

2.66" CORRUGATION WINDING STAIR

Installation Manual

15' to 60' Diameter Bins

See other details:

Appendix A - 90' to 105' Diameter Bins

Appendix B - 75' to 78' Diameter Bins

Appendix C - 60' to 72' Diameter Bins

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a division of

THE GSI GROUP



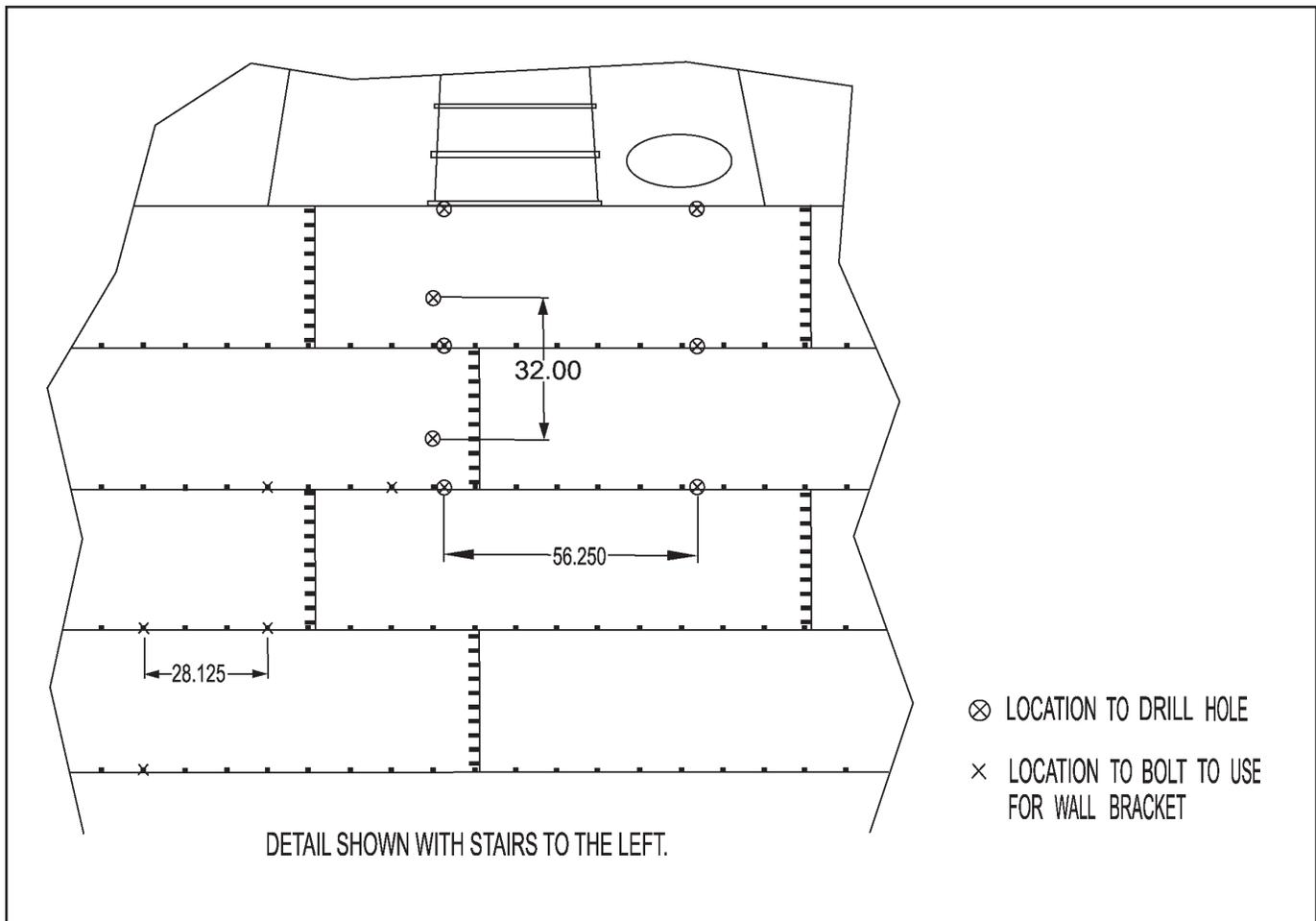
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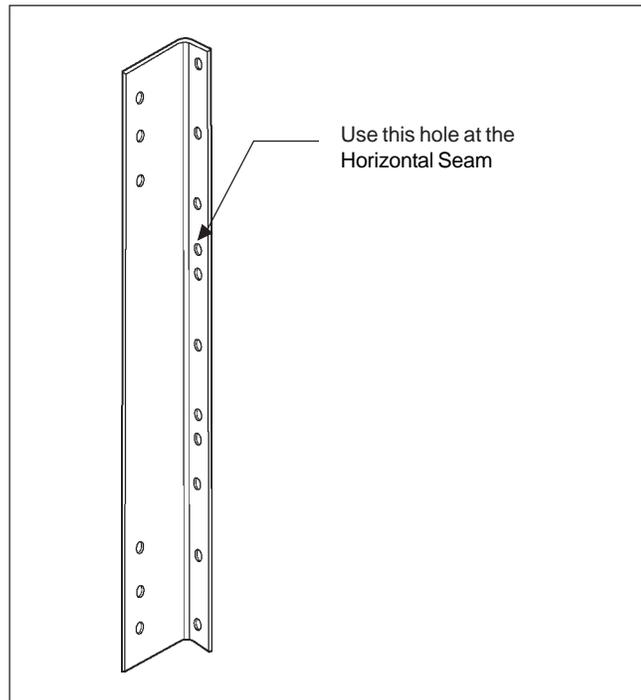
2.66" WINDING STAIR INSTALLATION

- 1) Determine which direction the steps will go around the bin. (Right or Left)
- 2) Determine where you want the steps to begin or end, depending on what is important. Each step will go up 10.666" and around the tank 9 3/8" (one bolt space on the horizontal seam). The 2.66" system will have 3 steps per ring. The platform will then cover 56.25" around the tank (6 spaces around the tank). The platform is to be placed under the roof steps and half of the manway.
- 3) Once you have determined the start and end of the stairs, the roof can be built to match the placement of the platform.
- 4) Add the second ring to the tank and stiffeners if you have a stiffened tank. Once you have two rings of 2.66" sidewall, you can begin mounting the stairs and platform.
- 5) There is to be one step in the top ring and three in each of the following rings.
- 6) The platform and the top of the top step will be 11.75" up from the horizontal seam between the first and second ring.



Installing Wall Brackets :

- 7) The wall brackets (LDR-4082) are to be mounted to the sidewall using horizontal seam bolts. The top wall bracket mounts to the horizontal seam in the hole shown (see diagram). Mount the bracket on the horizontal seam bolt directly below the left side of the roof steps if the steps go to the left or below the center of the manway if the steps will be mounted to the right of the platform.



- 8) Finish attaching the top wall bracket by field drilling a hole at the top and bottom of the bracket and attach with a 5/16" x 1 1/4" bin bolt and nut. (see first diagram)

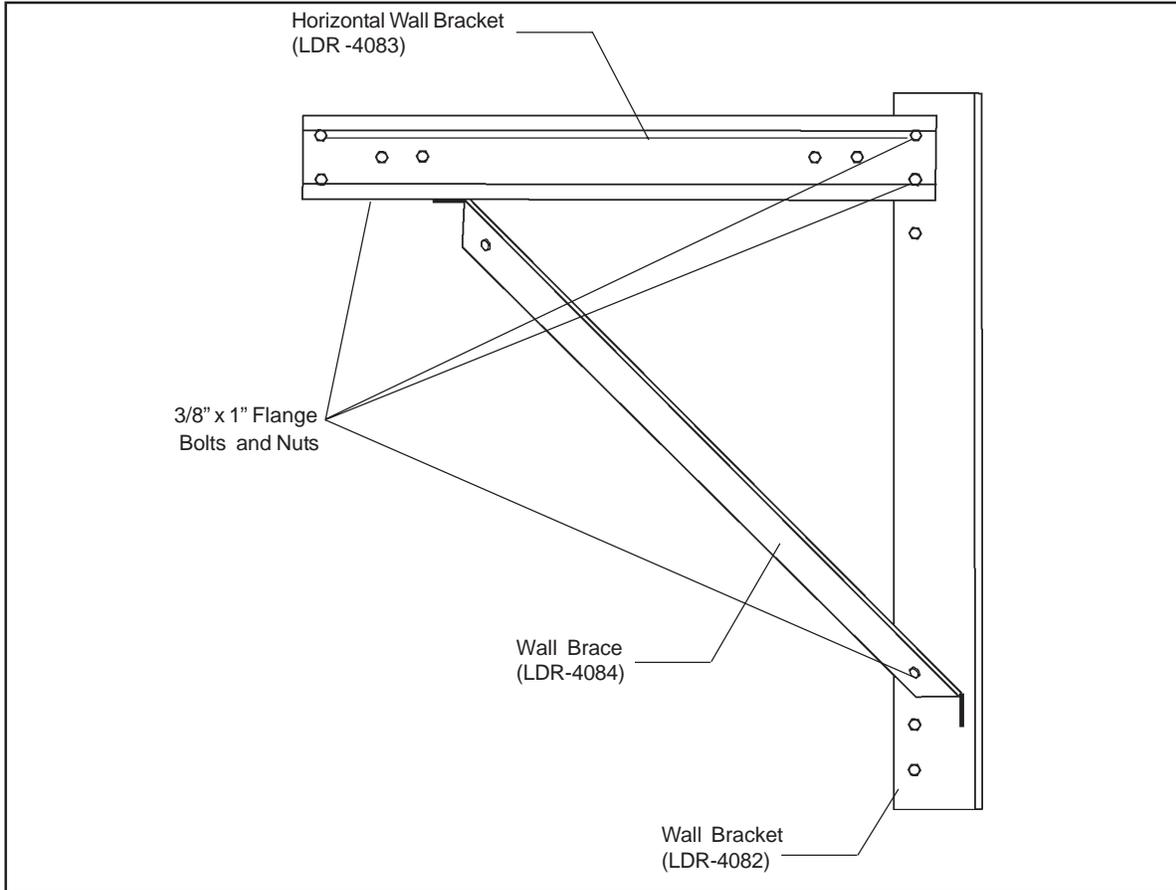
The second wall bracket will be mounted on the horizontal seam between the first and second ring. Space the bracket over 9.375" (one horizontal seam bolt) and attach with the top and bottom holes in the bracket with a 5/16" x 1.1/4" bolt and nut.

Note: All wall brackets must face the same direction.

- 9) Continue adding wall brackets as the tank is built.
- 10) The bottom bracket will need to be field drilled and cut to mount and support the bottom step. The two holes at the bottom of the bracket will be used to mount the horizontal bracket. Cut the bracket 14" long and include the bottom set of holes. Locate the bottom of the wall bracket 38" down from the center of the horizontal seam. Field drill the holes on the hills below the horizontal seam bolt 28 1/8" (3 spaces) over from the bracket at the top of the bottom ring. The bottom step will hang from this bracket.

Installing Horizontal Step Brackets and Wall Brace:

- 11) Attach the horizontal wall bracket (LDR-4083) to wall bracket with (2) 3/8 x 1" flange bolts and nuts. Attach the wall brace(LDR-4084) to the to the bottom of the horizontal bracket and wall bracket with 3/8" x 1" flange bolts and nuts. (See diagram below)

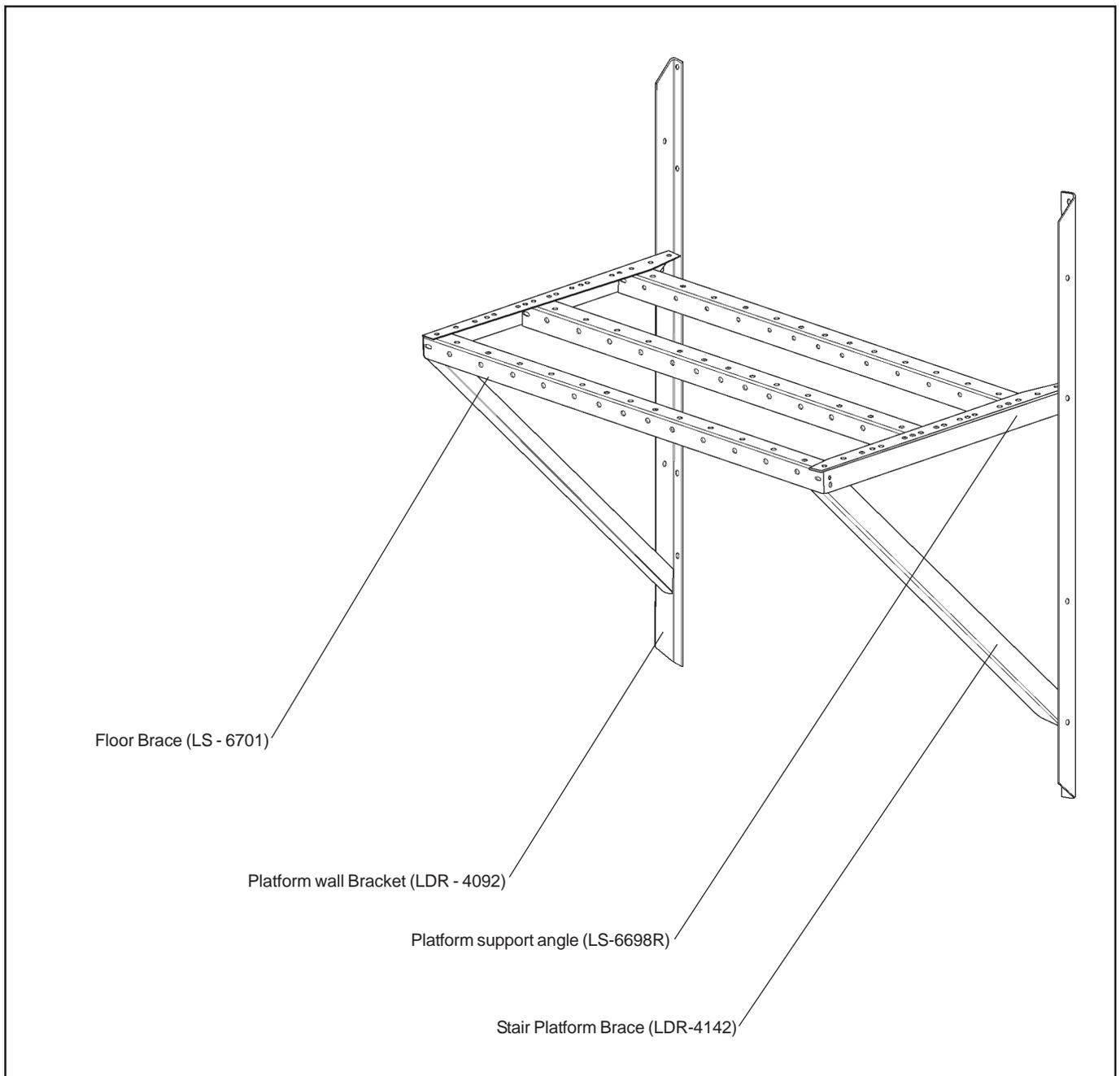


NOTE: Do not attach the wall brace through the sidewall of the bin. The steps will not be level if the lower tab of the wall brace is used.

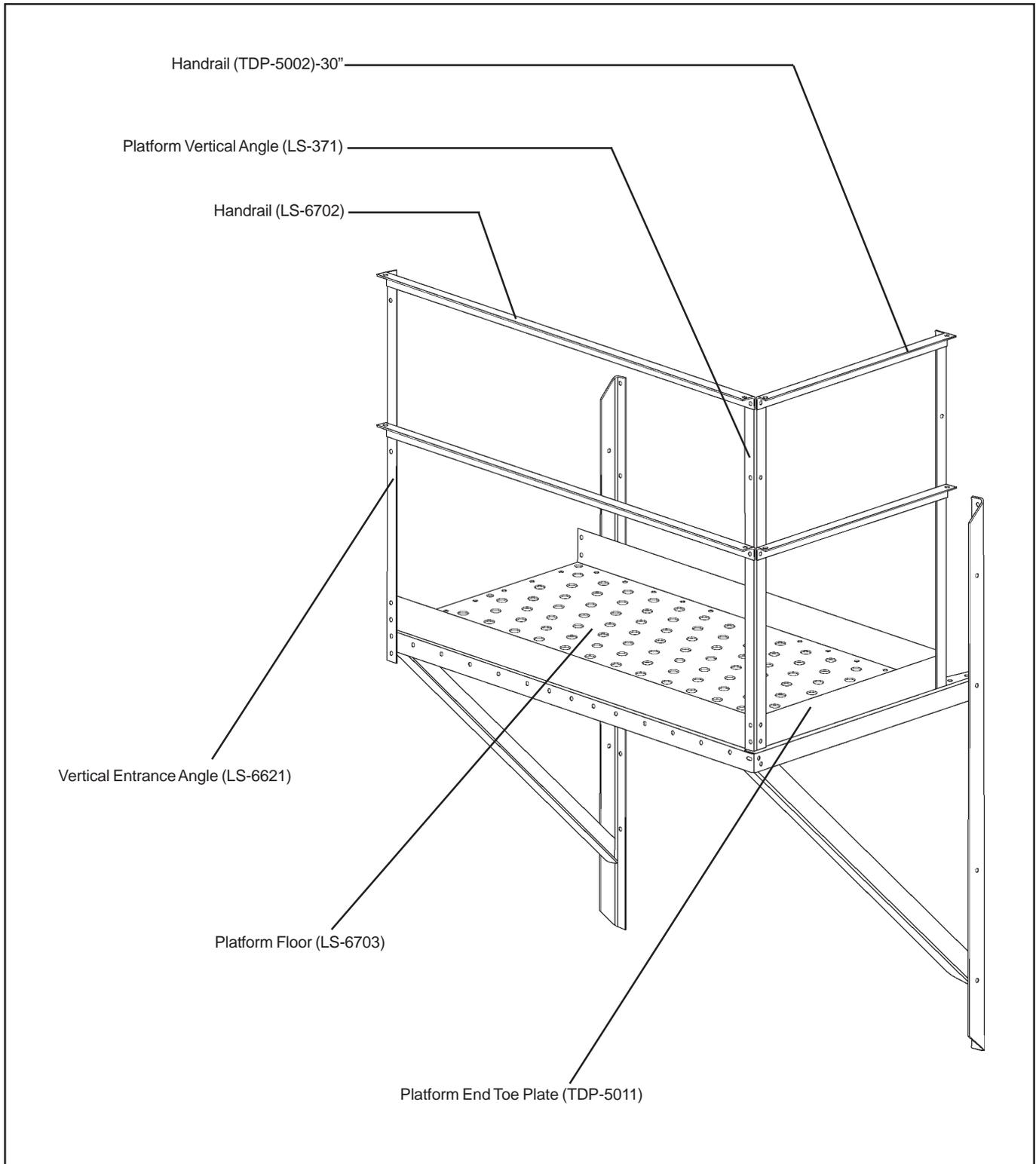
- 12) Tighten all bolts before adding the steps.
- 13) The wall bracket at the base of the tank will need to be field cut and drilled. The horizontal bracket needs to be located 11" up from the concrete to allow the first step to attach. The front lip of the step may need to be trimmed to allow the step to sit level. Drill two holes through the sidewall to attach the shortened wall bracket.

Installing Platform Mounting Brackets and Platform:

- 14) The platform is to be at the same height as the top of the horizontal bracket in the top ring. The platform wall brackets will need to be field drilled to accommodate placement. Preassemble the platform support as shown in the diagram. Place the assembly on the tank wall, align the horizontal angle with the top of the horizontal bracket, mark the 4 holes evenly spaced, remove assembly and drill holes. After drilling the holes, mark the other wall bracket and drill. Attach the first bracket assembly with (4) 5/16" x 1 1/4" bolts and nuts. Assemble the second platform mounting assembly. Temporarily suspend the second wall bracket and attach it to the first assembly with the cross supports. Once the cross supports are in place, level the platform and mark the hole placements for the second wall bracket assembly. Drill the holes and attach the bracket assembly. Tighten all the bolts in the platform support.

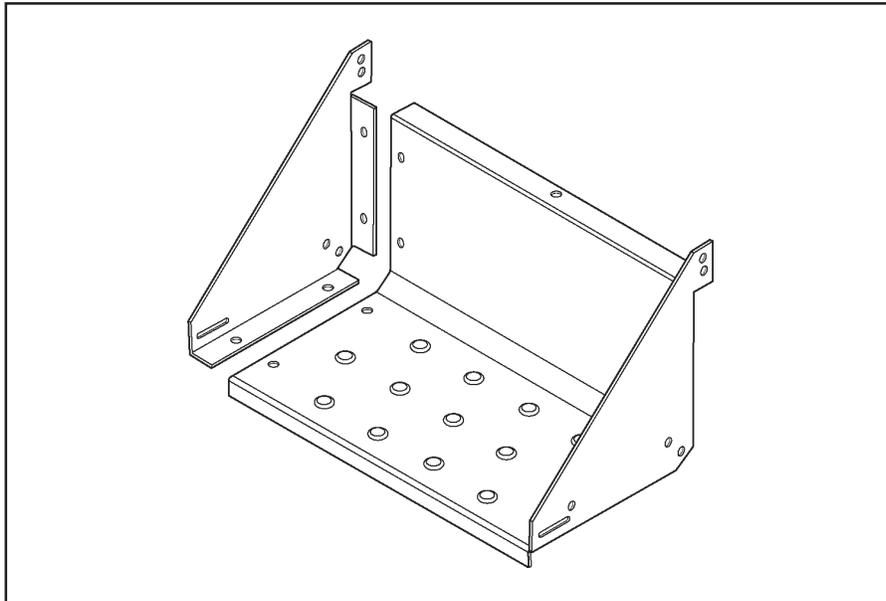


- 15) Attach the platform decking with 5/16" x 3/4" bin bolts and nuts.
- 16) Attach the handrails as shown in the diagram.



Step Assembly

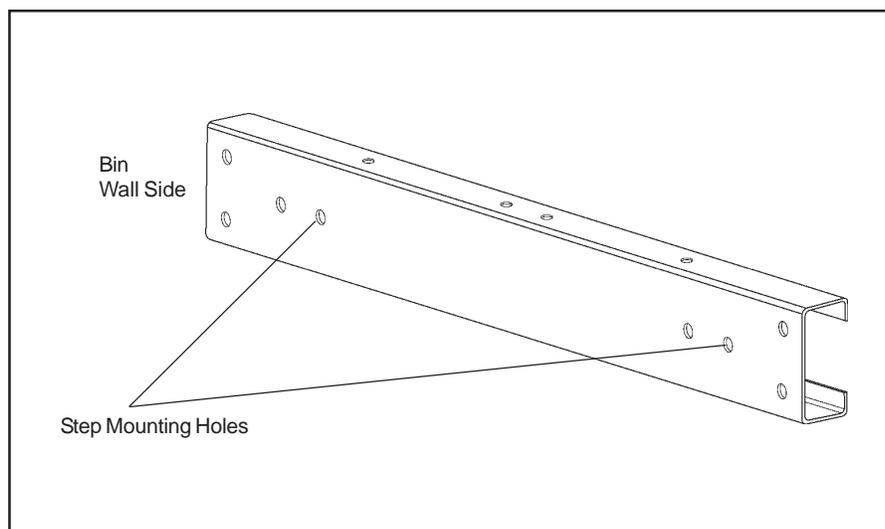
- 17) The ends of the steps are bolted to the step body with 5/16" slot truss bolts and flange nuts. The ends are bolted under and behind the step body. Tighten all 8 bolts after they are all in place and assemble all of the steps.



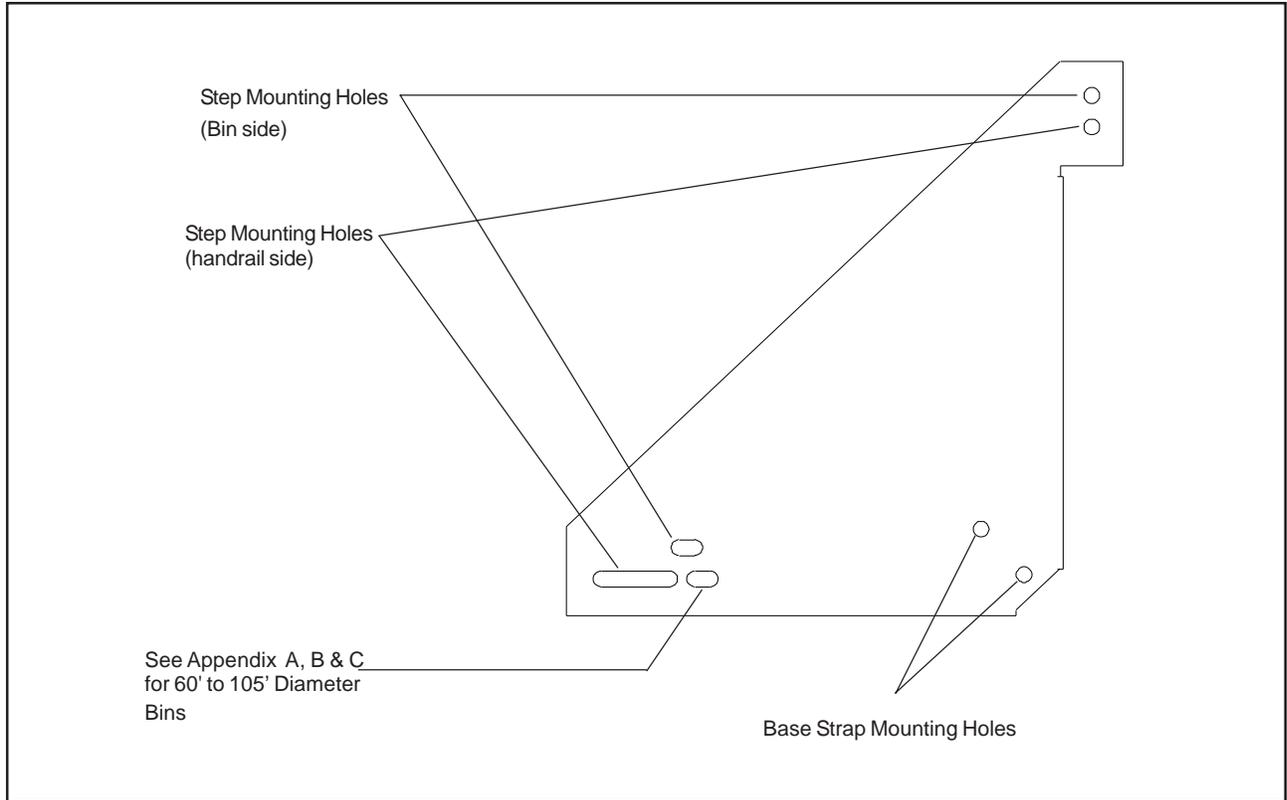
NOTE: Some of these bolts will need to be removed for attaching the step to the horizontal bracket. The front inside bolt may need to be removed if it interferes with the horizontal bracket or the step under it.

Step Attachment

- 18) The step attaches to the horizontal bracket with two top bolts in the back of the step assembly. Loosen the nuts from the bolts and hang the step in place and refasten the nuts.

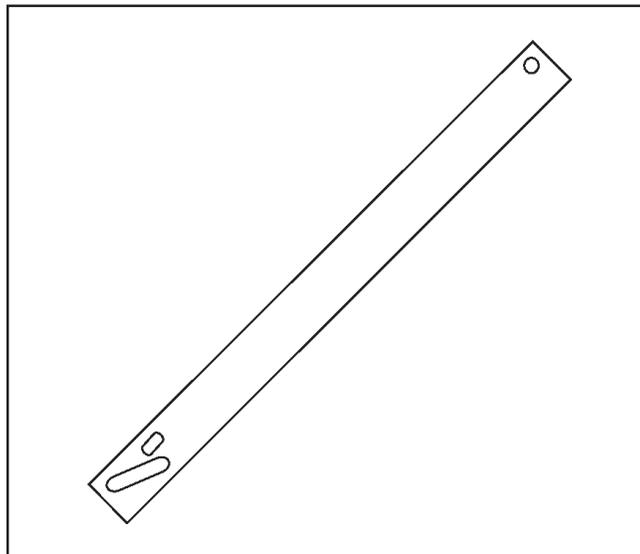


Hang a step on the next horizontal bracket located at the bottom of the bottom ring. The step between the two brackets should be put in place.



Reference the diagram to determine which hole/slot combination you should use to position the step. The location of the bolt within the slot will vary according to the diameter of the bin. Use the 5/16" x 3/4" truss head bolts and flange nuts to attach the steps with one bolt through the top tab into the step above. As the steps are installed, it may be necessary to remove the front inside bolt of the step to stop the interference with the horizontal bracket. Leave the bolts loose until all steps in the ring are in place.

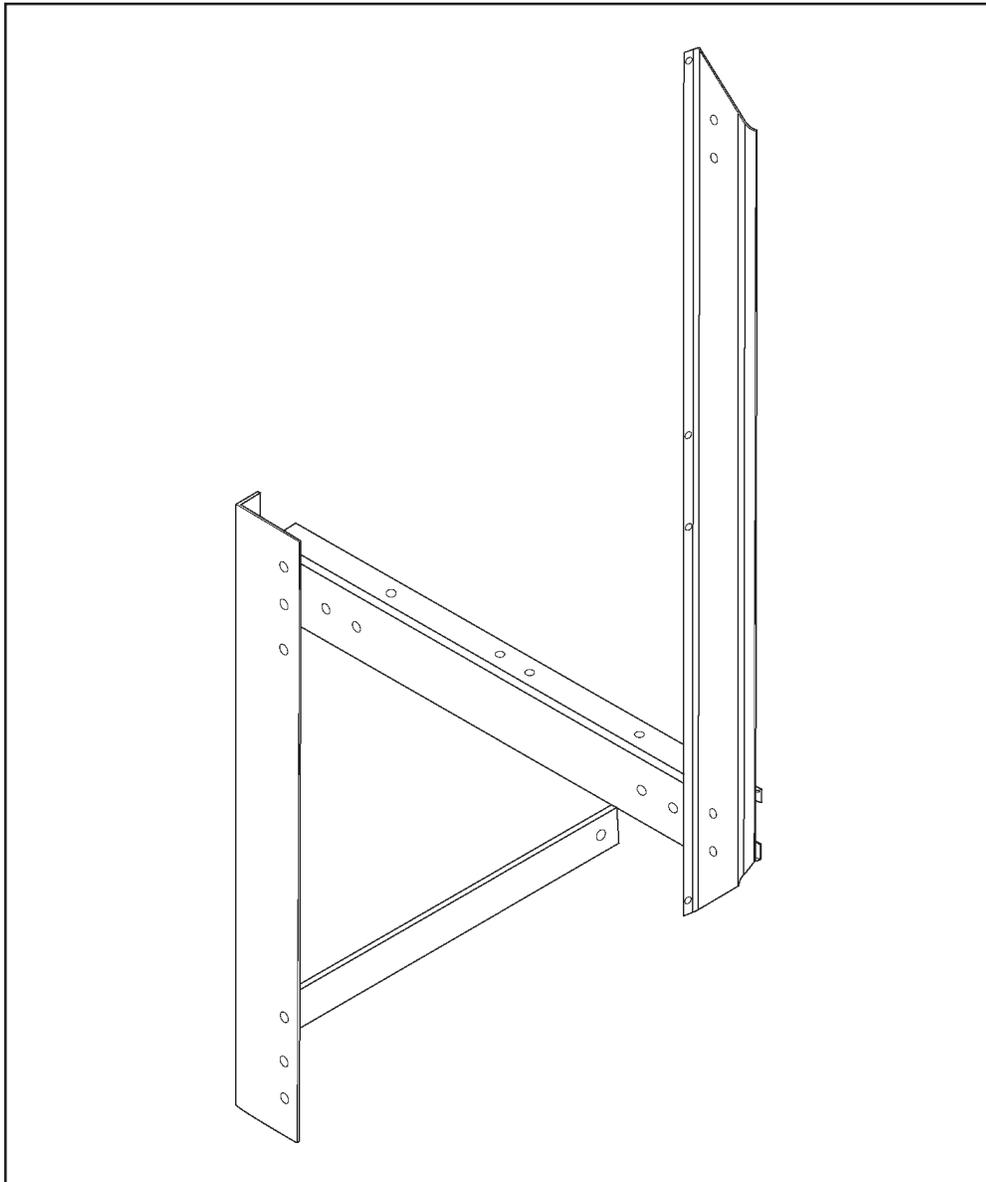
- 19) Install brace straps between the steps with 5/16" x 3/4" truss head bolts and flange nuts. The braces use one common hole in each step to attach. Use the lower mounting holes in the step where the brace must pass under the horizontal wall bracket. Visually determine which holes work best for the tank curvature that you have. The small slot on the brace will be used on the inside on small diameter bins.



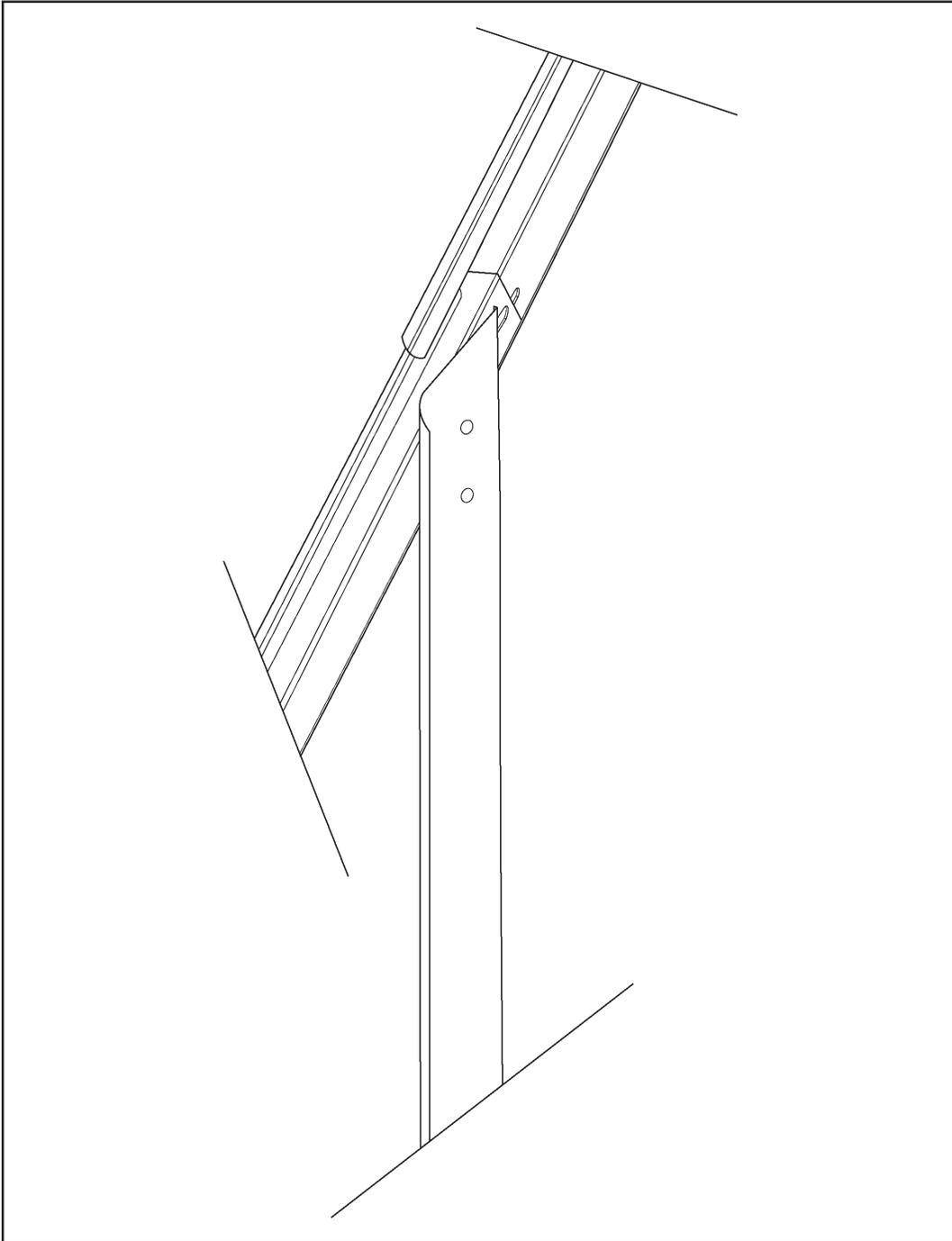
- 20) After the braces are installed, level each step and tighten all the bolts between the steps and in the braces. As you tighten, adjust the steps in the slots to curve with tank.
- 21) Continue raising the tank and adding wall brackets. Add three steps for each ring.

Handrail Posts and Handrail

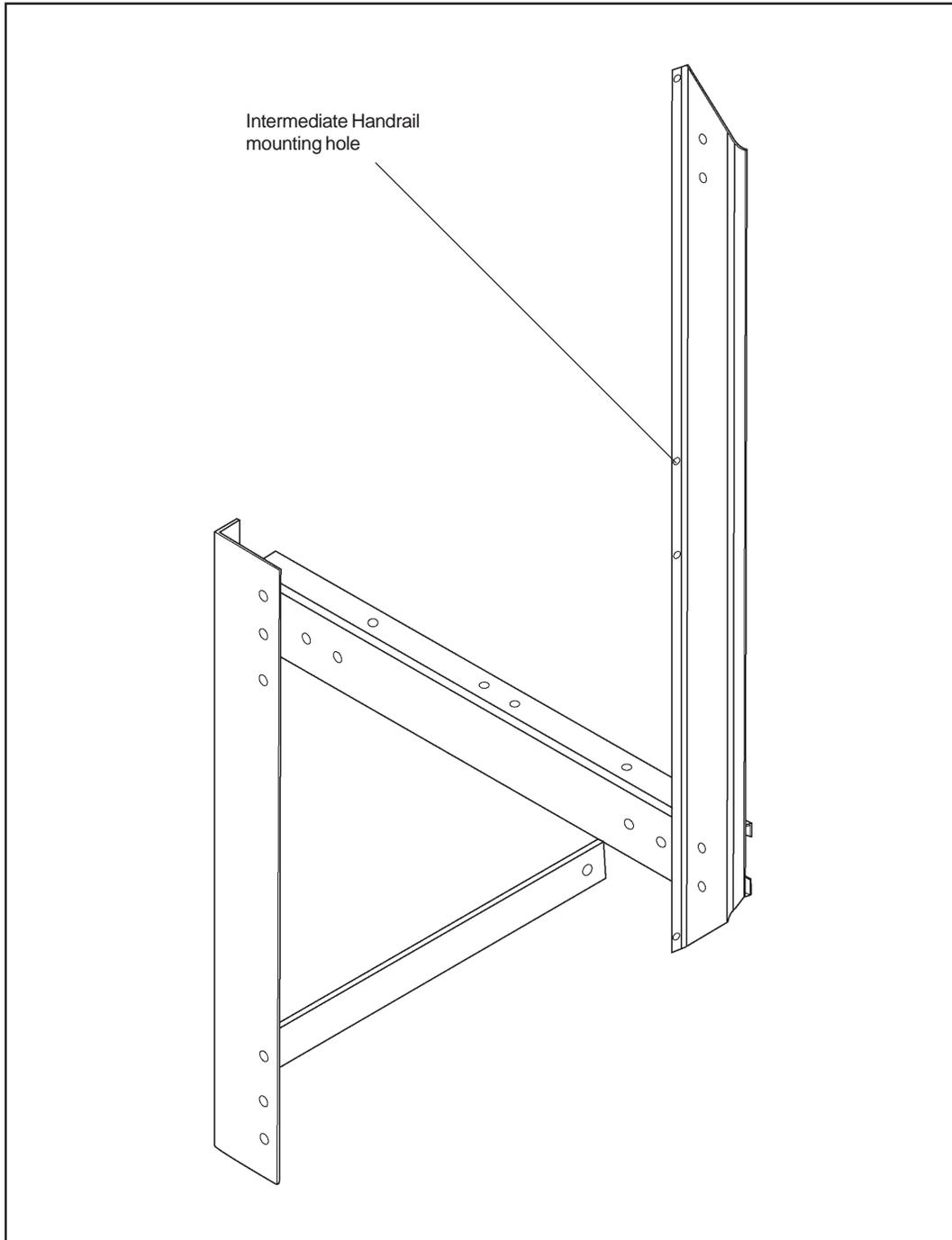
- 22) Attach the handrail posts to the end of the horizontal bracket with (2) 3/8" X 1" flange bolts and nuts. Make sure the post is plumb and tighten the bolts.



- 23) Each top handrail piece is set up to slide inside or over the one above it. Attach the upper handrail to the posts using a 5/16" x 1 1/4" bin bolt and nut. Put the bolt head on the inside of the stairs and loosely attach the nut. Continue adding stair sections and handrail. When all of the top handrail is in place, begin leveling the posts and tightening the handrail bolts from the top down. The tank diameter will determine where in the slot the bolt will be located.
- 24) Connection of the handrail to the platform will also depend heavily on the tank diameter. The top piece of handrail will need to be field cut and drilled as necessary.

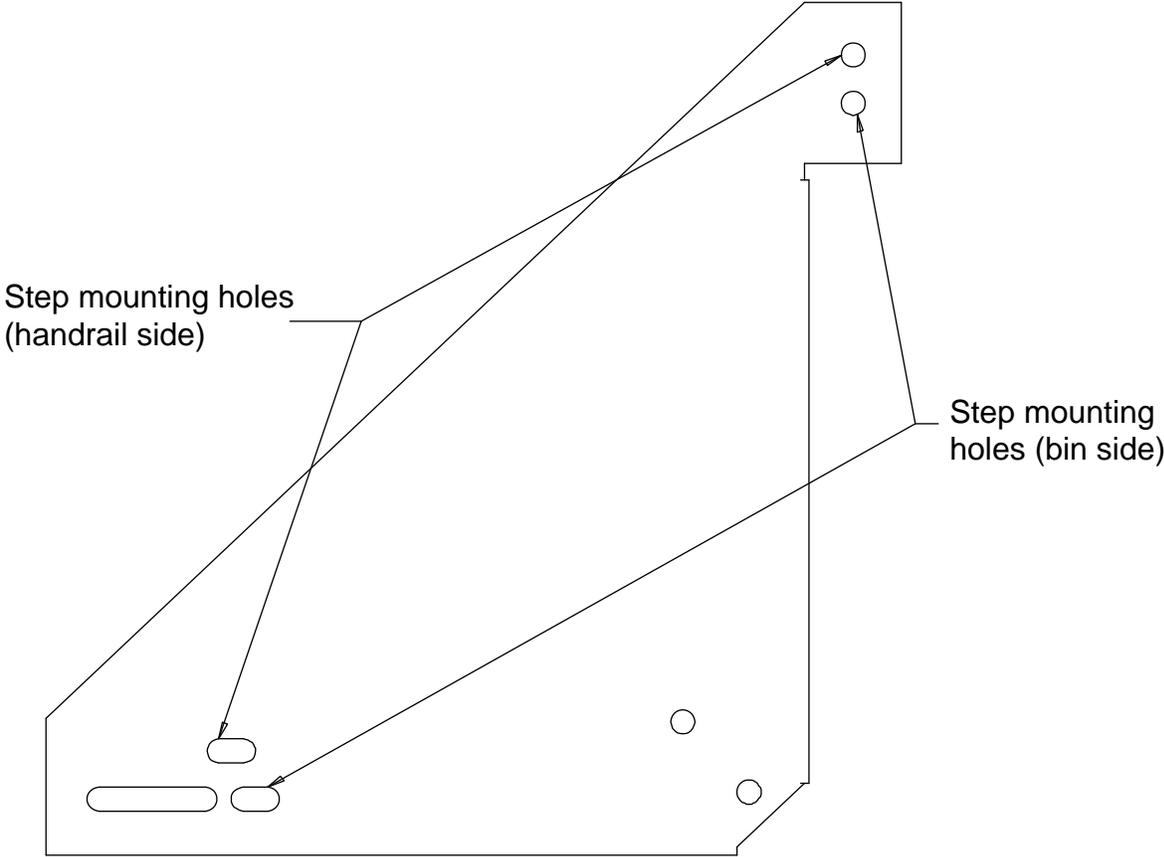


- 25) Bolt the intermediate handrail in place near the middle of the post with 5/16" x 3/4" bolts and flange nuts. Install the larger end of the telescoping tubes toward the top to keep moisture from running in the tube. The length of each piece may need to be shortened in the top section and bottom section.



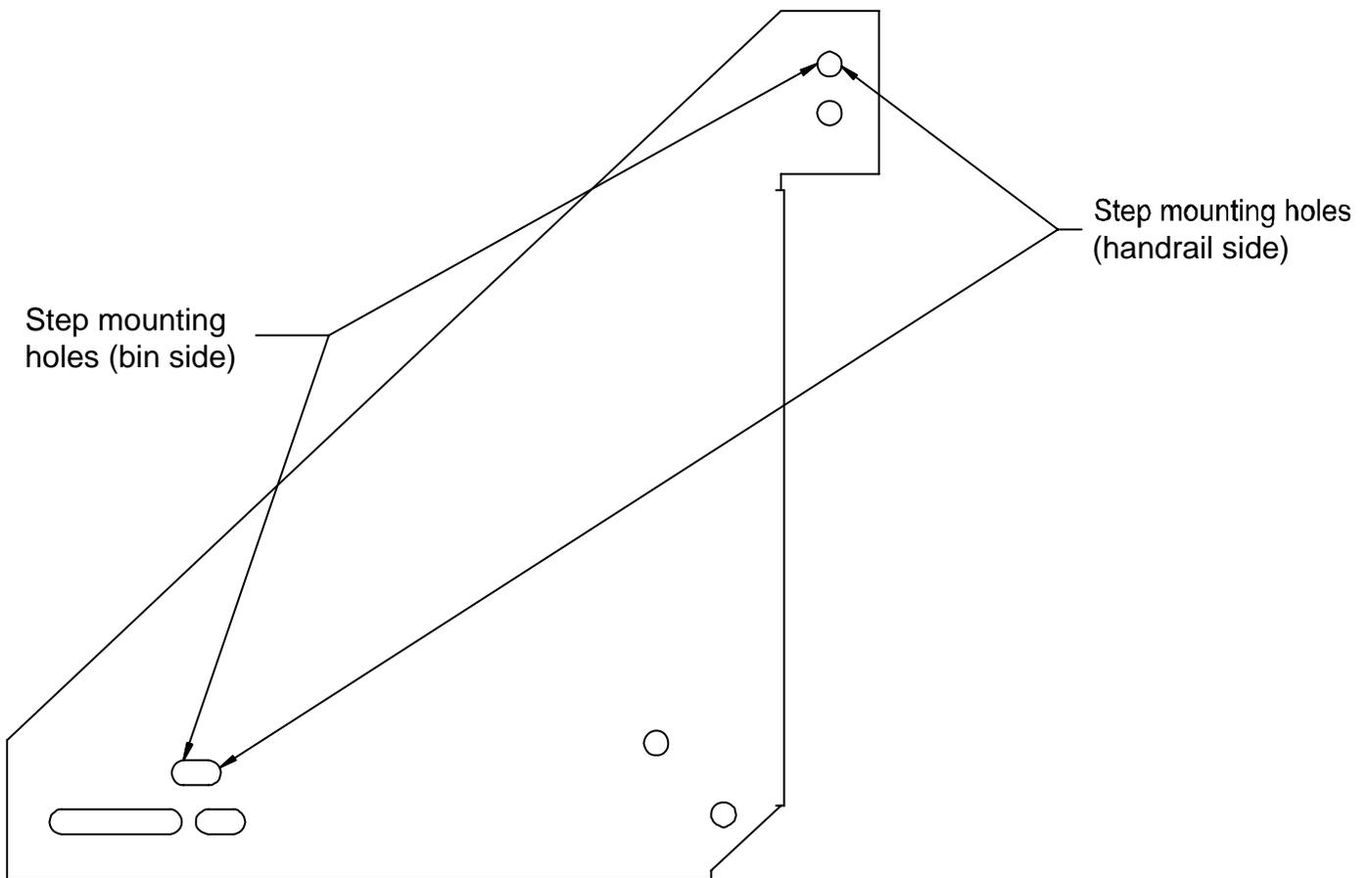
Appendix A

Holes / slots to be used to position the steps for a 90' to 105' bin.



Appendix B

Holes / slots to be used to position the steps for a 75' to 78' bin.



Appendix C

Holes / slots to be used to position the steps for a 60' to 72' bin.

