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

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

Develop a Standard Lift Plan (SLP) in accordance with EM 385-1-1, Section

16.H.03 using Form 16-2 Standard Pre-Lift Crane Plan/Checklist for each lift planned. Submit SLP to the Contracting Officer for approval within 15 calendar days in advance of planned lift.

Provide a Critical Lift Plan as required by EM 385-1-1, Section 16.H.01, using Form 16-3. Critical lifts require detailed planning and additional or unusual safety precautions. Develop and submit a critical lift plan to the Contracting Officer 30 calendar days prior to critical lift. Comply with load testing requirements in accordance with EM 385-1-1, Section 16.F.03.

1.13.5 Third Party Certification of Floating Cranes and Barge-Mounted Mobile Cranes

Floating cranes and barge-mounted mobile cranes used to perform work under the terms of this Contract must be certified in accordance with 29 CFR 1919 by an OSHA accredited person prior to submitting the required Lift Plan. Include proof of certification with the initial Lift Plan submission.

1.14 HOT WORK

1.14.1 Permit and Personnel Requirements

Submit and obtain a written permit no later than two (2) working days prior to performing "Hot Work" (i.e. welding or cutting) 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 two (2) 20 pound 4A:20 BC rated extinguishers for normal "Hot Work". The extinguishers must be current inspection tagged, and contain an approved safety pin and tamper resistant seal. It is also mandatory to have a designated FIRE WATCH for any "Hot Work" performed at the Portsmouth Naval Shipyard. The Fire Watch must be trained in accordance with NFPA 51B and remain on-site for a minimum of one hour after completion of the task or as specified on the hot work permit.

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

a. Duration of Hot Work

At the discretion of the Portsmouth Naval Shipyard Fire Inspectors, a hot work permit may be written for up to one work week, (Monday through Friday), provided work is being performed at one specific location and will not hinder any life safety code.

Hot work permits must be issued for five (5) work days with a time period not to exceed twelve (12) hours. Request for weekend permits must be submitted at least two (2) working days in advance of the work to be performed and will only be valid for the weekend requested.

b. Hot Work Within a Confined Space

Hot work permits within a confined space will be issued on a daily

basis with a time period not to exceed a twelve (12) hour shift. All requests for hot work permits within a confined space must be received a minimum of two (2) complete working days prior to entry. A duplicate copy of the air monitoring results will be furnished to the fire inspector at time of issuance.

1.14.2 Work Around Flammable Materials

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

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

1.15 RADIATION SAFETY REQUIREMENTS

Submit License Certificates, employee training records, and Leak Test Reports for radiation materials and equipment to the Contracting Officer and Radiation Safety Office (RSO), and Contracting Oversight Technician (COT) for all specialized and licensed material and equipment proposed for use on the construction project. Maintain on-site records whenever licensed radiological materials or ionizing equipment are on Government property.

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

1.15.1 Radiography Operation Planning Work Sheet

Submit a Gamma and X-Ray Radiography Operation Planning Work Sheet to Contracting Officer 14 days prior to commencement of operations involving radioactive materials or radiation generating devices for all equipment to be used on Portsmouth Naval Shipyard. (PNSY)

The Contracting Officer and COT will review the submitted worksheet and provide questions and comments.

Contractors must use primary dosimeters process by a National Voluntary Laboratory Accreditation Program (NVLAP) accredited laboratory.

1.15.2 Site Access and Security

Coordinate site access and security requirements with the Contracting Officer and COT for all radiological materials and equipment containing ionizing radiation that are proposed for use on a Government facility. For gamma radiography materials and equipment, a Government escort is required for any travels on the Portsmouth Naval Shipyard. The Navy COT or Government authorized representative will meet the Contractor at a designated location outside the Portsmouth Naval Shipyard, ensure safety of the materials being transported, and will escort the Contractor for gamma sources onto the Portsmouth Naval Shipyard, to the job site, and off the Portsmouth Naval Shipyard.

Provide a copy of all calibration records, and utilization records to the COT for radiological operations performed on the site.

1.15.3 Loss or Release and Unplanned Personnel Exposure

Loss or release of radioactive materials, and unplanned personnel exposures must be reported immediately to the Contracting Officer, RSO, and Portsmouth Naval Shipyard Security Department Emergency Number.

1.15.4 Site Demarcation and Barricade

Properly demark and barricade an area surrounding radiological operations to preclude personnel entrance, in accordance with EM 385-1-1, Nuclear Regulatory Commission, and Applicable State regulations and license requirements, and in accordance with requirements established in the accepted Radiography Operation Planning Work Sheet.

Do not close or obstruct streets, walks, and other facilities occupied and used by the Government without written permission from the Contracting Officer.

1.15.5 Security of Material and Equipment

Properly secure the radiological material and ionizing radiation equipment at all times, including keeping the devices in a properly marked and locked container, and secondarily locking the container to a secure point in a Contractor's vehicle or other approved storage location during transportation and while not in use. While in use, maintain a continuous visual observation on the radiological material and ionizing radiation equipment. In instances where radiography is scheduled near or adjacent to buildings or areas having limited access or one-way doors, make no assumptions 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, position a fully instructed employee inside the building or area to prevent exiting while external radiographic operations are in process.

1.15.6 Transportation of Material

Comply with 49 CFR 173 for Transportation of Regulated Amounts of Radioactive Material. Notify Local Fire authorities and the site Radiation Safety Officer (RSO) of any Radioactive Material use.

1.15.7 Schedule for Exposure or Unshielding

Actual exposure of the radiographic film or unshielding the source must be scheduled only upon final approval from the local COTS or RSO Representative.

1.15.8 Transmitter Requirements

Adhere to the Portsmouth Naval Shipyard policy concerning the use of transmitters, such as radios and cell phones. Obey Emissions control (EMCON) restrictions.

1.16 CONFINED SPACE ENTRY REQUIREMENTS.

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

1.16.1 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. Comply with EM 385-1-1, Section 34 for entry procedures. Hazards pertaining to the space must be reviewed with each employee during review of the AHA.

1.16.2 Forced Air Ventilation

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.

1.16.3 Sewer Wet Wells

Sewer wet wells require continuous atmosphere monitoring with audible alarm for toxic gas detection.

1.16.4 Rescue Procedures and Coordination with Local Emergency Responders

Develop and implement an on-site rescue and recovery plan and procedures. The rescue plan must not rely on local emergency responders for rescue from a confined space.

1.17 HIGH NOISE LEVEL PROTECTION

Operations that involve the use of equipment with output of high noise levels (i.e. jackhammers, air compressors, and explosive-actuated devices) must be coordinated with the Contracting Officer. Use of any such equipment outside normal working hours must be approved in writing by the Contracting Officer prior to commencement of work.

1.18 DIVE SAFETY REQUIREMENTS

Develop a Dive Operations Plan, AHA, emergency management plan, and personnel list that includes qualifications, for each separate diving operation. Submit these documents to the District Dive Coordinator (DDC) for review and acceptance at least 30 working days prior to commencement of diving operations. These documents must be at the diving location at all times. Provide each of these documents as a part of the project file.

The following documents are required for all Contractor diving operations. All documents must be reviewed and found acceptable by two (2) of the following: DDC/ADC/DSR, prior to start of diving operations. Contractors must submit the documents to the DDC through the Contracting Officer. Additional documentation may be required depending on the scope of the diving operation:

a. Safe Practices Manual: See EM 385-1, Section 30.A.15.

b. Dive Operations Plan(s): See EM 385-1, Section 30.A.16.

c. AHA to cover all aspects of the job: See EM 385-1, Section 30.A.17.

d. Emergency Management Plan: See EM 385-1, Section 30.A.18.

e. Dive Personnel Qualifications: See EM 385-1, Sections 30.A.05 - 30.A.09.

1.19 SEVERE STORM PLAN

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

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

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

c. Ensure that temporary erosion controls are adequate.

PART 2 PRODUCTS

2.1 CONFINED SPACE SIGNAGE

Provide permanent signs integral to or securely attached to access covers for new permit-required confined spaces. Signs for confined spaces must comply with NEMA Z535.2. 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" must be red and readable from 5 feet.

PART 3 EXECUTION

3.1 CONSTRUCTION AND OTHER WORK

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

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

a. Hard Hat

b. Long Pants

c. Appropriate Safety Shoes

d. Appropriate Class Reflective Vests

e. Gloves

f. Safety Glasses

g. Hearing Protection

h. Fall Protection

3.1.1 Worksite Communication

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

3.1.2 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.

3.1.3 Hazardous Material Exclusions

Notwithstanding any other hazardous material used in this Contract, radioactive materials or instruments capable of producing ionizing/non-ionizing radiation (with the exception of radioactive material and devices used in accordance with EM 385-1-1 such as nuclear density meters for compaction testing and laboratory equipment with radioactive sources) as well as materials which contain asbestos, mercury, polychlorinated biphenyls, di-isocyanates, lead-based paint, and hexavalent chromium, are prohibited. The Contracting Officer, upon written request by the Contractor, may consider exceptions to the use of any of the above excluded materials. Low mercury lamps used within fluorescent lighting fixtures are allowed as an exception without further Contracting Officer approval. Notify the Radiation Safety Officer (RSO) prior to excepted items of radioactive material and devices being brought on Portsmouth Naval Shipyard.

3.1.4 Unforeseen Hazardous Material

Contract documents identify materials such as PCB, lead paint, and friable and non-friable asbestos and other OSHA regulated chemicals (i.e. 29 CFR Part 1910.1000). If material(s) that may be hazardous to human health upon disturbance are encountered during construction operations, 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 the material is not hazardous or poses no danger, the Government will direct the Contractor to proceed without change. If the 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 UTILITY OUTAGE REQUIREMENTS

Apply for utility outages at least 15 calendar days in advance. At a minimum, the written request must include the location of the outage, utilities being affected, duration of outage, any necessary sketches, the location of the outage, LOTO boundaries and a description of the means to fulfill energy isolation requirements in accordance with EM 385-1-1, Section 11.A.02 (Isolation). Some examples of energy isolation devices and procedures are highlighted in EM 385-1-1, Section 12.D. In accordance with EM 385-1-1, Section 12.A.01, where outages involve Government or Utility personnel, coordinate with the Government on all activities involving the control of hazardous energy.

These activities include, but are not limited to, a review of HECP and HEC procedures, as well as applicable Activity Hazard Analyses (AHAs). In accordance with EM 385-1-1, Section 11.A.02 and NFPA 70E, work on energized electrical circuits must not be performed without prior Government authorization. Government permission is considered through the permit process and submission of a detailed AHA. Energized work permits are considered only when de-energizing introduces additional or increased hazard or when de-energizing is infeasible.

3.3 OUTAGE COORDINATION MEETING

After the utility outage request is approved and prior to beginning work on the utility system requiring shut-down, conduct a pre-outage coordination meeting in accordance with EM 385-1-1, Section 12.A. This meeting must include the Prime Contractor, the Prime and Subcontractors performing the work, the Contracting Officer, and the NAVFAC PWD ME UEM representative. All parties must fully coordinate HEC activities with one another. During the coordination meeting, all parties must discuss and coordinate on the scope of work, HEC procedures (specifically, the lock-out/tag-out procedures for worker and utility protection), the AHA, assurance of trade personnel qualifications, identification of competent persons, and compliance with HECP training in accordance with EM 385-1-1, Section 12.C. Clarify when personal protective equipment is required during switching operations, inspection, and verification.

3.4 CONTROL OF HAZARDOUS ENERGY (LOCKOUT/TAGOUT)

Provide and operate a Hazardous Energy Control Program (HECP) in accordance with EM 385-1-1 Section 12, 29 CFR 1910.333, 29 CFR 1915.89, ASSP A10.44, NFPA 70E, and paragraph entitled HAZARDOUS ENERGY CONTROL PROGRAM (HECP) herein.

Contracting Officer will, upon 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, must operate any switch, valve, or equipment that has an official lockout/tag-out tag attached to it, nor can such tag be removed except as provided in this Section.

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

When work is to be performed on electrical circuits, only qualified

personnel are to 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/she notifies the holder of the tag stub each time he/she enters and departs from the protected area.

Portsmouth Naval Shipyard 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 Portsmouth Naval Shipyard. The use of another colored locks and tags (blue for Portsmouth Naval Shipyard 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 must 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 must be secured in a passive condition with the appropriate vents, pins, and locks.

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

Vent valves must be tagged open during the course of the work. (PNSY)

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

3.4.1 Safety Preparatory Inspection Coordination Meeting with the Government or Utility

For electrical distribution equipment that is to be operated by Government or Utility personnel, the Prime Contractor and the Subcontractor performing the work must attend the safety preparatory inspection coordination meeting, which will also be attended by the Contracting Officer's Representative, and required by EM 385-1-1, Section 12.A.02. The meeting will occur immediately preceding the start of work and following the completion of the outage coordination meeting. Both the safety preparatory inspection coordination meeting and the outage coordination meeting must occur prior to conducting the outage and commencing with lockout/tagout procedures.

3.4.2 Lockout/Tagout Isolation

Where the Government or Utility performs equipment isolation and lockout/tagout, the Contractor must place their own locks and tags on each energy-isolating device and proceed in accordance with the HECP. Before any work begins, both the Contractor and the Government or Utility must perform energy isolation verification testing while wearing required PPE detailed in the Contractor's AHA and required by EM 385-1-1, Sections 05.I and 11.B. Install personal protective grounds, with tags, to eliminate the potential for induced voltage in accordance with EM 385-1-1, Section 12.E.06.

3.4.3 Lockout/Tagout Removal

Upon completion of work, conduct lockout/tagout removal procedure in accordance with the HECP. In accordance with EM 385-1-1, Section 12.E.08, each lock and tag must be removed from each energy isolating device by the authorized individual or systems operator who applied the device. Provide formal notification to the Government (by completing the Government form if provided by Contracting Officer's Representative), confirming that steps of de-energization and lockout/tagout removal procedure have been conducted and certified through inspection and verification. Government or Utility locks and tags used to support the Contractor's work will not be removed until the authorized Government employee receives the formal notification.

3.4.4 Tag Placement (PNSY)

Lockout/tag-out tags must 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 must 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 performed; 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."

3.4.5 Tag Removal (PNSY)

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 must turn in his/her 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.

3.5 FALL PROTECTION PROGRAM

Establish a fall protection program, for the protection of all employees exposed to fall hazards. Within the program include company policy, identify roles and responsibilities, education and training requirements, fall hazard identification, prevention and control measures, inspection, storage, care and maintenance of fall protection equipment, and rescue and evacuation procedures in accordance with ASSP Z359.2 and EM 385-1-1, Sections 21.A and 21.D.

3.5.1 Training

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

ASSP Z359.2 in the AHA.

3.5.2 Fall Protection Equipment and Systems

Enforce use of personal fall protection equipment and systems designated (to include fall arrest, restraint, and positioning) for each specific work activity in the Site Specific Fall Protection and Prevention Plan and AHA at all times when an employee is exposed to a fall hazard. Protect employees from fall hazards as specified in EM 385-1-1, Section 21.

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

3.5.2.1 Additional Personal Fall Protection

In addition to the required fall protection systems, other protection measures such as safety skiffs, personal floatation devices, and life rings, are required when working above or next to water in accordance with EM 385-1-1, Sections 21.O through 21.O.06. Personal fall protection systems and equipment are required when working from an articulating or extendible boom, swing stages, or suspended platform. In addition, personal fall protection systems are required when operating other equipment such as scissor lifts. The need for tying-off in such equipment is to prevent ejection of the employee from the equipment during raising, lowering, travel, or while performing work.

3.5.2.2 Personal Fall Protection Harnesses

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

3.5.3 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 a roof having a slope less

than or equal to 4:12 (vertical to horizontal), protect personnel from falling by the use of conventional fall protection systems (personal fall arrest/restraint systems, guardrails, or safety nets) in accordance with EM 385-1-1, Section 21 and 29 CFR 1926.500. A safety monitoring system is not adequate fall protection and is not authorized.

(2) For work greater than 6 feet from the unprotected roof edge, in addition to the use of conventional fall protection systems the use of a warning line system is also permitted, in accordance with 29 CFR 1926.500 and EM 385-1-1, Section 21.L.

b. Steep-Sloped Roofs: Work on a roof having a slope greater than 4:12 (vertical to horizontal) requires a personal fall arrest system, guardrails with toe-boards, or safety nets. This requirement also applies to residential or housing type construction.

3.5.4 Horizontal Lifelines (HLL)

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

3.5.5 Guardrails and Safety Nets

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

3.5.6 Rescue and Evacuation Plan and Procedures

When personal fall arrest systems are used, ensure that the mishap victim can self-rescue or can be rescued promptly should a fall occur. Prepare a Rescue and Evacuation Plan and include a detailed discussion of the following: methods of rescue; methods of self-rescue or assisted-rescue; equipment used; training requirement; specialized training for the rescuers; procedures for requesting rescue and medical assistance; and transportation routes to a medical facility. Include the Rescue and Evacuation Plan within the Activity Hazard Analysis (AHA) for the phase of work, in the Fall Protection and Prevention (FP&P) Plan, and the Accident Prevention Plan (APP). The plan must be in accordance with the requirements of EM 385-1-1, ASSP Z359.2, and ASSP Z359.4.

3.6 SHIPYARD REQUIREMENTS

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

3.7 WORK PLATFORMS

3.7.1 Scaffolding

Provide employees with a safe means of access to the work area on the scaffold. Climbing of any scaffold braces or supports not specifically designed for access is prohibited. Comply with the following requirements:

a. Scaffold platforms greater than 20 feet in height must be accessed by use of a scaffold stair system.

b. Ladders commonly provided by scaffold system manufacturers are prohibited for accessing scaffold platforms greater than 20 feet maximum in height.

c. An adequate gate is required.

d. Employees performing scaffold erection and dismantling must be qualified.

e. Scaffold must be capable of supporting at least four times the maximum intended load, and provide appropriate fall protection as delineated in the accepted fall protection and prevention plan.

f. Stationary scaffolds must be attached to structural building components to safeguard against tipping forward or backward.

g. Special care must be given to ensure scaffold systems are not overloaded.

h. Side brackets used to extend scaffold platforms on self-supported scaffold systems for the storage of material are prohibited. The first tie-in must be at the height equal to 4 times the width of the smallest dimension of the scaffold base.

i. Scaffolding other than suspended types must bear on base plates upon wood mudsills (2 in x 10 in x 8 in minimum) or other adequate firm foundation.

j. Scaffold or work platform erectors must have fall protection during the erection and dismantling of scaffolding or work platforms that are more than six feet.

k. 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.

3.7.2 Elevated Aerial Work Platforms (AWPs)

Workers must be anchored to the basket or bucket in accordance with manufacturer's specifications and instructions (anchoring to the boom may only be used when allowed by the manufacturer and permitted by the CP). Lanyards used must be sufficiently short to prohibit a worker from climbing out of the basket. The climbing of rails is prohibited. Lanyards with built-in shock absorbers are acceptable. Self-retracting devices are not acceptable. Tying off to an adjacent pole or structure is not permitted unless a safe device for 100 percent tie-off is used for the transfer.

Use of AWPs must be operated, inspected, and maintained as specified in the

operating manual for the equipment and delineated in the AHA. Operators of AWPs must be designated as qualified operators by the Prime Contractor. Maintain proof of qualifications on site for review and include in the AHA.

3.8 EQUIPMENT

3.8.1 Material Handling Equipment (MHE)

a. Material handling equipment such as forklifts must not be modified with work platform attachments for supporting employees unless specifically delineated in the manufacturer's printed operating instructions. Material handling equipment fitted with personnel work platform attachments are prohibited from traveling or positioning while personnel are working on the platform.

b. The use of hooks on equipment for lifting of material must be in accordance with manufacturer's printed instructions. Material Handling Equipment Operators must be trained in accordance with OSHA 29 CFR 1910, Subpart N.

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

3.8.2 Load Handling Equipment (LHE)

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

a. Equip cranes and derricks as specified in EM 385-1-1, Section 16.

b. Notify the Contracting Officer 15 working days in advance of any LHE entering the Portsmouth Naval Shipyard, in accordance with EM 385-1-1, Section 16.A.02, so that necessary quality assurance spot checks can be coordinated. Prior to cranes entering Federal activities, a Crane Access Permit must be obtained from the Contracting Officer. A copy of the permitting process will be provided at the Preconstruction Meeting. Contractor's operator must remain with the crane during the spot check. Rigging gear must comply with OSHA ASME B30.9 Standards safety standards.

c. Comply with the LHE manufacturer's specifications and limitations for erection and operation of cranes and hoists used in support of the work. Perform erection under the supervision of a designated person (as defined in ASME B30.5). Perform all testing in accordance with the manufacturer's recommended procedures.

d. Comply with ASME B30.5 for mobile and locomotive cranes, ASME B30.22 for articulating boom cranes, ASME B30.3 for construction tower cranes, ASME B30.8 for floating cranes and floating derricks, ASME B30.9 for slings, ASME B30.20 for below the hook lifting devices, and ASME B30.26 for rigging hardware.

e. Under no circumstance 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 must be alert to this special hazard and follow the requirements of EM 385-1-1 Section 11, and ASME B30.5 or ASME B30.22 as applicable.

g. Do not use crane suspended personnel work platforms (baskets) unless the Contractor proves that using any other access to the work location would provide a greater hazard to the workers or is impossible. Do not lift personnel with a line hoist or friction crane. Additionally, submit a specific AHA for this work to the Contracting Officer. Ensure the activity and AHA are thoroughly reviewed by all involved personnel.

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, except for employees required to handle the load.

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 access where accessible areas of the LHE's rotating superstructure poses a risk of striking, pinching, or crushing personnel.

m. Maintain inspection records in accordance by EM 385-1-1, Section 16.D, including shift, monthly, and annual inspections, the signature of the person performing the inspection, and the serial number or other identifier of the LHE that was inspected. Records must be available for review by the Contracting Officer.

n. Maintain written reports of operational and load testing in accordance with EM 385-1-1, Section 16.F, listing the load test procedures used along with any repairs or alterations performed on the LHE. Reports must be available for review by the Contracting Officer.

o. Certify that all LHE 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. At wind speeds greater than 20 mph, the operator, the rigger, and the lift supervisor must cease all crane operations, evaluate conditions and determine if the lift may proceed. Base the determination to proceed or not on wind calculations per the manufacturer and a reduction in LHE rated capacity if applicable. Include this maximum wind speed determination as part of the activity hazard analysis plan for that operation.

q. Follow FAA guidelines when required based on project location.

3.8.3 Machinery and Mechanized Equipment

a. Proof of qualifications for operator must be kept on the project site

for review.

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

3.8.4 Base Mounted Drum Hoists

a. Operation of base mounted drum hoists must be in accordance with EM 385-1-1 and ASSP A10.22.

b. Rigging gear must be in accordance with applicable ASME/OSHA standards.

c. When used on telecommunication towers, base mounted drum hoists must be in accordance with TIA-1019, TIA-222, ASME B30.7, 29 CFR 1926.552, and 29 CFR 1926.553.

d. When used to hoist personnel, the AHA must include a written standard operating procedure. Operators must have a physical examination in accordance with EM 385-1-1 Section 16.B.05 and trained, at a minimum, in accordance with EM 385-1-1 Section 16.U and 16.T. The base mounted drum hoist must also comply with OSHA Instruction CPL 02-01-056 and ASME B30.23.

e. Material and personnel must not be hoisted simultaneously.

f. Personnel cage must be marked with the capacity (in number of persons) and load limit in pounds.

g. Construction equipment must not be used for hoisting material or personnel or with trolley/tag lines. Construction equipment may be used for towing and assisting with anchoring guy lines.

3.8.5 Use of Explosives

Use of explosives is not allowed.

3.9 EXCAVATIONS AND UTILITY LOCATING

Soil classification must be performed by a competent person in accordance with 29 CFR 1926 and EM 385-1-1.

3.9.1 Utility Locations

A. 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.

B. Underground Utilities Location

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 14calendar 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 Form (Attachment B) at 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 Attachment B 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.

The Contractor shall maintain the utility markings though 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 (DSC) if there are any questions regarding the underground utilities or the Dig Safe notification.

C. Third Party Utility Locate

The Contractor must provide the services of a third party, qualified independent utility locating company/person(s) (Cannot be the Government's Utility Locating Firm) to positively identify underground utilities in the work area. The third party independent locating firm is in addition to the PWD ME Dig Safe Process.

The Third Party review must be completed after the PWD ME Dig Safe marking have been completed. Once the Third Party Locate Company has completed their review of the excavation area and the Government markings are confirmed, the Third Party Locate Company and Contractor must sign the Third Party Utility Locate Certification Form (Attachment C) and submit the

form to the Contracting Officer prior to commencing excavation. If the Third Party Locate Company finds any discrepancies with the Government's utility markings, the Contractor must notify the Contracting Officer immediately.

3.9.2 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.

3.9.3 Utilities Within and Under Concrete, Bituminous Asphalt, and Other Impervious Surfaces (Including Dry Dock and Berthing Walls)

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 Portsmouth Naval Shipyard utility departments in addition to location and depth verification by a third party, independent, private locating company. The third party, independent, private locating company must locate utility depth by use of Ground Penetrating Radar (GPR), X-ray, bore scope, or ultrasound prior to the start of demolition and construction. 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.

3.9.4 Excavating with Hazardous or Mission Critical Utilities Within the Excavation Area

a. The Contractor must employ supplement daily Dig Safe procedures to include an additional checkoff on Contractor Daily Activity Plan to confirm all utilities have been clearly marked and reviewed with the SSHO. The SSHO & the Excavator must complete and sign UTILITY LOCATE - PRE-EXCAVATION SAFETY CHECKLIST (Attachment D). This checklist must be reviewed and signed by the PWD ME ET prior to the commencing any excavation/trenching work.

b. The Contractor must provide a Dig Safe laminated utility color coding system posted in or near all heavy digging equipment for easy reference to type of utility.

c. The SSHO must complete a pre-excavation walk as part of the morning procedure to help ensure all known utilities are identified and markings are refreshed with the appropriate color-coded paint. The Excavation/Trenching Competent person must complete the Contractor Daily Checklist for Trenching/Excavation included in Attachment E. The Daily Checklist must be completed prior commencing excavation/trenching work and must be submitted with the CM/ET daily.

d. Contractor must provide additional danger signage, to mark areas of known live underground utilities.

e. Contractor must ensure a ‘spotter’ accompanies the equipment operator during excavation work.

f. Contractor must provide Construction CM/ET notification no later than 7 working days prior to the date of the preparatory and initial pre-excavation/demo safety review meeting.

g. The Contractor must confirm and identify the closest utility isolation points and develop mitigation strategies with the utility owner (Coordinate with the PWD ME DSC) to ensure the safe excavation adjacent to these utilities. Utility Outages to isolate utility systems may need to be considered in circumstances where the excavation work cannot be completed safely.

3.10 ELECTRICAL

Perform electrical work in accordance with EM 385-1-1, Sections 11 and 12.

3.10.1 Conduct of Electrical Work

As delineated in EM 385-1-1, electrical work is to be conducted in a de-energized state unless there is no alternative method for accomplishing the work. In those cases obtain an energized work permit from the Contracting Officer. The energized work permit application must be accompanied by the AHA and a summary of why the equipment/circuit needs to be worked energized. 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. Attach temporary grounds in accordance with ASTM F855 and IEEE 1048. 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 is 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 are permitted to enter. When work requires work near energized circuits as defined by NFPA 70, high voltage personnel must use personal protective equipment that includes, as a minimum, electrical hard hat, safety shoes, insulating gloves, and 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. Ensure that each employee is familiar with and complies with these procedures and 29 CFR 1910.147.

3.10.2 Qualifications

Electrical work must be performed by QP personnel with verifiable credentials who are familiar with applicable code requirements. Verifiable credentials consist of State, National, and Local Certifications or Licenses that a Master or Journeyman Electrician may hold, depending on work being performed, and must be identified in the appropriate AHA. Journeyman/Apprentice ratio must be in accordance with State and Local requirements applicable to where work is being performed.

3.10.3 Arc Flash

Conduct a hazard analysis/arc flash hazard analysis whenever work on or near energized parts greater than 50 volts is necessary, in accordance with NFPA 70E.

All personnel entering the identified arc flash protection boundary must be QPs and properly trained in NFPA 70E requirements and procedures. Unless permitted by NFPA 70E, no Unqualified Person is permitted to approach nearer than the Limited Approach Boundary of energized conductors and circuit parts. Training must be administered by an electrically qualified source and documented.

3.10.4 Grounding

Ground electrical circuits, equipment and enclosures in accordance with NFPA 70 and IEEE C2 to provide a permanent, continuous and effective path to ground unless otherwise noted by EM 385-1-1.

Check grounding circuits to ensure that the circuit between the ground and a grounded power conductor has a resistance low enough to permit sufficient current flow to allow the fuse or circuit breaker to interrupt the current.

3.10.5 Testing

Temporary electrical distribution systems and devices must be inspected, tested and found acceptable for Ground-Fault Circuit Interrupter (GFCI) protection, polarity, ground continuity, and ground resistance before initial use, before use after modification, and at least monthly. Monthly inspections and tests must be maintained for each temporary electrical distribution system, and signed by the electrical CP or QP.

3.10.6 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 must meet the requirements of EM 385-1-1, NFPA 70E, and OSHA electrical standards.

-- 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 Form 16-1 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.

SECTION 01 35 26 – ATTACHMENT A

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.

SECTION 01 35 26 – ATTACHMENT A

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 instructions1.12.4

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

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

- 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 reference1.2.1 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.

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** ☐	**No** ☐
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** ☐	**No** ☐
9	Does plan include a certificate of compliance?		**Yes** ☐	**No** ☐
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** ☐	**No** ☐	**N/A** ☐
12	Does the plan designate a qualified Rigger-in-Charge		**Yes** ☐	**No** ☐
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)?	**TOTAL**	**lbs.**	
17	What is the capacity of the crane as configured		**lbs.**	
18	What percentage of crane capacity does this lift represent?		**%**	

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** ☐	**No** ☐
22	Does plan include ground loading and outrigger reaction data to determine cribbing requirements, or a Waterfront Operational Permit?		**Yes** ☐	**No** ☐	**N/A** ☐
23	For crawler crane, does the plan indicate area restrictions for operation?		**Yes** ☐	**No** ☐	**N/A** ☐
24	For floating crane, does plan include maximum allowable list?		**Yes** ☐	**No** ☐	**N/A** ☐
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** ☐	**No** ☐	**N/A** ☐
26	For mobile crane mounted on barge, does plan include revised load chart?		**Yes** ☐	**No** ☐	**N/A** ☐
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** ☐	**No** ☐
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** ☐	**No** ☐
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** ☐	**No** ☐
38	Does the plan describe the rigging procedures?			**Yes** ☐	**No** ☐
39	Does the plan indicate rigging hardware requirements?			**Yes** ☐	**No** ☐

SECTION 01 35 26 – ATTACHMENT A

CONTRACTOR CRANE ENTRY CHECKLIST

40	For personnel lifts, does the plan demonstrate compliance with 29 CFR 1926.550?	**Yes** ☐	**No** ☐	**N/A** ☐
41	Does EM 385-1-1 govern this lift?	**Yes** ☐	**No** ☐	**N/A** ☐
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?	**Yes** ☐	**No** ☐	**N/A** ☐
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?		**Yes** ☐	**No** ☐
47	What are the names of the riggers?			
48	Does the plan indicate the qualifications of the riggers?		**Yes** ☐	**No** ☐
49	Did all involved personnel (Operator, Riggers, Lift Supervisor, etc.) sign the critical lift plan?		**Yes** ☐	**No** ☐

Name	Organization	**Signature**	**Date**	**Phone**
Contracting Official:				
wed By				

FORM 16-1 Certificate of Compliance for LHE and Rigging	
This certificate shall be signed by an official of the company that provides LHE/cranes and rigging gear for any application under this contract.	
Contracting Officer's Point of Contact: (Government Designated Representative)	Phone #:
Prime Contractor/Phone #:	Contract Number:
SSHO/QC:	Phone #:
LHE Manufacturer/Type/Capacity:	
LHE Operator(s) Name(s):	
I certify that: 1. The above noted LHE and all rigging gear conform to the EM 385-1-1, applicable OSHA regulations (host country regulations in foreign countries) and applicable ASME standards. 2. The operator(s) noted above has been trained, qualified and designated in accordance with the requirements in Section 16, EM 385-1-1 for the operation of the above noted LHE. 3. The operator(s) noted above has been trained not to bypass safety devices during LHE operations. 4. The operator(s), rigger(s) and company official (staff) are aware that immediate notification to the GDA of any incident or accident involving this equipment is required.	
Company Official Signature:	Date:
Company Official Name/Title:	
Post on Crane/LHE. (In Cab and Contractor's Office for each LHE onto USACE Project/Property)	

EM 385-1-1
XX Jul 14

FORM 16-2
Standard Pre-Lift Crane Plan/Checklist

DATE: ___/___/_____ Job Number: _____ Location: _____
TIME: _____ Completed By (Competent Person):_____
NOTE: Applies to Cranes, Derricks, Hoists and Power-Operated equipment that can be used to hoist, lower and/or horizontally move a suspended load (includes excavators, forklifts, Rough Terrain equipment, etc., when used with rigging).

Crane Considerations		Yes	No
1	Are the lifts within the crane's rated capacities? (based on boom height, radius)		
2	Boom deflections considered?		
3	Have all potential crane boom obstructions been identified?		
4	Have Environmental Considerations been addressed? (Wind, Weather-Lightning)		
5	Have electrical hazards been addressed (Overhead / Underground) - Clearance distances established? - Is a spotter required? - Public Utility contact required?		
6	Crane swing radius properly barricaded and personnel advised of hazards?		

Comments:

Load		Yes	No
1	Weights and Centers of Gravity (COG) have been Determined?		
2	Anything Inside / Outside the loads that could shift during the lift?		
3	Determine if the rigging needs protection from the loads?		
4	All anchor bolts, hold downs, or fasteners have been removed?		
5	Potential for binding – are load cells required to verify the loads are free?		
6	Attachment points rated to take load weight?		
7	Are the loads structurally capable of being lifted? (bending & twisting issues)		
8	Is a critical lift plan required per the EM section 16.H?		

Comments:

FORM 16-2 (cont'd)
Standard Pre-Lift Crane Plan/Checklist

Rigging		Yes	No
1	All rigging has been inspected by a Qualified Rigger?		
2	Have sling angles been calculated?		
3	Are shackles correctly sized for the sling eyes?		
4	Are softeners needed?		

Comments:

Personnel		Yes	No
1	The roles, responsibilities and qualifications for personnel have been defined? (Operator, Lift Supervisor, Rigger, Signal Person)		
2	A Pre-Lift meeting has been conducted?		
3	Personnel trained per the EM?		

Comments:

Area Preparation		Yes	No
1	The locations for the load landings has been selected and prepared?		
2	Blocking and or Cribbing is available to set the loads on?		
3	Travel paths have been determined and cordoned off?		
4	Other personnel in the area have been notified of the lifts?		
5	Have ground bearing support questions been addressed?		

Comments:

Crane Operator: _____ Date: _____

Riggers: _____ Date: _____

Signal Person: _____ Date: _____

Others: _____ Date: _____

NAVFAC MIDLANT

CRITICAL LIFT PLAN

Date:	**Qualified Person:**
Location:	

Contractor is required to fill sections A.thru F. prior to submitting plan.
Sections G.- H to be completed by PWD Maine ET

A. TOTAL LOAD

1. Load Weight		lbs
2. Wt. of Aux. Block		lbs
3. Wt. of Main Block		lbs
4. Wt. of Lifiting Beam		lbs
5. Wt. of Sling/Shackles		lbs
6. Wt. of Jib/Ext. (erected/stowed)		lbs
7. Wt. of Hoist Rope		lbs
8. Other:		lbs
TOTAL WEIGHT		

Note: Source of load weight (Drawings, Calcs, etc.) must be attached on Page 2.

B. CRANE

1. Type of Crane Mobile Hydraulic Truck
2. Maximum Crane Capacity _____ lbs.
3. Radius (Maximum) _____ ft.
4. Radius (Minimum) _____ ft.
5. Boom Length (Maximum) _____ ft.
6. Boom Length (Minimum) _____ ft.
7. Crane Capacity (Max Radius) _____ lbs.
8. Crane Capacity (Min Radius) _____ lbs.
9. Boom Angle (Maximum) _____ deg.
10. Boom Angle (Minimum) _____ deg.
11. Gross Load of Crane _____ lbs.
12. Lift is _____ % of the Crane's rated capacity
13. If Jib/Ext. is to be used:
    Length _____ ft.
    Offset _____ ft.
14. Rated Capacity of Jib/Ext. lbs

C. HOIST ROPE

	Main	*Aux 1*	*Aux 2*	
1. # of Parts				
2. Rope Diamter				
3. Capacity				

D. RIGGING

1. Hitch Type(s) _____
2. No. of Slings: _____ Size: _____
3. Sling Type: _____
4. Sling Assembly Capacity: _____ lbs.
5. Shackle Size(s): _____
6. Shackle Rated Capacity(s) _____ lbs.

E. CRANE PLACEMENT ***(Mobile Cranes Only)***

1. Maximum Bearing Pressure _____ PSF
   Note: Bearing Pressure Calculations must be attached on Page 3.
2. Ground Conditions Suitable for Load? ____ YES / NO
   Note: Ground Condition Calculations must be attached on Page 3.
3. High Voltage or Electrical Hazards? ____ YES / NO
   Note: If Elelctrical Hazards are present they must be shown on Page 4.
4. Obstructions to Lift or Swing? ____ YES / NO
   Note: If Obstructions are present they must be shown on Page 4.
5. Travel with Load Required? ____ YES / NO
6. Other? _____

F. OPERATOR QUALIFICATIONS

1. Certified Operator? ____ YES / NO
2. Option? _____
3. Certified for Type, Class & Capacity? ____ YES / NO
4. Designated in writing by emp_____

G. COMPLETED IN FIELD:	*(YES)*	*NO*	*PWD ET*
1. Crane Inspected			
2. Rigging Inspected			
3. Crane Set-up			
4. Overhead Hazard Check			
5. Swing Check			
6. Counterweight Check			
7. Operator Qualifications			
8. Signal Person Qualifications			
9. Rigger Qualifications			
10. Load Chart in Crane			
11. Load Test			
12. Tag Lines			
13. Wind Conditions			
14. Traffic Hazard Check			
15. Site Control			

H. SIGNATURES IN FIELD:

1. Crane Operator _____
2. Rigger _____
3. Signal Person _____
4. Lift Supervisor _____
5. PWD ET _____
6. Other _____

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XX Jul 14

U.S. Army Corps of Engineers

CRITICAL LIFT PLAN

For use of this form, see EM 385-1-1, Section 16. Proponent agency is Crane HHWG.

SITE PLAN

Show here or attach site plan and sequencing

CRANE AND RIGGING ACCIDENT REPORT

Accident Category: ☐ Crane Accident ☐ Rigging Accident

Reporting Activity:

UIC:

Copy To: Navy Crane Center
Bldg. 491 NNSY
Portsmouth, VA 23709
Fax: 757-967-3808

Activity Responsible for the Accident:

UIC:

Report No:

Accident Location: | Accident Date: | Time:

BOS Contractor: ☐ Yes ☐ No If Yes, Contract No:

Contractor Equip. ☐ Yes ☐ No

Crane No: | Crane Type: | Category: | Crane OEM:

Crane Capacity: | Hoist Capacity: | Weight of Load on hook: | Weather:

Complex Lift or Complex Non-Crane Rigging Operation? ☐ Yes ☐ No

Lost Work Days? ☐ Yes ☐ No | Fatality or Permanent Disability? ☐ Yes ☐ No | Material/ Property Cost Estimate:

Accident Type (check all that apply):

☐ Personal Injury ☐ Overload ☐ Two Blocked ☐ Power Line Contact

☐ Dropped Load ☐ Derail ☐ Crane Collision ☐ Damaged Crane

☐ Damaged Rigging Gear ☐ Damaged Load ☐ Load Collision ☐ Other: Specify _____

Cause of Accident (check all that apply):

☐ Improper Operation ☐ Equipment Failure ☐ Inadequate Visibility

☐ Improper Rigging ☐ Switch Alignment ☐ Inadequate Communication

☐ Track Condition ☐ Procedural Failure ☐ Other: Specify _____

Responsibility (check all that apply):

☐ Crane Walker ☐ Rigger ☐ Operator ☐ Signal Person

☐ Maintenance ☐ Management/Supervision ☐ Other: Specify _____

Crane Function:

☐ Travel ☐ Hoist ☐ Rotate ☐ Luffing ☐ Telescoping ☐ Other ☐ N/A

Is this accident indicative of a recurring problem? ☐ Yes ☐ No

If yes, list Accident Report Nos.: _____

ATTACH COMPLETE AND CONCISE SITUATION DESCRIPTION AND CORRECTIVE/PREVENTIVE ACTIONS TAKEN AS ENCLOSURE (1). Include root 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.

INCLUDE: Printed Name, Code and Date.

Preparer:	Phone:	E-mail:	Code:	Date:
Concurrence		Code:	Date:	
Concurrence WHE Program Manager (if Applicable)		Code:	Date:	
Certifying Official (Crane Accident Only):				

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.

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. build flg 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•. 120.000pounds). 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 hoot.
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 NA 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)

NEAR MISS AND UNPLANNED OCCURRENCE REPORT

Near Miss Category: ☐ Crane Near Miss ☐ Rigging Near Miss

☐ Unplanned Occurrence

Reporting Activity: **UIC:**	**Copy To:** Navy Crane Center Bldg. 491 NNSY Portsmouth, VA 23709 Fax: 757-967-3808

Activity Responsible for the Near Miss: **UIC:**	**Report No:**		
	Location:	**Near Miss Date:**	**Time:**
BOS Contractor: ☐ Yes ☐ No **If Yes, Contract No:**	**Contractor Equip.** ☐ Yes ☐ No		

Crane No:	**Crane Type:**	**Category:**	**Crane OEM:**

Crane Capacity:	**Hoist Capacity:**	**Weight of Load on hook:**	**Weather:**

Complex Lift or Complex Non-Crane Rigging Operation? ☐ Yes ☐ No

Is this near miss indicative of a recurring problem? ☐ Yes ☐ No

In the space below, include a description of the event, root cause and corrective actions taken to prevent recurrence:

Brief description:

Root cause:

Corrective Actions:

INCLUDE: Printed Name, Code and Date unless otherwise specified.

Preparer:	**Phone:**	**E-mail:**	**Code:**	**Date:**

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.

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, Of 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 reoccurring problem? Check Yes of 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)

Public Works Department, Maine

ATTACHMENT B

PWD-ME DIG SAFE UTILITY LOCATE REQUEST FORM

A Utility Locate Request Form is required for ANY Excavation (i.e. ground penetrating or concrete slab cutting, coring or drilling) either inside or outside of a building, which will penetrate more than 3", on the Shipyard. This Form shall be submitted to PWD-ME DSC at least fourteen (14) calendar days prior to Excavation.

PART 1 INFORMATION THE EXCAVATOR WILL NEED TO OBTAIN A DIG SAFE TICKET (when the Excavator contacts DIG SAFE they will obtain a Dig Safe Ticket as proof of notification.)

Caller Details:

Caller Name _____Title_____

Phone #_____ Fax #_____ Alt # _____

Email address _____ Business Hours _____ to _____

Company Name_____

Address_____

City_____ State _____ Zip _____

Location Details (where excavation is planned)

(Check one) State: MA_____ME_____NH_____RI_____VT_____

City/Town _____

(Optional) Latitude _____ Longitude _____

Address/Intersection_____

Nearest Cross Street _____

Additional Information _____

Type of Work_____

Excavation Planned Depth (feet) _____

Area (i.e. St to building, in the St., sidewalk area, right side of building)

_____

Pre-marked? Yes _____ No _____

Excavation planned Start Month _____Day _____Year _____ Time (military) _____

Excavator Doing Work (if not same as above)_____

Naval Facilities Engineering Command

ATTACHMENT B (CONT'D)

PWD-ME DIG SAFE UTILITY LOCATE REQUEST FORM

A Utility Locate Request Form is required for ANY Excavation (i.e. ground penetrating or concrete slab cutting, coring or drilling) either inside or outside of a building, which will penetrate more than 3", on the Shipyard. Submit this Form to PWD-ME DSC at least fourteen (14) calendar days prior to Excavation.

Part I – Completed by the Excavator.

Today's Date: ____/____/_____ DIG SAFE Ticket #:_____
Utility Companies Dig Safe will notify: _____

Requested by: _____Phone #:_____

Code # / Company: _____ E-mail:_____

Contract #:_____Project Title: _____

Shipyard POC: _____Phone #_____

Excavation Location: _____Area Pre-Marked YES____, NO_____

Type of work: _____

Depth: (ft): _____ Anticipated Excavation Date: ___/____/___Time: (military) _____

Attach a map or the contract drawings showing the excavation/ground penetrating area.

PWD ME Construction Contractors: Complete Part 1 and Submit Form to PWD ME CM/ET

PWD ME AE Firms/Sub consultants: Complete Part 1 and Submit Form to PWD ME DM
Shipyard Personnel: Complete Parts 1 & 2 and Submit Form to PWD-ME DSC

Part 2 – To be completed by the PWD ME CM/ET/DM (If Shipyard work, Part 2 must be completed by Requestor)

Date: ___/___/____ Name: _____Phone #_____
Locate Priority: Routine (> 14 days) _____; Urgent (< 14 days) _____; Emergency (<2 days) _____ (DSC Approval Req.)

Part 1 Reviewed and Complete: YES_____, NO_____ Initial: _____

Submit Completed Form to DSC. The DSC will review the Request and forward to the PWD ME FSC Utility Locate Contract Rep who will review and forward to the Utility Locating Company for action.

Part 3 – To be completed by FSC Utility Locating Company

Approved by FSC Utility Locate Contractor: Initials _____

Date Utilities marked in the field: _____/____/_____ Name: _____

Comments: _____

Utility Plan Discrepancies Noted: YES____, NO____ PWD ME FSC PAR & DSC Notified: YES____ NO____ (notification is required if there are Plan Discrepancies)
Comments: _____

ATTACHMENT B (CONT'D)

Submit to PWD ME FSC Contract Rep who will forward to the DSC. If Plan Discrepancies are noted, provide a scaled markup plan showing the correct utility locations.

Part 4 – To be completed by PWD ME DSC

Date___/____/____ Logged Into Database: YES___ NO ____ #_____

Any Hazardous/Mission Critical Utilities within 10' (within 20' of gas line) of Excavation Area: YES___ NO___ *(if YES, ensure Excavator is briefed to include additional controls of Appendix B.)*

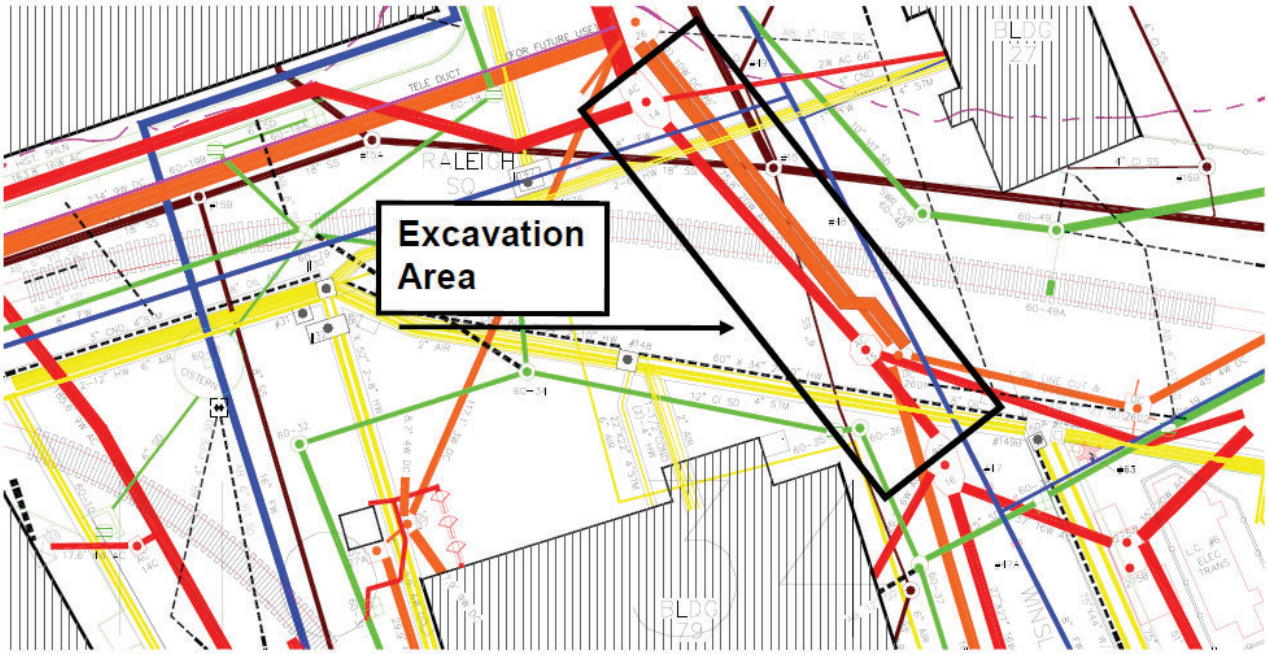
Comments: _____

DSC return a copy of the completed Form to PWD ME CM/ET/DM or Shipyard Personnel Requesting the Utility Locate.

PWD ME CM/ET/DM/Requestor ensure the Excavator is aware if any Plan Discrepancies were found and to use extreme caution when excavating.

If Plan Discrepancies are noted, the PWD DSC shall coordinate any Utility Plan Updates with PWD DC CADD Rep.

Sample Drawing



ATTACHMENT C
CONTRACTOR UTILITY LOCATE – PRE-EXCAVATION SAFETY CHECKLIST

Project Title: _____
Prime Contractor: _____
Contract No.: _____
Excavator: _____

_____Gov't and Utility (if listed in Part 1 ATTACHMENT A) Dig Safe Markings Completed & Visible in the field.
_____PWD ME Dig Safe Utility Locate Request Form returned from DSC and any Noted Discrepancies are Resolved.
_____Contractor's Independent Third Party Utility Locate Completed and any discrepancies are resolved with PWD-ME (Attach Third Party Certification Form).

Excavating with Hazardous or Mission Critical Utilities within 10' of the excavation area (within 20' of gas line) (as identified by DSC or plans): Yes_____ or No: _____ If Yes complete the following:

_____The Contractor must supplement daily Dig Safe procedures to include an additional checkoff on Contractor Daily Activity Plan ensuring all utilities have been clearly marked and reviewed with the SSHO.

_____The Contractor must have a Dig Safe laminated utility color coding system posted in or near all heavy digging equipment for easy reference to type of utility.

_____The SSHO must complete a pre-excavation walk as part of the morning procedure to ensure all known utilities are identified and markings are refreshed with the appropriate color-coded paint.

_____ Contractor must provide additional danger signage, to mark areas of known live underground utilities.

_____ Contractor must ensure a 'spotter' accompanies the equipment operator during excavation work.

_____ Contractor must provide Construction CM/ET notification no later than 7 working days prior to the preparatory and initial pre-excavation/ demo safety review meeting. (The CM/ET and the DSC will attend this meeting to ensure safety and preservation of Critical Utilities is discussed with adequate focus.)

_____The Contractor must confirm & identify the closest utility isolation points & develop mitigation strategies with the utility owner (Coordinate with the DSC) to ensure the safe excavation adjacent to these utilities. Utility Outages to isolate utility systems may need to be considered in circumstances where the excavation work cannot be completed safely.

Prime Contractor SSHO Signature/Date:_____

Excavator Signature/Date:_____

PWD ME ET Signature/Date: _____

ATTACHMENT D

Naval Facilities Engineering Command

Public Works Department, Maine

UTILITY LOCATE – PRE-EXCAVATION SAFETY CHECKLIST

Project Title: _____

Prime Contractor: _____

Contract No.: _____

Excavator:_____

_____ **Gov't Dig Safe Markings Completed & Visible in the field**

_____**Third Party Utility Locate Completed (Attach Third Party Certification Form)**

_____**PWD ME Dig Safe Form Returned with any Discrepancies Noted & Resolved**

Excavating with Hazardous or Mission Critical Utilities within the excavation area: Yes_____ or No:_____ If Yes complete the following:

_____The Contractor must employ supplement daily Dig Safe procedures to include an additional checkoff on Contractor Daily Activity Plan asking if all utilities have been clearly marked and reviewed with the SSHO.

_____The Contractor must have a Dig Safe laminated utility color coding system posted in or near all heavy digging equipment for easy reference to type of utility.

_____The SSHO must complete a pre-excavation walk as part of the morning procedure to help ensure all known utilities are identified and markings are refreshed with the appropriate color-coded paint.

_____ Contractor must provide additional danger signage, to mark areas of known live underground utilities.

_____ Contractor must ensure a 'spotter' accompanies the equipment operator during excavation work.

_____ Contractor must provide Construction CM/ET notification no later than 7 working days prior to the date of the preparatory and initial pre-excavation/ demo safety review meeting. (The CM/ET & as well as the PWD ME DSC will attend this meeting to ensure safety and preservation of Critical Utilities is discussed with adequate focus.)

_____The Contractor must confirm & identify the closest utility isolation points & develop mitigation strategies with the utility owner (Coordinate with the PWD ME DSC) to ensure the safe excavation adjacent to these utilities. Utility Outages to isolate utility systems may need to be considered in circumstances where the excavation work cannot be completed safely.

Prime Contractor SSHO Signature/Date:_____

Excavator Signature/Date:_____

PWD ME ET Signature/Date:_____

ATTACHMENT E

Contractor Daily Checklist for Trenching/Excavation

Project:		Date:	Weather:	Soil Classification:
Trench Depth:	Length:	Width:	Type of Protective System:	

Name and Signature of Competent Person:

Yes	No	N/A	Excavation
			Trench box extends at least 18 inches above the vertical wall of the excavation and to within 2 feet of the bottom of the trench (or less if soil collapsing behind or below trench box).
			Trench box installed in accordance with manufacturers specific instructions and use limitations.
			Trench box inspected for damage or defects and pins and spreaders are securely installed.
			If other soil protective systems are used, they are installed in accordance with Manufacturer's Instructions OR are approved by a Registered Professional Engineer.
			All employees at worksite trained in trenching safety procedures.
			Surface encumbrances such as utility poles, heavy equipment supported or removed.
			Heavy equipment safety zone at least 1½ times depth of trench for if not supported.
			Employees protected from loose rock or soil.
			Spoils, materials, and equipment set back a minimum of 2' from edge of excavation.
			Walkways and bridges over excavations 6' or more in depth are at least 20 inches wide and are equipped with required guardrails.
			Ladders placed no more than 25 feet apart.
			Employees prohibited from working or walking under suspended loads.
			Employees prohibited from working on faces of sloped or benched excavations above other employees.
			Warning system established and used when mobile equipment is operating near edge of excavation.
			Barriers provided if trench opening is not readily apparent.
			Barriers, fences available to secure area if left overnight.

Yes	No	N/A	Personal Protective Equipment
			Hard hats worn by all employees.
			Work boots or safety shoes worn by all employees.
			Eye protection worn by all employees (if applicable).
			Hearing protection worn by all employees (if applicable).
			Warning vests, or other highly visible PPE provided and worn by all employees exposed to vehicular traffic.

ATTACHMENT E (CONT'D)

Daily Worksite Checklist for Trenching/Excavation Sites – pg 2

Yes	No	N/A	Utilities
			Utility companies contacted and/or utilities located.
			Exact location of utilities marked when near excavation.
			Underground installations protected, supported, or removed when excavation is open.
			Equipment available to survey underground utility installations, existing utilities and any other buried foundations or structures.

Yes	No	N/A	Wet Conditions
			Precautions taken to protect employees from accumulation of water.
			Water removal equipment monitored by Competent Person.
			Surface water controlled or diverted.
			Inspection made after each rainstorm.

Yes	No	N/A	Hazardous Atmosphere
			Atmosphere tested when there is a possibility of oxygen deficiency or build-up of hazardous gases. If yes, atmosphere will be tested every_____.
			Oxygen content is between 19.5% and 21%.
			Flammable gas build-up to 20% of lower explosive limit (LEL).
			Toxic Levels of gases are below limits set on gas monitor.
			Ventilation blowing into space and air intake placed away from vehicle exhaust.
			Program Manager contacted if atmosphere is above established limits. Source of contaminant to be determined and eliminated prior to entry or Program Manager will establish special procedures for entry.

-
-
-
-
-
-
-
-

ATTACHMENT E (CONT'D)

Daily Worksite Checklist for Trenching/Excavation Sites – pg 2

Emergency Procedures for Trench Cave-Ins

- **GET ALL OTHER EMPLOYEES OUT OF THE TRENCH!!**
- **CALL 438-2333**
- **NOTIFY COMPETENT PERSON**

Note time
Note location of trapped worker(s)
Leave all victims hand tools in place
Shut down all heavy equipment
Stop nearby traffic that may cause vibration
Keep everyone back from trench at least 50 feet
Gather information for rescue team
WAIT for rescue team. Do not attempt to rescue.

Note-Do not attempt to dig the person out using hand tools or heavy equipment. This could cause the trench to collapse further and could cause further injuries!!!!

SECTION 01 42 00

SOURCES FOR REFERENCE PUBLICATIONS
02/19

PART 1 GENERAL

1.1 REFERENCES

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

1.2 ORDERING INFORMATION

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

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

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

AMERICAN HARDBOARD ASSOCIATION (AHA)
1210 West Northwest Highway
Palatine, IL 60067
Ph: 847-934-8800
Fax: 847-934-8803
E-mail: aha@hardboard.org
Internet: http://domensino.com/AHA/

AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)
130 East Randolph, Suite 2000
Chicago, IL 60601
Ph: 312-670-5444
Fax: 312-670-5403
Steel Solutions Center: 866-275-2472
E-mail: solutions@aisc.org
Internet: https://www.aisc.org/

AMERICAN SOCIETY FOR NONDESTRUCTIVE TESTING (ASNT)
P.O. Box 28518
1711 Arlingate Lane
Columbus, OH 43228-0518
Ph: 800-222-2768 or 614-274-6003
Fax: 614-274-6899
E-mail: tjones@asnt.org
Internet: https://www.asnt.org/

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)
Two Park Avenue
New York, NY 10016-5990
Ph: 800-843-2763
Fax: 973-882-1717
E-mail: customercare@asme.org
Internet: https://www.asme.org/

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

AMERICAN WATER WORKS ASSOCIATION (AWWA)
6666 W. Quincy Avenue
Denver, CO 80235 USA
Ph: 303-794-7711 or 800-926-7337
Fax: 303-347-0804
Internet: https://www.awwa.org/

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

AMERICAN WOOD PROTECTION ASSOCIATION (AWPA)
P.O. Box 361784
Birmingham, AL 35236-1784
Ph: 205-733-4077
Fax: 205-733-4075
Internet: http://www.awpa.com

ASPHALT INSTITUTE (AI)
2696 Research Park Drive
Lexington, KY 40511-8480
Ph: 859-288-4960
Fax: 859-288-4999
E-mail: info@asphaltinstitute.org
Internet: http://www.asphaltinstitute.org

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

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

ELECTRONIC INDUSTRIES ALLIANCE (EIA)
EIA has become part of the ELECTRONIC COMPONENTS INDUSTRY ASSOCIATION (ECIA)

GREEN SEAL (GS)
1001 Connecticut Avenue, NW
Suite 827
Washington, DC 20036-5525
Ph: 202-872-6400
Fax: 202-872-4324
E-mail: greenseal@greenseal.org
Internet: https://www.greenseal.org/

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)
445 and 501 Hoes Lane
Piscataway, NJ 08854-4141
Ph: 732-981-0060 or 800-701-4333
Fax: 732-981-9667
E-mail: onlinesupport@ieee.org
Internet: https://www.ieee.org/

INTERNATIONAL CODE COUNCIL (ICC)
500 New Jersey Avenue, NW
6th Floor, Washington, DC 20001
Ph: 800-786-4452 or 888-422-7233
Fax: 202-783-2348
E-mail: order@iccsafe.org
Internet: https://www.iccsafe.org/

INTERNATIONAL CONCRETE REPAIR INSTITUTE (ICRI)
1000 Westgate Drive, Suite 252
St. Paul, MN 55114
Ph: 651-366-6095
Fax: 651-290-2266
E-mail: info@icri.org
Internet: https://www.icri.org/

INTERNATIONAL ELECTRICAL TESTING ASSOCIATION (NETA)
3050 Old Centre Ave. Suite 101
Portage, MI 49024
Ph: 269-488-6382
Fax: 269-488-6383
Internet: https://www.netaworld.org/

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (ISO)
ISO Central Secretariat
BIBC II
Chemin de Blandonnet 8
CP 401 - 1214 Vernier, Geneva
Switzerland

Ph: 41-22-749-01-11
E-mail: central@iso.ch
Internet: https://www.iso.org

MAINE DEPARTMENT OF TRANSPORTATION (MEDOT)
24 Child St.
Augusta, ME 04330
Ph: 207-624-3000
E-mail: maine.dot@maine.gov
Internet:

MANUFACTURERS STANDARDIZATION SOCIETY OF THE VALVE AND FITTINGS INDUSTRY (MSS)
127 Park Street, NE
Vienna, VA 22180-4602
Ph: 703-281-6613
E-mail: info@msshq.org
Internet: http://msshq.org

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)
1300 North 17th Street, Suite 900
Arlington, VA 22209
Ph: 703-841-3200
Internet: https://www.nema.org

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

NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY (NIST)
100 Bureau Drive
Gaithersburg, MD 20899
Ph: 301-975-2000
Internet: https://www.nist.gov/

PORTSMOUTH NAVAL SHIPYARD (PNSY)
Seavey Island
Kittery, Maine

SOCIETY FOR PROTECTIVE COATINGS (SSPC)
800 Trumbull Drive
Pittsburgh, PA 15205
Ph: 877-281-7772 or 412-281-2331
Fax: 412-444-3591
E-mail: customerservice@sspc.org
Internet: http://www.sspc.org

SOCIETY OF AUTOMOTIVE ENGINEERS INTERNATIONAL (SAE)
400 Commonwealth Drive
Warrendale, PA 15096
Ph: 877-606-7323 or 724-776-4841
Fax: 724-776-0790
E-mail: customerservice@sae.org
Internet: https://www.sae.org/

SOCIETY OF CABLE TELECOMMUNICATIONS ENGINEERS (SCTE)
140 Philips Road
Exton, PA 19341-1318
Ph: 800-542-5040 or 610-363-6888
Fax: 610-884-7237
E-Mail: info@scte.org
Internet: https://www.scte.org/

TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA)
1320 North Courthouse Rosd, Suite 200
Arlington, VA 22201
Ph: 703-907-7700
Fax: 703-907-7727
E-mail: marketing@tiaonline.org
Internet: https://www.tiaonline.org/

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

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

U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT (HUD)
HUD User

P.O. Box 23268
Washington, DC 20026-3268
Ph: 800-245-2691 or 202-708-3178
TDD: 800-927-7589
Fax: 202-708-9981
E-mail: helpdesk@huduser.gov
Internet: https://www.huduser.gov

U.S. DEPARTMENT OF STATE (SD)
2201 C Street, NW
Washington, DC 20520
Ph: 202-647-4000
Internet: https://www.state.gov/

U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)
1200 Pennsylvania Avenue, N.W.
Washington, DC 20004
Ph: 202-564-4700
Internet: https://www.epa.gov
--- Some EPA documents are available only from:
National Technical Information Service (NTIS)
5301 Shawnee Road
Alexandria, VA 22312
Ph: 703-605-6060 or 1-800-363-2068
Fax: 703-605-6880
TDD: 703-487-4639
E-mail: info@ntis.gov
Internet: https://www.ntis.gov/

U.S. FEDERAL AVIATION ADMINISTRATION (FAA)
Order for sale documents from:
Superintendent of Documents
U.S. Government Publishing Office (GPO)
732 N. Capitol Street, NW
Washington, DC 20401
Ph: 202-512-1800 or 866-512-1800
Bookstore: 202-512-0132
Internet: https://www.gpo.gov/
Order free documents from:
U.S. Department of Transportation
Federal Aviation Administration
800 Independence Avenue, SW
Washington, DC 20591
Ph: 866-835-5322
Internet: https://www.faa.gov/

U.S. FEDERAL HIGHWAY ADMINISTRATION (FHWA)
1200 New Jersey Ave., SE
Washington, DC 20590
Ph: 202-366-4000
E-mail: ExecSecretariat.FHWA@dot.gov
Internet: https://www.fhwa.dot.gov/
Order from:
Superintendent of Documents
U.S. Government Publishing Office (GPO)
732 N. Capitol Street, NW
Washington, DC 20401
Ph: 202-512-1800 or 866-512-1800
Bookstore: 202-512-0132

Internet: https://www.gpo.gov/

U.S. GENERAL SERVICES ADMINISTRATION (GSA)
General Services Administration
1800 F Street, NW
Washington, DC 20405
Ph: 1-844-472-4111
Internet: https://www.gsaelibrary.gsa.gov/ElibMain/home.do
Obtain documents from:
Acquisition Streamlining and Standardization Information System (ASSIST)
Internet: https://assist.dla.mil/online/start/; account registration required

U. S. GREEN BUILDING COUNCIL (USGBC)
2101 L St NW, Suite 500
Washington, DC 20037
Ph: 202-828-7422
Internet: https://new.usgbc.org/

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

U.S. NAVAL FACILITIES ENGINEERING COMMAND (NAVFAC)
1322 Patterson Ave. SE, Suite 1000
Washington Navy Yard, DC 20374-5065
Ph: 202-685-9387
Internet: http://www.navfac.navy.mil

UNDERWRITERS LABORATORIES (UL)
2600 N.W. Lake Road
Camas, WA 98607-8542
Ph: 877-854-3577 or 360-817-5500
E-mail: CustomerExperienceCenter@ul.com
Internet: https://www.ul.com/
UL Directories available through IHS at https://ihsmarkit.com/

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

-- End of Section --

SECTION 01 44 00.00 22

ARCHAEOLOGICAL MONITORING (PWD ME)
03/22

PART 1 GENERAL

This Section applies to Design-Bid-Build and Design-Build projects at the Portsmouth Naval Shipyard and at PWD ME AOR Facilities.

1.1 SUMMARY

Perform archaeological monitoring for all forms of soil disturbing activities and excavations. Work must include, but is not limited to: background research and review of previous surveys, monitoring during excavation, installation of components, regrading, and other work indicated or specified. Results of monitoring efforts must be summarized in Resource Reports, draft report, final draft report, and final report. Potential archaeological resources present within the project area is identified in the included in scope of work.

The Government will provide existing documentation pertaining to the project area, which will include previous investigations, plans, photographs, and research.

1.2 REFERENCES

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

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

36 CFR 79	(2012) Curation Of Federally-Owned And Administered Archaeological Collections

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

Archaeologist Qualifications; G

SD-06 Test Reports

Draft Archaeological Monitoring Report; G

Final Draft archaeological Monitoring Report; G

Final Archaeological Monitoring Report; G

Curated Artifacts (if collected); G

1.4 QUALITY ASSURANCE

Submit Archaeologist Qualifications. The Archaeologist must meet the Secretary of the Interior's Professional Qualification Standards for Archaeologist as outlined in 36 CFR Part 61 as required by the National Historic Preservation Act (Section 112, a, 1, A), OPNAVIST 5090.1E (Section 13-3.6), and the Principal Investigator must be an approved Archaeologist on the Maine Historic Preservation Commission's Level II Approved List. Field staff do not need to be named on the Level II list as long as they are supervised by an archaeologist with those qualifications. The Archaeologist must specialize in historic archaeology and have experience monitoring construction work in urban or industrial archaeological settings. The Archaeologist must have a demonstrated track record of success in carrying projects to completion, including the submission of all final project documentation and curated artifacts.

1.5 COORDINATION

The Contractor is responsible for obtaining permission and clearance from the appropriate Contracting Officer to enter areas of the required fieldwork.

The Contractor is responsible for recording minutes of all meetings and furnishing a copy of the minutes to the Contracting Officer within 15 days. Prior to the start of work, the archaeologist, KTR, and PWD-ME Cultural Resources Manager must meet to review the proposed approach to the work and review relevant documentation.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 INSPECTION AND MONITORING

a. The Archaeologist must observe excavation activities for archaeological resources. The Archaeologist must be present on the project site according to a schedule agreed upon by Contracting Officer until it is determined that project construction activities could have no effects on significant archaeological resources.

b. The Archaeologist must advise all project Contractors to be on the alert for evidence of the presence of the expected resource(s), of how to identify the evidence of the expected resource(s), and of the appropriate protocol in the event of apparent discovery of an archaeological resource. GPS points, photographs, sketch maps, and measured drawings must be provided as applicable to document to the greatest extent possible resources encountered.

c. If an intact archaeological resource is encountered, all soil disturbing activities in the vicinity of the resource must cease. The Archaeologist must be empowered to temporarily redirect excavation/ construction crews and heavy equipment until the resource is evaluated. The Archaeologist must immediately notify the Contracting Officer of the encountered archaeological resource. The Archaeologist must, after making a reasonable effort to assess the identity, integrity, and significance of the encountered archaeological resource, present the findings of this assessment to the Contracting Officer.

Following verbal communication of this information, the assessment must be formalized in a Resource Report.

d. The Contractor must be responsible for the safety of all work conducted and must insure that the work area is safe during any archaeological investigation. This includes providing appropriate shoring, access, and egress routes and any needed equipment. No one will be expected to enter the excavation until it has been deemed safe and it will be the responsibility of the Contractor to insure that the archaeological monitors have the ability to enter the excavation as needed.

e. The Archaeologist must document the resource(s) encountered with photographs (including scale), mapping, measured drawings, collection of GPS points, written description of the resource; and collect artifacts, as appropriate.

3.2 ARCHAEOLOGICAL MONITORING REPORTS

Record findings of the archaeological monitoring at project completion in a written report. The report must include a map created by GPS points showing the location of any resources documented and must be illustrated by photographs. The Archaeologist must record and be authorized to collect archaeological material as warranted for analysis.

3.2.1 Report Requirements:

a. If a potentially significant resource is encountered, summarize the results of the archaeological investigations in a Resource Report. The Archaeologist, in coordination with the Contractor must produce the Resource Report to include a map and written summary of the discovery to support PWD ME coordination with SHPO. The Report must include, at a minimum, a physical description of the resource and its context; the depth at which it was encountered; potential resource identification; a description of the proposed impacts to the resource; and recommended follow-on steps, including options to avoid or minimize impacts on the potential site. The Resource Report must be submitted to the Contracting Officer no later than 2 business days after the potentially significant resource is encountered.

b. Provide two (2) hard copies and one (1) electronic copy of a draft archaeological monitoring report (99 percent complete) for review by the Government. Once the draft report has been reviewed by the Government, the Contractor must be notified of any recommended changes in a timely manner by the Contracting Officer. Production of the final draft report must be within ten (10) business days of receipt of the Government comments.

c. Provide two (2) hard copies and one (1) electronic copy of the final draft archaeological monitoring report for review by the Government and Maine SHPO. The final draft report must be completed in accordance with current State of Maine archaeological survey requirements. Draft GIS data must also be provided at this time.

d. Once the final draft report has been reviewed by the SHPO, the Contractor must be notified of any recommended changes in a timely manner by the Contracting Officer. Production of three (3) hard copies and three (3) electronic copies of the final reports must be within ten (10) business days of receipt of the Government comments.

e. The final archaeological monitoring report must be completed in accordance with current State of Maine archaeological survey requirements and the associated materials.

f. The Contractor must submit reports (e.g. draft report) directly to the Contracting Officer within 30 calendar days of completion of monitoring. Copies of submittal distribution letters must be forwarded to the Contracting Officer.

g. The Contractor must submit all informal documents regarding archeological field site reconnaissance and archaeological site mapping (field notes, etc.) directly to the Contracting Officer. Upon request or after acceptance of the final report, all field notes, photographs, artifacts, and related data will be turned over to the Contracting Officer.

h. The Contractor must submit all documentation in editable electronic format (Microsoft Word, Excel, ESRI ArcINFO, etc.) and in PDF upon completion of work. Three (3) hard copies and three (3) electronic copies of the report must also be submitted upon completion and acceptance of work.

i. The Contractor is required to prepare and submit all data, reports, graphics, maps, charts, etc. in an electronic format consistent with the platform currently used by the PWD ME Cultural Resources GIS database. Details and requirements will be provided to the Contractor by the Contracting Officer upon award of this Contract.

3.3 ARTIFACT CURATION

Artifacts recovered during the monitoring effort must be cleaned, recorded, and curated in accordance with 36 CFR 79. The Archaeologist must identify a repository for permanent curation and pay initial curation fees. If no suitable repository is identified, curated artifacts must be provided to the Government with the Final Report Submission.

-- End of Section --

SECTION 01 45 00.00 22

QUALITY CONTROL (PWD ME)
05/21

PART 1 GENERAL

This Section applies to only Design-Bid-Build projects at Portsmouth Naval Shipyard and PWD ME AOR Facilities.

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	(2014) Safety -- 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. 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.

QC Manager Qualifications; G

QC Specialists Qualifications; G

1.3 INFORMATION FOR THE CONTRACTING OFFICER

Prior to commencing work on construction, 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: Submit the report electronically by 10:00 AM the next working day after each day that work is performed and for every seven (7) consecutive calendar days of no-work. Include copies of the Special Inspector's daily reports as well as any discrepancies that are observed during Special Inspections that were reported to the QC Manager for correction. If discrepancies are not corrected before the special inspector leaves the site the observed discrepancies must be documented in the daily report (See Section 01 45 35 for Special Inspection Requirements).

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 (7) 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: Within two (2) working days after the test is performed, submit the report as an electronic attachment to the CQC Report.

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. Provide a copy of the final Testing Plan and Log to the eOMSI preparer for inclusion into the eOMSI 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 (2) 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.

l. Special Inspection Report: Submit the Special Inspection reports, in the same manner as the CQC Report.

1.4 QC PROGRAM REQUIREMENTS

Establish and maintain a QC program as described in this Section. 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, historic coordination drawings review and approval, testing, completion inspections, QC certifications, independent Special Inspections in accordance with Section 01 45 35 SPECIAL INSPECTIONS, 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. The QC Manager will be subject to removal by the Contracting Officer for non-compliance with the QC requirements specified in the Contract, failure to perform the duties of the QC Manager specified herein,

or failure to manage the QC program. The removal and replacement of the QC Manager will not be cause for claim of additional compensation or extensions of the Contract Completion Date (CCD).

1.4.1 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. The removal and replacement of QC organization personnel will not be cause for claim of additional compensation or extensions of the Contract Completion Date (CCD).

1.4.2 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.

1.4.3 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.

1.4.4 Special Inspections

Perform all required Special Inspections per Section 01 45 35 SPECIAL INSPECTIONS, the statement of Special Inspections and the Schedule of Special Inspections.

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. The QC Manager must <u>not</u> perform the duties of Project Superintendent, nor the duties of Project Manager, or SSHO. The only duties and responsibilities of the QC Manager are to manage and implement the QC program on this Contract. 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 must not be the Special Inspector. The QC manager is responsible for notifying the Special Inspector of activities which require

their review. The QC manager is responsible for coordinating the Special Inspection activities, see paragraph QUALITY CONTROL MANAGER, in Section 01 45 35 SPECIAL INSPECTIONS. The QC manager is responsible for the quality control for perimeter construction.

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 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.

1.5.3 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.

1.5.4 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 must assist and report to the QC Manager and who must 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. QC Specialists must not be the special inspector.

Qualification/Experience in Area of Responsibility	Area of Responsibility	Frequency
Coating Inspector	QC responsibilities for all work covered by 09 97 13.27 HIGH PERFORMANCE COATING FOR STEEL STRUCTURES	As required by specification section

Qualification/Experience in Area of Responsibility	Area of Responsibility	Frequency
Welding Inspector	QC responsibilities for all work covered by 05 05 23.16 STRUCTURAL WELDING	As required by specification section
Paving Inspector	QC responsibilities for all work covered by Maine DOT paving	As required by Maine DOT specifications

1.5.5 Special Inspector

The Special Inspector (SI) must be an independent third party hired directly by the Prime Contractor. The SI must not be a company employee of the Contractor or any Sub-Contractor performing the work to be inspected. The qualifications of the SI is defined in Section 01 45 35 SPECIAL INSPECTION.

1.5.6 Registered Fire Protection Engineer

The Registered Fire Protection Engineer serves as the subject matter expert within the QC organization on all matters related to fire and life safety (FPQC).

1.5.8.1 Qualifications

a. License/Registration. The FPQC must be a currently registered Professional Engineer (P.E.) licensed by a Licensing Board in the United States, the District of Columbia, Guam or Puerto Rico, having passed the National Council of Examiners for Engineering and Surveying (NCEES) written examination specifically in the discipline of Fire Protection Engineering.

b. Experience. The FPQC must have a minimum five years of fire protection engineering experience. Project experience must be relevant and similar in level of complexity to the fire protection work specified under this contract.

c. Association. Other than the contractual obligations with the prime contractor, the FPQC shall have no other business relationship (employee, owner, partner, operating officer, distributor, salesman, or technical representative) or family relationship, or financial investment with the prime construction contractor or subcontractors.

d. Single Source. The prime construction contractor must obtain FPQC services from a single engineering firm or company. The firm may identify multiple licensed fire protection engineers from the firm for performance of the duties, but must submit the name and current license for each individual identified; these individuals may not be substituted without prior approval from the Contracting Officer.

1.5.8.2 Roles and Responsibilities during Construction

a. The FPQC is a member of the QC Organization and reports to the QC Manager.

b. The FPQC shall review each submittal related to fire and life safety

prior to the Contractor forwarding the submittal to the Government. The Government FPE retains the role as the Authority Having Jurisdiction (AHJ). The FPQC is responsible for ensuring submittals are complete and accurate and all corrections have been made prior to submission to the Government. The Government reserves the right to reject any submittal that has not been reviewed first by the FPQC and so marked, in writing, attesting to such review and completeness of the submittal.

c. The FPQC shall provide construction surveillance at the following milestones. This includes providing a written summary of findings, a conclusion on compliance with the contract documents, and signature. On-site construction surveillance is required by the FPQC for the following:

(1) Visually inspect the installation of underground water pipe, thrust blocks, tie-rods, and connection to aboveground piping.

(2) Witness the flushing of the underground system prior to connection to the riser.

(3) Visually inspect interior and exterior attachments, coatings, and vortex plate prior to filling a fire protection water tank.

(4) A visual inspection of the fire alarm system after conduit and wiring have been pulled, but before the installation of devices. The FPQC shall inspect all conduit, wiring, conduit fill, wire type, installation heights of back boxes, location of isolator modules, monitor modules, surge arrestors, amplifiers, batteries, and all other aspects of the installation.

(5) A visual inspection of the sprinkler system after installation of piping but prior to close-in of the walls and ceilings. The FPQC shall inspect pipe hangars, bracing, sprinkler head types, sprinkler head obstructions, damage, painted, or covered heads, location of control valves, drains and vents, component mounting heights, and all other aspects of the installation.

(6) Building construction features including fire rated walls, partitions, rated doors, coatings, and penetrations.

(7) Life Safety features including means of egress, stair enclosures, emergency lighting, and locking arrangements.

(8) All rework related to the above inspections, which may be inspected during the Pre-Final.

1.5.8.3 Pre-Final Acceptance Testing

a. As part of the QC program, the Contractor's QC Manager shall arrange for a preliminary on-site walkthrough by the FPQC who shall visually inspect the systems installed, as well as witness functional testing. The FPQC shall;

(1) Visually inspect all fire protection systems and all life safety features of the facility within the contract scope of work.

(2) Witness functional testing of all fire and life safety systems.

(3) Record all deficiencies in writing.

(4) Provide the deficiency list to the QC manager for rework.

(5) Confirm satisfactory completion of rework and testing.

(6) Review/confirm all record of completion forms.

b. The FPQC must witness a successful pretest prior to any Final Acceptance testing.

c. Upon completion of rework and successful Pre-Final testing, the FPQC shall certify in writing the satisfactory installation and operation of all systems in accordance with the contract documents, confirming the systems are ready for Final Acceptance testing.

d. The QC Manager can then forward the FPQC's certification and request a Final Acceptance test to be witnessed by the AHJ.

1.5.8.4 Final Acceptance Testing

a. The Contractor's QC Manager shall arrange for the final walkthrough and Final Acceptance testing by the Government FPE (AHJ).

b. The QC Manager shall arrange all logistics including the presence of necessary contractors, manufacturer's representatives, and notifications/outages.

c. The QC Manager shall provide two-week's notice on the request for Final Acceptance testing.

1.5.8.5 Documentation

a. The FPQC shall maintain a running list of inspection discrepancies, including confirmation of rework and final resolution of each discrepancy.

b. The running list shall be attached to the FPQC's certification of successful pre-Final Acceptance testing.

1.6 QUALITY CONTROL (QC) PLAN

1.6.1 Construction Quality Control (QC) Plan

Submit a Construction QC Plan prior to start of construction.

1.6.1.1 Requirements

Provide, for acceptance by the Contracting Officer, a Construction QC Plan, prior to start of construction, that includes a table of contents, with major sections identified, with pages numbered sequentially, and that documents the proposed methods and responsibilities for accomplishing quality control 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. Example: The fire protection engineer who designs the sprinkler system.

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 Network Analysis Schedule (NAS). Include all activities for which this specification requires QC Specialists or specialty inspection personnel. Provide separate DFOWs in the NAS for each design development stage and submittal package.

l. 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 DFOW, a Preparatory and Initial phase checklist must 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 DFOW.

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. Include a sample record of training for reporting what systems were included in the training, who provided the training, when and where the training was performed and who attended the training.

p. ORGANIZATION AND PERSONNEL CERTIFICATIONS LOG: Procedures for coordinating, tracking and documenting all certifications on Subcontractors, testing laboratories, suppliers, personnel, etc. QC Manager must 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.

q. DAILY CONTRACTOR QUALITY CONTROL REPORT FORM: Template that includes fields for the following:

1) Date.
2) Sequential report number.
3) Weather and temperature.
4) Number of personnel on site by trade or by Subcontract.
5) Kind and number of major equipment on site.
6) Tests performed and their results, if known.
7) Materials and equipment delivered to the site and their conditions.
8) Names, affiliations, and positions of visitors to the site with brief explanations of the reasons for visits.
9) Brief description of each work activity, noting items that were completed that day.
10) Items of work that need attention at a later date, and why.
11) Any accidents and injuries.
12) Items of concern with respect to maintenance of quality.
13) Accounting update of unit price items specified in Document 00 22 13.00 20 SUPPLEMENTARY INSTRUCTIONS TO OFFERORS utilizing the numbering convention indicated in the Unit Prices Form (e.g., 0001g).
14) Any other items of significance.

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 list of DFOWs.

1.8 COORDINATION AND MUTUAL UNDERSTANDING MEETING

After submission of the QC Plan, and prior to Government approval and the start of construction, the QC Manager must 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 must be repeated. Also, review the Special Inspection requirements outlined in Section 01 45 35 Special Inspections. The Contractor's Special Inspections Project Manual will be reviewed to verify that all parties have a clear understanding of the Special Inspections provisions and the individual duties and responsibilities of each party.

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, Special Inspections, and the coordination of the management, production, and QC personnel. At the meeting, explain in detail how the three phases of control will be implemented for each DFOW, as well as how each DFOW will be affected by each management plan or requirement as listed below:

a. Waste Management Plan.

b. IAQ Management Plan.

c. Procedures for noise and acoustics management.

d. Environmental Management Plan.

e. Environmental regulatory requirements.

f. Special Inspections.

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. Schedule construction operations with consideration for indoor air quality as specified in the IAQ Management Plan. Coordinate special inspections.

1.8.3 Attendees

As a minimum, the personnel required to attend include an officer of the firm, the Project Manager, Project Superintendent, QC Manager, Alternate QC Manager, Assistant QC Manager, QC Specialists,Special Inspector, Special Inspector of Record, Environmental Manager, and Subcontractor representatives as approved by the Contracting Officer. Each Subcontractor who will be assigned QC responsibilities must 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 (DOR), and the Contracting Officer. Provide a copy of the signed minutes to all attendees and must 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, the QC Specialists, the Special Inspector, the Special Inspector of Record, and the foremen who are performing the work of the DFOWs. The QC Manager must prepare the minutes of the meeting and provide a copy to the Contracting Officer within two (2) 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 items (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.

m. Review Non-Compliance Notices and any actions required to address non-complaint work/actions.

n. Review Special Inspections (Section 01 45 35) and any deficiencies identified by the Special Inspectors. Review actions taken or planned actions to correct any deficiencies noted.

1.10 DESIGN REVIEW AND DOCUMENTATION

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 DFOW.

1.11.1 Preparatory Phase

The meeting must be conducted by the QC Manager and attended by the QC Specialists, the Project Superintendent, the Project SSHO, the Special Inspector, the Special Inspector of Record, and the foreman responsible for the DFOW or as approved by the Contracting Officer. When the DFOW will be accomplished by a Subcontractor, that Subcontractor's foreman must 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 DFOW (Note: Preparatory Meeting shall only be held if the shop drawings or submittals have been approved, hard copies are printed for the meeting, the APP and appropriate AHA related to the DFOW have been submitted and the appropriate personnel as stated above are present for the meeting):

a. Review each paragraph of the applicable specification Sections.

b. Review the Contract drawings.

c. 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.

d. Review the testing plan and ensure that provisions have been made to provide the required QC testing and applicable required A/E (DOR) Quality Assurance Inspections.

e. Examine the work area to ensure that the required preliminary work has been completed.

f. 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.

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

h. Discuss specific controls used and construction methods, construction tolerances, layout/survey controls (horizontal and Vertical controls) necessary, workmanship standards, and the approach that will be used to provide quality construction by planning ahead and identifying potential problems for each DFOW.

i. Discuss the QC documentation required to be collected as part of the work.

j. Identify any changed conditions or modifications that may impact the execution of the work.

k. Review the processes/strategies that will be implemented to address any issues if the work does not go as planned or if any unforeseen conditions are encountered or if any changes arise that may impact the successful execution of the work.

l. Review the listing of Government QA inspections that may be implemented as part of the execution of the work.

m. Review any Special Inspections (Section 01 45 35) required as part of the execution of the work.

n. If work includes demolition work, review demolition work plan to ensure compliance with EM 385-1-1 Section 23 Demolition, Renovation and Re-Occupancy.

o. If work includes excavation, review Utility Locating Requirements.(Note: Special attention is required if Hazardous or

Mission Critical Utilities are within the excavation area.) If Hazardous and Mission Critical Utilities (as identified in the Scope of Work & Drawings) are located within the excavation area, the PWD ME Dig Safe Coordinator, PWD ME CM/ET, PWD ME Design Manager (DM) and the assigned PWD ME Project Civil Engineer must be present at the meeting to review requirements to ensure safety and preservation of critical utilities is discussed with adequate focus.

p. If work includes excavation, review Soil Management Requirements (Note: Special attention is required if the work is within an IR site or Hazardous Soils are within the excavation area. Include Code 106.3 Representatives at this meeting to discuss Soil Management processes and procedures.)

q. If the work is subject to any environmental (EV) permitting, Archaeological Monitoring, or SHPO approvals, review the terms and conditions of the applicable permits as well as any supplemental controls/ approvals that are required to complete the work. (Note: Include PWD ME EV Representatives at this meeting to review the project specific requirements).

r. If work includes the removal and disposal of Hazardous materials, review the appropriate work plans to ensure the work plans have been approved and any comments are understood by the work execution team. (Note: Include Code 106.3 Representatives at this meeting to discuss Hazardous Materials handling and disposal processes and procedures.)

1.11.2 Initial Phase

Notify the Contracting Officer at least two(2) work days in advance of each initial phase. When construction crews are ready to start work on a DFOW, conduct the initial phase with the QC Specialists, the Project Superintendent, the Special Inspector, and the foreman responsible for that DFOW. Observe the initial segment of the DFOW 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 DFOW:

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

b. Resolve any workmanship issues.

c. Resolve conflicts.

d. Ensure that testing is performed by the approved laboratory.

e. Check work procedures for compliance with the APP and the appropriate AHA to ensure that applicable safety requirements are met.

f. Review project specific work plans (i.e. HAZMAT Abatement, Stormwater Management) to ensure all preparatory work items have been completed and documented.

g. Coordinate scheduled work with special inspections required by Section 01 45 35 SPECIAL INSPECTIONS, the statement of special inspections and the schedule of special inspections.

1.11.3 Follow-Up Phase

Perform the following for on-going work daily, or more frequently as necessary, until the completion of each DFOW 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.

f. Assure applicable required A/E (DOR) Quality Assurance Inspections are scheduled.

g. Coordinate scheduled work with special inspections required by Section 01 45 35 SPECIAL INSPECTIONS, the statement of special inspections and the schedule of special inspections.

1.11.4 Additional Preparatory and Initial Phases

Conduct additional preparatory and initial phases on the same DFOW 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 DFOW 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 (2) 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. The testing and retesting must be performed at no additional cost to the Government.

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 must 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 https://www.nist.gov/nvlap, the American Association of State Highway and Transportation Officials (AASHTO) program at http://www.aashtoresource.org/aap/overview, International Accreditation Services, Inc. (IAS) at http://www.iasonline.org, U. S. Army Corps of Engineers Materials Testing Center (MTC) at http://www.erdc.usace.army.mil/Media/FactSheets/FactSheetArticleView/tabid/9254/Article/476661/materials-testing-center.aspx, and the American Association for Laboratory Accreditation (A2LA) program at http://www.a2la.org/.

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 eOMSI preparer for inclusion into the eOMSI documentation, in accordance with Sections 01 78 23 OPERATION AND MAINTENANCE DATA and 01 78 24.00 20 FACILITY ELECTRONIC OPERATION AND MAINTENANCE SUPPORT INFORMATION (eOMSI).

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 must 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 eOMSI preparer for inclusion into the eOMSI 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 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 QC Manager 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 QC Manager as a result of this inspection. The QC Manager must 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 (CCD) 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 QC Manager, the Project Superintendent, and others deemed necessary must be present. 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 entitled INFORMATION FOR THE CONTRACTING OFFICER herein must 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, a record of visitors to the work site, quality control problem areas, deviations from the QC Plan, construction deficiencies encountered, and 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 an electronic folder. Divide folder into a series of tabbed sections as shown below. Ensure folder is updated at each required progress meeting. This information 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. Special inspection 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 must 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 must be attached to the CQC Report prepared for the same day.

1.16.4 Testing Plan and Log

As tests are performed, 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 entitled INFORMATION FOR THE CONTRACTING OFFICER. Provide a copy of the final "Testing Plan and Log" to the eOMSI preparer for inclusion into the eOMSI 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 00.00 22 CLOSEOUT SUBMITTALS (PWD ME) 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 or QC Specialist assigned to an area of responsibility must initial each revision. Upon completion of work, the QC Manager must 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, must 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.

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 45 35

SPECIAL INSPECTIONS
11/20

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.

INTERNATIONAL CODE COUNCIL (ICC)

ICC IBC (2021) International Building Code

1.2 GENERAL REQUIREMENTS

Perform Special Inspections in accordance with the Statement of Special Inspections, Schedule of Special Inspections and Chapter 17 of ICC IBC. The Statement of Special Inspections and Schedule of Special Inspections are included as an attachment to the Scope of Work specification. Special Inspections are to be performed by an independent third party and are intended to ensure that the work of the Prime Contractor is in accordance with the Contract Documents and applicable building codes. Special inspections do not take the place of the three phases of control inspections performed by the Contractor's QC Manager or any testing and inspections required by other sections of the specifications.

Structural observations will be performed separately by the Government. The Contractor must provide notification to the Contracting Officer 14 calendar days prior to completing any construction elements requiring Special Inspections.

1.3 DEFINITIONS

1.3.1 Continuous Special Inspections

Continuous Special Inspections is the constant monitoring of specific tasks by a Special Inspector when the active construction is on going. These inspections must be carried out continuously over the duration of the particular tasks.

1.3.2 Perform

Perform these Special Inspections tasks for each welded joint or member.

1.3.3 Observe

Observe these Special Inspections items on a periodic daily basis. Operations need not be delayed pending these inspections.

1.3.4 Special Inspector (SI)

A qualified person retained by the Contractor and approved by the Contracting Officer as having the competence necessary to inspect a particular type of construction requiring Special Inspections. The SI must

be an independent third party hired directly by the Prime Contractor.

1.3.5 Associate Special Inspector (ASI)

A qualified person who assists the SI in performing Special Inspections but must perform inspection under the direct supervision of the SI and cannot perform inspections without the SI on site.

1.3.6 Third Party

A Special inspector must not be an employee of the Contractor or of any Sub-Contractor performing the work to be inspected.

1.3.7 Contracting Officer

The Government official having overall authority for administrative contracting actions. Certain contracting actions may be delegated to the Contracting Officer's Representative (COR).

1.3.8 Contractor's Quality Control (QC) Manager

An individual retained by the Prime Contractor and qualified in accordance with the Section 01 45 00.00 22 QUALITY CONTROL or 01 45 00.10 22 QUALITY CONTROL (PWD ME) having the overall responsibility for the Contractor's QC organization.

1.3.9 Structural Engineer of Record (SER)

A registered design professional contracted by the Government as an A/E responsible for the overall design and review of submittal documents prepared by others. The SER is registered or licensed to practice their respective design profession as defined by the statutory requirements of the professional registration laws in the state in which the design professional works. The SER is also referred to as the Engineer of Record (EOR) in design code documents.

1.3.10 Statement of Special Inspections (SSI)

A document developed by the SER identifying the material, systems, components and work required to have Special Inspections. This statement is included at the end of this specification.

1.3.11 Schedule of Special Inspections (SSI)

A schedule which lists each of the required Special Inspections, the extent to which each Special Inspection is to be performed, and the required frequency for each in accordance with ICC IBC Chapter 17. This schedule is included at the end of this specification.

1.3.12 Definable Feature of Work (DFOW)

An inspection group that is separate and distinct from other inspection groups, having inspection requirements or inspectors that are unique.

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-01 Preconstruction Submittals

Special Inspections Agency's Written NDT Practices with method and evidence of regular equipment calibration where applicable; G

SD-06 Test Reports

Special Inspections Daily Reports; G

Special Inspections Biweekly Reports; G

SD-07 Certificates

Special Inspector Qualifications; G

Qualification Records for NDT technicians; G

SD-11 Closeout Submittals

Interim Report of Special Inspections for Each DFOW; G

Comprehensive Final Report of Special Inspections; G

1.5 SPECIAL INSPECTOR QUALIFICATIONS

Submit qualifications for each special inspector and the special inspector of record.

1.5.1 Steel Construction and High Strength Bolting

1.5.1.1 Special Inspector

a. ICC Structural Steel and Bolting Special Inspector certificate with one year of related experience, or

b. Registered Professional Engineer with three years of related experience

1.5.1.2 Associate Special Inspector

Engineer-In-Training with one year of related experience.

1.5.2 Welding Structural Steel

1.5.2.1 Special Inspector

a. ICC Structural Welding Special Inspector certificate with one year of related experience, or

b. AWS Certified Welding Inspector

1.5.2.2 Associate Special Inspector

AWS Certified Associate Welding Inspector

1.5.3 Nondestructive Testing of Welds

1.5.3.1 Special Inspector

NDT Level III Certificate

1.5.3.2 Associate Special Inspector

NDT Level II Certificate plus one year of related experience

1.5.4 Concrete Construction

1.5.4.1 Special Inspector

a. ICC Reinforced Concrete Special Inspector Certificate with one year of related experience, or

b. ACI Concrete Construction Special Inspector, or

c. Registered Professional Engineer with three years of related experience

1.5.4.2 Associate Special Inspector

a. ACI Concrete Construction Special Inspector in Training, or

b. Engineer-In-Training with one year of related experience

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

3.1 RESPONSIBILITIES

3.1.1 Quality Control Manager

a. Supervise all Special Inspectors required by the Contract Documents and the IBC.

b. Verify the qualifications of all of the Special Inspectors.

c. Verify the qualifications of fabricators.

d. Maintain a 3-ring binder for the Special Inspector's daily and biweekly reports. This file must be located in a conspicuous place in the project trailer/office to allow review by the Contracting Officer and the SER.

e. Maintain a rework items list that includes discrepancies noted on the Special Inspectors daily report.

3.1.2 Special Inspectors

a. Inspect all elements of the project for which the special inspector is qualified to inspect and are identified in the Schedule of Special Inspections.

b. Attend preparatory phase meetings related to the Definable Feature of

Work (DFOW) for which the special inspector is qualified to inspect.

c. Submit Special Inspections agency's written NDT practices for the monitoring and control of the agency's operations to include the following:

(1) The agency's procedures for the selection and administration of inspection personnel, describing the training, experience and examination requirements for qualifications and certification of inspection personnel.

(2) The agency's inspection procedures, including general inspection, material controls, and visual welding inspection.

d. Submit qualification records for nondestructive testing (NDT) technicians designated for the project.

e. Submit NDT procedures and equipment calibration records for NDT to be performed and equipment to be used for the project.

f. Submit a copy of the daily reports to the QC Manager.

g. Report discrepancies that are observed during Special Inspections to the QC Manager for correction. If discrepancies are not corrected before the special inspector leaves the site the observed discrepancies must be documented in the daily report.

h. Submit a biweekly Special Inspection Report until all inspections are complete. A report is required for each biweekly period in which Special Inspections activity occurs, and must include the following:

(1) A summary of the work performed during the reporting time frame. The reports must cover the inspection requirements specified on the attached list of Special Inspections included at the end of this specification. Copies of the daily reports must be included.

(2) Changes and discrepancies with the drawings, specifications and mechanical or electrical component certification, that were observed during the reporting period.

(3) Discrepancies which were resolved or corrected.

(4) A list of nonconforming items requiring resolution.

(5) All applicable test result including nondestructive testing reports.

i. At the completion of each DFOW requiring Special Inspections, submit an interim report of Special Inspections that documents the Special Inspections completed for that DFOW. Identify the inspector responsible for each item inspected and corrections of all discrepancies noted in the daily reports. The interim report of Special Inspections must be signed, dated and indicate the certification of the special inspector qualifying them to conduct the inspection.

j. At the completion of the project submit, a comprehensive final report of Special Inspections that documents the Special Inspections completed for the project and corrections of all discrepancies noted in the daily reports. The comprehensive final report of Special Inspections must be

signed, dated and indicate the certification of the special inspector qualifying them to conduct the inspection.

k. Submit daily reports to the SIOR.

3.2 DEFECTIVE WORK

Check work as it progresses, but failure to detect any defective work or materials must in no way prevent later rejection if defective work or materials are discovered, nor obligate the Contracting Officer to accept such work. The Contractor's failure to comply with the Special Inspections specified herein will be grounds for the Contracting Officer taking any or all of the following actions including issuing a Stop Work Order, the removal of the QC Manager, removal of the Special Inspector of Record and a Marginal or Unsatifactory CPARS rating.

-- End of Section --

SECTION 01 50 00.00 22

TEMPORARY CONSTRUCTION FACILITIES AND CONTROLS (PWD ME)
03/22

PART 1 GENERAL

This Section applies to Design-Bid-Build and Design-Build projects at Portsmouth Naval Shipyard and PWD ME AOR Facilities.

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	(2022) Standard for Safeguarding Construction, Alteration, and Demolition Operations
NFPA 70	(2023) National Electrical Code

U.S. ARMY CORPS OF ENGINEERS (USACE)

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

U.S. FEDERAL AVIATION ADMINISTRATION (FAA)

FAA AC 70/7460-1	(2016; Rev L; Change 2) Obstruction Marking and Lighting

U.S. FEDERAL HIGHWAY ADMINISTRATION (FHWA)

MUTCD	(2009; Rev 2012) Manual on Uniform Traffic Control Devices

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

Construction site plan; G

Traffic control plan; G

Haul Road Plan; G

Contractor Computer Cybersecurity Compliance Statements; G

Contractor Temporary Network Cybersecurity Compliance Statements; G

Temporary Safety Railing Inspection Schedule; G

TemporarySafety Railing Installation Sequencing Plan; G

SD-02 Shop Drawings

Temporary Safety Railing Shop Drawings; G

SD-05 Design Data

Temporary Safety Railing Design Calculations; G

1.3 CONSTRUCTION SITE PLAN

Prior to the start of work, submit for Government approval a site construction plan showing the locations and dimensions of temporary facilities (including layouts and details and equipment and material onsite and offsite storage areas), access and haul routes, avenues of ingress/egress to the fenced area and details of the temporary construction safety fencing/barriers systems that complies with EM 385-1-1 Sections 4 and 8.

Identify any areas where vehicle track pads will be installed to prevent the tracking of mud onto the pavement outside the project site limits. Indicate if the use of a supplemental or other staging area is desired. Show locations of safety and construction fences, site trailers, construction entrances, trash dumpsters, temporary sanitary facilities, and dewatering system storage tanks and infiltration pits.

Prior to the start of Construction, furnish and erect temporary project safety fencing at the work site in accordance with the plans and the following requirements:

a. Temporary project fencing (or a substitute acceptable to the Contracting Officer (GDA) and delineated in the APP) must be provided on all projects. See also EM 385-1-1 Sections 4 and 8.

b. Fencing must extend from grade to a minimum of 4 feet above grade and must have a maximum mesh size of 2 inches. Fencing must remain rigid/taut with a minimum of 200 pounds of force exerted on it from any direction with less than 4 inches of deflection.

c. Signs warning of the presence of construction hazards and requiring unauthorized persons to keep out of the construction area must be posted on the fencing. At a minimum, signs must be posted every 150 feet. Fenced sides of projects that are less than 150 feet must, at minimum, have at least one warning sign.

d. Depending upon the nature and location of the project site, the Contractor may request not to install temporary fencing in some sections of the project site. The SSHO must submit a risk analysis (AHA) to the Contracting Officer for review. This must be based on a risk analysis of public exposure and other project specific considerations, and must be included in the applicable AHA.

If the Contracting Officer approves the request and has determined fencing is not required, install signs and other acceptable barrier systems, warning of construction hazards, and must be conspicuously posted.

If at any time it is determined the risk to the public changes based on the work, take immediate action to address any risk to the public.

1.4 DOD CONDITION OF READINESS (COR)

DOD will set the Condition of Readiness (COR) based on the weather forecast for sustained winds 50 knots (58 mph) or greater. Contact the Contracting Officer for the current COR setting.

Monitor weather conditions a minimum of twice a day and take appropriate actions according to the approved Emergency Plan in the accepted Accident Prevention Plan, EM 385-1-1 Section 01 Emergency Planning and the instructions below.

Unless otherwise directed by the Contracting Officer, comply with:

a. Condition FOUR (Sustained winds of 58 mph or greater expected within 72 hours): Normal daily jobsite cleanup and good housekeeping practices. Collect and store in piles or containers scrap lumber, waste material, and rubbish for removal and disposal at the close of each work day. Maintain the construction site including storage areas, free of accumulation of debris. Stack form lumber in neat piles less than 3 feet high. Remove all debris, trash, or objects that could become missile hazards. Review requirements pertaining to "Condition THREE" and continue action as necessary to attain "Condition FOUR" readiness. Contact Contracting Officer for weather and COR updates and completion of required actions.

b. Condition THREE (Sustained winds of 58 mph or greater expected within 48 hours): Maintain "Condition FOUR" requirements and commence securing operations necessary for "Condition ONE" which cannot be completed within 18 hours. Cease all routine activities which might interfere with securing operations. Commence securing and stow all gear and portable equipment. Make preparations for securing buildings. Reinforce or remove formwork and scaffolding. Secure machinery, tools, equipment, materials, or remove from the jobsite. Expend every effort to clear all missile hazards and loose equipment from general Portsmouth Naval Shipyard areas. Contact Contracting Officer for weather and COR updates and completion of required actions. Review requirements pertaining to "Condition TWO" and continue action as necessary to attain "Condition THREE" readiness.

c. Condition TWO (Sustained winds of 58 mph or greater expected within 24 hours): Secure the jobsite, and leave Government premises.

d. Condition ONE (Sustained winds of 58 mph or greater expected within 12 hours): Contractor access to the jobsite and Government premises is prohibited.

1.5 CYBERSECURITY DURING CONSTRUCTION

The Contractor must meet the following requirements throughout the construction process.

1.5.1 Contractor Computer Equipment

Contractor owned computers may be used for construction. When used, Contractor computers must meet the following requirements along with the

requirements of paragraph SECURITY RESPONSIBILITIES (PNSY) of Section 01 14 00.00 22 WORK RESTRICTIONS (PWD ME):

Note: Any Computers (including tablet, laptop, or other computers) must not be introduced into nor removed from the Portsmouth Naval Shipyard. Obtain approvals from the PNSY Security Officer via the Contracting Officer. Cameras, video equipment, or similar photographic equipment installed in computers must be disabled. Proof of computer Portsmouth Naval Shipyard Security Officer approval must be with the tablet, laptop, or other computers at all times.

1.5.1.1 Operating System

The operating system must be an operating system currently supported by the manufacturer of the operating system. The operating system must be current on security patches and operating system manufacturer required updates.

1.5.1.2 Anti-Malware Software

The computer must run anti-malware software from a reputable software manufacturer. Anti-malware software must be a version currently supported by the software manufacturer, must be current on all patches and updates, and must use the latest definitions file. All computers used on this project must be scanned using the installed software at least once per day.

1.5.1.3 Passwords and Passphrases

The passwords and passphrases for all computers must be changed from their default values. Passwords must be a minimum of eight characters with a minimum of one uppercase letter, one lowercase letter, one number, and one special character.

1.5.1.4 Contractor Computer Cybersecurity Compliance Statements

Provide a single submittal containing completed Contractor Computer Cybersecurity Compliance Statements for each company using Contractor owned computers. Contractor Computer Cybersecurity Compliance Statements must use the template published at http://www.wbdg.org/ffc/dod/unified-facilities-guide-specifications-ufgs/forms-graphics-tables. Each Statement must be signed by a cybersecurity representative for the relevant company.

1.5.2 Temporary IP Networks

Temporary Contractor-installed IP networks may be used during construction. When used, temporary Contractor-installed IP networks must meet the following requirements:

1.5.2.1 Network Boundaries and Connections

The network must not extend outside the project site and must not connect to any IP network other than IP networks provided under this project or Government furnished IP networks provided for this purpose. Any and all network access from outside the project site is prohibited.

1.5.3 Government Access to Network

Government personnel must be allowed to have complete and immediate access to the network at any time in order to verify compliance with this specification.

1.5.4 Temporary Wireless IP Networks

In addition to the other requirements on temporary IP networks, temporary wireless IP (WiFi) networks must not interfere with existing wireless network and must use WPA2 security. Network names (SSID) for wireless networks must be changed from their default values.

1.5.5 Passwords and Passphrases

The passwords and passphrases for all network devices and network access must be changed from their default values. Passwords must be a minimum of 8 characters with a minimum of one uppercase letter, one lowercase letter, one number, and one special character.

1.5.6 Contractor Temporary Network Cybersecurity Compliance Statements

Provide a single submittal containing completed Contractor Temporary Network Cybersecurity Compliance Statements for each company implementing a temporary IP network. Contractor Temporary Network Cybersecurity Compliance Statements must use the template published at http://www.wbdg.org/ffc/dod/unified-facilities-guide-specifications-ufgs/forms-graphics-tables. Each Statement must be signed by a cybersecurity representative for the relevant company. If no temporary IP networks will be used, provide a single copy of the Statement indicating this.

PART 2 PRODUCTS

2.1 TEMPORARY SIGNAGE

2.1.1 Bulletin Board

Prior to the commencement of work activities, provide a clear weatherproof covered bulletin board not less than 36 by 48 inches in size for displaying the Equal Employment Opportunity poster, a copy of the wage decision contained in the Contract, Wage Rate Information poster, Safety and Health Information as required by EM 385-1-1 Section 01, and other information approved by the Contracting Officer. Coordinate requirements herein with 01 35 26.00 22 GOVERNMENTAL SAFETY REQUIREMENTS (PWD ME). Locate the bulletin board at the project site in a conspicuous place easily accessible to all employees, and in location as approved by the Contracting Officer.

2.1.2 Project Identification Signs

The requirements for the signs, their content, and location are as indicated or as specified in Section 01 58 00 PROJECT IDENTIFICATION (if included in the specifications). Erect signs within 15 days after receipt of the notice to proceed. Correct the data required by the safety sign daily, with light colored metallic or non-metallic numerals.

2.1.3 Warning Signs

Post temporary signs, tags, and labels to give workers and the public adequate warning and caution of construction hazards according to the EM 385-1-1 Section 04. Attach signs to the perimeter fencing a maximum of every 150 feet warning the public of the presence of construction hazards. Signs must require unauthorized persons to keep out of the construction site. Correct the data required by safety signs daily. Post signs at all points of entry designating the construction site as a hard hat area.

2.2 TEMPORARY TRAFFIC CONTROL

2.2.1 Haul Roads

At no expense to the Government, construct access and haul roads necessary for proper prosecution of the work under this Contract in accordance with EM 385-1-1 Section 04. Construct with suitable grades and widths; avoid sharp curves, blind corners, and dangerous cross traffic. Submit haul road plan for approval. Provide necessary lighting, signs, barricades, and distinctive markings for the safe movement of traffic. The method of dust control, although optional, must be adequate to ensure safe operation at all times. Location, grade, width, and alignment of construction and haul roads are subject to approval by the Contracting Officer. Lighting must be adequate to assure full and clear visibility for full width of haul road and work areas during any night work operations.

2.2.2 Barricades

Erect and maintain temporary barricades to limit public access to hazardous areas. Barricades are required whenever safe public access to paved areas such as roads, parking areas, or sidewalks is prevented by construction activities or as otherwise necessary to ensure the safety of both pedestrian and vehicular traffic. Securely place barricades clearly visible with adequate illumination to provide sufficient visual warning of the hazard during both day and night.

2.2.3 Temporary Security Lighting

Provide temporary security lighting if any existing permanent security lighting is disturbed during the execution of the work.

2.3 FENCING

Provide fencing along the construction site and at all open excavations and tunnels to control access by unauthorized people. Safety fencing must be highly visible to be seen by pedestrians and vehicular traffic. All fencing must meet the requirements of EM 385-1-1. Remove the fence upon completion and acceptance of the work. Fencing must be installed to be able to restrain a force of at least 250 pounds against it.

2.3.1 Chain Link Panel Fencing

Temporary panel fencing must be galvanized steel chain link panels 6 feet high. Multiple fencing panels may be linked together at the bases to form long spans as needed. Each panel base must be weighted down using sand bags or other suitable materials in order for the fencing to withstand anticipated winds while remaining upright. Fencing must remain rigid and taut with a minimum of 200 pounds of force exerted on it from any direction with less than 4 inches of deflection. Completely remove fencing and posts at the completion of construction and restore surfaces disturbed or damaged to its original condition. Equip fence with a lockable gate. Gate must remain locked when construction personnel are not present.

2.3.2 Temporary Security Lighting

Provide temporary security lighting if any existing permanent security lighting is disturbed during the execution of the work. Any CIA lighting outages must be approved through code 1122 and temporary lighting must be

provided that is equal to or greater than the current foot-candle rating of the area. Allow 5 working days for review.

2.4 TEMPORARY WIRING

Provide temporary wiring in accordance with EM 385-1-1 Section 11, NFPA 241, and NFPA 70. Include monthly inspection and testing of all equipment and apparatus.

2.5 TEMPORARY SAFETY RAILING SYSTEM

Provide a temporary safety railing system to protect pedestrians traversing through the construction site from fall hazards and prevent vehicles from inadvertently exiting the bridge. The protection system must be installed immediately after removal of the exisitng bridge west safety rail system, during the weekend shut down period, a hazard must never exist at anytime to pedestrians.

2.5.1 Temporary Safety Railing System Design

The safety rail system must be designed by a licensed professional engineer in accordance with AASHTO and MEDOT standards. Submit a temporary safety railing installation sequencing plan for approval by the Contracting Officer.

Submit the temporary safety railing design calculations and temporary safety railing shop drawings signed, dated and stamped by a professional engineer.

2.5.2 Temporary Safety Railing Inspection

Inspect the temporary safety rail system on a periodic basis throughout the duration of construction. Submit a temporary safety railing inspection schedule for approval by the Contracting Officer.

PART 3 EXECUTION

3.1 EMPLOYEE PARKING

Construction Contract employees must park privately owned vehicles in an area designated by the Contracting Officer. Employee parking must not interfere with existing and established parking requirements of the Government installation. Refer to Section 01 14 00.00 22 WORK RESTRICIONS (PWD ME)paragraph EMPLOYEE PARKING for additional requirements.

3.2 AVAILABILITY AND USE OF UTILITY SERVICES

3.2.1 Temporary Utilities

Provide temporary utilities required for construction. Materials may be new or used, must be adequate for the required usage, not create unsafe conditions, and not violate applicable codes and standards.

3.2.2 Government Provided Utility Services

The Government will not provide any utility services.

3.2.2 Sanitation

Provide and maintain within the construction area minimum field-type sanitary facilities approved in accordance with EM 385-1-1 Section 02 and by the Contracting Officer. Locate the facilities behind the construction fence or out of the public view. Clean units and empty wastes at least once a week or more frequently into a municipal, district, or Portsmouth Naval Shipyard sanitary sewage system, or remove waste to a commercial facility. Obtain approval from the system owner prior to discharge into a municipal, district, or commercial sanitary sewer system. Penalties or fines associated with improper discharge will be the responsibility of the Contractor. Maintain these conveniences at all times without nuisance. Include provisions for pest control and elimination of odors. Government toilet facilities will not be available toContractor's personnel.

3.2.3 Telephone

Make arrangements and pay all costs for telephone facilities desired.

3.2.4 Obstruction Lighting of Cranes

Provide a minimum of two (2) aviation red or high intensity white obstruction lights on temporary structures (including cranes) over 100 feet above ground level. Light construction and installation must comply with FAA AC 70/7460-1. Lights must be operational during periods of reduced visibility, darkness, and as directed by the Contracting Officer.

3.2.5 Fire Protection

Provide temporary fire protection equipment for the protection of personnel and property during construction. Remove debris and flammable materials daily to minimize potential hazards.

3.3 TRAFFIC PROVISIONS

3.3.1 Maintenance of Traffic

a. Conduct operations in a manner that will not close any thoroughfare or interfere in any way with traffic on railways or highways except with written permission of the Contracting Officer at least 15 calendar days prior to the proposed modification date, and provide to the Contracting Officer a Traffic Control Plan for Government approval detailing the proposed controls to traffic movement for approval. The plan must be in accordance with State and local regulations and the MUTCD, Part VI. Contractor may move oversized and slow-moving vehicles to the worksite provided requirements of the State of Maine Department of Transportation have been met.

b. Conduct work so as to minimize obstruction of traffic, and maintain traffic on at least half of the roadway width at all times. Obtain approval from the Contracting Officer prior to starting any activity that will obstruct vehicle or pedestrian traffic.

c. Provide, erect, and maintain, at no expense to the Government, lights, barriers, signals, passageways, detours, and other items, that may be required by the Life Safety Signage and overhead protection authority having jurisdiction.

d. The area adjacent to the project site will be an active Shipyard work

site. All work shall be coordinated to avoid impacting Shipyard operations. Work shall not impact Shipyard Fire Department access in any way unless otherwise approved by the Contracting Officer, Government and Shipyard Fire Department via outage request process.

3.3.2 Protection of Traffic

Maintain and protect traffic on all affected roads during the construction period except as otherwise specifically directed by the Contracting Officer. Measures for the protection and diversion of traffic, including the provision of watchmen and flagmen, erection of barricades, placing of lights around and in front of equipment and the work, and the erection and maintenance of adequate warning, danger, and direction signs, will be as required by the State and local authorities having jurisdiction. Provide self-illuminated (lighted) barricades during hours of darkness. Brightly-colored (orange) vests are required for all personnel working in roadways. Protect the traveling public from damage to person and property. Minimize the interference with public traffic on roads selected for hauling material to and from the site. Investigate the adequacy of existing roads and their allowable load limit. The Contractor is responsible for the repair of damage to roads caused by construction operations.

3.3.3 Rush Hour Restrictions

Do not interfere with the peak traffic flows preceding and during normal operations without notification to and approval by the Contracting Officer.

3.3.4 Dust Control

Dust control methods and procedures must be approved by the Contracting Officer. Coordinate dust control methods with Section 01 57 19.00 22 TEMPORARY ENVIRONMENTAL CONTROLS - PORTSMOUTH NAVAL SHIPYARD (PWD ME).

3.4 CONTRACTOR'S TEMPORARY FACILITIES

Contractor is responsible for security of their property. Provide adequate outside security lighting at the temporary facilities. Trailers must be anchored to resist high winds and meet applicable State or local standards for anchoring mobile trailers. Coordinate anchoring with EM 385-1-1 Section 04. The Contract Clause entitled "FAR 52.236-10, Operations and Storage Areas" and the following apply:

3.4.1 Safety Systems

Protect the integrity of any installed safety systems or personnel safety devices. Obtain prior approval from the Contracting Officer if entrance into systems serving safety devices is required. If it is temporarily necessary to remove or disable personnel safety devices in order to accomplish Contract requirements, provide alternative means of protection prior to removing or disabling any permanently installed safety devices or equipment and obtain approval from the Contracting Officer.

3.4.2 Administrative Field Offices

Provide and maintain administrative field office facilities within the construction area at the designated site. Government office and warehouse facilities will not be available to Contractor personnel.

3.4.3 Storage Area

Construct a temporary 6 foot high chain link fence around trailers and materials. Include plastic strip inserts, colored green, so that visibility through the fence is obstructed. Fence posts may be driven, in lieu of concrete bases, where soil conditions permit. Do not place or store trailers, materials, or equipment outside the fenced area unless such trailers, materials, or equipment are assigned a separate and distinct storage area by the Contracting Officer away from the vicinity of the construction site but within the boundaries of the Portsmouth Naval Shipyard. Trailers, equipment, or materials must not be open to public view with the exception of those items which are in support of ongoing work on the current day. Do not stockpile materials outside the fence in preparation for the next day's work. Park mobile equipment, such as tractors, wheeled lifting equipment, cranes, trucks, and like equipment within the fenced area at the end of each work day.

3.4.4 Supplemental Storage Area

Upon request, and pending availability, the Contracting Officer will designate another or supplemental area for the use and storage of trailers, equipment, and materials. This area may not be in close proximity of the construction site but will be within the Portsmouth Naval Shipyard boundaries. Maintain the area in a clean and orderly fashion and secured if needed to protect supplies and equipment. Utilities will not be provided to this area by the Government.

3.4.5 Maintenance of Storage Area(s)

Keep fencing in a state of good repair and proper alignment. Grassed or unpaved areas, which are not established roadways, must be covered with a layer of gravel as necessary to prevent rutting and the tracking of mud onto paved or established roadways, should the Contractor elect to traverse them with construction equipment or other vehicles; gravel gradation will be at the Contractor's discretion. Mow and maintain grass located within the boundaries of the construction site for the duration of the project. Grass and vegetation along fences, buildings, under trailers, and in areas not accessible to mowers must be edged or trimmed neatly.

3.4.6 Appearance of Trailers

a. Trailers must be roadworthy and comply with all appropriate State and local vehicle requirements. Trailers which are rusted, have peeling paint or are otherwise in need of repair will not be allowed on Portsmouth Naval Shipyard property. Trailers must present a clean and neat exterior appearance and be in a state of good repair.

b. Maintain the temporary facilities. Failure to do so will be sufficient reason to require their removal at the Contractor's expense.

3.4.7 Laydown Space

Parking and laydown space on the site is limited to the area shown on the plans. Manage the on-site work including equipment, storage trailers, material, material deliveries to allow the work to be completed within the specified Contract duration. This may require the Contractor to locate suitable storage off-site and multiple equipment mobilizations to allow the work to be completed. Equipment or materials not used to complete the work must be removed from the site. If additional offsite storage, additional

mobilization or demobilizations are required, all these costs must be included in the base bid.

Failure to plan the work based on the space limitations must not be the basis for any claim nor an equitable price or Contract time adjustment.

3.4.8 Weather Protection of Temporary Facilities and Stored Materials

Take necessary precautions to ensure that roof openings and other critical openings in the temporary facilities are monitored carefully. Take immediate actions required to seal off such openings when rain or other detrimental weather is imminent, and at the end of each workday. Ensure that the openings are completely sealed off to protect materials and equipment in the temporary facilities from damage.

3.4.9 Building and Site Storm Protection

When a warning of gale force winds is issued, take precautions to minimize danger to persons, and protect the work and nearby Government property. Precautions must include, but are not limited to, closing openings; removing loose materials, tools, and equipment from exposed locations; and removing or securing scaffolding and other temporary work. Close openings in the work when storms of lesser intensity pose a threat to the work or any nearby Government property.

3.4.10 Temporary Partitions

Provide "No Dust" temporary partitions of wood or metal frame, heavy duty plastic sheathing and negative pressure HEPA filtered ventilation. Provide access door and vestibules as required to prevent dust from escaping the enclosure. Refer to Section 02 41 00 DEMOLITION for additional information and requirements if included as part of the specifications.

3.5 TEMPORARY PROJECT SAFETY FENCING

As soon as practicable, but not later than 15 days after the date established for commencement of work, furnish and erect temporary project safety fencing at the work site as specified in paragraph entitled CONSTRUCTION SITE PLAN herein. Maintain the safety fencing during the life of the Contract and, upon completion and acceptance of the work, remove from the work site.

3.6 CLEANUP

Remove construction debris, waste materials, packaging material, and the like from the work site daily. Any dirt or mud which is tracked onto paved or surfaced roadways must be cleaned away. Store all salvageable materials resulting from demolition activities within the fenced area described above or at the supplemental storage area. Neatly stack stored materials not in trailers, whether new or salvaged.

3.7 RESTORATION OF STORAGE AREA

Upon completion of the project remove the bulletin board, signs, barricades, haul roads, and any other temporary products from the site. After removal of trailers, materials, and equipment from within the fenced area, remove the fence. Restore areas used during the performance of the Contract to the original or better condition. Remove gravel used to traverse grassed areas and restore the areas to their original condition,

including top soil and seeding as necessary.

-- End of Section --

SECTION 01 57 19.00 22

TEMPORARY ENVIRONMENTAL CONTROLS - PORTSMOUTH NAVAL SHIPYARD (PWD ME)
09/22

PART 1 GENERAL

This Section applies to Design-Bid-Build and Design-Build projects at Portsmouth Naval Shipyard only.

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. ENVIRONMENTAL PROTECTION AGENCY (EPA)

EPA SW-846	(Third Edition; Update IV) Test Methods for Evaluating Solid Waste: Physical/Chemical Methods

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

29 CFR 1910.120	Hazardous Waste Operations and Emergency Response
40 CFR 50	National Primary and Secondary Ambient Air Quality Standards
40 CFR 82	Protection of Stratospheric Ozone
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 261.7	Residues of Hazardous Waste in Empty Containers
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 300.125	National Oil and Hazardous Substances Pollution Contingency Plan - Notification and Communications
40 CFR 302	Designation, Reportable Quantities, and Notification
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
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 https://legislature.maine.gov/statutes/38/title38ch0sec0.html

STATE OF MAINE RULES are available on the internet at https://www.maine.gov/sos/cec/rules/06/chaps06.htm

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 AIR BUREAU CHAPTER 159 Control of Volatile Organic Compounds from Adhesives and Sealants; 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 MRSA 439-B	Contractors Certified in Erosion Control (Latest Edition)
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 38 MSRA 853	Licensing of Transporters of Hazardous Waste
MAINE 38 MSRA 857	Hazardous Waste Manifest Requirements
MAINE 38 MSRA 858	Universal Waste Rules
MAINE 38 MSRA 860	Waste Oil Management Rules
MAINE 88 MRSA 480A-480Z	Natural Resources Protection Act
CODE OF MAINE RULE 06-096	Chapter 500 Stormwater Management
CODE OF MAINE RULE 06-096	Chapter 573 Snow Dumps: Best Management Practices for Pollution Prevention
MAINE DEP	Maine Erosion and Sediment Control Practices Field Guide for Contractors, latest edition.
MEPDES Permit #MER042000	General Permit for the Discharge of Stormwater from State or Federally Owned Municipal Separate Storm Sewer Systems

PORTSMOUTH NAVAL SHIPYARD INSTRUCTIONS

NAVSHIPY PTSMH INST 5090.8 Environmental Sampling Manual

NAVSHIPY PTSMH INST 5090.30 Hazardous Waste Generator Standards

1.2 DEFINITIONS

1.2.1 Chemical Wastes

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

1.2.2 Garbage

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

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 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 Safety Data Sheet (SDS) 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 includes ammunition, weapons, explosive actuated devices, propellants, pyrotechnics, chemical and biological warfare materials, medical and pharmaceutical supplies, medical waste and infectious materials, bulk fuels, radioactive materials, and other materials such as asbestos, mercury, and polychlorinated biphenyls (PCBs). Nonetheless, the exposure may occur incident to manufacture, storage, use and demilitarization of these items.

1.2.5 Hazardous Waste

Hazardous Waste is any material that meets the definition of a solid waste and exhibit a hazardous characteristic (ignitability, corrosivity, reactivity, or toxicity) as specified in 40 CFR 261, Subpart C, or contains a listed hazardous waste as identified in 40 CFR 261, Subpart D or as identified by Maine Department of Environmental Protection (MEDEP) MAINE 38 MSRA 850-860. Hazardous waste controls also apply to Universal Wastes.

1.2.6 Municipal Separate Storm Sewer System (MS4) Permit

MS4 permits are those held by installations to obtain NPDES permit coverage for their stormwater discharges.

1.2.7 National Pollutant Discharge Elimination System (NPDES)

The NPDES permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States.

1.2.8 Non-Emergency Spill Event

A non-emergency spill event is a discharge of a known material or any hazardous substance that does not pose an immediate threat to human health or the environment, can be cleaned up as part of normal housekeeping by the personnel who discovered the spill, and is not released on the soil or into any waterway inlet (for example, storm drain) or outside Navy property boundaries.

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 Petroleum, Oils, and Lubricants (POLs) and have become separated from that POLs. 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 POLs.

All oily waste must be collected and turned in to Building 357 for disposal. A hazardous waste determination form may be required prior to disposal. All waste characterization sampling must be conducted in accordance with Paragraph 3.13.4.2 herein entitled SAMPLING AND ANALYSIS OF HAZARDOUS WASTE. Oily waste must be minimized through good housekeeping practices and employee education.

1.2.10 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.

1.2.11 Regulated Waste

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

1.2.12 Reportable Release

A reportable release means any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment of a known or unknown material or

hazardous substance that poses an immediate threat to human health or the environment to the air, soil, or water. Reportable releases are: a sheen of oil on the water; a violation of the Installation's or project's water permit (NPDES permit(s)); A sewage spill that threatens human health or the environment; a Comprehensive Environmental Response, Compensation, and Liability Act reportable quantity for hazardous/toxic substances (40 CFR 302); an air or hazardous substance release that is a threat to human health or the environment or released outside the facility boundaries.

1.2.13 Sediment

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

1.2.14 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. 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.

b. 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.

c. 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.

d. Non-Hazardous Waste: Non-hazardous waste is waste that is excluded from, or does not meet, hazardous waste criteria in accordance with 40 CFR 263.

e. Paint cans: Metal cans that are RCRA empty of paints, solvents, thinners, and adhesives. 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.

f. 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. Paint cans that meet the definition of empty containers in accordance with 40 CFR 261.7 may be included as recyclable if sold to a scrap metal company.

g. 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.

h. 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.

i. Wood: Dimension and non-dimension lumber, plywood, chipboard, and hardboard. Treated and/or painted wood that meets the definition of lead contaminated or lead based contaminated paint is not included.

j. 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.

k. Special Waste: "Special waste" means any solid waste generated by sources other than household and typical commercial establishments that do not meet the definition of a hazardous waste but 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;

(10) Shredder residue; and

(11) Railroad ties with or without creosote.

1.2.15 Sewage

Liquid waste designated by the Government as "domestic sanitary sewage" and normally discharged through domestic sanitary sewage systems. Liquids designated as "sewage" include human body waste, and wastewater from sinks, showers, laundries, dishwashers, and garbage disposals when these liquids use only chemicals approved by the Government for discharge into the sanitary sewer.

1.2.16 Spill Event

A spill is any release of oil or hazardous substances to the water or ground that is not controlled or permitted. This includes any spilling, leaking, pumping, emitting, discharging, injecting, escaping, leaching, disposing, or dumping of liquid or solid material that is not authorized in writing by the Contracting Officer.

1.2.17 Universal Waste

The universal waste regulations streamline collection requirements for certain hazardous wastes in the following categories: batteries, pesticides, and 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.

1.2.18 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.

1.3 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

Preconstruction Survey; G

Solid Waste Management Plan; G

Regulatory Notifications; G

Environmental Management Plan (EMP); G

Dirt and Dust Control Plan; G

Contractor Hazardous Material Inventory Log; G

Stormwater Management/Erosion and Sedimentation Control Plan; G

Spill Prevention, Control, and Countermeasures (SPCC) Plan; G

SD-06 Test Reports

Laboratory Analysis; G

Disposal Requirements; G

Erosion and Sediment Control Inspection and Corrective Action; 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.

Stormwater 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

Hazardous Waste/Debris Management; G

Regulatory Notifications; G

Asbestos Free Certification Form; 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.

Conduct tests and procedures for the purpose of assessing whether construction operations are in compliance with Applicable Environmental Laws. Analytical work must be done by qualified laboratories; and where required by law, the laboratories must 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 must 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 must 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 https://environmentaltraining.ecatts.com/start. Obtain the password for registration from the Contracting Officer.

This training has been structured to allow personnel to receive credit under this Contract and also to carry forward credit to future contracts. Ensure 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, working in multiple States will require personnel to re-take modules tailored to the State where the Contract work is being performed.

ECATTS is available for use by all 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. Obtain a camera pass from Portsmouth Naval Shipyard Security (via Contracting Officer) prior to use of a camera at Portsmouth Naval Shipyard. Digital cameras can only be used. All computer discs must be turned over to Portsmouth Naval Shipyard Security (via Contracting Officer) for review and clearance prior to use.

1.5.2 Regulatory Notifications

Prepare all regulatory notification requirements in accordance with Federal, State, and local regulations. Regulatory notifications must be submitted by the Government unless otherwise directed by the Contracting Officer. 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 Portsmouth Naval Shipyard. The brief will be conducted by the Contracting Officer's Representative (COR) and is part of the Pre-Construction Meeting agenda including details for environmental protection, expectations for the Environmental Management Plan, important notes regarding Installation Restoration (IR), Historic, and Cultural Resources, Wetlands, and Concrete Wash Water/Wastewater. Provide the following information: types, quantities, and use of hazardous materials that will be brought onto the Portsmouth Naval Shipyard; 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, historic properties, required reports, required permits, specific permit requirements, and other measures to be taken. Identify additional environmental concerns specific to the site (e.g., historic, archaeological and natural resources, IR, erosion and sediment control, spill prevention and control, soil management, testing 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 compliance with Federal, State, local, and Portsmouth Naval Shipyard requirements. The Environmental Manager cannot perform the duties of the Project Superintendent or the SSHO. The Environmental Manager must ensure compliance with Hazardous Waste Program requirements (including hazardous waste handling, storage, daily turn-in, manifesting, and disposal as applicable); implement the Environmental Management Plan; ensure that all environmental permits are obtained, maintained, and closed out; ensure compliance with Stormwater Program Management requirements; ensure compliance with Hazardous Materials (storage, handling, and reporting) requirements; and coordinate any remediation of regulated substances (lead, asbestos, PCB transformers, etc.). 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 personnel are trained in 40 CFR requirements in accordance with their position requirements; coordinate removal or turn-in 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 Spill Prevention, Control, and Countermeasures (SPCC) requirements, including but 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. 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 a RCRA Large Quantity Generator. 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 to Portsmouth Naval Shipyard Environmental Division (Code 106.3) and NAVFAC Environmental (PWD-ME EV) Staff in accordance with Paragraph entitled SOLID WASTE MANAGEMENT PLAN in

Part 3 of this Section.

1.7 SITE WASTE REMOVAL (SWR) MEETING

A SWR meeting must be held with the PWD ME CM and Code 106.3 fourteen (14) calendar days prior to the removal of wastes from a project site to ensure all pertinent requirements of the Standard Operating Procedure for Site Waste Removal(SWR)(Attachment B) have been met. No transport of wastes will be allowed until full concurrence is provided by the PWD ME CM and Code 106.3 following the satisfactory completion of the SWR.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 ENVIRONMENTAL MANAGEMENT PLAN (EMP)

Prior to initiating any work on site, meet with the Contracting Officer, Code 106.3, and PWD-ME EV Staff to discuss the proposed Environmental Management Plan (EMP) and develop a mutual understanding relative to the details of environmental protection required to be addressed in the EMP as discussed at the Pre-Construction Meeting, including measures for protecting natural resources and other measures to be taken. The EMP must be submitted in the following format and must 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 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, any required dewatering facilities and infiltration areas, 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. Stormwater 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)

(5) Wastewater disposal methods

(6) Include a draft (or blank) inspection form that will be used for the Erosion and Sediment Control Inspections.

e. Protection of the Environment from Waste Derived from Contract Operations

(1) Control and disposal of solid and sanitary waste.

(2) Control and disposal of hazardous materials and 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 NAVSHIPY PTSMH INST 5090.30 Hazardous Waste Generator Standards. PTSMH INST 5090.30 will be provided by the Contracting Officer. As a minimum, include the following:

(a) Procedures to be employed to complete a written waste determination for wastes which are to be generated. Written waste determinations will be as requested by the Government;

(b) Sampling/analysis plan;

(c) Management procedures for hazardous materials and hazardous waste daily accumulation, storage (if approved), labeling, transportation, turn-in and disposal of waste. Disposal or treatment of hazardous waste by the Contractor is not allowed unless specifically noted or approved by Code 106.3;

(d) Management procedures and regulatory documentation ensuring disposal of hazardous waste complies with Land Disposal Restrictions, as applicable (40 CFR 268);

(e) Management procedures for recyclable hazardous materials such as lead-acid batteries, used oil, and similar;

(f) Used oil management procedures in accordance with 40 CFR 279;

(g) Pollution prevention/hazardous waste minimization procedures;

(h) Plans for the disposal of hazardous and other regulated waste by permitted facilities (as applicable); and

(i) 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 and the 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 at a minimum must include:

(a) Type of tank or container, quantity stored, type of product stored, and location.

(b) Secondary containment required for tanks/containers 55 gallons or greater; double-wall tanks preferred.

(c) Tank inspection forms (industry standard forms are acceptable, but the use of Portsmouth Naval Shipyard inspection forms is preferred). Records must be kept for 3 years or for the duration of the project. Tanks must be inspected monthly.

i) Bulk storage containers, to include those on equipment, 55 gallons or greater require monthly inspection.

ii) Inspection procedures and an inspection sheet for the release of retained stormwater from secondary containment used for bulk storage tanks and containers.

(d) Where spill kits are located and a description of the spill kit contents for the type of spill anticipated.

(e) If transferring fuel: how often, what type of fuel, and where. Coordinate with the Contracting Officer's Representative (COR) and Code 106.3 prior to transferring fuel over water.

(f) Who to notify in case of ANY spill (Portsmouth Naval Shipyard Fire Department: 207-438-2333, Contracting Officer's Representative, Code 106.3: 207-438-4477, NRC, MEDEP, etc.).

(g) How to clean up a spill safely and bring the spill cleanup waste to Building 357 by the end of the shift generated.

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 30 calendar days after the Contract award date, submit the proposed Environmental Management Plan for further discussion, review, and approval. Commencement of work must not begin until the environmental management plan has been approved by the Contracting Officer, Code 106.3, and PWD-ME EV Staff.

3.1.2 Licenses, State and Federal Permits

Copies of the approved permit(s) are available from the Contracting Officer. Maintain copies of all permits at the project site. Comply with all terms and conditions of the approved permits.

Where required by the State regulatory authority, the inspections and certifications will be provided through the services of a Professional Engineer (PE), registered (licensed) in the State of Maine. Where a PE is not required, the individual must be otherwise qualified by other current State licensure, specific training, and prior experience (minimum 5 years). As a part of the quality control plan, which is required to be submitted for approval by the Quality Control section, provide a sub item containing the name, appropriate professional registration or license number, address, and telephone number of the professionals or other qualified persons who will be performing the inspections and certifications for each permit.

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 must not be used for tree cuts or stumps.

3.2.1 Erosion and Sediment Control Measures

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 must be in place before the activity begins, maintained and must remain in place and functional until the site is permanently stabilized.

Temporary and permanent erosion control measures must meet, at a minimum, the Best Management Practices (BMPs) presented in the Maine Erosion and Sediment Control Practices Field Guide for Contractors, latest edition. Other techniques may be employed if approved by Code 106.3 and PWD-ME EV and demonstrated to the Contracting Officer that the practice will achieve the required result of no release of sediment per State law.

Site work including any filling, excavation, landscaping, and/or other earthwork in excess of one cubic yard of disturbance, must comply with State of Maine requirements for certification in erosion and sediment control practices within a shoreland zone. A certified individual must 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 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.

a. Stormwater Management/Erosion and Sedimentation Control Plan

(1) Submit a Stormwater Management/Erosion and Sedimentation Control Plan to the Contracting Officer, for review and approval by Code

106.3 and PWD-ME Environmental,for all earthwork in excess of one cubic yard of disturbance. The Plan must demonstrate effective selection, implementation and maintenance of Best Management Practices (BMPs) demonstrating compliance with the Portsmouth Naval Shipyard's Maine Pollutant Discharge Elimination System Municipal Storm-Separate Sewer System Permit (MS4).

CMR 06-096 Chapter 500 Stormwater Management and terms and conditions specified in other approved permits (e.g., Maine Construction General Permit (MCGP), U.S. Army Corps of Engineers (ACOE)) issued for the work.

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

Submit Stormwater Management and Erosion Control Compliance Notebook at project completion or as directed by the Contracting Officer.

The Plan must:

(a) Identify potential sources of pollution which may be reasonably expected to affect the quality of stormwater discharge from the site.

(b) Describe and ensure implementation of practices which will be used to reduce the pollutants in stormwater discharge at the manufacturing,
storage and lay down, and construction sites.

(c) Describe and ensure full compliance with all MEDEP General Permits (MS4/MCGP) and any other regulatory permits (e.g., ACOE, USEPA) specific to the project.

(d) Describe and ensure compliance with MEDEP over winter stabilization and construction requirements, as applicable.

(e) Identify inspections and maintenance schedules for Best Management Practices (BMPs) demonstrating compliance with the State of Maine standards. Maintenance procedures must 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 best management practices from the Maine Erosion and Sediment Control Practices Field Guide for Contractors, latest edition. Submit a site plan showing locations of controls and provide manufacturer's product sheets for each control to be used.

(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. At a minimum, must include a description of concrete manufacturing activities and the management of concrete wastewater/wash water as

described in Paragraph 3.19 herein entitled CONCRETE WASH WATER.

3.2.2 Stockpiles

Assumed Non-Hazardous soil stockpiles require erosion and sediment controls around the downhill leading edge of the stockpile, or if a leading edge cannot be found, around the entire stockpile perimeter; a MEDEP approved erosion control cover on top of the stockpile when inactive 7 or more days, when stockpile operations are complete and while awaiting soil characterization test results; while awaiting test results, placarded as Pending Characterization and based on those sample results placarded as either Non-Hazardous or Hazardous; immediately cover with 6 mil plastic sheeting if soil characterization test results return as Hazardous.

Known Hazardous (IR Soil) or suspect contaminated soil stockpiles require 6 mil plastic sheeting underneath; erosion control sock around the entire stockpile perimeter; a 6 mil plastic sheeting cover unless actively being worked or while obtaining soil characterization test samples; at all times placarded as Hazardous for IR soil stockpiles. Suspect contaminated soil stockpiles must be placarded as Pending Characterization while awaiting soil characterization test results and based on those results placarded as either Non-Hazardous or Hazardous.

3.2.3 Erosion and Sediment Control Inspection and Corrective Action

Inspection reports must 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 must 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 resulting in 0.25 inches of precipitation or greater. Inspection reports must document compliance with State of Maine requirements. If erosion and sediment control BMPs need to be repaired, the repair work should be initiated upon discovery of the problem but no later than the end of the next workday. If additional BMPs or significant repair of BMPs are necessary, implementation must be completed within 7 calendar days and prior to any storm event (rainfall). For each BMP requiring maintenance, BMP needing replacement, and location needing additional BMPs, note in the inspection report the corrective action taken and when it was taken.

3.2.4 Burnoff

Burnoff of the ground cover is not permitted.

3.3 HISTORICAL AND ARCHAEOLOGICAL RESOURCES

Identify presence of historic properties impacted by the project and outline any required protection methodologies. 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, stop work in the immediate area of the discovery and protect the area from further disturbance. Notify the Contracting Officer immediately. Do not resume activities within the area until directed by the Contracting Officer to resume work. The Government retains ownership and control over historical and archaeological resources. If historical,

archaeological items, or human remains are discovered during excavations for the project, a certified Maine Archaeologist must be on site to evaluate the discovery and monitor excavation work. The qualifications of the Archaeologist must be submitted and approved by the Contracting Officer. A site monitoring report prepared by the Archaeologist must be submitted to the Contracting Officer within 21 calendar days of completing site excavation work. Refer to Section 01 44 00.00 22 ARCHAEOLOGICAL MONITORING (PWD ME) for additional requirements.

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 must contain, but not be limited to, the following wastes: stumps and grubbings, excess soil, construction debris, demolition debris, household solid waste, special waste, and industrial solid waste. The submission must 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 must state the classification (using the definitions provided in this Section), amount, location, and name of the business receiving the solid waste.

Include copies of the waste handling facilities' weight tickets, receipts, bills of sale, and other sales documentation. In lieu of sales documentation, submit a statement indicating the disposal location for the solid waste which is signed by an officer of the firm authorized to legally obligate or bind the firm. The sales documentation or certification must include the receiver's tax identification number and business, EPA, or State registration number, along with the receiver's delivery and business addresses and telephone numbers. For each solid waste retained for use, 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 into containers which are regularly emptied. Containers must be kept covered except when being loaded with trash and debris. Watertight covered dumpsters and roll-offs are preferred. 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 Portsmouth Naval 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 the most stringent local, State, and Federal requirements including 40 CFR 241, 40 CFR 243, and 40 CFR 258. Discharges from dumpsters and roll-offs are prohibited.

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 Portsmouth Naval Shipyard requirements.

3.4.2.1 Dumpsters and Roll-offs

Dry weather discharges from dumpsters and roll-offs are prohibited. Equip dumpsters and roll-offs with a secure lid or covering. Keep covers closed at all times, except when being loaded with trash and debris, or provide secondary containment to ensure that discharges have a control. Locate dumpsters and roll-offs behind the construction fence or out of the public view and away from storm drains. Empty site dumpsters and roll-offs at least once a week or as needed to keep the site free of debris and trash. If necessary, provide 55-gallon trash containers 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, dumpsters and roll-offs must use a cover and watertight containers are preferred; debris must not be higher than the sides before emptying. Water must not be collected in watertight roll-offs or dumpsters. Any water collected in roll-offs, dumpsters, or secondary containment could become contaminated with oil or other contaminants and may require waste characterization by the Contractor prior to release and/or removal from PNS.

3.5 WASTE DETERMINATION DOCUMENTATION

Complete a Waste Determination form (provided by the Contracting Officer at the pre-construction conference) for derived wastes to be generated, as requested by Code 106.3. 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 (Safety Data Sheets (SDS) by themselves are not adequate). Attach all support documentation to the Waste Determination form. A Waste Determination form may be requested for the following types of 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 Safety Data Sheets (SDS) 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 off-site transfers must be submitted to the Contracting Officer.

3.7 POLLUTION PREVENTION/HAZARDOUS WASTE MINIMIZATION

Minimize the use of hazardous materials and the generation of hazardous waste. Include procedures for pollution prevention/ hazardous waste minimization in the Hazardous Waste Management Section of the Environmental Management Plan.

3.8 WHM/HW MATERIALS PROHIBITION

Do not improperly dispose of hazardous materials/hazardous waste on Government property. No hazardous material will 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, empty containers, etc. may be considered hazardous wastes and must be turned in to Building 357 for disposal by the Government as described in the paragraph entitled HAZARDOUS MATERIAL MANAGEMENT of this Section. The list is illustrative rather than inclusive. Universal wastes must be managed with controls similar to those for hazardous waste.

Do not 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 by the Contracting Officer and Code 106.3.

3.9 HAZARDOUS MATERIAL MANAGEMENT

No hazardous material will be brought onto Government property that does not directly relate to requirements for the performance of this Contract. Hazardous materials for disposal may be considered hazardous wastes and must be turned in to Building 357 for hazardous waste determination by the end of the shift generated.

Include hazardous material control procedures in the Environmental Management Plan as described in Paragraph 3.1 herein entitled ENVIRONMENTAL MANAGEMENT PLAN (EMP) and the Safety Plan in accordance with Section 01 35 26.00 22 GOVERNMENTAL SAFETY REQUIREMENTS (pwd me). Address procedures and proper handling of hazardous materials, including the appropriate transportation requirements. All hazardous material must be in active use or properly stored. Hazardous materials must not be left unattended or uncontrolled while on Portsmouth Naval Shipyard.

Submit a SDS and estimated quantities to be used for each hazardous material to the Contracting Officer prior to bringing the material on the Portsmouth Naval Shipyard. Typical materials requiring SDS and quantity reporting include, but are not limited to, oil and latex based painting and caulking products, solvents, adhesives, aerosol, and petroleum products. 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 SDS 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, away from storm drains and surface waters. 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. All used oil will be turned in to Building 357 and disposed of by the Government.

3.10.1 Oily and Hazardous Substances

Provide secondary containment and overfill protection for oil and hazardous substance storage tanks. Prevent oil or hazardous substances from entering the ground, drainage areas, storm drains, 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 must 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. Provide procedures and equipment to prevent overfilling of tanks. Monitor and remove any rainwater that accumulates in open containment dikes, berms, or spill pallets. Inspect the accumulated rainwater prior to draining from a containment dike, berm or spill pallet to the environment, to determine there is no oil sheen present.

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, immediately notify the Contracting Officer. Do 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 must comply with 40 CFR Part 112. Secondary containment must 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 must 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. Drip pans are required. Cover tanks and drip pans during inclement weather to prevent spills, as necessary.

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 in accordance with 40 CFR 300. 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 Portsmouth Naval Shipyard Fire Department 207-438-2333, the Portsmouth Naval Shipyard's Command Duty Officer, Code 106.3: 207-438-4477, Contracting Officer's Representative, and the

Contracting Officer. If the response is inadequate, the Navy may respond. If this should occur, reimbursement to the Government for spill response assistance and analysis will be required.

The Contractor is responsible for verbal and written notifications as required by the Federal 40 CFR 300.125 and 40 CFR 355, State, and local regulations and Navy Instructions. These notifications will be done in coordination with Code 106.3. Spill response must 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, 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. Reimburse the Government for all material, equipment, and clothing generated during any spill cleanup. 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 spills, when:

a. Spill cleanup procedure has not begun within one hour of spill discovery/occurrence, or

b. If, in the Government's judgment, the spill cleanup is not adequately abating a 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 guidance in all aspects of hazardous waste management.

3.13.1 General

All hazardous wastes generated within the confines of the Portsmouth Naval Shipyard must be disposed of by the Government. Accordingly, all hazardous wastes generated to accomplish the requirements of this Contract must be considered Government-generated, and must be disposed of by the Government. Do not bring hazardous wastes onto Government property. Hazardous wastes must be handled in compliance with 40 CFR 260-268, 273, 279 and State of Maine MEDEP Regulations Chapter 850 to 860. For hazardous waste spills, immediately notify the Portsmouth Naval Shipyard Fire Department 207-438-2333, the Portsmouth Naval Shipyard's Command Duty Officer, Code 106.3: 207-438-4477, Contracting Officer's Representative and the Contracting Officer.

3.13.2 Containers

Use only Government-furnished, Government-labeled containers for the packaging of hazardous soils and hazardous wastes. Containers are requested and picked up at Building 357 following approval of the Management Plan required above.

a. Segregate hazardous and non-hazardous soils/wastes. Hazardous soils/wastes must be placed into containers provided by the Government. All containers of hazardous waste must have a Code 106.3

tracking number affixed to the container, as applicable.

b. Hazardous soils must be turned over to the Government, at Building 357, as coordinated with Code 106.3. All other containers of waste hazardous materials and hazardous waste, full or partially full, must be turned in to Building 357 by the end of the shift generated.

While in control of hazardous soils and hazardous wastes, the soils/wastes must be handled in accordance with Portsmouth Naval Shipyard requirements.

c. Prior to Government acceptance of the containers, provide the certification required by the "Submittals" paragraph of this Section, and such additional information regarding contents of the containers. Submittal of a Waste Determination form may be required for proper waste characterization as requested by Code 106.3.

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 Portsmouth Naval Shipyard must meet the regulatory requirements of this generator designation. 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 as requested by Code 106.3 or other Government personnel. Hazardous waste/debris must 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, 40 CFR 268, Maine Department of Environmental Protection (MEDEP) MAINE 38 MSRA 850-860, and NAVSHIPY PTSMH INST 5090.30, latest edition.

Hazardous wastes and universal wastes must also be managed in accordance with the approved Hazardous Waste Management Section of the Environmental Management Plan. Daily worksite accumulation of hazardous wastes and universal wastes must be in Government-provided containers in accordance with 49 CFR 173 and 49 CFR 178. Hazardous waste generated within the confines of Government facilities must 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 Portsmouth Naval Shipyard personnel from the Portsmouth Naval Shipyard Environmental Office. No hazardous waste will be brought onto Government property. Provide to the Contracting Officer a copy of all waste determination documentation that was requested by the Government for hazardous waste or solid wastes with chemical constituents listed in 40 CFR 372-SUBPART D. For hazardous wastes spills, notify the Portsmouth Naval Shipyard Fire Department 207-438-2333, the Portsmouth Naval Shipyard's Command Duty Officer, Code 106.3: 207-438-4477, Contracting Officer's Representative and the Contracting Officer.

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, request the establishment of a Regulated Waste Storage Area, a Satellite Accumulation Area, or a 90 Day Storage Area at the point of generation. Regulated waste and Hazardous Waste Accumulation Areas (HWAAs) are approved by Code 106.3.

Submit a request in writing to the Contracting Officer providing the following information:

Contract Number	_____	Contractor	_____
Haz/Waste or Regulated Waste POC	_____	Phone Number	_____
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 (10) working days for processing this request. The designated area where waste is being stored must be barricaded and a sign identifying as follows:

"DANGER - UNAUTHORIZED PERSONNEL KEEP OUT"

3.13.4.2 Sampling and Analysis of Hazardous Waste

a. Waste Sampling

Sample waste in accordance with EPA SW-846 and NAVSHIPY PTSMH INST 5090.8, latest revision. Each sampled drum or container must be clearly marked with the Contractor's identification number and cross referenced to the chemical analysis performed. All sampling events will require a Code 106.3 reviewed and approved sampling plan and availability for Code 106.3 oversight.

b. Laboratory Analysis

Follow the analytical procedure and methods in accordance with 40 CFR 261. Provide all analytical results and reports performed to the Contracting Officer and Code 106.3 Environmental Sampling Project Manager for review and approval.

All laboratory analysis for hazardous waste identification must be performed by a laboratory compliant 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 - contact Code 106.3 personnel at the Hazardous

Waste Storage Facility, Building 357, 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, 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. Do not remove or perform work on any asbestos containing materials without the prior approval of the Contracting Officer. Do not engage in any activity, which would remove or damage such materials or cause the generation of fibers from such materials.

Asbestos containing waste must be managed and disposed of in accordance with applicable environmental law. Asbestos containing waste must be manifested and the manifest provided to the Contracting Officer. Disposal of asbestos-containing waste must be coordinated with PWD-ME EV and Code 106.3.

Provide the attached Asbestos Free Certification Form (Attachment A) prior to the Government taking beneficial occupancy certifying that all materials, including those supplied by third parties, are asbestos free.

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 and disposed of by the Contractor. All hazardous waste disposed of by the Contractor must be approved by and coordinated with Code 106.3 prior to transporting wastes off PNS property.

a. Responsibilities for Disposal

Responsibilities include any generation of WHM/HW requiring disposal of solid waste or liquid.

(1) Agree 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 must 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.

Disposal Turn-In Requirements

For any waste hazardous materials or hazardous waste generated which requires disposal, the following conditions must be met 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. Contents of drum identified on the outside of the drum, as well as the volume of material, name of material manufacturer, and 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 must 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. Class I and II ODSs are Government property and must be returned to the Government for appropriate management. Coordinate with the Installation Environmental Office to determine the appropriate location for turn in of all reclaimed refrigerant. Regulations related to the protection of stratosphere ozone may be found in 40 CFR 82.

Class I ODS is defined in Section 602(a) of The Clean Air Act. A list of Class I ODS can be found on the EPA website at the following weblink. https://www.epa.gov/ozone-layer-protection/ozone-depleting-substances.

Class II ODS is defined in Section 602(s) of The Clean Air Act. A list of Class II ODS can be found on the EPA website at the following weblink. https://www.epa.gov/ozone-layer-protection/ozone-depleting-substances.

Heating and air conditioning technicians must be certified through an EPA-approved program. Copies of certifications must 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 must be reported to the Contracting Officer.

3.13.6 Universal Waste/e-Waste Management

Universal waste including, but not limited to, some mercury containing building products such as florescent lamps, mercury vapor lamps, high pressure sodium lamps, CRTs, batteries, aerosol paint containers, electrical equipment containing PCBs, and consumed electronic devices, must be managed in accordance with 40 CFR 260, 40 CFR 261, 40 CFR 262, 40 CFR 273, MAINE DEP 38 MSRA 858, and applicable environmental law.

3.14 DUST CONTROL

Dust control must meet the requirements of the BMPs in the Maine Erosion and Sediment Control Practices Field Guide for Contractors, latest edition. Keep dust down at all times, including during nonworking periods. Maintain excavations, stockpiles, haul roads, permanent and temporary access roads, plant sites, spoil areas, borrow areas, and other work areas within or outside the project boundaries free from particulates that would exceed 40 CFR 50, state, and local air pollution standards or that would cause a hazard or a nuisance. 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 or sweeping. 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. Runoff from cutting water is prohibited from entering storm drains or leaving the work site. Do not unnecessarily shake bags of cement, concrete mortar, or plaster.

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

Visible emissions from a fugitive emission source (including stockpiles and roadways) must not exceed an opacity of 20 percent, except for no more than five (5) minutes in any 1-hour period.

Dust suppression during demolition work may include using a manned water hose. Runoff from the site is prohibited.

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 Portsmouth Naval Shipyard roadways. As a minimum, identify in the plan the Subcontractor and equipment for cleaning along the haul route and measures to reduce the dirt, dust, and debris from roadways.

3.15 ABRASIVE AND/OR WET BLASTING AND WATER CUTTING

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 must take place in containments with emissions vented through bag house filters and emissions must 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 and Water Cutting

The use of wet blasting requires the capture and proper disposal of all wastes, including the blasting water, associated with the process. Provide enclosed containments to confine and collect wastewater and debris.

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 must be managed in accordance with paragraph entitled HAZARDOUS WASTE/DEBRIS MANAGEMENT of this Section and the approved EMP. Concrete wash water and oily waste generated from blasting operations must be disposed of in accordance with the policy outlined in these specifications.

3.16 SPRAY PAINTING OPERATIONS

Spray painting operations must take place in containment. Emissions from spray painting must 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 and/or sound deadening enclosures to limit noise within the limits of work. 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, must not exceed the maximum noise levels as specified in the Town of Kittery's Ordinance and all applicable OSHA Regulations. The Kittery Ordinance specifies the maximum permissible sound level limit at the Navy Property Boundary to be 65 dBA from 0700 to 2100 and 60 dBA from 2100 to 0700.

For any construction or demolition operations that may generate noise levels in excess of 80 dBA in adjacent facility work areas outside the limits of work, use low-noise emission equipment, sound deadening enclosures or schedule work outside the normal work hours (with approval by the Contracting Officer and if the noise levels will not exceed the Kittery Noise Ordinance levels stated above) to ensure the adjacent work areas are not impacted.

Provide all noise monitoring equipment necessary to record and document noise levels associated with any operations generating excessive noise to ensure these noise levels specified are not exceeded.

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 (within 15 minutes) notify instances of breakage or mercury spillage to the Portsmouth Naval Shipyard Fire Department 207-438-2333, the Portsmouth Naval Shipyard's Command Duty Officer, Code 106.3: 207-438-4477, Contracting Officer's Representative and the Contracting Officer. Clean the mercury spill area(s) to the satisfaction of the Contracting Officer. Cleanup of a mercury spill must not be recycled and must be managed as a hazardous waste for disposal.

3.19 CONCRETE WASH WATER

Concrete wash water is 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, wheelbarrows, pre casting equipment, forms, manufactured cast concrete sections, tools, concrete areas; masonry cutting operations; cleaning up of split mortar or block fill; and hosing away excess materials.

Water or stormwater 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 oily residue. Oily wastes must be collected and disposed of in accordance with Portsmouth Naval Shipyard policy.

Concrete wash water must be collected and either placed in a concrete wash out structure for settling solids and evaporating liquid or turned-in as wastewater to Building 357 by the end of the shift generated. As approved by Code 106.3, large volumes of concrete wastewater may be disposed of at a facility designed and approved for the disposal or recycling of concrete wastewater. Under no circumstances will clean water be added to concrete wash water/wastewater for dilution purposes or any other reason. Containment wash out structures must be watertight, designed to promote evaporation, and provide adequate freeboard to contain the wash water, solids, and rainfall to prevent overflow. Washout must only occur in designated areas that have been approved by the Contracting Officer's Representative.

Inspect all concrete wash out structures daily to determine filled capacity. Remove all materials from containment wash out structures when 75% fill capacity has been reached. Concrete wash out structure operations must be conducted to reduce the amount of concrete wastewater generated for disposal. 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 must be vacuumed and turned-in to Building 357 or, as approved by Code 106.3, disposed of at a facility designated for disposal/recycling of concrete wastewater.

3.19.1 Pollution Prevention

Store dry and wet concrete supplies under cover away from drainage areas. Concrete wash water must not be released to the storm drain system, sewer system, roadways, other uncontained impervious surfaces, or to natural waterways including the Piscataqua River and its tributaries. Take all precautions necessary to prevent rainwater or stormwater runoff from coming into contact with concrete wash water. Divert clean stormwater and roof runoff from contact with concrete wash water. Take all measures necessary to minimize the volume of concrete wash water generated. Protect all waterways, catch basins, and storm drain structures from potential discharges of concrete wash water. Collect and control concrete wash water separately from wastewater determined to be oily waste.

3.19.2 On-Shipyard Disposal

ALL CONCRETE WASTEWATER MUST BE COLLECTED AND TURNED-IN TO BUILDING 357 BY THE END OF THE SHIFT GENERATED. CONCRETE WASH WATER THAT IS COLLECTED AND DEPOSITED IN WASH OUT STRUCTURES MUST BE TURNED IN TO BUILDING 357 AT OR BEFORE THE CONCRETE WASH OUT STRUCTURE REACHES 75% CAPACITY.

3.19.3 Off-Shipyard Disposal

Concrete wastewater may be disposed of off-site as approved by Code 106.3. The Contractor must submit for approval the disposal facility designated for concrete wash water/wastewater and provide careful oversight to prevent improper dumping of concrete wash water. Any clean up resulting from improper control of concrete wash water will be at no expense to the Government.

3.20 DISPOSAL OF CHLORINATED WATER AND DECHLORINATION REQUIREMENTS

Chlorinated water created during disinfection procedures must not be directly discharged to storm drains or sanitary sewers without prior dechlorination and approval by Code 106.3. Chlorinated water must 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), as approved by Code 106.3. Dechlorination must be sufficiently effective to reduce total residual chlorine concentration to 1 mg/L or below.

3.21 SNOW STORAGE AND DISPOSAL

Site and operate snow storage and disposal areas to prevent the discharge of snow directly into surface waters and minimize discharges of pollutants from snow maintenance activities. As necessary, the Contractor must employ applicable snow dump BMPs from CMR 06-096 Chapter 573 Snow Dumps: Best Management Practices for Pollution Prevention for snow storage areas.

-- End of Section --

Public Works Department, Maine

ATTACHMENT A

ASBESTOS FREE CERTIFICATION FORM

References:

1. NAVFAC P-502 Asbestos Program Management

A. Asbestos Certification

The Contractor shall not use any asbestos containing material (ACM) at any time during the Work. Contractor shall certify that all material/equipment installed in any portion of the Work is asbestos free. The Government may request that the Contractor provide Safety Data Sheets, manufacturer certifications, laboratory analytical results, and/or other documentation to support the Contractor's certification that all suspect material/equipment is asbestos free. If any material/equipment is found to contain asbestos, the Contractor shall pay for the lawful and proper removal and disposal of product(s), and re-install acceptable material/equipment all at its sole expense.

By signing below, the Contractor certifies that all material/equipment installed in any portion of the Work is asbestos free:

Project Title:

Contract No.:

Company:

Date:

Print Name:

Contractor Signature:

Public Works Department, Maine **Rev. 0**

ATTACHMENT B **12/17/2021**

STANDARD OPERATING PROCEDURE FOR SITE WASTE REMOVAL (SWR) PROCESS

Applicability: This SOP applies to any special waste and excavated soil removed from Portsmouth Naval Shipyard (PNSY) including dredged materials. Herein the term "waste" represents both landside and dredged excavated materials, and bulk special waste that exceeds the storage capacity of the Hazardous Waste Facility.

Overview: Soils removed from PNSY shall be characterized and disposed in accordance with the regulatory requirements applicable to the waste. NAVFAC PWD-Maine, as the Contracting Officer Representative (COR), owns the overall responsibility for ensuring this removal and disposal process is followed and shall ensure Contractor compliance. The NAVFAC PWD-Maine COR (e.g. CM or ET) shall also ensure required documentation is complete and stored in the project file.

A critical step in this process is the scheduling and execution of a Site Waste Removal (SWR) meeting held at the project site. Wastes cannot be removed from a project site before this meeting is held and documented by a signed Site Waste Removal Form *[Enclosure (1)]*. Three parties must sign the form to complete the process – the NAVFAC COR, the C106 representative, and the contractor.

NOTE: Waste characterization must be completed in accordance with C106 requirements before the SWR meeting can be scheduled. The Contractor shall prepare and submit a Sampling and Analysis Plan (SAP) to C106.3 for approval prior to implementation in accordance with the Contract Documents. The SAP must demonstrate compliance with the sampling requirements of the proposed disposal facility. Following C106 approval of the SAP, waste sampling can be performed by C106 or by the contractor with direct oversight by C106. Next, the analytical results (complete laboratory report) are submitted to C106 for review. C106 will provide direction on the disposal requirements for the waste (e.g. non-hazardous or hazardous). The sampling plan must include a site diagram clearly showing the source location of the waste and the stored waste stockpile location. This diagram must be reviewed at the SWR meeting.

SWR Process:

1. Contractor requests SWR meeting via Microsoft Outlook sent to project CM or ET and the C106 representative a minimum of three (3) business days for non-hazardous wastes and ten (10) business days for hazardous wastes prior to the desired SWR meeting date. The invite shall include a proposed hauling schedule. The meeting must be held at the removal site or area where the waste is stored and will be hauled from.
2. Prior to the meeting, the Contractor shall inspect the site and confirm the field conditions (e.g. source of excavated soils, location and characterization of stockpiled wastes designated for disposal, etc.) match the information presented on the site diagram previously provided to C106 in the waste sampling plan. Wastes shall not be removed from PNSY if the sampling plan documentation does not match the field conditions found at the removal site.
3. Hold on-site SWR meeting. Contractor, NAVFAC CM/ET, and C106 representative shall be present for discussion and signing of the Initial SWR Form *[Enclosure (1)*]. If one of these three parties is not in attendance at the SWR it must be rescheduled.

STANDARD OPERATING PROCEDURE FOR
SITE WASTE REMOVAL (SWR) PROCESS

SWR Process-Continued:

4. The SWR meeting discussion shall *review* the following:
    a. Source of the waste.
    b. Location of removal/stock pile areas designated for removal.
    c. Analytical characterization results of the samples taken for the waste designated for disposal demonstrating non-hazardous or hazardous nature of the waste.
    d. Estimated tonnage of waste to be removed.
    e. Anticipated calendar time frame and duration of waste removal activities.
    f. Phases of waste removal that will require additional C106 review and *SWR* signoff. 'Phases' of waste removal will be established for each specific project. The *SWR* meeting group will establish how phases are defined for that particular project. Phase examples include:
        i. One stockpile of soil on site or in one bin from excavation activity.
        ii. One barge load of dredge spoils from dredge material excavation.
        iii. One single area or multiple areas for excavation/demolition within one project site as illustrated on a site diagram for live loading projects. **LIVE LOADING REQUIRES A DAILY SWR MEETING.**
5. SWR group will complete a site walk to identify the waste source area(s) to ensure in-field conditions match the site diagram.
6. NAVFAC will sign one DRR Form for each day of removal activity. A copy of the DRR form will be given to the first truck hauling waste for the activity, and the *DRR* form will be delivered with the truck load to B-357 as proof of DRR form approval for the day. The DRR forms will include the hauler name and truck numbers as well as the information provided in the Initial SWR Form signed by C106.
7. If suspected contaminated wastes (identified by odor or visual examination) are discovered during removal, removal activities shall immediately cease *and contact* C106 to evaluate the situation.
8. The contractor will fill out the descriptive fields of the Initial SWR form. C106 representative and NAVFAC CM/ET will review the information and provide signatures if the information is complete and everyone is in concurrence with the waste removal requirements.
9. The contractor will scan both the Initial SWR Form and corresponding site diagram and send to the NAVFAC CM/ET via email.
10. NAVFAC CM/ET will send the Initial SWR form and corresponding site diagram to the C106 SWR group email **PORT_PTNH_PNS_SWR.**
11. The Contractor *w*ill email subsequent DRR forms for daily waste removal activities to Code 106 at **PORT_PTNH_PNS_SWR.**
12. On the day of hauling, the NAVFAC CM/ET shall double check that the correct stockpile was loaded for disposal, sign the DRR form, and submit to the Contractor to file.
13. The NAVFAC CM/ET will continue daily surveillance, site condition reviews, and execution of DRR forms for each shipping day. The NAVFAC CM/ET will also review the Contractor Daily Production Reports to ensure all loads are recorded so they can be traced back to disposal manifests.

Rev. 0
12/17/2021

STANDARD OPERATING PROCEDURE FOR
SITE WASTE REMOVAL (SWR) PROCESS

ENCLOSURE 1

☐INITIAL SITE WASTE REMOVAL (SWR) ☐DAILY REMOVAL RECORD (DRR)

WASTE ACTIVITY DESCRIPTION
1. Contract No:
2. Contract title:
3. Prime contractor company name:
4. Hauling contractor company name:
5. Anticipated hauling date range: Click or tap to enter a date. through Click or tap to enter a date.
6. Waste type: ☐ Non-hazardous soils ☐ Hazardous soils ☐ Special waste _____ ☐ Other _____
7a. Waste source: 7b. Current waste location:
8. Anticipated total hauling amount (tons):
9. PNSY approved waste disposal facility:
WASTE REMOVAL APPROVALS – The signatures below verify that an onsite visual inspection of the material has been performed, and that this form is a record of the facts agreed upon.
10. Prime contractor signature:
11. NAVFAC CM/ET signature:
12. Code 106.3 signature:
DAILY REMOVAL RECORD - to be filled each morning of waste removal
13. Hauling date:
14. Anticipated hauling amount: tons truckloads
15. Hauling contractor Name & truck ID number(s):
16. Prime contractor signature:
17. NAVFAC CM/ET signature:

WASTE REMOVAL PASS ATTRIBUTE DESCRIPTIONS

1. *Contract No*. The unique NAVFAC contract identification number applied to the project requesting waste removal.

2. *Contract title*. The unique contract title/description applied to the project requesting waste removal.

3. *Prime contractor company name*. The project's prime contractor company name.

4. *Hauling contractor company name*. The subcontractor hired to haul waste from the project site to the PNSY approved waste disposal company.

5. *Anticipated hauling date(s)*. Hauling date range agreed upon at SWR meeting for duration of waste removal in the approved phase of removal.

6. W*aste description*. Description of waste in terms of hazardous/non-hazardous designation and any other characteristic determined at the SWR meeting.

7a. W*aste source*. Detailed written description of the source of the waste to be removed. Include removal areas, buildings, streets, land marks, coordinates, and other information as available.

7b. *Current waste location*. Detailed written description of the waste location if displaced from the original source during removal. Include removal areas, bin designations, stockpile locations, buildings, streets, land marks, coordinates and other information as available.

8. *Anticipated total hauling amount (tons)*. Total amount of waste anticipated for removal in the approved phase of removal.

9. *PNSY approved waste disposal facility*. Name of the PNSY approved waste disposal facility.

10. *Prime contractor signature*. Written signature of project's prime contractor.

11. *NAVFAC CM/ET signature*. Written signature of NAVFAC CM or ET in attendance at the SWR meeting.

12. *Code 106.3 signature*. Written signature of Code 106.3 representative in attendance at the SWR meeting.

13. *Hauling date*. Date of the waste removal.

14. *Anticipated hauling amount*. Entire hauling amount (total tons) anticipated for said hauling date.

15. *Hauling contractor truck ID number(s)*. The identification number of the contractor's truck.

16. *Prime contractor signature*. Written signature of prime contractor.

17. *NAVFAC CM/ET signature*. Written signature of project's NAVFAC CM or ET overseeing daily removal of waste from the site.

SECTION 01 58 00

PROJECT IDENTIFICATION
08/19, CHG 2: 11/20

PART 1 GENERAL

This Section applies to Design-Bid-Build and Design-Build projects as applicable at Portsmouth Naval Shipyard and PWD ME AOR Facilities.

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 WOOD PROTECTION ASSOCIATION (AWPA)

AWPA C1	(2003) All Timber Products - Preservative Treatment by Pressure Processes
AWPA C2	(2003) Lumber, Timber, Bridge Ties and Mine Ties - Preservative Treatment by Pressure Processes

1.2 SUBMITTALS

Government approval is required for submittals with a "G" classification. Submittals not having a "G" classification are for Contractor Quality Control approval. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Preliminary Drawing Indicating Layout And Text Content; G

1.3 PROJECT IDENTIFICATION SIGN

Prior to initiating any work on site, provide one project identification sign at the location designated. Construct the sign in accordance with project sign detail, which can be downloaded at: http://www.wbdg.org/ffc/dod/unified-facilities-guide-specifications-ufgs/forms-graphics-tables. Maintain sign throughout the life of the project. Upon completion of the project, remove the sign from the site.

1.3.1 Project Identification Signboard

Provide a project identification signboard in accordance with attached Plates. Provide a preliminary drawing indicating layout and text content. Erect a signboard at a conspicuous location on the job site where directed by the Contracting Officer.

a. The field of the sign consists of a 4 by 8 foot sheet of grade B-B medium density overlaid exterior plywood.

b. Lumber is B or better Southern pine, pressure-preservative treated in accordance with AWPA C1 and AWPA C2. Nails are aluminum or galvanized

steel.

c. Give one coat of exterior alkyd primer and two coats of exterior alkyd enamel paint to the entire signboard and supports. Perform the lettering and sign work by a skilled sign painter using paint known in the trade as bulletin colors. The colors, lettering sizes, and lettering styles are as indicated. Where preservative-treated lumber is required, utilize only cured pressure-treated wood which has had the chemicals leached from the surface of the wood prior to painting.

d. Use spray applied automotive quality high gloss acrylic white enamel paint as background for the NAVFAC logo. NAVFAC logo is an applied 2 mil film sticker/decal with either transparent or white background or paint the logo by stencil onto the sign. The weather resistant sticker/decal film is rated for a minimum of 2-year exterior vertical exposure. Mount the self-adhering sticker to the sign with pressure sensitive, permanent acrylic adhesive. Shop cut sticker/decal to rectangular shape and provide pull-off backing sheet on adhesive side of design sticker for shipping.

e. Sign paint colors (manufacturer's numbers/types listed below for color identification only)

(1) Blue = To match dark blue color in the NAVFAC logo.

(2) White = To match Brilliant White color in the NAVFAC logo.

f. NAVFAC logo must retain proportions and design integrity. NAVFAC logos in electronic format may be obtained from the NAVFAC web portal via the following link: https://www.navfac.navy.mil/about_us/logos_and_seals.html. Use the following to choose color values for the paint to be used:

(1) Dark Blue = equivalent to CMYK values 100, 72, 0, 8.

(2) Light Blue = equivalent to CMYK values 69, 34, 0, 0.

(3) Cyan = equivalent to CMYK values 100, 9, 0, 6.

(4) Yellow = equivalent to CMYK values 0.9,94, 0.

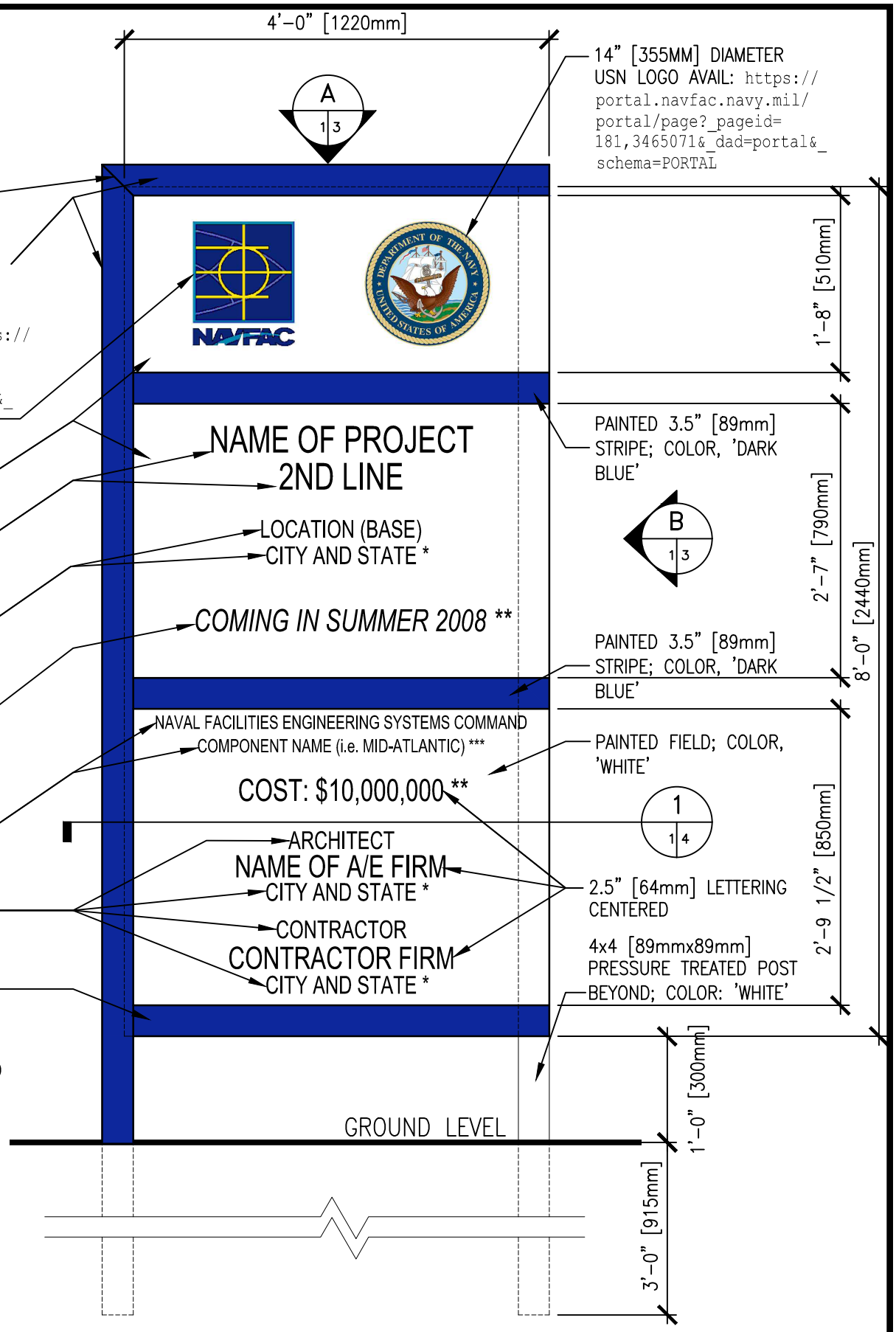
PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

-- End of Section --

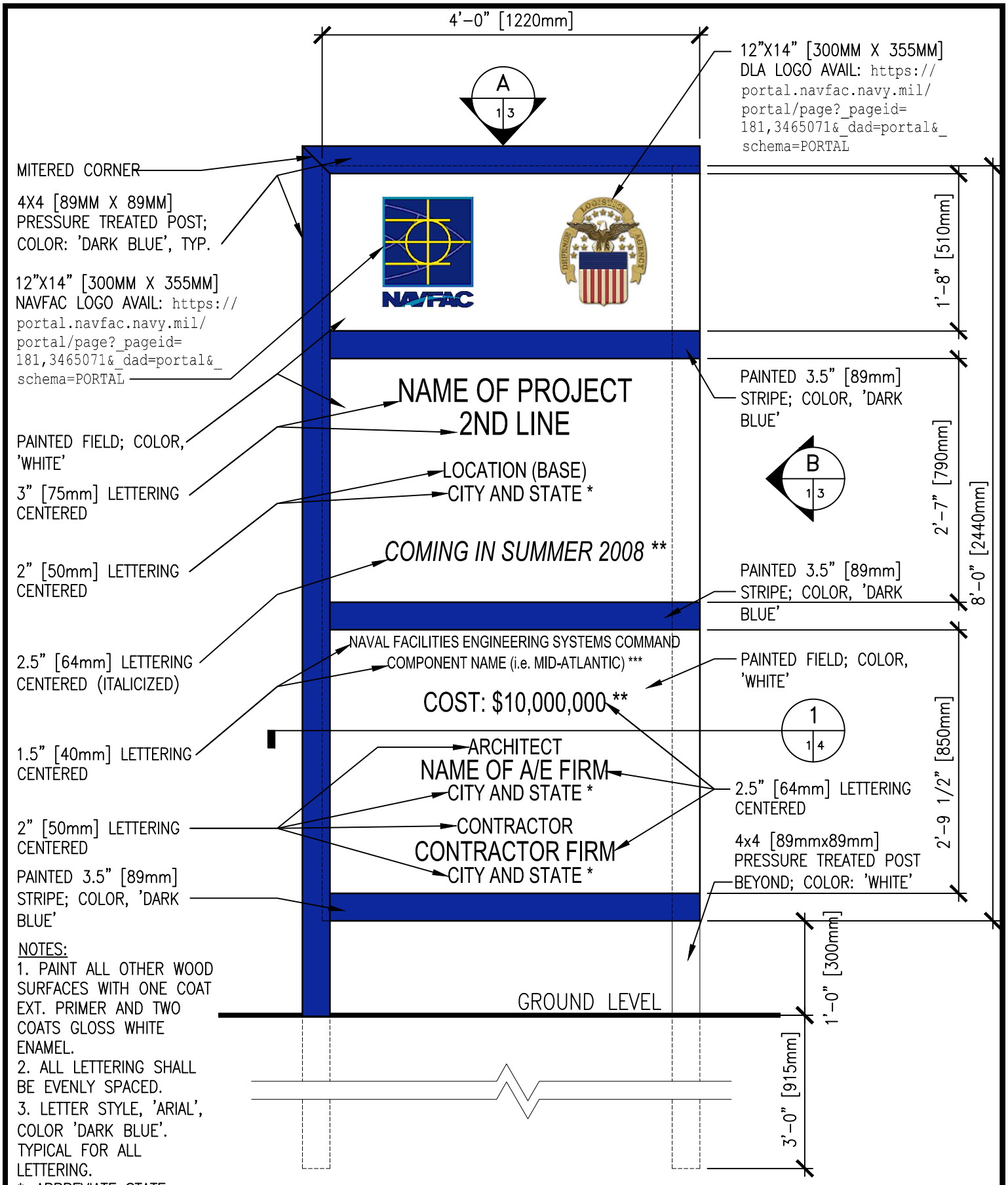


NOTES:
1. PAINT ALL OTHER WOOD SURFACES WITH ONE COAT EXT. PRIMER AND TWO COATS GLOSS WHITE ENAMEL.
2. ALL LETTERING SHALL BE EVENLY SPACED.
3. LETTER STYLE, 'ARIAL', COLOR 'DARK BLUE'. TYPICAL FOR ALL LETTERING.
*–ABBREVIATE STATE
**–CONFIRM USE WITH CONTRACTING OFFICER
***–VERIFY NAME WITH CONTRACTING OFFICER.

NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND PROJECT IDENTIFICATION SIGNBOARD

SCALE: 3/4" = 1'-0"

PLATE 1USN



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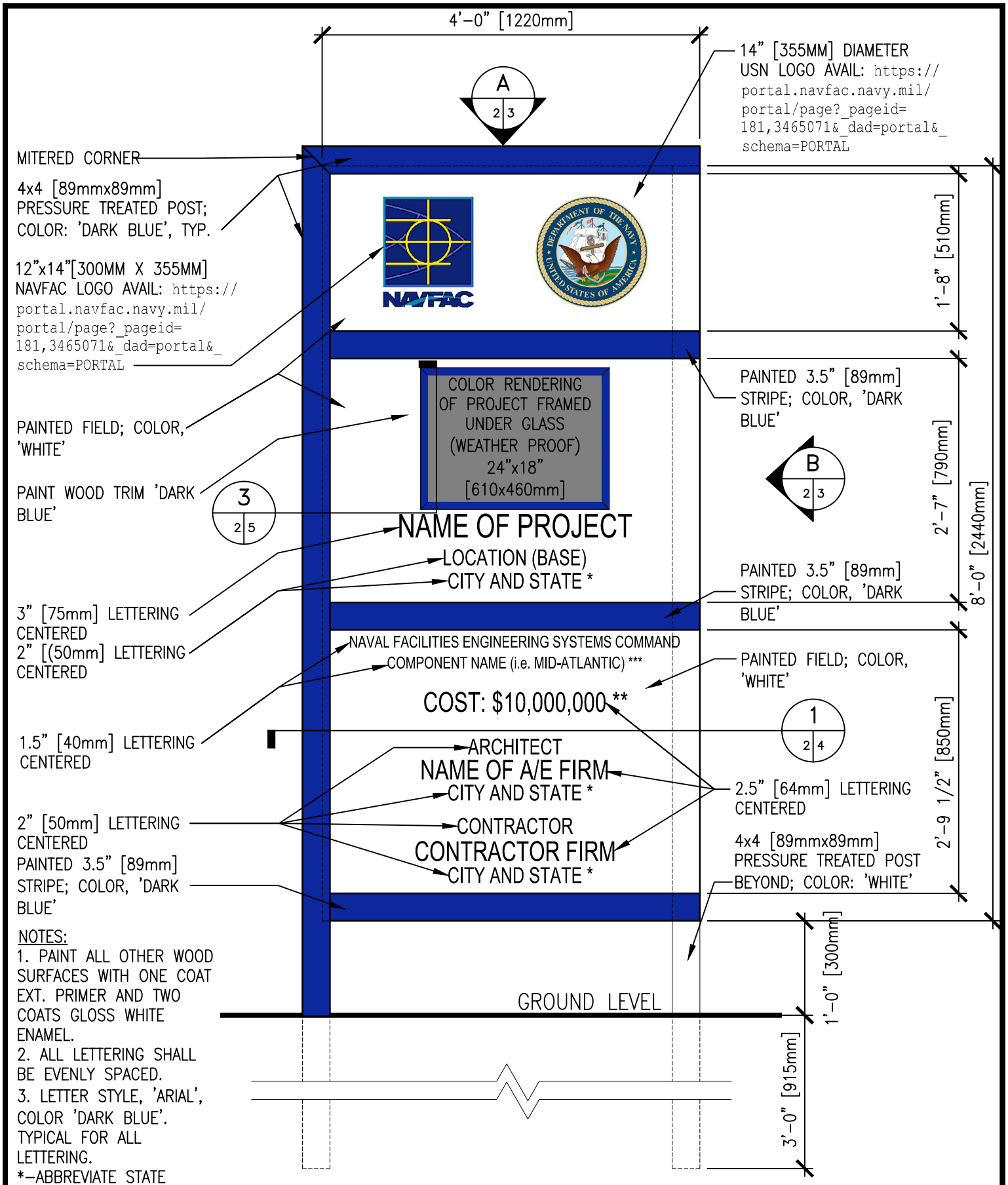
3. LETTER STYLE, 'ARIAL', COLOR 'DARK BLUE'. TYPICAL FOR ALL LETTERING.
*–ABBREVIATE STATE
**–CONFIRM USE WITH CONTRACTING OFFICER
***–VERIFY NAME WITH CONTRACTING OFFICER.

NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND PROJECT IDENTIFICATION SIGNBOARD

SCALE: 3/4" = 1'-0"

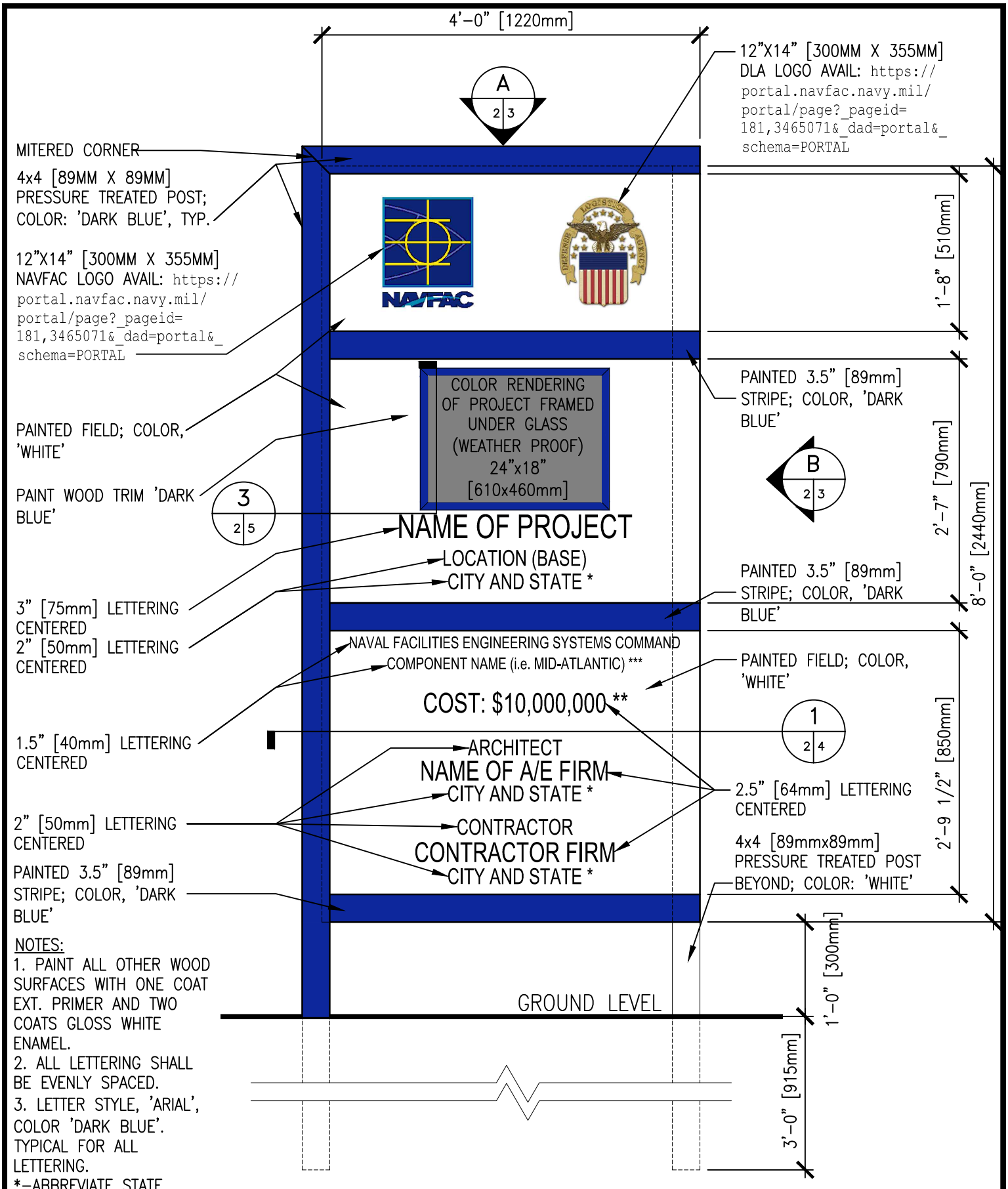
PLATE 1DLA



NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND PROJECT IDENTIFICATION SIGNBOARD

SCALE: 3/4" = 1'-0"

PLATE 2USN

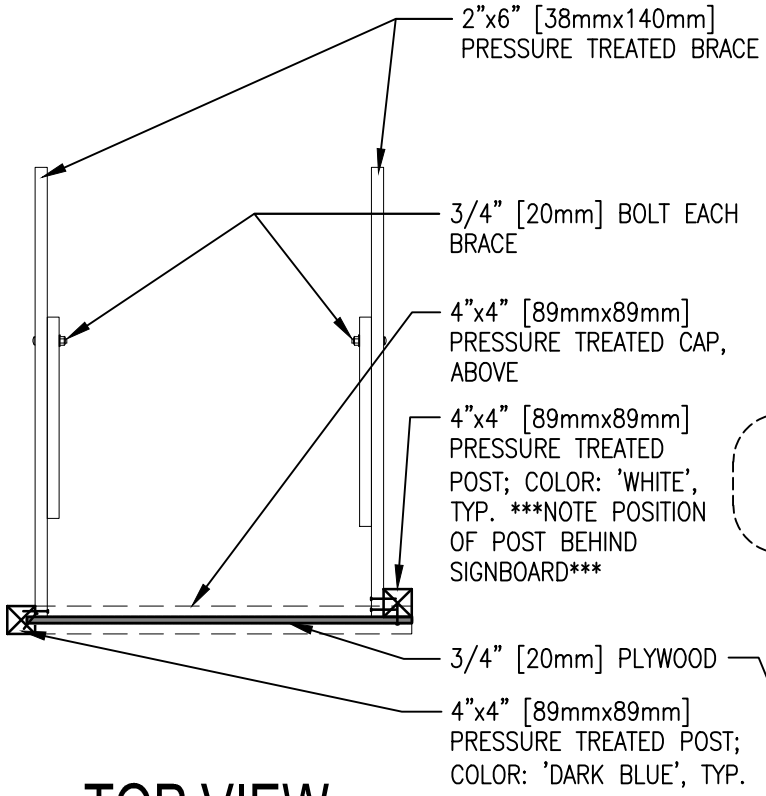


NOTES:
1. PAINT ALL OTHER WOOD SURFACES WITH ONE COAT EXT. PRIMER AND TWO COATS GLOSS WHITE ENAMEL.
2. ALL LETTERING SHALL BE EVENLY SPACED.
3. LETTER STYLE, 'ARIAL', COLOR 'DARK BLUE'. TYPICAL FOR ALL LETTERING.
*–ABBREVIATE STATE
**–CONFIRM USE WITH CONTRACTING OFFICER
***–VERIFY NAME WITH CONTRACTING OFFICER.

NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND PROJECT IDENTIFICATION SIGNBOARD

SCALE: 3/4" = 1'-0"

PLATE 2DLA

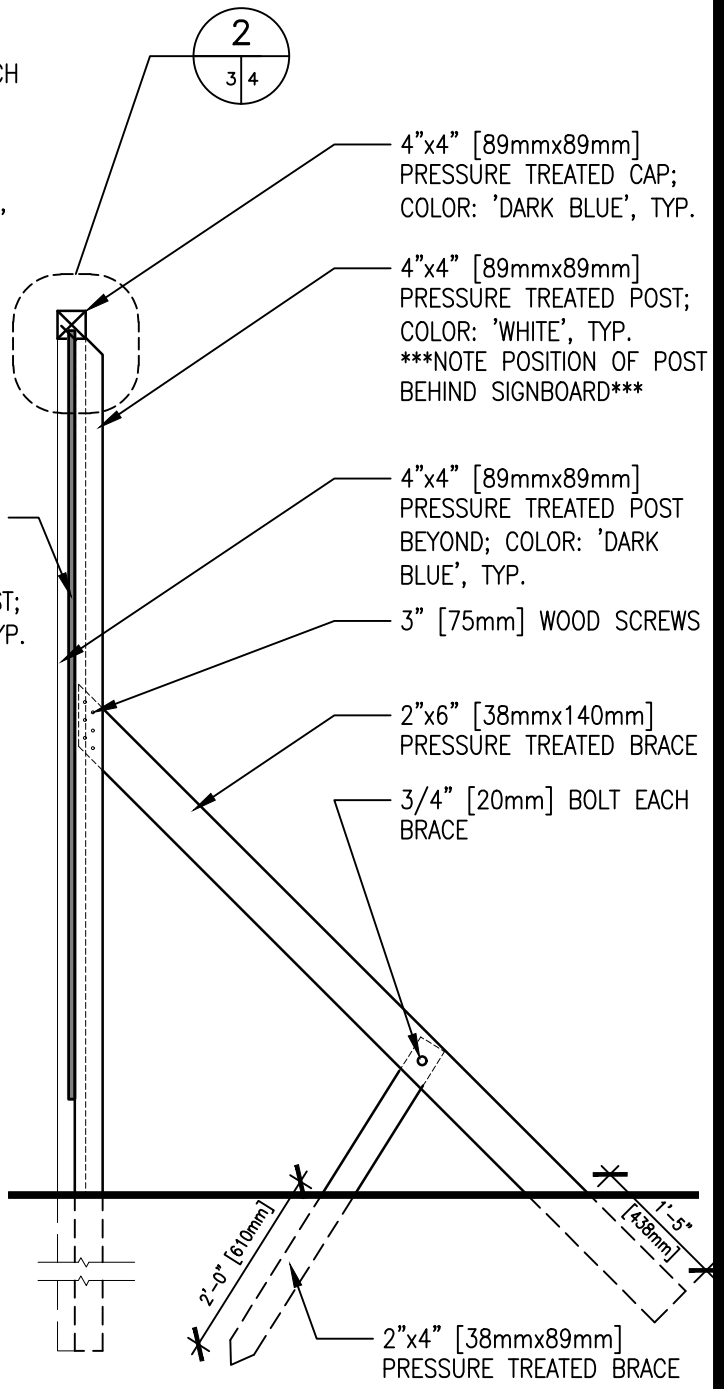


A
1,2 | 3

TOP VIEW

SCALE: 1/2" = 1'-0"

NOTES:
1. POSTS AND BRACES SHALL BE PRESSURE TREATED.
2. ALL FASTENERS SHALL BE ZINC COATED.
3. BRACING IS REQUIRED IN ALL SOIL CONDITIONS AND HIGH WIND ENVIRONMENTS.

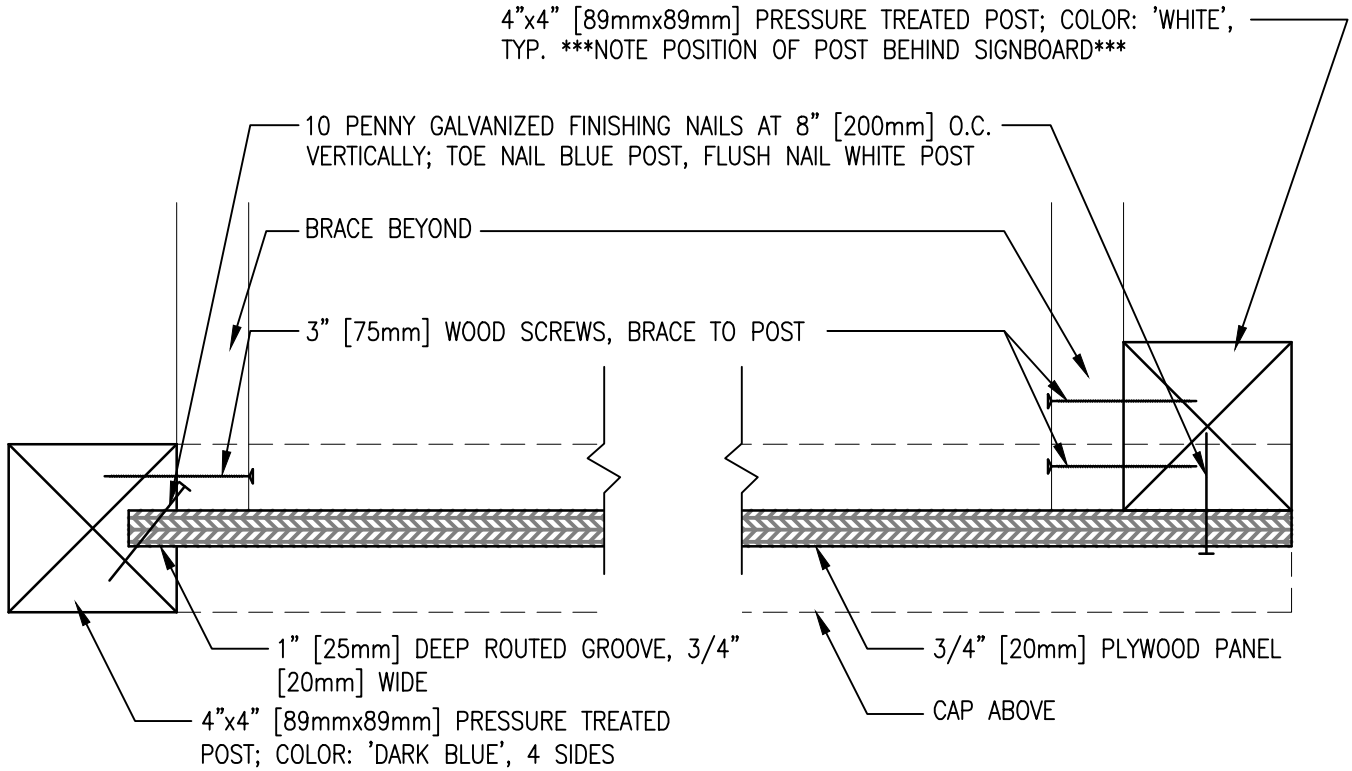


B
1,2 | 3

SIDE VIEW

SCALE: 1/2" = 1'-0"

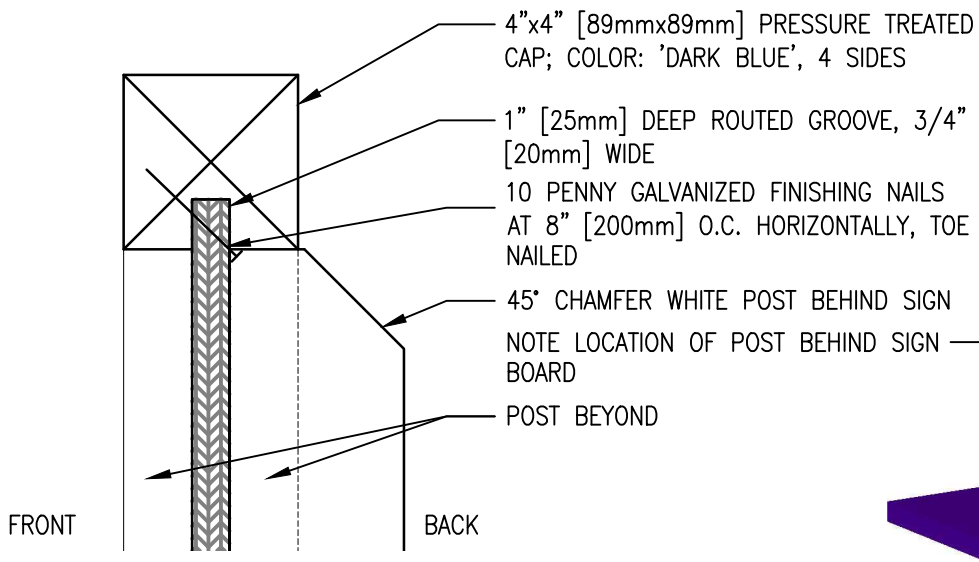
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
PROJECT IDENTIFICATION SIGNBOARD
SUPPORT DETAILS

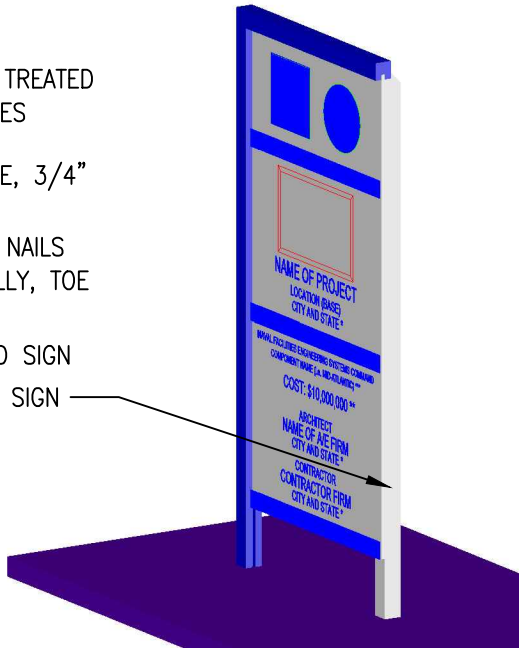


1 PLAN SECTION

1,2 | 4

SCALE: 3" = 1'-0"





2 SECTION AT TOP

1,2 | 4

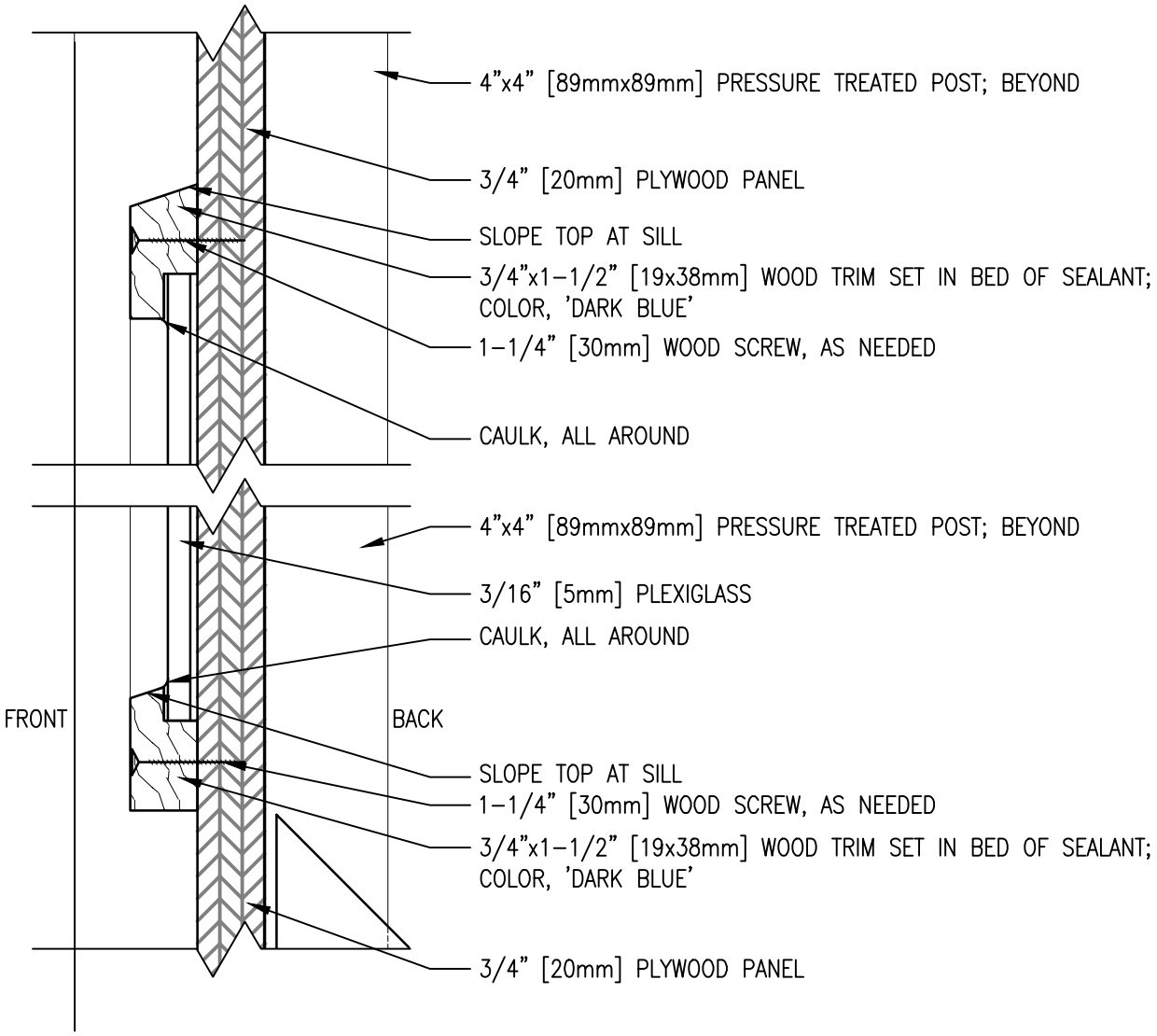
SCALE: 3" = 1'-0"

3 ISO VIEW

2 | 4

SCALE: NONE

NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND PROJECT IDENTIFICATION SIGNBOARD SECTIONS



3 / 2 5

SECTION AT RENDERING FRAME

SCALE: 6" = 1'-0"

NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND

PROJECT IDENTIFICATION SIGNBOARD SECTION

SECTION 01 74 19

CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL
02/19, CHG 1: 08/20

PART 1 GENERAL

This Section applies to Design-Bid-Build and Design-Build projects at Portsmouth Naval Shipyard and PWD ME AOR Facilities.

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. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

40 CFR 273	Standards for Universal Waste Management
49 CFR 173	Shippers - General Requirements for Shipments and Packagings
49 CFR 178	Specifications for Packagings

1.2 DEFINITIONS

1.2.1 Co-mingle

The practice of placing unrelated materials together in a single container, usually for benefits of convenience and speed.

1.2.2 Construction Waste

Waste generated by construction activities, such as scrap materials, damaged or spoiled materials, temporary and expendable construction materials, and other waste generated by the workforce during construction activities.

1.2.3 Demolition Debris/Waste

Waste generated from demolition activities, including minor incidental demolition waste materials generated as a result of Intentional dismantling of all or portions of a building, to include clearing of building contents that have been destroyed or damaged.

1.2.4 Disposal

Depositing waste in a solid waste disposal facility, usually a managed landfill, regulated in the US under the Resource Conservation and Recovery Act (RCRA).

1.2.5 Diversion

The practice of diverting waste from disposal in a landfill, by means of eliminating or minimizing waste, or reuse of materials.

1.2.6 Final Construction Waste Diversion Report

A written assertion by a material recovery facility operator identifying constituent materials diverted from disposal, usually including summary tabulations of materials, weight in short-ton.

1.2.7 Recycling

The series of activities, including collection, separation, and processing, by which products or other materials are diverted from the solid waste stream for use in the form of raw materials in the manufacture of new products sold or distributed in commerce, or the reuse of such materials as substitutes for goods made of virgin materials, other than fuel.

1.2.8 Reuse

The use of a product or materials again for the same purpose, in its original form or with little enhancement or change.

1.2.9 Salvage

Usable, salable items derived from buildings undergoing demolition or deconstruction, parts from vehicles, machinery, other equipment, or other components.

1.2.10 Source Separation

The practice of administering and implementing a management strategy to identify and segregate unrelated waste at the first opportunity.

1.3 CONSTRUCTION WASTE (INCLUDES DEMOLITION DEBRIS/WASTE)

Divert a minimum of 60 percent by weight of the project construction waste and demolition debris/waste from the landfill. Follow applicable industry standards in the management of waste. Apply sound environmental principles in the management of waste. (1) Practice efficient waste management when sizing, cutting, and installing products and materials and (2) use all reasonable means to divert construction waste and demolition debris/waste from landfills and incinerators and to facilitate the recycling or reuse of excess construction materials.

1.4 CONSTRUCTION WASTE MANAGEMENT

Implement a construction waste management program for the project. Take a pro-active, responsible role in the management of construction construction waste, recycling process, disposal of demolition debris/waste, and require all Subcontractors, vendors, and suppliers to participate in the construction waste management program. Establish a process for clear tracking, and documentation of construction waste and demolition debris/waste.

1.4.1 Implementation of Construction Waste Management Program

Develop and document how the construction waste management program will be implemented in a construction waste management plan. Submit a Construction Waste Management Plan to the Contracting Officer for approval. Construction waste and demolition debris/waste materials include un-used construction materials not incorporated in the final work, as well as demolition debris/waste materials from demolition activities or

deconstruction activities. In the management of waste, consider the availability of viable markets, the condition of materials, the ability to provide material in suitable condition and in a quantity acceptable to available markets, and time constraints imposed by internal project completion mandates.

1.4.2 Oversight

The Environmental Manager, as specified in Section 01 57 19.00 22 TEMPORARY ENVIRONMENTAL CONTROLS - PORTSMOUTH NAVAL SHIPYARD (PWD ME, is responsible for overseeing and documenting results from executing the construction waste management plan for the project and is responsible for all waste being disposed of in accordance with the contract documents and state & Federal regulations. If any waste materials are removed from the Shipyard or Facility not in compliance with the requirements stated in the Contract Documents, the person assigned as the Environmental Manager is subject to removal by the Contracting Officer for non-compliance with requirements specified in the Contract. 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 is acceptable as the subject of claim for extension of time for excess costs or damages by the Contractor. The Contraactor will be responsible to take all required actions to addressand correct any non-compliance as well paying any fines as result of improper handling or disposal. This will reflect poorly on the Prime Contractor's performance rating (CPARS) and noted in their final performance evaluation.

1.4.3 Special Programs

Implement any special programs involving rebates or similar incentives related to recycling of construction waste and demolition debris/waste materials. Retain revenue or savings from salvaged or recycling, unless otherwise directed. Ensure firms and facilities used for recycling, reuse, and disposal are permitted for the intended use to the extent required by Federal, State, and local regulations.

1.4.4 Special Instructions

Provide on-site instruction of appropriate separation, handling, recycling, salvage, reuse, and return methods to be used by all parties at the appropriate stages of the projects. Designation of single source separating or commingling will be clearly marked on the containers.

1.4.5 Waste Streams

Delineate waste streams and characterization, including estimated material types and quantities of waste, in the construction waste management plan. Manage all waste streams associated with the project. Typical waste streams are listed below. Include additional waste steams not listed:

a. Land Clearing Debris

b. Asphalt

c. Masonry and CMU

d. Concrete

e. Metals (e.g. banding, stud trim, ductwork, piping, rebar, roofing,

other trim, steel, iron, galvanized, stainless steel, aluminum, copper, zinc, bronze, etc.)

f. Wood (nails and staples allowed)

g. Glass

h. Paper

i. Plastics (PET, HDPE, PVC, LDPE, PP, PS, Other)

j. Gypsum

k. Non-hazardous paint and paint cans

l. Carpet

m. Ceiling Tiles

n. Insulation

o. Beverage Containers

1.5 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

Construction Waste Management Plan; G

SD-11 Closeout Submittals

Final Construction Waste Diversion Report; G

1.6 MEETINGS

Conduct Construction Waste Management meetings. After award of the Contract and prior to commencement of work, schedule and conduct a meeting with the Contracting Officer to discuss the proposed construction waste management plan and to develop a mutual understanding relative to the management of the construction waste management program and how waste diversion requirements will be met.

The requirements of this meeting may be fulfilled during the coordination and mutual Understanding meeting outlined in Section 01 45 00.00 22 QUALITY CONTROL (PWD ME). At a minimum, discuss and document waste management goals at following meetings:

a. Preconstruction & Pre-demolition meeting.

b. Regular Quality Control meetings.

c. Work safety meeting (if applicable).

1.7 CONSTRUCTION WASTE MANAGEMENT PLAN

Submit Construction Waste Management Plan within 15 calendar days after Contract Award. Revise and resubmit Construction Waste Management Plan until it receives final approval from the Contracting Officer, in order for construction to begin. Execute demolition or deconstruction activities in accordance with Section 02 41 00 DEMOLITION. Manage demolition debris/waste or deconstruction materials in accordance with the approved construction waste management plan.

An approved construction waste management plan will not relieve the Contractor of responsibility for compliance with applicable environmental regulations or meeting project cumulative waste diversion requirement. Ensure all Subcontractors receive a copy of the approved Construction Waste Management Plan. The plan demonstrates how to meet the project waste diversion requirement. Also, include the following in the plan:

a. Identify the names of individuals responsible for waste management and waste management tracking, along with roles and responsibilities on the project.

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 on site and equipment to be used for processing, sorting, and temporary storage of materials.

e. Name of landfill and/or incinerator to be used.

f. Identification of local and regional re-use programs, including non-profit organizations such as schools, local housing agencies, and organization that accept used materials such as material exchange networks and resale stores. Include the name, location, phone number for each re-use facility identified, and provide a copy of the permit or license for each facility.

g. List of specific materials, by type and quantity, that will be salvaged for resale, salvaged and reused on the current project, salvaged and stored for reuse on a future project, or recycled. Identify the recycling facilities by name, address, and phone number.

h. Identification of materials that cannot be recycled or reused with an explanation or justification, to be approved by the Contracting Officer.

i. Description of the means by which any materials identified in item (g) above will be protected from contamination.

j. 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).

k. Copy of training plan for Subcontractors and other services to prevent contamination by co-mingling materials identified for diversion and

waste materials.

l. Facilities or Subcontractors offering construction waste transport on-site or off-site must ensure that proper shipping orders, bill of lading, manifests, or other shipping documents containing waste diversion information meet requirements of 40 CFR 273 Universal Waste Management, 49 CFR 173 Shippers - General Requirements for Shipments and Packagings, and 49 CFR 178 Specifications for Packaging. Individuals signing manifests or other shipping documents should meet the minimum training requirements.

m. List each supplier who deliver construction materials, in bulk, or package products in returnable containers or returnable packaging, or have take-back programs. List each program and the applicable material to actively monitor and track to assist in meeting waste diversion requirements on the project.

Distribute copies of the waste management plan to each Subcontractor, Environmental Manager, and the Contracting Officer.

1.8 RECORDS (DOCUMENTATION)

1.8.1 General

Maintain records to document the types and quantities of waste generated and diverted though re-use, recycling and/or sale to third parties; through disposal to a landfill or incinerator facility. Provide explanations for any materials not recycled, reused or sold. Collect and retain manifests, weight tickets, sales receipts, and invoices specifically identifying diverted project waste materials or disposed materials.

1.8.2 Accumulated

Maintain a running record of materials generated and diverted from landfill disposal, including accumulated diversion rates for the project. Make records available to the Contracting Officer during construction or incidental demolition activities. Provide a copy of the diversion records to the Contracting Officer upon completion of the construction, incidental demolitions, or minor deconstruction activities.

1.9 FINAL CONSTRUCTION WASTE DIVERSION REPORT

A Final Construction Waste Diversion Report is required at the end of the project. Provide the Contracting Officer the Final Construction Waste Diversion Report 60 days prior to the Beneficial Occupancy Date (BOD).

1.10 COLLECTION

Collect, store, protect, and handle reusable and recyclable materials at the site in a manner which prevents contamination, and provides protection from the elements to preserve their usefulness and monetary value. Provide receptacles and storage areas designated specifically for recyclable and reusable materials and label them clearly and appropriately to prevent contamination from other waste materials. Keep receptacles or storage areas neat and clean.

Train Subcontractors and other service providers to either separate waste streams or use the co-mingling method as described in the construction waste management plan. Handle hazardous waste and hazardous materials in

accordance with applicable regulations and coordinate with Section 01 57 19.00 22 TEMPORARY ENVIRONMENTAL CONTROLS - PORTSMOUTH NAVAL SHIPYARD (PWD ME). Separate materials by one of the following methods described herein:

1.10.1 Source Separation Method

Separate waste products and materials that are recyclable from trash and sort as described below into appropriately marked separate containers and then transport to the respective recycling facility for further processing. Deliver materials in accordance with recycling or reuse facility requirements (e.g., free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to the recycling process). Separate materials into the category types as defined in the construction waste management plan.

1.10.2 Other Methods

Other methods proposed by the Contractor may be used when approved by the Contracting Officer.

1.11 DISPOSAL

Control accumulation of waste materials and trash. Recycle or dispose of collected materials off-site at intervals approved by the Contracting Officer and in compliance with waste management procedures as described in the waste management plan. Except as otherwise specified in other Sections of the specifications, dispose of in accordance with the following:

1.11.1 Reuse

Give first consideration to reusing construction and demolition materials as a disposition strategy. Recover for reuse materials, products, and components as described in the approved construction waste management plan. Coordinate with the Contracting Officer to identify onsite reuse opportunities or material sales or donation available through Government resale or donation programs. Sale of recovered materials is not allowed on the Portsmouth Naval Shipyard.

1.11.2 Recycle

Recycle non-hazardous construction and demolition/debris materials that are not suitable for reuse. Track rejection of contaminated recyclable materials by the recycling facility. Rejected recyclables materials will not be counted as a percentage of diversion calculation. Recycle all fluorescent lamps, HID lamps, mercury (Hg) -containing thermostats and ampoules, and PCBs-containing ballasts and electrical components as directed by the Contracting Officer. Do not crush lamps on site as this creates a hazardous waste stream with additional handling requirements.

1.11.3 Waste

Dispose by landfill or incineration only those waste materials with no practical use, economic benefit, or recycling opportunity.

1.12 ADDITIONAL REPORTING AND RECORDING REQUIREMENTS

Provide monthly cost and revenue data to the NAVFAC Midlant Integrated Solid Waste Management office. Submit report by e-mail to:

IntegratedSolidWasteManagement@navy.mil no later than the 3rd of each month. Data must be reported on an excel document provided by the Contracting Officer. Comply with the requirements specified in Appendix A.

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:

SECTION 1	Tons	Cost	Revenue	Remarks
Recycled (tons)				
Concrete(incl: brick & block)				
Wood				
Metal				
Asphalt				
Green waste(clearing debris)				
Dirt				
Sand				
Gravel/Rock				
Mixed				
Misc				
Subtotal - Recycled	**0.00**	**$ -**	**$ -**	
SECTION 2				
Landfilled (tons)				
Concrete(incl: brick & block)				
Wood				
Metal				
Asphalt				
Green Waste(clearing debris)				
General C&D				
Dirt				
Sand				
Gravel/Rock				
Mixed				
Misc				
Subtotal - Landfilled	**0.00**	**$ -**	**$ -**	
Solid Waste (tons)				
Total Solid Waste	**0.00**	**$ -**	**$ -**	

REPORTING DEADLINE IS NO LATER THAN THE 3RD OF EACH MONTH

SECTION 01 78 00.00 22

CLOSEOUT SUBMITTALS (PWD ME)
05/21

PART 1 GENERAL

This Section applies to Design-Bid-Build and Design-Build projects at Portsmouth Naval Shipyard and PWD ME AOR Facilities.

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) Standard Guide for Stewardship for the Cleaning of Commercial and Institutional Buildings

GREEN SEAL (GS)

GS-37	(2017) Cleaning Products for Industrial and Institutional Use

U.S. DEPARTMENT OF DEFENSE (DOD)

FC 1-300-09N	(2014; with Change 4, 2018) Navy and Marine Corps Design
UFC 1-300-08	(2009; with Change 2, 2011) Criteria for Transfer and Acceptance of DoD Real Property

1.2 DEFINITIONS

1.2.1 As-Built Drawings

As-built drawings are the marked-up drawings, maintained by the Contractor on-site, that depict actual conditions and deviations from the Contract Documents. These deviations and additions may result from coordination required by, but not limited to: Contract modifications; official responses to submitted Requests for Information (RFI's); direction from the Contracting Officer; design that is the responsibility of the Contractor; and differing site conditions. Maintain the as-builts throughout construction as red-lined hard copies on site. These files serve as the basis for the creation of the record drawings.

1.2.2 Record Drawings

The record drawings are the final compilation of actual conditions reflected in the as-built drawings.

1.3 SOURCE DRAWING FILES

Request the full set of electronic drawings, in the source format, for Record Drawing preparation, after award and at least 30 days prior to required use.

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-03 Product Data

Warranty Management Plan

One (1) paper and one (1) 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

Two (2) paper record copies and one pdf copy of the warranty tags showing the layout and design.

Final Cleaning

Two (2) copies of the listing of completed final clean-up items.

Spare Parts Data

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 systems.

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

SD-10 Operation and Maintenance Data

Operation and Maintenance Manuals; G in accordance with paragraph entitled OPERATION AND MAINTENANCE MANUALS of this Section. Submit three (3) paper copies, and two (2) pdf copies on CD-Rom.

Comply with the requirements specified in Section 01 78 23 OPERATION AND MAINTENANCE DATA for O&M Data format. Refer to Section 01 78 24.00 20 FACILITY ELECTRONIC OPERATION AND MAINTENANCE SUPPORT INFORMATION (eOMSI) for additional requirements.

SD-11 Closeout Submittals

As-Built Drawings; G

Record Drawings; G

Drawings showing final as-built conditions of the project. The final CADD record drawings must consist of one (1) set of electronic CADD drawing files in the specified electronic format saved on a CD, one (1) set of mylar drawings, two (2) sets of blue-line prints of the mylars, and one (1) set of the approved working Record drawings.

As-Built Record of Equipment and Materials

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.

Certification of EPA Designated Items; G

Interim DD FORM 1354; G

Checklist for DD FORM 1354; G

Red Zone Documents per Section 01 30 00.00 22; G

eOMSI, Final Submittal per Section 01 78 24.00 20; G

1.5 SPARE PARTS DATA

Submit two copies of the Spare Parts Data list.

a. Indicate manufacturer's name, part number, and stock level required for test and balance, pre-commissioning, maintenance and repair activities. List those items that may be standard to the normal maintenance of the system.

Supply two (2) items of each part for spare parts inventory. Provision of spare parts does not relieve the responsibilities listed under the Contract warranty provisions.

1.6 WARRANTY MANAGEMENT

1.6.1 Warranty Management Plan

Develop a warranty management plan which contains information relevant to FAR 52.246-21 Warranty of Construction. At least 30 days before the planned pre-warranty conference, submit one set of the warranty management plan. 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 narrative must 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. Submit warranty information, made available during the construction phase, 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 must begin on the date of project acceptance and continue for the full product warranty period. Conduct a joint 4 month and 9 month warranty inspection, measured from time of acceptance; with the Contractor, Contracting Officer and the Customer Representative. The warranty management plan must include, but is not limited to, the following:

a. Roles and responsibilities of 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. For each warranty, the name, address, telephone number, and e-mail of each of the guarantor's representatives nearest to the project location.

c. A list and status of delivery of Certificates of Warranty for extended warranty items, including roofs, HVAC balancing, pumps, motors, transformers, and for commissioned systems, such as fire protection and alarm systems, sprinkler systems, and lightning protection systems.

d. As-Built Record of Equipment and Materials 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, including the starting date of warranty of construction. Items which have warranties longer than one year 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.

e. The plans for attendance at the 4 and 9 month post-construction warranty inspections conducted by the Government.

f. Procedure and status of tagging of equipment covered by warranties longer than one year.

g. Copies of instructions to be posted near selected pieces of equipment where operation is critical for warranty or safety reasons.

1.6.2 Performance Bond

The Performance Bond must remain effective throughout the construction and warranty 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 to respond will be cause for the Contracting Officer to proceed against the Contractor.

1.6.3 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. At this meeting, establish and review 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 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 must 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.

1.6.4 Warranty Tags

At the time of installation, tag each warranted item with a durable, oil and water resistant tag approved by the Contracting Officer. Attach each tag with a copper wire and spray with a silicone waterproof coating. Also, submit two record copies of the warranty tags showing the layout and design. 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.

Type of product/material	
Model number	
Serial number	
Contract number	
Warranty period from/to	
Inspector's signature	
Construction Contractor	
Address	
Telephone number	
Warranty contact	
Address	
Telephone number	
Warranty response time priority code	
WARNING - PROJECT PERSONNEL TO PERFORM ONLY OPERATIONAL MAINTENANCE DURING THE WARRANTY PERIOD.	

1.7 PROJECT CLOSEOUT DOCUMENTS

1.7.1 As-Built Record of Equipment and Materials

Furnish one (1) 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 (2) 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

Description	Specification Section	Manufacturer and Catalog, Model, and Serial Number	Composition and Size	Where Used

1.7.2 Final Approved Shop Drawings

Furnish final approved project shop drawings 30 calendar days after transfer of the completed facility.

1.7.3 Construction Contract Specifications

Furnish final record (as-built) construction Contract Specifications, including modifications thereto, 30 calendar days after transfer of the completed facility.

1.7.4 Real Property Equipment

Furnish a list of installed equipment furnished under this Contract. Include all information usually listed on a 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.

1.7.5 Red Zone Documents

Submit Red Zone Documents in accordance with Section 01 30 00.00 22 ADMINISTRATIVE REQUIREMENTS (PWD ME). Failure to provide acceptable and timely Red Zone Documents as specified may reflect poorly on the Prime Contractor's performance evaluation.

1.7.6 eOMSI, Final Submittal

Submit eOMSI, Final Submittal in accordance with Section 01 78 24.00 22 FACILITY ELECTRONIC OPERATION AND MAINTENANCE SUPPORT INFORMATION (eOMSI). Failure to provide an acceptable and timely final eOMSI submittal as specified may reflect poorly on the Prime Contractor's performance evaluation.

1.8 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 the 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.

1.9 FINAL CLOSEOUT DOCUMENTS

Failure to provide acceptable closeout documents as specified above may reflect poorly on the Prime Contractor's performance and noted in their final performance evaluation.

PART 2 PRODUCTS

2.1 CERTIFICATION OF EPA DESIGNATED ITEMS

Submit the Certification of EPA Designated Items as required by FAR 52.223-9 Estimate of Percentage of Recovered Material Content for EPA Designated Items and FAR 52-223-17 Affirmative Procurement of EPA designated items in Service and Construction Contracts. 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:

a. The product does not meet appropriate performance standards;

b. The product is not available within a reasonable time frame;

c. The product is not available competitively (from two or more sources);

d. The product is only available at an unreasonable price (compared with a comparable non-recycled content product)."

Record each product used in the project that has a requirement or option of containing recycled content, noting total price, total value of post-industrial recycled content, total value of post-consumer recycled content, exemptions (a, b, c, or d, as indicated), and comments. Recycled content values may be determined by weight or volume percent, but must be consistent throughout.

PART 3 EXECUTION

3.1 AS-BUILT DRAWINGS

Refer to Appendices A and B for drawing standards. Provide and maintain two black line print copies of the PDF Contract Drawings for As-Built Drawings. Maintain the as-builts throughout construction as red-lined hard copies on site and red-lined PDF files. Submit As-Built Drawings 30 days prior to Beneficial Occupancy Date (BOD).

3.1.1 Markup Guidelines

Make comments and markup the drawings complete without reference to letters, memos, or materials that are not part of the As-Built drawing. Show what was changed, how it was changed, where item(s) were relocated and change related details. These working as-built markup prints must be neat, legible and accurate as follows:

a. Use base colors of red, green, and blue. Color code for changes as follows:

   (1) Special (Blue) - Items requiring special information, coordination, or special detailing or detailing notes.

   (2) Deletions (Red) - Over-strike deleted graphic items (lines), lettering in notes and leaders.

   (3) Additions (Green) - Added items, lettering in notes and leaders.

b. Provide a legend if colors other than the "base" colors of red, green, and blue are used.

c. Add and denote any additional equipment or material facilities, service lines, incorporated under As-Built Revisions if not already shown in legend.

d. Use frequent written explanations on markup drawings to describe changes. Do not totally rely on graphic means to convey the revision.

e. Use legible lettering and precise and clear digital values when marking prints. Clarify ambiguities concerning the nature and application of change involved.

f. Wherever a revision is made, also make changes to related section views, details, legend, profiles, plans and elevation views, schedules, notes and call out designations, and mark accordingly to avoid conflicting data on all other sheets.

g. For deletions, cross out all features, data and captions that relate to that revision.

h. For changes on small-scale drawings and in restricted areas, provide large-scale inserts, with leaders to the applicable location.

i. Indicate one of the following when attaching a print or sketch to a markup print:

   1) Add an entire drawing to Contract Drawings

   2) Change the Contract Drawing to show

   3) Provided for reference only to further detail the initial design.

j. Incorporate all shop and fabrication drawings into the markup drawings.

3.1.2 As-Built Drawings Content

Show on the as-built drawings, but not limited to, the following information:

a. The actual location, 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, show by offset dimensions to two permanently fixed surface features the end of each run including each change in direction on the record drawings. Locate valves, manholes, utility structures, 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.

b. The location and dimensions of any changes within the building structure.

c. Layout and schematic drawings of electrical circuits and piping.

d. Correct grade, elevations, cross section, or alignment of roads, earthwork, structures or utilities if any changes were made from Contract plans.

e. Changes in details of design or additional information obtained from working drawings specified to be prepared or furnished by the Contractor; including but not limited to shop drawings, fabrication, erection, installation plans and placing details, pipe sizes, insulation material, dimensions of equipment, and foundations.

f. The topography, invert elevations and grades of drainage structures & pipes installed or affected as part of the project construction.

g. Changes or Revisions which result from the final inspection.

h. Where Contract Drawings or Specifications present options, show only the option selected for construction on the working as-built markup drawings.

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. Changes in location of equipment and architectural features.

l. Modifications and compliance with FC 1-300-09N procedures.

m. Actual location of anchors, construction and control joints, etc., in concrete.

n. Unusual or uncharted obstructions that are encountered in the Contract work area during construction.

o. Location, extent, thickness, and size of stone protection particularly where it will be normally submerged by water.

3.2 RECORD DRAWINGS

Prepare and provide Record Drawings and Source Documents in accordance with FC 1-300-09N. Provide four copies of Record Drawings and Documents on separate CDs or DVDs 30 days after BOD.

3.3 PROJECT RECORD DOCUMENTS

3.3.1 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.

3.3.1.1 Government Furnished Materials

One (1) 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.

3.3.1.2 Working Record and Final Record Drawings

Revise two (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. Keep the working as-built drawings current and 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 one (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. Failure to maintain the working as-built drawings, hard copy and (CADD) as specified herein, will result in the Contracting Officer deducting from the monthly progress payment an amount representing the estimated cost of maintaining the record 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 the datum established for the contract drawings), 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 must also be shown by offset dimensions to two (2) permanently fixed surface features at 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, manholes, utilitys structures, etc.

b. The actual location (horizontal and vertical position based on the datum established for the contract drawings), 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 must be a Delta sized to allow for a capital letter to fit within. The letter must have a height of not less than 1/8-inch when plotted.

(9) The revision symbol letter must be consistent for all drawing

modifications for each monthly billing cycle. Drawing modifications for the first monthly billing cycle must be designated as "A" for all modifications throughout the drawing package. The next month's revisions must be designated as "B" throughout the drawing package, and so on.

3.3.1.3 Drawing Preparation

At project completion, provide two (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 must be satisfactorily replaced at no expense to the Government.

3.3.1.4 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 and per PWD ME CADD Standards and As-Built CADD Standards. (For information on PWD Maine CADD standards, please e-mail Preston Gowen at preston.gowen@navy.mil.)

Line colors, line weights, lettering, layering conventions, and symbols must remain consistent throughout the record drawing set, regardless of either as-built or record drawing. 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 must be encapsulated by a closed polygon or "revision cloud." A revision symbol must be placed outside the "revision cloud" with the appropriate letter designating the revision sequence. 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 must be deleted, erased or rendered illegible. Parts of the Contract Drawing found to be in error or modified during construction, must be over struck using methods described not to obscure the original drawing, and annotations must be added adjacent that clearly explain the modification, including accurate dimensions locating the feature. If additional drawings are required, the drawings must be prepared using the specified electronic file format applying, the same graphic standards specified for the original drawings. The title block and drawing border to be used for any new final record drawings must be identical to that used to create the Contract Drawings. Modifications, additions, and corrections to the Contract Drawings must be made to the electronic AutoCAD file(s). The original Contract Drawing files in the AutoCAD software format currently in use by PWD-ME will be furnished on a compact disc (CD). Provide all computer software and hardware necessary to prepare the final record drawing set. The Contracting Officer will review the final record drawing set for accuracy and return them 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) 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 must 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 must 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 to the Government 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 (1) set of electronic files on compact disc, read-only memory CD-ROM, one (1) 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 under this Contract. Approval and acceptance of final record drawings must be accomplished before final payment is made.

3.4 CLEANUP

Provide final cleaning in accordance with ASTM E1971 and submit two copies of the listing of completed final clean-up items. Leave site and surrounding 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 Section 01 57 19.00 22 TEMPORARY ENVIRONMENTAL CONTROLS - PORTSMOUTH NAVAL SHIPYARD (PWD ME)and 01 74 19 CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL.

3.5 REAL PROPERTY RECORD

Refer to UFC 1-300-08 for instruction on completing the DD FORM 1354. Contact the Contracting Officer for any project specific information necessary to complete the DD FORM 1354.

3.5.1 Interim DD FORM 1354

Near the completion of Project, but a minimum of 60 days prior to final acceptance of the work, complete and submit an accounting of all installed property with Interim DD FORM 1354. Include any additional assets, improvements, and alterations from the Draft DD FORM 1354.

3.5.2 Completed DD FORM 1354

Refer to Attachment A for the form. For convenience, a blank fillable PDF DD FORM 1354 may be obtained at the following link: www.esd.whs.mil/Portals/54/Documents/DD/forms/dd/dd1354.pdf

Submit the completed Checklist for DD FORM 1354 of Installed Building Equipment items. Attach this list to the updated DD FORM 1354.

-- End of Section --

TRANSFER AND ACCEPTANCE OF DoD REAL PROPERTY

Form Approved
OMB No. 0704-0188

PAGE OF PAGES

PLEASE DO NOT RETURN YOUR COMPLETED FORM TO THE ABOVE ORGANIZATION.

1. FROM *(Organization Name)*	2. DATE PREPARED *(YYYYMMDD)*	3. PROJECT/JOB NUMBER	4. SERIAL NUMBER	8. TRANSACTION DETAILS
5. TO *(Organization - Installation Code and Name)*	6. RPSUID/SITENAME/ INSTCODE/INSTNAME	7. CONTRACT NUMBER(S)	7a. PLACED-IN-SERVICE DATE *(YYYYMMDD)*	

a. METHOD *(X all that apply)*
- ☐ ACQUISITION BY CONSTRUCTION
- ☐ TRANSFER BETWEEN SERVICES
- ☐ CAPITAL IMPROVEMENT
- ☐ INVENTORY ADJUSTMENT

b. WHEN/EVENT *(X one)*
- ☐ TOTAL ASSET PLACED-IN-SERVICE
- ☐ PARTIAL ASSET PLACED-IN-SERVICE

c. TYPE *(X one)*
☐ DRAFT ☐ FINAL ☐ INTERIM

9. ITEM NO.	10a. FACILITY NO.	10b. RPUID	11. CATEGORY CODE	12. CATCODE DESCRIPTION	13. TYPE CODE	14. SUST. CODE	AREA 15. PRIMARY UM	AREA 16. PRIMARY UM QUANTITY	OTHER 17. SECONDARY UM	OTHER 18. SECONDARY UM QUANTITY	19. COST	20. FUND SOURCE	21. FUND ORG	22. INTER-EST CODE	23. ITEM REMARKS

24. STATEMENT OF COMPLETION. The facilities listed hereon are in accordance with maps, drawings, and specifications and change orders approved by the authorized representative of the using agency except for the deficiencies listed on the reverse side.

a. TRANSFERRED BY *(Typed Name and Signature)*

b. DATE SIGNED *(YYYYMMDD)*

c. TITLE *(Area Engr./Base Engr./DPW/Construction Agent)*

25a. ACCEPTED BY *(Typed Name and Signature)*

b. DATE SIGNED *(YYYYMMDD)*

c. TITLE *(DPW/RPAO)*

26. PROPERTY VOUCHER NUMBER

27. CONSTRUCTION DEFICIENCIES *(Attach blank sheet for continuations)*	28. PROJECT REMARKS *(Attach blank sheet for continuations)*

INSTRUCTIONS

GENERAL. This form has been designed and issued for use in connection with the transfer of military real property between the military departments and to or from other government agencies. It supersedes ENG Forms 290 and 290B (formerly used by the Army and Air Force) and NAVDOCKS Form 2317 (formerly used by the Navy).

Existing instructions issued by the military departments relative to the preparation of DD Form 1354 are applicable to this revised form to the extent that the various items and columns on the superseded forms have been retained. The military departments may promulgate additional instructions, as appropriate.

For detailed instructions on how to fill out this form, please refer to Unified Facilities Criteria (UFC) 1-300-08, dated 16 April 2009 or later.

SPECIFIC DATA ITEMS.

1. From. Name of the transferring agency.

2. Date Prepared. Date of actual preparation. Enter all dates in YYYYMMDD format (Example: March 31, 2010 = 20100331).

3. Project/Job Number. Project number on a DD Form 1391 or Individual Job Order Number.

4. Serial Number. Sequential serial number assigned by the preparing organization (e.g., 2010-0001).

5. To. Name and address of the receiving installation, activity, and Service of the Real Property Accountable Officer (RPAO).

6. RPSUID/SITENAME/INSTCODE/INSTNAME. Site Unique Identifier and name or installation code and name where the constructed facility is located.

7. Contract Number(s). Contract number(s) for this project.

7a. Placed-In-Service Date. RPA Placed In Service Date. This is the date the asset is actually placed-in-service.

8. Transaction Details.
a. Method of Transaction. Mark (X) as many boxes as apply.
b. When/Event. When or event causing preparation of DD Form 1354. X only one box.
c. Type. Draft, interim, or final DD Form 1354. X only one box.

9. Item Number. Use a separate item number for each facility, no item number for additional usages.

10a. Facility Number. Assigned in accordance with the Installation/Base Master Numbering Plan.

10b. RPUID. Identified in Real Property Inventory.

11. Category Code. The category code describes the facility usage.

12. Catcode Description. The category code name which describes the facility usage.

13. Type. Type of construction: P for Permanent; S for Semi- permanent; T for Temporary.

14. Sustainability Code. Reports whether or not an asset meets the sustainability guidelines set forth in Section 2(g) of Executive Order 13514. Valid values are: 1 (asset meets the guidelines); 2 (asset does not meet the guidelines); 3 (asset not evaluated); 4 (asset not subject to guidelines).

15. Area: UM 1. Area unit of measure; use the unit of measure associated with the category code selected in 11.

16. Total Quantity UM 1. The total area for the measure identified in Item 15. Use negative numbers for demolition.

17. Other: UM 2. Unit of Measure 2 is the capacity or other measurement unit (e.g., LF, MB, EA, etc.).

18. Total Quantity UM 2. The total capacity/other for the measure identified in Item 17.

19. Cost. Cost for each facility; for capital improvements to existing facilities, show amount of increase only. If there is no increase for the capital improvement, enter N/A.

20. Fund Source. Enter the Fund Source Code for this item.

21. Funding Organization. Enter the code for the organization responsible for acquiring this facility.

22. Interest Code. Enter the code that reflects government interest or ownership in the facility.

23. Item Remarks. Remarks pertaining only to the item number identified in Item 9; show cost sharing.

24. Statement of Completion. Typed name, signature, title, and date of signature by the responsible transferring individual or agent.

25. Accepted By. Typed name, signature, title, and date of signature by the RPAO or accepting official.

26. Property Voucher Number. Next sequential number assigned by the RPAO in voucher register.

27. Construction Deficiencies. List construction deficiencies in project during contractor turnover inspection.

28. Project Remarks. Project level remarks and continuation of blocks.

Last updated June 18, 2014

NAVFAC MID-ATLANTIC

Public Works Department
Maine

PORTSMOUTH NAVAL SHIPYARD

AS-BUILT CADD STANDARDS

June 2014

STANDARDS FOR EDITING EXISTING CONTRACT DRAWINGS TO REFLECT AS-BUILT CONDITIONS

Following are the *Standards* for editing existing contract drawings to reflect the construction as-built conditions for **NAVFAC MID-ATLANTIC; Public Works Department Maine (PWD-ME**). The purpose of these *Standards* is to provide a uniform system of drawing formats. This system will be used in retrieving information from the drawings in the future. Also, these *Standards* were established to eliminate various recurring problems encountered when transferring electronic files from non-government sources. All drawings modifications found to be generated outside of these standards will be returned to the drawing provider for correction at no additional cost to the ***GOVERNMENT*.**

As-built Drawings:

Drawing Sets:

The contractor shall maintain at the jobsite one set of full-size hard copy prints of the contract drawings, accurately marked in red with adequate dimensions, to show all variations between the construction actually provided and that indicated or specified in the contract documents, including buried or concealed construction. **Special attention shall be given to recording the horizontal and vertical location of all buried utilities that differ from the contract drawings**. Existing utility lines and features revealed during the course of construction shall also be accurately located and dimensioned, using permanent existing features and station coordinates as a reference. Acceptable features include; building corners, centers of utility manhole covers, fire hydrants, etc. Existing topographic features that differ from those shown on the contract drawings shall also be accurately located and recorded. Where a choice of materials or methods is permitted herein or where variations in scope or character of work from that of the original contract are authorized, the drawings shall be marked to define the construction provided. The representations of such changes shall conform to standard drafting practices and shall include such supplementary notes, legends, and details as necessary to clearly portray the as-built construction. These drawings shall be available for review by the Contracting Officer at all times. Upon completion of the work, the marked up prints shall be certified as correct, signed by the Contractor, and delivered to the Contracting Officer for review by **PWD-ME**. After acceptance of the as-builts, the contractor will add the as-built information to the original contract drawing files and plot new Mylar reflecting the as-built conditions.

Requests for partial payments will not be approved if the marked prints are not kept current. Request for final payment will not be approved until Contracting Officer receives delivery of the original electronic contract drawing CADD files, modified to reflect the as-built conditions and new Mylar plotted to reflect the as-built conditions.

Computer Aided Drafting Design (CADD) As-built Drawings:

File formats:

Although all methods of CADD drawing are permitted, the final product of all computer-aided drawings shall be made compatible with the ***AutoCAD*** currently in use by **PWD-ME** Drawings

created using non-AutoCAD programs that do not support AutoCAD's DWG file format, shall be transferred to the Drawing Interchange Format (DXF).

If the drawing provider's CADD software does not support the DXF format, it is the responsibility of the drawing provider to contact the Contracting Officer who will in turn contact the **PWD-ME** to make special arrangements for file transfer.

Each drawing file must not depend on any other drawing file to completely represent the finished product *(Mylar)*. All drawings found to use dependent external reference drawings, **will be returned to the drawing provider for correction**.

Each drawing file must not depend on any ***"THIRD PARTY"*** utility or software to represent the finished Mylar. Before using any third party software to create a finished product, the drawing provider shall verify that no additional cost or effort is required by the **PWD-ME** to completely represent the finished product *(Mylar).*

Drawing Sheets:

Electronic files of the contract drawings shall be provided to the Contractor following award of the contract. The contractor will add the accepted as-built conditions to the original electronic file of the drawing sheet. If additional sheets need to be added to the contract drawing package because of insufficient sheet space, it is the responsibility of the Contractor to ensure the PWD-ME CADD Drawing Standards are obtained and followed. Additional drawing numbers will be assigned by **PWD-ME** personnel prior to submittal of as-built drawings.

Basic Drawing Standards:

Electronic As-builts:

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.

Drawing Sheet Management:

Where construction projects encompass multiple facilities (buildings) or systems (utilities), all plans, details, legends, notes etc., for an individual facility or system must appear on the drawing sheets for each facility or system. Standardized details must appear on the drawing sheets for each facility or system where they apply. Cross-referencing details between facilities or systems is not permitted.

Drawing Units:

All drawings of buildings, structures, floor plans, etc. are to be drawn full size, with one drawing unit equal to one inch. All site plans, location plans, etc. are to be drawn full size, with one drawing unit equal to one foot. The original drawing's origin shall not be modified.

Entity Management:

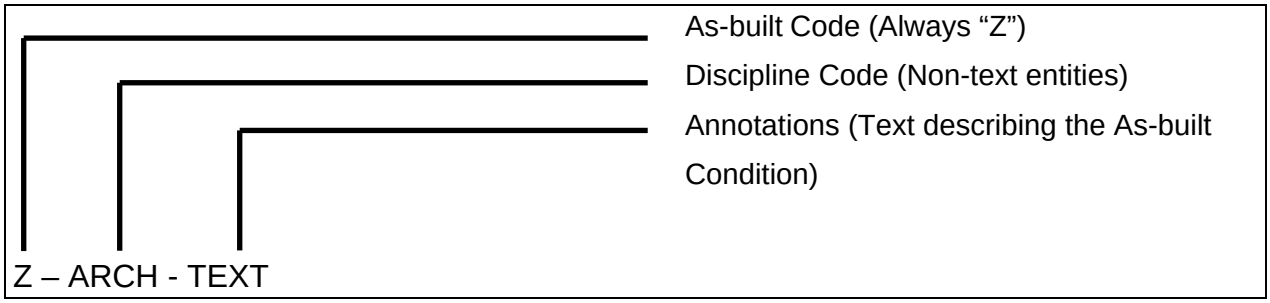
All additions to the original contract drawings will be made on additional layers as designated below. The minimum text height for the "D" size sheet is 1/8in plotted and 3/32in plotted for the "B" size sheet. All as-built modification layers are to be ***CYAN*** in, including all annotations, dimensions, leaders and callouts.

Entities discovered during construction but not represented on the original construction drawings shall be assigned to layers as described below. This information shall be added to the drawing in such a way not to obscure any original drawing entity when plotted.

Level/layer Management:

All drawing entities shall be grouped together by layer. Drawing entities shall be assigned to layers by discipline code for that entity, see table page D4. This includes non-text entities such as strikeouts, lines, circles, symbols, etc. See Table-1 for typical layer-naming.

Table-1



Identify entities by discipline. For instance: the example below shows layering configuration for all architectural as-built entities ***EXCLUDING TEXT*** that deviate from the original design:

Z-ARCH.

Annotations, dimensions, leaders and callouts for those architectural entities shall be assigned to layer:

Z-ARCH-TEXT.

All annotations shall be assigned to layers by discipline and designated as ***TEXT***.

Each layer name will follow the discipline code for that entity. See Table-2 for Discipline Descriptions:

Table-2

Discipline Code:	***Discipline:***	***Description:***
ARCH	Architectural	Architectural design, building's interior/exterior, walls, doors, windows etc.
CIVIL	Civil	Site work, external to buildings and structures. Typically surface work.
ELEC	Electrical	Electrical work pertaining to buildings/structures internal/external and distribution.
FP	Fire Protection	Fire Protection systems pertaining to buildings/structures internal/external
GEN	General	Typically drawing information, general notes, symbols, etc....
MECH	Mechanical	Mechanical work, HVAC components, compressed air, etc. pertaining to buildings/structures internal/external
PLUMB	Plumbing	Plumbing, piping and fixtures, etc.. pertaining to buildings/structures internal/external
UTIL	Utilities	Utility distribution systems, duct work, manholes and piping/cabling underground/direct buried
STRUC	Structural	All structural work, building framing, conc. duct reinforcement, misc. steel work, etc.
TELE	Telecommunications	Phone lines, cable TV, computer data lines, etc. pertaining to buildings/structures internal/external

Electronic Deliverables:

Submit all as-built documentation and drawing files to the Contracting Officer via recordable CD in the file formats discussed in this and other sections. Electronic transfer of files via E-mail or other methods is not permitted.

Standards Deviation:

Contact the Contracting Officer if questions arise about these standards or these drawing standards cannot be followed. Otherwise, all drawing files will be returned to the drawing provider for correction at no additional cost to the **PWD-ME.**

Last updated June 18, 2014

NAVFAC MID-ATLANTIC

Public Works Department
Maine

PORTSMOUTH NAVAL SHIPYARD

CADD STANDARDS

June 2014

1. CADD STANDARDS

All design documents and deliverables prepared by In-House forces and/or contracted A/E firms including IDIQ, Design Bid-Build and Design-Build process shall conform to the following NAVFAC MIDLANT and PWD-ME CADD standards areas not addressed on this standard shall follow:

- UFC 1-300-09N

U.S. DEPARTMENT OF DEFENSE (DOD) *[UFCs available on* http://dod.wbdg.org/

These are NAVFAC MIDLANT PWD-MAINE specific guidelines that supersede all others for contract documents utilized for execution. Refer to the U.S. National CAD Standard Version 3.0 for any items not covered in this or the referenced NAVFAC UFCs.

1. A. General: (for both Design-Build and Design-Bid-Build)

For drawing templates, pen tables, sample symbology, and instructions on sheet arrangement & procedures, see attached NAVFAC MIDLANT PWD-MAINE; Sheet Border Use and Procedures. Provide *.PDF format of all drawing sheets at each submittal phase. In addition, provide *.PDF and *.DWG format of all drawing sheets at the final design submission. CADD files shall be made available upon request, in addition to the full size, stamped Mylar and half-size hard copies or as directed by the specific contract specifications.

1. B. Design Drawings

Prepare, organize, and present design drawings in accordance with the requirements of UFC 1-300-09N.

All drawings and their associated PDFs will maintain a “PRELIMINARY Not for Construction” stamp across the signature areas of the title block, until the actual final design submittal. The stamp shall be in translucent lettering across the Project Title area of the drawing title block and shall be displayed on layer “G-ANNO-TTLB-PRLM”. The “G-ANNO-TTLB-PRLM” shall be off for final submittal.

Design revisions shall be tracked by number and date in the revision block of each drawing sheet during the design process. Design revisions shall be assigned to layer “G-ANNO-TTLB-PRLM” and shall be frozen for final submittal.

1. C. Drafting Conventions

1. C.1. Fonts

The standard text height for a plotted D-size drawing shall be **1/8”** for typical text, and **1/4”** for titles, and **1”** maximum for project titles on cover sheets. The standard text height for a plotted B-size drawing shall be **3/32”** for typical text, and **1/8”** for titles, and **1/2”** maximum for project titles on cover sheets. For typical text, use the “**RomanS”** font. For titles, use the “**Swis 721**

BT" font. Both fonts shall have a width ratio of no less than **0.8**.

ROMANS – 1/8" TALL

Swis 721 BT – 1/4" TALL (up to 1")

These are the only fonts that should be used within the drawing area, with one exception: on civil site plans, the Design Manager (EIC/AIC) may use text ("RomanS" font, 1/8" height {Leroy 100}, 0.8 width factor, with an oblique angle of 12 degrees) to annotate existing site features only. Typical (or Normal) text as defined above must be used for all other annotations.

1. C. 2. Symbols

Approved symbology in use by PWD-ME is provided on the PWD-ME title sheet. On the PWD-ME title and standard sheet, borders and plot styles shall delivered at each project design kickoff MTG.

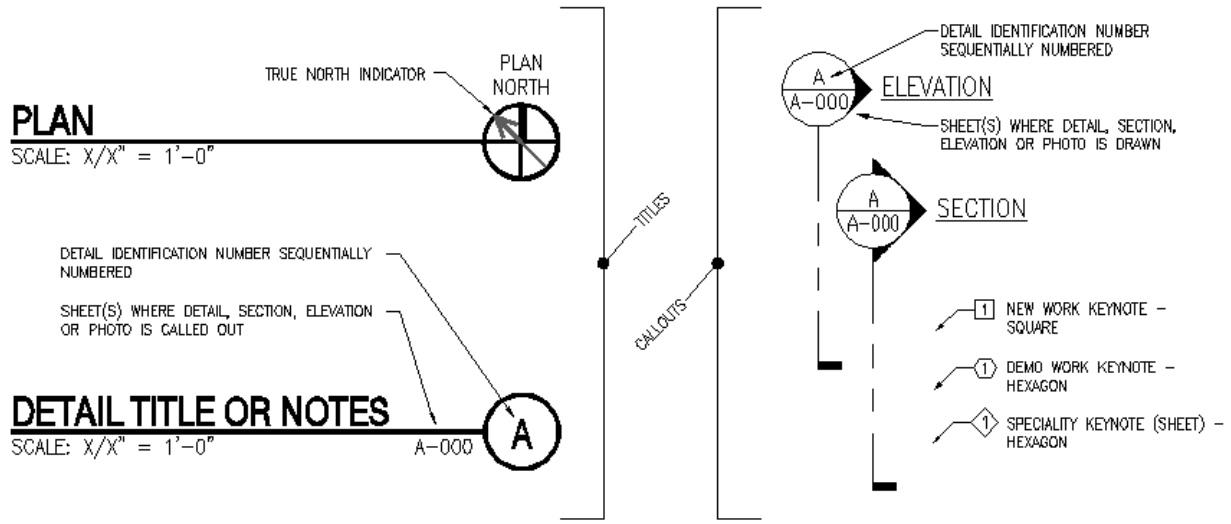


Figure 3-1 PWD-ME Approved Symbols

Note that detail, section, elevation and photograph callouts utilize two-part bubbles which indicate a detail identification number and identify sheet where the detail, section, elevation or photo is shown. Additional sheets(s) on which the detail is called out is (are) displayed to the bottom left of the bubble.

1. C. 3. Line Weights / Pen Tables

NAVFAC's Electronic Documents and Deliverables Working Group (EDDWG) developed a comprehensive pen table that utilized the National Cad Standard 255-pen table as a basis, but added much needed thinner lines and additional grayscales (shaded or screened pens) that had not made the transition from the original US Coast Guard standard. The NAVFAC-specific pen

table is provided as filename **NavFacStnd.ctb**.

The pen tables can be thought of in groups of 20. After pen 19, pens 20 thru 39 are in the "Rust" range when displayed on screen. The first 10 (pens 20 – 29) look "Rust" and print shades of "Rust"; while the second 10 (pens 30 – 39) look "Rust" but print Black. Typically, design drawings for contract documents utilize the pens that print Black (currently colored pens are used for renderings and some other instances, but not normally on contract drawings).

Since these pen tables are established to be legible when printed at full-size (22"x34"), the corresponding text height is 1/8". To be consistent, the related B-size (11"x17") & A-size sheet (8-1/2"x11")—normally used for sketches, uses fonts and line weights that are ½ the size of the large format (D-size) documents—otherwise the fonts are too big and the line weights are too bold. The associated pen table for B-size & A-size documents is **NavFacStnd-Sketch.ctb**

1. D. NAVFAC Logo

A NAVFAC Publications/Logo Guide will be published at a later date, but in the interim, all deliverables shall have the NAVFAC Brand Logo on the title block area of the drawing border (as displayed in the Templates). The logo should not be removed, deleted, or turned off and should appear on all PDFs to be utilized for the electronic bid solicitations. If contract drawings are produced by an A/E firm and that firm desires to have their logo on the drawings then the A/E must apply that logo to all sheets consistently in the same location. Typically that is in the lower- or upper-right hand corner of the drawform, adjacent to the title block.

1. E. Units of Measure

Unless otherwise directed, for all projects the default shall be English units of measurement (U.S. Customary System of units). All drawings, specifications, cost estimates, and design calculations shall reference this system of units.

1. F. Datums and Coordinate Systems

VERTICAL DATUM: All elevations, grades, or profiles shall be represented in U.S. feet and referenced to NAVD88 vertical datum and will be provided as required.

HORIZONTAL DATUM: All Portsmouth Naval Shipyard mapping, utility information, site drawings and surveys are represented in U.S. feet and referenced to the state plane coordinate system, NAD83 Maine west, zone 1802. All electronic mapping and utility information shall be maintained to this system.

1. G. Drawing Numbers/File Naming

In addition to NAVFAC drawings numbers discussed in UFC 1-300-09N, Chapter 4-3, "Drawing Numbers" the Government Project Manager will provide PWD (Public Works Department) Drawing Numbers for each drawing sheet, similar to NAVFAC drawing numbers. The PWD Drawing Number to be requested by the drawing provider at the 100% design stage. The CADD

files shall be named by the PWD drawing number in accordance with the following guidance: The CADD file for each ANSI D (22” x 34”) size drawing sheet shall be named by the corresponding PWD Number, minus the design year designator. Where the assigned PWD Number is: 59-08-501 the corresponding CADD file shall be named 059-501.DWG. Where a single drawing file is used to create multiple drawing sheets via layout tabs, the drawing file shall be named by the PWD Number of the first drawing sheet of the drawing set. Drawing sets shall be arranged by discipline.

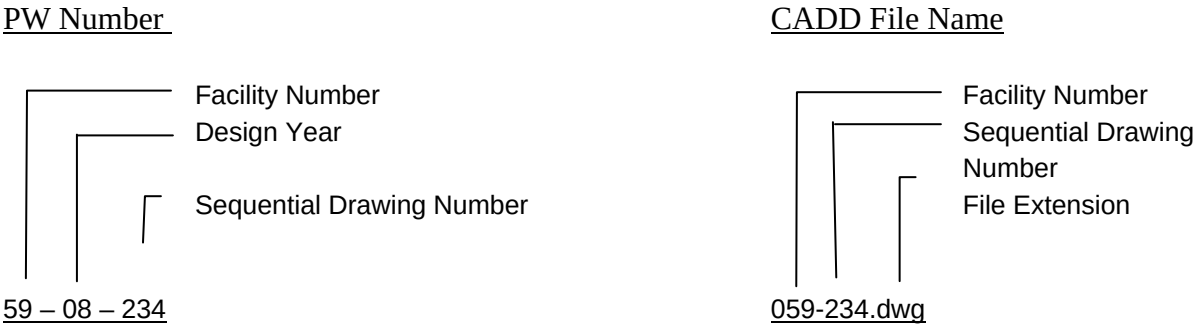


Figure 7-1 DRAWING NUMBERS/FILE NAMING

Files for sketches, drawings other than ANSI D (22” x 34”) size shall be named by construction contract number and sheet number of the first sheet of the sheet set.

1. G. 1. File Naming Convention for PDF Files:

ADOBE PDF file naming shall follow CADD file naming methods.

1. H. Electronic Submittals

Submit all CADD files for the final drawings in Autodesk Drawing (*.DWG) compatible with current PWD-ME CADD format. Drawing files shall be full files, uncompressed and unzipped. All submitted CADD files shall maintain their original and complete data structure as produced in their native Autodesk application (i.e. Architectural Desktop, Land Development Desktop, Civil 3D, Building Systems...). All files utilizing AutoCAD’s “Xref” feature shall be delivered with all external files “bound” to the drawing file. There shall be no external references in the final drawing file.

Multiple layout tabs are allowed, the tabs shall be annotated by PWD number for each sheet as described in section PWD-ME 7.0 Drawing Numbers/File Naming. The electronic file(s) shall be named by the PWD number of the first sheet of the sheet set. When required, the drawing file shall be split by sheet discipline. Corresponding PDF files shall be grouped into one file and named by the project title.

1. I. Record Documents …**1.10.1 Record Drawings** (As-Built drawings, **G)**

The Quality Control Manager shall deliver the marked-up As-Built drawings to the Contractor's Designer of Record who shall incorporate all as-built modifications.

The as-built modifications shall be accomplished by electronic drafting methods on the original CADD (*.DWG) design drawing files to create a complete set of record drawings. For each Record drawing, provide a CADD drawing identical to signed [A/E- or] Contractor-originated *.PDF drawings, that incorporates modifications to the as-built conditions. In addition, copy initials and dates from the Contracting Officer approved *.PDF documents to the title block of the Record CADD (*.DWG) drawings. The Record electronic files shall use the file name of the original signed CADD drawing file name with the suffix "-RD" before the file extension, ".DWG" (example; 059-501-RD.dwg – see Drawing File Naming). The original design, RFP, reference, or definitive drawings are not required for inclusion in the Record set of drawings.

After all as-built conditions are recorded on the CADD (*.DWG) files, produce a PDF file of each individual record drawing in conformance with UFC 1-300-09N. Generate PDF drawing files using a PDF page size that corresponds to the original document sheet size (NAVFAC utilizes an ANSI D-size, 22"x34" frame and a 0" border all around) and a PDF print resolution that results in clear detail of all drawing features.

Provide one set of signed and stamped record drawings, plotted on Mylar that fully represent the PDF file. Provide all project final submittals including as-builts in accordance with UFC 1-300-09N Chapter 7-5.2. Each CD-ROM shall be marked with Project Name, Construction Contract Number, Project Number, Specification Number, and Record Drawing date.

1. I. 1. Source Documents

In addition to the drawings provide the specifications, design analysis, reports, survey data, calculations, and any other contract documents utilized in creating the design package (drawings, specifications, and cost estimate) on the CD-ROM disk(s) as specified in preceding paragraph.

1. J. Forwarding Submittals

The [A/E- or] Contractor shall provide all submittals, that lend themselves to paper format (i.e. 8-1/2"x11" documents, 11"x17" or tabloid sheets, or 22"x34" drawings), in electronic *.PDF (Portable Document Format) to the Contracting Officer. The appropriate forwarding e-mail address(es) will be provided at the Pre-Construction meeting. Provision of electronic submittals with appropriate electronic transmittal may alleviate some of the paper copies required herein but must be verified at Pre-Construction meeting. In such instances a minimum of one hard copy shall be forwarded to the Contracting Officer.

SECTION 01 78 23

OPERATION AND MAINTENANCE DATA
08/15, CHG 1: 11/20

PART 1 GENERAL

This Section applies to Design-Bid-Build and Design-Build projects at Portsmouth Naval Shipyard and PWD ME AOR Facilities.

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) Standard Guide for Stewardship for the Cleaning of Commercial and Institutional Buildings

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-10 Operation and Maintenance Data

Training Plan; G

Training Outline; G

Training Content; G

SD-11 Closeout Submittals

Training Video Recording; G

Validation of Training Completion; G

1.3 OPERATION AND MAINTENANCE DATA

Submit Operation and Maintenance (O&M) Data for the provided equipment, product, or system, defining the importance of system interactions, troubleshooting, and long-term preventive operation and maintenance. Compile, prepare, and aggregate O&M data to include 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.

Coordinate the work of this Section with Section 01 78 24.00 22 FACILITY ELECTRONIC OPERATION AND MAINTENANCE SUPPORT INFORMATION (eOMSI).

1.3.1 Package Quality

Documents must be fully legible. Operation and Maintenance data must be consistent with the manufacturer's standard brochures, schematics, printed instructions, general operating procedures, and safety precautions.

1.3.2 Package Content

Provide data package content in accordance with paragraph 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.

1.3.3 Changes to Submittals

Provide manufacturer-originated changes or revisions to submitted data 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.

1.4 OPERATION AND MAINTENANCE MANUAL FILE FORMAT

Assemble data packages into electronic Operation and Maintenance Manuals. Assemble each manual into a composite electronically indexed file using the most current version of Adobe Acrobat or similar software capable of producing PDF file format. Provide compact disks (CD) or data digital versatile disk (DVD) as appropriate, so that each one contains operation, maintenance, and record files, project record documents, and training videos. Include a complete electronically linked operation and maintenance directory.

1.4.1 Organization

Bookmark Product and Drawing Information documents using the current version of CSI Masterformat numbering system, and arrange submittals using the specification Sections as a structure. Use CSI Masterformat and UFGS numbers along with descriptive bookmarked titles that explain the content of the information that is being bookmarked.

1.4.2 CD or DVD Label and Disk Holder or Case

Provide the following information on the disk label and disk holder or case:

a. Building Number

b. Project Title

c. Activity and Location

d. Construction Contract Number/eProjects Number

e. Prepared For: (Contracting Agency)

f. Prepared By: (Name, title, phone number, and email address)

g. Include the disk content on the disk label

h. Date

i. Virus scanning program used

1.5 TYPES OF INFORMATION REQUIRED IN O&M DATA PACKAGES

The following are a detailed description of the data package items listed in paragraph SCHEDULE OF OPERATION AND MAINTENANCE DATA PACKAGES.

1.5.1 Operating Instructions

Provide specific instructions, procedures, and illustrations for the following phases of operation for the installed model and features of each system:

1.5.1.1 Safety Precautions and Hazards

List personnel hazards and equipment or product safety precautions for operating conditions. List all residual hazards identified in the Activity Hazard Analysis provided under Section 01 35 26.00 22 GOVERNMENTAL SAFETY REQUIREMENTS (PWD ME). Provide recommended safeguards for each identified hazard.

1.5.1.2 Operator Prestart

Provide procedures required to install, set up, and prepare each system for use.

1.5.1.3 Startup, Shutdown, and Post-Shutdown Procedures

Provide narrative description for Startup, Shutdown, and Post-shutdown operating procedures including the control sequence for each procedure.

1.5.1.4 Normal Operations

Provide Control Diagrams with data to explain operation and control of systems and specific equipment. Provide narrative description of Normal Operating Procedures.

1.5.1.5 Emergency Operations

Provide 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. Provide Emergency Shutdown Instructions for fire, explosion, spills, or other foreseeable contingencies. Provide guidance and procedures for emergency operation of utility systems including required valve positions, valve locations and zones, or portions of systems controlled.

1.5.1.6 Operator Service Requirements

Provide instructions for services to be performed by the operator such as lubrication, adjustment, inspection, and recording gauge readings.

1.5.1.7 Environmental Conditions

Provide 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.

1.5.1.8 Operating Log

Provide forms, sample logs, and instructions for maintaining necessary operating records.

1.5.1.9 Additional Requirements for HVAC Control Systems

Provide Data Package 5 and the following for control systems:

a. Narrative description on how to perform and apply 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 checkout tests and calibrations performed by the Contractor (not Cx tests).

d. Full points list. Provide a listing of rooms with the following information for each room:

(1) Floor

(2) Room number

(3) Room name

(4) Air handler unit ID

(5) Reference drawing number

(6) Air terminal unit tag ID

(7) Heating or cooling valve tag ID

(8) Minimum cfm

(9) Maximum cfm

e. Full print out of all schedules and set points after testing and acceptance of the system.

f. Full as-built print out of software program.

g. Marking of system sensors and thermostats on the as-built floor plan and mechanical drawings with their control system designations.

1.5.2 Preventive Maintenance

Provide the following information for preventive and scheduled maintenance to minimize repairs for the installed model and features of each system. Include potential environmental and indoor air quality impacts of recommended maintenance procedures and materials.

1.5.2.1 Lubrication Data

Include the following preventive maintenance lubrication data, in addition to instructions for lubrication required under paragraph 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.

1.5.2.2 Preventive Maintenance Plan, Schedule, and Procedures

Provide manufacturer's schedule for routine preventive maintenance, inspections, condition monitoring (predictive tests), and adjustments required to ensure proper and economical operation and to minimize repairs. Provide instructions stating when the systems should be retested. Provide manufacturer's projection of preventive maintenance work-hours on a daily, weekly, monthly, and annual basis including trade/craft requirements by type of trade/craft. For periodic calibrations, provide manufacturer's specified frequency and procedures for each separate operation.

a. Define the anticipated time required to perform each test (work-hours), test apparatus, number of personnel identified by responsibility, and a testing validation procedure permitting the record operation capability requirements within the schedule. Provide 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 preventive maintenance, inspection, adjustment, lubrication, and cleaning necessary to minimize repairs.

b. 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.

1.5.2.3 Cleaning Recommendations

Provide environmentally preferable cleaning recommendations in accordance with ASTM E1971.

1.5.3 Repairs

Provide 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.

1.5.3.1 Troubleshooting Guides and Diagnostic Techniques

Provide 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.

1.5.3.2 Wiring Diagrams and Control Diagrams

Provide 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.

1.5.3.3 Repair Procedures

Provide instructions and a list of tools required to repair or restore the product or equipment to proper condition or operating standards.

1.5.3.4 Removal and Replacement Instructions

Provide step-by-step procedures and a list of required tools and supplies for removal, replacement, disassembly, and assembly of components, assemblies, subassemblies, accessories, and attachments. Provide tolerances, dimensions, settings, and adjustments required. Use a combination of text and illustrations.

1.5.3.5 Spare Parts and Supply Lists

Provide lists of spare parts and supplies required for 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.

1.5.3.6 Repair Work-Hours

Provide manufacturer's projection of repair work-hours including requirements by type of trade/craft. Identify, and tabulate separately, repair that requires the equipment manufacturer to complete or to participate.

1.5.4 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:

1.5.4.1 Product Submittal Data

Provide a copy of SD-03 Product Data submittals documented with the required approval.

1.5.4.2 Manufacturer's Instructions

Provide a copy of SD-08 Manufacturer's Instructions submittals documented with the required approval.

1.5.4.3 O&M Submittal Data

Provide a copy of SD-10 Operation and Maintenance Data submittals

documented with the required approval.

1.5.4.4 Parts Identification

Provide identification and coverage for the 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 must show the index, reference, or key number that will cross-reference the illustrated part to the listed part. Group the parts shown in the listings 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.

1.5.4.5 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 of the system. Provide copies of warranties required by Section 01 78 00.00 22 CLOSEOUT SUBMITTALS (PWD ME).

1.5.4.6 Extended Warranty Information

List all warranties for products, equipment, components, and sub-components whose duration exceeds one year. For each warranty listed, indicate the applicable specification Section, duration, start date, end date, and the point of contact for warranty fulfillment. Also, list or reference the specific operation and maintenance procedures that must be performed to keep the warranty valid. Provide copies of warranties required by Section 01 78 00.00 22 CLOSEOUT SUBMITTALS (PWD ME).

1.5.4.7 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.

1.5.4.8 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. Provide final set points.

1.5.4.9 Testing and Performance Data

Include completed prefunctional checklists, functional performance test forms, and monitoring reports. Include recommended schedule for retesting and blank test forms. Provide final set points.

1.5.4.10 Field Test Reports

Provide a copy of Field Test Reports (SD-06) submittals documented with the

required approval.

1.5.4.11 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.

1.6 SCHEDULE OF OPERATION AND MAINTENANCE DATA PACKAGES

Provide the O&M data packages specified in individual technical Sections. The information required in each type of data package is as follows:

1.6.1 Data Package 1

a. Safety precautions and hazards

b. Cleaning recommendations

c. Maintenance and repair procedures

d. Warranty information

e. Extended warranty information

f. Contractor information

g. Spare parts and supply list

1.6.2 Data Package 2

a. Safety precautions and hazards

b. Normal operations

c. Environmental conditions

d. Lubrication data

e. Preventive maintenance plan, schedule, and procedures

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. Extended warranty information

m. Contractor information

1.6.3 Data Package 3

a. Safety precautions and hazards

b. Operator prestart

c. Startup, shutdown, and post-shutdown procedures

d. Normal operations

e. Emergency operations

f. Environmental conditions

g. Operating log

h. Lubrication data

i. Preventive maintenance plan, schedule, and procedures

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. Product submittal data

q. O&M submittal data

r. Parts identification

s. Warranty information

t. Extended warranty information

u. Testing equipment and special tool information

v. Testing and performance data

w. Contractor information

x. Field test reports

1.6.4 Data Package 4

a. Safety precautions and hazards

b. Operator prestart

c. Startup, shutdown, and post-shutdown procedures

d. Normal operations

e. Emergency operations

f. Operator service requirements

g. Environmental conditions

h. Operating log

i. Lubrication data

j. Preventive maintenance plan, schedule, and procedures

k. Cleaning recommendations

l. Troubleshooting guides and diagnostic techniques

m. Wiring diagrams and control diagrams

n. Maintenance and repair procedures

o. Removal and replacement instructions

p. Spare parts and supply list

q. Maintenance and repair work-hours

r. Product submittal data

s. O&M submittal data

t. Parts identification

u. Warranty information

v. Extended warranty information

w. Personnel training requirements

x. Testing equipment and special tool information

y. Testing and performance data

z. Contractor information

aa. Field test reports

1.6.5 Data Package 5

a. Safety precautions and hazards

b. Operator prestart

c. Start-up, shutdown, and post-shutdown procedures

d. Normal operations

e. Environmental conditions

f. Preventive maintenance plan, schedule, and procedures

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. Extended warranty information

s. Testing and performance data

t. Contractor information

u. Field test reports

v. Additional requirements for HVAC control systems

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 TRAINING

Prior to acceptance of the facility by the Contracting Officer for Beneficial Occupancy, provide comprehensive training for the systems and equipment specified in the technical specifications. The training must be targeted for the PWD ME Facilities Management Specialist (FMS), building maintenance personnel, and applicable building occupants. Instructors must be well-versed in the particular systems that they are presenting. Address aspects of the Operation and Maintenance Manual submitted in accordance with Section 01 78 00.00 22 CLOSEOUT SUBMITTALS (PWD ME). Address aspects of the eOMSI Manual, as submitted in Section 01 78 24.00 20 FACILITY ELECTRONIC OPERATION AND MAINTENANCE SUPPORT INFORMATION (eOMSI). Training must include classroom or field lectures based on the system operating requirements. The location of classroom training requires approval by the Contracting Officer.

3.1.1 Training Plan

Submit a written training plan to the Contracting Officer for approval at least 60 calendar days prior to the scheduled training. Training plan must be approved by the Quality Control Manager (QC) and prior to forwarding to the Contracting Officer. Also, coordinate the training schedule with the Contracting Officer and QC Manager and . Include within the plan the following elements:

a. Equipment included in training

b. Intended audience

c. Location of training

d. Dates of training

e. Objectives

f. Outline of the information to be presented and subjects covered including description

g. Start and finish times and duration of training on each subject

h. Methods (e.g. classroom lecture, video, site walk-through, actual operational demonstrations, written handouts)

i. Instructor names and instructor qualifications for each subject

j. List of texts and other materials to be furnished by the Contractor that are required to support training

k. Description of proposed software to be used for video recording of training sessions.

3.1.2 Training Content

The core of this training must be based on manufacturer's recommendations and the operation and maintenance information. The QC Manager is responsible for overseeing and approving the content and adequacy of the training. Provide a brief summary of the FACILITY INFORMATION manual, and a more detailed presentation of the PRODUCT AND DRAWING MANUAL, specified in Section 01 78 24.00 22 FACILITY ELECTRONIC OPERATION AND MAINTENANCE SUPPORT INFORMATION (eOMSI). Spend 95 percent of the instruction time during the presentation on the OPERATION AND MAINTENANCE DATA. Include the following for each system training presentation:

a. Start-up, normal operation, shutdown, unoccupied operation, seasonal changeover, manual operation, controls set-up and programming, troubleshooting, and alarms.

b. Relevant health and safety issues.

c. Discussion of how the feature or system is environmentally responsive. Advise adjustments and optimizing methods for energy conservation.

d. Design intent.

e. Use of O&M Manual Files.

f. Review of control drawings and schematics.

g. Interactions with other systems.

h. Special maintenance and replacement sources.

i. Tenant interaction issues.

3.1.3 Training Outline

Provide the Operation and Maintenance Manual files (bookmarked PDF) and eOMSI Manual files as specified in Section 01 78 24.00 22 FACILITY ELECTRONIC OPERATION AND MAINTENANCE SUPPORT INFORMATION (eOMSI), and a written course outline listing the major and minor topics to be discussed by the instructor on each day of the course to each trainee in the course. Provide the course outline 14 calendar days prior to the training.

3.1.4 Training Video Recording

Record classroom training session(s) on video. Provide to the Contracting Officer two (2) copies of the training session(s) in DVD video recording format. Capture within the recording, in video and audio, the instructors' training presentations including question and answer periods with the attendees. The recording camera(s) must be attended by a person during the recording sessions to assure proper size of exhibits and projections during the recording are visible and readable when viewed as training.

3.1.5 Unresolved Questions from Attendees

If, at the end of the training course, there are questions from attendees that remain unresolved, the instructor must send the answers, in writing, to the Contracting Officer for transmittal to the attendees, and the training video must be modified to include the appropriate clarifications.

3.1.6 Validation of Training Completion

Ensure that each attendee at each training session signs a class roster daily to confirm Government participation in the training. At the completion of training, submit a signed validation letter that includes a sample record of training for reporting what systems were included in the training, who provided the training, when and where the training was performed, and copies of the signed class rosters. Provide two (2) copies of the validation to the Contracting Officer, and one copy to the Operation and Maintenance Manual Preparer for inclusion into the Manual's documentation.

3.1.7 Quality Control Coordination

Coordinate this training with the and QC Manager in accordance with Section 01 45 00.00 22 QUALITY CONTROL (PWD ME).

-- End of Section --

SECTION 01 78 24.00 20

FACILITY ELECTRONIC OPERATION AND MAINTENANCE SUPPORT INFORMATION (eOMSI)
02/15

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. DEPARTMENT OF DEFENSE (DOD)

FC 1-300-09N (2014; with Change 4, 2018) Navy and Marine Corps Design

1.2 DEFINITIONS AND ABBREVIATIONS

1.2.1 eOMSI Manual

Manual (PDF file) provided by the Contractor that includes, but is not limited to, product information, a facility description with photos, and a list of primary facility systems.

1.2.2 eOMSI Facility Data Workbook (FDW)

A Microsoft Excel file containing required facility information populated by the Contractor.

1.2.3 Systems

The words "system", "systems", and "equipment", when used in this document refer to as-built systems and equipment.

1.2.4 Computer Assisted Design and Drafting (CADD)

Electronic Computer Assisted Design and Drafting graphic software program that is used to create facility design contract documents and Record Drawings.

1.2.5 KTR

An abbreviation for "Contractor."

1.3 EOMSI MEETINGS

1.3.1 Pre-eOMSI Development Meeting

Be prepared to discuss the following during this meeting:

a. eOMSI Manual and eOMSI Facility Data Workbook Development Meetings

b. Processes and methods of gathering eOMSI Manual and eOMSI Facility Data Workbook information during construction.

c. The eOMSI Submittals schedule. Include the eOMSI submittal schedule on

the Baseline Construction Schedule.

d. Electronic eOMSI Facility Data Workbook file for Contractor's use and completion.

1.3.2 eOMSI Manual and Facility Data Workbook Coordination Meeting

Facilitate a meeting after the Pre-eOMSI Development Meeting prior to the submission of the eOMSI Progress Submittal. Meeting attendance must include the Contractor's eOMSI Manual and Facility Data Workbook Preparer, and Quality Control Manager, and the Government's Design Manager (DM), Contracting Officer's Representative, and NAVFAC Public Works (PW) Facilities Management Division (FMD). Include any Mechanical, Electrical, and Fire Protection Sub-Contractors.

The purpose of this meeting is to reach a mutual understanding of the scope of work concerning the contract requirements for eOMSI and coordinate the efforts necessary by both the Government and Contractor to ensure an accurate collection, preparation and timely Government review of eOMSI.

1.3.3 Facility Turnover Meeting

Include eOMSI in NAVFAC Red Zone (NRZ) facility turnover meetings as specified in Section 01 30 00.00 22 ADMINISTRATIVE REQUIREMENTS.

1.4 SUBMITTAL SCHEDULING

1.4.1 eOMSI, Progress Submittal

Submit the Progress submittal when construction is approximately 50 percent complete, to the Contracting Officer for approval. Provide eOMSI Manual Files (Bookmarked PDF) and eOMSI Facility Data Workbook (Excel). Include the elements and portions of system construction completed up to this point.

The purpose of this submittal is to verify progress is in accordance with contract requirements as discussed during the eOMSI Coordination Meeting. Field verify a portion of the eOMSI information in accordance with paragraph FIELD VERIFICATION.

1.4.2 eOMSI, Prefinal Submittal

Submit the 100 percent submittal of the eOMSI Prefinal Submittal to the Contracting Officer for approval within 60 calendar days of the Beneficial Occupancy Date (BOD). This submittal must provide a complete, working document that can be used to operate and maintain the facility. Any portion of the submittal that is incomplete or inaccurate requires the entire submittal to be returned for correction. Any discrepancies discovered during the Government's review of eOMSI Progress submittal must be corrected prior to the Prefinal submission.

The eOMSI Prefinal Submittal must include eOMSI Manual Files (Bookmarked PDF) and eOMSI Facility Data Workbook (Excel).

1.4.3 eOMSI, Final Submittal

Submit completed eOMSI Manual Files (Bookmarked PDF) and eOMSI Facility Data Workbook (Excel). The Final submittal is due at BOD. Any discrepancies discovered during the Government's review of the Prefinal eOMSI submittal, including the Field Verification, must be corrected prior

to the Final eOMSI submission.

1.5 UNITS OF MEASURE

Provide eOMSI utilizing the units of measure used in the Government generated contract documents.

1.6 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-11 Closeout Submittals

eOMSI, Progress Submittal; G

eOMSI, Prefinal Submittal; G

eOMSI, Final Submittal; G

PART 2 PRODUCTS

2.1 eOMSI FILES FORMAT

Format eOMSI manuals and files in accordance with Section 01 78 23 OPERATION AND MAINTENANCE DATA. Include a complete electronically linked operation and maintenance directory. Provide four electronic copies of the eOMSI Manuals to the Contracting Officer for approval.

Provide eOMSI Facility Data Workbook on compact disks (CD) or data digital versatile disk (DVD) disks in (EXCEL) format. Scan eOMSI Manual Files and eOMSI Facility Data Workbook for viruses, malware, and spyware using a commercially available scanning program that is routinely updated to identify and remove current virus threats.

2.1.1 eOMSI Manual Organization

Organize the eOMSI Manuals into two parts: 1) Product and Drawing Information, and 2) Facility Information. Bookmark the PDF files for easy access to the information.

a. Bookmark Product and Drawing Information documents in accordance with Section 01 78 23 OPERATION AND MAINTENANCE DATA.

b. Bookmark Facility Information to at least one level lower than the major system.

2.1.2 eOMSI Manual CD or DVD Disk Label and Disk Holder or Case

Provide disks in accordance with Section 01 78 23 OPERATION AND MAINTENANCE DATA.

2.2 eOMSI MANUAL

2.2.1 Product and Drawing Information

Provide an organized record of the facility products, materials, equipment,

and minimum information necessary to operate the facility. Provide Product and Drawing Information for the systems in the final constructed facility.

2.2.1.1 O&M Data

As a minimum, provide the approved O&M Data, submitted in the technical specification sections, in accordance with paragraph TYPES OF INFORMATION REQUIRED IN O&M DATA PACKAGES in Section 01 78 23 OPERATION AND MAINTENANCE DATA.

2.2.1.2 Record Drawings

Provide an electronic, PDF copy of the Record Drawings, prepared in accordance with FC 1-300-09N and 01 78 00.00 22 CLOSEOUT SUBMITTALS (PWD ME). Bookmark drawings using the sheet title and sheet number.

Include Record Drawings as part of the Red-Zone specified in Section 01 30 00.00 22 ADMINISTRATIVE REQUIREMENTS.

2.2.1.3 Utility Record Drawings

Using Record Source Drawings, show and document details of the actual installation of the utility systems; annotate and highlight the eOMSI information. Provide Utility Record Drawings in PDF format. Provide the following drawings at a large enough scale to differentiate designated isolation units from surrounding valves and switches.

a. Utility Schematic Diagrams - Provide a one line schematic diagram for each utility system such as power, water, wastewater, and gas/fuel. Schematic diagram must show from the point where the utility line is connected to the mainline up to the five-foot connection point to the facility. Indicate location or area designation for route of transmission or distribution lines; locations of duct banks, manholes/ handholes or poles; isolation units such as valves and switches; and utility facilities such as pump stations, lift stations, and substations.

b. Enlarged Connection and Cutoff Plans - Provide enlarged floor plans that provide information between the five foot utility connection point and where utilities connect to facility distribution. Enlarge floor plans/ elevations of the rooms where the utility enters the building and indicate on these plans locations of the main interior and exterior connection and cutoff points for the utilities. Also enlarge floor plans / elevations of the rooms where equipment is located. Include enough information to enable someone unfamiliar with the facility to locate the connection and cutoff points. Indicate designations such as room number, panel number, circuit breaker, or valve number, of each utility and equipment connection and cutoff point, and what that connection and cutoff point controls.

2.2.2 Facility Information

Provide the following in Facility Information:

2.2.2.1 General Facility and System Description

Detail the overall dimensions of the facility and foundation type. List and generally describe all the facility systems and any special features. Include photographs marked up and labeled to show key operating components

and the overall facility appearance.

2.2.2.2 Plans

Provide uncluttered, legible 11 by 17 inches plans. Include overall facility dimensions on the plans. Do not include items such as construction instructions, references, or frame numbers.

2.2.2.3 Equipment Listing

Provide a table that lists the major equipment shown on the design equipment schedules. Show the item descriptions, locations, model numbers; and the names, addresses, and telephone numbers of the manufacturers, suppliers, contractors, and subcontractors.

2.3 eOMSI FACILITY DATA WORKBOOK

An initial, pre-edited draft of the Model & Facility Data Matrix tab within the eOMSI Facility Data Workbook is included in Appendix A attached to this section. The Government will provide this eOMSI Facility Data Workbook electronically to the Contractor upon award. Add, delete, and update Mastersystems, Systems, and Subsystems that may have changed during construction, or any items that may have been omitted or missed during design, at no additional cost to the Government. Complete the KTR Facility Data File tab based on the selection of Mastersystems, Systems, and Subsystems installed. The following tabs are included in the eOMSI Facility Data File Workbook and serve the purpose stated:

a. Instructions Tab: Instructions for completing Model & Facility Data Matrix Tab and KTR Facility Data File Tab. If a discrepancy exists between what is required in this section and the Workbook, the instructions within the workbook take precedence.

b. Model & Facility Data Matrix Tab: - The Matrix lists Required Facility Asset Fields for each SYSTEM and SUBSYSTEM. The Designer of Record selects SYSTEMS and SUBSYSTEMS that are within the project scope, which the Contractor needs to include and populate in KTR Facility Data File tab. The "Required Facility Asset Field Position Numbers," one through seventeen, are pre-populated, and are not editable.

c. Required Facility Asset Fields Tab: Defines the 17 Required Facility Asset Field Position Numbers used in Model and Facility Data Matrix and KTR Facility Data File tabs.

d. KTR Sample Facility Data File Tab: Sample KTR eOMSI facility data file. This tab provides an example of the mandatory fields of equipment installed by the Contractor, and populated in the KTR eOMSI Facility Data File Tab, along with their descriptions.

e. KTR Facility Data File Tab: Required eOMSI facility data file deliverable provided to the Government. Provide a separate and unique new row for each facility component or piece of equipment installed.

PART 3 EXECUTION

3.1 FIELD VERIFICATION

Field verify eOMSI Facility Data Workbook information with Contractor and Government personnel. Include the following personnel in this meeting:

Contractor's eOMSI Manual and Facility Data Workbook Preparer and Quality Control Manager, and the Government's Contracting Officer's Representative and NAVFAC PW FMD. Request, and provide, an eOMSI Field Verification Meeting no sooner than 14 calendar days after submission of the Progress eOMSI submittal, and another, no sooner than 14 calendar days after submission of the Prefinal eOMSI submittal. During this meeting, the Government and Contractor will verify that the eOMSI Facility Data Workbook is complete and accurate.

Field verify that at least 5 Subsystems under each of the Mastersystems are accurate, for a total of 25 Subsystems. For each of these items, verify that the required facility asset field, as defined in the "Model & Facility Data Matrix" tab, contains the specified data and it is accurate (i.e. item description, manufacturer, model no., serial no.). 100 percent accuracy of eOMSI information is required for successful field verification. If data discrepancies are discovered amongst the 25 Subsystems verified, resubmit an updated eOMSI FDW, and request a make-up field verification meeting. At the make-up field verification meeting 25 new Subsystems and their associated required facility asset fields will be field verified; the 25 new Subsystems must be 100% accurate. Any discrepancies discovered must be corrected prior to next eOMSI Facility Data Workbook Submittal.

(1) A10 - FOUNDATIONS
(2) B20 - EXTERIOR ENCLOSURE
(3) D30 - HVAC
(4) D40 - FIRE PROTECTION
(5) D50 - ELECTRICAL

3.2 eOMSI TRAINING

Provide training on eOMSI Manuals and Facility Data Workbook in accordance with Section 01 78 23 OPERATION AND MAINTENANCE DATA.

-- End of Section --

SECTION 02 41 00

DEMOLITION AND DECONSTRUCTION
08/22

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 PROFESSIONALS (ASSP)

ASSP A10.6	(2006) Safety & Health Program Requirements for Demolition Operations - American National Standard for Construction and Demolition Operations

U.S. ARMY CORPS OF ENGINEERS (USACE)

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

U.S. FEDERAL AVIATION ADMINISTRATION (FAA)

FAA AC 70/7460-1	(2016; Rev L; Change 2) Obstruction Marking and Lighting

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

40 CFR 61	National Emission Standards for Hazardous Air Pollutants

1.2 PROJECT DESCRIPTION

1.2.1 Definitions

1.2.1.1 Demolition

Demolition is the process of tearing apart and removing any feature of a facility together with any related handling and disposal operations.

1.2.1.2 Deconstruction

Deconstruction is the process of taking apart a facility with the primary goal of preserving the value of all useful building materials.

1.2.1.3 Demolition Plan

Demolition Plan is the planned steps and processes for managing demolition activities and identifying the required sequencing activities and disposal mechanisms.

1.2.1.4 Deconstruction Plan

Deconstruction Plan is the planned steps and processes for dismantling all

or portions of a structure or assembly, to include managing sequencing activities, storage, re-installation activities, salvage and disposal mechanisms.

1.2.2 Demolition/Deconstruction Plan

Prepare a Demolition and Deconstruction Plan and submit proposed salvage, demolition, deconstruction, and removal procedures for approval before work is started. 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 in accordance with Section 01 74 19 CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL. Provide procedures for safe conduct of the work in accordance with EM 385-1-1. Plan must be approved by Contracting Officer prior to work beginning.

1.2.3 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 the value derived from the salvage and recycling of materials. Remove rubbish and debris from the project site; do not allow accumulations on pavements. The work includes demolition, deconstruction, 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 ITEMS TO REMAIN IN PLACE

Comply with FAR 52.236-9 to protect existing vegetation, structures, equipment, utilities, and improvements. 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 or pavements to remain. 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.

1.3.1 Existing Construction Limits and Protection

Do not disturb existing construction beyond the extent indicated or necessary for installation of construction. Provide temporary shoring and bracing for support of bridge 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.

1.3.2 Utility Service

Maintain existing utilities indicated to stay in service and protect against damage during demolition and deconstruction operations. Several utilities exist immediately adjacent to demolitiomn areas. Identify these utilities in the Demolition Plan. Detail contingencies for protecting these utilities within the Dewmolition plan. 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. Disconnect and seal utilities serving each area of alteration or removal upon written request from the Contractor.

1.3.3 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. 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.

1.4 BURNING

The use of burning at the project site for the disposal of refuse and debris will not be permitted.

1.5 SUBMITTALS

Government approval is required for submittals with a "G" or "S" classification. Submittals not having a "G" classification are for Contractor Quality Control approval. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Demolition and Deconstruction Plan; G

Existing Conditions

Temporary Support System; G

SD-07 Certificates

Notification; G

1.6 QUALITY ASSURANCE

Submit timely notification of demolition projects to Federal, State, regional, and local authorities in accordance with 40 CFR 61, Subpart M. Notify the State's environmental protection agency and the Contracting Officer in writing 10 working days prior to the commencement of work in accordance with 40 CFR 61, Subpart M. 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 ASSP A10.6. Comply with the Environmental Protection Agency requirements specified. Use of explosives will not be permitted.

1.6.1 Dust and Debris Control

Prevent the spread of dust and debris 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.

1.7 PROTECTION

1.7.1 Traffic Control Signs

a. Where pedestrian and driver safety is endangered in the area of removal work, use traffic barricades with flashing lights. Anchor barricades in a manner to prevent displacement by wind. Notify the Contracting Officer prior to beginning such work.

Provide a minimum of 2 FAA type L-810 steady burning red obstruction lights on temporary structures (including cranes) over 100 feet, but less than 200 ft, above ground level. The use of LED based obstruction lights are not permitted. For temporary structures (including cranes) over 200 ft above ground level provide obstruction lighting in accordance with FAA AC 70/7460-1. Perform light construction and installation in compliance with FAA AC 70/7460-1. Lights must be operational during periods of reduced visibility, darkness, and as directed by the Contracting Officer. Maintain the temporary services during the period of construction and remove only after permanent services have been installed and tested and are in operation.

1.7.2 Protection of Personnel

Before, during and after the demolition and deconstruction work continuously evaluate the condition of the structure being demolished and deconstructed and take immediate action to protect all personnel working in and around the project site. No area, section, 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.

1.8 RELOCATIONS

Perform the removal and reinstallation of relocated items as indicated with workmen skilled in the trades involved. Repair or replace items to be relocated which are damaged by the Contractor with new undamaged items as approved by the Contracting Officer.

1.9 EXISTING CONDITIONS

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 or the Contracting Officer's Representative showing the condition of structures and other facilities adjacent to areas of alteration or removal. Photographs or electronic images with a minimum resolution of 3072 x 2304 pixels, capable of a print resolution of 300 dpi, will be

acceptable as a record of existing conditions. Include in the record the elevation of the top of foundation walls, possible conflicting electrical conduits, plumbing lines, alarms systems, the location and extent of existing cracks and other damage and description of surface conditions that exist prior to 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. Submit survey results to the Contracting Officer.

PART 2 PRODUCTS

2.1 FILL MATERIAL

a. Comply with excavating, backfilling, and compacting procedures for soils used as backfill material to fill voids, depressions or excavations resulting from demolition or deconstruction of structures. Provide fill material consisting of waste products from demolition or deconstruction until all waste appropriate for this purpose is consumed.

PART 3 EXECUTION

3.1 EXISTING FACILITIES TO BE REMOVED

Inspect and evaluate existing structures onsite for reuse. Disassemble existing construction scheduled to be removed for reuse. 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. Designate materials for reuse onsite whenever possible.

3.1.1 Structures

a. Remove existing structures indicated to be removed.

b. Deconstruct structures in a systematic manner from the top of the structure to the ground. Complete demolition work above each tier before the supporting members on the lower level are disturbed. Demolish concrete in small sections. Remove structural framing members and lower to ground by means of derricks, platforms hoists, or other suitable methods as approved by the Contracting Officer.

c. Locate demolition and deconstruction equipment throughout the structure and remove materials so as to not impose excessive loads to the structure.

d. Remove existing rivets in the structural members, as indicated in the drawings, without compromising the structural integrity of the element.

e. Temporarily support the remaining concrete deck and related rail, light fixtures, and utilities as required to complete the work associated with the vehicle barrier. The temporary support system used must be designed and stamped by a Professional Engineer for all applicable design loads. Submit plans and associated calculations for review and approval prior to commencing demolition/deconstruction activities.

3.1.2 Utilities and Related Equipment

3.1.2.1 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.

3.1.2.2 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 but are not indicated on the drawings, notify the Contracting Officer 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.

3.1.3 Paving and Slabs

Remove concrete and asphaltic concrete paving and slabs as indicated. Provide neat sawcuts at limits of pavement removal as indicated. Remove pavement and slabs not to be used in this project from the project site at Contractor's expense.

3.1.4 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. Sawcuts in existing concrete sidewalk and roads must be at the nearest existing expansion joint or weakened plane joint and at full depth.

3.1.5 Structural Steel

Dismantle structural steel at field connections and in a manner that will prevent bending or damage. Flame-cutting torches are permitted when other methods of dismantling are not practical. Transport structural steel shapes to a designated area as directed by the Contracting Officer.

3.1.6 Miscellaneous Metal

Salvage shop-fabricated items and light-gage and cold-formed metal framing. Scrap metal is 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.

3.1.7 Mechanical Equipment and Fixtures

Disconnect mechanical hardware at the nearest connection to existing services to remain, unless otherwise noted. Disconnect mechanical

equipment and fixtures at fittings. Remove service valves attached to the unit. Salvage each item of equipment and fixtures as a whole unit; listed, indexed, tagged, and stored. Salvage each unit with its normal operating auxiliary equipment. Transport salvaged equipment and fixtures, including motors and machines, to a designated storage area as directed by the Contracting Officer. Do not remove equipment until approved. Do not offer low-efficiency equipment for reuse.

3.1.7.1 Preparation for Storage

Remove water, dirt, dust, and foreign matter from units; drain tanks, piping and fixtures; if previously used to store flammable, explosive, or other dangerous liquids, steam clean interiors. Seal openings with caps, plates, or plugs. Secure motors attached by flexible connections to the unit. Change lubricating systems with the proper oil or grease.

3.1.8 Electrical Equipment and Fixtures

Salvage motors, motor controllers, and operating and control equipment that are attached to the driven equipment. Salvage wiring systems and components. Box loose items and tag for identification. Disconnect primary, secondary, control, communication, and signal circuits at the point of attachment to their distribution system.

3.1.8.1 Fixtures

Remove and salvage electrical fixtures. Salvage unprotected glassware from the fixture and salvage separately. Salvage incandescent, mercury-vapor, and fluorescent lamps and fluorescent ballasts manufactured prior to 1978, boxed and tagged for identification, and protected from breakage.

3.1.8.2 Electrical Devices

Remove and salvage switches, switchgear, transformers, conductors including wire and nonmetallic sheathed and flexible armored cable, regulators, meters, instruments, plates, circuit breakers, panelboards, outlet boxes, and similar items. Box and tag these items for identification according to type and size.

3.1.8.3 Conduit and Miscellaneous Items

Salvage conduit except where embedded in concrete or masonry. Consider corroded, bent, or damaged conduit as scrap metal. Sort straight and undamaged lengths of conduit according to size and type. Classify supports, knobs, tubes, cleats, and straps as debris to be removed and disposed.

3.1.9 Items With Unique/Regulated Disposal Requirements

Remove and dispose of items with unique or regulated disposal requirements in the manner dictated by law or in the most environmentally responsible manner.

3.2 CONCURRENT EARTH-MOVING OPERATIONS

Do not begin excavation, filling, and other earth-moving operations that are sequential to demolition or deconstruction work in areas occupied by structures to be demolished or deconstructed until all demolition and deconstruction in the area has been completed and debris removed. Fill

holes, open basements and other hazardous openings.

3.3 DISPOSITION OF MATERIAL

3.3.1 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, become the property of the Contractor and must be removed from Government property. Materials approved for storage by the Contracting Officer must be removed before completion of the contract. 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. 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.

3.3.2 Reuse of Materials and Equipment

Remove and store materials and equipment listed in the Demolition Plan to be reused or relocated to prevent damage, and reinstall as the work progresses. Coordinate the re-use of materials and equipment with the re-use requirements in accordance with Section 01 74 19 CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL. Capture re-use of materials in the diversion calculations for the project.

3.3.3 Salvaged Materials and Equipment

Remove materials and equipment that are indicated and specified to be removed by the Contractor and that are to remain the property of the Government, and deliver to a storage site , as directed within by the Contracting Officer.

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. Coordinate the salvaged materials with tracking requirements in accordance with Section 01 74 19 CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL. Capture salvaged materials in the diversion calculations for the project.

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 following items reserved as property of the Government to the areas designated.

3.3.4 Unsalvageable and Non-Recyclable Material

Dispose of unsalvageable and non-recyclable noncombustible material in the disposal area located by the Contracting Officer. Dispose of unsalvageable and non-recyclable combustible material off the site.

3.4 CLEANUP

Remove debris and rubbish from project site and similar excavations. Remove and transport the debris in a manner that prevents spillage on streets or adjacent areas. Apply local regulations regarding hauling and disposal.

3.5 DISPOSAL OF REMOVED MATERIALS

3.5.1 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 as contractually specified in the Waste Management Plan.

3.5.2 Burning on Government Property

Burning of materials removed from demolished and deconstructed structures will not be permitted on Government property.

3.5.3 Removal to Spoil Areas on Government Property

Transport noncombustible materials removed from demolition and deconstruction structures to designated spoil areas on Government property.

3.5.4 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 per Section 01 57 19.00 22TEMPORARY ENVIRONMENTAL CONTROLS - PORTSMOUTH NAVAL SHIPYARD (PWD ME).

3.6 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 02 83 00.00 22

MANAGEMENT OF LEAD, CADMIUM, AND CHROMIUM DURING RENOVATION, DEMOLITION, REMOVAL, AND ABATEMENT
(PNS PROJECTS)
09/21

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 PROFESSIONALS (ASSP)

ASSP/SAFE Z9.2	(2018) Fundamentals Governing the Design and Operation of Local Exhaust Ventilation Systems

ASTM INTERNATIONAL (ASTM)

ASTM E1613	(2012) Standard Test Method for Determination of Lead by Inductively Coupled Plasma Atomic Emission Spectrometry (ICP-AES), Flame Atomic Absorption Spectrometry (FAAS), or Graphite Furnace Atomic Absorption Spectrometry (GFAAS) Techniques
ASTM E1644	(2021) Standard Practice for Hot Plate Digestion of Dust Wipe Samples for the Determination of Lead
ASTM E1728	(2016) Collection of Settled Dust Samples Using Wipe Sampling Methods for Subsequent Lead Determination
ASTM E1792	(2020) Standard Specification for Wipe Sampling Materials for Lead in Surface Dust

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 701	(2019) Standard Methods of Fire Tests for Flame Propagation of Textiles and Films

U.S. ARMY CORPS OF ENGINEERS (USACE)

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

U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT (HUD)

HUD 6780	(1995; Errata Aug 1996;Rev Ch. 7 - 1997) Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing

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

29 CFR 1926.103	Respiratory Protection
29 CFR 1926.1126	Chromium
29 CFR 1926.1127	Cadmium
29 CFR 1926.21	Safety Training and Education
29 CFR 1926.33	Access to Employee Exposure and Medical Records
29 CFR 1926.55	Gases, Vapors, Fumes, Dusts, and Mists
29 CFR 1926.59	Hazard Communication
29 CFR 1926.62	Lead
29 CFR 1926.65	Hazardous Waste Operations and Emergency Response
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 745	Lead-Based Paint Poisoning Prevention in Certain Residential Structures
49 CFR 172	Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, and Training Requirements
49 CFR 178	Specifications for Packagings

U.S. NAVAL FACILITIES ENGINEERING COMMAND (NAVFAC)

ND OPNAVINST 5100.23	(2005; Rev G) Navy Occupational Safety and Health (NAVOSH) Program Manual

UNDERWRITERS LABORATORIES (UL)

UL 586	(2009; Reprint Dec 2017) UL Standard for

	Safety High-Efficiency Particulate, Air Filter Units

PORTSMOUTH NAVAL SHIPYARD (PNSY)

5090.6F	(4-21) Solid Waste Operations
5090.30	(4-05) Hazardous Waste Generator Standards
APPENDIX A	"Limited Hazardous Materials Assessment for Metals in Paint (Barium, Cadmium, Chromium, Lead, & Zinc) & PCBs in Caulking/Gasketing at Bridge #2, Portsmouth Naval Shipyard, Kittery, Maine", dated January 5, 2017, prepared by Northeast Test Consultants.

Appendix A is provided as a separate document in the contract documents. If the appendix is missing from the contract documents notify the Contracting Officer.

1.2 DEFINITIONS

1.2.1 Abatement

Measures defined in 40 CFR 745, Section 223, designed to permanently eliminate lead-based paint hazards.

1.2.2 Action Level

Employee exposure, without regard to use of respirators, to an airborne concentration of lead of 30 micrograms per cubic meter of air averaged over an 8-hour period; to an airborne concentration of cadmium of 2.5 micrograms per cubic meter of air averaged over an 8-hour period; to an airborne concentration of chromium (VI) of 2.5 micrograms per cubic meter of air averaged over an 8-hour period.

1.2.3 Area Sampling

Sampling of lead, cadmium, and chromium concentrations within the lead, cadmium, and chromium control area and inside the physical boundaries which is representative of the airborne lead, cadmium, and chromium concentrations but is not collected in the breathing zone of personnel (approximately 5 to 6 feet above the floor).

1.2.4 Cadmium Permissible Exposure Limit (PEL)

Five micrograms per cubic meter of air as an 8-hour time weighted average as determined by 29 CFR 1926.1127. If an employee is exposed for more than 8-hours in a work day, determine the PEL by the following formula:

PEL (micrograms/cubic meter of air) = 40/No. hrs worked per day

1.2.5 Certified Industrial Hygienist (CIH)

As used in this section refers to a person retained by the Contractor who is certified as an industrial hygienist and who is trained in the recognition and control of lead, cadmium and chromium hazards in accordance with current federal, State, and local regulations. CIH must be certified

for comprehensive practice by the American Board of Industrial Hygiene. The Certified Industrial Hygienist must be independent of the Contractor and must have no employee or employer relationship which could constitute a conflict of interest.

1.2.6 Child-Occupied Facility

Real property which is a building or portion of a building constructed prior to 1978 visited regularly by the same child, six-years of age or under, on at least two different days within any week (Sunday through Saturday period), provided that each day's visit lasts at least 3-hours, and the combined annual visits last at least 60-hours. Child-occupied facilities include but are not limited to, day-care centers, preschools and kindergarten classrooms.

1.2.7 Chromium Permissible Exposure Limit (PEL)

Five micrograms per cubic meter of air as an 8-hour time weighted average as determined by 29 CFR 1926.1126. If an employee is exposed for more than 8-hours in a work day, determine the PEL by the following formula:

PEL (micrograms/cubic meter of air) = 40/No. hrs worked per day

1.2.8 Competent Person (CP)

As used in this section, refers to a person employed by the Contractor who is trained in the recognition and control of lead, cadmium and chromium hazards in accordance with current federal, State, and local regulations and has the authority to take prompt corrective actions to control the lead, cadmium and chromium hazard. The Contractor may provide more than one CP as required to supervise and monitor the work. The CP must be a Certified Industrial Hygienist (CIH) certified by the American Board of Industrial Hygiene or a Certified Safety Professional (CSP) certified by the Board of Certified Safety Professionals or a licensed lead-based paint abatement Supervisor/Project Designer in the State of Maine.

1.2.9 Contaminated Room

Refers to a room for removal of contaminated personal protective equipment (PPE).

1.2.10 Decontamination Shower Facility

That facility that encompasses a clean clothing storage room, and a contaminated clothing storage and disposal rooms, with a shower facility in between.

1.2.11 Deleading

Activities conducted by a person who offers to eliminate lead-based paint or lead-based paint hazards or paints containing cadmium/chromium or to plan such activities in commercial buildings, bridges or other structures.

1.2.12 Eight-Hour Time Weighted Average (TWA)

Airborne concentration of lead, cadmium, and chromium to which an employee is exposed, averaged over an 8-hour workday as indicated in 29 CFR 1926.62, 29 CFR 1926.1126, and 29 CFR 1926.1127.

1.2.13 High Efficiency Particulate Air (HEPA) Filter Equipment

HEPA filtered vacuuming equipment with a UL 586 filter system capable of collecting and retaining lead, cadmium, and chromium-contaminated particulate. A high efficiency particulate filter demonstrates at least 99.97 percent efficiency against 0.3 micron or larger size particles.

1.2.14 Lead

Metallic lead, inorganic lead compounds, and organic lead soaps. Excludes other forms of organic lead compounds. The use of the term Lead in this section also refers to paints which contain detectable concentrations of Cadmium and Chromium. For the purposes of the section lead-based paint (LBP) and paint with lead (PWL) also contains cadmium and chromium.

1.2.15 Lead-Based Paint (LBP)

Paint or other surface coating that contains lead in excess of 1.0 milligrams per centimeter squared or 0.5 percent by weight.

1.2.16 Lead-Based Paint Activities

In the case of target housing or child occupied facilities, lead-based paint activities include; a lead-based paint inspection, a risk assessment, or abatement of lead-based paint hazards.

1.2.17 Lead-Based Paint Hazards

Paint-lead hazard, dust-lead hazard or soil-lead hazard as identified in 40 CFR 745, Section 65. Any condition that causes exposure to lead from lead-contaminated dust, lead-contaminated soil, lead-based paint that is deteriorated or present in accessible surfaces, friction surfaces, or impact surfaces that would result in adverse human health effects.

1.2.18 Lead, Cadmium, and Chromium Control Area

A system of control methods to prevent the spread of lead, cadmium, and chromium dust, paint chips or debris to adjacent areas that may include temporary containment, floor or ground cover protection, physical boundaries, and warning signs to prevent unauthorized entry of personnel. HEPA filtered local exhaust equipment may be used as engineering controls to further reduce personnel exposures or building/outdoor environmental contamination.

1.2.19 Lead Permissible Exposure Limit (PEL)

Fifty micrograms per cubic meter of air as an 8-hour time weighted average as determined by 29 CFR 1926.62. If an employee is exposed for more than 8-hours in a work day, determine the PEL by the following formula:

PEL (micrograms/cubic meter of air) = 400/No. hrs worked per day

1.2.20 Material Containing Lead/Paint with Lead (MCL/PWL)

Any material, including paint, which contains lead as determined by the testing laboratory using a valid test method. The requirements of this section do not apply if no detectable levels of lead are found using a quantitative method for analyzing paint or MCL using laboratory instruments with specified limits of detection (usually 0.01 percent). An X-Ray

Fluorescence (XRF) instrument is not considered a valid test method.

1.2.21 Personal Sampling

Sampling of airborne lead, cadmium, and chromium concentrations within the breathing zone of an employee to determine the 8-hour time weighted average concentration in accordance with 29 CFR 1926.62, 29 CFR 1926.1126, and 29 CFR 1926.1127. Samples must be representative of the employees' work tasks. Breathing zone must be considered an area within a hemisphere, forward of the shoulders, with a radius of 6 to 9 inches and centered at the nose or mouth of an employee.

1.2.22 Physical Boundary

Area physically roped or partitioned off around lead, cadmium, and chromium control area to limit unauthorized entry of personnel.

1.2.23 Target Housing

Residential real property which is housing constructed prior to 1978, except housing for the elderly or persons with disabilities (unless any one or more children age 6-years or under resides or is expected to reside in such housing for the elderly or persons with disabilities) or any zero bedroom dwelling.

1.3 DESCRIPTION

This specification covers all project-related activities, including, but not limited to, renovation, demolition, removal, and/or remediation, impacting PWL and/or material containing lead, cadmium, and chromium located on Bridge 2 and/or as indicated on the drawings. Refer to the report located in Appendix A of this section. The work covered by this section includes work tasks and the precautions specified in this section for the protection of personnel and the environment during and after the performance of the hazard abatement activities in accordance with state and federal regulations and as specified herein.

1.3.1 Protection of Existing Areas To Remain

Project work including, but not limited to, lead, cadmium, and chromium hazard abatement work, storage, transportation, and disposal must be performed without damaging or contaminating adjacent work and areas. Where such work or areas are damaged or contaminated, restore work and areas to the original condition.

1.3.2 Coordination with Other Work

Coordinate with work being performed in adjacent areas to ensure there are no exposure issues. Explain coordination procedures in the Lead, Cadmium, and Chromium Compliance Plan and describe how the Contractor will prevent lead, cadmium and chromium exposure to other contractors and Government personnel performing work unrelated to lead, cadmium and chromium activities.

1.3.3 Sampling and Analysis

Submit a log of the analytical results from sampling conducted during the abatement. Keep the log of results current with project activities and brief the results to the Contracting Officer as analytical results are

reported.

1.3.3.1 Dust Wipe Materials, Sampling and Analysis

Sampling must conform to ASTM E1728 and ASTM E1792. Analysis must conform to ASTM E1613 and ASTM E1644.

1.3.3.2 Clearance Monitoring

a. Collect dust wipe samples as appropriate, the lead, cadmium and chromium hazard control area after the final visual inspection.

1.3.4 Clearance Requirements

Target clearance levels

(1) Lead - Below concentrations detected in wipe samples collected before commencement of work.

(2) Chromium - Below concentrations detected in wipe samples collected before commencement of work.

(3) Cadmium - Below concentrations detected in wipe samples collected before commencement of work.

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-01 Preconstruction Submittals

Competent Person Qualifications; G

Training Certification; G

Occupational and Environmental Assessment Data Report; G

Medical Examinations; G

Lead, Cadmium, and Chromium Waste Management Plan; G

Licenses, Permits and Notifications; G

Lead, Cadmium, and Chromium Compliance Plan; G

Lead, Cadmium, and Chromium Compliance Plan Checklist; G

Waste Characterization Sampling Plan; G

Sample Results; G

SD-03 Product Data

Respirators; G

Vacuum Filters; G

Negative Air Pressure System; G

Materials and Equipment; G

Expendable Supplies; G

Local Exhaust Equipment; G

Pressure Differential Automatic Recording Instrument; G

Pressure Differential Log; G

SD-06 Test Reports

Sampling and Analysis; G

Occupational and Environmental Assessment Data Report; G

Sampling Results; G

Pressure Differential Recordings For Local Exhaust System; G

SD-07 Certificates

Testing Laboratory; G

Third Party Consultant Qualifications; G

Notification of the Commencement of Work Impacting Lead, Cadmium, or Chromium; G

Clearance Certification; G

SD-11 Closeout Submittals

Turn-In Documents or Weight Tickets; G

1.5 QUALITY ASSURANCE

1.5.1 Qualifications

1.5.1.1 Competent Person (CP)

Submit name, address, and telephone number of the CP selected to perform responsibilities specified in paragraph COMPETENT PERSON (CP) RESPONSIBILITIES. Provide documented construction project-related experience with implementation of OSHA's Lead in Construction standard (29 CFR 1926.62), Chromium standard (29 CFR 1926.1126), and Cadmium standard (29 CFR 1926.1127) which shows ability to assess occupational and environmental exposure to lead, cadmium, and chromium; experience with the use of respirators, personal protective equipment and other exposure reduction methods to protect employee health. Demonstrate a minimum of 5 years experience implementing OSHA's Lead in Construction standard (29 CFR 1926.62), Chromium standard (29 CFR 1926.1126), and Cadmium standard (29 CFR 1926.1127). Submit proper documentation that the CP is trained and licensed and certified in accordance with federal, State and local laws. The competent person must possess the qualifications detailed in specification Section 1.2.8 above.

1.5.1.2 Training Certification

Submit a current certificate for each worker and supervisor, signed and dated by the accredited training provider, stating that the employee has received the required lead, cadmium and chromium training specified in 29 CFR 1926.62, 29 CFR 1926.1126, and 29 CFR 1926.1127 and is certified to perform or supervise deleading, lead removal or demolition activities in the State of Maine.

1.5.1.3 Testing Laboratory

Submit the name, address, and telephone number of the testing laboratory selected to perform the air and wipe analysis, testing, and reporting of airborne concentrations of lead, cadmium and chromium. Use a laboratory participating in the EPA National Lead Laboratory Accreditation Program (NLLAP) by being accredited by either the American Association for Laboratory Accreditation (A2LA) or the American Industrial Hygiene Association (AIHA) and that is successfully participating in the Environmental Lead Proficiency Analytical Testing (ELPAT) program to perform sample analysis. Laboratories selected to perform blood lead analysis must be OSHA approved.

1.5.1.4 Third Party Consultant Qualifications

Submit the name, address and telephone number of the third party consultant selected to perform the wipe sampling for determining concentrations of lead, cadmium and chromium in dust. Submit proper documentation that the consultant is trained and certified as an inspector technician or inspector/risk assessor by the USEPA authorized State (or local) certification and accreditation program.

1.5.2 Requirements

1.5.2.1 Competent Person (CP) Responsibilities

a. Verify training meets all federal, State, and local requirements.

b. Review and approve Lead, Cadmium, and Chromium Compliance Plan for conformance to the applicable referenced standards.

c. Continuously inspect LBP/PWL or MCL work for conformance with the approved plan.

d. Perform (or oversee performance of) air sampling. Recommend upgrades or downgrades (whichever is appropriate based on exposure) on the use of PPE (respirators included) and engineering controls.

e. Ensure work is performed in strict accordance with specifications at all times.

f. Control work to prevent hazardous exposure to human beings and to the environment at all times.

g. Supervise final cleaning of the lead, cadmium, and chromium control area, take clearance wipe samples if necessary; review clearance sample results and make recommendations for further cleaning.

h. Certify the conditions of the work as called for elsewhere in this

specification.

1.5.2.2 Lead, Cadmium, and Chromium Compliance Plan

Submit a detailed job-specific plan of the work procedures to be used in the disturbance of lead, cadmium and chromium, LBP/PWL or MCL. Include in the plan a sketch showing the location, size, and details of lead, cadmium, and chromium control areas, critical barriers, physical boundaries, location and details of decontamination facilities, viewing ports, and mechanical ventilation system. Include a description of equipment and materials, work practices, controls and job responsibilities for each activity from which lead, cadmium, and chromium is emitted. Include in the plan, eating, drinking, smoking, hygiene facilities and sanitary procedures, interface of trades, sequencing of lead, cadmium, and chromium related work, collected waste water and dust containing lead, cadmium, and chromium and debris, air sampling, respirators, personal protective equipment, and a detailed description of the method of containment of the operation to ensure that lead, cadmium, and chromium is not released outside of the lead, cadmium, and chromium control area. Include site preparation, cleanup and clearance procedures. Include occupational and environmental sampling, training and strategy, sampling and analysis strategy and methodology, frequency of sampling, duration of sampling, and qualifications of sampling personnel in the air sampling portion of the plan. Include a description of arrangements made among contractors on multicontractor worksites to inform affected employees and to clarify responsibilities to control exposures. If work will occur on a historic building, then include in the plan a description of how the proposed activities will comply with other relevant specifications to avoid or minimize impacts to historic fabric (for example, but not limited to, specifications related to historic masonry).

The plan must be developed and signed by a certified Lead Project Designer in the State of Maine. The plan must include the name and certification number of the person signing the plan.

1.5.2.3 Lead, Cadmium, and Chromium Compliance Plan Checklist

The Contractor must complete the Lead, Cadmium, and Chromium Compliance Plan Checklist included as Attachment A at the end of this specification. The Checklist must be signed by the properly-certified person preparing the Plan and must be submitted to the Government for review and approval with the Lead, Cadmium, and Chromium Compliance Plan.

1.5.2.4 Occupational and Environmental Assessment Data Report

If initial monitoring is necessary, submit occupational and environmental sampling results to the Contracting Officer within three working days of collection, signed by the testing laboratory employee performing the analysis, the employee that performed the sampling, and the CP.

In order to reduce the full implementation of 29 CFR 1926.62, 29 CFR 1926.1126, and 29 CFR 1926.1127 the Contractor must provide documentation. Submit a report that supports the determination to reduce full implementation of the requirements of 29 CFR 1926.62, 29 CFR 1926.1126, 29 CFR 1926.1127 and supporting the Lead, Cadmium, and Chromium Compliance Plan.

a. The initial monitoring must represent each job classification, or if working conditions are similar to previous jobs by the same employer,

provide previously collected exposure data that can be used to estimate worker exposures per 29 CFR 1926.62, 29 CFR 1926.1126, and 29 CFR 1926.1127. The data must represent the worker's regular daily exposure to lead, cadmium, and chromium for stated work. The initial monitoring must represent each task and/or type of activity. The initial monitoring must represent each/every PWL and/or material containing lead, cadmium, and chromium.

b. Submit worker exposure data gathered during the task based trigger operations of 29 CFR 1926.62, 29 CFR 1926.1126, and 29 CFR 1926.1127 with a complete process description. This includes, but is not limited to, manual demolition, manual scraping, manual sanding, heat gun, power tool cleaning, rivet busting, cleanup of dry expendable abrasives, abrasive blast enclosure removal, abrasive blasting, welding, cutting and torch burning where lead, cadmium and chromium containing coatings are present.

c. The initial assessment must determine the requirement for further monitoring and the need to fully implement the control and protective requirements including the lead, cadmium, and chromium compliance plan per 29 CFR 1926.62, 29 CFR 1926.1126, and 29 CFR 1926.1127.

1.5.2.5 Medical Examinations

Submit pre-work blood lead levels and post-work blood lead levels for all workers performing lead, cadmium, and chromium activities during the execution of the work. Initial medical surveillance as required by 29 CFR 1926.62, 29 CFR 1926.1126, and 29 CFR 1926.1127 must be made available to all employees exposed to lead, cadmium, and chromium at any time (one day) above the action level. Full medical surveillance must be made available to all employees on an annual basis who are or may be exposed to lead, cadmium and chromium in excess of the action level for more than 30 days a year or as required by 29 CFR 1926.62, 29 CFR 1926.1126, and 29 CFR 1926.1127. Adequate records must show that employees meet the medical surveillance requirements of 29 CFR 1926.33, 29 CFR 1926.62, 29 CFR 1926.1126, 29 CFR 1926.1127 and 29 CFR 1926.103. Provide medical surveillance to all personnel exposed to lead, cadmium, and chromium as indicated in 29 CFR 1926.62, 29 CFR 1926.1126, and 29 CFR 1926.1127. Maintain complete and accurate medical records of employees for the duration of employment plus 30 years.

1.5.2.6 Training

Train each employee performing work that disturbs lead, cadmium, and chromium, who performs LBP/MCL/PWL disposal, and air sampling operations prior to the time of initial job assignment and annually thereafter, in accordance with 29 CFR 1926.21, 29 CFR 1926.62, 29 CFR 1926.1126, 29 CFR 1926.1127, 40 CFR 745, 49 CFR 172, and State of Maine and local regulations where appropriate.

1.5.2.7 Respiratory Protection Program

a. Provide each employee required to wear a respirator a respirator fit test at the time of initial fitting and at least annually thereafter as required by 29 CFR 1926.62, 29 CFR 1926.1126, and 29 CFR 1926.1127.

b. Establish and implement a respiratory protection program as required by 29 CFR 1926.103, 29 CFR 1926.62, 29 CFR 1926.1126, 29 CFR 1926.1127, and 29 CFR 1926.55.

1.5.2.8 Hazard Communication Program

Establish and implement a Hazard Communication Program as required by 29 CFR 1926.59.

1.5.2.9 Lead, Cadmium, and Chromium Waste Management

The Lead, Cadmium, and Chromium Waste Management Plan must comply with applicable requirements of federal, State, and local hazardous waste regulations and address:

a. Identification and classification of wastes associated with the work.

b. Estimated quantities of wastes to be generated and disposed of.

c. Names and qualifications (experience and training) of personnel who will be working on-site with hazardous wastes.

d. List of waste handling equipment to be used in performing the work, to include cleaning, volume reduction, and transport equipment.

e. Spill prevention, containment, and cleanup contingency measures including a health and safety plan to be implemented in accordance with 29 CFR 1926.65.

f. Work plan and schedule for waste containment and management. Proper containment of the waste includes using acceptable waste containers, as well as proper marking/labeling of the containers. Clean up and containerize wastes daily.

g. Include any process that may alter or treat waste. Note that no process may be used that would render a hazardous waste non hazardous.

h. All HW must be placed in a Shipyard-permitted HWAA or Contractors shall turn HW in to a HWAA not later than the end of the shift on which it is generated. Responsibility for compliance is upon the Contractor. All hazardous wastes generated within the confines of the Shipyard are disposed of by the Government. Accordingly, all hazardous wastes generated by the Contractor to accomplish requirements of this contract will be considered Government-generated, and disposed of by the Government. Contractor shall not bring hazardous wastes onto Government property.

1.5.2.10 Waste Characterization Sampling Plan

A sampling plan must be developed that details practices to be followed for the collection, management, and analysis of waste characterization samples to determine if waste materials generated by the referenced project will be classified as hazardous or non-hazardous to ensure proper disposal. The plan must propose sampling that meets the requirements of all applicable local, state, and federal statutes and regulations, Navy and PNSY requirements, and project specifications. At a minimum, the sampling plan must include:

a. Confirmation that the sampling plan will be reviewed and accepted by the Navy (Code 106.3) prior to conducting any sampling. The Contracting Officer's Representative and Code 106.3 must be notified seven calendar days in advance of sampling to allow Code 106.3 Representatives to

witness sampling.

b. The timing of waste characterization sampling and analysis. To the extent feasible, waste sampling and analysis must be completed prior to any project work to ensure waste is properly characterized and can be separated to ensure hazardous waste is not commingled with non-hazardous waste.

c. The proposed date of sampling.

d. Documentation that the Environmental Field Technician (EFT) conducting the waste sampling has training in proper collection and decontamination procedures.

e. Confirmation that the samples will be submitted, under strict chain-of-custody (COC) requirements, to a Maine-certified laboratory. A copy of the laboratory's COC form should be attached to the plan.

f. Confirmation that sample collection, management, and analysis will be performed in accordance with the requirements of all applicable local, state and federal statutes and regulations, Navy and PNSY requirements, and the project specifications.

g. A listing of the constituents to be analyzed for, and the laboratory analytical methods to be utilized. At a minimum, the waste characterization must include laboratory analysis for RCRA 8 Metals via the Toxicity Characteristic Leaching Procedure (TCLP). Depending on the methods used in project implementation, additional waste characterization analysis may be required (for example, waste characterization analysis for corrosivity may be required if high pH solutions are used for paint removal).

h. Confirmation that results will be transmitted to the Contracting Officer and Code 106.3 for final waste characterization and determination of disposal requirements for each waste material.

i. Confirmation that the sampling procedure will include, but not be limited to, the following:

1. The Contractor will notify the Contracting Officer's Representative and PNSY Code 106.3 Sampling Program Manager seven (7) calendar days prior to each sampling event to ensure the area and materials to be sampled are witnessed by all parties.

2. The EFT taking the samples will inspect the work area/waste with the Government Representative(s) to visually and tactilely assess the materials to be sampled.

3. Using a field log, the EFT will record the locations, types, quantities and other salient details related to materials to be sampled.

4. The EFT will collect sufficient samples of the materials that will be waste requiring disposal from the project work area. Samples must be representative of all materials that comprise the waste.

5. The EFT will place the sample in a clean jar or vial, secure the jar or vial closed and label it with a unique sample number.

6. The EFT will record the sample number on the COC and note the location of the sample in the field log and on the site drawing.

7. The EFT will verify that the sample number(s) on the jar/vial are accurate and consistent with the COC.

8. The EFT will place the secured and labeled jar/vial into a cooler and arrange for prompt delivery of bulk samples to the analytical laboratory.

9. The EFT will clean up any debris generated by the sampling process.

10. The EFT will decontaminate the collection tool using wet wipes, water and paper towels after each sample is collected. Razor blades will be replaced on a periodic basis as determined by the Inspector.

11. All samples will be collected in a manner to eliminate cross-contamination by the previous sample.

12. All materials used in the collection of the samples (gloves, wipes, trash, etc.) will be containerized in a bag for delivery to Building 357 for disposal.

13. The Inspector will obtain the following sampling equipment to perform the bulk sampling.

    (a) Individual sample jars and vials;
    (b) Field log;
    (c) Site diagram;
    (d) Chain-of-Custody (COC) forms;
    (e) Nitrile gloves;
    (f) Stainless steel or plastic soil scoops;
    (g) Metal chisels of assorted sizes;
    (h) Razor knives and replacement blades;
    (i) Water and spray bottle;
    (j) Trash bags;
    (k) Disposable cleaning wipes;
    (l) Paper towels;
    (m) Duct tape; and
    (n) Flashlight.

1.5.2.11 Environmental, Safety and Health Compliance

In addition to the detailed requirements of this specification, comply with laws, ordinances, rules, and regulations of federal, State, and local authorities regarding lead, cadmium, and chromium. Comply with the applicable requirements of the current issue of 29 CFR 1926.62, 29 CFR 1926.1126, 29 CFR 1926.1127, EM 385-1-1, and ND OPNAVINST 5100.23. Submit matters regarding interpretation of standards to the Contracting Officer for resolution before starting work. Where specification requirements and the referenced documents vary, the most stringent requirements apply. The following local laws, ordinances, criteria, rules and regulations regarding removing, handling, storing, transporting, and disposing of lead, cadmium, and chromium-contaminated materials apply:

a. Shipyard Instruction 5090.6F Solid Waste Operations (included as Attachment B at the end of this specification)

b. Shipyard Instruction 5090.30 Hazardous Waste Generator Standards

Licensing and certification in the State of Maine is required.

1.5.3 Pressure Differential Recordings for Local Exhaust System

Provide a local exhaust system that creates a negative pressure of at least 0.02 inches of water relative to the pressure external to the enclosure and operate it continuously, 24-hours a day, until the temporary enclosure of the lead, cadmium, and chromium control area is removed. Submit pressure differential recordings for each work day to the PQP and GC for review and to the Contracting Officer within 24-hours from the end of each work day.

1.5.4 Licenses, Permits and Notifications

Certify and submit in writing to the Maine Department of Environmental Protection and the Contracting Officer at least 10 days prior to the commencement of work that licenses, permits, and notifications have been obtained. All associated fees or costs incurred in obtaining the licenses, permits and notifications are included in the contract price.

1.5.5 Pre-Construction Conference

Along with the CP, meet with the Contracting Officer to discuss in detail the Lead, Cadmium, and Chromium Waste Management Plan and the Lead, Cadmium, and Chromium Compliance Plan, including procedures and precautions for the work.

1.6 EQUIPMENT

1.6.1 Respirators

Furnish appropriate respirators approved by the National Institute for Occupational Safety and Health (NIOSH), Department of Health and Human Services, for use in atmospheres containing lead, cadmium and chromium dust, fume and mist. Respirators must comply with the requirements of 29 CFR 1926.62, 29 CFR 1926.1126, and 29 CFR 1926.1127.

1.6.2 Special Protective Clothing

Personnel exposed to lead, cadmium, and chromium contaminated dust must wear proper disposable protective whole body clothing, head covering, gloves, eye, and foot coverings as required by 29 CFR 1926.62, 29 CFR 1926.1126, and 29 CFR 1926.1127. Furnish proper disposable plastic or rubber gloves to protect hands. Reduce the level of protection only after obtaining approval from the CP.

1.6.3 Rental Equipment Notification

If rental equipment is to be used during PWL or MCL handling and disposal, notify the rental agency in writing concerning the intended use of the equipment.

1.6.4 Vacuum Filters

UL 586 labeled HEPA filters.

1.6.5 Equipment for Government Personnel

Furnish the Contracting Officer with two complete sets of personal protective equipment (PPE) daily, as required herein, for entry into and inspection of the lead, cadmium and chromium removal work within the lead, cadmium and chromium controlled area. Personal protective equipment must include disposable whole body covering, including appropriate foot, head, eye, and hand protection. PPE remains the property of the Contractor. The Government will provide respiratory protection for the Contracting Officer.

1.6.6 Abrasive Removal Equipment

The use of powered machine for vibrating, sanding, grinding, or abrasive blasting is prohibited unless equipped with local exhaust ventilation systems equipped with high efficiency particulate air (HEPA) filters. The use of abrasive removal equipment is prohibited unless expressly approved by the NAVFAC Cultural Resources (CR) Managers. Documentation of CR Manager approval must be included in the 'Lead, Cadmium, and Chromium Compliance Plan.'

1.6.7 Negative Air Pressure System

1.6.7.1 Minimum Requirements

Do not proceed with work in the area until containment is set up and HEPA filtration systems are in place. The negative air pressure system must meet the requirements of ASSP/SAFE Z9.2 including approved HEPA filters in accordance with UL 586. Negative air pressure equipment must be equipped with new HEPA filters, and be sufficient to maintain a minimum pressure differential of minus 0.02 inch of water column relative to adjacent, unsealed areas. Negative air pressure system minimum requirements are listed as follows:

a. The unit must be capable of delivering its rated volume of air with a clean first stage filter, an intermediate filter and a primary HEPA filter in place.

b. The HEPA filter must be certified as being capable of trapping and retaining mono-disperse particles as small as 0.3 micrometers at a minimum efficiency of 99.97 percent.

c. The unit must be capable of continuing to deliver no less than 70 percent of rated capacity when the HEPA filter is 70 percent full or measures 2.5 inches of water static pressure differential on a magnehelic gauge.

d. Equip the unit with a manometer-type negative pressure differential monitor with minor scale division of 0.02 inch of water and accuracy within plus or minus 1.0 percent. The manometer must be calibrated daily as recommended by the manufacturer.

e. Equip the unit with a means for the operator to easily interpret the readings in terms of the volumetric flow rate of air per minute moving through the machine at any given moment.

f. Equip the unit with an electronic mechanism that automatically shuts the machine off in the event of a filter breach or absence of a filter.

g. Equip the unit with an audible horn that sounds an alarm when the machine has shut itself off.

h. Equip the unit with an automatic safety mechanism that prevents a worker from improperly inserting the main HEPA filter.

1.6.7.2 Auxiliary Generator

Provide an auxiliary generator with capacity to power a minimum of 50 percent of the negative air machines at any time during the work. When power fails, the generator controls must automatically start the generator and switch the negative air pressure system machines to generator power. The generator must not present a carbon monoxide hazard to workers.

1.6.8 Vacuum Systems

Vacuum systems must be suitably sized for the project, and filters must be capable of trapping and retaining all mono-disperse particles as small as 0.3 micrometers (mean aerodynamic diameter) at a minimum efficiency of 99.97 percent. Properly dispose of used filters that are being replaced.

1.6.9 Heat Blower Guns

Heat blower guns must be flameless, electrical, paint-softener type with controls to limit temperature to 1,100 degrees F. Heat blower must be (grounded) 120 volts ac, and must be equipped with cone, fan, glass protector and spoon reflector nozzles.

1.7 PROJECT/SITE CONDITIONS

1.7.1 Protection of Existing Work to Remain

Perform work without damage or contamination of adjacent areas. Where existing work is damaged or contaminated, restore work to its original condition or better as determined by the Contracting Officer.

PART 2 PRODUCTS

2.1 MATERIALS AND EQUIPMENT

Keep materials and equipment needed to complete the project available and on the site. Submit a description of the materials and equipment required; including Safety Data Sheets (SDSs) for material brought onsite to perform the work.

2.1.1 Expendable Supplies

Submit a description of the expendable supplies required.

2.1.1.1 Polyethylene Bags

Disposable bags must be polyethylene plastic and be a minimum of 6 mils thick (4 mils thick if double bags are used) or any other thick plastic material shown to demonstrate at least equivalent performance; and capable of being made leak-tight. Leak-tight means that solids, liquids or dust cannot escape or spill out.

2.1.1.2 Polyethylene Leak-tight Wrapping

Wrapping used to wrap lead, cadmium, and chromium contaminated debris must be polyethylene plastic that is a minimum of 6 mils thick or any other thick plastic material shown to demonstrate at least equivalent performance.

2.1.1.3 Polyethylene Sheeting

Sheeting must be polyethylene plastic with a minimum thickness of 6 mil, or any other thick plastic material shown to demonstrate at least equivalent performance; and be provided in the largest sheet size reasonably accommodated by the project to minimize the number of seams. Where the project location constitutes an out of the ordinary potential for fire, or where unusual fire hazards cannot be eliminated, provide flame-resistant polyethylene sheets which conform to the requirements of NFPA 701.

2.1.1.4 Tape and Adhesive Spray

Tape and adhesive must be capable of sealing joints between polyethylene sheets and for attachment of polyethylene sheets to adjacent surfaces. After dry application, tape or adhesive must retain adhesion when exposed to wet conditions, including amended water. Tape must be minimum 2 inches wide, industrial strength.

2.1.1.5 Containers

When used, containers must be leak-tight and be labeled in accordance with EPA, DOT and OSHA standards. For containerization of hazardous waste, the Contractor must use containers provided by B357.

2.1.1.6 Chemical Paint Strippers

SDS for all chemicals must be provided to the Government as part of the prework submittals.

Chemical paint strippers must not contain methylene chloride and be formulated to prevent stain, discoloration, or raising of the substrate materials.

2.1.1.7 Chemical Paint Stripper Neutralizer

SDS for all chemicals must be provided to the Government as part of the prework submittals.

Neutralizers for paint strippers must be compatible with the substrate and suitable for use with the chemical stripper that has been applied to the surface.

2.1.1.8 Detergents and Cleaners

SDS for all chemicals must be provided to the Government as part of the prework submittals.

Detergents or cleaning agents must not contain trisodium phosphate and have demonstrated effectiveness in lead, cadmium and chromium control work using cleaning techniques specified by HUD 6780 guidelines.

PART 3 EXECUTION

3.1 PREPARATION

3.1.1 Protection

3.1.1.1 Notification

a. Notify the Contracting Officer 20 days prior to the start of any lead, cadmium and chromium work.

b. Notification of the Commencement of Work Impacting Lead, Cadmium, or Chromium

Submit a copy of the notification of the commencement of Work Impacting Lead, Cadmium, or Chromium to the Contracting Officer according to the procedures established by the Contracting Officer.

3.1.1.2 Lead, Cadmium, and Chromium Control Area

a. Physical Boundary - Provide physical boundaries around the lead, cadmium, and chromium control area by roping off the area designated in the work plan or providing curtains, portable partitions or other enclosures to ensure that lead, cadmium and chromium will not escape outside of the lead, cadmium and chromium control area. Prohibit the general public from accessing the lead, cadmium, and chromium control areas.

b. Warning Signs - Provide warning signs at approaches to lead, cadmium, and chromium control areas. Locate signs at such a distance that personnel may read the sign and take the necessary precautions before entering the area. Signs must comply with the requirements of 29 CFR 1926.62.

3.1.1.3 Local Exhaust System

Provide a local exhaust system in the lead, cadmium, and chromium control area in accordance with ASSP/SAFE Z9.2, 29 CFR 1926.62, 29 CFR 1926.1126 and 29 CFR 1926.1127 that will provide at least 4 air changes per hour inside of the negative pressure enclosure. Local exhaust equipment must be operated 24-hours per day, until the lead, cadmium, and chromium control area is removed and must be leak proof to the filter and equipped with HEPA filters. Maintain a minimum pressure differential in the lead, cadmium, and chromium control area of minus 0.02 inch of water column relative to adjacent, unsealed areas. Provide continuous 24-hour per day monitoring of the pressure differential with a pressure differential automatic recording instrument. Filters on exhaust equipment must conform to ASSP/SAFE Z9.2 and UL 586. Terminate the local exhaust system remote from any public access or ventilation system intakes.

3.1.1.4 Negative Air Pressure System Containment

a. Operate the negative air pressure systems to provide at least 4 air changes per hour inside the containment. Operate the local exhaust unit equipment continuously until the containment is removed. Smoke test the negative air pressure system for leaks at the beginning of each shift. The certified supervisor is responsible to continuously monitor and keep a pressure differential log with an automatic manometric recording instrument. Notify the Contracting Officer immediately if the pressure

differential falls below the prescribed minimum. Submit the continuously monitored pressure differential log, as specified. Do not use the building ventilation system as the local exhaust system. Terminate the local exhaust system out of doors unless the Contracting Officer allows an alternate arrangement. All filters must be new at the beginning of the project and be periodically changed as necessary to maintain specified pressure differential and disposed of as lead, cadmium and chromium contaminated waste.

b. Discontinuing Negative Air Pressure System. Operate the negative air pressure system continuously during work activities unless otherwise authorized by the Contracting Officer. At the completion of the project, units must be run until full cleanup has been completed and final clearance testing requirements have been met. Dismantling of the negative air pressure systems must be as presented in the Lead, Cadmium, and Chromium Compliance Plan. Seal the HEPA filter machine intakes with polyethylene to prevent environmental contamination.

3.1.1.5 Decontamination Shower Facility

Provide clean and contaminated change rooms and shower facilities in accordance with this specification and 29 CFR 1926.62, 29 CFR 1926.1126, and 29 CFR 1926.1127.

3.1.1.6 Eye Wash Station

Provide suitable facilities within the work area for quick drenching or flushing of the eyes where eyes may be exposed to injurious corrosive materials.

3.1.1.7 Mechanical Ventilation System

a. Use adequate ventilation to control personnel exposure to lead, cadmium and chromium in accordance with 29 CFR 1926.62, 29 CFR 1926.1126, and 29 CFR 1926.1127. To the extent feasible, use local exhaust ventilation or other collection systems, approved by the CP. Evaluate and maintain local exhaust ventilation systems in accordance with 29 CFR 1926.62, 29 CFR 1926.1126, and 29 CFR 1926.1127.

b. Vent local exhaust outside the building and away from building ventilation intakes or ensure system is connected to HEPA filters.

c. Use locally exhausted, power actuated tools or manual hand tools.

3.1.1.8 Personnel Protection

Personnel must wear and use protective clothing and equipment as specified herein. Eating, smoking, or drinking or application of cosmetics is not permitted in the lead, cadmium, and chromium control area. No one will be permitted in the lead, cadmium, and chromium control area unless they have been appropriately trained and provided with protective equipment.

3.2 ERECTION

3.2.1 Lead, Cadmium, and Chromium Control Area Requirements

Full containment - Contain removal operations by the use of a negative pressure enclosure system with decontamination facilities and with HEPA filtered exhaust if required by the CP. For containment areas larger than

1,000 square feet install a minimum of two 18 inch square viewing ports. Locate ports to provide a view of the required work from the exterior of the enclosed contaminated area. Glaze ports with laminated safety glass.

3.3 APPLICATION

3.3.1 Lead, Cadmium, and Chromium Work

Perform lead, cadmium, and chromium work in accordance with approved Lead, Cadmium, and Chromium Compliance Plan. Use procedures and equipment required to limit occupational exposure and environmental contamination with lead, cadmium, and chromium when the work is performed in accordance with 29 CFR 1926.62, 29 CFR 1926.1126, and 29 CFR 1926.1127 and as specified herein. Dispose of all PWL or MCL and associated waste in compliance with federal, State, and local requirements.

3.3.2 Paint with Lead, Cadmium, and Chromium or Material Containing Lead, Cadmium, and Chromium Removal

Manual or power sanding or grinding of lead, cadmium, and chromium surfaces or materials is not permitted unless tools are equipped with HEPA attachments or wet methods. The dry sanding or grinding of surfaces that contain lead, cadmium, and chromium is prohibited. The use of abrasive removal equipment is prohibited unless expressly approved by the NAVFAC Cultural Resources (CR) Managers. Documentation of CR Manager approval must be included in the 'Lead, Cadmium, and Chromium Compliance Plan.' Provide methodology for removing lead, cadmium, and chromium in the Lead, Cadmium, and Chromium Compliance Plan. Select lead, cadmium, and chromium removal processes to prevent contamination of work areas outside the control area with lead, cadmium, and chromium contaminated dust or other lead, cadmium, and chromium contaminated debris or waste and to ensure that unprotected personnel are not exposed to hazardous concentrations of lead, cadmium, and chromium. Describe this removal process in the Lead, Cadmium, and Chromium Compliance Plan.

Avoid deterioration of the substrate. Provide surface preparations for painting in accordance with Section 09 97 13.27 HIGH PERFORMANCE COATING FOR STEEL STRUCTURES.

Provide methodology for lead, cadmium and chromium, LBP/PWL removal, abatement/control and processes to prevent contamination of work areas outside the control area with lead, cadmium, and chromium contaminated dust or other lead, cadmium, and chromium contaminated debris/waste and to ensure that unprotected personnel are not exposed to hazardous concentrations of lead, cadmium, and chromium. Describe this lead, cadmium and chromium, LBP/PWL removal/control process in the Lead, Cadmium, and Chromium Compliance Plan.

3.3.2.1 Paint with Lead, Cadmium, and Chromium or Material Containing Lead, Cadmium, and Chromium - Outdoor Removal

Perform outdoor removal as indicated in Federal, State, and local regulations and in the Lead, Cadmium, and Chromium Compliance Plan. The worksite preparation (barriers or containments) must be job dependent and presented in the Lead, Cadmium, and Chromium Compliance Plan.

3.3.3 Personnel Exiting Procedures

Whenever personnel exit the lead, cadmium, and chromium controlled area,

they must perform the following procedures and must not leave the work place wearing any clothing or equipment worn in the control area:

a. Vacuum all clothing before entering the contaminated change room.

b. Remove protective clothing in the contaminated change room, and place them in an approved impermeable disposal bag.

c. Shower.

d. Change to clean clothes prior to leaving the clean clothes storage area.

3.4 FIELD QUALITY CONTROL

3.4.1 Tests

3.4.1.1 Air and Wipe Sampling

Conduct sampling for lead, cadmium, and chromium in accordance with 29 CFR 1926.62, 29 CFR 1926.1126, and 29 CFR 1926.1127 and as specified herein. Air and wipe sampling must be directed or performed by the CP.

a. The CP must be on the job site directing the air and wipe sampling and inspecting the project work to ensure that the requirements of the contract, local, state and federal statutes and regulations, Navy and PNSY requirements, and project specifications have been satisfied during all work impacting lead, cadmium, and/or chromium.

b. Collect personal air samples on employees who are anticipated to have the greatest risk of exposure as determined by the CP. In addition, collect air samples on at least twenty-five percent of the work crew or a minimum of two employees, whichever is greater, during each work shift.

c. Submit sample results of air samples, signed by the CP, within 72-hours after the air samples are taken.

d. Conduct area air sampling daily, on each shift in which lead, cadmium and chromium and lead-based paint removal operations are performed, in areas immediately adjacent to the lead, cadmium and chromium control area at exhaust points for negative air machines, at entrances to the NPE, and at other locations determined appropriate for the project and site conditions. Conduct sufficient area monitoring to ensure unprotected personnel are not exposed at or above 30 micrograms of lead per cubic meter of air or 2.5 micrograms of cadmium/chromium per cubic meter of air. If 30 micrograms of lead per cubic meter of air or 2.5 micrograms of cadmium/chromium per cubic meter of air is reached or exceeded, stop work, correct the conditions(s) causing the increased levels. Notify the Contracting Officer immediately. Determine if condition(s) require any further change in work methods. Resume removal work only after the CP and the Contracting Officer give approval.

e. Surface Wipe Samples - Collect surface wipe samples at a location no greater than 10 feet outside the lead, cadmium, and chromium control area at a frequency of once per day while lead, cadmium, and chromium removal work is conducted in occupied buildings. Surface wipe samples or Micro Vacuum surface sample results must meet criteria in paragraph CLEARANCE CERTIFICATION.

3.4.1.2 Sampling After Removal

After the visual inspection, collect wipe samples according to the HUD protocol contained in HUD 6780 to determine the lead, cadmium and chromium content of settled dust in micrograms per square meter foot of surface area.

3.5 CLEANING AND DISPOSAL

3.5.1 Cleanup

Maintain surfaces of the lead, cadmium, and chromium control area free of accumulations of dust and debris. Restrict the spread of dust and debris; keep waste from being distributed over the work area. Do not dry sweep or use pressurized air to clean up the area. At the end of each shift and when the lead, cadmium, and chromium operation has been completed, clean the controlled area of all visible contamination by vacuuming with a HEPA filtered vacuum cleaner, wet mopping the area and wet wiping the area as indicated by the Lead, Cadmium, and Chromium Compliance Plan. Reclean areas showing dust or debris. After visible dust and debris is removed, wet wipe and HEPA vacuum all surfaces in the controlled area. If adjacent areas become contaminated at any time during the work, clean, visually inspect, and then wipe sample all contaminated areas. The CP must then certify in writing that the area has been cleaned of lead, cadmium and chromium contamination before clearance testing.

3.5.1.1 Clearance Certification

The CP must certify in writing that air samples collected outside the lead, cadmium, and chromium control area during paint removal operations are less than 30 micrograms of lead per cubic meter of air and less than 2.5 micrograms of cadmium/chromium per cubic meter of air; the respiratory protection used for the employees was adequate; the work procedures were performed in accordance with 29 CFR 1926.62, 29 CFR 1926.1126, 29 CFR 1926.1127; and that there were no visible accumulations of material and dust containing lead, cadmium, and chromium left in the work site. Do not remove the lead, cadmium, and chromium control area or roped off boundary and warning signs prior to the Contracting Officer's acknowledgement of receipt of the CP certification.

For lead, cadmium and chromium-based paint hazard abatement work, surface wipe and soil sampling must be conducted and clearance determinations made according to the requirements detailed in Section 1.3.3 above and to the work practice standards presented in 40 CFR 745.227.

3.5.2 Disposal

a. Dispose of material, whether hazardous or non-hazardous in accordance with local, state, and federal statutes and regulations, Navy and PNSY requirements, and project specifications. Ensure all waste is properly characterized in accordance with the Waste Characterization Sampling Plan developed under specification Section 1.5.2.10 above. The result of each waste characterization will dictate disposal requirements.

b. Contractor is responsible for segregation of waste to include but not limited to separation of blast media from the coating system that is removed. Collect lead, cadmium, and chromium contaminated waste, scrap, debris, bags, containers, equipment, and lead, cadmium, and chromium-contaminated clothing that may produce airborne concentrations

of lead, cadmium, and chromium particles. Label the containers in accordance with 29 CFR 1926.62, 29 CFR 1926.1126, 29 CFR 1926.1127 and 40 CFR 261, 40 CFR 262 and corresponding state regulations.The cost of excess hazardous material waste generation due to inadequate separation techniques will be the responsibility of the Contractor.

c. Accumulate waste materials in U.S. Department of Transportation (49 CFR 178) approved 55 gallon drums or appropriately sized container for smaller volumes. Properly label each drum to identify the type of hazardous material (49 CFR 172). For hazardous waste, the collection container requires marking/labeling in accordance with 40 CFR 262 and corresponding state regulations.

d. Manage lead, cadmium, and chromium or lead, cadmium, and chromium contaminated waste in accordance with 40 CFR 260, 40 CFR 261, 40 CFR 262, 40 CFR 263, 40 CFR 264, and 40 CFR 265.

e. All lead, cadmium, and chromium waste generation, management,and disposal will be coordinated with the Shipyard environmental function (Code 106, B357) and the Contracting Officer.

All HW must be turned in to B357 not later than the end of the shift on which it is generated. Responsibility for compliance is upon the Contractor. All hazardous wastes generated within the confines of the Shipyard are disposed of by the Government. Accordingly, all hazardous wastes generated by the Contractor to accomplish requirements of this contract will be considered Government-generated, and disposed of by the Government. Contractor shall not bring hazardous wastes onto Government property.

Containers positioned within the work area boundaries shall have covers in place whenever containers are not in use.

3.5.2.1 Disposal Documentation

For non-hazardous waste, provide a certificate that the waste was accepted by the disposal facility. Provide turn-in documents or weight tickets for non-hazardous waste disposal.

3.5.2.2 Payment for Non-Hazardous Waste

Payment for disposal of non-hazardous waste will not be made until a signed copy of the manifest from the disposal facility is received and approved by the Contracting Officer. The manifest must detail and certify the amount of non-hazardous waste delivered to the disposal facility.

-- End of Section --

02 83 00.00 22 ATTACHMENT A

Specification Section 1.5.2.3 - Pb, Cr, Cd Compliance Plan Checklist - Building XX

Prepared by: _____ Date: _____

Spec Section(s)	Item Required	Included?	Section/ Page #	Notes
	Confirm that the Pb/Cr/Cd Compliance Plan contains the following:			
1.5.2.2	- Signature and seal to document plan prepared by Maine Lead Project Designer			
1.5.2.2	- Site sketch with all project details (control areas, critical barriers, physical boundaries, decon facilities, viewing ports, and mechanical ventilation system)			
	- Confirmation that meeting will be scheduled w/ ktr, supervisor, CP, PQP, CO, and APM to review Plan			
3.1	- Description of preparatory activities - protecting existing conditions, moving furniture, pre-cleaning			
1.5.2.2	- Description of safety precautions including, but not limited to, LO/TO, CSE, fall protection			
1.5.2.2	- Description of work practices for **each** activity, including:			
	- If abrasive removal is proposed, document approval by NAVFAC Cultural Resources MGR			
1.5.2.2	- Description of controls for **each** activity			
1.5.2.2	- Description of job responsibilities for **each** activity			
1.5.2.2	- Description of respirators and personal protective equipment			
1.5.2.2	- Description of equipment for **each** activity. Include all equipment spec sheets			
1.5.2.2	- Description of materials for **each** activity. Include all SDS			
1.5.2.2	- Description of hygiene facilities and sanitary procedures (including no eating, drinking, smoking)			
1.5.2.2	- Description of interface of trades			
1.5.2.2	- Description of work sequencing			
1.5.2.2	- Description of the method of containment of the operation to ensure that metals are not released outside of the control area. NPE or Regulated Area?			
3.1.1.2	- Description of required signage for **each** activity			
3.3.3, 3.1.1.7	- Description of decontamination equipment and process			
	- Rationale for not including shower (if applicable)			
1.5.3	- Description of local exhaust system and critical barrier equipment and process, including:			
	- Confirmation that Pressure Differential Recordings will be submitted w/in **24 hours**			
	- Confirmation that negative pressure will be maintained continuously until work area cleared			
1.5.2.2, 3.5	- Description of cleanup procedures during and at the end of work.			
3.4.1	- Description of personal sampling and analysis strategy and methodology, number of samples, and qualifications of sampling personnel, including:			
	- Confirmation that all personal sampling results will be submitted to NAVFAC w/in **XX hours**			
	- Specific thresholds for work stoppage, PPE upgrade, etc.			
3.4.1	- Detailed description of area sampling and analysis strategy and methodology, frequency of sampling, sample locations, duration of sampling, and qualifications of sampling personnel, including:			
	- Confirmation that all area sampling results will be submitted to NAVFAC w/in **XX hours**			
	- Listing of specific sampling locations. **Include locations in Notes column (to the right)**			
	- Specific thresholds for work stoppage, PPE upgrade, etc.			
3.4.1	- Detailed description of clearance sampling and analysis strategy and methodology, number of samples, and qualifications of sampling personnel, including:			
	- Confirmation that all clearance sampling results will be submitted to NAVFAC w/in **XX hours**			
	- Listing of specific sampling locations. **Include locations in Notes column (to the right)**			
	- Listing of clearance thresholds. **Include thresholds in Notes column (to the right)**			
1.4, 1.5.2.8, 3.5	- Detailed plan for Pb, Cd, and Cr Waste Management, including:			
	- Painted Materials			
	- Paint chips, dust, debris			
	- Ancillary waste, including poly sheeting			
	- Wastewater			
1.4, 1.5.1.2	- Copies of Training Certificates for Workers and Supervisors			
1.4	- Copies of Licenses for Workers and Supervisors			
1.4, 1.5.2.7	- Copies of Respiratory Protection Program, Including Training and Fit Testing Records			
1.4, 1.5.2.4	- Copies of Medical Examinations, Surveillance and Records			
1.4, 1.5, 1.5.3	- Copies licenses, permits and notifications for demolition, abatement, remediation, etc.			
1.4, 1.5.1.3	- Documentation of Testing Laboratory Qualifications/Certificates			
1.4, 1.5	- Copy of Occupant Protection Plan			
1.4, 1.5.1.5	- Documentation of Certified Risk Assessor Qualifications			
1.4	- Sample Copy of Clearance Certification			
3.1.1.1	- Copy of Notification to Contracting Officer			
3.1.1.1	- Copy of Notification to Occupants			
1.4	- Name, qualifications, and certification of Supervisor			
1.4, 1.5.1.1	- Documentation of Competent Person Qualifications			
1.4, 1.5.1.1	- Certified Industrial Hygienist?			
1.4, 1.5.1.1	- Certified Safety Professional?			
1.4, 1.5.1.1	- Licensed Lead-Based Abatement Supervisor/Project Designer in the State of Maine?			
1.3.3	- Description of approach for maintaining and submitting log of analytical results			
1.4, 1.5	- Copy of Occupational and Environmental Assessment Data Report			
1.4, 1.5.1.4	- Documentation of Third Party Consultant Qualifications			

CHECKLIST COMPLETED BY:_____ DATE: _____

NOTE: This checklist is not intended to list all of the Pb, Cr, Cd Compliance Plan components required per Specification Section 02 83 00.00 22, Pb, Cr and Cd Remediation. The Contractor is required to identify and meet all applicable Specification requirements.

NORTHEAST TEST CONSULTANTS

LIMITED HAZARDOUS MATERIALS ASSESSMENT
for METALS in PAINT
(Barium, Cadmium, Chromium, Lead, & Zinc) & PCBs in CAULKING/GASKETING

at

BRIDGE #2
PORTSMOUTH NAVAL SHIPYARD
KITTERY, MAINE

NTC JOB #15699-2016

Prepared for:

Danielle M. Somma, P.E.
Appledore Marine Engineering
600 State Street Suite E
Portsmouth, NH 03801

January 5, 2017

Industrial Hygiene Consultants
Indoor Air Quality • Operations & Maintenance • Mold • Asbestos • Lead Based Paint Testing

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NORTHEAST TEST CONSULTANTS

January 5, 2017

Danielle M. Somma, P.E.
Appledore Marine Engineering
600 State Street Suite E
Portsmouth, NH 03801

RE: Limited Hazardous Materials Assessment for
Metals in Paint & PCB's in Caulking/Gasketing
PNSY – Bridge #2 Project
NTC Job #15699-2016

Ms. Somma:

Northeast Test Consultants has completed a **Hazardous Materials Assessment for Bridge Paints and Caulking Materials** for **Structural Steel Recoating & Repair - Bridge #2** at the Portsmouth Naval Shipyard in Kittery, Maine as part of **Contract N40085-14-D-306, eprojects Work Order No: 1387709**.

PURPOSE

The purpose of this assessment was to characterize current environmental conditions for the Bridge #2 paints and caulking as part of due diligence prior to re-coating operations that would cause disturbance of these materials.

PROCEDURES

On December 19, 2016 a representative of *Northeast Test Consultants* was on-site at the property to perform survey and inspection work.

Hazardous Materials Sampling and Testing was performed to be compliant with any pertinent US EPA, OSHA and State of Maine Department of Environmental Protection requirements.

No formal analytical testing for any other specific items or chemicals was part of the scope of these services other than those parameters presented in this report.

Any conclusions contained herein are limited by the scope of work performed; no warranty, expressed or implied, is indicated as to any subsurface conditions not specifically noted within this report. All reasonable and customary assessment procedures and explorations for determination of the potential for hidden materials were performed during the course of this assessment activity, short of performing minor demolition.

Metals in Paint ***(Barium, Cadmium, Chromium, Lead, & Zinc)***

Assessment for Barium, Cadmium, Chromium, Lead and Zinc content in paints for requested areas was conducted by the collection of representative bulk samples followed by analysis at an accredited laboratory.

Barium content in paint was analyzed utilizing sample preparation according to EPA Method 200.0 followed by analysis utilizing Flame Atomic Absorption Spectrometry (AAS) utilizing NIOSH Method #7082M.

Cadmium content in paint was analyzed utilizing sample preparation according to EPA Method 200.0 followed by analysis utilizing Flame Atomic Absorption Spectrometry (AAS) utilizing NIOSH Method #7082M.

Chromium content in paint was analyzed utilizing sample preparation according to EPA Method 200.0 followed by analysis utilizing Flame Atomic Absorption Spectrometry (AAS) utilizing NIOSH Method #7082M.

Lead content in paint was analyzed utilizing sample preparation according to EPA Method 200.0 followed by analysis utilizing Flame Atomic Absorption Spectrometry (AAS) utilizing NIOSH Method #7082M.

Zinc content in paint was analyzed utilizing sample preparation according to EPA Method 200.0 followed by analysis utilizing Flame Atomic Absorption Spectrometry (AAS) utilizing NIOSH Method #7082M.

Polychlorinated Bi-phenyls (PCB's)

The collection of suspect caulking/gasket materials for determination of polychlorinated bi-phenyls (PCB's) was performed as needed and in accordance with *US Environmental Protection Agency's* Method EPA 608 / SW-846 3550B (PCB) Preparation Method with Soxhlet Extraction and SW-846 8082 Analytical Method by Gas Chromatography.

This activity was conducted to determine whether the caulking/gasket materials sampled contain PCB levels above the 50 ppm US EPA threshold value. No other evaluation action was included at this time.

If materials are found to have values above the 50 ppm, further site inspection and sample collection for limits of masonry/concrete leachating may be required, dependent on impact of materials for renovation/repair work, will be provided as an additional activity with associated costs to be provided based on scope of renovation/repair impact to be provided by the facility and/or design architect.

METALS IN PAINTS (Barium, Cadmium, Chromium, Lead & Zinc)

Barium in Paint

Barium, CAS #7440-39-3, is an alkaline earth metal, principally found as barite (barium sulfate) and witherite (barium carbonate) ores. Barium naturally occurs in food and groundwater.

Barium and barium compounds have a variety of uses including as a colorant in paints (barium carbonate and barium sulfate).

There is little quantitative information regarding the extent of barium absorption following inhalation, oral or dermal exposure.

According to the Agency for Toxic Substances and Disease Registry (ATSDR), the concentration of Barium in ambient air is estimated to be <0.05 $\mu g/m^3$ and is found in most soils at concentrations ranging from about 15 to 3,500 ppm, with mean values ranging between 265 and 835 ppm, depending on soil type.

The Occupational Safety & Health Administration (OSHA) has established a Permissible Exposure Limit (PEL) of 0.5 mg/m^3 for Barium.

The National Institute of Occupational Safety & Health (NIOSH) has a Recommended Exposure Limit (REL) of 0.5 mg/m^3 and The American Conference of Governmental Industrial Hygienists (ACGIH) has also established a Threshold Limit Value (TLV) of 0.5 mg/m^3.

Barium contaminated substances are regulated under Resource Conservations Recovery Act (RCRA) as a D-Listed material (D005) for hazardous waste. The Regulatory Waste Level for Barium is 100 mg/L.

Review of **Barium** results indicated levels ranging from **18.8 - 1,540 mg/kg**.

All sampled paints have an estimated TCLP value of <100 mg/L which is below the US EPA RCRA limit, making any generated free paint a non-hazardous waste stream item.

Refer to the attached analytical data sheets for reference.

Cadmium in Paint

Cadmium, CAS #7440-43-9, is a soft, malleable, bluish white metal found in zinc ores, and to a much lesser extent, in the cadmium mineral greenockite.

Cadmium and its compounds are highly toxic and exposure to this metal is known to cause cancer and targets the body's cardiovascular, renal, gastrointestinal, neurological, reproductive and respiratory systems.

Exposure to Cadmium can occur in all industry sectors but mostly in manufacturing and construction. Workers may be exposed during smelting and refining of metals, and manufacturing batteries, plastics, coatings, and solar panels. The expanding Ni-Cd battery recycling industry is a concern for cadmium exposure. Electroplating, metal machining, welding and painting are operations associated with cadmium exposure. Workers involved in landfill operations, the recycling of electronic parts, or the recycling of plastics may be exposed to cadmium. Compost workers and waste collectors are also potentially exposed to dust which may contain cadmium. The incineration of municipal waste is another source of cadmium exposure.

Cadmium has typically been used as a pigment for red, orange, and yellow paints.

The Occupational Safety & Health Administration (OSHA) has established a Permissible Exposure Limit (PEL) of 5 $\mu g/m^3$ (0.005 mg/m^3) with an Action Level of 2.5 $\mu g/m^3$ (0.0025 mg/m^3).

The National Institute of Occupational Safety & Health (NIOSH) has no Recommended Exposure Limit (REL). The American Conference of Governmental Industrial Hygienists (ACGIH) has established a Threshold Limit Value (TLV) of 0.01 mg/m^3.

Cadmium contaminated substances are regulated under Resource Conservations Recovery Act (RCRA) as a D-Listed material (D006) for hazardous wastes. The Regulatory Waste Level for Cadmium is 1.0 mg/L.

Review of **Cadmium** results indicated levels ranging from **<4.78 - 81.8 mg/kg**.

4 out of the 10 paint samples collected have an estimated TCLP value >1.0 mg/L which is above the US EPA RCRA limit, making any generated free paint a hazardous waste stream item.

If any torching, grinding or abrasion to these painted components is to be conducted, workers need to be protected so that exposures are <5 $\mu g/m^3$. If engineering controls do not control dust/fumes, then respiratory protection would need to be utilized.

Refer to the attached analytical data sheets for reference.

Chromium in Paint

Chromium, CAS #7440-47-3, is a naturally occurring element found in rocks, animals, plants, and soil. It can exist in several different forms. Depending on the form it takes, it can be a liquid, solid or gas. The most common forms are Chromium(0), Chromium(III), and Chromium(VI). Chromium (0) and Chromium (VI) are generally produced by industrial processes.

Because of their toxicity, Chromium(VI) salts are used for the preservation of wood. For example, chromated copper arsenate (CCA) is used in timber treatment to protect wood from decay fungi and wood-attacking insects including termites and marine borers.

Skin contact with certain Chromium(VI) compounds can cause skin ulcers. Some people are extremely sensitive to Chromium(VI) or Chromium(III). Allergic reactions consisting of severe redness and swelling of the skin have been noted.

Chromium (III) is the essential nutrient obtained by eating food such as vegetables, fruits, meat, yeast, and grain. Harmful exposure to Chromium occurs by drinking well water contaminated with Chromium (VI) or having skin contact with Chromium (VI) in the workplace or by inhalation during welding of metals containing chromium.

Chromium (VI) and its compounds are listed carcinogens because they are known to cause cancer. Long-term exposure to chromium (VI) in workplace air has been associated with lung cancer.

Chromium has typically been used as a pigment in orange, yellow and green paints.

The Occupational Safety & Health Administration (OSHA) has established a Permissible Exposure Limit (PEL) of 1.0 mg/m^3.

The National Institute of Occupational Safety & Health (NIOSH) has a Recommended Exposure Limit (REL) of 0.5 mg/m^3. The American Conference of Governmental Industrial Hygienists (ACGIH) has a Threshold Limit Value (TLV) of 0.5 mg/m^3.

Chromium contaminated substances are regulated under Resource Conservations Recovery Act (RCRA) as a D-Listed material (D007) for hazardous wastes. The Regulatory Waste Level for Chromium is 5.0 mg/L.

Review of **Chromium** results indicated levels ranging from **<16.7 - 31,900 mg/kg**.

9 out of the 10 paint samples collected have an estimated TCLP value >5.0 mg/L which is above the US EPA RCRA limit, making any generated free paint a hazardous waste stream item.

If any torching, grinding or abrasion to these painted components is conducted, workers need to be protected so that exposures are <1.0 mg/m^3**. If engineering controls do not control dust/fumes, then respiratory protection would need to be utilized.**

Refer to the attached analytical data sheets for reference.

Lead in Paint

Lead, CAS#7439-92-1, is a heavy, soft, silvery-blue gray metal. It is used in the production of batteries, ammunition, cable covering, roofing flashings, pigments, glass, ceramic glazes, casting metals and solders.

The Occupational Safety & Health Administration (OSHA) has established a Permissible Exposure Limit (PEL) of 50 $\mu g/m^3$ (0.05 mg/m^3), with an Action Level of 30 $\mu g/m^3$ (0.03 mg/m^3).

The National Institute of Occupational Safety & Health (NIOSH) has a Recommended Exposure Limit (REL) of 0.05 mg/m^3. The American Conference of Governmental Industrial Hygienists (ACGIH) has a Threshold Limit Value (TLV) of 0.05 mg/m^3.

Lead contaminated substances are regulated under Resource Conservations Recovery Act (RCRA) as a D-Listed material (D008) for hazardous wastes. The Regulatory Waste Level for Lead is 5.0 mg/L.

Lead has typically been used as a pigment in white, red, yellow, orange and green paints. Lead use in paint was banned in 1978.

Review of **Lead** results indicate levels ranging from **<16.7 - 88,300 mg/kg**.

8 out of the 10 paint samples collected have an estimated TCLP value >5.0 mg/L which is above the US EPA RCRA limit, making any generated free paint a hazardous waste stream item.

If any torching, grinding or abrasion to these painted components is conducted, workers need to be protected so that exposures are <50 $\mu g/m^3$ (<0.05 mg/m^3). **If engineering controls do not control dust/fumes, then respiratory protection would need to be utilized.**

Refer to the attached analytical data sheets for reference.

Zinc in Paint

Zinc, CAS#1314-13-2, is one of the most common elements in the earth's crust. It is found in air, soil and water and is present in all foods.

Zinc compounds are widely used in industry to make paint, rubber, dyes, wood preservatives and ointments.

Workers should not be exposed to airborne **Zinc** levels greater than 5 mg/m^3 as an eight-hour time weighted average (TWA) for Respirable Dust Fraction or exposed to levels greater than 15 mg/m^3 as an eight-hour time weighted average (TWA) for Total Dust Fraction as outlined in *OSHA 29 CFR 1910*, Part 1000, Toxic and Hazardous Substances, TABLE Z-1, Limits for Air Contaminants.

The National Institute of Occupational Safety & Health (NIOSH) has a Recommended Exposure Limit (REL) of 5.0 mg/m^3 for Respirable Dust and 15.0 mg/m^3 as a15 Minute Total Dust Ceiling. The American Conference of Governmental Industrial Hygienists (ACGIH) has a Threshold Limit Value (TLV) of 2.0 mg/m^3 and 10 mg/m^3 as Short Term Exposure Limit (STEL).

Zinc contaminated substances are not regulated under Resource Conservations Recovery Act (RCRA).

Review of **Zinc** results indicate levels ranging from **213 - 297,000 mg/kg**.

If any torching, grinding or abrasion to these painted components is conducted, workers need to be protected so that exposures are <2.0 mg/m^3**. If engineering controls do not control dust/fumes, then respiratory protection would need to be utilized.**

PCB INSPECTION

Polychlorinated biphenyls (PCBs) are a class of organic compounds with 1 to 10 chlorine atoms attached to biphenyl, which is a molecule composed of two benzene rings.

There are no known natural sources of PCBs. PCBs are either oily liquids or solids that are colorless to light yellow. Some PCBs can exist as a vapor in air. PCBs have no known smell or taste. Many commercial PCB mixtures are known in the U.S. by the trade name Aroclor.

Aroclor PCB mixtures were produced from approximately 1930 to 1979.

The specific Aroclor products screened for were Aroclor 1016, 1221, 1232, 1242, 1248, 1254, 1260, 1262, and 1268.

The first two digits generally refer to the number of carbon atoms in the phenyl rings and the last two digits in the name indicate the percentage of chlorine present in the material, for example, Aroclor 1016 means the product contains 10 carbon atoms and approximately 16% chlorine by weight.

US EPA regulatory guidelines classify materials with levels equal to or greater than 50 ppm (≥ 50 ppm) of PCB content to be a controlled hazardous waste material under the Toxic Substance Control Act (TSCA).

One (1) sample of suspect caulking/gasket material (black) on the Bridge #2 from an expansion joint was collected.

No levels of PCBs greater than 50 ppm (>50 ppm) were detected in the material sampled.

Refer to the attached analytical results data sheet for PCB analysis.

Recommendations (PCBs)

No recommendations required at this time.

Please review this executive overview report, attached analytical results for the collected bulk samples for metals in paint (barium, cadmium, chromium, lead, and zinc) and PCBs in caulking/gasketing.

Should you have any questions please feel free to give me a call.

Sincerely,

John M. Boilard, RIHT, CMC
ME DEP DC, AA, AI, AM
Operations Manager

Attachments

NTC Job #15699-2016

PAINT ANALYSIS
BARIUM, CADMIUM, CHROMIUM, LEAD & ZINC

Portsmouth Naval Shipyard
Bridge #2

Date Sampled: December 19, 2016
Analytical Method: Metals by ICP, NIOSH #7082 M

Sample/ Lab#	Sample Location Description	Analyte	LOQ mg/kg	Amount mg/kg	Estimated TCLP mg/L
LB-1 IHB6354001	Southeast, Underside Girder Green / Light Green Paint	Barium	9.73	**484**	24.2
		Cadmium	4.86	**18**	0.9
		Chromium	9.73	**31,900**	1,595
		Lead	9.73	**418**	20.9
		Zinc	9.73	**126,000**	6,300
LB-2 IHB6354002	South, Underside Center Bracing Green / Light Green Paint	Barium	9.84	**448**	22.4
		Cadmium	4.92	**22.4**	1.12
		Chromium	9.84	**28,500**	1,425
		Lead	9.84	**475**	23.75
		Zinc	9.84	**162,000**	8,100
LB-3 IHB6354003	Southwest, Underside Girder Green / Light Green Paint	Barium	9.73	**136**	6.8
		Cadmium	4.86	**<4.86**	<0.24
		Chromium	9.73	**6,710**	335.5
		Lead	9.73	**613**	30.65
		Zinc	9.73	**7,680**	384
LB-4 IHB6354004	Northeast, Underside Girder Green / Light Green Paint	Barium	8.86	**469**	23.45
		Cadmium	4.43	**44.5**	2.23
		Chromium	8.86	**13,100**	655
		Lead	8.86	**8,040**	402
		Zinc	8.86	**297,000**	14,850

For purposes of the Resource Conservations and Recovery Act (RCRA) regulations, a solid waste is classified by its toxicity characteristic by TCLP Test Method 1311 and compared to maximum concentrations allowed in 40 CFR 261.26 Table 1. A "total" analysis can be extrapolated to an estimated TCLP result by dividing by 20 (mg/kg ÷ 20) and comparing to limits in table below, assuming 100% solids are present.

	Limit
Barium	- 100 mg/L
Cadmium	- 1.0 mg/L
Chromium	- 5.0 mg/L
Lead	- 5.0 mg/L
Zinc	- N/A

= indicates the result exceeds limit for classification as Hazardous Waste

Key: LOQ = limit of quantification mg/kg = milligrams per kilogram mg/L = milligrams per liter

NTC Job #15699-2016

PAINT ANALYSIS
BARIUM, CADMIUM, CHROMIUM, LEAD & ZINC

Portsmouth Naval Shipyard
Bridge #2

Date Sampled: December 19, 2016
Analytical Method: Metals by ICP, NIOSH #7082 M

Sample/ Lab#	Sample Location Description	Analyte	LOQ mg/kg	Amount mg/kg	Estimated TCLP mg/L
LB-5 IHB6354005	North, Underside Center Bracing Green / Light Green Paint	Barium	9.52	**533**	26.65
		Cadmium	4.76	**10.3**	0.52
		Chromium	9.52	**24,300**	1,215
		Lead	9.52	**616**	30.8
		Zinc		**45,700**	2,285
LB-6 IHB6354006	Northwest, Underside Girder Green / Light Green / Red Paint	Barium	9.98	**1,540**	77
		Cadmium	4.99	**81.8**	4.09
		Chromium	9.98	**16,800**	840
		Lead	8.18	**88,300**	4,415
		Zinc	8.18	**76,700**	3,835
LB-7 IHB6354007	Northwest, Underside Drain Light Green Paint	Barium	8.18	**45**	2.25
		Cadmium	4.09	**23.9**	1.2
		Chromium	8.18	**209**	10.45
		Lead	8.18	**12.9**	0.65
		Zinc	8.19	**213**	10.65
LB-8 IHB6354008	Northwest, Underside Utility Duct Light Green Paint	Barium	16.7	**18.8**	0.94
		Cadmium	8.35	**<8.35**	<0.42
		Chromium	16.7	**<16.7**	<0.84
		Lead	16.7	**<16.7**	<0.84
		Zinc	16.7	**20,200**	1,010

For purposes of the Resource Conservations and Recovery Act (RCRA) regulations, a solid waste is classified by its toxicity characteristic by TCLP Test Method 1311 and compared to maximum concentrations allowed in 40 CFR 261.26 Table 1. A "total" analysis can be extrapolated to an estimated TCLP result by dividing by 20 (mg/kg ÷ 20) and comparing to limits in table below, assuming 100% solids are present.

	Limit
Barium	- 100 mg/L
Cadmium	- 1.0 mg/L
Chromium	- 5.0 mg/L
Lead	- 5.0 mg/L
Zinc	- N/A

= indicates the result exceeds limit for classification as Hazardous Waste

Key: LOQ = limit of quantification mg/kg = milligrams per kilogram mg/L = milligrams per liter

NTC Job #15699-2016

PAINT ANALYSIS
BARIUM, CADMIUM, CHROMIUM, LEAD & ZINC

Portsmouth Naval Shipyard
Bridge #2

Date Sampled: December 19, 2016
Analytical Method: Metals by ICP, NIOSH #7082 M

Sample/ Lab#	Sample Location Description	Analyte	LOQ mg/kg	Amount mg/kg	Estimated TCLP mg/L
LB-9 IHB6354009	Topside; Guard Rail Green Paint	Barium	9.65	**199**	9.95
		Cadmium	4.82	**11**	0.55
		Chromium	9.65	**6,030**	301.5
		Lead	9.65	**2,480**	124
		Zinc	9.65	**32,100**	1,605
LB-10 IHB6354010	Topside; Lamp Post Light Green Paint	Barium	9.55	**46.1**	2.31
		Cadmium	4.78	**<4.78**	<0.24
		Chromium	9.55	**231**	11.55
		Lead	9.55	**44.2**	2.21
		Zinc	9.55	**170,000**	8,500

For purposes of the Resource Conservations and Recovery Act (RCRA) regulations, a solid waste is classified by its toxicity characteristic by TCLP Test Method 1311 and compared to maximum concentrations allowed in 40 CFR 261.26 Table 1. A "total" analysis can be extrapolated to an estimated TCLP result by dividing by 20 (mg/kg ÷ 20) and comparing to limits in table below, assuming 100% solids are present.

	Limit
Barium	- 100 mg/L
Cadmium	- 1.0 mg/L
Chromium	- 5.0 mg/L
Lead	- 5.0 mg/L
Zinc	- N/A

= indicates the result exceeds limit for classification as Hazardous Waste

Key: LOQ = limit of quantification mg/kg = milligrams per kilogram mg/L = milligrams per liter

NTC Job #15699-2016

POLYCHLORINATED BIPHENYLS (PCB) ANALYSIS RESULTS

Appledore Marine Engineering: Portsmouth Naval Shipyard

Date Sampled: December 19, 2016
Analytical Method: EPA 608/SW 846 8082 & Soxhlet Extraction (3540)
Sample / Lab #: **PCB-1** / IHB6354011
Sample Description: **Expansion Joint Gasket (Black)**
Sample Location: **Bridge #2 - South, Topside**

Polychlorinated Biphenyls (PCB)	Report Limit, ppm (mg/kg)	Result, ppm* (mg/kg)
Aroclor 1016	0.78	**ND**
Aroclor 1221	0.78	**ND**
Aroclor 1232	0.78	**ND**
Aroclor 1242	0.78	**ND**
Aroclor 1248	0.78	**ND**
Aroclor 1254	0.78	**ND**
Aroclor 1260	0.78	**ND**
Aroclor 1262	0.78	**ND**
Aroclor 1268	0.78	**ND**

***Material containing PCB's at >50 ppm designates material as Hazardous Waste under TSCA.**

Laboratory: *Con-Test Analytical Laboratory*

Analytics Corporation
10329 Stony Run Lane
Ashland, Va 23005
Phone: (804) 365-3000 Fax: (804) 365-3002
AIHA Accreditation # 176, ID 100531

December 28, 2016

DEB KNIGHT
NORTHEAST TEST CONSULTANTS
587 SPRING STREET
WESTBROOK, ME 04092

Laboratory Workorder ID: U357003

Client Project ID: 15699
Received: December 22, 2016
Reported: December 28, 2016

Attached are the results we obtained on the analysis of your samples submitted to Analytics. Any Chains-of-Custody associated by this sample group are enclosed. Air concentrations are calculated as a convenience to the client and the overall accuracy of this result depends on both the accuracy of the air volume and the amount found by analysis. Theoretical air volumes for passive monitors are calculated using the sampling time submitted and the manufacture's listed sampling rate for each compound. Results provided in this report relate only to the items tested.

For blanks and non-detects the results indicated with a '<' value represents the reporting limit for the analysis. Unless otherwise noted results are not corrected for blank values.

Unless the signature of the appropriate manager(s) appears on this report, this report should be considered PRELIMINARY and is subject to change.

We appreciate your confidence in allowing Analytics to be your testing laboratory. Any questions regarding this report can be addressed by calling our customer services department at (800) 888-8061.

Andrew L. Teague, CIH
Technical Director

Enclosures

Analytics Corporation
10329 Stony Run Lane
Ashland, Va 23005
Phone: (804) 365-3000 Fax: (804) 365-3002
AIHA Accreditation # 176, ID 100531

Final Report

Work Order U357003

NORTHEAST TEST CONSULTANTS
587 SPRING STREET
WESTBROOK, ME 04092

Customer: 18109020
Attention: DEB KNIGHT
PO Number 389473

Date Received: 12/22/16
Client Project ID 15699

Lab ID: U357003001 Sample ID: LB-1 Media: Paint Chip Sample Date: 12/19/2016 Sampling Time:

Analyte	Method	Analysis Date	Volume	Reporting Limit	Front	Rear	Total	Concentration	
Barium	NIOSH 7082M	12/27/16	--	9.73 ug/g			--	484 ug/g	0.0484 %
Cadmium	NIOSH 7082M	12/27/16	--	4.86 ug/g			--	18 ug/g	0.0018 %
Chromium	NIOSH 7082M	12/28/16	--	9.73 ug/g			--	31900 ug/g	3.19 %
Lead	NIOSH 7082M	12/27/16	--	9.73 ug/g			--	418 ug/g	0.0418 %
Zinc	NIOSH 7082M	12/28/16	--	9.73 ug/g			--	126000 ug/g	12.6 %

Lab ID: U357003002 Sample ID: LB-2 Media: Paint Chip Sample Date: 12/19/2016 Sampling Time:

Analyte	Method	Analysis Date	Volume	Reporting Limit	Front	Rear	Total	Concentration	
Barium	NIOSH 7082M	12/27/16	--	9.84 ug/g			--	448 ug/g	0.0448 %
Cadmium	NIOSH 7082M	12/27/16	--	4.92 ug/g			--	22.4 ug/g	0.00224 %
Chromium	NIOSH 7082M	12/28/16	--	9.84 ug/g			--	28500 ug/g	2.85 %
Lead	NIOSH 7082M	12/27/16	--	9.84 ug/g			--	475 ug/g	0.0475 %
Zinc	NIOSH 7082M	12/28/16	--	9.84 ug/g			--	162000 ug/g	16.2 %

Lab ID: U357003003 Sample ID: LB-3 Media: Paint Chip Sample Date: 12/19/2016 Sampling Time:

Analyte	Method	Analysis Date	Volume	Reporting Limit	Front	Rear	Total	Concentration	

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Work Order U357003

Lab ID: U357003003 Sample ID: LB-3 Media: Paint Chip Sample Date: 12/19/2016 Sampling Time:

Analyte	Method	Analysis Date	Volume	Reporting Limit	Front	Rear	Total	Concentration	
Barium	NIOSH 7082M	12/27/16	--	9.73 ug/g			--	136 ug/g	0.0136 %
Cadmium	NIOSH 7082M	12/27/16	--	4.86 ug/g			--	< 4.86 ug/g	< 0.000486 %
Chromium	NIOSH 7082M	12/28/16	--	9.73 ug/g			--	6710 ug/g	0.671 %
Lead	NIOSH 7082M	12/27/16	--	9.73 ug/g			--	613 ug/g	0.0613 %
Zinc	NIOSH 7082M	12/28/16	--	9.73 ug/g			--	7680 ug/g	0.768 %

Lab ID: U357003004 Sample ID: LB-4 Media: Paint Chip Sample Date: 12/19/2016 Sampling Time:

Analyte	Method	Analysis Date	Volume	Reporting Limit	Front	Rear	Total	Concentration	
Barium	NIOSH 7082M	12/27/16	--	8.86 ug/g			--	469 ug/g	0.0469 %
Cadmium	NIOSH 7082M	12/27/16	--	4.43 ug/g			--	44.5 ug/g	0.00445 %
Chromium	NIOSH 7082M	12/28/16	--	8.86 ug/g			--	13100 ug/g	1.31 %
Lead	NIOSH 7082M	12/28/16	--	8.86 ug/g			--	8040 ug/g	0.804 %
Zinc	NIOSH 7082M	12/28/16	--	8.86 ug/g			--	297000 ug/g	29.7 %

Lab ID: U357003005 Sample ID: LB-5 Media: Paint Chip Sample Date: 12/19/2016 Sampling Time:

Analyte	Method	Analysis Date	Volume	Reporting Limit	Front	Rear	Total	Concentration	
Barium	NIOSH 7082M	12/27/16	--	9.52 ug/g			--	533 ug/g	0.0533 %
Cadmium	NIOSH 7082M	12/27/16	--	4.76 ug/g			--	10.3 ug/g	0.00103 %
Chromium	NIOSH 7082M	12/28/16	--	9.52 ug/g			--	24300 ug/g	2.43 %
Lead	NIOSH 7082M	12/27/16	--	9.52 ug/g			--	616 ug/g	0.0616 %

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Work Order U357003

Lab ID: U357003005 Sample ID: LB-5 Media: Paint Chip Sample Date: 12/19/2016 Sampling Time:

Analyte	Method	Analysis Date	Volume	Reporting Limit	Front	Rear	Total	Concentration	
Zinc	NIOSH 7082M	12/28/16	--	9.52 ug/g			--	45700 ug/g	4.57 %

Lab ID: U357003006 Sample ID: LB-6 Media: Paint Chip Sample Date: 12/19/2016 Sampling Time:

Analyte	Method	Analysis Date	Volume	Reporting Limit	Front	Rear	Total	Concentration	
Barium	NIOSH 7082M	12/27/16	--	9.98 ug/g			--	1540 ug/g	0.154 %
Cadmium	NIOSH 7082M	12/27/16	--	4.99 ug/g			--	81.8 ug/g	0.00818 %
Chromium	NIOSH 7082M	12/28/16	--	9.98 ug/g			--	16800 ug/g	1.68 %
Lead	NIOSH 7082M	12/28/16	--	8.18 ug/g			--	88300 ug/g	8.83 %
Zinc	NIOSH 7082M	12/28/16	--	8.18 ug/g			--	76700 ug/g	7.67 %

Lab ID: U357003007 Sample ID: LB-7 Media: Paint Chip Sample Date: 12/19/2016 Sampling Time:

Analyte	Method	Analysis Date	Volume	Reporting Limit	Front	Rear	Total	Concentration	
Barium	NIOSH 7082M	12/27/16	--	8.18 ug/g			--	45 ug/g	0.0045 %
Cadmium	NIOSH 7082M	12/27/16	--	4.09 ug/g			--	23.9 ug/g	0.00239 %
Chromium	NIOSH 7082M	12/27/16	--	8.18 ug/g			--	209 ug/g	0.0209 %
Lead	NIOSH 7082M	12/27/16	--	8.18 ug/g			--	12.9 ug/g	0.00129 %
Zinc	NIOSH 7082M	12/27/16	--	8.18 ug/g			--	213 ug/g	0.0213 %

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Lab ID: U357003008 Sample ID: LB-8 Media: Paint Chip Sample Date: 12/19/2016 Sampling Time:

Analyte	Method	Analysis Date	Volume	Reporting Limit	Front	Rear	Total	Concentration	
Barium	NIOSH 7082M	12/27/16	--	16.7 ug/g			--	18.8 ug/g	0.00188 %
Cadmium	NIOSH 7082M	12/27/16	--	8.35 ug/g			--	< 8.35 ug/g	< 0.000835 %
Chromium	NIOSH 7082M	12/27/16	--	16.7 ug/g			--	< 16.7 ug/g	< 0.00167 %
Lead	NIOSH 7082M	12/27/16	--	16.7 ug/g			--	< 16.7 ug/g	< 0.00167 %
Zinc	NIOSH 7082M	12/28/16	--	16.7 ug/g			--	20200 ug/g	2.02 %

Lab ID: U357003009 Sample ID: LB-9 Media: Paint Chip Sample Date: 12/19/2016 Sampling Time:

Analyte	Method	Analysis Date	Volume	Reporting Limit	Front	Rear	Total	Concentration	
Barium	NIOSH 7082M	12/27/16	--	9.65 ug/g			--	199 ug/g	0.0199 %
Cadmium	NIOSH 7082M	12/27/16	--	4.82 ug/g			--	11 ug/g	0.0011 %
Chromium	NIOSH 7082M	12/28/16	--	9.65 ug/g			--	6030 ug/g	0.603 %
Lead	NIOSH 7082M	12/27/16	--	9.65 ug/g			--	2480 ug/g	0.248 %
Zinc	NIOSH 7082M	12/28/16	--	9.65 ug/g			--	32100 ug/g	3.21 %

Lab ID: U357003010 Sample ID: LB-10 Media: Paint Chip Sample Date: 12/19/2016 Sampling Time:

Analyte	Method	Analysis Date	Volume	Reporting Limit	Front	Rear	Total	Concentration	
Barium	NIOSH 7082M	12/27/16	--	9.55 ug/g			--	46.1 ug/g	0.00461 %
Cadmium	NIOSH 7082M	12/27/16	--	4.78 ug/g			--	< 4.78 ug/g	< 0.000478 %
Chromium	NIOSH 7082M	12/27/16	--	9.55 ug/g			--	231 ug/g	0.0231 %
Lead	NIOSH 7082M	12/27/16	--	9.55 ug/g			--	44.2 ug/g	0.00442 %

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Work Order U357003

Lab ID: U357003010 Sample ID: LB-10 Media: Paint Chip Sample Date: 12/19/2016 Sampling Time:

Analyte	Method	Analysis Date	Volume	Reporting Limit	Front	Rear	Total	Concentration	
Zinc	NIOSH 7082M	12/28/16	--	9.55 ug/g			--	170000 ug/g	17 %

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Final Report

Work Order U357003

General Laboratory Comments

Abbreviations:
ug = micrograms; mg=milligrams; g = grams, ppm=parts per million (volume), ppb = parts per billion (volume), mg/M3=milligrams per cubic meter of air, ug/M3=micrograms per cubic meter of air; Min=minutes, Qual=Qualifiers

LABORATORY TEST REQUEST

ACCOUNT NUMBER, NAME AND ADDRESS

ANALYTICS

U357003

DATE SHIPPED	# OF SAMPLES	SAMPLE TYPE/MEDIA	PROJECT NAME OR NUMBER
12/19/2016	10	Bulk Paint	15699

PURCHASE ORDER NO.	CONTACT	TELEPHONE NUMBER
389473	Deb Knight	207-854-3939

TURN AROUND TIME
* ☐ SAME DAY
* ☐ 1 DAY
* ☐ CALL FOR AVAILABILITY
* ☐ 2 DAY
☑ STANDARD
*EXTRA CHARGE

SPECIAL INSTRUCTIONS AND/OR UNUSUAL CONDITIONS:
dknight@netest.com / holly@netest.com

☐ FAX RESULTS FAX NUMBER:
( ) _____
☑ EMAIL RESULTS - EMAIL:

FOR LABORATORY USE ONLY	SAMPLE # OR SAMPLE AREA	SAMPLE DATE	SAMPLE VOLUME/LITERS	ANALYSS REQUESTED - PLEASE USE SEPARATE LABORATORY TEST REQUEST FOR EACH SAMPLE TYPE
	LB-1	12/19/2016	-	Barium-NIOSH 7082M
	LB-2		-	Cadmium-NIOSH 7082M
	LB-3		-	Lead-NIOSH 7082M
	LB-4		-	Chromium-NIOSH 7082M
	LB-5		-	Zinc-NIOSH 7082M
	LB-6		-	
	LB-7		-	
	LB-8		-	
	LB-9		-	
	LB-10		-	

CHAIN OF CUSTODY RECORD

SAMPLES HAVE VEEN SEALED FOR TRANSPORT AND DELIVERED TO LABORATORY VIA:

UPS
CARRIER

IF "ANALYTICS COURIER" SIGN HERE

SIGN HERE TO INITIATE CHAIN OF CUSTODY

12/19/16
DATE

DATE/TIME	CONDITION OF SAMPLE	SAMPLES RECEIVED BY:	SAMPLES RELEASED BY:
12/22/16 830	OK	SIGNATURE(SAMPLE RECEIVING)	SIGNATURE(SAMPLE RECEIVING)
		SIGNATURE(SAMPLE ADMINISTRATION) SHERRY MCLAREN	SIGNATURE(SAMPLE ADMINISTRATION)
		SIGNATURE(LAB)	SIGNATURE(LAB)
		SIGNATURE(LAB)	SIGNATURE(LAB)

PLEASE RETAIN A COPY FOR YOUR RECORDS

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

January 4, 2017

Deb Knight
Northeast Test Consultants
587 Spring Street
Westbrook, ME 04092

Project Location: Maine
Client Job Number:
Project Number: 15699
Laboratory Work Order Number: 16L1045

Enclosed are results of analyses for samples received by the laboratory on December 21, 2016. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Steven M. Case
Project Manager

Table of Contents

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Northeast Test Consultants
587 Spring Street
Westbrook, ME 04092
ATTN: Deb Knight

REPORT DATE: 1/4/2017

PURCHASE ORDER NUMBER: 389474

PROJECT NUMBER: 15699

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 16L1045

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: Maine

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
PCB-1	16L1045-01	Caulk		SW-846 8082A	

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

The results of analyses reported only relate to samples submitted to the Con-Test Analytical Laboratory for testing.
I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Tod E. Kopyscinski
Laboratory Director

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Maine | Sample Description: | Work Order: 16L1045

Date Received: 12/21/2016

Field Sample #: PCB-1 | Sampled: 12/19/2016 00:00

Sample ID: 16L1045-01

Sample Matrix: Caulk

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.78	mg/Kg	4		SW-846 8082A	12/30/16	1/4/17 6:37	KAL
Aroclor-1221 [1]	ND	0.78	mg/Kg	4		SW-846 8082A	12/30/16	1/4/17 6:37	KAL
Aroclor-1232 [1]	ND	0.78	mg/Kg	4		SW-846 8082A	12/30/16	1/4/17 6:37	KAL
Aroclor-1242 [1]	ND	0.78	mg/Kg	4		SW-846 8082A	12/30/16	1/4/17 6:37	KAL
Aroclor-1248 [1]	ND	0.78	mg/Kg	4		SW-846 8082A	12/30/16	1/4/17 6:37	KAL
Aroclor-1254 [1]	ND	0.78	mg/Kg	4		SW-846 8082A	12/30/16	1/4/17 6:37	KAL
Aroclor-1260 [1]	ND	0.78	mg/Kg	4		SW-846 8082A	12/30/16	1/4/17 6:37	KAL
Aroclor-1262 [1]	ND	0.78	mg/Kg	4		SW-846 8082A	12/30/16	1/4/17 6:37	KAL
Aroclor-1268 [1]	ND	0.78	mg/Kg	4		SW-846 8082A	12/30/16	1/4/17 6:37	KAL

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	85.1	30-150		1/4/17 6:37
Decachlorobiphenyl [2]	83.1	30-150		1/4/17 6:37
Tetrachloro-m-xylene [1]	93.6	30-150		1/4/17 6:37
Tetrachloro-m-xylene [2]	97.3	30-150		1/4/17 6:37

con-test® ANALYTICAL LABORATORY

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Sample Extraction Data

Prep Method: SW-846 3540C-SW-846 8082A

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
16L1045-01 [PCB-1]	B166944	0.511	10.0	12/30/16

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL

Polychlorinated Biphenyls with 3540 Soxhlet Extraction - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B166944 - SW-846 3540C										
Blank (B166944-BLK1)				Prepared: 12/30/16 Analyzed: 01/04/17						
Aroclor-1016	ND	0.20	mg/Kg							
Aroclor-1016 [2C]	ND	0.20	mg/Kg							
Aroclor-1221	ND	0.20	mg/Kg							
Aroclor-1221 [2C]	ND	0.20	mg/Kg							
Aroclor-1232	ND	0.20	mg/Kg							
Aroclor-1232 [2C]	ND	0.20	mg/Kg							
Aroclor-1242	ND	0.20	mg/Kg							
Aroclor-1242 [2C]	ND	0.20	mg/Kg							
Aroclor-1248	ND	0.20	mg/Kg							
Aroclor-1248 [2C]	ND	0.20	mg/Kg							
Aroclor-1254	ND	0.20	mg/Kg							
Aroclor-1254 [2C]	ND	0.20	mg/Kg							
Aroclor-1260	ND	0.20	mg/Kg							
Aroclor-1260 [2C]	ND	0.20	mg/Kg							
Aroclor-1262	ND	0.20	mg/Kg							
Aroclor-1262 [2C]	ND	0.20	mg/Kg							
Aroclor-1268	ND	0.20	mg/Kg							
Aroclor-1268 [2C]	ND	0.20	mg/Kg							
Surrogate: Decachlorobiphenyl	*3.63*		mg/Kg	4.00		90.7	30-150			
Surrogate: Decachlorobiphenyl [2C]	*3.50*		mg/Kg	4.00		87.6	30-150			
Surrogate: Tetrachloro-m-xylene	*3.25*		mg/Kg	4.00		81.2	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*3.26*		mg/Kg	4.00		81.6	30-150			
LCS (B166944-BS1)				Prepared: 12/30/16 Analyzed: 01/04/17						
Aroclor-1016	3.4	0.20	mg/Kg	4.00		85.7	40-140			
Aroclor-1016 [2C]	3.7	0.20	mg/Kg	4.00		92.6	40-140			
Aroclor-1260	3.2	0.20	mg/Kg	4.00		81.1	40-140			
Aroclor-1260 [2C]	3.3	0.20	mg/Kg	4.00		82.2	40-140			
Surrogate: Decachlorobiphenyl	*3.92*		mg/Kg	4.00		98.1	30-150			
Surrogate: Decachlorobiphenyl [2C]	*3.81*		mg/Kg	4.00		95.3	30-150			
Surrogate: Tetrachloro-m-xylene	*3.82*		mg/Kg	4.00		95.6	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*3.91*		mg/Kg	4.00		97.7	30-150			
LCS Dup (B166944-BSD1)				Prepared: 12/30/16 Analyzed: 01/04/17						
Aroclor-1016	3.4	0.20	mg/Kg	4.00		84.5	40-140	1.48	30	
Aroclor-1016 [2C]	3.5	0.20	mg/Kg	4.00		88.6	40-140	4.35	30	
Aroclor-1260	3.2	0.20	mg/Kg	4.00		79.9	40-140	1.40	30	
Aroclor-1260 [2C]	3.2	0.20	mg/Kg	4.00		81.2	40-140	1.15	30	
Surrogate: Decachlorobiphenyl	*3.88*		mg/Kg	4.00		96.9	30-150			
Surrogate: Decachlorobiphenyl [2C]	*3.77*		mg/Kg	4.00		94.2	30-150			
Surrogate: Tetrachloro-m-xylene	*3.67*		mg/Kg	4.00		91.8	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*3.73*		mg/Kg	4.00		93.1	30-150			

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IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

SW-846 8082A

LCS

Lab Sample ID: B166944-BS1 Date(s) Analyzed 01/04/2017 01/04/2017

Instrument ID (1): Instrument ID (2):

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1016	1	0.00	0.00	0.00	3.4	
	2	0.00	0.00	0.00	3.7	8
Aroclor-1260	1	0.00	0.00	0.00	3.2	
	2	0.00	0.00	0.00	3.3	2

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IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

SW-846 8082A

LCS Dup

Lab Sample ID: B166944-BSD1 Date(s) Analyzed 01/04/2017 01/04/2017

Instrument ID (1): Instrument ID (2):

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1016	1	0.00	0.00	0.00	3.4	
	2	0.00	0.00	0.00	3.5	3
Aroclor-1260	1	0.00	0.00	0.00	3.2	
	2	0.00	0.00	0.00	3.2	0

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FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
ND	Not Detected
RL	Reporting Limit
DL	Method Detection Limit
MCL	Maximum Contaminant Level

Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.

No results have been blank subtracted unless specified in the case narrative section.

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CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications

No certified Analyses included in this Report

The CON-TEST Environmental Laboratory operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC - ISO17025:2005	100033	02/1/2018
MA	Massachusetts DEP	M-MA100	06/30/2017
CT	Connecticut Department of Publilc Health	PH-0567	09/30/2017
NY	New York State Department of Health	10899 NELAP	04/1/2017
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2017
RI	Rhode Island Department of Health	LAO00112	12/30/2016
NC	North Carolina Div. of Water Quality	652	12/31/2017
NJ	New Jersey DEP	MA007 NELAP	06/30/2017
FL	Florida Department of Health	E871027 NELAP	06/30/2017
VT	Vermont Department of Health Lead Laboratory	LL015036	07/30/2017
ME	State of Maine	2011028	06/9/2017
VA	Commonwealth of Virginia	460217	12/14/2017
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2017

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Phone: 413-525-2332
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Email: info@contestlabs.com
www.contestlabs.com
39 Spruce Street
East Longmeadow, MA 01028

CHAIN OF CUSTODY RECORD

Rev 04.05.12

Company Name: Northeast Test Consultants
Address: 587 Spring Street
Westbrook, ME 04092
Attention: Deb Knight/Holly McKibben
Project Location: Maine
Sampled By: Brian Cohen

Telephone: 207-854-3939
Project # 15699
Client PO# 389474

DATA DELIVERY (check all that apply)
O FAX ◉ EMAIL O WEBSITE
Fax # 207-854-3658
Email:
Format: ◉ PDF O EXCEL O GIS
O OTHER
O "Enhanced Data Package"

Project Proposal Provided? (for billing purposes)
O yes _____ proposal date

ANALYSIS REQUESTED

Con-Test Lab ID (laboratory use only)	Client Sample ID / Description	Collection Beginning Date/Time	Collection Ending Date/Time	Composite	Grab	*Matrix Code	Conc Code	Soxhlet
01	PCB-1	12/19/2016	12/19/2016			S	U	✓

# of Containers	1
** Preservation	
***Container Code	G

Dissolved Metals
O Field Filtered
O Lab to Filter

***Cont. Code:
A=amber glass
G=glass
P=plastic
ST=sterile
V= vial
S=summa can
T=tedlar bag
O=Other

**Preservation
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium bisulfate
X = Na hydroxide
T = Na thiosulfate
O = Other_____

*Matrix Code:
GW= groundwater
WW= wastewater
DW= drinking water
A = air
S = soil/solid
SL = sludge
O = other_____

Comments:
PCB-1/Expansion Joint Gasket

Please use the following codes to let Con-Test know if a specific sample may be high in concentration in Matrix/Conc. Code Box:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

Relinquished by: (signature)	Date/Time: 12/19/16
Received by: (signature)	Date/Time: 12/21/16 930
Relinquished by: (signature)	Date/Time:
Received by: (signature)	Date/Time:

Turnaround ††
☐ 7-Day
◉ 10-Day
☐ Other ____
RUSH †
☐ †24-Hr ☐ †48-Hr
☐ †72-Hr ☐ †4-Day
† Require lab approval

Detection Limit Requirements
Massachusetts:
Connecticut:
Other:

Is your project MCP or RCP ?
O MCP Form Required
O RCP Form Required
O MA State DW Form Required PWSID # _____

NELAC & AIHA-LAP, LLC Accredited
WBE/DBE Certified

†† TURNAROUND TIME STARTS AT 9:00 A.M. THE DAY AFTER SAMPLE RECEIPT UNLESS THERE ARE QUESTIONS ON YOUR CHAIN. IF THIS FORM IS NOT FILLED OUT COMPLETELY OR IS INCORRECT, TURNAROUND TIME WILL NOT START UNTIL ALL QUESTIONS ARE ANSWERED BY OUR CLIENT.

PLEASE BE CAREFUL NOT TO CONTAMINATE THIS DOCUMENT

Table of Contents

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East Longmeadow, MA. 01028
P: 413-525-2332
F: 413-525-6405
www.contestlabs.com

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Sample Receipt Checklist

CLIENT NAME: Northeast Test Consultants **RECEIVED BY:** RLF **DATE:** 12/21/16

1) **Was the chain(s) of custody relinquished and signed?** **Yes** X **No** ____ **No COC Incl.**

2) **Does the chain agree with the samples?** **Yes** X **No** ____
   If not, explain:

3) **Are all the samples in good condition?** **Yes** X **No** ____
   If not, explain:

4) **How were the samples received:**

On Ice ____ Direct from Sampling ____ Ambient X In Cooler(s) ____

Were the samples received in Temperature Compliance of (2-6°C)? **Yes** ____ **No** X **N/A** ____

Temperature °C by Temp blank ____ Temperature °C by Temp gun 20.8°C

5) **Are there Dissolved samples for the lab to filter?** **Yes** ____ **No** X
   Who was notified ____ Date ____ Time ____

6) **Are there any RUSH or SHORT HOLDING TIME samples?** **Yes** ____ **No** X
   Who was notified ____ Date ____ Time ____

7) **Location where samples are stored:**

Permission to subcontract samples? Yes No
(Walk-in clients only) if not already approved
Client Signature: ____

8) **Do all samples have the proper Acid pH:** **Yes** ____ **No** ____ **N/A** X

9) **Do all samples have the proper Base pH:** **Yes** ____ **No** ____ **N/A** X

10) **Was the PC notified of any discrepancies with the CoC vs the samples:** **Yes** ____ **N/A** X

Containers received at Con-Test

	# of containers		# of containers
1 Liter Amber		16 oz amber	
500 mL Amber		8 oz amber/clear jar	
250 mL Amber (8oz amber)		4 oz amber/clear jar	
1 Liter Plastic		2 oz amber/clear jar	
500 mL Plastic		Plastic Bag / Ziploc	
250 mL plastic		SOC Kit	
40 mL Vial - type listed below	1	Perchlorate Kit	
Colisure / bacteria bottle		Flashpoint bottle	
Dissolved Oxygen bottle		Other glass jar	
Encore		Other	

40 mL vials:	# HCl ____	# Methanol ____	Time and Date Frozen:
Doc# 277	# Bisulfate ____	# DI Water ____	
Rev. 4 August 2013	# Thiosulfate ____	Unpreserved 1	

Page 2 of 2

Login Sample Receipt Checklist

(Rejection Criteria Listing - Using Sample Acceptance Policy)

Any False statement will be brought to the attention of Client

Question	Answer (True/False) T/F/NA	Comment
1) The cooler's custody seal, if present, is intact.	NA	
2) The cooler or samples do not appear to have been compromised or tampered with.	T	
3) Samples were received on ice.	F	Shipped via USPS
4) Cooler Temperature is acceptable.	T	Soxhlet analysis
5) Cooler Temperature is recorded.	T	
6) COC is filled out in ink and legible.	T	
7) COC is filled out with all pertinent information.	T	
8) Field Sampler's name present on COC.	T	
9) There are no discrepancies between the sample IDs on the container and the COC.	T	
10) Samples are received within Holding Time.	T	
11) Sample containers have legible labels.	T	
12) Containers are not broken or leaking.	T	
13) Air Cassettes are not broken/open.	NA	
14) Sample collection date/times are provided.	T	
15) Appropriate sample containers are used.	T	
16) Proper collection media used.	T	
17) No headspace sample bottles are completely filled.	NA	
18) There is sufficient volume for all requsted analyses, including any requested MS/MSDs.	T	
19) Trip blanks provided if applicable.	NA	
20) VOA sample vials do not have head space or bubble is <6mm (1/4") in diameter.	NA	
21) Samples do not require splitting or compositing.	T	

Who notified of False statements? **Date/Time:**

Doc #277 Rev. 4 August 2013 **Log-In Technician Initials:** **Date/Time:**

RLF 12/21/16 930

SECTION 03 01 00

REHABILITATION OF CONCRETE
02/18

PART 1 GENERAL

1.1 SCOPE

This specification governs the rehabilitation of structural concrete. Specifically, work under this section covers concrete repairs to the bridge deck as depicted on the Contract Drawings and specified herein.

1.2 DEFINITIONS

1.2.1 Bracing

Temporary supplemental members used to avoid local or global instability during construction, evaluation, or repair that are intended to be removed after completion of construction.

1.2.2 Delamination

A planar separation in a material that is roughly parallel to the surface of the material.

1.2.3 Rehabilitation

Repairing or modifying an existing structure to a desired useful condition.

1.2.4 Repair

The reconstruction or renewal of concrete parts of an existing structure for its maintenance or to correct deterioration, damage, or faulty construction of members or systems of a structure.

1.2.5 Termination Joint

The interface where a placement of repair material meets existing concrete, the edge of an expansion joint, or other existing surfaces.

1.2.6 Unsound Concrete

Concrete that is fractured, delaminated, spalled, deteriorated, defective, contaminated or otherwise damaged.

1.3 REFERENCES

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

AMERICAN CONCRETE INSTITUTE (ACI)

ACI 117	(2010; Errata 2011) Specifications for Tolerances for Concrete Construction and Materials and Commentary

ACI SP-2	(2007; Abstract: 10th Edition) ACI Manual of Concrete Inspection

ASTM INTERNATIONAL (ASTM)

ASTM C31/C31M	(2022) Standard Practice for Making and Curing Concrete Test Specimens in the Field
ASTM C39/C39M	(2021) Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
ASTM C109/C109M	(2021) Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or (50-mm) Cube Specimens)
ASTM C143/C143M	(2020) Standard Test Method for Slump of Hydraulic-Cement Concrete
ASTM C172/C172M	(2017) Standard Practice for Sampling Freshly Mixed Concrete
ASTM C231/C231M	(2022) Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method
ASTM C1077	(2017) Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation
ASTM E329	(2021) Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection

INTERNATIONAL CONCRETE REPAIR INSTITUTE (ICRI)

ICRI 310.2R	(2013) Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, Polymer Overlays, and Concrete Repair

MAINE DEPARTMENT OF TRANSPORTATION (MEDOT)

MEDOT	State of Maine, Department of Transportation, Standard Specifications, including revisions through award of this contract (See http://www.maine.gov/mdot/publications/)

1.4 MODIFICATION OF REFERENCES

1.4.1 ACI Publications

Accomplish work in accordance with ACI publications except as modified herein. Consider the advisory or recommended provisions to be mandatory, as though the word "shall" had been substituted for the words "should" or "could" or "may," wherever they appear.

1.4.2 MEDOT Standard Specifications

Where included in the MEDOT specifications, replace the terms "Resident", "Fabrication Engineer" and "Department" with "Contracting Officer", unless otherwise specified.

1.5 SUBMITTALS

Government approval is required for submittals with a "G" classification. Submittals not having a "G" classification are for Contractor Quality Control approval. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Repair Plan; G

Quality Control Plan; G

Testing Agencies Qualifications; G

Quality Control Personnel Qualifications; G

Contractor Qualifications; G

Worker Qualifications; G

Field Testing Technicians And Testing Agency; G

Test Reports; G

Placement And Compaction Equipment; G

Protection Plan; G

Procedures To Repair Defective Work; G

Corrective Action Work Plan; G

Defect Plan; G

SD-03 Product Data

Miscellaneous Materials And Equipment; G

Repair Materials; G

SD-05 Design Data

Repair Procedures; G

Mixture Proportioning; G

SD-06 Test Reports

Mixture Proportioning; G

Miscellaneous Materials And Equipment; G

Lab Test Reports; G

SD-07 Certificates

Reinforcement And Reinforcement Supports; G

Batch Tickets; G

SD-08 Manufacturer's Instructions

Equipment For Concrete Preparation; G

1.6 QUALITY ASSURANCE

1.6.1 General Requirements

a. To protect personnel from overexposure to toxic materials, conform to the applicable manufacturer's Safety data sheets or local regulations. Submit manufacturer's Safety Data Sheets for all polymers as well as other potentially hazardous materials.

b. Submit the repair procedures for executing the work as well as the test data and documentation on materials used for repair. Submittal must include component materials, mixture proportions, and supplier's quality control program.

c. Inspection and testing of surface preparation as well as placement of reinforcing steel must be in accordance with provisions included herein and the Contract Document.

d. Sampling and testing of materials, as well as inspection and testing of work, must be in accordance with established procedures, manufacturer's instructions, specific instructions from the Contracting Officer if given, or recommended practices as referenced herein and the Contract Documents.

e. Trial batches and testing requirements for various repair materials specified are the responsibility of the Contractor.

e. The testing agency must inspect, sample, and test repair materials and concrete production as required. When it appears that material furnished or work performed by Contractor fails to conform to Contract Documents the testing agency will immediately report such deficiency.

1.6.2 Quality Control Plan

Submit a quality control plan as specified in Sections 01 45 00.00 22 QUALITY CONTROL (PWD ME) and 03 30 00 CAST-IN-PLACE CONCRETE.

1.6.3 Qualifications

The submittals must, where applicable, identify agencies and individuals who will be working on this contract and their relevant experience. Do not make changes in approved agencies or personnel without prior approval of the Contracting Officer.

1.6.3.1 Testing Agencies Qualifications

In addition to the requirements of Section 01 45 00.00 22 QUALITY CONTROL

(PWD ME), agencies that test concrete materials must meet the requirements of ASTM C1077. Testing agencies that test or inspect placement of reinforcing steel must meet the requirement of ASTM E329. Submit data on qualifications of Contractor's proposed testing agency for acceptance.

1.6.3.2 Quality Control Personnel Qualifications

Field tests of repair materials required must be made by an ICRI Concrete Surface Repair Technician Tier 2. Submit resumes, pertinent information, past experience, training and education of all operators of specialized demolition equipment if needed for this and the three paragraphs above.

1.6.3.3 Contractor Qualifications

The contractor performing the repair work must have been involved in a minimum of three concrete repair projects similar in size and scope to this project for at least five years. Submit information, including name, dollar value, date, and point-of-contact for similar projects which demonstrates the required experience and/or training.

1.6.3.4 Worker Qualifications

Each worker engaged in the use of specialized removal or application equipment, including saw operators, hydromilling equipment operators, must have satisfactorily completed an instruction program and three years of experience in the operation of the equipment.

1.6.3.5 Field Testing Technicians and Testing Agency

Provide an independent agency qualified for field testing of concrete. Submit data on qualifications of proposed testing agency and technicians for approval by the Contracting Officer prior to performing any work.

a. Work on concrete under this contract must be performed by an ACI Concrete Field Testing Technician Grade 1 qualified in accordance with ACI SP-2 or equivalent. Equivalent certification programs must include requirements for written and performance examinations as stipulated in ACI SP-2.

b. Testing agencies that perform testing services on concrete materials must meet the requirements of ASTM C1077.

1.6.3.6 Regulatory Requirements

Perform all work in accordance with 01 57 19.00 22 TEMPORARY ENVIRONMENTAL CONTROLS - PORTSMOUTH NAVAL SHIPYARD (PWD ME) and applicable Federal, State, and local safety, health, and environmental requirements. The Contractor is responsible for obtaining all permits required by Federal, State, and local agencies for the performance of the work.

1.6.4 Defect Plan

Submit a defect plan identifying the locations of defects, the method used to identify defects, and the size of the defects. Notify the COntracting Officer if the quantity of defects differ from the assumed quantities.

1.6.5 Repair Plan

Submit a repair plan describing the methods of concrete removal and repair,

including methods, equipment and materials to be used for each type of repair. Submit the repair plan for approval at least 30 days prior to the start of the work. The plan must include, but not be limited to, procedures for removal of deteriorated material, repair materials to be used with specific information on products and/or constituents, and requirements for handling, storage, etc., equipment to be used, surface preparation, testing of repair materials, and requirements for placement, finishing, curing and protection specific to the materials used. Include a description of field demonstrations in the work plan. Do not commence work until the work plan and field demonstration representative of the type of work are approved.

1.7 DELIVERY, STORAGE, AND HANDLING

Inspect materials delivered to site for damage, unload and store with a minimum of handling. Do not deliver concrete until forms, reinforcement, embedded items, and chamfer strips are in place and ready for concrete placement. Protect materials from contaminants such as grease, oil, and dirt.

1.8 PROJECT SITE CONDITIONS

1.8.1 Environmental Requirements

Do not place repair materials when weather conditions detrimentally affect the quality of the finished product. Do not place cement-based repair materials when the air temperature is below 40 degrees F in the shade. When air temperature is likely to exceed 90 degrees F, the cement-based repair material must have a temperature not exceeding 90 degrees F when deposited, and the surface of such placed cement-based repair material must be kept damp with a water fog until the approved curing medium is applied.

1.8.2 Existing Conditions

The contract drawings and reference drawings do not constitute a complete description of all metal parts and other materials that may be encountered, but represent the best information available to the Government. Other items, or different locations for items shown, may exist. Exercise care to avoid drilling through functional embedded items intended to remain in service. The selection of equipment and methods must consider the presence of such materials, and the Government will not be responsible in any way for the effect of such items on the equipment or progress. Where indicated, remove existing metal items to the limits noted on drawings.

1.9 CONSTRUCTION REMOVAL TOLERANCES

1.9.1 Concrete Depth Removal

Remove concrete to the lines of removal indicated on the contract drawings or to sound concrete, whichever is greater. Concrete removals that vary by more than the indicated tolerance will not be acceptable, unless approved in advance by the Contracting Officer. Unauthorized concrete removals must be repaired to the satisfaction of the Contracting Officer at no additional cost to the Government.

1.9.2 Concrete Area Removal

Area removal tolerance must be within 25 percent of the areas indicated in the contract drawings. Concrete removals that vary by more than the

indicated tolerance will not be acceptable, unless approved by the Contracting Officer or indicated in the approved Letter of Acceptance of Government's Defect Quantities. Unauthorized concrete removals must be repaired to the satisfaction of the Contracting Officer at no additional cost to the Government.

1.10 ACCEPTANCE OF REHABILITATION WORK

1.10.1 General Requirements

a. Completed concrete rehabilitation work must conform to applicable requirements of Contract Document and this specification. The Contractor is responsible to bring Work into compliance with requirements of Contract Documents if the Concrete repair work fails to meet one or more requirements of Contract Documents.

b. Correct rejected repair work by removing and replacing or by strengthening with additional construction acceptable to the Contracting Officer. Use repair methods that meet applicable requirements for function, durability, dimensional tolerances, and appearance.

c. Submit proposed corrective action work plan, repair methods, materials, and modifications to the Work needed to correct rejected repair work to meet the requirements of Contract Documents.

1.10.2 Tolerances

Construction tolerances for repairs must conform to ACI 117. For conditions not shown or that are different than indicated in the Contract Documents, notify the Contracting Officer before proceeding with the work at those locations.

1.11 PROTECTION OF COMPLETED REHABILITATION WORK

a. Do not allow construction loads to exceed the loads that a structural member or structure is safely capable of supporting without damage. Provide supplemental support if construction loads are expected to exceed safe load capacity.

b. Protect repaired and adjacent areas from damage by construction traffic, equipment, and materials. During the curing period, protect repair materials from damage by mechanical disturbances, including load-induced stresses, shock, and vibration.

c. Protect repair materials from environmental damage by weather events during the length of the curing period.

PART 2 PRODUCTS

Products or materials used must conform to the requirements included herein as well as the Contract Documents. The usage of other products or materials not covered by this requirement or specified in the Contract Documents are permitted upon approval by the Contracting Officer. Additional information and submittals for products and materials not included in this document including product data, samples, design data, test reports, certificates, manufacturer's instructions, and field reports must be submitted as requested by the Contracting Officer.

2.1 MATERIALS FOR SHORING AND BRACING

2.1.1 Shoring and Bracing Systems

Use commercially manufactured and engineered shoring and bracing systems and components, except where custom built assemblies of lumber or other suitable materials are permitted by the Contracting Officer.

2.2 EQUIPMENT FOR CONCRETE PREPARATION

Means and methods used for concrete removal and surface preparation must be selected and used such as to minimize damage to the structure and to the concrete substrate that remains.

2.2.1 Equipment for Concrete Removal

Removal equipment and techniques must be suitable to produce concrete surface profiles and level of cleanliness in designated areas as required by this specification and the contract Documents.

2.2.1.1 Cutting Equipment

a. The following cutting equipment are permitted: Saw cutting.

b. Cutting, lifting, and transporting equipment must be adequate to cut, support, and transport concrete sections without incurring any damage to the existing structure.

2.2.1.2 Concrete Breakers

a. Provide sharp tips on breaker equipment to minimize microcracking damage in partial depth removal.

b. The use of the following impact equipment and methods is permitted: Hand-held breakers.

c. The maximum breaker size is 15 lbs.

2.2.2 Surface preparation and cleaning equipment

2.2.2.1 Other Cleaning Equipment

Use equipment that delivers oil free air capable of cleaning loose material and debris from repair areas. If necessary to dry the concrete surface, clean, dry, compressed air may be used. Also, use vacuums capable of removing loose material and debris.

2.2.3 Placement and Compaction Equipment

a. Submit technical literature for equipment and methods proposed for use in placing repair material.

b. Submit technical literature for equipment and methods proposed for vibrating and compacting repair material. Submittal must include technical literature describing the equipment including vibrator diameter, length, frequency, amplitude, centrifugal force, and manufacturer's description of the radius of influence under load. Where flat work is to be cast, provide similar information relative to the proposed compacting screed or other method to ensure dense placement.

2.3 MATERIALS FOR FORMWORK AND EMBEDDED ITEMS

a. Formwork and embedded items must meet the requirements specified in Section 03 30 00 CAST-IN-PLACE CONCRETE.

b. Install and remove formwork without damaging or staining the existing structure or repair material.

2.4 REINFORCEMENT AND REINFORCEMENT SUPPORTS

2.4.1 Steel Bars, Wires, and Fiber-reinforced Concrete

Reinforcement and reinforcement support must meet the requirements specified in Section 03 30 00 CAST-IN-PLACE CONCRETE. Submit mill certificates and shop drawings as required by 03 30 00 CAST-IN-PLACE CONCRETE

2.5 REPAIR MATERIALS

All repair materials must be in accordance with MEDOT Section 518.02.

2.5.1 Ready-Mix Concrete

Concrete for the bridge deck repairs must be MEDOT Class LP 5000 psi, in accordance with MEDOT Section 502.05.

2.5.2 Water

Water for cleaning, mixing and curing must be fresh, clean, potable, and free of injurious amounts of oil, acid, salt, or alkali.

2.5.3 Bonding Compounds

Bonding compounds are not permitted. Provide a roughened clean surface for bonding in accordance with ICRI 310.2R.

2.6 MISCELLANEOUS MATERIALS AND EQUIPMENT

2.6.1 Concrete Accessories

All concrete accessories not included in this document must meet the requirements specified in Section 03 30 00 CAST-IN-PLACE CONCRETE.

2.6.2 Miscellaneous Equipment

a. Equipment designed specifically for the application of repair materials must be used as required by the repair material manufacturer and the referenced specification.

b. Equipment not listed in this specification but referenced or used for repairs must be clean and in good operating condition.

c. All supplies and equipment must be available in sufficient quantities to allow continuity in the installation project and quality assurance.

2.7 MIXTURE PROPORTIONING

2.7.1 Repair Material Mixture Proportioning

Submit, at least 30 days before work commences, a repair material mixture proportioning for each type of repair meeting this requirement. Submit a complete list of materials including type; brand; source and proportions of each constituent.

2.7.1.1 Test Reports

Submit copies of test reports by independent test labs conforming to ASTM C1077 showing that the mixture has been successfully tested to produce concrete with the properties specified and that mixture will be suitable for the job conditions. Test reports shall be submitted along with the mixture proportions. Obtain approval before concrete placement.

Include the following:

a. Compressive Strength

b. Splitting Tensile Strength

c. Drying Shrinkage

d. Restrained Shrinkage Cracking

e. Chloride Ion Penetration

f. Bond Strength

g. Aggregates

h. Admixtures

i. Cement

2.7.2 Ready-Mix Concrete

Furnish batch tickets must be furnished for each load of concrete.

PART 3 EXECUTION

3.1 GENERAL SAFETY REQUIREMENTS

a. Provide Safety Data Sheets (SDS) for products on site reviewing them before work begins.

b. Provide safety guards, maintenance, and warnings for all machinery and equipment.

c. Have personal protection equipment practice in place - eye protection and face guards.

d. Have all workers in contact with wet cementitious material wear protective gloves and clothing.

e. Provide eyewash facilities on-site with location signage.

f. Provide dust masks for workers operating mixers.

g. Provide secured storage available for all hazardous or flammable materials.

h. Conduct safety meetings prior to beginning repair operations.

3.2 GENERAL REPAIR REQUIREMENTS

3.2.1 Preparation

3.2.1.1 Identification of Extent of Concrete Removal

a. Configure geometry of removal area to maximize the use of right-angle geometry, avoiding reentrant corners, and to obtain uniformity of depth. Determine the depth, location, and size of reinforcing bars prior to removal of concrete.

b. Prior to beginning any repair work, perform a survey to verify all repair quantities. Visually inspect and hammer sound, or utilize chain drag sounding methods, or other methods acceptable by the Contracting Officer to identify cracked, delaminated, spalled, disintegrated, and otherwise unsound concrete for removal. Mark boundaries of repair area and notify the Contracting Officer to approve the unsound concrete layout boundaries.

c. Inspect the marked boundaries with the Contracting Officer prior to commencing with the concrete removal. Revise the repair area boundaries as instructed by the Contracting Officer.

3.2.1.2 Protection Plan

Protect pedestrians, motorized traffic, mechanical, electrical, and plumbing equipment, surrounding construction, project site, landscaping, and surrounding buildings from damage or injury resulting from concrete rehabilitation work.

a. Construct dust and debris barriers surrounding repair work perimeter to control dust and to protect and control construction traffic.

b. Dispose of runoff from wet demolition or surface preparation operations in accordance with all local ordinances. Disposal methods must avoid soil erosion, avoid undermining pavements and foundations, damage to landscaping and vegetation.

c. Collect and neutralize alkaline wastes and acid wastes and dispose in accordance with local, state, and federal regulations.

d. Comply with local noise ordinances during demolition operations.

e. Perform demolition work and surface preparation work in a manner that minimizes disturbances of operations. Coordinate work with the Contracting Officer.

f. Submit a proposed protection plan for approval by the Contracting Officer

3.2.1.3 Formwork

a. Construct forms to sizes, shapes, lines, and dimensions to match existing adjacent surfaces and textures. Provide forms that match openings, offsets, chamfers, anchorages, inserts and other features as described on Contract Documents. Construct forms to accommodate installation of products by other trades. Provide forms for easy removal to minimize damage to concrete surfaces and adjacent surfaces. Apply form release coating over formwork surfaces prior to each concrete placement. Form release agents must not be applied to or come in contact with the repair area concrete substrate or reinforcement.

b. Do not damage repair material during removal of formwork for columns, walls, sides of beams, and other parts not supporting weight of concrete or repair material. Perform needed repair and treatment required on vertical surfaces at once and follow immediately with specified curing. Remove all formwork anchors embedded in existing concrete. Fill anchor holes and repair all damage to existing concrete at anchor holes.</

3.2.1.4 Concrete Removal

a. Remove concrete from repair areas to indicated depth and profile. Notify Contracting Officer if additional delaminated, fractured, or unsound concrete is present. Remove concrete with care to avoid damage to adjacent structures and embedded metal that is not to be removed. Repair any such damage at no additional cost to the Government.

b. Do not damage embedded reinforcing and adjacent concrete. The removal methods must produce minimal microcracking (bruising) of the prepared substrate surfaces. Avoid directly striking reinforcing steel with impact tools used for concrete removal.

c. Provide perpendicular edges at perimeter of repair area. The perimeter of the repair areas must be saw cut to a depth of 0.50 to 0.75 in.. For vertical or overhead surfaces, provide 45-degree slope at repair boundaries to facilitate air and rebound escape. Do not cut or damage embedded reinforcement or other embedded items. If embedded reinforcing steel or other embedded items are too close to the surface to provide the perpendicular edge cut, notify the Contracting Officer for direction before proceeding.

d. Extend concrete removal along the corroded reinforcing steel to a point where there is no further delamination, concrete cracking, or reinforcing steel corrosion, and where the reinforcement is bonded to the surrounding concrete.

e. Remove concrete around the exposed layer of reinforcement to a uniform depth beyond within the repair areas to provide a minimum clearance between exposed reinforcing steel and surrounding concrete of 0.75 in., or at least 0.25 in. larger than the maximum nominal size of the coarse aggregate in the repair material.

f. Do not remove metal and other embedded items exposed during the concrete removal operations without authorization from the Contracting Officer. Unless otherwise indicated, continue removal using appropriate equipment to remove unsound concrete and to eliminate any

offsets in the area to be repaired which would cause an abrupt change in thickness of the repair. Any removal beyond the limits shown on the drawings must be approved by the Contracting Officer prior to performing the additional removal.

g. Remove foreign material, such as dirt, oil, grease, or other chemicals, from the cracks before injection using compressed air, low-pressure water, or vacuuming. Allow wet surfaces to dry at least 24 hours.

h. Immediately before placing the repair material or installing formwork, make the repair area available for inspection by the Contracting Officer. Obtain acceptance by the Contracting Officer of surface preparation before proceeding with Work. If the Work is rejected, perform additional operations to the satisfaction of Contracting Officer.

i. Handle all existing steel exposed by concrete removal operations in accordance with MEDOT Section 518.04.

3.2.1.5 Preparation of Concrete Substrate Surface

a. Confirm perpendicular edges at repair area perimeter, and reinstate if damaged by concrete removal process. Remove loosely bonded concrete, bruised or fractured concrete, and bond-inhibiting materials such as dirt, concrete slurry, or any other detrimental materials from the concrete substrate using approved methods. Where concrete has been removed by impact methods, abrasive blasting must be used to prepare the surface and remove bruised concrete.

b. Provide substrate surface profiles as specified in the Contract Documents.

c. Visually inspect and sound substrate surface to confirm that no further delaminations or otherwise unsound concrete remains. If encountered, notify the Contracting Officer.

3.2.1.6 Cleaning

Perform all cleaning operations to produce a highly roughened, bondable surface in accordance with ICRI concrete surface profile scale CSP5 to CSP7 and to the satisfaction of the Contracting Officer. Protect adjacent structures and embedded items. Use potable water for all cleaning operations. Perform a preliminary washing as soon as the chipping is completed to remove loose materials and dust particles. Clean surfaces to which new concrete is to be bonded. Final cleaning shall remove all laitance, carbonation, scum, dirt, oil, grease, and loose or disintegrated concrete. Perform additional surface chipping to remove coarse aggregate that is undercut by cleaning process. Perform such additional chipping as determined necessary by the Contracting Officer at no additional cost to the Government. Wire brush or sandblast metal surfaces against which concrete is to be placed to remove rust and other contaminants which would prevent proper bond with the concrete. Perform final cleaning immediately prior to concrete placement. Protect all work from contamination during all phases of cleanup and preparation prior to repair.

3.2.2 Application

3.2.2.1 Existing Reinforcement Preparation

a. Clean existing reinforcement that will remain. Remove corrosion and/or other laitance and notify the Contracting Officer if section loss is greater than 20%.

b. Permit evaluation of existing reinforcement and placement of new reinforcement by the Contracting Officer.

3.2.2.2 Placement of Reinforcement

a. Placement, splicing, and handling of reinforcement must meet the requirements specified in Section 03 30 00 CAST-IN-PLACE CONCRETE.

b. Reinforcement must be free of materials deleterious to bond. Reinforcement with rust, mill scale, or a combination of both will be considered satisfactory, provided minimum nominal dimensions, nominal weight, and minimum average height of deformations of a hand-wire-brushed test specimen are not less than applicable ASTM specification requirements.

3.2.2.3 Placement of Concrete

Place repair materials in accordance with MEDOT Section 518.07.

3.2.2.4 Placement of Other Repair Materials

a. Equilibrate repair material(s) and substrate to the temperature, cleanliness of substrate and reinforcement, and moisture requirements of the repair material manufacturer's requirements.

b. Comply with the repair material manufacturer's requirements for batching, mixing, placing and curing repair materials.

c. Review consistency of the mixed repair material(s) relative to the parameters documented in the repair material manufacturer product data sheet. If non-conforming, adjust consistency in compliance with the repair material manufacturer's requirements.

d. Apply or install repair material(s) within the application time frame (pot life) requirements of the repair material manufacturer's requirements, and place and consolidate to provide well-compacted repair.

e. Finish and tool repair materials, finished in accordance with the repair material manufacturer's written instructions and as indicated in Contract Documents.

f. Protect installed repair material(s) from damage, exposure to environmental conditions that are detrimental to the uncured or cured properties of the material. Cure in accordance with the requirements of the repair material manufacturer's requirements.

3.2.2.5 Curing and Protection

Cure repaired surfaces in accordance with MEDOT Section 518.08.

3.3 FIELD QUALITY CONTROL

Handle all existing steel exposed by concrete removal operations in accordance with MEDOT Section 518.04. Submit a quality control plan prior to executing work.

3.3.1 General

An independent material inspection and testing Contractor shall perform the required field inspection and test procedures outlined in this section, on a daily basis when concrete is being delivered.

3.3.2 Preparations for Placing

A qualified licensed Professional Engineer (PE) must inspect prepared surfaces, forms, and embedded items in sufficient time prior to each placement of repair material to certify that the surfaces are ready to receive the repair material. The professional engineer must fill out, sign, and submit the QC Inspection Checklist prior to Contractor placing repair material. Blank QC Inspection Checklist included.

3.3.3 Ready-Mix Concrete Material Testing

3.3.3.1 Time and Mix Pot Life

Verify repair material has not exceed allowable time or pot life.

3.3.3.2 Sampling

Collect representative samples of fresh concrete to perform tests specified in conformance with ASTM C172/C172M and ASTM C31/C31M.

3.3.3.3 Temperature

Test the concrete delivered and the concrete in the forms. Perform tests in hot or cold weather conditions below 50 degrees F and above 80 degrees F for each batch (minimum) or every 10 cubic yards (maximum) of concrete, until the specified temperature is obtained, and whenever test cylinders and slump tests are made.

3.3.3.4 Air Content

Test air content twice during each shift that repair material is placed. Obtain samples in accordance with ASTM C172/C172M and test in accordance with ASTM C231/C231M.

3.3.3.5 Slump

Test slump twice during each shift that repair material is produced. Obtain samples in accordance with ASTM C172/C172M and test in accordance with ASTM C143/C143M.

3.3.3.6 Consolidation and Protection

Ensure that the repair material is properly consolidated, finished, protected, and cured.

3.3.3.7 Compression Tests

Prepare compression test specimens during each shift that the repair material is produced in accordance with ASTM C31/C31M and cure at the site under the same conditions as the repair. Test in accordance with ASTM C109/C109M or ASTM C39/C39M.

3.3.3.8 Curing

a. Moist-Curing Inspections - At least once each shift, and once per day on nonworking days, inspect all areas subject to moist curing. Note and record the surface moisture condition.

b. Sheet-Curing Inspection - At least once each shift and once per day on nonworking days, inspect all areas being cured using material sheets.

Note and record the condition of the covering and the tightness of the laps and tapes.

3.3.4 Action Required

3.3.4.1 Placing

Repair material placement is not permitted until it is has been verified that the appropriate placement, consolidation, and finishing equipment, are available. Equipment must be in working order and have competent operators.

3.3.4.2 Time and Mix Pot Life

Dispose of material if it is beyond the designated time or pot life.

3.3.4.3 Air Content

Whenever a test result is outside the specification limits, do not deliver the concrete to the forms and adjust the dosage of the air-entrainment admixture and retest.

3.3.4.4 Slump

Whenever a test result is outside the specification limits, do not deliver the concrete to the forms and make necessary adjustments in the batch weights of water and fine aggregate. The adjustments are to be made so that the water-cementitious materials ratio does not exceed that specified in the submitted concrete mixture proportion.

3.3.4.5 Temperature

Whenever a test result is outside the specified limits, dispose of material and prepare a new batch.

3.3.4.6 Curing

a. Moist-Curing Corrective Action - When a daily inspection report lists an area of inadequate curing, take immediate corrective action, and extend the required curing period for such areas by one day.

b. Sheet-Curing Corrective Action - When a daily inspection report lists any tears, holes, or laps or joints that are not completely

closed, promptly repair the tears and holes or replace the sheets, close the joints, and extend the required curing period for those areas by one day.

3.3.4.7 Laboratory Test Results

If compression test results fall outside of specified limits, remove defective material and install material meeting specified limits.

3.3.5 Final Inspection and Acceptance Testing

Following completion of the work, inspect surfaces for damage, staining, and other distresses. Inspect repairs for cracking, crazing, delamination, unsoundness, staining and other defects. Inspect the finish and surface tolerances of the repairs to verify that all requirements have been met. Repair all surfaces exhibiting defects as directed at no cost to the Government when defects are due to Contractor workmanship or procedures. Contractor to submit procedures to repair defective work prior to completing repairs.

3.3.6 Reports

Report the results of all tests and inspections conducted at the project site informally at the end of each shift and in writing weekly and deliver within three days after the end of each weekly reporting period.

Submit lab test reports within 35 days of placement operations.

3.3.7 Manufacturer Field Service

Provide, at no additional cost to the Government, the services of the manufacturer's experienced technical representative during mixture proportioning, planning and production. The manufacturer's representative must be available for consultation by both the Contractor and the Contracting Officer during mixture proportioning, planning, and production of the materials and must be on-site immediately prior to and during at least the first placement of the material, and at other times if directed.

3.4 CLEAN UP

Clean all surfaces of concrete and adjacent facilities which are stained by dirt, oil, grease, fuel, or other byproducts that are created by the construction operations with detergent and pressure wash. Dispose of debris in accordance with applicable local, state, and federal laws.

3.5 PROTECTION PRIOR TO ACCEPTANCE

Do not permit vehicular or heavy equipment traffic on the repair surfaces until the repair material has obtained the designed strength. Permit light local traffic on the concrete surfaces at the end of the curing period, if approved by the Contracting Officer. Where shelter or other protective measures are provided for repair during inclement weather, maintain such protective measures until the repair material has cured and discontinuance of the measures is authorized.

3.6 FINAL ACCEPTANCE

Inspect and document all defects prior to any repair being completed.

QC INSPECTION CHECKLIST

PROJECT:		CONTRACTOR	NAME:
PROJECT LOCATION:			ADDRESS:
			PHONE:
DEFECT ID:		PROFESSIONAL ENGINEER	NAME:
DEFECT LOCATION:			LICENSE NUMBER:

INSPECTION TASKS

TASK:	DATE COMPLETED:	PROFESSIONAL ENGINEER SIGNATURE:
DETERMINATION OF REMOVAL LIMITS		
CONCRETE DEMOLITION		
CONCRETE DEPTH REMOVAL		
SUBSTRATE SURFACE PREPARATION		
RUST CLEANING		
FORMWORK INSTALLED		
FORMWORK SEALED		
FORM REMOVAL		
FIELD QUALITY CONTROL		
FINAL INSPECTION		
FINAL ACCEPTANCE		

REPAIR QUANTITIES

TASK:	QUANTITY:	DATE INSTALLED:
REINFORCING STEEL (LBS)		
CONCRETE (SF)		

-- End of Section --

SECTION 03 15 13.00

EXPANSION JOINTS
03/23

PART 1 GENERAL

This section includes the work associated with the bridge expansion joint repairs as depicted on the Contract Drawings.

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 ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)

AASHTO M 270M/M 270	(2020) Standard Specification for Structural Steel for Bridges
AASHTO M 297	(2021) Standard Specification for Preformed Polychloroprene Elastomeric Joint Seals for Bridges

AMERICAN WELDING SOCIETY (AWS)

AWS D1.5M/D1.5	(2020; Errata 1 2022) Bridge Welding Code

ASTM INTERNATIONAL (ASTM)

ASTM C920	(2018) Standard Specification for Elastomeric Joint Sealants
ASTM D412	(2016) Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers - Tension

MAINE DEPARTMENT OF TRANSPORTATION (MEDOT)

MEDOT	State of Maine, Department of Transportation, Standard Specifications, including revisions through award of this contract (See http://www.maine.gov/mdot/publications/)

1.2 SUBMITTALS

Government approval is required for submittals with a "G" classification. Submittals not having a "G" classification are for Contractor Quality Control approval. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Shop Drawings; G

SD-03 Product Data

Shapes And Plates; G

Stud Shear Connectors; G

Compression Seals; G

Lubricant Adhesive; G

Sealant; G

1.3 DELIVERY, STORAGE, AND HANDLING

Protect materials delivered and placed in storage off the ground from moisture, dirt, and other contaminants.

1.4 SHOP DRAWINGS

Submit shop drawings for the southern and northen expansion joints.

1.5 FIELD MEASUREMENTS

Field measure the existing deck and joint and make the necessary adjustments to the shop drawings accordingly.

1.6 FABRICATION

All work must conform to the applicable provisions of 05 12 00 STRUCTURAL STEEL.

PART 2 PRODUCTS

2.1 SHAPES AND PLATES

All shapes and plates must be AASHTO M 270M/M 270 Grade 36 per MEDOT Section 520 and hot dipped galvanized.

2.2 COMPRESSION SEALS

Compression seals must be multi-channel extruded shapes made of material conforming to the requirements of AASHTO M 297, and in a configuration as determined by each particular manufacturer and as shown in the contract documents. The seal must be marked on the top surface with the manufacturer's name or trademark, the lot number and the size designation at intervals of 5 feet or less. Actual seal dimensions must not differ from the nominal dimensions by more than 1/16 inch/inch of depth or width, or a maximum of 1/4 inch whichever is less. The material used must be one of the products listed on the MEDOT Qualified Products List.

2.3 STUD SHEAR CONNECTORS

Shear connectors must meet the material requirements of Section 7 of the AWS D1.5M/D1.5. Shear connectors must meet the mechanical property requirements of Table 7.1, Type B of AWS D1.5M/D1.5.

2.4 LUBRICANT ADHESIVE

The lubricant-adhesive must be a one part, moisture curing, polyurethane

and aromatic hydrocarbon solvent mixture and have the following physical properties:

Property	Requirement
Solids Content	60 - 80 percent by weight
Service Range	5 - 120 degress F minimum
Film Strength (ASTM D412)	1,200 psi minimum
Elongation at Break	250 percent minimum

Each lot of lubricant-adhesive must be delivered in sealed containers plainly marked with the manufacturer's name or trademark and the date of manufacture. Maximum shelf life must not exceed 6 months.

2.5 SEALANT

The sealant must be a one part, moisture curing, polyurethane base, nonsag, elastomeric product, conforming to the requirements of Federal Specification TT-S0023OC(2), Type II, Class A or ASTM C920, Type S, Grade NS, Class 25.

Each lot of sealant must be delivered in sealed containers plainly marked with the manufacturer's name or trademark and the date of manufacture. Maximum shelf life must be as recommended by the manufacturer.

PART 3 EXECUTION

3.1 INSTALLATION

3.1.1 Compression Seals

Compression seals must be provided in one continuous length, splices are not allowed, except as specified hereafter.

As received As received from the supplier of the seal, seals may contain one splice for each continuous length of 50 feet or greater. Sections under 50 feet long must not have any splices. Splices at abrupt angular changes in horizontal alignment is allowed. Splices in compression seals must be either vulcanized or adhesive bonded. At abrupt angular changes in vertical alignment, the lower 75 percent of the depth of compression seals must be cut to allow short radius bends.

3.1.2 Protective Coating at Mating Surfaces

The galvanizing on the metal surfaces in direct contact with neoprene seals must be lightly sandblasted to a dull gray appearance in order to promote a high strength bond between the seal and mating surface, and for smoothness for installation purposes. Alternately, this galvanized surface may be prepared to the manufacturer’s published recommendations for installation and bonding of seals.

3.1.3 Expansive Devices

Expansion Devices must be lowered into the blocked-out area of the deck slab, adjusted for the temperature in accordance with the Contract Drawings, set to the proper height and fastened in place. Once the expansion devices are set in their final positions, all shipping and temperature adjustment apparatuses must be removed and the concrete for the

slab and abutment backwall blocked-out area must be placed immediately.

Seal elements must be installed in accordance with the manufacturer's recommendations, using equipment manufactured specifically for the purpose of installing the seal elements. The equipment must not cause structural damage to either the seal or the joint armor and must not twist, distort or cause other malformations in the installed seal element. Any perforation or tearing of a seal element due to installation procedures or construction activities will be cause for rejection of the installed seal element, requiring replacement at no additional cost to the Government.

Immediately prior to the installation of the seal element, the metal contact surfaces of the joint armor must be clean, dry, and free of oil, rust, paint, or foreign material. Unless otherwise recommended by the seal manufacturer, the contact surfaces of the seal element must be cleaned with normal butyl-acetate, using clean rags or mops, immediately prior to application of the lubricant-adhesive or sealant. The lubricant adhesive or sealant must be applied to the seal element and joint armor contact surfaces at the rate recommended by the manufacturer of the seal.
The exposed ends of compression seals must be sealed with appropriately shaped pieces of foam rubber, bonded in place with sealant.

-- End of Section --

SECTION 03 30 00

CAST-IN-PLACE CONCRETE
02/19, CHG 4: 08/22

PART 1 GENERAL

Work under this section covers concrete work for the north approach reconstruction and the vehicle barrier system as depicted on the Contract Drawings.

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 CONCRETE INSTITUTE (ACI)

ACI 117	(2010; Errata 2011) Specifications for Tolerances for Concrete Construction and Materials and Commentary
ACI 121R	(2008) Guide for Concrete Construction Quality Systems in Conformance with ISO 9001
ACI 301	(2016) Specifications for Structural Concrete
ACI 302.1R	(2015) Guide for Concrete Floor and Slab Construction
ACI 304R	(2000; R 2009) Guide for Measuring, Mixing, Transporting, and Placing Concrete
ACI 305.1	(2014) Specification for Hot Weather Concreting
ACI 305R	(2020) Guide to Hot Weather Concreting
ACI 306.1	(1990; R 2002) Standard Specification for Cold Weather Concreting
ACI 306R	(2016) Guide to Cold Weather Concreting
ACI 308.1	(2011) Specification for Curing Concrete
ACI SP-2	(2007; Abstract: 10th Edition) ACI Manual of Concrete Inspection
ACI SP-15	(2011) Field Reference Manual: Standard Specifications for Structural Concrete ACI 301-05 with Selected ACI References

AMERICAN HARDBOARD ASSOCIATION (AHA)

AHA A135.4	(1995; R 2004) Basic Hardboard

ASTM INTERNATIONAL (ASTM)

ASTM A934/A934M	(2016) Standard Specification for Epoxy-Coated Prefabricated Steel Reinforcing Bars
ASTM C31/C31M	(2022) Standard Practice for Making and Curing Concrete Test Specimens in the Field
ASTM C39/C39M	(2021) Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
ASTM C42/C42M	(2020) Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete
ASTM C78/C78M	(2022) Standard Test Method for Flexural Strength of Concrete (Using Simple Beam with Third-Point Loading)
ASTM C94/C94M	(2022a) Standard Specification for Ready-Mixed Concrete
ASTM C138/C138M	(2017a) Standard Test Method for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete
ASTM C143/C143M	(2020) Standard Test Method for Slump of Hydraulic-Cement Concrete
ASTM C172/C172M	(2017) Standard Practice for Sampling Freshly Mixed Concrete
ASTM C173/C173M	(2016) Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method
ASTM C231/C231M	(2022) Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method
ASTM C567/C567M	(2019) Determining Density of Structural Lightweight Concrete
ASTM C920	(2018) Standard Specification for Elastomeric Joint Sealants
ASTM C1077	(2017) Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation
ASTM C1107/C1107M	(2020) Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink)
ASTM C1260	(2021) Standard Test Method for Potential Alkali Reactivity of Aggregates

	(Mortar-Bar Method)
ASTM C1602/C1602M	(2022) Standard Specification for Mixing Water Used in Production of Hydraulic Cement Concrete
ASTM D412	(2016) Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers - Tension
ASTM D471	(2016a) Standard Test Method for Rubber Property - Effect of Liquids
ASTM D1751	(2018) Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)
ASTM D1752	(2018) Standard Specification for Preformed Sponge Rubber, Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction
ASTM D2628	(1991; R 2016) Standard Specification for Preformed Polychloroprene Elastomeric Joint Seals for Concrete Pavements
ASTM D2835	(1989; R 2017) Standard Specification for Lubricant for Installation of Preformed Compression Seals in Concrete Pavements
ASTM D6690	(2015) Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements
ASTM E329	(2021) Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection

CONCRETE REINFORCING STEEL INSTITUTE (CRSI)

CRSI 10MSP	(2018) Manual of Standard Practice
CRSI RB4.1	(2016) Supports for Reinforcement Used in Concrete

NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY (NIST)

NIST PS 1	(2009) DOC Voluntary Product Standard PS 1-07, Structural Plywood

U.S. ARMY CORPS OF ENGINEERS (USACE)

COE CRD-C 513	(1974) Corps of Engineers Specifications for Rubber Waterstops
COE CRD-C 572	(1974) Corps of Engineers Specifications for Polyvinylchloride Waterstops

U.S. GREEN BUILDING COUNCIL (USGBC)

LEED NC	(2013) Leadership in Energy and Environmental Design(tm) New Construction Rating System

MAINE DEPARTMENT OF TRANSPORTATION (MEDOT)

MEDOT	State of Maine, Department of Transportation, Standard Specifications, including revisions through award of this contract (See http://www.maine.gov/mdot/publications/)

1.2 DEFINITIONS

a. "Cementitious material" as used herein must include all portland cement, pozzolan, fly ash, slag cement.

b. "Chemical admixtures" are materials in the form of powder or fluids that are added to the concrete to give it certain characteristics not obtainable with plain concrete mixes.

c. "Supplementary cementing materials" (SCM) include coal fly ash, slag cement, natural or calcined pozzolans, and ultra-fine coal ash when used in such proportions to replace the portland cement that result in improvement to sustainability and durability and reduced cost.

d. "Design strength" (f'c) is the specified compressive strength of concrete at time(s) specified in this section to meet structural design criteria.

e. "Mixture proportioning" is the process of designing concrete mixture proportions to enable it to meet the strength, service life and constructability requirements of the project while minimizing the initial and life-cycle cost.

f. "Mixture proportions" are the masses or volumes of individual ingredients used to make a unit measure (cubic meter or cubic yard) of concrete.

g. "Pozzolan" is a siliceous or siliceous and aluminous material, which in itself possesses little or no cementitious value but will, in finely divided form and in the presence of moisture, chemically react with calcium hydroxide at ordinary temperatures to form compounds possessing cementitious properties.

h. "Workability (or consistence)" is the ability of a fresh (plastic) concrete mix to fill the form/mould properly with the desired work (vibration) and without reducing the concrete's quality. Workability depends on water content, chemical admixtures, aggregate (shape and size distribution), cementitious content and age (level of hydration).

1.3 SUBMITTALS

Government approval is required for submittals with a "G" classification. Submittals not having a "G" classification are for Contractor Quality Control approval. Submit the following in accordance with Section 01 33 00

SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Concrete Curing Plan

Quality Control Plan; G

Quality Control Personnel Certifications; G

Quality Control Organizational Chart

Laboratory Accreditation; G

Form Removal Schedule; G

Construction Joints; G

Movement Joints Location And Detail; G

Mitigation Or Remediation Plan; G

SD-02 Shop Drawings

Formwork

Reinforcing Steel; G

SD-03 Product Data

Joint Sealants; (LEED NC)

Joint Filler; (LEED NC)

Formwork Materials

Cementitious Materials and Admixtures; (LEED NC)

Concrete Curing Materials

Reinforcement; (LEED NC)

Mechanical Reinforcing Bar Connectors

Waterstops

Biodegradable Form Release Agent

Nonshrink Grout

SD-04 Samples

Mock Up; G

SD-05 Design Data

Concrete Mix Design; G

SD-06 Test Reports

Concrete Mix Design; G

Fly Ash

Pozzolan

Aggregates

Compressive Strength Tests; G

Unit Weight of Structural Concrete

Air Content

Slump Tests

Water

SD-07 Certificates

VOC Content for Form Release Agents, Curing Compounds, and Concrete Penetrating Sealers

Safety Data Sheets

Field Testing Technician and Testing Agency

SD-08 Manufacturer's Instructions

Joint Sealants; (LEED NC)

Curing Compound

1.4 MODIFICATION OF REFERENCES

1.4.1 ACI Publications

Accomplish work in accordance with ACI publications except as modified herein. Consider the advisory or recommended provisions to be mandatory. Interpret reference to the "Building Official," the "Structural Engineer," and the "Architect/Engineer" to mean the Contracting Officer.

1.4.2 MEDOT Standard Specifications

Where included in the MEDOT specifications, replace the terms "Resident", "Fabrication Engineer" and "Department" with "Contracting Officer", unless otherwise specified.

1.5 DELIVERY, STORAGE, AND HANDLING

Follow ACI 301, ACI 304R and ASTM A934/A934M requirements and recommendations. Do not deliver concrete until vapor retarder, forms, reinforcement, embedded items, and chamfer strips are in place and ready for concrete placement. Do not store concrete curing compounds or sealers with materials that have a high capacity to adsorb volatile organic compound (VOC) emissions. Do not store concrete curing compounds or sealers in occupied spaces. Protect materials from contaminants such as grease, oil, and dirt. Ensure materials can be accurately identified after

bundles are broken and tags removed.

1.5.1 Reinforcement

Store reinforcement of different sizes and shapes in separate piles or racks raised above the ground to avoid excessive rusting. Protect from contaminants such as grease, oil, and dirt. Ensure bar sizes can be accurately identified after bundles are broken and tags removed.

1.6 QUALITY ASSURANCE

1.6.1 Design Data

1.6.1.1 Concrete Mix Design

Sixty days minimum prior to concrete placement, submit a mix design for a concrete mix meeting the requirements as specified herein. Submit a complete list of materials including type; brand; source and amount of cement, supplementary cementitious materials, and admixtures; and applicable reference specifications. Submit mill test and all other test for cement, supplementary cementitious materials, aggregates, and admixtures. Provide documentation of maximum nominal aggregate size, gradation analysis, percentage retained and passing sieve, and a graph of percentage retained verses sieve size. Provide mix proportion data using at least three different water-cementitious material ratios for which produce a range of strength encompassing those required for the type of concrete required. If source material changes, resubmit mix proportion data using revised source material. Provide only materials that have been proven by trial mix studies to meet the requirements of this specification, unless otherwise approved in writing by the Contracting Officer. Indicate clearly in the submittal where each mix design is used when more than one mix design is submitted. Resubmit data on concrete components if the qualities or source of components changes. Required average strength can be documented by field experience if field strength test data are available and represent a single group of at least 10 consecutive strength tests for one mixture, using materials and conditions similar to those expected for work, and encompassing a period of not less than 45 days. The average of field strength tests shall equal or exceed fcr'. Changes in materials, conditions, and proportions within the test record shall not have been more closely restricted than those for the proposed work. Test records shall not be more than 24 months old. Obtain mix design approval from the contracting officer prior to concrete placement.

An identical concrete mixture previously approved and used within the past 6 months by the MEDOT may be used without further approval, if copies of the previous approval, location and aggregate, fly ash, and pozzolan test results are submitted.

1.6.2 Shop Drawings

1.6.2.1 Formwork

Drawings showing details of formwork including, but not limited to; joints, supports, studding and shoring, and sequence of form and shoring removal. Indicate placement schedule, construction, location and method of forming control joints. Include locations of inserts, conduit, sleeves and other embedded items. Reproductions of contract drawings are unacceptable. Submit form removal schedule indicating element and minimum length of time for form removal.

Design, fabricate, erect, support, brace, and maintain formwork so that it is able to support, without failure, all vertical and lateral loads that may reasonably be anticipated to be applied to the formwork.

1.6.2.2 Reinforcing Steel

Indicate bending diagrams, assembly diagrams, splicing and laps of bars, shapes, dimensions, and details of bar reinforcing, accessories, and concrete cover. Do not scale dimensions from structural drawings to determine lengths of reinforcing bars. Reproductions of contract drawings are unacceptable.

1.6.3 Control Submittals

1.6.3.1 Concrete Curing Plan

Submit proposed materials, methods and duration for curing concrete elements in accordance with ACI 308.1.

1.6.3.2 VOC Content for form release agents, curing compounds, and concrete penetrating sealers

Submit certification for the form release agent, curing compounds, and concrete penetrating sealers that indicate the VOC content of each product.

1.6.3.3 Safety Data Sheets

Submit Safety Data Sheets (SDS) for all materials that are regulated for hazardous health effects. SDS must be readily accessible during each work shift to employees when they are at the construction site.

1.6.4 Test Reports

1.6.4.1 Fly Ash and Pozzolan

Submit test results in accordance with MEDOT Section 701.10for fly ash and pozzolan. Submit test results performed within 6 months of submittal date.

1.6.4.2 Aggregates

Submit test results indicating the aggregates meet the Alkali Silicia Reactivity requirements of MEDOT Section 703.0201.

1.6.5 Quality Control Plan

Develop and submit for approval a concrete quality control program in accordance with the guidelines of ACI 121R and as specified herein. The plan must include approved laboratories. Provide direct oversight for the concrete qualification program inclusive of associated sampling and testing. All quality control reports must be provided to the Contracting Officer, Quality Manager and Concrete Supplier. Maintain a copy of ACI SP-15 and CRSI 10MSP at project site.

1.6.6 Quality Control Personnel Certifications

Submit for approval the responsibilities of the various quality control personnel, including the names and qualifications of the individuals in those positions and a quality control organizational chart defining the

quality control hierarchy and the responsibility of the various positions. Quality control personnel must be employed by the Contractor.

Submit American Concrete Institute certification for the following:

a. CQC personnel responsible for inspection of concrete operations.

b. Lead Foreman or Journeyman of the Concrete Placing, Finishing, and Curing Crews.

c. Field Testing Technicians: ACI Concrete Field Testing Technician, Grade I.

1.6.6.1 Quality Manager Qualifications

The quality manager must hold a current license as a professional engineer in a U.S. state or territory with experience on at least five similar projects. Evidence of extraordinary proven experience may be considered by the Contracting Officer as sufficient to act as the Quality Manager.

1.6.6.2 Field Testing Technician and Testing Agency

Submit data on qualifications of an independent testing agency and technicians for approval by the Contracting Officer prior to performing testing on concrete.

a. Work on concrete under this contract must be performed by an ACI Concrete Field Testing Technician Grade 1 qualified in accordance with ACI SP-2 or equivalent. Equivalent certification programs must include requirements for written and performance examinations as stipulated in ACI SP-2.

b. Testing agencies that perform testing services on reinforcing steel must meet the requirements of ASTM E329.

c. Testing agencies that perform testing services on concrete materials must meet the requirements of ASTM C1077.

1.6.7 Laboratory Qualifications for Concrete Qualification Testing

The concrete testing laboratory must have the necessary equipment and experience to accomplish required testing. The laboratory must meet the requirements of ASTM C1077 and be Cement and Concrete Reference Laboratory (CCRL) inspected.

1.6.8 Laboratory Accreditation

Laboratory and testing facilities must be provided by and at the expense of the Contractor. The laboratories performing the tests must be accredited in accordance with ASTM C1077, including ASTM C78/C78M and ASTM C1260. The accreditation must be current and must include the required test methods, as specified. Furthermore, the testing must comply with the following requirements:

a. Aggregate Testing and Mix Proportioning: Aggregate testing and mixture proportioning studies must be performed by an accredited laboratory and under the direction of a registered professional engineer in a U.S. state or territory competent in concrete materials who is competent in concrete materials and must sign all reports and designs.

b. Acceptance Testing: Furnish all materials, labor, and facilities required for molding, curing, testing, and protecting test specimens at the site and in the laboratory. Furnish and maintain boxes or other facilities suitable for storing and curing the specimens at the site while in the mold within the temperature range stipulated by ASTM C31/C31M.

c. Contractor Quality Control: All sampling and testing must be performed by an approved, onsite, independent, accredited laboratory.

1.7 ENVIRONMENTAL REQUIREMENTS

Do not place concrete when weather conditions detrimentally affect the quality of the finished product. Do not place cement-based concrete when the air temperature is below 40 degrees F in the shade, and at or falling in the next 24 hours. When air temperature is likely to exceed 90 degrees F, the cement-based concrete shall have a temperature not exceeding 90 degrees F when deposited, and the surface of such placed cement-based concrete shall be kept damp with a water fog until the approved curing medium is applied. Halt work when weather conditions are potentially detrimental to the quality of bonding concrete.

1.8 SEQUENCING AND SCHEDULING

Unless otherwise specified, perform the work in such sequence that new work does not damage previously completed work.

PART 2 PRODUCTS

2.1 FORMWORK MATERIALS

All formwork must be built in accordance with MEDOT Section 502.09.

a. Form-facing material in contact with concrete must be lumber, plywood, or metal. Submit product information on proposed form-facing materials if different from that specified herein.

b. Design formwork, shores, reshores, and backshores to support loads transmitted to them and to comply with applicable building code requirements.

c. Design formwork to withstand pressure resulting from placement and vibration of concrete and to maintain specified tolerances.

d. Design formwork to accommodate waterstop materials in joints at locations indicated in Contract Documents.

e. Provide temporary openings in formwork if needed to facilitate cleaning and inspection.

f. Design formwork joints to inhibit leakage of mortar.

g. Do not use earth cuts as forms for vertical or sloping surfaces.

2.1.1 Wood Forms

Provide lumber that is square edged or tongue-and-groove boards, free of raised grain, knotholes, or other surface defects. Provide plywood that

complies with NIST PS 1, B-B concrete form panels or better or AHA A135.4, hardboard for smooth form lining.

2.1.1.1 Concrete Form Plywood (Standard Rough)

Provide plywood that conforms to NIST PS 1, B-B, concrete form, not less than 5/8-inch thick.

2.1.1.2 Overlaid Concrete Form Plywood (Standard Smooth)

Provide plywood that conforms to NIST PS 1, B-B, high density form overlay, not less than 5/8-inch thick.

2.1.2 Steel Forms

Provide steel form surfaces that do not contain irregularities, dents, or sags.

2.2 FORMWORK ACCESSORIES

a. Use commercially manufactured formwork accessories, including ties and hangers.

b. Form ties and accessories must not reduce the effective cover of the reinforcement.

2.2.1 Form Ties

a. Use form ties with ends or end fasteners that can be removed without damage to concrete.

b. Where indicated in Contract Documents, use form ties with integral water barrier plates or other acceptable positive water barriers in walls.

c. The breakback distance for ferrous ties must be at least 2 in..

d. Submit manufacturer's data sheet on form ties.

2.2.2 Waterstops

Submit manufacturer's data sheet on waterstop materials and splices.

2.2.2.1 PVC Waterstop

Polyvinylchloride waterstops must conform to COE CRD-C 572.

2.2.2.2 Rubber Waterstop

Rubber waterstops must conform to COE CRD-C 513.

2.2.2.3 Thermoplastic Elastomeric Rubber Waterstop

Thermoplastic elastomeric rubber waterstops must conform to ASTM D471.

2.2.2.4 Hydrophilic Waterstop

Swellable strip type compound of polymer modified chloroprene rubber that swells upon contact with water must conform to the following requirements

when tested in accordance to ASTM D412: Tensile strength 420 psi minimum; ultimate elongation 600 percent minimum. Hardness must be 50 minimum on the type A durometer and the volumetric expansion ratio in distilled water at 70 degrees F must be 3 to 1 minimum.

2.2.3 Biodegradable Form Release Agent

a. Provide form release agent that is colorless, biodegradable, and has a zero VOC content.

b. Provide product that does not bond with, stain, or adversely affect concrete surfaces and does not impair subsequent treatments of concrete surfaces.

c. Provide form release agent that reduces formwork moisture absorption, and does not contain diesel fuel, petroleum-based lubricating oils, waxes, or kerosene.

d. Submit manufacturer's product data on formwork release agent for use on each form-facing material.

2.2.4 Chamfer Materials

Use lumber materials with dimensions of 3/4 x 3/4 in.

2.2.5 Construction and movement joints

a. Submit details and locations of construction joints in accordance with the requirements herein.

b. Locate construction joints within middle one-third of spans of slabs, beams, and girders.

c. Locate construction joints in walls and columns at underside of slabs, beams, or girders and at tops of footings or slabs.

d. Make construction joints perpendicular to main reinforcement.

e. Provide movement joints where indicated in Contract Documents or in accepted alternate locations.

f. Submit movement joints location and detail if different from those indicated in Contract Documents.

g. Submit manufacturer's data sheet on expansion joint materials.

h. Provide keyways where indicated in Contract Documents.

2.2.6 Other Embedded items

Use sleeves, inserts, anchors, and other embedded items of material and design indicated in Contract Documents.

2.3 CONCRETE MATERIALS

2.3.1 Cementitious Materials and Admixtures

All cementitious materials, admixtures, and water shall be in accordance with MEDOT Section 701, appropriate for the type of concrete specified, and

in accordance with proprietary premix manufacturers recommendations.

2.3.1.1 Fly Ash

Provide Fly Ash in accordance with MEDOT Section 701.10.

2.3.1.2 Cement

Provide mill test reports for all cement materials in accordance with MEDOT Section 701.01.

2.3.2 Water

Water for cleaning, mixing, and curing must be fresh, clean, potable, and free of injurious amounts of oil, acid, salt, or alkali.

a. Water or ice must comply with the requirements of ASTM C1602/C1602M.

b. Minimize the amount of water in the mix. Improve workability by adjusting the grading of the aggregate and using admixture rather than by adding water.

c. Protect mixing water and ice from contamination during storage and delivery.

d. Submit test report showing water complies with ASTM C1602/C1602M.

2.3.3 Aggregate

Aggregates must be in accordance with MEDOT Section 703, appropriate for the type of concrete specified.

2.4 MISCELLANEOUS MATERIALS

2.4.1 Concrete Curing Materials

Provide concrete curing material in accordance with the requirements of MEDOT Section 701.06. Submit product data for concrete curing compounds. Submit manufactures instructions for placement of curing compound.

2.4.2 Nonshrink Grout

Nonshrink grout in accordance with ASTM C1107/C1107M and included on the MEDOT Qualified Product List.

2.4.3 Expansion/Contraction Joint Filler

ASTM D1751 or ASTM D1752 Type I or Type II. Material must be 1/2 inch thick, unless otherwise indicated.

2.4.4 Joint Sealants

Submit manufacturer's product data, indicating VOC content.

2.4.4.1 Horizontal Surfaces, 3 Percent Slope, Maximum

ASTM D6690 or ASTM C920, Type M, Class 25, Use T.

2.4.4.2 Vertical Surfaces Greater Than 3 Percent Slope

ASTM C920, Type M, Grade NS, Class 25, Use T.

2.4.4.3 Preformed Polychloroprene Elastomeric Type

ASTM D2628.

2.4.4.4 Lubricant for Preformed Compression Seals

ASTM D2835.

2.5 CONCRETE MIX DESIGN

Concrete for the vehicle barrier parapet, wedge barrier foundation, and sidewalk must be MEDOT Class LP 5000 psi, in accordance with MEDOT Section 502.05

Concrete for setting the granite curb must be MEDOT Class Fill 3000 psi, in accordance with MEDOT Section 502.05.

2.5.1 Durability

2.5.1.1 Alkali-Aggregate Reaction

Do not use any aggregate susceptible to alkali-carbonate reaction (ACR). All coarse and fine aggregates must be tested for alkali silica reactivity potential in accordance with MEDOT Section 703.0201.

2.5.1.2 Concrete Temperature

The temperature of concrete as delivered must not exceed 95°F.

2.5.2 Trial Mixtures

Trial mixtures must be in accordance to ACI 301.

2.6 REINFORCEMENT

Reinforcing steel must be Grade 60 deformed bars in accordance with MEDOT Section 709.01.

a. Bend reinforcement cold. Fabricate reinforcement in accordance with fabricating tolerances of ACI 117.

b. Submit manufacturer's certified test report for reinforcement.

c. Submit placing drawings showing fabrication dimensions and placement locations of reinforcement and reinforcement supports. Placing drawings must indicate locations of splices, lengths of lap splices, and details of mechanical and welded splices.

d. Submit request with locations and details of splices not indicated in Contract Documents.

2.6.1 Mechanical Reinforcing Bar Connectors

a. Provide 125 percent minimum yield strength of the reinforcement bar.

b. Submit data on mechanical splices demonstrating compliance with this paragraph.

2.6.2 Reinforcing Bar Supports

a. Provide reinforcement support types within structure as required by Contract Documents. Reinforcement supports must conform to CRSI RB4.1. Submit description of reinforcement supports and materials for fastening coated reinforcement if not in conformance with CRSI RB4.1.

b. Legs of supports in contact with formwork must be hot-dip galvanized, or plastic coated after fabrication, or stainless-steel bar supports.

PART 3 EXECUTION

3.1 PREPARATION

Determine quantity of concrete needed and minimize the production of excess concrete. Designate locations or uses for potential excess concrete before the concrete is poured.

3.1.1 General

a. Surfaces against which concrete is to be placed must be free of debris, loose material, standing water, snow, ice, and other deleterious substances before start of concrete placing.

b. Remove standing water without washing over freshly deposited concrete. Divert flow of water through side drains provided for such purpose.

3.1.2 Subgrade Under Slabs on Ground

a. Before construction of slabs on ground, have underground work on pipes and conduits completed and approved.

b. Previously constructed subgrade or fill must be cleaned of foreign materials

c. Finish surface of capillary water barrier under interior slabs on ground must not show deviation in excess of 1/4 inch when tested with a 10-foot straightedge parallel with and at right angles to building lines.

d. Finished surface of subgrade or fill under exterior slabs on ground must not be more than 0.02-foot above or 0.10-foot below elevation indicated.

3.1.3 Edge Forms and Screed Strips for Slabs

a. Set edge forms or bulkheads and intermediate screed strips for slabs to obtain indicated elevations and contours in finished slab surface and must be strong enough to support vibrating bridge screeds or roller pipe screeds if nature of specified slab finish requires use of such equipment.

b. Align concrete surface to elevation of screed strips by use of strike-off templates or approved compacting-type screeds.

3.1.4 Reinforcement and Other Embedded Items

a. Secure reinforcement, joint materials, and other embedded materials in position, inspected, and approved before start of concrete placing.

b. When concrete is placed, reinforcement must be free of materials deleterious to bond. Reinforcement with rust, mill scale, or a combination of both will be considered satisfactory, provided minimum nominal dimensions, nominal weight, and minimum average height of deformations of a hand-wire-brushed test specimen are not less than applicable ASTM specification requirements.

3.2 FORMS

Build all formwork in accordance with MEDOT Section 502.09.

3.2.1 Coating

a. Cover formwork surfaces with an acceptable material that inhibits bond with concrete.

b. If formwork release agent is used, apply to formwork surfaces in accordance with manufacturer's recommendations before placing reinforcement. Remove excess release agent on formwork prior to concrete placement.

c. Do not allow formwork release agent to contact reinforcement or hardened concrete against which fresh concrete is to be placed.

3.2.2 Removal of Forms and Supports

a. If vertical formed surfaces require finishing, remove forms as soon as removal operations will not damage concrete.

b. Remove top forms on sloping surfaces of concrete as soon as removal will not allow concrete to sag. Perform repairs and finishing operations required. If forms are removed before end of specified curing period, provide curing and protection.

c. Do not damage concrete during removal of vertical formwork for columns, walls, and sides of beams. Perform needed repair and finishing operations required on vertical surfaces. If forms are removed before end of specified curing period, provide curing and protection.

3.3 PLACING REINFORCEMENT AND MISCELLANEOUS MATERIALS

a. Unless otherwise specified, placing reinforcement and miscellaneous materials must be in accordance to ACI 301. Provide bars, welded wire reinforcement, wire ties, supports, and other devices necessary to install and secure reinforcement.

b. Reinforcement must not have rust, scale, oil, grease, clay, or foreign substances that would reduce the bond. Rusting of reinforcement is a basis of rejection if the effective cross-sectional area or the nominal weight per unit length has been reduced. Remove loose rust prior to placing steel. Tack welding is prohibited.

c. Concrete cover for reinforcement must be a minimum of 3-inches unless noted otherwise.

3.3.1 Reinforcement Supports

Provide reinforcement support in accordance with CRSI RB4.1 and ACI 301 Section 3 requirements.

3.3.2 Splicing

As indicated in the Contract Documents. For splices not indicated follow ACI 301. Do not splice at points of maximum stress.

3.3.3 Future Bonding

Plug exposed, threaded, mechanical reinforcement bar connectors with a greased bolt. Provide bolt threads that match the connector. Countersink the connector in the concrete. Caulk the depression after the bolt is installed.

3.3.4 Setting Miscellaneous Material

Place and secure anchors and bolts, pipe sleeves, conduits, and other such items in position before concrete placement and support against displacement. Plumb anchor bolts and check location and elevation. Temporarily fill voids in sleeves with readily removable material to prevent the entry of concrete.

3.3.5 Fabrication

Shop fabricate reinforcing bars to conform to shapes and dimensions indicated for reinforcement, and as follows:

a. Provide fabrication tolerances that are in accordance with ACI 117.

b. Provide hooks and bends that are in accordance with the Contract Documents.

Deliver reinforcing bars bundled, tagged, and marked. Tags must be metal with bar size, length, mark, and other information pressed in by machine. Marks must correspond with those used on the placing drawings.

Do not use reinforcement that has any of the following defects:

a. Bar lengths, depths, and bends beyond specified fabrication tolerances

b. Bends or kinks not indicated on drawings or approved shop drawings

c. Bars with reduced cross-section due to rusting or other cause

Replace defective reinforcement with reinforcement having the required shape, form, and cross-section area.

3.3.6 Placing Reinforcement

Place reinforcement in accordance with ACI 301.

For slabs on grade (over earth or over capillary water barrier) and for footing reinforcement, support bars or welded wire reinforcement on precast concrete blocks, spaced at intervals required by size of reinforcement, to keep reinforcement the minimum height specified above the underside of slab

or footing.

Provide reinforcement that is supported and secured together to prevent displacement by construction loads or by placing of wet concrete, and as follows:

a. Provide supports for reinforcing bars that are sufficient in number and have sufficient strength to carry the reinforcement they support, and in accordance with ACI 301 and CRSI 10MSP. Do not use supports to support runways for concrete conveying equipment and similar construction loads.

b. Equip supports on ground and similar surfaces with sand-plates.

c. Support welded wire reinforcement as required for reinforcing bars.

d. Secure reinforcements to supports by means of tie wire. Wire must be black, soft iron wire, not less than 16 gage.

e. Reinforcement must be accurately placed, securely tied at intersections, and held in position during placing of concrete by spacers, chairs, or other approved supports. Point wire-tie ends away from the form. Unless otherwise indicated, numbers, type, and spacing of supports must conform to the Contract Documents.

f. Bending of reinforcing bars partially embedded in concrete is not permitted.

3.3.7 Spacing of Reinforcing Bars

a. Spacing must be as indicated in the Contract Documents.

b. Reinforcing bars may be relocated to avoid interference with other reinforcement, or with conduit, pipe, or other embedded items. If any reinforcing bar is moved a distance exceeding one bar diameter or specified placing tolerance, resulting rearrangement of reinforcement is subject to preapproval by the Contracting Officer.

3.4 BATCHING, MEASURING, MIXING, AND TRANSPORTING CONCRETE

In accordance with ASTM C94/C94M, ACI 301, ACI 302.1R and ACI 304R, except as modified herein. Batching equipment must be such that the concrete ingredients are consistently measured within the following tolerances: 1 percent for cement and water, 2 percent for aggregate, and 3 percent for admixtures. Furnish mandatory batch ticket information for each load of ready mix concrete.

3.4.1 Measuring

Make measurements at intervals as specified in paragraphs SAMPLING and TESTING.

3.4.2 Mixing

a. Mix concrete in accordance with ASTM C94/C94M, ACI 301 and ACI 304R.

b. Machine mix concrete. Begin mixing within 30 minutes after the cement has been added to the aggregates. Place concrete within 90 minutes of either addition of mixing water to cement and aggregates or addition of

cement to aggregates if the concrete temperature is less than 84 degrees F.

c. Place concrete within 60 minutes if the concrete temperature is greater than 84 degrees F except as follows: if set retarding admixture is used and slump requirements can be met, limit for placing concrete may remain at 90 minutes. Additional water may be added, provided that no concrete has been placed and that both the specified maximum slump and submitted water-cementitious material ratio are not exceeded and the required concrete strength is still met. When additional water is added, an additional 30 revolutions of the mixer at mixing speed is required.

3.4.3 Transporting

Transport concrete from the mixer to the forms as rapidly as practicable. Prevent segregation or loss of ingredients. Clean transporting equipment thoroughly before each batch. Do not use aluminum pipe or chutes. Remove concrete which has segregated in transporting and dispose of as directed.

3.5 MOCK UP

All exposed concrete must match the color of the existing concrete on the bridge. Prior to placing concrete, perform a mockup of the mix design to confirm the color and texture of the concrete matches the existing concrete elements of the bridge. The mock-up needs to be inspected and approved by the Government prior to placing concrete for the project.

3.6 PLACING CONCRETE

Place concrete in accordance with MEDOT 502.10.

3.6.1 Cold Weather

Cold weather concrete must meet the requirements of ACI 306.1 unless otherwise specified. Do not allow concrete temperature to decrease below 50 degrees F. Obtain approval prior to placing concrete when the ambient temperature is below 40 degrees F or when concrete is likely to be subjected to freezing temperatures within 24 hours. Cover concrete and provide sufficient heat to maintain 50 degrees F minimum adjacent to both the formwork and the structure while curing. Limit the rate of cooling to 37 degrees F in any one hour and 50 degrees F per 24 hours after heat application.

3.6.2 Hot Weather

Hot weather concrete must meet the requirements of ACI 305.1 unless otherwise specified. Maintain required concrete temperature using Figure 4.2 in ACI 305R to prevent the evaporation rate from exceeding 0.2 pound of water per square foot of exposed concrete per hour. Cool ingredients before mixing or use other suitable means to control concrete temperature and prevent rapid drying of newly placed concrete. Shade the fresh concrete as soon as possible after placing. Start curing when the surface of the fresh concrete is sufficiently hard to permit curing without damage. Provide water hoses, pipes, spraying equipment, and water hauling equipment, where job site is remote to water source, to maintain a moist concrete surface throughout the curing period. Provide burlap cover or other suitable, permeable material with fog spray or continuous wetting of the concrete when weather conditions prevent the use of either liquid

membrane curing compound or impervious sheets. For vertical surfaces, protect forms from direct sunlight and add water to top of structure once concrete is set.

3.6.3 Bonding

Surfaces of set concrete at joints, must be roughened and cleaned of laitance, coatings, loose particles, and foreign matter. Roughen surfaces in a manner that exposes the aggregate uniformly and does not leave laitance, loosened particles of aggregate, nor damaged concrete at the surface.

3.7 WASTE MANAGEMENT

Provide as specified in the Waste Management Plan and as follows.

3.7.1 Mixing Equipment

Before concrete pours, designate for cleaning out concrete mixing trucks. Minimize water used to wash equipment.

3.7.2 Other Waste

Identify concrete manufacturer's or supplier's policy for collection or return of construction waste, unused material, deconstruction waste, and/or packaging material.

3.8 FINISHING

Concrete finishing shall be in accordance with MEDOT Section 502.13.

3.8.1 Defects

Repair surface defects in accordance with ACI 301 Section 5.

3.9 JOINTS

3.9.1 Construction Joints

Make and locate joints not indicated so as not to impair strength and appearance of the structure, as approved. Joints must be perpendicular to main reinforcement. Reinforcement must be continued and developed across construction joints. Locate construction joints as follows:

3.9.2 Isolation Joints in Slabs on Ground

a. Fill joints with premolded joint filler strips 1/2 inch thick, extending full concrete depth. Install filler strips at proper level below finish floor elevation with a slightly tapered, dress-and-oiled wood strip temporarily secured to top of filler strip to form a groove not less than 3/4 inch in depth where joint is sealed with sealing compound and not less than 1/4 inch in depth where joint sealing is not required. Remove wood strip after concrete has set. Contractor must clean groove of foreign matter and loose particles after surface has dried.

3.9.3 Contraction Joints in Slabs on Ground

a. Provide joints to form panels.

b. Under and on exact line of each control joint, cut 50 percent of welded wire reinforcement before placing concrete.

c. Sawcut contraction joints into slab on ground in accordance with ACI 301 Section 5.

d. Sawcutting will be limited to within 12 hours after set and at 1/4 slab depth.

3.10 CURING AND PROTECTION

Curing and protection in accordance with MEDOT Section 502.14, unless otherwise specified. Begin curing immediately following form removal. Avoid damage to concrete from vibration created by movement of equipment in the vicinity, disturbance of formwork or protruding reinforcement, and any other activity resulting in ground vibrations. Protect concrete from injurious action by sun, rain, flowing water, frost, mechanical injury, tire marks, and oil stains. Do not allow concrete to dry out from time of placement until the expiration of the specified curing period. Do not use membrane-forming compound on surfaces where appearance would be objectionable, on any surface to be painted, where coverings are to be bonded to the concrete, or on concrete to which other concrete is to be bonded. If forms are removed prior to the expiration of the curing period, provide another curing procedure specified herein for the remaining portion of the curing period.

3.10.1 Protection After Curing

Protect finished concrete surfaces from damage by construction operations.

3.11 FIELD QUALITY CONTROL

3.11.1 Concrete Sampling

ASTM C172/C172M. Collect samples of fresh concrete to perform tests specified. ASTM C31/C31M for making test specimens.

3.11.2 Concrete Testing

3.11.2.1 Slump Tests

ASTM C143/C143M. Take concrete samples during concrete placement/discharge. The maximum slump may be increased as specified with the addition of an approved admixture provided that the water-cementitious material ratio is not exceeded. Perform tests at commencement of concrete placement, when test cylinders are made, and for each batch (minimum) or every 20 cubic yards (maximum) of concrete.

3.11.2.2 Temperature Tests

Test the concrete delivered and the concrete in the forms. Perform tests in hot or cold weather conditions (below 50 degrees F and above 80 degrees F) for each batch (minimum) or every 20 cubic yards (maximum) of concrete, until the specified temperature is obtained, and whenever test cylinders and slump tests are made.

3.11.2.3 Compressive Strength Tests

ASTM C39/C39M. Make six 6 inch by 12 inch test cylinders for each set of tests in accordance with ASTM C31/C31M, ASTM C172/C172M and applicable requirements of ACI 305R and ACI 306R. Take precautions to prevent evaporation and loss of water from the specimen. Test two cylinders at 7 days, two cylinders at 28 days, and hold two cylinder in reserve. Each strength test result must be the average of two cylinders from the same concrete sample tested at 28 days. Concrete compressive tests must meet the requirements of this section, the Contract Document, and ACI 301. Retest locations represented by erratic core strengths. Where retest does not meet concrete compressive strength requirements submit a mitigation or remediation plan for review and approval by the contracting officer. Repair core holes with nonshrink grout. Match color and finish of adjacent concrete.

3.11.2.4 Air Content

ASTM C173/C173M or ASTM C231/C231M for normal weight concrete. Test air-entrained concrete for air content at the same frequency as specified for slump tests.

3.11.2.5 Unit Weight of Structural Concrete

ASTM C567/C567M and ASTM C138/C138M. Determine unit weight of normal weight concrete. Perform test for every 20 cubic yards maximum.

3.11.2.6 Strength of Concrete Structure

The strength of the concrete structure will be considered to be deficient if any of the following conditions are identified:

a. Failure to meet compressive strength tests as evaluated.

b. Reinforcement not conforming to requirements specified.

c. Concrete which differs from required dimensions or location in such a manner as to reduce strength.

d. Concrete curing and protection of concrete against extremes of temperature during curing, not conforming to requirements specified.

e. Concrete subjected to damaging mechanical disturbances, particularly load stresses, heavy shock, and excessive vibration.

f. Poor workmanship likely to result in deficient strength.

Where the strength of the concrete structure is considered deficient submit a mitigation or remediation plan for review and approval by the contracting officer.

3.11.2.7 Non-Conforming Materials

Factors that indicate that there are non-conforming materials include (but not limited to) excessive compressive strength, inadequate compressive strength, excessive slump, excessive voids and honeycombing, concrete delivery records that indicate excessive time between mixing and placement, or excessive water was added to the mixture during delivery and placement. Any of these indicators alone are sufficient reason for the Contracting

Officer to request additional sampling and testing.

Investigations into non-conforming materials must be conducted at the Contractor's expense. The Contractor must be responsible for the investigation and must make written recommendations to adequately mitigate or remediate the non-conforming material. The Contracting Officer may accept, accept with reduced payment, require mitigation, or require removal and replacement of non-conforming material at no additional cost to the Government.

3.11.2.8 Testing Concrete Structure for Strength

When there is evidence that strength of concrete structure in place does not meet specification requirements or there are non-conforming materials, make cores drilled from hardened concrete for compressive strength determination in accordance with ASTM C42/C42M, and as follows:

a. Take at least three representative cores from each member or area of concrete-in-place that is considered potentially deficient. Location of cores will be determined by the Contracting Officer.

b. Test cores after moisture conditioning in accordance with ASTM C42/C42M if concrete they represent is more than superficially wet under service.

c. Air dry cores, (60 to 80 degrees F with relative humidity less than 60 percent) for 7 days before test and test dry if concrete they represent is dry under service conditions.

d. Strength of cores from each member or area are considered satisfactory if their average is equal to or greater than 85 percent of the 28-day design compressive strength of the class of concrete.

Fill core holes solid with patching mortar and finished to match adjacent concrete surfaces.

Correct concrete work that is found inadequate by core tests in a manner approved by the Contracting Officer.

3.12 REPAIR, REHABILITATION AND REMOVAL

Before the Contracting Officer accepts the structure the Contractor must inspect the structure for cracks, damage and substandard concrete placements that may adversely affect the service life of the structure. A report documenting these defects must be prepared which includes recommendations for repair, removal or remediation must be submitted to the Contracting Officer for approval before any corrective work is accomplished.

3.12.1 Crack Repair

Prior to final acceptance, all cracks in excess of 0.02 inches wide must be documented and repaired. The proposed method and materials to repair the cracks must be submitted to the Contracting Officer for approval. The proposal must address the amount of movement expected in the crack due to temperature changes and loading.

3.12.2 Repair of Weak Surfaces

Weak surfaces are defined as mortar-rich, rain-damaged, uncured, or containing exposed voids or deleterious materials. Concrete surfaces with

weak surfaces less than 1/4 inch thick must be diamond ground to remove the weak surface. Surfaces containing weak surfaces greater than 1/4 inch thick must be removed and replaced or mitigated in a manner acceptable to the Contracting Officer.

3.12.3 Failure of Quality Assurance Test Results

Proposed mitigation efforts by the Contractor must be approved by the Contracting Officer prior to proceeding.

3.13 PROTECTION

Do not permit vehicular or heavy equipment traffic on the constructed surfaces. Permit light local traffic on the concrete surfaces at the end of the curing period, if approved by the Contracting Officer. Where shelter or other protective measures are provided for construction during inclement weather, maintain such protective measures until the concrete has cured and discontinuance of the measures is authorized.

-- End of Section --

SECTION 05 05 23.16

STRUCTURAL WELDING
08/18

PART 1 GENERAL

Work under this section covers the requirements for all welding as shown on the Contract Drawings and specified herein.

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 360	(2016) Specification for Structural Steel Buildings

AMERICAN SOCIETY FOR NONDESTRUCTIVE TESTING (ASNT)

ANSI/ASNT CP-189	(2020) ASNT Standard for Qualification and Certification of Nondestructive Testing Personnel
ASNT SNT-TC-1A	(2020) Recommended Practice for Personnel Qualification and Certification in Nondestructive Testing

AMERICAN WELDING SOCIETY (AWS)

AWS A2.4	(2012) Standard Symbols for Welding, Brazing and Nondestructive Examination
AWS D1.1/D1.1M	(2020; Errata 1 2021) Structural Welding Code - Steel
AWS D1.5M/D1.5	(2020; Errata 1 2022) Bridge Welding Code
AWS QC1	(2016) Specification for AWS Certification of Welding Inspectors
AWS Z49.1	(2021) Safety in Welding and Cutting and Allied Processes

ASTM INTERNATIONAL (ASTM)

ASTM E165/E165M	(2018) Standard Practice for Liquid Penetrant Examination for General Industry
ASTM E709	(2021) Standard Guide for Magnetic Particle Testing

1.2 SUBMITTALS

Government approval is required for submittals with a "G" classification.

Submittals not having a "G" classification are for Contractor Quality Control approval. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Welding Quality Assurance Plan; G

SD-03 Product Data

Welding Procedure Qualifications; G

Welder, Welding Operator, and Tacker Qualification

Previous Qualifications

Pre-Qualified Procedures; G

Welding Electrodes and Rods

SD-06 Test Reports

Nondestructive Testing

Weld Inspection Log

SD-07 Certificates

Certified Welding Procedure Specifications (WPS)

Certified Procedure Qualification Records (PQR)

Certified Welder Performance Qualifications (WPQ)

Certified Welding Inspector

Nondestructive Testing Personnel

Inspector And Ndt Personnel Requirements; G

1.3 QUALITY ASSURANCE

Except for pre-qualified (in accordance with AWS D1.5M/D1.5) and previously qualified procedures, each Contractor performing welding must record in detail and qualify the welding procedure specification for any welding procedure followed in the fabrication of weldments. Conform welding procedure qualifications to AWS D1.5M/D1.5 and to the specifications in this section. Submit for approval copies of the welding procedure specification and the procedure qualification records for each type of welding being performed. Submission of the welder, welding operator, or tacker qualification test records is also required. Approval of any procedure, however, does not relieve the Contractor of the sole responsibility for producing a finished structure meeting all the specified requirements. Submit this information on the forms in Annex M of AWS D1.5M/D1.5. Individually identify and clearly reference on the detail drawings and erection drawings all welding procedure specifications, or suitably key them to the contract drawings. In case of conflict between this specification and AWS D1.5M/D1.5, this specification governs.

1.3.1 General Requirements

Fabricate work in an AISC Certified Fabrication Plant, Category BU. Erect work by an AISC Certified Erector, Category CSE.

a. For Structural Projects, provide documentation of the following:

(1) Component Thickness 1/8 inch and greater: Qualification documents (WPS, PQR, and WPQ) in accordance with AWS D1.5M/D1.5.

b. For other applications, provide documentation of the following:

(1) Submit the Certified Welding Procedure Specifications (WPS), and Certified Procedure Qualification Records (PQR) to the Contracting Officer for approval.

(2) Submit the Certified Welder Performance Qualifications (WPQ) to the Contracting Officer for approval within fifteen calendar days prior to any employee welding on the project material.

1.3.2 Previous Qualifications

Welding procedures previously qualified by test in accordance with AWS D1.5M/D1.5, may be accepted for this contract without re-qualification, upon receipt of the test results, if the following conditions are met:

a. Testing was performed by an approved testing laboratory, technical consultant, or the Contractor's approved quality control organization.

b. The qualified welding procedure conforms to the requirements of this specification and is applicable to welding conditions encountered under this contract.

c. The welder, welding operator, and tacker qualification tests conform to the requirements of this specification and are applicable to welding conditions encountered under this contract.

1.3.3 Pre-qualified Procedures

Welding procedures which are considered pre-qualified as specified in AWS D1.5M/D1.5 will be accepted without further qualification. Submit for approval a listing or an annotated drawing to indicate the joints not pre-qualified. Procedure qualification is mandatory for these joints.

1.3.4 Welder, Welding Operator, and Tacker Qualification

Each welder, welding operator, and tacker assigned to work on this contract must be qualified in accordance with the applicable requirements of AWS D1.5M/D1.5 and as specified in this section. Welders, welding operators, and tackers who make acceptable procedure qualification test welds will be considered qualified for the welding procedure used within the applicable essential variables for welder qualification.

1.3.4.1 Previous Personnel Qualifications

At the discretion of the Contracting Officer, welders, welding operators, and tackers qualified by test within the previous 6 months may be accepted for this contract without re-qualification if all the following conditions are met:

a. Copies of the welding procedure specifications, the procedure qualification test records, and the welder, welding operator, and tacker qualification test records are submitted and approved in accordance with the specified requirements for detail drawings.

b. Testing was performed by an approved testing laboratory, technical consultant, or the Contractor's approved quality control organization.

c. The welder, welding operator, and tacker qualification tests conform to the requirements of this specification and are applicable to welding conditions encountered under this contract.

1.3.4.2 Certificates

Before assigning any welder, welding operator, or tacker to work under this contract, submit the names and certification that each individual is qualified as specified. State in the certification the type of welding and positions for which the welder, welding operator, or tacker is qualified, the code and procedure under which the individual is qualified, the date qualified, and the name of the firm and person certifying the qualification tests. Keep the certification current, on file, and furnish 3 copies.

1.3.4.3 Renewal of Qualification

Re-qualification of a welder or welding operator is required under any of the following conditions:

a. It has been more than 6 months since the welder or welding operator has used the specific welding process for which he is qualified.

b. There is specific reason to question the welder or welding operator's ability to make welds that meet the requirements of these specifications.

c. The welder or welding operator was qualified by an employer other than those firms performing work under this contract, and a qualification test has not been taken within the past 12 months. Submit as evidence of conformance all records showing periods of employment, name of employer where welder, or welding operator, was last employed, and the process for which qualified.

d. A tacker who passes the qualification test is considered eligible to perform tack welding indefinitely in the positions and with the processes for which he/she is qualified, unless there is some specific reason to question the tacker's ability or there has been a gap greater than 6 months since he/she last used the process. In such a case, the tacker is required to pass the prescribed tack welding test.

1.3.5 Inspector Qualification

Submit certificates indicating that certified welding inspectors meet the requirements of AWS QC1. Submit qualifications for nondestructive testing personnel in accordance with the requirements of ANSI/ASNT CP-189 for Levels I or II in the applicable nondestructive testing method. Level I inspectors must have direct supervision of a Level II inspector.

1.3.6 Symbols and Safety

Use symbols in accordance with AWS A2.4, unless otherwise indicated. Follow safe welding practices and safety precautions during welding in conformance with AWS Z49.1.

PART 2 PRODUCTS

2.1 SYSTEM DESCRIPTION

It is assumed that the existing steel on the bridge is weldable, however confirm the weldability of the steel prior to the start of work. Requirements for preheating, interpass temperature control, and post weld stress relief must be determined prior to commencement of work. Welding code for steel cladding and attachments must be AWS D1.1/D1.1M. All others shall comply with AWS D1.5M/D1.5.

Conform the design of welded connections to AISC 360, unless otherwise indicated or specified. Material with welds will not be accepted unless the welding is specified or indicated on the drawings or otherwise approved. Perform welding as specified in this section, except where additional requirements are shown on the drawings or are specified in other sections. Do not commence welding until welding procedures, inspectors, nondestructive testing personnel, welders, welding operators, and tackers have been qualified and the submittals approved by the Contracting Officer. Perform all testing at or near the work site. Maintain records of the test results obtained in welding procedure, welder, welding operator, and tacker performance qualifications.

2.2 WELDING EQUIPMENT AND MATERIALS

Provide all welding equipment, welding electrodes and rods, welding wire, and fluxes capable of producing satisfactory welds when used by a qualified welder or welding operator. Provide welding equipment and materials that comply with the applicable requirements of AWS D1.5M/D1.5. Submit product data on welding electrodes and rods.

PART 3 EXECUTION

3.1 WELDING OPERATIONS

3.1.1 Requirements

Conform workmanship and techniques for welded construction to the requirements of AWS D1.5M/D1.5 and AISC 360. When AWS D1.5M/D1.5 and the AISC 360 specification conflict, the requirements of AWS D1.5M/D1.5 govern.

3.1.2 Identification

Identify all welds in one of the following ways:

a. Submit written records to indicate the location of welds made by each welder, welding operator, or tacker.

b. Identify all work performed by each welder, welding operator, or tacker with an assigned number, letter, or symbol to identify welds made by that individual. The Contracting Officer may require welders, welding operators, and tackers to apply their symbol next to the weld by means of rubber stamp, felt-tipped marker with waterproof ink, or other

methods that do not cause an indentation in the metal. Place the identification mark for seam welds adjacent to the weld at 3 foot intervals. Identification with die stamps or electric etchers is not allowed.

3.1.3 Electrodes

Select welding electrodes must be for the appropriate steel, alloys, positions, methods, and conditions prevailing for the intended use. All welding electrodes must be such as will best develop the full strength and equivalent characteristics of the respective steel sections being welded. Welding materials which are not readily identifiable, or on which the flux has been damaged, or which are otherwise of questionable acceptability, must not be used.

3.1.4 Preparation

Shearing, flame cutting, beveling and chipping must be done carefully and accurately in such a manner to produce a smooth and uniform surface. Whenever possible, this work must be done with automated or mechanically guided tools. All edges, including bevels, must be left free of slag, deep scars and gouges.

3.1.5 Beveling

Particular importance must be assigned to maintaining joint detail dimensions, included groove angle, and joint root opening clearance during fit-up activities. Any beveled edge that has been damaged or does not conform to the standard joint welding detail shown in the drawings must be restored to the minimum acceptable tolerance prior to its incorporation into the structure.

3.1.6 Pre-Heating

Preheating of base metal prior to welding must be in accordance with the qualified welding procedure.

3.1.7 Weather

Welding is not permitted during conditions of precipitation or wind speeds exceeding the conditions for which a welding procedure has been qualified, unless in a protective environment.

3.1.8 Sequencing

Weld bead sequencing must be typically as shown in the applicable welding procedure. Weld sequencing must be such as to minimize residual stress build up.

3.2 CONNECTIONS

3.2.1 Joints for Rolled Shapes, Plates and Tubes

All fabrication involving the connection of steelwork by welding must conform to the weld size and joint preparation shown on the drawings. Unless otherwise indicated, sections must be joined with complete joint penetration groove welds in such a manner as to develop 100 percent joint efficiency.

3.3 QUALITY CONTROL

Perform visual inspections on all welds to determine conformance. Perform testing using an approved inspection or testing laboratory or technical consultant; or if approved, the Contractor's inspection and testing personnel may be used instead of the commercial inspection or testing laboratory or technical consultant. A Certified Welding Inspector must perform visual inspection on 100 percent of all welds. Document this inspection in the Visual Weld Inspection Log. Test 50% of CJP welds using ultrasonic testing per AWS D1.5M/D1.5. Randomly test 50% of all PJP and fillet welds or as indicated by magnetic particle or dye penetrant testing. Verify the welds conform to paragraph STANDARDS OF ACCEPTANCE. Conform procedures and techniques for inspection with applicable requirements of AWS D1.5M/D1.5, ASTM E165/E165M, and ASTM E709. Submit a Welding Quality Assurance Plan and records of tests and inspections.

3.4 STANDARDS OF ACCEPTANCE

Conform dimensional tolerances for welded construction, details of welds, and quality of welds with the applicable requirements of AWS D1.5M/D1.5 and the contract drawings. Submit all records of nondestructive testing.

3.4.1 Nondestructive Testing

The welding is subject to inspection and tests in the mill, shop, and field. Inspection and tests in the mill or shop do not relieve the Contractor of the responsibility to furnish weldments of satisfactory quality. When materials or workmanship do not conform to the specification requirements, the Government reserves the right to reject material or workmanship or both at any time before final acceptance of the structure containing the weldment. Any indication of a defect is regarded as a defect, unless re-evaluation by nondestructive methods or by surface conditioning shows that no unacceptable defect is present. Submit all records of nondestructive testing in accordance with paragraph STANDARDS OF ACCEPTANCE.

3.4.1.1 Radiographic Inspection (RT)

All "critical welds" must be radiographically inspected, throughout their full length where possible. Those "critical welds" which cannot be radiographically inspected must be tested by ultrasonic methods as specified hereinafter.

3.4.1.2 Magnetic Particle Inspecition (MT)

All "critical welds" not amenable to radiographic examinations must be cleared by magnetic particle inspection prior to performing ultrasonic inspection.

3.4.1.3 Ultrasonic Inspection (UT)

All "critical welds" not amenable to radiographic examination must be inspected by ultrasonic methods following magnetic particle inspection. Butt welds made from one side must be checked to determine that the depth of penetration into the joint root meets the requirements of the design welding details.

3.4.2 Destructive Tests

Make all repairs when metallographic specimens are removed from any part of a structure. Employ only qualified welders or welding operators, and use the proper joints and welding procedures, including peening or heat treatment if required, to develop the full strength of the members and joints cut and to relieve residual stress.

3.5 GOVERNMENT INSPECTION AND TESTING

In addition to the inspection and tests performed for quality control, the Government may perform inspection and testing for acceptance to the extent determined by the Contracting Officer. The costs of such inspection and testing will be borne by the Contractor if unsatisfactory welds are discovered, or by the Government if the welds are satisfactory. The work may be performed by the Government's own forces or under a separate contract for inspection and testing. The Government reserves the right to perform supplemental nondestructive and destructive tests to determine compliance with paragraph STANDARDS OF ACCEPTANCE.

3.6 INSPECTION OF PRODUCTION WELDING

Provide all completed field test reports to the Contracting Officer. Provide the services of an independent certified and approved NDT weld inspector to assure all welds are in accordance with the contract documents.

3.6.1 Inspector and NDT Personnel Requirements

a. Welding Inspectors: Personnel performing weld inspections must be AWS Certified Welding Inspectors (CWI) qualified and certified in accordance with the provisions of AWS QC1. Certified Welding Inspectors may be supported by assistant welding inspectors (not necessarily qualified to AWS QC1) who may perform specific inspection functions under the supervision of a CWI.

b. Nondestructive Testing Personnel: Personnel performing nondestructive testing must be qualified in accordance with the American Society for Nondestructive Testing Recommended Practice No. ASNT SNT-TC-1A. Only individuals qualified for NDT LEVEL I and working under the NDT LEVEL II or individuals qualified for NDT Level II may perform nondestructive testing.

c. Area Preparation: Prior to inspection of the work, clean the working area sufficiently to allow access to the work. Furnish, install and maintain in a safe operating condition, the necessary scaffolding, ladders, walkways, lighting, etc., to allow for safe and thorough inspection by the COTR.

d. Access to Work: Technicians engaged in non-destructive test activities must have access to the fabricating facility in general and area of testing in particular. Do not interfere with testing activities and allow adequate time for inspection.

e. Surface Preparation: Clean all major welds of slag, spatter, dirt, grease, oil and loose scale to aid in the visual inspection of those welds. The surface condition for properly applied welds must be adequate for proper interpretation of test results; therefore, any additional preparation of surfaces necessary, prior to instituting specific nondestructive mediums, must be provided.

3.6.2 Weld Classification

All welds must be subject to visual examination. Welds vital to the strength and integrity of the structure are defined as "critical welds" and shall be subject to nondestructive examination by means other than visual. Welds designated as critical shall include:

a. Splices in primary structural members.

b. Joints in primary structure (tubular and otherwise).

c. Plate-to-support connections.

3.7 CORRECTIONS AND REPAIRS

If inspection or testing indicates defects in the weld joints, repair defective welds using a qualified welder or welding operator as applicable. Conduct corrections in accordance with the requirements of AWS D1.5M/D1.5 and the specifications. Repair all defects in accordance with the approved procedures. Repair defects discovered between passes before additional weld material is deposited. Wherever a defect is removed and repair by welding is not required, blend the affected area into the surrounding surface to eliminate sharp notches, crevices, or corners. After a defect is thought to have been removed, and before re-welding, examine the area by suitable methods to ensure that the defect has been eliminated. Repaired welds must meet the inspection requirements for the original welds.

3.7.1 Radiographic Inspection

Weld areas containing defects exceeding the standards of acceptance in AWS D1.5M/D1.5 as revealed by radiography, must be repaired and additional radiographs of the repaired areas must be made at no expense to the Government.

-- End of Section --

SECTION 05 12 00

STRUCTURAL STEEL
08/18, CHG 2: 05/21

PART 1 GENERAL

Work under this section covers the requirements for the structural steel, fasteners, and the steel railings as shown on the Contract Drawings and specified herein.

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 303	(2016) Code of Standard Practice for Steel Buildings and Bridges
AISC 325	(2017) Steel Construction Manual
AISC 326	(2009) Detailing for Steel Construction
AISC 360	(2016) Specification for Structural Steel Buildings

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

ASME B46.1	(2020) Surface Texture, Surface Roughness, Waviness and Lay

AMERICAN WELDING SOCIETY (AWS)

AWS A2.4	(2012) Standard Symbols for Welding, Brazing and Nondestructive Examination
AWS D1.1/D1.1M	(2020; Errata 1 2021) Structural Welding Code - Steel
AWS D1.5M/D1.5	(2020; Errata 1 2022) Bridge Welding Code

ASTM INTERNATIONAL (ASTM)

ASTM A6/A6M	(2021) Standard Specification for General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling
ASTM A29/A29M	(2020) Standard Specification for General Requirements for Steel Bars, Carbon and Alloy, Hot-Wrought
ASTM A36/A36M	(2019) Standard Specification for Carbon Structural Steel
ASTM A53/A53M	(2022) Standard Specification for Pipe,

	Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
ASTM A123/A123M	(2017) Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
ASTM A143/A143M	(2007; R 2020) Standard Practice for Safeguarding Against Embrittlement of Hot-Dip Galvanized Structural Steel Products and Procedure for Detecting Embrittlement
ASTM A153/A153M	(2016a) Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
ASTM A307	(2021) Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength
ASTM A500/A500M	(2021a) Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes
ASTM A563	(2015) Standard Specification for Carbon and Alloy Steel Nuts
ASTM A780/A780M	(2020) Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings
ASTM A992/A992M	(2020) Standard Specification for Structural Steel Shapes
ASTM B695	(2021) Standard Specification for Coatings of Zinc Mechanically Deposited on Iron and Steel
ASTM C827/C827M	(2016) Standard Test Method for Change in Height at Early Ages of Cylindrical Specimens of Cementitious Mixtures
ASTM C1107/C1107M	(2020) Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink)
ASTM F436/F436M	(2019) Standard Specification for Hardened Steel Washers Inch and Metric Dimensions
ASTM F844	(2019) Standard Specification for Washers, Steel, Plain (Flat), Unhardened for General Use
ASTM F959/F959M	(2017a) Standard Specification for Compressible-Washer-Type Direct Tension Indicators for Use with Structural Fasteners, Inch and Metric Series

ASTM F1136/F1136M	(2011) Standard Specification for Zinc/Aluminum Corrosion Protective Coatings for Fasteners
ASTM F1554	(2020) Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength
ASTM F2329/F2329M	(2015) Standard Specification for Zinc Coating, Hot-Dip, Requirements for Application to Carbon and Alloy Steel Bolts, Screws, Washers, Nuts, and Special Threaded Fasteners
ASTM F2833	(2011; R 2017) Standard Specification for Corrosion Protective Fastener Coatings with Zinc Rich Base Coat and Aluminum Organic/Inorganic Type
ASTM F3125/F3125M	(2019) Standard Specification for High Strength Structural Bolts and Assemblies, Steel and Alloy Steel, Heat Treated, Inch Dimensions 120 ksi and 150 ksi Minimum Tensile Strength, and Metric Dimensions 830 MPa and 1040 MPa Minimum Tensile Strength

MANUFACTURERS STANDARDIZATION SOCIETY OF THE VALVE AND FITTINGS INDUSTRY (MSS)

MSS SP-58	(2018) Pipe Hangers and Supports - Materials, Design and Manufacture, Selection, Application, and Installation
MSS SP-69	(2003; Notice 2012) Pipe Hangers and Supports - Selection and Application (ANSI Approved American National Standard)

U.S. DEPARTMENT OF DEFENSE (DOD)

UFC 3-301-01	(2019, with Change 1, 2022) Structural Engineering

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

29 CFR Part 1926, Subpart R	Steel Erection

1.2 SUBMITTALS

Government approval is required for submittals with a "G" classification. Submittals not having a "G" classification are for Contractor Quality Control approval. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Erection and Erection Bracing Drawings; G

SD-02 Shop Drawings

Fabrication Drawings Including Details of Connections; G

SD-03 Product Data

Direct Tension Indicator Washers

Non-Shrink Grout

Beam C-Clamps; G

SD-05 Design Data

Shoring and Temporary Bracing; G

SD-06 Test Reports

Bolts, Nuts, and Washers

Bolt Testing Reports

Embrittlement Test Reports

SD-07 Certificates

Steel

Bolts, Nuts, and Washers

Galvanizing

1.3 QUALITY ASSURANCE

1.3.1 Preconstruction Submittals

1.3.1.1 Erection and Erection Bracing Drawings

Submit for record purposes. Indicate the sequence of erection, temporary shoring and bracing. The erection drawings must conform to AISC 303.

1.3.2 Fabrication Drawing Requirements

Submit fabrication drawings for approval prior to fabrication. Prepare in accordance with AISC 303, AISC 326 and AISC 325. Fabrication drawings must not be reproductions of contract drawings. Sign and seal fabrication drawings by a registered professional engineer. 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. Shoring and temporary bracing must be designed and sealed by a registered professional engineer and submitted for record purposes, with calculations, as part of the drawings. Clearly highlight any deviations from the details shown on the contract drawings highlighted on the fabrication drawings. Explain the reasons for any deviations from the contract drawings.

PART 2 PRODUCTS

2.1 SYSTEM DESCRIPTION

Provide the structural steel system, complete and ready for use. Provide structural steel systems including design, materials, installation, workmanship, fabrication, assembly, erection, inspection, quality control, and testing in accordance with AISC 303, AISC 360, and UFC 3-301-01 except as modified in this contract.

2.2 STEEL

2.2.1 Structural Steel

Wide flange and WT shapes, ASTM A992/A992M. Angles, Channels and Plates, ASTM A36/A36M.

2.2.2 Structural Steel Tubing

ASTM A500/A500M, Grade B.

2.2.3 Steel Pipe

ASTM A53/A53M, Type E or S, Grade B, weight class STD (Standard) or as indicated.

2.3 BOLTS, NUTS, AND WASHERS

Submit 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.

2.3.1 Common Grade Bolts

2.3.1.1 Bolts

ASTM A307, Grade A, plain finish unless noted otherwise. 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.

2.3.1.2 Nuts

ASTM A563, Grade A, heavy hex style.

2.3.1.3 Washers

ASTM F844.

2.3.2 High-Strength Bolts

High strength bolts and nuts must be shipped together in the same shipping container. Fasteners indicated to be galvanized shall be tested by the supplier to show that the galvanized nut with the supplied lubricant provided may be rotated from the snug tight condition well in excess of the rotation required for pretentioned installation without stripping. The supplier shall supply nuts that have been lubricated and tested with the supplied bolts.

2.3.2.1 Bolts

ASTM F3125/F3125M, Grade A325, Type 1 Heavy Hex Head Style, plain finish unless noted otherwise.

2.3.2.2 Nuts

ASTM A563, Grade and Style as specified in the applicable ASTM bolt standard.

2.3.2.3 Direct Tension Indicator Washers

ASTM F959/F959M. Submit product data for direct tension indicator washers.

2.3.2.4 Washers

ASTM F436/F436M, plain carbon steel.

2.3.3 Foundation Anchorage

2.3.3.1 Anchor Rods

ASTM F1554 Gr 36 55, Class 1A.

2.3.3.2 Anchor Nuts

ASTM A563, Grade A, hex style.

2.3.3.3 Anchor Washers

ASTM F844.

2.3.3.4 Anchor Plate Washers

ASTM A36/A36M.

2.4 STRUCTURAL STEEL ACCESSORIES

2.4.1 Non-Shrink Grout

ASTM C1107/C1107M, with no ASTM C827/C827M shrinkage. Submit product data for non-shrink grout.

2.4.2 Welded Shear Stud Connectors

ASTM A29/A29M, Grades 1010 through 1020. AWS D1.1/D1.1M, Table 7.1, Type B.

2.5 BEAM C-CLAMPS

MSS SP-69 and MSS SP-58. The c-clamps must be Underwriters Laboratories Listed and Factory Mutual Approved. They must have a 1/2 inch set screw and be hot dipped galvanized steel in accordance with ASTM A153/A153M.

2.6 GALVANIZING

ASTM F2329/F2329M, ASTM F1136/F1136M, ASTM F2833 or ASTM B695 for threaded parts or ASTM A123/A123M for structural steel members, as applicable, unless specified otherwise galvanize after fabrication where practicable.

Notify the galvanizer that the galvanizing must be finished to accept the bridge coating system.

2.7 COATING

Coat all steel shapes, plates, fasteners (except as noted) in accordance with Section 09 97 13.27 HIGH PERFORMANCE COATING FOR STEEL STRUCTURES.

2.8 FABRICATION

Fabrication must be in accordance with the applicable provisions of AISC 325. Fabrication and assembly must be done in the shop to the greatest extent possible. Punch, subpunch and ream, or drill bolt holes perpendicular to the surface of the member.

Compression joints depending on contact bearing must have a surface roughness not in excess of 500 micro inch as determined by ASME B46.1, and ends must be square within the tolerances for milled ends specified in ASTM A6/A6M.

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.

2.8.1 Markings

Prior to erection, identify members by a painted erection mark. Connecting parts assembled in the shop for reaming holes in field connections must 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.

2.9 DRAINAGE HOLES

Drill adequate drainage holes to eliminate water traps. Hole diameter must be 1/2 inch and location indicated on the detail drawings. Hole size and locations must not affect the structural integrity.

PART 3 EXECUTION

3.1 ERECTION

a. Erection of structural steel must be in accordance with the applicable provisions of AISC 325, AISC 303 and 29 CFR Part 1926, Subpart R.

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.

3.1.1 STORAGE

Store the material out of contact with the ground in such manner and location as to minimize deterioration.

3.2 CONNECTIONS

Except as modified in this section, design connections indicated in accordance with AISC 360. Build connections into existing work. Do not tighten anchor bolts set in concrete with impact torque wrenches. Holes

must not be cut or enlarged by burning. Bolts, nuts, and washers must be clean of dirt and rust, and lubricated immediately prior to installation.

3.2.1 Common Grade Bolts

Tighten ASTM A307 bolts 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.

3.2.2 High-Strength Bolts

Provide direct tension indicator washers in all ASTM F3125/F3125M, Grade A325 and Grade A490 bolted connections. Bolts must be installed in connection holes and initially brought to a snug tight fit. After the initial tightening procedure, fully tension bolts, progressing from the most rigid part of a connection to the free edges.

Fastener components shall be protected from dirt and moisture in closed containers at the site of the installation. Fastener components that are not incorporated into the work shall be returned to protected storage at the end of the work shift.

3.2.2.1 Installation of Direct Tension Indicator Washers (DTIW)

Where possible, install the DTIW under the bolt head and tighten the nut. If the DTIW is installed adjacent to the turned element, provide a flat washer between the DTIW and nut when the nut is turned for tightening, and between the DTIW and bolt head when the bolt head is turned for tightening. In addition to the LIW, provide flat washers under both the bolt head and nut when ASTM F3125/F3125M, Grade A490 bolts are used.

3.2.3 Tension Control Bolts

Bolts must be installed in connection holes and initially brought to a snug tight fit. After the initial tightening procedure, fully tension bolts, progressing from the most rigid part of a connection to the free edges.

3.3 GAS CUTTING

Use of gas-cutting torch in the field for correcting fabrication errors is not permitted on any major member in the structural framing.

3.4 WELDING

Welding must be in accordance with AWS D1.5M/D1.5. Provide AWS D1.5M/D1.5 qualified welders, welding operators, and tackers.

3.5 GALVANIZING REPAIR

Repair damage to galvanized coatings using ASTM A780/A780M zinc rich paint for galvanizing damaged by handling, transporting, cutting, welding, or bolting. Do not heat surfaces to which repair paint has been applied.

3.6 FIELD QUALITY CONTROL

Perform field tests, and provide labor, equipment, and incidentals required for testing. Notify the Contracting Officer in writing of defective welds,

bolts, nuts, and washers within 7 working days of the date of the inspection.

3.6.1 High-Strength Bolts

3.6.1.1 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 360, depending on bolt size and grade. The bolt tension must be developed by tightening the nut. A representative of the manufacturer or supplier must be present to ensure that the fasteners are properly used, and to demonstrate that the fastener assemblies supplied satisfy the specified requirements. Submit bolt testing reports.

3.6.1.2 Inspection

Inspection procedures must be in accordance with AISC 360. 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.

Inspect calibration of torque wrenches for high-strength bolts.

3.6.1.3 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. Provide the required access for the Government to perform the tests. 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 must 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, must be tested at the Contractor's expense. Retest new bolts after installation at the Contractor's expense.

3.6.2 Testing for Embrittlement

ASTM A143/A143M for steel products hot-dip galvanized after fabrication. Submit embrittlement test reports.

3.6.3 Inspection and Testing of Steel Stud Welding

Perform verification inspection and testing of steel stud welding conforming to the requirements of AWS D1.5M/D1.5, Stud Welding Clause. The Contracting Officer will serve as the verification inspector. Bend test

studs that do not show a full 360 degree weld flash or have been repaired by welding as required by AWS D1.5M/D1.5, Stud Welding Clause. Studs that crack under testing in the weld, base metal or shank will be rejected and replaced by the Contractor at no additional cost.

-- End of Section --

SECTION 05 14 00.13

WELDING STRUCTURAL ALUMINUM FRAMING
11/19

PART 1 GENERAL

This section covers the work associated with the vehicle barrier system railing as depicted on the Contract Drawings.

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 WELDING SOCIETY (AWS)

AWS D1.2/D1.2M	(2014; Errata 1 2014; Errata 2 2020) Structural Welding Code - Aluminum
AWS QC1	(2016) Specification for AWS Certification of Welding Inspectors
AWS QC7	(1993; Suppl G) Standard for AWS Certified Welders

ASTM INTERNATIONAL (ASTM)

ASTM E164	(2019) Standard Practice for Contact Ultrasonic Testing of Weldments
ASTM E165/E165M	(2018) Standard Practice for Liquid Penetrant Examination for General Industry
ASTM E1032	(2019) Standard Practice for Radiographic Examination of Weldments Using Industrial X-Ray Film

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 51B	(2019; TIA 20-1) Standard for Fire Prevention During Welding, Cutting, and Other Hot Work

1.2 DEFINITIONS

Establish levels of fabrication using the following classifications:

1.2.1 Class A Fabrication

Class A fabrication includes complete penetration weld joints only, and applies to those welds in critical applications where failure would cause a loss of the system and be hazardous to personnel. Classify welds as a Class A fabrication for highly stressed dynamic and cyclic loading. Characterize welds as a single point of failure with no redundancy for the redistribution of stress into another member.

1.2.2 Class B Fabrication

Class B fabrication includes complete and partial penetration groove weld joints and fillet weld joints, and applies to those welds in semi-critical applications where failure would reduce the overall efficiency of the system but loss of system or hazard to personnel would not be experienced.

1.2.3 Class C Fabrication

Class C fabrication includes complete and partial penetration groove weld joints and fillet weld joints, and applies to those welds in non-critical applications where failure would not affect the efficiency of the system nor create hazard to personnel. Classify welds as a Class C fabrication for connections of secondary members not subject to dynamic action and low stressed miscellaneous applications.

1.2.4 Class D Fabrication

Plug and slot weld joints may be used for subcritical construction joints, when the joints meet the design and fabrication requirements of AWS D1.2/D1.2M.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" classification. Submittals not having a "G" classification are for Contractor Quality Control approval. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Certified Welding Procedure Specifications (WPS); G

Certified Procedure Qualification Records (PQR); G

Certified Welder Performance Qualifications (WPQ); G

1.4 QUALITY CONTROL

1.4.1 Certified Welding Procedure Specifications (WPS)

Conform welding procedure qualifications to AWS D1.2/D1.2M and to the specifications in this section. Submit for approval copies of the welding procedure specification and the certified procedure qualification records (PQR) for each type of welding being performed.

1.4.2 Certificates

Submit Certified Welder Performance Qualifications (WPQ) certificates verifying that the welders performing the work hold current certification in accordance with AWS QC7. Do not allow pre-qualified welding procedures. Provide documentation of qualified welding procedures, welders and welding inspectors in accordance with Sections 3 and 5 of AWS D1.2/D1.2M and AWS QC1.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 EXAMINATION

Perform pre-weld inspection of all components. Report in writing all deficiencies or discrepancies to the Contracting Officer. Commencement of welding procedures validates acceptance of existing conditions.

3.2 PREPARATION

3.2.1 Protection

Protect all adjacent surfaces and equipment prior to commencement of welding work, in conformance with NFPA 51B and approved Operating Safety Plan.

3.2.2 Surface Preparation

Prepare all surfaces to be welded in conformance with AWS D1.2/D1.2M.

3.2.3 Welding Equipment

Provide all welding equipment, electrodes, welding wire, fluxes, preparatory tools and equipment, and any other accessories required to perform the work.

3.2.4 Heat Input Requirements

3.2.4.1 Preheat

Do not weld at an ambient temperature below 32 degrees F, or when the surfaces are wet or exposed to rain, snow, or high wind. Verify that the minimum temperature of the metals in the area of welding is 50 degrees F. When the ambient conditions are such that the normal temperature of the base metal is below 50 degrees F, preheat the area surrounding the joint to provide a base metal temperature of 100 degrees F for a distance of at least 3 inch in all directions from the joint to be welded.

3.2.4.2 Interpass

In a multipass weld, ensure that the interpass temperature is the temperature of the weld metal before the next pass is started.

3.2.4.3 Postweld

Postweld heat treatment of weldments is prohibited unless noted in the applicable Code qualified/certified welding documentation, Certified Welding Procedure Specifications (WPS).

3.3 FIELD QUALITY CONTROL

3.3.1 Inspection/Nondestructive Examination (NDE)

3.3.1.1 Inspection

Perform fabrication/erection inspection to ensure that materials and workmanship meet the minimum requirements of the contract documents.

Final acceptance of all welded joints will be by the Contracting Officer.

Additional testing and inspection as determined by the Contracting Officer may be done by the Government at the Government's expense.

Repair all unacceptable welds and make ready for Government reinspection at no additional cost to the Government.

After weld joints have been satisfactorily completed and accepted by the Contracting Officer, clean the joint area to a bright, unpitted, and unscarred surface and protect in accordance with the applicable contract documents.

3.3.1.2 Methods of Non-Destructive Examination (NDE)

Perform NDE examination/inspection of structural aluminum weldments in accordance with AWS D1.2/D1.2M.

If more than 20 percent of welds made by a welder contain defects identified by testing, then all groove welds made by that welder must be tested by ultrasonic testing, and all fillet welds made by that welder must be inspected by magnetic particle testing (MT) or dye penetrant testing (PT) as approved by the Contracting Officer. When the groove welds made by an individual welder are required to be tested, magnetic particle or dye penetrant testing may be used only in areas inaccessible to ultrasonic testing.Retest all repaired areas. Submit the weld inspection reports.

Review the drawings, weld position, and direction of travel prior to welding. Verify that the materials purchased match the specification and are free from rust, scale, mill or lamination.

Inspect for proper fit, alignment, cleanliness, preparation, size, gaging location, and acceptability of all welds; identification marking; operation and current characteristics of welding sets in use and the use of pre-heat. Inspect the equipment for damage, arc voltage, and amperage in accordance with specifications.

a. Visual Inspection (VT)

A Certified Welding Inspector must perform visual inspection on 100 percent of all welds. Document this inspection in the Visual Weld Inspection Log.

Verify the electrode size, type and storage comply with specifications. During welding, watch each pass paying close attention to root pass for any irregularities.

After completion of welding, use gauges to verify weld sizes, check finish and contour for acceptability, check for any defects including cracks, also look for overlap and undercut.

Enhance Visual Inspection (VT) for cracks and other discontinuities with a magnifying lens of 5X power wherever required to discern indications or defects otherwise not clear. Minimum light level shall be at least 1,000 LUX (100 foot-candles). Measure size and contour of welds with suitable gages.

b. Liquid Penetrant Inspection (PT)

Perform Liquid Penetrant Inspection (PT) of welds in accordance with ASTM E165/E165M.

c. Radiographic Inspection (RT)

Perform Radiographic Inspection (RT) of welds in accordance with the requirements of ASTM E1032.

d. Ultrasonic Inspection (UT)

When ultrasonic testing is required by the contract documents, specify the extent of testing, the procedure, and the acceptance criteria in accordance with ASTM E164.

3.3.1.3 Levels of Examination

a. Level I Examination

Level I examination requires 100 percent VT, and 100 percent RT. Where RT is not practical, perform PT of the root pass and the final surface of each weld joint.

Where applicable, each radiograph is to provide a minimum of the following additional information permanently included in the image:

(1) Agency Weld No. (including repair cycle no.)

(2) Agency Drawing No.

(3) Agency View No.

(4) Agency Contract No.

Final interpretation and acceptance of all radiographs of welded joints is performed by the Contracting Officer.

b. Level II Examination

Level II examination requires 100 percent VT, and PT of the final surface of each weld joint.

c. Level III Examination

Level III examination requires 100 percent VT of each weld joint.

3.3.1.4 Acceptance Requirements

-- End of Section --

SECTION 05 52 00

METAL RAILINGS
02/18, CHG 1: 02/20

PART 1 GENERAL

This section includes the work associated with the vehicle barrier railing and providing markers on the existing guardrail as depicted on the Contract Drawings.

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 ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)

AASHTO MASH	(2016) Manual for Assessing Safety Hardware - Second Edition

AMERICAN WELDING SOCIETY (AWS)

AWS D1.2/D1.2M	(2014; Errata 1 2014; Errata 2 2020) Structural Welding Code - Aluminum

ASTM INTERNATIONAL (ASTM)

ASTM B108/B108M	(2019) Standard Specification for Aluminum-Alloy Permanent Mold Castings
ASTM B209	(2014) Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate
ASTM B580	(2019) Standard Specification for Anodic Oxide Coatings on Aluminum
ASTM B221	(2021) Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes
ASTM D4956	(2013) Standard Specification for Retroreflective Sheeting for Traffic Control

MAINE DEPARTMENT OF TRANSPORTATION (MEDOT)

MEDOT	State of Maine, Department of Transportation, Standard Specifications, including revisions through award of this contract (See http://www.maine.gov/mdot/publications/)

1.2 SUBMITTALS

Government approval is required for submittals with a "G" classification.

Submittals not having a "G" classification are for Contractor Quality Control approval. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Reflectorized Flexible Guardrail Markers; G

Reflectorized Beam Guardrail Delineators; G

SD-02 Shop Drawings

Hardware; G

Fabrication And Installation Drawings; G

Shapes, Plates, Bars, And Strips; G

Guardrail Marker Plan; G

SD-03 Product Data

Protective Coating; G

Posts; G

Railing; G

Plates; G

Extrusions; G

SD-04 Samples

Color Chip; G

SD-08 Manufacturer's Instructions

Installation Instructions

1.3 QUALITY CONTROL

1.3.1 Welding Procedures

Section 05 14 00.13 WELDING STRUCTURAL ALUMINUM FRAMING applies to work specified in this section.

PART 2 PRODUCTS

2.1 FABRICATION

Preassemble items in the shop to the greatest extent possible. Disassemble units only to the extent necessary for shipping and handling. Clearly mark units for reassembly and coordinated installation.

For the fabrication of work exposed to view, use only materials that are smooth and free of surface blemishes, including pitting, seam marks, roller marks, rolled trade names, and roughness. Remove blemishes by grinding, or by welding and grinding, before cleaning, treating, and applying surface

finishes, including zinc coatings.

Provide complete, detailed fabrication and installation drawings. Provide railing and handrail detail plans and elevations at not less than 1 inch to 1 foot. Provide details of sections and connections at not less than 3 inches to 1 foot. Also detail setting drawings, diagrams, templates for installation of anchorages, including concrete inserts, anchor bolts, and miscellaneous metal items having integral anchors.

Use materials of size and thicknesses indicated or, if not indicated, of the size and thickness necessary to produce adequate strength and durability in the finished product for its intended use. Work the materials to the dimensions indicated on approved detail drawings, using proven details of fabrication and support. Use the type of materials indicated or specified for the various components of work.

Form exposed work true to line and level, with accurate angles and surfaces and straight sharp edges. Ensure that all exposed edges are eased to a radius of approximately 1/32 inch. Bend metal corners to the smallest radius possible without causing grain separation or otherwise impairing the work.

Weld corners and seams continuously and in accordance with the recommendations of AWS D1.2/D1.2M. Grind exposed welds smooth and flush to match and blend with adjoining surfaces.

Form the exposed connections with hairline joints that are flush and smooth, using concealed fasteners wherever possible. Use exposed fasteners of the type indicated or, if not indicated, use countersunk Phillips flathead screws or bolts.

Provide anchorage of the type indicated and coordinated with the supporting structure. Fabricate anchoring devices and space as indicated and as required to provide adequate support for the intended use of the work.

Use hot-rolled steel bars for work fabricated from bar stock unless work is indicated or specified to be fabricated from cold-finished or cold-rolled stock.

2.1.1 Protective Coating

Provide anodized aluminum finished elements that match the existing bridge coating color in accordance with ASTM B580. Touch up abraded surfaces and cut ends of galvanized members with zinc-dust, zinc-oxide primer, or an approved galvanizing repair compound. Submit a color chip of the coating system for Government review and approval to confirm the correct color choice.

2.2 COMPONENTS

2.2.1 Posts

Provide aluminum permanent mold casting conforming to ASTM B108/B108M, alloy 57A-T4 (A444-T4).

2.2.2 Railing

Provide aluminum round pipe conforming to ASTM B221, alloy 6061-T6.

2.2.3 Plates

Provide aluminum plates conforming to ASTM B209-56T, alloy GS11A, Condition T5 (6061-T6).

2.2.4 Extrusions

Provide extrusions conforming to ASTM B221, alloy 6061-T6 or 6351-T5.

2.2.5 Fasteners

Fasteners must meet requirements outlined in 05 12 00 STRUCTURAL STEEL

2.3 GUARDRAIL MARKERS

2.3.1 Reflectorized Flexible Guardrail Markers

The marker's flexible posts must be grey with either silver-white or yellow reflectors (to match the edge line striping) at the tangents, red at leading ends, and green at trailing ends.

Reflectorized flexible guardrail markers must be from the MEDOT Qualified Products List of Delineators. The marker must be grey, flexible, durable, and of a non-discoloring material to which 3 inch by 9 inch reflectors must be applied, and capable of recovering from repeated impacts and meet AASHTO MASH requirements.

Reflective material must meet the requirements of MEDOT Section 719.01 for ASTM D4956 Type III reflective sheeting.

2.3.2 Reflectorized Beam Guardrail Delineators

Delineators must be fabricated from high-impact, ultraviolet & weather resistant thermoplastic. On two directional roadways, the right hand side must be silver/white and no reflectorized delineator used on the left hand side.

All reflectors must have reflective sheeting applied to only one side of the delineator facing the direction of traffic as depicted in the contract drawings.

Reflectorized sheeting for guardrail delineators must meet the requirements of MEDOT Section 719.01

PART 3 EXECUTION

3.1 PREPARATION

Adjust railings before securing in place in order to ensure proper matching at butting joints and correct alignment throughout their length. Space posts not more than 5 feet on center. Plumb posts in each direction. Secure posts and rail ends in accordance to the Contract Drawings.

3.2 INSTALLATION OF VEHICLE BARRIER

Submit manufacturer's installation instructions for the products to be used in the fabrication of railing.

Provide complete, detailed fabrication and installation drawings for all

hardware, and for all shapes, plates, bars, and strips used in accordance with the design specifications cited in this section.

3.3 INSTALLATION OF GUARDRAIL MARKERS

Provide a guardrail marker plan indicating locations of where the markers will be installed for review and approval by the Contracting Officer.

3.3.1 Reflectorized Flexible Guardrail Markers

Reflectorized flexible guardrail markers must be mounted on all guardrails. A marker must be mounted onto guardrail posts at the flared end treatment's terminal and its tangent point, both at the leading and trailing ends of each run of guardrail. Whenever the end treatment is not flared, markers are only required at the end treatment's terminal. These must be red or green as appropriate. Markers must be installed on the protected side of guardrail posts unless otherwise approved by the Contracting Officer.

3.3.2 Reflectorized Beam Guardrail Delineators

Reflectorized beam guardrail ("butterfly"-type) delineators must be mounted on all "w"- beam guardrails. The delineators must be mounted within the guardrail beam at guardrail posts. Exact locations of the delineators must be confirmed by the Contracting Officer prior to installation.

3.4 FIELD QUALITY CONTROL

3.4.1 Field Welding

Ensure that procedures of manual shielded metal arc welding, appearance and quality of welds made, and methods used in correcting welding work comply with AWS D1.2/D1.2M.

-- End of Section --

SECTION 09 97 13.27

HIGH PERFORMANCE COATING FOR STEEL STRUCTURES
02/21, CHG 1: 08/22

PART 1 GENERAL

Work under this section includes removal of existing coating system, surface preparation, and recoating for all steel elements on the bridge as depicted on the Contract Drawings and specified herein.

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 C920	(2018) Standard Specification for Elastomeric Joint Sealants
ASTM D1200	(2010; R 2014) Viscosity by Ford Viscosity Cup
ASTM D1640/D1640M	(2014) Standard Test Methods for Drying, Curing, or Film Formation of Organic Coatings
ASTM D3276	(2015; E 2016) Standard Guide for Painting Inspectors (Metal Substrates)
ASTM D3925	(2002; R 2015) Sampling Liquid Paints and Related Pigmented Coatings
ASTM D4285	(1983; R 2018) Indicating Oil or Water in Compressed Air
ASTM D7127	(2017) Standard Test Method for Measurement of Surface Roughness of Abrasive Blast Cleaned Metal Surfaces using a Portable Stylus Instrument

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (ISO)

ISO 9001	(2015) Quality Management Systems-Requirements

SOCIETY FOR PROTECTIVE COATINGS (SSPC)

SSPC 7/NACE No.4	(2007) Brush-Off Blast Cleaning
SSPC AB 2	(2015; E 2016) Cleanliness of Recycled Ferrous Metallic Abrasive
SSPC AB 3	(2003; E 2004) Ferrous Metallic Abrasive
SSPC Guide 6	(2015) Guide for Containing Surface

	Preparation Debris Generated During Paint Removal Operations
SSPC Guide 12	(1998; E 2004) Guide for Illumination of Industrial Painting Projects
SSPC PA 1	(2016) Shop, Field, and Maintenance Coating of Metals
SSPC PA 2	(2015; E 2018) Procedure for Determining Conformance to Dry Coating Thickness Requirements
SSPC QP 1	(2019) Standard Procedure for Evaluating the Qualifications of Industrial/Marine Painting Contractors (Field Application to Complex Industrial Steel Structures and Other Metal Components)
SSPC QP 5	(2012) Standard Procedure for Evaluating the Qualifications of Coating and Lining Inspection Companies
SSPC QS 1	(2015) Standard Procedure for Evaluating a Contractor's Advanced Quality Management System
SSPC SP 1	(2015) Solvent Cleaning
SSPC SP 10/NACE No. 2	(2015) Near-White Blast Cleaning
SSPC SP 12/NACE No.5	(2002) Surface Preparation and Cleaning of Metals by Waterjetting Prior to Recoating
SSPC SP COM	(2016; E 2017) Surface Preparation Commentary for Steel and Concrete Substrates
SSPC VIS 1	(2002; E 2004) Guide and Reference Photographs for Steel Surfaces Prepared by Dry Abrasive Blast Cleaning

SOCIETY OF AUTOMOTIVE ENGINEERS INTERNATIONAL (SAE)

SAE AMS-STD-595A	(2017) Colors used in Government Procurement

U.S. ARMY CORPS OF ENGINEERS (USACE)

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

U.S. DEPARTMENT OF DEFENSE (DOD)

MIL-A-22262	(1993; Rev B; Am 1 1994; Am 2 1996; Notice 1 2021) Abrasive Blasting Media Ship Hull Blast Cleaning
MIL-DTL-24441	(2009; Rev D; Notice 1 2021) Paint,

	Epoxy-Polyamide, General Specification for
MIL-DTL-24441/19	(2009; Rev C) Paint, Epoxy-Polyamide, Zinc Primer, Formula 159, Type III
MIL-DTL-24441/31	(2009; Rev B; Notice 1 2021) Paint, Epoxy-Polyamide, White, Formula 152, Type IV
MIL-PRF-85285	(2022; Rev F) Topcoat, Aircraft and Support Equipment

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

29 CFR 1910-SUBPART Z	Toxic and Hazardous Substances
29 CFR 1910.134	Respiratory Protection
29 CFR 1910.1000	Air Contaminants
29 CFR 1926.59	Hazard Communication

1.2 DEFINITIONS

Definitions are provided throughout this Section, generally in the paragraph where used, and denoted by capital letters.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" classification. Submittals not having a "G" classification are for Contractor Quality Control approval. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-03 Product Data

Joint Sealant; G

SD-01 Preconstruction Submittals

Hazardous Waste Accumulation Plan; G

SD-03 Product Data

Epoxy Intermediate Coat; G

SD-03 Product Data

Polyurethane Topcoat; G

SD-03 Product Data

Zinc-Rich Epoxy Primer Coat; G

SD-04 Samples

Color Chip; G

SD-05, Design Data

Containment System

Inspection Access Plan; G

SD-06 Test Reports

Joint Sealant Qualification Test Reports

Coatings Qualification Test Reports

Metallic Abrasive Qualification Test Reports

Coating Sample Test Reports

Abrasive Sample Test Reports

Inspection Report Forms

Daily Inspection Reports

Recycled Metallic Abrasive Field Test Reports (Daily and Weekly)

SD-07 Certificates

Contract Errors, Omissions, and Other Discrepancies

Corrective Action Procedures

Coating Work Plan

Qualifications of Certified Industrial Hygienist (CIH)

Qualifications Of Individuals Performing Abrasive Blasting

Qualifications of Certified Protective Coatings Specialist (PCS)

Qualifications of Coating Inspection Company

Qualifications of QC Specialist Coating Inspector

Qualifications of Testing Laboratory for Coatings

Qualifications of Testing Laboratory for Abrasive

Qualifications of Coating Contractors

Joint Sealant Materials

Coating Materials

Metallic Abrasive

Coating System Component Certification; G

SD-08 Manufacturer's Instructions

Joint Sealant Instructions

Coating System Instructions

SD-11 Closeout Submittals

Disposal of Used Abrasive

Inspection Logbook; G

1.4 QUALITY ASSURANCE

1.4.1 Contract Errors, Omissions, and Other Discrepancies

Submit all errors, omissions, and other discrepancies in contract documents the Contracting Officer within 30 days of contract award for all work covered in this Section, other than the work that will not be uncovered until a later date. All such discrepancies shall be addressed and resolved, and the Coating Work Plan modified, prior to beginning the Initial and Follow-Up phases of work. Discrepancies that become apparent only after work is uncovered shall be identified at the earliest discoverable time and submitted for resolution. Schedule time (Float) should be built into the project schedule at those points where old work is to be uncovered or where access is not available during the first 30 days after award, to allow for resolution of contract discrepancies.

1.4.2 Corrective Action (CA)

CA shall be included in the Quality Control Plan.

1.4.2.1 Corrective Action Procedures

Develop procedures for determining the root cause of each non-compliance, developing a plan to eliminate the root cause so that the non-compliance does not recur, and following up to ensure that the root cause was eliminated. Develop Corrective Action Request (CAR) forms for initiating CA, and for tracking and documenting each step.

1.4.2.2 Implement Corrective Action

The Contractor shall take action to identify and eliminate the root cause of each non-compliance so as to prevent recurrence. These procedures shall apply to non-compliance in the work, and to non-compliance in the QC System. Corrective actions shall be appropriate to the effects of the non-compliance encountered. Each CAR shall be serialized, tracked in a Log to completion and acceptance by the Contracting Officer, and retained in project records. The Corrective Action Log, showing status of each CAR, shall be submitted to the Contracting Officer monthly. A CAR may be initiated by either the Contractor or the Contracting Officer. The Contracting Officer must approve each CAR at the root cause identification stage, the plan for elimination stage, and the close out stage after verification that the root cause has been eliminated.

1.4.3 Coating Work Plan

This work plan shall be considered as part of the Quality Control Plan.

Provide procedures for reviewing contract documents immediately after award to identify errors, omissions, and discrepancies so that any such issues can be resolved prior to project planning and development of detailed procedures.

Provide procedures for verification of key processes during Initial Phase to ensure that contract requirements can be met. Key processes shall include surface preparation, coating application and curing, inspection, and documentation, and any other process that might adversely impact orderly progression of work.

Provide procedures for all phases of coating operations, including planned work, rework, repair, inspection, and documentation. Address mobilization and setup, surface preparation, coating application, coating initial cure, tracking and correction of noncompliant work, and demobilization. Coordinate work processes with health and safety plans and confined space entry plans. For each process, provide procedures that include appropriate work instructions, material and equipment requirements, personnel qualifications, controls, and process verification procedures. Provide procedures for inspecting work to verify and document compliance with contract requirements, including inspection forms and checklists, and acceptance and rejection criteria.

Provide procedures for correcting noncompliant work. Detailed procedures are required in advance to avoid delays in meeting overcoat windows as well as to avoid delays in production. Provide procedures for repairing defects in the coating film, such as runs, drips, sags, holidays, overspray, as well as how to handle correct coating thickness noncompliance, any other areas of repair or rework that might be adversely affected by delays in preparing and approving new procedures.

If a procedure is based on a proposed or approved request for deviation, the deviation shall be referenced. Changes to procedures shall be noted by submittal number and date approved, clearly delineating old requirements and new requirements, so that the records provide a continuous log of requirements and procedures.

1.4.4 Inspection Access Plan

The Inspection Access Plan is for use by QC personnel for ongoing inspections and by the Government during Quality Assurance (QA) observations. The plan must include the design of any necessary scaffolding or staging required for QC/QA inspections. All staging and scaffolding must be designed by a qualified Licensed Professional Engineer.

1.4.5 Lead and Heavy Metals Waste Management Plan

Submit a project specific Lead and Heavy Metal Waste Management Plan in accordance with Section 02 83 00.00 22 MANAGEMENT OF LEAD, CADMIUM, AND CHROMIUM DURING RENOVATION, DEMOLITION, REMOVAL, AND ABATEMENT (PNS PROJECTS).

1.4.6 Hazardous Waste Accumulation Plan

A minimum of 30 days prior to beginning work, submit for approval a Hazardous Waste Accumulation Plan in accordance with Federal, State and Local requirements. The plan must detail the means and methods for containing, collecting, and processing all waste, including solid, liquid, and dissolved, generated from the cleaning and surface preparation operations. It must include all equipment, containers, and/or temporary staging necessary to meet the environmental and discharge requirements.

The plan must include provisions for processing and disposal in accordance

with the requirement of Section 01 57 19.00 22 TEMPORARY ENVIRONMENTAL CONTROLS - PORTSMOUTH NAVAL SHIPYARD (PWD ME). This plan must be separate and distinct from the Environmental Management Plan and Solid Waste Management Plan.

Emphasis must be on minimizing waste through effective recycling of the blast media to the maximum extent possible.

1.4.7 Design Data

1.4.7.1 Containment System

Submit complete design drawings and calculations for the scaffolding and containment system, including an analysis of the loads which will be added to the structure by the containment system and waste materials. A registered professional engineer shall approve calculations and scaffold system design.

The plan must provide calculations that assure the structural integrity of the bridge under the loading conditions. Loading conditions must include but not be limited to all equipment, materials, and containment system loads, noting the weight of spent abrasive on the containment system. The calculations and drawings must be prepared, signed, and sealed by a qualified Licensed Professional Engineer. The Licensed Professional Engineer must inspect the containment system, review the materials used for its construction, and certify that the as-erected containment is in conformance with the drawings.

Negative Pressure and airflow inside the containment is specified. Provide all ventilation calculations and details on the equipment that will be used for achieving the specified airflow and dust collection.

Confirm that the containment system maintains river traffic flow on half of the bridge and is above all predicted normal tidal levels throughout the construction duration with a minimum clearance of 18-inches. The system must be designed to allow disassembly in a controlled manner in the event of a storm that may exceed the predicted tidal levels. The containment system must be lighted with constant burning red lights every 50 feet and on all corners in accordance with the local USCG Requirements.

1.4.8 Test Reports

1.4.8.1 Joint Sealant Qualification Test Reports

Submit test results from independent laboratory of representative samples of joint sealant material. Samples must have been tested within the last three years. Submit results as required in paragraph QUALITY ASSURANCE PROVISIONS of ASTM C920. Note that testing in accordance with QUALITY ASSURANCE PROVISIONS is a pre-qualification requirement.

1.4.8.2 Coatings Qualification Test Reports

Submit test results from independent laboratory of representative samples of each coating material. U.S. Department of Defense laboratories are considered to be independent laboratories for purposes of compliance with "QUALIFICATION INSPECTION" requirements herein. Samples must have been tested within the last three years. Submit results for epoxy materials as required in paragraph QUALIFICATION INSPECTION of MIL-DTL-24441, and as revised by paragraph COATING SYSTEM herein. Submit results for

polyurethane materials as required in paragraph QUALIFICATION INSPECTION of MIL-PRF-85285, and as revised by paragraph COATING SYSTEM herein. Note that requirement for QUALIFICATION INSPECTION is a pre-qualification requirement, and involves the same testing required for listing in the Qualified Products List of the respective material. See appropriate Military Specification for specific test requirements.

1.4.8.3 Metallic Abrasive Qualification Test Reports

Submit results for abrasive as required in paragraph 4 REQUIREMENTS of SSPC AB 3. Submit test results from independent laboratory of representative samples of each abrasive to be used on the jobsite. Samples must have been tested within the last three years. Note that this testing is for the purpose of prequalifying the abrasive.

1.4.8.4 Recycled Metallic Abrasive Field Test Reports (Daily and Weekly)

Submit test results from independent laboratory of daily and weekly Quality Control testing required by SSPC AB 2, as modified in paragraph ABRASIVE.

1.4.9 Qualifications

1.4.9.1 Qualifications of Certified Industrial Hygienist (CIH)

Submit name, address, telephone number, FAX number, and e-mail address of the independent third party CIH. Submit documentation that hygienist is certified by the American Board of Industrial Hygiene in comprehensive practice, including certification number and date of certification/recertification. Provide evidence of experience with hazards involved in industrial coating application work.

1.4.9.2 Qualifications of Certified Protective Coatings Specialist (PCS)

Submit name, address, telephone number, FAX number, and e-mail address of the independent third party PCS. Submit documentation that specialist is certified by SSPC: The Society for Protective Coatings (SSPC) as a PCS, including certification number and date of certification/recertification. If the PCS is employed by the same coating inspection company to which the coating inspector is employed, this does not violate the independent third-party requirements. The PCS shall remain certified during the entire project, and the Contracting Officer shall be notified of any change in certification status within 10 days of the change. The PCS shall not be the designated coating inspector.

1.4.9.3 Qualifications of Coating Inspection Company

Submit documentation that the coating inspection company that will be performing all coating inspection functions is certified by SSPC to the requirements of SSPC QP 5 prior to contract award, and shall remain certified while accomplishing any coating inspection functions. The coating inspection company must remain so certified for the duration of the project. If a coating inspection company's certification expires, the firm will not be allowed to perform any inspection functions, and all surface preparation and coating application work must stop, until the certification is reissued. Requests for extension of time for any delay to the completion of the project due to an inactive certification will not be considered and liquidated damages will apply. Notify the Contracting Officer of any change in coating inspection company certification status.

1.4.9.4 Qualifications of QC Specialist Coating Inspector

Submit documentation that each coating inspector is employed, and qualified to SSPC QP 5, Level III, by the selected coating inspection company. Each inspector shall remain employed by the coating inspection company while performing any coating inspection functions.

1.4.9.5 Qualifications Of Individuals Performing Abrasive Blasting

Submit name, address, and telephone number of each person that will be performing abrasive blasting. Submit documentation that each blaster is qualified by SSPC to the SSPC C-7 Dry Abrasive Blaster Qualification Program. Each blaster shall remain qualified during the entire period of abrasive blasting, and the Contracting Officer shall be notified of any change in qualification status.

1.4.9.6 Qualifications of Testing Laboratory for Coatings

Submit name, address, telephone number, FAX number, and e-mail address of the independent third party laboratory selected to perform testing of coating samples for compliance with specification requirements. Submit documentation that laboratory is regularly engaged in testing of paint samples for conformance with specifications, and that persons performing analyses are qualified.

1.4.9.7 Qualifications of Testing Laboratory for Abrasive

Submit name, address, telephone number, FAX number, and e-mail address of the independent third party laboratory selected to perform testing of abrasive for compliance with specification requirements. Submit documentation that laboratory has experience in testing samples of abrasive for conformance with specifications, and that persons performing analyses are qualified.

1.4.9.8 Qualifications of Coating Contractors

All Contractors and Subcontractors that perform surface preparation or coating application shall be certified to either ISO 9001 or SSPC QP 1 and SSPC QS 1 prior to contract award, and shall remain certified while accomplishing any surface preparation or coating application. The painting Contractors and painting Subcontractors must remain so certified for the duration of the project. If a Contractor's or Subcontractor's certification expires, the firm will not be allowed to perform any work until the certification is reissued. Requests for extension of time for any delay to the completion of the project due to an inactive certification will not be considered and liquidated damages will apply. Notify the Contracting Officer of any change in Contractor certification status.

1.4.9.9 Joint Sealant Materials

Provide manufacturer's certification of conformance to contract requirements.

1.4.9.10 Coating Materials

Provide manufacturer's certification of conformance to contract requirements. Coating must meet or exceed MDEP CH 151 for Architectural and Industrial Maintenance (AIM) Coatings. Each coat of paint (primer, intermediate and topcoat) shall be contrasting colors.

1.4.9.11 Coating System Component Certification

All coating materials must come from one manufacturer. The manufacturer must provide certification that the materials are appropriate for the scope of work, application method to be used, and that surface preparation and thickness applications are acceptable and all materials are compatible with each other. The certification must provide the name of the manufacturer that will provide technical support for the entire system.

1.4.9.12 Metallic Abrasive

Provide manufacturer's certification of conformance to contract requirements and provide copies of test results.

1.4.10 Protective Coating Specialist (PCS)

The PCS shall be considered a QC Specialist and shall report to the QC Manager, as specified in Section 01 45 00.00 22 QUALITY CONTROL (PWD ME). The PCS shall approve all submittals prior to submission to the QC Manager for approval or submission to the government for approval.

1.4.11 Pre-Application Meeting

After approval of submittals but prior to the initiation of coating work, Contractor representatives, including at a minimum, project superintendent and QC manager, paint foreman, coating inspector, and PCS shall have a pre-application coating preparatory meeting. This meeting shall be in addition to the pre-construction conference. Specific items addressed shall include: corrective action requirements and procedures, coating work plan, safety plan, coordination with other Sections, inspection standards, inspection requirements and tools, test procedures, environmental control system, safety plan, and test logs. Notify Contracting Officer at least ten days prior to meeting.

1.5 QUALITY ASSURANCE (QA) OBSERVATIONS

The Government will conduct QA observations of any or all phases of the work. The presence of activity of Government observations in no way relieves the Contractor of the responsibility to perform all necessary QC inspections of their own and to comply with all requirements of this section.

1.6 INSPECTION ACCESS

Facilitate the Government's observations as required, including allowing ample time to view the work. Furnish, erect, and move scaffolding or other mechanical equipment to permit close observation of all surfaces on which the work is performed. All scaffolding and equipment must be provided during all phases of the work and meet all OSHA Regulations and EM 385-1-1.

1.7 PRODUCT DATA

1.7.1 Joint Sealant Instructions

Submit manufacturer's printed instructions including detailed application procedures, minimum and maximum application temperatures, and curing procedures. Include Safety Data Sheets (SDS) for materials to be used at

the job site in accordance with 29 CFR 1926.59.

1.7.2 Coating System Instructions

Submit manufacturer's printed instructions including detailed mixing and application procedures, number and types of coats required, minimum and maximum application temperatures, and curing procedures. Include Safety Data Sheets (SDS) for materials to be used at the job site in accordance with 29 CFR 1926.59.

1.8 DELIVERY AND STORAGE

Ship, store, and handle materials in accordance with SSPC PA 1, and as modified in this Section. Maintain temperature in storage spaces between 40 and 85 degrees F, and air temperature more than 5 degrees F above the dew-point at all times. Inspect materials for damage prior to use and return non-compliant materials to manufacturer. Remove materials with expired shelf life from government property immediately and notify the Contracting Officer.

If materials are approaching shelf life expiration and an extension is desired, samples may be sent to the manufacturer, along with complete records of storage conditions, with a request for shelf life extension. If the manufacturer finds the samples and storage data suitable for shelf life extension, the manufacturer may issue an extension, referencing the product evaluation and the review of storage records. Products may not be extended longer than allowed in the product specification.

1.9 COATING HAZARDS

Ensure that employees are trained in all aspects of the safety plan. Specified coatings may have potential health hazards if ingested or improperly handled. The coating manufacturer's written safety precautions shall be followed throughout mixing, application, and curing of the coatings. During all cleaning, cleanup, surface preparation, and paint application phases, ensure that employees are protected from toxic and hazardous chemical agents which exceed concentrations in 29 CFR 1910.1000. Comply with respiratory protection requirements in 29 CFR 1910.134. The CIH shall approve work procedures and personal protective equipment.

1.10 JOB SITE REFERENCES

Make available to the Contracting Officer at least one copy each of ASTM D3276, ASTM D3925, ASTM D4285, ASTM D7127, SSPC SP COM, SSPC SP 1, SSPC 7/NACE No.4, SSPC SP 10/NACE No. 2, SSPC PA 1, SSPC PA 2, SSPC Guide 6, SSPC VIS 1, SSPC QP 1, SSPC QS 1, and an SSPC Certified Contractor Evaluation Form at the job site.

PART 2 PRODUCTS

2.1 JOINT SEALANT

ASTM C920, Type S, Grade NS, Class 25. The sealant must be paintable with the coating system specified herein.

2.2 COATING SYSTEM

The coating system must meet or exceed MDEP CH 151 for Architectural and Industrial Maintenance (AIM) Coatings and must be approved for application

in the marine environment.

Alternate systems or products will not be considered. Provide a complete system (primer, intermediate coat, top coat) material from one supplier. The entire coating system is intended to be applied in the field. Surface preparation, for new steel elements, may be accomplished in the shop, following all temperature, humidity, and testing requirements listed herein, followed by an application of a hold-primer. Remove all shop-applied primer prior to final field surface preparation and coating system application. Adjust all shop preparation to avoid conflicts with final surface preparation requirements.

The coating system must meet the Maine Department of Transportation requirements as identified on the Qualified Products List. Approved coating systems are listed on the North East Protective Coating Committee (NEPCOAT) website.

2.2.1 Zinc-Rich Epoxy Primer Coat

Primer must be an organic zinc-rich epoxy primer approved on the NEPCOAT Qualified Products List B.

2.2.2 Epoxy Intermediate Coat

The intermediate coat must be an epoxy coating approved on the NEPCOAT Qualified Products List B. The intermediate coat must be tinted white.

2.2.3 Polyurethane Topcoat

The topcoat must be a polyurethane coating approved on the NEPCOAT Qualified Products List B. It must be tinted green to match the existing color of Bridge 2. Obtain a sample of the existing coating system and submit with a color chip of the proposed top coat for Government approval to confirm the correct color choice.

Modify paragraph 3.6.4 of MIL-PRF-85285, Viscosity and Pot Life, as follows:

The viscosity of the admixed coating, when tested in accordance with ASTM D1200 through a No. 4 Ford cup, shall be as follows:

Time from mix (minimum)	Maximum time through a No. 4 Ford cup
Initially	30 seconds
2 hours	60 seconds
4 hours	No gel

Modify paragraph 3.7.1 of MIL-PRF-85285, Drying Time, as follows:

When applied by spray techniques and when tested in accordance with ASTM D1640/D1640M, the coating shall be set-to-touch within four hours and dry-hard within eight hours (see 4.6 and table I).

2.3 COATING SAMPLE COLLECTION AND SHIPPING KIT

Provide a kit that contains one quart can for the base of each coating material, an appropriately sized can for each activator, dipping cups for each component to be sampled, a shipping box sized for the samples to to be shipped, and packing material. Mark cans for the appropriate component. Provide shipping documents, including either pre-paid shipping or a shipper number that can be used by the QC Manager to arrange pickup, addressed to the approved coating testing laboratory.

2.4 ABRASIVE SAMPLE COLLECTION AND SHIPPING KIT

Provide a kit that contains one suitable plastic bag or container for each sample to be collected. Mark containers for the appropriate component. Provide shipping documents, including either pre-paid shipping or a shipper number that can be used by the QC Manager to arrange pickup, addressed to the approved coating testing laboratory.

2.5 TEST KITS

2.5.1 Test Kit for Measuring Chloride, Sulfate and Nitrate Ions on Steel and Coated Surfaces

Provide test kits that meet all of the following requirements:

a. Contains all materials,supplies, tools, and instructions for field testing and on-site quantitative evaluation of chloride, sulfate, and nitrate ions;

b. Extract solution is acidic, factory pre-measured, pre-packaged, and of uniform concentration;

c. Components and solutions are mercury free and environmentally friendly;

d. Contains new materials and solutions for each test extraction;

e. Contains an extraction test container (vessel, sleeve, cell) that creates a sealed, encapsulated environment during salt ion extraction;

f. Contains a test extract container suitable for testing the following steel surfaces: horizontal (up/down configuration), vertical, flat, curved, smooth, pitted, and rough;

g. All salt ion concentrations are directly measured in micrograms per square centimeter.

2.5.2 Test Kit for Identifying Amine Blush on Epoxy Surfaces

Provide test kits that meet all of the following requirements:

a. Is a completely self-contained field test kit with all materials, supplies, tools, and instructions to perform tests and indicate the presence of unreacted amines;

b. Uses an identifiable, consistent, uniform, pre-packaged, factory pre-measured indicating solution;

c. Contains no mercury or lead and is environmentally friendly;

d. Contains a solution of an unreacted amine for the purpose of "self checking" the indicator solution;

2.6 ABRASIVE

The referenced abrasive specifications have maximum limits for soluble salts contamination, however, this maximum level of contamination does not guarantee that contamination will not be transferred to the steel surface during abrasive blasting. Other factors such as on-site handling and recycling can allow contamination of abrasive. Contractors are cautioned to verify that the chosen abrasive, along with work and storage processes, allow the final surface cleanliness requirements to be achieved. Successful testing of chlorides in abrasive does not negate the final acceptance testing of steel surfaces.

Interpret MIL-A-22262 to include the meaning that abrasive material contains a maximum one percent by weight of any toxic substance listed in either Table Z-1, Z-2, or Z-3 or 29 CFR 1910-SUBPART Z, with the exception of inert or nuisance dust materials, arsenic, beryllium, cadmium, cobalt, lead, mercury, rhodium, silver, tellurium, thallium, and uranium.

2.6.1 Metallic Abrasive

2.6.1.1 New and Remanufactured Steel Grit

Conform to the chemical and physical properties of SSPC AB 3 Class 1 (Steel) only. Class 2 (Iron) abrasive shall not be used.

To develop a suitable work mix from new steel abrasive, a minimum of 200 - 400 recycles is required, therefore, it is advantageous for a Contractor to use remanufactured steel grit or grit reclaimed from a previous project. Such grit shall be considered to conform if it can be traced to new grit conforming to SSPC AB 3 Class 1 and it meets all cleanliness requirements of SSPC AB 3 Class 1 when brought to the current jobsite. Submit one representative sample of this work mix to the laboratory for testing, along with samples of new material. Acceptance and use of this work mix shall not be used to justify any deviation from surface preparation requirements.

2.6.1.2 Recycled Steel Grit

Conform to the chemical and physical properties of SSPC AB 2

PART 3 EXECUTION

Perform all work, rework, and repair in accordance with approved procedures in the Coating Work Plan. Work must be phased to maintain boat traffic within the channel and vehicular traffic on the bridge.

3.1 REMOVAL OF COATINGS CONTAINING HAZARDOUS MATERIALS

Coatings containing hazardous materials and identified for disturbance during surface preparation, including removal, shall be handled in accordance with Section 02 83 00.00 22 MANAGEMENT OF LEAD, CADMIUM, AND CHROMIUM DURING RENOVATION, DEMOLITION, REMOVAL, AND ABATEMENT (PNS PROJECTS). Coordinate surface preparation requirements from Section 02 83 00.00 22 MANAGEMENT OF LEAD, CADMIUM, AND CHROMIUM DURING RENOVATION, DEMOLITION, REMOVAL, AND ABATEMENT (PNS PROJECTS).

3.2 COATING AND ABRASIVE SAMPLE COLLECTION AND TESTING

Sample and test materials delivered to the jobsite. Notify Contracting Officer three days in advance of sampling. The QC Manager and either the PCS or coating inspector shall witness all sampling.

3.2.1 Coating Sample Collection

Provide a sample collection kit as required in paragraph COATING SAMPLE COLLECTION AND SHIPPING KIT. From each lot, obtain a one quart sample of each base material, and proportional samples of each activator based on mix ratio, by random selection from sealed containers in accordance with ASTM D3925. Prior to sampling, mix contents of each sealed container to ensure uniformity. As an alternative to collecting small samples from kits, entire kits may be randomly selected and shipped to laboratory, observing all requirements for witnessing and traceability. For purposes of quality conformance inspection, a lot is defined as that quantity of materials from a single, uniform batch produced and offered for delivery at one time. A batch is defined as that quantity of material processed by the manufacturer at one time and identified by number on the label. Identify samples by designated name, specification number, batch number, project contract number, sample date, intended use, and quantity involved. The QC manager will take possession of the packaged samples, contact the shipping company to arrange for pickup, and relinquish the samples only to the shipping representative for shipment to the approved laboratory for testing as required by the paragraph COATING SAMPLE TEST REPORTS.

3.2.2 Abrasive Sample Collection

Provide a sample collection kit as required in paragraph ABRASIVE SAMPLE COLLECTION AND SHIPPING KIT. For purposes of quality conformance inspection, a lot shall consist of all abrasive materials of the same type from a single, uniform batch produced and offered for delivery at one time. Obtain samples of each abrasive lot using the sampling techniques and schedule of MIL-A-22262. The addition of any substance to a batch shall constitute a new lot. Identify samples by designated name, specification number, lot number, project contract number, sample date, intended use, and quantity involved. The QC manager will take possession of the packaged samples, contact the shipping company to arrange for pickup, and relinquish the samples only to the shipping representative for shipment to the approved laboratory for testing as required by the paragraph ABRASIVE SAMPLE TEST REPORTS.

3.2.3 Coating Sample Test Reports

Submit test results for each lot of coating material delivered to the jobsite. Test samples of primer, intermediate, and topcoat materials for compliance with requirements of Table I. Reject entire lot represented by samples that fail one or more tests, select new lots, and test samples.

3.2.4 Abrasive Sample Test Reports

Submit test results for each lot of abrasive delivered to the jobsite. Test samples of metallic abrasive to the requirements of paragraph REQUIREMENTS of SSPC AB 3, except paragraph 4.1.5 DURABILITY. Test samples of non-metallic abrasive as required in paragraph QUALITY CONFORMANCE INSPECTION of MIL-A-22262. Reject entire lot represented by samples that fail one or more tests, select new lots, and test samples.

3.3 SURFACES TO BE COATED

Coat steel surfaces of the bridge to include all structural steel elements and steel appurtenances including safety railings and light posts as depicted in the Contract Drawings..

3.4 LIGHTING

Provide lighting for all work areas as prescribed in SSPC Guide 12.

3.5 ENVIRONMENTAL CONDITIONS

3.5.1 Containment

Design and provide a containment system for the capture, containment, collection, storage and disposal of the waste materials generated by the work under this Section, to meet the requirements of SSPC Guide 6, Class 1. Vapor concentrations shall be kept at or below 10 percent of Lower Explosive Limit (LEL) at all times. Containment may be designed as fixed containment for complete structure or portable containment for sections of structure, however, containment shall remain in any one place from beginning of abrasive blasting through initial cure of coating. Waste materials covered by this paragraph shall not include any material or residue from removal of coatings containing lead, chromium, cadmium, PCB, or any other hazardous material.

The containment system must also meet the following requirements:

a. The containment system must be capable of mitigating noise created from re-coating operations through attenuation and adsorption in accordance with the requirement of Section 01 57 19.00 22 TEMPORARY ENVIRONMENTAL CONTROLS - PORTSMOUTH NAVAL SHIPYARD (PWD ME).

b. Dry Abrasive Blast Cleaning - Full Containment with Negative Pressure (SSPC Class 1). The enclosure must be designed, installed, and maintained to sustain maximum anticipated wind forces, including negative pressure. Flapping edges of containment materials are prohibited and the integrity of all containment materials, seams, and seals must be maintained for the duration of the project. Airflow inside containment msut be designed to provide visibility and reduce worker exposure to toxic metals as specified in the submitted Containment Plan. The minimum airflow shall be 60 cfm for down draft systems and 100 cfm for cross draft systems.

c. The containment system must not be attached to the structure by drilling or welding onto the bridge. The containment system must also be designed so that it is not inundated during high tides and extreme water levels or by wave action.

d. The blast enclosure must extend beyond the limits of surface preparation to allow the workers to blast away from, rather than into, the seam between the containment and the structure. The blast enclosure must have an entrance chamber to allow entrance and exit from the enclosure without allowing the escape of blasting residue.

e. All spent abrasive must be removed from the containment at the conclusion of each work shift.

f. Appropriate filtration must be used on the exhaust air of dust

collection and abrasive recycling equipment as required to comply with State and Federal regulations.

g. Areas beneath containment connection points that were shielded from abrasive blast cleaning must be prepared by vacuum blast cleaning or vacuum shrouded power tool cleaning after the containment is removed.

It is the Contractors responsibility to insure the feasibility and workability of the containment system. The Contractor shall perform his operations and work schedule in a manner as to minimize leakage of the containment system. The containment system shall be properly maintained and shall not deviate from the approved drawings. If the containment system fails to function satisfactorily, the Contractor shall suspend all operations, except those required to minimize adverse impact on the environment or government property. Operations shall not resume until modifications have been made to correct the cause of the failure.

3.5.2 Automated Monitoring Requirements

Provide continuous monitoring of temperature, relative humidity, and dew point data at pertinent points on the structure, during surface preparation, coating application, and initial cure. Locate sensors to provide pertinent data for the surface preparation and coat application being performed. Monitor any heating, cooling, or dehumidification equipment used. Make data available to the Contracting Officer through Internet access. Provide monitoring equipment to perform as follows:

a. Data is collected in the field unit in one minute increments, and available for download (on-site) in a standard format. Contractor shall collect this data and make available to the Contracting Officer;

b. Monitoring equipment shall have backup power such that data collection and transmission to web server will be uninterrupted during the entire period of the dehumidification requirement;

c. Monitoring equipment shall have capability to measure surface temperatures at a minimum of four locations anywhere on a 150 foot diameter by 50 foot high tank;

d. Monitoring equipment shall have capability to measure interior and exterior dry bulb temperature (DB), relative humidity (RH), and dewpoint temperature (DP);

e. Data shall be available continuously through secure Internet connection, using widely available web browsers;

f. Internet accessible data shall be collected and stored in maximum 15 minute increments, and lag time between data collection and online availability shall be no greater than 70 minutes;

g. Internet accessible data shall be available for viewing online in tabular format, and graphical format using selected data;

h. Internet accessible data shall be available for download in user-defined segments, or entire project to date, in a standard format usable by Microsoft Excel and other spreadsheet programs.

i. Internet-based controls shall provide alerts to pre-designated parties through email messaging;

j. Internet-based controls shall monitor data uploads from field unit and issue alert if data not initiated within 60 minutes of last upload;

k. Internet-based controls shall monitor operation of DH equipment and issues alert when power remains off for more than 15 seconds, or if pre-determined temperature, RH, or DP conditions are exceeded;

The requirements listed here were developed around the Munters Exactaire Monitoring System, as this was the only monitoring system having Internet connectivity known to be commercially available. There is no requirement for connectivity of the monitoring system to control the DH equipment, therefore, any combination of equipment having the required functionality will be accepted.

3.6 SURFACE PREPARATION

3.6.1 Low Pressure Water Cleaning and Solvent Cleaning

3.6.1.1 Cleaning Prior to Coating Removal

All surfaces scheduled for coating work must be thoroughly cleaned of contaminants prior to removal of existing coating system. All water and debris must be collected for proper disposal.

Washing must involve the use of chlorine free potable water at a minimum of 1000 psi and less than 5000 psi pressure, in accordance with “Low Pressure Water Cleaning” of SSPC SP 12/NACE No.5. Paint spray equipment must not be used to perform the water cleaning. The cleaning must be performed in such a manner as to remove dust, dirt, chalk, insect and animal nests, bird droppings, loose paint, and other foreign matter prior to solvent cleaning. The water, debris, and any loose paint removed by water cleaning must be collected for proper disposal. The washing must be completed no more than 2 weeks prior to surface preparation.

If detergents or additives are added to the water, the detergents/additives must be included in the submittals and not used until accepted by the Government. When detergents or additives are used, the surface must be rinsed with chlorine free potable water before the detergent water dries. After washing has been accepted by the Government, all traces of soluble contaminants which remain on the steel surfaces to be painted must be removed by solvent cleaning in accordance with SSPC SP 1.

The tops of pier caps and abutments must be cleaned free of dirt, paint chips, insect and animal nests, bird droppings, and other foreign matter and the debris collected for proper disposal.

3.6.2 Cleaning Between Coats

When foreign matter has accumulated on a previously applied coat, washing must be performed prior to the application of subsequent coats. The water does not need to be collected unless it contacts existing lead containing coatings. Washing must involve the use of non-chlorinated potable water at a minimum of 1000 psi and less than 5000 psi pressure, in accordance with “Low Pressure Water Cleaning” of SSPC SP 12/NACE No.5. Paint spray equipment must not be used to perform the water cleaning.

3.6.3 Abrasive Blasting Equipment

Use abrasive blasting equipment of conventional air, force-feed, or pressure type. Maintain a minimum pressure of 95 psig at nozzle. Confirm that air supply for abrasive blasting is free of oil and moisture when tested in accordance with ASTM D4285. Test air quality at each startup, but in no case less often than every five operating hours.

3.6.4 Operational Evaluation of Abrasive

Test abrasive for salt contamination and oil contamination as required by the appropriate abrasive specification daily at startup and every five operating hours thereafter.

3.6.5 Surface Standard

Inspect surfaces to be coated, and select plate with similar properties and surface characteristics for use as a surface standard. Blast clean one or more one foot square steel panels as specified in paragraph SURFACE PREPARATION. Record blast nozzle type and size, air pressure at nozzle and compressor, distance of nozzle from panel, and angle of blast to establish procedures for blast cleaning. Measure surface profile in accordance with ASTM D7127. When the surface standard complies with all specified requirements, seal with a clearcoat protectant. Use the surface standard for comparison to abrasive blasted surfaces throughout the course of work.

3.6.6 Pre-Preparation Testing for Surface Contamination

Perform testing, abrasive blasting, and testing in the prescribed order.

3.6.6.1 Pre-Preparation Testing for Oil and Grease Contamination

Inspect all surfaces for oil and/or grease contamination using two or more of the following inspection techniques: 1) Visual inspection, 2) WATER BREAK TEST, 3) CLOTH RUB TEST. Reject oil and/or grease contaminated surfaces, clean in accordance with SSPC SP 1, and recheck for contamination until surfaces are free of oil and grease.

WATER BREAK TEST - Spray atomized mist of distilled water onto surface, and observe for water beading. If water "wets" surface rather than beading up, surface can be considered free of oil or grease contamination. Beading of water (water forms droplets) is evidence of oil or grease contamination.

CLOTH RUB TEST - Rub a clean, white, lint free, cotton cloth onto surface and observe for discoloration. To confirm oil or grease contamination in lightly stained areas, a non-staining solvent may be used to aid in oil or grease extraction. Any visible discoloration is evidence of oil or grease contamination.

3.6.6.2 Pre-Preparation Testing for Soluble Salts Contamination

Test surfaces for soluble salts, and wash as required, prior to abrasive blasting. Soluble salt testing is also required in paragraph PRE-APPLICATION TESTING FOR SOLUBLE SALTS CONTAMINATION as a final acceptance test of prepared surfaces after abrasive blasting, and successful completion of this phase does not negate that requirement. This phase is recommended since pre-preparation testing and washing are generally more advantageous than attempting to remove soluble salt contamination after abrasive blasting. Effective removal of soluble salts

will require removal of any barrier to the steel surface, including rust. This procedure may necessitate combinations of wet abrasive blasting, high pressure water rinsing, and cleaning using a solution of water washing and soluble salts remover. The soluble salts remover shall be acidic, biodegradable, nontoxic, noncorrosive, and after application, will not interfere with primer adhesion. Delays between testing and preparation, or testing and coating application, may allow for the formation of new contamination. Use potable water, or potable water modified with soluble salt remover, for all washing or wet abrasive blasting. Test methods and equipment used in this phase are selected at the Contractor's discretion.

3.6.7 Abrasive Blasting

Abrasive blast steel surfaces to near-white metal in accordance with SSPC SP 10/NACE No. 2. Prepared surfaces shall conform to SSPC VIS 1 and shall match the prepared test-panels. Provide a 2 to 3 mil surface profile. Reject profile greater than 3 mils, discontinue abrasive blasting, and modify processes and materials to provide the specified profile. Measure surface profile in accordance with ASTM D7127, using Rmax as the measure of profile height. Record all measurements required in this standard. Measure profile at rate of three test areas for the first 1000 square feet plus one test area for each additional 1000 square feet or part thereof. When surfaces are reblasted for any reason, retest profile as specified. Following abrasive blasting, remove dust and debris by vacuum cleaning. Do not attempt to wipe surface clean.

3.6.8 Recyclable Abrasives

Operate the equipment in a manner that minimizes waste generation. Steps must also be taken to minimize dust generation during the transfer of all abrasive/paint debris (expendable or recyclable abrasives) for recycling or disposal. Acceptable methods include, but are not limited to vacuuming, screw or belt conveyance systems, or manual conveyance. Manual conveyance is only permitted if the work is performed inside a containment system that is equipped with an operating ventilation system capable of controlling the dust that is generated.

3.6.9 Vacuum Blast Cleaning (SSPC-Class 4A)

Vacuum blasting equipment must be fully automatic and capable of cleaning and recycling the abrasive. The system must be designed to deliver cleaned, recycled blasting abrasives and provide closed system containment during blasting. The removed coating, mill scale, and corrosion must be separated from the abrasive and stored for disposal.

Ensure that the vacuum shrouds are fully engaged while the tool is in use to prevent the escape of abrasive and lead paint chips. Attach containment materials around and under the work area to catch and contain abrasive and waste materials in the event of an accidental escape from the vacuum shroud. This containment is in addition to the containment system specified earlier.

3.6.10 Disposal of Used Abrasive

Dispose of used abrasive off Government property in accordance with the approved waste management plan and Federal, State, and Local mandated regulations.

3.6.11 Pre-Application Testing For Surface Contamination

3.6.11.1 Pre-Application Testing for Oil and Grease Contamination

Ensure surfaces are free of contamination as described in paragraph PRE-PREPARATION TESTING FOR OIL AND GREASE CONTAMINATION, except that only questionable areas need be checked for beading of water misted onto surface.

3.6.11.2 Pre-Application Testing for Soluble Salts Contamination

Test surfaces for chloride contamination using the Test Kit described in TEST KIT FOR MEASURING CHLORIDE, SULFATE AND NITRATE IONS ON STEEL AND COATED SURFACES. Test all surfaces at rate of three tests for the first 1000 square feet plus one test for each additional 2000 square feet or part thereof. Concentrate testing of bare steel at areas of coating failure to bare steel and areas of corrosion pitting. One or more readings greater than 3 micrograms per square centimeter of chlorides or 10 micrograms per square centimeter of sulfates or 5 micrograms per square centimeter of nitrates is evidence of soluble salt contamination. Reject contaminated surfaces, wash as discussed in paragraph PRE-PREPARATION TESTING FOR SOLUBLE SALTS CONTAMINATION, allow to dry, and re-test until all required tests show allowable results. Reblast tested and cleaned areas as required. Label all test tubes and retain for test verification.

3.6.11.3 Pre-Application Testing for Surface Cleanliness

Apply coatings to dust free surfaces. To test surfaces, apply strip of clear adhesive tape to surface and rub onto surface with finger. When removed, the tape should show little or no dust, blast abrasive, or other contaminant. Reject contaminated surfaces and retest. Test surfaces at rate of three tests for the first 1000 square feet plus one test for each additional 1000 square feet or part thereof. Provide two additional tests for each failed test or questionable test. Attach test tapes to Daily Inspection Reports.

3.7 STRUCTURAL STEEL MATING SURFACES

All laminar, stratified, or pack rust that has formed on or between the existing steel surfaces shall be removed as follows:

3.7.1 Disassembled Mating Surfaces

When the Contract requires existing mating surfaces to be disassembled, the surfaces must be cleaned and prepared as a faying surface. Faying surfaces for all steel connections must be abrasive blast cleaned and prime coated only as specified herein prior to being re-assembled.

3.7.2 Assembled Mating Surfaces

Pack rust formed along the perimeter of mating surfaces of connected plates or shapes of structural steel must be removed to the extent feasible without mechanically detaching the mating surface. Pack rust between mating surfaces must be removed to a level equal to or below the level of mating surfaces between which the rust is packed. Any pack rust remaining after cleaning the mating surfaces shall be tight and intact when examined using a dull putty knife. The tools used to remove these corrosion products must be identified in the submittals and accepted by the Contracting Officer. If the surface preparation or removal of rust results in nicks or gouges, the work must be suspended, and the damaged areas repaired at no additional

expense to the Goverment and to the satisfaction of the Contracting Officer. Demonstrate that they have made the necessary adjustments to prevent a reoccurrence of the damage prior to resuming work.

3.7.3 Application of Joint Sealant in Built-up Members

Apply joint sealant in voids between built up plates and connection plates where pack rust has been removed leaving a space between plates of 1/4 inch or greater. When the void space between any two plates meets or exceeds 1/4 inch, caulking shall fill the void over the full length of the void, regardless of whether or not that void height is 1/4 inch or greater. Sealant must be installed after blast cleaning but before application of primer. The sealant must be applied in the 25 to 50 micron (1 to 2 mils) dry film thickness range.

3.8 MIXING AND APPLICATION OF SEALANT AND COATING SYSTEM

3.8.1 Preparation of Sealant and Coating Materials for Application

Each of the sealant, primer, intermediate, and topcoat materials is a two-component material supplied in separate containers.

3.8.1.1 Mixing Sealant, Primer and Intermediate Coat Materials

Mix in accordance with manufacturer's instructions, which may differ for each product. Do not mix partial kits, or alter mix ratios. Mix materials in same temperature and humidity conditions specified in paragraph DELIVERY AND STORAGE. Allow mixed material to stand for the required induction time based on its temperature.

3.8.1.2 Mixing Topcoat Material

Do not mix partial kits, or alter mix ratios. Mix polyurethane coating materials in same temperature conditions specified in paragraph DELIVERY AND STORAGE. The polyurethane coating material is moisture sensitive and any introduction of moisture or water into the material during mixing or application will shorten usable pot life. Use a mixer that does not create a vortex. Do not add solvent without specific written recommendation from the manufacturer. No induction time is required, only thorough agitation of the mixed material.

3.8.1.3 Pot Life

Apply mixed products within stated pot life for each product. Stop applying when material becomes difficult to apply in a smooth, uniform wet film. Add all required solvent at time of mixing. Do not add solvent to extend pot life. Pot life is based on standard conditions at 70 degrees F and 50 percent relative humidity. For every 18 degrees F rise in temperature, pot life is reduced by approximately half, and for every 18 degrees F drop it is approximately doubled. Usable pot life depends on the temperature of the material at the time of mixing and the sustained temperature at the time of application. Other factors such as the shape of the container and volume of mixed material may also affect pot life. Precooling or exterior icing of components for at least 24 hours to a minimum of 50 degrees F in hot climates will extend pot life. High humidity at time of mixing and application shortens pot life of the Polyurethane topcoat material. Following are approximate pot life times:

Sealant As specified by manufacturer

Epoxy primer and intermediate materials 4 hours
Polyurethane topcoat materials 2 hours.

3.8.1.4 Application Conditions and Recoat Windows

The application condition requirements for the coating system are very time and temperature sensitive, and are intended to avoid the delamination problems frequently found on industrial structures. Plan coating application to ensure that specified temperature, humidity, and condensation conditions are met. If conditions do not allow for orderly application of sealant, primer, stripe coat, intermediate coat and topcoat, use appropriate means of controlling air and surface temperatures, as required. Partial or total enclosures, insulation, heating or cooling, or other appropriate measures may be required to control conditions to allow for orderly application of all required coats.

Maintain air and steel surface temperature between 60 and 100 degrees F during application and the first four hours of cure for epoxy coats and the first eight hours of cure for polyurethane coats. Maintain steel surface temperature more than 5 degrees F above the dew-point of the ambient air for the same period.

Use Table entitled "RECOAT WINDOWS" to determine appropriate recoat windows for each coat after the initial coat. Apply each coat during appropriate RECOAT WINDOW of preceding coat. If a RECOAT WINDOW is missed, the minimum and maximum primer and intermediate coat thickness may be adjusted to accommodate a FILL COAT, however, requirements for total epoxy coating thickness and total coating thickness will not be modified. Missing more than one RECOAT WINDOW may require complete removal of coating if maximum total coating thickness requirements cannot be achieved.

If coating is not applied during RECOAT WINDOW, or if surface temperature exceeds 120 degrees F between applications, provide GLOSS REMOVAL, apply next coat within 24 hours. If next planned coat is topcoat, apply FILL COAT if required to fill sanding marks. Sanding marks from GLOSS REMOVAL of intermediate coat reflecting through topcoat will be considered as noncompliant. Apply FILL COAT within 24 hours of GLOSS REMOVAL, then apply topcoat within RECOAT WINDOW of FILL COAT.

RECOAT WINDOWS						
EPOXY OVER EPOXY						
Temperature degrees F	60-70	71-80	12-36	91-100	101-110	111-120
RECOAT WINDOW (Hrs.)	24-72	18-60	16-48	12-36	8-18	4-6
POLYURETHANE OVER EPOXY						

RECOAT WINDOWS						
Temperature degrees F	60-70	71-80	12-36	91-100	101-110	111-120
RECOAT WINDOW (Hrs.)	24-96	24-72	16-48	12-36	10-24	8-16
POLYURETHANE OVER POLYURETHANE						
Temperature degrees F	60-70	71-80	12-36	91-100	101-110	111-120
RECOAT WINDOW (Hrs.)	8-48	6-48	4-36	3-24	2-12	1-2

The temperature ranges shown in the table above are for determining recoat windows. Choose recoat window based on the highest surface temperature that was sustained for one or more hours between coats. This applies to the entire time between coats. Measure and record air and surface temperatures on hourly basis to determine appropriate recoat windows. If surface temperature goes above 100 degrees F, measure and record temperatures every half hour.

FILL COAT - Where indicated, apply coat of intermediate coat epoxy, at 2 to 3 mils DFT, then apply next specified full coat within recoat window of FILL COAT. A FILL COAT may be used to adjust coating thickness to comply with requirements or to fill sanding marks in intermediate coat.

GLOSS REMOVAL - Where required, hand sand in a linear fashion to remove gloss using 120-200 grit wet/dry sandpaper, followed by solvent wiping with a clean rag soaked with denatured alcohol to remove all dust. GLOSS REMOVAL of primer coat is to scarify surface and shall consist of removal of approximately 1 mil of coating. If steel is exposed during GLOSS REMOVAL, repair in accordance with paragraph PROCEDURE FOR HOLIDAY AND SPOT REPAIRS OF NEWLY APPLIED COATING. GLOSS REMOVAL of intermediate coat may include removal of up to 3 mils of coating to avoid excess thickness, prior to application of FILL COAT.

3.8.2 Amine Blush Testing of Epoxy Coat Prior to Overcoating

Test epoxy surfaces prior to application of roof joint sealant, epoxy coat, or polyurethane topcoat for amine blush contamination using the Test Kit described in paragraph TEST KIT FOR IDENTIFYING AMINE BLUSH ON EPOXY SURFACES. Test all surfaces at rate of three tests for the first 1000

square feet plus one test for each additional 2000 square feet or part thereof. Remove any identified contamination using an approved procedure.

3.8.3 Application of Coating System and Joint Sealant

Apply coatings in accordance with SSPC PA 1 and as specified herein. Apply coatings to surfaces that meet all stated surface preparation requirements.

After application of primer coat and prior to application of each subsequent coat, perform testing prescribed in paragraph PRE-APPLICATION TESTING FOR SURFACE CONTAMINATION, as necessary, to ensure minimal intercoat contamination. This testing may be reduced to one half of the prescribed rate for bare steel if the testing indicates no contamination when sampling is evenly distributed over surfaces being tested. If contamination is found between coats, revert to the specified testing rate. Generally, oil and grease contamination and soluble salts contamination are not encountered if subsequent coats are applied within specified recoat windows and unusual atmospheric events do not occur. Such atmospheric events as a coastal storm blowing onshore can bring unusual chloride contamination. Concern for intercoat contamination should be continually prevalent, and spot testing should be accomplished to verify satisfactory conditions. Where visual examination or spot testing indicates contamination, perform sufficient testing to verify non-contamination, or to define extent of contamination for appropriate treatment.

Apply each coat in a consistent wet film, at 90 degrees to previous coat. Ensure that primer and intermediate coat "cold joints" are no less than six inches from welds. Apply stripe coat by brush. For convenience, stripe coat material may be delivered by spray if followed immediately with brush-out and approved procedures include appropriate controls on thickness. Apply all other coats by spray application. Use appropriate controls to prevent airborne coating fog from drifting beyond 15 feet from the structure perimeter. Cover or protect all surfaces that will not be coated. The cleanliness, temperature, recoat windows, and airborne paint containment requirements may necessitate the use of enclosures, portable shelters, or other appropriate controls.

Apply coatings at the following specified thickness:

Coat	Minimum DFT (Mils)	Maximum DFT (Mils)
Primer	3	5
Intermediate	3	5
Top	2	3
Total system	8	13

Measure coating thickness in accordance with SSPC PA 2 and at the following frequencies to confirm that coating application is within the specified range and within the tolerances of that standard:

a. Conduct wet film thickness measurements randomly during the application process to verify the application rates are acceptable.

b. Conduct dry film thickness measurements of each coat. Conduct 5

inspections in area coated by each shift. Do not conduct measurements in areas of striping.

For non-compliant areas, increase number of test areas to identify all non-compliant applications as required by SSPC PA 2. Add coating as required to correct underruns, and remove coating with excess thickness to bare steel and reapply as specified in paragraph PROCEDURE FOR HOLIDAY AND SPOT REPAIRS OF NEWLY APPLIED COATING.

3.8.3.1 Application of Primer

Apply primer coat, maintaining paint supply container height within 3 feet of the paint nozzle for applying zinc primer. Maintain constant agitation of paint pot to ensure that zinc does not settle in container.

3.8.3.2 Application of Stripe Coat

Apply a stripe coat of intermediate coat epoxy material within RECOAT WINDOW of primer, allowing sufficient dry time to allow application of intermediate coat within RECOAT WINDOW of primer. Apply by brush, working material into corners, crevices, angles, and welds, and onto outside corners and angles.

3.8.3.3 Application of Intermediate Coat

Apply intermediate coat within RECOAT WINDOW of primer coat.

3.8.3.4 Application of Topcoat

Make all required repairs to primer and intermediate coats as specified in paragraph entitled "Procedure for Holiday and Spot Repairs of Newly Applied Coating" prior to applying topcoat. Apply topcoat within RECOAT WINDOW of intermediate coat. The polyurethane topcoat may require multiple passes to achieve desired aesthetics and required thickness. Consult manufacturer for thinning and application procedures for anticipated temperature, humidity, and wind conditions. Touch-up blemishes and defects within recoat window of polyurethane topcoat. Retain sample of polyurethane topcoat, from the same batch used to coat structure, to make touch-ups that might be required later.

3.8.3.5 Application of Joint Sealant

Apply joint sealant to back-to-back steel joints that are less that 3/8 inches wide and are not seal welded. Apply sealant to top and bottom, or each side, of narrow joints. Apply sealant within 48 hours of application of the topcoat, and touch-up with topcoat after appropriate cure of the sealant.

3.8.3.6 Procedure for Holiday and Spot Repairs of Newly Applied Coating

Repair coating film defects at the earliest practicable time, preferably before application of the succeeding coat. Observe all requirements for soluble salts contamination, cleanliness between coats, and application conditions. Prepare defective area in accordance with SSPC SP 10/NACE No. 2, and feather coating as required to leave 4 inches of each succeeding coat feathered and abraded. Protect adjacent areas from damage and overspray. Remove dust and solvent wipe the prepared area plus an additional 4 inches beyond the prepared area with clean denatured alcohol. Apply each coat within RECOAT WINDOW of preceeding coat. Within four hours of preparation,

apply zinc-rich primer to prepared steel and feather onto prepared primer. Apply intermediate coat to primed area and feather to prepared intermediate area. Apply topcoat to intermediate coat and feather to prepared topcoat. Apply each repair coat to approximate thickness of surrounding coating system.

3.9 PROJECT IDENTIFICATION

At the completion of the work, stencil the following information on the bridge girder closest to teh south abutment in 3/4 to one inch Helvetica style letters of contrasting color using acrylic stencil paint:

Date coated:
Project Number:
Contractor:
Address:
Coating System
Surface Prep: SSPC SP 10 Profile: _____
Primer: _____ Thickness: ____
Intermediate: _____ Thickness: ____
Topcoat: _____ Thickness: ____
Total Thickness: _____

3.10 FIELD QUALITY CONTROL

Project documentation, including inspection and testing records, must be used to determine compliance with contract requirements and approved procedures. The certifications of completion, for invoices and for project completion, must be based on documented evidence of compliance with all requirements and approved Coating Work Plan procedures. Track inspections and tests in the Test Plan & Log.

For marking of bridge surfaces, use chalk for marking bare steel, and water based markers for marking coated surfaces, and remove marks prior to coating. Do not use any wax or grease based markers, or any other markers that leave a residue or stain.

3.10.1 Coating Inspector

The coating inspector shall be considered a QC Specialist and shall report to the QC Manager, as specified in Section 01 45 00.00 22 QUALITY CONTROL (PWD ME). The Coating Inspector shall be present during all pre-preparation testing, surface preparation, coating application, initial cure of the coating system, during all coating repair work, and during completion activities as specified in Section 01 45 00.00 22 QUALITY CONTROL (PWD ME). The Coating Inspector shall provide complete documentation of conditions and occurrences on the job site, and be aware of conditions and occurrences that are potentially detrimental to the coating system. The requirements for inspection listed in this Section are in addition to the QC inspection and reporting requirements specified in Section 01 45 00.00 22 QUALITY CONTROL (PWD ME).

3.10.2 Field Inspection

3.10.2.1 Inspection Requirements

Perform field inspection in accordance with ASTM D3276 and the approved Coating Work Plan. Document Contractor's compliance with the approved Coating Work Plan.

Provide all tools and instruments required to perform the required testing, as well as any tools or instruments that the inspector considers necessary to perform the required inspections and tests. Document each inspection and test, including required hold points and other required inspections and tests, as well as those inspections and tests deemed prudent from on-site evaluation to document a particular process or condition, as follows:

a. Location or area;
b. Purpose (required or special);
c. Method;
d. Criteria for evaluation;
e. Results;
f. Determination of compliance;
g. List of required rework;
h. Observations.

Collect and record Environmental Conditions as described in ASTM D3276 on a 24 hour basis, as follows:

a. During surface preparation, every two hours or when changes occur;

b. During coating application and the first four days of initial cure, every hour, or when changes occur;

c. Note location, time, and temperature of the highest and lowest surface temperatures each day;

d. Use a non-contact thermometer to locate temperature extremes, then verify with contact thermometers.

NOTE: Data collected on Environmental conditions in paragraph AUTOMATED MONITORING REQUIREMENTS may be used for overnight data, however, the data must be constantly verified as to location of sensors and validity of data with respect to the coating work being accomplished.

Document all equipment used in inspections and testing, including manufacturer, model number, serial number, last calibration date and future calibration date, and results of on-site calibration performed.

Document Contractors compliance with the approved Coating Work Plan.

3.10.2.2 Inspection Report Forms

Develop project-specific report forms as required to report measurements, test results, and observations being complete and and conforming to contract requirements. This includes all direct requirements of the contract documents and indirect requirements of referenced documents. Show acceptance criteria with each requirement and indication of conformity of each inspected item. The data may be in any format, but must be legible and presented so that entered data can be quickly compared to the appropriate requirement.

3.10.2.3 Daily Inspection Reports

Submit one copy of daily inspection report completed each day when performing work under this Section, to the Contracting Officer. Note all non-compliance issues, and all issues that were reported for rework in accordance with QC procedures of Section 01 45 00.00 22 QUALITY CONTROL

(PWD ME). Each report shall be signed by the coating inspector and the QC Manager. Submit report within 24 hours of date recorded on the report.

3.10.2.4 Inspection Logbook

A continuous record of all activity related to this Section shall be maintained in an Inspection Logbook on a daily basis. The logbook shall be hard or spiral bound with consecutively numbered pages, and shall be used to record all information provided in the Daily Inspection Reports, as well as other pertinent observations and information. The Coating Inspector's Logbook that is sold by NACE is satisfactory. Submit the original Inspection Logbook to the Contracting Officer upon completion of the project and prior to final payment.

3.10.2.5 Inspection Equipment

All equipment shall be in good condition, operational within its design range, and calibrated as required by the specified standard for use of each device.

3.10.2.6 Final Inspection

A final inspection of the coating work must be completed at the end of the project. The final inspection must ensure coating conforms to specifications, and is free from defects.

3.11 FINAL CLEANUP

Following completion of the work, remove debris, equipment, and materials from the site. Remove temporary connections to Government or Contractor furnished water and electrical services. Restore existing facilities in and around the work areas to their original condition.

TABLE 1

COATING QUALITY CONFORMANCE INSPECTION REQUIREMENTS

Table Ia - Zinc-rich Epoxy Primer Coat MIL-DTL-24441/19 Formula 159

Test	Component A		Component B		Mixed	
	Min.	Max.	Min.	Max.	Min.	Max.
Pigment content, percent (zinc dust)	---	---	81.5	85.5	---	---
Volatiles, percent	42.8	44.3	8.0	8.4	---	---
Non-volatile vehicle percent	53.7	57.7	8.3	8.7	---	---

TABLE 1

COATING QUALITY CONFORMANCE INSPECTION REQUIREMENTS

Table Ia - Zinc-rich Epoxy Primer Coat MIL-DTL-24441/19 Formula 159

Test	Component A		Component B		Mixed	
	Min.	Max.	Min.	Max.	Min.	Max.
Weight, Kilograms/liter	0.87	1.01	3.30	3.40	2.80	2.91
Weight, Pounds/gallon	7.3	8.4	27.5	28.4	23.4	24.4
Flashpoint, Degrees C	35.6	---	37.8	---	---	---
Flashpoint, Degrees F	96	---	100	---	---	---
Consistency, grams	---	---	250	500	150	300
Set to touch time, hours at 23 degrees C, 73 degrees F	---	---	---	---	---	2
Dry hard time, hours at 23 degrees C, 73 degrees F	---	---	---	---	---	8
Pot life, hours at 23 degrees C, 73 degrees F	---	---	---	---	4	---
Sag resistance, Micrometers	---	---	---	---	300	---
Sag resistance, Mils	---	---	---	---	12	---
VOC, Grams/liter	---	---	---	---	---	304
VOC, Pounds/gallon	---	---	---	---	---	2.5

NOTES: Test methods as specified in MIL-DTL-24441.

TABLE 1						
COATING QUALITY CONFORMANCE INSPECTION REQUIREMENTS						
Table Ib. - Epoxy Intermediate Coat MIL-DTL-24441/31 Formula 152 Type IV (White (Tinted))						
Test	Component A		Component B		Mixed	
	Min.	Max.	Min.	Max.	Min.	Max.
Pigment content, percent	44.0	49.0	33.0	38.0	---	---
Volatiles, percent	29.0	35.0	16.0	21.0	---	---
Non-volatile vehicle percent	17.5	23.5	44.0	49.0	---	---
Coarse particles, percent	---	0.3	---	0.3	---	---
Consistency, grams	180	320	300	470	180	245
Weight, Kilograms/liter	1.39	1.45	1.29	1.35	1.34	1.4
Weight, Pounds/gallon	11.6	12.1	10.8	11.3	11.2	11.7
Set to touch time, hours at 23 degrees C, 73 degrees F	---	---	---	---	---	3
Dry hard time, hours at 23 degrees C, 73 degrees F	---	---	---	---	---	8
Fineness of grind, Hegman	4	---	4	---	---	---
Flashpoint, Degrees C	35.5	---	37.8	---	---	---
Flashpoint, Degrees F	96	---	100	---	---	---
Titanium dioxide, percent of pigment	91	---	---	---	---	---
Pot life, hours at 23 degrees C, 73 degrees F	---	---	---	---	4	---
Sag resistance, Micrometers	---	---	---	---	300	---
Sag resistance, Mils	---	---	---	---	12	---

TABLE 1						
COATING QUALITY CONFORMANCE INSPECTION REQUIREMENTS						
Table Ib. - Epoxy Intermediate Coat MIL-DTL-24441/31 Formula 152 Type IV (White (Tinted))						
Test	Component A		Component B		Mixed	
	Min.	Max.	Min.	Max.	Min.	Max.
Color of dry film to approximate color of SAE AMS-STD-595A color 27778	---	---	---	---	---	Conform
Contrast ratio, at 75 micrometers, 3 mils DFT	---	---	---	---	.098	---
Gloss, 60 degree specular	---	---	---	---	35	---
VOC, Grams/liter	---	---	---	---	---	340
VOC, Pounds/gallon	---	---	---	---	---	2.8
GENERAL NOTES: Test methods as specified in MIL-DTL-24441.Where "Conform" is indicated, refer to specific requirements of MIL-DTL-24441/31.						

TABLE I						
COATING QUALITY CONFORMANCE INSPECTION REQUIREMENTS						
Table Ic - Polyurethane TopcoatMIL-PRF-85285 Type II (White and Colors)						
Test	Component A		Component B		Mixed	
	Min.	Max.	Min.	Max.	Min.	Max.
Moisture content, percent	---	2	---	---	---	---
Course particles, percent	---	---	---	---	---	.5
Viscosity	---	---	---	---	---	See Note 1
Fineness of grind, Hegman	---	---	---	---	7	---

TABLE I

COATING QUALITY CONFORMANCE INSPECTION REQUIREMENTS

Table Ic - Polyurethane TopcoatMIL-PRF-85285 Type II (White and Colors)

Test	Component A		Component B		Mixed	
	Min.	Max.	Min.	Max.	Min.	Max.
Drying to touch (See Note 2)	---	---	---	---	---	4
Dry-hard (See Note 2)	---	---	---	---	---	8
VOC, grams per liter	---	---	---	---	---	340
Color	---	---	---	---	delta E+-1.0	
Gloss 60 degree specular gloss						
Gloss	---	---	---	---	---	90
Semi-gloss	---	---	---	---	15	45
Opacity	---	---	---	---	0.95	---
Flexibility	---	---	---	---	---	Conform
Fluid resistance	---	---	---	---	---	Conform
Heat resistance (cure)	---	---	---	---	---	Conform
Solvent resistance (cure)	---	---	---	---	---	Conform
Condition in container	---	---	---	---	---	Conform
Odor	---	---	---	---	---	Conform
Lead percent	---	---	---	---	---	0.06
Cadmium percent	---	---	---	---	---	0.06
Chromium percent	---	---	---	---	---	0.00

NOTES:
(1) Modify paragraph 3.6.4 Viscosity and Pot Life, of MIL-PRF-85285 as follows:

The viscosity of the admixed coating, when tested in accordance with ASTM D1200 through a No. 4 Ford cup, shall be as follows:

TABLE I

COATING QUALITY CONFORMANCE INSPECTION REQUIREMENTS

Table Ic - Polyurethane TopcoatMIL-PRF-85285 Type II (White and Colors)

Test	Component A		Component B		Mixed	
	Min.	Max.	Min.	Max.	Min.	Max.
Time from mix (minimum)			Maximum time through a No. 4 Ford Cup			
Initially			30 seconds			
2 hours			60 seconds			
4 hours			No gel			

(2) Modify paragraph 3.7.1 Drying Time, of MIL-PRF-85285.
When applied by spray techniques and when tested in accordance with ASTM D1640/D1640M, the coating shall be set-to-touch within four hours and dry-hard within eight hours (see 4.6 and table I).

GENERAL NOTES:
Test methods as specified in MIL-PRF-85285, except those marked with "*".
Where "Conform" is indicated, refer to specific requirements of MIL-PRF-85285.

-- End of Section --

SECTION 26 05 00.00 40

COMMON WORK RESULTS FOR ELECTRICAL
11/20

PART 1 GENERAL

Work under this section includes all electrical work associated with the wedge barrier system as depicted in the Contract Drawings and specified herein.

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 D709	(2017) Standard Specification for Laminated Thermosetting Materials

ELECTRONIC INDUSTRIES ALLIANCE (EIA)

EIA 480	(1981) Toggle Switches

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)

IEEE C2	(2023) National Electrical Safety Code
IEEE Stds Dictionary	(2009) IEEE Standards Dictionary: Glossary of Terms & Definitions

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

ANSI C80.1	(2020) American National Standard for Electrical Rigid Steel Conduit (ERSC)
ANSI C80.3	(2020) American National Standard for Electrical Metallic Tubing (EMT)
ANSI Z535.1	(2017) Safety Colors
ANSI/NEMA OS 1	(2013; R 2020) Sheet-Steel Outlet Boxes, Device Boxes, Covers, and Box Supports
ANSI/NEMA OS 2	(2013; R 2020) Nonmetallic Outlet Boxes, Device Boxes, Covers, and Box Supports
NEMA 250	(2020) Enclosures for Electrical Equipment (1000 Volts Maximum)
NEMA FB 1	(2014) Standard for Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable
NEMA ICS 1	(2022) Standard for Industrial Control and Systems: General Requirements

NEMA KS 1	(2013) Enclosed and Miscellaneous Distribution Equipment Switches (600 V Maximum)
NEMA RN 1	(2005; R 2013) Polyvinyl-Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal Conduit
NEMA TC 2	(2020) Standard for Electrical Polyvinyl Chloride (PVC) Conduit
NEMA TC 3	(2021) Polyvinyl Chloride (PVC) Fittings for Use With Rigid PVC Conduit and Tubing
NEMA WD 1	(1999; R 2020) Standard for General Color Requirements for Wiring Devices
NEMA WD 6	(2021) Wiring Devices Dimensions Specifications

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70	(2023) National Electrical Code

UNDERWRITERS LABORATORIES (UL)

UL 1	(2005; Reprint Jan 2020) UL Standard for Safety Flexible Metal Conduit
UL 5	(2016; Reprint Jul 2022) UL Standard for Safety Surface Metal Raceways and Fittings
UL 6	(2007; Reprint Sep 2019) UL Standard for Safety Electrical Rigid Metal Conduit-Steel
UL 20	(2018; Reprint Jan 2021) UL Standard for Safety General-Use Snap Switches
UL 44	(2018; Reprint May 2021) UL Standard for Safety Thermoset-Insulated Wires and Cables
UL 83	(2017; Reprint Mar 2020) UL Standard for Safety Thermoplastic-Insulated Wires and Cables
UL 360	(2013; Reprint Aug 2021) UL Standard for Safety Liquid-Tight Flexible Metal Conduit
UL 489	(2016; Rev 2019) UL Standard for Safety Molded-Case Circuit Breakers, Molded-Case Switches and Circuit-Breaker Enclosures
UL 514A	(2013; Reprint Jun 2022) UL Standard for Safety Metallic Outlet Boxes
UL 514B	(2012; Reprint May 2020) Conduit, Tubing and Cable Fittings

UL 514C	(2014; Reprint Feb 2020) UL Standard for Safety Nonmetallic Outlet Boxes, Flush-Device Boxes, and Covers
UL 651	(2011; Reprint May 2022) UL Standard for Safety Schedule 40, 80, Type EB and A Rigid PVC Conduit and Fittings
UL 797	(2007; Reprint Mar 2021) UL Standard for Safety Electrical Metallic Tubing -- Steel
UL 4248-1	(2022) UL Standard for Safety Fuseholders - Part 1: General Requirements

1.2 DEFINITIONS

a. Unless otherwise specified or indicated, electrical and electronics terms used in these specifications, and on the drawings, are as defined in IEEE Stds Dictionary.

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.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" classification. Submittals not having a "G" classification are for Contractor Quality Control approval. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Certification; G

SD-02 Shop Drawings

Marking Strips; G

Shop Drawings; G

SD-03 Product Data

Conduits; G

Wire and Cable; G

Splices and Connectors; G

Switches; G

Receptacles; G

Outlet Boxes, Pull Boxes and Junction Boxes; G

Circuit Breakers; G

Device Plates; G

Product Data; G

SD-06 Test Reports

Continuity Test; G

Phase-Rotation Tests; G

Insulation Resistance Test; G

600-Volt Wiring Test; G

Insulation-Resistance Test; G

SD-08 Manufacturer's Instructions

Manufacturer's Instructions

1.4 QUALITY CONTROL

1.4.1 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. Ensure equipment, materials, installation, and workmanship are in accordance with the mandatory and advisory provisions of NFPA 70, unless more stringent requirements are specified or indicated.

1.4.2 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. Provide products which have been in satisfactory commercial or industrial use for 2 years prior to bid opening. Ensure the 2-year period includes applications of equipment and materials under similar circumstances and of similar size. Ensure the product has 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 must be products of a single manufacturer.

1.4.3 Material and Equipment Manufacturing Date

Products manufactured more than 3 years prior to date of delivery to site must not be used, unless specified otherwise.

1.5 WARRANTY

The equipment items must 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.

1.6 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 must 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 must not fade when exposed to sunlight and must be secured to prevent easy removal or peeling.

1.7 MANUFACTURER"S NAMEPLATE

Each item of equipment must 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.

1.8 FIELD FABRICATED NAMEPLATES

ASTM D709. 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 must identify the function and, when applicable, the position. Nameplates must be melamine plastic, 0.125 inch thick, white with black center core. Surface must be matte finish. Corners shall be square. Accurately align lettering and engrave into the core. Minimum size of nameplates must be one by 2.5 inches. Lettering must be a minimum of 0.25 inch high normal block style.

1.9 ELECTRICAL REQUIREMENTS

Electrical installations shall conform to IEEE C2, NFPA 70, and requirements specified herein.

1.10 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 must be thoroughly familiar with all parts of the installation and must be trained in operating theory as well as practical operation and maintenance work. Instruction must 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 must be as specified in the individual section. When more than 4 man-days of instruction are specified, use approximately half of the time for classroom instruction. Use other time for instruction with equipment or system. When significant changes or modifications in the equipment or system are made under the terms of the contract, provide additional instructions to acquaint the operating personnel with the changes or modifications.

1.11 SHOP DRAWINGS

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 must identify circuit terminals and indicate the internal wiring for each item of equipment and the interconnection between each item of equipment. Drawings must indicate adequate clearance for operation, maintenance, and replacement of operating equipment devices.

1.12 PRODUCT DATA

Submittal must include performance and characteristic curves.

1.13 GENERAL REQUIREMENTS

Submit material, equipment, and fixture lists for the following items showing manufacturer's style or catalog numbers, specification and drawings reference numbers, warranty information, and fabrication site.

Submit manufacturer's instructions including special provisions required to install equipment components and system packages. Special notices must detail impedances, hazards and safety precautions.

Submit certification required to install equipment components and system packages.

PART 2 PRODUCTS

2.1 EQUIPMENT

Provide the standard cataloged materials and equipment of manufacturers regularly engaged in the manufacture of the products. For material, equipment, and fixture lists submittals, show manufacturer's style or catalog numbers, specification and drawing reference numbers, warranty information, and fabrication site.

Provide factory-applied finish on electrical equipment in accordance with the following:

a. NEMA 250 corrosion-resistance test and the additional requirements as specified herein.

b. Interior and exterior steel surfaces of equipment enclosures: thoroughly cleaned followed by a rust-inhibitive phosphatizing or equivalent treatment prior to painting.

c. Exterior surfaces: free from holes, seams, dents, weld marks, loose

scale or other imperfections.

d. Interior surfaces: receive not less than one coat of corrosion-resisting paint in accordance with the manufacturer's standard practice.

e. Exterior surfaces: primed, filled where necessary, and given not less than two coats baked enamel with semigloss finish.

f. Equipment located indoors: ANSI Light Gray, and equipment located outdoors: ANSI Light Gray.

g. Provide manufacturer's coatings for touch-up work and as specified in paragraph FIELD APPLIED PAINTING.

2.1.1 Conduits

2.1.1.1 Rigid Steel Conduit

Provide hot dipped galvanized rigid steel conduit complying with NEMA RN 1, ANSI C80.1, UL 6 and UL 5 as applicable. Except where installed underground, or in corrosive areas, provide polyvinylchloride (PVC), or protect from corrosion by painting with bitumastic coating or wrapping with corrosion inhibiting tape.

Use threaded fittings for rigid steel conduit.

Use solid gaskets. Ensure conduit fittings with blank covers have gaskets, except in clean, dry areas or at the lowest point of a conduit run where drainage is required.

Provide covers with captive screws and are accessible after the work has been completed.

2.1.1.2 Electrical Metallic Tubing (EMT)

Ensure EMT is in accordance with UL 797, UL 5, and ANSI C80.3 and is zinc coated steel. Provide zinc-coated couplings and connectors that are raintight, compression type with insulated throat. Crimp, spring, or setscrew type fittings are not acceptable.

2.1.1.3 Flexible Metallic Conduit

Ensure flexible metallic conduit is galvanized steel and complies with UL 1 and UL 360.

Ensure fittings for flexible metallic conduit are specifically designed for such conduit.

Provide liquidtight flexible metallic conduit with a protective jacket of PVC extruded over a flexible interlocked galvanized steel core to protect wiring against moisture, oil, chemicals, and corrosive fumes.

Ensure fittings for liquidtight flexible metallic conduit are specifically designed for such conduit.

2.1.1.4 Rigid Nonmetallic Conduit

Ensure rigid nonmetallic conduit complies with NEMA TC 2, NEMA TC 3, and

UL 651 as applicable with a wall thickness not less than Schedule 40.

2.1.2 Outlet Boxes, Pull Boxes and Junction Boxes

Ensure outlet boxes for use with conduit systems are in accordance with NEMA FB 1 UL 514A, UL 514B, UL 514C and ANSI/NEMA OS 1, ANSI/NEMA OS 2 and are not less than 1-1/2 inches deep. Furnish all pull and junction boxes with screw-fastened covers.

2.1.3 Circuit Breakers

Ensure circuit breaker interrupting rating is not less than those indicated and in no event less than 10,000 20,000 amperes root-mean-square (rms) symmetrical at 208 and 24 volts, respectively. Provide multipole circuit breakers of the common-trip type with a single handle. Molded case circuit breakers are bolt-on type conforming to UL 489.

2.2 MATERIALS

Provide the standard cataloged materials and equipment of manufacturers regularly engaged in the manufacture of the products.

2.2.1 Wire And Cable

Provide wires and cables in accordance applicable requirements of NFPA 70 and UL for type of insulation, jacket, and conductor specified or indicated. Do not use wires and cables manufactured more than 12 months prior to date of delivery to site.

Use copper 600-volt type XHHW-2 for conductors installed in conduit. Ensure all conductors AWG No. 8 and larger, are stranded. All conductors smaller than AWG No. 8 are solid. Ensure flexible cable is Type SO and contains a grounding conductor with green insulation. Ensure conductors installed in plenums are marked plenum rated.

2.2.1.1 Insulation

Unless specified or indicated otherwise or required by NFPA 70, provide power and lighting wires rated for 600-volts, conforming to UL 44, except that grounding wire may be type TW conforming to UL 83; remote-control and signal circuits: 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.

2.2.2 Device Plates

Provide the following:

a. UL listed, one-piece device plates for outlets to suit the devices installed.

b. For metal outlet boxes, plates on unfinished walls: zinc-coated sheet steel or cast metal having round or beveled edges.

c. For nonmetallic boxes and fittings, other suitable plates may be provided.

d. Screws: machine-type with countersunk heads in color to match finish of plate.

e. Sectional type device plates are not be permitted.

f. Plates installed in wet locations: gasketed and UL listed for "wet locations."

2.2.3 Switches

2.2.3.1 Safety Switches

Ensure safety switches comply with NEMA KS 1, and are the heavy-duty type with enclosure, voltage, current rating, number of poles, and fusing as indicated on the drawings. Ensure fused switch fuse holders comply with UL 4248-1. Ensure switch construction is such that, when the switch handle in the "ON" position, the cover or door cannot be opened. Cover release device is coinproof and so constructed that an external tool is used to open the cover. Make provisions to lock the handle in the "OFF" position. Ensure the switch is not capable of being locked in the "ON" position.

Provide switches of the quick-make, quick-break type and terminal lugs for use with copper conductors.

Ensure safety color coding for identification of safety switches conforms to ANSI Z535.1.

2.2.3.2 Toggle Switches

Ensure toggle switches comply with EIA 480, NEMA WD 1, and UL 20 control Light Emitting Diode (LED), and fluorescent lighting fixtures and are the heavy duty, general purpose, noninterchangeable flush-type.

Provide commercial grade toggle switches, double-pole, four-way two-position devices rated 20 amperes at 120/277 volts, 60 hertz alternating current (ac) only.

Ensure all toggle switches are products of the same manufacturer.

2.2.4 Receptacles

Provide commercial grade receptacles, 20A, 125 VAC, 2-pole, 3-wire duplex conforming to NEMA WD 6.

PART 3 EXECUTION

3.1 PREPARATION

Submit manufacturer's instructions including special provisions required to install equipment components and system packages. Special provisions include impedances, hazards and safety precautions.

Paint electrical equipment as required to match finish of adjacent surfaces or to meet the indicated or specified safety criteria..

3.2 INSTALLATION

3.2.1 Underground Service

Underground service conductors and associated conduit: continuous from service entrance equipment to outdoor power system connection.

3.2.2 Wiring Methods

Provide insulated conductors installed in rigid steel conduit, rigid nonmetallic conduit, or EMT, except where specifically indicated or specified otherwise or required by NFPA 70 to be installed otherwise. Grounding conductor: separate from electrical system neutral conductor. Provide insulated green equipment grounding conductor for circuit(s) installed in conduit and raceways. Minimum conduit size: 1/2 inch in diameter for low voltage lighting and power circuits. Vertical distribution in multiple story buildings: made with metal conduit in fire-rated shafts, with metal conduit extending through shafts for minimum distance of 6 inches.

3.2.2.1 Pull Wire

Install pull wires in empty conduits. Pull wire: plastic having minimum 200-pound force tensile strength. Leave minimum 36 inches of slack at each end of pull wire.

3.2.3 Conduits and Fittings

Ensure that conduit runs do not contain more than the equivalent of three 90-degree bends, including those bends located immediately at the outlet or fitting.

Do not install crushed or deformed conduit. Avoid trapped conduit runs where possible. Take care to prevent the lodgment of foreign material in the conduit, boxes, fittings, and equipment during the course of construction. Clear any clogged conduit of obstructions or replace conduit.

3.2.3.1 Rigid Steel Conduit

Make field-made bends and offsets with approved Hickey bending tool or conduit bending machine. Use long radius conduit for elbows larger than 2-1/2 inches.

Provide a flush coupling for all conduit stubbed-up through concrete floors for connections to free-standing equipment with the exception of motor-control centers, and other such items of equipment, when the slab is of sufficient thickness. Otherwise, provide a floor box set flush with the finished slab. For conduits installed for future use, terminate with a coupling and plug; set flush with the slab.

3.2.3.2 Electrical Metallic Tubing (EMT)

Ground EMT in accordance with NFPA 70, using pressure grounding connectors especially designed for EMT.

3.2.3.3 Flexible Metallic Conduit

Use flexible metallic conduit to connect recessed fixtures from outlet boxes in ceilings, transformers, and other approved assemblies.

Use bonding wires in flexible conduit as specified in NFPA 70, for all circuits. Flexible conduit is not considered a ground conductor.

Make electrical connections to vibration-isolated equipment with flexible metallic conduit.

Use liquidtight flexible metallic conduit in wet and oily locations and to complete the connection to motor-driven equipment.

3.2.3.4 Rigid Nonmetallic Conduit

Install a green insulated copper grounding conductor in conduit with conductors and solidly connect to ground at each end. Size grounding wires in accordance with NFPA 70.

3.2.3.5 Underground Conduit

Plastic-coated rigid steel; PVC, Type EPC-40.

3.2.3.6 Conduit Installed in Concrete Slabs

Rigid steel; fiberglass, or PVC, Type EPC-40. Locate so as not to adversely affect structural strength of slabs. Install conduit within middle one-third of concrete slab. Do not stack conduits. Space conduits horizontally not closer than three diameters, except at cabinet locations. Curved portions of bends must not be visible above finish slab. Increase slab thickness as necessary to provide minimum one inch cover over conduit. Where embedded conduits cross expansion joints, provide suitable watertight expansion/deflection fittings and bonding jumpers. Expansion/deflection fittings must allow horizontal and vertical movement. Conduit larger than one inch trade size: installed parallel with or at right angles to main reinforcement; when at right angles to reinforcement, install conduit close to one of supports of slab.

3.2.3.7 Stub Ups

Provide conduits stubbed up through concrete for connection to free-standing equipment with adjustable top or coupling threaded inside for plugs, set flush with finished slab. Extend conductors to equipment in rigid steel conduit, except that flexible metal conduit may be used 6 inches above floor. Where no equipment connections are made, install screwdriver-operated threaded flush plugs in conduit end.

3.2.3.8 Conduit Support

Support conduit by pipe straps, wall brackets, threaded rod conduit hangers, or ceiling trapeze. Fasten by concrete inserts or expansion bolts on concrete; 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. Do not exceed one-fourth proof test load for load applied to fasteners. Provide vibration resistant and shock-resistant fasteners attached to concrete ceiling. Do not cut main reinforcing bars for any elements. Fill unused holes. Where conduit crosses 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.

3.2.3.9 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 dirt or trash from lodging in conduits, boxes, fittings, and equipment during construction. Free clogged conduits of obstructions.

3.2.4 Wiring

Color code feeder and branch circuit conductors as follows:

CONDUCTOR	COLOR AC
Phase A	Black (208VAC); Brown (480VAC)
Phase B	Red (208VAC); Orange (480VAC)
Phase C	Blue (208VAC); Yellow (480VAC)
Neutral	White (208VAC); Natural Gray (480VAC)
Equipment Grounds	Green

Use conductors up to and including AWG No. 2 that are manufactured with colored insulating materials. For conductors larger than AWG No. 2, have ends identified with color plastic tape in outlet, pull, or junction boxes.

Splice in accordance with the NFPA 70. Provide conductor identification within each enclosure where a tap, splice, or termination is made and at the equipment terminal of each conductor. Match terminal and conductor identification as indicated.

Where several feeders pass through a common pullbox, tag the feeders to clearly indicate the electrical characteristics, circuit number, and panel designation.

3.2.5 Splices and Connectors

Make all splices in AWG No. 8 and smaller with approved indentor crimp-type connectors and compression tools. Joints must be wrapped with an insulating tape that has an insulation and temperature rating equivalent to that of the conductor.

Make all splices in AWG No. 6 and larger with indentor crimp-type connectors and compression tools. Wrap joints with an insulating tape that has an insulation and temperature rating equivalent to that of the conductor.

3.2.6 Conductor Identification

Provide conductor identification within each enclosure where tap, splice, or termination is made. For conductors No. 6 AWG and smaller diameter, provide color coding by factory-applied, color-impregnated insulation. For conductors No. 4 AWG and larger diameter, provide color coding by plastic-coated, self-sticking markers; colored nylon cable ties and plates; or heat shrink-type sleeves. Identify control circuit terminations in accordance with manufacturer's recommendations.

3.2.6.1 Marking Strips

Provide marking strips in accordance with the following:

a. Provide white or other light-colored plastic marking strips, fastened by screws to each terminal block, for wire designations.

b. Use permanent ink for the wire numbers

c. Provide reversible marking strips to permit marking both sides, or provide two marking strips with each block.

d. Size marking strips to accommodate the two sets of wire numbers.

e. Assign a device designation in accordance with NEMA ICS 1 to each device to which a connection is made. Mark each device terminal to which a connection is made with a distinct terminal marking corresponding to the wire designation used on the Contractor's schematic and connection diagrams.

f. 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, provide additional wire and cable designations for identification of remote (external) circuits for the Government's wire designations.

g. 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.

3.2.7 Safety Switches

Securely fasten switches to the supporting structure or wall, utilizing a minimum of four 1/4 inch bolts. Do not use sheet metal screws and small machine screws for mounting. Do not mount switches in an inaccessible location or where the passageway to the switch may become obstructed. Mounting height 5 feet above floor level, when possible.

3.2.8 Boxes and Fittings

Provide pullboxes where necessary in the conduit system to facilitate conductor installation. For conduit runs longer than 100 feet or with more than three right-angle bends, install a pullbox at a convenient intermediate location.

Securely mount boxes and enclosures using supports that are independent of the conduit entering or leaving the boxes.

3.3 FIELD QUALITY CONTROL

After completion of the installation and splicing, and prior to energizing the conductors, perform wire and cable continuity and insulation tests as herein specified before the conductors are energized.

Provide all necessary test equipment, labor, and personnel to perform the tests, as herein specified.

Isolate completely all wire and cable from all extraneous electrical

connections at cable terminations and joints.

Perform insulation-resistance test on each field-installed conductor with respect to ground and adjacent conductors. Applied potential is 500 volts dc for 300 volt rated cable and 1000 volts dc for 600 volt rated cable. Take readings after 1 minute and until the reading is constant for 15 seconds. Minimum insulation-resistance values is not less than 25 Megohms for 300 volt rated cable and 100 Megohms for 600 volt rated cable. For circuits with conductor sizes AWG No. 8 and smaller insulation resistance testing is not required.

Perform continuity test to insure correct cable connection end-to-end (i.e correct phase conductor, grounded conductor, and grounding conductor wiring). Repair and verify any damages to existing or new electrical equipment resulting from mis-wiring. Receive approval for all repairs prior to commencement of the repair.

Conduct phase-rotation tests on all three-phase circuits using a phase-rotation indicating instrument. Perform phase rotation of electrical connections to connected equipment in a clockwise direction, facing the source.

Perform 600-volt wiring test on 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: 250,000 ohms.

Submit test reports in accordance with referenced standards in this section.

Final acceptance requires the successful performance of wire and cable under test. Do not energize any conductor until the final test reports are reviewed and approved.

3.4 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.

3.5 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 31 23 00.00 22 (PWD ME)

EXCAVATION AND FILL

10/2021

PART 1 GENERAL

1.1 REFERENCES

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

AMERICAN WATER WORKS ASSOCIATION (AWWA)

AWWA C600	(2017) Installation of Ductile-Iron Mains and Their Appurtenances

ASTM INTERNATIONAL (ASTM)

ASTM C136/C136M	(2019) Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
ASTM C33/C33M	(2018) Standard Specification for Concrete Aggregates
ASTM D1140	(2017) Standard Test Methods for Determining the Amount of Material Finer than 75-µm (No. 200) Sieve in Soils by Washing
ASTM D1556/D1556M	(2015; E 2016) Standard Test Method for Density and Unit Weight of Soil in Place by Sand-Cone Method
ASTM D1557	(2012; E 2015) Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3) (2700 kN-m/m3)
ASTM D2321	(2020) Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications
ASTM D2487	(2017; E 2020) Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)
ASTM D4318	(2017; E 2018) Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils
ASTM D698	(2012; E 2014; E 2015) Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/cu. ft. (600 kN-m/cu. m.))

U.S. ARMY CORPS OF ENGINEERS (USACE)

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

MAINE DEPARTMENT OF TRANSPORTATION (MEDOT)

MEDOT	State of Maine, Department of Transportation, Standard Specifications, including revisions through award of this contract (See http://www.maine.gov/mdot/publications/)

1.2 DEFINITIONS

1.2.1 Underdrain Backfill

A layer of clean, poorly graded crushed rock, stone, or natural sand or gravel having a high porosity which is placed beneath a building slab with or without a vapor barrier to cut off the capillary flow of pore water to the area immediately below a slab.

1.2.2 Degree of Compaction

Degree of compaction is expressed as a percentage of the maximum density obtained by the test procedure presented in ASTM D1557, for general soil types, abbreviated as percent laboratory maximum density.

1.2.3 Hard Materials

Weathered rock, dense consolidated deposits, or conglomerate materials which are not included in the definition of "rock" but which usually require the use of heavy excavation equipment, ripper teeth, or jack hammers for removal.

1.2.4 Rock

Solid homogeneous interlocking crystalline material with firmly cemented, laminated, or foliated masses or conglomerate deposits, neither of which can be removed without systematic drilling and blasting, drilling and the use of expansion jacks or feather wedges, or the use of backhoe-mounted pneumatic hole punchers or rock breakers; also large boulders, buried masonry, or concrete other than pavement exceeding 1 cubic yard in volume. Removal of hard material will not be considered rock excavation because of intermittent drilling that is performed merely to increase production. SPECIAL NOTE: BLASTING IS NOT PERMITTED ON PORTSMOUTH NAVAL SHIPYARD.

1.2.5 Non-Hazardous Soils

Non-hazardous soils shall include all soils which, upon generation, do not meet the definition of a hazardous waste as defined by the EPA Hazardous Waste Regulations 40 CFR 260 through 40 CFR 268, 40 CFR 273, and 40 CFR 279 and the State of Maine DEP Hazardous Waste Regulations Chapter 850-855.

1.2.6 Hazardous Soils

Hazardous soils shall include all soils which, upon generation, do meet the definition of a hazardous waste as defined by the EPA Hazardous Waste

Regulations 40 CFR 260, 40 CFR 268, 40 CFR 273, and 40 CFR 279 and the State of Maine DEP Hazardous Waste Regulations Chapter 850-855.

1.2.7 Installation Restoration (IR) Site

A known, demarcated area impacted by past waste disposal operations and/or hazardous substance spills currently regulated by the Navy and outside Federal and State agencies.

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. 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

Shoring and Sheeting Plan; G

Dewatering Work Plan; G

Excavation and Trenching Plan; G

Excess Soil Disposal & Soil Sampling Plan; G

Archeologists Qualifications; G

Submit 15 days prior to starting work.

SD-06 Test Reports

Pervious Granular Fill test; G

Borrow Materials; G

Fill and backfill test; G

Select material test; G

Density tests; G

Moisture Content Tests; G

Submit copies of all laboratory and field test reports within 24 hours of the completion of the test. If applicable, submit unit price item rock quantity surveys at least 24 hours in advance of removal.

1.4 DELIVERY, STORAGE, AND HANDLING

Perform in a manner to prevent contamination or segregation of materials.

1.5 CRITERIA FOR BIDDING

Base bids on the following criteria:

1.5.1 General Criteria

a. Surface elevations shown on drawings are approximate. Contractor shall confirm grades and inverts prior to start of work and ordering of materials.

b. Ground water elevation is estimated to be at or near mean high water level of the Piscataqua River. The Contractor shall include all costs associated with all dewatering efforts. Failure by the Contractor to plan for groundwater conditions shall not be the basis for any claim nor equitable price or contract time adjustments.

c. Removal of soils and rock beyond the lines and grades indicated will not be grounds for claims for additional payment.

d. Blasting will not be permitted on the Shipyard. Contractors means and methods may include hoe ramming or other approved methods. Provide protection of adjacent facilities as necessary during prosecution of work.

e. Borrow material, suitable backfill and bedding material in the quantities required are not available at the project site.

f. Excavation, handling and disposal requirements for excavated non-hazardous soils must be in accordance with the requirements specified herein. For purposes of bidding and soil handling, soils within the limits of work are assumed to be non-hazardous. Contractor is responsible for the costs of soil sampling that comply with the disposal facility and PNSY (PNSY c/106.3) requirements.

g. Suitable, non-hazardous soils excavated may be reused in earthwork operations, if the material meets the physical soil properties specified for backfill material.

h. Any stockpiling of non-hazardous soils must comply with the current MEDEP Erosion and Sediment Control Best Management Practices (BMPs) and other applicable requirements.

i. Any suspect soils encountered within the limits of work must be classified by the Contracting Officer and PWD-ME Environmental personnel by visual means. The Government may perform laboratory testing to confirm soils classification as hazardous or non-hazardous.

j. Sample, test, load, transport and dispose of all excess non-hazardous soils (unsuitable for reuse as backfill material) excavated from the site at a pre-approved licensed disposal facility in accordance with the requirements specified in Paragraph entitled "Excavated Materials Unsuitable for Backfill".

1.5.2 Soil Management Criteria

a. The Contractor is responsible for all aspects of soil management from generation to disposal; including, excavation, stockpiling, onsite management, testing, loading, transport, and disposal.

b. Contractor must submit an Excess Soil Disposal & Sampling Plan to PWD

ME EV and Code 106.3 for review and approval.

c. A site specific HASP is not required. Contractor must stop work and notify the PWD ME CM if suspect soil contamination is encountered (e.g. - presence of staining, odor, debris).

d. Reuse of excavated soil as backfill is allowed given project specifications are met.

e. Soil stockpiles must follow MEDEP Erosion and Sediment Control Best Management Practices.

f. Contractor must use an experienced environmental professional for the collection of soil samples for disposal characterization.

g. Code 106.3 must be present onsite to witness Contractor soil sampling events and scheduled at least seven days prior.

h. Contractor must use a licensed, Maine state-certified and NELAP accredited laboratory for waste disposal characterization (see requirements in 1.5.4).

i. Soil stockpiles must not be added to once Contractor sample collection is complete.

j. Contractor must clearly placard stockpiles with "Pending Characterization" while awaiting Contractor soil characterization test results and either "Non-Hazardous" or "Hazardous" based on those results.

k. Contractor must not ship any soil without the written approval of the PWD ME CM and Code 106.3.

l. Once loaded into trucks and/or containers, the Contractor must transport the soil to Building 357 for processing (e.g. - weigh load, manifest paperwork) prior to leaving the Shipyard.

m. Soil transported off the Shipyard must be disposed of at a licensed non-municipal landfill disposal facility, preapproved by Code 106.3.

n. The Contractor must provide documentation to the PWD ME CM and Code 106.3 that soil removed from the Shipyard was disposed of at the approved landfill disposal facility.

1.6 GENERAL SOIL MANAGEMENT REQUIREMENTS

1.6.1 Soil Transported Off Base

Any soil transported off base from the Shipyard must be disposed of at a licensed non-municipal landfill disposal facility, which has been preapproved by Code 106.3.

1.6.2 Bulk Materials in Contact With Soil

Bulk materials which are in contact with soil (e.g. - undisturbed bedrock, asphalt, concrete) may be transported off base for disposal or recycling, given soil is completely removed prior to being loaded for transport (field determination by PWD ME Construction Manager (CM) or Engineering Tech (ET)). Information regarding the destination of these materials must be submitted to the PWD ME CM.

1.7 SOIL SAMPLING FOR WASTE CHARACTERIZATION

Testing parameters must meet the requirements of the selected landfill disposal facility including the type, number, and frequency of tests. Chemical analysis of the samples must be performed by a licensed, Maine state-certified laboratory with National Environmental Laboratory Accreditation Program (NELAP) accreditation and a Quality Systems Manual that conforms to the standards of ISO 17025. More specifically, chemical analysis must be performed by a laboratory holding Maine state certification for each method used for sample analysis.

1.8 SITE WASTE REMOVAL (SWR) MEETING

A SWR meeting must be held with the PWD ME CM and Code 106.3 prior to the removal of excavated soil from a project site to ensure all pertinent requirements of this SOP (Attached to this Specification) have been met.

No transport of soil will be allowed until full concurrence is provided by the PWD ME CM and Code 106.3 following the satisfactory completion of the SWR.

1.9 REQUIREMENTS FOR TRANSPORTING BACKFILL ON BASE

Aggregates containing less than 10% fines (material passing the number 4 sieve) transported to the Shipyard from off base to be used as backfill do not require testing.

All other backfill materials which do not meet the above conditions must be tested for the following contaminants:

- Total Petroleum Hydrocarbons (TPH) (GC/FID)
- Total 8 RCRA Metals (7060, 7740, etc.)
- Total Volatiles (8260)
- Total Semi-Volatiles (8270)
- Total Pesticides (8081)
- Total Herbicides (8151)
- Total PCB's (8082)
- Ignitability/flash (1010-liquids, 1030-solids)
- Corrosivity/pH (9045)
- Reactive Sulfide (7.3.4.1)

Off base soil must not contain any contaminant concentration which exceeds the most current "Residential Scenario" values listed in Appendix 1 of the MEDEP Remedial Action Guidelines found at https://www.maine.gov/dep/spills/publications/guidance/. TPH concentrations must not exceed 100 mg/kg. If the total concentration of any Toxicity Characteristic Leaching Procedure (TCLP) regulated contaminant listed in 40 CFR 261.24 is greater than or equal to twenty times its regulatory threshold, TCLP analysis will be required. The off base soil must not contain any TCLP concentration which exceeds the current EPA values listed in 40 CFR 261.24, Table 1 Maximum Concentration of Contaminants for Toxicity Characteristic EPA limits.

Representative sampling and testing of the backfill must be conducted at a rate of 1 sample for every 1,000 tons, with a minimum of 1 sample per borrow source. Contractor must use a licensed, Maine state-certified and NELAP accredited laboratory for the chemical analysis. Backfill must not be transported on base until all laboratory test results have been approved

by PWD ME EV.

Borrow pits must meet all appropriate state certification guidelines. Written confirmation that the purchased backfill material did not come from a chemically impacted area must be provided by borrow pit supplier. Proof of certification and written confirmation must be provided to the PWD ME EV prior to backfill being brought on base.

1.10 EXCESS SOIL DISPOSAL & SOIL SAMPLING PLAN

The Contractor shall submit an Excess Soil Disposal & Soil Sampling Plan indicating the licensed facility that will be used for off site disposal of excess non-hazardous soil material. The Excess Soil Disposal & Soil Sampling Plan shall include the following:

1. Introduction - Provide a location and description of the excavation work required to complete the work under the contract. A site plan showing the limits of excavation and planned stockpile locations for soils to be reused and unsuitable or excess soils requiring disposal.

2. Excavation - Provide quantities of excavated materials. Provide an estimated quantity of soils to be reused and soils requiring off site disposal.

3. Pre-Excavation Soil Characterization - To classify the soils that will require disposal, the Contractor shall collect representative soil samples to confirm the material meets the requirements of the contractors selected licensed disposal facility. The soil samples from shall be collected in accordance with the requirements included in Attachment A Soil Sampling Procedures and sent to a certified, licensed laboratory for testing. The quantity & location of soil samples and laboratory tests shall be based on the disposal facility requirements.

4. Soil Sampling - The Contractor shall provide the analytical sampling requirements based on the licensed facility that will be accepting the soils for disposal. The soil sampling shall be collected in accordance with Attachment A. The soil shall be tested using a licensed laboratory that 1) Possesses state certification for each applicable test method, 2) Is accredited by the National Environmental Laboratory Accreditation Program (NELAP) which indicates they are compliant with International Organization for Standardization (ISO/IEC) 17011:2004.

5. Stockpiling - Provide description on how the soils (soils to be reused & excess soils requiring disposal) shall be stockpiled within the limits of work and in accordance with the requirements provided in the plans & contract documents. The location of the proposed stockpile areas shall be shown on a site plan.

6. Transportation on base - The excess soils shall be transported directly to Building 357 from the project site to be inspected, weighed & manifested by the Government prior to leaving the Shipyard. B357 is open Monday-Thursday from 8 am to 2 pm. The contractor shall coordinate deliveries with the Contracting Officer & PNSY 106.3 at least 14 calendar days prior to making any shipments to B357. The licensed facility must be approved by PWD ME Environmental & PNSY Code 106.3 prior to the any soil leaving the Shipyard. A partial list of approved disposal facilities has been provided below. For a complete listing contact the Contracting Officer.

Aggregate Recycling Corporation (ARC) Eliot, ME (207)439-5584

Waste Management New Hampshire Turnkey Recycling & Environmental Enterprises Rochester, NH (800)847-5303

Environmental Soil Management, Inc. (ESMI) of New Hampshire Loudon, NH (800)950-7645

MTS Environmental, Inc. Chichester, NH (603)749-4557

Commercial Paving & Recycling Company (CPRC) Scarborough, ME (207)833-3325

7. Transportation off base - Provide a description of how the soils will be transported to the approved disposal facility. The Contractor shall provide documentation to the Contracting Officer that soil removed from the Shipyard was disposed of at the approved disposal facility.

1.11 QUALITY ASSURANCE

1.11.1 Excavation and Trenching Plan

Provide Manufacturers Tabulated Data for trench boxes and other support systems to be used on the project. See EM 385-1-1, Section 25, Excavation and Trenching for requirements.

1.11.2 Dewatering Work Plan

The Contractor shall submit procedures for accomplishing dewatering work to the Contracting Officer for approval. The Dewatering Work Plan submittal shall be prepared by a Professional Geotechnical Engineer licensed in the State of Maine with specialized experience in geotechnical engineering. The requirements of the plan is specified in Paragraph entitled DEWATERING herein.

If re-infiltration will be used to manage the ground water, then the point of re-infiltration needs to be coordinated with the Contracting Officer.

1.11.3 Utilities

Movement of construction machinery and equipment over pipes and utilities during construction shall be at the Contractor's risk. Perform work adjacent to non-Government utilities as indicated in accordance with procedures outlined by utility company. Excavation made with power-driven equipment is not permitted within two(2) feet of known Government-owned utility or subsurface construction. For work immediately adjacent to or for excavations exposing a utility or other buried obstruction, excavate by hand. Start hand excavation on each side of the indicated obstruction and continue until the obstruction is uncovered or until clearance for the new grade is assured. Support uncovered lines or other existing work affected by the contract excavation until approval for backfill is granted by the Contracting Officer. Report damage to utility lines or subsurface construction immediately to the Contracting Officer.

1.11.4 Archaeological Monitoring

If required, provide archeological monitoring by a qualified archeologist for excavation. If significant archeological resources, including human remains, are encountered, stop work within the surrounding area

immediately. Do not proceed until direction is provided by the COR. Qualified archeologist shall be an historic archeologist meeting the Secretary of the Interior's professional guidelines for archeologist's and shall be included in the State of Maine level II list of approved historic archeologist's. Submit archeologists qualifications.

PART 2 PRODUCTS

2.1 SOIL MATERIALS

2.1.1 Satisfactory Materials

Any materials classified by ASTM D2487 as GW, GP, GM, GP-GM, GW-GM, GC, GP-GC, GM-GC, SW, SP free of debris, roots, wood, scrap material, vegetation, refuse, soft unsound particles, and frozen, deleterious, or objectionable materials. Unless specified otherwise, the maximum particle diameter shall be one-half the lift thickness at the intended location.

2.1.2 Unsatisfactory Materials

Materials which do not comply with the requirements for satisfactory materials. Unsatisfactory materials also include man-made fills, trash, refuse, or backfills from previous construction. Rock, boulders or stones with a particle diameter greater than one-half the lift thickness at the intended location, asphalt, or concrete materials shall be separated from any excess soils requiring disposal and shall be transported & disposed of by the Contractor. Unsatisfactory material also includes material classified as satisfactory which contains root and other organic matter, frozen material, and stones larger than 3 inches. The Contracting Officer shall be notified of any contaminated materials.

2.1.3 Cohesionless and Cohesive Materials

Cohesionless materials include materials classified in ASTM D2487 as GW, GP, SW, and SP. Cohesive materials include materials classified as GC, SC, ML, CL, MH, and CH. Materials classified as GM, GP-GM, GW-GM, SW-SM, SP-SM, and SM shall be identified as cohesionless only when the fines are nonplastic (plasticity index equals zero). Materials classified as GM and SM will be identified as cohesive only when the fines have a plasticity index greater than zero.

2.1.4 Expansive Soils

Soils that have a plasticity index equal to or greater than 20 when tested in accordance with ASTM D4318.

2.1.5 Backfill and Fill Material

Fill material for road construction must meet the requirements of 32 12 16.16 ROAD-MIX ASPHALT PAVING.

2.2 UTILITY BEDDING MATERIAL

Except as specified otherwise in the individual piping section, provide bedding for buried piping in accordance with AWWA C600, Type 4, except as specified herein. Backfill to top of pipe shall be compacted to 95 percent of ASTM D698 maximum density. Plastic piping shall have bedding to spring line of pipe. Provide ASTM D2321 materials as follows:

a. Class I: Angular,0.25 to 1.5 inches, graded stone, including a number of fill materials that have regional significance such as coral, slag, cinders, crushed stone, and crushed shells.

b. Class II: Coarse sands and gravels with maximum particle size of 1.5 inches, including various graded sands and gravels containing small percentages of fines, generally granular and noncohesive, either wet or dry. Soil Types GW, GP, SW, and SP are included in this class as specified in ASTM D2487.

2.3 GRAVEL

Provide as specified in Section 32 12 16.16 ROAD-MIX ASPHALT PAVING.

2.4 BORROW

Obtain borrow materials required in excess of those furnished from excavations from sources outside of Government property. Borrow materials shall meet MEDOT 703.18

2.5 TOPSOIL

Natural, friable soil representative of productive, well-drained soils in the area, free of subsoil, stumps, rocks larger than 1 inch diameter, brush, weeds, toxic substances, and other material detrimental to plant growth. Amend topsoil pH range to obtain a pH of 5.5 to 7.

2.6 BURIED WARNING AND IDENTIFICATION TAPE

Polyethylene plastic and metallic core or metallic-faced, acid- and alkali-resistant, polyethylene plastic warning tape manufactured specifically for warning and identification of buried utility lines. Provide tape on rolls,3 inch minimum width, color coded as specified below for the intended utility with warning and identification imprinted in bold black letters continuously over the entire tape length. Warning and identification to read, "CAUTION, BURIED (intended service) LINE BELOW" or similar wording. Color and printing shall be permanent, unaffected by moisture or soil.

Warning Tape Color Codes

Red: Electric
Yellow: Gas,Oil;Steam,Air,Other Dangerous Materials
Orange: CCTV, Telephone and Other Communications
Purple: Reclaimed Water
Blue: Water Systems
Green: Sewer Systems
White: Proposed Excavation
Pink: Temporary Survey Markings

2.6.1 Warning Tape for Metallic Piping

Acid and alkali-resistant polyethylene plastic tape conforming to the width, color, and printing requirements specified above. Minimum thickness of tape shall be 0.003 inch. Tape shall have a minimum strength of 1500 psi lengthwise, and 1250 psi crosswise, with a maximum 350 percent elongation.

2.6.2 Detectable Warning Tape for Non-Metallic Piping

Polyethylene plastic tape conforming to the width, color, and printing requirements specified above. Minimum thickness of the tape shall be 0.004 inch. Tape shall have a minimum strength of 1500 psi lengthwise and 1250 psi crosswise. Tape shall be manufactured with integral wires, foil backing, or other means of enabling detection by a metal detector when tape is buried up to3 feet deep. Encase metallic element of the tape in a protective jacket or provide with other means of corrosion protection.

2.7 DETECTION WIRE FOR NON-METALLIC PIPING

Detection wire shall be insulated single strand, solid copper with a minimum of 12 AWG.

PART 3 EXECUTION

3.1 PROTECTION

3.1.1 Shoring and Sheeting

Provide shoring bracing, cribbing, trench boxes, underpinning, and sheeting where indicated. In addition to Section 25 A and B of EM 385-1-1, the Contractor shall include provisions in the shoring and sheeting plan that will accomplish the following:

a. Prevent undermining of pavements, foundations, utility pipelines, structures, and slabs.

b. Prevent slippage or movement in banks or slopes adjacent to the excavation.

3.1.2 Drainage and Dewatering

Provide for the collection and disposal of surface and subsurface water encountered during construction. Prepare a Dewatering plan that complies with State and Federal regulations, and the requirements specified herein.

3.1.2.1 Drainage

So that construction operations progress successfully, completely drain construction site during periods of construction to keep soil materials sufficiently dry. The Contractor shall establish/construct storm drainage features (ponds/basins) at the earliest stages of site development, and throughout construction grade the construction area to provide positive surface water runoff away from the construction activity and/or provide temporary ditches, berms swales, and other drainage features and equipment as required to maintain dry soils, prevent erosion and undermining of foundations. When unsuitable working platforms for equipment operation and unsuitable soil support for subsequent construction features develop, remove unsuitable material and provide new soil material as specified herein. It is the responsibility of the Contractor to assess the soil and ground water conditions presented by the plans and specifications and to employ necessary measures to permit construction to proceed. Excavated slopes and backfill surfaces shall be protected to prevent erosion and sloughing. Excavation shall be performed so that the site, the area immediately surrounding the site, and the area affecting operations at the site shall be continually and effectively drained.

3.1.2.2 Dewatering

a. The majority of the Portsmouth Naval Shipyard experience shallow groundwater areas. Dewatering work and other aspects of the project must be planned under the assumption groundwater may be encountered up to the elevation of the highest tide or the elevations indicated on the site boring logs or in the geotechnical report. Any groundwater elevations shown on drawings accompanying the specifications are elevations which existed at the time of subsurface investigations, and are for reference only.

b. The Contractor shall hire a Professional Geotechnical Engineer licensed in the State of Maine with specialized experience in geotechnical engineering aspects of design and construction to prepare a project specific dewatering plan.

The dewatering plan shall at a minimum address anticipated dewatering discharge volumes, pumping rates required to maintain construction in the dry, demonstrate adequate capacity to treat and dispose the discharge volume, and illustrate on a site plan the location proposed for dewatering discharge treatment systems and disposal locations. The plan shall describe implementation of construction dewatering practices in accordance with Maine Erosion and Sediment Control Best Management Practices (Maine DEPLW0588, latest edition). At no point shall construction dewatering be discharged to storm sewers. The Geotechnical Engineer shall stamp and date the dewatering plan prior to submission to the Contracting Officer.

The Geotechnical Engineer shall be responsible for performing pre-construction site inspections and periodic site visits throughout construction to assess site conditions. The Geotechnical Engineer shall update the excavation, sheeting and dewatering plans must be updated as construction progresses to reflect changing conditions and shall submit an updated plan to the Contracting Officer. The Geotechnical Engineer shall submit a written report shall be submitted to the Contractor's Quality Control Manager and Contracting Officer, at least weekly, addressing the performance of the dewatering efforts, the Contractor's adherence to the plan and addressing any present or potential problems and recommendations.

The Geotechnical Engineer shall be available to meet with the Contracting Officer at any time throughout the contract duration to review the performance of the dewatering system.

c. The Contractor's dewatering efforts shall control groundwater flowing toward or into excavations to prevent sloughing of excavation slopes and walls, boils, uplift and heave in the excavation and to eliminate interference with orderly progress of the construction. Dewatering Pits, french drains, sumps, ditches or trenches shall not be permitted within three (3) feet of the foundation of any structure. Control measures shall be taken by the time the excavation reaches the water level in order to maintain the integrity of the in situ material. The water level shall be maintained continuously as recommended by the Contractor's Geotechnical Engineer.

d. The Contractor shall collect system performance records weekly. Measure and record performance of dewatering system at same time each day by use of observation wells or piezometers installed in conjunction with the dewatering system. Relieve hydrostatic head in pervious zones below subgrade elevation in layered soils to prevent uplift.

e. All water removed by the dewatering system shall be discharged back into the subsurface using infiltration pits (width of excavation must exceed the depth) or other means defined by the Contractor's Geotechnical Engineer and approved by the Contracting Officer. The dewatering system shall include temporary above ground storage tanks (ie. Frac Tanks) to manage the water based on soil infiltration rates. The size and number of storage tanks shall be defined by the Contractor's Geotechnical Engineer based on the required dewatering pump rates, soil infiltration rates, planned work schedule and shall be presented in the dewatering plan.

f. If contaminated groundwater is encountered while dewatering, dewatering operations shall cease and the contractor shall notify the Contracting Officer to request disposal requirements, issued by PWD-ME Environmental Division and PNSY Environmental Division. Discharge of hazardous substances (e.g. petroleum) shall not be permitted under any circumstances.

Dewatering outside of an IR site where non-hazardous soil is assumed to be present:

If dewatering pumps are located outside of an IR site, the pumped water shall be discharged into infiltration pits located within the same area outside of the IR boundary. Under no circumstances shall water be released to the storm drain system, sanitary sewer, a wetland resource, or the river.

g. The water in the storage tanks shall be discharged into infiltration pits (width of excavation must exceed the depth) within the limits of work. Multiple infiltration pits may be required. The locations of the infiltration shall be identified by the Contractors' Geotechnical Engineer and approved by the Contracting Officer. Under no circumstances shall water be released to the storm drain system, sanitary sewer, a wetland resource, or the river.

h. The Contractor shall include in the bid all necessary controls required to manage all dewatering activities required to complete the work within the specified contract time and in accordance with the plans and specifications. Failure by the Contractor to plan for groundwater conditions and dewatering requirements necessary to complete the work shall not be the basis for any claim nor an equitable price or contract time adjustment.

3.1.3 Underground Utilities

The location of the existing utilities shown on the plans are approximate. The Contractor shall physically field verify the location and elevation of the existing utilities indicated prior to starting construction. The Contractor shall submit a PWD Maine Dig Safe Utility Request Form and contact Dig Safe (1-888-344-7233). The Contractor shall confirm the location of all existing underground utilities prior to commencing any excavation work.

3.1.4 Machinery and Equipment

Movement of construction machinery and equipment over pipes during construction shall be at the Contractor's risk. Repair, or remove and provide new pipe for existing or newly installed pipe that has been displaced or damaged.

3.2 EXCAVATION

3.2.1 General

Excavate to contours, elevations to complete the work indicated on the plans.

Keep excavations free from water. Excavate soil disturbed or weakened by Contractor's operations, soils softened or made unsuitable for subsequent construction due to exposure to weather. Excavations below indicated depths and/or limits identified in MEDOT Section 203, Excavation and Embankment and MEDOT Section 206, Structural Excavation will not be permitted except to remove unsatisfactory material. Unsatisfactory material encountered below the grades shown shall be classified by Contracting Officer and removed as directed. Refill with backfill or structural fill material, depending on location with respect to structures and compact as required in herein. Unless specified otherwise, refill excavations cut below indicated depth with backfill and compact to minimum 95 percent of ASTM D 1557 maximum density. Satisfactory material removed below the depths indicated, without specific direction of the Contracting Officer, shall be replaced with satisfactory materials to the indicated excavation grade; except as specified for spread footings. Determination of elevations and measurements of approved over depth excavation of unsatisfactory material below grades indicated shall be done under the direction of the Contracting Officer. No extra payment will be made for removal of unsuitable soils and replacement with satisfactory material or select fills as may be directed by the Contracting Officer.

3.2.2 Pipe Trenches

Excavate to the dimension indicated. Grade and shape bottom of trenches to provide uniform support for each section of pipe after pipe bedding placement. Tamp if necessary to provide a firm pipe bed. Recesses shall be excavated to accommodate bells and joints so that pipe will be uniformly supported for the entire length. Rock, where encountered, shall be excavated to a depth of at least 6 inches below the bottom of the pipe. Blasting is not allowed.

3.2.3 Hard Material and Rock Excavation

Remove hard material and rock to elevations indicated in a manner that will leave foundation material in an unshattered and solid condition. Blasting is not allowed. Roughen level surfaces and cut sloped surfaces into benches for bond with concrete. Protect shale from conditions causing decomposition along joints or cleavage planes and other types of erosion.

3.2.4 Excavated Materials

Satisfactory excavated material required for fill or backfill shall be placed in the proper section of the permanent work required or shall be separately stockpiled if it cannot be readily placed. Satisfactory material in excess of that required for the permanent work and all unsatisfactory material shall be disposed of as specified in herein in "Excavated Materials Unsutable for Backfill."

3.3 CONTROL OF EXCAVATIONS AND EXCAVATED MATERIALS

All Excavation work shall conform with all applicable OSHA and EM385-1-1 requirements. All excavation activities shall conform with Shipyard

requirements. All excavations shall be closed as soon as work within the excavation is complete. Excavated materials shall not be allowed to spread in an uncontrolled manner nor become contaminated with other debris. All excavations shall be properly barricaded with barricades and suitable warning devices in a good state of repair. The Government will not provide barricades for Contractor use. The following controls also apply:

3.3.1 Unnatural Fill Materials/Industrial Debris

Unnatural fill materials/industrial debris is soil containing buried debris from industrial operations. Materials include, but are not limited to, metal, plastic, brick, concrete, wood, containers, glass, and materials with unusual color or odor. Upon discovery of such materials, notify the Contracting Officer, who will arrange for the PWD ME Environmental Division to inspect the materials.

3.3.2 Hazardous Excavated Materials

If any Hazardous soils are encountered, the excavated materials shall be placed in Government-furnished roll-off type containers or trucks for removal and disposal by the Government. Containers containing such materials must be covered with six (6) mil plastic sheeting, except when placing additional material within. While uncovered, the container must be physically attended by a qualified handler.

3.3.3 Excavated Materials to be Reused as Backfill

a. Excavated non-hazardous soil materials from excavations which will remain open for LESS THAN TWO WEEKS may remain at the site of excavation.

b. All stockpiled soils must be placed upon and covered with a minimum of 6 millimeter plastic sheeting. Stockpiles must remain covered when not being actively worked (e.g. overnight, off-work hours) and surrounded by erosion/sediment control measures as specified on the plans, permit requirements and/or State of Maine regulatory requirements.

c. Non-hazardous soils meeting the requirements for backfill material as defined in the project specifications, may be reused in earthwork operations.

d. Any suspect soils encountered during the remainder of the earthwork operations within the limits of work must be classified by the Contracting Officer and PWD ME Environmental personnel by visual means and/or laboratory testing.

3.4 SUBGRADE PREPARATION

Unsatisfactory material in surfaces to receive fill or in excavated areas shall be removed and replaced with satisfactory materials as directed by the Contracting Officer. The surface shall be scarified to a depth of 6 inches before the fill is started. Sloped surfaces steeper than 1 vertical to 4 horizontal shall be plowed, stepped, benched, or broken up so that the fill material will bond with the existing material. When subgrades are less than the specified density, the ground surface shall be broken up to a minimum depth of 6 inches, pulverized, and compacted to the specified density. When the subgrade is part fill and part excavation or natural ground, the excavated or natural ground portion shall be scarified to a depth of 12 inches and compacted as specified for the adjacent fill.

Material shall not be placed on surfaces that are muddy, frozen, or contain frost. Compaction shall be accomplished by sheepsfoot rollers, pneumatic-tired rollers, steel-wheeled rollers, or other approved equipment well suited to the soil being compacted. Material shall be moistened or aerated as necessary to provide the moisture content that will readily facilitate obtaining the specified compaction with the equipment used. Minimum subgrade density shall be as specified herein.

3.4.1 Proof Rolling

Proof rolling shall be done on an exposed subgrade free of surface water (wet conditions resulting from rainfall) which would promote degradation of an otherwise acceptable subgrade. After stripping, proof roll the existing subgrade of the developable site with six passes of a loaded 10 yard dump truck or a 15 ton, pneumatic-tired roller. Operate the truck or roller in a systematic manner to ensure the number of passes over all areas, and at speeds between2 1/2 to 3 1/2 miles per hour. Notify the Contracting Officer a minimum of 3 days prior to proof rolling. Proof rolling shall be performed in the presence of the Contracting Officer. Rutting or pumping of material shall be undercut as directed by the Contracting Officer and replaced with fill and backfill material.

3.5 FILLING AND BACKFILLING

Fill and backfill to contours, elevations required to complete the work. Compact each lift before placing overlaying lift as specified below.

3.5.1 Backfill and Fill Material Placement

Provide for paved areas and under concrete slabs and tunnels, except where structural fill is provided. Place in 6 inch lifts. Do not place over wet or frozen areas. Place backfill material adjacent to structures as the structural elements are completed and accepted. Place and compact material to avoid loading upon or against adjacent structures.

3.5.2 Structural Fill Placement

Provide under structures not pile supported. Place in 6 inch lifts. Do not place over wet or frozen areas. Backfill adjacent to structures shall be placed as structural elements are completed and accepted. Place and compact material to avoid loading upon or against adjacent structures.

3.5.3 Backfill and Fill Material Placement Over Pipes and at Walls

Backfilling shall not begin until underground utilities systems have been inspected, tested and approved, and the excavation cleaned of trash and debris. Backfill shall be brought to indicated finish grade. Where pipe is coated or wrapped for protection against corrosion, the backfill material up to an elevation 2 feet above sewer lines and 1 foot above other utility lines shall be free from stones larger than 1 inch in any dimension. Heavy equipment for spreading and compacting backfill shall not be operated closer to foundation or retaining walls than a distance equal to the height of backfill above the top of footing; the area remaining shall be compacted in layers not more than 4 inches in compacted thickness with power-driven hand tampers suitable for the material being compacted. Backfill shall be placed carefully around pipes or tanks to avoid damage to coatings, wrappings, or tanks.

3.5.4 Trench Backfilling

Backfill as rapidly as construction, testing, and acceptance of work permits. Place and compact trench backfill in6 inch lifts to top of trench and in 6 inch lifts toone foot over pipe outside structures and paved areas.

3.6 BORROW

Where satisfactory materials are not available in sufficient quantity from required excavations, approved borrow materials shall be obtained as specified herein.

3.7 BURIED WARNING AND IDENTIFICATION TAPE

Provide buried utility lines with utility identification tape. Bury tape12 inches below finished grade; under pavements and slabs, bury tape 6 inches below top of subgrade.

3.8 BURIED DETECTION WIRE

Bury detection wire directly above non-metallic piping at a distance not to exceed 12 inches above the top of pipe. The wire shall extend continuously and unbroken, from manhole to manhole. The ends of the wire shall terminate inside the manholes at each end of the pipe, with a minimum of 3 feet of wire, coiled, remaining accessible in each manhole. The wire shall remain insulated over it's entire length. The wire shall enter manholes between the top of the corbel and the frame, and extend up through the chimney seal between the frame and the chimney seal. For force mains, the wire shall terminate in the valve pit at the pump station end of the pipe.

3.9 COMPACTION

Determine in-place density of existing subgrade; if required density exists, no compaction of existing subgrade will be required. Density requirements specified herein are for cohesionless materials. When cohesive materials are encountered or used, density requirements may be reduced by 5 percent.

3.9.1 General Site

Compact underneath areas designated for vegetation and areas outside the 5 foot line of the paved area or structure to 90 percent of ASTM D1557.

3.9.2 Utility Trenches

Compact top 12 inches of subgrades to 95 percent of ASTM D1557. Compact common fill, fill and backfill material, structural fill material to 95 percent of ASTM D1557.

3.9.3 Paved Areas

Compact top 12 inches of subgrades to 95 percent of ASTM D1557. Compact fill and backfill materials to 95 percent of ASTM D1557.

3.10 FINISH OPERATIONS

3.10.1 Grading

Finish grades as indicated within one-tenth of one foot. Grade areas to

drain water away from structures. Maintain areas free of trash and debris. For existing grades that will remain but which were disturbed by Contractor's operations, grade as directed.

3.10.2 Topsoil and Seed

Scarify existing subgrade. Provide 6 inches of topsoil for newly graded finish earth surfaces and areas disturbed by the Contractor. Topsoil shall not be placed when the subgrade is frozen, excessively wet, extremely dry, or in a condition otherwise detrimental to seeding, planting, or proper grading. If there is insufficient on-site topsoil meeting specified requirements for topsoil, provide topsoil required in excess of that available. Seed shall match existing vegetation. Provide seed at 5 pounds per 1000 square feet. Provide granular controlled release fertilizer containing the following minimum percentages, by weight, of plant food nutrients:

10 percent available nitrogen
5 percent available phosphorus

Provide mulch and water to establish an acceptable stand of grass.

3.10.3 Protection of Surfaces

Protect newly backfilled, graded, and topsoiled areas from traffic, erosion, and settlements that may occur. Repair or reestablish damaged grades, elevations, or slopes.

3.11 FIELD QUALITY CONTROL

3.11.1 Sampling

Take the number and size of samples required to perform the following tests.

3.11.2 Testing

Perform one of each of the following tests for each material used. Provide additional tests for each source change.

3.11.2.1 Fill and Backfill Material Testing

Test fill and backfill material in accordance with ASTM C136/C136M for conformance to ASTM D2487 gradation limits; ASTM D1140 for material finer than theNo. 200 sieve; ASTM D4318 for liquid limit and for plastic limit; ASTM D698 or ASTM D1557 for moisture density relations, as applicable.

3.11.2.2 Select Material Testing

Test select material in accordance with ASTM C136/C136M for conformance to ASTM D2487 gradation limits; ASTM D1140 for material finer than the No. 200 sieve; ASTM D698 or ASTM D1557 for moisture density relations, as applicable.

3.11.2.3 Pervious Granular Fill Testing

Test pervious granular fill in accordance with ASTM C136/C136M for conformance to gradation specified in ASTM C33/C33M.

3.11.2.4 Density Tests

DUE TO LIMITED SCOPE OF THIS CONTRACT, DENSITY TESTING WILL NOT BE REQUIRED UNLESS THE CONTRACTING OFFICER OR THEIR AUTHORIZED REPRESENTATIVES ARE CONCERNED WITH THE WORKMANSHIP OF THE CONTRACTOR. IN THIS CASE, DENSITY TESTING PER THE FOLLOWING WILL BE REQUIRED AT THE EXPENSE OF THE CONTRACTOR.

Test density in accordance with ASTM D1556/D1556M. Perform an ASTM D1556 /D1556M density test at the start of the job and as follows:

a. Density testing per the following will be required at the expense of the Contractor.

b. Bedding and backfill in trenches: One test per 50 linear feet in each lift.

c. Other site areas as follows:

Material Type	Location of Material	Test Frequency
Undisturbed native soil	Structures	Two random tests in building footings and two tests on subgrade within building line.
Fills and backfills	Structures (adjacent to)	One test per structure per 2,000 sq. ft taken 12 inches below finished grade.
Subgrades	Site and parking	One test per lift per 2,500 sq. ft.
Embankments or borrow	Any	One test per lift per 500 cubic yds placed.
Native soil subgrade other than structures and parking	Any	One test or one test per 10,000 sq. ft, whichever is greater.
Borrow	Any	One test per lift per 500 cubic yds placed.

-- End of Section --

ATTACHMENT A

SOIL SAMPLING PROCEDURES

References:

1. NAVSHIPYD PTSMH INSTRUCTION 5090.8C
2. EPA SW-846, Chapter 9
3. Navy Environmental Compliance Sampling and Field Testing Procedures Manual (T0300-AZ-PRO-010).

A. Excavation Soil Sampling

1. Location. Soil Stockpiles referred to in this document refer to excavated soils accumulated at its point of generation and detained awaiting sampling results, either in a container or a covered pile at the work site prior to removal for disposal. The following sample procedures outlined also apply to any test pitting that is conducted to characterize the soils prior to site excavation activities related to the execution of the planned work. Location of any test pits planned to characterize the soils prior to excavation shall be identified in the Excess Soil Disposal Plan and approved by the Contracting Officer & Code 106.3.

2. Purpose. To outline the procedures for sample collection, preservation, and documentation for excavated soil and debris accumulation and disposal. This procedure requires that excavated soil be sampled at a frequency dictated by the requirements of the waste disposal facility receiving the material.

3. Scope. This procedure controls the sampling of excavated soil accumulated in covered piles. It does not apply to known hazardous wastes or oil contaminated materials.

B. Hazards and Safety Precautions

1. Characteristics of Non-hazardous Excavated Soil and Debris. Generally, the excavated soil and debris waste stream consists of soils with additional contents consisting of asphalt, brick, and concrete. On occasion, this material can be contaminated with lead or other metals.

2. Safety Pre-cautions. Wear appropriate protective clothing based on the Contractor's Safety Plan. As a minimum, steel toe boots, safety glasses, hard hat, and work gloves should be worn. Respiratory protection shall be worn at the discretion of personnel performing the sampling procedure. Avoid any eye exposure and ingestion of the waste material.

C. Preparation

1. Estimate the volume and weight of the soil requiring off-site disposal. Soil has a density of between 1.3 and 1.5 tons per cubic yard depending on the site conditions.

2. Measure the pile dimensions to include the base, height, and depth. Multiply the estimated volume by the density to find the tonnage of debris.

3. Determine the number of samples required based the Contractor's disposal requirements. The number of composite samples will be determined by the receiving waste disposal company's frequency requirement (e.g., one sample every 200 -250 tons).

4. Obtain the appropriate sample containers and collection equipment as specified herein.

5. Sampling equipment must be decontaminated prior to use.

D. Sampling Procedure

1. Single Composite Samples

   1.1 Collect at least four samples at random depths and locations in the pile. Use an auger, trowel, or scoop as appropriate. All samples shall be taken at least one foot below the surface of the pile.

   1.2 Sketch the depth and location of the sampling points in a field report to be submitted to the Contractor Officer.

   1.3 Place equal amount of material from each sampling point in a bucket and mix thoroughly.

   1 .4 Fill a single sample container with this material. Return any extra material to the pile.

2. Two or More Composite Samples. Use the above procedure to collect two composite samples. Simple random sampling methodology (per Chapter 9, EPA SW-846) shall be employed to find the composite spots for each of the samples if the entire pile is homogenous. If two or more distinct materials are present, simple random sampling will be performed separately on each material (Incremental Composite Sampling).

3. Prepare one field duplicate for every twenty (20) samples taken in accordance with this procedure.

4. Decontaminate the sampling equipment.

5. Record sampling event data with indelible ink in a permanently bound Field Log Book (FLB). Event data should include all information that is detailed in the references (e.g, diagrams, dates, times, list of equipment).

E. Sample Handling and Preservation

1. Store the sample in a secure sample cooler. Provide samples outsourced laboratory for analysis.

F. Quality Assurance / QC

1. QC consists primarily of strict adherence to prescribed required standards for cleanliness, preservation and handling samples.

2. QC samples shall be taken at the following frequency:
    a. Field duplicate samples shall be taken on a random basis. The number of field duplicate samples shall be approximately 5% of the total samples taken under this procedure.

G. Analytical Testing Requirements

The final analytical sampling requirements shall be based on the Contractor's selected disposal facility requirements but as a minimum the Contractor shall test for the following:

Total 8 RCRA Metals (7060, 7740, etc.)
Total Volatiles (8260)
Total Semi-Volatiles (8270)
Total Pesticides (8081)
Total Herbicides (8151)
Total PCB's (8082)
Ignitability/flash (1010-liquids, 1030–solids)
Corrosivity/pH (9045)
Reactive Sulfide (7.3.4.1)
Reactive Cyanide (7.3.4.2)

If the total concentration of any TCLP-Regulated contaminant (40CFR 261.24) is greater than or equal to twenty times its regulatory threshold, TCLP analysis is required.

Note: VOC Samples must be collected separately as a grab and not part of the composite or mixed. Use a syringe style sampling instrument (i.e., EnCore sampler) for obtaining the VOC sample.

H. Reporting Requirements

Electronically provide the following documentation to the Contracting Office & Code 106.3 following the sampling event or when the documentation becomes available:

1. Analytical report,
2. Copy of the Chain of Custody,
3. FLB entries for the sampling event,
4. Any other pertinent documentation supporting details of the sampling event.

PORTSMOUTH NAVAL SHIPYARD
KITTERY, MAINE

SOIL MANAGEMENT – STANDARD OPERATING PROCEDURE

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SOIL MANAGEMENT – STANDARD OPERATING PROCEDURE

1.1 **Purpose**. This Soil Management Standard Operating Procedure (SOP) manual establishes a protocol for monitoring excavation activities at Portsmouth Naval Shipyard. This SOP controls the removal of excavated materials to ensure proper testing, transport, and disposal as well as to provide detailed information on the location and specific restrictions of known regulated areas of hazardous contamination.

1.2 **Scope**. This SOP applies to all units, tenants, and activities aboard the Shipyard and pertains to any excavation, for any reason, at any location on the Shipyard by all personnel, including Contractors and Shipyard employees.

1.3 **Background**.

1.3.1 Off Base Soil Disposal. The Shipyard strictly enforces that all soil transported off base must be disposed of at a licensed non-municipal landfill disposal facility, which has been preapproved by Code 106.3.

1.3.2 Installation Restoration (IR) Sites. The Shipyard has been in existence in excess of 200 years and past industrial operations have resulted in the release of hazardous substances into the environment at specific locations across the installation. The existence of these sites has required the United States Environmental Protection Agency (EPA) to designate the Shipyard as a National Priority List (NPL) site. As a result of this status, it is imperative that any excavation within these locations is controlled. These locations are identified as IR sites as listed in Appendix 1.7.1 and shown on the IR Site Management Plan Map in Appendix 1.7.2. Soil excavated from these sites must be handled in accordance with all federal and state environmental regulations.

1.4 **Responsibilities**.

1.4.1 PWD ME EV.

1.4.1.1 Review, provide direction, and approve/disapprove all proposed excavation activities at the Shipyard through the use of the EV Checklist as shown in Appendix 1.7.3.

1.4.1.2 Provide required notification to the EPA and State of Maine Department of Environmental Protection (MEDEP) for any excavation proposed within an IR site boundary.

1.4.1.3 Escort outside regulatory agency personnel requesting access to IR sites.

1.4.1.4 Routinely monitor excavations within IR sites to ensure compliance with EPA and MEDEP requirements.

1.4.1.5 Review soil disposal and sampling plans for strict adherence to the instructions of this SOP.

1.4.1.6 Update this SOP with the most up to date regulatory requirements as appropriate.

1.4.2 PWD ME.

1.4.2.1 Prepare an EV Checklist including a detailed site plan and scope of work for PWD ME projects that involve excavation of Shipyard soil.

1.4.2.2 Ensure that contracts reflect the specific conditions for approval as directed by PWD ME EV and Code 106.3 in the EV Checklist.

1.4.2.3 Ensure that contractor personnel are aware of the restrictions imposed by this SOP and that no soil is to leave the Shipyard unless approved by Code 106.3.

1.4.2.4 Monitor excavations regularly to visually inspect materials excavated and direct the contractor on proper soil handling and management.

1.4.2.5 Inform Code 106.3 in the event that suspect material is unearthed during excavation.

1.4.2.6 Ensure any site specific Health and Safety Plans (HASPs) describing proper Hazardous Waste Operations and Emergency Response (HAZWOPER) are reviewed and approved prior to the start of excavation activities.

1.4.3 Code 106.3.

1.4.3.1 Provide training to PWD ME personnel on the intricacies of soil management and coordination with Code 106.3 as it relates to soil stockpiling, sampling, testing, transport, and disposal.

1.4.3.2 Review, provide direction, and approve/disapprove all proposed excavation activities at the Shipyard through the use of the EV Checklist as shown in Appendix 1.7.3.

1.4.1.3 Review soil disposal and sampling plans to enforce consistency with the Instructions of this SOP.

1.4.3.4 Provide oversight of all soil sampling associated with waste disposal characterization at the Shipyard.

1.4.3.5 Conduct soil sampling for Government waste disposal characterization and in the event of an unforeseen discovery of potential soil contamination. Provide direct oversight of Contractor soil sampling activities.

1.4.3.6 Maintain signatory authority for all hazardous and non-hazardous soil transportation and disposal documentation (e.g. - hazardous waste manifest).

1.5 **All Inclusive Soil Management Requirements**.

1.5.1 Soil Transported Off Base.

1.5.1.1 Any soil transported off base from the Shipyard must be disposed of at a licensed non-municipal landfill disposal facility, which has been preapproved by Code 106.3.

1.5.2 Waste Characterization Definitions.

1.5.2.1 Non-hazardous soil includes all soils which, upon generation, **do not** meet the definition of a hazardous waste as defined by the EPA Hazardous Waste Regulations 40 CFR 260 through 40 CFR 268, 40 CFR 273, and 40 CFR 279 and the MEDEP Hazardous Waste Regulations Chapter 850-855.

1.5.2.2 Hazardous soil includes all soils which, upon generation, **do** meet the definition of a hazardous waste as defined by the EPA Hazardous Waste Regulations 40 CFR 260, 40 CFR 268, 40 CFR 273, and 40 CFR 279 and the State of MEDEP Hazardous Waste Regulations Chapter 850-855.

1.5.3 Bulk Materials In Contact With Soil.

1.5.3.1 Bulk materials which are in contact with soil (e.g. - undisturbed bedrock, asphalt, concrete) may be transported off base for disposal or recycling, given soil is completely removed prior to being loaded for transport (field determination by PWD ME Construction Manager (CM) or Engineering Tech (ET)). Information regarding the destination of these materials must be submitted to the PWD ME CM.

1.5.4 Soil Sampling For Waste Characterization. Testing parameters must meet the requirements of the selected landfill disposal facility including the type, number, and frequency of tests. Chemical analysis of the samples must be performed by a licensed, Maine state-certified laboratory with National Environmental Laboratory Accreditation Program (NELAP) accreditation and a Quality Systems Manual that conforms to the standards of ISO 17025. More specifically, chemical analysis must be performed by a laboratory holding Maine state certification for each method used for sample analysis. The following two field method approaches are available for soil sample collection and testing.

1.5.4.1 Post-Excavation Stockpile Sampling – This method is the preferred method of choice as it provides the most accurate and complete characterization of soil for disposal.

1.5.4.2 Pre-Excavation In-Situ Sampling – This method should only be considered when project space is limited and stockpiling is not practical. This method can be achieved through the excavation of test pits and/or the advancement of soil borings. The quantity and location of test pits/borings, soil samples and laboratory tests must be approved by Code 106.3.

1.5.5 Requirements for Transporting Backfill On Base.

1.5.5.1 Aggregates containing less than 10% fines (material passing the number 4 sieve) transported to the Shipyard from off base to be used as backfill do not require testing.

1.5.5.2 All other backfill materials which do not meet the above conditions must be tested for the following contaminants:

- Total Petroleum Hydrocarbons (TPH) (GC/FID)
- Total 8 RCRA Metals (7060, 7740, etc.)
- Total Volatiles (8260)
- Total Semi-Volatiles (8270)
- Total Pesticides (8081)
- Total Herbicides (8151)
- Total PCB's (8082)
- Ignitability/flash (1010-liquids, 1030–solids)
- Corrosivity/pH (9045)
- Reactive Sulfide (7.3.4.1)

1.5.5.3 Off base soil must not contain any contaminant concentration which exceeds the most current "Residential Scenario" values listed in Appendix 1 of the MEDEP Remedial Action Guidelines found at https://www.maine.gov/dep/spills/publications/guidance/. TPH concentrations must not exceed 100 mg/kg. If the total concentration of any Toxicity Characteristic Leaching Procedure (TCLP) regulated contaminant listed in 40 CFR 261.24 is greater than or equal to twenty times its regulatory threshold, TCLP analysis will be required. The off base soil must not contain any TCLP concentration which exceeds the current EPA values listed in 40 CFR 261.24, Table 1 Maximum Concentration of Contaminants for Toxicity Characteristic EPA limits.

1.5.5.4 Representative sampling and testing of the backfill must be conducted at a rate of 1 sample for every 1,000 tons, with a minimum of 1 sample per borrow source. Contractor must use a licensed, Maine state-certified and NELAP accredited laboratory for the chemical analysis. Backfill must not be transported on base until all laboratory test results have been approved by PWD ME EV.

1.5.5.5 Borrow pits must meet all appropriate state certification guidelines. Written confirmation that the purchased backfill material did not come from a chemically impacted area must be provided by borrow pit supplier. Proof of certification and written confirmation must be provided to the PWD ME EV prior to backfill being brought on base.

1.5.6 Site Waste Removal (SWR) Meeting.

1.5.6.1 A SWR meeting must be held with the PWD ME CM and Code 106.3 prior to the removal of excavated soil from a project site to ensure all pertinent requirements of this SOP have been met.

1.5.6.2 No transport of soil will be allowed until full concurrence is provided by the PWD ME CM and Code 106.3 following the satisfactory completion of the SWR.

1.6 **Site Specific Scenarios for Soil Management**.

1.6.1 **Scenario #1** - Excavation within an IR site where hazardous soil is assumed to be present.

IR sites are also referred to as Operable Units (OUs) as listed in Appendix 1.7.1. Scenario #1 applies to OU3, OU2 (limited to an area beneath a 2-foot soil cover around Building 310), OU8, and OU9 (limited to an area beneath Building 62 Annex). The following is a list of requirements associated with Scenario #1.

1.6.1.1 Coordination with PWD ME EV IR Coordinator must occur at least three weeks prior to the start of work to allow adequate time for PWD ME EV notification to EPA and MEDEP. The notification must include a site plan identifying IR site boundaries and the proposed activities therein.

1.6.1.2 IR site boundaries must be shown and clearly identified on design drawings where excavation is proposed.

1.6.1.3 The Government is responsible for soil testing, transport, and disposal.

1.6.1.4 The Contractor is responsible for soil excavation, stockpiling, onsite management, and loading (into Government furnished trucks and/or containers).

1.6.1.5 A site specific HASP describing proper HAZWOPER site controls must be implemented for worker protection.

1.6.1.6 Reuse of excavated soil is prohibited.

1.6.1.7 Soil stockpiles must be located within the IR site boundary.

1.6.1.8 Soil stockpiles must be placed on and covered with 6 mil poly sheeting and surrounded with erosion and sediment controls to prevent runoff. Soil stockpiles must follow MEDEP Erosion and Sediment Control Best Management Practices.

1.6.1.9 Soil stockpiles must remain covered unless being actively worked or tested.

1.6.1.10 Contractor must segregate soil stockpiles based on visual contamination (e.g. - presence of staining, odor, debris) from other materials excavated.

1.6.1.11 Contractor must coordinate directly with Code 106.3 to schedule soil testing (at least seven days prior to desired date).

1.6.1.12 Soil stockpiles must not be added to once Government soil sample collection activities are complete.

1.6.1.13 Contractor must clearly placard stockpiles with “Pending Characterization” while awaiting Government soil characterization test results and either “Non-Hazardous” or “Hazardous” based on those results.

1.6.1.14 Contractor must coordinate directly with Code 106.3 to schedule Government furnished trucks and/or containers.

1.6.2 **Scenario #2** - Excavation within an IR site where non-hazardous soil is assumed to be present (previously remediated), but is still regulated under Land Use Controls.

Scenario #2 applies to OU1, OU2 (with the exception of an area beneath a 2-foot soil cover around Building 310), OU7, and OU9 (with the exception of an area beneath Building 62 Annex). The following is a list of requirements associated with Scenario #2.

1.6.2.1 Coordination with PWD ME EV IR Coordinator must occur at least three weeks prior to the start of work to allow adequate time for PWD ME EV notification to EPA and MEDEP. The notification must include a site plan identifying IR site boundaries and the proposed activities therein.

1.6.2.2 IR site boundaries must be shown and clearly identified on design drawings where excavation is proposed.

1.6.2.3 The Government is responsible for soil testing, transport, and disposal.

1.6.2.4 The Contractor is responsible for soil excavation, stockpiling, onsite management, and loading (into Government furnished trucks and/or containers).

1.6.2.5 A site specific HASP is not required as the IR site has been remediated to acceptable Construction Worker exposure levels. Contractor must stop work and notify the PWD ME CM if suspect soil contamination is encountered (e.g. - presence of staining, odor, debris).

1.6.2.6 Reuse of excavated soil is prohibited.

1.6.2.7 Soil stockpiles must be located within the IR site boundary.

1.6.2.8 Soil stockpiles must be placed on and covered with 6 mil poly sheeting and surrounded with erosion and sediment controls to prevent runoff. Soil stockpiles must follow MEDEP Erosion and Sediment Control Best Management Practices.

1.6.2.9 Soil stockpiles must remain covered unless being actively worked or tested.

1.6.2.10 Contractor must coordinate directly with Code 106.3 to schedule soil testing (at least seven days prior to desired date).

1.6.2.11 Soil stockpiles must not be added to once Government soil sampling activities are complete.

1.6.2.12 Contractor must clearly placard stockpiles with “Pending Characterization” while awaiting Government soil characterization test results and either “Non-Hazardous” or “Hazardous” based on those results.

1.6.2.13 Contractor must coordinate directly with Code 106.3 to schedule Government furnished trucks and/or containers.

1.6.3 **Scenario #3** - Excavation outside of an IR site where non-hazardous soil is assumed to be present and the volume of soil to be generated is >50 cubic yards in total.

Below is a list of requirements associated with Scenario #3.

1.6.3.1 The Contractor is responsible for all aspects of soil management from generation to disposal; including, excavation, stockpiling, onsite management, testing, loading, transport, and disposal.

1.6.3.2 Contractor must submit an Excess Soil Disposal & Sampling Plan to PWD ME EV and Code 106.3 for review and approval.

1.6.3.3 A site specific HASP is not required. Contractor must stop work and notify the PWD ME CM if suspect soil contamination is encountered (e.g. - presence of staining, odor, debris).

1.6.3.4 Reuse of excavated soil as backfill is allowed given project specifications are met.

1.6.3.5 Soil stockpiles must follow MEDEP Erosion and Sediment Control Best Management Practices.

1.6.3.6 Contractor must use an experienced environmental professional for the collection of soil samples for disposal characterization.

1.6.3.7 Code 106.3 must be present onsite to witness Contractor soil sampling events and scheduled at least seven days prior.

1.6.3.8 Contractor must use a licensed, Maine state-certified and NELAP accredited laboratory for waste disposal characterization (see requirements in 1.5.4).

1.6.3.9 Soil stockpiles must not be added to once Contractor sample collection is complete.

1.6.3.10 Contractor must clearly placard stockpiles with “Pending Characterization” while awaiting Contractor soil characterization test results and either “Non-Hazardous” or “Hazardous” based on those results.

1.6.3.11 Contractor must not ship any soil without the written approval of the PWD ME CM and Code 106.3.

1.6.3.12 Once loaded into trucks and/or containers, the Contractor must transport the soil to Building 357 for processing (e.g. – weigh load, manifest paperwork) prior to leaving the Shipyard.

1.6.3.13 Soil transported off the Shipyard must be disposed of at a licensed non-municipal landfill disposal facility, preapproved by Code 106.3.

1.6.3.14 The Contractor must provide documentation to the PWD ME CM and Code 106.3 that soil removed from the Shipyard was disposed of at the approved landfill disposal facility.

1.6.4 **Scenario #4** - Excavation outside of an IR site where non-hazardous soil is assumed to be present and the volume of soil to be generated is <50 cubic yards in total.

Below is a list of requirements associated with Scenario #4.

1.6.4.1 The Contractor is responsible for soil excavation, onsite management, loading, and transport (to Building 357).

1.6.4.2 The Government is responsible for soil testing and disposal.

1.6.4.3 A site specific HASP is not required. Contractor must stop work and notify the PWD ME CM if suspect soil contamination is encountered (e.g. - presence of staining, odor, debris).

1.6.4.4 Reuse of excavated soil as backfill is allowed given project specifications are met.

1.6.4.5 Soil stockpiles must follow MEDEP Erosion and Sediment Control Best Management Practices.

1.6.4.6 Contractor must coordinate directly with Code 106.3 via Building 357 personnel for approval to offload at the Building 357 facility.

1.6.4.7 Code 106.3 will specify which soil bin is available for the offload of soil.

1.6.4.8 Contractor must not transport soil to Building 357 without the written approval of the PWD ME CM and Code 106.3.

1.6.5 **Scenario #5** - Excavation outside of an IR site where hazardous soil is discovered (unforeseen) during investigation and/or construction activities.

The following will apply to the limited area of identified contamination. Below is a list of requirements associated with Scenario #5.

1.6.5.1 The Government is responsible for soil testing, transport, and disposal.

1.6.5.2 The Contractor is responsible for soil excavation, stockpiling, onsite management, and loading (into Government furnished trucks and/or containers).

1.6.5.3 A site specific HASP describing proper HAZWOPER site controls must be implemented for worker protection.

1.6.5.4 Reuse of excavated soil is prohibited.

1.6.5.5 Soil stockpiles must be located within the project footprint, as close to the excavation as possible.

1.6.5.6 Soil stockpiles must be placed on and covered with 6 mil poly sheeting and surrounded with erosion and sediment controls to prevent runoff. Soil stockpiles must follow MEDEP Erosion and Sediment Control Best Management Practices.

1.6.5.7 Soil stockpiles must remain covered unless being actively worked or tested.

1.6.5.8 Contractor must segregate soil stockpiles based on visual contamination (e.g. - presence of staining, odor, debris) from other materials excavated.

1.6.5.9 Contractor must coordinate directly with Code 106.3 to schedule soil testing (at least seven days prior to desired date).

1.6.5.10 Soil stockpiles must not be added to once Government soil sample collection activities are complete.

1.6.5.11 Contractor must clearly placard stockpiles with “Pending Characterization” while awaiting Government soil characterization test results and either “Non-Hazardous” or “Hazardous” based on those results.

1.6.5.12 Contractor must coordinate directly with Code 106.3 to schedule Government furnished trucks and/or containers.

1.7 Appendix.

1.7.1 IR Sites at the Portsmouth Naval Shipyard.

- Operable Unit 1
  Site 10 – Former Battery Acid Tank No. 24

- Operable Unit 2
  Site 6 – Former Defense Reutilization and Marketing Office (DRMO) Storage Yard
  Site 29 – Former Teepee Incinerator Site

- Operable Unit 3
  Site 8 - Jamaica Island Landfill (JILF)

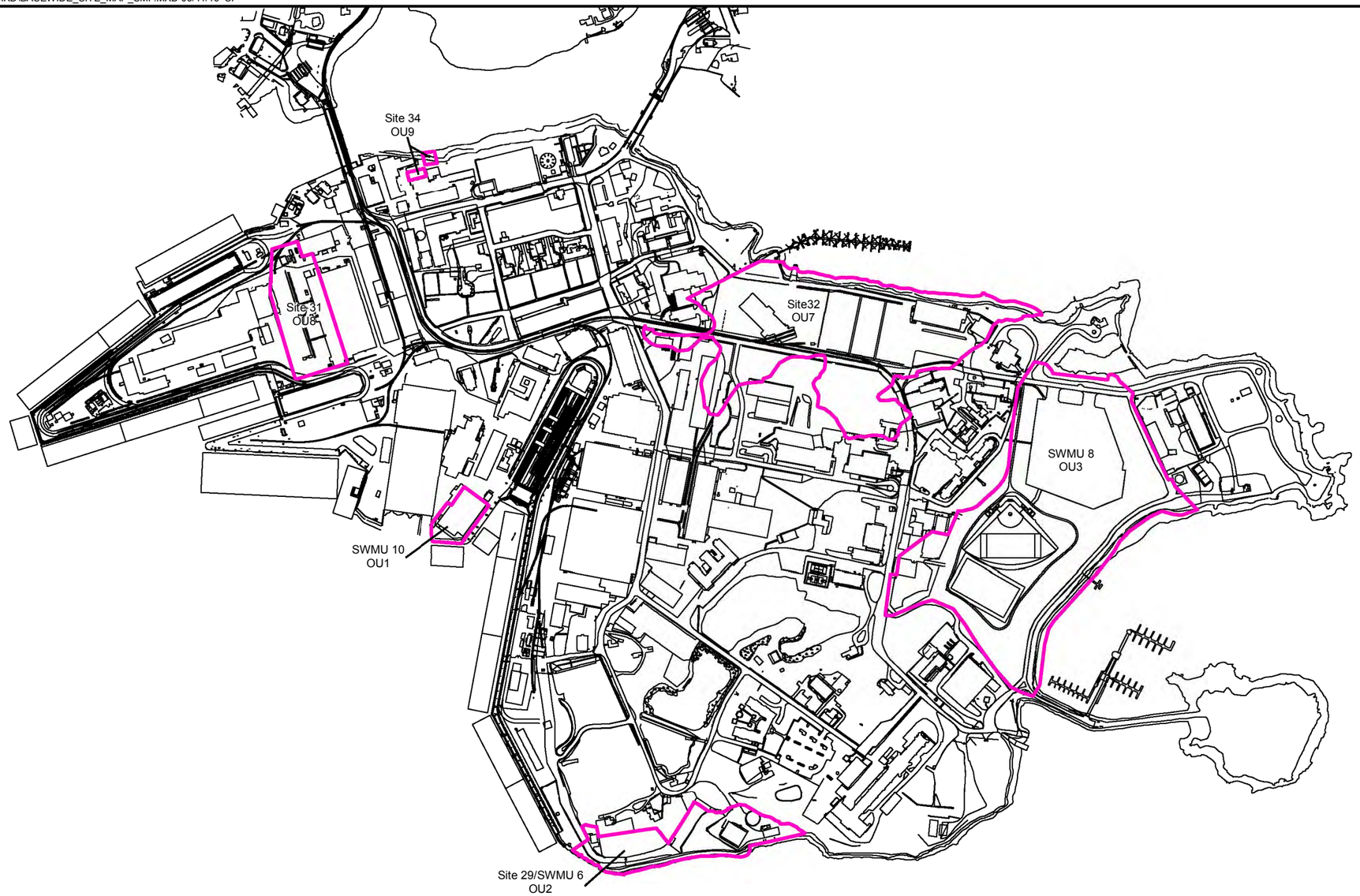
- Operable Unit 7
  Site 32 – Former Topeka Pier Site

- Operable Unit 8
  Site 31 – Former West Timber Basin

- Operable Unit 9
  Site 34 – Former Oil Gasification Plant, Building 62

1.7.2 IR Sites at Portsmouth Naval Shipyard (2020 Site Management Plan).

PGH P:\GIS\PORTSMOUTH_NSY\MAPDOCS\MXD\BASEWIDE_SITE_MAP_SMP.MXD 06/11/19 SP



Legend

Remedy in Place Site Boundary

600 0 600 Feet

Operable Unit 1:	Site 10/SWMU 10 - Former Battery Acid Tank No. 24
Operable Unit 2	Site 6/SWMU 6 - Defense Reutilization and Marketing Office (DRMO) Storage Yard Site 29 - Former Teepee Incinerator Site
Operable Unit 3	Site 8/SWMU 8 - Jamaica Island Landfill (JILF)
Operable Unit 7	Site 32 - Topeka Pier Site
Operable Unit 8	Site 31 - Former West Timber Basin
Operable Unit 9	Site 34 - Former Oil Gasification Plant, Building 62

NAVFAC

FACILITY PLAN VIEW
ENVIRONMENTAL RESTORATION
PROGRAM SITES
PORTSMOUTH NAVAL SHIPYARD
KITTERY, MAINE

CTO	WE01
DRAWN BY	S. PAXTON
DATE	06/10/19
CHECKED BY	M. VED
DATE	06/11/19
FIGURE NUMBER	2

PGH P:\GIS\PORTSMOUTH_NSY\MAPDOCS\MXD\BASEWIDE_SITE_MAP_AERIAL_SMP.MXD 06/11/19 SP

Operable Unit 1:	Site 10/SWMU 10 - Former Battery Acid Tank No. 24
Operable Unit 2	Site 6/SWMU 6 - Defense Reutilization and Marketing Office (DRMO) Storage Yard Site 29 - Former Teepee Incinerator Site
Operable Unit 3	Site 8/SWMU 8 - Jamaica Island Landfill (JILF)
Operable Unit 7	Site 32 - Topeka Pier Site
Operable Unit 8	Site 31 - Former West Timber Basin
Operable Unit 9	Site 34 - Former Oil Gasification Plant, Building 62

NAVFAC

FACILITY AERIAL VIEW
ENVIRONMENTAL RESTORATION
PROGRAM SITES
PORTSMOUTH NAVAL SHIPYARD
KITTERY, MAINE

CTO	WE01
DRAWN BY	S. PAXTON
DATE	06/10/19
CHECKED BY	M. VED
DATE	06/11/19
FIGURE NUMBER	3

1.7.3 Environmental Checklist.

PWD-ME ENVIRONMENTAL CHECKLIST – PART 1

This Environmental (EV) Checklist is used to determine the environmental requirements associated with a proposed action. Complete Part 1 of this form, attach a site map and submit the form electronically to PWD-ME (EV) NEPA Manager.

General Project Information (Attach additional sheets as needed)

1	Requesting Organization:			
2	Project Manager / Phone /Date		Ext.	Date (MM/DD/YY):
3	Name of Project:			
4	Project Number (if any):			
5	Project Location:			
6	Project Phase	**Select Project Phase**		
7	Brief Description of the Project: (attach additional sheets as needed)			
8	Purpose and need for project.			
9	Award/Construction Start Date			

Does the project involve any of the following?		**YES**	**NO**	**UNSURE**
10	Ground Disturbing Activities (i.e. excavation, grading, demolition, site work, borings, etc.):	☐	☐	☐
a.	Size of Disturbance (square feet):			
b.	Estimated Quantity of Excess Soil to be generated (cubic yard):			
11	New Impervious Surface (square feet):	☐	☐	☐
12	Lead paint, Asbestos, or PCB handling/removal (identify type and estimated quantity below)	☐	☐	☐
13	Air emission-generating equipment (i.e., paint booth, emergency generator, boiler):	☐	☐	☐
a.	Fuel burning equipment with maximum design heat input ≥ 1.0 MMBtu/hr	☐	☐	☐
b.	Emergency Generator Capacity ≥ 50 kW	☐	☐	☐
c.	Stationary Internal Combustion Engines (i.e. generators, diesel fire pumps) ≥ 0.5 MMBtu/hr	☐	☐	☐
d.	Refrigerant containing equipment (> 5 lbs. refrigerant)	☐	☐	☐
14	Temporary stockpiling of soil	☐	☐	☐
15	Utility connections (i.e. water, sewer, storm drain, etc.)	☐	☐	☐
16	Tree removal	☐	☐	☐
17	Removal and/or installation of aboveground and/or underground storage tanks	☐	☐	☐

As depicted on the Shipyard's Land Use Map*, will the project be located within: ***Contact PWD-ME EV for projects at other sites in PWD-ME's AOR.**		**YES**	**NO**	**UNSURE**
18	An Installation Restoration Program Site	☐	☐	☐
19	A historic building	☐	☐	☐
20	An archaeological area	☐	☐	☐
21	A surface water (i.e. river, pond) or wetland or within **100** feet of a surface water or wetland	☐	☐	☐

Additional Comments

PWD-ME ENVIRONMENTAL CHECKLIST – PART 2

PLEASE NOTE: Part 2 is to be completed by the PWD-ME EV NEPA Manager and EV Program Managers. The Environmental Review is only valid for 1 year

ENVIRONMENTAL REQUIREMENTS (Issues that can affect the project's timeline, cost or site location).

Environmental Aspect	YES	NO	Environmental Requirement	Project Impacts
National Env Policy Act (NEPA)	☐	☐	CATEX = 2 weeks; EA = 12 months; EIS = 24	Cannot award till complete
Endangered Species	☐	☐	Consultations with Regulators required	Process may take 6 months
Wetland/Surface Water	☐	☐	Permits and possible mitigation required	Process may take 2-7
Tree Mitigation	☐	☐	Compensation for tree loss or mitigation is required	This may add costs to project
Coastal Zone Mgmt Act	☐	☐	Coastal Consistent Determination (CCD) is required	Process takes 120 days
Storm Water Management	☐	☐	Permit/Best Management Practice (varies by State)	Process may take 2-7
Site Location Development Act	☐	☐	Permit Modification for any change in land use	Process takes 120 days
Marine Resources	☐	☐	Consultations with NOAA/NMFS required	Process takes minimum 60
Natural Res. Protection Act	☐	☐	Permit for work within/near a natural resource	Full permit requires 120 days
Cultural Resources	☐	☐	Consultations with SHPO required	Process may take 2-9
Major Air Emission Source	☐	☐	Permit modification is required	Process takes 6 months
Construction Emissions	☐	☐	Air Conformity Record of Non-Applicability is required	Process takes two week
Installation Restoration	☐	☐	Land-use controls exist or consultation w/ EPA	Process may take 4 months
Erosion & Sediment Control	☐	☐	Required for projects with any ground disturbance	Incorporate into the design
Spill Preventative Measures	☐	☐	Secondary containment required for oil tank ≥ 55-gal	Incorporate into the design

ENVIRONMENTAL PROGRAM MANAGER COMMENTS (Additional comments may be provided on Page 3)

Program	Name/Date	Comments/Requirement
Cultural Resources	Date:	
Natural Resources	Date:	
Air Quality	Date:	
Water Resources	Date:	
Installation Restoration/ Soils Management	Date:	
Asbestos Program	Date	
Other (Haz Waste, Petroleum, etc)	Date:	

PWD-ME NEPA Program Manager	**Date**	**Code 106 Environmental**	**Date**

NEPA Action: ☐CATEX ☐EA ☐EIS ☐No NEPA action required

PWD-ME ENVIRONMENTAL CHECKLIST - PART 3
ADDITIONAL INFORMATION

Part 3 of this form may be used by EV Program Managers if additional information is required. Program, Name and Date must be provided with each additional comment.

SECTION 32 12 16.16

ROAD-MIX ASPHALT PAVING
11/20

PART 1 GENERAL

Work under this section covers pavement repairs as indicated on the Contract Drawings and specified herein.

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 ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)

AASHTO M 320	(2017) Standard Specification for Performance-Graded Asphalt Binder
AASHTO T 304	(2011; R 2015) Standard Method of Test for Uncompacted Void Content of Fine Aggregate
AASHTO T 329	(2015) Standard Test Method for Moisture Content of Hot Mix Asphalt (HMA) by Oven Method

ASPHALT INSTITUTE (AI)

AI MS-2	(2015) Asphalt Mix Design Methods
AI MS-22	(2020) Construction of Quality Asphalt Pavement

ASTM INTERNATIONAL (ASTM)

ASTM C117	(2017) Standard Test Method for Materials Finer than 75-um (No. 200) Sieve in Mineral Aggregates by Washing
ASTM C127	(2015) Standard Test Method for Density, Relative Density (Specific Gravity), and Absorption of Coarse Aggregate
ASTM C128	(2015) Standard Test Method for Density, Relative Density (Specific Gravity), and Absorption of Fine Aggregate
ASTM C136/C136M	(2019) Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
ASTM C566	(2013) Standard Test Method for Total Evaporable Moisture Content of Aggregate by Drying
ASTM D140/D140M	(2016) Standard Practice for Sampling

	Asphalt Materials
ASTM D1461-17	(2022) Standard Test Method for Moisture or Volatile Distillates in Asphalt Mixtures
ASTM D2172/D2172M	(2017; E 2018) Standard Test Methods for Quantitative Extraction of Asphalt Binder from Asphalt Mixtures
ASTM D2489/D2489M	(2016) Standard Test Method for Estimating Degree of Particle Coating of Asphalt Mixtures
ASTM D3665	(2012; R 2017) Standard Practice for Random Sampling of Construction Materials
ASTM D3666	(2016) Standard Specification for Minimum Requirements for Agencies Testing and Inspecting Road and Paving Materials
ASTM D5444	(2015) Mechanical Size Analysis of Extracted Aggregate
ASTM D5821	(2013; R 2017) Standard Test Method for Determining the Percentage of Fractured Particles in Coarse Aggregate
ASTM D6307	(2019) Standard Test Method for Asphalt Content of Asphalt Mixture by Ignition Method
ASTM D6926	(2020) Standard Practice for Preparation of Asphalt Mixture Specimens Using Marshall Apparatus
ASTM D6927	(2015) Standard Test Method for Marshall Stability and Flow of Bituminous Mixtures

INTERNATIONAL CONCRETE REPAIR INSTITUTE (ICRI)

ICRI 03732	(1997) Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, and Polymer Overlays

MAINE DEPARTMENT OF TRANSPORTATION (MEDOT)

MEDOT	State of Maine, Department of Transportation, Standard Specifications, including revisions through award of this contract (See http://www.maine.gov/mdot/publications/)

1.2 MODIFICATION OF REFERENCES

Where included in the MEDOT specifications, replace the terms "Resident", "Fabrication Engineer" and "Department" with "Contracting Officer", unless otherwise specified.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" classification. Submittals not having a "G" classification are for Contractor Quality Control approval. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Moisture Meter; G

Membrane Manufacturer’s Written Requirements; G

SD-02 Shop Drawings

Placement Plan; G

SD-03 Product Data

Mix Design; G

Contractor Quality Control; G

High Performance Waterproofing Membrane; G

SD-04 Samples

Aggregates

Asphalt Cement Binder

SD-06 Test Reports

Aggregates; G

QC Monitoring

Material Acceptance; G

Moisture Test Results; G

SD-07 Certificates

Asphalt Cement Binder; G

Testing Laboratory; G

Certificate Of Calibration; G

Manufacturer Certified Applicator; G

1.4 ENVIRONMENTAL REQUIREMENTS

Hot-mix asphalt must be placed in accordance with the weather and seasonal limitations within MEDOT Section 401.06.

PART 2 PRODUCTS

2.1 SYSTEM DESCRIPTION

Perform the work consisting of pavement courses composed of mineral aggregate and asphalt material heated and mixed in a central mixing plant and placed on a prepared course. Provide asphalt pavement designed and constructed in accordance with this section conforming to the lines, grades, thicknesses, and typical cross sections shown on the drawings. Construct each course to the depth, section, or elevation required by the drawings and rolled, finished, and approved before the placement of the next course. Submit proposed Placement Plan indicating lane widths and longitudinal joints for each course or lift.

2.2 EQUIPMENT

The mixing plant and all equipment must meet MEDOT Section 401 requirements.

2.3 AGGREGATES

Coarse and fine aggregate, for hot mix asphalt pavements, must meet the requirements in MEDOT Section 703.7. Submit all aggregate test results to the Contracting Officer at least 14 days prior to start of construction.

2.3.1 Aggregate Gradation

The combined aggregate gradation must conform to gradations specified in MEDOT Section 703.09, and be graded uniformly from coarse to fine.

2.4 ASPHALT CEMENT BINDER

The asphalt binder must conform to MEDOT Section 401.05 and AASHTO M 320. Test data indicating grade certification must be provided by the supplier at the time of delivery of each load to the mix plant. Submit copies of these certifications to the Contracting Officer. The supplier is defined as the last source of any modification to the binder. The Contracting Officer may sample and test the binder at the mix plant at any time before or during mix production. Obtain samples for this verification testing in accordance with ASTM D140/D140M and in the presence of the Contracting Officer. Furnish these samples to the Contracting Officer for the verification testing, which must be at no cost to the Contractor. Submit copies of certified test data, amount, type and description of any modifiers blended into the asphalt cement binder.

2.5 MIX DESIGN

a. Develop the mix design. The asphalt mix must be composed of a mixture of well-graded aggregate, mineral filler if required, and asphalt material. The aggregate fractions must be sized, handled in separate size groups, and combined in such proportions that the resulting mixture meets the grading requirements of the job mix formula (JMF). Submit proposed JMF; do not produce hot-mix asphalt for payment until a JMF has been approved. The hot-mix asphalt must be designed in accordance with MEDOT Section 401.03.

b. An identical mix formula previously approved and used within the past 6 months by the MEDOT may be used without further approval, if copies of the previous approval, location, proportions of each ingredient, and test results are submitted..

2.5.1 JMF Requirements

Submit the proposed JMF in writing, for approval, at least 14 days prior to the start of the test section including, as a minimum:

a. Percent passing each sieve size.

b. Percent of asphalt cement.

c. Percent of each aggregate and mineral filler to be used.

d. Asphalt performance grade or penetration grade.

e. Number of blows of hammer per side of molded specimen (NA for Superpave). Number of gyrations of Superpave gyratory compactor, (NA for Marshall mix design)

f. Laboratory mixing temperature.

g. Laboratory compaction temperature.

h. Temperature-viscosity relationship of the asphalt cement

i. Plot of the combined gradation on the 0.45 power gradation chart, stating the nominal maximum size.

j. Graphical plots and summary tabulation of stability (NA for Superpave), flow (NA for Superpave), air voids, voids in the mineral aggregate, and unit weight versus asphalt content as shown in AI MS-2. Include summary tabulation that includes individual specimen data for each specimen tested.

k. Specific gravity and absorption of each aggregate.

l. Percent natural sand.

m. Percent particles with two or more fractured faces (in coarse aggregate).

n. Fine aggregate angularity.

o. Percent flat or elongated particles in coarse aggregate.

p. Tensile Strength Ratio and wet/dry specimen test results.

q. Antistrip agent (if required).

r. List of all modifiers.

s. Percentage and properties (asphalt content, aggregate gradation, and aggregate properties) of RAP in accordance with paragraph RECYCLED ASPHALT PAVEMENT, if RAP is used.

t. Correlation of hand-held hammer with mechanical hammer (NA for Superpave).

u. Asphalt viscosity grade, penetration grade, or performance grade.

2.5.2 Adjustments to JMF

Keep the Laboratory JMF for each mixture in effect until a new formula is approved in writing by the Contracting Officer. Should a change in sources of any materials be made, perform a new laboratory JMF design and a new JMF approved before the new material is used. The Contractor will be allowed to adjust the Laboratory JMF within the limits specified in MEDOT Section 401.03 to optimize mix volumetric properties with the approval of the Contracting Officer. Adjustments to the Laboratory JMF must be applied to the field (plant) established JMF and limited to those values as indicated in the MEDOT Specifications.

If adjustments are needed that exceed the specified limits, develop a new mix design.

2.6 RECYCLED HOT MIX ASPHALT

Recycled HMA may be used as permitted by MEDOT and must consist of reclaimed asphalt pavement (RAP), coarse aggregate, fine aggregate, mineral filler, and asphalt cement to produce a consistent gradation and asphalt content and properties. When RAP is fed into the plant, the maximum RAP chunk size must not exceed 2 inches. Design the recycled HMA mix using procedures contained in AI MS-2 and AI MS-22. The job mix must meet the requirements of paragraph MIX DESIGN. The amount of RAP must not exceed 30 percent.

2.6.1 RAP Aggregates and Asphalt Cement

Provide a blend of aggregates used in the recycled mix that meet the requirements of paragraph AGGREGATES. Establish the percentage of asphalt binder in the RAP for the mixture design according to ASTM D2172/D2172M or ASTM D6307 using the appropriate dust correction procedure.

2.6.2 RAP Mix

The blend of new asphalt cement and the RAP asphalt binder must meet requirements in paragraph ASPHALT CEMENT BINDER. The virgin asphalt cement must not be more than two standard asphalt material grades different than that specified in paragraph ASPHALT CEMENT BINDER.

2.7 SUB-BASE MATERIAL

The aggregate sub-base material must be Type A and meet the requirements of MEDOT Section 703.06.

2.8 HIGH PERFORMANCE WATERPROOFING MEMBRANE (BID OPTION)

Provide a high performance waterproofing membrane to the concrete bridge deck with a barrier type membrane in accordance with MEDOT Section 508, and the manufacturer’s published recommendations.

The waterproofing membrane must be a torch or spray applied high performance waterproofing membrane (high performance membrane) in accordance with MEDOT specifications.

2.8.1 Materials

The high performance membrane must include all materials, as recommended by the manufacturer, to produce a waterproof barrier on the concrete bridge

deck. In addition to the membrane, these materials may include, but are not limited to, a primer, hot-applied rubberized asphalt sealer, mastic, flashing, aggregate scatter and tack coat. The product must be listed on the MEDOT qualified product list (QPL) under Waterproofing Membranes: High-Performance (Spray Applied) or High Performance- (Torch Applied).

PART 3 EXECUTION

Install pavement in accordance with MEDOT Section 401.

3.1 CONTRACTOR QUALITY CONTROL

3.1.1 General Quality Control Requirements

Submit the Quality Control Plan. Do not produce hot-mix asphalt for until the quality control plan has been approved. In the quality control plan, address all elements which affect the quality of the pavement including, but not limited to:

a. Mix Design and unique JMF identification code

b. Aggregate Grading

c. Quality of Materials

d. Stockpile Management and procedures to prevent contamination

e. Proportioning

f. Mixing and Transportation

g. Mixture Volumetrics

h. Moisture Content of Mixtures

i. Placing and Compaction

j. Joints

k. Surface Smoothness

l. Truck bed release agent

m. Correlation of mechanical hammer to hand hammer. Determine the number of blows of the mechanical hammer required to provide the same density of the JMF as provided by the hand hammer. Use the average of three specimens per trial blow application.

3.1.2 Manufacturer Certified Applicator

For application of the high performance waterproofing membrane, the primer and membrane must be applied by a manufacturer certified applicator. Applicators are individuals who have been thoroughly trained by the manufacturer, in all aspects of application of the membrane system. Although an individual may be certified as both an applicator and a representative, the individual must not serve in both capacities at the same time. Upon certification, the manufacturer must issue a badge to the applicator that includes the manufacturer’s name and logo, a current photograph of the applicator, the applicator’s full name and the word

"Applicator". The text of the badge must be clearly printed in English. The applicator must have the badge on and prominently displayed at all times, while installing the membrane system.

3.1.3 Testing Laboratory

Submit certification of compliance and Plant Scale Calibration Certification. Use a laboratory to develop the JMF that meets the requirements of ASTM D3666. The Government will inspect the laboratory equipment and test procedures prior to the start of hot mix operations for conformance to ASTM D3666. The laboratory must maintain the Corps certification for the duration of the project. A statement signed by the manager of the laboratory stating that it meets these requirements or clearly listing all deficiencies must be submitted to the Contracting Officer prior to the start of construction. The statement must contain as a minimum:

a. Qualifications of personnel; laboratory manager, supervising technician, and testing technicians.

b. A listing of equipment to be used in developing the job mix.

c. A copy of the laboratory's quality control system.

d. Evidence of participation in the AASHTO Materials Reference Laboratory (AMRL) program.

Provide a fully equipped asphalt laboratory located at the plant or job site that is equipped with heating and air conditioning units to maintain a temperature of 75 plus or minus 5 degrees F. Provide laboratory facilities that are kept clean and all equipment maintained in proper working condition. Provide the Government with unrestricted access to inspect the laboratory facility, to witness quality control activities, and to perform any check testing desired. The Government will advise in writing of any noted deficiencies concerning the laboratory facility, equipment, supplies, or testing personnel and procedures. When the deficiencies are serious enough to adversely affect test results, immediately suspend the incorporation of the materials into the work. Incorporation of the materials into the work will not be permitted to resume until the deficiencies are corrected.

3.1.4 Quality Control Testing

Perform all quality control tests applicable to these specifications and as set forth in the Quality Control Program. Use the independent commercial laboratory for acceptance testing in paragraph ACCEPTANCE. Use in-house capabilities or the independent commercial laboratory for quality control testing. Required elements of the testing program include, but are not limited to tests for the control of asphalt content, aggregate gradation, aggregate moisture, moisture in the asphalt mixture, temperatures, VMA, Marshall stability, flow, and in-place density. Develop a Quality Control Testing Plan as part of the Quality Control Program.

3.1.4.1 Asphalt Content

Determine asphalt content a minimum of twice per lot (a lot is defined in paragraph PAVEMENT LOTS) using the ignition method in accordance with ASTM D6307. Use the extraction method in accordance with ASTM D2172/D2172M if the correction factor for the ignition method in ASTM D6307 is greater

than 1.0. The asphalt content for the lot will be determined by averaging the test results.

3.1.4.2 Aggregate Properties

Determine aggregate gradations a minimum of twice per lot from mechanical analysis of extracted aggregate in accordance with ASTM D5444, ASTM C136/C136M, and ASTM C117. Determine the specific gravity of each aggregate size grouping for each 20,000 tons in accordance with ASTM C127 or ASTM C128. Determine fractured faces for gravel sources for each 20,000 tons in accordance with ASTM D5821. Determine the uncompacted void content of natural sand, manufactured sand, and blended aggregate for each 20,000 tons in accordance with AASHTO T 304 Method A.

3.1.4.3 Moisture Content of Aggregate

Determine the moisture content of aggregate used for production a minimum of once per lot in accordance with ASTM C566.

3.1.4.4 Moisture Content of Asphalt Mixture

Determine the moisture content of the asphalt mixture at least once per lot in accordance with AASHTO T 329.

3.1.4.5 Temperatures

Check temperatures at least four times per lot, at necessary locations to determine the temperature at the dryer, the asphalt cement binder in the storage tank, the asphalt mixture at the plant, and the asphalt mixture at the job site.

3.1.4.6 Gradation

Determine aggregate gradations a minimum of twice per lot from mechanical analysis of recovered aggregate in accordance with ASTM D5444. When asphalt content is determined by the ignition oven or nuclear method, aggregate gradation must be determined from hot bin samples on batch plants, or from the cold feed on drum mix plants. For batch plants, test aggregates in accordance with ASTM C136/C136M using actual batch weights to determine the combined aggregate gradation of the mixture.

3.1.4.7 VMA, Marshall Stability, and Flow

Obtain mixture samples at least four times per lot. Calculate the VMA of each specimen in accordance with AI MS-2 based on ASTM C127 and ASTM C128 bulk specific gravity for the aggregate, as well as the Marshall stability and flow, as described in ASTM D6927. Provide VMA within the limits of.

3.1.4.8 In-Place Density

Conduct any necessary testing to ensure the specified density is achieved. A nuclear gauge or other non-destructive testing device can be used to monitor pavement density.

3.1.4.9 Grade and Smoothness

Conduct the necessary checks to ensure the grade and smoothness requirements are met in accordance with paragraph MATERIAL ACCEPTANCE.

3.1.4.10 Additional Testing

Perform any additional testing deemed necessary to control the process.

3.1.4.11 QC Monitoring

Submit all QC test results to the Government on a daily basis as the tests are performed. The Government reserves the right to monitor any of the Contractor's quality control testing and to perform duplicate testing as a check to the Contractor's quality control testing.

3.1.5 Sampling

When directed by the Government, sample and test any material which appears to not meet specification requirements unless such material is voluntarily removed and replaced or deficiencies corrected. Perform all sampling in accordance with standard procedures specified.

3.2 PREPARATION OF ASPHALT BINDER MATERIAL

Heat the asphalt cement material while avoiding local overheating. Provide a continuous supply of the asphalt material to the mixer at a uniform temperature. Maintain the temperature of the asphalt delivered to the mixer to provide a suitable viscosity for adequate coating of the aggregate particles. For hot-mix, do not heat unmodified asphalt to a temperature exceeding 325 degrees F when added to the aggregate. Do not heat modified asphalt to a temperature exceeding 350 degrees F when added to the aggregate.

3.3 PREPARATION OF AGGREGATE

Heat and dry the aggregate prior to mixing. Provide a rate of heating and a maximum temperature that does not damage the aggregates. Do not heat the aggregate to a temperature exceeding 350 degrees F when the asphalt binder is added. Maintain the temperature no lower than is required to obtain complete coating and uniform distribution on the aggregate particles and to provide a mixture of satisfactory workability.

3.4 HIGH PERMFORMANCE WATERPROOFING MEMBRANE INSTALLATION (BID OPTION)

3.4.1 Storage

store and install the membrane and all associated components in accordance with the manufacturer’s published recommendations.

3.4.2 Preparation

If an existing waterproofing membrane is present, completely remove the existing membrane to the primed surfaces. Prior to application of primer or installation of membrane the concrete must be cured in accordance with the applicable Contract requirements; areas where rapid setting patching materials have been placed must be cured for a minimum of 72 hours, or as recommended by the product manufacturer.

3.4.2.1 Cleaning

The entire surface of the concrete bridge deck to receive the waterproofing membrane must be shot blasted to achieve a surface which is clean and free of laitance, oil, grease and any foreign materials, as well as any sharp

protrusions or sharp indentations. The shot blasting must be accomplished using self-contained, self-propelled equipment to achieve a consistent anchor profile.

3.4.2.2 Surface Profile

Maintain an onsite copy of ICRI 03732. The final concrete surface profile must range between a CSP 1 and a CSP 5, as defined by ICRI 03732, or as approved by the membrane manufacturer’s representative. All surfaces must then be cleaned to remove all loose dust and debris.

3.4.2.3 Moisture Testing

Priming and membrane application must only be done when the air and concrete temperatures are above 40 degrees Fahrenheit and the surfaces that are to receive the primer and membrane have a moisture content at, or below, 6 percent. Primer or membrane must not be applied or installed until the concrete has been in place for a minimum of 10 days. Supply a portable electronic moisture meter capable of measuring the moisture content of concrete surfaces in percent. The list of acceptable moisture meters is included on the MEDOT QPL under Waterproofing Membranes. The moisture meter must be calibrated annually and a certificate of calibration from the moisture meter manufacturer must be submitted prior to utilizing the meter. Perform moisture testing of the concrete substrate using the approved moisture meter. Moisture tests must be performed at locations determined by, and in the presence of, the Contracting Officer. Submit the moisture test results for approval prior to commencing the priming and membraning operations.

3.4.3 Membrane Installation

Install the membrane in accordance with MEDOT Section 508 and the manufacturer's recommendations.

Waterproofing membrane over which hot mix asphalt (HMA) pavement will be placed must receive a bituminous tack coat, in accordance with MEDOT Section 409, with a coverage rate of between 0.01 and 0.02 gallons per square yard. Alternately, if a membrane manufacturer recommends its own tack coat as part of its waterproofing system, then this tack material must be applied in accordance with the manufacturer’s recommendations. Prior to tacking, the membrane must be clean and free from loose debris, moisture or other contaminants. Membrane surfaces that have been tacked must be paved within 48 hours of application of the tack coat.

3.4.3.1 Spray Applied High Performance Membrane

Spray applied membrane must be installed in accordance with the manufacturer’s recommendations.

Aggregate scatter shall be applied to the final coat of membrane, in accordance with the manufacturer’s recommendations. Materials for aggregate scatter must be in accordance with the manufacturer’s requirements.

Corner detail at edge of superstructure slab/vertical surfaces (e.g., curb or permanent barrier): The waterproofing system must be placed to within ½ inch of the top of the HMA wearing surface.

Corner detail at end of superstructure slab/vertical surface (e.g., backwall): The waterproofing system must be placed on vertical surfaces, at

the ends of slabs, down the vertical face, a minimum of one foot, unless otherwise shown on the Plans.

3.4.3.2 Torch Applied High Performance Membrane

The waterproofing membrane must be heat welded onto the prepared substrate. Care must be taken to assure that the membrane is completely bonded to the primed surface. Machines used to apply the membrane must be fully functional, including thermostats.

Corner detail at edge of superstructure slab/vertical surfaces (e.g., curb or permanent barrier): Membrane material or special flashing must be installed in corners, in accordance with the manufacturer's recommendations, to within ½ inch of the top of the HMA wearing surface. In the absence of a manufacturer's recommended flashing or if the manufacturer does not recommend bending membrane material to conform to this corner configuration, then the following procedure must be used:

a. The membrane must be heat welded to the slab to within one inch of the vertical surface;

b. The vertical surface must be protected to prevent damage or permanent discoloring of the vertical surface;

c. The remaining area between the edge of the membrane and the vertical surface must be completely sealed with hot-applied rubberized asphalt material, meeting the requirements of the membrane manufacturer's recommendations;

d. The hot-applied rubberized asphalt material must be applied so as to form a complete seal between the membrane and the vertical surface and must extend up the vertical surface to within ½ inch of the top of the HMA wearing surface.

Corner detail at end of superstructure slab/vertical surface (e.g., backwall): The waterproofing system must be placed on vertical surfaces, at the ends of slabs, down the vertical face, a minimum of one foot, unless otherwise shown on the Plans. Immediately prior to application of the tack coat, the entire surface of the membrane must be rolled with a rubber tired roller and any blisters found in the membrane must be repaired with guidance from the manufacturer's representative, as per the manufacturer's recommendations; similarly, if blisters appear during or after placement of the first lift of HMA pavement, the membrane must be repaired with guidance from the manufacturer's representative, as per the manufacturer's recommendations.

3.4.4 HMA Pavement Placement on Top of High Performance Membrane

The required laydown temperature of HMA pavement placed on high performance membrane must be within the tolerances included in the membrane manufacturer's written recommendations, with the target temperature to be at the high end of the given range, but not to exceed 325 degrees Fahrenheit, measured at the HMA pavement plant.

Paving operations must be done in a manner to permit water to drain to the low area of the deck without entrapment. No vehicles, other than the HMA paving equipment, is permitted on the membrane prior to placing the HMA pavement. The first layer of HMA pavement placed on the deck must be placed with an approved rubber mounted bituminous paver of such type and operated

in such a manner that the waterproofing membrane does note become damaged in any way. Paving equipment wheels and tires must be clean and free from stones or other material that could penetrate the membrane. The tack coat and HMA pavement may be applied immediately after the membrane is installed.

3.4.5 Manufacturer's Representation

A manufacturer’s representative must be present at all times during the installation of high performance membrane, including application of the primer and tack coat. The representative must also be present for placement of the HMA binder course over the membrane. The representative must be readily identified by a photo identification badge, issued by the manufacturer, that includes the manufacturer’s name and logo, a current photograph of the representative, the representative’s full name and the word “Representative”. The text of the badge must be clearly printed in English. The representative must have the badge on and prominently displayed at all times, while overseeing this work.

3.4.6 Membrane Repairs

Torn or damaged membrane must be repaired in accordance with manufacturer’s recommendations. Blistering of membrane at any time prior to Final Acceptance must be repaired in accordance with the manufacturer’s recommendations. At least one week prior to installation of any waterproofing membrane, submit the membrane manufacturer’s written requirements pertaining to overlapping of seams, application procedures, repairing of damaged membrane and treatment of blistering of the membrane, including treatment of blistering either before, during or after the first lift of HMA pavement is placed on the membrane, for review and approval.

3.5 PREPARATION OF ASPHALT MIXTURE

The aggregates and the asphalt cement must be weighed or metered and introduced into the mixer in the amount specified by the JMF. Mix the combined materials until the aggregate obtains a uniform coating of asphalt binder and is thoroughly distributed throughout the mixture. Wet mixing time must be the shortest time that will produce a satisfactory mixture, but no less than 25 seconds for batch plants. Establish the wet mixing time for all plants based on the procedure for determining the percentage of coated particles described in ASTM D2489/D2489M, for each individual plant and for each type of aggregate used. The wet mixing time will be set to at least achieve 95 percent of coated particles. The moisture content of all hot-mix asphalt upon discharge from the plant must not exceed 0.5 percent by total weight of mixture as measured by ASTM D1461-17.

3.6 PREPARATION OF THE UNDERLYING SURFACE

The surface, which hot mix asphalt is to be placed, must be cleaned and prepared in accordance with MEDOT Section 401.11. Immediately before placing the hot mix asphalt, clean the underlying course of dust and debris. Apply a tack coat in accordance with MEDOT specifications.

3.7 PREPARING SUB-BASE MATERIAL

Sub-base material must be compacted to 95 percent of maximum density for the full width and depth of the course in accordance with MEDOT Section 304. The Sub-base must be supplemented with clean aggregate, wherever necessary, and any unsuitable material identified must be replaced.

3.8 REPAIRING CONCRETE BRIDGE DECK

Repair existing bridge deck in accordance with MEDOT Section 518 and 03 01 00 REHABILITATION OF CONCRETE.

3.9 TRANSPORTING AND PLACING

3.9.1 Transporting

Transport asphalt mixture from the mixing plant to the site in clean, tight vehicles. Schedule deliveries so that placing and compacting of mixture is uniform with minimum stopping and starting of the paver. Provide adequate artificial lighting for night placements. Hauling over freshly placed material will not be permitted until the material has been compacted as specified, and allowed to cool to 140 degrees F.

3.9.2 Placing

HMA must be placed in accordance with MEDOT Section 401.15. Place and compact the mix at a temperature suitable for obtaining density, surface smoothness, and other specified requirements. Upon arrival, place the mixture to the full width by an asphalt paver; it must be struck off in a uniform layer of such depth that, when the work is completed, it will have the required thickness and conform to the grade and contour indicated. On isolated areas where irregularities or unavoidable obstacles make the use of mechanical spreading and finishing equipment impractical, the mixture may be spread and luted by hand tools.

3.10 COMPACTION OF MIXTURE

After placing, the mixture must be thoroughly and uniformly compacted by rolling in accordance with MEDOT Section 401.16. Furnish sufficient rollers to handle the output of the plant. Continue rolling until the surface is of uniform texture, true to grade and cross section, and the required field density is obtained. To prevent adhesion of the mixture to the roller, keep the wheels properly moistened but excessive water will not be permitted. In areas not accessible to the roller, the mixture must be thoroughly compacted with hand tampers. Any mixture that becomes loose and broken, mixed with dirt, contains check-cracking, or is in any way defective must be removed full depth, replaced with fresh hot mixture and immediately compacted to conform to the surrounding area. This work must be done at the Contractor's expense. Skin patching will not be allowed.

3.11 JOINTS

The formation of joints must be performed ensuring a continuous bond between the courses and to obtain the required density in accordance with MEDOT Section 401.17.

3.11.1 Transverse Joints

Do not pass the roller over the unprotected end of the freshly laid mixture, except when necessary to form a transverse joint. When necessary to form a transverse joint, construct by means of placing a bulkhead or by tapering the course. Utilize a dry saw cut on the transverse joint full depth and width on a straight line to expose a vertical face prior to placing the adjacent lane. Remove the cutback material from the project. In both methods, provide a light tack coat of asphalt material to all contact surfaces before placing any fresh mixture against the joint.

3.11.2 Longitudinal Joints

Provide a joint that meets density and smoothness requirements for joints and has uniform texture. Cut back longitudinal joints which are irregular, damaged, uncompacted, cold (less than 175 degrees F at the time of placing adjacent lanes), or otherwise defective, a maximum of 3 inches from the top of the course with a cutting wheel to expose a clean, sound, near vertical surface for the full depth of the course. Remove all cutback material from the project. Provide a light tack coat of asphalt material to all contact surfaces prior to placing any fresh mixture against the joint.

3.12 MATERIAL ACCEPTANCE

Testing for acceptability of work will be performed by an independent laboratory hired by the Contractor. Forward test results daily to the Contracting Officer. Acceptance of the plant produced mix and in-place requirements will be on a lot to lot basis. A standard lot for all requirements will be equal to 8 hours of production. Grade and surface smoothness determinations will be made on the lot as a whole. Exceptions or adjustments to this will be made in situations where the mix within one lot is placed as part of both the intermediate and surface courses, thus grade and smoothness measurements for the entire lot cannot be made. In order to evaluate laboratory air voids and in-place (field) density, each lot will be divided into four equal sublots.

3.13 SUBLOT SAMPLING

One random mixture sample for determining laboratory air voids, theoretical maximum density, and for any additional testing the Contracting Officer desires, will be taken from a loaded truck delivering mixture to each sublot, or other appropriate location for each sublot. All samples will be selected randomly, using commonly recognized methods of assuring randomness conforming to ASTM D3665 and employing tables of random numbers or computer programs. Laboratory air voids will be determined from three laboratory compacted specimens of each sublot sample in accordance with ASTM D6926. The specimens will be compacted within 2 hours of the time the mixture was loaded into trucks at the asphalt plant. Samples will not be reheated prior to compaction and insulated containers will be used as necessary to maintain the temperature.

3.14 ADDITIONAL SAMPLING AND TESTING

The Contracting Officer reserves the right to direct additional samples and tests for any area which appears to deviate from the specification requirements. The cost of any additional testing will be paid for by the Government. Testing in these areas will be in addition to the lot testing, and the requirements for these areas will be the same as those for a lot.

3.15 GRADE

The final wearing surface of pavement must match the existing grade. Diamond grinding may be used to remove high spots to meet grades and ensure positive drainage is maintained. Skin patching for correcting low areas or planing or milling for correcting high areas will not be permitted.

3.16 SURFACE SMOOTHNESS

Pavement smoothness must meet the requirements of MEDOT Section 402.

-- End of Section --

SECTION 32 17 23

PAVEMENT MARKINGS
08/16, CHG 5: 11/18

PART 1 GENERAL

This specification section covers pavement markings.

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 D6628	(2003; R 2015) Standard Specification for Color of Pavement Marking Materials

U.S. FEDERAL HIGHWAY ADMINISTRATION (FHWA)

MUTCD	(2009; Rev 2012) Manual on Uniform Traffic Control Devices

MAINE DEPARTMENT OF TRANSPORTATION (MEDOT)

MEDOT	State of Maine, Department of Transportation, Standard Specifications, including revisions through award of this contract (See http://www.maine.gov/mdot/publications/)

1.2 MODIFICATION OF REFERENCES

Where included in the MEDOT specifications, replace the terms "Resident", "Fabrication Engineer" and "Department" with "Contracting Officer", unless otherwise specified.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" classification. Submittals not having a "G" classification are for Contractor Quality Control approval. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Pavement Marking Plan; G

SD-03 Product Data

Surface Preparation Equipment List; G

Application Equipment List; G

Exterior Surface Preparation

Safety Data Sheets; G

Polyurea Paint; G

SD-06 Test Reports

Test Reports

SD-07 Certificates

Qualifications; G

Volatile Organic Compound, (VOC); G

SD-08 Manufacturer's Instructions

Polyurea Paint Manufacturer's Application Guidance; G

1.4 QUALITY ASSURANCE

1.4.1 Regulatory Requirements

Submit certificate stating that the proposed pavement marking paint meets the Volatile Organic Compound, (VOC) regulations of the local Air Pollution Control District having jurisdiction over the geographical area in which the project is located. Submit Safety Data Sheets for each product.

1.4.2 Qualifications

Submit documentation certifying that pertinent personnel are qualified for equipment operation and handling of applicable chemicals. The documentation should include experience on five projects of similar size and scope with references for all personnel.

1.4.3 Pavement Marking Plan

Prior to commencing work, submit for review and approval a pavement marking plan indicating the various markings to be provided on the bridge and approaches.

1.5 DELIVERY AND STORAGE

Deliver paint materials in original sealed containers that plainly show the designated name, specification number, batch number, color, date of manufacture, manufacturer's directions, and name of manufacturer.

Provide storage facilities at the job site for maintaining materials at temperatures recommended by the manufacturer.

1.6 PROJECT/SITE CONDITIONS

1.6.1 Environmental Requirements

1.6.1.1 Weather Limitations for Application

Apply pavement markings to clean, dry surfaces, and unless otherwise approved, only when the air and pavement surface temperature is at least 5 degrees F above the dew point and the air and pavement temperatures are within the limits recommended by the pavement marking manufacturer. Allow

pavement surfaces to dry after water has been used for cleaning or rainfall has occurred prior to striping or marking. Test the pavement surface for moisture before beginning work each day and after cleaning. Do not commence marking until the pavement is sufficiently dry and the pavement condition has been approved by the Contracting Officer. Employ the "plastic wrap method" to test the pavement for moisture as specified in paragraph TESTING FOR MOISTURE.

1.6.2 Traffic Controls

Place warning signs conforming to MUTCD near the beginning of the worksite and well ahead of the worksite for alerting approaching traffic from both directions. Place small markers along newly painted lines or freshly placed raised markers to control traffic and prevent damage to newly painted surfaces or displacement of raised pavement markers. Mark painting equipment with large warning signs indicating slow-moving painting equipment in operation.

When traffic must be rerouted or controlled to accomplish the work, provide necessary warning signs, flag persons, and related equipment for the safe passage of vehicles.

1.6.3 Lighting

When night operations are necessary, provide all necessary lighting and equipment. The Government reserves the right to accept or reject night work on the day following night activities by the Contractor.

PART 2 PRODUCTS

2.1 EQUIPMENT

2.1.1 Surface Preparation

2.1.1.1 Surface Preparation Equipment for Roads

Submit a surface preparation equipment list by serial number, type, model, and manufacturer. Include descriptive data indicating area of coverage per pass, pressure adjustment range, tank and flow capacities, and safety precautions required for the equipment operation. Mobile equipment must allow for removal of markings without damaging the pavement surface or joint sealant. Maintain machines, tools, and equipment used in the performance of the work in satisfactory operating condition.

2.1.2 Application Equipment

Submit application equipment list appropriate for the material(s) to be used. Include manufacturer's descriptive data and certification for the planned use that indicates area of coverage per pass, pressure adjustment range, tank and flow capacities, and all safety precautions required for operating and maintaining the equipment. Provide and maintain machines, tools, and equipment used in the performance of the work in satisfactory operating condition, or remove them from the work site. Provide mobile and maneuverable application equipment to the extent that straight lines can be followed and normal curves can be made in a true arc.

2.1.2.1 Paint Application Equipment

2.1.2.1.1 Hand-Operated, Push-Type Machines

Provide hand-operated push-type applicator machine of a type commonly used for application of water based paint to pavement surfaces for small marking projects, such as legends and cross-walks, automotive parking areas, or surface painted signs. Provide applicator machine equipped with the necessary tanks and spraying nozzles capable of applying paint uniformly at coverage specified. Hand operated spray guns may be used in areas where push-type machines cannot be used.

2.1.2.1.2 Self-Propelled or Mobile-Drawn Spraying Machines

Provide self-propelled or mobile-drawn spraying machine with suitable arrangements of atomizing nozzles and controls to obtain the specified results. Provide machine having a speed during application capable of applying the stripe widths indicated at the paint coverage rate specified herein and of even uniform thickness with clear-cut edges.

2.1.2.1.2.1 Road Marking

Provide equipment used for marking roads capable of placing the prescribed number of lines at a single pass as solid lines, intermittent lines, or a combination of solid and intermittent lines using a maximum of three different colors of paint as specified.

2.1.2.1.2.2 Hand Application

Provide spray guns for hand application of paint in areas where the mobile paint applicator cannot be used.

2.2 MATERIALS

Use polyurea paint for roads. The maximum allowable VOC content of pavement markings is 150 grams per liter. Color of markings are indicated on the drawings and must conform to ASTM D6628 for roads. Provide materials conforming to the requirements specified herein.

2.2.1 Polyurea Paint

The polyurea paint must be a product listed on the MEDOT Qualified Product List (QPL).

PART 3 EXECUTION

3.1 EXAMINATION

3.1.1 Testing for Moisture

Test the pavement surface for moisture before beginning pavement marking after each period of rainfall, fog, high humidity, or cleaning, or when the ambient temperature has fallen below the dew point. Do not commence marking until the pavement is sufficiently dry and the pavement condition has been approved by the Contracting Officer or authorized representative.

Employ the "plastic wrap method" to test the pavement for moisture as follows: Cover the pavement with a 12 inch by 12 inch section of clear plastic wrap and seal the edges with tape. After 15 minutes, examine the

plastic wrap for any visible moisture accumulation inside the plastic. Do not begin marking operations until the test can be performed with no visible moisture accumulation inside the plastic wrap. Re-test surfaces when work has been stopped due to rain.

3.1.2 Surface Preparation Demonstration

Prior to surface preparation, demonstrate the proposed procedures and equipment. Prepare areas large enough to determine cleanliness and rate of cleaning.

3.1.3 Test Stripe Demonstration

Prior to paint application, demonstrate test stripe application within the work area using the proposed materials and equipment. Apply separate test stripes in each of the line widths and configurations required herein using the proposed equipment. Make the test stripes long enough to determine the proper speed and operating pressures for the vehicle(s) and machinery, but not less than 50 feet long.

3.1.4 Application Rate Demonstration

During the Test Stripe Demonstration, demonstrate compliance with the application rates specified within the manufacturer's guidance. Document the equipment speed and operating pressures required to meet the specified rates in each configuration of the equipment and provide a copy of the documentation to the Contracting Officer prior to proceeding with the work.

3.1.5 Level of Performance Demonstration

The Contracting Officer will be present at the application demonstrations to observe the results obtained and to validate the operating parameters of the vehicle(s) and equipment. If accepted by the Contracting Officer, the test stripe is the measure of performance required for this project. Do not proceed with the work until the demonstration results are satisfactory to the Contracting Officer.

3.2 EXTERIOR SURFACE PREPARATION

Allow new pavement surfaces to cure for a period of not less than 30 days before application of marking materials. Thoroughly clean surfaces to be marked before application of the paint. Remove dust, dirt, and other granular surface deposits by sweeping, blowing with compressed air, rinsing with water, or a combination of these methods as required. Remove rubber deposits, residual curing compounds, and other coatings adhering to the pavement by water blasting.

3.2.1 Early Painting of Rigid Pavements

Pretreat rigid pavements that require early painting with an aqueous solution containing 3 percent phosphoric acid and 2 percent zinc chloride. Apply the solution to the areas to be marked.

3.2.2 Early Painting of Asphalt Pavements

For asphalt pavement systems requiring painting application at less than 30 days, apply the paint and beads at half the normal application rate, followed by a second application at the normal rate after 30 days.

3.3 APPLICATION

Apply pavement markings to dry pavements only.

3.3.1 Paint

Apply paint in accordance with the polyurea paint manufacturer's application guidance. Provide guidelines and templates as necessary to control paint application. Take special precautions in marking numbers, letters, and symbols. Manually paint numbers, letters, and symbols. Sharply outline all edges of markings. The maximum drying time requirements of the paint specifications will be strictly enforced, to prevent undue softening of bitumen, and pickup, displacement, or discoloration by tires of traffic. If there is a deficiency in drying of the markings, painting operations must cease until the cause of the slow drying is determined and corrected.

3.3.2 Cleanup and Waste Disposal

Keep the worksite clean and free of debris and waste from the removal and application operations. Dispose of debris at approved sites.

3.4 FIELD QUALITY CONTROL

3.4.1 Sampling and Testing

As soon as the paint materials are available for sampling, obtain by random selection from the sealed containers, two quart samples of each batch in the presence of the Contracting Officer. Accomplish adequate mixing prior to sampling to ensure a uniform, representative sample. A batch is defined as that quantity of material processed by the manufacturer at one time and identified by number on the label. Clearly identify samples by designated name, specification number, batch number, project contract number, intended use, and quantity involved.

Test samples by an approved laboratory. If a sample fails to meet specification, replace the material in the area represented by the samples and retest the replacement material as specified above. Submit certified copies of the test reports, prior to the use of the materials at the jobsite. Include in the report of test results a listing of any specification requirements not verified by the test laboratory.

3.4.2 Material Inspection

Examine material at the job site to determine that it is the material referenced in the report of test results or certificate of compliance. Provide test results substantiating conformance to the specified requirements with each certificate of compliance.

3.4.3 Dimensional Tolerances

Apply all markings in the standard dimensions provide in the drawings. New markings may deviate a maximum of 10 percent larger than the standard dimension. The maximum deviation allowed when painting over an old marking is up to 20 percent larger than the standard dimensions.

3.4.4 Bond Failure Verification

Inspect newly applied markings for signs of bond failure based on visual

inspection and comparison to results from Test Stripe Demonstration paragraph.

3.4.5 Coating Application Verification

Use a wet film thickness gauge to measure the application of wet paint.

-- End of Section --

SECTION 33 71 02

UNDERGROUND ELECTRICAL DISTRIBUTION
08/21

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 ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)

AASHTO HB-17	(2002; Errata 2003; Errata 2005, 17th Edition) Standard Specifications for Highway Bridges

AMERICAN CONCRETE INSTITUTE (ACI)

ACI 318M	(2014; ERTA 2015) Building Code Requirements for Structural Concrete & Commentary
ACI SP-66	(2004) ACI Detailing Manual

ASTM INTERNATIONAL (ASTM)

ASTM B1	(2013) Standard Specification for Hard-Drawn Copper Wire
ASTM B3	(2013) Standard Specification for Soft or Annealed Copper Wire
ASTM B8	(2011; R 2017) Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft
ASTM B800	(2005; R 2021) Standard Specification for 8000 Series Aluminum Alloy Wire for Electrical Purposes-Annealed and Intermediate Tempers
ASTM B801	(2018) Standard Specification for Concentric-Lay-Stranded Conductors of 8000 Series Aluminum Alloy for Subsequent Covering or Insulation
ASTM C309	(2019) Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete
ASTM C478	(2018) Standard Specification for Circular Precast Reinforced Concrete Manhole Sections

ASTM C857	(2016) Standard Practice for Minimum Structural Design Loading for Underground Precast Concrete Utility Structures
ASTM C990	(2009; R 2019) Standard Specification for Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)

IEEE 48	(2020) Test Procedures and Requirements for Alternating-Current Cable Terminations Used on Shielded Cables Having Laminated Insulation Rated 2.5 kV through 765 kV or Extruded Insulation Rated 2.5 kV through 500 kV
IEEE 81	(2012) Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Ground System
IEEE C2	(2023) National Electrical Safety Code
IEEE Stds Dictionary	(2009) IEEE Standards Dictionary: Glossary of Terms & Definitions

INTERNATIONAL ELECTRICAL TESTING ASSOCIATION (NETA)

NETA ATS	(2021) Standard for Acceptance Testing Specifications for Electrical Power Equipment and Systems

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

ANSI C119.1	(2016) Electric Connectors - Sealed Insulated Underground Connector Systems Rated 600 Volts
NEMA RN 1	(2005; R 2013) Polyvinyl-Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal Conduit
NEMA TC 2	(2020) Standard for Electrical Polyvinyl Chloride (PVC) Conduit
NEMA TC 3	(2021) Polyvinyl Chloride (PVC) Fittings for Use With Rigid PVC Conduit and Tubing
NEMA TC 9	(2020) Standard for Fittings for Polyvinyl Chloride (PVC) Plastic Utilities Duct for Underground Installation
NEMA WC 70	(2021) Power Cable Rated 2000 Volts or Less for the Distribution of Electrical Energy

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70	(2023) National Electrical Code

SOCIETY OF CABLE TELECOMMUNICATIONS ENGINEERS (SCTE)

ANSI/SCTE 77	(2013) Specification for Underground Enclosure Integrity

U.S. GENERAL SERVICES ADMINISTRATION (GSA)

CID A-A-60005	(Basic; Notice 2) Frames, Covers, Gratings, Steps, Sump And Catch Basin, Manhole

UNDERWRITERS LABORATORIES (UL)

UL 6	(2007; Reprint Sep 2019) UL Standard for Safety Electrical Rigid Metal Conduit-Steel
UL 44	(2018; Reprint May 2021) UL Standard for Safety Thermoset-Insulated Wires and Cables
UL 83	(2017; Reprint Mar 2020) UL Standard for Safety Thermoplastic-Insulated Wires and Cables
UL 94	(2013; Reprint Apr 2022) UL Standard for Safety Tests for Flammability of Plastic Materials for Parts in Devices and Appliances
UL 486A-486B	(2018; Reprint May 2021) UL Standard for Safety Wire Connectors
UL 510	(2020) UL Standard for Safety Polyvinyl Chloride, Polyethylene and Rubber Insulating Tape
UL 514A	(2013; Reprint Jun 2022) UL Standard for Safety Metallic Outlet Boxes
UL 514B	(2012; Reprint May 2020) Conduit, Tubing and Cable Fittings
UL 651	(2011; Reprint May 2022) UL Standard for Safety Schedule 40, 80, Type EB and A Rigid PVC Conduit and Fittings
UL 854	(2020) Standard for Service-Entrance Cables
UL 1242	(2006; Reprint Apr 2022) UL Standard for Safety Electrical Intermediate Metal Conduit -- Steel

1.2 DEFINITIONS

a. Unless otherwise specified or indicated, electrical and electronics terms used in these specifications, and on the drawings, are as defined

in IEEE Stds Dictionary.

b. In the text of this section, the words conduit and duct are used interchangeably and have the same meaning.

c. In the text of this section, "medium voltage cable splices," and "medium voltage cable joints" are used interchangeably and have the same meaning.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" classification. Submittals not having a "G" classification are for Contractor Quality Control approval. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Precast Underground Structures; G

SD-03 Product Data

Live End Caps; G

Precast Concrete Structures; G

Sealing Material

Pulling-In Irons

Manhole Frames and Covers; G

Handhole Frames and Covers; G

Composite/Fiberglass Handholes; G

Cable Supports (racks, arms and insulators); G

SD-06 Test Reports

Field Acceptance Checks and Tests; G

Cable Installation Plan and Procedure; G

Six copies of the information described below in 8-1/2 by 11 inch binders having a minimum of three rings from which material may readily be removed and replaced, including a separate section for each cable pull. Separate sections by heavy plastic dividers with tabs, with all data sheets signed and dated by the person supervising the pull.

a. Site layout drawing with cable pulls numerically identified.

b. A list of equipment used, with calibration certifications. The manufacturer and quantity of lubricant used on pull.

c. The cable manufacturer and type of cable.

d. The dates of cable pulls, time of day, and ambient temperature.

e. The length of cable pull and calculated cable pulling tensions.

f. The actual cable pulling tensions encountered during pull.

SD-07 Certificates

Cable Installer Qualifications; G

1.4 QUALITY ASSURANCE

1.4.1 Precast Underground Structures

Submittal required for each type used. Provide calculations and drawings for precast manholes and handholes bearing the seal of a registered professional engineer including:

a. Material description (i.e., f'c and Fy)

b. Manufacturer's printed assembly and installation instructions

c. Design calculations

d. Reinforcing shop drawings in accordance with ACI SP-66

e. Plans and elevations showing opening and pulling-in iron locations and details

1.4.2 Cable Installer Qualifications

Provide at least one onsite person in a supervisory position with a documentable level of competency and experience to supervise all cable pulling operations. Provide a resume showing the cable installers' experience in the last three years, including a list of references complete with points of contact, addresses and telephone numbers. Cable installer must demonstrate experience with a minimum of three medium voltage cable installations. The Contracting Officer reserves the right to require additional proof of competency or to reject the individual and call for an alternate qualified cable installer.

1.4.3 Regulatory Requirements

In each of the publications referred to herein, consider the advisory provisions to be mandatory, as though the word, "must" 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 must be in accordance with the mandatory and advisory provisions of IEEE C2 and NFPA 70 unless more stringent requirements are specified or indicated.

1.4.4 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 must have been in satisfactory commercial or industrial use for 2 years prior to bid opening. The 2-year period must include applications of equipment and materials under similar

circumstances and of similar size. The product must have been for 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 must 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.

1.4.4.1 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.

1.4.4.2 Material and Equipment Manufacturing Date

Products manufactured more than 3 years prior to date of delivery to site are not acceptable, unless specified otherwise.

PART 2 PRODUCTS

2.1 CONDUIT, DUCTS, AND FITTINGS

2.1.1 Rigid Metal Conduit

UL 6.

2.1.1.1 Rigid Metallic Conduit, PVC Coated

NEMA RN 1, Type A40, except that hardness must be nominal 85 Shore A durometer, dielectric strength must be minimum 400 volts per mil at 60 Hz, and tensile strength must be minimum 3500 psi.

2.1.2 Intermediate Metal Conduit

UL 1242.

2.1.2.1 Intermediate Metal Conduit, PVC Coated

NEMA RN 1, Type A40, except that hardness must be nominal 85 Shore A durometer, dielectric strength must be minimum 400 volts per mil at 60 Hz, and tensile strength must be minimum 3500 psi.

2.1.3 Plastic Duct for Concrete Encasement

Provide Type EPC-40 per UL 651 and NEMA TC 2 or as indicated.

2.1.4 Duct Sealant

UL 94, Class HBF. Provide high-expansion urethane foam duct sealant that expands and hardens to form a closed, chemically and water resistant, rigid structure. Sealant must be compatible with common cable and wire jackets and capable of adhering to metals, plastics and concrete. Sealant must be capable of curing in temperature ranges of 35 degrees F to 95 degrees F. Cured sealant must withstand temperature ranges of -20 degrees F to 200 degrees F without loss of function.

2.1.5 Fittings

2.1.5.1 Metal Fittings

UL 514B.

2.1.5.2 PVC Conduit Fittings

UL 514B, UL 651 NEMA TC 3.

2.1.5.3 PVC Duct Fittings

NEMA TC 9.

2.1.5.4 Outlet Boxes for Steel Conduit

Outlet boxes for use with rigid or flexible steel conduit must be cast-metal cadmium or zinc-coated if of ferrous metal with gasketed closures and must conform to UL 514A.

2.2 LOW VOLTAGE INSULATED CONDUCTORS AND CABLES

Insulated conductors must be rated 600 volts and conform to the requirements of NFPA 70, including listing requirements, or in accordance with NEMA WC 70. Wires and cables manufactured more than 12 months prior to date of delivery to the site are not acceptable. Service entrance conductors must conform to UL 854, type USE.

2.2.1 Conductor Types

Cable and duct sizes indicated are for copper conductors and XHHW-2 unless otherwise noted. Conductors No. 10 AWG and smaller must be solid. Conductors No. 8 AWG and larger must be stranded.

2.2.2 Conductor Material

Unless specified or indicated otherwise or required by NFPA 70, wires in conduit, other than service entrance, must be 600-volt, Type XHHW-2 conforming to UL 83 or RHW conforming to UL 44. Copper conductors must be annealed copper complying with ASTM B3 and ASTM B8. Aluminum conductors must be Type AA-8000 aluminum conductors complying with ASTM B800 and ASTM B801, and must be of an aluminum alloy listed or labeled by UL as "component aluminum-wire stock (conductor material). Type 1350 is not acceptable. Intermixing of copper and aluminum conductors in the same raceway is not permitted.

2.2.3 Direct Buried

Provide single-conductor cables identified for direct burial.

2.2.4 Cable Marking

Insulated conductors must have the date of manufacture and other identification imprinted on the outer surface of each cable at regular intervals throughout the cable length.

Identify each cable by means of a fiber, laminated plastic, or non-ferrous metal tags in each manhole, handhole, junction box, and each terminal. Each tag must contain the following information; cable type, conductor

size, circuit number, circuit voltage, cable destination and phase identification.

Color code conductors. Provide conductor identification within each enclosure where a tap, splice, or termination is made. Conductor identification must be by color-coded insulated conductors, plastic-coated self-sticking printed markers, colored nylon cable ties and plates, heat shrink type sleeves,or colored electrical tape. Properly identify control circuit terminations. Color must 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 may be white with a different colored (not green) stripe for each. Color of ungrounded conductors in different voltage systems are 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

d. On three-phase, four-wire delta system, high leg must be orange, as required by NFPA 70.

2.3 LOW VOLTAGE WIRE CONNECTORS AND TERMINALS

Provide a uniform compression over the entire conductor contact surface. Use solderless terminal lugs on stranded conductors.

a. For use with copper conductors: UL 486A-486B.

b. For use with aluminum conductors: UL 486A-486B. For connecting aluminum to copper, connectors must be the circumferentially compressed, metallurgically bonded type.

2.4 LOW VOLTAGE SPLICES

Provide splices in conductors with a compression connector on the conductor and by insulating and waterproofing using one of the following methods which are suitable for continuous submersion in water and comply with ANSI C119.1.

2.4.1 Heat Shrinkable Splice

Provide heat shrinkable splice insulation by means of a thermoplastic adhesive sealant material applied in accordance with the manufacturer's written instructions.

2.4.2 Cold Shrink Rubber Splice

Provide a cold-shrink rubber splice which consists of EPDM rubber tube which has been factory stretched onto a spiraled core which is removed during splice installation. The installation must not require heat or flame, or any additional materials such as covering or adhesive. It must be designed for use with inline compression type connectors, or indoor, outdoor, direct-burial or submerged locations.

2.5 LIVE END CAPS

Provide live end caps using a "kit" including a heat-shrinkable tube and a high dielectric strength, polymeric plug overlapping the conductor. Conform to applicable portions of IEEE 48.

2.6 TAPE

2.6.1 Insulating Tape

UL 510, plastic insulating tape, capable of performing in a continuous temperature environment of 80 degrees C.

2.6.2 Buried Warning and Identification Tape

Provide detectable tape in accordance with Section 31 23 00.00 22 EXCAVATION AND FILL.

2.7 PULL ROPE

Plastic or flat pull line (bull line) having a minimum tensile strength of 200 pounds.

2.8 GROUNDING AND BONDING

2.8.1 Driven Ground Rods

Provide solid stainless steel ground rods not less than 3/4 inch in diameter by 10 feet in length. Sectional type rods may be used for rods 20 feet or longer.

2.8.2 Grounding Conductors

Stranded-bare copper conductors must conform to ASTM B8, Class B, soft-drawn unless otherwise indicated. Solid-bare copper conductors must conform to ASTM B1 for sizes No. 8 and smaller. Insulated conductors must be of the same material as phase conductors and green color-coded, except that conductors must be rated no more than 600 volts. Aluminum is not acceptable.

2.9 CAST-IN-PLACE CONCRETE

Provide concrete in accordance with Section 03 30 00 CAST-IN-PLACE CONCRETE.

2.10 UNDERGROUND STRUCTURES

Provide precast concrete underground structures or standard type cast-in-place manhole types as indicated, conforming to ASTM C857 and ASTM C478. Top, walls, and bottom must consist of reinforced concrete. Walls and bottom must be of monolithic concrete construction. Locate duct

entrances and windows near the corners of structures to facilitate cable racking. Covers must fit the frames without undue play. Form steel and iron to shape and size with sharp lines and angles. Castings must be free from warp and blow holes that may impair strength or appearance. Exposed metal must have a smooth finish and sharp lines and arises. Provide necessary lugs, rabbets, and brackets. Set pulling-in irons and other built-in items in place before depositing concrete. Install a pulling-in iron in the wall opposite each duct line entrance. Cable racks, including rack arms and insulators, must be adequate to accommodate the cable.

2.10.1 Cast-In-Place Concrete Structures

Concrete must conform to Section 03 30 00 CAST-IN-PLACE CONCRETE.

2.10.2 Precast Concrete Structures, Risers and Tops

Precast concrete underground structures may be provided in lieu of cast-in-place subject to the requirements specified below. Precast units must be the product of a manufacturer regularly engaged in the manufacture of precast concrete products, including precast manholes.

2.10.2.1 General

Precast concrete structures must have the same accessories and facilities as required for cast-in-place structures. Likewise, precast structures must have plan area and clear heights not less than those of cast-in-place structures. Concrete materials and methods of construction must be the same as for cast-in-place concrete construction, as modified herein. Slope in floor may be omitted provided precast sections are poured in reinforced steel forms. Concrete for precast work must have a 28-day compressive strength of not less than 4000 psi. Structures may be precast to the design and details indicated for cast-in-place construction, precast monolithically and placed as a unit, or structures may be assembled sections, designed and produced by the manufacturer in accordance with the requirements specified. Structures must be identified with the manufacturer's name embedded in or otherwise permanently attached to an interior wall face.

2.10.2.2 Design for Precast Structures

ACI 318M. In the absence of detailed on-site soil information, design for the following soil parameters/site conditions:

a. Angle of Internal Friction (phi) = 30 degrees

b. Unit Weight of Soil (Dry) = 110 pcf, (Saturated) = 130 pcf

c. Coefficient of Lateral Earth Pressure (Ka) = 0.33

d. Ground Water Level = 3 feet below ground elevation

e. Vertical design loads must include full dead, superimposed dead, and live loads including a 30 percent magnification factor for impact. Live loads must consider all types and magnitudes of vehicular (automotive, industrial, or aircraft) traffic to be encountered. The minimum design vertical load must be for H20 highway loading per AASHTO HB-17.

f. Horizontal design loads must include full geostatic and hydrostatic pressures for the soil parameters, water table, and depth of installation to be encountered. Also, horizontal loads imposed by adjacent structure foundations, and horizontal load components of vertical design loads, including impact, must be considered, along with a pulling-in iron design load of 6000 pounds.

g. Each structural component must be designed for the load combination and positioning resulting in the maximum shear and moment for that particular component.

h. Design must also consider the live loads induced in the handling, installation, and backfilling of the manholes. Provide lifting devices to ensure structural integrity during handling and installation.

2.10.2.3 Construction

Provide a uniform thickness for structure top, bottom, and wall not less than 6 inches. Thin-walled knock-out panels for designed or future duct bank entrances are not permitted. Provide quantity, size, and location of duct bank entrance windows as directed, and cast completely open by the precaster. Size of windows must exceed the nominal duct bank envelope dimensions by at least 12 inches vertically and horizontally to preclude in-field window modifications made necessary by duct bank misalignment. However, the sides of precast windows must be a minimum of 6 inches from the inside surface of adjacent walls, floors, or ceilings. Form the perimeter of precast window openings to have a keyed or inward flared surface to provide a positive interlock with the mating duct bank envelope. Provide welded wire fabric reinforcing through window openings for in-field cutting and flaring into duct bank envelopes. Provide additional reinforcing steel comprised of at least two No. 4 bars around window openings. Provide drain sumps a minimum of 12 inches in diameter and 4 inches deep for precast structures.

2.10.2.4 Joints

Provide tongue-and-groove joints on mating edges of precast components. Shiplap joints are not allowed. Design joints to firmly interlock adjoining components and to provide waterproof junctions and adequate shear transfer. Seal joints watertight using preformed plastic strip conforming to ASTM C990. Install sealing material in strict accordance with the sealant manufacturer's printed instructions. Provide waterproofing at conduit/duct entrances into structures, and where access frame meets the top slab, provide continuous grout seal.

2.10.3 Manhole Frames and Covers

Provide cast iron frames and covers for manholes conforming to CID A-A-60005. Cast the words "ELECTRIC" or "TELECOMMUNICATIONS" in the top face of power and telecommunications manhole covers, respectively.

2.10.4 Handhole Frames and Covers

Frames and covers of steel must be welded by qualified welders in accordance with standard commercial practice. Provide rolled-steel floor plate covers having an approved antislip surface. Hinges must be of wrought steel, 5 by 5 inches by approximately 3/16 inch thick, without screw holes, and must be for full surface application by fillet welding. Hinges must have nonremovable pins and five knuckles. The surfaces of

plates under hinges must be true after the removal of raised antislip surface, by grinding or other approved method.

2.10.5 Composite/Fiberglass Handholes and Covers

ANSI/SCTE 77. Provide handholes and covers of polymer concrete, reinforced with heavy weave fiberglass with a design load (Tier rating) appropriate for or greater than the intended use. All covers are required to have the Tier level rating embossed on the surface which must not exceed the design load of the box.

2.11 CABLE SUPPORTS (RACKS, ARMS, AND INSULATORS)

Zinc coat the metal portion of racks and arms after fabrication.

2.11.1 Cable Rack Stanchions

The wall bracket or stanchion must be 4 inches by approximately 1-1/2 inch by 3/16 inch channel steel, or 4 inches by approximately 1 inch glass-reinforced nylon with recessed bolt mounting holes, 48 inches long (minimum) in manholes. Space slots for mounting cable rack arms at 8 inch intervals.

2.11.2 Rack Arms

Cable rack arms must be steel or malleable iron or glass reinforced nylon and must be of the removable type. Rack arm length must be a minimum of 8 inches and a maximum of 12 inches.

2.11.3 Insulators

Insulators for metal rack arms must be dry-process glazed porcelain. Insulators are not required for nylon arms.

PART 3 EXECUTION

3.1 INSTALLATION

Install equipment and devices in accordance with the manufacturer's published instructions and with the requirements and recommendations of NFPA 70 and IEEE C2 as applicable.

3.2 CABLE INSPECTION

Inspect each cable reel for correct storage positions, signs of physical damage, and broken end seals prior to installation. If end seal is broken, remove moisture from cable prior to installation in accordance with the cable manufacturer's recommendations.

3.3 CABLE INSTALLATION PLAN AND PROCEDURE

Obtain from the manufacturer an installation manual or set of instructions which addresses such aspects as cable construction, insulation type, cable diameter, bending radius, cable temperature limits for installation, lubricants, coefficient of friction, conduit cleaning, storage procedures, moisture seals, testing for and purging moisture, maximum allowable pulling tension, and maximum allowable sidewall bearing pressure. Prepare a checklist of significant requirements and submit along with the manufacturer's instructions in accordance with SUBMITTALS. Install cable

strictly in accordance with the cable manufacturer's recommendations and the approved installation plan.

Calculations and pulling plan must include:

a. Site layout drawing with cable pulls identified in numeric order of expected pulling sequence and direction of cable pull.

b. List of cable installation equipment.

c. Lubricant manufacturer's application instructions.

d. Procedure for resealing cable ends to prevent moisture from entering cable.

e. Cable pulling tension calculations of all cable pulls.

f. Cable percentage conduit fill.

g. Cable sidewall bearing pressure.

h. Cable minimum bend radius and minimum diameter of pulling wheels used.

i. Cable jam ratio.

j. Maximum allowable pulling tension on each different type and size of conductor.

k. Maximum allowable pulling tension on pulling device.

3.4 UNDERGROUND STRUCTURE CONSTRUCTION

Provide standard type cast-in-place construction as specified herein and as indicated, or precast construction as specified herein. Horizontal concrete surfaces of floors must have a smooth trowel finish. Cure concrete by applying two coats of white pigmented membrane forming-curing compound in strict accordance with the manufacturer's printed instructions, except that precast concrete may be steam cured. Curing compound must conform to ASTM C309. Locate duct entrances and windows in the center of end walls (shorter) and near the corners of sidewalls (longer) to facilitate cable racking and splicing. Covers for underground structures must fit the frames without undue play. Form steel and iron to shape and size with sharp lines and angles. Castings must be free from warp and blow holes that may impair strength or appearance. Exposed metal must have a smooth finish and sharp lines and arises. Provide necessary lugs, rabbets, and brackets. Set pulling-in irons and other built-in items in place before depositing concrete. Manhole locations, as indicated, are approximate. Coordinate exact manhole locations with other utilities and finished grading and paving.

3.4.1 Cast-In-Place Concrete Structures

Construct walls on a footing of cast-in-place concrete except that precast concrete base sections may be used for precast concrete manhole risers.

3.4.2 Precast Concrete Construction

Set commercial precast structures on 6 inches of level, 90 percent compacted granular fill, 3/4 inch to 1 inch size, extending 12 inches

beyond the structure on each side. Compact granular fill by a minimum of four passes with a plate type vibrator. Installation must additionally conform to the manufacturer's instructions.

3.4.3 Pulling-In Irons

Provide steel bars bent as indicated, and cast in the walls and floors. Alternatively, pipe sleeves may be precast into the walls and floors where required to accept U-bolts or other types of pulling-in devices possessing the strengths and clearances stated herein. The final installation of pulling-in devices must be made permanent. Cover and seal exterior projections of thru-wall type pulling-in devices with an appropriate protective coating. In the floor, locate the irons a minimum of 6 inches from the edge of the sump, and in the walls, locate the irons within 6 inches of the projected center of the duct bank pattern or precast window in the opposite wall. However, the pulling-in iron must not be located within 6 inches of an adjacent interior surface, or duct or precast window located within the same wall as the iron. If a pulling-in iron cannot be located directly opposite the corresponding duct bank or precast window due to this clearance limitation, locate the iron directly above or below the projected center of the duct bank pattern or precast window the minimum distance required to preserve the 6 inch clearance previously stated. In the case of directly opposing precast windows, pulling-in irons consisting of a 3 foot length of No. 5 reinforcing bar, formed into a hairpin, may be cast-in-place within the precast windows simultaneously with the end of the corresponding duct bank envelope. Irons installed in this manner must be positioned directly in line with, or when not possible, directly above or below the projected center of the duct bank pattern entering the opposite wall, while maintaining a minimum clear distance of 3 inches from any edge of the cast-in-place duct bank envelope or any individual duct. Pulling-in irons must have a clear projection into the structure of approximately 4 inches and must be designed to withstand a minimum pulling-in load of 6000 pounds. Hot-dip galvanize irons after fabrication.

3.4.4 Cable Racks, Arms and Insulators

Cable racks, arms and insulators must be sufficient to accommodate the cables. Space racks in power manholes not more than 3 feet apart, and provide each manhole wall with a minimum of two racks. Space racks in signal manholes not more than 16 1/2 inches apart with the end rack being no further than 12 inches from the adjacent wall. Methods of anchoring cable racks are as follows:

a. Provide a 5/8 inch diameter by 5 inch long anchor bolt with 3 inch foot cast in structure wall with 2 inch protrusion of threaded portion of bolt into structure. Provide 5/8 inch steel square head nut on each anchor bolt. Coat threads of anchor bolts with suitable coating immediately prior to installing nuts.

b. Provide concrete channel insert with a minimum load rating of 800 pounds per foot. Insert channel must be steel of the same length as "vertical rack channel;" and cast flush in structure wall. Provide 5/8 inch steel nuts in channel insert to receive 5/8 inch diameter by 3 inch long steel, square head anchor bolts.

c. Provide concrete "spot insert" at each anchor bolt location, cast flush in structure wall. Each insert must have minimum 800 pound load rating. Provide 5/8 inch diameter by 3 inch long steel, square head anchor bolt at each anchor point. Coat threads of anchor bolts with

suitable coating immediately prior to installing bolts.

3.4.5 Field Painting

Clean cast-iron frames and covers not buried in concrete or masonry of mortar, rust, grease, dirt and other deleterious materials, and coat with bituminous paint.

3.5 DIRECT BURIAL CABLE SYSTEM

Direct-bury cables in the earth below the frostline to the requirements of NFPA 70 and IEEE C2, whichever is more stringent.

3.5.1 Trenching

Excavate trenches for direct-burial cables to provide a minimum cable cover of 24 inches below finished grade for power conductors operated at 600 volts or less, and 30 inches below finished grade for over 600 volts in accordance with IEEE C2. When rock is encountered, remove to a depth of at least 3 inches below the cable and fill the space with sand or clean earth free from particles larger than 1/4 inch. Bottoms of trenches must be smooth and free of stones and sharp objects. Where materials in bottoms of trenches are other than sand, a 75 mm 3 inch layer of sand must be laid first and compacted to approximate densities of surrounding firm soil. Trenches must be not less than 8 inches wide, and must be in straight lines between cable markers. Do not use cable plows. Bends in trenches must have a radius consistent with the cable manufacturer's published minimum cable bending radius for the cable installed.

3.5.2 Cable Installation

Unreel cables along the sides of or in trenches and carefully place on sand or earth bottoms. Pulling cables into direct-burial trenches from a fixed reel position is not permitted, except as required to pull cables through conduits under paving or railroad tracks.

Where two or more cables are laid parallel in the same trench, space cables laterally at not less than 3 inches apart, except that communication cable must be separated from power cable by a minimum distance of 12 inches.

Where direct-burial cables cross under roads or other paving exceeding5 feet in width, install such cables in ducts. Extend ducts at least 5 feet beyond each edge of any paving and at least 5 feet beyond each side of any railroad tracks. Cables may be pulled into duct from a fixed reel where suitable rollers are provided in the trench. Where direct burial cable transitions to duct-enclosed cable, center direct-burial cables in duct entrances, and a waterproof nonhardening mastic compound must be used to facilitate such centering. If paving are in place where cables are to be installed, coated rigid steel conduits driven under the paving may be used in lieu of concrete-encased ducts. Prevent damage to conduit coatings by providing ferrous pipe jackets or by predrilling. Where cuts are made in any paving, restore the paving and subbase to their original condition. Where cable is placed in duct(e.g. under paved areas, or roads), slope ducts to drain.

3.5.3 Splicing

Provide cables in one piece without splices between connections except where the distance exceeds the lengths in which cables are manufactured.

Where splices are required, install splices only in maintenance manholes/handholes or cabinets/pedestals.

3.5.4 Bends

Bends in cables must have an inner radius not less than those specified in NFPA 70 for the type of cable, or manufacturer's recommendation.

3.5.5 Horizontal Slack

Leave approximately 3 feet of horizontal slack in the ground on each end of cable runs, on each side of connection boxes, and at points where connections are brought above ground. Where cable is brought above ground, leave additional slack to make necessary connections.

3.6 UNDERGROUND CONDUIT AND DUCT SYSTEMS

3.6.1 Requirements

Run conduit in straight lines except where a change of direction is necessary. Provide numbers and sizes of ducts as indicated. Bond bare copper grounding conductor to ground rings (loops) in all manholes and to ground rings (loops) at all equipment slabs (pads). Route grounding conductor into manholes with the duct bank (sleeving is not required). Ducts must have a continuous slope downward toward underground structures and away from buildings, laid with a minimum slope of 4 inches per 100 feet. Depending on the contour of the finished grade, the high-point may be at a terminal, a manhole, a handhole, or between manholes or handholes. Terminate all PVC conduit end points in structures with end bells. The bell end of the conduits that enter manholes and handholes must be flush with the wall.

Perform changes in ductbank direction as follows:

a. Short-radius manufactured 90-degree duct bends may be used only for pole or equipment risers, unless specifically indicated as acceptable.

b. The minimum manufactured bend radius must be 18 inches for ducts of less than 3 inch diameter, and 36 inches for ducts 3 inches or greater in diameter.

c. As an exception to the bend radius required above, provide field manufactured longsweep bends having a minimum radius of 25 feet for a change of direction of more than 5 degrees, either horizontally or vertically, using a combination of curved and straight sections. Maximum manufactured curved sections allowed for use in field manufactured longsweep bend: 30 degrees.

3.6.2 Treatment

Keep ducts clean of concrete, dirt, or foreign substances during construction. Make field cuts requiring tapers with proper tools and match factory tapers. Use a coupling recommended by the duct manufacturer whenever an existing duct is connected to a duct of different material or shape. Store ducts to avoid warping and deterioration with ends sufficiently plugged to prevent entry of any water or solid substances. Thoroughly clean ducts before being laid. Store plastic ducts on a flat surface and protected from the direct rays of the sun.

3.6.3 Conduit Cleaning

As each conduit run is completed, for conduit sizes 3 inches and larger, draw a flexible testing mandrel approximately 12 inches long with a diameter less than the inside diameter of the conduit through the conduit. After which, draw a stiff bristle brush through until conduit is clear of particles of earth, sand and gravel; then immediately install conduit plugs. For conduit sizes less than 3 inches, draw a stiff bristle brush through until conduit is clear of particles of earth, sand and gravel; then immediately install conduit plugs.

3.6.4 Jacking and Drilling Under Roads and Structures

Conduits to be installed under existing paved areas which are not to be disturbed, and under roads and railroad tracks, must be zinc-coated, rigid steel, jacked into place. Where ducts are jacked under existing pavement, install rigid steel conduit because of its strength. To protect the corrosion-resistant conduit coating, predrilling or installing conduit inside a larger iron pipe sleeve (jack-and-sleeve) is required. For crossings of existing railroads and airfield pavements greater than 50 feet in length, the predrilling method or the jack-and-sleeve method will be used. Separators or spacing blocks must be made of steel, concrete, plastic, or a combination of these materials placed not farther apart than 4 feet on centers. Hydraulic jet method must not be used.

3.6.5 Galvanized Conduit Concrete Penetrations

Galvanized conduits which penetrate concrete (slabs, pavement, and walls) in wet locations must be PVC coated and extend from at least 2 inches within the concrete to the first coupling or fitting outside the concrete (minimum of 6 inches from penetration).

3.6.6 Multiple Conduits

Separate multiple conduits by a minimum distance of 3 inches, except that light and power conduits must be separated from control, signal, and telephone conduits by a minimum distance of 12 inches. Stagger the joints of the conduits by rows (horizontally) and layers (vertically) to strengthen the conduit assembly. Provide plastic duct spacers that interlock vertically and horizontally. Spacer assembly must consist of base spacers, intermediate spacers, ties, and locking device on top to provide a completely enclosed and locked-in conduit assembly. Install spacers per manufacturer's instructions, but provide a minimum of two spacer assemblies per 10 feet of conduit assembly.

3.6.7 Conduit Plugs and Pull Rope

Provide new conduit indicated as being unused or empty with plugs on each end. Plugs must contain a weephole or screen to allow water drainage. Provide a plastic pull rope having 3 feet of slack at each end of unused or empty conduits.

3.6.8 Conduit and Duct Without Concrete Encasement

Depths to top of the conduit must be not less than 24 inches below finished grade. Provide not less than 3 inches clearance from the conduit to each side of the trench. Grade bottom of trench smooth; where rock, soft spots, or sharp-edged materials are encountered, excavate the bottom for an additional 3 inches, fill and tamp level with original bottom with sand or

earth free from particles, that would be retained on a 1/4 inch sieve. The first 6 inch layer of backfill cover must be sand compacted as previously specified. The rest of the excavation must be backfilled and compacted in 3 to 6 inch layers. Provide color, type and depth of warning tape as specified in Section 31 23 00.00 22 EXCAVATION AND FILL.

3.6.8.1 Encasement Under Roads and Structures

Under roads, paved areas, and railroad tracks, install conduits in concrete encasement of rectangular cross-section providing a minimum of 3 inch concrete cover around ducts. Extend concrete encasement at least 5 feet beyond the edges of paved areas and roads, and 12 feet beyond the rails on each side of railroad tracks. Depths to top of the concrete envelope must be not less than 24 inches below finished grade.

3.6.9 Duct Encased in Concrete

Construct underground duct lines of individual conduits encased in concrete. Depths to top of the concrete envelope must be not less than 18 inches below finished grade, except under roads and pavement, concrete envelope must be not less than 24 inches below finished grade. Do not mix different kinds of conduit in any one duct bank. Concrete encasement surrounding the bank must be rectangular in cross-section and provide at least 3 inches of concrete cover for ducts. Separate conduits by a minimum concrete thickness of 3 inches. Before pouring concrete, anchor duct bank assemblies, prevent floating during concrete pouring by driving reinforcing rods adjacent to duct spacer assemblies and attaching the rods to the spacer assembly. Provide color, type and depth of warning tape as specified in Section 31 23 00.00 22 EXCAVATION AND FILL.

3.6.9.1 Connections to Manholes

Duct bank envelopes connecting to underground structures must be flared to have enlarged cross-section at the manhole entrance to provide additional shear strength. Dimensions of the flared cross-section must be larger than the corresponding manhole opening dimensions by no less than 12 inches in each direction. Perimeter of the duct bank opening in the underground structure must be flared toward the inside or keyed to provide a positive interlock between the duct bank and the wall of the structure. Use vibrators when this portion of the encasement is poured to assure a seal between the envelope and the wall of the structure.

3.6.9.2 Connections to Existing Underground Structures

For duct bank connections to existing structures, break the structure wall out to the dimensions required and preserve steel in the structure wall. Cut steel and extend into the duct bank envelope. Chip the perimeter surface of the duct bank opening to form a key or flared surface, providing a positive connection with the duct bank envelope.

3.6.9.3 Connections to Existing Concrete Pads

For duct bank connections to concrete pads, break an opening in the pad out to the dimensions required and preserve steel in pad. Cut the steel and extend into the duct bank envelope. Chip out the opening in the pad to form a key for the duct bank envelope.

3.6.9.4 Connections to Existing Ducts

Where connections to existing duct banks are indicated, excavate the banks to the maximum depth necessary. Cut off the banks and remove loose concrete from the conduits before new concrete-encased ducts are installed. Provide a reinforced concrete collar, poured monolithically with the new duct bank, to take the shear at the joint of the duct banks. Remove existing cables which constitute interference with the work.

3.6.9.5 Partially Completed Duct Banks

During construction wherever a construction joint is necessary in a duct bank, prevent debris such as mud, and, and dirt from entering ducts by providing suitable conduit plugs. Fit concrete envelope of a partially completed duct bank with reinforcing steel extending a minimum of 2 feet back into the envelope and a minimum of 2 feet beyond the end of the envelope. Provide one No. 4 bar in each corner, 3 inches from the edge of the envelope. Secure corner bars with two No. 3 ties, spaced approximately one foot apart. Restrain reinforcing assembly from moving during concrete pouring.

3.6.10 Duct Sealing

Seal all electrical penetrations for radon mitigation, maintaining integrity of the vapor barrier, and to prevent infiltration of air, insects, and vermin.

3.7 CABLE PULLING

Test existing duct lines with a mandrel and thoroughly swab out to remove foreign material before pulling cables. Pull cables down grade with the feed-in point at the manhole or buildings of the highest elevation. Use flexible cable feeds to convey cables through manhole opening and into duct runs. Do not exceed the specified cable bending radii when installing cable under any conditions, including turnups into switches, transformers, switchgear, switchboards, and other enclosures. Cable with tape or wire shield must have a bending radius not less than 12 times the overall diameter of the completed cable. If basket-grip type cable-pulling devices are used to pull cable in place, cut off the section of cable under the grip before splicing and terminating.

3.7.1 Cable Lubricants

Use lubricants that are specifically recommended by the cable manufacturer for assisting in pulling jacketed cables.

3.8 CABLES IN UNDERGROUND STRUCTURES

Do not install cables utilizing the shortest path between penetrations, but route along those walls providing the longest route and the maximum spare cable lengths. Form cables to closely parallel walls, not to interfere with duct entrances, and support on brackets and cable insulators. Support cable splices in underground structures by racks on each side of the splice. Locate splices to prevent cyclic bending in the spliced sheath. Install cables at middle and bottom of cable racks, leaving top space open for future cables, except as otherwise indicated for existing installations. Provide one spare three-insulator rack arm for each cable rack in each underground structure.

3.8.1 Cable Tag Installation

Install cable tags in each manhole as specified, including each splice. Tag wire and cable provided by this contract. Install cable tags over the fireproofing, if any, and locate the tags so that they are clearly visible without disturbing any cabling or wiring in the manholes.

3.9 CONDUCTORS INSTALLED IN PARALLEL

Group conductors such that each conduit of a parallel run contains one Phase A conductor, one Phase B conductor, one Phase C conductor, and one neutral conductor.

3.10 LOW VOLTAGE CABLE SPLICING AND TERMINATING

Make terminations and splices with materials and methods as indicated or specified herein and as designated by the written instructions of the manufacturer. Do not allow the cables to be moved until after the splicing material has completely set. Make splices in underground distribution systems only in accessible locations such as manholes, handholes, or aboveground termination pedestals.

3.11 CABLE END CAPS

Cable ends must be sealed at all times with coated heat shrinkable end caps. Cables ends must be sealed when the cable is delivered to the job site, while the cable is stored and during installation of the cable. The caps must remain in place until the cable is spliced or terminated. Sealing compounds and tape are not acceptable substitutes for heat shrinkable end caps. Cable which is not sealed in the specified manner at all times will be rejected.

3.12 GROUNDING SYSTEMS

NFPA 70 and IEEE C2, except provide grounding systems with a resistance to solid earth ground not exceeding 5 ohms.

3.12.1 Grounding Electrodes

Provide cone pointed driven ground rods driven full depth plus 12 inches, installed to provide an earth ground of the appropriate value for the particular equipment being grounded. If the specified ground resistance is not met, provide an additional ground rod in accordance with the requirements of NFPA 70 (placed not less than 6 feet from the first rod). Should the resultant (combined) resistance exceed the specified resistance, measured not less than 48 hours after rainfall, notify the Contracting Officer immediately.

3.12.2 Grounding Connections

Make grounding connections which are buried or otherwise normally inaccessible, by exothermic weld or compression connector.

a. Make exothermic welds strictly in accordance with the weld manufacturer's written recommendations. Welds which are "puffed up" or which show convex surfaces indicating improper cleaning are not acceptable. Mechanical connectors are not required at exothermic welds.

b. Make compression connections using a hydraulic compression tool to

provide the correct circumferential pressure. Tools and dies must be as recommended by the manufacturer. An embossing die code or other standard method must provide visible indication that a connector has been adequately compressed on the ground wire.

3.12.3 Grounding Conductors

Provide bare grounding conductors, except where installed in conduit with associated phase conductors. Ground cable sheaths, cable shields, conduit, and equipment with No. 6 AWG. Ground other noncurrent-carrying metal parts and equipment frames of metal-enclosed equipment. Ground metallic frames and covers of handholes and pull boxes with a braided, copper ground strap with equivalent ampacity of No. 6 AWG. Provide direct connections to the grounding conductor with 600 v insulated, full-size conductor for each grounded neutral of each feeder circuit, which is spliced within the manhole.

3.12.4 Ground Cable Crossing Expansion Joints

Protect ground cables crossing expansion joints or similar separations in structures and pavements by use of approved devices or methods of installation which provide the necessary slack in the cable across the joint to permit movement. Use stranded or other approved flexible copper cable across such separations.

3.12.5 Manhole Grounding

Loop a 4/0 AWG grounding conductor around the interior perimeter, approximately 12 inches above finished floor. Secure the conductor to the manhole walls at intervals not exceeding 36 inches. Connect the conductor to the manhole grounding electrode with 4/0 AWG conductor. Connect all incoming 4/0 grounding conductors to the ground loop adjacent to the point of entry into the manhole. Bond the ground loop to all cable shields, metal cable racks, and other metal equipment with a minimum 6 AWG conductor.

3.13 EXCAVATING, BACKFILLING, AND COMPACTING

Provide in accordance with NFPA 70 and Section 31 23 00.00 22 EXCAVATION AND FILL.

3.13.1 Reconditioning of Surfaces

3.13.1.1 Unpaved Surfaces

Restore to their original elevation and condition unpaved surfaces disturbed during installation of duct or direct burial cable.

3.13.1.2 Paving Repairs

Where trenches, pits, or other excavations are made in existing roadways and other areas of pavement where surface treatment of any kind exists , restore such surface treatment or pavement the same thickness and in the same kind as previously existed, except as otherwise specified, and to match and tie into the adjacent and surrounding existing surfaces. Make repairs as specified in Section 32 12 16.16 ROAD-MIX ASPHALT PAVING.

3.14 CAST-IN-PLACE CONCRETE

Provide concrete in accordance with Section 03 30 00 CAST-IN-PLACE CONCRETE.

3.14.1 Concrete Slabs (Pads) for Equipment

Unless otherwise indicated, the slab must be at least 8 inches thick, reinforced with a 6 by 6 - W2.9 by W2.9 mesh, placed uniformly 4 inches from the top of the slab. Place slab on a 6 inch thick, well-compacted gravel base. Top of concrete slab must be approximately 4 inches above finished grade with gradual slope for drainage. Edges above grade must have 1/2 inch chamfer. Slab must be of adequate size to project at least 8 inches beyond the equipment.

Stub up conduits, with bushings, 2 inches into cable wells in the concrete pad. Coordinate dimensions of cable wells with transformer cable training areas.

3.14.2 Sealing

When the installation is complete, seal all conduit and other entries into the equipment enclosure with an approved sealing compound. Seals must be of sufficient strength and durability to protect all energized live parts of the equipment from rodents, insects, or other foreign matter.

3.15 FIELD QUALITY CONTROL

3.15.1 Performance of Field Acceptance Checks and Tests

Perform in accordance with the manufacturer's recommendations, and include the following visual and mechanical inspections and electrical tests, performed in accordance with NETA ATS.

3.15.1.1 Low Voltage Cables, 600-Volt

Perform tests after installation of cable, splices and terminations and before terminating to equipment or splicing to existing circuits.

a. Visual and Mechanical Inspection

(1) Inspect exposed cable sections for physical damage.

(2) Verify that cable is supplied and connected in accordance with contract plans and specifications.

(3) Verify tightness of accessible bolted electrical connections.

(4) Inspect compression-applied connectors for correct cable match and indentation.

(5) Visually inspect jacket and insulation condition.

(6) Inspect for proper phase identification and arrangement.

b. Electrical Tests

(1) Perform insulation resistance tests on wiring No. 6 AWG and larger diameter using instrument which applies voltage of approximately 1000 volts dc for one minute.

(2) Perform continuity tests to insure correct cable connection.

3.15.1.2 Grounding System

a. Visual and mechanical inspection

Inspect ground system for compliance with contract plans and specifications.

b. Electrical tests

Perform ground-impedance measurements utilizing the fall-of-potential method in accordance with IEEE 81. On systems consisting of interconnected ground rods, perform tests after interconnections are complete. On systems consisting of a single ground rod perform tests before any wire is connected. Take measurements in normally dry weather, not less than 48 hours after rainfall. Use a portable ground resistance tester in accordance with manufacturer's instructions to test each ground or group of grounds. The instrument must be equipped with a meter reading directly in ohms or fractions thereof to indicate the ground value of the ground rod or grounding systems under test. Provide site diagram indicating location of test probes with associated distances, and provide a plot of resistance vs. distance.

3.15.2 Follow-Up Verification

Upon completion of acceptance checks and tests, show by demonstration in service that circuits and devices are in good operating condition and properly performing the intended function. As an exception to requirements stated elsewhere in the contract, the Contracting Officer must be given 5 working days advance notice of the dates and times of checking and testing.

.... -- End of Section --

SECTION 34 71 13.19

ACTIVE VEHICLE BARRIERS
04/08

PART 1 GENERAL

This specification section includes the complete replacement of the active vehicle barrier system located on the north approach as indicated in the Contract Drawings. This entails review of the existing barrier system and components and design, fabrication, installation, testing and training for the replacement Delta system. This system shall be complete in all aspects to allow operation from the security booth at Gate 2 and the security tower.

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 ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)

AASHTO HB-17	(2002; Errata 2003; Errata 2005, 17th Edition) Standard Specifications for Highway Bridges

AMERICAN WELDING SOCIETY (AWS)

AWS D1.1/D1.1M	(2020; Errata 1 2021) Structural Welding Code - Steel

ASTM INTERNATIONAL (ASTM)

ASTM F2656/F2656M	(2020) Standard Test Method for Crash Testing of Vehicle Security Barriers

U.S. DEPARTMENT OF STATE (SD)

SD-STD-02.01	(2003; Rev A) Specification For Vehicle Crash Test of Perimeter Barriers and Gates

U.S. FEDERAL HIGHWAY ADMINISTRATION (FHWA)

MUTCD	(2009; Rev 2012) Manual on Uniform Traffic Control Devices

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

29 CFR 1910	Occupational Safety and Health Standards

UNDERWRITERS LABORATORIES (UL)

UL 486A-486B	(2018; Reprint May 2021) UL Standard for Safety Wire Connectors

1.2 SYSTEM DESCRIPTION

The design and structural materials of the vehicle barrier furnished must be the same as those used in the crash tested barrier. Crash test must have be performed and data compiled by an approved independent testing agency in accordance with either ASTM F2656/F2656M or SD-STD-02.01. Barriers tested and certified on the previous Department of State standard, SD-STD-02.01 and listed on the DoD approved anti-ram vehicle barrier list are also acceptable. The truck crash barrier system shall be Delta Scientific Corporation Model DSC2000, module array barrier, with hydraulic tanks.

Submit a complete list of equipment, materials, including industrial standards used and how they apply to the applicable component and manufacturer's descriptive data and technical literature, catalog cuts, and installation instructions. Information necessary to document a minimum 1-year successful field operation performance history for each type of vehicle barrier installed.

The crash barrier system must be Delta Scientific Corporation Model DSC2000, module array barrier which includes seven (7) DSC2000 wedge barriers, ten inch shallow frame barricade, one (1) Hydraulic Power System, emergency fast operation, less than a 1/2 second, standard black/yellow paint, control circuit for four barricades, control circuit for three barricades, two (three horsepower) motors (three phase), hydraulic interconnect lines for each barricade 50 feet each, seven auxiliary limit switches fully up, seven auxiliary limit switches fully down, seven barrier heater packages 120 vAC, seven hot dip galvanization packages, one hydraulic pumping unit enclosure, one oil reservoir heater, delta units, 500 watts, one emergency manual operating system, hand pump, two power unit mounted electrical disconnects, two battery backup packs (for controls only), one main control panel with reset and override for dual lane control, one remote control sub panel with annunciator for dual lane control, two sump pumps, four stop go signals led lights 120vAC, two sets of yellow warning beacons, seven loop detector kits, rubber inner tube pieces for noise abatement, spare parts and complete instructions, start up and trouble-shooting manual.

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-02 Shop Drawings

Installation; G

Equipment; G

Electrical Work; G

System Drawing Package; G

SD-03 Product Data

Barrier System

Spare Parts Package

Noise Mitigation Measures; G

SD-05 Design Data

Data Package; G

SD-06 Test Reports

Field Testing

SD-10 Operation and Maintenance Data

Operation And Maintenance Manuals; G

1.4 DELIVERY, STORAGE, AND HANDLING

Protect components placed in storage from the weather, humidity, and temperature variation, dirt and dust, or other contaminants. Store structural materials on sleepers or pallets and protect them from rust and objectionable materials such as dirt, grease, or oil.

1.5 EXTRA MATERIALS

Provide a manufacturer's standard recommended spare parts package, with current unit prices and source of supply complete with detailed manuals on parts replacement, with each barrier to facilitate 1 year of normal operation. Give particular consideration to system components which are not readily available from local or commercial sources and which are critical to the operation of the system.

Submit spare parts data for each different item of material and equipment used, after approval of the detail drawings. Include in the data a complete list of parts and supplies, with current unit prices and source of supply.

1.6 OPERATION AND MAINTENANCE MANUALS

Submit six copies of operation and maintenance manuals, a minimum of 2 weeks prior to field training. One complete set prior to performance testing and the remainder upon acceptance. Manuals shall be approved prior to acceptance. Operation manuals shall outline the step-by-step procedures required for system startup, operation, and shutdown. The manuals shall include the manufacturer's name, model number, service manual, parts list, and brief description of all equipment and their basic operating features. Maintenance manuals shall include routine maintenance procedures, possible breakdowns and repairs, and troubleshooting guide. The manuals shall include piping layout, equipment layout, and simplified wiring and control diagrams of the system as installed. The manuals shall also include synthetic biodegradable hydraulic oil types to be used for ambient temperature ranges of minus 30 degrees F to 150 degrees F to cover winter operation, summer operation, and ambient temperature ranges in between.

Submit finalized manuals in electronic/digital format within 30 days after completing the endurance test. Update the draft copy used during site testing with any changes required prior to final delivery of the manuals. Identify each manual's contents on the cover. Include in each

manual the names, addresses, and telephone numbers of each subcontractor installing equipment and systems, and the nearest service representative for each item of equipment. Provide each manual with a table of contents and tab sheets. Place tab sheets at the beginning of each chapter or section and at the beginning of each appendix. Include modifications made during installation, checkout, and acceptance in the final copies delivered after completion of the endurance test. Provide the number of copies of each manual per DD FORM 1423.

1.6.1 Functional Design Manual

Identify the operational requirements for the system and explain the theory of operation, design philosophy, and specific functions within the functional design manual. Include a description of hardware and software functions, interfaces, and requirements for all system operating modes.

1.6.2 Maintenance Manual

Include descriptions of maintenance for all equipment including inspection, periodic prevention maintenance (include specific time intervals for each recommended preventative maintenance tasks), fault diagnosis, and repair or replacement of defective components in the maintenance manual.

1.6.3 Application Software

Provide a copy of the software installation package on optical disk and USB drive that runs the control program. Provide on optical disk, separate from the operating system software, the complete program or image of the installed software, with all custom changes and configuration data specific for the installed system. At the end of project, after the endurance test is complete, provide complete sets of optical discs.

1.7 SYSTEM DRAWING PACKAGE

Maintain a separate set of drawings (including site, civil, electrical, mechanical, structural, and architectural plans, elevations, and details), elementary diagrams, wiring diagrams, and control diagrams of the system to be used for final system drawings. This set is to be accurately kept up-to-date with all changes and additions to the AVBCS and to be delivered to the Government with the final endurance test report. In addition to being complete and accurate, this set of drawings is to be kept neat and not be used for installation purposes. Furnish final drawings with the endurance test report on optical disk in MicroStation latest Version 2021 or AutoCAD latest version format.

Include the following in the overall system drawing package:

a. Functional System Block Diagram, identifying all major equipment including interconnection between components specified herein and those furnished under other sections and communications protocols. Indicate control/signal and data communication paths and identify PLCs, control interface devices, and media. Describe characteristics of network and other data communication lines. Describe methods used to protect against power outages and transient voltages including types and ratings of isolation and surge suppression devices used in data, communication, signal, control, and ac and dc power circuits.

b. Block and Wiring Diagrams of each subsystem.

c. Drawing showing equipment layout in the Command & Control including the Master control panel, UPS, and other hardware intended to be located in the Command & Control.

d. Drawing showing equipment layout around the crash rated active vehicle barriers including the crash rated active vehicle barriers, active vehicle barrier control box(es), vehicle presence detectors, stop lines, traffic signals, and warning beacons (wig-wag warning signals).

e. A signing and pavement marking plan.

f. Drawing showing layout and dimensions of each individual active vehicle barrier operating panels.

g. Tamper switch locations for AVBCS related cabinets and operating panels.

h. Vehicle presence, overspeed, and wrong-way detector locations, set-points, and sensor detection patterns. Include descriptions of the security strategy for detecting potential threat vehicles, the coverage and operation of the sensors, and the human machine interfaces for overspeed and wrong way alarms.

i. Details of connections to power sources, including power supplies and grounding.

j. Preliminary point-to-point wiring database. Preliminary submittals is to provide sufficient detail to ensure the final database has all the appropriate information. Provide details such as the legend to be used for the different wiring types, alphanumeric numbering scheme, abbreviations to be used, and the layout of the database. Provide an example of a small section of the system showing the point-to-point wiring.

k. Final point-to-point wiring diagram of complete interconnected system including database listing of wire numbers, to and from designations, and wire characteristics. Provide the final database for the wiring. The database is to include details such as the legend to be used for the different wiring types, alphanumeric numbering scheme, abbreviations to be used, and where the wire starts and where it ends.

1.8 DATA PACKAGE

Submit the data package including the following items:

a. Communications speeds and protocol descriptions.

b. Operator commands.

c. Alarm and system messages and printing formats.

d. Start-up and shut-down operations including system and database backup operations.

e. Expansion capability and method of implementation.

f. System data entry requirements.

g. User enrollment.

h. System and application software descriptions.

i. Recovery and restart procedures.

PART 2 PRODUCTS

2.1 RETRACTABLE BARRIERS

When in the raised position, the total retractable barrier heights shall be no less than 36 inches above the roadway surface and shall be 24 inches wide. When in the lowered position, the retractable barrier shall extend no more than 5/8 inch above the roadway surface. Retractable barriers in the lowered position shall be capable of supporting a 32,000 pound axle load or a 16,000 pound wheel load. Design for this load shall be in accordance with AASHTO HB-17.

Barricade must be a shallow frame below grade assembly that can be cast in a foundation of 12 inches in depth. The assembly must have a heavy steel ramp weldment capable of being rotated to an above grade position. The guard (open up) position must present a formidable obstacle to approaching trucks. Upon impact, forces must be first absorbed by the ramp weldment and then transmitted to the foundation of the unit. The truck crash barrier system must be Delta Scientific Corporation Model DSC2000, module array barrier, with hydraulic tanks.

a. Barricade Height: Height of the barricade must be 36 inches, minimum, as measured from the top of the foundation frame on the top of the barrier inclusive of the top road plate.

b. Barricade Length: An array of Barrier Modules must have a length of 276 inches. Individual Barrier modules must be 24 inches long with a spacing in between ramps of 18 inches.

c. Foundation Depth: The frame of the barrier must be 10 inches deep. The foundation depth is 12 inches.

d. Safety/Visibility Panel: Descending from the front edge of the barrier ramp must be a rigid panel containing three or more red warning reflectors. The panel must be continuous across the full width of the barrier ramp. The height of the panel must be 12 inches, minimum. The safety visibility panel must have yellow/white (alternately yellow/black) diagonal stripes.

e. Serviceability of Safety/Visibility Panel: The panel and side skirts mounted on the ram weldment must be readily removable to facilitate barrier maintenance and service using standard hand tools.

f. Finish: the roadway plates must have yellow/white (alternately yellow/black) diagonal stripes and have a non-skid surface.

g. Hydraulic Circuit: Circuit must incorporate the design concepts as described by US Patent #4,490,068. Unit must consist of an electrically driven hydraulic pump which must pressurize a high pressure manifold connected to a hydraulic accumulator. Electrically actuated valves must be installed on the manifold to allow oil to be directed to the hydraulic cylinders to raise and lower the barricade. The hydraulic circuit must include all necessary control logic devices, interconnect lines and valves to override and lock out the normal speed control valve(s) for emergency open (up) fast operation of the barricade(s).

h. Main Power: the electric motor driving the hydraulic pump must be fed from a 208 Volt, 3 phase, and 60 Hz source. Motor must be sufficiently sized for the expected number of barricade operations.

i. Power Off Operation: The accumulator must be sized to allow 5 half cycle operations for a single barricade in the event of a power outage. The control valves must also be manually operable in this case.

j. Manual Operation: A hand pump must be furnished to allow the barricades to be raised manually in the event of a prolonged power interruption.

k. The system must not require continuous running of the motor to stay in the raised position.

l. Construction: The hydraulic power unit and accessories must be mounted and wired on an integral steel skid. The HPU must fit in an envelope of 60 inches wide x 36 inches deep x 60 inches high. The HPU must be mounted in a weather resistant enclosure.

2.1.1 Powered Retractable Barrier

The retractable barrier shall be capable of 60 complete up/down cycles per hour. The retractable barrier motion shall be instantly reversible and shall be capable of raising the barrier from the lowered position to the raised position within 8 seconds during normal use, and within 2 seconds during an emergency. Also, the barrier shall be capable of being lowered from the raised position to the lowered position in not more than 3 seconds. Retractable barrier shall withstand a 15,000 pound vehicle at impact speed of 50 mph with maximum barrier deflection or vehicle penetration of 3 feet.

2.1.1.1 Failure Modes of Operation

The system shall be designed to remain in the last commanded position in the event of hydraulic, electrical, or mechanical failure. A manual pump, or other system, shall be included for operation of hydraulic barriers without power.

2.1.1.2 Electric Motors

Unless otherwise indicated, electric motors shall have totally enclosed enclosures. All couplings, motor shafts, gears, and other moving parts shall be fully guarded in accordance with 29 CFR 1910 Subpart O. Guards shall be removable without disassembling the guarded unit. For multiple barriers operated from a single hydraulic unit it is highly recommended that the electric motor be 3-phase.

2.1.1.3 System

The system shall be designed to maintain the barriers in the raised position, without inspection, for periods of time of up to 1 week. The system shall not require continuous running of the motor to stay in the raised position.

2.1.1.4 Noise Mitigation Measures

Rubber must be installed onto each of the seven (7) DSC2000 barricades. Install a thin rubber mat, inner tube size. Cut a new bicycle inner tube into pieces and use 3M weatherstrip adhesive and glue them to the angle

iron brackets. In addition, glue rubber mat pieces to the center support posts. Do not use any rubber pieces thicker than an inner tube, as it could damage the barrier.

2.2 NAMEPLATES

Nameplate data shall be permanently attached to each vehicle barrier. The data shall be legibly marked on corrosion-resistant metal plates and shall consist of at least the following:

a. Manufacturer's name.

b. Model number.

c. Serial number.

d. Date of manufacture.

2.3 ELECTRICAL WORK

Submit detail drawings containing complete wiring and schematic diagrams, and any other details required to demonstrate that the system has been coordinated and will properly function as a unit. Show on the Drawings proposed layout and anchorage of equipment and appurtenances, and equipment relationship to other parts of the work including foundation and clearances for maintenance and operation. Include with the Detail drawings a copy of the Department of State certificate of barrier performance.

Motors, manual or automatic motor control equipment except where installed in motor control centers and protective or signal devices required for the operation specified herein shall be provided in accordance with Section 26 05 00.00 40 COMMON WORK RESULTS FOR ELECTRICAL. All field wiring for loop detectors, communication lines, and power circuits shall have surge protection. Any wiring required for the operation specified herein, but not shown on the electrical plans, shall be provided under this section in accordance with Sections 26 05 00.00 40 COMMON WORK RESULTS FOR ELECTRICAL and 33 71 02 UNDERGROUND ELECTRICAL DISTRIBUTION.

2.4 CONTROL PANEL

Integration into the existing control panel and control circuit shall be required or a new control panel shall be provided to interface between all barrier control stations and the power unit. A control panel shall be provided for the inbound lanes and a separate one for the outbound lanes where the barriers are located. The control station is defined as the main control panel as shown. The control circuit shall contain all relays, timers, and other devices or an industrial programmable controller programmed as necessary for the barrier operation. The control panel shall allow direct interface with auxiliary equipment such as card readers, remote switches, loop detectors, infrared sensors, and slidinggate limit switches. Loop controllers shall not cause an automatic barrier raise following power loss or restoration. The enclosure shall be as indicated on the drawings. All device interconnect lines shall be run to terminal strips.

2.4.1 Voltage

The control circuit shall operate from a 120 volt 60 Hz supply. The control circuit voltage shall be 12v DC and 24v DC for all external control

panels.

2.4.2 Main Control Panel

A main control panel must be provided, in the Guard House (Gate 2 Base Entrance), to control barrier function. This panel shall have a key-lockable main switch with main power "ON" and panel "ON" lights. Buttons to raise and lower each barrier shall be provided. Barrier "UP" and "DOWN" indicator lights shall be included for each barrier. An emergency fast operate circuit (EFO) shall be operated from a push button larger than the normal controls and have a flip safety cover installed over the push button or toggle switch. The EFO shall also be furnished with an EFO-active light and reset button. The main control panel shall have a key lockable switch to arm or disable the remote control panel. An indicator light shall show if the remote control panel is enabled.

2.4.3 Remote Control Panel

Integration into the existing remote control panel in the Guard Tower (located on South Approach), shall be required. Each panel shall have a panel "ON" light that is lit when enabled by a key lockable switch on the main control panel. Buttons to raise and lower each barrier shall be provided. Barrier "UP" and "DOWN" indicator lights shall be included for each barrier. The EFO shall be operated from a push button larger than the normal controls and have a flip safety cover installed over the push button or toggle switch. Activation of either EFO will operate all barriers. The EFO shall be interconnected with an EFO-active light. When the remote control panel EFO is pushed, operation of the barrier will not be possible from this panel until reset at the main control panel.

2.5 MISCELLANEOUS EQUIPMENT

2.5.1 Safety Equipment

2.5.1.1 Barrier Systems Sensors

The sensors must be compatible with the barrier controller and function as part of a complete barrier control system. The barrier system sensors shall consist of the following:

2.5.1.1.1 Suppression Loops

Two inductive loops whose outputs shall be used to prevent barriers raising when a vehicle is within a prescribed distance of the barrier. The output of the loops shall override all barrier rise signals until one second after a vehicle clears the suppression loop.

2.5.1.1.2 Speed Loops

Two inductive loops whose output is used to signal the barrier controller of a vehicle approaching at a speed greater than the posted speed (25 mph or less (recommended)). The speed loops shall cause the barrier control panel to annunciate a warning sound alerting the guard to make a decision as to whether the barrier should be raised or not.

2.5.1.1.3 Wrong Way Loops

Two inductive loops whose output is used to signal the barrier control panel to annunciate a warning sound if a vehicle is attempting to enter the

facility through the exit lane. The warning sound will alert the guard to make a decision as to whether the barrier should be raised or not.

2.5.1.1.4 Traffic Lights

Red/yellow 8 inch traffic lights shall be supplied. The yellow flashing light shall indicate that the barrier is fully open. All other positions shall cause the light to show red. Brackets shall be supplied to allow the light to be mounted a minimum 4.5 feet above the roadway pavement on a 3.5 inch outside diameter metal post.

2.5.2 Warning Annunciator

Provide a warning annunciator built into the barrier control panel that produces a pulsing audible sound when the speed loop detects a vehicle entering the facility with excess speed. Provide a warning annunciator built into the barrier control panel that produces a continuous sound whenever a wrong way loop detects a vehicle entering from the exit. The warning annunciator shall sound until a warning annunciator silence reset button is pressed.

2.5.3 Heater

A waterproof barrier heater with a thermostat control and NEMA 4 junction box connection point shall be provided for de-icing and snow melting. The heater shall provide barrier operation to an ambient temperature of minus 40 degrees F. For retractable bollards, a 250-watt heater shall be provided for each bollard.

2.5.4 Signage

Signage shall read "Axle Weight Limit 9 Tons" and shall conform to MUTCD sign (R12.2).

2.6 FINISH

The roadway plate shall have a nonskid surface painted white with reflective red 4 inch wide red reflective stripes 4 inches apart. The barrier front shall be painted white and have 4 inch wide reflective red stripes 4 inches apart. The diagonal striping should point down and outward from the center of the device. Bollards shall be painted white with 2 inch wide reflective red diagonal stripes. The barrier crash gate shall be painted as specified by purchaser and the crash beam shall be painted white with 3 inch wide reflective red diagonal stripes.

2.7 CONCRETE

The concrete shall conform to Section 03 30 00 CAST-IN-PLACE CONCRETE.

2.8 WELDING

Welding shall be in accordance with AWS D1.1/D1.1M.

2.9 PAVEMENT

After placement of the vehicle barrier, the pavement sections shall be replaced to match the section and depth of the surrounding pavement. Pavement shall be warped to match the elevations of existing pavement. Positive surface drainage, away from the vehicle barrier, shall be provided

by pavement slope.

PART 3 EXECUTION

3.1 INSTALLATION

Perform installation in accordance with manufacturer's instructions and in the presence of a representative of the manufacturer. Manufacturer's representative shall be experienced in the installation, adjustment, and operation of the equipment provided. The representative shall also be present during adjustment and testing of the equipment.

a. The barrier array, remote hydraulic tanks, master control panel, slave control panel, traffic signal lights, yellow warning beacons, and appurtenances are to be furnished, installed and tested.

b. Prepare for barricade installation by removing existing wedge barricade and concrete foundation. Provide all heavy trucks, heavy equipment, and labor necessary to prepare site for barricade foundation length, width and depth.

c. Install all items in their proper locations as shown on the Contract Drawings, rigid and secure, plumb and level, and in true alignment with related and adjoining work. Do not weld electrical materials for attachment and support. Barricade foundation must be complete to manufacturer's requirements.

d. Furnish anchor bolts and anchorage items as required, and field check to insure proper alignment and location. Provide templates, layout drawings, and supervision at the job site to ensure correct placing of anchorage items in concrete. Check embedded items for correctness of location and detail before concrete is placed.

e. Install supporting members, fastenings, framing, hangers, bracing, brackets, straps, bolts, and angles as required to set and connect rigidly the work.

3.2 HYDRAULIC LINES

Place buried hydraulic lines in polyvinyl chloride (PVC) sleeves. Provide positive drainage from the hydraulic power unit to the barrier for drainage of condensation within the PVC sleeve.

3.3 PIT DRAINAGE

Provide a drain connection that requires pit/vault type construction.

3.4 ELECTRICAL

All control power wiring requiring compression terminals shall use ring-style terminals. Terminals and compression tools shall conform to UL 486A-486B. Roundhead screws and lockwashers shall be used to provide vibration-resistant connections. Connections between any printed circuit cards and the chassis shall be made with screw connections or other locking means to prevent shock or vibration separation of the card from its chassis. The electrical power supply breaker for the hydraulic power unit shall be capable of being locked in the power on and power off positions.

3.5 MANUFACTURER'S SERVICES

Provide the services of a manufacturer's representative who is experienced in the installation, adjustment, and operation of the equipment supplied. The representative shall supervise the installation, adjustment, and testing of the equipment.

3.6 FIELD TRAINING

Provide a field training course for designated operating staff members. Training shall be provided for a total period of not less than 8 hours of normal working time and shall start after the system is functionally complete but prior to final acceptance tests. Field training shall cover all of the items contained in the operating and maintenance instructions.

3.7 FIELD TESTING

Upon completion of construction, perform a field test for each vehicle barrier. The test shall include raising and lowering the barrier, both electrically and manually, through its complete range of operation. Each vehicle barrier shall then be continuously cycled for not less than 30 minutes to test for heat build-up in the hydraulic system. Notify the Contracting Officer at least 7 days prior to the beginning of the field test. Furnish all equipment and make all necessary corrections and adjustments prior to tests witnessed by the Contracting Officer. Any conditions that interfere with the proper operation of the barrier disclosed by the test shall be corrected at no additional cost to the Government. Adjustments and repairs shall be done under the direction of the Contracting Officer. After adjustments are made to assure correct functioning of components, applicable tests shall be completed. Submit test reports in booklet form showing all field tests, including component adjustments and demonstration of compliance with the specified performance criteria, upon completion and testing of the installed system. Indicate with each test report the final position of controls.

-- End of Section --