



# Top Dry Autoflow Construction Manual 21', 24', 30' and 36'

Construction and Owner's Manual

GSI GROUP



PNEG-1276

Date: 06-06-12



PNEG-1276



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## Safety Guidelines

This manual contains information that is important for you, the owner/operator, to know and understand. This information relates to protecting **personal safety** and **preventing equipment problems**. It is the responsibility of the owner/operator to inform anyone operating or working in the area of this equipment of these safety guidelines. To help you recognize this information, we use the symbols that are defined below. Please read the manual and pay attention to these sections. Failure to read this manual and its safety instructions is a misuse of the equipment and may lead to serious injury or death.



**This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.**



**DANGER** indicates a hazardous situation which, if not avoided, will result in death or serious injury.



**WARNING** indicates a hazardous situation which, if not avoided, could result in death or serious injury.



**CAUTION**, used with the safety alert symbol, indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

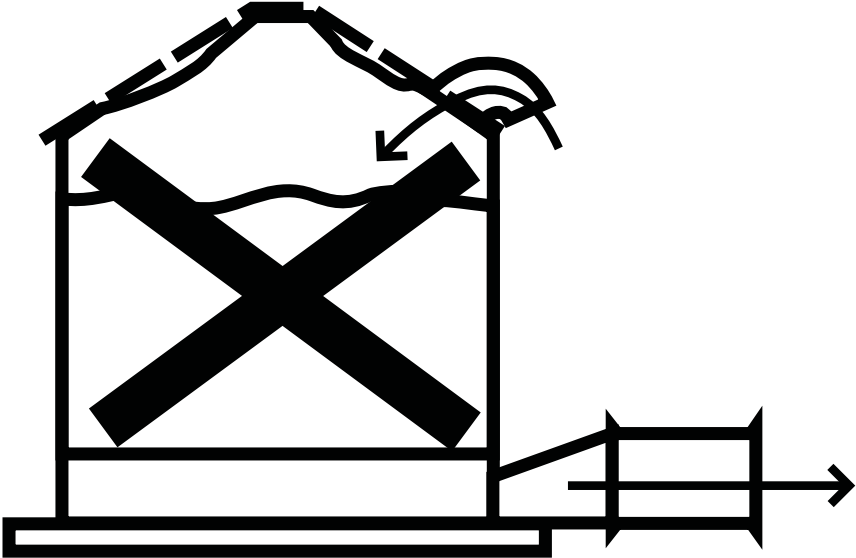


**NOTICE** is used to address practices not related to personal injury.

## Roof Damage Warning and Disclaimer

The manufacturer does not warrant any roof damage caused by excessive vacuum or internal pressure from fans or other air moving systems. Adequate ventilation and/or “makeup air” devices should be provided for all powered air handling systems. The manufacturer does not recommend the use of downward flow systems (suction). Severe roof damage can result from any blockage of air passages. Running fans during high humidity/cold weather conditions can cause air exhaust or intake ports to freeze.

**⚠ CAUTION!**



The diagram shows a simple line drawing of a house with a gabled roof. A roof vent is located on the right side of the roof. A large, bold 'X' is drawn over the roof area, indicating damage or obstruction. An arrow points from the vent towards the right, suggesting airflow. The entire diagram is enclosed in a black border.

**Excessive vacuum (or pressure) may damage roof. Use positive aeration system. Make sure all roof vents are open and unobstructed. Start roof fans when supply fans are started. Do not operate when conditions exist that may cause roof vent icing.**

**DC-969**

**ATTENTION:** The decal shown below should be present on the outside of the door cover of the 2 ring, 24" porthole door cover and the roof manway cover. If a decal has been damaged or is missing in any of these locations, contact the manufacturer for a free replacement decal.

**GSI Decals**

1004 E. Illinois St.  
Assumption, IL. 62510  
Phone: 1-217-226-4421



# DANGER

		
<b>Rotating flighting will kill or dismember.</b>	<b>Flowing material will trap and suffocate.</b>	<b>Crusted material will collapse and suffocate.</b>

## Keep clear of all augers. DO NOT ENTER this bin!

---

**If you must enter the bin:**

- 1. Shut off and lock out all power.**
- 2. Use a safety harness and safety line.**
- 3. Station another person outside the bin.**
- 4. Avoid the center of the bin.**
- 5. Wear proper breathing equipment or respirator.**

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## Failure to heed these warnings will result in serious injury or death.


DC-GBC-1A

## 2. Decals

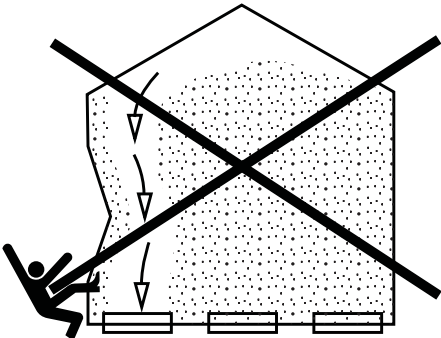
**ATTENTION:** The decal shown below should be present on the outside of the door cover of the 2 ring, 24" porthole door cover and the roof manway cover. If a decal has been damaged or is missing in any of these locations, contact the manufacturer for a free replacement decal.

### GSI Decals

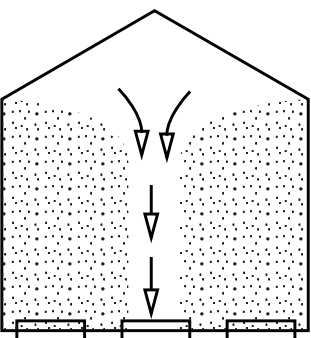
1004 E. Illinois St.  
Assumption, IL. 62510  
Phone: 1-217-226-4421



# WARNING



**DON'T**



**DO**

### UNLOADING INSTRUCTIONS:

1. Use **CENTER FLOOR OUTLET ONLY** until **NO** grain remains above this outlet.
2. Side floor outlets to be used **ONLY** when above condition is satisfied.
3. Lock all side floor outlets to avoid accidental premature use.
4. See manufacturers instructions for proper use of factory supplied sidedraw (wall) discharge systems.

**Failure to heed these warnings could result in serious injury, death, structural damage or collapse of tank.**

DC-GBC-2A



## Foundation Requirements for Top Dry Bins (4.00" Top Dry Bin Corrugation)

### Requirements

The following foundation recommendations are a revision to earlier manuals distributed by the GSI Group.

**NOTE:** *There are changes in foundation dimensions from past publications. These dimensions are critical to the proper installation and function of each foundation.*

### Selecting the Proper Site

The selected site should be level, firm and free from underlying debris. The bin can be installed satisfactorily on slopes, but as the slope increases, additional labor and materials are required for the foundation. The concrete foundation surface must be level. If some fill is required, it should be watered and tamped thoroughly to prevent uneven settling from the weight of the bin. Naturally, the site must allow convenient access for easy loading and unloading, plus provide additional space for future units. Also consider the positioning of handling equipment, availability of electricity and the placement of fans, heaters, and gas tanks.

### Scribe the Diameter

Having determined the center of the site, drive a small 2 x 4 in the ground to mark the center point of the foundation. The top of the stake should be the same height as the finished foundation will be. Using one large spike, nail a straight 2 x 4 (approximately 2' longer than the radius of the bin) to the top of the center spike. The swiveling 2 x 4 will act as a compass, enabling you to scribe the correct diameter of the foundation and later locate the anchor and stiffener bolt locations. (**NOTE:** *Making the 2 x 4 2' longer than the radius allow the 2 x 4 to also be used as a leveling device and for pulling concrete.*) (See Figure 3A.)

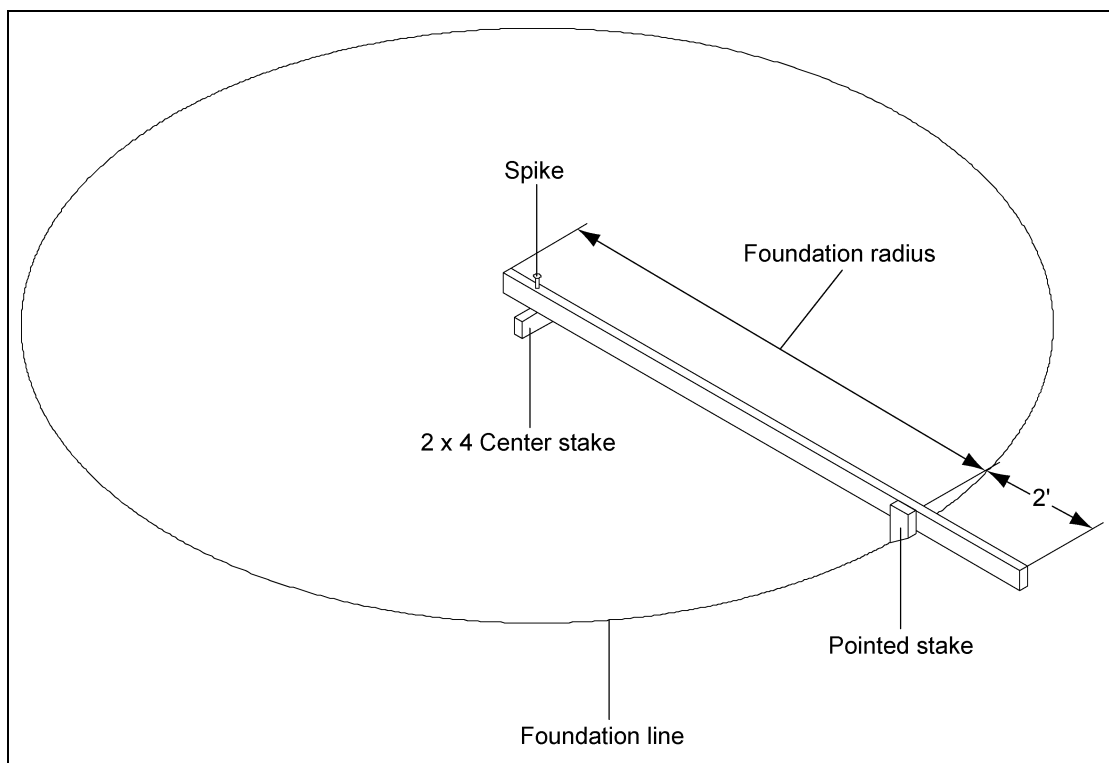


Figure 3A

### 3. Foundation Requirements

## Foundation Requirements for Top Dry Bins (4.00" Top Dry Bin Corrugation) (Continued)

### Prepare the Foundation Forms

Having scribed the diameter of the foundation, proceed by digging the foundation's footing. This consists of a large circular trench dug inside the foundation line, (Refer to foundation details for necessary information). Once the footing has been dug, you are ready to build the forms. It is important that the forms be rigid enough to hold its shape against the poured concrete. Also, the foundation must be flat. Sloped floors cannot be used in drying bins. A carpenter's level placed on top of the compass 2 x 4 will enable you to set the top of the forms to match the top of the center stake. Check the form work with a transit to ensure a uniform elevation for the entire foundation. The foundation should be level within 1/8" on non-stiffened tanks and 1/4" on stiffened tanks at bin wall perimeter. Stiffened tanks must be shimmed level. (See [Figure 3B](#).)

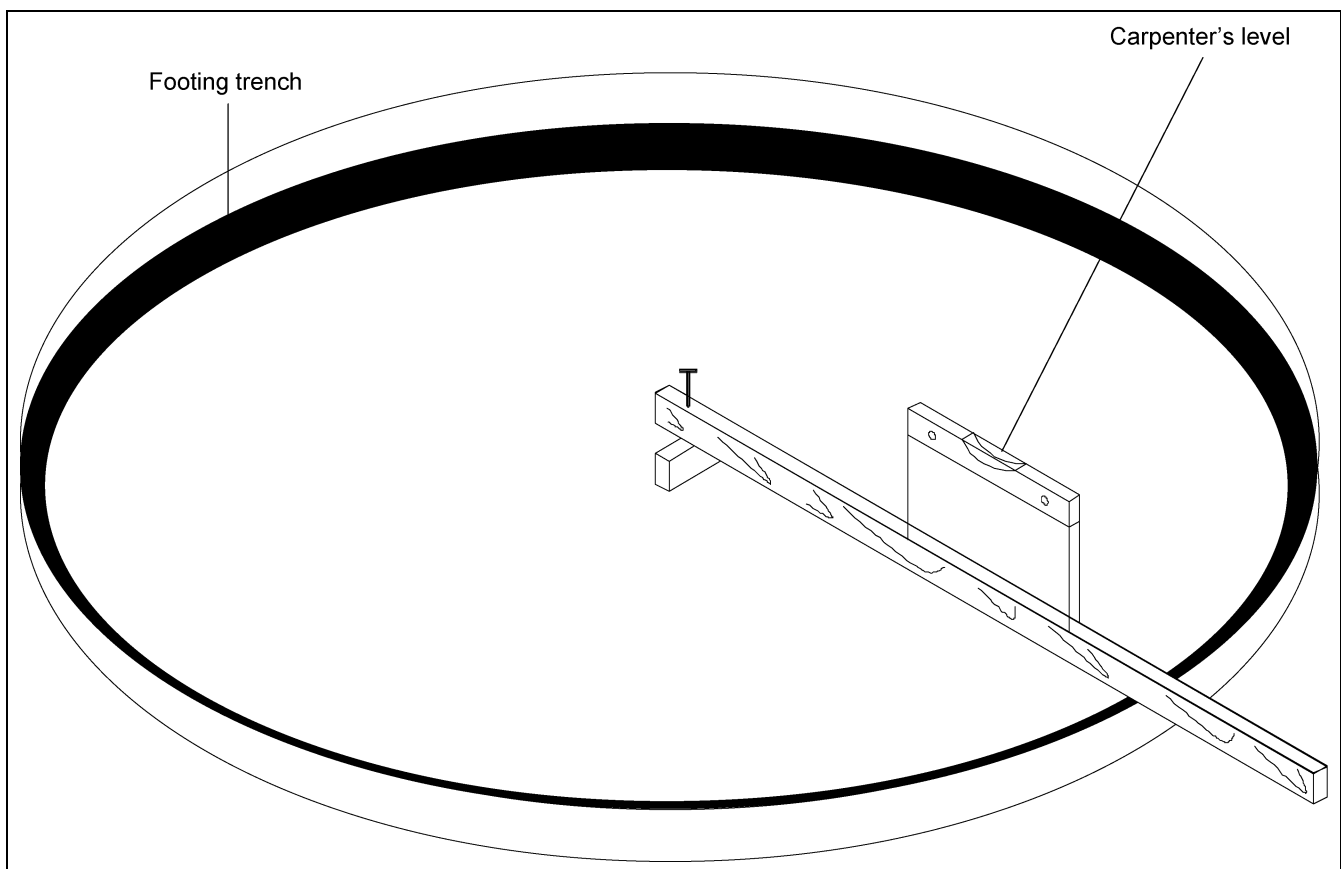


Figure 3B

All foundation specifications shall be construed as recommendations only. Because of the many variable conditions in actual installation, the GSI Group, assumes no liability for results arising from the use of such recommendations.

### Alternate Foundation Forms

There are two (2) styles of foundation forms commonly used. The first is the circular form shown in [Figure 3B](#). The second style of foundation can be made of 2" x 8" boards set into a square with the corners blocked off to form an octagon. This eight sided form will approximate a circle and can also be constructed easily.

## Foundation Requirements for Top Dry Bins (4.00" Top Dry Bin Corrugation) (Continued)

### Second Style of Foundation

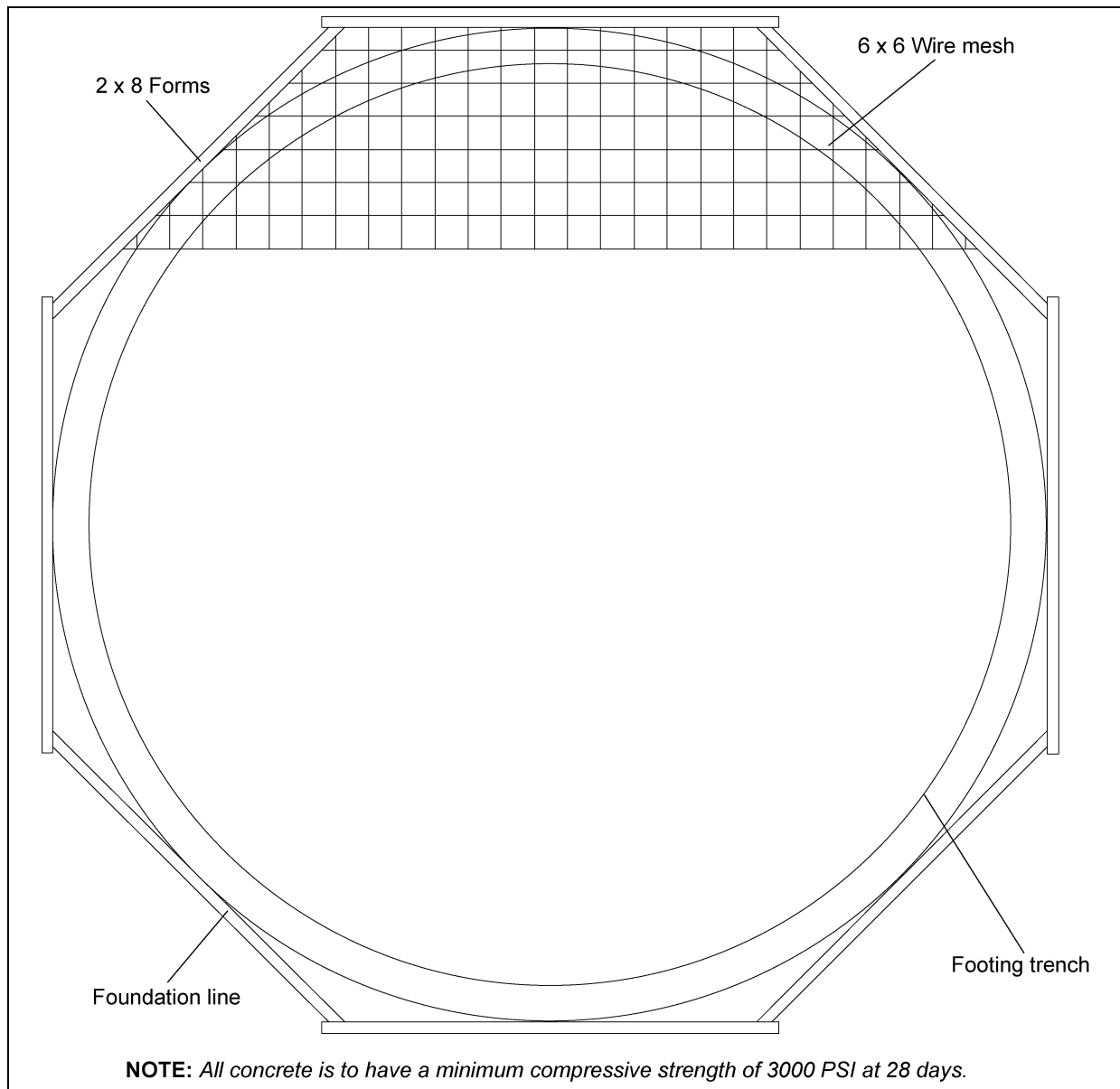


Figure 3C

### Place the Reinforcement

Once the forms and trench have been prepared, begin the placement of reinforcement rods at various levels in the foundation's footing. See the appropriate charts and drawings for the bin to determine requirements and positions of the reinforcement. The reinforcement rods offer their greatest strength when lapped properly and connected by wiring or welding. Next, place a minimum of 2" of compacted sand on the inside section of the foundation to provide a good base for the concrete and protect against rodents. The sand should then be covered with four (4) mil polyethylene plastic which will act as a moisture barrier. Two (2) layers of 6 x 6 wire mesh should then be added to the entire area of the foundation to complete the preparation of the bins foundation. (See Figure 3C.)

### 3. Foundation Requirements

## Inline Centrifugal Fan Pad

### Placement of the Fan Pad: GSI Transitions/Fans only.

If a fan is to be installed, refer to [Figure 3D](#) to determine the concrete pad size.

1. The top of this pad should be level with the top of the bin's foundation.
2. Recommended pad thickness is 4" minimum.
3. Front of pad should be perpendicular to bin wall.
4. Pad for heater not required.

**IMPORTANT:** Fan pad and fan must be leveled and smooth for proper operation. Vibration problems can result from improper fan leveling.

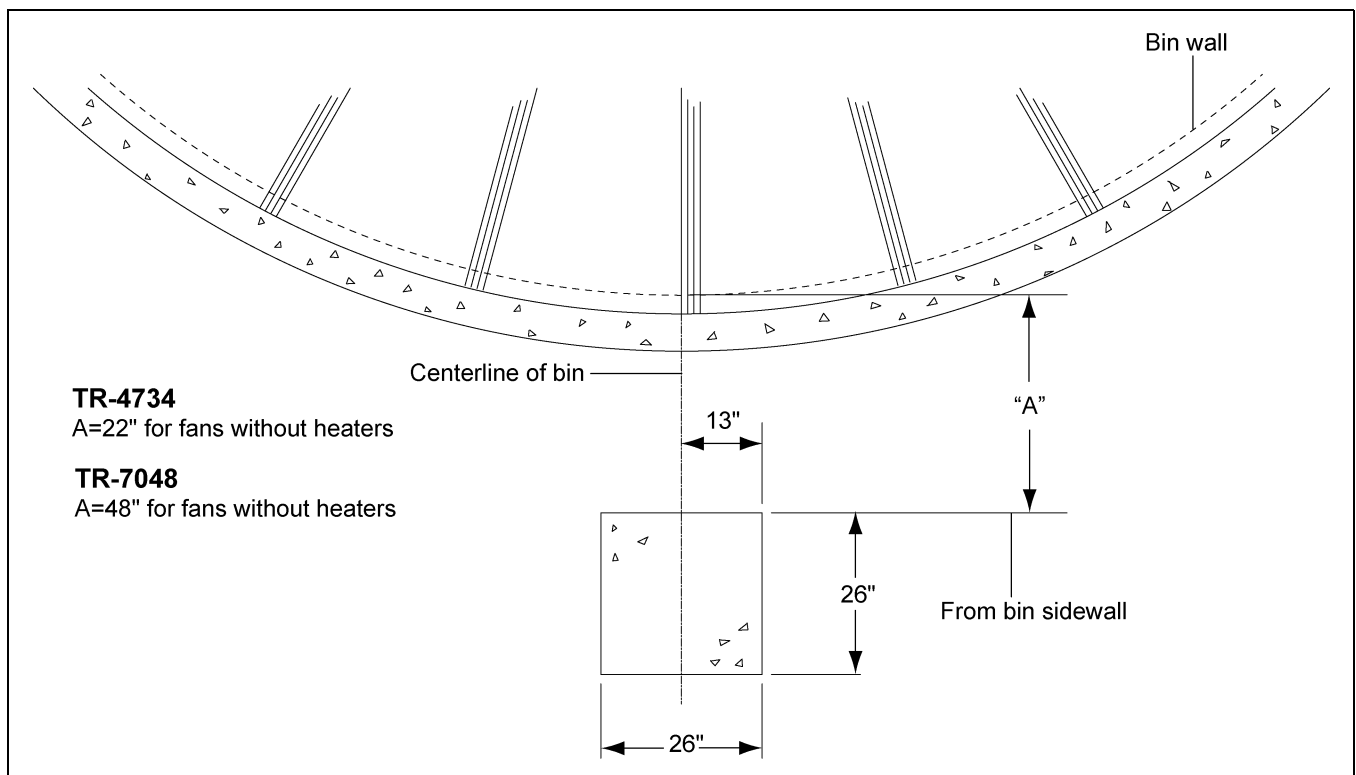


Figure 3D

## Duct and Drying Fan Pad Optional

### Placement of the Duct Fan Pad: GSI Top Dry Duct System only.

Refer to [Figure 3E](#) to determine the duct pad size.

1. The top of this pad should be level with the top of the bin's foundation.
2. Recommended pad thickness is 4" minimum.
3. Front of pad should be perpendicular to bin wall.

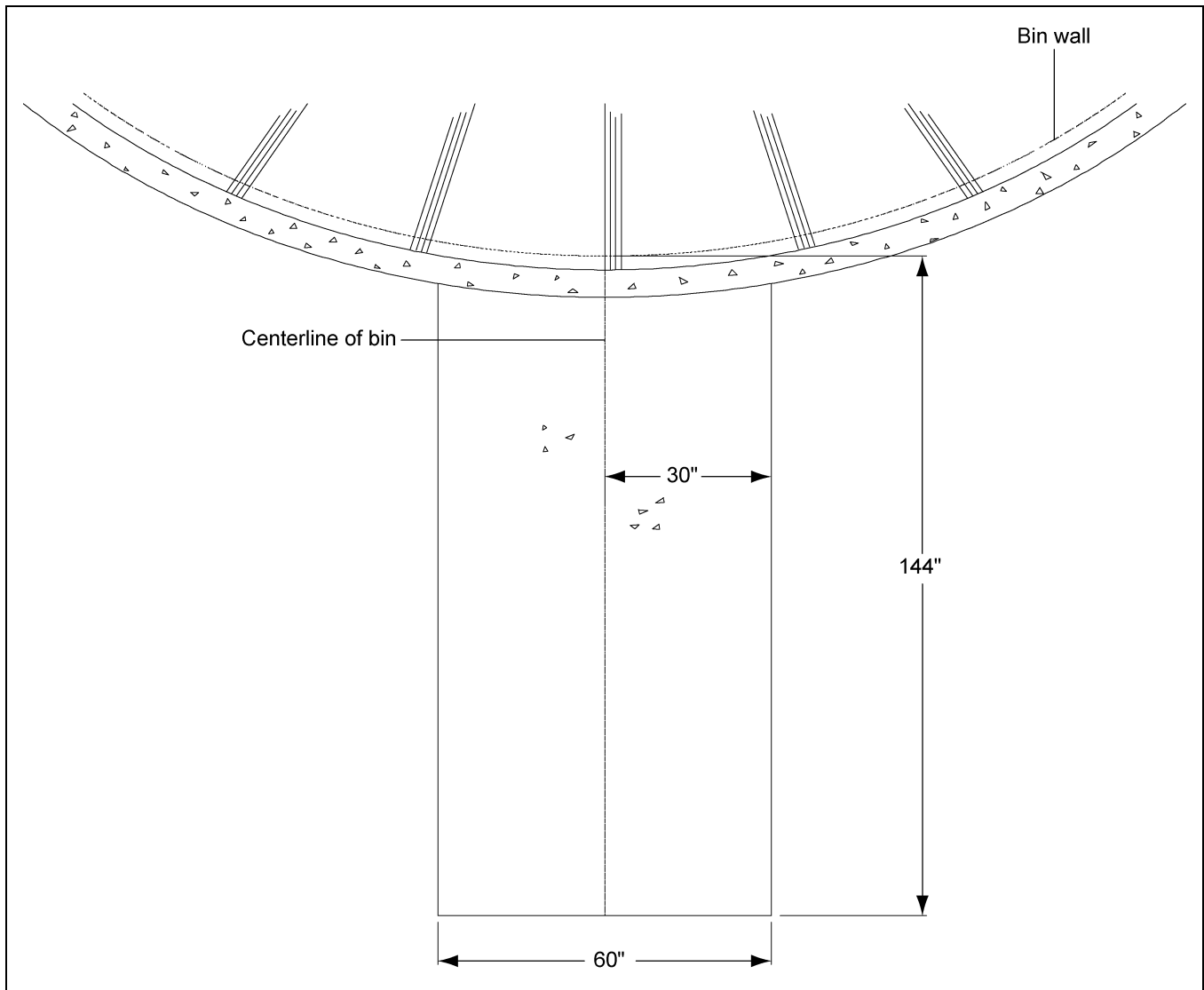


Figure 3E

### 3. Foundation Requirements

## Anchor Bolt Placement

Having poured and leveled the concrete, use the center stake and straight 2 x 4 again to find the bolt circle radius for the outside hold-down brackets. Select a starting point and stretch a pre-measured chord along the imaginary circle formed by the bolt circle radius. Take into consideration the placement of these bolts so as not to interfere with the positions of bin doors and transitions. (*Refer to below chart for necessary radius and chord lengths.*) Take the time and work carefully since accuracy is important.

**NOTE:** Top edge of slab where the bin wall sets must be held to within 1/8" of level.

Bin Diameter	"B" Bolt Circle Radius	# of Anchors	"E" Chord Distance
12'	6' - 3-1/4"	8	4' - 9-9/16"
15'	7' - 9-1/8"	10	4' - 9-9/16"
18'	9' - 3-1/16"	12	4' - 9-1/2"
21'	10' - 8-15/16"	14	4' - 9-3/8"
24'	12' - 2-7/8"	16	4' - 9-5/16"
27'	13' - 8-3/4"	18	4' - 9-1/4"
30'	15' - 2-11/16"	20	4' - 9-1/8"
33'	16' - 8-9/16"	22	4' - 9-1/16"
36'	18' - 2-1/2"	24	4' - 9-1/16"
42'	21' - 2-5/16"	28	4' - 8-15/16"
48'	24' - 2-1/8"	32	4' - 8-7/8"
54'	27' - 1-15/16"	36	4' - 8-13/16"
60'	30' - 1-3/4"	40	4' - 8-3/4"

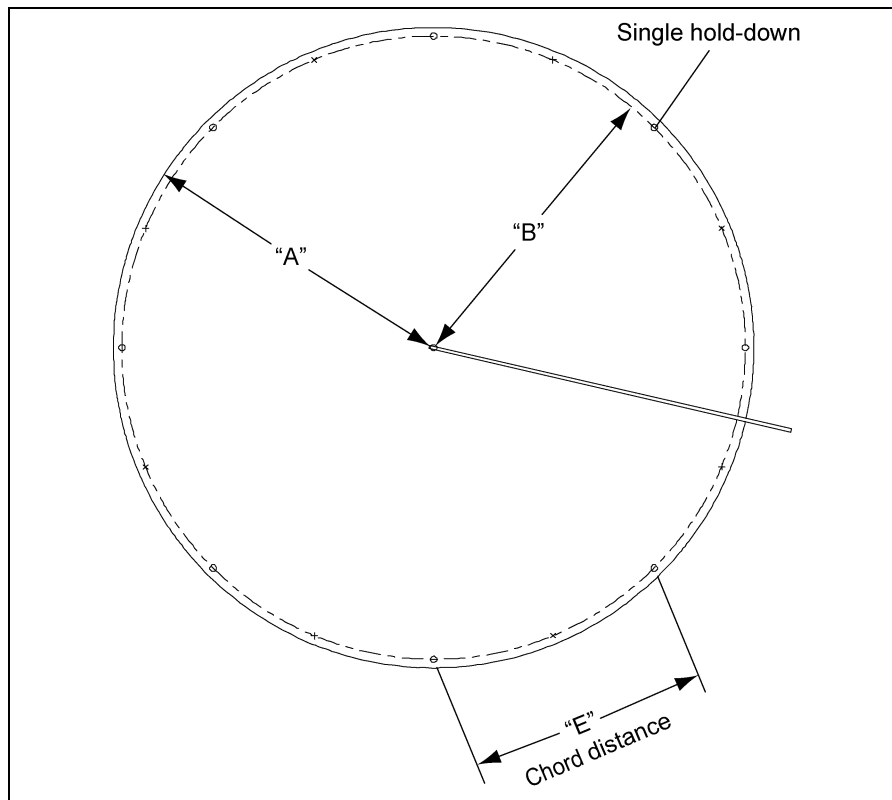


Figure 3F

## Frost Free Pad (Top Dry Bins)

**NOTES:**

1. Foundation site should be well drained and free of vegetation or debris.
2. Foundation design is based on a minimum soil bearing capacity of 3000 PSI. If soil bearing capacity is in doubt, contact a local soil testing engineer.
3. Concrete shall have a minimum compressive strength of 3000 PSI at 28 days.
4. Requirements for reinforcement do not include overlap.
5. Lap all circumferential bars 35 bar diameters and stagger all laps in plan 3'-0".
6. All material used for backfill inside the ring wall should be clean, well graded, crushed stone of sand-gravel mixture. Backfill should be placed at 6" lifts and well compacted.
7. The optional #4 rebar grid can be substituted for the wire mesh in most cases. Place the #4 bars in the pad in an 18" x 18" grid.

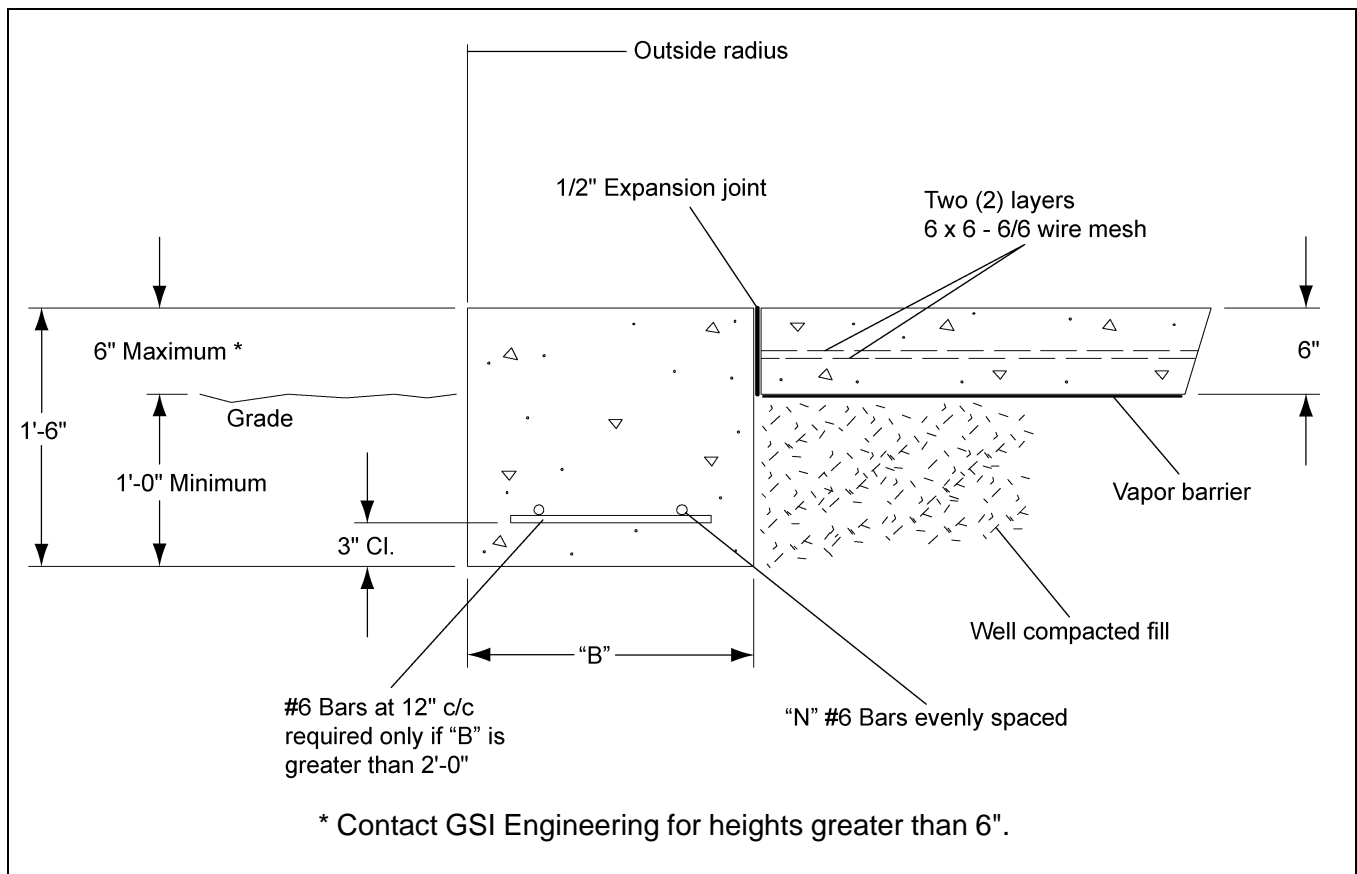


Figure 3G

### 3. Foundation Requirements

## Frost Free Foundation (Top Dry Bins)

Diameter of bin: 21'

Corrugation: 4.00"

Ring #	B	N	Outside Radius	Sq. Ft. Mesh 6 x 6 - 6/6	Optional #4 18" x 18" Grid (Ft.)	Length #6 Bar (Ft.)	Total Cu. Yds. Concrete
6	1'-1"	2	11'-3"	700	500	200	11
7, 8	1'-7"	2	11'-3"	700	500	200	12

Diameter of bin: 24'

Corrugation: 4.00"

Ring #	B	N	Outside Radius	Sq. Ft. Mesh 6 x 6 - 6/6	Optional #4 18" x 18" Grid (Ft.)	Length #6 Bar (Ft.)	Total Cu. Yds. Concrete
6	1'-1"	2	12'-9"	900	600	200	13
7, 8	1'-9"	2	12'-9"	900	600	200	15
9, 10	2'-6"	3	13'-2"	900	600	400	18

Diameter of bin: 30'

Corrugation: 4.00"

Ring #	B	N	Outside Radius	Sq. Ft. Mesh 6 x 6 - 6/6	Optional #4 18" x 18" Grid (Ft.)	Length #6 Bar (Ft.)	Total Cu. Yds. Concrete
6	1'-2"	2	15'-9"	1400	900	200	19
7, 8	1'-10"	2	15'-10"	1400	900	200	21
9, 10	2'-8"	3	16'-1"	1400	900	500	25
11	3'-8"	4	16'-5"	1400	900	700	29

Diameter of bin: 36'

Corrugation: 4.00"

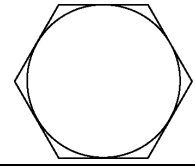
Ring #	B	N	Outside Radius	Sq. Ft. Mesh 6 x 6 - 6/6	Optional #4 18" x 18" Grid (Ft.)	Length #6 Bar (Ft.)	Total Cu. Yds. Concrete
6	1'-3"	2	18'-9"	2000	1300	300	26
7, 8	2'-0"	2	18'-11"	2000	1300	400	30
9, 10	2'-10"	3	19'-0"	2000	1300	600	33
11, 12	3'-11"	4	19'-6"	2000	1300	900	39



## Hardware/Bolting Requirements

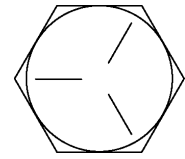
### Grade 2

Grade 2 bolts are designated with a plain head.



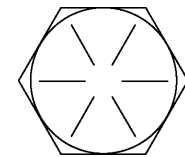
### Grade 5

Grade 5 bolts are designated by three (3) slash marks on the head. All 5/16" diameter bolts are to be grade 5 or higher.



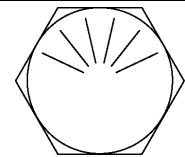
### Grade 8

Grade 8 bolts are designated by six (6) slash marks on the head.



### Grade 8.2

Grade 8.2 bolts are designated by six (6) slash marks on the head in a sunrise pattern. All 3/8" diameter bolts are to be grade 8 or 8.2.



**IMPORTANT:** Do not tighten bolts to exceed the torque specifications listed below.

### Important Hardware Usage

20 Gauge through 15 gauge sidewall sheets, use 5/16" x 3/4" bolts and nuts (S-275).

14 Gauge and 13 gauge sidewall sheets, use 5/16" x 3/4" bolts and nuts (S-275).

Use 5/16" x 1-1/4" (S-277) for attaching floor flashing to the sidewall.

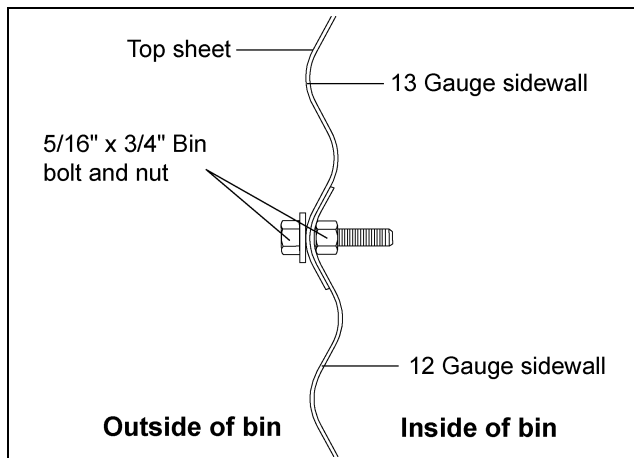


Figure 4A

Bolt Size	Torque (Ft. Lbs.)	
	Minimum	Maximum
5/16"-18	15	20
3/8"-16	35	42
7/16"-14	65	72
1/2"-13	95	105

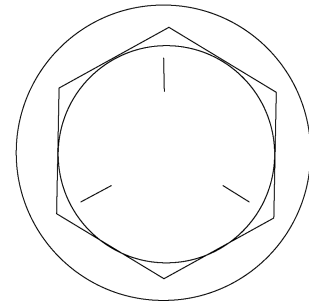
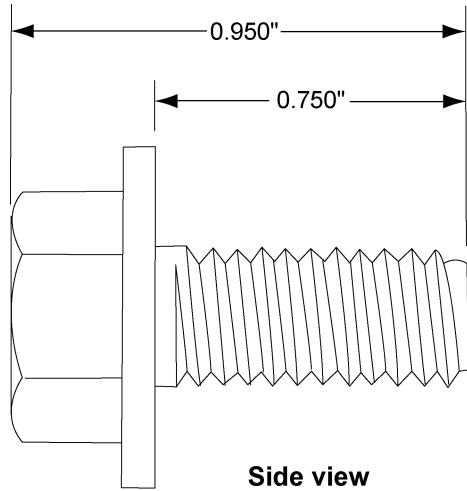


**Under no condition shall any other bolts be substituted for those supplied by GSI.**

## 4. Hardware

### Refer to Top Dry Tank Bolting Requirements for Complete Bolt Usage

**0.3125" x 0.750" Pre-assembled with a steel backed neoprene washer.**



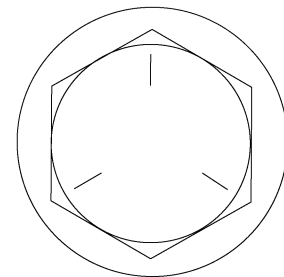
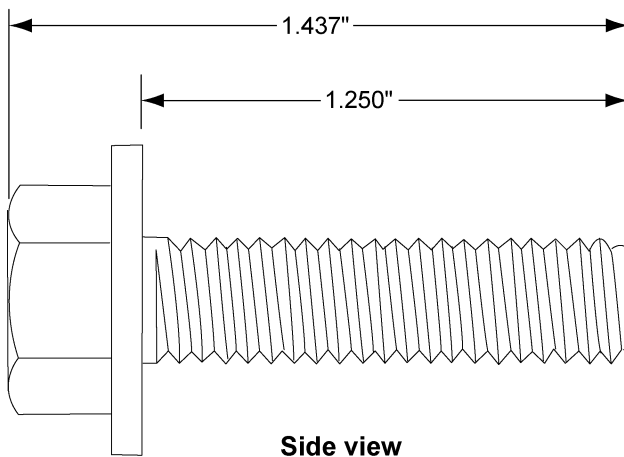
**Grade 5**

**Top view**

**S-275**

This bolt is used to connect horizontal and vertical seams for 13 gauge and thinner sidewall sheets to each other and to bolt the stiffeners to the sidewall sheets. It is also used in attaching roof panels to the top sidewall sheet and attaching roof panels and flashing to the center collar.

**0.3125" x 1.250" Pre-assembled with a steel backed neoprene washer.**



**Grade 5**

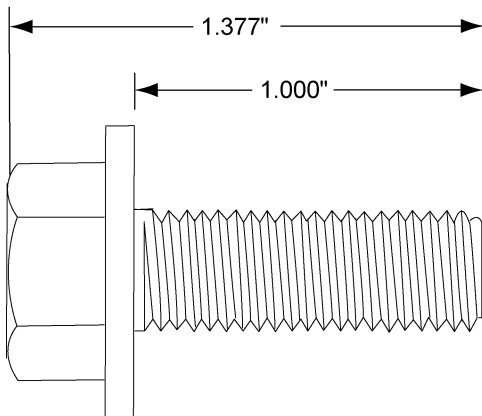
**Top view**

**S-277**

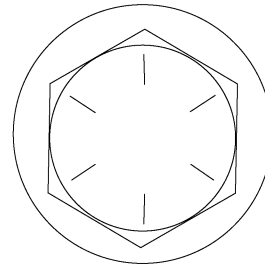
This bolt is primarily used to connect roof panels together where they overlap. It is also used at the bottom of the flat bottomed bins to attach the base angle to the sidewall sheet. A small number of these are provided for joints and splice plates (FC-42076) for the stiffeners to sidewall connection.

## Refer to Top Dry Tank Bolting Requirements for Complete Bolt Usage (Continued)

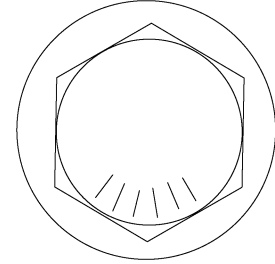
**0.375" x 1.000" Hex flanged head without a plastic sealing washer.**



Side view



Grade 8



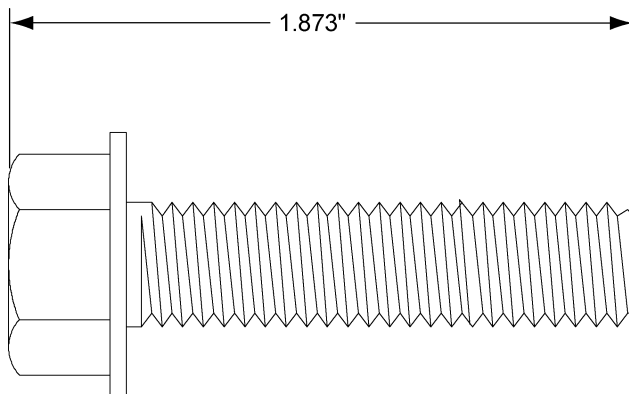
Grade 8.2

Top view

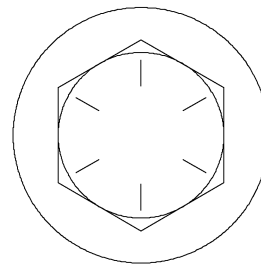
**S-7927**

This bolt is used to splice the stiffeners together on the flanges. A steel flat washer is used on the nut side of the connection. They are also used on "C" channel splices and mounting "C" channel to wall bracket.

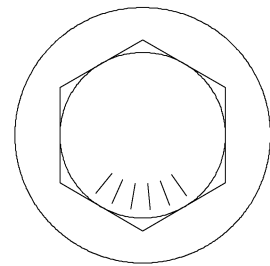
**0.375" x 1.500" Hex flanged head without a plastic sealing washer.**



Side view



Grade 8



Grade 8.2

Top view

**S-7928**

This bolt is used to attach the wall bracket to the sidewall and stiffener. A steel flat washer is used on the nut side of the connection.

**NOTE:** The only washers shipped loose with the bins are the steel flat washers. The 5/16" steel flat washer (S-845) is used where the base angle attaches to the sheet and some are used at the main eave clips. The 3/8" steel flat washers (S-248) are used at the stiffener splices and some are used in the roof rafter splices.

## 4. Hardware

### Location of Accessories

Below is a typical Top Dry bin layout showing suggested locations of Top Dry accessories. When locating the manway be sure the outside ladder will not interfere with other accessories below. Roof vents should be spaced evenly around the roof. (Quantity will vary with individual systems.) (See Figure 4B.)

**NOTE:** The Top Dry system should be provided with a dependable equipment ground.

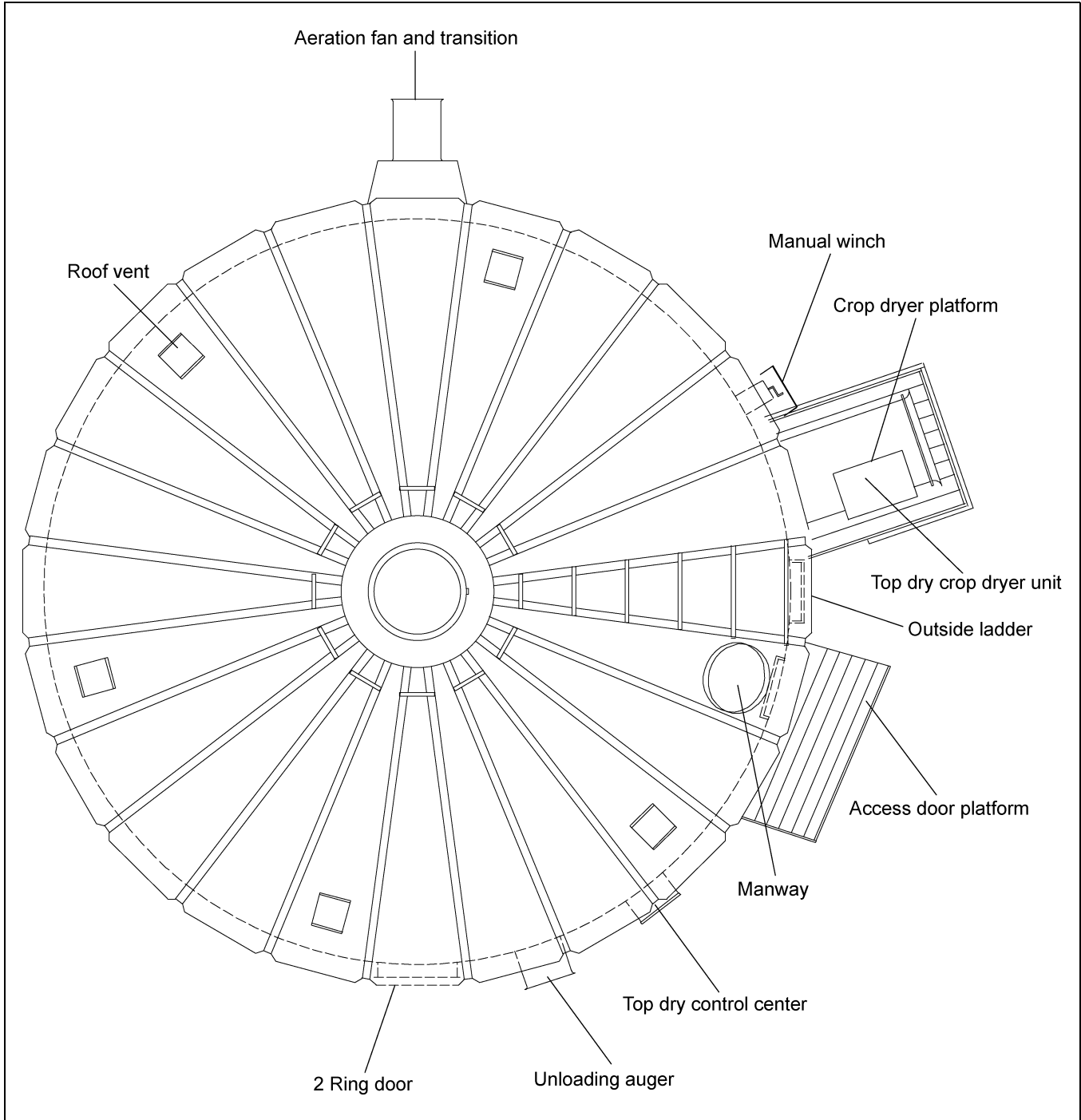
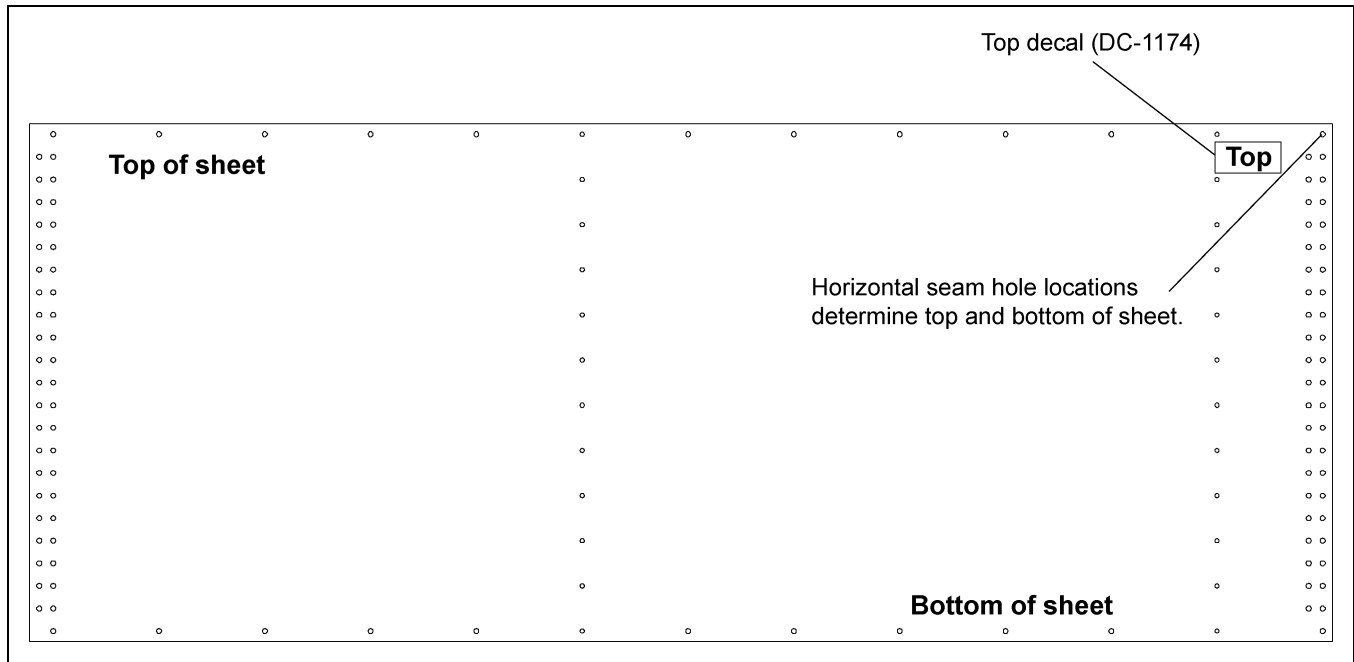


Figure 4B

## Very Important



**Figure 4C** Sheet Shown as Viewed from the Inside of Bin

**All** 4.00" corrugated sidewall sheets must be placed correctly.

**All** 4.00" corrugated sidewall sheets have a **top and bottom**.

Failure to observe this will not allow the door to fit properly.

Carefully review the erection manual and place sidewall sheets as shown in [Figure 4C](#).

## 5. Sidewall Construction

### Sidewall Gauges

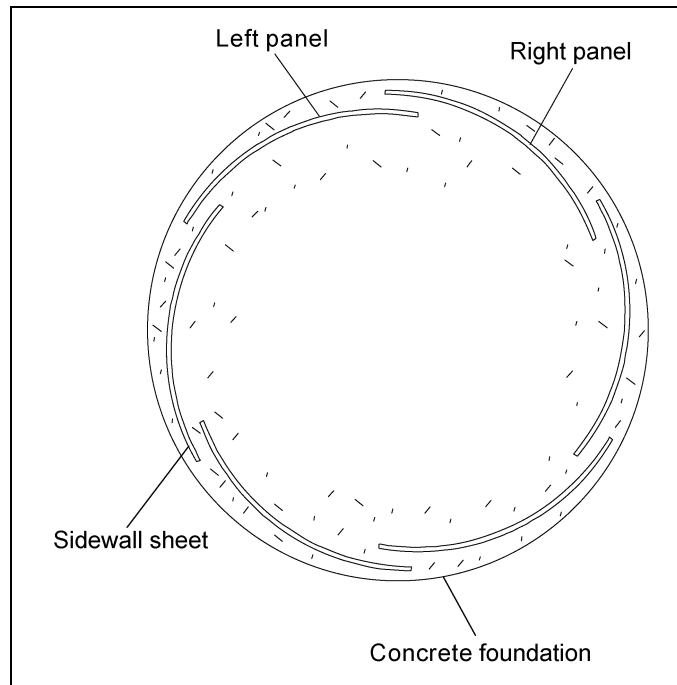
Tank Dia. (Ft.)	# of Rings of Sidewall	Sidewall Base Ring	Sidewall Ring #2	Sidewall Ring #3	Sidewall Ring #4	Sidewall Ring #5	Sidewall Ring #6	Sidewall Ring #7	Sidewall Ring #8	Sidewall Ring #9	Sidewall Ring #10	Sidewall Ring #11
21	5	20 Ga.	20 Ga.	20 Ga.	20 Ga.	20 Ga.						
21	6	20 Ga.	20 Ga.	20 Ga.	20 Ga.	20 Ga.	20 Ga.					
21	7	20 Ga.	20 Ga.	20 Ga.	20 Ga.	20 Ga.	20 Ga.	20 Ga.				
21	8	18 Ga.	20 Ga.	20 Ga.	20 Ga.	20 Ga.	20 Ga.	20 Ga.	20 Ga.			
24	5	20 Ga.	20 Ga.	20 Ga.	20 Ga.	20 Ga.						
24	6	20 Ga.	20 Ga.	20 Ga.	20 Ga.	20 Ga.	20 Ga.					
24	7	18 Ga.	20 Ga.	20 Ga.	20 Ga.	20 Ga.	20 Ga.	20 Ga.				
24	8	18 Ga.	18 Ga.	20 Ga.	20 Ga.	20 Ga.	20 Ga.	20 Ga.	20 Ga.			
24	9	17 Ga.	18 Ga.	18 Ga.	20 Ga.	20 Ga.	20 Ga.	20 Ga.	20 Ga.	20 Ga.		
24	10	17 Ga.	17 Ga.	18 Ga.	18 Ga.	18 Ga.	20 Ga.	20 Ga.	20 Ga.	20 Ga.	20 Ga.	
30	5	18 Ga.	18 Ga.	18 Ga.	18 Ga.	20 Ga.						
30	6	18 Ga.	18 Ga.	18 Ga.	18 Ga.	18 Ga.	20 Ga.					
30	7	17 Ga.	18 Ga.	18 Ga.	18 Ga.	18 Ga.	18 Ga.	20 Ga.				
30	8	17 Ga.	17 Ga.	18 Ga.	18 Ga.	18 Ga.	18 Ga.	18 Ga.	20 Ga.			
30	9	17 Ga.	17 Ga.	17 Ga.	18 Ga.	18 Ga.	18 Ga.	18 Ga.	18 Ga.	20 Ga.		
30	10	16 Ga.	17 Ga.	17 Ga.	17 Ga.	18 Ga.	18 Ga.	18 Ga.	18 Ga.	18 Ga.	20 Ga.	
30	11	16 Ga.	17 Ga.	17 Ga.	17 Ga.	17 Ga.	18 Ga.	18 Ga.	18 Ga.	18 Ga.	18 Ga.	20 Ga.
36	5	17 Ga.	18 Ga.	18 Ga.	18 Ga.	20 Ga.						
36	6	17 Ga.	18 Ga.	18 Ga.	18 Ga.	18 Ga.	20 Ga.					
36	7	16 Ga.	17 Ga.	18 Ga.	18 Ga.	18 Ga.	18 Ga.	20 Ga.				
36	8	16 Ga.	16 Ga.	17 Ga.	18 Ga.	18 Ga.	18 Ga.	18 Ga.	20 Ga.			
36	9	16 Ga.	16 Ga.	16 Ga.	17 Ga.	18 Ga.	18 Ga.	18 Ga.	18 Ga.	20 Ga.		
36	10	15 Ga.	16 Ga.	16 Ga.	16 Ga.	17 Ga.	18 Ga.	18 Ga.	18 Ga.	18 Ga.	20 Ga.	
36	11	14 Ga.	15 Ga.	15 Ga.	16 Ga.	16 Ga.	17 Ga.	18 Ga.	18 Ga.	18 Ga.	18 Ga.	20 Ga.

**NOTE:** Fan entrance sheets and plenum access door sheets are located in the second ring from the top of the bin, just below the upper drying floor.

## Sidewall Erection Instructions

Before bolting the sidewall sheets together, check that you have the proper gauge steel for the first ring. The higher gauge numbers denote the thinner materials. (For example, 22 gauge material is thinner than 14 gauge.) In erecting most grain bins the thinnest material usually goes on top, therefore the first sidewall ring you assemble will be the top ring of the bin. Check the various gauges of the bin with the color code chart and begin building accordingly **REMEMBER.....Assemble the top ring first.**

Once you have selected the proper gauge material, begin assembling all sidewall sheets in the following manner: Standing on the inside the bin, place the left panel to the inside with the right panel to the outside. *(See Figure 5A.)* **Check to see that the sidewall sheet is “Right side up”.** *Refer to Page 21 for details.*



**Figure 5A**

Gauge	Color Code
22	White
20	Red
19	Black/Yellow
18	Orange
17	Pink/Light Blue
16	Blue
15	Brown/Red
14	Green
13	Yellow/Blue
12	Black
11	Pink
10	Light Blue
9	Blue/Orange
8	Yellow

## 5. Sidewall Construction

### Sidewall Erection Instructions (Continued)

After assembling the **second ring**, lift the top ring sheets in place, add top stiffeners, build the Top Dry floor, then the roof.

**NOTE:** The sidewall sheets used for the **top ring** are punched to accommodate the eave flashing bolts.

**NOTE:** The fan entrance sheet and access door are located in the second ring. Attach the top stiffeners, leaving out the seven (7) bolts indicated in [Figure 5B](#) at each stiffener location. Install the flashing bolts from the outside and tighten first nut on the inside of the bin.

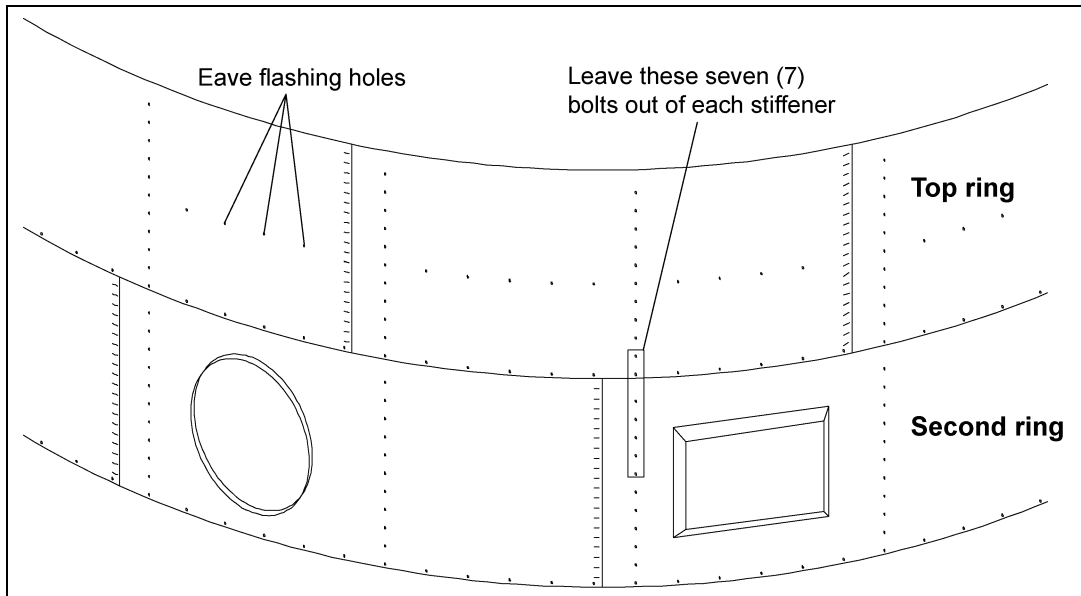


Figure 5B

### Caulking Detail

**NOTE:** The rope caulking is installed before each sheet is assembled. Apply rope caulking between the last vertical row of bolts and edge of outside sheet. There is sufficient caulking for all vertical seams on storage and drying bins. Wipe sheet clean where caulking is to be applied. (See [Figure 5C](#).)

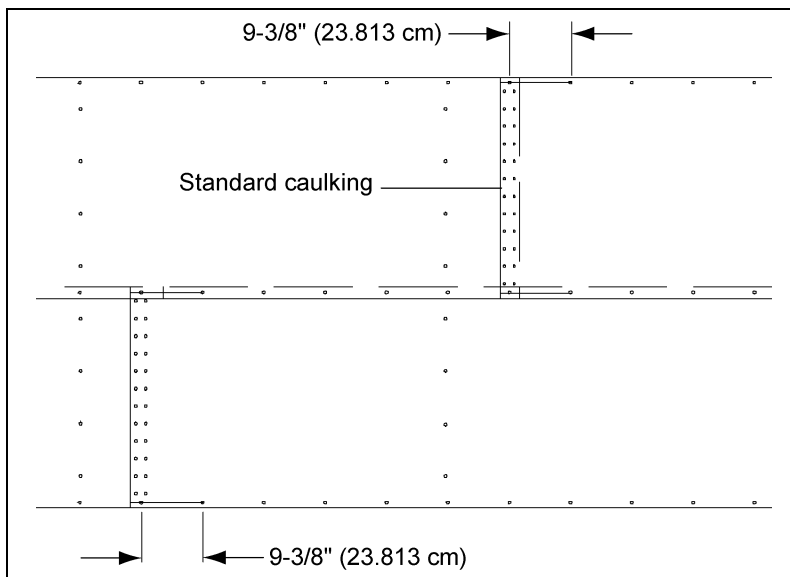


Figure 5C Standard Sidewall Sheets as Viewed from Inside



## Caulking Detail (Continued)

Using correct size bin bolts throughout, begin assembling sidewall sheets end to end (overlapping the same way throughout) until the ring is completed. All body sheet bolts are to be installed with the bolt head and its neoprene washer to the outside and the nut on the inside. Do not tighten bolts until all sheets are assembled and form a complete ring. Attach lifting brackets to stiffener bolt holes. These straps, coupled to the jacks will enable you to later elevate the bin. Now tighten the bolts in sequence, starting from the center and working to the edge in both directions. This permits the sidewall sheets to draw-up evenly. Complete one-ring and stop. You are now ready to assemble the roof. Refer to the roof erection manual for roof assembly instructions located in roof hardware box.

## Lifting Jacks and Brackets

**NOTE:** *The number of lifting jacks required is best determined by personal experience. Factors such as bin size, soil compaction, wind velocity, jack design, etc., are all to be considered when deciding how many to use. If in doubt, use one jack on every other stiffener. GSI recommends heavy duty jacks rated at 6000 lbs. or more. (See Figure 5D.)*

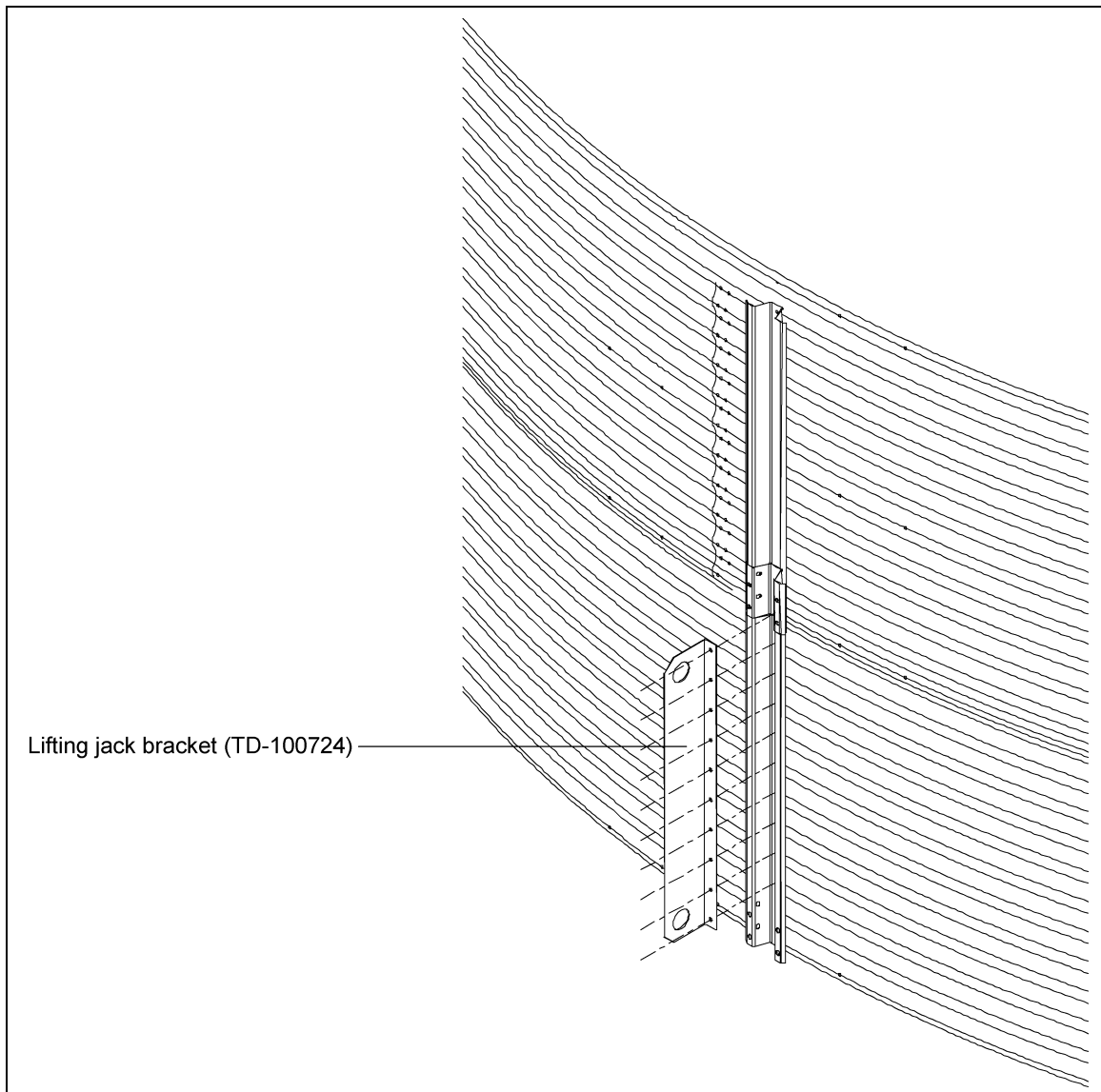


Figure 5D

## 5. Sidewall Construction

### Lifting Jack Usage

Give some thought before starting the bin on location of door and other accessories. Proper placement of lifting jacks in relationship to anchor bolts could make a difference on odd or even ring bins. Walk-through door is centered between two (2) stiffener anchor bolts. The sidewall sheets are also staggered 1/2" from end to end.

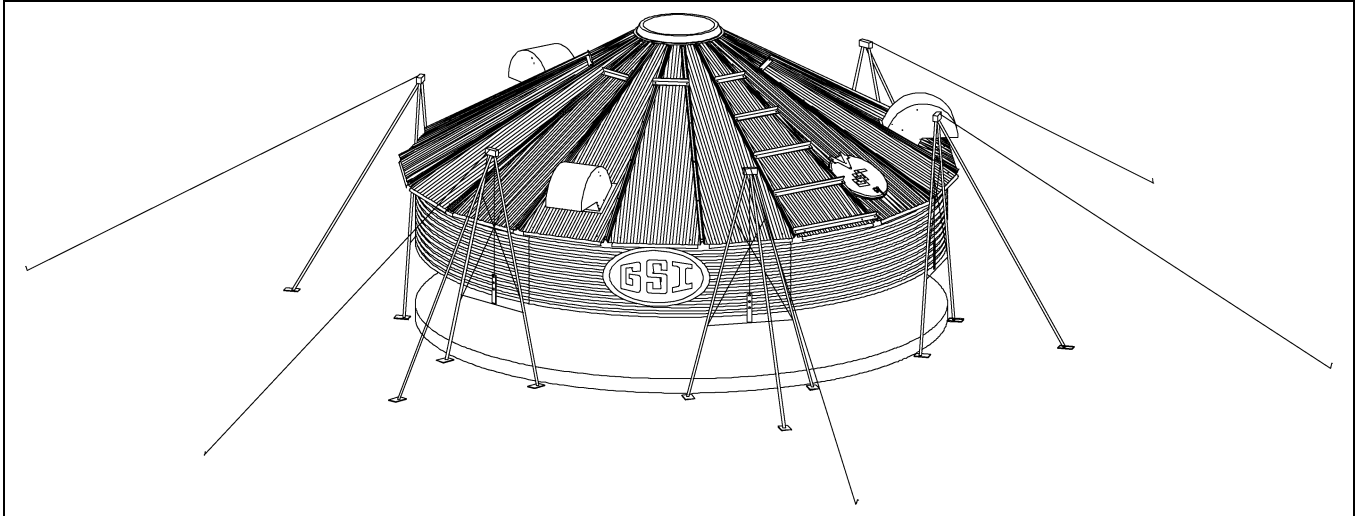


Figure 5E



***The number of lifting jacks required is best determined by personal experience. Factors such as bin size, soil compaction, wind velocity, jack design, etc., are all to be considered when deciding how many to use. If in doubt, use one jack on every vertical seam. Be sure to use heavy duty jacks for commercial installation.***

Lifting brackets should be attached to the stiffeners. Normally you will need to attach to at least four (4) bolts per stiffener. Anchor all jacks securely with metal stakes and cable. Now raise the bin just high enough to assemble the next ring. When lifting the bin, crank all jacks at an equal rate. This will prevent bowing previously assembled rings and make for easier hole alignment. To the inside of the first ring, bolt the next ring. Be sure to stagger the sheets and select the proper gauge material. Lower the bin on the foundation after assembling and tightening bolts on the new ring or rings. When installing duct work for the drying fans be sure to install it as you go up with the bin letting the duct set on the foundation before the bolts are tightened to assure proper alignment. Now re-bolt the lifting straps to the lowest ring in place thus far. Continue ring additions until you are ready for door installation. You may want to leave sheets loose to make the attachment of the stiffeners easier.

**NOTE:** Add inside and outside ladders to bin walls as you continue to raise the bin.

## Stiffener Gauges

Nominal Dia. of Sidewall (Ft.)	# of Rings of Sidewall	Stiffener Base Ring	Stiffener Ring #2	Stiffener Ring #3	Stiffener Ring #4	Stiffener Ring #5	Stiffener Ring #6	Stiffener Ring #7	Stiffener Ring #8	Stiffener Ring #9	Stiffener Ring #10	Stiffener Ring #11
21	5		14 Ga.	16 Ga.	16 Ga.	16 Ga.						
21	6		14 Ga.		16 Ga.	16 Ga.	16 Ga.					
21	7		12 Ga.		14 Ga.	16 Ga.	16 Ga.	16 Ga.				
21	8		12 Ga.		14 Ga.		16 Ga.	16 Ga.	16 Ga.			
24	5		14 Ga.	16 Ga.	16 Ga.	16 Ga.						
24	6		12 Ga.		14 Ga.	16 Ga.	16 Ga.					
24	7		12 Ga.		14 Ga.	16 Ga.	16 Ga.	16 Ga.				
24	8		12 Ga.		12 Ga.		14 Ga.	16 Ga.	16 Ga.			
24	9		10 Ga.		12 Ga.		12 Ga.	14 Ga.	14 Ga.	16 Ga.		
24	10		8 Ga.		10 Ga.		12 Ga.		14 Ga.	16 Ga.	16 Ga.	
30	5		12 Ga.	14 Ga.	16 Ga.	16 Ga.						
30	6		12 Ga.		14 Ga.	16 Ga.	16 Ga.					
30	7		12 Ga.		12 Ga.	14 Ga.	16 Ga.	16 Ga.				
30	8		10 Ga.		12 Ga.		14 Ga.	16 Ga.	16 Ga.			
30	9		10 Ga.		12 Ga.		12 Ga.	14 Ga.	16 Ga.	16 Ga.		
30	10		8 Ga.		10 Ga.		12 Ga.		14 Ga.	16 Ga.	16 Ga.	
30	11		8 Ga.		10 Ga.		12 Ga.		12 Ga.	14 Ga.	16 Ga.	16 Ga.
36	5		12 Ga.	14 Ga.	16 Ga.	16 Ga.						
36	6		12 Ga.		12 Ga.	14 Ga.	16 Ga.					
36	7		10 Ga.		12 Ga.	14 Ga.	14 Ga.	16 Ga.				
36	8		10 Ga.		12 Ga.		12 Ga.	14 Ga.	16 Ga.			
36	9		8 Ga.		10 Ga.		12 Ga.	14 Ga.	14 Ga.	16 Ga.		
36	10		8 Ga.		10 Ga.		12 Ga.		12 Ga.	14 Ga.	16 Ga.	
36	11		8 Ga.		8 Ga.		10 Ga.		12 Ga.	14 Ga.	14 Ga.	16 Ga.

**NOTE:** All Top Dry bin stiffeners are mounted on the outside of the bin. See stiffener instructions for stiffener joint details and stiffener to sidewall attachment on [Page 28](#).

## 6. Stiffener Details

### Outside Stiffeners

The XX in the part numbers at the bottom will identify the stiffeners gauge.

Example: FC-4205714 is a 2 ring standard stiffener 14 gauge.

Part #	Stiffener Description	Overall Length	Color Code
FC-4207210	2 Ring 10 Gauge (Base)	94-27/32"	White
FC-4207212	2 Ring 12 Gauge (Base)	94-27/32"	Black
FC-4207214	2 Ring 14 Gauge (Base)	94-27/32"	Green
FC-4207216	2 Ring 16 Gauge (Base)	93-13/16"	Blue
FC-4207308	2 Ring 8 Gauge (Base)	88-3/16"	Yellow
FC-4206308	2 Ring 8 Gauge	87-15/16"	Yellow
FC-42062	2 Ring 10 Gauge Transitional	94-19/32"	Purple
FC-4205712	2 Ring 12 Gauge	94-19/32"	Black
FC-4205714	2 Ring 14 Gauge	94-19/32"	Green
FC-4207516	2 Ring 16 Gauge	93-9/16"	Blue
FC-4207518	2 Ring 18 Gauge	93-9/16"	Orange
FC-4206516	2 Ring 16 Gauge Top	85-9/16"	Blue
FC-4206518	2 Ring 18 Gauge Top	85-9/16"	Orange
FC-4205912	1 Ring 12 Gauge	50-19/32"	Black
FC-4205914	1 Ring 14 Gauge	50-19/32"	Green
FC-4207416	1 Ring 16 Gauge	49-9/16"	Blue
FC-4207418	1 Ring 18 Gauge	49-9/16"	Orange
FC-4206616	1 Ring Top 16 Gauge	41-7/16"	Blue
FC-4206618	1 Ring Top 18 Gauge	41-7/16"	Orange
FC-42076	Splice	10-11/16"	-

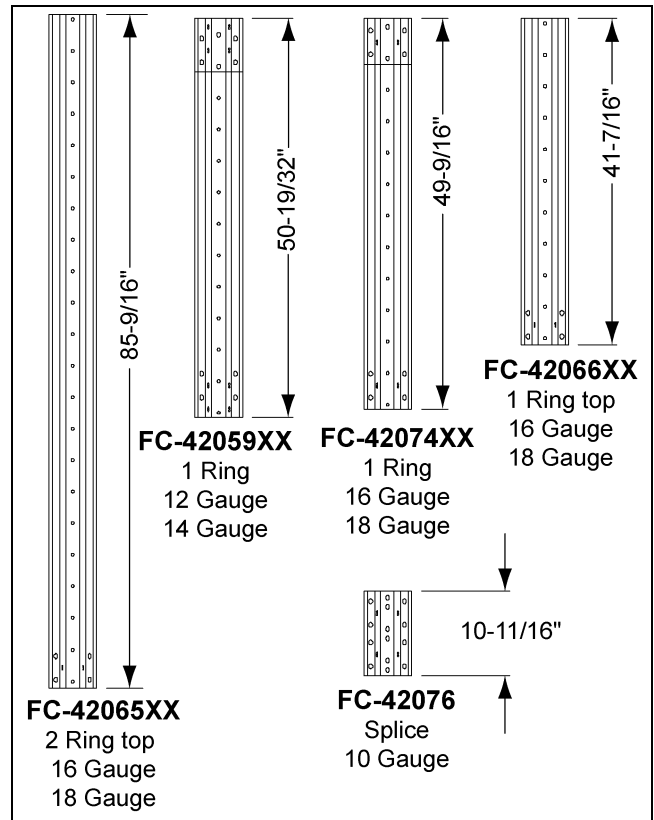


Figure 6A

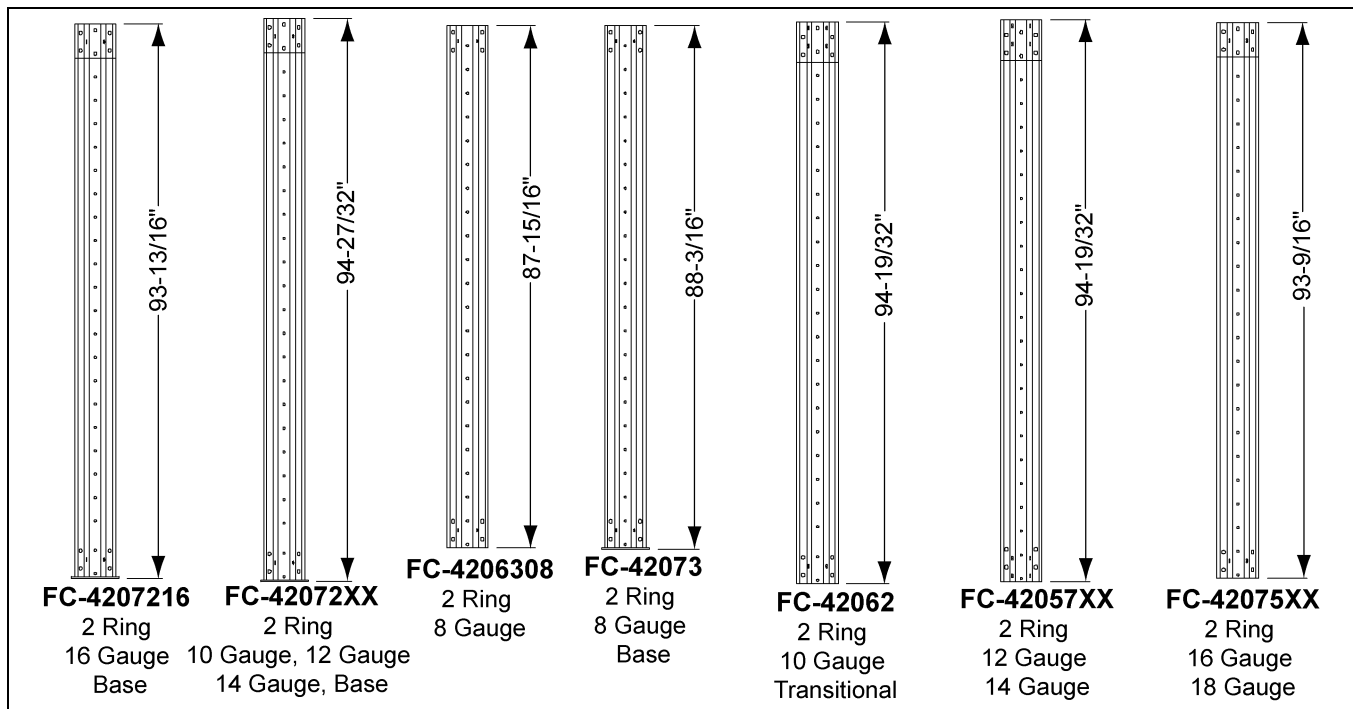


Figure 6B

## Top Stiffener Starting Location

Refer to [Figure 6C](#), for proper location of top stiffeners. On the overlap of the stiffeners and on the splice, use 3/8" x 1" hex bolts, a washer on the nut side connection. Refer to the stiffener layout, [See Figure 6A on Page 28](#) for stiffener usage.

All stiffeners are outside the bin wall. Use 5/16" x 3/4" grade 5 bin bolts with head and neoprene washer to the inside of the bin wall. Refer to proper [Chart](#) and illustrations [on Page 28](#) for proper location of stiffeners and sidewall sheets.

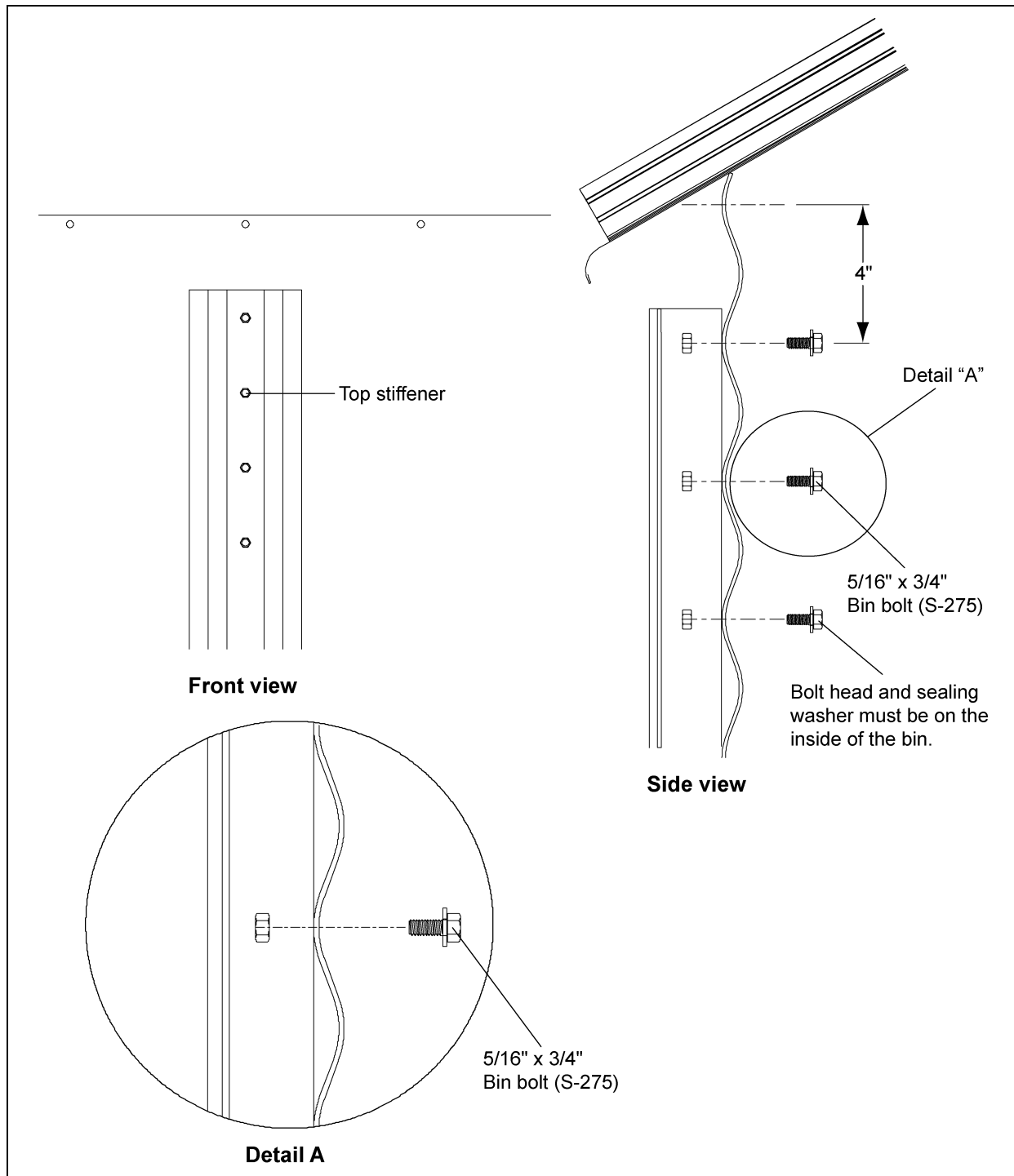


Figure 6C

## 6. Stiffener Details

### Stiffener Installation and Location

When installing bottom stiffeners, you may find that in some cases the stiffener with base plate attached will not rest on the foundation (due to unlevel concrete, etc.). Shim plates have been furnished and should be used to fill opening between base plate and concrete.

**IMPORTANT:** *If shim plates are not used where required, the downward pressure of the stiffeners will not be transferred directly to the foundation and bin failure could result.*

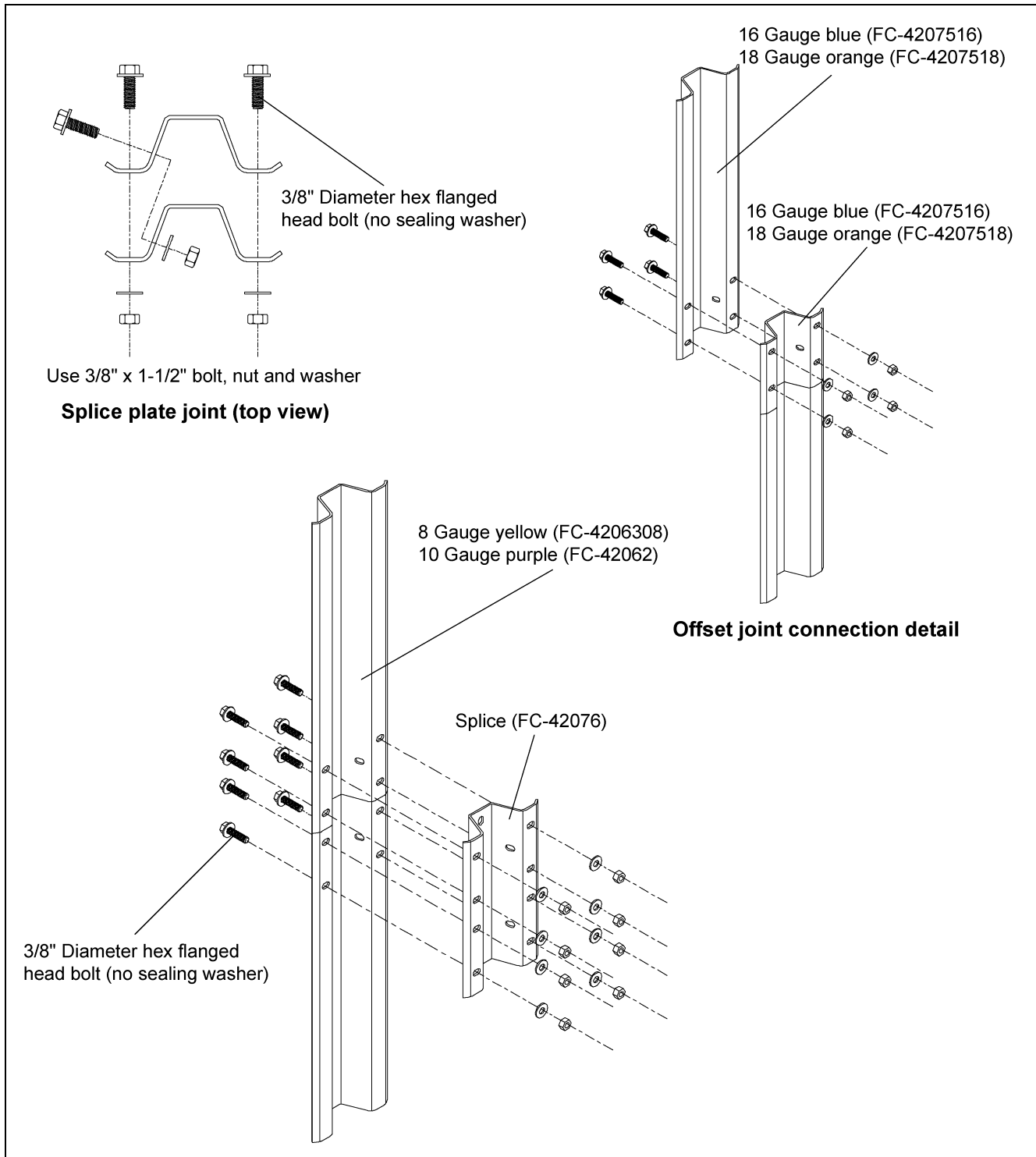


Figure 6D

## Bolting Requirements

### Two (2) Stiffeners per Sidewall Sheet

Sidewall Gauge	Horizontal Seam	Vertical Seam	Stiffener to Sidewall	Overlap Seam
17 through 20	5/16" x 3/4" [10]	5/16" x 3/4" [42]	5/16" x 3/4" [20]	5/16" x 3/4" [2]

All bolts are standard bin bolts with neoprene washers. For horizontal and vertical seam bolts, the bolt head and neoprene washers are on the outside of the bin.

**NOTE:** For the splice plates (FC-42076), use 5/16" x 1-1/4" bolts for the stiffener to sidewall connections.

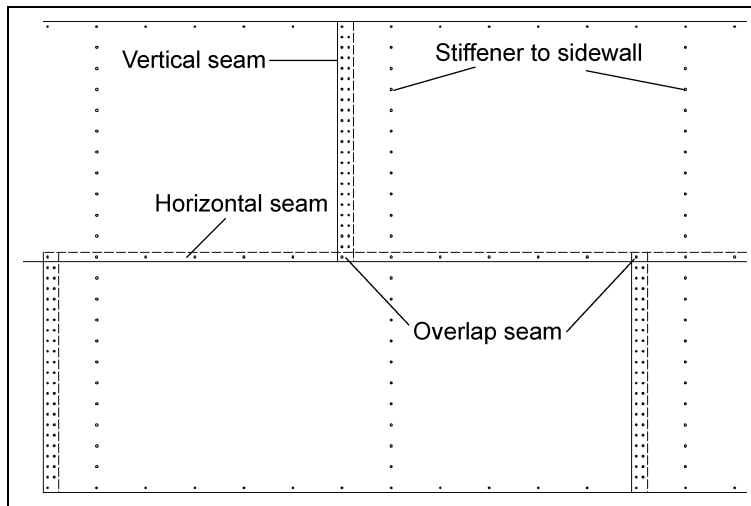


Figure 6E Standard (17 gauge through 20 gauge) Sheet Bolting Detail (Viewed from outside of the bin.)

## Stiffener and Seam Locations

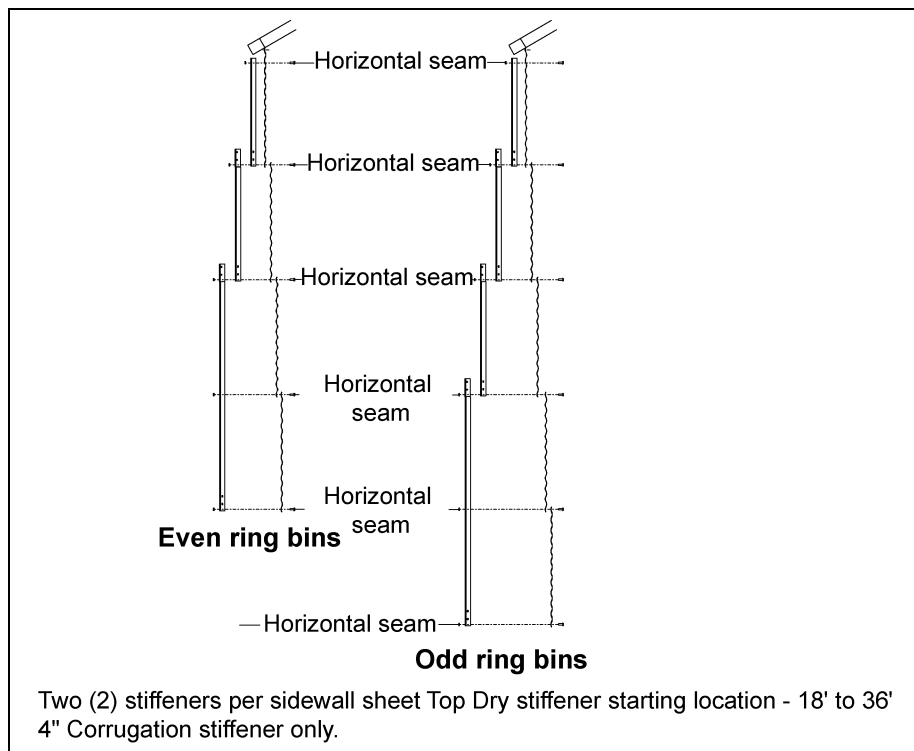


Figure 6F

## 7. "C" Channels

### Stiffener to "C" Channel Bracket Installation

Install the stiffeners on the outside of the bin and the wall brackets on the inside of the bin. The wall brackets are to be positioned with the brackets top hole matching the first hole up from the horizontal seam (not counting the horizontal seam). Bracket to sidewall connection using a 3/8" x 1-1/2" bolt (S-2086), head outside, with a neoprene washer (S-3558) against the wall on the inside. (See Figure 7A.)

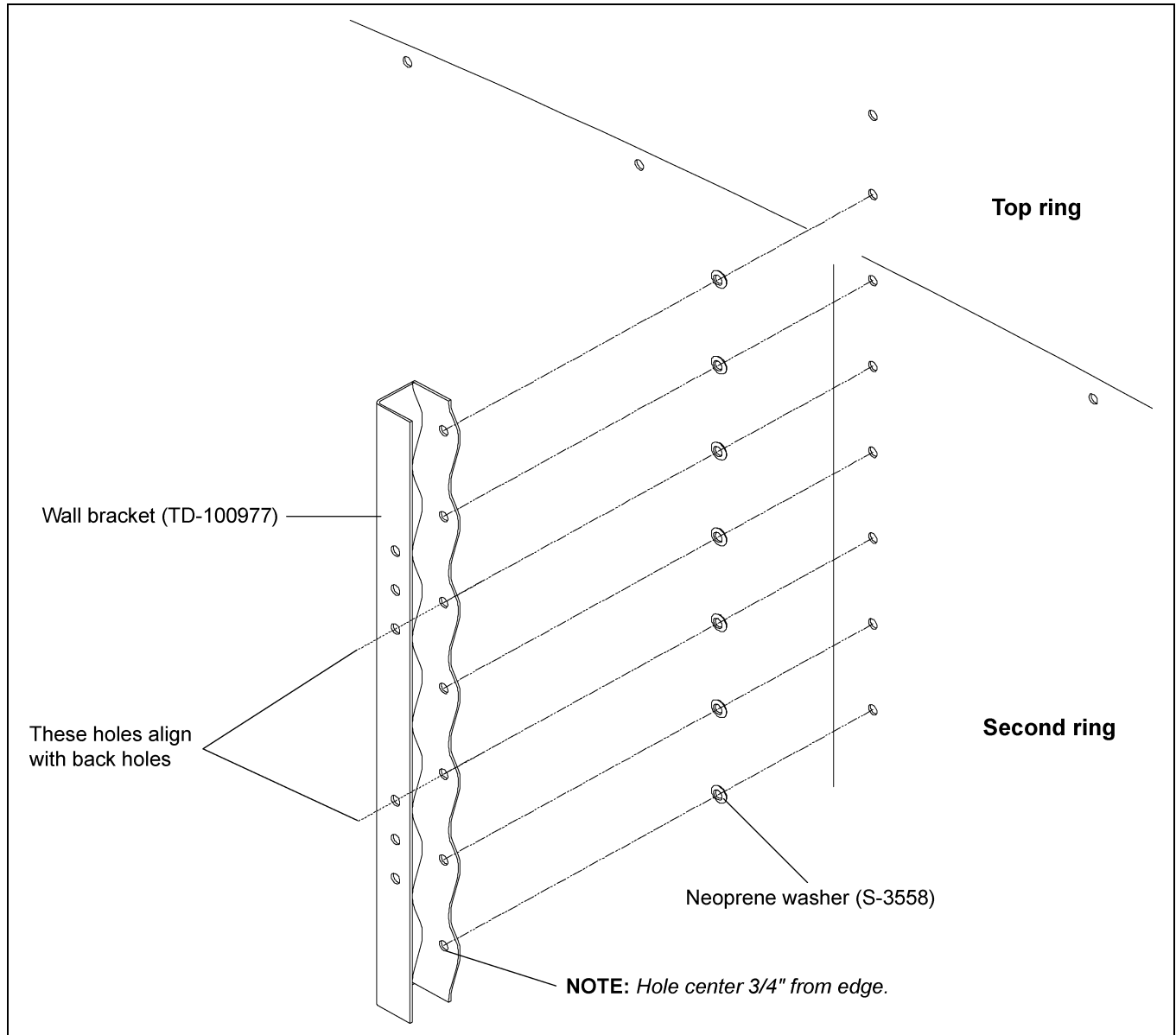


Figure 7A



## "C" Channel Installation

Fasten the rolled "C" eave members to the wall brackets in the upper two (2) holes of the top set of three (3) holes leaving the bolts loose.

Install the splice plates at the rolled "C" eave member seams using 3/8" x 1" flanged hex bolts and nuts. Tighten all bolts. (See [Figure 7B](#) and [Figure 7C](#).)

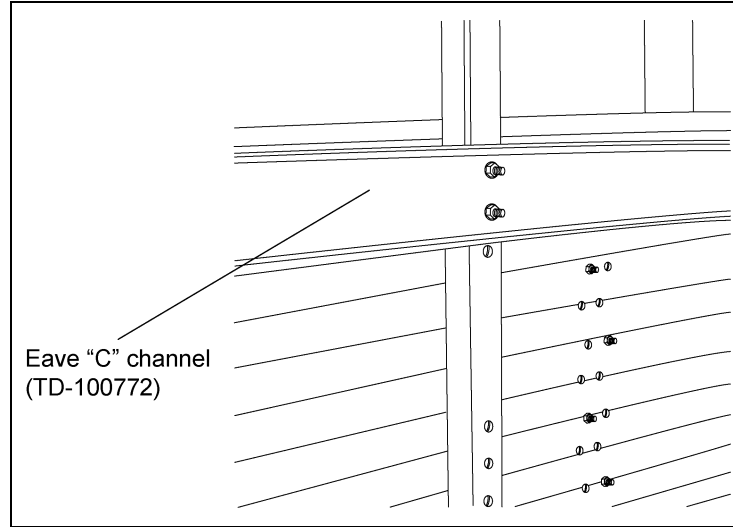


Figure 7B "C" Channel Attachment

Nominal Diameter of Tank (Ft.)	Part # "A"
21'	TD-100772
24'	TD-100678
30'	TD-100643
36'	TD-100731

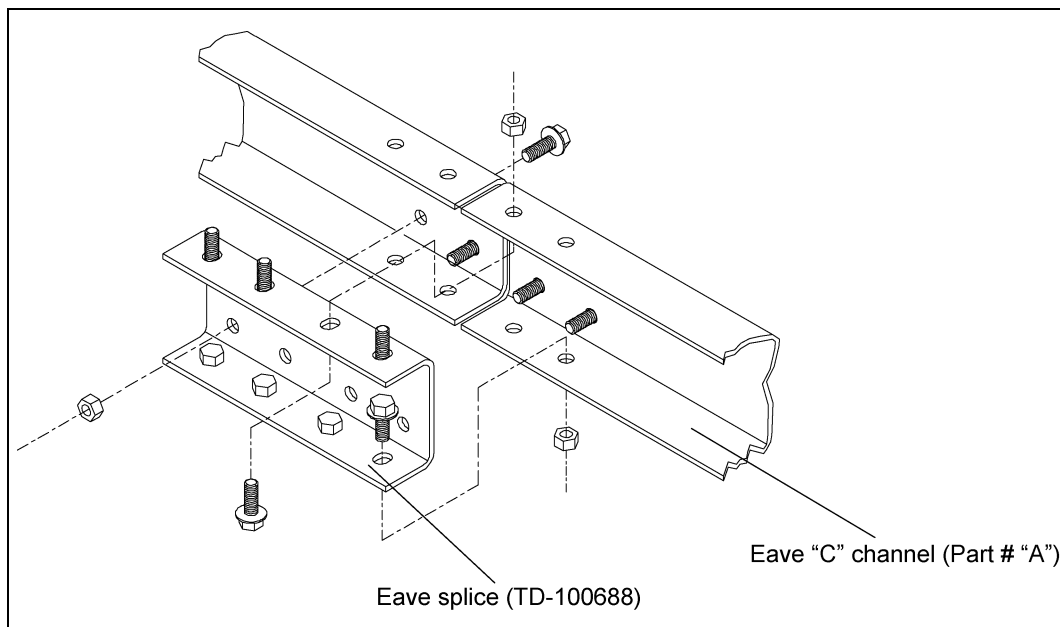


Figure 7C

## 7. "C" Channels

### Center Collar Assembly

Add channel braces and brace plates to center collar as shown using 3/8" x 1" bolts and nuts. (Do not attach cross channel until floor is done if using a jack on center collar.) (See Figure 7D.)

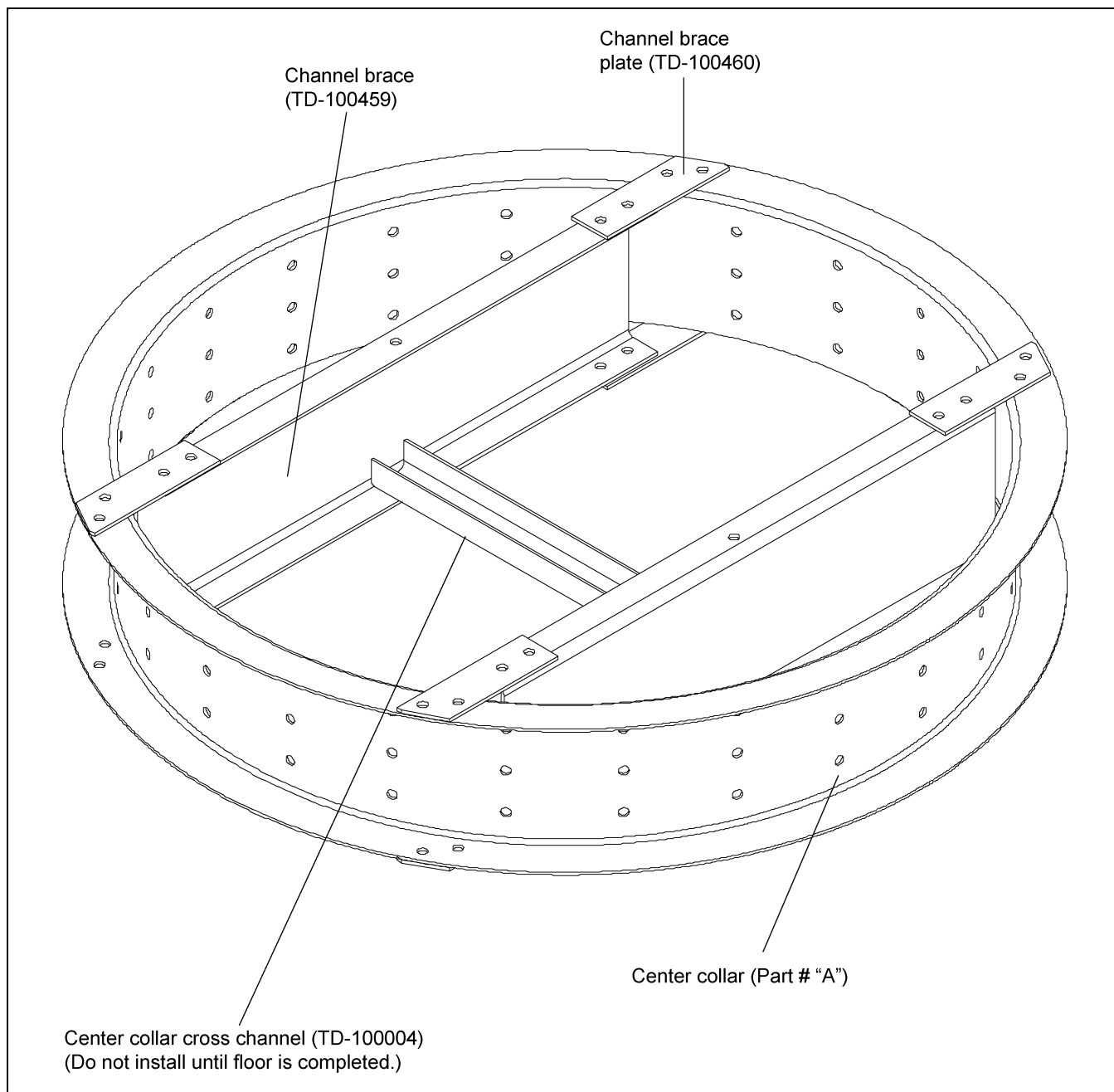


Figure 7D

Nominal Diameter of Tank (Ft.)	Part # "A"
21'	TD-100631
24'	TD-100632
30'	TD-100634
36'	TD-100730

Position the center collar at the center of the bin and raise it to the required height per diameter of tank. Height is measured from the bottom of the center collar to the concrete. (See Figure 7E.)

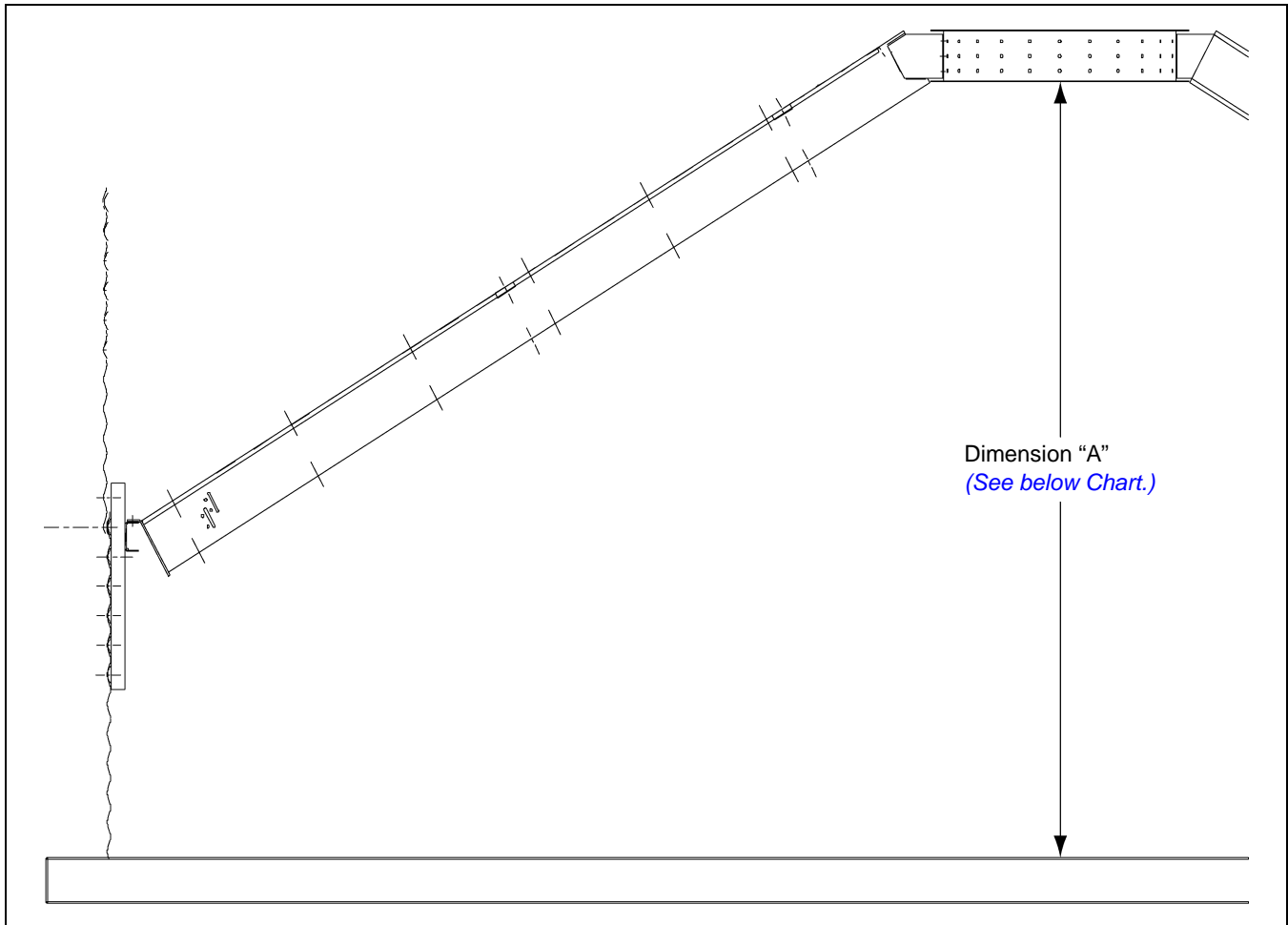


Figure 7E

Nominal Diameter of Tank (Ft.)	Dimension "A"
21'	8' - 0-1/2"
24'	8' - 9-1/2"
30'	10' - 5-3/16"
36'	11' - 8-3/4"

## 8. Installation

### Rafter Installation and Floor Support Angle Attachment

When installing the rafters, set the lower clip end on the "C" eave member. Leave the bolts to the center collar and the eave member loose until all rafters are in place. Use 3/8" x 1" hex bolts and nuts to connect the center collar and eave member to three (3) rafters at 90° to each other. These first three (3) rafters should all face the same direction. Every other rafter should alternate direction. **IMPORTANT:** *There are left and right rafters. Be sure to alternate left, right, left, right, etc.* The floor sheet support purlins can now be installed using 5/16" x 3/4" bin bolts. There are two (2) different lengths of purlins to fit between the rafters. Insert the straight tab of the purlin through the upper slot in the left hand rafter when looking toward the bottom of the rafters. Bolt the bent end of the purlin to the right hand rafter in the upper two (2) holes. After inserting the next purlin tab, bolt the first purlin tab to the second purlin. Continue around the bin alternating lengths as the rafter facings did. Tighten all bolts.

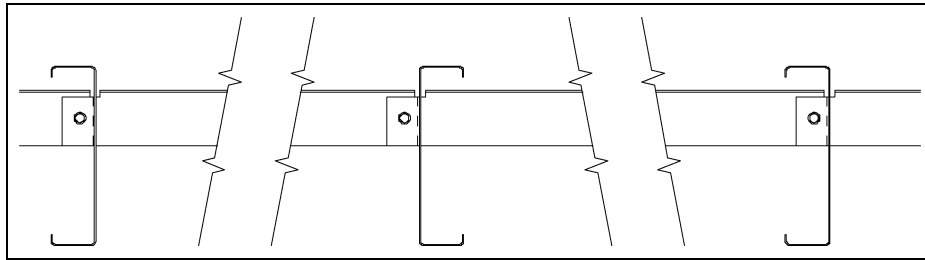
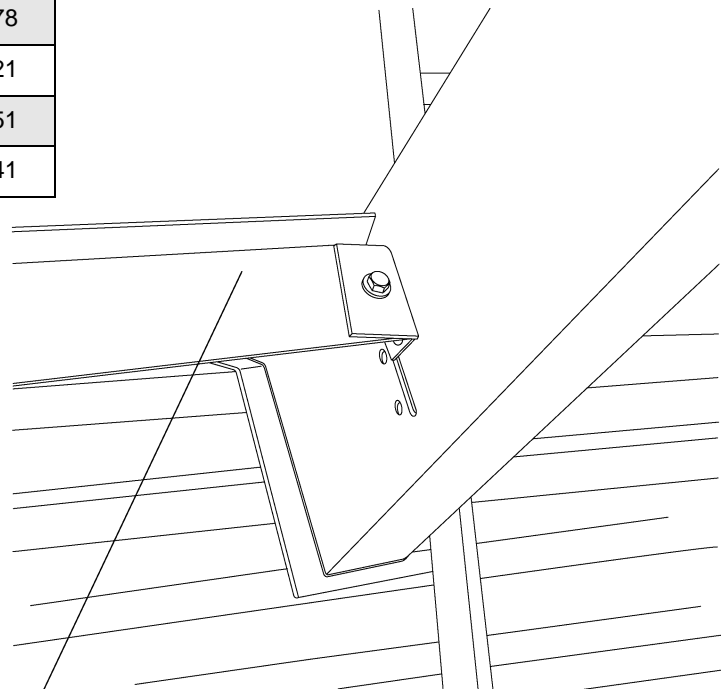


Figure 8A

Nominal Diameter of Tank (Ft.)	Long Support	Short Support
21'	TD-100777	TD-100778
24'	TD-100720	TD-100721
30'	TD-100650	TD-100651
36'	TD-100740	TD-100741



Floor support angle assembly

Figure 8B

## Purlin Installation

### 21' Special Angle Purlin Assembly

Where two (2) rafters face the same direction use 5/16" x 3/4" bin bolts and nuts with the three (3) bent edges facing toward the sidewall, the longest edge on top. (See Figure 8C.)

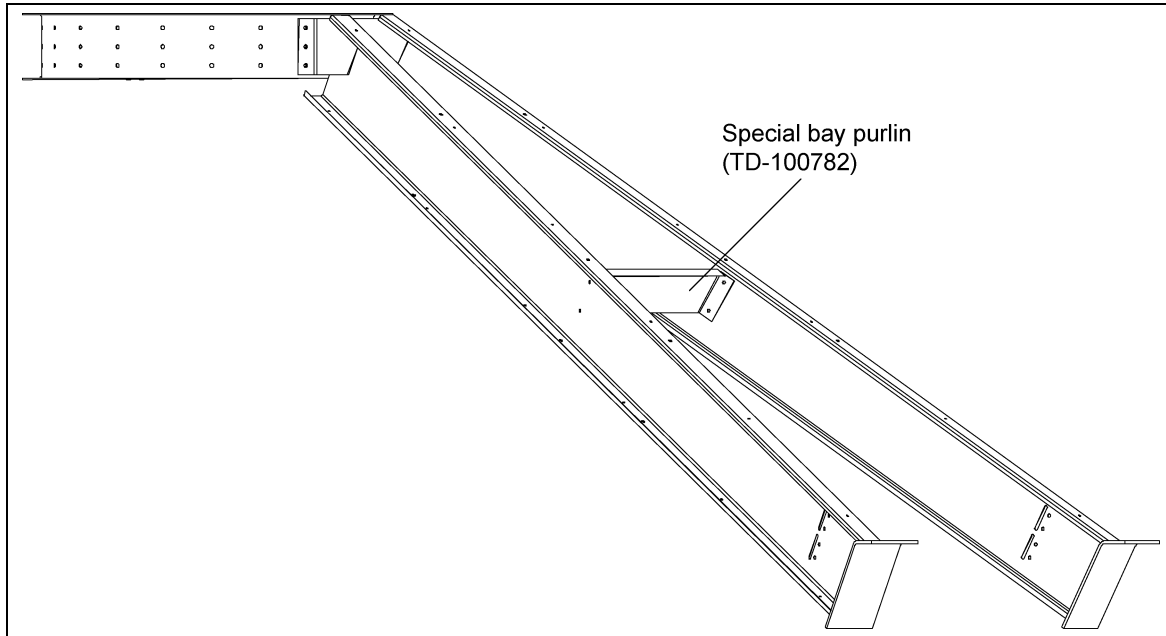


Figure 8C

### 21' Intermediate Purlin

Bolt purlins to rafters in the fourth hole counting up from the sidewall. (See Figure 8D.)

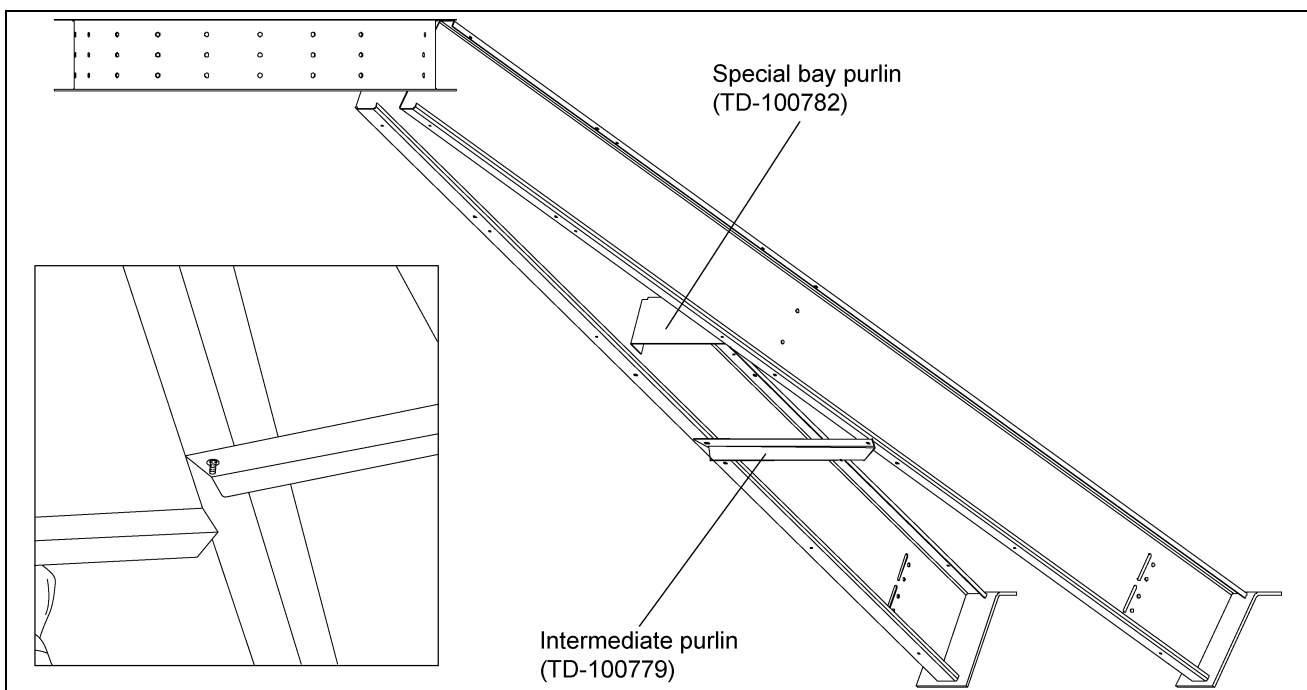


Figure 8D

## 8. Installation

### 24' Intermediate Purlin

Counting up from the lower end of the rafter, on the underneath side, the angle purlins bolt in the third hole using 5/16" x 3/4" bin bolts. The angle is to be bolted to the underneath side of the rafters, joining rafter to rafter, with the angle interior angle facing the center of the bin as shown in [Figure 8E](#). Tighten all bolts.

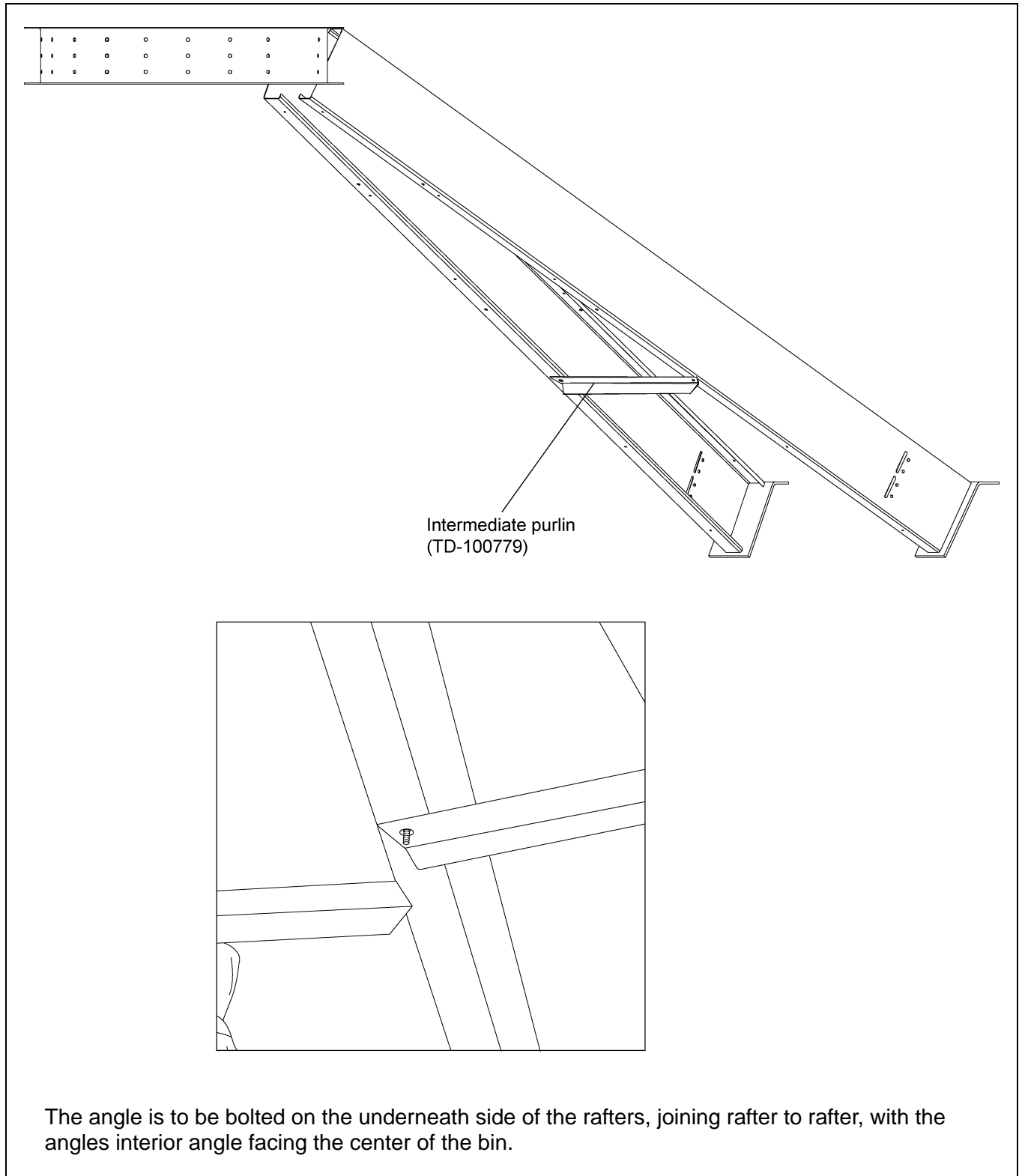


Figure 8E

### 30' Intermediate Purlin

The upper purlins are bolted using 5/16" x 1-1/4" bolts in the ninth hole counting up from the sidewall. The middle purlins are bolted in the fourth hole counting up from the sidewall. Bolt purlins to rafters with interior angle facing the center of the bin as shown in *Figure 8F*.

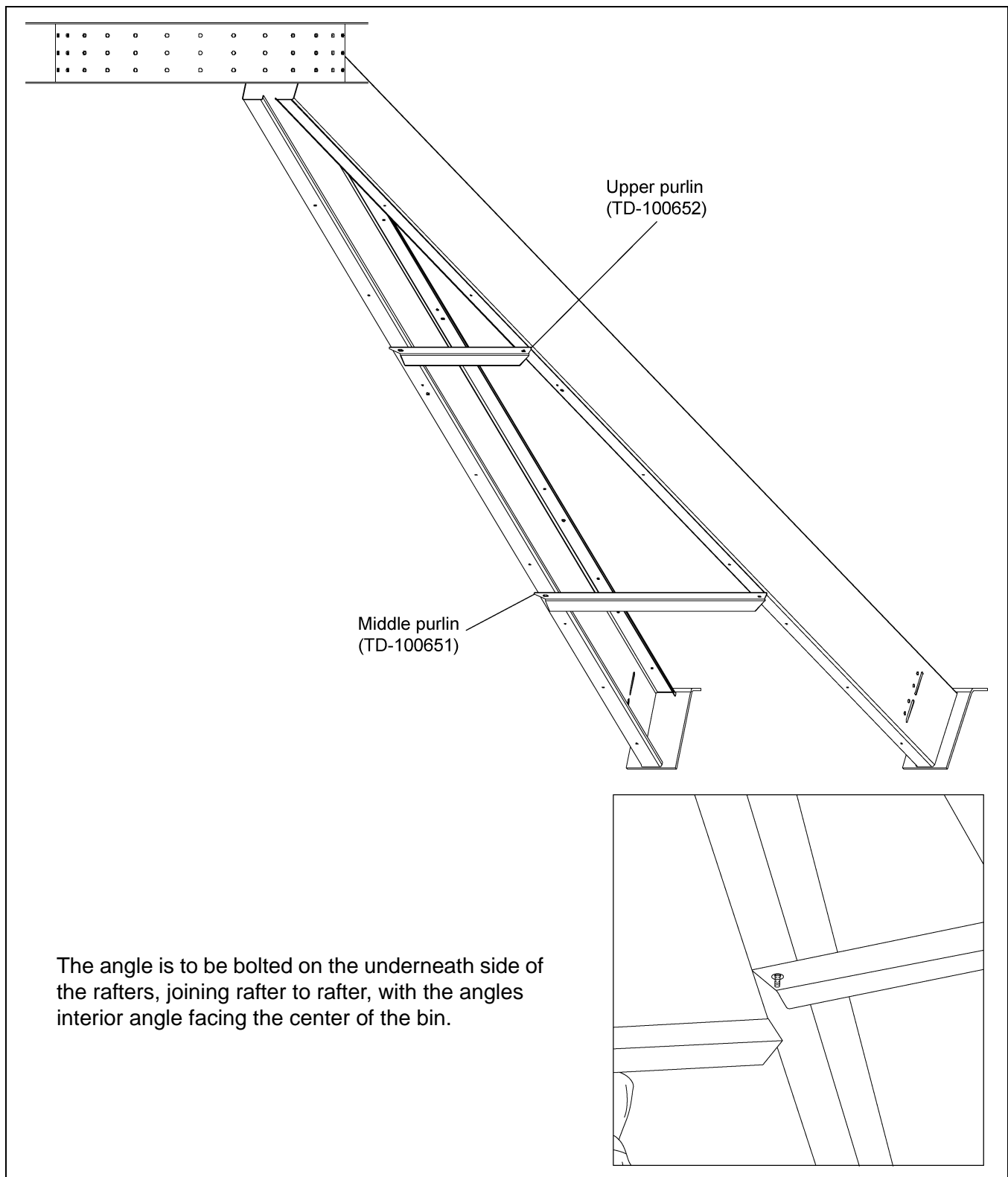


Figure 8F

## 8. Installation

### 36' Intermediate Purlin

The upper purlins are bolted using 5/16" x 1-1/4" bolts in the ninth hole counting up from the sidewall. The middle purlins are bolted in the fourth hole counting up from the sidewall. Bolt purlins to rafters with interior angle facing the center of the bin as shown in *Figure 8G*.

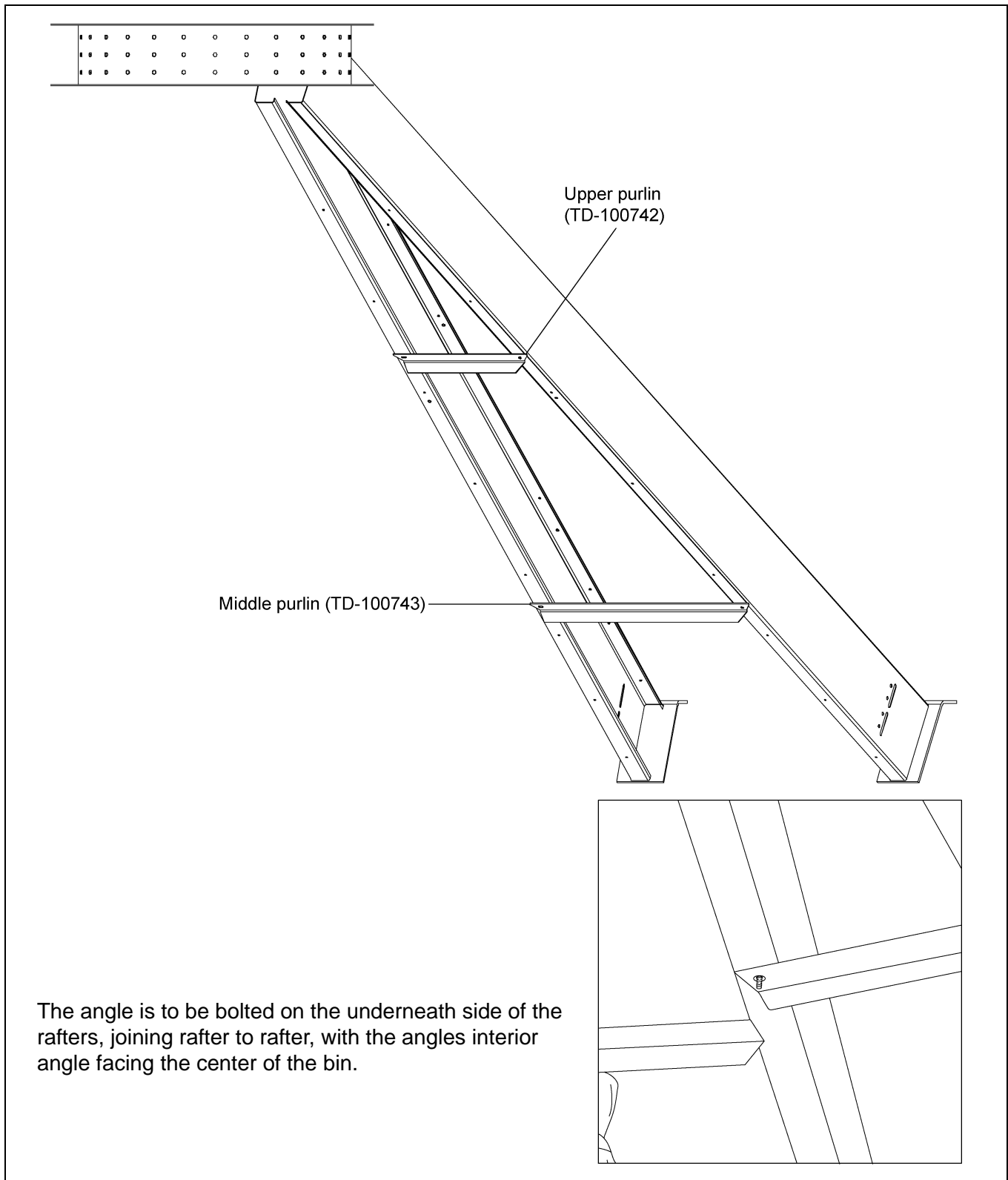


Figure 8G



## Dump Hopper Installation

Pre-assemble the dump hoppers and flashing angles to the floor sheets. Place a dump hopper under the floor sheet and align it with the pre-punched large hole. Place a flashing angle on top of the sheet across the outer edge of the hopper entrance with the interior of the angle facing the sidewall. Screw down through the angle, sheet and hopper with 5/16" x 3/4" self-tapping screws. (See [Figure 8H.](#))

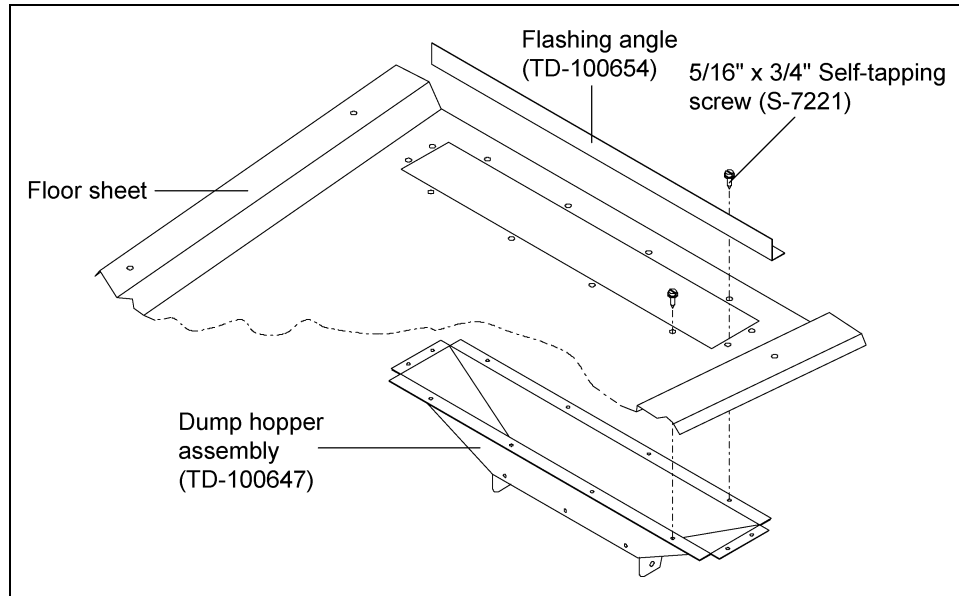


Figure 8H

## Floor Sheet Installation

The assembled sheets can now be laced over the framework. As the sheets are placed and overlapped they are to be screwed down to the rafters using 5/16" x 3/4" self-tapping screws. There are certain holes in the sheets that should not be screwed down at this time to mount leveling band posts later. See chart [below](#). All holes are counted from the sidewall sheet up to the center of the bin. (See [Figure 8I.](#))

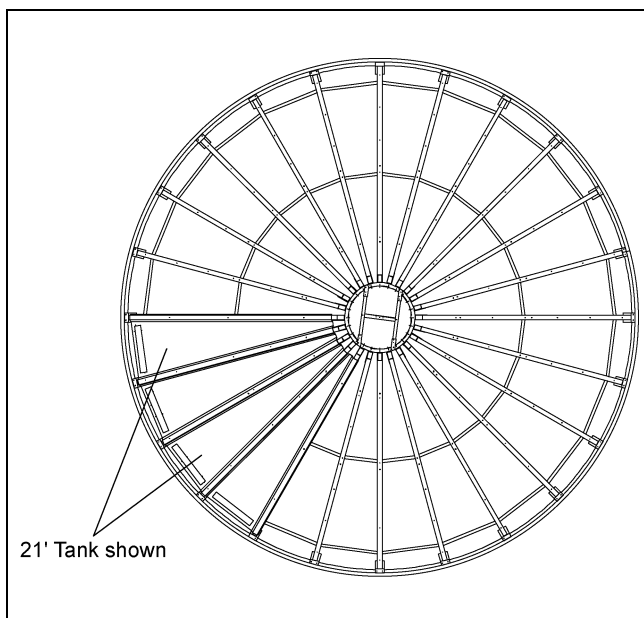


Figure 8I

Nominal Diameter of Tank (Ft.)	# of Holes to Leave Empty
21'	Third and Eighth Holes
24'	Third and Eighth Holes
30'	Fourth, Seventh and Tenth Holes
36'	Third, Sixth, Tenth and Twelfth Holes

## 8. Installation

### Flashing Bolt Installation

Install the eave flashing bolts (5/16" x 1-1/4") through the sidewall and tighten first nut. **Note at the vertical sidewall seams, one bolt is turned around to avoid interference with eave flashing.** (See Figure 8J.)

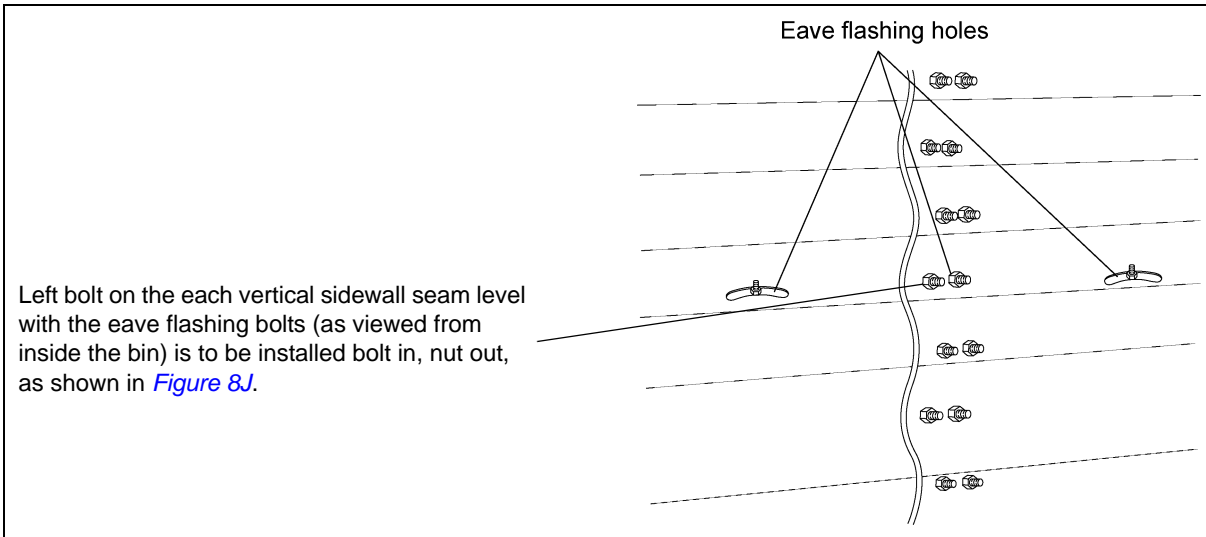


Figure 8J

### Eave Flashing Installation

Install the eave flashing centered on the floor sheet (1 per) with the bent edge towards the sidewall install a fender washer (S-3671) and nut. Screw the flashing to the flashing angle at the dump hopper opening with five (5) #10 self-drilling screws (S-280) and screw the flashing pieces together where they overlap with three (3) #10 self-drilling screws (S-280). (See Figure 8K below and Figure 8L on Page 43.)

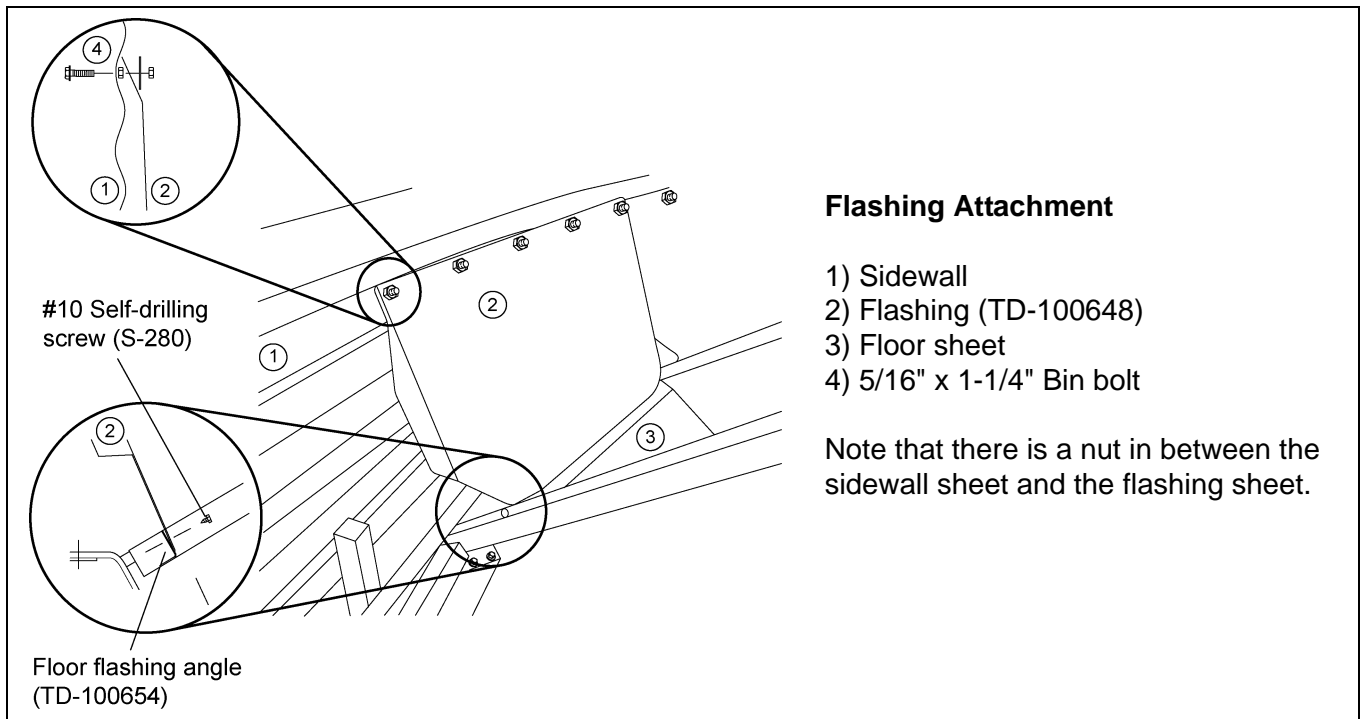


Figure 8K

## Eave Flashing Installation (Continued)

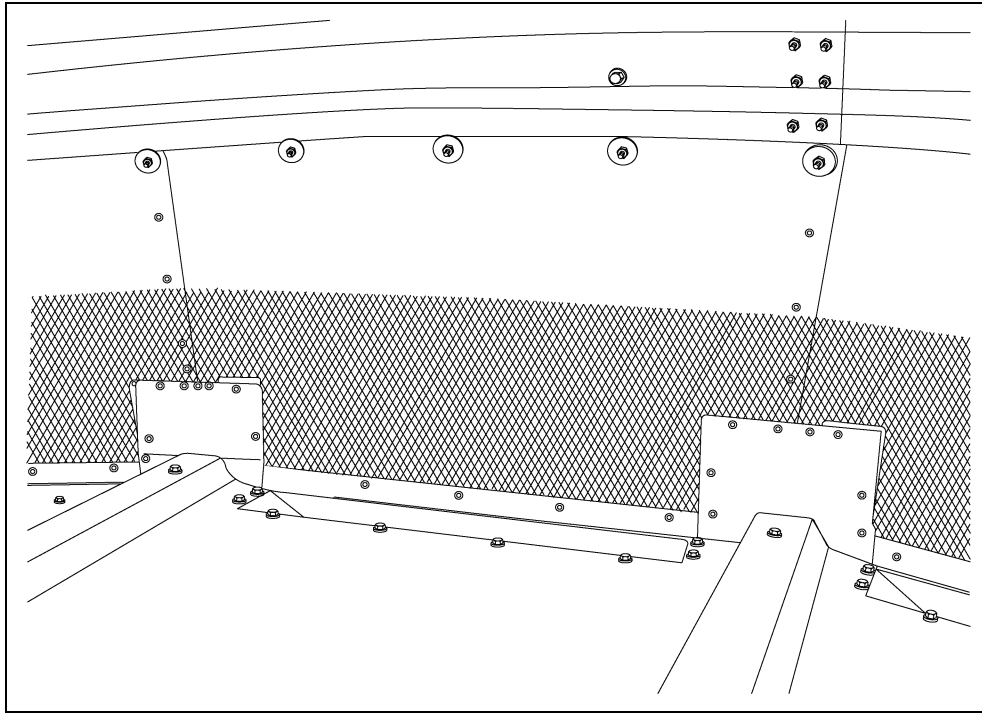


Figure 8L

## Eave Flashing Splice

The flashing splice pieces can now be attached to the eave flashing to seal around the rib of the floor sheet as shown with #10 self-drilling screws (S-280). (See [Figure 8M.](#))

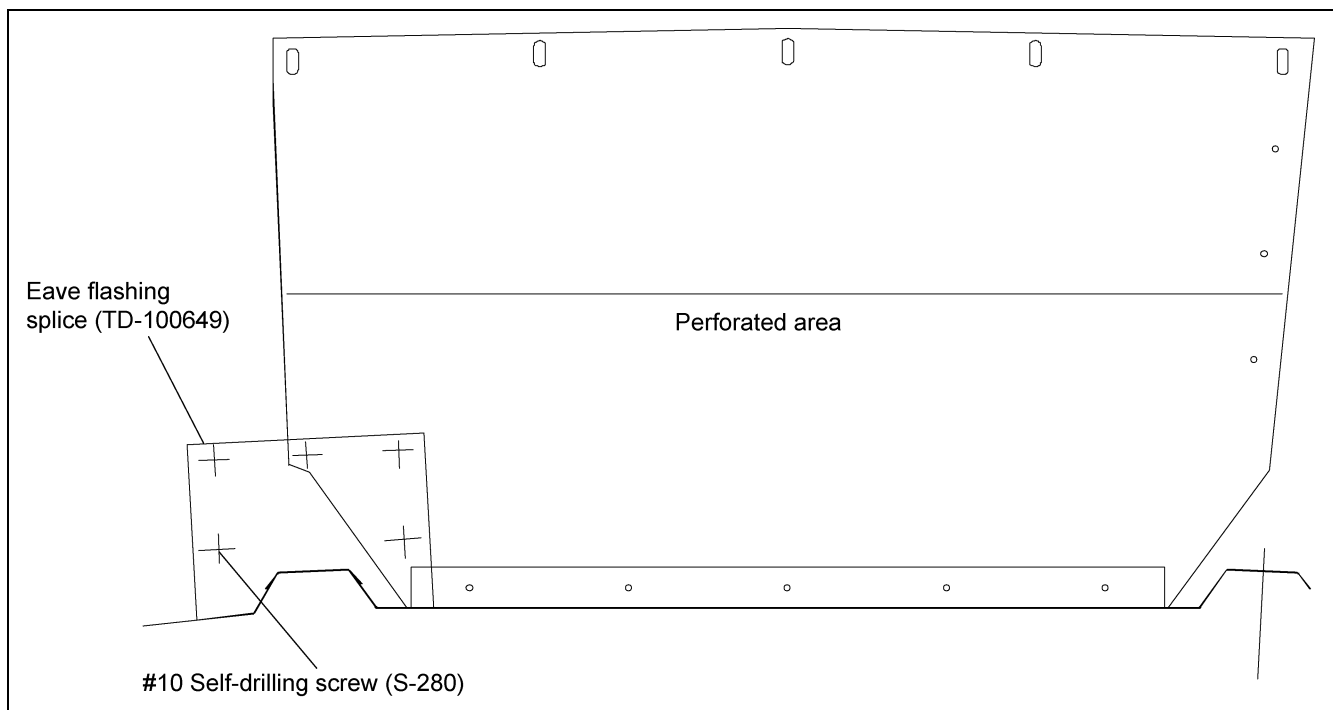


Figure 8M Eave Flashing (TD-101018) (As viewed from inside the bin.)

## 8. Installation

### Outer Dump Chutes

Bolt an angle dam (TD-100598) to each dump chute using three (3) 1/4" x 5/8" bolts and nuts, as shown in [Figure 8N](#). Use 1/4" x 5/8" bolts and double nuts to fasten dump chutes to hopper. **Do not tighten first nut down.** Lock second nut to first nut and **make sure chutes raise and lower FREELY.**

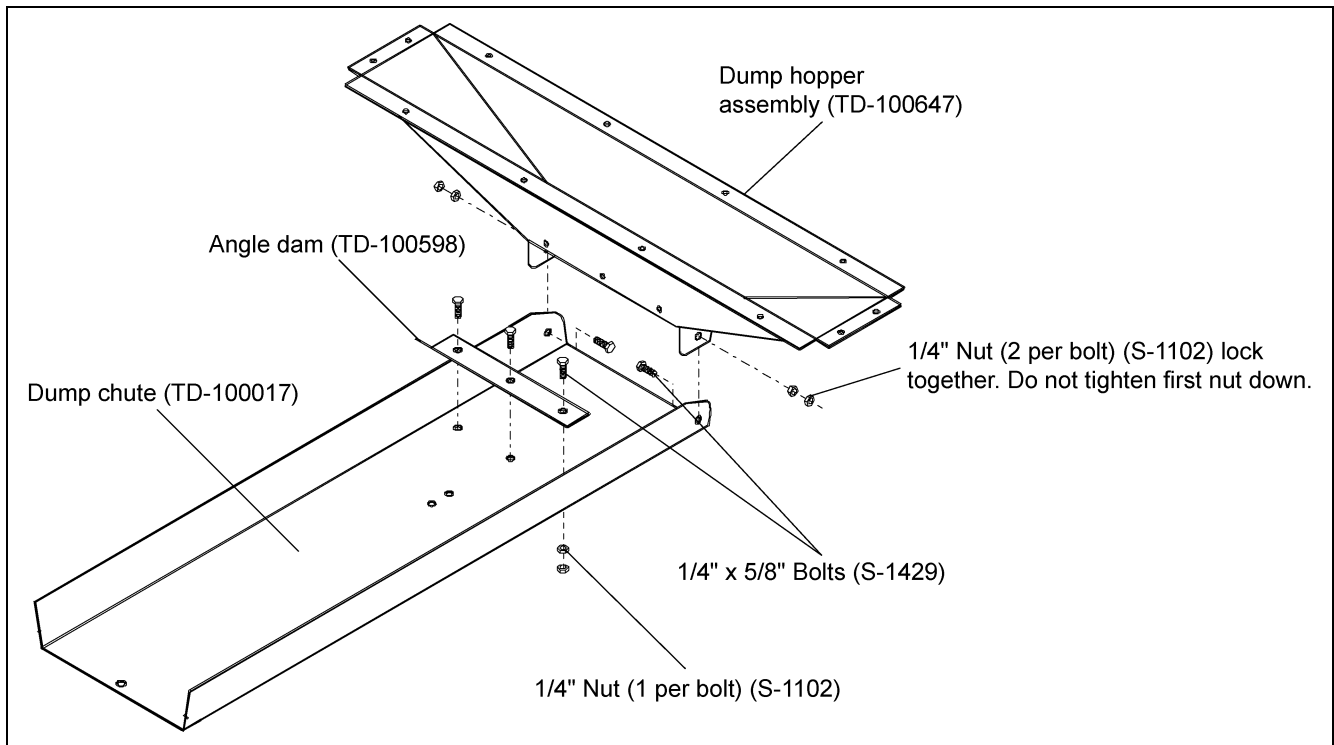


Figure 8N

## 21' and 24' Leveling Band Post Installation

Install the leveling band posts on the floor as shown in *Figure 80*.

**21':** The third and eighth holes in the floor sheet indicate the location of the leveling band posts. Attach posts with 5/16" x 1-1/4" bin bolts (S-277). The third hole from the bottom of the sheet, there will be seven (7) posts (1 every third sheet). In the eighth hole there will be five (5) posts (1 every fourth sheet except the last will cover 5 sheets). After all of the posts have been installed fill the unused holes with 5/16" x 1-1/4" bin bolts.

**24':** The fourth and eighth holes in the floor sheet indicate the location of the leveling band posts. Attach posts with 5/16" x 1-1/4" bin bolts (S-277). The third hole from the bottom of the sheet, there will be eight (8) posts (1 every third sheet). In the eighth hole there will be four (4) posts (1 every sixth sheet). After all of the posts have been installed fill the unused holes with 5/16" x 1-1/4" bin bolts.

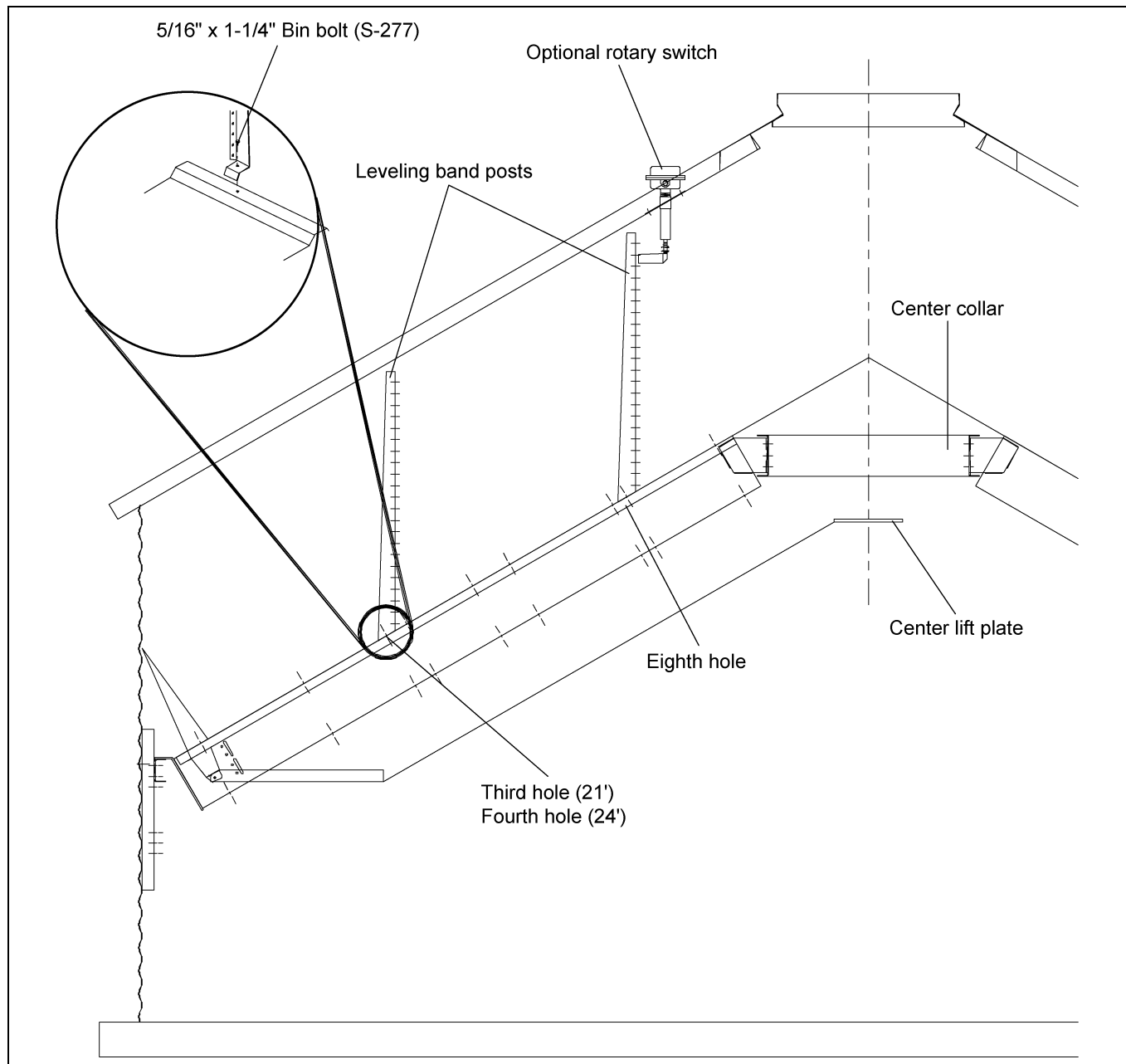


Figure 80

## 8. Installation

### 30' Leveling Band Post Installation

Install the leveling band posts on the floor as shown in *Figure 8P*.

The fourth, seventh and tenth holes in the floor sheets indicate the location of the leveling band posts. Attach with 5/16" x 1-1/4" bin bolts (S-277). In the fourth and seventh hole there will be ten (10) posts (1 at every third sheet). In the tenth hole there will be six (6) posts (1 every fifth).

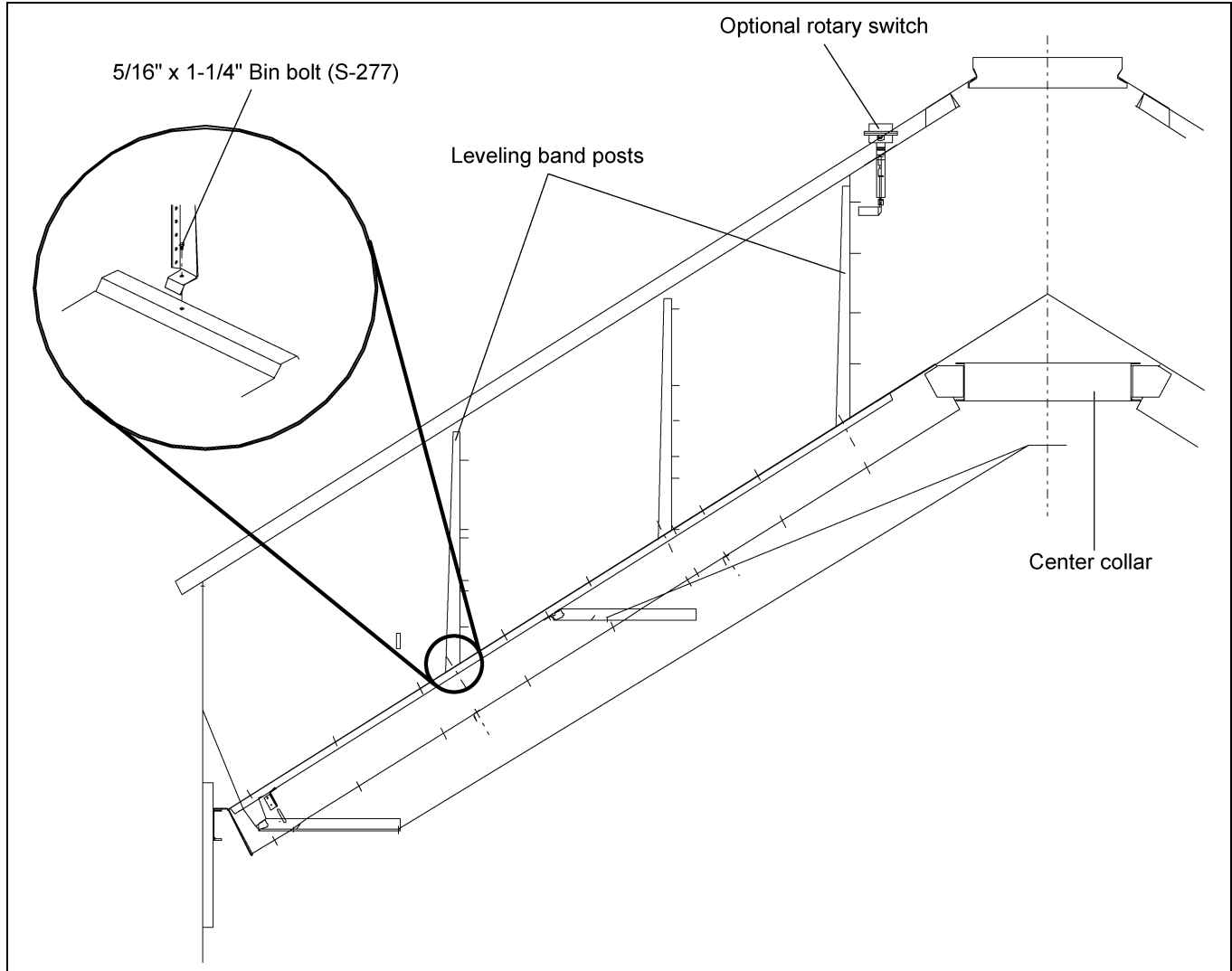


Figure 8P

## 36' Leveling Band Post Installation

Install the leveling band posts on the floor as shown in [Figure 8Q](#).

The third, sixth, tenth and twelfth holes in the floor sheets indicate the location of the leveling band posts. Attach with 5/16" x 1-1/4" bin bolts (S-277). In the third hole from the bottom of the floor sheets there will be eighteen (18) posts (one in every other sheet). In the sixth and tenth hole there will be twelve (12) posts (1 at every third sheet). In the twelfth hole there will be six (6) posts (1 every sixth sheet).

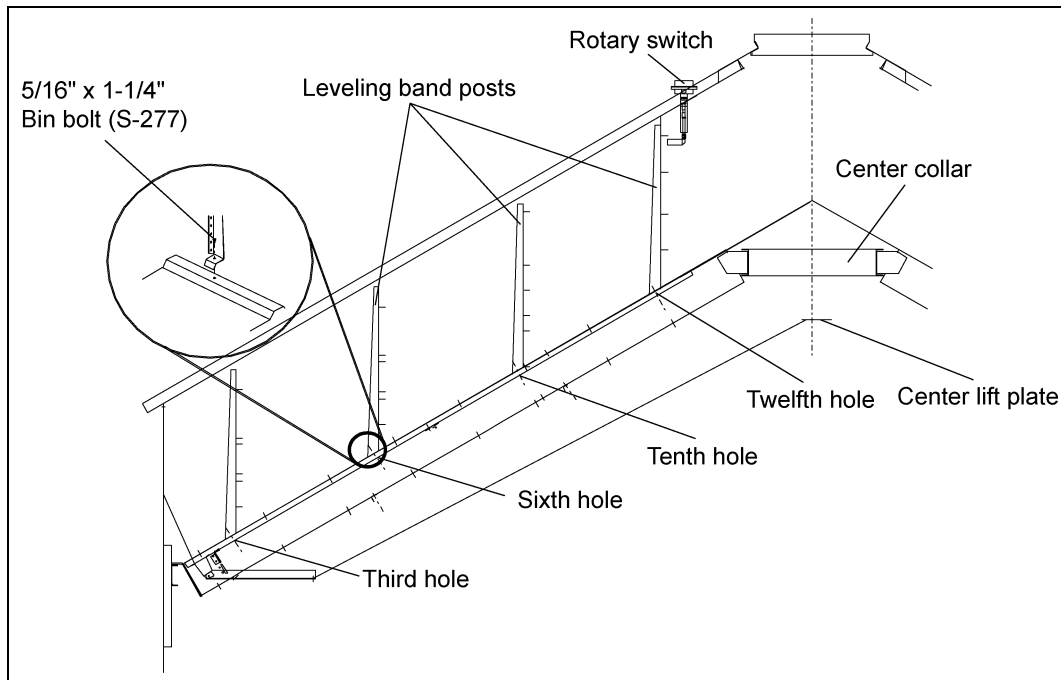


Figure 8Q

## Leveling Band Installation

**NOTE:** Field cut rounded notches in the outer leveling band(s) where the two (2) roof support channels hang from the roof ribs. (See [Figure 8R](#).)

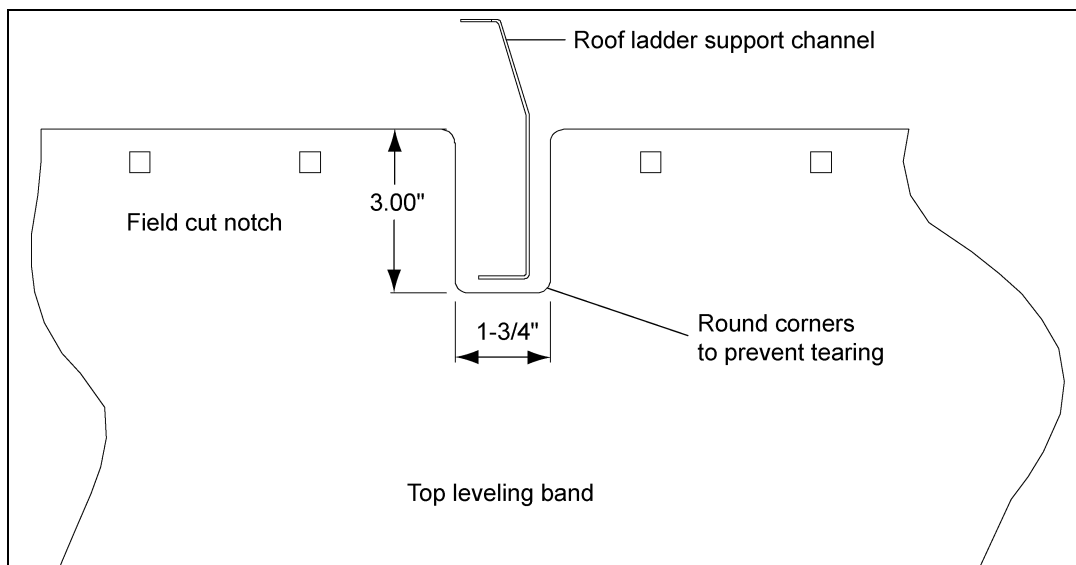


Figure 8R

## 8. Installation

### 21' Leveling Band Location

Position leveling bands as shown in the *Figure 8S*.

Use two (2) 5/16" x 3/4" bin bolts to attach bands to posts. Also use 5/16" x 3/4" bin bolts to join band sections. **Note that band sections connect to each other only at endmost holes until completing the circle where an overlap may occur.**

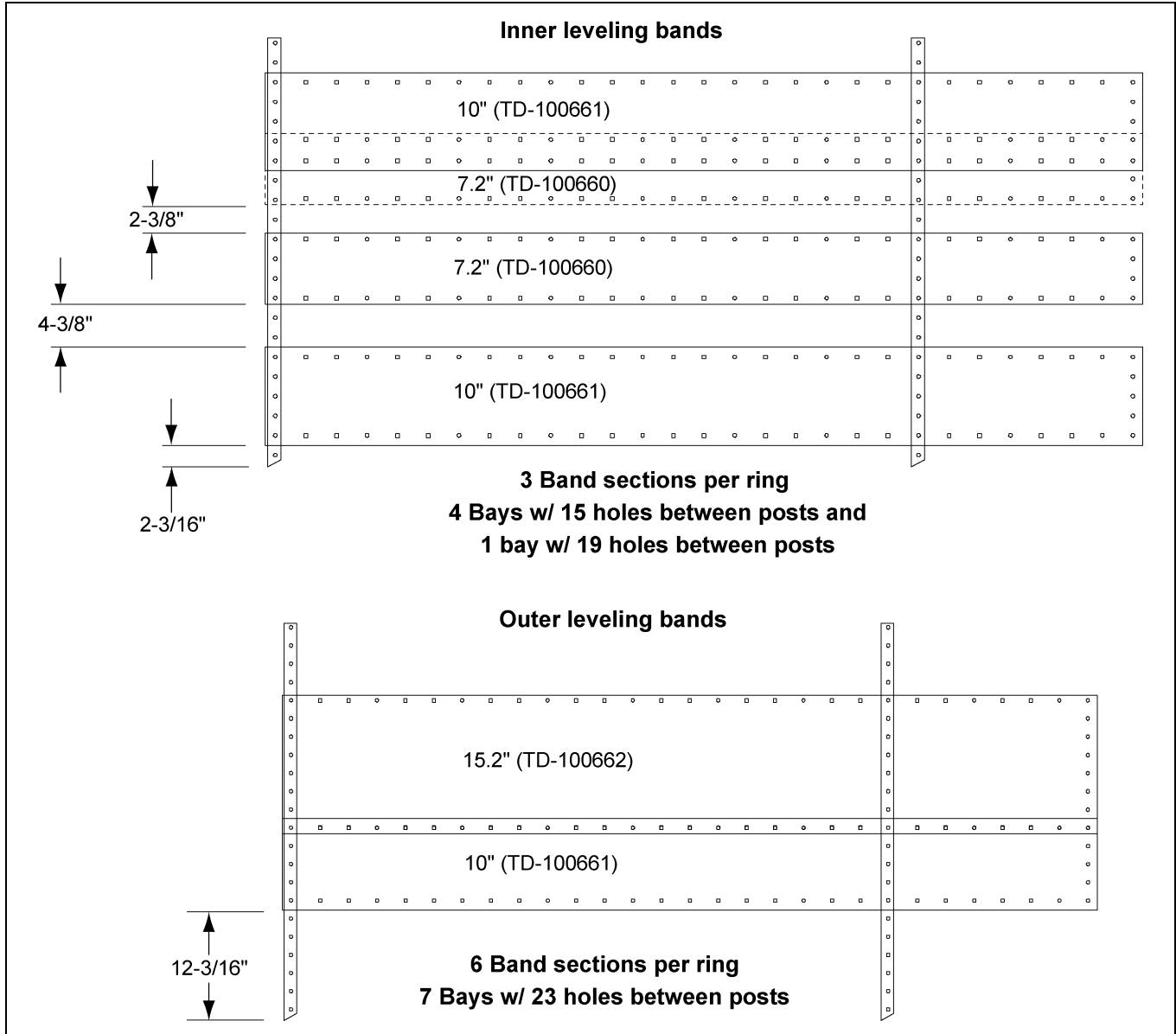


Figure 8S

21' Leveling Band Grain Depth Settings		
21'	Old	New
Inner	30.13"	26.13"
Outer	28.571"	12-3/16"
Dump Time Estimate (Corn at 105°)	25 Sec.	25 Sec.



## 24' Leveling Band Location

Position leveling bands as shown in the *Figure 8T*.

Use two (2) 5/16" x 3/4" bin bolts to attach bands to posts. Also use 5/16" x 3/4" bin bolts to join band sections. **Note that band sections connect to each other only at end most holes until completing the circle where an overlap may occur.**

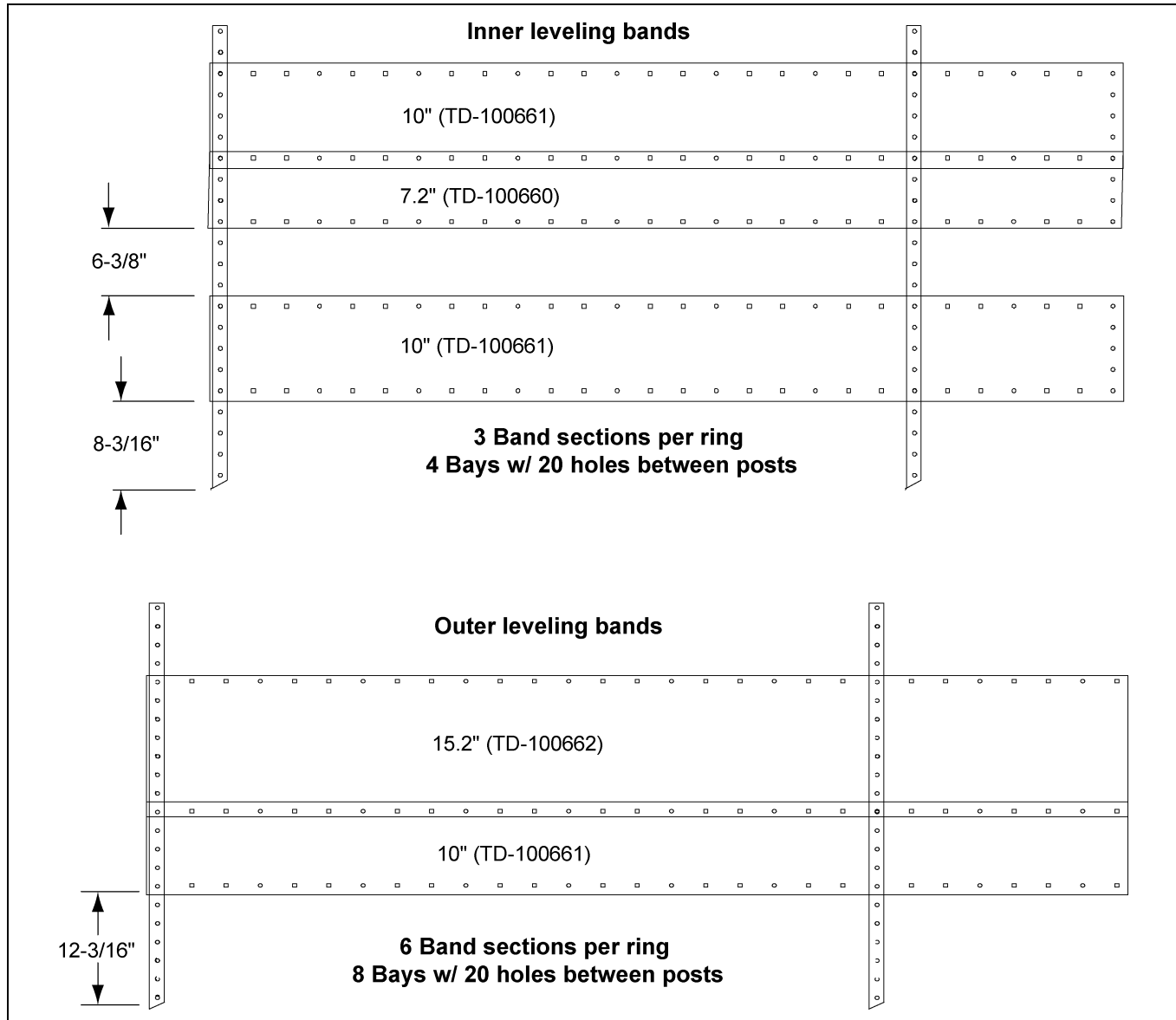


Figure 8T

24' Leveling Band Grain Depth Settings		
24'	Old	New
Inner	24.57"	Same
Outer	14.2"	12.2"
Dump Time Estimate (Corn at 105°)	32 Sec.	28 Sec.

## 8. Installation

### 30' Leveling Band Location

#### Inner Leveling Bands

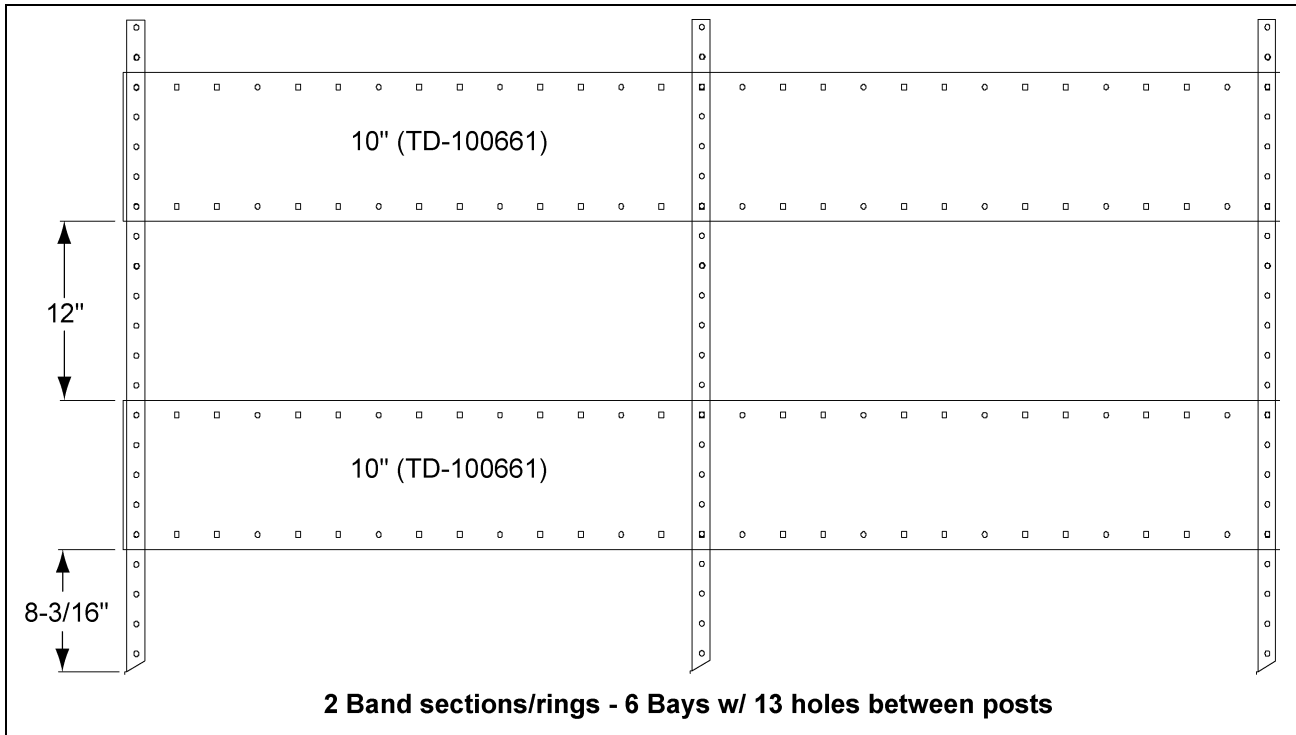


Figure 8U

#### Middle Leveling Bands

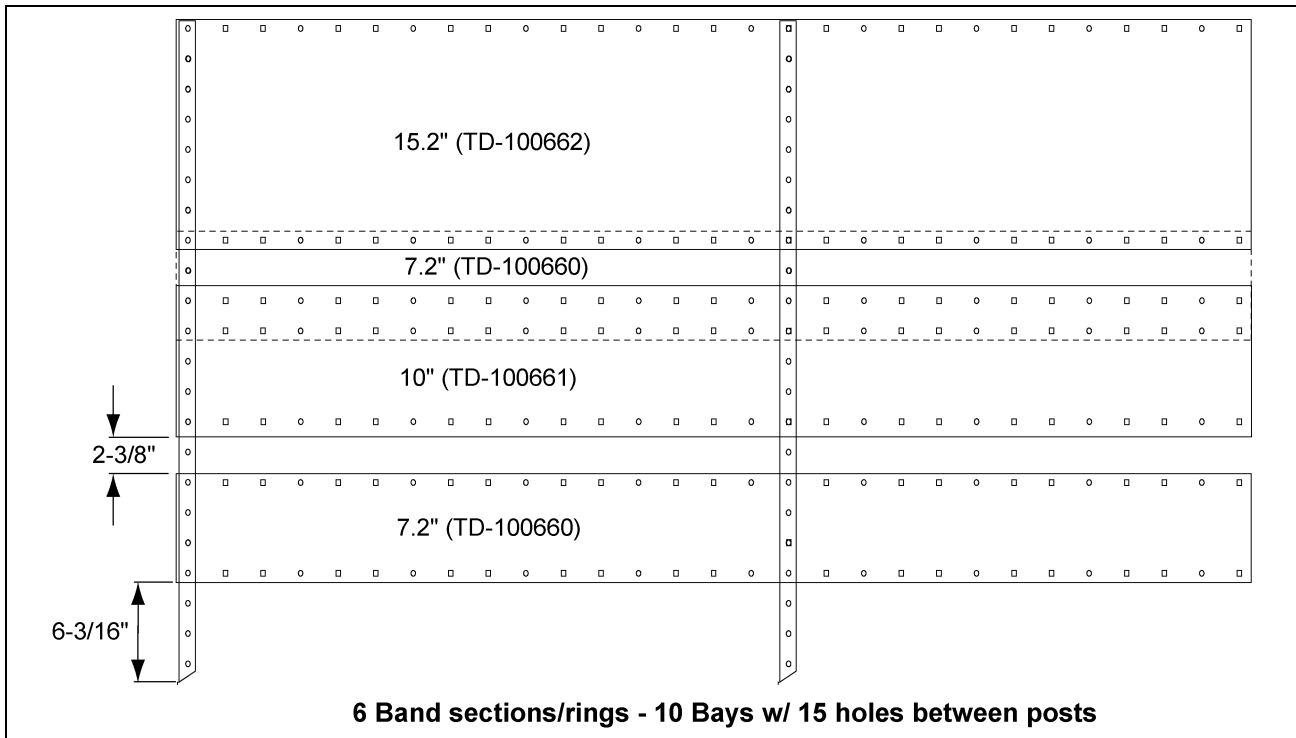


Figure 8V

### 30' Leveling Band Locations (Continued)

#### Outer Leveling Bands

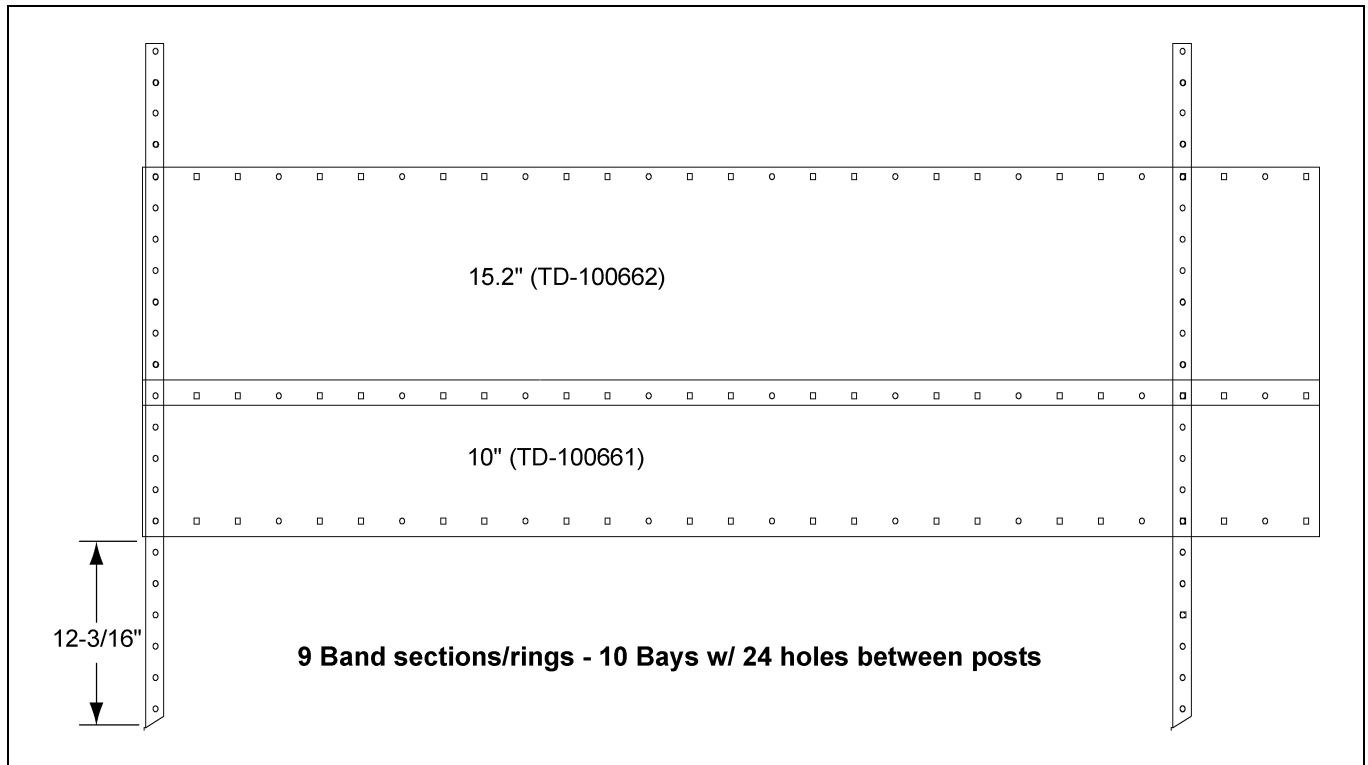


Figure 8W

30' Leveling Band Grain Depth Settings		
30'	Old	New
Inner	30.2"	Same
Middle	22.6"	16.6"
Outer	16.2"	12.2"
Dump Time Estimate (Corn at 105°)	40 Sec.	34 Sec.

## 8. Installation

### 36' Leveling Band Location

#### Inner Leveling Bands

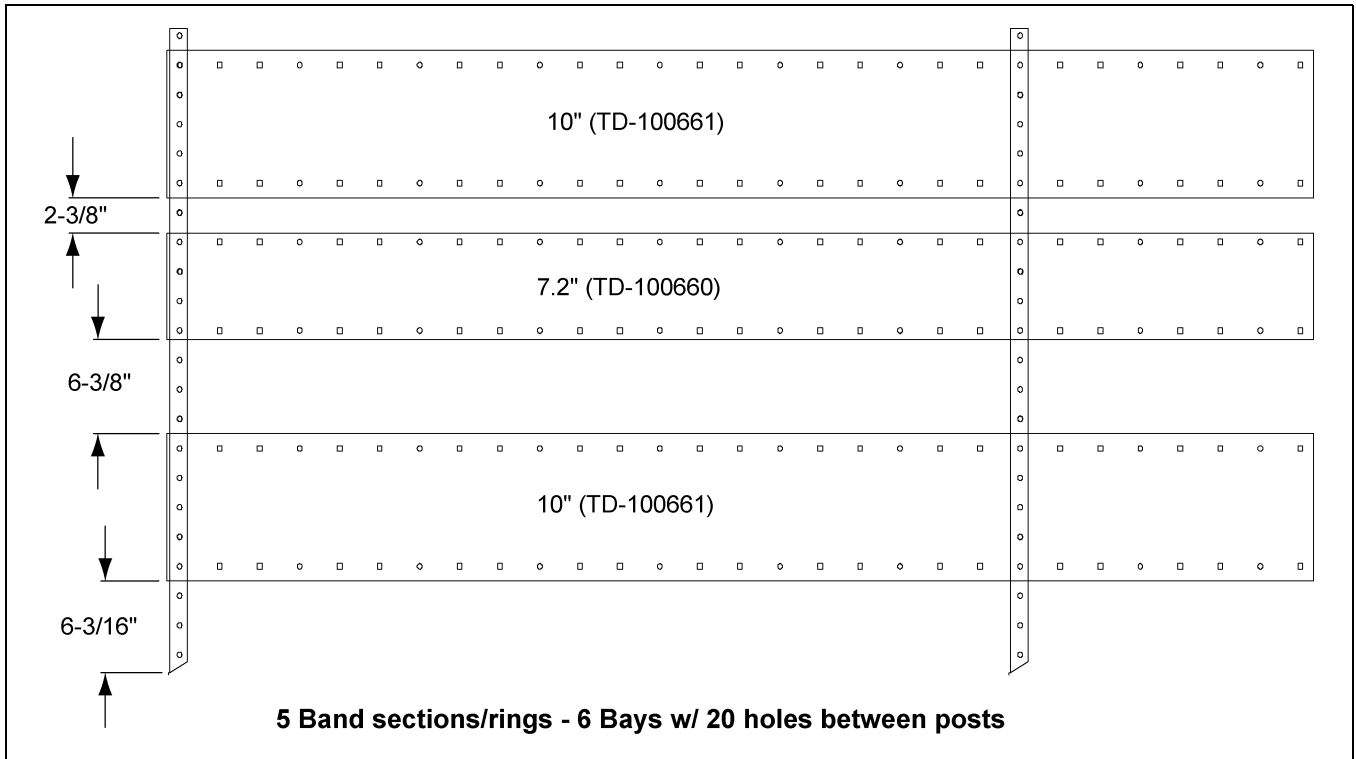


Figure 8X

#### Number 2 Set of Leveling Bands

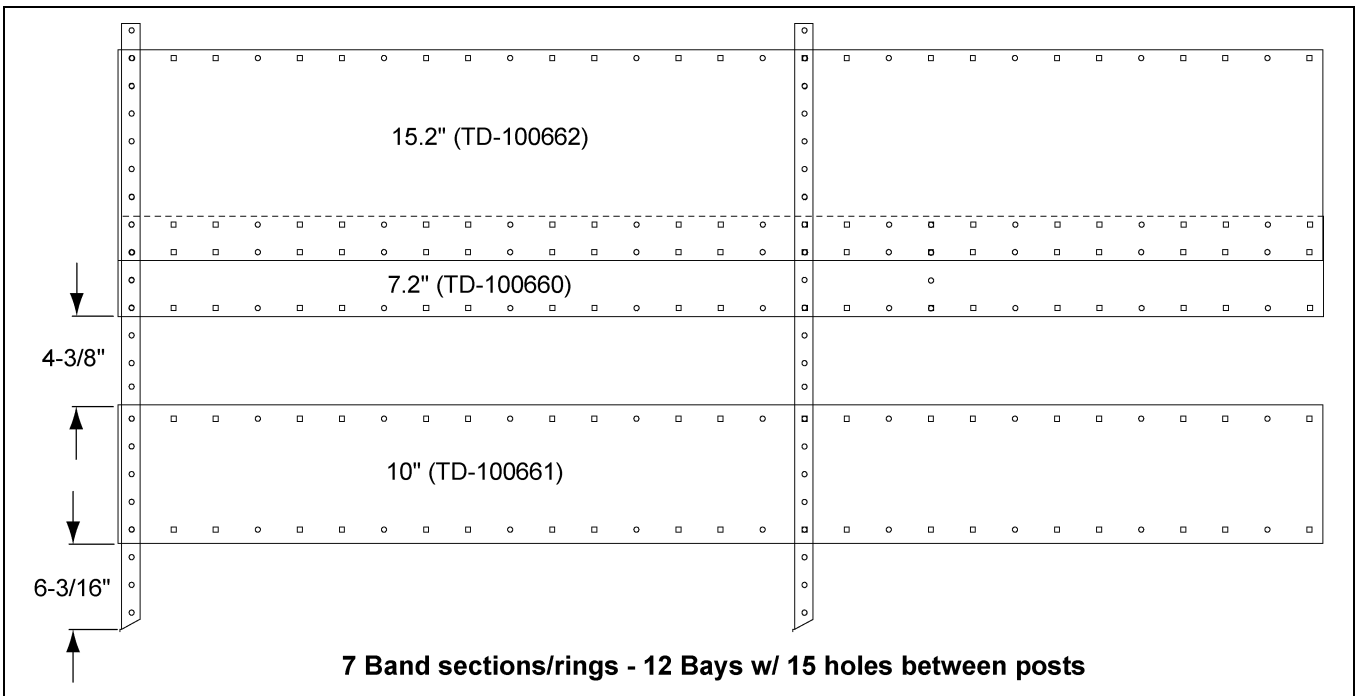


Figure 8Y

## 36' Leveling Band Locations (Continued)

### Number 3 Set of Leveling Bands

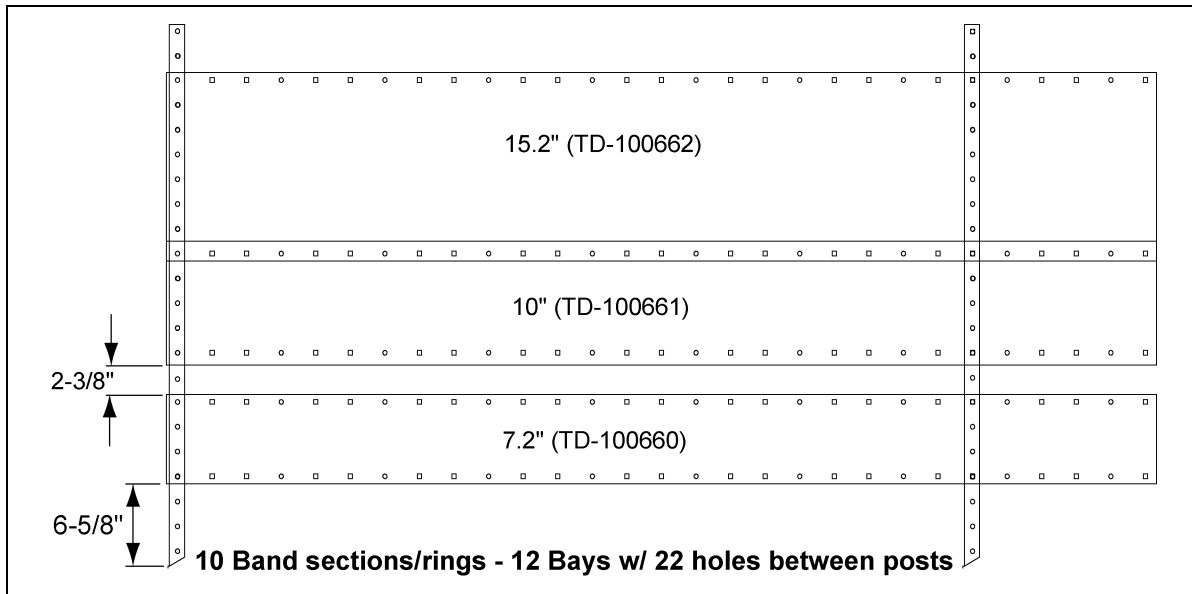


Figure 8Z

### Number 4 Set of Leveling Bands

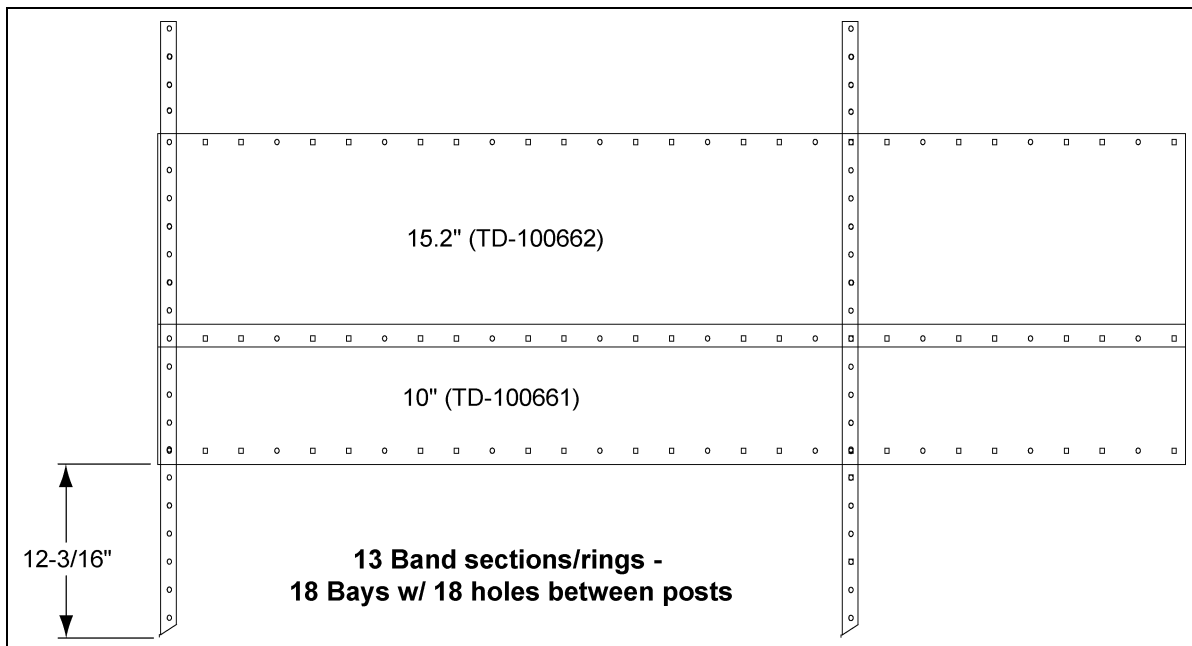


Figure 8AA

36' Leveling Band Grain Depth Settings					
36'	Old	New	36'	Old	New
Inner	31.5"	Same	No. 4	14.2"	12.2"
No. 2	26.5"	22.5"	Dump Time Estimate (Corn at 105°)	36 Sec.	31 Sec.
No. 3	20.2"	16.2"			

## 9. Assembly

### Pulley Assembly

Position the pulley assembly to the cross angle in the middle of the center collar assembly. Use a 3/8" x 1" hex head cap bolt to fasten assembly to the cross angle. Position the pulley in the direction of the desired winch location on the sidewall. (See Figure 9A.)

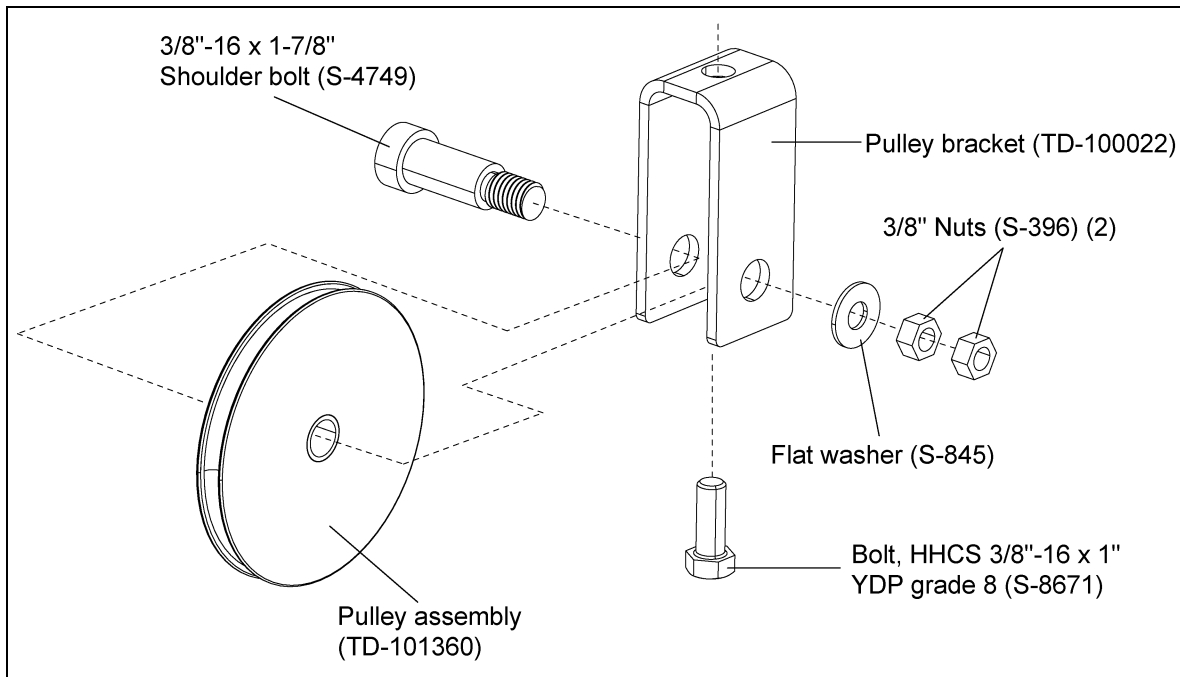


Figure 9A

Field drill five (5) 3/8" diameter holes as shown at left. Attach the pulley assembly with 5/16" x 3/4" bolts with the neoprene on the inside of the bin. (See Figure 9B.)

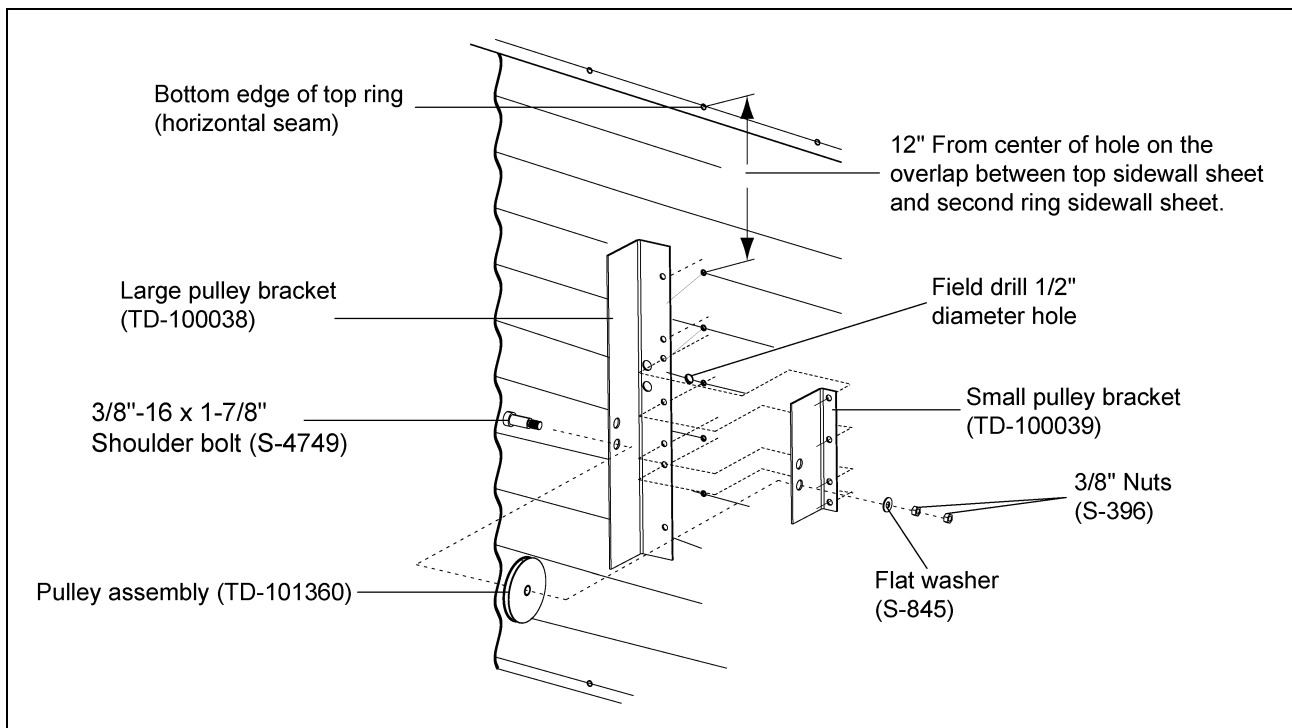


Figure 9B

## Dump Chute Chain Assembly

Attach all dump chute chains directly to the lift (TD-100801) plate as shown in [Figure 9C](#).

Install all chains using “S” hooks (S-4692) to attach the chains to the dump chutes and lift plates. Keep excess chain at the lift plate. Adjust the chains until the chutes are approximately level when the lift plate is in the closed (up) position. Once the chains are uniformly adjusted, crimp the “S” hooks closed. Check when attaching the “S” hook to the end link on a chain that the end has not been cut open. If this is found remove the end link or shift up and use the next link in chain. The lift plate should be approximately 12" down from the cross channel when the chutes are level.

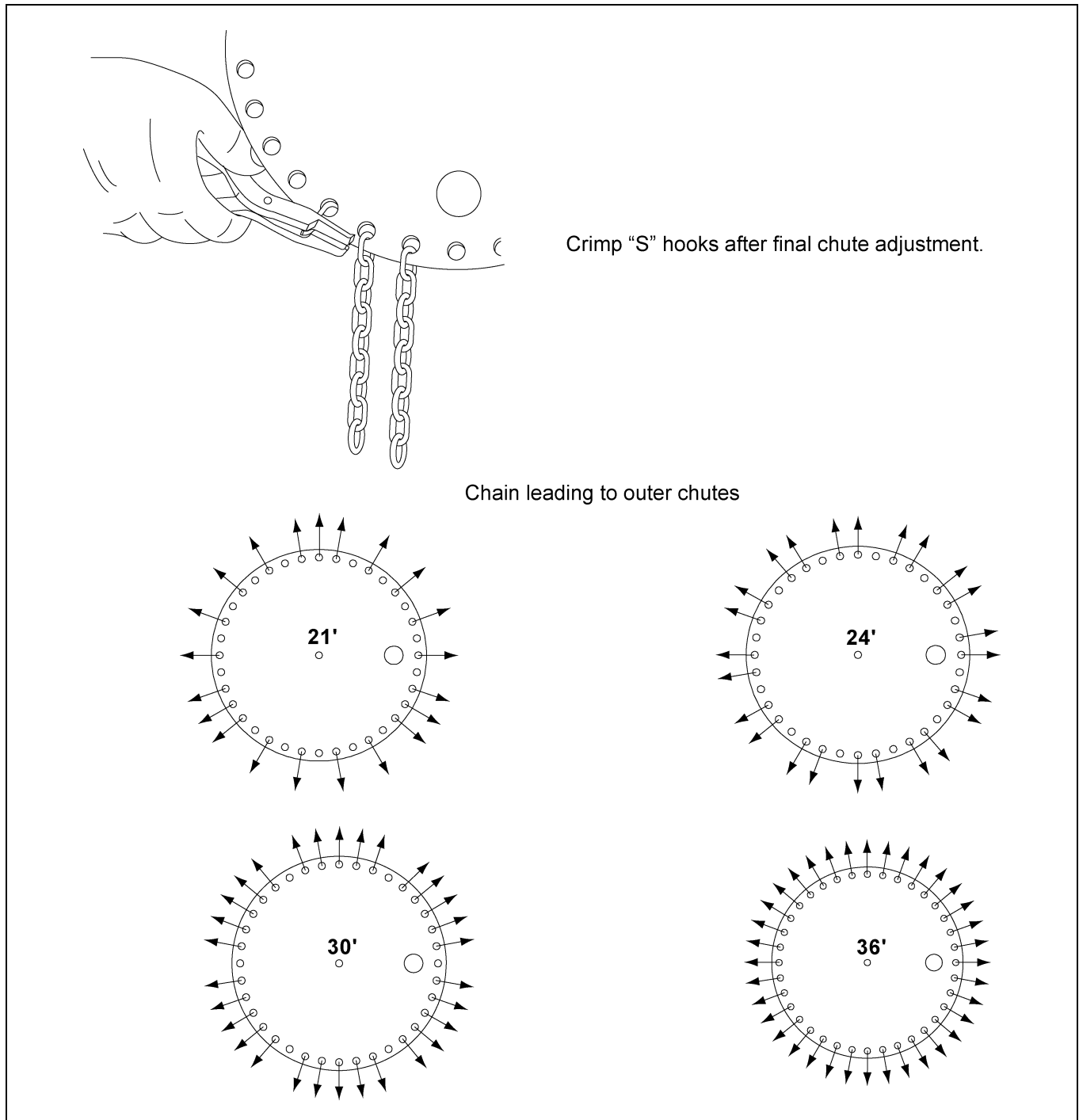


Figure 9C

# Dump Chute Chain Assembly (Continued)

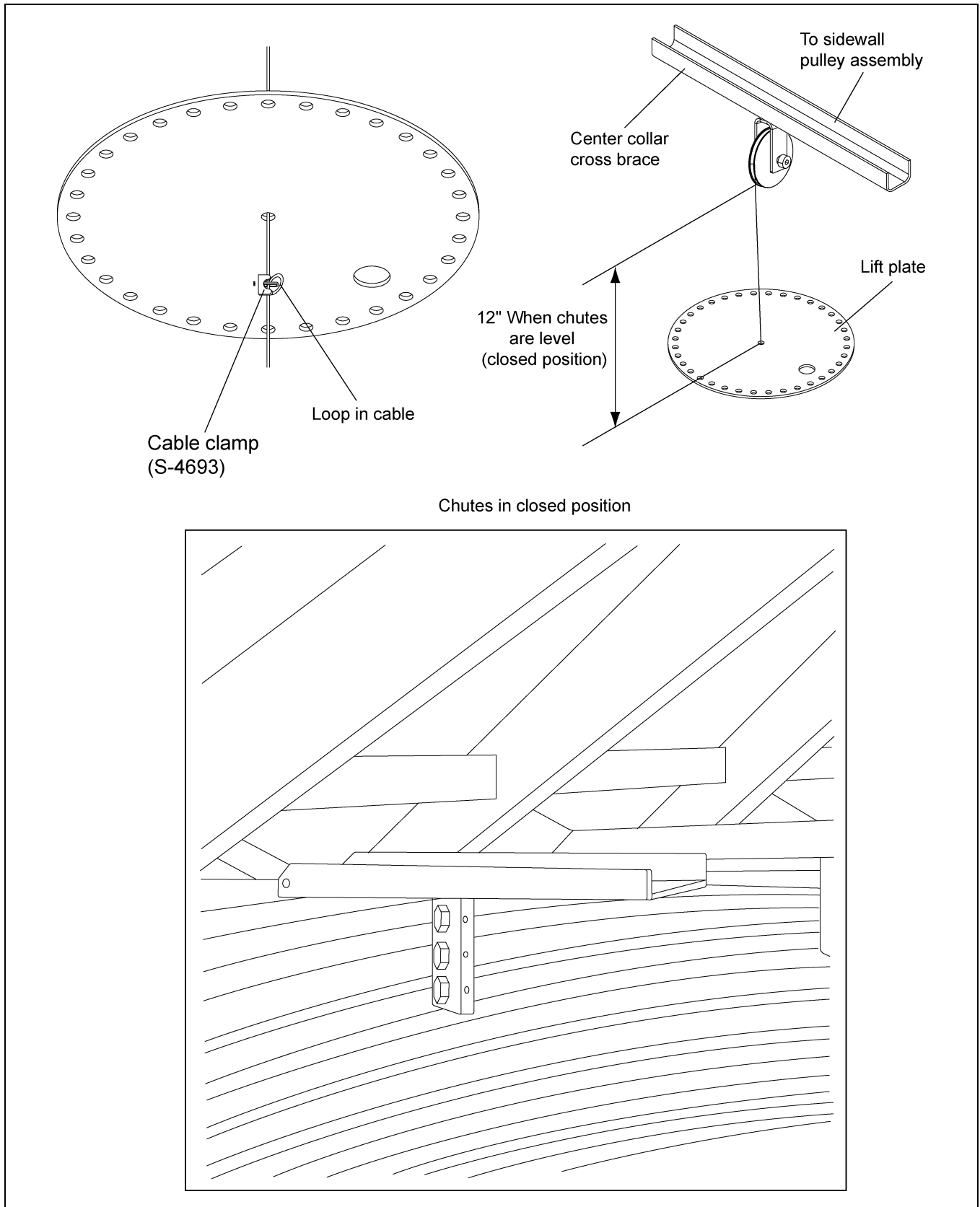


Figure 9D



## Center Cone Assembly

Bolt the sections together to form perforated cone as shown in [Figure 9E](#). Use 1/4" x 5/8" bolts and nuts to attach sections together.

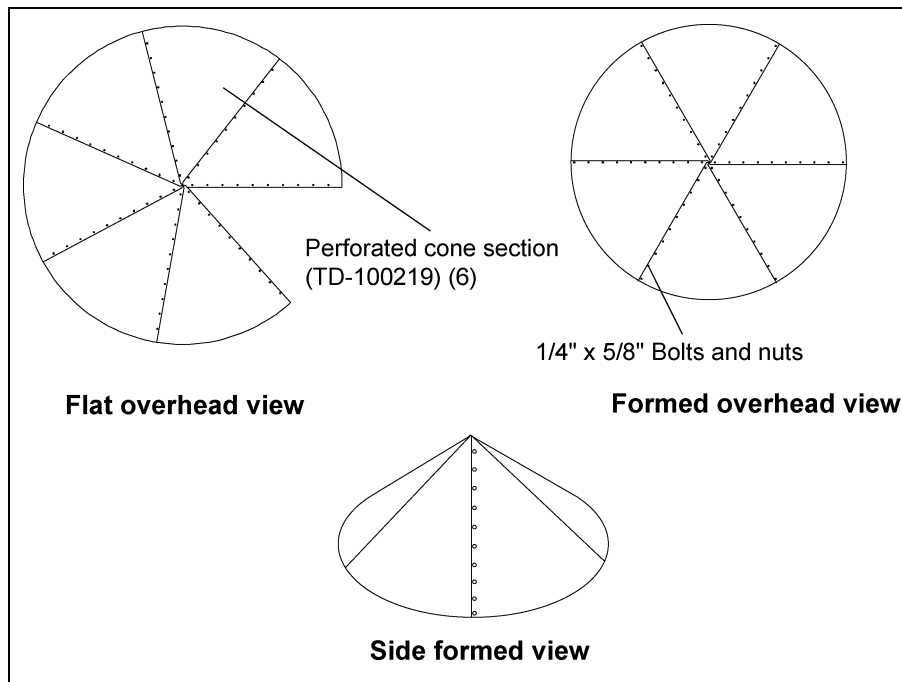


Figure 9E

## Center Cone Installation

After chains have been adjusted, install cone over the center collar. Fasten cone assembly with twelve (12) #10 x 3/4" self-drilling screws (S-280). (See [Figure 9F](#).)

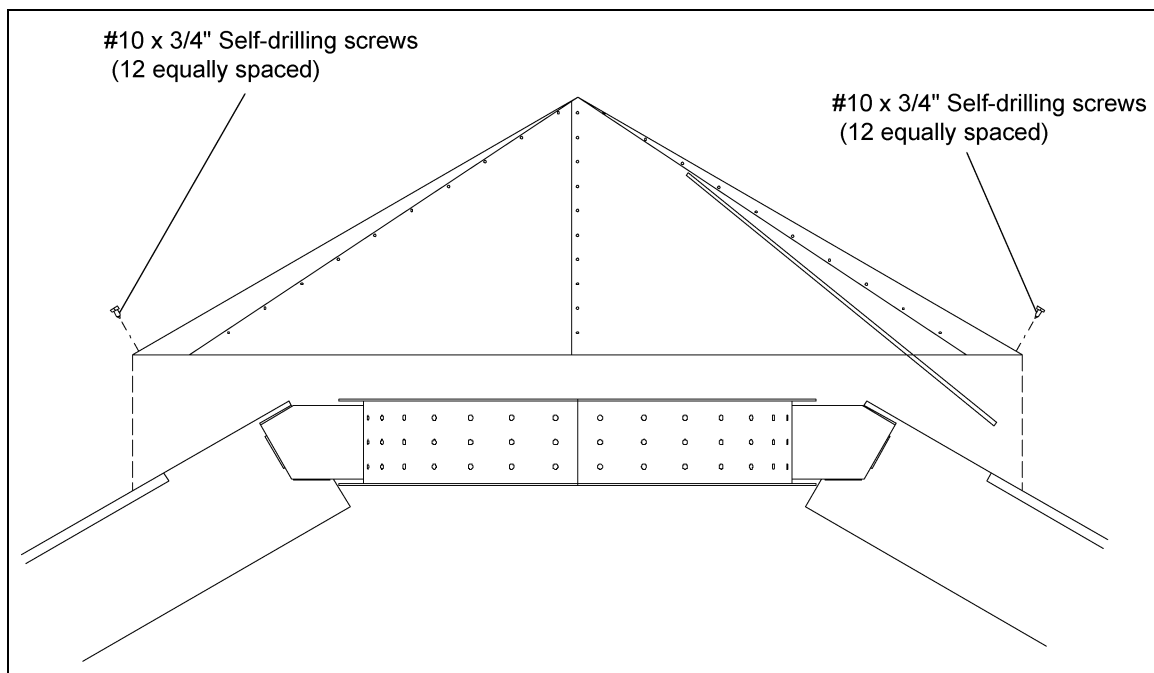


Figure 9F

## 9. Assembly

### Roof Assembly

#### Special Instructions

SEE ROOF INSTALLATION MANUAL LOCATED WITH ROOF HARDWARE PACKAGE.

1. Use eave clips (TD-101017) for 21'-24' tanks and eave clips (TD-101074) for 30'-36' tanks. The Top Dry eave clips are located in the roof hardware package.
2. Locate eave clips so that a roof sheet will be centered over sidewall ladder.
3. Use roof brackets (TD-100274) shipped in the roof hardware package. *(See Figure 9G.)*

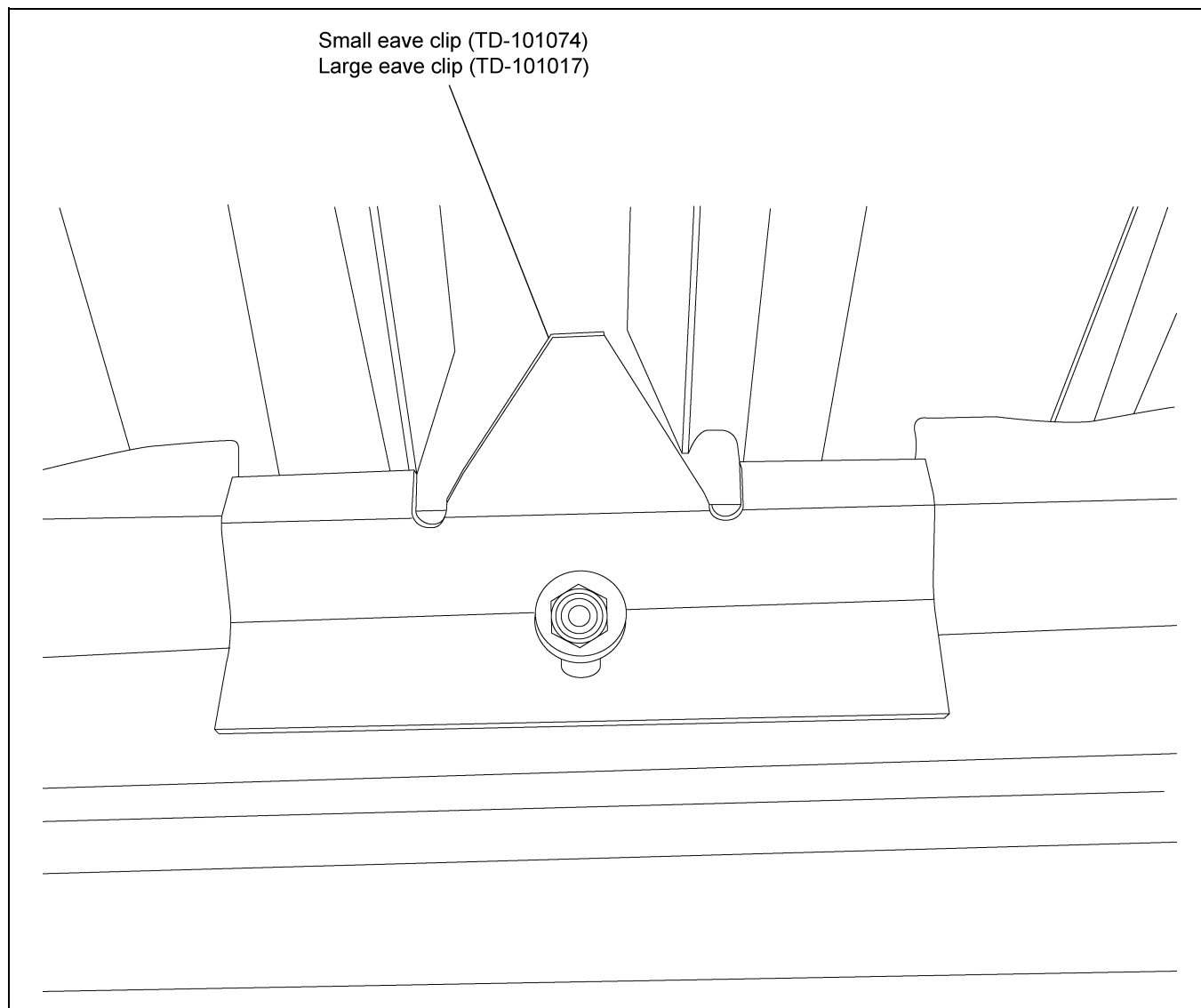


Figure 9G

## Perforated Center Band

Drill 3/8" diameter holes equally spaced as shown in [Chart](#) for top band clips. Attach clips using 5/16" x 3/4" bin bolts. Add perforated band sections. Note that these do not attach to the leveling bands but hang down on the inside of the top inner leveling band. (See [Figure 9H](#).)

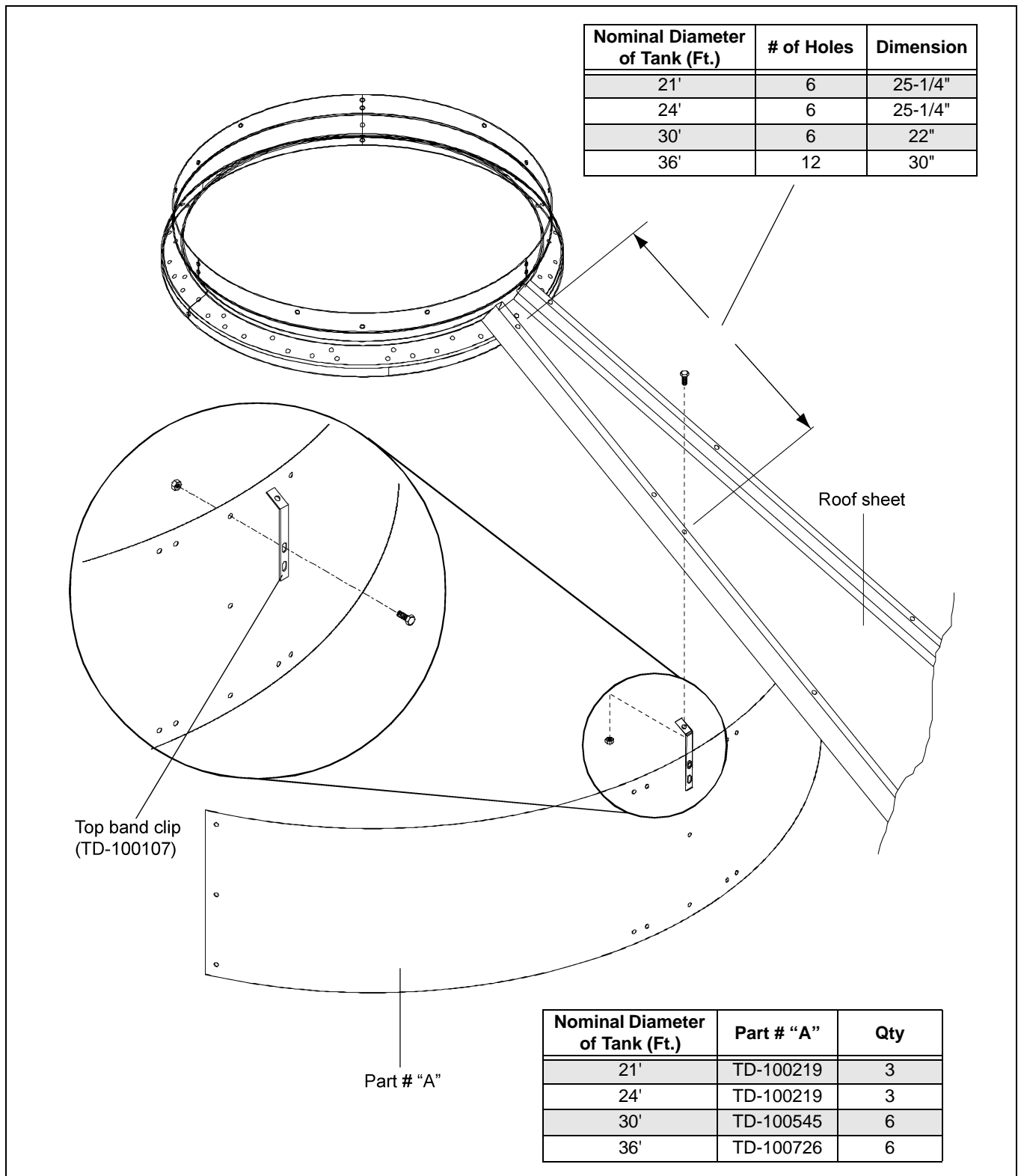


Figure 9H

## 42" Fan Diffuser Instructions and Installation

Bolt the long side of the hangers to the endmost slots of the top plate (TD-100665) as shown in *Figure 9I*.

Hold the top plate up under the bottom flange of the "C" channel in front of the fan opening. Mark and drill four (4) 3/8" holes into bottom flange using diffuser hangers as a guide. Using 5/16" x 3/8" bolts and nuts bolt the top plate to the "C" channel.

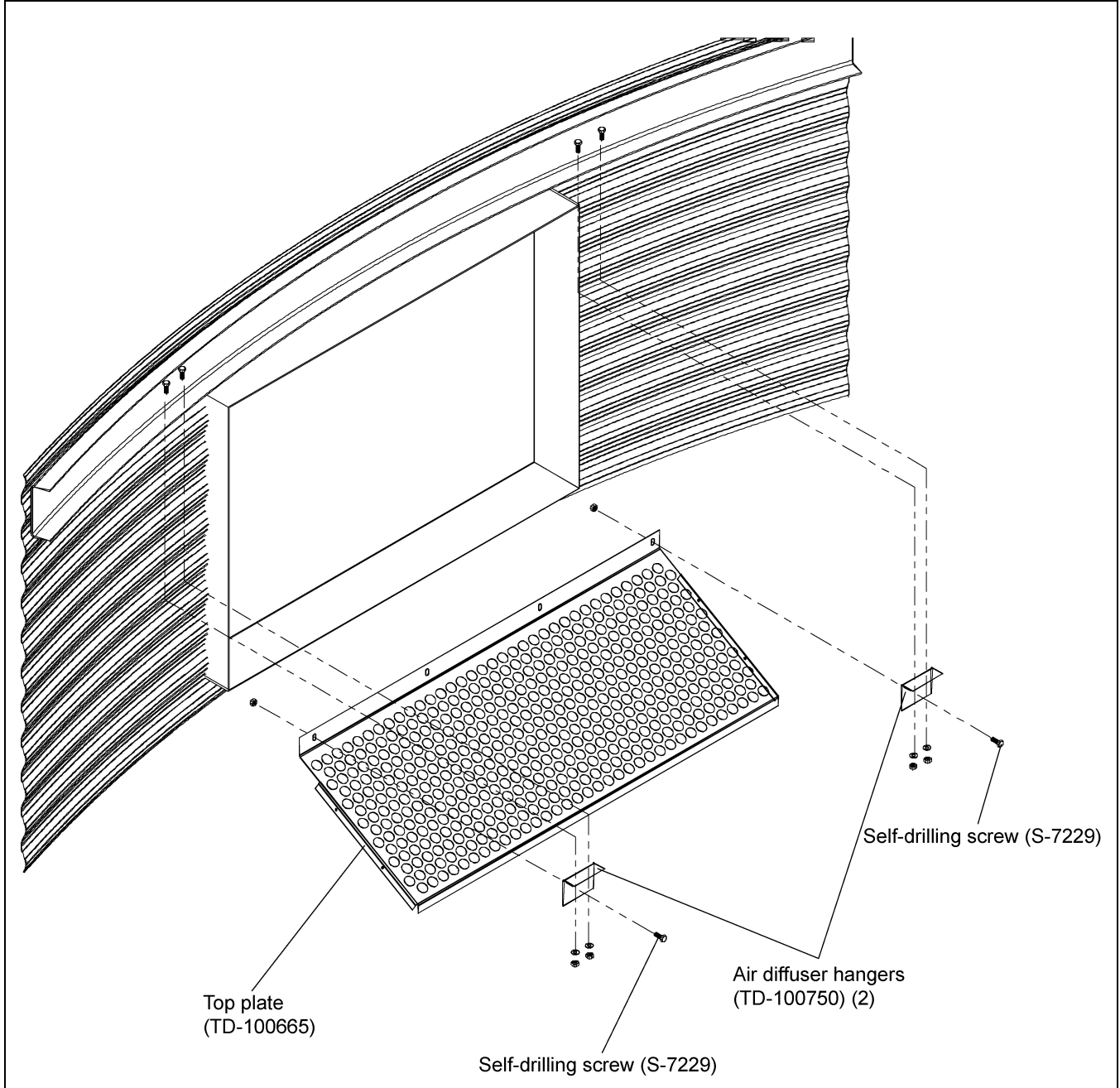


Figure 9I

## 42" Fan Diffuser Instructions and Installation (Continued)

Attach front plate to the top plate with four (4) 1/4" x 1" self-drilling screws.

Bolt the side brackets to the front plate slot with the angle outward. Field drill two (2) holes (on inside corrugation hills) through the sidewall and install 5/16" x 3/4" bin bolts and nuts.

Position the side plates on each side with the angle outward and fasten in place using six (6) 1/4" x 1" self-drilling screws. (See Figure 9J.)

**NOTE:** The corner bolt will need to be removed through the side plate, side bracket and front plate.

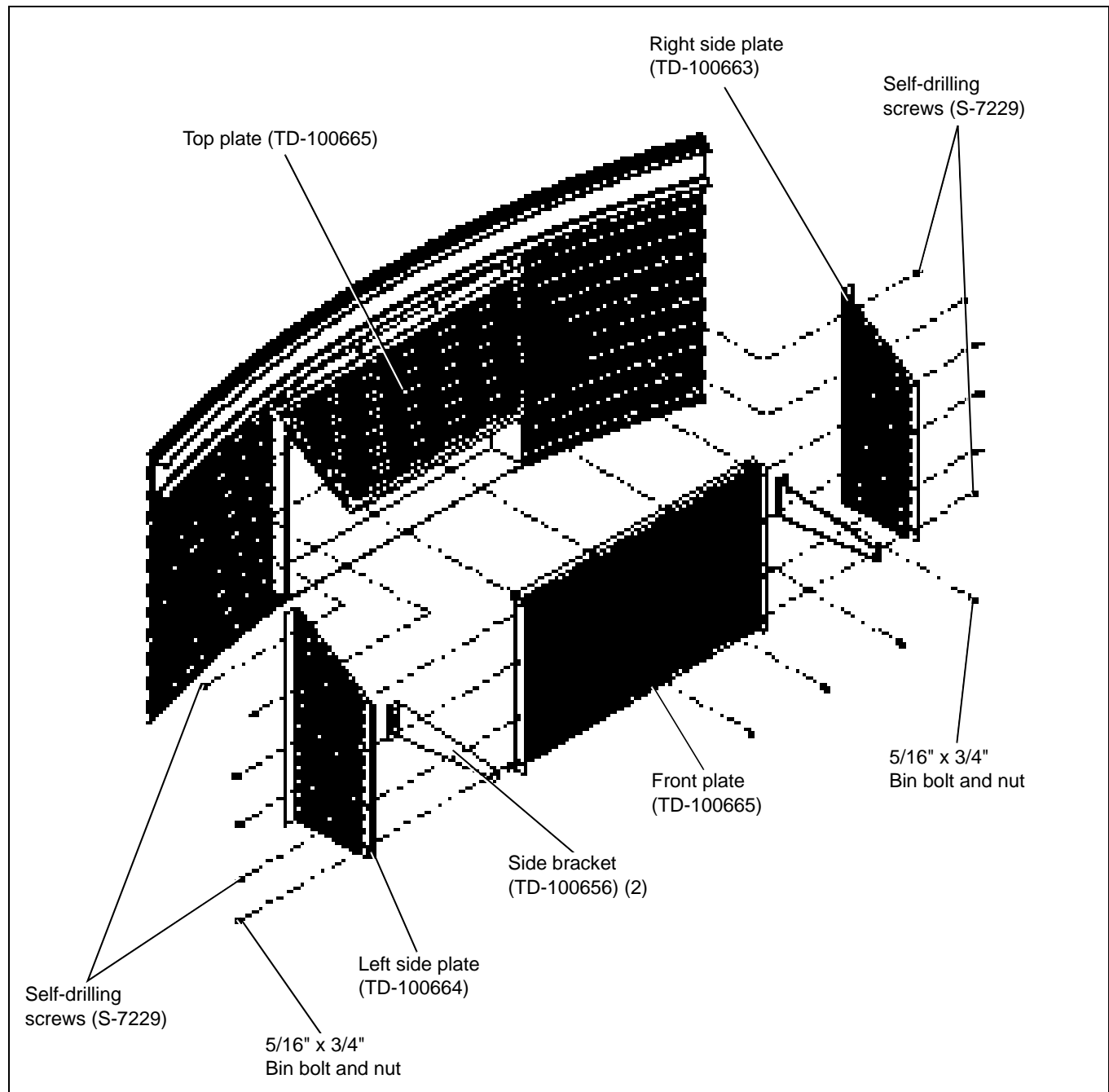


Figure 9J

## Fan Entrance Sheets

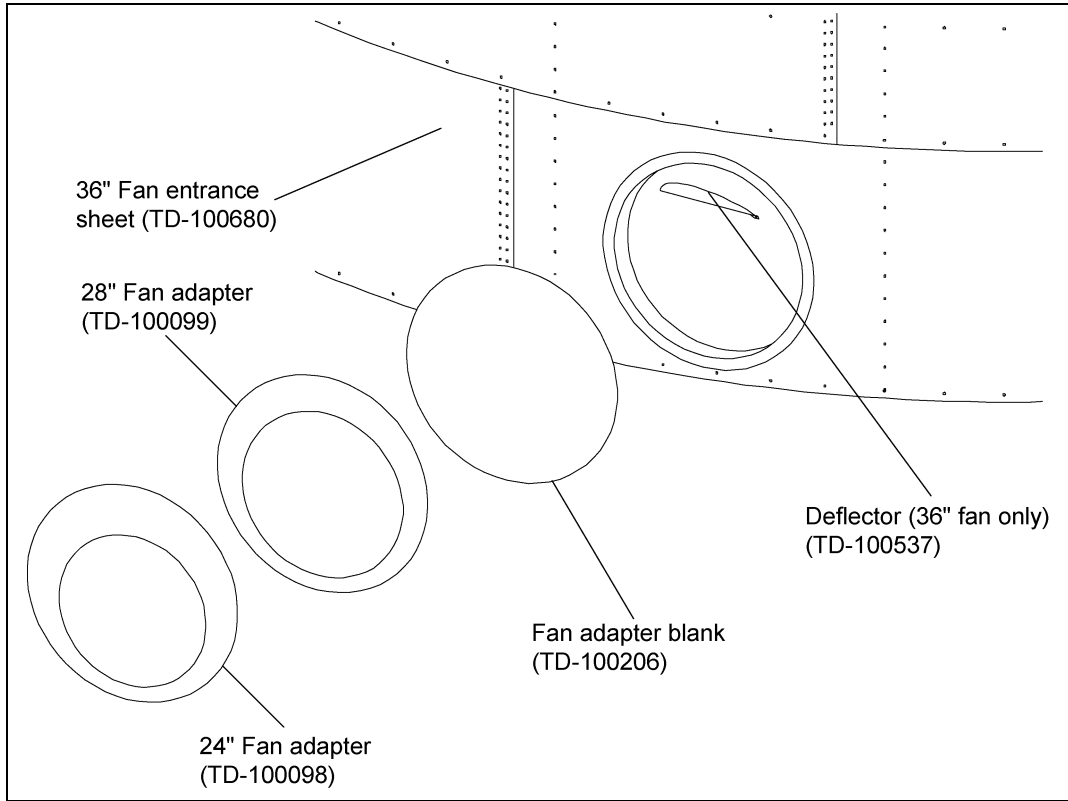


Figure 9K 24" through 36" Fans

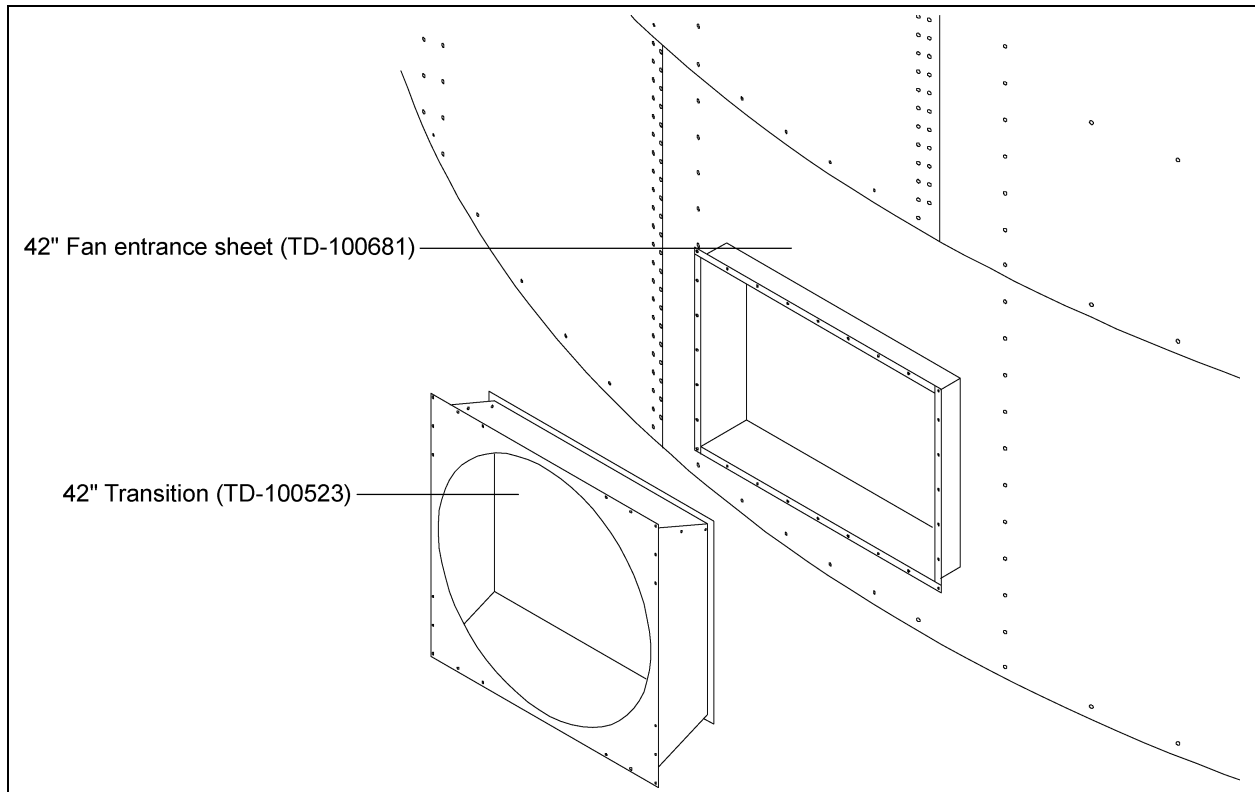


Figure 9L 42" Fans

Detailed Layout for Proper Location of Platforms

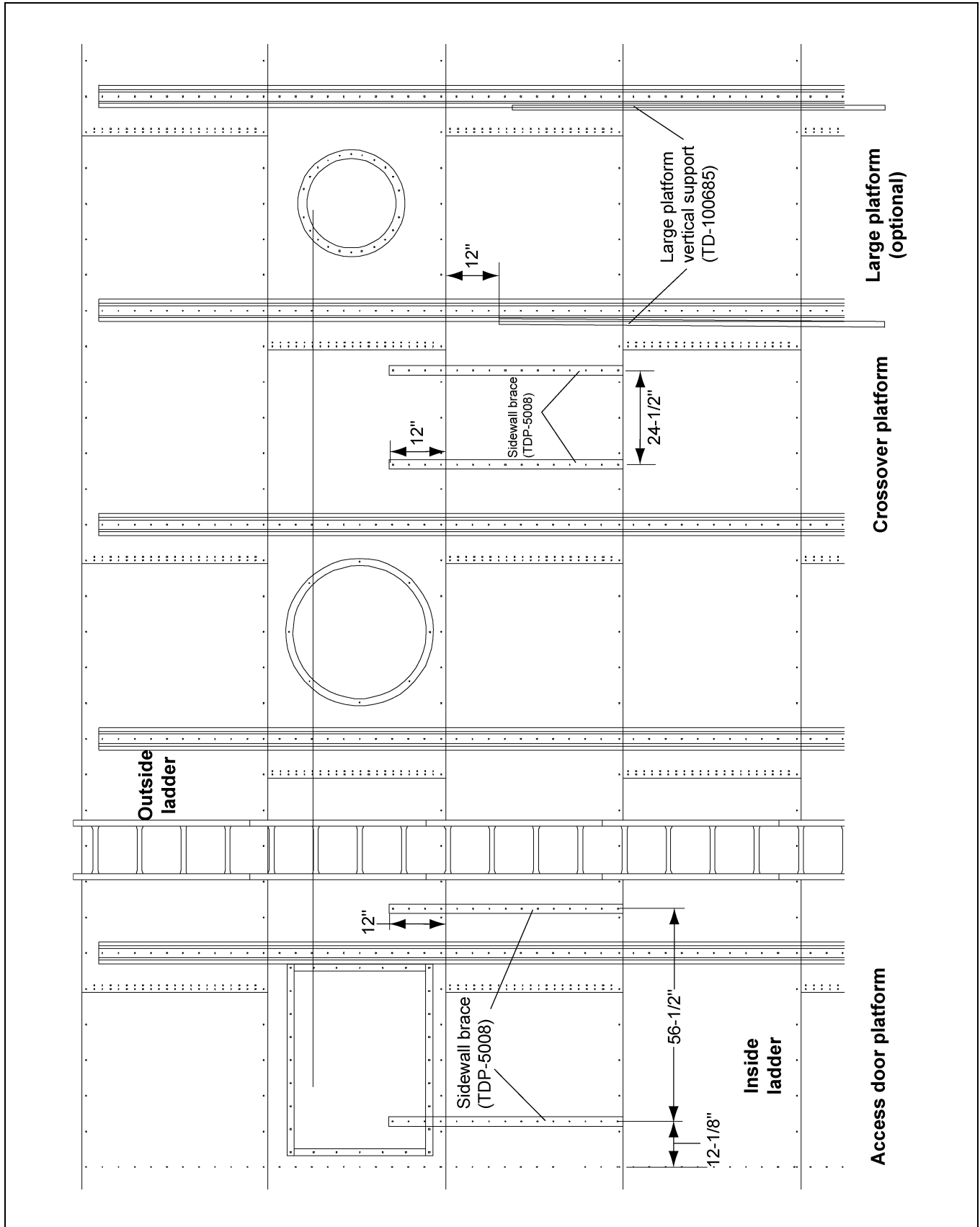


Figure 9M

## 9. Assembly

### Access Door Platform (TDP-5012)

Before assembly of any platform, read the entire instructions to assure proper placement and assembly.

*Refer to Figure 9N* for proper location of access door platform. Begin by assembling the access door platform support frame using 5/16" x 3/4" truss head bolts and nuts. When attaching platform vertical support to bin sidewall field drill sixteen (16) 3/8" diameter holes for each support spaced every 4". Be sure and use 5/16" x 3/4" bin bolt on vertical support to sidewall. Special attention should be taken when assembling the platform support that the support brace is placed correctly.

Now proceed to the platform floor. Align holes on platform floor with holes on platform support and bolt together using 5/16" x 3/4" truss head bolt and nuts. Next, assemble handrail posts, handrails and handrail braces.

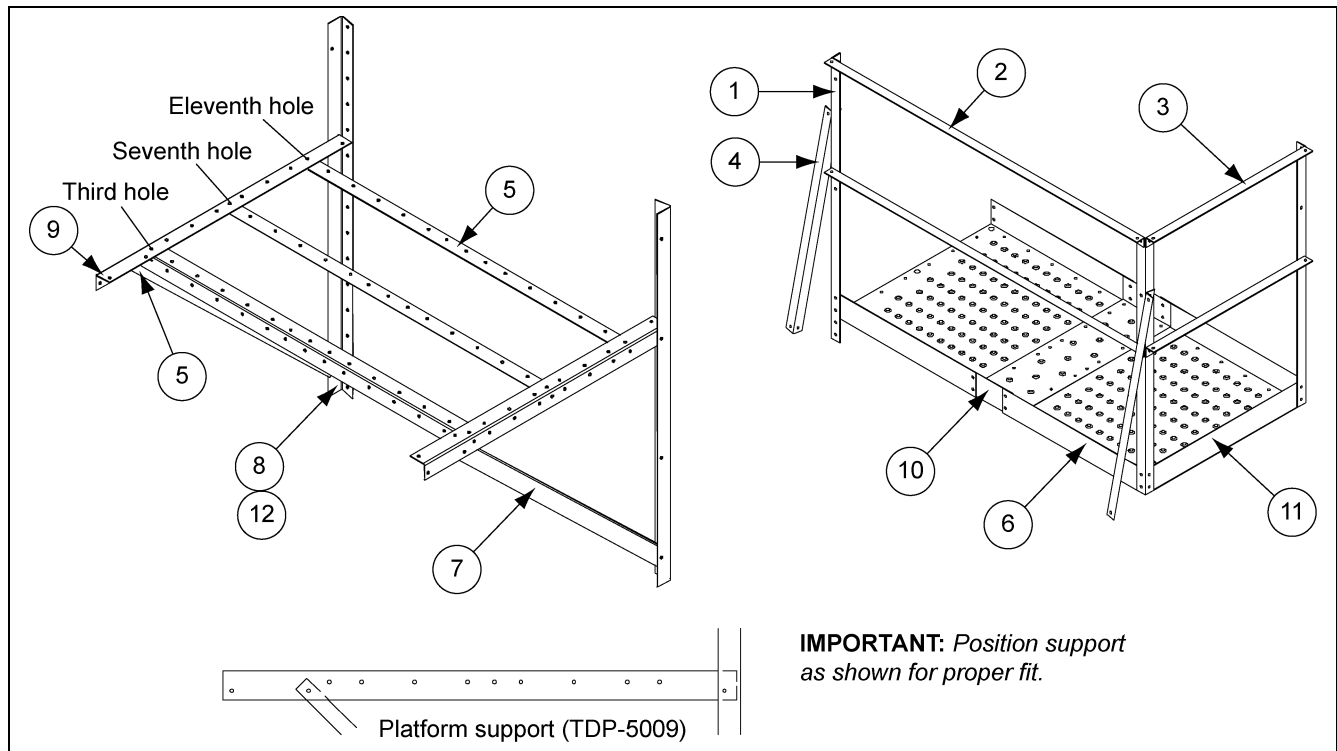


Figure 9N

Ref #	Part #	Description	Qty	Weight
1	LS-371	Platform Vertical Angle 42"	3	11.38
2	TDP-5000	Handrail 59"	2	10.15
3	TDP-5002	Handrail 30"	2	10.15
4	TDP-5003	Handrail Brace 36-29/32"	2	6.34
5	TDP-5005	Floor Brace 58-1/2"	3	26.11
6	TDP-5006	Platform Floor 37-7/8"	2	38.23
7	TDP-5007	Support Brace 50-21/32"	2	15.08
8	TDP-5008	Sidewall Brace 58"	2	19.65
9	TDP-5009	Platform Support 43-1/2"	2	12.95
10	TDP-5010	Platform Floor Splice 37-1/2"	1	6.24
11	TDP-5011	Platform Toe Plate 29-3/4"	1	3.29
12	TDP-5008N	Sidewall Brace 2.66"	2	16.61
N/S	TDP-5014	Access Door Hardware Package	1	5.41



## Small Platform Assembly

### For 36" Fans and Smaller or with #1 fan when two (2) 36" or smaller fans are installed

Before assembling any platform, read all of the instructions first to assure proper placement and assembly. Refer to Figure 90 for proper location of small platform. Begin by assembling the small platform support frame using 3/8" x 1" bolts on all connections. Use 5/16" x 1-1/4" bin bolt to attach platform vertical supports to sidewall stiffeners.

Be sure and locate the 5/16" x 1-1/4" bolts from the inside of the bin to the outside. This will provide maximum weather protection.

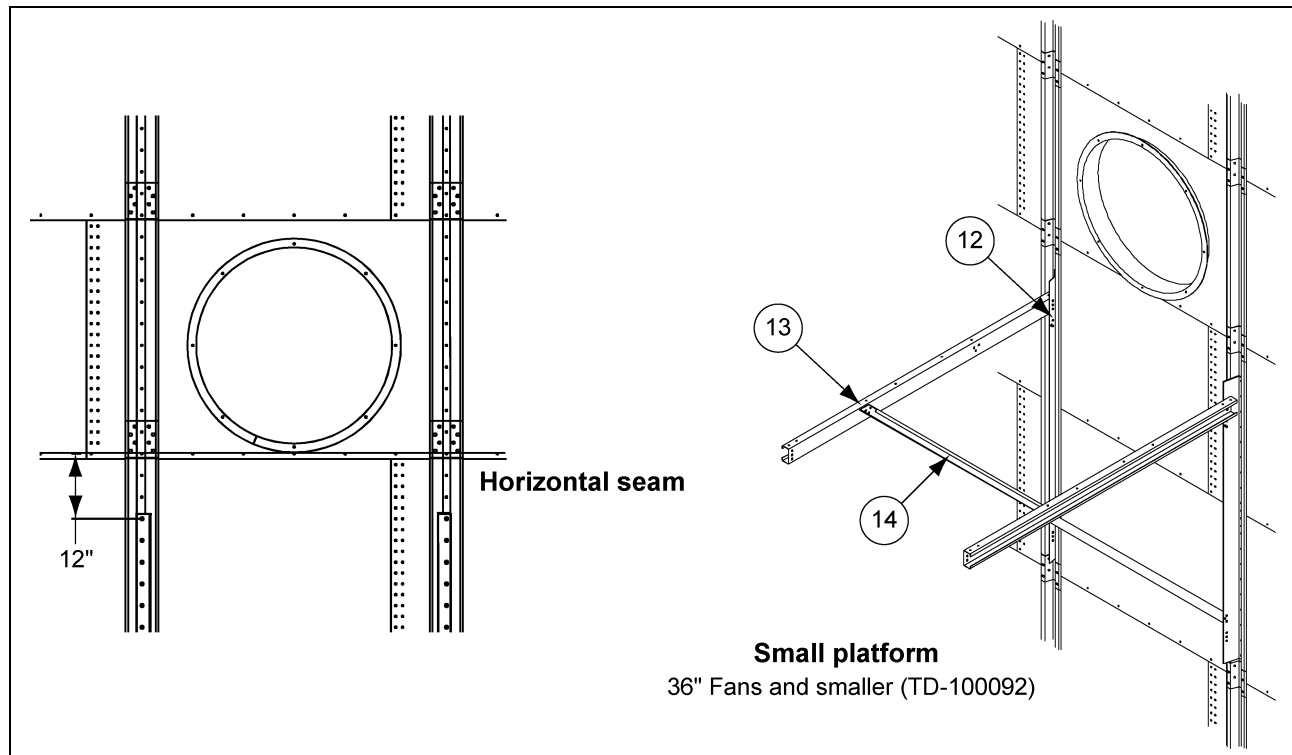


Figure 90

Ref #	Part #	Description	Weight	Qty
1	TD-100051	Channel Bracket	3.90	8
2	TD-100052	Handrail Post 49-3/4"	31.69	4
3	TD-100059	Long Toeboard 78-1/2"	10.96	2
4	TD-100060	Short Toeboard 54-1/2"	3.80	1
5	TD-100061	Long Handrail 78-1/2"	37.52	4
6	TD-100062	Short Handrail 54-1/2"	13.02	2
7	TD-100064	Floor Plank 78"	112.87	11
8	TD-100066	"X" Brace Strap 60"	7.26	4
9	TD-100067	Mid Channel Support 74"	32.73	2
10	TD-100070	Side Channel Support 78-1/2"	41.26	2
11	TD-100072	End Channel Support 78-1/2"	41.60	2
12	TD-100686	Vertical Support 70"	43.11	2
13	TD-100083	Support Channel 80-7/8"	32.98	2
14	TD-100084	Knee Brace 83-5/8"	23.67	2
N/S	TD-100090	Small Platform Hardware Package	8.96	1

## Small Platform Assembly (Continued)

### 36" Fans and Smaller (TD-100092)

Position the vertical support to the existing sidewall stiffeners as shown in *Figure 9P* and double nut with 5/16" nuts.

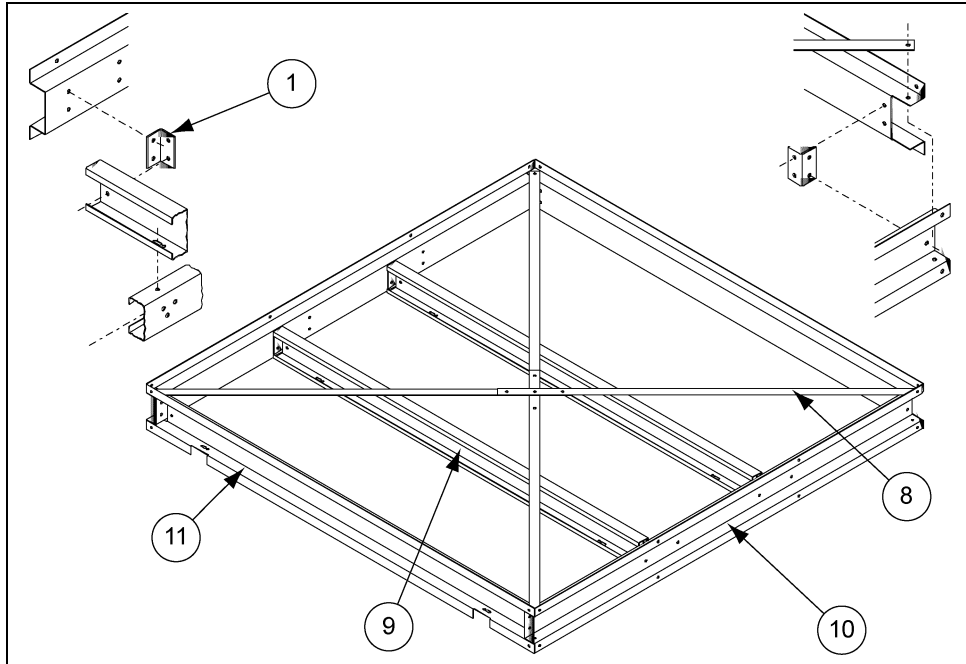


Figure 9P

When bolting stiffener to sidewall at locations where platform supports are to be attached, use twenty five (25) 5/16" x 1-1/4" bin bolts, heads to inside. Start 12" below horizontal seam of second and third rings from top. (See *Figure 9Q*.)

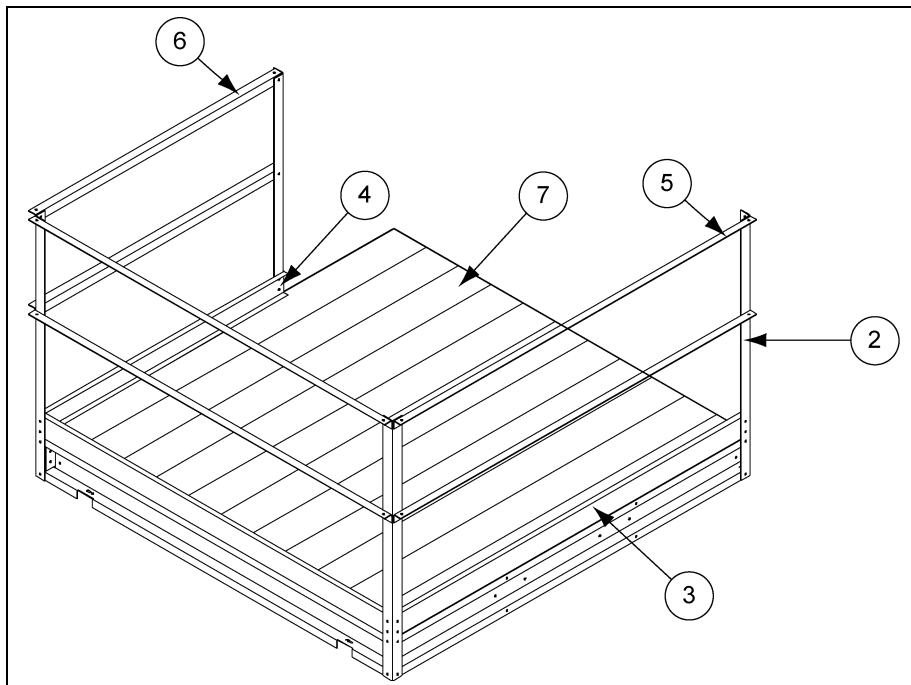


Figure 9Q

## Large Platform Assembly

### For 42" Fan

Before assembly of any platform, read the entire instructions to assure proper placement and assembly.

Refer to Figure 9R for proper location of large platform. Begin by assembling the large platform support frame using 7/16" x 1" bolts on all connections. Use 5/16" x 1-1/4" bin bolt to attach the platform vertical supports to the sidewall stiffeners. Be sure and place the 5/16" x 1-1/4" bolts from the inside of the bin to the outside. This will provide maximum weather protection.

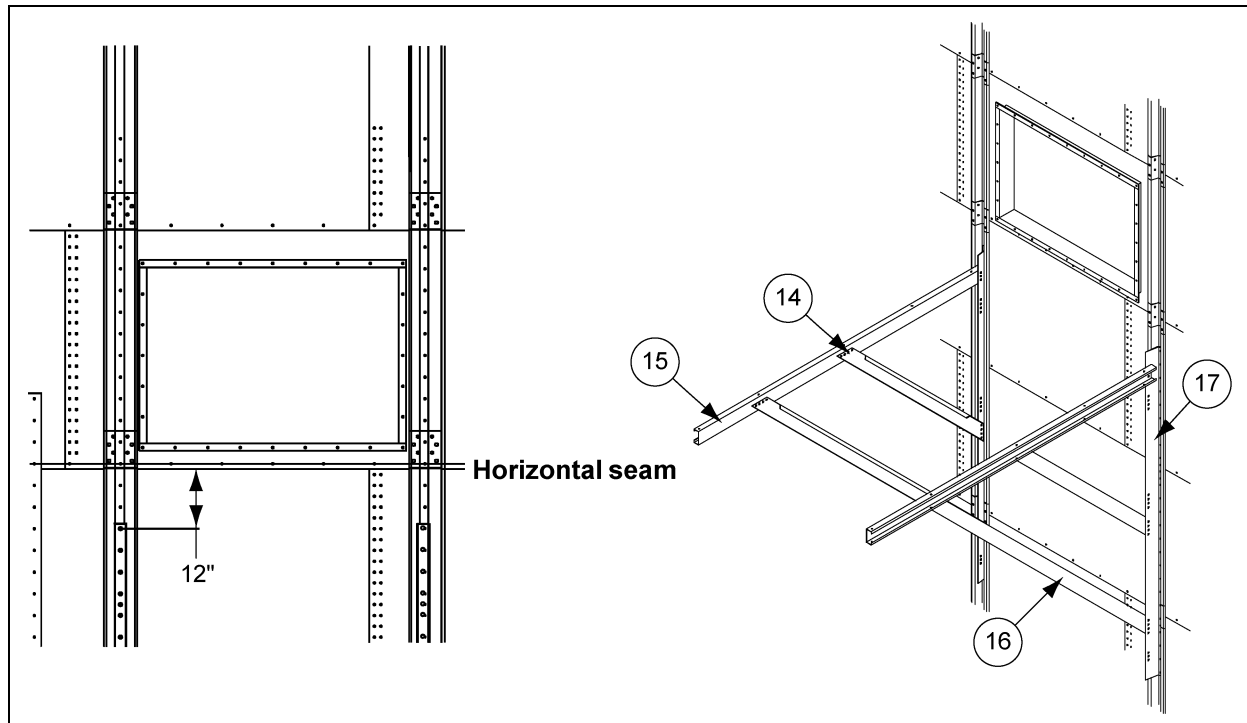


Figure 9R

Ref #	Part #	Description	Qty	Weight
1	TD-100051	Channel Bracket	10	4.87
2	TD-100052	Handrail Post 49-3/4"	7	55.47
3	TD-100053	Toeboard 71-1/2"	1	4.99
4	TD-100054	Toeboard 92"	1	6.42
5	TD-100055	Toeboard 95-1/2"	1	6.67
6	TD-100056	Handrail 71-1/2"	2	17.07
7	TD-100057	Handrail 92"	2	22.98
8	TD-100058	Handrail 95-1/2"	2	22.81
9	TD-100063	Floor Plank 95-1/2"	13	163.35
10	TD-100065	"X" Brace Strap 94-5/16"	2	8.75
11	TD-100068	Mid Channel Support 88"	3	58.37
12	TD-100069	Side Channel Support 96"	2	50.46
13	TD-100071	End Channel Support 92-1/2"	2	49.15
14	TD-100085	Short Knee Brace 72-9/32"	2	54.51
15	TD-100086	Support Channel 98-3/8"	2	53.08
16	TD-100087	Long Knee Brace 114"	2	85.98
17	TD-100685	Vertical Support 94"	2	63.64
N/S	TD-100091	Large Platform Hardware Package	1	14.35

## Large Platform Assembly (Continued)

### For 1 Fan Systems or #2 Fan on 2 Fan Systems

Position the vertical support to the existing sidewall stiffeners as shown in *Figure 9S* and double nut with 5/16" nuts.

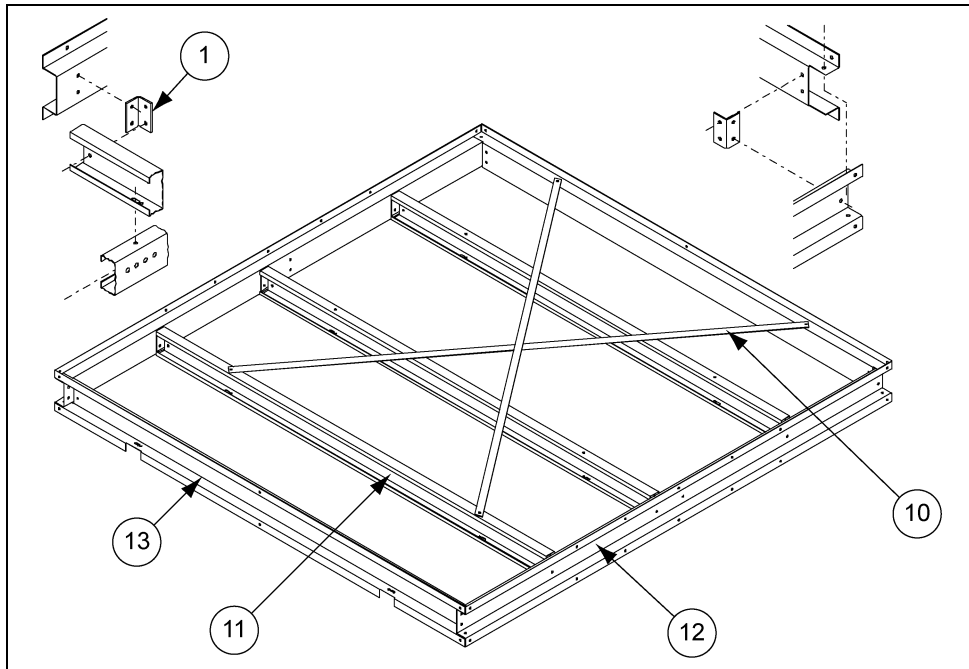


Figure 9S

When bolting stiffener to sidewall at locations where platform supports are to be attached, use twenty five (25) 5/16" x 1-1/4" bin bolts, heads to inside. Start 12" below horizontal seam of second and third rings from top. (See *Figure 9T*.)

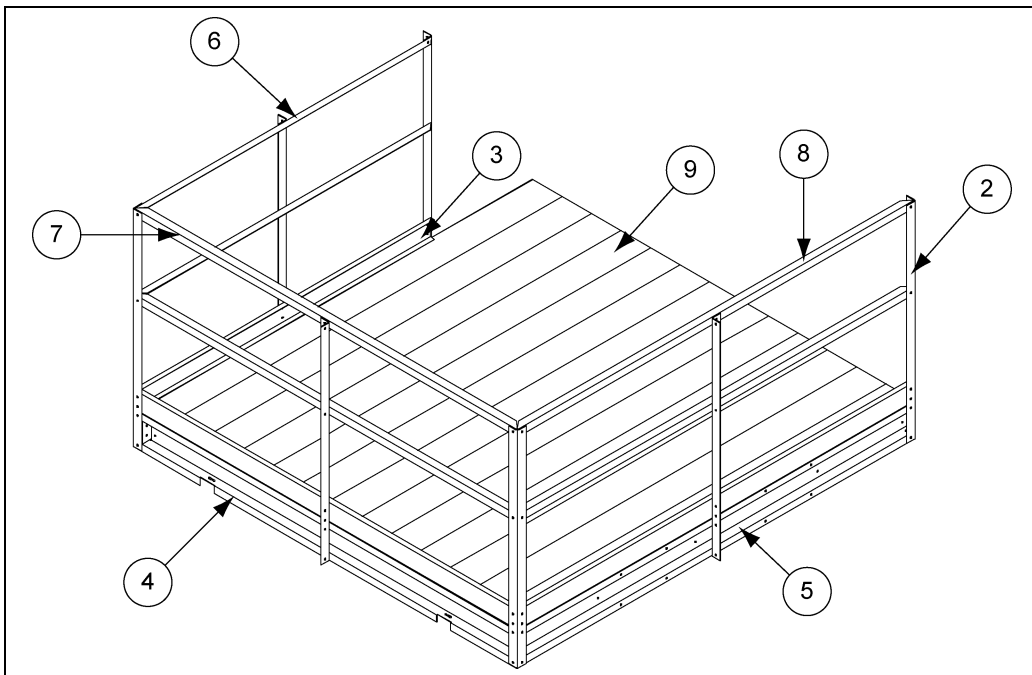


Figure 9T

## Cross Over Platform Assembly for Use with Stairs (TDP-5013)

Before assembly of any platform, read the entire instructions to assure proper placement and assembly.

Refer to [Figure 9U](#) for proper location of cross over platform. Begin by assembling the cross over platform support frame using 5/16" x 3/4" truss head bolts and nuts. When attaching platform vertical support to bin sidewall field drill sixteen (16) 3/8" diameter holes for each support spaced every 4". Be sure and use 5/16" x 3/4" bin bolt on vertical support to sidewall. Special attention should be taken when assembling the platform support that the support brace is placed correctly.

Now proceed to the platform floor. Align holes on platform floor with holes on platform support and bolt together using 5/16" x 3/4" truss head bolt and nuts. Next, assemble handrail posts, handrails, and handrail braces.

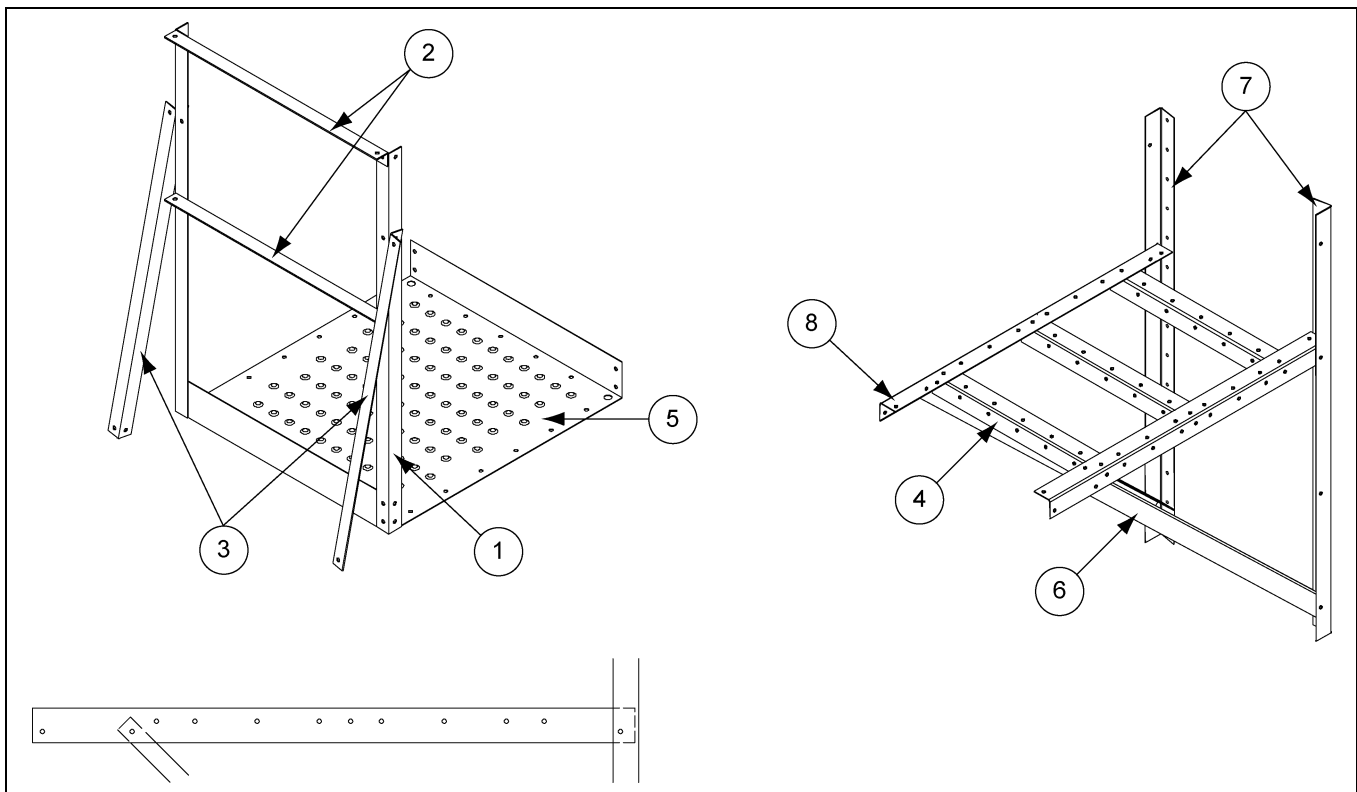


Figure 9U

Ref #	Part #	Description	Qty	Weight
1	LS-371	Platform Vertical Angle	2	7.59
2	TDP-5001	Handrail 27"	2	4.63
3	TDP-5003	Handrail Brace 36-29/32"	2	6.34
4	TDP-5004	Short Floor Brace 26-1/2"	3	11.85
5	TDP-5006	Platform Floor 37-7/8"	1	19.11
6	TDP-5007	Support Brace 50-21/32"	2	15.08
7	TDP-5008	Sidewall Brace 58"	2	19.65
8	TDP-5009	Platform Support 43-1/2"	2	12.95
N/S	TDP-5015	Cross Over Platform Hardware Package	1	3.95

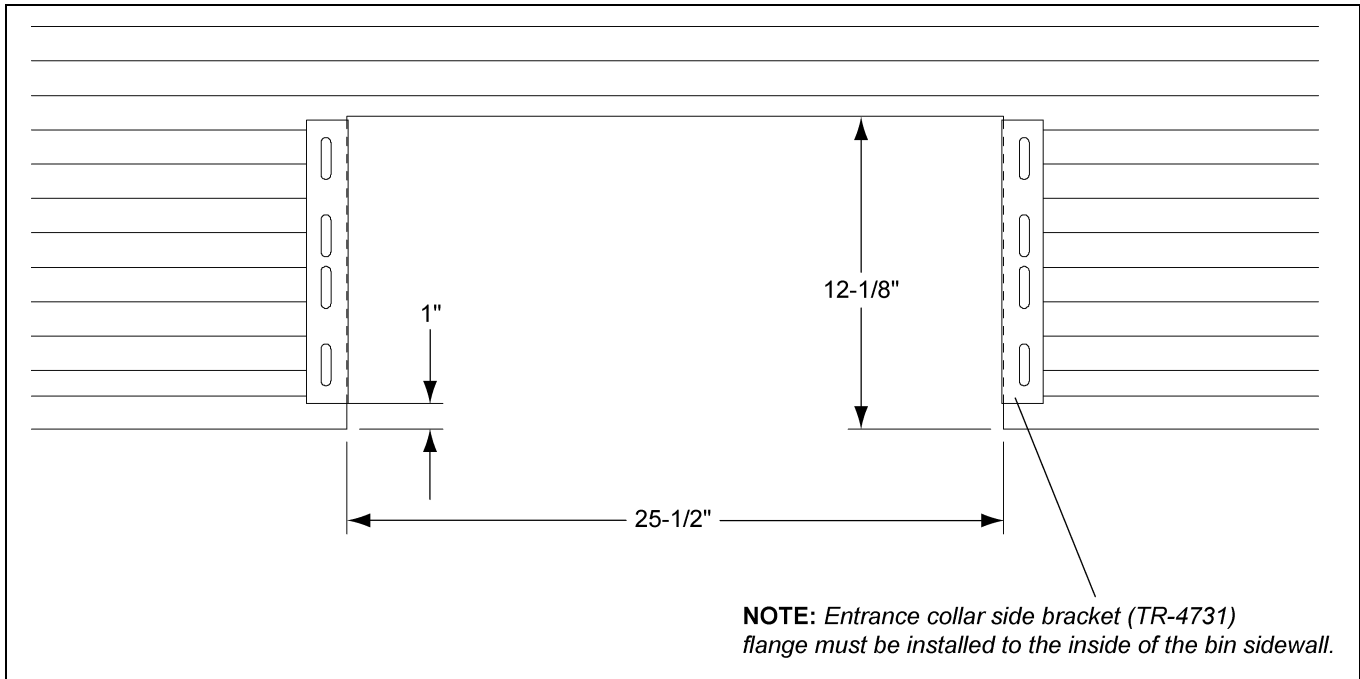
## 9. Assembly

### Transition Installation (TR-4734)

BEFORE CUTTING THE OPENING CHECK THAT TR-4734 IS THE TRANSITION THAT WAS ORDERED.

When installing the GSI aeration transition, it will be necessary to field cut a hole into the bottom sidewall ring (usually straight across from the unload auger). *Refer to Figure 9V* for proper dimensions of cut out. The base angle will also need to be cut at entrance collar cut out. Take note of the diagram showing the 1" dimension from bottom of entrance collar side bracket to concrete. This is important for proper fit of transition.

**NOTE:** Entrance collar side bracket must be bolted on the inside of the bin sidewall.



**Figure 9V** As Viewed from Inside Bin

Part #	Description	Qty
S-275	5/16"-18 x 3/4" Bin Bolt Grade 5	125
S-280	#10-16 x 5/8" Self-Drilling Screw	10
S-3651	Tube Caulk Gray Butyl #506-15	1
S-396	5/16"-18 Hex Nut Grade 2	125
S-7264	Spec Neoprene Seal Strip w/ ADH	10'

# Transition Assembly (TR-4734)

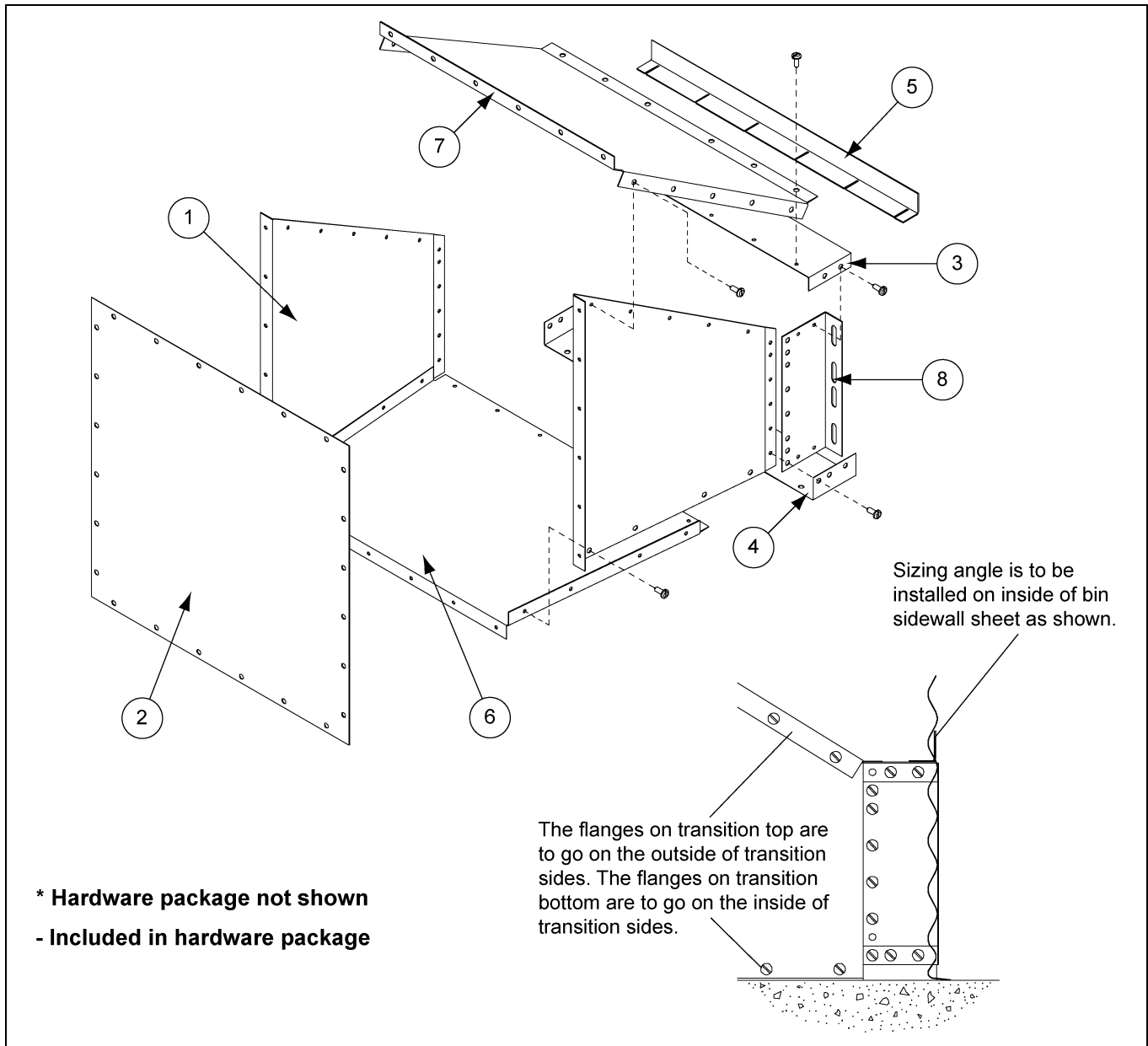


Figure 9W

Ref #	Part #	Description
1	TR-4724-1	Transition Side
1	TR-4724-2	Transition Side
2	TR-4767	Transition Faceplate
3	TR-4726	Top Entrance Collar Piece
4	TR-4727	Bottom Entrance Collar
5	TR-4728	Sizing Angle
6	TR-4729	Transition Bottom
7	TR-4730	Transition Top
8	TR-4731	Entrance Collar Side Bracket

## 9. Assembly

### Top Dry Access Door Assembly (TD-100996)

1. Assemble the Z-frames (TD-100991 and TD-100992) and then attach the frames (TD-100991 and TD-100992), to the inside of the access door plate (TD-100990). **NOTE:** *The first set of Z-frames comes pre-assembled to the access door plate.*
2. Now attach the top and bottom rear door catches (TD-101020) to the back of the Z-frames. Referring to the layout, position the catches with the left hand most hole aligned with the center hole of the access door plate.
3. Using washers to center the doors over the opening, attach the top access door (TD-100993) and the inside access door (TD-100994) to the Z-frames. Utilize the lock washers to secure the bolts to the doors. Do **not** overly tighten the lock washers. This allows the doors to move freely.
4. Now attach the handles (D02-0045 and D03-0512) to the doors. **NOTE:** *The locking handles along with the hardware labeled “out”, go to the outside doors. The rear handles have their own hardware package.*
5. With the nut and bolt supplied, attach the appropriate latches to the handles and lock them. (*Refer to Figure 9X.*) Adjust front latches (TD-101021) to catch the inside lip of the front Z-frames. Adjust rear latches (TD-101022) to fit the slot in the top and bottom catches attached to the rear Z-frames.
6. Attach the assembled access door to the access door panel (TD-101025).

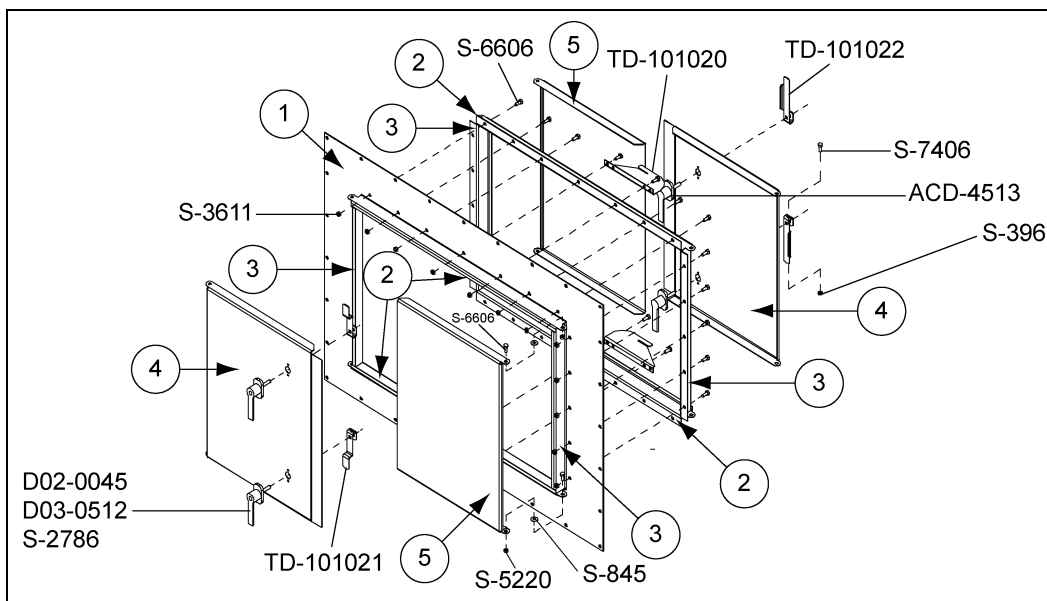


Figure 9X

Ref #	Part #	Description	Qty
1	TD-100990	Access Door Plate	1
2	TD-100991	Access Top/Bottom Z-Frames	4
3	TD-100992	Access Door Side Z-Frames	4
4	TD-100993	Top Access Door	2
5	TD-100994	Inside Access Door	2
x	TD-101020	Rear Door Catches	2
x	TD-101021	Outside Door Latches	2
x	TD-101022	Inside Door Latches	2
x	D03-0512	Lockable Handle	2
x	D02-0045	Gasket for Lockable Handle	2
x	ACD-4513	Access Door Handle w/ Gasket	2



## 2 Ring Door Installation and Accessories

Before starting to install, be sure the correct door has been received.

### 4.00" Bin Corrugation (WD-6133) 21' Bins

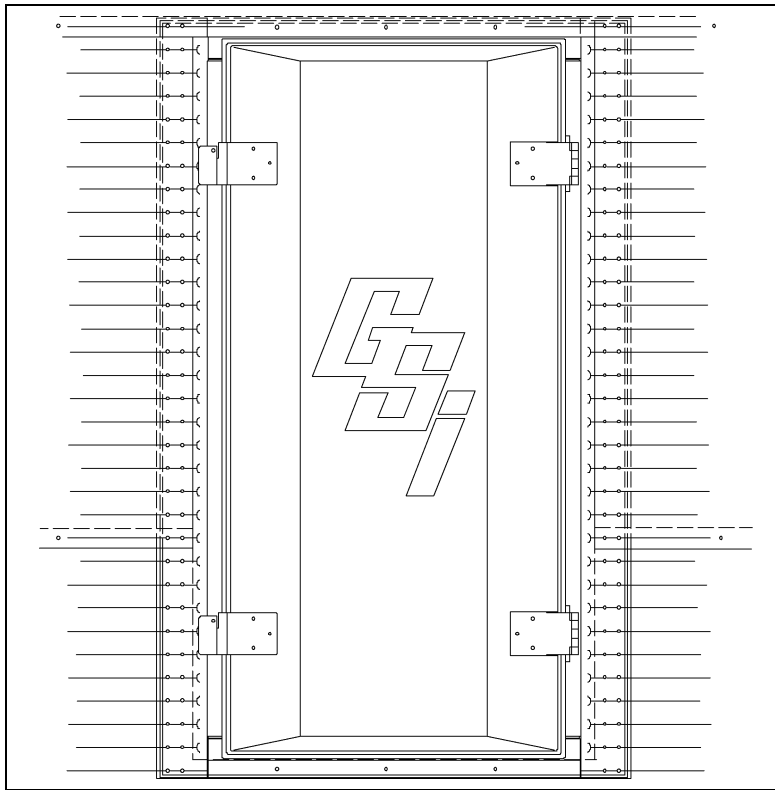


Figure 10A

1. Remove inner door panels, and outer door cover. Apply double row of rope caulk along door flanges, noting how door and bin sheets lap. The top of the door frame goes to the inside of the sidewall and the bottom of the door frame goes to the outside of the sidewall sheet. With inner door panels and outer door cover removed set door frame into opening. **Insert a bolt at the four (4) corners of door frame and sidewall, do not tighten until completing [Step 2](#).**
2. Re-install inner door panels at original locations. Close latch bars to lock panels in place. Be sure that panels are fully seated over all bearing pins. Install inner panel hinge assemblies per illustration instructions with hinges. **NOTE: Do not distort door frame with use of alignment or drift punches if necessary, drill or ream holes to insert bolts in door frame. Now tighten frame bolts starting at center and working toward top and bottom on each side.**
3. Keep inner panels latched and loosen all bearing pin bolts. Re-tighten all bearing pin bolts. This makes loading on pins uniform for easier operation of panels.
4. If some latch bars are loose or require excessive force to lock, loosen hex socket cap screws and adjust in or out until latch bars operate smoothly. Check that the panels are fully seated over all bearing pins.
5. Re-install outer cover. Adjust outer door hinges and latches as required.
6. Assemble door hold back as shown [on Page 74](#). Open door cover until it approaches the bin wall. Hook retaining bracket over lower latch mount and position the door hold back against bin wall in a valley. Drill a 3/8" hole through the bin wall and bolt the door hold back to the bin.

## 2 Ring Door Assembly

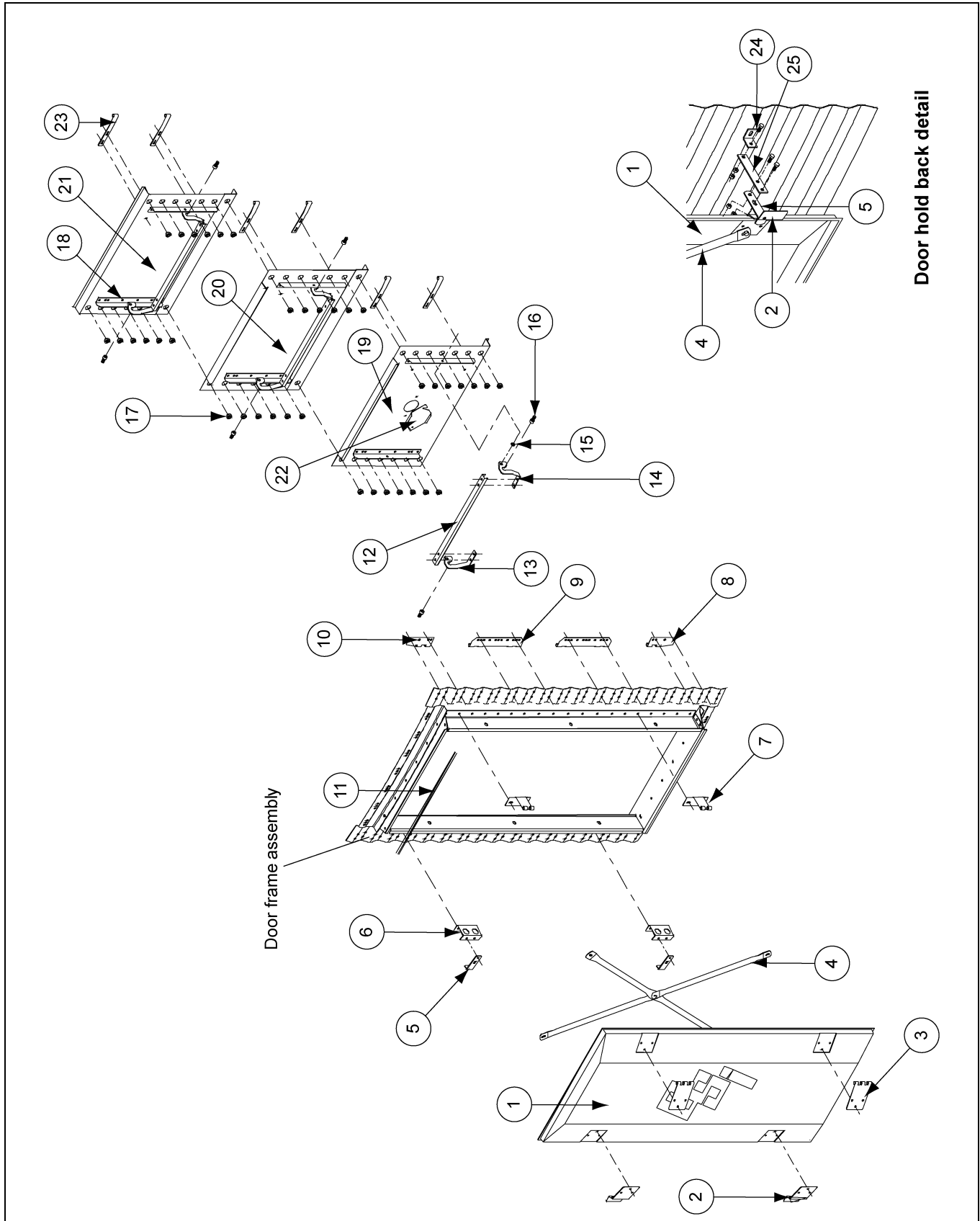
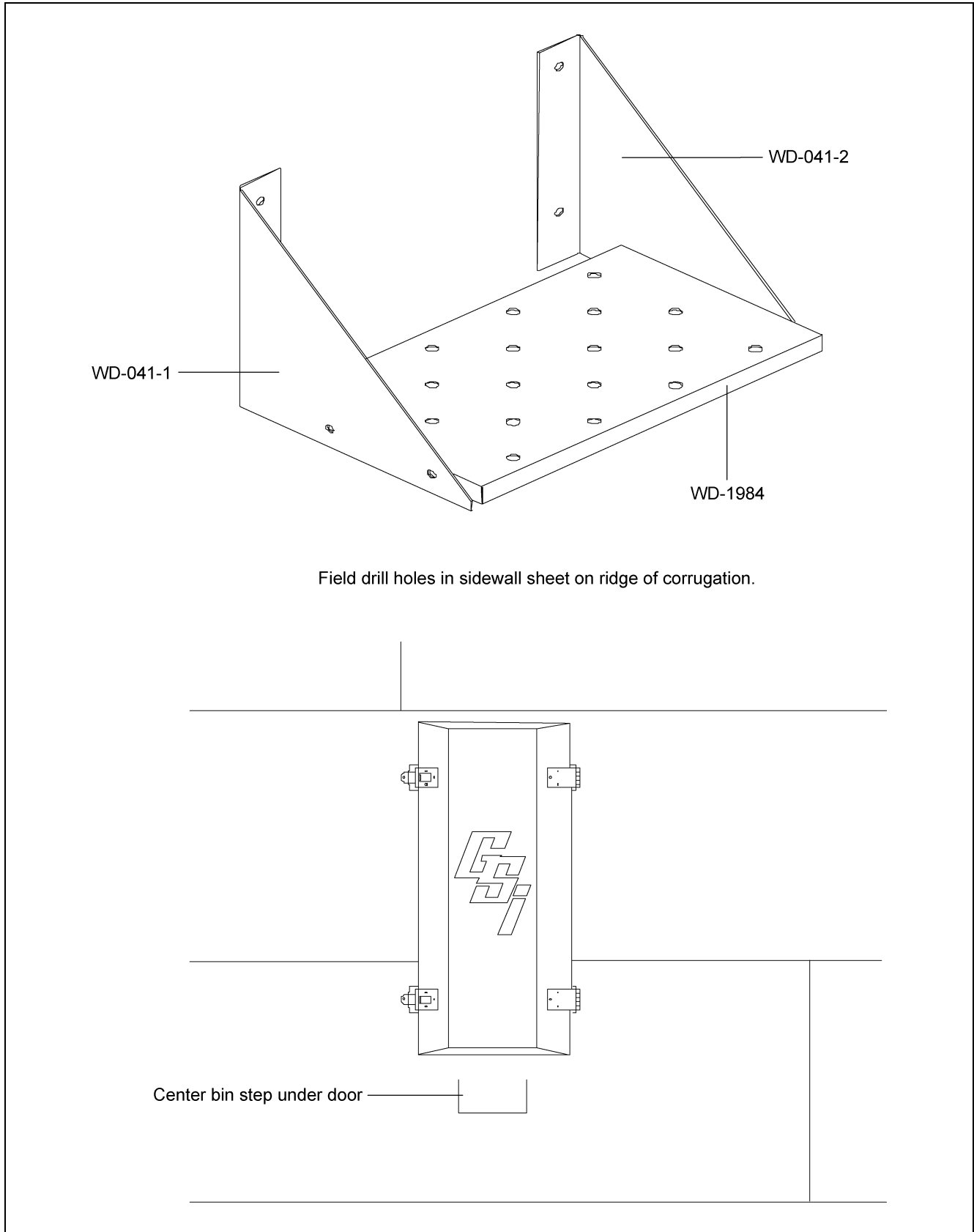


Figure 10B

## 2 Ring Door Assembly Parts List

Ref #	Part #		Description	Qty	
	12'-27' Bin Diameter	30'-60' Bin Diameter		12'-27' Bin Diameter	30'-60' Bin Diameter
	4.00" Corr.	4.00" Corr.			
1	WD-039	WD-039	Outer Door Cover	1	1
2	WD-2854	WD-2854	Outer Cover Latch Bracket	2	2
3	WD-225	WD-225	Outer Cover Hinge Bracket	2	2
4	WD-035	WD-035	Door Cover Brace Section	4	4
5	WD-033	WD-033	Door Retainer	3	3
6	WD-6124	WD-6124	Outer Cover Latch Mount Base	2	2
7	WD-6066	WD-6066	Outer Cover Hinge Base	2	2
8	WD-6055	WD-6055	Bottom Inner Door Hinge	1	1
9	WD-6056	WD-6056	Middle Inner Door Hinge	2	2
10	WD-6054	WD-6054	Top Inner Door Hinge	1	1
11	S-4380	S-4380	Rubber Trim Seal Strip	2-1/4'	2-1/4'
12	WD-6039	WD-6039	Latch Bar	3	3
13	WD-6037	WD-6037	Inner Panel Latch - Right Hand	3	3
14	WD-6038	WD-6038	Inner Panel Latch - Left Hand	3	3
15	S-7160	S-7160	1/2" x 1" Hex Socket Cap Screw	6	6
16	WD-6040	WD-6040	Latch Bushing	6	6
17	WD-6079	WD-6079	Long Bearing Pin	38	38
18	WD-6125	WD-6125	Inner Panel Reinforcing Angle	6	6
19	WD-6128	WD-6128	Bottom Inner Door Panel	1	1
20	WD-6127	WD-6127	Middle Inner Door Panel	1	1
21	WD-6126	WD-6126	Top Inner Door Panel	1	1
22	WD-6028	WD-6028	Bottom Inner Door Port Hole Cover	1	1
23	WD-6053	WD-6053	Inner Door Hinge Strap	6	6
24	WD-1302	WD-1302	Door Hold Back Bracket	1	1
25	WD-6110	WD-6110	Door Hold Back Extension	1	1

### Optional Bin Step Assembly (WD-042)



Field drill holes in sidewall sheet on ridge of corrugation.

Center bin step under door

Figure 10C

## Base Angle

Once the door frame has been placed and secured, continue adding necessary sidewall ring(s). To the lower edge of the bottom ring, attach the base angle ring. Before lowering the bin, apply mastic sealer to the entire underneath side of the base angle. (See Figure 10D.) Next, lower the bin onto the foundation and check for an adequate seal.

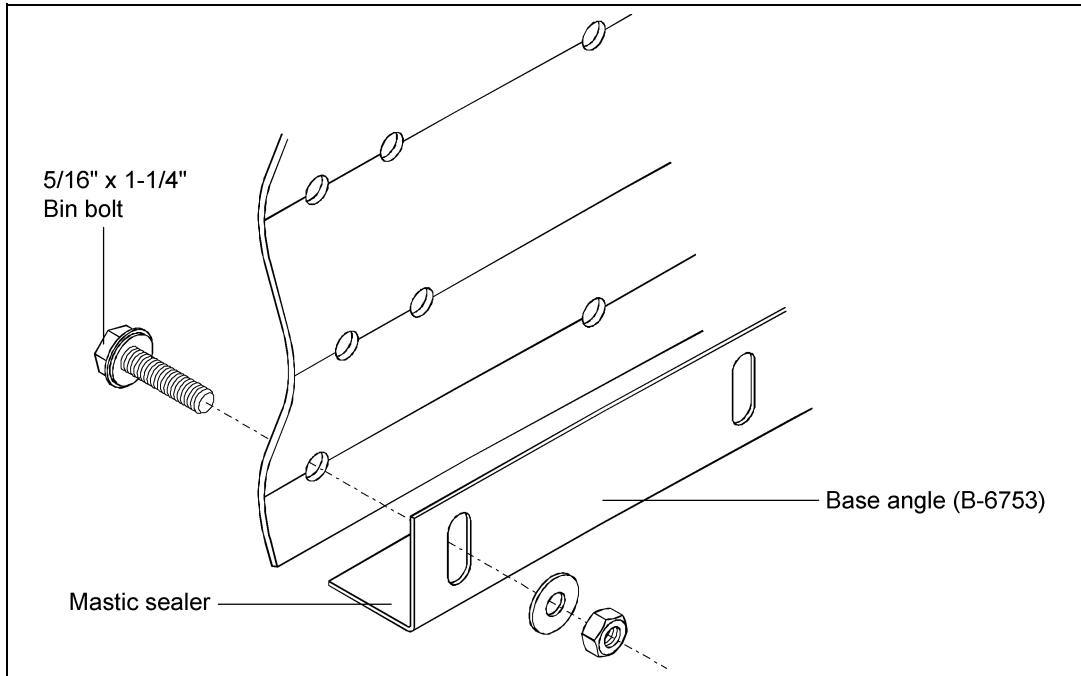


Figure 10D

## Base Stiffener Shim

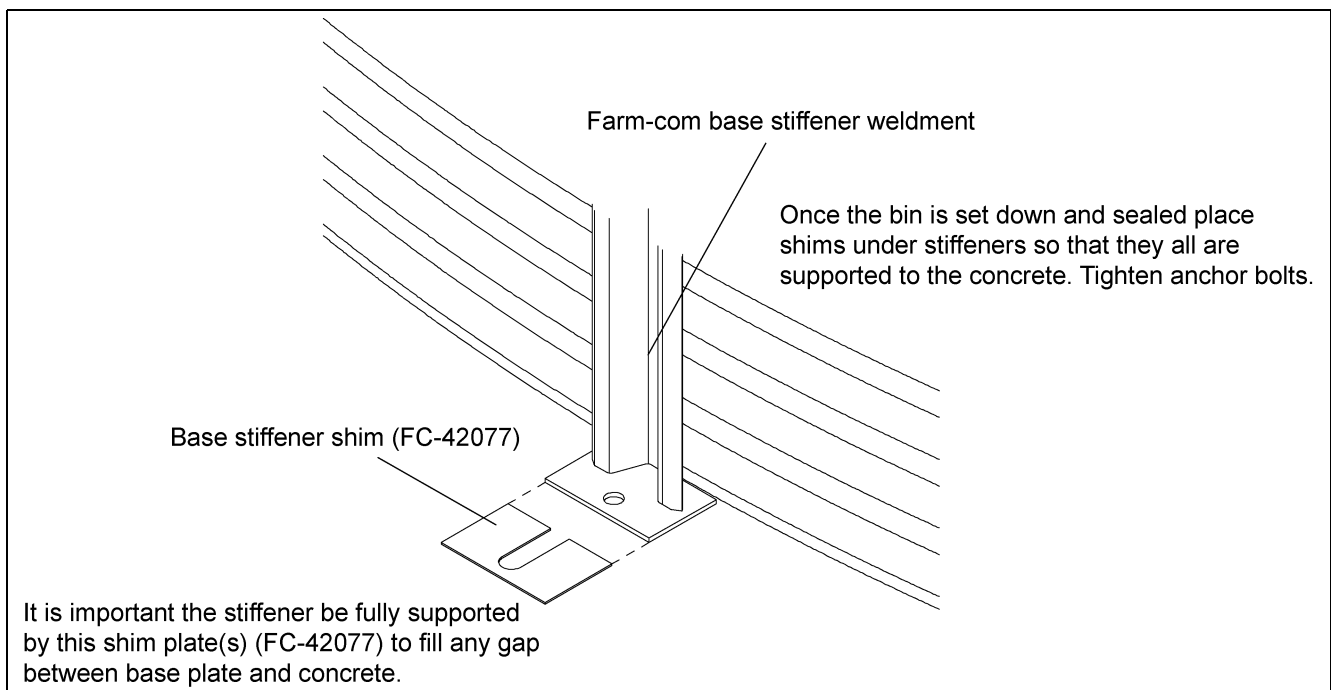


Figure 10E

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# NOTES

## GSI Group, LLC Limited Warranty

The GSI Group, LLC ("GSI") warrants products which it manufactures to be free of defects in materials and workmanship under normal usage and conditions for a period of 12 months after sale to the original end-user or if a foreign sale, 14 months from arrival at port of discharge, whichever is earlier. The end-user's sole remedy (and GSI's only obligation) is to repair or replace, at GSI's option and expense, products that in GSI's judgment, contain a material defect in materials or workmanship. Expenses incurred by or on behalf of the end-user without prior written authorization from the GSI Warranty Group shall be the sole responsibility of the end-user.

### Warranty Extensions:

The Limited Warranty period is extended for the following products:

	Product	Warranty Period	
<b>AP Fans and Flooring</b>	Performer Series Direct Drive Fan Motor	3 Years	* Warranty prorated from list price: 0 to 3 years - no cost to end-user 3 to 5 years - end-user pays 25% 5 to 7 years - end-user pays 50% 7 to 10 years - end-user pays 75%
	All Fiberglass Housings	Lifetime	
	All Fiberglass Propellers	Lifetime	
<b>Cumberland Feeding/Watering Systems</b>	Feeder System Pan Assemblies	5 Years **	** Warranty prorated from list price: 0 to 3 years - no cost to end-user 3 to 5 years - end-user pays 50%
	Feed Tubes (1-3/4" and 2.00")	10 Years *	
	Centerless Augers	10 Years *	
	Watering Nipples	10 Years *	
<b>Grain Systems</b>	Grain Bin Structural Design	5 Years	
<b>Grain Systems Farm Fans Zimmerman</b>	Portable and Tower Dryers	2 Years	† Motors, burner components and moving parts not included. Portable dryer screens included. Tower dryer screens not included.
	Portable and Tower Dryer Frames and Internal Infrastructure †	5 Years	

GSI further warrants that the portable and tower dryer frame and basket, excluding all auger and auger drive components, shall be free from defects in materials for a period of time beginning on the twelfth (12<sup>th</sup>) month from the date of purchase and continuing until the sixtieth (60<sup>th</sup>) month from the date of purchase (extended warranty period). During the extended warranty period, GSI will replace the frame or basket components that prove to be defective under normal conditions of use without charge, excluding the labor, transportation, and/or shipping costs incurred in the performance of this extended warranty.

### Conditions and Limitations:

THERE ARE NO WARRANTIES THAT EXTEND BEYOND THE LIMITED WARRANTY DESCRIPTION SET FORTH ABOVE. SPECIFICALLY, GSI MAKES NO FURTHER WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE IN CONNECTION WITH: (I) PRODUCT MANUFACTURED OR SOLD BY GSI OR (II) ANY ADVICE, INSTRUCTION, RECOMMENDATION OR SUGGESTION PROVIDED BY AN AGENT, REPRESENTATIVE OR EMPLOYEE OF GSI REGARDING OR RELATED TO THE CONFIGURATION, INSTALLATION, LAYOUT, SUITABILITY FOR A PARTICULAR PURPOSE, OR DESIGN OF SUCH PRODUCTS.

GSI shall not be liable for any direct, indirect, incidental or consequential damages, including, without limitation, loss of anticipated profits or benefits. The sole and exclusive remedy is set forth in the Limited Warranty, which shall not exceed the amount paid for the product purchased. This warranty is not transferable and applies only to the original end-user. GSI shall have no obligation or responsibility for any representations or warranties made by or on behalf of any dealer, agent or distributor.

GSI assumes no responsibility for claims resulting from construction defects or unauthorized modifications to products which it manufactured. Modifications to products not specifically delineated in the manual accompanying the equipment at initial sale will void the Limited Warranty.

This Limited Warranty shall not extend to products or parts which have been damaged by negligent use, misuse, alteration, accident or which have been improperly/inadequately maintained. This Limited Warranty extends solely to products manufactured by GSI.

Prior to installation, the end-user has the responsibility to comply with federal, state and local codes which apply to the location and installation of products manufactured or sold by GSI.

This equipment shall be installed in accordance with the current installation codes and applicable regulations, which should be carefully followed in all cases. Authorities having jurisdiction should be consulted before installations are made.

G S I G R O U P



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