

NCHTC 2.66" Standard Ladder, Platforms and Safety Cages

Models:
12'-36' DIAMETER

Installation Manual

PNEG-2461
Version 1.0

Date: 08-29-25



PNEG-2461

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

Contents

Chapter 1	Safety Precautions	5
	Safety Guidelines for Tanks.....	5
	Cautionary Symbol Definitions.....	6
	Safety Cautions.....	7
	Safety Decals	11
	Safety Sign-Off Sheet.....	13
Chapter 2	General Information	15
	Assembling the Ladder Sections	16
	Assembling the Ladder Stand-Off Brackets	16
	Assembling the Safety Cage Hoop Brackets.....	17
	Installing the Ladder Extension Rails	17
	Installing the End Caps to the Ladder.....	18
	Assembling the 32" Safety Cage Section.....	18
	Assembling the 48" Safety Cage Section.....	19
	Assembling the Safety Cage Bell Section.....	19
	Ladder Usage Chart	20
Chapter 3	Installing the Eave Platform and Ladder.....	29
	Installing the Ladder Starting Brackets and Sidewall Braces at the Eave.....	29
	Installing the Eave Platform.....	32
	Installing the Ladder for the Eave Platform	35
	Installing the Eave Adjustable Braces	36
	Installing the Safety Cages.....	37
Chapter 4	Installing the Intermediate Platform and Ladder.....	43
	Installing the Sidewall Braces and Ladder Starting Brackets	44
	Installing the Intermediate Platform.....	46
	Installing the Ladder at the Intermediate Platform	49
	Installing the Safety Cages.....	50
Chapter 5	Installing the Base Platforms and Ladder.....	55
	Installing the Sidewall Braces and Ladder Starting Brackets	56
	Installing the Base Platforms	58
	Installing the Column Plates	62
	Installing the Ladder for the Base Platform	64
	Installing the Safety Cages (50' Offset Platform)	66
	Installing the Safety Cages (20' Offset Platform)	70
	Limited Warranty — N.A. Grain Products	73

NOTES

1 Safety Precautions

Topics Covered in this Chapter

- Safety Guidelines for Tanks
- Cautionary Symbol Definitions
- Safety Cautions
- Safety Decals
- Safety Sign-Off Sheet

Safety Guidelines for Tanks

Safety guidelines are general-to-specific safety rules that must be followed at all times. This manual is written to help you understand safe operating procedures and problems that can be encountered by the operator and other personnel when using this equipment. Read and save these instructions.

As owner or operator, you are responsible for understanding the requirements, hazards, and precautions that exist and to inform others as required. Unqualified persons must stay out of the work area at all times.

Alterations must not be made to the equipment. Alterations can produce dangerous situations resulting in **SERIOUS INJURY** or **DEATH**.

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

When necessary, you must consider the installation location relative to electrical, fuel and water utilities.

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

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

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










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

ST-0035-2

Cautionary Symbol Definitions

Cautionary symbols appear in this manual and on product decals. The symbols alert the user of potential safety hazards, prohibited activities and mandatory actions. To help you recognize this information, we use the symbols that are defined below.

Table 1-1 Description of the different cautionary symbols

Symbol	Description
	This symbol indicates an imminently hazardous situation which, if not avoided, will result in serious injury or death.
	This symbol indicates a potentially hazardous situation which, if not avoided, can result in serious injury or death.
	This symbol indicates a potentially hazardous situation which, if not avoided, can result in minor or moderate injury.
	This symbol is used to address practices not related to personal injury.
	This symbol indicates a general hazard.
	This symbol indicates a prohibited activity.
	This symbol indicates a mandatory action.

ST-0005-2

Safety Cautions

Use Personal Protective Equipment

- Use appropriate personal protective equipment:

Eye Protection



Respiratory Protection



Foot Protection



Hearing Protection



Head Protection



Fall Protection



Hand Protection



- Wear clothing appropriate to the job.
- Remove all jewelry.
- Tie long hair up and back.

ST-0004-1

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



ST-0002-1

Chapter 1: Safety Precautions

Maintain Equipment and Work Area

- Understand service procedures before doing work. Keep area clean and dry.
- Never service equipment while it is operating. Keep hands, feet, and clothing away from moving parts.
- Keep your equipment in proper working condition. Replace worn or broken parts immediately.



ST-0003-1

Lifting Hazard

- Single person lift can cause injury.
- Use a mechanical lifting device to lift or move the equipment during installation.



ST-0021-2

Ladder Load Limit

- The ladder load limit is 300 LBS (1.34 kN). Do not exceed this weight.
- Excessive load will damage the ladder and severe injury or death will result.
- Ladders, stairways and platforms are for use by competent and trained personnel only. Do not allow children or other unauthorized persons to have access to the equipment.
- Access to the equipment must be restricted by the use of security fencing and lockable gates.
- Lower sections of ladders must be fitted with a lockable safety gate to prevent unauthorized access.
- Lock out and tag out power supplies to all equipment.
- Do not attach lifting equipment to ladders .
- Do not work at heights during high winds, rain, snow, or ice storms.



ST-0059-2

Platform Load Limit

- The platform load limit is 500 LBS (2.25 kN). Do not exceed this weight.
- Excessive load will damage the platform and cause platform to fall. Severe injury or death will result.



ST-0044-2

Stay Clear of Hoisted Equipment

- Always use proper lifting or 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. Not following these safety precautions creates the risk of falling equipment, which can crush personnel and cause serious injury or death.



ST-0047-1

Fall Hazard

- Ladders, stairways and platforms are for use by competent and trained personnel only. Do not allow children or other unauthorized persons to have access to the equipment.
- Access to the equipment must be restricted by the use of security fencing and lockable gates.
- Lower sections of ladders must be fitted with a lockable safety gate to prevent unauthorized access.
- Make sure that hot surfaces have had adequate time to cool before working on or in the equipment.
- Lock out and tag out power supplies and fuel supplies to all equipment.
- Do not attach lifting equipment to ladders or platforms.
- Do not go outside of the safety rails provided on elevated platforms.
- Do not work at heights during high winds, rain, snow, or ice storms.



ST-0056-1

Chapter 1: Safety Precautions

Sharp Edge Hazard

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



ST-0036-2

Confined Space Hazards and Entry Procedures

- Note that the interior of this equipment is considered a confined space. Maintenance of this equipment can require access to the confined space.
- Access doors must be shut and locked except when access is required.
- Doors giving access to dangerous equipment must be safety interlocked.
- The following entry procedures must be followed:
 - Be aware of all possible hazards present inside the confined space and wear personal protective equipment (PPE) as needed.
 - Complete a permit to work and follow all permit required confined space entry procedures defined by the site manager.
 - Make sure that the area has been purged of any hazardous products or gases. Check the atmosphere for harmful gases or vapors with a suitable gas analyzer and make sure levels are safe before entering.
 - Do not smoke or use naked flames.
 - Lock out and tag out power supplies and fuel supplies to all equipment.
 - Do not work alone. Work in teams of at least three so that help is immediately available in the event of an emergency.
 - Confirm that all personnel have safely exited the equipment and tools have been recovered once work is complete.



ST-0055-1

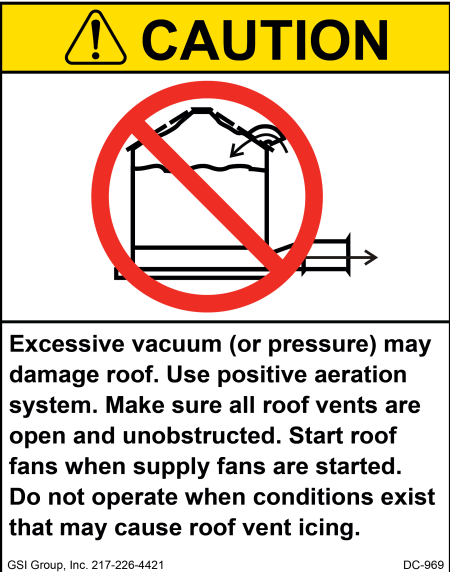
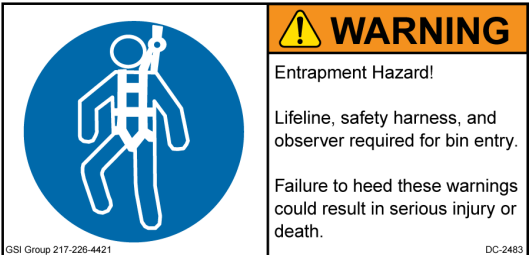
Safety Decals

The safety decals on your equipment are safety indicators which must be carefully read and understood by all personnel involved in the installation, operation, service and maintenance of the equipment.




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

GSI Decals

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

Location	Decal No.	Decal	Description
<p>Located next to aeration system.</p>	<p>DC-969</p>		<p>Caution, Vacuum Pressure</p>
<p>On tank doors and roof hatch covers</p>	<p>DC-2483</p>		<p>Warning, Entrapment Hazard</p>

Chapter 1: Safety Precautions

Location	Decal No.	Decal	Description
On tank door covers	DC-GBC-1A		Warning, Keep Clear of Augers
On tank door covers	DC-GBC-2A		Warning, Unload Instructions
On tank outer door cover	DC-2585		Warning, Confined Space Hazard

NOTES

2 General Information

Topics Covered in this Chapter

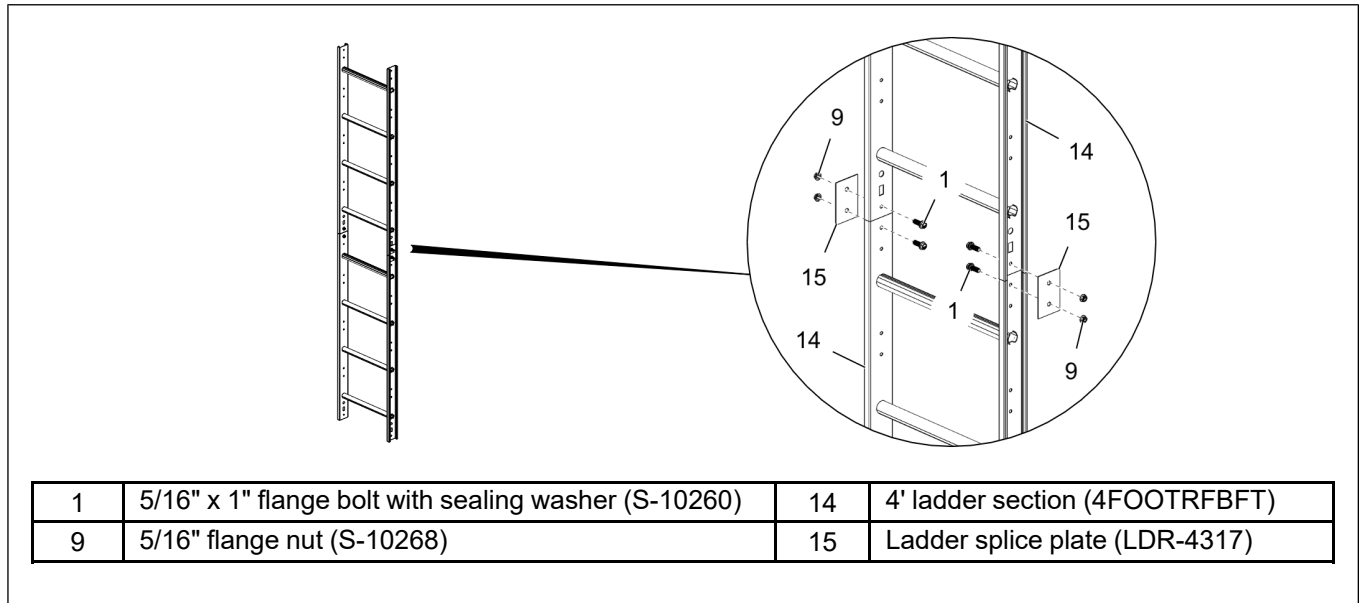
- Assembling the Ladder Sections
- Assembling the Ladder Stand-Off Brackets
- Assembling the Safety Cage Hoop Brackets
- Installing the Ladder Extension Rails
- Installing the End Caps to the Ladder
- Assembling the 32" Safety Cage Section
- Assembling the 48" Safety Cage Section
- Assembling the Safety Cage Bell Section
- Ladder Usage Chart

Assembling the Ladder Sections

Assemble the ladder sections (14) together with two splice plates (15) using four 5/16" x 1" flange bolts (1) and 5/16" flange nuts (9).

NOTE: Install flange bolts (1) with bolt head on the inside and splice plates (15) on the outside of the ladder.

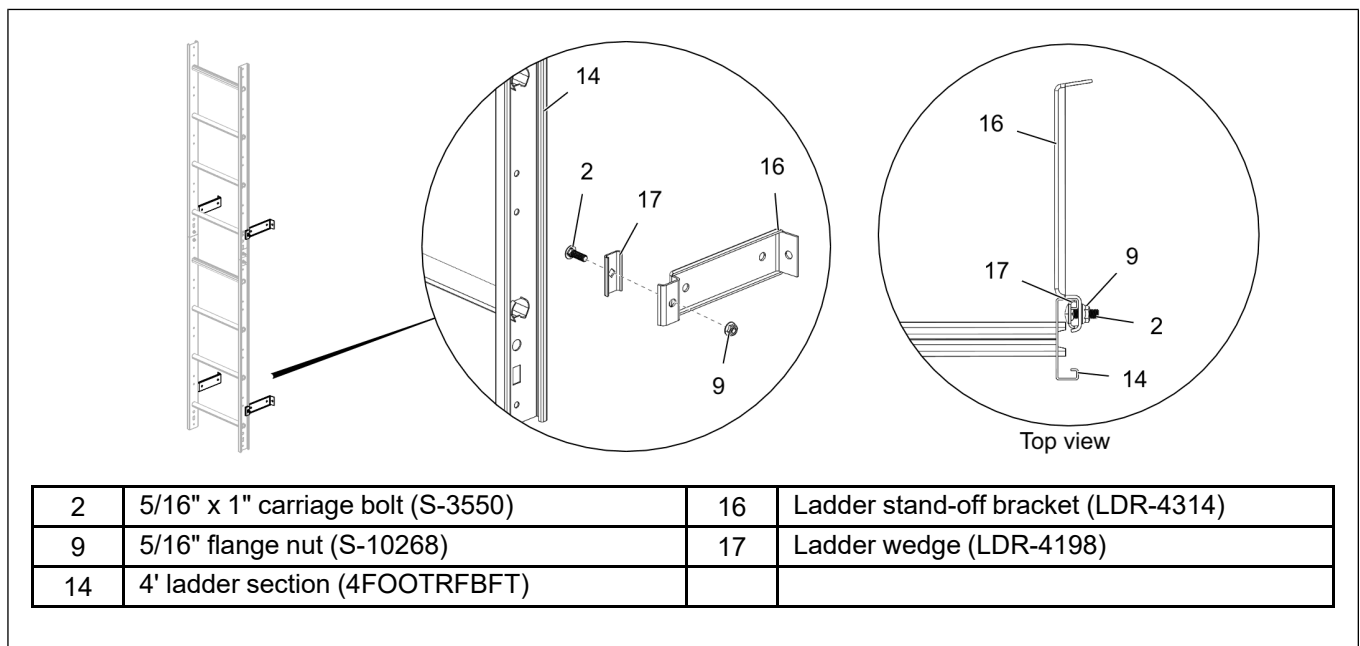
Figure 2-1 Assembling the ladder sections



Assembling the Ladder Stand-Off Brackets

Slide the ladder wedge (17) along the ladder rail (14) and install the ladder stand-off bracket (16) to the ladder wedge (17) using 5/16" x 1" carriage bolt (2) and 5/16" flange nut (9).

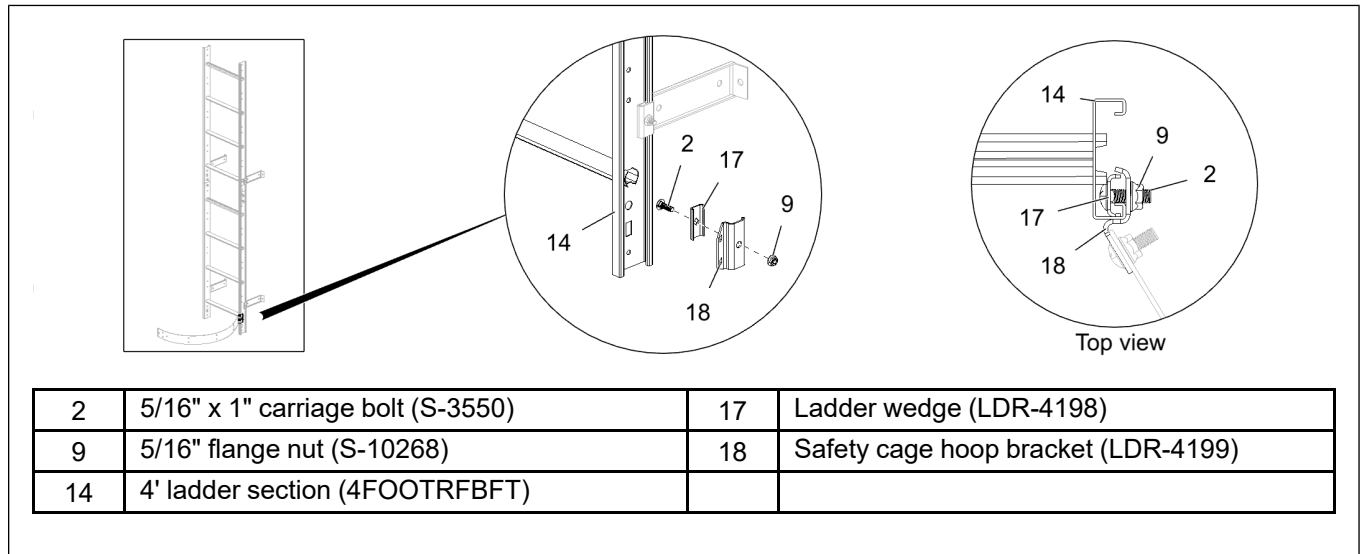
Figure 2-2 Assembling the ladder stand-off brackets



Assembling the Safety Cage Hoop Brackets

Slide the ladder wedge (17) along the ladder rail (14) and install the safety cage hoop bracket (18) to the ladder wedge (17) using 5/16" x 1" carriage bolt (2) and 5/16" flange nut (9).

Figure 2-3 Assembling the safety cage hoop brackets

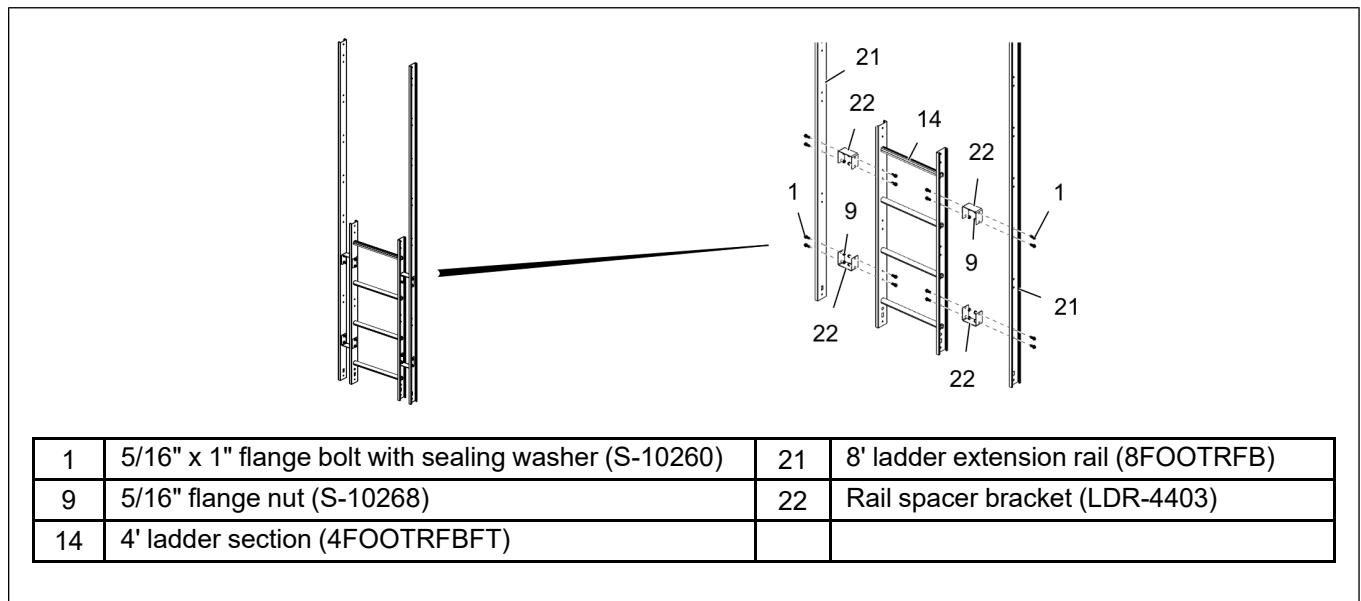


Installing the Ladder Extension Rails

Ladder extension rails are installed to the top ladder section that includes a safety cage.

1. Install one rail spacer bracket (22) to each top and bottom set of holes on both sides of the ladder section (14) using 5/16" x 1" flange bolts (1) and 5/16" flange nuts (9).
2. Position the bottom of ladder extension rails (21) flush with the bottom of the ladder section (14) and install one ladder extension rail (21) to the rail spacer brackets (22) on both sides of the ladder section (14) using 5/16" x 1" flange bolts (1) and 5/16" flange nuts (9).

Figure 2-4 Installing the ladder extension rails



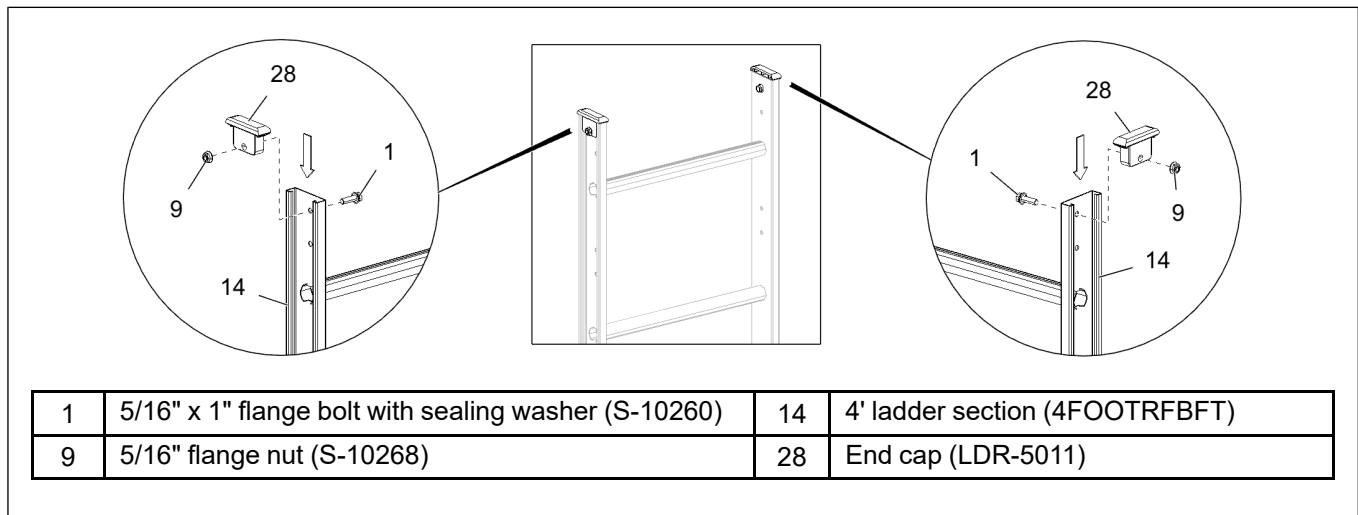
Installing the End Caps to the Ladder

The end cap helps to protect your hands from the sharp edges on the ends of the ladder.

1. Install the end caps (28) to both the left and right side of the ladder rail by snapping the end caps (28) onto the top of the ladder section (14).
2. Secure the end caps (28) in place using 5/16" x 1" flange bolt (1) and 5/16" flange nut (9).

NOTE: The end caps (28) are installed along with the ladder starting brackets when installing the ladder section (14) to the tank.

Figure 2-5 Installing the end caps

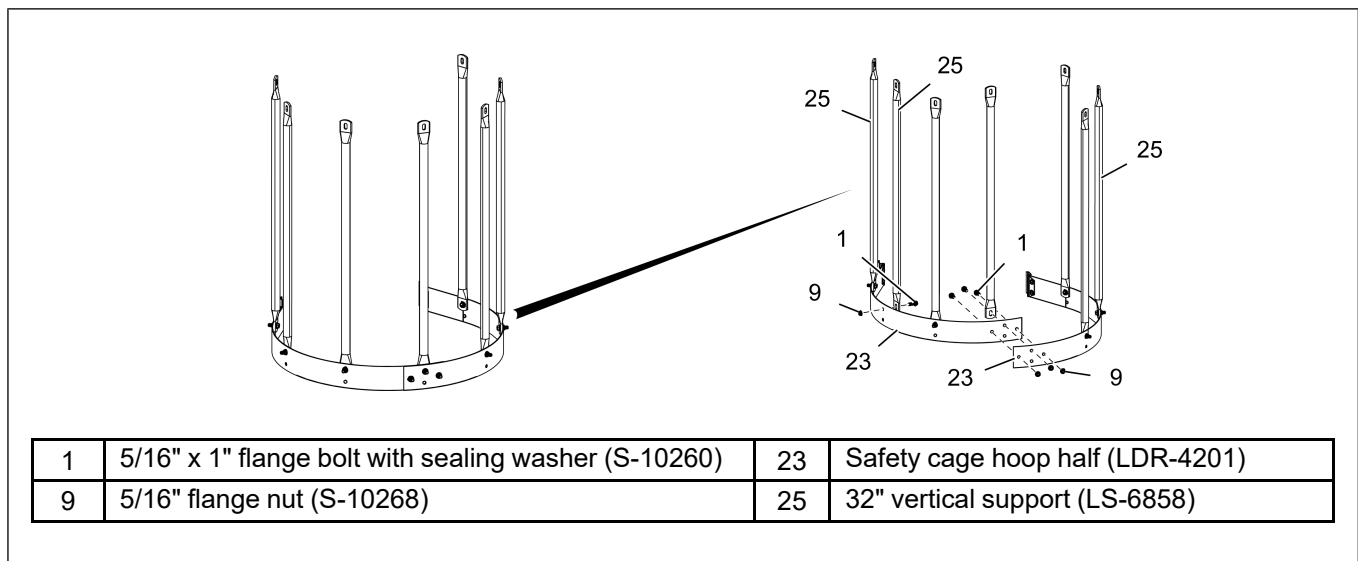


Assembling the 32" Safety Cage Section

1. Assemble the two safety cage hoop halves (23) together using 5/16" x 1" flange bolts (1) and 5/16" flange nuts (9).
2. Attach the seven 32" vertical supports (25) to the top row holes of the safety cage hoop halves (23) assembly using 5/16" x 1" flange bolts (1) and 5/16" flange nuts (9).

NOTE: Install flange bolts (1) with bolt heads on the inside of the cage. Hand tighten the bolts (1).

Figure 2-6 Assembling the 32" safety cage section

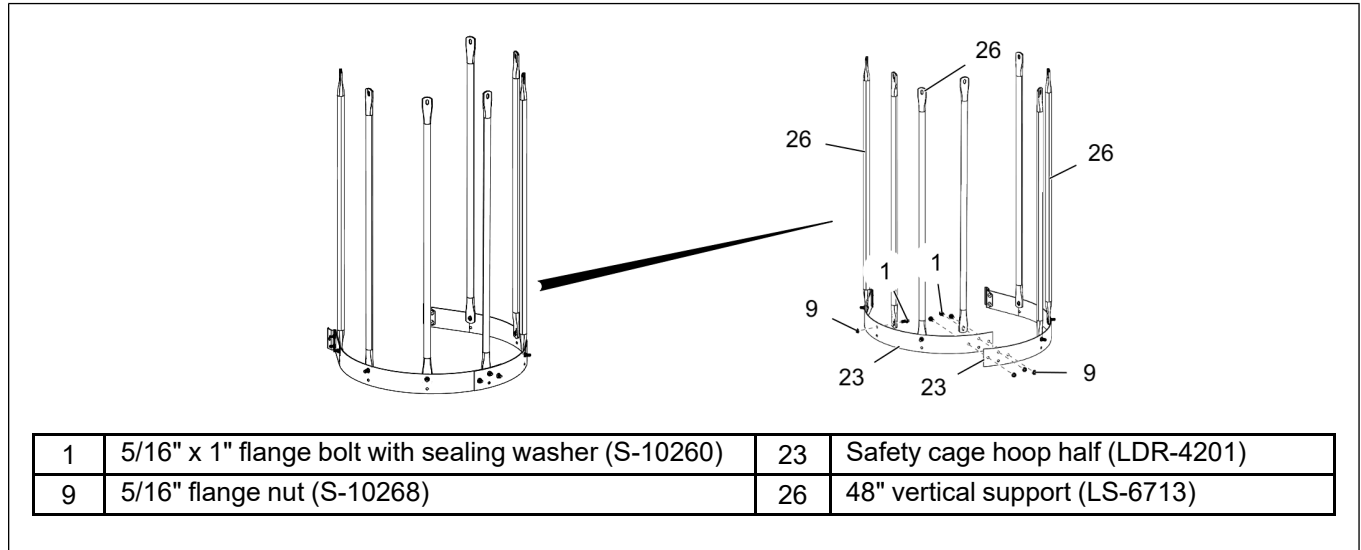


Assembling the 48" Safety Cage Section

1. Assemble the two safety cage hoop halves (23) together using 5/16" x 1" flange bolts (1) and 5/16" flange nuts (9).
2. Attach the seven 48" vertical supports (26) to the top row holes of the safety cage hoop halves (23) assembly using 5/16" x 1" flange bolts (1) and 5/16" flange nuts (9).

NOTE: Install flange bolts (1) with bolt heads on the inside of the cage. Hand tighten the bolts (1).

Figure 2-7 Assembling the 48" safety cage section

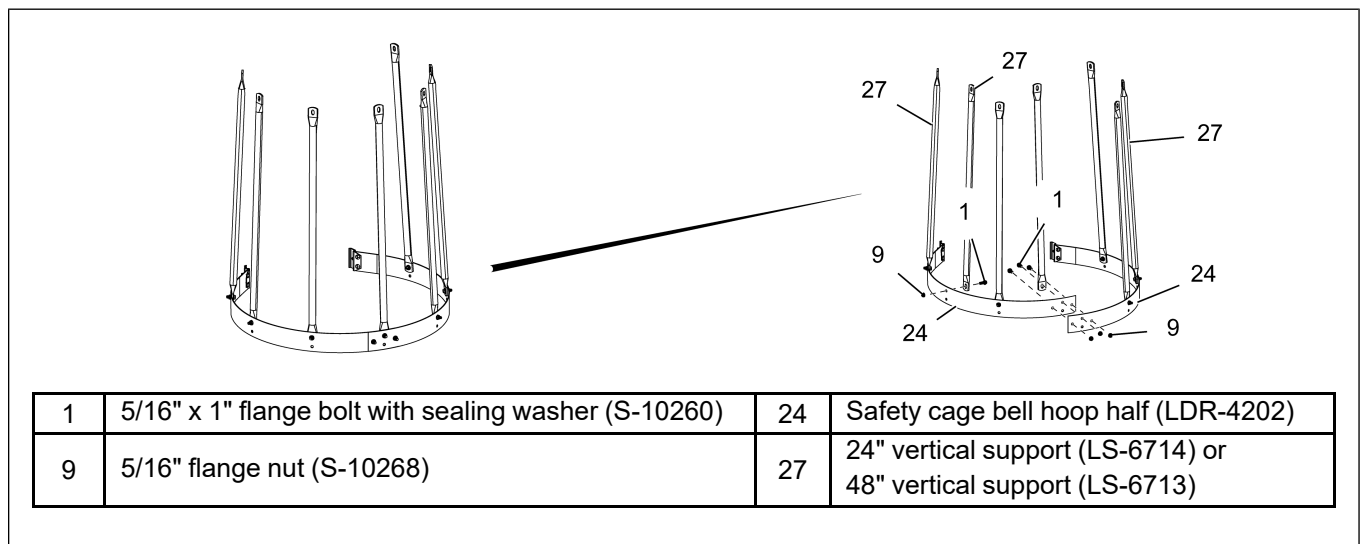


Assembling the Safety Cage Bell Section

1. Assemble the two safety cage bell hoop halves (24) together using 5/16" x 1" flange bolts (1) and 5/16" flange nuts (9).
2. Attach the seven vertical supports (27) to the top row holes of the safety cage bell hoop halves (24) assembly using 5/16" x 1" flange bolts (1) and 5/16" flange nuts (9).

NOTE: Install flange bolts (1) with bolt heads on the inside of the cage. Hand tighten the bolts (1).

Figure 2-8 Assembling the safety cage bell section

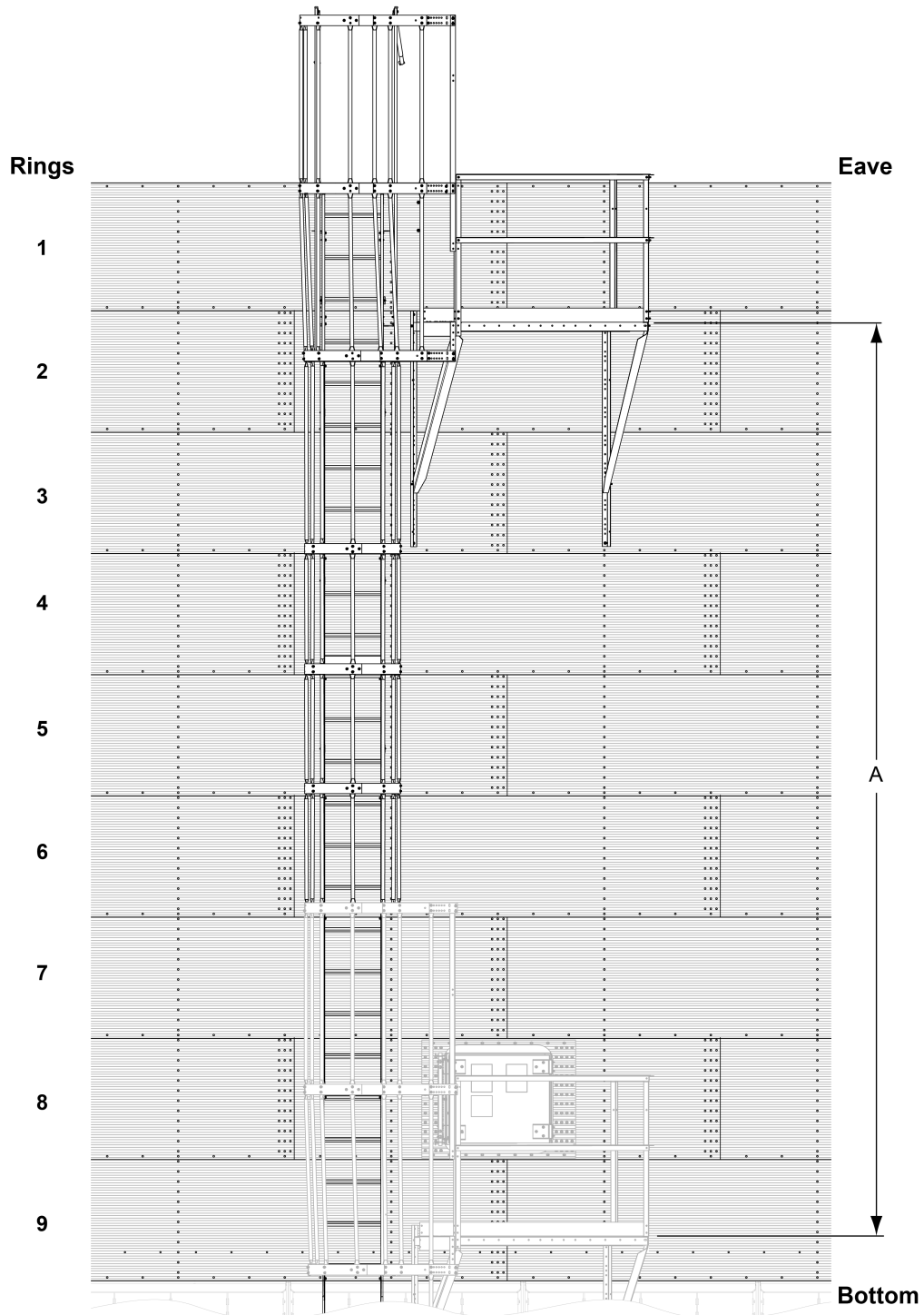


Ladder Usage Chart

50' Offset Platform

Refer to the [Table 2-1, page 21](#) for platform locations and dimension details "A".

Figure 2-9 Ladder, safety cage and platform layout (9 rings and shorter)



NOTE: Stiffeners are hidden for clarity.

The chart below should be used in conjunction with the [Figure 2-9, page 20](#). Follow the proper letter designation from the diagram to the chart finding the proper ring details and use the number of ladders and safety cages as indicated in the below chart.

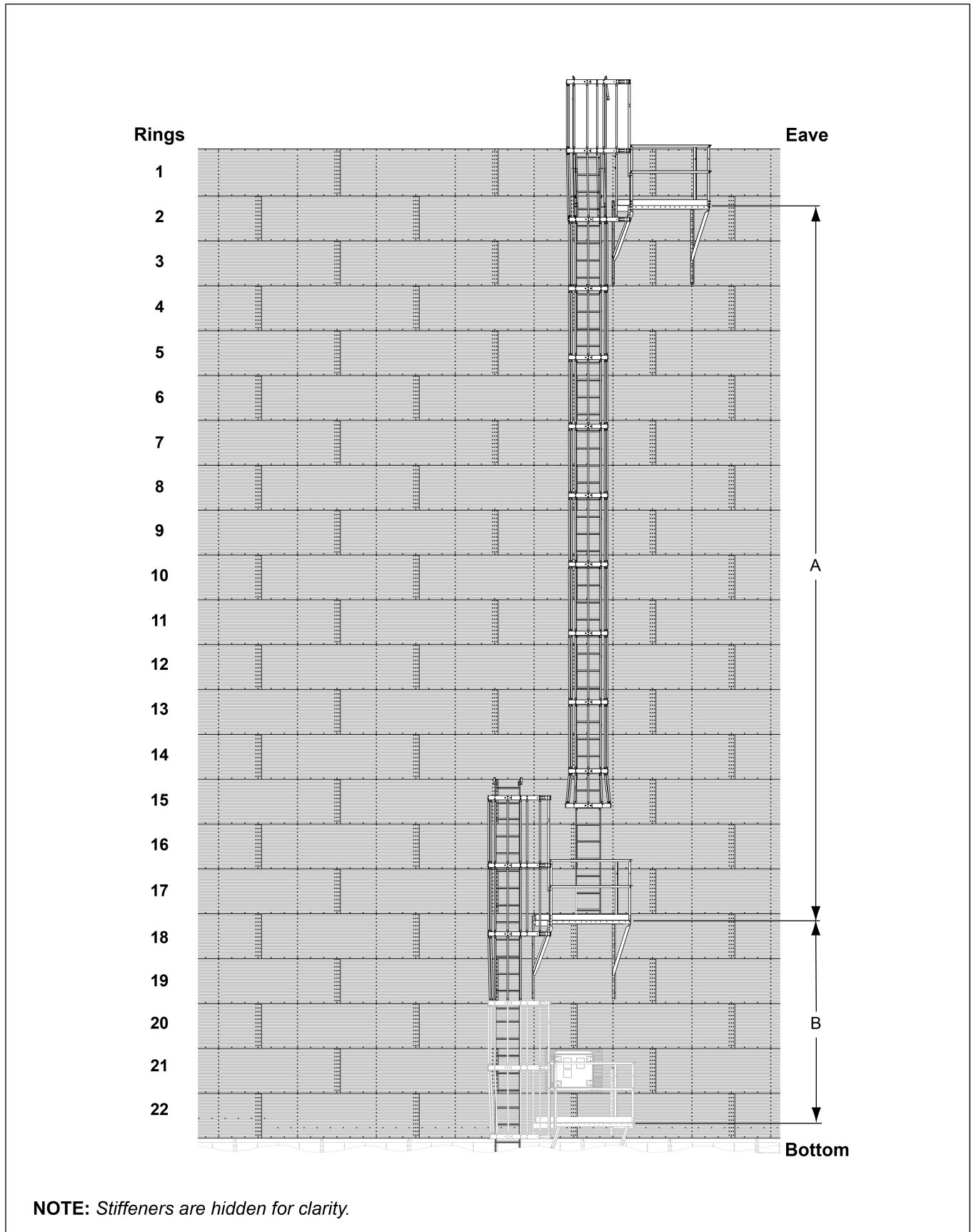
Table 2-1 Ladder, safety cage and platform usage chart (9 rings and shorter)

	Item	Rings					
		4	5	6	7	8	9
A	Platform located in ring:	2	2	2	2	2	2
	4' ladder section	3	4	4	5	6	6
	Bell safety cage	-	-	-	-	-	-
	Safety cage 4' section	0	0	1	1	1	1
	Safety cage 32" section	0	0	0	1	2	3
	Dimension "A"	90"	122"	154"	186"	218"	250"

Chapter 2: General Information

Refer to the [Table 2-1, page 21](#) for platform locations and dimension details "A" through "B".

Figure 2-10 Ladder, safety cage and platform layout (10 rings and taller)



The chart below should be used in conjunction with the [Figure 2-10, page 22](#). Follow the proper letter designation from the diagram to the chart finding the proper ring details and use the number of ladders and safety cages as indicated in the below chart.

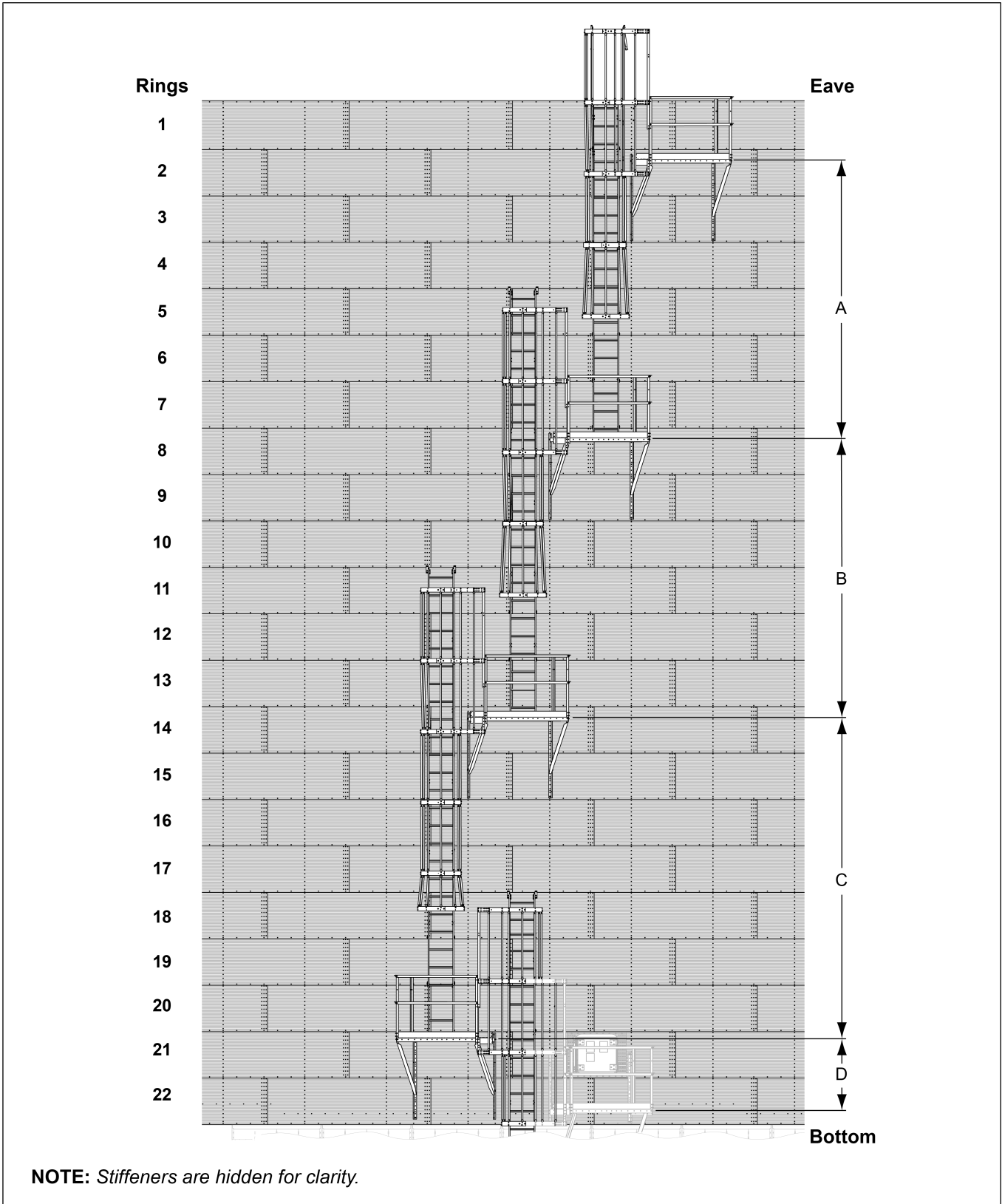
Table 2-2 Ladder, safety cage and platform usage chart (10 rings and taller)

	Item	Rings												
		10	11	12	13	14	15	16	17	18	19	20	21	22
A	Platform located in ring:	2	2	2	2	2	2	2	2	2	2	2	2	2
	4' ladder section	4	4	5	6	6	7	8	8	9	10	10	11	12
	Bell safety cage	24"	24"	48"	24"	24"	48"	24"	24"	48"	24"	24"	48"	24"
	Safety cage 4' section	0	1	1	2	3	3	4	5	5	6	7	7	8
	Safety cage 32" section	0	0	0	0	0	0	0	0	0	0	0	0	0
	Dimension "A"	128"	160"	192"	224"	256"	288"	320"	352"	384"	416"	448"	480"	512"
B	Platform located in ring:	6	7	8	9	10	11	12	13	14	15	16	17	18
	4' ladder section	6	6	6	6	6	6	6	6	6	6	6	6	6
	Bell safety cage	-	-	-	-	-	-	-	-	-	-	-	-	-
	Safety cage 4' section	1	1	1	1	1	1	1	1	1	1	1	1	1
	Dimension "B"	154"	154"	154"	154"	154"	154"	154"	154"	154"	154"	154"	154"	154"

20' Offset Platform

Refer to the [Table 2-3, page 25](#) for platform locations and dimension details "A" through "D".

Figure 2-11 Ladder, safety cage and platform layout (20' offset)



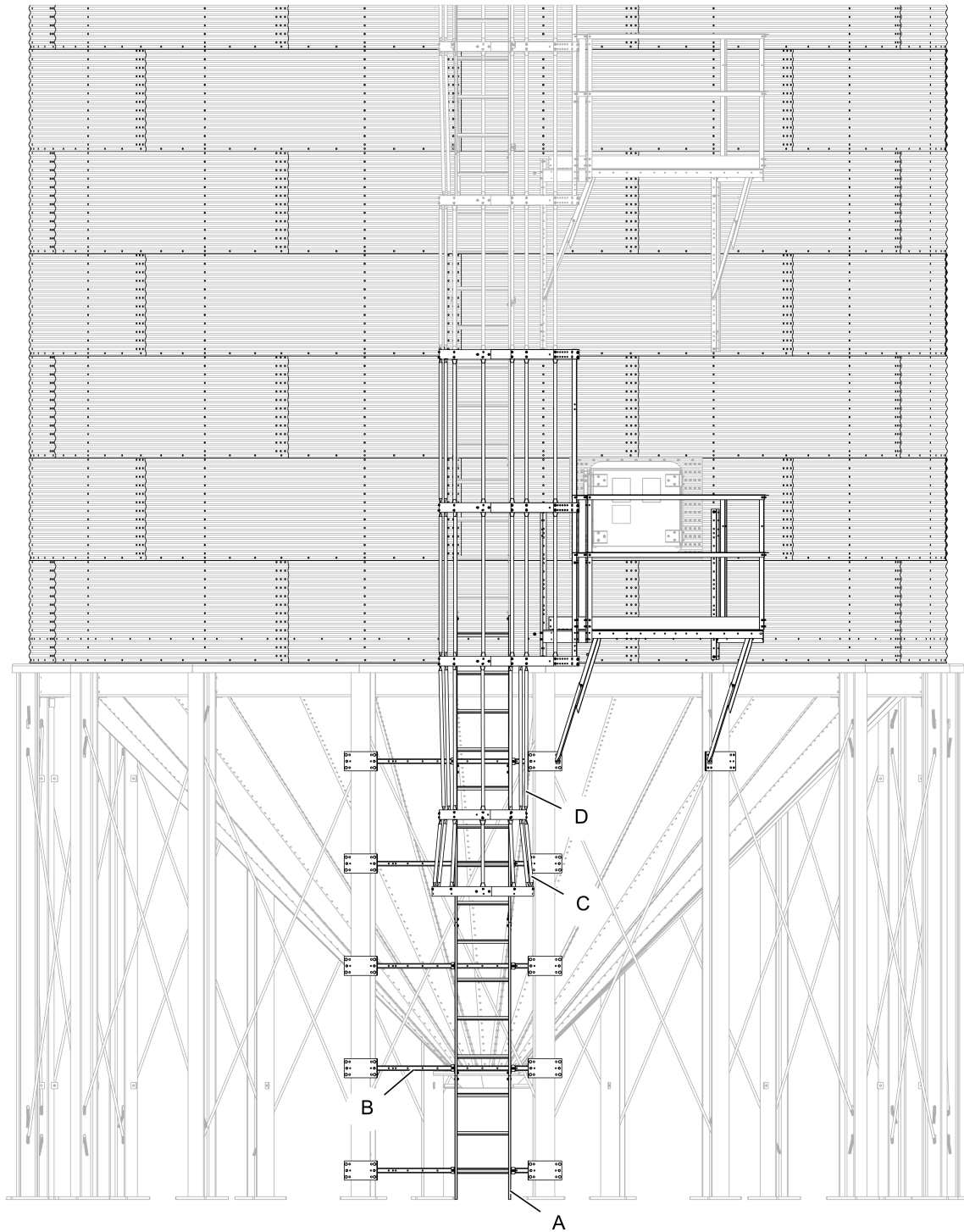
The chart below should be used in conjunction with the [Figure 2-11, page 24](#). Follow the proper letter designation from the diagram to the chart finding the proper ring details and use the number of ladders and safety cages as indicated in the below chart.

Table 2-3 Ladder, safety cage and platform usage chart (20' offset)

	Item	Rings																			
		4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
A	Platform located in ring:	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
	4' ladder section	3	4	3	4	4	5	6	4	4	4	4	5	5	6	4	4	4	5	5	
	Bell safety cage	0	0	0	24"	24"	48"	24"	24"	24"	24"	48"	48"	24"	24"	24"	48"	48"			
	Safety cage 4' section	0	0	0	0	1	1	2	0	0	1	1	1	1	2	1	1	1	1	1	
	Dimension "A"	90"	122"	96"	128"	160"	192"	224"	128"	128"	160"	160"	192"	192"	224"	160"	160"	160"	192"	192"	
B	Platform located in ring:			5	6	7	8	9	6	6	7	7	8	8	9	7	7	7	8	8	
	4' ladder section			4	4	4	4	4	5	6	6	6	6	7	7	6	6	6	6	6	
	Bell safety cage			0	0	0	0	0	24"	24"	24"	48"	48"	24"	24"	24"	24"	48"	48"	48"	
	Safety cage 4' section			0	0	0	0	0	0	1	1	1	1	2	2	1	1	1	1	1	
	Dimension "A"			58"	58"	58"	58"	58"	128"	160"	160"	192"	192"	224"	224"	160"	160"	192"	192"	192"	
C	Platform located in ring:								10	11	12	13	14	15	16	12	12	13	14	14	
	4' ladder section								4	4	4	4	4	4	4	6	6	6	6	7	
	Bell safety cage								0	0	0	0	0	0	0	24"	48"	48"	48"	24"	
	Safety cage 4' section								0	0	0	0	0	0	0	1	1	1	1	2	
	Dimension "C"								58"	58"	58"	58"	58"	58"	58"	160"	192"	192"	192"	224"	
D	Platform located in ring:															17	18	19	20	21	
	4' ladder section															4	4	4	4	4	
	Bell safety cage															0	0	0	0	0	
	Safety cage 4' section															0	0	0	0	0	
	Dimension "D"															58"	58"	58"	58"	58"	

Hopper Substructure

Figure 2-12 Ladder and safety cage layout for substructure



NOTE: Stiffeners are hidden for clarity.

Ladder and Safety Cage Usage Chart

Table 2-4 For 40° hopper

Ref #	Description	Diameter		
		27'	30'	36'
A	4' ladder section	3	4	4
B	Ladder support channel	5	5	6
C	Bell safety cage	48"	48"	48"
D	Safety cage 4' section	0	0	1

Table 2-5 For 45° hopper

Ref #	Description	Diameter							
		12'	15'	18'	21'	24'	27'	30'	36'
A	4' ladder section	2	3	3	3	4	4	4	5
B	Ladder support channel	4	4	4	5	5	5	6	7
C	Bell safety cage	0	0	24"	48"	24"	24"	48"	48"
D	Safety cage 4' section	0	0	0	0	1	1	1	2

Table 2-6 For 60° hopper

Ref #	Description	Diameter		
		15'	18'	21'
A	4' ladder section	4	4	5
B	Ladder support channel	5	6	6
C	Bell safety cage	24"	48"	24"
D	Safety cage 4' section	1	1	2

NOTES

3 Installing the Eave Platform and Ladder

Topics Covered in this Chapter

- Installing the Ladder Starting Brackets and Sidewall Braces at the Eave
- Installing the Eave Platform
- Installing the Ladder for the Eave Platform
- Installing the Eave Adjustable Braces
- Installing the Safety Cages

Installing the Ladder Starting Brackets and Sidewall Braces at the Eave

Before You Begin

- All tank packages contains the correct components for assembly.
- Read and follow the complete instructions for correct placement of parts.
- Make sure to use the charts to determine the appropriate quantity and size of the parts to be used based upon the number of rings in the tank.
- 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.

What You Should Know

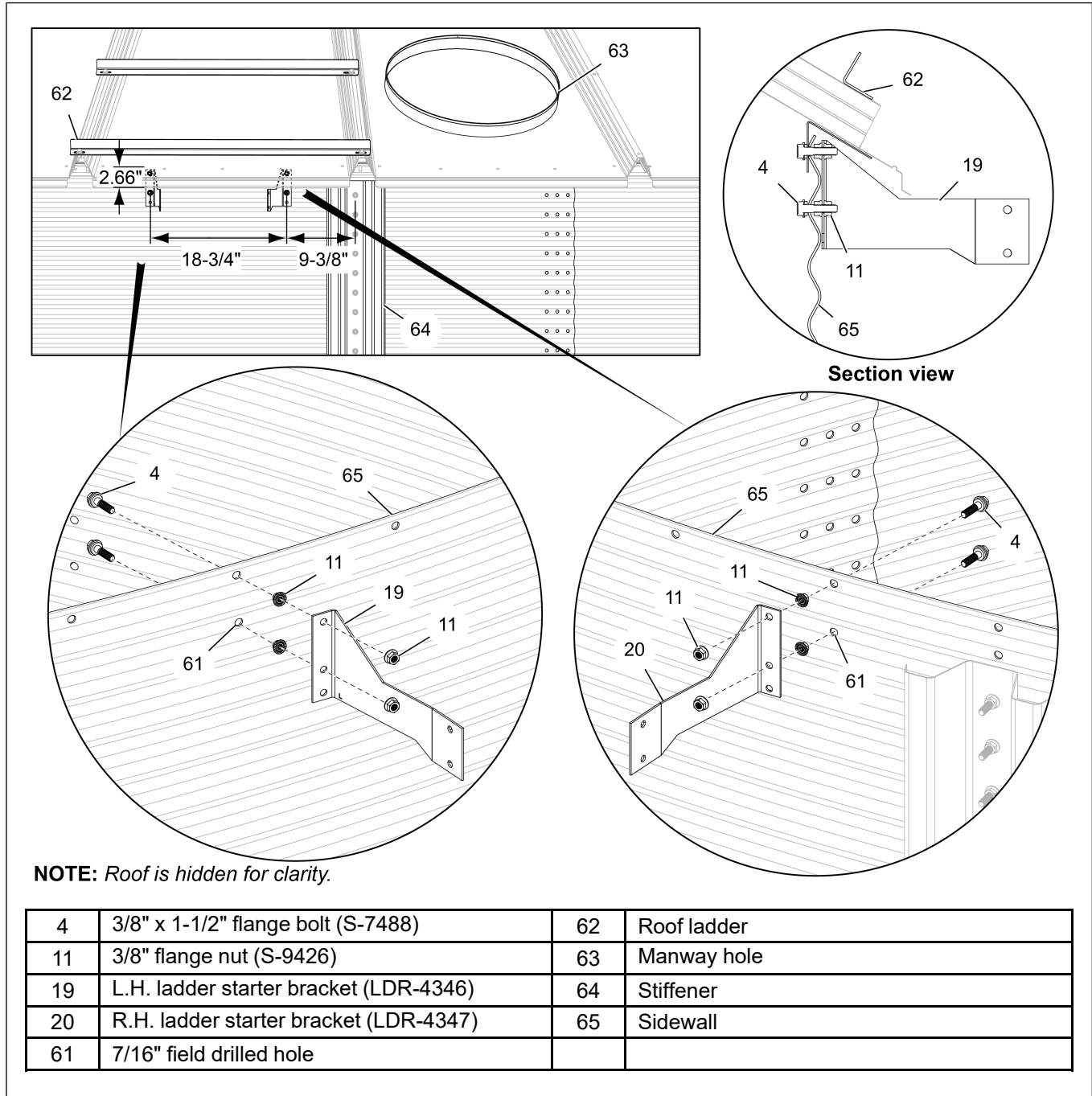
- Correct placement of the eave ladder starter bracket is critical to assure proper fit of all ladder parts and also to assure the correlation between the platforms are correct for proper installation of the access door platform. If the eave starter brackets are mislocated, standard installation of the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

Chapter 3: Installing the Eave Platform and Ladder

1. Locate the stiffener (64) directly below the roof ladder (62). Mark a hole on the sidewall (65) measuring 9-3/8" from the center of the stiffener (64) and 2.66" from the top most horizontal seam. Mark another hole by measuring horizontally 18-3/4" to the left of the previously marked hole. Field drill 7/16" hole (61) through the markings.
2. Install the L.H. ladder starter bracket (19) and R.H. ladder starter bracket (20) to the sidewall (65) using 3/8" x 1-1/2" flange bolts (4) and 3/8" flange nuts (11).

NOTE: Align the top hole of the ladder brackets (19 and 20) with the top most horizontal seam and the bottom hole with the field drilled holes. For each bolt (4), add an extra flange nut (11) to fill the gap between the sidewall (65) and the brackets (19 and 20).

Figure 3-1 Installing the ladder starting brackets at eave platform

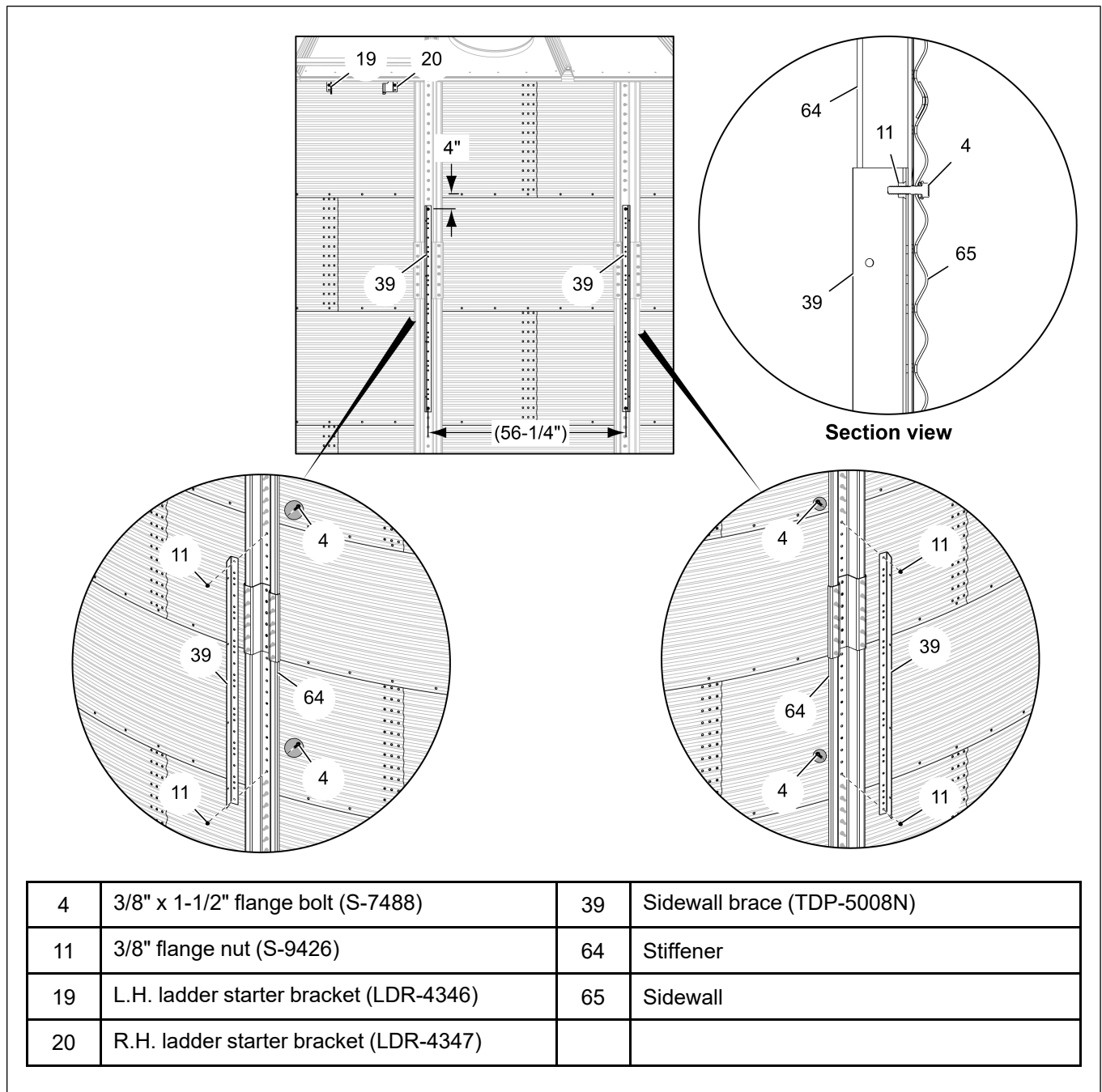


3. Position the top hole of the sidewall brace (39) on the stiffener 4" below the bottom horizontal seam of the first ring.

NOTE: *The offset from the L.H. or R.H. starter bracket depends on which side the platform is to be installed.*

4. Install the sidewall brace (39) onto the stiffener (64) using 3/8" x 1-1/2" flange bolts (4) and 3/8" flange nuts (11).
5. Similarly, install the next sidewall brace (39) to the stiffener (64) immediately to the right of the previously installed sidewall brace (39).

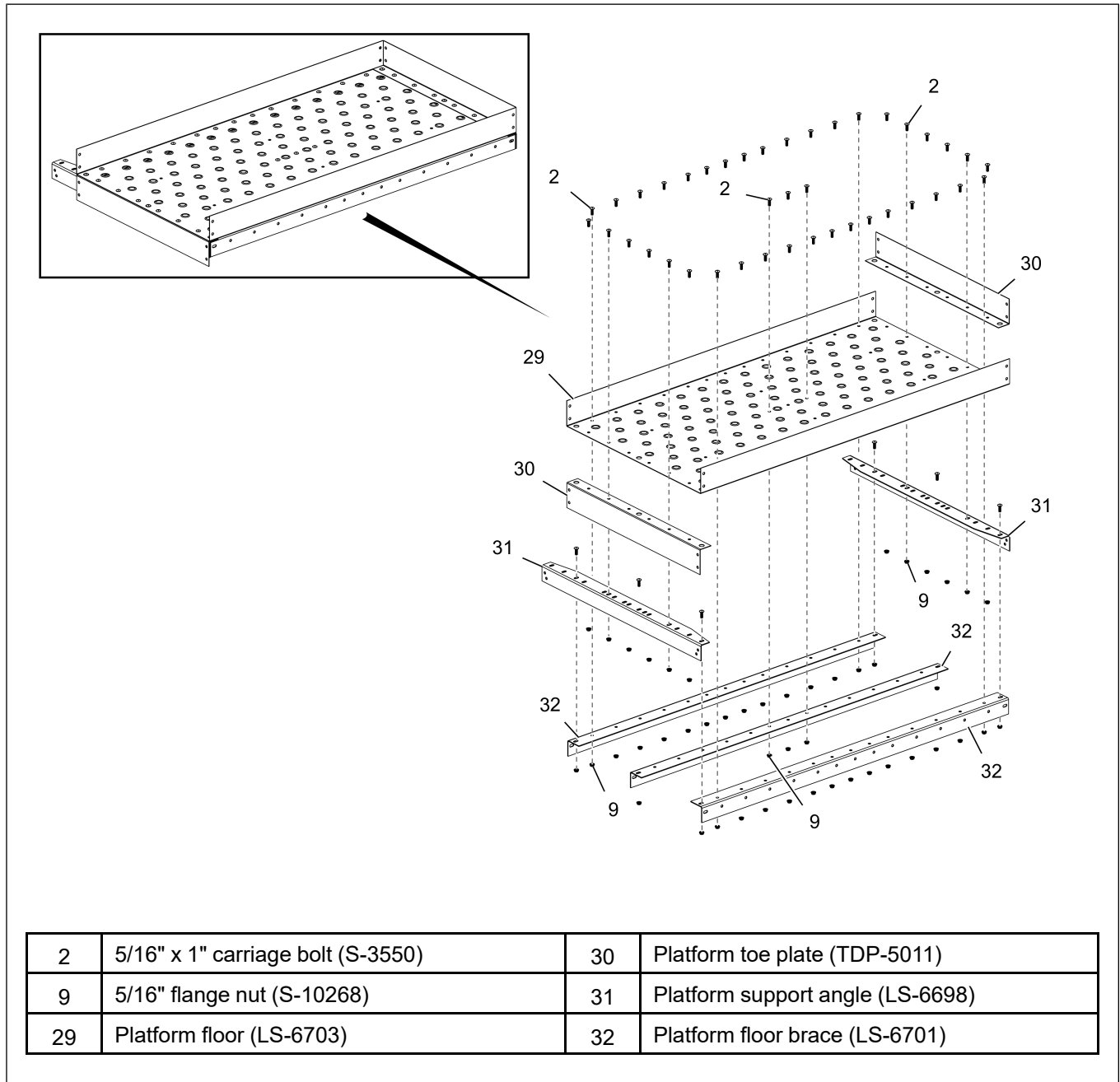
Figure 3-2 *Installing the sidewall braces for the eave platform*



Installing the Eave Platform

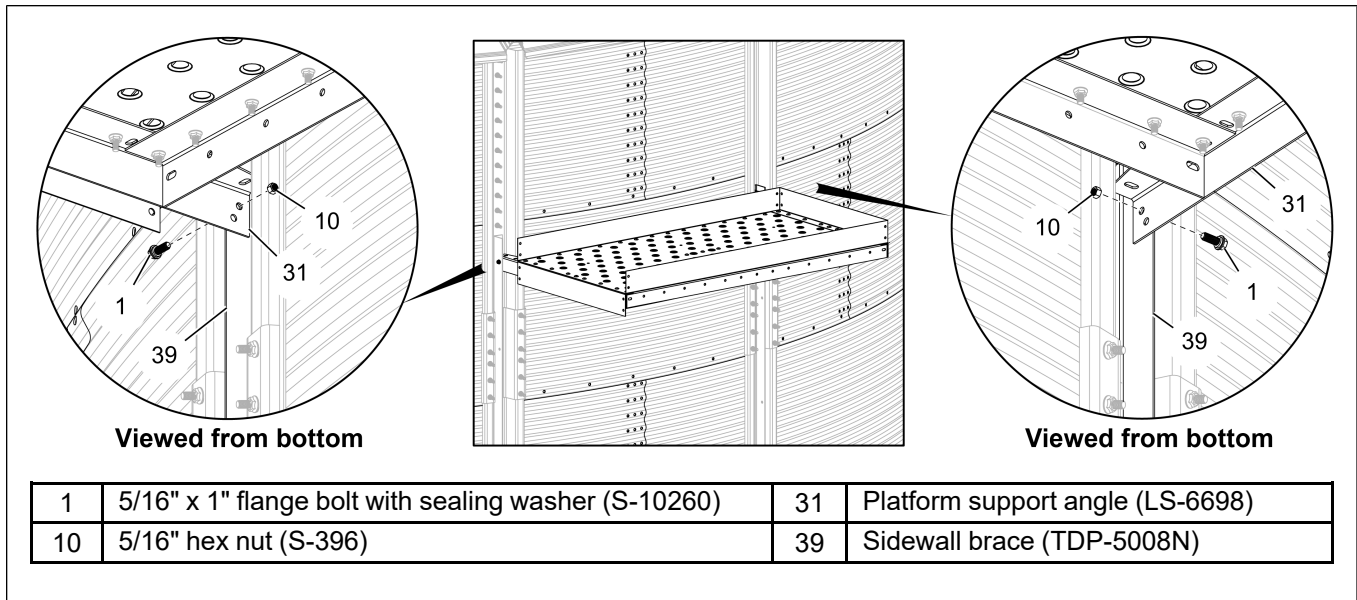
1. Assemble the platform floor (29), toe plates (30), support angles (31) and floor braces (32) together using 5/16" x 1" carriage bolts (2) and 5/16" flange nuts (9).
 - a. Assemble the right side toe plate (30) above the platform floor (29) and left side toe plate (30) below the platform floor (29).
 - b. Assemble one support angle (31) to each side below the platform floor (29).
 - c. Assemble the floor braces (32) to the front, middle and rear end below the platform floor (29).
 - d. Install carriage bolts (2) with bolt head on top of the platform floor (29).

Figure 3-3 Assembling the platform floor with toe plates, support angles and floor braces



2. Lift the platform assembly and attach the support angles (31) to the sidewall braces (39) using 5/16" x 1" flange bolts (1) and 5/16" hex nuts (10).

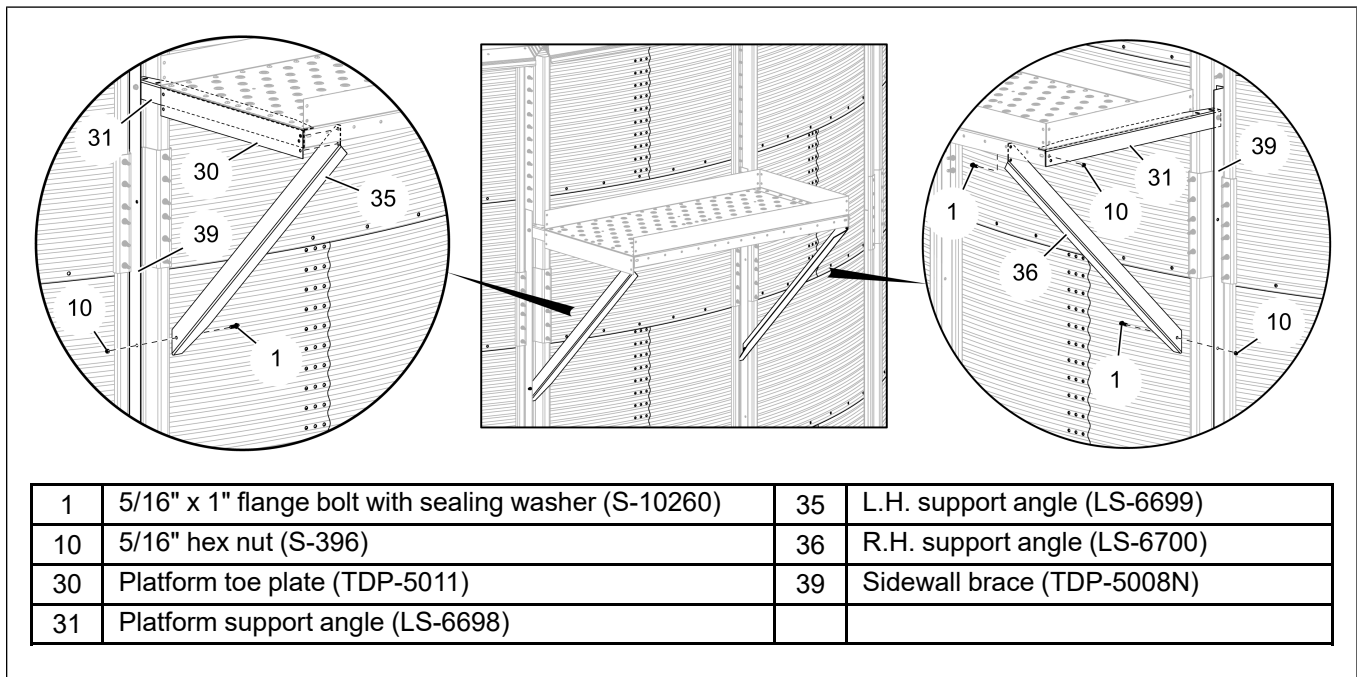
Figure 3-4 Attaching the support angles to the sidewall braces



3. Install one end of the L.H. support angle (35) to the sidewall brace (39) using 5/16" x 1" flange bolts (1) and 5/16" hex nuts (10). Align the other end with toe board plate (30) but do not install hardware at this time.
4. Install the R.H. support angle (36) between the support angle (31) and sidewall brace (39) using 5/16" x 1" flange bolts (1) and 5/16" hex nuts (10).

NOTE: Use the upper hole in the R.H. support angles (36) while connecting to the upper hole of the platform support angle (31).

Figure 3-5 Installing the L.H. and R.H. support angles

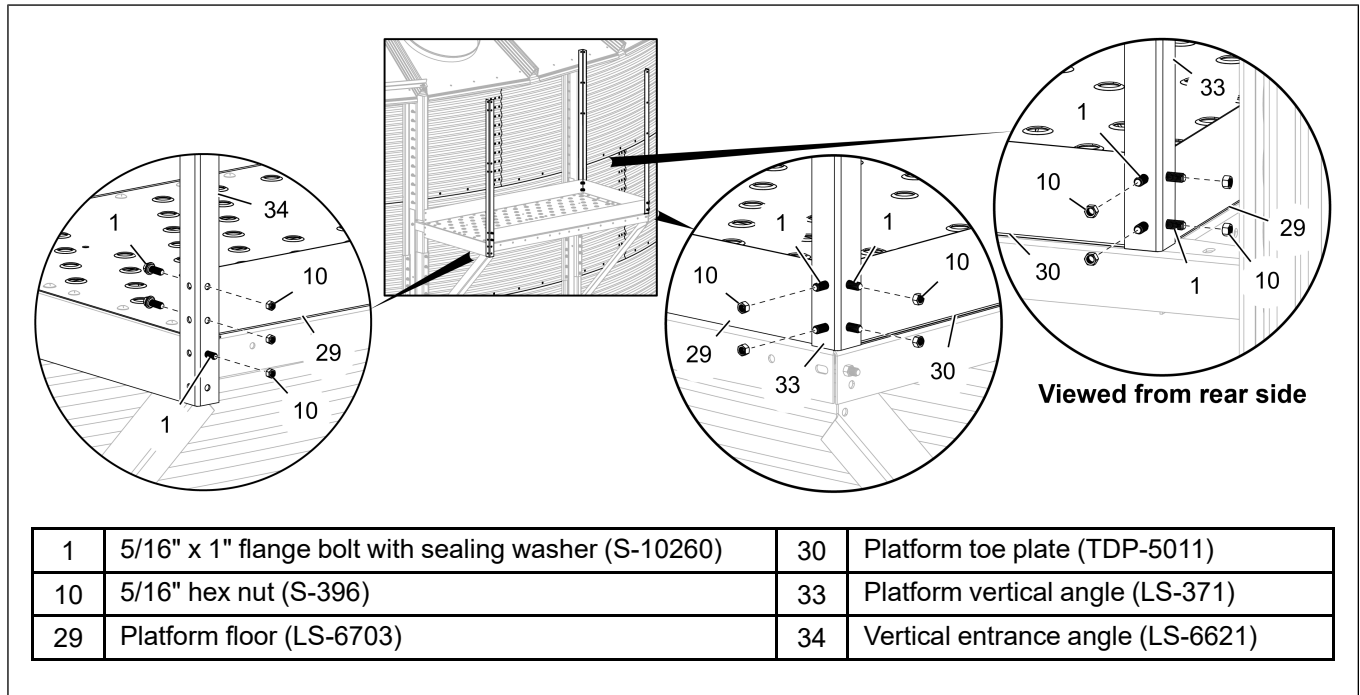


Chapter 3: Installing the Eave Platform and Ladder

5. Install the vertical entrance angle (34) and platform vertical angles (33) to the platform floor (29) and toe plate (30) using 5/16" x 1" flange bolts (1) and 5/16" hex nuts (10).

NOTE: Install flange bolts (1) with bolt head to the inside of the platform floor (29).

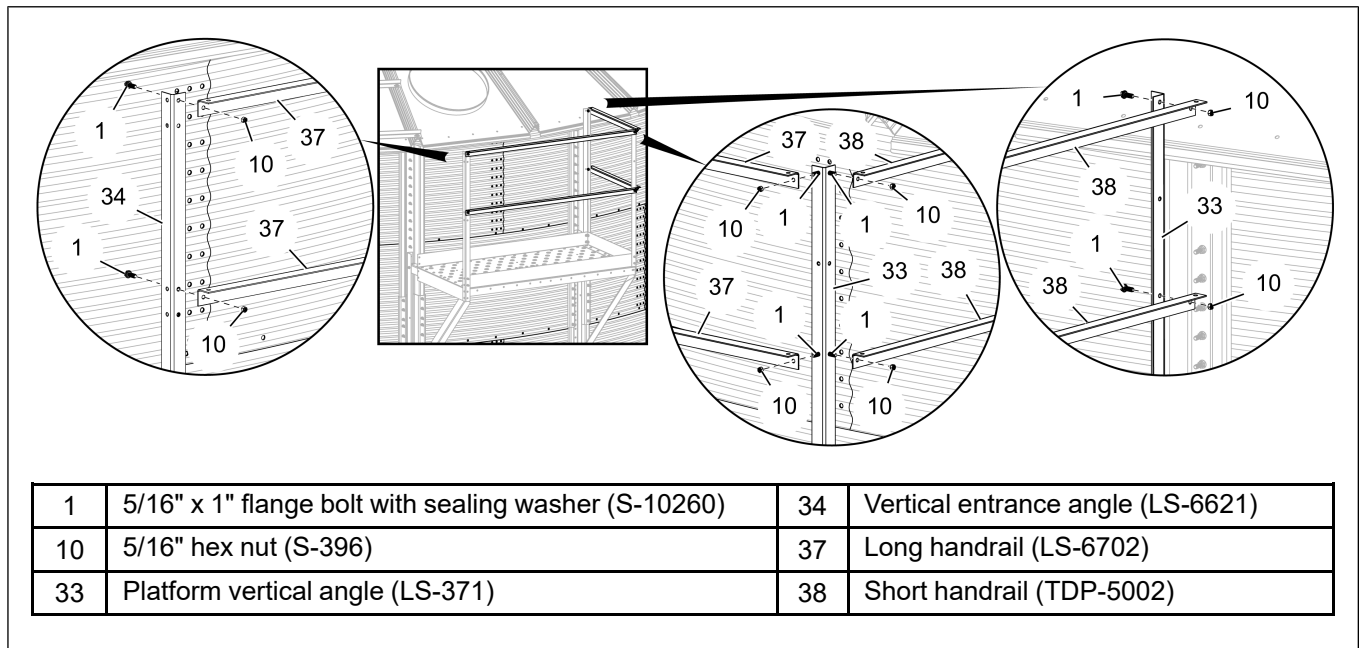
Figure 3-6 Installing the vertical entrance angle and platform vertical angles



6. Install the long handrails (37) between the vertical entrance angle (34) and platform vertical angle (33) using 5/16" x 1" flange bolts (1) and 5/16" hex nuts (10).
7. Install the short handrails (38) between the platform vertical angles (33) using 5/16" x 1" flange bolts (1) and 5/16" hex nuts (10).

NOTE: Install flange bolts (1) with bolt head to the inside of the platform floor.

Figure 3-7 Installing the handrails



Installing the Ladder for the Eave Platform

1. Check the 4' ladder section (14) to make sure the ladder rung dimples are to the top surface and attach the 4' ladder section (14) to the L.H. and R.H. ladder starter brackets (19 and 20) using 5/16" x 1" flange bolts (1) and 5/16" flange nuts (9).

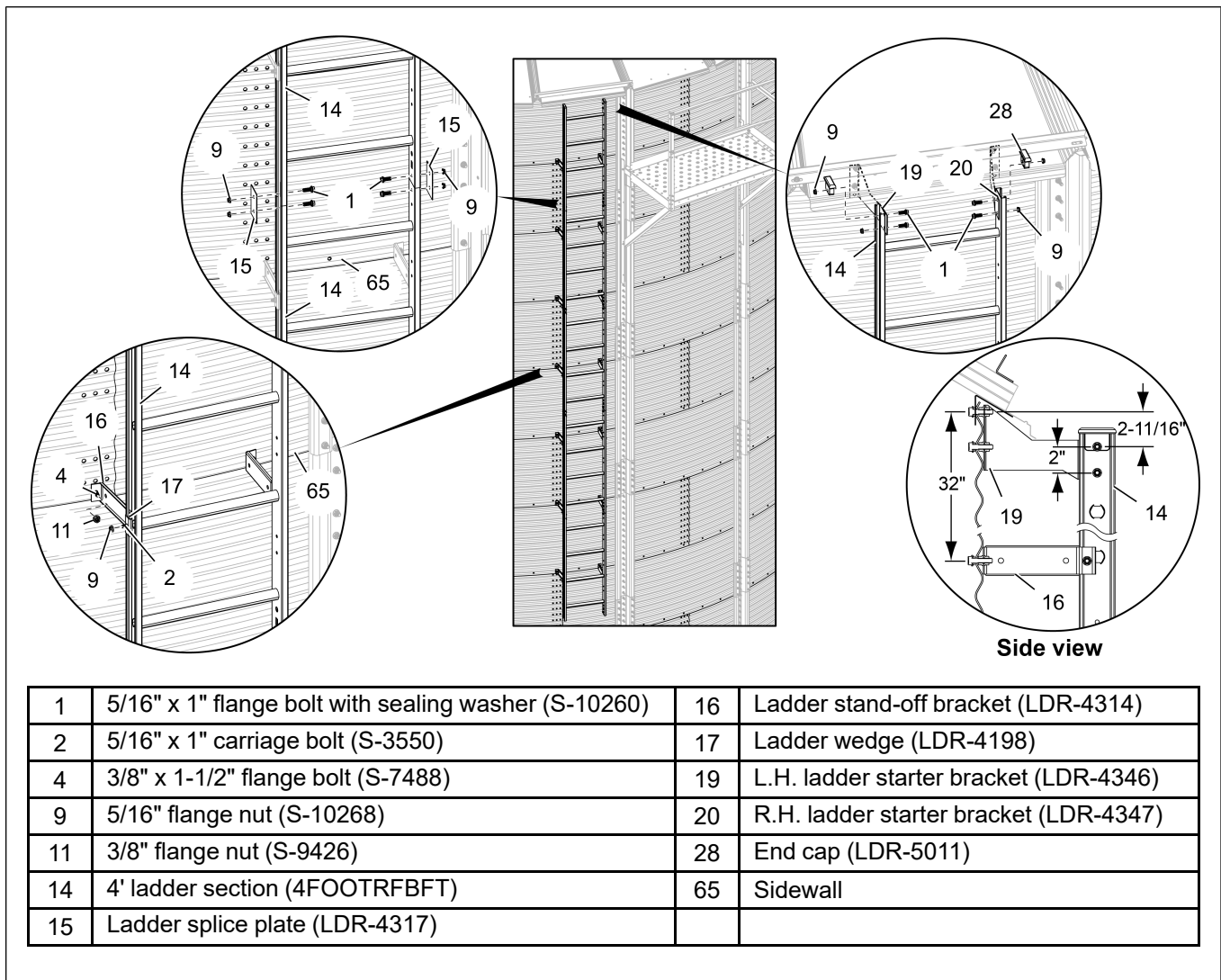
NOTE: While attaching the ladder (14) to the starter brackets (19 and 20), make sure to install the end caps (28) to the top hole on both sides of the ladder (14). Refer to [Installing the End Caps to the Ladder, page 18](#) for details.

2. Attach the ladder stand-off brackets (16) to the sidewall (65) at the horizontal seams (repeating every 44") using the existing 3/8" x 1-1/2" flange bolts (4) and 3/8" flange nuts (11). To attach the ladder section (14) to the ladder stand-off bracket (16), refer to [Assembling the Ladder Stand-Off Brackets, page 16](#).
3. Connect the next 4' ladder section (14) to the previously installed ladder section (14). Refer to [Assembling the Ladder Sections, page 16](#) for details. Secure the ladder section (14) to the sidewall (65) by installing the ladder stand-off brackets (16) at the horizontal seams.

4. Continue to install the remaining ladder sections (14) till the next platform.

NOTE: Install all flange bolts (1) with bolt head on the inside of the ladder (14).

Figure 3-8 Installing the ladder sections



Installing the Eave Adjustable Braces

The eave adjustable brace is comprised of one middle brace (large diameter tube) and two end braces (smaller diameter tubes).

Before You Begin

Make sure the ladder extension rail (21) is installed on both side of the ladder section (14). Refer to [Installing the Ladder Extension Rails, page 17](#) for details.

1. Insert the round side of the end braces (46 and 47) into the middle brace (45) as shown.
2. Attach the other end of the end brace (47) to the top of the ladder extension rail (21) using 5/16" x 1" flange bolt (1) and 5/16" flange nut (9).
3. Slide and adjust the braces until the flattened bottom of the end brace (46) reaches the roof panel (66). Field drill the roof panel (66) through the end brace (46) and attach the end brace (46) to the roof panel (66) using 5/16" x 1" flange bolt (1) and 5/16" flange nut (9).
4. After securing the ends of the braces to the extension rail (21) and roof panel (66), field drill two 5/16" holes (67) through both middle brace (45) and end brace (46) and bolt together using 1/4" x 1-1/2" HHCS bolts (6) and 1/4" hex nuts (13). Similarly, field drill two 5/16" holes (67) through both middle brace (45) and end brace (47) and bolt together using 1/4" x 1-1/2" HHCS bolts (6) and 1/4" hex nuts (13).
5. Repeat the above steps to install the middle brace (45) and end braces (46 and 47) for the other side of the ladder rail (21).

Figure 3-9 Assembling the eave adjustable braces

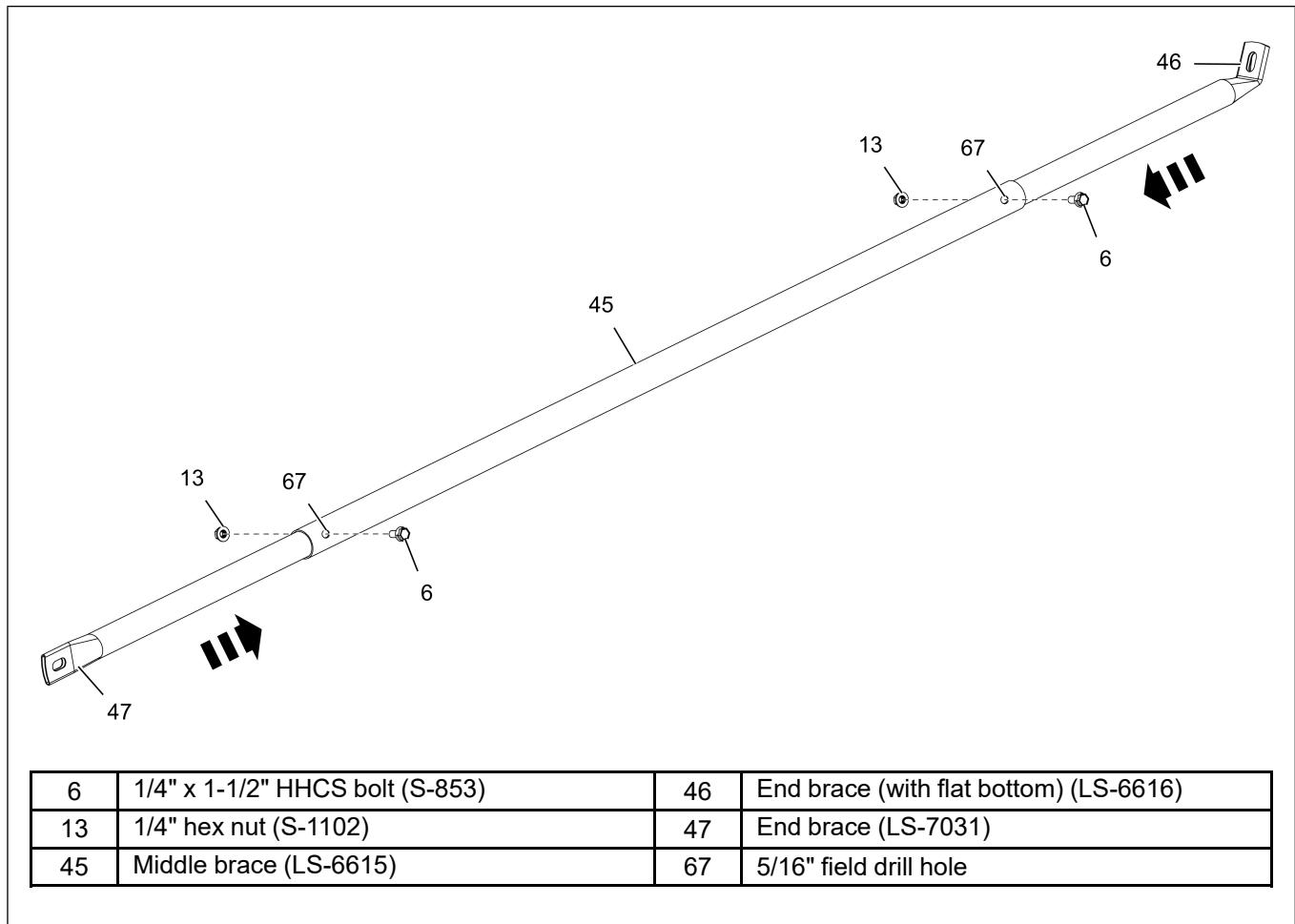
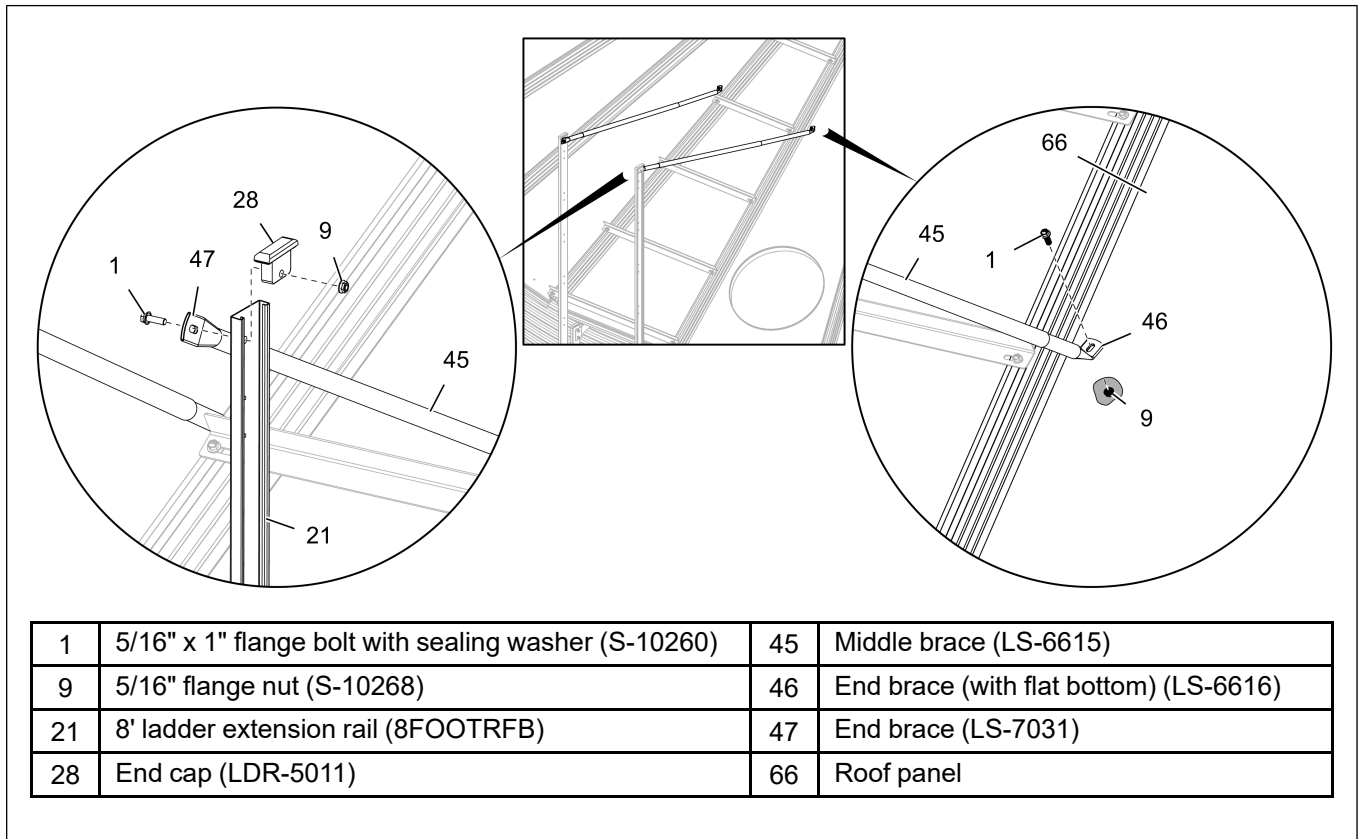


Figure 3-10 Installing the eave adjustable braces

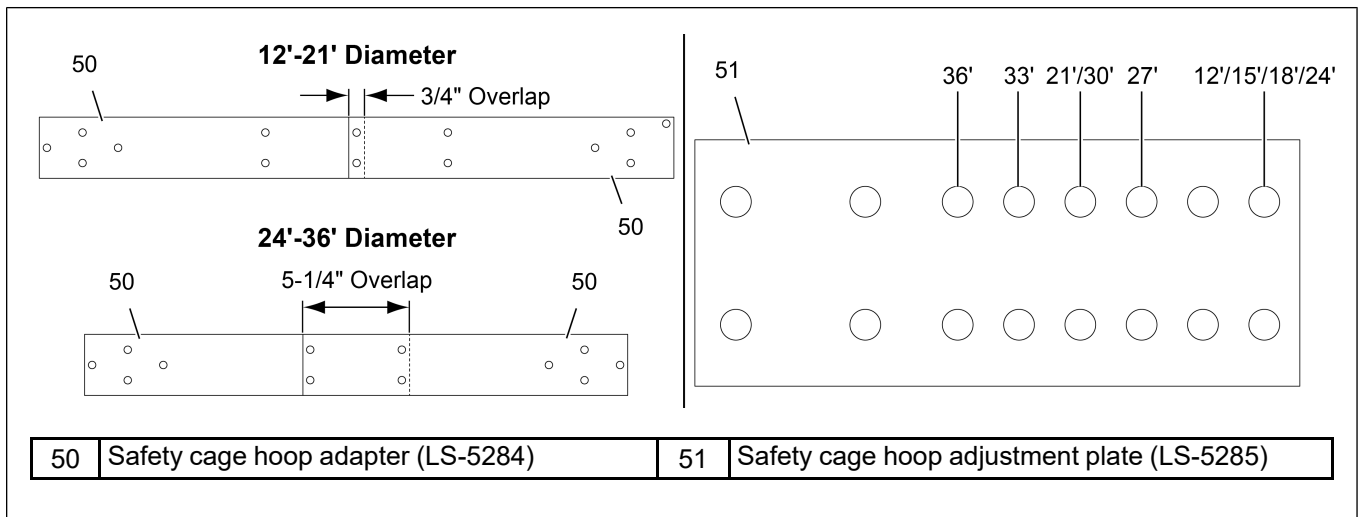


Installing the Safety Cages

What You Should Know

Refer to the below image for the overlap details of safety cage hoop adapters (50) and the holes to use on safety cage hoop adjustment plate (51) when attaching the adapters (50) to adjustment plates (51).

Figure 3-11 Safety cage hoop adapter and adjustment plate details

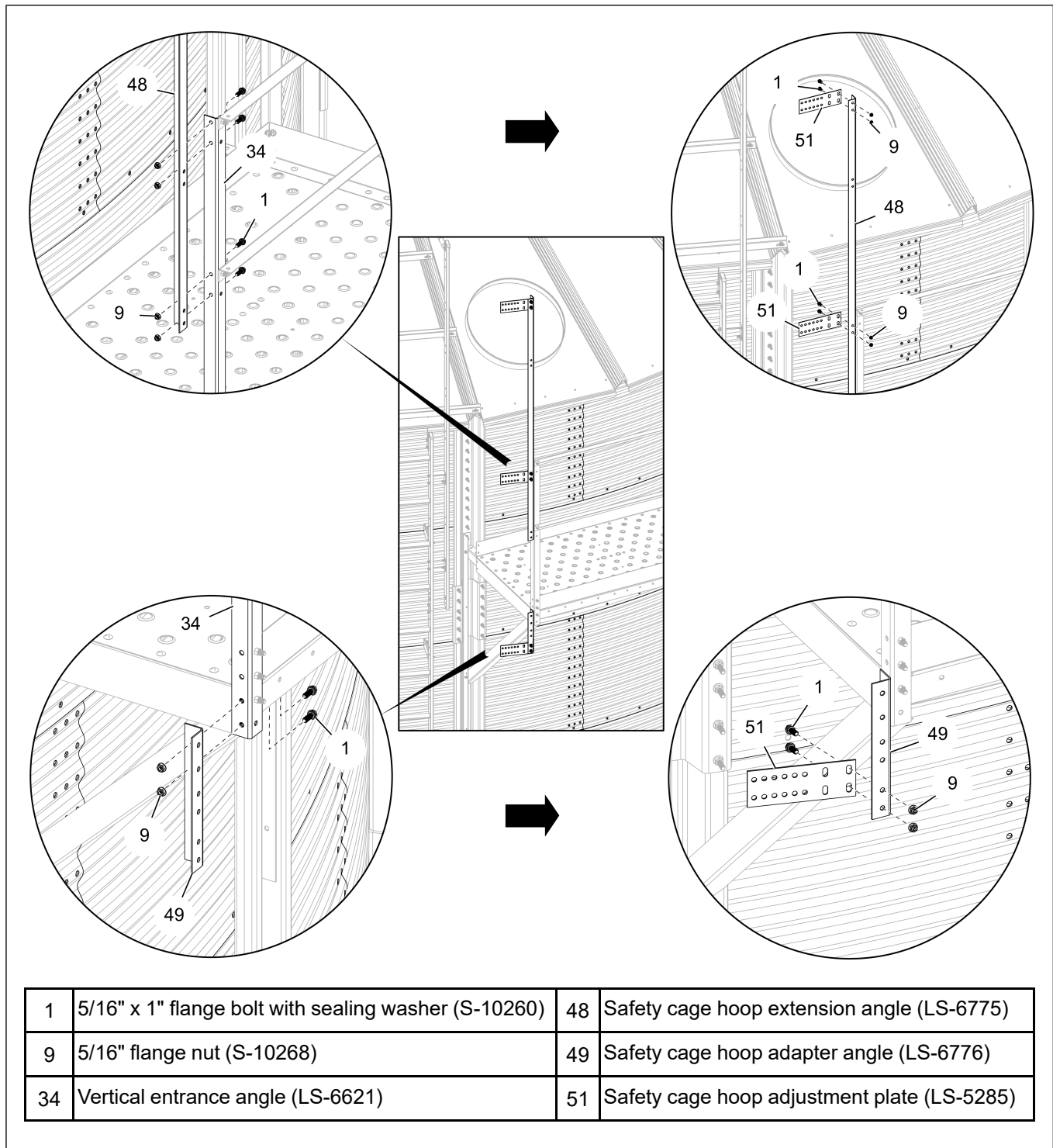


Chapter 3: Installing the Eave Platform and Ladder

1. Install the safety cage hoop extension angle (48) and safety cage hoop adapter angle (49) to the vertical entrance angle (34) using 5/16" x 1" flange bolts (1) and 5/16" flange nuts (9).
2. Attach one safety cage hoop adjustment plate (51) to the top and another one to the middle of the safety cage hoop extension angle (48) using 5/16" x 1" flange bolts (1) and 5/16" flange nuts (9).
3. Attach one safety cage hoop adjustment plate (51) to the bottom of the safety cage hoop adapter angle (49) using 5/16" x 1" flange bolts (1) and 5/16" flange nuts (9) per plate (51).

NOTE: Install all the flange bolts (9) with bolt head on the inside of the cages.

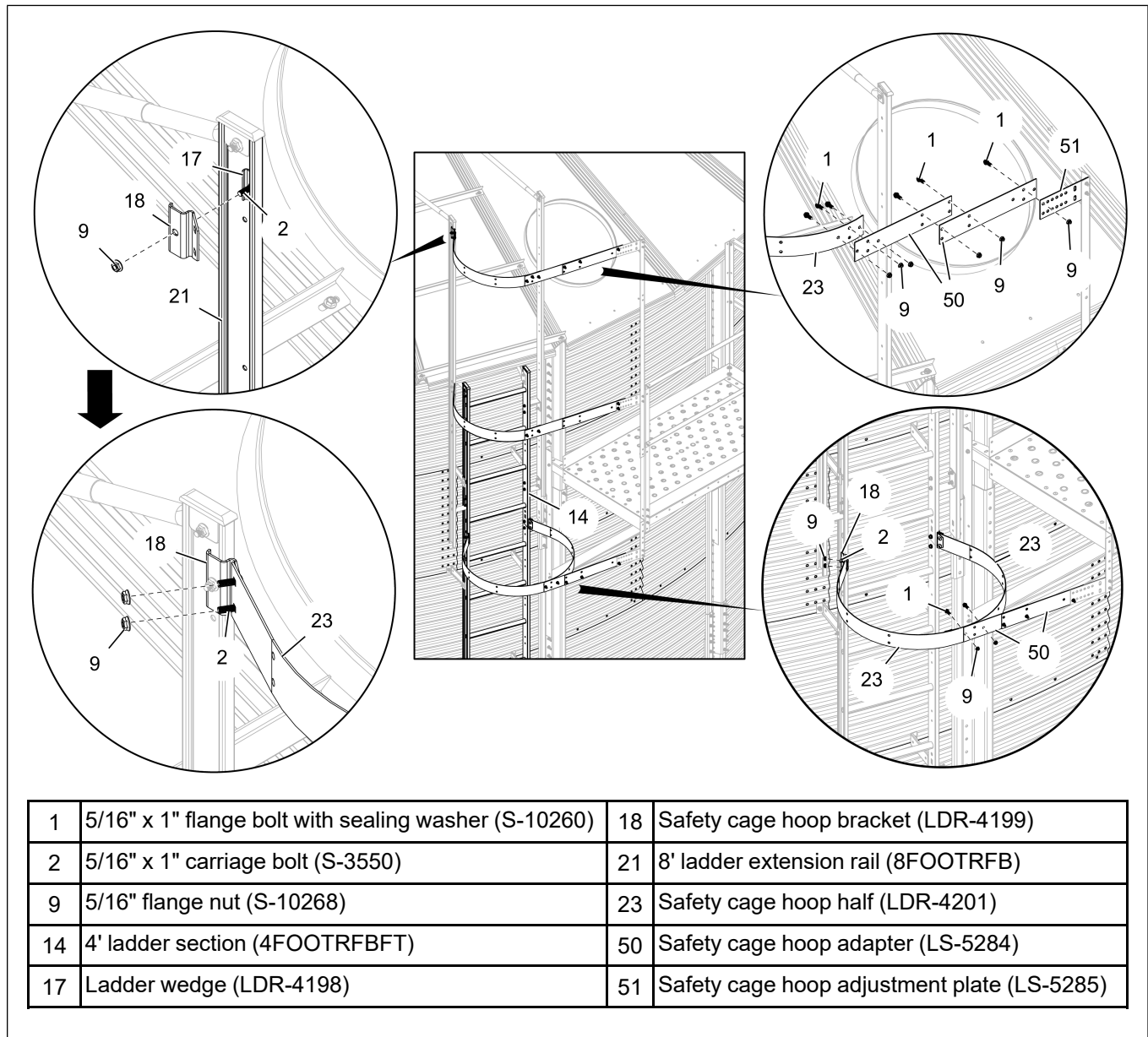
Figure 3-12 Installing the extension angle, adapter angle and adjustment plates



4. Assemble three sets by joining two safety cage hoop adapters (50) in each set using 5/16" x 1" flange bolts (1) and 5/16" flange nuts (9). Refer to overlap details on [Figure 3-11, page 37](#).
5. Assemble one set of safety cage hoop adapters (50) to each safety cage hoop adjustment plate (51) using 5/16" x 1" flange bolts (1) and 5/16" flange nuts (9). Refer to [Figure 3-11, page 37](#) for the proper holes to be used.
6. Attach one safety cage hoop half (23) to the open end of the top and middle sets of safety cage hoop adapters (50) using 5/16" x 1" flange bolts (1) and 5/16" flange nuts (9).
7. At the bottom, assemble two safety cage hoop halves (23) together with the bottom set of safety cage hoop adapters (50) using 5/16" x 1" flange bolts (1) and 5/16" flange nuts (9).
8. Attach the top and middle safety cage hoop halves (23) to the ladder extension rail (21) and bottom safety cage hoop halves (23) to the ladder section (14). Refer to [Assembling the Safety Cage Hoop Brackets, page 17](#) for details.

NOTE: Install all the flange bolts (9) with bolt head on the inside of the cages.

Figure 3-13 Installing the safety cage hoop halves and hoop adapters

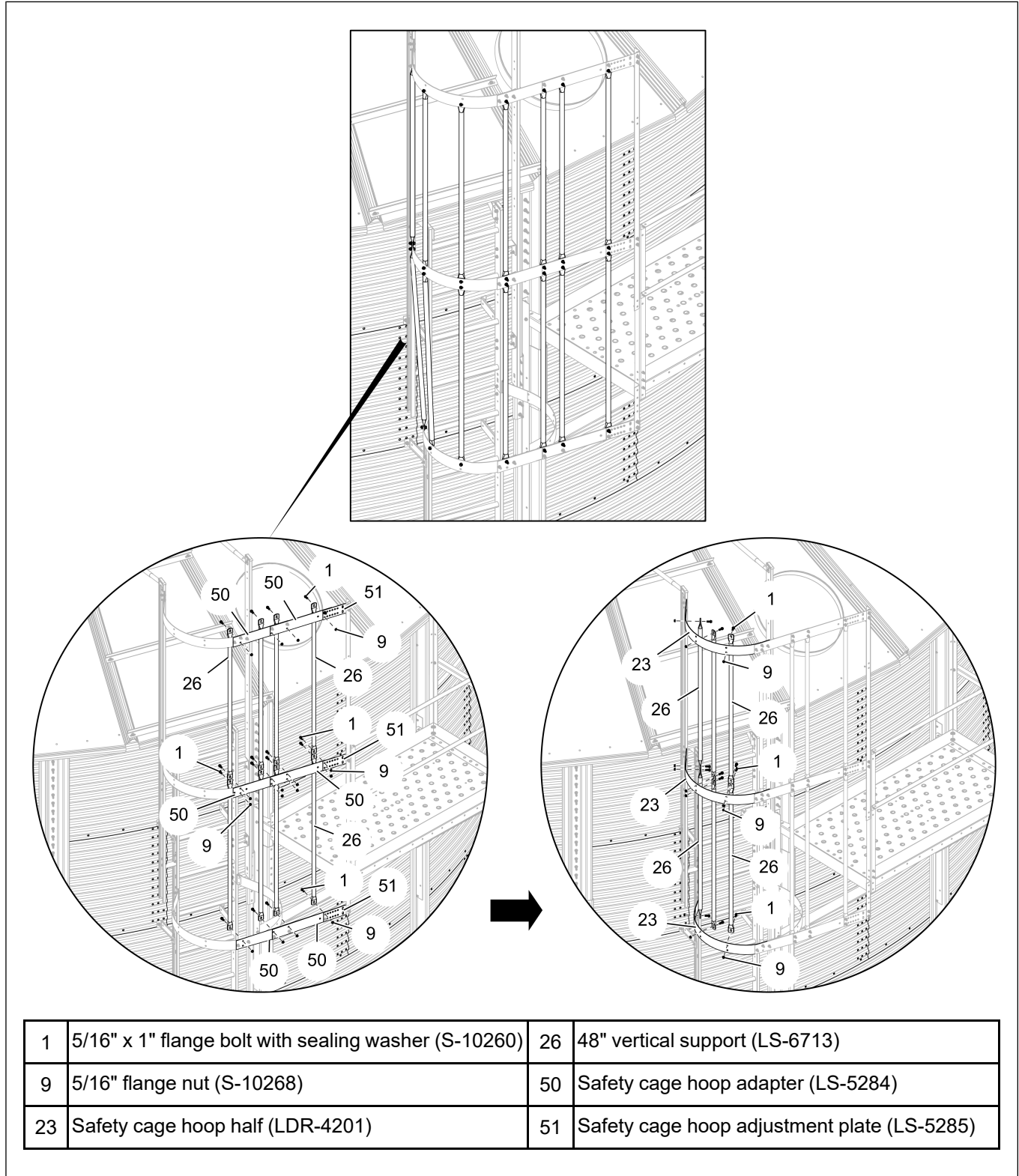


Chapter 3: Installing the Eave Platform and Ladder

9. Install the 48" vertical supports (26) between the top and middle hoop halves (23), hoop adapters (50), adjustment plates (51) using 5/16" x 1" flange bolts (1) and 5/16" flange nuts (9).
10. Install the 48" vertical supports (26) between the middle and bottom hoop halves (23), hoop adapters (50), adjustment plates (51) using 5/16" x 1" flange bolts (1) and 5/16" flange nuts (9).

NOTE: Install all the flange bolts (9) with bolt head on the inside of the cages.

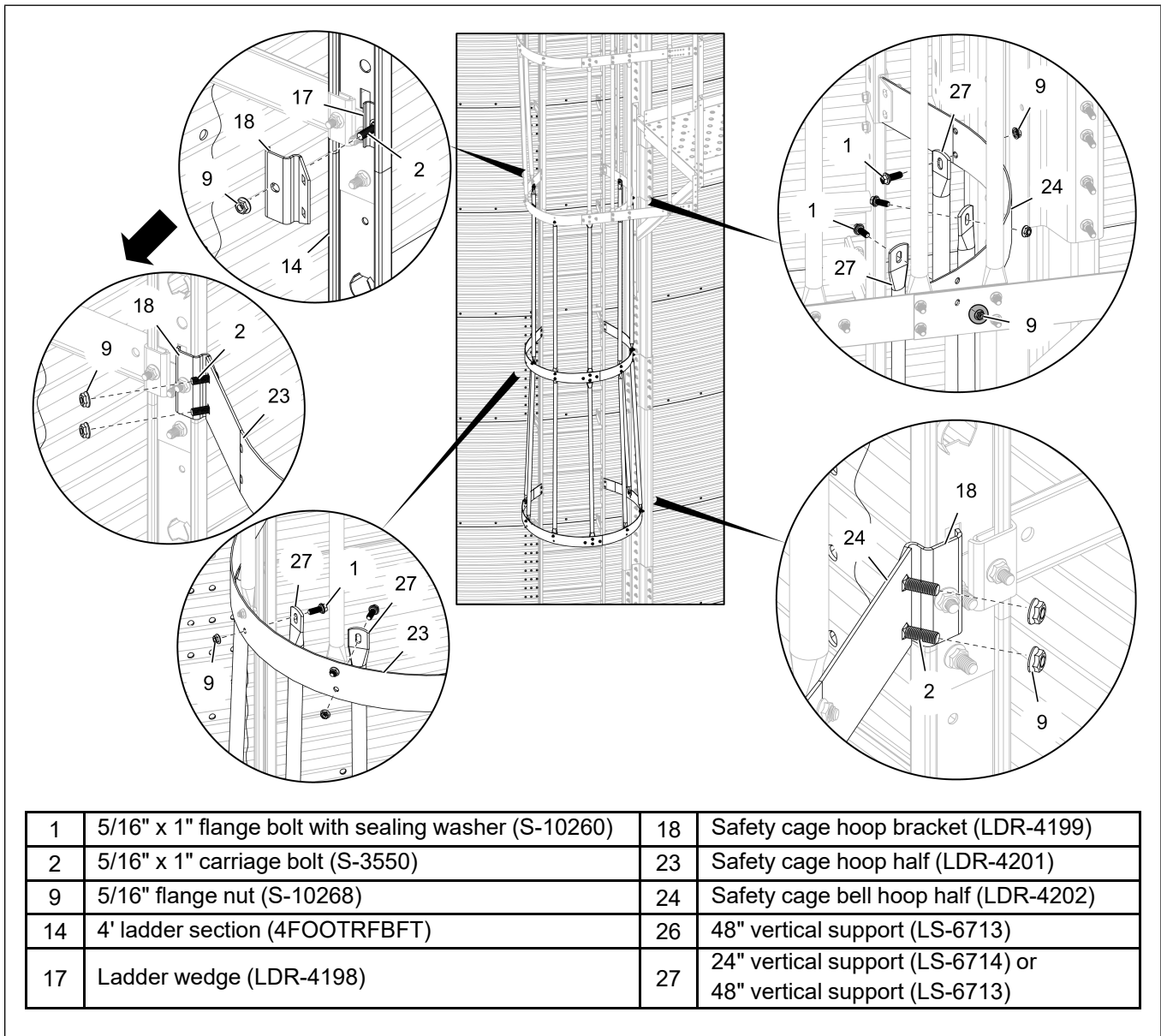
Figure 3-14 Installing the vertical supports



11. Install the safety cage assembly (32" or 48") to the ladder section (14) by connecting the 32" vertical supports (25) or 48" vertical supports (26) previously installed safety cage hoop halves (23) using 5/16" x 1" flange bolts (1) and 5/16" flange nuts (9).
12. Attach the safety cage hoop halves (23) to the safety cage hoop brackets (18) using 5/16" x 1" carriage bolts (2) and 5/16" flange nuts (9). To attach the safety cage hoop brackets (18) to the ladder section (14), refer to [Assembling the Safety Cage Hoop Brackets, page 17](#).
13. After installing the safety cage assembly (32" or 48"), finally install the safety cage bell section by connecting the vertical supports (27) to the previously installed safety cage hoop halves (23) using 5/16" x 1" flange bolts (1) and 5/16" flange nuts (9).
14. Attach the safety cage bell hoop halves (24) to the safety cage hoop brackets (18) using 5/16" x 1" carriage bolts (2) and 5/16" flange nuts (9). To attach the safety cage hoop brackets (18) to the ladder section (14), refer to [Assembling the Safety Cage Hoop Brackets, page 17](#).

NOTE: Install all the flange bolts (9) with bolt head on the inside of the cages.

Figure 3-15 Installing the remaining safety cage sections



NOTES

4 Installing the Intermediate Platform and Ladder

Topics Covered in this Chapter

- Installing the Sidewall Braces and Ladder Starting Brackets
- Installing the Intermediate Platform
- Installing the Ladder at the Intermediate Platform
- Installing the Safety Cages

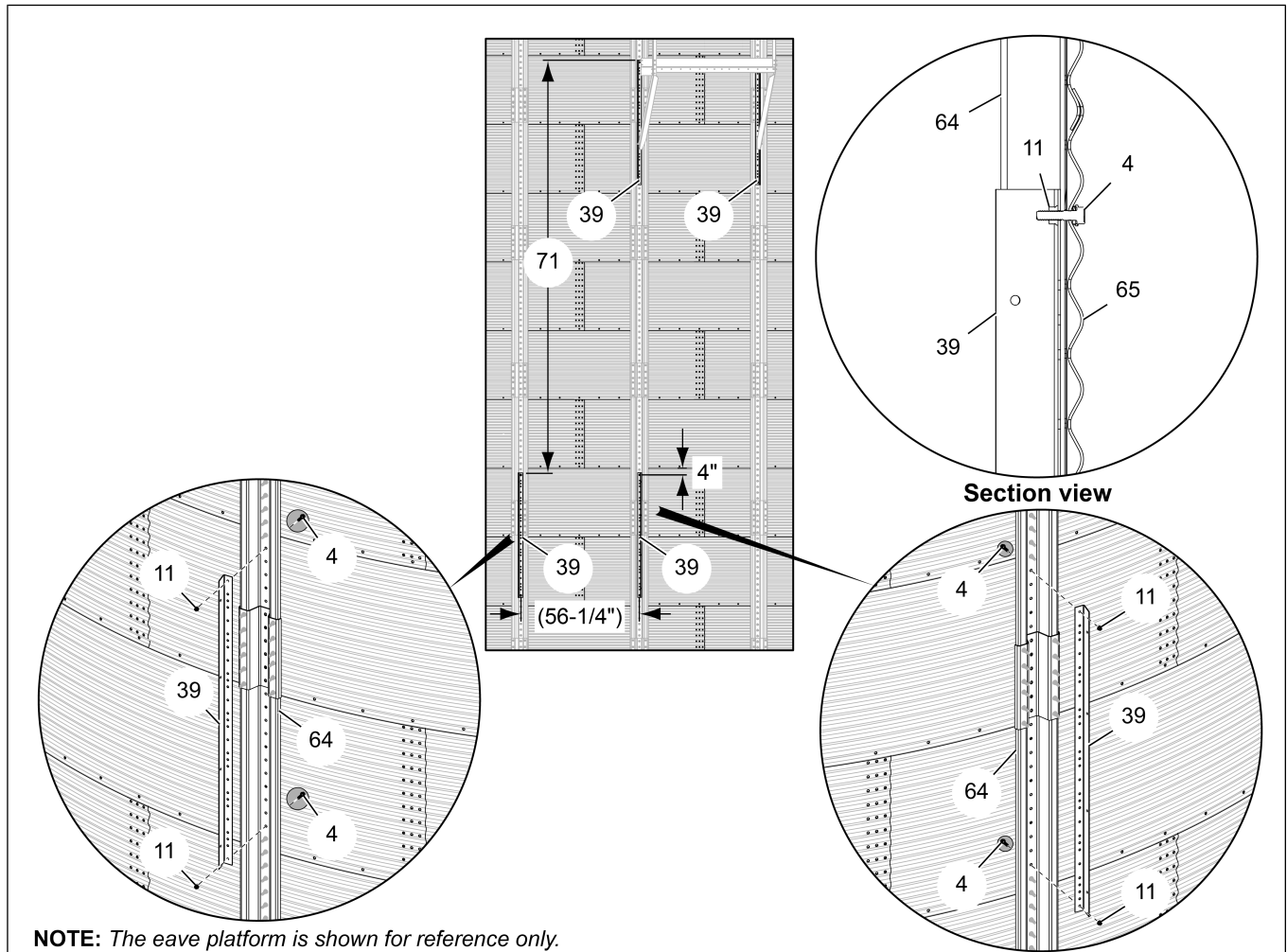
Installing the Sidewall Braces and Ladder Starting Brackets

What You Should Know

Pay careful attention when installing the intermediate platform mounting angles. The dimensions and locations of these angles are very critical to assure proper fit of all parts.

1. Position the first sidewall brace (39) in-line with the left sidewall brace (39) of the previous platform, and align its top hole 4" below the horizontal seam of the ring where the platform will be installed. Refer to the [Ladder Usage Chart, page 20](#) to determine the correct ring.
2. Install the sidewall brace (39) onto the stiffener (64) using 3/8" x 1-1/2" flange bolts (4) and 3/8" flange nuts (11).
3. Similarly, install the next sidewall brace (39) to the stiffener (64) immediately to the left of the previously installed sidewall brace (39).

Figure 4-1 Installing the sidewall braces for the intermediate platform



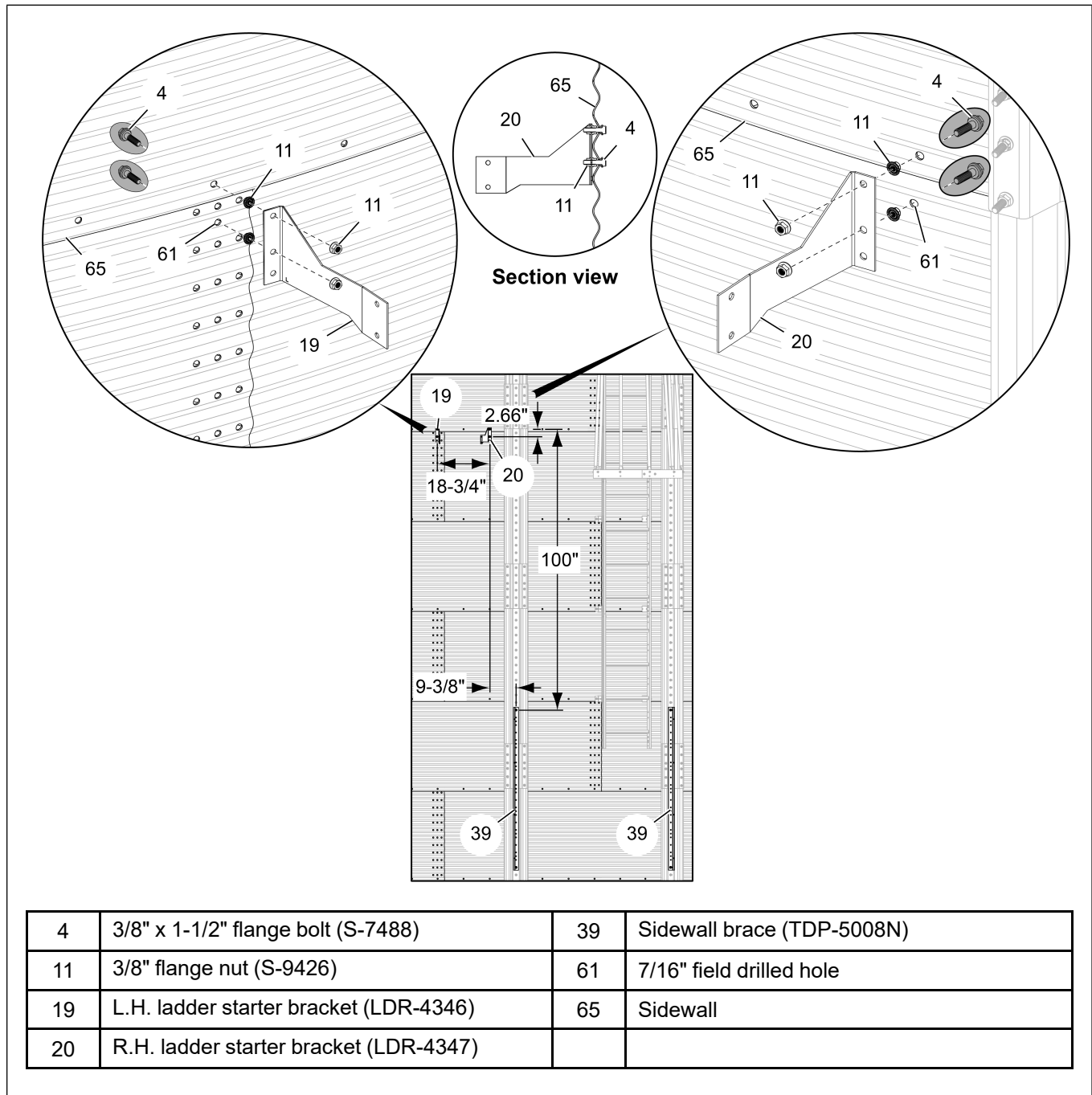
4	3/8" x 1-1/2" flange bolt (S-7488)	64	Stiffener
11	3/8" flange nut (S-9426)	65	Sidewall
39	Sidewall brace (TDP-5008N)	71	Refer to Ladder Usage Chart, page 20 .

Chapter 4: Installing the Intermediate Platform and Ladder

4. Locate the top horizontal seam of the third ring above the one where the sidewall braces (39) are installed. From this seam, measure 2.66" downward and 9-3/8" from the center of the left sidewall brace (39), toward the left side. Mark a hole at this location on the sidewall (65).
5. Mark another hole by measuring horizontally 18-3/4" to the left of the previously marked hole. Field drill 7/16" hole (61) through the markings.
6. Install the L.H. ladder starter bracket (19) and R.H. ladder starter bracket (20) to the sidewall (65) using 3/8" x 1-1/2" flange bolts (4) and 3/8" flange nuts (11).

NOTE: Align the top hole of the ladder brackets (19 and 20) with the top horizontal seam and the bottom hole with the field drilled holes. For each bolt (4), add an extra flange nut (11) to fill the gap between the sidewall (65) and the brackets (19 and 20).

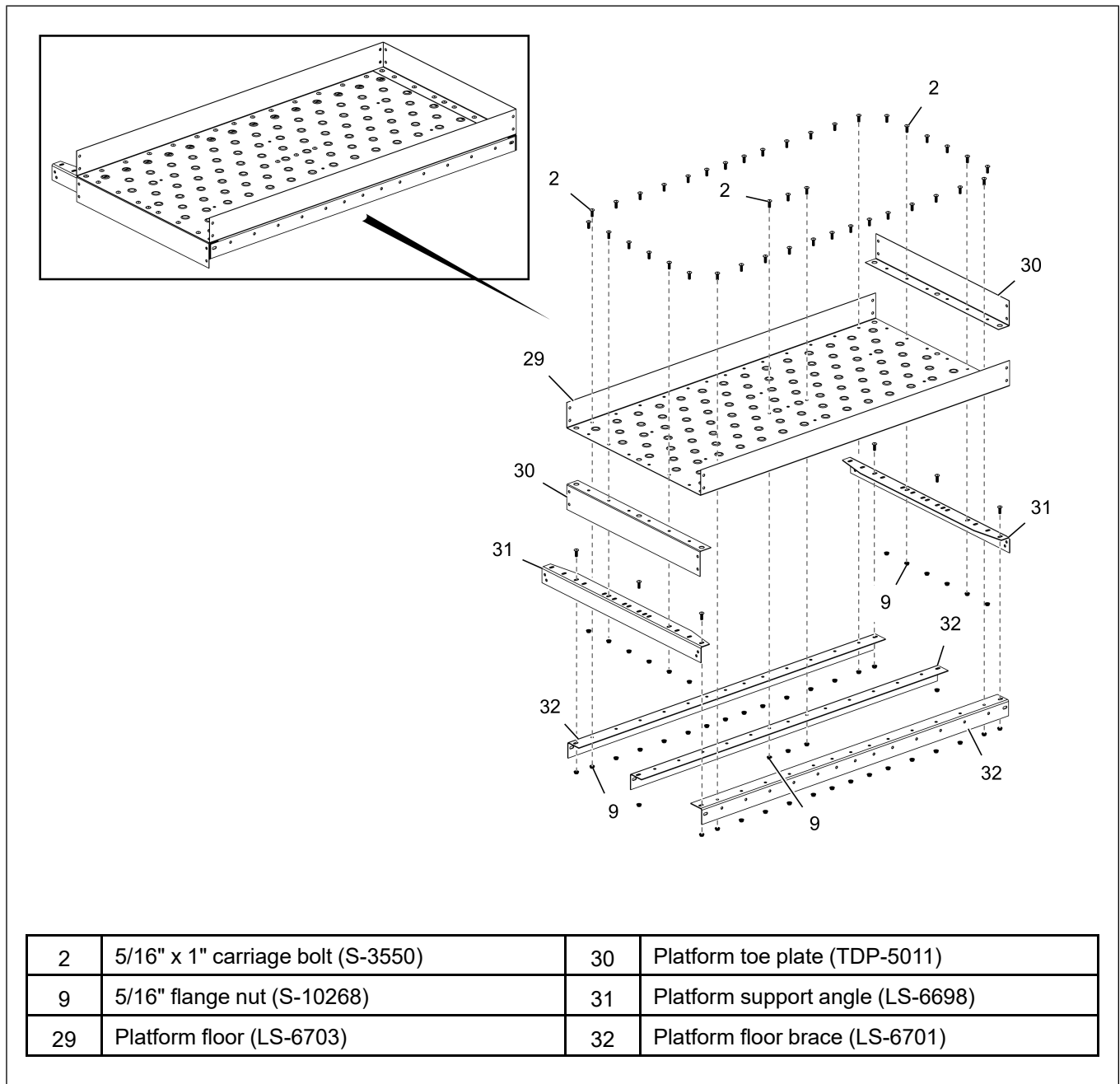
Figure 4-2 Installing the ladder starting brackets at the intermediate platform



Installing the Intermediate Platform

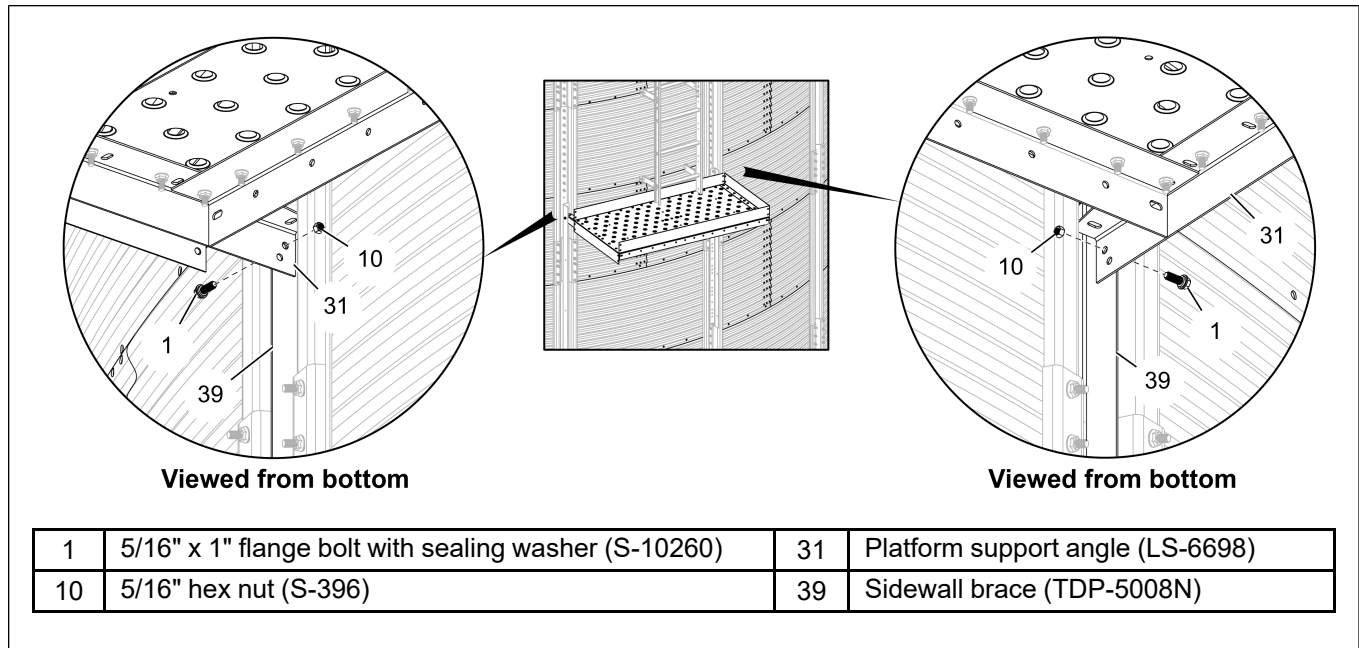
1. Assemble the platform floor (29), toe plates (30), support angles (31) and floor braces (32) together using 5/16" x 1" carriage bolts (2) and 5/16" flange nuts (9).
 - a. Assemble the right side toe plate (30) above the platform floor (29) and left side toe plate (30) below the platform floor (29).
 - b. Assemble one support angle (31) to each side below the platform floor (29).
 - c. Assemble the floor braces (32) to the front, middle and rear end below the platform floor (29).
 - d. Install carriage bolts (2) with bolt head on top of the platform floor (29).

Figure 4-3 Assembling the platform floor with toe plates, support angles and floor braces



2. Lift the platform assembly and attach the support angles (31) to the sidewall braces (39) using 5/16" x 1" flange bolts (1) and 5/16" hex nuts (10).

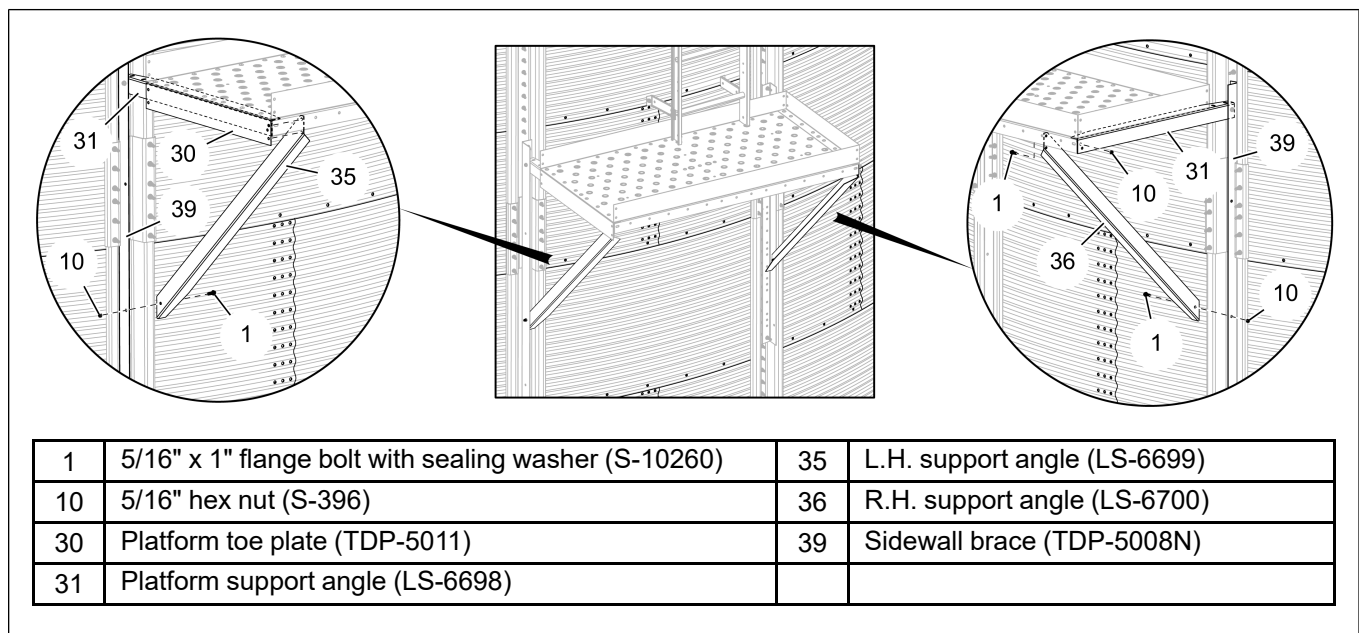
Figure 4-4 Attaching the support angles to the sidewall braces



3. Install one end of the L.H. support angle (35) to the sidewall brace (39) using 5/16" x 1" flange bolts (1) and 5/16" hex nuts (10). Align the other end with toe board plate (30) but do not install hardware at this time.
4. Install the R.H. support angle (36) between the support angle (31) and sidewall brace (39) using 5/16" x 1" flange bolts (1) and 5/16" hex nuts (10).

NOTE: Use the upper hole in the R.H. support angles (36) while connecting to the upper hole of the platform support angle (31).

Figure 4-5 Installing the L.H. and R.H. support angles

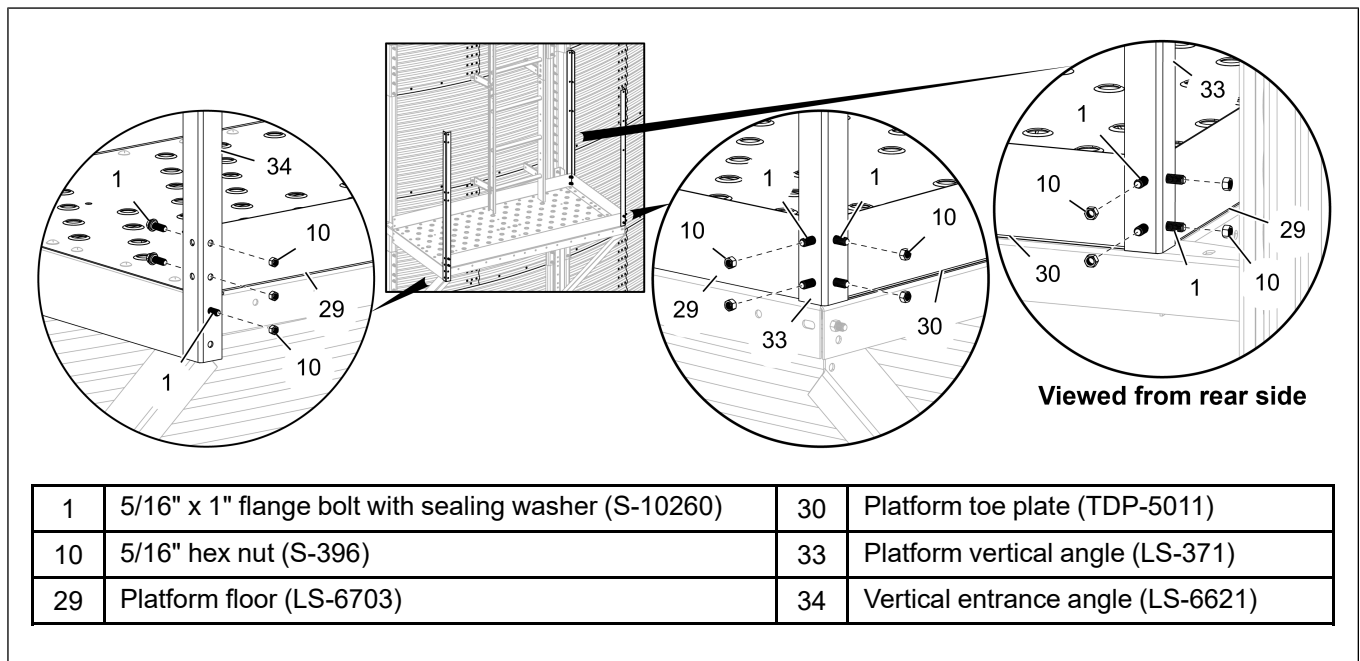


Chapter 4: Installing the Intermediate Platform and Ladder

5. Install the vertical entrance angle (34) and platform vertical angles (33) to the platform floor (29) and toe plate (30) using 5/16" x 1" flange bolts (1) and 5/16" hex nuts (10).

NOTE: Install flange bolts (1) with bolt head to the inside of the platform floor (29).

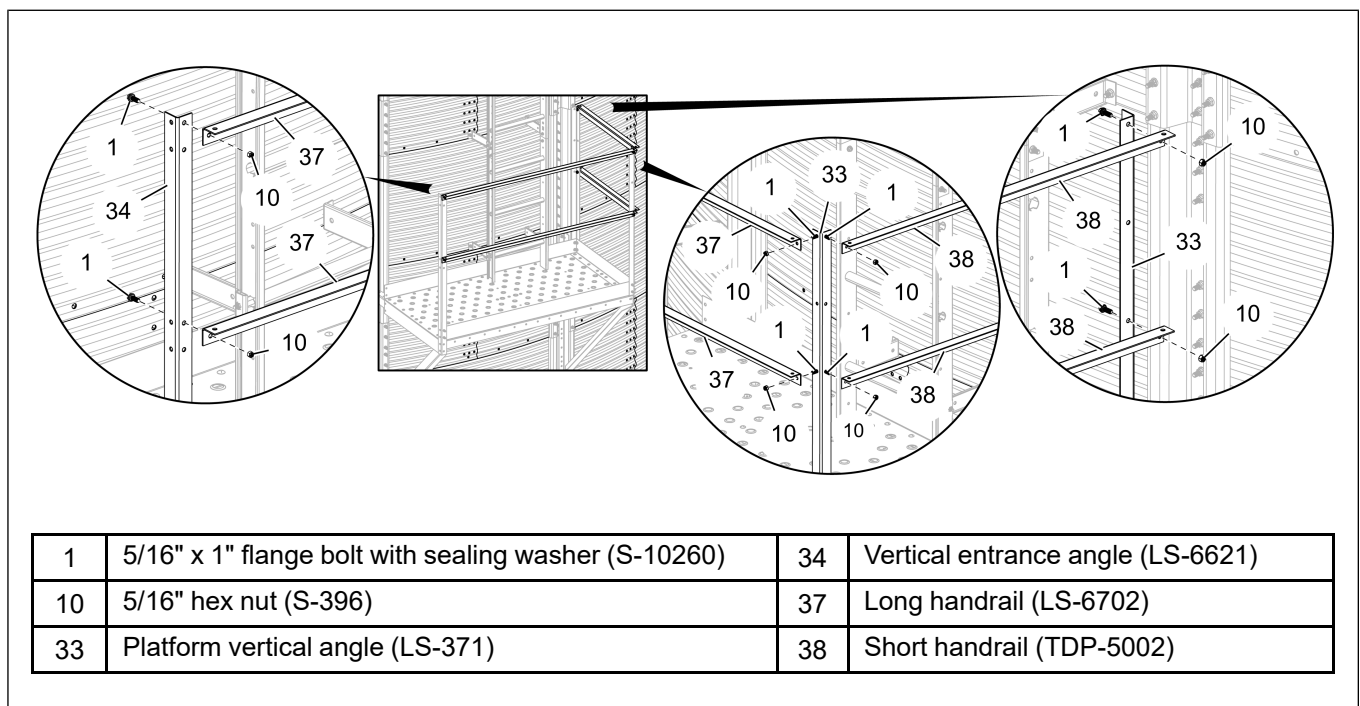
Figure 4-6 Installing the vertical entrance angle and platform vertical angles



6. Install the long handrails (37) between the vertical entrance angle (34) and platform vertical angle (33) using 5/16" x 1" flange bolts (1) and 5/16" hex nuts (10).
7. Install the short handrails (38) between the platform vertical angles (33) using 5/16" x 1" flange bolts (1) and 5/16" hex nuts (10).

NOTE: Install flange bolts (1) with bolt head to the inside of the platform floor.

Figure 4-7 Installing the handrails



Installing the Ladder at the Intermediate Platform

1. Check the 4' ladder section (14) to make sure the ladder rung dimples are to the top surface and attach the 4' ladder section (14) to the L.H. and R.H. ladder starter brackets (19 and 20) using 5/16" x 1" flange bolts (1) and 5/16" flange nuts (9).

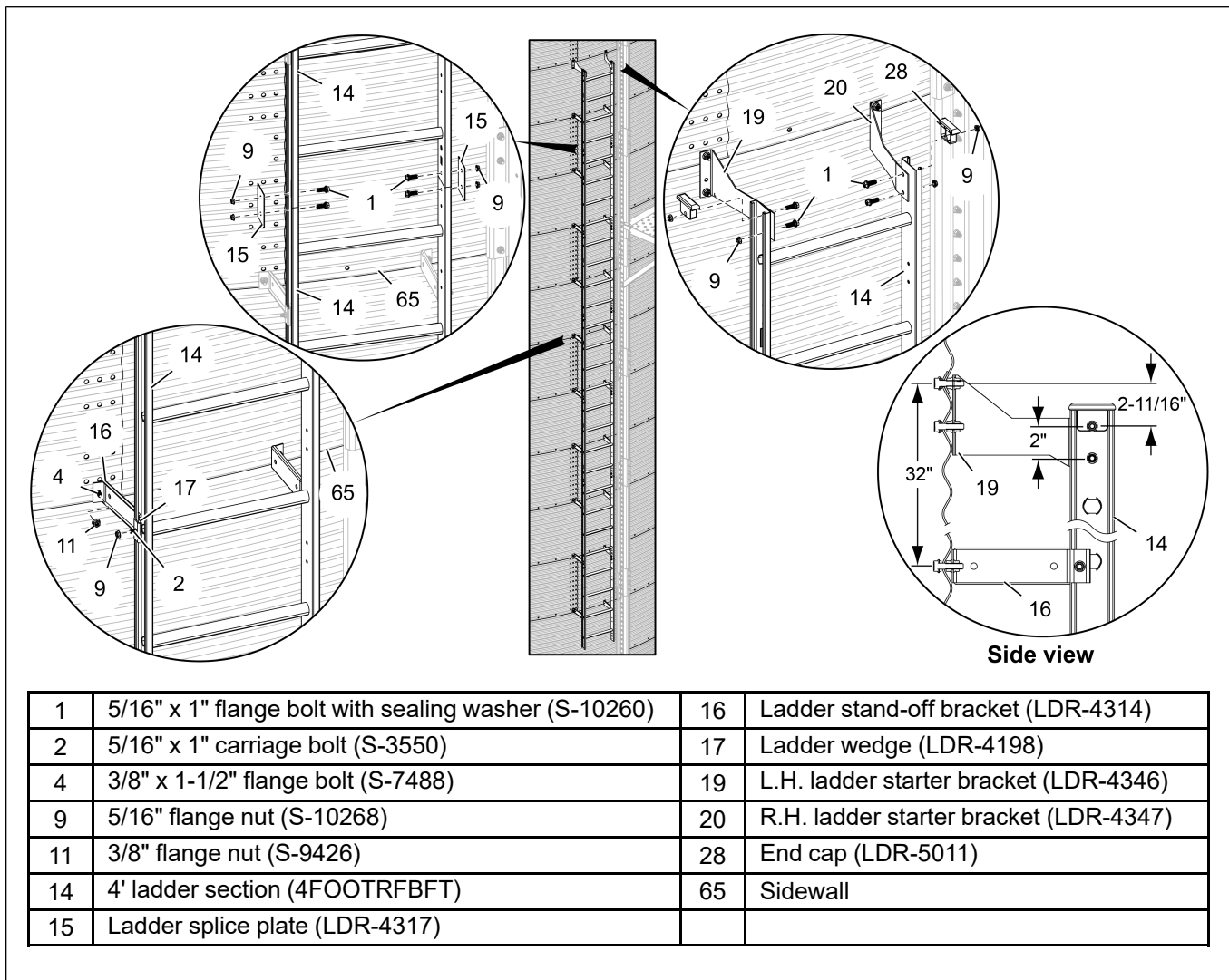
NOTE: While attaching the ladder (14) to the starter brackets (19 and 20), make sure to install the end caps (28) to the top hole on both sides of the ladder (14). Refer to [Installing the End Caps to the Ladder, page 18](#) for details.

2. Attach the ladder stand-off brackets (16) to the sidewall (65) at the horizontal seams (repeating every 44") using the existing 3/8" x 1-1/2" flange bolts (4) and 3/8" flange nuts (11). To attach the ladder section (14) to the ladder stand-off bracket (16), refer to [Assembling the Ladder Stand-Off Brackets, page 16](#).
3. Connect the next 4' ladder section (14) to the previously installed ladder section (14). Refer to [Assembling the Ladder Sections, page 16](#) for details. Secure the ladder section (14) to the sidewall (65) by installing the ladder stand-off brackets (16) at the horizontal seams.

4. Continue to install the remaining ladder sections (14) till the base of the tank.

NOTE: Install all flange bolts (1) with bolt head on the inside of the ladder (14).

Figure 4-8 Installing the ladder sections

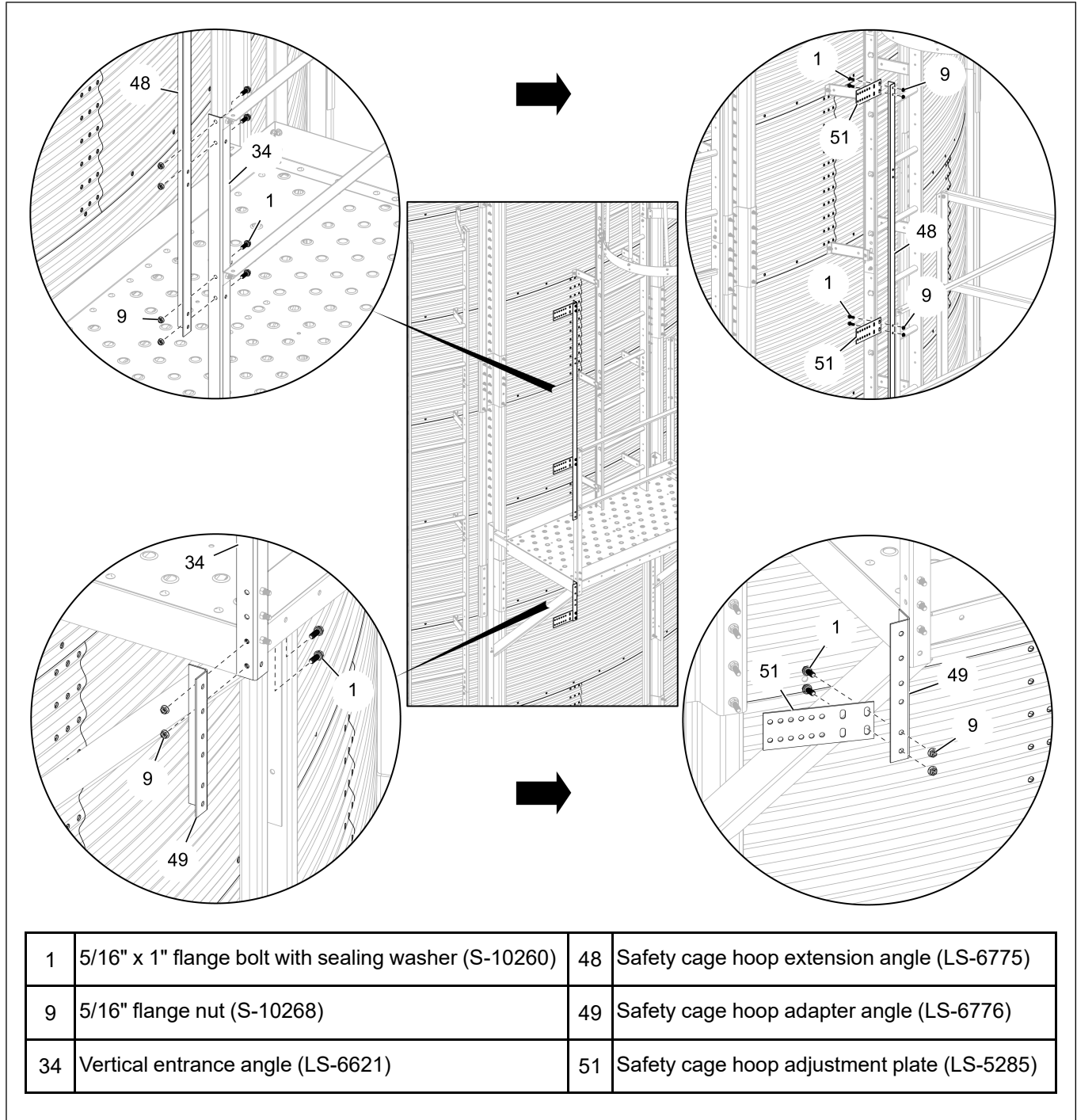


Installing the Safety Cages

1. Install the safety cage hoop extension angle (48) and safety cage hoop adapter angle (49) to the vertical entrance angle (34) using 5/16" x 1" flange bolts (1) and 5/16" flange nuts (9).
2. Attach one safety cage hoop adjustment plate (51) to the top and another one to the middle of the safety cage hoop extension angle (48) using 5/16" x 1" flange bolts (1) and 5/16" flange nuts (9).
3. Attach one safety cage hoop adjustment plate (51) to the bottom of the safety cage hoop adapter angle (49) using 5/16" x 1" flange bolts (1) and 5/16" flange nuts (9) per plate (51).

NOTE: Install all the flange bolts (9) with bolt head on the inside of the cages.

Figure 4-9 Installing the extension angle, adapter angle and adjustment plates

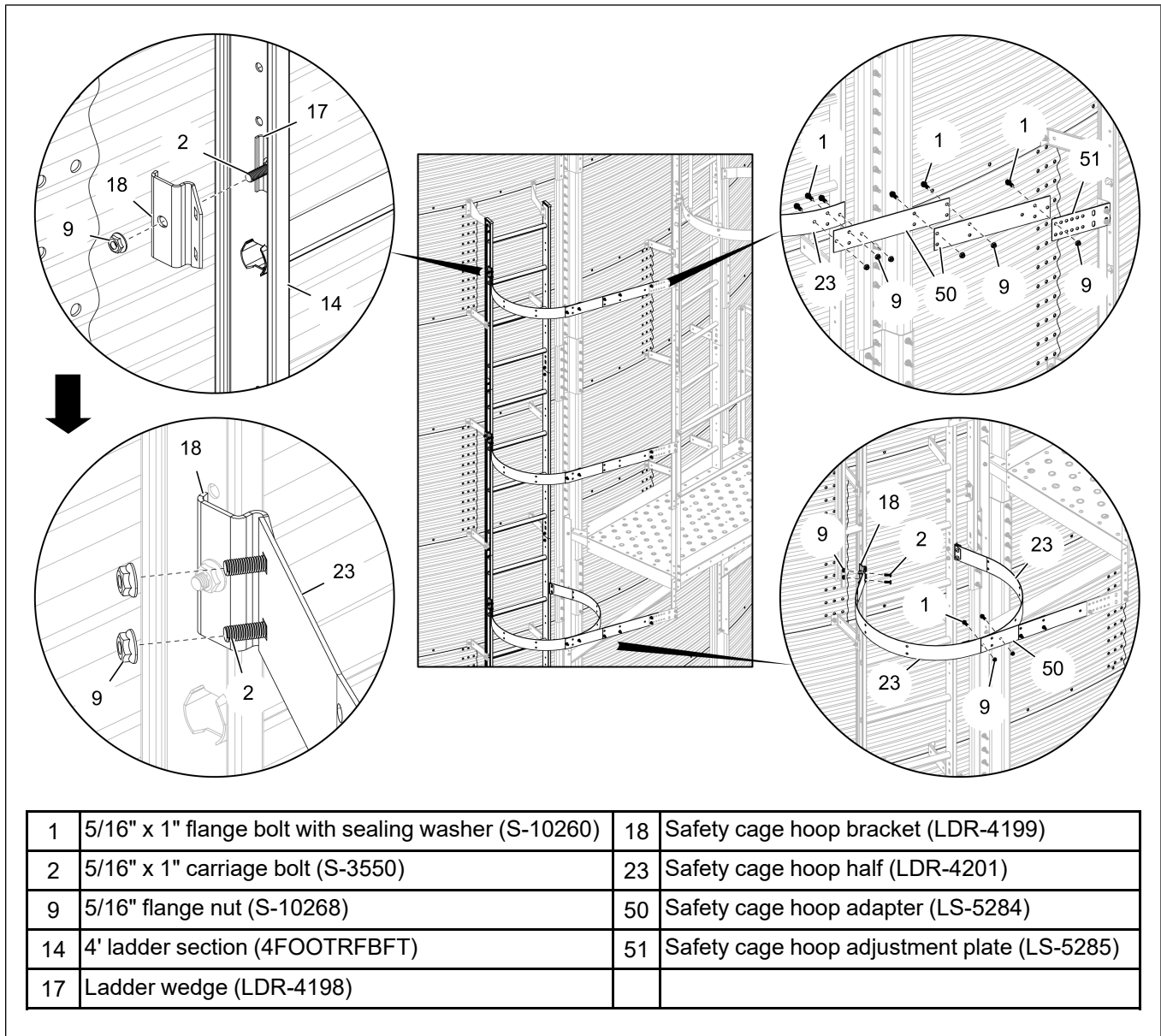


Chapter 4: Installing the Intermediate Platform and Ladder

4. Assemble three sets by joining two safety cage hoop adapters (50) in each set using 5/16" x 1" flange bolts (1) and 5/16" flange nuts (9). Refer to overlap details on .
5. Assemble one set of safety cage hoop adapters (50) to each safety cage hoop adjustment plate (51) using 5/16" x 1" flange bolts (1) and 5/16" flange nuts (9). Refer to [Figure 3-11, page 37](#) for the proper holes to be used.
6. Attach one safety cage hoop half (23) to the open end of the top and middle sets of safety cage hoop adapters (50) using 5/16" x 1" flange bolts (1) and 5/16" flange nuts (9).
7. At the bottom, assemble two safety cage hoop halves (23) together with the bottom set of safety cage hoop adapters (50) using 5/16" x 1" flange bolts (1) and 5/16" flange nuts (9).
8. Attach the safety cage hoop half (23) to the ladder section (14). Refer to [Assembling the Safety Cage Hoop Brackets, page 17](#) for details.

NOTE: Install all the flange bolts (9) with bolt head on the inside of the cages.

Figure 4-10 Installing the safety cage hoop halves and hoop adapters

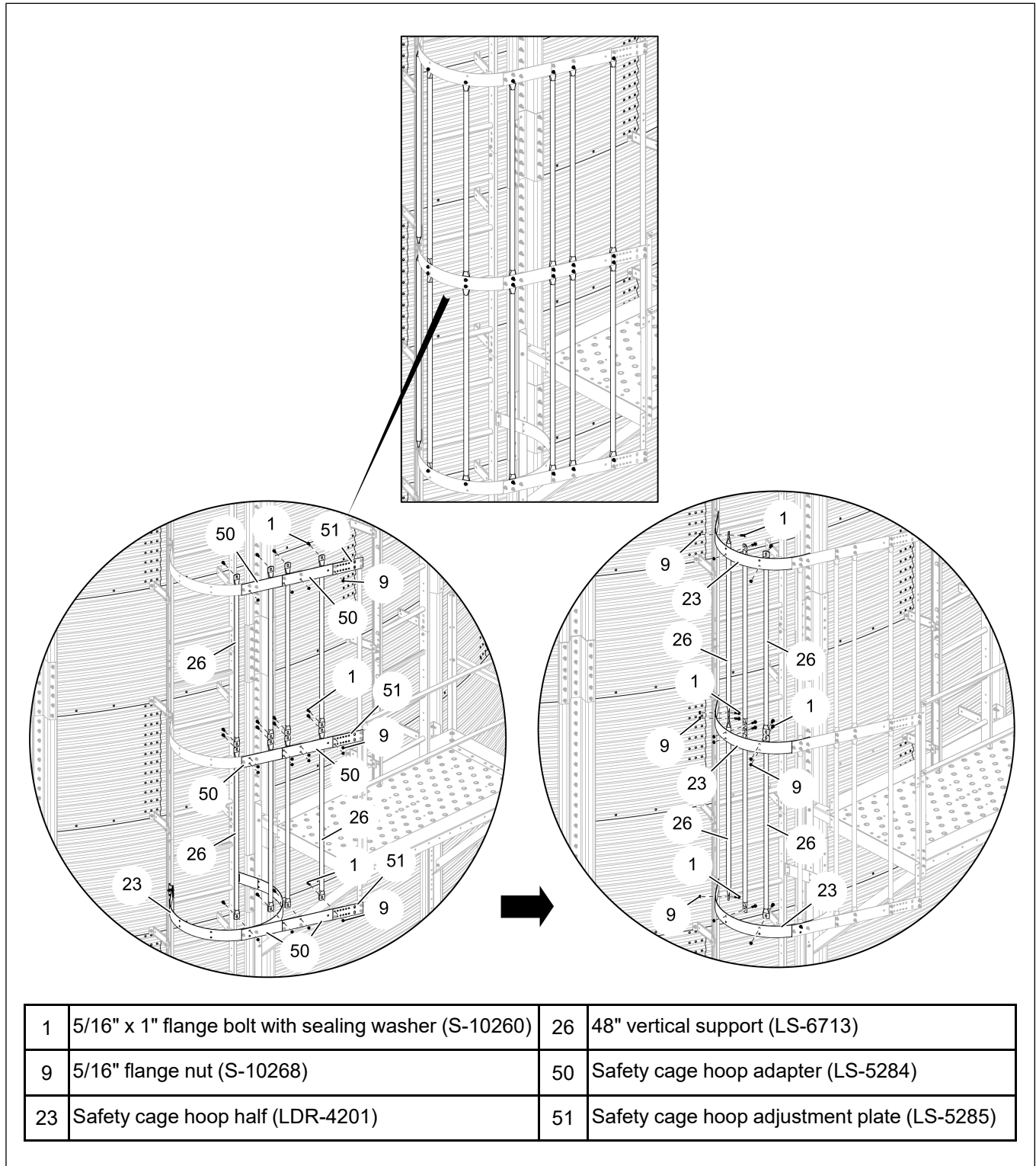


Chapter 4: Installing the Intermediate Platform and Ladder

9. Install the 48" vertical supports (26) between the top and middle hoop halves (23), hoop adapters (50) and adjustment plates (51) using 5/16" x 1" flange bolts (1) and 5/16" flange nuts (9).
10. Install the 48" vertical supports (26) between the middle and bottom hoop halves (23), hoop adapters (50) and adjustment plates (51) using 5/16" x 1" flange bolts (1) and 5/16" flange nuts (9).

NOTE: Install all the flange bolts (9) with bolt head on the inside of the cages.

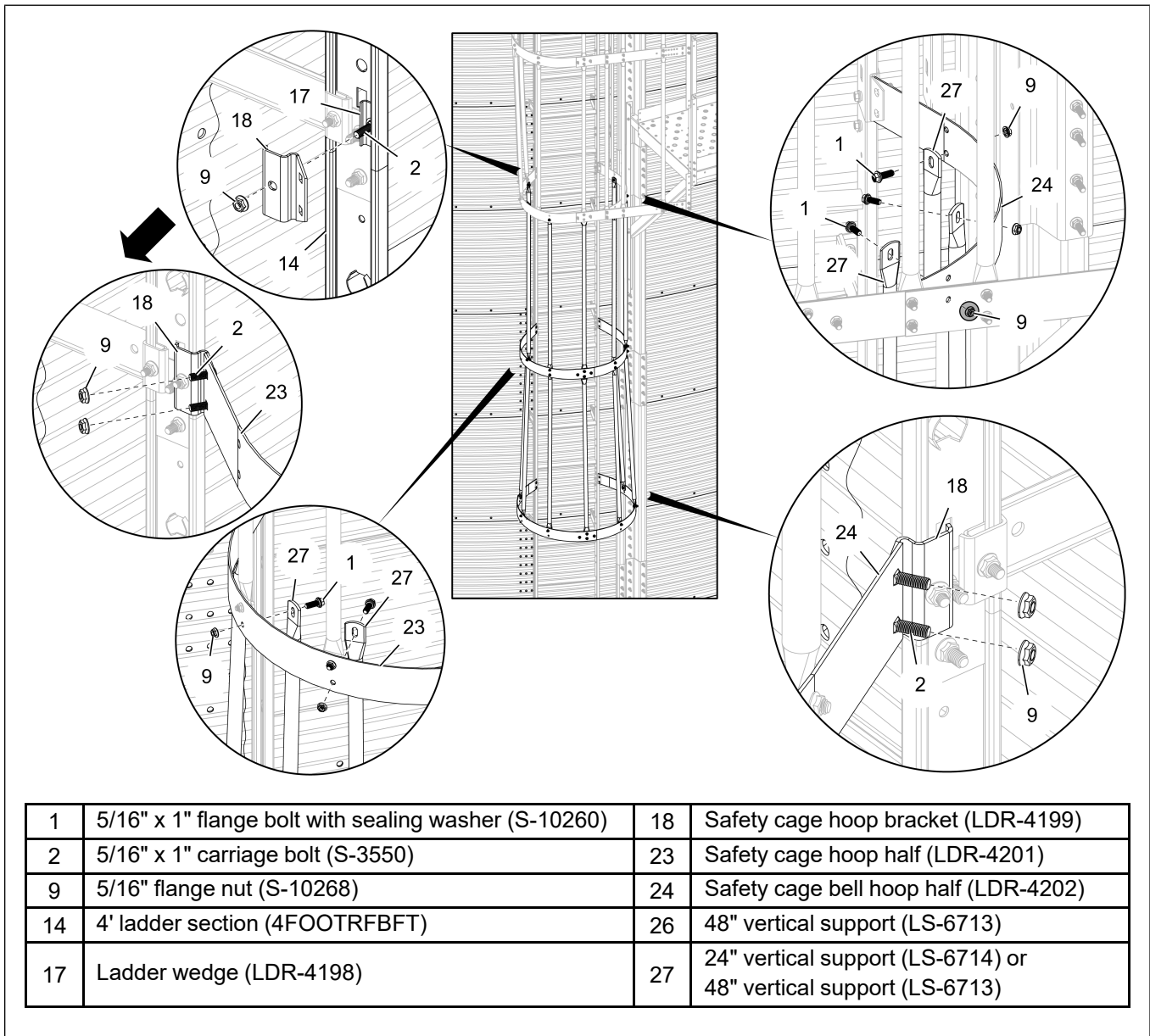
Figure 4-11 Installing the vertical supports



11. Install the safety cage assembly (32" or 48") to the ladder section (14) by connecting the (32") vertical supports (25) or (48") vertical supports (26) to the previously installed safety cage hoop halves (23) using 5/16" x 1" flange bolts (1) and 5/16" flange nuts (9).
12. Attach the safety cage hoop halves (23) to the safety cage hoop brackets (18) using 5/16" x 1" carriage bolts (2) and 5/16" flange nuts (9). To attach the safety cage hoop brackets (18) to the ladder section (14), refer to [Assembling the Safety Cage Hoop Brackets, page 17](#) for details.
13. After installing the safety cage assembly (32" or 48"), finally install the safety cage bell section by connecting the vertical supports (27) to the previously installed safety cage hoop halves (23) using 5/16" x 1" flange bolts (1) and 5/16" flange nuts (9).
14. Attach the safety cage bell hoop halves (24) to the safety cage hoop brackets (18) using 5/16" x 1" carriage bolts (2) and 5/16" flange nuts (9). To attach the safety cage hoop brackets (18) to the ladder section (14), refer to [Assembling the Safety Cage Hoop Brackets, page 17](#) for details.

NOTE: Install all the flange bolts (9) with bolt head on the inside of the cages.

Figure 4-12 Installing the remaining safety cage sections



NOTES

5 Installing the Base Platforms and Ladder

Topics Covered in this Chapter

- Installing the Sidewall Braces and Ladder Starting Brackets
- Installing the Base Platforms
- Installing the Column Plates
- Installing the Ladder for the Base Platform
- Installing the Safety Cages (50' Offset Platform)
- Installing the Safety Cages (20' Offset Platform)

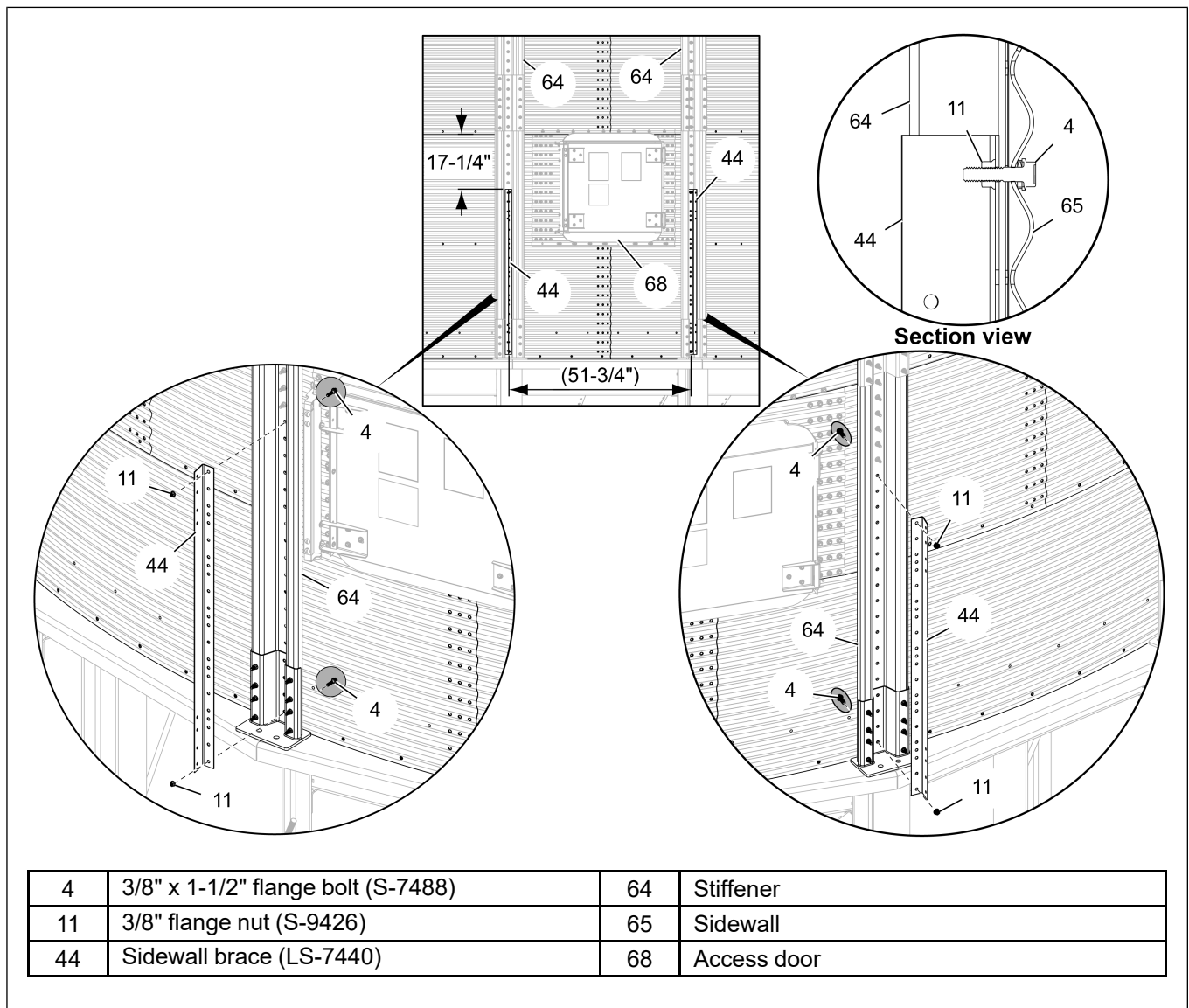
Installing the Sidewall Braces and Ladder Starting Brackets

What You Should Know

Pay careful attention when installing the base platform mounting angles. The dimensions and locations of these angles are very critical to assure proper fit of all parts.

1. Position the sidewall brace (44) onto the stiffener (64) to the left of the access door (68), aligning its top hole 17-1/4" below the horizontal seam of the ring where the door (68) will be installed.
2. Install the sidewall brace (44) onto the stiffener (64) using 3/8" x 1-1/2" flange bolts (4) and 3/8" flange nuts (11).
3. Similarly, install the next sidewall brace (39) to the stiffener (64) on the right of the access door (68).

Figure 5-1 Installing the sidewall braces for the platforms



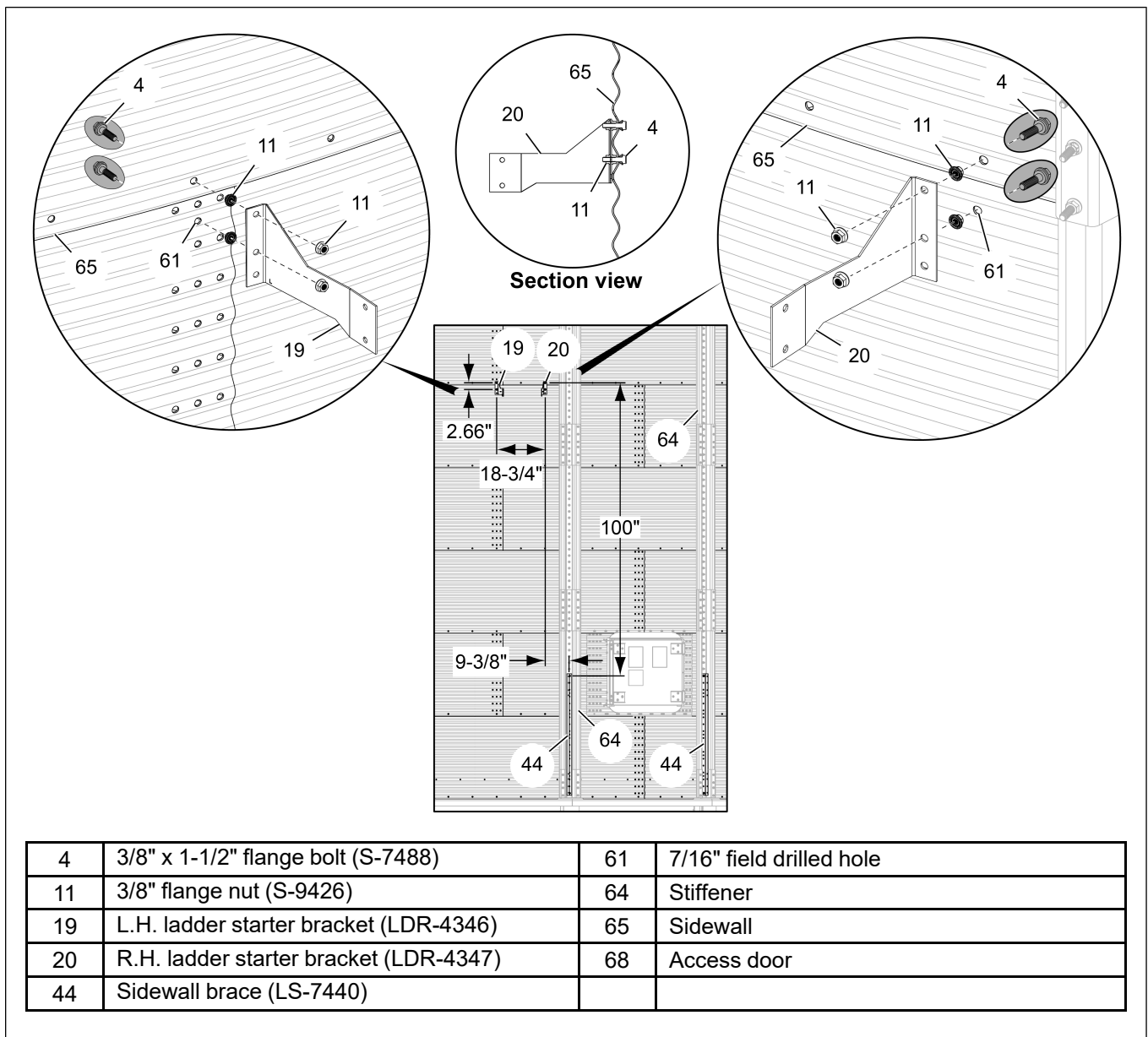
NOTE: The base platform does not include a separate ladder for a 50' offset configuration. After installing the sidewall braces, continue with the base platform assembly and installation. Refer to [Installing the Base Platforms, page 58](#) for details.

NOTE: The base platform includes a separate ladder for a 20' offset configuration. Refer to the following steps to install the ladder starter brackets.

4. Locate the top horizontal seam of the third ring above the one where the access door (68) is installed. From this seam, measure 2.66" downward and 9-3/8" from the center of the left sidewall brace (44), toward the left side. Mark a hole at this location on the sidewall (65).
5. Mark another hole by measuring horizontally 18-3/4" to the left of the previously marked hole. Field drill 7/16" hole (61) through the markings.
6. Install the L.H. ladder starter bracket (19) and R.H. ladder starter bracket (20) to the sidewall (65) using 3/8" x 1-1/2" flange bolts (4) and 3/8" flange nuts (11).

NOTE: Align the top hole of the ladder brackets (19 and 20) with the top horizontal seam and the bottom hole with the field drilled holes. For each bolt (4), add an extra flange nut (11) to fill the gap between the sidewall (65) and the brackets (19 and 20).

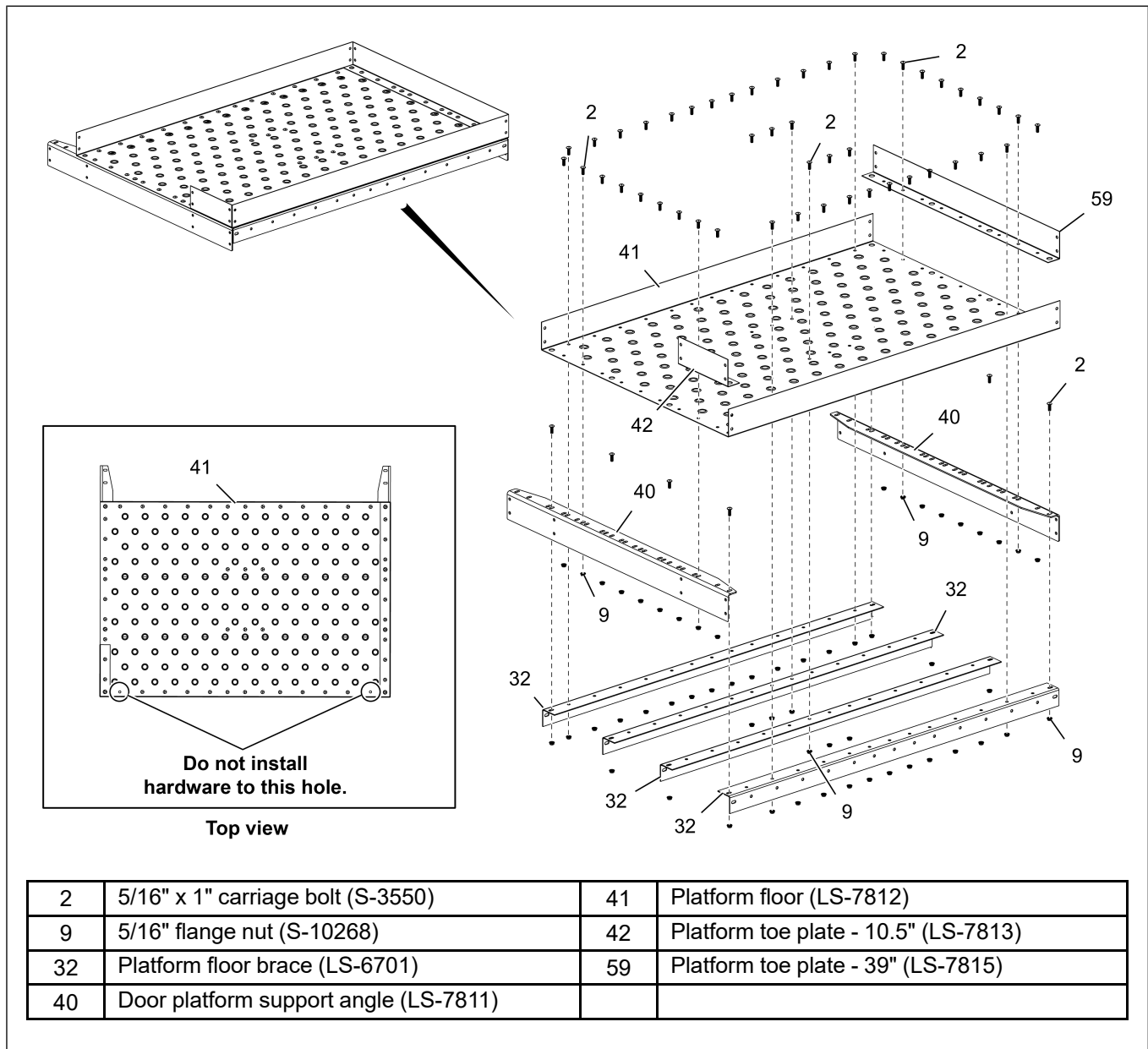
Figure 5-2 Installing the ladder starting brackets at the base (20' offset)



Installing the Base Platforms

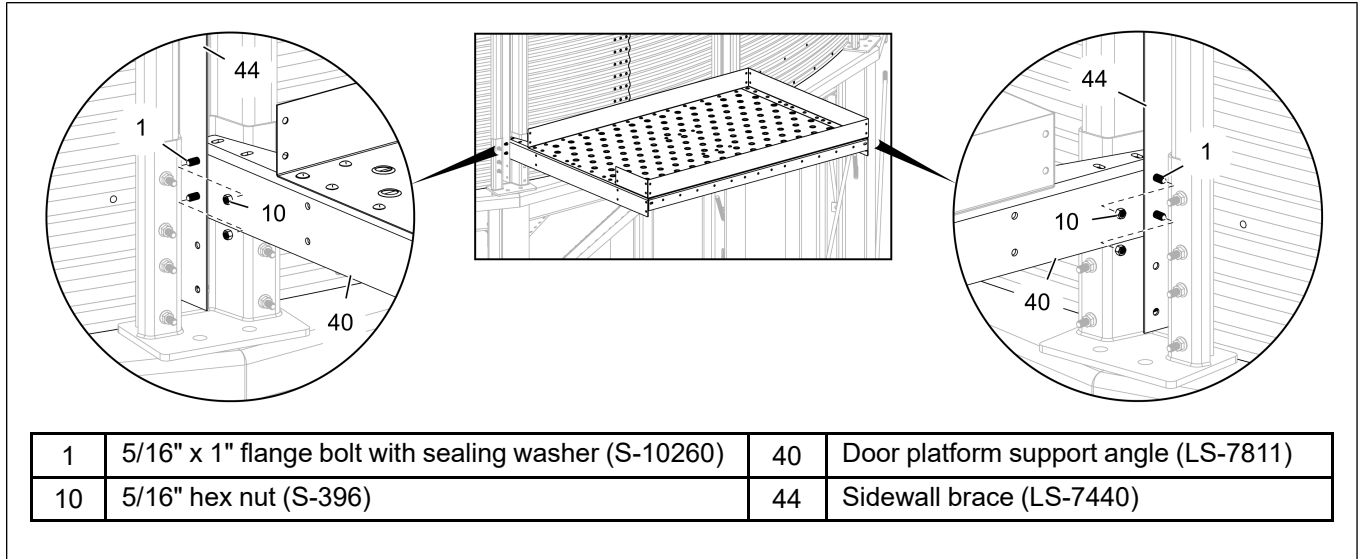
1. Assemble the platform floor (41), toe plates (42 and 59), support angles (40) and floor braces (32) together using 5/16" x 1" carriage bolts (2) and 5/16" flange nuts (9).
 - a. Assemble the short toe plate (42) to the L.H. side and long toe plate (59) to the R.H. side above the platform floor (41).
 - b. Assemble one support angle (40) to each side below the platform floor (29).
 - c. Assemble the floor braces (32) to the front, middle and rear end below the platform floor (41).
 - d. Install carriage bolts (2) with bolt head on top of the platform floor (41). Do not install hardware for the second hole from each side for the front floor brace (32). Diagonal supports will be installed at this location.

Figure 5-3 Assembling the platform floor with toe plates, support angles and floor braces



2. Lift the platform assembly and attach the support angles (40) to the sidewall braces (44) using 5/16" x 1" flange bolts (1) and 5/16" hex nuts (10).

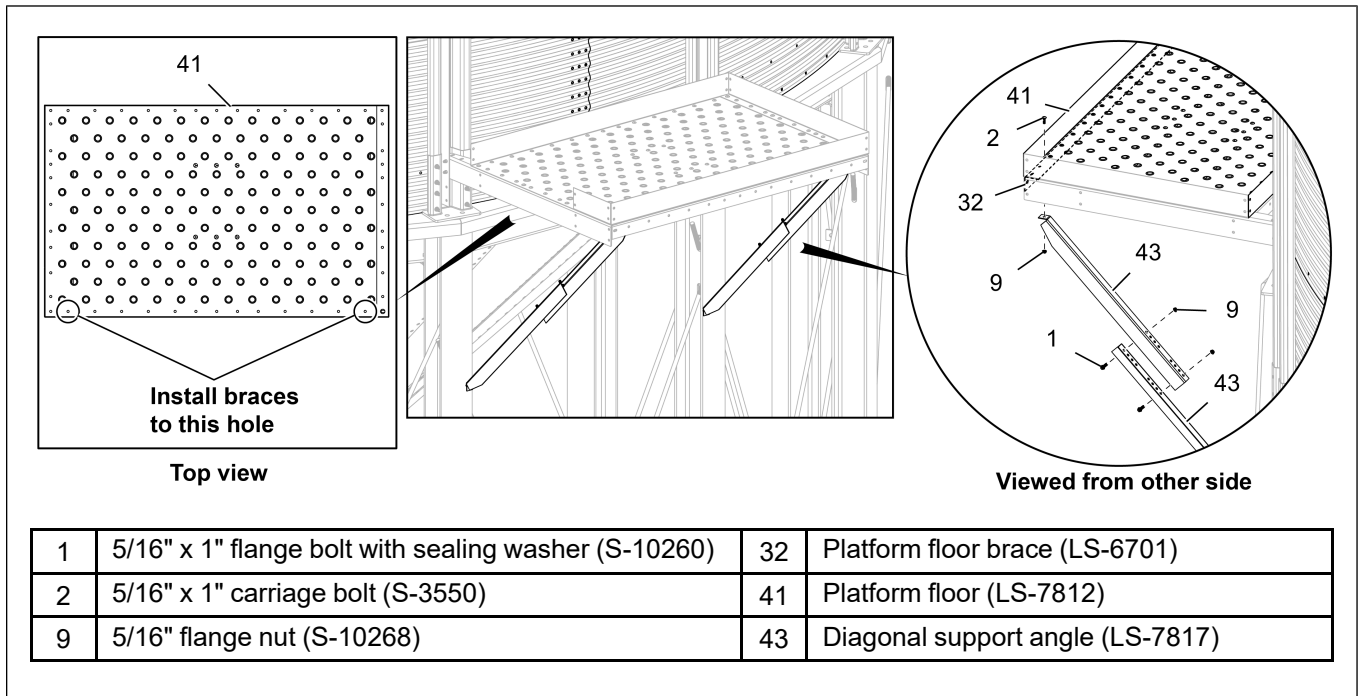
Figure 5-4 Attaching the support angles to the sidewall braces



3. Attach one diagonal support angle (43) to the second hole on the front floor brace (32), below the platform floor (41) using 5/16" x 1" carriage bolt (2) and 5/16" flange nut (9).
4. Overlap another diagonal support angle (43) over the previously installed angle and secure them together using two 5/16" x 1" flange bolts (1) and 5/16" flange nuts (9). Do not tighten the hardware at this time.

NOTE: Repeat the same procedure to install the diagonal support angle (43) on the other end of the front floor brace (32).

Figure 5-5 Installing the diagonal support angles

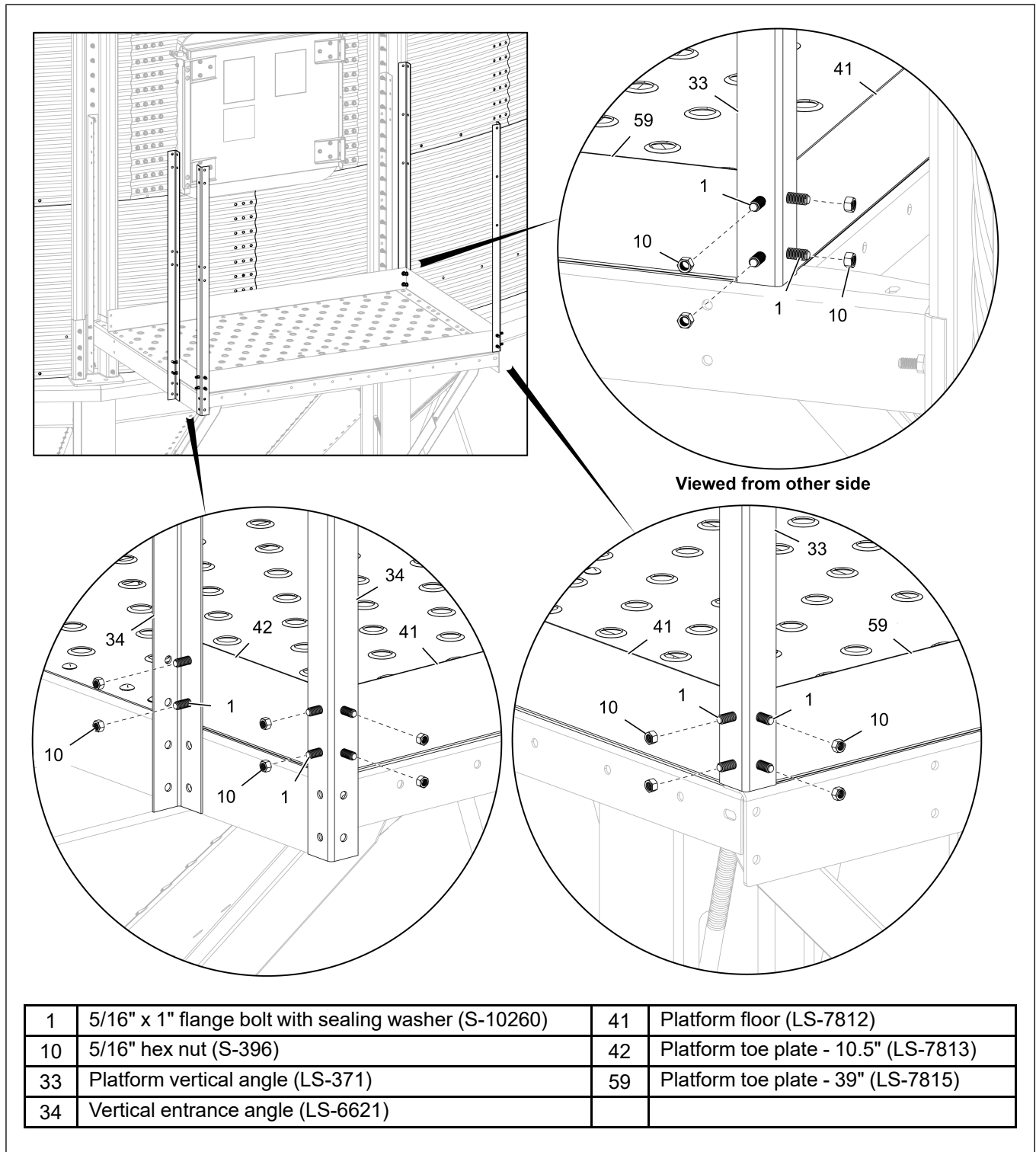


Chapter 5: Installing the Base Platforms and Ladder

5. Install one vertical entrance angle (34) to the end of platform toe plate (42), and another angle (34) to the to the platform floor (41) and toe plate (42) at the left side corner of the platform using 5/16" x 1" flange bolts (1) and 5/16" hex nuts (10).
6. Install one platform vertical angle (33) to the platform floor (41) and toe plate (59) at each right corner of the platform using 5/16" x 1" flange bolts (1) and 5/16" hex nuts (10).

NOTE: Install flange bolts (1) with bolt head to the inside of the platform floor (41).

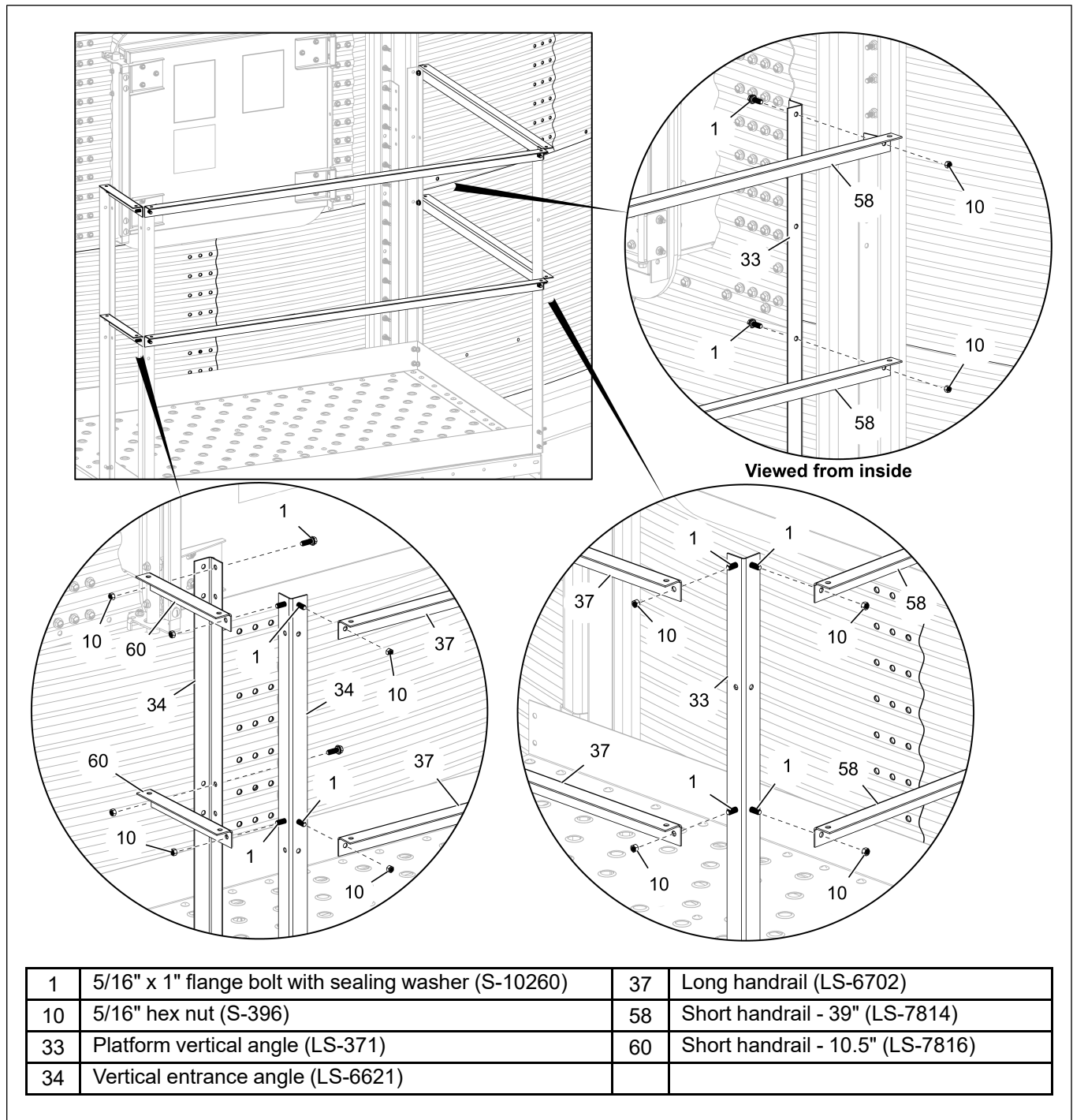
Figure 5-6 Installing the vertical entrance angle and platform vertical angles



7. Install the long handrails (37) between the vertical entrance angle (34) and platform vertical angle (33) using 5/16" x 1" flange bolts (1) and 5/16" hex nuts (10).
8. Install the short handrails (58) between the platform vertical angles (33) using 5/16" x 1" flange bolts (1) and 5/16" hex nuts (10).
9. Install the short handrails (60) between the vertical entrance angles (34) using 5/16" x 1" flange bolts (1) and 5/16" hex nuts (10).

NOTE: Install flange bolts (1) with bolt head to the inside of the platform floor.

Figure 5-7 Installing the handrails



Installing the Column Plates

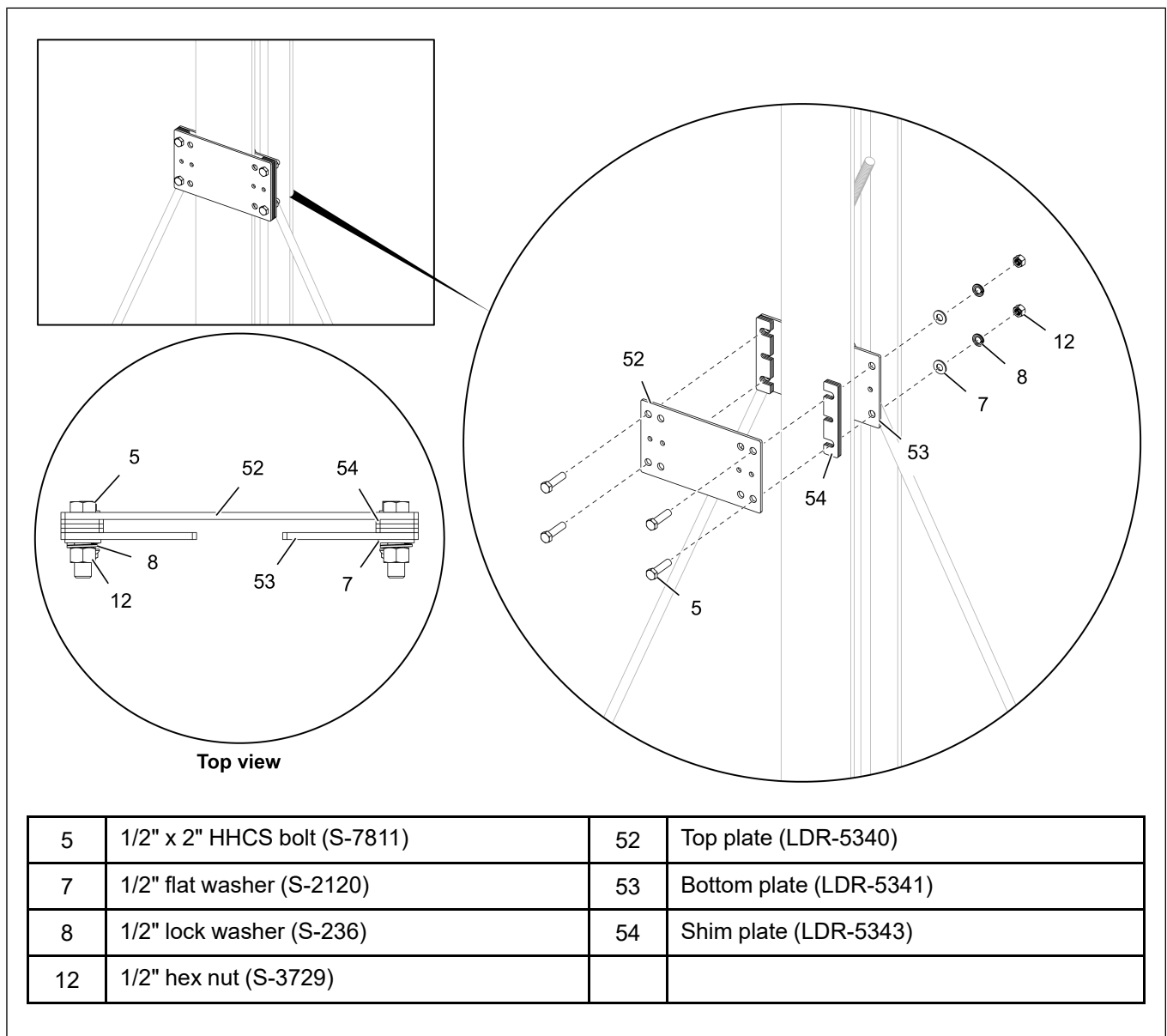
Before You Begin

Assemble the top plate (52), shim plates (54) and bottom plates (53) together using four 1/2" x 2" HHCS bolts (5), 1/2" flat washers (7), 1/2" lock washers (8) and 1/2" hex nuts (12).

NOTE:

1. Hand tighten the hex nuts (12) to allow the bottom plates (53) to slide freely when installing the plates onto the column weldments. Make sure to use enough shim plates (54) to keep the bottom plate (53) as flat as possible.
2. Use the inner set of vertical holes for 15', 18', 21', 24', 27' and outer set of vertical holes for 30' and 36' in the top plate (52).
3. One shim plate (54) is used for 24'/10R columns.

Figure 5-8 Assembling the column plates



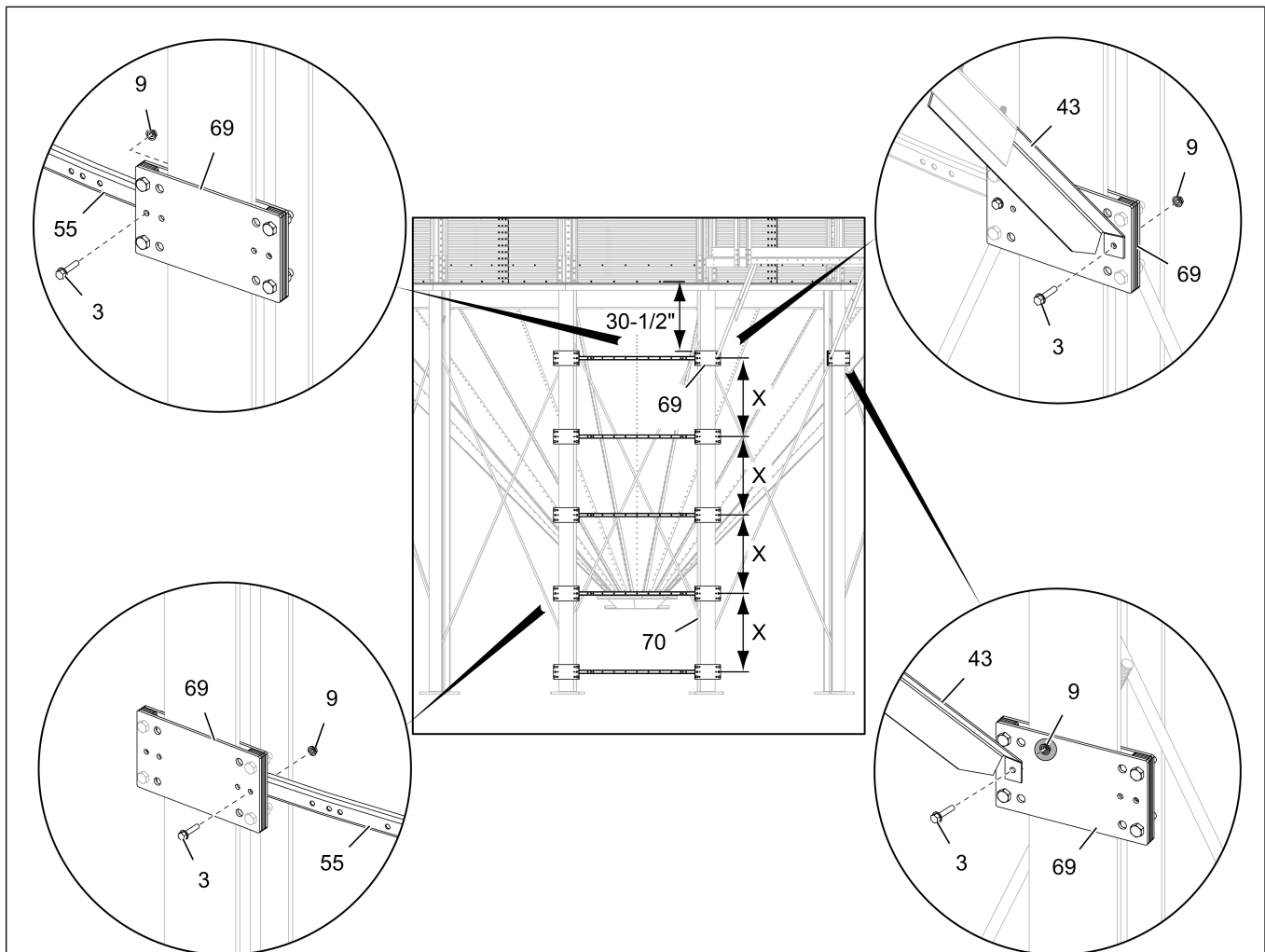
1. Position the top of column plate assembly (69) at 30-1/2" from the bottom most horizontal seam and install one column plate assembly (69) to the three column weldments (70) below the platform.
2. Continue to install the column plate assemblies (69) down the middle and left legs, spaced evenly with a span of no more than 44".
3. Install the support channel (55) between the column plate assemblies (69) using 5/16" x 1-1/2" flange bolts (3) and 5/16" flange nuts (9).

NOTE: Position the support channel (55) to the backside of the bottom plate and install the hardware through the middle holes.

4. Attach the diagonal support angles (43) of both platforms to the support channel (55) or the column plate assembly (69) using 5/16" x 1-1/2" flange bolts (3) and 5/16" flange nuts (9).

NOTE: Adjust the column plate assemblies (69) to align with the diagonal support angles (43).

Figure 5-9 Installing the column plate assemblies to the column weldments



NOTE: "X" indicates even spacing between the ladder support channels (55).

3	5/16" x 1-1/2" flange bolt (S-10185)	55	Ladder support channel (LDR-5342)
9	5/16" flange nut (S-10268)	69	Column plate assembly
43	Diagonal support angle (LS-7817)	70	Column weldment

Installing the Ladder for the Base Platform

1. Check the 4' ladder section (14) to make sure the ladder rung dimples are to the top surface and attach the 4' ladder section (14) to the L.H. and R.H. ladder starter brackets (19 and 20) using 5/16" x 1" flange bolts (1) and 5/16" flange nuts (9).

NOTE: *While attaching the ladder (14) to the starter brackets (19 and 20), make sure to install the end caps (28) to the top hole on both sides of the ladder (14). Refer to [Installing the End Caps to the Ladder, page 18](#) for details.*

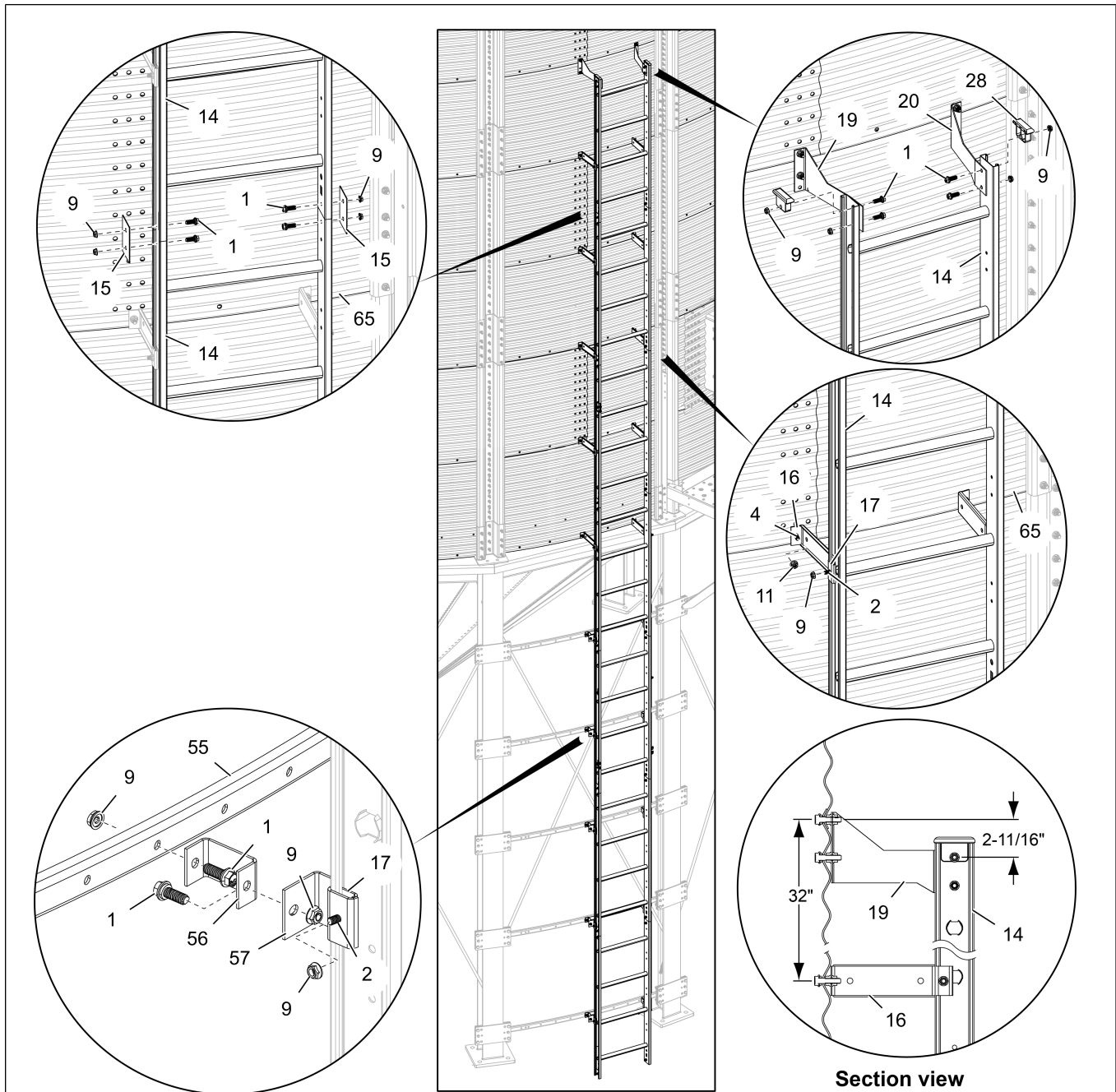
2. Attach the ladder stand-off brackets (16) to the sidewall (65) at the horizontal seams (repeating every 44") using the existing 3/8" x 1-1/2" flange bolts (4) and 3/8" flange nuts (11). To attach the ladder section (14) to the ladder stand-off bracket (16), refer to [Assembling the Ladder Stand-Off Brackets, page 16](#).
3. Connect the next 4' ladder section (14) to the previously installed ladder section (14). Refer to [Assembling the Ladder Sections, page 16](#) for details.
4. Attach two ladder brackets (56) to the support channel (55) where the ladder section (14) meets the support channel (55). Secure the ladder section (14) to the ladder bracket (56) by attaching an inside ladder stand-off (57) to each ladder bracket (56). Use 5/16" x 1" flange bolts (1) and 5/16" flange nuts (9) for all the connections.

NOTE: *To attach the ladder section (14) to the ladder stand-off (57), refer to [Assembling the Ladder Stand-Off Brackets, page 16](#).*

5. Continue to install the remaining ladder section (14) till the bottom of the tank.

NOTE: *Install all flange bolts (1) with bolt head on the inside of the ladder (14).*

Figure 5-10 *Installing the ladder sections*



Section view

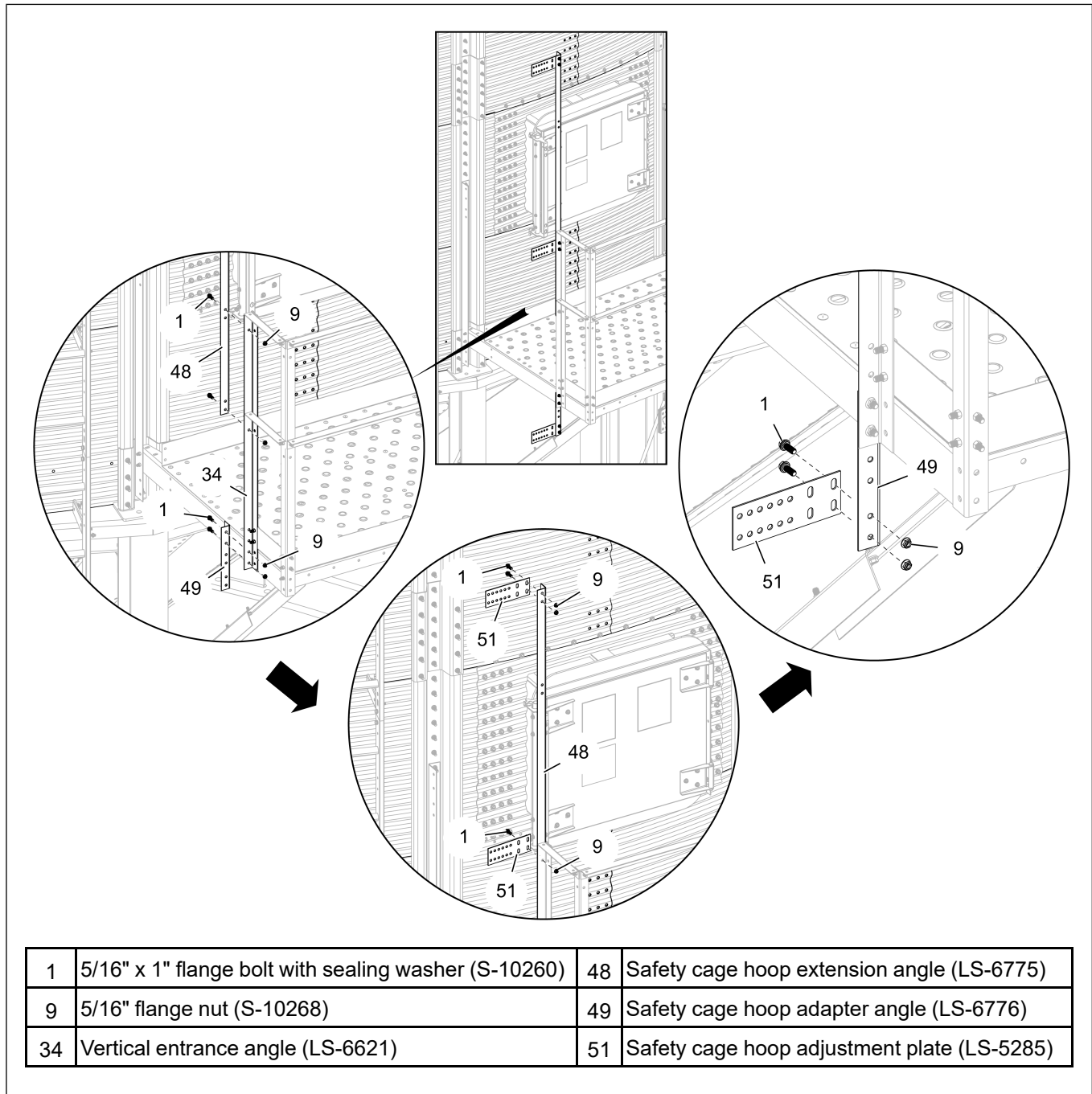
1	5/16" x 1" flange bolt with sealing washer (S-10260)	17	Ladder wedge (LDR-4198)
2	5/16" x 1" carriage bolt (S-3550)	19	L.H. ladder starter bracket (LDR-4346)
4	3/8" x 1-1/2" flange bolt (S-7488)	20	R.H. ladder starter bracket (LDR-4347)
9	5/16" flange nut (S-10268)	28	End cap
11	3/8" flange nut (S-9426)	55	Ladder support channel (LDR-5342)
14	4' ladder section (4FOOTRFBFT)	56	Ladder bracket (CHT-1233)
15	Ladder splice plate (LDR-4317)	57	Inside ladder stand-off (LDR-4200)
16	Ladder stand-off bracket (LDR-4314)	65	Sidewall

Installing the Safety Cages (50' Offset Platform)

1. Install the safety cage hoop extension angle (48) and safety cage hoop adapter angle (49) to the vertical entrance angle (34) on base platform using 5/16" x 1" flange bolts (1) and 5/16" flange nuts (9).
2. Attach one safety cage hoop adjustment plate (51) to the top and another one to the middle of the safety cage hoop extension angle (48) using 5/16" x 1" flange bolts (1) and 5/16" flange nuts (9).
3. Attach one safety cage hoop adjustment plate (51) to the bottom of the safety cage hoop adapter angle (49) using 5/16" x 1" flange bolts (1) and 5/16" flange nuts (9).

NOTE: Install all the flange bolts (9) with bolt head on the inside of the cages.

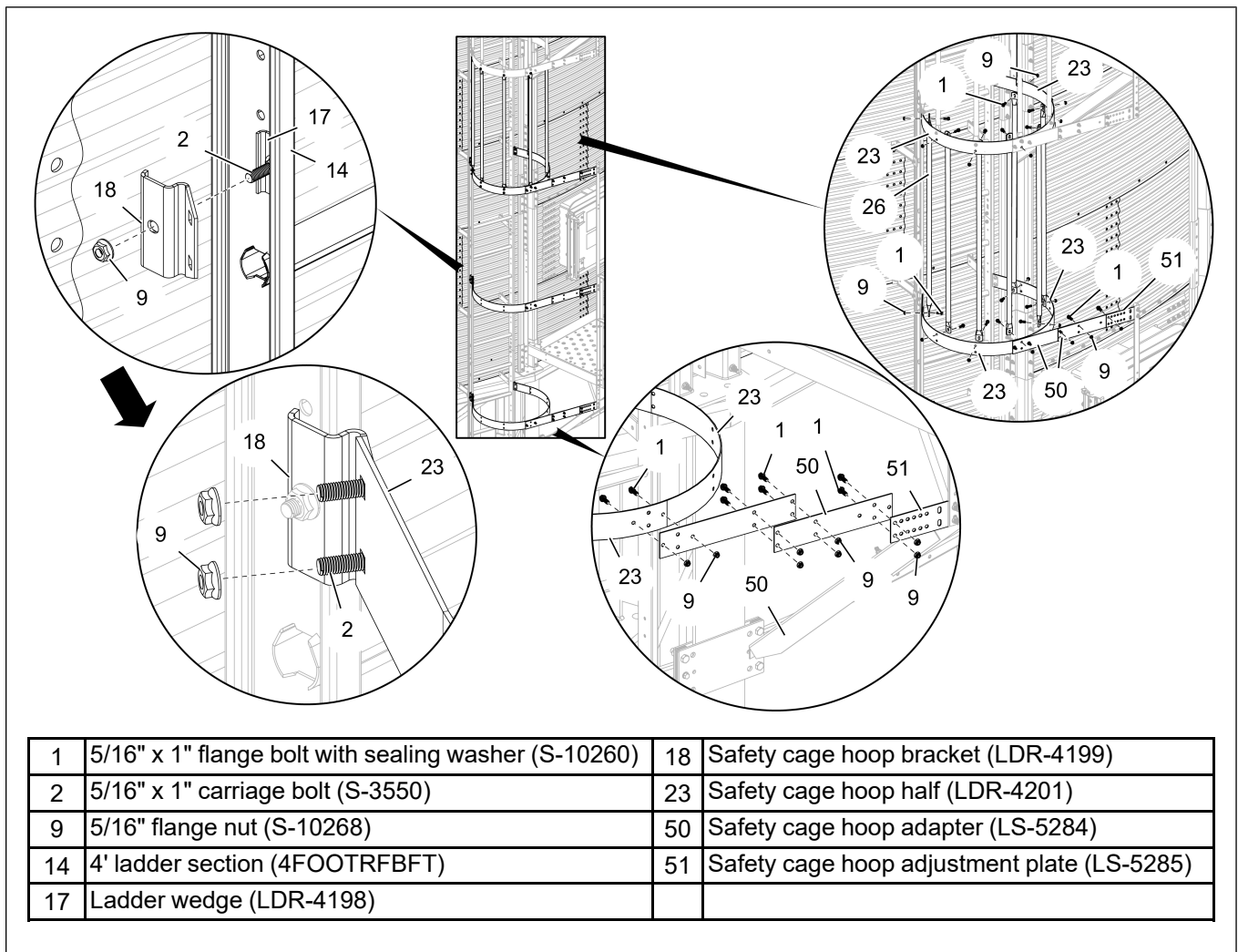
Figure 5-11 Installing the extension angle, adapter angle and adjustment plates



4. Assemble three sets by joining two safety cage hoop adapters (50) in each set using 5/16" x 1" flange bolts (1) and 5/16" flange nuts (9). Refer to overlap details on [Figure 3-11, page 37](#).
5. Assemble one set of safety cage hoop adapters (50) to each safety cage hoop adjustment plate (51) using 5/16" x 1" flange bolts (1) and 5/16" flange nuts (9). Refer to [Figure 3-11, page 37](#) for the proper holes to be used.
6. Attach one safety cage hoop halves (23) to the open end of the top and middle set of safety cage hoop adapters (50) using 5/16" x 1" flange bolts (1) and 5/16" flange nuts (9).
7. At the top, assemble two safety cage hoop halves (23) together with the top set of safety cage hoop adapters (50) and at the bottom, assemble two safety cage hoop halves (23) together with the bottom set of safety cage hoop adapters (50) using 5/16" x 1" flange bolts (1) and 5/16" flange nuts (9)
8. Attach the safety cage hoop half (23) to the ladder section (14). Refer to [Assembling the Safety Cage Hoop Brackets, page 17](#) for details.
9. Install the 32" vertical supports (25) or 48" vertical supports (26) to connect the top safety cage hoop halves (23) to the safety cage from the above platform using 5/16" x 1" flange bolts (1) and 5/16" flange nuts (9).

NOTE: Install all the flange bolts (1) with bolt head on the inside of the cages.

Figure 5-12 Installing the safety cage hoop halves and hoop adapters

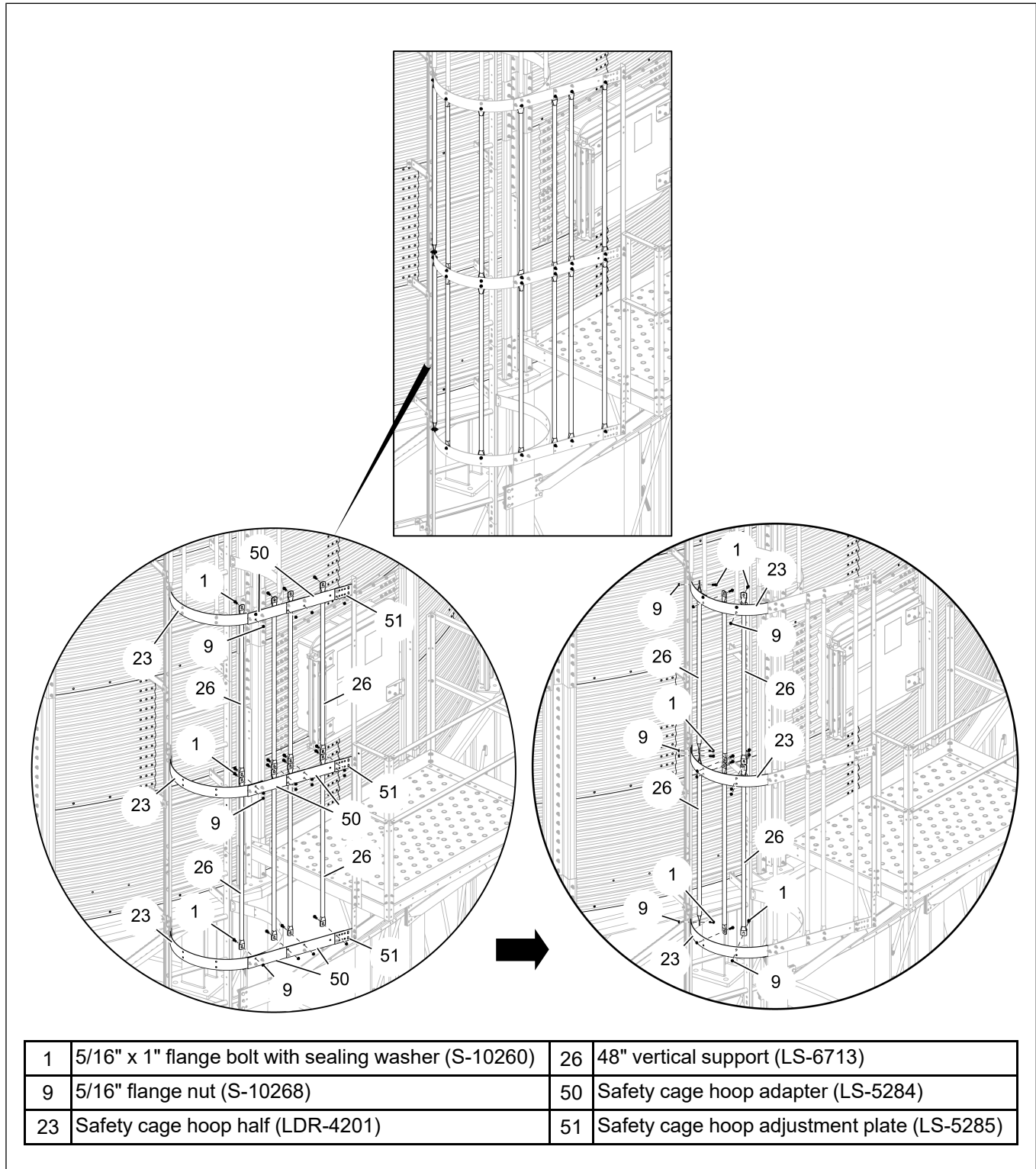


Chapter 5: Installing the Base Platforms and Ladder

10. Install the 48" vertical supports (26) between the top and middle hoop halves (23), hoop adapters (50), adjustment plates (51) using 5/16" x 1" flange bolts (1) and 5/16" flange nuts (9).
11. Install the 48" vertical supports (26) between the middle and bottom hoop halves (23), hoop adapters (50), adjustment plates (51) using 5/16" x 1" flange bolts (1) and 5/16" flange nuts (9).

NOTE: Install all the flange bolts (9) with bolt head on the inside of the cages.

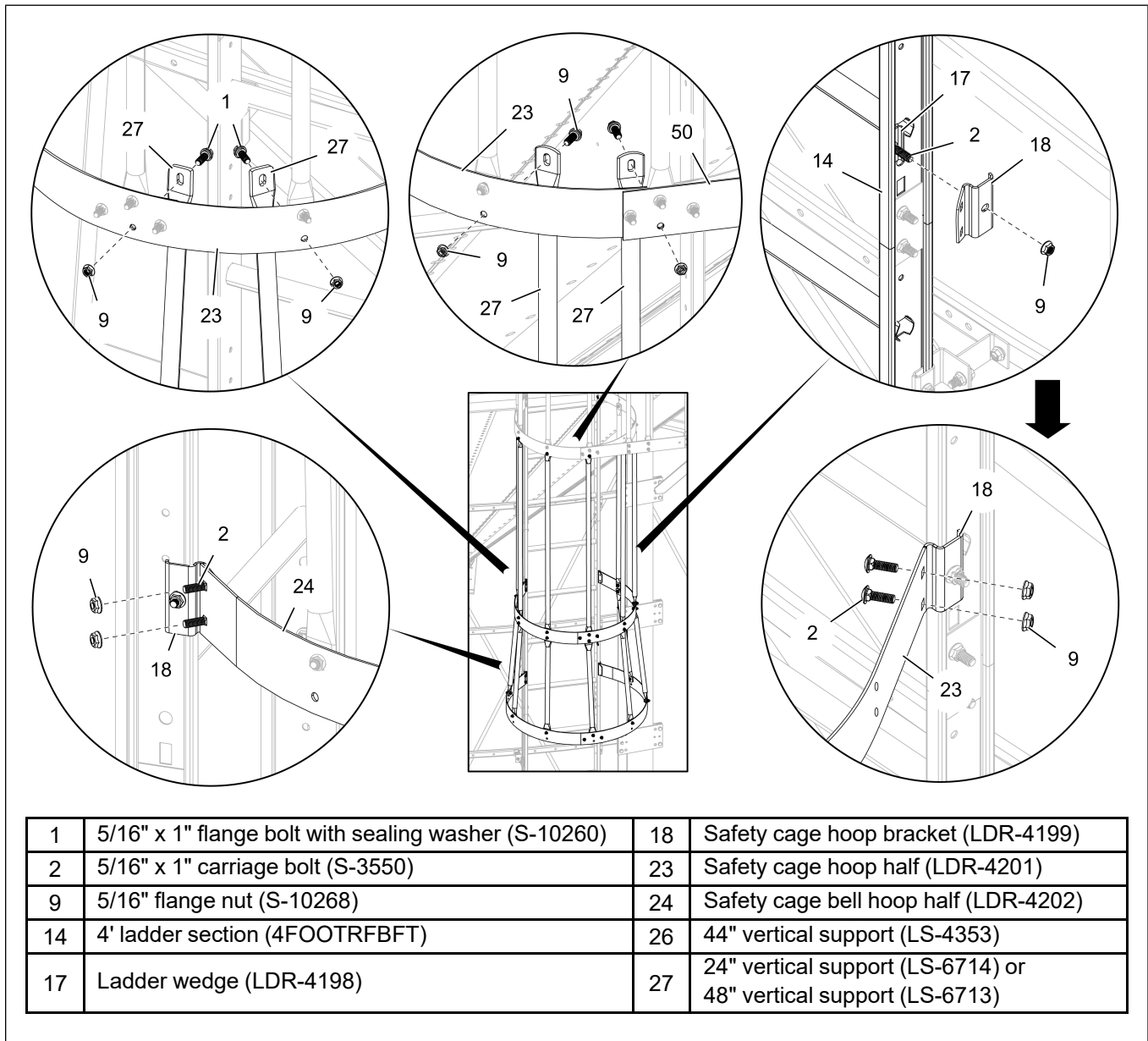
Figure 5-13 Installing the vertical supports



12. Install the safety cage assembly (32" or 48") to the ladder section (14) by connecting the (32") vertical supports (25) or (48") vertical supports (26) to the previously installed safety cage hoop halves (23) using 5/16" x 1" flange bolts (1) and 5/16" flange nuts (9).
13. Attach the safety cage hoop halves (23) to the safety cage hoop brackets (18) using 5/16" x 1" carriage bolts (2) and 5/16" flange nuts (9). To attach the safety cage hoop brackets (18) to the ladder section (14), refer to [Assembling the Safety Cage Hoop Brackets, page 17](#) for details.
14. After installing the safety cage assembly (32" or 48"), finally install the safety cage bell section by connecting the vertical supports (27) to the previously installed safety cage hoop halves (23) using 5/16" x 1" flange bolts (1) and 5/16" flange nuts (9).
15. Attach the safety cage bell hoop halves (24) to the safety cage hoop brackets (18) using 5/16" x 1" carriage bolts (2) and 5/16" flange nuts (9). To attach the safety cage hoop brackets (18) to the ladder section (14), refer to [Assembling the Safety Cage Hoop Brackets, page 17](#).

NOTE: Install all the flange bolts (9) with bolt head on the inside of the cages.

Figure 5-14 Installing the remaining safety cage sections

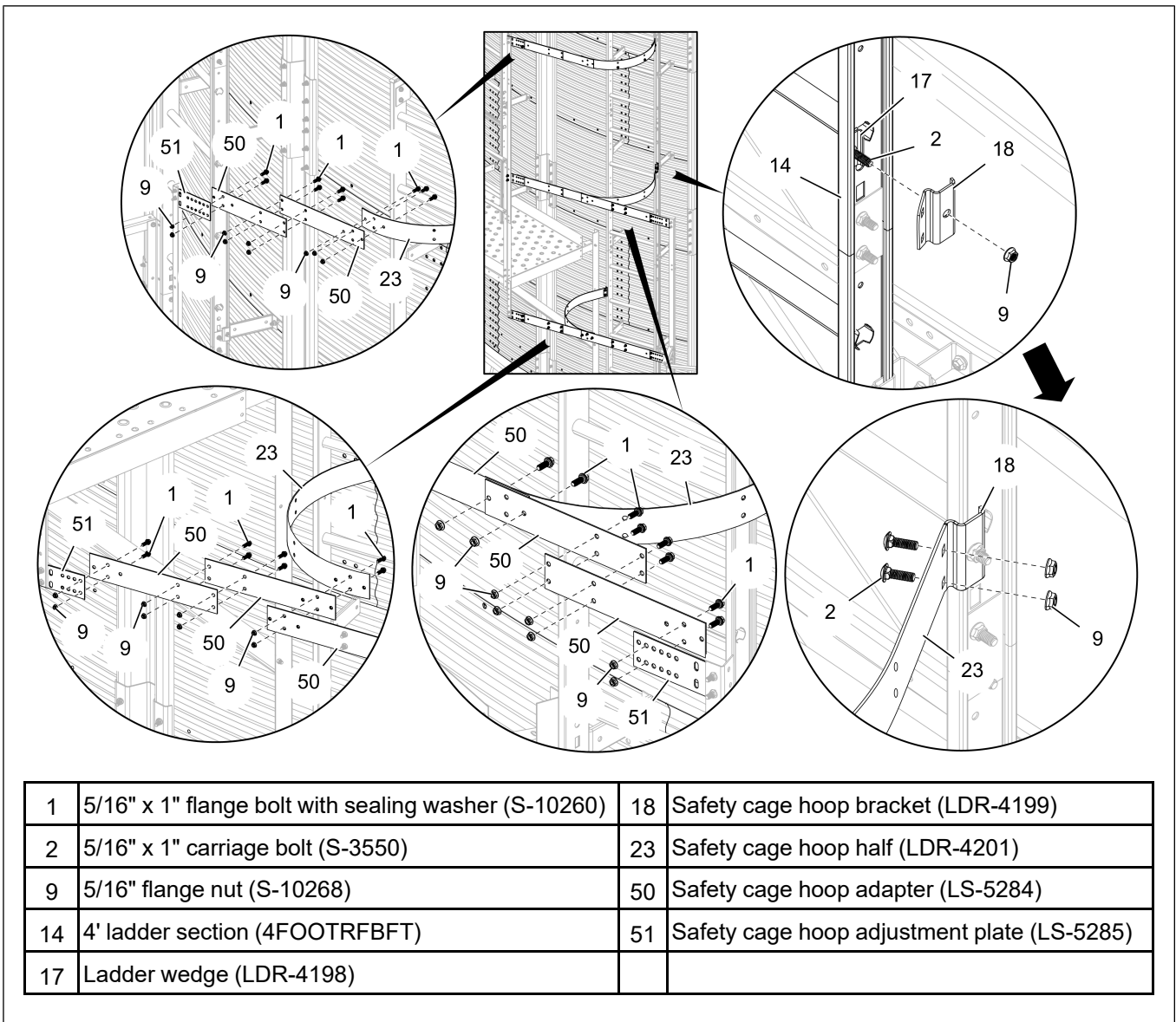


Installing the Safety Cages (20' Offset Platform)

1. Assemble five sets by joining two safety cage hoop adapters (50) in each set using 5/16" x 1" flange bolts (1) and 5/16" flange nuts (9). Refer to overlap details on [Figure 3-11, page 37](#).
2. Assemble one set of safety cage hoop adapters (50) to each safety cage hoop adjustment plate (51) using 5/16" x 1" flange bolts (1) and 5/16" flange nuts (9). Refer to [Figure 3-11, page 37](#) for the proper holes to be used.
3. Attach one safety cage hoop half (23) to the open end of the top set of safety cage hoop adapters (50) using 5/16" x 1" flange bolts (1) and 5/16" flange nuts (9).
4. At the middle and bottom, connect each set of safety cage hoop adapters (50) on both sides with a safety cage hoop half (23) using 5/16" x 1" flange bolts (1) and 5/16" flange nuts (9). 5. Attach the three safety cage hoop halves (23) to the ladder section (14) as shown. Refer to [Figure 3-11, page 37](#) for details.

NOTE: Install all the flange bolts (9) with bolt head on the inside of the cages.

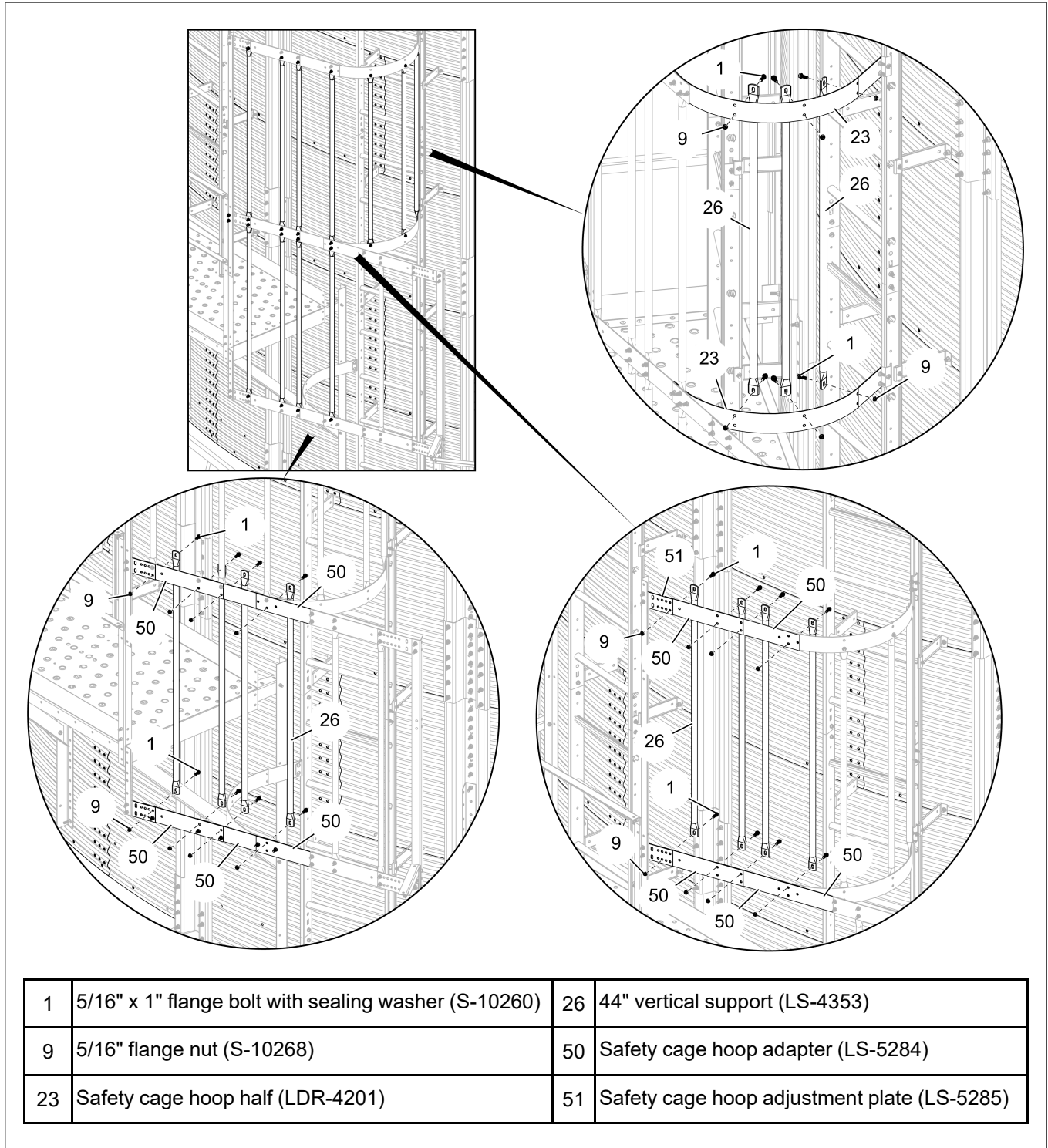
Figure 5-15 Installing the safety cage hoop halves and hoop adapters



5. Install the 48" vertical supports (26) between the top and middle hoop halves (23), hoop adapters (50), adjustment plates (51) using 5/16" x 1" flange bolts (1) and 5/16" flange nuts (9).
6. Install the 48" vertical supports (26) between the middle and bottom hoop halves (23), safety cage hoop adapters (50), adjustment plates (51) using 5/16" x 1" flange bolts (1) and 5/16" flange nuts (9).

NOTE: Install all the flange bolts (9) with bolt head on the inside of the cages.

Figure 5-16 Installing the vertical supports

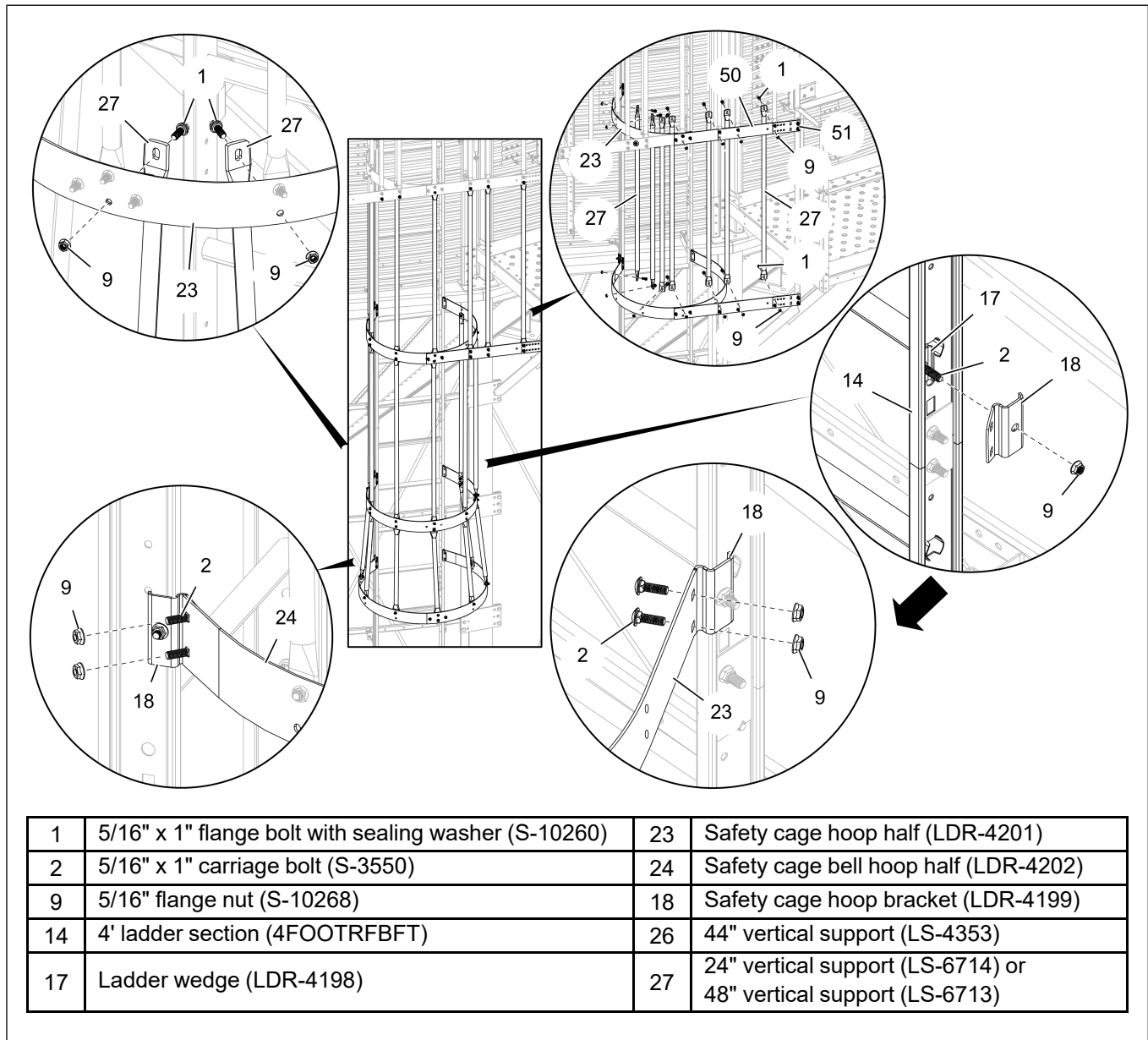


Chapter 5: Installing the Base Platforms and Ladder

7. Install the safety cage assembly (32" or 48") to the ladder section (14) by connecting the (32") vertical supports (25) or (48") vertical supports (26) to the previously installed safety cage hoop halves (23) using 5/16" x 1" flange bolts (1) and 5/16" flange nuts (9).
8. Attach the safety cage hoop halves (23) to the safety cage hoop brackets (18) using 5/16" x 1" carriage bolts (2) and 5/16" flange nuts (9). To attach the safety cage hoop brackets (18) to the ladder section (14), refer to [Assembling the Safety Cage Hoop Brackets, page 17](#) for details.
9. After installing the safety cage assembly (32" or 48"), finally install the safety cage bell section by connecting the vertical supports (27) to the previously installed safety cage hoop halves (23) using 5/16" x 1" flange bolts (1) and 5/16" flange nuts (9).
10. Attach the safety cage bell hoop halves (24) to the safety cage hoop brackets (18) using 5/16" x 1" carriage bolts (2) and 5/16" flange nuts (9). To attach the safety cage hoop brackets (18) to the ladder section (14), refer to [Assembling the Safety Cage Hoop Brackets, page 17](#).

NOTE: Install all the flange bolts (9) with bolt head on the inside of the cages.

Figure 5-17 Installing the remaining safety cage sections



Limited Warranty — N.A. Grain Products

The GSI Group, LLC. (“GSI”) warrants products which it manufactures, to be free of defects in materials and workmanship under normal usage and conditions for a period of 12 months from the date of shipment (or, if shipped by vessel, 14 months from the date of arrival at the port of discharge). If, in GSI’s sole judgment, a product is found to have a defect in materials and/or workmanship, GSI will, at its own option and expense, repair or replace the product or refund the purchase price. This Limited Warranty is subject to extension and other terms as set forth below.

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

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

Conditions and Limitations:

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

The sole and exclusive remedy for any claimant is set forth in this Limited Warranty and shall not exceed the amount paid for the product purchased. This Warranty only covers the value of the warranted parts and equipment, and does not cover labor charges for removing or installing defective parts, shipping charges with respect to such parts, any applicable sales or other taxes, or any other charges or expenses not specified in this Warranty. GSI shall not be liable for any other direct, indirect, incidental or consequential damages, including, without limitation, loss of anticipated profits or benefits. Expenses incurred by or on behalf of a claimant without prior written authorization from the GSI warranty department shall not be reimbursed. This warranty is not transferable and applies only to the original end-user. GSI shall have no obligation or responsibility for any representations or warranties made by or on behalf of any dealer, agent or distributor. Prior to installation, the end-user bears all responsibility to comply with federal, state and local codes which apply to the location and installation of the products.

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

Notice Procedure:

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

Service Parts:



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

(Limited Warranty - N.A. Grain Products_ revised 01 October 2020)

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



**1004 E. Illinois St.
Assumption, IL 62510-0020
Phone: 1-217-226-4421
Fax: 1-217-226-4420
www.grainsystems.com**

 and  are trademarks of The GSI Group, LLC.