**6. ENGINEERING SYSTEMS REQUIREMENTS**

**H10 WATERFRONT STRUCTURES**

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SYSTEMS REQUIREMENTS  
WATERFRONT STRUCTURES TEMPLATE 02/18  
  
Instructions for using this template: There are template files for each UNIFORMAT Level 2 Group Elements. This template is for Group Element H10-WATERFRONT STRUCTURES. Text such as this is hidden text that will not print when the hidden text box in "Print/Options" is unchecked.  
  
Edit this template for the requirements of the project and wherever brackets [ ] appear. Use UFC 4-152-01 when determining Waterfront Structure system requirements.  
   
The SYSTEMS REQUIREMENTS are intended to define items that are required throughout the facility or on a system wide basis that are common to waterfront facilities. Waterfront Structure-specific requirements are defined in GENERAL SYSTEM REQUIREMENTS paragraph of this ESR. Coordinate with the lead programmer for interface requirement with other elements of the program. Editing is required where brackets [ ] appear. Delete all Waterfront Structure elements that are not required for the project. If additional required elements or sub-elements for the project do not appear in the template, consult with the Capital Improvements Section at NAVFAC Atlantic for additional element numbers and description. Coordinate with the PERFORMANCE TECHNICAL SPECIFICATION (PTS) SECTION H10 to ensure that performance requirements are provided for all of the Waterfront Facility Elements listed here and that paragraph numbering matches.  
  
There may be rare occasions when prescriptive specifications may either be edited and included in Part 5 of the RFP or required in Section H10 to be edited by the Contractor's Designer of Record. In both cases, the Engineering Systems Requirements (ESR) must include references to these documents.  
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**SYSTEM DESCRIPTION**  
The Waterfront Structure System consists of all [wharf,] [pier,] [breasting dolphin,] [mooring dolphin,] [access trestle,] [and] [ \_\_\_\_\_\_\_ ] structures and appurtenances at [ \_\_project site\_\_\_\_\_ ] necessary and required for [the safe mooring of the design vessels, [and] to support the waterfront operation when these vessels are in port] [and] [ \_\_\_\_\_\_\_\_ ]. The facility purpose is for [homeporting of the design vessel(s),] [loading/unloading of fuel,] [loading/unloading of ammunition,] [loading/unloading o supply,] [general purpose berthing,] [repair,] [fitting-out or refit,] [\_\_\_\_\_\_\_\_\_\_\_].

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NOTE: Provide additional waterfront structure system scope description if not already covered above. List the waterfront structure elements included in the project.  
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**GENERAL SYSTEM REQUIREMENTS**  
Provide a Waterfront Structure System complete in place, tested and approved, as specified throughout this RFP, as needed for a complete, usable and proper installation. Provide material and equipment in accordance with the criteria of this ESR and PTS Section H10 [and] [Part 5, Prescriptive Specifications] [and] [the manufacturer's recommendations]. Where the word "should" is used in the manufacturer's recommendations, substitute the word "must".

[The service life of waterfront structures must be [25] [50] [ \_\_\_\_ ] years.]

Do not commence in-water and over-water waterfront structure work until the required permits listed in Paragraph titled, "Permitting and Agency Review" in Chapter 3, Site Analysis of Part 3 are obtained. Work to be done below [Mean Higher High Water (MHHW)] [\_\_\_\_\_\_\_\_] is considered in-water work.

**Design Vessels**  
The design vessel(s) are listed below: [\_\_\_\_\_, \_\_\_\_\_\_, \_\_\_\_\_\_, \_\_\_\_\_\_, and \_\_\_\_\_\_]. [Vessel characteristics can be found in the websites identified in UFC 4-152-01.]

[Characteristics of vessels considered in the design are listed below:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| VESSELS | DRAFT  FT (M) | LENGTH  FT (M) | BEAM  FT (M) | EXTENDED WIDTH FT (M) | DISPLACEMENT  TON (TONNE) | SAIL AREA  SQ FT (SQ M) |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
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NOTE: Provide the vessel characteristics information in the table above if the information is not readily available on the websites. Provide additional vessel or other special operation equipment information if not already coved above.  
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**Mooring Requirements**

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NOTE: Describe the mooring requirements (e.g., type of vessel(s), mooring configuration(s), type of services) at each berth included in the project.  
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Design the facilities for [Type I] [Type IIA] [Type IIB] [\_\_\_\_\_] mooring services. [Develop the mooring arrangement of the vessels identified above.] [The mooring configurations are shown on the RFP drawings provided in Part 6.]

Provide adequate [electrical power,] [communication,] [closed circuit television (CCTV),] [community antenna television system (CATV),] [water,] [sewer,] [salt water,] [fire protection water,] [compressed air,] [bilge and oily waste,] [and] [ \_\_\_\_\_ ] services to support the berthed vessels. Details of the requirements are described in ESR H50, Waterfront Utilities.

**Load Requirements**

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NOTE: Provide project specific load requirements or provide Contractor directions to determine load requirements below.  
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Design loads must be in accordance with UFC 4-152-01 with the following project specific requirements:

[Dead Loads] [Weight of the permanent structural components]

[Uniform Load] [\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ at wharf/pier]

[\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ at dolphin]

[\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ at access walkway]

[\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ at access trestle]]

[Concentrated Load] [ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ]

[Live Loads]

[Uniform Load] [\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ at wharf/pier]

[\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ at dolphin]

[\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ at access walkway]

[\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ at access trestle]

[Truck Load] [AASHTO HS-20-44]

[ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ]

[Mobile Truck Crane] [ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ]

[Fork Lift] [ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ]

[Railroad Load] [Cooper E-80]

[ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ]

[Portal Crane] [ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ]

[Container Crane] [ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ]

[Concentrated Loads] [ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ]

[ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ]

[Importance Factors]

[The structure classification for determining Importance Factors for seismic, snow, and wind design must be \_\_\_\_\_\_] [Occupancy Category [IV] [III] [II] [I] in accordance with Table 2-2 of UFC 3-301-01.]

[Wind Exposure]

[Base wind design on Exposure [\_\_\_\_] and basic wind speed of [ \_\_\_\_\_\_\_ ].

[Wave Exposure]

[Design the [wharf,] [pier,] [breasting dolphin,] [mooring dolphins,] [access trestle,] [and] [\_\_\_\_\_\_\_\_] for the wave conditions [as follow: \_\_\_\_\_\_\_\_\_\_\_] [provided in \_\_\_\_\_title of report\_\_\_\_\_ included in Attachment \_\_ of Part 6] [to be determined by the Contractor].

[Current]

[Design the [wharf,] [pier,] [breasting dolphin,] [mooring dolphins,] [access trestle,] [and] [\_\_\_\_\_\_\_\_] for the current conditions [as follows: \_\_\_\_\_\_\_\_\_\_] [provided in \_\_\_\_\_title of report\_\_\_\_\_ included in Attachment \_\_ of Part 6] [to be determined by the Contractor].

[Tide Exposure]

[Design the [wharf,] [pier,] [breasting dolphin,] [mooring dolphins,] [access trestle,] [and] [\_\_\_\_\_\_\_\_] for the tidal conditions [as follows: \_\_\_\_\_\_\_\_\_\_] [provided in \_\_\_\_\_title of report\_\_\_\_\_ included in Attachment \_\_ of Part 6] [to be determined by the Contractor].

[Seismic Design]

[Consider the [wharf,] [pier,] [breasting dolphin,] [mooring dolphin,] [access trestle,] [and] [\_\_\_\_\_\_\_ ] as Seismic User Group [III] [ II ] [ I ] and Seismic Design Category [A] [B] [C] [D] [E] [F] and design in accordance with the design provisions of UFC 4-152-01.

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NOTE: For Seismic Analysis procedure described under "Note B" in Paragraph titled "Determine Seismic Analysis Procedure" of UFC 4-152-01, suggest using the following.  
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[Level 1 – An earthquake with a 50 percent probability of exceedance in 50 years exposure. This event has a return period of 72 years and is considered a moderate event likely to occur one or more times during the life of the facility.

Level 2 – An earthquake with a 10 percent probability of exceedance in 50 years exposure. This event has a return period of 475 years and is considered a major event.

The ground accelerations and response spectra for these earthquakes [are provided in \_\_title of report\_\_\_\_ included in Attachment \_\_ of Part 6] [must be determined by Contractor]].

Seismic design of other structures located on the [wharf,] [pier,] [breasting dolphin,] [mooring dolphin,] [access trestle,] [and] [\_\_\_\_\_\_] must be in accordance with UFC 1-200-01.

[Berthing and Mooring Loads]

[Design the [wharf,] [pier,] [breasting dolphin,] [mooring dolphin,] [and] [ \_\_\_\_\_\_\_\_\_ ] for the mooring and berthing loads [as provided in \_\_reference to mooring and berthing analysis report provided in Part 6 \_\_\_ ] [to be determined by the Contractor].] [Berthing must be based on berthing velocity [normal to the wharf/pier] of \_\_\_\_\_\_\_\_\_ [and based on tug assisted condition].]

**Required Dimensional and Other Constraints**

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NOTE: Describe dimensional and other constraints (minimum or maximum) of the new, modified or extended wharf/pier and/or other waterfront facilities. These constraints could be governed by operational requirements, space limitations or environmental/permit considerations.  
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[Develop the layout and minimum facility dimensions based on guidelines provided in UFC 4-152-01 and \_\_\_\_\_\_\_\_\_specify special constraints\_\_\_\_\_\_\_\_\_.] [The minimum dimensions of the facility must be \_\_\_specify plan dimensions\_\_\_\_.] [The facility must have a double deck configuration with the following minimum dimensional constraints. \_\_\_\_\_specify plan dimensions and deck vertical clearance\_\_\_\_\_ .]

[Deck elevation of [wharf,] [pier,] [breasting dolphin,] [mooring dolphin,] [and] [\_\_\_\_\_\_\_\_\_\_] [must match with \_\_\_\_specify name of existing facility and elevation(s)\_\_\_\_] [must be at \_\_\_\_specify elevation(s) as shown on the RFP drawings provided in Part 6\_\_\_\_] [must be determined by the Contractor based on guidelines provided in UFC 4-152-01 and \_\_\_\_specify special constraints\_\_\_\_].]

[Layout and dimensional constraints described above are shown on the RFP drawings provided in Part 6. Review this information and verify conformance with the requirements of this RFP.]

[All components that are connected or supported between fixed and floating elements must be capable of operating through the entire range of tidal fluctuations without binding, chafing or excessive strain. These components include, but are not limited to brows, camels, floating fenders, [\_\_\_\_\_\_].]

[Make provisions in the design of waterfront structures to allow the implementation of the following future plans

• [ \_\_water deepening to -xx ft\_(-yy m)\_\_\_ ]

• [ \_\_wharf/pier extension\_\_\_\_\_\_\_\_\_\_\_\_\_ ]

• [ \_\_\_berthing of xyz class vessel\_\_\_\_\_\_ ]

• [ \_\_\_installation of container cranes\_\_\_\_ ]

• [ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ]

**Government Furnished Equipment**  
Install Government-furnished material and equipment such that material and equipment will function as intended, including providing miscellaneous items such as [anchor bolts], [metal insert plates] [eyepads] [and] [ \_\_\_\_\_\_ ]. Pick up equipment at location(s) designated by Contracting Officer [within [5 miles] [\_\_\_\_\_\_] of project site] and transfer to project site for storage until ready for installation. Testing requirements of Government-furnished equipment are the responsibility of the Contractor and must follow the same guidelines as though the Contractor had provided the equipment. The following items will be furnished by the Government and must be installed and tested by the Contractor:

• [Hydro-pneumatic fenders including galvanized chains and shackles]

• [Foam-filled fenders including galvanized chains and shackles]

• [Pneumatic fenders including galvanized chains and shackles]

• [Camels or separators]

• [Oil containment boom and accessories]

• [Vessel access brow]

• [ \_\_\_\_\_\_\_\_\_\_\_ ]

• [ \_\_\_\_\_\_\_\_\_\_\_ ]

**H1010 SUBSTRUCTURE**

The [new] [modified] [extended] [ \_\_\_\_\_\_ ] [wharf,] [pier,] [breasting dolphin,] [mooring dolphin,] [access trestle,] [and] [ \_\_\_\_\_\_ ] must be supported by one of the following or combination of the following substructures. [Location and arrangement of substructures must [be determined by the Contractor] [and] [meet the guidelines or restrictions specified on the RFP drawings provided in Part 6] [to meet the parameters set for the environmental mitigation requirements and U.S. Army Corps of Engineers (USACOE) permit] [and] [\_\_\_\_\_\_].]

Substructure for Waterfront Structures in the project must include the following:

• [Pile foundation]

• [Pile caps]

• [Quays]

• [Relieving platforms]

• [Revetments]

• [Seawalls]

• [Boat ramps]

• [Cut-off wall]

• [Firewalls and Hanging Panels]

• [\_\_\_\_\_\_\_\_\_\_\_]

Design and construct the waterfront structure substructures for the [new] [modified] [extended] [\_\_\_\_\_\_\_] [wharf,] [pier,] [breasting dolphin,] [mooring dolphin,] [access trestle] [and] [\_\_\_\_\_\_\_\_] required for the project [and as identified on the RFP drawings provided in Part 6] [including any necessary soil improvement] such that the structure meets all gravity, soil, static, seismic, wind, mooring, and berthing loadings specified in ESR H10, and performance requirements of Paragraph H1010 in PTS Section H10 of Part 4.

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NOTE: For project that includes modification, or strengthening of existing waterfront structure, describe the type of existing substructure to be modified or strengthened. Make reference to the record drawings for the existing waterfront structure provided in Part 6. Describe which portions of the existing substructure are to be modified or strengthened and work to be done. .Make reference to the RFP drawings provided in Part 6 where the work scopes are identified. Make reference to available inspection reports of the existing waterfront structure provided in Part 6.  
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NOTE: Include the following for project that involve repair and rehab of existing waterfront substructure.  
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[Following substructure areas/elements in the existing [wharf,] [pier,] [breasting dolphin,] [mooring dolphin,] [access trestle,] [and] [\_\_\_\_\_\_] require repair and rehabilitation:

• [ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ]

• [ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ]

• [ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ]

• [ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ] ]

[Locations and types of damages that require repair and rehabilitation are shown on the [RFP drawings,] [inspection report(s),] [and] [\_\_\_\_\_\_\_] provided in Part 6]. [The types of repairs are also shown on the [RFP drawings,] [and] [\_\_\_\_\_\_\_\_\_] provided in Part 6.] [Perform a detailed existing condition inspection, including inspection of exposed surfaces, [underwater inspection of the below water substructure elements and over-water inspection of the above water substructure elements] [and] [ \_\_\_\_\_\_\_\_\_\_\_\_\_\_ ].] [\_\_\_\_describe means of adjusting the level of effort should the actual effort based on Contractor’s inspection differ from the information provided in the RFP\_\_\_\_\_\_\_\_\_.

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NOTE: Include the following for project that includes dredging to increase water depth in the vicinity of existing waterfront structures.  
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[Dredging is required to increase the water depth in the vicinity of existing [wharf,] [pier,] [breasting dolphin,] [mooring dolphin,] [access trestle,] [and] [\_\_\_\_\_\_\_\_\_]. This dredging [will] [may] impact the structural integrity of the [wharf,] [pier,] [breasting dolphin,] [mooring dolphin,] [access trestle,] [and] [\_\_\_\_\_\_\_\_]. Assess impact of the water deepening dredging on existing structure and design and construct the necessary protection or strengthening to existing structure(s). [Following type(s) of structural protection or strengthening are not allowed:

• [ \_\_\_\_\_\_\_\_\_\_\_ ]

• [ \_\_\_\_\_\_\_\_\_\_\_ ] ]

[Potential areas that require protection or strengthening and the Government dictated constraints are shown on the RFP drawings provided in Part 6.]

[Material and construction type selections for substructure elements are as follows. These requirements have precedence over specifications provided in Part 4:

• [Piling – No timber piles]

• [Sheet pile – [steel,] [concrete,] [or] [fiberglass reinforced plastic]

• [ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ]

• [ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ] ]

[Use of corrosion allowance in lieu of corrosion protection for steel piling exposed to water is not allowed.]  
A Soil Sampling and Laboratory Testing report, [and] [\_\_\_\_\_\_\_\_\_\_\_\_ ] are included in Attachment [ \_\_\_\_ ] of Part 6 for information only. . [Additional borings logs from past projects at the site \_\_\_\_\_\_\_\_\_\_\_\_ are also included in Attachment \_\_\_ of Part 6 for information only.] It is the responsibility of the Contractor to evaluate and assess the project impact of the soil sampling and laboratory testing report data and to perform a detailed and complete geotechnical engineering investigation for the final project design and construction.

**H1020 SUPERSTRUCTURE**

Superstructure for the [new] [modified] [extended] [ \_\_\_\_\_\_ ] [wharf,] [pier,] [breasting dolphin,] [mooring dolphin,] [access trestle,] [and] [ \_\_\_\_\_\_\_\_ ] structures must include [ beams and girders,] [columns,] [utility enclosures], [and] [ \_\_\_\_\_\_\_\_ ] that support the operation deck area of the [wharf,] [pier,] [breasting dolphin,] [mooring dolphin,] [access trestle,] [and] [ \_\_\_\_\_\_\_\_ ] as identified on the RFP drawings provided in Part 6.

The superstructure must be of reinforced concrete construction [with the exception of [ \_\_\_\_\_\_\_\_\_\_ ].  
Design and construct the superstructure to meet all gravity, static, seismic, wind, mooring, and berthing loadings specified in ESR H10 and performance requirements of Paragraph H1020 in PTS Section H10 of Part 4.

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NOTE: For project that includes modification or strengthening of existing waterfront structure, describe the type of existing superstructure to be modified or strengthened. Make reference to the record drawings for the existing waterfront structure provided in Part 6. Describe which portions of the existing superstructure are to be modified or strengthened and work to be done. Make reference to the RFP drawings provided in Part 6 where the work scopes are identified. Make reference to available inspection reports of the existing waterfront structure provided in Part 6.  
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NOTE: Include the following for project that involve repair and rehab of existing waterfront superstructure.  
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[Following superstructure areas/elements in the existing [wharf,] [pier,] [breasting dolphin,] [mooring dolphin,] [access trestle,] [and] [\_\_\_\_\_\_] require repair and rehabilitation:

• [ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ]

• [ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ]

• [ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ]

• [ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ] ]

[Locations and types of damages that require repair and rehabilitation are shown on the [RFP drawings,] [inspection report(s),] [and] [\_\_\_\_\_\_\_] provided in Part 6]. [The types of repairs are also shown on the [RFP drawings,] [and] [\_\_\_\_\_\_\_\_\_] provided in Part 6.] [Perform a detailed existing condition inspection, including topside inspection, [over-water inspection of the underside of superstructure elements] [and] [ \_\_\_\_\_\_\_\_\_\_\_\_\_\_ ].] [\_\_\_describe means of adjusting the level of effort should the actual effort as determined based on Contractor’s inspection differ from the information provided in the RFP\_\_\_\_\_\_\_\_\_.]

[Material selections for deck elements are as follows. These requirements have precedence over specifications provided in Part 4:

• [ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ]

• [ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ] ]

**H1030 DECK**

Deck for the [new] [modified] [extended] [ \_\_\_\_\_\_\_\_ ] [wharf,] [pier,] [breasting dolphins,] [mooring dolphin,] [access trestle] [and] [ \_\_\_\_\_\_\_\_ ] structures must include [elevated deck,] [on-grade deck,] [deck overlay,] [curbs and bullrails,] [mooring hardware foundation,] [high mast lighting foundations,] [utility mounds,] [expansion joints,] [guard post and railings,] [paint striping,] [and] [ \_\_\_\_\_\_\_\_ ] covering or located within the wharf operation area. Wharf operation area is defined on the RFP drawings provided in Part 6.

[The elevated deck must be of reinforced concrete construction integrated with the superstructure.] [On-grade deck must be of [Portland cement concrete slab] [or] [asphalt concrete pavement].  
Design and construct the deck elements to meet all gravity, static, seismic, wind, mooring, and berthing loadings specified in ESR H10 and performance requirements of Paragraph H1030 in PTS Section H10 of Part 4.

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NOTE: For project that includes modification or strengthening of existing waterfront structure, describe the type of existing deck to be modified or strengthened. Make reference to the record drawings for the existing waterfront structure provided in Part 6. Describe which portions of the deck elements to be modified or strengthened and work to be done. .Make reference to the RFP drawings provided in Part 6 where the work scopes are identified. Make reference to available inspection reports of the existing waterfront structure provided in Part 6.  
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NOTE: Include the following for project that involve repair and rehab of existing waterfront deck.  
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[Following deck areas/elements in the existing [wharf,] [pier,] [breasting dolphin,] [mooring dolphin,] [access trestle,] [and] [\_\_\_\_\_\_] require repair and rehabilitation:

• [ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ]

• [ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ]

• [ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ]

• [ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ] ]

[Locations and types of damages that require repair and rehabilitation are shown on the [RFP drawings,] [inspection report(s),] [and] [\_\_\_\_\_\_\_] provided in Part 6]. [The types of repairs are also shown on the [RFP drawings,] [and] [\_\_\_\_\_\_\_\_\_] provided in Part 6.] [Perform a detailed existing condition inspection, including top deck inspection, [over-water inspection of the underside of deck elements] [and] [ \_\_\_\_\_\_\_\_\_\_\_\_\_\_ ].] [\_\_\_describe means of adjusting the level of effort should the actual effort based on Contractor’s inspection differ from the information provided in the RFP\_\_\_\_\_\_\_\_\_.]

[Material selections for deck elements are as follows. These requirements have precedence over specifications provided in Part 4:

• [Electrical utility mound enclosures - [reinforced concrete,] [galvanized and coated steel,] [or] [stainless steel] ]

• [Expansion joint armor - [galvanized steel,] [or] [stainless steel] ]

• [Pipe railing over utility risers - [galvanized and coated steel,] [or] stainless steel] ]

• [On-grade slab – [non-marine concrete with non-epoxy coated rebar can be used,] [or] [non-marine concrete with epoxy coated rebar can be used].]

• [ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ] ]

**H1040 MOORING AND BERTHING SYSTEM**

The Mooring and Berthing System for the Waterfront Facility must include [primary fender,] [secondary fender,] [corner fender,] [dolphins,] [mooring hardware,] [and] [ \_\_\_\_\_\_\_\_ ].

[ \_\_specify special requirements related to mooring and berthing system\_\_\_ ]

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*   
NOTE: Use the following for project where Government provides the mooring analysis, Government can either:  
specify the type/size/location of mooring hardware and fender to be used for the project (in this case both mooring hardware and fender will be prescriptive) or  
have the Contractor select the type/size of mooring hardware and fender system to be used for the project  
\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

[ [A mooring analysis report prepared by \_\_\_\_\_\_\_\_\_ is provided in Attachment \_\_\_ of Part 6. Provide the mooring and fendering system as described below:]

• [Provide [\_\_\_\_\_\_\_\_\_specify mooring hardware\_\_\_\_] [and] [\_\_\_\_\_\_\_\_specify fenders\_\_\_\_\_\_] in accordance with prescriptive specifications provided in Part 5.]

• [Design and construct [mooring hardware] [and] [fenders] meeting the requirements of the Government furnished mooring analysis provided in Part 6 and the performance requirements of Paragraph H1040 in PTS section H10 of Part 4.]

• Â·[Design and construct the foundations and anchor bolts for the new mooring hardware and install the mooring hardware in accordance with the performance requirements of Paragraphs H1030 and H1040 in PTS Section H10 of Part 4 and locations specified on the RFP drawings in Part 6.]

• [Design and construct the support system for the [fenders,] [camels,] [and] [ \_\_\_\_\_\_ ] and install the fendering system in accordance with the performance requirements of Paragraph H1040 in PTS Section H10 of Part 4 and [fender,] [camel,] [and] [ \_\_\_\_\_\_ ] locations specified on the RFP drawings in Part 6.] ]

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NOTE: Use the following for project where Contractor is to provide mooring analysis, Government can either:  
   
require Contractor to fully design-build mooring hardware and fender system or specify the type/size of mooring hardware and fender system to be used for the project (in this case mooring hardware and fender will be prescriptive) and Contractor to determine locations of mooring hardware and fenders.  
\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

[ [Prepare mooring analysis based on guidance provided in UFC 4-159-03 and UFC 4-152-01 to determine the mooring hardware and fendering requirements for this project. Contractor shall provide the mooring and fendering system in accordance with the performance requirements of Paragraph H1040 in PTS Section H10 of Part 4:]

• [Provide [\_\_\_\_\_\_specify mooring hardware \_\_\_] [and] [\_\_\_\_specify fenders \_\_\_\_] in accordance with prescriptive specifications provided in Part 5.]

• [Design and construct [mooring hardware] [and] [fenders] meeting the requirements of Contractor’s mooring analysis and the performance requirements of Paragraph H1040 in PTS Section H10 of Part 4.]

• [Design and construct the foundations and anchor bolts for the new mooring hardware and install the mooring hardware in accordance with the performance requirements of Paragraphs H1030 and H1040 in PTS Section H10 of Part 4.]

• [Design and construct the support system for the [fenders] [camels] [and] [\_\_\_\_\_\_] and install the fendering system.] ]

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NOTE: Use the following for project that involve rehabilitation or refurbishing of existing mooring hardware.  
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[ [Mooring hardware system on existing \_\_\_\_\_\_\_\_\_\_ [wharf,] [pier,] [breasting dolphin,] [mooring dolphin,] [and] [\_\_\_\_\_\_] must be refurbished by the Contractor. The items to be refurbished are identified on the RFP drawings provided in Part 6. The refurbishing consists of the following:

• Design and carry out the refurbishing of existing [bollards] [double bitts] [cleats] [and] [\_\_\_\_\_\_\_] in accordance with the performance requirements of Paragraph H1040 in PTS Section H10 of Part 4.]]

[Material selections for mooring and berthing elements are as follows. These requirements have precedence over specifications provided in Part 4:

• [Fender pile brackets and collars – [stainless steel] [or] [galvanized and coated steel] ]

• [Fender framing – [stainless steel] [or] [galvanized and coated steel] ]

• [ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ] ]

**H1050 APPURTENANCES**

[Design and construct the following appurtenances for \_\_\_\_\_\_\_\_\_\_\_\_\_ [wharf,] [pier,] [berthing dolphin,] [mooring dolphin,] [access trestle] [and] [ \_\_\_\_\_\_\_ ]:

• [Handrails]

• [Brow]

• [Cable booms]

• [Floats]

• [Safety ladders]

• [Life rings]

• [Oil containment booms]

• [ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ]

**H1060 OTHER FEATURES**

[Not Used.]

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*   
NOTE: Use this paragraph to describe other waterfront structure features not included in other paragraphs of H10.  
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