

Hardware Kit and Building Material for Floating Dock Assemblies Specification



HARDWARE KITS AND BUILDING MATERIALS FOR FLOATING DOCK ASSEMBLY SPECIFICATION

GENERAL

The specification herein states the minimum requirements of the Port. All bids must be regular in every respect. Unauthorized conditions, limitations, or provisions shall be cause for rejection. The Port will consider as irregular or non-responsive any and all bids that are not prepared and submitted in accordance with the bid document and specification, or any bid lacking sufficient technical literature to enable the Port to make a reasonable determination of compliance to the specification. It shall be the bidder's responsibility to carefully examine each item of the specification.

Failure to offer a completed bid or failure to respond to each section of the technical specification (Comply: Yes/No/N/A) may be grounds for the proposal to be rejected without review as non-responsive. All variances, exceptions and/or deviations shall be fully described in the appropriate section(s). Deceit in responding to the specification will be cause for rejection.

SUBMITTALS

Detailed product information drawings, product information sheets, etc. shall be submitted to the Owner for review and approval prior to finalizing the order. The Owner will have ten (10) business days to complete their review and provide comments and responses.

DESIGN PARAMETERS

- All materials to be furnished by the Proposer shall comply with "Buy America" requirements.
- All dock components shall be rated for use in either commercial and/or heavy duty applications. Proposer shall provide information with their proposal demonstrating this criterion is being fulfilled.
- Dimensions
 - Widths shall be a minimum of 4'-0" except for docks functioning as main walkways which shall be 6'-0".
 - Dock lengths shall be a minimum of 8'-0" and may be a maximum of 16'-0". Lengths may only be adjusted in 1'-0" intervals.
 - Ramp/gangway lengths shall be a minimum of 8'-0" and may increase in length by 1'-0" even intervals. Proposer shall include proposed dimensions of all dock and ramp/gangway components in their proposal.
 - Depths shall be kept to the minimum required to accommodate framing, hardware and float components while meeting freeboard parameters.
- Wood components will not be permitted to remain continuously submerged below the waterline.
- All dock components shall be designed to support and resist the following loading conditions:
 - Dead Loads:
 - Dead Load shall be the entire weight of the dock and all permanent equipment shown or specified.

- Live Loads:
 - For purposes of flotation, live load shall be 30 pounds per square foot over the entire surface of the docks minimum.
 - For strength, live load shall not be less than 75 pounds per square foot over the entire surface of the docks minimum.
 - Concentrated load of 400 pounds applied to any one square foot of area (not concurrent with uniform lip load).
 - Structural members, deck surfaces and gangways shall be designed with a uniform live load of 50 PSF with a maximum deflection not to exceed the ratio of length over 180. Strength of the members shall be based on a live load of 75 psf.
- Special attention shall be given to insure that adequate flotation is provided to support gangway and dock connections.
- Handrails:
 - Handrails shall be capable of withstanding loads of 200 pounds applied in any direction at any point resulting in minimal deflection.
 - Handrails shall be 42 inches in height with the midrail positioned at approximately 22 inches.
 - Posts for handrails shall be spaced no more than 8 foot on centers.
 - Each side of a ramp/gangway shall have a handrail with a midrail.
 - Handrails will be placed around the outside perimeter of docks where public exposure warrants them.
- Dockage elements shall have adequately designed lifting points. Lifting rings shall be firmly attached to the frame to assure proper load pick up without overstressing the structure.
- Stability:
 - At any condition of loading, from none to full design load and at unbalanced conditions, the units shall remain stable and no portion of the deck surface shall be under water and no section of the flotation system shall lift out of the water.
 - With a concentrated load of 400 pounds located any where on the dock, the dock shall not tilt more than 6 degrees from horizontal. Nor shall the dock lose no more than 6 inches of freeboard.
- Currents and Waves: The floating dock system shall be designed to withstand storm conditions of up to four feet high waves on a periodic but not on a continual basis. The system shall withstand a sustained wave height of 2 feet.
- Impact: The floating dock end (tee) section, its anchorage and connections shall be able to resist the impact of a 10 ton boat striking the dock at any location moving at a velocity of two knots or less at a maximum angle of 10 degrees to the centerline of the dock. The remainder of the system shall be able to resist the impact of a 5 ton vessel at a velocity of two knots or less at a maximum angle of 10 degrees to the centerline of the dock.
- Ice: The structures shall withstand the forces imposed by non-moving ice.
- Torsion: Positively prevent torsion, racking, and twisting by providing sufficient built-in torsional resistance to prevent more than three inches of variation in normal freeboard at the free end of all dock units under possible combinations of specified loadings.
- Ramp/gangway connection: Where the ramps/gangways are attached to the floating docks, extra flotation shall be provided under the end of the ramp/gangway or first dock section, such that the dock remains level and stable under dead loads and there is not excessive deflection under live load.



- The hinge connection between docks shall be continuous with no openings between dock sections. Each dock module shall be level with the adjacent dock. The opening between sections shall not exceed 3/4" at the top walking surface.
- Connections shall be designed to permit removal and replacement of connectors, without the necessity of removing other components for access and without the use of divers and be accessible from the top of the dock.
- Decking shall run perpendicular to traffic on all ramp/gangway sections and dock sections.
- Design water fluctuation shall be 4'-0".
- Anchoring System: The dock anchorage system shall employ concrete deadmen and chain or cables. Elevation adjustments may be required for satisfactory operation through the design water fluctuation range. All adjustments shall be accessible from the surface of the dock sections and not require the use of divers.
- Freeboard: Freeboard is defined as the distance from the water surface to the top of the deck. The dock system shall maintain approximately 24 inches of freeboard under dead load conditions. Under dead load, the system shall not tilt (pitch or list) more than 1 inch on the overall length or width of each unit. Freeboard under dead load and 30 pounds per square foot live load shall not be less than 12 inches and no floats shall be submerged.

MATERIALS

- Hardware such as brackets, braces, hinges, stiffarms, stabilizers, etc. shall be a minimum of 1/4" thick using a minimum of 3/8" diameter carriage and/or lag bolts for assembly. Hinges shall have 3/4" diameter (minimum) pins and/or bolts. All carriage bolts and pins shall be secured accordingly with either nuts or cotter keys.
- Screws for securing either wood or composite decking shall be of similar/matching color to the decking and be approved for use with pressure treated lumber.
- All steel fasteners and hardware shall be hot-dipped galvanized for wood or steel construction.
- Hot dipped galvanized members requiring minor surficial touchups shall be completed with a field applied cold galvanizing compound.
- Fasteners and hardware for aluminum construction shall be stainless steel.
- Species of wood may be southern yellow pine, red and Ponderosa pine, Douglas fir, or hemlock-fir and shall be specified by proposer with their proposal.
- Lumber shall be pressure treated with a water-based preservative in accordance with AWPA specifications.
- Lumber shall be rated for Ground Contact, Fresh Water environment use with a minimum "Use Category" of UC4A.
- Dock Framing Lumber
 - Framing lumber size shall be nominal 2" by xx".
 - Framing lumber shall be Select or No. 1 grade.
- Dock Decking
 - Decking lumber size shall be nominal 5/4" x 6".
 - Decking lumber shall be Premium grade
 - Composite decking may be used to substitute timber decking and shall meet the following minimum requirements:
 - Fully capped with PVC
 - Nominal size of 5/4" x 6" with wood grain pattern.
 - Fastened with screws or hidden clip system.

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- Provide skid resistance in both wet and dry weather conditions.
 - Shall either be impregnated with or treated with a long lasting UV inhibitor.
 - Shall either be impregnated with or treated with a long lasting fungicide.
 - Minimum 15 year warranty.
 - Minimal to no potential for static build-up.
 - Proposer shall provide product information for composite decking at time of bid.
- Floats
 - Virgin grade polyethylene materials for marine use
 - One piece molded shell
 - Foam filled with 1.0 – 1.5 density expanded polystyrene foam (EPS); hollow floats will not be considered.
 - Puncture and penetration resistant
 - Shall either be impregnated with or treated with a long lasting UV inhibitor.
 - Shall either be impregnated with or treated with a long lasting fungicide.
 - Fire resistant.
 - Molded in mounting holes/slots with heavy duty and/or reinforced flanges
 - Meets USACE Regulation #36 CFR Part 327
 - Shall be submerged at least 35% but not more than 65% below the water surface elevation considering provided design load parameters.
 - Minimum of 15 year warranty against sinking, cracking, peeling, fragmenting or losing beads.
 - Handrails:
 - Shall be of either wood, aluminum or steel construction.
 - Lumber size shall be nominal 2" by xx" for structural framing members.
 - 5/4" b 6" deck boards may be used for horizontal handrails/midrails as finishing/trim boards and shall be supported with corresponding 2" by xx" framing lumber to provide necessary structural support.
 - Steel and aluminum handrails shall be constructed of 1½" minimum diameter, schedule 40 pipe. Alternate shapes such as square, rectangular, angle, etc., may be proposed for the handrails provided they meet the requirements of the specification.
 - Connections for steel and aluminum handrails may either be welded or use prefabricated fittings for construction. Both shall provide a smooth final finish with all sharp edges, burs, etc. being removed.
 - Handrails may be either the permanently fastened or removable type. If of the removable type, any fasteners used to secure the handrail to the ramp/gangway must be accessible from the ramps/gangways walking surface.
 - Steel handrails shall be hot dipped galvanized following fabrication.
 - Rubrails
 - Shall be made from flexible PVC or other similar material that will not rub off or leave marks on boats and is also resistant to cracking, rotting, deterioration and staining.
 - Shall either be impregnated with or treated with a long lasting UV inhibitor.
 - Shall either be impregnated with or treated with a long lasting fungicide.
 - Shall be installed per manufacturer's instructions along all exposed dock edges where boat's may come in contact.
 - Utility Raceway
 - Docks as indicated shall provide a utility raceway allowing for flexible electric and water utility lines to be carried from a source point on the shoreline to individual connections at utility pedestals mounted along



- the dock. Raceway may either be located directly below the deck surface or mounted to the exterior edge of the dock. Raceway mounted along the exterior perimeter of docks shall consider all applicable loading conditions.
- Raceway shall be sized to provide a minimum useable area of 192 square inches. The minimum depth shall be 8 inches. The minimum width shall be 12 inches and the maximum 24 inches.
 - Shall provide a system to support and protect utilities spanning from the shoreline connection point to the first dock mounted utility raceway. This system shall be capable of accommodating the specified design water fluctuation.
 - Deck surface above raceway shall withstand design-loading conditions as specified.
 - Shall include a means for convenient top side access along the docks to seasonally remove and replace utilities.
 - Shall support utility lines in a manner to prevent them from regularly becoming submerged underwater.
 - Shall be free draining so as not to allow water to collect or remain contained.
 - Materials used to support utilities shall not result in wear or damage such as abrasions, rubbing, punctures, kinks, etc.
 - Detailed drawings shall be provided for review by the engineer following award.
- Ramps/Gangways
 - May be constructed of either wood, steel or aluminum construction or a combination thereof.
 - Wood handrails shall be pressure treated in accordance with AWPA specifications, Use Category UC4A minimum.
 - Wood members shall be Premium, Select or No. 1.
 - Steel handrails shall be hot dipped galvanized.
 - For aluminum construction, all fasteners shall be stainless steel.
 - The free end of ramps/gangways shall incorporate rollers or other means to allow for movement.
 - Roller material shall be of UHMW (ultra high molecular weight) polyethylene or of similar quality material.
 - Materials shall not rub off or leave marks on the decking surface and are resistant to cracking, rotting, deterioration and staining.
 - Ramps/gangways will be secured to concrete headwalls located at the ends of sidewalks on shore. Proposer shall provide details of their anchorage/fastening system so concrete headwalls can be constructed to incorporate the proposed ramps/gangways connection system.
 - Ramps/gangways shall provide a smooth transition at ends with docks or landing surfaces allowing for wheel carts, coolers, etc. to be transported.
 - Aluminum or wood deck surfaces shall provide skid resistance in both wet and dry weather conditions.
 - Aluminum decking shall be 6061-T6 extruded ribbed decking.
 - Tie-Down Cleats
 - 10" minimum length steel, hot-dipped galvanized.
 - Corresponding hot dipped galvanized hardware shall be provided.