ITEM 615.6850 11 - PREFABRICATED FLOATING BOAT DOCK

DESCRIPTION

This work shall consist of furnishing and installing PREFABRICATED FLOATING BOAT DOCK and other necessary marine hardware and accessories in accordance with the contract documents and as directed by the Engineer.

MATERIALS

The materials and components shall be new and free from defects which would adversely affect the performance or maintainability of individual components or the overall assembly. Materials required for the floating boat docks shall be as follows:

A. Docks:

Floats shall consist of a high density polyethylene casing with a black ultraviolet light inhibitor added, they shall be heavy duty, filled with polystyrene, and structurally connected to the framework.

Decking shall consist of Ipe wood of the sizes designed by the Contractor and shall be standard width. Decking shall be supplied surfaced four sides (S4S) and eased four edges (E4E). Edges shall be eased to a radius of 4 mm.

The frame shall be 6061-T6 aluminum and shall conform to Section 715-04, Wrought Aluminum, of the NYSDOT Standard Specifications for Construction and Materials. Aluminum welding of the dock frame shall be in accordance with the American Welding Society (AWS) D1.2 or D9.1 structural welding code and shall be performed by experienced operators.

Dock edge protection shall consist of non-marring, non-yellowing, extruded marine white or beige vinyl dock fender. Fenders shall be provided for the entire dock perimeter and be structurally connected to the dock.

B. Hardware and connections:

Fasteners and miscellaneous connections shall be stainless steel AISI Type 304 Class 1 (ASTM A193M B8) and shall conform to Section 715-16, Stainless Steel Connecting Products, of the NYSDOT Standard Specifications for Construction and Materials.

Pile guides shall be roller type, with hoops fabricated using schedule 40 pipe and 6 mm thick angles, hot dipped galvanized steel. Rollers shall be UHMW polyurethane with black ultra-violet inhibitor added. Galvanizing shall be performed as per Section 719-01, Galvanized Coatings and Repair Methods of the NYSDOT Standard Specifications for Construction and Materials.

Cleats, rings, and other hardware shall be marine grade and shall be designed to accommodate all anticipated loads.

C. Emergency Tether:

The tether shall be a galvanized steel wire rope at least 9 mm in diameter, with a minimum tensile strength of 45 KN, conforming to the requirements of ASTM A603, Zinc Coated Steel Structural Wire Rope. Connecting pieces shall hot-dipped galvanized steel and be of

sufficient strength to restrain the boat dock if the tether becomes engaged. Galvanizing shall be performed as per Section 719-01, Galvanized Coatings and Repair Methods.

Connection of the tether to the dock and to the platform shall be lockable and easily removed. Marine grade saddle clamps with wire rope thimble or other appropriate connection shall be used.

CONSTRUCTION DETAILS

A. Design Parameters:

The dock shall be designed for a minimum uniformly applied vertical live load of 1.0 kPa (20 psf). The deck surface shall be designed for a concentrated live load of 1.78 kN (400 lbs) applied over an area of one square foot. Maximum deflection shall be limited to L/180, where "L" is the length of the dock.

The dock shall be designed to be stable under all load combinations.

The dock shall be designed for a uniformly applied horizontal wind load of 720 Pa (15 psf). Wind load shall originate from any direction and shall be applied on all projected surfaces, assuming 100% boat occupancy.

The dock shall be designed to accommodate the loading of he gangway in all load cases.

The aluminum skid and frame shall be design so that dock can be moved to and from its storage location while carrying the gangway on top of it and shall considering the most adverse support condition. The floats shall not be in contact with the ground when the dock is moved on the skids. The skids shall have a readily replaceable sliding surface.

The dock and its connections shall be designed to resist the impact of the largest boat normally using the dock moving at a velocity of two knots or less at a maximum angle of ten degrees to the centerline of the dock.

Anchoring devices shall allow for free movement of the dock, while minimizing damage due to normal movement caused by tides, boat wakes, water fluctuation, and seasonal winds. Anchoring devices shall be of sufficient strength to restrain a uniform force of 2.19 kN/m (150 lb/ft) applied along the entire length of dock.

Flotation devices shall be sized and placed to provide freeboard of at least 300 mm but not more than 760 mm under combined dead load plus 1.0 kPa (20 psf) uniformly distributed live load. Flotation devices shall provide a minimum of 450 mm freeboard under dead load only. The freeboard shall be measured from the top of the decking to the waterline.

B. Fabrication and installation:

Decking shall be laid with a 2 mm (1/16") maximum gap between boards. Fasten deck boards by pre-drilling a pilot hole and countersinking all screws. Seal all ends immediately after cutting with a clear aqueous wax end sealer.

Stored materials shall be placed on skids and not on the ground and shall be piled and blocked up so that they will not become bent or otherwise damaged.

Fendering shall be attached to the dock every 100 mm with stainless steel sheet metal screws with a flat head and countersunk finishing washer. Corner dock bumpers shall be installed at

all ends of sections.

Anchoring devices, including pile guides, shall be bolted or welded through the wood decking to the aluminum frame. Floating docks must move freely during the entire cycle of water level extremes with the normal expected condition. Framing shall be braced at the pile guides.

Any potential corrosive installation of dissimilar materials shall be properly insulated to minimize or eliminate corrosion in a marine environment.

C. Submittals:

The Contractor shall make arrangements for the dock manufacturer's representative to be at the site to provide assistance to the Contractor during dock installation. A demonstration explaining the proper techniques and equipment required to adjust, seasonally install and remove, and effectively maintain this docking system shall be given to the Engineer. In addition to this demonstration, the contractor shall provide three (3) typewritten copies of operation and maintenance instructions.

The Contractor shall provide complete design details of the dock structure. Two copies of the design detail shop drawings and two copies of design calculations shall be provided to the Engineer at least 45 working days prior to fabrication. All drawings and design calculations shall be stamped by a Professional Engineer licensed and registered to practice in New York State. The shop drawings shall be subject to the approval of the Engineer.

All exposed surfaces and their welded joints shall be smooth and free of sharp or jagged edges. Surfaces to be welded shall be free from scale, paint, grease or other foreign matter. Welds shall be of sufficient size and shape to develop the full strength of the parts connected by welds. The Contractor shall submit the following documents concurrently with the shop drawings:

1. Welding Procedure Specification
2. Procedure Qualification Report
3. Record of Performance Qualification Test

D. Qualifications:

The installing contractor shall be a qualified Marine Contractor and shall have a minimum of five (5) years continuous experience in commercial dock fabrication and/or installation and be required to submit a list of previous experience on similar projects.

METHOD OF MEASUREMENT

This work will be measured as the number of PREFABRICATED FLOATING BOAT DOCK units satisfactorily furnished and installed.

BASIS OF PAYMENT

The unit price bid shall include the cost of furnishing all labor, materials, and equipment necessary to satisfactorily complete the work.