# 6', 7' and 9' Bulk Feed Tanks
# BFT and GHT Series

Assembly Manual

PNEG-256

Date: 09-24-09

GSI GROUP

PNEG-256

**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.**

# Contents

## 1. Introduction

READ THIS MANUAL carefully to learn how to properly use and install equipment. Failure to do so could result in personal injury or equipment damage.

INSPECT the shipment immediately upon arrival. The customer is responsible for ensuring that all quantities are correct. The customer should report and note any damage or shortage on the bill of lading to justify their claim to the transport company.

THIS MANUAL SHOULD BE CONSIDERED a permanent part of your equipment and should be easily accessible when needed.

This warranty provides you the assurance that the company will back its products when defects appear within the warranty period. In some circumstances, the company also provides field improvements, often without charge to the customer, even if the product is out of warranty. Should the equipment be abused, or modified to change its performance beyond the factory specifications, the warranty will become void and field improvements may be denied.

## 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 an imminently hazardous situation which, if not avoided, will result in death or serious injury.

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

**CAUTION** indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

**CAUTION** used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.

**NOTE** indicates information about the equipment that you should pay special attention.

# General Safety Statement

Our foremost concern is your safety and the safety of others associated with grain handling equipment. This manual is to help you understand safe operating procedures and some problems which may be encountered by the operator and other personnel.

As owner and/or operator, you are responsible to know what requirements, hazards and precautions exist and inform all personnel associated with the equipment or in the area. Safety precautions may be required from the personnel. Avoid any alterations to the equipment, which may produce a very dangerous situation, where SERIOUS INJURY or DEATH may occur.

You should consider the location of the bin site relative to power line locations or electrical transmission equipment. Contact your local power company to review your installation plan or for information concerning required equipment clearance. Clearance of portable equipment that may be taken to the bin site should also be reviewed and considered. Any electrical control equipment in contact with the bin should be properly grounded and installed in accordance with National Electric Code provisions and other local or national codes.

This product is intended for the use of grain storage only. Any other use is a misuse of the product.

This product has sharp edges, which may cause serious injury. To avoid injury, handle sharp edges with caution and always use proper protective clothing and equipment.

Sidewall bundles or sheets must be stored in a safe manner. The safest method of storing sidewall bundles is laying horizontally with the arch of the sheet upward, like a dome. Sidewall sheets stored on edge must be secured so that they cannot fall over and cause injury. Use care when handling and moving sidewall bundles.

Personnel operating or working around equipment should read this manual. This manual must be delivered with equipment to its owner. Failure to read this manual and its safety instructions is a misuse of the equipment.

# Safety Instructions

Our foremost concern is your safety and the safety of others associated with this equipment. We want to keep you as a customer. This manual is to help you understand safe operating procedures and some problems which may be encountered by the operator and other personnel.

As owner and/or operator, it is your responsibility to know what requirements, hazards and precautions exist, and to inform all personnel associated with the equipment or in the area. Safety precautions may be required from the personnel. Avoid any alterations to the equipment. Such alterations may produce a very dangerous situation where SERIOUS INJURY or DEATH may occur.

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.

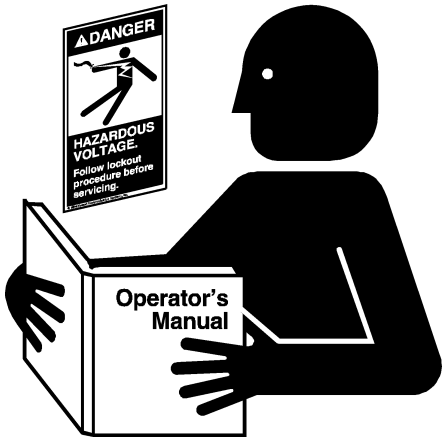
## Follow Safety Instructions

Carefully read all safety messages in this manual and safety signs on your machine. Keep signs in good condition. Replace missing or damaged safety signs. Be sure new equipment components and repair parts include the current safety signs. Replacement safety signs are available from the manufacturer.

Learn how to operate the machine and how to use controls properly. Do not let anyone operate without instruction.

Keep your machinery in proper working condition. Unauthorized modifications to the machine may impair the function and/or safety and affect machine life.

If you do not understand any part of this manual or need assistance, contact your dealer.




**Read and Understand Manual**

## Practice Safe Maintenance

Understand service procedures before doing work. Keep area clean and dry.

Never lubricate, service, or adjust machine while it is in operation. Keep hands, feet and clothing away from rotating parts.

Keep all parts in good condition and properly installed. Fix damage immediately. Replace worn or broken parts. Remove any built up grease oil and debris.

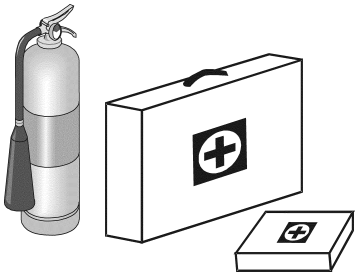
**Maintain Equipment and Work Area**

## Prepare for Emergencies

Be prepared if fire starts.

Keep a first aid kit and fire extinguisher handy.

Keep emergency numbers for doctors, ambulance service, hospital and fire department near your telephone.



**Keep Emergency Equipment Quickly Accessible**

## Wear Protective Clothing

Wear close fitting clothing and safety equipment appropriate to the job.

Remove all jewelry.

Long hair should be tied up and back.

Safety glasses should be worn at all times to protect eyes from debris.

Wear gloves to protect your hands from sharp edges on plastic or steel parts.

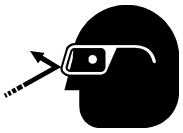
Wear steel toe boots to help protect your feet from falling debris. Tuck in any loose or dangling shoe strings.

A respirator may be needed to prevent breathing potentially toxic fumes and dust.

Wear hard hat to help protect your head.

Wear appropriate fall protection equipment when working at elevations greater than six feet (6').

**Eye Protection**



**Gloves**

**Steel Toe Boots**

**Respirator**

**Hard Hat**

**Fall Protection**

# Proper Storage Grain Bin/Silo Materials Prior to Construction

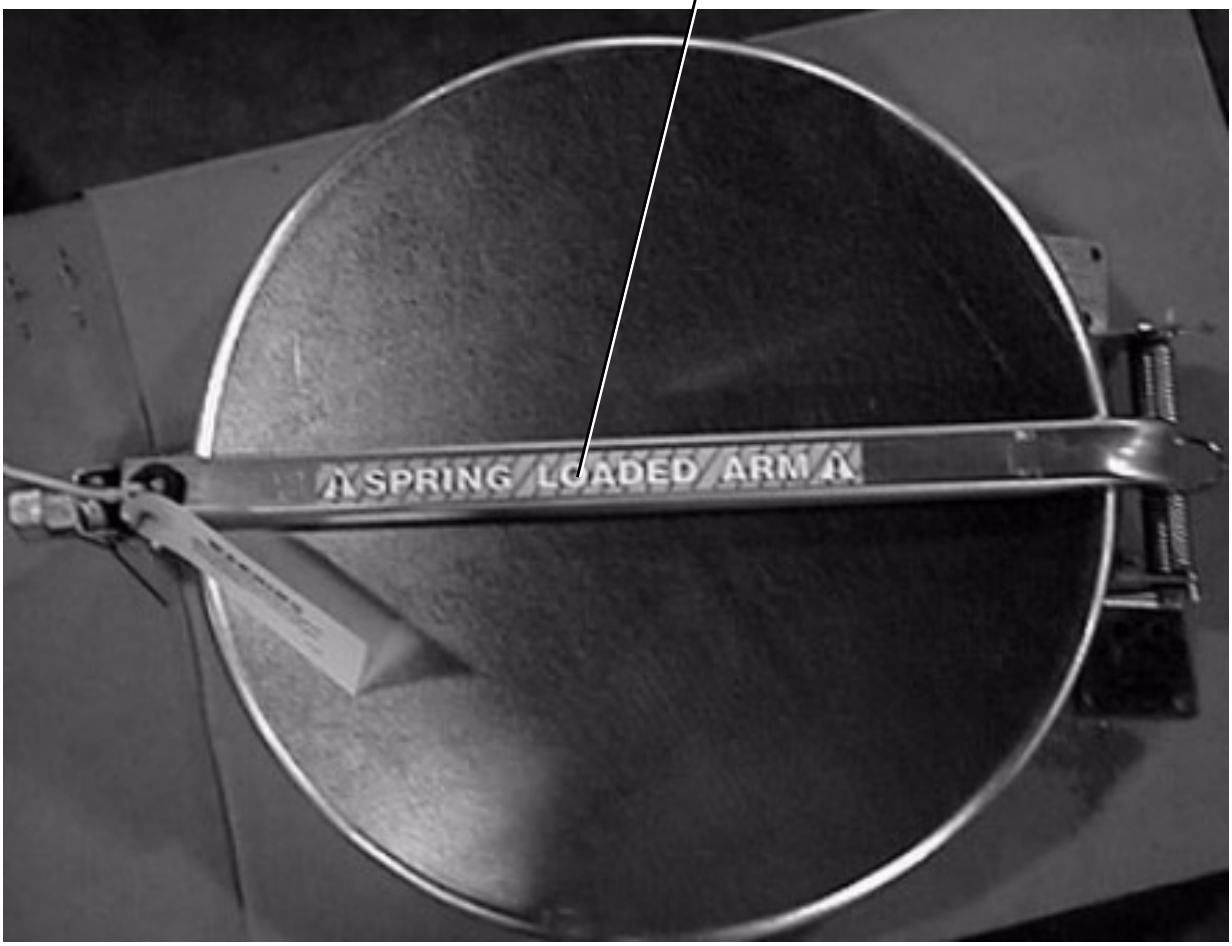
Wet storage stain (rust) will develop when closely packed bundles of galvanized material, such as sidewall and roof sheets, have moisture present. Inspect roof and sidewall bundles on arrival for any moisture. If moisture is present, it must not be allowed to remain between the sheets. Separate the sheets or panels immediately and wipe them down. Spray with a light oil or diesel fuel.

If possible, sidewall bundles, roof sheets and other closely packed galvanized materials should be stored in a dry, climate controlled building. If outdoor storage is unavoidable, the materials should be stored so that they are raised above the ground and vegetation. Any tacking and spacing materials should not be corrosive or wet. Be sure to protect materials from the weather, but permit air movement around the bundles if possible.

Storing roof bundles and sidewall sheets at a slight incline can also help minimize the presence of moisture. Storing the bundles with the center of the dome up (like an arch) is one option for minimizing moisture during storage. Sidewall bundles can also be stored on edge but must be secured so that they do not fall over and cause injury.

If “white rust” or “wet storage stain” occurs, contact the manufacturer immediately about ways to minimize the adverse effect upon the galvanized coating.


DC-604

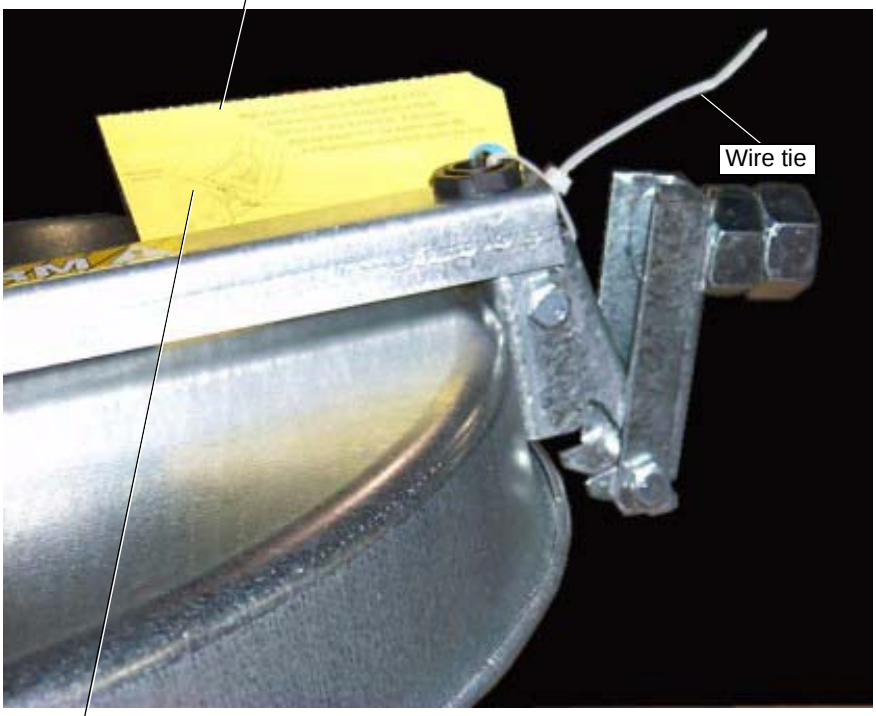


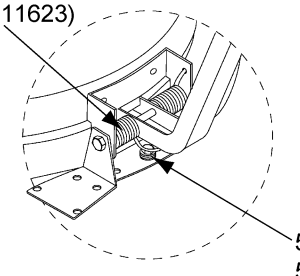

**DC-604 Located on the cap latch control arm.**

# WARNING

**MECHANISM UNDER SPRING PRESSURE.**
HOLD CONTROL ARM AGAINST CAP WHILE REMOVING WIRE TIE FROM ARM.
**DO NOT UNITE** UNTIL INSTALLED ON THE PEAK RING.

DC-590




Make sure loop of main cap spring (BLK-11623) is held securely in the preloaded position by the 5/16" x 1-1/4" stop bolt beneath. If necessary, place one or more 5/16" flat washers under the bolt head to ensure that the bolt catches the loop.

**DC-GBC-1A Located on inside the peak cap.**



For Replacement Decals, Contact:

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

# Bulk Feed Tank Assembly Manual General Instructions

This product is intended for the use of storing feed only. Any other use is a misuse of the product.

While every effort has been made to prevent sharp edges, always wear the proper protective clothing while erecting the bulk feed tank.

GSI recommends contacting the local power company to have a representative review your installation to ensure that your wiring will be compatible with their system and to ensure that adequate power will be supplied to your unit.

A bulk feed tank weight a minimum of 444 lbs. (201 kg). Always take all necessary precautions when raising the tank to its feet. Follow all instructions in the manual.

The safety pages show the location of the safety decals. The photographs depict exactly where the decals should be. If a decal has been damaged or is missing, contact our company for a free replacement.

Always read the assembly manual completely prior to starting to assemble the bulk feed tank. Compare the actual shipment with the packing list to be sure there are no shortages of parts.

1. Remove the protective mask from decals before assembling the tank. The protective mask may become difficult to remove after exposure to sunlight.

2. Stagger all vertical seams on all sidewall rings.

3. When legs extend up two (2) rings, always align the leg holes with the bottom two (2) rings.

4. All hopper seams and the hopper collar use truss head bolts. The heads of the bolts must be on the **inside** of the tank.

5. Tighten ALL bolts from the nut side ONLY. **Do not allow bolt heads to spin.**

6. Hex head bin bolts are used on all sidewall and roof seams with the bolt heads on the **outside** of the bin.

7. Hex head bolts are used on all leg to sidewall connections with the bolt heads on the inside of the tank.

8. 7' Diameter sidewall sheets **must** be bolted together so that there is 65-5/8" between leg holes. *Refer Page 72*.

9. Use a drift punch to align holes.

10. Overlap ALL vertical sidewall sheet seams in the same direction.

11. Hole spacing of 3-1/8" is used at the top of all top sidewall sheets and at the bottom of all bottom sidewall sheets.

## Selecting the Proper Site

The selected site should be level, firm and free from underlying debris. The tank can be installed satisfactorily on slopes, but as the slope increases, additional labor and materials are required for the foundation. The concrete foundation surfaces must be level. If fill is required, it should be watered and tamped thoroughly to prevent uneven settling from the weight of the tank. Good water drainage must be provided to prevent water collecting under or around the tank. The site must allow convenient access for easy loading and unloading, as well as provide additional space for future units. Be sure to consider the positioning of material handling equipment, the availability of electricity, and any other factors that may impact site selection etc.

## Tools

Tools recommended for assembly of bulk feed tanks include:

1. Assorted sizes of combination wrenches
2. Hammer
3. Three (3) 12" long drift punches
4. One (1) large flathead screwdriver
5. One (1) pair of slip joint pliers
6. Two (2) adjustable wrenches
7. Ratchet and sockets
8. Impact wrenches and sockets (if available)

# NOTES

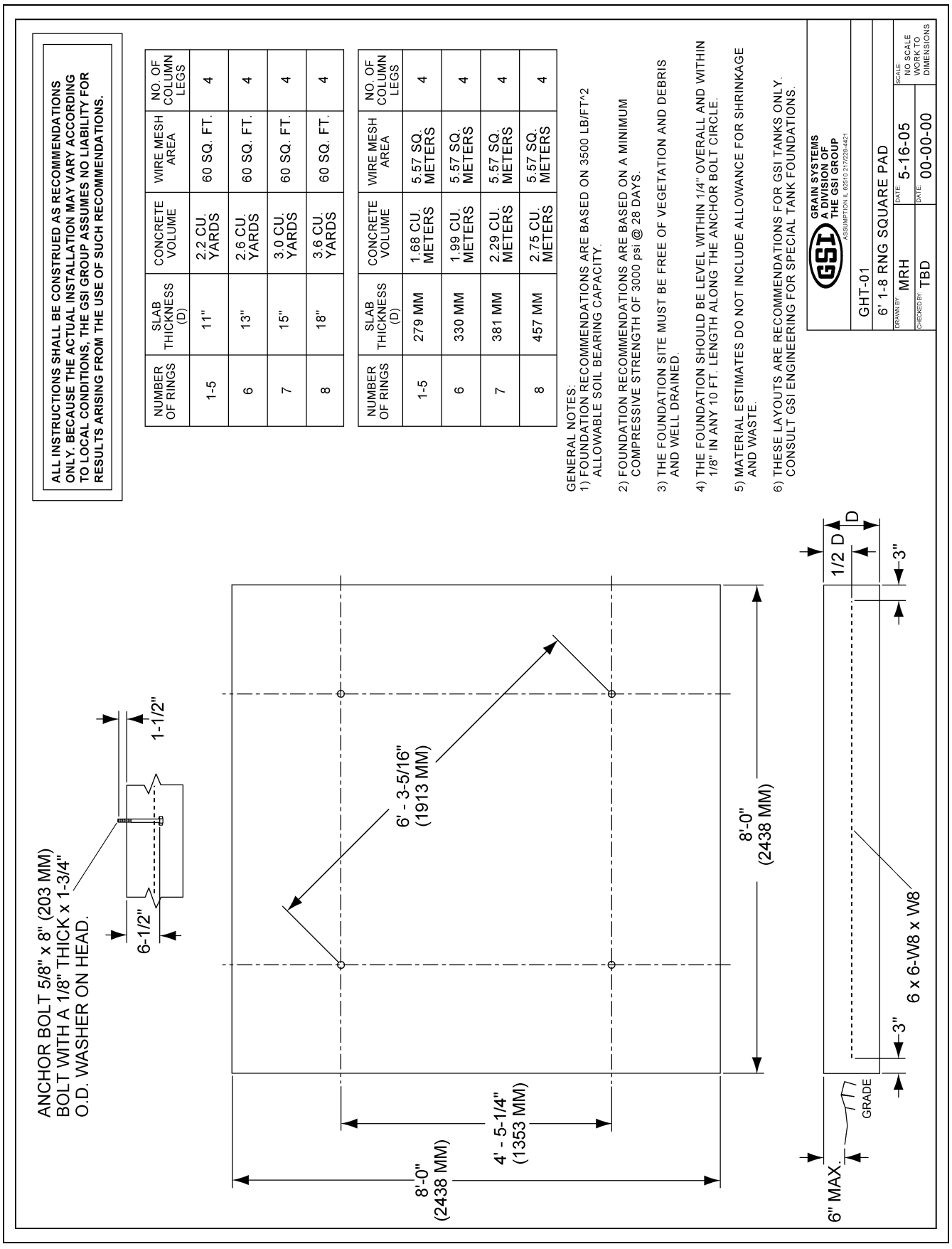
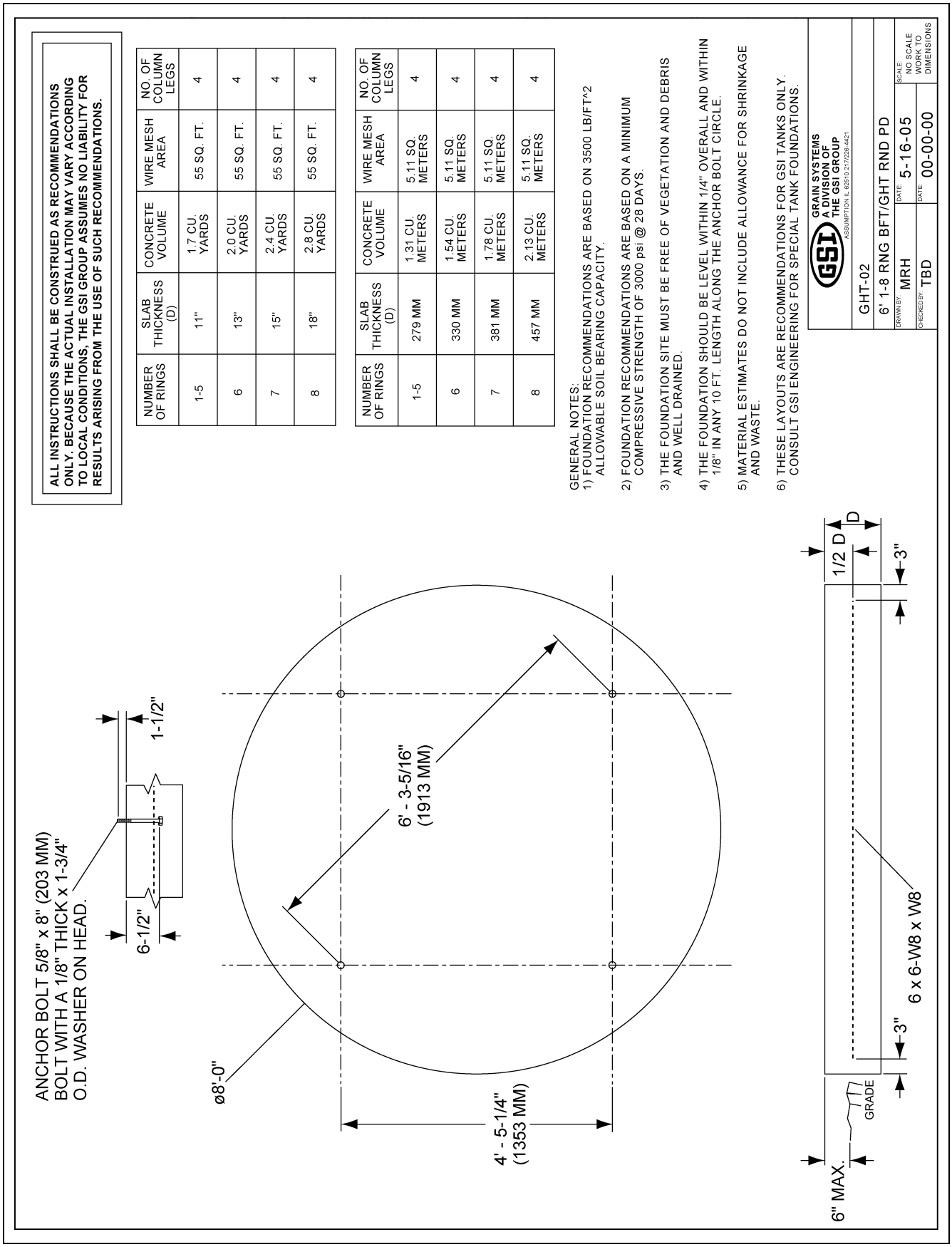

ALL INSTRUCTIONS SHALL BE CONSTRUED AS RECOMMENDATIONS ONLY. BECAUSE THE ACTUAL INSTALLATION MAY VARY ACCORDING TO LOCAL CONDITIONS, THE GSI GROUP ASSUMES NO LIABILITY FOR RESULTS ARISING FROM THE USE OF SUCH RECOMMENDATIONS.
NUMBER OF RINGS | SLAB THICKNESS (D) | CONCRETE VOLUME | WIRE MESH AREA | NO. OF COLUMN LEGS
1-5 | 11" | 2.2 CU. YARDS | 60 SQ. FT. | 4
6 | 13" | 2.6 CU. YARDS | 60 SQ. FT. | 4
7 | 15" | 3.0 CU. YARDS | 60 SQ. FT. | 4
8 | 18" | 3.6 CU. YARDS | 60 SQ. FT. | 4
NUMBER OF RINGS | SLAB THICKNESS (D) | CONCRETE VOLUME | WIRE MESH AREA | NO. OF COLUMN LEGS
1-5 | 279 MM | 1.68 CU. METERS | 5.57 SQ. METERS | 4
6 | 330 MM | 1.99 CU. METERS | 5.57 SQ. METERS | 4
7 | 381 MM | 2.29 CU. METERS | 5.57 SQ. METERS | 4
8 | 457 MM | 2.75 CU. METERS | 5.57 SQ. METERS | 4
GENERAL NOTES:
1) FOUNDATION RECOMMENDATIONS ARE BASED ON 3500 LB/FT^2 ALLOWABLE SOIL BEARING CAPACITY.
2) FOUNDATION RECOMMENDATIONS ARE BASED ON A MINIMUM COMPRESSIVE STRENGTH OF 3000 psi @ 28 DAYS.
3) THE FOUNDATION SITE MUST BE FREE OF VEGETATION AND DEBRIS AND WELL DRAINED.
4) THE FOUNDATION SHOULD BE LEVEL WITHIN 1/4" OVERALL AND WITHIN 1/8" IN ANY 10 FT. LENGTH ALONG THE ANCHOR BOLT CIRCLE.
5) MATERIAL ESTIMATES DO NOT INCLUDE ALLOWANCE FOR SHRINKAGE AND WASTE.
6) THESE LAYOUTS ARE RECOMMENDATIONS FOR GSI TANKS ONLY. CONSULT GSI ENGINEERING FOR SPECIAL TANK FOUNDATIONS.
GSI GRAIN SYSTEMS A DIVISION OF THE GSI GROUP
ASSUMPTION ID: 62510.2117226.4421
GHT-01
6' 1-8 RNG SQUARE PAD
DRAWN BY: MRH DATE: 5-16-05
CHECKED BY: TBD DATE: 00-00-00
SCALE: NO SCALE WORK TO DIMENSIONS
ANCHOR BOLT 5/8" x 8" (203 MM) BOLT WITH A 1/8" THICK x 1-3/4" O.D. WASHER ON HEAD.
1-1/2"
6-1/2"
6' - 3-5/16" (1913 MM)
8'-0" (2438 MM)
4' - 5-1/4" (1353 MM)
8'-0" (2438 MM)
1/2 D
D
3"
3"
6 x 6-W8 x W8
6" MAX.
GRADE

**Figure 5A**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NUMBER OF RINGS | SLAB THICKNESS (D) | CONCRETE VOLUME | WIRE MESH AREA | NO. OF COLUMN LEGS
1-5 | 11" | 1.7 CU. YARDS | 55 SQ. FT. | 4
6 | 13" | 2.0 CU. YARDS | 55 SQ. FT. | 4
7 | 15" | 2.4 CU. YARDS | 55 SQ. FT. | 4
8 | 18" | 2.8 CU. YARDS | 55 SQ. FT. | 4
NUMBER OF RINGS | SLAB THICKNESS (D) | CONCRETE VOLUME | WIRE MESH AREA | NO. OF COLUMN LEGS
1-5 | 279 MM | 1.31 CU. METERS | 5.11 SQ. METERS | 4
6 | 330 MM | 1.54 CU. METERS | 5.11 SQ. METERS | 4
7 | 381 MM | 1.78 CU. METERS | 5.11 SQ. METERS | 4
8 | 457 MM | 2.13 CU. METERS | 5.11 SQ. METERS | 4
GENERAL NOTES:
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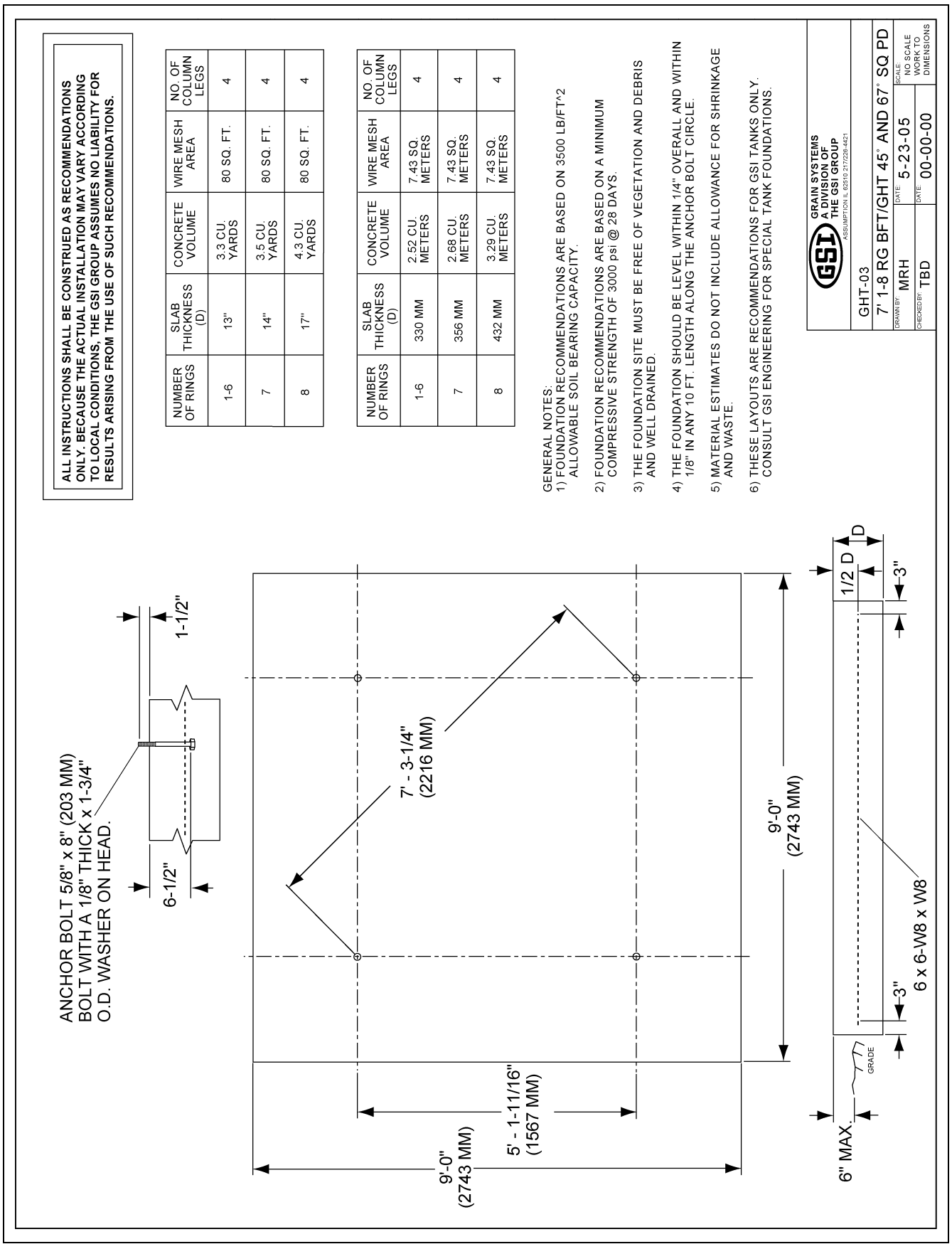
2) FOUNDATION RECOMMENDATIONS ARE BASED ON A MINIMUM COMPRESSIVE STRENGTH OF 3000 psi @ 28 DAYS.
3) THE FOUNDATION SITE MUST BE FREE OF VEGETATION AND DEBRIS AND WELL DRAINED.
4) THE FOUNDATION SHOULD BE LEVEL WITHIN 1/4" OVERALL AND WITHIN 1/8" IN ANY 10 FT. LENGTH ALONG THE ANCHOR BOLT CIRCLE.
5) MATERIAL ESTIMATES DO NOT INCLUDE ALLOWANCE FOR SHRINKAGE AND WASTE.
6) THESE LAYOUTS ARE RECOMMENDATIONS FOR GSI TANKS ONLY. CONSULT GSI ENGINEERING FOR SPECIAL TANK FOUNDATIONS.
GRAIN SYSTEMS A DIVISION OF THE GSI GROUP
ASSUMPTION IL 62510 217/226-4421
GHT-02
6' 1-8 RNG BFT/GHT RND PD
DRAWN BY: MRH
DATE: 5-16-05
SCALE: NO SCALE WORK TO DIMENSIONS
CHECKED BY: TBD
DATE: 00-00-00
ANCHOR BOLT 5/8" x 8" (203 MM) BOLT WITH A 1/8" THICK x 1-3/4" O.D. WASHER ON HEAD.
1-1/2"
6-1/2"
ø8'-0"
6' - 3-5/16" (1913 MM)
4' - 5-1/4" (1353 MM)
1/2 D
D
3"
3"
6 x 6-W8 x W8
6" MAX.
GRADE

**Figure 5B**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NUMBER OF RINGS | SLAB THICKNESS (D) | CONCRETE VOLUME | WIRE MESH AREA | NO. OF COLUMN LEGS
1-6 | 13" | 3.3 CU. YARDS | 80 SQ. FT. | 4
7 | 14" | 3.5 CU. YARDS | 80 SQ. FT. | 4
8 | 17" | 4.3 CU. YARDS | 80 SQ. FT. | 4
NUMBER OF RINGS | SLAB THICKNESS (D) | CONCRETE VOLUME | WIRE MESH AREA | NO. OF COLUMN LEGS
1-6 | 330 MM | 2.52 CU. METERS | 7.43 SQ. METERS | 4
7 | 356 MM | 2.68 CU. METERS | 7.43 SQ. METERS | 4
8 | 432 MM | 3.29 CU. METERS | 7.43 SQ. METERS | 4
GENERAL NOTES:
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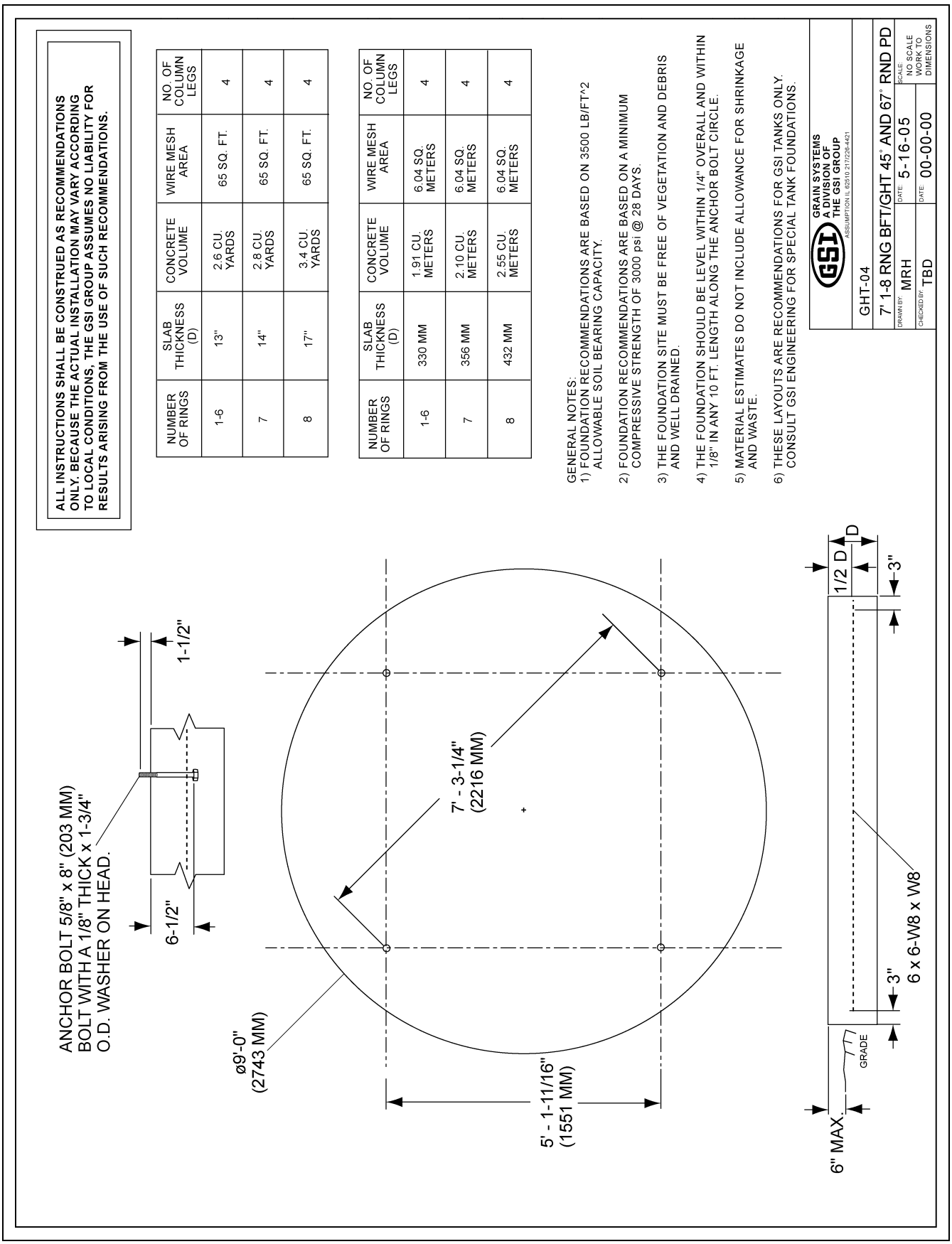
4) THE FOUNDATION SHOULD BE LEVEL WITHIN 1/4" OVERALL AND WITHIN 1/8" IN ANY 10 FT. LENGTH ALONG THE ANCHOR BOLT CIRCLE.
5) MATERIAL ESTIMATES DO NOT INCLUDE ALLOWANCE FOR SHRINKAGE AND WASTE.
6) THESE LAYOUTS ARE RECOMMENDATIONS FOR GSI TANKS ONLY. CONSULT GSI ENGINEERING FOR SPECIAL TANK FOUNDATIONS.
GSI GRAIN SYSTEMS A DIVISION OF THE GSI GROUP
ASSUMPTION IL 62510 2177226-4421
GHT-03
7' 1-8 RG BFT/GHT 45° AND 67° SQ PD
DRAWN BY: MRH DATE: 5-23-05 SCALE: NO SCALE
CHECKED BY: TBD DATE: 00-00-00 WORK TO DIMENSIONS
ANCHOR BOLT 5/8" x 8" (203 MM) BOLT WITH A 1/8" THICK x 1-3/4" O.D. WASHER ON HEAD.
1-1/2"
6-1/2"
7' - 3-1/4" (2216 MM)
9'-0" (2743 MM)
5' - 1-11/16" (1567 MM)
9'-0" (2743 MM)
1/2 D
D
3"
3"
6 x 6-W8 x W8
6" MAX.
GRADE

**Figure 5C**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NUMBER OF RINGS | SLAB THICKNESS (D) | CONCRETE VOLUME | WIRE MESH AREA | NO. OF COLUMN LEGS
1-6 | 13" | 2.6 CU. YARDS | 65 SQ. FT. | 4
7 | 14" | 2.8 CU. YARDS | 65 SQ. FT. | 4
8 | 17" | 3.4 CU. YARDS | 65 SQ. FT. | 4
NUMBER OF RINGS | SLAB THICKNESS (D) | CONCRETE VOLUME | WIRE MESH AREA | NO. OF COLUMN LEGS
1-6 | 330 MM | 1.91 CU. METERS | 6.04 SQ. METERS | 4
7 | 356 MM | 2.10 CU. METERS | 6.04 SQ. METERS | 4
8 | 432 MM | 2.55 CU. METERS | 6.04 SQ. METERS | 4
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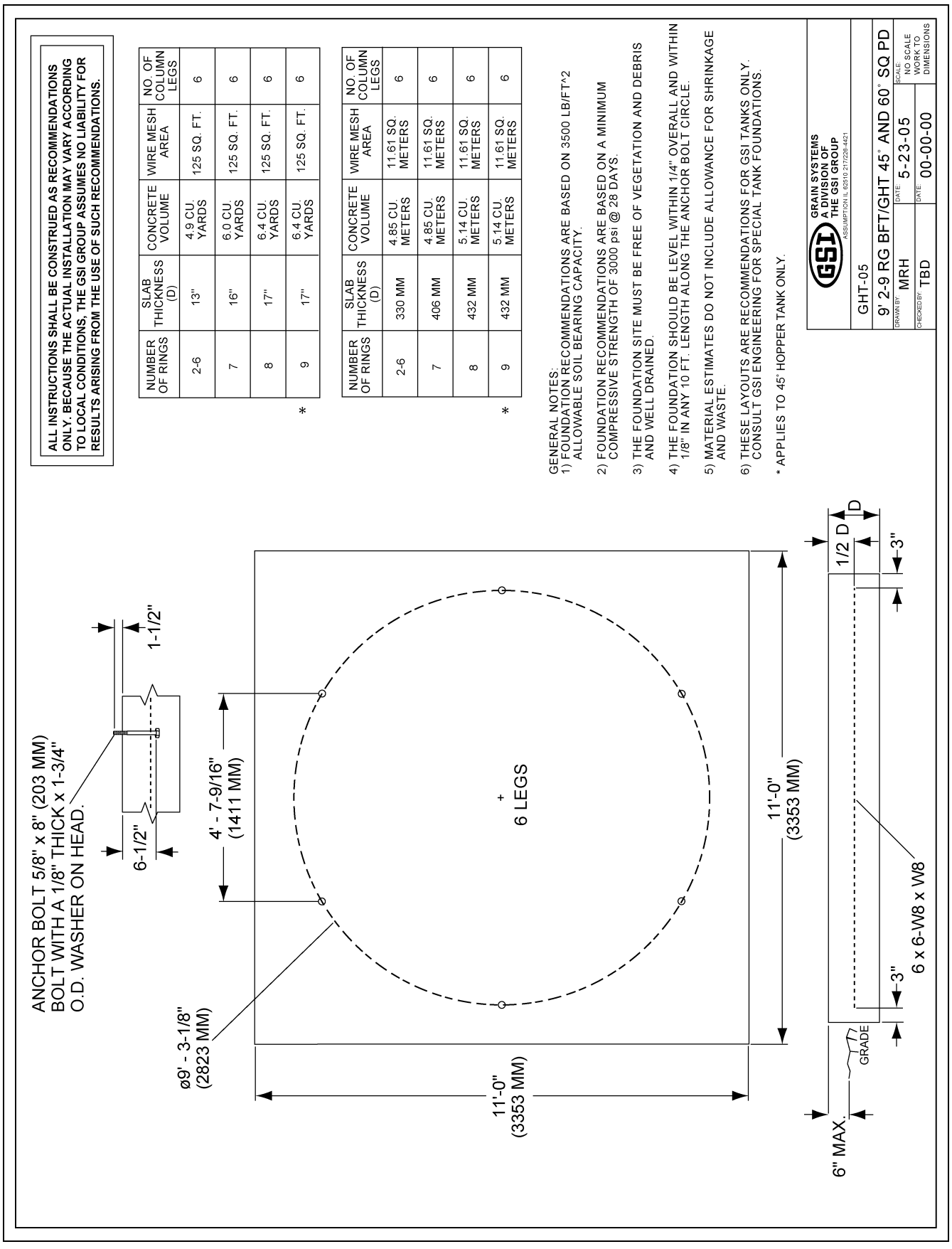
GRAIN SYSTEMS A DIVISION OF THE GSI GROUP
ASSUMPTION IL 62510 217/226-4421
GHT-04
7' 1-8 RNG BFT/GHT 45° AND 67° RND PD
DRAWN BY: MRH
DATE: 5-16-05
SCALE: NO SCALE WORK TO DIMENSIONS
CHECKED BY: TBD
DATE: 00-00-00
ANCHOR BOLT 5/8" x 8" (203 MM) BOLT WITH A 1/8" THICK x 1-3/4" O.D. WASHER ON HEAD.
1-1/2"
6-1/2"
ø9'-0" (2743 MM)
7' - 3-1/4" (2216 MM)
5' - 1-11/16" (1551 MM)
1/2 D
D
3"
3"
6" MAX.
GRADE
6 x 6-W8 x W8

**Figure 5D**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NUMBER OF RINGS | SLAB THICKNESS (D) | CONCRETE VOLUME | WIRE MESH AREA | NO. OF COLUMN LEGS
2-6 | 13" | 4.9 CU. YARDS | 125 SQ. FT. | 6
7 | 16" | 6.0 CU. YARDS | 125 SQ. FT. | 6
8 | 17" | 6.4 CU. YARDS | 125 SQ. FT. | 6
* 9 | 17" | 6.4 CU. YARDS | 125 SQ. FT. | 6
NUMBER OF RINGS | SLAB THICKNESS (D) | CONCRETE VOLUME | WIRE MESH AREA | NO. OF COLUMN LEGS
2-6 | 330 MM | 4.85 CU. METERS | 11.61 SQ. METERS | 6
7 | 406 MM | 4.85 CU. METERS | 11.61 SQ. METERS | 6
8 | 432 MM | 5.14 CU. METERS | 11.61 SQ. METERS | 6
* 9 | 432 MM | 5.14 CU. METERS | 11.61 SQ. METERS | 6
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6) THESE LAYOUTS ARE RECOMMENDATIONS FOR GSI TANKS ONLY. CONSULT GSI ENGINEERING FOR SPECIAL TANK FOUNDATIONS.
* APPLIES TO 45° HOPPER TANK ONLY.
GRAIN SYSTEMS A DIVISION OF THE GSI GROUP
ASSUMPTION IL 62510 217/226-4421
GHT-05
9' 2-9 RG BFT/GHT 45° AND 60° SQ PD
DRAWN BY: MRH
DATE: 5-23-05
SCALE: NO SCALE
CHECKED BY: TBD
DATE: 00-00-00
WORK TO DIMENSIONS
ANCHOR BOLT 5/8" x 8" (203 MM)
BOLT WITH A 1/8" THICK x 1-3/4"
O.D. WASHER ON HEAD.
1-1/2"
6-1/2"
4' - 7-9/16"
(1411 MM)
ø9' - 3-1/8"
(2823 MM)
+
6 LEGS
11'-0"
(3353 MM)
11'-0"
(3353 MM)
1/2 D
D
3"
3"
6 x 6-W8 x W8
6" MAX.
GRADE

**Figure 5E**

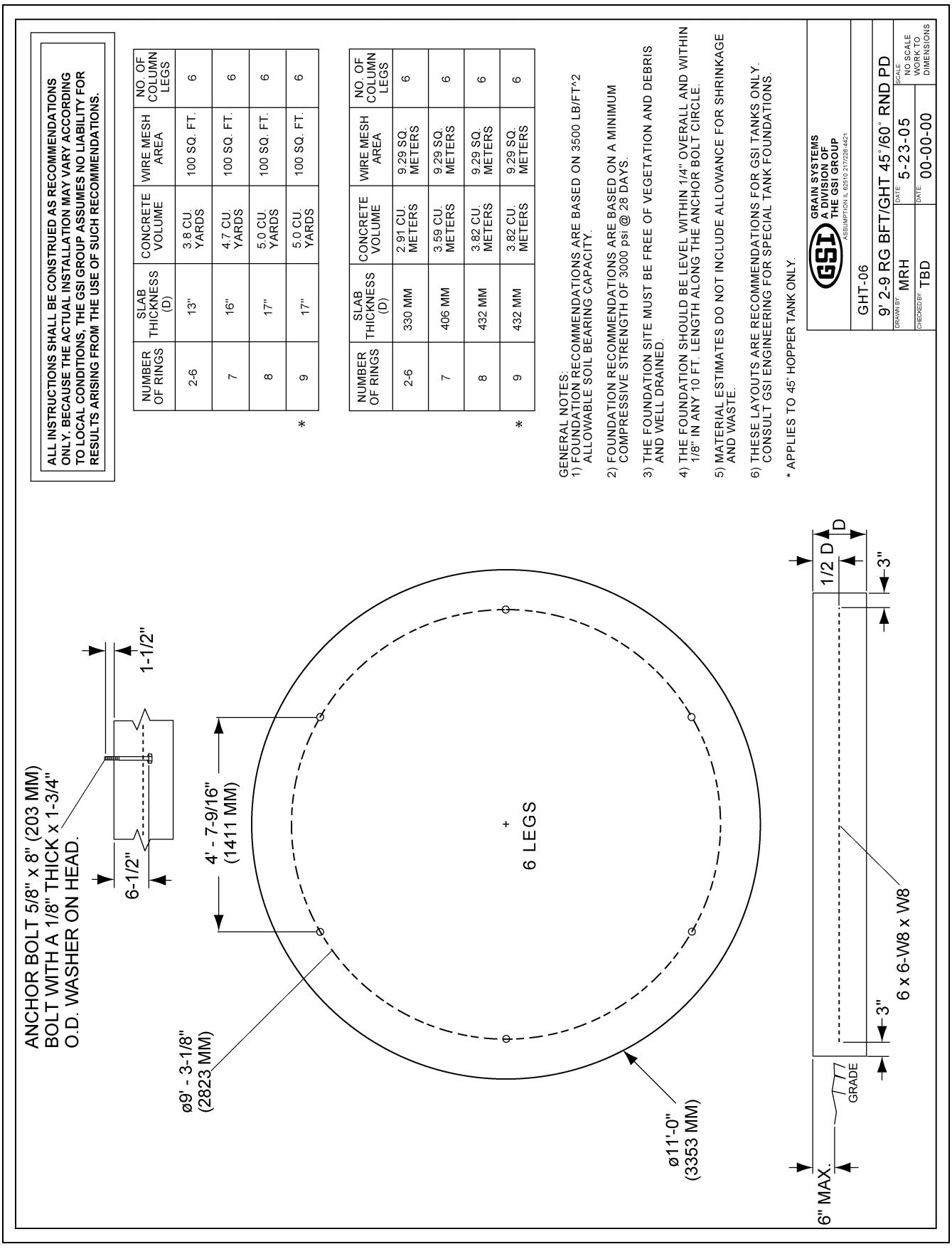

ALL INSTRUCTIONS SHALL BE CONSTRUED AS RECOMMENDATIONS ONLY. BECAUSE THE ACTUAL INSTALLATION MAY VARY ACCORDING TO LOCAL CONDITIONS, THE GSI GROUP ASSUMES NO LIABILITY FOR RESULTS ARISING FROM THE USE OF SUCH RECOMMENDATIONS.
NUMBER OF RINGS | SLAB THICKNESS (D) | CONCRETE VOLUME | WIRE MESH AREA | NO. OF COLUMN LEGS
2-6 | 13" | 3.8 CU. YARDS | 100 SQ. FT. | 6
7 | 16" | 4.7 CU. YARDS | 100 SQ. FT. | 6
8 | 17" | 5.0 CU. YARDS | 100 SQ. FT. | 6
9 | 17" | 5.0 CU. YARDS | 100 SQ. FT. | 6
*
NUMBER OF RINGS | SLAB THICKNESS (D) | CONCRETE VOLUME | WIRE MESH AREA | NO. OF COLUMN LEGS
2-6 | 330 MM | 2.91 CU. METERS | 9.29 SQ. METERS | 6
7 | 406 MM | 3.59 CU. METERS | 9.29 SQ. METERS | 6
8 | 432 MM | 3.82 CU. METERS | 9.29 SQ. METERS | 6
9 | 432 MM | 3.82 CU. METERS | 9.29 SQ. METERS | 6
*
GENERAL NOTES:
1) FOUNDATION RECOMMENDATIONS ARE BASED ON 3500 LB/FT^2 ALLOWABLE SOIL BEARING CAPACITY.
2) FOUNDATION RECOMMENDATIONS ARE BASED ON A MINIMUM COMPRESSIVE STRENGTH OF 3000 psi @ 28 DAYS.
3) THE FOUNDATION SITE MUST BE FREE OF VEGETATION AND DEBRIS AND WELL DRAINED.
4) THE FOUNDATION SHOULD BE LEVEL WITHIN 1/4" OVERALL AND WITHIN 1/8" IN ANY 10 FT. LENGTH ALONG THE ANCHOR BOLT CIRCLE.
5) MATERIAL ESTIMATES DO NOT INCLUDE ALLOWANCE FOR SHRINKAGE AND WASTE.
6) THESE LAYOUTS ARE RECOMMENDATIONS FOR GSI TANKS ONLY. CONSULT GSI ENGINEERING FOR SPECIAL TANK FOUNDATIONS.
* APPLIES TO 45° HOPPER TANK ONLY.
GRAIN SYSTEMS A DIVISION OF THE GSI GROUP
ASSUMPTION IL 62510 217/226-4421
GHT-06
9' 2-9 RG BFT/GHT 45°/60° RND PD
DRAWN BY: MRH DATE: 5-23-05 SCALE: NO SCALE
CHECKED BY: TBD DATE: 00-00-00 WORK TO DIMENSIONS
ANCHOR BOLT 5/8" x 8" (203 MM) BOLT WITH A 1/8" THICK x 1-3/4" O.D. WASHER ON HEAD.
1-1/2"
6-1/2"
4' - 7-9/16" (1411 MM)
ø9' - 3-1/8" (2823 MM)
6 LEGS
ø11'-0" (3353 MM)
1/2 D
D
3"
3"
6 x 6-W8 x W8
6" MAX.
GRADE

**Figure 5F**

# Tank Side Walls

**Sidewall Sheet Gauge Chart**

| Model | Gauge |
|---|---|
| BFT 6'-1 Ring | 20 |
| BFT 6'-2 Ring | 20-20 |
| BFT 6'-3 Ring | 18-20-20 |
| BFT 6'-4 Ring | 18-20-20-20 |
| BFT 7'-1 Ring | 20 |
| BFT 7'-2 Ring | 18-20 |
| BFT 7'-3 Ring | 18-20-20 |
| BFT 7'-4 Ring | 18-18-20-20 |
| BFT 7'-5 Ring | 17-17-18-20-20 |
| BFT 7'-6 Ring | 15-15-17-18-20-20 |
| BFT 9'-1 Ring | 20 |
| BFT 9'-2 Ring | 20-20 |
| BFT 9'-3 Ring | 20-20-20 |
| BFT 9'-4 Ring | 18-18-20-20 |
| BFT 9'-5 Ring | 17-17-18-20-20 |
| BFT 9'-6 Ring | 15-15-17-18-20-20 |

## How to Use the Chart on this Page

The chart labeled *Sidewall Sheet Gauge Chart* is for the reference when building the tank. This chart indicates what gauges the rings of the specific tank must have. To read the chart, locate the size of tank being built, (a 7' diameter tank with 4 rings is referred to as BFT 7'-4 ring). The side labeled “gauge” indicates which sidewall sheets to use. The sheets are color coded. Simply match the gauge number with the color. *(See Chart Below.)*

**NOTE:** *Sidewall sheets are color coded on edges for gauge identification.*

**Sheet Gauge Color Code Chart**

| Code # | Color |
|---|---|
| 20 | Red |
| 18 | Orange |
| 17 | Pink/Light Blue |
| 16 | Blue |
| 15 | Brown/Red |
| 14 | Green |
| 13 | Yellow/Blue |
| 12 | Black |
| 11 | Pink |
| 10 | Light Blue |

## Caulking

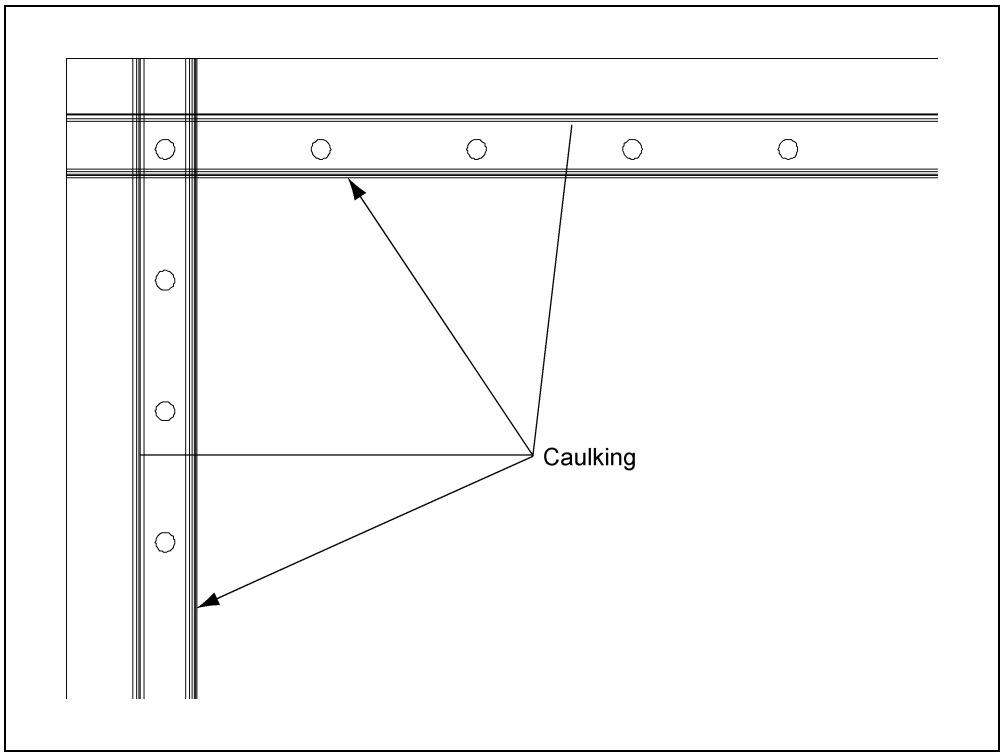



**Figure 6A** *Caulking Detail*

**NOTE:** *Apply rope caulking to each sheet prior to assembling. Wipe sheet clean where the caulk is to be applied. Apply caulking on each side of the holes on the vertical seams and also on each side of the horizontal row of holes as shown in Figure 6B below.*


**Figure 6B**

# Sidewall Sheet Orientation

**IMPORTANT:** *Please note the sheet orientation when assembling the bin sidewall. The upper right corner will have a slot or identifying sticker. This corner should be on the inside of the tank when assembled.*

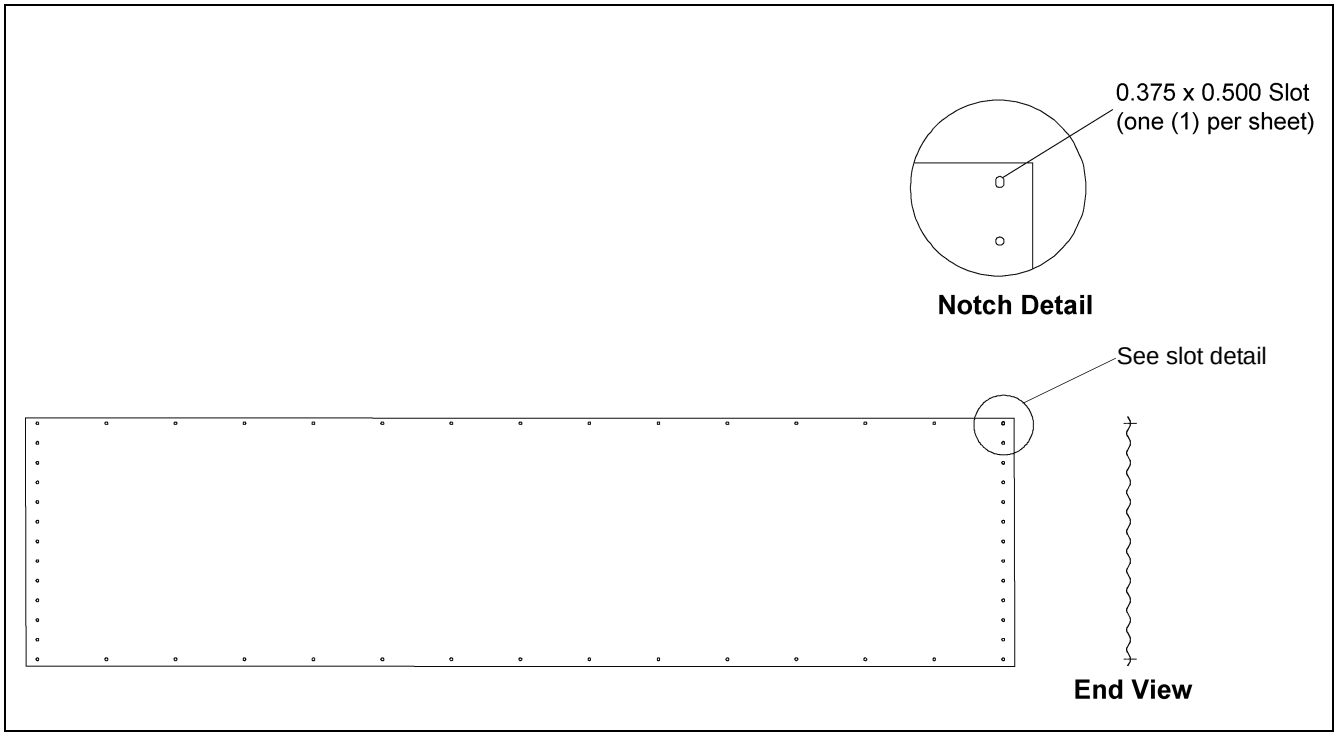



**Figure 6C** *Viewed from Inside*

Sheet orientation will effect how the sheets lap together.

## Sidewall Assembly

Begin by assembling the top ring of the bulk feed tank. The top row of bolt holes has 3-1/8" spacing in the top ring. Before bolting the sidewall sheets together, make sure that the proper gauge steel is selected for the top ring. The higher gauge number denotes thinner material. (Example, 20 gauge material is thinner than 14 gauge.) When assembling any bulk feed tanks, the thinnest material always goes on top. The heaviest corrugated sidewall sheet will be located on the bottom of the tank. Check the various gauges of the tank with the *Sheet Gauge Color Code Chart* and *Sidewall Sheet Gauge Chart on Page 22*. Begin by putting the rings together on the edge of the sheets. On 7'-1 ring tanks, ensure vertical leg seams are spaced equally around tank. *(Refer Page 72.)* After the first ring is complete, the roof must be assembled. The pages that follow provide the instructions to do so. After the roof is assembled, roll the tank on its side for easier sidewall assembly. *(See Figure 6F on Page 26.)*

**Tighten ALL bolts from the nut side ONLY.**

Continue to add rings with lighter gauges first, then heavier gauges. The next row of sidewall sheets go to the inside of the previous row of sidewall panels. Remember to apply the rope caulking between every ring.

**Always stagger all vertical seams between rows.**

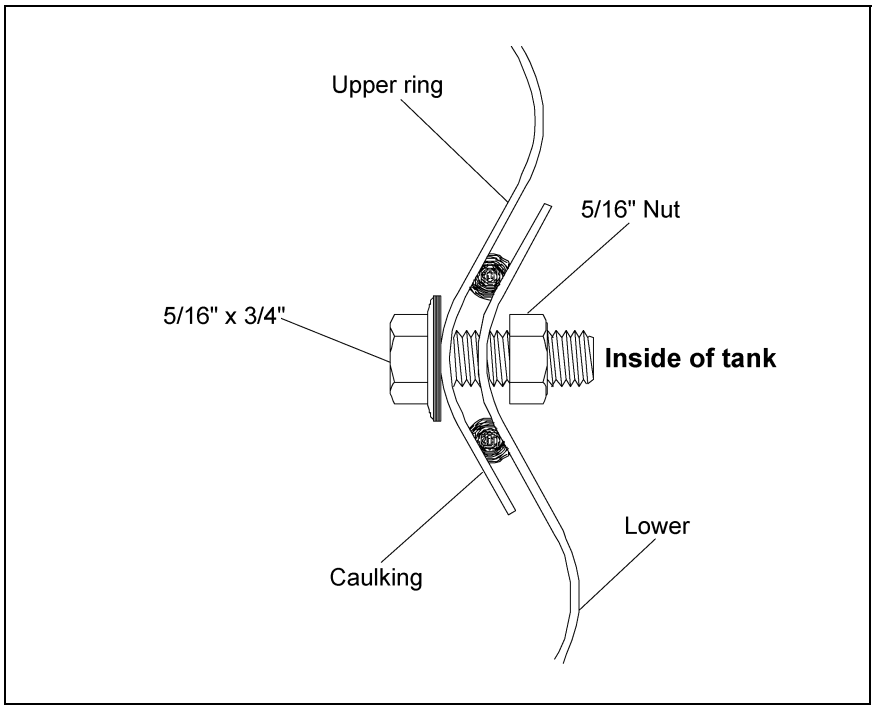



**Figure 6D** *Ring Overlap Detail*


**Figure 6E** *First Ring Assembly*

**IMPORTANT:** ***Begin bolting in the center of the sheet.*** *When starting to assemble the sidewall rings to one another, be sure to start in the center of the sheet and work to the outside edges (horizontal seams). This allows the sidewall to draw up evenly.*

**Figure 6F** *Sidewall Assembly*

It is easier to assemble additional sidewall sheets with the tank on its side. It can be rolled easily from side to side to allow the bolts and nuts to be placed in the proper holes. (Note that the roof must be assembled on the first ring BEFORE rolling the tank to its side for continued sidewall sheet assembly.)

# Sealed Roof Panels Installation

Note that the roof and sidewall ladders are centered on a roof seam. When placing a roof panel, note that the outside edge is bent down. This edge should be located on the outside of other roof panel to form a tight seal. Apply two (2) strips of caulking on all seams.

**Figure 7A**


**Figure 7B**

Assemble roof panels in a counterclockwise manner. On bins that will be equipped with a pneumatic fill system *(Refer Page 64)*, the two (2) roof panels with the fill hole and the exhaust hole should be located opposite to each other on the bulk feed tank. The peak ring may now be installed.

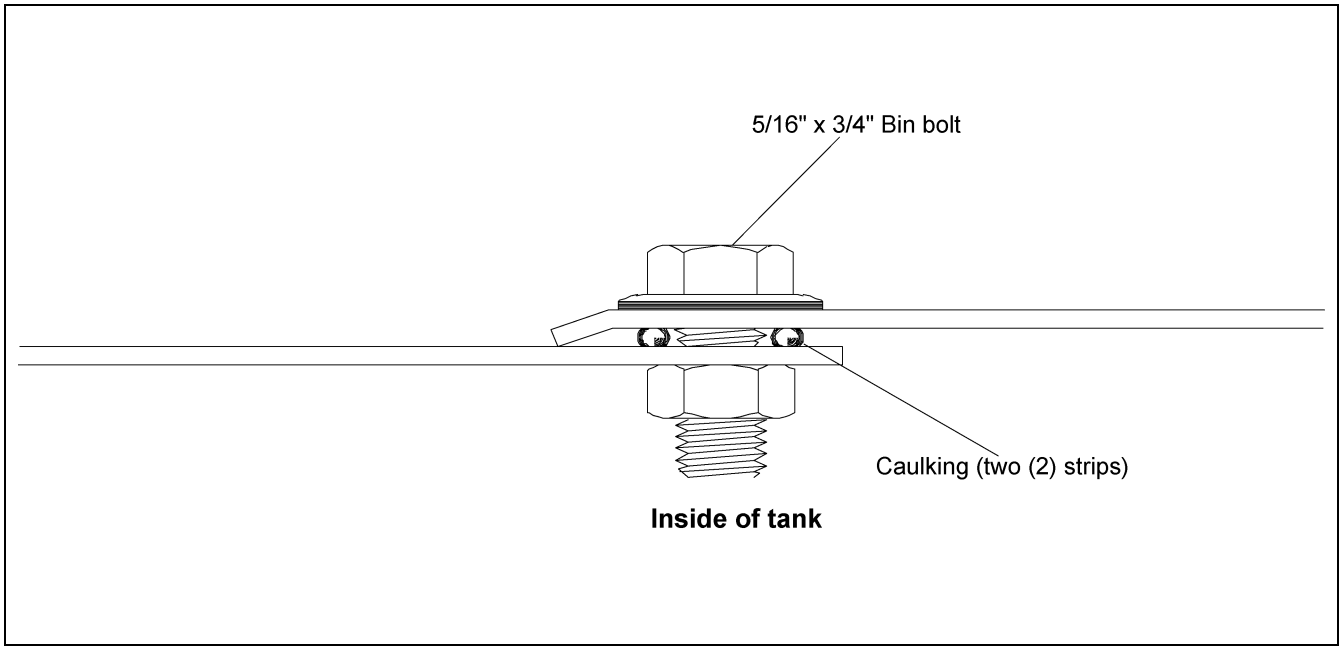



**Figure 7C** *Roof Sheet Overlap Detail*

# Peak Ring

## Peak Ring Collar to Roof Panels

Use two (2) strips of caulking between peak ring and roof panels *(See Figure 7E).* Note that the peak ring goes on the outside of the roof panels.

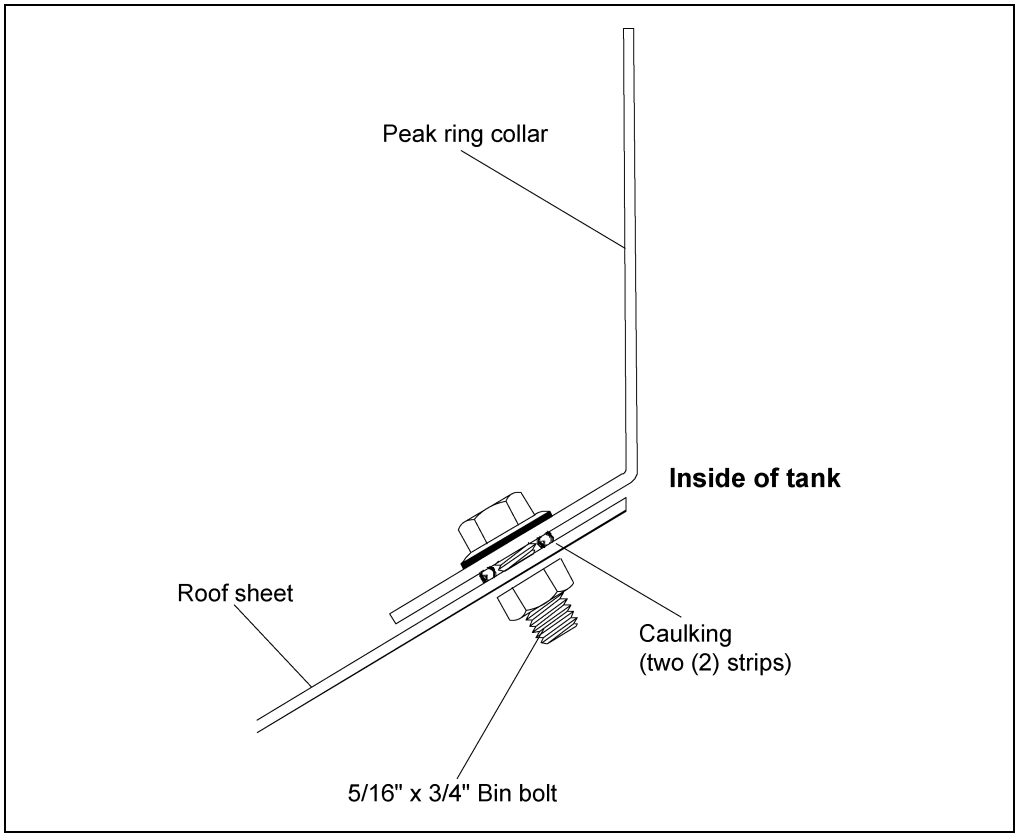



**Figure 7D** *Peak Ring Collar Detail*

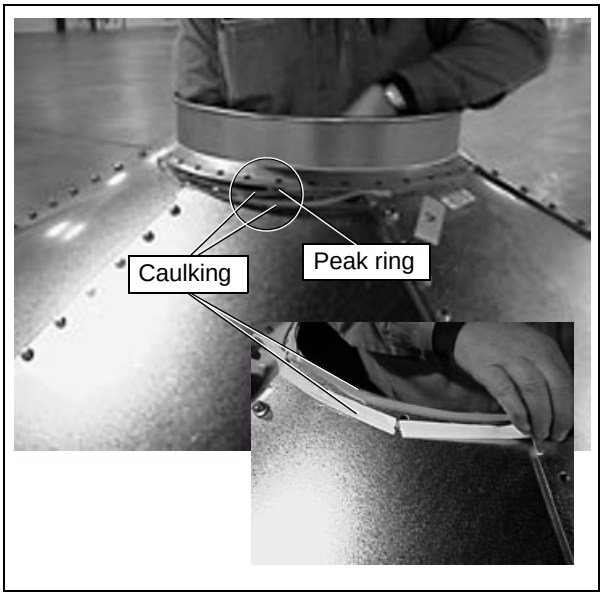



**Figure 7E**


**Figure 7F**

# Eave Safety Rail (6')

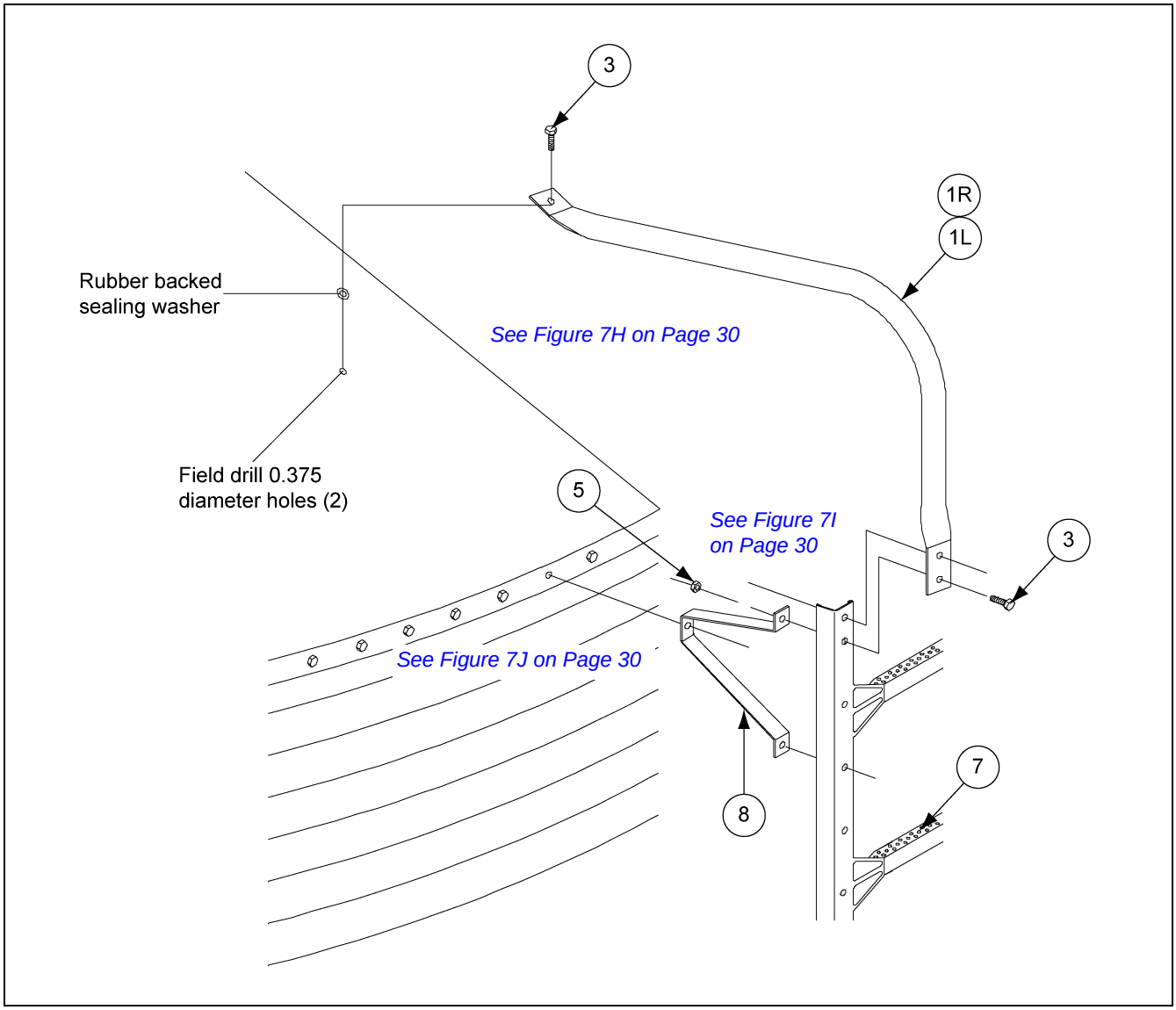



**Figure 7G** *6' Roof Eave Safety Rail Detail*

### 6' Roof Eave Safety Rail Parts List

| Ref # | Part # | Description | Qty 6' Diameter |
|---|---|---|---|
| 1L | BLK-11877L | 6' BFT Left Hand Roof Eave Safety Rail | 1 |
| 1R | BLK-11877R | 6' BFT Right Hand Roof Eave Safety Rail | 1 |
| 3 | S-275 | 5/16" x 3/4" Bin Bolt | 6 |
| 5 | S-396 | 5/16"-18 Hex Nut | 6 |
| 7 | LDR-4002 | 44" Sidewall Ladder Section | - |
| 8 | LS-121 | Sidewall Ladder Standoff | - |

Field drill two (2) 3/8" diameter holes in 6' roof for safety rail attachment. Use bin bolt sealing washer between roof and rail. Note left and right positioning so it will fall between the legs when tank is complete.

**Figure 7H**

**Figure 7I**

**Figure 7J**

# Eave Ladder

**NOTE:** *Ladder is symmetrical across roof seam. One side shown for clarity.*

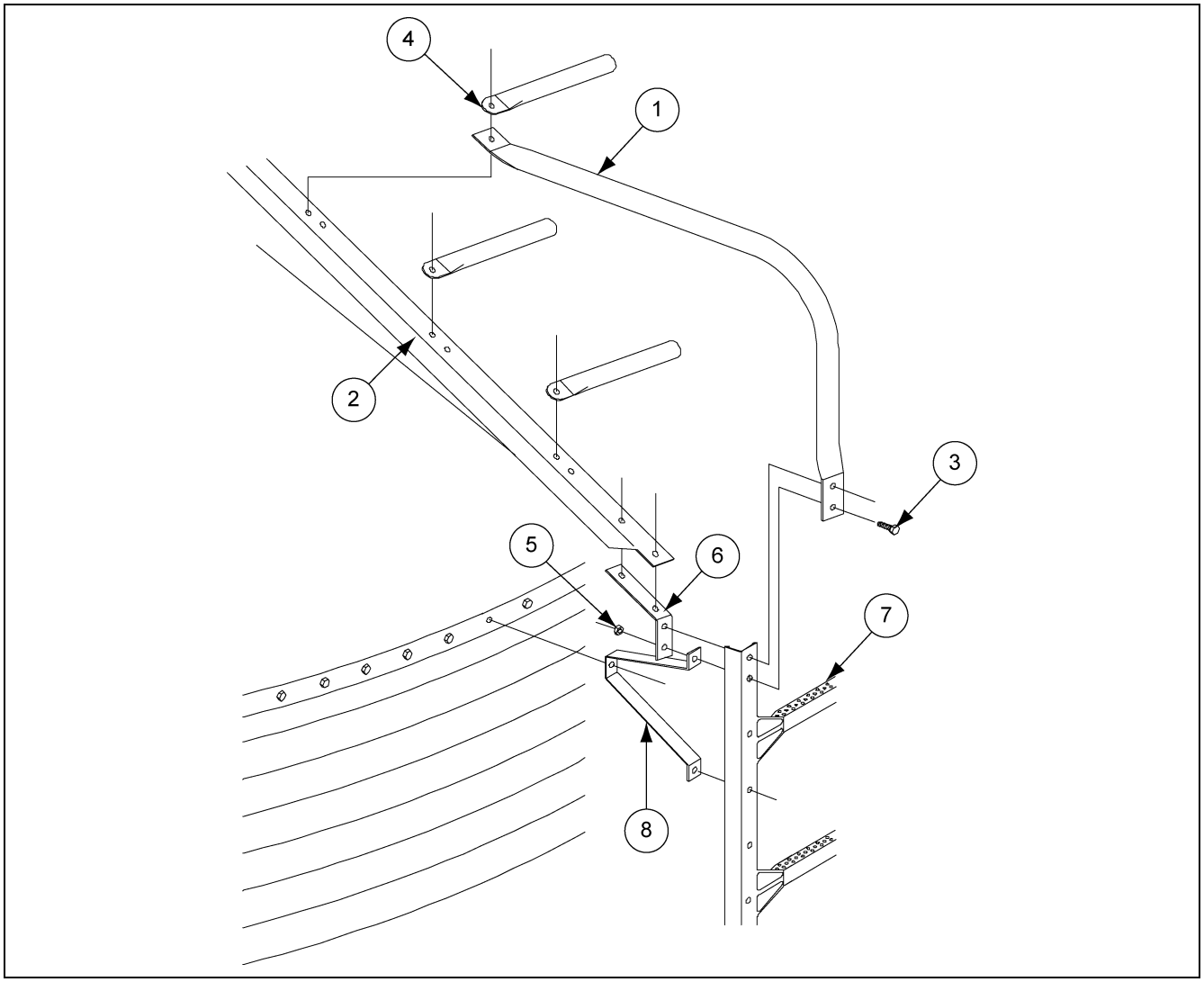



**Figure 7K** *7' and 9' Roof Eave Ladder Detail*

### 7' and 9' Roof Eave Ladder Parts List

| Ref # | Part # | Description | Qty 7' Diameter | Qty 9' Diameter |
|---|---|---|---|---|
| 1 | BLK-11680 | Ladder Eave Safety Ring | 2 | 2 |
| 2 | BLK-11760 | 7' BFT Roof Ladder Support Channel | 2 | - |
| 2 | BLK-11761 | 9' BFT Roof Ladder Support Channel | - | 2 |
| 3 | S-275 | 5/16" x 3/4" Bin Bolt | 16 | 18 |
| 4 | BLK-11679 | Roof Ladder Rung | 2 | 3 |
| 5 | S-396 | 5/16"-18 Hex Nut | 16 | 18 |
| 6 | BLK-11673 | Lower Support Channel Bracket | 2 | 2 |
| 7 | LDR-4002 | 44" Sidewall Ladder Bracket | - | - |
| 8 | LS-121 | Sidewall Ladder Standoff | - | - |

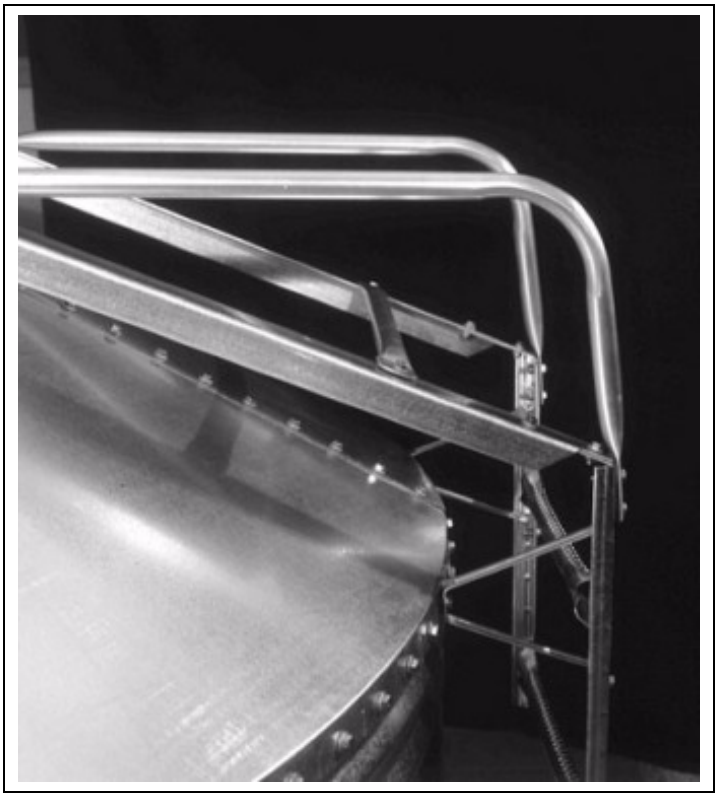


**Figure 7L**

## Peak Ring (Ladder)

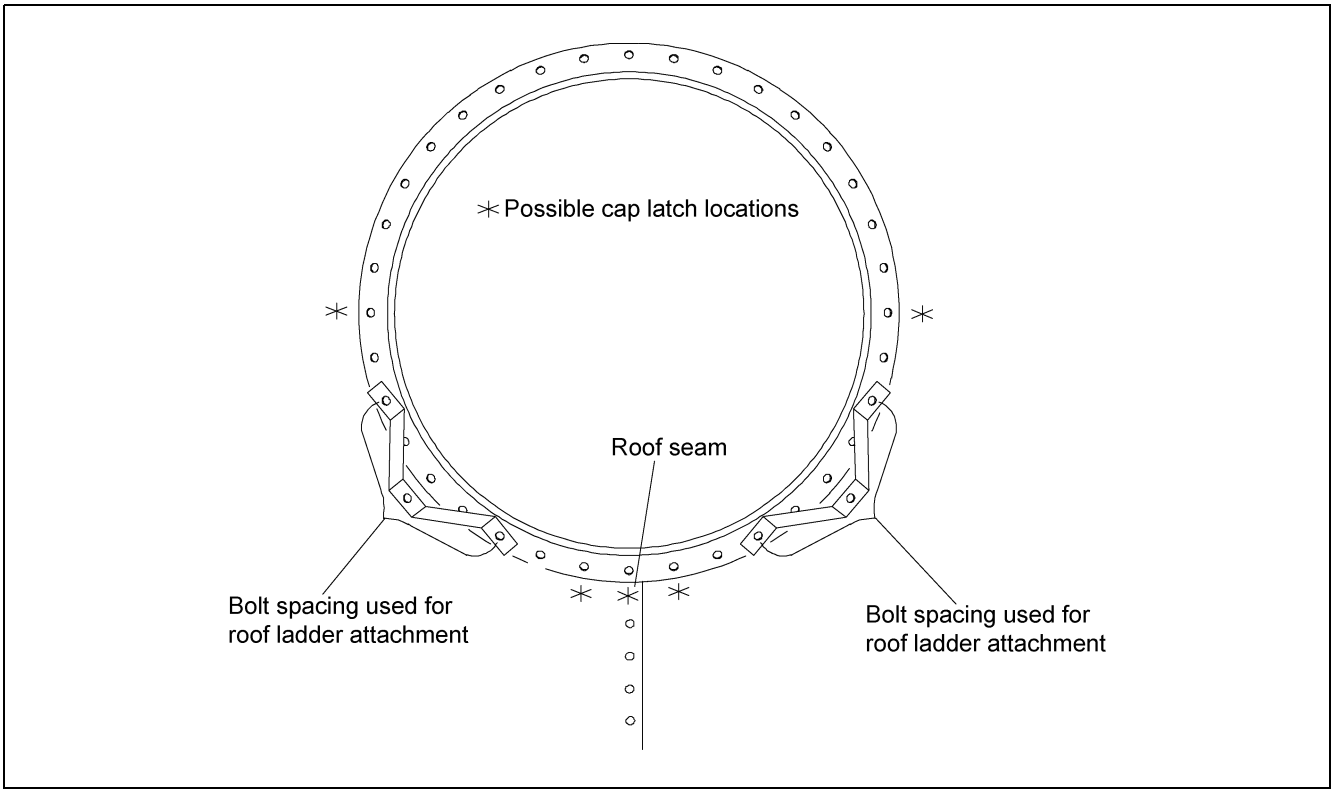



**Figure 7M** *7'-9' Roof Ladder Peak Ring Detail*

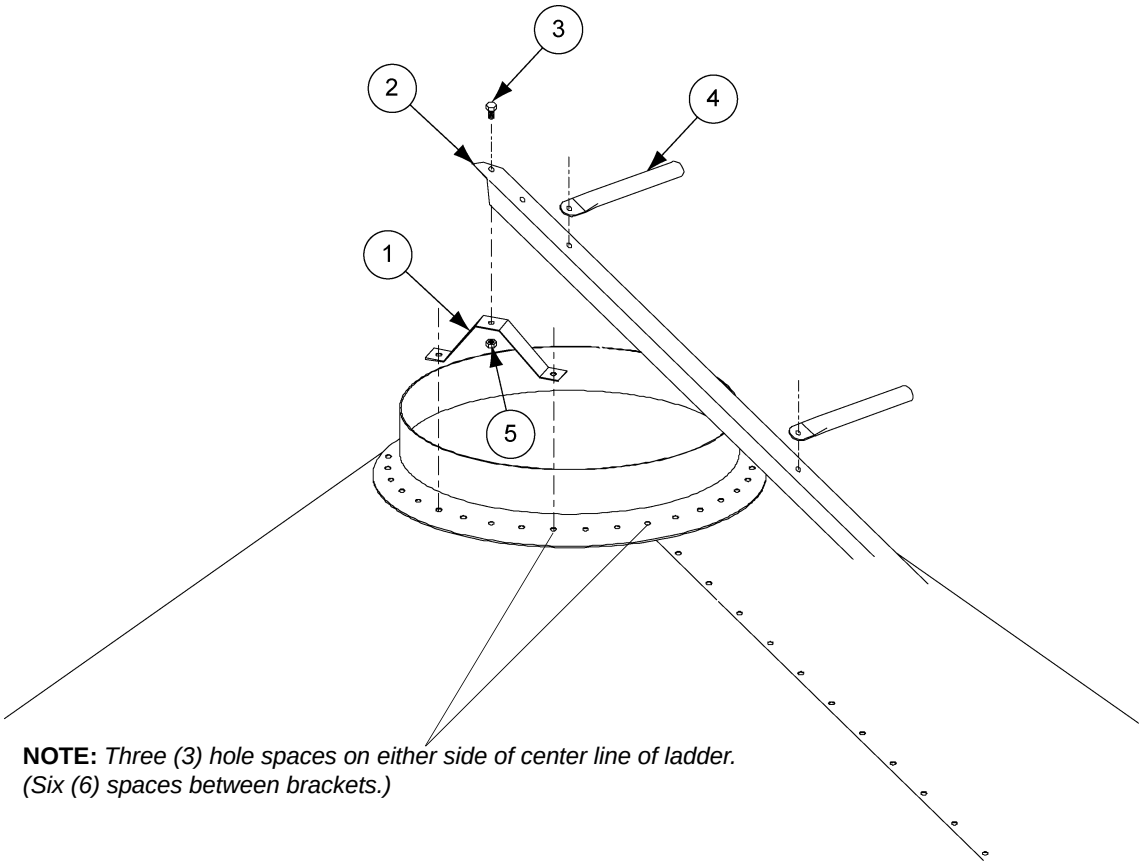



**Figure 7N**

**7' and 9' Roof Eave Ladder Detail**

| Ref # | Part # | Description | Qty 7' Diameter | Qty 9' Diameter |
|---|---|---|---|---|
| 1 | LS-147 | Inside Ladder Standoff | 2 | 2 |
| 2 | BLK-11760 | 7' BFT Roof Ladder Support Channel | 2 | - |
| 2 | BLK-11761 | 9' BFT Roof Ladder Support Channel | - | 2 |
| 3 | S-275 | 5/16" x 3/4" Bin Bolt | 16 | 18 |
| 4 | BLK-11679 | Roof Ladder Rung | 2 | 3 |
| 5 | S-396 | 5/16"-18 Hex Nut | 16 | 18 |

Note that peak ring is mounted to the outside of the roof panels. 6' Bulk feed tank utilizes only eave safety rail. *(See Eave Ladder on Page 31.)*

**NOTE:** *Center roof ladder over roof seam during assembly. Ladder is symmetrical across roof seam. One side shown for clarity.*

# Cap

## Roof Cap Ground Control

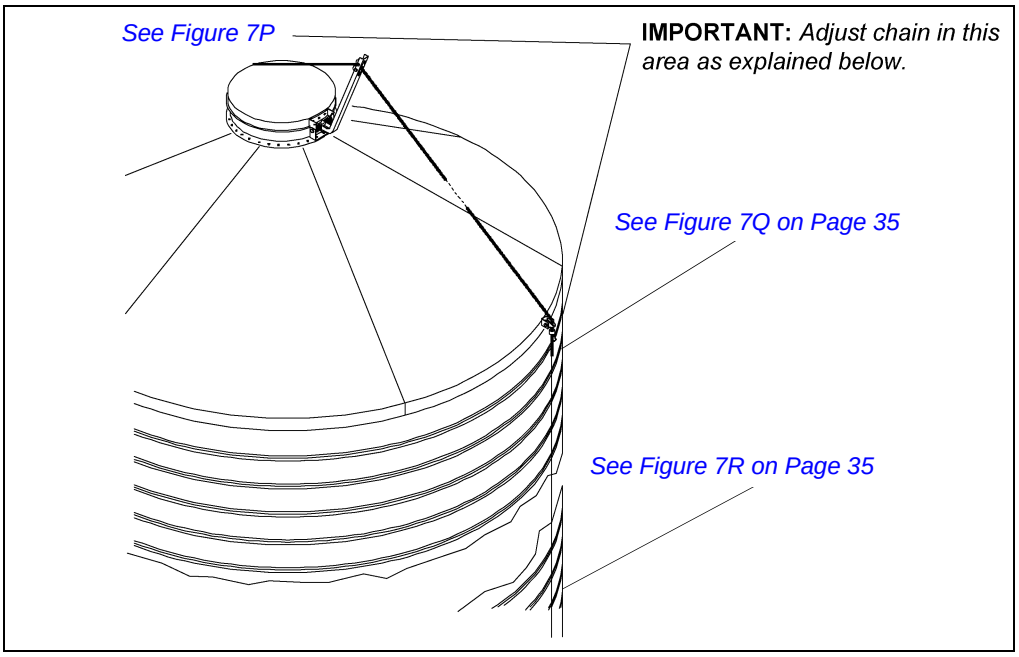



**Figure 7O**

Ground control comes standard on 6'-60°, 7-67° and 9'-60° bulk feed tanks. Ground control is optional on all 45° bulk feed tanks. Ground control components come fully assembled for the convenience. The ground control is shipped with the control arm secured for safety and shipping purposes. The short chain and retaining tie are intended for shipping use only.

CAUTION

***The control arm is spring loaded. Be careful when removing shipping retainers.***

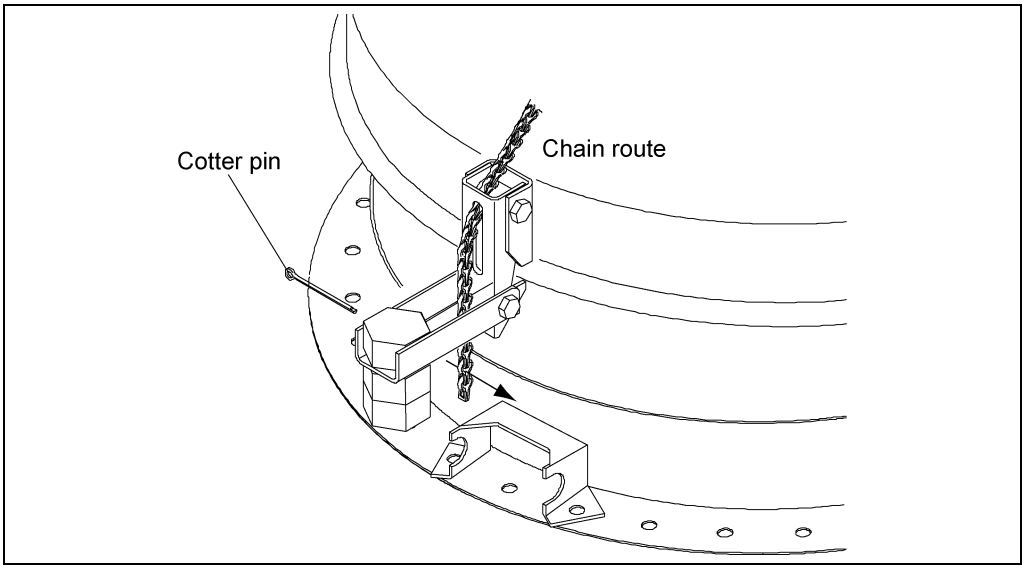



**Figure 7P**

## Cap (Continued)

Refer to *Figure 7T on Page 36* and *Figure 7W on Page 38* for component part assembly. The cap latch hook, located opposite to the cap hinge, latches over the hold down bracket (BLK-11846) (Ref #20, *Figure 7U on Page 37*). One end of the ground control chain is secured at the counterweight arm with a cotter pin. *(See Figure 7P on Page 34.)* The chain is passed up and over the cap, through the grommet on the pivot arm, and through the roof eave bracket (BLK-11950), then continues down the side of the tank.

After removing the slack from the ground control chain while in the fully closed and latched position, install the key ring clip 2" below chain holder bracket. *(See Figure 7R.)* Ensure that the key ring allows the cap to fully latch when the cap is in the closed position, but will not allow the chain enough slack on top of the cap to become wrapped around the pivot arm in a high wind condition.

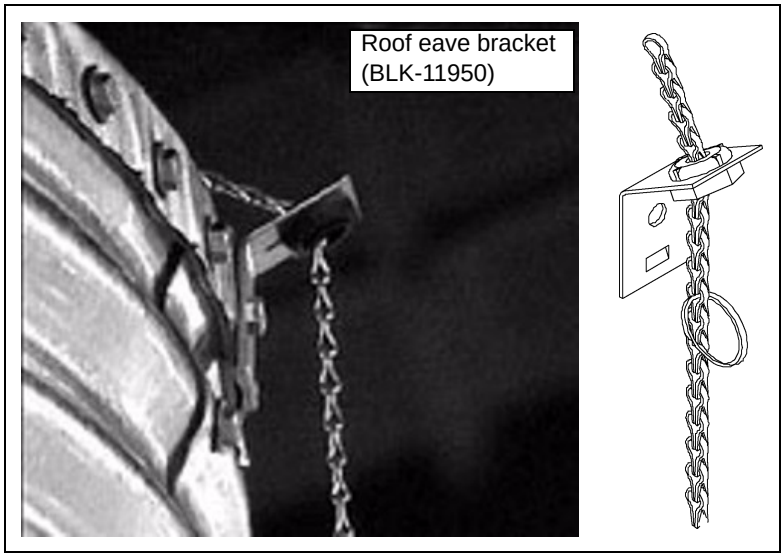



**Figure 7Q**

Make sure the loop of the main cap spring (BLK-11623) is held securely in the preloaded position by the head of the 5/16" bolt beneath (Ref #4, *Control Arm Detail on Page 36*). If necessary, place one or more 5/16" flat washers under the bolt head to ensure that the bolt catches the loop. *(See Stop Bolt Detail on Page 36.)*

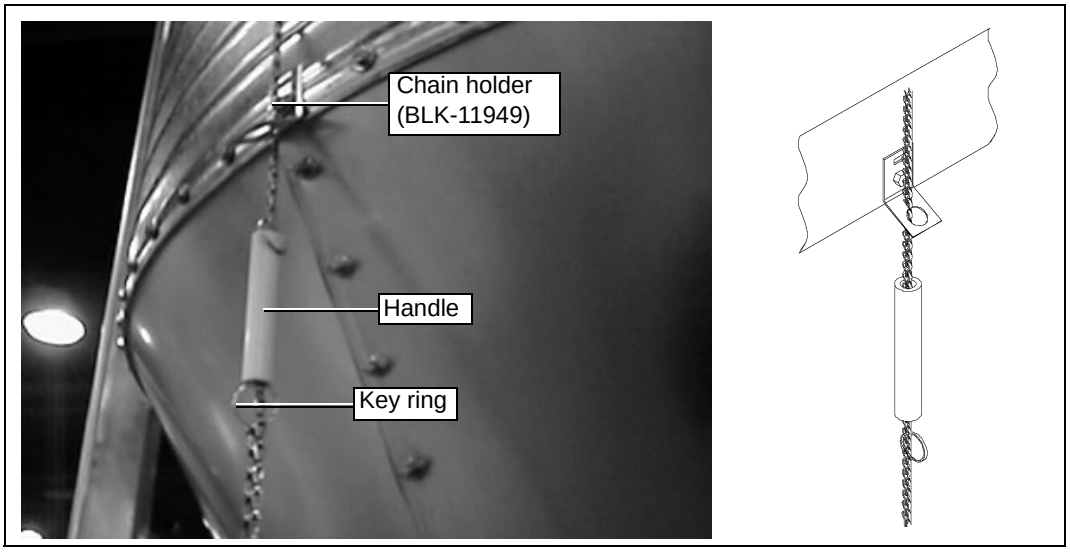
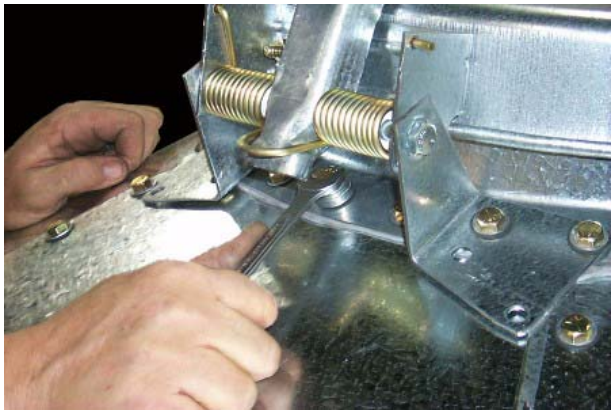



**Figure 7R**

# Cap (Continued)

Bolt the chain holder (BLK-11949) to the bottom horizontal row of sidewall holes, or field drill and bolt to the leg tie brace. *(See Figure 7R on Page 35.)* Two (2) 4" plastic handles and extra key ring clips are provided for use at the hopper eave to be used as fully open and fully closed cap indicators.



**If necessary, place one or more 5/16" flat washers under the bolt head to ensure that the bolt catches the loop.**

**Make sure the loop of the main cap spring (BLK-11623) is held securely in the preloaded position by the head of the 5/16" bolt beneath.**

**Figure 7S**

**WARNING** ***The control arm is spring loaded. It must be released while on the ground and before attaching it to the peak ring. Failure to do so will result in serious injury.***

**NOTE:** *Use the chart on Page 37 for control arm and ground control details.*

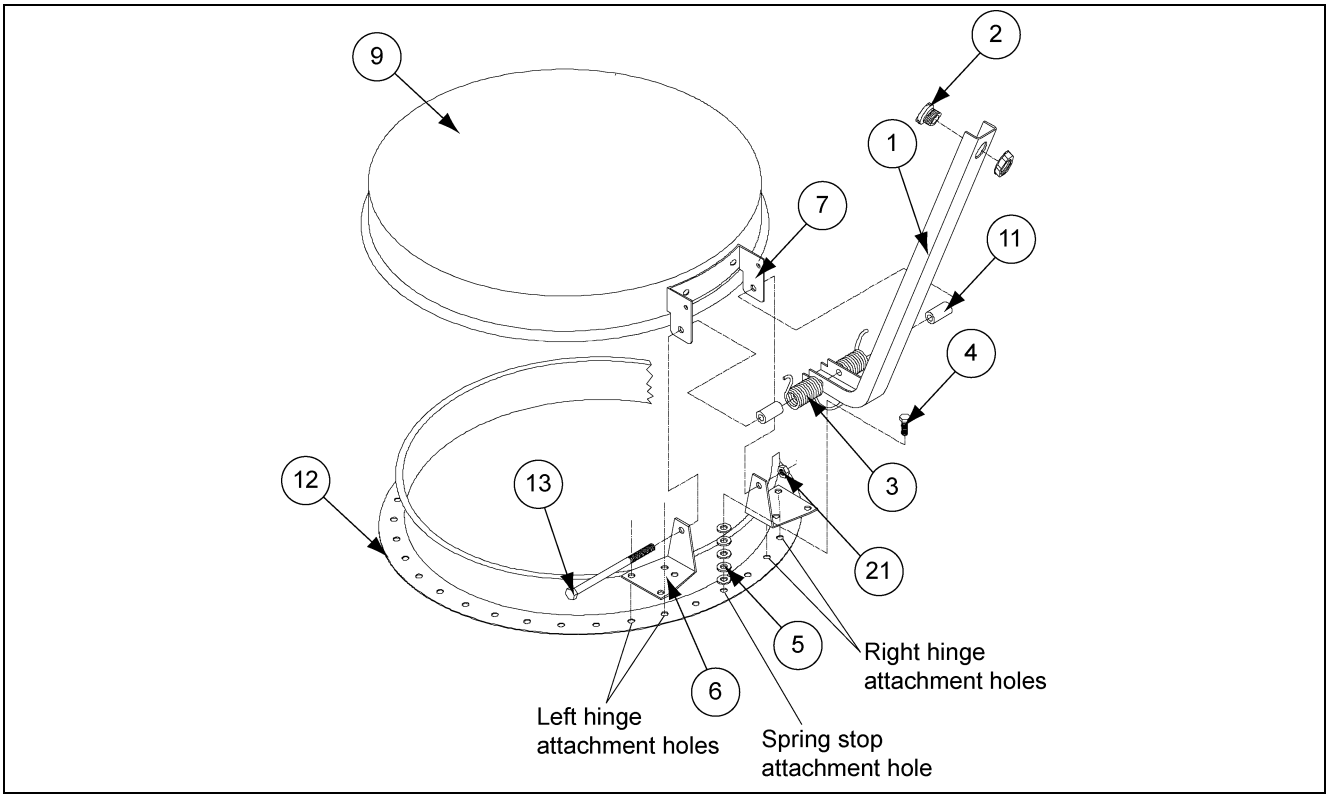



**Figure 7T** *Control Arm Detail*

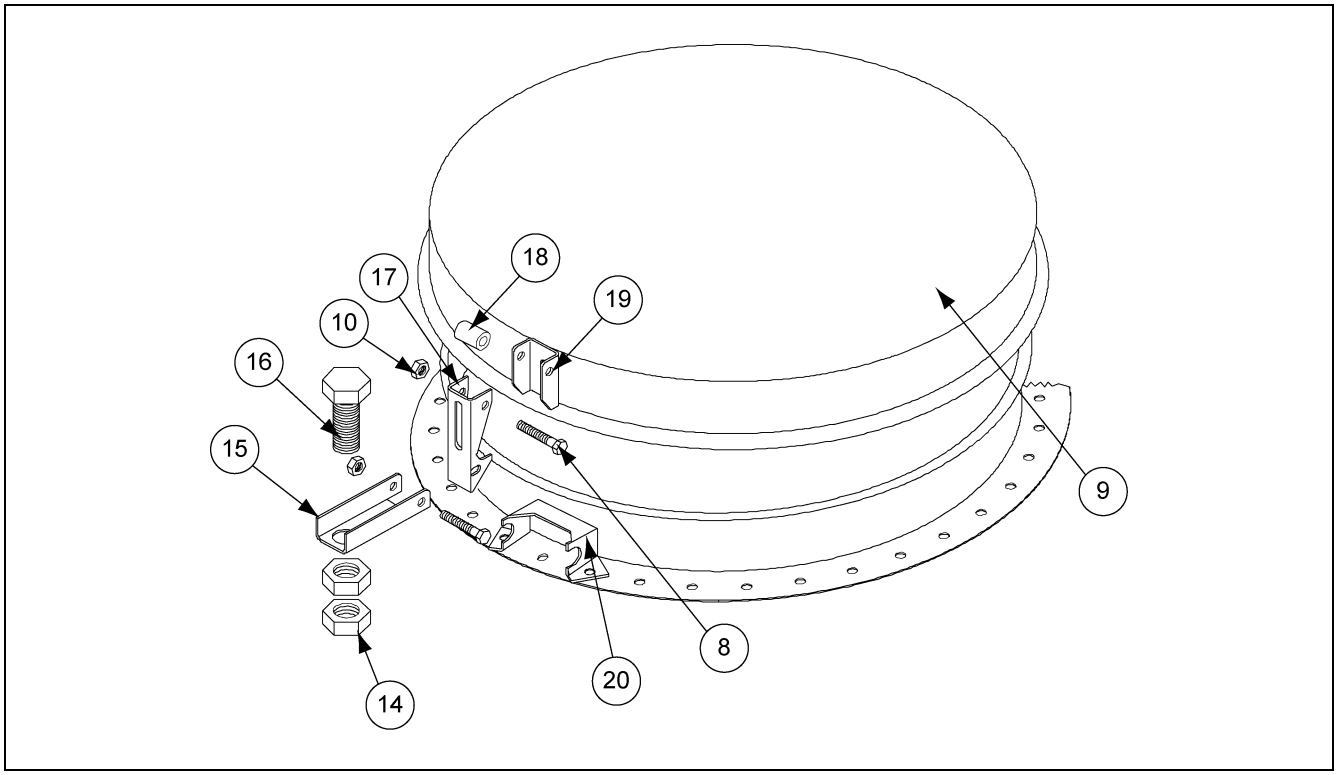



**Figure 7U** *Ground Control Detail*

## Control Arm and Ground Control Parts List

| Ref # | Part # | Description |
|---|---|---|
| 1 | BLK-11735 | Control Arm |
| 2 | BLK-11876 | Nylon Grommet with Nut |
| 3 | BLK-11623 | Flush Cap Main Spring |
| 4 | S-277 | 5/16"-18 x 1-1/4" Bin Bolt (Grade 5) |
| 5 | S-845 | 5/16" Wrought Iron Washer (Grade 2) |
| 6 | BLK-11842 | Lower Cap Hinge |
| 7 | BLK-11734 | Upper Cap Hinge |
| 8 | S-7329 | 5/16"-18 x 2" Hex Head Bolt |
| 9 | BLK-10015 | Bulk Tank Roof Cap |
| 10 | S-5220 | 5/16"-18 Hex Lock Nut (Grade 2) |
| 11 | BLK-11503 | 1.875" Long Spring Spacer |
| 12 | BLK-11730 | 1 Piece Bulk Tank Peak Ring |
| 13 | S-7171 | 3/8"-16 x 6-1/2" Hex Head Bolt (Grade 5) |
| 14 | S-3214 | 7/8"-9 Hex Nut (Grade 2) |
| 15 | BLK-11845 | Latch Counterweight |
| 16 | S-7281 | 7/8"-9 x 1-1/2" Hex Head Bolt |
| 17 | BLK-11844 | Peak Cap Latch |
| 18 | BLK-11795 | 0.938" x 0.750" Diameter Plastic Spacer |
| 19 | BLK-11843 | Pivot Bracket |
| 20 | BLK-11846 | Cap Hold Down Bracket |
| 21 | S-4663 | 3/8"-16 Hex Head Lock Nut |

# Peak Ring

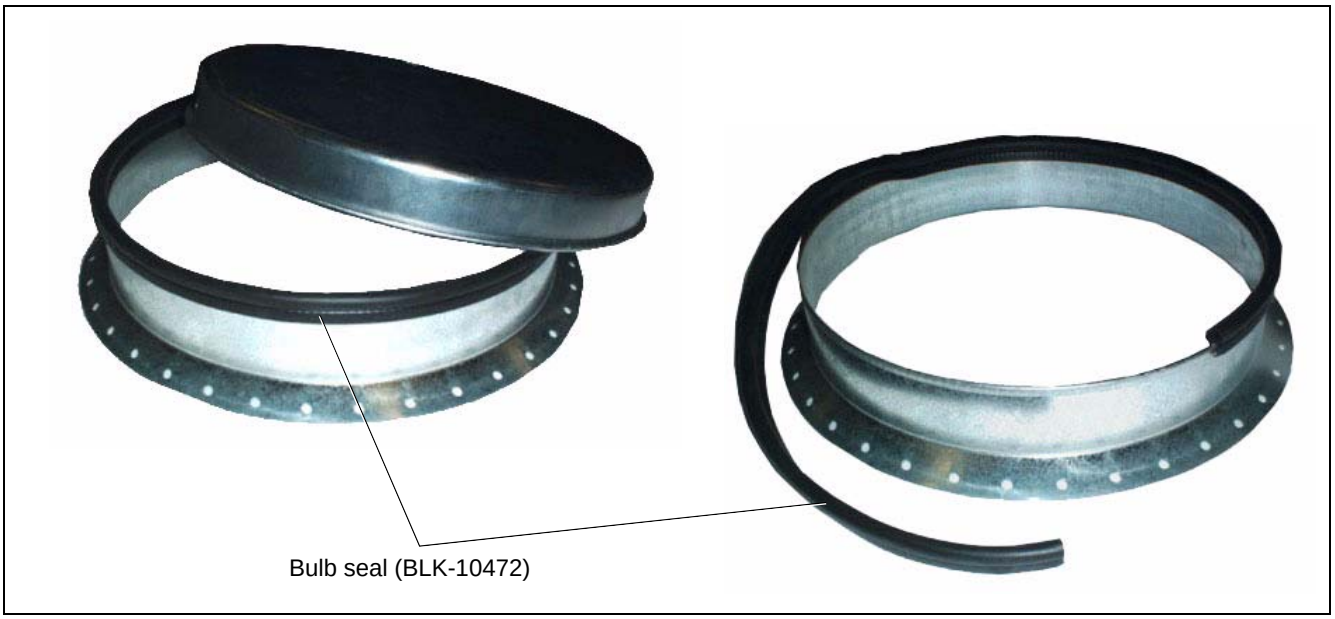



**Figure 7V** *Bulb Seal Kit (optional)*

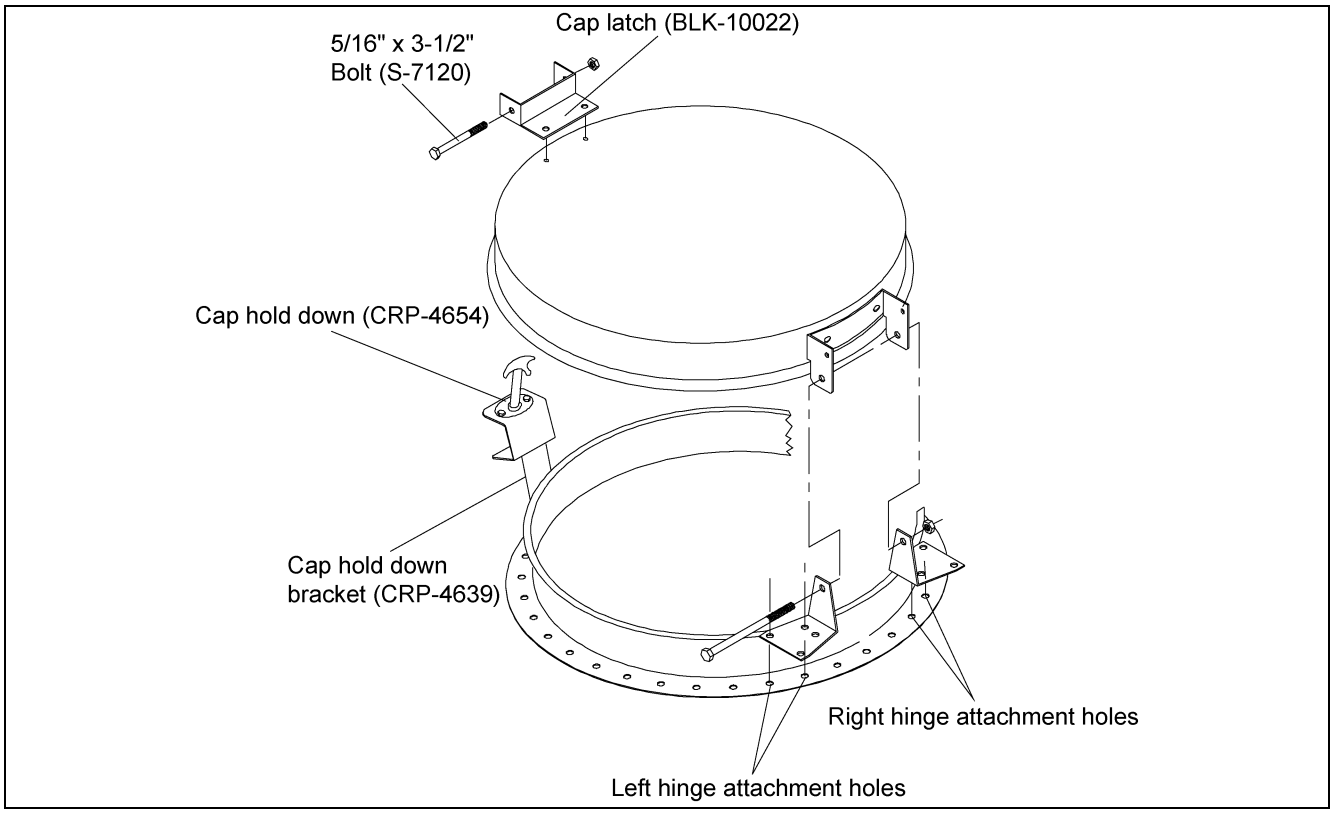



**Figure 7W** *Cap Hold Down Package*

**NOTE:** *Bulb seal kit is included with all pneumatic fill kits. When ordered as a separate option, specify part # BLK-10472.*

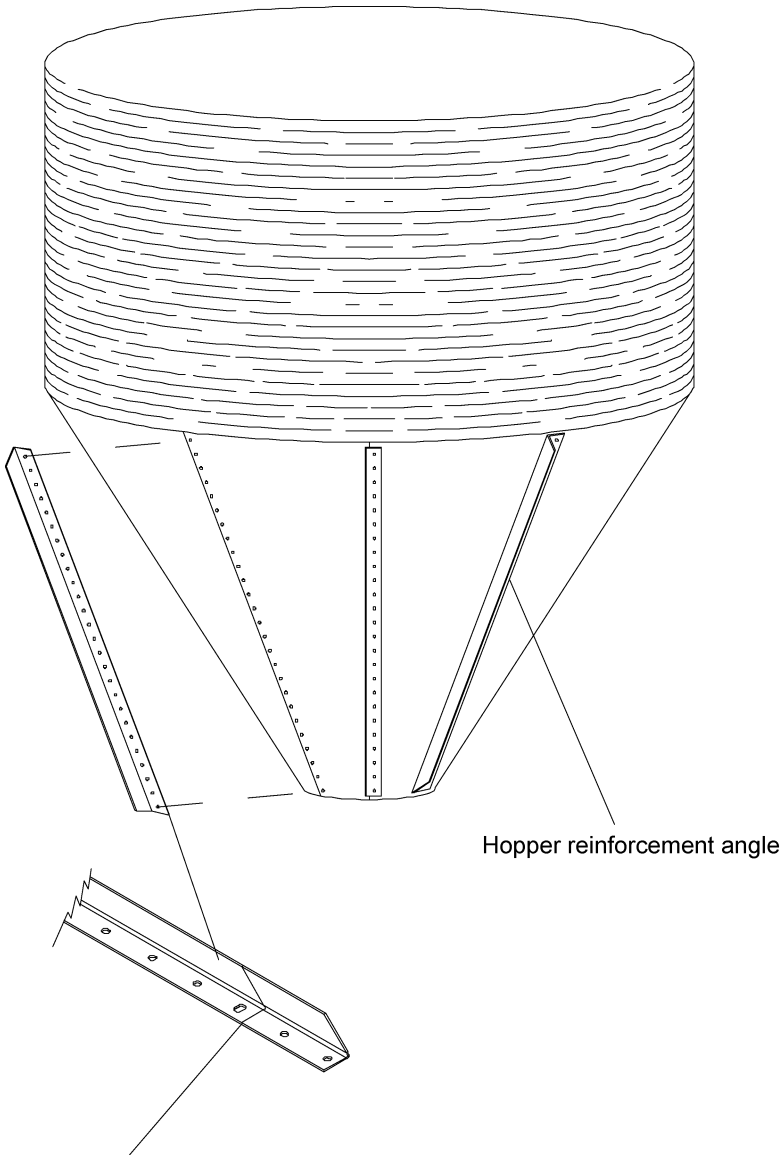
Cap hold down package comes standard on all 45° hopper bulk tanks, **optional** on all 60° and 67° hopper bulk tanks.

## Hopper Sheets

When starting to attach hopper sheets to sidewall, the first hopper sheet seam should be positioned halfway between leg positions. Lap the hopper sheets as shown in *Figure 8F* and *Figure 8G on Page 42*. Use two (2) strips of caulking on all seams at sidewall to hopper and hopper sheet to hopper sheet. Be sure to place the head of the truss bolt on the **inside** of hopper. Leave one (1) hopper sheet out to allow room to install hopper collar. Be sure to use two (2) strips of caulking between hopper collar and hopper sheets, then put last hopper sheet in place.

CAUTION

***All 9' diameter 60° 3-6 ring and 7' diameter 67° 5-6 ring tanks require hopper reinforcement angles. Angle covers entire seam (including hopper collar).***




**NOTE:** *When used for 22" (559 mm) hopper openings, field cut brace below slot to fit properly.*

**Figure 8A**

**Hopper sheet to sidewall sheet**

**Figure 8B**

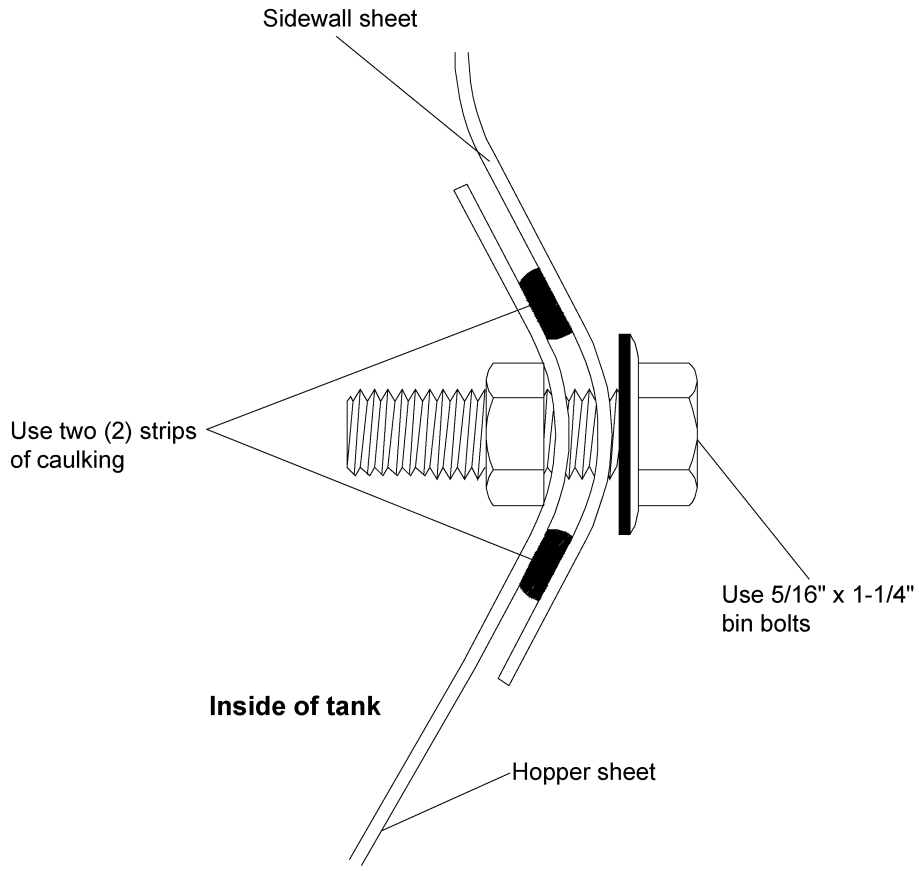



**Figure 8C**

## 9' 60° Leg Attachment (for 9' 60° Tanks Only)

Curved washers are supplied in the hardware packages. These washers must be installed at the bottom leg to sidewall bolt connection, to the inside of the hopper panel as indicated in the *Figure 8D* below.

Apply caulking in between the hopper panel and the sidewall sheet.

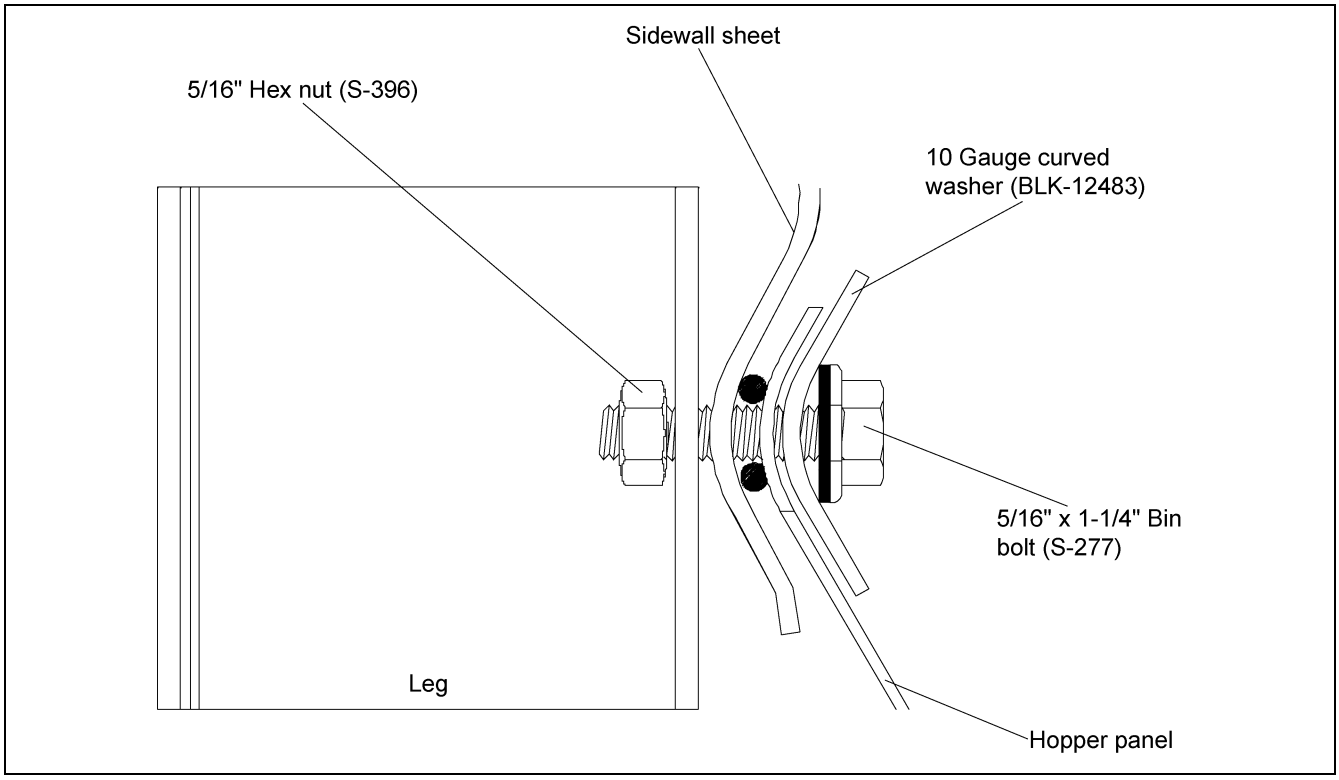



**Figure 8D**

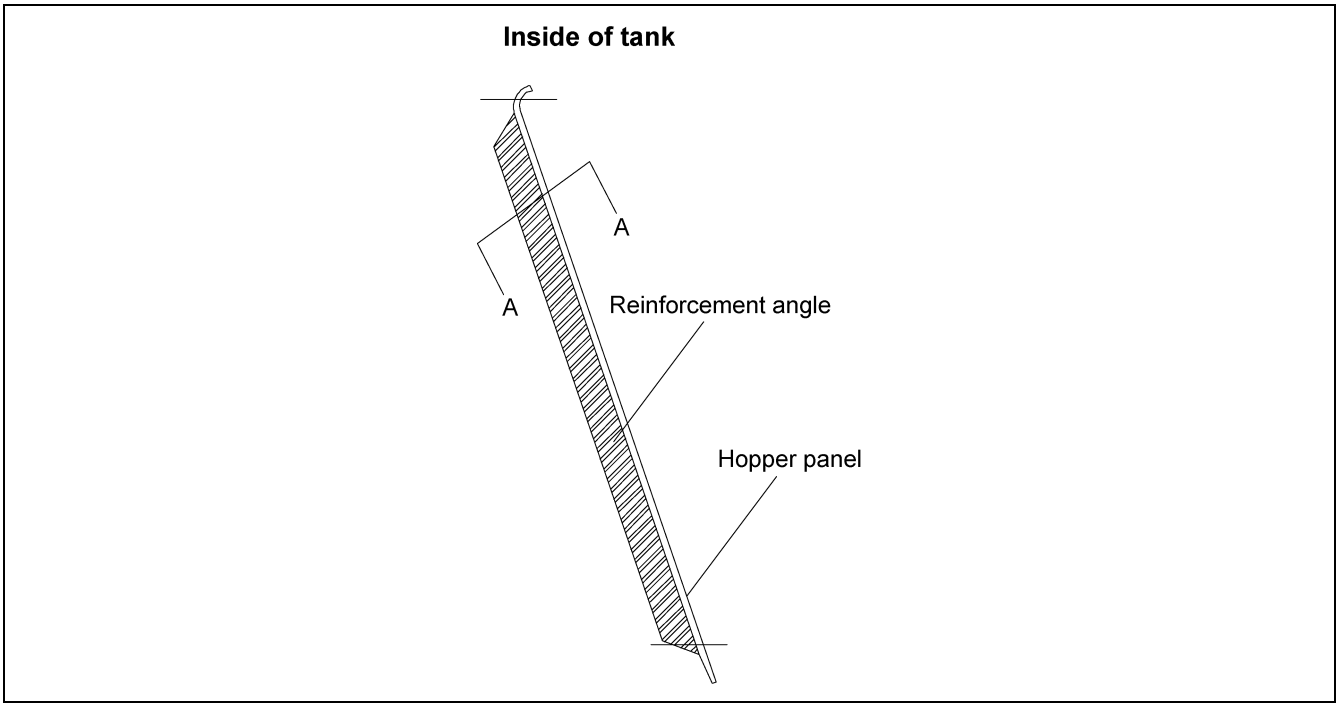



**Figure 8E**

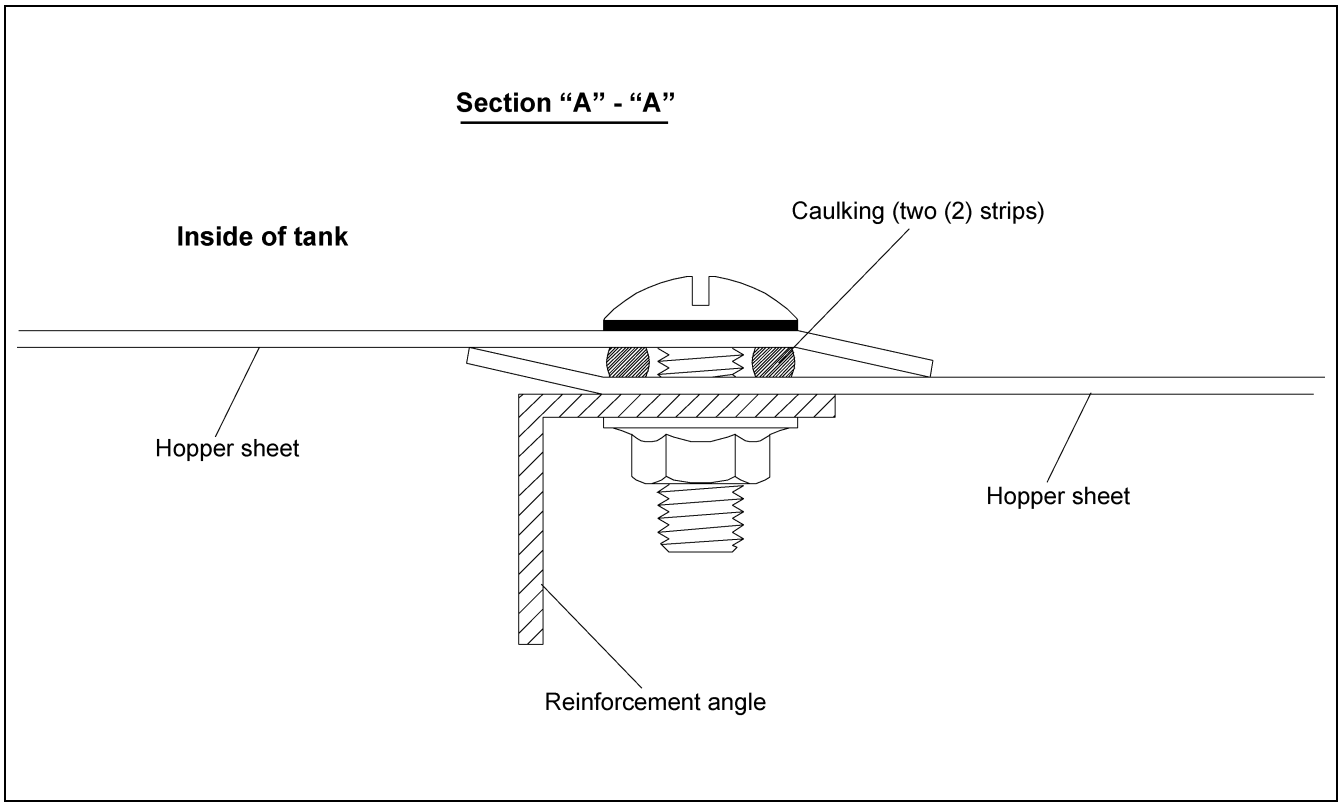



**Figure 8F** *Hopper Overlap and Bolt Detail w/ Reinforcement Angle*

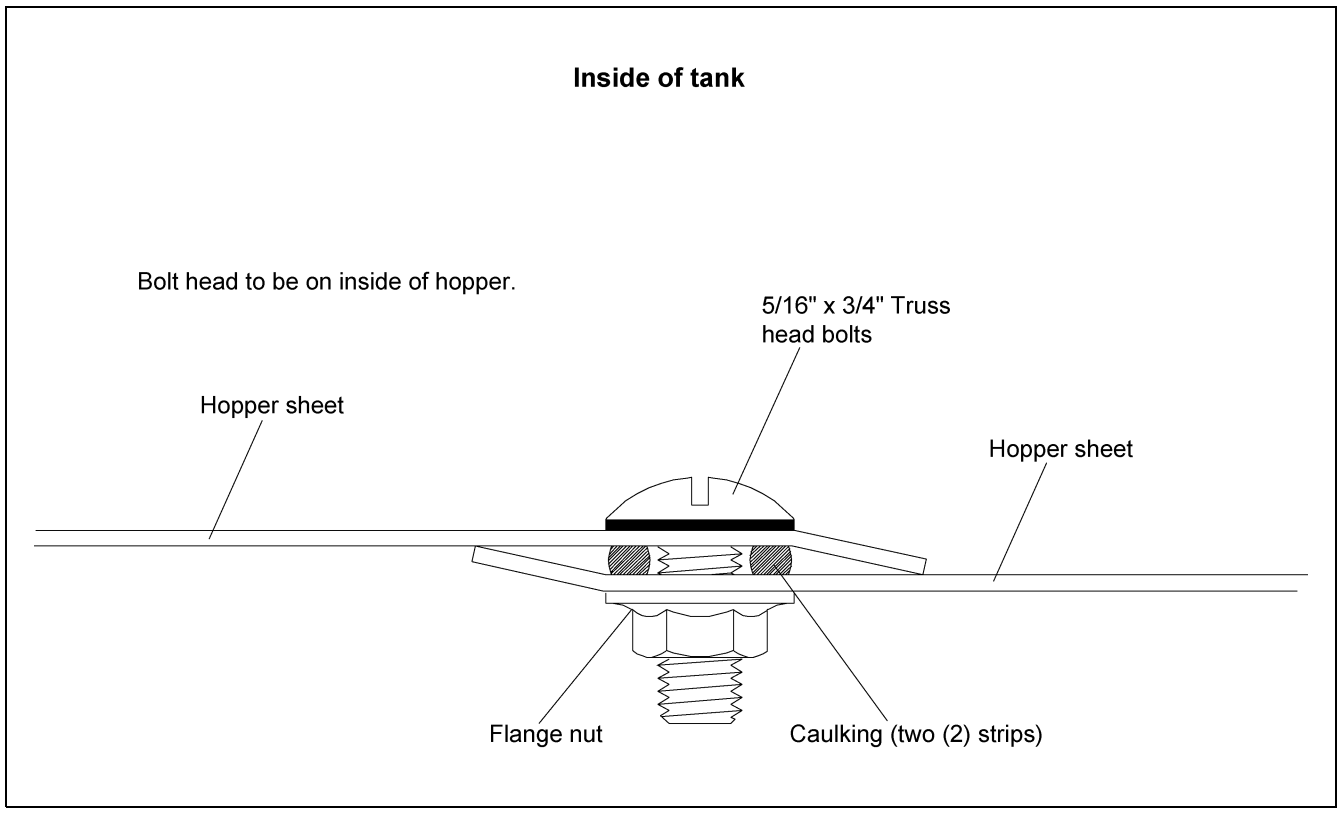



**Figure 8G** *Hopper Overlap and Bolt Detail for Tanks w/out Reinforcement Angle*

## Reinforcement Angles

**NOTE:** *Every hole in the hopper sheet will be utilized. Use 5/16" x 3/4" truss head bolt on hopper seams. (Truss head goes on inside of hopper).*

***The 9' 3-6 ring, 60° and 7' 5-6 ring, 67° ring tanks are the only ones to use reinforcement angles.***

**NOTE:** *Last (bottom) bolt in reinforcement angle goes through hopper collar also.*

## Hopper Collar

Before last hopper panel is attached, assemble the hopper extensions (if utilized) on the hopper collar. Use 5/16" truss head bolts, and caulk all joints on the assembly, attach to the hopper panels, using 5/16" truss head bolts. Be sure to caulk between hopper extensions and hopper panels. *(Refer Page 44.)*

**Figure 8H**

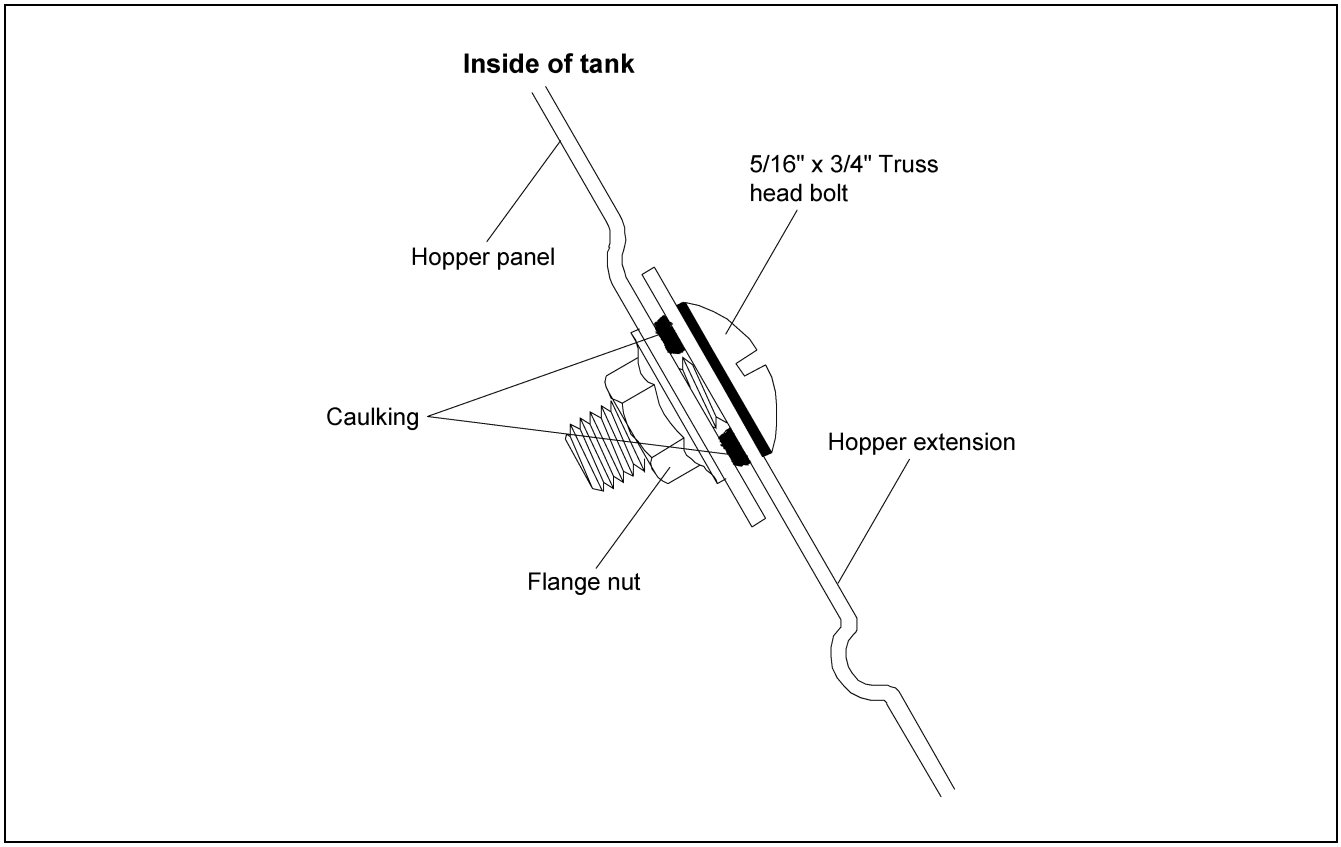



**Figure 8I** *Bolt Detail: Hopper Extension (if used)*

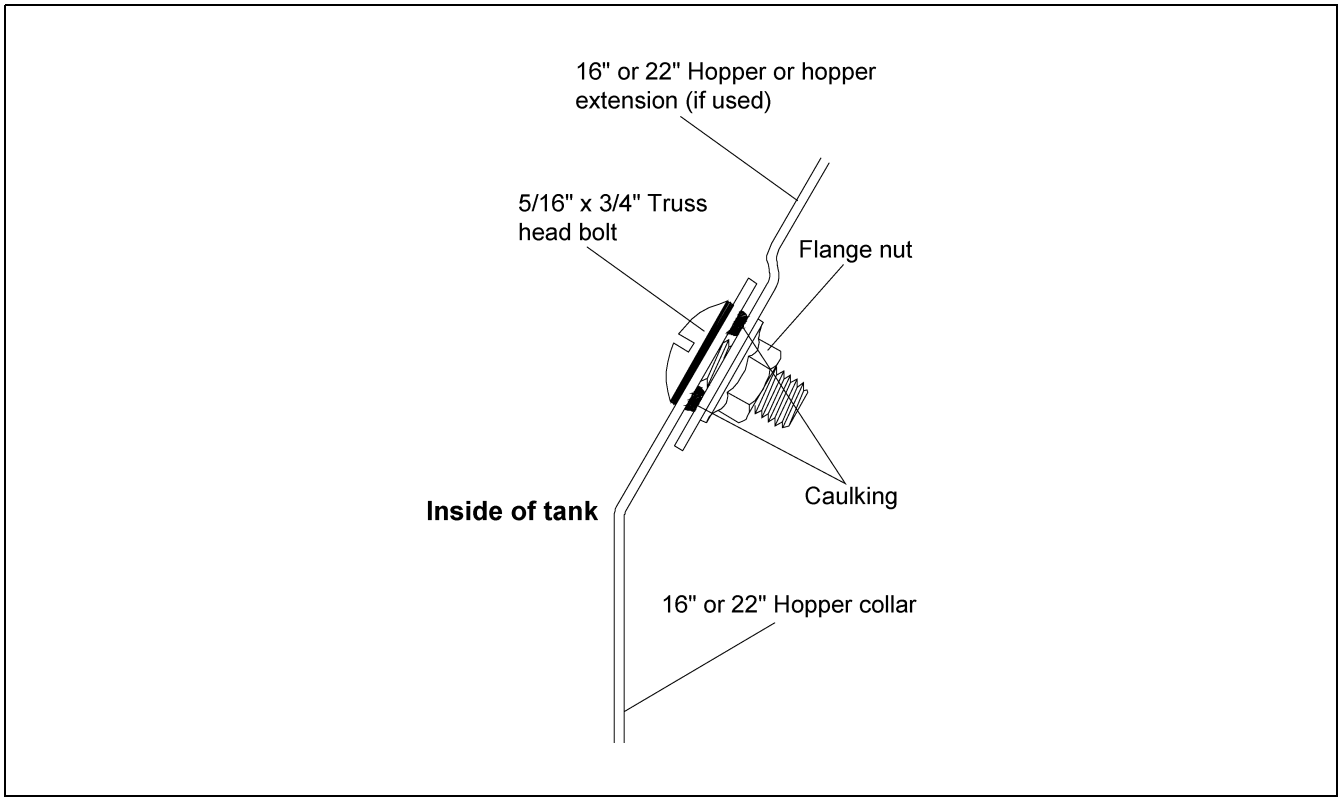



**Figure 8J** *Bolt Detail: Hopper Collar*

Install hopper collar before all hopper panels are assembled. Use 5/16" x 3/4" truss head bolts, as shown in *Figure 8I* and *Figure 8J on Page 44*, on all hopper seams. Be sure to caulk between the hopper collar and hopper panels. *(See Figure 8K, Figure 8L and Figure 8M on Page 46.)*

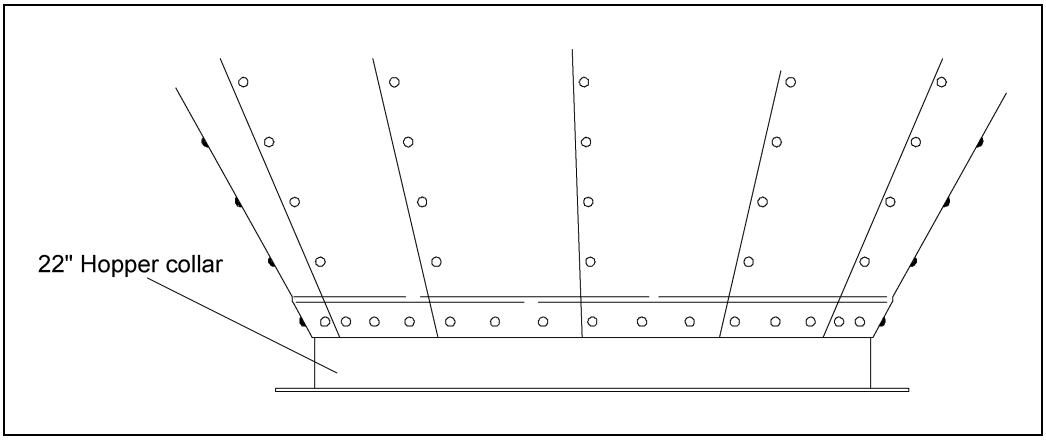



**Figure 8K** *22" Hopper Collar*

| Part # | Description |
|---|---|
| BLK-10854 | 45° 22" Hopper Collar |
| BLK-10342 | 60° 22" Hopper Collar |
| BLK-10341 | 67° 22" Hopper Collar |

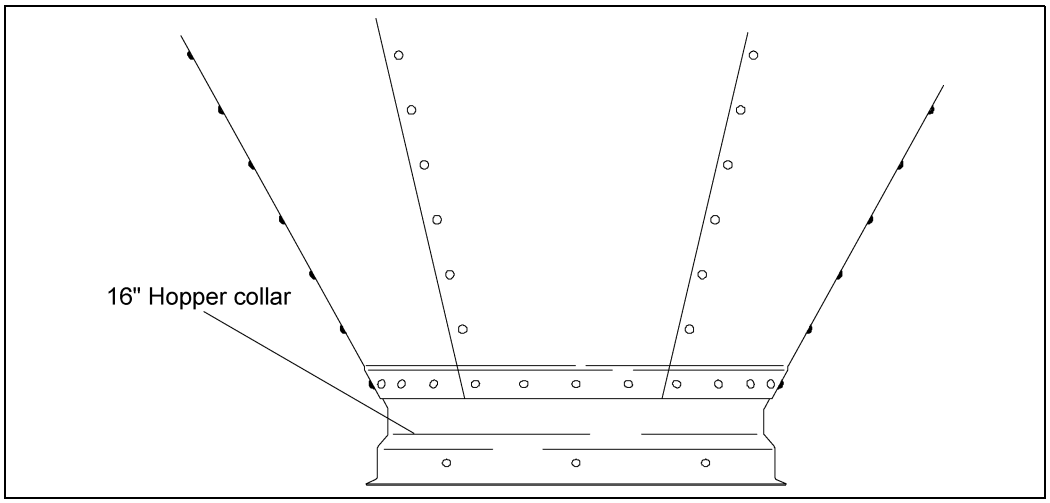



**Figure 8L** *16" Hopper Collar*

| Part # | Description |
|---|---|
| BLK-10489 | 6'-16" 60° (24 Holes) |
| BLK-10488 | 7'-16" 67° (24 Holes) |
| BLK-11463 | *9'-16" 60° (27 Holes) |

***NOTE:** *9'-16" 60° Hopper collar (BLK-11463) is used with a 9'-16" 60° tank only (27 holes).*

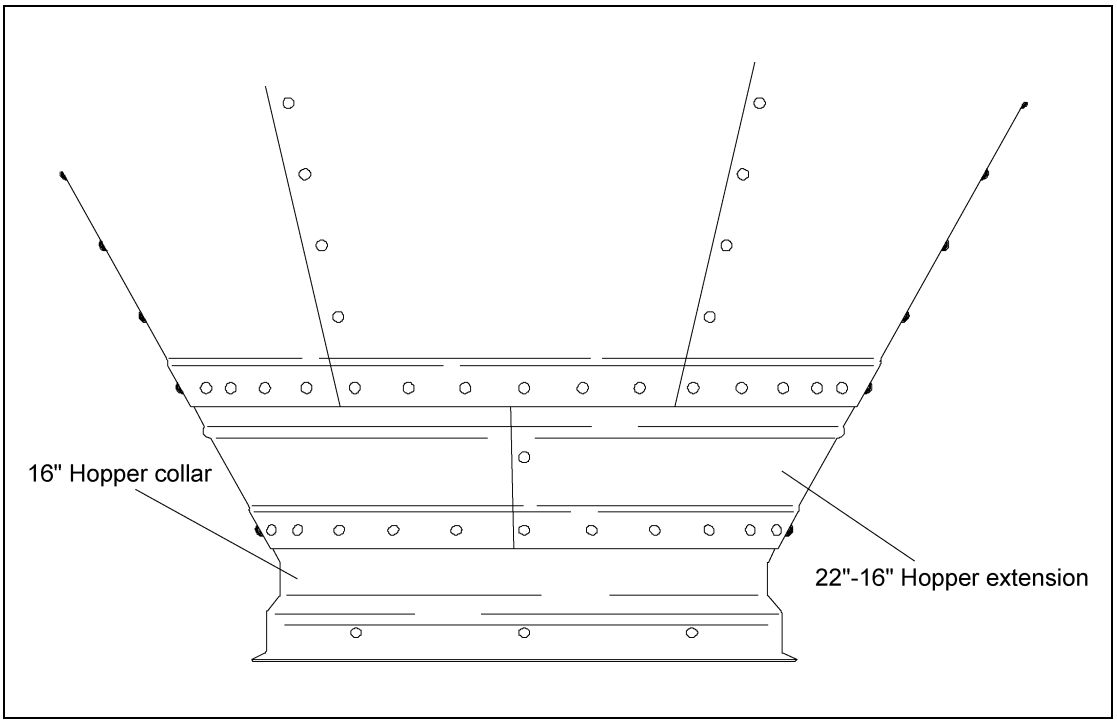



**Figure 8M** *Hopper Extension Kits*

| Part # | Description |
|---|---|
| BLK-10847 | 16" 45° Hopper Extension and Collar (Standard on 9' 45°) |
| BLK-10587 | 16" 60° Hopper Extension and Collar (Optional) |
| BLK-10591 | 16" 67° Hopper Extension and Collar (Optional) |

# Tank Legs and Leg Braces

When installing legs to sidewall, reverse the normal insertion procedure on bolts. **Place hex head and neoprene washer to inside of sidewall, leaving threaded portion of bolt protruding outward.** This provides for a weather tight seal at the leg attachment location. *See below and Pages 48-50* for leg attachment to sidewall sheet details.

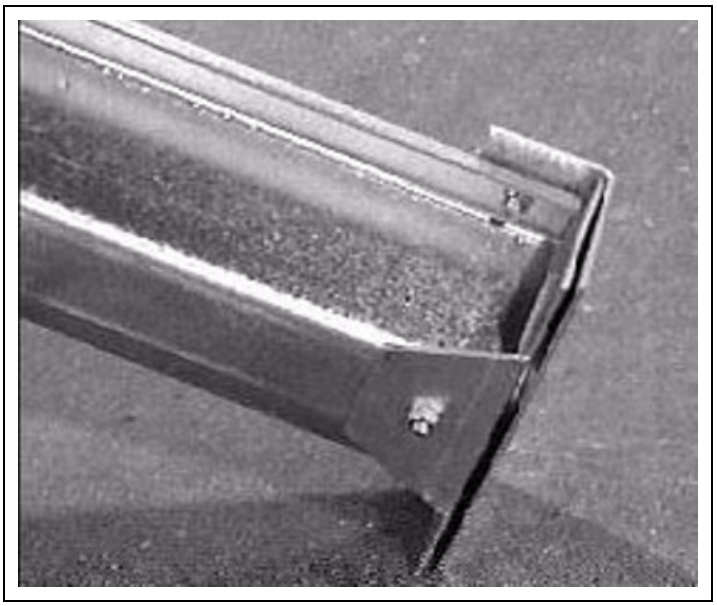


**Figure 9A**

Use 5/16" x 3/4" bin bolts and nuts when attaching the leg to base. Make sure the washer is used on the slot side of the leg.

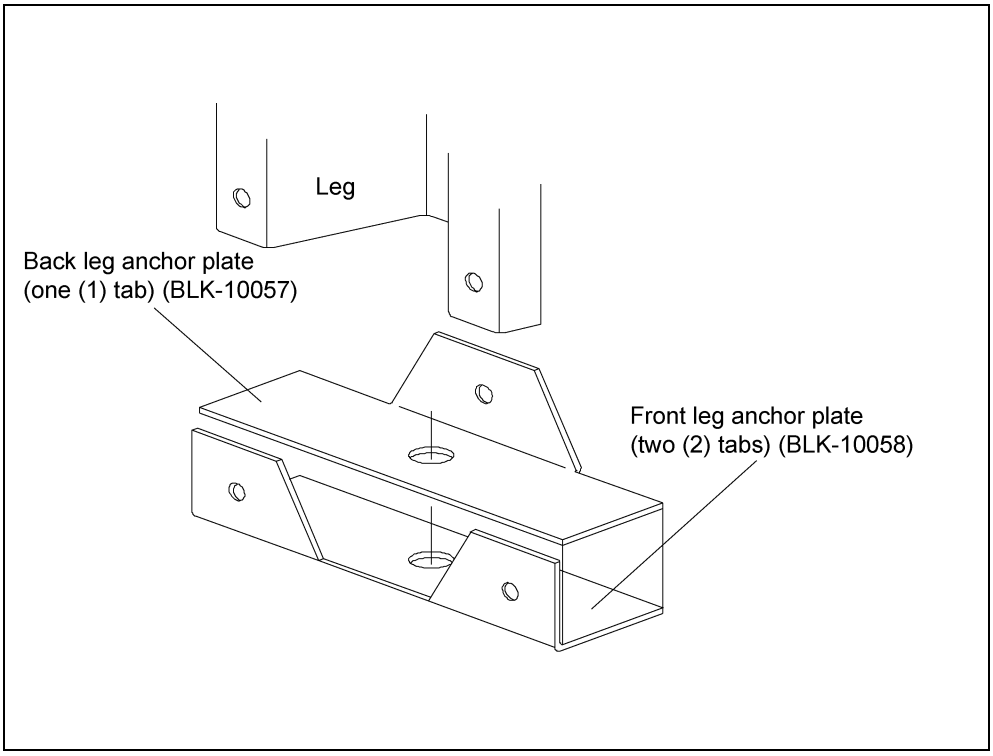
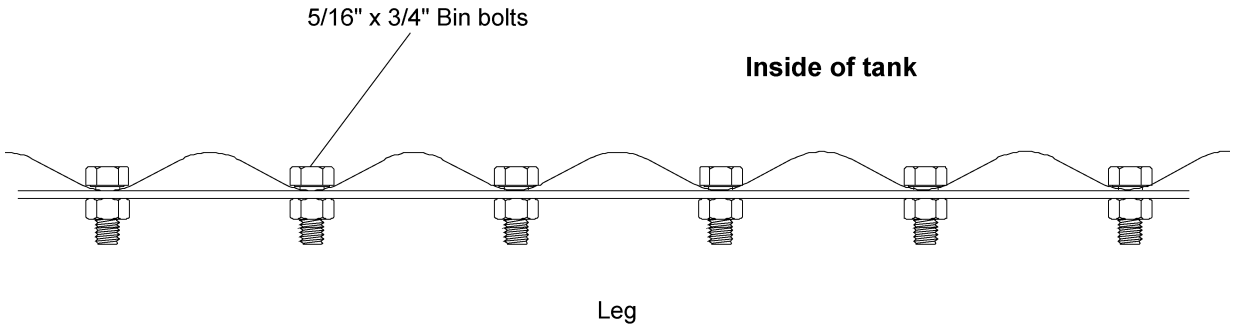



**Figure 9B**

**Line up leg with these holes and bolt (refer *Figure 9C* below) 6' tank leg shown.**

**Figure 9C**




Insert bolts inside to outside on all leg to tank connections.

**Figure 9D**

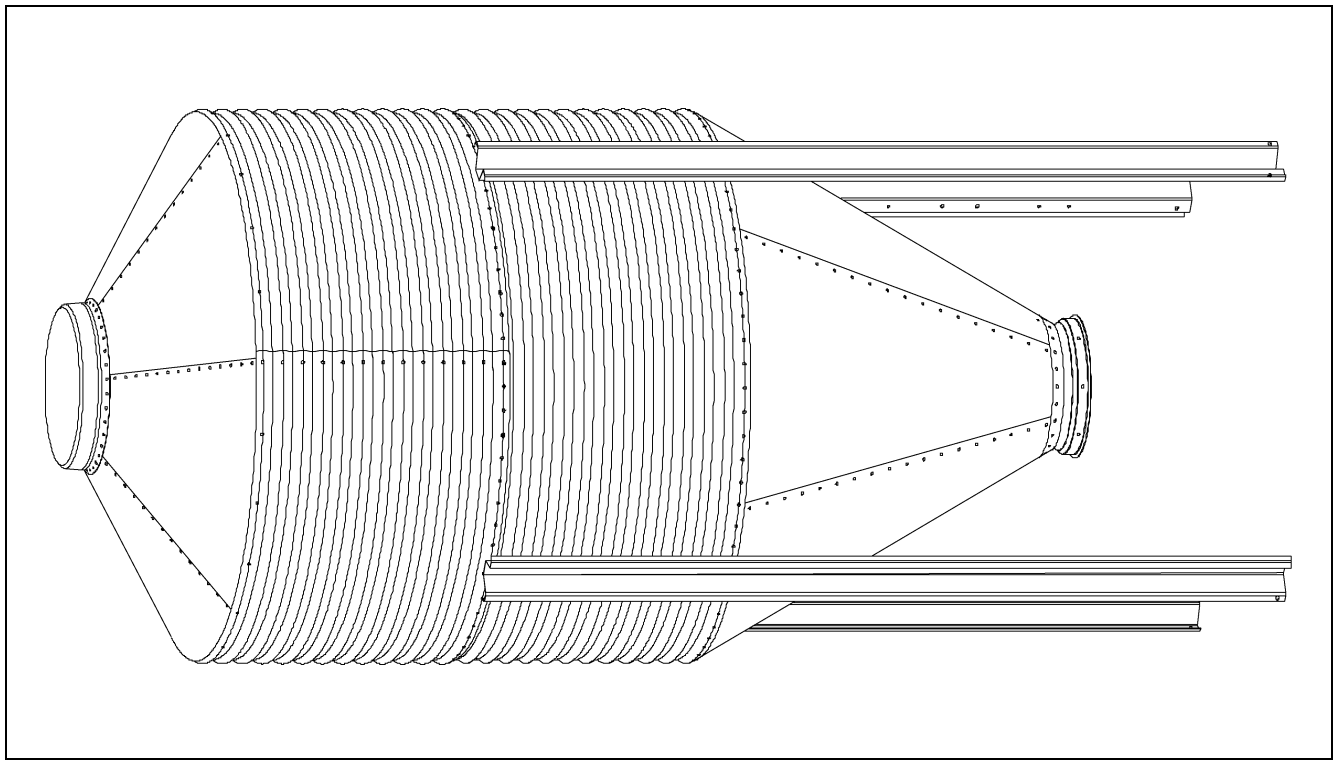


**Figure 9E**

## Leg Size Chart

| Tank Size (Diameter) | Hopper | Rings # | Length | Leg Coverage |
|---|---|---|---|---|
| 6' | 60° | 1-3 | 106-3/8" | 1 Ring |
| 6' | 60° | 4 | 106-3/8" | 1 Ring |
| 7' | 67° | 1-4 | 140-1/2" | 1 Ring |
| 7' | 67° | 5-6 | 164-1/2" | 1-3/4 Ring (56") |
| 9' | 60° | 1-5 | 140-1/2" | 1 Ring |
| 9' | 60° | 6 | 164-1/2" | 1-3/4 Ring (56") |
| 9' | 45° | 1-5 | 106-1/8" | 1 Ring |
| 9' | 45° | 6 | 132-3/4" | 1-3/4 Rings (56") |

## 1 Ring Leg 140-1/2" (3569 mm)

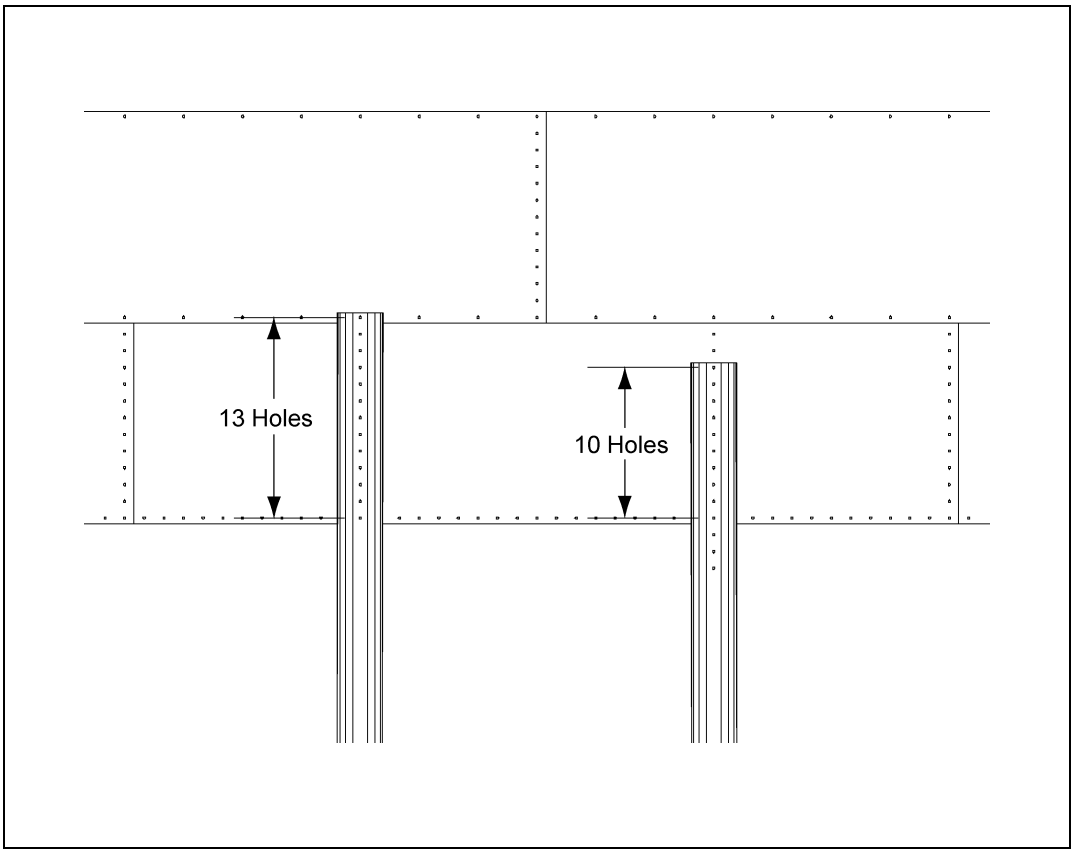



**Figure 9F** *Leg Adjustment (7' (1-4 ring) 67° and 9' (1-5 ring) 60° only)*

**NOTE:** *9' 5 Ring tanks must utilize two (2) ring coverage legs if raising 8" (203.2 mm).*

CAUTION

***Failure to follow instructions may cause damage or failure of the equipment.***

Depending on the size of the bulk feed tank being assembled, the leg will cover either the bottom ring or 1-3/4 rings (56"). *Refer Leg Size Chart on Page 49* to find the correct number of rings the legs will cover. **Put all legs on, but do not tighten bolts until all braces are in place.** Be sure to put leg braces on properly. *(Refer Pages 51-55.)*

## Extra Clearance Leg Adjustment

In cases where extra clearance is required (on 7' 67° and 9' 60° tanks only), you may raise the tank up to 8" when installing the legs. See details for proper positioning. Call GSI's engineering for any other special requirements.

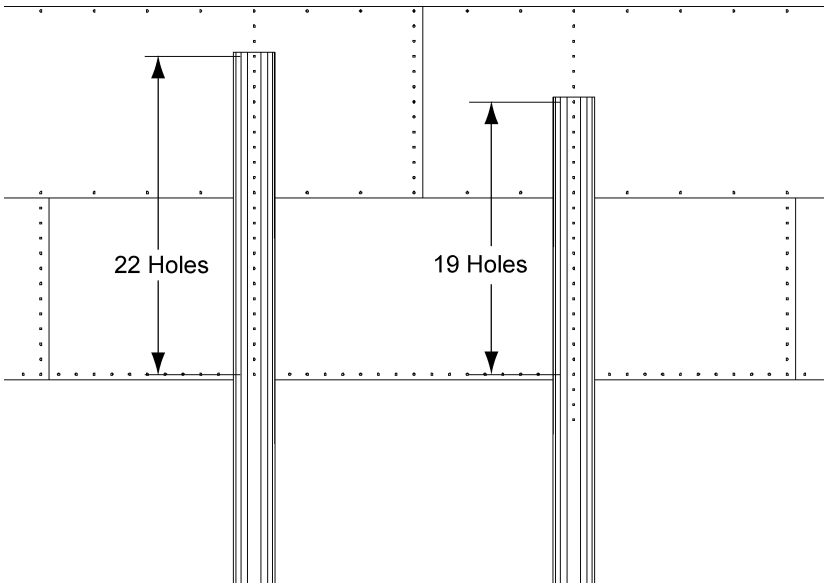
**NOTE:** *9' 5 Ring tanks must utilize two (2) ring coverage legs if raising 8" (203.2 mm).*

CAUTION

***Failure to follow instructions may cause damage or failure of the equipment.***

## Bracing Hole Layout (60° and 67° Legs)

For 7' 67° and 9' 60° feed tank bracing layout. *(See Figure 9I on Page 52* and *Figure 9J on Pages 53.)*




Leg adjustment (7' (5-6 ring) 67° and 9' (6 ring) 60° only) 2 ring leg 164-1/2" (4178 mm)

**Figure 9G**

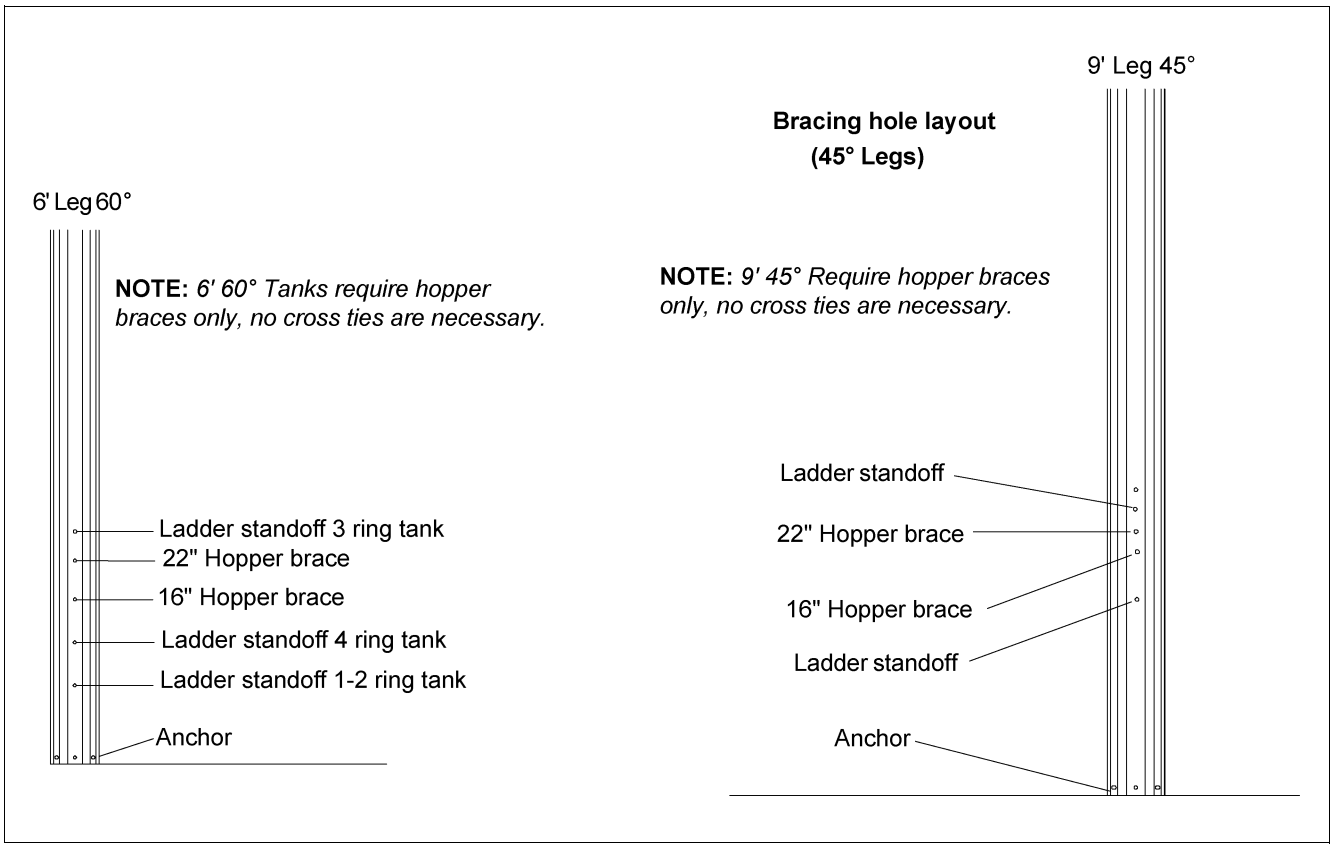
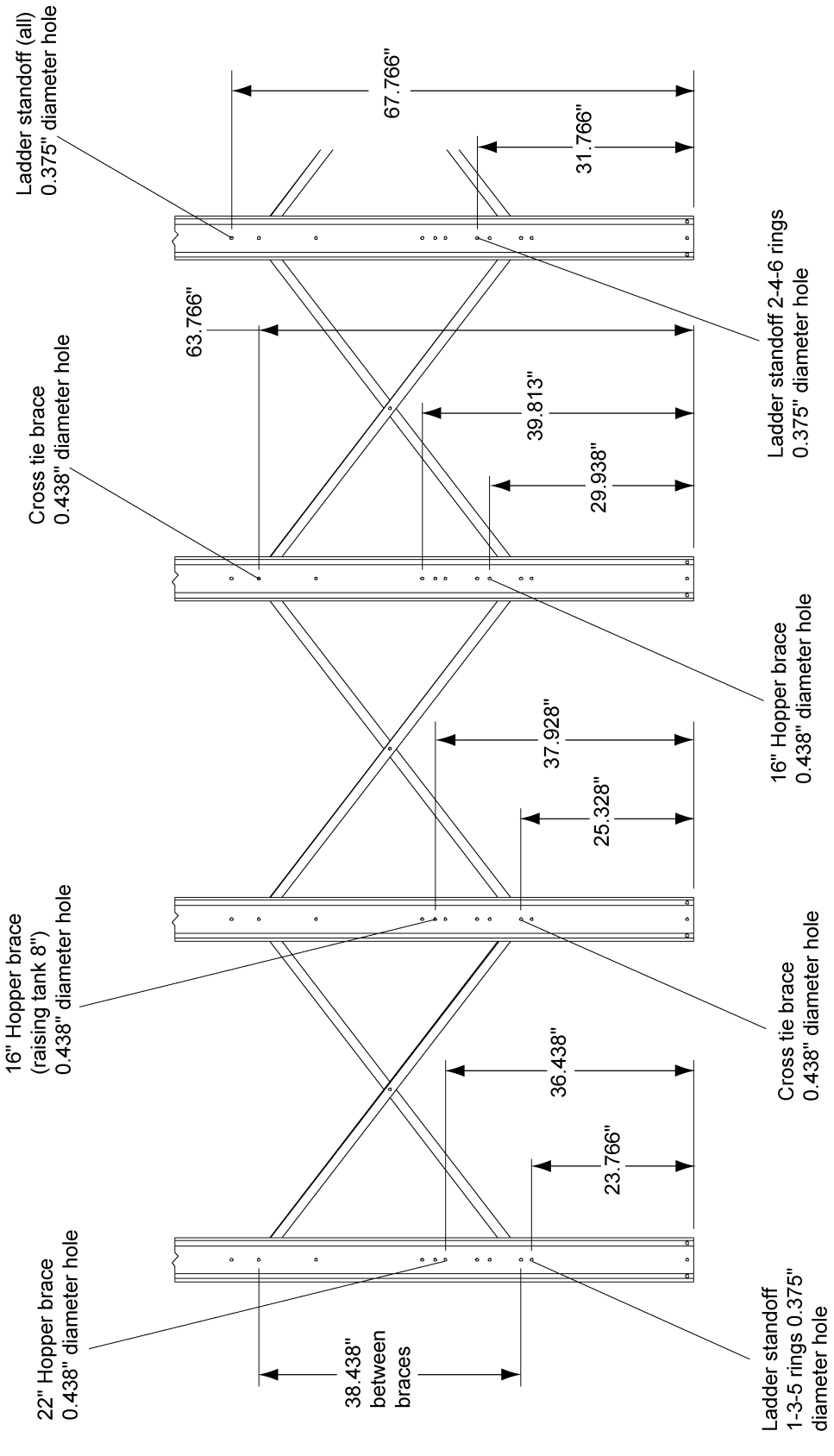



**Figure 9H**

**7' 67° 1-6 Ring**
**Drawing below has been modified for clarity (not to scale)**




**7' and 9' Bracing notes.** *(See Page 51.)*

Dimensions shown are measured from center of attachment holes in legs to bottom of leg. Use 3/8" nuts and bolts to attach cross ties to each other and to leg. Hopper braces are attached to legs with 3/8" nuts and bolts and to hopper collar with 5/16" hardware. Ladder standoffs are attached to legs with 5/16" nuts and bolts. Do not tighten hardware until all bracing is in place.

**Figure 9I**

**9' 60° 2 through 6 Ring tank**

**Drawing below has been modified for clarity (not to scale)**

**NOTE:** *9' 5 Ring tanks must use 6 ring legs when raising 8" (203.2 mm)*

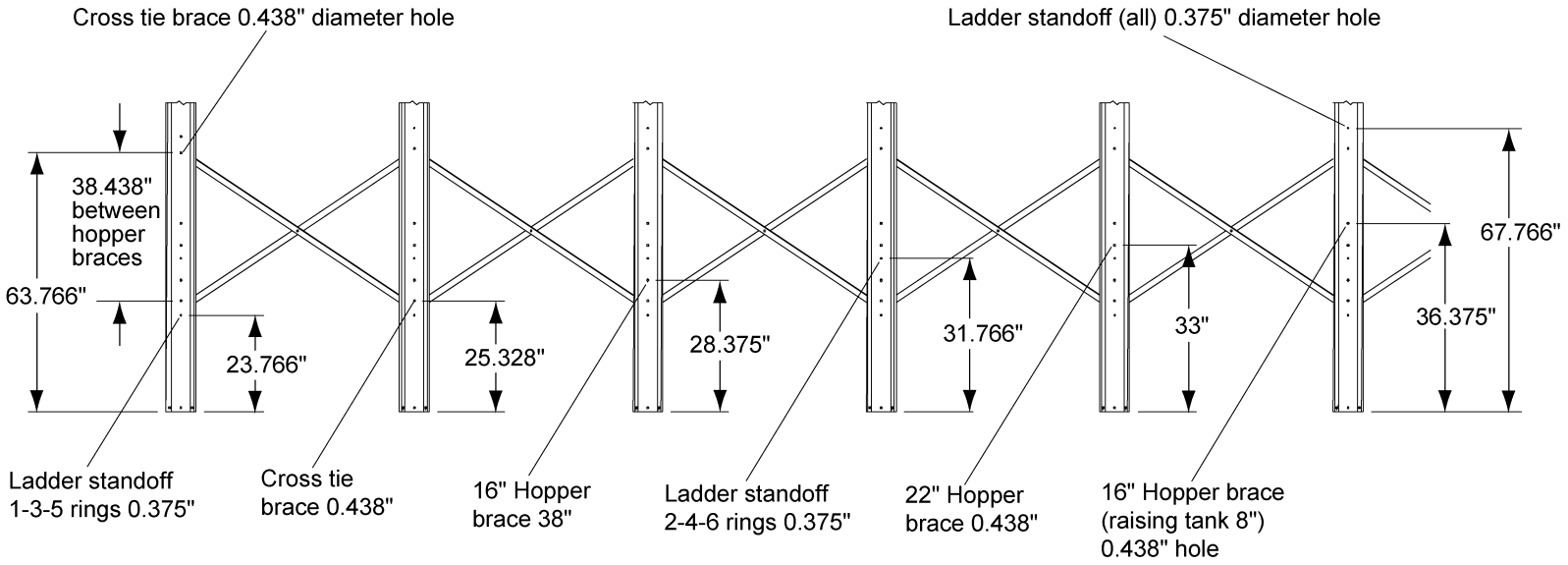



Figure 9J

**7' and 9' Bracing notes.** *(See Page 51.)*

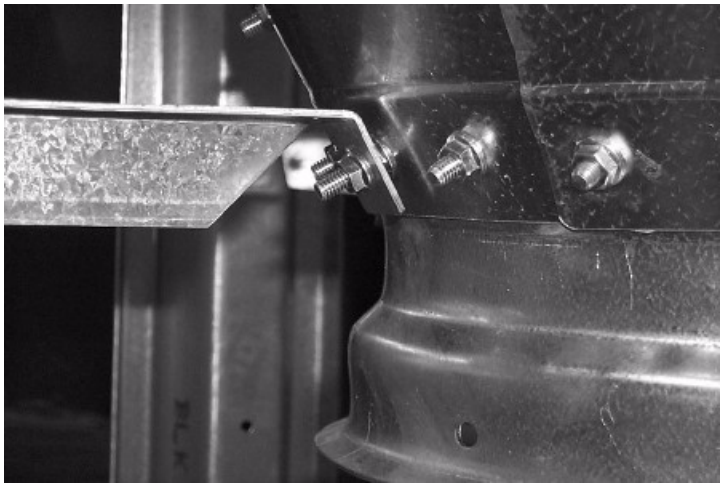
Dimensions shown are measured from center of attachment holes in legs to bottom of leg. Use 3/8" nuts and bolts to attach cross ties to each other and to leg. Hopper braces are attached to legs with 3/8" nuts and bolts and to hopper collar with 5/16" hardware. Ladder standoffs are attached to legs with 5/16" nuts and bolts. Do not tighten hardware until all bracing is in place.

# Hopper to Leg Horizontal Bracing

**BFT Brace Quantity**

| Tank Description | Hopper Brace | Inside Cross Tie Brace | Outside Cross Tie Brace |
|---|---|---|---|
| 6' Diameter 60° Hopper | 4 | 0** | 0** |
| 7' Diameter 67° Hopper | 4 | 4 | 4 |
| 9' Diameter 60° Hopper | 6 | 6 | 6 |
| 9' Diameter 45° Hopper | 6 | 0** | 0** |

***** 6' 60° and 9' 45° tanks do not require cross tie braces.***



All 6' 60°, all 7' 67° and all 9' 60° tanks utilize hopper bracing. Braces attach horizontally to the legs with 3/8" hardware and to the hopper with 5/16" hardware.

**Figure 9K**

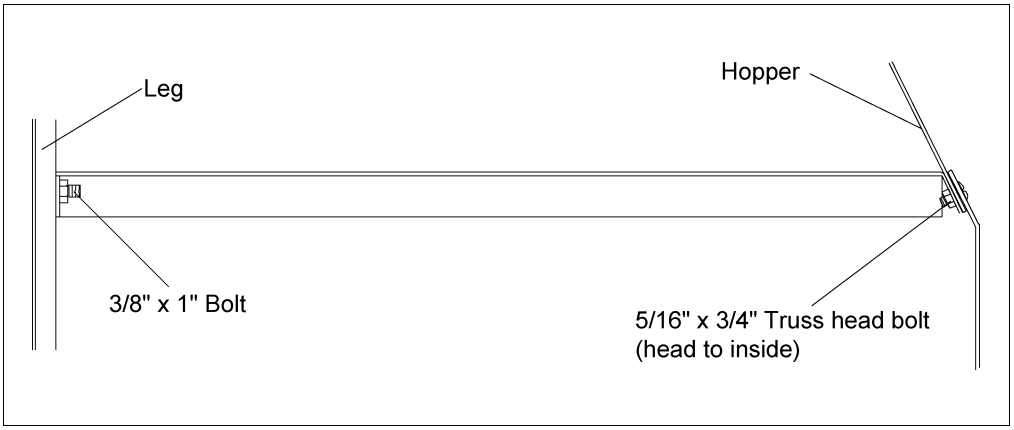



**Figure 9L**

Hopper braces are to be spaced equally around tank. Hopper braces are required on all hopper tanks.

Refer to the chart below for the quantities required.

| Tank | Brace Part # (16" Hopper) | Qty | Brace Part # (22" Hopper) | Qty |
|---|---|---|---|---|
| 6' 60° | BLK-12146 | 4 | BLK-12147 | 4 |
| 7' 67° | BLK-12107 | 4 | BLK-12108 | 4 |
| 9' 60° | BLK-12109 | 6 | BLK-12110 | 6 |
| 9' 45° | BLK-12111 | 6 | BLK-12112 | 6 |

**NOTE:** *Hopper braces attach between the legs and the collar/hopper horizontal seam. Never bolt the braces directly to the hopper seam above the collar. Use 16" braces with 16" collar and 22" braces with 22" collars.*

# Optional Sidewall Ladder

## Instructions

To start sidewall ladder, place two (2) outside standoffs spaces 18-3/4" (476 mm) apart. At the roof eave, the ladder should be located on the standoffs. (Refer to *Figure 10B on Page 57.*) Continue with standoff located on every horizontal seam. Ladder support ring should be located between two (2) legs as shown. This will support the ladder at the bottom of bulk feed tank. When positioning the ladder on the tank, be sure to attach ladder so the raised non-slip tread surface is to the **top** of the ladder rungs.

| Ladder Standoff Ring | | Qty |
|---|---|---|
| 6' | BLK-10147 | 1 |
| 7' | BLK-10148 | 2 |
| 9' | BLK-10149 | 3 |

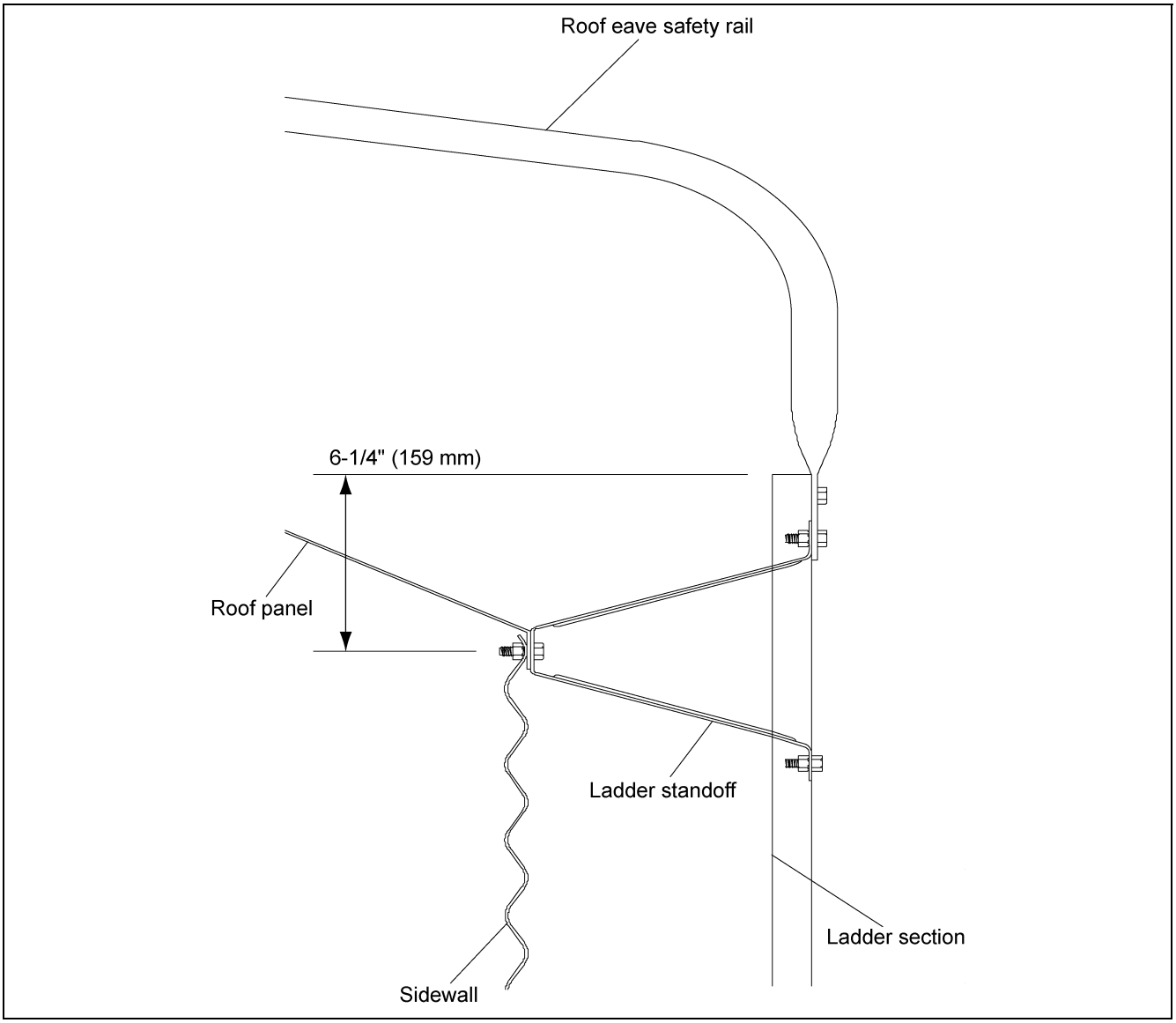



**Figure 10A** *Sidewall Ladder Detail*

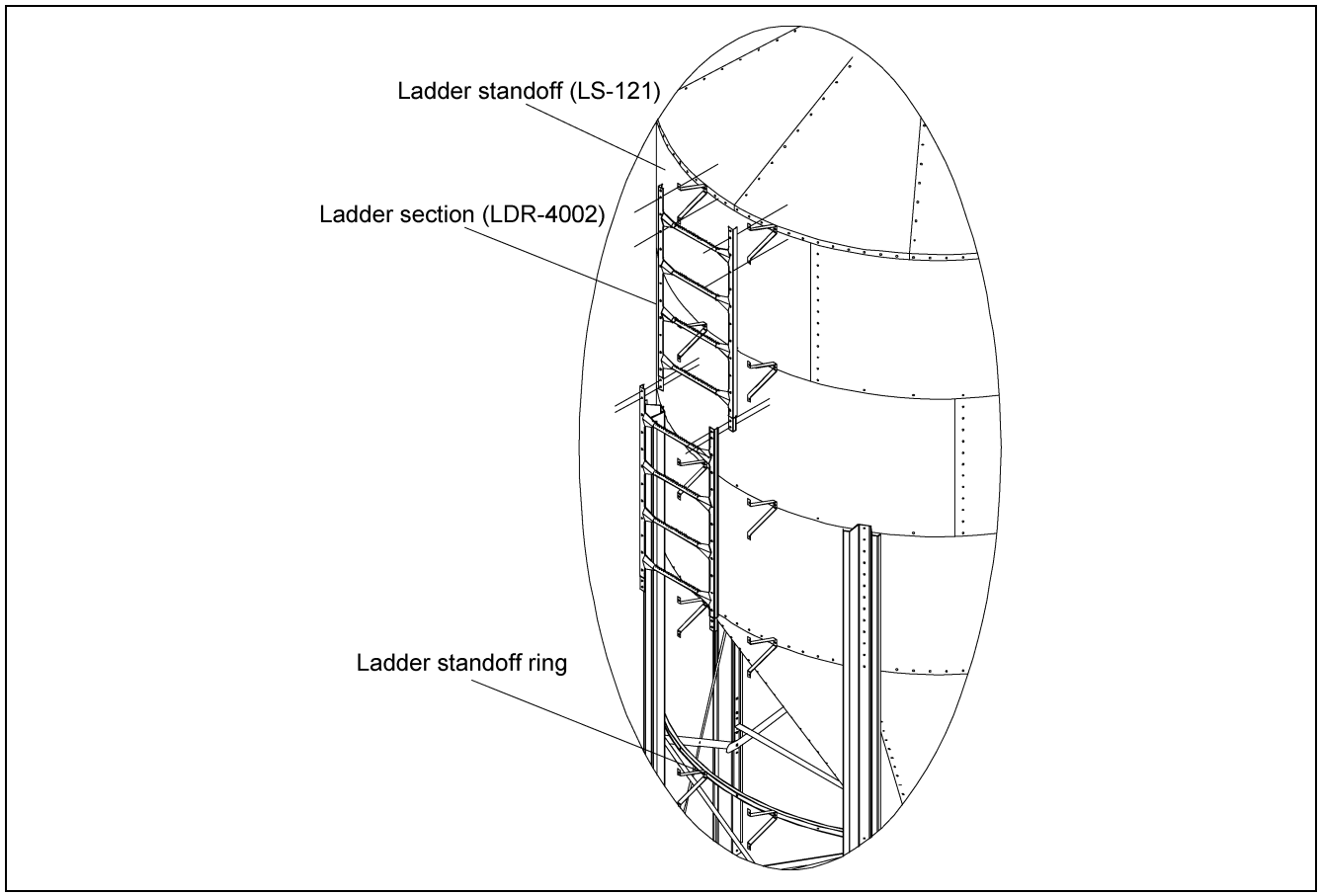
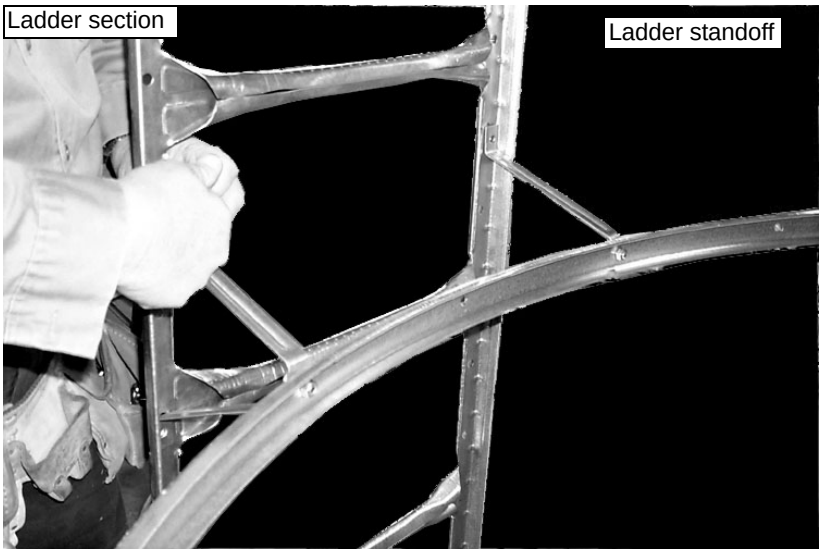



**Figure 10B** *Ladder Standoff Detail*

Note locations of legs and other ring's horizontal hole spacing when placing ladder.




Lower ladder section will overlap upper ladder section's offset. Each side is bolted together by two (2) 5/16" x 3/4" bolts and 5/16" nut.


**Figure 10C**

# Safety Cage

**Ladder and Safety Cage Usage Chart**
**(Number in chart specifies ring size)**

| Ladder Package # | Safety Cage # | 6' 60° | 7' 67° | 9' 60° | 9' 45° |
|---|---|---|---|---|---|
| BLK-10824 | N/A | | | | |
| BLK-10630 | BLK-10831 | 1 | | | |
| BLK-10634 | BLK-10832 | 2 | 1 | | 2 |
| BLK-10635 | BLK-10833 | 3 | 2 | 2 | 3 |
| BLK-10640 | BLK-10835 | 4 | 3 | 3 | 4 |
| BLK-10637 | BLK-10836 | | 4 | 4 | |
| BLK-10641 | BLK-10837 | | | | 5 |
| BLK-10642 | BLK-10838 | | 5 | 5 | 6 |
| BLK-10643 | BLK-10839 | | 6 | 6 | |

Start attaching ladder at the eave (top) of the bulk feed tank. After the first ladder section has been attached to the sidewall of tank, attach ladder extension rails to the ladder as shown. Refer *Pages 56-57* for proper ladder placement in relation to the eave of the tank. Use 5/16" bin bolts and nuts on all safety cage connections. Attach hoop brackets and adjustable safety cage braces to the top of the extension rails. Now attach the opposite end of the adjustable brace to the roof ladder rail. After completing this, drill two (2) 5/16" holes through the adjustable brace and use 1/4" x 1-1/2" bolts and nuts to secure the two (2) braces together.

Add the safety cage hoops to the brackets and attach vertical supports to the hoops. Continue adding ladder sections and safety cage as sidewall rings are attached. Included in the safety cage package are two (2) bell hoop halves which should be located at the bottom of the safety cage. Follow all drawings and details for proper placement of parts and proper location of safety cage.

**IMPORTANT:** *Belled safety cage section parts are color code: Red.*

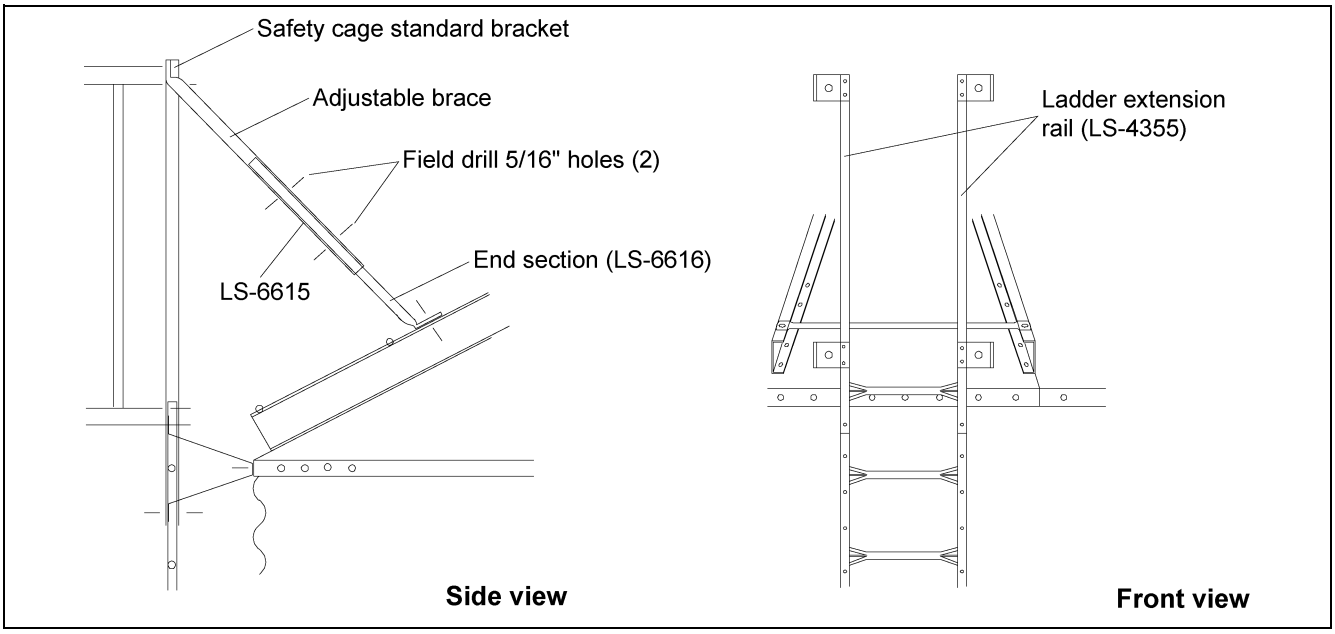
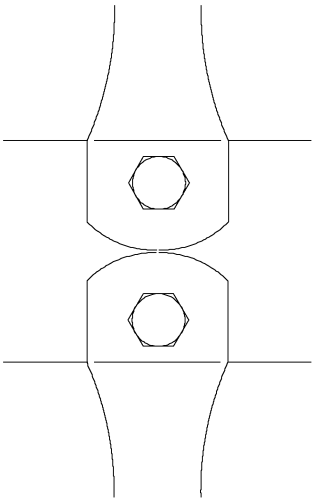
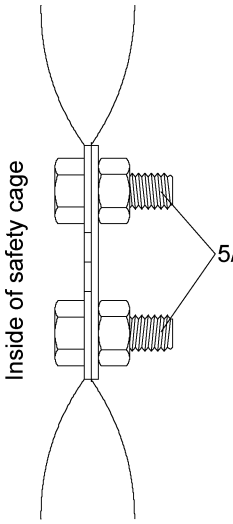


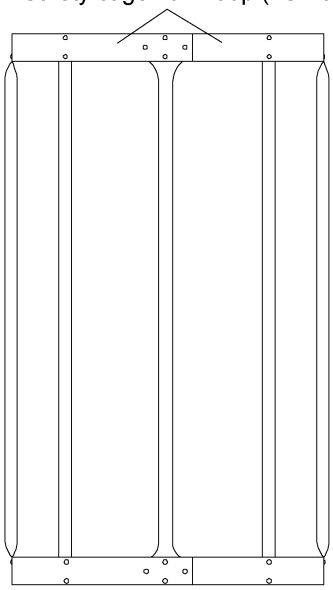

**Figure 10D**



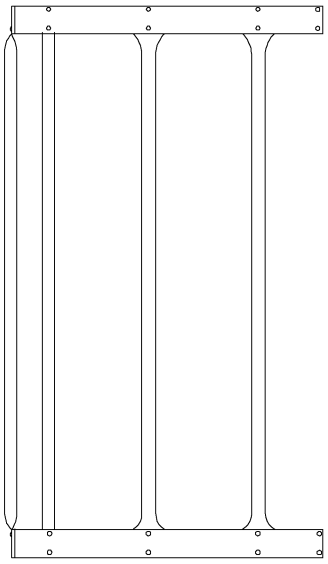
Head of the bolt to be placed to the inside of the safety cage.




Safety cage half hoop (LS-4351)

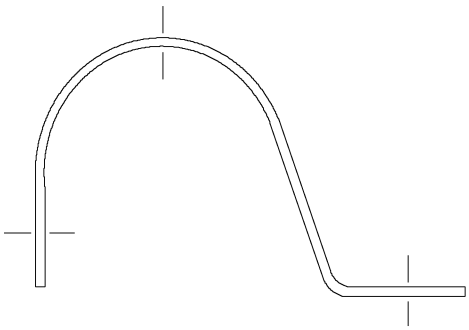


Safety cage vertical support (LS-4353)



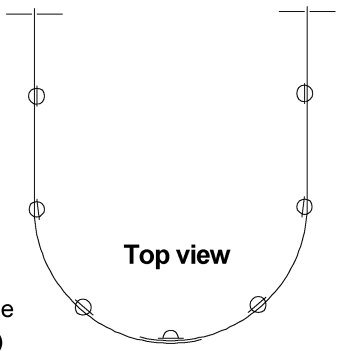
**Front view**

**Side view**



Safety cage standard bracket (LS-4349)

Attach hoop to bracket on ladder



**Top view**

Overlap safety cage hoops 5" (127 mm)

**Figure 10E** *Safety Cage Assembly*

# Raising Bin to set on Foundation

## Preparing Bin

Prior to standing the bin upright, peel protective mask off the decal while it is easy to reach. Mask may become difficult to remove if exposed to sunlight.

***Check for all possible overhead obstructions, power line, etc., BEFORE standing the bin on the foundation.***

To prevent damage to legs when raising bin, brace them with 2" x 4" (50 mm x 100 mm) pieces of wood as shown in *Figure 11A*. See the chart below for the correct length.

> **WARNING** ***Do not raise tank near power lines. Electrocution could occur if the tank comes into contact with live power lines.***

| Bin Size | 2" x 4" Length |
|---|---|
| 6' Diameter (1829 mm) | 51-3/8" (1305 mm) |
| 7' Diameter (2134 mm) | 59-7/8" (1521 mm) |
| 9' Diameter (2743 mm) | 52-1/8" (1324 mm) |

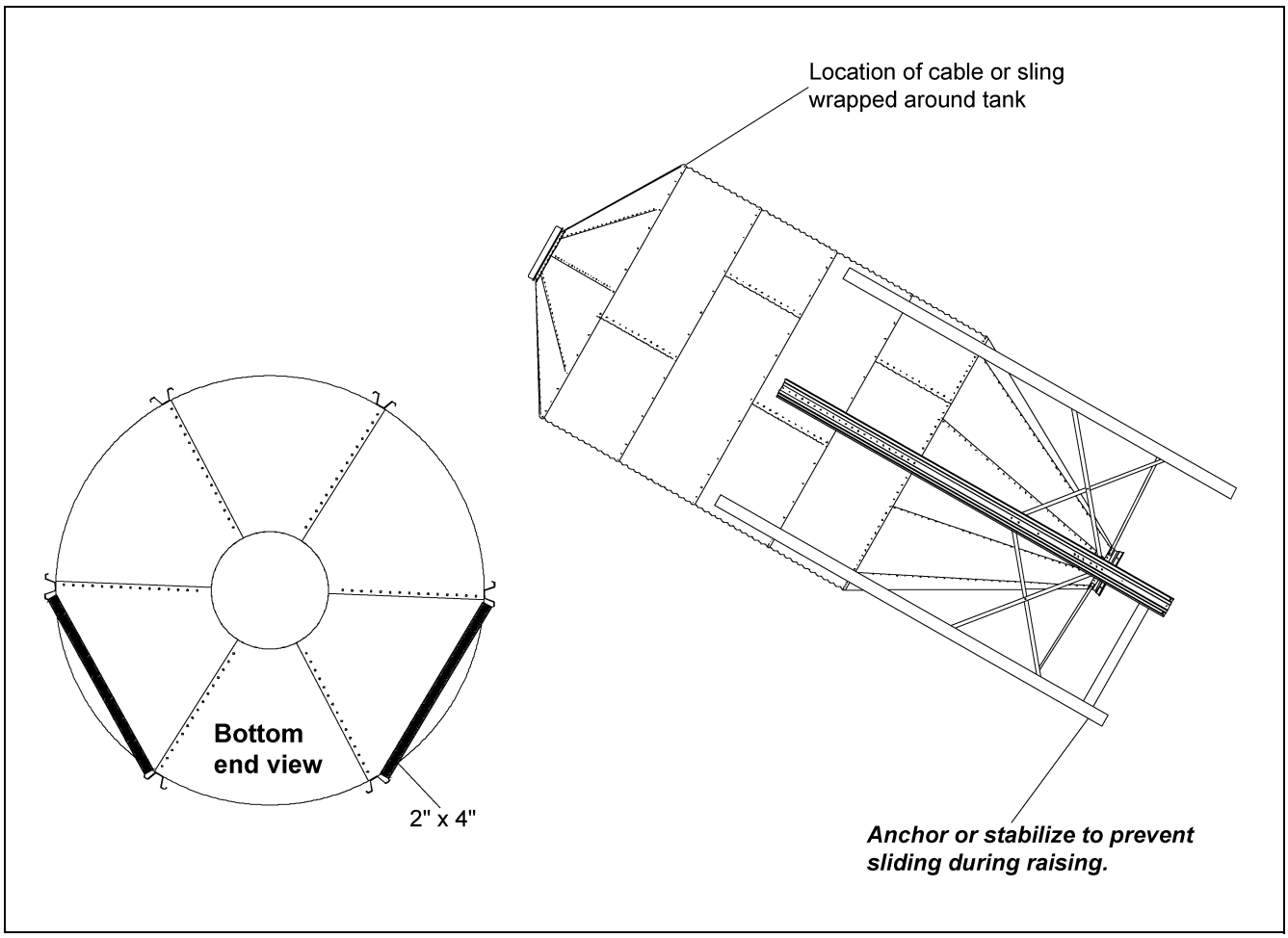



**Figure 11A**

# Raising Bin to set on Foundation (Continued)

Be sure that all bolts are tightened properly. Bulk feed tank can now be set up on foundation. Small bulk feed tanks may be set up with manpower. As the tanks get taller and heavier, other means must be used to raise the bulk feed tank. A small crane of adequate capacity attached to a cable or sling secured around the bulk feed tank just above the legs may be a possibility. Refer any questions to a qualified rigger.

## Anchoring Tank

Check all legs to see if shims are necessary to level the tank properly. After bulk feed tank is level and shimmed properly, anchor the tank down with 5/8" washers and nuts. *(See Figure 11B.)*

## Standard Hopper Bin Anchoring

Measure between opposite legs to be sure they are an equal distance apart before securing the bin with anchor bolts. Follow the chart shown below. Failure to do so may cause damage to the bin.

| Bin Size | Distance between Opposite Legs |
|---|---|
| 6' Diameter (1829 mm) | 72-1/4" (1835 mm) |
| 7' Diameter (2134 mm) | 84-1/4" (2140 mm) |
| 9' Diameter (2743 mm) | 108-1/8" (2746 mm) |

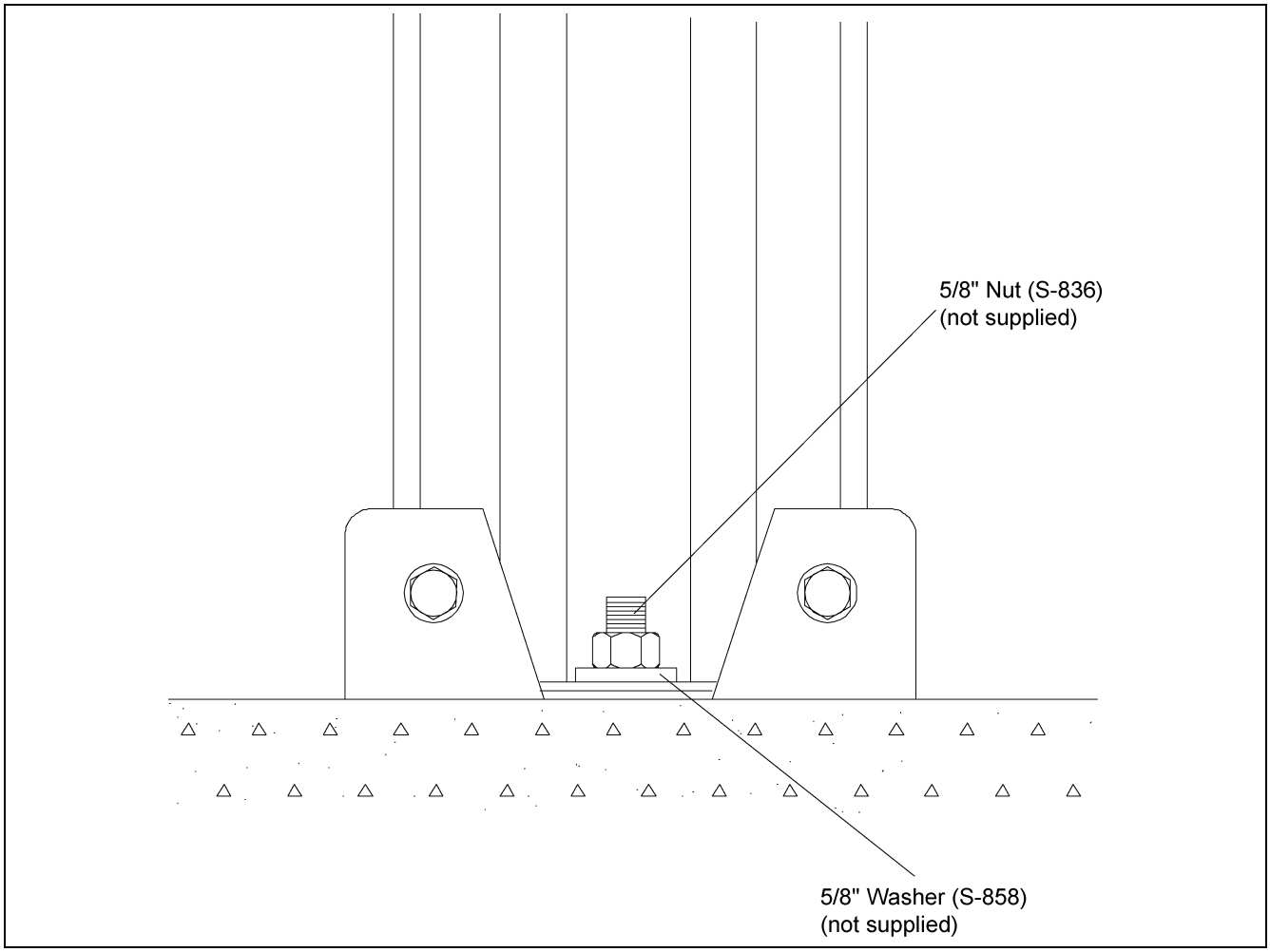



**Figure 11B** *Leg Base Detail*

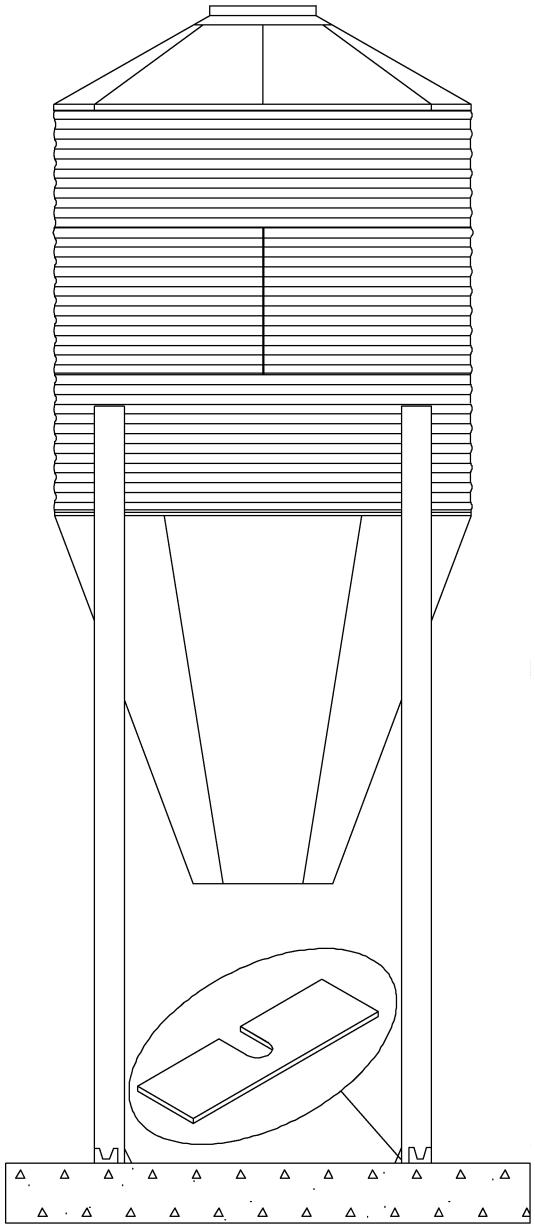


**Figure 11C** *Leg Base Detail*

**NOTE:** *Leg shims are not standard equipment and must be obtained locally.*

# Bin Grounding Instructions

**NOTE:** *Parts not supplied by manufacturer and must be purchased locally.*

All bins should have two (2) ground connections. Ground clamps must be placed at equal distances around the bin.

Alternate installation: Cables may be placed in the foundation or through PVC sleeve inserted in the slab during construction.

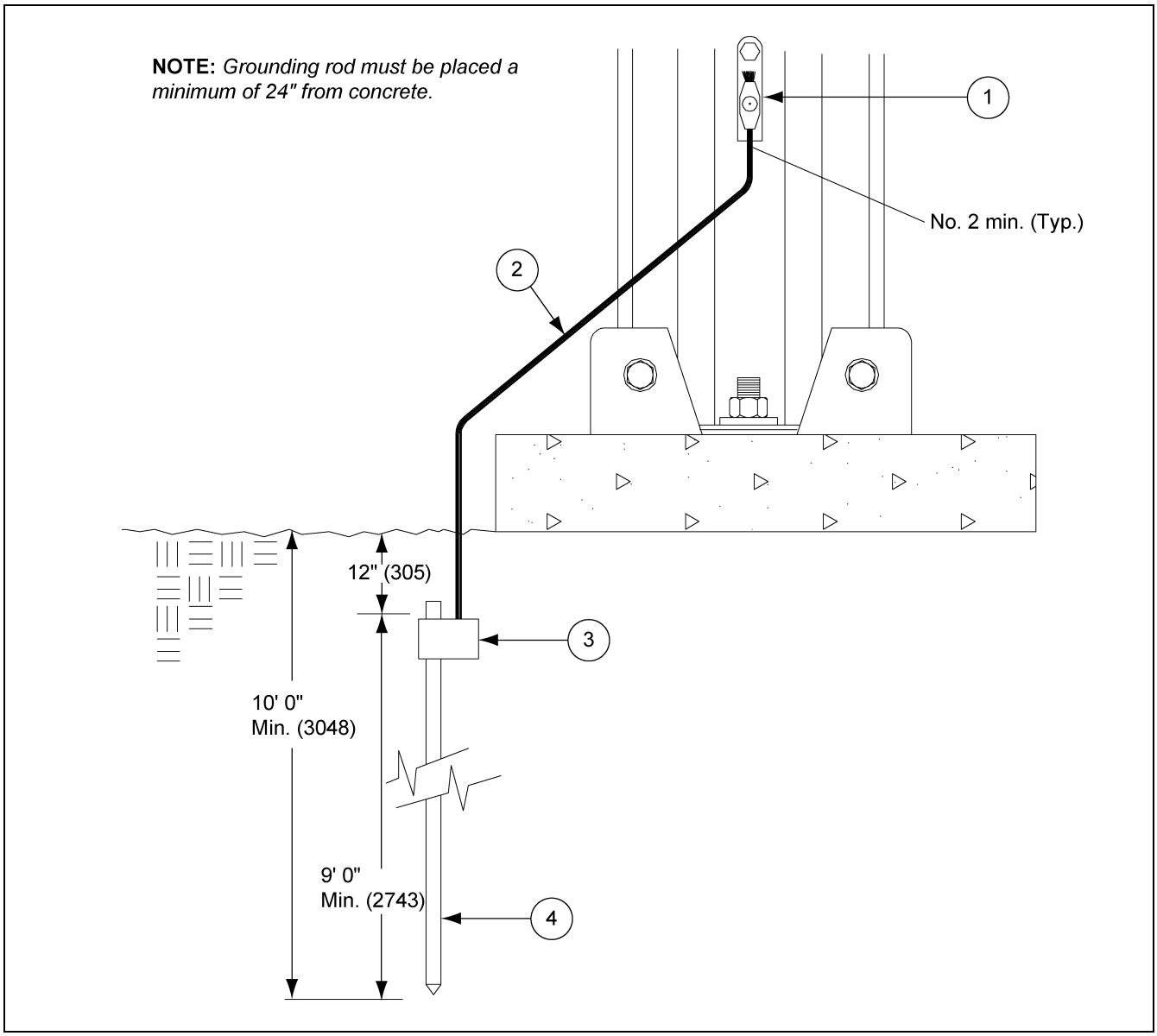



**Figure 12A**

| Ref # | Description |
|---|---|
| 1 | Cable Clamp |
| 2 | 5' (1524 mm) Copper Cable (Plain or Jacketed) |
| 3 | Ground Rod Clamp |
| 4 | Ground Rod 1/2" x 10' (3048 mm) |

# Roof Panel

Identical pre-punched roof panels are available from the manufacturer for inlet and outlet sections of pneumatic fill systems. Extruded lip of the panels provide for weather tight installation. Caulking placed between angle rings virtually eliminates all leakage issues. Rubber seal must be utilized at roof cap area to prevent material “blow by” from pressurized systems.

To install fill kits in roof panels not pre-punched, cut 5-5/8" (143 mm) diameter holes in opposing roof panels as shown. Caulk sufficiently to provide weather tight seal.

Refer to “Peak Ring Seal Strip” installation procedure *on Page 28* when installing pneumatic fill kits.

Abnormal pressure may require use of optional cap hold down package (BLK-10474).

**NOTE:** *Inlet and exhaust parts from roof eave upward supplied with kit.*

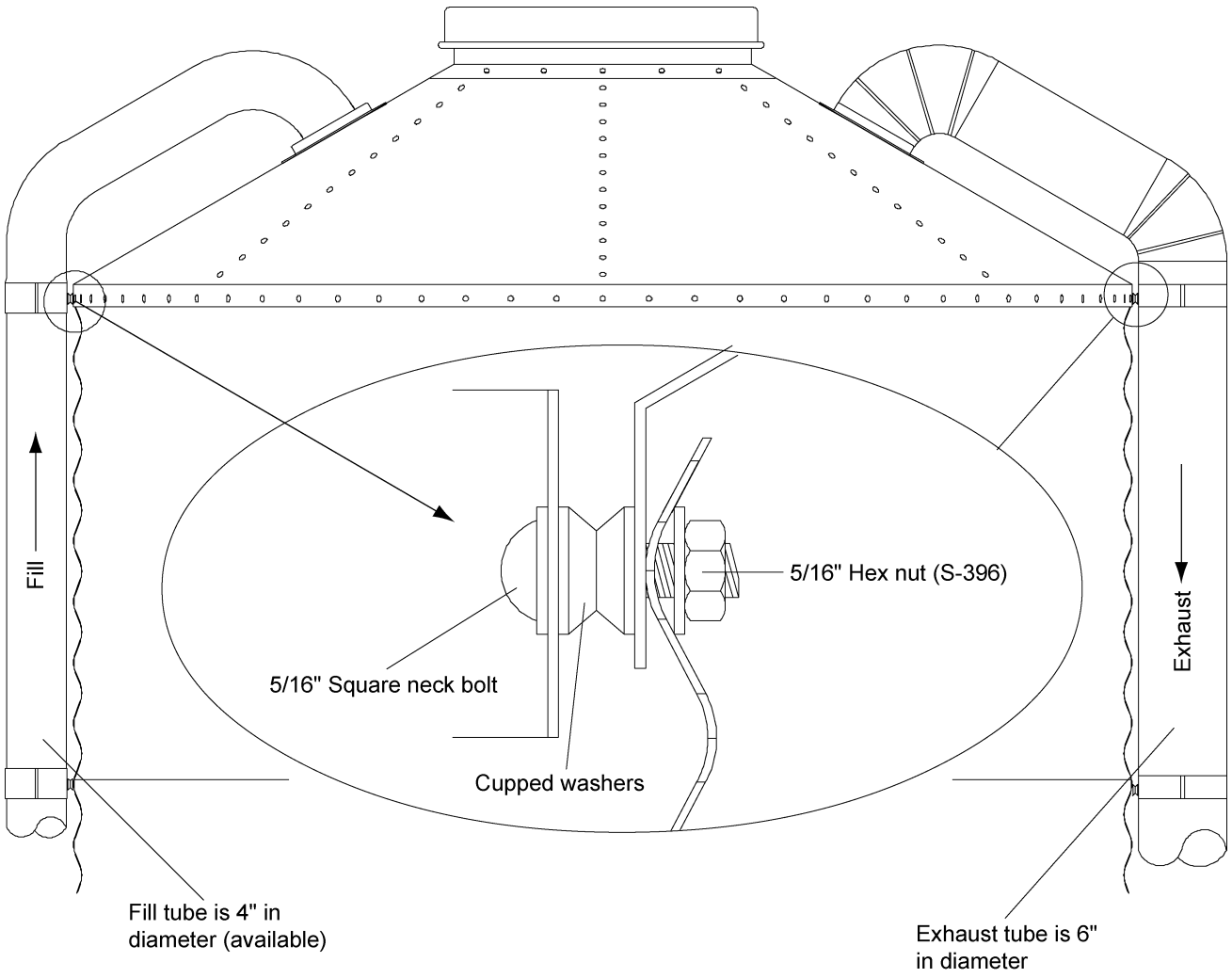



**Figure 13A** *Pneumatic Fill Kit Assembly*

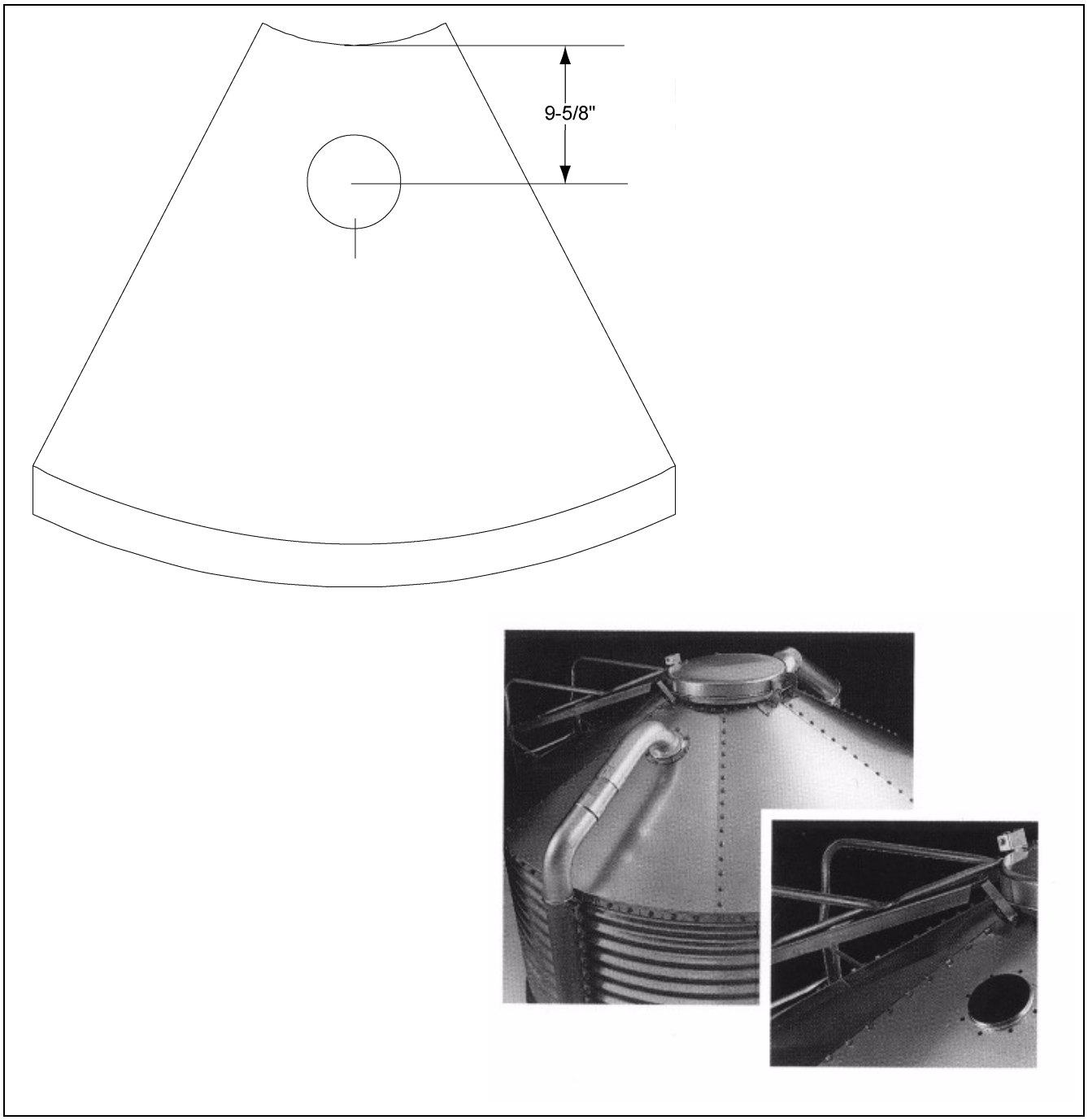
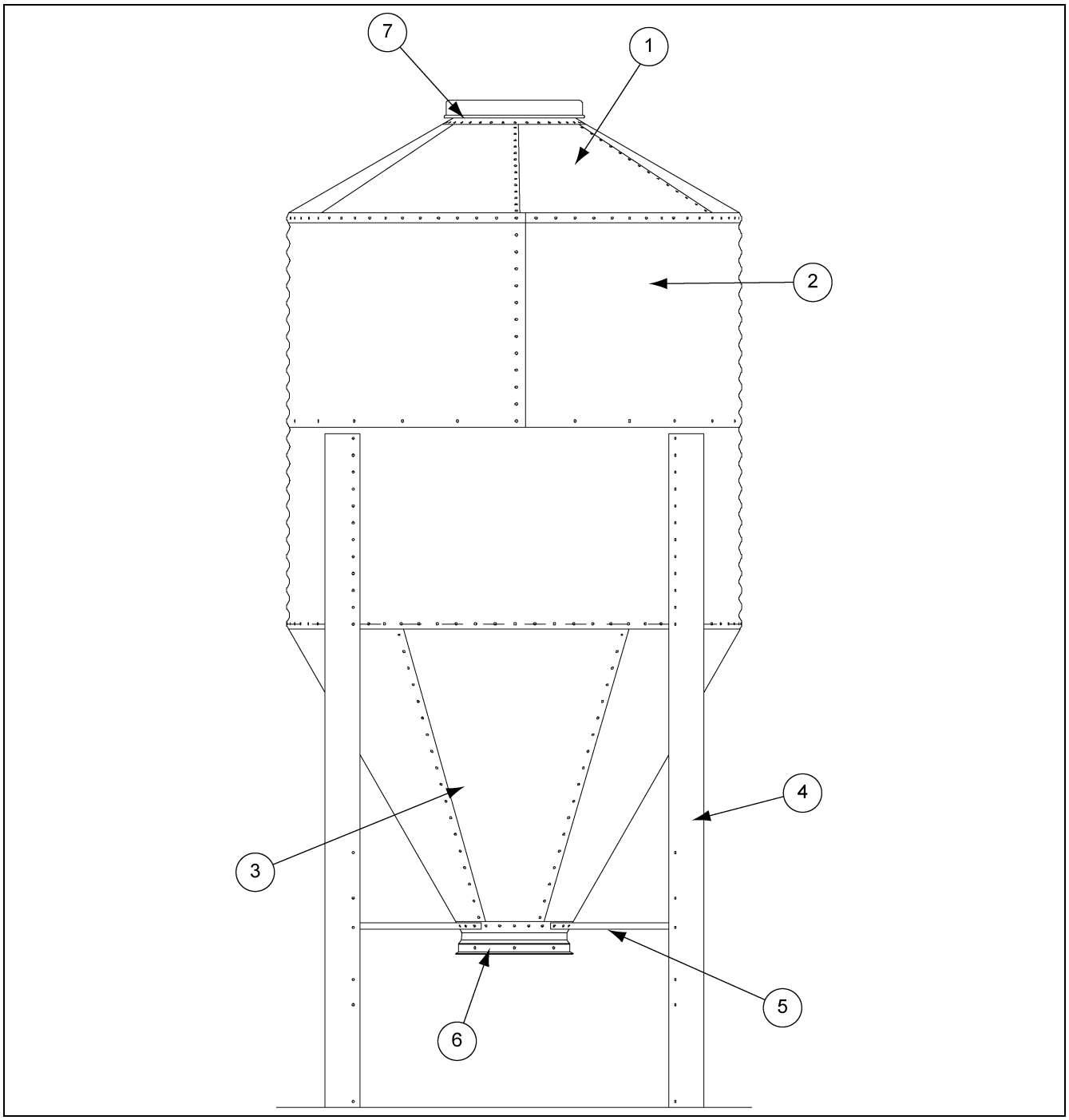



**Figure 13B**

# NOTES

# 6' Diameter 60° Hopper Bin Specifications



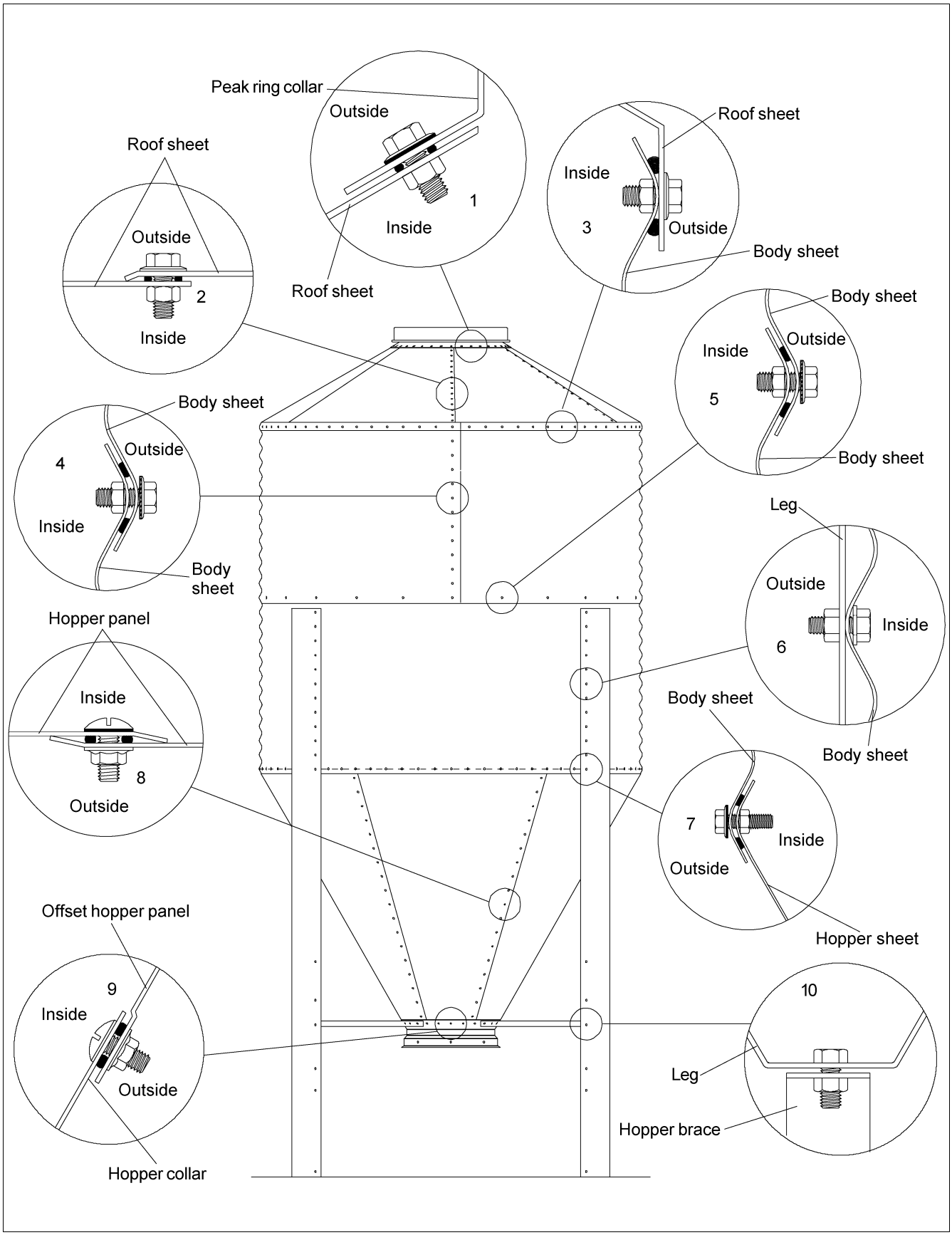

| Under Collar Clearance | |
|---|---|
| 16" Collar | 28-5/16" (719 mm) |
| 22" Collar | 32-7/8" (837 mm) |

**IMPORTANT:** *Bolt heads are inside of bin at the leg to body attachment and on all vertical seams on hopper panels. Tighten ALL bolts from the nut side ONLY. Refer Page 23 for location of caulking. No cross tie bracing required.*

## 6' Diameter 60° Hopper Bin Specifications Parts List

| Ref # | Part # | Description | Qty |
|---|---|---|---|
| 1 | BLK-12254 | 6' 30° Roof Panel (20 Gauge) (Shown) | 6 |
| | BLK-12257 | 6' 40° Roof Panel (20 Gauge) | 6 |
| 2 | **6' Sidewall Sheet** | | **2 Per Ring** |
| | SS40682006 | 20 Gauge (Top Punched Sidewall Sheet) | |
| | SS41632006 | 20 Gauge (Top Punched Decal Sidewall Sheet) | |
| | SS40672006 | 20 Gauge (Bottom/Top Leg Sidewall Sheet) | |
| | SS40692006 | 20 Gauge (Middle Punched Sidewall Sheet) | |
| | SS41622006 | 20 Gauge (Bottom/Top Leg Decal Sidewall Sheet) | |
| | SS40712006 | 20 Gauge (Bottom Leg Sidewall Sheet) | |
| | SS40711806 | 18 Gauge (Bottom Leg Sidewall Sheet) | |
| 3 | BLK-11475 | 6' 60° Offset Hopper Panel 16" Opening (20 Gauge) (Shown) | 6 |
| | BLK-10358 | 6' 60° Hopper Panel 22" Opening (20 Gauge) | 6 |
| 4 | BLK-12716 | 6' 60° Leg 106-1/16" (14 Gauge) (1-3 Rings) | 4 |
| | BLK-12222 | 6' 60° Leg 106-1/16" (12 Gauge) (4 Ring) | 4 |
| 5 | BLK-12146 | Hopper Brace for 16" Collar (Shown) | 4 |
| | BLK-12147 | Hopper Brace for 22" Collar | 4 |
| 6 | BLK-10489 | 16" 60° Hopper Collar (24 Holes) (Shown) | 1 |
| | BLK-10342 | 22" 60° Hopper Collar (36 Holes) | 1 |
| 7 | BLK-11730 | 30° Bulk Tank Peak Ring (Shown) | 1 |
| | BLK-12534 | 40° Bulk Tank Peak Ring | 1 |

# 6' Diameter 60° Hopper Bin Hardware Specifications



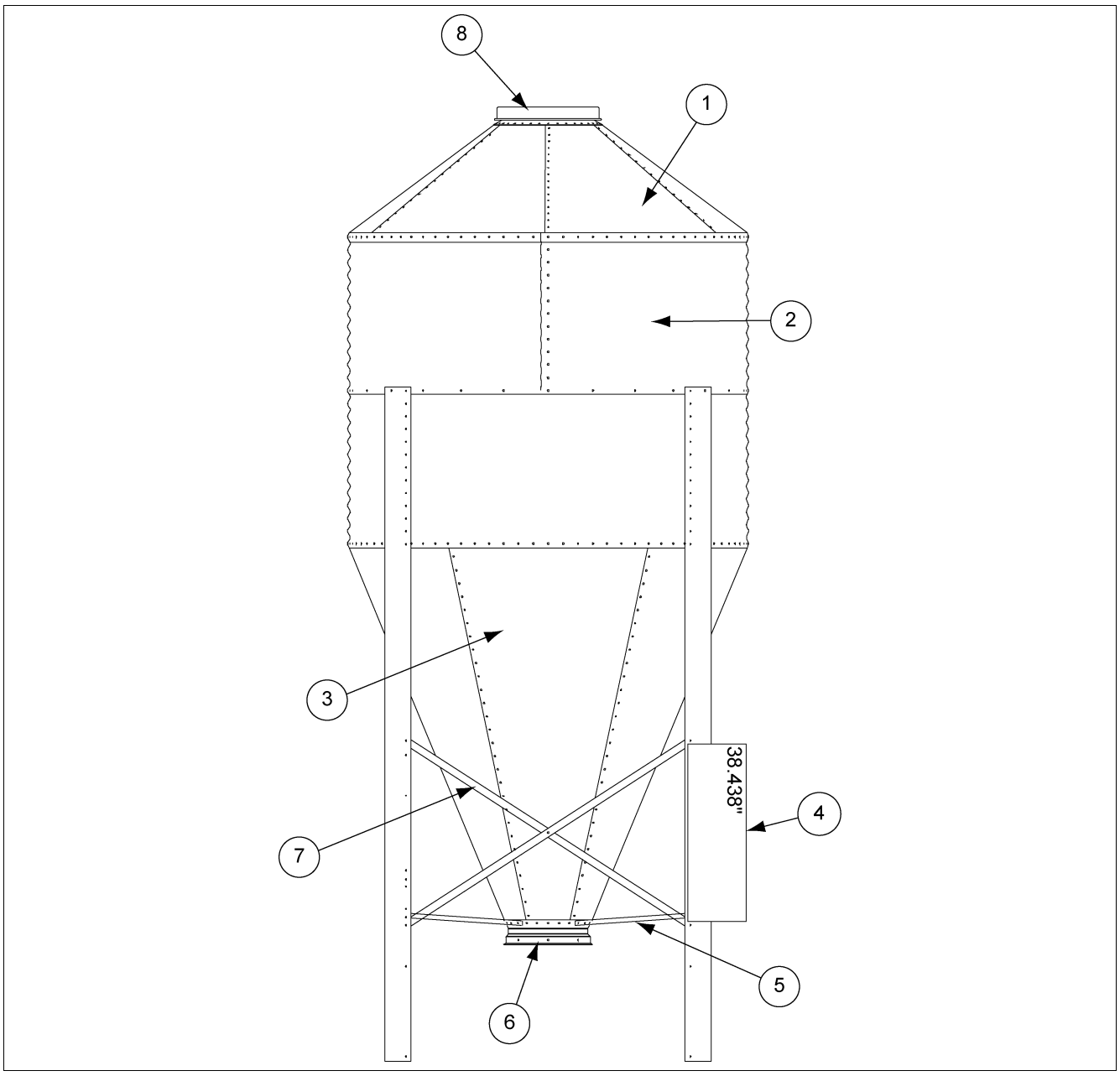
## 6' Diameter 60° Hopper Bin Hardware Specifications Parts List

| Ref # | Part # | Description | Qty |
|---|---|---|---|
| 1 | S-275<br>S-396 | Bulk Tank Peak Ring to Roof Panels (Use 5/16" x 3/4" Hex Head Bin Bolts and 5/16" Hex Nuts.) | 36<br>36 |
| 2 | S-275<br>S-396 | Roof Panel to Roof Panel (Use 5/16" x 3/4" Hex Head Bin Bolts and 5/16" Hex Nuts.) | 48<br>48 |
| 3 | S-275<br>S-396 | Roof Panels to Top Sidewall Sheets (Use 5/16" x 3/4" Hex Head Bin Bolts and 5/16" Hex Nuts.) | 72<br>72 |
| 4 | S-275<br>S-396 | Vertical Sidewall Sheet Seams (Use 5/16" x 3/4" Hex Head Bin Bolts and 5/16" Hex Nuts.) | Varies<br>Varies |
| 5 | S-275<br>S-396 | Horizontal Sidewall Sheet Seams (Use 5/16" x 3/4" Hex Head Bin Bolts and 5/16" Hex Nuts.) | Varies<br>Varies |
| 6 | S-275<br>S-396 | Leg to Sidewall Sheet (Use 5/16" x 3/4" Hex Head Bin Bolts and 5/16" Hex Nuts.) **(Bolt Heads to Inside of Tank.)** | 48<br>48 |
| 7 | S-277<br>S-396 | Hopper Panels to Sidewall Sheet (Use 5/16" x 1-1/4" Hex Head Bin Bolts and 5/16" Hex Nuts.) **(Bolt Head to Inside at Leg to Hopper to Sidewall Connection Only.)** | 72<br>72 |
| 8 | S-4303<br>S-3611 | Vertical Hopper Seams (Use 5/16" x 3/4" Truss Head Bin Bolts and 5/16" Flanged Whiz Nuts.) **(Bolt Heads to Inside of Tank.)** | 108<br>108 |
| 9 | S-4303<br>S-3611 | Hopper Collar to Hopper Panel (Use 5/16" x 3/4" Truss Head Bin Bolts and 5/16" Flanged Whiz Nuts.) **(Bolt Heads to Inside of Tank.)** (16" Shown) | 24 or 36<br>24 or 36 |
| 10 | S-7927<br>S-456 | Hopper Brace to Leg (Use 3/8" x 1" Flange Head Bolts and 3/8" Hex Nuts.) | 4<br>4 |

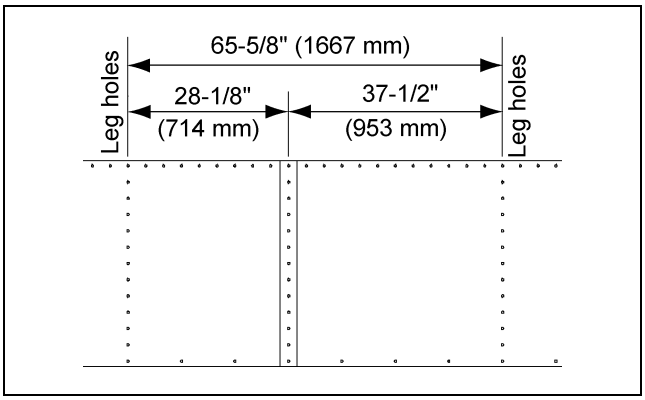
**NOTE:** *Bolt listed first and nut second for each usage.*

*Hardware usage: Heads of bolts are on the outside of tank unless otherwise noted.*

# 7' Diameter 67° Hopper Bin Specifications




| Under Collar Clearance | |
|---|---|
| 16" Collar | 30-3/8" (771 mm) |
| 22" Collar | 36-1/2" (927 mm) |



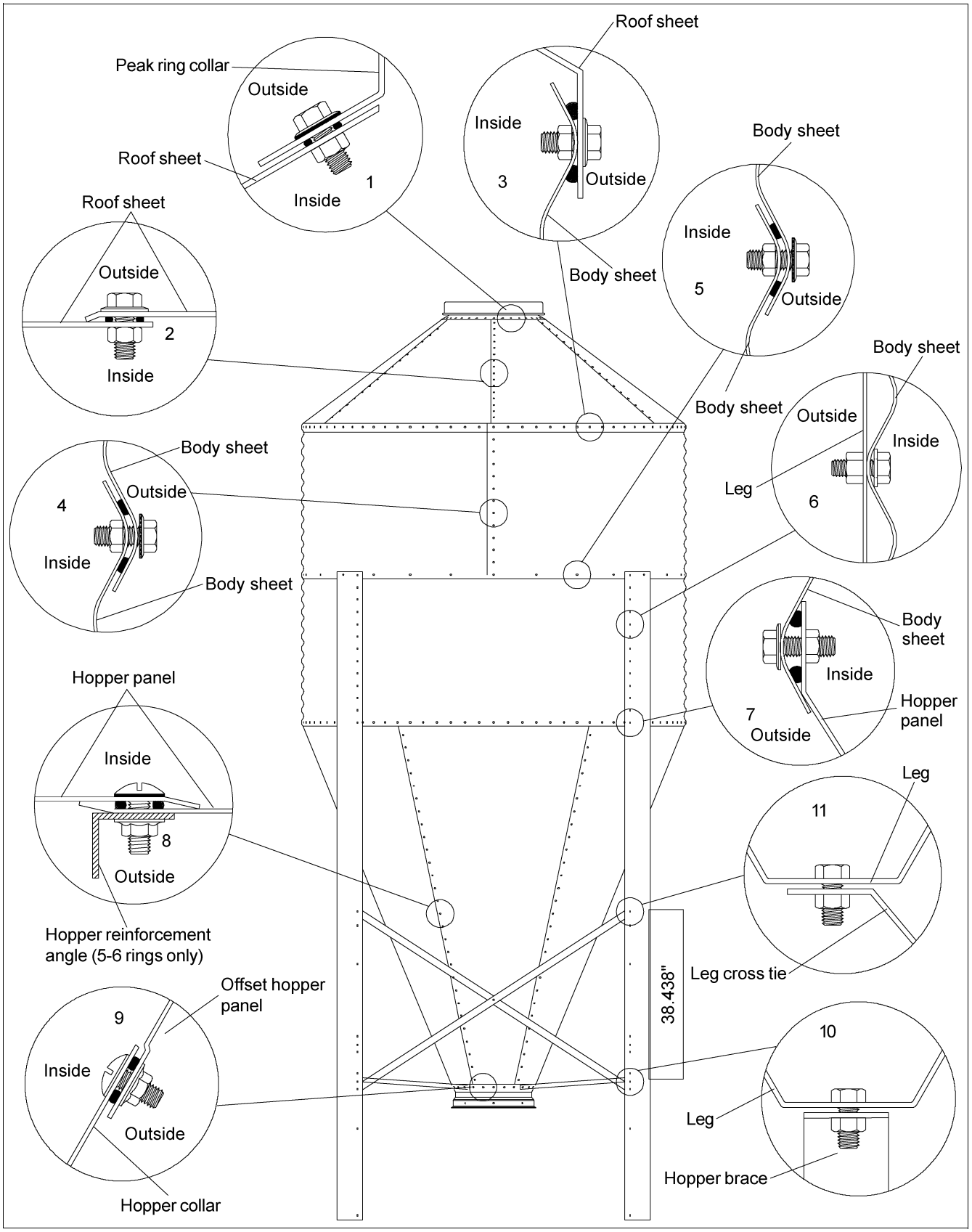
**IMPORTANT:** *Vertical seams of body sheets with leg holes MUST be bolted together to provide 65-5/8" (1667 mm) between leg holes.*

**IMPORTANT:** *Bolt heads are inside of bin at the leg to body attachment and on all vertical seams on hopper panels. Tighten ALL bolts from the nut side ONLY. Refer Page 23 for location of caulking.*

## 7' Diameter 67° Hopper Bin Specifications Parts List

| Ref # | Part # | Description | Qty |
|---|---|---|---|
| 1 | BLK-12260 | 7' 30° Roof Panel (20 Gauge) (Shown) | 6 |
| | BLK-12263 | 7' 40° Roof Panel (20 Gauge) | 6 |
| 2 | **7' Sidewall Sheet** | | **2 Per Ring** |
| | SS40602007 | 20 Gauge (Bottom/Top Leg Punched Sidewall Sheet) | |
| | SS41642007 | 20 Gauge (Bottom/Top Leg Punched Decal Sidewall Sheet) | |
| | SS40612007 | 20 Gauge (Top Punched Sidewall Sheet) | |
| | SS41652007 | 20 Gauge (Top Punched Decal Sidewall Sheet) | |
| | SS40462007 | 20 Gauge (Middle Punched Sidewall Sheet) | |
| | SS40461807 | 18 Gauge (Middle Punched Sidewall Sheet) | |
| | SS40461707 | 17 Gauge (Middle Punched Sidewall Sheet) | |
| | SS40641707 | 17 Gauge (Middle Leg Punched Sidewall Sheet) | |
| | SS40641507 | 15 Gauge (Middle Leg Punched Sidewall Sheet) | |
| | SS40661807 | 18 Gauge (Bottom Leg Punched Sidewall Sheet) | |
| | SS40661707 | 17 Gauge (Bottom Leg Punched Sidewall Sheet) | |
| | SS40661507 | 15 Gauge (Bottom Leg Punched Sidewall Sheet) | |
| 3 | BLK-11476 | 7' 67° Offset Hopper Panel 16" Opening (18 Gauge) (Shown) | 6 |
| | BLK-10569 | 7' 67° Hopper Panel 22" Opening (18 Gauge) | 6 |
| 4 | BLK-12039 | 7' Leg 140-1/2" (12 Gauge) (1-4 Rings) (Shown) | 4 |
| | BLK-12040 | 7' Leg 164-1/2" (10 Gauge) (5-6 Rings) (Shown) | 4 |
| 5 | BLK-12107 | Hopper Brace for 16" Collar (Shown) | 4 |
| | BLK-12108 | Hopper Brace for 22" Collar | 4 |
| 6 | BLK-10488 | 16" 67° Hopper Collar (Shown) | 1 |
| | BLK-10341 | 22" 67° Hopper Collar (36 Holes) | 1 |
| 7 | BLK-12056 | 7' Inside Cross Tie Brace (72.49") (12 Gauge) | 4 |
| | BLK-12057 | 7' Outside Cross Tie Brace (72.49") (12 Gauge) | 4 |
| 8 | BLK-11730 | 30° Bulk Tank Peak Ring (Shown) | 1 |
| | BLK-12534 | 40° Bulk Tank Peak Ring | 1 |
| 9 | BLK-12009 | 7' 67° Hopper Reinforcement Angle (5-6 Ring Tanks Only) | 6 |

# 7' Diameter 67° Hopper Bin Hardware Specifications



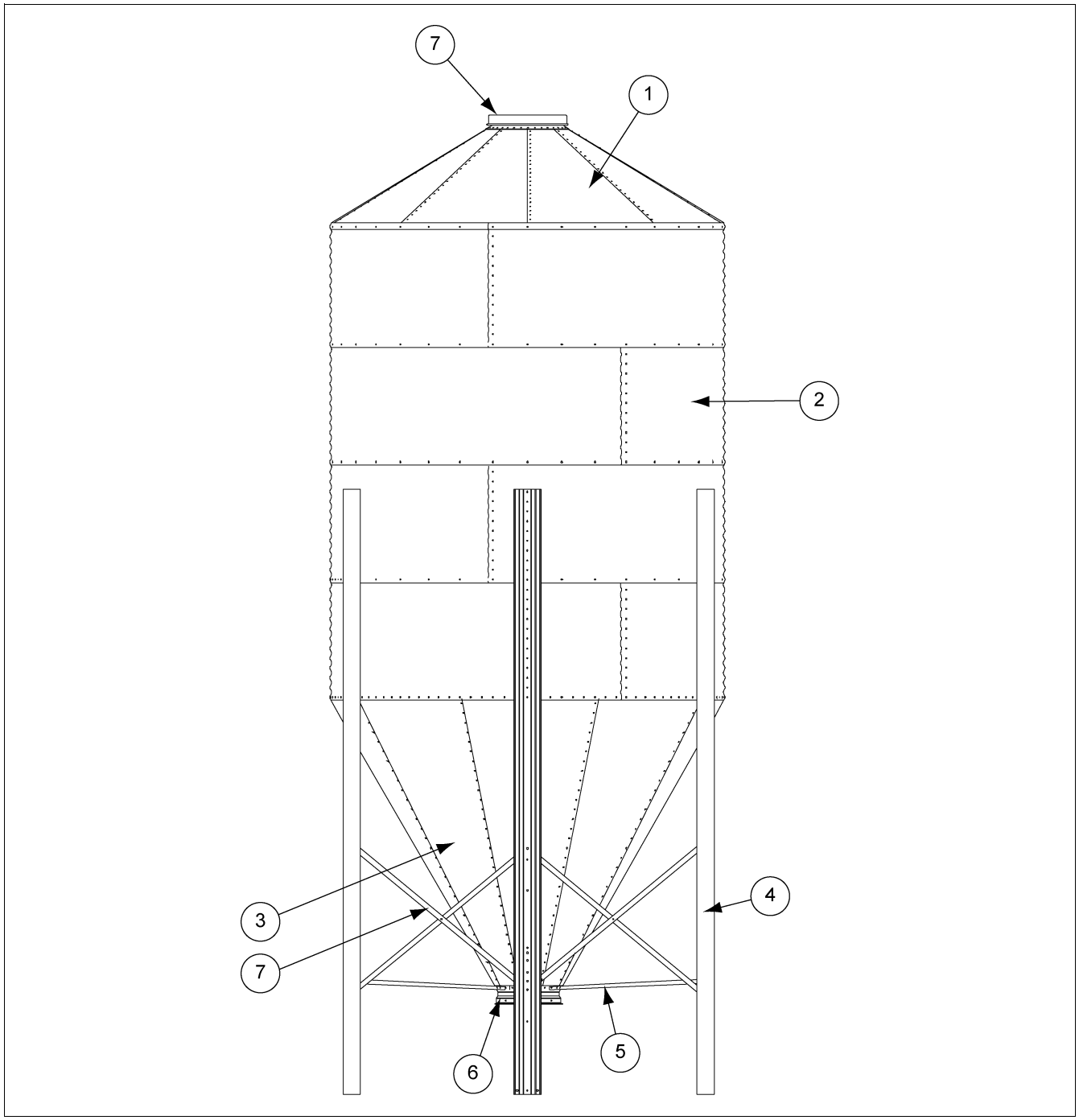
## 7' Diameter 67° Hopper Bin Hardware Specifications Parts List

| Ref # | Part # | Description | Qty |
|---|---|---|---|
| 1 | S-275<br>S-396 | Bulk Tank Peak Ring to Roof Panels (Use 5/16" x 3/4" Hex Head Bin Bolts and 5/16" Hex Nuts.) | 36<br>36 |
| 2 | S-275<br>S-396 | Roof Panel to Roof Panel (Use 5/16" x 3/4" Hex Head Bin Bolts and 5/16" Hex Nuts.) | 60<br>60 |
| 3 | S-275<br>S-396 | Roof Panels to Top Sidewall Sheets (Use 5/16" x 3/4" Hex Head Bin Bolts and 5/16" Hex Nuts.) | 84<br>84 |
| 4 | S-275<br>S-396 | Vertical Sidewall Sheet Seams (Use 5/16" x 3/4" Hex Head Bin Bolts and 5/16" Hex Nuts.) | Varies<br>Varies |
| 5 | S-275<br>S-396 | Horizontal Sidewall Sheet Seams (Use 5/16" x 3/4" Hex Head Bin Bolts and 5/16" Hex Nuts.) | Varies<br>Varies |
| 6 | S-275<br>S-396 | Leg to Sidewall Sheet (Use 5/16" x 3/4" Hex Head Bin Bolts and 5/16" Hex Nuts.) **(Bolt Heads to Inside of Tank.)** | 52 or 88<br>52 or 88 |
| 7 | S-277<br>S-396 | Hopper Panels to Sidewall Sheet (Use 5/16" x 1-1/4" Hex Head Bin Bolts and 5/16" Hex Nuts.) **(Bolt Head to Inside at Leg to Hopper to Sidewall Connection Only.)** | 84<br>84 |
| 8 | S-4303<br>S-3611 | Vertical Hopper Seams (Use 5/16" x 3/4" Truss Head Bin Bolts and 5/16" Flanged Whiz Nuts.) **(Bolt Heads to Inside of Tank.)** | 162<br>162 |
| 9 | S-4303<br>S-3611 | Hopper Collar to Hopper Panel (Use 5/16" x 3/4" Truss Head Bin Bolts and 5/16" Flanged Whiz Nuts.) **(Bolt Heads to Inside of Tank.)** (16" Shown) | 24 or 36<br>24 or 36 |
| 10 | S-7927<br>S-456 | Hopper Brace to Leg (Use 3/8" x 1" Flange Head Bolts and 3/8" Hex Nuts.) | 4<br>4 |
| 11 | S-7927<br>S-456 | Cross Tie Brace (Use 3/8" x 1" Flange Head Bolts and 3/8" Hex Nuts.) | 12<br>12 |

**NOTE:** *Bolt listed first, nut second for each usage.*

*Hardware usage: Heads of bolts are on the outside of tank unless otherwise noted.*

# 9' Diameter 60° Hopper Bin Specifications



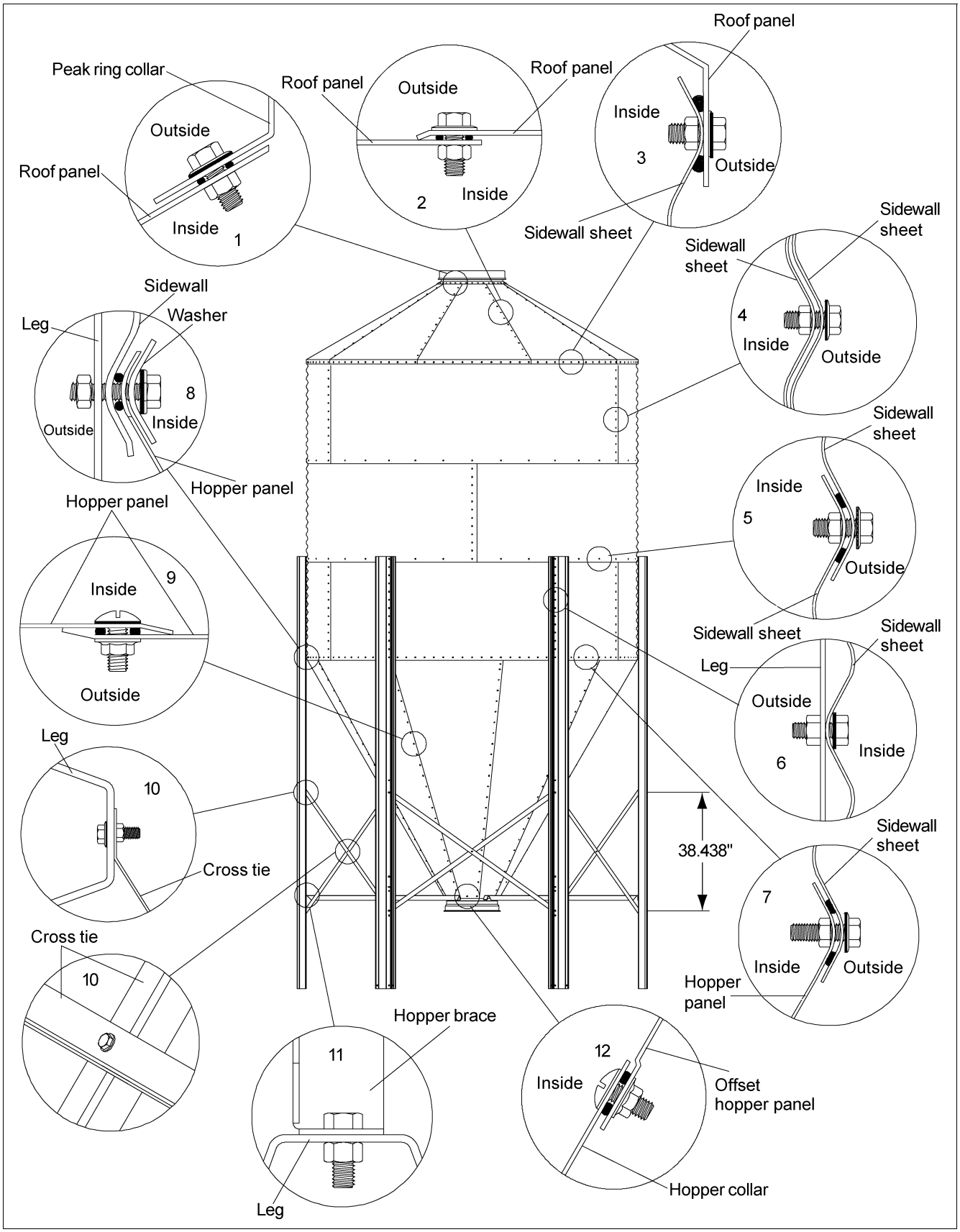

| Under Collar Clearance | |
|---|---|
| 16" Collar | 28-1/16" (713 mm) |
| 22" Collar | 32-5/8" (829 mm) |

**IMPORTANT:** *Bolt heads are inside of bin at the leg to body attachment and on all vertical seams on hopper panels. Tighten ALL bolts from the nut side ONLY. Refer Page 23 for location of caulking.*

## 9' Diameter 60° Hopper Bin Specifications Parts List

| Ref # | Part # | Description | Qty |
|---|---|---|---|
| 1 | BLK-12266 | 9' 30° Roof Panel (20 Gauge) (Shown) | 9 |
| | BLK-12269 | 9' 40° Roof Panel (20 Gauge) | 9 |
| 2 | **9' Sidewall Sheet** | | **3 Per Ring** |
| | SS40682009 | 20 Gauge (Top Punched Sidewall Sheet) | |
| | SS41662009 | 20 Gauge (Top Punched Decal Sidewall Sheet) | |
| | SS40692009 | 20 Gauge (Middle Punched Sidewall Sheet) | |
| | SS40691809 | 18 Gauge (Middle Punched Sidewall Sheet) | |
| | SS40691709 | 17 Gauge (Middle Punched Sidewall Sheet) | |
| | SS40701509 | 15 Gauge (Middle Leg Punched Sidewall Sheet) | |
| | SS40712009 | 20 Gauge (Bottom Leg Punched Sidewall Sheet) | |
| | SS40711809 | 18 Gauge (Bottom Leg Punched Sidewall Sheet) | |
| | SS40711709 | 17 Gauge (Bottom Leg Punched Sidewall Sheet) | |
| | SS40711509 | 15 Gauge (Bottom Leg Punched Sidewall Sheet) | |
| 3 | BLK-12311 | 9' 60° Offset Hopper Panel 16" Opening (18 Gauge) (Shown) | 9 |
| | BLK-12313 | 9' 60° Hopper Panel 22" Opening (18 Gauge) | 9 |
| 4 | BLK-12036 | 9' Leg 140-1/2" (12 Gauge) (2-5 Rings) (Shown) | 6 |
| | BLK-12037 | 9' Leg 164-1/2" (10 Gauge) (6 Rings) | 6 |
| 5 | BLK-12109 | Hopper Brace for 16" Collar (Shown) | 6 |
| | BLK-12110 | Hopper Brace for 22" Collar | 6 |
| 6 | BLK-12342 | 16" 60° Hopper Collar (18 Holes) (Shown) | 1 |
| | BLK-10342 | 22" 60° Hopper Collar (36 Holes) | 1 |
| 7 | BLK-12058 | 9' Inside Cross Tie Brace (67.788") (12 Gauge) | 6 |
| | BLK-12059 | 9' Outside Cross Tie Brace (67.788") (12 Gauge) | 6 |
| 8 | BLK-11730 | 30° Bulk Tank Peak Ring (Shown) | 1 |
| | BLK-12534 | 40° Bulk Tank Peak Ring | 1 |
| 9 | BLK-12730 | 9' 60° Hopper Reinforcement Angle (3-6 Ring Tanks Only) | 9 |

# 9' Diameter 60° Hopper Bin Hardware Specifications



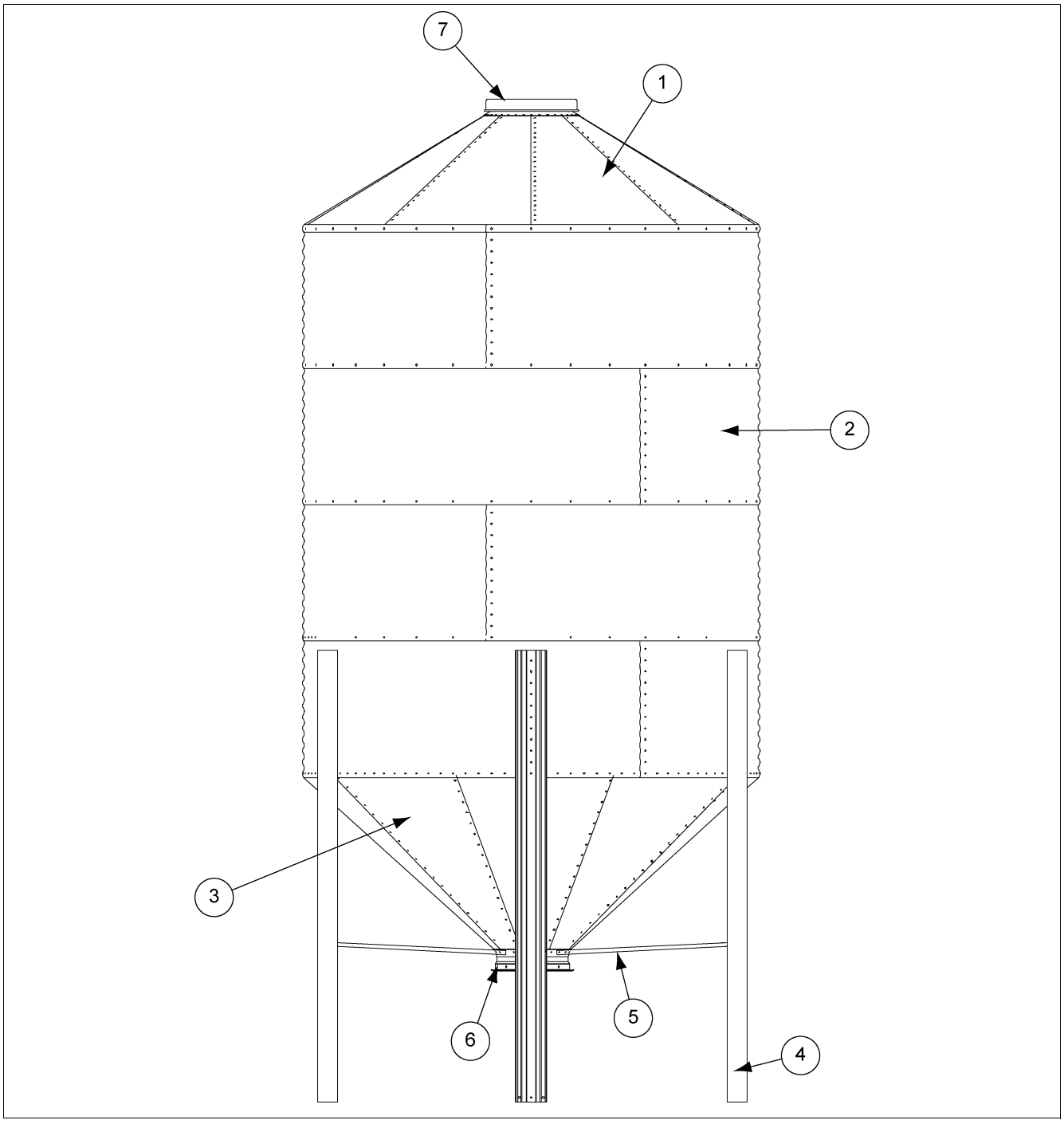
## 9' Diameter 60° Hopper Bin Hardware Specifications Parts List

| Ref # | Part # | Description | Qty |
|---|---|---|---|
| 1 | S-275<br>S-396 | Bulk Tank Peak Ring to Roof Panels (Use 5/16" x 3/4" Hex Head Bin Bolts and 5/16" Hex Nuts.) | 36<br>36 |
| 2 | S-275<br>S-396 | Roof Panel to Roof Panel (Use 5/16" x 3/4" Hex Head Bin Bolts and 5/16" Hex Nuts.) | 108<br>108 |
| 3 | S-275<br>S-396 | Roof Panels to Top Sidewall Sheets (Use 5/16" x 3/4" Hex Head Bin Bolts and 5/16" Hex Nuts.) | 108<br>108 |
| 4 | S-275<br>S-396 | Vertical Sidewall Sheet Seams (Use 5/16" x 3/4" Hex Head Bin Bolts and 5/16" Hex Nuts.) | Varies<br>Varies |
| 5 | S-275<br>S-396 | Horizontal Sidewall Sheet Seams (Use 5/16" x 3/4" Hex Head Bin Bolts and 5/16" Hex Nuts.) | Varies<br>Varies |
| 6 | S-275<br>S-396 | Leg to Sidewall Sheet (Use 5/16" x 3/4" Hex Head Bin Bolts and 5/16" Hex Nuts.) **(Bolt Heads to Inside of Tank.)** | 78 or 132<br>78 or 132 |
| 7 | S-277<br>S-396 | Hopper Panels to Sidewall Sheet (Use 5/16" x 1-1/4" Hex Head Bin Bolts and 5/16" Hex Nuts.) **(Bolt Head to Inside at Leg to Hopper to Sidewall Connection Only.)** | 108<br>108 |
| 8 | S-277<br>S-396<br>BLK-12483 | Leg to Body Sheet to Hopper Connection (Use 10 Gauge Washer under 5/16" x 1-1/4" Hex Head Bin Bolts and 5/16" Hex Nuts.) **(Bolt Head to Inside at Leg to Hopper to Sidewall Connection Only.)** | 6<br>6<br>6 |
| 9 | S-4303<br>S-3611 | Vertical Hopper Seams (Use 5/16" x 3/4" Truss Head Bin Bolts and 5/16" Flanged Whiz Nuts.) **(Bolt Heads to Inside of Tank.)** | 216<br>216 |
| 10 | S-7927<br>S-456 | Cross Tie Brace (Use 3/8" x 1" Flange Head Bolts and 3/8" Hex Nuts.) | 18<br>18 |
| 11 | S-7927<br>S-456 | Hopper Brace to Leg (Use 3/8" x 1" Flange Head Bolts and 3/8" Hex Nuts.) | 6<br>6 |
| 12 | S-4303<br>S-3611 | Hopper Collar to Hopper Panel (Use 5/16" x 3/4" Truss Head Bin Bolts and 5/16" Flanged Whiz Nuts.) **(Bolt Heads to Inside of Tank.)** (16" Shown) | 27 or 36<br>27 or 36 |

**NOTE:** *Bolts listed first, nut second for each usage.*

*Hardware usage: Heads of bolts are on the outside of tank unless otherwise noted.*

# 9' Diameter 45° Hopper Bin Specifications



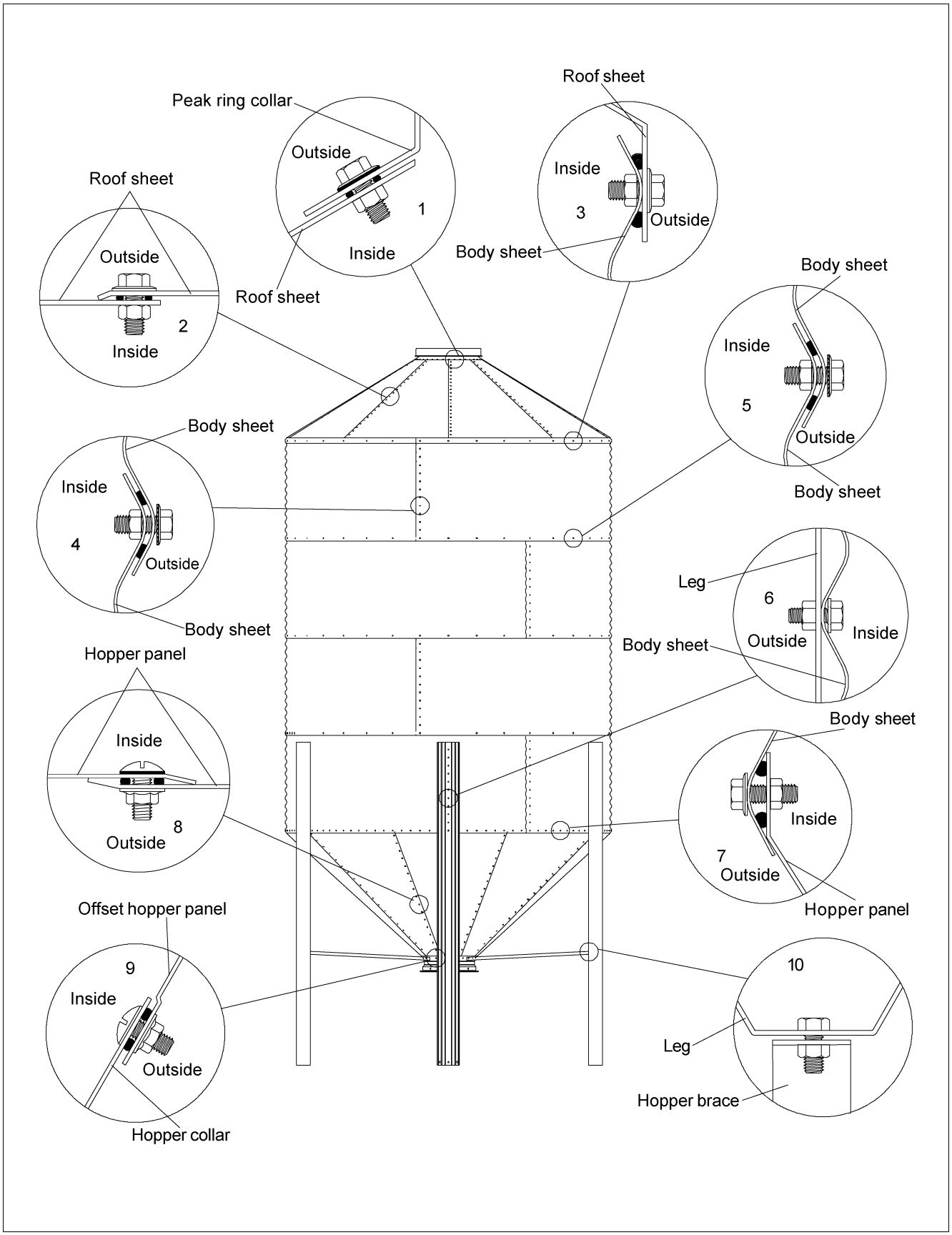

| Under Collar Clearance | |
|---|---|
| 16" Collar | 30-11/16" (779 mm) |
| 22" Collar | 33-1/4" (844 mm) |

**IMPORTANT:** *Bolt heads are inside of bin at the leg to body attachment and on all vertical seams on hopper panels. Tighten ALL bolts from the nut side ONLY. Refer Page 23 for location of caulking. No cross tie bracing required.*

## 9' Diameter 45° Hopper Bin Specifications Parts List

| Ref # | Part # | Description | Qty |
|---|---|---|---|
| 1 | BLK-12266 | 9' 30° Roof Panel (20 Gauge) (Shown) | 9 |
| | BLK-12269 | 9' 40° Roof Panel (20 Gauge) | 9 |
| 2 | **9' Sidewall Sheet** | | **3 Per Ring** |
| | SS40682009 | 20 Gauge (Top Punched Sidewall Sheet) | |
| | SS41662009 | 20 Gauge (Top Punched Decal Sidewall Sheet) | |
| | SS40692009 | 20 Gauge (Middle Punched Sidewall Sheet) | |
| | SS40691809 | 18 Gauge (Middle Punched Sidewall Sheet) | |
| | SS40691709 | 17 Gauge (Middle Punched Sidewall Sheet) | |
| | SS40701509 | 15 Gauge (Middle Leg Punched Sidewall Sheet) | |
| | SS40712009 | 20 Gauge (Bottom Leg Punched Sidewall Sheet) | |
| | SS40711809 | 18 Gauge (Bottom Leg Punched Sidewall Sheet) | |
| | SS40711709 | 17 Gauge (Bottom Leg Punched Sidewall Sheet) | |
| | SS40711509 | 15 Gauge (Bottom Leg Punched Sidewall Sheet) | |
| 3 | BLK-10694 | 9' 45° Offset Hopper Panel 22" Opening (16 Gauge) (Shown) | 9 |
| 4 | BLK-12043 | 9' 45° Leg 106-1/8" (12 Gauge) (2-5 Rings) (Shown) | 6 |
| | BLK-12044 | 9' 45° Leg 132-3/8" (10 Gauge) (6 Rings) | 6 |
| 5 | BLK-12111 | Hopper Brace for 16" Collar (Shown) | 6 |
| | BLK-12112 | Hopper Brace for 22" Collar | 6 |
| 6 | BLK-10696 | 16" 45° Hopper Collar Bundle (Shown) | 1 |
| | BLK-10854 | 22" 45° Hopper Collar (36 Holes) | 1 |
| 8 | BLK-11730 | 30° Bulk Tank Peak Ring (Shown) | 1 |
| | BLK-12534 | 40° Bulk Tank Peak Ring | 1 |

# 9' Diameter 45° Hopper Bin Hardware Specifications



## 9' Diameter 45° Hopper Bin Hardware Specifications Parts List

| Ref # | Part # | Description | Qty |
|---|---|---|---|
| 1 | S-275<br>S-396 | Bulk Tank Peak Ring to Roof Panels (Use 5/16" x 3/4" Hex Head Bin Bolts and 5/16" Hex Nuts.) | 36<br>36 |
| 2 | S-275<br>S-396 | Roof Panel to Roof Panel (Use 5/16" x 3/4" Hex Head Bin Bolts and 5/16" Hex Nuts.) | 126<br>126 |
| 3 | S-275<br>S-396 | Roof Panels to Top Sidewall Sheets (Use 5/16" x 3/4" Hex Head Bin Bolts and 5/16" Hex Nuts.) | 108<br>108 |
| 4 | S-275<br>S-396 | Vertical Sidewall Sheet Seams (Use 5/16" x 3/4" Hex Head Bin Bolts and 5/16" Hex Nuts.) | Varies<br>Varies |
| 5 | S-275<br>S-396 | Horizontal Sidewall Sheet Seams (Use 5/16" x 3/4" Hex Head Bin Bolts and 5/16" Hex Nuts.) | Varies<br>Varies |
| 6 | S-275<br>S-396 | Leg to Sidewall Sheet (Use 5/16" x 3/4" Hex Head Bin Bolts and 5/16" Hex Nuts.) **(Bolt Heads to Inside of Tank.)** | 28 or 132<br>28 or 132 |
| 7 | S-277<br>S-396 | Hopper Panels to Sidewall Sheet (Use 5/16" x 1-1/4" Hex Head Bin Bolts and 5/16" Hex Nuts.) **(Bolt Head to Inside at Leg to Hopper to Sidewall Connection Only.)** | 108<br>108 |
| 8 | S-4303<br>S-3611 | Vertical Hopper Seams (Use 5/16" x 3/4" Truss Head Bin Bolts and 5/16" Flanged Whiz Nuts.) **(Bolt Heads to Inside of Tank.)** | 171<br>171 |
| 9 | S-4303<br>S-3611 | Hopper Collar to Hopper Panel (Use 5/16" x 3/4" Truss Head Bin Bolts and 5/16" Flanged Whiz Nuts.) **(Bolt Heads to Inside of Tank.)** (16" Shown) | 27 or 36<br>27 or 36 |
| 10 | S-7927<br>S-456 | Cross Tie Brace (Use 3/8" x 1" Flange Head Bolts and 3/8" Hex Nuts.) | 18<br>18 |
| 11 | S-7927<br>S-456 | Hopper Brace to Leg (Use 3/8" x 1" Flange Head Bolts and 3/8" Hex Nuts.) | 6<br>6 |

**NOTE:** *Bolt listed first, nut second for each usage.*

*Hardware usage: Heads of bolts are on the outside of tank unless otherwise noted.*

# 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 |
|---|---|---|
| **AP Fans and Flooring** | Performer Series Direct Drive Fan Motor | 3 Years |
| | All Fiberglass Housings | Lifetime |
| | All Fiberglass Propellers | Lifetime |
| **Cumberland Feeding/Watering Systems** | Feeder System Pan Assemblies | 5 Years ** |
| | Feed Tubes (1-3/4" and 2.00") | 10 Years * |
| | Centerless Augers | 10 Years * |
| | Watering Nipples | 10 Years * |
| **Grain Systems** | Grain Bin Structural Design | 5 Years |
| **Grain Systems Farm Fans Zimmerman** | Portable and Tower Dryers | 2 Years |
| | Portable and Tower Dryer Frames and Internal Infrastructure † | 5 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%

** Warranty prorated from list price:
0 to 3 years - no cost to end-user
3 to 5 years - end-user pays 50%

† Motors, burner components and moving parts not included. Portable dryer screens included. Tower dryer screens not included.

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 ($12^{th}$) month from the date of purchase and continuing until the sixtieth ($60^{th}$) 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.

9101239_1_CR_rev7.DOC (revised July 2009)

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.

GSI GROUP

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