SPECIFICATIONS

FOR

ALUMINUM BOARDING DOCK FABRICATION & DELIVERY

AT

COOK PARK RAMP, TUALATIN RIVER – MILE 9.8

FOR THE

CITY OF TIGARD

Approved By:
Allen Chiou, P.E.
Oregon State Marine Board
Boating Facilities Designer

Prepared By:
Allen Chiou, P.E.
Boating Facilities Designer
August 15, 2024

This page intentionally blank

SPECIFICATIONS

FOR

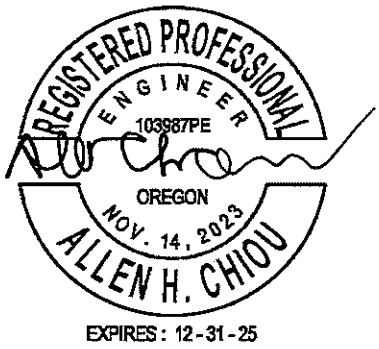
ALUMINUM BOARDING DOCK FABRICATION & DELIVERY

AT

COOK PARK RAMP, TUALATIN RIVER – MILE 9.8

FOR THE

CITY OF TIGARD



EXPIRES: 12-31-25

This page intentionally blank

Table of Contents

SECTION 01000 - GENERAL CONDITIONS

GENERAL

01000.10 DESCRIPTION OF WORK

Location of work is at Cook Park Ramp, Washington County, Oregon.

Major project components are as follows:

(a) Boarding Docks
(b) Delivery and offloading at specified location.
Cook Park Ramp
17005 SW 92nd Ave
Tigard, OR 97224

01000.20 OWNER

Project is for City of Tigard, referred to hereafter as Owner.

The Owner's Representative is:
Jeff Peck
Phone: (503) 718-2466
Email: JeffP@tigard-or.gov
Project Manager
City of Tigard
13125 SW Hall Boulevard
Tigard, OR 97223

01000.30 ENGINEER

The Engineer of Record is:
Allen Chiou, P.E.
Boating Facilities Designer
Phone: (503) 798-3460
Email: Allen.Chiou@boat.oregon.gov
Oregon State Marine Board
435 Commercial Street NE
P.O. Box 14145
Salem, OR 97309-5065

The Engineer's Representative is:
See Engineer of Record.

01000.40 GENERAL BIDDING REQUIREMENTS

This project is bid out as **UNIT PRICE** and the Contractor shall furnish all labor, equipment, and materials necessary to complete work in accordance with the Plans, Specifications, and terms of the contract.

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.

01000.50 PLANS

The following twenty [20] drawings hereby form a part of this contract:
3403-1730-01 TITLE SHEET
3403-1730-02 BOARDING DOCK LAYOUT PLAN
3403-1730-03 ALUMINUM BOARDING DOCK VIEWS (TYPE "A" DOCK)
3403-1730-04 DOCK W/ EXTERNAL PILE HOOP (LEFT SIDE)
3403-1730-05 ALUMINUM BOARDING DOCK SECTIONS
3403-1730-06 SHELL DETAILS (TYPE "A" DOCK)
3403-1730-07 PILE HOOP STIFFENER LAYOUT & DETAILS
3403-1730-08 STRUCTURAL LAYOUT

3403-1730-09 FOAM, CONCRETE, WALE DETAILS
3403-1730-10 TOPSIDE LAYOUT (TYPE “A” DOCK)
3403-1730-11 PILE HOOP MOUNTING PLATE & DETAILS
3403-1730-12 EXTERNAL PILE HOOP DETAILS
3403-1730-13 HINGE BARREL ASSEMBLY DETAILS
3403-1730-14 LAST DOCK DETAILS
3403-1730-15 BULLRAIL DETAILS
3403-1730-16 STRUCTURAL DETAILS
3403-1730-17 ABUTMENT HINGE DETAILS
3403-1730-18 FIBERGLASS DECK PANEL DETAILS
3403-1730-19 DOGLEG DOCK (TYPE “A”)
3403-1730-20 HINGE BARREL STIFFENER (DOGLEG DOCK)

END OF SECTION 01000

SECTION 01090 - REFERENCE STANDARDS AND ABBREVIATIONS

GENERAL

01090.10 REFERENCE STANDARDS AND ABBREVIATIONS

All work shall conform to the current edition of the following reference standards:

- AA Aluminum Association
- AASHTO American Association of State Highway and Transportation Officials
- ACI American Concrete Institute
- ACM American Construction Manual
- ADA Americans with Disabilities Act Standards for Accessible Design
- AISC American Institute of Steel Construction
- APA American Plywood Association
- APWA American Public Works Association
- ASTM American Society for Testing and Materials
- AWPA American Wood Preservers' Association
- AWS American Welding Society
- AWWA American Water Works Association
- DFPA Division for Product Approval of American Plywood Association
- IBC International Building Code, State of Oregon Structural Specialty Code
- ISSA International Slurry Surfacing Association
- NEC National Electric Code
- ODOT Oregon Standard Specifications for Construction by the Oregon Department of Transportation.
- OSHA Occupational Safety and Health Administration
- QPL Qualified Products Listing by the Oregon Department of Transportation, Materials and Research Section
- UPC Uniform Plumbing Code, State of Oregon Plumbing Specialty Code
- WAQTC Western Alliance for Quality Transportation Construction
- WCLIB West Coast Lumber Inspection Bureau
- WWPI Western Wood Preservers Institute

END OF SECTION 01090

SECTION 01200 – SOURCE OF MATERIALS

GENERAL

01200.15 PREFERENCES FOR MATERIALS

This section specifies materials sources to comply with Federal Requirements.

01200.20 BUY AMERICA
Infrastructure Investment and Jobs Act (IIJA), which includes the Build America, Buy America (BABA) Act was signed into law on November 15, 2021. All projects with Federal funding shall comply with BABA and IIJA. The Contractor understands and agrees that the Specifications for this project must comply with BABA and IIJA requirements. To the extent any of these Specifications conflict with such requirements, BABA and IIJA requirements control.

Applicable Laws:
(a) Public Law 117-58, div G §§70901-52
(b) 2 CFR 200.322

01200.21 IRON AND STEEL
All iron and steel used in the project shall be produced in the United States.

All iron or steel manufacturing processes, including, without limitation, the casting of ingots, for iron or steel Materials permanently incorporated into the Project shall occur in the United States.

01200.22 MANUFACTURED PRODUCTS
Manufactured products used in the project shall be produced in the United States.

Produced in the United States means the cost of the components of the manufactured product that are mined, produced, or manufactured in the United States is greater than 55 percent of the total cost of all components of the manufactured product.

Defined:
(a) An article, material, or supply that is or consists primarily of nonferrous metals, plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables), glass (including optic glass), lumber, or drywall. Construction Materials do not include items of primarily iron or steel; manufactured products; cement and cementitious materials; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives.

01200.23 CONSTRUCTION MATERIALS
All manufacturing processes for the construction material shall occur in the United States.

01200.30 WAIVER
If the material, manufactured product, or construction material is not available domestically as described by the applicable laws, a waiver may be requested. The waiver shall be requested by the OSMB through the Federal funding partner with information provided by the Contractor or Owner.

The head of a Federal agency that applies a domestic content procurement preference under this section may waive the application of that preference in any case in which the head of the Federal agency finds that:

(a) Applying the domestic content procurement preference would be inconsistent with the public interest.
(b) Types of iron, steel, manufactured products, or construction materials are not produced in the United States in sufficient and reasonably available quantities or of a satisfactory quality; or
(c) The inclusion of iron, steel, manufactured products, or construction materials produced in the United States will increase the cost of the overall project by more than 25 percent.

Waivers must be requested of the Federal Funding Agency:
(a) In writing
(b) Posted publicly for 15 calendar days
(c) If approved, published in the Federal Register

EXECUTION

01200.45 REQUIREMENTS

The Contractor shall provide a certification statement with their bid stating:

(a) All iron, steel, manufactured products, and construction materials used in this project shall conform with requirements outlined by the Infrastructure Investment and Jobs Act (IIJA), which includes the Build America, Buy America (BABA) Act.

All iron or steel manufacturing processes, including, without limitation, the casting of ingots, for iron or steel Materials permanently incorporated into the Project shall occur in the United States.

The Contractor shall provide the Engineer with a Certificate of Materials Origin, on a form furnished by the Engineer, before incorporating any iron, steel, manufactured products, or construction materials into the Project. Unless a Certificate of Materials Origin has been provided to the Engineer, the Materials shall be considered of foreign origin, shall not be incorporated into the Work, and shall not be eligible for any payments.

The Contractor shall retain manufacturers' certificates verifying the origin of all domestic iron or steel Materials for three years after the date of final payment for the Project and shall furnish copies to the Engineer upon request.

The Contractor shall provide a certification statement prior to final acceptance stating:

(a) All iron, steel, manufactured products, and construction materials used in this project conform with requirements outlined by the Infrastructure Investment and Jobs Act (IIJA), which includes the Build America, Buy America (BABA) Act.

Waiver requests shall be made in writing at least 45 calendar days prior to permanent incorporation into the project.

The Contractor shall include this provision (Section 01200) in all subcontracts.

END OF SECTION 01200

SECTION 01305 – PRODUCT AND MATERIAL SUBMITTALS

GENERAL

01305.10 DESCRIPTION

This section specifies transmittal instructions, the number of copies of Contractor submittals to be provided, and distribution of those submittals as required in the General Conditions.
Submittals may include:

(a) Product Submittals
(b) Material Submittals
(c) Equipment Submittals
(d) Shop Drawings

01305.20 REQUIRED SUBMITTALS

Submittals are required if indicated in the Specification sections.

Deviation from Contract: Submit a request for substitution for deviations from the Specifications or Plans. Include the reason for the deviation and cost differential for the deviation. Deviations from the Contract shall be authorized only if previously approved in writing.

The Engineer of Record (or the Engineer's Representative) reserves the right to ask for Submittals that are not referenced in this document.

EXECUTION

01305.30 SUBMISSIONS

Any submittal listed in other sections of these Specifications shall be submitted using this section.

01305.35 SUBMITTAL FORMAT
An electronic submittal format is preferred.

If hard copies are submitted, the Contractor shall submit three (3) copies of all required information. Individual sheets shall not exceed 11"x 17" in size.

Each submittal shall be accompanied by a Submittal Transmittal Form. The Submittal Transmittal Form shall indicate:

(a) Which specific product is being proposed.
(b) How the product is being used (indicate specific Specification sections where applicable).
(c) Size and quantities (if applicable).

Submittals shall be received by the Engineer of Record (or the Engineer's Representative) at least fourteen (14) calendar days prior to purchase and/or installation.

Submittal Completeness: Submittals, which do not have all the required information, are not acceptable and will be returned without review.

01305.40 REVIEW PROCEDURE
The Engineer of Record (or the Engineer's Representative) will review the submittal for conformance to the Plans and Specifications. After review, the submittal will be returned to the Contractor, and a copy shall be supplied to the Owner. The returned material will consist of one (1) marked-up copy of the submittal. Additional copies as needed will be the responsibility of the Contractor. The returned submittal will indicate one of the following actions:

- "**Accepted as Submitted**" - If the review indicates the material, equipment, or work method is in general conformance with the Contract Plans/Specifications, the submittal copies shall be marked "Accepted as Submitted." In this event, the Contractor may begin to incorporate the material/equipment/work method covered in the submittal.

- "**Accepted as Noted**" - If the review indicates the submittal is insufficient or that limited corrections are required, the submittal copies may be marked "Accepted as Noted." The Contractor may begin to implement the work method or incorporate materials/comments covered in the submittal in accordance with the corrections/comments noted.

- "**Correct and Resubmit**" - If the review reveals the submittal is insufficient or contains incorrect data and the comments require revision and resubmittal, the submittal copies shall be marked "Correct and Resubmit." In this case, the Contractor shall not undertake work covered by this submittal until the submittal has been revised, resubmitted, and returned to the Contractor with a marking of "Accepted" or "Accepted as Noted."

- "**Review Not Required**" - If the review reveals the material, equipment, or work does not require a submittal, then the submitted copies shall be marked "Review Not Required." In this event, the Contractor may begin to incorporate the material/equipment/work covered by the submittal and no further action is required.

01305.50 EFFECT OF REVIEW OF CONTRACTOR'S SUBMITTALS
A mark of "Accepted" or "Accepted as Noted" shall mean the Engineer of Record (or the Engineer's Representative) has no objection to the Contractor, upon the Contractor's own responsibility, using the plan or method of work proposed, or providing the materials or equipment proposed.

The Contractor shall furnish to the Engineer the following items for equipment, articles, and materials incorporated in the work:

(a) Submittals for items identified in individual Specification sections.

(b) Manufacturer's special tools and special accessories normally furnished by the manufacturer and which, by their specific nature and special design, are suited for convenient and expeditious adjustment, maintenance, and repair.

(c) Two sets of installation instructions; part lists; routine preventative maintenance and operation manuals; corrective maintenance instructions; plans and other like data pertinent for maintenance and repair.

(d) Manufacturer and dealer's warranties and guarantees which are normally available to purchasers. Such warranties and guarantees shall be made effective to the Owner as the purchaser.

END OF SECTION 01305

SECTION 05150 - ALUMINUM BOARDING DOCKS

GENERAL

05150.10 DESCRIPTION OF WORK

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, pile pockets, external pile hoops, and all other miscellaneous dock items as shown on the Plans. Work may also include the fabrication of a steel abutment hinge assembly if required.

Work also includes the delivery and offloading of the dock system per section 05150.90. Work does not include the installation of the dock system. Each completed 6'x20' dock has a theoretical dry weight of approximately 3,800 pounds.

(a) Experience

The manufacture of the complete dock system shall be performed by experienced personnel meeting the qualifications listed in this Specification. Provide documents per Section 05150.50 SUBMITTALS.

1) Dock manufacturer must be experienced and regularly engaged in the manufacture of aluminum structures with a minimum of five (5) years consecutive experience. Provide references.

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.

05150.20 DOCK CONFIGURATIONS

Individual docks are 6'x20' (nominal) and designated as either Type "A", Type "B", or Type "C". Type "A" is continuous where Type "B" and Type "C" have an integrated pile pocket. For any given project, either all Type "A" docks or a combination of Type "A" and Type "B" or Type "C" docks will be used. Quantities of each dock type and the installed dock layout are shown on the Plans.

The offshore end of the last dock will require modifications. This may be either a Type "A", Type "B", or Type "C" dock depending on pile layout. Reference should be made to the dock layout drawing for confirmation of dock type.

The shore end of the first dock may utilize a transition plate, which will require modifications. This may be either a Type “A”, Type “B”, or Type “C” dock. Reference should be made to the dock layout drawing for confirmation of dock type. Modifications are required if a transition plate is required.

If external pile hoops are required, they will be installed on one side only of a Type “A” dock. Reference should be made to the dock layout drawing for confirmation of external pile hoop locations.

05150.30 REFERENCES

- AWS D1.1 - Structural Welding Code, Steel, American Welding Society
- AWS D1.2 - Structural Welding Code, Aluminum, American Welding Society
- ASTM Standards - American Society of Testing and Materials
- International Building Code, International Code Council
- Specification for Aluminum Structures, Aluminum Association
- Specification for the Design, Fabrication and Erection of Structural Steel for Buildings – American Institute of Steel Construction

05150.50 SUBMITTALS

(a) General

Experience certifications, material source certifications, testing reports, inspection results, and all other submittals required within this section shall be submitted and accepted prior to final construction and delivery of the docks. Submittals shall be made per section 01305 PRODUCT AND MATERIAL SUBMITTALS of these Specifications.

(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.

One (1) set of shop drawings shall be submitted electronically for review. One set of shop drawings will be returned after review and comments.

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.

- Pultruded fiberglass grating and associated fasteners
- Rubstrips
- UHMW Polyethylene
- Expanded polystyrene foam
- Concrete mix design
- Barrier coating material for concrete/aluminum isolation
- Zinc Anodes
- Bullrail ends (if used)
- Perforated sheet for drainage holes
- All fastening hardware (i.e., nuts, bolts, screws, washers, padlocks)
- Boat regulatory signs (typically submitted directly to the Engineer by OCE sign shop).
- Metalized finish for transition plates.

(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.
- Structural Aluminum
- Stainless Steel
- Fasteners
- Mild Steel
- Galvanizing

(e) Welding Procedures and Welder Qualifications: Submit weld procedure specifications (WPS) and procedure qualification records (PQR) for all structural welds and welder 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 representatives reserve the right to inspect the construction at any time throughout the manufacturing process. Submit and keep the manufacturing schedule updated for all dock components so that inspection visits can be arranged at appropriate times.

05150.60 MANUFACTURER'S RESPONSIBILITIES

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 Plans, Specifications, and the approved Shop Drawings.

> Note: A suggested sequence of assembly is shown on the Plans, 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.

The manufacturer shall furnish all necessary materials, equipment, labor, supervision, testing, inspections, and incidentals necessary to complete the work identified in the Plans and Specifications.

(a) Inspections and Quality Control: The manufacturer is responsible for adherence to internal quality control procedures and for the coordination and cost of all independent inspections listed below from a qualified inspection service. Submit all inspection reports within 48 hours of inspection.

Internal welds shall be visually inspected for compliance with the Plans 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.

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, and no concrete has been placed around pile pockets per the Plans.

Foam floatation shall be visually inspected for proper and complete installation per the Plans and Specifications.

Internal welds of all top covers, spacers, and deck supports shall be visually inspected for compliance with the Plans and Specifications prior to installing decking. Any welds found to be deficient shall be repaired to the satisfaction of the independent welding inspector.

External welds shall be visually inspected for compliance with the Plans and Specifications prior to installing wales and rubstrips. Pile hoop and hinge barrel stiffeners, if required, 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.

All critical dimensions shall be verified (i.e., shell length, width, height, pile pockets, pile hoop stiffeners, and pile hoop mounting plates).

MATERIALS

05150.65 PRODUCTS

All materials to be incorporated into 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.

(a) Aluminum

All structural members, bars, and plates shall be ASTM B209, alloy 5086-H116 except for the following components which shall be alloy 6061.

(1) Hinge Barrel Assemblies (e.g., barrel filler plates, barrel top plates, barrel gussets, barrel backing plates)

(2) Pile Pocket Details (e.g., gate bracket, removable gate, wear pad retainers)

(3) Transition Plate (5086 acceptable to accommodate bending)

(4) External Pile Hoop Assemblies

Round tube shall be ASTM B221, alloy 6061

Pipe shall be structural per ASTM B429, alloy 6063-T52

Bullrail Ends and Corners:

(1) Ends and corners 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 or 6063 pipe. Bullrail ends shall be 2” round tube or 1½” pipe with a 2” inside radius and no tangents. Bullrail ends shall be R&B Wagner part number 7972 (2” tube”) or 364 (1½” pipe) or approved equal. Product is available from Wagner Companies 1-888-243-6914 www.wagnercompanies.com.

(2) Alternatively, ends and corners may be formed from bending straight sections of 2” tube or 1½” pipe to the dimensions and radius shown on the Plans.

Standard extruded profiles (where allowed) shall be ASTM B308, alloy 6061.

(b) Stainless Steel

All stainless steel shall be type 316 unless otherwise noted on the Plans. All fasteners connecting to aluminum shall be stainless steel except for wale block fasteners per 05150.65 (k).

(c) Polyethylene

All polyethylene components shall be virgin or reprocessed, ultra-high molecular weight (UHMW) polyethylene, and shall be fully or partially cross-linked and black in color and UV-stabilized.

(d) Foam Floatation

Floatation blocks shall be expanded polystyrene. Sizes are shown on the Plans. The foam shall be Type 1 and weigh ±1.0 pound per cubic foot in accordance with 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.

(e) Wales

Wales (composite decking materiall) shall be Moistureshield Vantage, Trex Transcend, or approved equal. Recycled wood-plastic composite lumber used for all wales shall meet the following qualifications:

Manufactured from at least 90% recycled-content, wood-plastic composite. Composite shall be 50% recycled plastic ±10% and 50% waste wood fiber ±10%.

The color shall be Bridle or a similar shade of brown. All boards shall be the same color.

Finish shall be non-slip wood grain.

Dimensions shall be 1" actual thickness (no tolerance) and 5½" wide ±¼", 20-foot lengths.

Have a solid plank cross-sectional area. Edges shall be solid, not grooved.

Have square (nominal, less than ⅛" radius actual) corners.

(f) Decking

The decking shall be pultruded fiberglass grate. Fiberglass deck grates shall be ADA-compliant manufactured from pultruded polyester resin (SPF), with a product designation of T-1210, 12% open space, 1" bearing bar height, 1½" bearing bar width, with a coarse grit slip-resistant surface, 3⁄16"-¼" clear spacing between top of bearing bars, gray in color, with corrosion-resistant fasteners. Possible product suppliers include Fibergrate (www.fibergrate.com), McNichols (www.mcnichols.com), or AMD Grating (www.amdgrating.com).

(g) Decking Clips

All decking shall be installed with Fibergrate Spring Clips (part number 734282) or approved equal.

(h) Pile Pocket/Hoop Wear Pads

Wear pads shall be UHMW-PE (1½" thick) meeting the same requirements as polyethylene per 05150.65 (c).

(i) Grounding Rails

Grounding rails shall be UHMW-PE (1" thick) meeting the same requirements as polyethylene per 05150.70 (c).

(j) Wale Blocks

Wale blocks shall be UHMW-PE (1" thick) meeting the same requirements as polyethylene per 05150.70 (c).

(k) Fasteners

Composite lumber wales and UHMW-PE grounding rails shall use fasteners designed specifically for attachment of such materials to aluminum framing. Fasteners shall be aluminum blind rivet nuts with flange and knurled outer body and ¼-20 internal threads for use with ¼-20 x 1¾" 316 stainless steel hex head bolt and flat washer. Rivet nuts shall have a grip range compatible with a 3/16" aluminum plate. A rivet nut example is AVK open end AL-series, www.avkfasteners.com, but any rivet nut meeting the criteria may be acceptable. Provide submittal for approval prior to ordering.

Pultruded fiberglass deck grate fasteners shall be minimum #12 x 1-½" 316 stainless steel bi-metal self-drilling screws with ⅜" hex head.

All bolts, nuts, and washers shall be 316 stainless steel. Self-locking ("nylock") type nuts are not allowed.

Wale Block fasteners shall be ⅜" x 1½" "F" type self-tapping zinc coated screws.

Padlocks shall be brass body, 1¾" max. width, ¼" or 5/16" shackle diameter, ¾" min. inside shackle width and 1½" max. inside shackle height. All padlocks shall be keyed alike. Provide quantity as shown on the Plans plus an additional four (4) for spares.

(l) 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 3,500 psi and a unit weight of 140-145 pcf.

(m) Rubstrip

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, www.taylormadeproducts.com, 1-800-628-5188.

Recently completed dock projects have shown that the availability of Medium Dock & Post Bumper may be limited. However, this is still the preferred/required rubstrip product so bid pricing shall reflect the use of this product. If this product is unavailable for installation (prior to shipment of the completed docks) then an alternative rubstrip product will be approved. Dimex RR-5008W white vinyl bumper available from Scottco Marine, www.scottcomarine.com, is approved as an alternative product only if the required product is unavailable.

(n) Zinc Anodes

Zinc anodes shall be 3"x6"x¾" 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.

(o) 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 5/32" diameter perforated holes on 3/16" staggered centers.

(p) Boating Regulatory Signs (Owner-Furnished)

Signs shall be purchased by the Owner and delivered to the dock fabricator for installation onto the signposts. Signs shall be purchased from Oregon Corrections Enterprises, 777 Stanton Boulevard,

Ontario, Oregon 97914. Contact Joel Clucas by telephone at 541-881-4556, FAX 541-881-5494, or ocesignshop@oce.oregon.gov. Substitutions will not be permitted.

(q) Mild Steel

All mild steel components shall be ASTM A36 unless noted otherwise on the Plans. Reinforcing bars shall be ASTM A706, grade 60, suitable for welding and galvanizing. Fasteners connecting steel-to-steel shall be ASTM A325 with appropriate heavy hex nuts and hardened flat washers.

(r) Anti-Seize Lubricant

Lubricant shall be compatible for use with stainless steel in a marine environment. Provide a single, four (4)-ounce bottle to the Owner for use during installation.

05150.80 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 practicable.

(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, and barrel filler plates shall be coarsely sandblasted to provide a non-slip surface where foot traffic is expected.

Transition plates shall be coarsely sandblasted, top and bottom prior to application of a metalized finish. The metalized finish shall be atomized aluminum sprayed on with torch and compressed air. The metalized finish is only required on the top walking surface of the transition plate and barrels.

The abutment hinge barrel assembly shall be coarsely sandblasted, top and bottom prior to application of hot dip galvanizing and a metalized finish. The metalized finish shall be atomized metal sprayed on with torch and compressed air. The metalized finish is only required on the top walking surface of the hinge barrel assembly.

(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 64th Avenue S, Kent, WA 98032, (253) 850-5800, 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).

(d) Galvanizing

All mild steel components shall be hot-dipped galvanized after fabrication in accordance with ASTM A123 or A153 as applicable. Any damage to the galvanized coating shall be repaired using a hot-stick or spray metalized in accordance with ASTM A153.

EXECUTION

05150.87 FABRICATION AND WORKMANSHIP

(a) General

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.

All fabrication shall conform to the Contract Documents, these Specifications, and the approved shop drawings.

Fabrication details, materials, finishes, and colors shall be consistent throughout.

All structural members shall be the size, length, wall thickness, and alloy as shown in the approved shop drawings.

All cut edges shall be clean and true, free of burrs. Flame cutting is not permitted, and all holes shall be punched or drilled.

Cap all open ends of tubular members as shown in the Plans and grind smooth. Provide ½" diameter weep holes in bottom ends of all closed aluminum tubes as required for venting and drainage.

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.

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, offloading, and on-site stockpiling.

All completed docks shall bear a permanent decal or identification plate listing the name of manufacturer, date of manufacture, live load rating (20 psf), a unique identifying serial number, and sequence number.

(b) Forming

a. Shell
   i. 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 Plans. All bends shall be 90 degrees with ½" inside radii.

b. Shapes
   i. All channels, angles, and rectangular tubes shall be formed by bending plate or flat bar unless shown otherwise on the Plans. 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 Plans and Specifications.
   ii. 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 Plans.

c. Round Tube
   i. All round tube shall be extruded. Hinge barrels shall be 6061 alloy.

   ii. Bullrails shall be continuous between the end posts prior to a terminating radiused end or corner at a pile pocket. One splice per bullrail is allowed provided it is centered over a post. Use of factory bent elbows is allowed (See 05150.65 (a)). Elbows or formed bends shall be fully welded to all straight sections of round tube and to the top flange of the dock shell.

d. Pipe

i. Pipe is an allowable alternative to round tube for bullrails only.

ii. Pipe shall be structural Schedule 40, 6063-T52 alloy.

iii. Section 05150.87 (b) c.ii applies to pipe bullrails.

(c) Welding

All welding shall conform to the latest editions of the AWS structural welding codes, including the repair of defective welds.

All welding shall be 100% visually inspected by a manufacturer provided, AWS qualified, inspector from an independent testing company. See Section 05150.60 for details.

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.

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.

The preferred filler wire for all aluminum welding shall be ER5183. However, ER5356 is an acceptable alternative.

Weld spatter and slag shall be removed.

Continuous weld all connections unless otherwise shown in the Plans.

Any welding done after the installation of the foam floatation 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

All decking shall be installed flat and true without intentional changes in slope or tripping hazards and compliant with accessibility standards.

All decking shall be installed with Fibergrate Spring Clips (part number 734282) or approved equal. The location and quantity of clips are shown on drawing sheet 18. Clips shall be fastened with #12 x 1-½" 316 stainless steel bi-metal self-drilling screws with ⅜" hex head.

Pultruded fiberglass grate shall be installed in the largest panels practicable with the bearing bars oriented perpendicular to the span direction of the dock. The affected ends of any field or shop cutting or drilling of fiberglass grate bars shall be sealed with polyurethane or catalyzed resin sealant as recommended by the grating manufacturer. Panel layout may be adjusted as needed to minimize narrow strips of decking from cutouts around pile pockets.

(e) Fasteners

All fasteners shall be of the size and type shown in the Plans.

Washers are required under the heads and nuts of all fasteners unless noted otherwise in the Plans.

All fasteners shall be appropriately fully tightened in accordance with applicable industry standards and practices.

Any fastener connecting dissimilar metals shall be stainless steel or electrically isolated to prevent corrosion.

Any fastener in a walking surface shall be flush with, or recessed below, the surface or concealed.

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. Type "B" docks will not have concrete in spaces around the pile pocket as shown on the Plans. Foam filler blocks shall be installed in place of the concrete in these areas only.

(h) Foam Floatation
Foam floatation blocks shall be placed using the sequence shown on the Plans. The design allows for a ⅛" space between the top of the foam and the underside of the bulkhead flanges and end stiffeners to allow for installation of the ⅛" 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 Plans.

(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 Plans. Wales shall be full length without splices. Leave a ⅛" gap between all wales and wale blocks. Attach using blind rivet nuts with hex head bolts per manufacturer's installation instructions and as detailed on the Plans.

(k) Wale Blocks
Wale blocks are required at all wale ends except for the end wale on the last dock. Wale blocks shall have a 45-degree chamfer as shown on the Plans except for the two offshore blocks on the last dock. Wale blocks shall be attached with F-type zinc coated bolts: size, quantity and location as shown on the Plans. Bolts shall be epoxy paint coated (black in color) prior to installation.

(l) 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 Plans. Attach with two rows of #8 stainless steel screws, 4-inch on center spacing. Also install a rubstrip across the offshore end of last dock. The ends of the rubstrip shall be finished by the manufacturer.

(m) Hinge Barrel Isolators
UHMW-PE bushings, sleeves, and spacers shall be fabricated from solid material per details shown on the Plans. Isolators protect against metal-to-metal contact and provide a wear surface between hinge barrels and hinge pins.

(n) Offshore End of Last Dock

The offshore end of the last dock requires modifications. Depending on the dock layout these modifications will apply to either a Type “A”, Type “B”, or Type “C” dock (reference Dock Layout drawing). In place of the offshore end hinge barrel assembly, fabricate and install a wale support, wales, rubstrip, bullrail, signpost, and corner wear blocks as shown on the Plans. In addition, the last dock requires modified bullrails (both sides) as shown on the Plans.

(o) Shore End of First Dock
See Plans for details of this section.

(p) Hinge Pins
All dock and transition plate hinge pins shall have a stop welded to one end with vertical sides as shown on the Plans. The hole at the opposite end of the pin shall be drilled in the same plane as the vertical sides of the pin stop as shown on the Plans. Provide bolt, nut, washers, and padlock for each hinge pin. The stainless-steel washer on the padlock end of the dock hinge pin is a custom size and will require milling to the dimensions shown on the Plans. Alternatively, a 1¼” SAE washer may be used (1.375” I.D.) but may require reaming to fit.

(q) Boating Regulatory Signs
Attach signs to the signpost as indicated on the Plans using stainless steel or aluminum rivets. Install signs level and plumb with sign surfaces free from distortion or other defects in appearance.

(r) Pile Hoop & Hinge Barrel Stiffeners (If required)
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 Plans.

(s) External Pile Hoops (If required)
Weld external pile hoop mounting plate to the wale support at locations as shown on the Plans. Careful attention should be given to which side of the dock the hoop is to be installed and distance from the shore and offshore ends. Adjust lengths of wales and rubstrips as required.

(t) Abutment Hinge Barrel Assembly
Assembly will be field installed. See sheet 17 of the Plans for details.

(u) Dock Identification Plates
Each dock shall have a unique identification plate that will correspond to the naming convention shown on the Plans or in the absence of a naming convention will be numbered sequentially starting with “1” as the first or shore-end dock. Identification plates shall be consistently placed in the same location on each dock. Doing so will ensure that the docks are installed in the correct order and orientation. Minimum plate information is listed in Section 05150.87 (a); additional information on the identification plates is at the fabricator’s discretion.

05150.90 DELIVERY
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 (3 docks total) is permitted with proper and adequate blocking and must not be supported by the bullrails of the lower dock. For Type “A” docks, additional blocking at mid-span of the lower dock’s shell bottom must be provided.

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.

Manufacturer is responsible for delivery and offloading of docks at the following location:

Cook Park Ramp
17005 SW 92nd Ave
Tigard, OR 97224

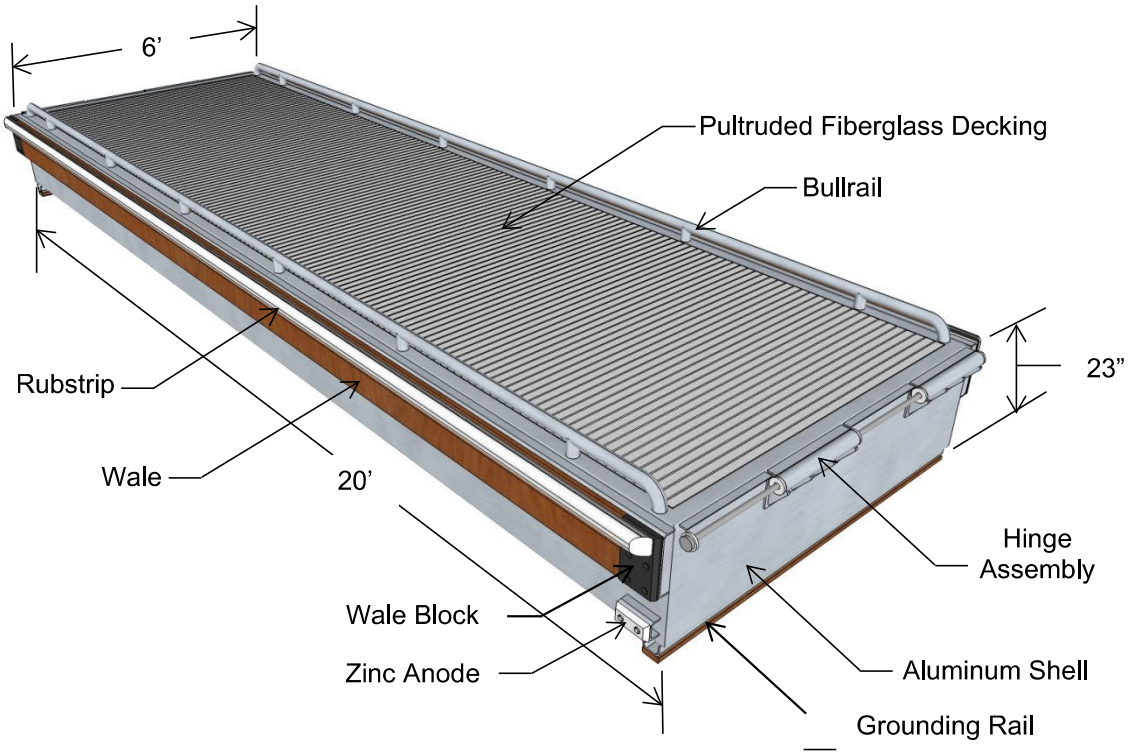
05150.91 WARRANTY

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.

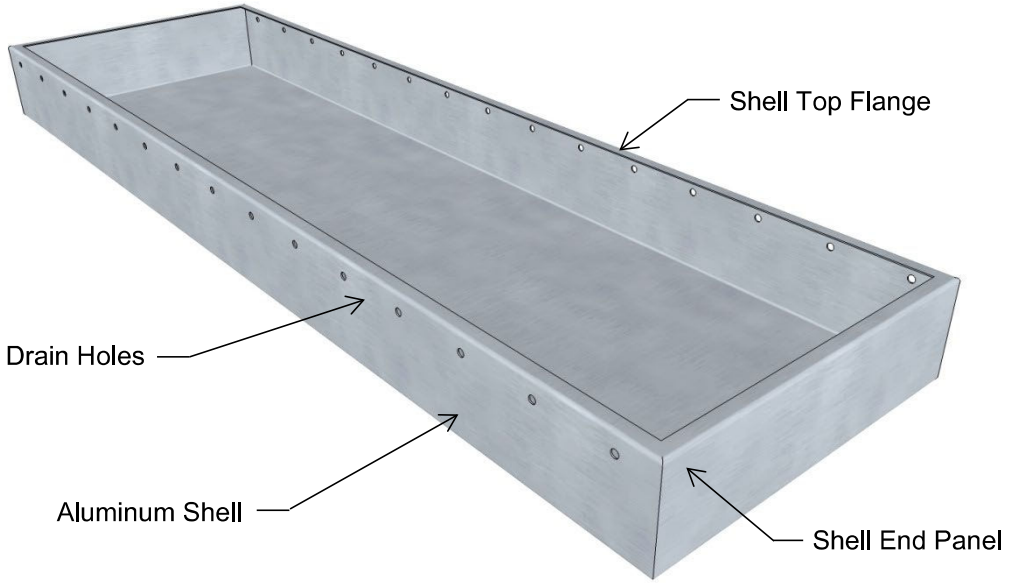
The warranty period shall commence upon delivery and acceptance of the docks and all related components by the Owner.

05150.95 SUPPLEMENTAL DRAWINGS

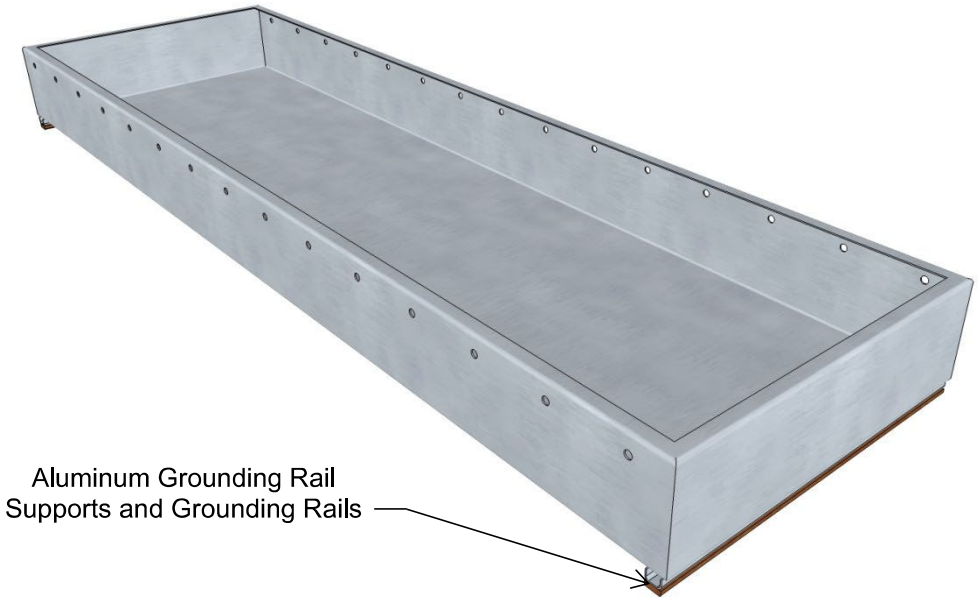
The following 3-D dock renderings are provided solely for the purpose of visualizing (1) a suggested sequence of dock assembly and (2) general position of dock components within the dock structure. These renderings are not intended for use as construction or shop drawings.



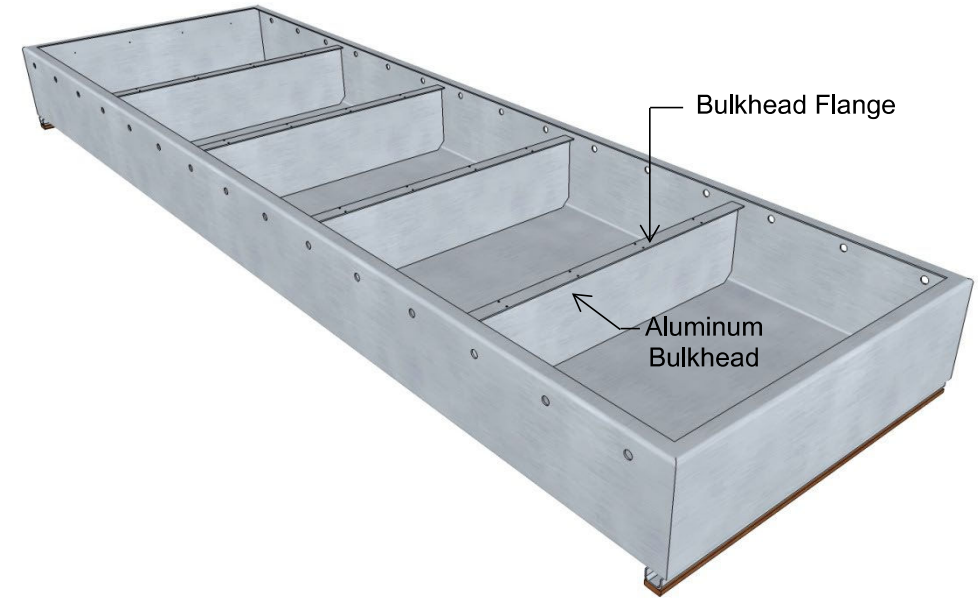
01 - DOCK OVERVIEW



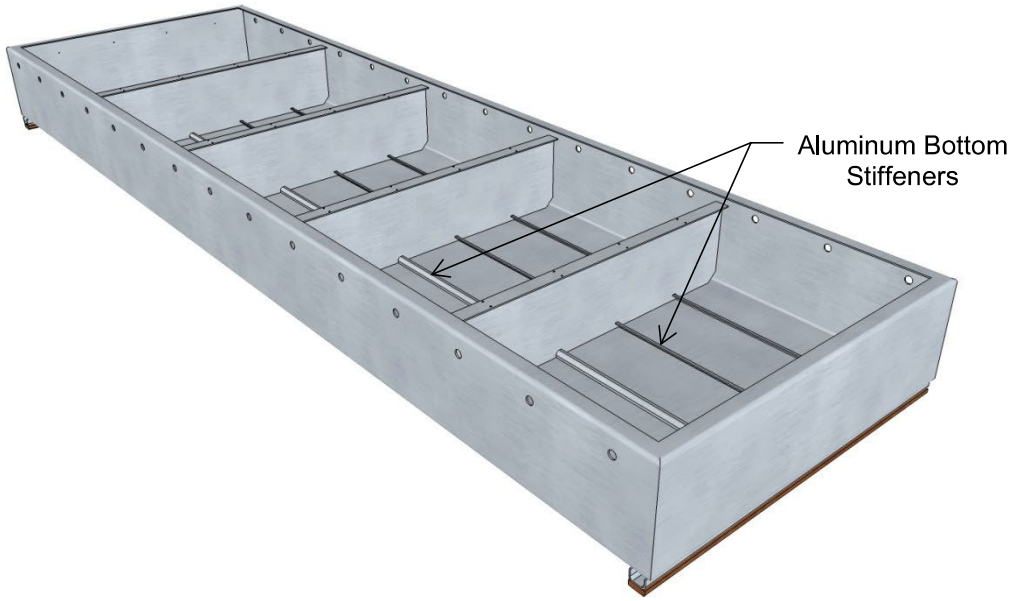
02 - SHELL ONLY



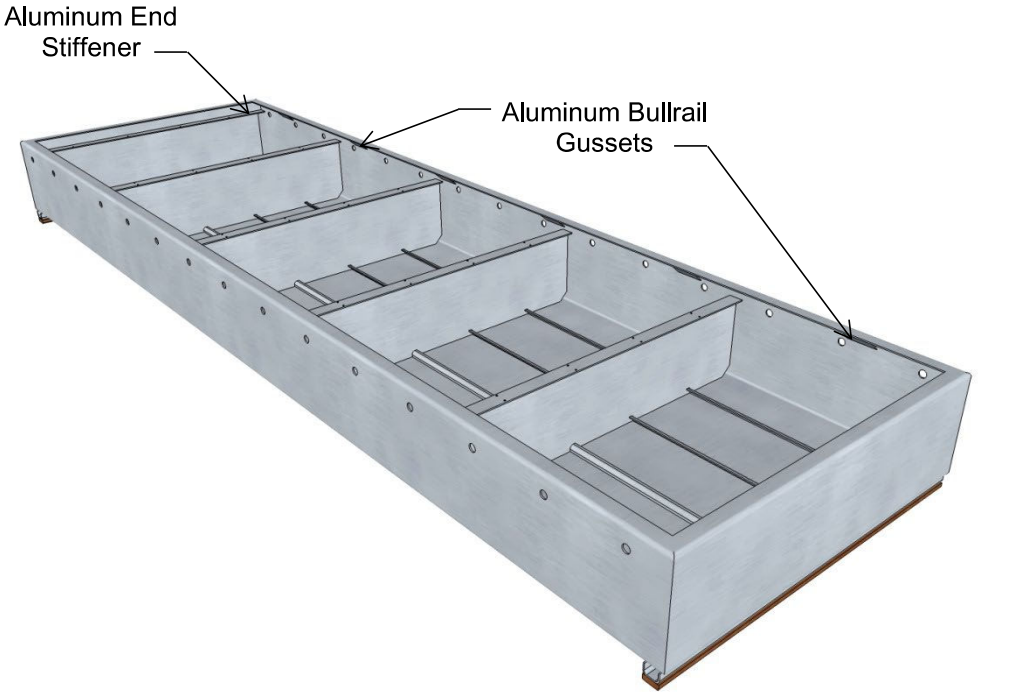
03 - ADD GROUNDING SUPPORTS & GROUNDING RAILS



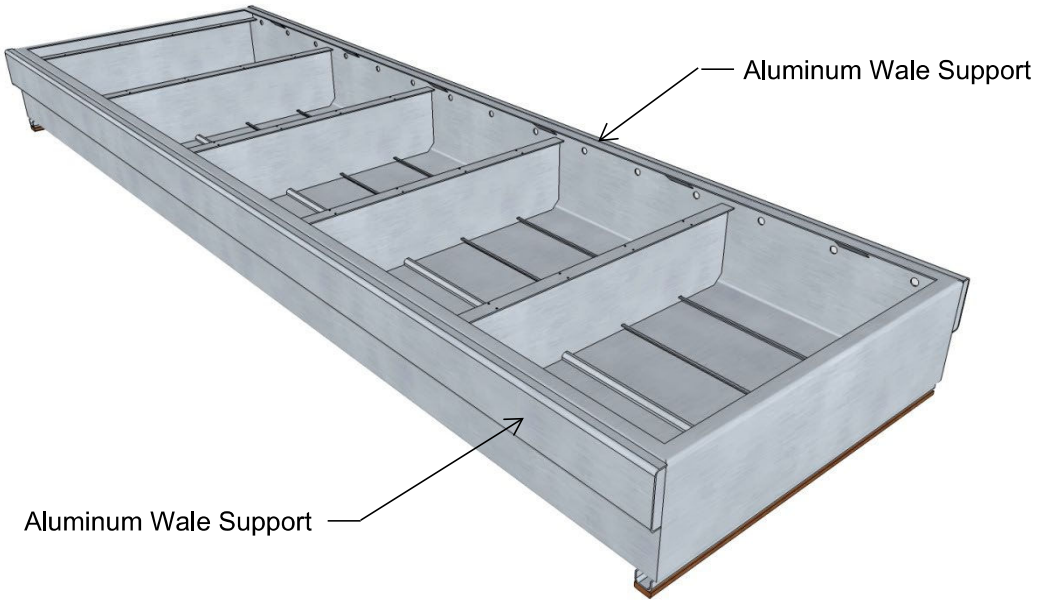
04 - ADD BULKHEADS



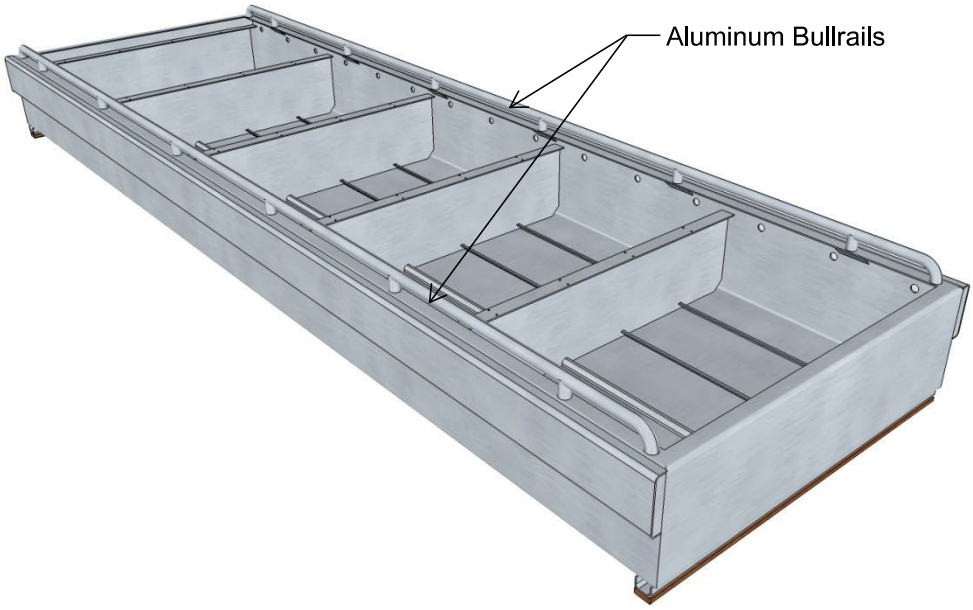
05 - ADD BOTTOM STIFFENERS



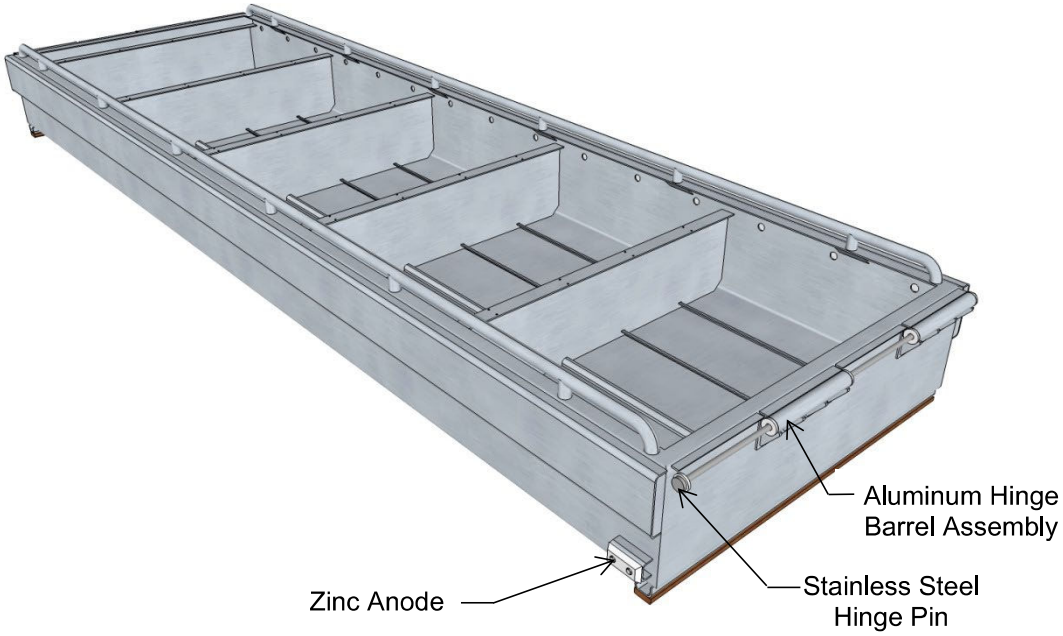
06 - ADD END STIFFENERS & BULLRAIL GUSSETS



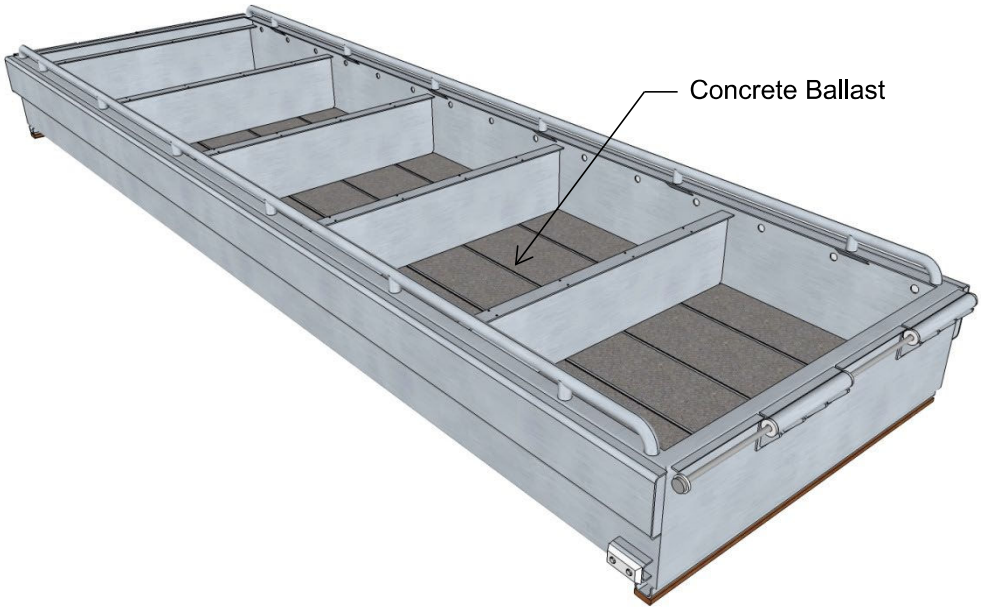
07 - ADD WALE SUPPORTS



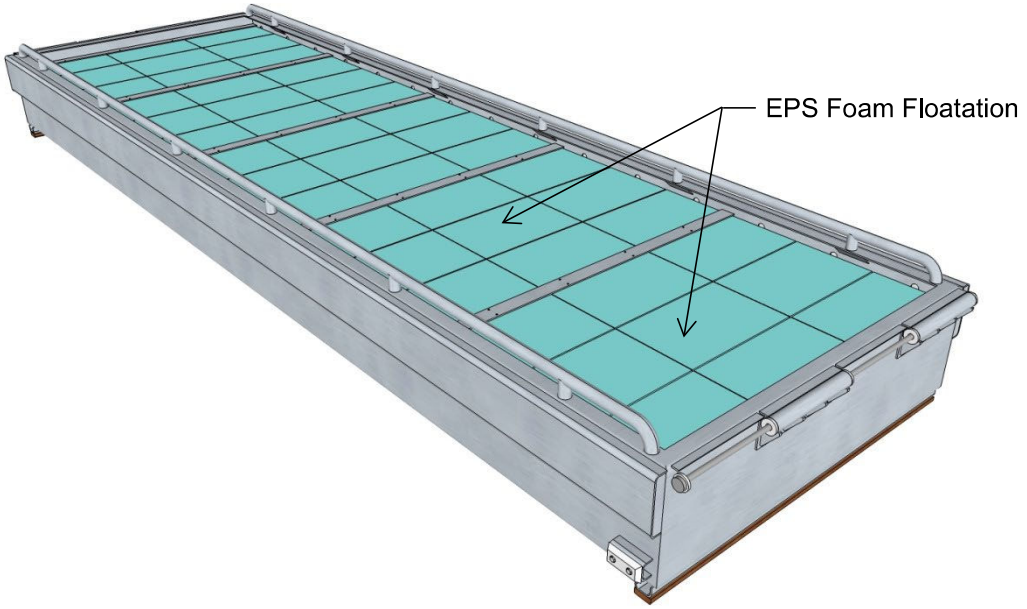
08 - ADD BULLRAILS



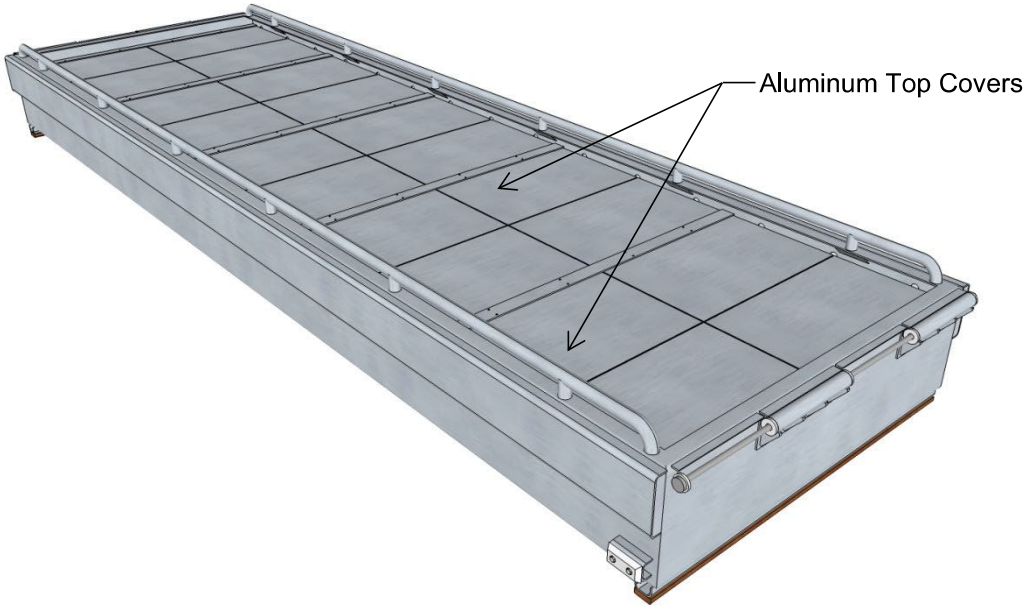
09 - ADD HINGE BARREL ASSEMBLIES & ZINC ANODES



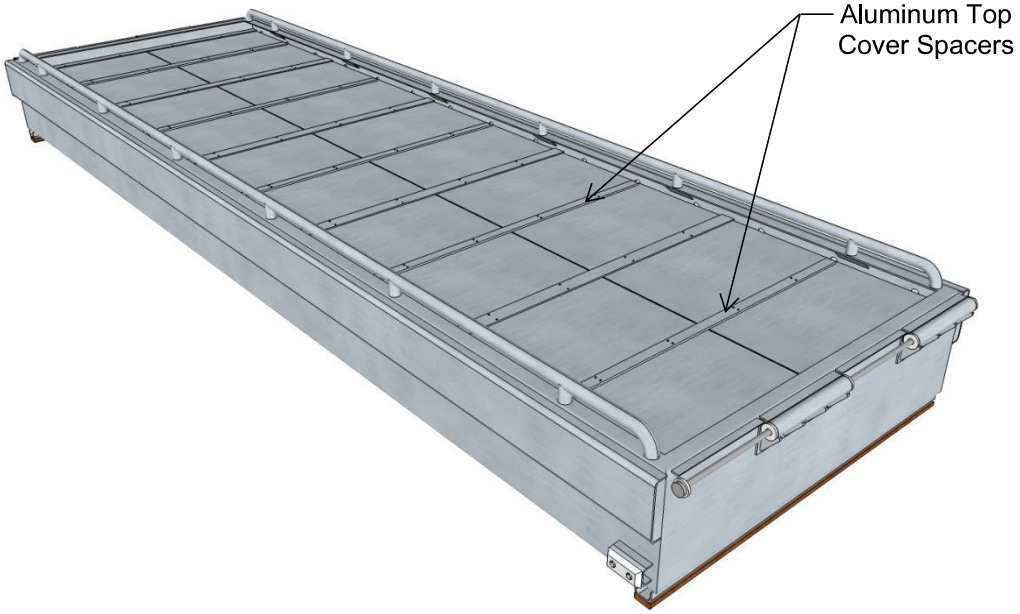
10 - ADD CONCRETE BALLAST



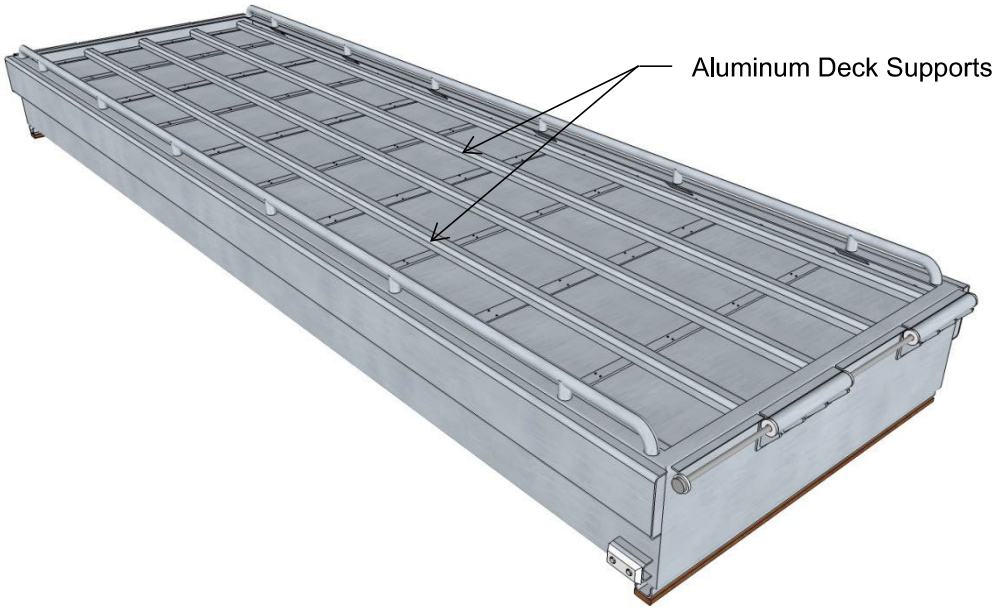
11 - ADD FOAM FLOATATION



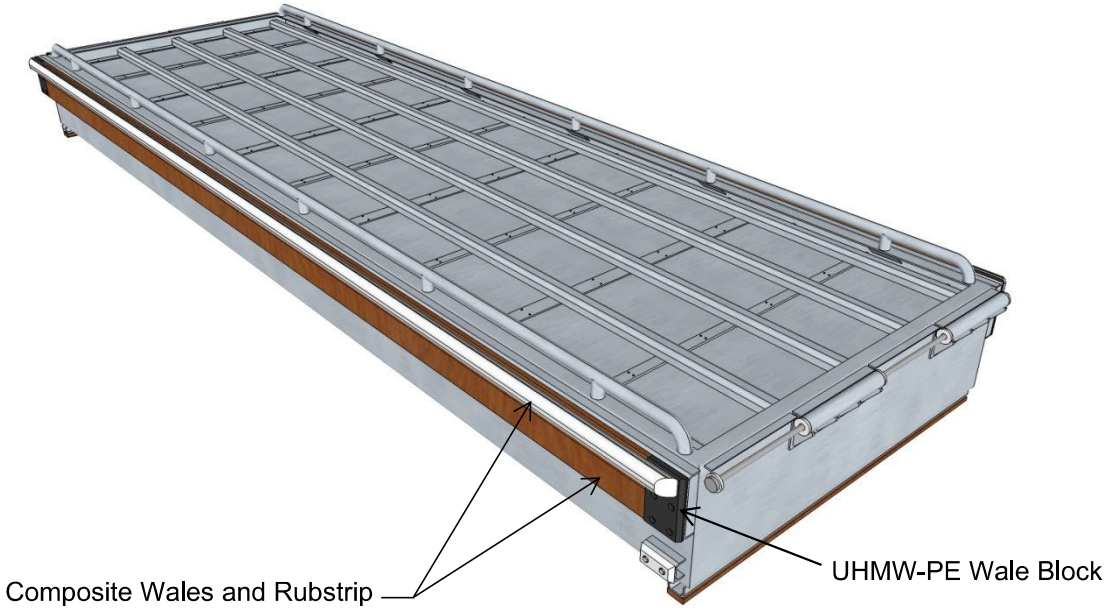
12 - ADD TOP COVERS



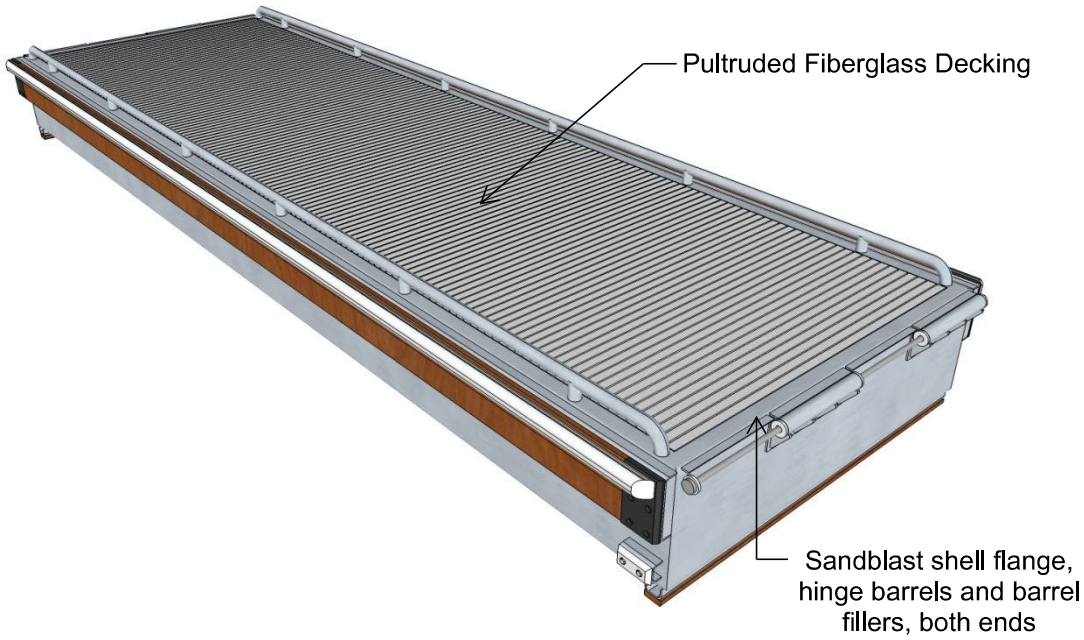
13 - ADD TOP COVER SPACERS



14 - ADD DECK SUPPORTS



15 - ADD WALES, WALE BLOCKS, & RUBSTRIPS



16 - ADD DECKING & SANDBLAST (COMPLETE)

END OF SECTION 05150