

TRINITY MARINE PRODUCTS, INC.

FRP LIFT-OFF BARGE COVERS **Handling, Stacking and Storage Procedures** **Page 1**

Proper handling, stacking and storage of FRP Lift-Off Barge Covers is very important in achieving the maximum service life of the covers. The following procedures have been assembled to aid in reaching this goal, safely and efficiently.

*FRP Lift-Off Covers are provided with “Non-Skid” areas designed for use as “walking surfaces”. These non-skid areas are found on the top center, along the outside edge and on the step areas of all covers. They are strategically located to provide safe access to the grain door openings and the lifting eye / clamp assemblies. When performing any operation involving FRP Lift-Off Covers that requires accessing the top-side of the covers, **WALK ON NON-SKID AREAS ONLY!!** See Figures #1 & #2 for further description of typical non-skid locations.*

1) Lifting Covers →

Each individual FRP Lift-Off Cover section is provided with four (4) combination “Lifting Eye / Clamp” assemblies (See Figure #3). These assemblies are designed to be used as “lifting points” when handling the covers and as hold-down “clamps” when the covers are either in a stack or positioned on the barge coaming cap.

Use only the four, and all four, lifting eyes when lifting cover sections. (Note: “Clamp” portion of “Lifting Eye / Clamp” assembly is not designed for lifting!) Lifting cover sections with the lifting eyes should be accomplished through the use of a four-way lifting cable assembly (See Figure #4). Each of the four cable legs in this assembly should have an equal length (21 ft. minimum; 25 ft. maximum) with each leg of cable terminating in a safety hook. (Note: Cable lengths shorter than 21 ft. could impose undue stresses on the cover sections and cable lengths in excess of 25 ft. may not allow the clamp to release properly when lifting is attempted.) Individual cover sections typically weight between 2100 and 2400 lbs. Cables and lifting hooks should be sized accordingly.

Care should be taken anytime covers are being handled to avoid high wind situations that may cause the cover to “sail”. Care should also be taken to avoid impact loads to the cover that may cause fractures in the laminate. Any and all general safety rules involving lifting and/or transporting loads with lifting equipment should be observed at all times when handling FRP Lift-Off Barge Covers!!

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2) Stacking covers on ends of barge →

End covers at each end of the barge are to be left in place with center covers stacked on top of the end covers in the following order:

9 cover set:

*Cover #1 (End Cover) remains on barge at bottom of stack.
Cover #2 (Female Cover) stacks first on top of End cover.
Cover #4 (Female Cover) stacks next on top of #2 Female.
Cover #3 (Male Cover) stacks last on top of #4 Female.*

*Cover #9 (End Cover) remains on barge at bottom of stack.
Cover #8 (Female Cover) stacks first on top of End cover.
Cover #6 (Female Cover) stacks next on top of #8 Female.
Cover #7 (Male Cover) stacks next on top of #6 Female.
Cover #5 (Male Cover) stacks last on top of #7 Male.*

See Figure #5 for further identification.

8 cover set:

*Cover #1 (End Cover) remains on barge at bottom of stack.
Cover #2 (Female Cover) stacks first on top of End cover.
Cover #4 (Female Cover) stacks next on top of #2 Female.
Cover #3 (Male Cover) stacks last on top of #4 Female.*

*Cover #8 (End Cover) remains on barge at bottom of stack.
Cover #7 (Female Cover) stacks first on top of End cover.
Cover #6 (Male/Female) stacks next on top of #7 Female.
Cover #5 (Male Cover) stacks last on top of #6 Male/Female.*

See Figure #6 for further identification.

*Care should be taken in the stacking process to insure that covers are properly aligned (Lifting Eye / Clamp assemblies should be directly above one another. See Figure #7) as they are lowered, smoothly and carefully, one onto the other. **Do Not Drop Covers Onto Stack!!!** Avoid any cover-to-cover contact except in the stacking pad area of the lower cover where the stacking lug of the upper cover is designed to rest (See Figure #3).*

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3) Spreading covers that are stacked on ends of barge →

Reverse the previously described procedures in Item #2 setting Cover #5 in position first, and so on. End covers remain in place at each end of the barge.

*Again, care should be taken in the cover setting process to insure that covers are properly positioned and aligned with pin holes as they are lowered, smoothly and carefully, onto the coaming cap. **Do Not Drop Covers Onto Coaming Cap!!!** Avoid any cover-to-barge contact except in the area between the stacking lug and the outside edge of the cover where the cover is designed to rest on the coaming cap.*

4) Stacking covers for storage →

Stacking and/or storing of covers, other than atop the end covers on each end of the barge, should be accomplished utilizing the following guide lines:

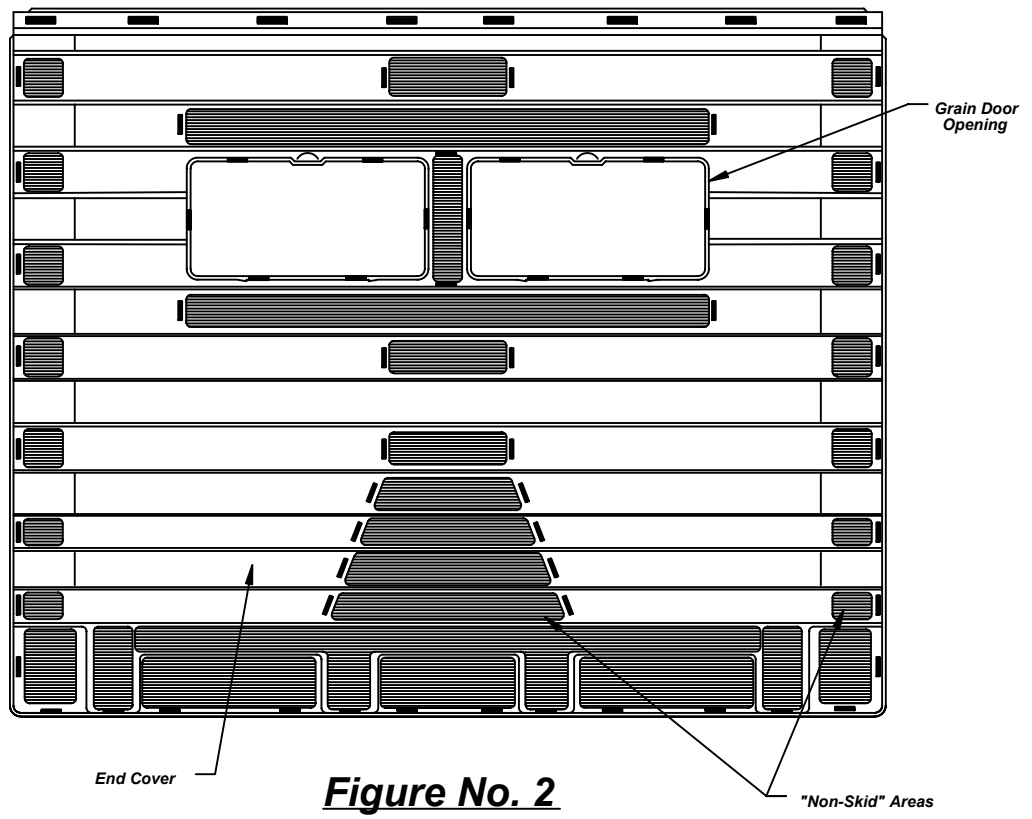
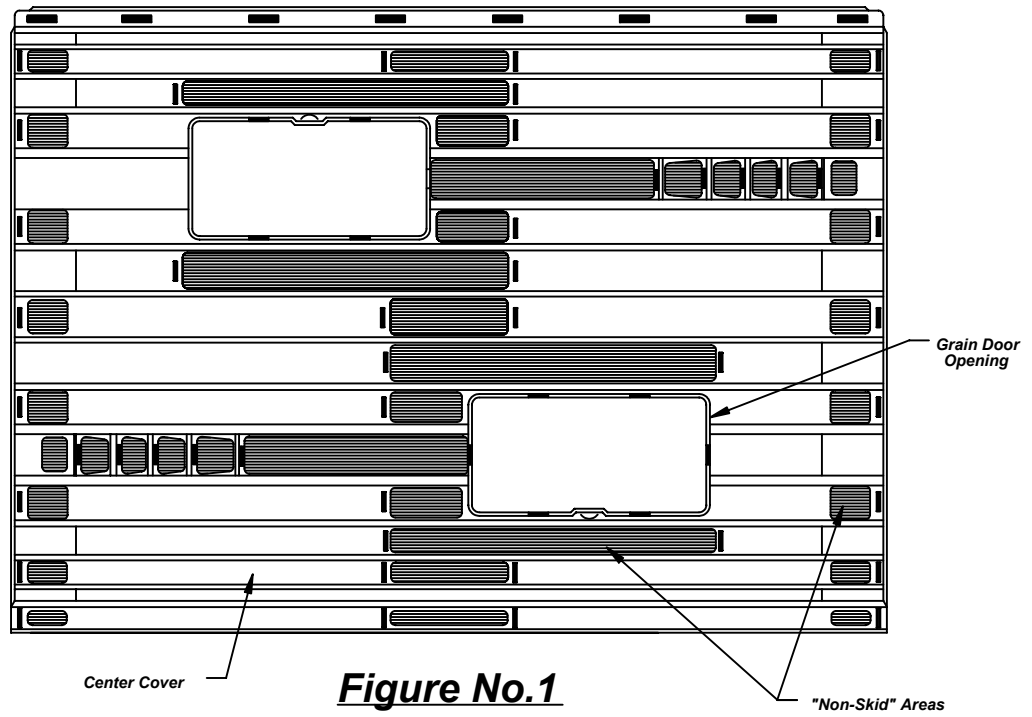
- a. *Cover stack “supports” are required to replace that which is otherwise provided by the coaming and cap on the barge. Prior to starting a cover stack, supports should be placed on a firm, level base and located between the stacking lug and the locator pins on the bottom of the first cover (See Figure #3). The length of this cover support should be a minimum of 16 ft. with two (2) supports required per stack (one on each side of stack). Two railroad ties placed end to end work well for making one support but other materials (such as 8” x 8” square steel or aluminum tubing) can be substituted provided that the substitute material can support the weight of the stack.*
- b. *Never set covers or stacks of covers directly on the “pipe-edge” or the locator pin (See Figures #8a & #8b).*
- c. *Covers per stack should not exceed fifteen (15).*
- d. *Do not stack covers of different widths in the same stack (See Figure #9).*
- e. *Do not “mix” end covers in a stack with center covers. End covers should either be stacked on the bottom with center covers only above or with end covers only in the entire stack.*

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- f. If covers are to be stored in sets, they should be stacked with the two end covers first (on the bottom), the female covers next, then the male/female (if applicable), and finally the males on top for a total of either eight (8) or nine (9) covers per set.*
- g. If covers are to be stored in "bulk", the like covers should be stacked together (i.e. ends in one stack, females in another stack, males in another, and so on). No more than fifteen (15) covers should be in each stack!*

These procedures and guidelines are in accordance with standard practices employed at our manufacturing facilities. Questions concerning and clarification of these procedures should be directed to our FRP Engineering Department at (270) 898-7303.



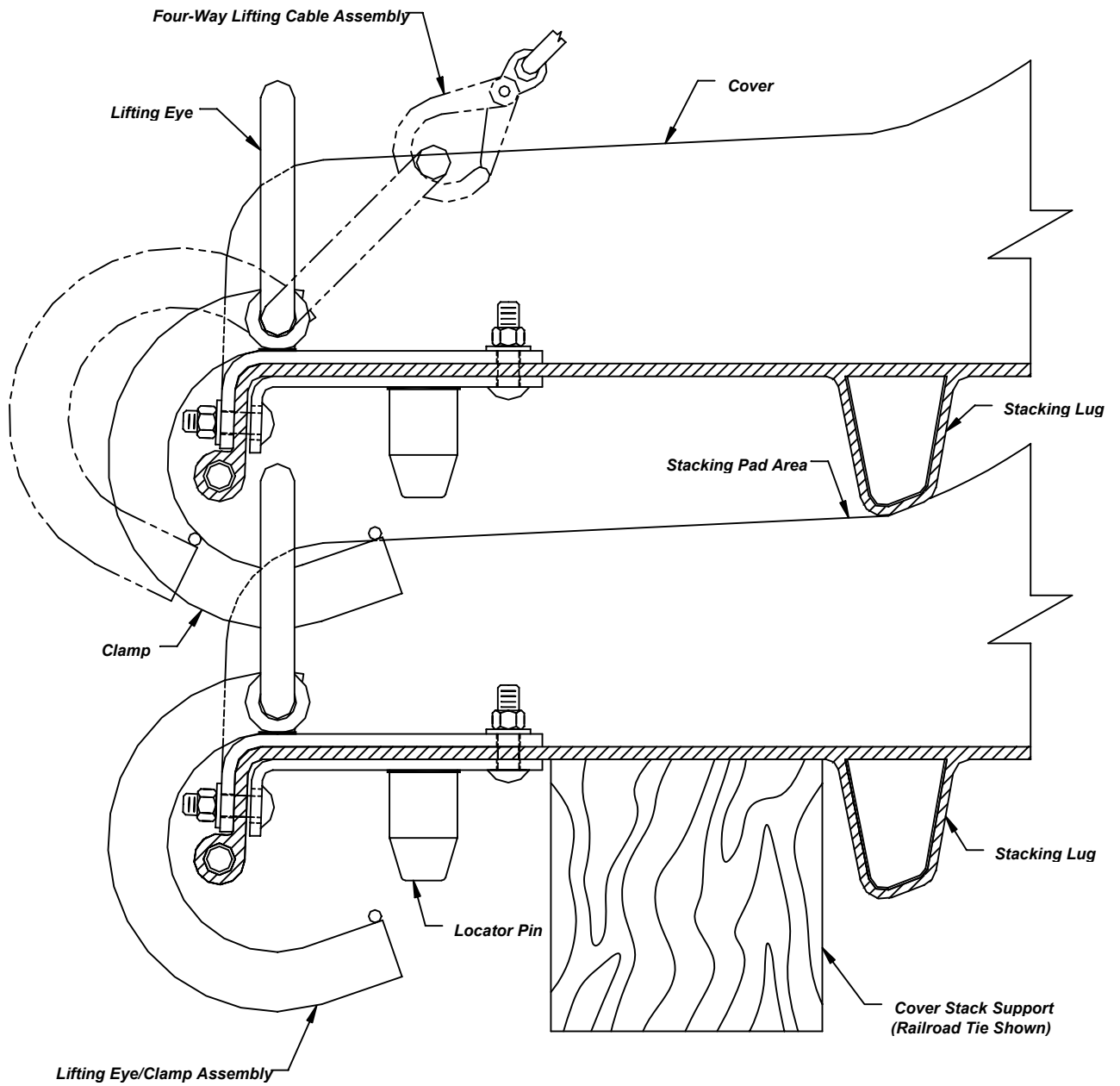
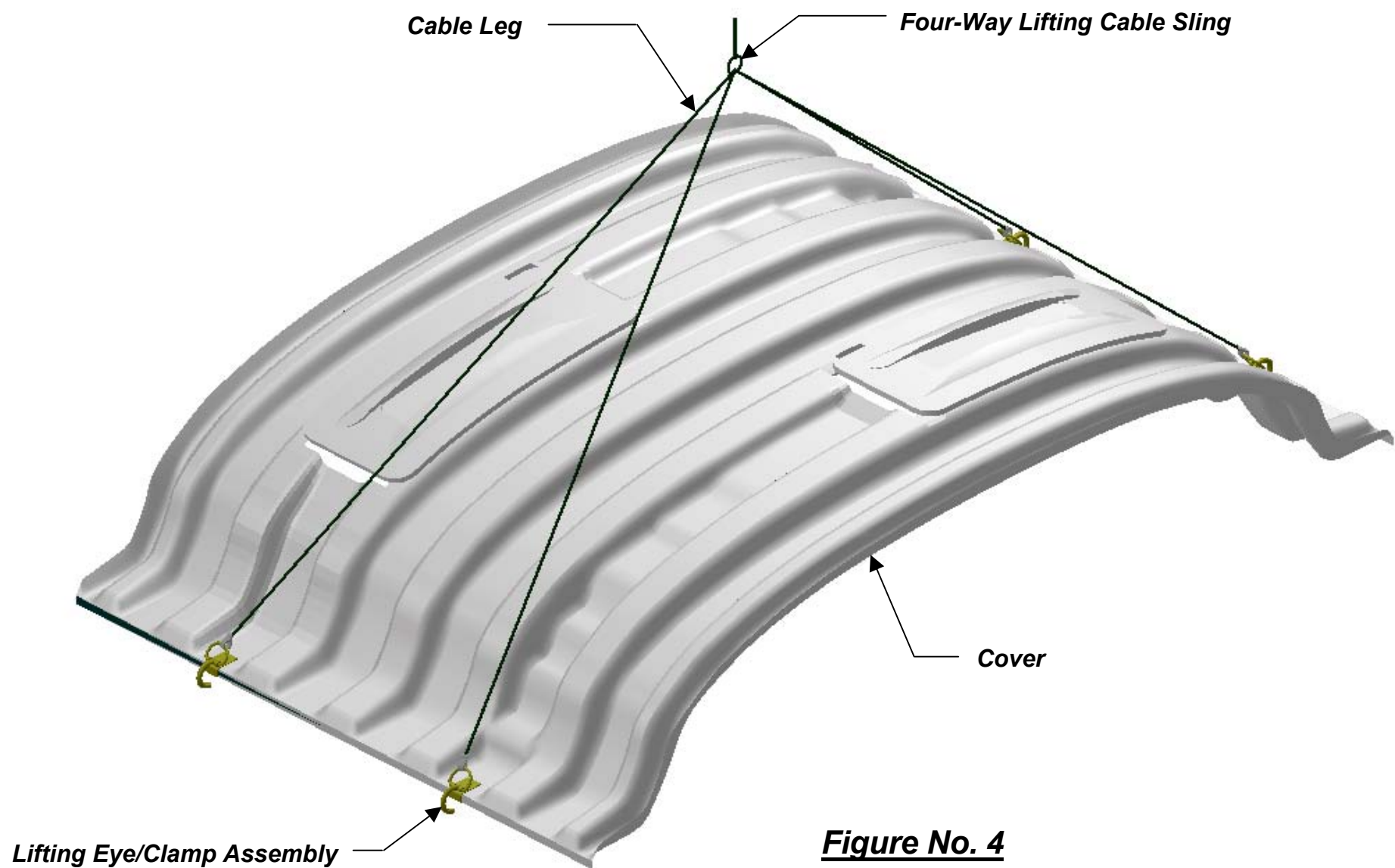


Figure No. 3



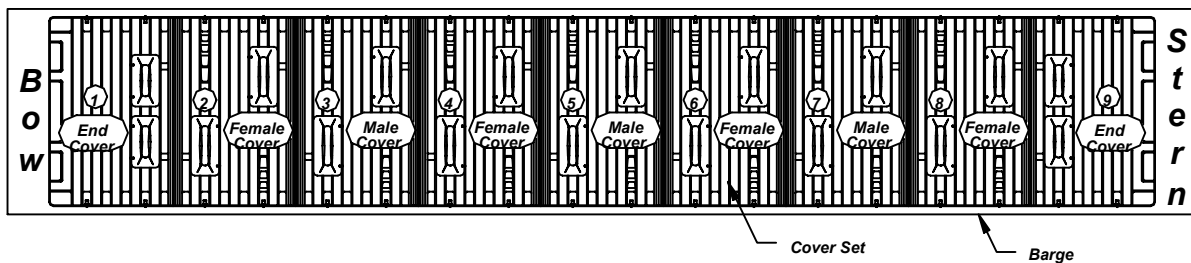


Figure No. 5

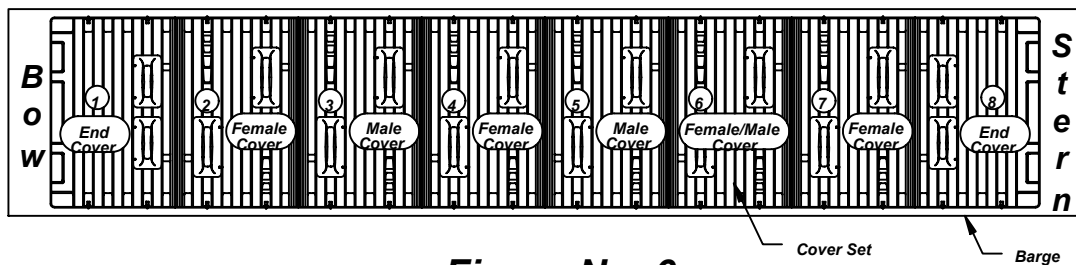


Figure No. 6

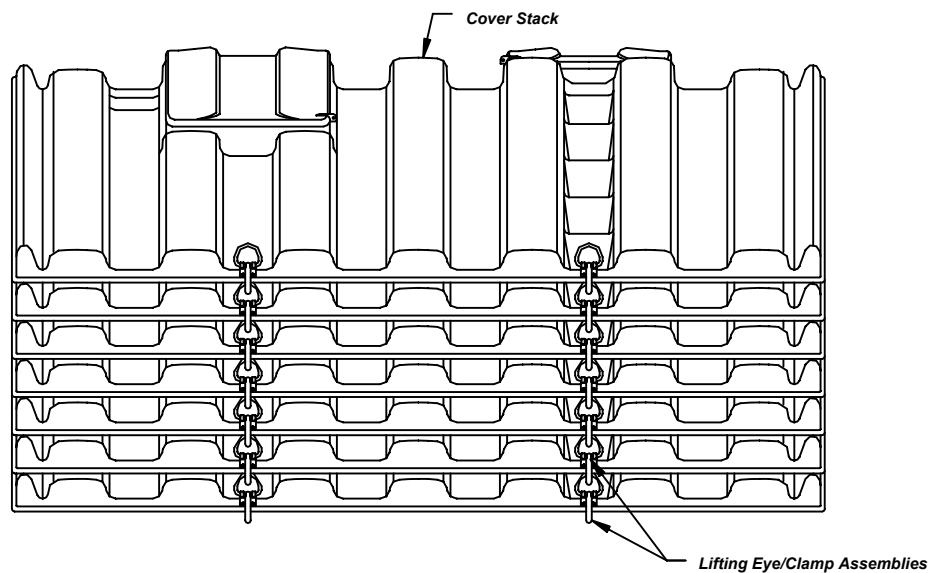


Figure No. 7

