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NAVFAC PTS-H50 (June 2023)  
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Preparing Activity: NAVFAC SUPERSEDING PTS-H50 (September 2022)  
  
PERFORMANCE TECHNICAL SPECIFICATION  
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SECTION H50  
  
WATERFRONT UTILITIES  
06/23

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NOTE: This section is intended to be used as a guide and contains requirements that are common to many different types of facilities; however, not all requirements and equipment items will be applicable to all projects. In addition, there may be special requirements for a particular project that are not addressed at all. The RFP preparer may have to incorporate additional information to address these special requirements in this PTS and corresponding Part 3 ESR. If the RFP preparer chooses to delete elements that are not required for the project, do not change the remaining Uniformat paragraph designations (example - A102001). Uniformat designations are unique to the products they are assigned to. However, the subparagraph numerical extensions (example - 1.2 or a,b,c) of the Uniformat designations may change if subparagraphs are deleted.  
  
This guide specification is formatted utilizing Uniformat II, an industry recognized standard, ASTM E 1557. When the RFP preparer chooses to add a paragraph that does not apply to an existing building element already included in the specification, refer to the Uniformat/WBS located on the NAVFAC Design-Build Website for a listing of Uniformat II designations and definitions.  
  
NOTE: The RFP preparer may view or hide the criteria notes in this PTS section by modifying the WORD preferences for "Hidden text". To view the criteria notes, choose "File" then "Option". Click "Display" then check the "Hidden text" box under "Always show these formatting marks on the screen". In the same section, check the box for "Print hidden text" under "Printing options" to print the criteria notes.  
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NOTE: The Table of Contents is intended for navigation purposes only for the RFP writer and should not show up in the printed document.  
  
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**H50 GENERAL**

RFP Part 3 including the Engineering System Requirements (ESR) provide project specific requirements. The RFP Part 4, Performance Technical Sections (PTS) provide generalized technical requirements that apply to multiple facility types and include more requirements than are applicable to any one project. Therefore, only the RFP Part 4 requirements that apply to the project and further define the RFP Part 3 project specific requirements are required.

**H50 1.1 NARRATIVE**

Use this Section in conjunction with all parts of the Design Build (D/B) Request for Proposal (RFP) to determine the full requirements of this solicitation.

This Section covers installations within the waterfront facility. See PTS Sections G30, *Site Civil/Mechanical Utilities*, G40, *Site Electrical Utilities*, for continuation of systems beyond the five foot line.

**H50 1.2 WATERFRONT UTILITIES DESIGN GUIDANCE**

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*   
NOTE: This Performance Technical Specification (PTS) has been developed to utilize certain UFGS sections for prescriptive requirements. However, there may be rare occasions when additional prescriptive specifications may be identified by the Engineering Systems Requirements (ESR) to be edited by the Contractor's Designer of Record. If other UFGS sections or standards are to be referenced in this PTS section, list those not covered by the UMRL in the following two paragraphs.  
   
If the product or system is new and not covered in the PTS, provide a new paragraph and heading. If the product or system is presently covered in the PTS but is being changed by the reference to the UFGS, edit the PTS paragraphs to eliminate redundancy or conflicts. In either case, identify the UFGS section in the products and materials (UNIFORMAT II/WBS level 4) text of the PTS as follows:  
   
"Uniformat II/WBS Number – Paragraph Number Paragraph Heading  
The Designer of Record must utilize UFGS Section Number, "Section Title" for the project specification, and submit the edited specification section as a part of the design submittal for the project."  
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Provide the design and installation in accordance with the following references. This Performance Technical Specification (PTS) adds clarification to the fundamental requirements contained in the following Government Standards. The general requirements of this PTS Section are located in PTS Section Z10, *General Performance Technical Specification*.

**H50 1.2.1 Government Standards**

UNITED FACILITIES CRITERIA (UFC)

UFC 3-201-01, *Civil Engineering*

UFC 3-575-01, *Lightning and Static Electricity Protection Systems*

UFC 3-600-10N, *Fire Protection Engineering*

UFC 4-150-02, *Dockside Utilities for Ship Service*

*UNIFIED FACILITIES GUIDE SPECIFICATIONS (UFGS)*

UFGS Section 09 97 13.26, *Coating of Steel Waterfront Structures, Zero VOC, (SZC) Splash Zone Coating*

UFGS Section 26 05 33, *Dockside Power Connection Stations*

**H50 1.3 QUALITY ASSURANCE**

Submit qualifications, certifications, and Test Plans indicated herein 45 calendar days prior to the expected date of execution. Notify the Contracting Officer 14 calendar days prior to all testing. Submit test results within 7 calendar days of completion of testing.

The Designer of Record is responsible for approving the submittals listed below.

**H50 1.3.1 Waterfront Civil/Mechanical Utilities**

For waterfront civil/mechanical utilities quality assurance requirements, refer to applicable portion of the "Quality Assurance" paragraph in PTS Section G30, *Site Civil/Mechanical Utilities*.

**H50 1.3.2 Waterfront Electrical Utilities**

For waterfront electrical utilities quality assurance, refer to applicable portions of the "Quality Assurance" paragraph in PTS Section G40, *Site Electrical Utilities*.

**H50 1.3.3 Waterfront Fire Protection**

For waterfront fire protection quality assurance requirements, refer to applicable portion of the "Quality Assurance" paragraph in PTS Section D40, *Fire Protection*.

**H50 1.3.4 Lightning Protection System**

For the waterfront lightning protection system, obtain a UL Lightning Protection Inspection Certificate certifying that the system meets requirements of NFPA 780.

**H50 1.4 DESIGN SUBMITTALS**

Submit design submittals in accordance with PTS Section Z10, *General Performance Technical Specification*, Part 2 Section 01 33 10.05 20, *Design Submittal Procedures*, UFC 3-201-01, *Civil Engineering*, UFC 3-401-01, *Mechanical Engineering*, UFC 3-501-01, *Electrical Engineering*, UFC 3-600-10N, *Fire Protection Engineering*, and UFC 4-150-02, *Dockside Utilities for Ship Services*.

**H50 1.5 CONSTRUCTION SUBMITTALS**

The general requirements of this PTS Section are located in PTS Section Z10, *General Performance Technical Specification*. Submit construction submittals in accordance with Part 2 Section 01 33 00.05 20, *Construction Submittal Procedures*.

If an OMSI manual is not a contract requirement, then provide product data for all equipment; and submit operation and maintenance data in accordance with Part 2 Section 01 78 24.00 20, *Facility Data Workbook (FDW).*

Provide certification that all adjustable protective device settings have been set in accordance with the coordination study for the as-built equipment and configuration.

**H5010 CIVIL/MECHANICAL UTILITIES**

**H5010 1.1 PIPE LOCATION**

Piping on deck with asphalt concrete pavement can be either placed underground, in a concrete trench or on a ledge outboard of the pier/wharf concrete curb/bullrail. Piping on elevated concrete deck or concrete deck on-grade can be placed in a concrete trench or on a ledge outboard of the pier/wharf concrete curb/bullrail. For utility trench requirements, refer to the "Utility Trenches" paragraph in PTS Section H10, *Waterfront Structures*.

**H5010 1.2 TEMPORARY REMOVAL AND REPLACEMENT**

Where necessary or as indicated on RFP drawings provided in Part 6, temporary removal and replacement of utilities and installation of interim facilities may be required to maintain services to existing facilities. Temporary replacement facilities must match the function and quality of existing facilities.

**H501001 POTABLE WATER**

Requirements for potable water on pier/wharf are provided below. Additional requirements are provided in the "Potable Water Distribution" paragraph in PTS Section G30, *Site Civil/Mechanical Utilities*.

**H501001 1.1 PIPING**

Water service lines 100mm and smaller must be brass pipe, ASTM B43, extra strong. Fittings must be brass or bronze, FS WW-P-460, 120 psi (825 kPa) minimum. Water lines between 4 inches and 12 inches (100 mm and 300 mm) must be ductile iron pipe (AWWA C151) or PVC pressure pipe (AWWA 900 DR18). Water lines placed above ground or in a trench must be flanged ductile iron pipe (AWWA C115). Fittings must be ductile iron (AWWA C110 or AWWA C153) with rubber sealed gasket joints (AWWA C115). Piping and fittings for ductile iron pipe must have cement-mortar lining (AWWA C104).

**H501001 1.2 VALVES**

**H501001 1.2.1 Gate Valves**

Provide gate valves conforming to AWWA C509, nonrising stem type with flanged ends. Body, bonnet and gate must be of ductile iron. Valves must open by counterclockwise rotation of the valve stem. Stuffing boxes must have O-ring stem seals. Stuffing boxes must be bolted and constructed so as to permit easy removal of parts for repair. Bronze used in valves must be Grade A, Grade D or Grade E as specified in AWWA C509. Valves must have protective epoxy interior coating conforming to AWWA C550.

**H501001 1.3 BACKFLOW PREVENTERS**

Provide reduced pressure principle type backflow preventers, with epoxy coated and lined ductile iron bodies, replaceable bronze seats, stainless steel internal parts, nonrising stem gate shut-off valves, and suitable for pressures up to 175 psi (1,200 kPa) at 110 degrees F (43 degrees C).

**H501001 1.4 PRESSURE REGULATORS**

Provide adjustable pressure regulator to reduce incoming water pressure to level specified in the "Potable Water" paragraph of ESR Section H50, *Waterfront Utilities*in Part 3.

**H501001 1.5 UTILITY STATION PIPING AND OUTLET**

Piping and outlets must be in accordance with UFC 4-150-02 or as shown in RFP drawings provided in Part 6.

**H501002 SALTWATER**

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*   
NOTE: For project with saltwater system add requirements below.  
\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

[Not used.]

**H501003 SANITARY SEWER**

Requirements for sanitary sewer on pier/wharf are provided below. Additional requirements are provided in the "Sanitary Sewer Piping" and "Sanitary Sewer Manholes & Cleanouts" paragraphs in PTS Section G30, *Site Civil/Mechanical Utilities*.

**H501003 1.1 PIPING**

Piping must be ductile iron, flanged, conforming to AWWA C115/A21.15, Thickness Class 56. Fittings must conform to AWWA C110/A21.10 or AWWA C153/A21.53 and have a pressure rating at least equivalent to that of the pipe. Pipe and fittings must have a ceramic epoxy internal lining resistant to chemical attack.

**H501003 1.2 VALVES**

**H501003 1.2.1 Plug Valves**

Provide plug valves with cast iron bodies, MSS SP-78. Valves must be rated for at least 175 psi (1,200 kPa) at 140 degrees F (60 degrees C). Valves and operators must be designed for outdoor service. Provide valve with internal lining or coating compatible with ship and submarine sewage discharge.

**H501003 1.2.2 Check Valves**

Provide swing type check valve with flanged ends. Valves must be designed for outdoor service. Valve materials must be compatible with ship and submarine sewage discharge.

**H501003 1.3 CAMLOCK HOSE COUPLING**

Provide camlock hose coupling with stainless steel coupler body, Viton gasket, and twin cam arms with finger rings and stainless steel pins. Coupling must have a pressure rating of at least 145 psi (1,000 kPa). Provide matching stainless steel plug with stainless steel connecting chain.

**H501004 BILGE AND OILY WASTE**

**H501004 1.1 PIPING**

Piping must be ductile iron, flanged, conforming to AWWA C115/A21.15, Thickness Class 56. Fittings must conform to AWWA C110/A21.10 or AWWA C153/A21.53 and have a pressure rating at least equivalent to that of the pipe. Pipe and fittings must have a ceramic epoxy internal lining resistant to chemical attack.

**H501004 1.2 VALVES**

**H501004 1.2.1 Plug Valves**

Provide plug valves with cast iron bodies, MSS SP-78. Valves must be rated for at least 175 psi (1,200 kPa) at 140 degrees F (60 degrees C). Valves and operators must be designed for outdoor service. Provide valve with internal lining or coating compatible with ship and submarine bilge and oily waste discharge.

**H501004 1.3 CAMLOCK HOSE COUPLING**

Provide camlock hose coupling with stainless steel coupler body, Viton gasket, and twin cam arms with finger rings and stainless steel pins. Coupling must have a pressure rating of at least 145 psi (1,000 kPa). Provide matching stainless steel plug with stainless steel connecting chain.

**H501005 STEAM**

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*   
NOTE: For project with steam system add requirements below.  
\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

Not used.

**H501006 COMPRESSED AIR**

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*   
NOTE: For project with high pressure or low pressure compressed air system add requirements below.  
\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

Not used.

**H501090 OTHER CIVIL/MECHANICAL UTILITIES**

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*   
NOTE: For project with other civil/mechanical systems add requirements below.  
\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

Not used.

**H501091 MISCELLANEOUS MATERIAL**

**H501091 1.1 PIPE GUARDRAILS**

Provide Schedule 80 pipe guardrails of stainless steel, ASTM A 312/A 312 M, Type 316L, or of galvanized and coated steel, with butt welding fittings of the same material and weight of the piping.

**H501091 1.2 PIPE HANGERS AND SUPPORTS**

Pipe hangers and supports must conform with MSS SP-58 and MSS SP-69 and must be of Type 316 or Type 316L stainless steel or galvanized steel.

**H501091 1.3 HARDWARE**

Hardware, including bolts, nuts, washers, anchors and screws, must be of Type 316 stainless steel or galvanized steel.

**H501091 1.4 MISCELLANEOUS METAL**

Miscellaneous metal must be standard mill finished structural steel shapes, galvanized ASTM A 36/ASTM A 36M steel, or Type 316L stainless steel.

**H5020 ELECTRICAL UTILITIES**

**H5020 1.1 DUCT/CONDUIT PLACEMENT**

Ducts and conduits located on elevated deck must be embedded in the concrete deck. As an alternative, electrical cables can be contained inside concrete jackets supported below the deck.

**H502001 ELECTRICAL POWER DISTRIBUTION**

**H502001 1.1 ELECTRICAL POWER DISTRIBUTION**

Waterfront electrical power distribution systems may include the primary system to the substation and the secondary system that serves electrical power outlet assemblies located on the wharf/pier.

Electrical power distribution must be in accordance with the requirements of the applicable portion of the "Electrical Distribution" paragraph in PTS Section G40, *Site Electrical Utilities*.

**H502001 1.2 ELECTRICAL POWER OUTLET ASSEMBLIES**

Refer to the "Utility Mounds" paragraph in PTS Section H10, *Waterfront Structures*, for enclosure for electrical power outlet assembly.

The Designer of Record must utilize UFGS Section 26 05 33, *Dockside Power Connection Stations*, for work related to waterfront electrical power outlet assemblies. Provide multiple three phase, three wire power receptacles suitable for the power ratings specified in the "Electrical Power Distribution" paragraph of ESR Section H50, *Waterfront Utilities* in Part 3. These power outlet assemblies must be served by substations with 3 phase, 3 wire delta secondaries. Each receptacle at the power outlet assembly must be supplied by a power circuit breaker that is capable of delivering the specified amperes continuously with adequate long time trip rating to allow continuous operation at specified amperes without nuisance tripping. Provide remote controls for each circuit breaker serving share power receptacles. Provide controls for primary and secondary main circuit breakers at the electrical power outlet assemblies served.

Provide industrial power outlets for portable equipment used at pier side. Industrial power outlets must include 3 phase 4 wire receptacles and 3 wire receptacles for the specified voltages, and 115 volt convenience receptacles. Industrial power outlets must be served from a substation or transformer with grounded neutral secondary.

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*   
NOTE: Add requirements for other power outlet assemblies.  
\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**H502002 TELECOMMUNICATION**

Refer to the "Utility Mounds" paragraph in PTS Section H10, *Waterfront Structures*, for enclosure for telecommunication stations.

Refer to the "Site Communication and Security" paragraph in PTS Section G40, *Site Electrical Utilities*, for requirements for Cable, wiring, ductbanks, manholes and handholes.

**H502003 LIGHTING**

Refer to the "Site Lighting" paragraph in PTS Section G40, *Site Electrical Utilities*, for requirements for over deck lighting.

Provide lighting fixtures mounted on high mast poles.

Provide a computer model of the illumination system using photometric data prepared for the fixture by an independent testing laboratory. Follow IES standards for preparation of the computer model. Adjust and modify the design to provide the illumination required. The corrosion protection features must be suitable for the environmental condition at the site.

**H502004 LIGHTNING PROTECTION**

Design and construct lightning protection system in accordance with UFC 3-575-01, *Lightning and Static Electricity Protection Systems*. Design protection system for protection of ordnance that is placed on the pier/wharf. The Designer of Record must utilize UFGS Section 26 41 00, *Lightning Protection System*, for work related to these systems. Provide primary and secondary ground wires and means for connecting portable equipment to the grounding system. Material used must be suitable for the environmental conditions at the site.

**H502005 ELECTRICAL POWER CABLE BOOMS FOR BERTHING OF SUBMARINES**

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*   
NOTE: The following requirements are applicable only to submarine berthing wharf/pier project that includes electrical power booms.  
\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

Function of the power boom is to support and deliver power cables from the on pier/wharf power outlet assembly to the points of power connection on the berthed submarine. Locations of the power booms and the ranch of operation are as shown on RFP drawings provided in Part 6.

The power boom must be of galvanized steel construction with proper corrosion protection coating meeting the requirements of UFGS Section 09 97 13.26, *Coating of Steel Waterfront Structures, Zero VOC, (SZC) Splash Zone Coating*. Bolts, nuts and washers must be hot dip galvanized. When the boom is under its stowed position at the pier/wharf or when the boom is positioned to connect the cables to the submarine, the boom must be secured from unexpected movement in both horizontal and vertical directions. Both horizontal and vertical movements of the boom must be activated manually with the assistance of power, mechanical or hydraulic device. Provide safeguard to preclude simultaneous movement in different directions and uncontrolled movement while the boom is in motion.

The power cable must be supported on a cable tray in the boom with means of delivering the cables to the submarine at different locations as shown on RFP drawings provided in Part 6. Use of electrical hoist may be allowed.

All electrical or hydraulic components must be suitable for outdoor services in marine environment. The rate of movement at the end of the boom must be limited to 8 feet/minute (2.5 meters/minute). Moving elements that involve metal-to-metal contact must have friction reduction components (such as Teflon coatings and bronze bushings).

Structural design requirements for the power boom must be in accordance with PTS Section H10, *Waterfront Structures*.

**H502090 OTHER ELECTRICAL UTILITIES**

Not used.

**H5030 WATERFRONT FIRE PROTECTION**

**H503001 FIRE PROTECTION WATER**

**H503002 FIRE ALARM**

---End of Section---