

# Ladder, Safety Cage and Platform Assembly for GSI Hopper Tanks

Installation Manual

PNEG-1451

Date: 10-26-07

GSI GROUP



PNEG-1451



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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.

## 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.

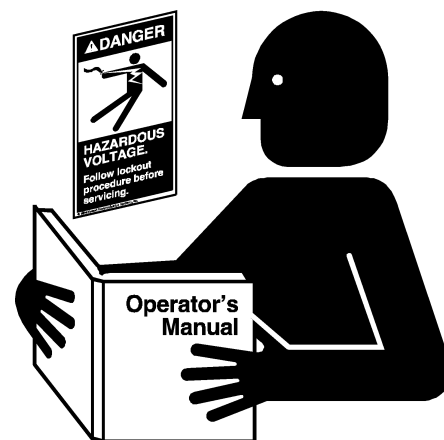
### Follow Safety Instructions

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.

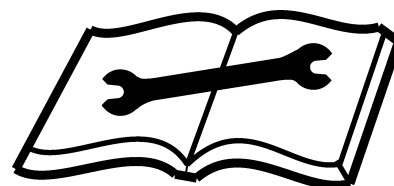
If you do not understand any part of this manual or need assistance, contact your dealer.



**Read and Understand Manual**

### Install Equipment Properly

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 Building Codes**

## 2. Safety

### Stay Clear of Hoisted Equipment

Always use proper lifting/hoisting equipment when assembling or disassembling equipment.

Do not walk or stand under hoisted equipment.

Always use sturdy and stable supports when needed for installation.



### 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.

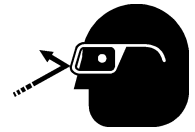
Wear gloves to protect your hands from sharp edges on plastic or steel parts.

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.

**Eye Protection**



**Gloves**



**Steel Toe Boots**



**Respirator**



**Hard Hat**

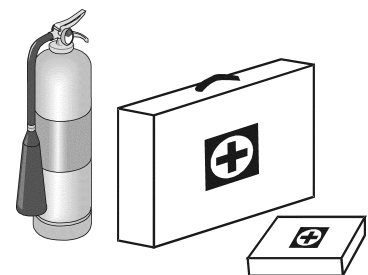


### Prepare for Emergencies

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**

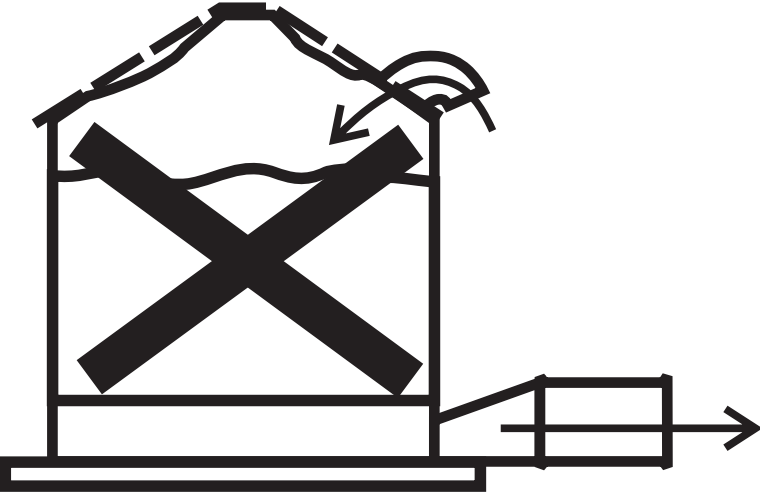


## Roof Damage Warning and Disclaimer

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



# CAUTION!



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

**DC-969**

### 3. Safety Decals

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

#### GSI Decals

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

**DANGER**

**Rotating flighting will kill or dismember.**

**Flowing material will trap and suffocate.**

**Crusted material will collapse and suffocate.**

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

**If you must enter the bin:**

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

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

DC-GBC-1A

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

**GSI Decals**

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



# WARNING



DON'T



DO

UNLOADING INSTRUCTIONS:

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

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

DC-GBC-2A

### Extension Rail Installation

All ladder systems that include a safety cage must also include ladder extension rails attached to the top four foot (4') ladder section. Start by bolting the spacer brackets through the top and bottom set of holes in the top ladder section. Then, attach the extension rails to the spacer brackets as shown in [Figure 4A](#). When installed correctly, the bottom of the extension rail should be flush with the bottom of the top ladder section. Use 5/16" x 3/4" bin bolts for all connections.

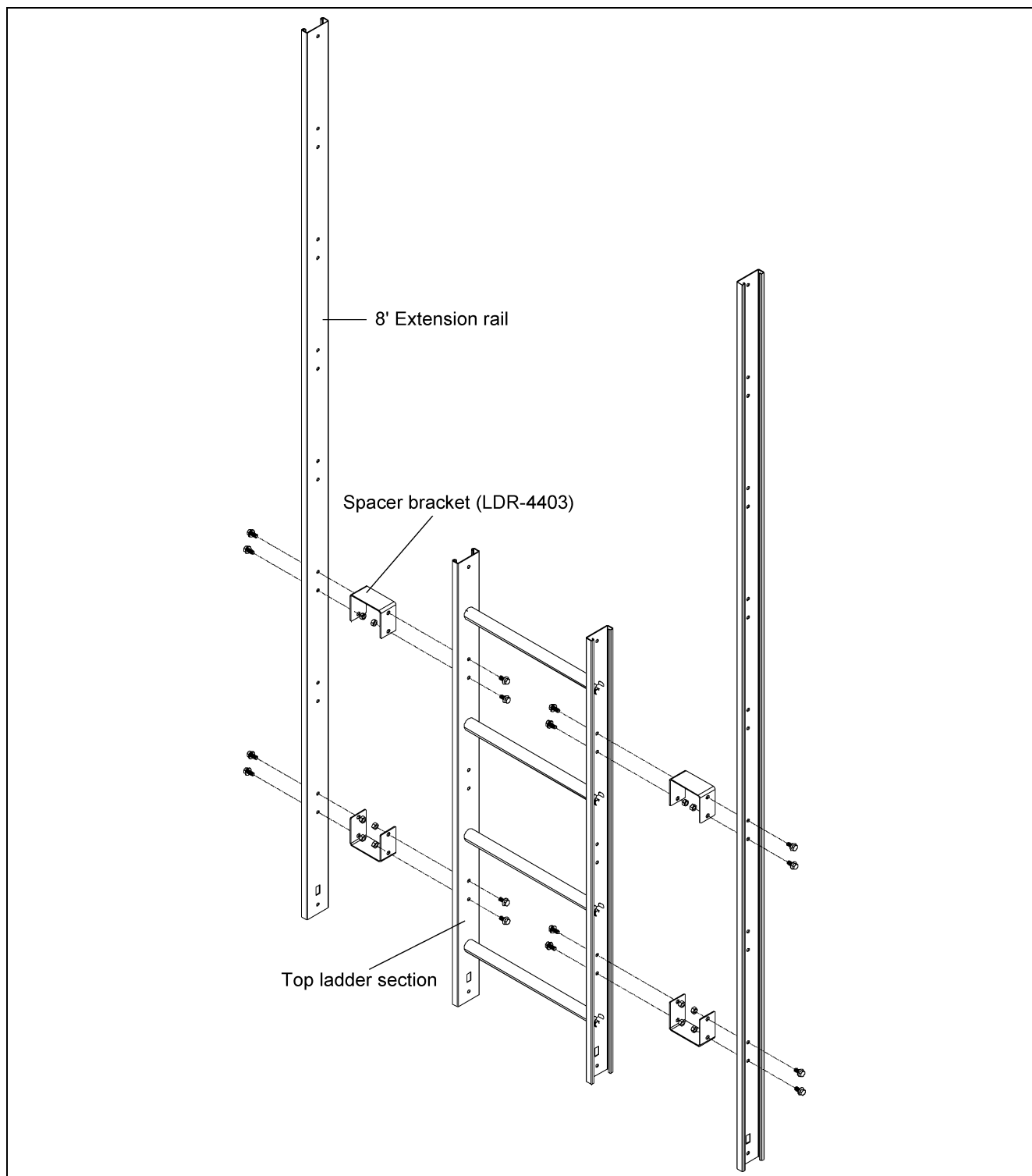


Figure 4A Ladder Extension

## Ladder Section Assembly

Two (2) splice plates (LDR-4317) are required to attach each ladder section. The head of the bolt should be to the inside of the ladder with the splice plate on the outside as shown in [Figure 4B](#). Use 5/16" x 3/4" bolts for all connections.

**NOTE:** With most installations, the last ladder section installed to reach the ground, the base, or the intermediate platform should be cut to fit.

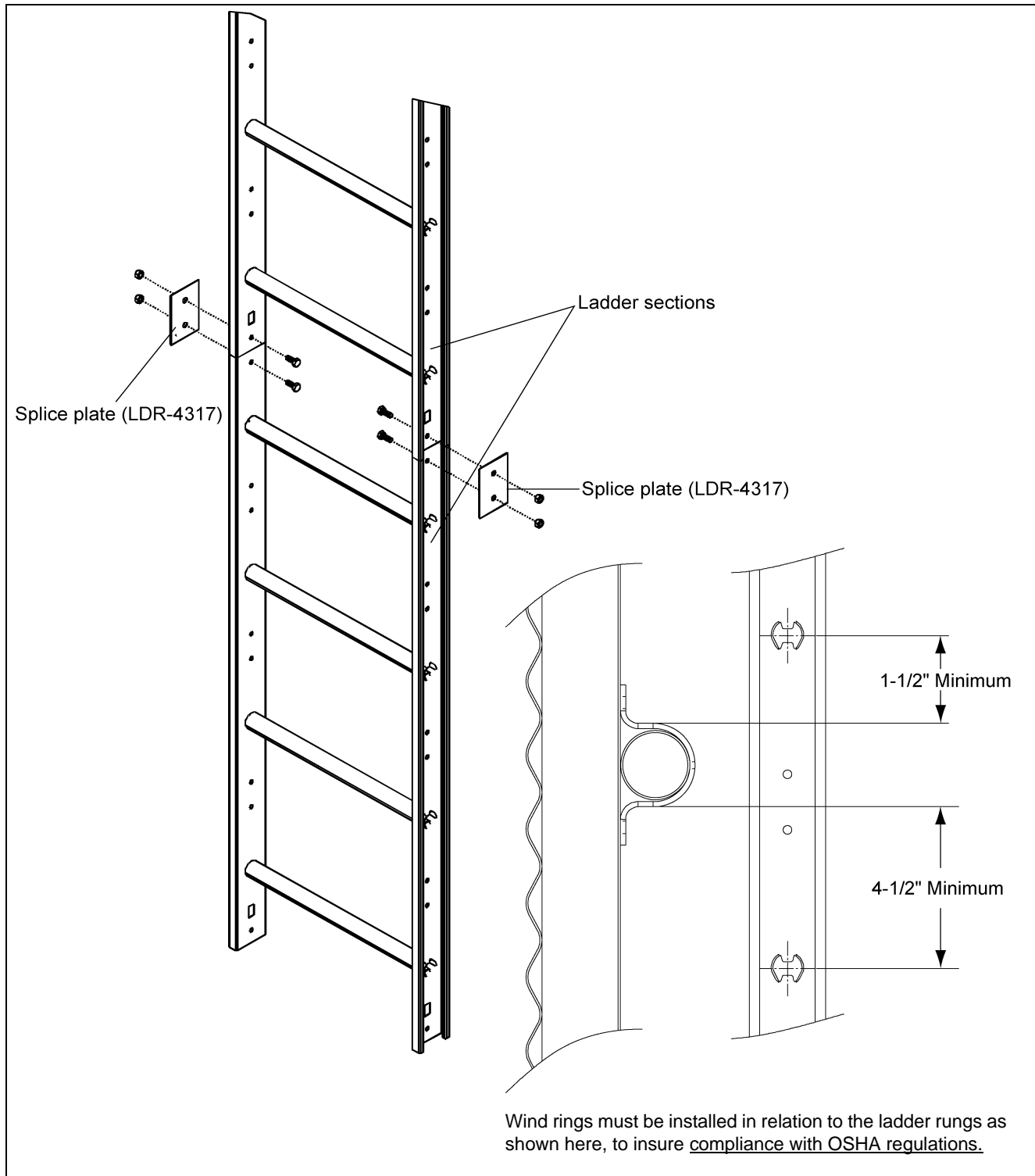


Figure 4B

## Ladder Standoff Detail

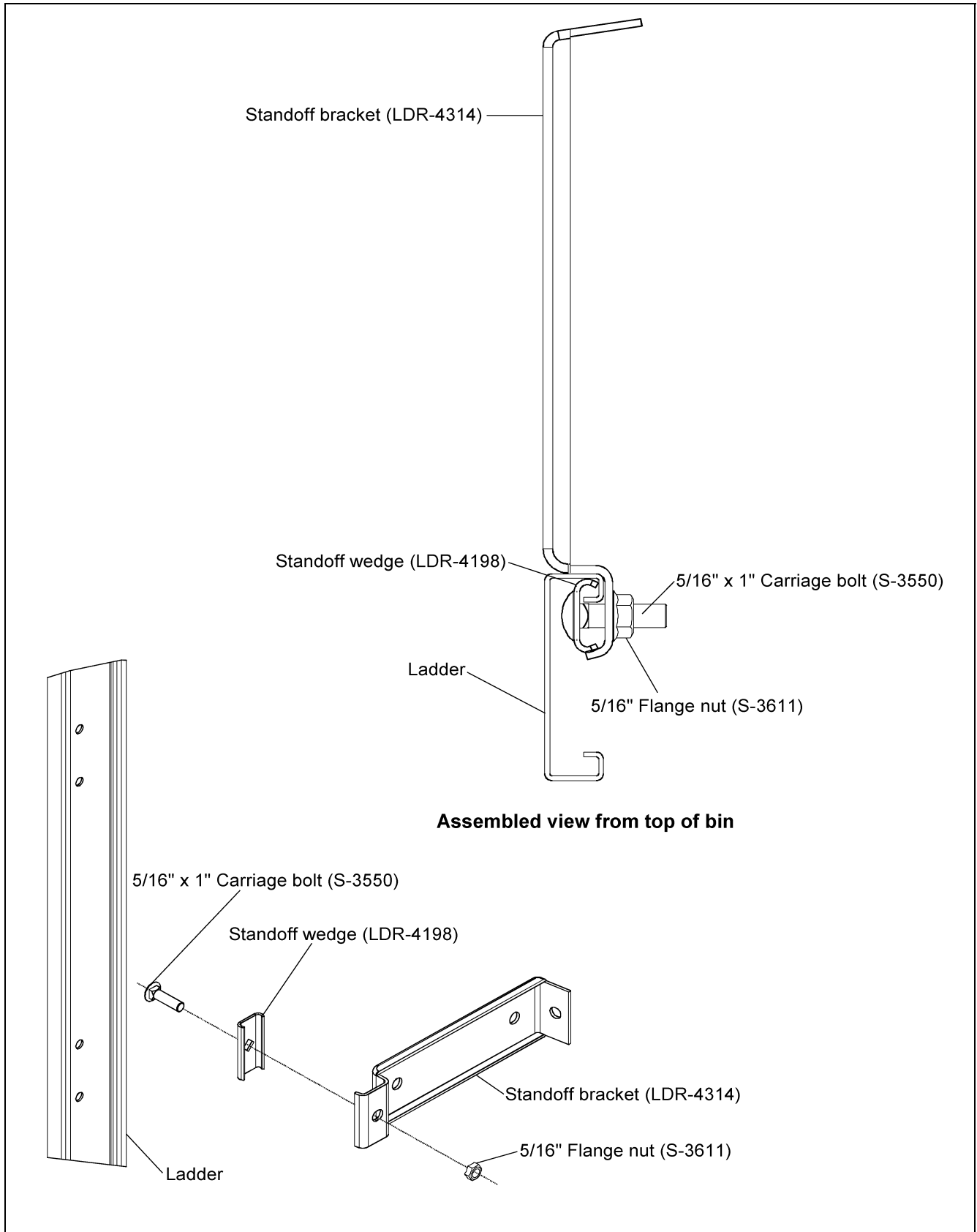


Figure 4C

# Extension Angle Hole Detail

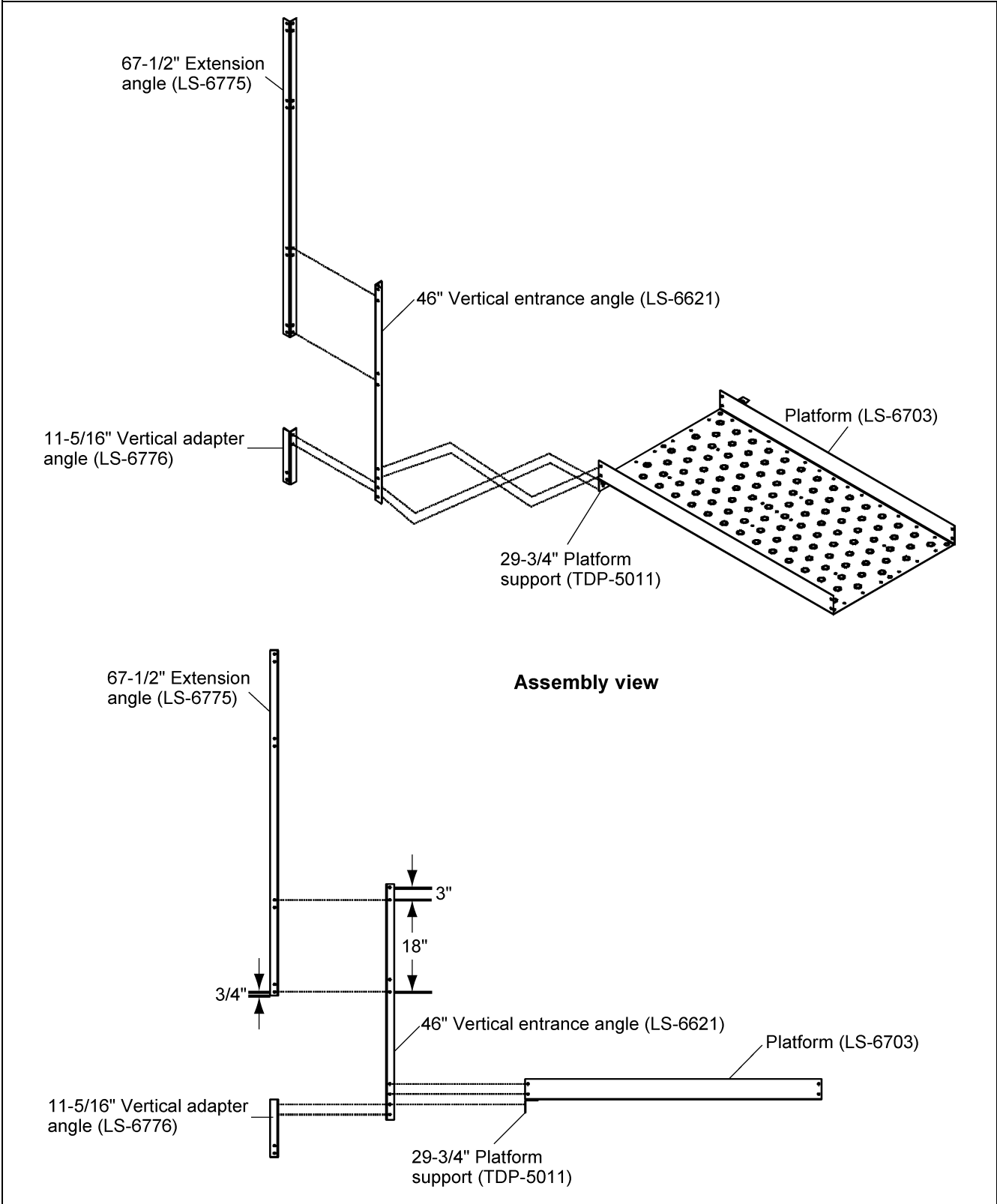
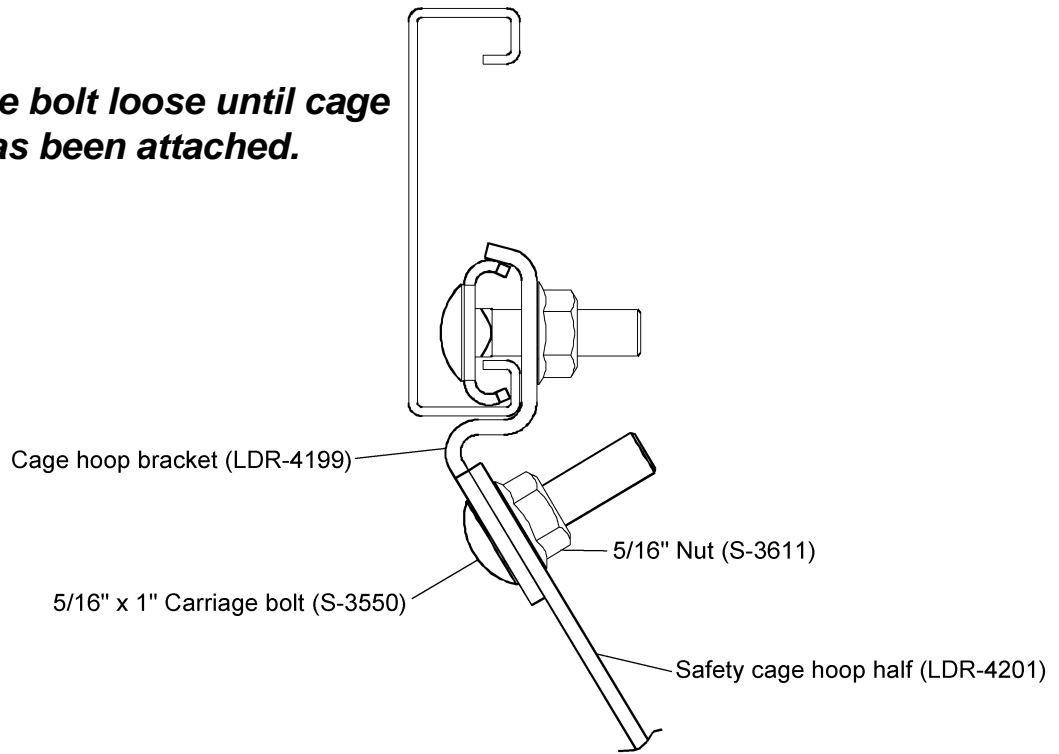


Figure 4D

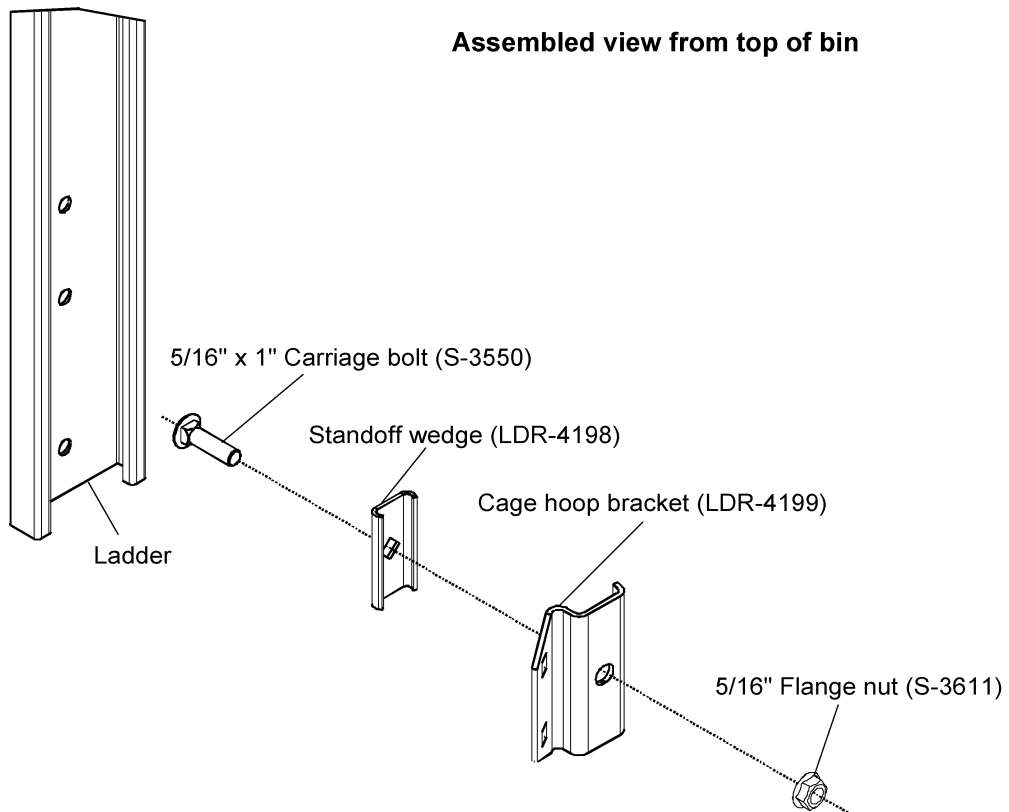
**NOTE:** Platform and Platform Support shown for reference only. See Platform Assembly Detail on Page 51 for complete installation instructions for these parts.

## Cage Hoop Bracket Assembly

**NOTE: Leave bolt loose until cage hoop half has been attached.**



**Assembled view from top of bin**



**Figure 4E**



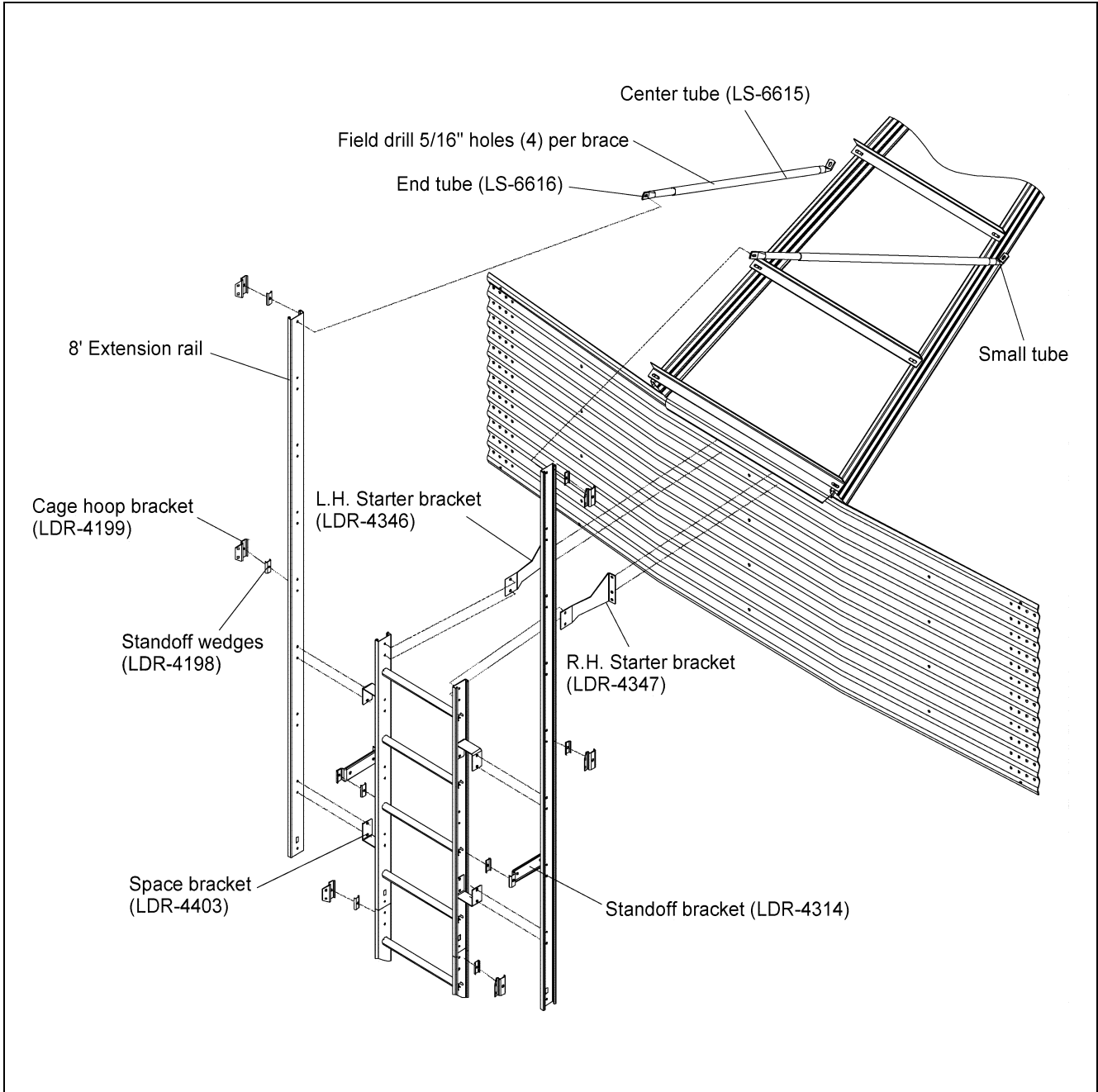


Figure 4F

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# NOTES



**2.66" CORRUGATED  
COMMERCIAL HOPPER  
TANK 4-9 RINGS**

## 2.66" Commercial Hopper Tank (NCHT) Ladder and Platform Layout 4-9 Rings

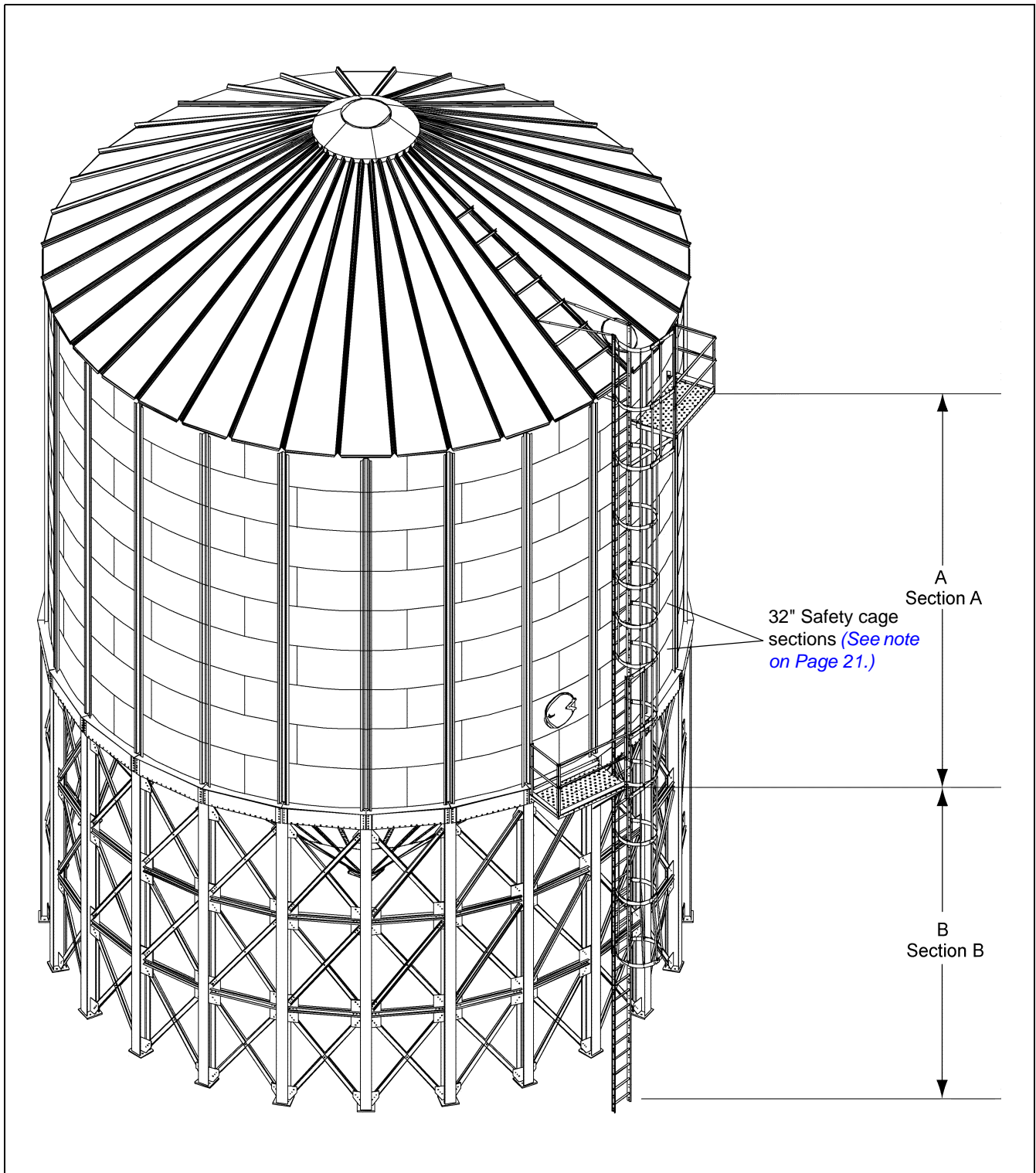


Figure 5A 9 Rings

See Page 21 for platform locations and section listings.

## 5. 2.66" Corrugated Commercial Hopper Tank 4-9 Rings

### Ladder, Safety Cage and Platform Location Chart

For Section A, find the proper ring grain bin and use the number of ladders and safety cages indicated. [See Chart below \(Section A\)](#). For Section B, find the proper diameter grain bin and hopper slope, then use the number of ladders and safety cages indicated. [See Chart below \(Section B\)](#).

		Rings					
		4	5	6	7	8	9
<b>Section A</b>	<b>Platform Located in Ring:</b>	2	2	2	2	2	2
	4 Ft. Ladder Section	3	4	4	5	6	6
	Safety Cage 32" Section	0	1	2	0	1	2
	Safety Cage 48" Section	0	0	0	2	2	2
	<b>Dimension A</b>	96"	128"	160"	192"	224"	256"

**NOTE:** The 32" safety cage section must be installed in Section A of the ladder system. DO NOT install the 32" verticals in the eave or access door safety cage hoop assembly. The eave and access door safety cage hoop assembly use the 48" verticals.

		Diameter														
		12'	12'	15'	15'	18'	18'	21'	21'	24'	27'	27'	30'	30'	36'	36'
<b>Section B</b>	<b>Hopper Slope:</b>	45	60	45	60	45	60	45	60	45	40	45	40	45	40	45
	4 Ft. Ladder Section	4	5	5	6	5	7	5	7	6	5	6	6	7	6	7
	Bell Safety Cage	0	1	0	1	1	1	1	1	1	1	1	1	1	1	1
	Safety Cage 48" Section	0	0	0	1	0	1	0	2	0	0	1	0	1	1	2
	Bell Safety Cage Size	N/A	24"	N/A	24"	24"	48"	48"	24"	48"	48"	24"	48"	48"	48"	48"
	<b>Dimension B</b>	91"	128"	108"	167"	128"	198"	144"	229"	162"	142"	179"	156"	195"	187"	236"

### **NCHT Ladder, Safety Cage and Platform Instructions 4-9 Rings**

All grain bin packages, from 4 ring to 9 ring and 12' to 35' diameter, contain the correct components for assembly. Read and follow the complete instructions for correct placement of parts. Be sure and use the charts to determine the appropriate number and size parts to be used based upon the number of rings in the bin. Failure to do so may result in an improper fit or shortage of parts. Pay particular attention to the location of ladders and platforms as they relate to the other equipment and structures in the area.

#### **Eave Starter Bracket Installation**

Correct placement of the eave ladder starter bracket is critical to assure proper fit of all ladder components and to assure the correlation is correct between the platforms for proper installation of the access door platform. If the eave starter brackets are mislocated, standard installation of the access door platform will not be possible.

### Location of Field Drilled Holes for Eave Ladder Starter Brackets

The starter brackets must be located directly below the roof ladder. Before the starter brackets can be installed, two (2) 3/8" holes must be field drilled 2.66" below and directly in line with the top row of pre-punched horizontal holes. The first hole, required for the left-hand starter bracket, must be located 9-3/8" from the center of the stiffener to the center of the hole as shown in [Figure 5B](#). The second hole, required for the right-hand bracket, must be located 18-3/4" from the center of the first hole. Refer to [Figure 5B](#) for the proper location of the two (2) 3/8" field drilled holes required to install the starter brackets.

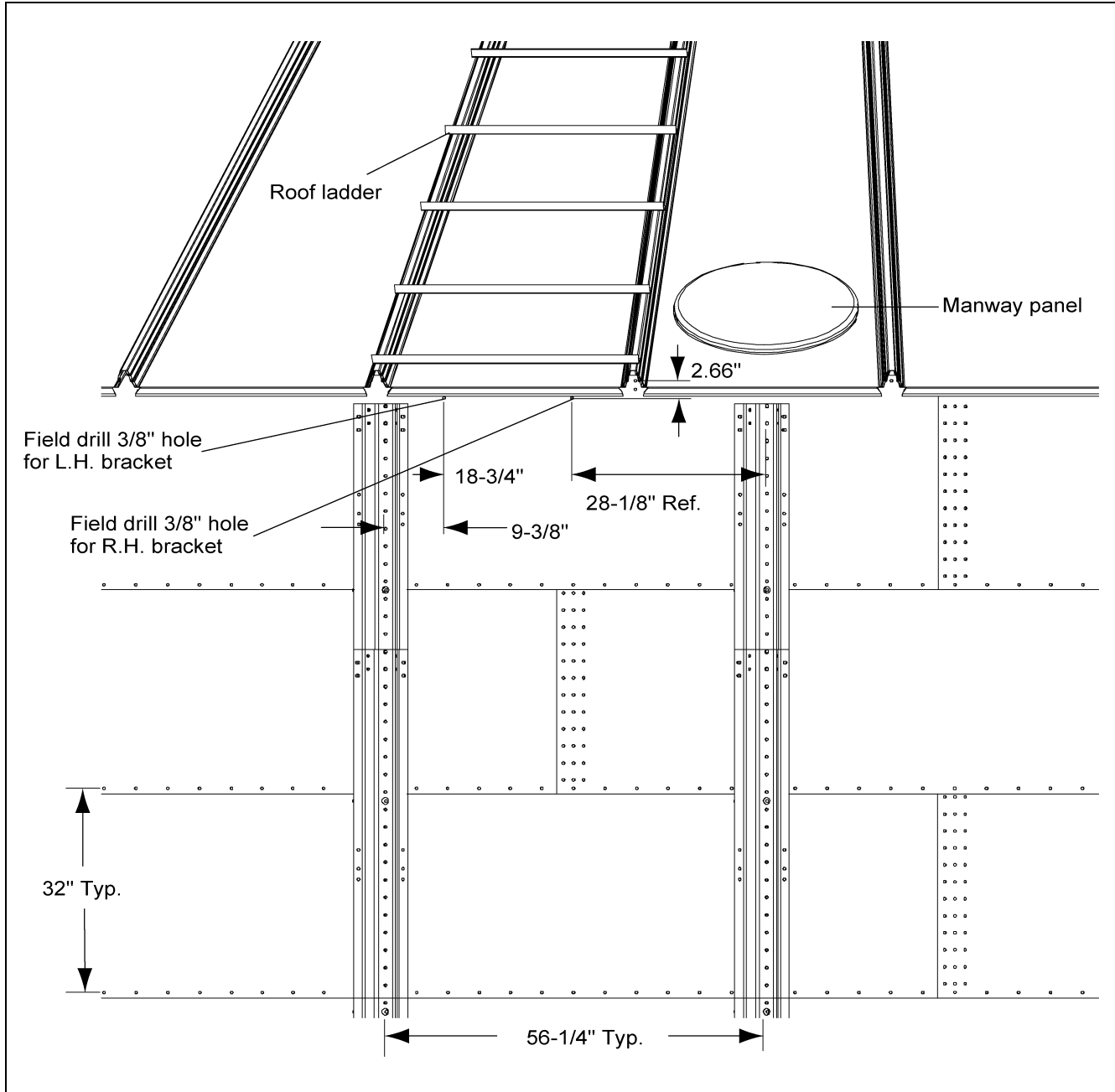


Figure 5B

## 5. 2.66" Corrugated Commercial Hopper Tank 4-9 Rings

### Eave Starter Bracket and Ladder Assembly with Safety Cage

Once the two (2) 3/8" holes have been field drilled, attach the starter brackets to the sidewall as shown in [Figure 5C](#). Check the top ladder section to make sure the ladder rung dimples are to the top. Attach starter brackets to the top of the ladder. [See Figure 4B on Page 13](#) for the proper installation of additional ladder sections required. Standoff brackets must be installed on the ladder sections and attached to the sidewall at each horizontal seam and repeated every 32". Use 5/16" x 3/4" bin bolts for all connections. It is also necessary to field drill a 3/8" hole on the ladder section for each starter bracket (L.H. and R.H.).

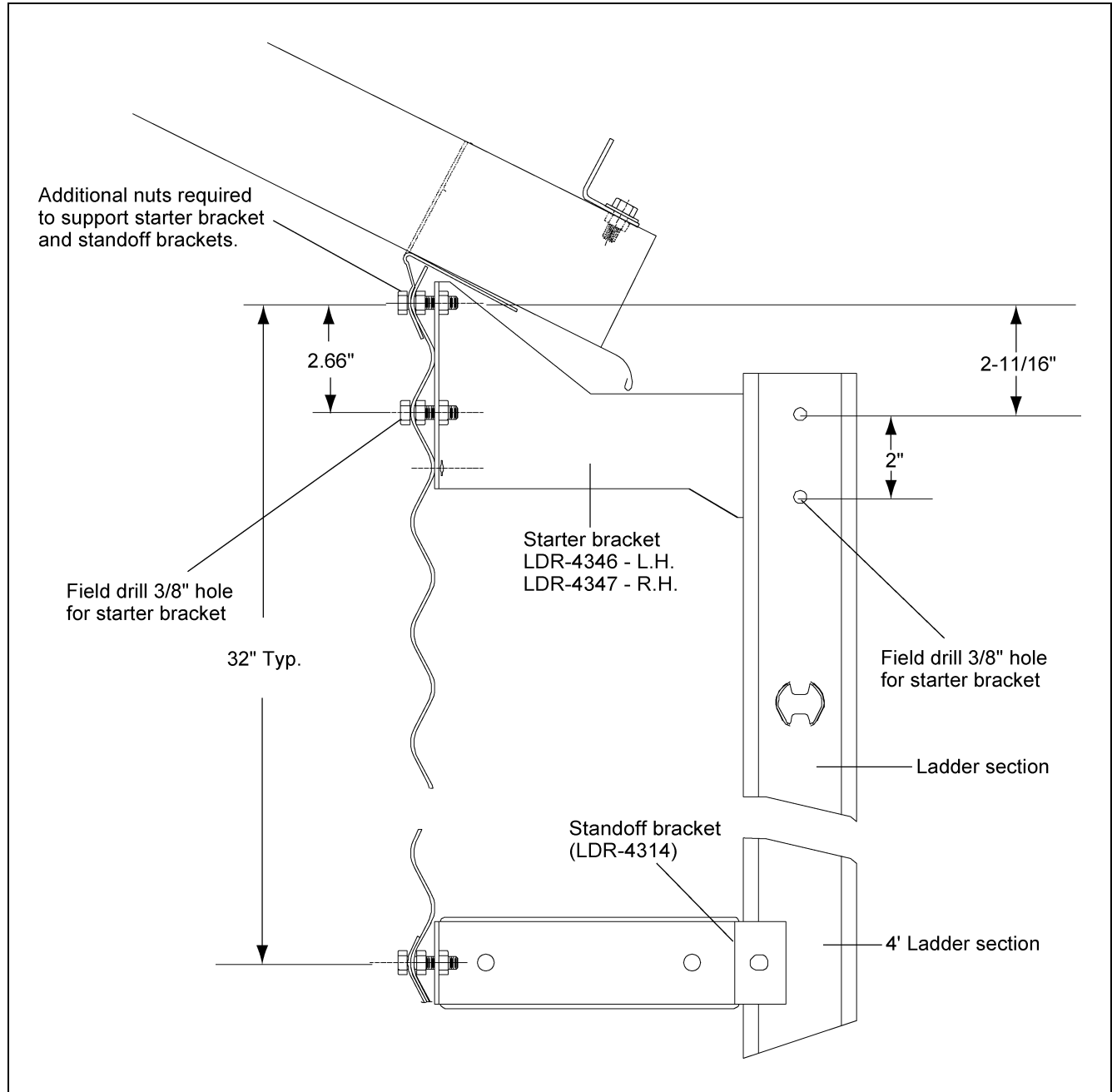
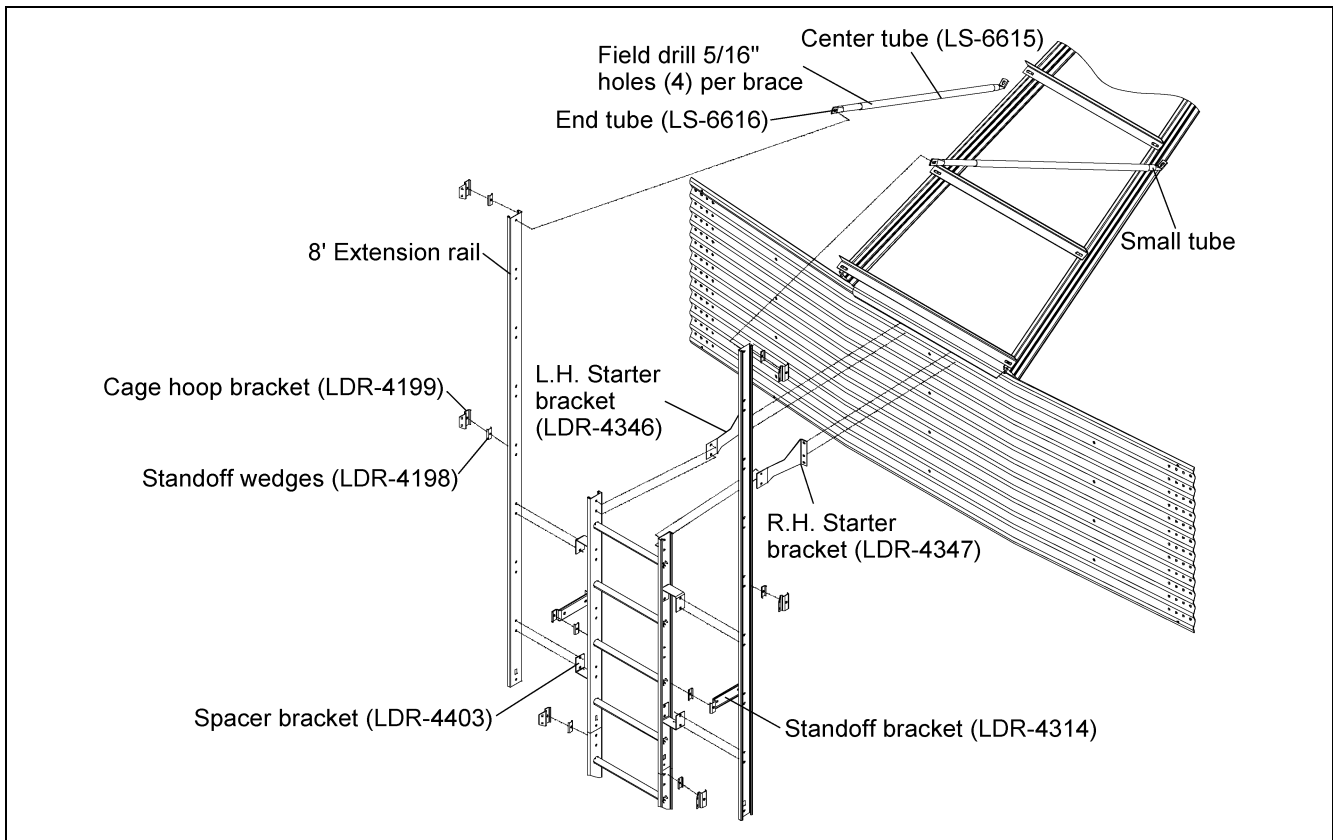


Figure 5C

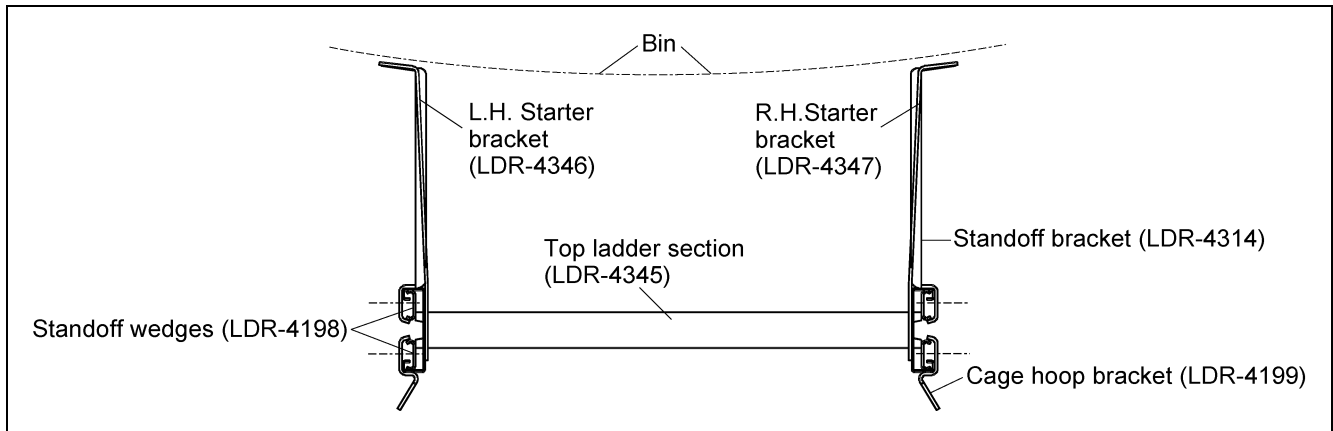
**NOTE:** [Refer to General Detail Information on Page 12](#) for additional details for standoff bracket to ladder assembly and also, 8' extension rail installation (omitted in detailed figure above for clarity).



## 5. 2.66" Corrugated Commercial Hopper Tank 4-9 Rings



**Figure 5D**



**Figure 5E** Ladder and bracket as viewed from top of bin

## 5. 2.66" Corrugated Commercial Hopper Tank 4-9 Rings

### Eave Adjustable Braces

The eave adjustable braces must be attached at this time. An eave adjustable brace is comprised of one (1) large diameter tube and two (2) smaller diameter tubes. (See Figure 5F.) Slide the smaller tubes inside the larger tubes and attach one (1) smaller tube to the top of the ladder extension rail. Adjust the other smaller tube so the bottom of the flattened tube reaches the roof panel. Field drill four (4) 5/16" holes through both large and small tubes and bolt together using 1/4" x 1-1/2" bolts and nuts. This will prevent the adjustable braces from slipping. (See Figure 5G.)

**NOTE:** Refer to Page 24 for proper location of ladder starter brackets.

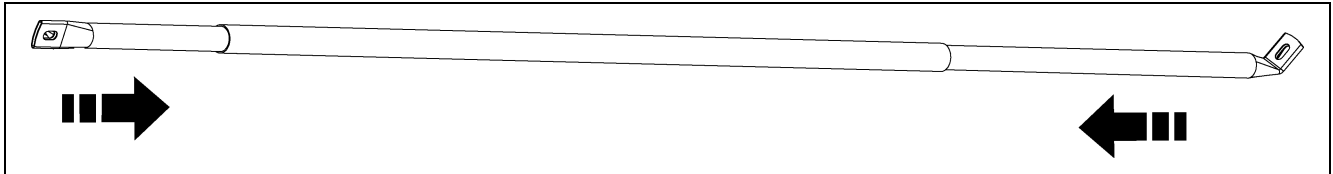


Figure 5F

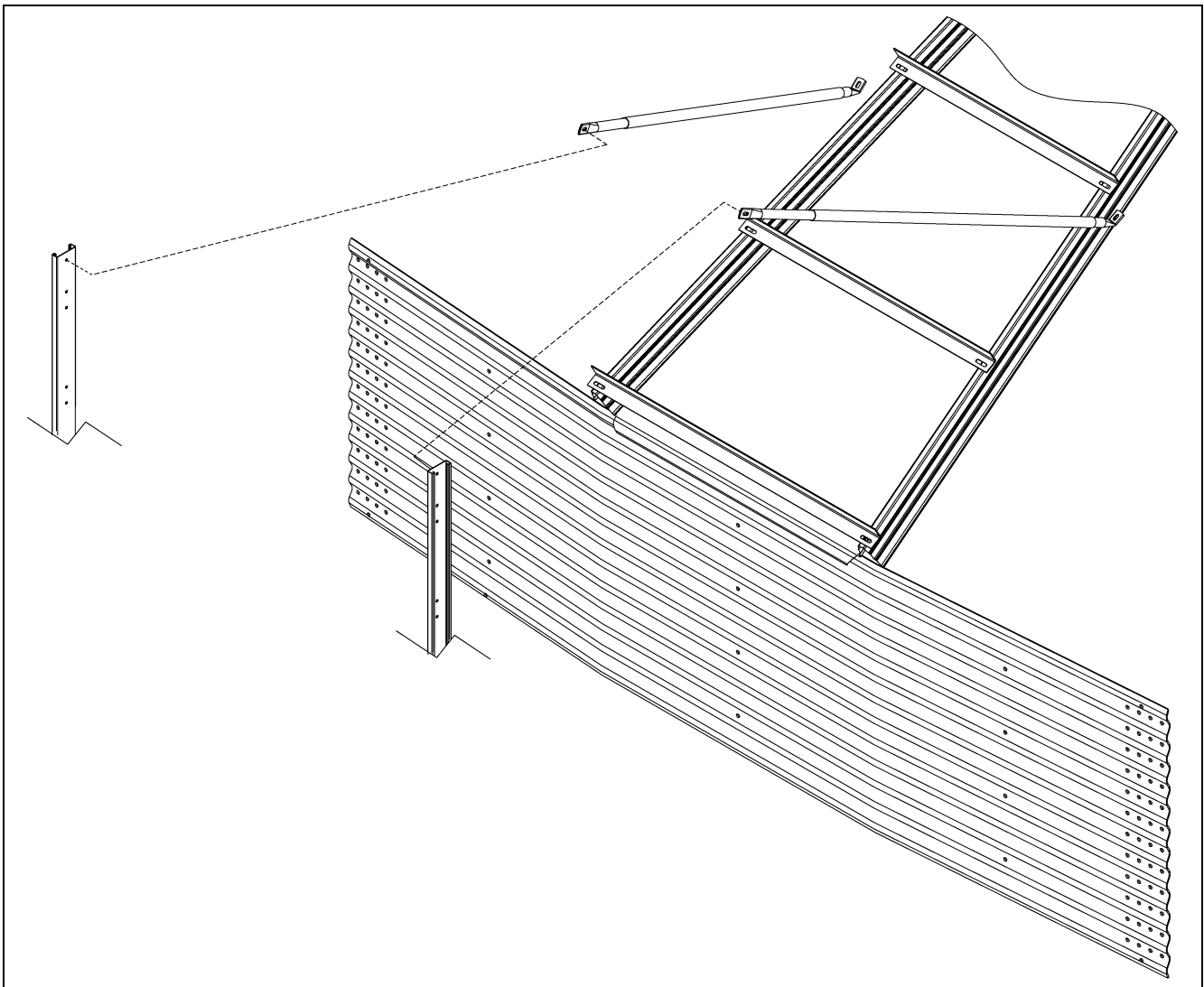


Figure 5G

**NOTE:** Refer to Figure 4A on Page 12 for additional details for standoff bracket to ladder assembly and cage hoop bracket to ladder.

### Eave Platform Mounting Angle Installation

Figure 5H shows the location of the platform mounting angles. Each angle must be mounted starting 4" below the top horizontal seam of the second ring with the first mounting angle offset 9-3/8" from the right hand starter bracket. The second mounting angle must be located 56-1/4" from the first mounting angle. The dimensions and locations of these angles are critical for proper fit of all parts. Using the platform mounting angles as guides, field drill 3/8" holes in the sidewall every 8". (See Figure 5H.)

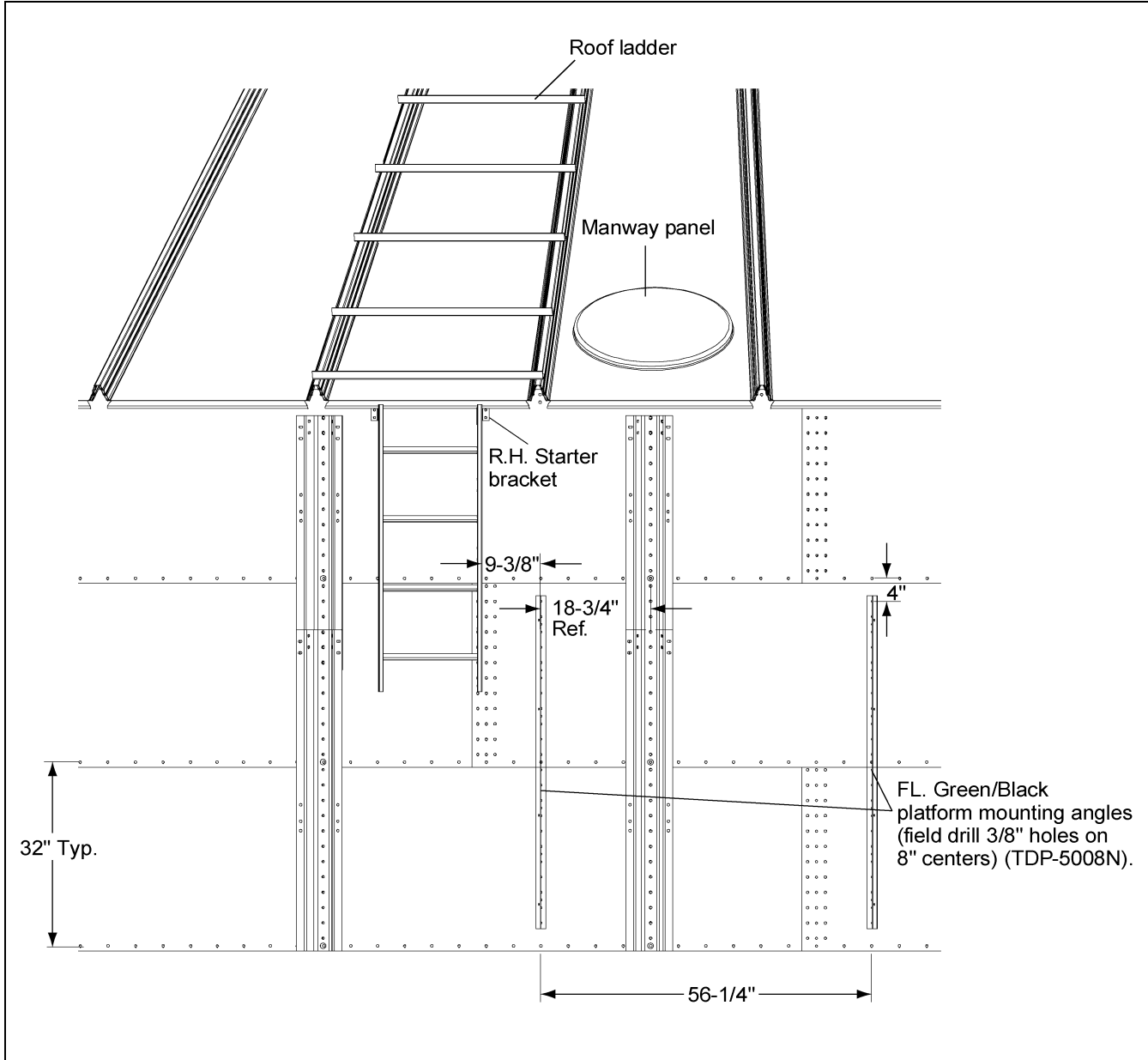
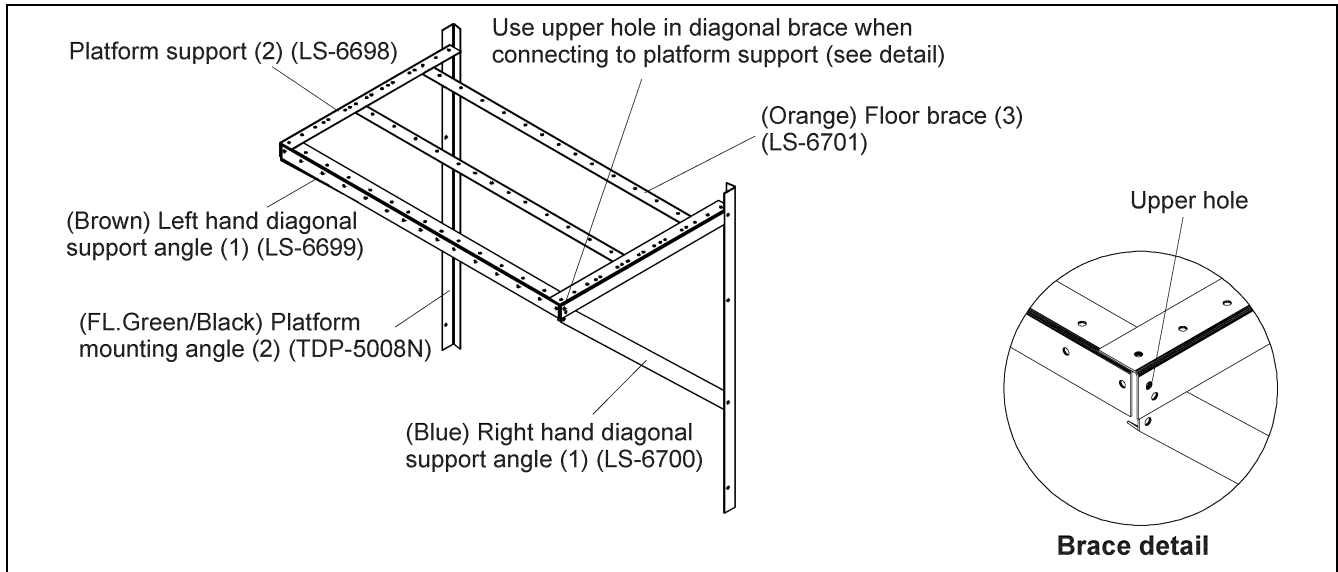


Figure 5H

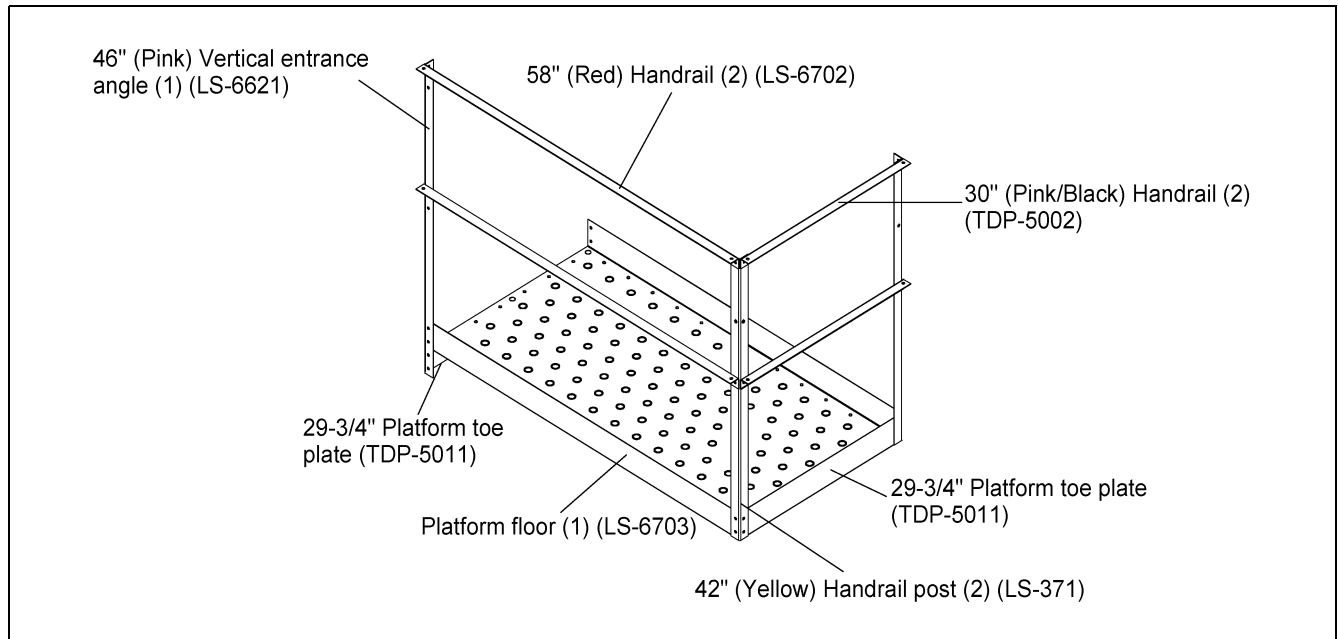
## Right Hand Platform and Platform Support Assembly

**NOTE:** Mount the platform supports on the bin first. Next, assemble the platform floor onto the support frame. Do not tighten platform support to floor brace bolts until the floor and toe plates are secure.

Assemble the platform support frame using 5/16" x 3/4" truss head bolts and nuts. (See Figure 5I.) When attaching the platform mounting angles to the sidewall, locate the mounting angles according to the instructions on previous pages. Align holes on the platform floor with the holes on the platform supports and bolt together using 5/16" x 3/4" truss head bolts and nuts. Attach platform toe plates at the same time as attaching the platform floor. The vertical entrance angle bolts to the platform floor, toe plate and platform support. The handrail post bolts to the platform floor and toe plate as shown in Figure 5J.



**Figure 5I** Right hand platform support assembly



**Figure 5J** Right hand platform

## Eave Safety Cage Hoop Assembly

Before attaching any pieces to the ladders or platform, some pre-assembly is required. Attach two (2) safety cage brackets to the 8' extension rail and one (1) safety cage bracket to the second 4' ladder section as shown in [Figure 5K](#). Bolt the safety cage hoop adjuster plates onto the extension angle as shown in [Figure 5K](#). Using the proper configuration depending on the bin diameter ([See Adapter Assembly Detail on Page 30](#)), bolt the safety cage hoop adapters together and attach to the safety cage hoop halves. Be sure to use the 5/16" x 3/4" bolt with the head of the bolt to the inside of the safety cage. Bolt these assemblies to the safety cage brackets and hoop adjuster plates ([See Connection Detail on Page 30](#) for proper hole location). Tighten bolts as you go. The bottom assembly requires two (2) hoop halves and will be positioned just below the platform as shown in [Figure 5K](#). Use the safety cage hoop adjuster angle to secure the two hoop half assemblies to the vertical entrance angle on the platform assembly.

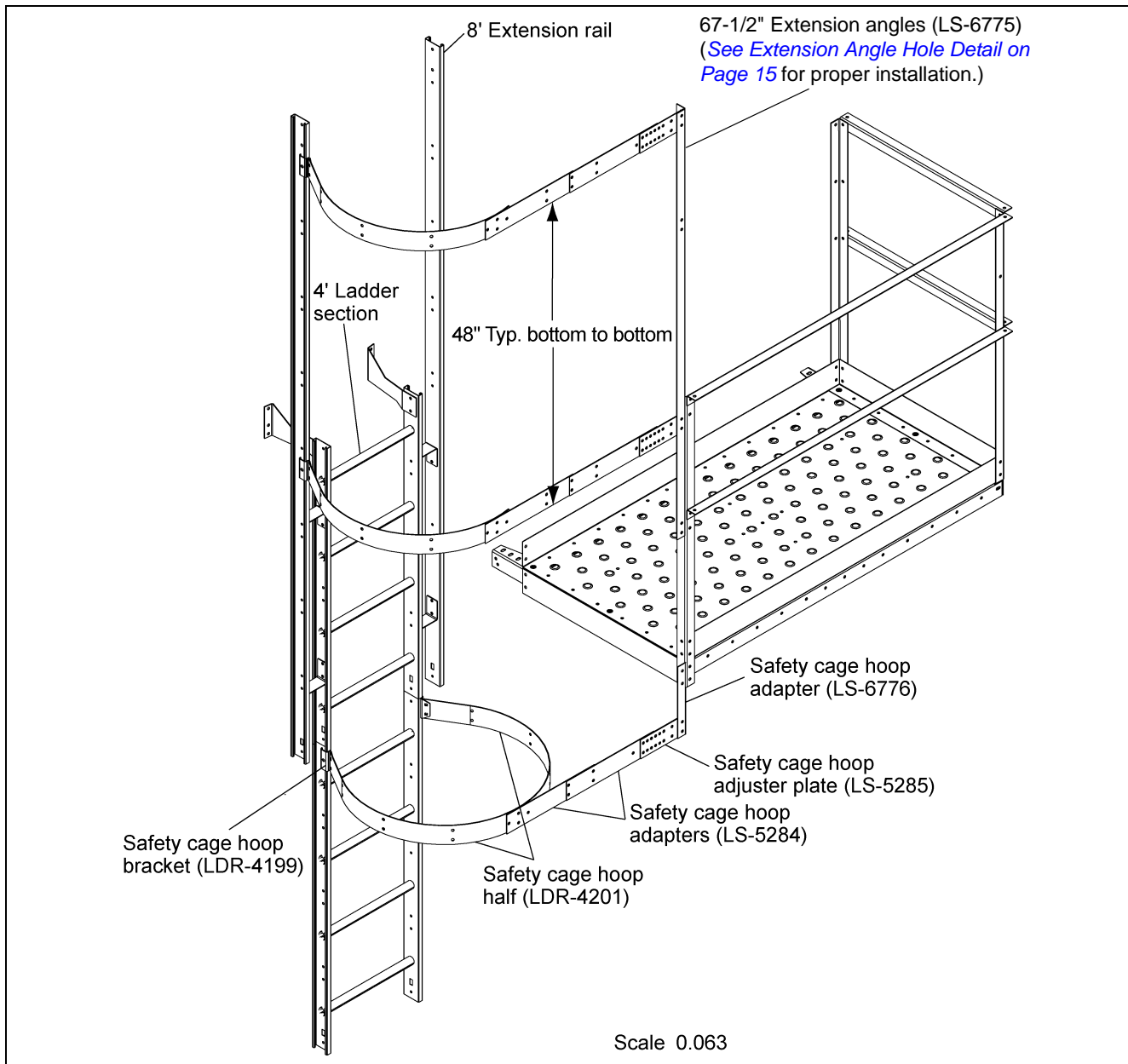


Figure 5K

**NOTE:** 48" vertical supports removed in [Figure 5K](#) for clarity.

## Adapter Assembly Detail

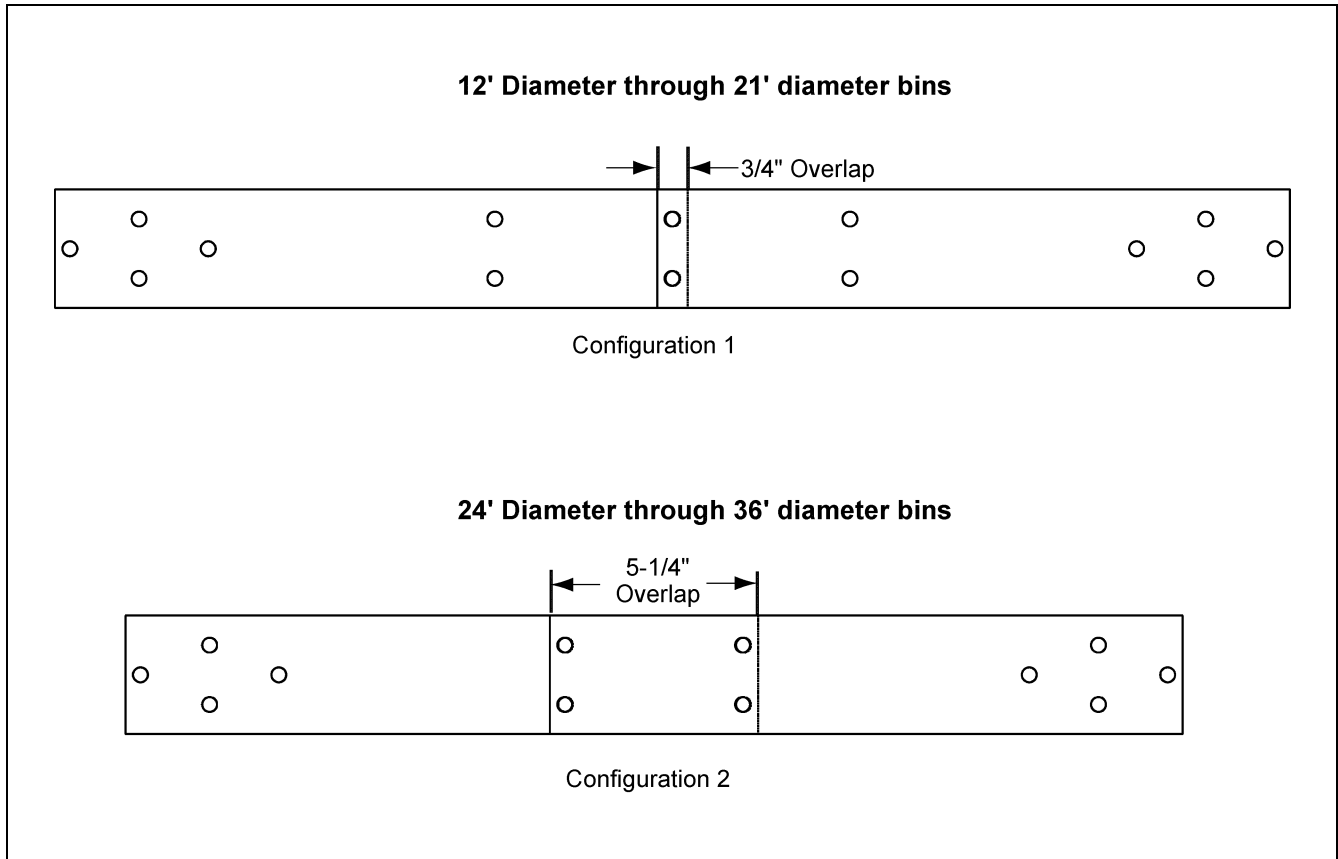


Figure 5L

## Connection Detail

Use [Figure 5M](#) to determine the proper holes to use when attaching the hoop adapter to the adjuster plate.

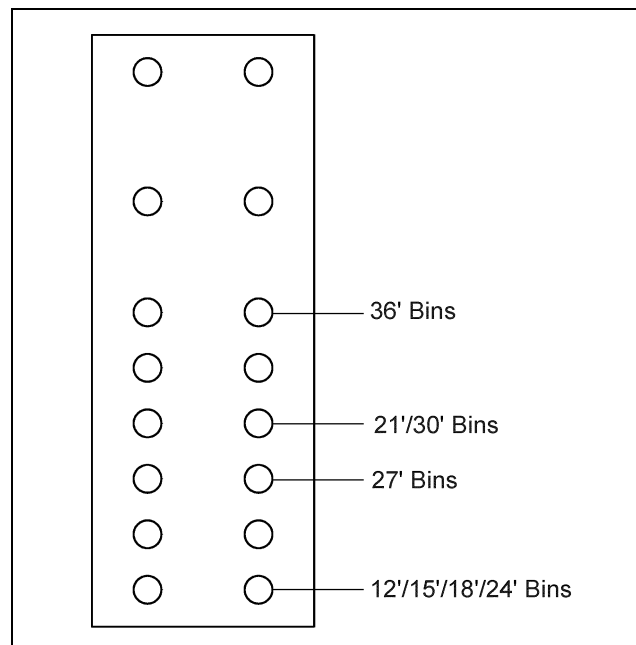


Figure 5M

## Vertical Supports

After all three (3) hoop assemblies are in place, attach the 48" vertical supports from hoop assembly to hoop assembly, as shown in [Figure 5N](#). This requires ten (10) supports, five (5) between each set of hoops. The second set of vertical supports must be bent at the flat area to allow for the tapering of the bottom hoop assembly. Use 5/16" x 3/4" bolts (unless otherwise noted) with the head of the bolt to the inside of the safety cage.

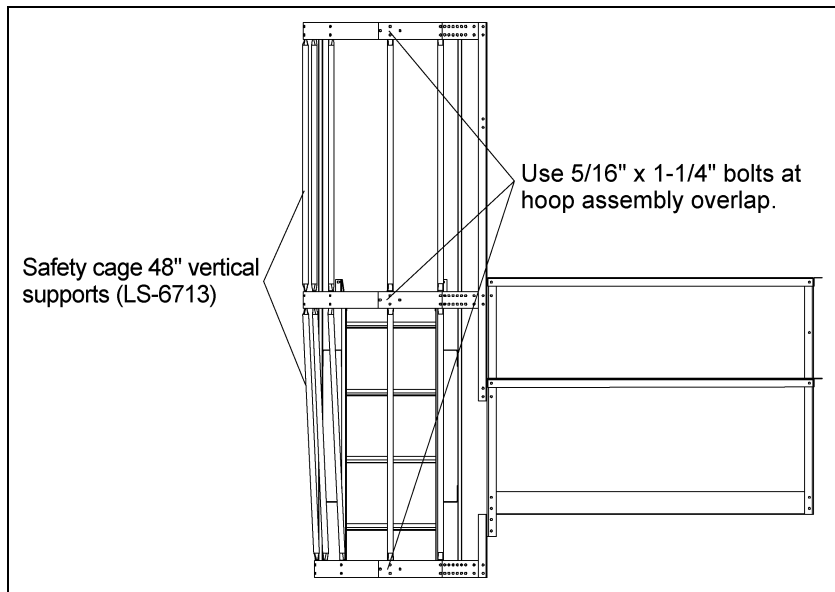


Figure 5N Vertical Supports

## 32" and 48" Safety Cage

Attach the vertical support pieces to the existing hoop halves using the 5/16" x 3/4" bolts and nuts (with the heads on the inside of the cage). Fasten two (2) hoop halves together and bolt to other end of vertical supports. Attach cage hoop brackets to ladder, [Refer to Figure 5K on Page 29](#) for proper attachment. Once cage hoop brackets have been installed, attach cage hoop halves and tighten bolts. Repeat installation for each safety cage required.

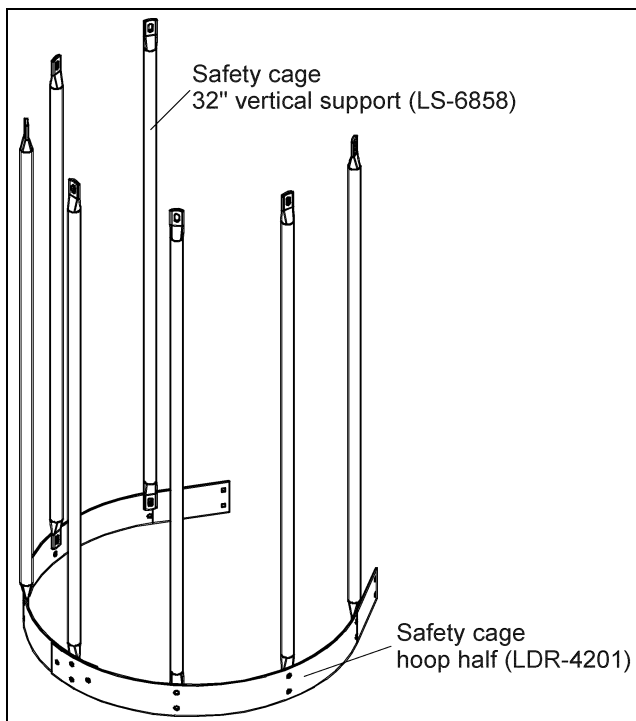


Figure 5O 32" Safety Cage

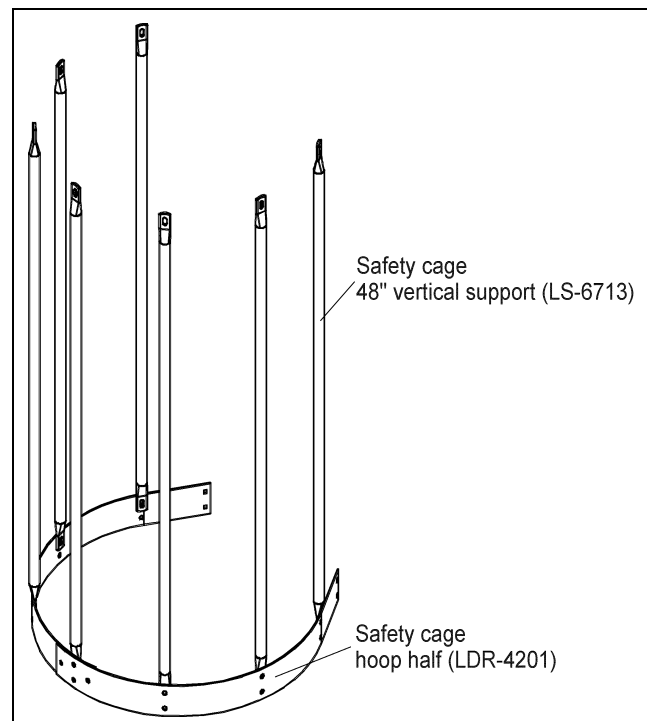


Figure 5P 48" Safety Cage

## Access Door Platform Mounting Angle Installation

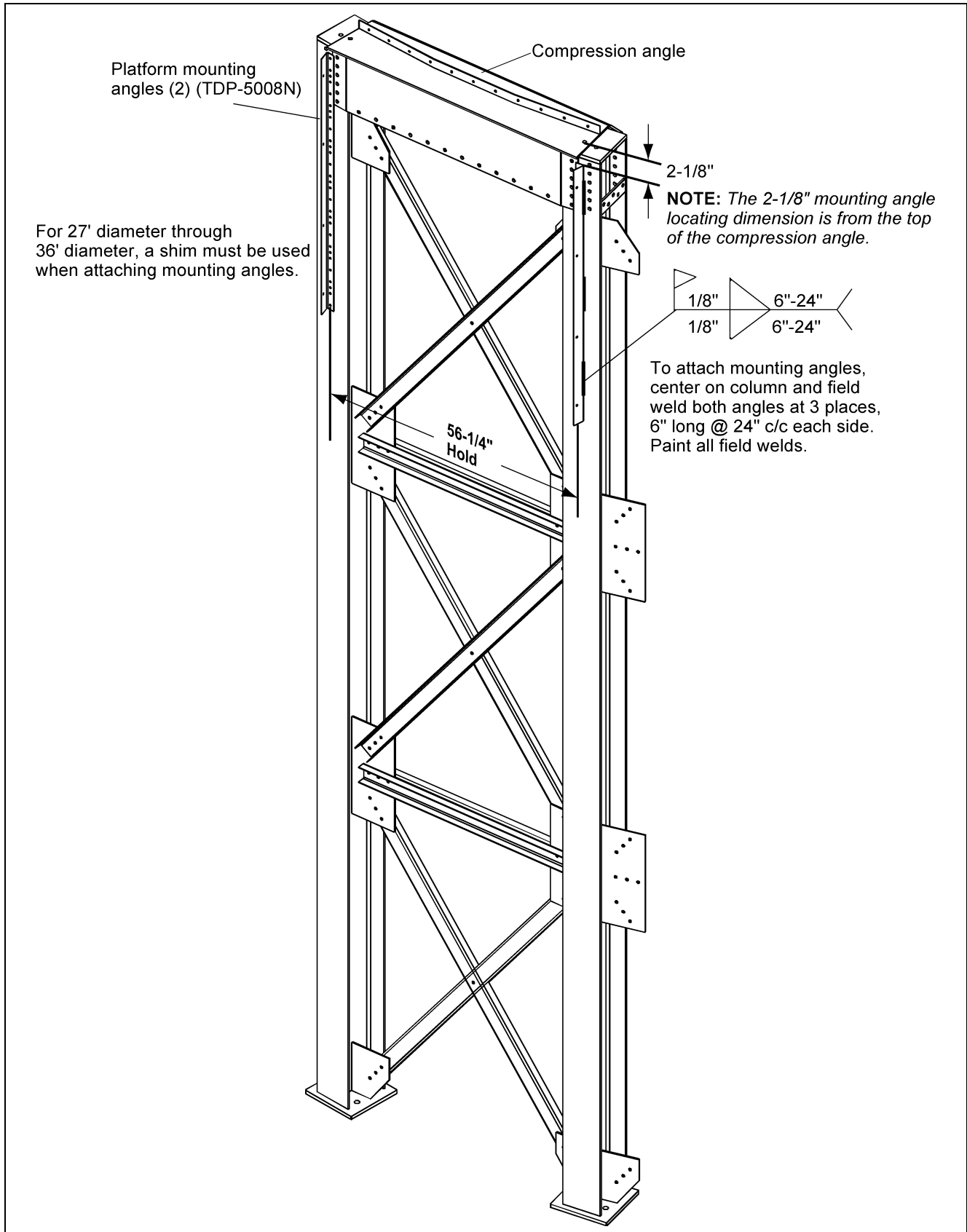


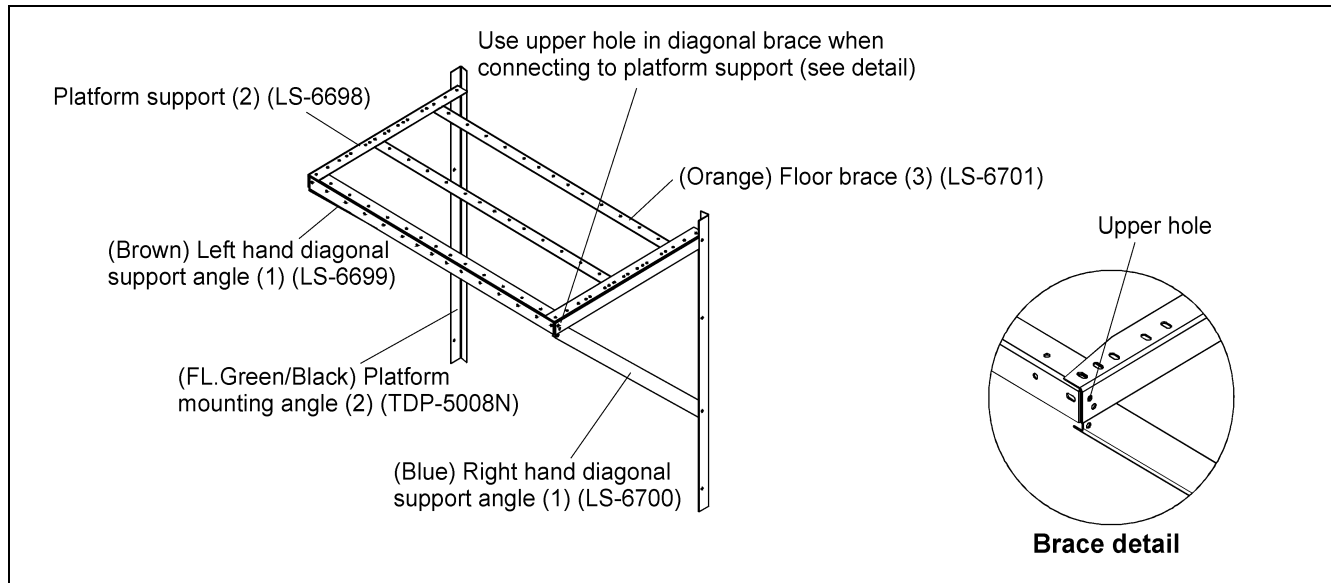
Figure 5Q



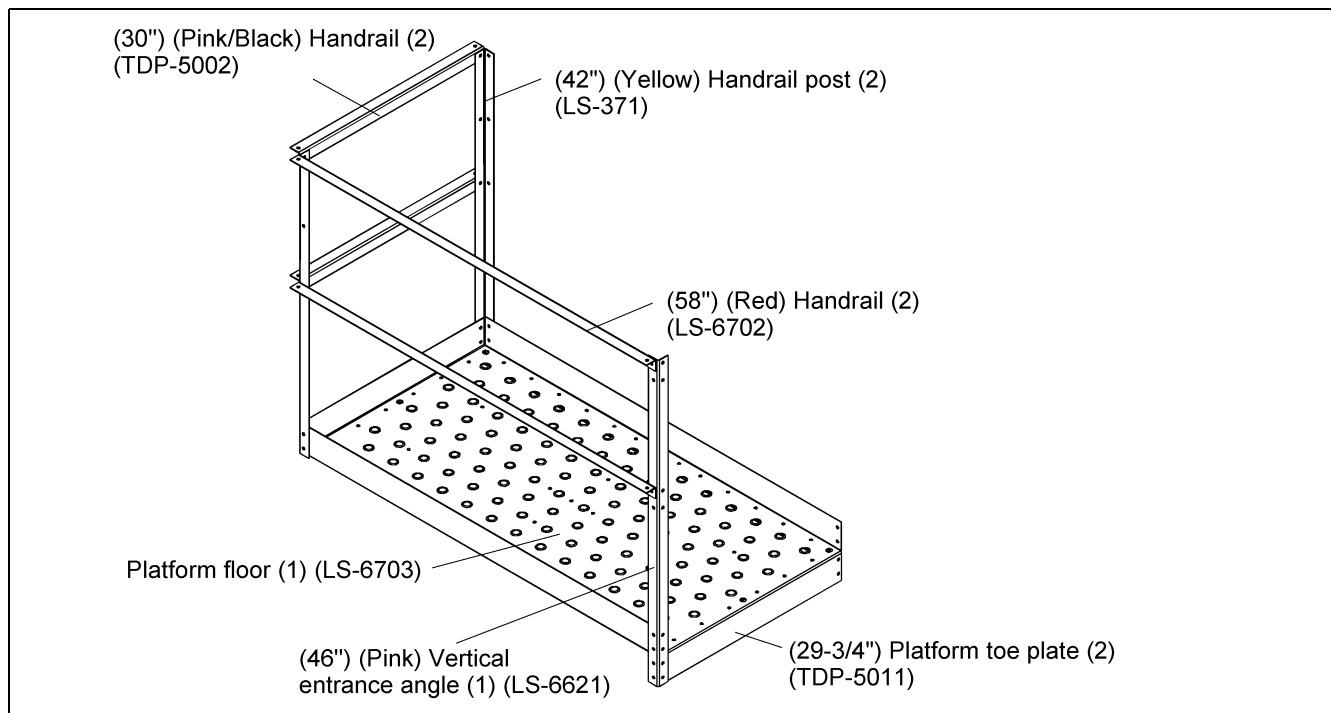
## Left Hand Platform and Platform Support Assembly

**NOTE:** Mount the platform mounting angles on the columns first. Next, assemble the platform floor onto the support frame. Do not tighten platform support to floor brace bolts until the floor and toe plates are secure.

Assemble the platform support frame using 5/16" x 3/4" truss head bolts and nuts. Align holes on the platform floor with the holes on platform supports and bolt together using 5/16" x 3/4" truss head bolts and nuts. Attach platform toe plates at the same time as attaching the platform floor. Vertical entrance angle bolts to the platform floor, toe plate and platform support. Handrail post bolts to the platform floor and toe plate as shown in [Figure 5S](#).



**Figure 5R** Left Hand Platform Support Assembly



**Figure 5S** Left Hand Platform

## Access Door Safety Cage Hoop Assembly

Before attaching any pieces to the ladder or platform, some pre-assembly is required. Attach the safety cage brackets to the ladder section. (See [Figure 5K on Page 29.](#)) Bolt the safety cage hoop adjuster plates onto the extension angle as shown in [Figure 5T.](#) For the middle hoop assembly, bolt the safety cage hoop adapters and safety cage hoop half together using the proper holes, based upon the bin diameter. (See [Page 30.](#)) Be sure to use the 5/16" x 3/4" bolt with the head of the bolt to the inside of the safety cage. Bolt this assembly to the safety cage bracket and hoop adjuster plate, tighten as you go. The bottom assembly requires two (2) hoop halves and will be positioned just below the platform as shown in [Figure 5T.](#) Use the safety cage hoop adjuster angle to secure the two (2) hoop half assemblies to the vertical entrance angle on the platform assembly. To finish the installation, secure the access door platform assembly to the existing safety cage assembly using the safety cage hoop adapters as shown in [Figure 5T.](#)

**NOTE:** See [Pages 31 and 35](#) for vertical supports, safety cage installation, and bell safety cage installation details to complete the ladder assembly.

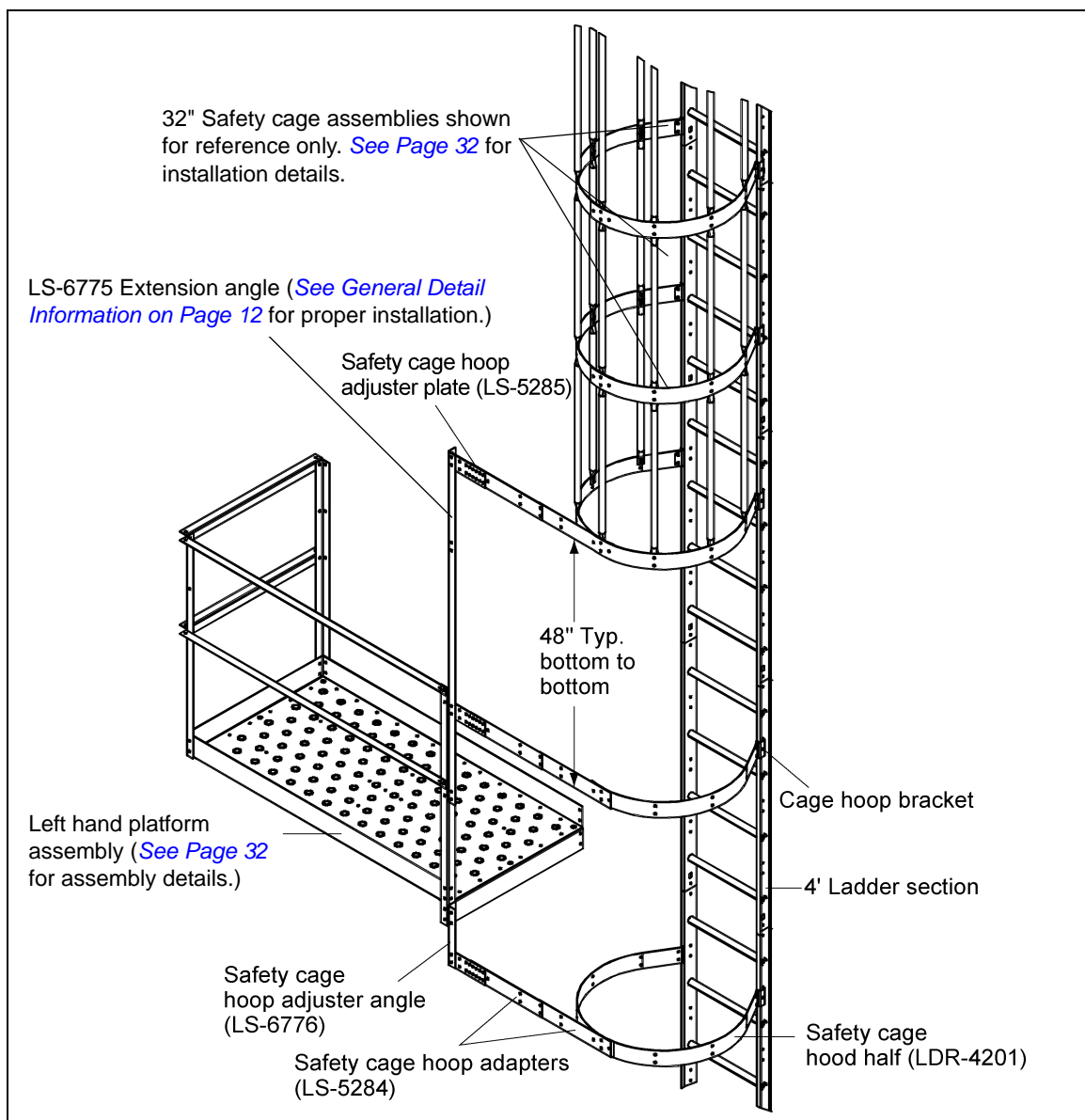
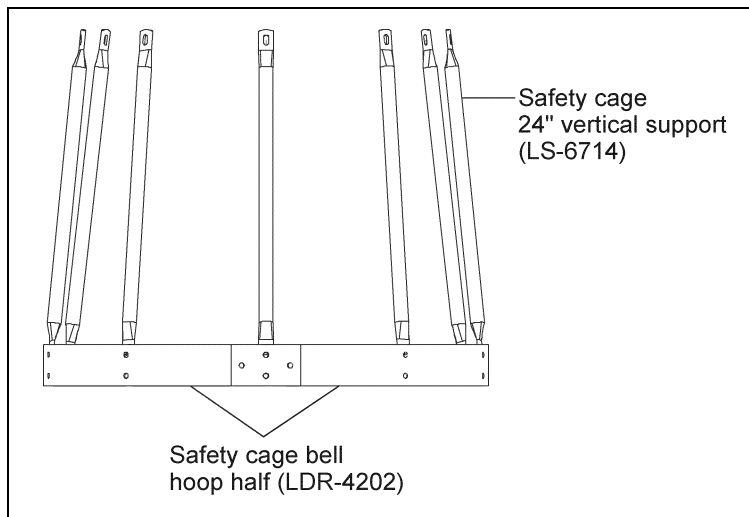


Figure 5T

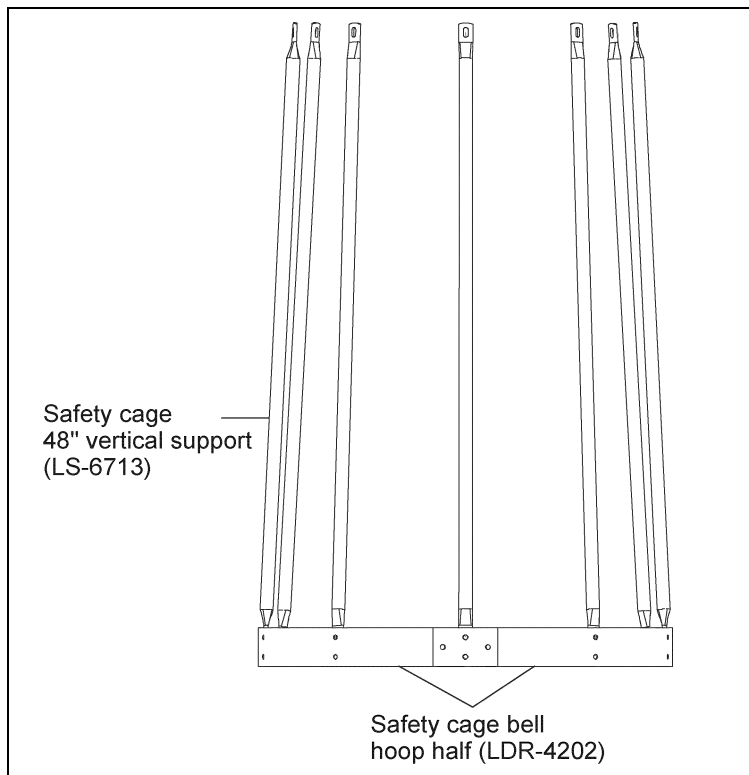
## 24"-48" Safety Cage Bell Sections

Attach the vertical supports to the hoop half assembly from the final safety cage installation using 5/16" x 3/4" bolts and nuts (with the heads on the inside of the cage). Assemble the special bell safety cage hoop halves and attach to other end of vertical supports. The vertical support must be bent at the flat area to allow for the angle of the bell section. Attach the safety cage brackets to the ladder as shown in the [Figure 5K on Page 29](#). Once the safety cage brackets are installed, attach the bell safety cage hoop half assembly to the safety cage brackets and tighten bolts.

**NOTE:** *The safety cage bell section is to be used at the point of termination of the safety cage and should be just above the concrete (generally 7' to 8').*



**Figure 5U 24" Bell**



**Figure 5V 48" Bell**

## Ladder Support Detail

The ladder must be secured to the hopper support columns with ladder standoff brackets using support channels and ladder brackets as shown in [Figure 5W](#).

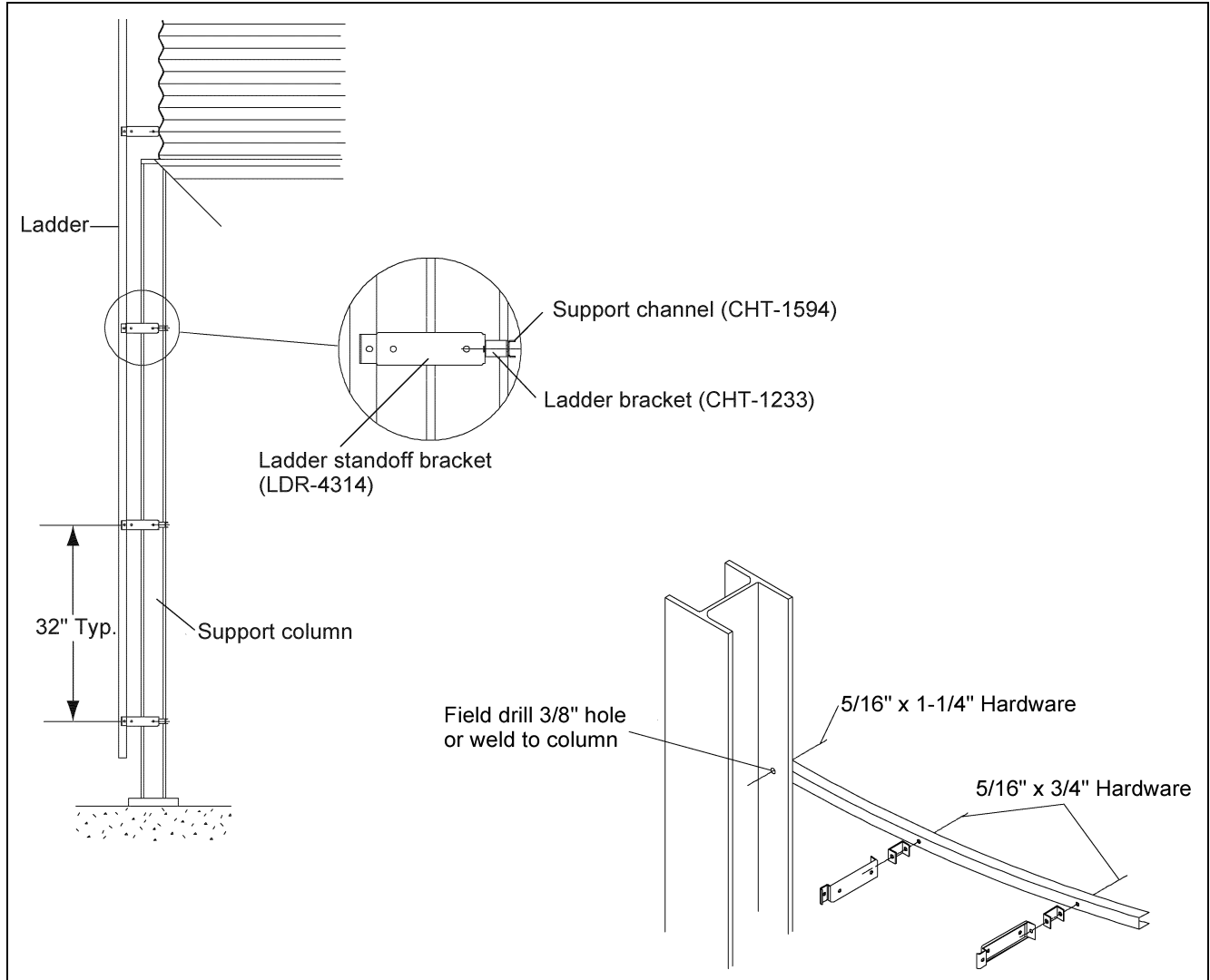


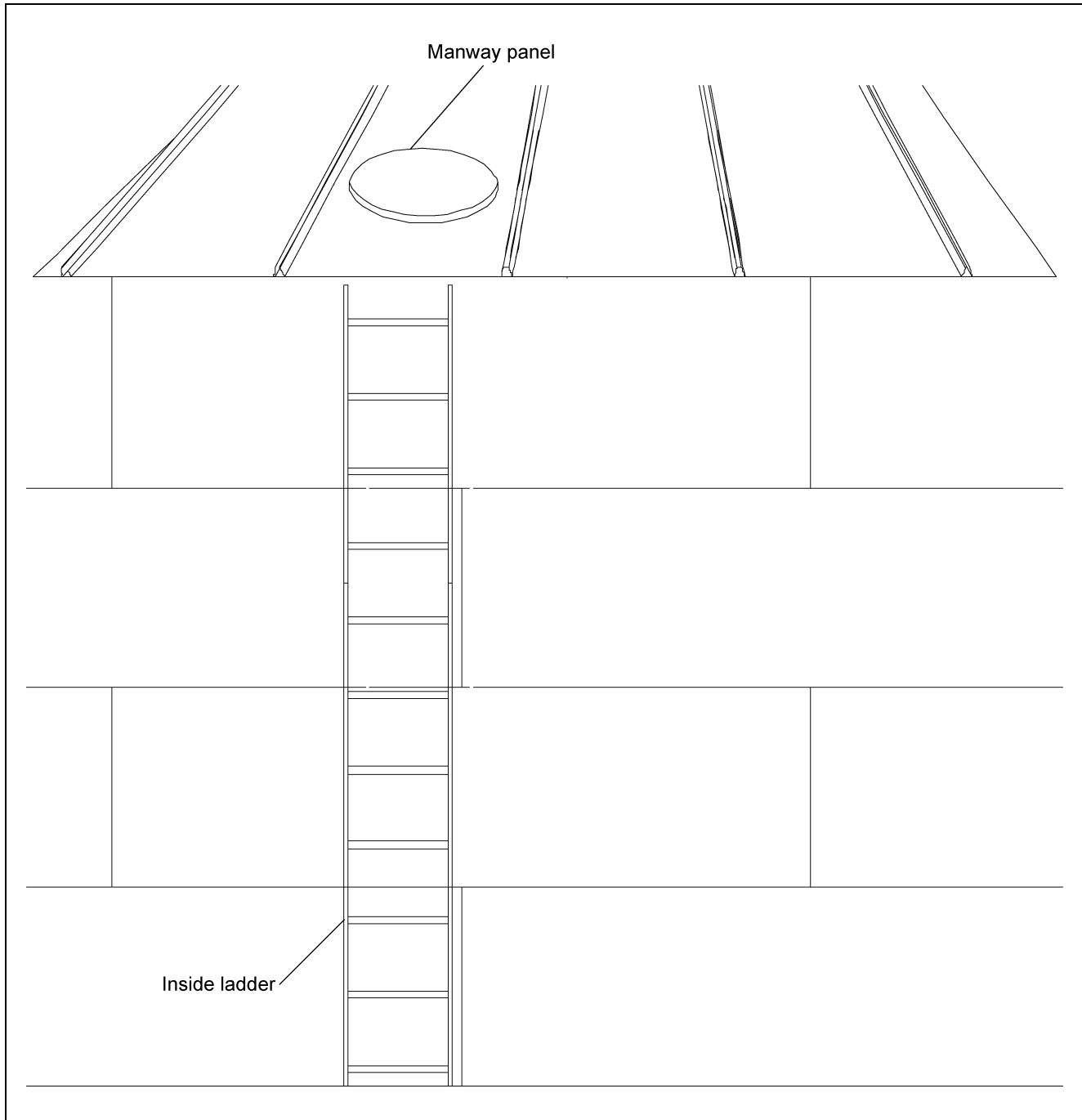
Figure 5W

Tank Diameter	Hopper Slope	No. of Support Channels	Hopper Ladder Brackets
12'	45	3	6
12'	60	4	8
15'	45	4	8
15'	60	6	12
18'	45	4	8
18'	60	7	14
21'	45	5	10
21'	60	8	16
24'	45	5	10
27'	40	5	10
30'	40	5	10
36'	40	6	12
36'	45	8	16

## Inside Ladder Installation

### Inside Ladder Location

The inside ladder package includes the ladder, starter brackets and double the amount of standoff brackets. Position the ladder directly under the manhole roof panel as shown in [Figure 5X](#) and install the starter brackets as shown in [Figure 5Y](#). Place the standoff brackets every 16" vertically on the sidewall sheets using the horizontal seam holes for every other hole location. Use 5/16" x 3/4" bin bolts to attach the standoff brackets to the sidewall of the grain bin.



**Figure 5X** Inside of Grain Bin

## 5. 2.66" Corrugated Commercial Hopper Tank 4-9 Rings

### Inside Starter Bracket and Ladder Placement

Refer to [Figure 5Y](#) and follow the correct dimensions as shown. The ladder starter brackets must be located in line with the horizontal seam. Check the 4' ladder section to make sure the ladder rung dimples are to the top. Attach to the starter brackets using the hole located 1" from top of the ladder. It will be necessary to field drill the second 3/8" hole for the starter bracket on the ladder 2" below the hole 1" from the top of the ladder. All standoff brackets must be installed every 16" and attached to each 4' section required.

**NOTE:** Refer to [Figure 4C on Page 14](#) for additional details for standoff bracket to ladder assembly.

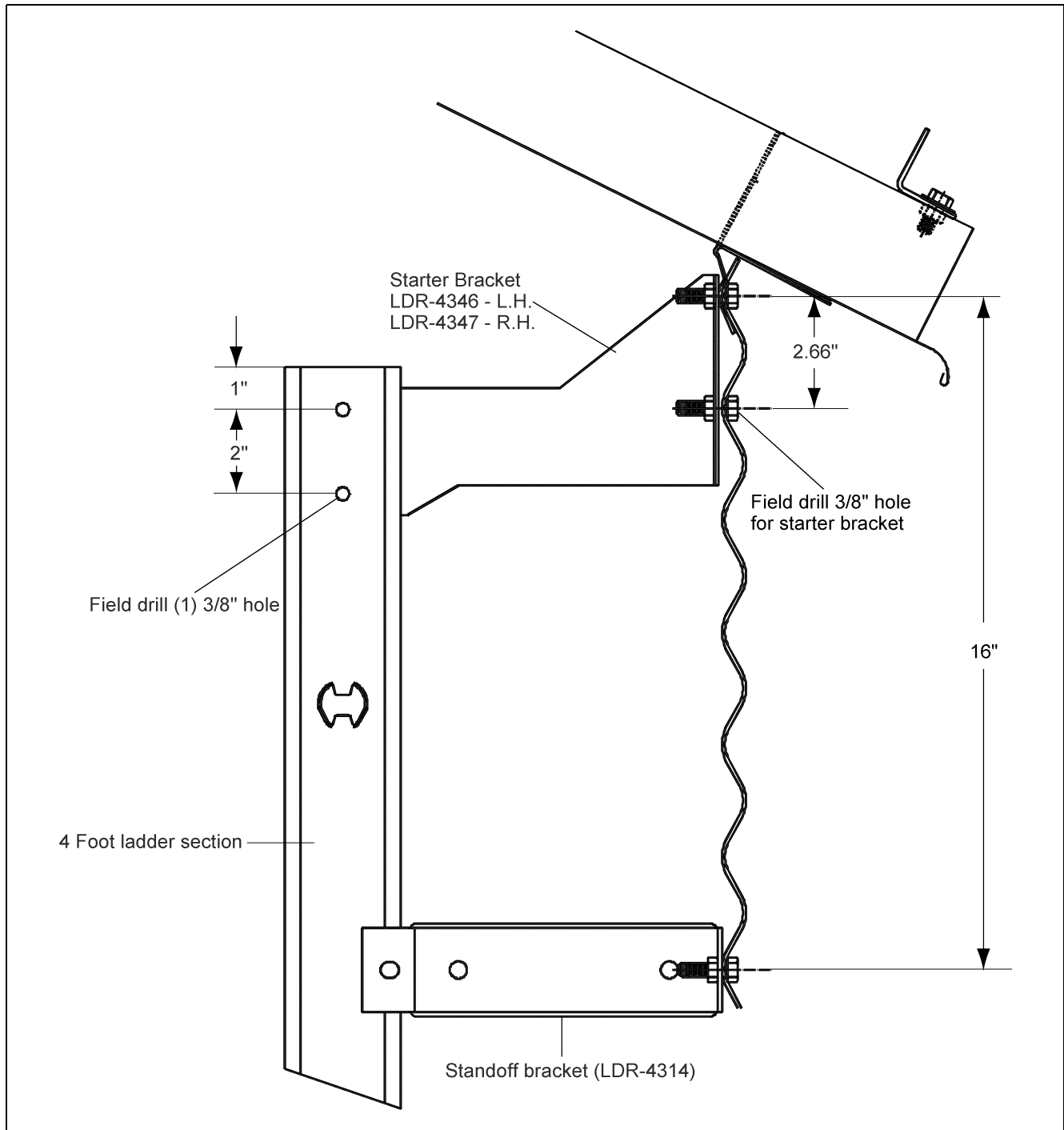


Figure 5Y

## Inside Ladder Standoff Bracket/Supports

### Inside Ladder Standoff Bracket Requirements

For the standoff brackets, field drill two (2) 3/8" diameter holes 18-3/4" apart directly in line with the horizontal seam holes. Continue down the sidewall with standoff brackets every 16".

*Refer to Figure 5Z.*

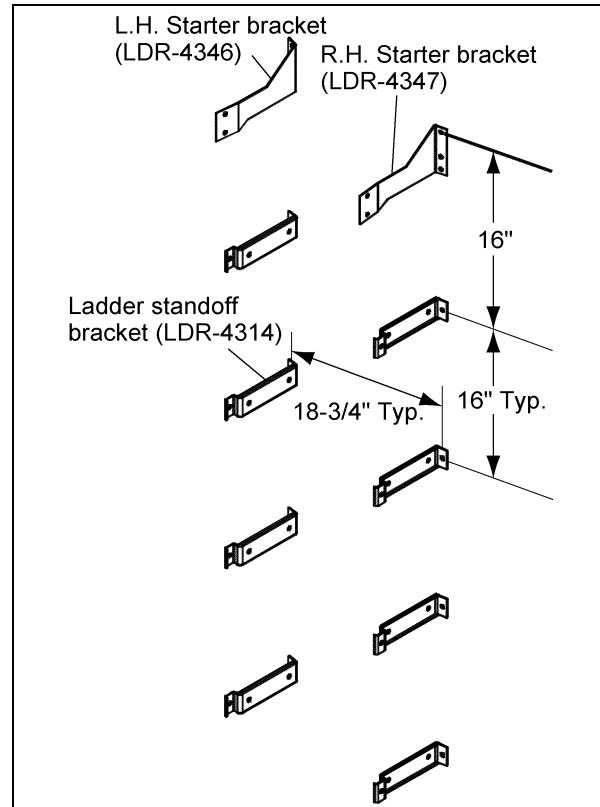


Figure 5Z

### Inside Ladder Supports

After completing the inside ladder, be sure to support the bottom of the ladder to the concrete. Depending on the actual installation, the amount of support required may vary. Supports are not supplied by the manufacturer. If a bin sweep is to be used in the grain bin, other considerations may be necessary to assure there is no interference with the equipment. *Refer to Figure 5AA.*

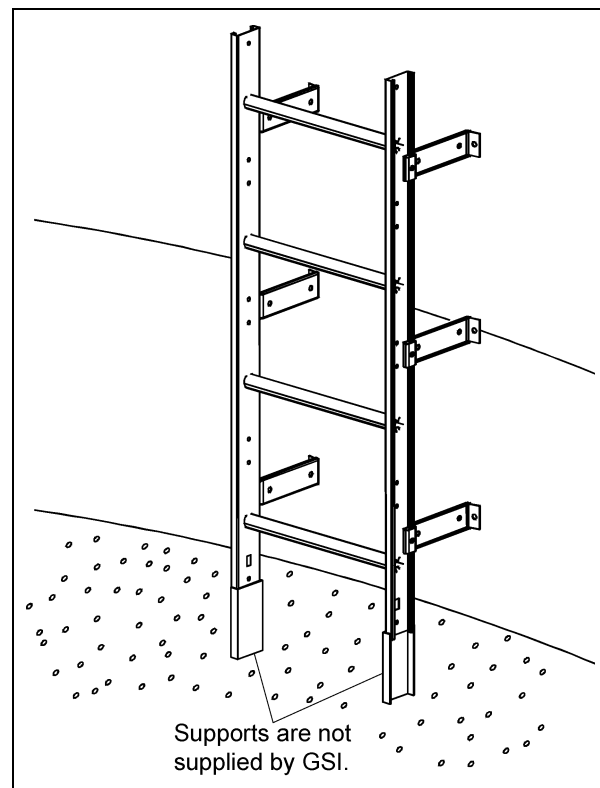


Figure 5AA

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# NOTES





**2.66" CORRUGATED  
COMMERCIAL HOPPER  
TANK 10-22 RINGS**

## 2.66" Commercial Hopper Tank (NCHT) Ladder and Platform Layout 10-22 Rings

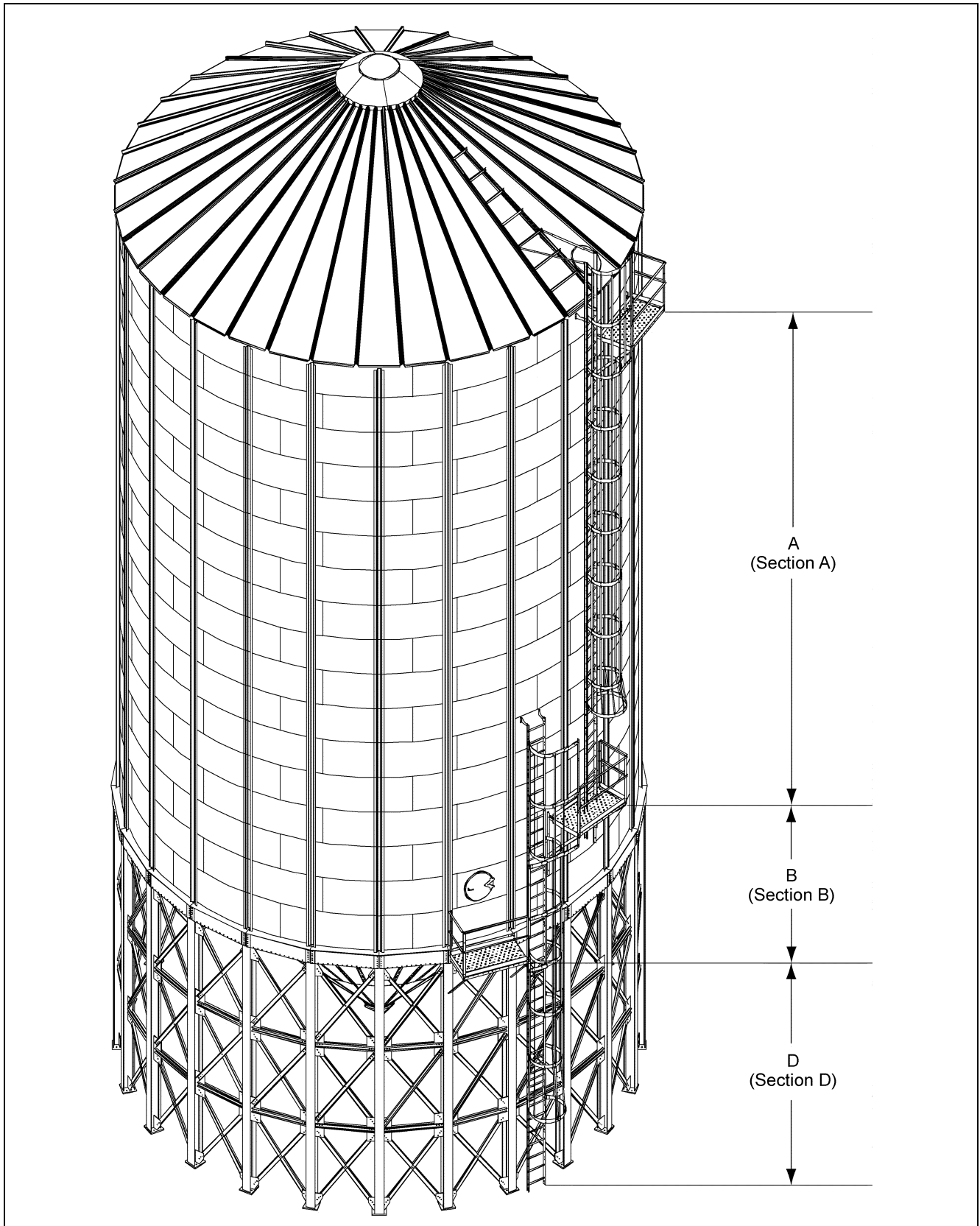


Figure 6A 17 Rings

## 6. 2.66" Corrugated Commercial Hopper Tank 10-22 Rings

### Ladder, Safety Cage and Platform Location Chart

For Section A through C, find the proper ring grain bin and use the number of ladders and safety cages as shown in the [Chart below](#). For Section D, find the proper diameter grain bin and hopper slope, and use the number of ladders and safety cages as shown in the [Chart on Page 45](#).

		Rings														
		10	11	12	13	14	15	16	17	18	19	20	21	22		
<b>Section A</b>	Platform Located in Ring:	2	2	2	2	2	2	2	2	2	2	2	2	2		
	4 Ft. Ladder Section	5	6	6	7	8	8	9	10	4	6	6	6	7		
	Bell Safety Cage	1	1	1	1	1	1	1	1	1	1	1	1	1		
	Safety Cage 48" Section	1	2	2	3	4	4	5	6	0	2	2	2	3		
	Bell Safety Cage Size	48"	24"	48"	48"	24"	48"	48"	24"	48"	48"	48"	48"	48"		
	<b>Dimension A</b>	192"	224"	256"	288"	320"	352"	384"	416"	160"	256"	256"	256"	288"		
<b>Section B</b>	Platform Located in Ring:	8	9	10	11	12	13	14	15	16	17	18	19	20		
	4 Ft. Ladder Section	4	4	4	4	4	4	4	4	4	4	4	4	4		
	Bell Safety Cage	0	0	0	0	0	0	0	0	0	0	0	0	0		
	Safety Cage 48" Section	0	0	0	0	0	0	0	0	0	0	0	0	0		
	<b>Dimension B</b>	96"	96"	96"	96"	96"	96"	96"	96"	96"	96"	96"	96"	96"		
<b>Section C</b>	Platform Located in Ring:									7	10	10	10	11		
	4 Ft. Ladder Section									8	7	8	8	8		
	Bell Safety Cage									1	1	1	1	1		
	Safety Cage 48" Section									3	2	2	3	3		
	Bell Safety Cage Size									48"	24"	48"	48"	48"		
	<b>Dimension C</b>									288"	224"	256"	288"	288"		
<b>Section D</b>	<b>Diameter</b>															
		12'	12'	15'	15'	18'	18'	21'	21'	24'	27'	27'	30'	30'	36'	36'
	<b>Hopper Slope:</b>	45	60	45	60	45	60	45	60	45	40	45	40	45	40	45
	4 Ft. Ladder Section	4	5	5	6	5	7	5	7	6	5	6	6	7	6	7
	Bell Safety Cage	0	1	0	1	1	1	1	1	1	1	1	1	1	1	1
	Safety Cage 4' Section	0	0	0	1	0	1	0	2	0	0	1	0	1	1	2
	Bell Safety Cage Size	N/A	24"	N/A	24"	24"	48"	48"	24"	48"	48"	24"	48"	48"	48"	48"
	<b>Dimension D</b>	91"	128"	108"	167"	128"	198"	144"	229"	162"	142"	179"	156"	195"	187"	236"

## 2.66" Commercial Hopper Tank (NCHT) Ladder and Platform Layout 10-22 Rings (Continued)

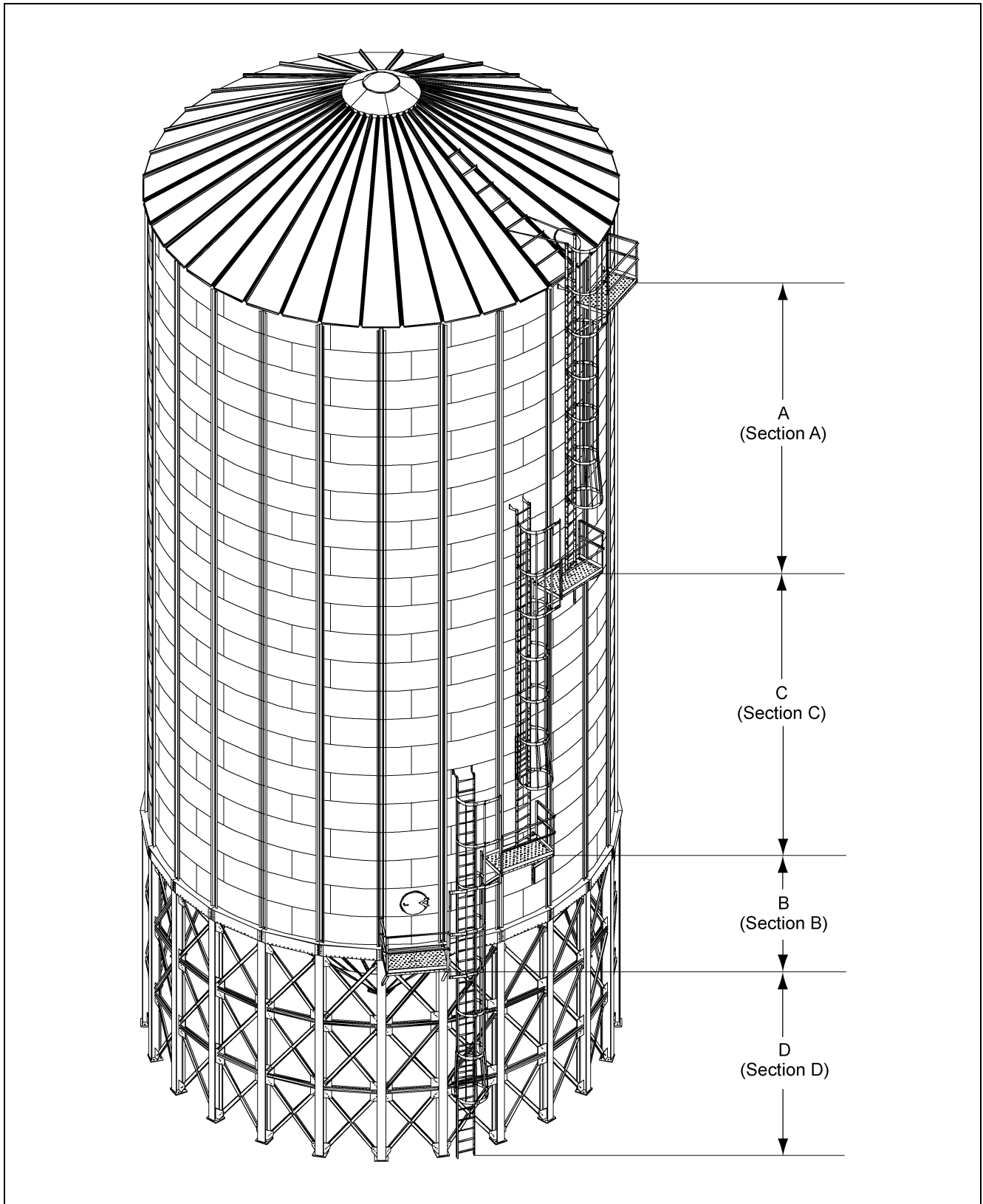


Figure 6B 22 Rings

## 6. 2.66" Corrugated Commercial Hopper Tank 10-22 Rings

### Ladder, Safety Cage and Platform Location Chart

For Section A through C, find the proper ring grain bin and use the number of ladders and safety cages as shown in the [Chart below](#). For Section D, find the proper diameter grain bin and hopper slope, and use the number of ladders and safety cages as shown in the [Chart on Page 45](#).

		Rings														
		10	11	12	13	14	15	16	17	18	19	20	21	22		
Section A	Platform Located in Ring:	2	2	2	2	2	2	2	2	2	2	2	2	2		
	4 Ft. Ladder Section	5	6	6	7	8	8	9	10	4	6	6	6	7		
	Bell Safety Cage	1	1	1	1	1	1	1	1	1	1	1	1	1		
	Safety Cage 48" Section	1	2	2	3	4	4	5	6	0	2	2	2	3		
	Bell Safety Cage Size	48"	24"	48"	48"	24"	48"	48"	24"	48"	48"	48"	48"	48"		
	<b>Dimension A</b>	192"	224"	256"	288"	320"	352"	384"	416"	160"	256"	256"	256"	288"		
Section B	Platform Located in Ring:	8	9	10	11	12	13	14	15	16	17	18	19	20		
	4 Ft. Ladder Section	4	4	4	4	4	4	4	4	4	4	4	4	4		
	Bell Safety Cage	0	0	0	0	0	0	0	0	0	0	0	0	0		
	Safety Cage 48" Section	0	0	0	0	0	0	0	0	0	0	0	0	0		
	<b>Dimension B</b>	96"	96"	96"	96"	96"	96"	96"	96"	96"	96"	96"	96"	96"		
	Section C	Platform Located in Ring:									7	10	10	10	11	
4 Ft. Ladder Section										8	7	8	8	8		
Bell Safety Cage										1	1	1	1	1		
Safety Cage 48" Section										3	2	2	3	3		
Bell Safety Cage Size										48"	24"	48"	48"	48"		
<b>Dimension C</b>										288"	224"	256"	288"	288"		
		Diameter														
		12'	12'	15'	15'	18'	18'	21'	21'	24'	27'	27'	30'	30'	36'	36'
Section D	<b>Hopper Slope:</b>	45	60	45	60	45	60	45	60	45	40	45	40	45	40	45
	4 Ft. Ladder Section	4	5	5	6	5	7	5	7	6	5	6	6	7	6	7
	Bell Safety Cage	0	1	0	1	1	1	1	1	1	1	1	1	1	1	1
	Safety Cage 4' Section	0	0	0	1	0	1	0	2	0	0	1	0	1	1	2
	Bell Safety Cage Size	N/A	24"	N/A	24"	24"	48"	48"	24"	48"	48"	24"	48"	48"	48"	48"
	<b>Dimension D</b>	91"	128"	108"	167"	128"	198"	144"	229"	162"	142"	179"	156"	195"	187"	236"

## NCHT Ladder, Safety Cage and Platform Instructions 10-22 Rings

All grain bin packages, from 10 ring to 22 ring and 12' to 36' diameter, contain the correct components for assembly. Be sure and use the charts to determine the appropriate number and size parts to be used based upon the number of rings in the bin. Read and follow the complete instructions for correct placement of parts. Failure to do so may result in an improper fit or shortage of parts. Pay particular attention to the location of ladders and platforms as they relate to the equipment and other structures in the area.

### Eave Starter Bracket Installation

Correct placement of the eave ladder starter bracket is critical to assure proper fit of all ladder parts and also to assure the correlation between the platforms is correct for proper installation of the access door platform. If the eave starter brackets are mislocated, standard installation of the access door platform will not be possible.

### Location of Field Drilled Holes for Eave Ladder Starter Brackets

The starter brackets must be located directly below the roof ladder. Before the starter brackets can be installed, two (2) 3/8" holes must be field drilled 2.66" below and directly in line with the top row of pre-punched horizontal holes. The first hole, required for the left-hand starter bracket, must be located 9-3/8" from the center of the stiffener to the center of the hole. The second hole, required for the right-hand bracket, must be located 18-3/4" from the center of the first hole. Refer to Figure 6C for the proper location of the two (2) 3/8" field drilled holes required to install the starter brackets.

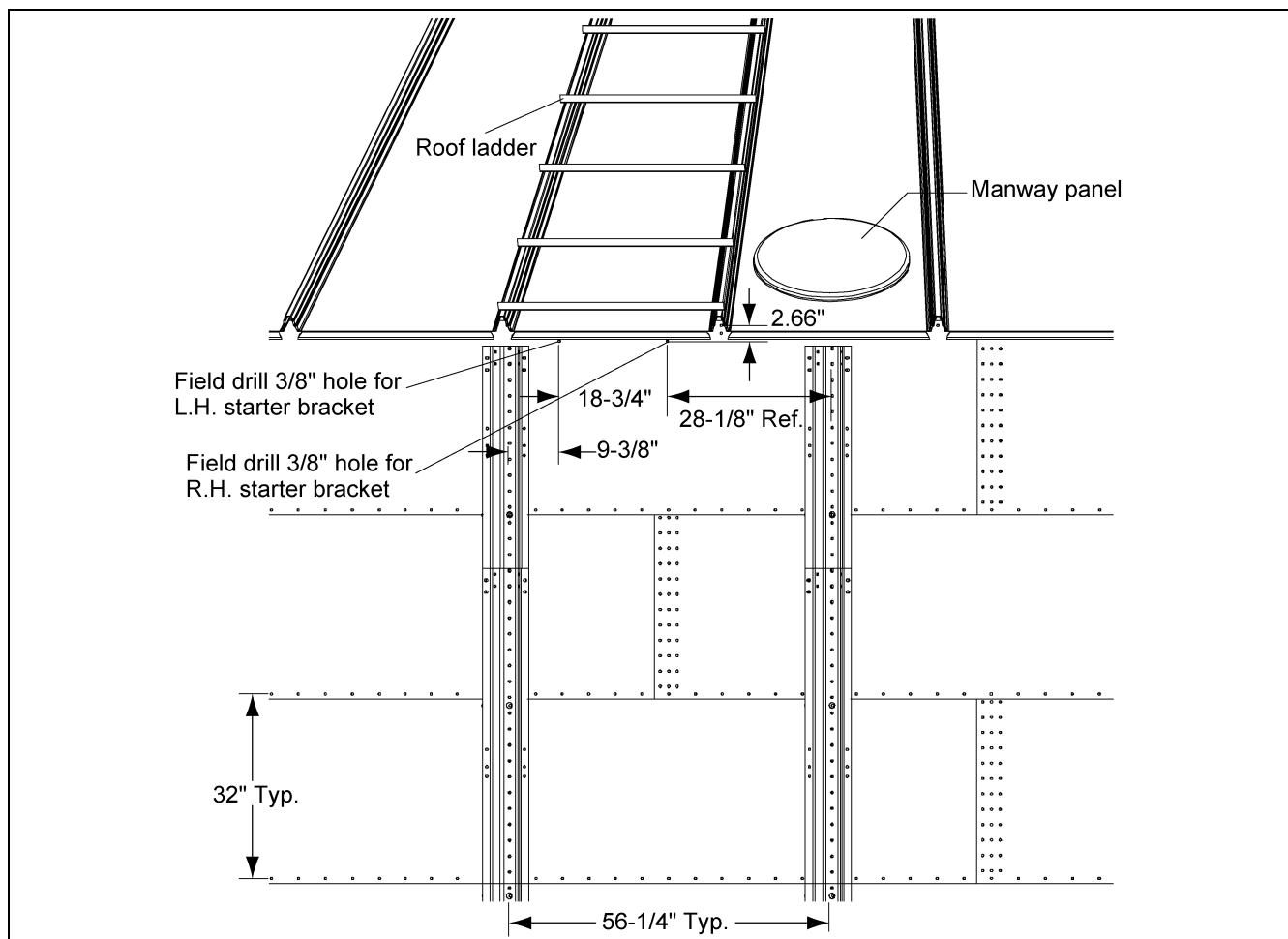


Figure 6C

## Eave Starter Bracket and Ladder Assembly with Safety Cage

Once the two (2) 3/8" holes have been field drilled, attach the starter brackets to the sidewall as shown in [Figure 6D](#). Check the top ladder section to make sure the ladder rung dimples are to the top. Attach starter brackets to the top of the ladder. It will be necessary to field drill a 3/8" hole in the ladder section for the starter bracket as well. (See [Figure 6F on Page 48.](#)) See [Figure 4B on Page 13](#) for the proper installation of additional ladder sections required. Standoff brackets must be installed on the ladder sections and attached to the sidewall at each horizontal seam and repeated every 32". Use 5/16" x 3/4" bin bolts for all connections.

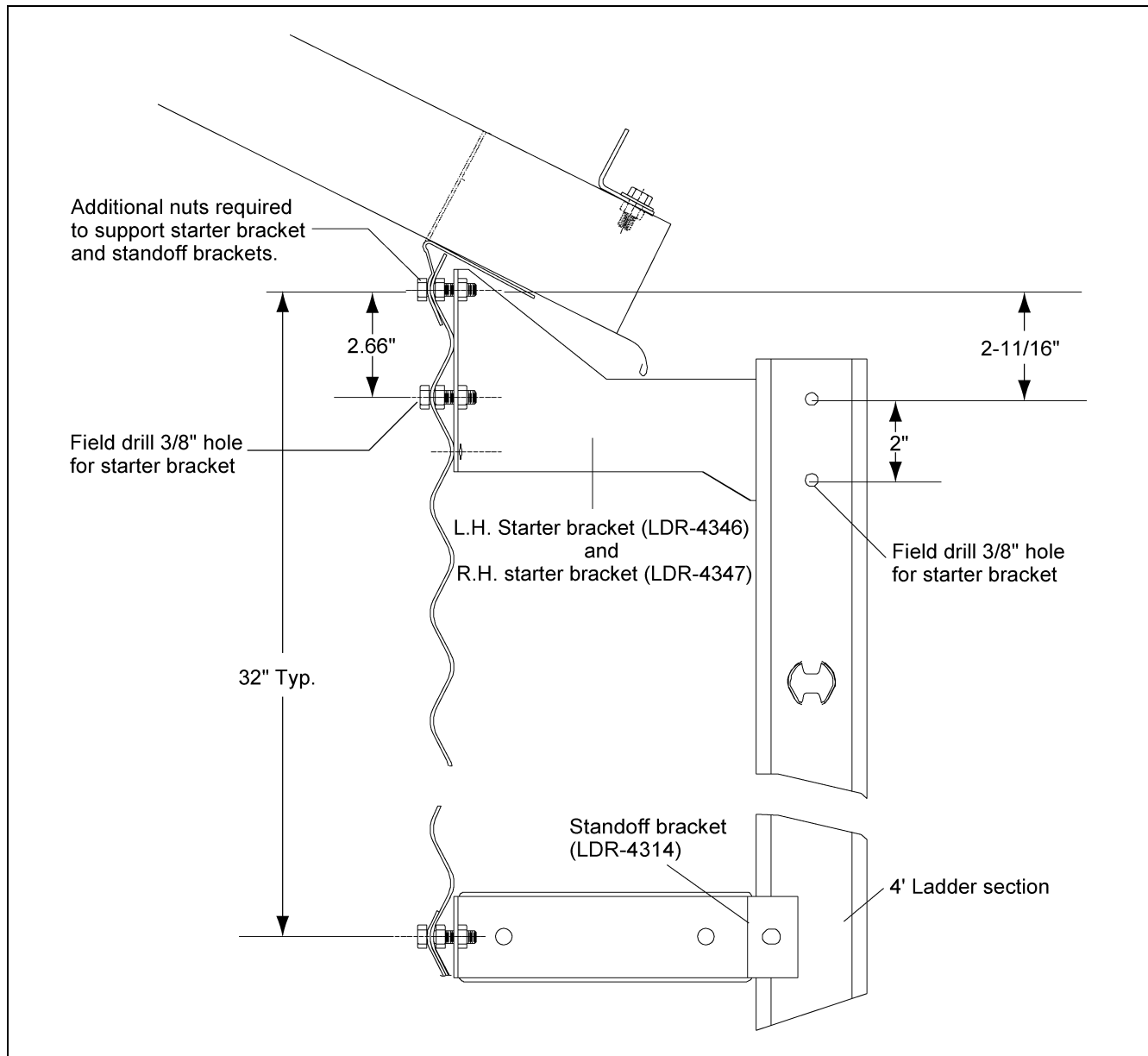
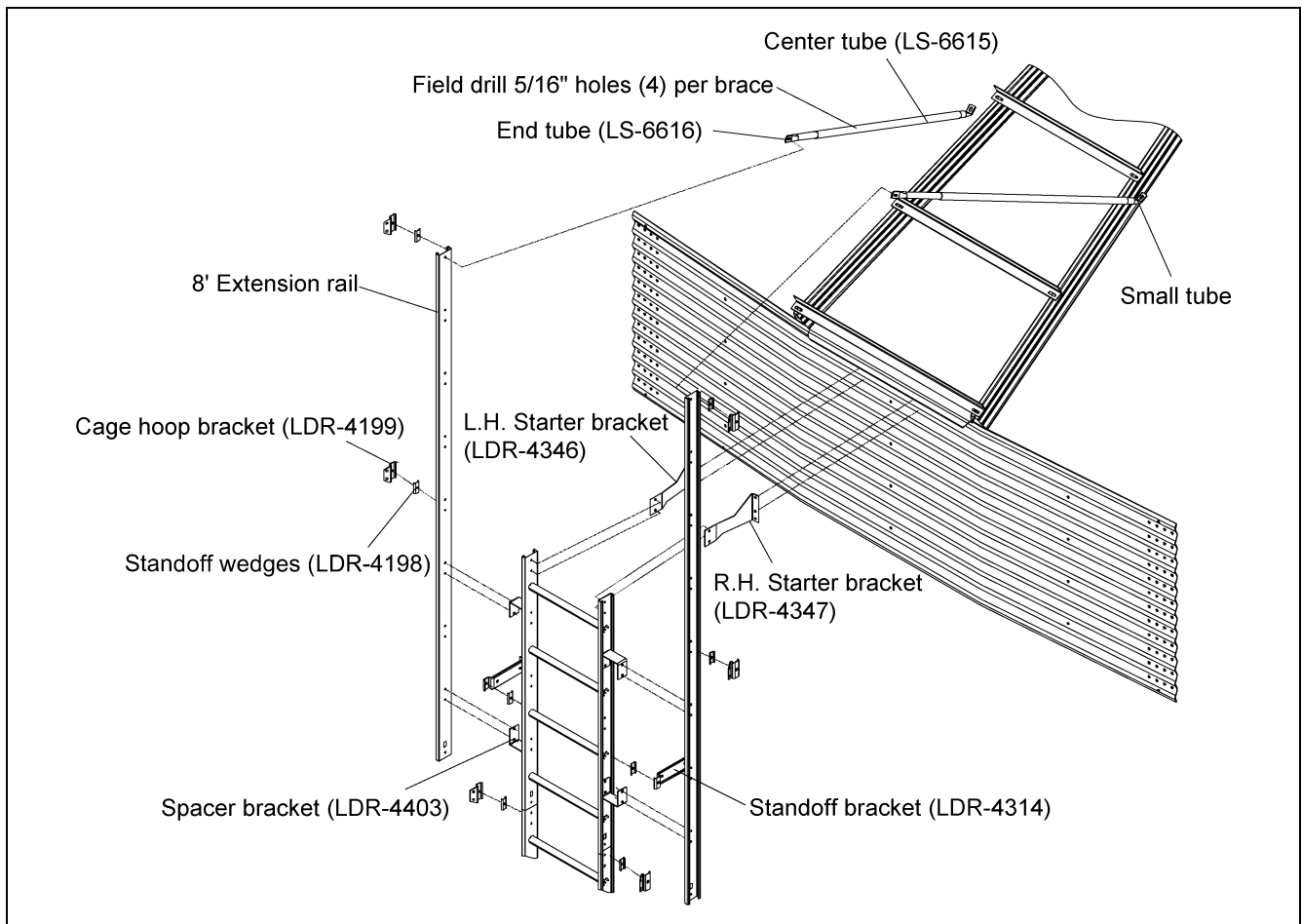


Figure 6D

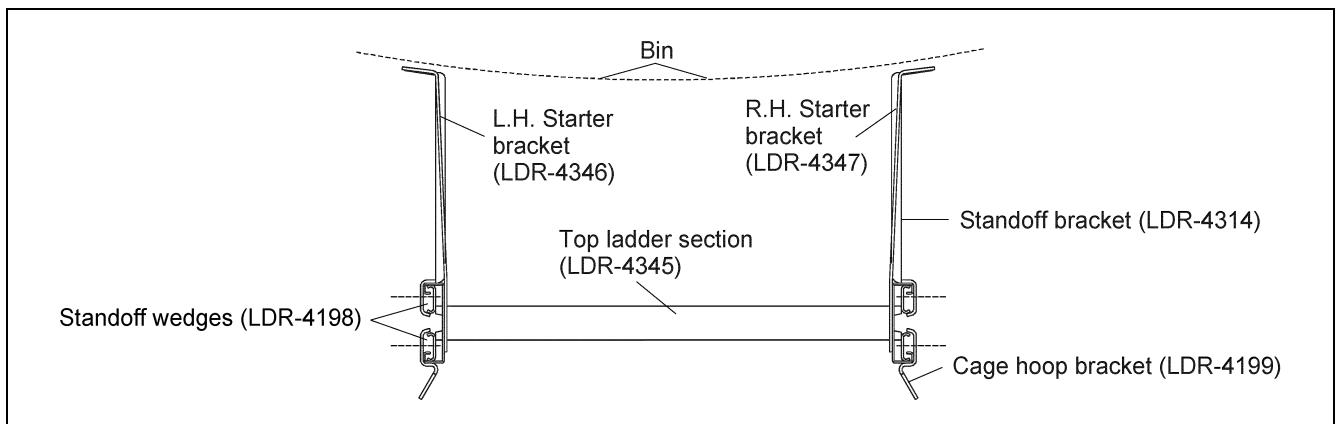
**NOTE:** Refer to [Figure 4 on Page 12](#) for additional details for standoff bracket to ladder assembly and 8' extension rail installation (omitted in detailed image above for clarity).

## 6. 2.66" Corrugated Commercial Hopper Tank 10-22 Rings



**Figure 6E**

**NOTE:** Refer to [Figure 6D](#) for proper location of ladder starter brackets.



**Figure 6F** Ladder and brackets as viewed from top of bin



## Eave Adjustable Braces

The eave adjustable braces must be attached at this time. An eave adjustable brace is comprised of one (1) large diameter tube and two (2) smaller tubes. (See [Figure 6G.](#)) Slide the smaller tubes inside the larger tubes and attach one (1) smaller tube to the top of the ladder extension rail. Adjust the other smaller tube so the bottom of the flattened tube reaches the roof panel. Field drill four (4) 5/16" holes through both large and small tubes and bolt together using 1/4" x 1-1/2" bolts and nuts. This prevent the adjustable braces from slipping. (See [Figure 6H.](#))

**NOTE:** Refer to [Page 47](#) for proper location of ladder starter brackets.

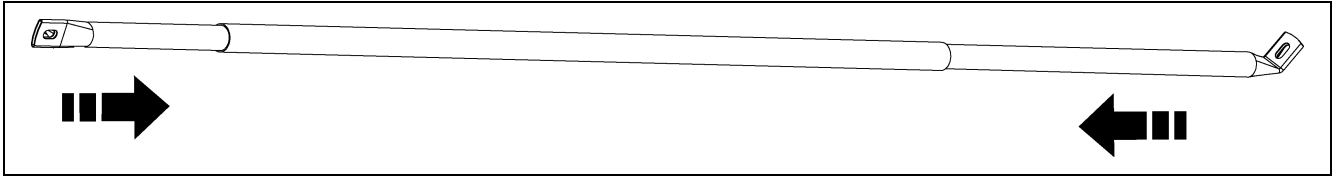


Figure 6G

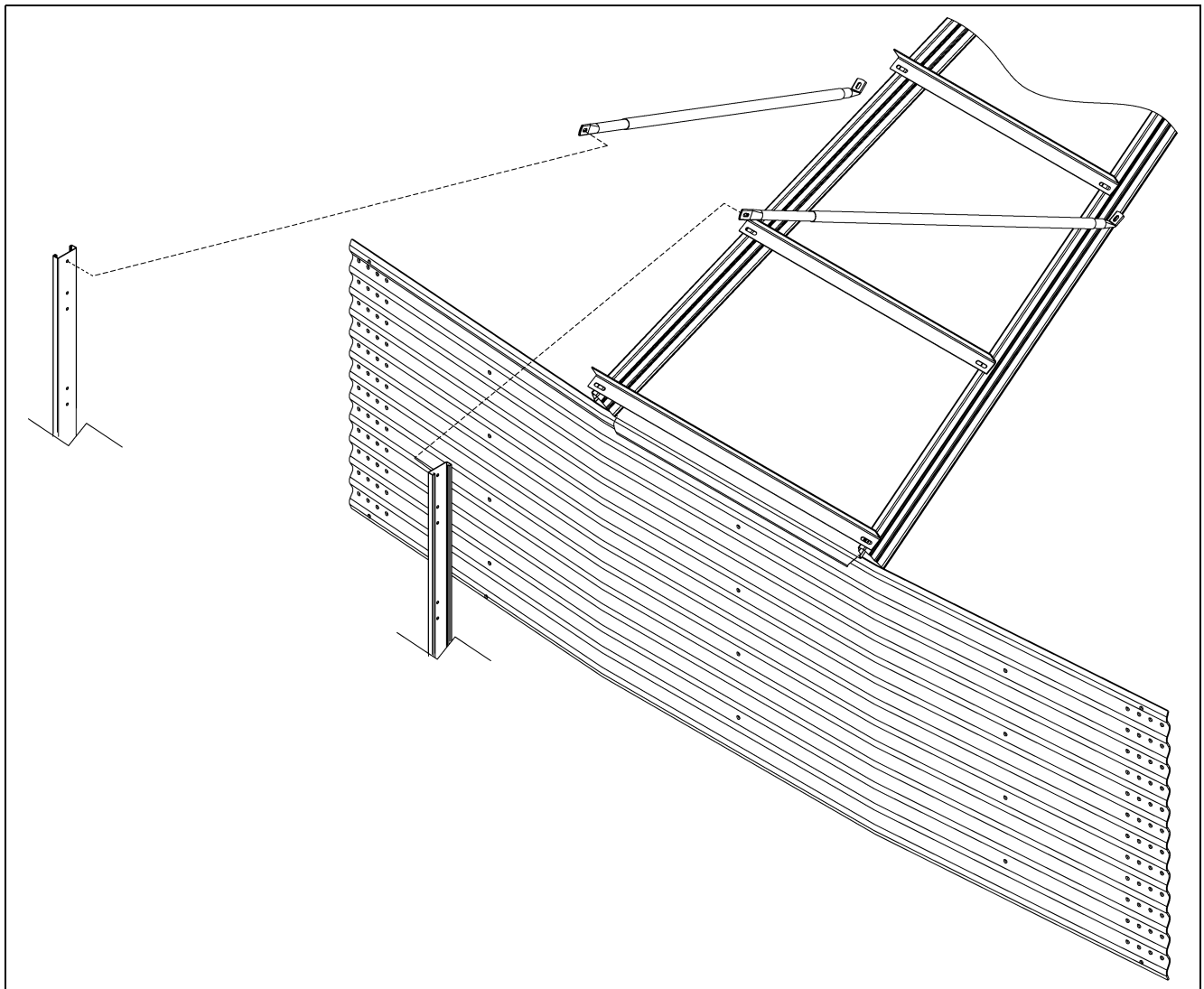


Figure 6H

**NOTE:** Refer to [Figure 4A on Page 12](#) for additional details for standoff bracket to ladder assembly and cage hoop bracket to ladder.

### Eave Platform Mounting Angle Installation

Figure 6I shows the location of the platform mounting angles. Each angle must be mounted starting 4" below the top horizontal seam of the second ring with the first mounting angle offset 9-3/8" from the right hand starter bracket. The second mounting angle must be located 56-1/4" from the first mounting angle. The dimensions and locations of these angles are critical for proper fit of all parts. Using the platform mounting angles as guides, field drill 3/8" holes in the sidewall every 8". (See Figure 6I.)

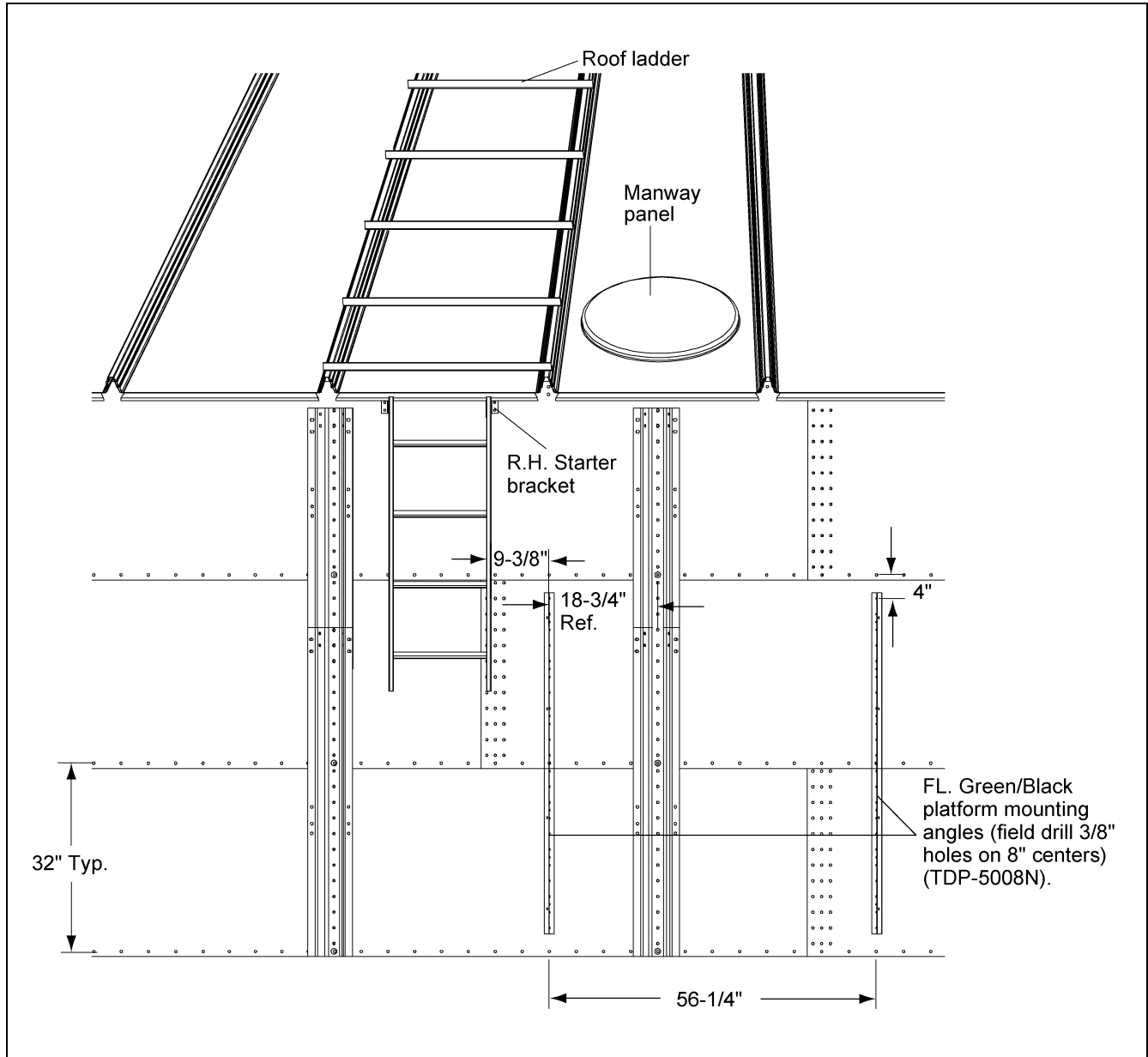
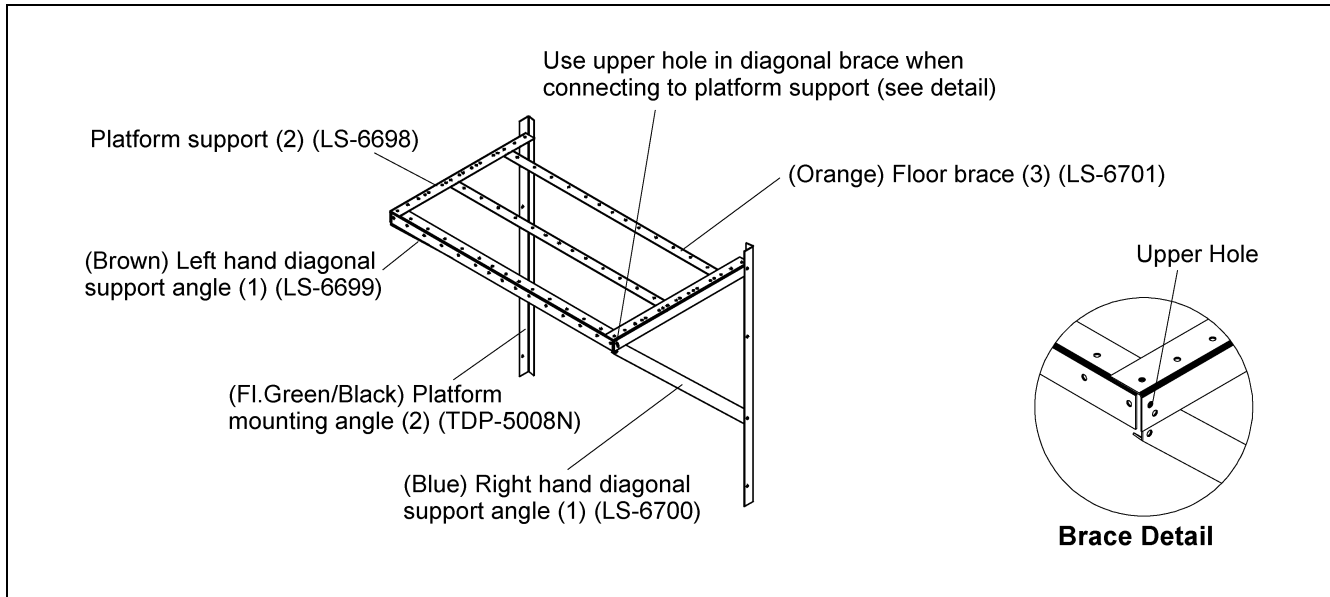


Figure 6I

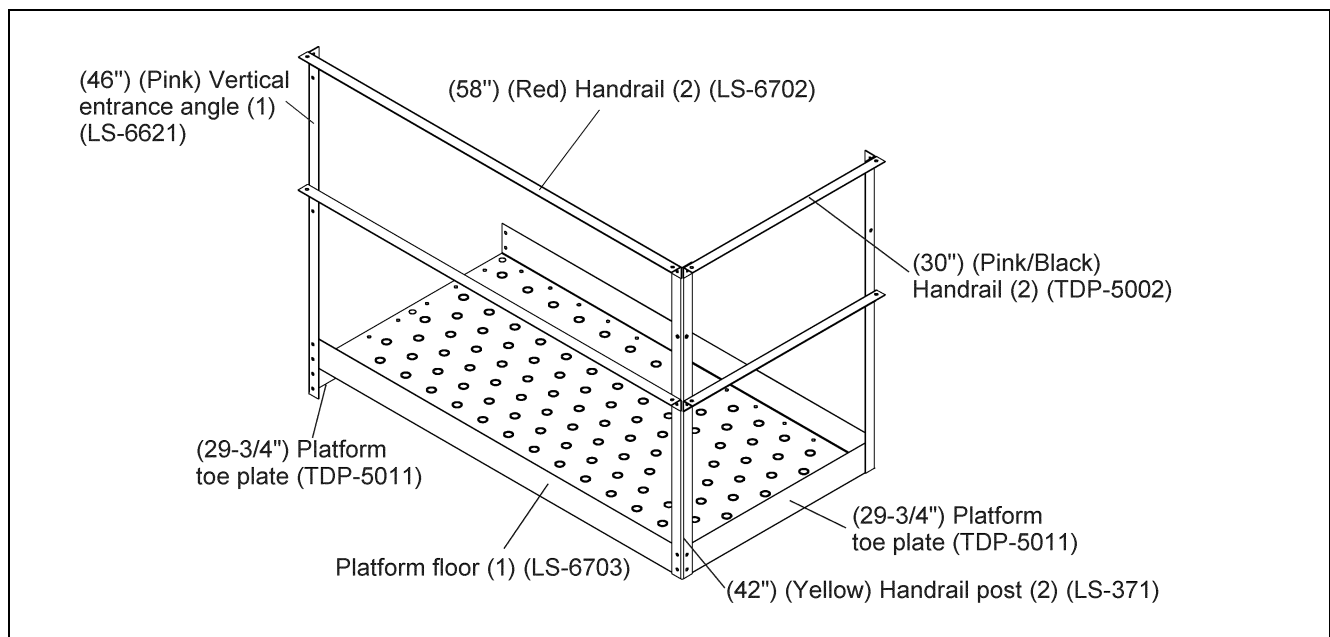
## Right Hand Platform and Platform Support Assembly

**NOTE:** Mount the platform supports on the bin first. Next, assemble the platform floor onto the support frame. Do not tighten platform support to floor brace bolts until the floor and toe plates are secure.

Assemble the platform support frame using 5/16" x 3/4" truss head bolts and nuts. (See Figure 5I on Page 28.) When attaching the platform mounting angles to the sidewall, locate the mounting angles according to the instructions on previous pages. Align holes on the platform floor with the holes on the platform supports and bolt together using 5/16" x 3/4" truss head bolts and nuts. Attach platform toe plates at the same time as attaching the platform floor. The vertical entrance angle bolts to the platform floor, toe plate and platform support. The handrail post bolts to the platform floor and toe plate as shown in Figure 6K.



**Figure 6J** Right hand platform support assembly



**Figure 6K** Right hand platform

## Eave Safety Cage Hoop Assembly

Before attaching any pieces to the ladders or platform, some pre-assembly is required. Attach two (2) safety cage brackets to the 8' extension rail and one (1) safety cage bracket to the second 4' ladder section as shown in [Figure 6L](#). Bolt the safety cage hoop adjuster plates onto the extension angle as shown in [Figure 6L](#). Using the proper configuration depending on the bin diameter ([See Adapter Assembly Detail on Page 53](#)), bolt the safety cage hoop adapters together and attach to the safety cage hoop halves. Be sure to use the 5/16" x 3/4" bolt with the head of the bolt to the inside of the safety cage. Bolt these assemblies to the safety cage brackets and hoop adjuster plates ([See Connection Detail on Page 53](#) for proper hole location). Tighten bolts as you go. The bottom assembly requires two (2) hoop halves and will be positioned just below the platform as shown in [Figure 6L](#). Use the safety cage hoop adjuster angle to secure the two (2) hoop half assemblies to the vertical entrance angle on the platform assembly.

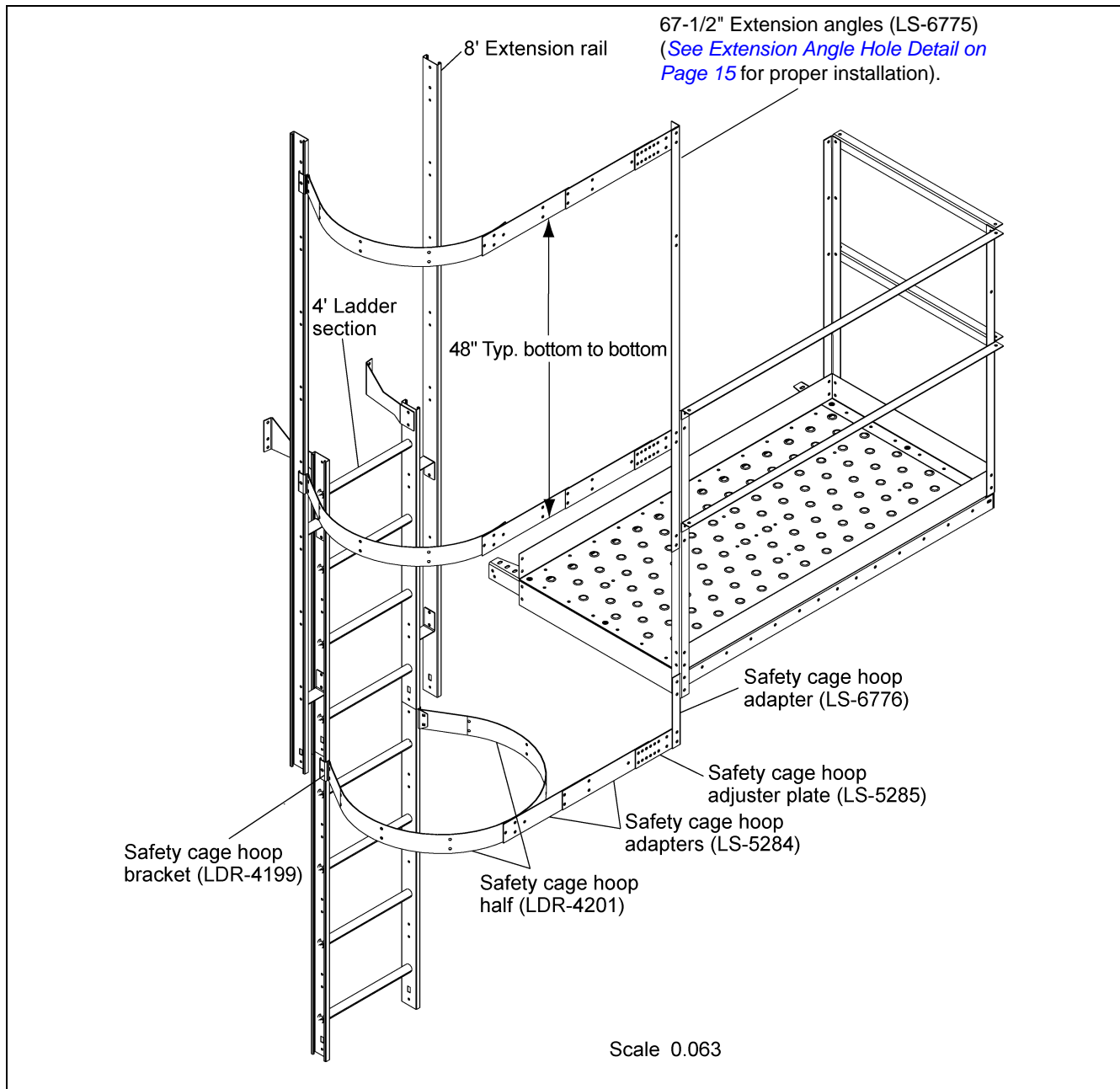


Figure 6L

**NOTE:** 48" vertical supports removed in [Figure 6L](#) for clarity.

## Adapter Assembly Detail

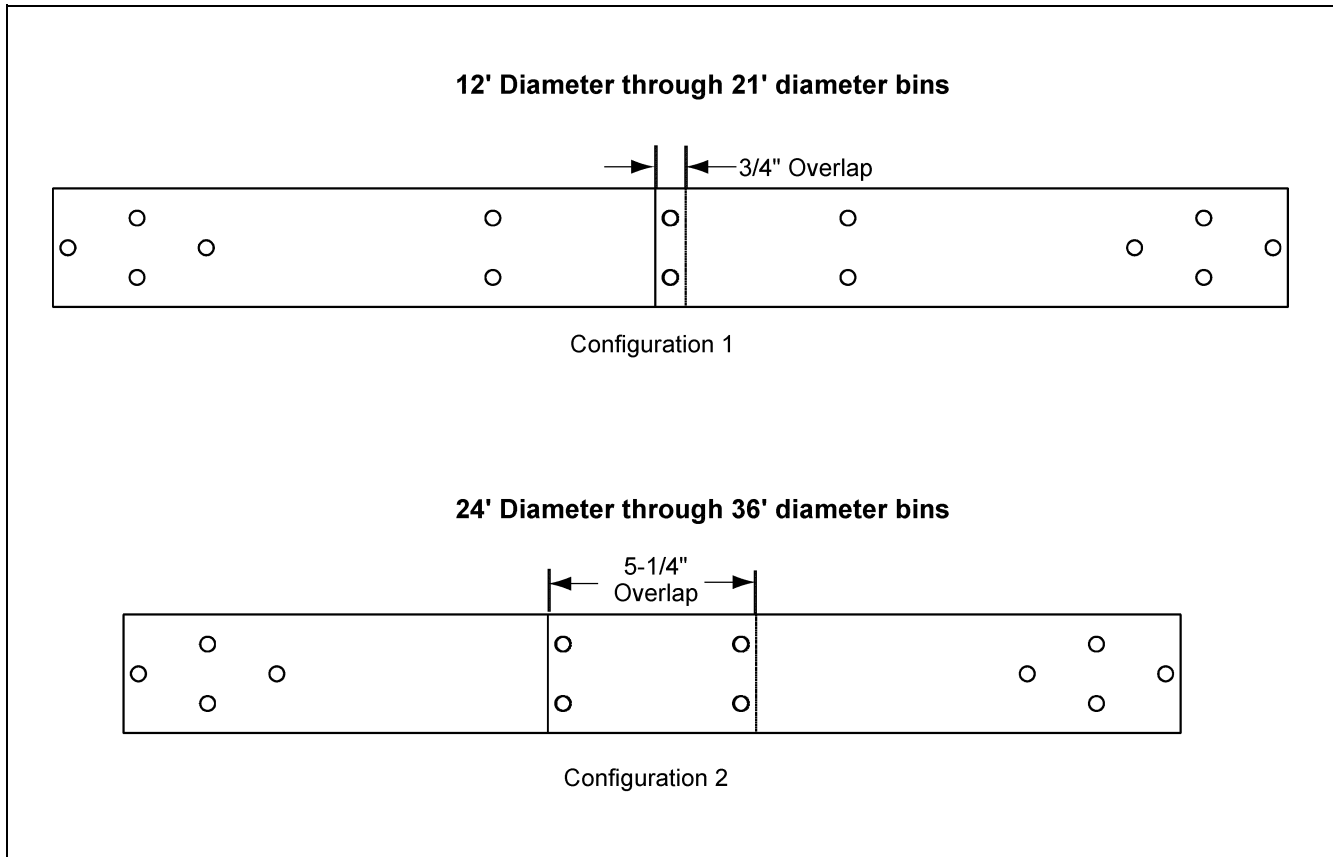


Figure 6M 18' Diameter through 21' Diameter Bins

## Connection Detail

Use [Figure 6N](#) to determine the proper holes to use when attaching the hoop adapter to the adjuster plate.

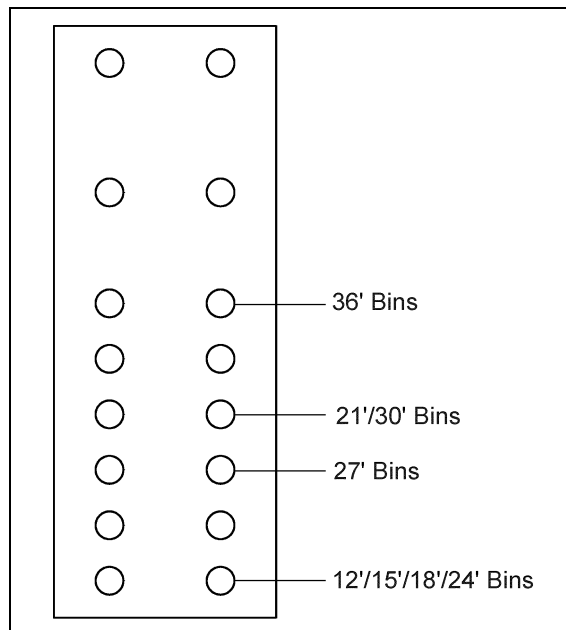


Figure 6N

## Vertical Supports

After all three (3) hoop assemblies are in place, attach the 48" vertical supports from hoop assembly to hoop assembly, as shown in [Figure 60](#). This requires ten (10) supports, five (5) between each set of hoops. The second set of vertical supports must be bent at the flat area to allow for the tapering of the bottom hoop assembly. Use 5/16" x 3/4" bolts (unless otherwise noted) with the head of the bolt to the inside of the safety cage.

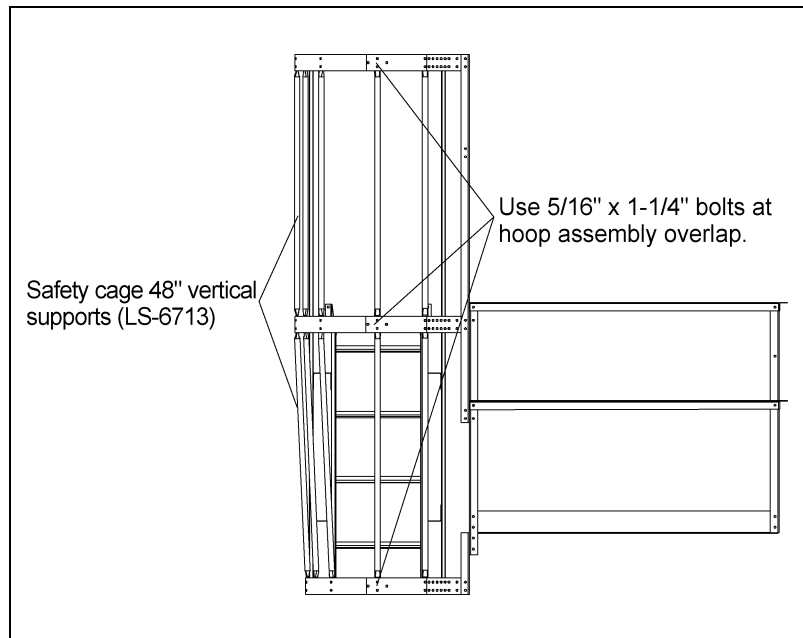


Figure 60 Vertical Supports

## 48" Safety Cage

Attach the vertical support pieces to the existing hoop halves above using the 5/16" x 3/4" bolts and nuts (with the heads on the inside of the cage). Fasten two (2) hoop halves together and bolt to other end of vertical supports. Attach cage hoop brackets to ladder ([See General Detail Information on Page 12](#) for proper attachment.) Once cage hoop brackets have been installed, attach cage hoop halves and tighten bolts. Repeat installation for each safety cage required.

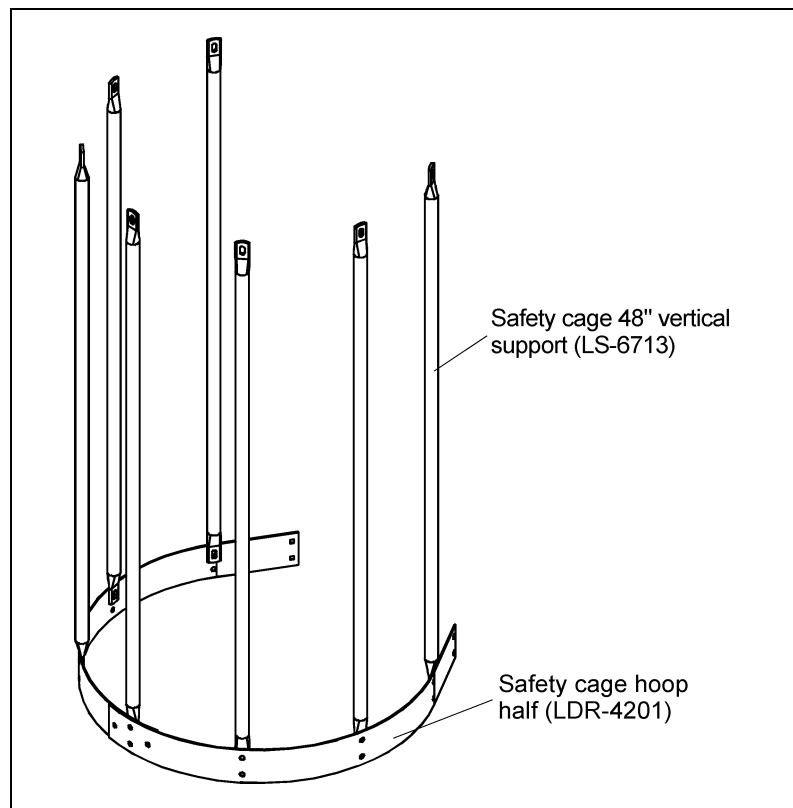
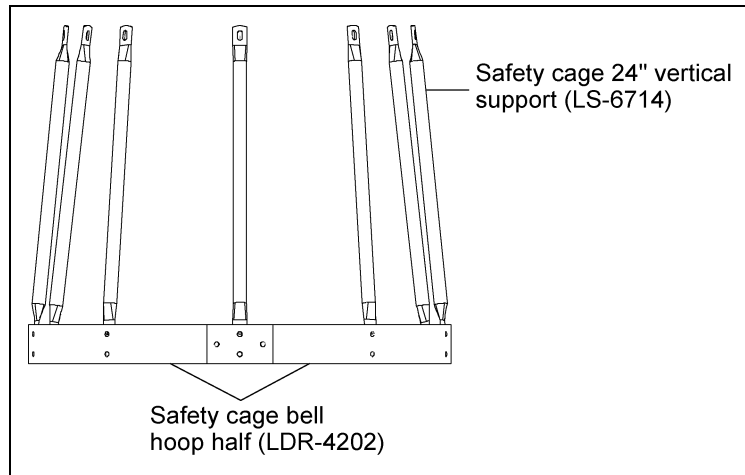


Figure 6P 48" Safety Cage

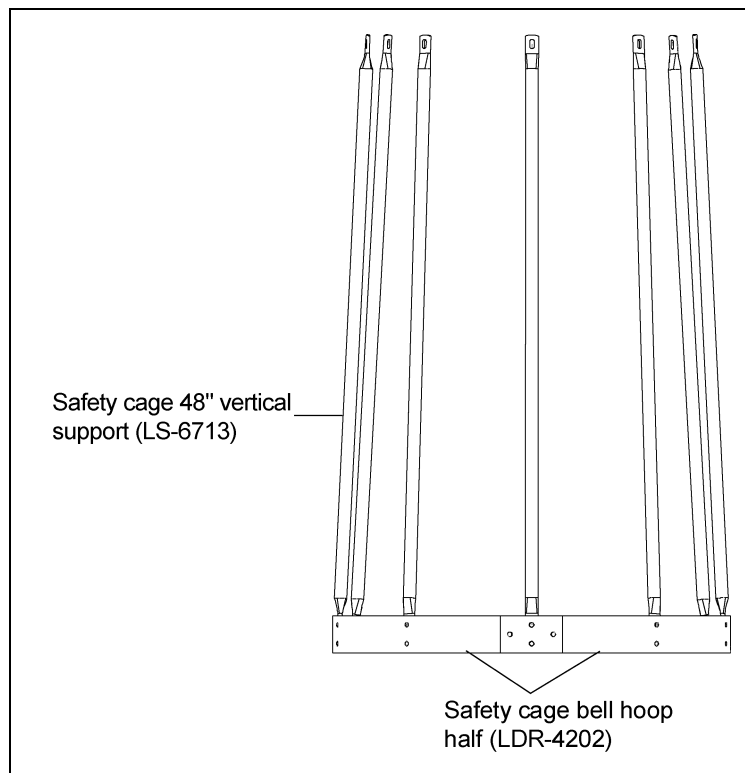
## 24"-48" Safety Cage Bell Sections

Attach the vertical supports to the hoop half assembly from the final safety cage installation using 5/16" x 3/4" bolts and nuts (with the heads on the inside of the cage). Assemble the special bell safety cage hoop halves and attach to other end of vertical supports. The vertical support will have to be bent at the flat area to allow for the angle of the bell section. Attach the safety cage brackets to the ladder as shown in the [General Detail Information on Page 12](#). Once the safety cage brackets are installed, attach the bell safety cage hoop half assembly to the safety cage brackets and tighten bolts.

**NOTE:** *The safety cage bell section is to be used at the point of termination of the safety cage and should be just above the intermediate or base platform (generally 7' to 8').*



**Figure 6Q 24" Bell**



**Figure 6R 48" Bell**

## Intermediate Platform Mounting Angle Installation

For bins with 18-22 rings, an intermediate platform is required. *Figure 6S* shows the location of the intermediate platform mounting angles. Each angle must be mounted starting 4" below the top horizontal seam of the ring specified in the *Chart on Page 45*, with the first mounting angle directly in line with the left-hand eave mounting angle. The second mounting angle must be located 56-1/4" to the left of the first mounting angle. Pay careful attention when installing these angles. The dimensions and locations of these angles are critical to assure proper fit of all parts. Using the platform mounting angles as guides, field drill 3/8" holes in the sidewall every 8". (*See Figure 6I on Page 50.*)

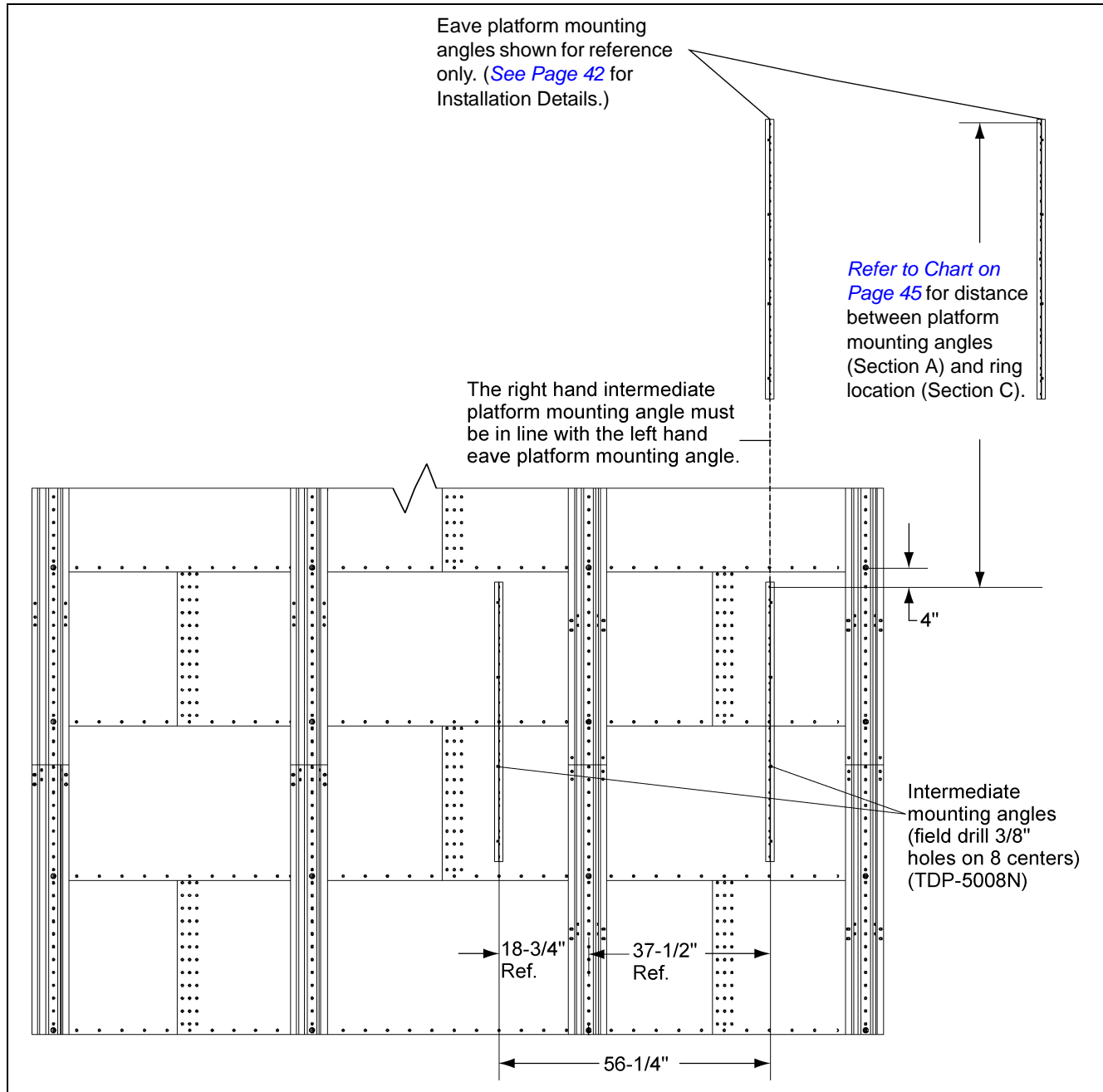


Figure 6S



## Location of Field Drilled Holes for Intermediate Ladder Starter Brackets

Before installing the starter brackets, field drill two (2)  $\frac{3}{8}$ " holes located 2.66" below and directly in line with the top horizontal seam holes located in the third ring up from the intermediate platform mounting angles. The first hole, required for the right-hand starter bracket, must be located  $9\frac{3}{8}$ " from the center of the left-hand intermediate platform mounting angle to the center of the hole. The second hole, required for the left-hand bracket, must be located  $18\frac{3}{4}$ " from the center of the first hole.

Refer to [Figure 6T](#) for the proper location of the two (2)  $\frac{3}{8}$ " field drilled holes required to install the starter brackets.

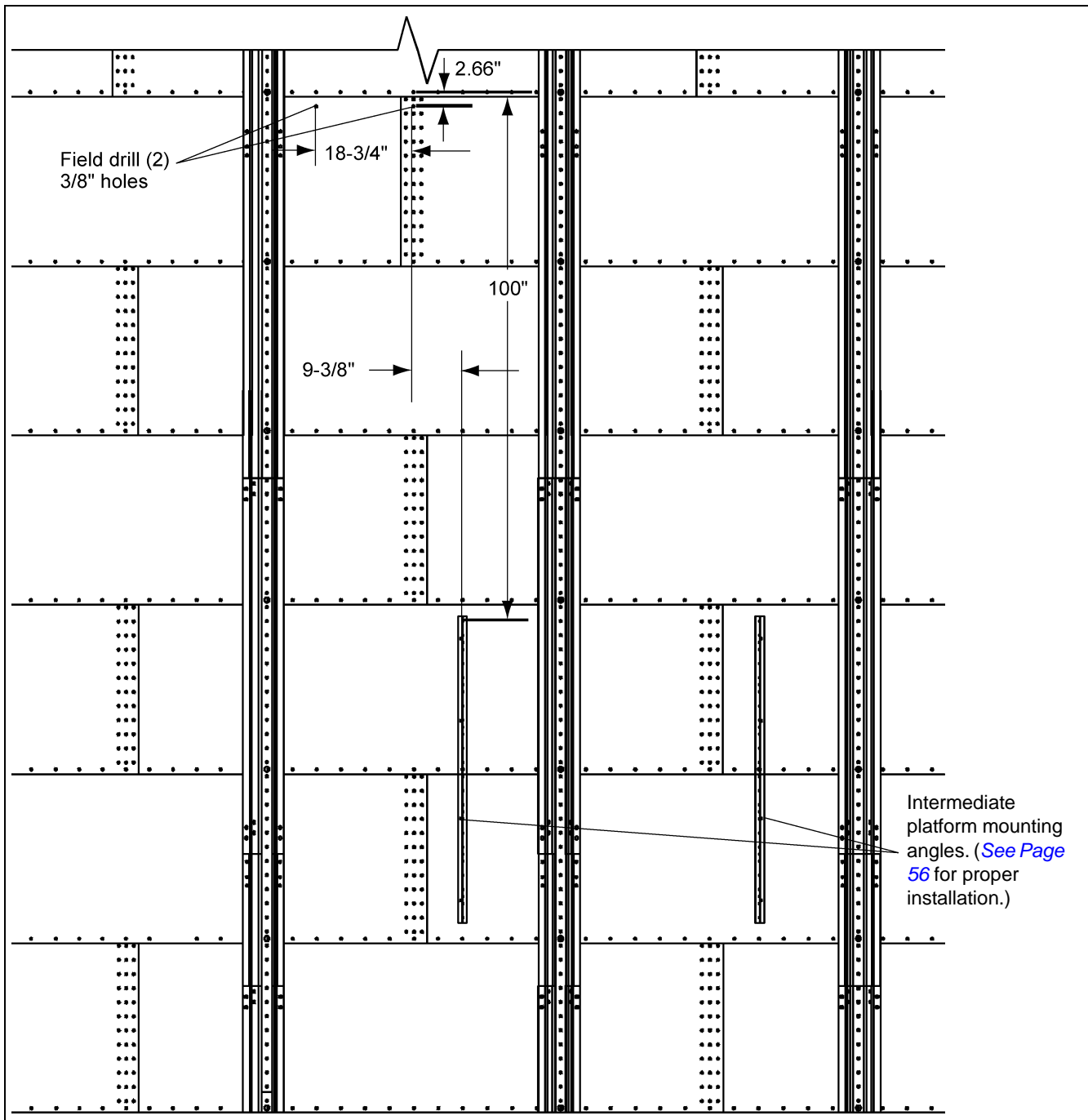


Figure 6T

## Intermediate Starter Bracket and Ladder Assembly with Safety Cage

After drilling the two (2) 3/8" holes, attach the starter brackets to the sidewall as shown in [Figure 6U](#). Check the top ladder section to make sure the ladder rung dimples are to the top surface and attach to the starter brackets using the holes located 1" from the top of the ladder. [See General Detail Information on Page 12](#) for proper installation of additional ladder sections required. Standoff brackets must be installed on the ladder sections and attached to the sidewall at each horizontal seam (repeating every 32") until reaching the base platform. (Use 5/16" x 3/4" bin bolts for all connections.) In addition to the two (2) field drilled holes in the sidewall for the starter bracket, it is also necessary to field drill a 3/8" hole in the ladder section for the starter bracket. Refer to the section in these instructions that references the location of the base platforms.

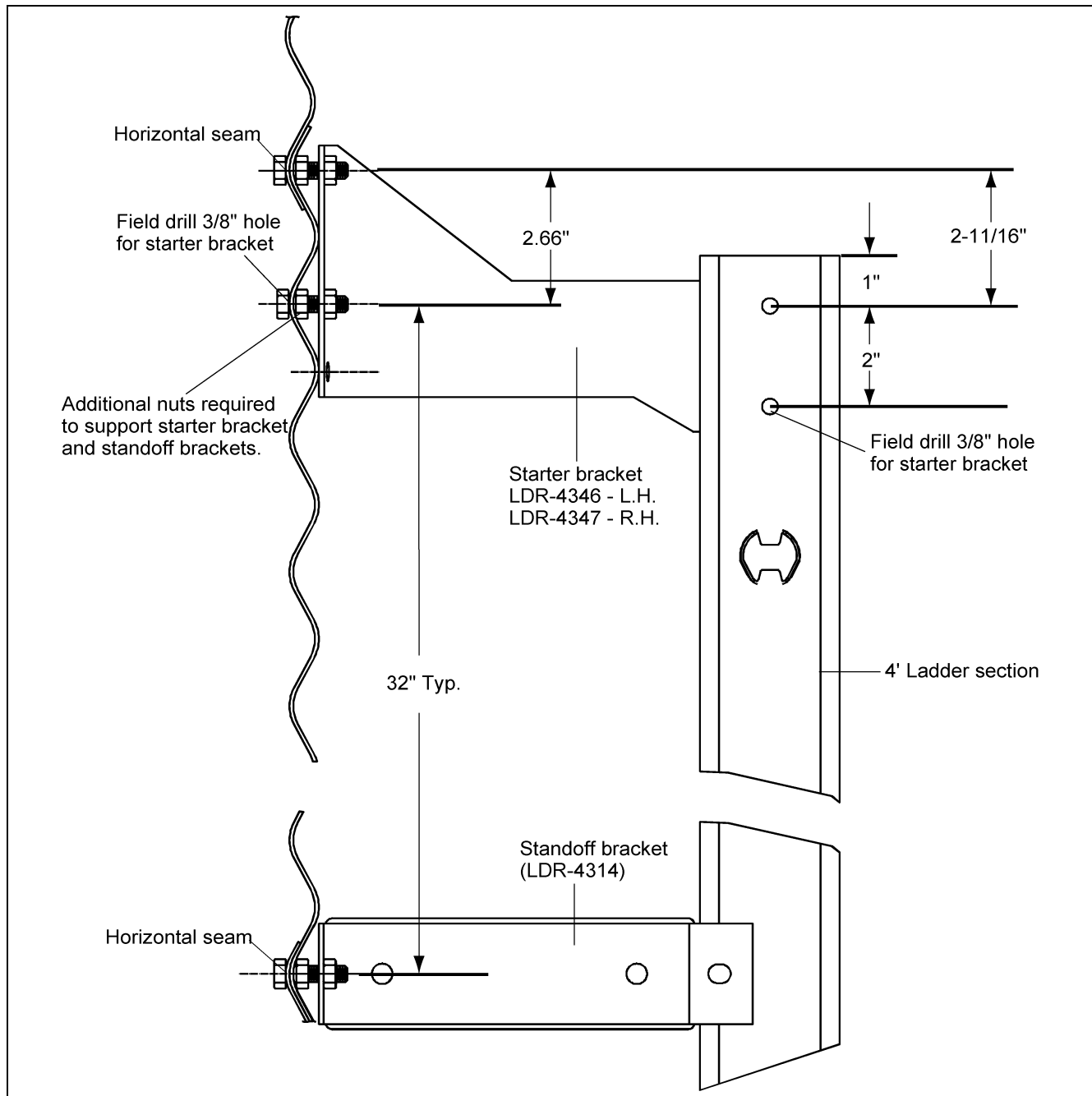


Figure 6U

## Intermediate and Base Safety Cage Hoop Assembly

Before attaching any pieces to the ladders or platform, some pre-assembly is required. Attach the safety cage brackets to the ladder section. (See [General Detail Information on Page 12.](#)) Bolt the safety cage hoop adjuster plates onto the extension angle as shown in [Figure 6V](#). Bolt the safety cage hoop adapters and safety cage hoop halves together using the proper holes based on the diameter of the grain bin. (See [Page 53.](#)) Be sure to use the 5/16" x 3/4" bolt with the head of the bolt to the inside of the safety cage. Bolt these assemblies to the safety cage brackets and hoop adjuster plates, tighten bolts as you go. The bottom assembly requires two (2) hoop halves and will be positioned just below the platform as shown in [Figure 6V](#). Use the safety cage hoop adjuster angle to secure the two (2) hoop half assemblies to the vertical entrance angle on the platform assembly.

**NOTE:** See [Pages 54 and 55](#) for vertical supports, safety cage and bell cage installation details to complete the intermediate ladder assembly.

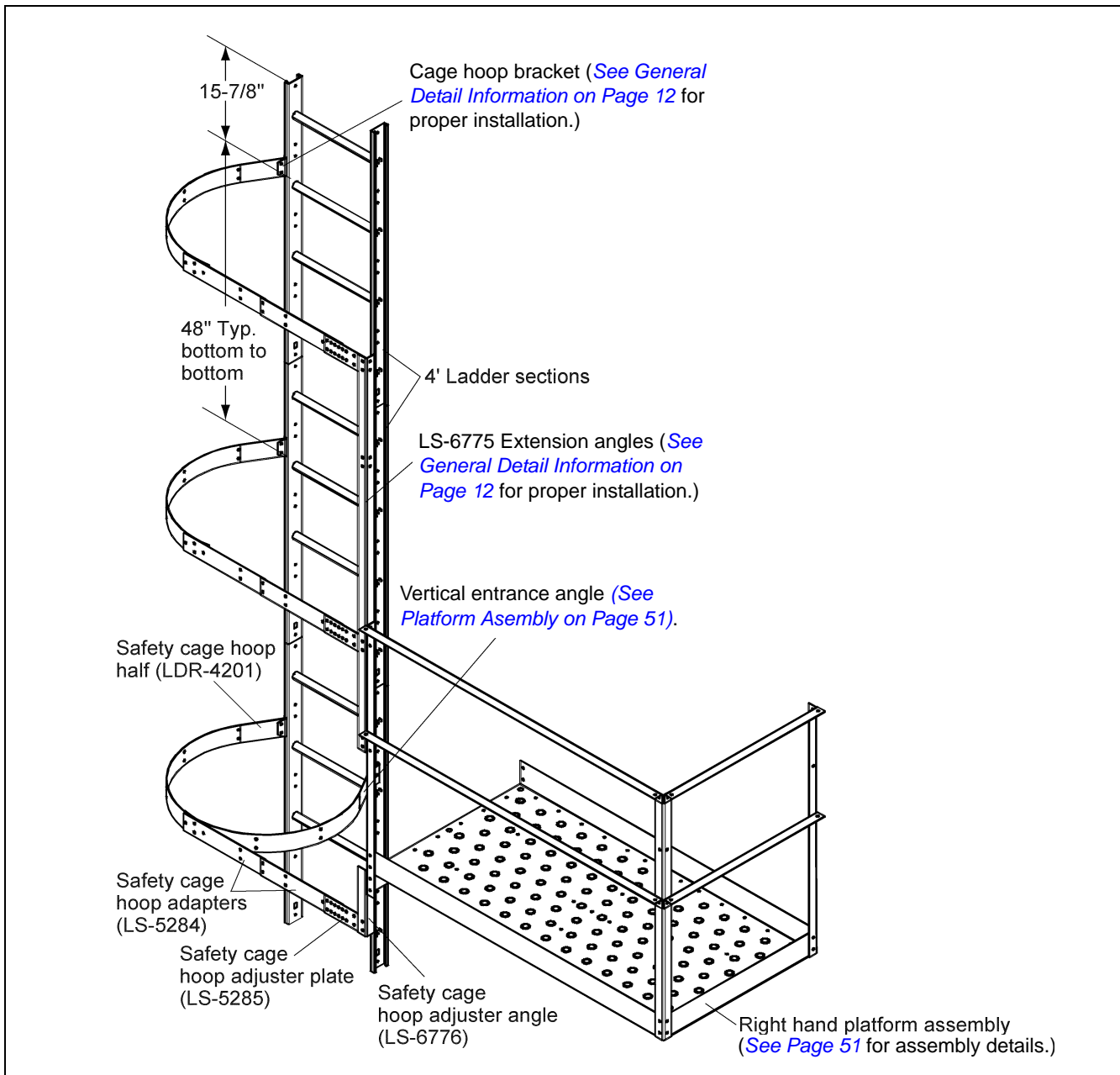


Figure 6V

## Base Platform Mounting Angle Installation

Figure 6W shows the location of the base platform mounting angles. Each angle must be mounted starting 4" below the top horizontal seam of the third ring from the bottom of the tank with the first mounting angle directly in line with the left-hand eave or intermediate mounting angle (if applicable). The second mounting angle must be located 56-1/4" to the left of the first mounting angle. Pay careful attention when installing these angles. The dimensions and locations of these angles are critical to assure proper fit of all parts and integration with the access door platform.

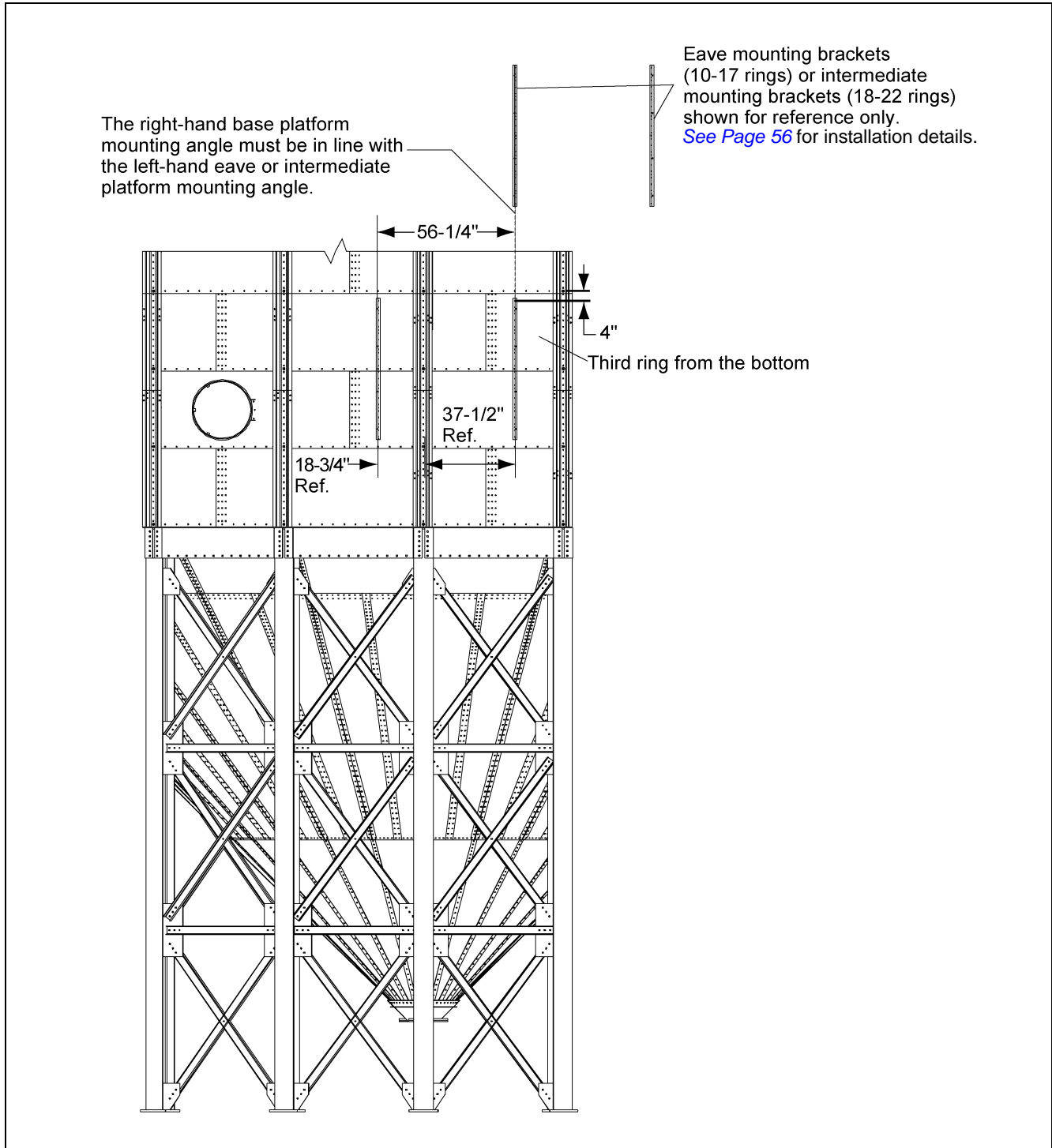


Figure 6W

## Location of Field Drilled Holes for Base Ladder Starter Brackets

Before installing the starter brackets, field drill two (2)  $\frac{3}{8}$ " holes 2.66" below and directly in line with the top horizontal seam holes located in the sixth ring from the bottom of the tank. The first hole, for the right-hand starter bracket, must be located  $9\frac{3}{8}$ " from the center of the left-hand base platform mounting angle to the center of the hole. The second hole, for the left-hand bracket, must be located  $18\frac{3}{4}$ " from the center of the first hole. Refer to Figure 6X for the proper location of the two (2)  $\frac{3}{8}$ " field drilled holes required to install the starter brackets.

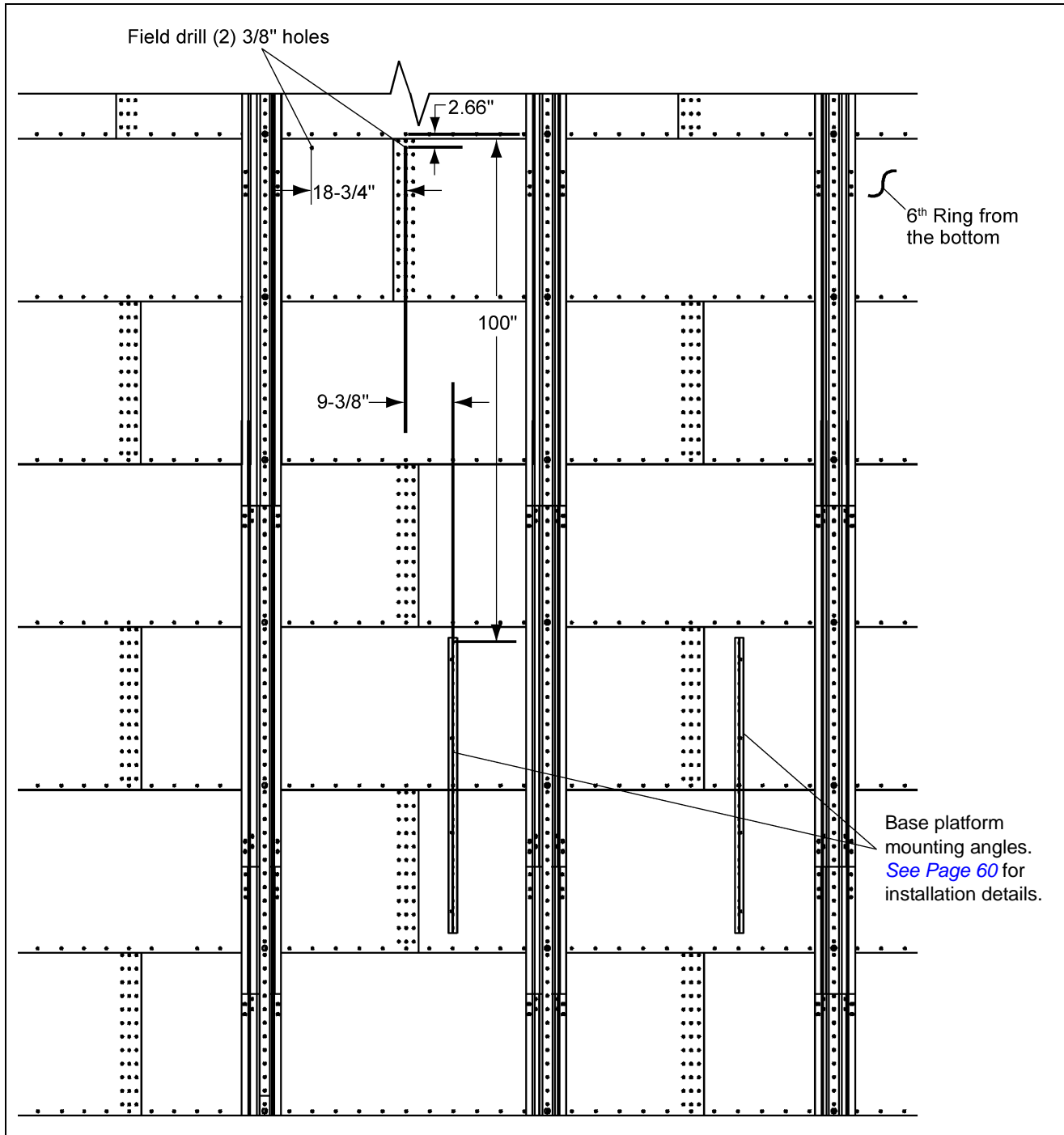


Figure 6X

## Base Starter Bracket and Ladder Assembly with Safety Cage

Once the two (2) 3/8" holes have been field drilled, attach the starter brackets to the sidewall as shown in [Figure 6Y](#). Check the top ladder section to make sure the ladder rung dimples are to the top. Attach to the starter brackets using the holes located 1" from the top of the ladder. It will also be necessary to field drill a 3/8" hole in the ladder section. Drill this hole 2" below the pre-drilled hole 1" from the top of the ladder. (See [Figure 6Y](#).) See [General Detail Information on Page 12](#) for proper installation of additional ladder sections required. Now, standoff brackets must be installed on the ladder sections and attached to the sidewall at each horizontal seam and repeated every 32" until reaching the bottom of the tank. Use 5/16" x 3/4" bin bolts for all connections.

**NOTE:** See [Page 59](#) for safety cage hoop assembly, [Page 51](#) for platform assembly, and [Page 54](#) for vertical support installation. **DO NOT** install any safety cages or safety cage bells at this time. The access door platform assembly must be installed first.

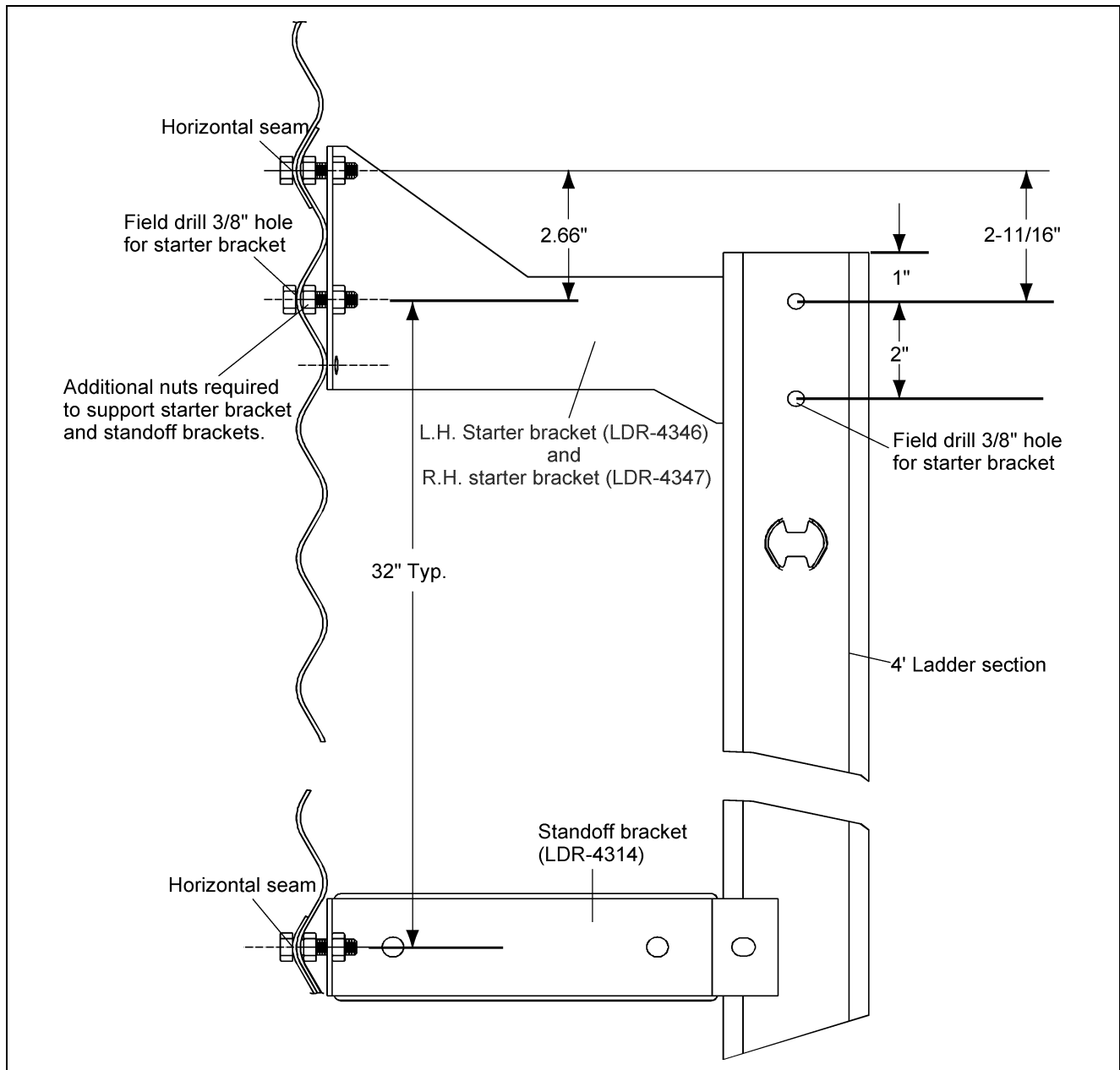


Figure 6Y

## Access Door Platform Mounting Angle Installation

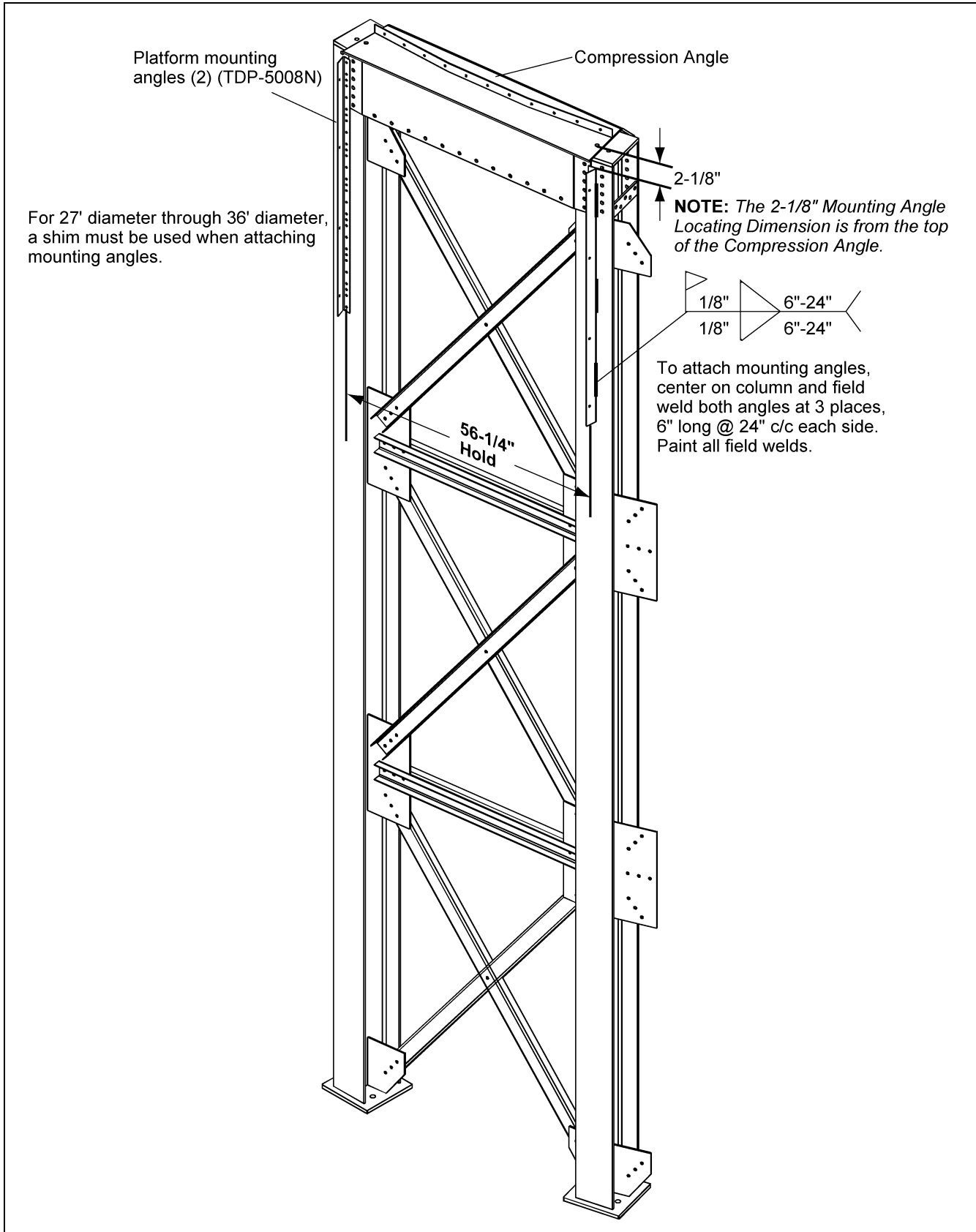
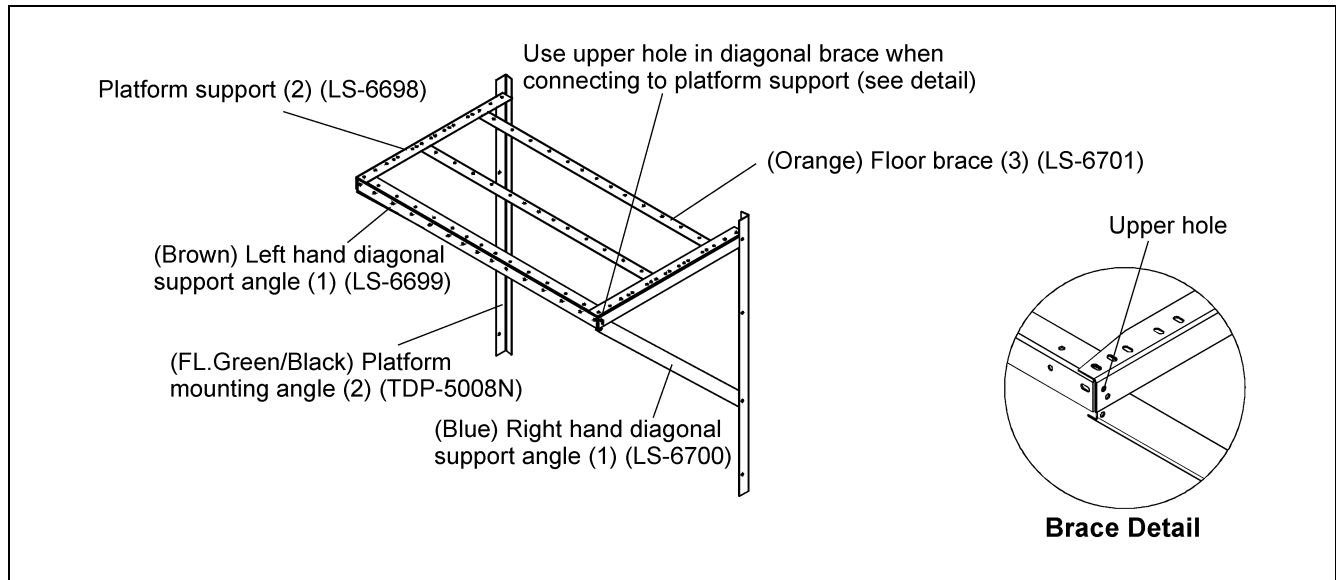


Figure 6Z

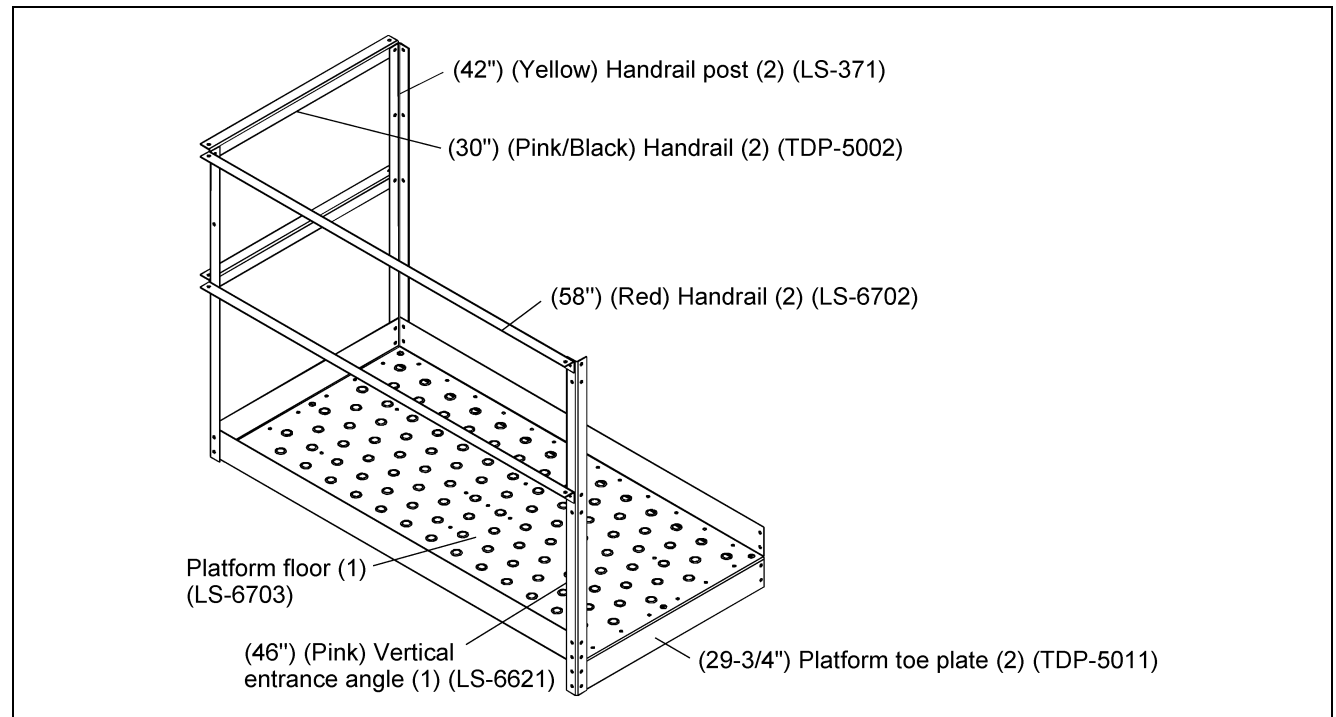
## Left Hand Platform and Platform Support Assembly

**NOTE:** Mount the platform mounting angles supports on the column first. Next, assemble the platform floor onto the support frame. Do not tighten platform support to floor brace bolts until the floor and toe plates are secure.

Assemble the platform support frame using 5/16" x 3/4" truss head bolts and nuts. Align holes on the platform floor with the holes on platform supports and bolt together using 5/16" x 3/4" truss head bolts and nuts. Attach platform toe plates at the same time as attaching the platform floor. The vertical entrance angle bolts to the platform floor, toe plate and platform support. The handrail post bolts to the platform floor and toe plate as shown in [Figure 6AB](#).



**Figure 6AA** Left Hand Platform Support Assembly



**Figure 6AB** Left Hand Platform



## Access Door Safety Cage Hoop Assembly

Before attaching any pieces to the ladder or platform, some pre-assembly is required. Attach the safety cage brackets to the ladder section. (*See General Detail Information on Page 12* for proper installation instructions.) Bolt the safety cage hoop adjuster plates onto the extension angle as shown in *Figure 6AC*. For the middle hoop assembly, bolt the safety cage hoop adapters and safety cage hoop half together using the proper holes, based upon the bin diameter. (*See Page 53.*) Be sure to use the 5/16" x 3/4" bolt with the head of the bolt to the inside of the safety cage. Bolt this assembly to the safety cage bracket and hoop adjuster plate, tighten as you go. The bottom assembly requires two (2) hoop halves and will be positioned just below the platform as shown in *Figure 6AC*. Use the safety cage hoop adjuster angle to secure the two (2) hoop half assemblies to the vertical entrance angle on the platform assembly. To finish the installation, secure the access door platform assembly to the base platform assembly using the safety cage hoop adapters as shown in *Figure 6AC*.

**NOTE:** *See Pages 54 and 55* for vertical support, safety cage, and bell cage installation details to complete the ladder assembly.

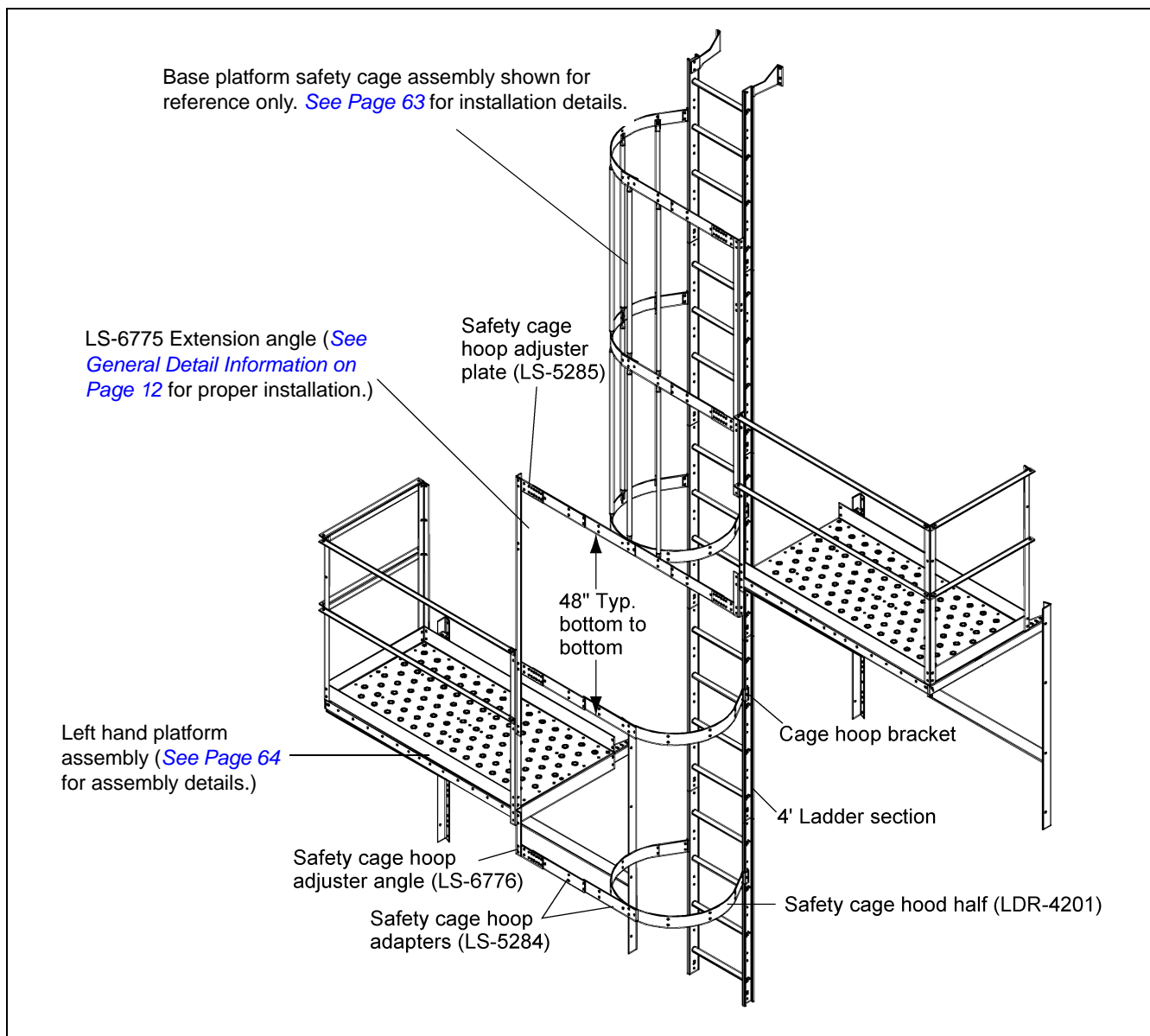


Figure 6AC

## Ladder Support Detail

The ladder must be secured to the hopper support columns with ladder standoff brackets using support channels and ladder brackets as shown in [Figure 6AD](#).

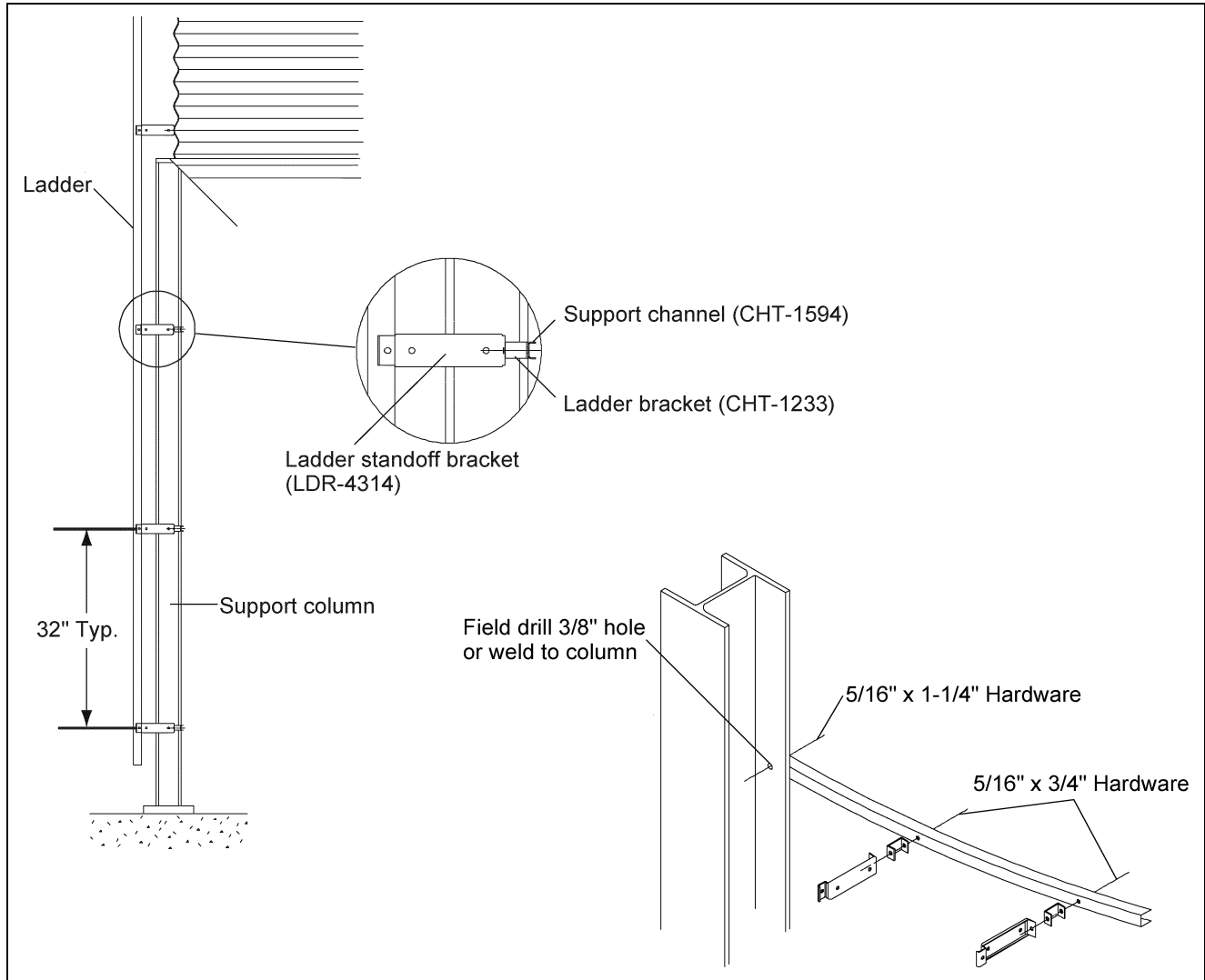


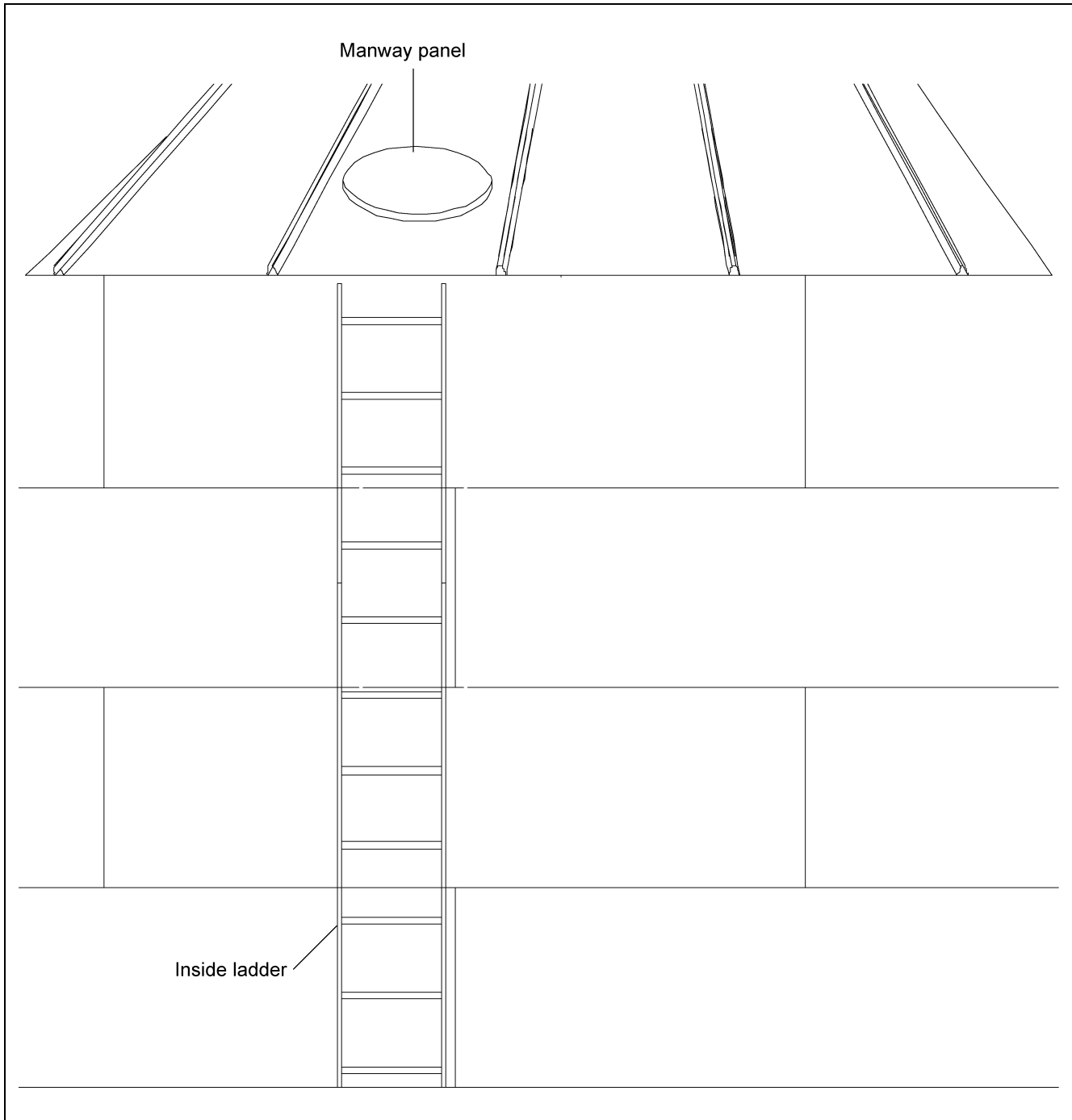
Figure 6AD

Tank Diameter	Hopper Slope	# of Support Channels	Hopper Ladder Brackets
12'	45	3	6
12'	60	4	8
15'	45	4	8
15'	60	6	12
18'	45	4	8
18'	60	7	14
21'	45	5	10
21'	60	8	16
24'	45	5	10
27'	40	5	10
30'	40	5	10
36'	40	6	12
36'	45	8	16

## Inside Ladder Installation

### Inside Ladder Placement

The inside ladder package includes the ladder, starter brackets and double the amount of standoff brackets. Position the ladder directly under the manhole roof panel as shown in [Figure 6AE](#) and install the starter brackets as shown in [Figure 6AF](#). Place the standoff brackets vertically on the sidewall sheets every 16" using the horizontal seam holes for every other hole location. Use 5/16" x 34" bin bolts to attach the standoff brackets to the sidewall of the grain bin.



**Figure 6AE** Inside of Grain Bin

### Inside Starter Bracket and Ladder Placement

Refer to [Figure 6AF](#) and follow the correct dimensions as shown. The ladder starter brackets must be located in line with the horizontal seam. Check the 4' ladder section to make sure the ladder rung dimples are to the top. Attach to the starter brackets using the hole located 1" from top of the ladder. It will also be necessary to field drill a 3/8" hole on the ladder section for the starter bracket. Field drill this hole 2" below the pre-drilled hole that is 1" below the top of the ladder. (See [Figure 6AF.](#)) All standoff brackets must be installed every 16" and attached to each 4' section required.

**NOTE:** Refer to [Figure 4C on Page 14](#) for additional details for standoff bracket to ladder assembly.

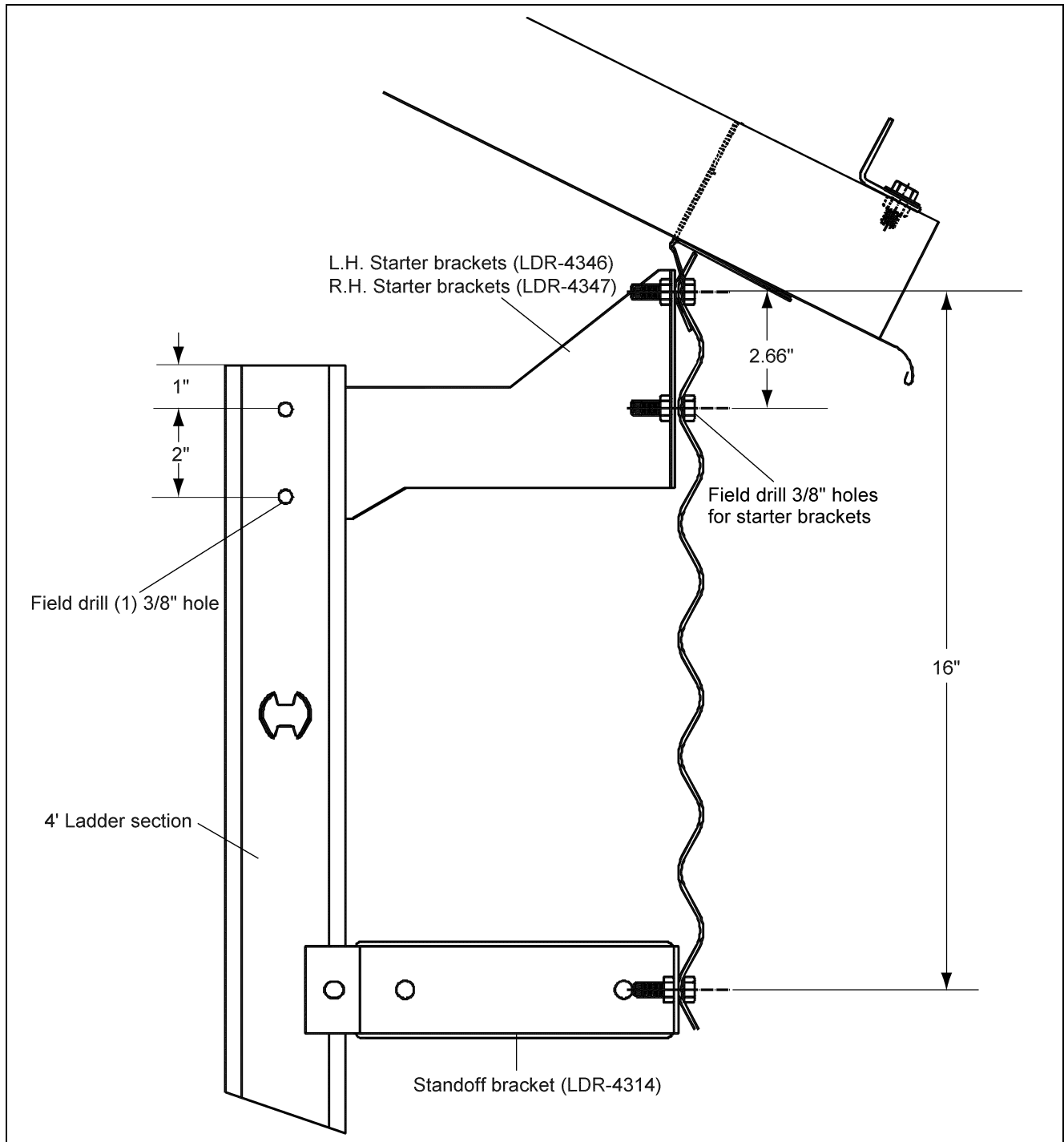


Figure 6AF

## Inside Ladder Standoff Bracket/Supports

### Inside Ladder Standoff Bracket Requirements

For the standoff brackets, field drill two (2) 3/8" diameter holes 18-3/4" apart directly in line with the horizontal seam holes. Continue down the sidewall with standoff brackets every 16". Refer to Figure 6AG.

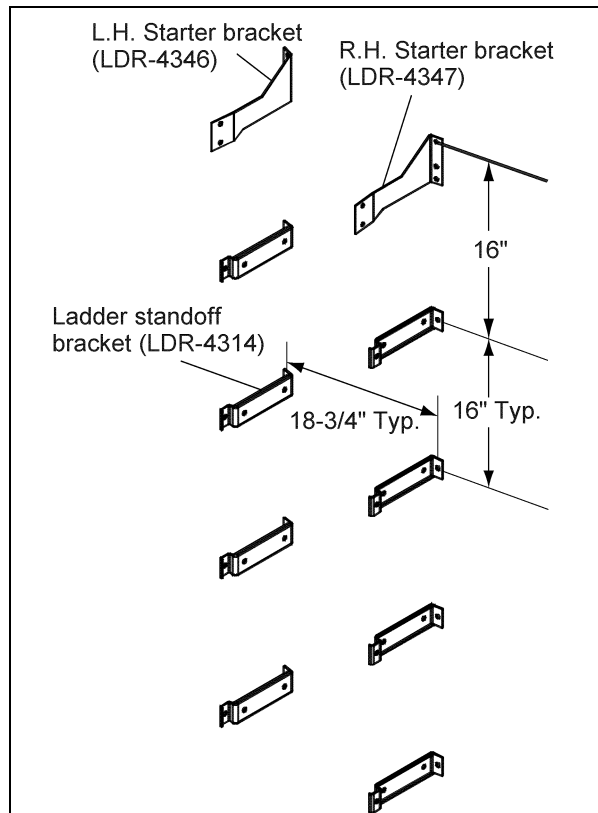


Figure 6AG

### Inside Ladder Supports

After completing the inside ladder, be sure to support the bottom of the ladder to the concrete. Depending on the actual installation, the amount of support required may vary. Supports are not supplied by the manufacturer. If a bin sweep is to be used in the grain bin, other considerations may be necessary to assure there is no interference with the equipment. Refer to Figure 6AH.

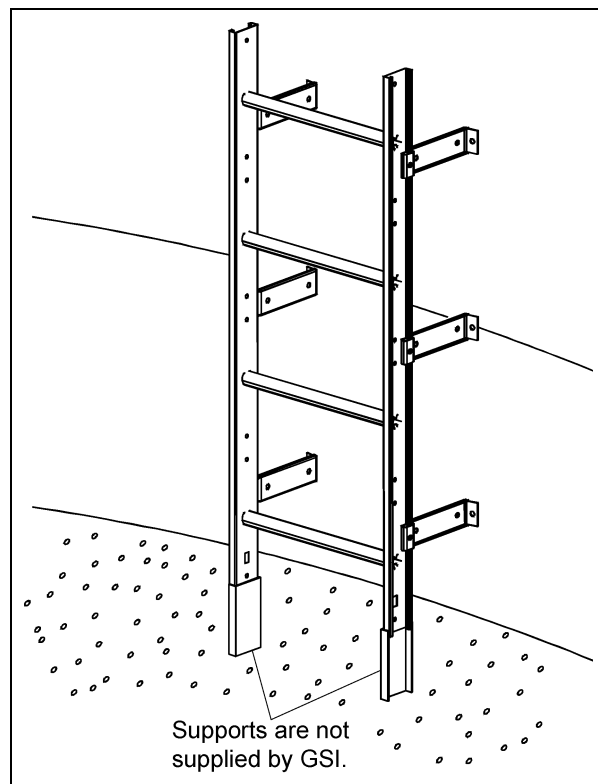


Figure 6AH

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# NOTES



**4.00" CORRUGATED  
FARM-COM HOPPER  
TANKS (FCHT)  
4-6 RINGS**

## 4.00" Farm Commercial Hopper Tank Ladder and Platform Layout 4-6 Rings

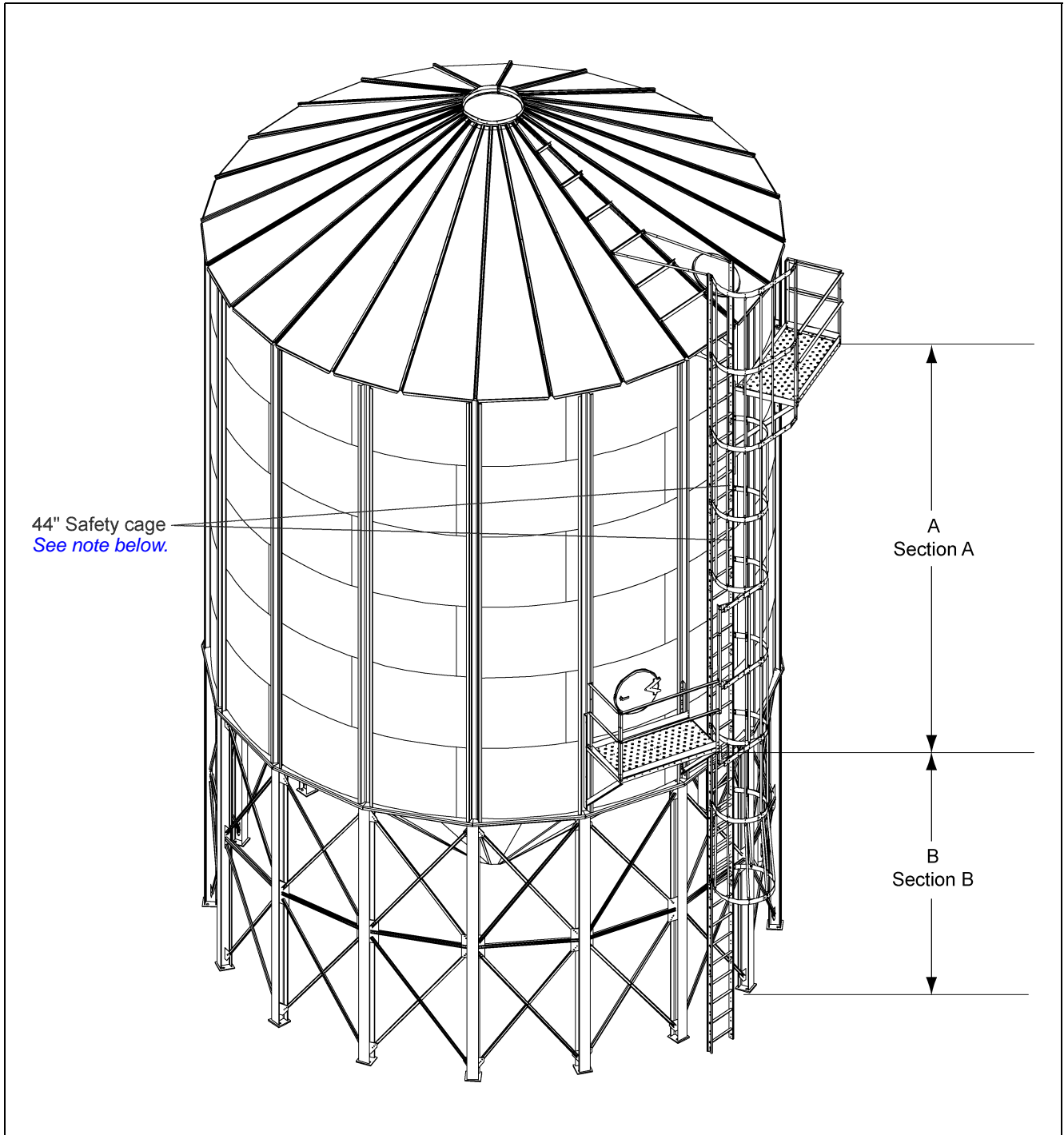


Figure 7A 6 Rings

**NOTE:** The 44" safety cage sections must be installed in section A of the ladder system. DO NOT install the 44" verticals in the eave or access door safety cage hoop assembly.



## 7. 4.00" Corrugation Farm Commercial Hopper Tanks (FCHT) 4-6 Rings

### Ladder, Safety Cage, and Platform Location Chart

For Section A, find the proper ring grain bin and use the number of ladders and safety cages. *See Chart below (Section A)*. For Section B, find the proper diameter grain bin and hopper slope and use the number of ladders and safety cages. *See Chart below (Section B)*.

	Rings		
	4	5	6
Platform Located in Ring:	1	1	1
4 Ft. Ladder Section	3	4	5
Bell Safety Cage	0	0	0
44" Safety Cage	0	1	2
Bell Safety Cage Size	0	0	0
<b>Dimension A</b>	96"	140"	184"

	Rings		
	18'	21'	24'
Hopper Slope:	45	45	45
4 Ft. Ladder Section	6	6	7
Bell Safety Cage	1	1	1
Safety Cage 48" Section	1	1	1
Bell Safety Cage Size	24"	48"	48"
<b>Dimension B</b>	176"	192"	204"

### **FCHT Ladder, Safety Cage and Platform Instructions 4-6 Rings**

All grain bin packages, from 4 ring to 6 ring and 18' to 24' diameter, contain the correct components for assembly. Read and follow the complete instructions for correct placement of parts. Be sure and use the charts to determine the appropriate number and size parts to be used based upon the number of rings in the bin. Failure to do so may result in an improper fit or shortage of parts. Pay particular attention to the location of ladders and platforms as they relate to the equipment and other structures in the area.

#### **Eave Starter Bracket Installation**

Correct placement of the eave ladder starter bracket is critical to assure proper fit of all ladder components and to assure the correlation is correct between the platforms for proper installation of the access door platform. If the eave starter brackets are mislocated, standard installation of the access door platform will not be possible.

### Location of Field Drilled Holes for Eave Ladder Starter Brackets

The starter brackets must be located directly below the roof ladder. Before the starter brackets can be installed, two (2) 3/8" holes must be drilled 4" below and directly in line with the top row of pre-punched horizontal holes. The first hole, for the left-hand starter bracket, must be located 9-3/8" from the center of the stiffener to the center of the hole. The second hole, for the right-hand bracket, must be located 18-3/4" from the center of the first hole. Refer to Figure 7B for the proper location of the two (2) 3/8" field drilled holes required to install the starter brackets.

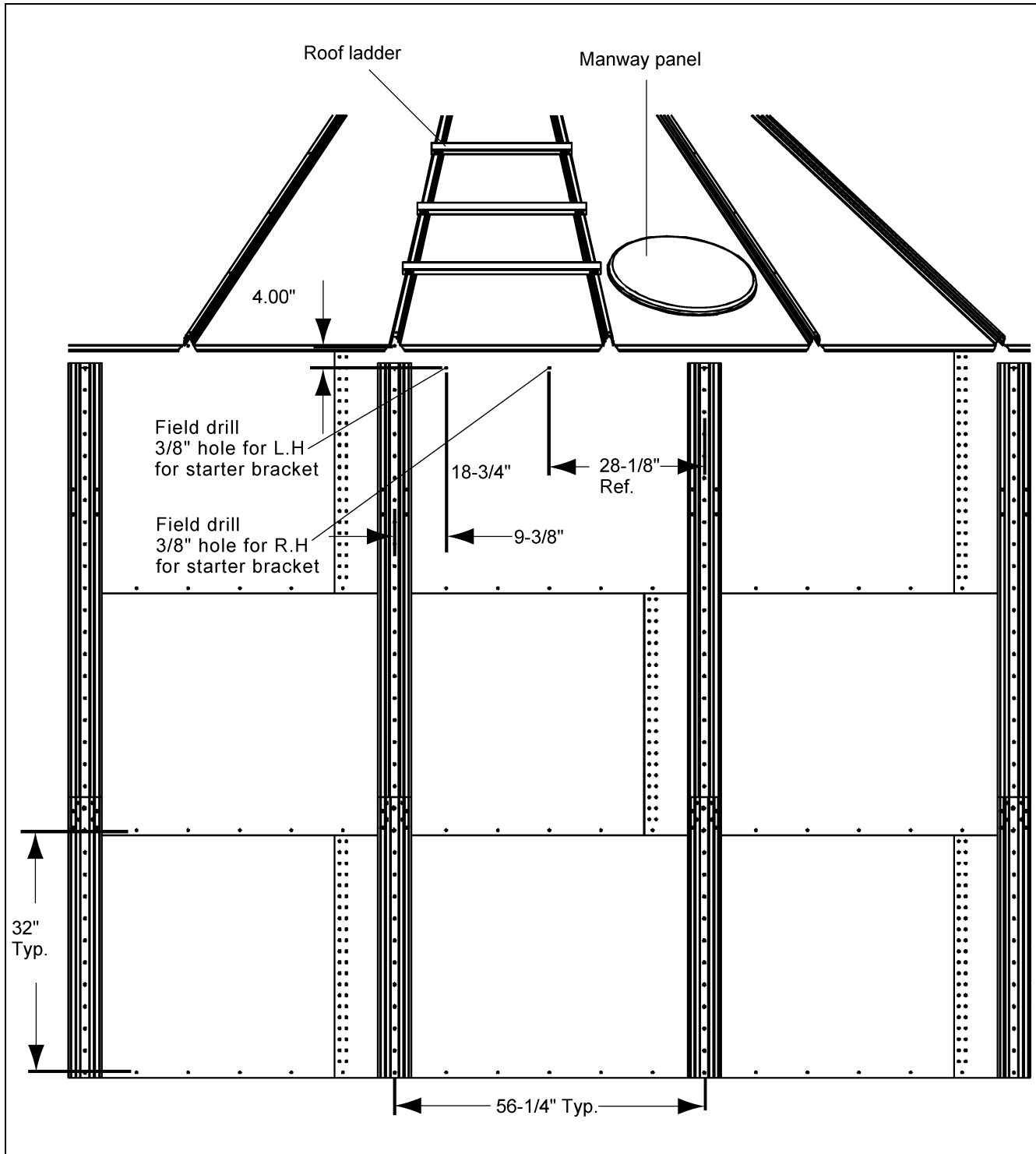


Figure 7B

### Eave Starter Bracket and Ladder Assembly with Safety Cage

Once the two (2) 3/8" holes have been field drilled, attach the starter brackets to the sidewall as shown in [Figure 7C](#). Check the top ladder section to make sure the ladder rung dimples are to the top. Attach starter brackets to the top of the ladder. It will also be necessary to field drill a 3/8" hole on the ladder section for the starter bracket. Field drill this hole 2" below the pre-drilled hole that is 1" from the top of the ladder. [See General Detail Information on Page 12](#) for the proper installation of additional ladder sections required. Standoff brackets must be installed on the ladder sections and attached to the sidewall at each horizontal seam and repeated every 44". Use 5/16" x 3/4" bin bolts for all connections.

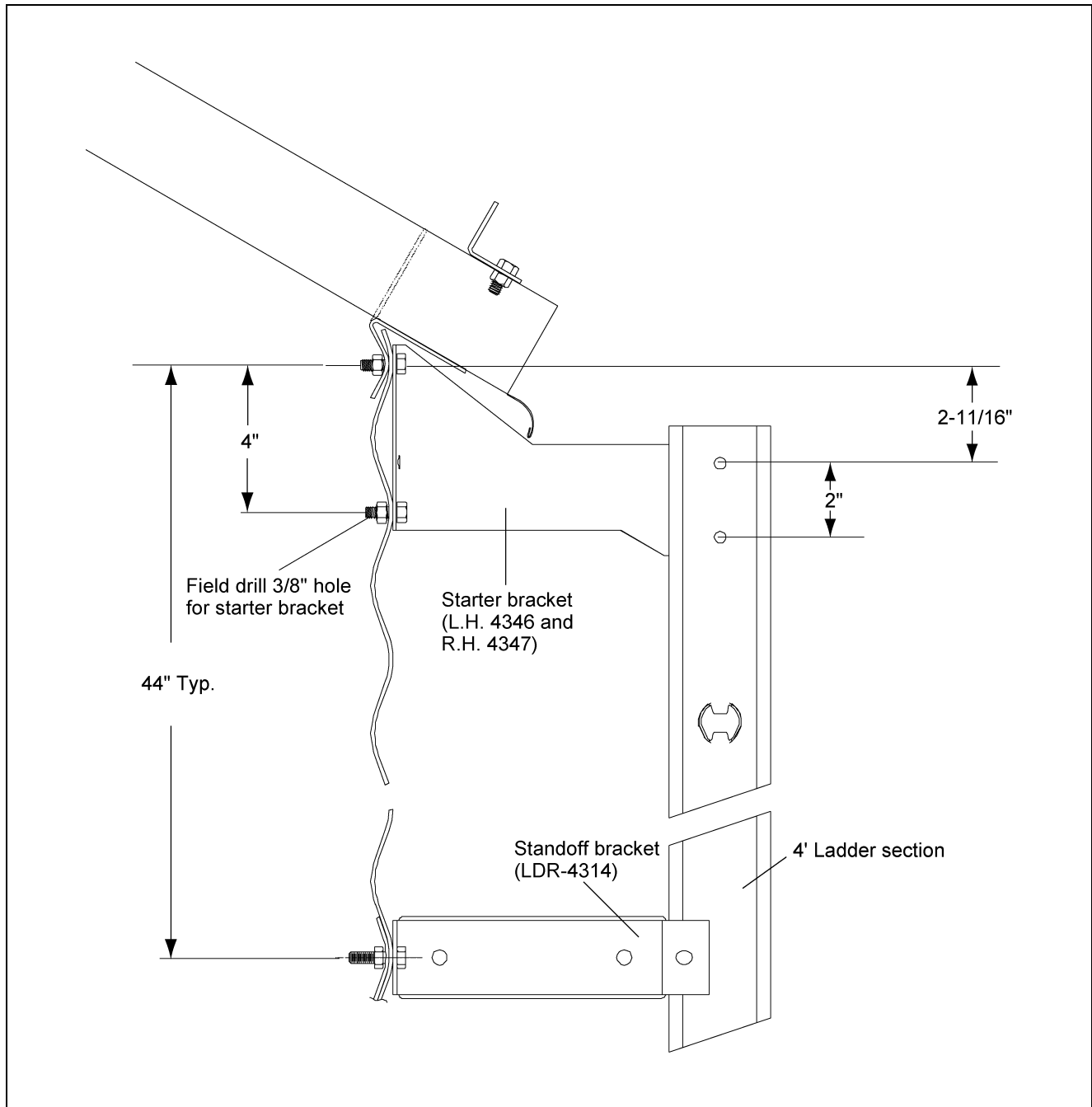
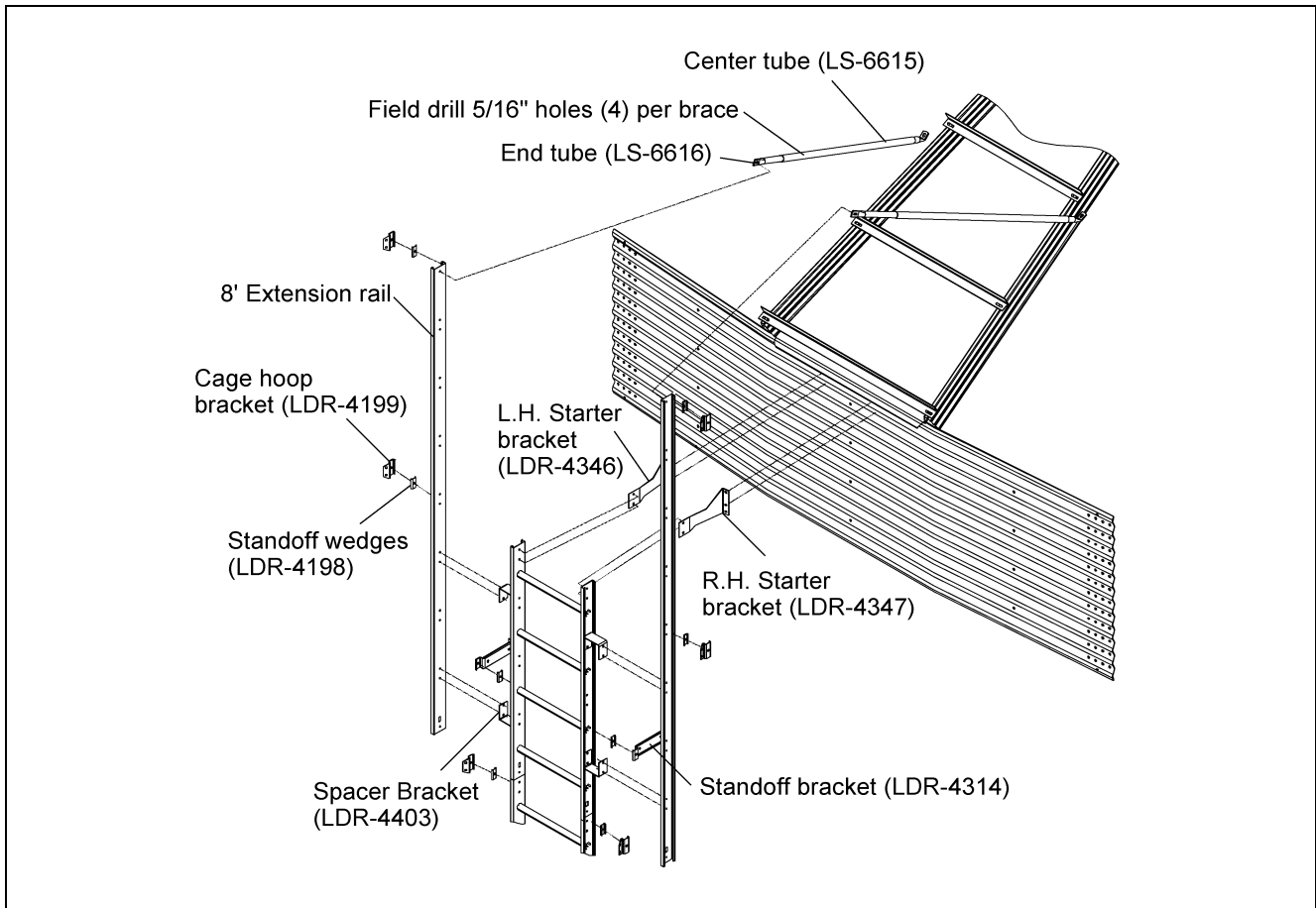


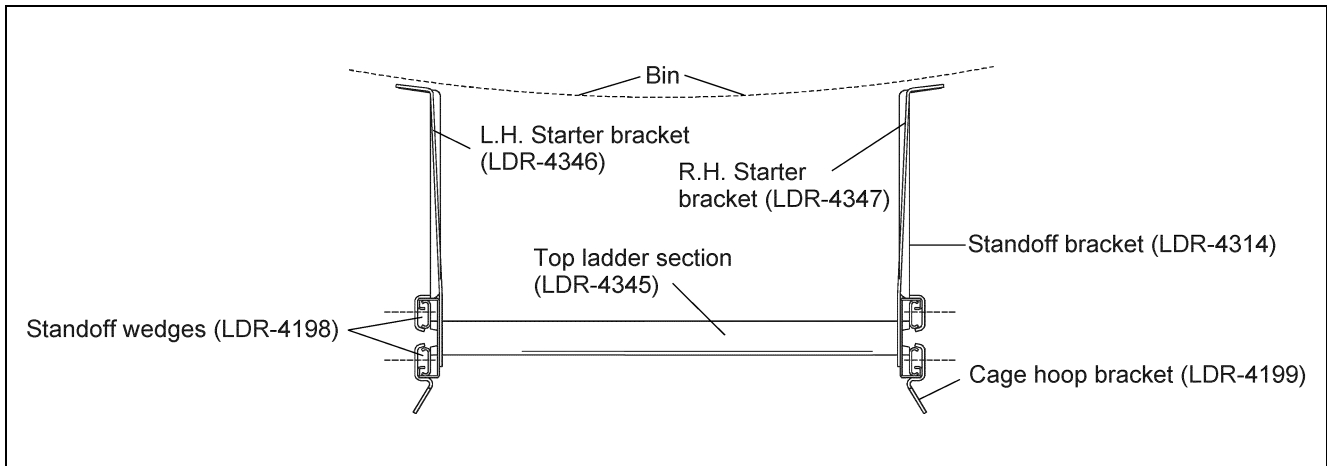
Figure 7C

**NOTE:** [Refer to General Detail Information on Page 12](#) for additional details for standoff bracket to ladder assembly and also, 8' extension rail installation (omitted in detail for clarity).

## 7. 4.00" Corrugation Farm Commercial Hopper Tanks (FCHT) 4-6 Rings



**Figure 7D**



**Figure 7E** Ladder and brackets as viewed from top of bin

### Eave Adjustable Braces

The eave adjustable braces must be attached at this time. An eave adjustable brace is comprised of one (1) larger diameter tube and two (2) smaller tubes. (See Figure 7F.) Slip the smaller tubes inside the larger tubes and attach one (1) smaller tube to the top of the ladder extension rail. Adjust the other smaller tube so the bottom of the flattened tube reaches the roof panel. Field drill four (4) 5/16" holes through both large and small tubes and bolt together using 1/4" x 1-1/2" bolts and nuts. This prevent the adjustable braces from slipping. (See Figure 7G.)

**NOTE:** Refer to Page 76 for proper location of ladder starter brackets.

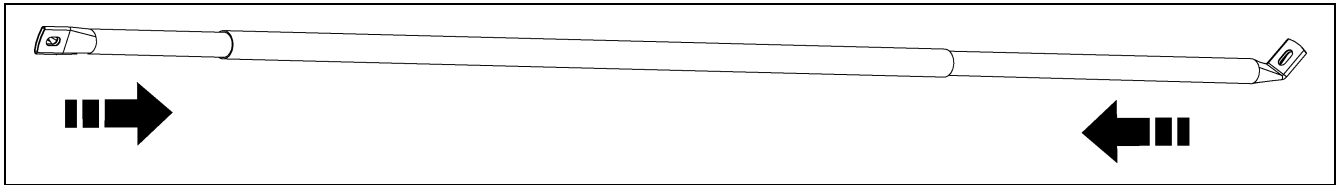


Figure 7F

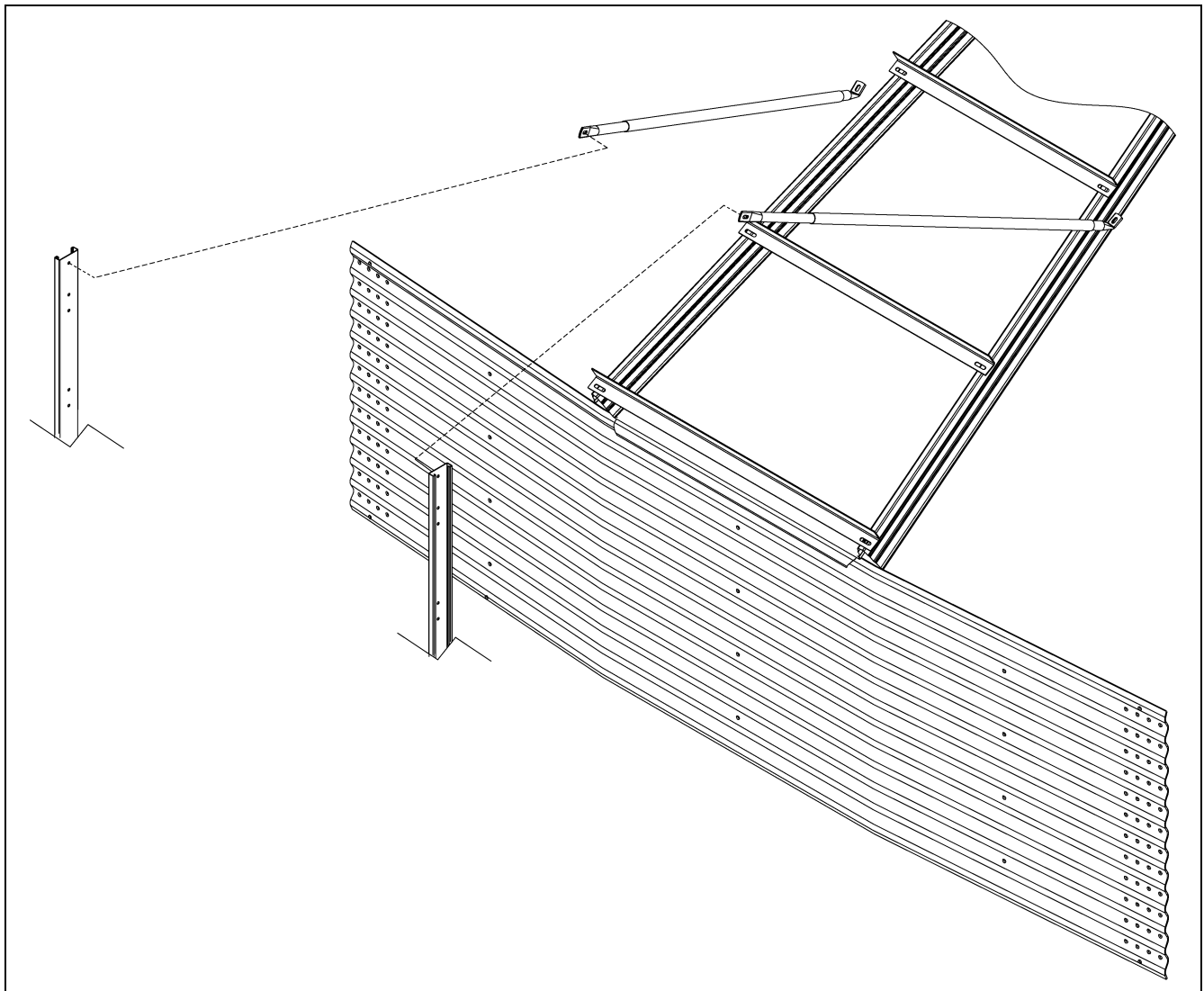


Figure 7G

**NOTE:** Refer to General Detail Information on Page 12 for additional details for standoff bracket to ladder assembly and cage hoop bracket to ladder.

### Eave Platform Mounting Angle Installation

Figure 7H shows the location of the platform mounting angles. Each angle must be mounted starting 8" above the top horizontal seam of the second ring with the first mounting angle offset 9-3/8" from the right hand starter bracket. The second mounting angle must be located 56-1/4" from the first mounting angle. The dimensions and locations of these angles are critical for proper fit of all parts. Using the platform mounting angles as guides, field drill 3/8" holes in the sidewall every 8". (See Figure 7H.)

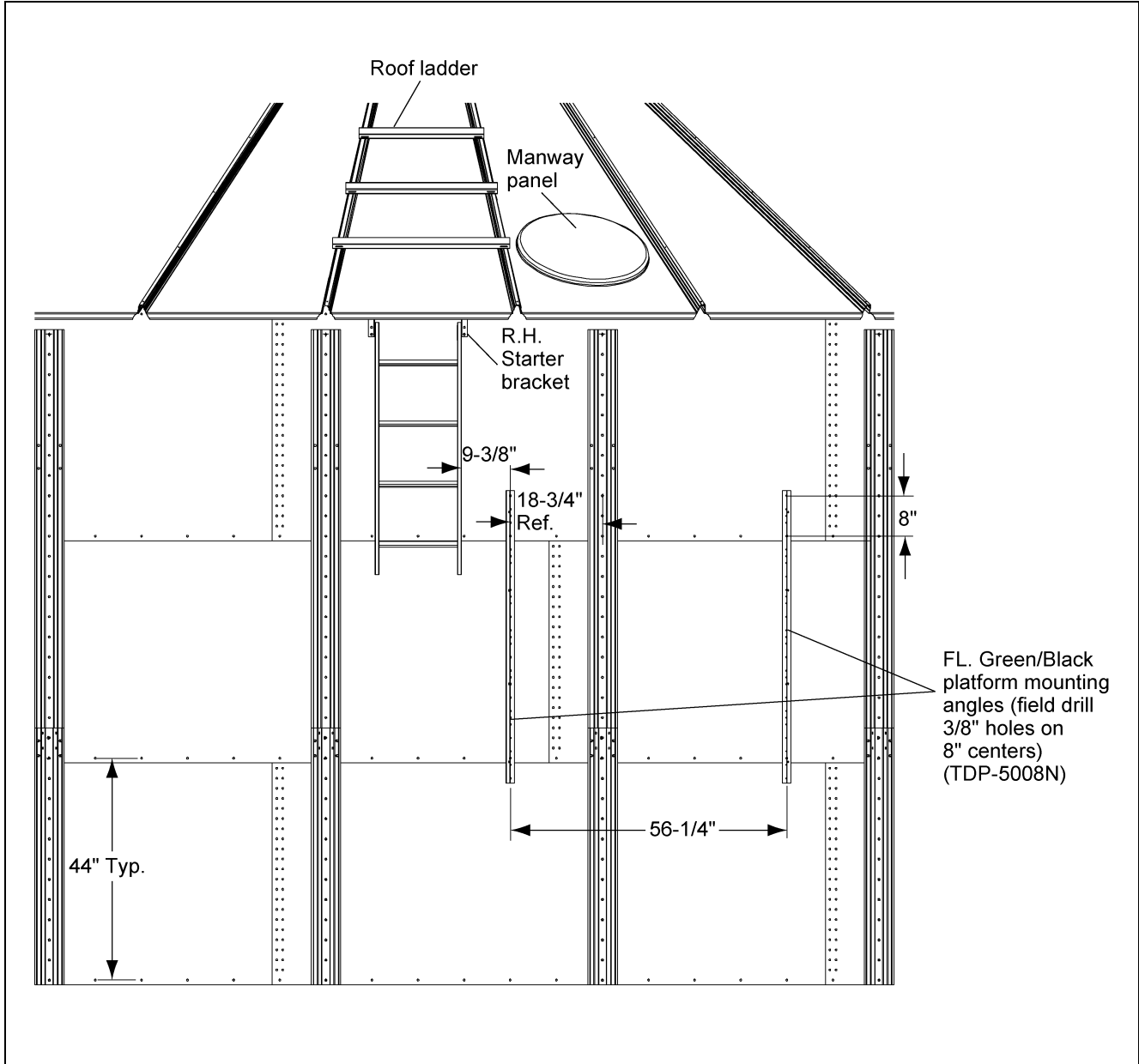
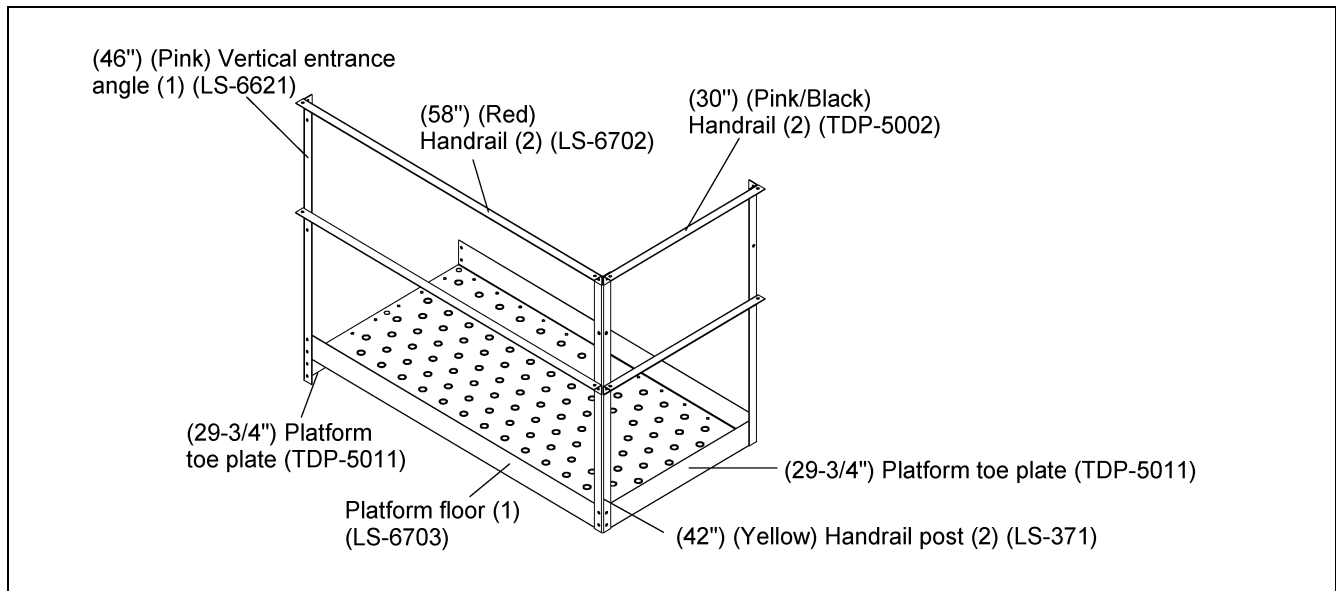


Figure 7H

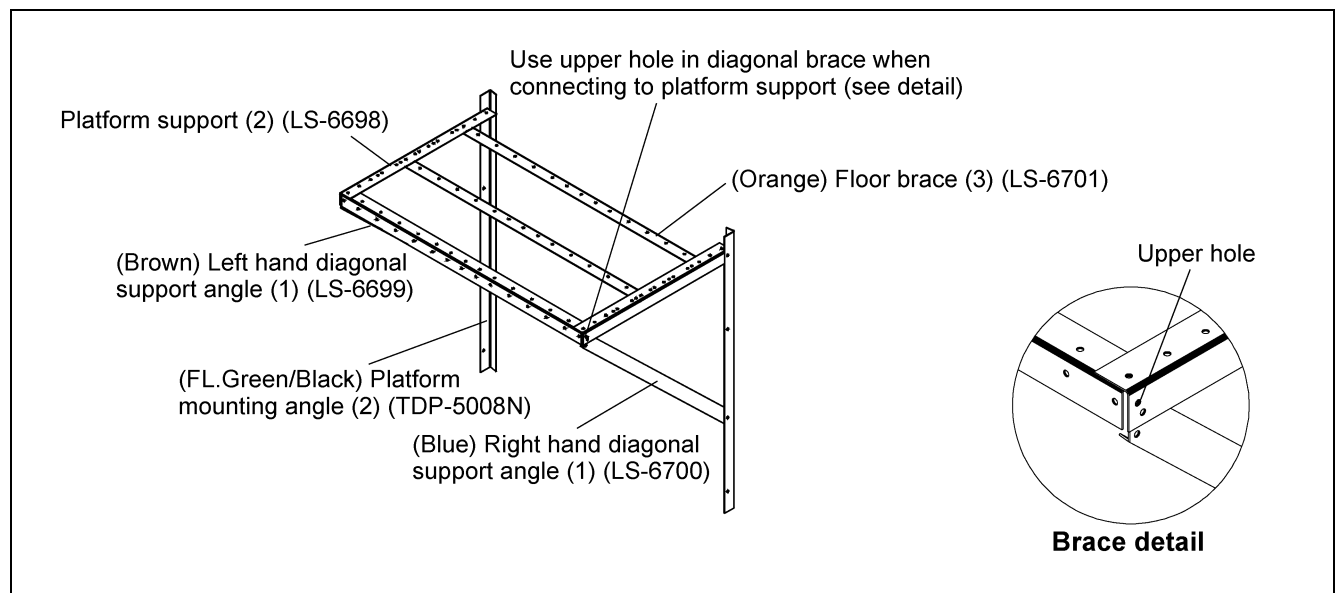
## Right Hand Platform and Platform Support Assembly

**NOTE:** Mount the platform supports on the bin first. Next, assemble the platform floor onto the support frame. Do not tighten platform support to floor brace bolts until the floor and toe plates are secure.

Assemble the platform support frame using 5/16" x 3/4" truss head bolts and nuts. When attaching the platform mounting angles to the sidewall, locate the mounting angles according to the instructions on previous pages. Align holes on the platform floor with the holes on platform supports and bolt together using 5/16" x 3/4" truss head bolts and nuts. Attach platform toe plates at the same time as attaching the platform floor. The Vertical entrance angle bolts to the platform floor, toe plate and platform support. The handrail post bolts to the platform floor and toe plate as shown in [Figure 7I](#).



**Figure 7I** Right Hand Platform

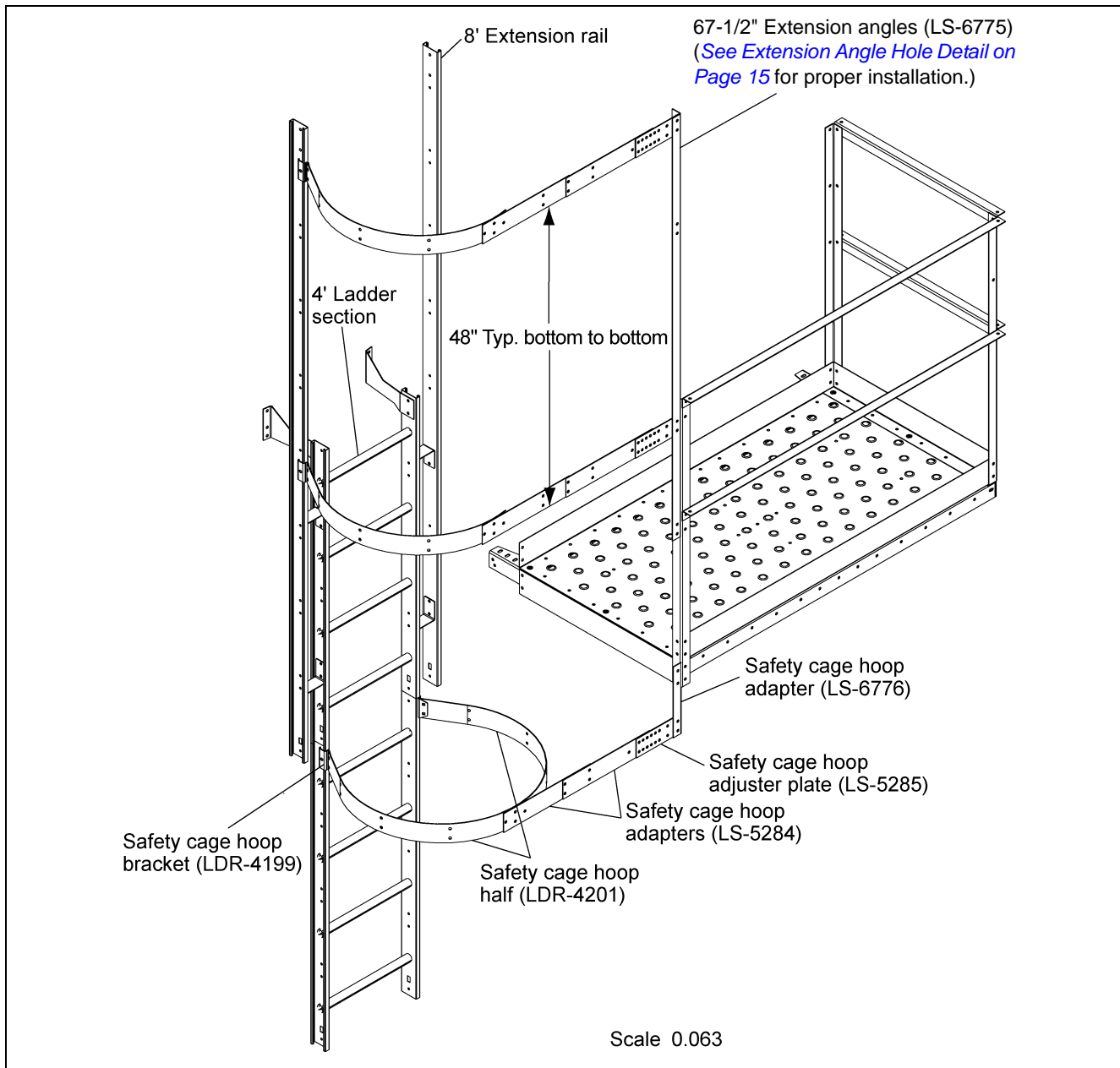


**Figure 7J** Right Hand Platform Support Assembly



## Eave Safety Cage Hoop Assembly

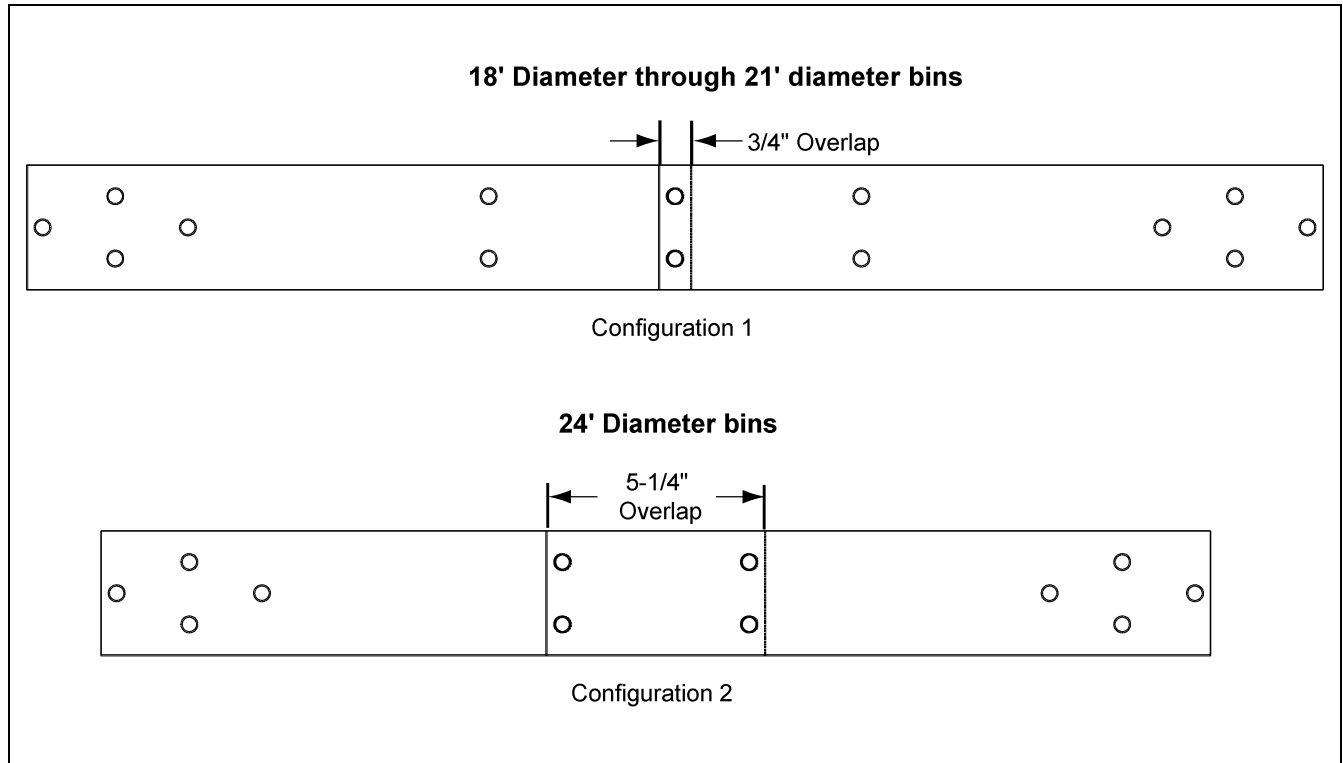
Before attaching any pieces to the ladders or platform, some pre-assembly is required. Attach two (2) safety cage brackets to the 8' extension rail and one (1) safety cage bracket to the second 4' ladder section as shown in [Figure 7K](#). (See [Page 52](#) for assembly details.) Bolt the safety cage hoop adjuster plates onto the extension angle as shown. Using the proper configuration depending on the bin diameter (See [Adapter Assembly Detail on Page 82](#)), bolt the safety cage hoop adapters together and attach to the safety cage hoop halves. Be sure to use the 5/16" x 3/4" bolt with the head of the bolt to the inside of the safety cage. Bolt these assemblies to the safety cage brackets and hoop adjuster plates (See [Connection Detail on Page 82](#) for proper hole location). Tighten bolts as you go. The bottom assembly requires two (2) hoop halves and will be positioned just below the platform as shown in [Figure 7K](#). Use the safety cage hoop adjuster angle to secure the two (2) hoop half assemblies to the vertical entrance angle on the platform assembly.



**Figure 7K**

**NOTE:** 48" vertical supports removed in [Figure 7K](#) for clarity.

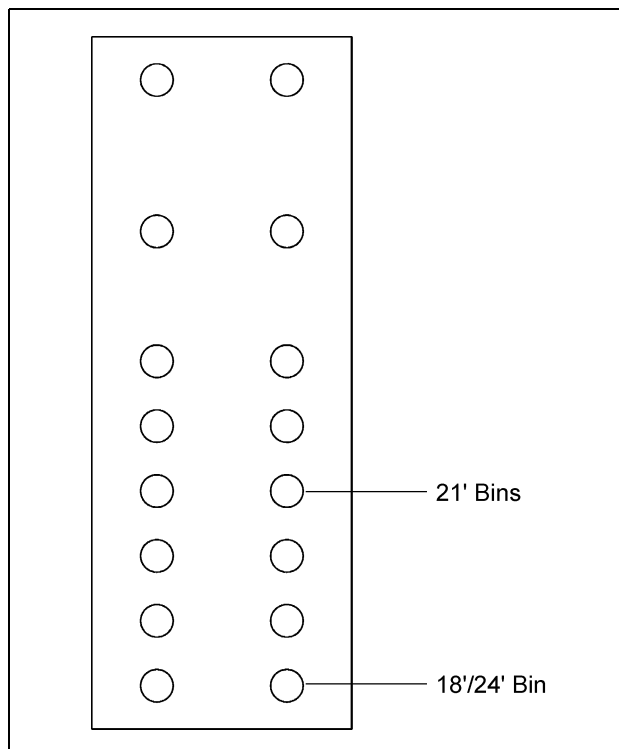
## Adapter Assembly Detail



**Figure 7L** 18' Diameter through 21' Diameter Bins

## Connection Detail

Use [Figure 7M](#) to determine the proper holes to use when attaching the hoop adapter to the adjuster plate.



**Figure 7M**

## Vertical Supports

After all three (3) hoop assemblies are in place, attach the 48" vertical supports from hoop assembly to hoop assembly, as shown in [Figure 7N](#). This requires ten (10) supports, five (5) between each set of hoops. The second set of vertical supports must be bent at the flat area to allow for the tapering of the bottom hoop assembly. Use 5/16" x 3/4" bolts (unless otherwise noted) with the head of the bolt to the inside of the safety cage.

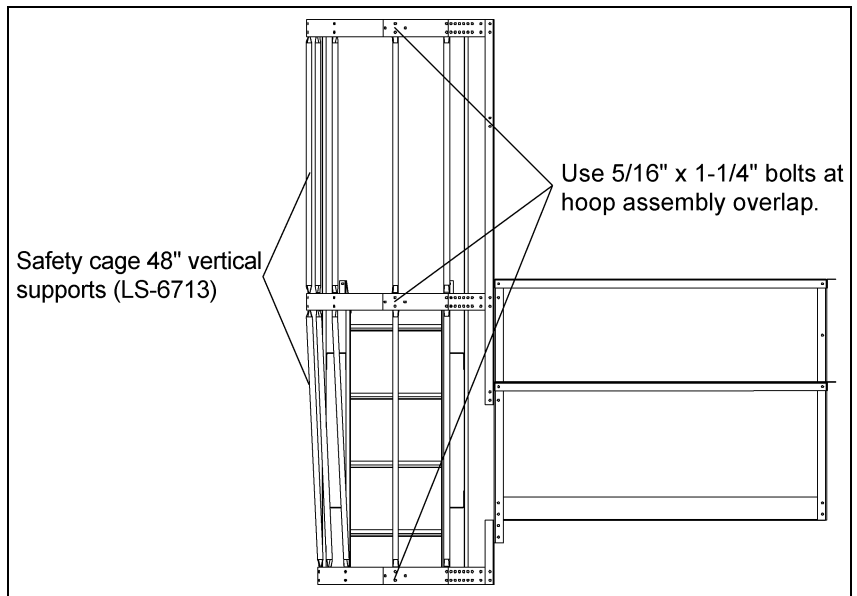


Figure 7N Vertical Supports

## 44" and 48" Safety Cage

Attach the vertical support pieces to the existing hoop halves above using the 5/16" x 3/4" bolts and nuts (with the heads on the inside of the cage). Fasten two (2) hoop halves together and bolt to other end of vertical supports. Attach cage hoop brackets to ladder, [See General Detail Information on Page 12](#) for proper attachment. Once cage hoop brackets have been installed, attach cage hoop halves and tighten bolts. Repeat installation for each safety cage required.

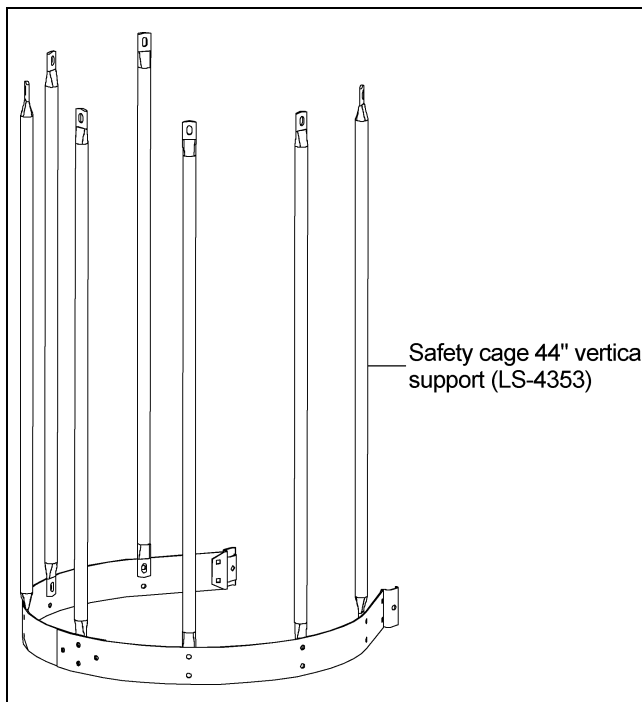


Figure 7O 44" Safety Cage

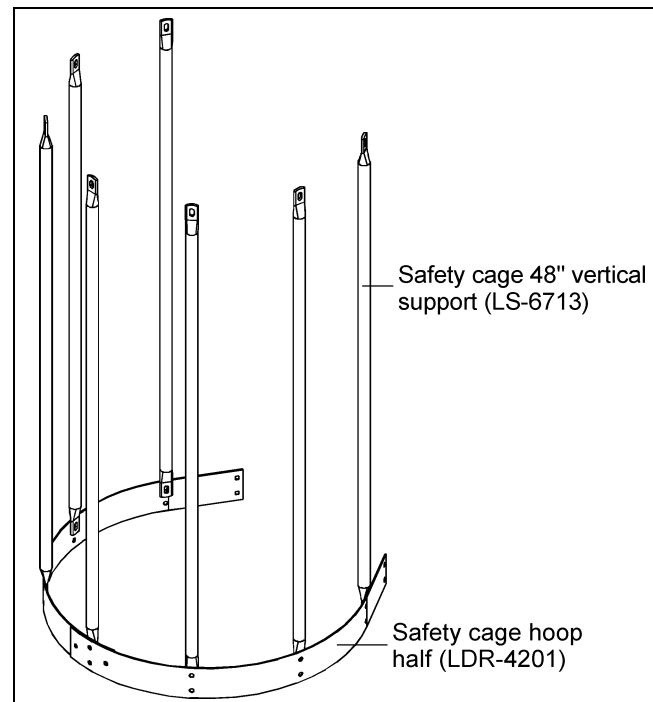


Figure 7P 48" Safety Cage

## Access Door Platform Mounting Angle Installation

Figure 7Q shows the location of the access door platform mounting angles. Each angle must be mounted starting 16" above the top horizontal seam of the bottom ring and installed in the stiffeners located on each side of the access door. When installed correctly, these angles should be offset from the eave platform mounting angles 37-1/2". Pay careful attention when installing these angles. The dimensions and locations of these angles are very critical to assure proper fit of all parts.

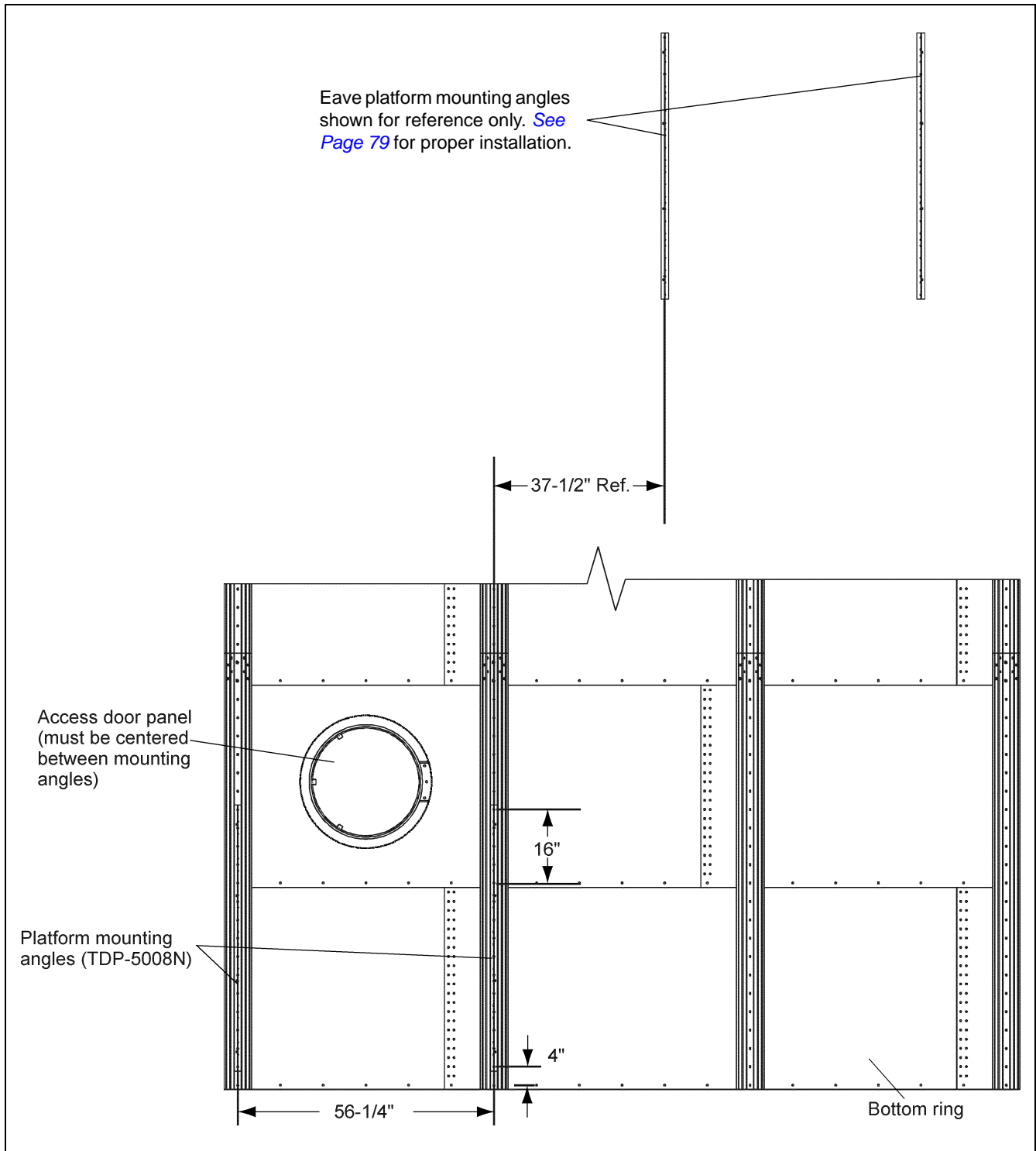
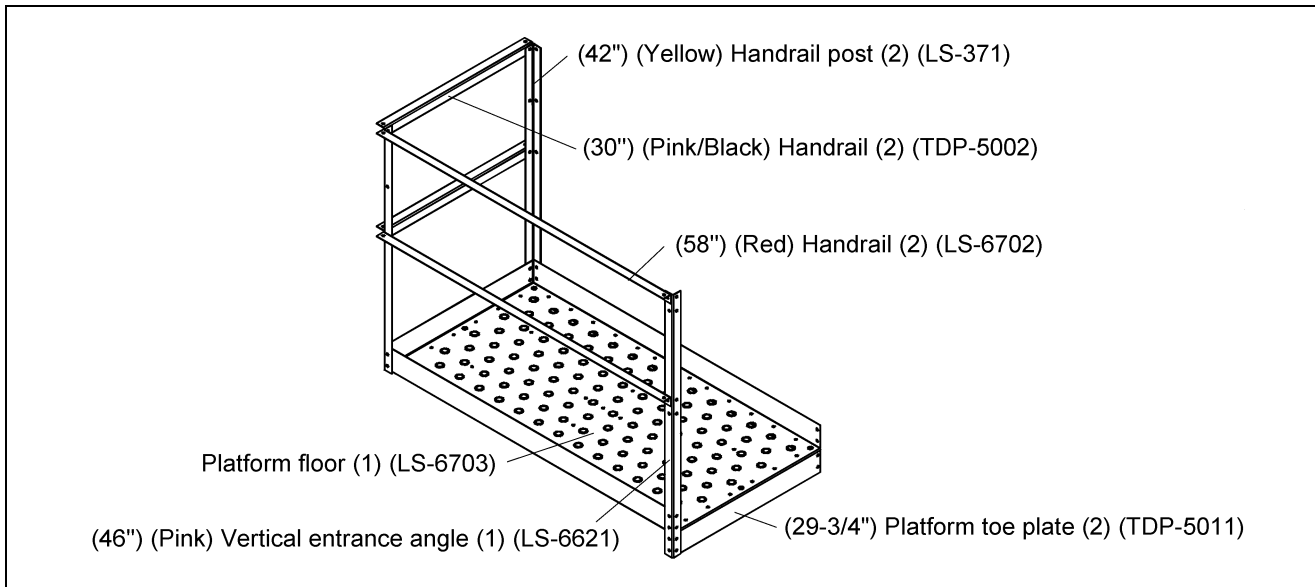


Figure 7Q

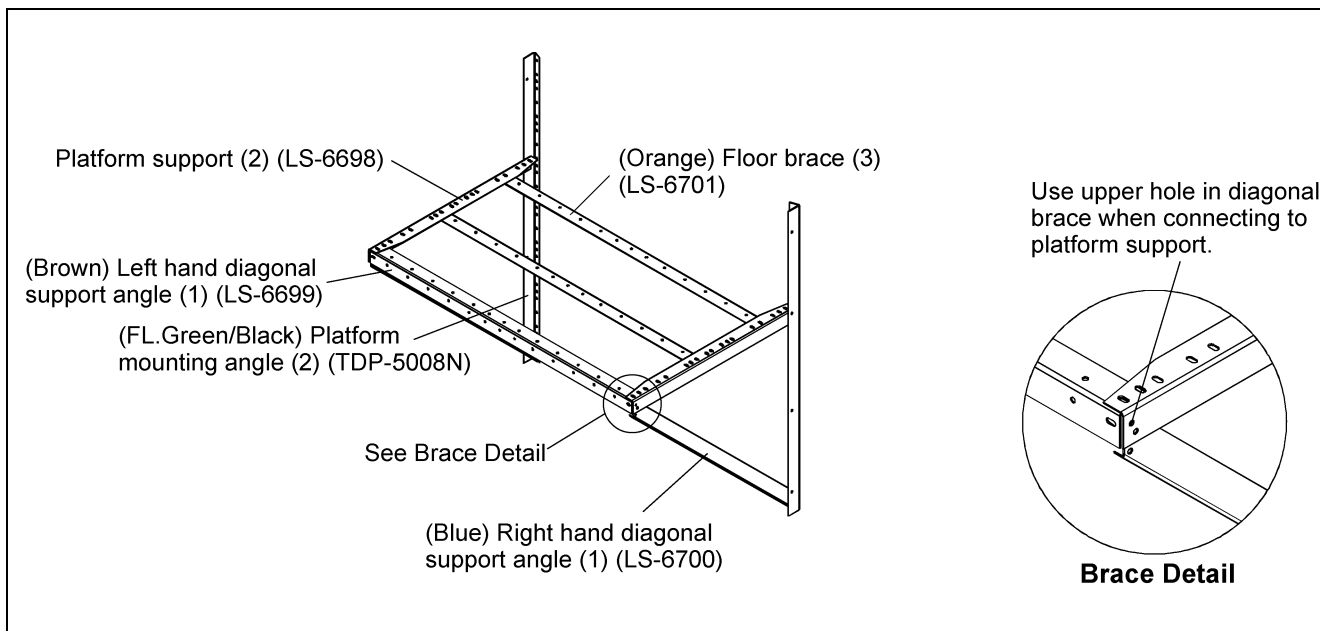
## Left Hand Platform and Platform Support Assembly

**NOTE:** Mount the platform supports on the bin first. Next, assemble the platform floor onto the support frame. Do not tighten platform support to floor brace bolts until the floor and toe plates are secure.

Assemble the platform support frame using 5/16" x 3/4" truss head bolts and nuts. When attaching the platform mounting angles to the stiffeners, locate the mounting angles according to the instructions on previous pages. Align holes on the platform floor with the holes on platform supports and bolt together using 5/16" x 3/4" truss head bolts and nuts. Attach platform toe plates at the same time as attaching the platform floor. The vertical entrance angle bolts to the platform floor, toe plate and platform support. The handrail post bolts to the platform floor and toe plate as shown in [Figure 7R](#).



**Figure 7R** Left Hand Platform



**Figure 7S** Left Hand Platform Support Assembly

## Access Door Safety Cage Hoop Assembly

Before attaching any pieces to the ladder or platform, some pre-assembly is required. Attach the safety cage brackets to the ladder section. (*See General Detail Information on Page 12* for proper installation instructions.) Bolt the safety cage hoop adjuster plates onto the extension angle as shown in *Figure 7T*. For the middle hoop assembly, bolt the safety cage hoop adapters and safety cage hoop half together using the proper holes, based upon the bin diameter. (*See Page 82.*) Be sure to use the 5/16" x 3/4" bolt with the head of the bolt to the inside of the safety cage. Bolt this assembly to the safety cage bracket and hoop adjuster plate, tighten as you go. The bottom assembly requires two (2) hoop halves and will be positioned just below the platform as shown in *Figure 7T*. Use the safety cage hoop adjuster angle to secure the two (2) hoop half assemblies to the vertical entrance angle on the platform assembly. To finish the installation, secure the access door platform assembly to the existing safety cage assembly using the safety cage hoop adapters as shown in *Figure 7T*.

**NOTE:** *See Page 83 and 87* for vertical support, safety cage, and bell cage installation details to complete the ladder assembly.

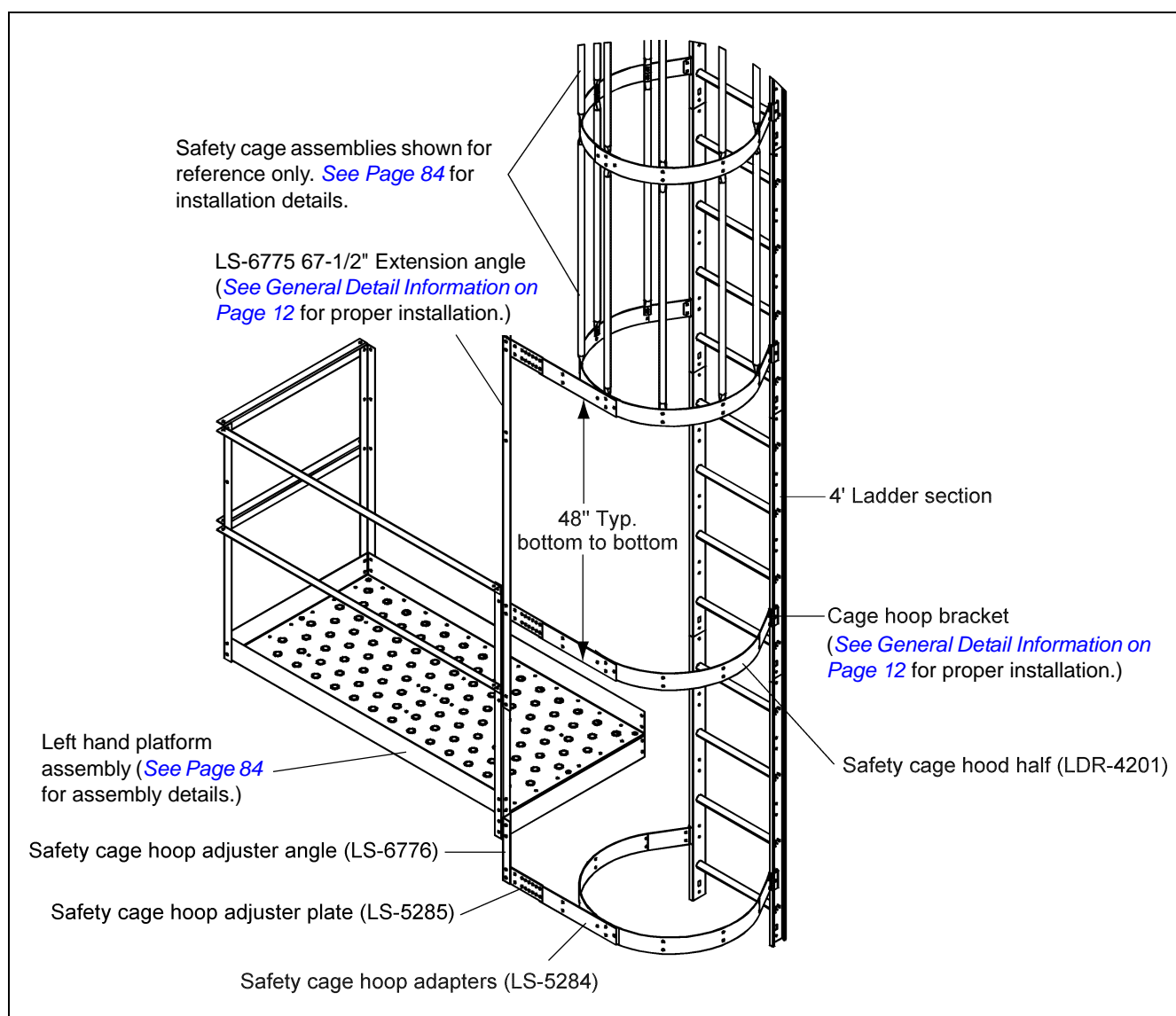
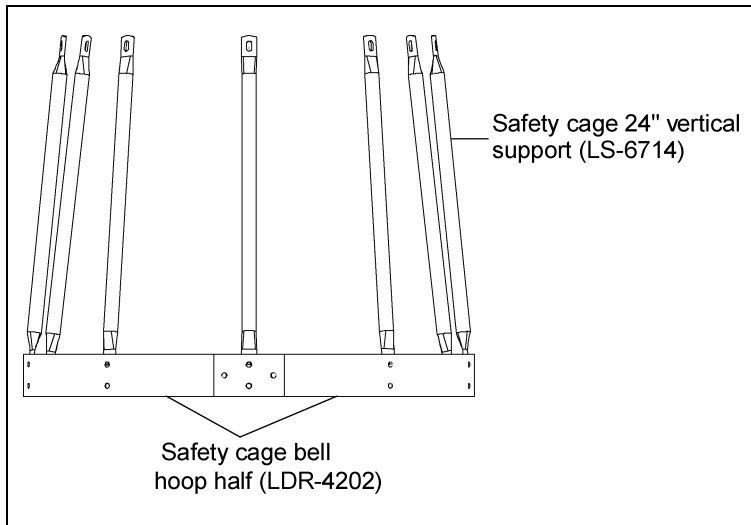


Figure 7T

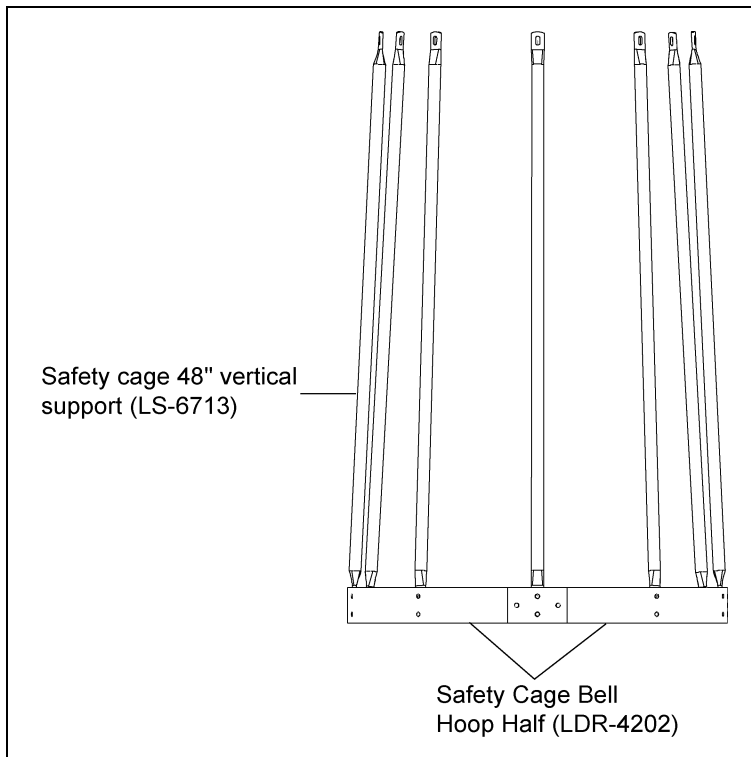
## 24"-48" Safety Cage Bell Sections

Attach the vertical supports to the hoop half assembly from the safety cage installation using 5/16" x 3/4" bolts and nuts (with the heads on the inside of the cage). Assemble the special bell safety cage hoop halves and attach to other end of vertical supports. The vertical supports will have to be bent at the flat area to allow for the angle of the bell section. Attach the safety cage brackets to the ladder as shown in the [General Detail Information on Page 12](#). Once the safety cage brackets are installed, attach the bell safety cage hoop half assembly to the safety cage brackets and tighten bolts.

**NOTE:** *The Safety cage bell section is to be used at the point of termination of the safety cage and should be just above the concrete (generally 7' to 8').*



**Figure 7U 24" Bell**



**Figure 7V 48" Bell**

## Ladder Support Detail

The ladder must be secured to the hopper support columns with ladder standoff brackets using support channels and ladder brackets as shown in [Figure 7W](#).

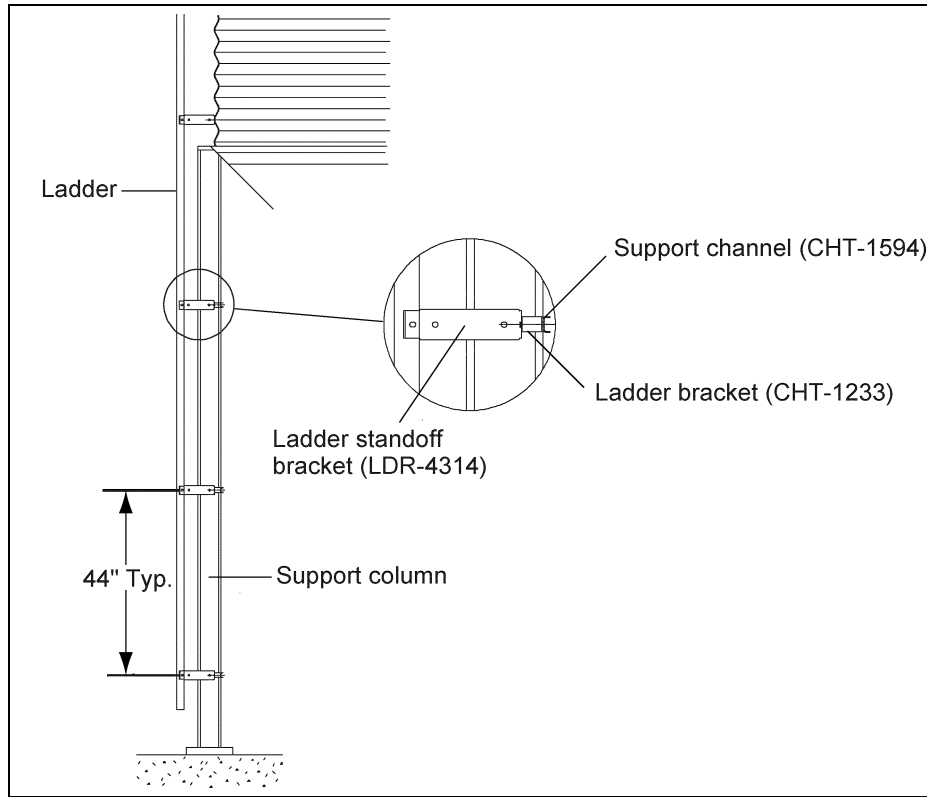


Figure 7W

Tank Diameter	Hopper Slope	No. of Support Channels	Hopper Ladder Brackets
18'	45	3	6
21'	45	4	8
24'	45	4	8

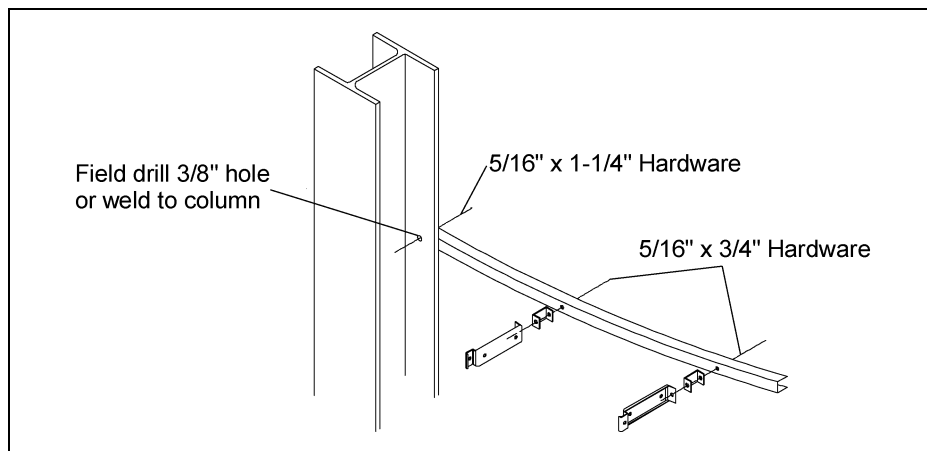


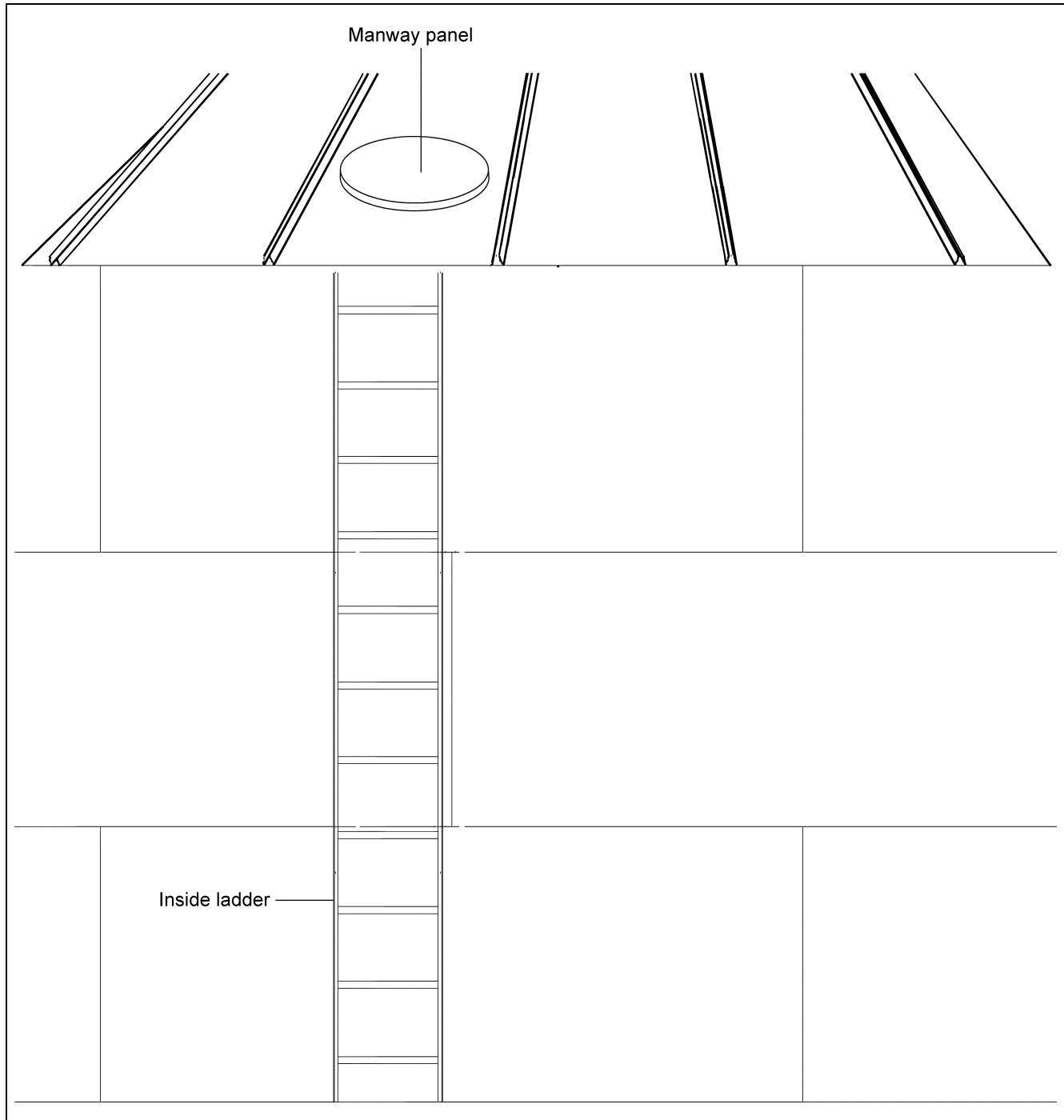
Figure 7X



## Inside Ladder Placement

### Inside Ladder Installation

The inside ladder package includes the ladders, starter brackets, and double the amount of standoff brackets. Position the ladder directly under the manhole roof panel as shown in [Figure 7Y](#) and install starter brackets as shown in [Figure 7Z](#). Place the standoff brackets vertically on the sidewall sheets every 22" using the horizontal seam holes for every other hole location. Use 5/16" x 3/4" bin bolts to attach the standoff brackets to the sidewall of the grain bin.



**Figure 7Y** Inside of Grain Bin

### Inside Starter Bracket and Ladder Placement

Refer to [Figure 7Z](#) and follow the correct dimensions as shown. The ladder starter brackets must be located in line with the horizontal seam. Check the 4' ladder section to make sure the ladder rung dimples are to the top. Attach to the starter brackets using the hole located 1" from top of the ladder. It will also be necessary to field drill a 3/8" hole on the ladder section for the starter bracket. Field drill this hole 2" below the pre-drilled hole that is 1" below the top of the ladder. ([See Figure 6AF on Page 68.](#)) All standoff brackets must be installed every 22" and attached to each 4' section required.

**NOTE:** Refer to [General Detail Information on Page 12](#) for additional details for standoff bracket to ladder assembly.

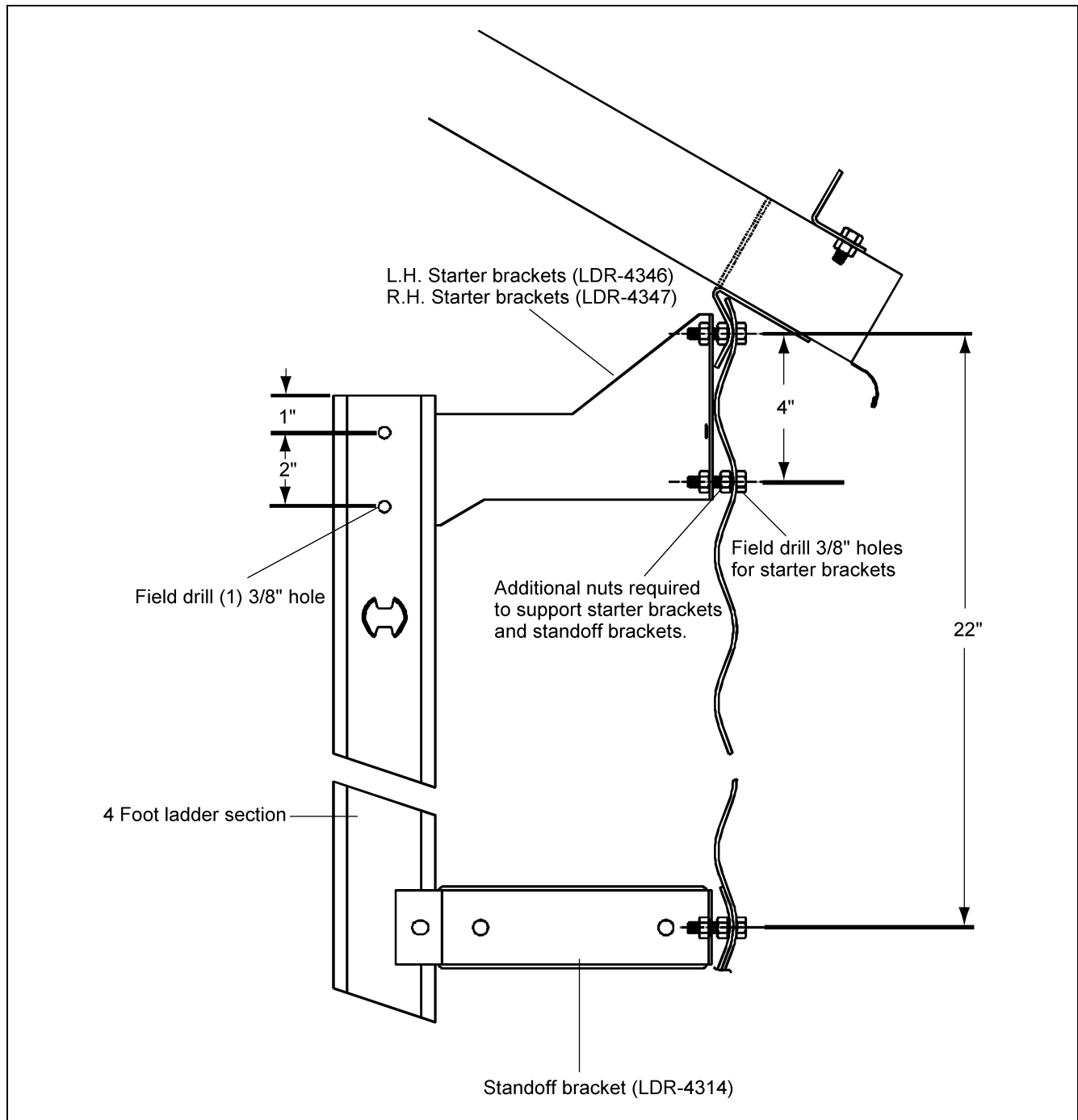


Figure 7Z Inside Starter Bracket and Ladder Placement

## Inside Ladder Standoff Bracket/Supports

### Inside Ladder Standoff Bracket Requirements

For the standoff brackets, field drill two (2) 3/8" diameter holes 18-3/4" apart directly in line with the horizontal seam holes. Continue down the sidewall with standoff brackets every 22".

*Refer to Figure 7AA.*

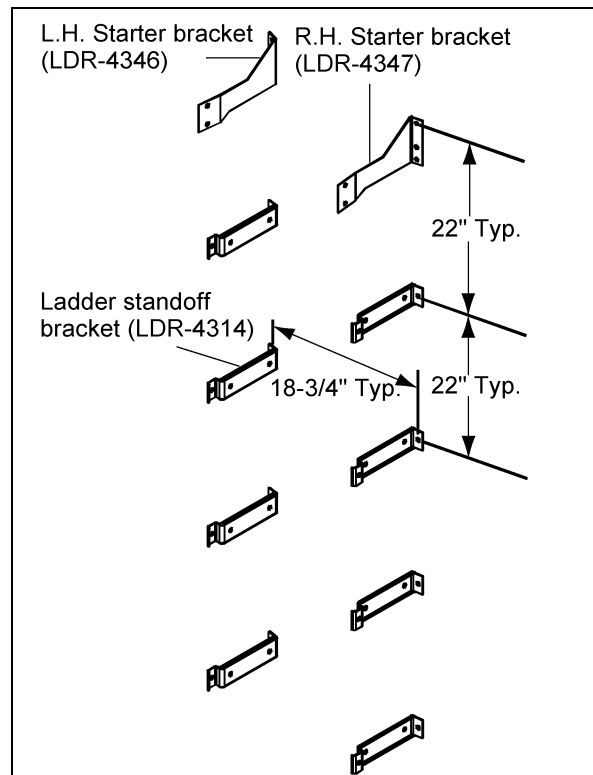


Figure 7AA

### Inside Ladder Supports

After completing the inside ladder, be sure to support the bottom of the ladder to the concrete. Depending on the actual installation, the amount of support required may vary. The supports are not supplied by the manufacturer. If a bin sweep is to be used in the grain bin, other considerations may be necessary to assure there is no interference with the equipment.

*Refer to Figure 7AB.*

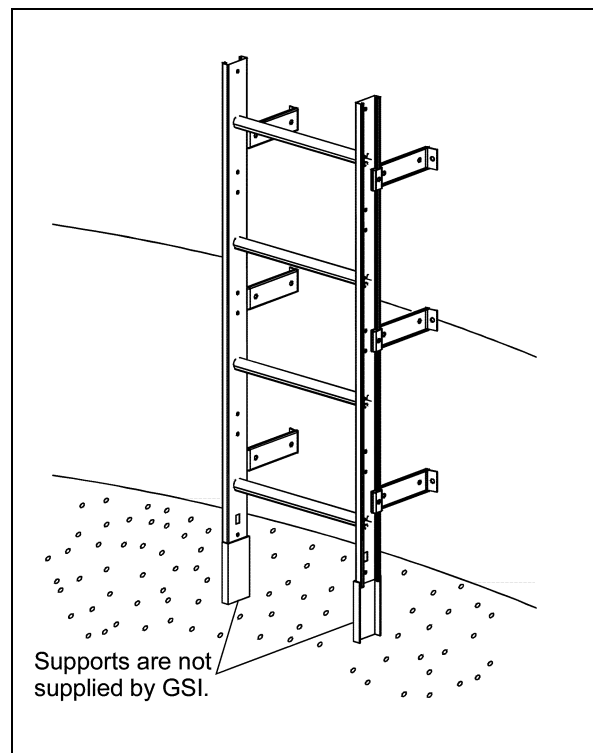


Figure 7AB



**4.00" CORRUGATED  
FARM-COM HOPPER  
TANKS (FCHT)  
7-9 RINGS**

## 4.00" Farm Commercial Hopper Tank (FCHT) Ladder and Platform Layout

### Ladder, Safety Cage, and Platform Location Chart

For Section A, find the proper ring grain bin and use the number of ladders and safety cages indicated. [See Chart below \(Section A\)](#). For Section B, find the proper diameter grain bin and hopper slope and use the number of ladders and safety cages indicated. [See Chart below \(Section B\)](#).

	Rings		
	7	8	9
<b>Section A</b>			
Platform Located in Ring:	1	1	1
4 Ft. Ladder Section	6	7	8
Bell Safety Cage	1	1	1
Safety Cage 4' Section	2	3	4
Bell Safety Cage Size	24"	24"	24"
<b>Dimension A</b>	228"	272"	316"

	Diameter		
	18'	21'	24'
<b>Section B</b>			
Hopper Slope:	45	45	45
4 Ft. Ladder Section	8	8	8
Bell Safety Cage	1	1	1
Safety Cage 4' Section	1	1	1
Bell Safety Cage Size	24"	48"	48"
<b>Dimension B</b>	176"	192"	204"

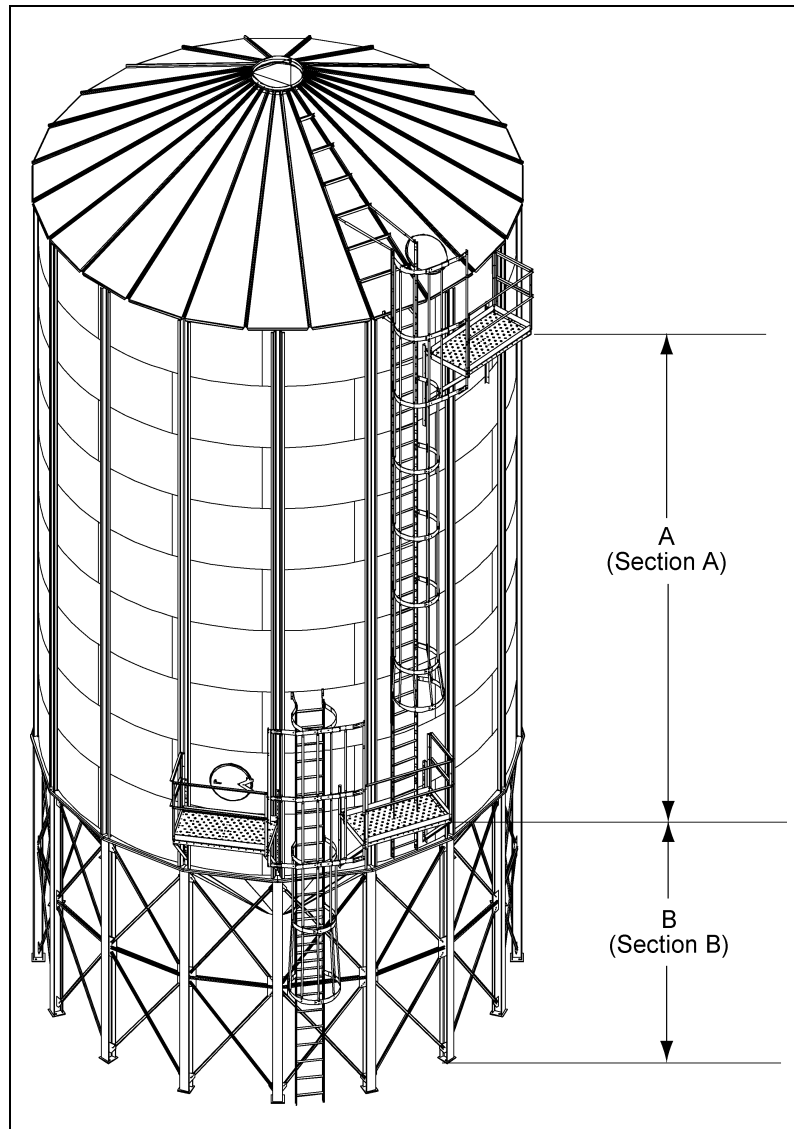


Figure 8A

## FCHT Ladder, Safety Cage, and Platform Instructions 7-9 Rings

All grain bin packages, from 7 ring to 9 ring and 18' to 24' diameter, contain the correct components for assembly. Read and follow the complete instructions for correct placement of parts. Be sure and use the charts to determine the appropriate number and size parts to be used based upon the number of rings in the bin. Failure to do so may result in an improper fit or shortage of parts. Pay particular attention to the location of ladders and platforms as they relate to the equipment and other structures in the area.

### Eave Starter Bracket Installation

Correct placement of the eave ladder starter bracket is critical to assure proper fit of all ladder components and to assure the correlation is correct between the platforms for proper installation of the access door platform. If the eave starter brackets are mislocated, standard installation of the access door platform will not be possible.

### Location of Field Drilled Holes for Eave Ladder Starter Brackets

The starter brackets must be located directly below the roof ladder. Before the starter brackets can be installed, two (2) 3/8" holes must be field drilled 4" below and directly in line with the top row of pre-punched horizontal holes. The first hole, for the left-hand starter bracket, must be located 9-3/8" from the center of the stiffener to the center of the hole. The second hole, for the right-hand bracket, must be located 18-3/4" from the center of the first hole. *Refer to Figure 8B* for the proper location of the two (2) 3/8" field drilled holes required to install the starter brackets.

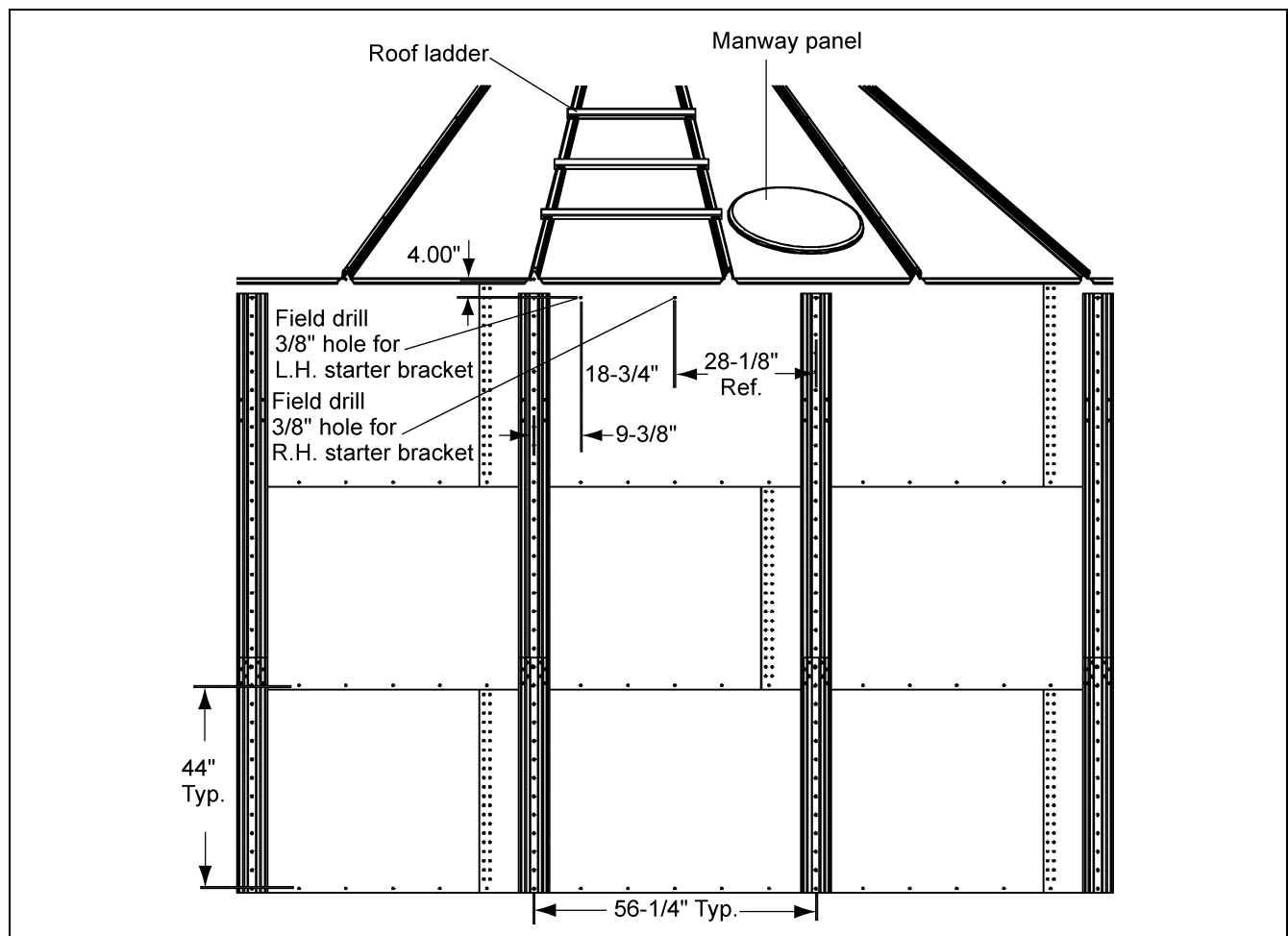


Figure 8B

### Eave Starter Bracket and Ladder Assembly with Safety Cage

Once the two (2) 3/8" holes have been field drilled, attach the starter brackets to the sidewall as shown in [Figure 8C](#). Check the top ladder section to make sure the ladder rung dimples are to the top. Attach starter brackets to the top of the ladder. [See General Detail Information on Page 12](#) for the proper installation of additional ladder sections required. Standoff brackets must be installed on the ladder sections and attached to the sidewall at each horizontal seam and repeated every 44". Use 5/16" x 3/4" bin bolts for all connections. It is also necessary to field drill a 3/8" hole on the ladder section for each starter bracket (L.H. and R.H.).

**NOTE:** [Refer to General Detail Information on Page 12](#) for additional details for standoff bracket to ladder assembly and also, 8' extension rail installation (omitted in detail for clarity).

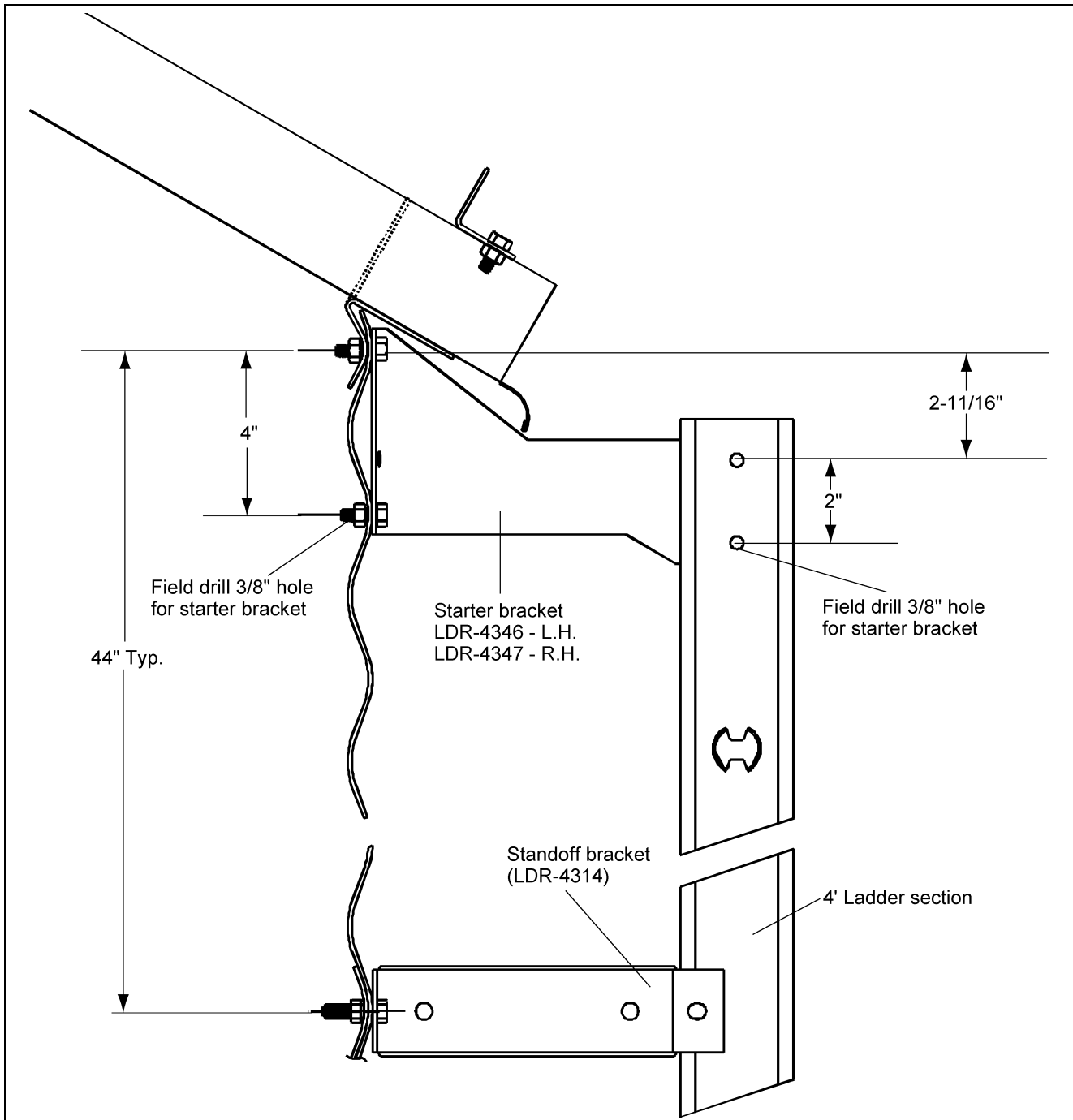
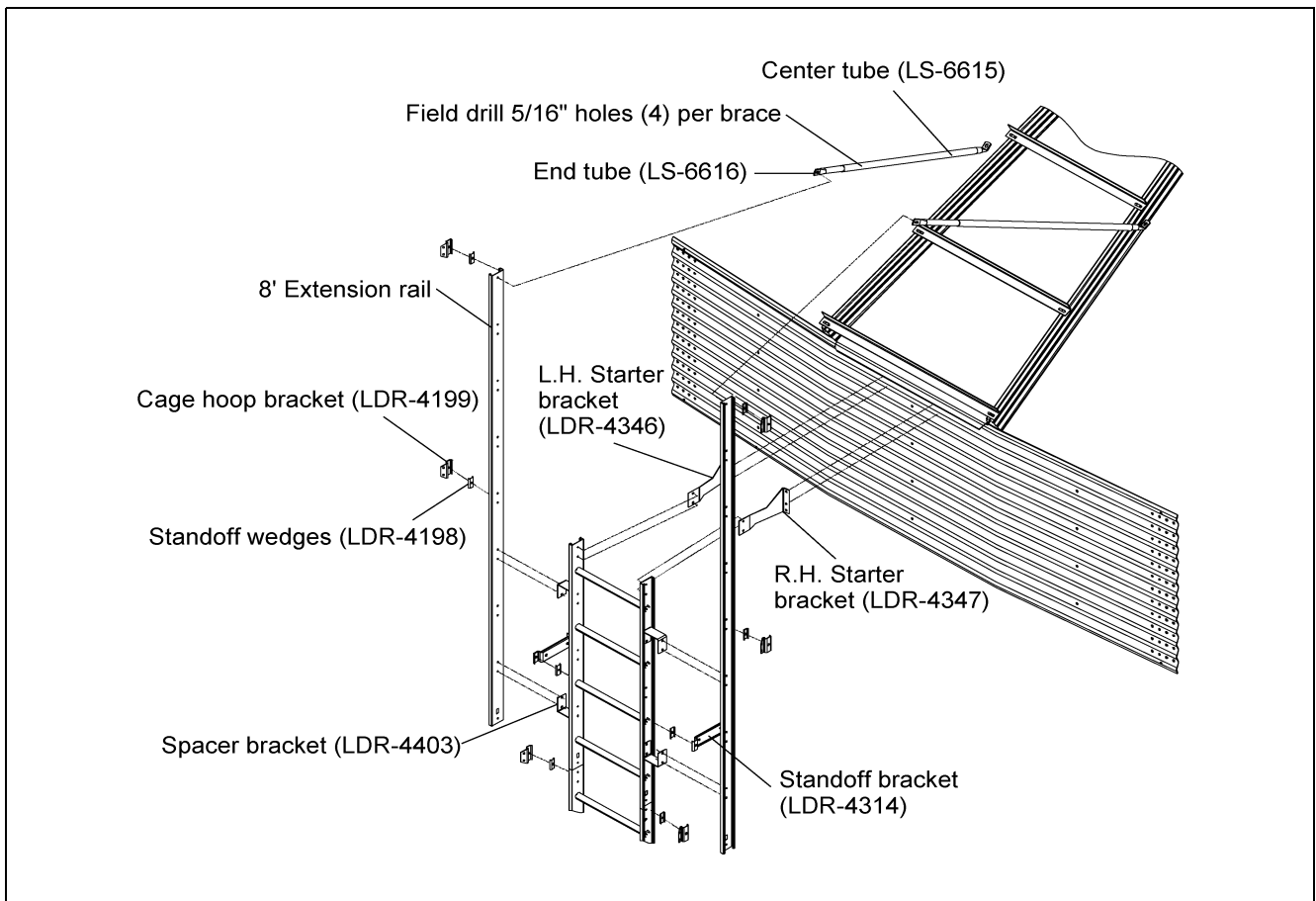
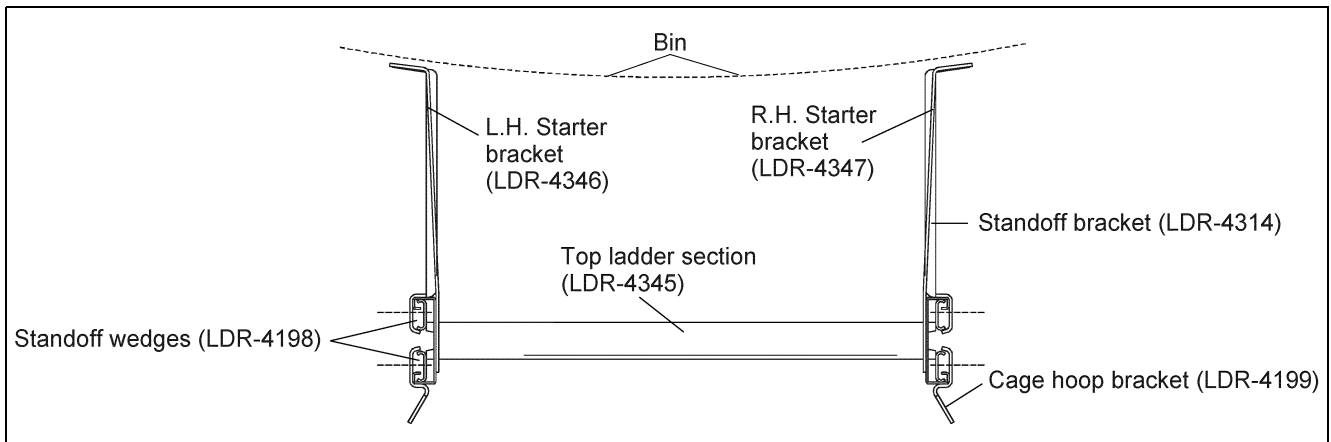


Figure 8C

## 8. 4.00" Corrugation Farm Commercial Hopper Tank (FCHT) 7-9 Rings



**Figure 8D**



**Figure 8E** Ladder and brackets as viewed from top of bin



### Eave Adjustable Braces

The eave adjustable braces must be attached at this time. An eave adjustable brace is comprised of one (1) larger diameter tube and two (2) smaller tubes. (See [Figure 8F.](#)) Slip the smaller tubes inside the larger tubes and attach one (1) smaller tube to the top of the ladder extension rail. Adjust the other smaller tube so the bottom of the flattened tube reaches the roof panel. Field drill four (4) 5/16" holes through both large and small tubes and bolt together using 1/4" x 1-1/2" bolts and nuts. This prevent the adjustable braces from slipping. (See [Figure 8G.](#))

**NOTE:** Refer to [Page 95](#) for proper location of ladder starter brackets.

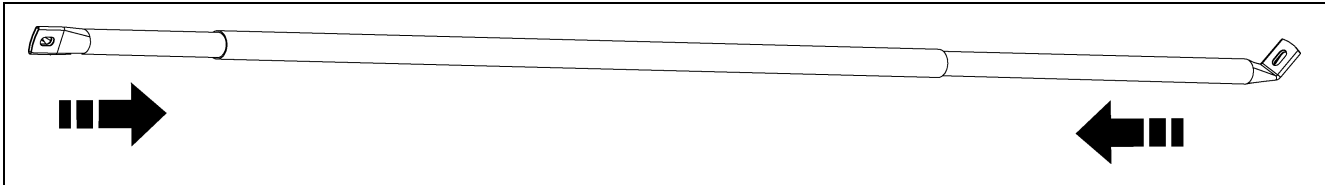


Figure 8F

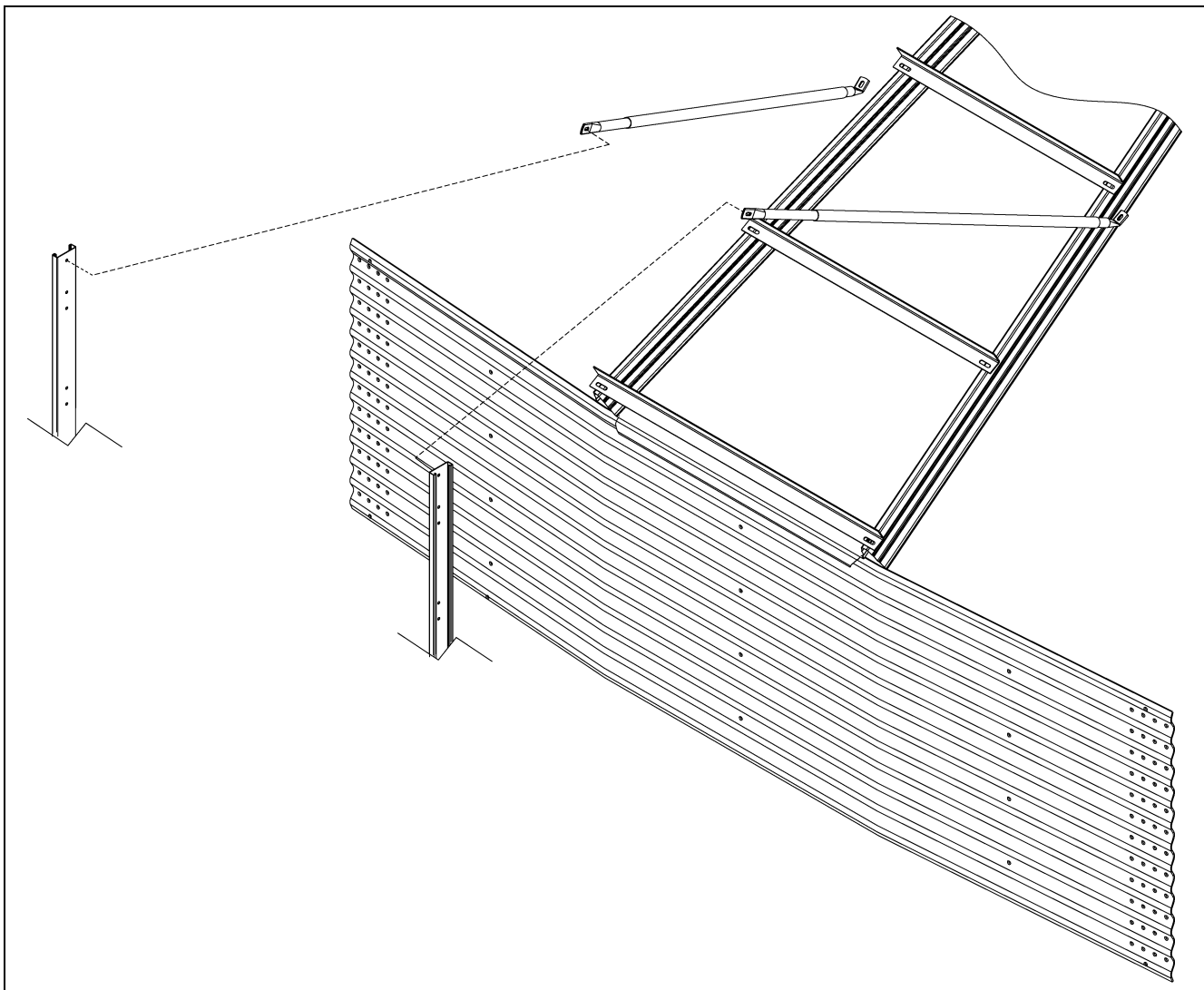


Figure 8G

**NOTE:** Refer to [General Detail Information on Page 12](#) for additional details for standoff bracket to ladder assembly and cage hoop bracket to ladder.

### Eave Platform Mounting Angle Installation

Figure 8H shows the location of the platform mounting angles. Each angle must be mounted starting 8" above the top horizontal seam of the second ring with the first mounting angle offset 9-3/8" from the right hand starter bracket. The second mounting angle must be located 56-1/4" from the first mounting angle. The dimensions and locations of these angles are critical for proper fit of all parts. Using the platform mounting angles as guides, field drill 3/8" holes in the sidewall every 8". (See Figure 8H.)

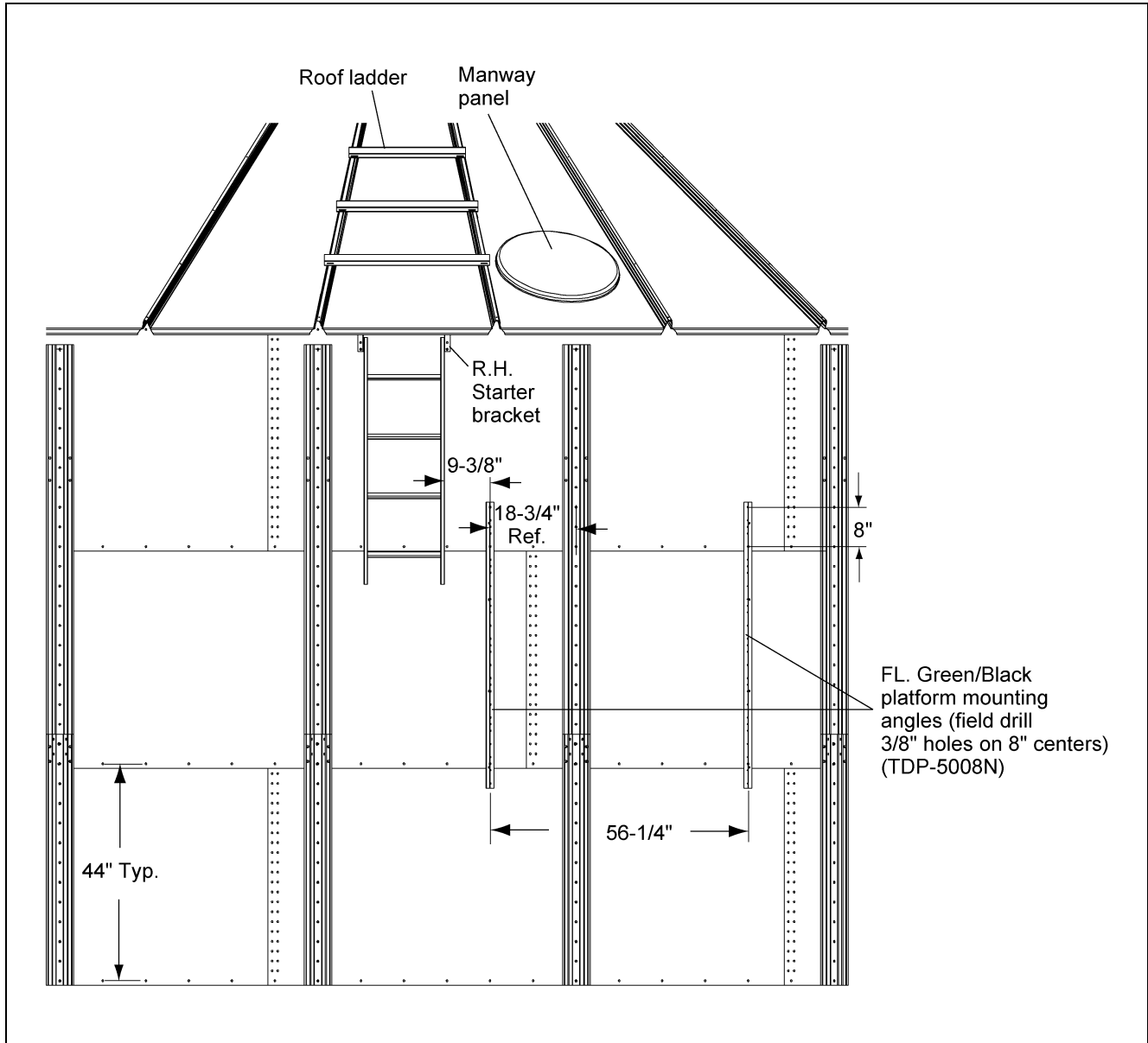
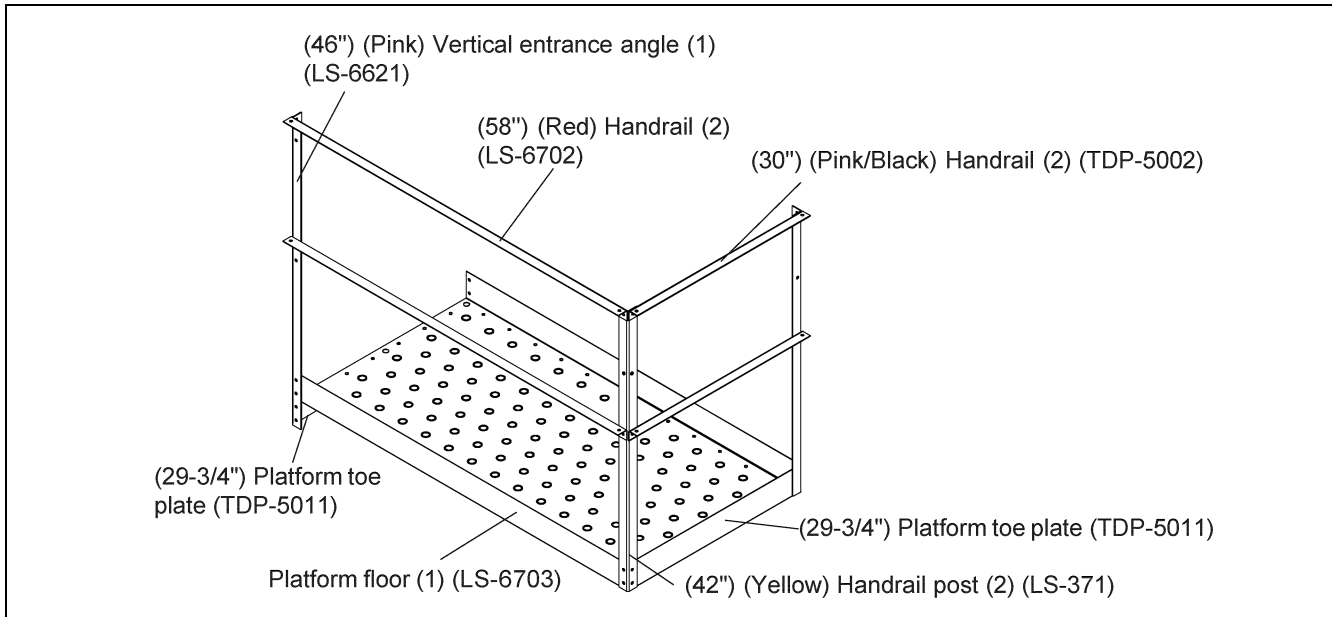


Figure 8H

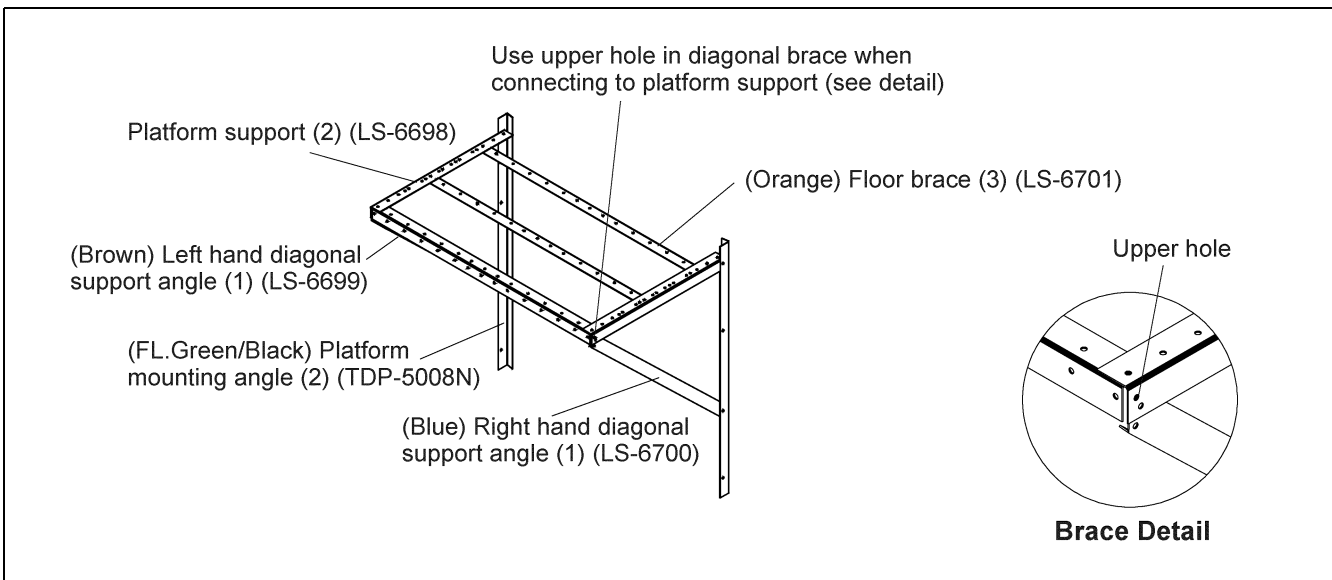
## Eave Platform and Platform Support Assembly

**NOTE:** Mount the platform mounting angles on the bin first. Next, assemble the platform floor onto the support frame. Do not tighten platform support to floor brace bolts until the floor and toe plates are secure.

Assemble the platform support frame using 5/16" x 3/4" truss head bolts and nuts. When attaching the platform mounting angles to the sidewall, locate the vertical supports according to the instructions on previous pages. Align holes on the platform floor with the holes on platform supports and bolt together using 5/16" x 3/4" truss head bolts and nuts. Attach platform toe plates at the same time as attaching the platform floor. The vertical entrance angle bolts to the platform floor, toe plate and platform support. The handrail post bolts to the platform floor and toe plate as shown in [Figure 8I](#).



**Figure 8I** Eave Platform



**Figure 8J** Eave Platform Support Assembly

## Eave Safety Cage Hoop Assembly

Before attaching any pieces to the ladders or platform, some pre-assembly is required. Attach two (2) safety cage brackets to the 8' extension rail and one (1) safety cage bracket to the second 4' ladder section as shown in [Figure 8K](#). (See [Page 52](#) for assembly details.) Bolt the safety cage hoop adjuster plates onto the extension angle as shown in [Figure 8K](#). Using the proper configuration depending on the bin diameter (See [Adapter Assembly Detail on Page 101](#)), bolt the safety cage hoop adapters together and attach to the safety cage hoop halves. Be sure to use the 5/16" x 3/4" bolt with the head of the bolt to the inside of the safety cage. Bolt these assemblies to the safety cage brackets and hoop adjuster plates (See [Connection Detail on Page 101](#) for proper hole location). Tighten bolts as you go. The bottom assembly requires two (2) hoop halves and will be positioned just below the platform as shown in [Figure 8K](#). Use the safety cage hoop adjuster angle to secure the two (2) hoop half assemblies to the vertical entrance angle on the platform assembly.

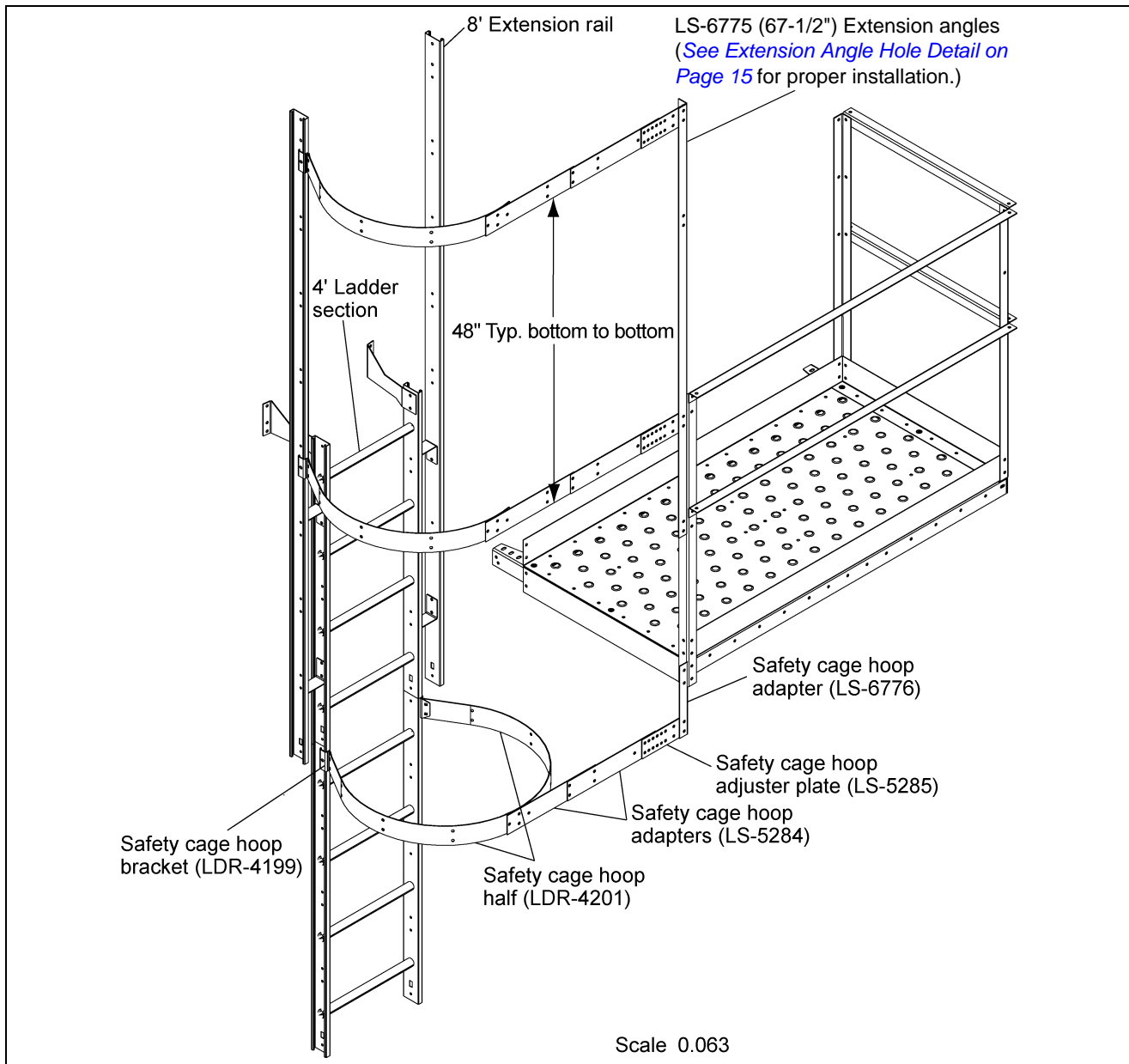
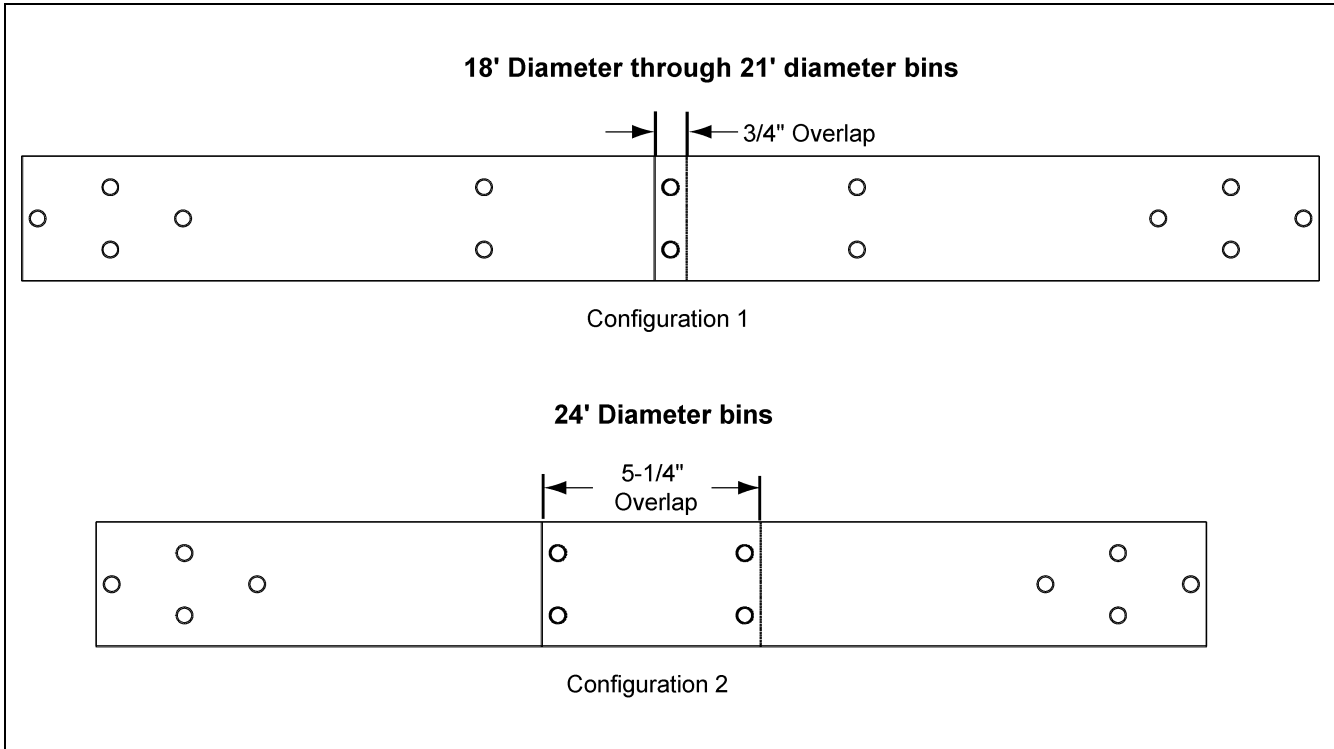


Figure 8K

**NOTE:** 48" vertical supports removed in [Figure 8K](#) for clarity.

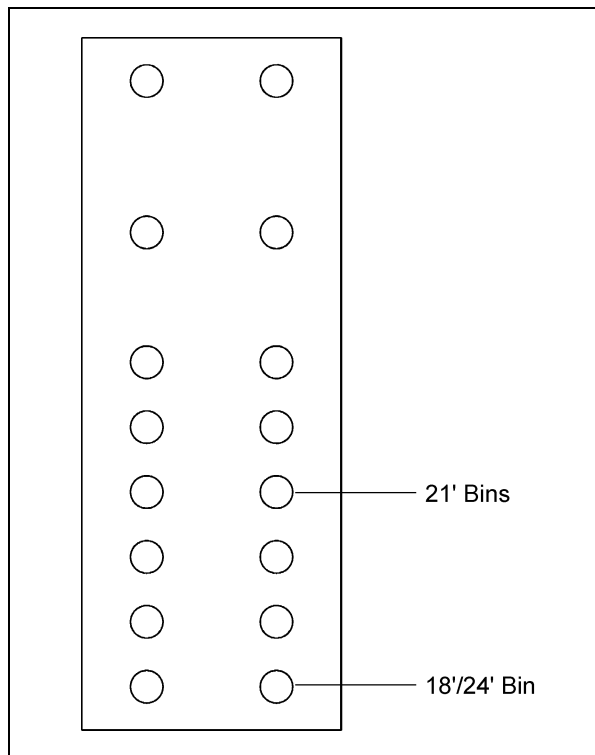
## Adapter Assembly Detail



**Figure 8L** 18' Diameter through 21' Diameter Bins

## Connection Detail

Use [Figure 8M](#) to determine the proper holes to use when attaching the hoop adapter to the adjuster plate.



**Figure 8M**

### Vertical Supports

After all three (3) hoop assemblies are in place, you may attach the 48" vertical supports from hoop assembly to hoop assembly, as shown in [Figure 8N](#). This requires ten (10) supports, five (5) between each set of hoops. The second set of vertical supports must be bent at the flat area to allow for the tapering of the bottom hoop assembly. Use 5/16" x 3/4" bolts (unless otherwise noted) with the head of the bolt to the inside of the safety cage.

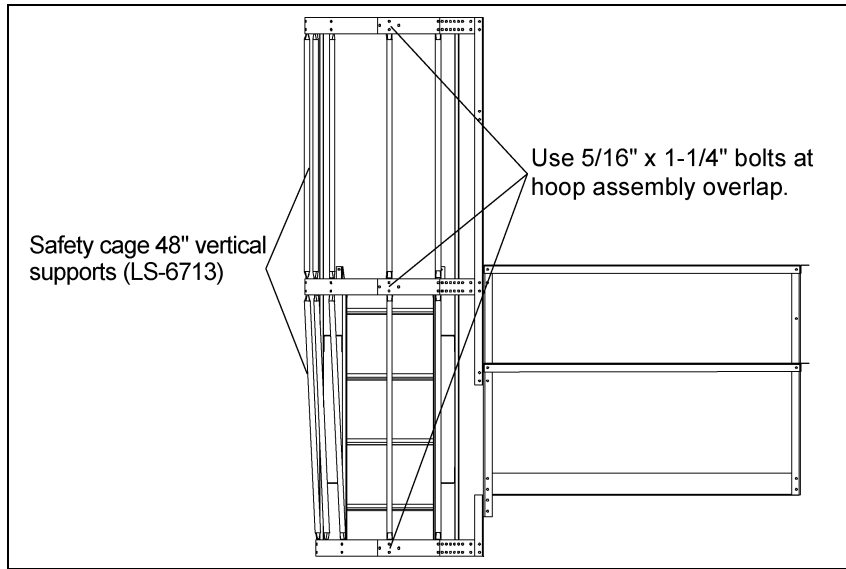


Figure 8N Vertical Supports

### 48" Safety Cage

Attach the vertical support pieces to the existing hoop halves above using the 5/16" x 3/4" bolts and nuts (with the heads on the inside of the cage). Fasten two (2) hoop halves together and bolt to other end of vertical supports. Attach cage hoop brackets to ladder, [See General Detail Information on Page 12](#) for proper attachment. Once cage hoop brackets have been installed, attach cage hoop halves and tighten bolts. Repeat installation for each safety cage required.

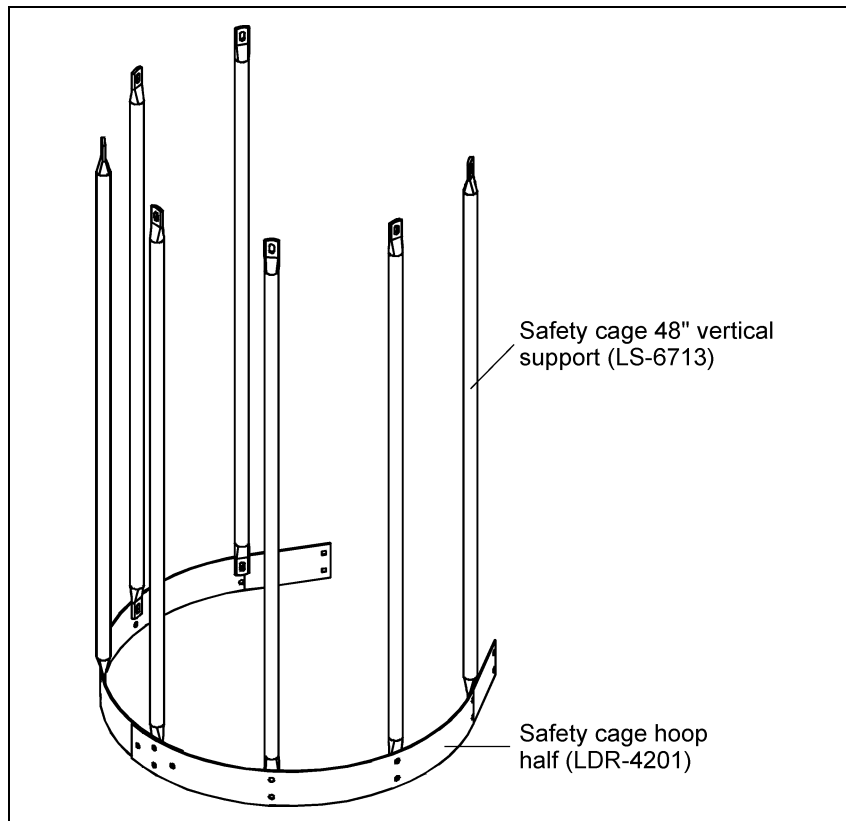
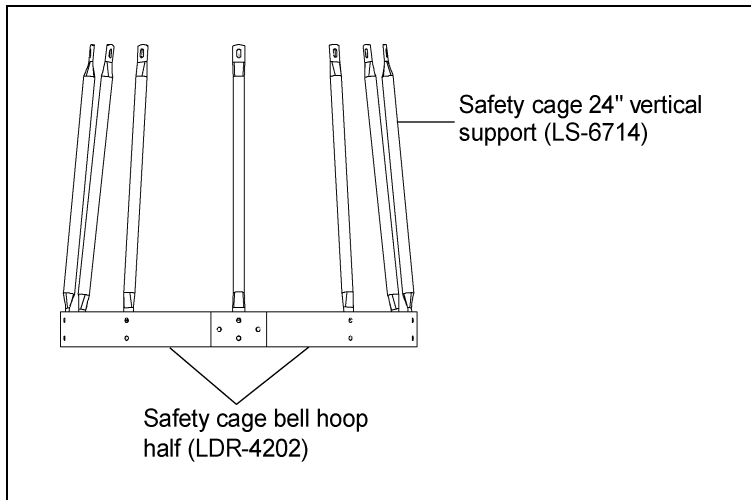


Figure 8O 48" Safety Cage

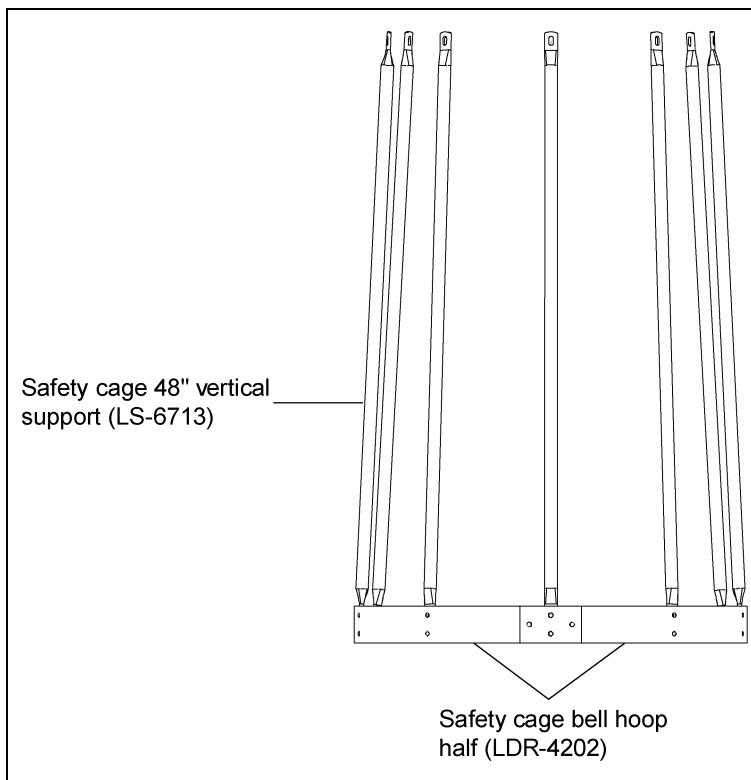
## 24"-48" Safety Cage Bell Sections

Attach the vertical supports to the hoop half assembly from the final safety cage installation using 5/16" x 3/4" bolts and nuts (with the heads on the inside of the cage). Assemble the special bell safety cage hoop halves and attach to other end of vertical supports. The vertical support must be bent at the flat area to allow for the angle of the bell section. Attach the safety cage brackets to the ladder as shown in the [General Detail Information on Page 12](#). Once the safety cage brackets are installed, attach the bell safety cage hoop half assembly to the safety cage brackets and tighten bolts.

**NOTE:** *The safety cage bell section is to be used at the point of termination of the safety cage and should be just above the base platform (generally 7' to 8').*



**Figure 8P 24" Bell**



**Figure 8Q 48" Bell**

## Access Door/Base Platform Mounting Angle Installation

Figure 8R shows the location of the access door platform mounting angles. All four (4) angles must be mounted starting 16" above the top horizontal seam of the bottom ring with the first mounting angle directly in line with the left-hand eave mounting angle. The second mounting angle must be located 56-1/4" to the left of the first mounting angle. The remaining two (2) mounting angles will be installed in the stiffeners located on each side of the access door. When installed correctly, there should be 37-1/2" between the two (2) sets of mounting angles. Pay careful attention when installing these angles. The dimensions and locations of these angles are very critical to assure proper fit of all parts.

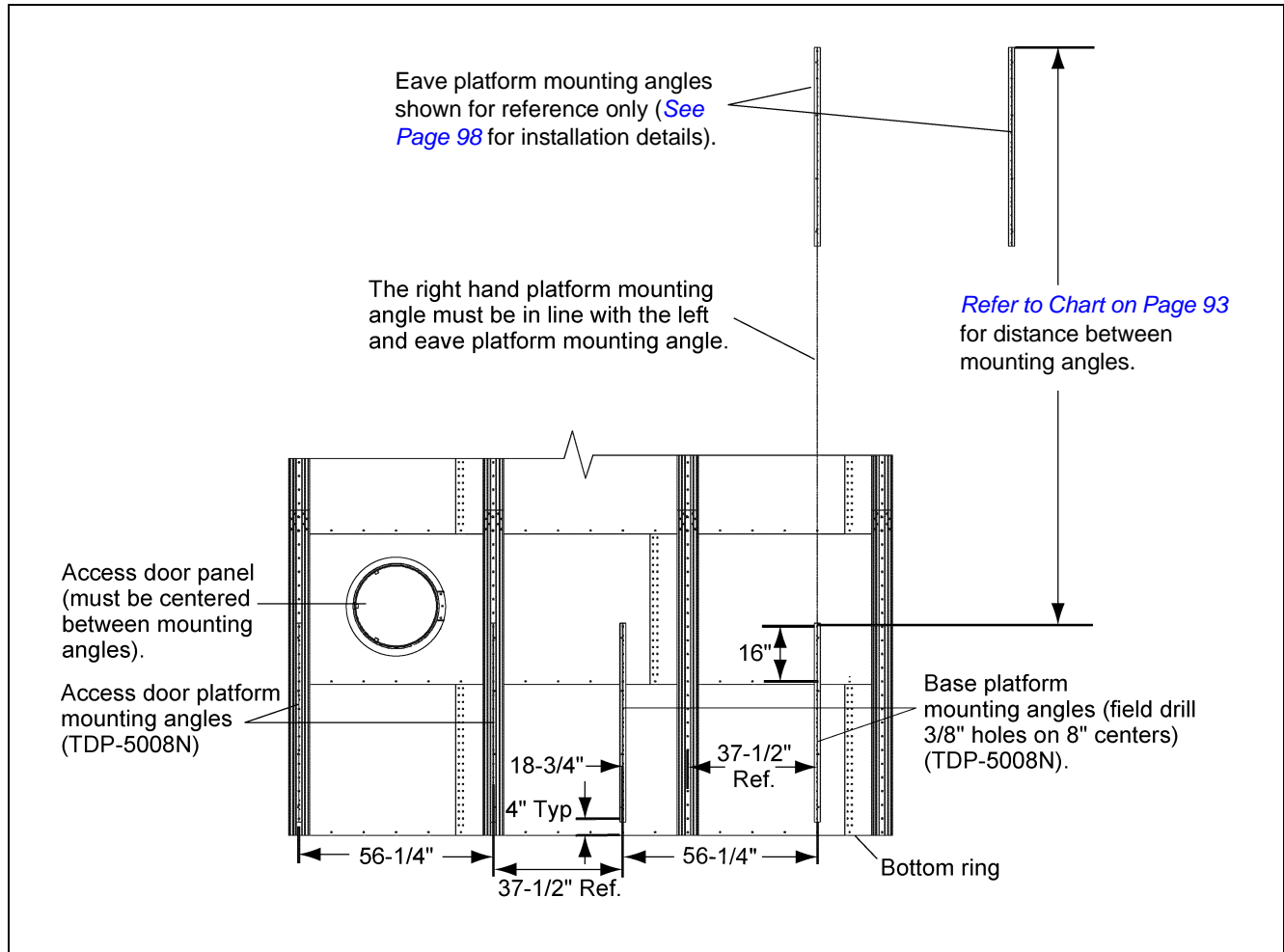


Figure 8R



## Location of Field Drilled Holes for Base/Access Door Ladder Starter Brackets

Before the starter brackets can be installed, two (2)  $\frac{3}{8}$ " holes must be drilled. The holes must be located 4" below and directly in line with the top horizontal seam holes located in the 3<sup>rd</sup> ring from the bottom of the tank. The first hole, required for the right-hand starter bracket, must be located  $9\frac{3}{8}$ " from the center of the left-hand base platform mounting angle to the center of the hole. The second hole, required for the left-hand bracket, must be located  $18\frac{3}{4}$ " from the center of the first hole. When located correctly, the holes will be centered between the two (2) sets of mounting angles. *Refer to Figure 8S* for the proper location of the two (2)  $\frac{3}{8}$ " field drilled holes required to install the starter brackets.

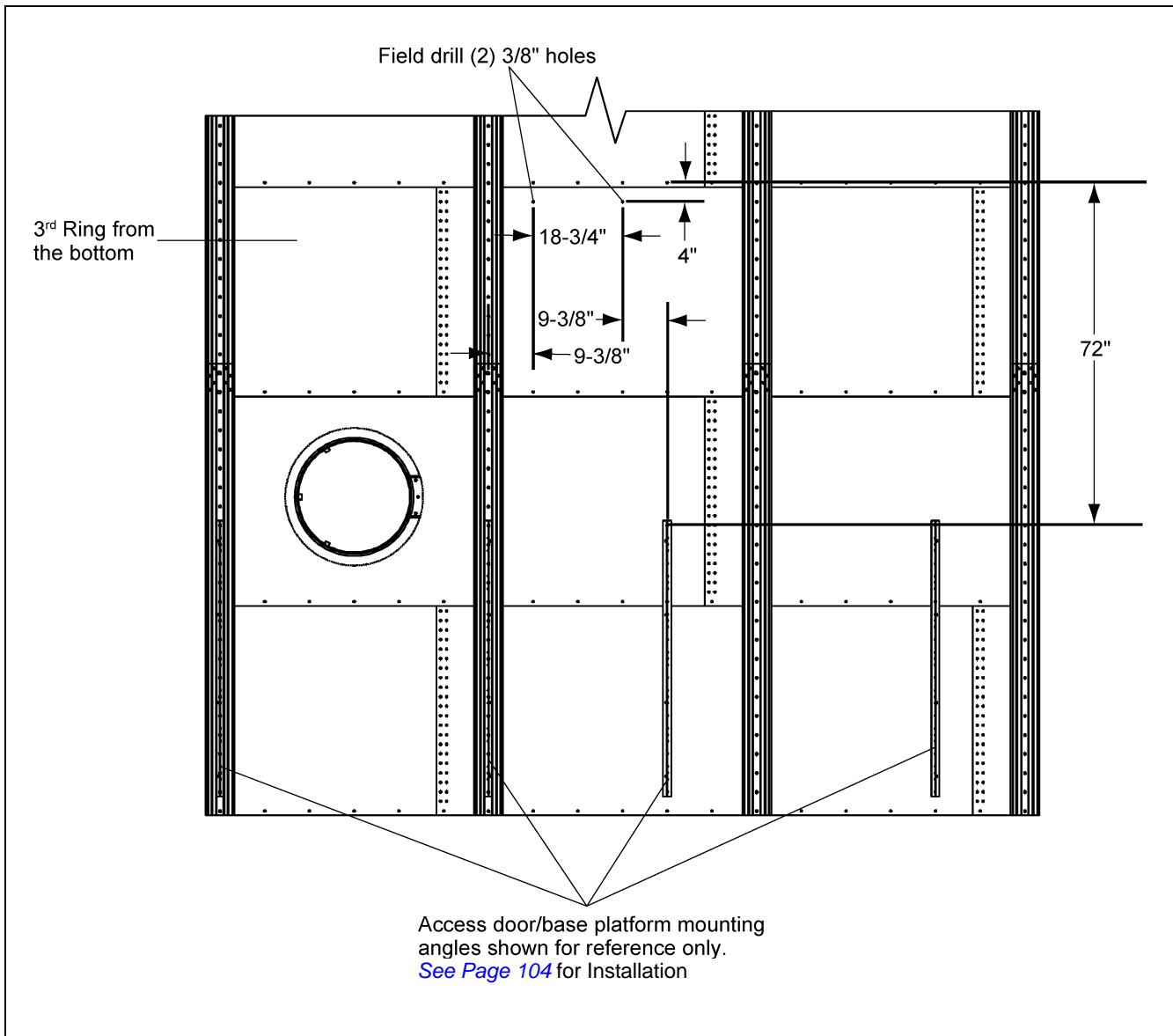


Figure 8S

## Base/Access Door Starter Bracket and Ladder Assembly with Safety Cage

Once the two (2) 3/8" holes have been drilled, attach the starter brackets to the sidewall as shown in [Figure 8T](#). Check the top ladder section to make sure the ladder rung dimples are to the top surface and attach to the starter brackets using the holes located 1" from the top of the ladder. [See General Detail Information on Page 12](#) for installation of additional ladder sections required. Now, standoff brackets must be installed on the ladder sections and attached to the sidewall at each horizontal seam (repeating every 44") until reaching the ground. (Use 5/16" x 3/4" bin bolts for all connections.)

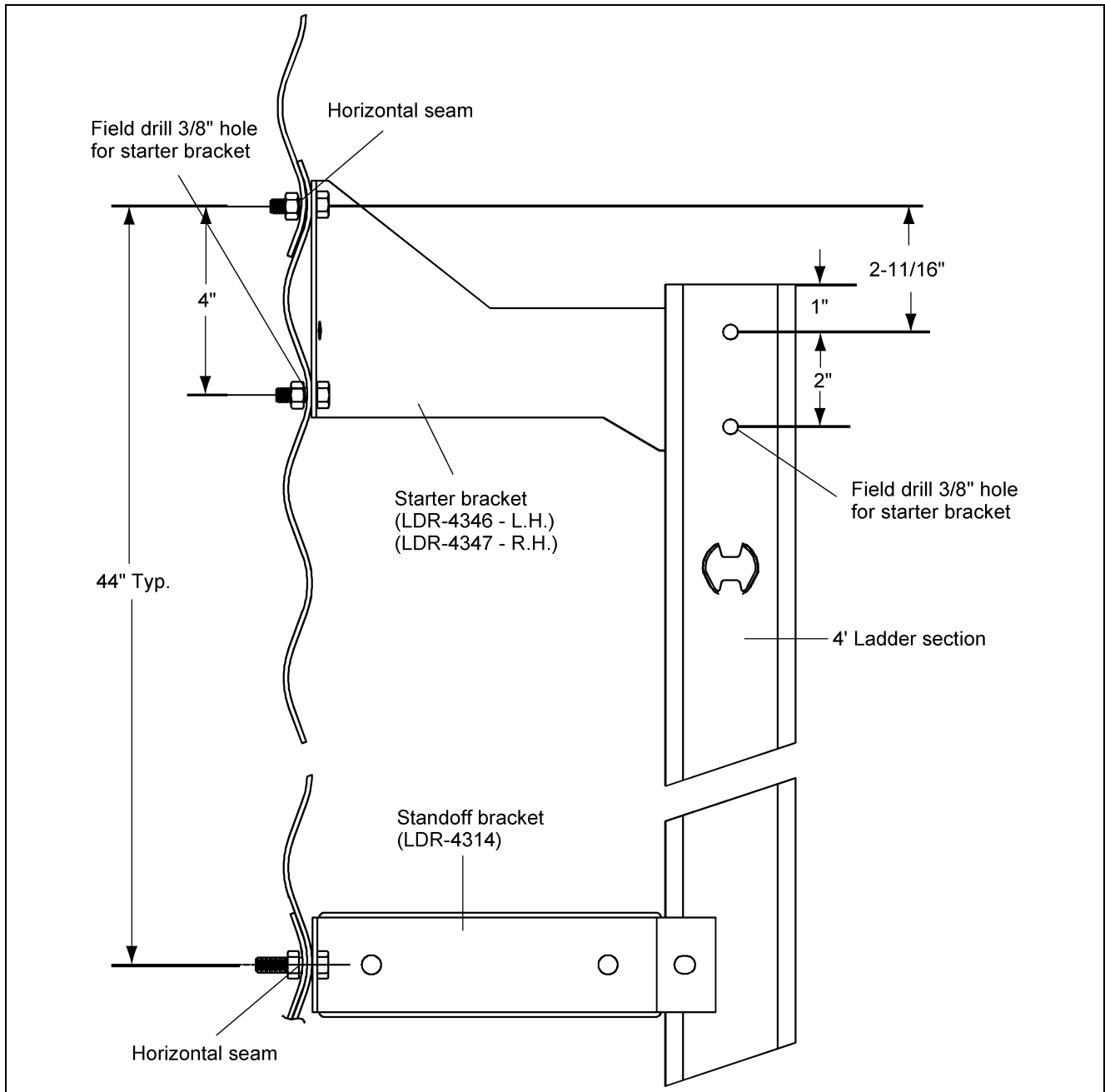


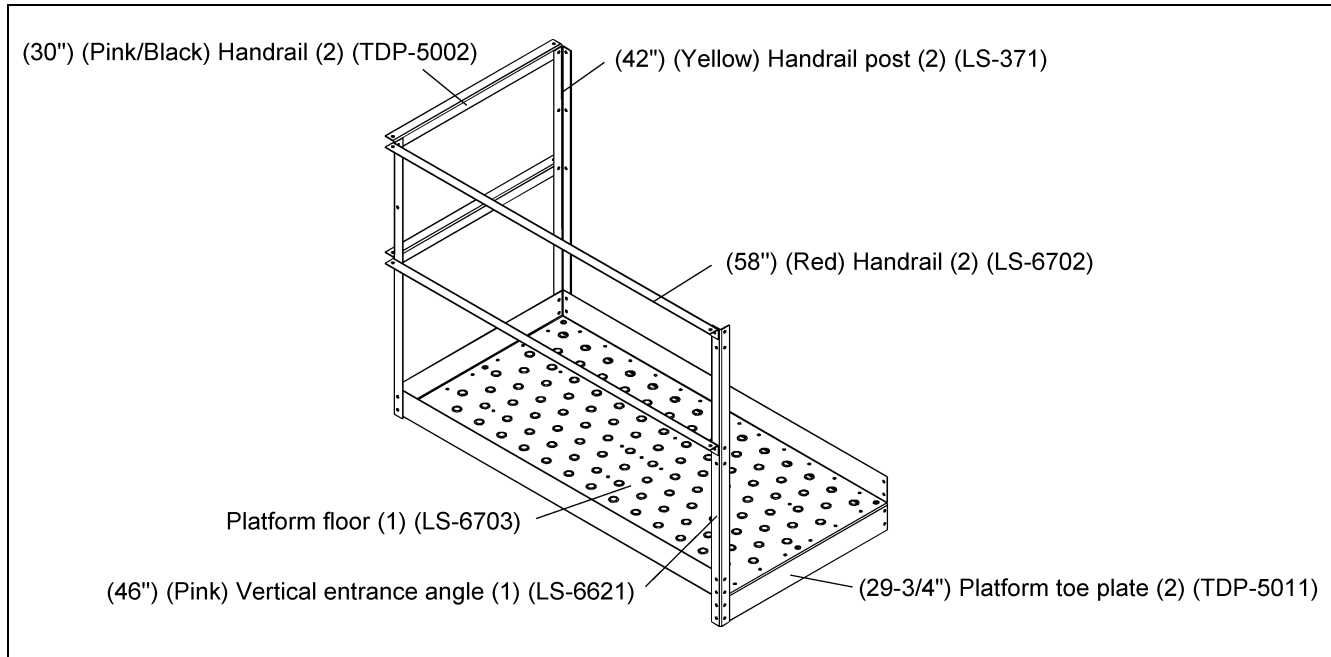
Figure 8T

**NOTE:** [Refer to General Detail Information on Page 12](#) for additional details for standoff bracket to ladder assembly and ladder section assembly.

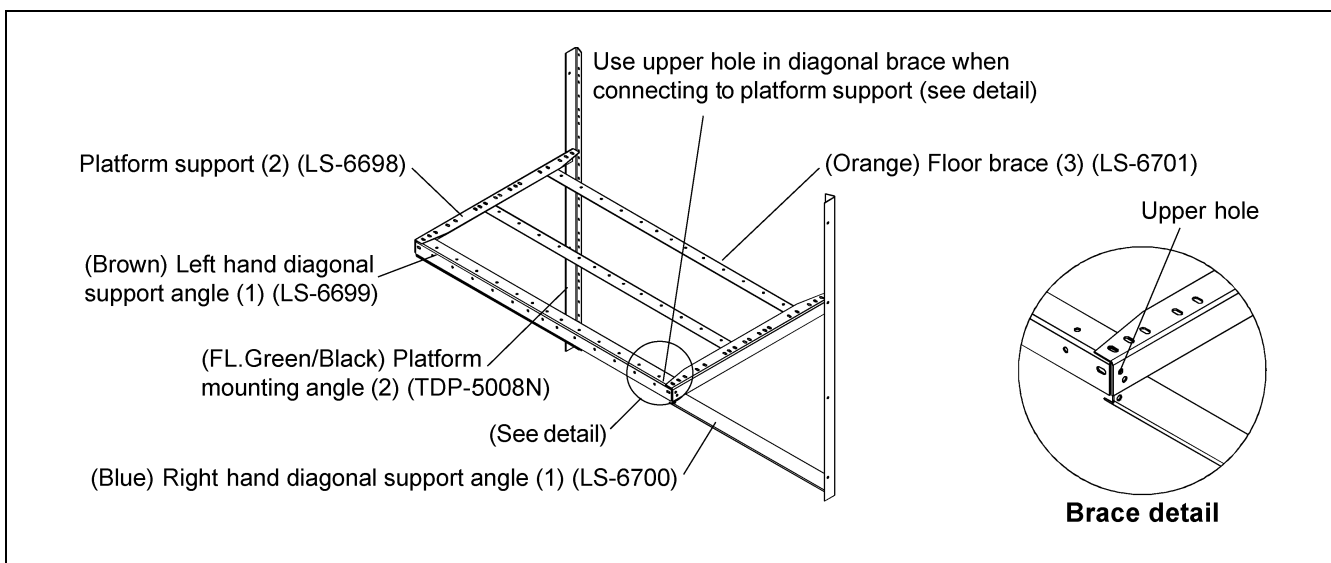
## Access Door Platform and Platform Support Assembly

**NOTE:** The platform mounting angles should be mounted on the bin first. The platform floor should then be assembled onto the support frame. Leave platform support to floor brace bolts loose until floor and toe plates are secure.

Assemble the platform support frame using 5/16" x 3/4" truss head bolts and nuts. When attaching platform mounting angles to stiffeners, locate the mounting angles according to the instructions on Page 104. Align holes on the platform floor with the holes on platform supports and bolt together using 5/16" x 3/4" truss head bolts and nuts. Attach platform toe plates at the same time as attaching the platform floor. The vertical entrance angle bolts to the platform floor, toe plate and platform support. The handrail post bolts to the platform floor and toe plate as shown in Figure 8U.



**Figure 8U** Access Door Platform



**Figure 8V** Access Door Platform Support Assembly

## Base Platform and Platform Support Assembly

**NOTE:** The platform mounting angles should be mounted on the bin first. The platform floor should then be assembled onto the support frame. Leave platform support to floor brace bolts loose until floor and toe plates are secure.

Assemble the platform support frame using 5/16" x 3/4" truss head bolts and nuts. When attaching platform mounting angles to sidewall, locate the mounting angles according to the instructions on Page 104. Align holes on the platform floor with the holes on platform supports and bolt together using 5/16" x 3/4" truss head bolts and nuts. Attach platform toe plates at the same time as attaching the platform floor. the vertical entrance angle bolts to the platform floor, toe plate and platform support. The handrail post bolts to the platform floor and toe plate as shown in Figure 8W.

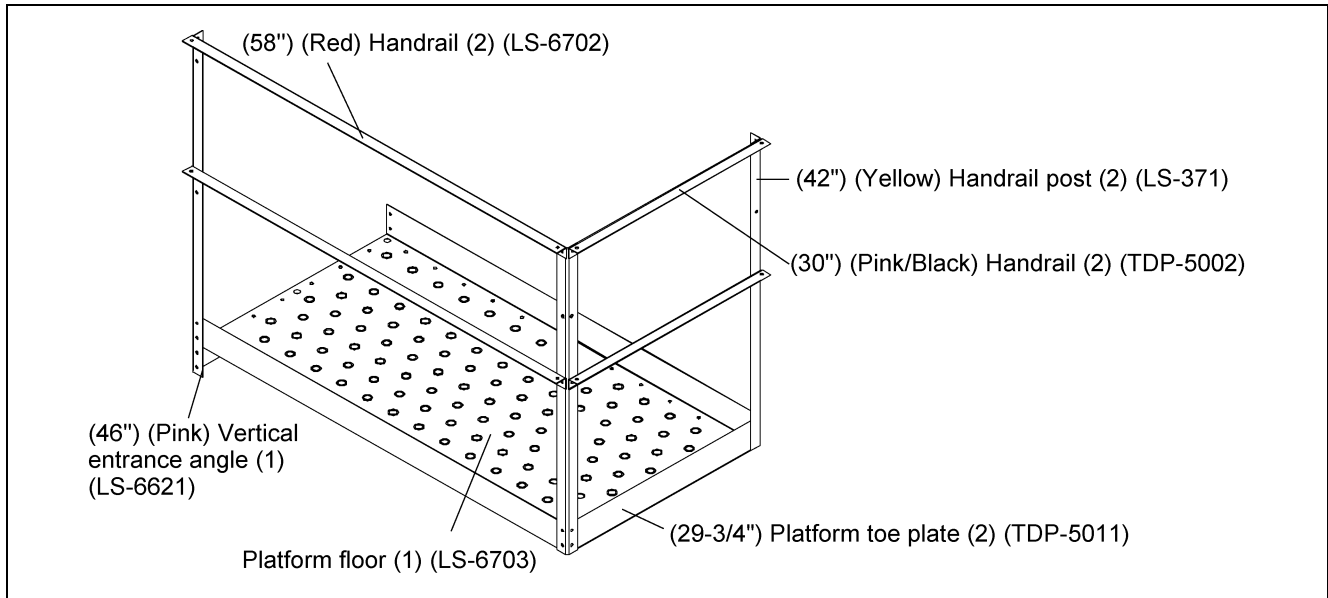


Figure 8W Base Platform

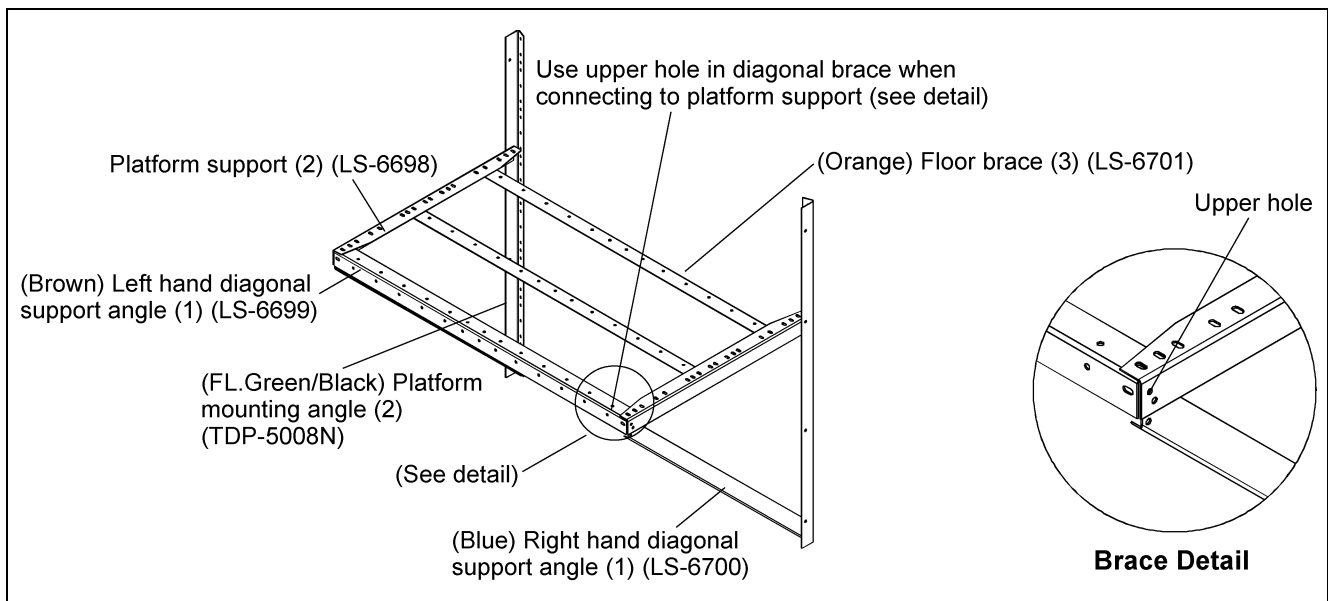


Figure 8X Base Platform Support Assembly

## Access Door/Base Safety Cage Hoop Assembly

Before attaching any pieces to the ladder or platform, some pre-assembly is required. Attach the safety cage brackets to the ladder section. (*See General Detail Information on Page 12* for proper installation instructions). Bolt the safety cage hoop adjuster plates onto the extension angle as shown in *Figure 8Y*. For the middle hoop assembly, bolt the safety cage hoop adapters and safety cage hoop half together using the proper holes, based upon the bin diameter. (*See Page 101.*) Be sure to use the 5/16" x 3/4" bolt with the head of the bolt to the inside of the safety cage. Bolt this assembly to the safety cage bracket and hoop adjuster plate, tighten as you go. Use the safety cage hoop adjuster angle to secure the two (2) hoop half assemblies to the vertical entrance angle on the platform assembly. To finish the installation, secure the bottom hoop assembly to the vertical entrance angle on the platform assembly.

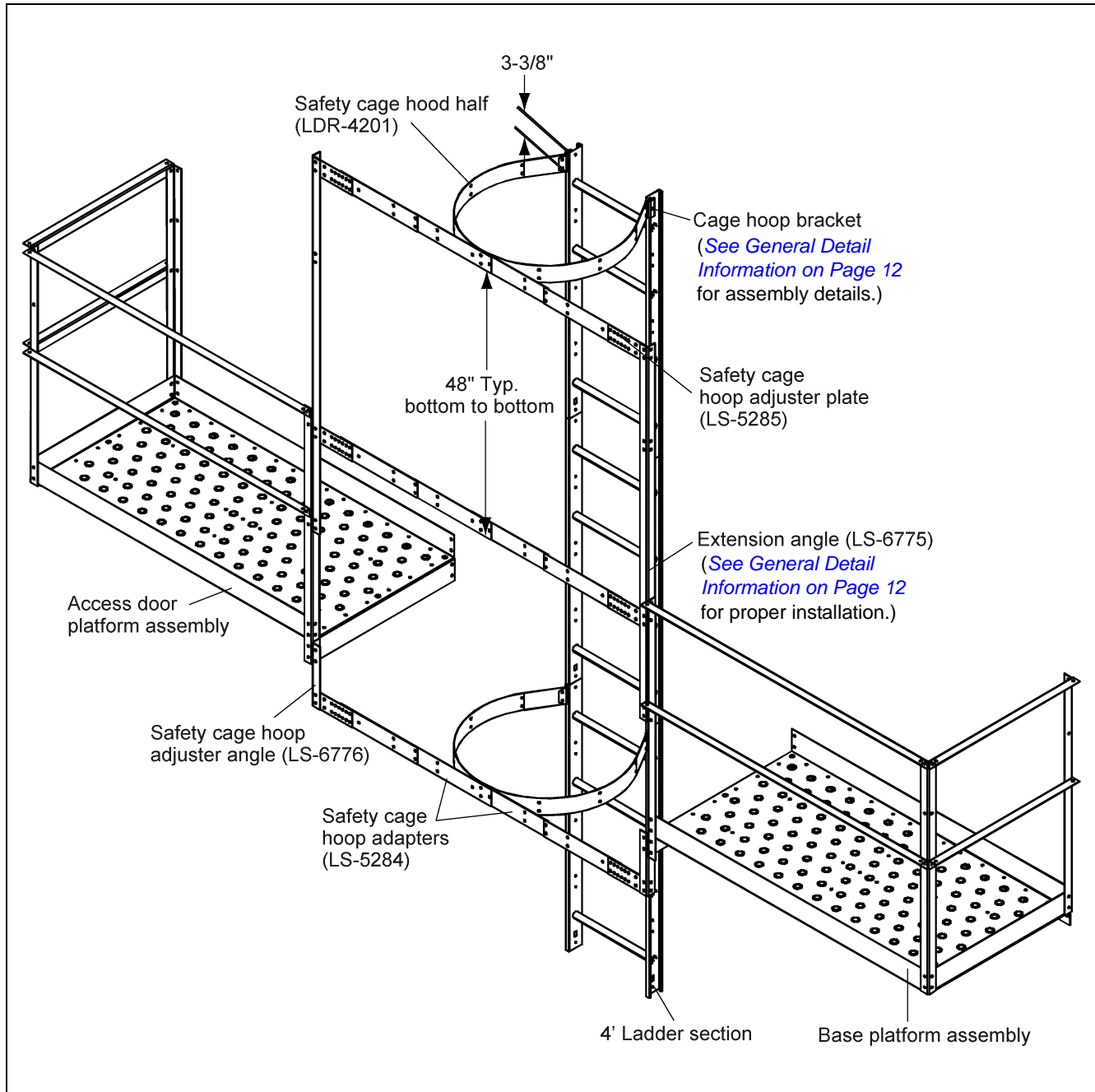


Figure 8Y

## Access Door/Base Platform Vertical Supports

After completing the safety cage frame, attach the 48" vertical supports from adapter plate to adapter plate as shown in [Figure 8Z](#). This will require ten (10) supports, five (5) between each set of adapter plates. Bolts should have the head of the bolt to the inside of the safety cage. [Refer to Pages 102 and 103](#) for safety cage and bell cage installation to complete access door ladder assembly.

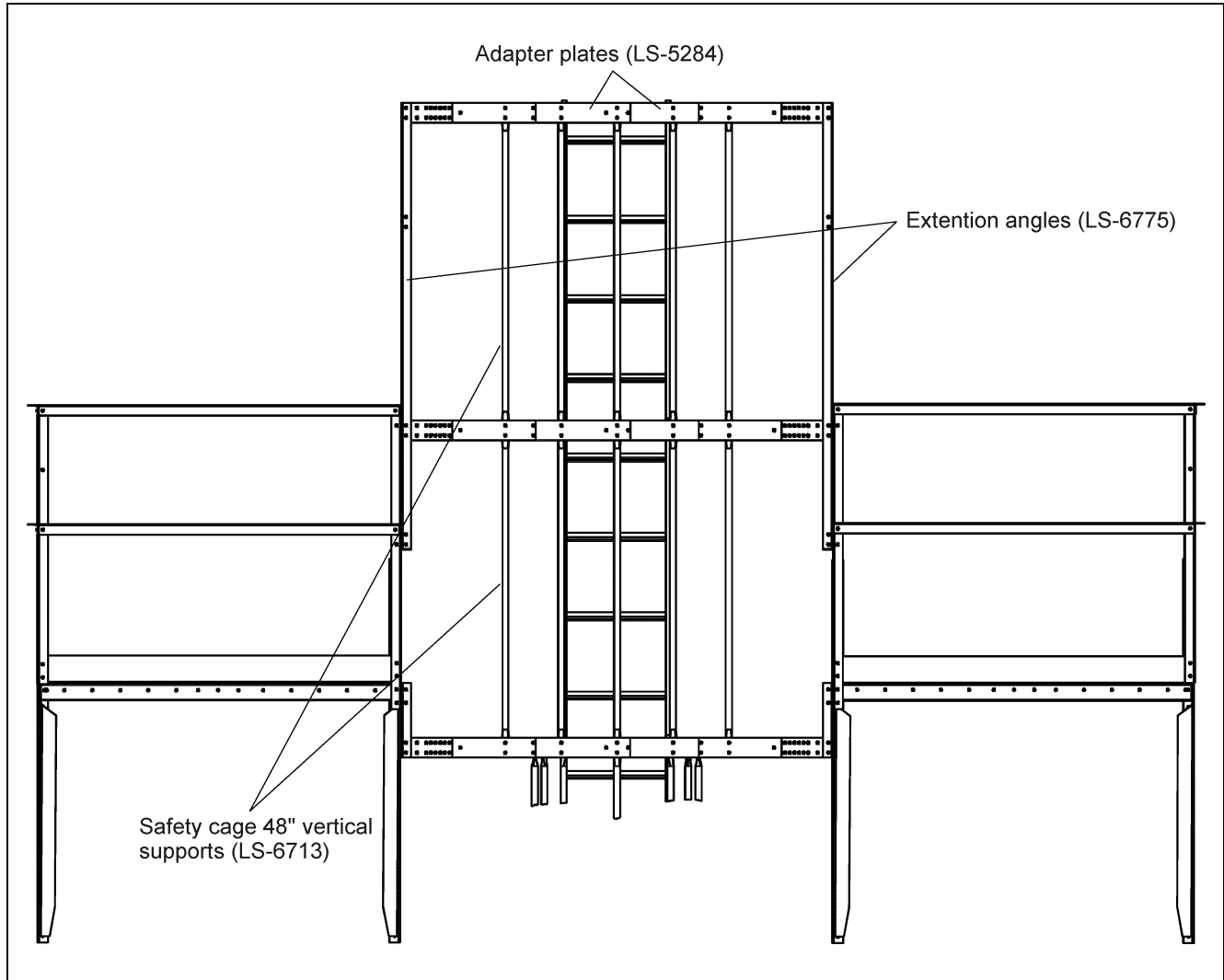


Figure 8Z

## Ladder Support Detail

The ladder must be secured to the hopper support columns with ladder standoff brackets using support channels and ladder brackets as shown in [Figure 8AA](#).

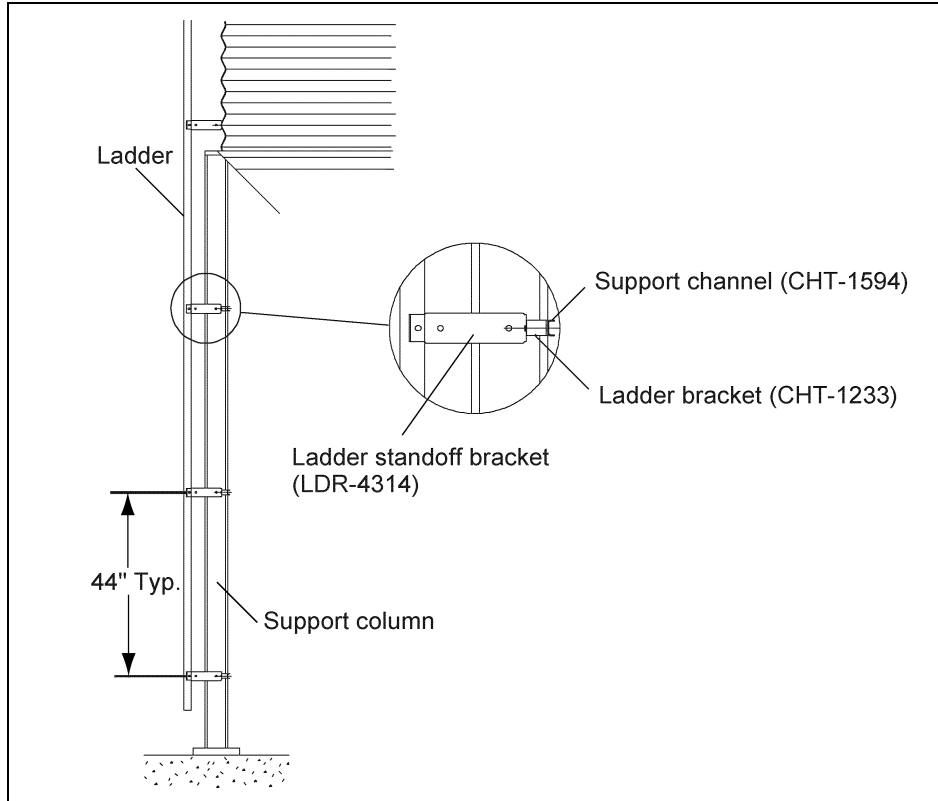


Figure 8AA

Tank Diameter	Hopper Slope	No. of Support Channels	Hopper Ladder Brackets
18'	45	3	6
21'	45	4	8
24'	45	4	8

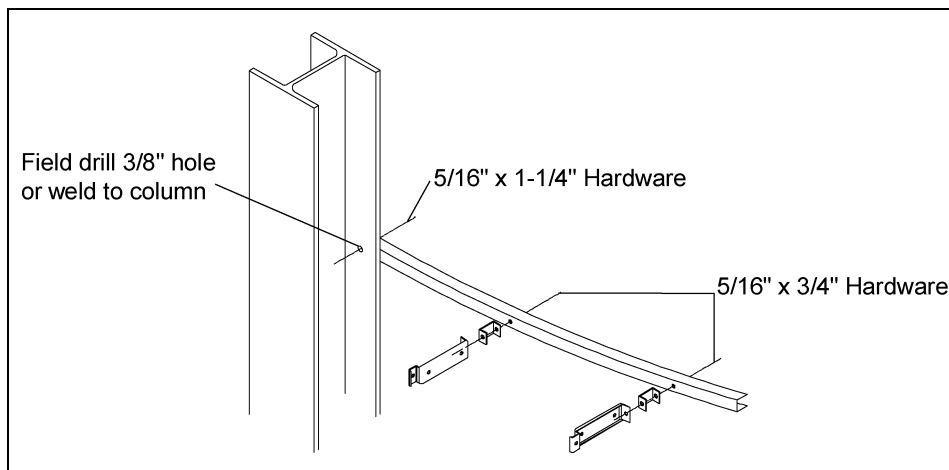
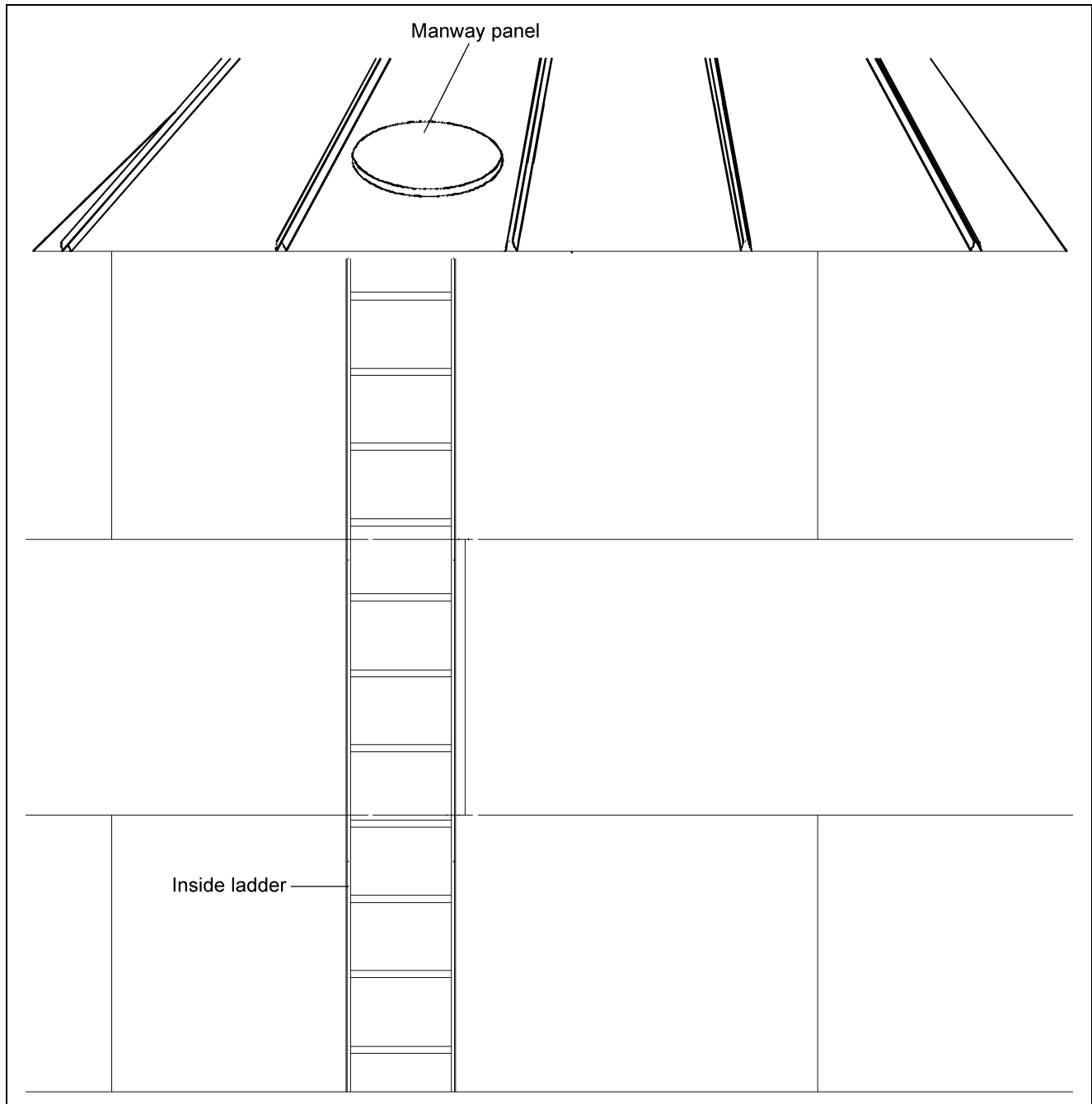


Figure 8AB

## Inside Ladder Placement

### Inside Ladder Installation

The inside ladder package includes the ladders, starter brackets, and double the amount of standoff brackets. Position the ladder directly under the manhole roof panel as shown in [Figure 8AC](#) and install starter brackets as shown in [Figure 8AD](#). Place the standoff brackets every 22" vertically on the sidewall sheets using the horizontal seam holes for every other hole location. Use 5/16" x 3/4" bin bolts to attach the standoff brackets to the sidewall of the grain bin.

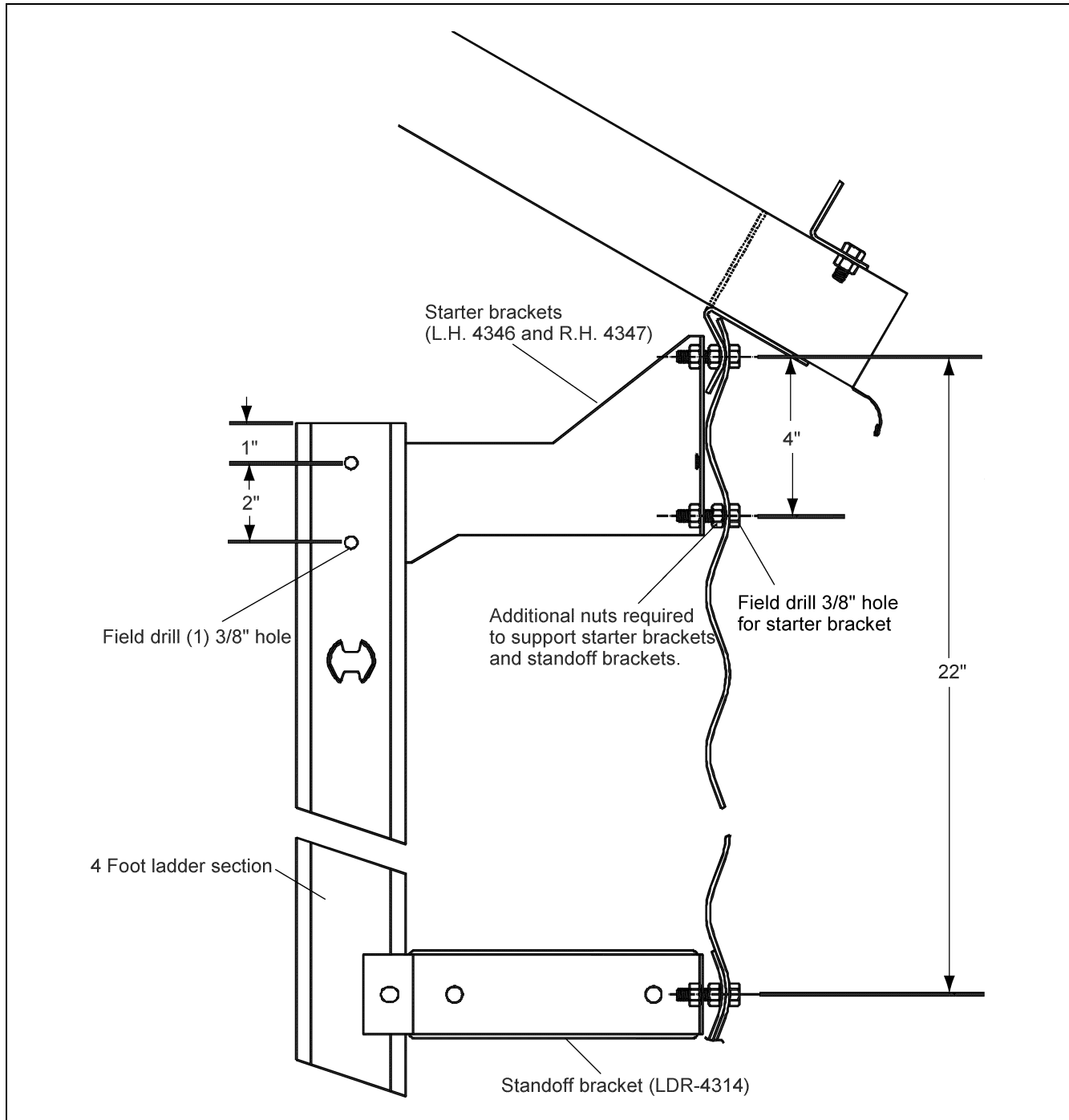


**Figure 8AC** Inside of Grain Bin



### Inside Starter Bracket and Ladder Placement

Refer to [Figure 8AD](#) and follow the correct dimensions as shown. The ladder starter brackets must be located in line with the horizontal seam. Check the 4' ladder section to make sure the ladder rung dimples are to the top. Attach to the starter brackets using the hole located 1" from top of the ladder. Now all standoff brackets must be installed every 22" and attached to each 4' section required.



**Figure 8AD** Inside Starter Bracket and Ladder Placement

**NOTE:** Refer to [General Detail Information on Page 12](#) for additional details for standoff bracket to ladder assembly.

## Inside Ladder Standoff Bracket/Supports

### Inside Ladder Standoff Bracket Requirements

For the standoff brackets, field drill two (2) 3/8" diameter holes 18-3/4" apart directly in line with the horizontal seam holes. Continue down the sidewall with standoff brackets every 22".

*Refer to Figure 8AE.*

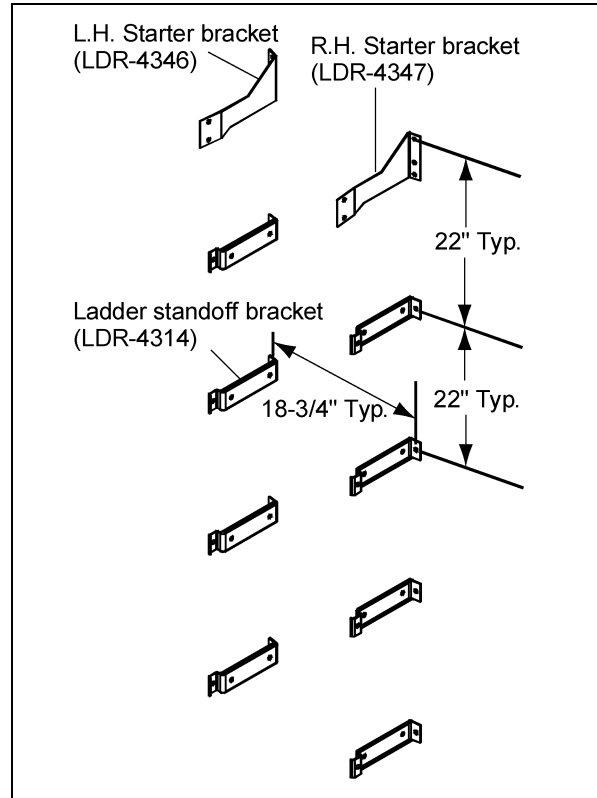


Figure 8AE

### Inside Ladder Supports

After completing the inside ladder, be sure to support the bottom of the ladder to the concrete. Depending on the actual installation, the amount of support required may vary. Supports are not supplied by the manufacturer. If a bin sweep is to be used in the grain bin, other considerations may be necessary to assure there is no interference with the equipment. *Refer to Figure 8AF.*

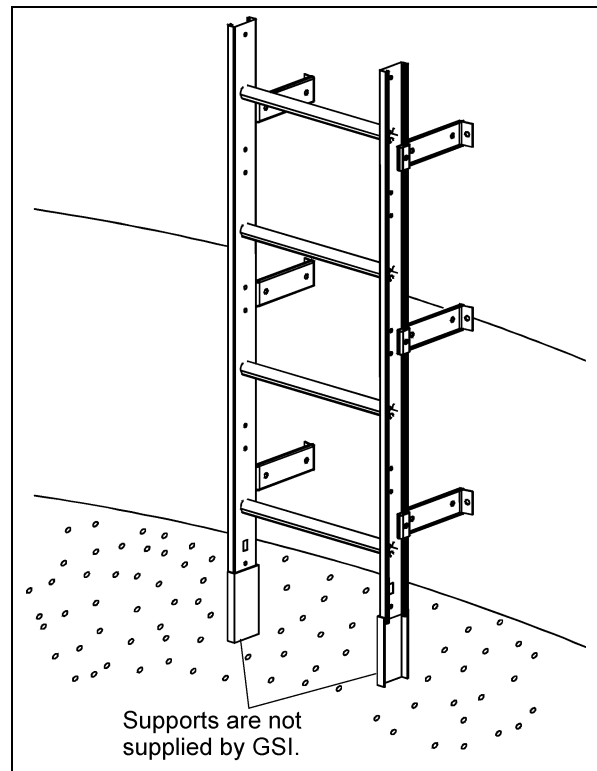


Figure 8AF

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G S I G R O U P



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