

**SPECIFICATIONS**  
**FOR THE**  
**ALUMINUM DOCKS – FABRICATE & DELIVER**  
**AT**  
**CARNAHAN PARK, TRASK RIVER-MILE 1.4**  
**FOR THE**  
**CITY OF TILLAMOOK**



Approved By: Prepared By:  
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Oregon State Marine Board  
Senior Facilities Engineer



Stuart Jantze  
Boating Facilities Designer  
01 January 2016

**AS ADVERTISED**

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FACILITY IMPROVEMENT  
AT CARNAHAN PARK,  
TRASK RIVER – MILE 1.4  
FOR THE  
CITY OF TILLAMOOK

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## SECTION 01010 - SUMMARY OF WORK

### PART 1 - GENERAL

#### 1.1 DESCRIPTION OF WORK

- A. Location of work is at Carnahan Park, Trask River – Mile 1.4, Tillamook County, Oregon.
- B. Major project components are as follows:
- Aluminum boarding docks manufacturing, delivery, and offloading.
- C. Project is for The City of Tillamook, referred to hereafter as Owner.
- D. The Owner's Representative is:
- |                      |   |
|----------------------|---|
| Kate Laxon           | Phone: 503.374.1824   |
| Public Works         | Fax: 503.842.3445   |
| City of Tillamook    | email: <a href="mailto:klaxson@tillamookor.gov">klaxson@tillamookor.gov</a> |
| 201 Laurel Ave       |   |
| Tillamook, OR, 97141 |   |
- E. The Engineer of Record is:
- |                             |   |
|-----------------------------|---|
| Jeffery W. Smith, P.E.      | Phone: 503.378.2607   |
| Boating Facilities Engineer | Fax: 503.378.4597   |
| Oregon State Marine Board   | email: <a href="mailto:jeff.smith@state.or.us">jeff.smith@state.or.us</a> |
| P.O. Box 14145              | 435 Commercial Street NE  |
| Salem, OR 97309-5065        | Salem, OR   |
- F. The Engineer's Representative is:
- |                             |   |
|-----------------------------|---|
| Stuart Jantze               | Phone: 503.378.2604   |
| Boating Facilities Designer | Fax: 503.378.4597   |
| Oregon State Marine Board   | email: <a href="mailto:stuart.jantze@state.or.us">stuart.jantze@state.or.us</a> |
| P.O. Box 14145              | 435 Commercial Street NE  |
| Salem, OR 97309-5065        | Salem, OR   |
- G. This project is bid out as a **LUMP SUM CONTRACT** and the Contractor shall furnish all labor, equipment, and materials necessary to complete work in accordance with the drawings, specifications, and terms of the contract.
- H. Value Engineering, whereby the Contractor suggests alternate design and/or materials for a reduced cost and share in the savings, is **NOT** a component of this project contract.

## 1.2 DRAWINGS

A. The following seventeen [17] drawings hereby form a part of this contract:

1. 2915 – 1550 – 01 Title Sheet
2. 2915 – 1550 – 02 Dock Layout Plan
3. 2915 – 1550 – 03 Standard Dock Plan & Elevation
4. 2915 – 1550 – 04 Dock w/ External Pile Hoop (Right Side)
5. 2915 – 1550 – 05 Dogleg Dock (D04 – Right Side)
6. 2915 – 1550 – 06 Aluminum Dock Sections
7. 2915 – 1550 – 07 Aluminum Dock Shell Details
8. 2915 – 1550 – 08 Structural Layout
9. 2915 – 1550 – 09 Structural Details
10. 2915 – 1550 – 10 Foam, Concrete, & Wale Details
11. 2915 – 1550 – 11 Topside Layout
12. 2915 – 1550 – 12 Fiberglass Deck Panel Details
13. 2915 – 1550 – 13 End Dock Modifications
14. 2915 – 1550 – 14 Abutment Transition Plate
15. 2915 – 1550 – 15 Hinge Barrel Assembly Details
16. 2915 – 1550 – 16 External Pile Hoop Assembly Details
17. 2915 – 1550 – 17 Pile Hoop and Hinge Barrel Stiffeners

END OF SECTION 01010

## SECTION 05150- ALUMINUM BOARDING DOCKS

### PART 1 - GENERAL

#### 1.1 DESCRIPTION OF WORK

- A. The work under this item shall consist of all labor, materials, tools and equipment necessary to fabricate, assemble and furnish aluminum boarding docks, transition plates, external pile hoops and all other miscellaneous dock items as shown on the drawings.
- B. Work also includes the delivery and off-loading of the dock system at the site of installation. Work does not include the installation of the dock system. Each completed 6'x20' dock has a theoretical dry weight of approximately 3,800 lbs.
- C. The manufacture of the complete dock system shall be performed by experienced personnel meeting the qualifications listed in this specification.
  - 1. Dock manufacturer must be experienced and regularly engaged in the manufacture of aluminum structures with a minimum of five (5) years consecutive experience.
  - 2. Welders shall be currently certified in accordance with the latest AWS structural welding codes (AWS D1.1 for Steel and AWS D1.2 for Aluminum) and have been regularly engaged in welding for a period of at least three (3) continuous months.

#### 1.2 DOCK CONFIGURATIONS

- A. Individual docks are 6'x20' (nominal) and designated as "standard". Dock quantities with the various individual modifications are shown on the drawings.
- B. Reference should be made to the dock layout plan for location & connection between the dock sections. The fabricator shall dry fit the docks to verify hinge connections and pile locations prior to delivery.

#### 1.3 REFERENCES

- A. AWS D1.1 -Structural Welding Code, Steel, American Welding Society
- B. AWS D1.2 - Structural Welding Code, Aluminum, American Welding Society
- C. ASTM Standards- American Society of Testing and Materials
- D. International Building Code (2009 Edition), International Code Council
- E. Specification for Aluminum Structures, Aluminum Association
- F. Specification for the Design, Fabrication and Erection of Structural Steel for Buildings – American Institute of Steel Construction

#### 1.4 RELATED DOCUMENTS

- A. The provisions and intent of the Contract, including the General Conditions, Supplementary Conditions and General Requirements apply to this work as if specified in this section.

## 1.5 SUBMITTALS

- A. Experience: Within seven (7) days after the issuance of the Notice of Intent to Award, the Dock Manufacturer shall submit written documentation to show that the Dock Manufacturer has been regularly engaged in the manufacture of aluminum structures for a minimum of five (5) years.
- B. Shop Drawings: Within twenty (20) days after issuance of the Notice to Proceed, complete dock shop drawings shall be submitted by the dock manufacturer for review and acceptance. The engineer will provide electronic copies of the construction drawings, after the Notice to Proceed, to assist in the creation of shop drawings. The shop drawings shall include all necessary layout plans, elevations, cross-sections, fabrication details, dimensions, materials, hardware, and finishes of all manufactured dock components to fully describe the work. Fabrication of the docks shall not begin until the shop drawings have been reviewed and returned as accepted.
1. One (1) set of shop drawings shall be submitted electronically for review. One set of shop drawings will be returned after review and comments.
  2. Review and acceptance of shop drawings shall be for general conformance only. It shall remain the responsibility of the Contractor and manufacturer to comply with all Contract requirements.
- C. Product Data: Submit manufacturer's data sheets or catalog cuts of all materials and products to be fabricated and installed under this section for approval prior to ordering.
1. Chosen Decking material option (i.e. composite lumber, aluminum plank, or pultruded fiberglass grating) and associated fasteners
  2. Rubstrips
  3. UHMW Polyethylene
  4. Expanded polystyrene foam
  5. Concrete mix design
  6. Barrier coating material for concrete/aluminum isolation
  7. Zinc Anodes
  8. Bullrail ends (if used)
  9. Perforated sheet for drainage holes
  10. All fastening hardware (nuts, bolts, screws, washers)
- D. Test Reports and Certificates of Compliance: Submit test reports and mill certificates for all structural materials for approval prior to ordering. Test reports and certificates shall substantiate the required mechanical properties of all structural materials incorporated into the work.
1. Structural Aluminum
  2. Stainless Steel

### 3. Fasteners

- E. Welding Procedures and Welder Qualifications: Submit weld procedure specifications (WPS) and procedure qualification records (PQR) for all structural welds and welders qualification test records or certificates for all persons anticipated to perform structural welding in conformance with AWS D1.2. All qualification documentation shall be submitted for review and approval prior to the beginning of any work on the docks.
- F. Manufacturer's Instructions: Submit all manufacturer's suggested handling, shipping and installation procedures and maintenance recommendations prior to the shipment and installation of the dock system.
- G. Inspections: The Owner, Engineer of Record, or their representative(s) reserves the right to inspect the construction at any time throughout the manufacturing process. Submit and keep updated the manufacturing schedule for all dock components so that inspection visits can be arranged at appropriate times.

### 1.6 MANUFACTURER'S RESPONSIBILITIES

- A. The manufacturer shall be solely responsible for the means, methods, techniques, sequences and procedures used for the fabrication of the docks and related components. The manufacturer shall be responsible for overseeing that the finished work complies accurately with the Contract Drawings, Specifications and the approved Shop Drawings.

Note: A suggested sequence of assembly is shown on the drawings but the actual sequence may vary. Furthermore, a series of 3-D dock renderings is provided at the end of this specification section that illustrates a suggested sequence of assembly.

- B. The manufacturer shall furnish all necessary materials, equipment, labor, supervision, testing, inspections, and incidentals necessary to complete the work identified on the Drawings and Specifications.
- C. Inspections and Quality Control: The manufacturer is responsible for adherence to internal quality control procedures and all independent inspections from a qualified inspection service as listed here. Submit all inspections reports within 48 hours of inspection.
  - 1. Internal welds shall be visually inspected for compliance with the drawings and specifications prior to placing concrete and foam. Any welds found to be deficient shall be repaired to the satisfaction of the independent welding inspector.
  - 2. Concrete shall be visually inspected prior to placement of foam. Inspector shall verify presence of barrier coating, placement of concrete to top of bottom stiffeners.
  - 3. Foam floatation shall be visually inspected for proper and complete installation per the drawings and specifications.
  - 4. Internal welds of all top covers, spacers and deck supports shall be visually inspected for compliance with the drawings and specifications prior to installing decking. Any welds found to be deficient shall be repaired to the satisfaction of the independent welding inspector.

5. External welds shall be visually inspected for compliance with the drawings and specifications prior to installing wales and rubstrips. Pile hoop and hinge barrel stiffeners shall be inspected prior to installation of the overlaying wale support. Any welds found to be deficient shall be repaired to the satisfaction of the independent welding inspector.
6. All critical dimensions shall be verified (i.e. shell length, width, height, pile hoop stiffeners and pile hoop mounting plates).

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. General: All materials to be incorporated in to the work shall be new and meet acceptable industry standards for condition, appearance and straightness. All exposed edges shall be smooth and free of sharp edges.
- B. Aluminum:
  1. All structural members, bars and plates shall be ASTM B209, alloy 5086-H116 with the exception of the following components which shall be alloy 6061.
    - (a) Hinge Barrel Assemblies (e.g. barrel filler plates, barrel top plates, barrel gussets, barrel backing plates)
    - (b) External Pile Hoop Assemblies
    - (c) Transition Plates
  2. Round tube shall be ASTM B221, alloy 6061
  3. Bullrail Ends:
    - (a) Ends may be purchased pre-formed from 6063 aluminum alloy with a wall thickness no less than 0.125" and welded to all straight runs of 6061 round tube. Bullrail ends shall be 2" round tube with a 2" inside radius and no tangents. Bullrail ends shall be R&B Wagner part number 7972 or approved equal. Product is available from Wagner Companies 1-888-243-6914 [www.wagnercompanies.com](http://www.wagnercompanies.com).
    - (b) Alternatively, ends may be formed from bending straight sections of 2" tube to the dimensions and radius shown on the drawings.
  4. Standard extruded profiles (where allowed) shall be ASTM B308, alloy 6061
- C. Stainless Steel: All stainless steel shall be type 316 unless otherwise noted on the drawings. All fasteners connecting to aluminum shall be stainless steel. All stainless steel nuts shall either be self-locking "nylock" type or have spring lock washers.
- D. Polyethylene: All polyethylene components shall be virgin or reprocessed, ultra-high molecular weight (UHMW) polyethylene and shall be fully or partially cross-linked. All components exposed to sunlight shall be **ultra violet stabilized and** black in color (i.e. pile pocket wear pads, hinge pin spacers and corner blocks). Hinge barrel sleeves and grounding rails do not have to be UV-stabilized and may be white in color.

- E. Foam Floatation: Floatation blocks shall be expanded polystyrene, sizes as shown on the drawings. The foam shall be Type 1 and weigh 1.0+/- pounds per cubic foot in accordance to ASTM C578. Water absorption of foam shall be four percent (4%) or less by volume. Floatation blocks are not required to be shrink wrapped or otherwise encased prior to installation.
- F. Wales: Wales (composite lumber) shall be Choice Deck Foundations deck board or approved equal. Recycled wood-plastic composite lumber used for all wales shall meet the following qualifications:
1. Manufactured from at least 90% recycled-content, wood-plastic composite. Composite shall be 50% recycled plastic +/- 10% and 50% waste wood fiber +/- 10%.
  2. Color shall be a shade of brown. All boards shall be the same color.
  3. Finish shall be non-slip wood grain.
  4. Dimensions shall be 1" actual thickness (no tolerance) and 5½" wide +/- ¼".
  5. Have a solid plank cross sectional area.
  6. Have square (nominal, less than 1/8" radius actual) corners.
- G. Decking: Shall be pultruded fiberglass grate meeting the following requirements: Fiberglass deck grates shall be ADA compliant manufactured from pultruded polyester resin (SPF), with a product designation of T-1210, 12% open space ( $\frac{3}{16}$ "- ¼" clear spacing between top of bearing bars), 1" bearing bar height, 1½" bearing bar width, with a coarse grit slip-resistant surface, gray in color, with corrosion resistant fasteners. Possible product suppliers include Fibergrate ([www.fibergrate.com](http://www.fibergrate.com)), McNichols ([www.mcnichols.com](http://www.mcnichols.com)) or AMD Grating ([www.amdgrating.com](http://www.amdgrating.com)). Custom fasteners may be required as shown on drawings.
- H. Grounding Rails: Grounding rails shall be UHMW-PE (1" thick) meeting the same requirements as polyethylene per Section 2.1 D above except no ultra violet stabilization is required.
- I. Stainless Steel Screws: Composite lumber wales and UHMW-PE grounding rails shall use fasteners designed specifically for attachment of such materials to aluminum framing. Fasteners shall be DeckFast Metal Deck Screws (epoxy coated 410 stainless steel, 10x1-5/8", T-20 star recess, color to match lumber), or approved equal, available from Starborn Industries, 45 Mayfield Avenue, Edison NJ 08837, (732) 381-9830, [www.starbornindustries.com](http://www.starbornindustries.com).
- J. Concrete Ballast: Concrete may be supplied from a central ready-mix plant regularly engaged in the production of concrete or mixed on-site using commercially available bags of concrete mix. Concrete shall have a minimum compressive strength of 3500 psi and a unit weight of 140-145 pcf.
- K. Rubstrips: Rubstrips shall be Medium Dock & Post Bumper, Model DB3.CU, one continuous piece the entire length of the float. Bumpers shall be ordered to lengths required and have factory finished ends. Product is available from Taylor Made Products, <http://www.taylormadeproducts.com>, 1-800-628-5188.

- L. Zinc Anodes: Zinc anodes shall be 3"x6"x $\frac{3}{4}$ " bolt-on type with galvanized steel inserts, model ZHC-3H, or approved equal, available from BoatZincs, 53 Knoll Trail, Acton, MA 01720, (978) 841-9978, [www.boatzincs.com](http://www.boatzincs.com).
- M. Drainage Hole Screening: Drainage holes in the lower flange of all wale supports shall be covered with screening material welded to the inside of the wale support. Screening material shall be 0.063" gauge aluminum sheet with round  $\frac{5}{32}$ " diameter perforated holes on  $\frac{3}{16}$ " staggered centers.
- N. Boating Regulatory Signs: Furnish and install dock mounted signs as indicated on the drawings. Signs shall be purchased from Oregon Corrections Enterprises, 777 Stanton Boulevard, Ontario, Oregon, 97914. Contact Ramona Erickson at telephone 541-881-5466 or FAX 541-881-5494 or [rerickson@oce.oregon.gov](mailto:rerickson@oce.oregon.gov). Substitutions will not be permitted.

## 2.2 FINISHES

- A. Interior: All interior aluminum surfaces and components of each dock shall be mill finish. Mill stamps shall not be removed, but shall be oriented to be as least noticeable as practical.
- B. Exterior: All exterior aluminum surfaces and components (e.g. bullrails, wale supports) shall be mill finish with the following exceptions. The shell top flange at each end of the dock, hinge barrel assemblies, barrel filler plates and transition plate shall be coarsely sandblasted to provide a non-slip surface where foot traffic is expected.
- C. Barrier Coating: Barrier coating between aluminum and concrete ballast shall be a bituminous paint, CRL bituminous coating or approved equal, available from C.R. Laurence Co. 23000 64<sup>th</sup> Avenue S Kent, WA 98032, (253) 850-5800, [www.crlaurence.com](http://www.crlaurence.com). Alternatively, the barrier coating may be a high performance, chemically cured, rust inhibitive epoxy primer for exterior aluminum surfaces that is compatible with concrete and suitable for wet environments. Product shall be Devran 201H Epoxy Primer or approved equal, available from International Paint ([www.international-pc.com](http://www.international-pc.com)).

## PART 3 - EXECUTION

### 3.1 FABRICATION AND WORKMANSHIP

- A. General:
  1. The manufacture and fabrication of the docks and its related components shall conform to the latest edition of the Aluminum Construction Manual, the AISC Manual of Steel Construction and all other applicable industry standards.
  2. All fabrication shall conform to the Contract Documents, these specifications and the approved shop drawings.
  3. Fabrication details, materials, finishes and colors shall be consistent throughout.
  4. All structural members shall be the size, length, wall thickness and alloy as shown in the approved shop drawings.

5. All cut edges shall be clean and true, free of burrs. Flame cutting is not permitted and all holes shall be punched or drilled.
6. Cap all open ends of tubular members as shown in the drawings and grind smooth. Provide ½" diameter weep holes in bottom ends of all closed aluminum tubes as required for venting and drainage.
7. Inside of all docks shall be thoroughly cleaned to remove all metal filings, dust, grease, concrete residue, metal scraps and dirt prior to applying a barrier coating and installing foam blocks.
8. The completed docks and other components shall be supported on timber dunnage or other appropriate means to prevent direct dock-to-ground or dock-to-dock contact and to prevent damage during fabrication, storage, delivery, off-loading and on-site stockpiling.
9. All completed docks shall bear a permanent decal or identification plate listing name of manufacturer, date of manufacture, live load rating (20 psf), a unique identifying serial number and sequence number.

B. Forming:

1. Shell: The bottom, sides and top flanges of each shell section shall be continuous by bending 4' x 10' or 8' x 10' sheets of 3/16" plate cut to length to meet the dimensional requirements as shown on the drawings. All bends shall be 90 degrees with ½" inside radii.
2. Shapes:
  - (a) All channels, angles, and rectangular tubes shall be formed by bending plate or flat bar unless shown otherwise on drawings. All bends shall be 90 degrees with ½" inside radii. Alternatively, shapes may be extruded provided they meet the dimensional and alloy requirements as shown on the drawings and specified.
  - (b) All shapes shall be full length to the maximum extent possible. Wale supports and deck supports may be fabricated from the least number of shorter pieces welded together. Any weld joints in the deck supports shall be centered over a bulkhead flange. Any weld joints in the wale supports shall be offset from the shell joint as shown on the drawings.
3. Round Tube:
  - (a) All round tube shall be extruded. Hinge barrels shall be 6061 alloy.
  - (b) Bullrails shall be continuous (no splices) between the end posts prior to the terminating radiused end. Use of factory formed elbows is allowed (See 2.1 B.3). Elbows or formed bends shall be fully welded to all straight sections of round tube and to the top flange of the dock shell.
  - (c) It should be noted that no pipe is used in the dock design.

C. Welding:

1. All welding shall conform to the latest editions of the AWS structural welding codes, including the repair of defective welds.
2. All welding shall be 100% visually inspected by a manufacturer provided, AWS qualified, inspector from an independent testing company. See 1.6 for details.
3. All welding shall be performed in a temperature controlled, shop environment by AWS qualified and approved structural welders using qualified and approved welding procedures and welding equipment.
4. Welding shall be carried out in a systematic sequence planned to minimize distortion and residual stress. Structure shall be fitted without excessive forcing before welding. Welds are to be cleaned and excessive roughness or spatter is to be removed. Temporary welds incident of erection are to be carefully removed and flushed off by chipping or grinding. Finished welds are to present a neat workmanlike appearance.
5. The preferred filler wire for all aluminum welding shall be ER5183. However, ER5356 is an acceptable alternative.
6. Weld spatter and slag shall be removed.
7. Weld continuous all connections unless otherwise shown in the drawings.
8. Any welding, done after the installation of the foam flotation blocks, is to be performed in a manner which does not damage or cause burning of the foam. The Manufacturer is fully responsible for maintaining the integrity of the foam throughout the fabrication process.

D. Decking:

1. All decking shall be non-skid and installed flat and true without intentional changes in slope or tripping hazards and compliant with accessibility standards.
2. All decking shall be installed with stainless steel fasteners made specifically for the type of decking material being installed and for attachment to aluminum structure.
3. Pultruded fiberglass grating shall be installed in as large of panels as practical with the bearing bars oriented perpendicular to the span direction of the dock. The affected ends of any field or shop cutting of fiberglass grate bars shall be sealed with catalyzed resin sealant as recommended by the grating manufacture.

E. Fasteners:

1. All fasteners shall be the size and type shown in the drawings.
2. Washers are required under the heads and nuts of all fasteners unless noted otherwise in the drawings.
3. All fasteners shall be appropriately fully tightened in accordance with applicable industry standards and practices.

4. Any fastener connecting dissimilar metals shall be stainless steel or electrically isolated to prevent corrosion.
  5. Any fastener in a walking surface shall be flush with, or recessed below, the surface or concealed.
  6. All threads to be liberally coated with a marine grade anti-seize compound prior to installing nuts.
- F. Barrier Coating: Apply a continuous coat of bituminous paint or epoxy primer to the inside bottom and sides of shell, bulkheads and bottom stiffeners only to the extent that concrete will come in contact with the aluminum surfaces. Paint may be applied by spray, brush or roller and at a rate per manufacturer's recommendation. Allow paint to dry and cure per manufacturer's recommendation prior to placing concrete ballast.
- G. Concrete Ballast: Place concrete evenly in bottom of shell up to and level with tops of bottom stiffeners.
- H. Foam Floatation: Foam floatation blocks shall be placed using the sequence shown on the drawings. The design allows for a  $\frac{1}{8}$ " space between the top of the foam and the underside of the bulkhead flanges and end stiffeners to allow for installation of the  $\frac{1}{8}$ " thick aluminum top covers.
- I. Screened Drainage Holes: Holes in the lower flange of the wale supports are critical for drainage. Each drain hole shall be covered with perforated aluminum sheet per specifications and details shown on the drawings.
- J. Wales and grounding rails: Wales and grounding rails shall be ripped to finish widths and edges either radiused or left square depending on the application as shown on the drawings.
- K. Rubstrips: Install top of rubstrip along both sides of dock flush with top of composite wales using the supplier's recommended "fold-over method" as shown on the drawings. Attach with 2 rows of #8 stainless steel screws, 4-inches on center spacing. Also install a rubstrip across the off-shore end of last dock. Ends of the rubstrip shall be finished by the manufacturer.
- L. Pile Hoop & Hinge Barrel Stiffeners: External pile hoops and dogleg dock hinge barrels require installation of structural stiffeners prior to installation of the wale supports. Each stiffener is a C5x9 aluminum structural channel welded to the dock shell at the locations shown on the drawing prior to installation of the wale support. The flanges of the channel will require trimming so that the outside face of the channel web is flush with the inside face of the wale support. Slots are cut in the wale support to provide slot welding of the wale support to the stiffener as shown on the drawings.
- M. External Pile Hoops: Weld external pile hoop mounting plates to the wale support at locations as shown on the drawings. Careful attention should be given to which side of the dock the hoop is to be installed and distance from the shore and off-shore ends. Adjust lengths of wales and rubstrips as required.
- N. Off-Shore End of Last Dock (D08): The off-shore end of the last dock (D08) requires modifications. In place of the off-shore end hinge barrel assembly, fabricate and install a wale support, wales, rubstrip, bullrail, sign post and corner wear blocks as shown on the drawings.

- O. Shore End of Dogleg Dock (D04): The shore end of the dogleg dock (D04) requires modifications. In place of the shore end hinge barrel assembly, fabricate and install a wale support, wales, rubstrip, bullrail, and one (1) corner wear block as shown on the drawings. Also install a hinge barrel assembly to the shore side of the dock and modify wales and rubstrips as shown on the drawings. In addition, this dock requires modified bullrails (both sides) for wheelchair access as shown on the drawings.
- P. Shore End of First Dock (D01): The shore end of the first dock (D01) requires modification for transition plates. In place of the standard hinge barrel assembly, fabricate and install a transition plate hinge barrel assembly, transition plate and hinge pin as shown on the drawings.
- Q. Hinge Barrel Isolators: UHMW-PE bushings, sleeves and spacers shall be fabricated from solid material per details shown on the drawings. Isolators protect against metal-to-metal contact and provide a wear surface between hinge barrels and hinge pins.
- R. Boating Regulatory Signs: Attach signs to sign post as indicated on drawings using stainless steel or aluminum rivets. Install signs level and plumb with sign surfaces free from distortion or other defects in appearance.

### 3.2 DELIVERY

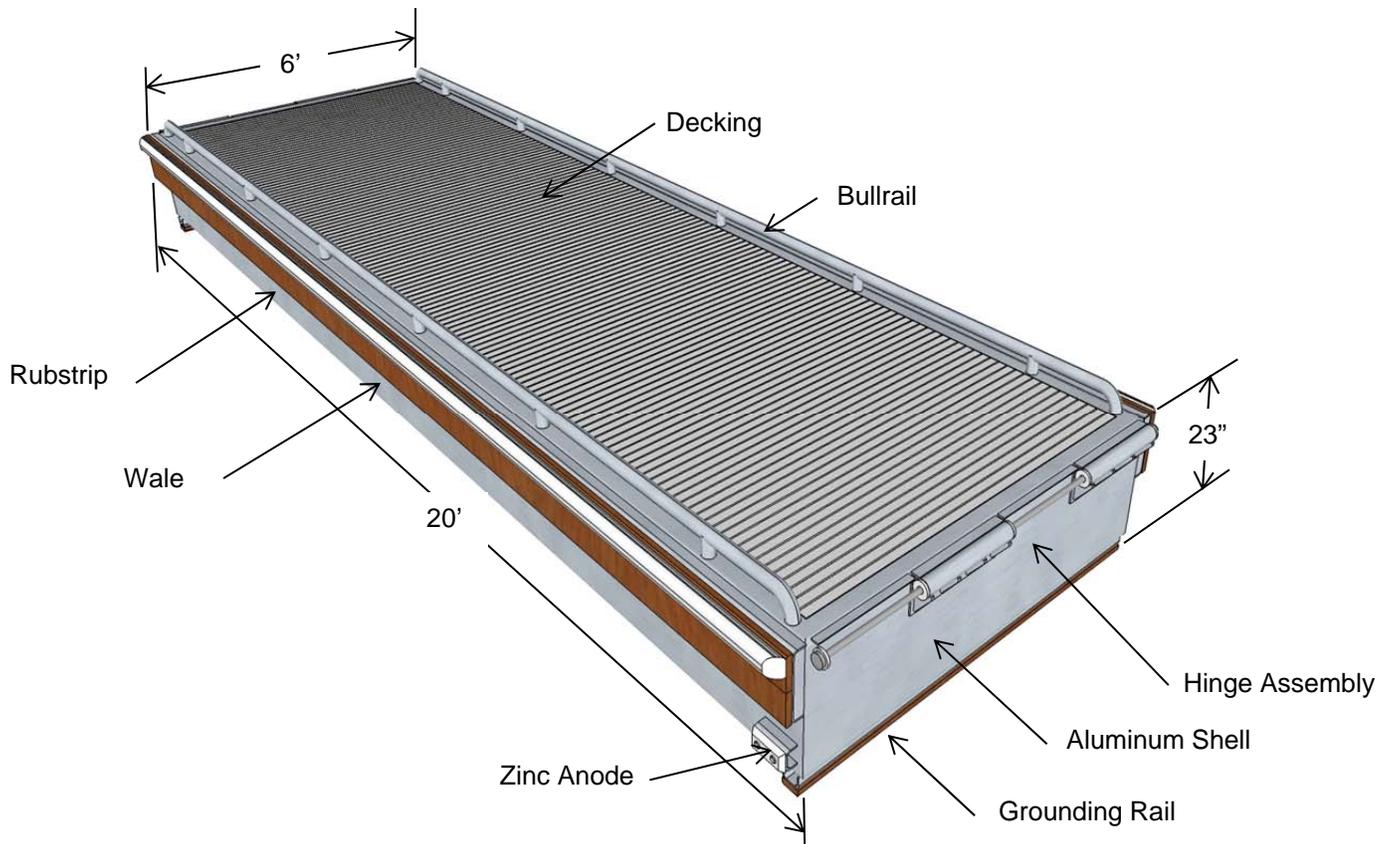
- A. The aluminum boarding docks shall be transported, lifted and stored in accordance with good industry practices, the handling instructions of the manufacturer and as specified herein. Stacking of one dock on another (2 docks total) is permitted with proper and adequate blocking and must not be supported by the bullrails of the lower dock. Additional blocking at the mid-span of the lower dock's shell bottom must be provided.
- B. Rubstrip material shall be protected from damage, compression or discoloration caused by tie-down straps used during transport. Adequate blocking shall be used to keep tie-down straps from contacting the rubstrips.

### 3.3 WARRANTY

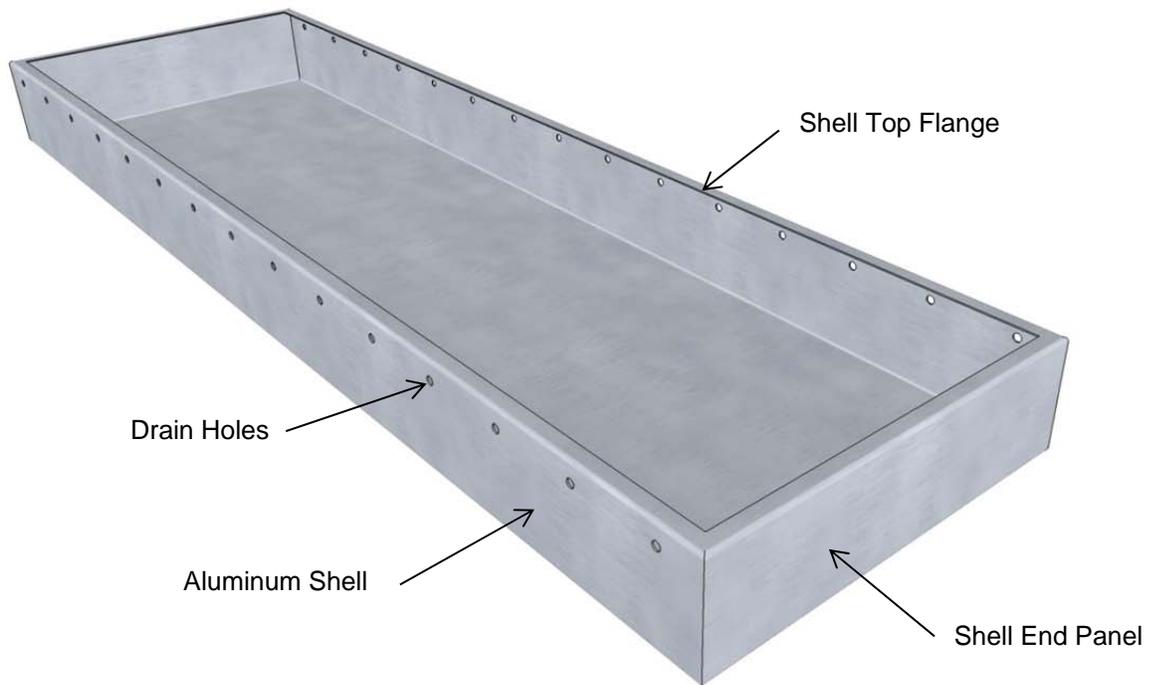
- A. The manufacturer of the aluminum boarding docks and their related components shall provide the Owner with a written warranty that the aluminum boarding docks and any related components shall be free of defects in materials and workmanship for a period of two (2) years, unless the Contract requires a more stringent or longer warranty.
- B. The warranty period shall commence upon delivery and acceptance of the docks and all related components by the Owner.

### 3.4 SUPPLEMENTAL DRAWINGS

- A. The following 3-D Dock renderings are provided solely for the purpose of visualizing (1) a suggested sequence of dock assembly and (2) general position of dock components within the dock structure. These renderings are not intended for use as construction or shop drawings.



01 - DOCK OVERVIEW

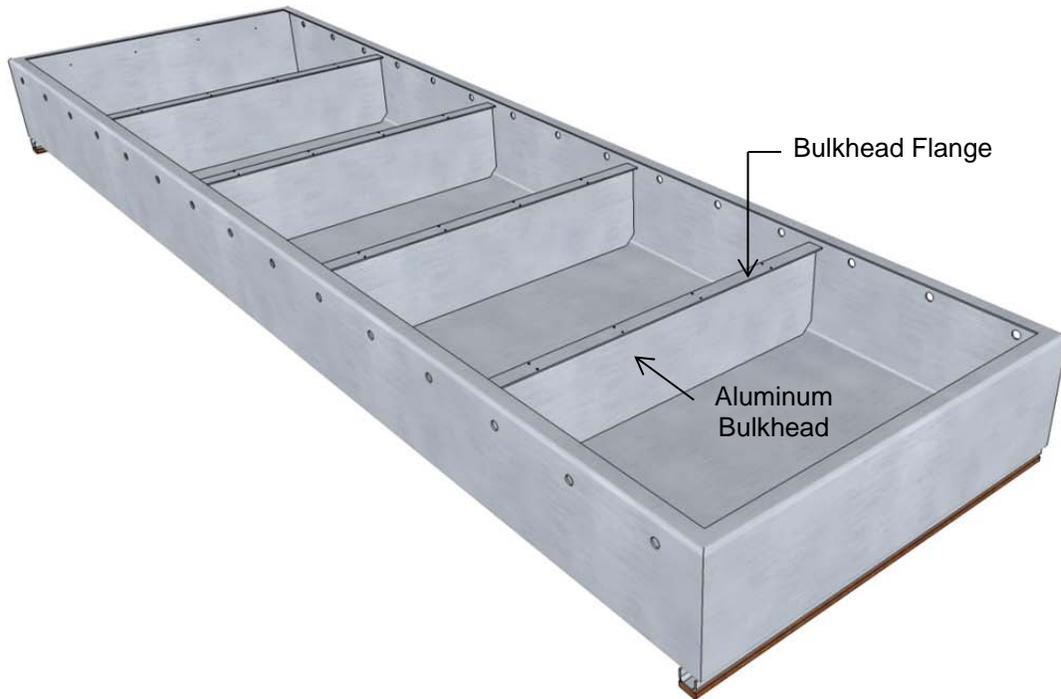


02 - SHELL ONLY



Aluminum Grounding Rail  
Supports and Grounding Rails

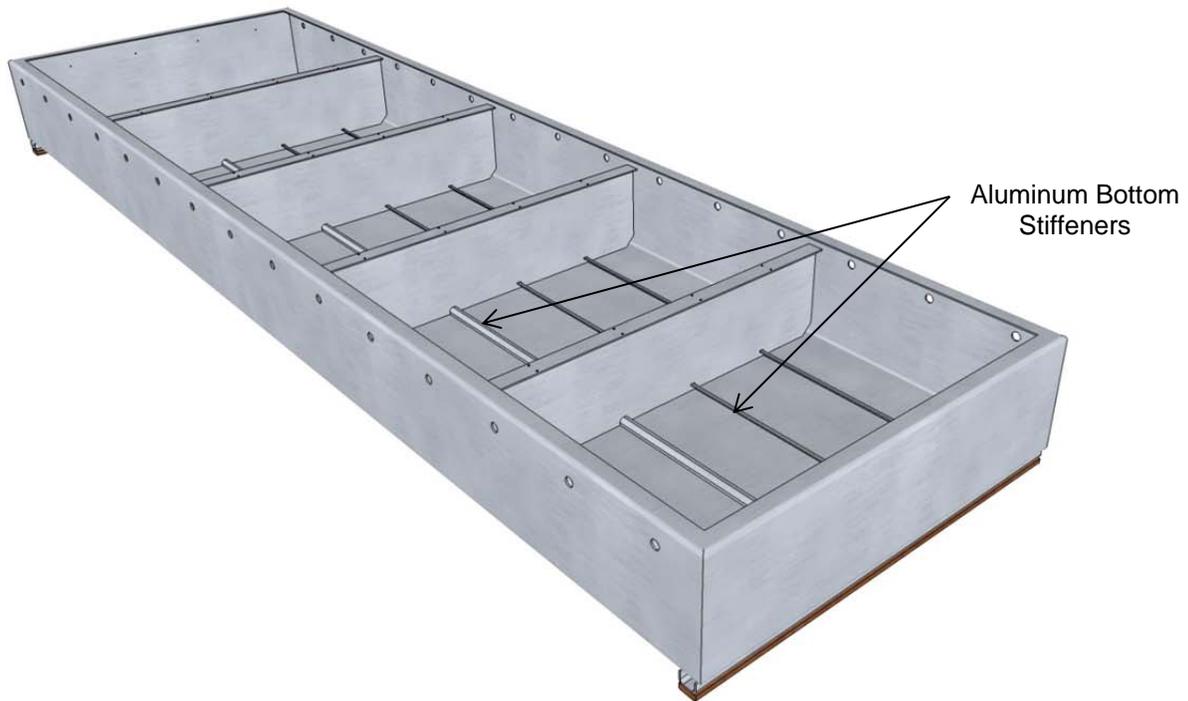
### 03 - ADD GROUNDING SUPPORTS & GROUNDING RAILS



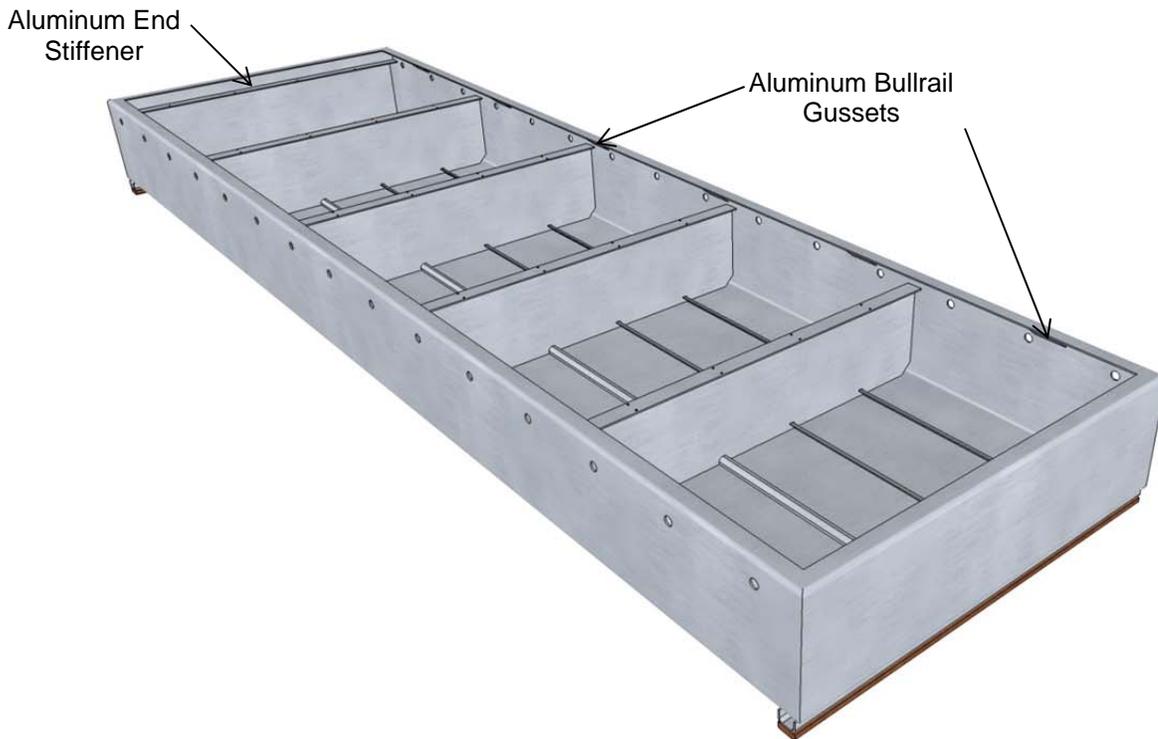
Bulkhead Flange

Aluminum  
Bulkhead

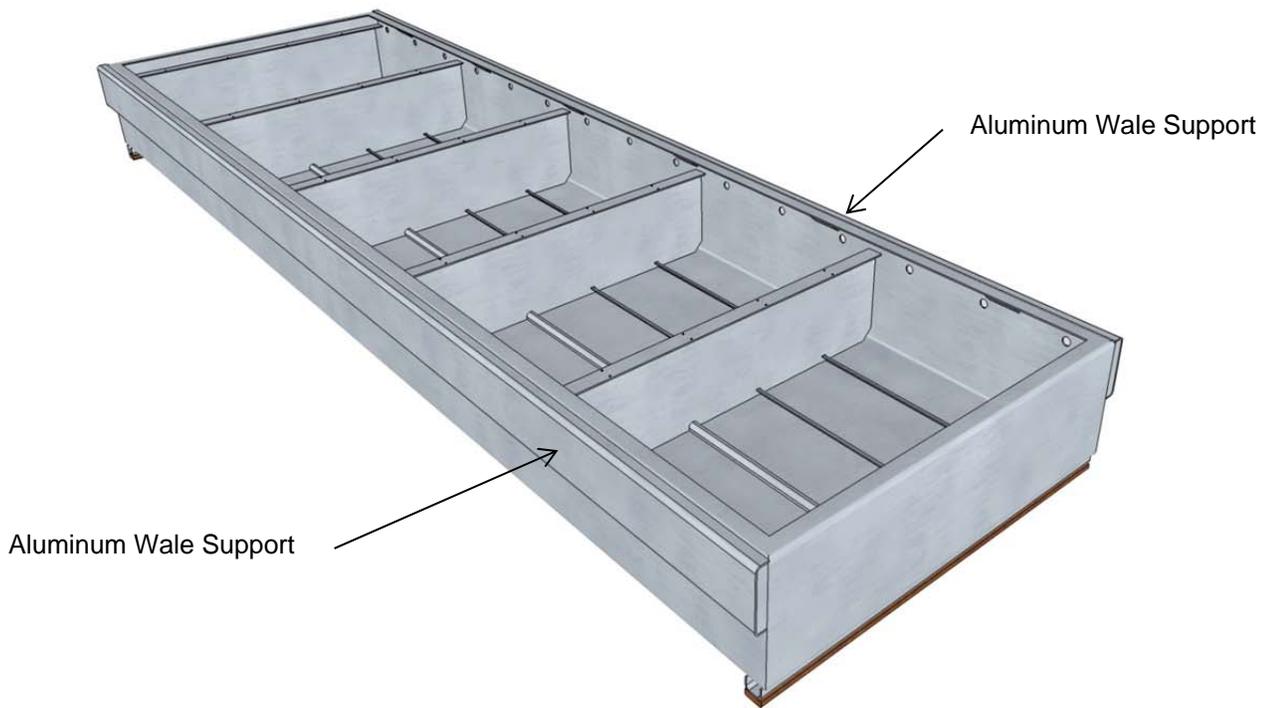
### 04 - ADD BULKHEADS



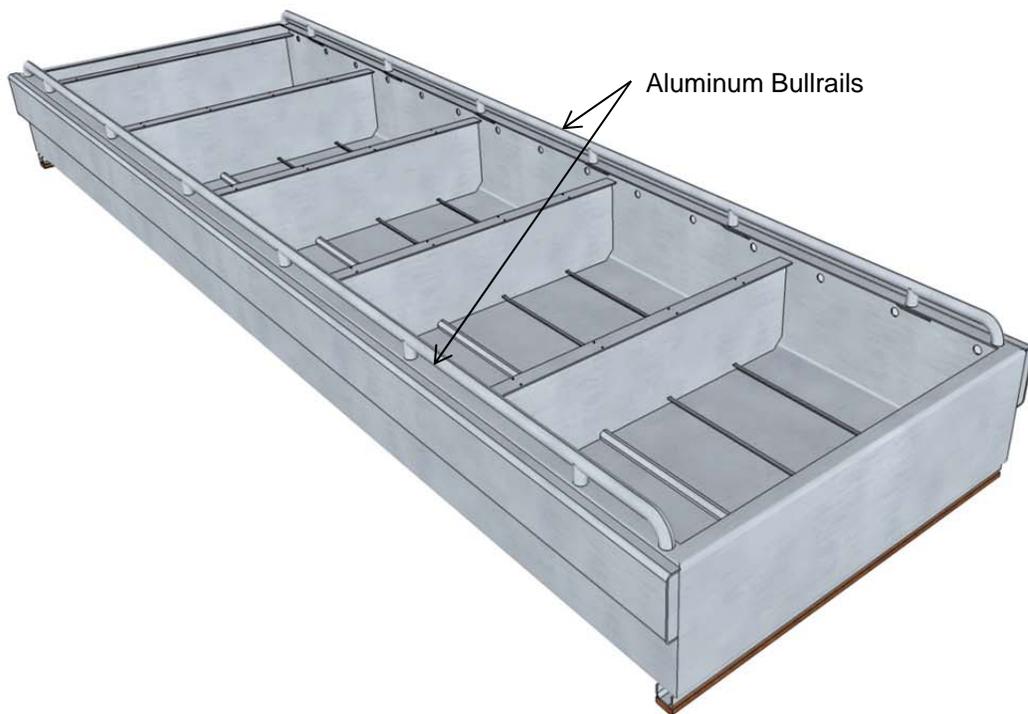
### 05 - ADD BOTTOM STIFFENERS



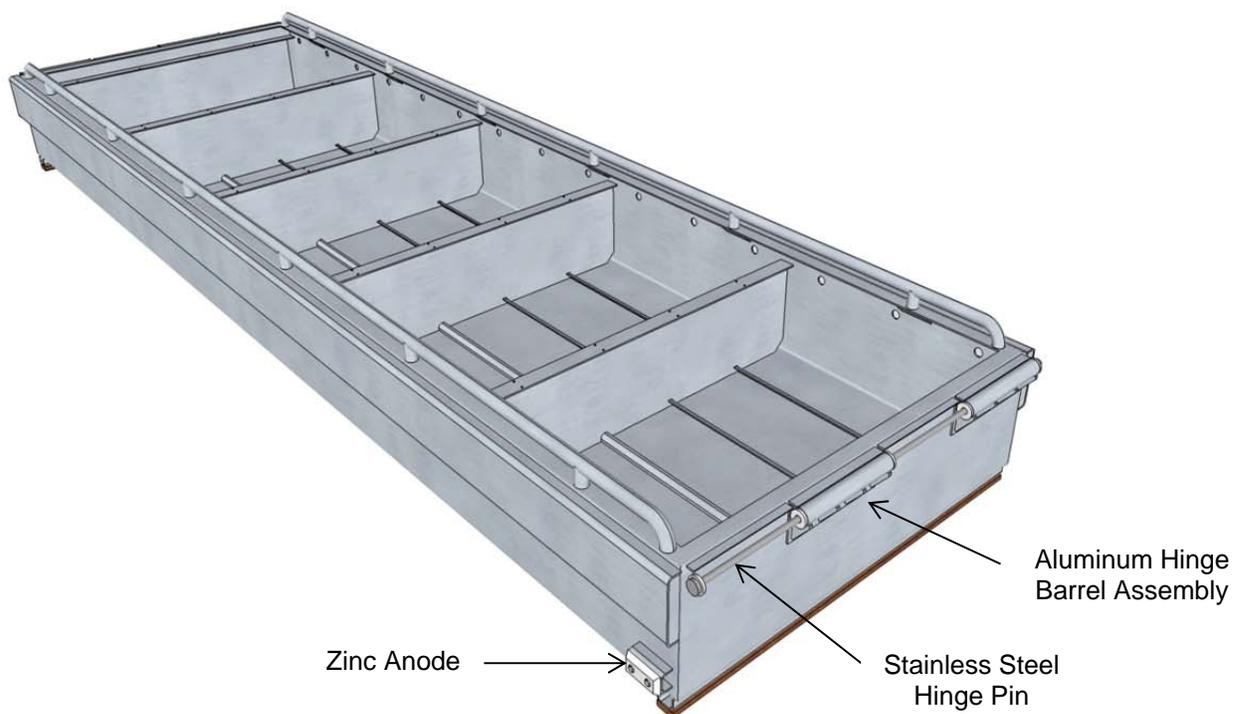
### 06 - ADD END STIFFENERS & BULLRAIL GUSSETS



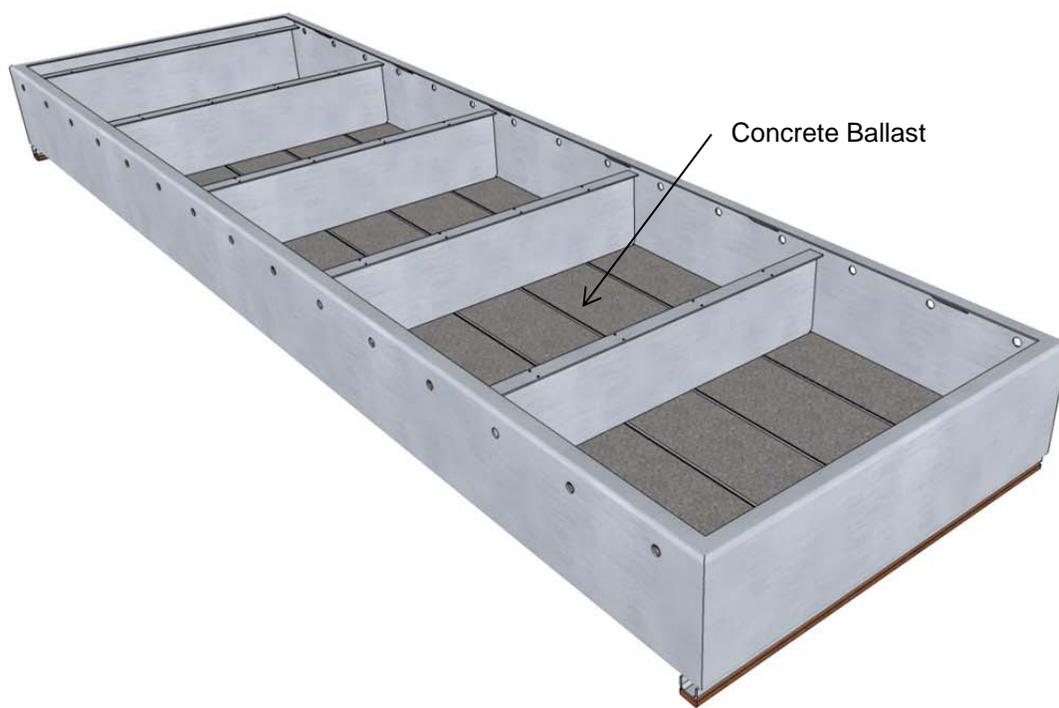
### 07 - ADD WALE SUPPORTS



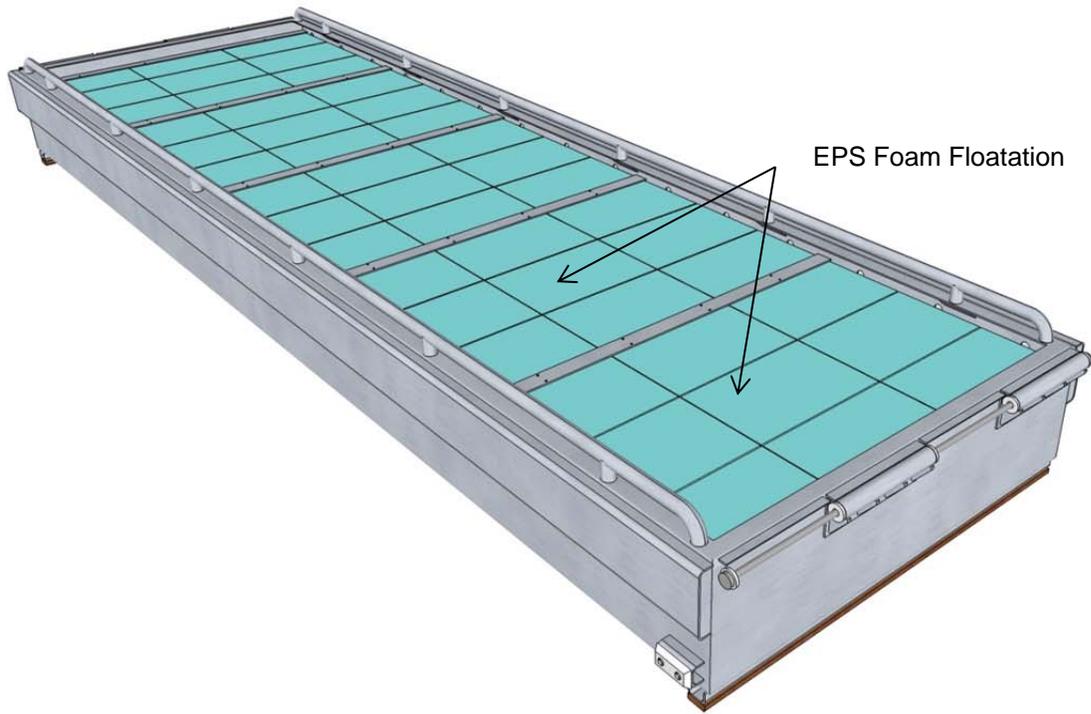
### 08 - ADD BULLRAILS



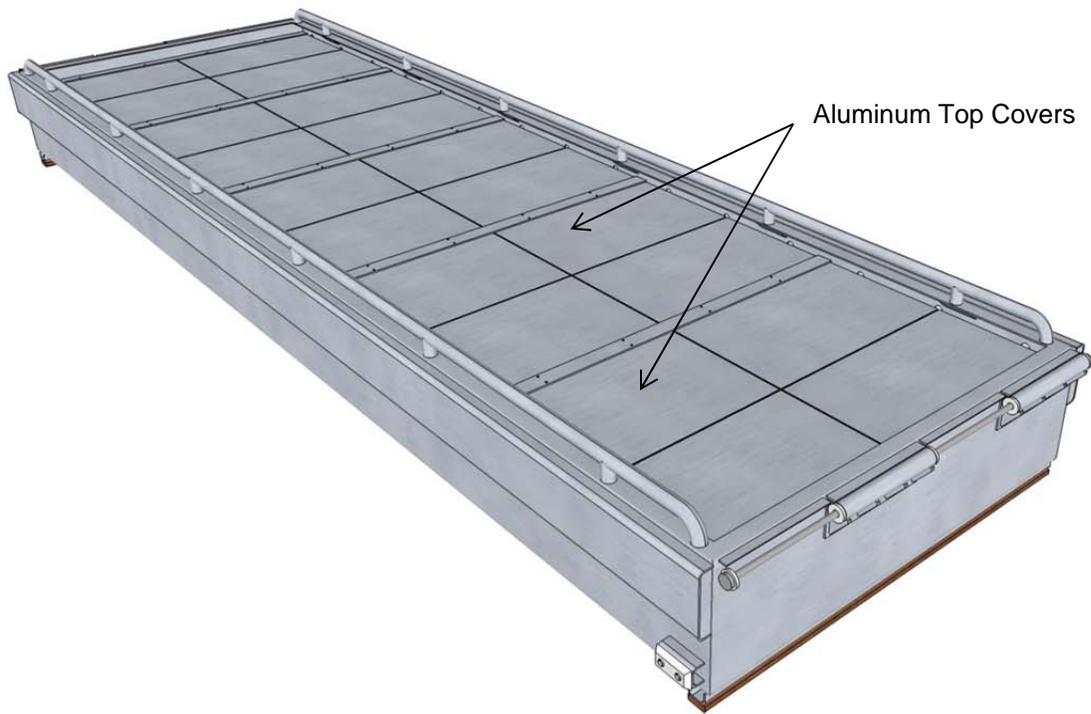
## 09 - ADD HINGE BARREL ASSEMBLIES & ZINC ANODES



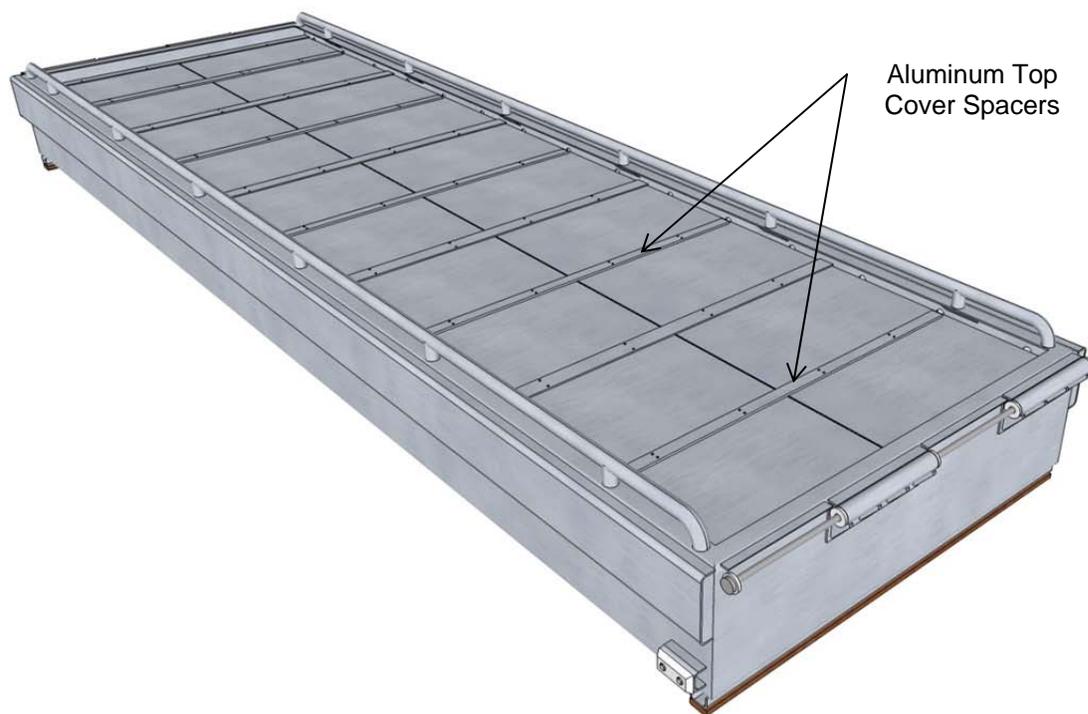
## 10 - ADD BARRIER COATING & CONCRETE BALLAST



11 - ADD FOAM FLOATATION

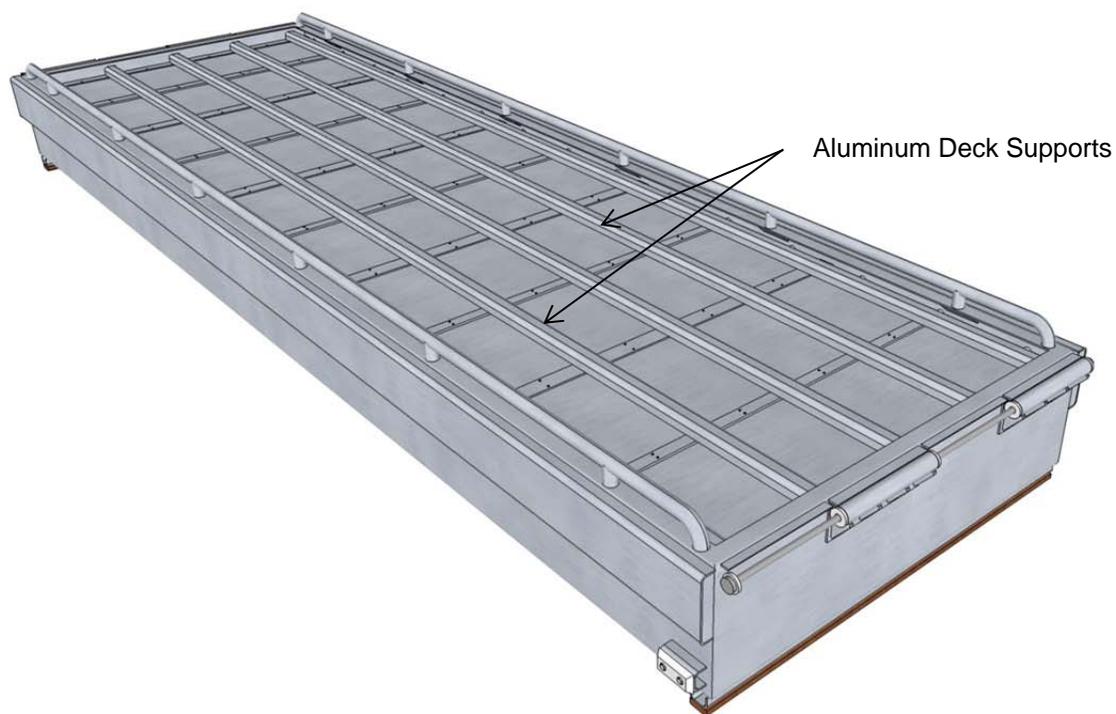


12 - ADD TOP COVERS



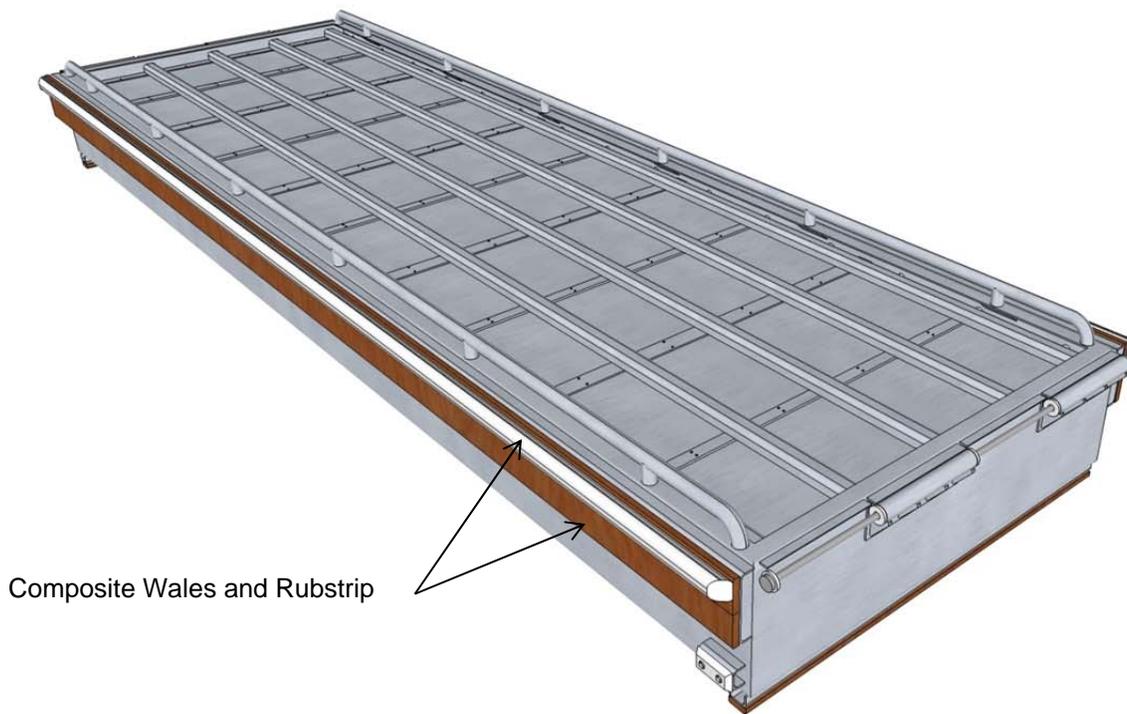
Aluminum Top  
Cover Spacers

**13 - ADD TOP COVER SPACERS**



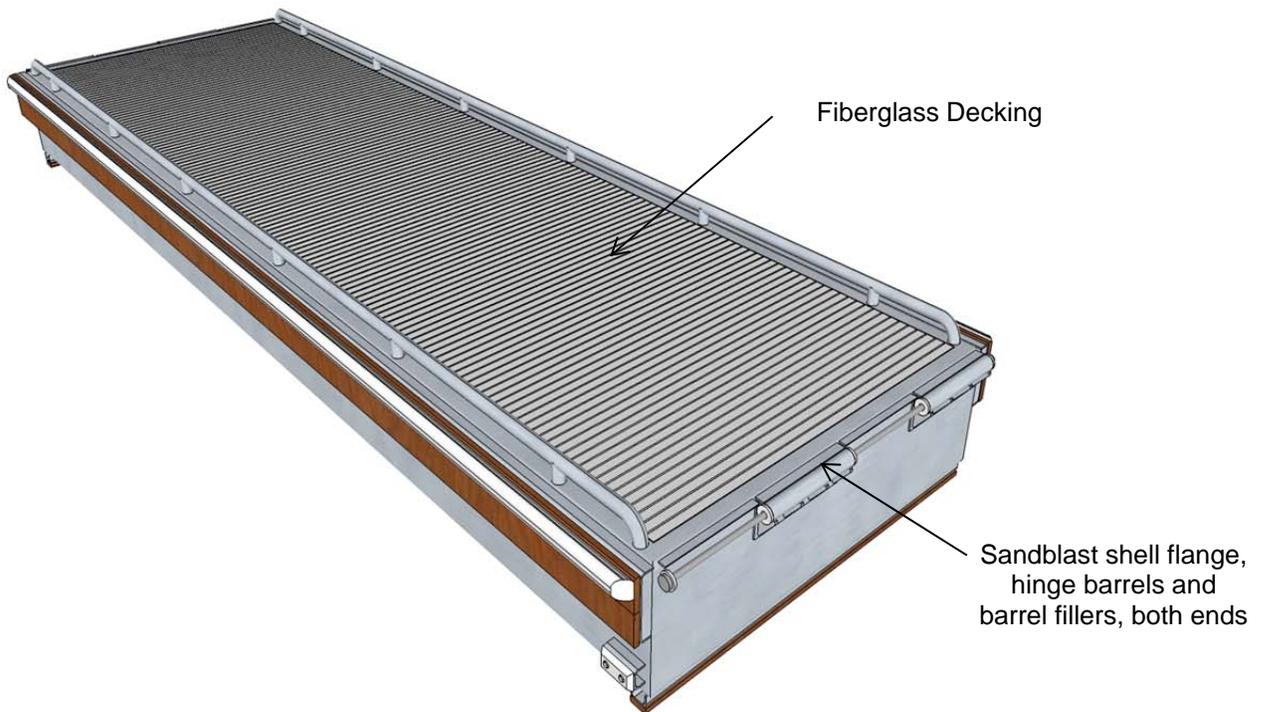
Aluminum Deck Supports

**14 - ADD DECK SUPPORTS**



Composite Wales and Rubstrip

### 15 - ADD WALES & RUBSTRIPS



Fiberglass Decking

Sandblast shell flange,  
hinge barrels and  
barrel fillers, both ends

### 16 - ADD DECKING & SANDBLAST (COMPLETE)

END OF SECTION 05150