

24 ft. Metric Commercial Hopper Tank

Models:

24' - SMALLER (18 RINGS AND BELOW)

Installation Manual

PNEG-2224

Version 1.0

Date: 10-19-20



PNEG-2224

All information, illustrations, photos, and specifications in this manual are based on the latest information available at the time of publication. The right is reserved to make changes at any time without notice.

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NOTES

1 Safety Precautions

Topics Covered in this Chapter

- Safety Guidelines
- Safety Decals
- Safety Sign-off Sheet

Safety Guidelines

Follow Safety Instructions



Use Personal Protective Equipment

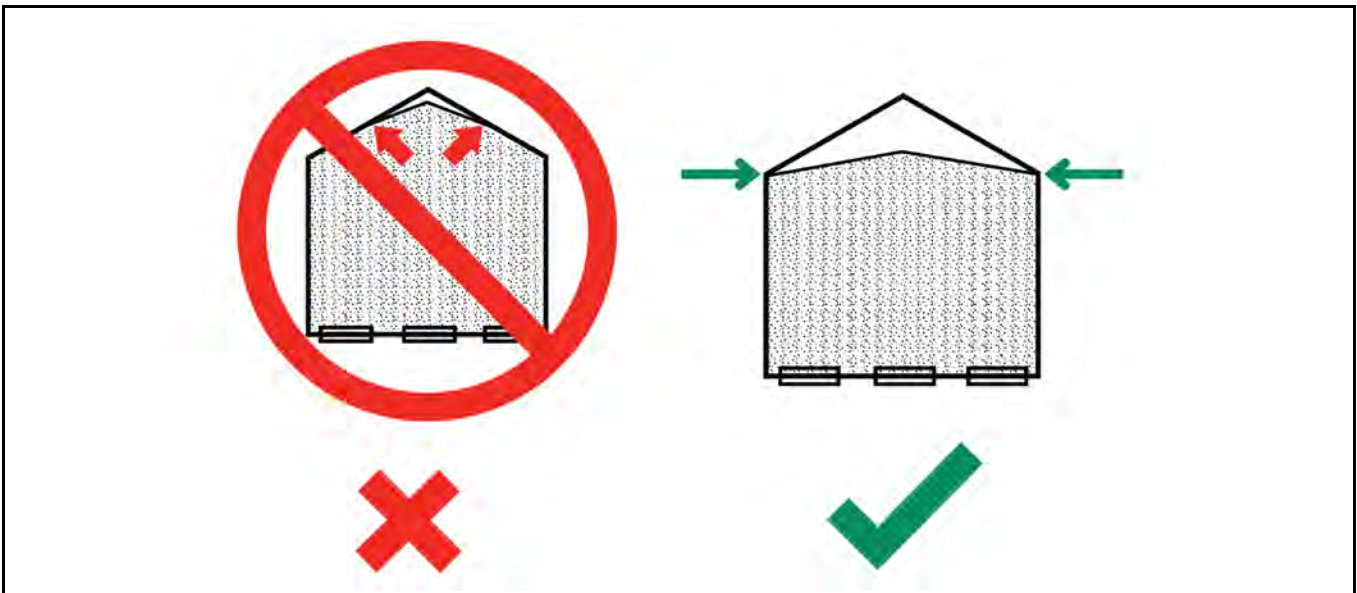


Chapter 1: Safety Precautions

Do Not Enter Bin



Do Not Overfill the Bin



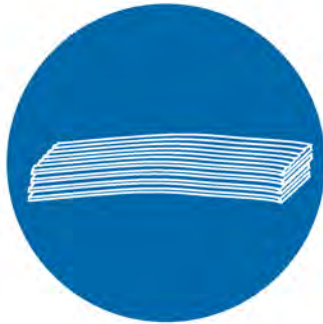
Stay Clear of Hoisted Equipment



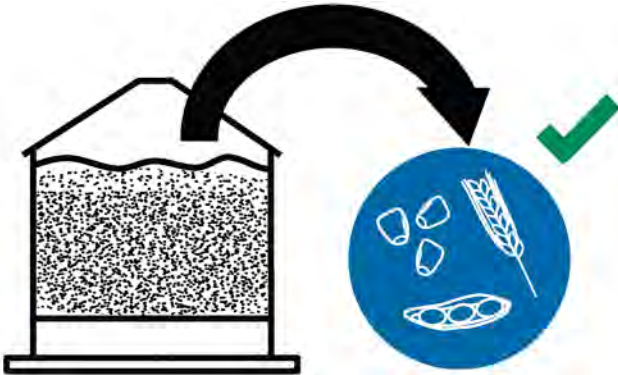
Sharp Edge Hazard



Store Bin Sheets Properly

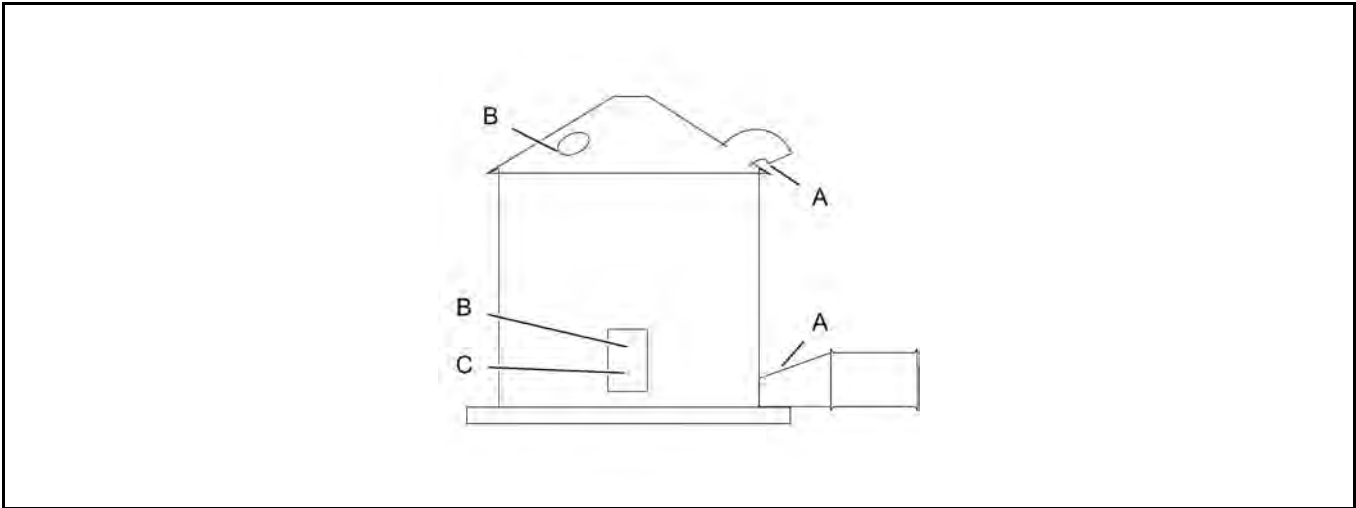


Install and Operate Equipment Properly



Safety Decals

To replace a damaged or missing decal, contact GSI to receive a free replacement.



Location	Decal No.	Decal
A	DC-2306	<p>Decal DC-2306 includes the following safety instructions:</p> <ul style="list-style-type: none"> Warning: Hot Surface (Yellow triangle with exclamation mark and heat waves). Prohibition: No Open Flame (Red circle with slash and flame). Prohibition: No Smoking (Red circle with slash and cigarette). Instruction 1: Correct way to lift the lid (Green checkmark). Instruction 2: Incorrect ways to lift the lid (Red X marks). Instruction 3: Correct way to close the lid (Green checkmark). Incorrect way to close the lid (Red X mark). <p>© GSI Group Inc. 217-226-4421 DC-2306</p>
B	DC-2161	<p>Decal DC-2161 includes the following safety instructions:</p> <ul style="list-style-type: none"> Warning: Automatic Machinery (Yellow triangle with hand being crushed). Warning: Automatic Machinery (Yellow triangle with hand being crushed). Warning: Automatic Machinery (Yellow triangle with hand being crushed). Warning: Automatic Machinery (Yellow triangle with hand being crushed). Prohibition: No Hand (Red circle with slash and hand). Prohibition: No Hand (Red circle with slash and hand). Prohibition: No Hand (Red circle with slash and hand). Prohibition: No Hand (Red circle with slash and hand). Instruction: Wear Safety Glasses (Blue circle with person wearing glasses). Instruction: Use Safety Harness (Blue circle with person wearing harness). Instruction: Use Safety Harness (Blue circle with person wearing harness). Instruction: Use Safety Harness (Blue circle with person wearing harness). <p>© GSI Group Inc. 217-226-4421 DC-2161</p>


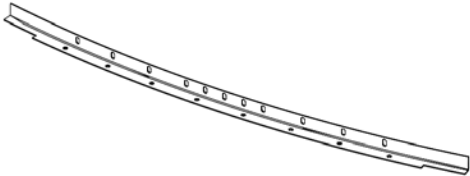
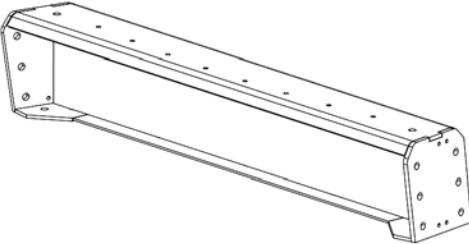
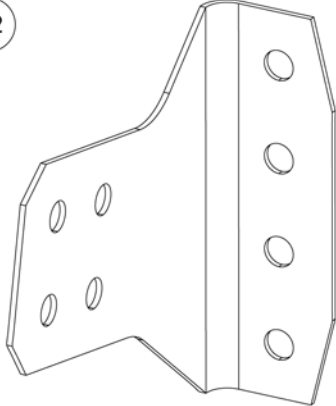
NOTES

2 24 ft. Commercial Hopper Tank Installation

Topics Covered in this Chapter

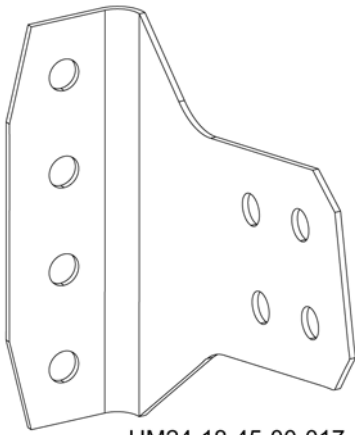
- Parts List
- 24ft. Hopper Tank Installation (18 Rings and Below)

Parts List

<p>19</p>  <p>HM24-18-45-60-00-005 Vertical column</p>	<p>20</p>  <p>HM24-06-047 Sealing strip</p>
<p>21</p>  <p>HM24-18-45-00-042 Compression angle</p>	<p>22</p>  <p>HM24-18-45-00-013 Horizontal bracing clip - 1</p>

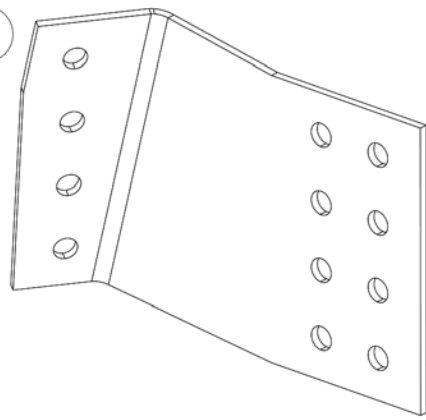
Chapter 2: 24 ft. Commercial Hopper Tank Installation

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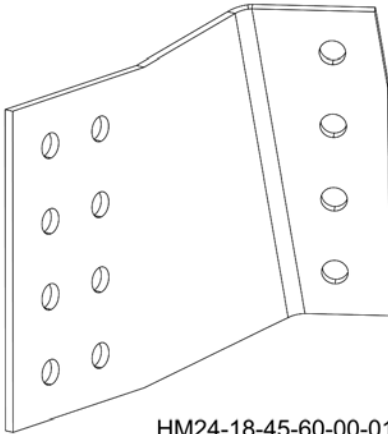
HM24-18-45-00-017
Horizontal bracing clip - 2

24



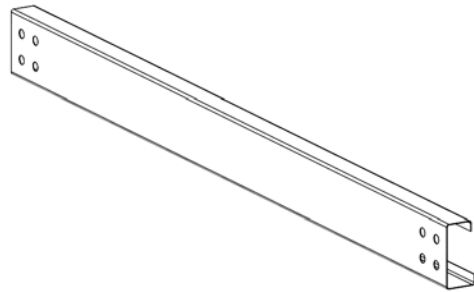
HM24-18-45-60-00-012
Diagonal bracing clip - 1

25



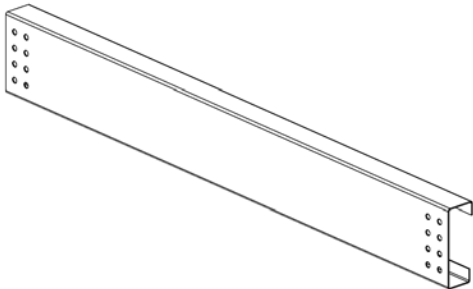
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Diagonal bracing clip - 2

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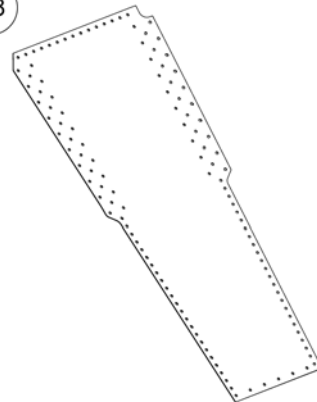
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Horizontal bracing

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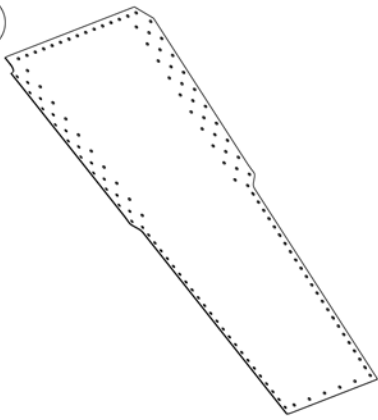
HM24-18-45-60-00-011
Cross bracing

28



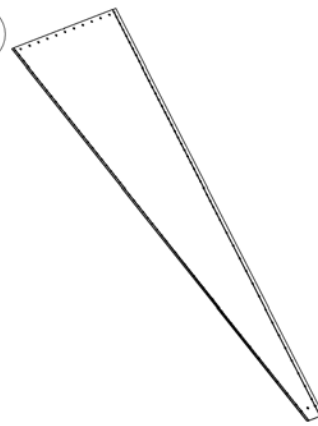
HM24-18-45-00-054-UL
Upper left panel

29



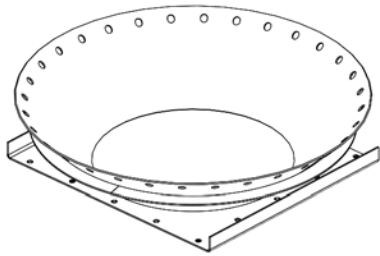
HM24-18-45-00-054-UR
Upper right panel

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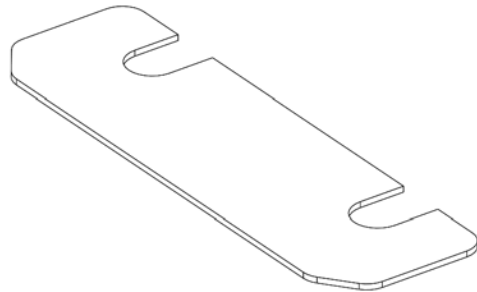
HM24-18-45-00-054-L
Lower Panel

32



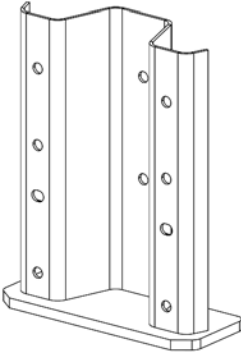
HM24-45-16-056
Cone weldment

35



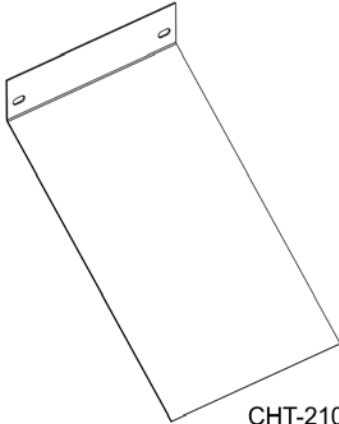
HM24-45-06-052
Hopper shim plate

36



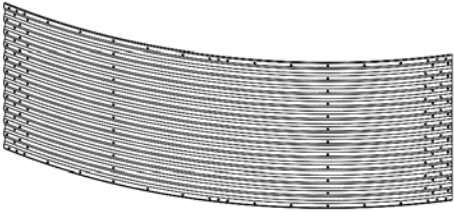
HM24-18-45-00-049
Base boot

57



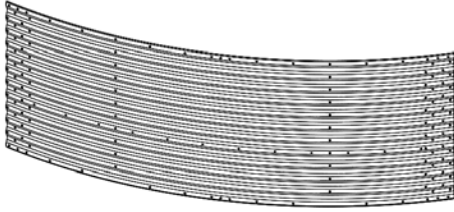
CHT-2104-M
Flashing

61



Body sidewall

74



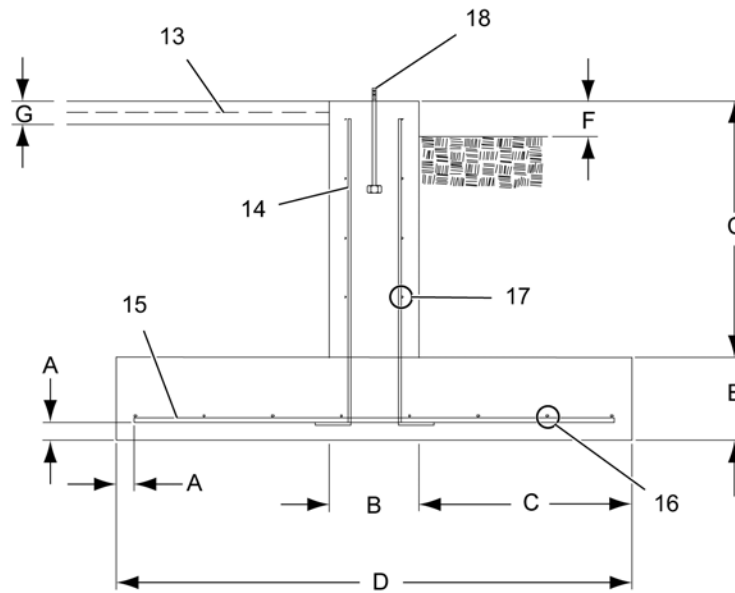
Base sidewall

Table 2-1 Hardware list

S.No	Part No	Description
1	S-BFSBM08030BN	M8 x 30 flange bolt
2	S-BTSBM10025BN	M10 x 25 truss head bolt
3	S-BFSBM10030BN	M10 x 30 flange bolt
4	S-BFSBM10035BN	M10 x 35 flange bolt
5	S-BFSBM12025BN	M12 x 25 flange bolt
6	S-BTSBM12030BN	M12 x 30 truss head bolt
7	S-BFSBM12040BN	M12 x 40 flange bolt
8	S-BFSBM16050BN	M16 x 50 flange bolt
9	S-BFSBM08B	M8 flange nut
10	S-BFSBM10B	M10 flange nut
11	S-BFSBM12B	M12 flange nut
12	S-BFSBM16B	M16 flange nut

24ft. Hopper Tank Installation (18 Rings and Below)

Figure 2-1 Footing details (upto 18 rings)



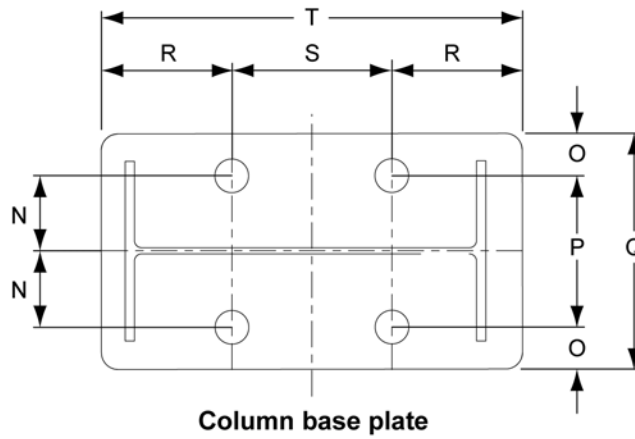
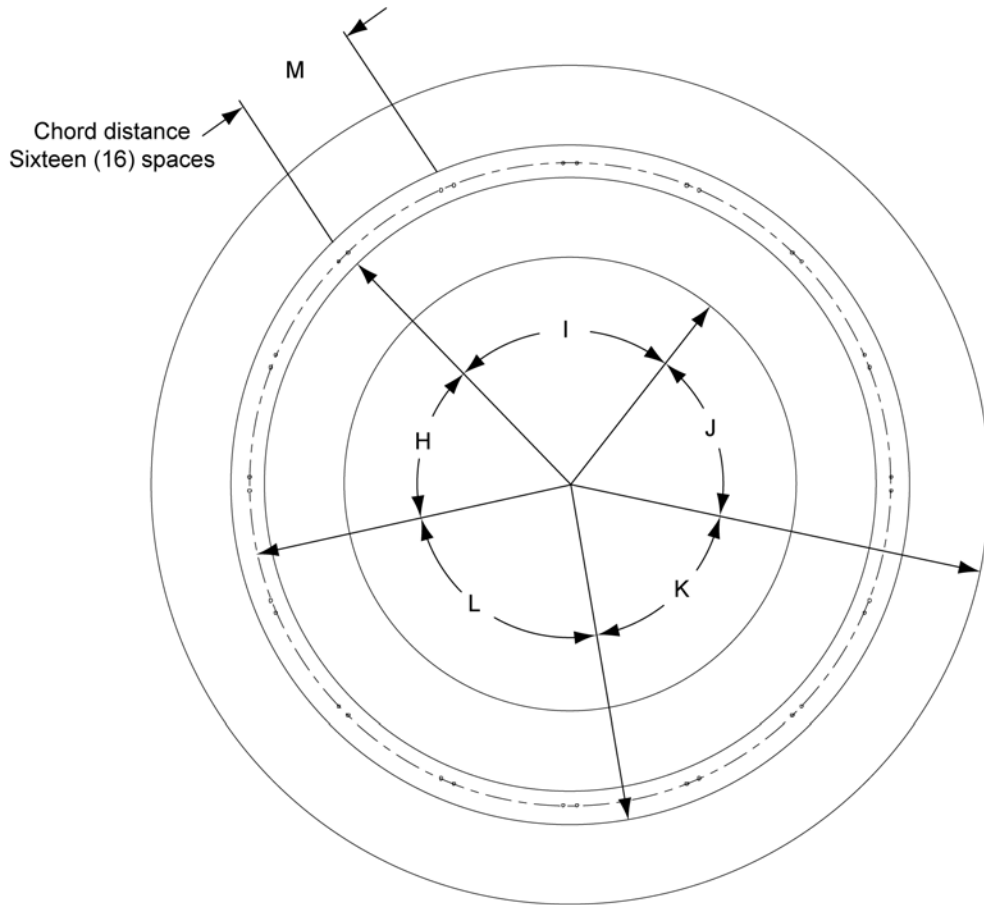
A	7.62 cm (3")	13	6 x 6 - 6/6 wire mesh
B	38.10 cm (15")	14	#4 bars, 30.48 cm (12") C/C each face
C	0.91 m (3')	15	#6 bars, 17.78 cm (7") C/C 2.06 m (6' - 9") long, spaced at center of footing
D	2.21 m (7' - 3")	16	8 - #5 hoops evenly spaced
E	0.36 m (1' - 2")	17	4 - #4 hoops evenly spaced each face
F	15.24 cm (6")	18	1.91 cm (3/4") Diameter anchor rod (B-7035) 32 required. 7.62 cm (3") projection above concrete, 38.1 cm (15") embedment.
G	10.16 cm (4")		

NOTE:

- 1. The foundation design is based on a minimum allowable soil bearing capacity of 3000 PSF. Bearing capacity of the soils should be determined by geotechnical investigation and be of uniform bearing capacity.*
- 2. The foundation site must be free of vegetation and debris and well drained.*
- 3. The foundation must be founded below the frost line or placed on non-expansive frost free fill.*
- 4. All material used for backfill inside the ring wall should be clean, well graded, crushed rock or a sand-gravel mixture. Backfill should be placed in 152.4 mm (6 in.) lifts, 95% compaction.*
- 5. All reinforcement must meet the requirements of ASTM A615 grade 60 deformed bars.*
- 6. Lap all circumferential bars 35 bar diameters and stagger all laps in plans 914.4 mm (3 ft - 0 in.). Estimates for material do not include end laps.*
- 7. Concrete must have a minimum compressive strength of 3000 PSI at 28 days, 6%-8% air entrainment, 101.6 mm (4 in.) slump.*
- 8. Codes: ACI 318-95.*
- 9. Interior top slab may be crowned 50.8 mm (2 in.) to provide water drainage away from foundation. Crowning the slab will reduce the clearance under the discharge.*
- 10. The minimum anchor rod is a 19.05 mm (3/4 in.) F1554 grade 55 rod with 381 mm (15 in.) embedment, with a SAE grade 5 or A325 nut. Anchor rod requirements should be determined in conjunction with the foundation engineer.*

Chapter 2: 24 ft. Commercial Hopper Tank Installation

Figure 2-2 Foundation details (upto 18 rings)



Column base plate

H	3.68 m (12' - 7/8")	O	25.00 mm (1")
I	3.52 m (11' - 6-1/2")	P	90.00 mm (3-1/2")
J	2.60 m (8' - 6-1/2")	Q	140.00 mm (5-1/2")
K	4.81 m (15' - 9-1/2")	R	77.50 mm (3")
L	3.90 m (12' - 9-1/2")	S	95.00 mm (3-3/4")
M	1.44 m (4' - 8-17/32")	T	250.00 mm (9-7/8")
N	45.00 mm (1-3/4")		

Figure 2-3 Hopper tank column heights for 45° hopper slope

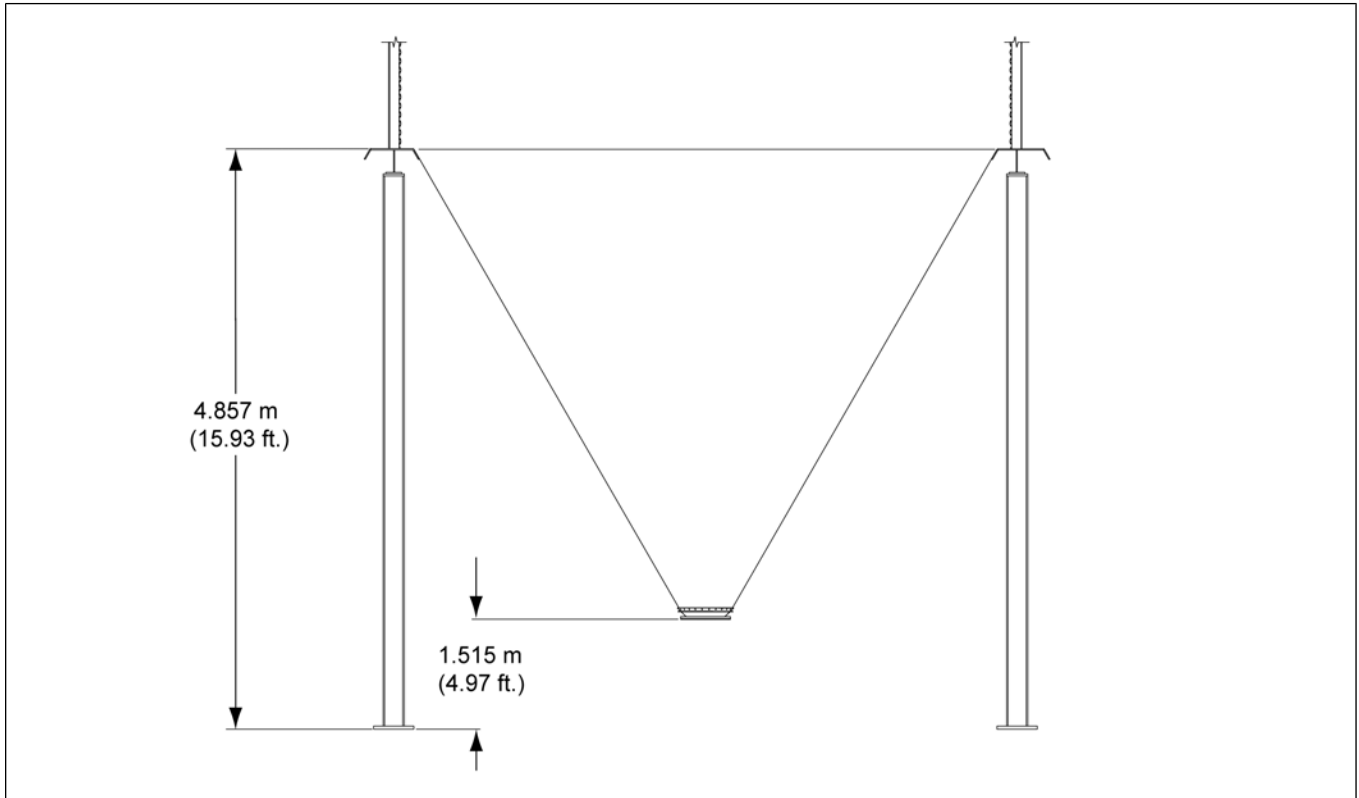
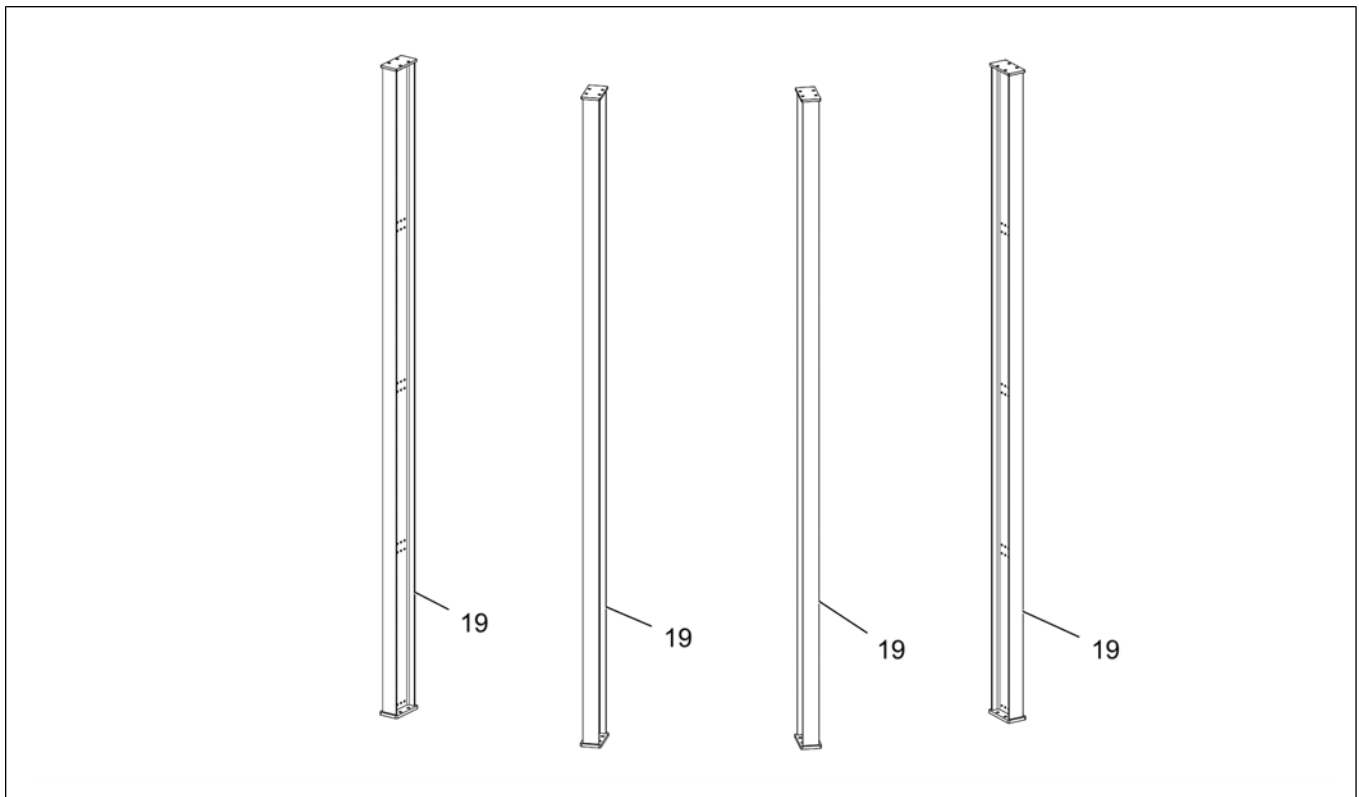


Figure 2-4 Positioning the vertical columns



Chapter 2: 24 ft. Commercial Hopper Tank Installation

Figure 2-5 Installing the sealing strips to the transition beam assembly

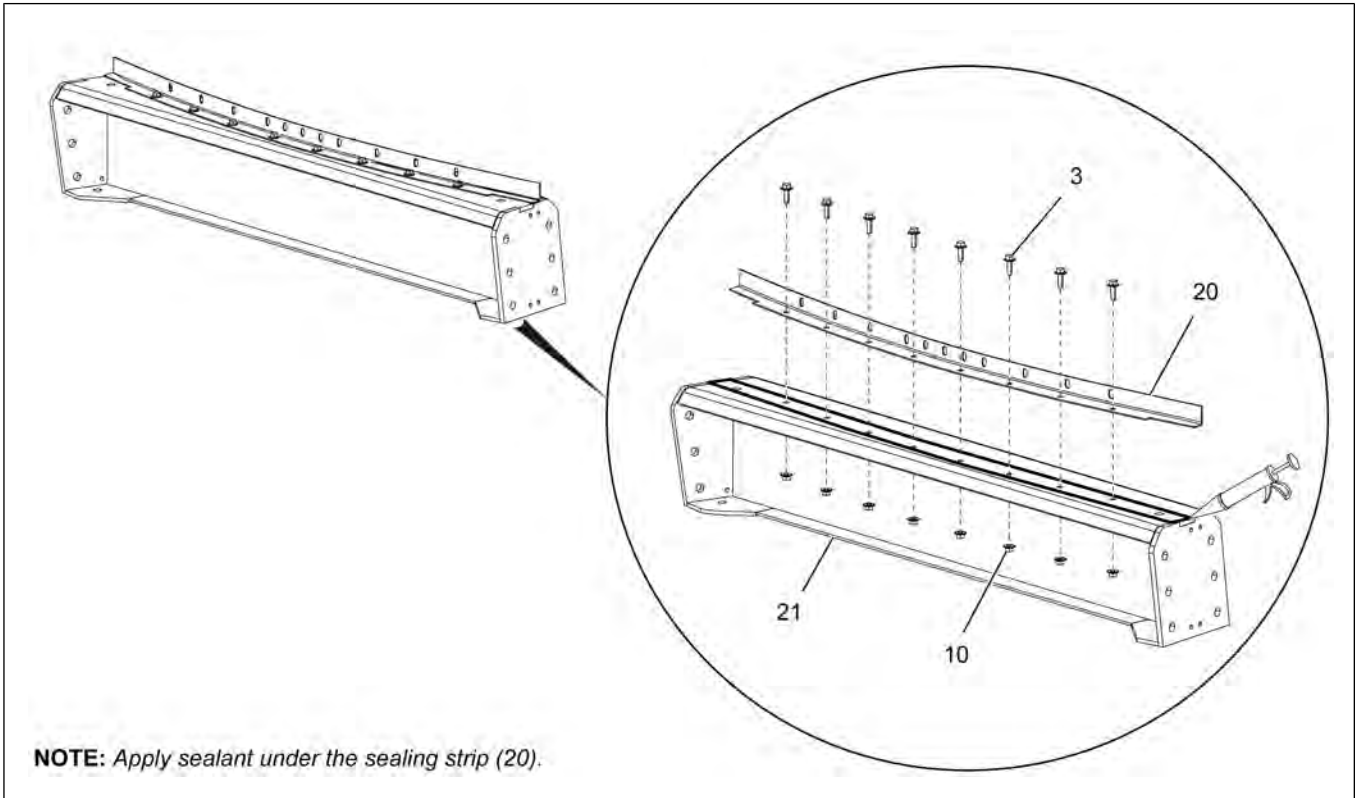


Figure 2-6 Installing the transition beams to the vertical column

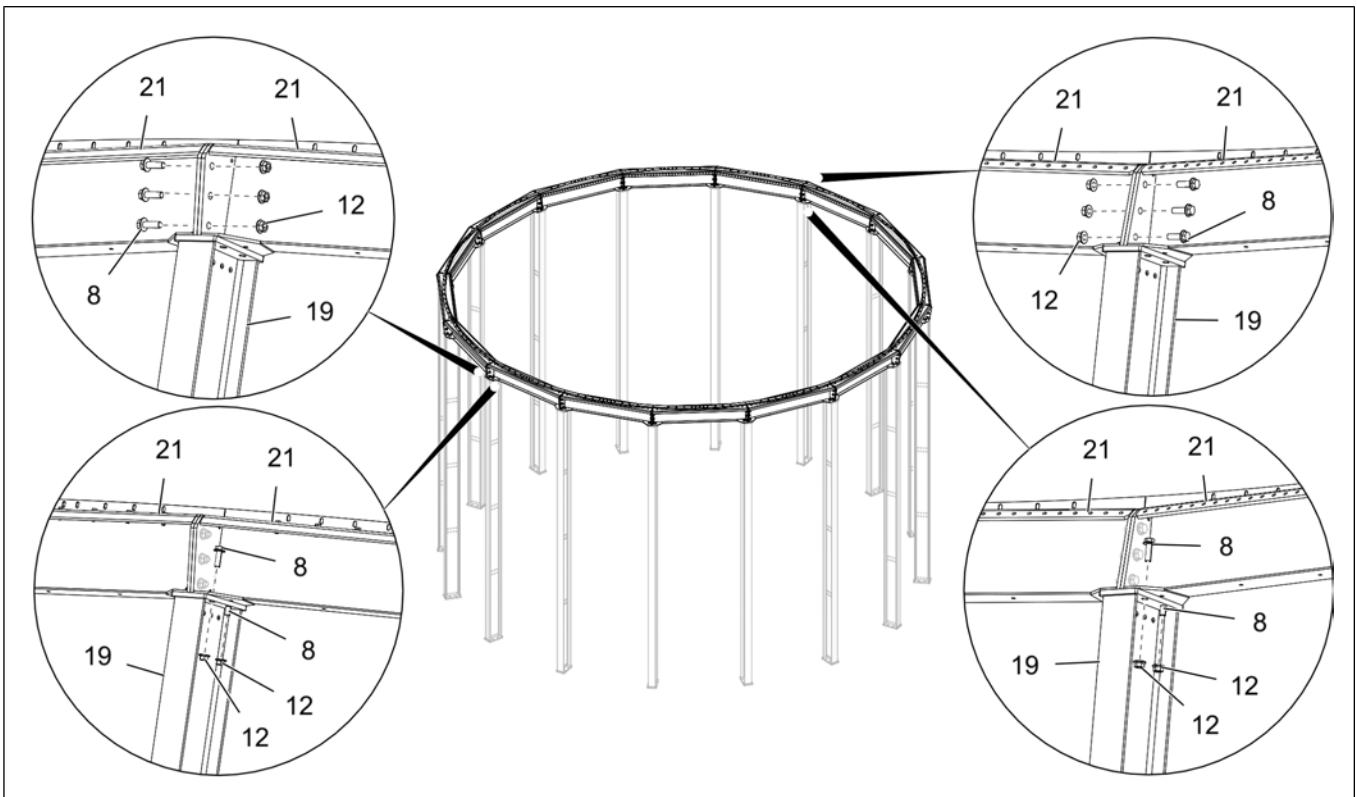


Figure 2-7 Attaching the top and bottom horizontal bracings to the vertical column (4-leg section)

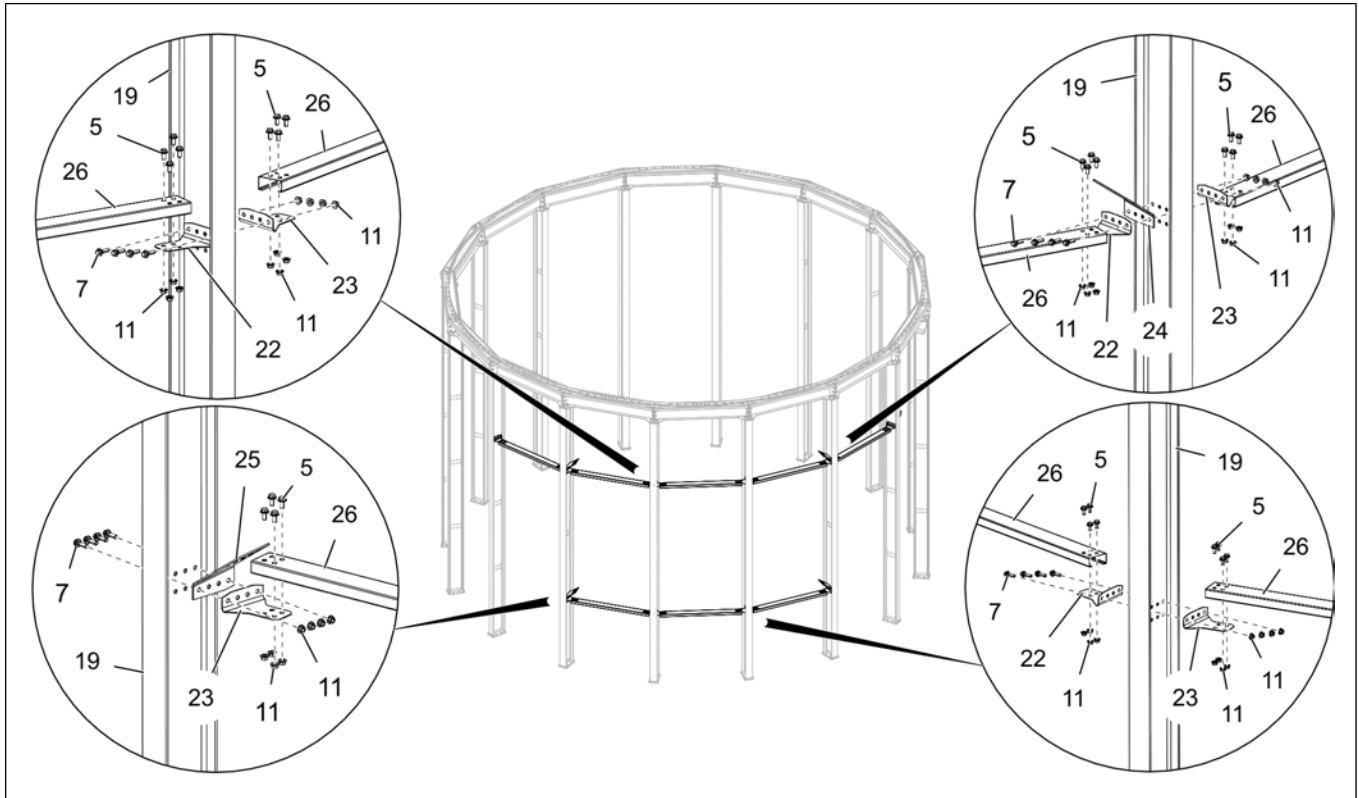
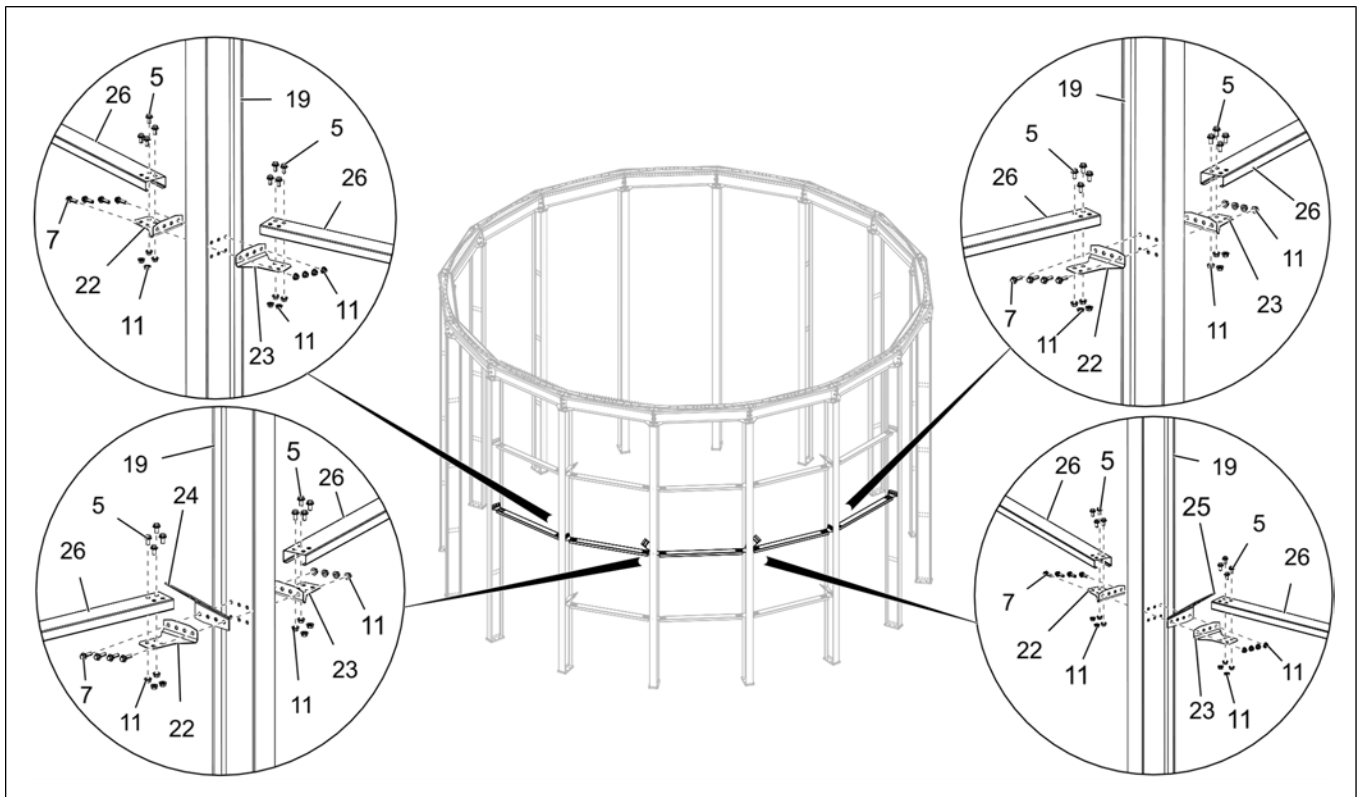


Figure 2-8 Attaching the intermediate horizontal bracings to the vertical column (4-leg section)



Chapter 2: 24 ft. Commercial Hopper Tank Installation

Figure 2-9 Installing the cross bracings to the diagonal bracing clips (4-leg section)

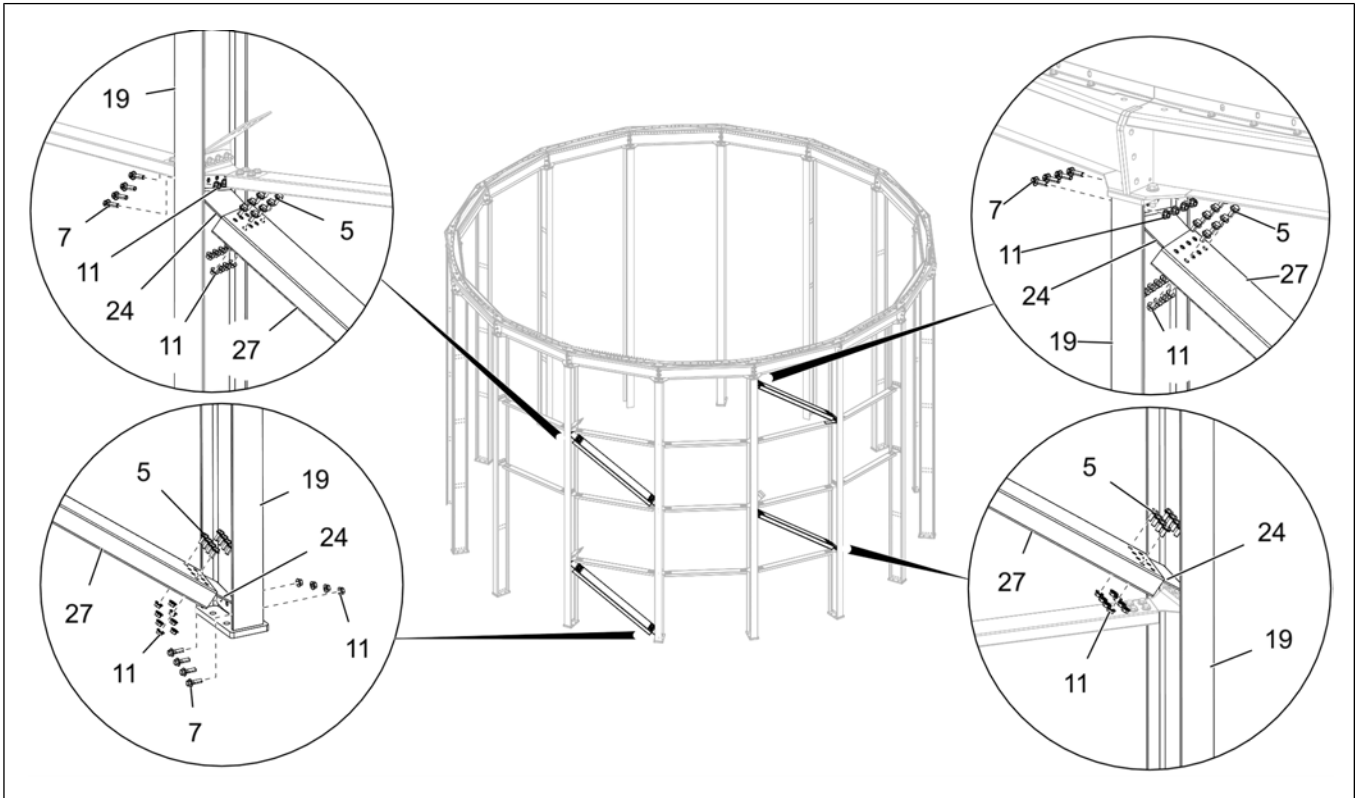


Figure 2-10 Installing the cross bracings to the diagonal bracing clips (4-leg section)

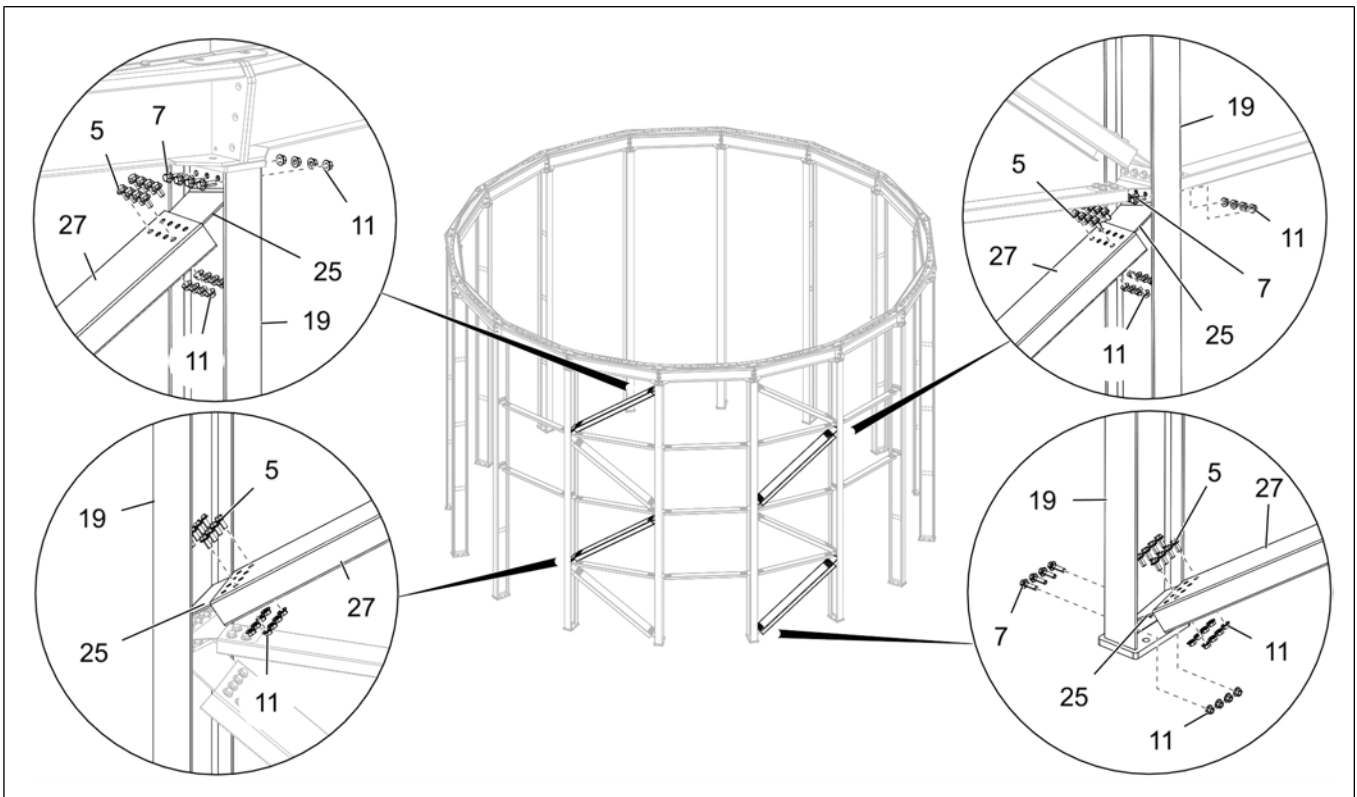


Figure 2-11 Hopper panels overview

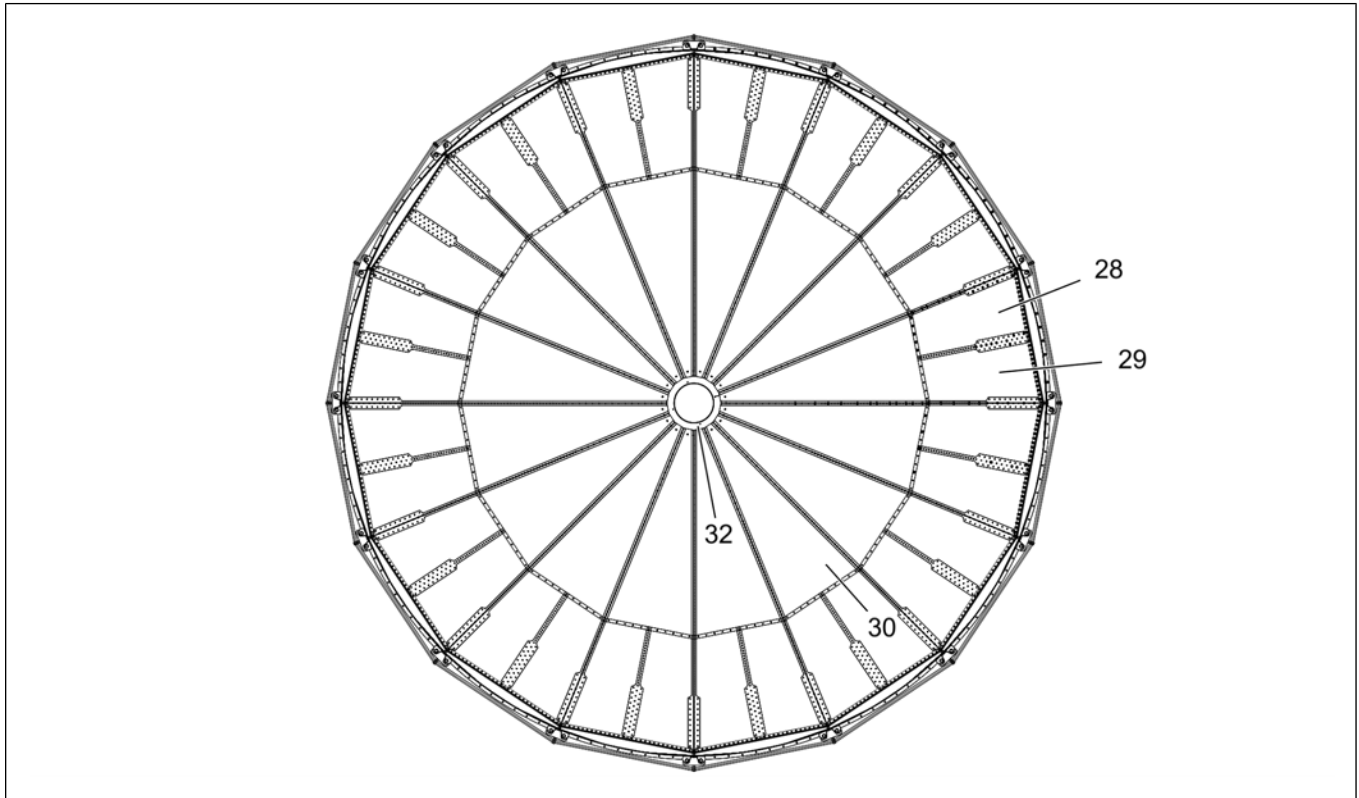
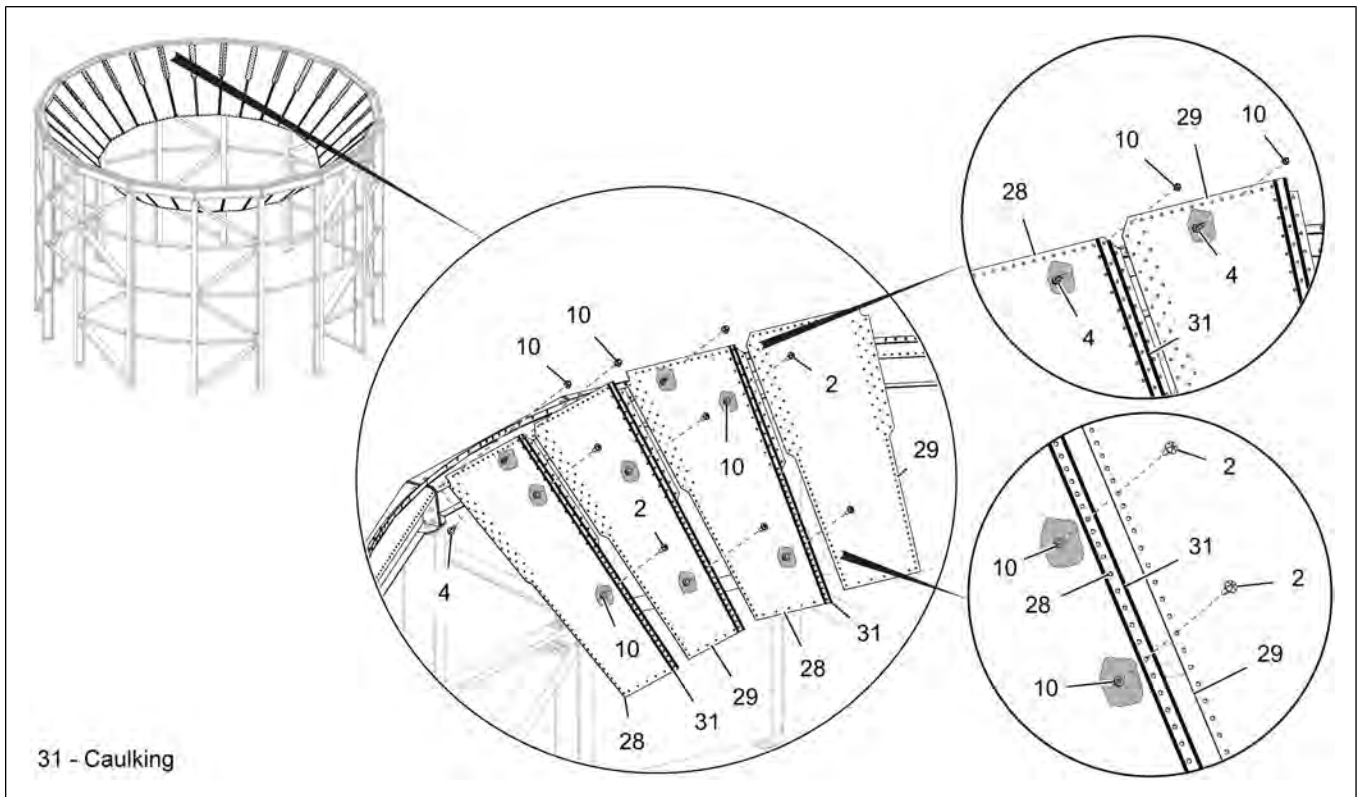


Figure 2-12 Installing the upper panels to the transition beam assembly



Chapter 2: 24 ft. Commercial Hopper Tank Installation

Figure 2-13 Installing the lower panels to the upper panels

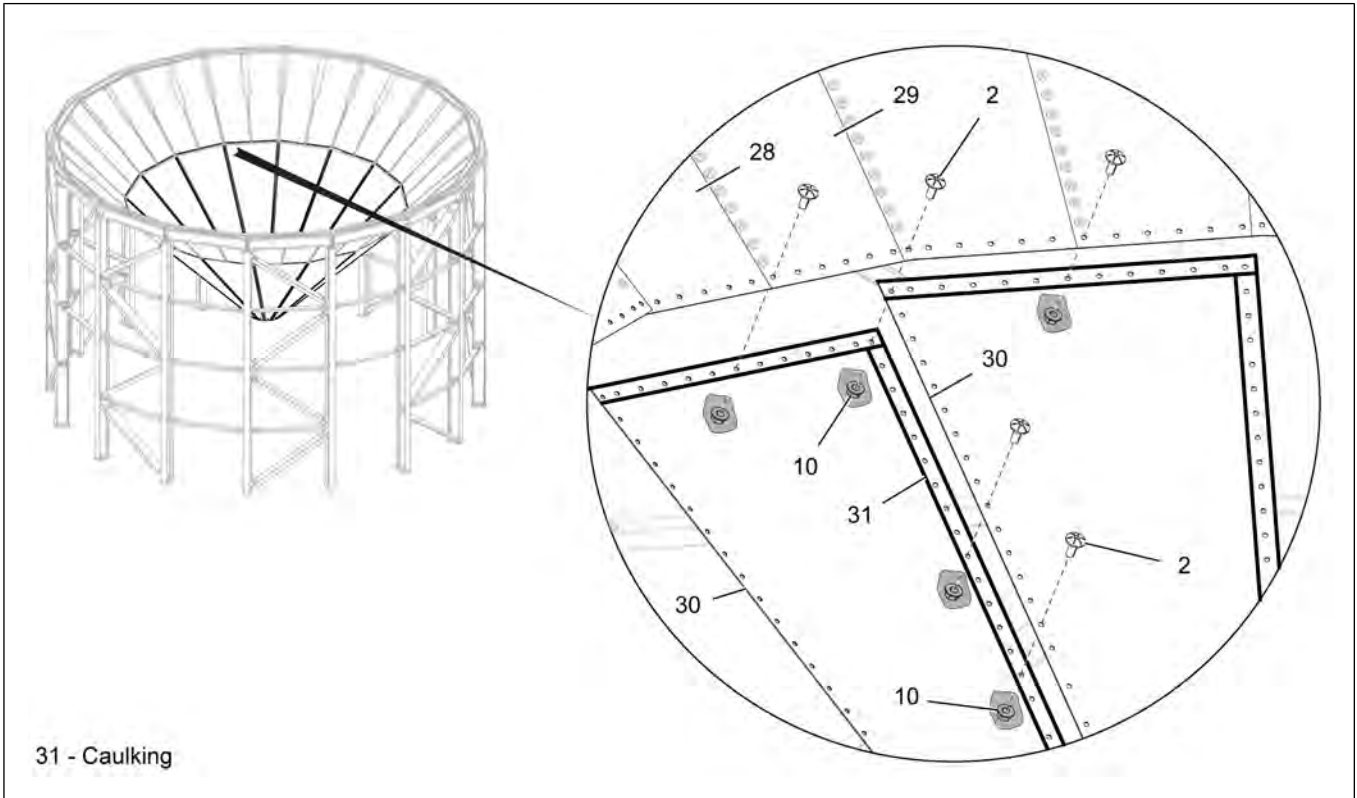


Figure 2-14 Hopper panel overlapping details

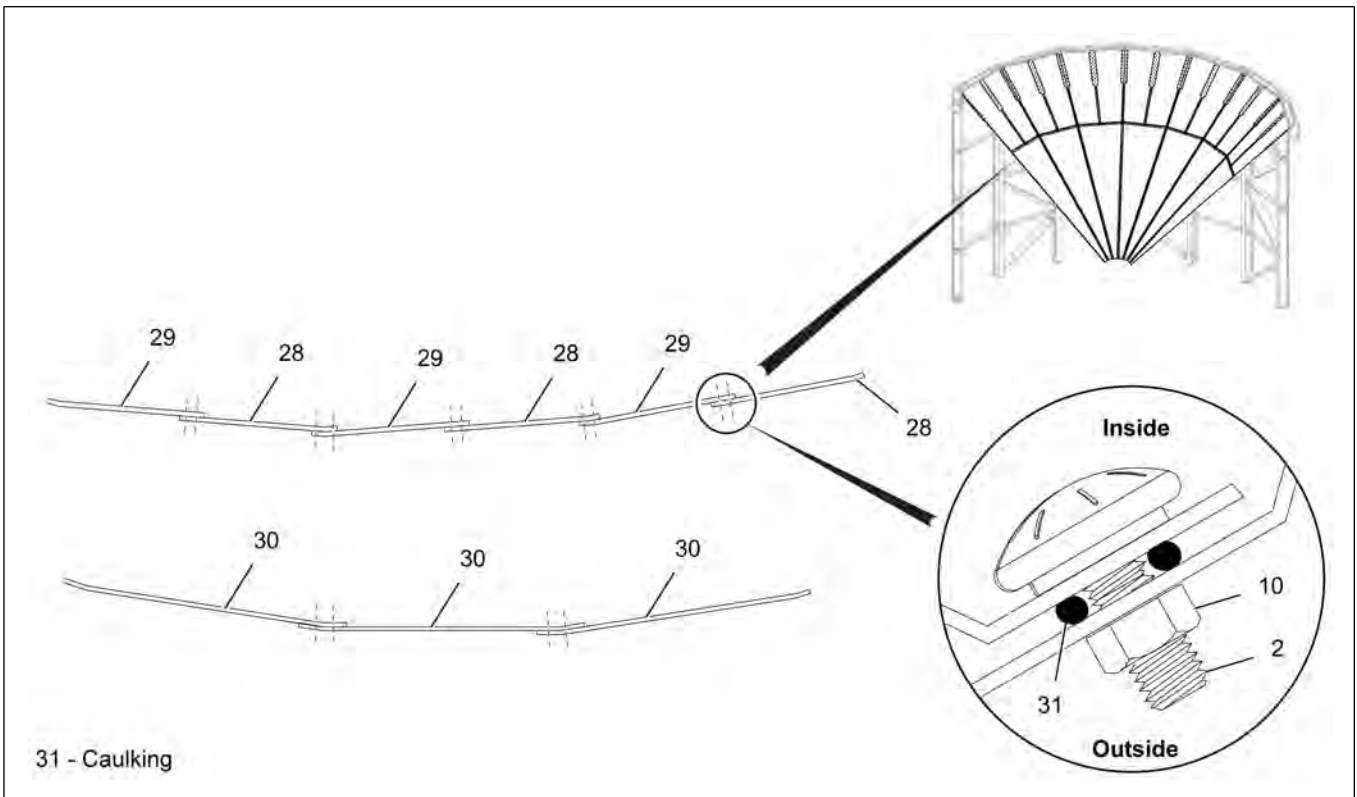


Figure 2-15 *Installing the collar weldment*

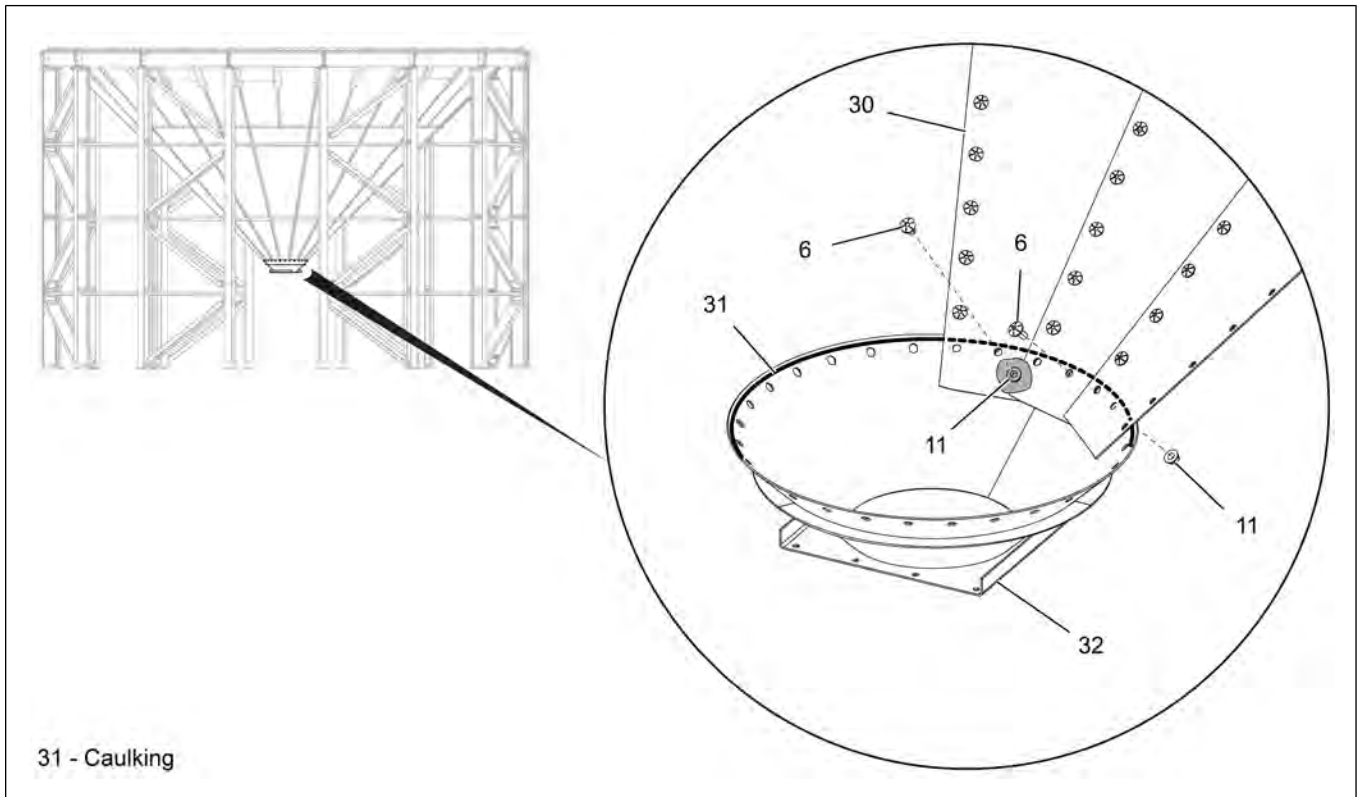
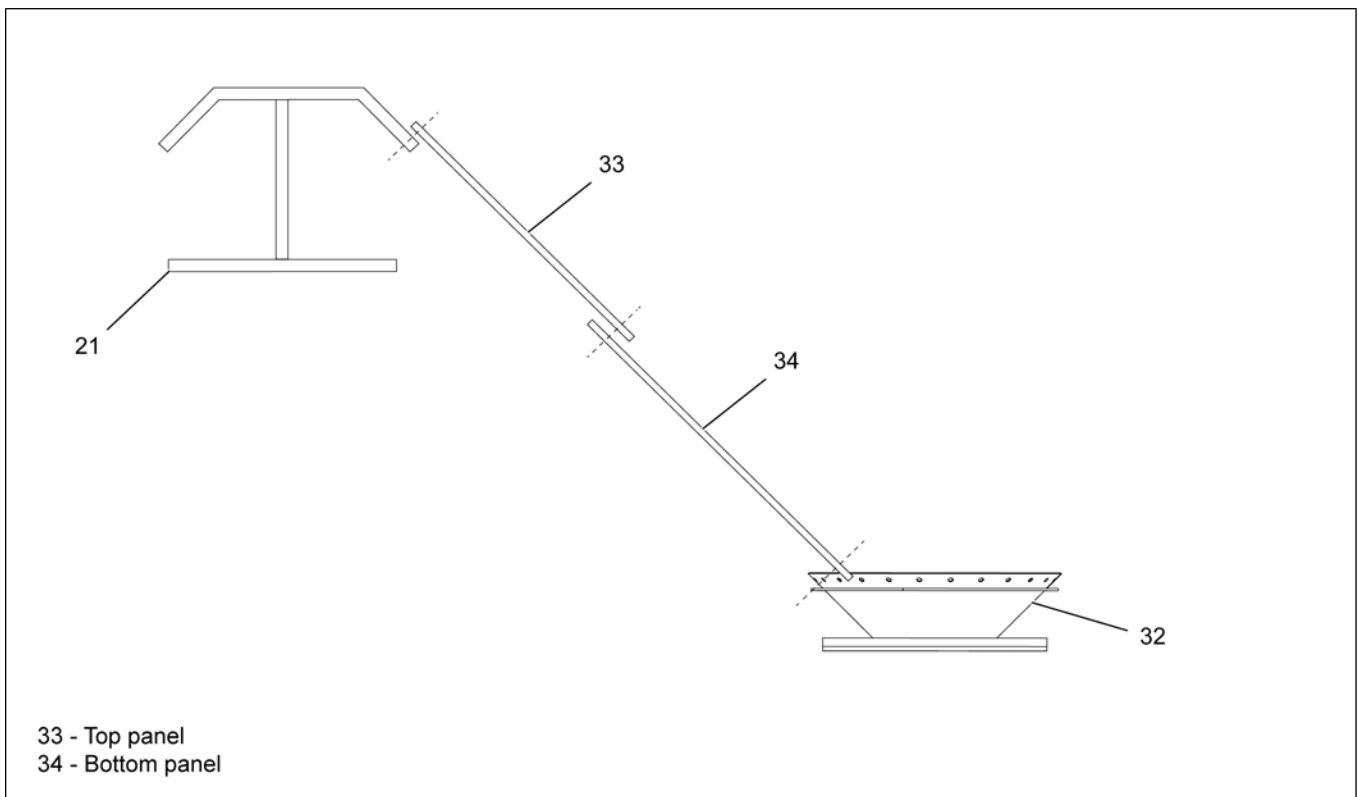


Figure 2-16 *Hopper panels and collar weldment overlap details*



Chapter 2: 24 ft. Commercial Hopper Tank Installation

Figure 2-17 Installing the base boot and shim plate to the transition beam

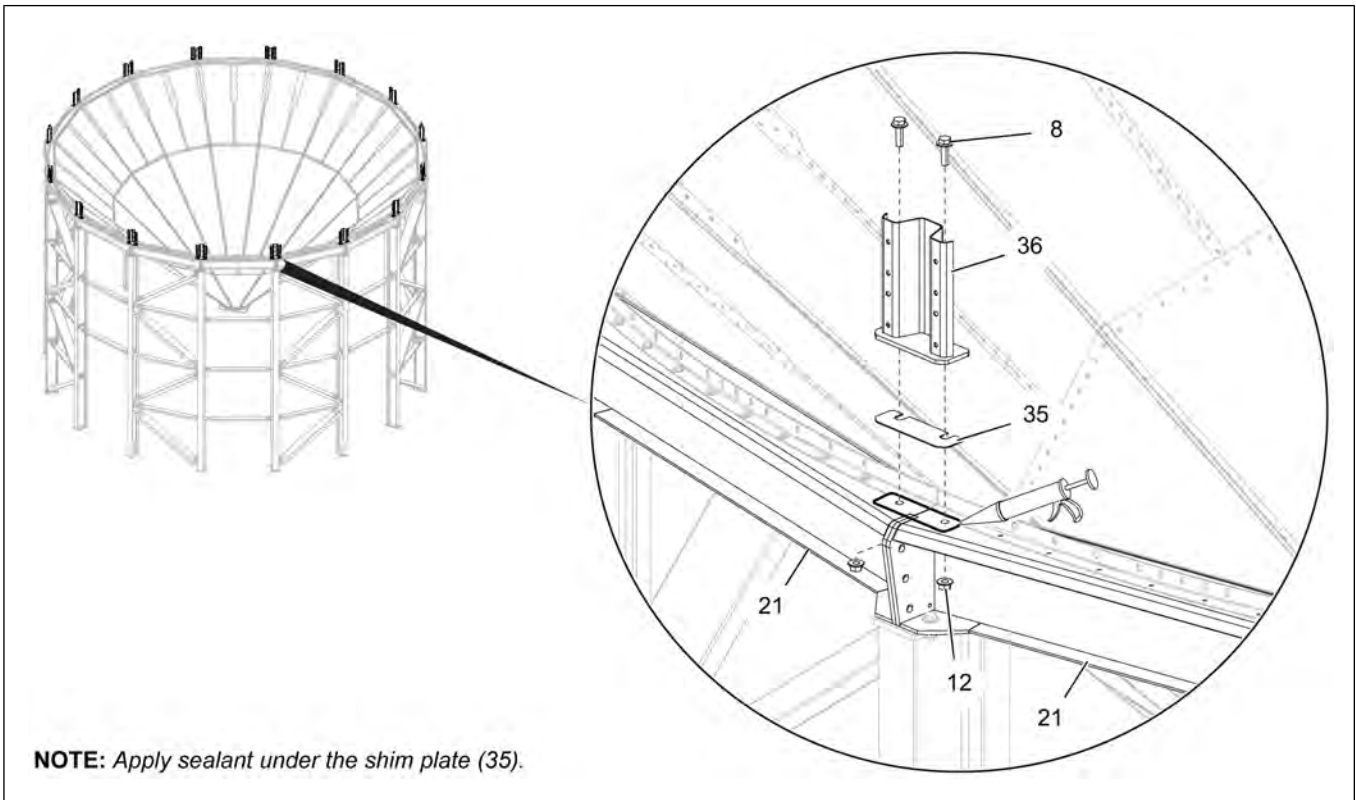


Figure 2-18 Installing the aeration package

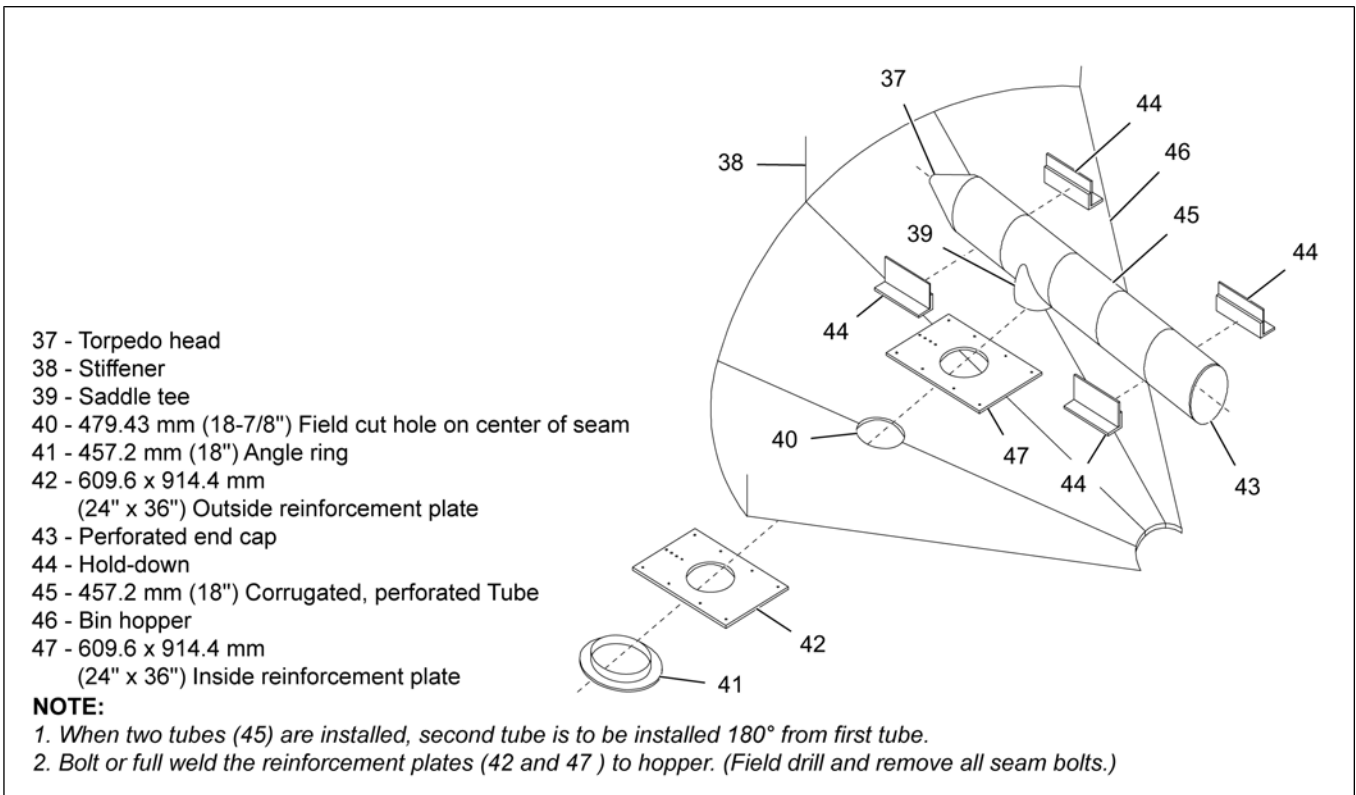


Figure 2-19 Aeration package side view

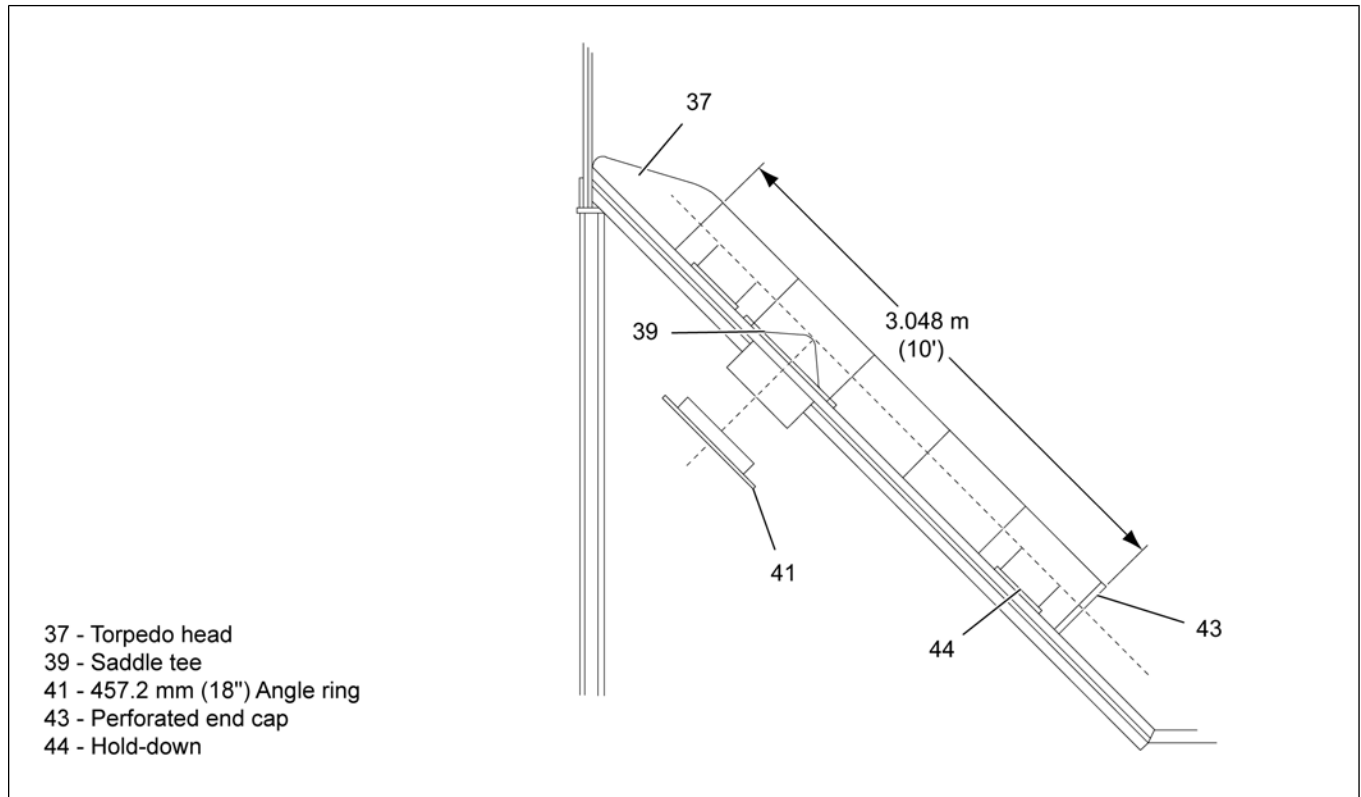
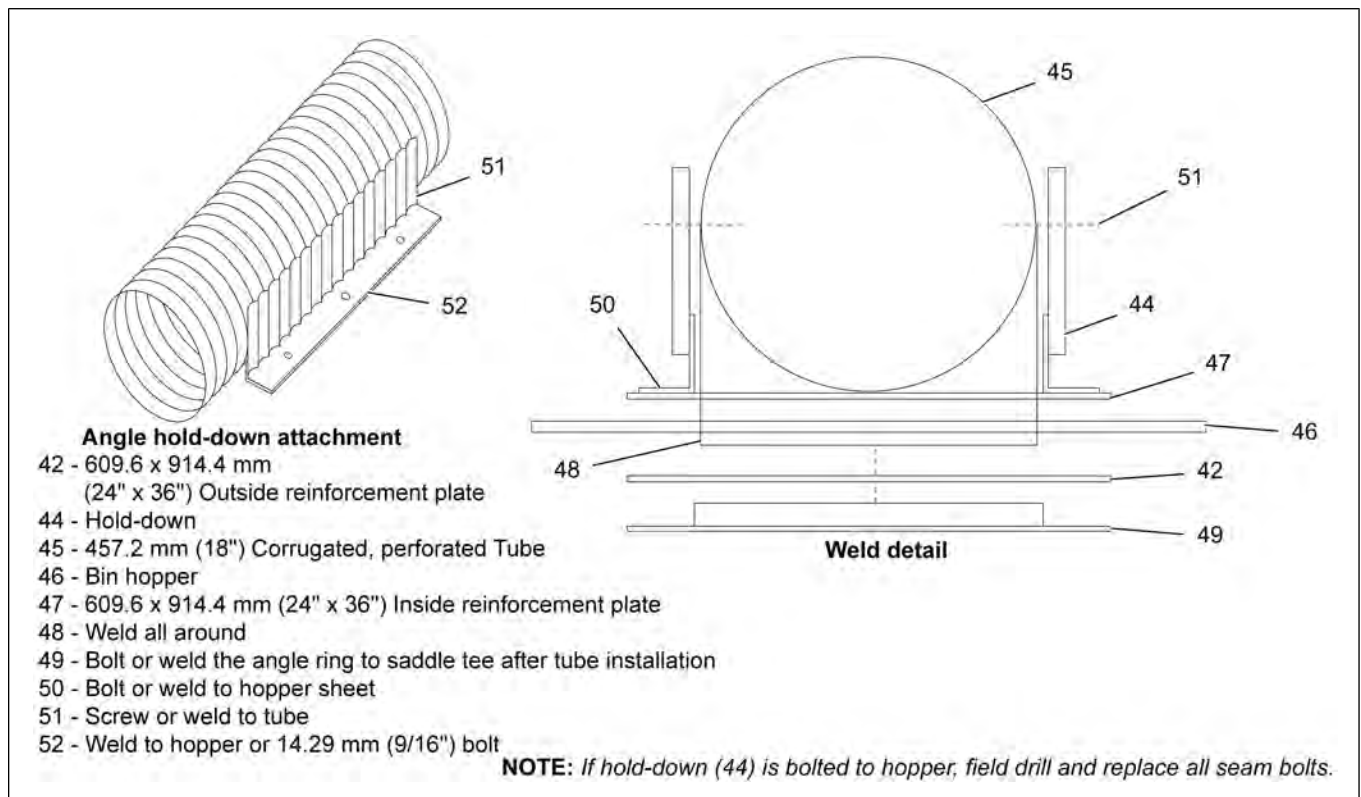


Figure 2-20 Aeration package welding and bolting details



Chapter 2: 24 ft. Commercial Hopper Tank Installation

Figure 2-21 Installing the hopper ladder supports

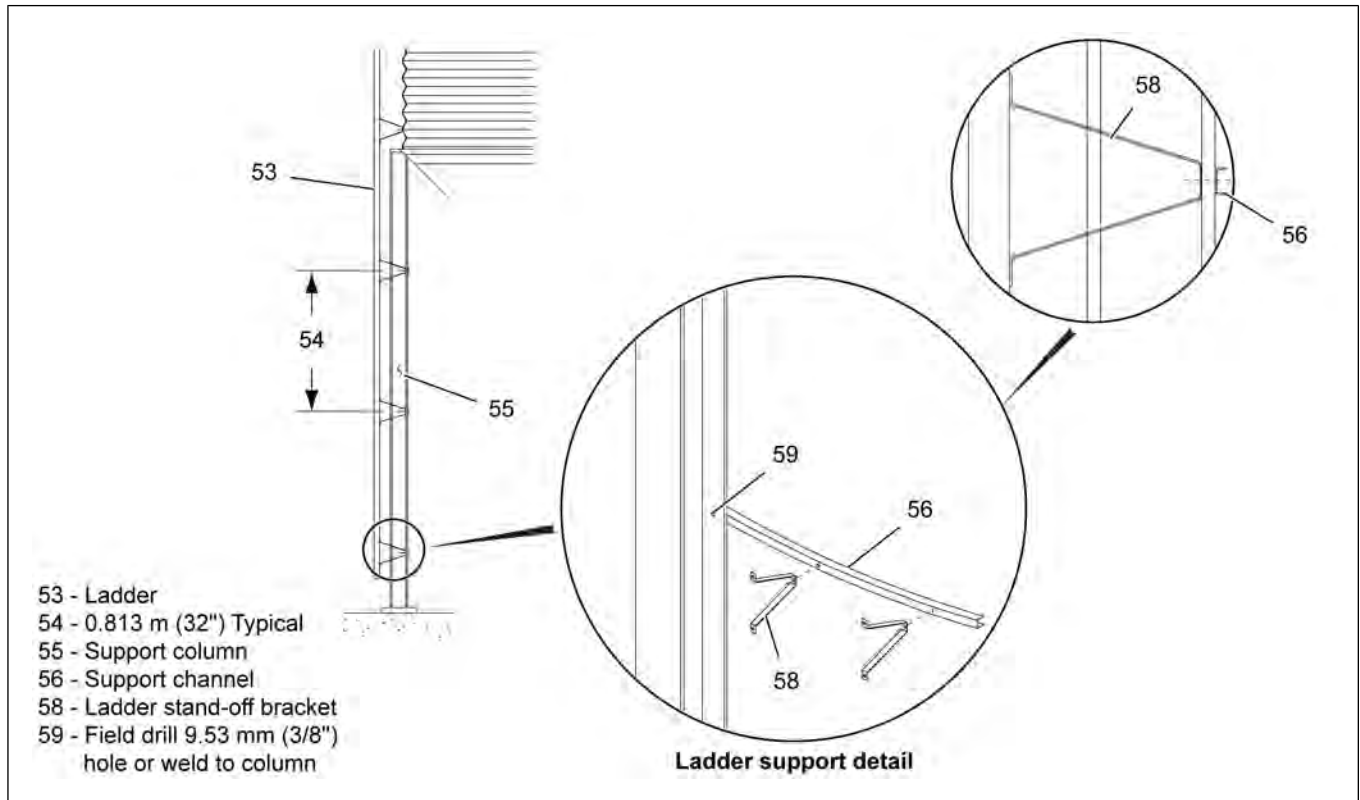


Figure 2-22 Lifting jack usage

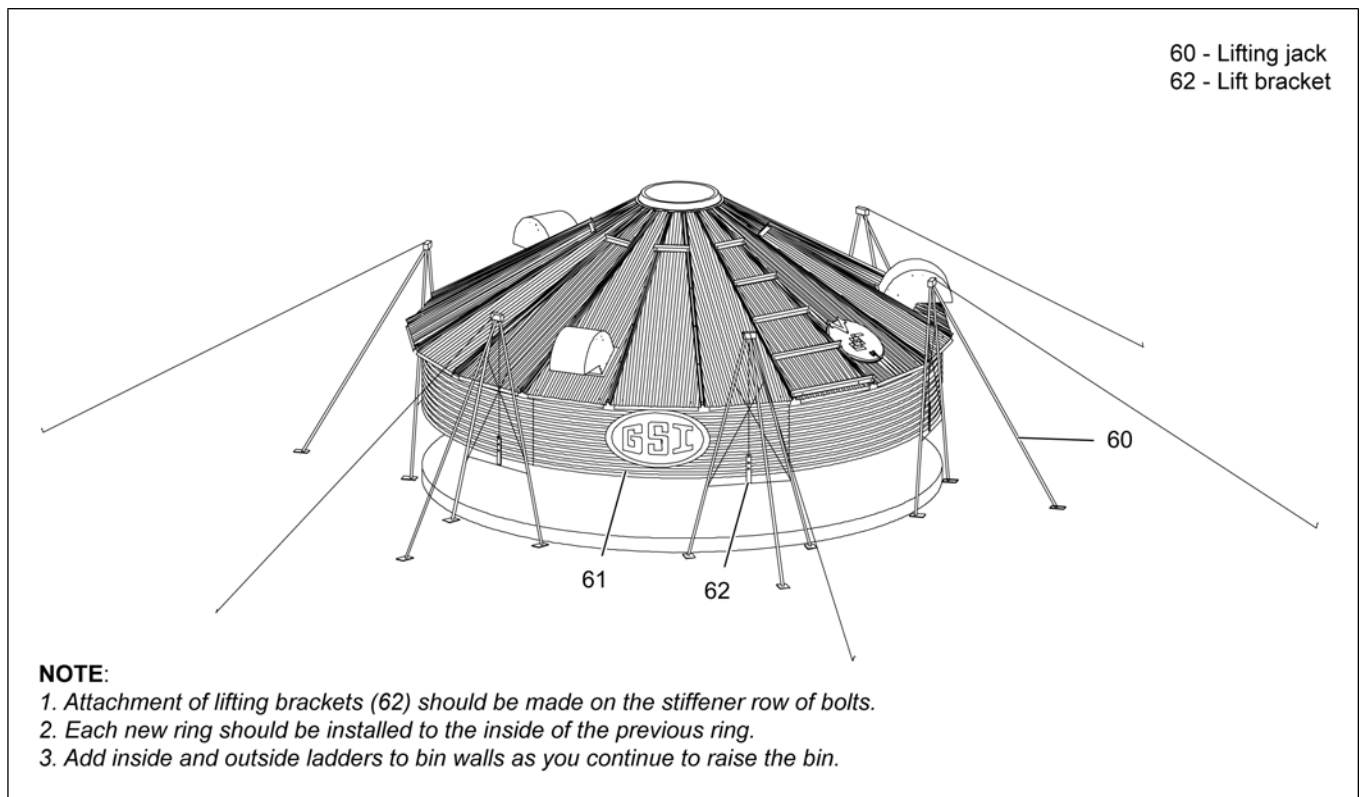


Figure 2-23 Attaching the lift brackets to the sidewall

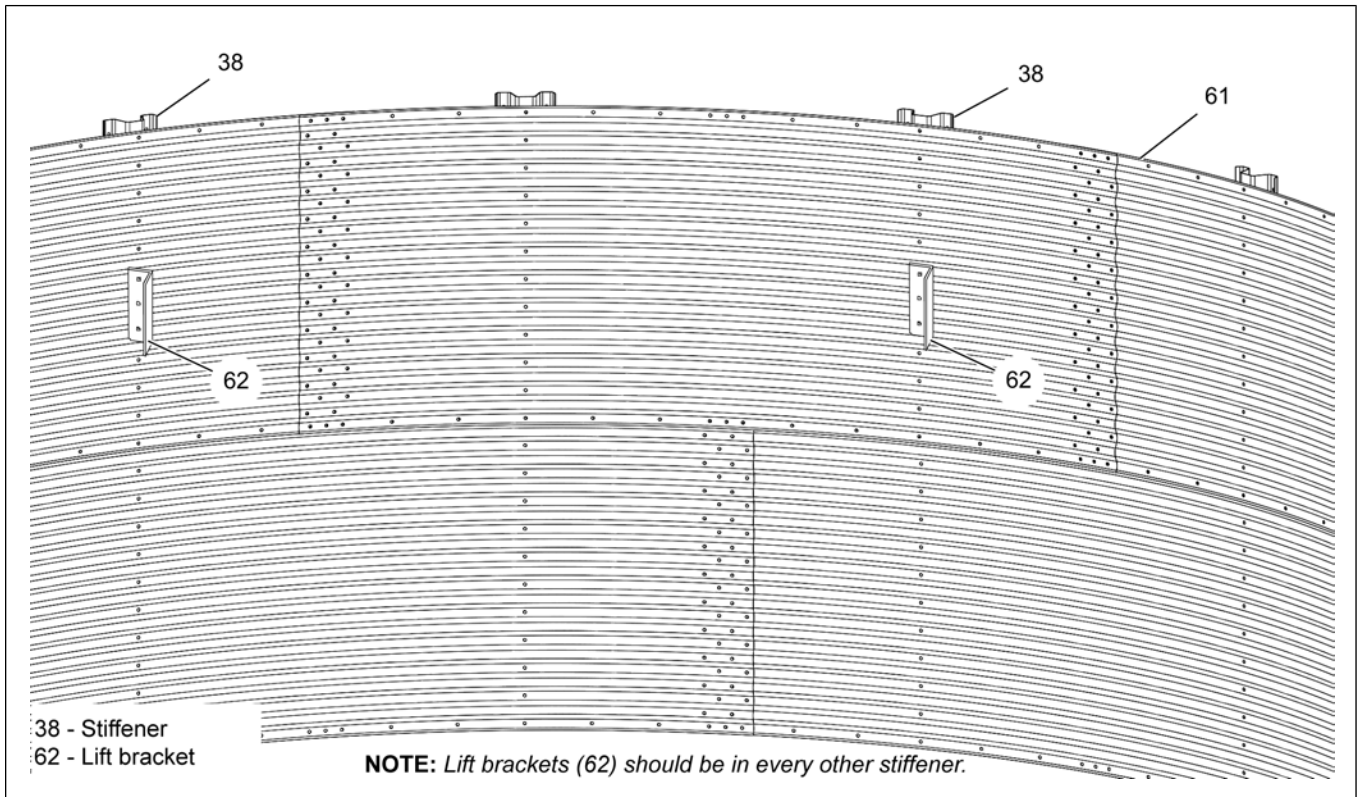
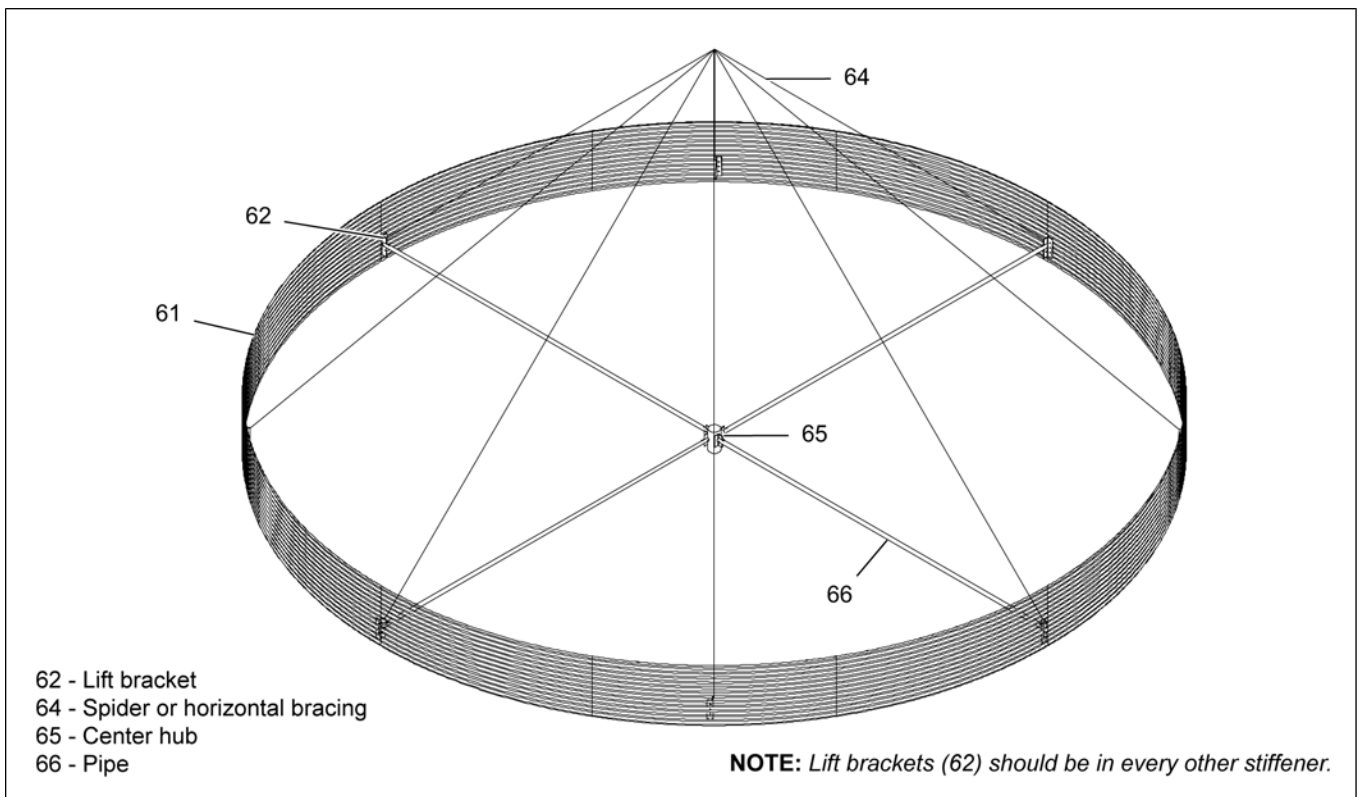


Figure 2-24 Positioning the spider and center hub



Chapter 2: 24 ft. Commercial Hopper Tank Installation

Figure 2-25 Center hub and connecting pipe details

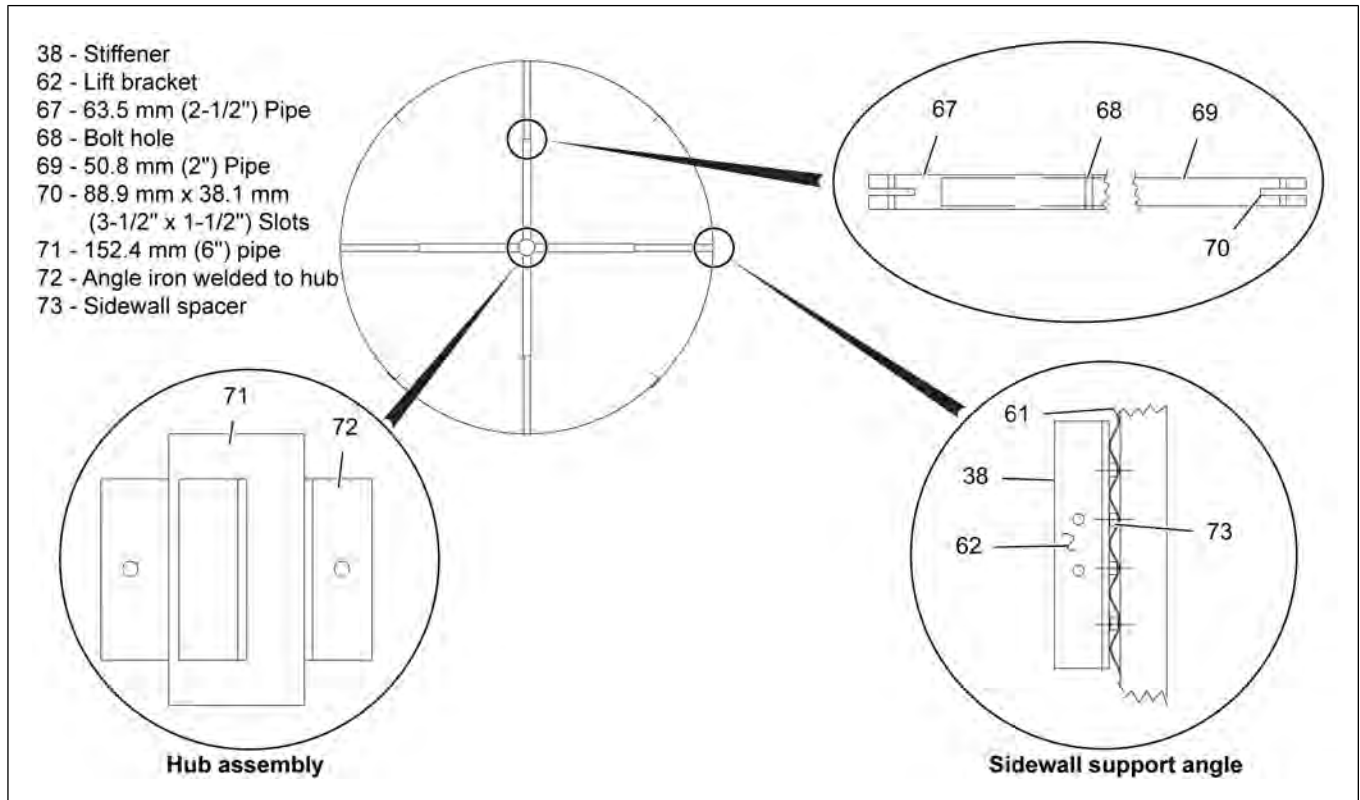


Figure 2-26 Installing the flashing to the base sidewall

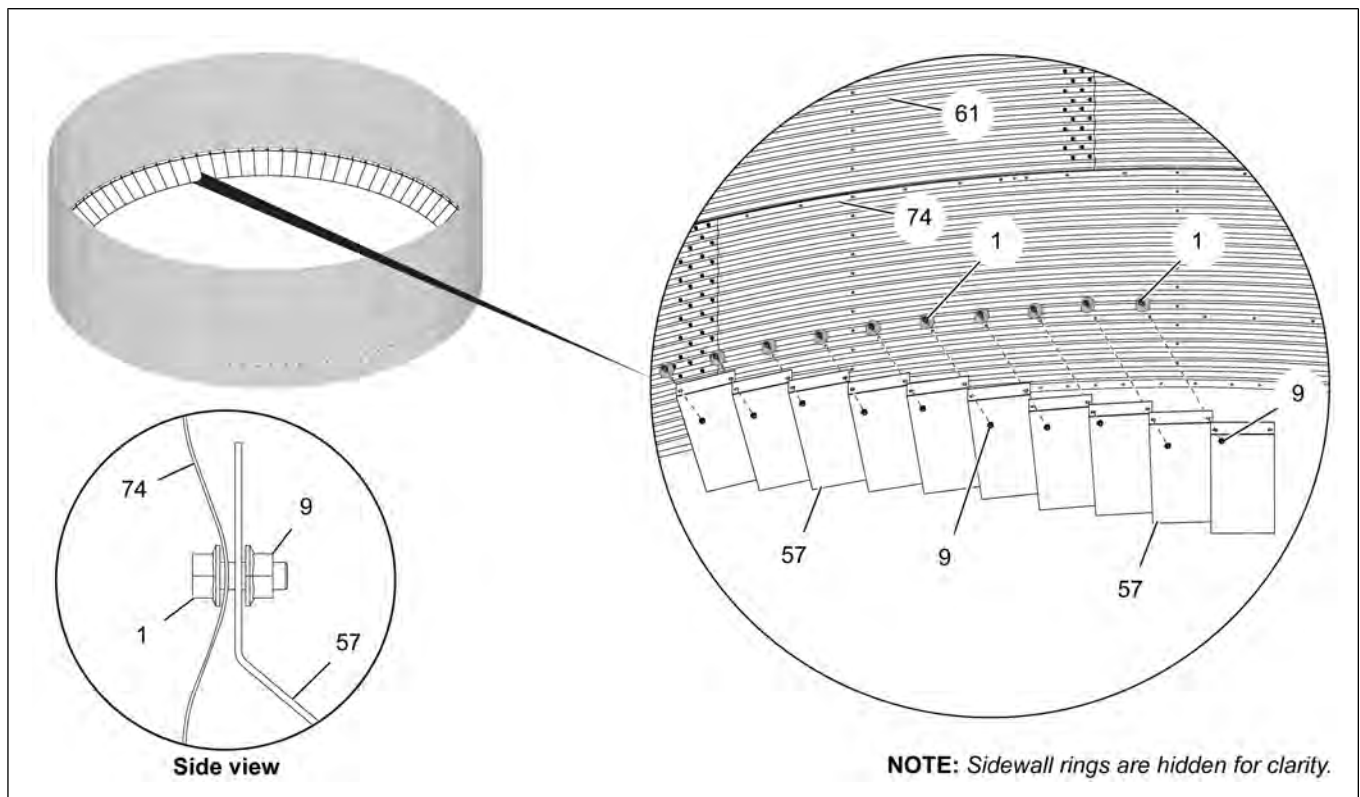


Figure 2-27 *Aligning the base sidewall to the base boot and sealing strip*

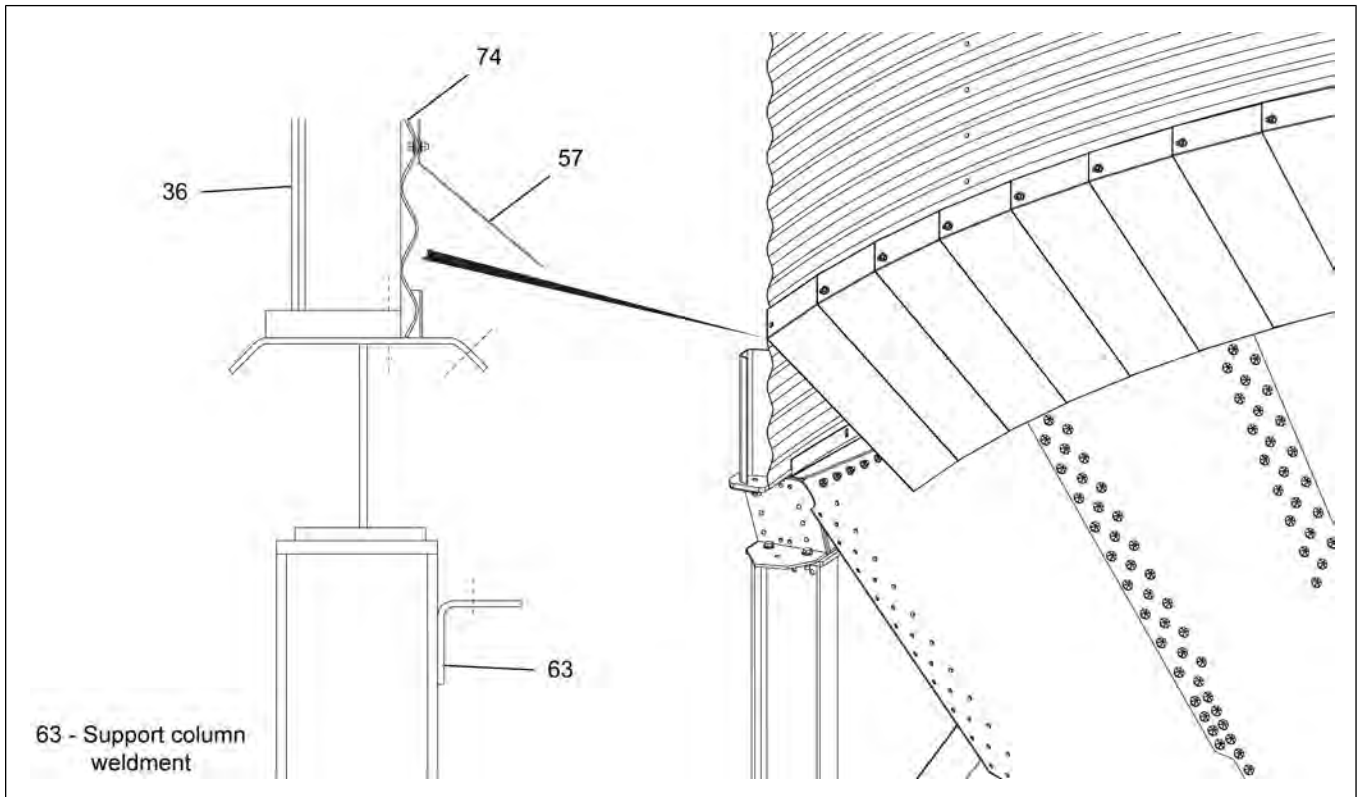
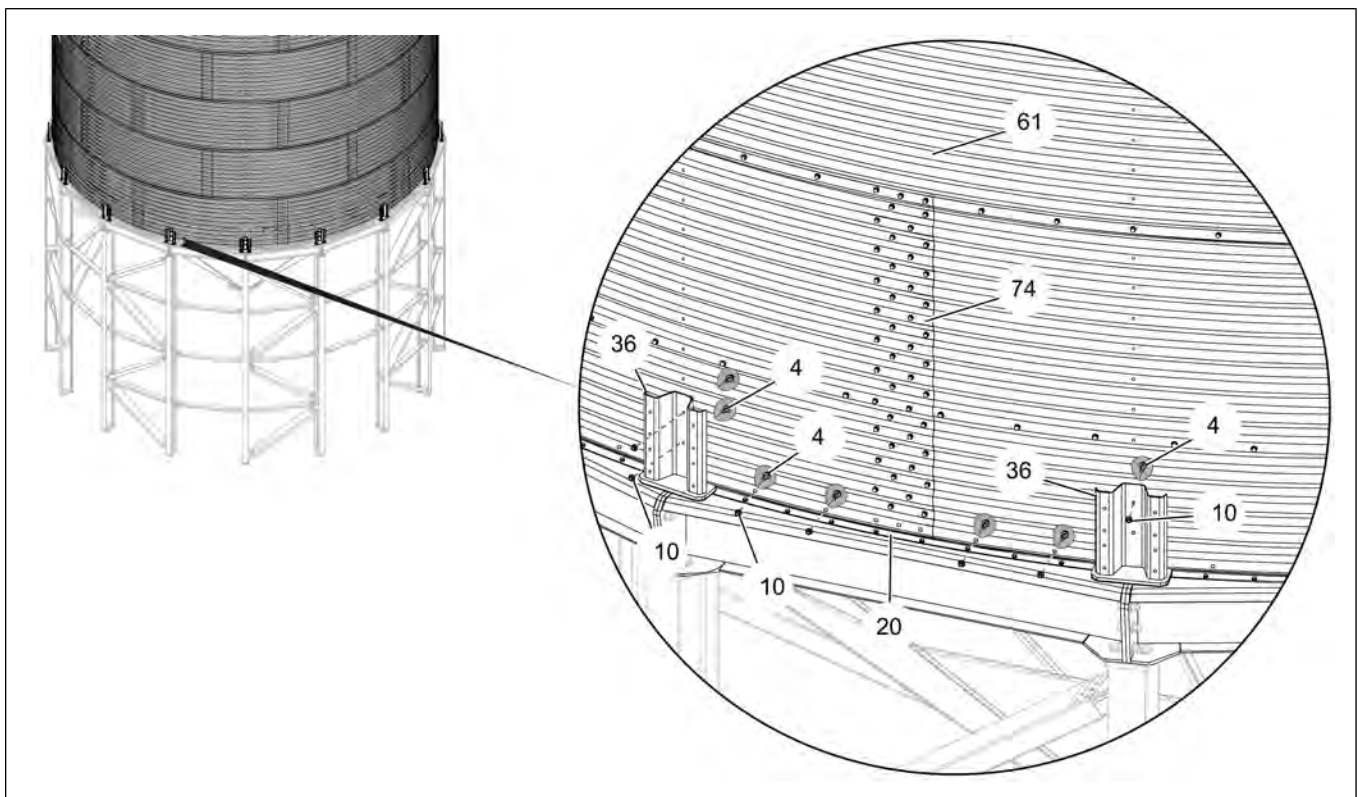


Figure 2-28 *Installing the base sidewall to the base boot and sealing strip*



NOTES

Limited Warranty — EME Grain Products

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 from the date of shipment (or, if shipped by vessel, 14 months from the date of arrival at the port of discharge). If, in GSI’s sole judgment, a product is found to have a defect in materials and/or workmanship, GSI will, at its own option and expense, repair or replace the product or refund the purchase price. This Limited Warranty is subject to extension and other terms as set forth below.

Warranty Enhancements: The warranty period for the following products is enhanced as shown below and is in lieu of (and not in addition to) the above stated warranty period. (Warranty Period is from date of shipment.)

	Product	Warranty Period
Storage	Grain Bin Structural Design • Sidewall, roof, doors, platforms and walkarounds • Flooring (when installed using GSI specified floor support system for that floor) • Hopper tanks (BFT, GHT, NCHT, and FCHT)	5 Years
Conditioning	Dryer Structural Design – (Tower, Portable and TopDry) • Includes (frame, portable dryer screens, ladders, access doors and platforms)	5 Years
	All other Dryer parts including: • Electrical (controls, sensors, switches and internal wiring)	2 Years
	All Non-PTO Driven Centrifugal and Axial Fans	3 Years
	Bullseye Controllers	2 Years
Material Handling	Bucket Elevators Structural Design	5 Years
	Towers Structural Design	5 Years
	Catwalks Structural Design	5 Years
	Accessories (stairs, ladders and platforms) Structural Design	5 Years

Conditions and Limitations:

THERE ARE NO WARRANTIES THAT EXTEND BEYOND THE LIMITED WARRANTY DESCRIPTION SET FORTH HEREIN; SPECIFICALLY, GSI DISCLAIMS ANY AND ALL OTHER WARRANTIES OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE IN CONNECTION WITH: (I) ANY 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.

The sole and exclusive remedy for any claimant is set forth in this Limited Warranty and shall not exceed the amount paid for the product purchased. This Warranty only covers the value of the warranted parts and equipment, and does not cover labor charges for removing or installing defective parts, shipping charges with respect to such parts, any applicable sales or other taxes, or any other charges or expenses not specified in this Warranty. GSI shall not be liable for any other direct, indirect, incidental or consequential damages, including, without limitation, loss of anticipated profits or benefits. Expenses incurred by or on behalf of a claimant without prior written authorization from the GSI warranty department shall not be reimbursed. 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. Prior to installation, the end-user bears all responsibility to comply with federal, state and local codes which apply to the location and installation of the products.

This Limited Warranty extends solely to products sold by GSI and does not cover any parts, components or materials used in conjunction with the product, that are not sold by GSI. GSI assumes no responsibility for claims resulting from construction defects, unauthorized modifications, corrosion or other cosmetic issues caused by storage, application or environmental conditions. Modifications to products not specifically delineated in the manual accompanying the product at initial sale will void all warranties. 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.

Notice Procedure:

In order to make a valid warranty claim a written notice of the claim must be submitted, using the RMA form, within 60 days of discovery of a warrantable nonconformance. The RMA form is found on the OneGSI portal.

Service Parts:

GSI warrants, subject to all other conditions described in this Warranty, Service Parts which it manufactures for a period of 12 months from the date of purchase unless specified in Enhancements above.

(Limited Warranty - EME Grain Products_ revised 01 October 2020)

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.



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