

32801-12261 TWRA Lake Graham Pier Specifications

See attached diagram for floating fishing pier, walkway, and roof dimensions.

1.1. Scope

The work covered by this Contract consists of furnishing all labor, materials, equipment and supplies and performing all operations necessary to furnish and install a complete floating dock system including piers, anchorage system, ramps, bumpers, cleats, fasteners and other marina hardware as shown on the drawings and specified herein. The pier shall be installed at: 56 Lowell Thomas Drive Jackson, TN 38301.

1.2. Experience

The floating dock system shall be of commercial grade and as provided by a dock manufacturer having no less than ten (10) years experience in the commercial construction of floating docks, manufacturing and installation.

1.3. Workmanship and Quality Design Standards (as deemed applicable by Galva Foam Marine Ind.):

American Institute of Steel Construction - Steel Manual

American Welding Society

Light Gage Structural Institute- Light Gauge Structural Steel Design Manual

ASCE Report No. 50 "Small Craft Harbors", 1969 or Current Edition

American Society of Testing Materials

Steel Conforms to ASTM Designation: A-36 minimum

Galvanizing Conforms to ASTM A-123

- A. *Workmanship shall be first class in all respects and any materials not representing a finished and acceptable product will be rejected.*
- B. *All finished steel members shall be free from twists, bends, distortions and open joints. All steel construction shall be free of sharp edges and burrs, ends of exposed steel members shall be rounded or beveled, and all coping and mitering to be done with care. Projecting materials and burrs which would prevent bearing of the various members on each other shall be removed.*
- C. *All welding shall conform to the requirements of the American Welding Society. Welds shall be a solid and homogenous part of the metals joined and shall be free from pits or scale and shall be full areas and length required to develop the required strength for the intended use.*
- D. *All drilling and cutting of steel done after galvanizing shall be painted with a high zinc dust content paint. All welds over galvanized material shall be thoroughly cleaned and coated with two coats cold galvanizing compound.*
- E. *All connections between modular sections shall occur below deck level. All bolts, nuts*

and washers shall be set square with connecting structural members and drawn tight. Lock washer or other devices shall be used to prevent nuts from loosening after properly tightened. All fasteners to be galvanized.

- F. *All components to be hot-dipped galvanized after fabrication, minimum 2-oz. per square foot coating, per ASTM A-123.*
- G. *The handrails at the gangway, ramp, and dock shall be ADA compliant.*

1.4. Vertical Design Loads

- A. *Dead load shall be the entire weight of the floating piers including utilities, storage lockers, etc., known at the time of Contract.*
- B. *Deck surface and structural frame loading shall be equal to minimum of fifty (50) lbs. per square foot applied to full surface of deck.*
- C. *Access ramps shall be designed for fifty (50) PSF applied to full surface area.*
- D. *Flotation deck live load for uncovered docks shall be thirty (30 PSF) as a standard, applied to the full area of the deck surface. Flotation shall be adequate to maintain a uniform freeboard over the length of the pier. Unless a desired freeboard is specified, the required live load will control.*

1.5. Lumber

Lumber shall be 2" x 6" (nominal) Southern Yellow Pine Grade No. 1, surfaced four sides, conforming in all respects to Southern Pine Inspection Bureau as applicable. All rub-rail and deck timbers shall be pressure-treated with ACQ (alkaline copper quat) with preservation retention of 0.4 lbs. cu. ft. and bear the quality mark of AWPA, standard LP-22 water-borne preservatives.

1.6. Substructure

- A. *Standard-Individual substructure frames shall be welded steel or aluminum, modular box truss in design. All truss diagonals shall be 1/2" diameter solid steel round rod. Main frame trusses shall be 12" deep with welded truss cross members every 4' or less. Top and bottom rails of all trusses shall be 1-1/2" x 1-1/2" x 3/16" angle. Frame members which form a connection or end frame shall be 1-1/2" x 1-1/2" x 3/16" angle. Vertical angles at all frame corners and where end frame connections occur shall be a minimum of 3" x 3" x 3/16" angle. A 1" x 1" x 3/16" diagonal brace shall be provided between all trussed cross members. All components to be hot-dipped galvanized after fabrication, using a minimum coating of 2 oz. per square foot. Custom heavy-duty design to meet severe loadings and special site conditions shall be available upon request.*

1.7. Flotation

- A. *Expanded modified polystyrene billets shall have a 1.1 lb. per cu. ft nominal density of 100% virgin material securely bolted to the steel frame truss. Water absorption shall not to exceed 1 percent by volume per year. ("Modified" means unable to support*

combustion without external heat source).

- B. Encasement shall be high density polyethylene shells consistent with the following standards:

| | |
|---|---|
| Wall Thickness | .15" nominal, (.2"+/- at corners) (.187 and .2 wall available) |
| Molding | Roto- molding |
| Minimum density | .95 gms/cc ASTM D1505-68 |
| Environmental stress cracking | >1000 ASTM D 1963 |
| Tensile strength at yield | 2600 psi ASTM D638 |
| Flexural modulus | 100,000 psi ASTM D790 |
| Arm impact test (-40 degrees F) 1/8" specimen | 70 ft. lbs. |

Poly-shells shall be one-piece roto-molded units. Units filled with expanded in place polystyrene. Expanded polystyrene core material shall not absorb more than 3 lb. per cubic foot of water at seven (7) days as measured by the "Hunt Absorption Test". Flotation units to be securely attached to bottom of frame using threaded fasteners. Freeboard height is dependent on required live load. Flotation device shall carry a 10-year limited encasement warranty to the original purchaser.

- C. *Flotation Integrity: Flotation units shall be designed to maintain desired buoyancy and freeboard even if structurally damaged (i.e. broken in half). Connections of flotation units shall be designed so that the floating dock acts as a unit. One unit does not deflect without adjacent units deflecting and no vertical slip will occur between units when deflecting.*

1.8. Decking

A. *Precast reinforced concrete plank decking made from hard rock aggregate, containing 3/16 min. diameter welded wire mesh reinforcement, 4,000 PSI. Concrete planks shall be a minimum 1-1/2" thick, and have a limited lifetime warranty to the original purchaser. This type of decking pier is excellent for rough water conditions since the weight adds stability. It also dissipates heat well, has a low maintenance factor and allows easy access to utilities.*

B. *2" x 6" nominal southern yellow pine, grade 1, ACQ preserved. Deck shall be attached directly to substructure by means of self tapping torx head screws. 2" x 6" decking will run perpendicular to walkways except for 1' and 2' fingers which will run parallel. All decking may be run parallel upon the State's.*

1.9. Rub-Rail

The dock shall have a horizontal rub-rail of 2" x 6" ACQ conforming to lumber specifications or 2" x 6" wood / plastic / rubber composite running the entire perimeter of the dock. Said rub-rail shall be flush with top of deck material and be attached with self tapping torx head screws. An optional ACQ rubrail material can be added to entirely cover substructure components. Vertical steel angles shall be welded into section siderails on maximum four feet centers when this optional lower rubrail is utilized.

1.10. Aluminum Gangways

Gangway shall be manufactured by ShoreMaster, Inc., or approved equal. Gangway shall be fabricated of 6000 series aluminum compatible with a marine environment. Fasteners shall be stainless steel Type 304.

The walkway surface shall be non-skid aluminum. Guardrail height to be 42 inches, with a horizontal handrail installed at 34 inches. The handrails at the ramp and the dock shall be ADA compliant.

Wheels or rollers shall be non-marring of the flotation surface and rated to carry the dead plus live loading of the gangway.

Hinges for mounting the gangway at its upper end shall be of suitable material and rated to carry the dead plus live loadings of the gangway. Fasteners to mount the hinge shall be supplied by the Contractor.

1.11. Design Loads:

- A. Live Load: The gangway shall be capable of sustaining a uniformly distributed live-load of 50 pounds per square foot.*
- B. Handrail Horizontal Load: Handrails shall be capable of withstanding a 200 pounds concentrated horizontal load applied at the top of the railing.*
- C. Handrail Vertical Load: Handrails shall be capable of withstanding a 50 pounds per foot Vertical loading applied at the top of the railing.*

1.12. Anchorage

Type of anchorage system shall be site specific, to be determined based on water-level fluctuation, actual water depth, basin materials, and topography of land. Said anchorage system shall be designed to resist the specified wind and wave loads at the maximum design water level. The concrete for the anchorage shall be minimum 3000 PSI.

Pier shall be built and ready for angler use within 150 days of Contract award.

