24'–54' CEU Grain Bins

Eurocode Wide-Corr® Centurion® Grain Bins Installation and Storage Instructions

Read this manual before using product. Failure to follow instructions and safety precautions can result in serious injury, death, or property damage. Keep manual for future reference.

Part Number: 198866 R19
Revised: September, 2024
Original Instructions

New in this Manual

The following changes have been made in this revision of the manual:

Description	Section
New section	Section 2.5 – Auxiliary Equipment Safety on page 7
New section	Section 2.6 – Working At Height Safety on page 8
Updated	Section 2.7 – Overhead Power Lines on page 9
Updated	Section 3.2 – Guidelines for Supporting Catwalks and other External Loads on AGI on page 16
Updated	Section 3.6 – Methods of Installation on page 18
Updated	Section 3.1 – Bin Design and Capacity on page 13
New section	Section 4.4 – Pre-Plan Assembly on page 25
Updated	Section 3.3 – Foundation Design and Loads on page 17
New section	Section 5.18 – External Sign Sheet Installation (For Stiffened Bin) on page 98
High Mount Vent installation added	Section 5.3 – Typical Non-Structural Roof Installation on page 30
New section	Section 5.23 – Door Cover Sidewall Latch Installation on page 112
Updated	Section 7.2 – Roof Parts Box Part Identification on page 181
New Wall Sheet Layouts Added	Section 6.4 – Wall Sheet and Upright Layouts - CEU (No Stencil Sheet) on page 141

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1. Introduction

Before assembling, please read this manual. Familiarize yourself with the process and the necessary precautions for efficient and safe assembly of this AGI 24'–54' CEU Grain Bins.

Everyone present at the assembly site is required to be familiar with all safety precautions.

Keep this manual available for frequent reference and review it with new personnel. Call your local distributor or dealer if you need assistance or additional information.

2. Safety

2.1. Safety Alert Symbol and Signal Words

This safety alert symbol indicates important safety messages in this manual. When you see this symbol, be alert to the possibility of injury or death, carefully read the message that follows, and inform others.

Signal Words: Note the use of the signal words **DANGER**, **WARNING**, **CAUTION**, and **NOTICE** with the safety messages. The appropriate signal word for each message has been selected using the definitions below as a guideline.

DANGER Indicates an imminently hazardous situation that, if not avoided, will result in serious injury or death.

WARNING Indicates a hazardous situation that, if not avoided, could result in serious injury or death.

CAUTION Indicates a hazardous situation that, if not avoided, may result in minor or moderate injury.

NOTICE Indicates a potentially hazardous situation that, if not avoided, may result in property damage.

2.2. General Safety Information

Read and understand all safety instructions, safety decals, and manuals and follow them when assembling the equipment.

- Only experienced personnel who are familiar with this type of assembly and installation should perform this work. Untrained assemblers/installers expose themselves and bystanders to possible serious injury or death.

- Do not modify the grain bin in any way or deviate from the instructions in this manual without written permission from the manufacturer. Unauthorized modification or methods may impair the function and/or safety. Any unauthorized modification will void the warranty.
- Follow a health and safety program for your worksite. Contact your local occupational health and safety organization for information.
- Contact your local representative or AGI if you need assistance or additional information.
- Always follow applicable local codes and regulations.

2.3. Personal Protective Equipment

The following Personal Protective Equipment (PPE) should be worn when installing the equipment.

- **Safety Glasses**

Wear safety glasses at all times to protect eyes from debris.

- **Coveralls**

Wear coveralls to protect skin.

- **Hard Hat**

Wear a hard hat to help protect your head.

- **Steel-Toe Boots**

Wear steel-toe boots to protect feet from falling debris.

- **Work Gloves**

Wear work gloves to protect your hands from sharp and rough edges.

2.4. Safety Equipment

The following safety equipment should be kept on site.

- **First-Aid Kit**

Have a properly-stocked first-aid kit available for use should the need arise, and know how to use it.

2.5. Auxiliary Equipment Safety

Unapproved auxiliary equipment could cause performance issues or structural failure, and is not covered by warranty.

- Do not install auxiliary equipment if the grain bin is not designed for use with it. Refer to the specific information provided in this manual for auxiliary equipment or check with AGI or your dealer for written approval, if necessary.
- Obtain, read, and understand the instructions and safety warnings of the auxiliary equipment manufacturer.
- Attach auxiliary safety decals to the grain bin as applicable.
- Store auxiliary operations/maintenance manuals in a safe place available for future use.

2.6. Working At Height Safety

- Ensure that all work at height is properly planned, organized and carried out by a competent person.
- Use appropriate work equipment and make sure that they are inspected to ensure safety.
- Select collective measures to prevent falls (such as guard rails and working platforms) before other measures which may only reduce the distance and consequences of a fall (such as nets or air bags) or may only provide fall-arrest through personal protection equipment.
- Ensure that those persons working at height are trained in how to avoid falling and how to avoid or minimise any injuries should they fall.
- Check the weather condition. Postpone any work at height until there is no risk to the health and safety of any person working at height.
- Ensure that nothing is thrown or tipped from height if it is likely to injure a person.

2.7. Overhead Power Lines

⚠ WARNING

- Keep grain bins a horizontal distance of at least 150 ft (45.7 m) from power lines. Increase distance to meet electrical code requirements where required.
- Do not load or unload the grain bin if there is a chance of any loading or unloading equipment contacting power lines.
- Do not locate grain bins on both sides of a power line or under a power line.
- Electrocution can occur without direct contact.

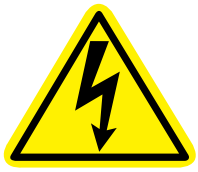
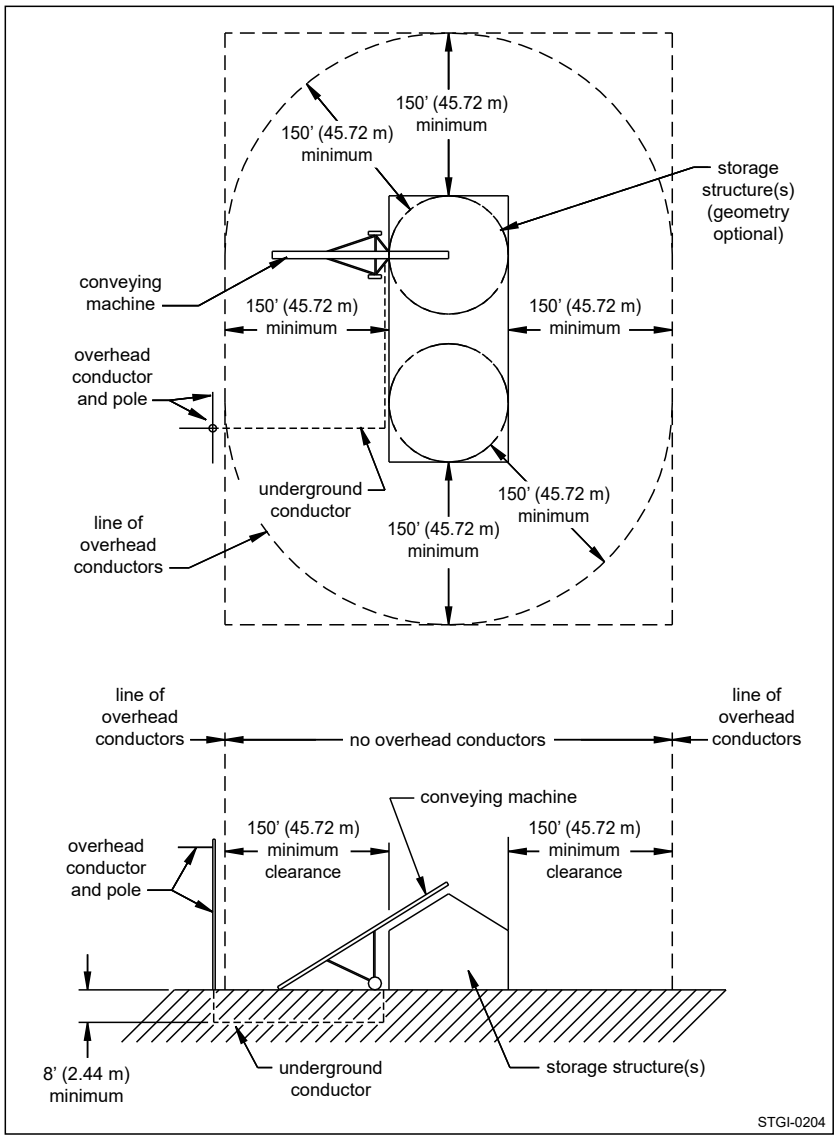


Figure 1. Power Lines and Conductor Clearance



2.8. Safety Decals

- Keep safety decals clean and legible at all times.
- Replace safety decals that are missing or have become illegible. See decal location figures that follow.
- Replaced parts must display the same decal(s) as the original part.
- Replacement safety decals are available **free of charge** from your distributor, dealer, or factory as applicable.

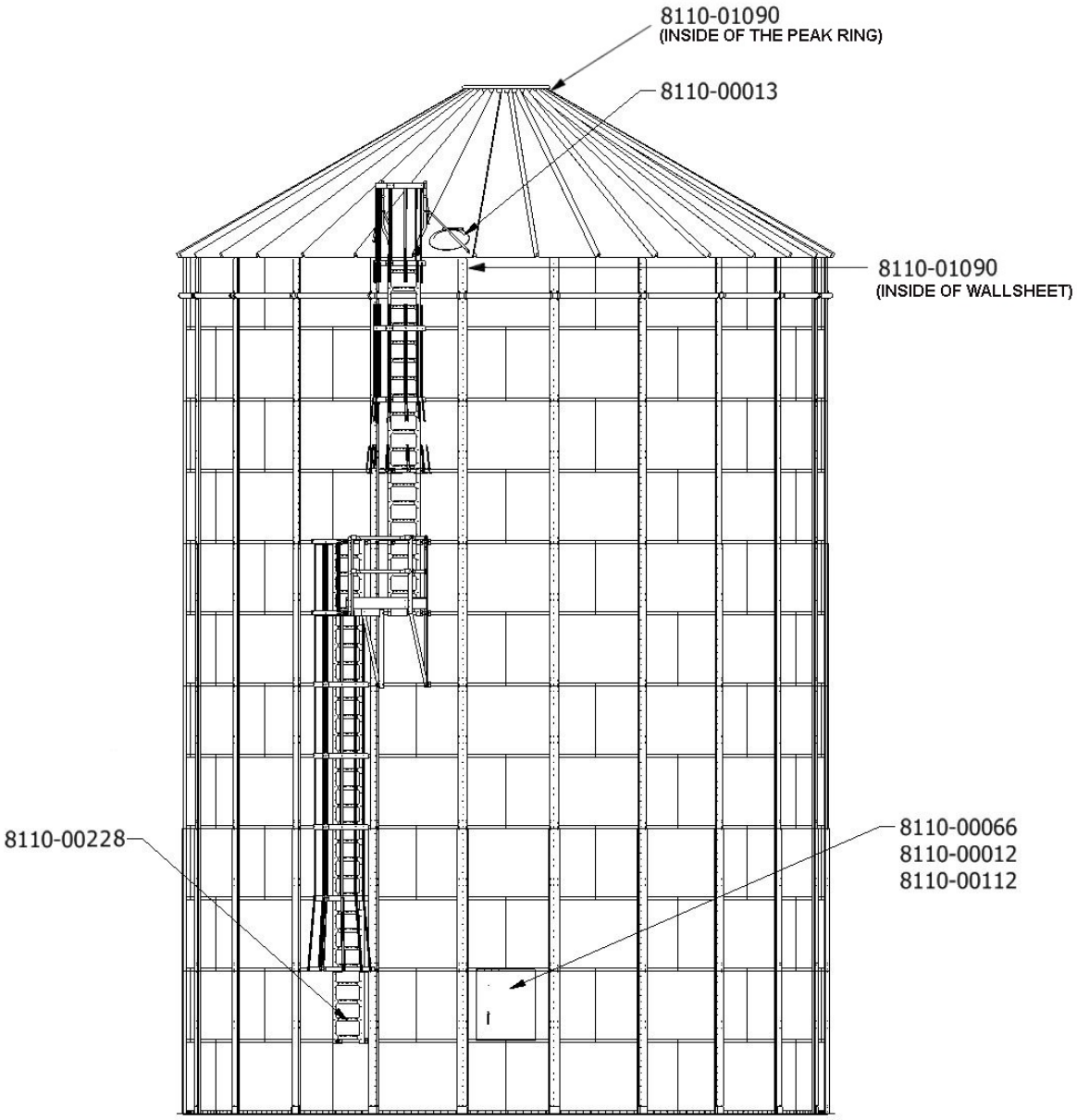
2.9. Decal Installation/Replacement

1. Decal area must be clean and dry, with a temperature above 50°F (10°C).
2. Decide on the exact position before you remove the backing paper.
3. Align the decal over the specified area and carefully press the small portion with the exposed sticky backing in place.
4. Slowly peel back the remaining paper and carefully smooth the remaining portion of the decal in place.
5. Small air pockets can be pierced with a pin and smoothed out using the decal backing paper.

2.10. Safety Decal Locations and Details

Replicas of the safety decals that are attached to the grain bin and their messages are shown in the figure(s) that follow. Safe operation and use of the grain bin requires that you familiarize yourself with the various safety decals and the areas or particular functions that the decals apply to, as well as the safety precautions that must be taken to avoid serious injury, death, or damage.

Safety Decal Locations



Safety Decals and Part Numbers

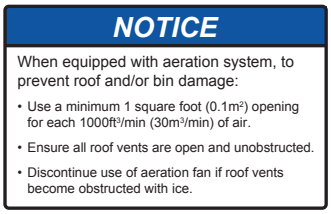
8110-00013

8110-00112

8110-00012

8110-00228

8110-00066



8110-01090

3. Before You Begin

3.1. Bin Design and Capacity

Standard AGI Grain Bins are designed for:

1. Non-corrosive free-flowing materials up to 52 lbs/ft^3 (833 kg/m^3) average compacted bulk density.
2. Maximum horizontal gusted wind speed of 94 mph (151 km/h).
3. German seismic zone 3 with a_o = 1.00 m/s^2.

   Note

   Seismic resistance in grain bins varies with height and diameter. Many standard designs have significant seismic capabilities. Designs can be reviewed and/or modified to reflect local seismic requirements.

4. Roof loading capabilities vary with diameter, peak load and snow load.
   a. Peak Loads – standard peak loads follow. ***Upgrades are available.***

   Table 1. Peak Loads for Various Roofs

Size	Type of Roof	Load (lbs)	Load (kg)
24’	non-structural	4000 lbs	1814 kg
27’ to 48’	non-structural	5000 lbs	2268 kg
51’ & 54’	non-structural	8000 lbs	3629 kg
48’ to 108’	structural	20,000 lbs	9072 kg

   b. Roof Snow Loads (RSL) – at the above stated standard peak loads, standard RSLs vary with diameter and range from 24 psf (117 kg/m^2) to 39 psf (190 kg/m^2). ***Upgrades are available***.

      Note

      The correlation between ground snow load (GSL) and roof snow load (RSL) for grain bin designs vary with jurisdictions. In the US GSL = 2 x RSL. In Europe GSL = 1.25 x RSL. In Canada the correlation between GSL and RSL varies and is site specific.

   c. For maximum roof snow load capacities for various sizes and types of roofs, refer to the Roof Design Capacities sections that follow.
5. Four catwalks loads, each applied to an upgraded set of vertical uprights, each taking a maximum of 10,000 lbs (44.48 kN).

3.1.1 Roof Design Capacities for Non-Structural Roofs

Table 2. Maximum Roof Snow Load at STANDARD Peak Load

Bin Series	Std Peak Load	Standard Roof		Plus Upgrade 1	
	lbs (kN)	psf	kPa	psf	kPa
24	4000 (17.8)	35.9	1.72	40	1.92
27	5000 (22.2)	38.9	1.86	39	1.87
30		35.9	1.72	40	1.92
33		39.6	1.89	44	2.11
36		34.3	1.64	38	1.82
42		30.6	1.46	34	1.63
45		28.7	1.38	32	1.53
48		29.6	1.42	33	1.58
51	8000 (35.6)	25.1	1.20	28	1.34
54		24.2	1.16	27	1.29

Note

1. Standard roofs are adequate for many applications but additional capacity is available when optional upgrade packages are used.
2. Upgrade packages include roof stiffening rings and/or rib supports.
3. For peak load between standard and upgrade limits, a straight line interpolation can be used to determine maximum roof snow load.
4. Structural roofs for 48' – 54' with rafters are available to support greater peak ring loads.
5. Higher level upgrade kits include all components from lower level kit; only one upgrade kit needs to be ordered for any given bin.

3.1.2 Roof Design Capacities for Structural Roofs

Table 3. Maximum Roof Snow Load at STANDARD Peak Loads - Canada and United States

Bin Series	Std Peak Load	Standard Roof	
	lbs (kN)	psf	kPa
48	20000 (89.0)	39	1.87
51		39	1.87
54		39	1.87
60		39	1.87
66		38	1.82
72		38	1.82
75		37	1.77
78		37	1.77
84		37	1.77
90		37	1.77
96		37	1.77
102		32	1.53
105		32	1.53
108		32	1.53

Table 4. Maximum Roof Snow Load at UPGRADED Peak Loads - Canada and United States

Bin Series	Upgraded Peak Load	Standard Roof	
	lbs (kN)	psf	kPa
48	60000 (266.9)	38	1.82
51		38	1.82
54		38	1.82
60		38	1.82
66		37	1.77
72		37	1.77
75		36	1.72
78		36	1.72
84		36	1.72
90		34	1.63
96		34	1.63
102		31	1.48
105		31	1.48
108		31	1.48

Note

Standard capacities are provided. Additional capacity is available with optional upgrades.

3.1.3 Roof Snow Load vs. Ground Snow Load

The Roof Design Capacity tables reflect roof snow load (RSL) values. These are design values. Often, comparisons are made to ground snow values (GSL). These are not the same. The conversion from GSL to RSL varies between jurisdictions and is governed by building codes:

- In the United States, for grain bins, GSL = RSL x 2
- In Europe, for grain bins, GSL = RSL x 1.25

- In Canada, for grain bins, the GSL/RSL conversion varies with every location across the country. However, for comparison purposes, the US conversion can be used as an approximation.

Therefore, when comparing against competitive GSL values in the US, double the above values. When comparing against competitive GSL values in Canada, double the above values for a reasonably close approximation.

3.2. Guidelines for Supporting Catwalks and other External Loads on AGI

Frequently catwalk and related equipment loads are supported on grain bins. Such connections are commonly made into the grain bin stiffeners and across the peak. A grain bin is a thin shell structure primarily designed to withstand the internal uniformly distributed loads inherent with the stored bulk material inside of the bin. Special considerations must be given to the manner in which external loads are supported. AGI has developed products which are compatible with these requirements and considerations. If a third party solution is provided, the provider assumes full responsibility of the structure, its load distribution, and the manner in which it is connected to the grain bin. The following guidelines must form part of the third party design considerations.

Connection to Stiffeners

1. The available catwalk support stiffeners in AGI stiffened bins are for 10,000 lb incremental catwalk loads and 20,000 lb incremental catwalk loads per upgraded stiffener. The actual loads subjected to a single stiffener by the mating catwalk support shall not exceed these maximum capacities.
2. AGI recommends that the vertical load transfer between the catwalk supports and the stiffener occur over a minimum distance of 66" for 10,000 lb loads and 120" for 20,000 lb loads. Adequate connection strength must be provided.
3. The catwalk support stiffener in AGI bins are designed to provide vertical load support only. Any lateral loads subjected to the grain bin must be negligible.
4. There is a restriction of 2 upgraded catwalk support stiffeners per bin location. Therefore, the maximum supported load at the grain bin eave is 20,000 lbs (for two 10,000 lb upgrades) and 40,000 lbs (for two 20,000 lb upgrades). This can be repeated on the opposing side of the bin at a second location. Deviation from this must be approved by AGI Engineering.

Connection to Peak Rings

1. The allowable vertical peak load to any AGI bin roof is restricted to its published rated capacity. The load must be centered and evenly distributed into the peak ring. Any off-centre load and/or improper load distribution may cause roof failure.
2. A AGI structural roof requires the peak support loads to be transferred directly into the compression ring/ roof rafter system. This is accomplished with peak load support brackets that are included with the structural roof. They must be installed as shown in the structural roof manual, connecting the peak support structure to the compression ring. They are required even if a non-AGI peak support structure is used. A non-AGI peak support structure needs to be designed to be able to connect with the brackets. The required bolt pattern is shown in the structured roof manual.
3. A AGI non-structural roof that is supporting a catwalk requires six clips to be installed in order to attach the flat cap to the peak ring. These clips are available from AGI.

3.3. Foundation Design and Loads

The foundations for the stiffened bin models are based on 3000 lbs. per sq. ft. (144 kPa) soil bearing capacity. All foundation designs use 3000 lbs. per sq. in. (21 MPa) ultimate compressive strength (after 28 days) for concrete and 43,500 lbs. per sq. in. (300 MPa) re-bar. The foundation designs included in this manual are suggestions only, and will vary according to local soil conditions. AGI will not assume any liability for results arising from their use.

Important

Foundation should be uniform and level. Level should not vary by more than ¼" over a span of four feet under the bottom ring angle. Any variance from level must be shimmed under upright base assembly. If being utilized to support a full floor aeration system, this levelness requirement should extend across the complete floor area.

3.4. Lifting with Bin Jacks

Use bin jacks to lift the bin safely during assembly and help prevent strength and functionality problems later, including alignment, tolerance, bin roundness, distortion, and twisting issues.

⚠ WARNING To prevent risk of serious injury or damage to the equipment:

- Prior experience is required. Do not use bin jacks if you are not properly trained or have never used them.
- Do not use bin jacks in windy conditions.
- Do not exceed lifting capacity of a bin jack.
- Powered bin jacks are recommended. If using manually operated chain jacks, lift carefully and evenly to prevent damage.

For important additional information, refer to:

- Specifications section in your manual, the sales order, or approval drawing of the bin's radius and total weight of the grain bin (including roof, fasteners, stiffeners, and all accessories).
- Bin jack manufacturer's instructions and bin jack lifting capacity.

Tools and Equipment

Use the following to lift the bin:

- bin jacks (internal or external)
- scaffolding/ladders
- lifting lugs
- drift pin
- socket/impact set
- wrench set

Additional tools and equipment may be required.

General Bin Jacking Instructions

Refer to the bin jack manufacturer's instructions in addition to the following to safely lift the bin during assembly:

- Use one bin jack per wall sheet.
- Confirm that the number of bin jacks can support at least 5X the weight of the bin.
- Fabricate lifting lugs to match the hole spacing on the bin.
- Assemble the top 1-2 wall sheet rings directly on the foundation.
- Layout and space the bin jacks evenly at each stiffener/seam according to the bin's radius.
- Anchor the bin jacks securely to the concrete.
- Connect the bin jacks securely to the stiffeners/seams.
- Lift using the bin jacks at an even and slow pace.
- Align the stiffener/seam holes with the wall sheet holes using a drift pin.
- When not actively assembling, lower the bin fully and secure it to the foundation to protect against wind gusts and other conditions.

3.5. Site and Assembly

Unless otherwise specifically provided in writing, AGI does not take responsibility for any defects or damages to any property, or injury to any persons, arising from or related to any site or assembly considerations, including but not limited to:

- Bin location and bin siting
- Soil conditions and corresponding foundation requirements
  (Note that the examples provided in manuals are for specifically stated soil conditions.)
- Bin assembly
  (AGI recommends the use of qualified bin installers. Contact AGI for information on installers in your area.)
- Field modifications or equipment additions that affect the bin structure
- Interconnections with neighboring structures
- Have the builder make all non-bin equipment in excess of AGI's recommendations. All such equipment including: LEGS, WALKWAYS, SPOUTING, and CONVEYORS must be self supporting.
- Compliance with all applicable safety standards, including but not limited to fall restraint systems (ladders or other systems). Contact local safety authorities as the standards vary between jurisdictions.

3.6. Methods of Installation

The recommendations for assembling and installing AGI grain bins must be closely followed to achieve the full strength of the bin and to achieve adequate weather sealing. The product warranty is void if:

1. Wall sheets and/or uprights not specified for a given tier are used.
2. Foundations are found to be inadequate or out-of-level.
3. Anchor bolts (cast-in-place, drill-in, chemical type or other) are found to be inadequate.
4. Off-center loading or unloading is used. (This does not apply to the use of approved side unloading systems).
5. Materials stored are not free-flowing or have a compacted bulk density greater than 52 lbs/ft^3 (833 kg/m^3).

If using bin jacks during assembly, always lift on an upright. Choose a hoist with an adequate capacity for the expected empty bin deadload. Make sure the rated capacity of the hoist is not exceeded.

3.7. Cutting Openings in Wide-Corr® Grain Bins

This section provides instructions for cutting openings to accommodate fan transitions, unloading augers and roof vents.

General Rules for Cutting openings

1. Never cut any uprights, roof ribs, or wall sheet bolted vertical seams to create an opening.
2. Openings shall be located so equipment being installed won't interfere with any bin components/ accessories.
3. Openings shall be minimized as much as possible for structural integrity of grain bins.
4. Corners in openings shall be cut with minimum radius of 1/8" to reduce stress concentration.
5. Openings shall be sealed all the way around for all weather conditions.
6. Instructions shall be followed closely to avoid damage to bin structure.
7. Except cutting openings described below, any other modification to AGI bins shall be approved by a professional engineer.

Openings for Fan Transitions of Aeration Floors

1. Consult aeration floor installation instructions for information on Planning floor layout.
2. Openings shall be centered to a wall sheet in horizontal direction.
3. Opening shall be cut as tight as it can be for the transition to go through and shall have no more than 1/4" gap on any side to the section of a fan transition going through a bin wall.
4. Opening height for fan transition shall be limited to 12.5" inches from bottom edge of a bottom wall sheet.
5. Opening width shall not exceed 46.5" for stiffened bins and 72.5" for unstiffened bins.
6. Vertical support shall be required to support load above opening.
7. Bottom angles may be cut flush to the sides of an opening to form part of opening.

Openings for Unloading Augers of Wide-Corr® Bins with Full Floor Aeration

1. Consult aeration floor installation instructions for information on Planning floor layout.
2. Openings shall be centered to a wall sheet in horizontal direction.
3. Openings shall be cut as tight as it can be for unloading auger to go through and shall have no more than 1/4" gap to auger flange section on any side.
4. Opening height for any auger shall be limited to 12.5" from the bottom edge of a bottom wall sheet.
5. Vertical flange of a bottom angle may be cut flush to sides of an opening to form part of opening.

Openings for Roof Vents in Roof Sheets

1. Openings shall be centered between roof ribs and have 2.5" minimum distance between edge of opening and base of a roof rib.
2. Openings can be square, rectangular, or round.
3. Openings shall be the same size as the inlet opening of a vent being installed.

4. Any side of a square/rectangular opening shall have a maximum length of 18" and a circular opening shall have a maximum diameter of 24".

3.8. Critical Assembly Requirements

To ensure a successful, safe and reliable outcome you must comply with the following assembly techniques and practices:

1. Comply with all local code and jurisdictional requirements applicable to your grain bin installation.
2. Design and build foundations with the necessary strength for the loads they must support, and for local soil conditions. AGI foundation guidelines are based on specific stated conditions and may not be applicable to local conditions.
3. Your foundation must provide uniform and level support to the structure being supported. Surface imperfections causing gapping must be remedied. This may involve, but not be limited to a) grouting under the bottom ring of a non-stiffened bin or tank, and b) shimming under the uprights of a stiffened bin or tank, or under the legs of a hopper.
4. Make sure that the proper hardware is utilized for all bolted connections. If a shortage occurs, do not substitute. Take the necessary steps to obtain the proper hardware. Make sure nuts are tightened to the required torque values as specified in the appropriate assembly manual.
5. Comply with all assembly instructions provided in the appropriate assembly manual to make sure your whole grain bin is constructed safely. Important: Do not deviate from the wall sheet and upright layouts provided.
6. Before anchoring your structure to its foundation, make sure the structure is round. The maximum variation from perfect roundness is 3/4" on the radius. Locate anchor bolts toward the outside of the anchor bolt holes (away from the circle) to permit the incremental expansion that can occur with the initial filling.
7. When installing roof stiffening rings, if it is necessary to shorten the stiffening ring tubes, shorten them as little as possible. Initially the nuts on the expanders should be centered and as close together as possible. When tightening, share the amount of take-up between expanders such that the nuts remain centered, and the amount of engagement between all expanders on the same ring is equalized.
8. If extending an existing bin or tank, ensure that the foundation is adequate for the increased loads it must support.
9. If installing an existing bin on a hopper, make sure the bin is designed for a hopper application, and that the foundation is capable of withstanding the substantial point loads that the hopper legs apply. If uprights are present, make sure that they are supported.
10. Make sure that an integral end-to-end connection exists between all mating uprights. Successive uprights must not overlap.
11. Vertical tolerances between uprights and wall sheets are tight. This can be affected by “jacking” techniques, which can allow the tolerance to grow or shrink depending on the technique used. The gapping between successive uprights must be monitored to ensure that upright holes align with wall sheet holes.
12. If catwalks are being installed on the structure, upright catwalk upgrades are likely required. The upgraded stiffeners must be installed in the correct locations to support the intended catwalk loads. Also, the structure must be properly oriented to ensure the eventual correct alignment between the catwalks and the supporting uprights. Finally, the connectors that tie into the uprights and support the catwalks are best installed during assembly of the structure. See the catwalk assembly manual for additional details.

3.9. Product Storage

If you won't be assembling the bin right away, store the bundles and boxes inside a building with good ventilation to prevent white or red rust from forming.

Note

White rust can be removed and does not cause permanent damage.

NOTICE **Red rust causes permanent structural damage.**

Do not assemble any part containing red rust.

If you can't store the bundles and boxes inside, follow the instructions below for outdoor storage.

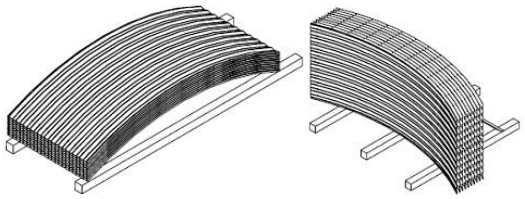
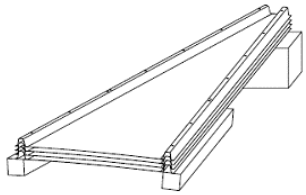
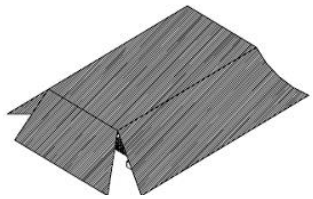
Storing Bin Bundles and Boxes Outdoors

Required Materials:

- Wood blocks
- Waterproof tarp

Storage Procedure:

1. First, place the bundles and boxes on wood blocks about 6"-8" off the ground.

Place the curved wall sheets with the hump facing up.	
Elevate the roof sheets at least 12" at the small end of the sheets.	
Place all the other bundles so they are well-sloped.	

2. For the bin boxes, ladder boxes, and hardware boxes: build a simple framework to support, cover with a waterproof tarp, and secure.

Note

The boxes are not waterproof and will deteriorate in normal weather conditions, allowing moisture to contact the parts inside.

If Parts Become Wet

1. Open the bundles as soon as possible.
2. Separate and dry the bin sheets or parts. Keep the parts separated until assembly.

⚠ WARNING **Risk of injury or damage.**

Brace parts securely to avoid damage or injury from material falling when in storage.

3. Dry any boxed parts that are wet and store them in a new, dry box.
4. After drying the wall sheets, apply a food-grade oil with a clean, lint-free cloth.

Note

Applying oil will help prevent moisture to contact with the dried wall sheets.

⚠ WARNING **Risk of slipping.**

Do not use oil on roof sheets, ladders, or other parts where a person may walk or stand after the bin is assembled.

3.10. Grain Bin Use

- Fill the bin through the center roof opening only.
- Do not overfill the bin roof area! This may cause roof damage or failure.
- Do not off-center unload a grain bin. It is imperative to unload from the center of the bin first, until as much grain as possible has been removed, and only then proceed to unload from the next closest unload gate to the center. Continue utilizing the unload gates in succession from the center towards the outside. Gate control mechanisms should be clearly marked and interconnected to prevent an external gate from being opened first.
- The only exception to center unloading is when a properly designed and installed side draw system is utilized. However, as bins tend to go out of round when employing side draws, the bin must be completely emptied before refilling.
- When unloading a bin with a mobile auger through a properly designed auger chute, the entry end of the auger should be pushed into the center of the bin before the auger is engaged. Slower rates of flow are preferable and should not exceed the capacity of an 8” auger.
- Ensure that the inner door panels of grain bin doors are completely closed and latched before filling the grain bin.
- Never enter a loaded grain bin for any reason. Grain can be a killer.

3.11. Important Notes

- AGI does not provide a foundation design for this product, and is not liable for any damages or injuries related to inadequately designed or constructed foundations. Customers must contract professional services for all foundation design and construction work.
- In order to maintain your wall sheets in good condition separate sheets and allow air circulation between them. Store sheets in a dry place. Do not store sheets with sheet ends pointing upwards.
- To keep an even pressure on walls, the bin must always be unloaded from the center.
- Contact local power officials for minimum power line clearance.
- See Section 3.8 – Critical Assembly Requirements on page 20 for mandatory siting and assembly requirements.
- Store only non-corrosive, free-flowing materials up to 55 lbs/ft^3 (880 kg/m^3) average compacted density in AGI .
- Tighten all bolts to the recommended torque settings.

- Do not locate grain bins close to high buildings, which might cause snow to fall onto or build up on the roof of the grain bin. Consider future expansion and allow space for loading and unloading of the bin. Your dealer and local government agricultural consultants can help you plan your storage system for maximum efficiency.

4. Preparation

4.1. Check the Shipment

Unload the parts at the assembly site and compare the packing slip to the shipment. Ensure that all items have arrived and that none are damaged.

Report damaged parts or shortages immediately to your dealer. Your dealer will order replacement parts immediately to ensure that assembly will not be held up by missing parts. All parts will be charged for and credit will be issued by party at fault. No credit will be issued if freight bills are signed as received in good condition.

4.2. List of Tools and Equipment

Use quality tools and equipment. Use them safely, and correctly, for their intended use. Tools for this application should include:

Tools

- Electric or pneumatic (air) impact tools
- Power drill and drill bits
- Sockets (multiple 9/16” and 1/2” sockets recommended)
- Large-pocket carpenter pouch
- 8” (20 cm) metal punches (for aligning bolt holes)
- Step and extension ladders, construction grade
- 6-point wrenches (Imperial, box end)
- Metal-cutting saw suitable for cutting roof rings and wind rings
- Scaffolding
- Centre-post bin stand
- Crane and/or bin jacks

Minimum Recommended Safety Equipment

- A properly-stocked first-aid kit
- Eye, foot, head, and hand protection (safety glasses, steel-toed boots, hard hat, work gloves)
- Cable, chain, or rope to tie-off bin or jacks in case of wind
- Body harness and lifeline (for use where falling hazard exists)
- Ground fault interrupt protected electrical hook-ups

4.3. Order Optional Equipment

Optional equipment such as unloading augers, aeration equipment, anchor bolts, foundation sealant, external ladders, safety cage and platforms, etc., should all be on site and checked before assembly starts. Plan your installation in advance. For details, see assembly instruction supplied with optional equipment.

4.4. Pre-Plan Assembly

Before assembling:

1. Read and understand this manual.
2. Develop an assembly plan, with consideration given to the layout of accessories and auxiliary equipment.
3. Predetermine the locations for access doors, anchor bolts, ladders, manways, side draws, roof steps, roof vents, fans, and other auxiliary equipment.
4. Plan your construction in accordance with your assembly and layout plan.

Important

Installation of accessories or equipment on grain systems equipment/structures that overstresses the bin in any manner will void the warranties.

In cases where additional loading is involved, if you do not already have specific recommendations from AGI, contact AGI engineering department in Grand Island, NE (USA) before installation begins.

Do not install 24'–54' CEU Grain Bins controls or the like near anything having a strong electromagnetic field such as large power transmission lines or transformers.

4.4.1 Pre-Planning: Side Draw Discharge, Aeration, and Unload Equipment

Side draw discharge pre-planning: Make certain side draw discharge does not fall on a vertical sidewall seam.

Figure 2. Never Position a Side Draw Opening at a Sidewall Seam

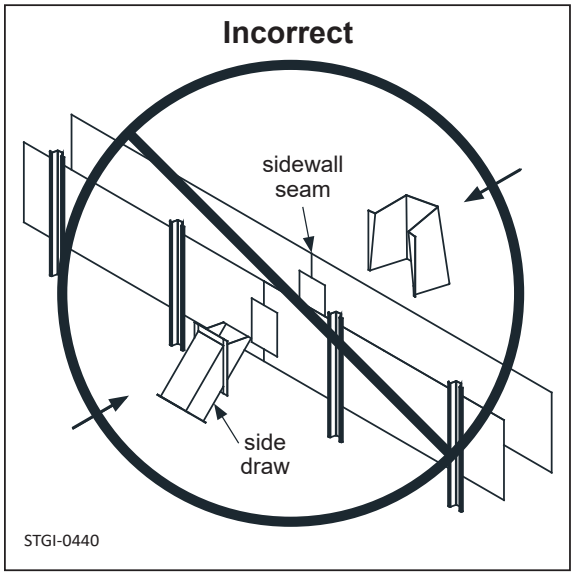
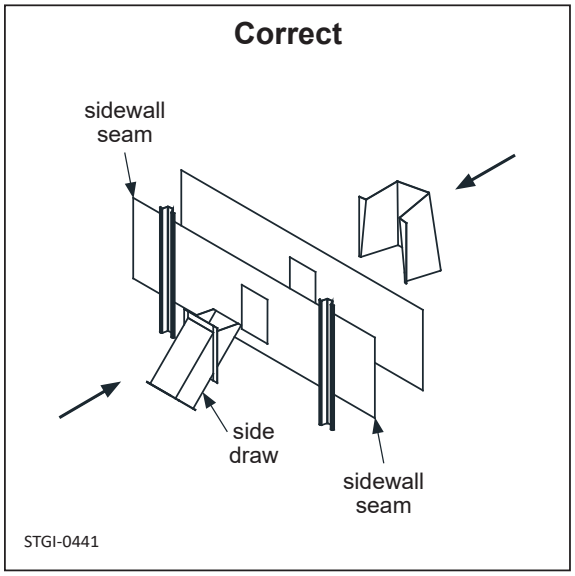
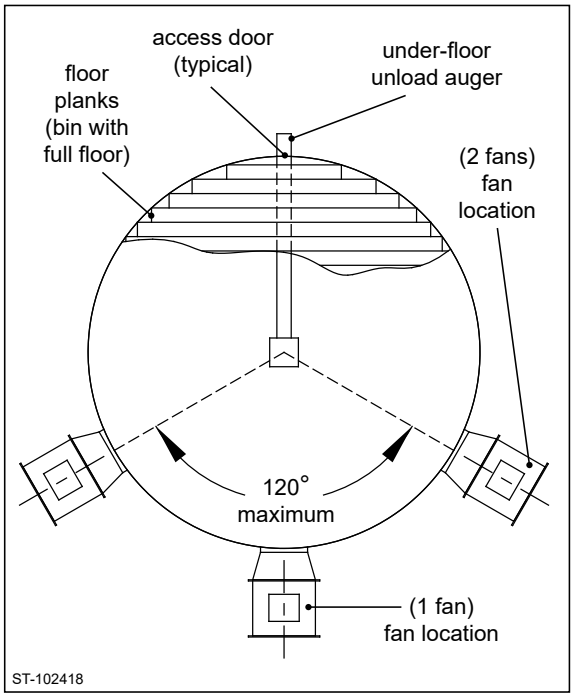


Figure 3. Position Midway Between Stiffeners and Not on a Vertical Seam



The following Figure 4 is one suggested guide for locating aeration fans and floor unload equipment.

Figure 4. Example Fan and Unload Equipment Layout



5. Assembly

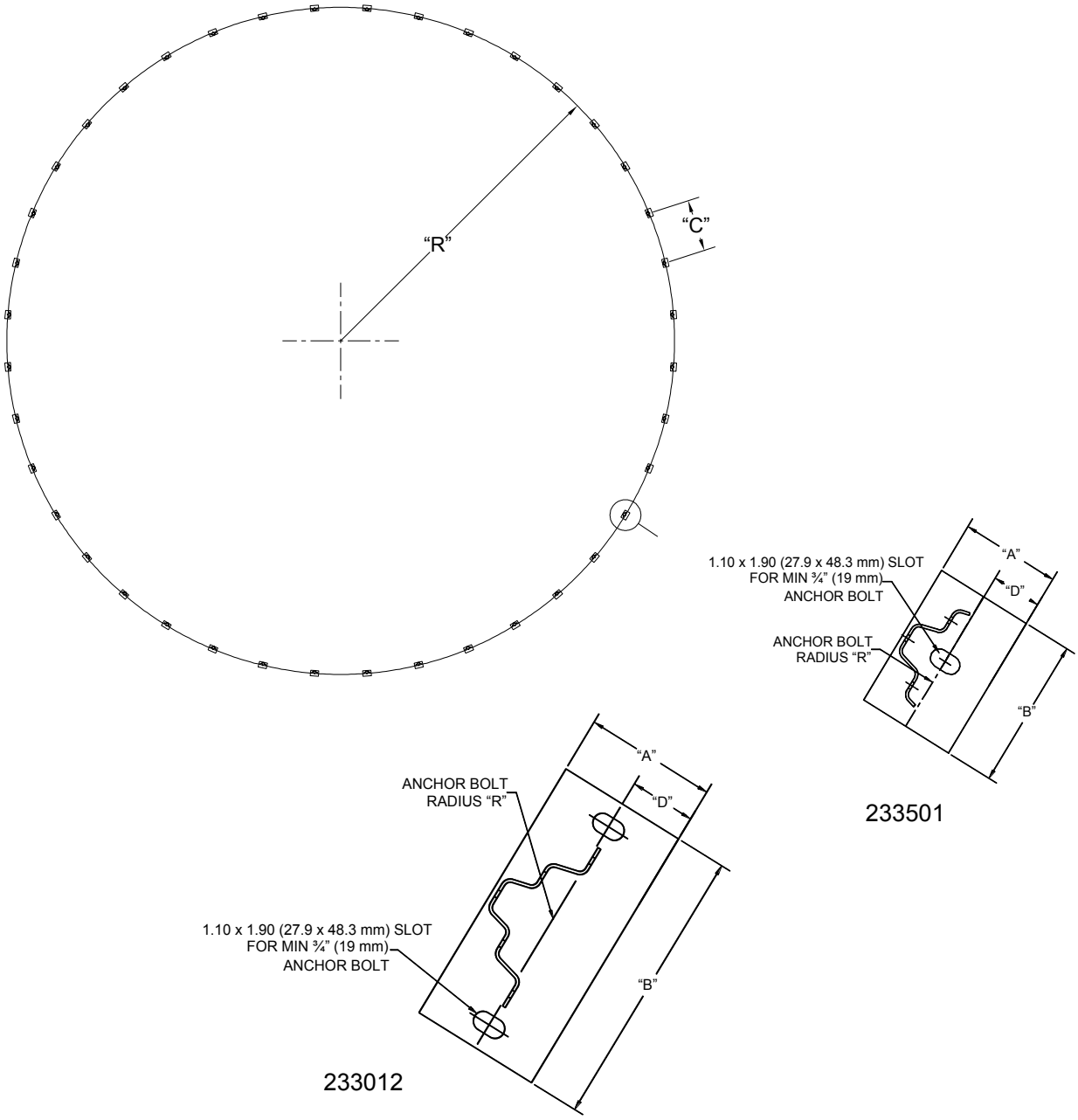
5.1. Assembly Safety

⚠ WARNING

- Do not take chances with safety. The components can be large, heavy, and hard to handle. Always use the proper tools, rated lifting equipment, and lifting points for the job.
- Do not stand on, under, or near any component that is not secured.
- Carry out assembly in a large open area with a level surface.
- Always have two or more people assembling the grain bin.
- Make sure you have sufficient lighting for the work area.
- Tighten all fasteners according to their specifications. Do not replace or substitute bolts, nuts, or other hardware that is of lesser quality than the hardware supplied by the manufacturer.
- Stay away from overhead power lines and other obstructions during assembly. Contact with power lines can cause electrocution.
- Do not work in high winds.
- The equipment shall be installed in accordance with applicable local codes and regulations.

5.2. Anchor Bolt Radius

Figure 5. Anchor Bolt Radius



Base Plate			
Part Number	**A**	**B**	**D**
233501	6″	9″	3″
233012	7.5″	16″	3.75″

Table 5. Anchor Bolt Radius

Bin Model	Number of Tiers	Base Plate	Anchor Bolt Radius "R"		Anchor Bolt Cord "C"		No. of Anchor Bolts
			Inch	mm	Inch	mm	
24	5–12	233501	146.5	3721	57.16	1452	16
27	5–12	233501	164.4	4176	57.10	1450	18
30	5–12	233501	182.3	4630	57.04	1449	20
33	5–12	233501	200.2	5085	56.98	1447	22
36	5–12	233501	218.1	5540	56.94	1446	24
42	5–12	233501	253.9	6449	56.86	1444	28
45	5–12	233501	271.8	6904	56.82	1443	30
48	5–12	233501	289.7	7358	56.79	1442	32
51	5–12	233501	307.6	7813	56.76	1442	34
54	5–11	233501	325.5	8268	56.74	1441	36
54	12	233012	326.3	8288	56.88	1445	72

5.3. Typical Non-Structural Roof Installation

The following is a step-by-step procedure for assembling a non-structural roof system.

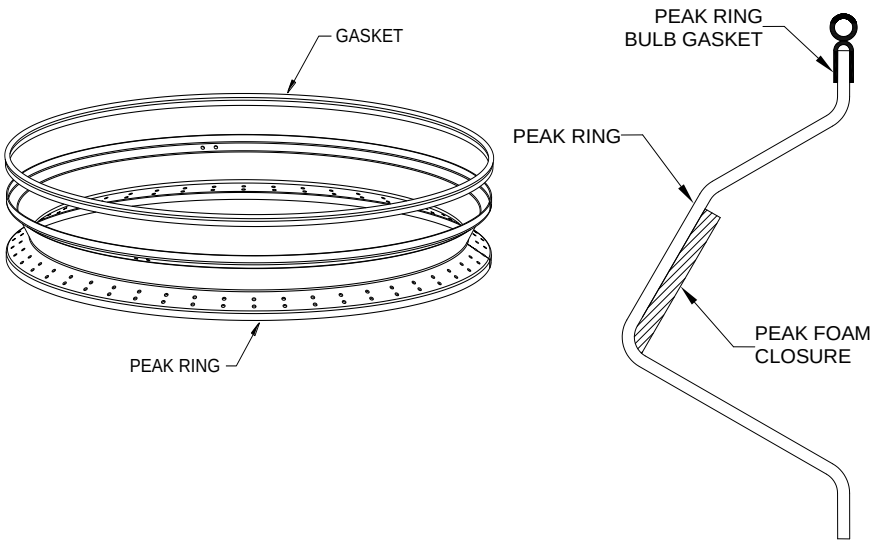
Preparation

1. Inspect the concrete foundation to insure that the foundation meets all the requirements of the installation.
2. Plan the assembly:
   a. Determine the desired bin orientation.
   b. Determine the locations of bin features and accessories (AGI logo, fall restraint brackets, Grain Gauge, unloading devices, outside ladder, spiral stairs).

   These considerations affect the location of the inspection hatch roof panel and the placement of the roof ladder or roof stairs.
3. Prepare the peak ring:
   a. Install the supplied bulb gasket around the top of the peak ring. Trim to fit.
   b. Install the foam closure gasket around the center section of the peak ring. Trim to fit.

   Refer to Figure 6 on page 30.

Figure 6. Gasket and Foam Closure Assembly to Peak Ring



4. Install the center post making sure the post is vertical, braced and anchored properly for safe installation.
5. Lay out the bin circumference (for the bottom tier of wall sheets) on the foundation:
   a. Anchor a string to the exact center of the concrete foundation.
   b. Determine the required string length using Table 6 on page 31.

Note

The radius values given in the chart are 3/4" smaller than the wall sheet radius at the bottom. This ensures that the scribed circle can be seen during assembly. A perfectly placed ring of sheets should be 3/4" on the outside of this scribed circle.

c. Scribe the bin circumference onto the foundation.

Important

Follow these steps carefully. It is imperative that the bin be as round as possible.

Table 6. Scribe Radius and Peak Ring Height (1 and 2 tier)

Nominal Bin Dia.	Scribe Radius		Top of Peak Ring Height "H" with 1 tier of wall sheets		Top of Peak Ring Height "H" with 2 tiers of wall sheets	
(ft)	(ft in)	(m)	(ft in)	(m)	(ft in)	(m)
24	11'10-1/2"	3.619	10'4-7/16"	3.160	14'0-7/16"	4.279
27	13'4-3/8"	4.074	11'2-3/4"	3.423	14'10-3/4"	4.540
30	14'10-5/16"	4.529	11'7-5/8"	3.546	15'3-5/8"	4.664
33	16'4-3/16"	4.984	12'5-15/16"	3.808	16'1-15/16"	4.910
36	17'10-1/8"	5.438	13'4-1/4"	4.071	17'0-1/4"	5.188
42	20'9-15/16"	6.348	15'0-15/16"	4.596	18'8-15/16"	5.714
45	22'3-13/16"	6.803	15'11-5/16"	4.859	19'7-5/16"	5.977
48	23'9-3/4"	7.258	16'9-5/8"	5.121	20'5-5/8"	6.239
51	25'3-5/8"	7.712	17'5-5/8"	5.325	21'1-5/8"	6.442
54	26'9-9/16"	8.167	18'4"	5.588	22'0"	6.706

Assemble the Top Tier of Wall Sheets

1. Assemble a single tier of wall sheets if single-tier uprights are included in the bin package.
2. Assemble two tiers if two-tier uprights are included in the bin package.
3. Refer to the Appendix for information on proper hardware usage.
4. After the first ring of wall sheets has been assembled, check the position and roundness of the ring:
   a. Verify that the bin is round, with **no more than 0.75" variation** on the radius, when measured from the center of the bin.
   b. Verify that the wall sheets form a smooth circle with no flat spots or cauliflower shaped curves.

   Note

   Correcting for roundness becomes much more difficult the longer you wait.
5. When setting jacks, make sure they are also set round and that they are anchored to the concrete.

Install the Top Ring Angle Sections

Important

Read and fully understand the following instructions before attaching the top ring angles to the top of the wall sheets. There are timing considerations for the inspection hatch, outside ladder, inside ladder, and other components.

1. Attach the top ring angle to the inside top of the wall sheets.
   a. Do not align the top ring angle joints with wall sheet joints.
   b. Make sure that the top ring angle joints are at least two or three wall sheet holes away from the Grain Gauge cutout.
   c. If building a stiffened bin, do not install the top angle bolt that lines up with the stiffener holes at this time. It needs to be installed with the stiffeners.
2. There are six pairs of vertically aligned circular and square holes in the top ring angle. (See Figure 7 on page 32)
   a. These are used to attach the center holes at the bottom of the roof sheets to the top ring angle. This locks in the correct centering location of the roof sheets, which is important for locating roof accessories such as the inspection hatch, roof ladder, roof stairs, etc.
   b. Whichever pair of vertically aligned circular or square holes you choose to attach the first roof sheet center hole to, the next pair of vertically aligned circular or square holes over, to the left or right, will be used as a Bird Stop location. (See Figure 7 on page 32)
   c. The next pair of vertically aligned circular or square holes over from the Bird Stop location, will be another roof sheet center hole location.
   d. This pattern will repeat all the way around the bin.

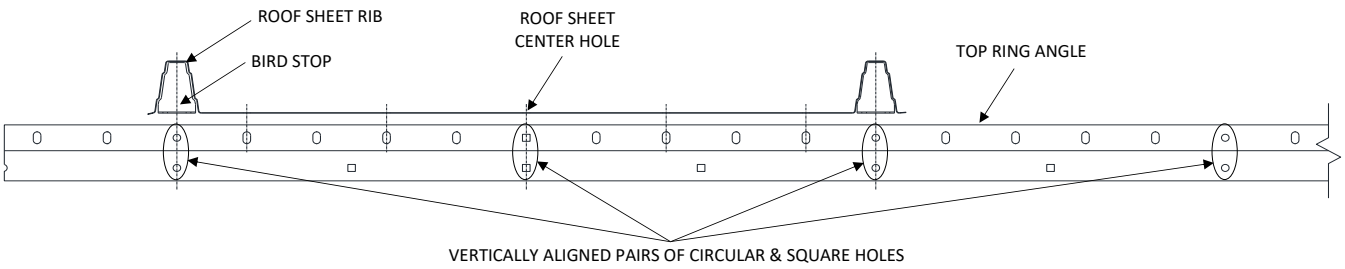
      Note

      To make timing easier of other parts, and accessories on the bin, best practice is to mark all important locations on the top angle using a marker.
3. Because the inspection hatch is in the center of the roof sheet, the inspection hatch will be centered on one set of the vertically aligned circular or square holes.
   a. If this bin is equipped with an inside ladder, center the inspection hatch above the inside ladder.
   b. Do not align the inside ladder with stiffeners.
   c. Do not attach inside ladder brackets at stiffener locations or vertical seams.
4. The slots in the top ring angle align with the other non-center holes in the roof sheet.

   Note

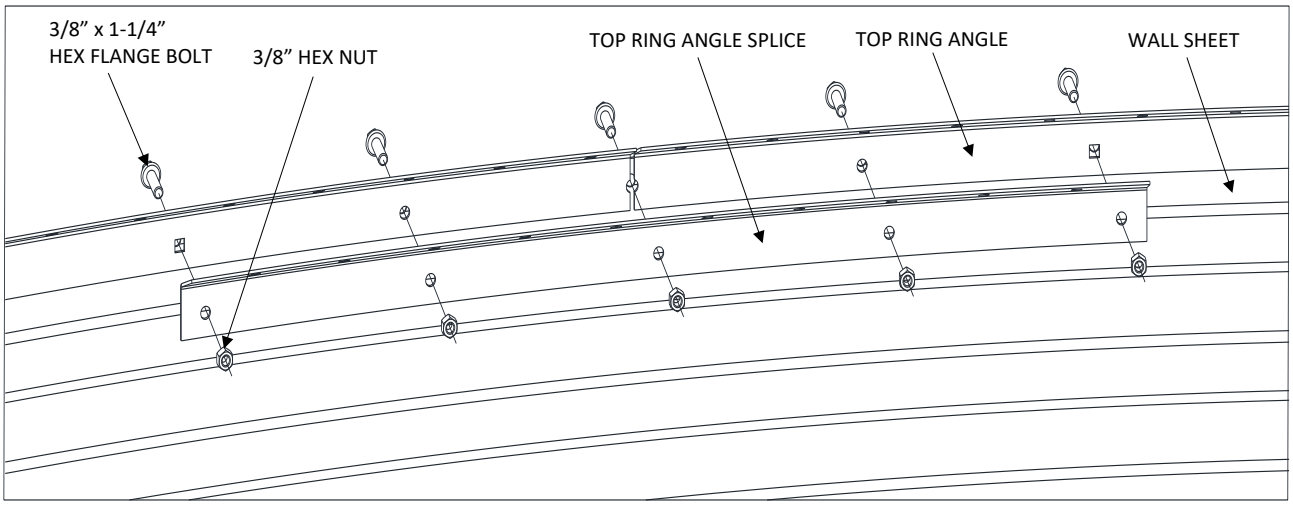
   If using bin jacks through the top ring angle, jack bolts will need to be longer. Knowing jack placement before attaching the top ring angles will eliminate the need for replacing bolts.

Figure 7. Top Ring Angle Timing Details



5. Install Top Ring Angle Splices between all Top Ring Angle sections:
   a. Align the middle hole in the Top Ring Angle Splice with the joint between two Top Ring Angle sections.
   b. Use the Top Ring Angle hardware to attach the Top Ring Angle Splice at all five bolt locations (see Figure 8 on page 33).
   c. Tighten all hardware.

Figure 8. Installing Top Ring Angle Splices

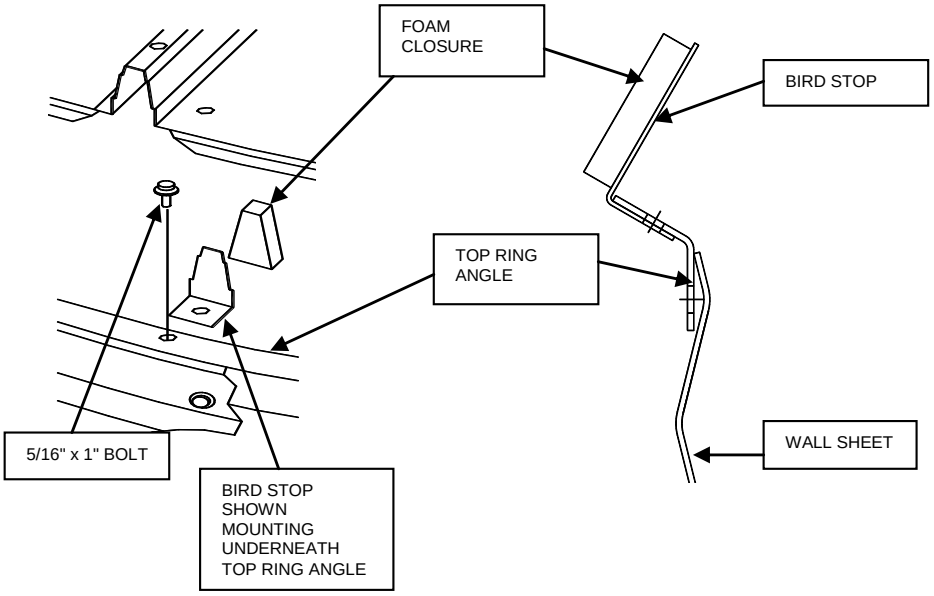


Install Bird Stops

Bird stops consist of a metal bird stop bracket, an adhesive backed foam closure and a nut and bolt.

1. Install bird stops at the bottom end of all roof panel ribs:
    a. Best practice is to install bird stops before attaching the roof panels. (Easier access to bolts and aids with timing)
    b. Install bird stops at locations that are five holes to the left or right of the roof panel center mounting holes in the top ring angle.
    c. Best practice is to install the bird stop with the flange placed under the top ring angle instead of on top of it.

Figure 9. Bird Stop Installation



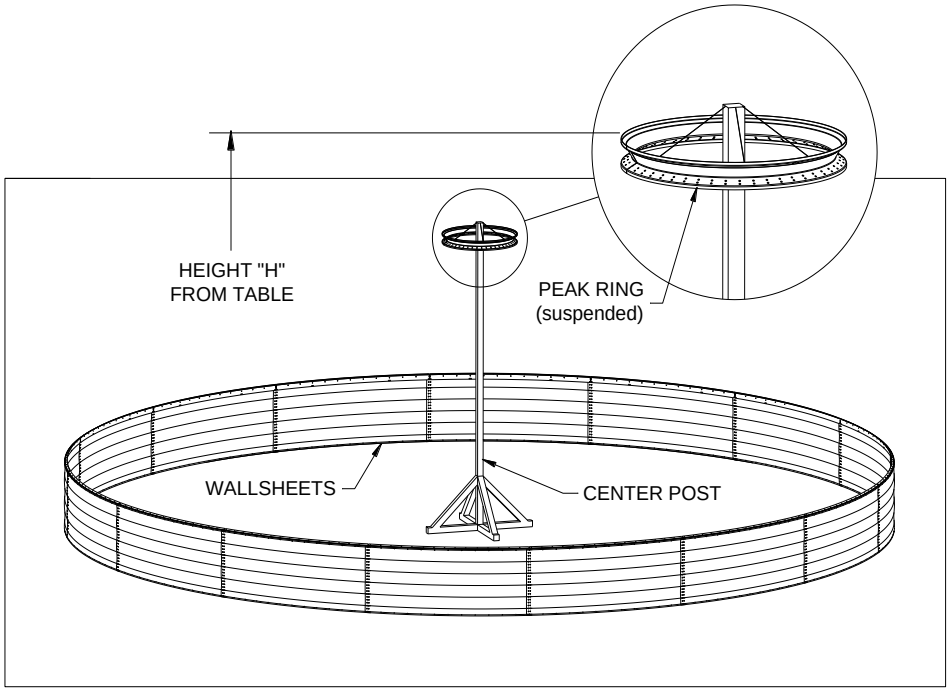
Tip

Mounting the bird stop under the top ring angle prevents it from turning when tightening the nut.

Install the Peak Ring

1. Determine the correct peak ring height (H) for the bin size from Table 6 on page 31.
2. Attach the peak ring assembly to the top of the center post at the correct height for the bin being assembled.

Figure 10. Peak Ring Installation

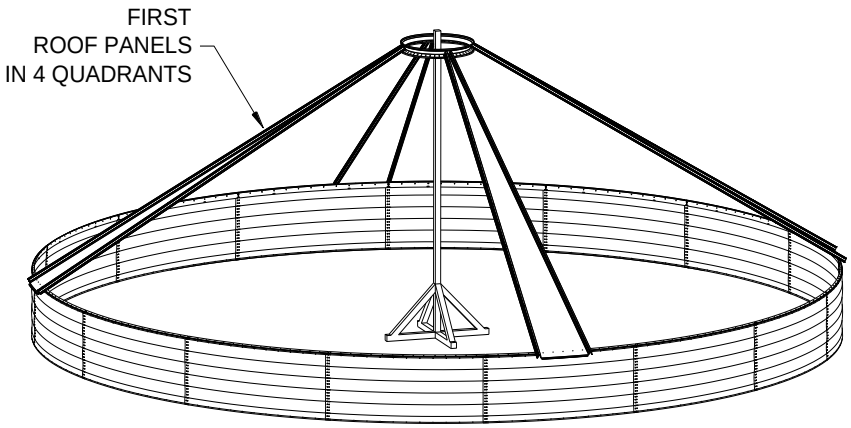


Install the Roof Sheets

1. Attach roof sheets with the narrow end to the peak ring and the wide end to the top ring angle.
2. Initially, attach four roof panels at the quarter points of the bin. (See Figure 11 on page 36.)

   This will stabilize and support the peak ring during the rest of the installation.

Figure 11. Roof Panel Installation



Tip

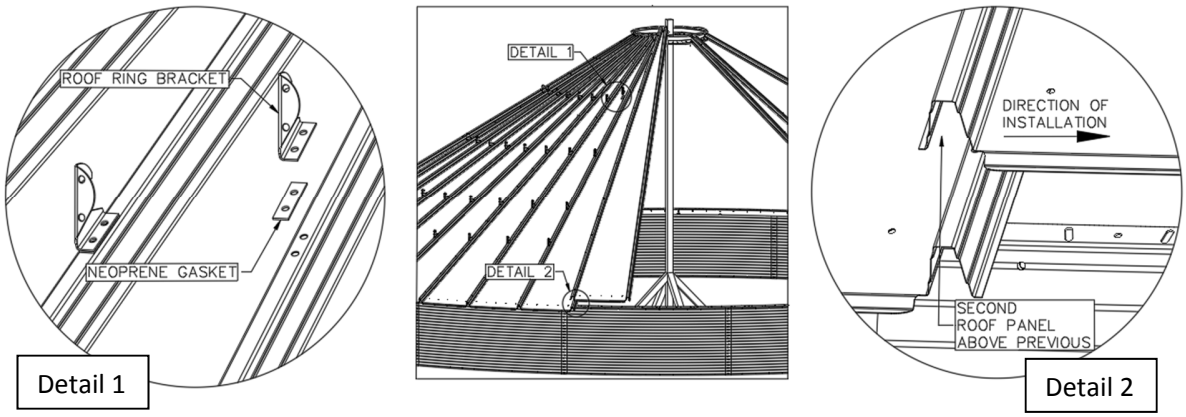
The narrow end of the roof panels gets pushed into the foam closure. Once this occurs there is little room for adjustment at the top end as the roof panel is embedded in the foam. Sometimes the roof panels get “flattened” slightly from bundling, shipping and handling. It is relatively easy to push the ribs together slightly but this should occur before the panel is seated in the foam. Monitor the alignment of mating roof panels with the underlying holes in the peak ring and make adjustments, if necessary, before anchoring the roof panel into the foam.

Important

Be careful when attaching the bottom of the roof panels to the top ring angle. The center round holes at the bottom of the roof panels must align with either the vertically-aligned round or square holes in the top ring angle. This locks in the correct centering location for the roof sheet. The other non-centre holes in the bottom of the roof sheet align with the round slots in the top ring angle.

3. Make sure that the gap between the roof panel and the peak-ring is sealed by the foam closure.
4. Install the remaining roof panels, working in a counter clockwise direction:
   - Attach the center roof panel hole first, then the other four holes at the bottom of the roof panel.
   - Insert bolts, with a stl/neo washer added to each bolt, from the outside and add the nuts on the underside.
   - Use two bolts at each roof panel to peak ring connection.
   - Make sure the left roof rib overlaps the right rib of the preceding panel. (See Detail 2 in Figure 12 on page 37.)
   - Fill in every bolt hole in roof-panel ribs with rubber washered bolts to the outside and nuts on the underside.
   - If the number and diameter of optional roof stiffening rings is known, install the roof ring brackets (with a neoprene gasket under each) in the double rib hole locations as you add roof panels. (See Detail 1 Figure 12 on page 37.)

Figure 12. Roof Rib Orientation & Roof Ring Bracket Assembly



Important

As assembly proceeds, additional support is advised to keep the peak ring level. Alternatively sequentially add roof panels in the different quadrants such that the weight of the panels on the peak ring remains uniformly distributed. Leave all roof bolts loose until the roof is completely assembled, especially those at the peak ring and top ring angle locations.

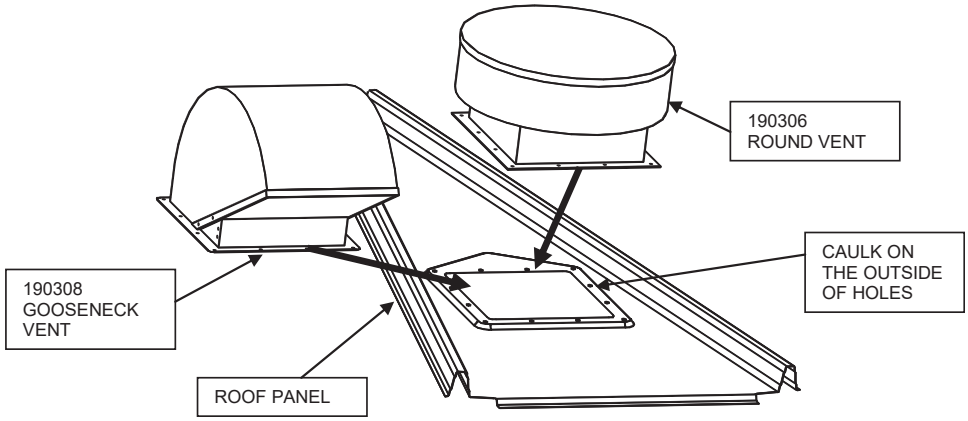
5. Install vent roof panels where required, as the roof is being assembled.

   Distribute vent roof panels evenly around the roof. Ensure that they do not interfere with other roof elements such as roof stairs or rungs, temperature cables, etc.

   Note

   AGI supplied roof vents come in two styles: Gooseneck and Round. Both have pre-formed bolt holes for mounting to the roof panel. The vent roof panels have a raised mount section, mounting holes and a pre-cut ventilation opening. No on-site cutting is required. A recommended practice is to assemble the vents to the roof panels at ground level before installing. Place a strip of caulking all the way around the weather side of the connection, position the vent, and bolt into place.

Figure 13. Roof Vent Assembly



6. Install inspection hatch roof panel where required. The inspection hatch can be pre-assembled if desired. (See Section 5.9 – Inspection Hatch Details on page 87.)
7. Install the roof ladder on the roof sheet to the left of the inspection hatch. (See Section 5.4 – Roof Ladder Details on page 45.)

Note

Enough roof ladder rungs are supplied to bridge across every pair of holes on a single roof panel. Where roof stiffening ring brackets are placed, the ladder rung can be skipped. The roof ring will serve as a rung in this location. Roof ladder rungs are installed with the higher vertical flange facing the peak ring.

Installing the High Mount Vents (Optional)

High Mount Vents are optional and are not sold for use with every installation.

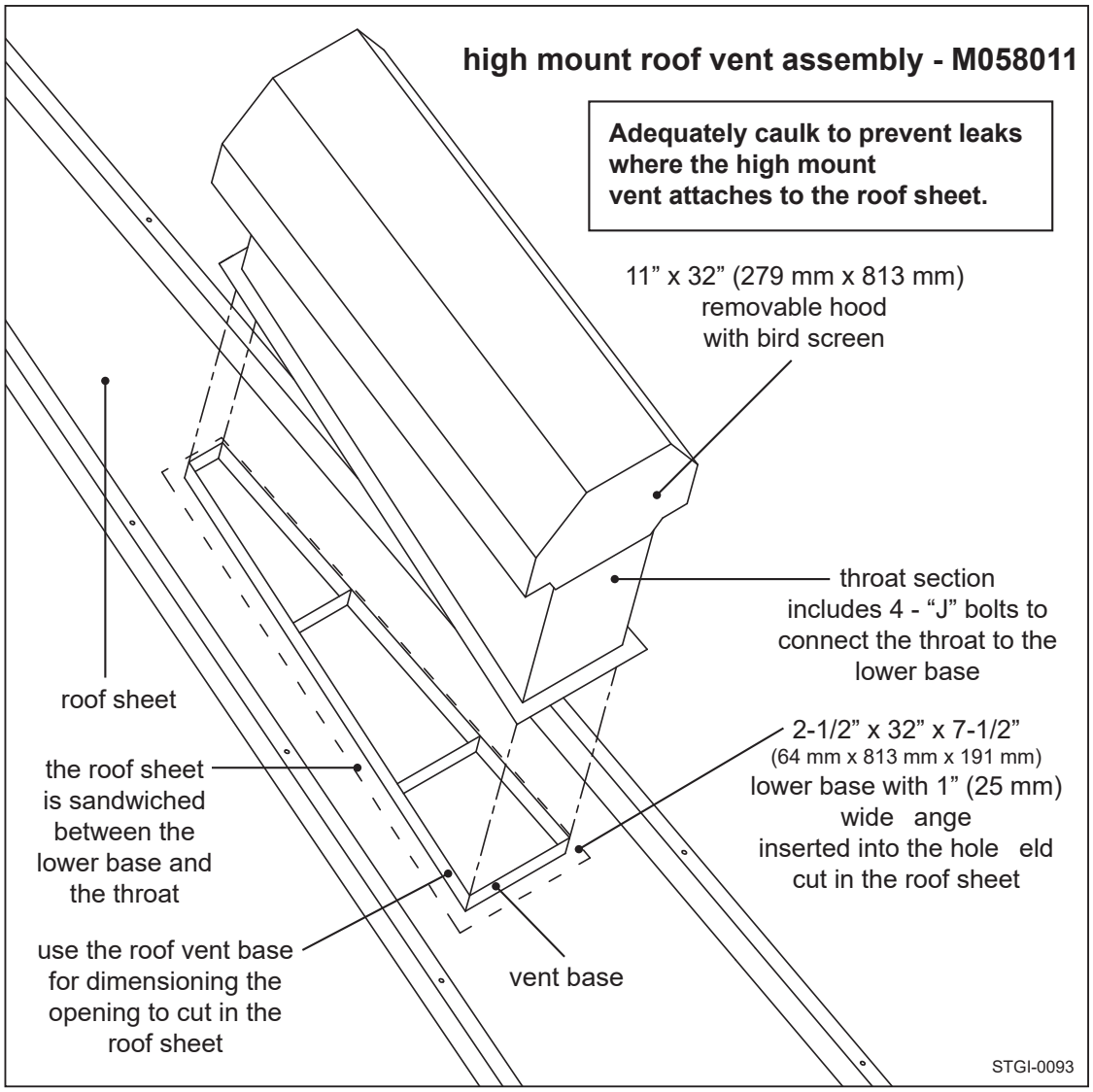
Part Number	Description	Weight lb (kg)
058011	High Mount Vents 1.1 sq ft (.10m^2)	10 (5)

Note

Suggestion: Space vents evenly around the bin roof.

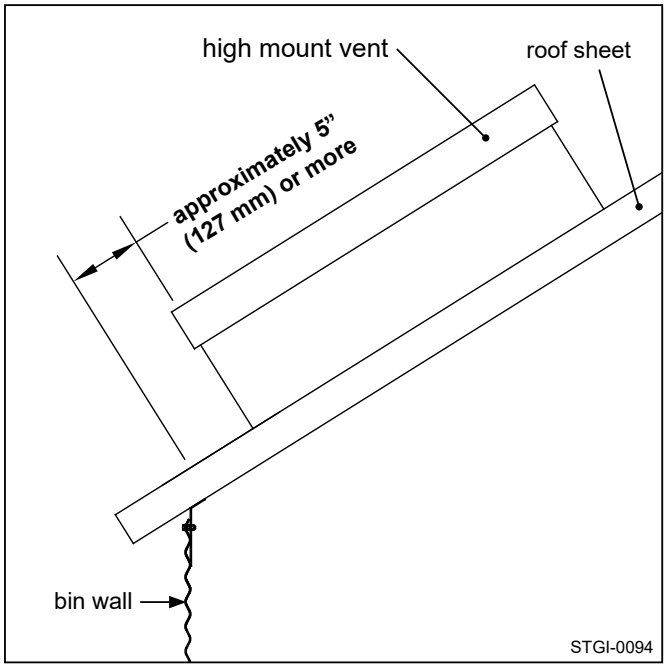
1. See the following Figure 14. If high mount vents are used, field cut entrances for the vents. Insert the high mount vent's lower base through the field cut hole from below the roof sheet. The throat section includes (4) "J" bolts. Use those "J" bolts to connect the throat to the lower base. Sandwich the roof sheet between the lower base and throat.

Figure 14. Optional High Mount Vents Installation



2. Evenly space all roof vents around the bin roof perimeter. Install the high mount roof vents high enough on the bin roof sheet to avoid interference with an eave ring or eave clips. Your installation may require the installation of additional roof vents at upper or intermediate roof locations (to facilitate airflow in the roof peak). Many cases require the installation of power roof vents with thermostat controls. Install the required roof vents before using the bin for the first time.

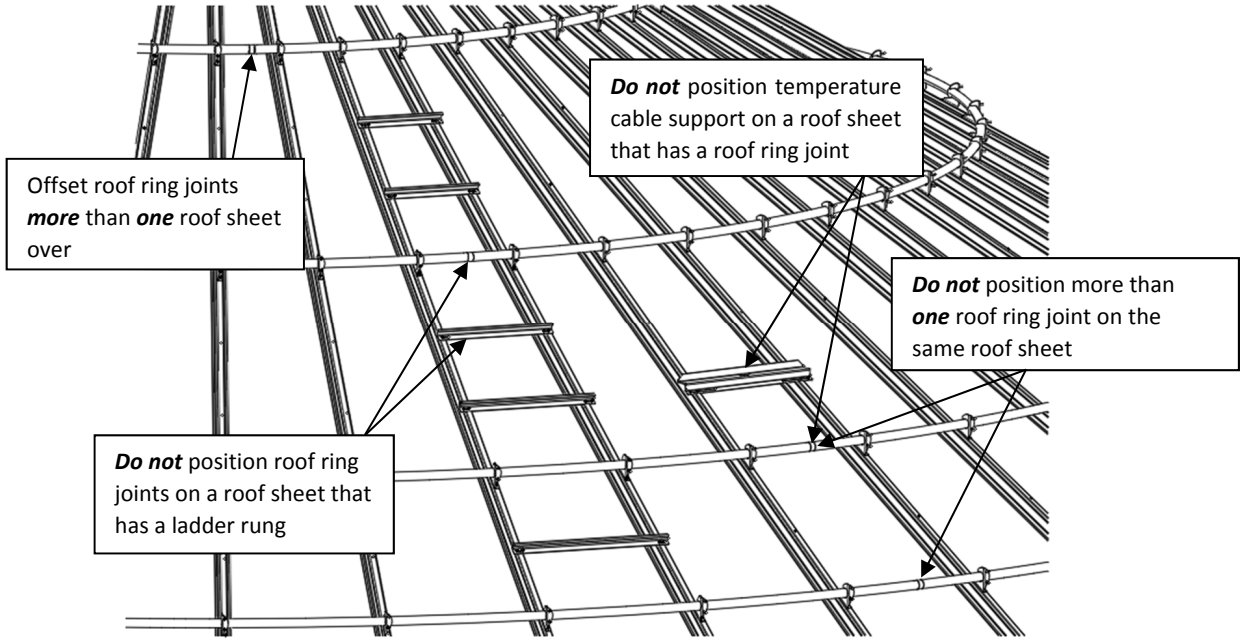
Figure 15. High Mount Vent Placement



Install Roof Stiffening Rings

1. Add roof stiffening rings (if required):
   a. See Table 7 on page 43 for standard roof stiffening ring locations.
   b. On roofs with multiple stiffening rings, stagger the ring joints to avoid having more than one joint on same roof sheet. (See Figure 16 on page 41.)

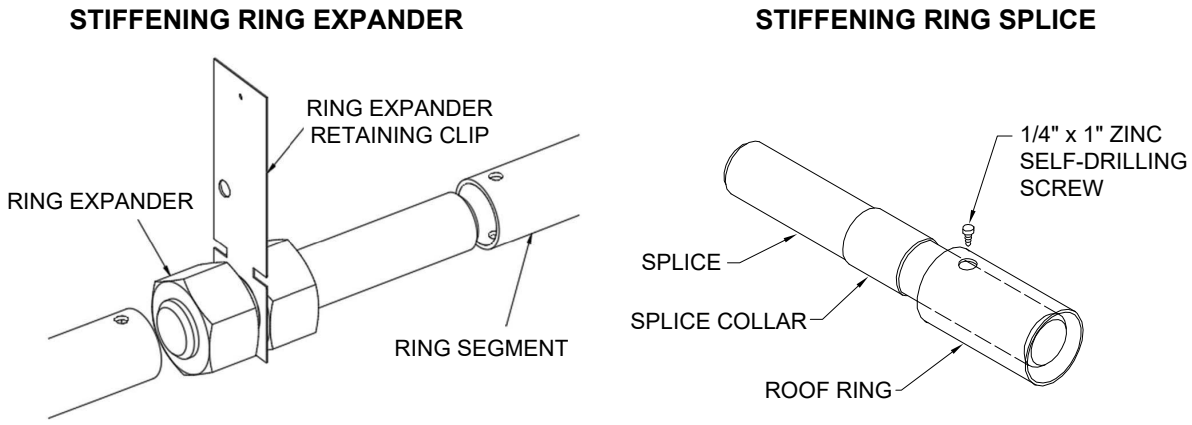
Figure 16. Roof Stiffening Rings Installation



c. Join roof stiffening rings together by inserting a ring splice into the facing ends and pushing everything together tightly.

d. Secure the splice to the roof ring with a self-drilling screw.

Figure 17. Stiffening Ring Connection



e. Field cut the last stiffening ring segment so there is a 2½" gap between the mating tubes.

f. To make the final connection, insert a ring expander between the final ring sections.

g. Remove one nut from the ring expander, slide the ring expander retaining clip onto the threaded portion against other nut. Thread removed nut back on. (See Figure 17 on page 41).

h. With nuts close to one end, insert the long end of the ring expander into one tube and, by flexing both tubes, make the connection to the mating tube. (See Figure 17 on page 41.)

i. Thread both nuts toward the center.

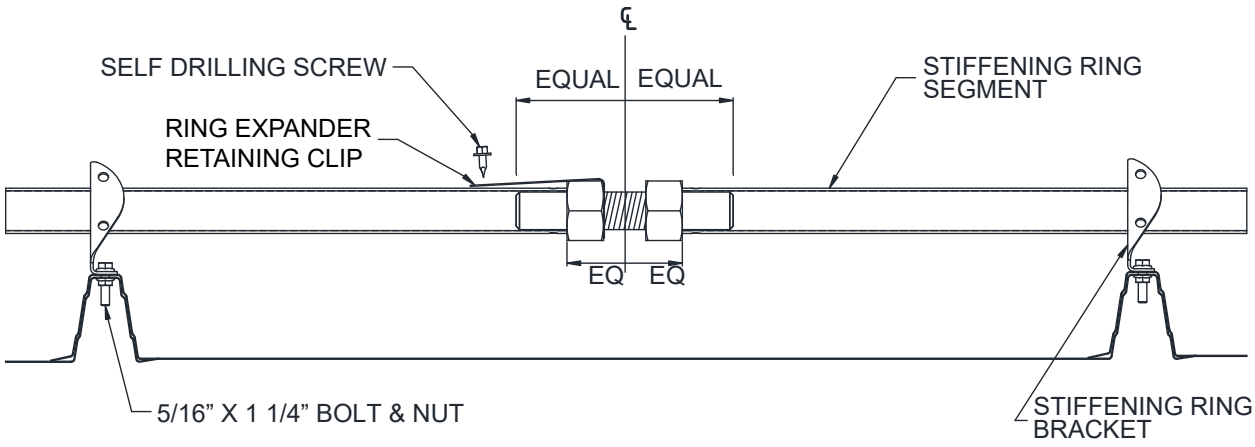
   The green paint on the threaded portion indicates the center.

j. Slide stiffening ring tubes into the brackets.

Note

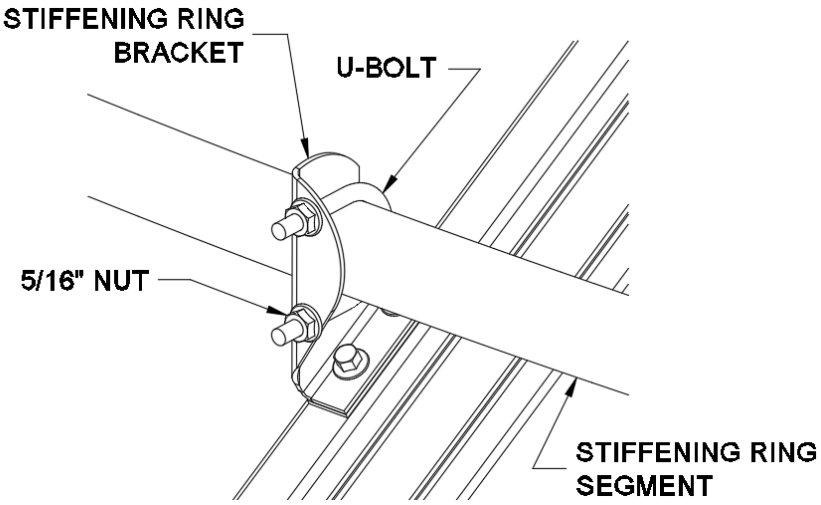
Before expanding, or tightening the roof, all nuts on the ring expanders should be tight together and centered.

Figure 18. Stiffening Ring Connection (side view)



2. Tighten the roof hardware.
3. Expand the nuts on the stiffening ring expanders until the slack has been taken up and the roof is snug.
   - Do not overtighten and crown the roof.
   - Nuts must be centered on the threaded rod.
   - Use the painted marking as a guide.
   - On rings with multiple expanders, the distance between the nuts on all of them should be equal. (See Figure 18 on page 42.)
4. Slide retaining clip against one nut, bend clip over nut and flat against stiffening ring. Secure the retaining clip to the stiffening ring with a self drilling screw. (See Figure 18 on page 42.)
5. Install u-bolts into stiffening ring brackets, tighten the u-bolts until stiffening ring is pulled tight against the brackets. (See Figure 19 on page 42.)

Figure 19. Stiffening Ring Bracket Assembly



6. Once all the roof panels have been installed, make sure all nuts have been tightened.

Table 7. Roof Reinforcing Matrix

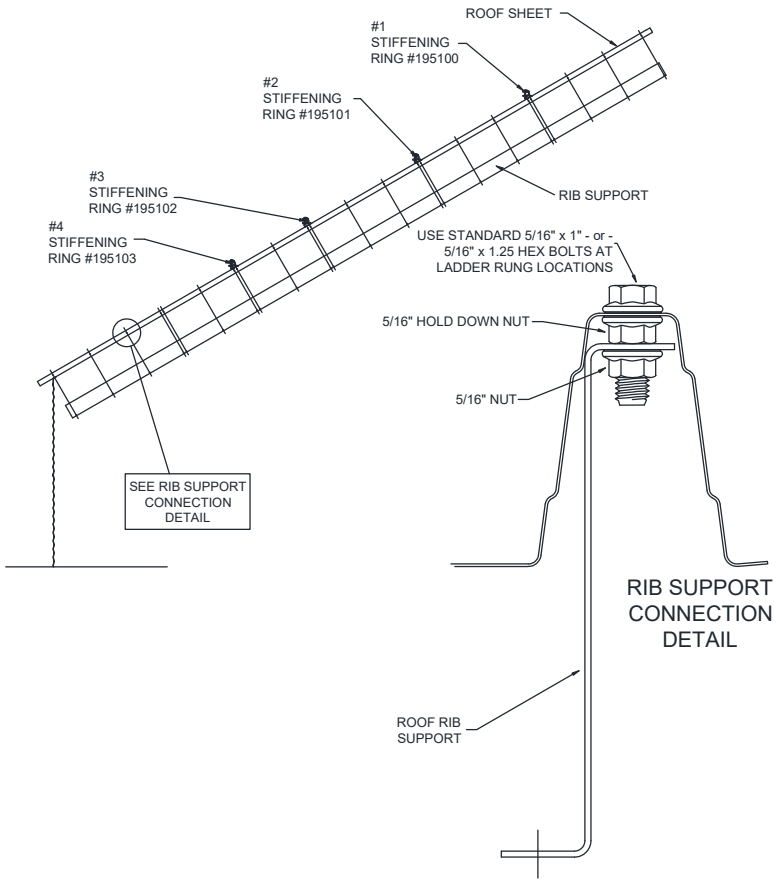
Component →	Roof Stiffening Ring Tubes				Rib Supports
Location & Colour →	1st - Yellow	2nd - Black	3rd - Red	4th - Green	Under ribs
Chord length (in) →	103.8	167.4	197.6	200.4	Varies
Qty of Expanders →	2	2	3	3	n/a
Bin Series	**Component Part Numbers (and Quantity)**				
24	195100 (5)				212753 (24)
27	195100 (5)				212754 (27)
30	195100 (5)				212755 (30)
33	195100 (5)	195101 (5)			212756 (33)
36	195100 (5)	195101 (5)			212757 (36)
42	195100 (5)	195101 (5)	195102 (6)		212759 (42)
45	195100 (5)	195101 (5)	195102 (6)	195103 (7)	212760 (45)
48	195100 (5)	195101 (5)	195102 (6)	195103 (7)	212761 (48)
51	195100 (5)	195101 (5)	195102 (6)	195103 (7)	212762 (51)
54	195100 (5)	195101 (5)	195102 (6)	195103 (7)	212763 (54)
Notes:	• Roofs are supplied as standard or with optional upgrades for higher load capacity				
	<– standard components for all roofs				
	<– components supplied with roofs upgraded to level 1 as per Tariff tool 2019				
	• Structural roofs with rafter system is available for 48’ bins and larger. These raftered roofs do not require stiffening rings or rib supports				

Install Roof Rib Supports

Rib supports are an upgrade that provide additional load capacity when required. Rib supports vary in length, depending on roof size and are designed to fit under the roof panel ribs. They run along the length of the rib from the eave (at the bottom) to near the peak ring (at the top).

1. Install one rib support at each roof rib location:
   a. Fit the rib support onto the shanks of the existing bolts used to join mating roof ribs.
   b. Add a second nut to secure the rib supports to the ribs. (See Rib Support Connection Detail in Figure 20 on page 44.)

Figure 20. Roof Rib Support Assembly



(Drawing represents a non-specific example only)

Install Associated Components

1. Assemble bin entry anchor system, roof cap, roof cap opener, ladders and associated components (if applicable).

- See Section 5.8 – Flat Roof Cap Assembly on page 86
- See Section 5.5 – Remote Roof Cap Opener Installation on page 46
- See Section 5.4 – Roof Ladder Details on page 45
- See Section 5.6 – Bin Entry Anchor System: Non-Structured Roof on page 84

5.4. Roof Ladder Details

1. Locate the roof panel containing the roof ladder components to the left or right of the inspection hatch, and in line with the outside ladder.
2. Recommended (for convenience): Attach the roof ladder and a section of the outside ladder early, when the roof section is at ground level.
3. Start at the bottom of the roof with the longest ladder rung supplied and move up the roof using progressively shorter ladder rungs.
4. Bolt ladder rungs to the roof panel ribs using the pre-drilled holes in the ribs.
5. Use 5/16" x 1-1/4" hex bolts and hex nuts (bolts above and nuts underneath).

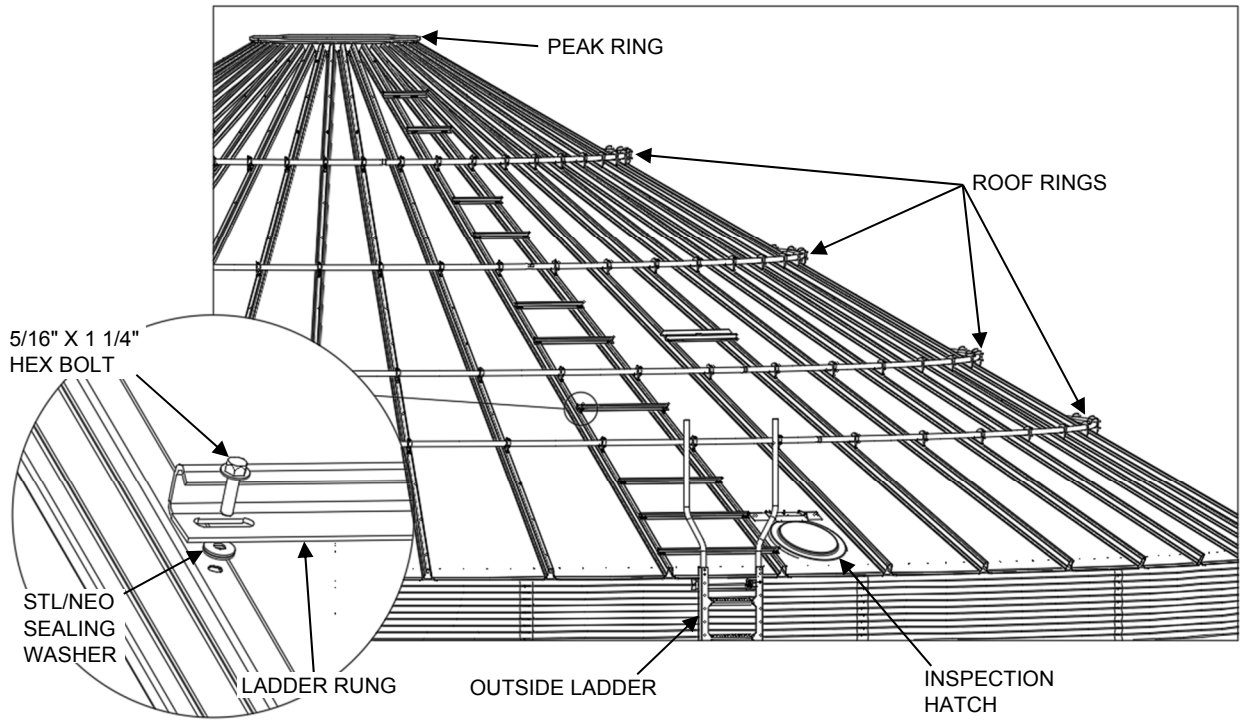
Note

Make sure that a STL/NEO sealing washer is installed between the ladder rung and the roof sheet.

Note

The ladder rung is oriented with the vertical portion facing up towards the peak ring. When a ladder rung is located at a double hole pattern designed for a roof-ring element, bolt through the upper holes and fill the other holes with a 1" hex bolt. No ladder rung is used at a roof-ring location. The ring itself will serve as a step. This ladder rung can be discarded or saved for another job.

Figure 21. Roof Ladder Details

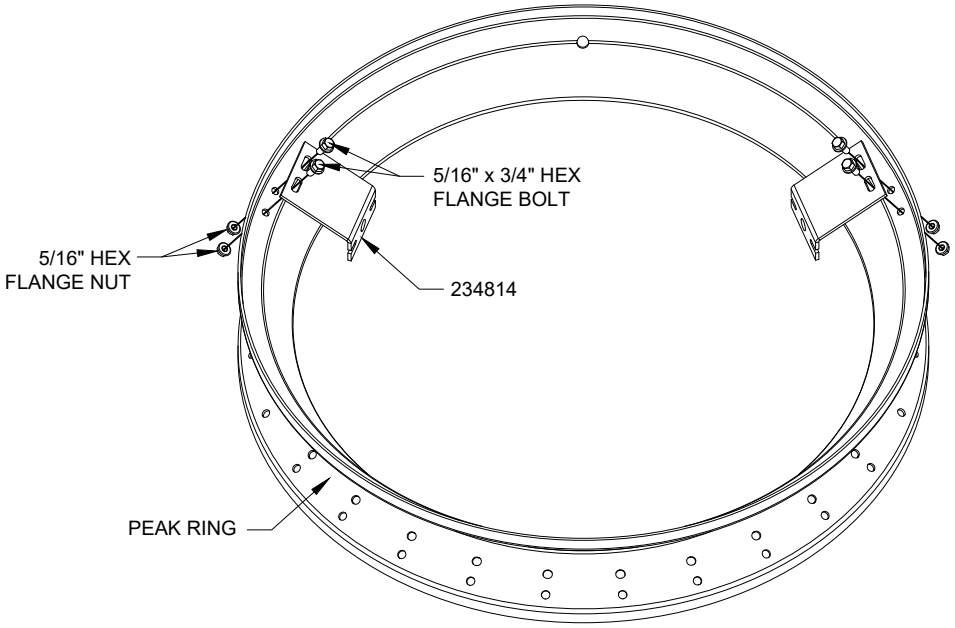


5.5. Remote Roof Cap Opener Installation

5.5.1 Remote Roof Cap Opener System for 24' – 27'

(Standard for 5 — 9 tier bins)

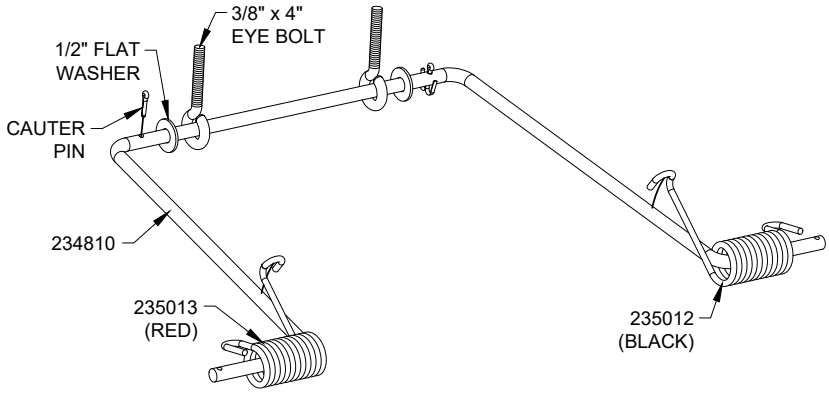
Install the Pivot Arm Brackets



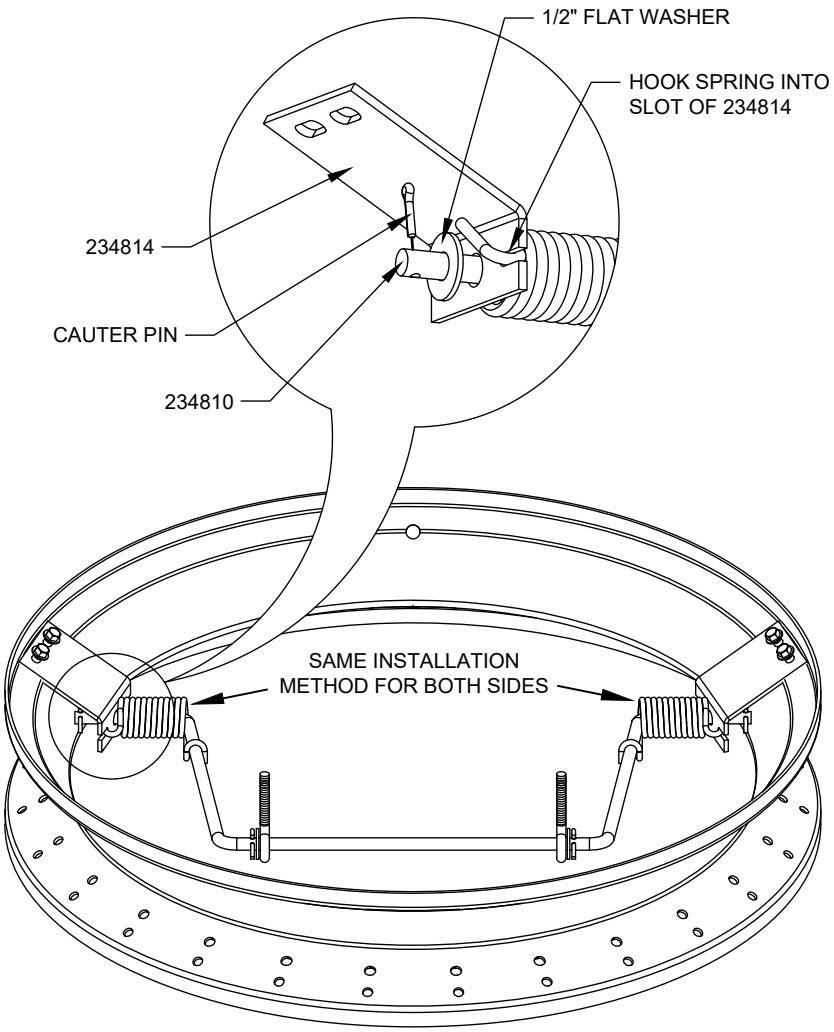
Note

The brackets are interchangeable, right to left.

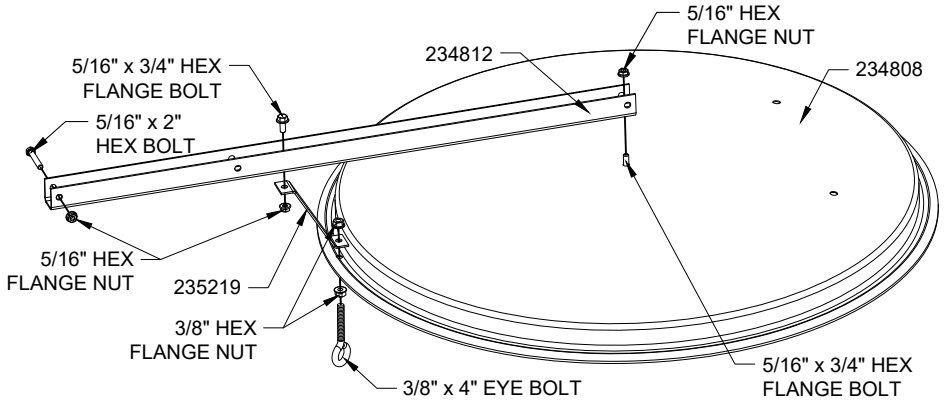
Install the Pivot Arm Hardware



Install the Pivot Arm to the Brackets



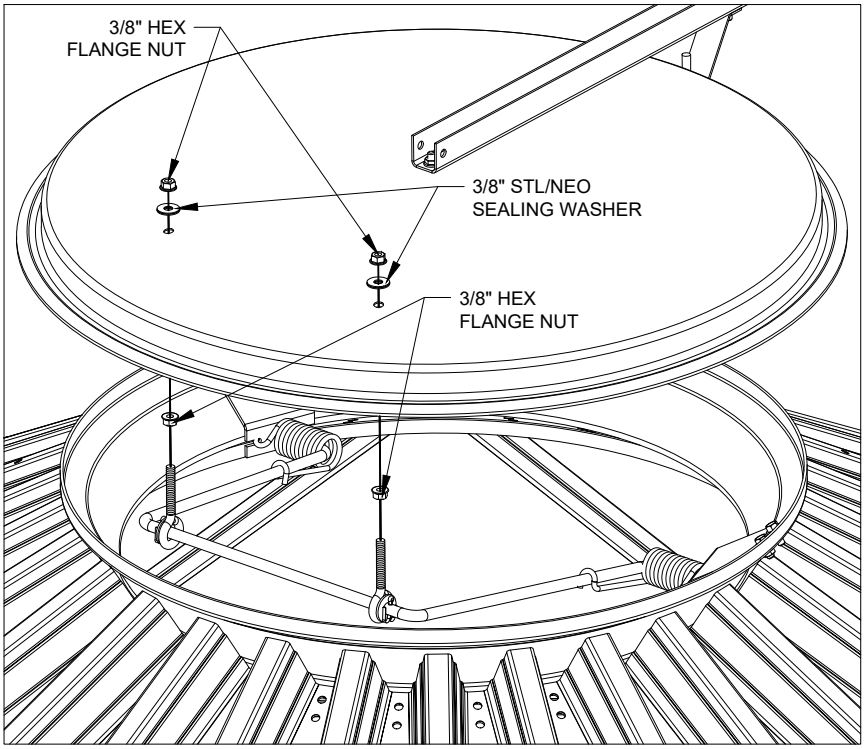
Pre-assemble the Roof Cap



Important

Do not tighten the 3/8" x 4" eye bolt until the slide rod has been fully installed.

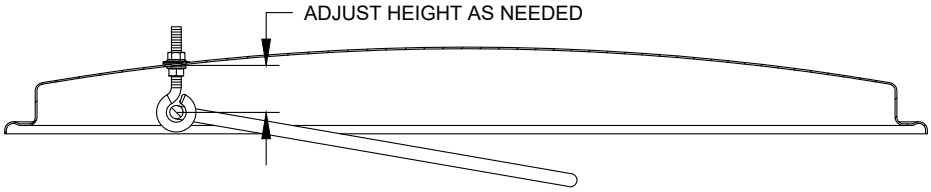
Install the Roof Cap to the Pivot Arm

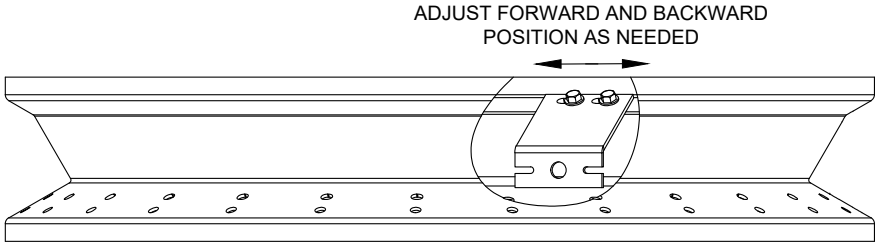


Note

To help with installing the pivot arm eye bolts to the roof cap, rotate the pivot arm up and over the top of the peak ring. Then place a 2x4 across the peak ring, under the pivot arm.

Center the Roof Cap

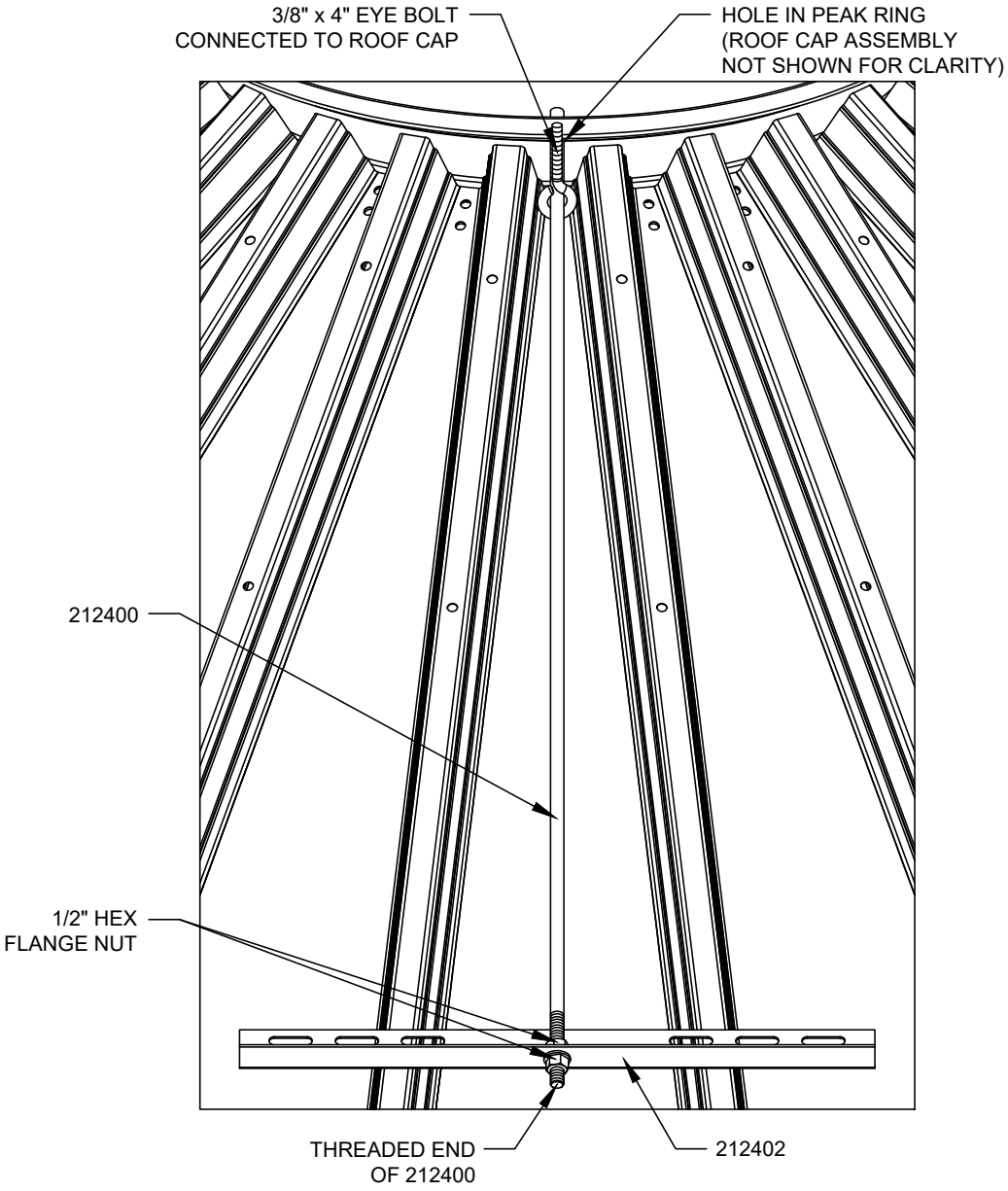




Note

Adjust position of pivot arm brackets in combination with pivot arm eye bolt nut height to center roof cap on peak ring.

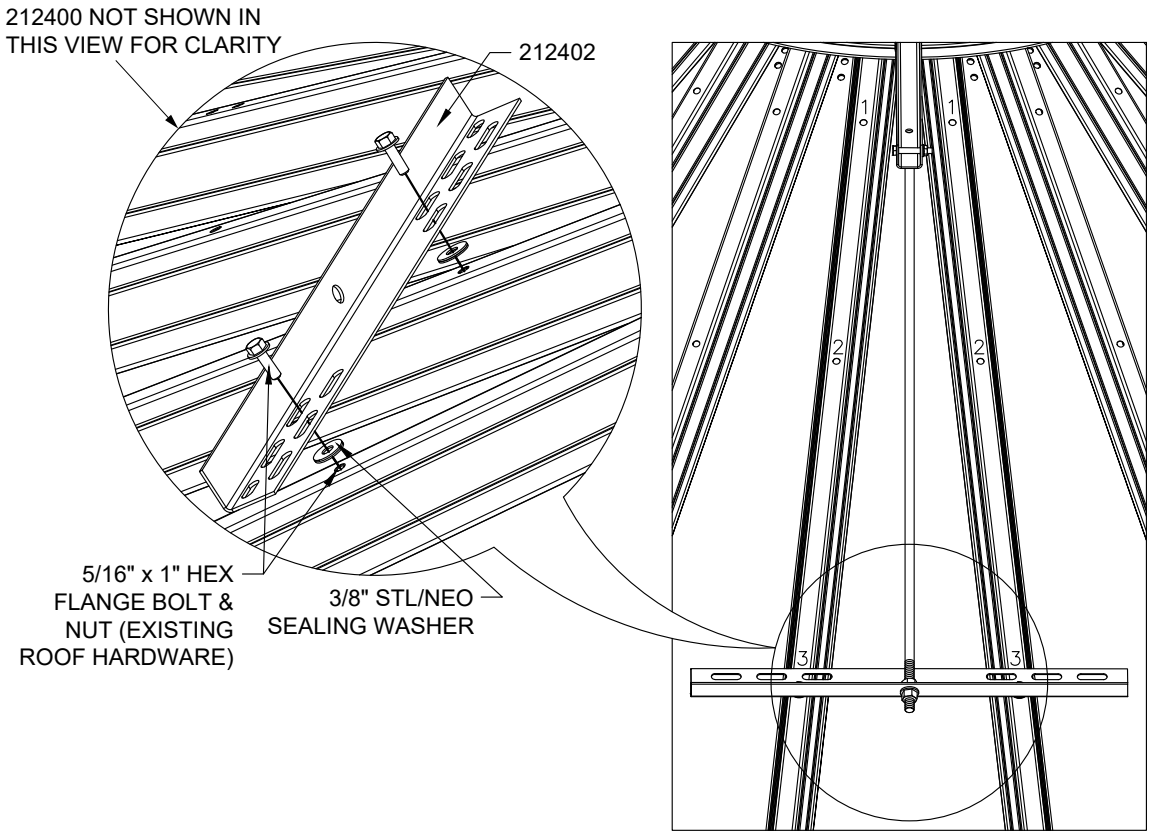
Install the Slide Rod



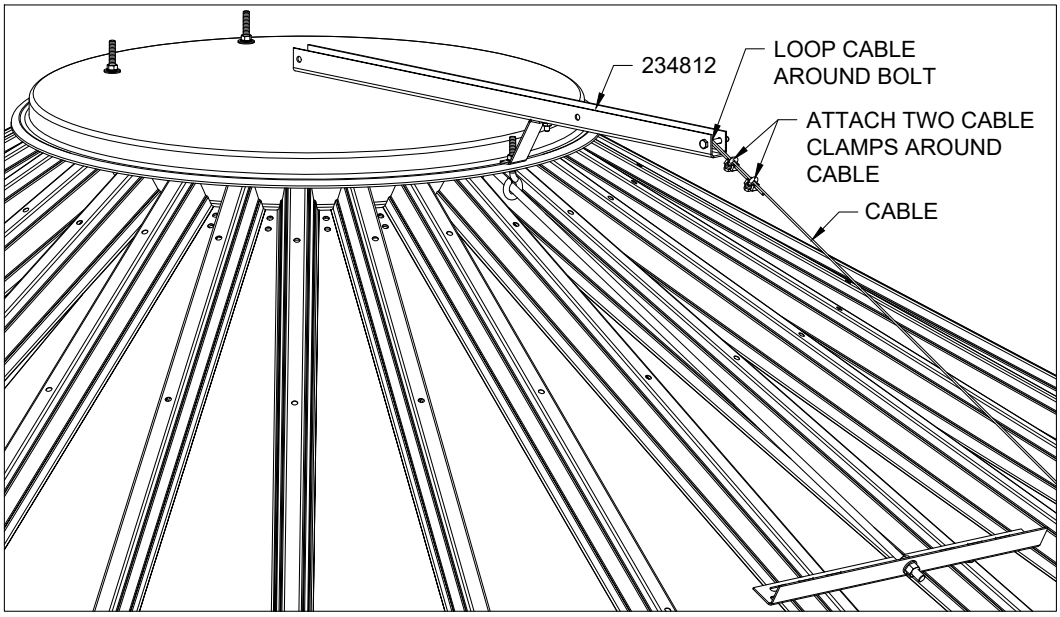
Note

Adjust the 3/8" x 4" eye bolt so that the roof cap is supported on the slide rod, and tighten the eye bolt hardware.

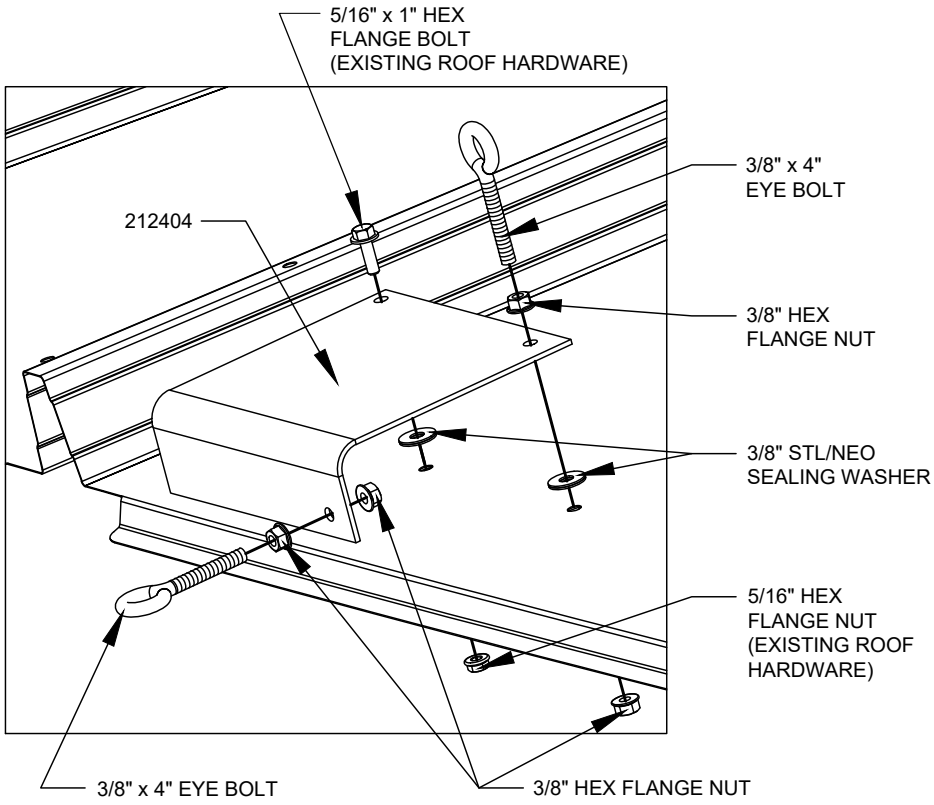
Install the Slide Rod Bracket



Attach the Cable to the Roof Cap Assembly



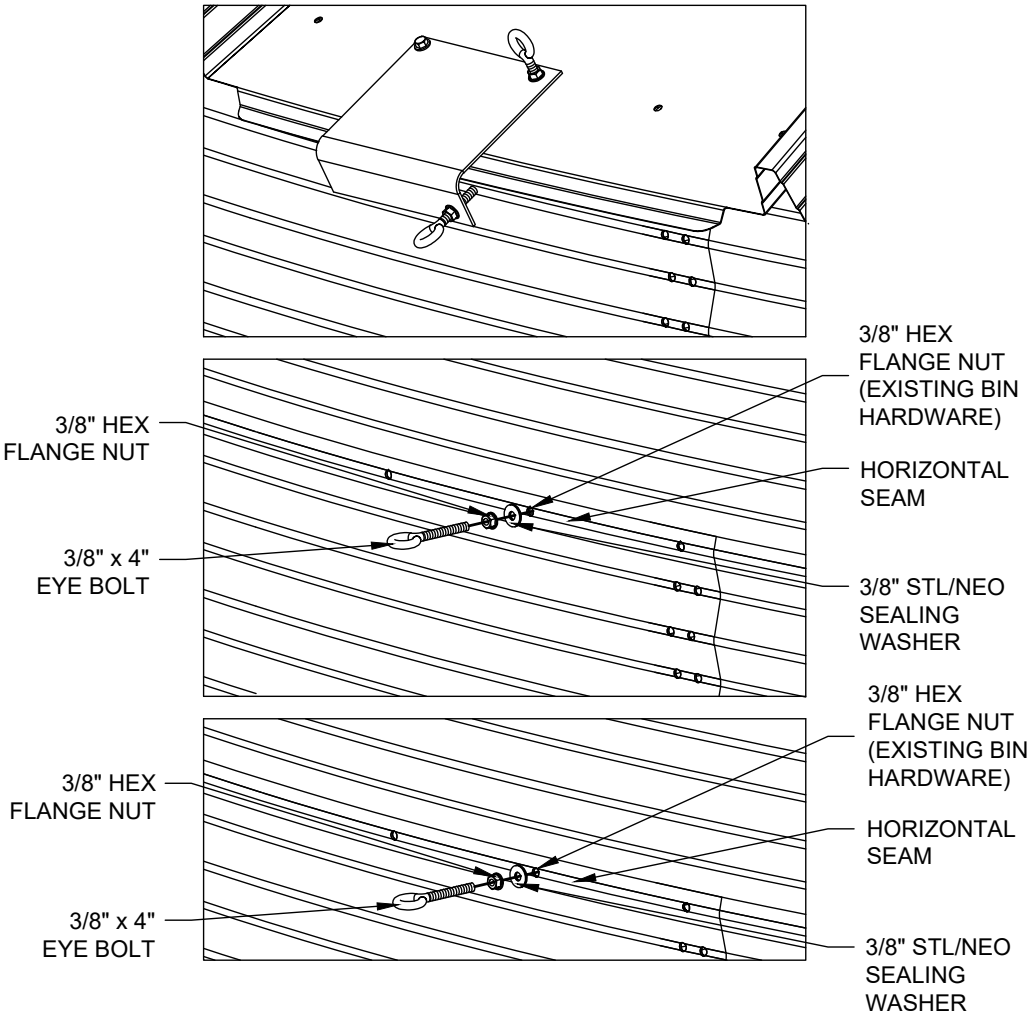
Install the Eave Guide Plate



Note

Insert the eye bolt into the center bolt hole of the roof sheet.

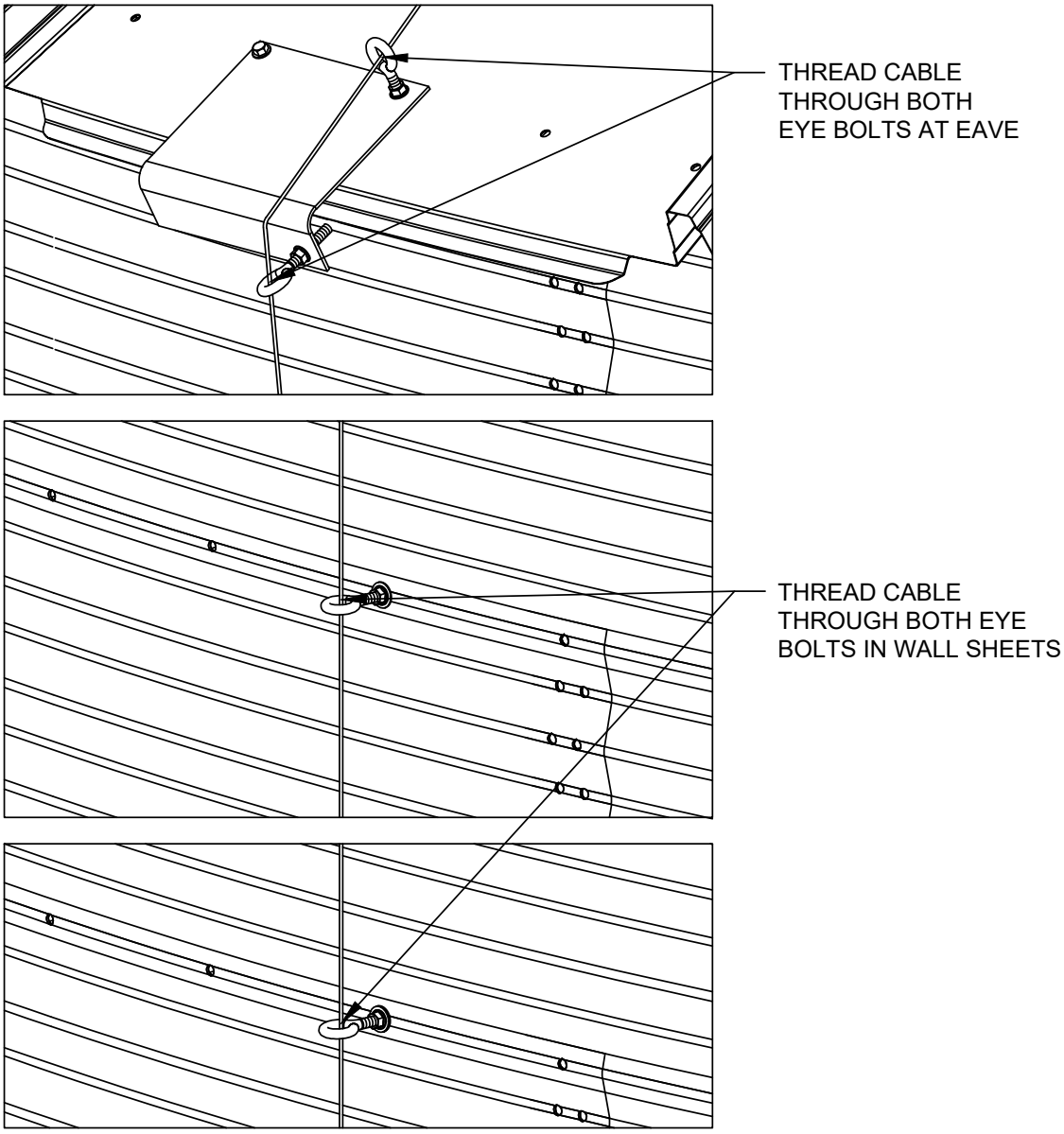
Install the Down Bin Eye Bolts



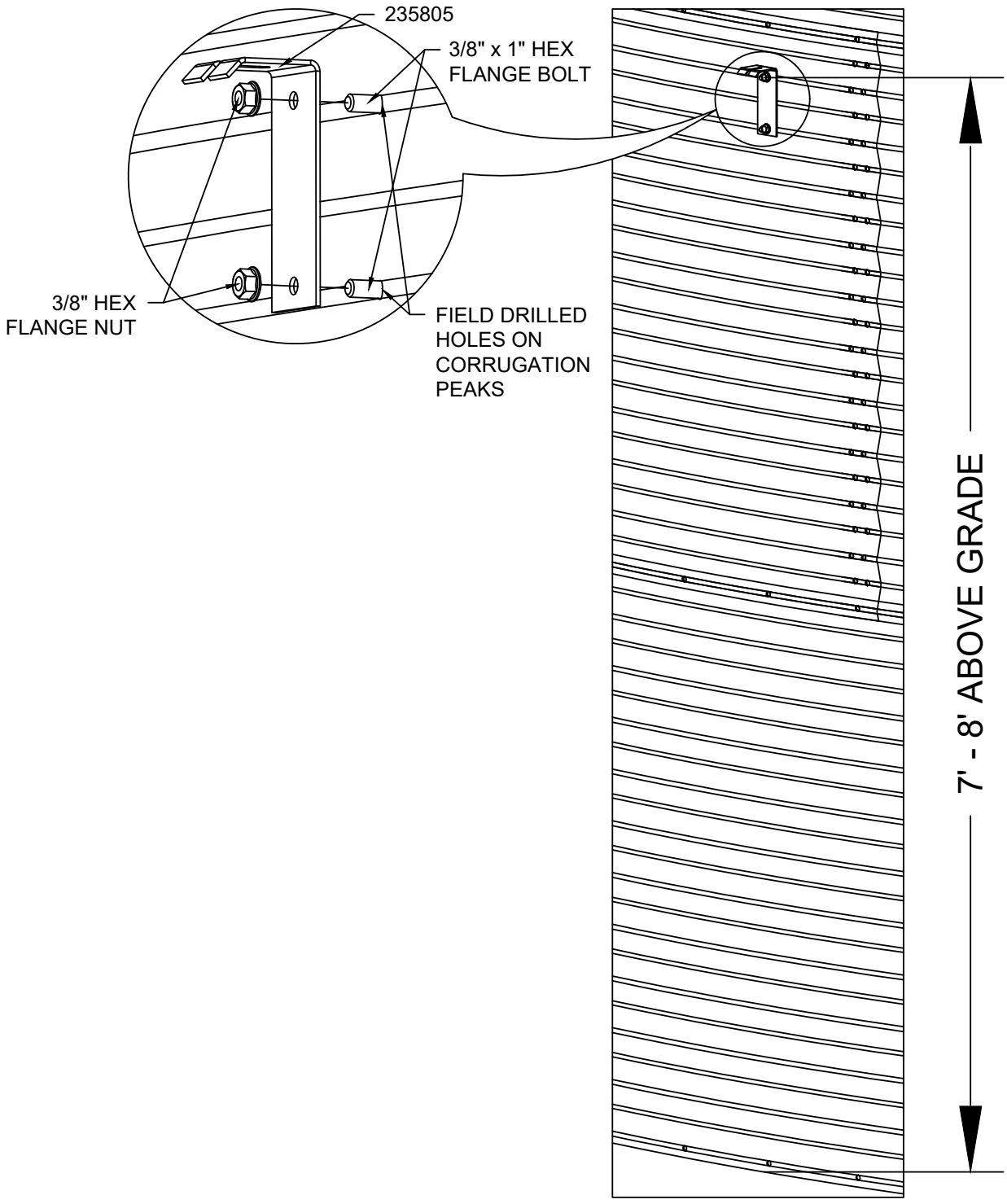
Note

Ensure eye bolts installed at horizontal seams are vertically aligned with eye bolts in 212404. Space the eye bolts so there is an even distance between the Eave Guide Plate, down bin eye bolts, and cleat hook.

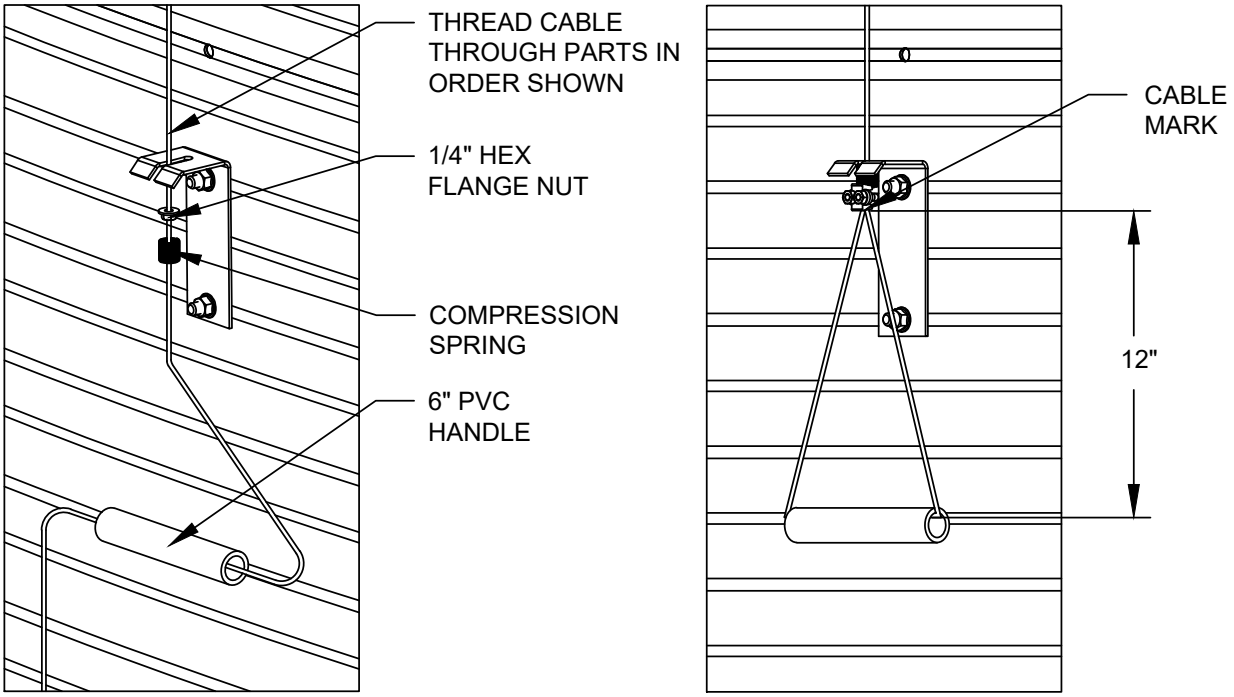
Thread the Cable Through the Eye Bolts



Install the Cleat Hook

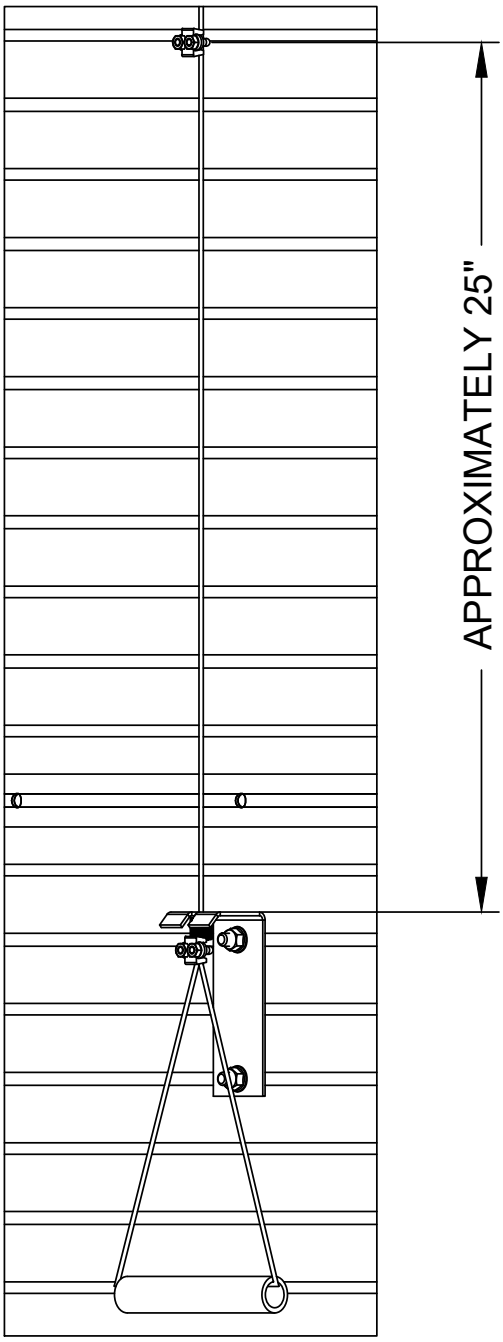


Install the Handle



1. Thread the cable through the 1/4" hex flange nut, compression spring, and PVC handle, in that order.
2. Pull the cable tight enough to just being to open the roof cap.
3. Mark the spot on the cable that is even with the cleat hook when the cable is in tension.
4. Push the nut and spring above the mark.
5. Loop the cable large enough to allow the handle to hang horizontally 12" down from the mark.
6. Clamp the cable at the mark and trim the extra cable.
7. Insert the nut into the spring, and position the spring on top of the clamp.

Install the Indicator for Open Cap

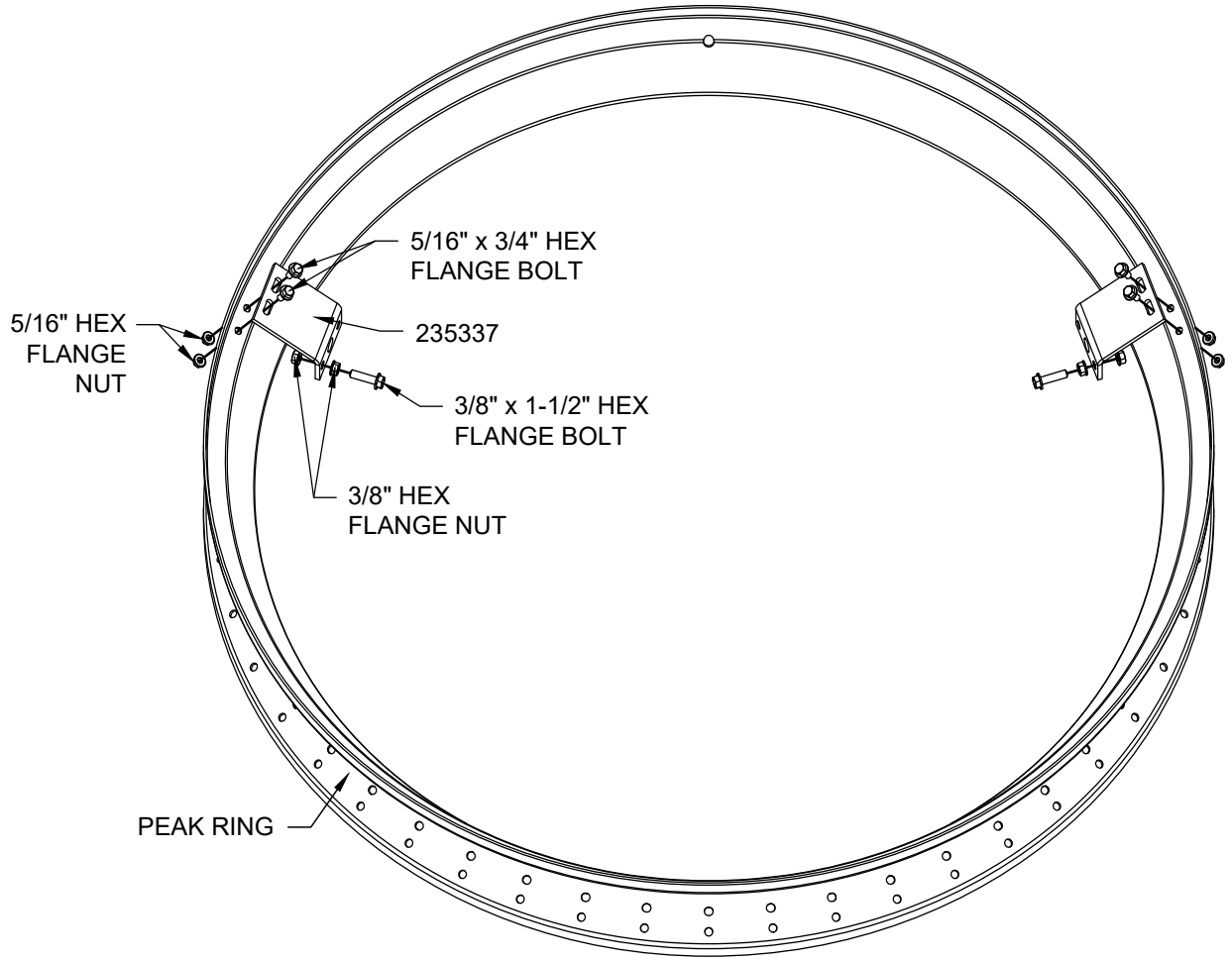


1. With the lid closed, attach a cable clamp approximately 25" above the cleat hook. This will act as the indicator for when the cap is fully opened.
2. Adjust the height of the cable clamp as needed for a more open, or more closed cap.
3. Do not increase the height to more than 30" as this may cause damage to the RCO assembly.

5.5.2 Remote Roof Cap Opener System for 30' – 48'

(Standard for 5 — 9 tier bins)

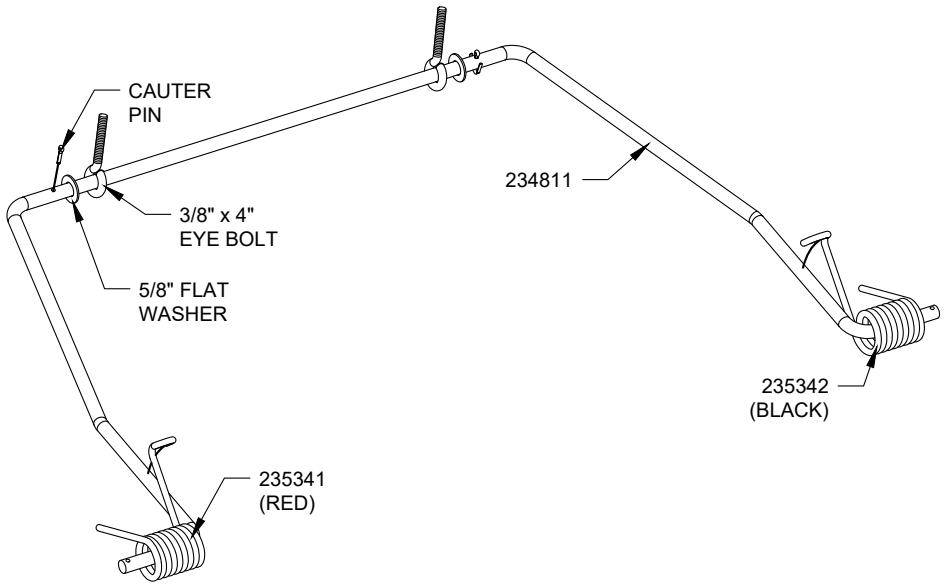
Install the Pivot Arm Brackets



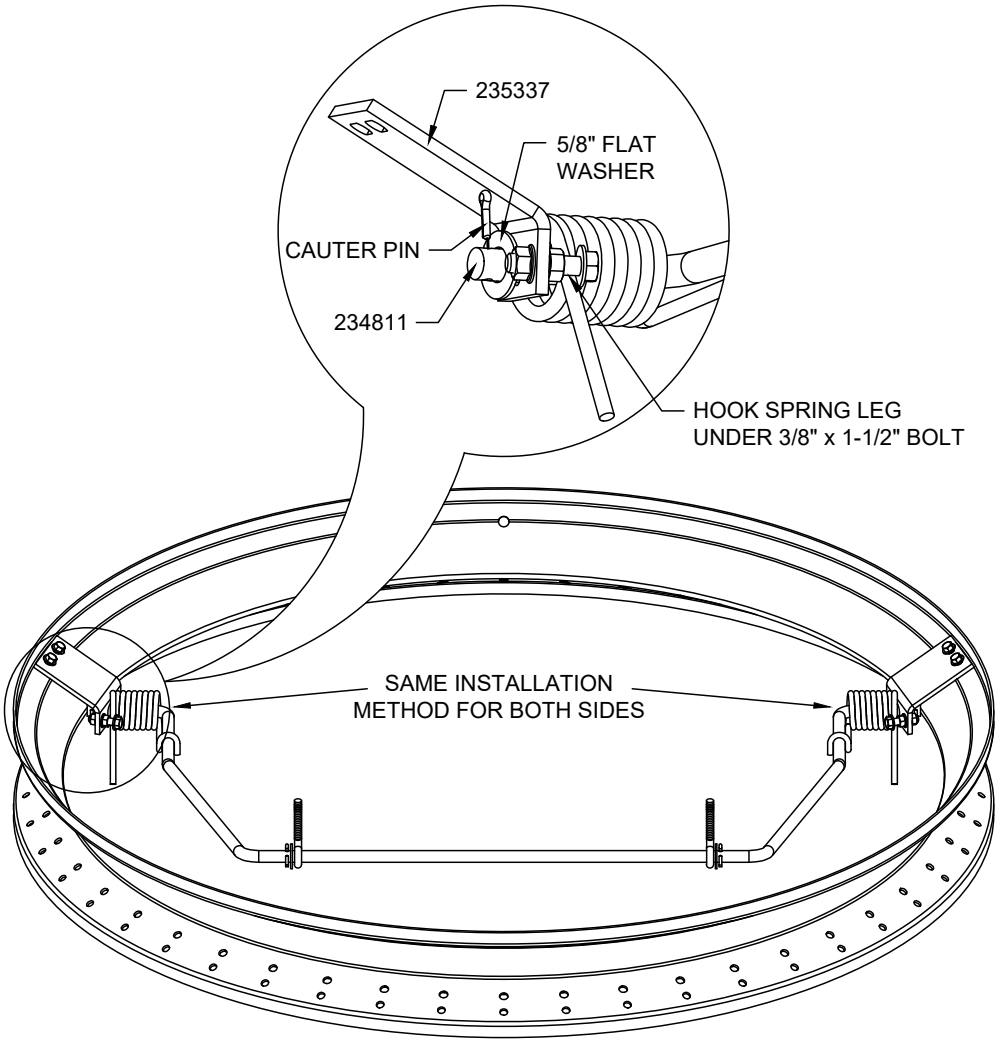
Note

The brackets are interchangeable, right to left.

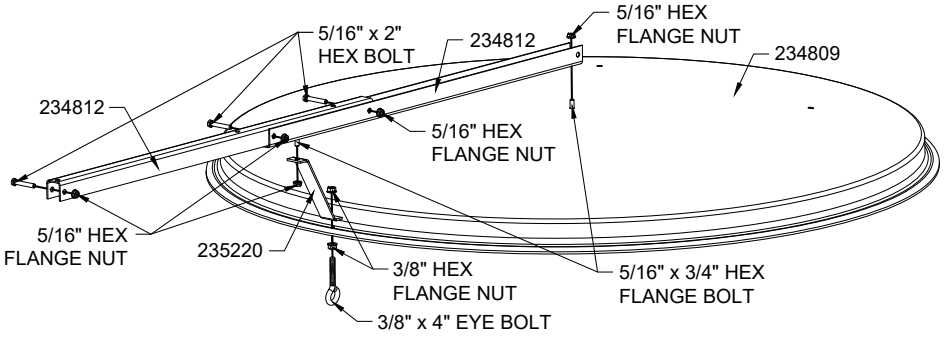
Install the Pivot Arm Hardware



Install the Pivot Arm to the Brackets



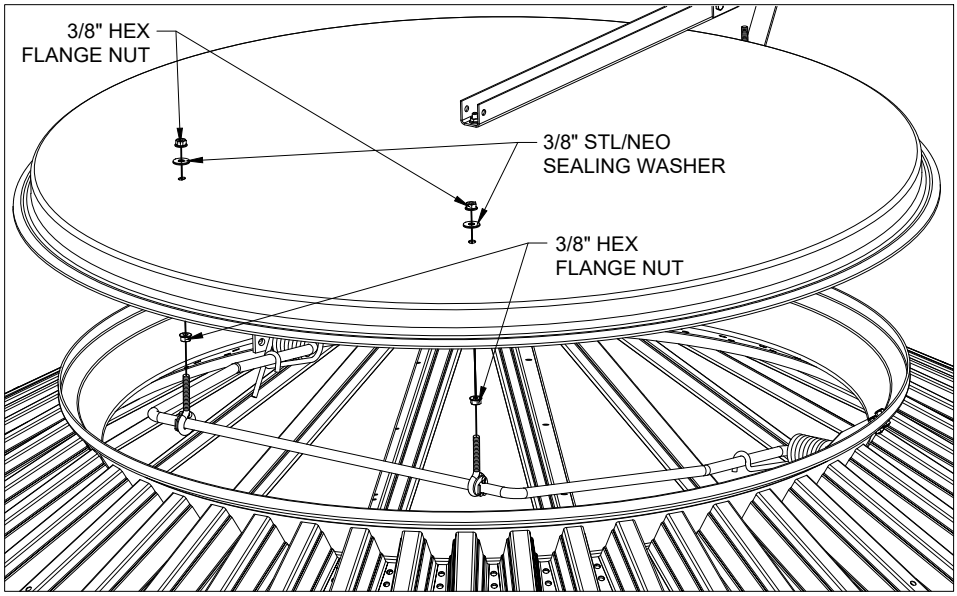
Pre-assemble the Roof Cap



Important

Do not tighten the 3/8" x 4" eye bolt until the slide rod has been fully installed.

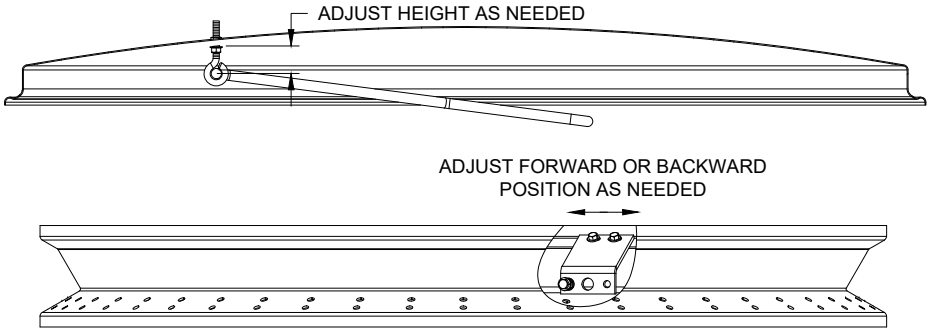
Install the Roof Cap to the Pivot Arm



Note

To help with installing the pivot arm eye bolts to the roof cap, rotate the pivot arm up and over the top of the peak ring. Then place a 2x4 across the peak ring, under the pivot arm.

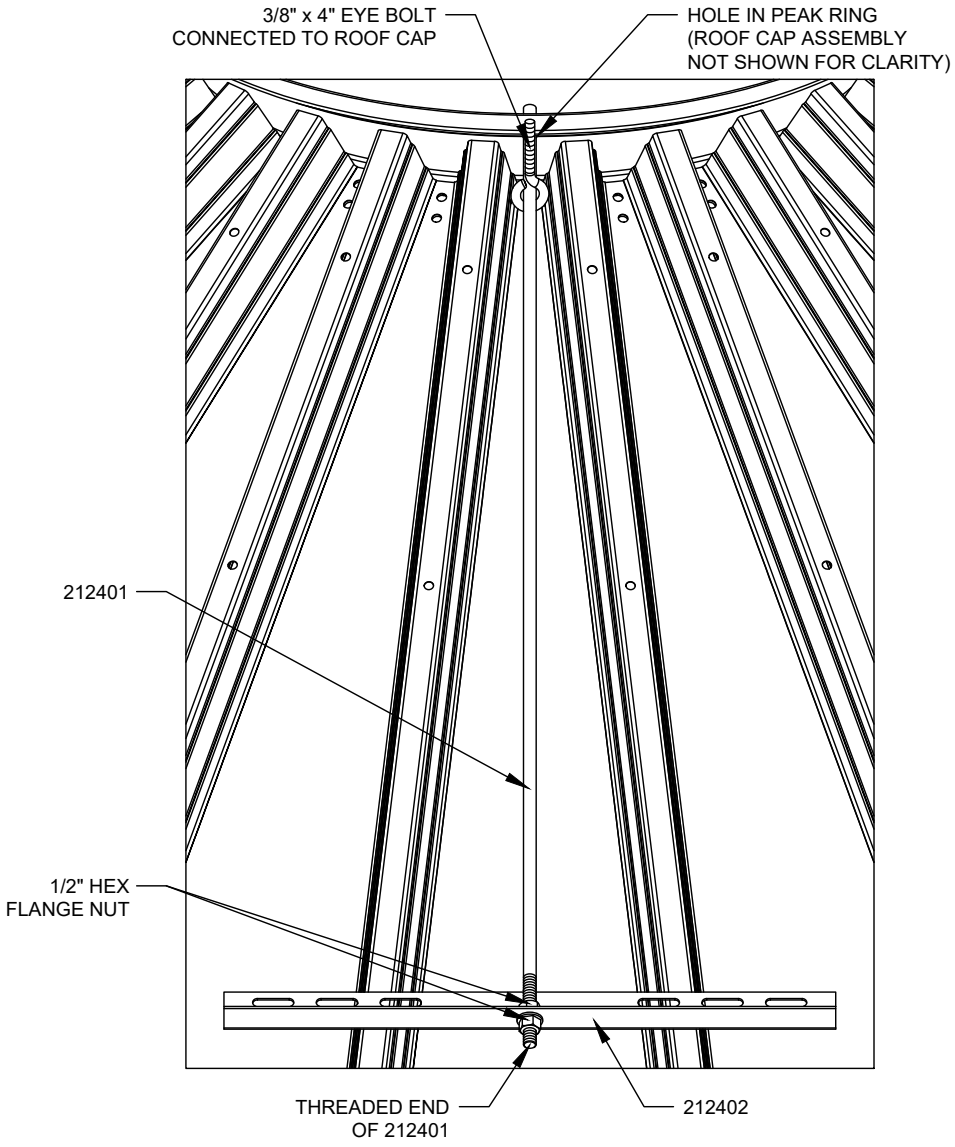
Center the Roof Cap



Note

Adjust position of pivot arm brackets in combination with pivot arm eye bolt nut height to center roof cap on peak ring.

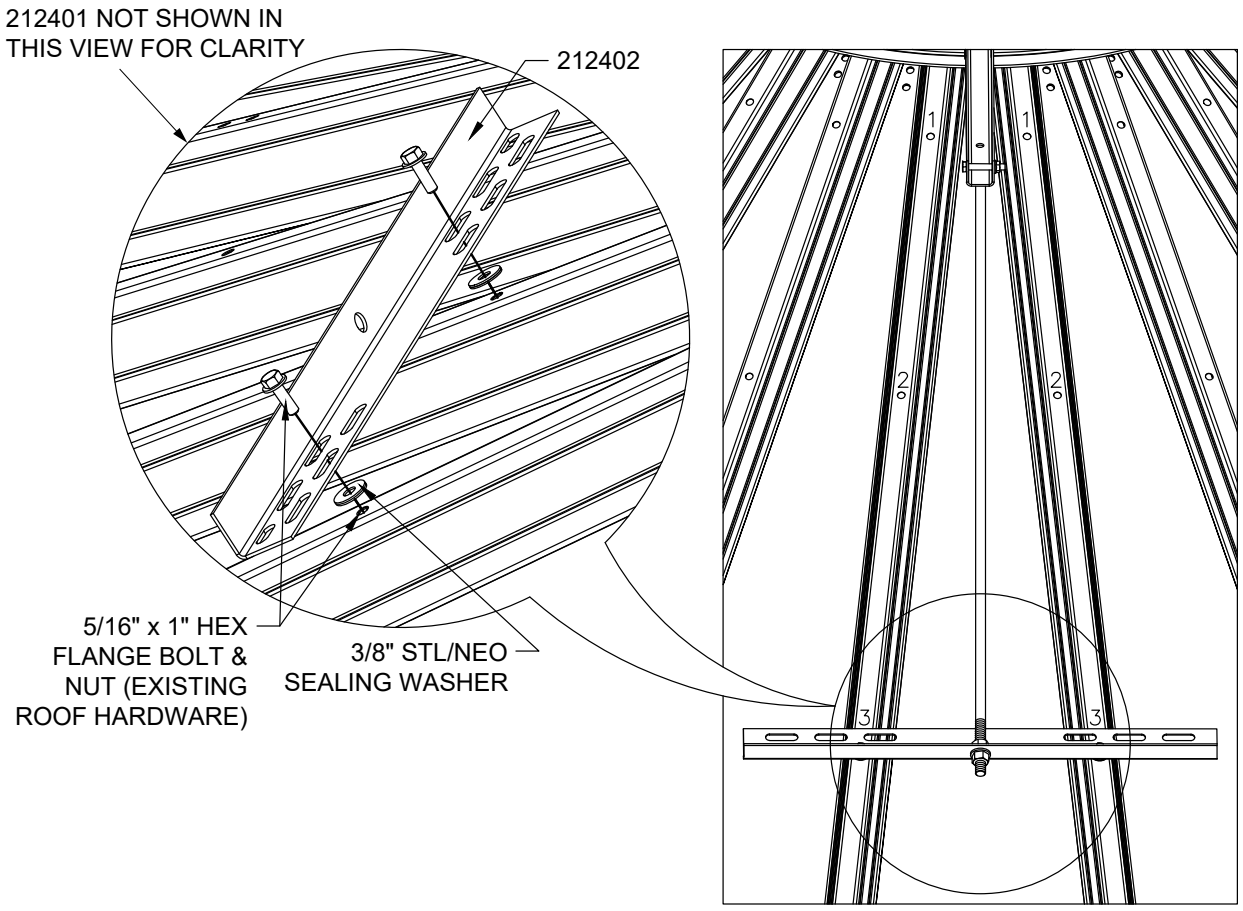
Install the Slide Rod



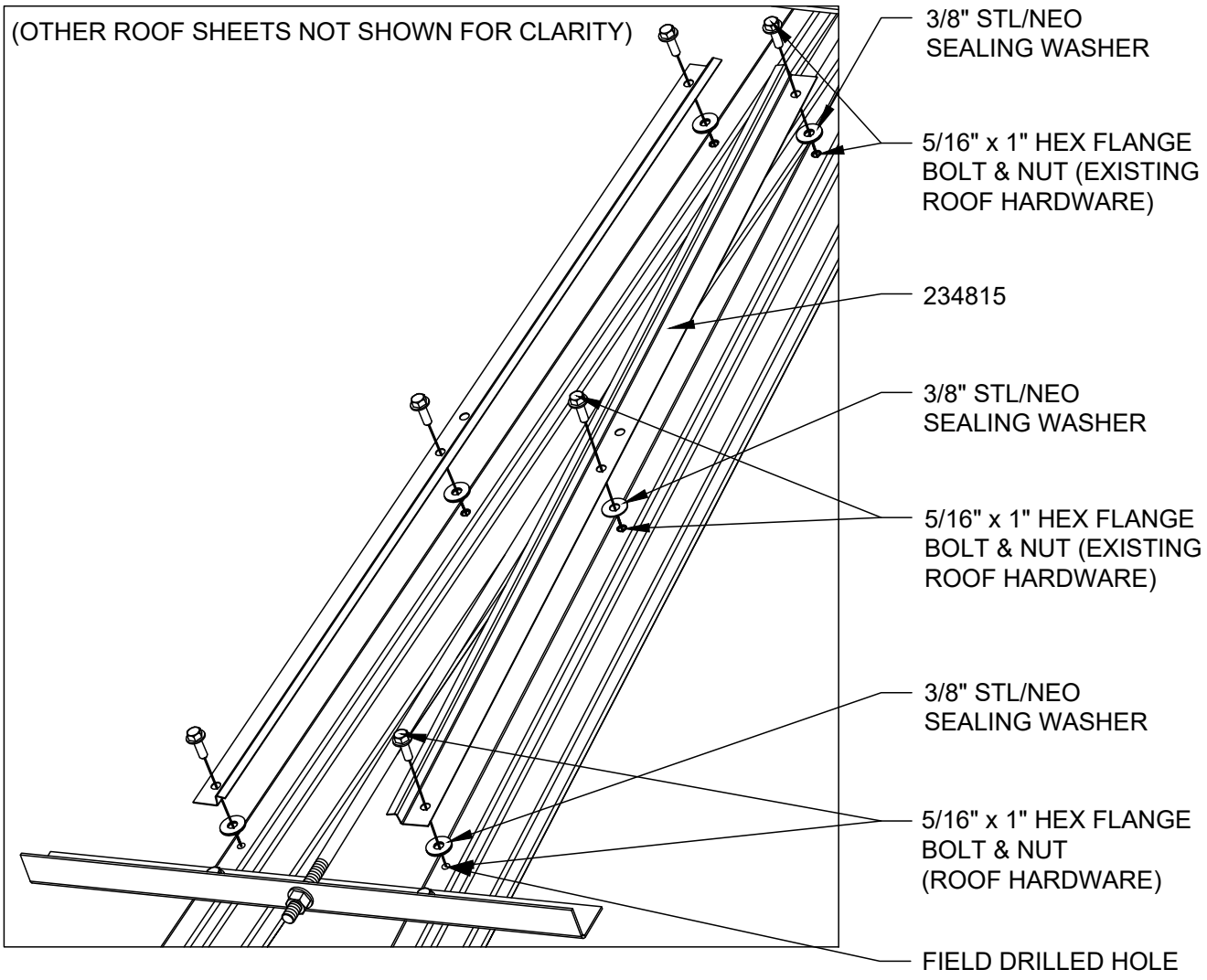
Note

Adjust the 3/8" x 4" eye bolt so that the roof cap is supported on the slide rod, and tighten the eye bolt hardware.

Install the Slide Rod Bracket



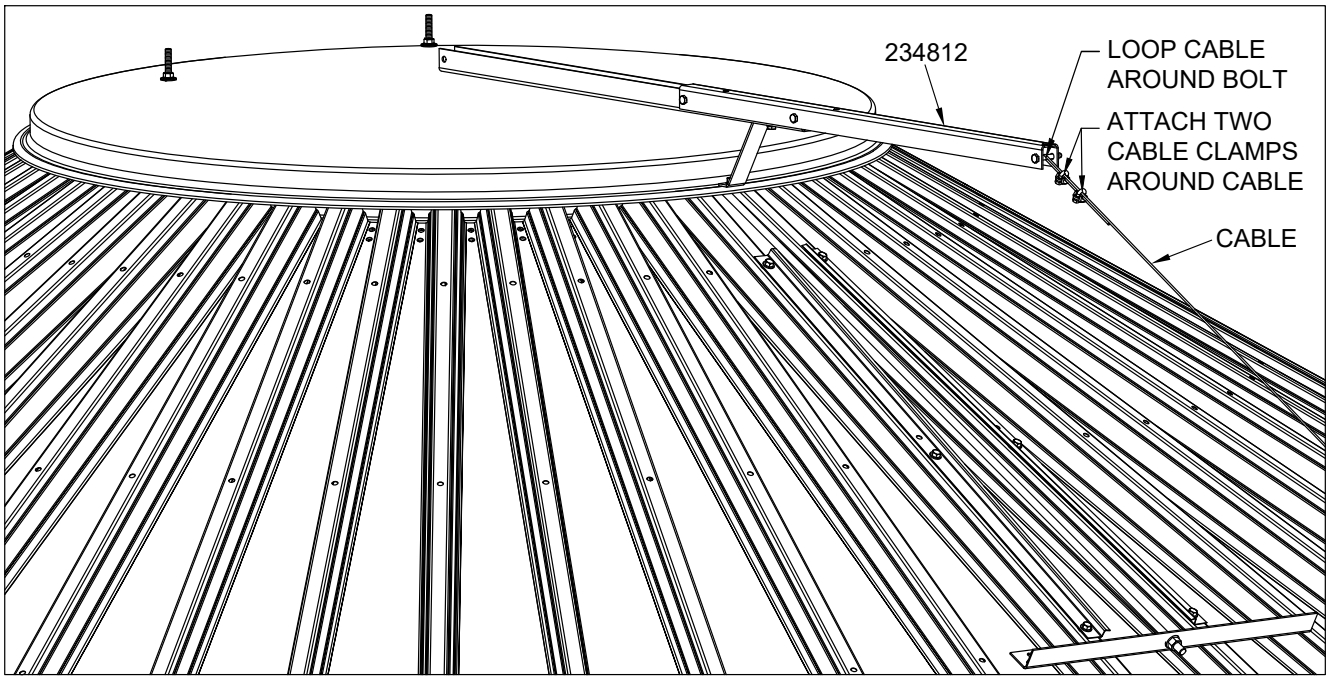
Install the Guide Rails



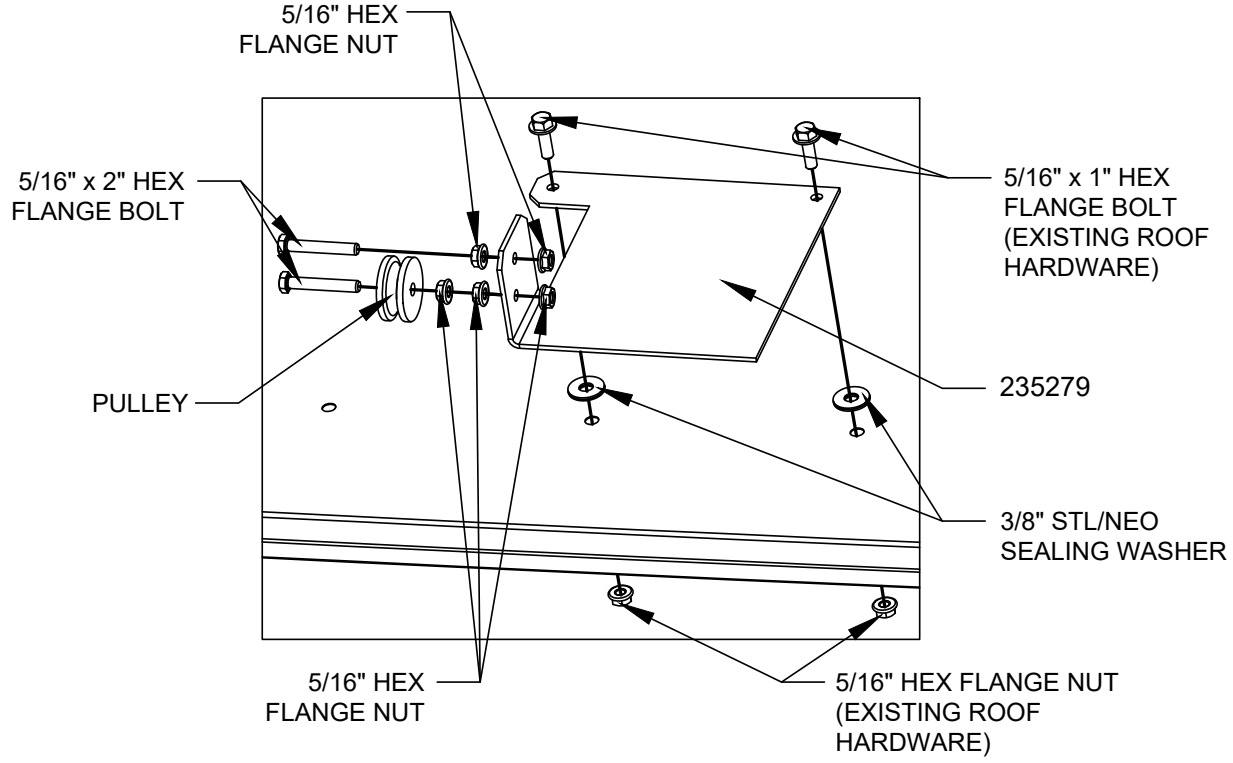
Note

Guide rails are interchangeable, right to left.

Attach the Cable to the Roof Cap Assembly



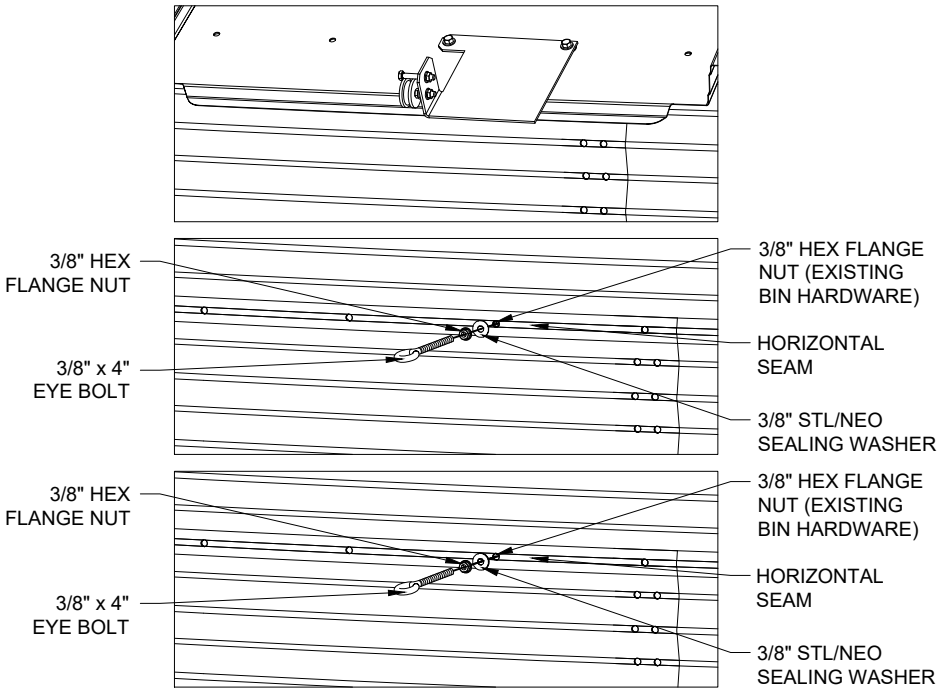
Install the Eave Guide Plate



Note

Align the pulley with the center of the roof sheet.

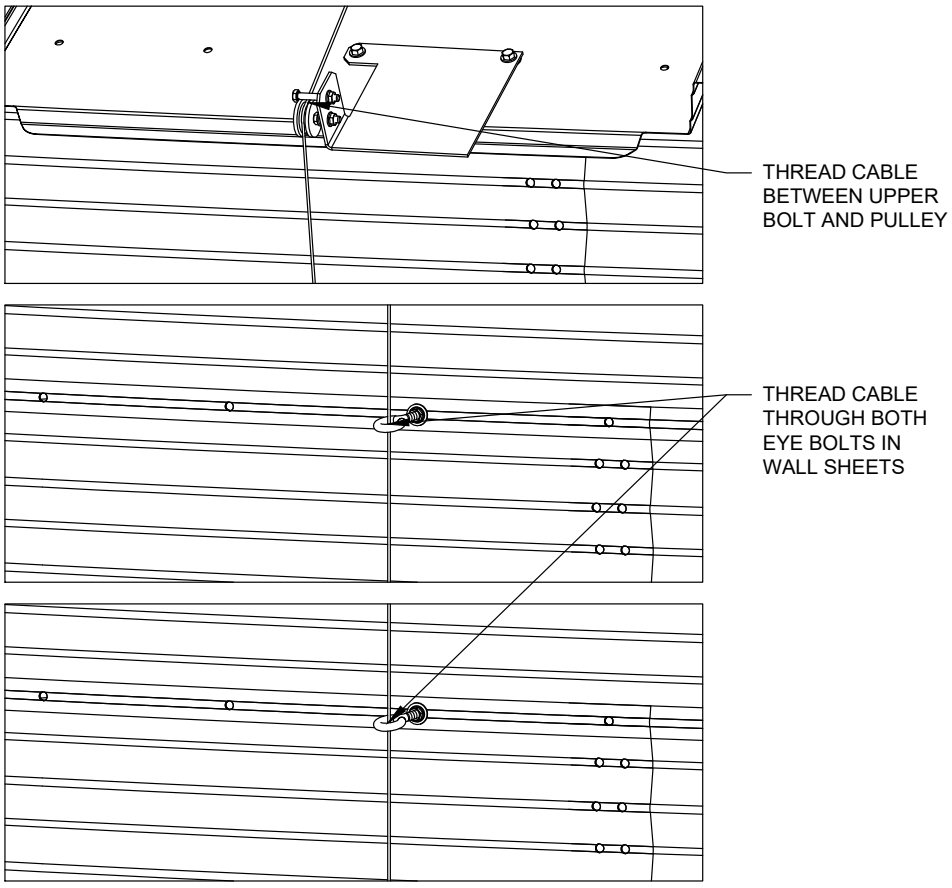
Install the Down Bin Eye Bolts



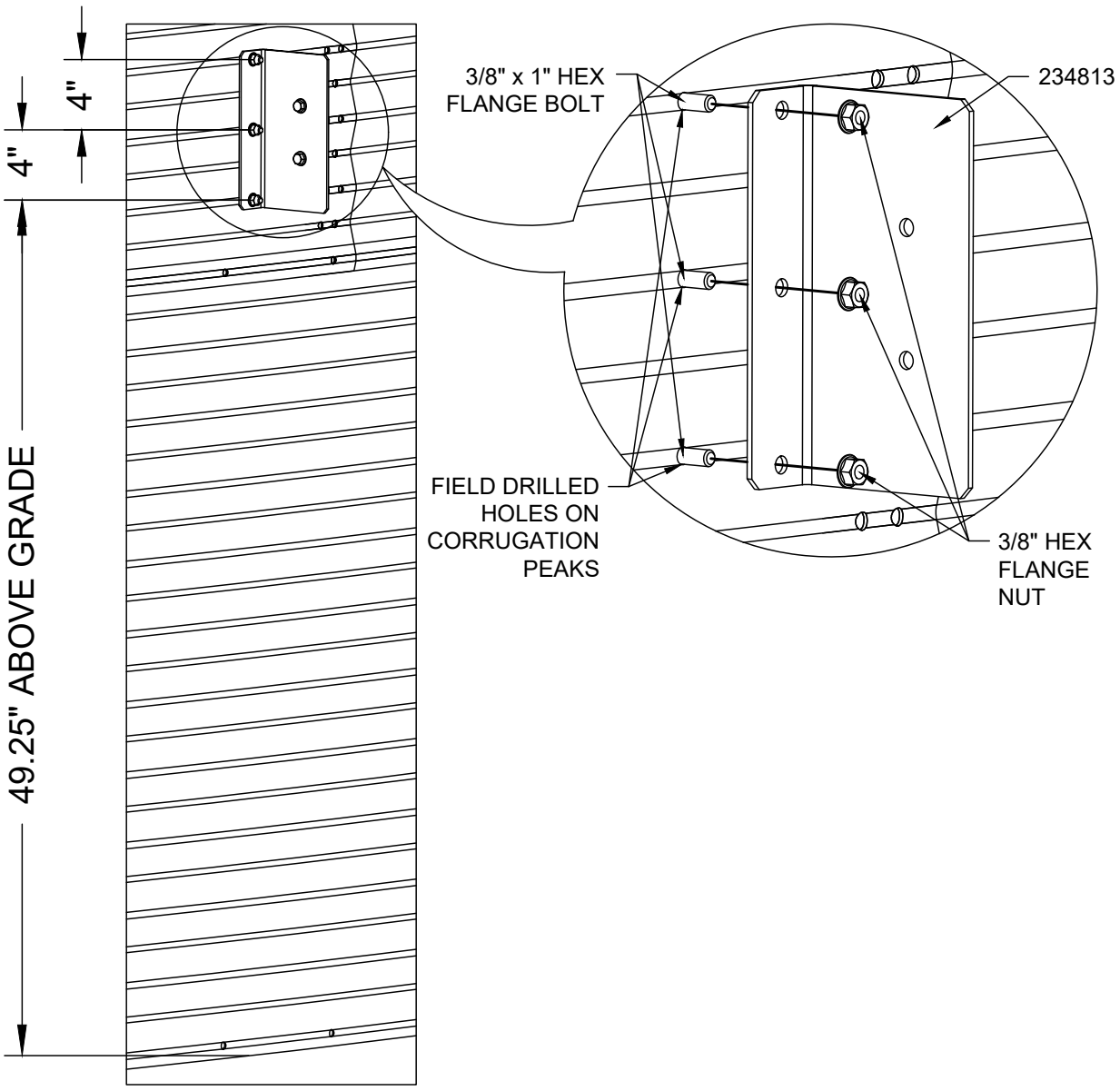
Note

Ensure eye bolts installed at horizontal seams are vertically aligned with the pulley. Space the eye bolts so there is an even distance between the eave guide plate, down bin eye bolts, and winch.

Thread the Cable Through the Eye Bolts



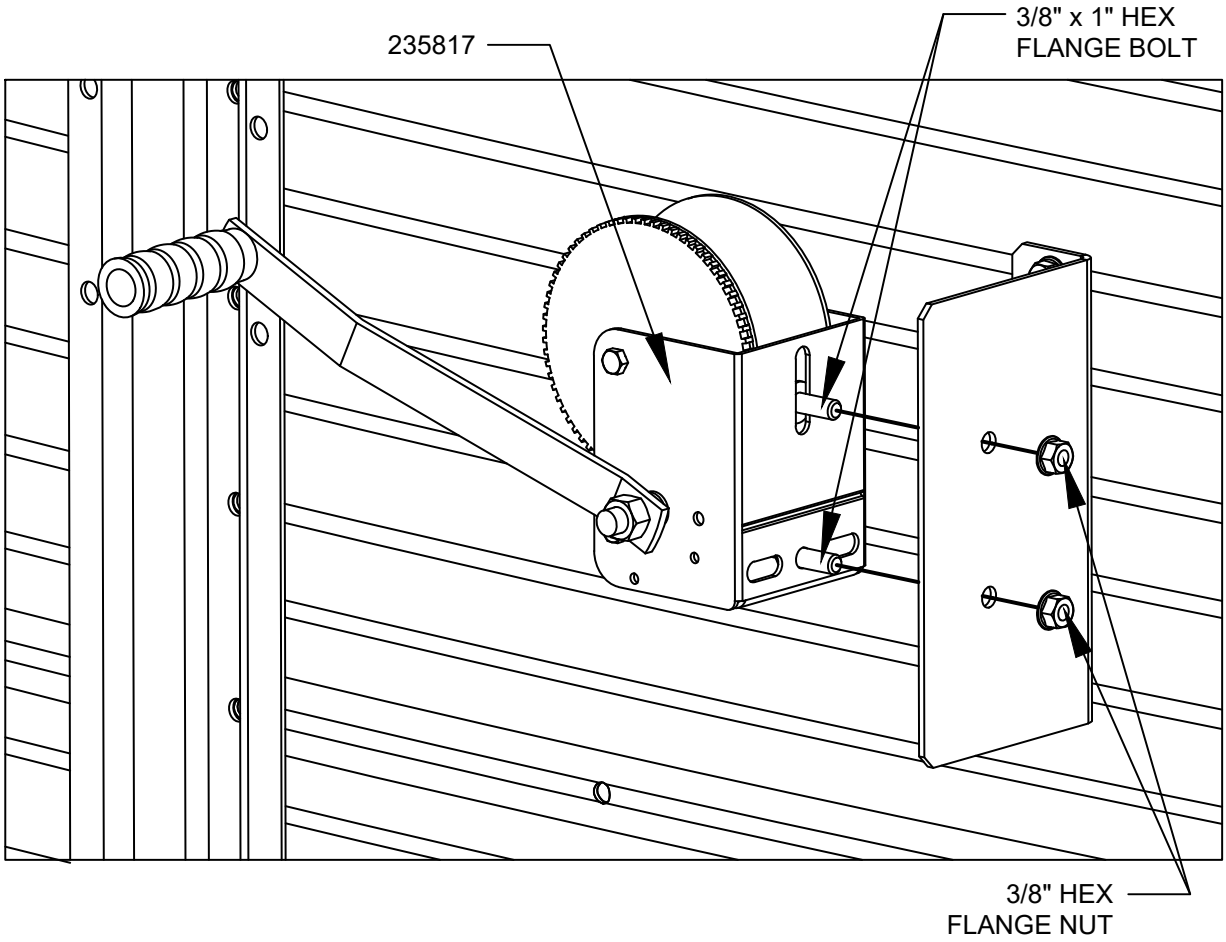
Install the Winch Bracket



Note

Ensure 234813 is offset approximately 3" from being vertically aligned with eye bolts installed at horizontal seams. This will ensure the drum of the Winch will be vertically aligned with the eye bolts.

Install the Winch



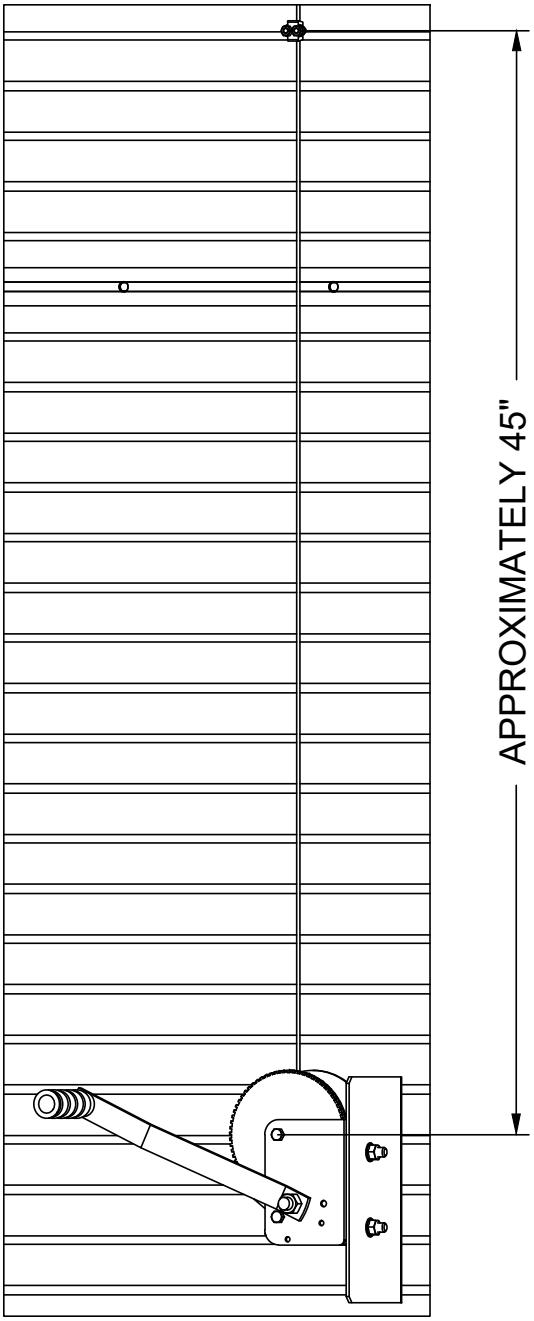
Note

Assemble the Winch as per the instructions supplied within the winch box.

Important

If installed on a stiffened bin, ensure the winch handle or cable does not interfere with any of the stiffeners.

Install the Indicator for Open Cap

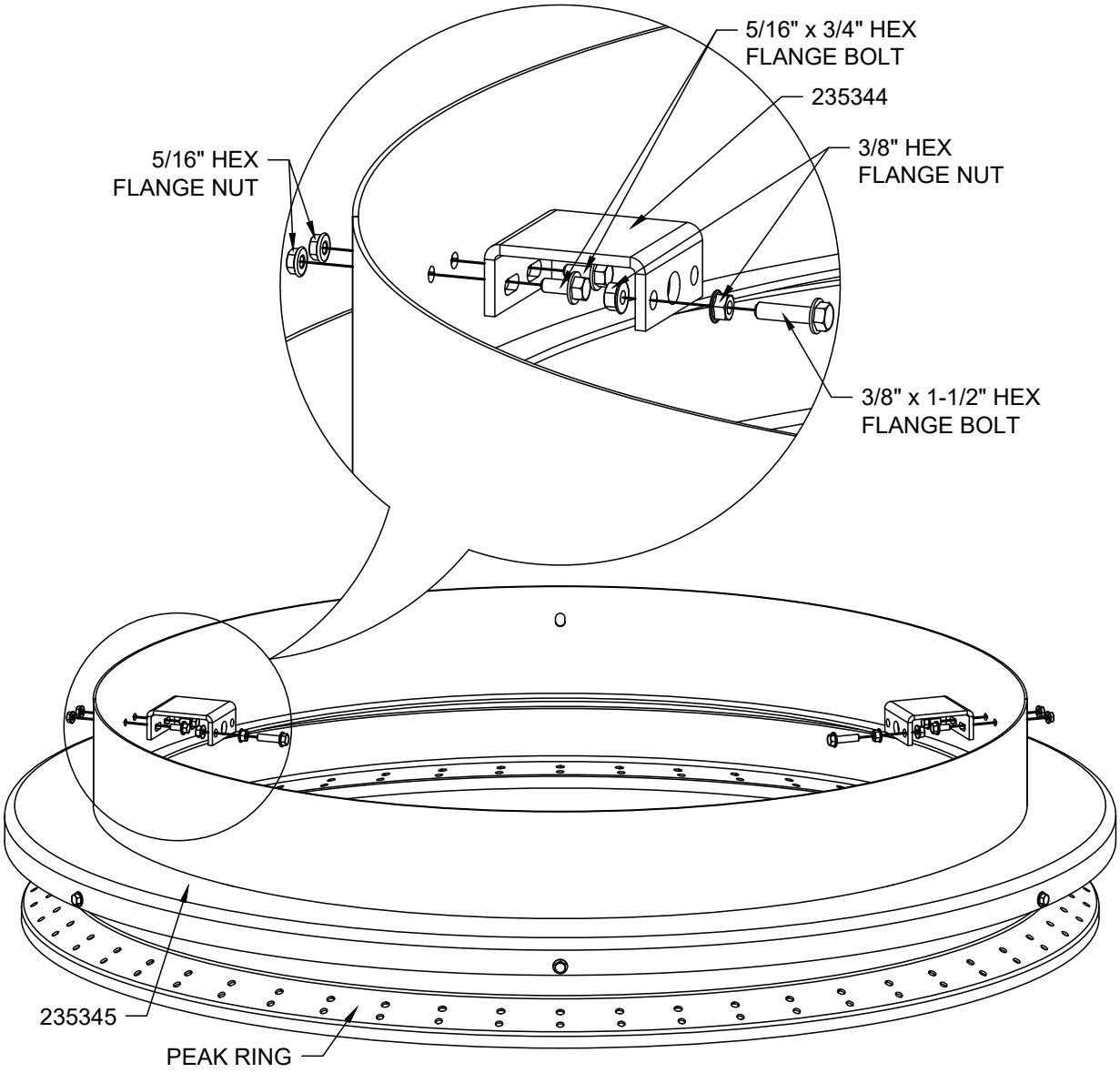


1. Attach the cable to the winch as per the instructions supplied within the winch box.
2. With the lid closed, attach a cable clamp approximately 45" above the middle of the winch drum. This will act as the indicator for when the cap is fully opened.
3. Adjust the height of the cable clamp as needed for a more open, or more closed cap.
4. Do not increase the height to more than 50" as this may cause damage to the RCO assembly.

5.5.3 Remote Roof Cap Opener System for 51' – 54'

(Standard for 5 — 9 tier bins)

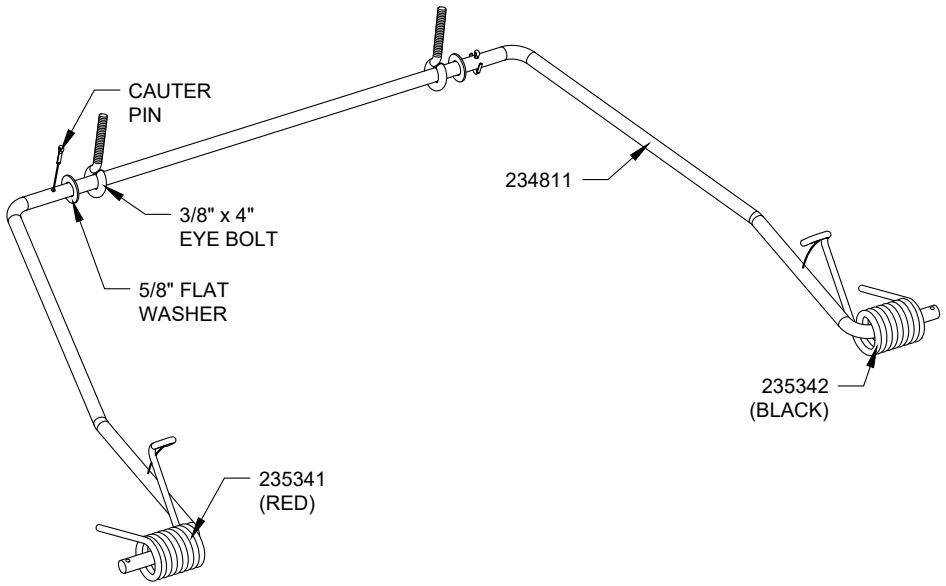
Install the Pivot Arm Brackets



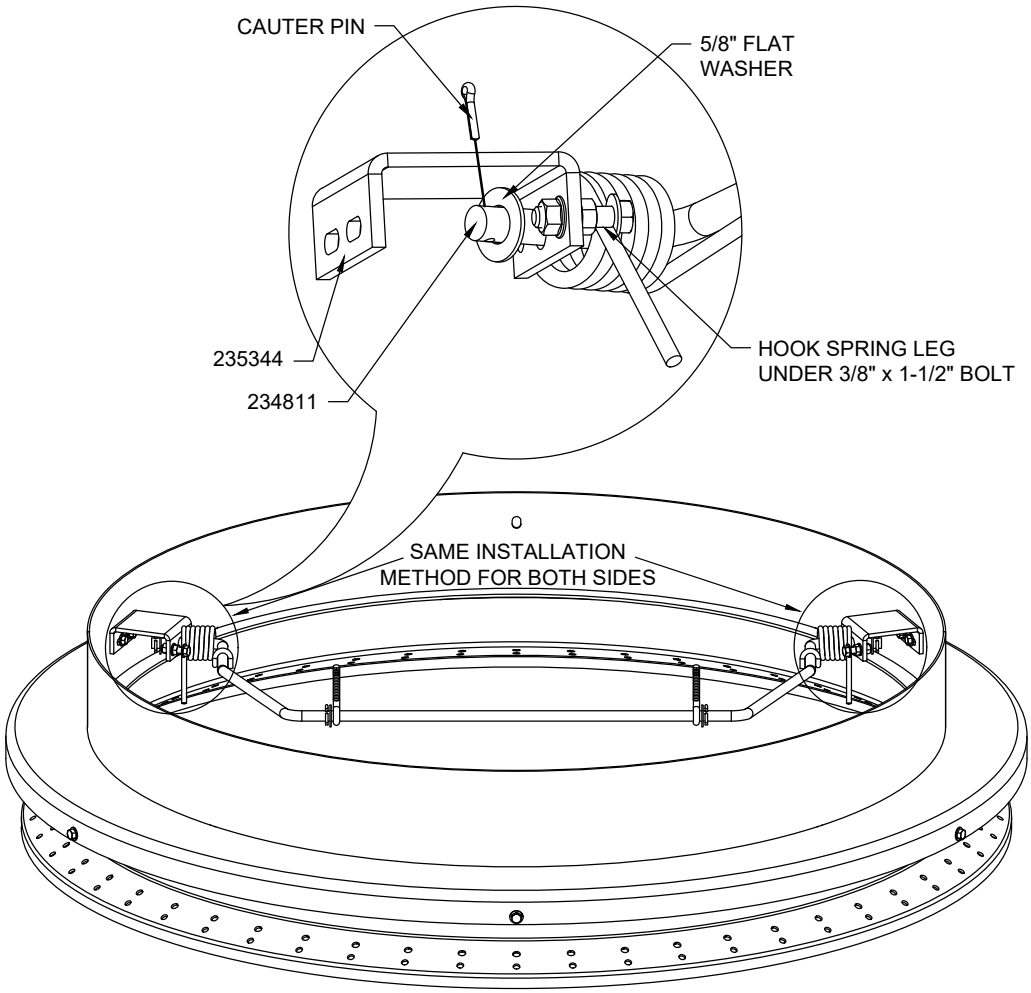
Note

The brackets are interchangeable, right to left.

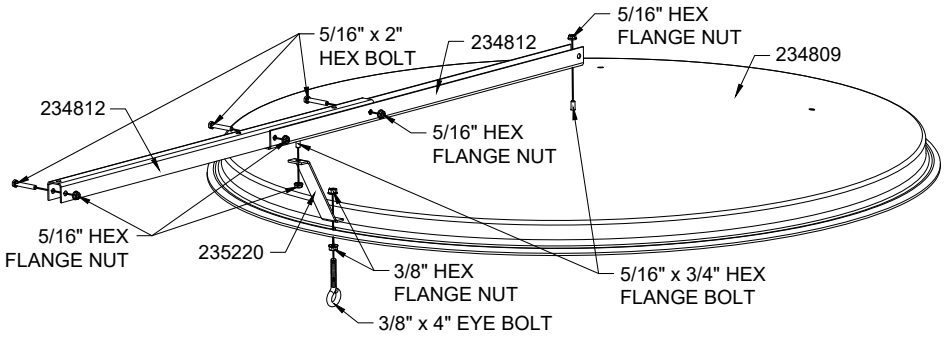
Install the Pivot Arm Hardware



Install the Pivot Arm to the Brackets



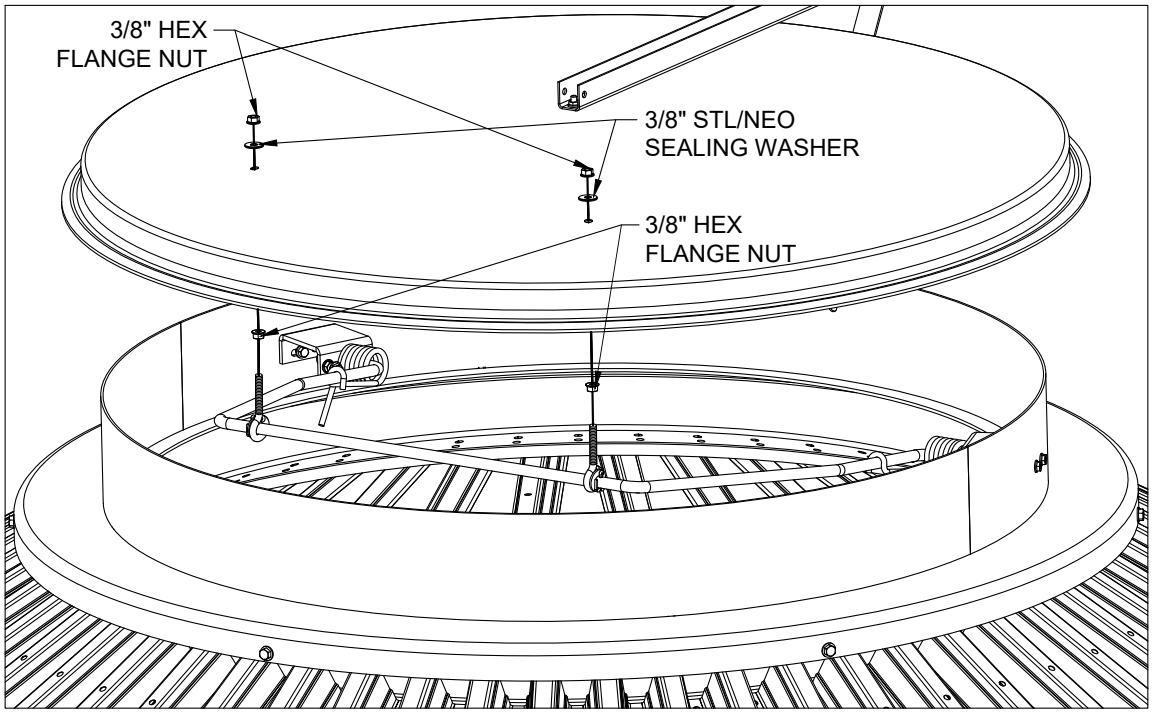
Pre-assemble the Roof Cap



Important

Do not tighten the 3/8" x 4" eye bolt until the slide rod has been fully installed.

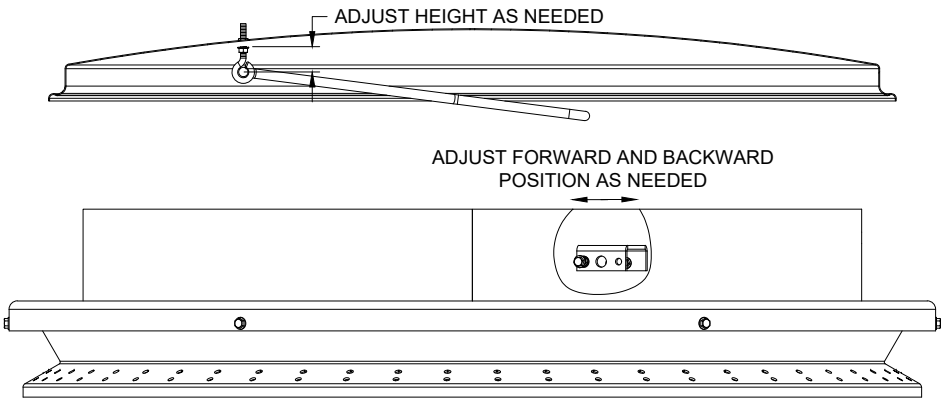
Install the Roof Cap to the Pivot Arm



Note

To help with connecting the pivot arm to the roof cap, rotate the pivot arm up and over the top of the collar cap assembly. Then place a 2x4 across the collar cap assembly, under the pivot arm.

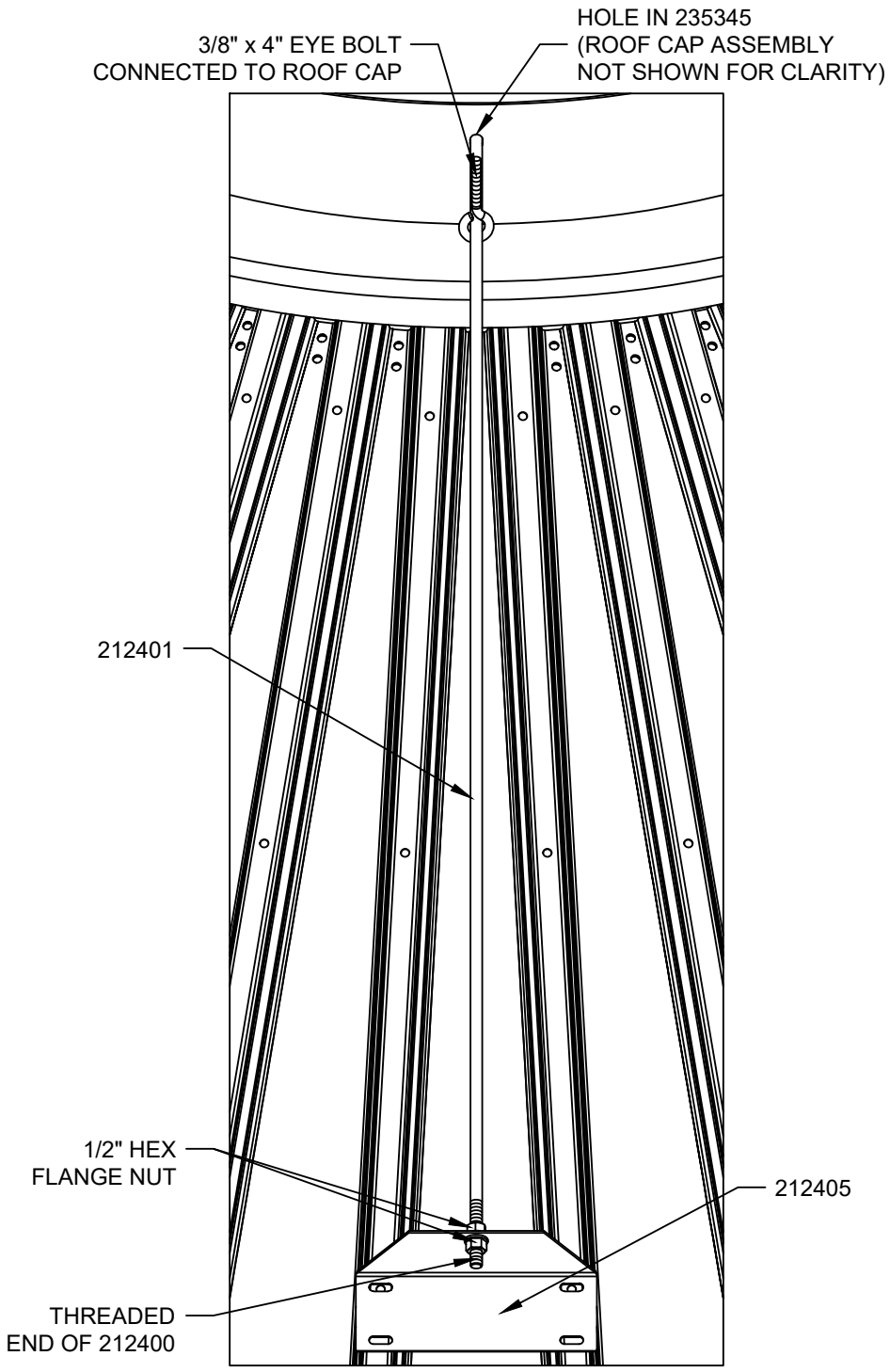
Center the Roof Cap



Note

Adjust position of pivot arm brackets in combination with pivot arm eye bolt nut height to center roof cap on peak ring.

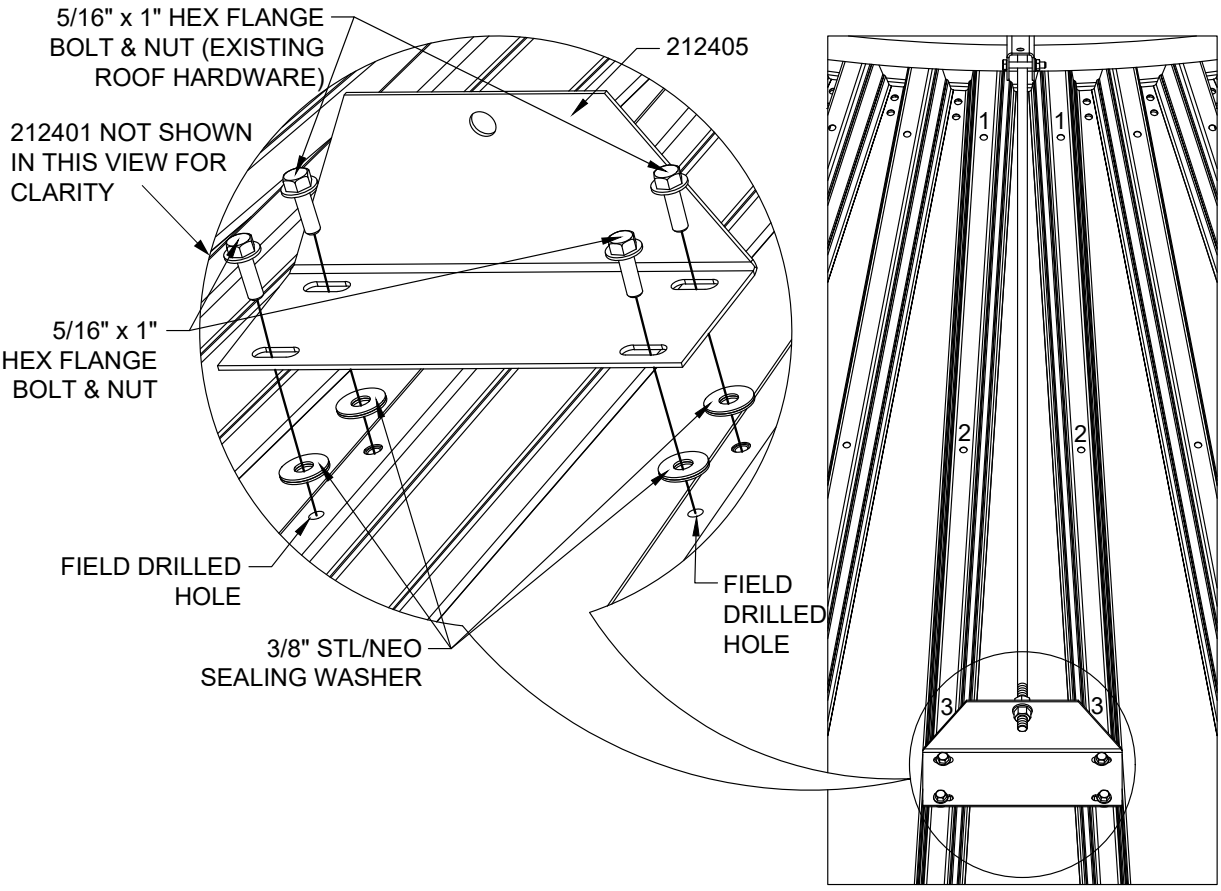
Install the Slide Rod



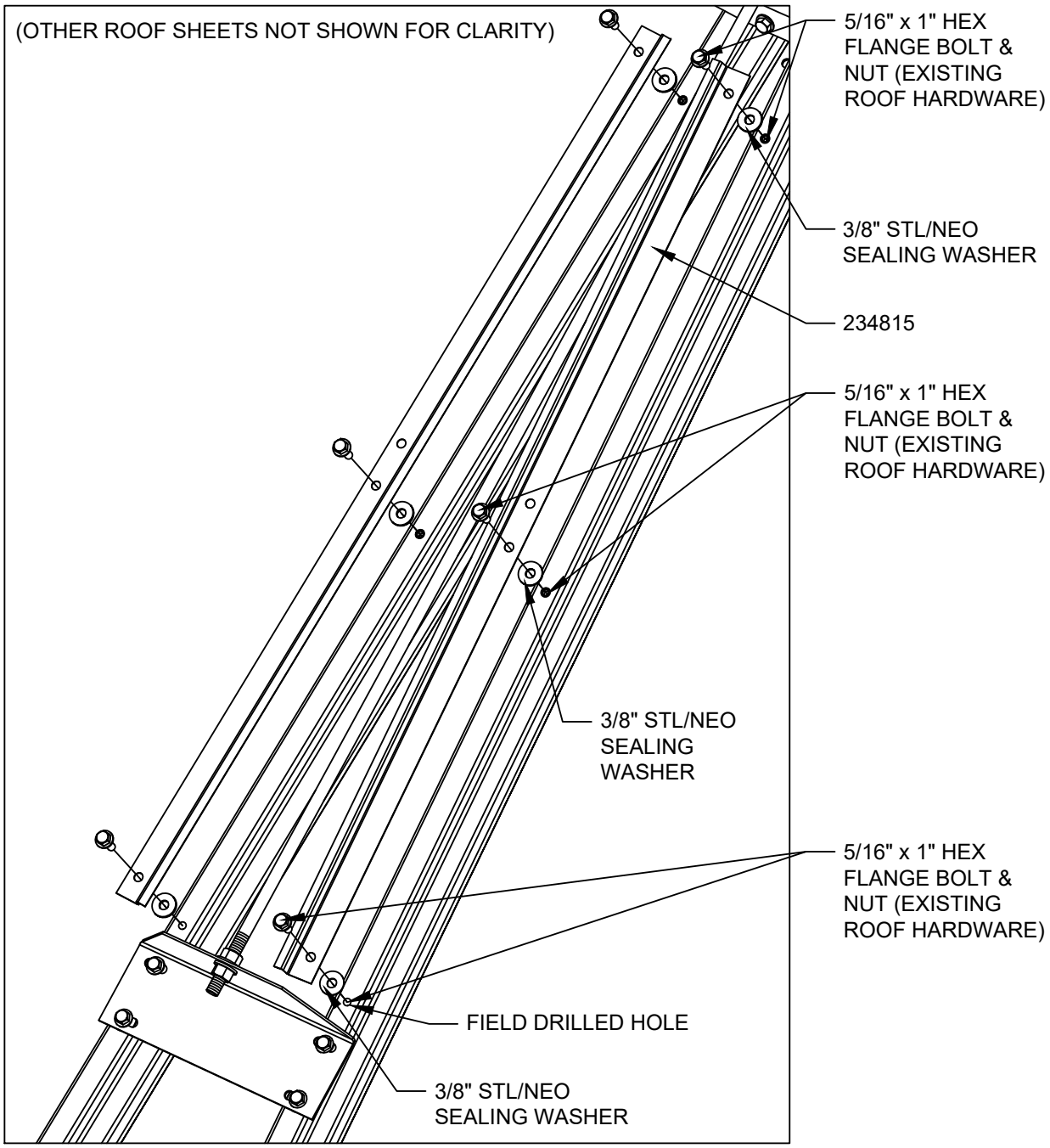
Note

Adjust the 3/8" x 4" eye bolt so that the roof cap is supported on the slide rod, and tighten the eye bolt hardware.

Install the Slide Rod Bracket



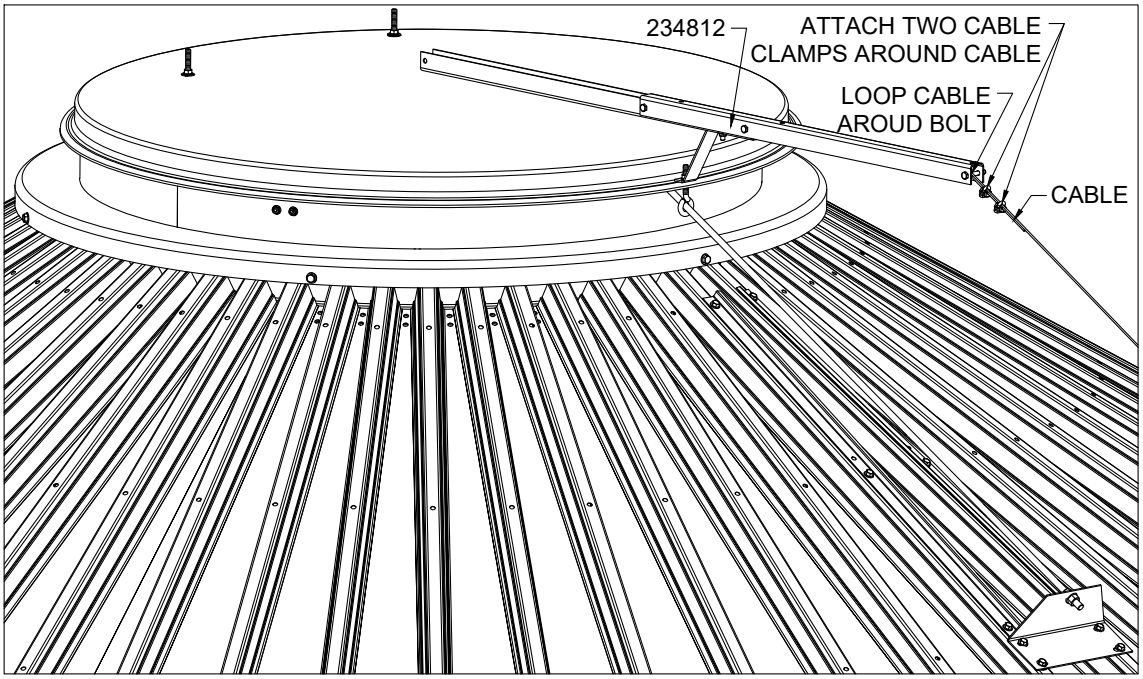
Install the Guide Rails



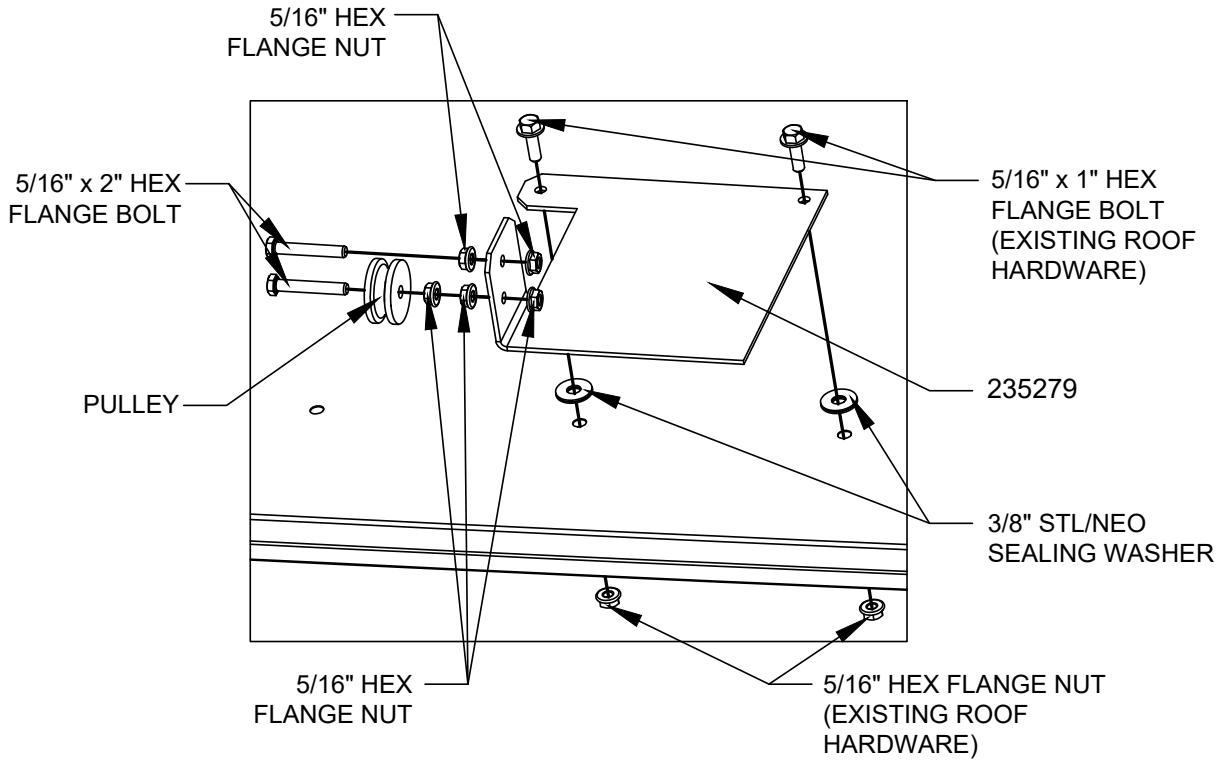
Note

Guide rails are interchangeable, right to left.

Attach the Cable to the Roof Cap Assembly



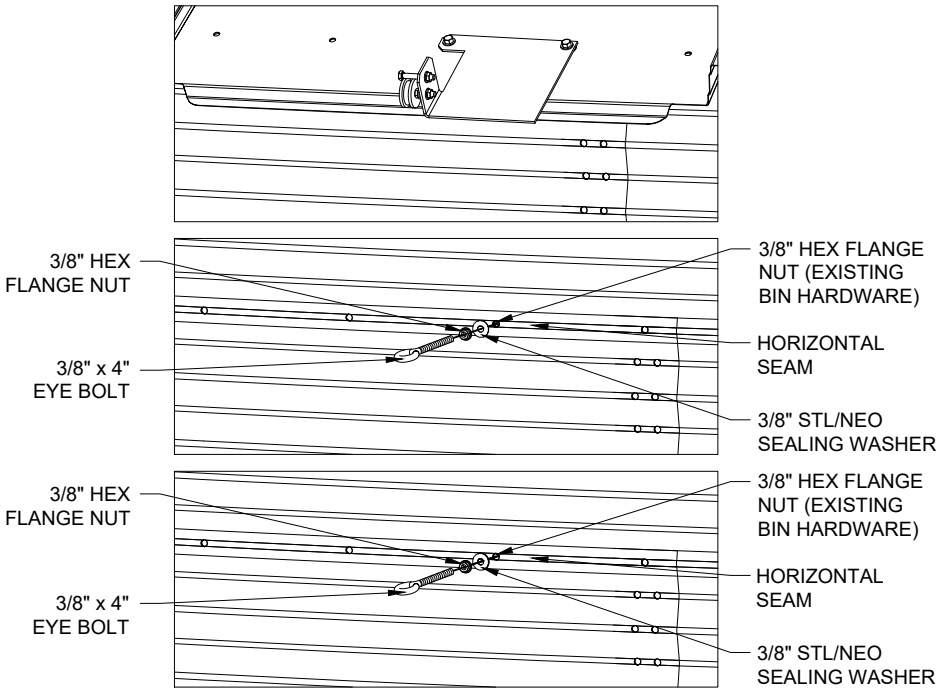
Install the Eave Guide Plate



Note

Align the pulley with the center of the roof sheet.

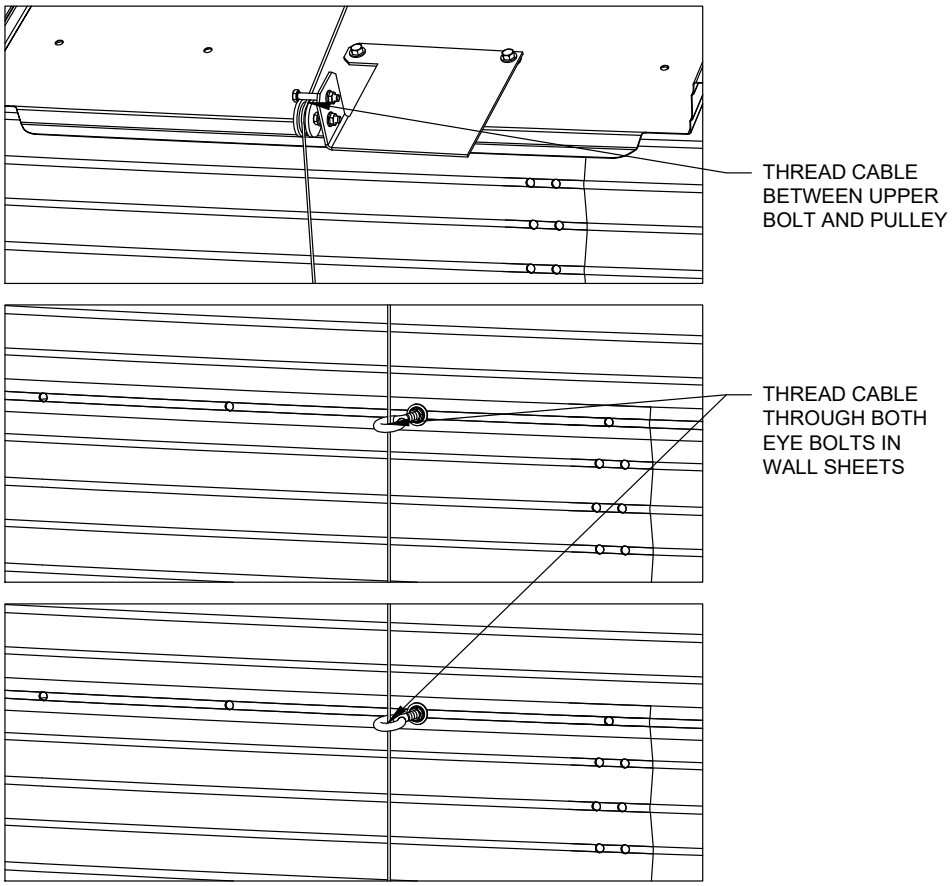
Install the Down Bin Eye Bolts



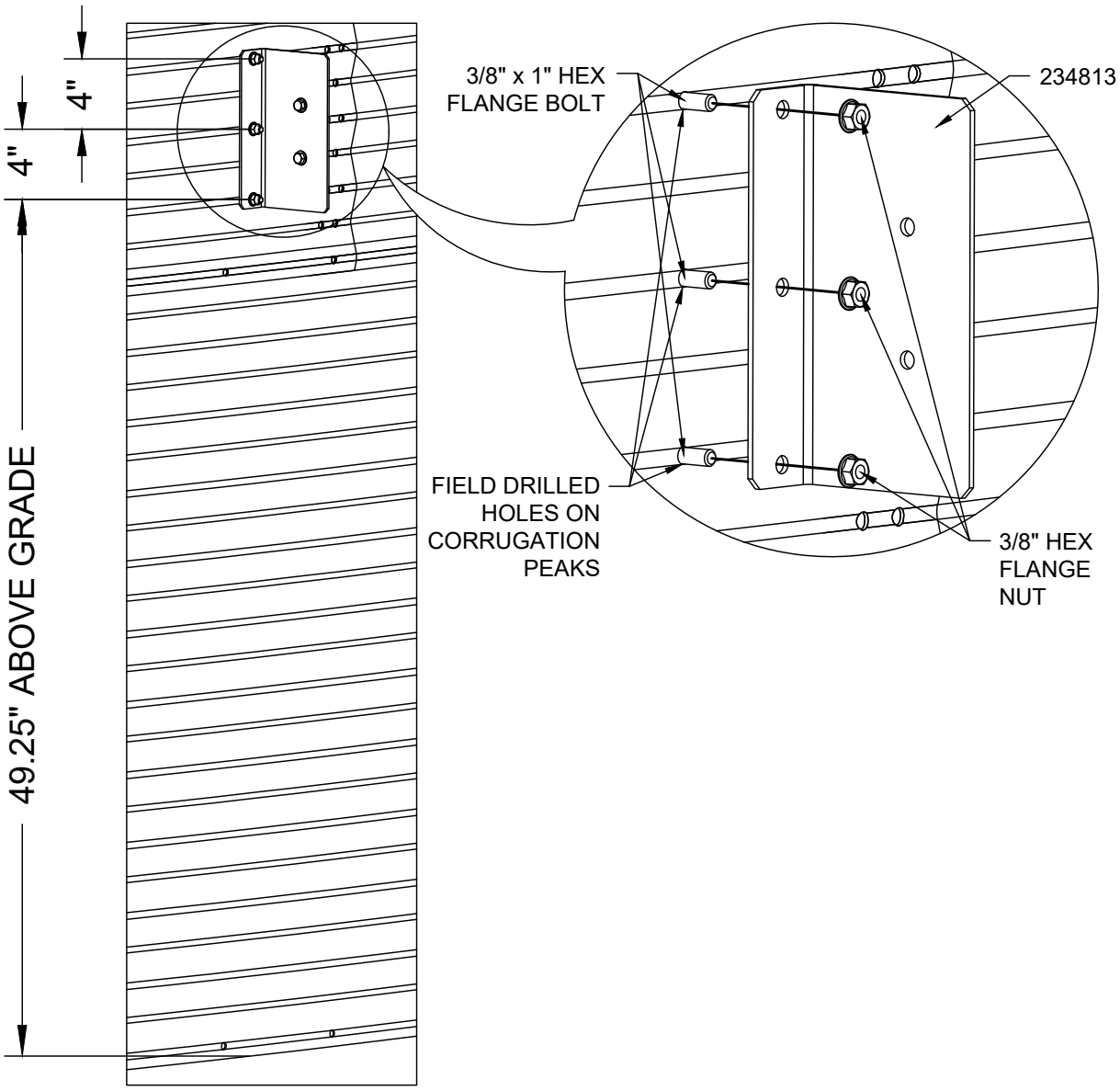
Note

Ensure eye bolts installed at horizontal seams are vertically aligned with the pulley. Space the eye bolts so there is an even distance between the eave guide plate, down bin eye bolts, and winch.

Thread the Cable Through the Eye Bolts



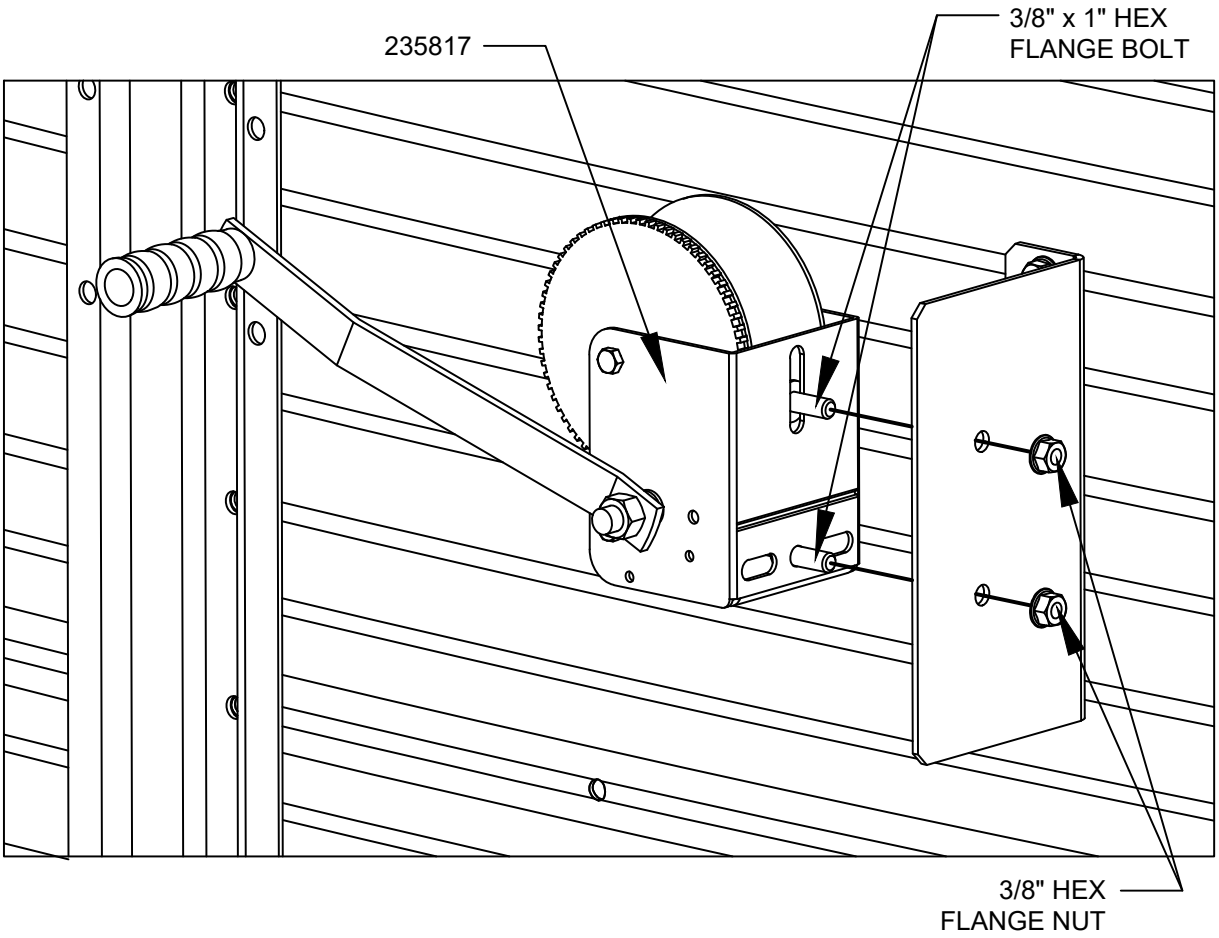
Install the Winch Bracket



Note

Ensure 234813 is offset approximately 3" from being vertically aligned with eye bolts installed at horizontal seams. This will ensure the drum of the Winch will be vertically aligned with the eye bolts.

Install the Winch



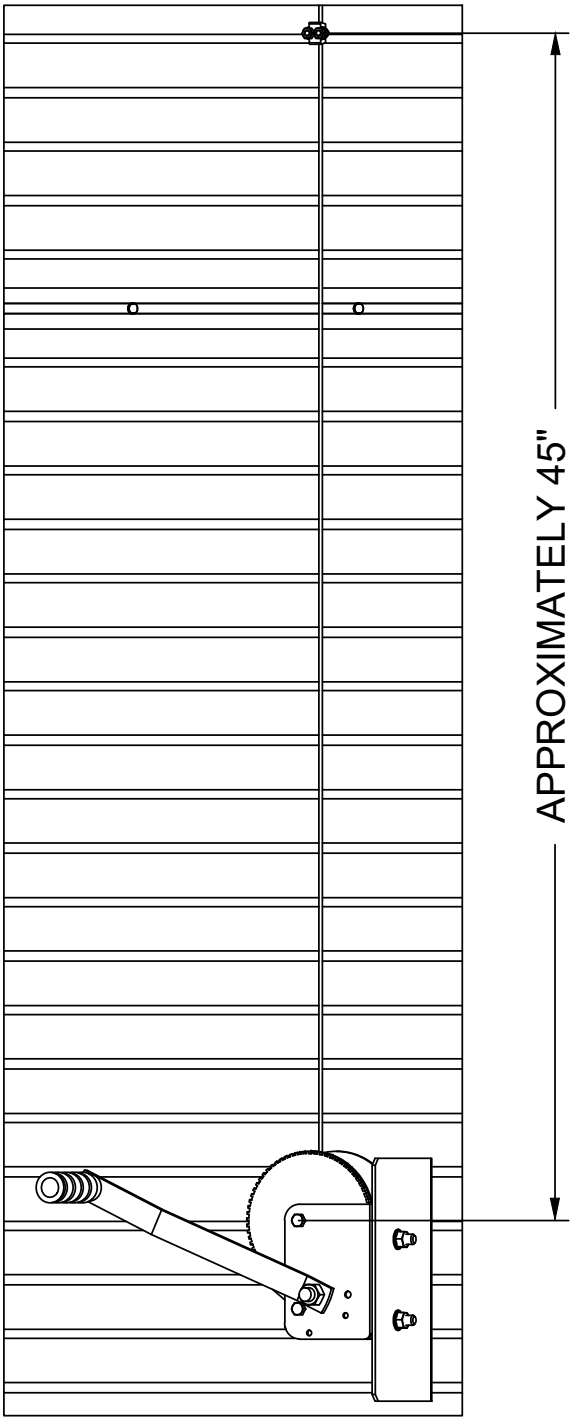
Note

Assemble the Winch as per the instructions supplied within the winch box.

Important

If installed on a stiffened bin, ensure the winch handle or cable does not interfere with any of the stiffeners.

Install the Indicator for Open Cap



1. Attach the cable to the Winch as per the instructions supplied within the winch box.
2. With the lid closed, attach a cable clamp approximately 45" above the middle of the winch drum. This will act as the indicator for when the cap is fully opened.
3. Adjust the height of the cable clamp as needed for a more open, or more closed cap.
4. Do not increase the height to more than 50" as this may cause damage to the RCO assembly.

5.5.4 Remote Roof Cap Material List

Table 8. Remote Roof Cap Material

Item	Description	24' — 27'		30' — 48'		51' — 54’	
		P/N	Quantity	P/N	Quantity	P/N	Quantity
1	PIVOT ARM	234810	1	234811	1	234811	1
2	PIVOT ARM BRACKET	234814	2	235337	2	235344	2
3	ROPE ARM	234812	1	234812	2	234812	2
4	ROPE ARM SUPPORT	235219	1	235220	1	235220	1
5	CABLE GUIDE EAVE PLATE	212404	1	235279	1	235279	1
6	CABLE	235798	1	235799	1	235799	1
7	SLIDE ROD	212400	1	212401	1	212401	1
8	SLIDE ROD ANGLE	212402	1	212402	1	212405	1
9	GUIDE RAIL	-	-	234815	2	234815	2
10	WINCH	-	-	235817	1	235817	1
11	WINCH BRACKET	-	-	234813	1	234813	1
12	5/16" X 3/4" HFW BOLT	193801	10	193801	10	193801	10
13	5/16" X 2" HEX BOLT	234588	1	234588	6	234588	6
14	5/16" HEX FLLK NUT	235923	15	235923	25	235923	25
15	3/8" X 4" EYE BOLT	154953	7	154953	5	154953	5
16	3/8" HEX FLLK NUT	235955	15	235955	15	235955	15
17	1/2" HEX FLLK NUT	154201	2	154201	2	154201	2
18	LEFT HANDED SPRING (BLACK)	235012	1	235342	1	235342	1
19	RIGHT HANDED SPRING (RED)	235013	1	235341	1	235341	1
20	CABLE CLAMP	235804	4	235804	5	235804	5
21	6" PVC CABLE HANDLE	235807	1	-	-	-	-
22	CLEAT HOOK	235805	1	-	-	-	-
23	COMPRESSION SPRING	235806	1	-	-	-	-
24	1/4" HEX FLLK NUT	154156	1	-	-	-	-
25	1/2" FLAT WASHER	154981	6	-	-	-	-
26	5/32" X 1-1/4" COTTER PIN	154952	6	154952	6	154952	6
27	3/8" STL/NEO SEALING WASHER	193775	10	193775	20	193775	20
28	3/8" X 1-1/2" HFW BOLT	-	-	235946	2	235946	2
29	CABLE PULLEY	-	-	235224	1	235224	1
30	5/16" HEX NUT	-	-	193729	5	193729	5
31	5/8" FLAT WASHER	-	-	154954	6	154954	6

- Items 12 to 27 are packaged in a poly-bag, P/N 234804, for 24'-27' and found in the Roof Parts Box
- Items 12 to 20 & 26 to 31 are packaged in a poly-bag, P/N 234805, for 30'-48' and found in the Roof Parts Box
- Items 12 to 20 & 26 to 31 are packaged in a poly-bag, P/N 234805, for 51'-54' and found in RCO Hardware Box, P/N 234806

5.6. Bin Entry Anchor System: Non-Structured Roof

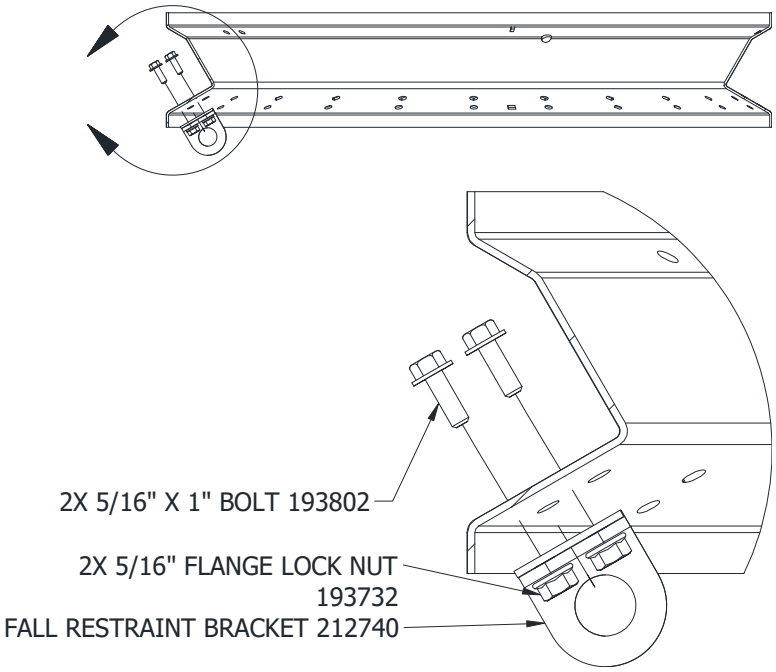
Important

The fall restraint bracket is rated for a maximum load of 2,000 lbs. The bin owner and user are responsible for correctly installing, using, and operating the Bin Entry Anchor System. The rope, pulley, and harness are not supplied by AGI.

⚠ WARNING Failure to install correctly as instructed below may result in serious injury or death.

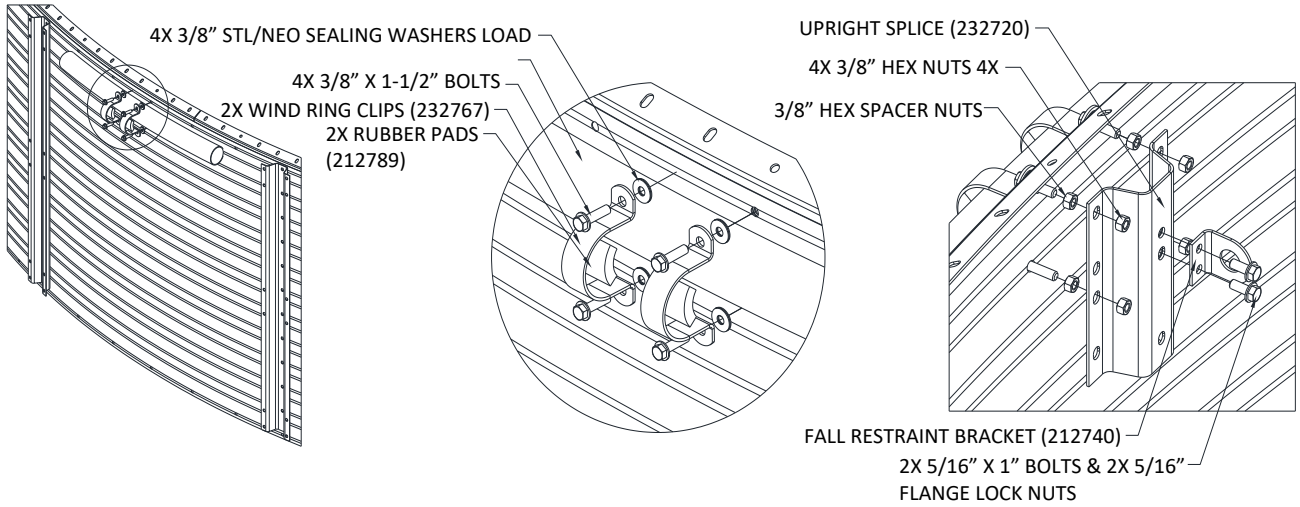
1. Install fall restraint bracket under peak ring as shown. Make sure to bolt the fall restraint bracket to the roof sheet with the inspection hatch cut out. (See Figure 22 on page 84.)

Figure 22. Installing the fall restraint bracket



2. Bolt the second fall restraint bracket to the upright splice. Then bolt the upright splice along the top wall sheet horizontal seam with the wind ring clips, sandwiching the load spreader tube and rubber pads as shown. (See Figure 23 on page 85.)
   a. Field drill holes as needed on the wall sheet and top angle for the wind ring clip connections. Washers must be sandwiched between the wind ring clips and the wall sheet for sealing. (See Figure 23 on page 85.)
   b. The load spreader tube and upright splice can be installed off center on the wallsheet (between the uprights on stiffened bins), for better reachability from the inspection hatch. Do not install the load spreader tube over a vertical wall sheet seam. (See Figure 23 on page 85.)

Figure 23. Installing the load spreader tube



3. Place the Fall Restraint Anchor Point Decals (PN 8110-01090) on the bin, see Section 2.9 – Decal Installation/ Replacement on page 10 and Section 2.10 – Safety Decal Locations and Details on page 11 for installation instructions and placement.

5.7. Lifting Wide-Corr® Bins with Cranes

The table below lists the maximum height and weight limits for each diameter of bin which AGI approves for lifting by the roof using a crane. These limits assume that the total lifted load is evenly distributed around the peak ring, through the use of a lifting tripod or similar device of adequate strength. Any bin exceeding EITHER the height or weight limit MUST be lifted using jacks or similar method which supports the wall sheets directly.

These limits are critical. Failure during lifting carries the risk of serious injury or death.

Table 9. Lifting Weights for Various Bin Sizes

Bin Diameter	Maximum Tier Height	Approximate Weight
24'	8	9,000 lbs
27'	8	11,000 lbs
30'	8	13,000 lbs

Important Safety Notes

- Limits above are based on safe lifting of the bin only. They are not based on design factors for lifting people or objects over people. Adequate safety blocks or supports must be used when working under or near the bin wall.
- Extreme caution must be used when lifting bins more than a few inches, as occurs when mounting bins on hoppers. "Bouncing" of the load and/or wind gusts can add significantly to the loads on the roof and could cause overloading and/or failure.
- Please refer to any additional capacity information, lifting instructions, and safety information provided by the crane manufacturer.

5.8. Flat Roof Cap Assembly

Figure 24. Flat Roof Cap Assembly Detail

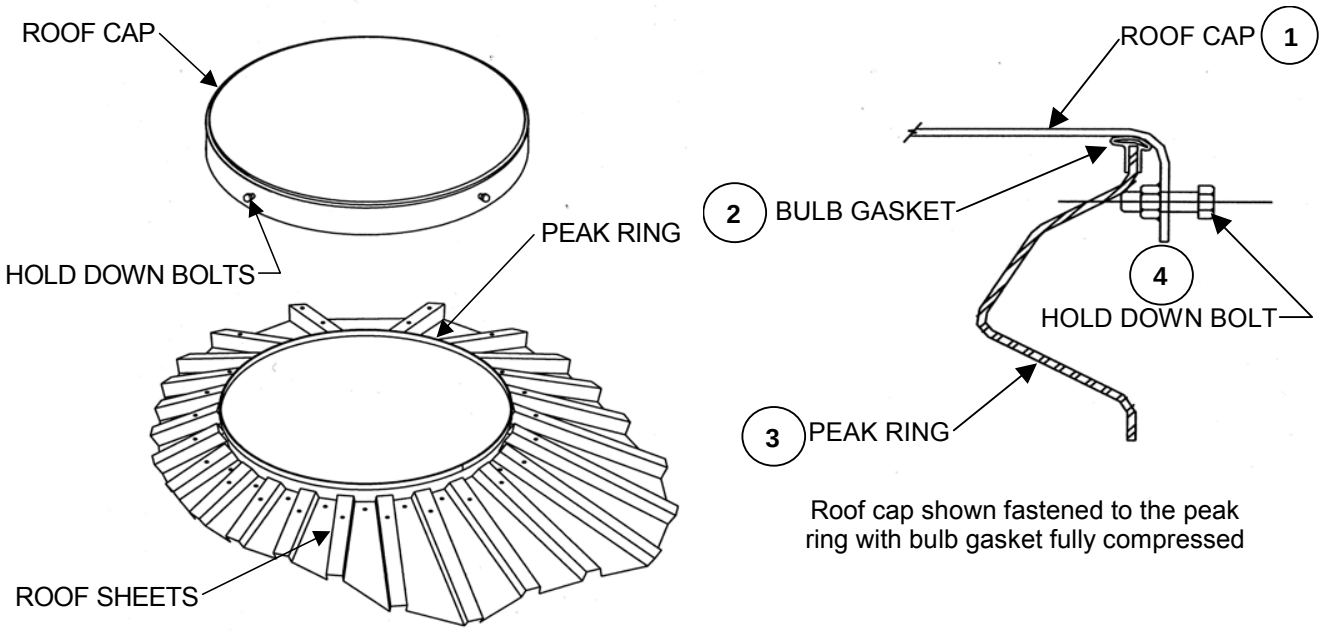


Table 10. Flat Roof Cap Part Numbers

Item	Description	Part No.	Used On
1	34" HEAVY DUTY FLAT CAP (for use with 33" peak ring)	195090	up to 27' Bin
	53.5" HEAVY DUTY FLAT CAP (for use with 52" peak ring)	195087	30' to 48' Bin
	61.5" HEAVY DUTY FLAT CAP (for use with 60" peak ring)	195091	51' & 54' Bin
2	PEAK RING BULB GASKET 105" LONG	195149	up to 27' Bin
	PEAK RING BULB GASKET 168" LONG	195150	30' to 48' Bin
	PEAK RING BULB GASKET 105" LONG	2 x 195149	51' & 54' Bin
3	3/8" x 1-1/2" HEX FLANGE BOLT (supplied with the lid)	193797	All

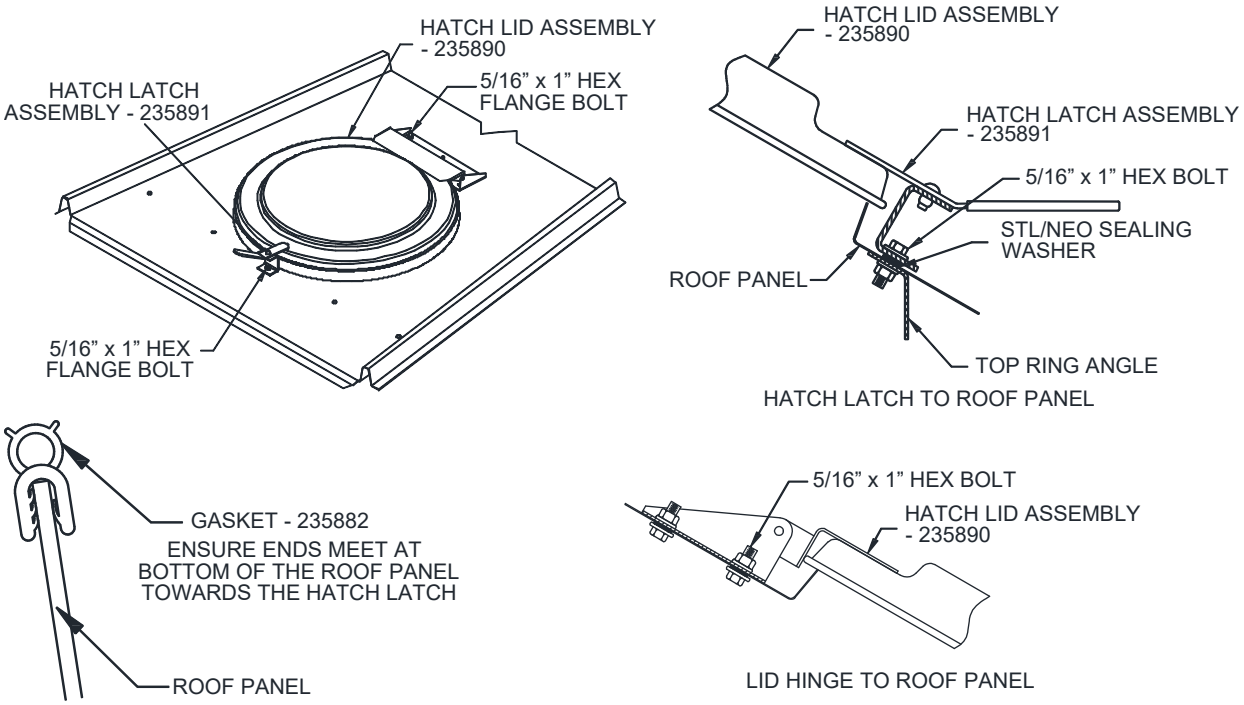
1. Fasten the bulb gasket onto the top rim of the peak ring. Trim to fit.
2. Place the roof cap on the peak ring with two of the hold down bolts, making sure they are clear of the roof ladder.
3. Locate bolts between the roof ribs.
4. Tighten the hold-down bolt opposite the roof ladder until approximately 3/8" of the bolt is protruding past the welded nut.
5. Tighten the two bolts near the roof ladder until the roof cap pulls down firmly and cannot be moved.
6. Tighten all other roof cap bolts similarly.
7. Ensure that the roof cap is fully secured around the peak ring.
8. For a non-structural roof that is supporting a catwalk, install six flat cap clips (213437) as shown in the AGI catwalk manual 213440. These clips are provided in the AGI catwalk peak support modules.

5.9. Inspection Hatch Details

Installation of inspection hatch

1. Place the inspection hatch gasket (235882) around the lip of the inspection hatch opening. Trim the gasket to fit if necessary.
2. Bolt on the hatch lid assembly (235890) with 5/16" x 1" bolts provided for the roof. For best sealing results, the bolt heads should be on the underside of the roof panel, with the sealing washers pressed against the roof panel.
3. Bolt on the latch assembly (235891) as shown below. The latch is positioned on the center hole of the roof panel and bolts through the top ring angle as shown.

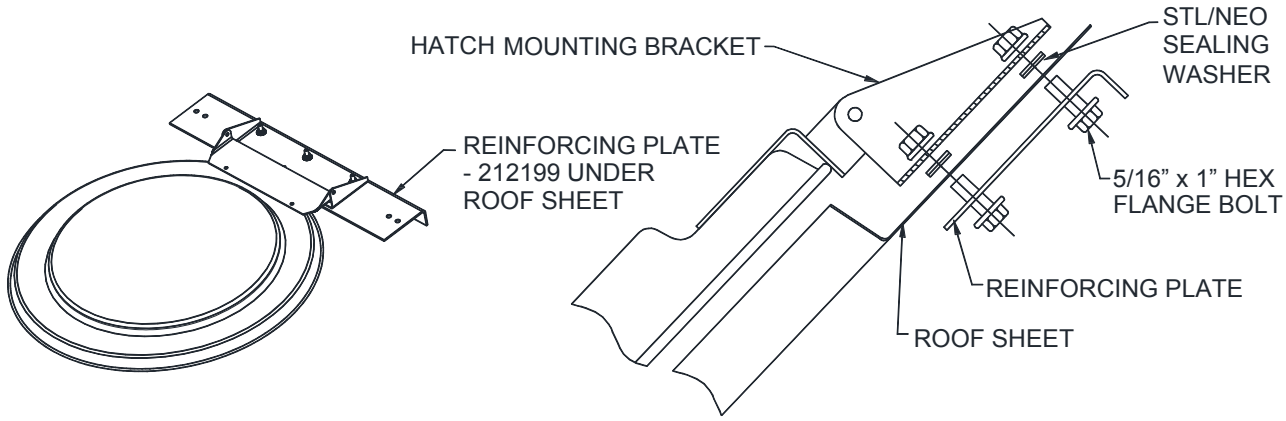
Figure 25. Inspection Hatch Details



5.10. Inspection Hatch Reinforcing Plate

1. For high wind applications, place the inspection hatch reinforcing plate under the roof sheet and secure with 5/16" x 1" hex flange bolts and nuts.
2. The flange on the plate must be located away from the hatch opening to minimize the possibility of interference or injury with inspector.
3. The four outermost mounting holes are used for extra stiffening when the roof sheet width permits. Field drill the roof sheet as needed.

Figure 26. Inspection Hatch Reinforcing Plate Detail



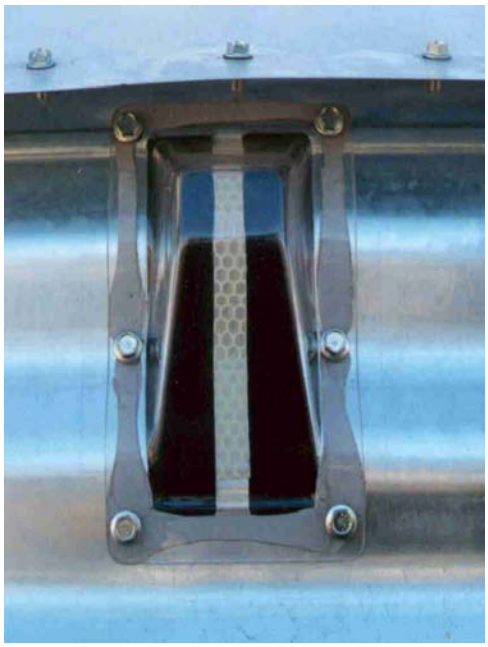
5.11. Typical Structural Roof Installation

For structural roof system installation instructions, please refer to **Structural Roof Manual (212453)**.

5.12. Grain Gauge Installation and Operation (Optional)

The Grain Gauge™ is a clear polycarbonate unit that shows when the grain level reaches the top of the sidewall. The highly reflective tape is visible at night when a light is directed at it. **When you can no longer see this reflective tape - the Grain Gauge™ is full and the grain auger should be shut off**. The Grain Gauge™ and reflective strip comes packaged in the parts box.

Figure 27. Grain Gauge



If the Grain Gauge Cutout IS Present

The cut-out for the Grain Gauge is located in a separate top tier wall sheet.

1. Position the sheet with the cutout for maximum benefit, either;
   - facing the direction of the auger that will be loading the bin, or
   - directly under the inspection hatch for easy clean out.

   The Grain Gage wall sheet can also be rotated to position the Grain Gauge at two possible positions:
   - an upper position for smaller augers and/or larger bins
   - a lower position for larger augers and/or smaller bins
2. Install the reflective strip on the center web of the cut-out as shown.
3. Caulk around the outside of the bolt holes on the Grain Gauge™ flange with the 1/16" x 3/8" tape caulking supplied.
4. Fasten the Grain Gauge™ to the decal sheet using grain bin bolts with the indented upside down “V” at the bottom.

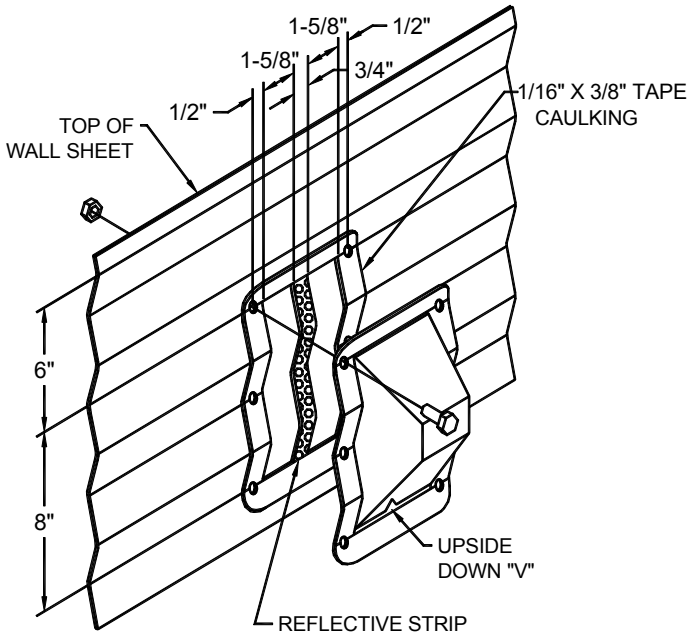
   Note

   Do not position the joint between two adjacent top ring angles directly over the Grain Gauge™ cutout. Insure that the top angle “bridges” the cutout and that the closest joint is at least 2 or 3 holes away.

If the Grain Gauge Cutout IS NOT Present

1. Using the grain gauge, position the grain gauge at a desirable location on the bin. The normal location is such that the top holes in the grain gauge are centered in the second corrugation valley below the top horizontal row of bin bolts at the eave (see Figure 28 on page 90).

Figure 28. Grain Gauge Detail



2. Mark and drill out holes using a 3/8" drill.
3. Mark and cut-out the two slots, using the holes as a reference, according to the diagram.
4. Install the reflective strip on the center web.
5. Install the grain gauge using bin bolts with the indented upside down “V” at the bottom.

5.13. Bin Roundness

It is imperative that the bin be as round as possible. The following steps describe how to ensure the bin is round.

1. Verify that the foundation meets all the requirements of the installation.
2. Scribe the bin circumference onto the foundation as follows:
   a. Anchor a string to the exact center of the concrete foundation.
   b. Consult the following table to find the scribe radius for the size of the bin being assembled.
   c. Using the required string length, scribe the bin circumference onto the foundation.

      The radius values given in the chart are 3/4–inch smaller than the wall sheet radius at the bottom. This ensures that the scribed circle can be seen during assembly. A perfectly placed ring of sheets should be 3/4 inch on the outside of this scribed circle.
3. After the first ring of wall sheets has been assembled, check the position and roundness of the ring:
   a. Verify that the maximum amount that the bin is out of round is no more than 0.75" on the radius, when measured from the center of the bin.
   b. Verify that the wall sheets form a smooth circle with no flat spots or cauliflower shaped curves.
   c. Before anchoring the bin to the foundation, re-check to ensure that the bin is round and within tolerance.

      Note

      The longer you wait, the more it becomes difficult to correct the bin roundness.
4. Locate anchor bolts towards the outside of the anchor bolt slots (away from bin) to permit the incremental expansion that can occur with the initial filling of the bin.
5. When setting jacks, make sure they are also set round and that they are anchored to the concrete.

Table 11. Scribe Radius – 24' to 54' Bins

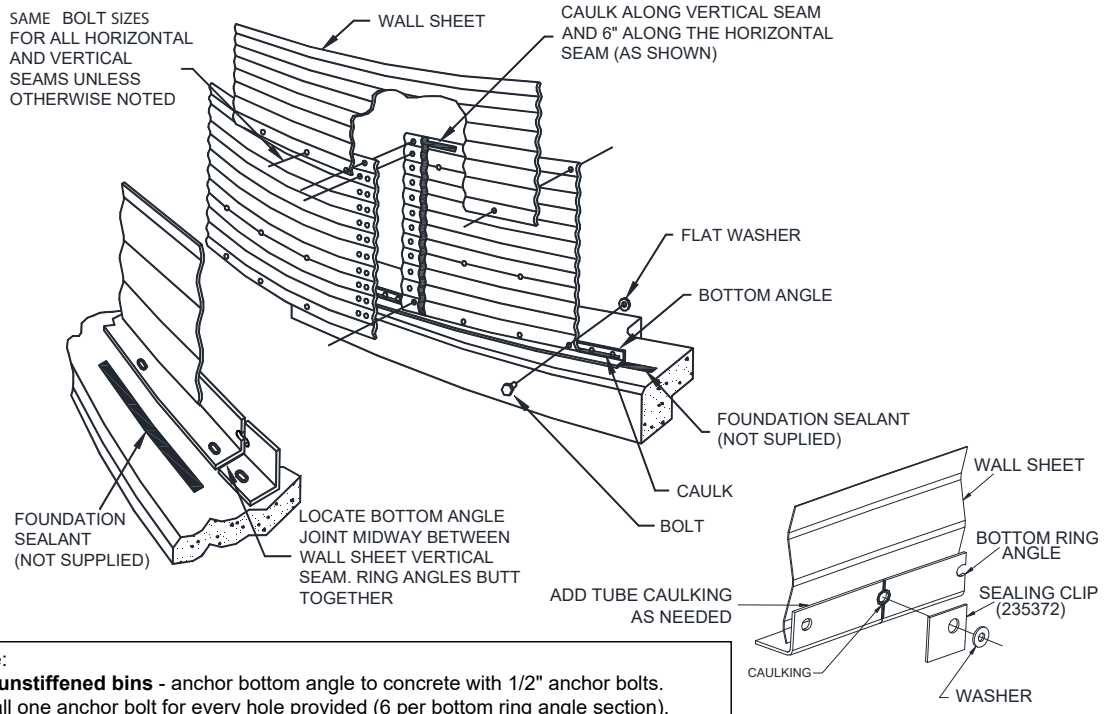
Nominal Bin Diameter (ft)	Scribe Radius (ft in)	Nominal Bin Diameter (ft)	Scribe Radius (ft in)
24	11'10-1/2"	42	20'9-15/16"
27	13'4-3/8"	45	22'3-13/16"
30	14'10-5/16"	48	23'9-3/4"
33	16'4-3/16"	51	25'3-5/8"
36	17'10-1/8"	54	26'9-9/16"

5.14. Wall Sheet and Bottom Angle Assembly

Note

For bin hardware specification, refer to Section 7. – Appendix on page 161.

Figure 29. Wall Sheet and Bottom Angle Assembly Detail



Note:
For unstiffened bins - anchor bottom angle to concrete with 1/2" anchor bolts. Install one anchor bolt for every hole provided (6 per bottom ring angle section).

For stiffened bins - the bottom angle anchors are not required for stiffened bins as long as the stiffener base assembly anchors are making a good seal between the bottom angle and the foundation. If the seal is not good due to uneven concrete it is recommended to also anchor the bottom angle with as many 1/2" anchor bolts as are needed to achieve a good seal.

5.15. Centurion Wall Sheet Part Number Matrix

Table 12. Wall Sheet Part Number Table

Corrugated Wall Sheets						Punched Wall Sheets	
Thickness nom (min)	Gauge	Label Colour	Weight lbs	Length (overall)	Flat	Regular	Bottom
.040 (.036)	20	Yellow	58.3	116.5”	194654	194660 Stencil	
					194657	194663 Stencil	
					194679	194730	
.050 (.045)	18	Orange	72.8		194655	194661 Stencil	
					194658	194664 Stencil	
					194680	194731	194771
.057 (.052)	17	Red	83.0		194681	194732	194772
.066 (.061)	15	Pink	97.7		194682	194733	194773
.076 (.070)	14	Lime	112.2		194656	194662	
					194659	194665	
					194683	194734	194774
.096 (.088)	13	Green	141.1		194684	194735	194775
.116 (.107)	12	Blue	171.4		194685	194736	194776
.126 (.117)	11	Purple	189.0	117.0”	194606	194737	194777
.139 (.130)	10	Black	209.4		194607	194738	194778
Short Sheets Installed Beside the Door							
.057 (.052)	17	Red	66.3	93.0”		194780	
			26.2	36.8”			194783
.076 (.070)	14	Lime	89.6	93.0”		194781	
.096 (.088)	13	Green	44.6	36.8”			194784
.116 (.107)	12	Blue	136.8	93.0”		194782	
			54.1	36.8”			194785
Bottom wall sheets are punched for full floor aeration flashing. Use bin bolts provided to plug unused holes if a full floor aeration system is not being used.							

5.16. Wall Sheet Caulking Detail

Figure 30. Wall Sheet Caulking Detail (inside view) — Imperial

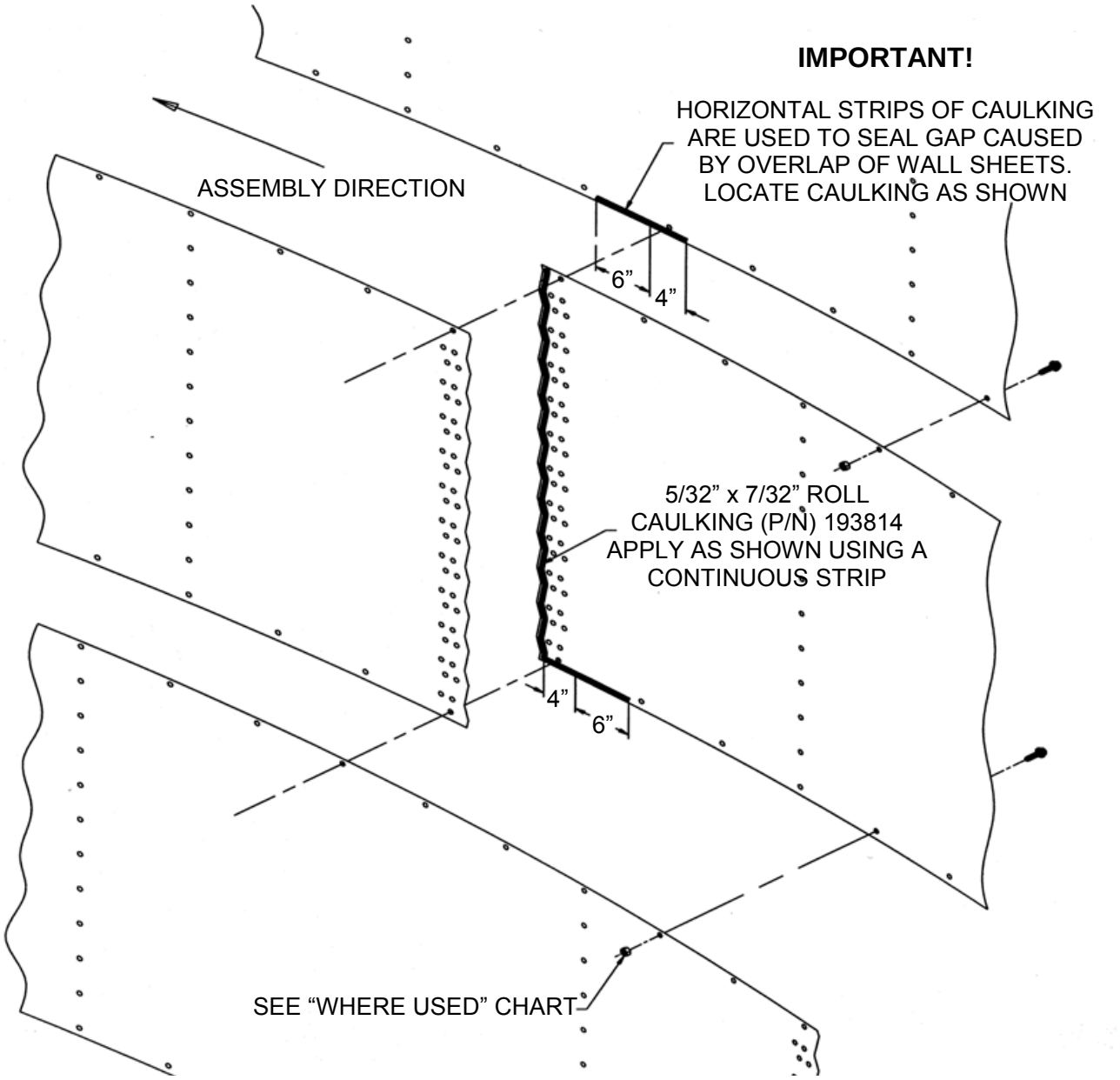
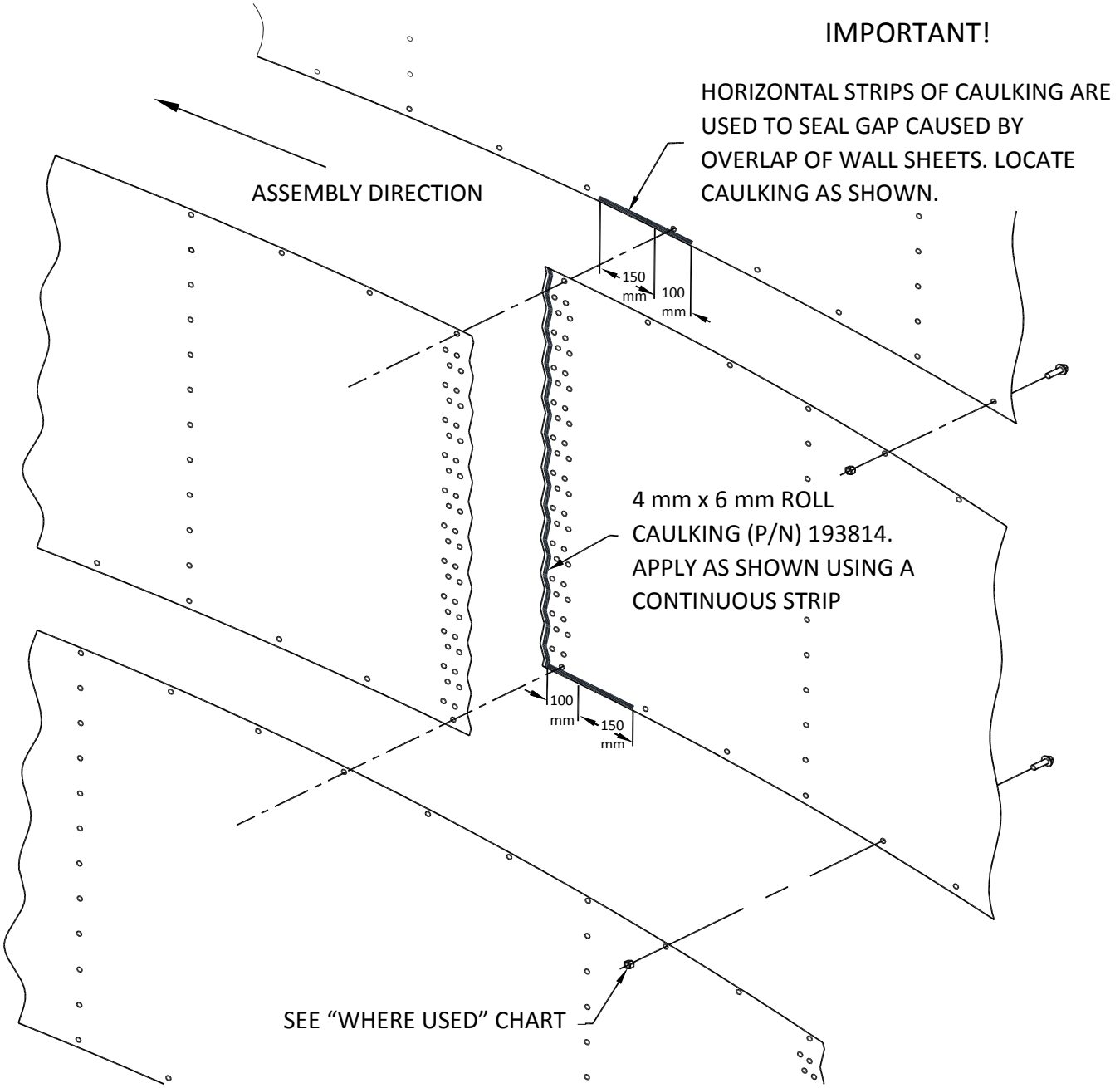


Figure 31. Wall Sheet Caulking Detail (inside view) — Metric



5.17. Stencil and Short Sheet Placement

For all bin diameters except 54’, if a top-tier wind ring is required for a stiffened bin, it will pass through the “WESTEEL” Stencil. If the customer wishes, the stencil sheet(s) can be positioned in the 2nd tier from the top in order to keep it clear of the wind ring.

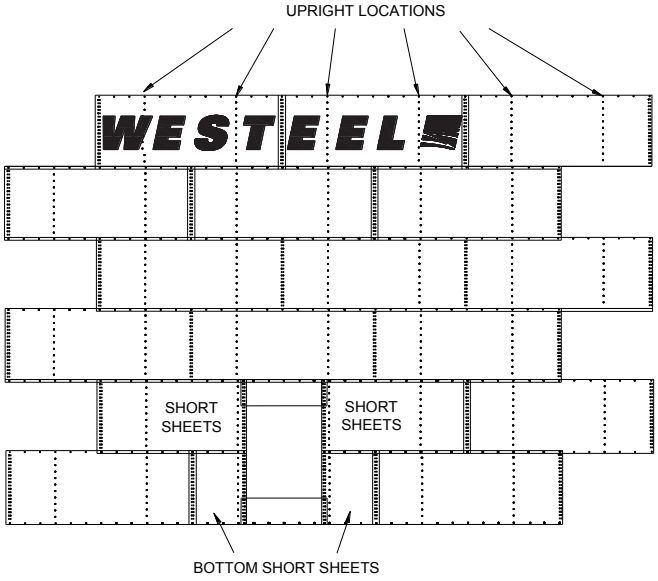
Note

For AGI sign sheet, the sign sheet always needs to be installed externally in stiffened bins.

Even Tiered Bins:

To align the stencil sheets above the walk-in door as shown, stagger the wall sheets normally as shown below.

Figure 32. Stencil and Short Sheet Placement — Even Tiered Bins



Odd Tiered Bins:

To center the stencil above the walk-in door, stagger the wall sheets normally at the bottom and near the middle and coincide the seams in the top two tiers as shown below.

Figure 33. Stencil and Short Sheet Placement — Odd Tiered Bins

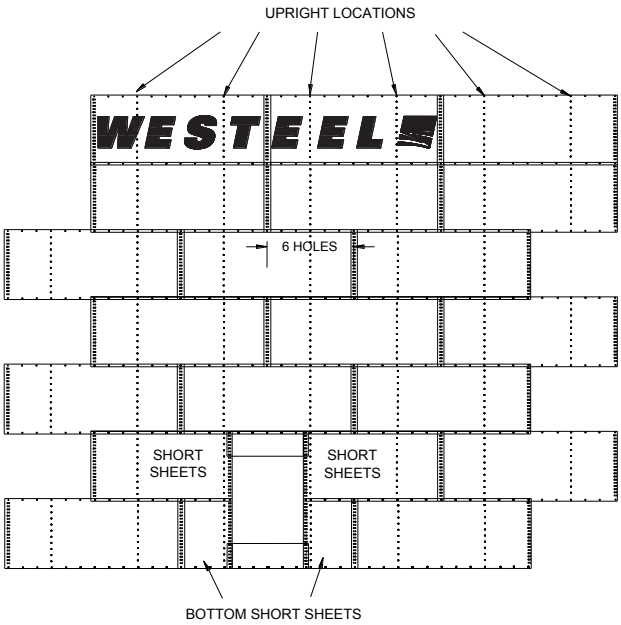


Table 13. Short Sheet Part Numbers

Part Number	Used With
194780	194679 — 194681
194781	194682 — 194683
194782	194684 — 194685

Table 14. Bottom Short Sheet Part Numbers

Part Number	Used With
194783	194679 — 194681
194784	194682 — 194684
194785	194685

5.18. External Sign Sheet Installation (For Stiffened Bin)

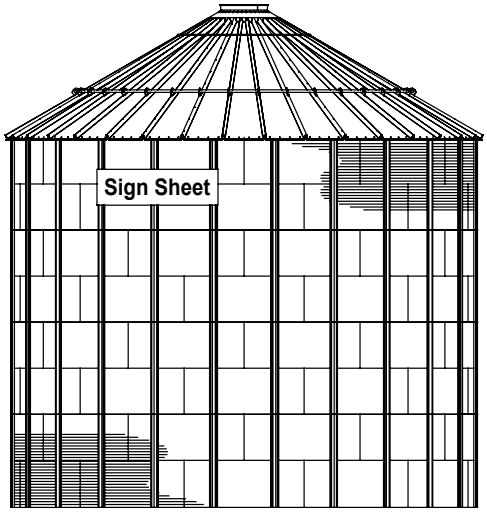
Example Sign Sheet

Selecting the Sign Sheet Location

Note

Choose a location to install the sign sheet somewhere in the top three rings.

Figure 34. Example Sign Sheet Location



Note

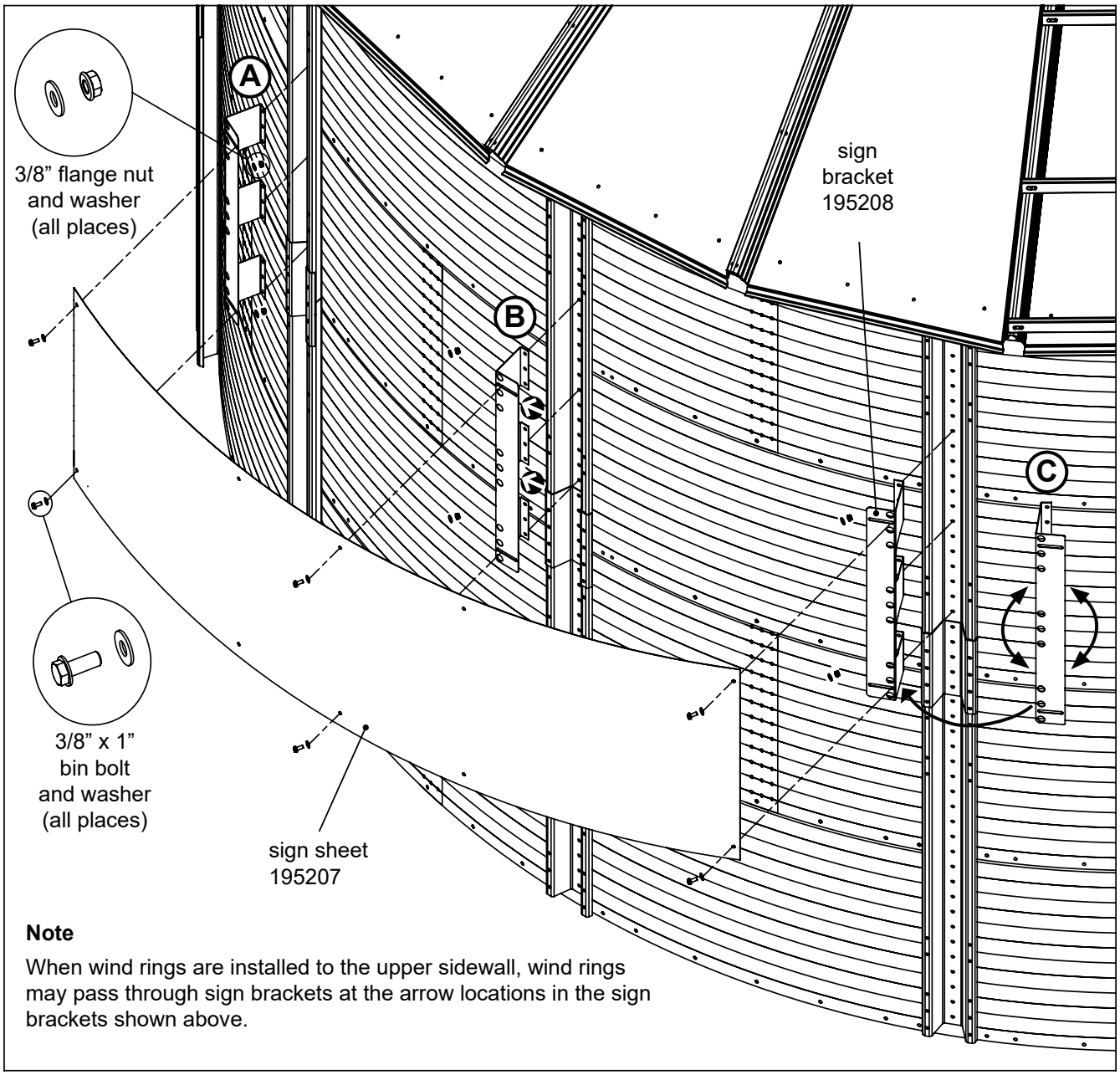
It may not be possible to locate the sign sheet on this bin in the exact location shown in Figure 34. Possible sign sheet locations will vary based on available sign bracket mounting hole locations.

Installing the Sign Sheet

1. Install the sign brackets to the stiffeners.
2. Make certain to use the correct intermediate stiffener bolt pattern no matter which location is selected for sign brackets installation.

   Each bracket is exactly the same. Brackets A and B flanges face right.
3. Install bracket C with the flanges facing either right or left depending on which orientation enables connection to the sign sheet.
4. Use the supplied stiffener bolts, nuts, and flat washers to make the connection.
5. Install the sign sheet to the sign brackets slotted holes.
6. Use the 3/8" x 1" bin bolts, 3/8" flat washers, and 3/8" flange nuts supplied with the sign sheet.
7. Install flat washers on the both the bolt and nut sides. Tighten all bolts.

Figure 35. Sign Sheet Installation



Note

When wind rings are installed to the upper sidewall, wind rings may pass through sign brackets at the arrow locations in the sign brackets shown above.

5.19. Commercial Bin Upright Assembly

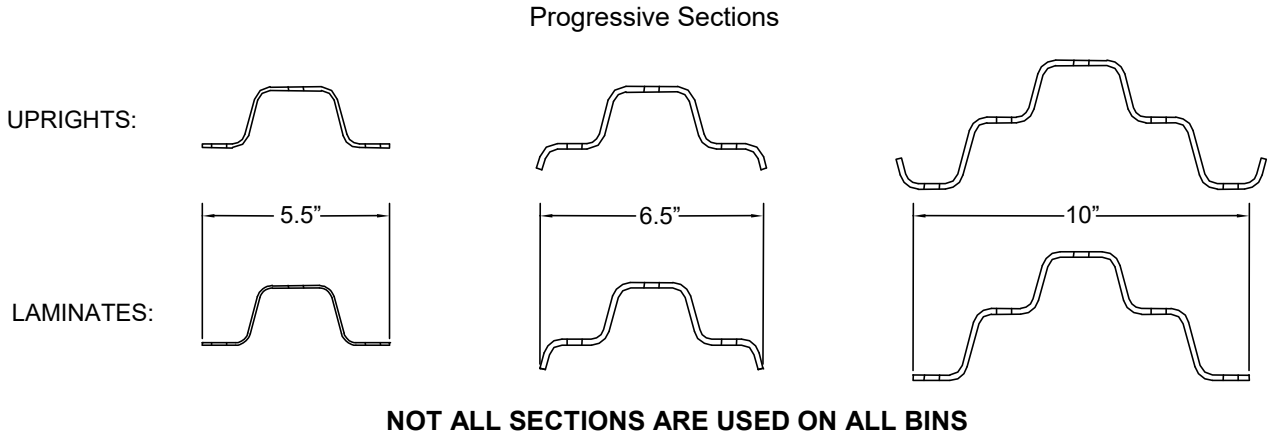
This section provides information needed to assemble uprights for commercial bins.

Introduction

The AGI Commercial upright system consists of uprights and laminates. Single uprights, joined by splice plates, are used at the top of bins. Laminate sections are introduced when vertical load requirements dictate. Once introduced the laminates continue to be utilized for the balance of the assembly.

A unique feature of the AGI upright system is the progressive section. Not only do the uprights and laminates increase in gauge from the top to the bottom of the bin, they also increase in section.

Figure 36. Progressive Sections



Both upright and laminate sections measure 88" long. In the center of each there are vertical holes spaced at 4" centers. This permits use on externally stiffened bins. There are two locations on each wall sheet for attachment of the uprights. The wall sheet holes that mate with the uprights are spaced at 4" centers. All center upright holes must be filled with bolts.

Upright/Laminate Identification

In order to properly erect the bin it is necessary to distinguish uprights from laminates, it is necessary to determine the gauge of the part, and it is necessary to determine the width of the section. The various combinations are provided in the upright/ laminate table. It is also necessary to determine the orientation of the parts as there is a distinct top and bottom. All the information that is required for assembly is contained on the label.

The label, is the easiest means of identification. It contains all of the necessary information. For assembly purposes, the label is placed on the bottom of both uprights and laminates.

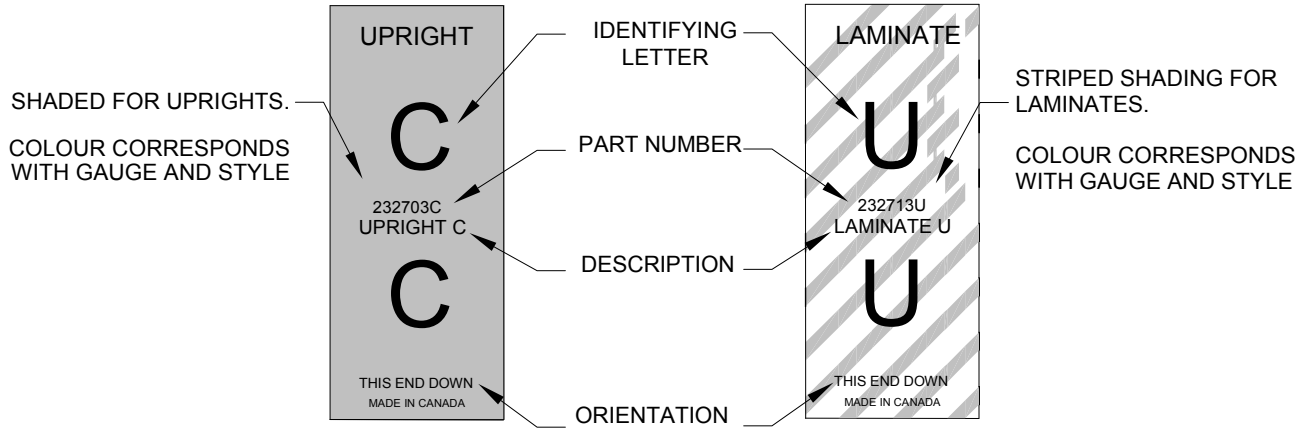
Upright labels have solid colours and laminate labels are striped. For both uprights and laminates, the colour corresponds with gauge and style.

Each upright and laminate has a unique identifying letter. This is prominently displayed on the label, and corresponds with the respective assembly charts provided (see Figure 37).

Tip

For error free installation, make sure that the identifying letter on the label coincides with the wall sheet/upright layout for the bin being assembled, and that the labels on both uprights and laminates remain on the bottom. There is a definite top and bottom orientation for uprights and laminates. It is imperative that they are oriented correctly.

Figure 37. Upright and Laminate Labels



Short Upright

There is one short upright measuring 44" long for use in odd tier bins. The alpha character for this part is “S”. There is no corresponding laminate as it is used at the top of the bin before the laminates are introduced. The short upright always goes in the top tier.

Tip

The short “S” upright is located in the top tier of odd-tiered bins.

Upright/Laminate Assembly

Use the wall sheet/upright layout provided for the bin in question, to determine the proper order of the various upright and laminate components. The identifying letter on the label is the easiest means of identification. In addition to the identifying letter, every upright and laminate is also identified by gauge and width. If for some reason the label is missing from a part, the following table contains information that will aid in the identification of the various parts.

Tip

In all cases laminates nest inside uprights. The uprights are placed against the bin wall sheets and the laminates are away from the wall sheets.

It is important to get the first uprights started correctly. The top hole in the top upright bolts into the top horizontal wall sheet seam (see Figure 38).

Tip

For proper upright orientation align the bottom of the first upright with the bottom edge of a wall sheet.

Figure 38. Upright Orientation Detail

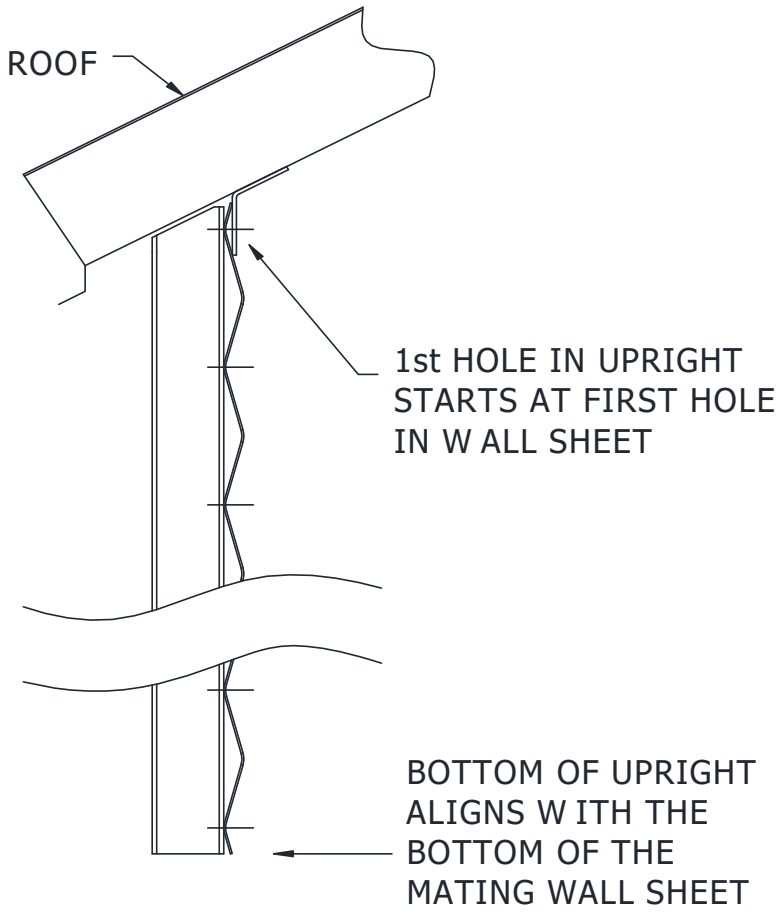


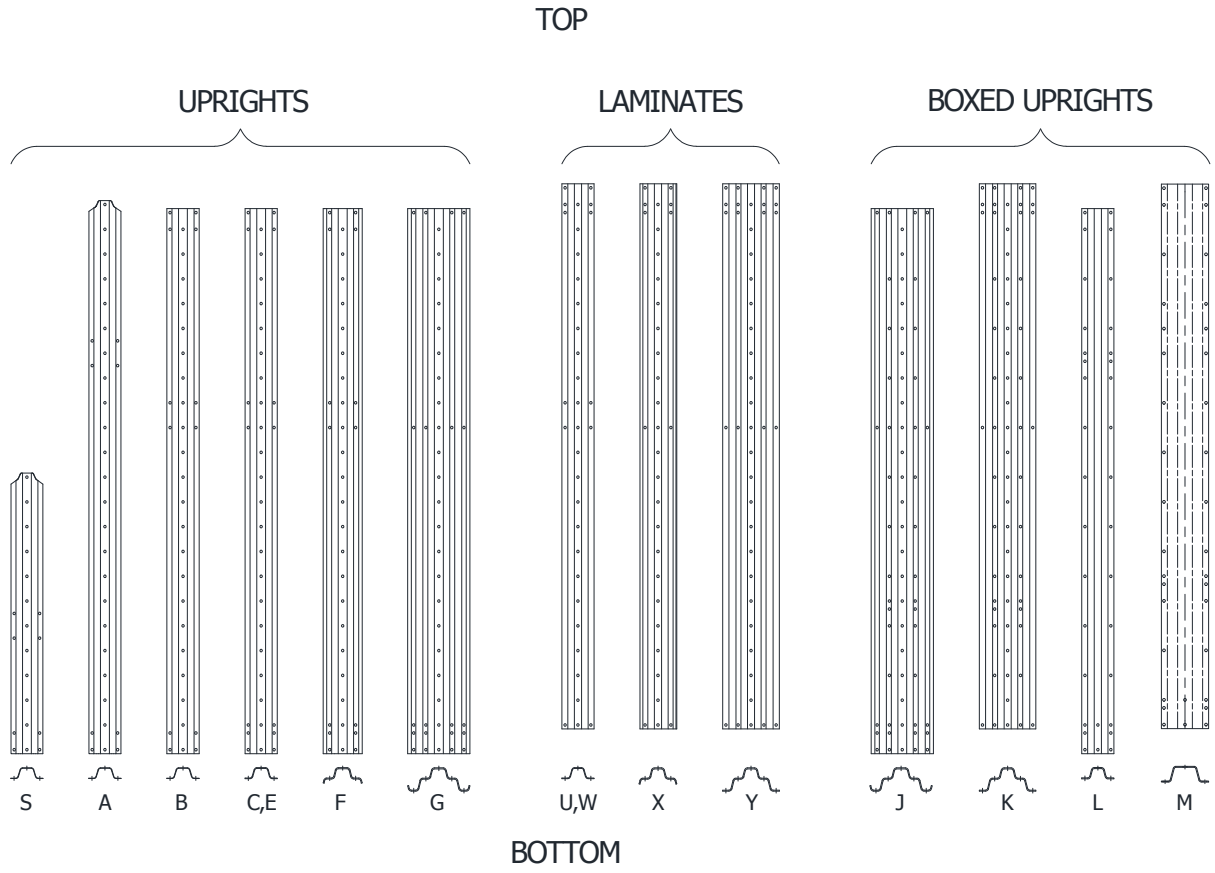
Table 15. Upright/Laminate Identification Table

	Identifying Letter	Part Number	Description	Gauge	Label Colour	Width of Section (in)
Uprights	S	232700S	Upright S .076" Short	14	Light green	5.5"
	A	232701A	Upright A .076" x 5.5"	14	Yellow	5.5"
	B	232702B	Upright B .076" x 5.5"	14	Light green	5.5"
	C	232703C	Upright C .116" x 5.5"	12	Blue	5.5"
	E	232705E	Upright E .168" x 5.5"	8	Brown	5.5"
	F	232706F	Upright F .168" x 6.5"	8	Silver	6.5"
	G	232707G	Upright G .168" x 10"	8	Gold	10"
Laminates	U	232713U	Laminate U .116" x 5.5"	12	Blue striped	5.5"
	W	232715W	Laminate W .168" x 5.5"	8	Brown striped	5.5"
	X	232716X	Laminate X .168" x 6.5"	8	Silver Striped	6.5"
	Y	232717Y	Laminate Y .168" x 10"	8	Gold striped	10"
Boxed	J	232709J	Upright Boxed J .168" x 10"	8	Red	10"
	K	232710K	Laminate Boxed K .168" x 10"	8	Red Striped	10"
	L	232711L	Laminate Boxed L .168" x 5.5"	8	Red Striped	5.5"

Note

Not all sections are used on all bins.

Figure 39. Upright and Laminate Components



Catwalk Support Uprights

The upright/laminate requirements under catwalk support locations are likely different from the normal upright/laminate order. Consult your AGI representative for specifications.

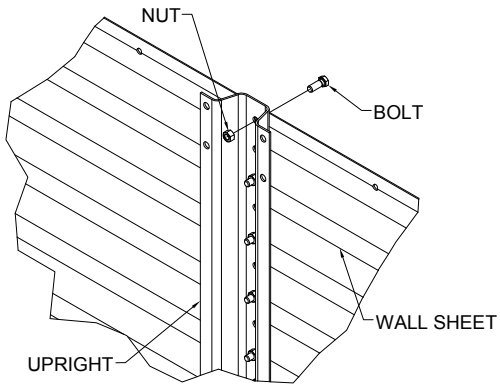
Bolt/Nut Orientation

To allow for a good seal install the bolts from the inside of the bin as shown for externally stiffened bins.

Upright/Splice Pre-Assemblies

At the top of a bin, laminates are not utilized and a splice is required to make the connection between mating uprights. The splice nests inside the upright similar to a laminate. When pre-assembling uprights to splices, insure that the splice goes on the top end of the upright, such that the label on the bottom of the upright remains visible. Keeping the label visible will help prevent subsequent errors. This practice will also prevent ground interference when adjusting jack locations.

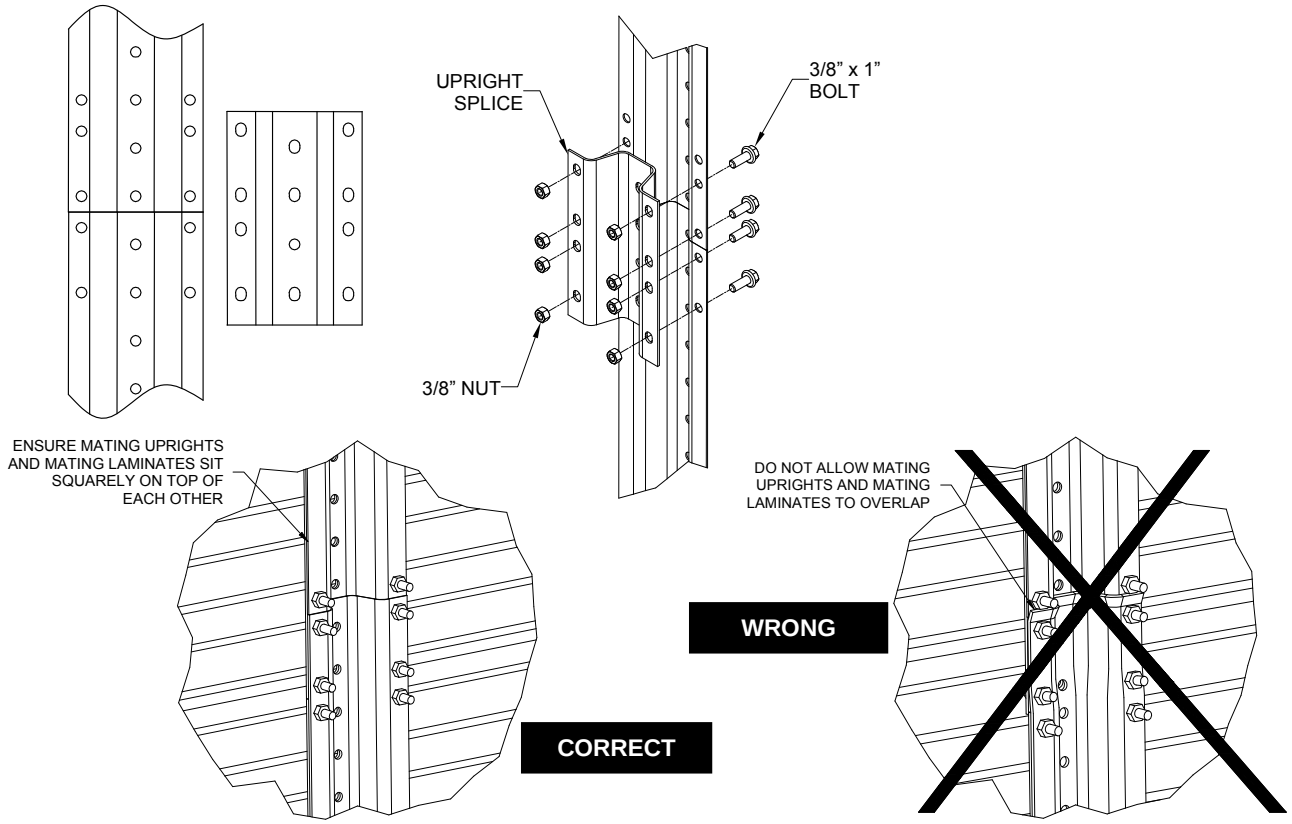
Figure 40. Upright / Wall Sheet Bolt and Nut Orientation



Tip

It may be advantageous to conduct pre-assemblies during the installation process. This can be a real time saver.

Figure 41. Pre-Assembling Uprights/Splices



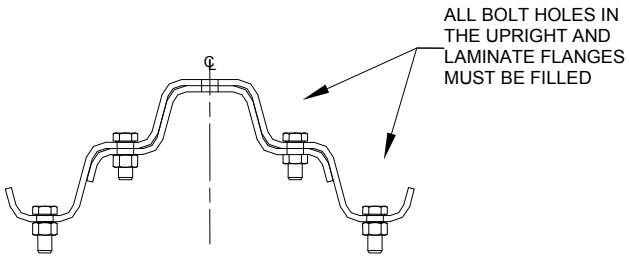
Upright and Laminate Assembly

Uprights and laminates are designed to transfer vertical loads through an end to end, butt connection. Ensure that mating uprights sit squarely on top of each other and do not overlap. Ensure that mating laminates sit squarely on top of each other and do not overlap. Secure the joints with the nuts and bolts provided. Failure to do so can result in structural failure.

Upright/Laminate Pre-assemblies

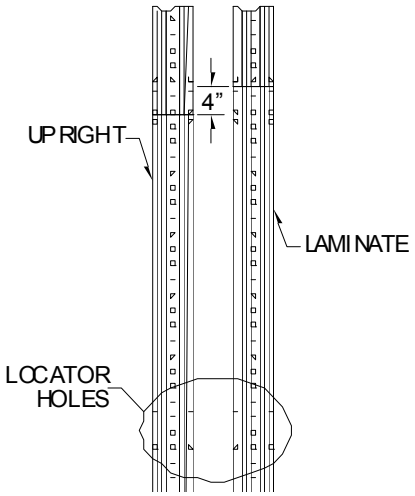
Laminates nest inside of uprights and are offset 4" above the uprights.

Figure 42. Nesting Laminates and Uprights



For proper orientation, ensure that the labels on the upright and laminate are both towards the bottom and that the locator holes in the middle portion of the upright and laminate line up. Bolts can be placed in these locator holes to create a pre-assembly. All locator holes, located in the middle of the upright and laminate flanges, need to be filled with bolts. These include holes in flanges that may only have one thickness of material.

Figure 43. Upright/Laminate Orientation



When properly assembled, both the upright label and the laminate label will remain visible during the pre-assembly phase. Once assembled on the bin the upright label will be covered.

In the assembly layouts, the combination of an upright and a laminate is called an assembly. For example, the combination of a “C” upright and a “U” laminate would be called a “CU Assembly”. Both the “C” on the upright label and the “U” on the laminate label, would remain visible, and would therefore remain distinguishable from other pre-assemblies.

Tip

When creating pre-assemblies, ensure that the labels on both the upright and the laminate are on the same end, and that the locator holes align with each other in the middle of the parts. Once pre-assembled, both labels should remain visible.

Note

Once completely assembled onto the bin, all visible holes in the upright and laminate flanges must be filled. All mating wall sheet/upright holes must be filled.

5.19.1 Base Assembly 233501 (Laminate Sections)

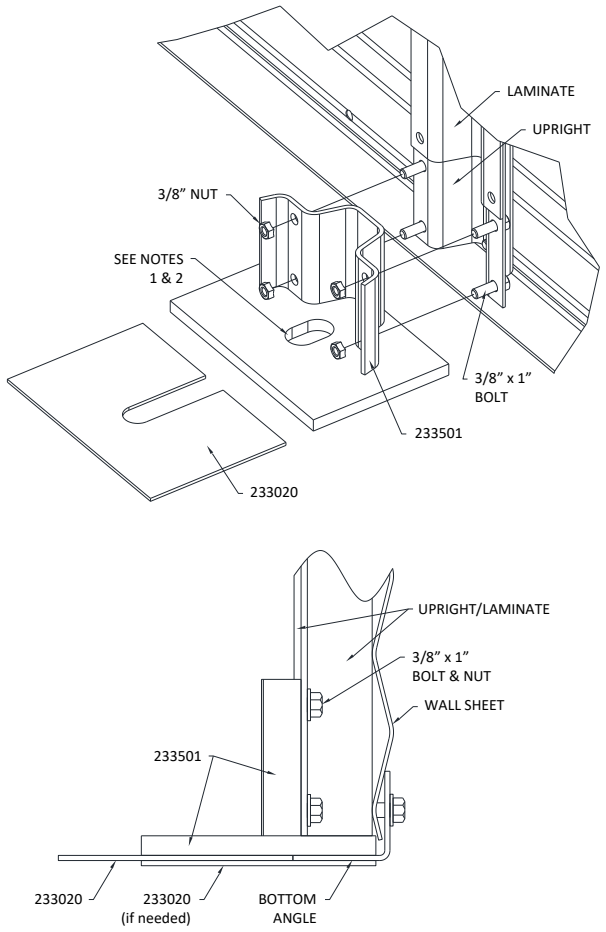
233501 — Base Assembly for Uprights with Laminate Sections

At the bottom of an assembled bin that has laminates, there will be a 4" gap between the bottom laminate and the base plate. It is imperative that this area is filled with the 4" laminate section that protrudes from the base assembly. Use the combination of base assemblies and shims to secure the bin to the foundation, as shown below.

Tip

Depending on the assembly procedure, it may be convenient to bolt on the base assemblies when creating the upright/laminate pre-assemblies.

Figure 44. Base Assembly 233501 for Uprights with Laminate Sections



Important

1) When positioning anchor bolts, locate them as far forward (away from the bin) within the slot as possible.
2) The anchor bolts at the upright locations should be chosen so that they can handle the loads imposed on them and that the head, either alone or with large diameter heavy washers, is large enough to sufficiently cover the 1.20" x 1.90" anchoring slot provided in the base plate. The base plate should not be able to pull up over the nut.

5.19.2 Base Assembly 233012 (Laminate Sections)

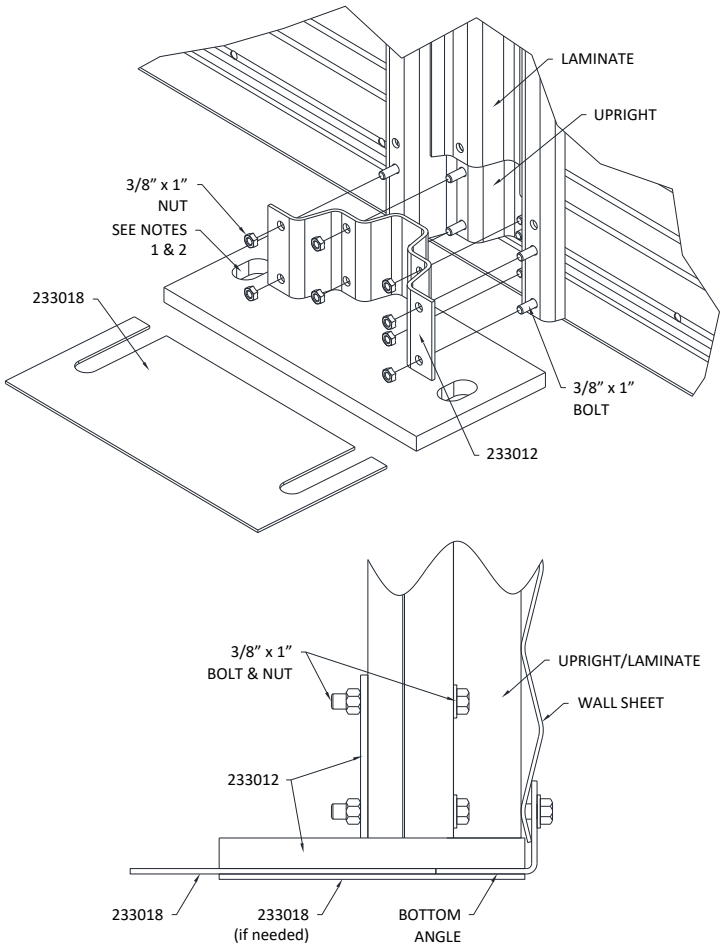
233012 – Base Assembly for Uprights (G or larger) with Laminate Sections

At the bottom of an assembled bin that has laminates, there will be a 4” gap between the bottom laminate and the base plate. It is imperative that this area is filled with the 4” laminate section that protrudes from the base assembly. Use the combination of base assemblies and shims to secure the bin to the foundation, as shown below.

Tip

Depending on the assembly procedure, it may be convenient to bolt on the base assemblies when creating the upright/laminate pre-assemblies.

Figure 45. Base Assembly 233012 for uprights with laminate sections



Important

1) When positioning anchor bolts, locate them as far forward (away from the bin) as possible within the slots.

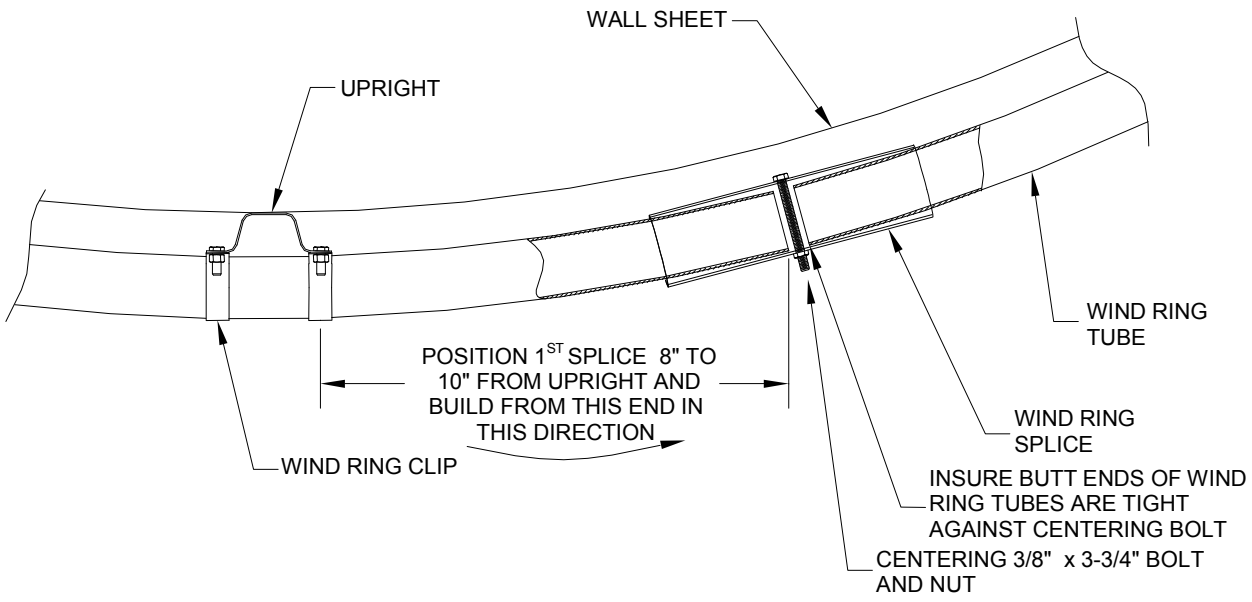
2) The anchor bolts at the upright locations should be chosen so that they can handle the loads imposed on them and that the head, either alone or with large diameter heavy washers, is large enough to sufficiently cover the 1.20” x 1.90” anchoring slots provided in the base plate. The base plate should not be able to pull up over the nuts.

5.20. Wind Ring Assembly

Wind rings fulfill their function when the bin is empty or partially filled. In high winds, the wind rings provide extra stiffness and help keep the bin round. Not all bins require wind rings. Bin diameter and height determine the location and the quantity of wind rings required.

Wind ring locations are identified by an O placed beside the relevant uprights within the wall sheet and upright layouts for the bin in question. At these locations wind ring tubes are secured to the upright flanges with a series of clips that bolt into the upright locator holes that are located in the flanges of the 5.5" wide upright and upright/laminate combinations. Adjacent tubes are aligned and secured to each other with wind ring splices. A 3/8" x 3-3/4" bolt through the splice keeps it centered on the connection.

Figure 46. Wind Ring Assembly

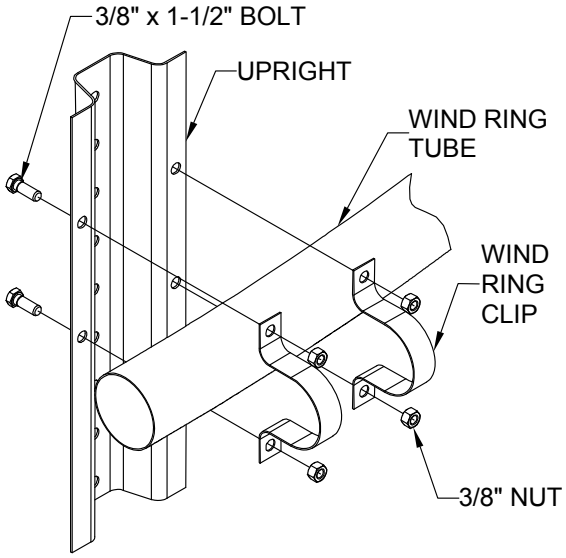


Externally Stiffened Bins

Once the uprights have been secured to the bin walls, position the first wind ring tube and secure it to the upright using the wind ring clips provided. Two clips are required per upright, one on each flange. Position the wind ring such that a wind ring splice (with bolt inserted) can be slipped onto the end of the tube without interfering with the upright or the wind ring clips. The splice should be orientated such that the bolt is horizontal.

Insert the end of the next wind ring tube into the open end of the wind ring splice. Insure that the ends of both tubes are tight against the centering bolt. Secure the wind ring tube to the uprights with the wind ring clips. Continue around the bin.

Figure 47. Wind Ring Mounting Detail (externally stiffened bins)



All wind ring splice connections should be made in the space between uprights, and should not encroach into the area where the wind ring clips are securing the wind ring tube to the uprights. To avoid interference with uprights and the need to make multiple cuts, position an end of the first tube relatively close to an upright, such that the space between the end of the tube and the next upright is maximized, and build from that end. Insure that both ends of the tube are far enough away from the closest uprights to avoid interference with the splice. When progressing around the bin, this space between the end of the tube and the next uprights may shrink with each additional tube that is installed. On large diameter bins, if this space shrinks to the point where the wind ring splice interferes with the upright, then the tube will need to be cut. Make the cut such that the space that is created between the end of the tube and the next upright is similar to the identical space on the first tube that was installed. In this manner, there will not be a shortage of tube.

Note

Assembly Tip: When putting the first wind ring tube in place, locate one end close to an upright with a 8" to 10" overhang, and continue building from that end. This will reduce the need for multiple cuts.

The final wind ring tube in a circle will need to be cut to length. Secure one end of the last tube in the previously installed wind ring splice as described above. Hold the tube in place and mark the cut-line relative to the previously installed tube at the other end. Insure that allowance is made for the 3/8" diameter bolt. Once the tube has been cut, install one end of the tube as described above. On the other end slide the wind ring splice completely onto the free end. Position this end relative to the previously installed tube, and slide the splice onto the second tube until it is centered. Insert the centering bolt. Install all wind ring clips. Tighten all bolts.

Note

Assembly Tip: When tightening wind ring clips, always tighten in sequence starting at the spliced end of the tube, which has already been secured, and work towards the free, and as yet unspliced, end.

5.21. Walk-In Door Installation

Install the door from the inside of the bin using 3/8" x 1-½" bolts. The door should overlap the top spacer sheet as shown below. Place caulking on the top spacer sheet above and below the row of holes where it will meet with the door frame. The bottom spacer sheet overlaps the door from the inside as shown. Place caulking above and below the row of holes where it will meet the door frame. Both spacer sheets must be installed below the door if auger chute and full floor aeration are used. Locate door tie-back to secure door in open position.

Any of the chain links can be used to bolt through to the bin at an existing or field drilled wall sheet or stiffening hole. Chain links can be cut if shorter door tie back is needed. The door tie back uses a hook to attach to the door handle's lockable ring.

Figure 48. Door Installation Detail

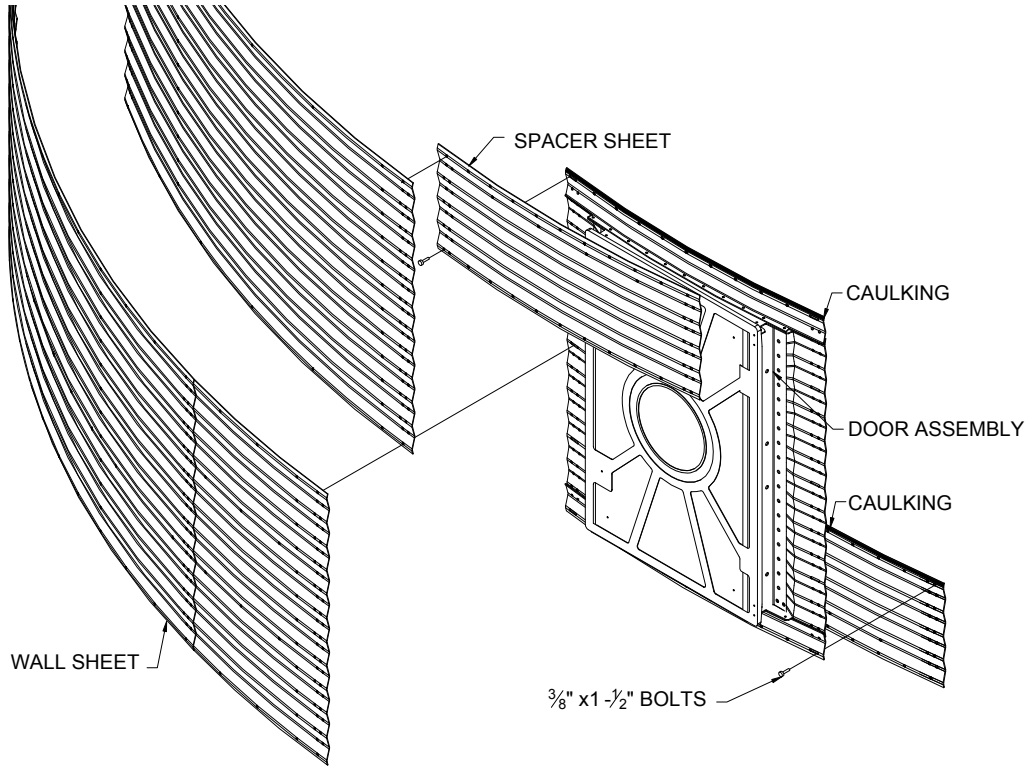
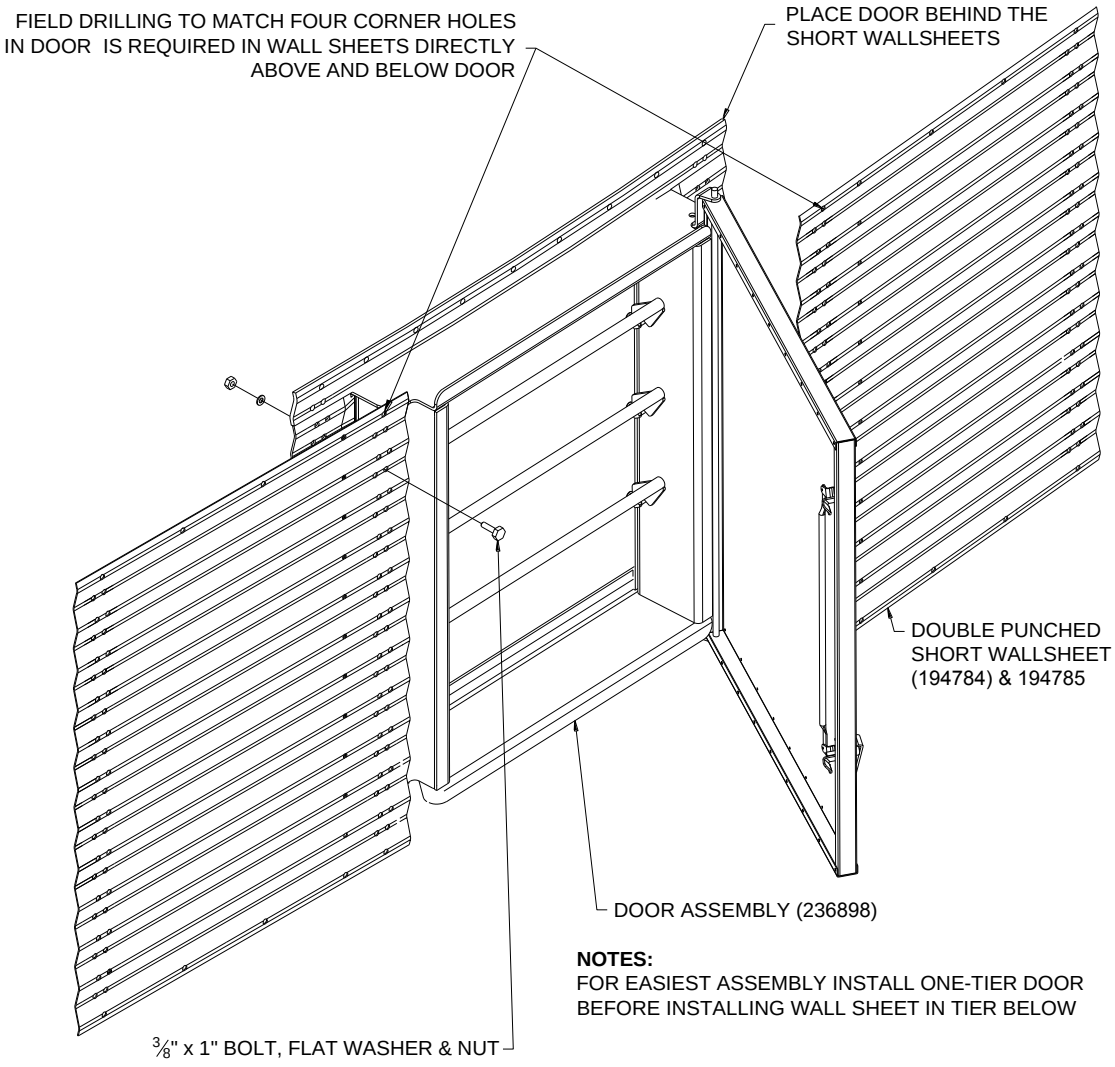


Table 16. Door Types

Standard c/w Two Door Boards – 236893							
2405	2406	2407	2408	2409	2410	2411	2412
2705	2706	2707	2708	2709	2710	2711	2712
3005	3006	3007	3008	3009	3010	3011	3012
3305	3306	3307	3308	3309	3310	3311	3312
3605	3606	3607	3608	3609	3610	3611	3612
4205	4206	4207	4208	4209	4210	4211	4212
4505	4506	4507	4508	4509	4510		
4805	4806	4807	4808				
5105	5106	5107					
5405	5406						

5.22. One-Tier Light Duty Door Installation

Figure 49. One-Tier Light Duty Door Detail



Important

Inner door board must be closed and latches completely engaged before filling. Failure and collapse of the bin could result if bin is filled without properly closing inner door board.

5.23. Door Cover Sidewall Latch Installation

Install the door cover sidewall latch (P/N - 236783) on the swing side of the door cover. See Figure 50 below.

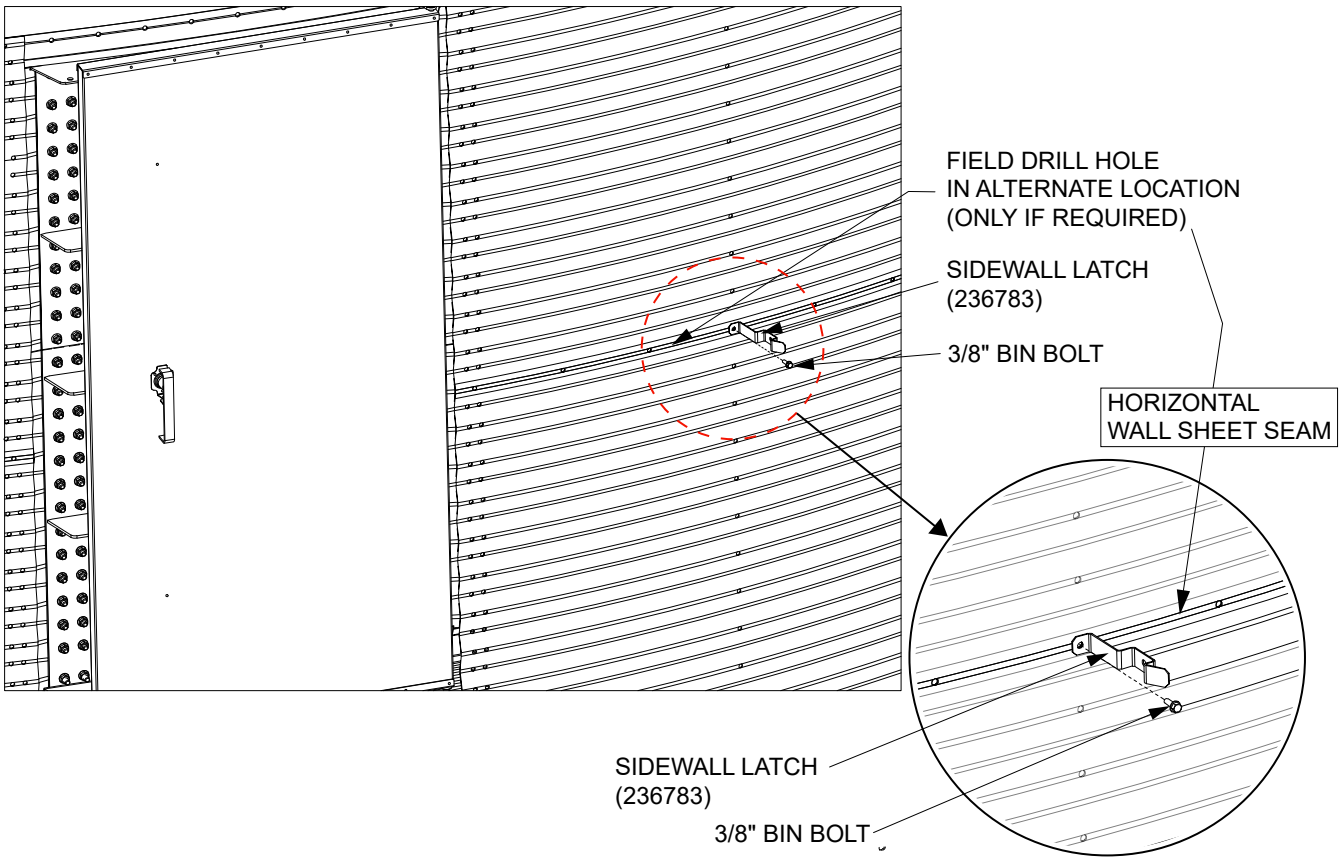
- When possible, re-use the bin bolt on the horizontal wall sheet seam that lines up with the door cover.
- If existing bin bolt cannot be used, drill a 7/16" hole on top of a wall sheet corrugation approximately halfway up the door cover and install latch with a 3/8" bin bolt and nut

In all other cases, . Use the door cover swing to help position the field drill hole.

Important

The door cover should snap shut and sit within the channel on the latch once installation is complete.

Figure 50. Install the Sidewall Latch



6. Specifications

6.1. Centurion-W Grain Bin Specifications

Table 17. Centurion-W Grain Bin Specifications

MODEL	BIN DIAMETER	CAPACITY			HEIGHT					
					EAVES			OVERALL		
		bu	m^3	Tonnes	ft	ft - in	m	ft	ft - in	m
2405	23'10" 7.28 m	7820	261	212	18.5	18'6"	5.64	25.2	25'2"	7.68
2406		9220	308	250	22.2	22'2"	6.76	28.9	28'10"	8.80
2407		10620	354	288	25.8	25'10"	7.87	32.5	32'6"	9.92
2408		12010	401	326	29.5	29'6"	8.99	36.2	36'2"	11.03
2409		13410	447	364	33.2	33'2"	10.11	39.9	39'10"	12.15
2410		14810	494	402	36.8	36'10"	11.23	43.4	43'5"	13.24
2411		16210	540	440	40.5	40'6"	12.35	47.1	47'1"	14.35
2412		17610	587	478	44.2	44'2"	13.46	50.8	50'9"	15.47
2705	26'10" 8.19 m	10020	335	272	18.5	18'6"	5.64	26.1	26'1"	7.94
2706		11790	394	320	22.2	22'2"	6.76	29.7	29'9"	9.06
2707		13560	453	368	25.8	25'10"	7.87	33.4	33'5"	10.18
2708		15330	511	416	29.5	29'6"	8.99	37.1	37'1"	11.30
2709		17100	570	464	33.2	33'2"	10.11	40.7	40'9"	12.41
2710		18870	629	512	36.8	36'10"	11.23	44.3	44'3"	13.50
2711		20640	688	560	40.5	40'6"	12.35	48.0	47'11"	14.62
2712		22410	747	608	44.2	44'2"	13.46	51.6	51'7"	15.73
3005	29'10" 9.10 m	12510	419	339	18.5	18'6"	5.64	26.5	26'6"	8.09
3006		14700	491	399	22.2	22'2"	6.76	30.2	30'2"	9.20
3007		16880	564	458	25.8	25'10"	7.87	33.9	33'10"	10.32
3008		19070	637	517	29.5	29'6"	8.99	37.5	37'6"	11.44
3009		21250	709	577	33.2	33'2"	10.11	41.2	41'2"	12.56
3010		23440	782	636	36.8	36'10"	11.23	44.7	44'8"	13.62
3011		25620	855	695	40.5	40'6"	12.35	48.4	48'4"	14.74
3012		27810	927	754	44.2	44'2"	13.46	52.0	52'0"	15.86
3305	32'10" 10.01 m	15320	513	416	18.5	18'6"	5.64	27.4	27'5"	8.35
3306		17970	601	487	22.2	22'2"	6.76	31.1	31'1"	9.47
3307		20610	689	559	25.8	25'10"	7.87	34.7	34'9"	10.58
3308		23250	777	631	29.5	29'6"	8.99	38.4	38'5"	11.70
3309		25900	865	702	33.2	33'2"	10.11	42.1	42'1"	12.82
3310		28540	952	774	36.8	36'10"	11.23	45.6	45'7"	13.89
3311		31190	1040	846	40.5	40'6"	12.35	49.2	49'3"	15.00
3312		33830	1128	918	44.2	44'2"	13.46	52.9	52'11"	16.12
3605	35'10" 10.91 m	18450	618	500	18.5	18'6"	5.64	28.3	28'3"	8.61
3606		21590	723	586	22.2	22'2"	6.76	31.9	31'11"	9.73
3607		24740	827	671	25.8	25'10"	7.87	35.6	35'7"	10.85
3608		27890	932	756	29.5	29'6"	8.99	39.3	39'3"	11.96
3609		31030	1036	842	33.2	33'2"	10.11	42.9	42'11"	13.08
3610		34180	1141	927	36.8	36'10"	11.23	46.4	46'5"	14.15
3611		37330	1246	1012	40.5	40'6"	12.35	50.1	50'1"	15.27
3612		40470	1350	1098	44.2	44'2"	13.46	53.7	53'9"	16.38

Table 17 Centurion-W Grain Bin Specifications (continued)

MODEL	BIN DIAMETER	CAPACITY			HEIGHT					
					EAVES			OVERALL		
		bu	m^3	Tonnes	ft	ft - in	m	ft	ft - in	m
4205	41'9" 12.73 m	25690	862	697	18.5	18'6"	5.64	30.0	30'0"	9.14
4206		29980	1004	813	22.2	22'2"	6.76	33.6	33'8"	10.25
4207		34260	1147	929	25.8	25'10"	7.87	37.3	37'4"	11.37
4208		38540	1289	1045	29.5	29'6"	8.99	41.0	41'0"	12.49
4209		42820	1431	1162	33.2	33'2"	10.11	44.6	44'8"	13.61
4210		47110	1574	1278	36.8	36'10"	11.23	48.1	48'2"	14.67
4211		51390	1716	1394	40.5	40'6"	12.35	51.8	51'10"	15.79
4212		55670	1858	1510	44.2	44'2"	13.46	55.5	55'6"	16.91
4505	44'9" 13.64 m	29830	1001	809	18.5	18'6"	5.64	30.8	30'10"	9.40
4506		34750	1165	942	22.2	22'2"	6.76	34.5	34'6"	10.52
4507		39660	1328	1076	25.8	25'10"	7.87	38.2	38'2"	11.64
4508		44580	1491	1209	29.5	29'6"	8.99	41.8	41'10"	12.75
4509		49500	1655	1343	33.2	33'2"	10.11	45.5	45'6"	13.87
4510		54410	1818	1476	36.8	36'10"	11.23	49.0	49'0"	14.94
4511		59330	1982	1609	40.5	40'6"	12.35	52.7	52'8"	16.05
4512		64250	2145	1743	44.2	44'2"	13.46	56.3	56'4"	17.17
4805	47'9" 14.55 m	34320	1153	931	18.5	18'6"	5.64	31.7	31'8"	9.66
4806		39910	1339	1083	22.2	22'2"	6.76	35.4	35'4"	10.78
4807		45510	1524	1234	25.8	25'10"	7.87	39.0	39'0"	11.90
4808		51100	1710	1386	29.5	29'6"	8.99	42.7	42'8"	13.02
4809		56700	1896	1538	33.2	33'2"	10.11	46.4	46'4"	14.13
4810		62290	2082	1690	36.8	36'10"	11.23	49.9	49'10"	15.20
4811		67880	2268	1841	40.5	40'6"	12.35	53.5	53'6"	16.32
4812		73480	2454	1993	44.2	44'2"	13.46	57.2	57'2"	17.43
5105	50'9" 15.46 m	39170	1316	1063	18.5	18'6"	5.64	32.2	32'2"	9.81
5106		45490	1526	1234	22.2	22'2"	6.76	35.9	35'10"	10.93
5107		51800	1736	1405	25.8	25'10"	7.87	39.5	39'6"	12.05
5108		58120	1946	1576	29.5	29'6"	8.99	43.2	43'2"	13.17
5109		64430	2156	1748	33.2	33'2"	10.11	46.9	46'10"	14.28
5110		70750	2366	1919	36.8	36'10"	11.23	50.5	50'6"	15.40
5405	53'9" 16.37 m	44400	1493	1204	18.5	18'6"	5.64	33.1	33'1"	10.08
5406		51480	1728	1396	22.2	22'2"	6.76	36.7	36'9"	11.19
5407		58560	1963	1588	25.8	25'10"	7.87	40.4	40'5"	12.31
5408		65640	2199	1780	29.5	29'6"	8.99	44.1	44'1"	13.43
5409		72720	2434	1972	33.2	33'2"	10.11	47.7	47'9"	14.55

1. Based on 1.244 cu. ft. per bushel and 6% compaction in cylinder

2. Based on 770 kg/m^3 and 6% compaction in cylinder (below eaves line)

Capacities shown include 28° roof cone.

NOTE: Upgraded stir or cir bins should be used with stirring or recirculating devices.

6.2. Foundation Loads — Grain Bin Series CEU

Important

- Grain Bin Anchoring: Adequate anchoring is critical to a successful bin installation. The anchoring of the bin is dependent on local wind loading conditions and forms part of the site specific design requirements. The anchor bolt details must form part of the site specific foundation design.
- For stiffened bins the primary anchor bolt locations are through the base plates at each and every upright location. The anchor bolt design, plus connection details to the base plate, must accommodate the total shear and uplift loads that can occur due to wind loading at the site in question.
- In addition AGI suggests the use of 1/2" x 3" embedment anchor bolts through the bottom ring angle to insure bin roundness, for sealing purposes, and for additional localized lateral stability.

Table 18. Foundation Loads — CEU Series 24' Bins (Imperial-Unfactored)

	Units	2405	2406	2407	2408	2409	2410	2411	2412
Vertical dead load	kips/upr	0.37	0.41	0.47	0.52	0.60	0.68	0.76	0.83
Vertical grain load	kips/upr	13.54	17.90	23.17	30.02	36.71	43.78	51.45	59.53
Vertical roof snow load *	kips/upr	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Vertical roof peak load	kips/upr	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Vertical catwalk load	kips/upr	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
Bin floor pressure	kips/ft^2	1.050	1.107	1.154	1.194	1.227	1.255	1.277	1.296
Number of anchor bolts for uprights	n/a	16	16	16	16	16	16	16	16
Number of anchor bolts for bottom angle ring	n/a	48	48	48	48	48	48	48	48
Note: Wind and Seismic values are worked up by location and available by request. * Based on snow load of 35.9 psf									

Table 19. Foundation Loads — CEU Series 27' Bins (Imperial-Unfactored)

	Units	2705	2706	2707	2708	2709	2710	2711	2712
Vertical dead load	kips/upr	0.36	0.40	0.46	0.52	0.60	0.68	0.76	0.86
Vertical grain load	kips/upr	14.32	18.84	24.04	30.90	37.96	45.45	53.34	61.74
Vertical roof snow load *	kips/upr	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22
Vertical roof peak load	kips/upr	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28
Vertical catwalk load	kips/upr	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
Bin floor pressure	kips/ft^2	1.140	1.203	1.258	1.304	1.343	1.376	1.405	1.429
Number of anchor bolts for uprights	n/a	18	18	18	18	18	18	18	18
Number of anchor bolts for bottom angle ring	n/a	54	54	54	54	54	54	54	54
Note: Wind and Seismic values are worked up by location and available by request. * Based on snow load of 38.9 psf									

Table 20. Foundation Loads — CEU Series 30' Bins (Imperial-Unfactored)

	Units	3005	3006	3007	3008	3009	3010	3011	3012
Vertical dead load	kips/upr	0.41	0.45	0.52	0.58	0.66	0.75	0.84	0.94
Vertical grain load	kips/upr	15.01	19.84	24.97	31.08	38.95	46.82	55.13	63.82
Vertical roof snow load *	kips/upr	1.26	1.26	1.26	1.26	1.26	1.26	1.26	1.26
Vertical roof peak load	kips/upr	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Vertical catwalk load	kips/upr	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
Bin floor pressure	kips/ft^2	1.226	1.296	1.356	1.408	1.453	1.492	1.526	1.555
Number of anchor bolts for uprights	n/a	20	20	20	20	20	20	20	20
Number of anchor bolts for bottom angle ring	n/a	60	60	60	60	60	60	60	60
Note: Wind and Seismic values are worked up by location and available by request. * Based on snow load of 35.9 psf									

Table 21. Foundation Loads — CEU Series 33' Bins (Imperial-Unfactored)

	Units	3305	3306	3307	3308	3309	3310	3311	3312
Vertical dead load	kips/upr	0.43	0.48	0.55	0.61	0.70	0.78	0.88	0.99
Vertical grain load	kips/upr	15.63	20.74	26.20	32.03	39.02	47.93	56.61	65.73
Vertical roof snow load *	kips/upr	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52
Vertical roof peak load	kips/upr	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23
Vertical catwalk load	kips/upr	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
Bin floor pressure	kips/ft^2	1.309	1.384	1.450	1.508	1.558	1.602	1.641	1.675
Number of anchor bolts for uprights	n/a	22	22	22	22	22	22	22	22
Number of anchor bolts for bottom angle ring	n/a	66	66	66	66	66	66	66	66
Note: Wind and Seismic values are worked up by location and available by request. * Based on snow load of 39.6 psf									

Table 22. Foundation Loads — CEU Series 36' Bins (Imperial-Unfactored)

	Units	3605	3606	3607	3608	3609	3610	3611	3612
Vertical dead load	kips/upr	0.45	0.51	0.57	0.65	0.71	0.81	0.93	1.03
Vertical grain load	kips/upr	16.19	21.56	27.32	33.40	40.10	47.86	54.84	67.33
Vertical roof snow load *	kips/upr	1.44	1.44	1.44	1.44	1.44	1.44	1.44	1.44
Vertical roof peak load	kips/upr	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21
Vertical catwalk load	kips/upr	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
Bin floor pressure	kips/ft^2	1.389	1.470	1.541	1.604	1.659	1.708	1.752	1.790
Number of anchor bolts for uprights	n/a	24	24	24	24	24	24	24	24
Number of anchor bolts for bottom angle ring	n/a	72	72	72	72	72	72	72	72
Note: Wind and Seismic values are worked up by location and available by request. * Based on snow load of 34.3 psf									

Table 23. Foundation Loads — CEU Series 42' Bins (Imperial-Unfactored)

	Units	4205	4206	4207	4208	4209	4210	4211	4212
Vertical dead load	kips/upr	0.50	0.56	0.63	0.72	0.80	0.91	1.01	1.13
Vertical grain load	kips/upr	17.16	23.00	29.30	35.99	43.00	50.30	58.95	68.22
Vertical roof snow load *	kips/upr	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Vertical roof peak load	kips/upr	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
Vertical catwalk load	kips/upr	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
Bin floor pressure	kips/ft^2	1.545	1.635	1.715	1.786	1.851	1.909	1.961	2.008
Number of anchor bolts for uprights	n/a	28	28	28	28	28	28	28	28
Number of anchor bolts for bottom angle ring	n/a	84	84	84	84	84	84	84	84
Note: Wind and Seismic values are worked up by location and available by request. * Based on snow load of 30.6 psf									

Table 24. Foundation Loads — CEU Series 45' Bins (Imperial-Unfactored)

	Units	4505	4506	4507	4508	4509	4510	4511	4512
Vertical dead load	kips/upr	0.51	0.58	0.65	0.75	0.84	0.94	1.04	1.18
Vertical grain load	kips/upr	17.58	23.63	30.18	37.14	44.47	52.10	60.24	69.72
Vertical roof snow load *	kips/upr	1.51	1.51	1.51	1.51	1.51	1.51	1.51	1.51
Vertical roof peak load	kips/upr	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
Vertical catwalk load	kips/upr	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
Bin floor pressure	kips/ft^2	1.621	1.714	1.798	1.874	1.942	2.004	2.060	2.110
Number of anchor bolts for uprights	n/a	30	30	30	30	30	30	30	30
Number of anchor bolts for bottom angle ring	n/a	90	90	90	90	90	90	90	90

Note: Wind and Seismic values are worked up by location and available by request.
* Based on snow load of 28.7 psf

Table 25. Foundation Loads — CEU Series 48' Bins (Imperial-Unfactored)

	Units	4805	4806	4807	4808	4809	4810	4811	4812
Vertical dead load	kips/upr	0.55	0.62	0.70	0.80	0.90	1.02	1.11	1.24
Vertical grain load	kips/upr	17.97	24.21	30.99	38.22	45.84	53.79	62.03	70.92
Vertical roof snow load *	kips/upr	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65
Vertical roof peak load	kips/upr	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
Vertical catwalk load	kips/upr	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
Bin floor pressure	kips/ft^2	1.695	1.792	1.880	1.959	2.031	2.097	2.157	2.211
Number of anchor bolts for uprights	n/a	32	32	32	32	32	32	32	32
Number of anchor bolts for bottom angle ring	n/a	96	96	96	96	96	96	96	96

Note: Wind and Seismic values are worked up by location and available by request.
* Based on snow load of 29.6 psf

Table 26. Foundation Loads — CEU Series 51' Bins (Imperial-Unfactored)

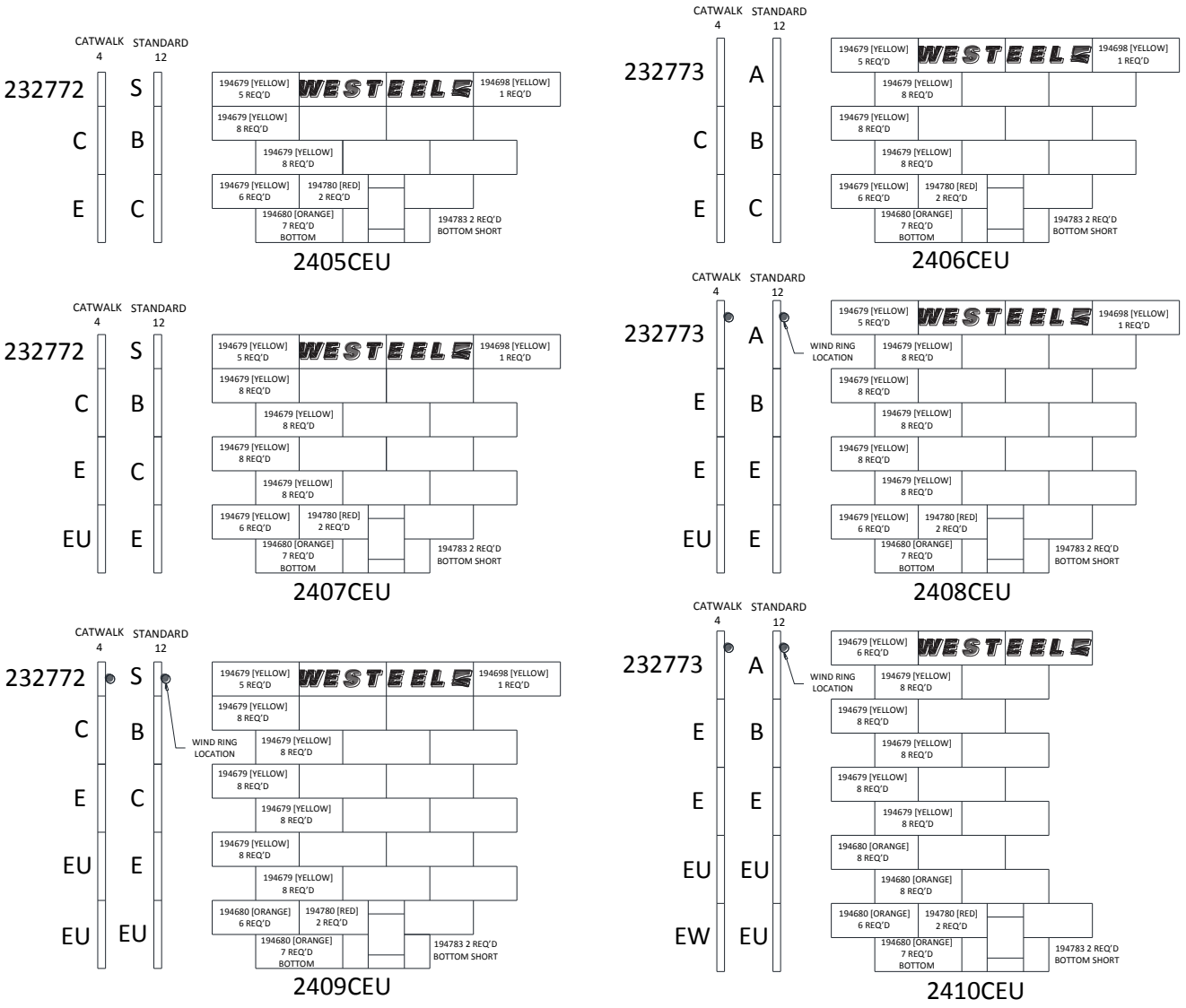
	Units	5105	5106	5107	5108	5109	5110	5111	5112
Vertical dead load	kips/upr	0.56	0.64	0.73	0.84	0.93	1.07	1.15	1.28
Vertical grain load	kips/upr	18.32	24.75	31.75	39.23	47.12	55.38	63.94	72.79
Vertical roof snow load *	kips/upr	1.49	1.49	1.49	1.49	1.49	1.49	1.49	1.49
Vertical roof peak load	kips/upr	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
Vertical catwalk load	kips/upr	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
Bin floor pressure	kips/ft^2	1.768	1.868	1.960	2.043	2.118	2.188	2.251	2.309
Number of anchor bolts for uprights	n/a	34	34	34	34	34	34	34	34
Number of anchor bolts for bottom angle ring	n/a	102	102	102	102	102	102	102	102
Note: Wind and Seismic values are worked up by location and available by request. * Based on snow load of 25.1 psf									

Table 27. Foundation Loads — CEU Series 54' Bins (Imperial-Unfactored)

	Units	5405	5406	5407	5408	5409	5410	5411	5412
Vertical dead load	kips/upr	0.60	0.69	0.77	0.90	0.99	1.13	1.23	1.40
Vertical grain load	kips/upr	18.65	25.25	32.45	40.17	48.33	56.87	65.75	74.94
Vertical roof snow load *	kips/upr	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52
Vertical roof peak load	kips/upr	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22
Vertical catwalk load	kips/upr	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
Bin floor pressure	kips/ft^2	1.841	1.944	2.038	2.124	2.204	2.276	2.343	2.404
Number of anchor bolts for uprights	n/a	36	36	36	36	36	36	36	36
Number of anchor bolts for bottom angle ring	n/a	108	108	108	108	108	108	108	108
Note: Wind and Seismic values are worked up by location and available by request. * Based on snow load of 24.2 psf									

6.3. Wall Sheet and Upright Layouts - CEU (with Westeel Stencil)

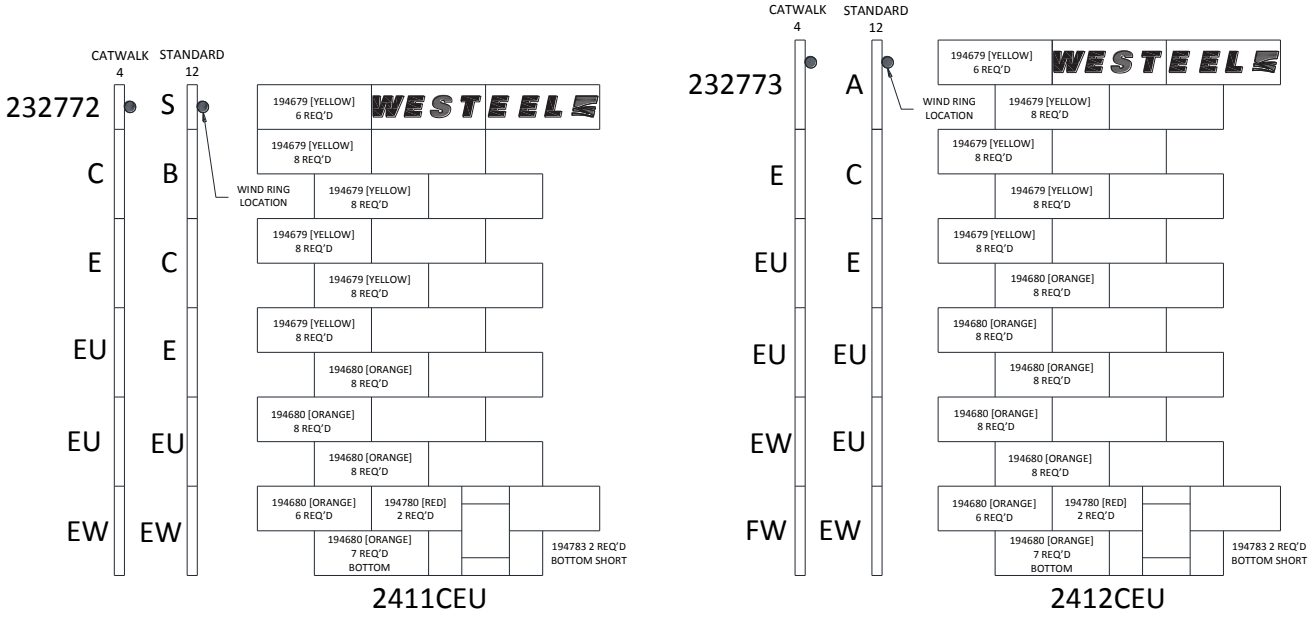
Figure 51. Model 2405CEU to 2412CEU



Notes:

1. **Colors** match part number label and indicate wall sheet thickness.
2. Stencil sheets are 194654 and 194657 [YELLOW].
3. Walk-in door 236893 (supplied with 2 door boards).
4. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
5. The catwalk uprights shown can take 10,000 lbs. of catwalk load per upright. Four catwalk uprights come standard with the bin.
6. ● — Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).

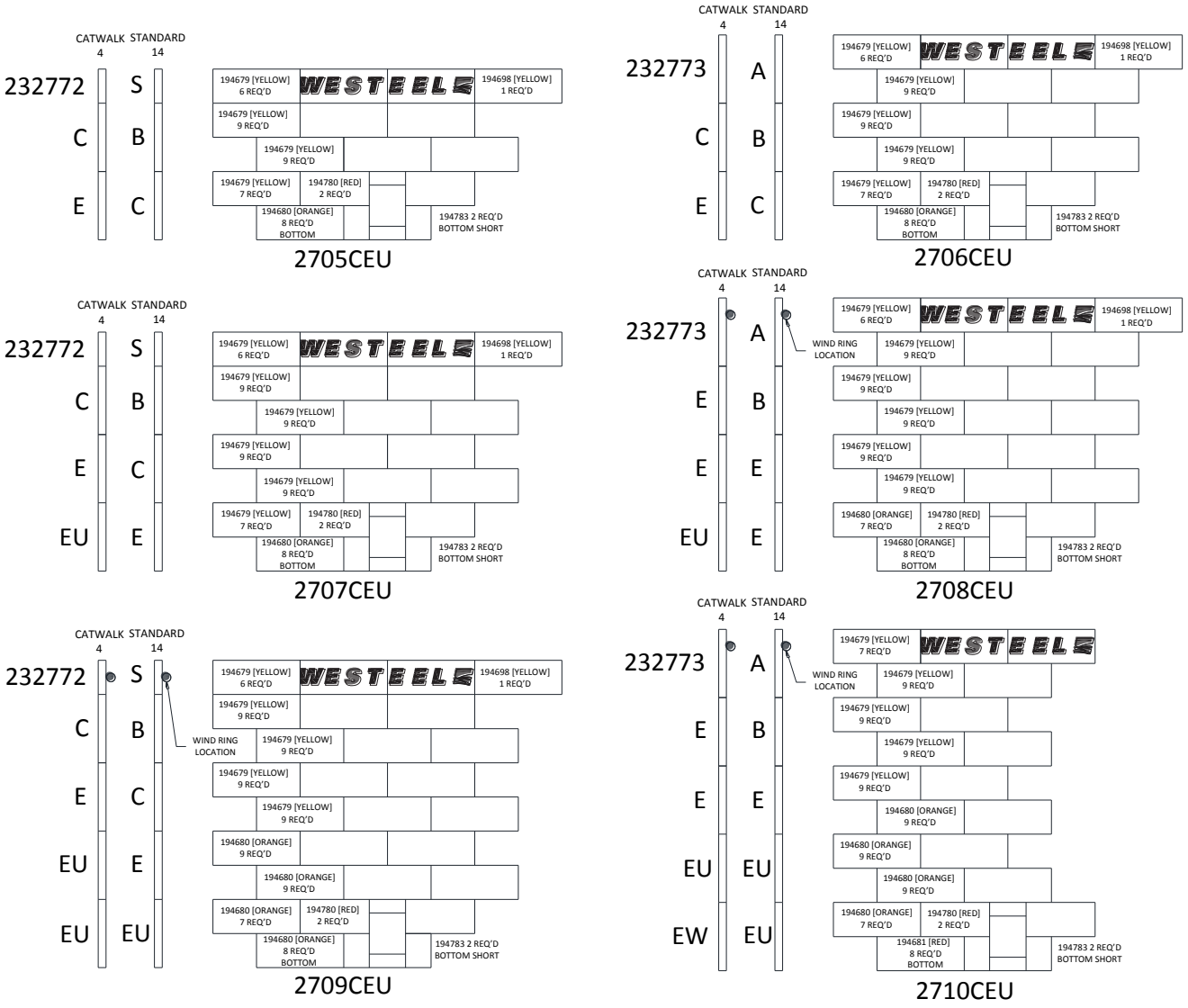
Figure 51 Model 2405CEU to 2412CEU (continued)



Notes:

1. **Colors** match part number label and indicate wall sheet thickness.
2. Stencil sheets are 194654 and 194657 [YELLOW].
3. Walk-in door 236893 (supplied with 2 door boards).
4. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
5. The catwalk uprights shown can take 10,000 lbs. of catwalk load per upright. Four catwalk uprights come standard with the bin.
6. ● — Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).

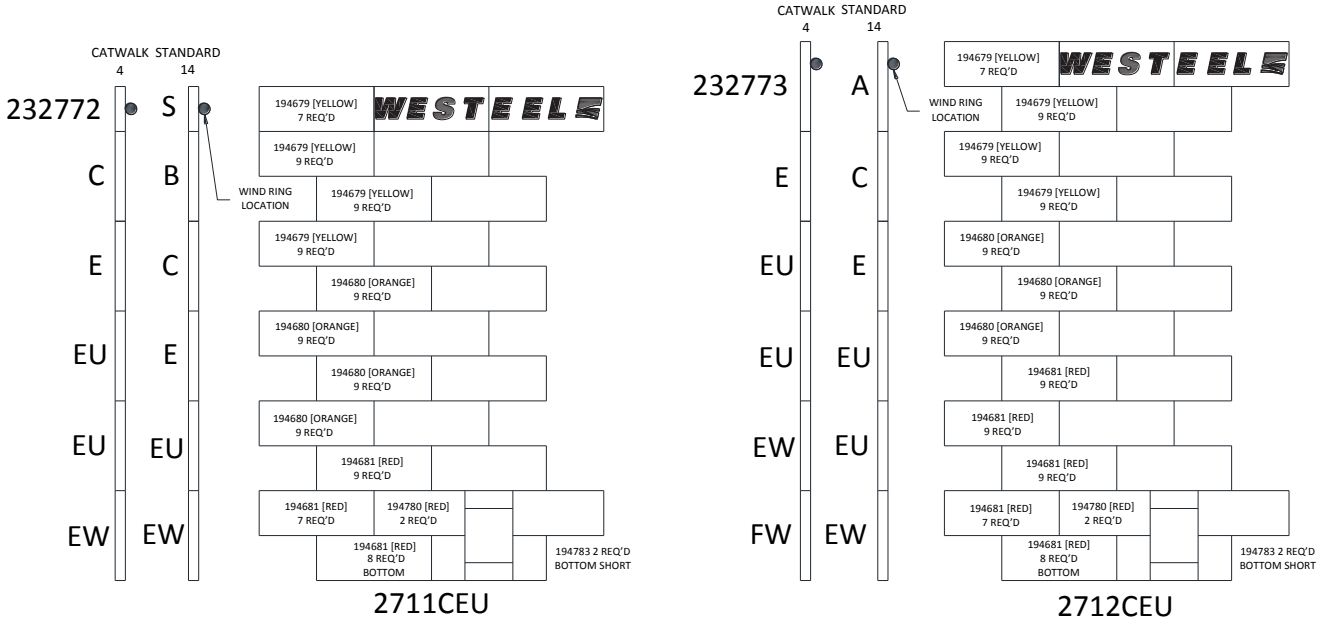
Figure 52. Model 2705CEU to 2712CEU



Notes:

1. **Colors** match part number label and indicate wall sheet thickness.
2. Stencil sheets are 194654 and 194657 [YELLOW].
3. Walk-in door 236893 (supplied with 2 door boards).
4. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
5. The catwalk uprights shown can take 10,000 lbs. of catwalk load per upright. Four catwalk uprights come standard with the bin.
6. ● — Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).

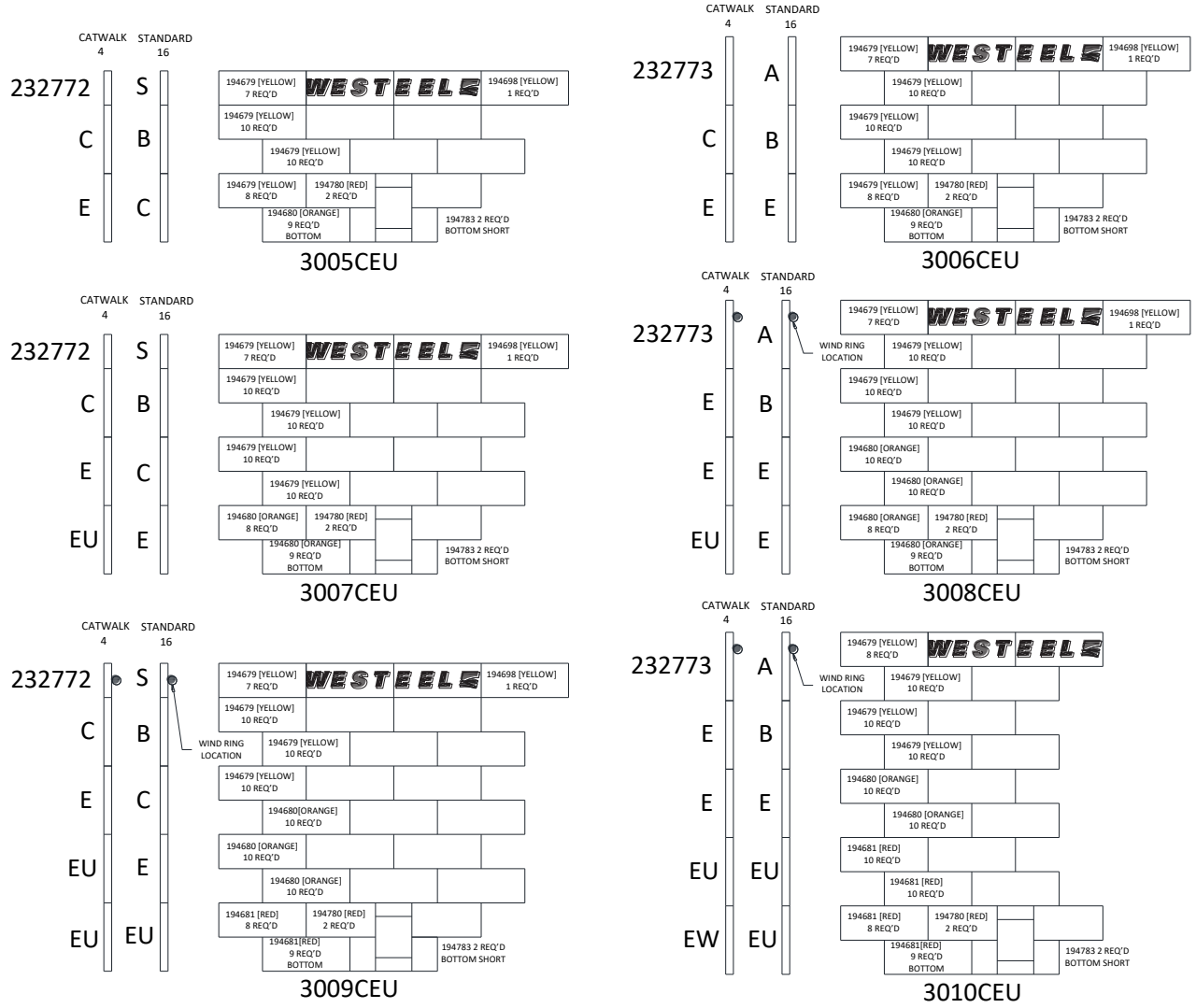
Figure 52 Model 2705CEU to 2712CEU (continued)



Notes:

1. **Colors** match part number label and indicate wall sheet thickness.
2. Stencil sheets are 194654 and 194657 [YELLOW].
3. Walk-in door 236893 (supplied with 2 door boards).
4. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
5. The catwalk uprights shown can take 10,000 lbs. of catwalk load per upright. Four catwalk uprights come standard with the bin.
6. ● — Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).

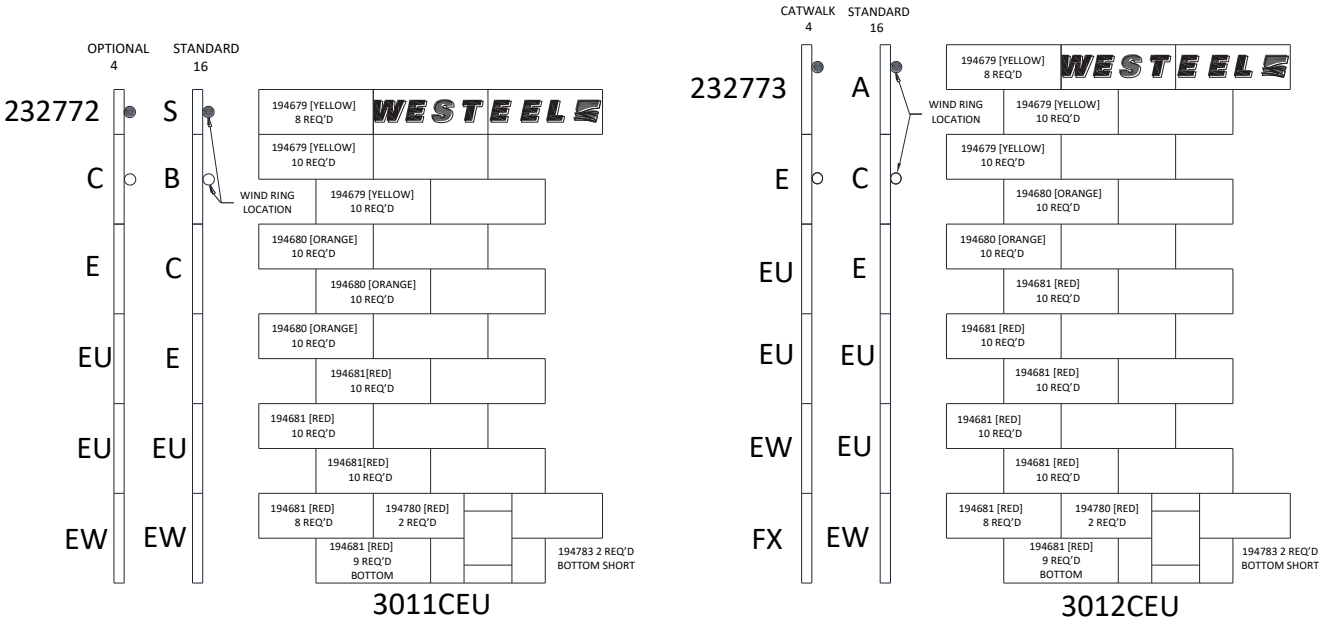
Figure 53. Model 3005CEU to 3012CEU



Notes:

1. **Colors** match part number label and indicate wall sheet thickness.
2. Stencil sheets are 194654 and 194657 [YELLOW].
3. Walk-in door 236893 (supplied with 2 door boards).
4. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
5. The catwalk uprights shown can take 10,000 lbs. of catwalk load per upright. Four catwalk uprights come standard with the bin.
6. ● — Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).

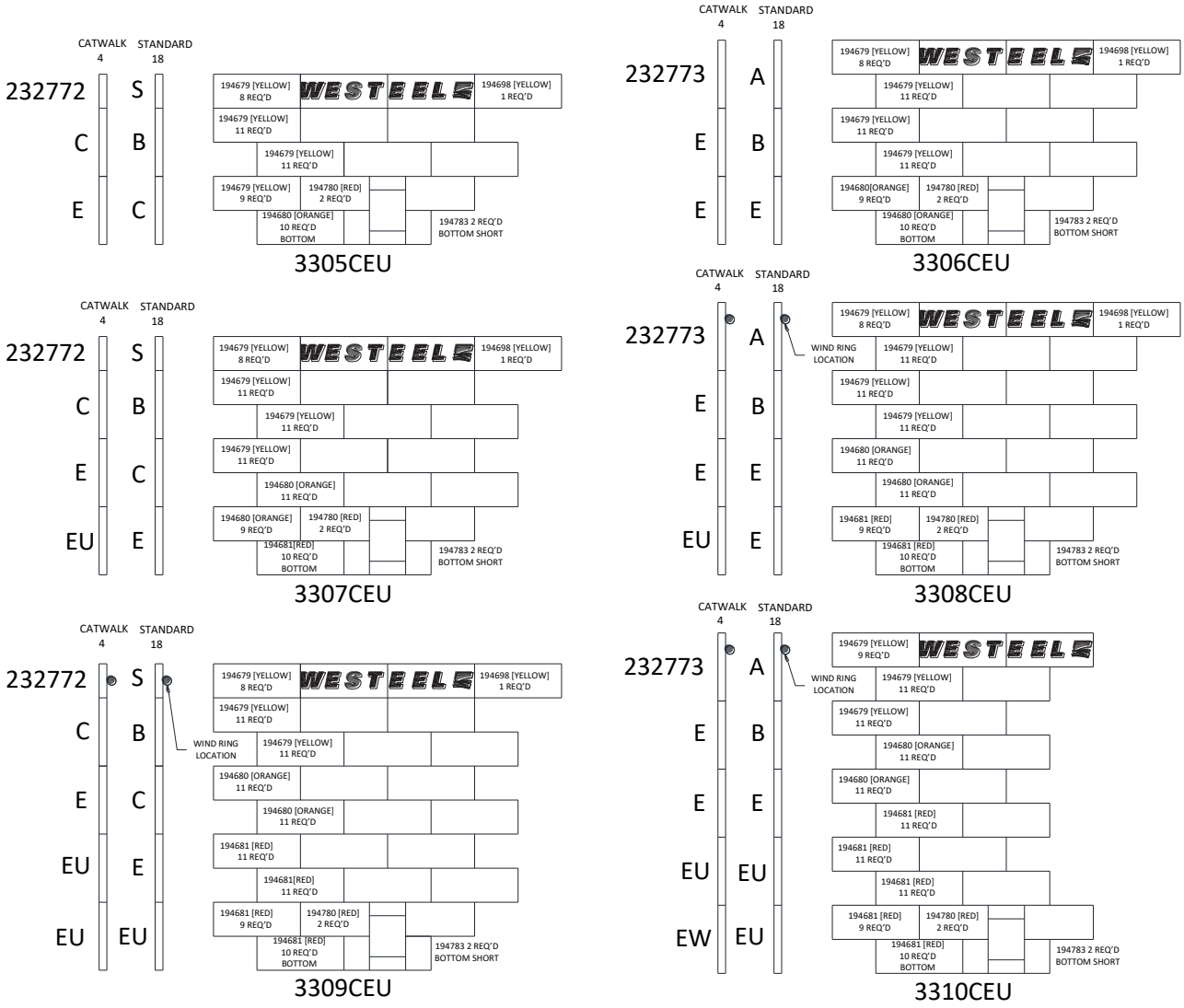
Figure 53 Model 3005CEU to 3012CEU (continued)



Notes:

1. **Colors** match part number label and indicate wall sheet thickness.
2. Stencil sheets are 194654 and 194657 [YELLOW].
3. Walk-in door 236893 (supplied with 2 door boards).
4. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
5. The catwalk uprights shown can take 10,000 lbs. of catwalk load per upright. Four catwalk uprights come standard with the bin.
6. ○ — Indicates standard wind ring placement.
   ● — Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).

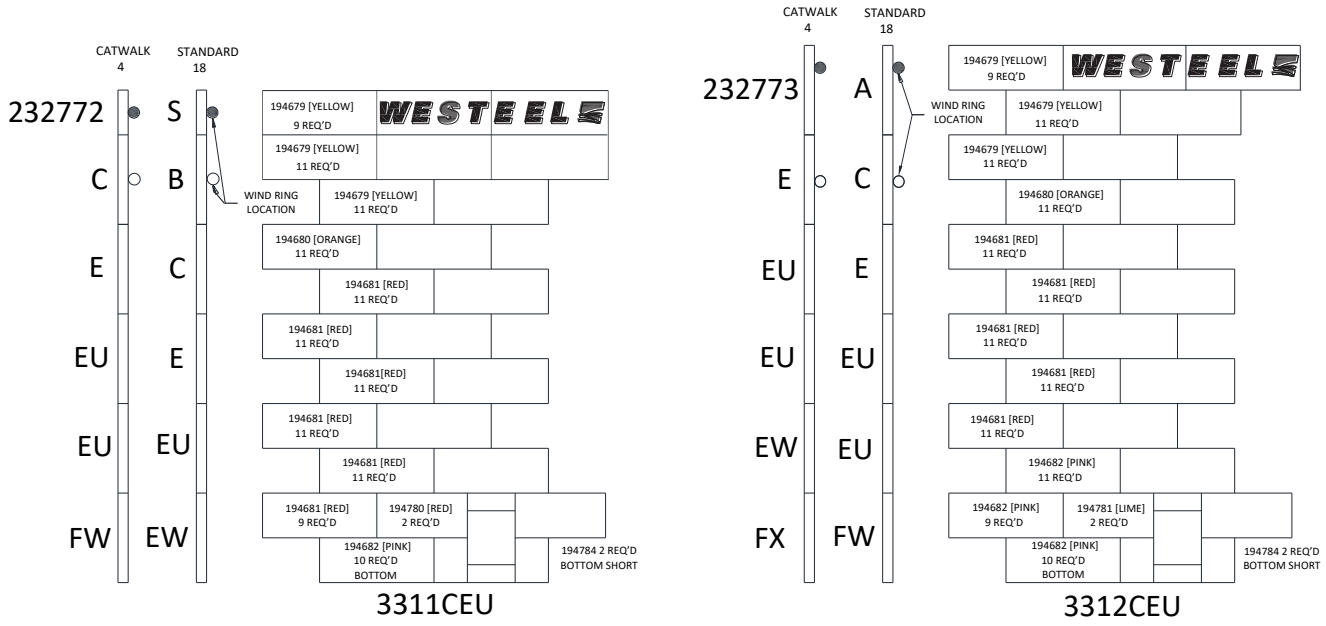
Figure 54. Model 3305CEU to 3312CEU



Notes:

1. **Colors** match part number label and indicate wall sheet thickness.
2. Stencil sheets are 194654 and 194657 [YELLOW].
3. Walk-in door 236893 (supplied with 2 door boards).
4. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
5. The catwalk uprights shown can take 10,000 lbs. of catwalk load per upright. Four catwalk uprights come standard with the bin.
6. ● — Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).

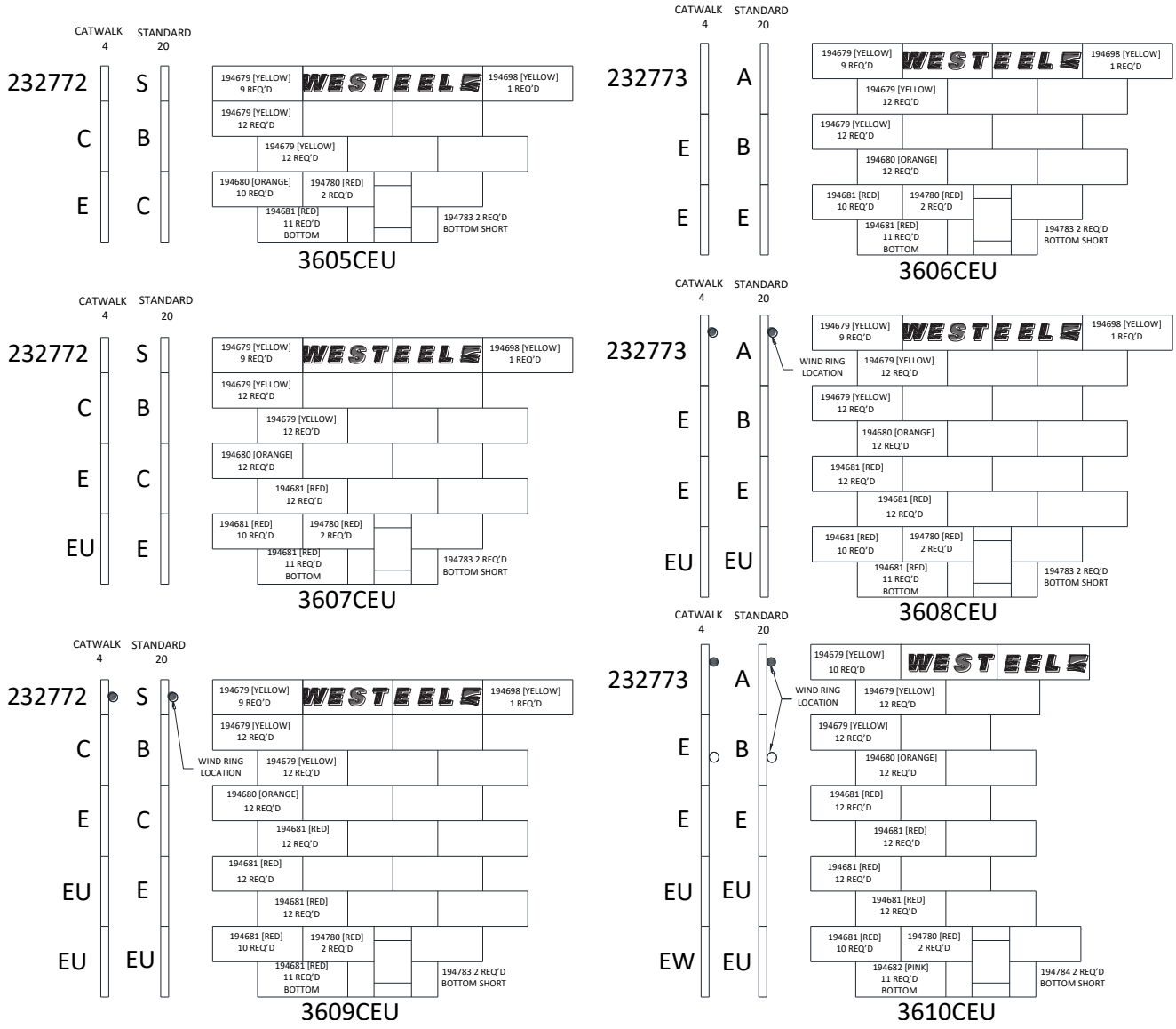
Figure 54 Model 3305CEU to 3312CEU (continued)



Notes:

1. **Colors** match part number label and indicate wall sheet thickness.
2. Stencil sheets are 194654 and 194657 [YELLOW].
3. Walk-in door 236893 (supplied with 2 door boards).
4. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
5. The catwalk uprights shown can take 10,000 lbs. of catwalk load per upright. Four catwalk uprights come standard with the bin.
6. ○ — Indicates standard wind ring placement.
   ● — Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).

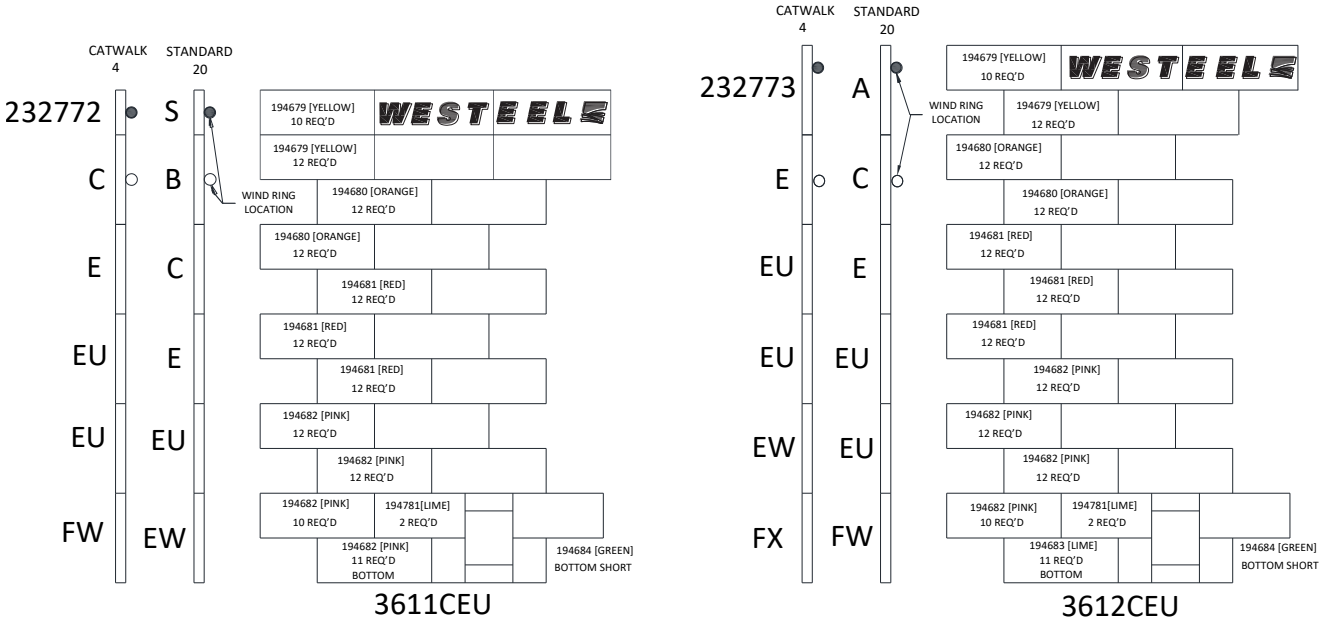
Figure 55. Model 3605CEU to 3612CEU



Notes:

1. **Colors** match part number label and indicate wall sheet thickness.
2. Stencil sheets are 194654 and 194657 [YELLOW].
3. Walk-in door 236893 (supplied with 2 door boards).
4. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
5. The catwalk uprights shown can take 10,000 lbs. of catwalk load per upright. Four catwalk uprights come standard with the bin.
6. ○ — Indicates standard wind ring placement.
   ● — Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).

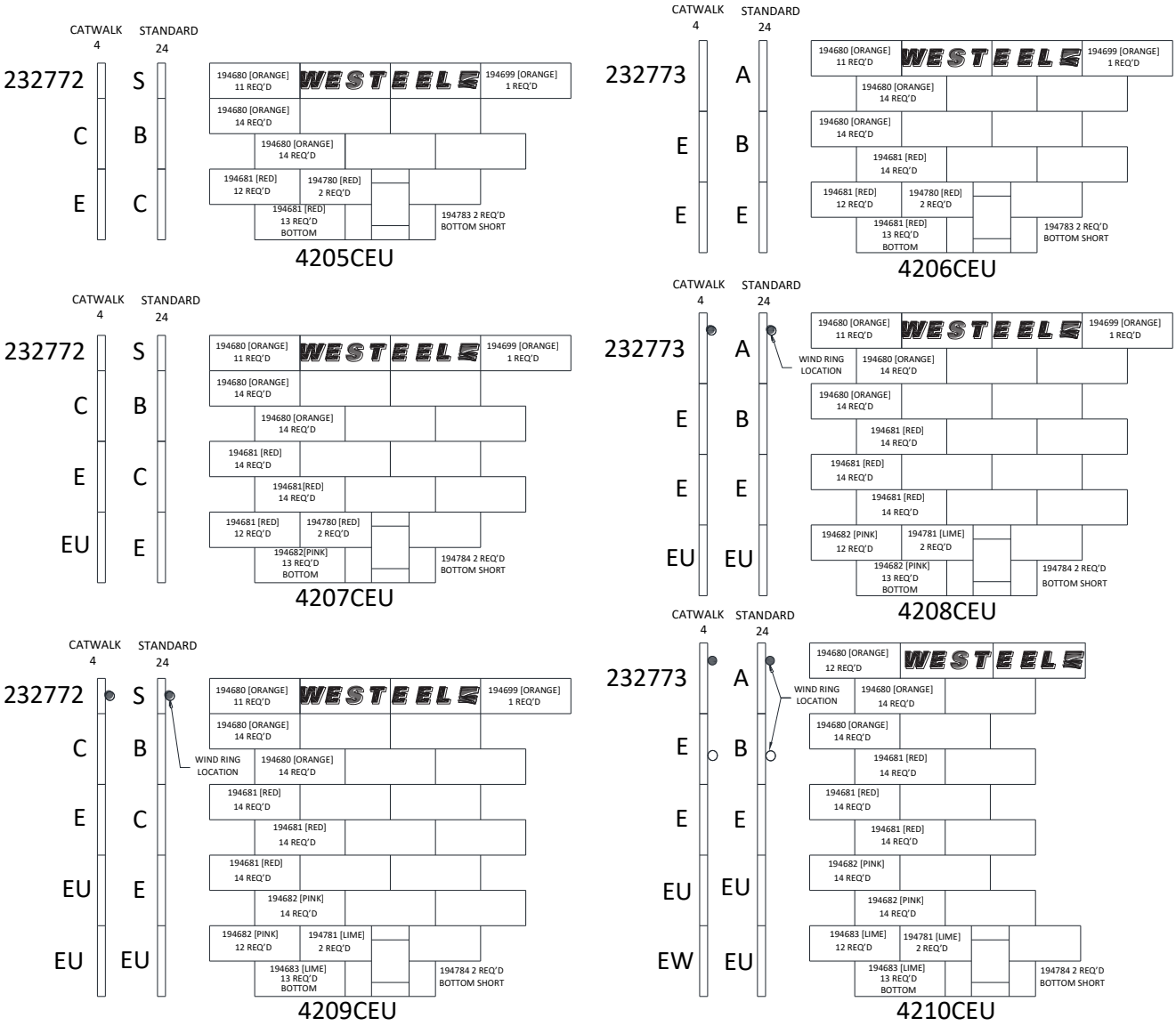
Figure 55 Model 3605CEU to 3612CEU (continued)



Notes:

1. **Colors** match part number label and indicate wall sheet thickness.
2. Stencil sheets are 194654 and 194657 [YELLOW].
3. Walk-in door 236893 (supplied with 2 door boards).
4. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
5. The catwalk uprights shown can take 10,000 lbs. of catwalk load per upright. Four catwalk uprights come standard with the bin.
6. ○ — Indicates standard wind ring placement.
   ● — Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).

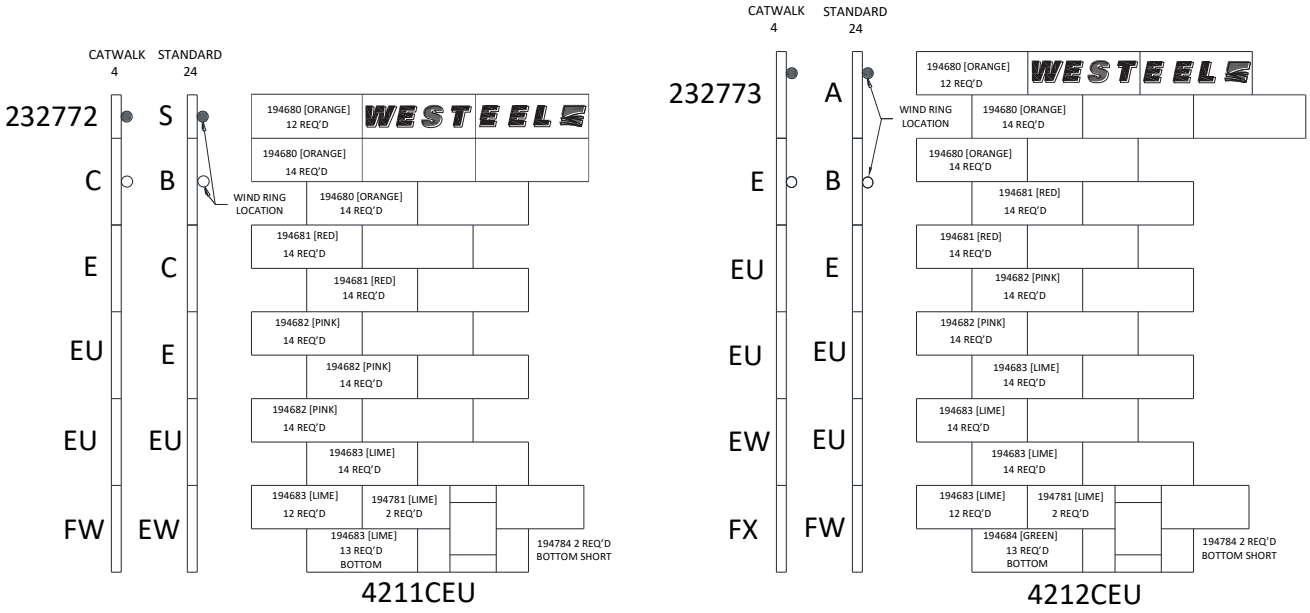
Figure 56. Model 4205CEU to 4212CEU



Notes:

1. **Colors** match part number label and indicate wall sheet thickness.
2. Stencil sheets are 194655 and 194658 [ORANGE].
3. Walk-in door 236893 (supplied with 2 door boards).
4. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
5. The catwalk uprights shown can take 10,000 lbs. of catwalk load per upright. Four catwalk uprights come standard with the bin.
6. ○ — Indicates standard wind ring placement.
   ● — Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).

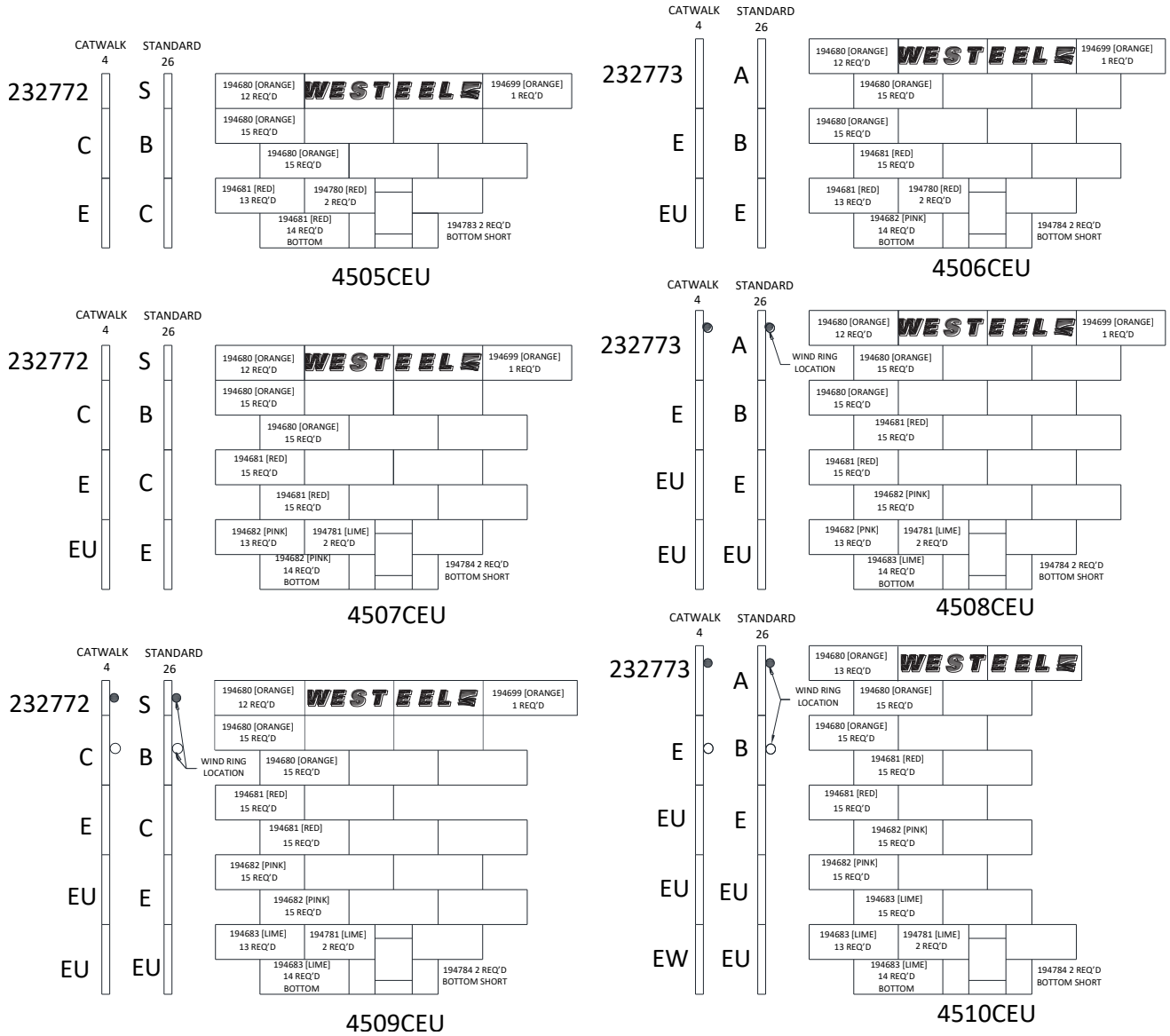
Figure 56 Model 4205CEU to 4212CEU (continued)



Notes:

1. **Colors** match part number label and indicate wall sheet thickness.
2. Stencil sheets are 194655 and 194658 [ORANGE].
3. Walk-in door 236893 (supplied with 2 door boards).
4. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
5. The catwalk uprights shown can take 10,000 lbs. of catwalk load per upright. Four catwalk uprights come standard with the bin.
6. ○ — Indicates standard wind ring placement.
   ● — Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).

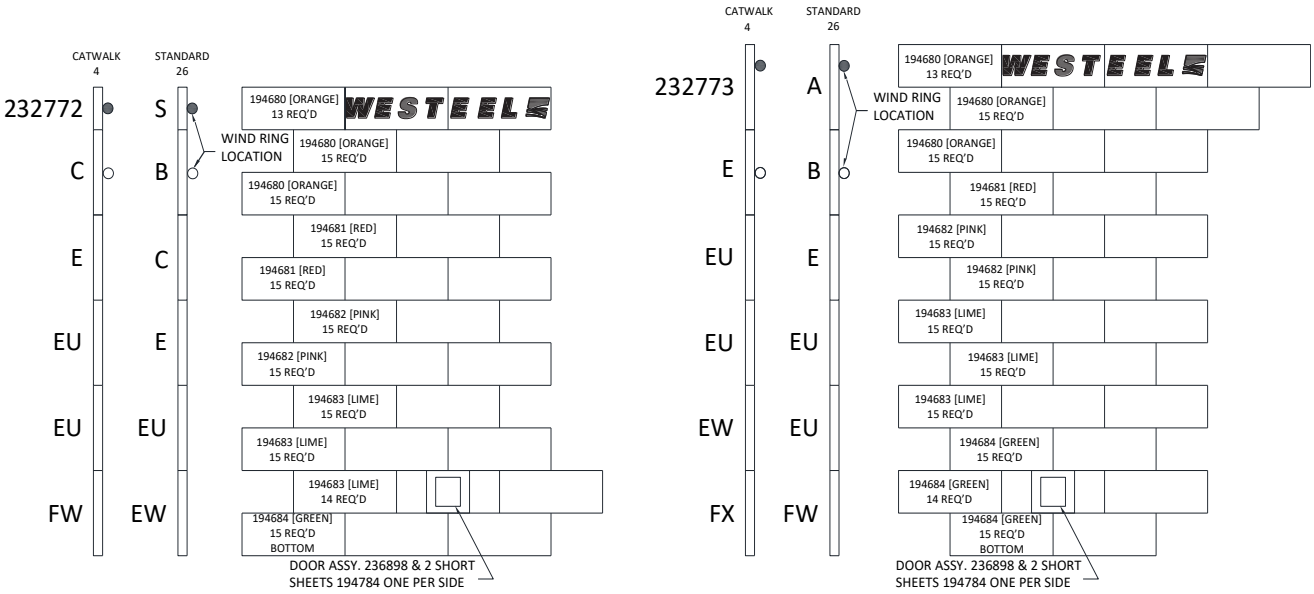
Figure 57. Model 4505CEU to 4512CEU



Notes:

1. **Colors** match part number label and indicate wall sheet thickness.
2. Stencil sheets are 194655 and 194658 [ORANGE].
3. Walk-in door 236893 (supplied with 2 door boards).
4. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
5. The catwalk uprights shown can take 10,000 lbs. of catwalk load per upright. Four catwalk uprights come standard with the bin.
6. ○ — Indicates standard wind ring placement.
   ● — Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).

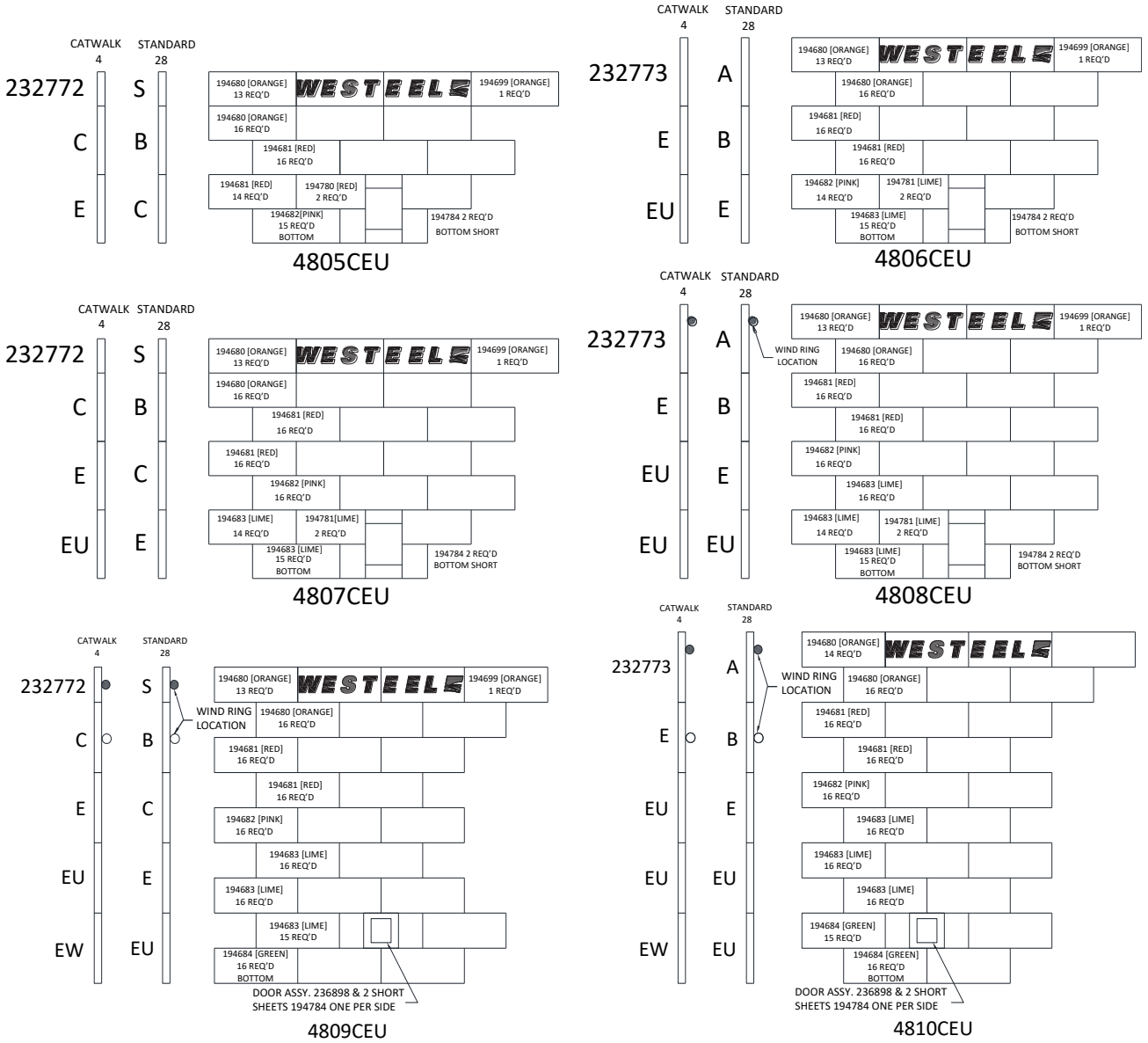
Figure 57 Model 4505CEU to 4512CEU (continued)



Notes:

1. **Colors** match part number label and indicate wall sheet thickness.
2. Stencil sheets are 194655 and 194658 [ORANGE].
3. 1-Tier door 236898 (supplied with 2 short sheets).
4. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
5. The catwalk uprights shown can take 10,000 lbs. of catwalk load per upright. Four catwalk uprights come standard with the bin.
6. ○ — Indicates standard wind ring placement.
   ● — Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).

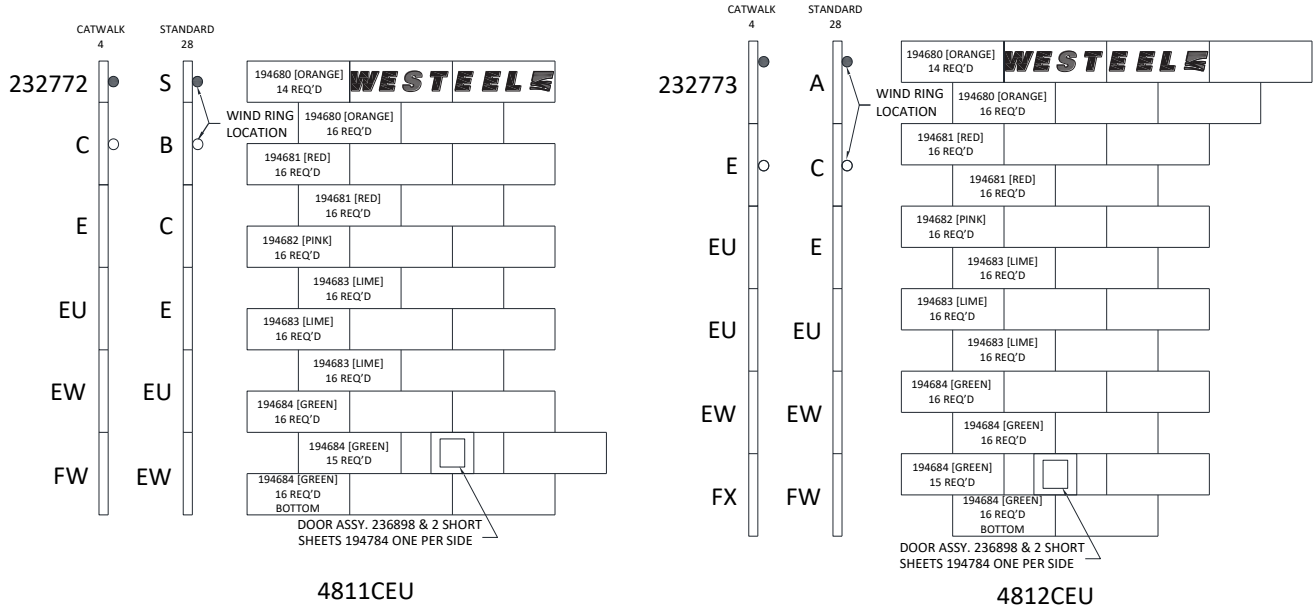
Figure 58. Model 4805CEU to 4812CEU



Notes:

1. **Colors** match part number label and indicate wall sheet thickness.
2. Stencil sheets are 194655 and 194658 [ORANGE].
3. Walk-in door is 236893 (supplied with 2 door boards). 1-Tier door is 236898 (supplied with 2 short sheets).
4. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
5. The catwalk uprights shown can take 10,000 lbs. of catwalk load per upright. Four catwalk uprights come standard with the bin.
6. ○ — Indicates standard wind ring placement.
   ● — Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).

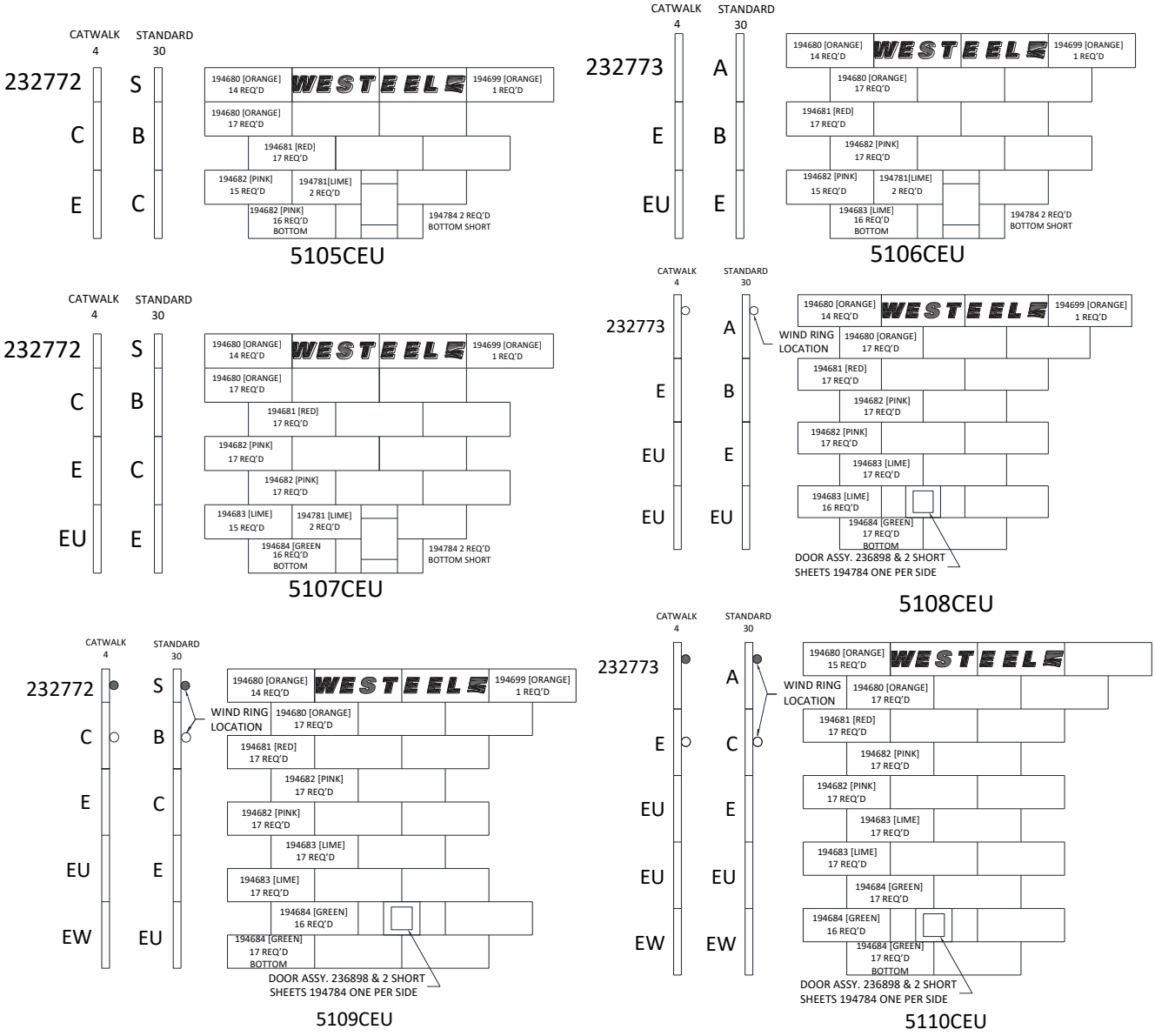
Figure 58 Model 4805CEU to 4812CEU (continued)



Notes:

1. **Colors** match part number label and indicate wall sheet thickness.
2. Stencil sheets are 194655 and 194658 [ORANGE].
3. 1-Tier door is 236898 (supplied with 2 short sheets).
4. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
5. The catwalk uprights shown can take 10,000 lbs. of catwalk load per upright. Four catwalk uprights come standard with the bin.
6. ○ — Indicates standard wind ring placement.
   ● — Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).

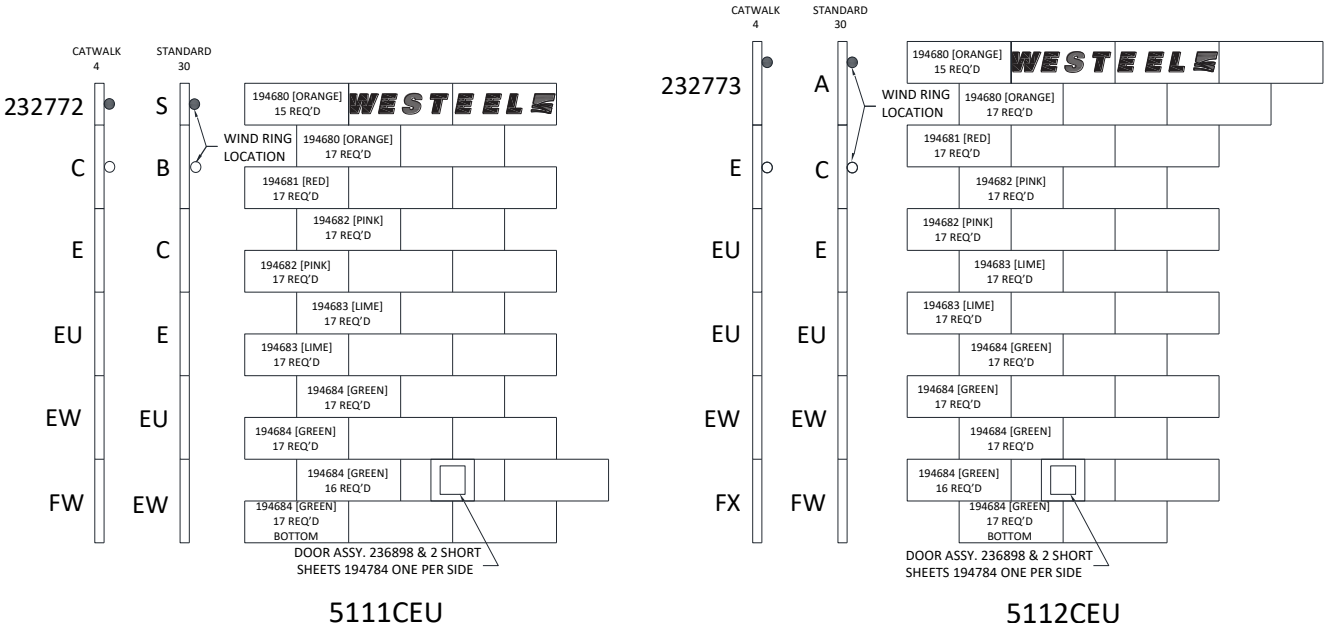
Figure 59. Model 5105CEU to 5112CEU



Notes:

1. **Colors** match part number label and indicate wall sheet thickness.
2. Stencil sheets are 194655 and 194658 [ORANGE].
3. Walk-in door is 236893 (supplied with 2 door boards). 1-Tier door is 236898 (supplied with 2 short sheets).
4. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
5. The catwalk uprights shown can take 10,000 lbs. of catwalk load per upright. Four catwalk uprights come standard with the bin.
6. ○ — Indicates standard wind ring placement.
   ● — Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).

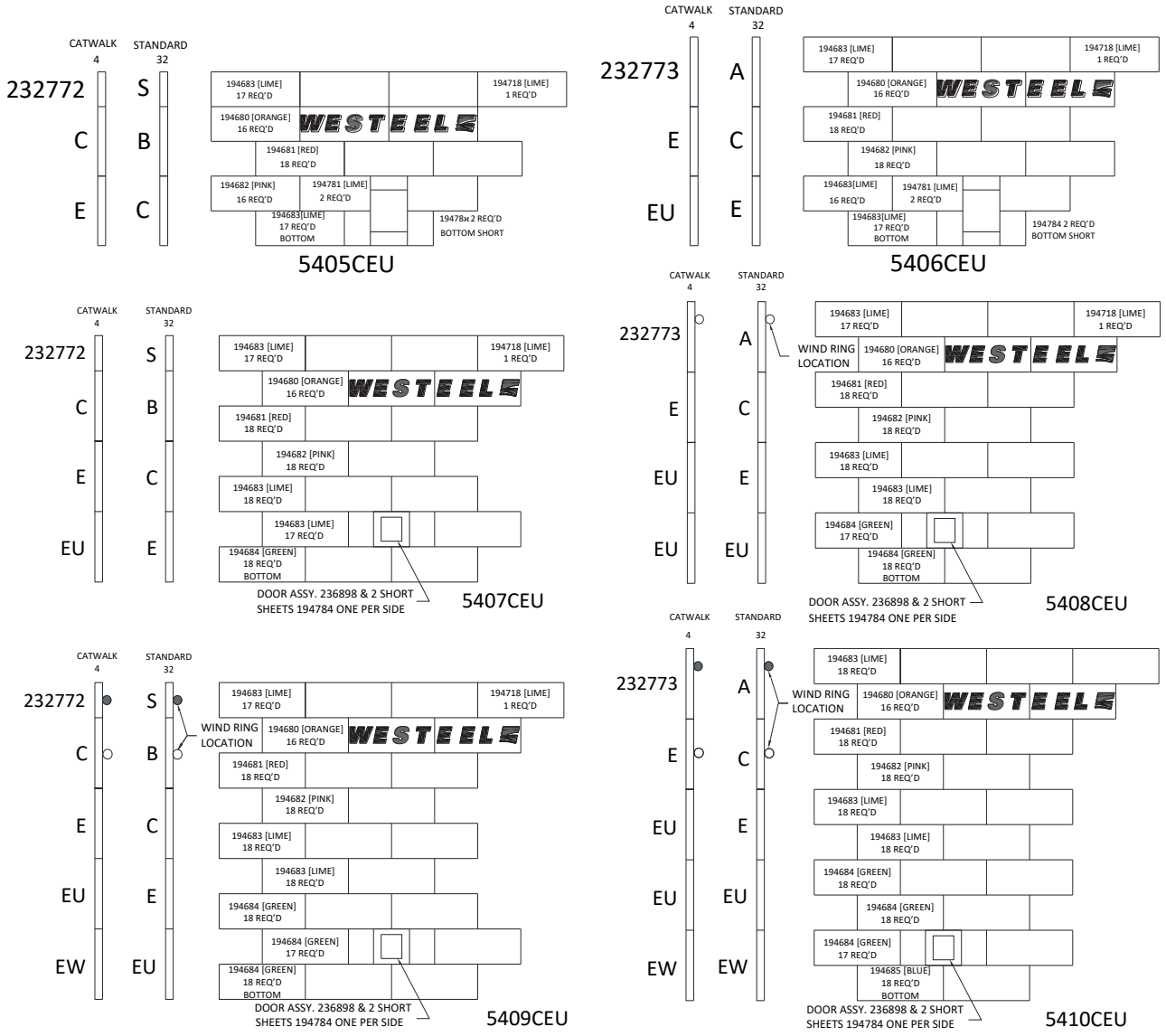
Figure 59 Model 5105CEU to 5112CEU (continued)



Notes:

1. **Colors** match part number label and indicate wall sheet thickness.
2. Stencil sheets are 194655 and 194658 [ORANGE].
3. 1-Tier door 236898 (supplied with 2 short sheets).
4. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
5. The catwalk uprights shown can take 10,000 lbs. of catwalk load per upright. Four catwalk uprights come standard with the bin.
6. ○ — Indicates standard wind ring placement.
   ● — Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).

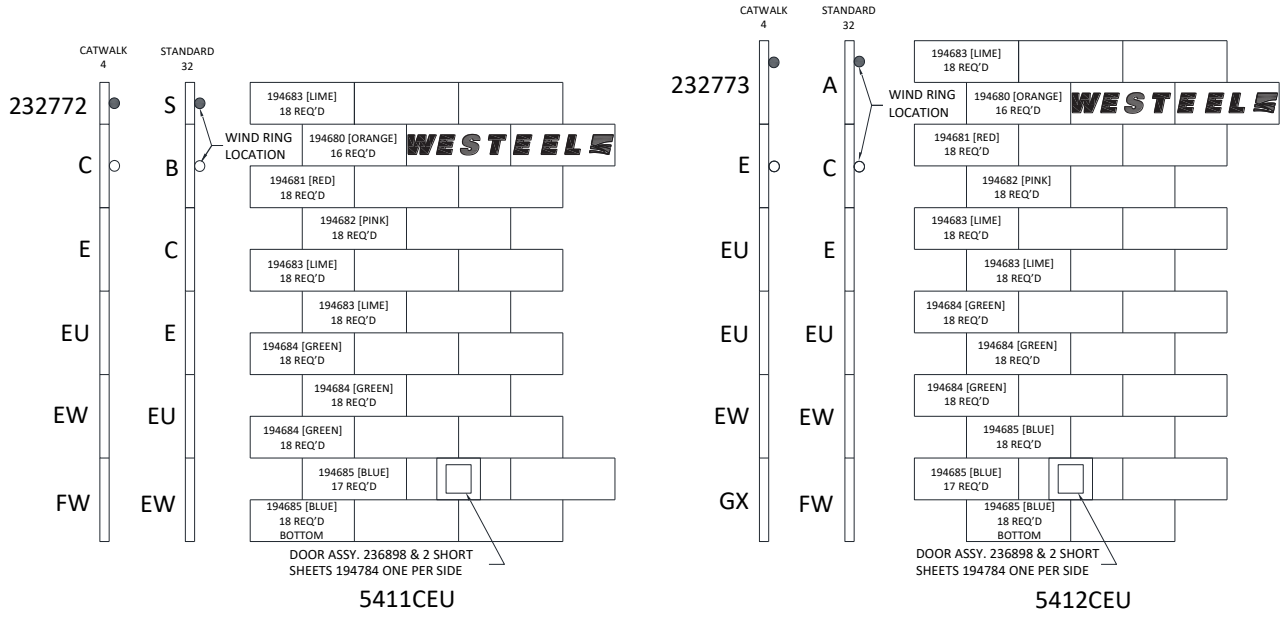
Figure 60. Model 5405CEU to 5412CEU



Notes:

1. **Colors** match part number label and indicate wall sheet thickness.
2. Stencil sheets are 194655 and 194658 [ORANGE].
3. Walk-in door is 236893 (supplied with 2 door boards). 1-Tier door is 236898 (supplied with 2 short sheets).
4. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
5. The catwalk uprights shown can take 10,000 lbs. of catwalk load per upright. Four catwalk uprights come standard with the bin.
6. ○ — Indicates standard wind ring placement.
   ● — Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).

Figure 60 Model 5405CEU to 5412CEU (continued)

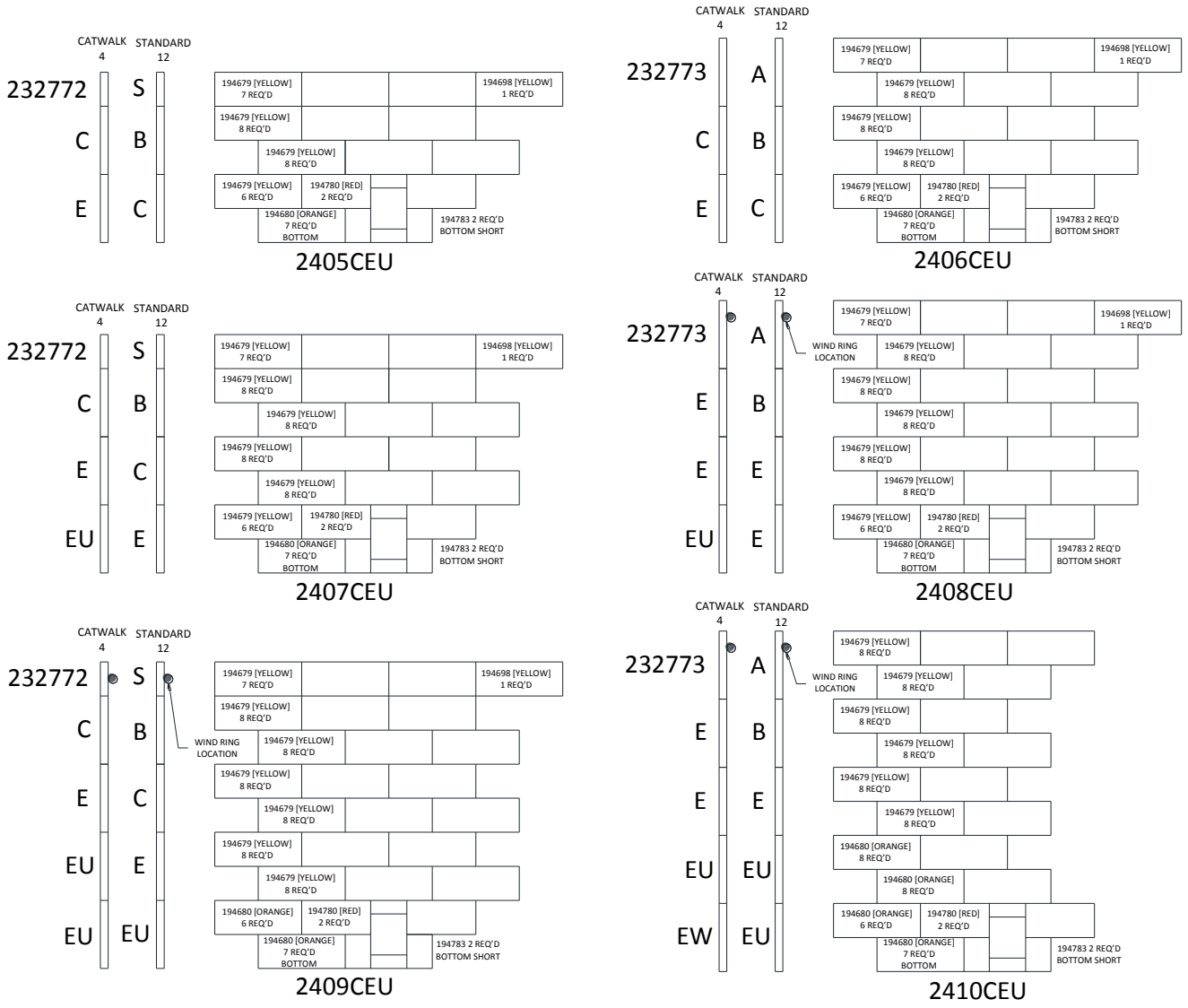


Notes:

1. **Colors** match part number label and indicate wall sheet thickness.
2. Stencil sheets are 194655 and 194658 [ORANGE].
3. 1-Tier door is 236898 (supplied with 2 short sheets).
4. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
5. The catwalk uprights shown can take 10,000 lbs. of catwalk load per upright. Four catwalk uprights come standard with the bin.
6. ○ — Indicates standard wind ring placement.
   ● — Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).

6.4. Wall Sheet and Upright Layouts - CEU (No Stencil Sheet)

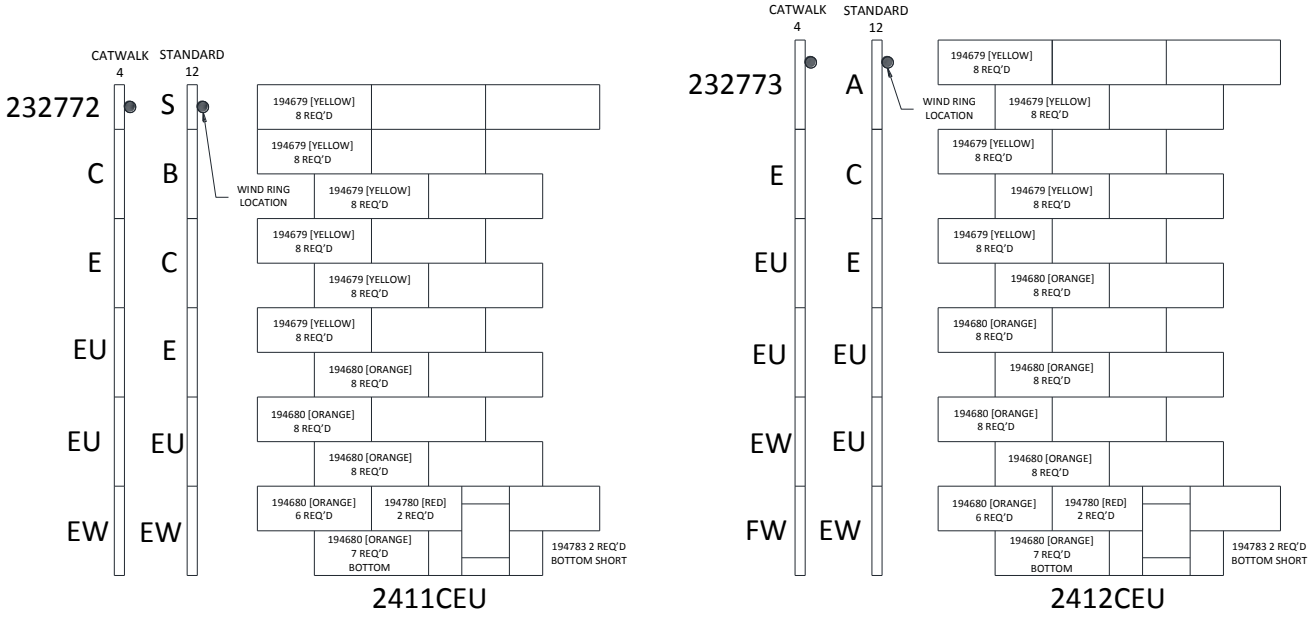
Figure 61. Model 2405CEU to 2412CEU



Notes:

1. **Colors** match part number label and indicate wall sheet thickness.
2. Walk-in door 236893 (supplied with 2 door boards).
3. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
4. The catwalk uprights shown can take 10,000 lbs. of catwalk load per upright. Four catwalk uprights come standard with the bin.
5. ● — Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).

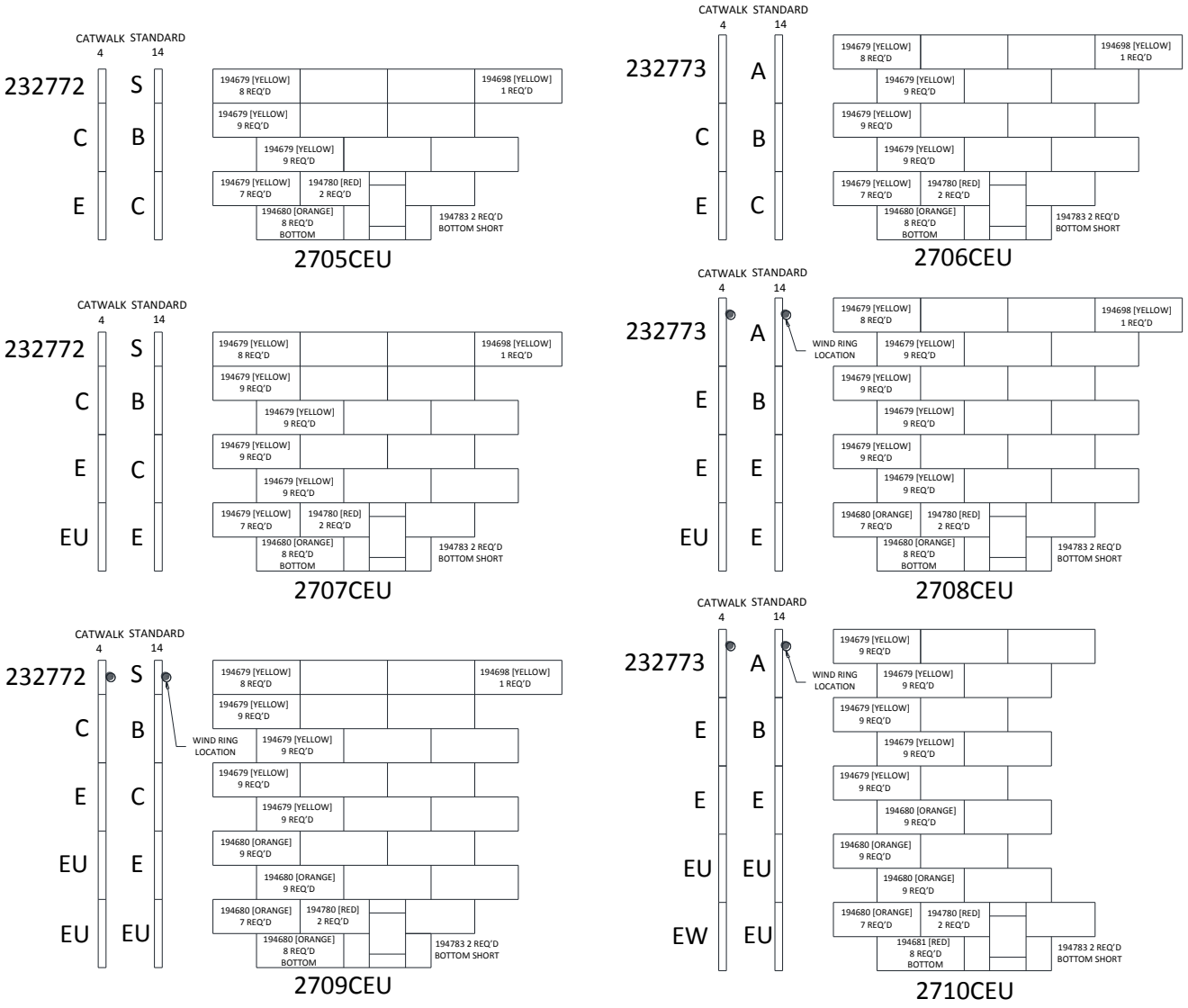
Figure 61 Model 2405CEU to 2412CEU (continued)



Notes:

1. **Colors** match part number label and indicate wall sheet thickness.
2. Walk-in door 236893 (supplied with 2 door boards).
3. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
4. The catwalk uprights shown can take 10,000 lbs. of catwalk load per upright. Four catwalk uprights come standard with the bin.
5. ● — Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).

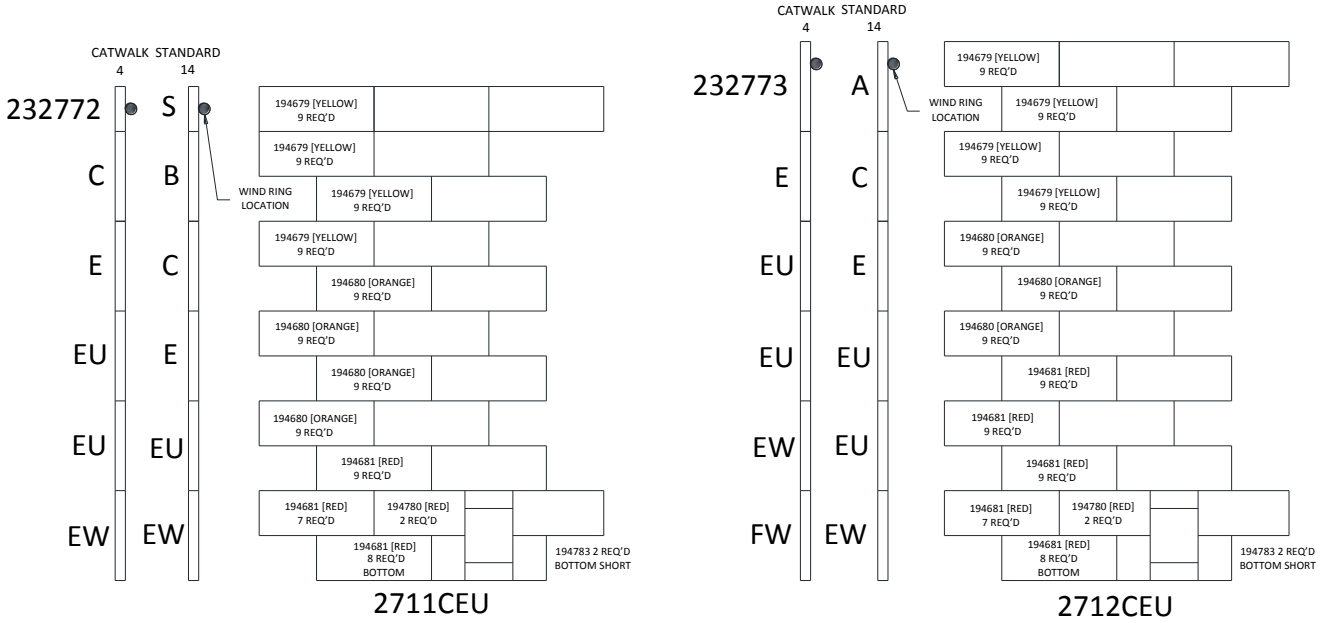
Figure 62. Model 2705CEU to 2712CEU



Notes:

1. **Colors** match part number label and indicate wall sheet thickness.
2. Walk-in door 236893 (supplied with 2 door boards).
3. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
4. The catwalk uprights shown can take 10,000 lbs. of catwalk load per upright. Four catwalk uprights come standard with the bin.
5. ● — Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).

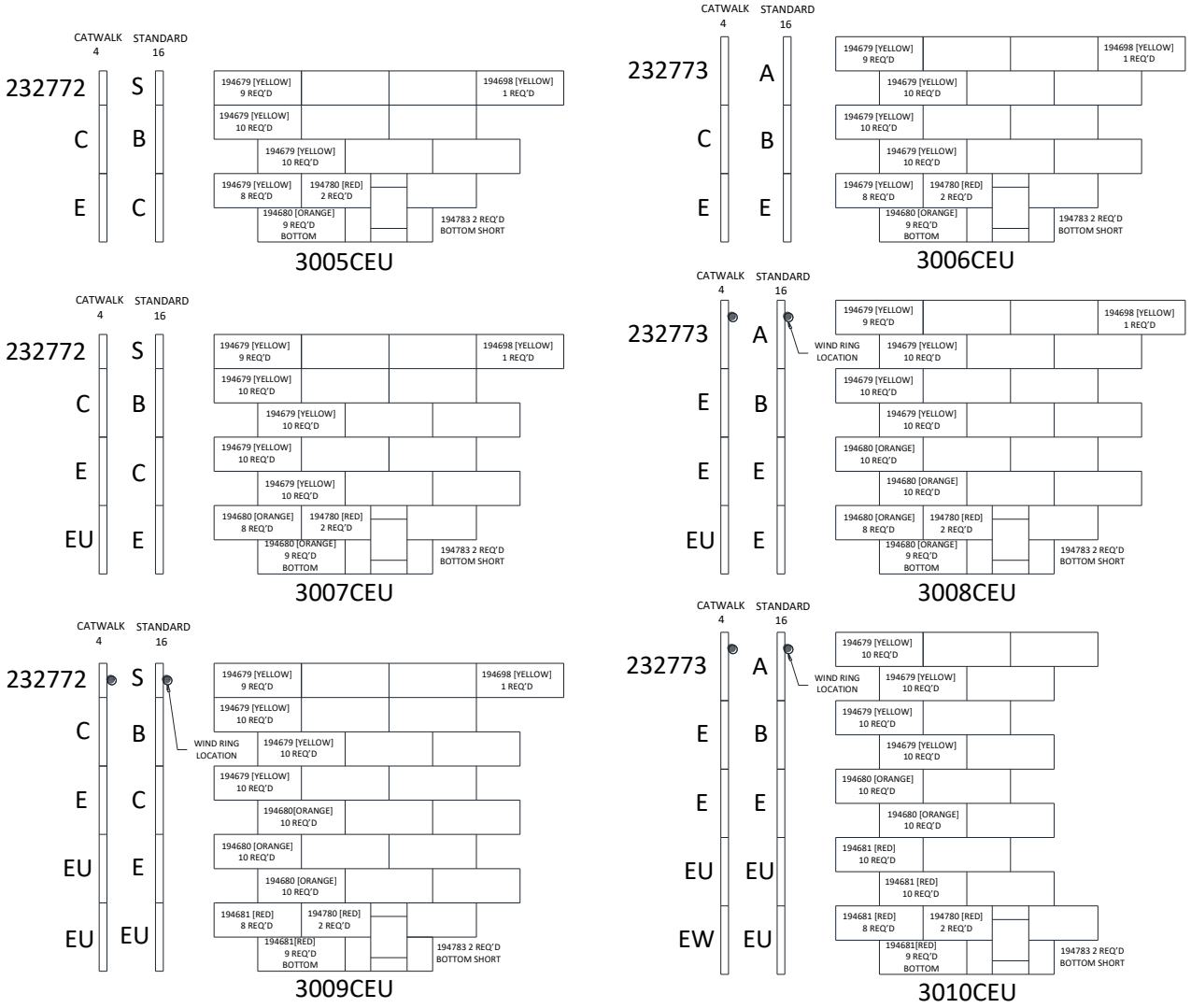
Figure 62 Model 2705CEU to 2712CEU (continued)



Notes:

1. **Colors** match part number label and indicate wall sheet thickness.
2. Walk-in door 236893 (supplied with 2 door boards).
3. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
4. The catwalk uprights shown can take 10,000 lbs. of catwalk load per upright. Four catwalk uprights come standard with the bin.
5. ● — Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).

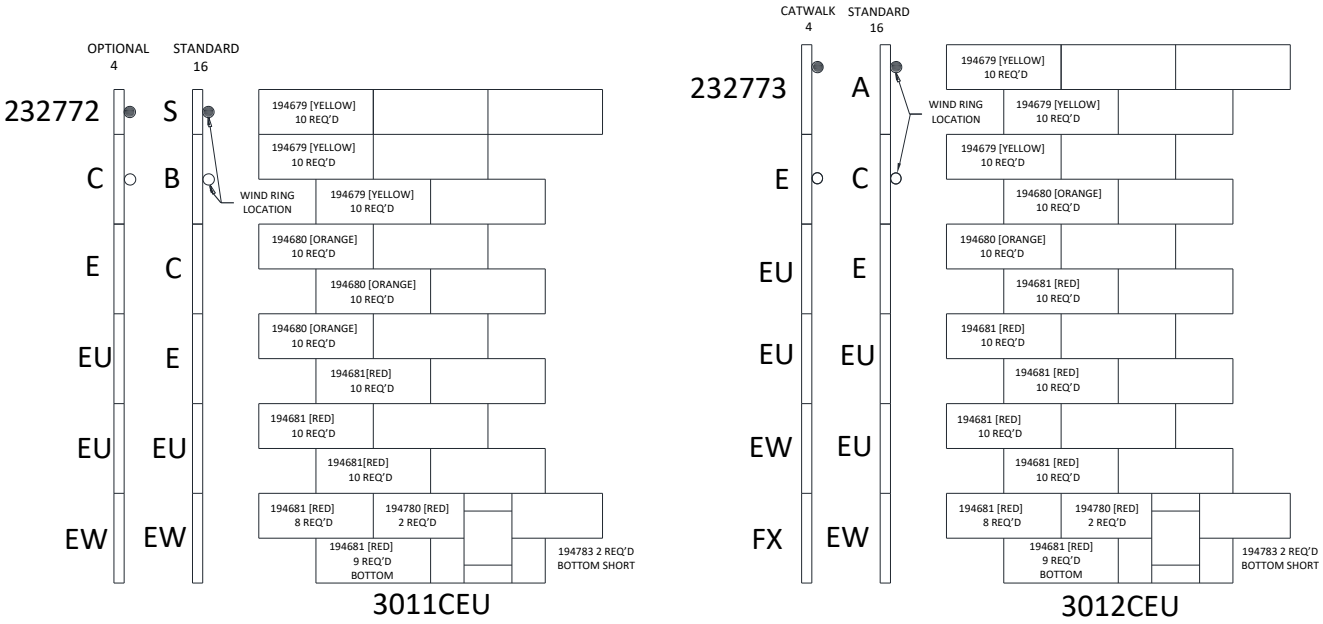
Figure 63. Model 3005CEU to 3012CEU



Notes:

1. **Colors** match part number label and indicate wall sheet thickness.
2. Walk-in door 236893 (supplied with 2 door boards).
3. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
4. The catwalk uprights shown can take 10,000 lbs. of catwalk load per upright. Four catwalk uprights come standard with the bin.
5. ● — Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).

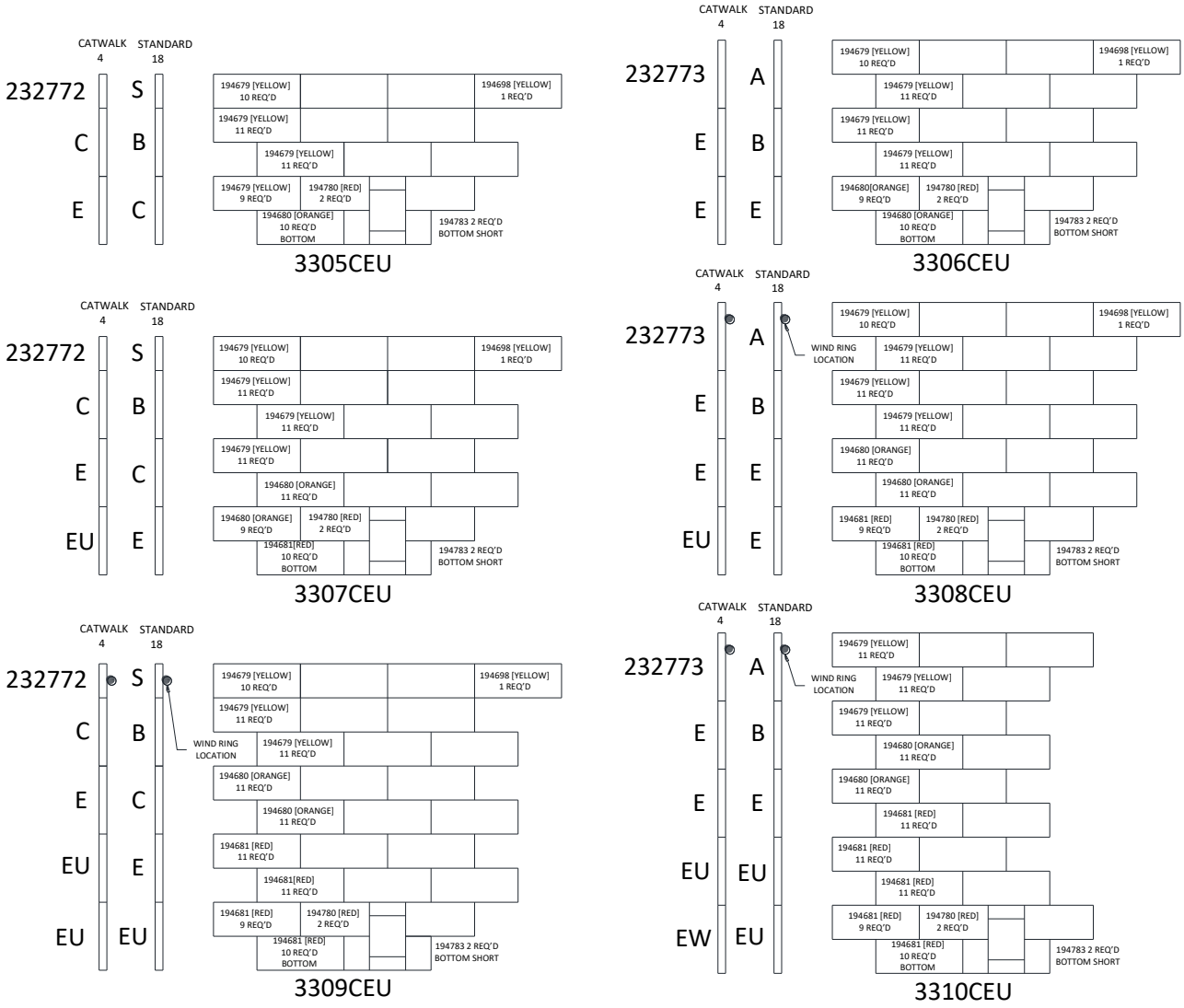
Figure 63 Model 3005CEU to 3012CEU (continued)



Notes:

1. **Colors** match part number label and indicate wall sheet thickness.
2. Walk-in door 236893 (supplied with 2 door boards).
3. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
4. The catwalk uprights shown can take 10,000 lbs. of catwalk load per upright. Four catwalk uprights come standard with the bin.
5. ○ — Indicates standard wind ring placement.
   ● — Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).

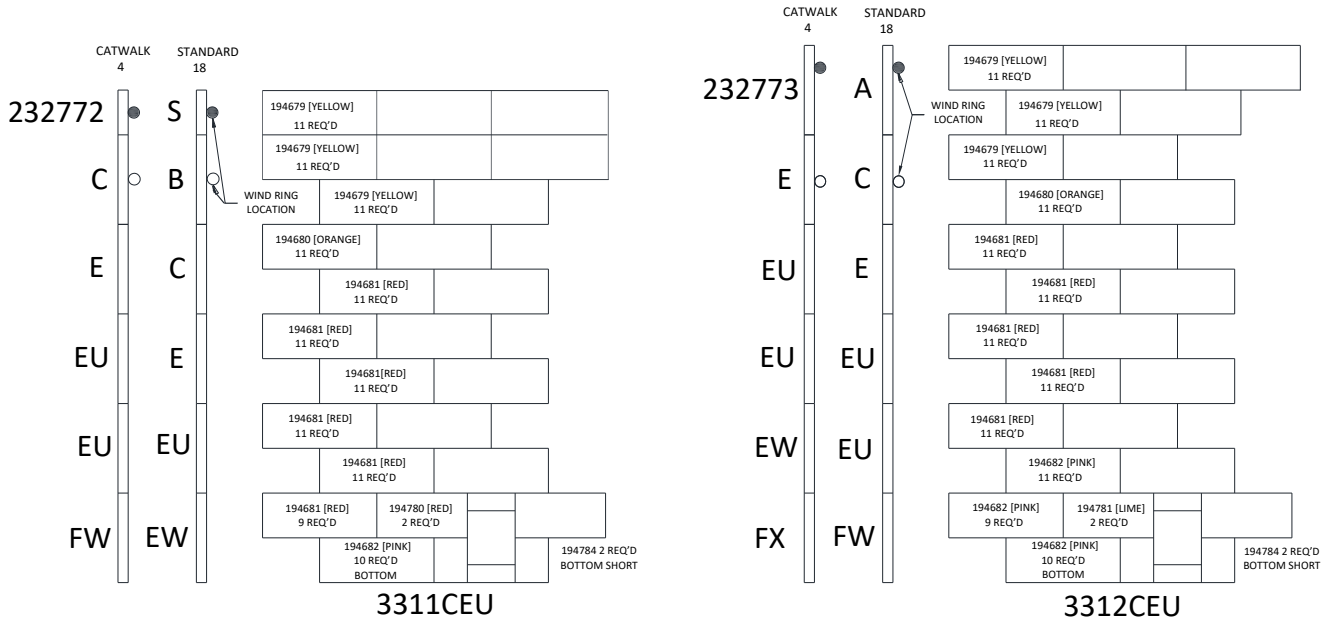
Figure 64. Model 3305CEU to 3312CEU



Notes:

1. **Colors** match part number label and indicate wall sheet thickness.
2. Walk-in door 236893 (supplied with 2 door boards).
3. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
4. The catwalk uprights shown can take 10,000 lbs. of catwalk load per upright. Four catwalk uprights come standard with the bin.
5. ● — Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).

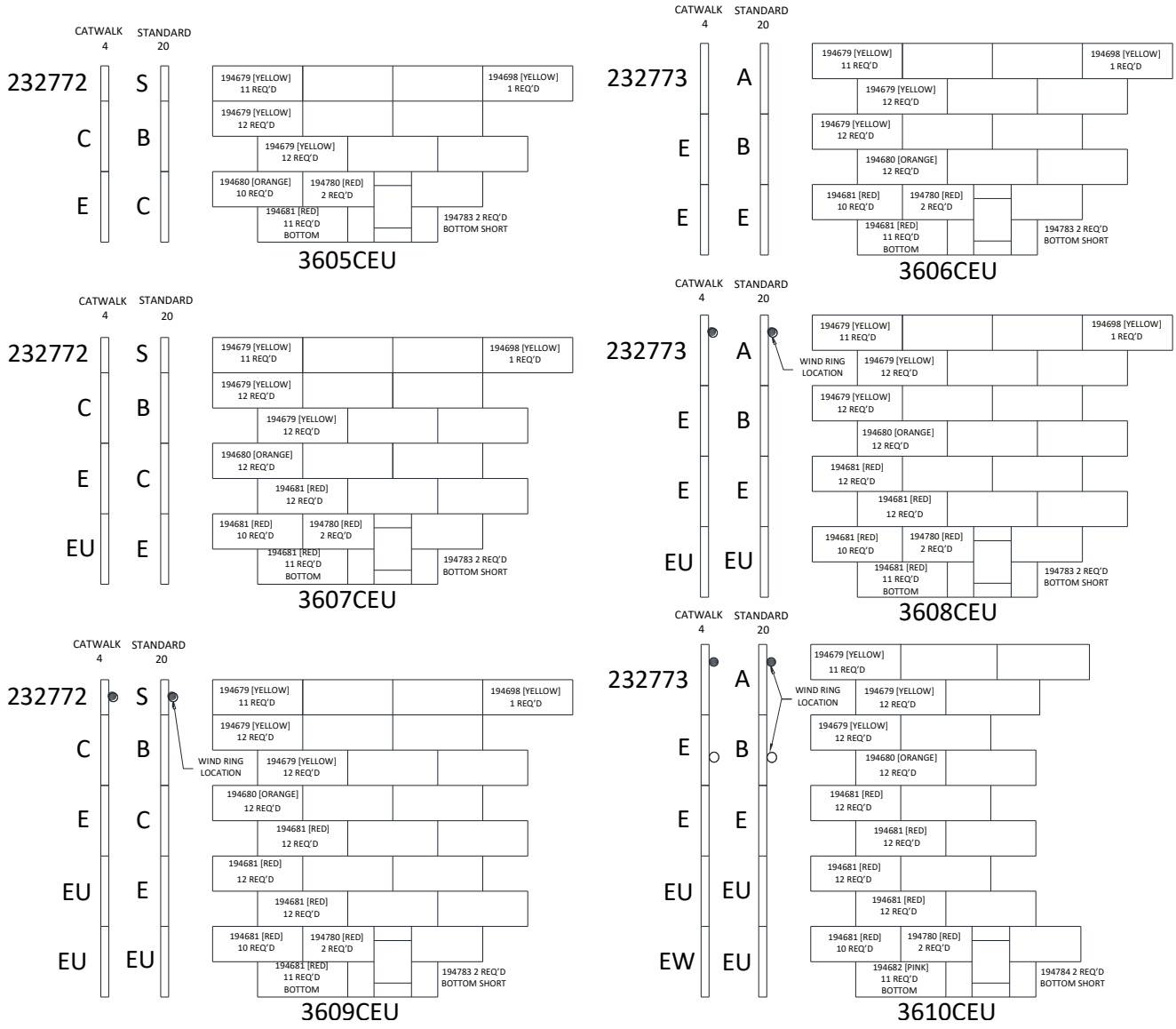
Figure 64 Model 3305CEU to 3312CEU (continued)



Notes:

1. **Colors** match part number label and indicate wall sheet thickness.
2. Walk-in door 236893 (supplied with 2 door boards).
3. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
4. The catwalk uprights shown can take 10,000 lbs. of catwalk load per upright. Four catwalk uprights come standard with the bin.
5. ○ — Indicates standard wind ring placement.
   ● — Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).

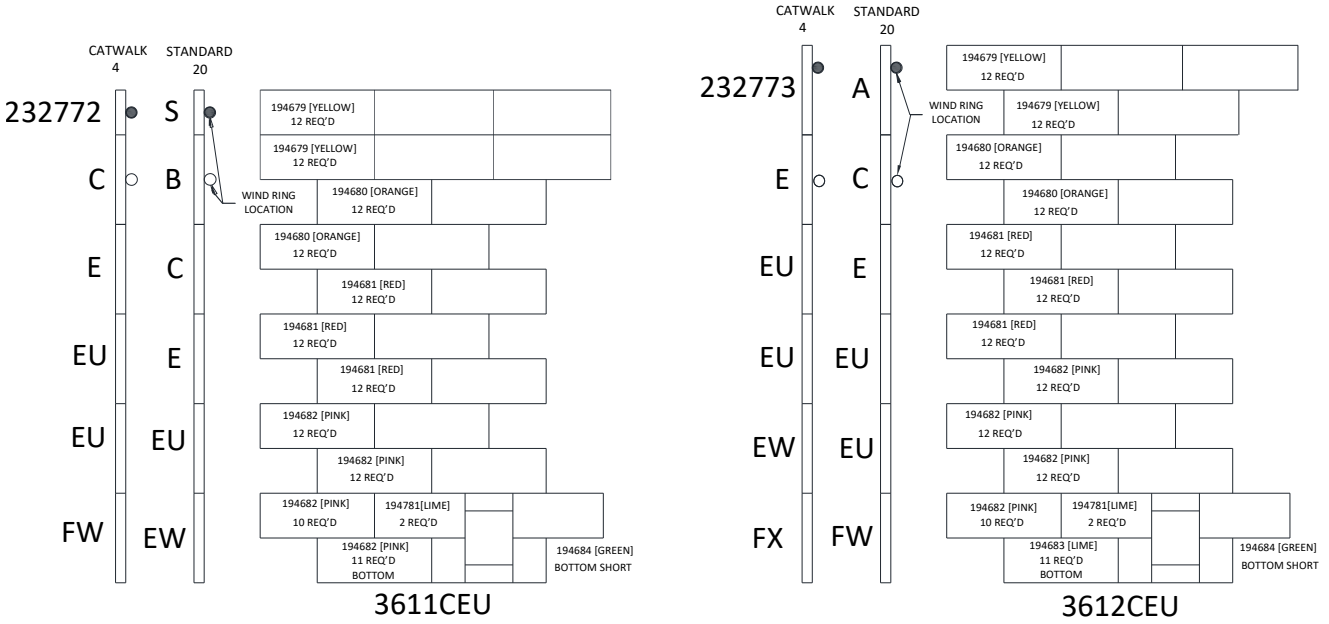
Figure 65. Model 3605CEU to 3612CEU



Notes:

1. **Colors** match part number label and indicate wall sheet thickness.
2. Walk-in door 236893 (supplied with 2 door boards).
3. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
4. The catwalk uprights shown can take 10,000 lbs. of catwalk load per upright. Four catwalk uprights come standard with the bin.
5. ○ — Indicates standard wind ring placement.
   ● — Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).

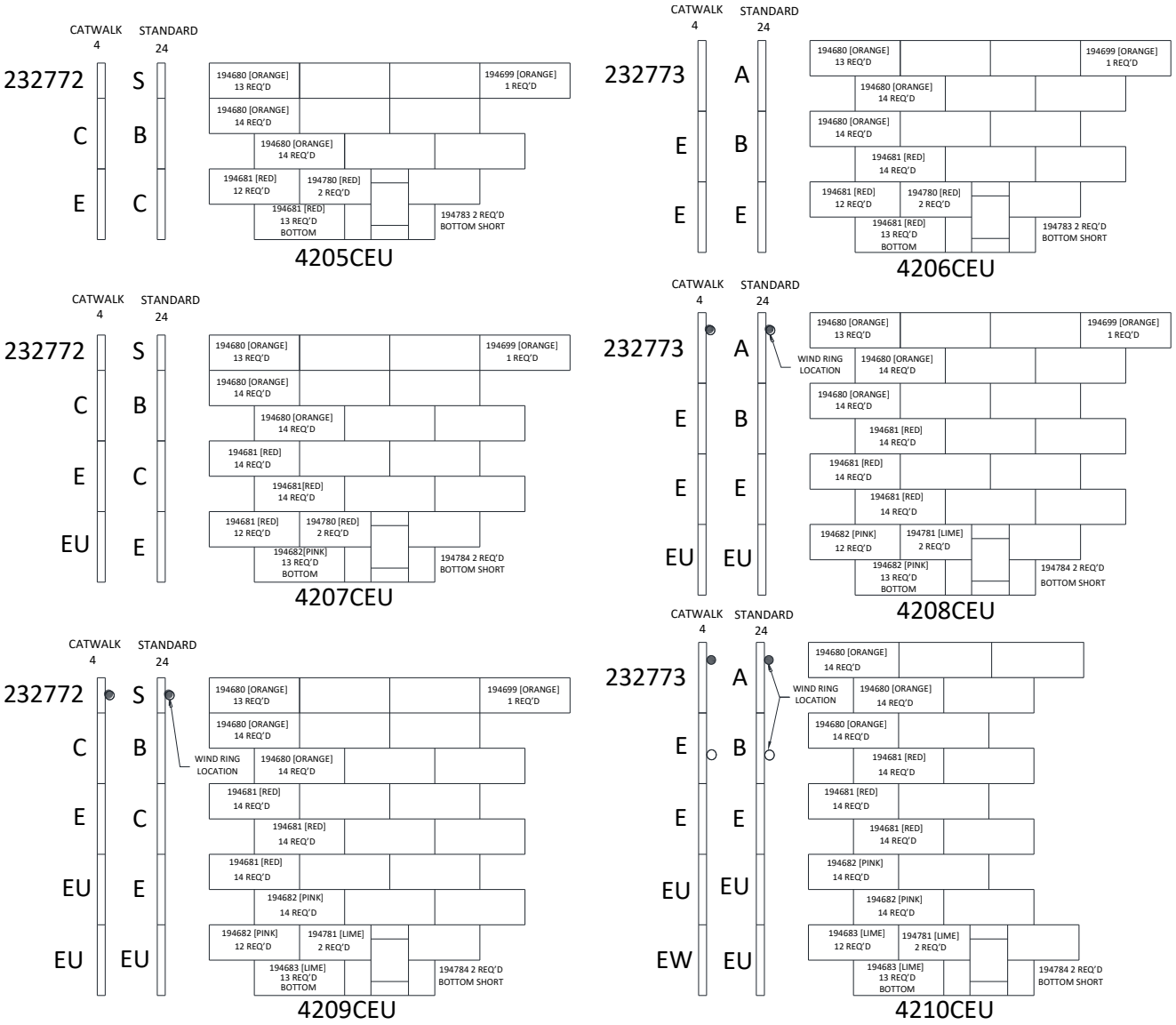
Figure 65 Model 3605CEU to 3612CEU (continued)



Notes:

1. **Colors** match part number label and indicate wall sheet thickness.
2. Walk-in door 236893 (supplied with 2 door boards).
3. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
4. The catwalk uprights shown can take 10,000 lbs. of catwalk load per upright. Four catwalk uprights come standard with the bin.
5. ○ — Indicates standard wind ring placement.
   ● — Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).

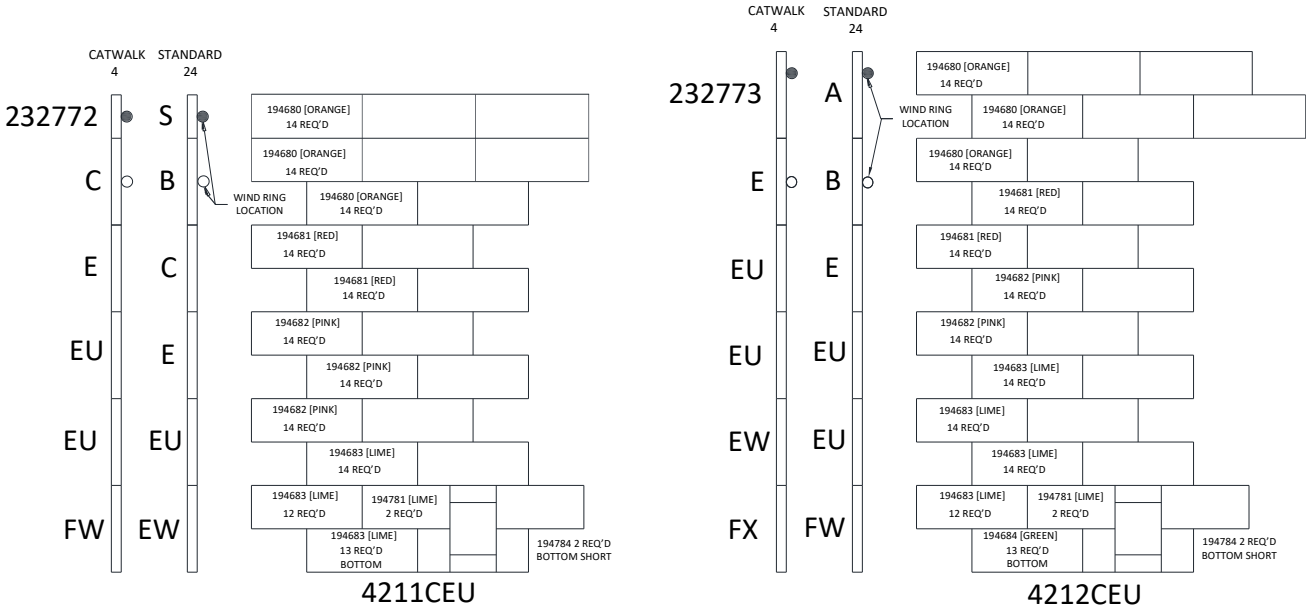
Figure 66. Model 4205CEU to 4212CEU



Notes:

1. **Colors** match part number label and indicate wall sheet thickness.
2. Walk-in door 236893 (supplied with 2 door boards).
3. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
4. The catwalk uprights shown can take 10,000 lbs. of catwalk load per upright. Four catwalk uprights come standard with the bin.
5. ○ — Indicates standard wind ring placement.
   ● — Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).

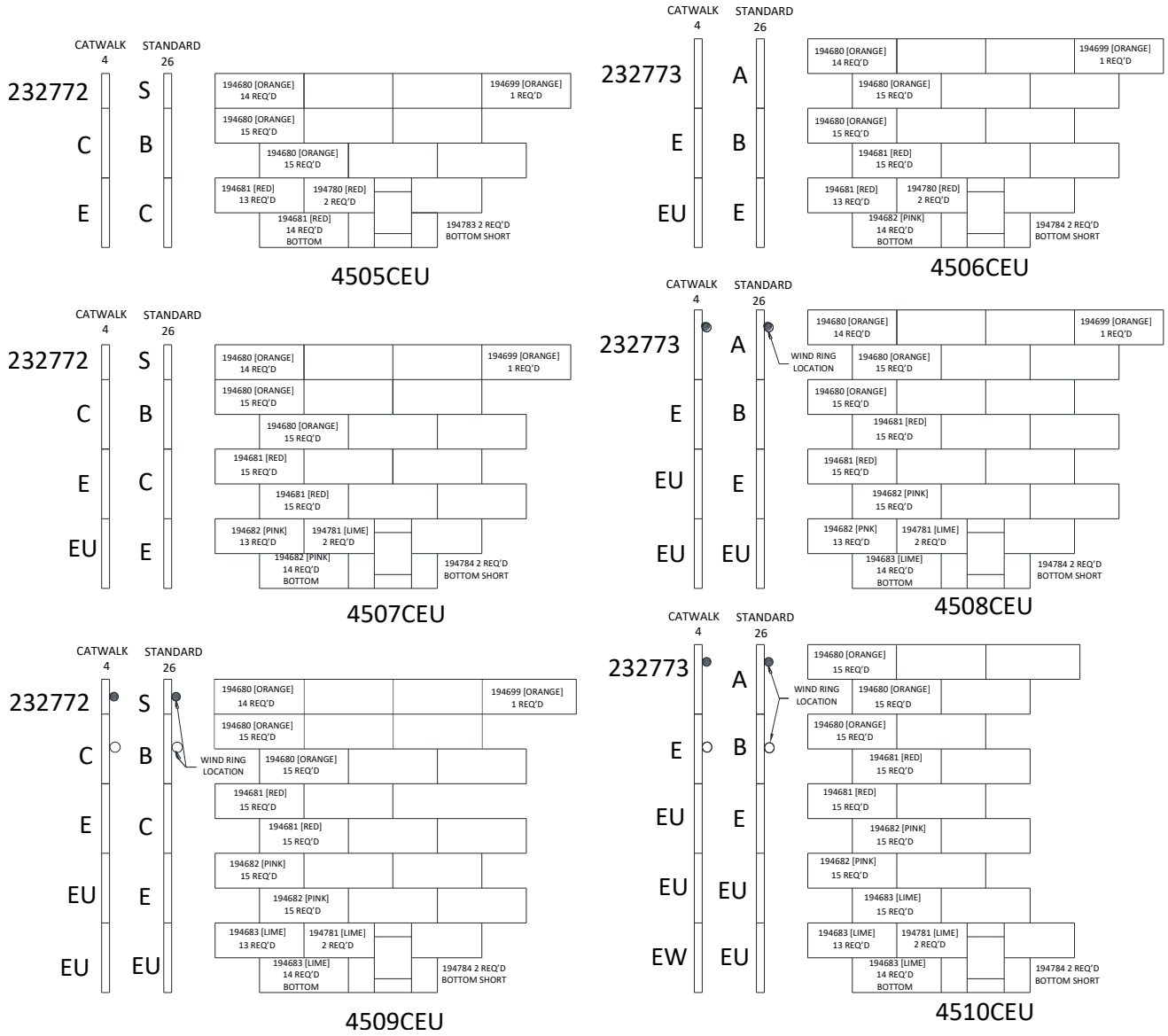
Figure 66 Model 4205CEU to 4212CEU (continued)



Notes:

1. **Colors** match part number label and indicate wall sheet thickness.
2. Walk-in door 236893 (supplied with 2 door boards).
3. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
4. The catwalk uprights shown can take 10,000 lbs. of catwalk load per upright. Four catwalk uprights come standard with the bin.
5. ○ — Indicates standard wind ring placement.
   ● — Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).

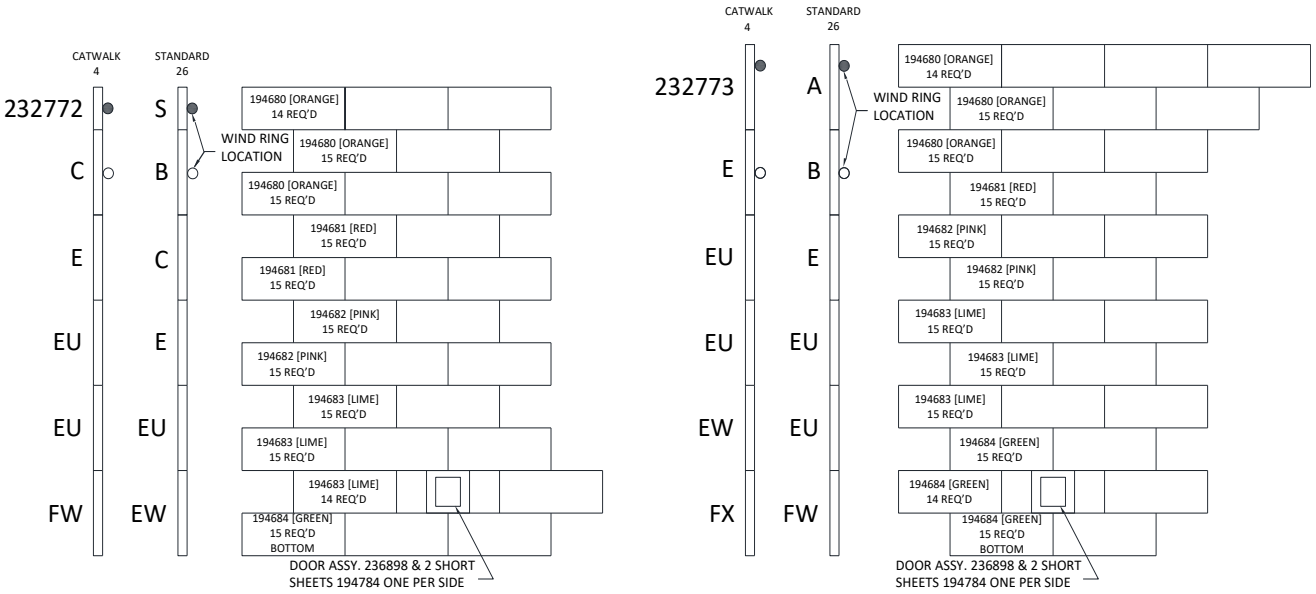
Figure 67. Model 4505CEU to 4512CEU



Notes:

1. **Colors** match part number label and indicate wall sheet thickness.
2. Walk-in door 236893 (supplied with 2 door boards).
3. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
4. The catwalk uprights shown can take 10,000 lbs. of catwalk load per upright. Four catwalk uprights come standard with the bin.
5. ○ — Indicates standard wind ring placement.
   ● — Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).

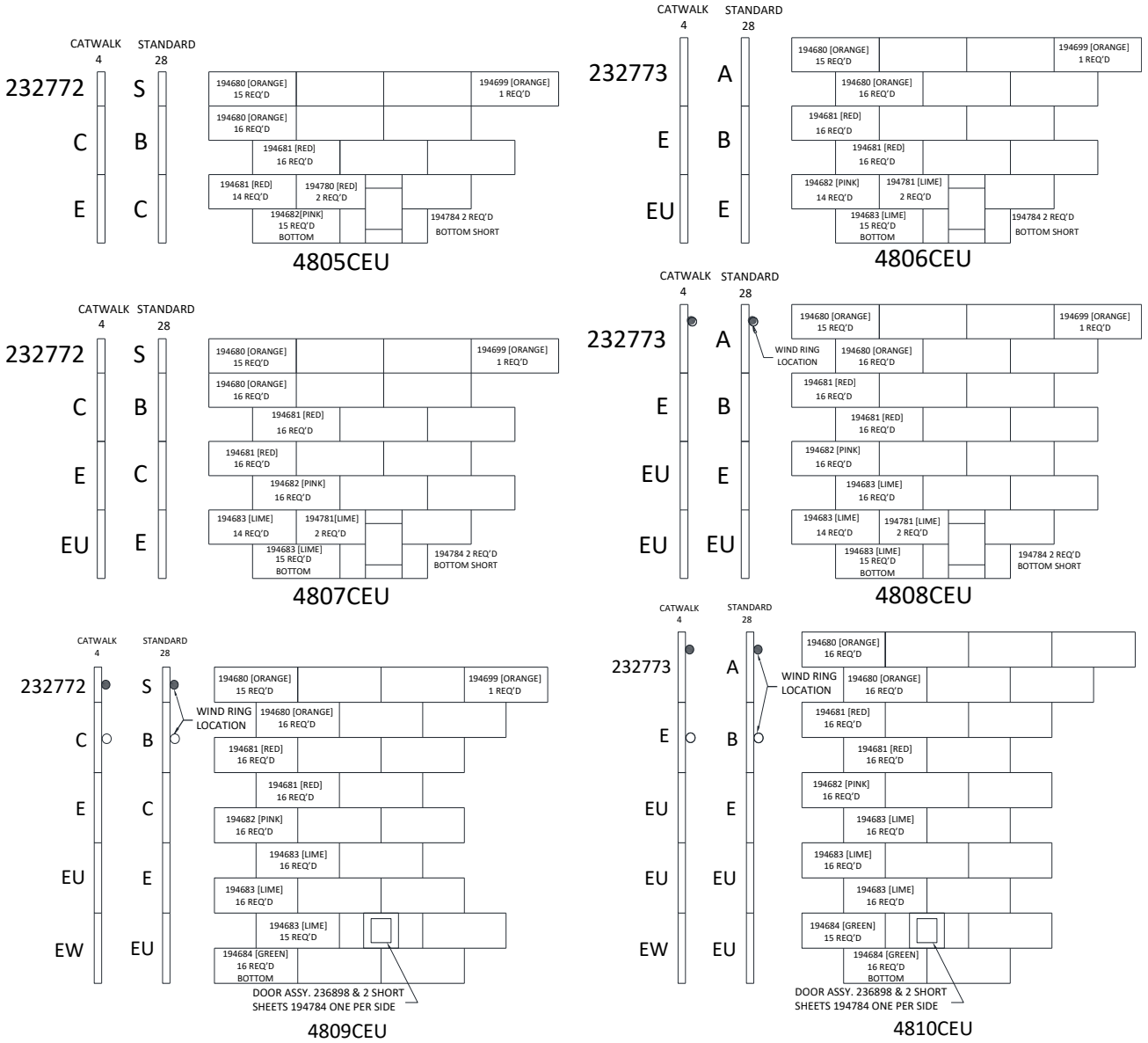
Figure 67 Model 4505CEU to 4512CEU (continued)



Notes:

1. **Colors** match part number label and indicate wall sheet thickness.
2. 1-Tier door 236898 (supplied with 2 short sheets).
3. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
4. The catwalk uprights shown can take 10,000 lbs. of catwalk load per upright. Four catwalk uprights come standard with the bin.
5. ○ — Indicates standard wind ring placement.
   ● — Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).

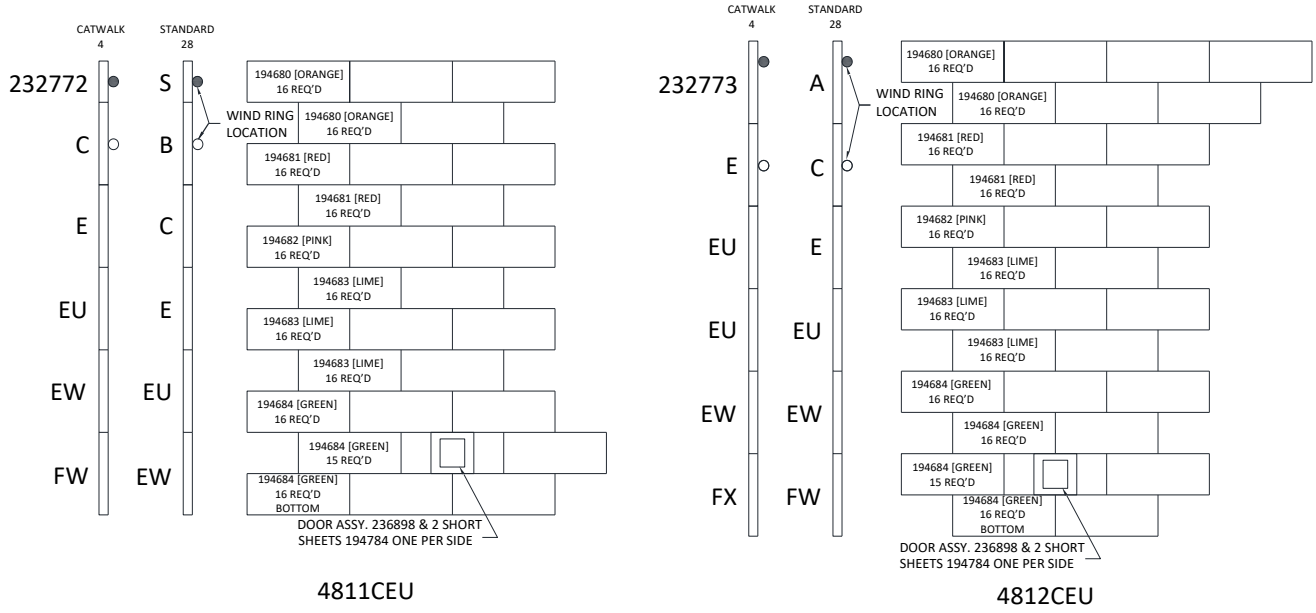
Figure 68. Model 4805CEU to 4812CEU



Notes:

1. **Colors** match part number label and indicate wall sheet thickness.
2. Walk-in door is 236893 (supplied with 2 door boards). 1-Tier door is 236898 (supplied with 2 short sheets).
3. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
4. The catwalk uprights shown can take 10,000 lbs. of catwalk load per upright. Four catwalk uprights come standard with the bin.
5. ○ — Indicates standard wind ring placement.
   ● — Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).

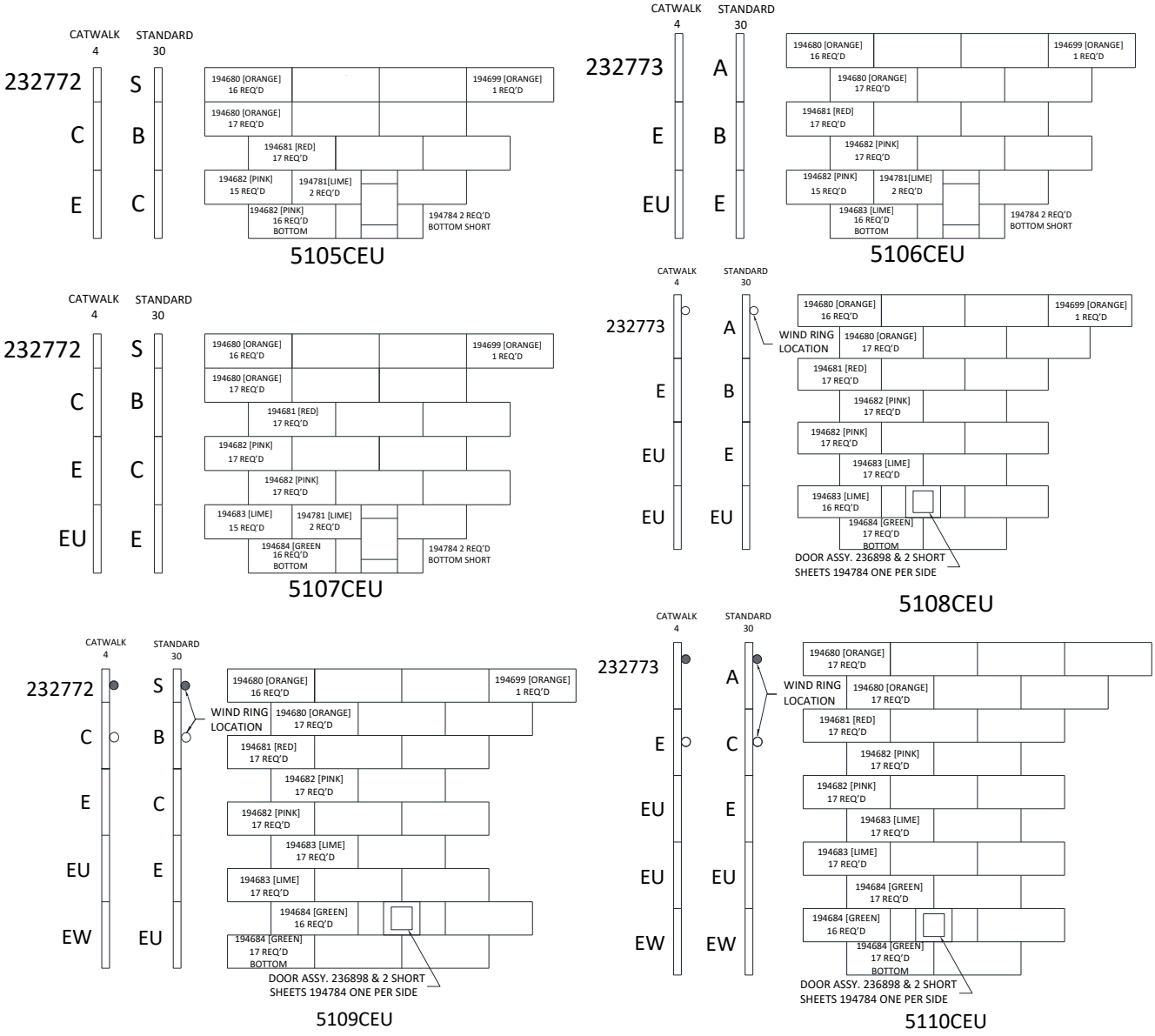
Figure 68 Model 4805CEU to 4812CEU (continued)



Notes:

1. **Colors** match part number label and indicate wall sheet thickness.
2. 1-Tier door is 236898 (supplied with 2 short sheets).
3. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
4. The catwalk uprights shown can take 10,000 lbs. of catwalk load per upright. Four catwalk uprights come standard with the bin.
5. ○ — Indicates standard wind ring placement.
   ● — Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).

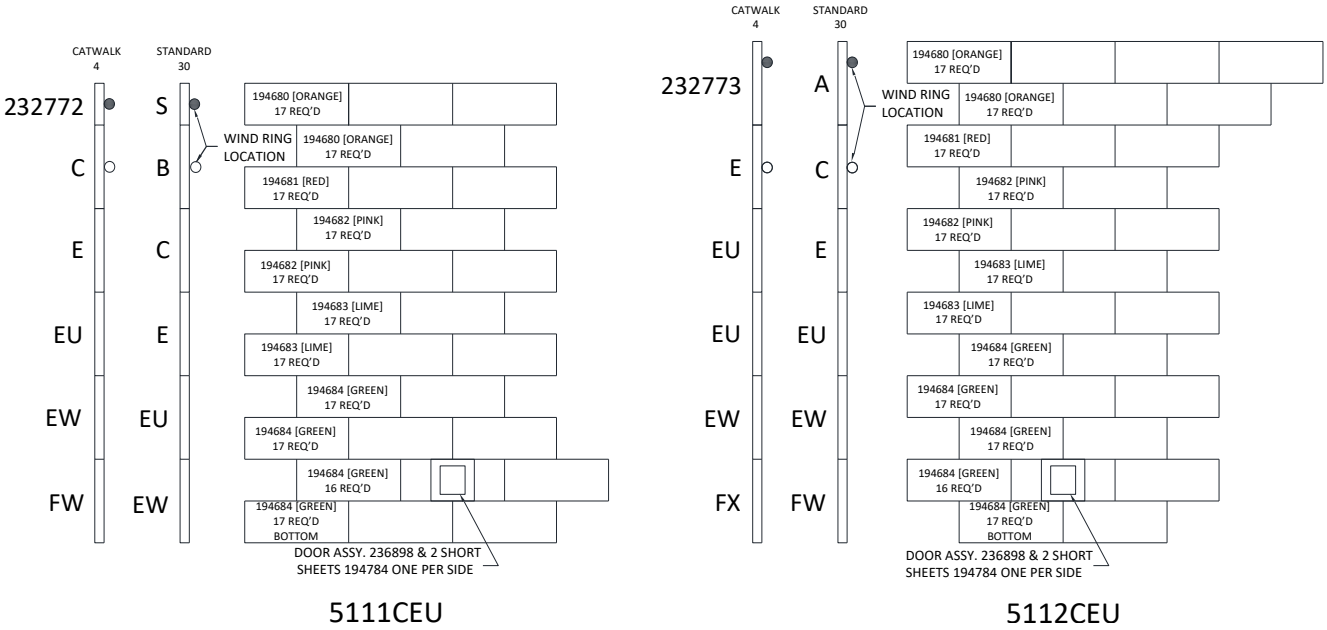
Figure 69. Model 5105CEU to 5112CEU



Notes:

1. **Colors** match part number label and indicate wall sheet thickness.
2. Walk-in door is 236893 (supplied with 2 door boards). 1-Tier door is 236898 (supplied with 2 short sheets).
3. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
4. The catwalk uprights shown can take 10,000 lbs. of catwalk load per upright. Four catwalk uprights come standard with the bin.
5. ○ — Indicates standard wind ring placement.
   ● — Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).

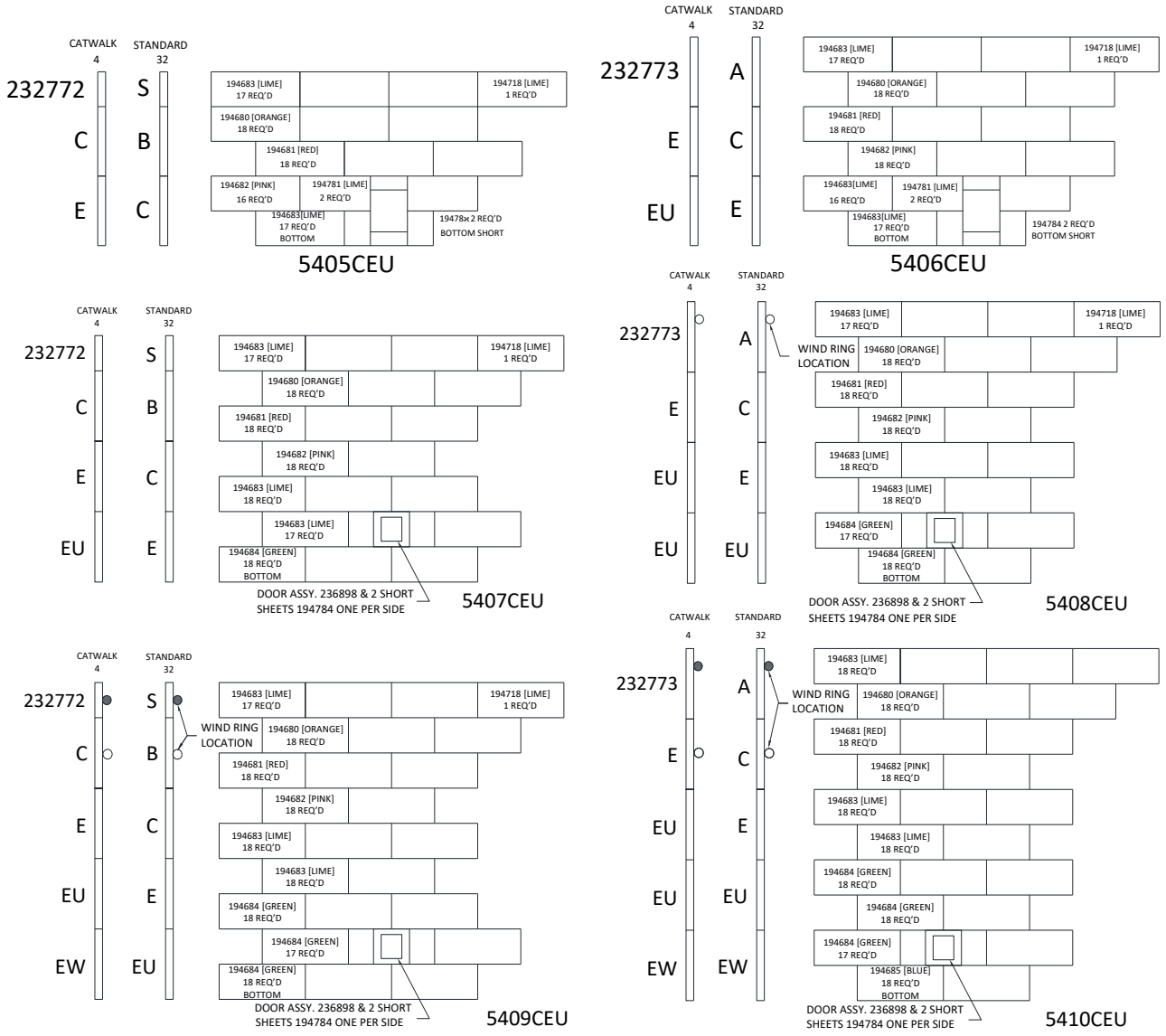
Figure 69 Model 5105CEU to 5112CEU (continued)



Notes:

1. **Colors** match part number label and indicate wall sheet thickness.
2. 1-Tier door 236898 (supplied with 2 short sheets).
3. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
4. The catwalk uprights shown can take 10,000 lbs. of catwalk load per upright. Four catwalk uprights come standard with the bin.
5. ○ — Indicates standard wind ring placement.
   ● — Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).

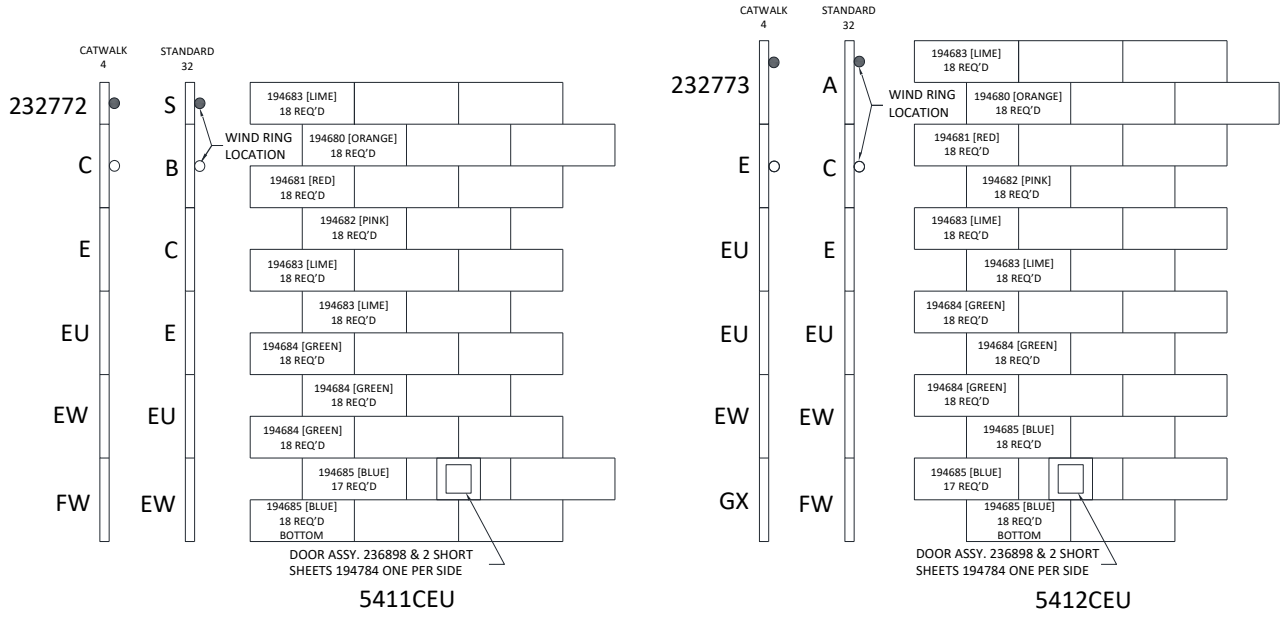
Figure 70. Model 5405CEU to 5412CEU



Notes:

1. **Colors** match part number label and indicate wall sheet thickness.
2. Walk-in door is 236893 (supplied with 2 door boards). 1-Tier door is 236898 (supplied with 2 short sheets).
3. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
4. The catwalk uprights shown can take 10,000 lbs. of catwalk load per upright. Four catwalk uprights come standard with the bin.
5. ○ — Indicates standard wind ring placement.
   ● — Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).

Figure 70 Model 5405CEU to 5412CEU (continued)



Notes:

1. **Colors** match part number label and indicate wall sheet thickness.
2. 1-Tier door is 236898 (supplied with 2 short sheets).
3. All uprights except for the top "S" and 232772 catwalk upright are 2 tiers long.
4. The catwalk uprights shown can take 10,000 lbs. of catwalk load per upright. Four catwalk uprights come standard with the bin.
5. ○ — Indicates standard wind ring placement.
   ● — Indicates additional wind ring placement if using AGI side draw system (must be ordered separately).

7. Appendix

7.1. CEU Parts Box Listings

Table 28. 24–Series CEU

PART NUMBER	DESCRIPTION	UNIT WT (lbs)	BIN MODEL (CEU)							
			2405	2406	2407	2408	2409	2410	2411	2412
185010	CARTON 37x37x9 for BIN PARTS 15-27	9.40	1	1	1	1	1	1	1	1
212205	PEAK RING 24	30.70	1	1	1	1	1	1	1	1
195149	PEAK RING BULB GASKET 105"	0.90	1	1	1	1	1	1	1	1
212228	PEAK RING FOAM for 15-27, 51-54	0.40	1	1	1	1	1	1	1	1
212740	FALL RESTRAINT BRACKET	0.30	2	2	2	2	2	2	2	2
234810	RCO PIVOT ARM 15-27	3.01	1	1	1	1	1	1	1	1
234814	RCO PIVOT ARM BRACKET 15-27	0.85	2	2	2	2	2	2	2	2
234812	RCO ROPE ARM 15–60	4.12	1	1	1	1	1	1	1	1
235219	RCO ROPE ARM SUPPORT 15-27	0.26	1	1	1	1	1	1	1	1
212404	RCO CABLE GUIDE	3.50	1	1	1	1	1	1	1	1
235798	RCO CABLE 9/32 x 45' GALV	0.75	1	1	1	1	1	1	1	1
212400	RCO SLIDE ROD 15-27	2.45	1	1	1	1	1	1	1	1
212402	RCO SLIDE ROD ANGLE	2.15	1	1	1	1	1	1	1	1
234804	RCO HARDWARE PACKAGE 15-27	4.70	1	1	1	1	1	1	1	1
193077	LADDER RUNG 38.5 (36.0 CTR)	4.60	1	1	1	1	1	1	1	1
193075	LADDER RUNG 34.5 (32.0 CTR)	4.10	1	1	1	1	1	1	1	1
193073	LADDER RUNG 30.5 (28.0 CTR)	3.60	1	1	1	1	1	1	1	1
193070	LADDER RUNG 24.5 (22.0 CTR)	1.70	1	1	1	1	1	1	1	1
193068	LADDER RUNG 20.5 (18.0 CTR)	1.40	1	1	1	1	1	1	1	1
193066	LADDER RUNG 16.5 (14.0 CTR)	1.10	1	1	1	1	1	1	1	1
193063	LADDER RUNG 14.5 (8.0 CTR)	1.00	1	1	1	1	1	1	1	1
235890	INSPECTION HATCH LID	7.48	1	1	1	1	1	1	1	1
235891	INSPECTION HATCH LATCH	0.81	1	1	1	1	1	1	1	1
235882	INSPECTION HATCH BULB GASKET 76"	0.50	1	1	1	1	1	1	1	1
212230	BIRD STOP	0.13	24	24	24	24	24	24	24	24
212231	FOAM ROOF RIB CLOSURE (12)	0.06	2	2	2	2	2	2	2	2
194120	GRAIN GAUGE	0.30	1	1	1	1	1	—	—	—
194125	REFLECTIVE STRIP .75 x 8.2	0.001	1	1	1	1	1	—	—	—
232767	WIND RING CLIP	0.44	2	2	2	2	2	2	2	2
212789	RUBBER PAD	0.06	2	2	2	2	2	2	2	2
232720	UPRIGHT SPLICE	2.14	1	1	1	1	1	1	1	1

Table 28 24–Series CEU (continued)

PART NUMBER	DESCRIPTION	UNIT WT (lbs)	BIN MODEL (CEU)							
			2405	2406	2407	2408	2409	2410	2411	2412
212734	LOAD SPREADER TUBE 24	8.60	1	1	1	1	1	1	1	1
195695	DOOR TIE BACK CHAIN 17.75" LONG	0.52	1	1	1	1	1	1	1	1
235372	SEALING CLIP for BOTTOM ANGLE	0.12	8	8	8	8	8	8	8	8
235914	BOLT HFS .313 x 1.00 GR8.2 - BAG 250	8.50	1	1	1	1	1	1	1	1
235915	BOLT HFS .313 x 1.00 GR8.2 - BAG 50	1.70	1	1	1	1	1	1	1	1
235916	BOLT HFS .313 x 1.25 GR8.2 - BAG 80	3.04	2	2	2	2	2	2	2	2
235924	HEX FLANGE NUT .313 GR8 - BAG 250	3.50	2	2	2	2	2	2	2	2
235926	HEX FLANGE NUT .313 GR8 - BAG 50	0.70	1	1	1	1	1	1	1	1
235971	WSHR SEAL .313 STL/NEO - BAG 500	2.25	1	1	1	1	1	1	1	1
235943	BOLT HFS .375 x 1.0 GR8.2 - BAG 50	2.55	1	—	2	1	2	1	3	2
235944	BOLT HFS .375 x 1.25 GR8.2 - BAG 100	5.70	1	1	1	1	1	1	1	1
235947	HEX NUT .375 GR8 - BAG 300	4.80	—	—	—	—	—	—	1	—
235948	HEX NUT .375 GR8 - BAG 100	1.60	2	1	2	2	2	2	—	2
235956	FLAT WASHER .375 - BAG 200	2.80	1	1	1	1	1	1	1	1
235974	WSHR SEAL .375 STL/NEO - BAG 25	0.16	1	1	1	1	1	1	1	1
193814	CAULKING - 40' ROLL	1.00	8	9	11	12	13	13	15	16
170445	CAULKING - 300 ml TUBE	1.00	2	2	2	2	2	2	2	2
198866	MANUAL - CENTURION-W EUROCODE	0.30	1	1	1	1	1	1	1	1

Table 29. 27–Series CEU

PART NUM-BER	DESCRIPTION	UNIT WT (lbs)	BIN MODEL (CEU)							
			2705	2706	2707	2708	2709	2710	2711	2712
185010	CARTON 37x37x9 for BIN PARTS 15-27	9.40	1	1	1	1	1	1	1	1
212206	PEAK RING 27	30.70	1	1	1	1	1	1	1	1
195149	PEAK RING BULB GASKET 105"	0.90	1	1	1	1	1	1	1	1
212228	PEAK RING FOAM for 15-27, 51-54	0.40	1	1	1	1	1	1	1	1
212740	FALL RESTRAINT BRACKET	0.30	2	2	2	2	2	2	2	2
234810	RCO PIVOT ARM 15-27	3.01	1	1	1	1	1	1	1	1
234814	RCO PIVOT ARM BRACKET 15-27	0.85	2	2	2	2	2	2	2	2
234812	RCO ROPE ARM 15–60	4.12	1	1	1	1	1	1	1	1
235219	RCO ROPE ARM SUPPORT 15-27	0.26	1	1	1	1	1	1	1	1
212404	RCO CABLE GUIDE	3.50	1	1	1	1	1	1	1	1
235798	RCO CABLE 9/32 x 45' GALV	0.75	1	1	1	1	1	1	1	1
212400	RCO SLIDE ROD 15-27	2.45	1	1	1	1	1	1	1	1
212402	RCO SLIDE ROD ANGLE	2.15	1	1	1	1	1	1	1	1
234804	RCO HARDWARE PACKAGE 15-27	4.70	1	1	1	1	1	1	1	1
193077	LADDER RUNG 38.5 (36.0 CTR)	4.60	1	1	1	1	1	1	1	1
193075	LADDER RUNG 34.5 (32.0 CTR)	4.10	1	1	1	1	1	1	1	1
193073	LADDER RUNG 30.5 (28.0 CTR)	3.60	1	1	1	1	1	1	1	1
193071	LADDER RUNG 26.5 (24.0 CTR)	3.20	1	1	1	1	1	1	1	1
193069	LADDER RUNG 22.5 (20.0 CTR)	1.50	1	1	1	1	1	1	1	1
193067	LADDER RUNG 18.5 (16.0 CTR)	1.30	1	1	1	1	1	1	1	1
193065	LADDER RUNG 14.5 (12.0 CTR)	1.00	1	1	1	1	1	1	1	1
193063	LADDER RUNG 14.5 (8.0 CTR)	1.00	1	1	1	1	1	1	1	1
235890	INSPECTION HATCH LID	7.48	1	1	1	1	1	1	1	1
235891	INSPECTION HATCH LATCH	0.81	1	1	1	1	1	1	1	1
235882	INSPECTION HATCH BULB GASKET 76"	0.50	1	1	1	1	1	1	1	1
212230	BIRD STOP	0.13	27	27	27	27	27	27	27	27
212231	FOAM ROOF RIB CLOSURE (12)	0.06	3	3	3	3	3	3	3	3
194120	GRAIN GAUGE	0.30	1	1	1	1	1	—	—	—
194125	REFLECTIVE STRIP .75 x 8.2	0.001	1	1	1	1	1	—	—	—
232767	WIND RING CLIP	0.44	2	2	2	2	2	2	2	2
212789	RUBBER PAD	0.06	2	2	2	2	2	2	2	2
232720	UPRIGHT SPLICE	2.14	1	1	1	1	1	1	1	1
212735	LOAD SPREADER TUBE 27	8.60	1	1	1	1	1	1	1	1
195695	DOOR TIE BACK CHAIN 17.75" LONG	0.52	1	1	1	1	1	1	1	1
235372	SEALING CLIP for BOTTOM ANGLE	0.12	9	9	9	9	9	9	9	9

Table 29 27–Series CEU (continued)

PART NUM-BER	DESCRIPTION	UNIT WT (lbs)	BIN MODEL (CEU)							
			2705	2706	2707	2708	2709	2710	2711	2712
235914	BOLT HFS .313 x 1.00 GR8.2 - BAG 250	8.50	1	1	1	1	1	1	1	1
235915	BOLT HFS .313 x 1.00 GR8.2 - BAG 50	1.70	2	2	2	2	2	2	2	2
235916	BOLT HFS .313 x 1.25 GR8.2 - BAG 80	3.04	1	1	1	1	1	1	1	1
235917	BOLT HFS .313 x 1.25 GR8.2 - BAG 50	1.90	2	2	2	2	2	2	2	2
235924	HEX FLANGE NUT .313 GR8 - BAG 250	3.50	2	2	2	2	2	2	2	2
235926	HEX FLANGE NUT .313 GR8 - BAG 50	0.70	2	2	2	2	2	2	2	2
235971	WSHR SEAL .313 STL/NEO - BAG 500	2.25	1	1	1	1	1	1	1	1
235941	BOLT HFS .375 x 1.0 GR8.2 - BAG 325	16.58	—	—	—	—	—	—	1	—
235943	BOLT HFS .375 x 1.0 GR8.2 - BAG 50	2.55	—	—	—	—	3	4	1	—
235944	BOLT HFS .375 x 1.25 GR8.2 - BAG 100	5.70	2	2	2	2	2	2	2	2
235947	HEX NUT .375 GR8 - BAG 300	4.80	—	—	—	—	1	1	2	—
235948	HEX NUT .375 GR8 - BAG 100	1.60	—	—	2	2	1	1	—	1
235956	FLAT WASHER .375 - BAG 200	2.80	1	1	1	1	1	1	1	1
235974	WSHR SEAL .375 STL/NEO - BAG 25	0.16	1	1	1	1	1	1	1	1
193814	CAULKING - 40' ROLL	1.00	9	11	12	13	14	16	17	18
170445	CAULKING - 300 ml TUBE	1.00	2	2	2	2	2	2	2	2
198866	MANUAL - CENTURION-W EUROCODE	0.30	1	1	1	1	1	1	1	1

Table 30. 30–Series CEU

PART NUMBER	DESCRIPTION	UNIT WT (lbs)	BIN MODEL (CEU)							
			3005	3006	3007	3008	3009	3010	3011	3012
185011	CARTON 53x27x7 for BIN PARTS 30-54	8.30	1	1	1	1	1	1	1	1
195150	PEAK RING BULB GASKET 168"	1.44	1	1	1	1	1	1	1	1
212229	PEAK RING FOAM for 30-48	0.50	1	1	1	1	1	1	1	1
212740	FALL RESTRAINT BRACKET	0.30	2	2	2	2	2	2	2	2
234811	RCO PIVOT ARM 30-60	7.12	1	1	1	1	1	1	1	1
235337	RCO PIVOT ARM BRACKET 30-48	1.37	2	2	2	2	2	2	2	2
234812	RCO ROPE ARM 15–60	4.12	2	2	2	2	2	2	2	2
235220	RCO ROPE ARM SUPPORT 30-48	0.42	1	1	1	1	1	1	1	1
235279	RCO ROOF EAVE PLATE	3.02	1	1	1	1	1	1	1	1
235817	RCO LID WINCH	5.00	1	1	1	1	1	1	1	1
234813	RCO WINCH BRACKET	2.40	1	1	1	1	1	1	1	1
235799	RCO CABLE 9/32 x 70' GALV	1.14	1	1	1	1	1	1	1	1
212401	RCO SLIDE ROD 30-48	3.06	1	1	1	1	1	1	1	1
212402	RCO SLIDE ROD ANGLE	2.15	1	1	1	1	1	1	1	1
234815	RCO GUIDE RAIL 30–60	0.80	2	2	2	2	2	2	2	2
234805	RCO HARDWARE PACKAGE 30-60	7.60	1	1	1	1	1	1	1	1
193077	LADDER RUNG 38.5 (36.0 CTR)	4.60	1	1	1	1	1	1	1	1
193076	LADDER RUNG 36.5 (34.0 CTR)	4.40	1	1	1	1	1	1	1	1
193074	LADDER RUNG 32.5 (30.0 CTR)	3.90	1	1	1	1	1	1	1	1
193072	LADDER RUNG 28.5 (26.0 CTR)	3.40	1	1	1	1	1	1	1	1
193070	LADDER RUNG 24.5 (22.0 CTR)	1.70	1	1	1	1	1	1	1	1
193068	LADDER RUNG 20.5 (18.0 CTR)	1.40	1	1	1	1	1	1	1	1
193066	LADDER RUNG 16.5 (14.0 CTR)	1.10	1	1	1	1	1	1	1	1
193064	LADDER RUNG 14.5 (10.0 CTR)	1.00	1	1	1	1	1	1	1	1
235890	INSPECTION HATCH LID	7.48	1	1	1	1	1	1	1	1
235891	INSPECTION HATCH LATCH	0.81	1	1	1	1	1	1	1	1
235882	INSPECTION HATCH BULB GASKET 76"	0.50	1	1	1	1	1	1	1	1
212230	BIRD STOP	0.13	30	30	30	30	30	30	30	30
212231	FOAM ROOF RIB CLOSURE (12)	0.06	3	3	3	3	3	3	3	3
194120	GRAIN GAUGE	0.30	1	1	1	1	1	—	—	—
194125	REFLECTIVE STRIP .75 x 8.2	0.001	1	1	1	1	1	—	—	—
232767	WIND RING CLIP	0.44	2	2	2	2	2	2	44	44
212789	RUBBER PAD	0.06	2	2	2	2	2	2	2	2
232720	UPRIGHT SPLICE	2.14	1	1	1	1	1	1	1	1
212736	LOAD SPREADER TUBE 30	8.60	1	1	1	1	1	1	1	1

Table 30 30–Series CEU (continued)

PART NUMBER	DESCRIPTION	UNIT WT (lbs)	BIN MODEL (CEU)							
			3005	3006	3007	3008	3009	3010	3011	3012
195695	DOOR TIE BACK CHAIN 17.75" LONG	0.52	1	1	1	1	1	1	1	1
235372	SEALING CLIP for BOTTOM ANGLE	0.12	10	10	10	10	10	10	10	10
235914	BOLT HFS .313 x 1.00 GR8.2 - BAG 250	8.50	1	1	1	1	1	1	1	1
235915	BOLT HFS .313 x 1.00 GR8.2 - BAG 50	1.70	3	3	3	3	3	3	3	3
235916	BOLT HFS .313 x 1.25 GR8.2 - BAG 80	3.04	1	1	1	1	1	1	1	1
235917	BOLT HFS .313 x 1.25 GR8.2 - BAG 50	1.90	2	2	2	2	2	2	2	2
235924	HEX FLANGE NUT .313 GR8 - BAG 250	3.50	2	2	2	2	2	2	2	2
235926	HEX FLANGE NUT .313 GR8 - BAG 50	0.70	3	3	3	3	3	3	3	3
235971	WSHR SEAL .313 STL/NEO - BAG 500	2.25	1	1	1	1	1	1	1	1
235941	BOLT HFS .375 x 1.0 GR8.2 - BAG 325	16.58	—	1	—	—	1	1	—	1
235943	BOLT HFS .375 x 1.0 GR8.2 - BAG 50	2.55	4	—	—	1	—	1	4	—
235944	BOLT HFS .375 x 1.25 GR8.2 - BAG 100	5.70	2	2	2	2	2	2	2	2
235949	BOLT HEX .375 x 3.75 GR5 - BAG 10	1.27	—	—	—	—	—	—	1	1
235947	HEX NUT .375 GR8 - BAG 300	4.80	1	1	—	1	1	2	1	1
235948	HEX NUT .375 GR8 - BAG 100	1.60	1	2	2	—	2	—	1	2
235956	FLAT WASHER .375 - BAG 200	2.80	1	1	1	1	1	1	1	1
235974	WSHR SEAL .375 STL/NEO - BAG 25	0.16	1	1	1	1	1	1	1	1
193814	CAULKING - 40' ROLL	1.00	10	12	13	15	16	17	19	20
170445	CAULKING - 300 ml TUBE	1.00	2	2	2	2	2	2	2	2
198866	MANUAL - CENTURION-W EUROCODE	0.30	1	1	1	1	1	1	1	1

Table 31. 33–Series CEU

PART NUMBER	DESCRIPTION	UNIT WT (lbs)	BIN MODEL (CEU)							
			3305	3306	3307	3308	3309	3310	3311	3312
185011	CARTON 53x27x7 for BIN PARTS 30-54	8.30	1	1	1	1	1	1	1	1
195150	PEAK RING BULB GASKET 168"	1.44	1	1	1	1	1	1	1	1
212229	PEAK RING FOAM for 30-48	0.50	1	1	1	1	1	1	1	1
212740	FALL RESTRAINT BRACKET	0.30	2	2	2	2	2	2	2	2
234811	RCO PIVOT ARM 30-60	7.12	1	1	1	1	1	1	1	1
235337	RCO PIVOT ARM BRACKET 30-48	1.37	2	2	2	2	2	2	2	2
234812	RCO ROPE ARM 15–60	4.12	2	2	2	2	2	2	2	2
235220	RCO ROPE ARM SUPPORT 30-48	0.42	1	1	1	1	1	1	1	1
235279	RCO ROOF EAVE PLATE	3.02	1	1	1	1	1	1	1	1
235817	RCO LID WINCH	5.00	1	1	1	1	1	1	1	1
234813	RCO WINCH BRACKET	2.40	1	1	1	1	1	1	1	1
235799	RCO CABLE 9/32 x 70' GALV	1.14	1	1	1	1	1	1	1	1
212401	RCO SLIDE ROD 30-48	3.06	1	1	1	1	1	1	1	1
212402	RCO SLIDE ROD ANGLE	2.15	1	1	1	1	1	1	1	1
234815	RCO GUIDE RAIL 30-60	0.80	2	2	2	2	2	2	2	2
234805	RCO HARDWARE PACKAGE 30-60	7.60	1	1	1	1	1	1	1	1
193077	LADDER RUNG 38.5 (36.0 CTR)	4.60	1	1	1	1	1	1	1	1
193076	LADDER RUNG 36.5 (34.0 CTR)	4.40	1	1	1	1	1	1	1	1
193074	LADDER RUNG 32.5 (30.0 CTR)	3.90	1	1	1	1	1	1	1	1
193072	LADDER RUNG 28.5 (26.0 CTR)	3.40	1	1	1	1	1	1	1	1
193071	LADDER RUNG 26.5 (24.0 CTR)	3.20	1	1	1	1	1	1	1	1
193069	LADDER RUNG 22.5 (20.0 CTR)	1.50	1	1	1	1	1	1	1	1
193066	LADDER RUNG 16.5 (14.0 CTR)	1.10	1	1	1	1	1	1	1	1
193064	LADDER RUNG 14.5 (10.0 CTR)	1.00	1	1	1	1	1	1	1	1
235890	INSPECTION HATCH LID	7.48	1	1	1	1	1	1	1	1
235891	INSPECTION HATCH LATCH	0.81	1	1	1	1	1	1	1	1
235882	INSPECTION HATCH BULB GASKET 76"	0.50	1	1	1	1	1	1	1	1
195063	STIFFENING RING BRACKET	0.31	33	33	33	33	33	33	33	33
195080	STIFFENING RING GASKET - BAG 50	0.05	1	1	1	1	1	1	1	1
195074	STIFFENING RING SPLICE 1.375	1.35	3	3	3	3	3	3	3	3
195085	STIFFENING RING EXPANDER 1.375	4.66	2	2	2	2	2	2	2	2
232798	STIFFENING RING EXPANDER CLIP	0.13	2	2	2	2	2	2	2	2
235151	SELFDRILL SCREW .25 x 1.0 - BAG 7	0.13	1	1	1	1	1	1	1	1
212230	BIRD STOP	0.13	33	33	33	33	33	33	33	33
212231	FOAM ROOF RIB CLOSURE (12)	0.06	3	3	3	3	3	3	3	3

Table 31 33–Series CEU (continued)

PART NUMBER	DESCRIPTION	UNIT WT (lbs)	BIN MODEL (CEU)							
			3305	3306	3307	3308	3309	3310	3311	3312
194120	GRAIN GAUGE	0.30	1	1	1	1	1	—	—	—
194125	REFLECTIVE STRIP .75 x 8.2	0.00	1	1	1	1	1	—	—	—
232767	WIND RING CLIP	0.44	2	2	2	2	2	2	49	49
212789	RUBBER PAD	0.06	2	2	2	2	2	2	2	2
232720	UPRIGHT SPLICE	2.14	1	1	1	1	1	1	1	1
212737	LOAD SPREADER TUBE 33-36	8.60	1	1	1	1	1	1	1	1
195695	DOOR TIE BACK CHAIN 17.75" LONG	0.52	1	1	1	1	1	1	1	1
235372	SEALING CLIP for BOTTOM ANGLE	0.12	11	11	11	11	11	11	11	11
235914	BOLT HFS .313 x 1.00 GR8.2 - BAG 250	8.50	2	2	2	2	2	2	2	2
235916	BOLT HFS .313 x 1.25 GR8.2 - BAG 80	3.04	2	2	2	2	2	2	2	2
235917	BOLT HFS .313 x 1.25 GR8.2 - BAG 50	1.90	1	1	1	1	1	1	1	1
234157	U-BOLT, ROUND .312 x 1.75W x 2.8L	0.12	33	33	33	33	33	33	33	33
235924	HEX FLANGE NUT .313 GR8 - BAG 250	3.50	3	3	3	3	3	3	3	3
235926	HEX FLANGE NUT .313 GR8 - BAG 50	0.70	2	2	2	2	2	2	2	2
235971	WSHR SEAL .313 STL/NEO - BAG 500	2.25	1	1	1	1	1	1	1	1
235943	BOLT HFS .375 x 1.0 GR8.2 - BAG 50	2.55	1	4	—	2	—	2	—	—
235944	BOLT HFS .375 x 1.25 GR8.2 - BAG 100	5.70	2	2	2	2	2	2	2	2
235949	BOLT HEX .375 x 3.75 GR5 - BAG 10	1.27	—	—	—	—	—	—	1	1
235947	HEX NUT .375 GR8 - BAG 300	4.80	—	1	—	1	—	1	—	1
235948	HEX NUT .375 GR8 - BAG 100	1.60	2	1	2	—	2	—	2	—
235956	FLAT WASHER .375 - BAG 200	2.80	1	1	1	1	1	1	1	1
235974	WSHR SEAL .375 STL/NEO - BAG 25	0.16	1	1	1	1	1	1	1	1
193814	CAULKING - 40' ROLL	1.00	11	13	14	16	18	19	21	22
170445	CAULKING - 300 ml TUBE	1.00	2	2	2	2	2	2	2	2
198866	MANUAL - CENTURION-W EUROCODE	0.30	1	1	1	1	1	1	1	1

Table 32. 36–Series CEU

PART NUMBER	DESCRIPTION	UNIT WT (lbs)	BIN MODEL (CEU)							
			3605	3606	3607	3608	3609	3610	3611	3612
185011	CARTON 53x27x7 for BIN PARTS 30-54	8.30	1	1	1	1	1	1	1	1
195150	PEAK RING BULB GASKET 168"	1.44	1	1	1	1	1	1	1	1
212229	PEAK RING FOAM for 30-48	0.50	1	1	1	1	1	1	1	1
212740	FALL RESTRAINT BRACKET	0.30	2	2	2	2	2	2	2	2
234811	RCO PIVOT ARM 30-60	7.12	1	1	1	1	1	1	1	1
235337	RCO PIVOT ARM BRACKET 30-48	1.37	2	2	2	2	2	2	2	2
234812	RCO ROPE ARM 15–60	4.12	2	2	2	2	2	2	2	2
235220	RCO ROPE ARM SUPPORT 30-48	0.42	1	1	1	1	1	1	1	1
235279	RCO ROOF EAVE PLATE	3.02	1	1	1	1	1	1	1	1
235817	RCO LID WINCH	5.00	1	1	1	1	1	1	1	1
234813	RCO WINCH BRACKET	2.40	1	1	1	1	1	1	1	1
235799	RCO CABLE 9/32 x 70' GALV	1.14	1	1	1	1	1	1	1	1
212401	RCO SLIDE ROD 30-48	3.06	1	1	1	1	1	1	1	1
212402	RCO SLIDE ROD ANGLE	2.15	1	1	1	1	1	1	1	1
234815	RCO GUIDE RAIL 30–60	0.80	2	2	2	2	2	2	2	2
234805	RCO HARDWARE PACKAGE 30-60	7.60	1	1	1	1	1	1	1	1
193077	LADDER RUNG 38.5 (36.0 CTR)	4.60	1	1	1	1	1	1	1	1
193076	LADDER RUNG 36.5 (34.0 CTR)	4.40	1	1	1	1	1	1	1	1
193074	LADDER RUNG 32.5 (30.0 CTR)	3.90	1	1	1	1	1	1	1	1
193073	LADDER RUNG 30.5 (28.0 CTR)	3.60	1	1	1	1	1	1	1	1
193070	LADDER RUNG 24.5 (22.0 CTR)	1.70	1	1	1	1	1	1	1	1
193068	LADDER RUNG 20.5 (18.0 CTR)	1.40	1	1	1	1	1	1	1	1
193067	LADDER RUNG 18.5 (16.0 CTR)	1.30	1	1	1	1	1	1	1	1
193065	LADDER RUNG 14.5 (12.0 CTR)	1.00	1	1	1	1	1	1	1	1
193063	LADDER RUNG 14.5 (8.0 CTR)	1.00	1	1	1	1	1	1	1	1
235890	INSPECTION HATCH LID	7.48	1	1	1	1	1	1	1	1
235891	INSPECTION HATCH LATCH	0.81	1	1	1	1	1	1	1	1
235882	INSPECTION HATCH BULB GASKET 76"	0.50	1	1	1	1	1	1	1	1
195063	STIFFENING RING BRACKET	0.31	36	36	36	36	36	36	36	36
195080	STIFFENING RING GASKET - BAG 50	0.05	1	1	1	1	1	1	1	1
195074	STIFFENING RING SPLICE 1.375	1.35	3	3	3	3	3	3	3	3
195085	STIFFENING RING EXPANDER 1.375	4.66	2	2	2	2	2	2	2	2
232798	STIFFENING RING EXPANDER CLIP	0.13	2	2	2	2	2	2	2	2
235151	SELFDRILL SCREW .25 x 1.0 - BAG 7	0.13	1	1	1	1	1	1	1	1
212230	BIRD STOP	0.13	36	36	36	36	36	36	36	36

Table 32 36–Series CEU (continued)

PART NUMBER	DESCRIPTION	UNIT WT (lbs)	BIN MODEL (CEU)							
			3605	3606	3607	3608	3609	3610	3611	3612
212231	FOAM ROOF RIB CLOSURE (12)	0.06	3	3	3	3	3	3	3	3
194120	GRAIN GAUGE	0.30	1	1	1	1	1	—	—	—
194125	REFLECTIVE STRIP .75 x 8.2	0.001	1	1	1	1	1	—	—	—
232767	WIND RING CLIP	0.44	2	2	2	2	2	53	53	53
212789	RUBBER PAD	0.06	2	2	2	2	2	2	2	2
232720	UPRIGHT SPLICE	2.14	1	1	1	1	1	1	1	1
212737	LOAD SPREADER TUBE 33-36	8.60	1	1	1	1	1	1	1	1
195695	DOOR TIE BACK CHAIN 17.75" LONG	0.52	1	1	1	1	1	1	1	1
235372	SEALING CLIP for BOTTOM ANGLE	0.12	12	12	12	12	12	12	12	12
235914	BOLT HFS .313 x 1.00 GR8.2 - BAG 250	8.50	2	2	2	2	2	2	2	2
235915	BOLT HFS .313 x 1.00 GR8.2 - BAG 50	1.70	2	2	2	2	2	2	2	2
235916	BOLT HFS .313 x 1.25 GR8.2 - BAG 80	3.04	2	2	2	2	2	2	2	2
235917	BOLT HFS .313 x 1.25 GR8.2 - BAG 50	1.90	1	1	1	1	1	1	1	1
234157	U-BOLT, ROUND .312 x 1.75W x 2.8L	0.12	36	36	36	36	36	36	36	36
235924	HEX FLANGE NUT .313 GR8 - BAG 250	3.50	3	3	3	3	3	3	3	3
235926	HEX FLANGE NUT .313 GR8 - BAG 50	0.70	4	4	4	4	4	4	4	4
235971	WSHR SEAL .313 STL/NEO - BAG 500	2.25	1	1	1	1	1	1	1	1
235941	BOLT HFS .375 x 1.0 GR8.2 - BAG 325	16.58	—	—	—	—	—	1	—	1
235943	BOLT HFS .375 x 1.0 GR8.2 - BAG 50	2.55	—	1	—	2	—	—	3	2
235944	BOLT HFS .375 x 1.25 GR8.2 - BAG 100	5.70	2	2	2	2	2	2	2	2
235949	BOLT HEX .375 x 3.75 GR5 - BAG 10	1.27	—	—	—	—	—	1	1	1
235947	HEX NUT .375 GR8 - BAG 300	4.80	—	1	—	1	—	2	1	2
235948	HEX NUT .375 GR8 - BAG 100	1.60	—	—	1	—	1	—	1	1
235956	FLAT WASHER .375 - BAG 200	2.80	1	1	1	1	1	1	1	1
235974	WSHR SEAL .375 STL/NEO - BAG 25	0.16	1	1	1	1	1	1	1	1
193814	CAULKING - 40' ROLL	1.00	12	14	16	17	19	21	22	24
170445	CAULKING - 300 ml TUBE	1.00	2	2	2	2	2	2	2	2
198866	MANUAL - CENTURION-W EUROCODE	0.30	1	1	1	1	1	1	1	1

Table 33. 42–Series CEU

PART NUMBER	DESCRIPTION	UNIT WT (lbs)	BIN MODEL (CEU)							
			4205	4206	4207	4208	4209	4210	4211	4212
185011	CARTON 53x27x7 for BIN PARTS 30-54	8.30	1	1	1	1	1	1	1	1
195150	PEAK RING BULB GASKET 168"	1.44	1	1	1	1	1	1	1	1
212229	PEAK RING FOAM for 30-48	0.50	1	1	1	1	1	1	1	1
212740	FALL RESTRAINT BRACKET	0.30	2	2	2	2	2	2	2	2
234811	RCO PIVOT ARM 30-60	7.12	1	1	1	1	1	1	1	1
235337	RCO PIVOT ARM BRACKET 30-48	1.37	2	2	2	2	2	2	2	2
234812	RCO ROPE ARM 15–60	4.12	2	2	2	2	2	2	2	2
235220	RCO ROPE ARM SUPPORT 30-48	0.42	1	1	1	1	1	1	1	1
235279	RCO ROOF EAVE PLATE	3.02	1	1	1	1	1	1	1	1
235817	RCO LID WINCH	5.00	1	1	1	1	1	1	1	1
234813	RCO WINCH BRACKET	2.40	1	1	1	1	1	1	1	1
235799	RCO CABLE 9/32 x 70' GALV	1.14	1	1	1	1	1	1	1	1
212401	RCO SLIDE ROD 30-48	3.06	1	1	1	1	1	1	1	1
212402	RCO SLIDE ROD ANGLE	2.15	1	1	1	1	1	1	1	1
234815	RCO GUIDE RAIL 30–60	0.80	2	2	2	2	2	2	2	2
234805	RCO HARDWARE PACKAGE 30-60	7.60	1	1	1	1	1	1	1	1
193077	LADDER RUNG 38.5 (36.0 CTR)	4.60	1	1	1	1	1	1	1	1
193076	LADDER RUNG 36.5 (34.0 CTR)	4.40	1	1	1	1	1	1	1	1
193075	LADDER RUNG 34.5 (32.0 CTR)	4.10	1	1	1	1	1	1	1	1
193073	LADDER RUNG 30.5 (28.0 CTR)	3.60	1	1	1	1	1	1	1	1
193072	LADDER RUNG 28.5 (26.0 CTR)	3.40	1	1	1	1	1	1	1	1
193071	LADDER RUNG 26.5 (24.0 CTR)	3.20	1	1	1	1	1	1	1	1
193068	LADDER RUNG 20.5 (18.0 CTR)	1.40	1	1	1	1	1	1	1	1
193067	LADDER RUNG 18.5 (16.0 CTR)	1.30	1	1	1	1	1	1	1	1
193065	LADDER RUNG 14.5 (12.0 CTR)	1.00	1	1	1	1	1	1	1	1
193064	LADDER RUNG 14.5 (10.0 CTR)	1.00	1	1	1	1	1	1	1	1
193063	LADDER RUNG 14.5 (8.0 CTR)	1.00	1	1	1	1	1	1	1	1
235890	INSPECTION HATCH LID	7.48	1	1	1	1	1	1	1	1
235891	INSPECTION HATCH LATCH	0.81	1	1	1	1	1	1	1	1
235882	INSPECTION HATCH BULB GASKET 76"	0.50	1	1	1	1	1	1	1	1
195063	STIFFENING RING BRACKET	0.31	42	42	42	42	42	42	42	42
195080	STIFFENING RING GASKET - BAG 50	0.05	1	1	1	1	1	1	1	1
195074	STIFFENING RING SPLICE 1.375	1.35	3	3	3	3	3	3	3	3
195085	STIFFENING RING EXPANDER 1.375	4.66	2	2	2	2	2	2	2	2
232798	STIFFENING RING EXPANDER CLIP	0.13	2	2	2	2	2	2	2	2

Table 33 42–Series CEU (continued)

PART NUMBER	DESCRIPTION	UNIT WT (lbs)	BIN MODEL (CEU)							
			4205	4206	4207	4208	4209	4210	4211	4212
235151	SELFDRILL SCREW .25 x 1.0 - BAG 7	0.13	1	1	1	1	1	1	1	1
212230	BIRD STOP	0.13	42	42	42	42	42	42	42	42
212231	FOAM ROOF RIB CLOSURE (12)	0.06	4	4	4	4	4	4	4	4
194120	GRAIN GAUGE	0.30	1	1	1	1	1	—	—	—
194125	REFLECTIVE STRIP .75 x 8.2	0.001	1	1	1	1	1	—	—	—
232767	WIND RING CLIP	0.44	2	2	2	2	2	61	61	61
212789	RUBBER PAD	0.06	2	2	2	2	2	2	2	2
232720	UPRIGHT SPLICE	2.14	1	1	1	1	1	1	1	1
212738	LOAD SPREADER TUBE 39-45	8.60	1	1	1	1	1	1	1	1
195695	DOOR TIE BACK CHAIN 17.75" LONG	0.52	1	1	1	1	1	1	1	1
235372	SEALING CLIP for BOTTOM ANGLE	0.12	14	14	14	14	14	14	14	14
235914	BOLT HFS .313 x 1.00 GR8.2 - BAG 250	8.50	3	3	3	3	3	3	3	3
235915	BOLT HFS .313 x 1.00 GR8.2 - BAG 50	1.70	2	2	2	2	2	2	2	2
235916	BOLT HFS .313 x 1.25 GR8.2 - BAG 80	3.04	2	2	2	2	2	2	2	2
235917	BOLT HFS .313 x 1.25 GR8.2 - BAG 50	1.90	2	2	2	2	2	2	2	2
234157	U-BOLT, ROUND .312 x 1.75W x 2.8L	0.12	42	42	42	42	42	42	42	42
235924	HEX FLANGE NUT .313 GR8 - BAG 250	3.50	4	4	4	4	4	4	4	4
235926	HEX FLANGE NUT .313 GR8 - BAG 50	0.70	4	4	4	4	4	4	4	4
235971	WSHR SEAL .313 STL/NEO - BAG 500	2.25	1	1	1	1	1	1	1	1
235941	BOLT HFS .375 x 1.0 GR8.2 - BAG 325	16.58	—	1	—	1	—	—	—	1
235943	BOLT HFS .375 x 1.0 GR8.2 - BAG 50	2.55	1	3	—	1	4	2	2	3
235944	BOLT HFS .375 x 1.25 GR8.2 - BAG 100	5.70	2	2	2	2	2	2	2	2
235949	BOLT HEX .375 x 3.75 GR5 - BAG 10	1.27	—	—	—	—	—	1	1	1
235947	HEX NUT .375 GR8 - BAG 300	4.80	1	2	—	2	1	1	1	2
235948	HEX NUT .375 GR8 - BAG 100	1.60	—	1	—	—	1	—	—	1
235956	FLAT WASHER .375 - BAG 200	2.80	1	1	1	1	1	1	1	1
235974	WSHR SEAL .375 STL/NEO - BAG 25	0.16	1	1	1	1	1	1	1	1
193814	CAULKING - 40' ROLL	1.00	14	16	18	20	22	24	—	2
170445	CAULKING - 300 ml TUBE	1.00	2	2	2	2	2	2	2	2
198866	MANUAL - CENTURION-W EUROCODE	0.30	1	1	1	1	1	1	1	1

Table 34. 45–Series CEU

PART NUM-BER	DESCRIPTION	UNIT WT (lbs)	BIN MODEL (CEU)							
			4505	4506	4507	4508	4509	4510	4511	4512
185011	CARTON 53x27x7 for BIN PARTS 30-54	8.30	1	1	1	1	1	1	1	1
195150	PEAK RING BULB GASKET 168"	1.44	1	1	1	1	1	1	1	1
212229	PEAK RING FOAM for 30-48	0.50	1	1	1	1	1	1	1	1
212740	FALL RESTRAINT BRACKET	0.30	2	2	2	2	2	2	2	2
234811	RCO PIVOT ARM 30-60	7.12	1	1	1	1	1	1	1	1
235337	RCO PIVOT ARM BRACKET 30-48	1.37	2	2	2	2	2	2	2	2
234812	RCO ROPE ARM 15–60	4.12	2	2	2	2	2	2	2	2
235220	RCO ROPE ARM SUPPORT 30-48	0.42	1	1	1	1	1	1	1	1
235279	RCO ROOF EAVE PLATE	3.02	1	1	1	1	1	1	1	1
235817	RCO LID WINCH	5.00	1	1	1	1	1	1	1	1
234813	RCO WINCH BRACKET	2.40	1	1	1	1	1	1	1	1
235799	RCO CABLE 9/32 x 70' GALV	1.14	1	1	1	1	1	1	1	1
212401	RCO SLIDE ROD 30-48	3.06	1	1	1	1	1	1	1	1
212402	RCO SLIDE ROD ANGLE	2.15	1	1	1	1	1	1	1	1
234815	RCO GUIDE RAIL 30–60	0.80	2	2	2	2	2	2	2	2
234805	RCO HARDWARE PACKAGE 30-60	7.60	1	1	1	1	1	1	1	1
193078	LADDER RUNG 40.5 (38.0 CTR)	4.80	1	1	1	1	1	1	1	1
193076	LADDER RUNG 36.5 (34.0 CTR)	4.40	1	1	1	1	1	1	1	1
193075	LADDER RUNG 34.5 (32.0 CTR)	4.10	1	1	1	1	1	1	1	1
193074	LADDER RUNG 32.5 (30.0 CTR)	3.90	1	1	1	1	1	1	1	1
193072	LADDER RUNG 28.5 (26.0 CTR)	3.40	1	1	1	1	1	1	1	1
193071	LADDER RUNG 26.5 (24.0 CTR)	3.20	1	1	1	1	1	1	1	1
193070	LADDER RUNG 24.5 (22.0 CTR)	1.70	1	1	1	1	1	1	1	1
193068	LADDER RUNG 20.5 (18.0 CTR)	1.40	1	1	1	1	1	1	1	1
193066	LADDER RUNG 16.5 (14.0 CTR)	1.10	1	1	1	1	1	1	1	1
193065	LADDER RUNG 14.5 (12.0 CTR)	1.00	1	1	1	1	1	1	1	1
193064	LADDER RUNG 14.5 (10.0 CTR)	1.00	1	1	1	1	1	1	1	1
193063	LADDER RUNG 14.5 (8.0 CTR)	1.00	1	1	1	1	1	1	1	1
193061	LADDER RUNG 14.5 (4.0 C/C)	1.00	1	1	1	1	1	1	1	1
235890	INSPECTION HATCH LID	7.48	1	1	1	1	1	1	1	1
235891	INSPECTION HATCH LATCH	0.81	1	1	1	1	1	1	1	1
235882	INSPECTION HATCH BULB GASKET 76"	0.50	1	1	1	1	1	1	1	1
195063	STIFFENING RING BRACKET	0.31	45	45	45	45	45	45	45	45
195080	STIFFENING RING GASKET - BAG 50	0.05	1	1	1	1	1	1	1	1

Table 34 45–Series CEU (continued)

PART NUM-BER	DESCRIPTION	UNIT WT (lbs)	BIN MODEL (CEU)							
			4505	4506	4507	4508	4509	4510	4511	4512
195074	STIFFENING RING SPLICE 1.375	1.35	3	3	3	3	3	3	3	3
195085	STIFFENING RING EXPANDER 1.375	4.66	2	2	2	2	2	2	2	2
232798	STIFFENING RING EXPANDER CLIP	0.13	2	2	2	2	2	2	2	2
235151	SELFDRILL SCREW .25 x 1.0 - BAG 7	0.13	1	1	1	1	1	1	1	1
212230	BIRD STOP	0.13	45	45	45	45	45	45	45	45
212231	FOAM ROOF RIB CLOSURE (12)	0.06	4	4	4	4	4	4	4	4
194120	GRAIN GAUGE	0.30	1	1	1	1	1	—	—	—
194125	REFLECTIVE STRIP .75 x 8.2	0.001	1	1	1	1	1	—	—	—
232767	WIND RING CLIP	0.44	2	2	2	2	65	65	65	65
212789	RUBBER PAD	0.06	2	2	2	2	2	2	2	2
232720	UPRIGHT SPLICE	2.14	1	1	1	1	1	1	1	1
212738	LOAD SPREADER TUBE 39-45	8.60	1	1	1	1	1	1	1	1
195695	DOOR TIE BACK CHAIN 17.75" LONG	0.52	1	1	1	1	1	1	1	1
235372	SEALING CLIP for BOTTOM ANGLE	0.12	15	15	15	15	15	15	15	15
235914	BOLT HFS .313 x 1.00 GR8.2 - BAG 250	8.50	4	4	4	4	4	4	4	4
235916	BOLT HFS .313 x 1.25 GR8.2 - BAG 80	3.04	2	2	2	2	2	2	2	2
235917	BOLT HFS .313 x 1.25 GR8.2 - BAG 50	1.90	2	2	2	2	2	2	2	2
234157	U-BOLT, ROUND .312 x 1.75W x 2.8L	0.12	45	45	45	45	45	45	45	45
235924	HEX FLANGE NUT .313 GR8 - BAG 250	3.50	5	5	5	5	5	5	5	5
235926	HEX FLANGE NUT .313 GR8 - BAG 50	0.70	3	3	3	3	3	3	3	3
235971	WSHR SEAL .313 STL/NEO - BAG 500	2.25	1	1	1	1	1	1	1	1
235941	BOLT HFS .375 x 1.0 GR8.2 - BAG 325	16.58	—	1	1	1	—	1	1	—
235943	BOLT HFS .375 x 1.0 GR8.2 - BAG 50	2.55	—	1	3	2	—	—	3	4
235944	BOLT HFS .375 x 1.25 GR8.2 - BAG 100	5.70	2	2	2	2	2	2	2	2
235949	BOLT HEX .375 x 3.75 GR5 - BAG 10	1.27	—	—	—	—	1	1	1	1
235947	HEX NUT .375 GR8 - BAG 300	4.80	—	2	2	2	—	1	2	1
235948	HEX NUT .375 GR8 - BAG 100	1.60	1	—	1	1	1	2	1	1
235956	FLAT WASHER .375 - BAG 200	2.80	1	1	1	1	1	1	2	2
235974	WSHR SEAL .375 STL/NEO - BAG 25	0.16	1	1	1	1	1	1	1	1
193814	CAULKING - 40' ROLL	1.00	15	17	19	22	24	—	2	4
170445	CAULKING - 300 ml TUBE	1.00	2	2	2	2	2	2	2	2
198866	MANUAL - CENTURION-W EUROCODE	0.30	1	1	1	1	1	1	1	1

Table 35. 48–Series CEU

PART NUMBER	DESCRIPTION	UNIT WT (lbs)	BIN MODEL (CEU)							
			4805	4806	4807	4808	4809	4810	4811	4812
185011	CARTON 53x27x7 for BIN PARTS 30-54	8.30	1	1	1	1	1	1	1	1
195150	PEAK RING BULB GASKET 168"	1.44	1	1	1	1	1	1	1	1
212229	PEAK RING FOAM for 30-48	0.50	1	1	1	1	1	1	1	1
212740	FALL RESTRAINT BRACKET	0.30	2	2	2	2	2	2	2	2
234811	RCO PIVOT ARM 30-60	7.12	1	1	1	1	1	1	1	1
235337	RCO PIVOT ARM BRACKET 30-48	1.37	2	2	2	2	2	2	2	2
234812	RCO ROPE ARM 15–60	4.12	2	2	2	2	2	2	2	2
235220	RCO ROPE ARM SUPPORT 30-48	0.42	1	1	1	1	1	1	1	1
235279	RCO ROOF EAVE PLATE	3.02	1	1	1	1	1	1	1	1
235817	RCO LID WINCH	5.00	1	1	1	1	1	1	1	1
234813	RCO WINCH BRACKET	2.40	1	1	1	1	1	1	1	1
235799	RCO CABLE 9/32 x 70' GALV	1.14	1	1	1	1	1	1	1	1
212401	RCO SLIDE ROD 30-48	3.06	1	1	1	1	1	1	1	1
212402	RCO SLIDE ROD ANGLE	2.15	1	1	1	1	1	1	1	1
234815	RCO GUIDE RAIL 30–60	0.80	2	2	2	2	2	2	2	2
234805	RCO HARDWARE PACKAGE 30-60	7.60	1	1	1	1	1	1	1	1
193078	LADDER RUNG 40.5 (38.0 CTR)	4.80	1	1	1	1	1	1	1	1
193076	LADDER RUNG 36.5 (34.0 CTR)	4.40	1	1	1	1	1	1	1	1
193075	LADDER RUNG 34.5 (32.0 CTR)	4.10	1	1	1	1	1	1	1	1
193074	LADDER RUNG 32.5 (30.0 CTR)	3.90	1	1	1	1	1	1	1	1
193073	LADDER RUNG 30.5 (28.0 CTR)	3.60	1	1	1	1	1	1	1	1
193070	LADDER RUNG 24.5 (22.0 CTR)	1.70	1	1	1	1	1	1	1	1
193069	LADDER RUNG 22.5 (20.0 CTR)	1.50	1	1	1	1	1	1	1	1
193067	LADDER RUNG 18.5 (16.0 CTR)	1.30	1	1	1	1	1	1	1	1
193066	LADDER RUNG 16.5 (14.0 CTR)	1.10	1	1	1	1	1	1	1	1
193065	LADDER RUNG 14.5 (12.0 CTR)	1.00	1	1	1	1	1	1	1	1
193063	LADDER RUNG 14.5 (8.0 CTR)	1.00	1	1	1	1	1	1	1	1
193062	LADDER RUNG 14.5 (6.0 CTR)	1.00	1	1	1	1	1	1	1	1
235890	INSPECTION HATCH LID	7.48	1	1	1	1	1	1	1	1
235891	INSPECTION HATCH LATCH	0.81	1	1	1	1	1	1	1	1
235882	INSPECTION HATCH BULB GASKET 76"	0.50	1	1	1	1	1	1	1	1
195063	STIFFENING RING BRACKET	0.31	96	96	96	96	96	96	96	96
195080	STIFFENING RING GASKET - BAG 50	0.05	2	2	2	2	2	2	2	2
195074	STIFFENING RING SPLICE 1.375	1.35	6	6	6	6	6	6	6	6
195085	STIFFENING RING EXPANDER 1.375	4.66	5	5	5	5	5	5	5	5

Table 35 48–Series CEU (continued)

PART NUMBER	DESCRIPTION	UNIT WT (lbs)	BIN MODEL (CEU)							
			4805	4806	4807	4808	4809	4810	4811	4812
232798	STIFFENING RING EXPANDER CLIP	0.13	5	5	5	5	5	5	5	5
235151	SELFDRILL SCREW .25 x 1.0 - BAG 7	0.13	2	2	2	2	2	2	2	2
212230	BIRD STOP	0.13	48	48	48	48	48	48	48	48
212231	FOAM ROOF RIB CLOSURE (12)	0.06	4	4	4	4	4	4	4	4
194120	GRAIN GAUGE	0.30	1	1	1	1	1	—	—	—
194125	REFLECTIVE STRIP .75 x 8.2	0.001	1	1	1	1	1	—	—	—
232767	WIND RING CLIP	0.44	2	2	2	2	70	70	70	70
212789	RUBBER PAD	0.06	2	2	2	2	2	2	2	2
232720	UPRIGHT SPLICE	2.14	1	1	1	1	1	1	1	1
212739	LOAD SPREADER TUBE 48-54	8.60	1	1	1	1	1	1	1	1
195695	DOOR TIE BACK CHAIN 17.75" LONG	0.52	1	1	1	1	1	1	1	1
235372	SEALING CLIP for BOTTOM ANGLE	0.12	16	16	16	16	16	16	16	16
235914	BOLT HFS .313 x 1.00 GR8.2 - BAG 250	8.50	4	4	4	4	4	4	4	4
235915	BOLT HFS .313 x 1.00 GR8.2 - BAG 50	1.70	2	2	2	2	2	2	2	2
235916	BOLT HFS .313 x 1.25 GR8.2 - BAG 80	3.04	3	3	3	3	3	3	3	3
235917	BOLT HFS .313 x 1.25 GR8.2 - BAG 50	1.90	1	1	1	1	1	1	1	1
234157	U-BOLT, ROUND .312 x 1.75W x 2.8L	0.12	96	96	96	96	96	96	96	96
235924	HEX FLANGE NUT .313 GR8 - BAG 250	3.50	6	6	6	6	6	6	6	6
235926	HEX FLANGE NUT .313 GR8 - BAG 50	0.70	3	3	3	3	3	3	3	3
235971	WSHR SEAL .313 STL/NEO - BAG 500	2.25	1	1	1	1	1	1	1	1
235941	BOLT HFS .375 x 1.0 GR8.2 - BAG 325	16.58	1	—	1	1	—	1	—	—
235943	BOLT HFS .375 x 1.0 GR8.2 - BAG 50	2.55	—	4	3	3	—	4	2	—
235944	BOLT HFS .375 x 1.25 GR8.2 - BAG 100	5.70	2	2	2	2	2	2	2	2
235949	BOLT HEX .375 x 3.75 GR5 - BAG 10	1.27	—	—	—	—	1	1	1	1
235947	HEX NUT .375 GR8 - BAG 300	4.80	2	1	2	2	1	2	1	—
235948	HEX NUT .375 GR8 - BAG 100	1.60	—	1	1	1	—	2	—	2
235956	FLAT WASHER .375 - BAG 200	2.80	1	1	1	1	2	2	2	2
235974	WSHR SEAL .375 STL/NEO - BAG 25	0.16	1	1	1	1	1	1	1	1
193814	CAULKING - 40' ROLL	1.00	16	18	21	23	25	2	4	6
170445	CAULKING - 300 ml TUBE	1.00	2	2	2	2	2	2	2	2
198866	MANUAL - CENTURION-W EUROCODE	0.30	1	1	1	1	1	1	1	1

Table 36. 51–Series CEU

PART NUMBER	DESCRIPTION	UNIT WT (lbs)	BIN MODEL (CEU)							
			5105	5106	5107	5108	5109	5110	5111	5112
185011	CARTON 53x27x7 for BIN PARTS 30-54	8.30	1	1	1	1	1	1	1	1
195149	PEAK RING BULB GASKET 105"	0.90	2	2	2	2	2	2	2	2
212228	PEAK RING FOAM for 15-27, 51-54	0.40	2	2	2	2	2	2	2	2
212740	FALL RESTRAINT BRACKET	0.30	2	2	2	2	2	2	2	2
193078	LADDER RUNG 40.5 (38.0 CTR)	4.80	1	1	1	1	1	1	1	1
193076	LADDER RUNG 36.5 (34.0 CTR)	4.40	1	1	1	1	1	1	1	1
193075	LADDER RUNG 34.5 (32.0 CTR)	4.10	1	1	1	1	1	1	1	1
193074	LADDER RUNG 32.5 (30.0 CTR)	3.90	1	1	1	1	1	1	1	1
193072	LADDER RUNG 28.5 (26.0 CTR)	3.40	1	1	1	1	1	1	1	1
193070	LADDER RUNG 24.5 (22.0 CTR)	1.70	1	1	1	1	1	1	1	1
193069	LADDER RUNG 22.5 (20.0 CTR)	1.50	1	1	1	1	1	1	1	1
193067	LADDER RUNG 18.5 (16.0 CTR)	1.30	1	1	1	1	1	1	1	1
193065	LADDER RUNG 14.5 (12.0 CTR)	1.00	1	1	1	1	1	1	1	1
193064	LADDER RUNG 14.5 (10.0 CTR)	1.00	1	1	1	1	1	1	1	1
193063	LADDER RUNG 14.5 (8.0 CTR)	1.00	1	1	1	1	1	1	1	1
193062	LADDER RUNG 14.5 (6.0 CTR)	1.00	1	1	1	1	1	1	1	1
235890	INSPECTION HATCH LID	7.48	1	1	1	1	1	1	1	1
235891	INSPECTION HATCH LATCH	0.81	1	1	1	1	1	1	1	1
235882	INSPECTION HATCH BULB GASKET 76"	0.50	1	1	1	1	1	1	1	1
195063	STIFFENING RING BRACKET	0.31	156	156	156	156	156	156	156	156
195080	STIFFENING RING GASKET - BAG 50	0.05	4	4	4	4	4	4	4	4
195074	STIFFENING RING SPLICE 1.375	1.35	9	9	9	9	9	9	9	9
195085	STIFFENING RING EXPANDER 1.375	4.66	9	9	9	9	9	9	9	9
232798	STIFFENING RING EXPANDER CLIP	0.13	9	9	9	9	9	9	9	9
235151	SELFDRILL SCREW .25 x 1.0 - BAG 7	0.13	3	3	3	3	3	3	3	3
212230	BIRD STOP	0.13	51	51	51	51	51	51	51	51
212231	FOAM ROOF RIB CLOSURE (12)	0.06	5	5	5	5	5	5	5	5
194120	GRAIN GAUGE	0.30	1	1	1	1	1	—	—	—
194125	REFLECTIVE STRIP .75 x 8.2	0.001	1	1	1	1	1	—	—	—
232767	WIND RING CLIP	0.44	2	2	2	73	73	73	73	73
212789	RUBBER PAD	0.06	2	2	2	2	2	2	2	2
232720	UPRIGHT SPLICE	2.14	1	1	1	1	1	1	1	1
212739	LOAD SPREADER TUBE 48-54	8.60	1	1	1	1	1	1	1	1
195695	DOOR TIE BACK CHAIN 17.75" LONG	0.52	1	1	1	1	1	1	1	1

Table 36 51–Series CEU (continued)

PART NUMBER	DESCRIPTION	UNIT WT (lbs)	BIN MODEL (CEU)							
			5105	5106	5107	5108	5109	5110	5111	5112
235372	SEALING CLIP for BOTTOM ANGLE	0.12	17	17	17	17	17	17	17	17
235914	BOLT HFS .313 x 1.00 GR8.2 - BAG 250	8.50	5	5	5	5	5	5	5	5
235916	BOLT HFS .313 x 1.25 GR8.2 - BAG 80	3.04	4	4	4	4	4	4	4	4
234157	U-BOLT, ROUND .312 x 1.75W x 2.8L	0.12	156	156	156	156	156	156	156	156
235924	HEX FLANGE NUT .313 GR8 - BAG 250	3.50	7	7	7	7	7	7	7	7
235926	HEX FLANGE NUT .313 GR8 - BAG 50	0.70	4	4	4	4	4	4	4	4
235971	WSHR SEAL .313 STL/NEO - BAG 500	2.25	1	1	1	1	1	1	1	1
235941	BOLT HFS .375 x 1.0 GR8.2 - BAG 325	16.58	—	—	1	—	—	—	1	—
235943	BOLT HFS .375 x 1.0 GR8.2 - BAG 50	2.55	1	—	—	—	1	—	—	5
235944	BOLT HFS .375 x 1.25 GR8.2 - BAG 100	5.70	3	3	3	3	3	3	3	3
235949	BOLT HEX .375 x 3.75 GR5 - BAG 10	1.27	—	—	—	1	1	1	1	1
235947	HEX NUT .375 GR8 - BAG 300	4.80	1	1	2	—	1	1	2	2
235948	HEX NUT .375 GR8 - BAG 100	1.60	1	—	1	1	1	—	—	—
235956	FLAT WASHER .375 - BAG 200	2.80	1	1	1	2	2	2	2	2
235957	FLAT WASHER .375 - BAG 75	1.05	1	1	1	—	—	—	—	—
235974	WSHR SEAL .375 STL/NEO - BAG 25	0.16	1	1	1	1	1	1	1	1
193814	CAULKING - 40' ROLL	1.00	17	20	22	24	1	3	6	8
170445	CAULKING - 300 ml TUBE	1.00	2	2	2	2	2	2	2	2
198866	MANUAL - CENTURION-W EUROCODE	0.30	1	1	1	1	1	1	1	1

Table 37. 54 CEU

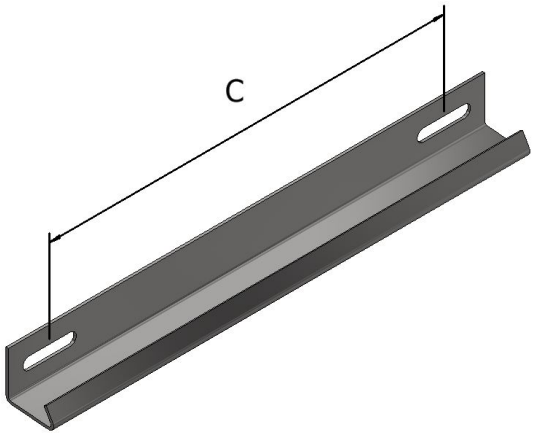
PART NO.	DESCRIPTION	UNIT WT.	QTY
185011	CARTON 53x27x7 for BIN PARTS 30-54	8.3	1
195149	PEAK RING BULB GASKET 105"	0.9	2
212228	PEAK RING FOAM for 15-27, 51-54	0.4	2
212740	FALL RESTRAINT BRACKET	0.3	2
193078	LADDER RUNG 40.5 (38.0 CTR)	4.8	1
193076	LADDER RUNG 36.5 (34.0 CTR)	4.4	1
193075	LADDER RUNG 34.5 (32.0 CTR)	4.1	1
193074	LADDER RUNG 32.5 (30.0 CTR)	3.9	1
193073	LADDER RUNG 30.5 (28.0 CTR)	3.6	1
193071	LADDER RUNG 26.5 (24.0 CTR)	3.2	1
193069	LADDER RUNG 22.5 (20.0 CTR)	1.5	1
193068	LADDER RUNG 20.5 (18.0 CTR)	1.4	1
193066	LADDER RUNG 16.5 (14.0 CTR)	1.1	1
193065	LADDER RUNG 14.5 (12.0 CTR)	1.0	1
193064	LADDER RUNG 14.5 (10.0 CTR)	1.0	1
193063	LADDER RUNG 14.5 (8.0 CTR)	1.0	1
193062	LADDER RUNG 14.5 (6.0 CTR)	1.0	1
235890	INSPECTION HATCH LID	7.5	1
235891	INSPECTION HATCH LATCH	0.81	1
235882	INSPECTION HATCH BULB GASKET 76"	0.5	1
195063	STIFFENING RING BRACKET	0.31	162
195080	STIFFENING RING GASKET - BAG 50	0.05	4
195074	STIFFENING RING SPLICE 1.375	1.35	9
195085	STIFFENING RING EXPANDER 1.375	4.66	9
232798	STIFFENING RING EXPANDER CLIP	0.125	9
235151	SELFDRILL SCREW .25 x 1.0 - BAG 7	0.13	3
212230	BIRD STOP	0.127	54
212231	FOAM ROOF RIB CLOSURE (12)	0.06	5
232767	WIND RING CLIP	0.44	2
212789	RUBBER PAD	0.06	2
232720	UPRIGHT SPLICE	2.14	1
212739	LOAD SPREADER TUBE 48-54	8.60	1
235914	BOLT HFS .313 x 1.00 GR8.2 - BAG 250	8.50	6
235915	BOLT HFS .313 x 1.00 GR8.2 - BAG 50	1.70	4

Table 37 54 CEU (continued)

PART NO.	DESCRIPTION	UNIT WT.	QTY
235916	BOLT HFS .313 x 1.25 GR8.2 - BAG 80	3.04	2
235917	BOLT HFS .313 x 1.25 GR8.2 - BAG 50	1.9	2
234157	U-BOLT, ROUND .312 x 1.75W x 2.8L	0.12	162
235924	HEX FLANGE NUT .313 GR8 - BAG 250	3.50	9
235926	HEX FLANGE NUT .313 GR8 - BAG 50	0.70	2
235973	WSHR SEAL .313 STL/NEO - BAG 25	0.10	2
235974	WSHR SEAL .375 STL/NEO - BAG 25	0.16	1
212454	MANUAL - ROOF NON-STRUCTURAL	0.30	1

7.2. Roof Parts Box Part Identification

Table 38. Roof Parts Box Part Identification



P/N	C
193061	4
193062	6
193063	8
193064	10
193065	12
193066	14
193067	16
193068	18
193069	20
193070	22

P/N	C
193071	24
193072	26
193073	28
193074	30
193075	32
193076	34
193077	36
193078	38

"C" Dimension is in inches

193061-78 – Roof Ladder Rung

195063 – Stiffening Ring Bracket

195080 – Stiffening Ring Gasket (Bag of 50)

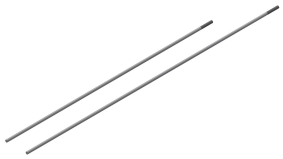
194120 – Grain Gauge

195074 – Stiffening Ring Splice (1-3/8" Dia.)

195085 – Stiffening Ring Expander (1-3/8" Dia.)

195149 – Peak Ring Bulb Gasket (105")

195150 – Peak Ring Bulb Gasket (168")



212400 - RCO Slide Rod (15' - 27') (45" Long)

212401 - RCO Slide Rod (30' - 54') (55" Long)

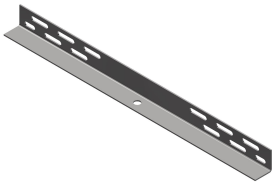
212228 – Peak Ring Foam Closure (15' - 27', 51' - 54')

212229 – Peak Ring Foam Closure (30' - 48')

212230 – Bird Stop

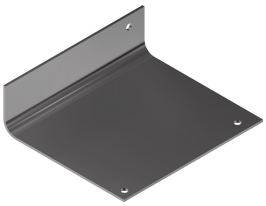
212231 – Roof Rib Foam Closure

195695 – Door Tie Back Chain (17-3/4" Long)

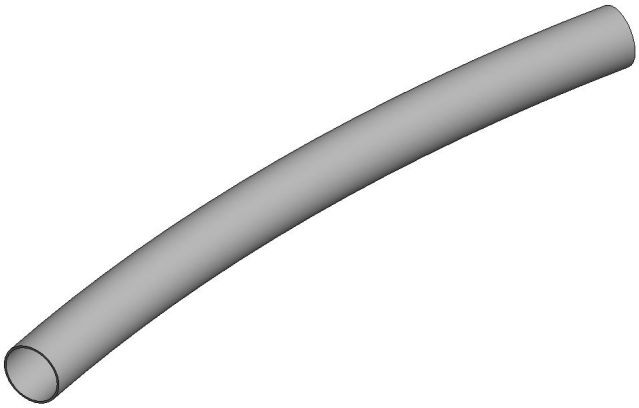


212402 – RCO Slide Rod Angle (15' - 48')

234815 – RCO Guide Rail (30' - 60') (41.35" Long)



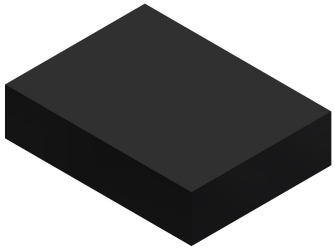
212404 – RCO Rope Guide Plate (15' - 27')



212731-39 — Load Spreader Tube

P/N	DIAMETER
212731	15
212732	18
212733	21
212734	24
212735	27
212736	30
212737	33 - 36
212738	39 - 45
212739	48 - 54

212740 – Fall Restraint Bracket



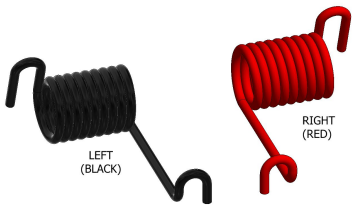
212789 - Rubber Pad

232720 – Upright Splice

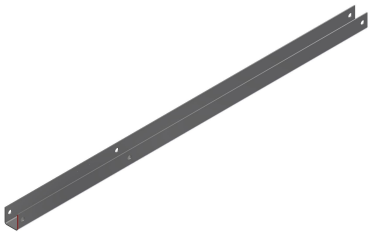
232767 – Wind Ring Clip

234813 – RCO Winch Bracket

234804 – RCO Hardware Package (15' - 27')



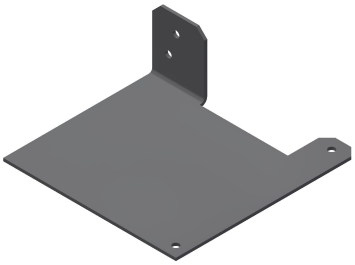
235012-13 – RCO Spring (15' - 27')



234812 – RCO Rope Arm (36")

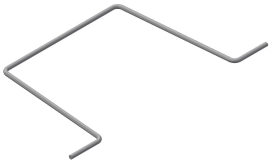
235219 - RCO Rope Arm Support (15' - 27')

235220 - RCO Rope Arm Support (30' - 54')



235279 – RCO Rope Guide Plate (30' - 54')

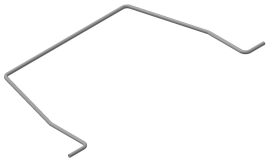
234814 – RCO Pivot Arm Bracket (15' - 27')



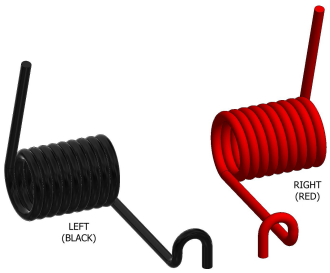
234810 – RCO Pivot Arm (15' - 27')

234805 – RCO Hardware Bag (30' - 60')

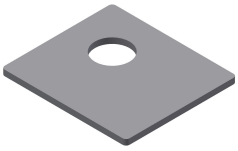
235337 - RCO Pivot Arm Bracket (30' - 48')



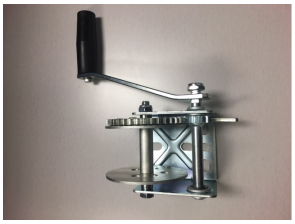
234811 – RCO Pivot Arm (30' - 60')



235341-42 – RCO Spring (30' - 54')

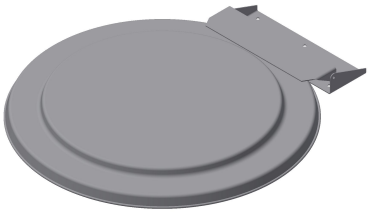


235372 – Bottom Angle Sealing Clip



235817 – RCO Winch Assembly

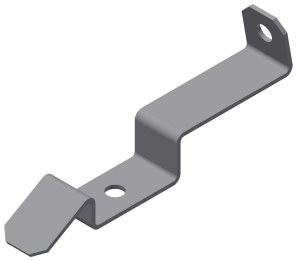
235882 – Inspection Hatch Bulb Gasket



235890 – Inspection Hatch Lid Assembly

235891 – Inspection Hatch Latch Assembly

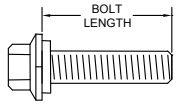
232798 - Stiffening Ring Expander Retaining Clip



236783 – Door Sidewall Latch

7.3. Hardware Usage

Table 39. Roof Hardware

	1/4" x 1" Self Drilling Screw	5/16" x 1" Flanged Hex Bolt (Washer)	5/16" x 1-1/4" Flanged Hex Bolt (Washer)	5/16" Flanged Lock Nut	5/16" STL/NEO Sealing Washer	3/8" x 1-1/2" Flanged Hex Bolt (Washer)	3/8" Hex Nut	3/8" STL/NEO Sealing Washer
	235151 (7)	235914 (250) 235915 (50)	235916 (80) 235917 (50)	235924 (250) 235926 (50)	235971 (500) 235973 (25)	235935 (55)	232851 (700) 235947 (300) 235948 (100)	235974 (25)
TOP RING ANGLE to WALL SHEET			•	•				
ROOF SHEET to PEAK RING		•		•				
ROOF SHEET to SHIM to TOP RING ANGLE			•	•				
ROOF SHEET RIB to ROOF SHEET RIB		•		•				
LADDER RUNG to ROOF SHEET RIB			•	•	•			
STIFFENING RING BRACKET to ROOF SHEET RIB			•	•				
STIFFENING RING EXPANDER CLIP to STIFFENING RING	•							
ROOF VENT to ROOF SHEET VENT CUTOUT		•		•				
INSPECTION HATCH LID ASSEMBLY to ROOF SHEET HATCH CUTOUT		•		•				
INSPECTION HATCH LATCH to ROOF SHEET		•		•	•			
ROOF SHEET to PEAK RING to FALL RESTRAINT BRACKET		•		•				
WIND RING CLIP to WALL SHEET to UPRIGHT SPLICE						•	•	•
FALL RESTRAINT BRACKET to UPRIGHT SPLICE		•		•				
BIRD STOP to TOP RING ANGLE		•		•				

Note

For structural roof hardware usage, please refer to **Structural Roof Manual (212453).**

Table 40. Bin Hardware

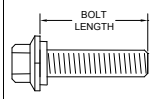
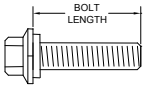
	3/8" x 1" Flanged Hex Bolt (Washer)	3/8" x 1-1/2" Flanged Hex Bolt (Washer)	3/8" x 3-3/4" Hex Bolt	3/8" Flanged Lock Nut	3/8" Hex Nut	3/8" Flat Washer	3/8" STL/NEO Sealing Washer	7/16" x 1-1/2" Flanged Hex Bolt (Washer)	7/16" x 1-3/4" Flanged Hex Bolt (Washer)	7/16" Hex Nut	1/2" Flat Washer
	232850 (700) 235941 (325) 235943 (50)	232852 (500) 235946 (100)	235949 (10)	235954 (300) 235955 (50)	232850 (700) 232852 (500) 235947 (300) 235948 (100)	235956 (200) 235957 (75)	235975 (100)	232855 (400)	232856 (300)	232855 (400) 232856 (300)	154981
INSIDE ROOF CONNECTOR UPRIGHT to WALL SHEET to OUTSIDE UPRIGHT (DOUBLE NUT)		•		•	•		•				
WALL SHEETS 194679 to 194685, and 194606 to 194607 (0.040" to 0.139")	•				•	• ☼					
WALL SHEET 194608 (0.168")		•			•	• ☼					
UPRIGHT to WALL SHEETS 194679 to 194685 (0.040" to 0.116")	•				•						
UPRIGHT to WALL SHEETS 194606 to 194608, and 194604 to 194618 (0.126" to 0.168", AND 0.096" LAM to 0.139" LAM)		•			•						
WALL SHEETS 194604 to 194605, and 194616 to 194617 (0.096" LAM to 0.139" LAM)								•		•	• ♦
WALL SHEET 194618 (0.168" LAM)									•	•	• ♦
UPRIGHT to WALL SHEET AT HORIZONTAL SEAMS		•			•						
UPRIGHT to LAMINATE to CAP PLATE to WALL SHEET (FOR BINS WITH BOXED UPRIGHTS ONLY)		•			•						
UPRIGHT to UPRIGHT SPLICE	•				•						
UPRIGHT to LAMINATE	•				•						
UPRIGHT to LAMINATE to BOXED UPRIGHT		•			•						
WALL SHEET to UPRIGHT to LAMINATE to CAP PLATE (FOR BINS WITH BOXED UPRIGHTS)		•			•						

Table 40 Bin Hardware (continued)

	3/8" x 1" Flanged Hex Bolt (Washer)	3/8" x 1-1/2" Flanged Hex Bolt (Washer)	3/8" x 3-3/4" Hex Bolt	3/8" Flanged Lock Nut	3/8" Hex Nut	3/8" Flat Washer	3/8" STL/NEO Sealing Washer	7/16" x 1-1/2" Flanged Hex Bolt (Washer)	7/16" x 1-3/4" Flanged Hex Bolt (Washer)	7/16" Hex Nut	1/2" Flat Washer
	232850 (700) 235941 (325) 235943 (50)	232852 (500) 235946 (100)	235949 (10)	235954 (300) 235955 (50)	232850 (700) 232852 (500) 235947 (300) 235948 (100)	235956 (200) 235957 (75)	235975 (100)	232855 (400)	232856 (300)	232855 (400) 232856 (300)	154981
WIND RING CLIP to UPRIGHT		•			•						
WIND RING SPLICE			•		•						
WALL SHEET to BOTTOM RING ANGLE	•				•	•					
DRYING FLOOR FLASHING HOLES in BOTTOM WALL SHEET					•						
WALL SHEET to WALK-IN DOOR		•			•						
WALL SHEET to ONE-TIER DOOR	•				•	•					
DOOR TIE-BACK to WALL SHEET	•				•						

Note

☼ — Use washers only at wall sheet to bottom ring angle, non-laminated to laminated wall sheet horizontal seam and wall sheet vertical seams to door (non-laminated sheets only; 3/8" bolts).

♦ — Use washers only at wall sheet to bottom ring angle.

7.4. Recommended Bolt Assembly

When tightening bolts, tighten the nut on the bolt until a “snug-tightened condition” has been achieved. A “snug-tightened condition” is defined in *Specification for Structural Joints Using ASTM A325 or A490 Bolts* (Research Council on Structural Connections: June 2004), which states:

“*The snug-tightened condition is the tightness that is attained with a few impacts of an impact wrench or the full effort of an ironworker using an ordinary spud wrench to bring the connected plies into firm contact.”*

A properly tightened bolt will compress the sealing washer noticeably. All assembly crew members must be made aware of this requirement, and must know how to achieve a snug-tightened condition using common bin-building tools.

It is important that the bolts in the vertical wall sheet seams are tightened enough to squeeze the caulking and bring the wall sheet surfaces into firm contact with each other. This is especially important to monitor when installing bolts in temperatures approaching -10°C (14°F).

The following table shows the minimum impact gun torque capacity necessary to achieve a snug-tightened condition for bolts used in the assembly process.

Table 41. Recommended Impact Gun Torque Values Capacity to Achieve Snug-Tightened Bolts

Bolt Diameter	Bolt Grade	Grade Mark	Recommended Torque Capacity		
			in-lb	ft-lb	N-m
1/4"	Grade 8.2		75	6	8
5/16"	Grade 8.2		215	18	24
3/8"	Grade 8.2		370	31	42
7/16"	Grade 8.2		600	50	68
1/2"	Grade 8.2		960	80	108
5/8"	Grade 8.2		1800	150	203
3/4"	Grade 5		3230	269	365

For proper sealing, do not overtighten the wall seam connections. Sealing is not critical on stiffener splice connections; these connections should be tightened securely to prevent loosening.

Hold the bolt head securely when tightening the nut to prevent damage to the sealing washer.

Important

Always tighten the nut, not the bolt.

Avoid bin assembly at temperatures below -10°C (14°F) if possible. Erection in low temperatures does not ensure strong, well sealed connections. Do not substitute bolts in place of those supplied by AGI.

Important

Do not substitute any other bolts/fasteners for those supplied by the **AGI** factory.

8. Warranty

AGI Grain Bin Products

Ag Growth International, Inc. ("AGI") warrants that the goods and/or services being supplied (the "Goods") will be free from defects in materials and workmanship under normal conditions, use, service, and maintenance, for a period of twelve (12) months from the date of first operation of the Goods, but in no event more than eighteen (18) months from the date of delivery of the Goods to the end-user (or as otherwise set out in the chart below) (the "Warranty Term"). If the Goods are being used for rental purposes, the Warranty Term for the subject Goods shall be limited to 90 days.

Galvanized Bins	5 Years
SureTrack	2 Years
Easyflow2	2 Years
Fans	3 Years
Heaters	1 Year
Side Draw	5 Year
Transitions	3 Years
Roof Exhauster	1 Year
Floors	5 Years
Catwalk	1 Year
Bulk Feed Tanks	2 Years
Hopper Tanks	5 Year
SeedStor-K Cones	
Paint	1 Year
Structural	10 Year
Commercial HBB Hopper	
Paint	1 Year
Structural	10 Year
Welded Cone(s)	
Paint	1 Year
Structural	10 Year
Farm Smoothwall Bins	
Paint	1 Year
Structural	10 Year
Commercial Smoothwall Bins	
Paint	1 Year
Structural	10 Year
SMARTStir Accessories	
Trolley	1 Year
Down Auger	1 Year
Disconnected Box	1 Year
Grain Spreader	1 Year
EasyDry Accessories	
Plenum	5 Year
Controls	1 Year
Blower Heater	1 Year

Subject to AGI's sole discretion, if the Goods, or a component thereof, are found to have a default in materials and/or workmanship within the Warranty Term, AGI will, at its own option and expense, repair or replace the subject Goods or refund the purchase price for the applicable Goods. Any warranty related expenses incurred on behalf of or by the end-user without the prior written consent of AGI shall be the sole responsibility of the end-user. Expenses relating to travel, customs or import duties and tariffs, equipment rental, and any costs associated with accessing the Goods are the sole responsibility of the customer. Warranty shall be void in the event that the Goods are returned or disposed of without the written consent of AGI.

The customer shall not assert a claim that the Goods are defective unless the customer gives written notice to AGI of such defect within forty-eight (48) hours of discovering such defect. In the event of a warranty claim, the customer must complete any and all information

required by AGI in order to properly assess or investigate the claim. AGI shall be given a reasonable opportunity to inspect and test the Goods in question. Failure by the customer to notify AGI of such claim within 48 hours shall operate as a waiver of any and all such claims by the customer.

THIS IS THE SOLE AND EXCLUSIVE WARRANTY GIVEN BY AGI WITH RESPECT TO THE GOODS AND IS IN LIEU OF AND EXCLUDES ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, ARISING BY OPERATION OF LAW OR OTHERWISE, INCLUDING WITHOUT LIMITATION, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE WHETHER OR NOT THE PURPOSE OR USE HAS BEEN DISCLOSED TO SELLER IN SPECIFICATIONS, DRAWINGS, OR OTHERWISE, AND WHETHER OR NOT AGI'S GOODS ARE SPECIFICALLY DESIGNED AND/OR MANUFACTURED BY AGI FOR BUYER'S USE OR PURPOSE.

This limited warranty extends solely to Goods manufactured by AGI and does not cover any third-party parts, components, or materials. To the extent permitted by the manufacturer, AGI will pass on applicable warranties on third-party parts, components or materials to the end-user. This warranty does not extend to any losses or damages due to misuse, use of a kind and/or to a degree not reasonably expected to be made of the Goods, any use of the Goods which is not an intended use as specified in AGI's published product literature or otherwise specified by AGI in writing, accident, acts of God, abuse, neglect, normal wear and tear (including corrosion and cosmetic issues), any equipment attached to or used in conjunction with the Goods, any field modifications or substitutions to original Goods, component damage incurred during shipping and handling, modification or alteration, used beyond rated capacity, or improper installation, maintenance or application.

THE SOLE AND EXCLUSIVE REMEDY FOR ANY CLAIM HEREUNDER SHALL BE LIMITED TO REPAIR, REPLACEMENT, OR REFUND OF THE PURCHASE PRICE. AGI SHALL NOT BE LIABLE FOR DAMAGES CAUSED BY DELAY IN PERFORMANCE AND IN NOT EVENT, REGARDLESS OF THE FORM OF THE CLAIM OR CAUSE OF ACTION (WHETHER BASED IN CONTRACT, INFRINGEMENT, NEGLIGENCE, STRICT LIABILITY, OTHER TORT OR OTHERWISE), SHALL AGI'S LIABILITY TO BUYER AND/OR ITS CUSTOMERS EXCEED THE PURCHASE PRICE OF THE GOODS. BUYER AGREED THAT IN NO EVENT SHALL AGI'S LIABILITY TO BUYER AND/OR ITS CUSTOMERS EXTEND TO INCLUDE INCIDENTAL, CONSEQUENTIAL, OR PUNITIVE DAMAGES. THE TERM "CONSEQUENTIAL DAMAGES" SHALL INCLUDE, BUT NOT BE LIMITED TO, LOSS OF ANTICIPATED PROFITS, LOSS OF USE, LOSS OF REVENUE, FAILURE TO MEET GOVERNMENT AND/OR ADMINISTRATIVE REQUIREMENTS, CLEAN UP COSTS, COST OF CAPITAL AND DAMAGE OR LOSS TO OTHER GOODS, PROPERTY OR EQUIPMENT.

To the fullest extent permitted by law, Buyer, on behalf of itself, its suppliers, their agents, employees or any entity or person for which Buyer is or may be responsible ("Indemnitors") shall fully indemnify, save and hold AGI, its agents, employees, officers, directors, partners and related entities harmless from and against all liability, damage, loss, claims, demands, actions and expenses of any nature whatsoever, including, but not limited to reasonable attorney's fees which arise out of or are connected with: (a) any negligent act, error or omission by any Indemnitor in the performance of this agreement; (b) the failure of the Indemnitor to comply with the laws, statutes, ordinances or regulations of any governmental or quasi-governmental authority; or (c) the material breach of any term or condition of this agreement by any of the Indemnitors. Without limiting the generality of the foregoing, the indemnity hereinabove set forth shall include all liability, damage, loss, claims, demands, and actions on account of personal injury, death or property loss to any third party, any Indemnitee, any of Indemnitee's employees, agents, licensees or invitees. The indemnity set forth herein shall survive any termination of this agreement.

THIS WARRANTY IS NON-TRANSFERABLE AND APPLIES ONLY TO THE ORIGINAL END-USER AND SHALL BE CONSIDERED VOID IF NOT REGISTERED WITHIN 30 DAYS OF RECEIPT OF THE GOODS BY THE ORIGINAL END USER.

AGI is a leading provider of equipment solutions for agriculture bulk commodities including seed, fertilizer, grain, and feed systems with a growing platform in providing equipment and solutions for food processing facilities. AGI has manufacturing facilities in Canada, the United States, the United Kingdom, Brazil, South Africa, India and Italy and distributes its products globally.

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Please include the part number listed on the cover page in your message.