

# SPECIFICATIONS FOR FIXED PIERS, FLOATING DOCKS AND GANGWAYS

## SCOPE

The work covered under this section shall consist of manufacturing and/or supplying of the prefabricated fixed piers, floating docks, gangways, pile guides, cleats, fendering, utility routing/anchorage system and other marine hardware and accessories as may be shown or enumerated on the plans. All materials shall be as manufactured by Gator Dock & Marine, LLC, Sanford, Florida, (407) 323-0190 or engineer approved equal.

## GENERAL

The deck and frame structural components of the floating docks and gangways shall be designed with minimum safety factors on working stress which conform to those set forth in the latest issue of the Aluminum Association "SPECIFICATIONS FOR ALUMINUM STRUCTURES" for buildings and similar type structures. The installing contractor shall be a qualified Marine Contractor or General Contractor licensed by the appropriate governing agency and shall be capable of securing building or construction permits. The manufacturer/supplier shall have a minimum of 5 years continuous experience in commercial pier, dock or gangway fabrication and may be required to submit a list of previous experience on similar projects. If required, the previous record will be submitted to the owner or owner's designated representative 10 working days prior to the bid opening. To ensure that all specified criteria have been met when supplying other than the specified items the following items may be required with the contractor's bid:

1. Dimensional layout of piers, docks, gangways and piles or anchorage systems to be furnished under this contract.
2. Engineering calculations showing compliance with the design criteria specified herein. All calculations will be stamped with the seal of a qualified licensed, professional engineer. Computations shall include as a minimum the following.
  - Compliance with combined live and dead load requirements considering both bending and deflection.
  - Compliance with freeboard requirements under normal load conditions.
3. Typical sections or details of the following:
  - Fixed piers, including pile connectors.
  - Floating docks, including flotation.
  - Finger dock or pier, including connection to main walkway.
  - Gangways, including connections to bulkhead or fixed pier, handrails and handicap ramps.
  - Anchorage system.
  - Utility hangar and access system.
  - Decking material and connection details.
  - Cleats-location and connection details.

## TECHNICAL

The following requirements are a minimum and must be met by each dock fabricator in accordance with the requirements of the section entitled GENERAL.

## MATERIALS

### FRAME

1.1.1. Aluminum extrusions for dock, pier, and gangway structures shall be aluminum alloy 6061-T6 "E" channels extruded in accordance with the requirements of applicable sections of Federal Specifications QQ-A-200. Miscellaneous aluminum may be 6063-T5 or 5052-H32.

### FLOTATION

1.2.1. Flotation shall consist of rigid urethane foam utilizing a two-component polymeric MDI system designed for Marine Flotation applications injected into aluminum shells to 2.0 pounds per cubic foot.

1.2.1.1. Full Float™ dock flotation frame shall consist of a fully encased 6061-T6 box frame of similar design to the floating dock walking surface frame.

1.2.1.2. Not Used.

1.2.1.3. Expanded polystyrene flotation with or without polyethylene casings shall be prohibited

### ACCESSORIES

#### DECKING

1.3.1.1. Aluminum decking shall be symmetrically extruded slats with integrated ribs and mechanical knurling to provide a non skid surface. Decking to be aluminum alloy 6061-T6.

1.3.1.2. Not Used.

1.3.1.3. Not Used.

1.3.1.4. Not Used.

1.3.2. Cleats shall be cast aluminum alloy meeting the requirements of the Federal Specifications QQ-A-571F and QQ-A-601E.

1.3.3. All hardware shall be stainless steel type 304.

### FENDERS

1.3.4.1. Wood side fenders shall be Southern Pine No. 1 Structural (1200# extreme fiber bending) Stress Grade with a minimum CCA content equal to 0.40 pounds per cubic foot or equal. All wood shall comply with American Softwood Lumber Standard PS 20-70. Each piece of lumber shall be identified by the grade and treatment mark of recognized organization or independent agency certified by the American Lumber Standards Committee, Washington, DC to grade the species. All lumber specified for treatment shall be treated to the requirements of American Wood Preservers Bureau AWPB LP-22.

1.3.4.2. When specified by the owner, vinyl bumpers shall be of non-marring marine grade extruded vinyl with minimum 3" vertical face. Standard black vinyl bumper shall be UV stabilized. Optional white vinyl bumper shall be non-yellowing.

## ROLLERS

1.3.5. Rollers for either pile guides or gangways shall be UHMW polyethylene with black ultra-violet light inhibitor added.

## HANDRAILS

1.3.6. Handrails on gangways and piers when specified shall be 6061-T6 aluminum alloy, minimum 1" NPS. When required, additional grab rails, toe curbs, and fishing rails shall be in accordance with applicable sections of the Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities.

## DESIGN

### FRAME

2.1. For fixed piers, gangways, and the structural frame design of floating docks, the aluminum frame and decking shall be designed to withstand the full calculated dead load of all framing & accessories combined with a live load of 50 pounds per square foot. Allowable deflection shall be  $L/180$  where "L" in inches is the freespan between supports for fixed piers & gangways, or the freespan between cross members for floating docks.

### FLOTATION

2.2. All floating docks shall be designed for a minimum freeboard of 8 inches under full dead plus live load, and 10 inches under a dead load plus concentrated load of 400 pounds applied at any location on the dock walking surface. Additional flotation shall be added to support the gangway dead loads without creating undue distortion in the dock.

2.2.1. Full Float™ docks shall be designed for a minimum of 40psf live load providing a minimum of 16" unloaded freeboard.

2.2.2. Not Used.

## ACCESSORIES

- 2.3.1. Cleats shall be designed to withstand a mooring line load of 1500 pounds in any direction.
- 2.3.2. Handrails shall be a minimum of 42 inches in height above the finished walking surface and shall withstand a uniform horizontal load of 20 pounds per linear foot applied at the top of the rail.
- 2.3.3. Hinged or bolted floating dock module connectors shall be able to withstand a load of 3000 pounds applied to the full connector.
- 2.3.4. Anchoring devices for floating docks shall allow free movement of the dock, while minimizing damage due to normal dock movement caused by tides, boat wakes, water fluctuation and seasonal winds. Anchoring devices shall be of sufficient number to restrain a uniform lateral force of 150 pounds per linear foot applied along the entire length of the dock.
- 2.3.5. Utility lines shall meet all governing construction and fire codes. All electrical lines, junction boxes and accessories shall be installed with the strict adherence to the latest edition of the "National Electrical Code".

## FABRICATION

### FRAME

- 3.1.1. All aluminum structural members shall be welded in accordance with the American Welding Society Structural Welding Code D1.2.
- 3.1.2. Individual dock and pier sections shall be sequentially numbered, matched, and pre-drilled in the shop prior to shipment.

### FLOTATION

- 3.2. Flotation: All flotation shall be fully installed in the shop. Selected floats may be removed to facilitate shipping.
- 3.2.1. Full Float™ docks shall have the float fully welded with gussets between the float frame & dock frame at each cross member location or maximum 5' centers.
- 3.2.2. Not Used.
- 3.2.3. Not Used.

## ACCESSORIES

- 3.3.1. Aluminum decking shall be spaced with not more than 3/8 inch air space between the slats. Asymmetric/interlocking decking slats shall be prohibited to prevent water pooling on dock surface. The legs of each decking slat shall be welded to the side members and to any longitudinal with a minimum of 1-1/4 inches of weld per leg. The decking slats shall be placed transversely on the gangway, pier or dock.

3.3.2. Not Used.

3.3.3. Not Used.

3.3.4. Cleats on aluminum decked docks shall be welded with a continuous fillet weld. All cleats shall be installed in locations shown on plans.

3.3.5. Where wood fendering is used the minimum size member shall be 2 x 8, secured at minimum spacing of 4' on center with 3/8" type 304 stainless steel bolts countersunk below the wearing surface of the exposed side.

3.3.6. Handrails shall be installed in locations shown in the plans. Handrails shall be secured in place with two 3/8" stainless steel bolts through the extruded handrail pockets welded to the side rail if a detachable type handrail system is used. Handrails will be welded to the side rails if a truss type system is requested. The type of handrail system shall be the option of the engineer.

3.3.7. Hinge mount extrusions shall be welded to the frame of the dock with a continuous fillet weld unless otherwise shown on the plans. Non-hinged dock module connectors shall be shown on the plans.

3.3.8. Anchoring devices, including pile guides, shall be bolted or welded to the piers and docks in locations and according to the details shown in the plans. Framing shall be braced at pile guides.

## INSTALLATION

4.1. Docks and piers shall be anchored with pile guides or other anchoring devices bolted to the aluminum frame. Floating docks must move freely during the entire cycle of water level extremes with the normal expected wind condition. Utility lines must not be installed on top of the deck or in a location subject to damage during normal use and must be installed to function properly during normal expected water level and weather extremes.

4.2. Gangways shall be securely fastened to the wall or fixed structure as shown on plans. Utilities running on the gangway shall be installed so as not to interfere with the access area of the gangway or to be damaged during normal operation.

4.3. Utility hangars and access panels shall be mounted and located as shown in plans.

4.4. Any potentially corrosive installation of dissimilar metals shall be properly insulated to minimize or eliminate corrosion in a marine environment.