



INSTALLATION MANUAL

P/N 375248

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CB GRAIN BIN 5SL MANUAL

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MANUAL REVISIONS:

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- Miscellaneous Formatting Updates.

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SECTION 1: STANDARD LIMITED WARRANTY

Chief Grain Bin Products

1. **DEFINITIONS.** The following terms, when they appear in the body of this Standard Limited Warranty for Grain Bin Products in initial capital letters shall have the meaning set forth below:
 - a. Accepted Purchase Order shall mean the Purchase Order identified below.
 - b. Chief shall mean Chief Agri, a division of Chief Industries, Inc.
 - c. Original Owner shall mean the original owner identified below.
 - d. Product shall mean the Chief Agri Equipment as described in the Accepted Purchase Order.
 - e. Reseller shall mean the authorized Chief Agri Equipment dealer identified below.
2. **LIMITED PRODUCT WARRANTY.** Upon and subject to the terms and conditions set forth below, Chief hereby warrants to the Reseller, and, if different, the Original Owner as follows:
 - a. All new Products delivered to the Reseller or the Original Owner by Chief pursuant to the Accepted Purchase Order will, when delivered, conform to the specifications set forth in the Accepted Purchase Order;
 - b. All new Products delivered pursuant to the Accepted Purchase Order will, in normal use and service, be free from defects in materials or workmanship; and
 - c. Upon delivery, Chief will convey good and marketable title to the Products, free and clear of any liens or encumbrances except for, where applicable, a purchase money security interest in favor of Chief.
3. **DURATION OF WARRANTY AND NOTICE REQUIREMENTS.** Subject to the Exceptions, Exclusions and Limitations set forth below, the warranties set forth in Section 2 above shall apply to all covered non-conforming conditions that are discovered within the first sixty (60) months following delivery of the Product to the carrier designated by the Reseller and/or the Original Owner at Chief's manufacturing facility in Kearney, Nebraska (the "Warranty Period") and are reported to the Chief as provided in Section 4 below within thirty (30) days following discovery (a "Notice Period").
4. **NOTICE PROCEDURE.** In order to make a valid warranty claim, the Reseller and/or the Original Owner must provide Chief with a written notice of any nonconforming condition discovered during the Warranty Period within the applicable Notice Period specified in Section 3 above. Said notice must be in writing; be addressed to Chief Industries, Inc., Agri Division, Customer Service Department, P.O. Box 848, Kearney, NE 68848; and contain the following information: (a) the Customer's name and address; (b) the Reseller's name and address; (c) the make and model of the Product in question; (d) the current location of the Product; (e) a brief description of the problem with respect to which warranty coverage is claimed; and (f) the date on which the Product was purchased.

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5. **EXCEPTIONS AND EXCLUSIONS.** Anything herein to the contrary notwithstanding, the warranties set forth in Section 2 above do not cover any of the following, each of which are hereby expressly excluded:
- a. Defects that are not discovered during the applicable Warranty Period;
 - b. Defects that are not reported to the Chief Agri Division Customer Service Department in conformity with the notice procedure set forth in Section 4 above within the applicable Notice Period specified in Section 3;
 - c. Any used or pre-owned Products;
 - d. Any Chief manufactured parts that are not furnished as a part of the Accepted Purchase Order;
 - e. Any fixtures, equipment, materials, supplies, accessories, parts or components that have been furnished by Chief but are manufactured by a third party;
 - f. Any Products which have been removed from the location at which they were originally installed;
 - g. Any defect, loss, damage, cost or expense incurred by the Reseller or the Original Owner to the extent the same arise out of, relate to or result, in whole or in part, from any one or more of the following:
 - i. Usual and customary deterioration, wear or tear resulting from normal use, service and exposure;
 - ii. Theft, vandalism, accident, war, insurrection, fire or other casualty;
 - iii. Any damage, shortages or missing parts which result during shipping or are otherwise caused by the Reseller, the Original Owner and/or any third party;
 - iv. Exposure to marine environments, including frequent or sustained salt or fresh water spray;
 - v. Exposure to corrosive, chemical, ash, smoke, fumes, or the like generated or released either within or outside of the structure on which the Product is installed,
 - vi. Exposure to or contact with animals, animal waste and/or decomposition;
 - vii. The effect or influence the Product may have on surrounding structures, including, without limitation, any loss, damage or expense caused by drifting snow;
 - viii. Any Product or portion thereof that has been altered, modified or repaired by the Reseller, the Original Owner or any third party without Chief's prior written consent;
 - ix. Any Product or portion thereof that has been attached to any adjacent structure without Chief's prior written approval;
 - x. Any Product to which any fixtures, equipment, accessories, materials, parts or components which were not provided as a part of the original Accepted Purchase Order have been attached without Chief's prior written approval;
 - xi. The failure on the part of the Reseller, the Original Owner or its or their third party contractors to satisfy the requirements of all applicable statutes, laws, ordinances rules, regulations and codes, (including zoning laws and/or building codes);

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- xii. The use of the Product for any purpose other than the purpose for which it was designed; and/or
 - xiii. The failure of the Reseller, the Original Owner and/or any third party to:
 - 1. properly handle, transport and/or store the Product or any component part thereof;
 - 2. properly select and prepare a site that is adequate for the installation and/or operation of the Product or any component part thereof;
 - 3. properly design and construct a foundation that is adequate for the installation and/or operation of the Product or any component part thereof;
 - 4. properly set up, erect, construct or install the Product and/or any component part thereof; and/or
 - 5. properly operate, use, service and/or maintain the Product and each component part thereof.
6. **RESOLUTION OF WARRANTY CLAIMS.** In the event any nonconforming condition is discovered within the Warranty Period and Chief is notified of a warranty claim as required by Section 4 prior to the end of the applicable Notice Period set forth in Section 3 above, Chief shall, with the full cooperation of the Reseller and the Original Owner, immediately undertake an investigation of such claim. To the extent Chief shall determine, in its reasonable discretion, that the warranty claim is covered by the foregoing Limited Product Warranty, the following shall apply:
- a. Warranty Claims with Respect to Covered Non-Conforming Conditions Discovered Within the First Three Hundred Sixty-Five (365) Days and Reported to Chief Within Thirty (30) Days of Discovery. In the case of a warranty claim which relates to a covered non- conforming condition that is discovered during the first three hundred sixty five (365) days of the Warranty Period and is reported to Chief as required by Section 4 within thirty (30) days of discovery as required by Section 3, Chief will, as Chief's sole and exclusive obligation to the Reseller and the Original Owner, and as their sole and exclusive remedy, work in cooperation with the Reseller and the Original Owner to correct such non- conforming condition, and in connection therewith, Chief will ship any required replacement parts to the "ship to address" set forth in the Accepted Purchase Order FOB Chief's facilities in Kearney, Nebraska, and will either provide the labor or reimburse the Reseller or the Original Owner, as may be appropriate in the circumstances, for any out of pocket expense the Original Owner may reasonably and necessarily incur for the labor that is required to correct such non-conforming condition, provided that if work is to be performed by the Reseller or a third party contractor, Chief may require at least two competitive bids to perform the labor required to repair or correct the defect and reserves the right to reject all bids and obtain additional bids. Upon acceptance of a bid by Chief, Chief will authorize the necessary repairs.
 - b. All Other Warranty Claims. Except as is otherwise provided in subsection 6a. above, in the case of all other warranty claims which relate to covered non-conforming

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conditions that are discovered during the Warranty Period and are reported to Chief as required by Section 4 within thirty (30) days following discovery, Chief will, as Chief's sole and exclusive obligation to the Reseller and the Original Owner, and as the Reseller's and the Original Owner's sole and exclusive remedy, ship any required replacement parts to the Original Owner at the "ship to address" specified in the Accepted Purchase Order FOB Chief's facilities in Kearney, Nebraska; and in such event, Chief shall have no responsibility or liability to either the Reseller or the Original Owner for the cost of any labor required to repair or correct the defect.

7. **WARRANTY NOT TRANSFERABLE.** This Warranty applies only to the Reseller and the Original Owner and is not transferable. As such, this Warranty does not cover any Product that is sold or otherwise transferred to any third party following its delivery to the Original Owner.
8. **LIMITATION ON WARRANTIES, LIABILITIES AND DAMAGES.** The Reseller and the Original Owner expressly agree that the allocation of the risk, liability, loss, damage, cost and expense arising from any Product that does not conform to the limited warranty given in Section 2 above are fair and reasonable and acknowledge that such allocation was expressly negotiated by the parties and was reflected in the Purchase Price of the Product. Accordingly, the Reseller and the Original Owner expressly agree as follows:
 - a. Disclaimer of Implied Warranties. EXCEPT AS IS OTHERWISE EXPRESSLY SET FORTH HEREIN, CHIEF MAKES NO OTHER REPRESENTATIONS OR WARRANTIES OF ANY KIND WHATSOEVER, WHETHER EXPRESS OR IMPLIED, BY OPERATION OF LAW, COURSE OF DEALING OR OTHERWISE WITH RESPECT TO THE PRODUCT, ANY COMPONENT PART THEREOF OR ANY OTHER GOODS OR SERVICES THAT CHIEF MANUFACTURES, FABRICATES, PRODUCES, SELLS OR PROVIDES TO THE DEALER OR THE ORIGINAL OWNER PURSUANT TO THE TERMS OF ANY ACCEPTED PURCHASE ORDER, INCLUDING WITHOUT LIMITATION ANY REPRESENTATION OR WARRANTY WITH RESPECT TO DESIGN, CONDITION, MERCHANTABILITY OR FITNESS OF THE PRODUCT OR ANY OTHER GOODS OR SERVICES FOR ANY PARTICULAR PURPOSE OR USE.
 - b. Limitation on Liability. EXCEPT AS IS OTHERWISE EXPRESSLY SET FORTH IN SECTION 6 ABOVE, CHIEF'S LIABILITY TO THE DEALER AND/OR THE ORIGINAL OWNER WITH RESPECT TO ANY DEFECTS IN ANY PRODUCTS OR FOR ANY OTHER GOODS OR SERVICES WHICH DO NOT CONFORM TO THE WARRANTIES SET FORTH ABOVE SHALL NOT, IN ANY EVENT, EXCEED THE ACTUAL COST OF SUCH NON-CONFORMING PRODUCT, GOODS OR SERVICES AS DETERMINED PURSUANT TO THE ACCEPTED PURCHASE ORDER; AND
 - c. Limitation on the Nature of Damages. EXCEPT AS EXPRESSLY PROVIDED IN SECTION 6 ABOVE, CHIEF SHALL NOT, UNDER ANY CIRCUMSTANCES, BE LIABLE TO THE DEALER, THE ORIGINAL OWNER OR ANY THIRD PARTY FOR ATTORNEY FEES COURT COSTS OR ANY OTHER SPECIAL, INDIRECT, INCIDENTAL, CONSEQUENTIAL, LIQUIDATED OR PUNITIVE DAMAGES OF ANY NAME, NATURE OR DESCRIPTION AS A RESULT OF THE FAILURE OF ANY

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PRODUCT OR ANY OTHER GOODS OR SERVICES PURCHASED BY THE DEALER OR THE ORIGINAL OWNER FROM CHIEF PURSUANT TO THE ACCEPTED PURCHASE ORDER TO CONFORM TO THE LIMITED WARRANTIES SET FORTH IN SECTION 2 ABOVE.

9. **APPLICABLE LAW.** This Limited Product Warranty has been issued, accepted and entered into by the Reseller, the Original Owner and Chief in the State of Nebraska and shall be governed by, and construed in accordance with, the internal laws of the State of Nebraska. Any legal action or proceeding with respect to any goods or services furnished to the Original Owner by Chief in connection herewith, or any document related hereto shall be brought only in the district courts of Nebraska, or the United States District Court for the District of Nebraska, and, by execution and delivery of this Limited Product Warranty, the undersigned Original Owner hereby accept for themselves and with respect to their property, generally and unconditionally, the jurisdiction of the aforesaid courts. Further, the undersigned Original Owner hereby irrevocably waives any objection, including, without limitation, any forum non convenience, which it may now or hereafter have to the bringing of such action or proceeding in such respective jurisdictions.

4843-5948-9057, v. 1

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SECTION 2: GENERAL INFORMATION

WARNING

WATER SENSITIVE MATERIALS – READ THIS NOTICE CAREFULLY

Items must be inspected and carrier advised immediately if damage is noted. White rust is a corrosion attack of the zinc coating resulting from the presence of water. Anywhere rust is found will result in a reduction of the life of the galvanized steel.

If water has entered a bundle or if condensation has formed between items, the package must be opened, the items separated and all surfaces dried.

If items are to be installed within 10 days:

Store bundled items off the ground high enough to allow air circulation beneath bundle and to prevent water from entering. Store 1 end at least 8" (20.32cm) higher than the opposite end. Support long bundles in the center. Prevent rain from entering the bundle by covering with a tarpaulin, making provision for air circulation between the draped edges and the ground.

Do not wrap in plastic.

If items are not to be installed within 10 days:

Provide inside dry storage. Storage beyond 6 months is not recommended. If white rust is apparent upon receipt of shipment, notify Chief immediately. Damage to items, resulting from improper storage, is the responsibility of the receiver.

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BEFORE YOU BEGIN

Before starting the installation of the equipment, take time to thoroughly study the construction methods in this manual, this will save you time and money.

Chief makes no warranty concerning components, accessories or equipment not manufactured by Chief.

When using a cutting torch or welding galvanized material, the possibility of developing toxic fumes will exist. Provide adequate ventilation and respiratory protection when using this type of equipment during installation.

INTRODUCTION

Thank you for purchasing a Chief Grain Product. Proper installation and operation will ensure you the best overall experience with your equipment and guarantee smooth operation.

This proprietary information is loaned with the expressed agreement that the drawings and information therein contained are the property of Chief Industries, Inc. and will not be reproduced, copied, or otherwise disposed of, directly or indirectly, and will not be used in whole or in part to assist in making or to furnish any information for the making of drawings, prints or other reproduction hereof, or for the making of additional products or equipment except upon written permission of Chief Industries, Inc. first obtained and specific as to each case. The acceptance of this material will be construed as an acceptance of the foregoing agreement.

The technical data contained herein is the most recent available at the time of publication and is subject to modification without notice. Chief Industries, Inc. reserves the right to modify the construction and method of operation of their products at any time without any obligation on their part to modify any equipment previously sold and delivered.

The model nomenclature distinguishes the application of the grain bin. The information includes a designation of the applicable structure diameter, eave height, roof design and design criteria utilized. The definition of the model number nomenclature is as follows:

Example: CB 16 - 12 - SVR - SZA
 (A) (B) (C) (D) (E)

(A) = Chief Bin Laminated Splice
(B) = Grain Bin Diameter (# of sheets about the circumference [ring] of the bin)
(C) = Grain Bin Height (# of rings in height of the bin)
(D) = Roof Design Type (Stepped V-Rib Roof Panel)
(E) = Grain Bin Design Criteria for Seismic and/or Wind Rating

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GENERAL DESIGN INFORMATION

All Chief grain bins are designed for storage and handling of free flowing grain with density as follows:

- 52 PCF (833 kg/m³) Compacted Density

Storage of products other than grain products having unusual flow characteristics, or products with unusual corrosive properties must be approved by Chief engineering department prior to quoting.

Storage of non-flowing products such as soybean meal or meat scraps in a standard designed bin will void the warranty.

For the grain bin, each individual sidewall ring has been designed to accommodate the vertical and horizontal wall loads imposed by the stored grain. Sidewall sheeting gauge and design strength for each ring is individually analyzed for all bin sizes. Sidewall stiffener gauges and design strength is individually determined for the full sidewall height range. All steel materials are purchased in accordance with the applicable ASTM Standard.

All bolted connections are designed using high strength bolts which meet the specifications of the applicable ASTM or SAE standard.

All grain bins must be filled uniformly at the center and unloaded thru the center discharge only, until grain no longer flows by gravity. Grain bins filled or emptied off-center will void the warranty; with the exception of approved side draw unload systems.

All galvanized steel used for storage and drying bins conform to ASTM specification A653 with the galvanized coating to ASTM specification A924.

Galvanized coating type G-90.

- 22 Gauge thickness & lighter = Commercial Steel Type A, 33ksi min yield (grade 230)
- 20 Gauge thickness & heavier = Structural Steel Grade 55, Class I; 55ksi min yield (grade 420)

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GRAIN BIN USAGE

CB Stiffened to Eave Bin Series: The CB Stiffened to Eave Bins may be used for all common drying applications. These bins are available in sizes CB #5 thru #16. If stirring devices consisting of more than six down augers are to be used, contact Chief Industries, Inc. for recommendations. This bin can be used when stairways, Recirculating devices, and stirring devices with four or more down augers are to be installed.

ACCESSORY EQUIPMENT

All accessory equipment should be installed and maintained in accordance with each individual supplier's installation and operation instructions. However, if any sidewall penetrations or other modifications to the Chief standard design are required, contact Chief for special recommendations.

Important Note: Do not modify bin design without Chief approval. It is the responsibility of the general contractor to verify that all equipment is properly installed and that the equipment is compatible with the intended use. A qualified electrician should be contracted to complete all electrical wiring and servicing.

ROOF PEAK SERVICE LOADS

For standard bin models towers located between the bins should support overhead equipment such as conveyors, augers, and catwalks. The bin walls or roof should not support the load from these items. When an alternate site design is required, the grain bin can be specifically designed to support concentrated loads at the peak or eave of the roof with upgraded design stiffeners to support the overhead load.

When determining the service loads on the roof peak, the weight of all accessory equipment suspended or supported by the peak should be considered. The weights should be calculated using the equipment dead load plus the live load from the grain in transit.

For example, the weight of an overhead conveyor should include the catwalk, conveyor head assembly, motors, drives, downspouts, discharges and weight of grain when in operation. If conveyor and catwalk design is such that snow build up is likely during winter months, snow load must be added in the peak load calculation. If a temperature cable is suspended from peak add 1000 lbs. (452 kg.) per 40 foot (12.2 m) of cable length to the peak's service load. Interpolate value for intermediate cable lengths (example: 60 foot (18.3 m) cable would exert 1500 lbs. (680 kg), of load).

Important Note: Do not allow excessive snow and ice to accumulate on any portion of the roof, potentially causing excessive roof loading and structural damage.

Important Note: Roof peak overloading can cause structural damage to the bin roof. Roof loads in excess of the specified peak rating will void the warranty.

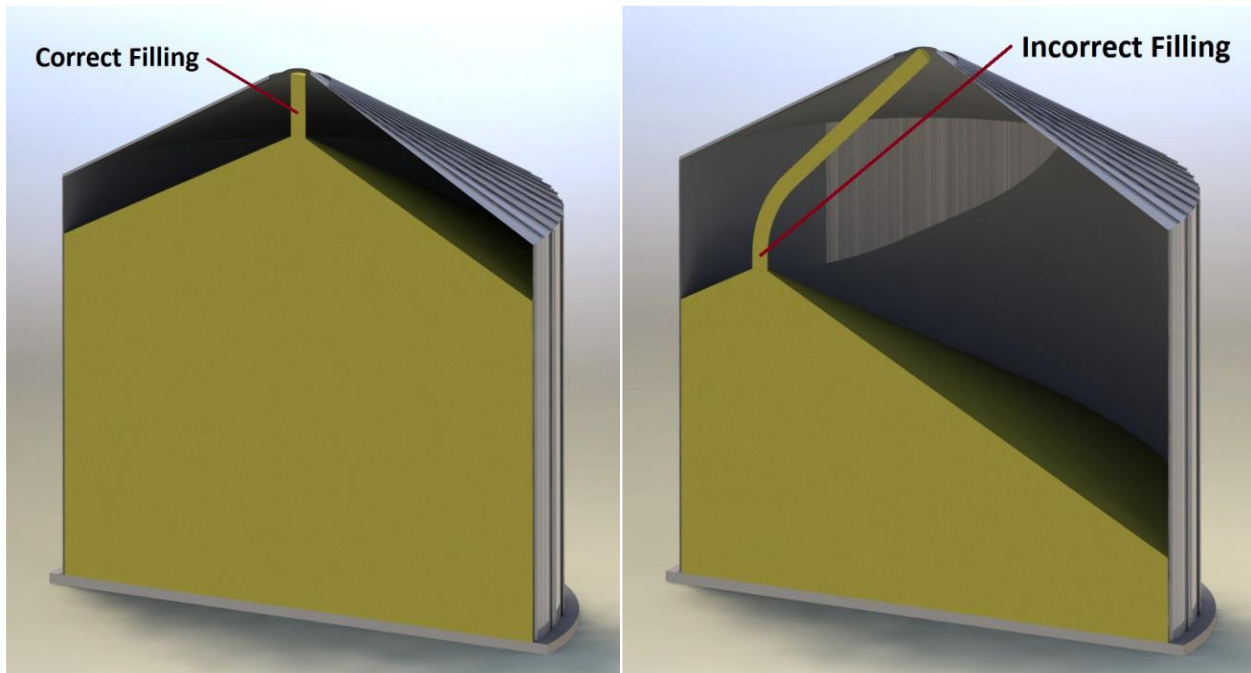
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BIN LOADING

Standard commercial grain bins (CB18 and larger) can be loaded at a rate below 40,000 bushels per hour. If a loading rate of 40,000 bushels per hour or greater is required, or the grain bin is smaller than a CB18 and requires a loading rate of 40,000 bushels per hour, contact Chief for upgrade recommendations.

Center filling thru the peak opening is recommended for all grain bins. Off center loading will create unequal pressures on the sidewall and results in structural damage. If spouting is to be used, it is recommended that a dead head or cushion box be used to promote uniform filling. Also, the use of spreaders or splash plates are recommended for distributing the grain fines, promoting uniform air flow thru grain and leveling the grain peak.

Important Note: Do not overfill the grain bin. Overfilling can cause structural damage to the roof and creates improper airflow and ventilation issues. The maximum grain level is 1" (2.54cm) below the roof eave.



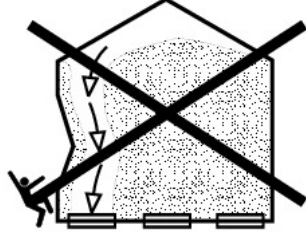
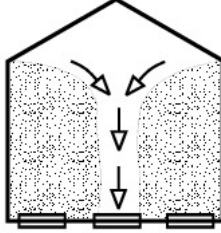
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BIN UNLOADING (RECLAIM)

Standard commercial grain bins CB18 and larger can be unloaded at a rate below 20,000 bushels per hour. If bin is to be unloaded at a rate of 20,000 bushel an hour or greater, or is smaller than a CB18, contact Chief for upgrade recommendations.

All grain bins must be reclaimed through a center discharge. As shown in the following illustration, if intermediate sumps are installed in the floor, they must not be opened until all grain is removed above the center sump. Therefore, center and intermediate sumps must have separate control rods.



 DON'T	 DO
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UNLOADING INSTRUCTIONS:

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

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

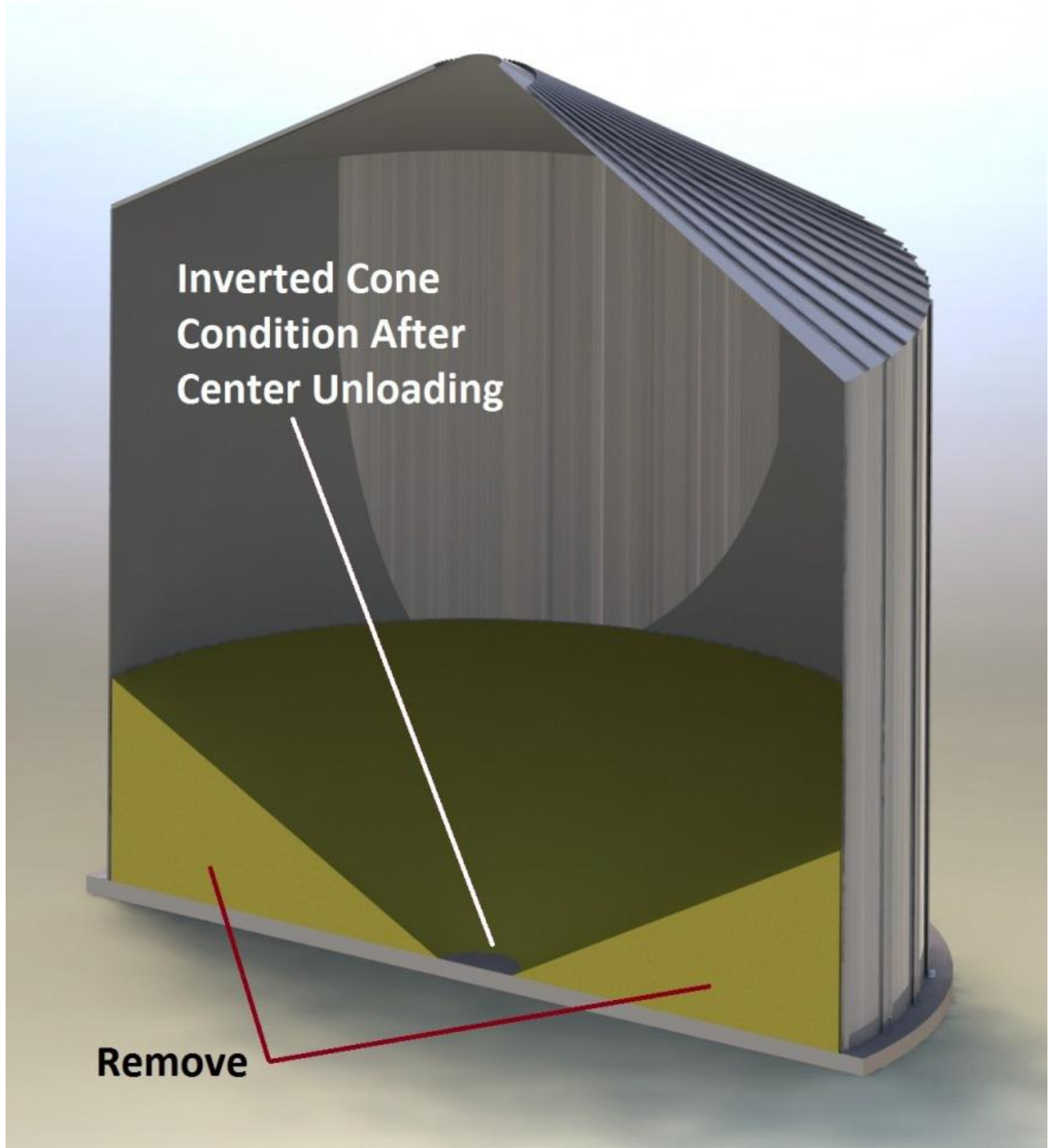
DC-GBC-2A

The center sump sweep auger pivot should be centered in the bin to ensure unobstructed sweep rotation. If unloading auger exits through the sidewall, thoroughly seal around auger tube to prevent moisture and airflow leakage. Reinforcing of sidewall sheets will be necessary if auger exits through the sidewall at a point exposed to direct grain pressure. Contact Chief for appropriate reinforcing recommendations.

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After unloading grain from the bin through the center discharge, the remaining inverted cone of grain needs to be removed to prevent spoilage of the grain and degrading the protective zinc coating of the sidewall sheets.

Important Note: Running the aeration fans with the grain in this inverted cone condition will not maintain proper condition of the grain. The airflow from the fans will be discharged through the lowest grain depth at the center of the bin and will deliver a limited air flow at the bin wall.



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BIN SIDE DRAW UNLOADING

Side draw systems are to be used with dry grain only. Do not use a side draw unit with any poor flowing product. Consult Chief **for appropriate installation recommendations.**

Important Note: Failure to follow the side draw operation instructions can cause structural damage and will void the warranty.

Side draw baffle systems may be installed in the various grain bins specified in the Chief catalog.

Important Note: Any side draw unit improperly installed, or side draw units manufactured by a supplier other than Chief could result in structural damage to the bin wall and will void the warranty.

It is recommended that a side draw outlet is placed in the 4th, 5th, or 6th sidewall sheet from the base of the foundation. When installing a side draw system, the first interior baffle must be placed on 1st (top) ring located at the bin eave. The first wind ring also needs to be installed on 1st (top) ring of bin, when using a side draw system. It is not recommended that a side draw system be installed in the Chief commercial hopper bin series (CHT's).

After installing the side draw unit, the operating instruction labels must be installed in plain view at operator level at the control chain operating station. The label must be clearly visible to anyone operating the side draw. Installation of the side draw is not complete until these labels are in place.

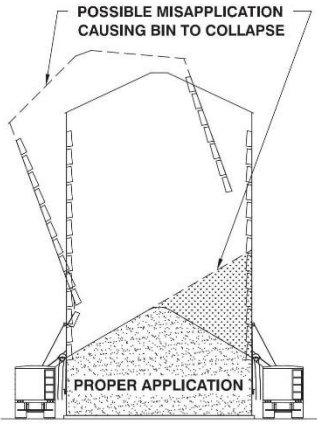


**Improper operation
Can cause personal injury or
substantial property damage.**

**Do not use while other unloading
equipment is operating.
Open slide gate slowly.
Discontinue use immediately
if flow becomes obstructed.
Lock slide gate closed when
not in use.**

872162





**"TO PREVENT DAMAGE TO THE
STRUCTURE WHILE UNLOADING
WITH SIDEDRAWS"**

◀ IF MULTIPLE SIDEDRAWS ARE
BEING USED, ONLY 1 SIDEDRAW
MAY BE USED AT A TIME

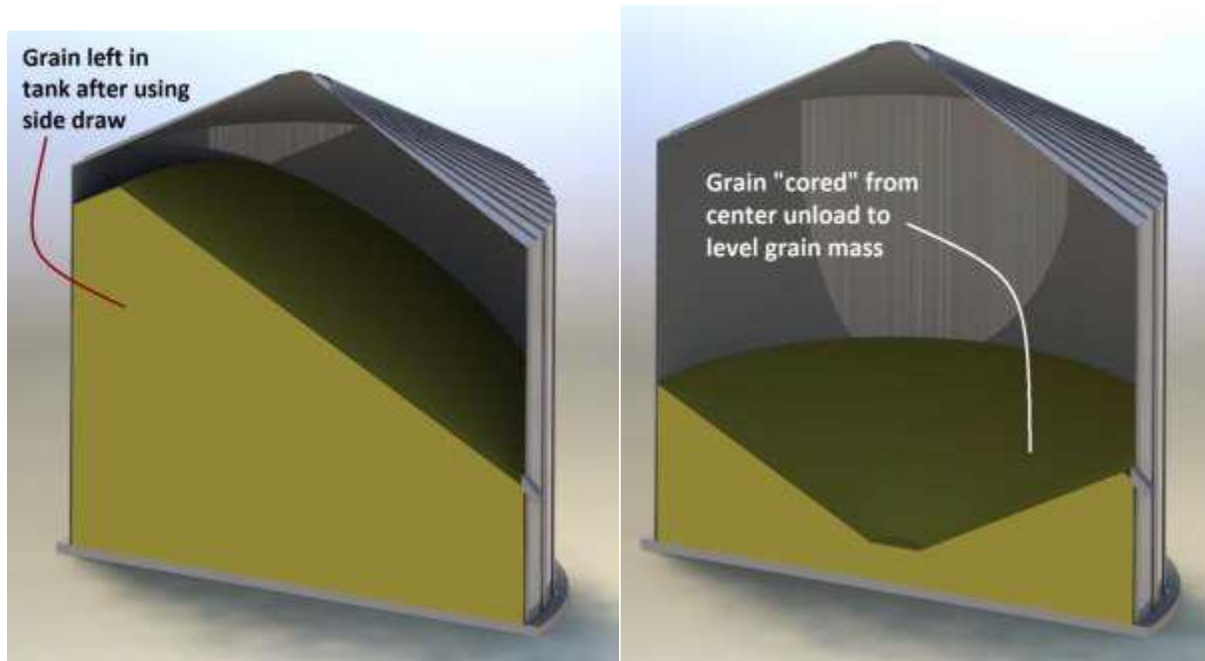
◀ BINS WITH SIDEDRAW
SYSTEMS CAN BE FILLED AND
UNLOADED FROM THE SIDEDRAW
A MAXIMUM OF 2 TIMES. AFTER
SIDEDRAWING THE BIN FOR THE
2ND TIME, THE GRAIN MUST BE
CONED OR UNLOADED FROM THE
CENTER DISCHARGE BEFORE
REFILLING THE BIN, TO RELAX
THE SIDEWALLS AND
FOUNDATION.

872163

CB GRAIN BIN 5SL MANUAL

Important Note: Grain bins with side draw systems cannot be loaded at the peak and unloaded from the side draw simultaneously. If multiple side draw systems are installed on a grain bin, only one side draw can be used at a time. If 2 side draw systems are installed on the grain bin, they must be placed 180 degrees apart.

After removing grain from the grain bin using the side draw system it is required that the grain is “cored” from the center discharge to level the grain in the bin before refilling. In addition, prior to prolonged storage, grain should be “cored” or taken to a level condition. “Coring” refers to removing grain from the center discharge to create an inverted cone, where the grain along the sidewall is at the same elevation around the entire bin perimeter.

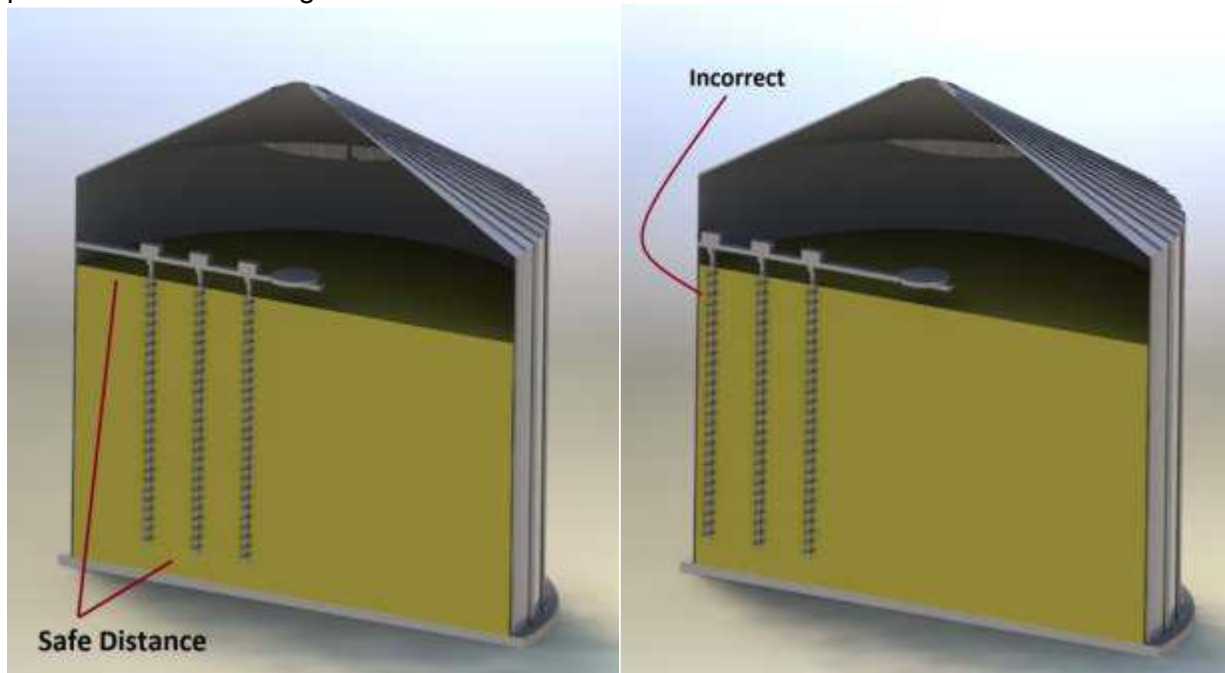


CB GRAIN BIN 5SL MANUAL

STIRRING DEVICES:

Stirring devices can be installed in any drying bin, with the limitations discussed previously. All stiffened bin models thru 7 rings tall will accommodate a stirring device of no more than 3 down augers. The bin storage capacity will be reduced when installing a stirring device. Drying bin storage capacities listed in the Chief catalog should be used with the additional capacity reduction for the down auger drive unit clearance. Inside ladders may require reduced length brackets for wall attachment to provide the clearance required for the stirring device.

CAUTION: The grain level must not be filled above the stirring device. Grain pressure on the stirring device could cause roof or stirring device damage. Do not operate augers near the sidewall to prevent sidewall damage.



Down augers may require shortening in order to provide minimum floor clearance of 3"-5" (76mm -127 mm) or additional clearance for sweep augers. Always follow the manufacturer down auger shortening procedure.

CONTINUOUS FLOW EQUIPMENT:

Re-circulators can only be installed in stiffened CB grain bins. These devices should be installed as instructed by the manufacturer and with the following additional considerations:

1. Consult floor manufacturer for recommended floor reinforcing measures at base of re-circulator.
2. If transfer auger exits through roof panels, provide sealant around auger tube to prevent water leakage.
3. The weight of the transfer auger must not be supported by the roof panels. The transfer auger should be supported by the re-circulator boot and an adjacent bin or independent support.

CB GRAIN BIN 5SL MANUAL

ROOF VENTILATION:

Any grain bins using forced air for aeration or drying must be provided with sufficient exhaust or intake vents to prevent excessive internal pressures, either positive or negative. The vent supplier should be consulted for ventilation requirements on each project, with the specific storage structure size, grain type and depth, fan size and floor type taken into consideration. Typically, 1 sq ft (.09 sq meter) of exhaust area is required for every 1,000 cfm (28.31 cubic meters per minute) of exhaust. Chief does not recommend the use of negative aeration systems. In the event that negative aeration is to be used, the intake vent requirement should be sized for the storage structure in the empty condition.



Important Note: Roof vents must be open and free of debris or other obstructions prior to operation of the aeration fans.

Important Note: Powered fans should not be operated when ambient temperature is below 35 degrees Fahrenheit (2 degrees Celsius) due to the potential of vent icing. Obstructed or iced vents can significantly increase the internal to external pressure differential and could result in structural damage to the grain bin.

Important Note: High unloading rates can create a vacuum inside the grain bin. If unloading rates exceed 5,000BPH (125MTPH) a minimum of 1 free intake vent (goose neck is recommended) must be installed. 1 unobstructed standard Caldwell bin vent will provide adequate venting for an unloading rate of up to 80,000BPH (2,000MTPH). If substantially higher unloading rates are needed, please contact Chief for a recommended venting requirement.

FANS AND TRANSITIONS:

Aeration fans should be sized in accordance with Chief's engineering specifications for each specific grain bin.

All fans must be installed per Chief's recommendations and leveled prior to operation. A qualified electrician should be contracted to complete all electrical wiring and servicing.

The transition through the bin wall must be thoroughly sealed around the outside of the transition entrance collar to prevent airflow leakage. Use of caulking in combination with flashing provided by the transition manufacturer is recommended. If the transition interrupts a stiffener line, the special transition stiffener available from Chief must be installed as described in the installation manual.

Standard drying bins do not require reinforcing of bottom sidewall sheet as long as transition enters below the false floor level.

CB GRAIN BIN 5SL MANUAL

HEATERS:

The heater unit must be properly matched with the fan size to be used. Heater unit and fan must be compatible, and it is recommended that both units be supplied by the same manufacturer to insure compatibility and safety. Heater unit installation and servicing should only be completed by personnel properly trained by the manufacturer of products being used. The fan and heater need to be located on the bin to assure uniform airflow to the bin. The units should be located at a position that is opposite (180 degrees) from the outlet of the unload tube.

- **DANGER:** Fuel bins, lines and all valves must be compatible with the type of fuel to be used. Failure to use certified fuel bins, lines or valves can result in death or severe personal injury.
- **DANGER:** Never use anhydrous ammonia bins or improperly modified fuel bins for L.P. gas storage.
- **DANGER:** L.P. fuel flow control regulators must be installed as recommended by heater unit manufacturer.
- **DANGER:** Natural gas flow regulators at the service entrance must be installed by natural gas supplier and must not be modified.

The drying temperature should be established based on the type of grain to be dried. Excessive heat can result in grain damage, over-drying and potential grain fires. For optimum temperature recommendations, contact Chief Industries Inc.

AERATION FLOORS:

Chief recommends the use of channel-lock floors with steel supports for full floor drying applications. The floor layout support spacing must be followed for the particular bin being constructed. Floor supports, fan locations and unload tube should be oriented as shown in the aeration layout supplied by Chief to provide optimum airflow movement.

1. Commercial drying applications (floors loaded and unloaded more than once per year) require 18-gauge channel-lock floors.
2. Grain depths 60' (18.3 m) to 89' (27.1 m) require 18-gauge channel-lock floors.
3. Grain depths 90' (27.4 m) to 110' (33.5 m) require 16-gauge channel-lock floors.

TEMPERATURE CABLES:

Temperature cables can be installed in all standard Chief grain bins. Refer to the installation manual for the correct quantity and location of temperature cables for the size of each grain bin.

Temperature cable support kits supplied by Chief are available and must be used whenever temperature cables are installed. Follow the temperature cable manufacturer's recommendations for installation of the cables and shortening temperature cables if required. Verify adequate clearance for sweep augers or other internal equipment and provide adequate sealant where the temperature cable lead wire exits the storage structure.

CB GRAIN BIN 5SL MANUAL

Important Note: Support of temperature cables by any method other than a Chief support kit may cause structural damage to the roof structure and will void the warranty. All temperature cables should be secured to the floor to prevent the cable from drifting towards the sidewall during filling. The use of light twine or monofilament line secured to a recessed anchor is recommended.

Important Note: “Structured” roofs are designed for a maximum load of 2,000 lbs. (907 Kg) per temperature cable. If this load is exceeded, this may cause structural damage to the roof and will nullify the warranty.

GENERAL CONTRACTOR RESPONSIBILITIES

It is the responsibility of the general contractor to verify that the complete bin system (bin, foundation, base sealing, grain transport equipment, aeration equipment and other accessory equipment) is constructed with quality workmanship and that all equipment is installed per the respective manufacturer's instructions.

In addition, the general contractor is responsible for the fitness of use of any system which he constructs. All accessory equipment incorporated into the system should be approved for the intended use by each respective equipment manufacturer.

FIELD MODIFICATIONS AND INSTALLATION DEFECTS

Chief assumes no responsibility for field modifications or installation defects which result in structural damage or storage quality problems. If any field modifications are necessary which are not specifically covered by the contents of the installation manual, contact Chief for approval. Any unauthorized modification or installation defect which affects the structural integrity of the grain bin will void the warranty.

PRE-INSTALLATION

Chief does not assume any responsibility from parts damaged due to faulty or improper installation procedures.

CHECKING SHIPMENT

For your convenience steel components will be color coded, individual items labeled with an appropriate part number and packages labeled. Hardware, including bolts, nuts, screws and other small clips or brackets may be divided into smaller packages for ease of use and identification.

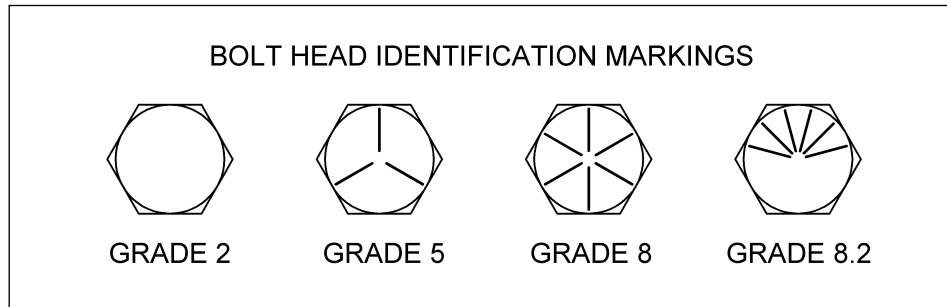
Check your shipment at the time of delivery against the packing list provided with the shipment. If any items are missing or any damaged material is evident, note such shortage or damage on the freight bill before you sign the shipment paperwork.

Claims of shortages will not be honored after 30 days from receipt of shipment. Parts that are missing or damaged are the responsibility of the delivering carrier, not the manufacturer or dealer. It is advisable to reorder damaged or missing parts immediately so that there will be no delay in the bin installation. After receiving the invoice for the reordered material, file a claim with the delivering carrier immediately.

CB GRAIN BIN 5SL MANUAL

HARDWARE TORQUE

All components are assembled using SAE grade hex head bolts with corresponding washers and nuts. Bolts are marked with radial lines on the bolt head as shown in the following illustration.



Do not substitute any other bolt type or grade. Use only the bolts supplied by Chief. The substitution of bolts from other sources is not permitted and will void the warranty.

When installing hardware, the minimum and maximum torque values shown below must be followed. All hardware must seat tight against the corresponding bin component.

BOLT DIAMETER	MINIMUM TORQUE	MAXIMUM TORQUE
5/16"	22 ft.-lbs.	28 ft.-lbs.
7/16"	60 ft.-lbs.	75 ft.-lbs.

Please note the following wrench/socket size to be used on the corresponding hardware:

BOLT SIZE	HEAD SIZE	NUT SIZE
5/16"	1/2" WRENCH	1/2" WRENCH
7/16"	5/8" WRENCH	11/16" WRENCH
1/2"	3/4" WRENCH	3/4" WRENCH
5/8"	15/16" WRENCH	15/16" WRENCH

Important Note: Prior to starting the installation it is very important to plan ahead and by verifying the order and location of all bin components. This includes:

- Roof vents and manways
- Ladder, platform and spiral stair components
- Wind Rings
- Bin entry doors
- Side draw unloads
- Aeration components

CB GRAIN BIN 5SL MANUAL

SUGGESTED EQUIPMENT:

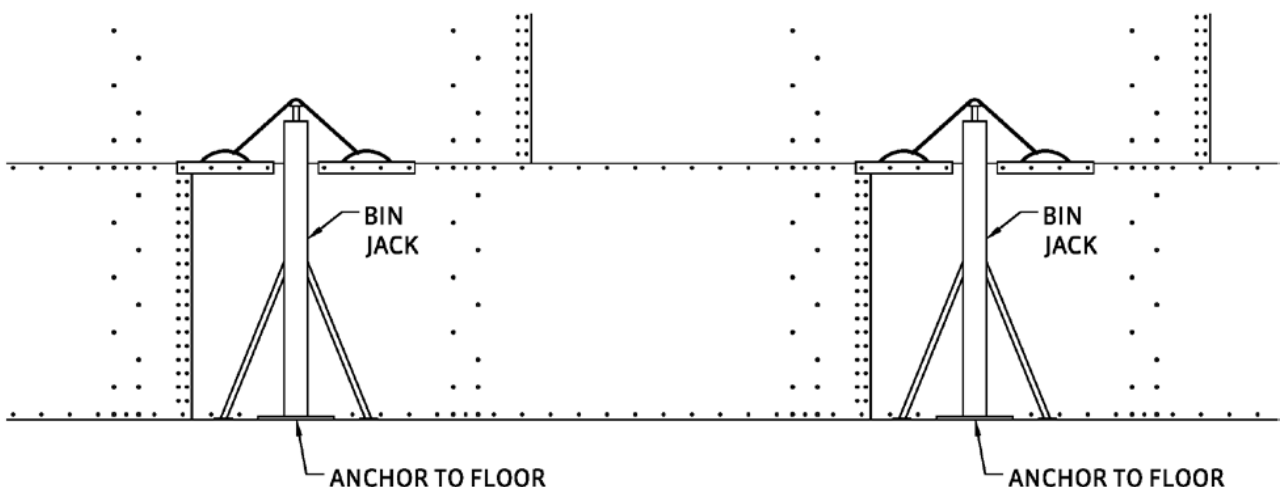
Chief recommends the following equipment and tools needed for installation of the grain storage bin. Individual installations may vary.

- Impact wrenches and sockets
- End wrenches
- Crescent wrenches
- Vise grip pliers
- Alignment punches
- Rubber mallets
- Level
- Drill and drill bits
- Screw Guns
- Metal Saw
- Extension cords
- Ladders
- Bin Jacks

BIN JACK INSTALLATION:

Chief recommends that bin jacks be used for all bins taller than 8 rings and all bins larger than 30' (9.1m) in diameter. Chief recommends using a minimum of 1 bin jack per sidewall sheet to minimize sidewall distortion during installation. Failure to use the proper quantity of bin jacks may result in permanent distortion of the bin sidewall sheets. During installation not all jacks may lift equally, therefore the allowable lifting capacity of the bin jacks must never be exceeded or serious injury could result. Always verify bin weight to ensure a safe and trouble-free installation.

ATTENTION: Securely anchor the bin jacks to the foundation during construction.



INSTALLATION PROCEDURES:

CB GRAIN BIN 5SL MANUAL

IMPORTANT NOTE: Prior to starting the installation it is very important to plan ahead and by verifying the order and location of all bin components. This includes:

- Roof vents and manways
- Ladder, platform and spiral stair components
- Wind Rings
- Bin entry doors
- Side draw unloads
- Aeration components
- Upgraded stiffener locations for material handling support structures
-

For a jacking procedure initiated with only the top ring assembled, the general installation of the bin components will be in the following order:

1. Assemble Ring #1 (top ring).
2. Roof structure (refer to roof installation manual)
3. Roof sheeting, venting and fans
4. Install sidewall sheet lifting jacks
5. Assemble remaining rings in ascending order from the roof eave down (#2 then #3 then #4, etc.)

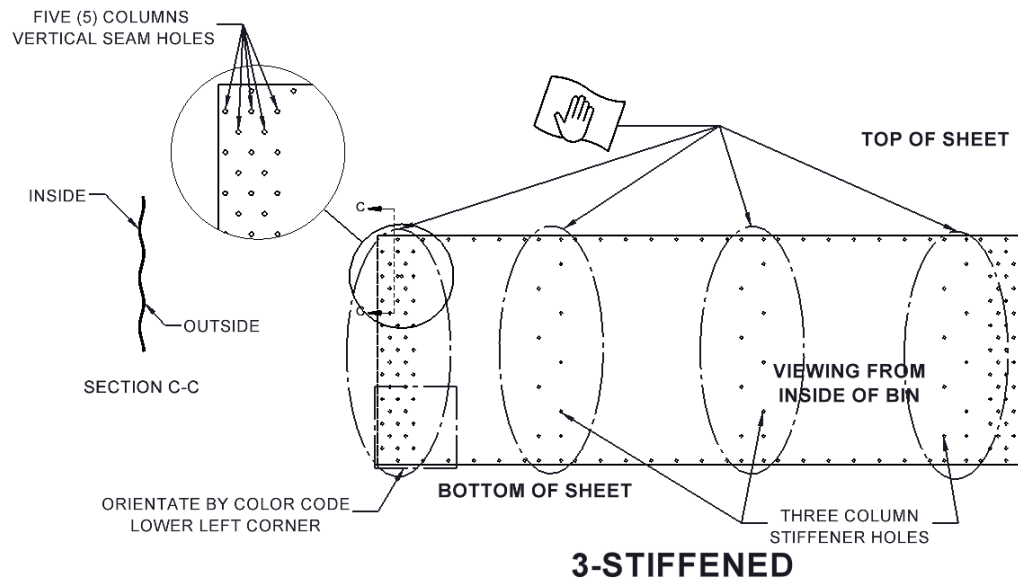
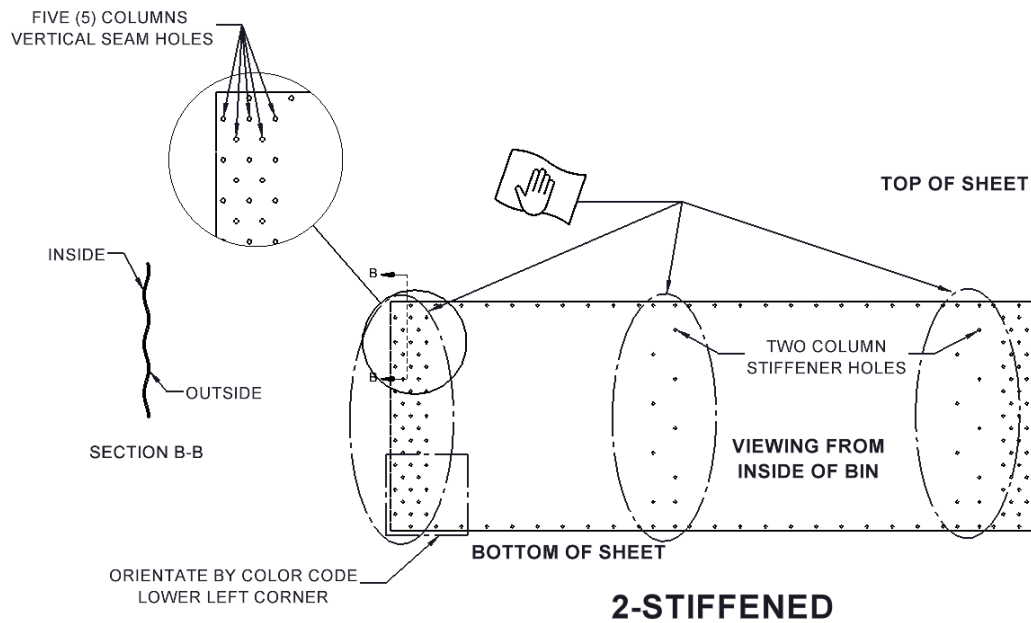
For a jacking procedure initiated with the top 2 rings assembled, the general installation of the bin components will be in the following order:

1. Assemble Ring #2
2. Assemble Ring #1 (top ring) above ring #2.
3. Roof structure (refer to roof installation manual)
4. Roof sheeting, venting and fans
5. Install sidewall sheet lifting jacks
6. Assemble remaining rings in ascending order from the roof eave down (#3 then #4 then #5, etc.)

SIDEWALL ORIENTATION:

CB GRAIN BIN 5SL MANUAL

SIDEWALL SHEET ORIENTATION



SECTION 3: SIDEWALLS

CB GRAIN BIN 5SL MANUAL

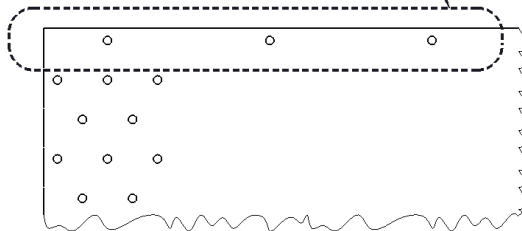
SIDEWALL GAUGE COLOR CODES:

Important Note: Top Sidewall Sheets will also have a “GOLD” color designation located on the upper right-hand corner.

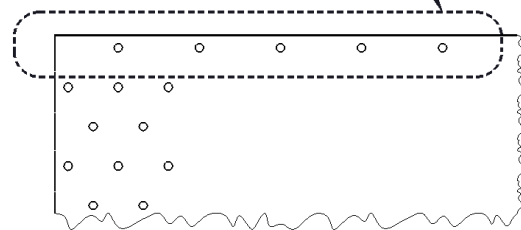
MATERIAL GAUGE	GAUGE COLOR CODE	
20	WHITE	WH
18	ORANGE	OR
17	LIGHT BLUE	L BL
16	GREEN	GR
14	YELLOW	YL
13	BROWN	BR
12	DARK BLUE	D BL
11	PINK	PK
10	BLACK	BK
9	LIGHT GREEN	L GR
8	RED	RD

SIDEWALL HOLE PUNCHING IDENTIFICATION:

HORIZONTAL SEAM
SINGLE PUNCHED SPACING



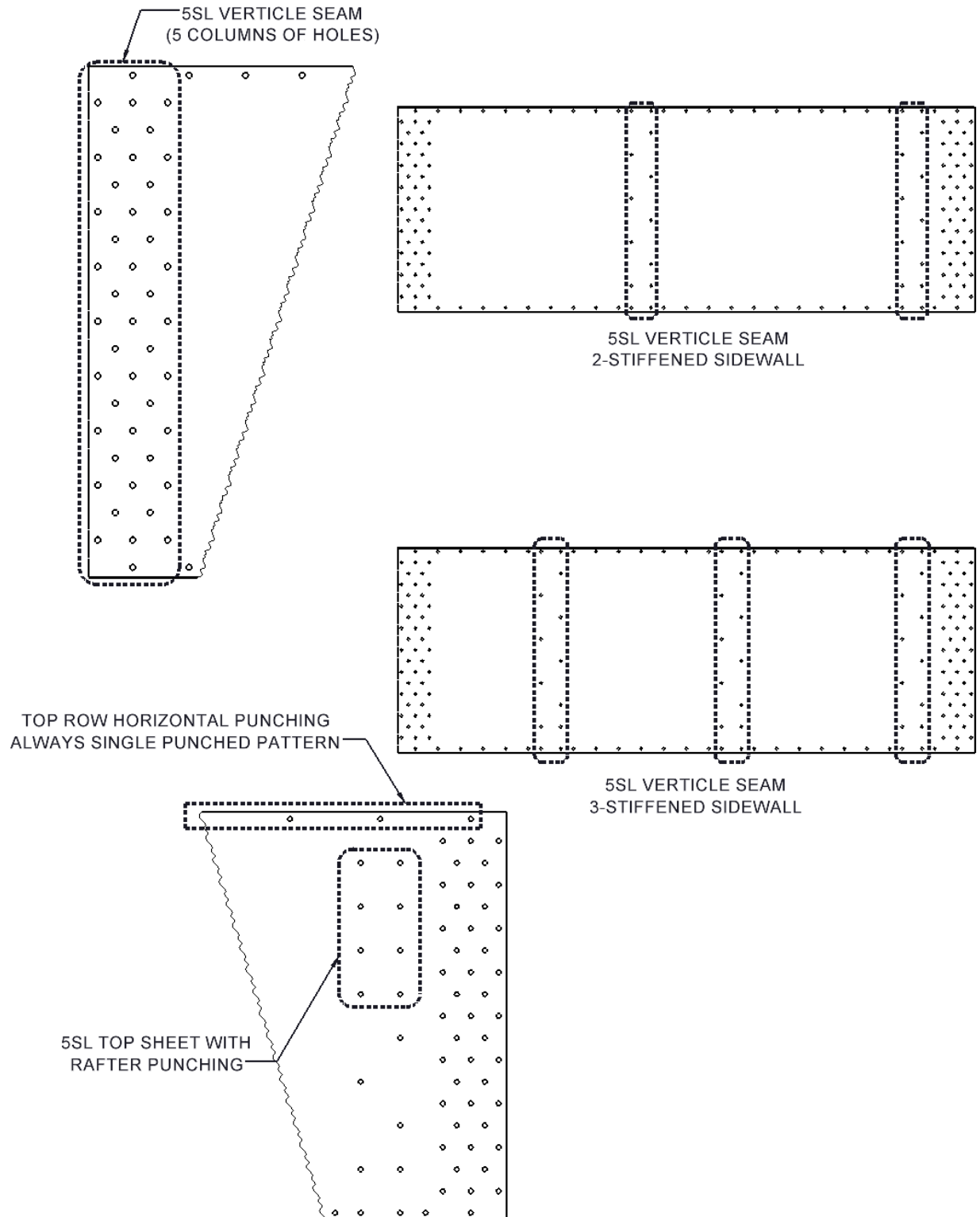
HORIZONTAL SEAM
DOUBLE PUNCHED SPACING



CB GRAIN BIN 5SL MANUAL

SIDEWALL HOLE PUNCHING IDENTIFICATION:

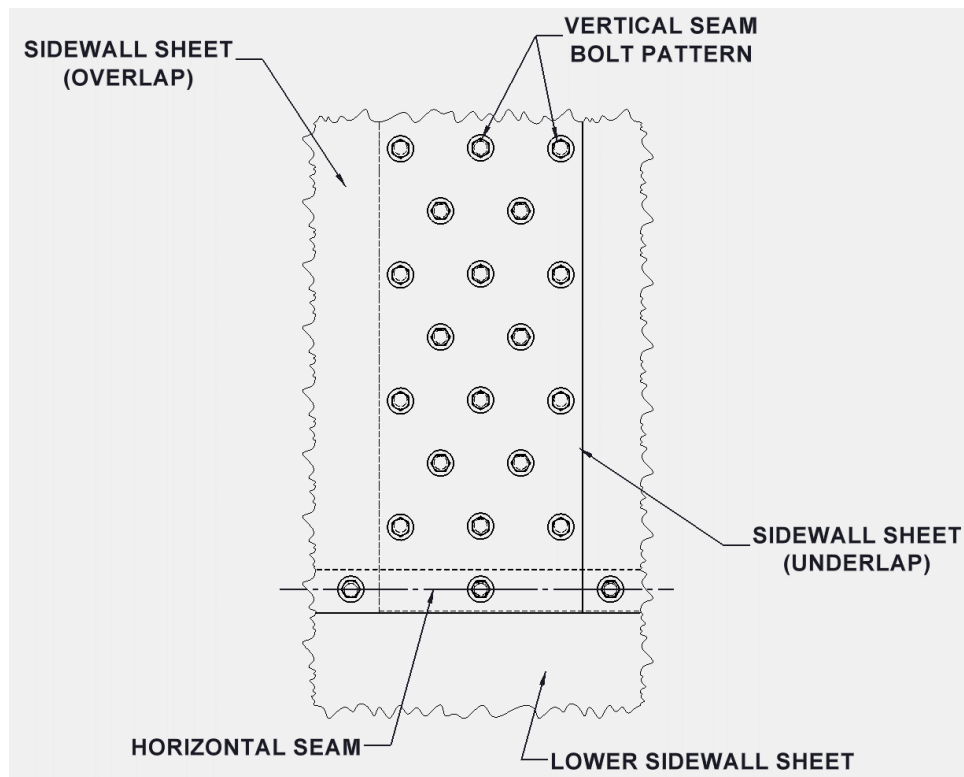
5SL SIDEWALL PUNCHING IDENTIFICATION



CB GRAIN BIN 5SL MANUAL

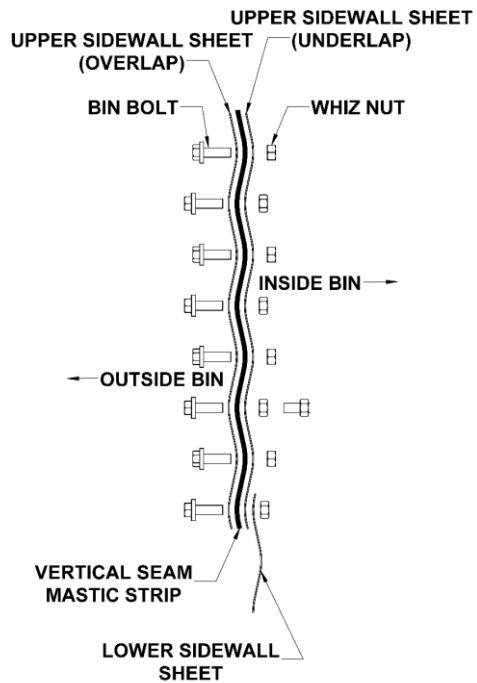
FASTENING SIDEWALLS:

5SL VERTICAL SEAM HARDWARE PATTERN:

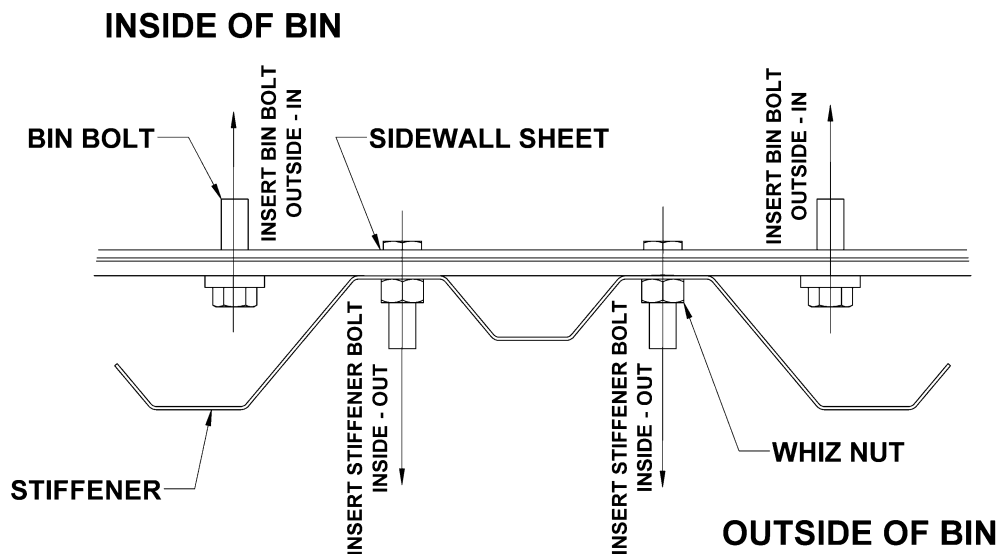


CB GRAIN BIN 5SL MANUAL

VERTICAL SEAM PROFILE:

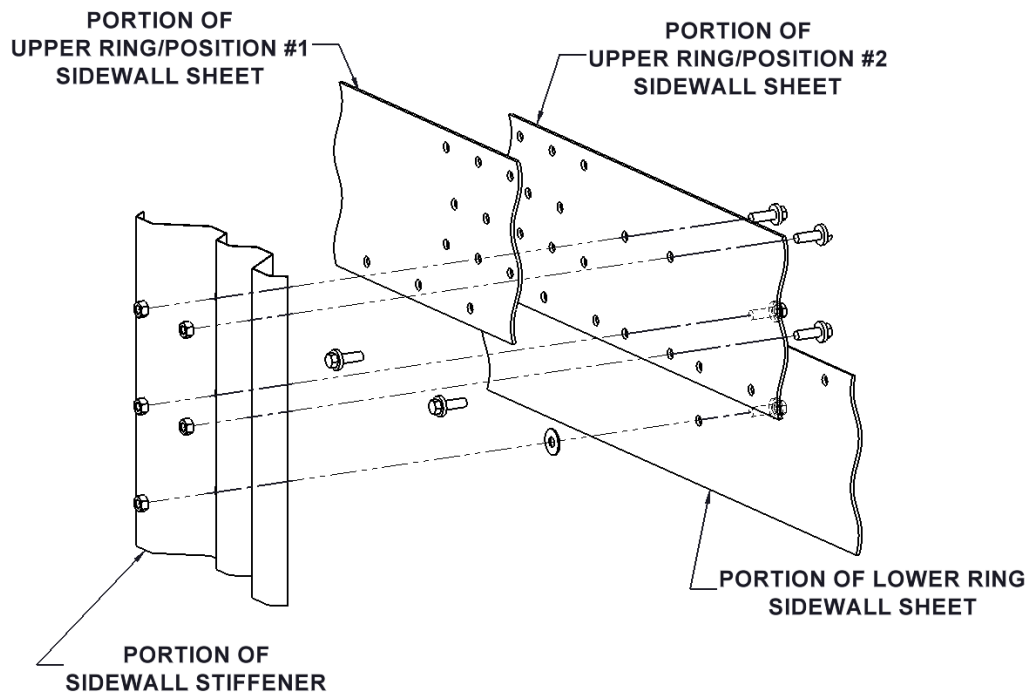


STIFFENER INSTALL (TOP VIEW AT HORIZONTAL SEAM):

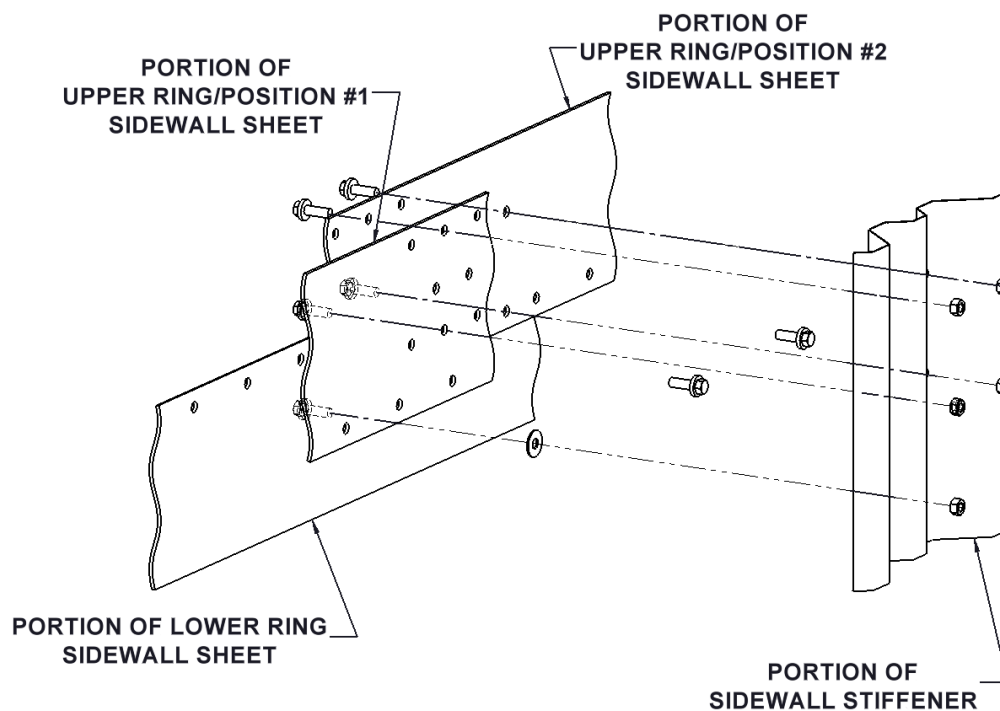


CB GRAIN BIN 5SL MANUAL

FASTENING STIFFENERS TO SIDEWALLS:



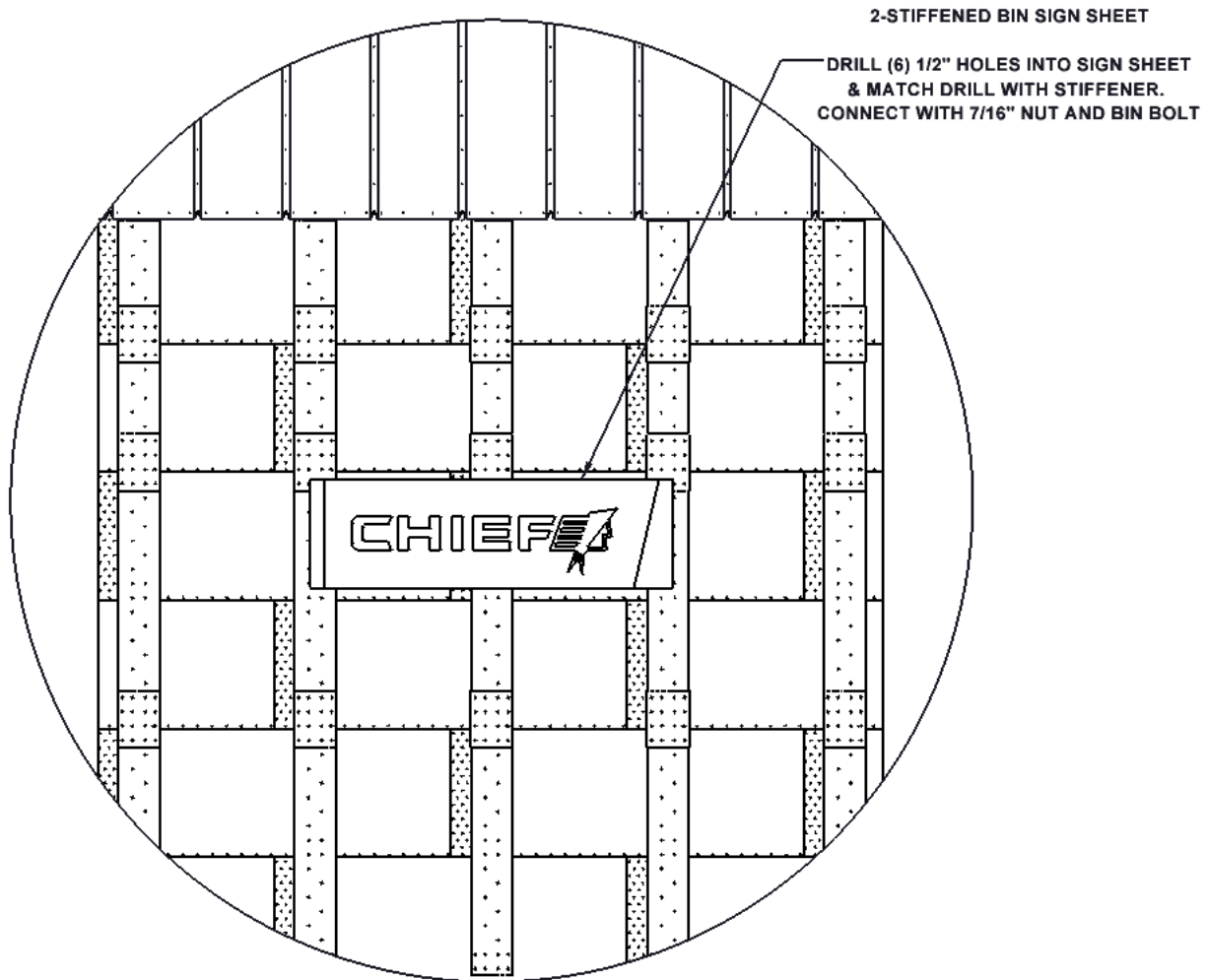
VIEW FROM RIGHT HAND SIDE



VIEW FROM LEFT HAND SIDE

CB GRAIN BIN 5SL MANUAL

2-STIFFENED SIGN SHEET INSTALLATION:



2 STIFFENED

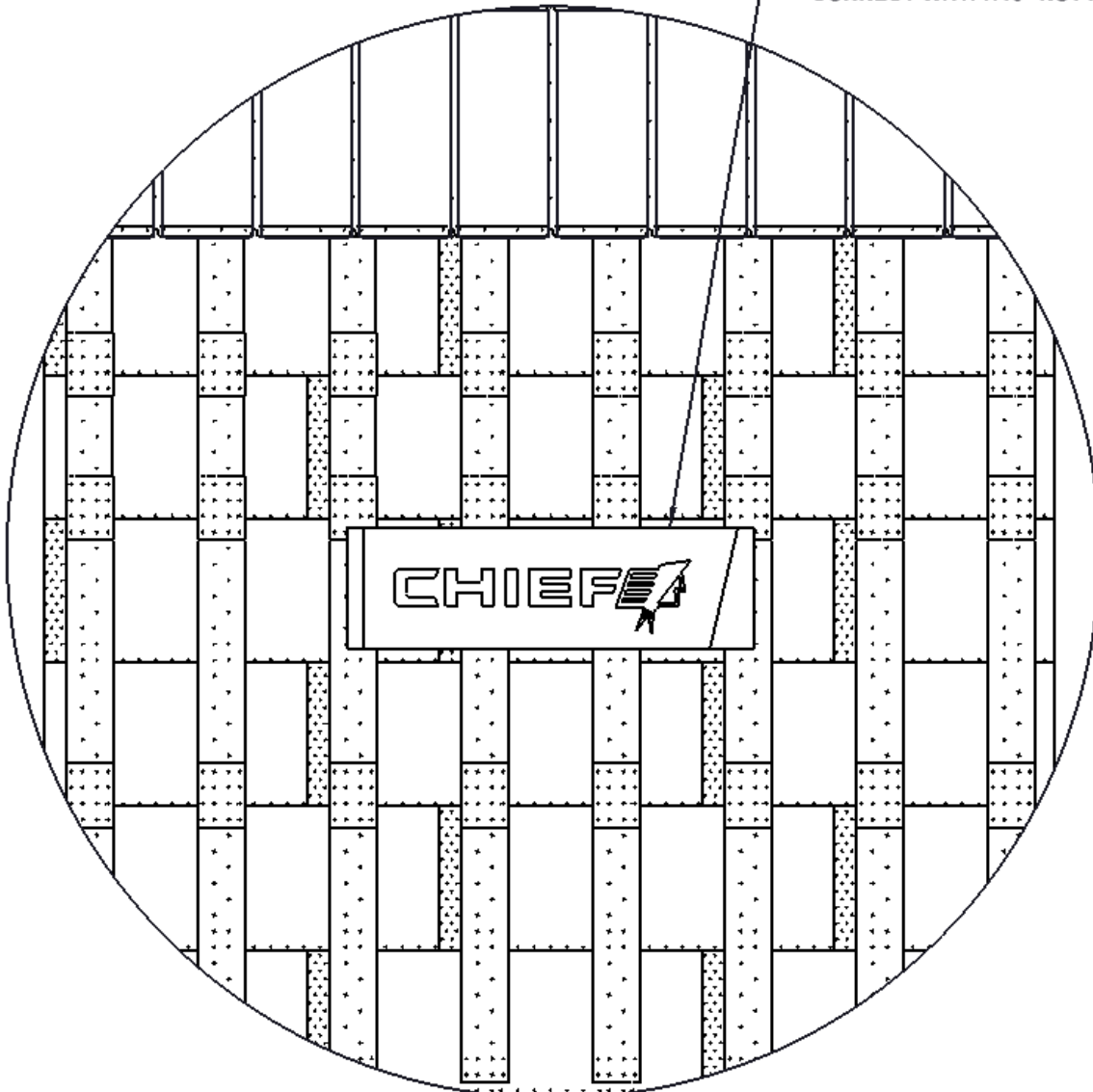
(5SL SIDEWALL SHOWN)

CB GRAIN BIN 5SL MANUAL

3-STIFFENED SIGN SHEET INSTALLATION:

3-STIFFENED BIN SIGN SHEET

DRILL (6) 1/2" HOLES INTO SIGN SHEET
& MATCH DRILL WITH STIFFENER.
CONNECT WITH 7/16" NUT AND BIN BOLT



3 STIFFENED

(5SL SIDEWALL SHOWN)

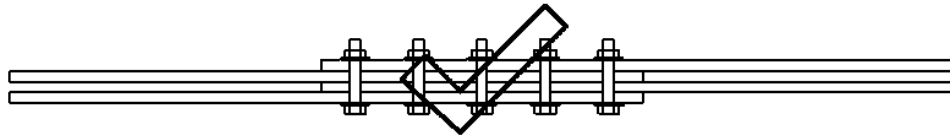
CB GRAIN BIN 5SL MANUAL

GO / NO GO SIDE WALL SHEET ASSEMBLY:

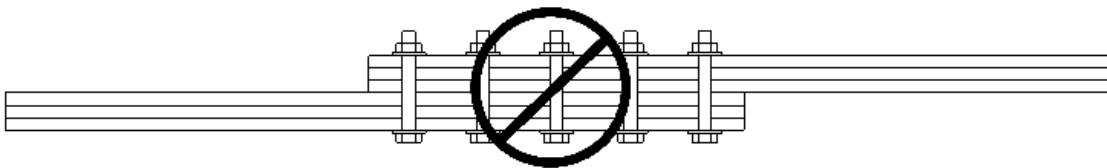
5SL DOUBLE LAMINATED SIDEWALL



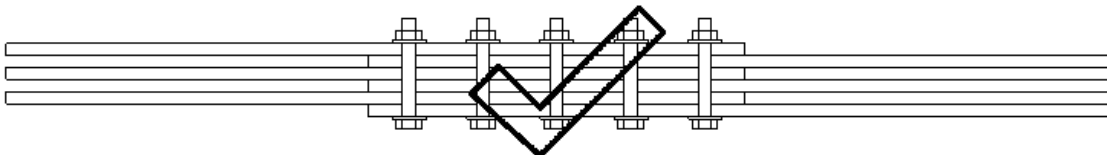
**INCORRECT VERTICAL SEAM
ASSEMBLY WILL CAUSE
STRUCTURAL FAILURE TO WALL
SYSTEM WHEN BIN IS FILLED**



5SL TRIPLE LAMINATED SIDEWALL



**INCORRECT VERTICAL SEAM
ASSEMBLY WILL CAUSE
STRUCTURAL FAILURE TO WALL
SYSTEM WHEN BIN IS FILLED**

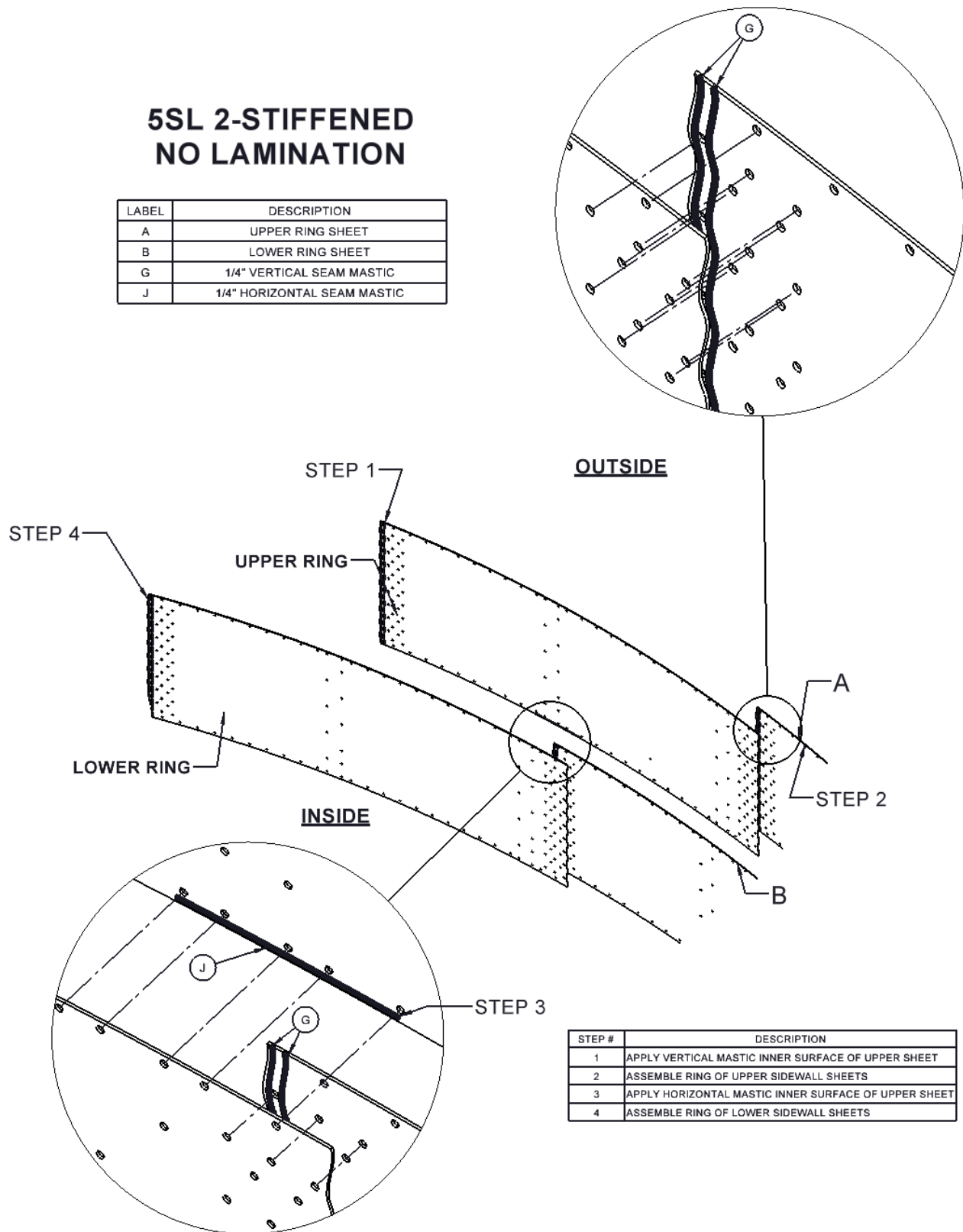


CB GRAIN BIN 5SL MANUAL

5SL, 2-STIFFENED NON-LAMINATED SIDEWALL OVERVIEW:

5SL 2-STIFFENED NO LAMINATION

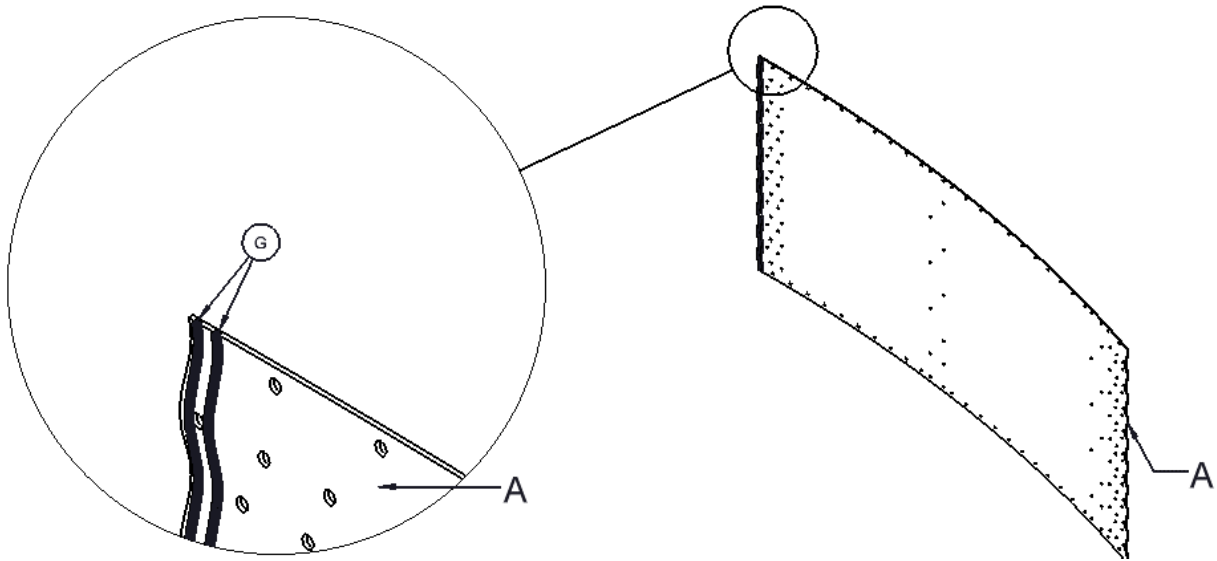
LABEL	DESCRIPTION
A	UPPER RING SHEET
B	LOWER RING SHEET
G	1/4" VERTICAL SEAM MASTIC
J	1/4" HORIZONTAL SEAM MASTIC



CB GRAIN BIN 5SL MANUAL

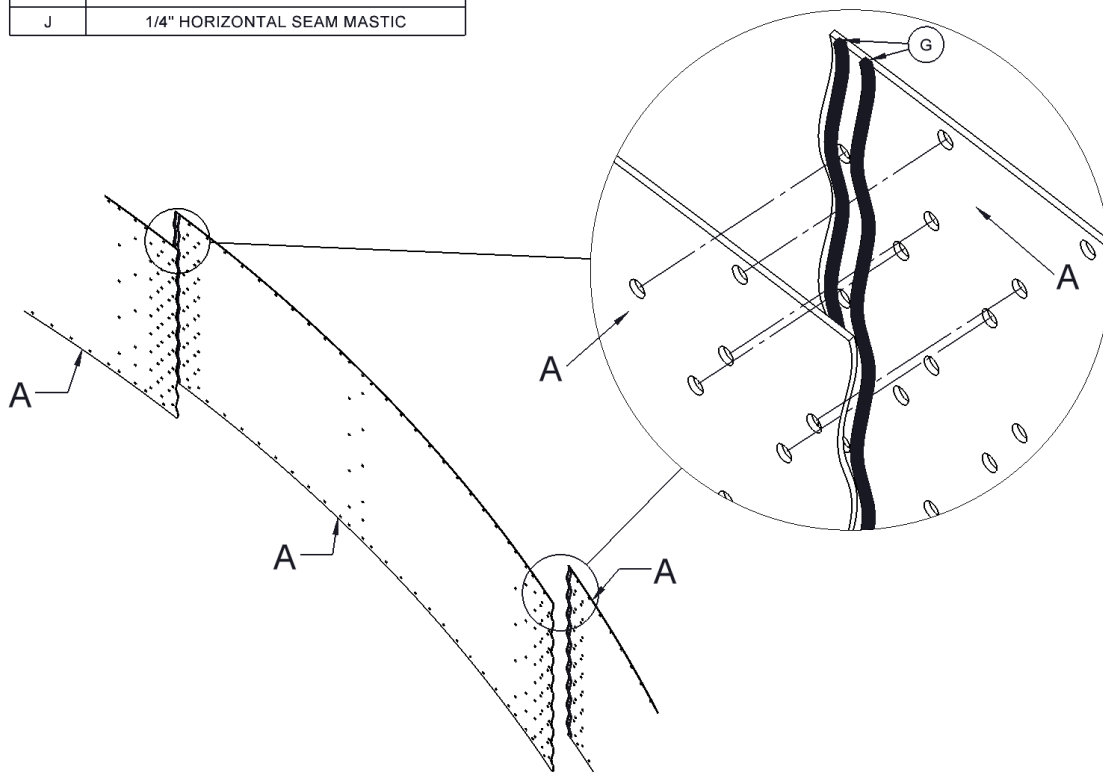
5SL, 2-STIFFENED NON-LAMINATED SIDEWALL STEPS 1 & 2:

STEP 1: UPPER RING MASTIC



LABEL	DESCRIPTION
A	UPPER RING SHEET
B	LOWER RING SHEET
G	1/4" VERTICAL SEAM MASTIC
J	1/4" HORIZONTAL SEAM MASTIC

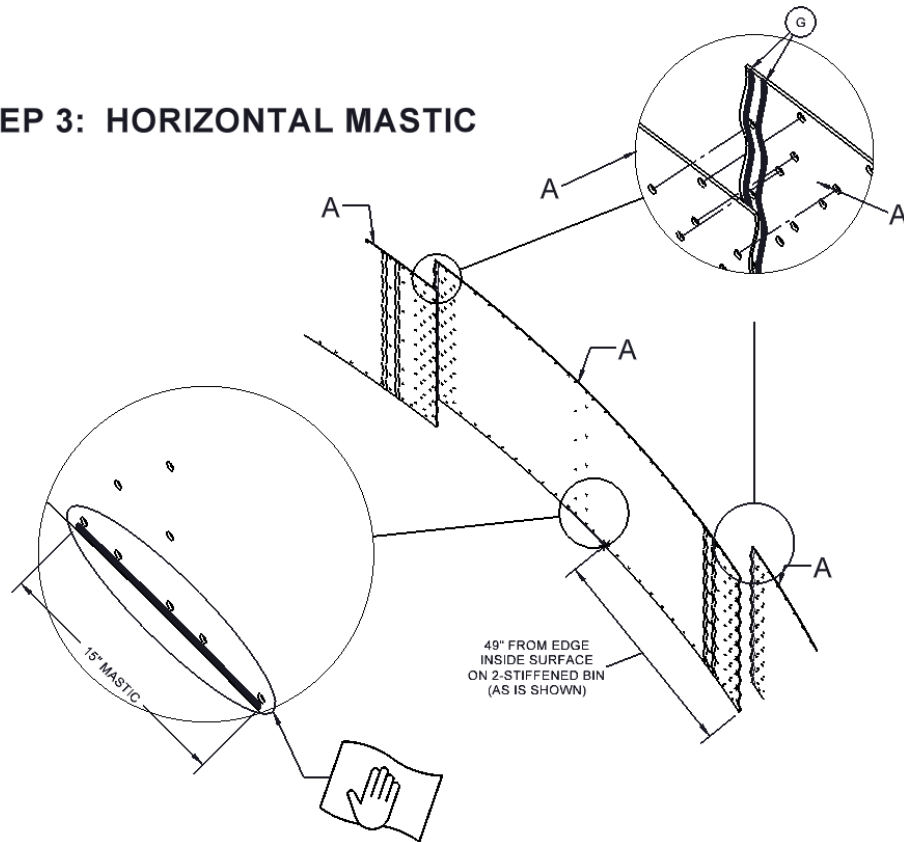
STEP 2: UPPER RING ASSEMBLY



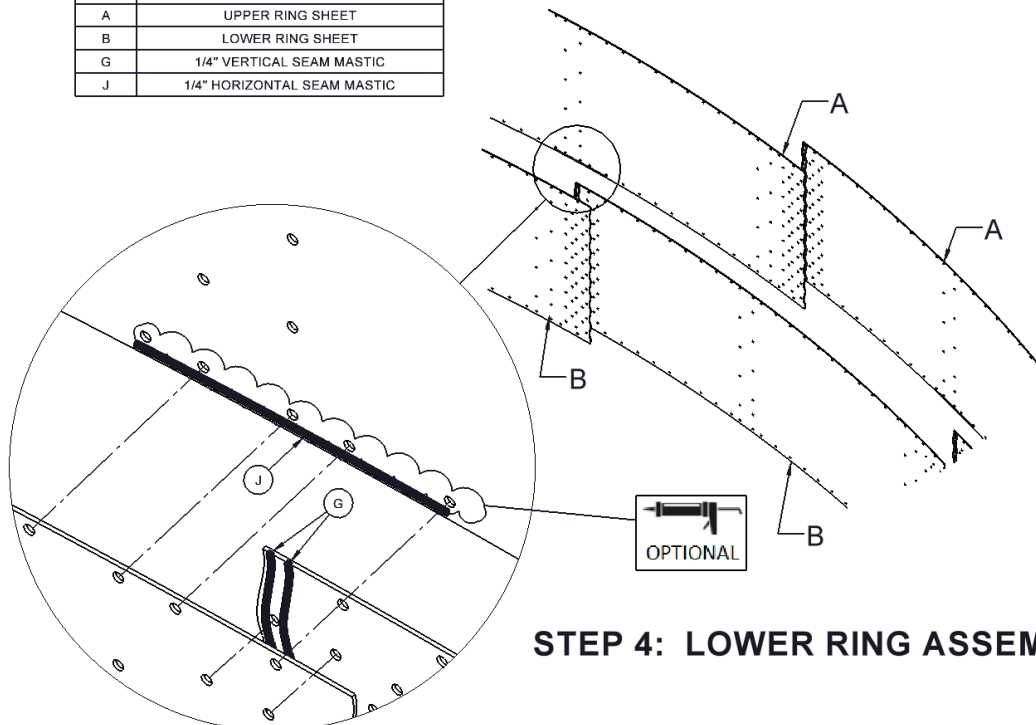
CB GRAIN BIN 5SL MANUAL

5SL, 2-STIFFENED NON-LAMINATED SIDEWALL STEPS 3 & 4:

STEP 3: HORIZONTAL MASTIC



LABEL	DESCRIPTION
A	UPPER RING SHEET
B	LOWER RING SHEET
G	1/4" VERTICAL SEAM MASTIC
J	1/4" HORIZONTAL SEAM MASTIC



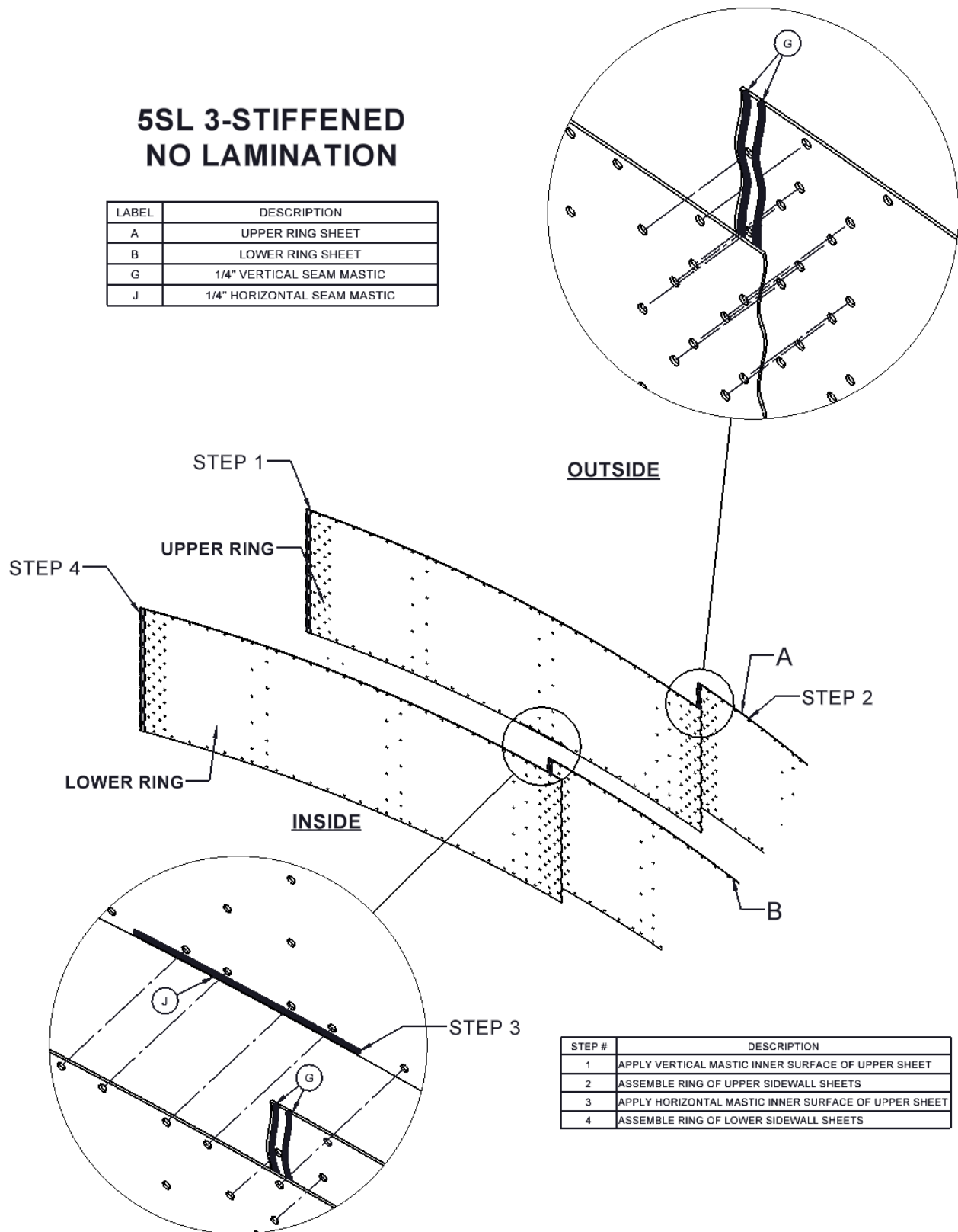
STEP 4: LOWER RING ASSEMBLY

CB GRAIN BIN 5SL MANUAL

5SL, 3-STIFFENED NON-LAMINATED SIDEWALL OVERVIEW:

5SL 3-STIFFENED NO LAMINATION

LABEL	DESCRIPTION
A	UPPER RING SHEET
B	LOWER RING SHEET
G	1/4" VERTICAL SEAM MASTIC
J	1/4" HORIZONTAL SEAM MASTIC

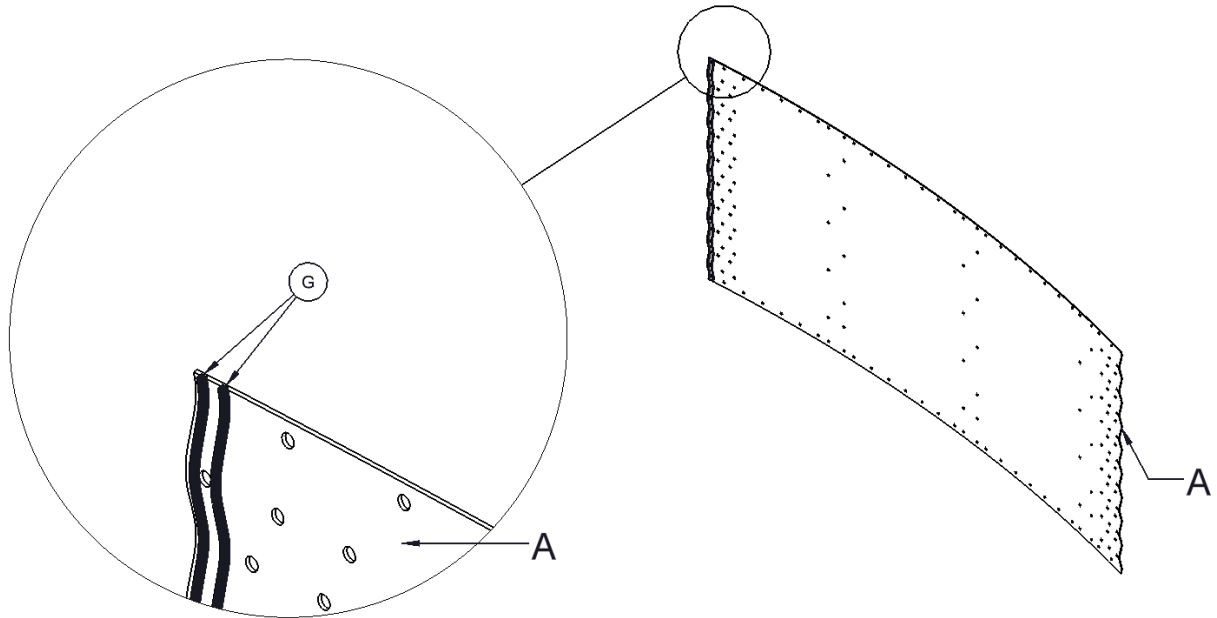


STEP #	DESCRIPTION
1	APPLY VERTICAL MASTIC INNER SURFACE OF UPPER SHEET
2	ASSEMBLE RING OF UPPER SIDEWALL SHEETS
3	APPLY HORIZONTAL MASTIC INNER SURFACE OF UPPER SHEET
4	ASSEMBLE RING OF LOWER SIDEWALL SHEETS

CB GRAIN BIN 5SL MANUAL

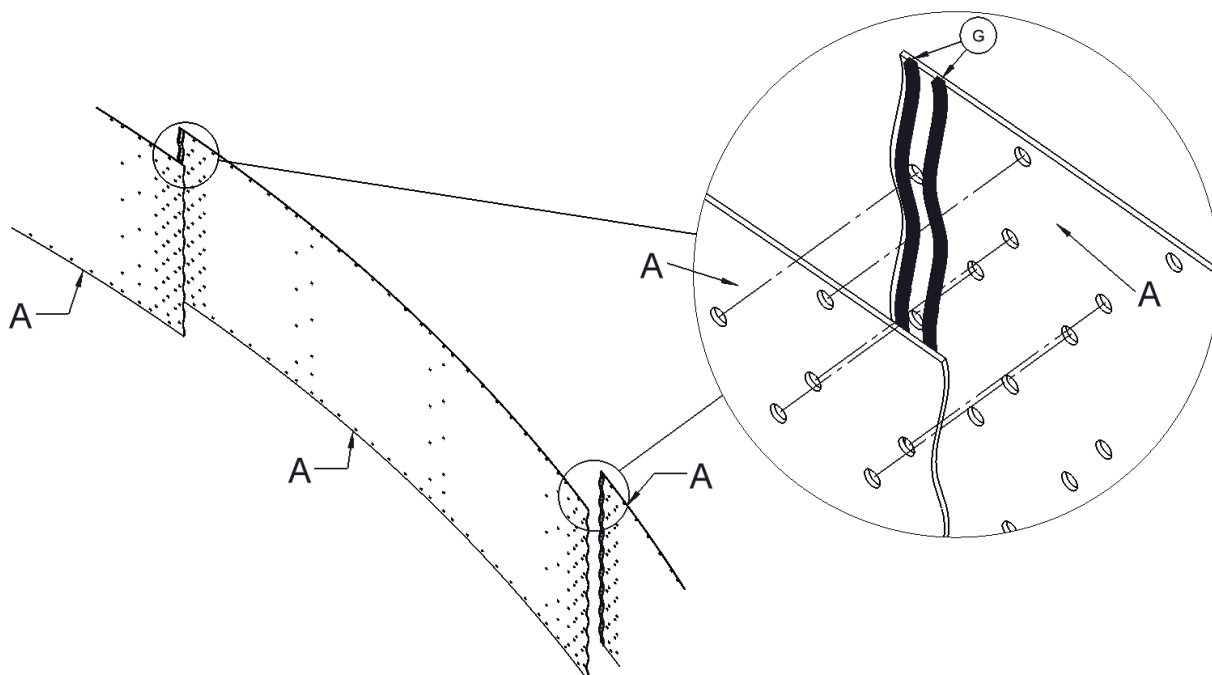
5SL, 3-STIFFENED NON-LAMINATED STEPS 1 & 2:

STEP 1: UPPER RING MASTIC



LABEL	DESCRIPTION
A	UPPER RING SHEET
B	LOWER RING SHEET
G	1/4" VERTICAL SEAM MASTIC
J	1/4" HORIZONTAL SEAM MASTIC

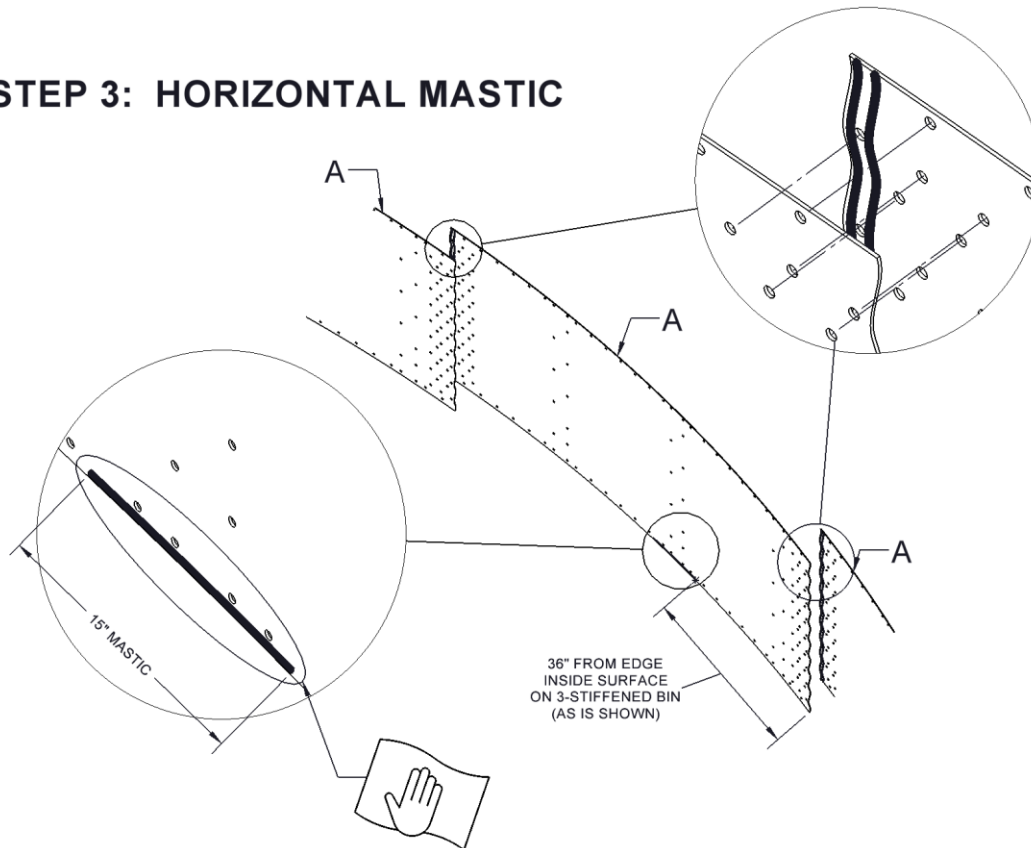
STEP 2: UPPER RING ASSEMBLY



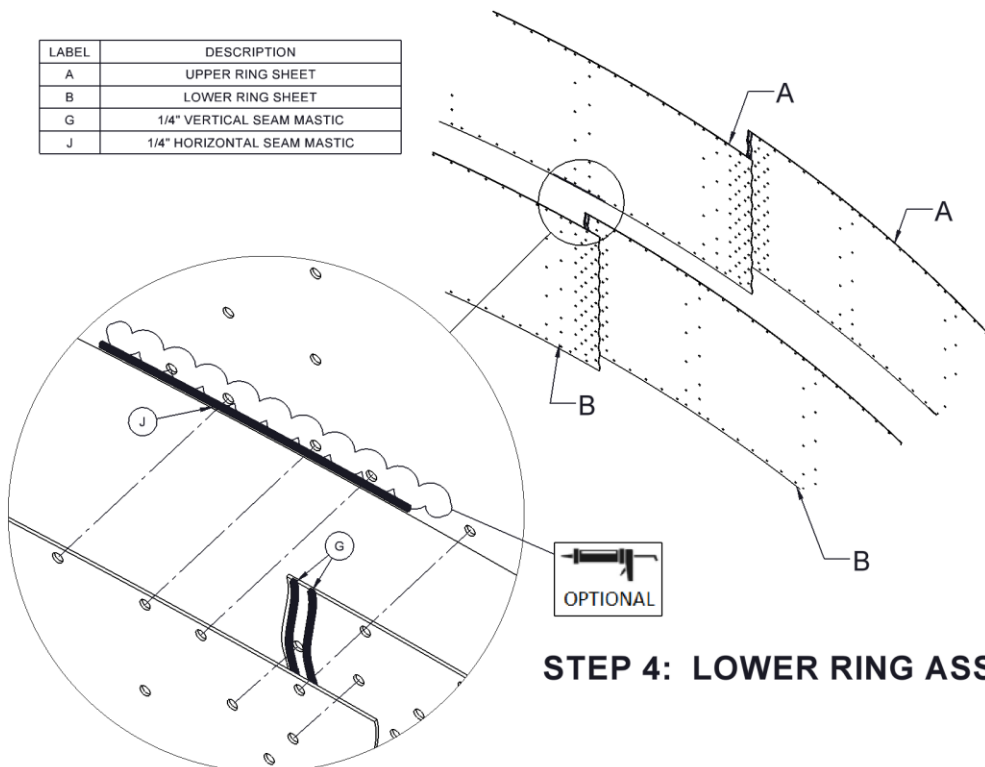
CB GRAIN BIN 5SL MANUAL

5SL, 3-STIFFENED NON-LAMINATED STEPS 3 & 4:

STEP 3: HORIZONTAL MASTIC



LABEL	DESCRIPTION
A	UPPER RING SHEET
B	LOWER RING SHEET
G	1/4\" VERTICAL SEAM MASTIC
J	1/4\" HORIZONTAL SEAM MASTIC



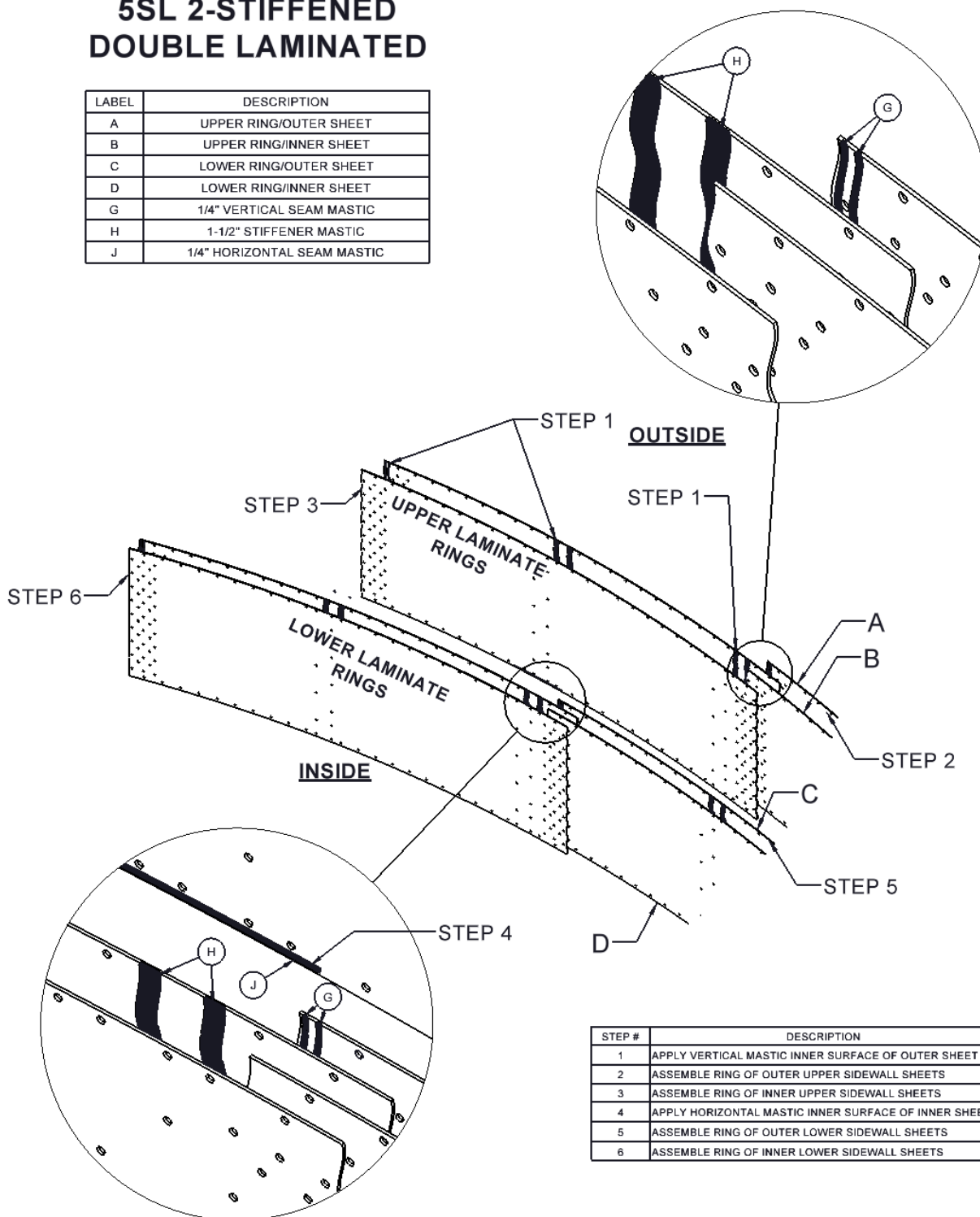
STEP 4: LOWER RING ASSEMBLY

CB GRAIN BIN 5SL MANUAL

5SL, 2-STIFFENED DOUBLE LAMINATED SIDEWALL OVERVIEW:

5SL 2-STIFFENED DOUBLE LAMINATED

LABEL	DESCRIPTION
A	UPPER RING/OUTER SHEET
B	UPPER RING/INNER SHEET
C	LOWER RING/OUTER SHEET
D	LOWER RING/INNER SHEET
G	1/4" VERTICAL SEAM MASTIC
H	1-1/2" STIFFENER MASTIC
J	1/4" HORIZONTAL SEAM MASTIC

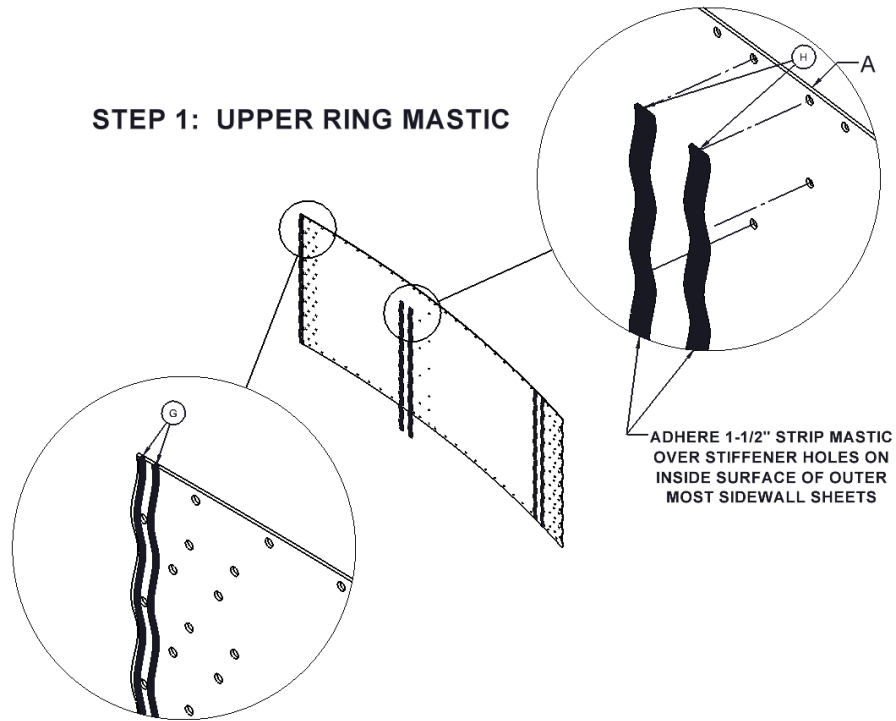


STEP #	DESCRIPTION
1	APPLY VERTICAL MASTIC INNER SURFACE OF OUTER SHEET
2	ASSEMBLE RING OF OUTER UPPER SIDEWALL SHEETS
3	ASSEMBLE RING OF INNER UPPER SIDEWALL SHEETS
4	APPLY HORIZONTAL MASTIC INNER SURFACE OF INNER SHEET
5	ASSEMBLE RING OF OUTER LOWER SIDEWALL SHEETS
6	ASSEMBLE RING OF INNER LOWER SIDEWALL SHEETS

CB GRAIN BIN 5SL MANUAL

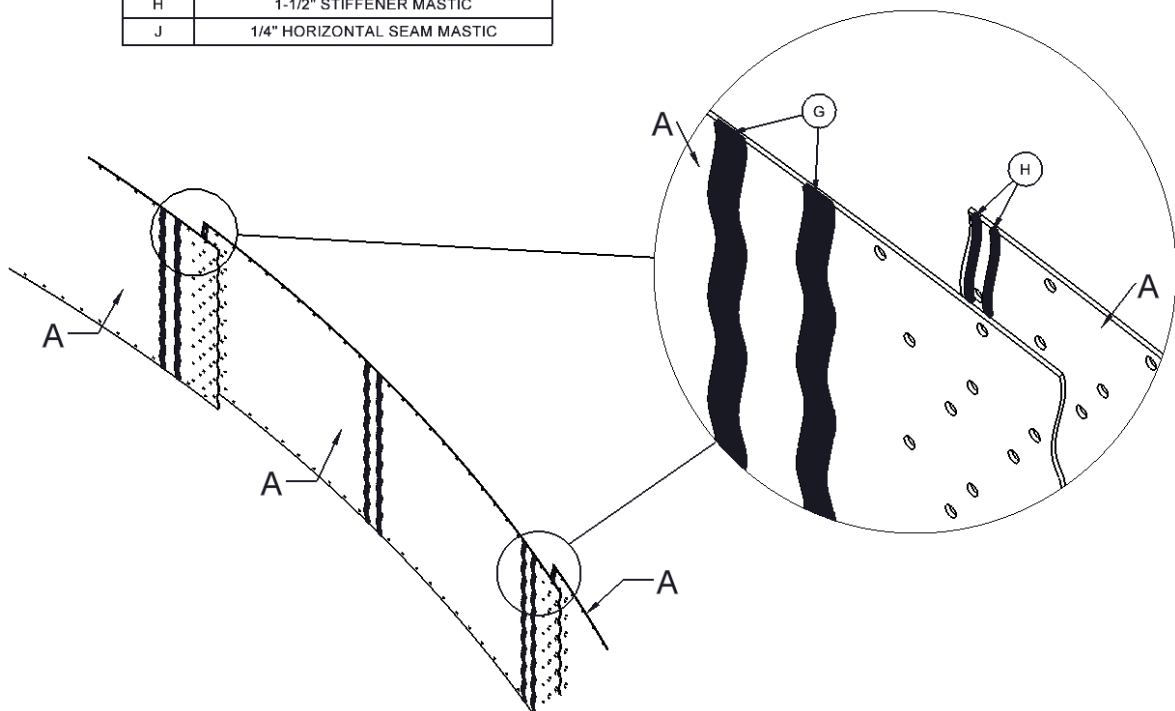
5SL, 2-STIFFENED DOUBLE LAMINATED SIDEWALL STEPS 1 & 2:

STEP 1: UPPER RING MASTIC



LABEL	DESCRIPTION
A	UPPER RING/OUTER SHEET
B	UPPER RING/INNER SHEET
C	LOWER RING/OUTER SHEET
D	LOWER RING/INNER SHEET
G	1/4" VERTICAL SEAM MASTIC
H	1-1/2" STIFFENER MASTIC
J	1/4" HORIZONTAL SEAM MASTIC

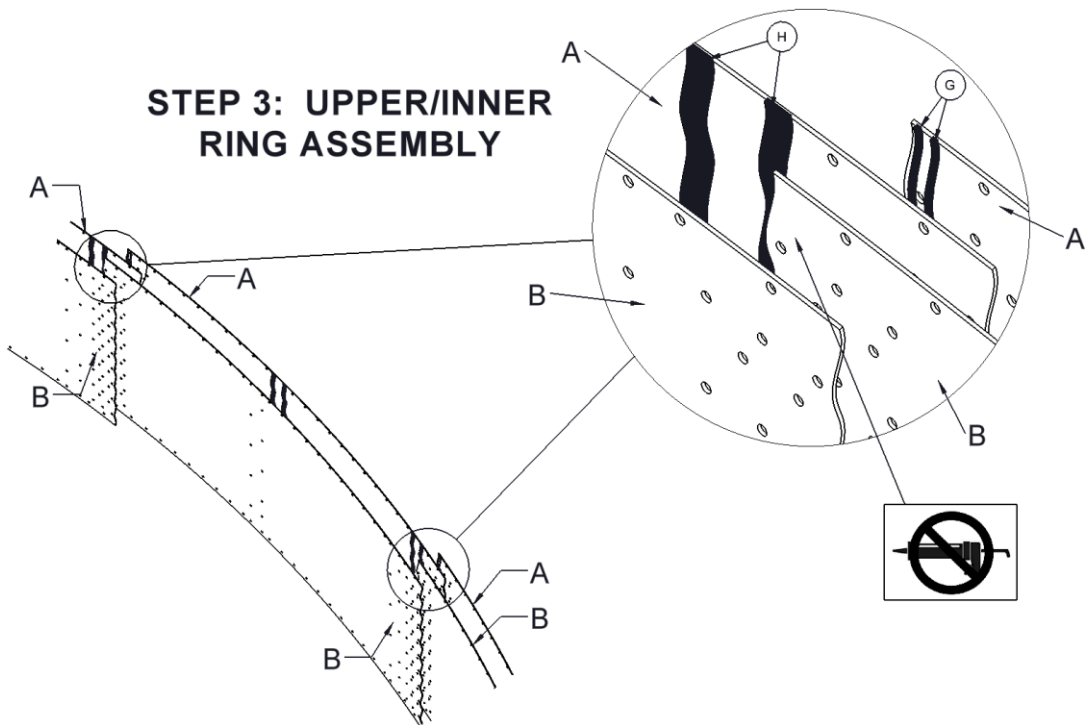
STEP 2: UPPER/OUTER RING ASSEMBLY



CB GRAIN BIN 5SL MANUAL

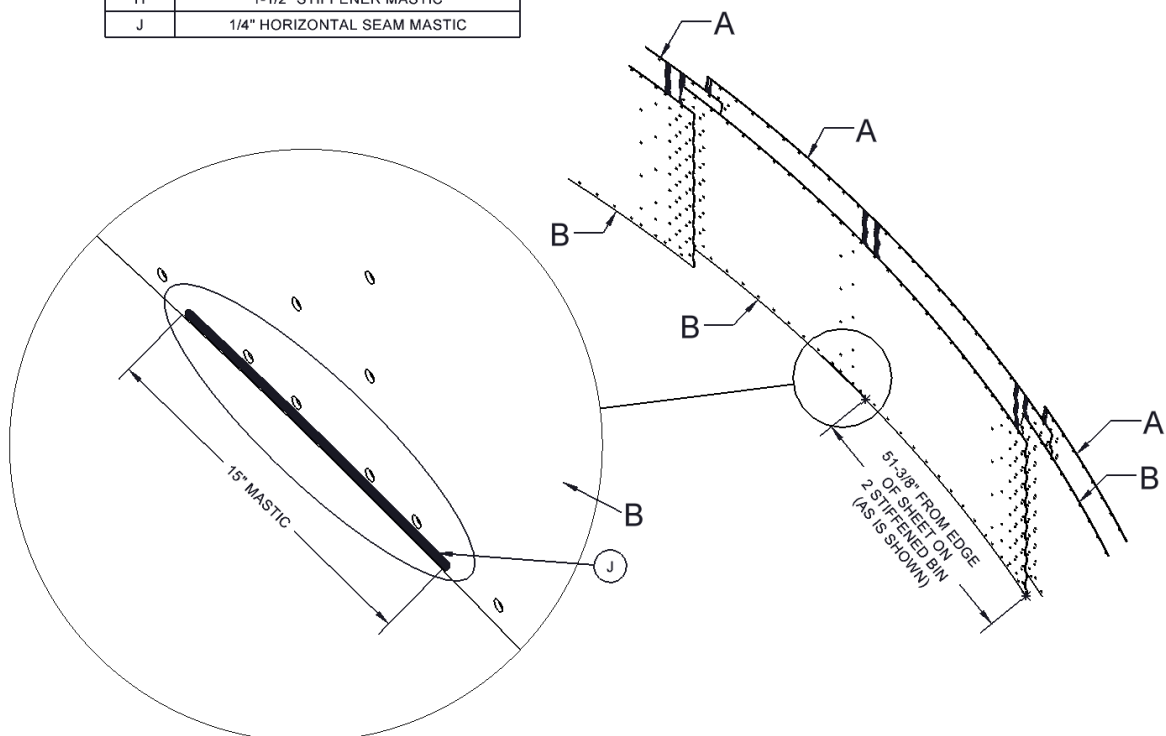
5SL, 2-STIFFENED DOUBLE LAMINATED SIDEWALL STEPS 3 & 4:

STEP 3: UPPER/INNER RING ASSEMBLY



LABEL	DESCRIPTION
A	UPPER RING/OUTER SHEET
B	UPPER RING/INNER SHEET
C	LOWER RING/OUTER SHEET
D	LOWER RING/INNER SHEET
G	1/4" VERTICAL SEAM MASTIC
H	1-1/2" STIFFENER MASTIC
J	1/4" HORIZONTAL SEAM MASTIC

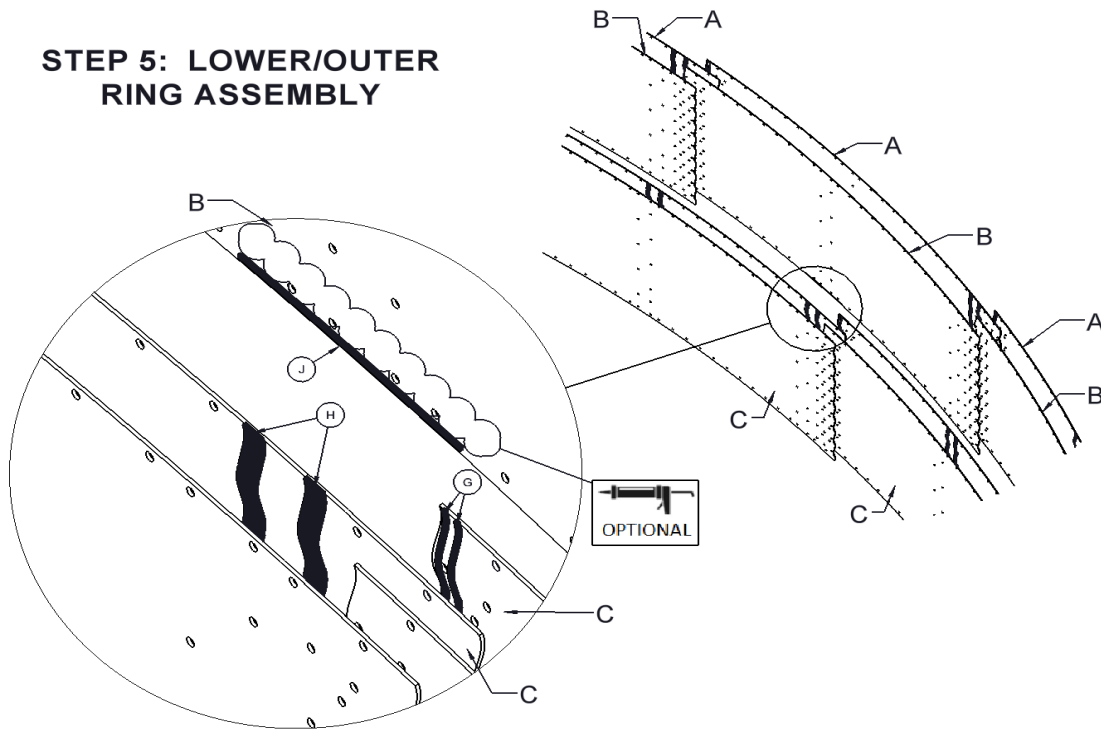
STEP 4: HORIZONTAL MASTIC



CB GRAIN BIN 5SL MANUAL

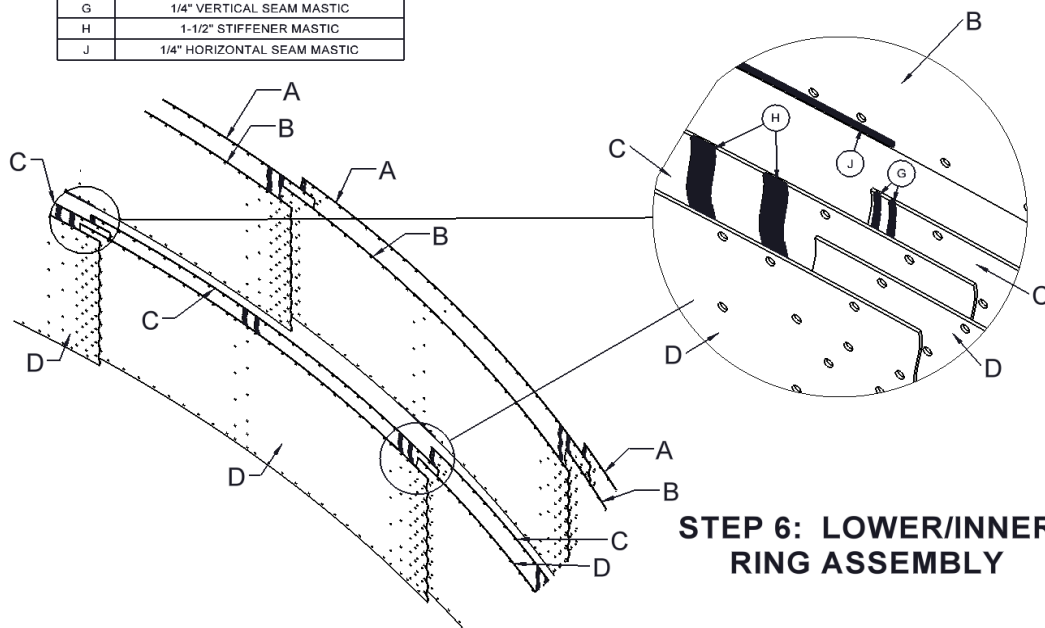
5SL, 2-STIFFENED DOUBLE LAMINATED SIDEWALL STEPS 5 & 6:

STEP 5: LOWER/OUTER RING ASSEMBLY



Important Note: Additional caulking may be applied along the bottom edge of the upper/inner sidewall sheet at the lower ring vertical seam locations to fill the small gaps created by the sidewall overlap.

LABEL	DESCRIPTION
A	UPPER RING/OUTER SHEET
B	UPPER RING/INNER SHEET
C	LOWER RING/OUTER SHEET
D	LOWER RING/INNER SHEET
G	1/4" VERTICAL SEAM MASTIC
H	1-1/2" STIFFENER MASTIC
J	1/4" HORIZONTAL SEAM MASTIC



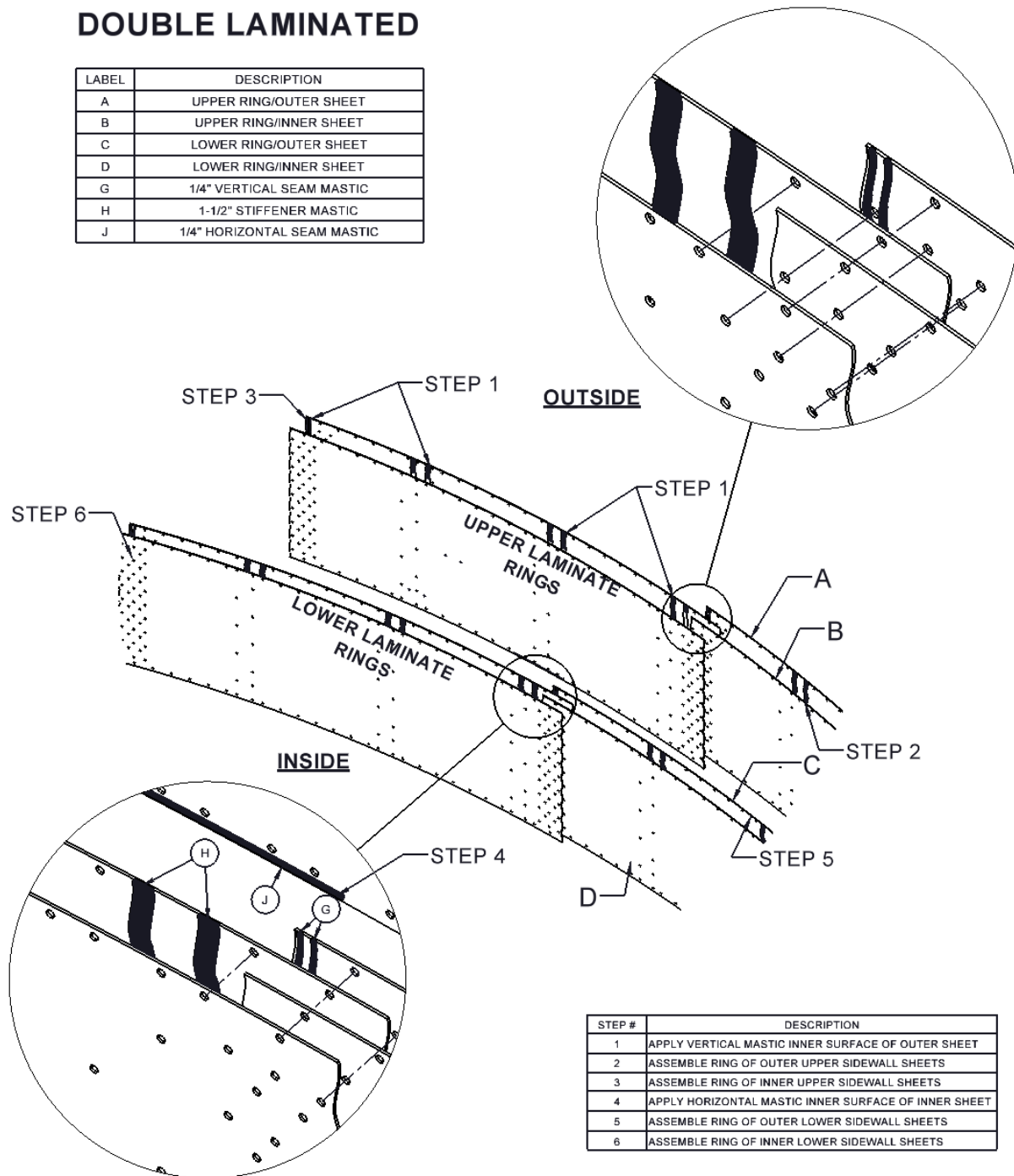
STEP 6: LOWER/INNER RING ASSEMBLY

CB GRAIN BIN 5SL MANUAL

5SL, 3-STIFFENED DOUBLE LAMINATED SIDEWALL OVERVIEW:

5SL 3-STIFFENED DOUBLE LAMINATED

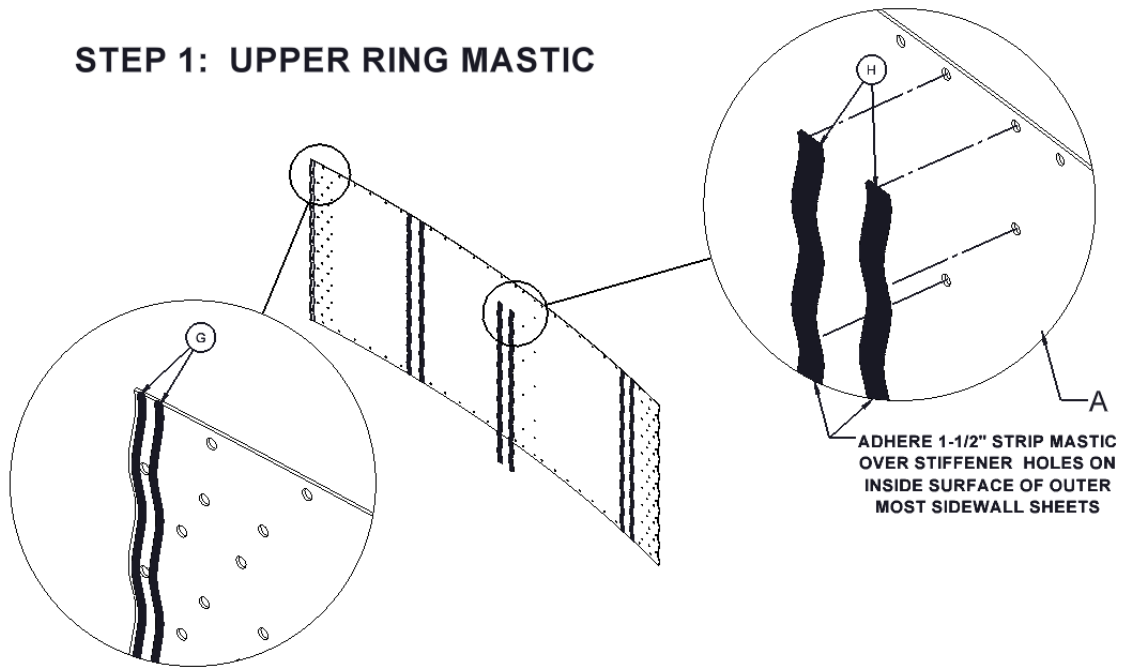
LABEL	DESCRIPTION
A	UPPER RING/OUTER SHEET
B	UPPER RING/INNER SHEET
C	LOWER RING/OUTER SHEET
D	LOWER RING/INNER SHEET
G	1/4" VERTICAL SEAM MASTIC
H	1-1/2" STIFFENER MASTIC
J	1/4" HORIZONTAL SEAM MASTIC



CB GRAIN BIN 5SL MANUAL

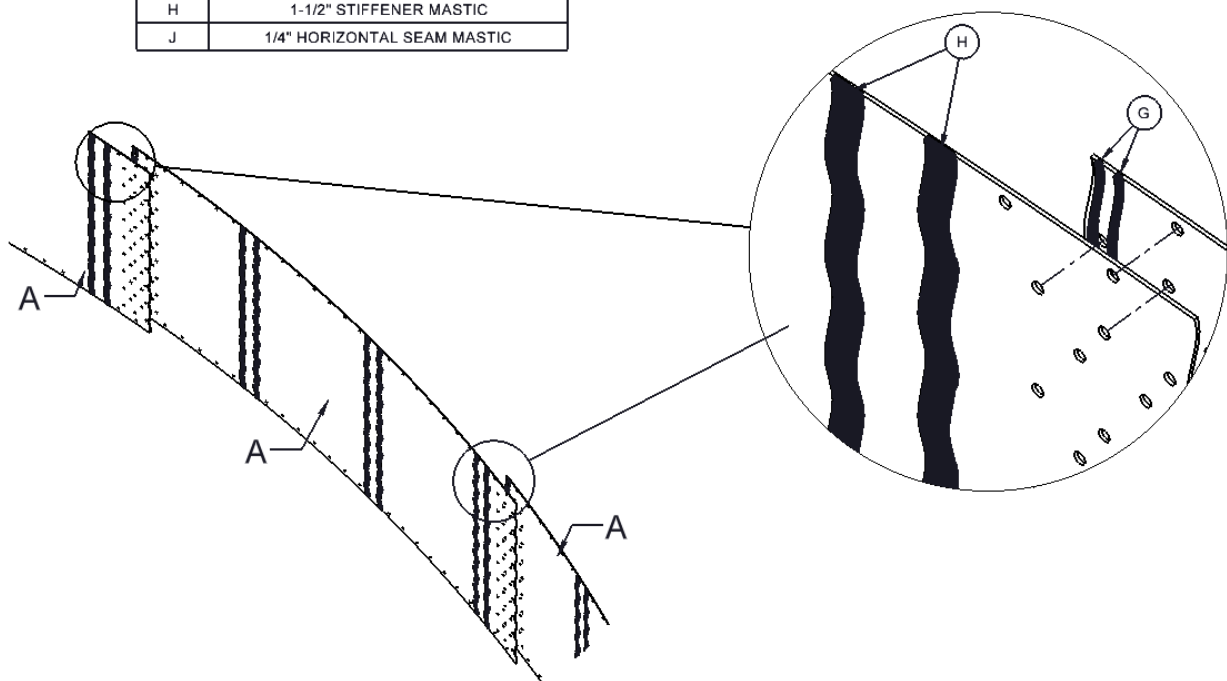
5SL, 3-STIFFENED DOUBLE LAMINATED SIDEWALL STEPS 1 & 2:

STEP 1: UPPER RING MASTIC



LABEL	DESCRIPTION
A	UPPER RING/OUTER SHEET
B	UPPER RING/INNER SHEET
C	LOWER RING/OUTER SHEET
D	LOWER RING/INNER SHEET
G	1/4\" VERTICAL SEAM MASTIC
H	1-1/2\" STIFFENER MASTIC
J	1/4\" HORIZONTAL SEAM MASTIC

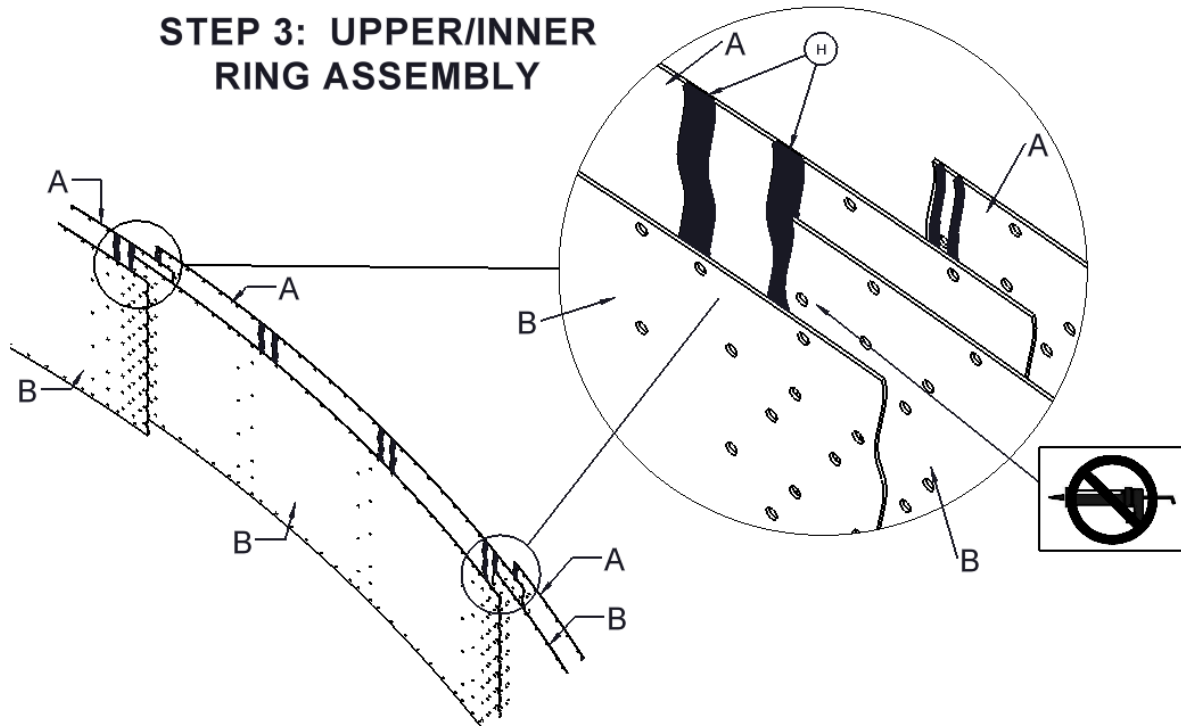
STEP 2: UPPER/OUTER RING ASSEMBLY



CB GRAIN BIN 5SL MANUAL

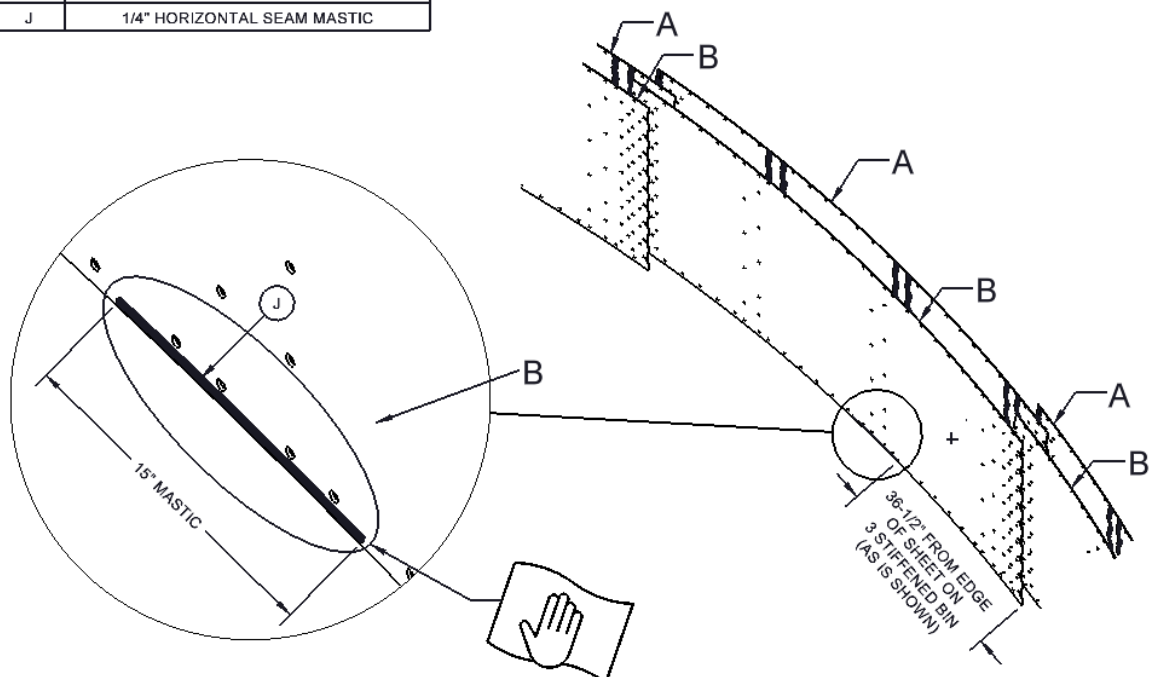
5SL, 3-STIFFENED DOUBLE LAMINATED SIDEWALL STEPS 3 & 4:

STEP 3: UPPER/INNER RING ASSEMBLY



LABEL	DESCRIPTION
A	UPPER RING/OUTER SHEET
B	UPPER RING/INNER SHEET
C	LOWER RING/OUTER SHEET
D	LOWER RING/INNER SHEET
G	1/4" VERTICAL SEAM MASTIC
H	1-1/2" STIFFENER MASTIC
J	1/4" HORIZONTAL SEAM MASTIC

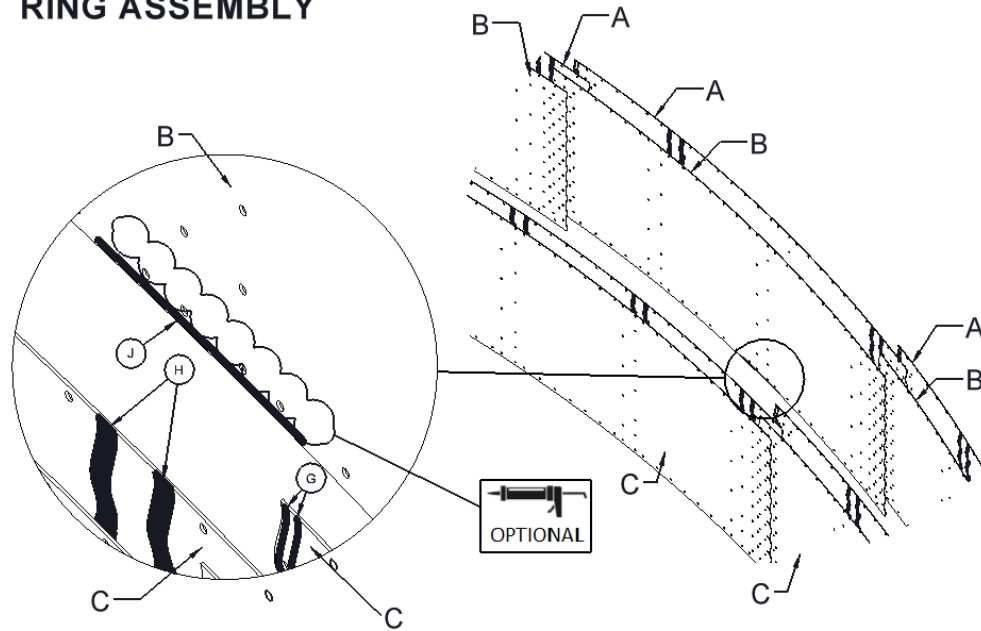
STEP 4: HORIZONTAL MASTIC



CB GRAIN BIN 5SL MANUAL

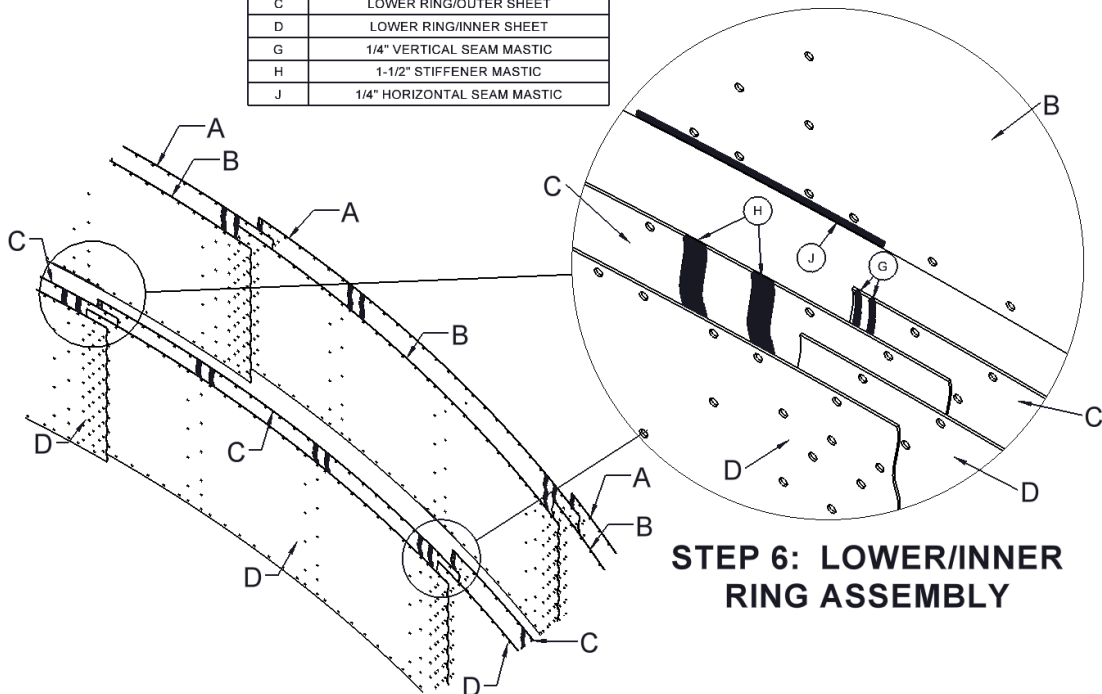
5SL, 3-STIFFENED DOUBLE LAMINATED SIDEWALL STEPS 5 & 6:

STEP 5: LOWER/OUTER RING ASSEMBLY



Important Note: Additional caulking may be applied along the bottom edge of the upper/inner sidewall sheet at the lower ring vertical seam locations to fill the small gaps created by the sidewall overlap.

LABEL	DESCRIPTION
A	UPPER RING/OUTER SHEET
B	UPPER RING/INNER SHEET
C	LOWER RING/OUTER SHEET
D	LOWER RING/INNER SHEET
G	1/4" VERTICAL SEAM MASTIC
H	1-1/2" STIFFENER MASTIC
J	1/4" HORIZONTAL SEAM MASTIC



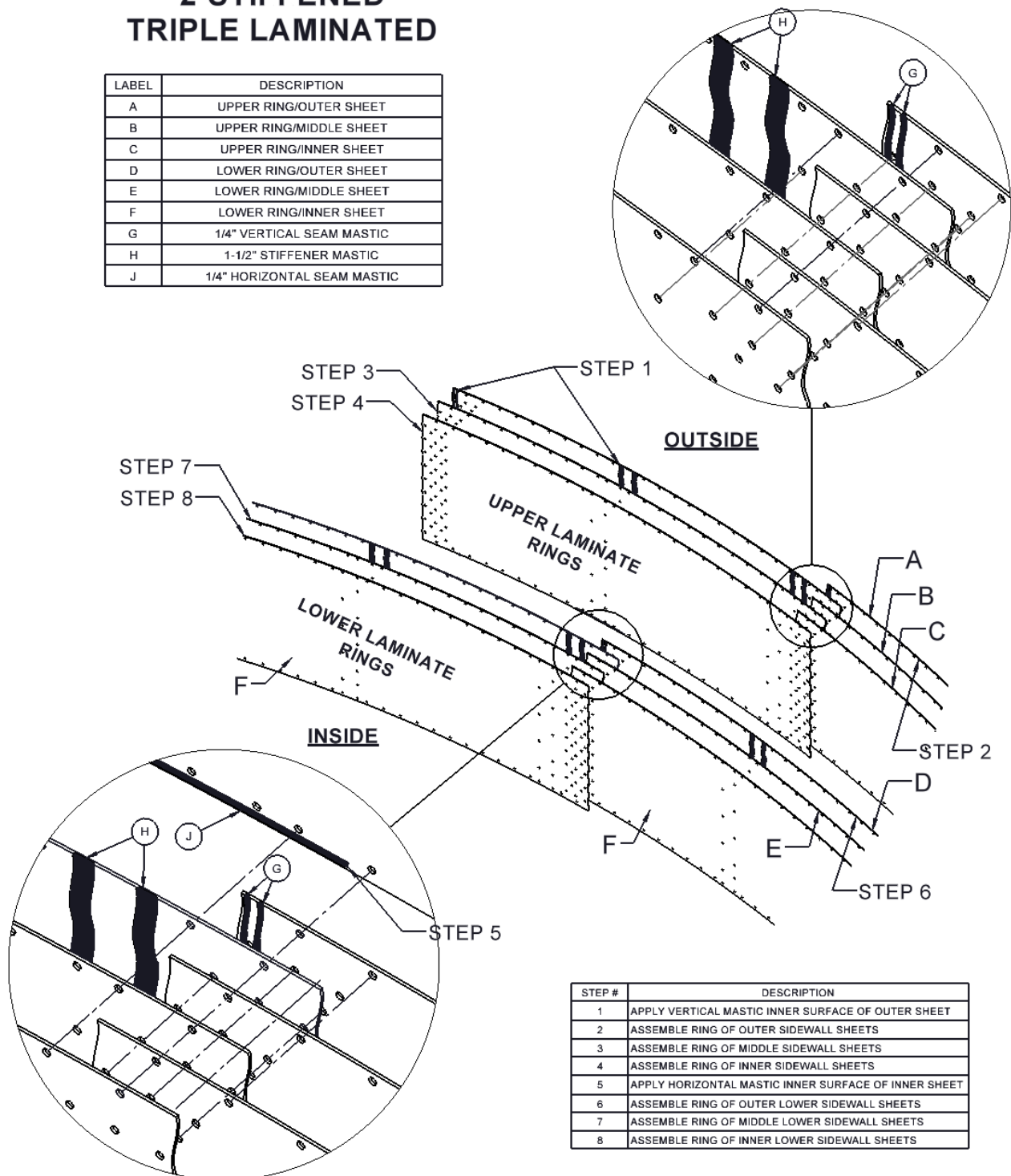
STEP 6: LOWER/INNER RING ASSEMBLY

CB GRAIN BIN 5SL MANUAL

5SL, 2-STIFFENED TRIPLE LAMINATED SIDEWALL OVERVIEW:

2-STIFFENED TRIPLE LAMINATED

LABEL	DESCRIPTION
A	UPPER RING/OUTER SHEET
B	UPPER RING/MIDDLE SHEET
C	UPPER RING/INNER SHEET
D	LOWER RING/OUTER SHEET
E	LOWER RING/MIDDLE SHEET
F	LOWER RING/INNER SHEET
G	1/4" VERTICAL SEAM MASTIC
H	1-1/2" STIFFENER MASTIC
J	1/4" HORIZONTAL SEAM MASTIC

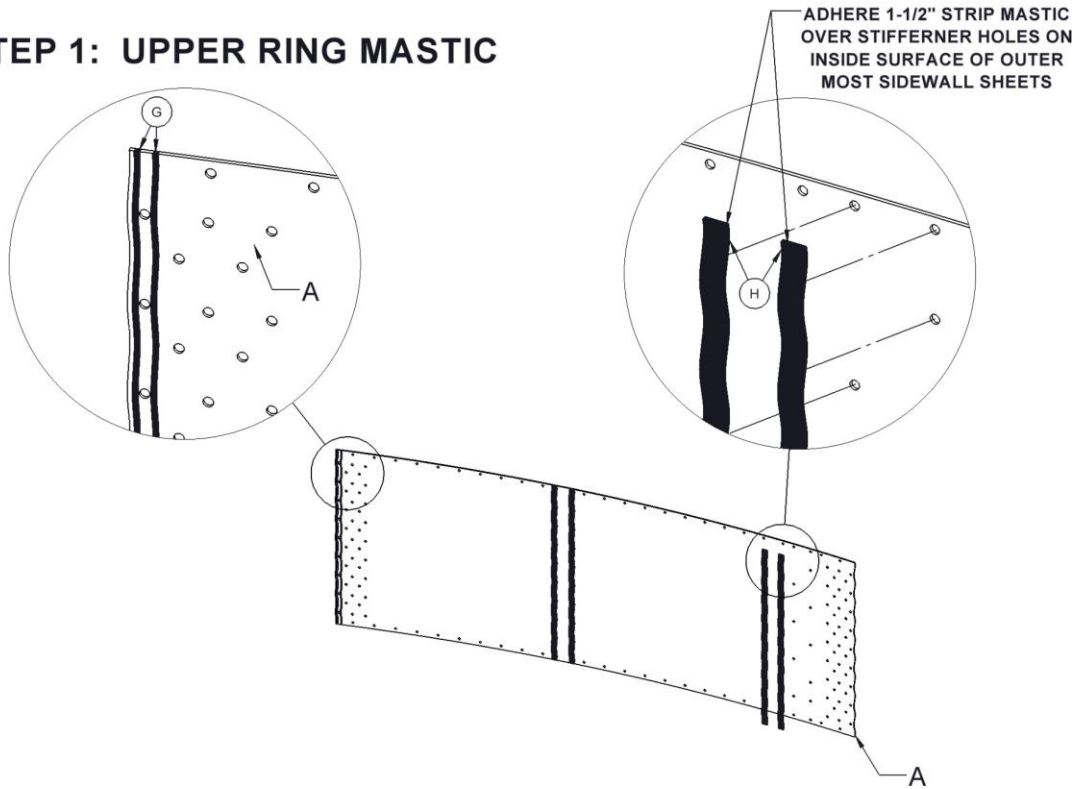


STEP #	DESCRIPTION
1	APPLY VERTICAL MASTIC INNER SURFACE OF OUTER SHEET
2	ASSEMBLE RING OF OUTER SIDEWALL SHEETS
3	ASSEMBLE RING OF MIDDLE SIDEWALL SHEETS
4	ASSEMBLE RING OF INNER SIDEWALL SHEETS
5	APPLY HORIZONTAL MASTIC INNER SURFACE OF INNER SHEET
6	ASSEMBLE RING OF OUTER LOWER SIDEWALL SHEETS
7	ASSEMBLE RING OF MIDDLE LOWER SIDEWALL SHEETS
8	ASSEMBLE RING OF INNER LOWER SIDEWALL SHEETS

CB GRAIN BIN 5SL MANUAL

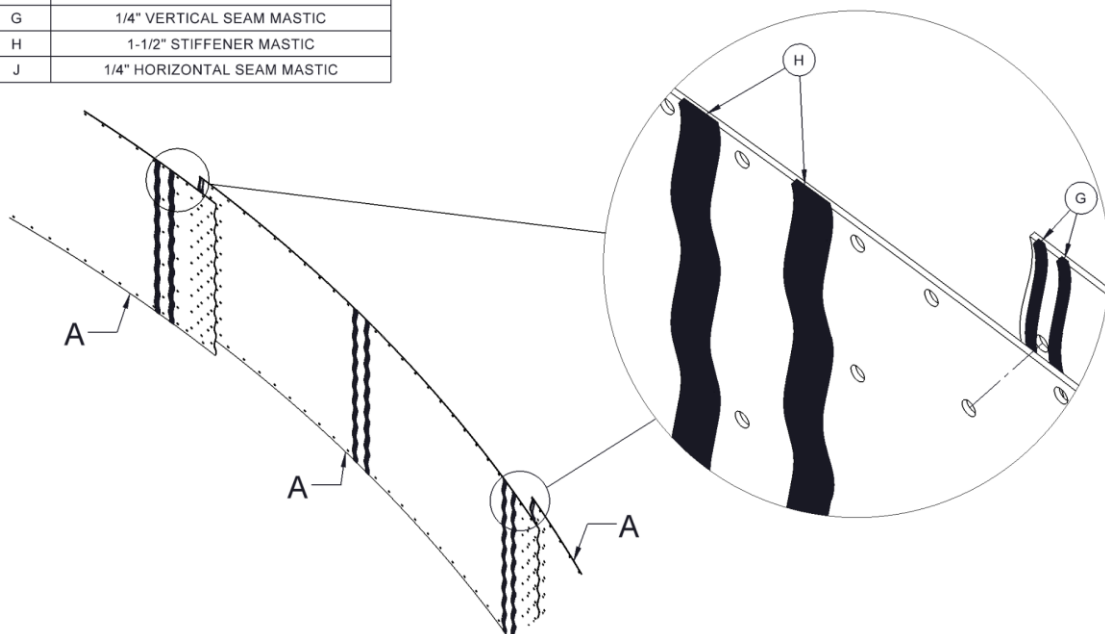
5SL, 2-STIFFENED TRIPLE LAMINATED SIDEWALL STEPS 1 & 2:

STEP 1: UPPER RING MASTIC



LABEL	DESCRIPTION
A	UPPER RING/OUTER SHEET
B	UPPER RING/MIDDLE SHEET
C	UPPER RING/INNER SHEET
D	LOWER RING/OUTER SHEET
E	LOWER RING/MIDDLE SHEET
F	LOWER RING/INNER SHEET
G	1/4" VERTICAL SEAM MASTIC
H	1-1/2" STIFFENER MASTIC
J	1/4" HORIZONTAL SEAM MASTIC

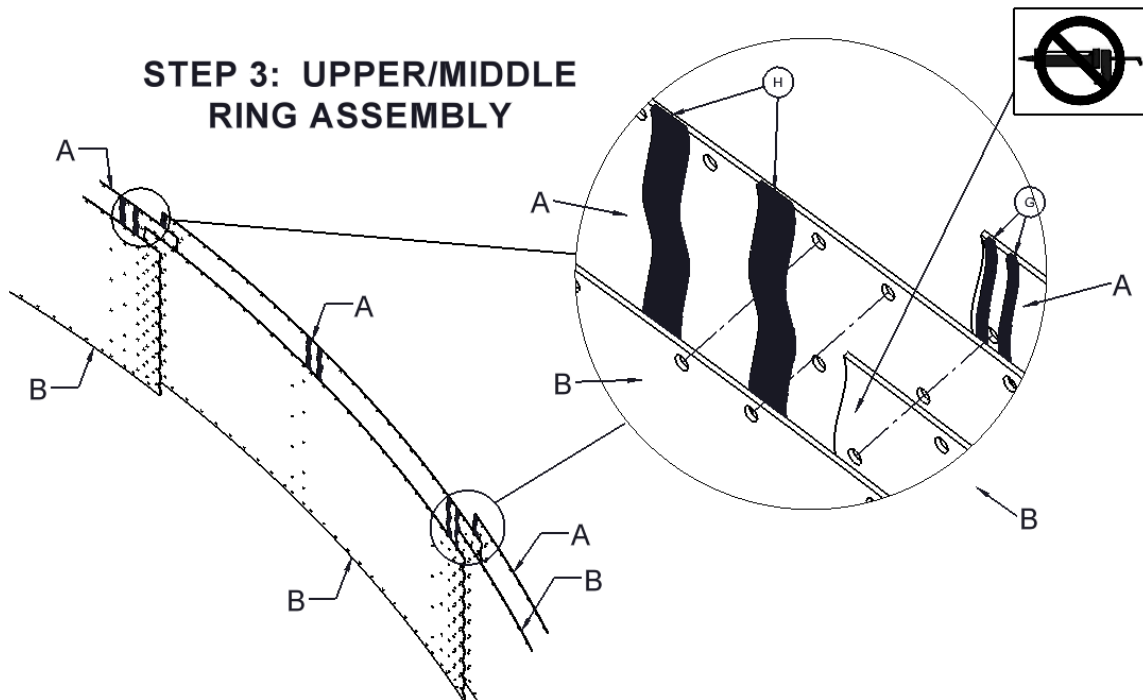
STEP 2: UPPER/OUTER RING ASSEMBLY



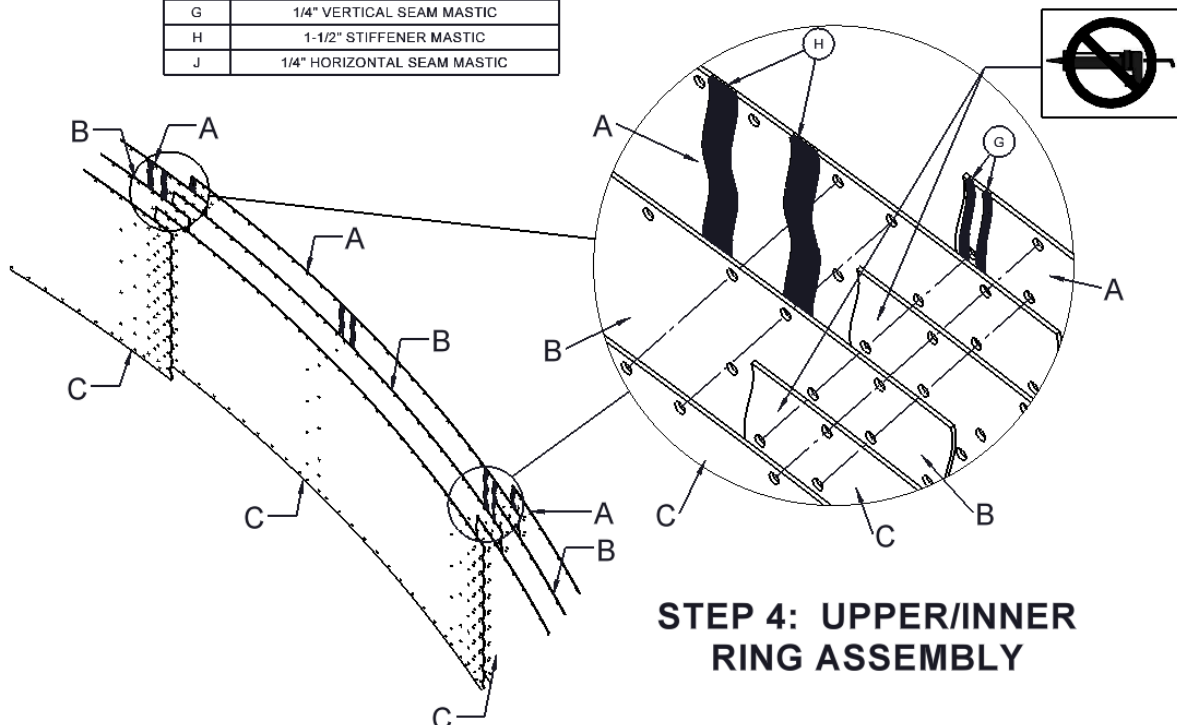
CB GRAIN BIN 5SL MANUAL

5SL, 2-STIFFENED TRIPLE LAMINATED SIDEWALL STEPS 3 & 4:

STEP 3: UPPER/MIDDLE RING ASSEMBLY



LABEL	DESCRIPTION
A	UPPER RING/OUTER SHEET
B	UPPER RING/MIDDLE SHEET
C	UPPER RING/INNER SHEET
D	LOWER RING/OUTER SHEET
E	LOWER RING/MIDDLE SHEET
F	LOWER RING/INNER SHEET
G	1/4" VERTICAL SEAM MASTIC
H	1-1/2" STIFFENER MASTIC
J	1/4" HORIZONTAL SEAM MASTIC

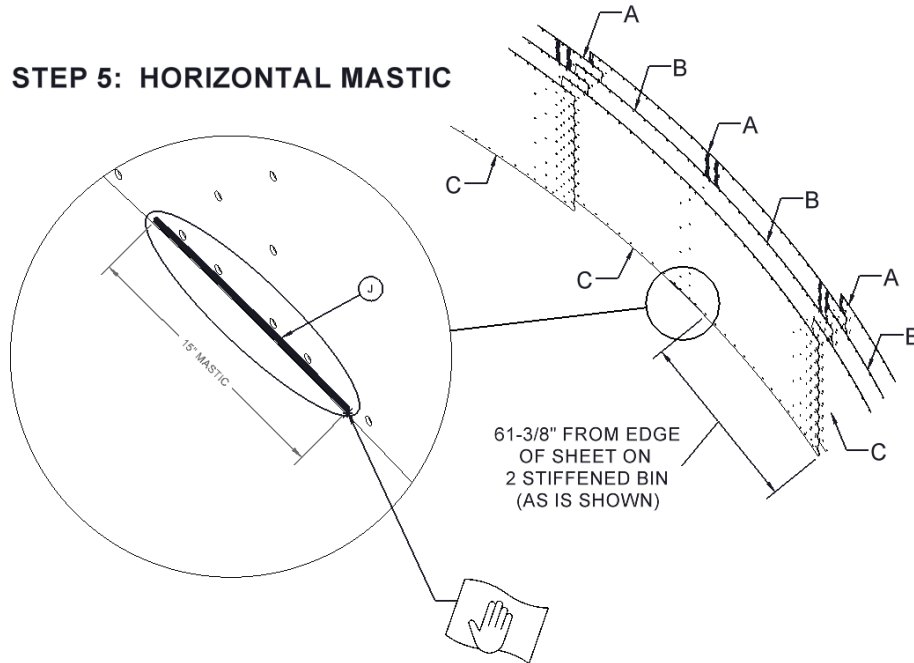


STEP 4: UPPER/INNER RING ASSEMBLY

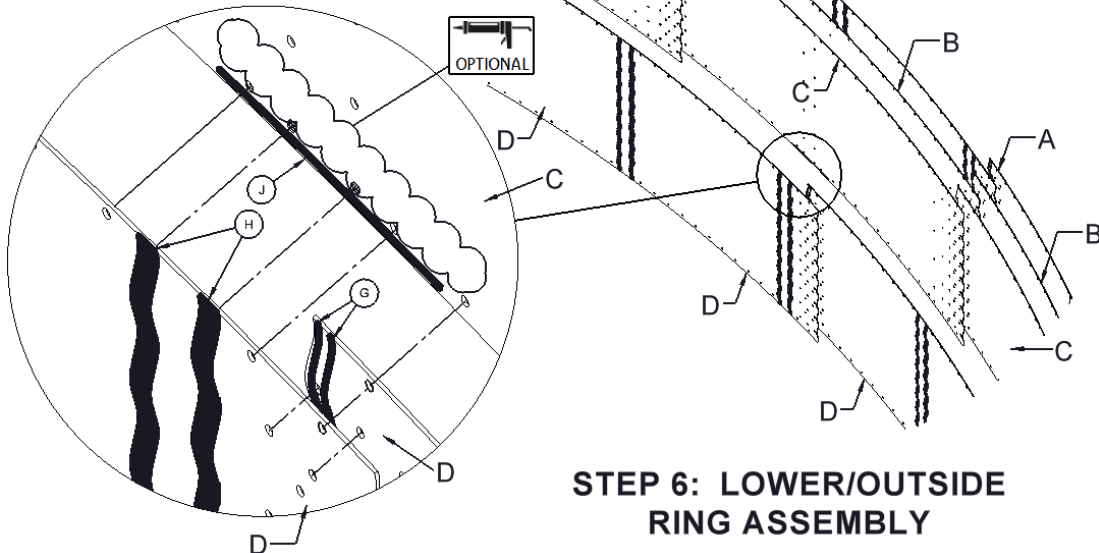
CB GRAIN BIN 5SL MANUAL

5SL, 2-STIFFENED TRIPLE LAMINATED SIDEWALL STEPS 5 & 6:

STEP 5: HORIZONTAL MASTIC



LABEL	DESCRIPTION
A	UPPER RING/OUTER SHEET
B	UPPER RING/MIDDLE SHEET
C	UPPER RING/INNER SHEET
D	LOWER RING/OUTER SHEET
E	LOWER RING/MIDDLE SHEET
F	LOWER RING/INNER SHEET
G	1/4" VERTICAL SEAM MASTIC
H	1-1/2" STIFFENER MASTIC
J	1/4" HORIZONTAL SEAM MASTIC



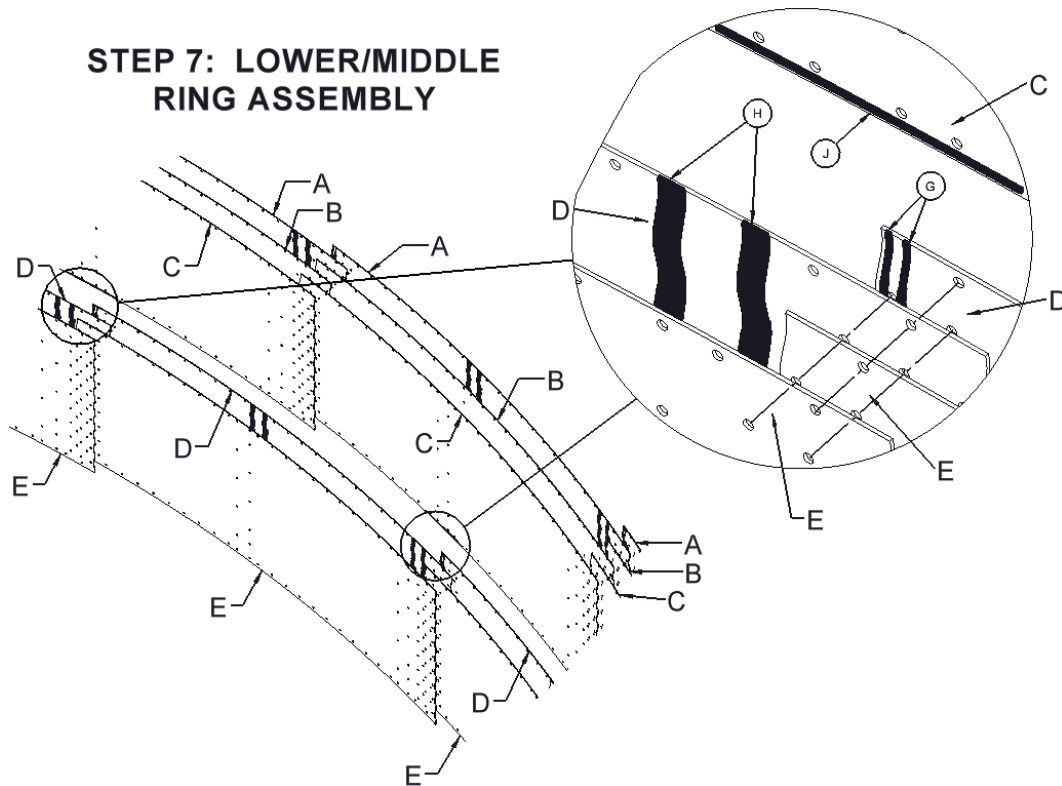
STEP 6: LOWER/OUTSIDE RING ASSEMBLY

Important Note: Additional caulking may be applied along the bottom edge of the upper/inner sidewall sheet at the lower ring vertical seam locations to fill the small gaps created by the sidewall overlap.

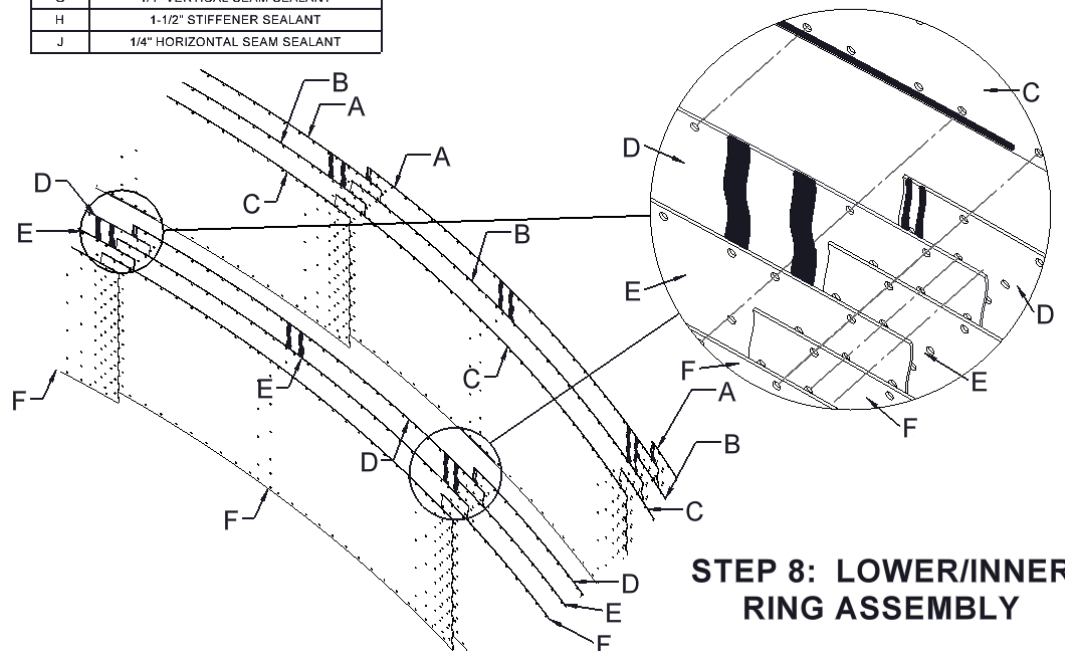
CB GRAIN BIN 5SL MANUAL

5SL, 2-STIFFENED TRIPLE LAMINATED SIDEWALL STEPS 7 & 8:

STEP 7: LOWER/MIDDLE RING ASSEMBLY



LABEL	DESCRIPTION
A	UPPER RING/OUTER SHEET
B	UPPER RING/MIDDLE SHEET
C	UPPER RING/INNER SHEET
D	LOWER RING/OUTER SHEET
E	LOWER RING/MIDDLE SHEET
F	LOWER RING/INNER SHEET
G	1/4" VERTICAL SEAM SEALANT
H	1-1/2" STIFFENER SEALANT
J	1/4" HORIZONTAL SEAM SEALANT



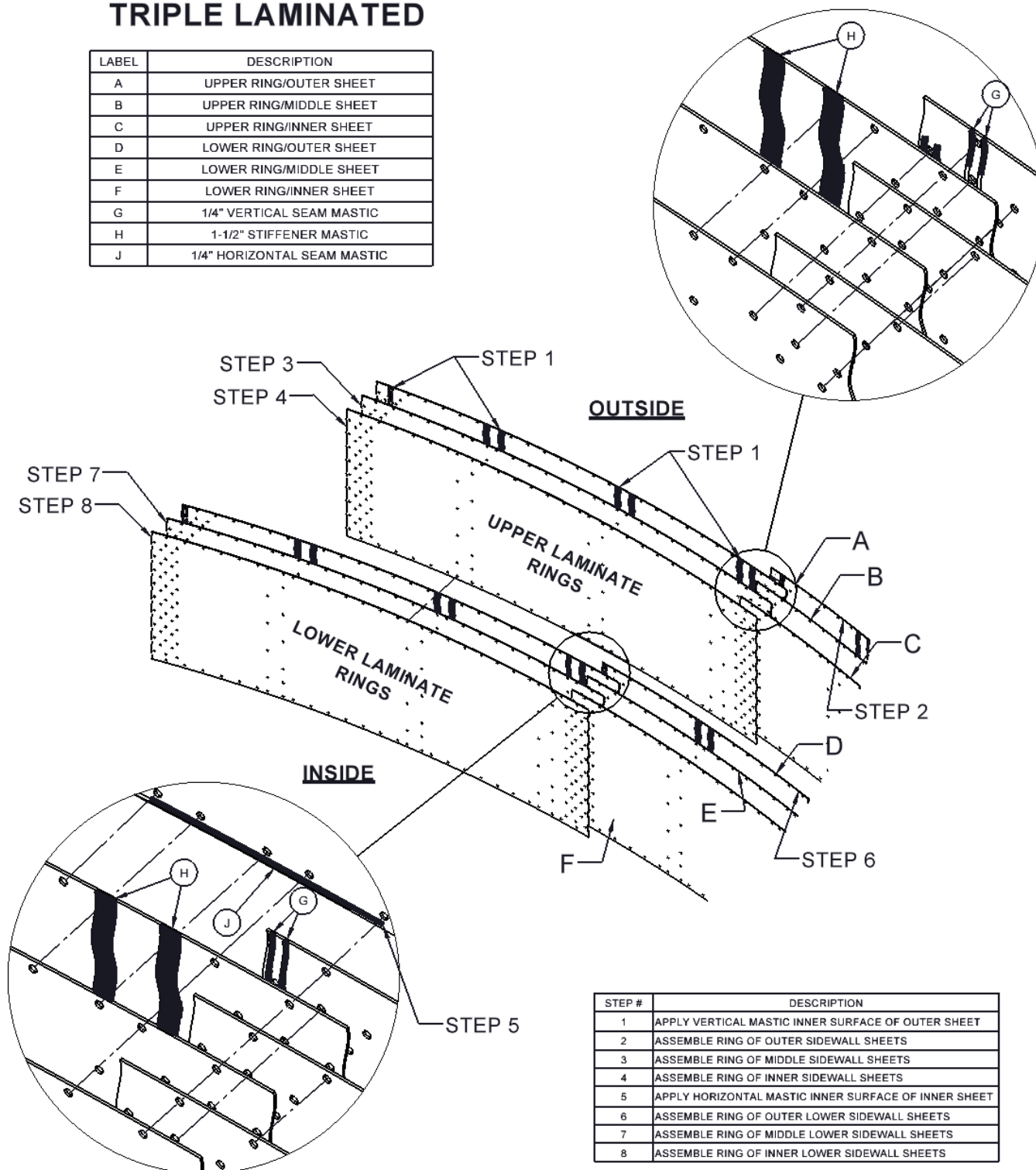
STEP 8: LOWER/INNER RING ASSEMBLY

CB GRAIN BIN 5SL MANUAL

5SL, 3-STIFFENED TRIPLE LAMINATED SIDEWALL OVERVIEW:

3-STIFFENED TRIPLE LAMINATED

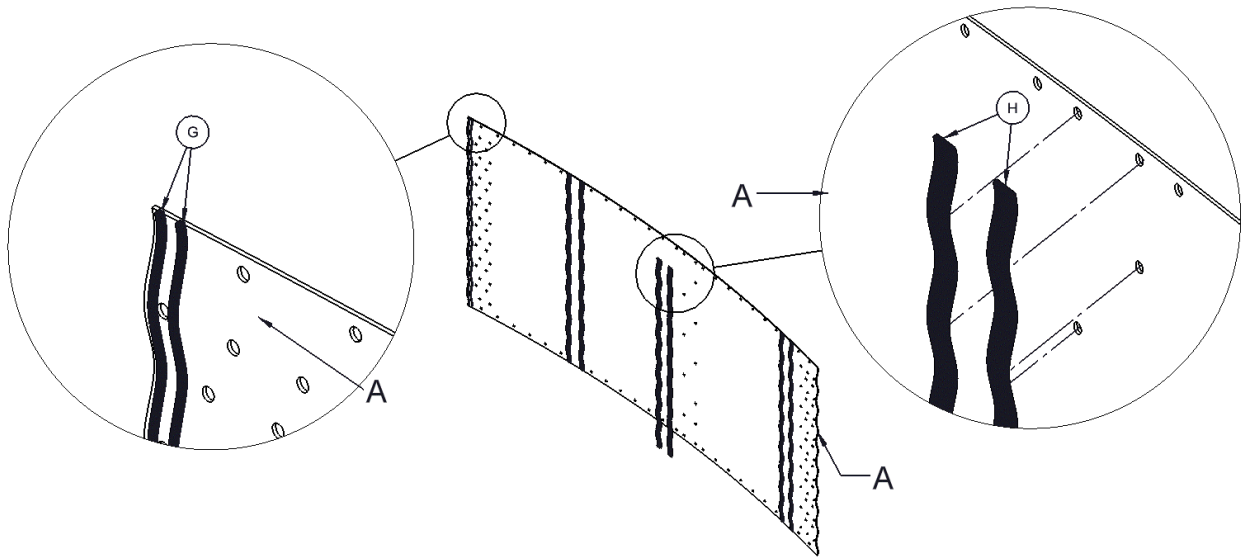
LABEL	DESCRIPTION
A	UPPER RING/OUTER SHEET
B	UPPER RING/MIDDLE SHEET
C	UPPER RING/INNER SHEET
D	LOWER RING/OUTER SHEET
E	LOWER RING/MIDDLE SHEET
F	LOWER RING/INNER SHEET
G	1/4" VERTICAL SEAM MASTIC
H	1-1/2" STIFFENER MASTIC
J	1/4" HORIZONTAL SEAM MASTIC



CB GRAIN BIN 5SL MANUAL

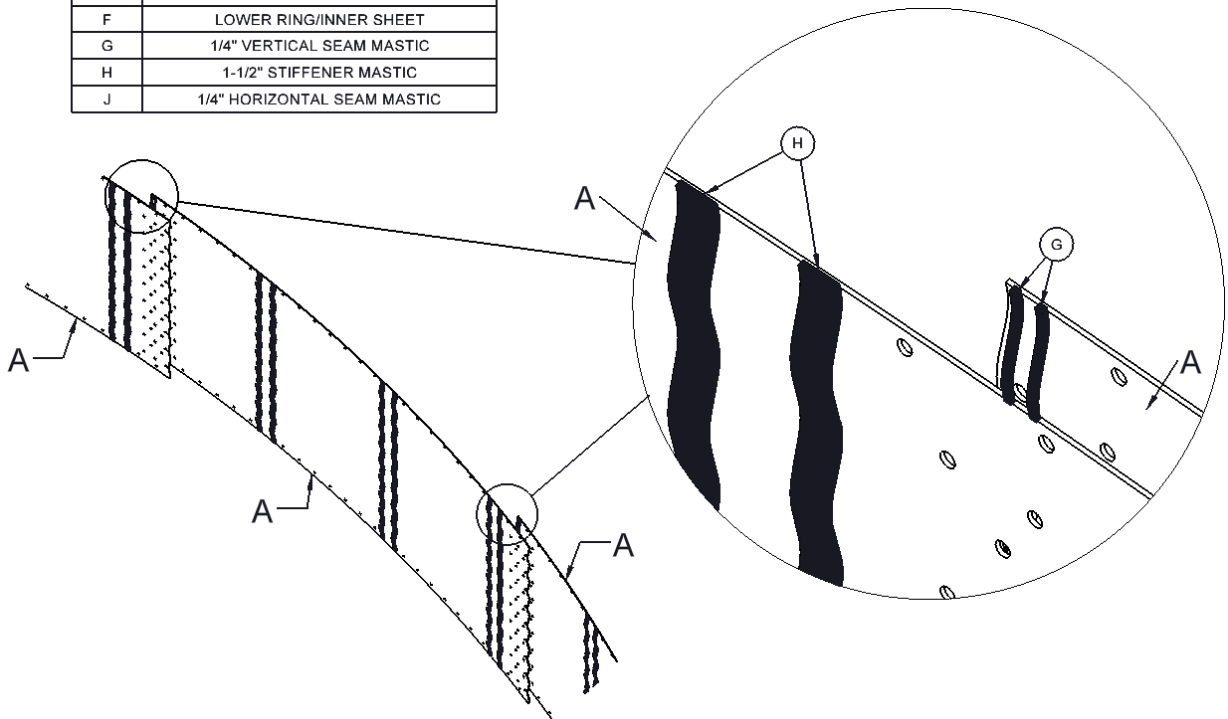
5SL, 3-STIFFENED TRIPLE LAMINATED STEPS 1 & 2:

STEP 1: UPPER RING MASTIC



LABEL	DESCRIPTION
A	UPPER RING/OUTER SHEET
B	UPPER RING/MIDDLE SHEET
C	UPPER RING/INNER SHEET
D	LOWER RING/OUTER SHEET
E	LOWER RING/MIDDLE SHEET
F	LOWER RING/INNER SHEET
G	1/4" VERTICAL SEAM MASTIC
H	1-1/2" STIFFENER MASTIC
J	1/4" HORIZONTAL SEAM MASTIC

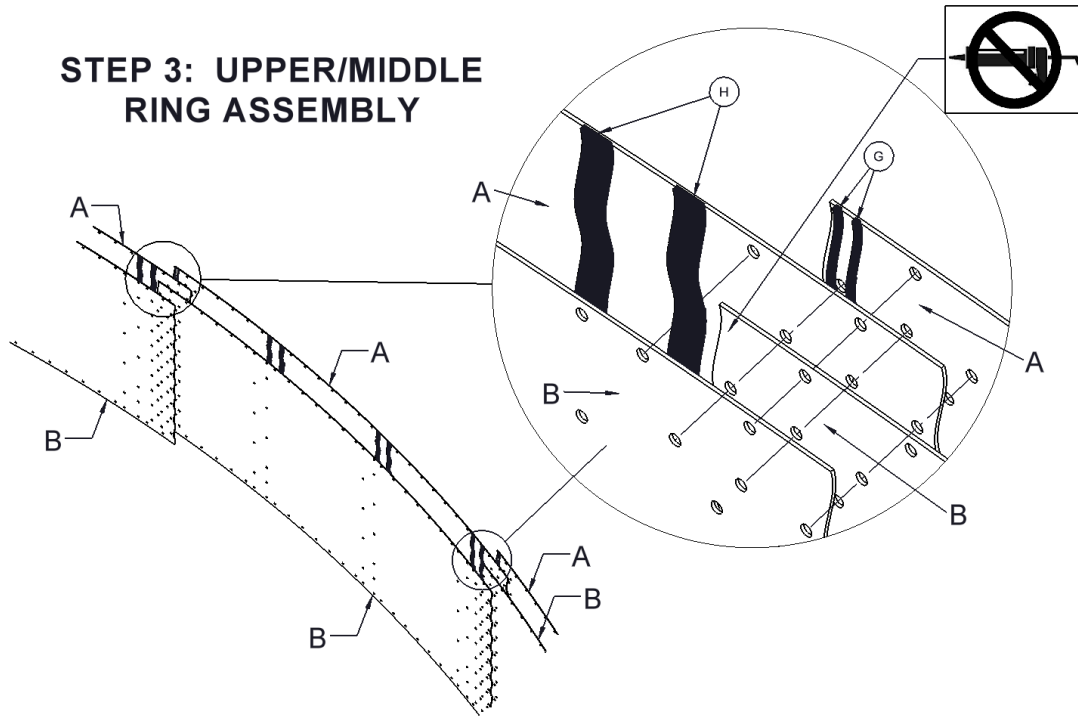
STEP 2: UPPER/OUTER RING ASSEMBLY



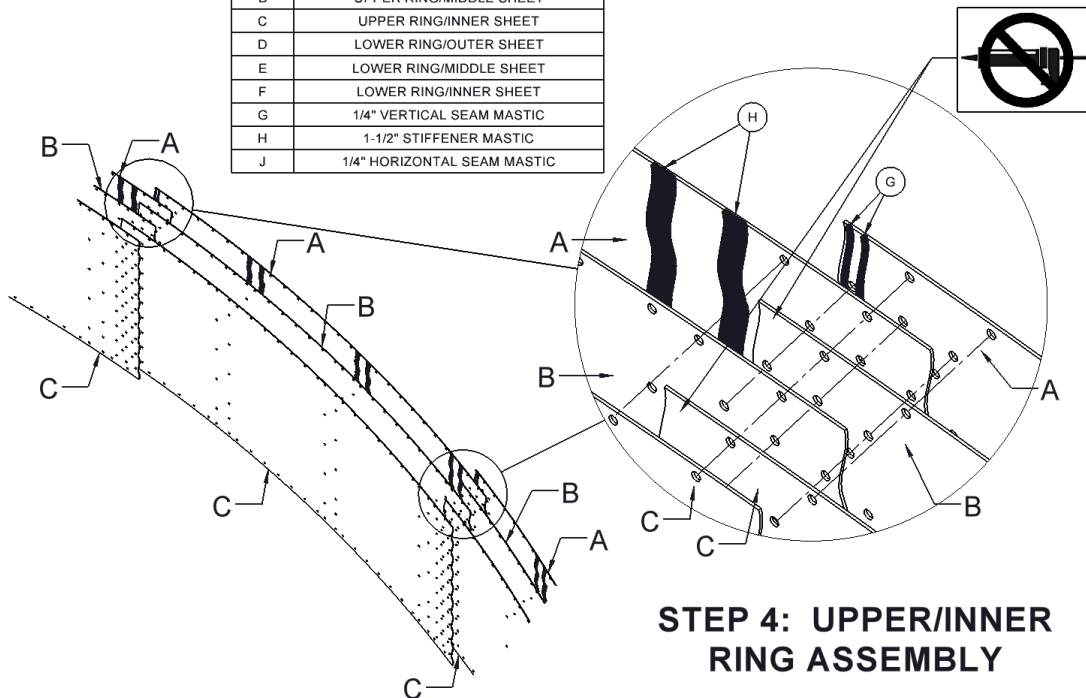
CB GRAIN BIN 5SL MANUAL

5SL, 3-STIFFENED TRIPLE LAMINATED STEPS 3 & 4:

STEP 3: UPPER/MIDDLE RING ASSEMBLY



LABEL	DESCRIPTION
A	UPPER RING/OUTER SHEET
B	UPPER RING/MIDDLE SHEET
C	UPPER RING/INNER SHEET
D	LOWER RING/OUTER SHEET
E	LOWER RING/MIDDLE SHEET
F	LOWER RING/INNER SHEET
G	1/4" VERTICAL SEAM MASTIC
H	1-1/2" STIFFENER MASTIC
J	1/4" HORIZONTAL SEAM MASTIC

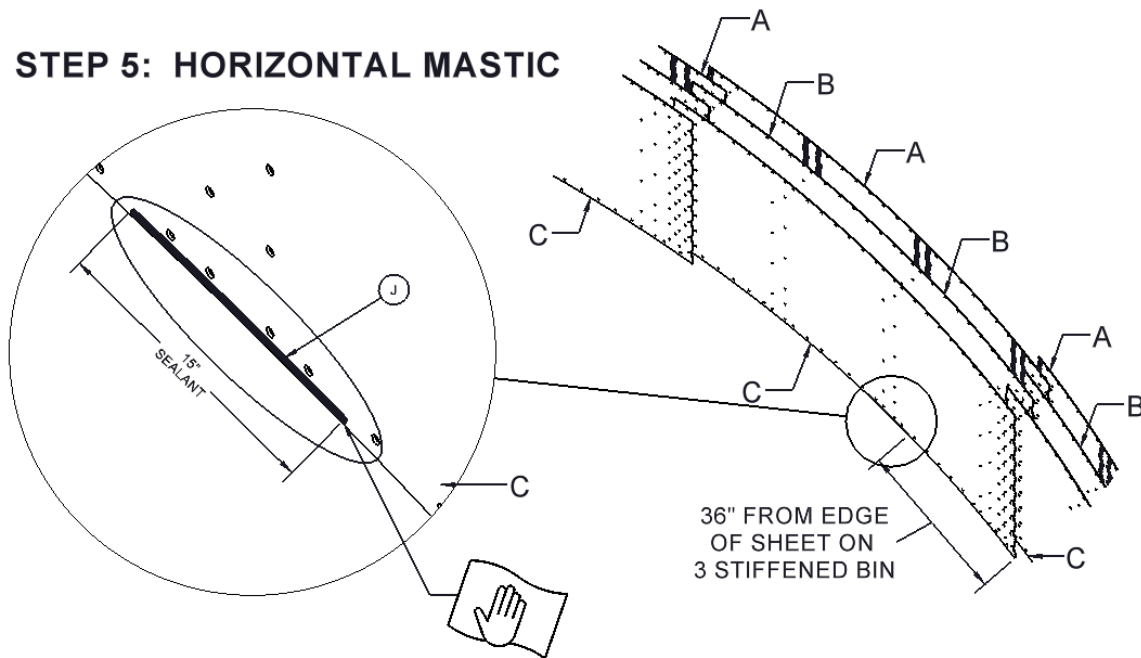


STEP 4: UPPER/INNER RING ASSEMBLY

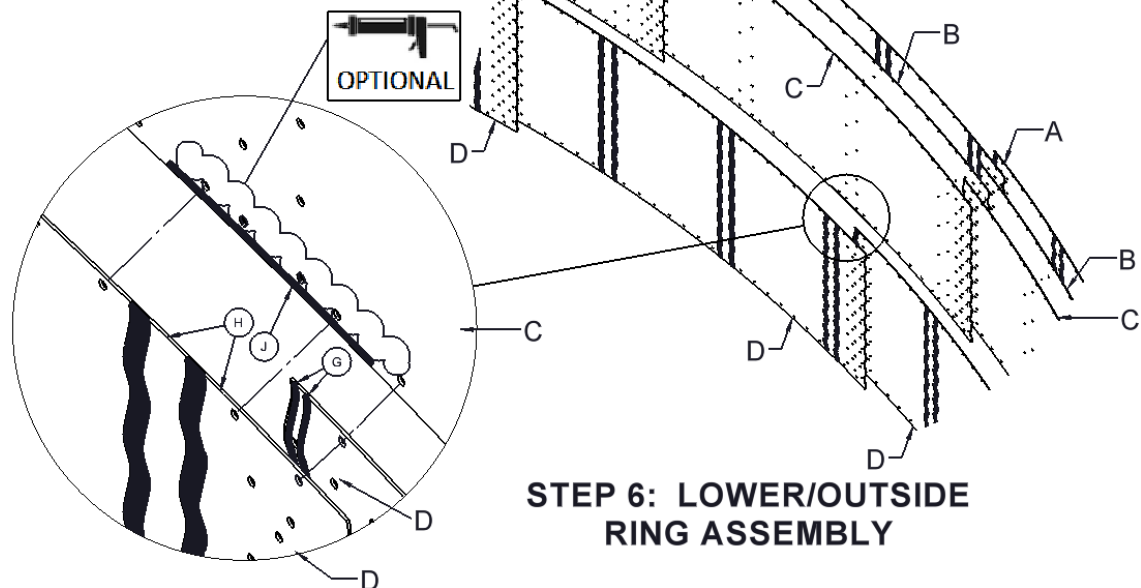
CB GRAIN BIN 5SL MANUAL

5SL, 3-STIFFENED TRIPLE LAMINATED STEPS 5 & 6:

STEP 5: HORIZONTAL MASTIC



LABEL	DESCRIPTION
A	UPPER RING/OUTER SHEET
B	UPPER RING/MIDDLE SHEET
C	UPPER RING/INNER SHEET
D	LOWER RING/OUTER SHEET
E	LOWER RING/MIDDLE SHEET
F	LOWER RING/INNER SHEET
G	1/4" VERTICAL SEAM MASTIC
H	1-1/2" STIFFENER MASTIC
J	1/4" HORIZONTAL SEAM MASTIC

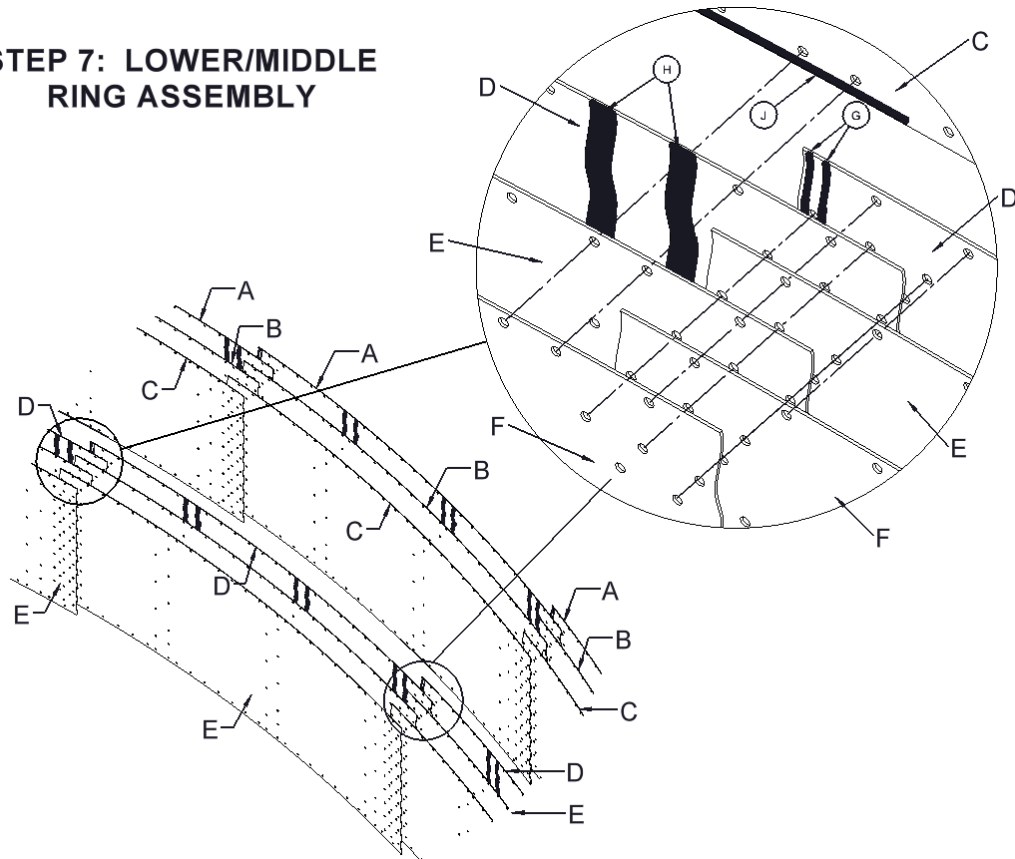


Important Note: Additional caulking may be applied along the bottom edge of the upper/inner sidewall sheet at the lower ring vertical seam locations to fill the small gaps created by the sidewall overlap.

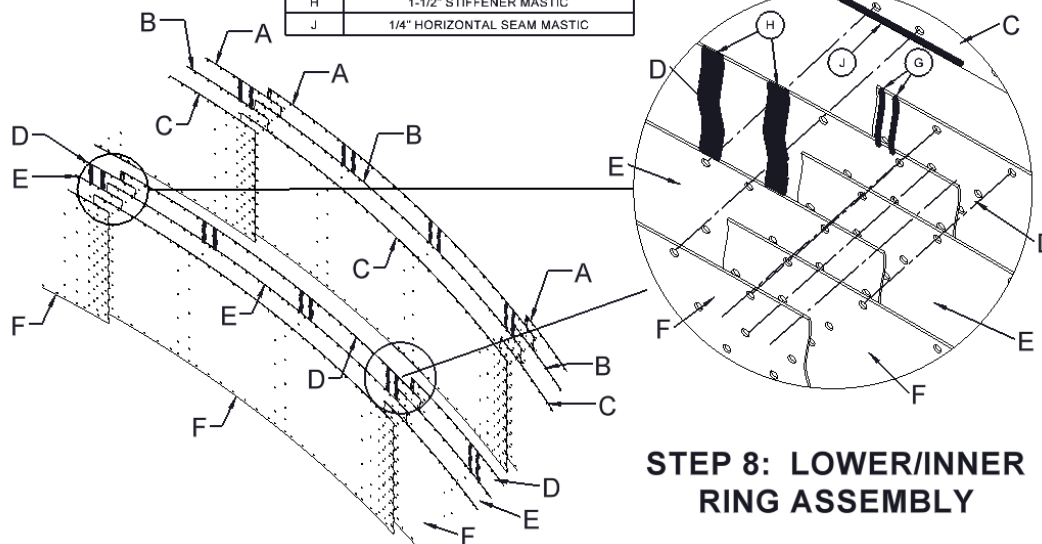
CB GRAIN BIN 5SL MANUAL

5SL, 3-STIFFENED TRIPLE LAMINATED STEPS 7 & 8:

STEP 7: LOWER/MIDDLE RING ASSEMBLY



LABEL	DESCRIPTION
A	UPPER RING/OUTER SHEET
B	UPPER RING/MIDDLE SHEET
C	UPPER RING/INNER SHEET
D	LOWER RING/OUTER SHEET
E	LOWER RING/MIDDLE SHEET
F	LOWER RING/INNER SHEET
G	1/4" VERTICAL SEAM MASTIC
H	1-1/2" STIFFENER MASTIC
J	1/4" HORIZONTAL SEAM MASTIC



STEP 8: LOWER/INNER RING ASSEMBLY

CB GRAIN BIN 5SL MANUAL

SECTION 4: STIFFENERS

PART DESCRIPTION:

Example: **9361800 – STIFF CLS42 A 2R 18GA OR**
 9361800 PART NUMBER
 STIFF STIFFENER
 CLS Chief Laminated Splice
 42 42" Sheet Height
 A Hole Punching Designation
 2R 2 Ring Height
 18GA 18 Gauge Galvanized Steel
 OR Orange (Material Gauge Color Code)

COLOR CODES

STIFFENER MATERIAL GAUGE COLOR CODES

MATERIAL GAUGE	GAUGE COLOR CODE	
20 GA	WHITE	WH
18 GA	ORANGE	OR
17 GA	LIGHT BLUE	L BL
16 GA	GREEN	GR
14 GA	YELLOW	YL
13 GA	BROWN	BR
12 GA	DARK BLUE	D BL
11 GA	PINK	PK
10 GA	BLACK	BK
09 GA	LIGHT GREEN	L GR
08 GA	RED	RD

STIFFENER HOLE PUNCHING DESIGNATION COLOR CODES

PUNCH CODE	EDGE COLOR	CENTER COLOR
A	WHITE	-
B	ORANGE	-
C	GREEN	-
D	YELLOW	-
E	BROWN	-
F	BLUE	-
BTTM1	PINK	GOLD
BTTM2	BLACK	GOLD
BTTM3	LIGHT GREEN	GOLD
DRST1	RED	-
DRST2	YELLOW/BLACK	-

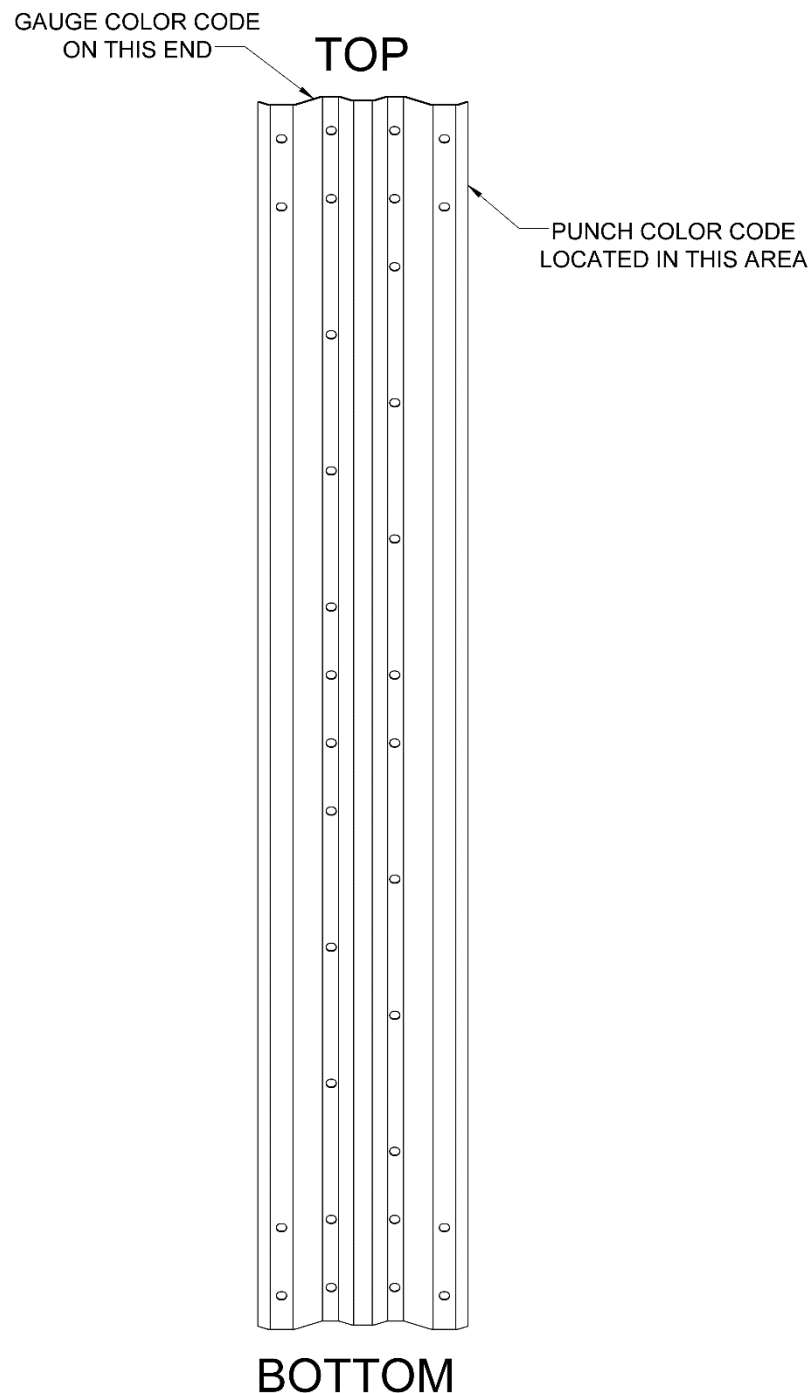
CB GRAIN BIN 5SL MANUAL

STIFFENER OUTER WING HOLE BOLTS

Use 7/16x1.25" bolts for Single & Double stiffener laminations.

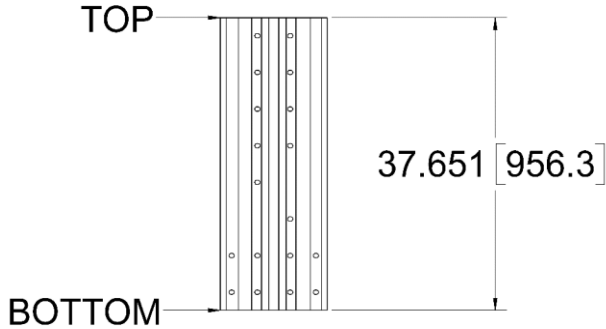
Use 7/16x2" bolts for Triple & Quad stiffener laminations.

LOCATING STIFFENER HOLE PUNCHING AND GAUGE COLOR CODES:



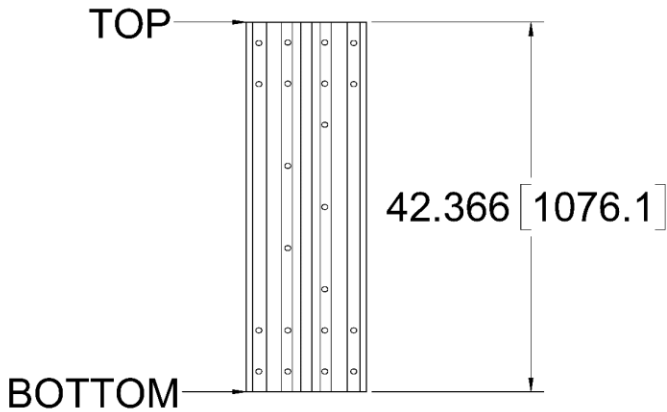
CB GRAIN BIN 5SL MANUAL

1-RING STIFFENER:



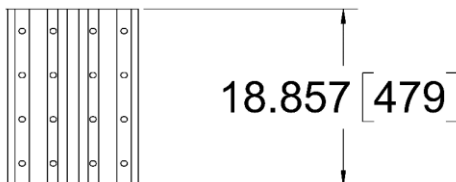
PART #	DESCRIPTION
9361832	STIFF CLS42 1R TOP 18GA OR
9361833	STIFF CLS42 1R TOP 16GA GR
9361834	STIFF CLS42 1R TOP 14GA YL

1-RING TOP STIFFENER:



PART #	DESCRIPTION
9361835	STIFF CLS42 1R 18GA OR
9361836	STIFF CLS42 1R 16GA GR
9361837	STIFF CLS42 1R 14GA YL

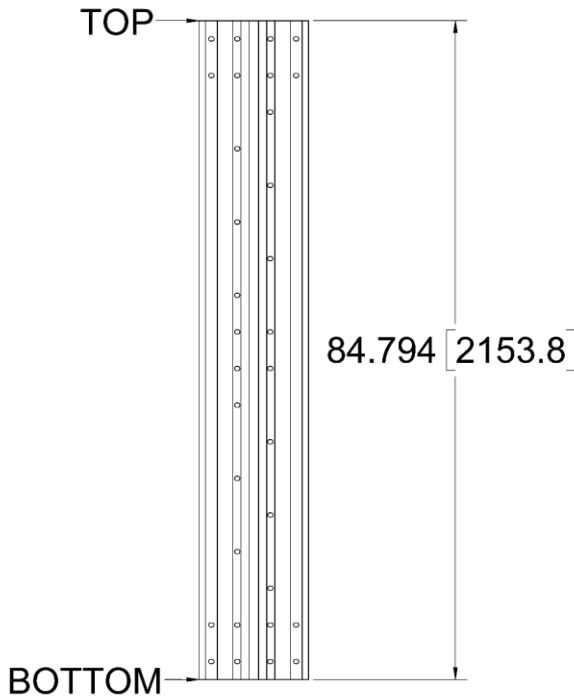
NO LAMINATION STIFFENER SPLICE:



PART #	DESCRIPTION
9361839	STIFF CLS42 SPLICE 14GA YW
9361550	STIFF CLS42 SPLICE 12GA D BL
9361838	STIFF CLS42 SPLICE 10GA BK

CB GRAIN BIN 5SL MANUAL

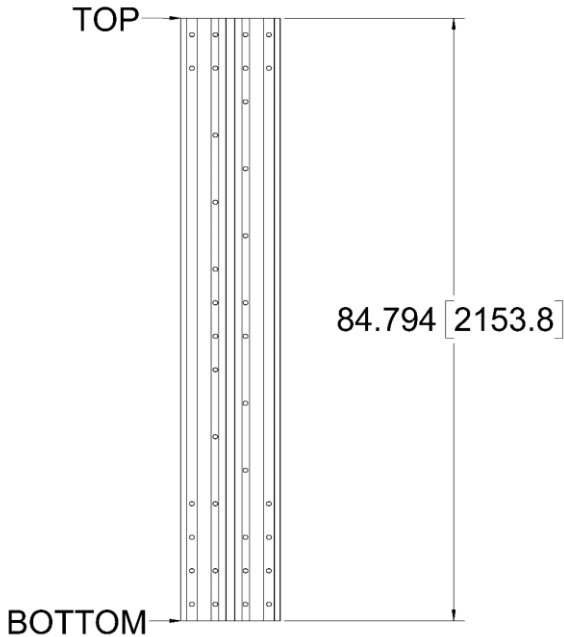
2-RING SINGLE STIFFENER:



PUNCH CODE "A": WHITE		
PART #	DESCRIPTION	
9361800	STIFF CLS42 A 2R 18GA	OR
9361801	STIFF CLS42 A 2R 16GA	GR
9361802	STIFF CLS42 A 2R 14GA	YL
9361799	STIFF CLS42 A 2R 13GA	BR
9361803	STIFF CLS42 A 2R 12GA	D BL
9361812	STIFF CLS42 A 2R 11GA	PK
9361804	STIFF CLS42 A 2R 10GA	BK
9361798	STIFF CLS42 A 2R 09GA	L GR
9361805	STIFF CLS42 A 2R 08GA	RD

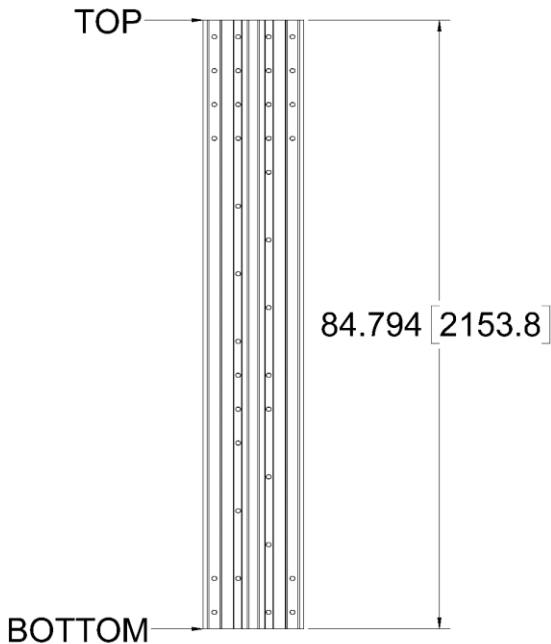
CB GRAIN BIN 5SL MANUAL

2-RING, BACKSIDE DOUBLE LAMINATED STIFFENER:



PUNCH CODE "B": ORANGE		
PART #	DESCRIPTION	
9361806	STIFF CLS42 B 2R 08GA	RD

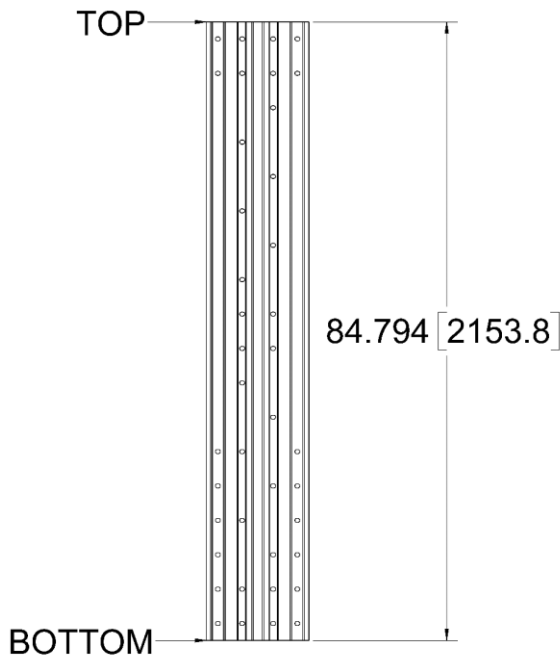
2-RING, FRONTSIDE DOUBLE LAMINATED STIFFENER:



PUNCH CODE "C": GREEN		
PART #	DESCRIPTION	
9361807	STIFF CLS42 C 2R 14GA	YL
9361797	STIFF CLS42 C 2R 13GA	BR
9361808	STIFF CLS42 C 2R 12GA	D BL
9361796	STIFF CLS42 C 2R 11GA	PK
9361809	STIFF CLS42 C 2R 10GA	BK
9361795	STIFF CLS42 C 2R 09GA	L GR
9361810	STIFF CLS42 C 2R 08GA	RD

CB GRAIN BIN 5SL MANUAL

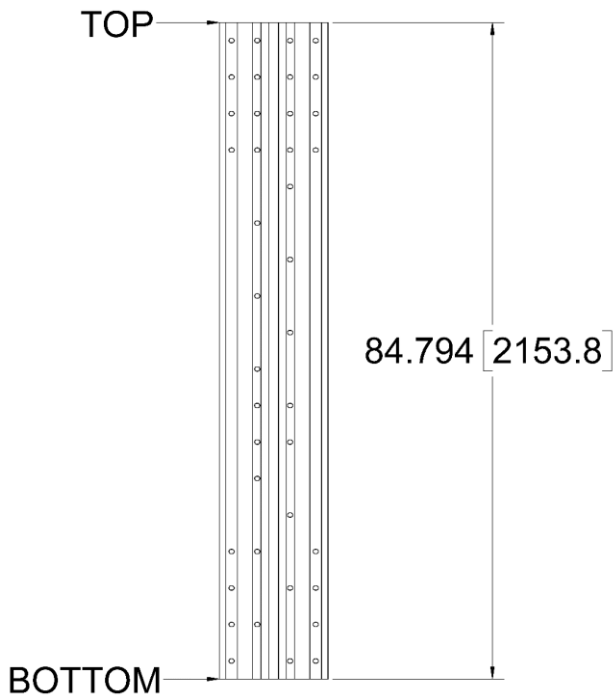
2-RING, BACKSIDE TRIPLE LAMINATED STIFFENER:



PUNCH CODE "D": YELLOW

PART #	DESCRIPTION
9361811	STIFF CLS42 D 2R 08GA RD

2-RING, MIDDLE TRIPLE LAMINATED STIFFENER:

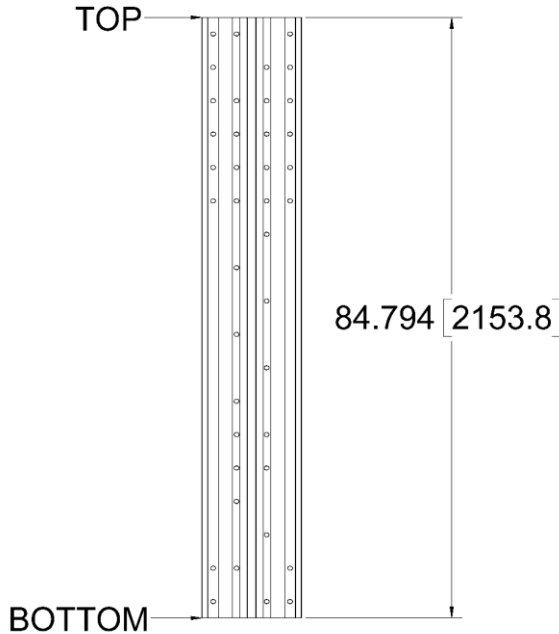


PUNCH CODE "E": BROWN

PART #	DESCRIPTION
9361794	STIFF CLS42 E 2R 8GA RD

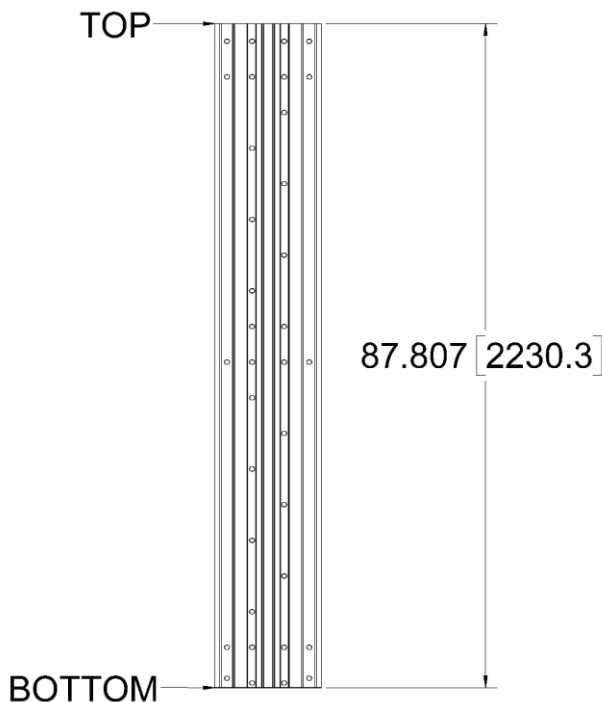
CB GRAIN BIN 5SL MANUAL

2-RING, FRONTSIDE TRIPLE LAMINATED STIFFENER:



PUNCH CODE "F": DARK BLUE	
PART #	DESCRIPTION
9361791	STIFF CLS42 F 2R 10GA BK
9361792	STIFF CLS42 F 2R 09GA L GR
9361793	STIFF CLS42 F 2R 08GA RD

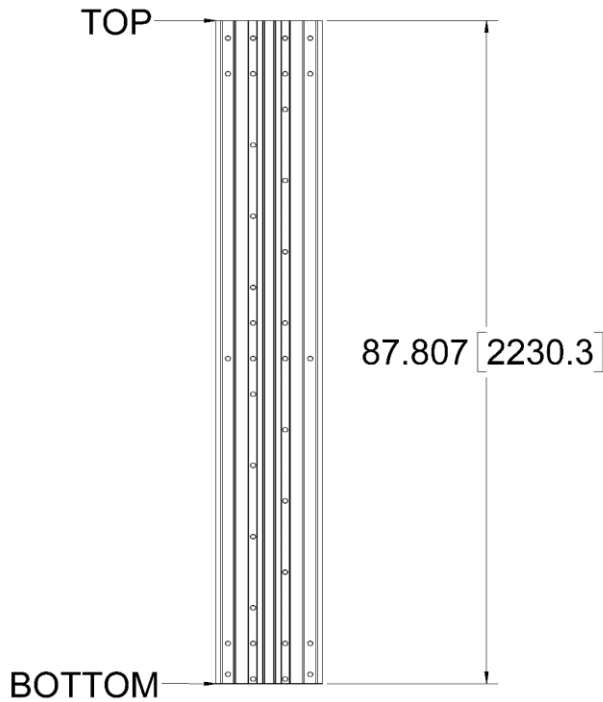
2-RING BTTM, SINGLE STIFFENER:



PUNCH CODE "BTTM1": PINK	
PART #	DESCRIPTION
9361813	STIFF CLS42 2R BTTM1 18GA OR
9361814	STIFF CLS42 2R BTTM1 16GA GR
9361815	STIFF CLS42 2R BTTM1 14GA YL
9361819	STIFF CLS42 2R BTTM1 13GA BR
9361816	STIFF CLS42 2R BTTM1 12GA D BL
9361820	STIFF CLS42 2R BTTM1 11GA PK
9361817	STIFF CLS42 2R BTTM1 10GA BK
9361825	STIFF CLS42 2R BTTM1 09GA L GR

CB GRAIN BIN 5SL MANUAL

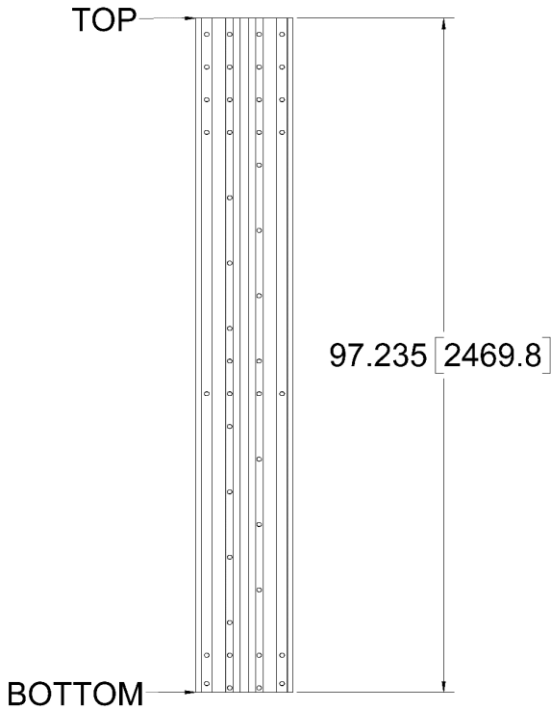
2-RING BTTM, DOUBLE BACKSIDE / TRIPLE BACKSIDE STIFFENER:



PUNCH CODE "BTTM1": PINK		
PART #	DESCRIPTION	
9361818	STIFF CLS42 2R BTTM1 08GA	RD

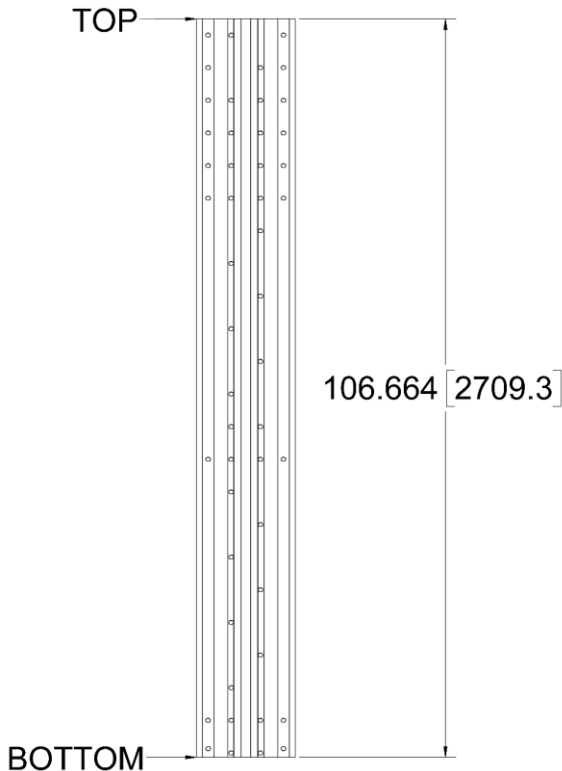
CB GRAIN BIN 5SL MANUAL

2-RING BTTM, FRONTSIDE DOUBLE/MIDDLE TRIPLE LAMINATED STIFFENER:



PUNCH CODE "BTTM2": BLACK		
PART #	DESCRIPTION	
9361821	STIFF CLS42 2R BTTM2 14GA	YL
9361826	STIFF CLS42 2R BTTM2 13GA	BR
9361822	STIFF CLS42 2R BTTM2 12GA	D BL
9361829	STIFF CLS42 2R BTTM2 11GA	PK
9361823	STIFF CLS42 2R BTTM2 10GA	BK
9361830	STIFF CLS42 2R BTTM2 09GA	L GR
9361824	STIFF CLS42 2R BTTM2 08GA	RD

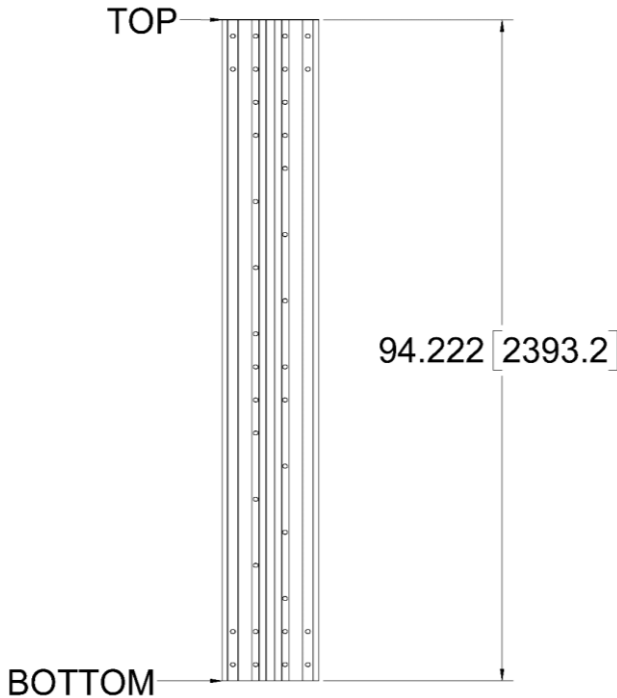
2-RING BTTM, FRONTSIDE TRIPLE LAMINATED STIFFENER:



PUNCH CODE "BTTM3": LIGHT GREEN		
PART #	DESCRIPTION	
9361827	STIFF CLS42 2R BTTM3 10GA	BK
9361831	STIFF CLS42 2R BTTM3 09GA	L GR
9361828	STIFF CLS42 2R BTTM3 08GA	RD

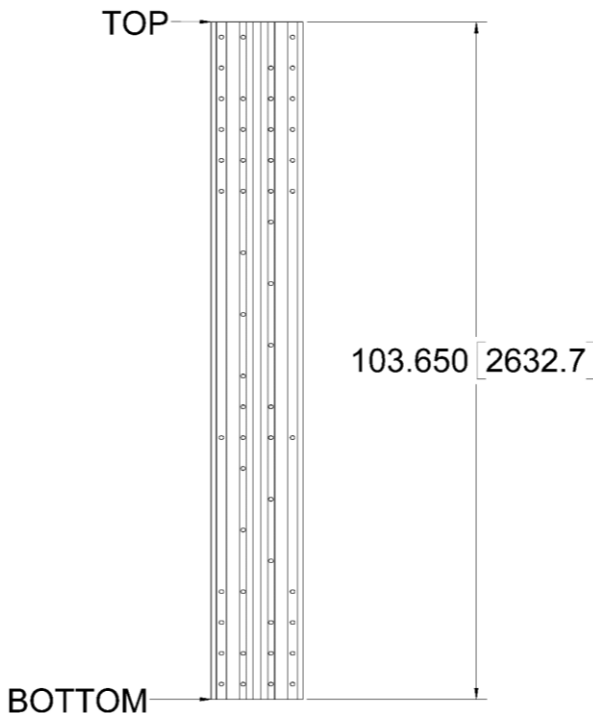
CB GRAIN BIN 5SL MANUAL

2-RING FRONT SIDE DOUBLE LAMINATED OVER DOOR STIFFENER:



PUNCH CODE "DRST1": RED		
PART #	DESCRIPTION	
9362580	STIFF CLS42 2R DRST1 14GA	YL
9362581	STIFF CLS42 2R DRST1 13GA	BR
9362582	STIFF CLS42 2R DRST1 12GA	D BL
9362583	STIFF CLS42 2R DRST1 11GA	PK
9362584	STIFF CLS42 2R DRST1 10GA	BK
9362585	STIFF CLS42 2R DRST1 09GA	L GR
9362586	STIFF CLS42 2R DRST1 08GA	RD

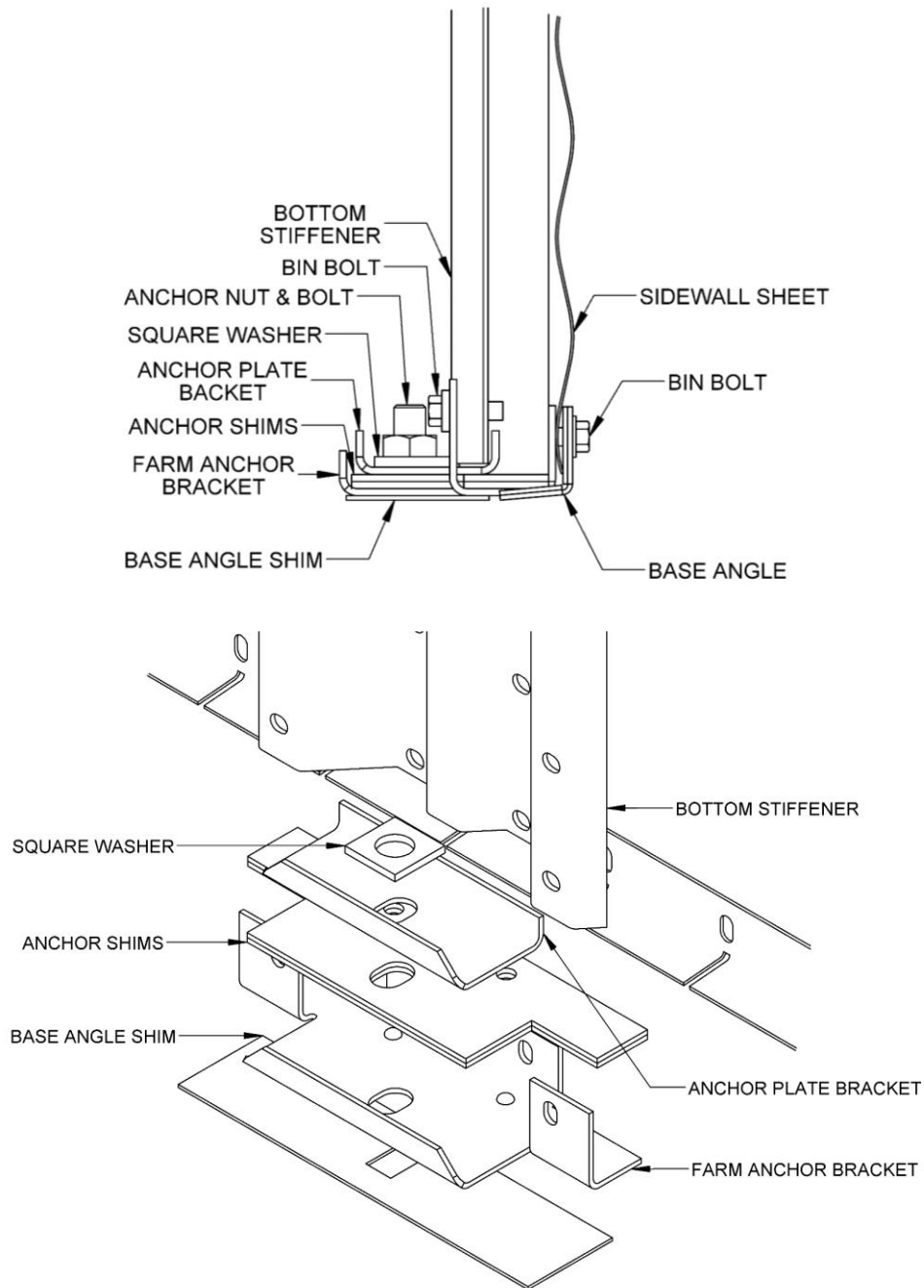
2-RING FRONT SIDE TRIPLE LAMINATED OVER DOOR STIFFENER:



PUNCH CODE "DRST2": YELLOW/BLACK		
PART #	DESCRIPTION	
9362587	STIFF CLS42 2R DRST2 14GA	YL
9362588	STIFF CLS42 2R DRST2 13GA	BR
9362589	STIFF CLS42 2R DRST2 12GA	D BL
9362590	STIFF CLS42 2R DRST2 11GA	PK
9362591	STIFF CLS42 2R DRST2 10GA	BK
9362592	STIFF CLS42 2R DRST2 09GA	L GR
9362593	STIFF CLS42 2R DRST2 08GA	RD

CB GRAIN BIN 5SL MANUAL

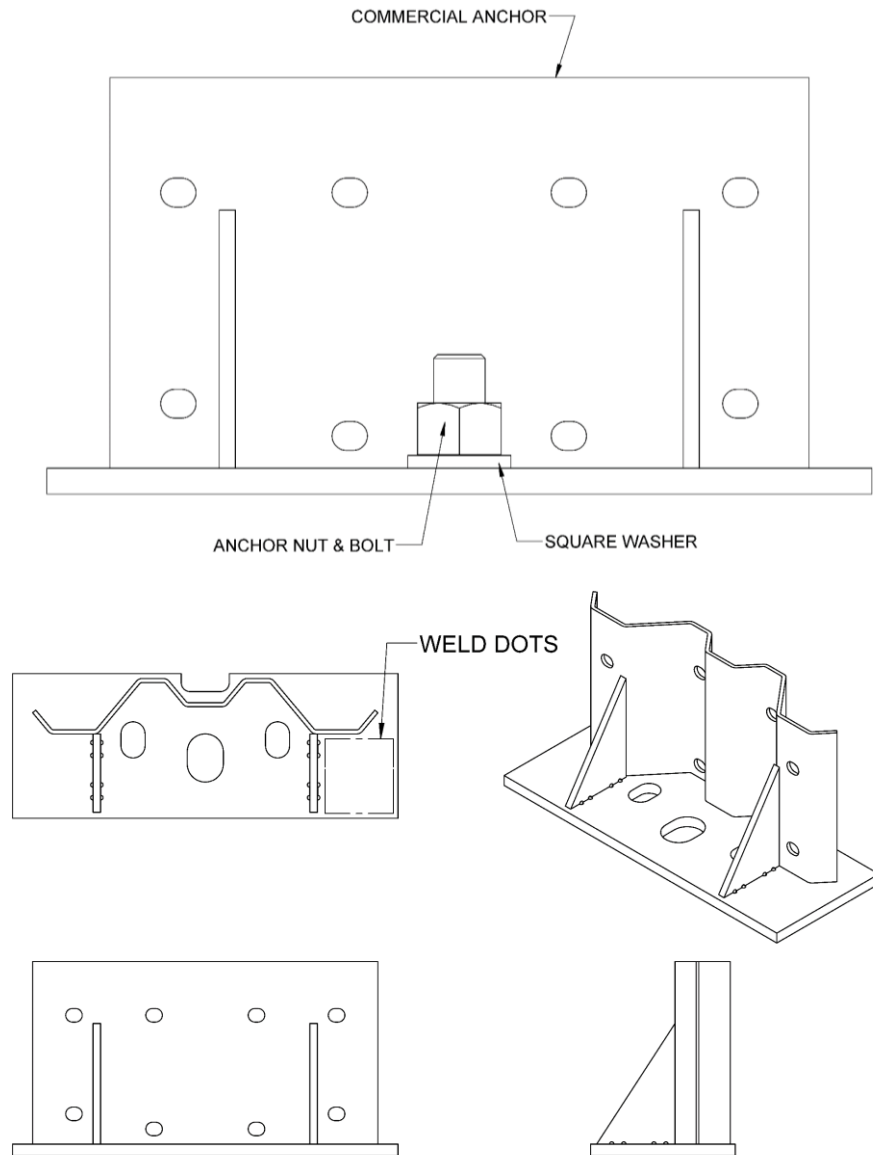
FARM ANCHOR ASSEMBLY:



PART #	DESCRIPTION
9347999	ANCHOR BRKT W-STIFF 8GA 1"HL"
9391033	ANCHOR REIN PLT,8GA,1"HL
9382905	SHIM,BASE ANGLE,12GA,9347999 ANCHOR
9391062	SHIM,ANCHOR,WLMT,8GA
9392999	WASHER BASE ANCHOR 2X2 1.125HL

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BIN ANCHOR WELDED ASSEMBLY:



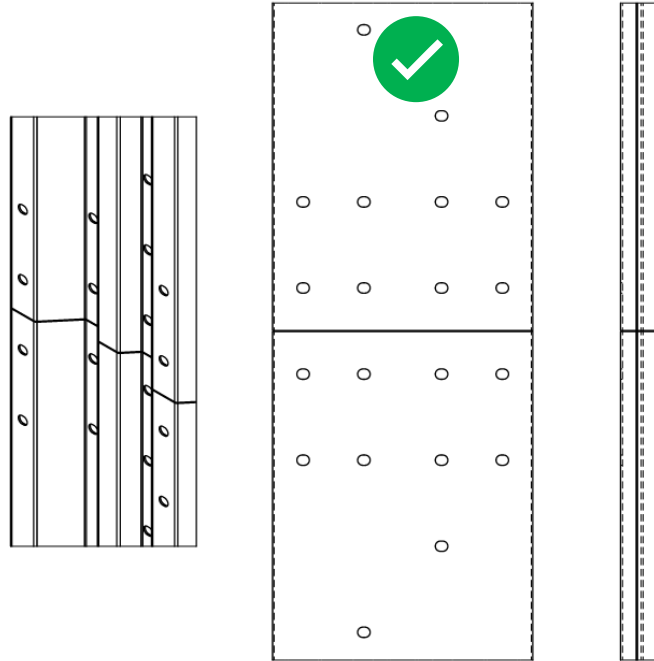
PART #	DESCRIPTION
9361586	ANCHOR WDMT W 1-PLY .5PLT 3HL SLT/TBD SW
9361588	ANCHOR WDMT W 2-PLY .5PLT 3HL SLT/TBD SW
9361590	ANCHOR WDMT W 3-PLY .5PLT 3HL SLT/TBD SW

- - SINGLE DOT - 1 PLY
- - DOUBLE DOT - 2 PLY
- - TRIPLE DOT - 3 PLY

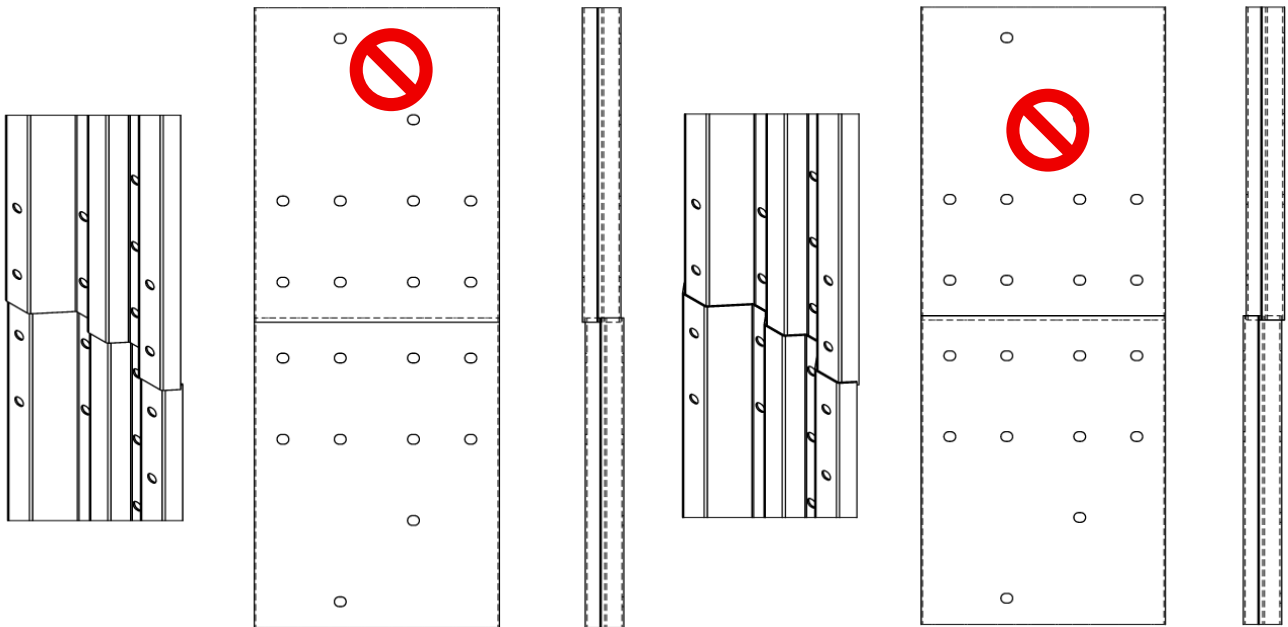
CB GRAIN BIN 5SL MANUAL

STIFFENER STACKING CONNECTION BETWEEN SEGMENTS

Stiffeners must always be installed edge to edge between stiffener segments.



Overlapping between stiffener segments will cause structural failure.

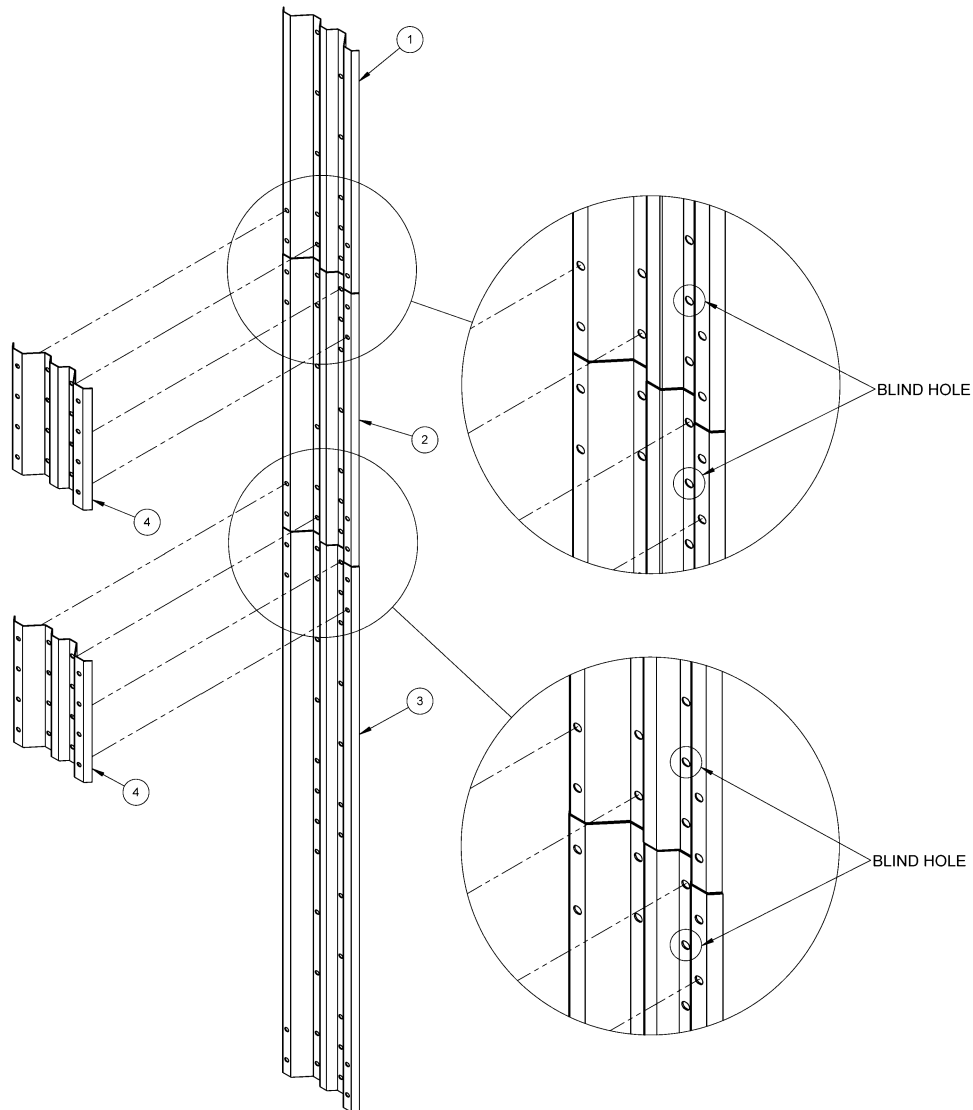


CB GRAIN BIN 5SL MANUAL

1-RING SINGLE LAMINATION STIFFENER STACK UP ASSEMBLY:

ITEM	QTY	DESCRIPTION
1	1	ONE-RING TYPE "1RTOP" TOP INSTALL SINGLE STIFFENER
2	1	ONE-RING TYPE "1R" SINGLE STIFFENER
3	1	TWO-RING TYPE "A" SINGLE STIFFENER
4	2	NO LAMINATION STIFFENER SPLICE

NOTICE TYPE "1RTOP", TYPE "1R", TYPE "SPLICE" AND TYPE "A" IDENTIFY SPECIFIC HOLE PUNCHING DESIGNATIONS. TAKE NOTE OF BLIND HOLE CALL OUT LOCATIONS AS THESE SIGNIFY SLOT LOCATIONS THAT WILL NOT HAVE A CORRESPONDING HOLE IN THE SIDEWALL SHEET AND NO FASTENER WILL BE REQUIRED. ALL STIFFENER TO SIDEWALL CONNECTION LOCATIONS REQUIRE A 7/16" BIN BOLT AND 7/16" WHIZ NUT.

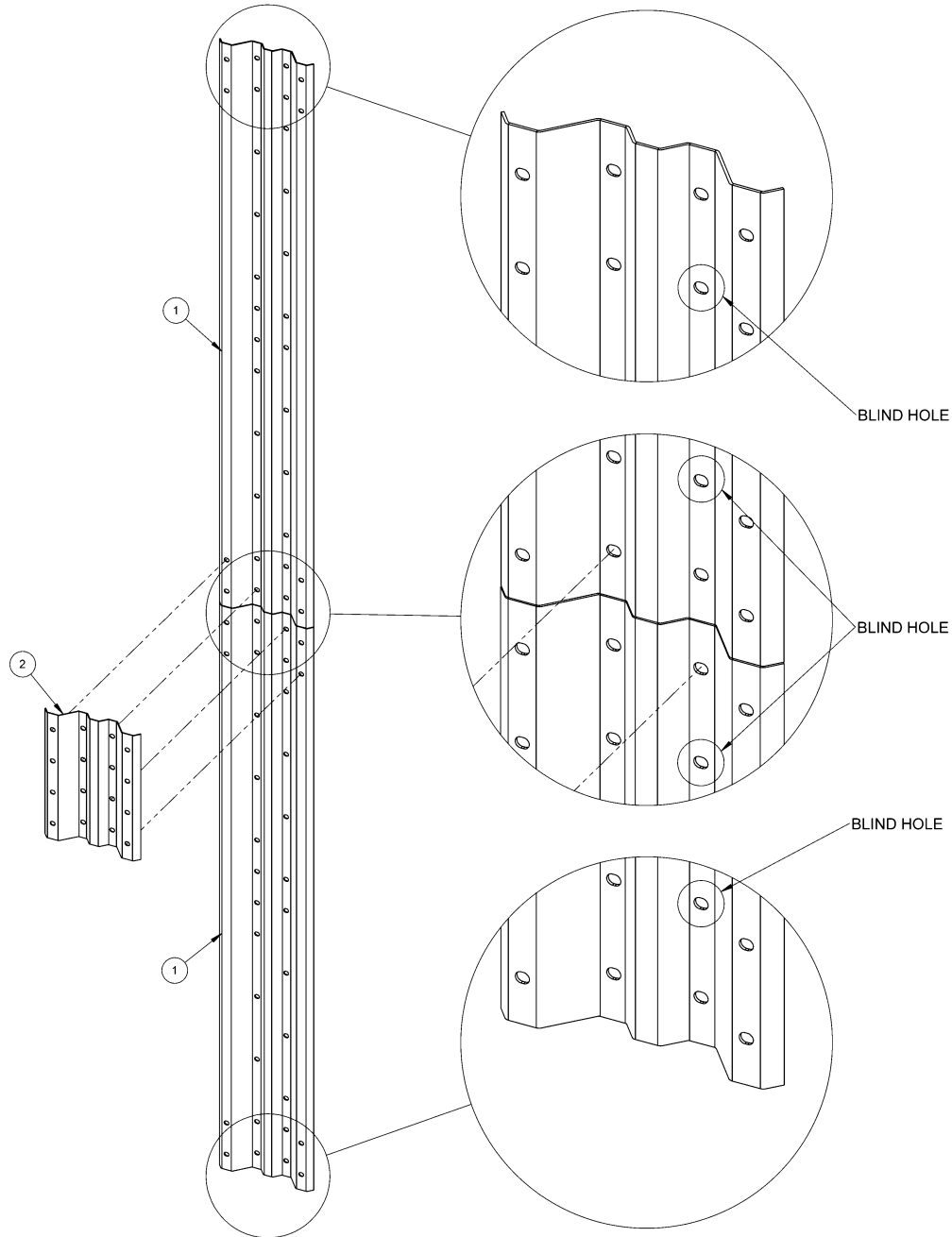


CB GRAIN BIN 5SL MANUAL

2-RING SINGLE LAMINATION SIDEWALL STIFFENER STACK UP ASSEMBLY:

ITEM	QTY	DESCRIPTION
1	2	TWO-RING TYPE "A" SINGLE STIFFENER
2	1	NO LAMINATION STIFFENER SPLICE

NOTICE TYPE "A" IDENTIFIES SPECIFIC HOLE PUNCHING DESIGNATIONS. TAKE NOTE OF BLIND HOLE CALL OUT LOCATIONS AS THESE SIGNIFY SLOT LOCATIONS THAT WILL NOT HAVE A CORRESPONDING HOLE IN THE SIDEWALL SHEET AND NO FASTENER WILL BE REQUIRED. ALL STIFFENER TO SIDEWALL CONNECTION LOCATIONS REQUIRE A 7/16" BIN BOLT AND 7/16" WHIZ NUT.



2-RING SINGLE LAMINATION BOTTOM STIFFENER STACK UP ASSEMBLY:

NOTICE TYPE "A" AND TYPE "BTM1" IDENTIFY SPECIFIC HOLE PUNCHING DESIGNATIONS. TAKE NOTE OF BLIND HOLE CALL OUT LOCATIONS AS THESE SIGNIFY SLOT LOCATIONS THAT WILL NOT HAVE A CORRESPONDING HOLE IN THE SIDEWALL SHEET AND NO FASTENER WILL BE REQUIRED. ALL STIFFENER TO SIDEWALL CONNECTION LOCATIONS REQUIRE A 7/16" BIN BOLT AND 7/16" WHIZ NUT.

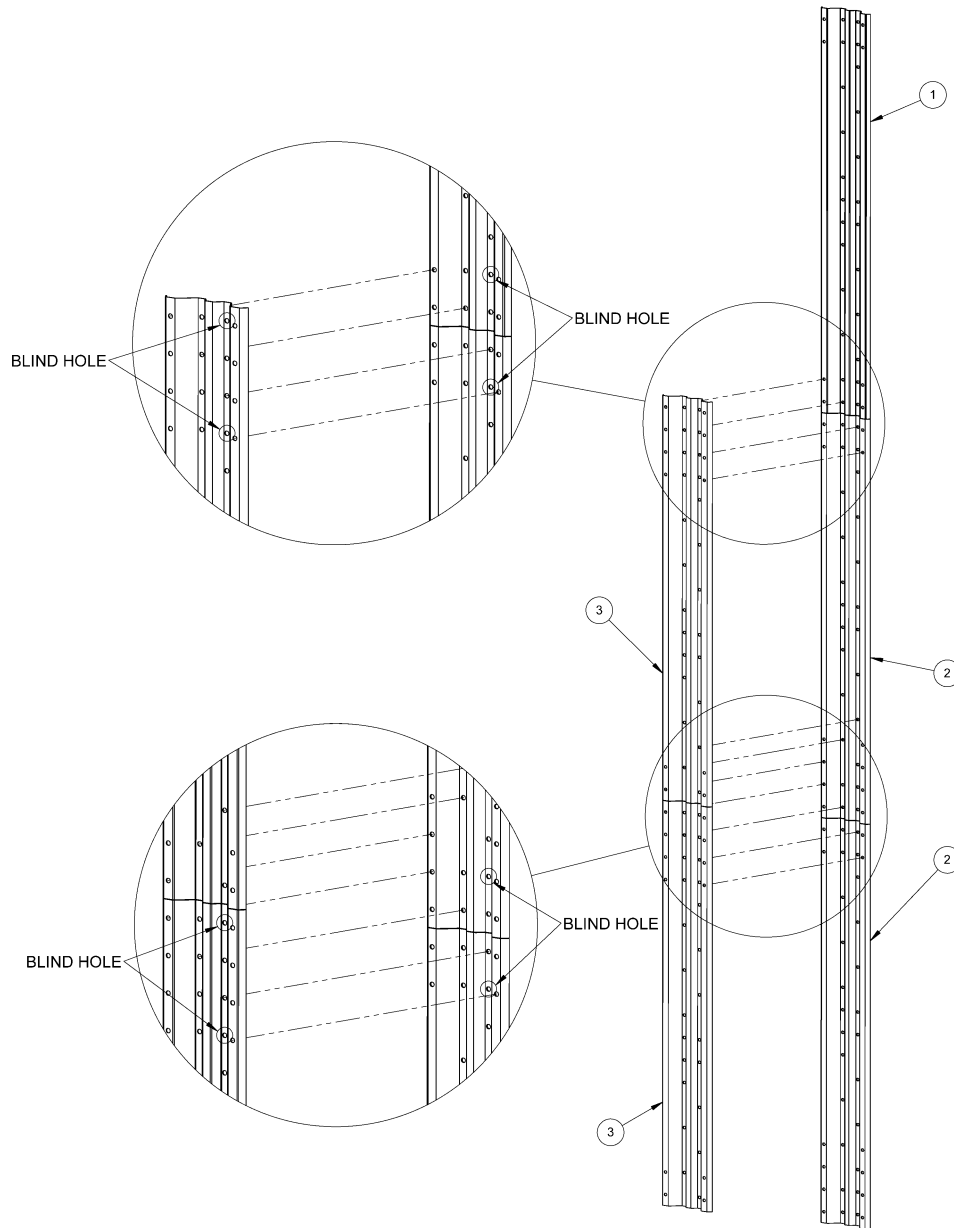


CB GRAIN BIN 5SL MANUAL

2-RING DOUBLE LAMINATION SIDEWALL STIFFENER STACK UP ASSEMBLY:

ITEM	QTY	DESCRIPTION
1	1	TWO-RING TYPE "A" SINGLE STIFFENER
2	1	TWO-RING TYPE "B" BACKSIDE STIFFENER
3	1	TWO-RING TYPE "C" FRONTSIDE STIFFENER

NOTICE TYPE "A" AND TYPE "B" AND TYPE "C" IDENTIFY SPECIFIC HOLE PUNCHING DESIGNATIONS. TAKE NOTE OF BLIND HOLE CALL OUT LOCATIONS AS THESE SIGNIFY SLOT LOCATIONS THAT WILL NOT HAVE A CORRESPONDING HOLE IN THE SIDEWALL SHEET AND NO FASTENER WILL BE REQUIRED. ALL STIFFENER TO SIDEWALL CONNECTION LOCATIONS REQUIRE A 7/16" BIN BOLT AND 7/16" WHIZ NUT.

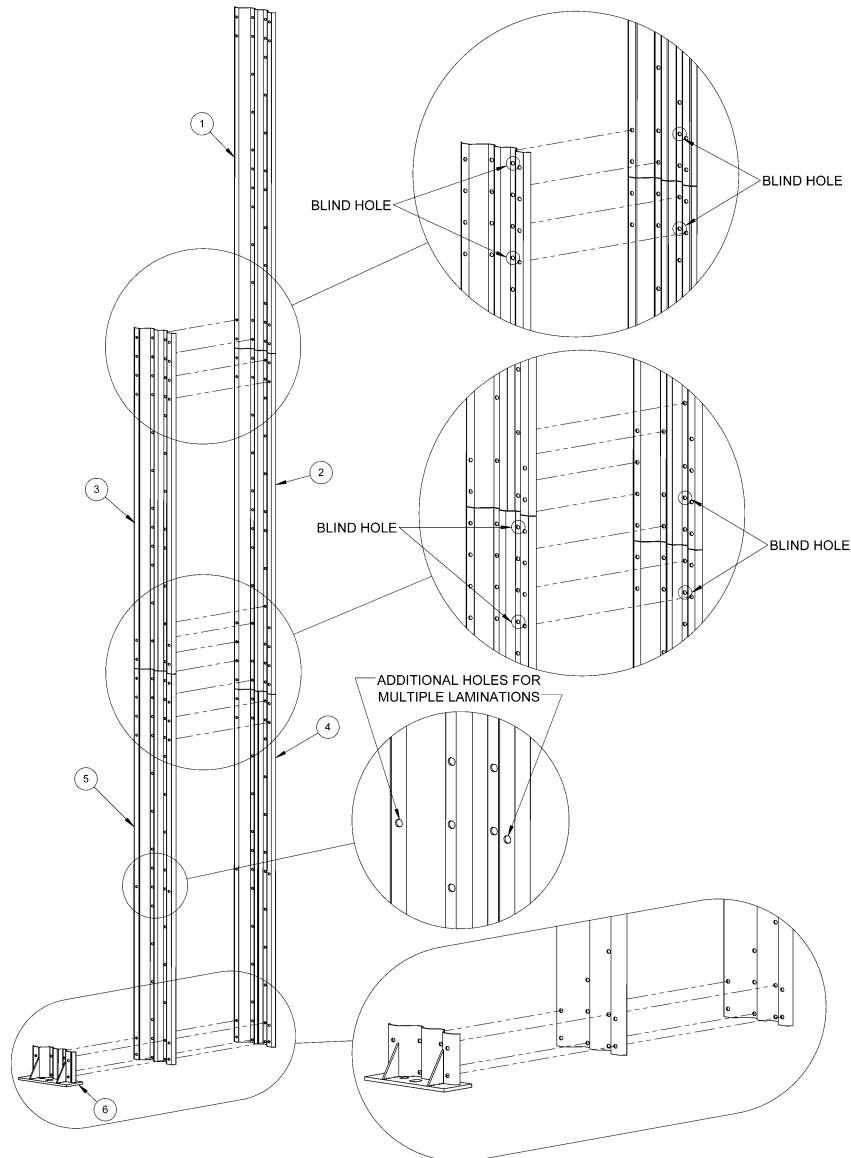


CB GRAIN BIN 5SL MANUAL

2-RING DOUBLE LAMINATION BOTTOM STIFFENER STACK UP ASSEMBLY:

ITEM	QTY	DESCRIPTION
1	1	TWO-RING TYPE "A" SINGLE STIFFENER
2	1	TWO-RING TYPE "B" BACKSIDE STIFFENER
3	1	TWO-RING TYPE "C" FRONTSIDE STIFFENER
4	1	TWO-RING TYPE "BTTM1" BACKSIDE DBL/ BACKSIDE TRPL STIFFENER
5	1	TWO-RING TYPE "BTTM2" FRONTSIDE DBL/MIDDLE TRPL STIFFENER
6	1	ANCHOR WDMT W/ STIFFENER PROFILE

NOTICE TYPE "A", TYPE "B", TYPE "C", TYPE "BTTM1" AND TYPE "BTTM2" IDENTIFY SPECIFIC HOLE PUNCHING DESIGNATIONS. TAKE NOTE OF BLIND HOLE CALL OUT LOCATIONS AS THESE SIGNIFY SLOT LOCATIONS THAT WILL NOT HAVE A CORRESPONDING HOLE IN THE SIDEWALL SHEET AND NO FASTENER WILL BE REQUIRED. ALL STIFFENER TO SIDEWALL CONNECTION LOCATIONS REQUIRE A 7/16" BIN BOLT AND 7/16" WHIZ NUT.

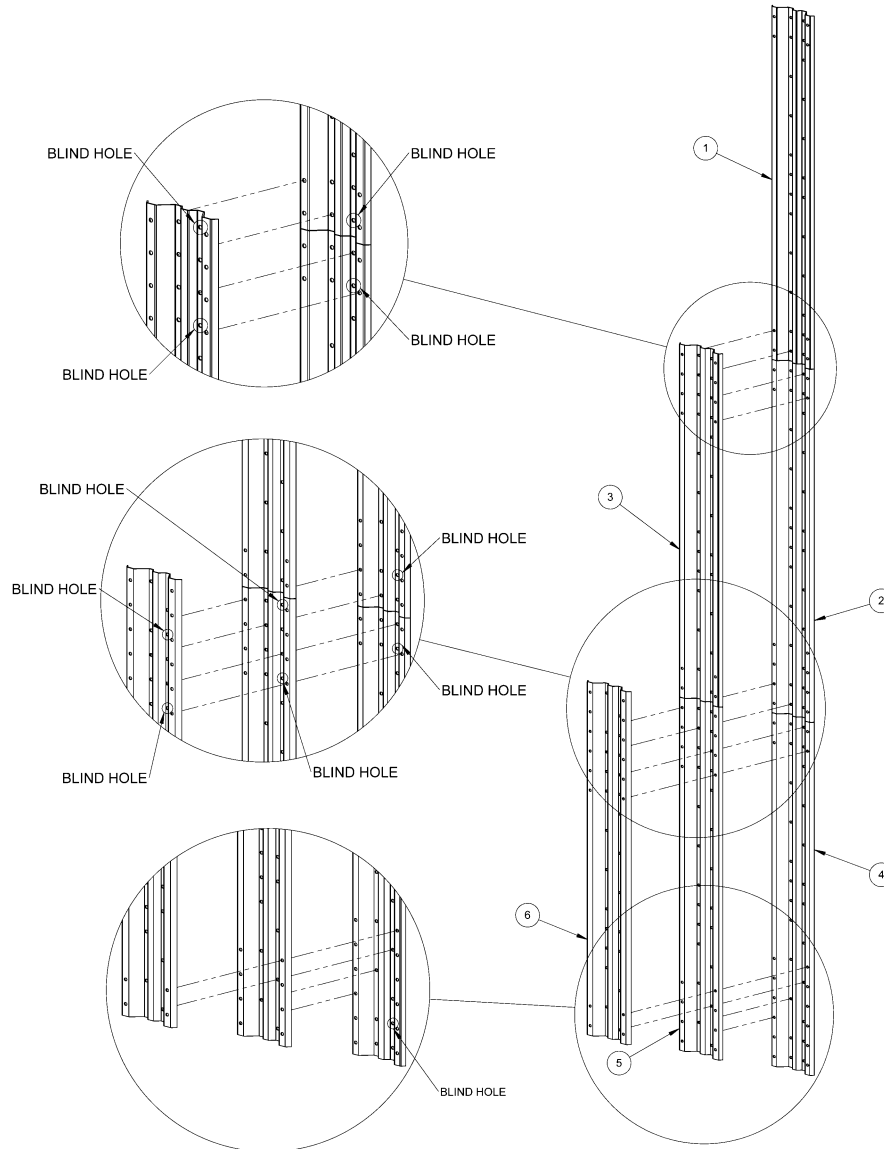


CB GRAIN BIN 5SL MANUAL

2-RING TRIPLE LAMINATION SIDEWALL STIFFENER STACK UP ASSEMBLY:

ITEM	QTY	DESCRIPTION
1	1	TWO-RING TYPE "A" SINGLE STIFFENER
2	1	TWO-RING TYPE "B" BACKSIDE STIFFENER
3	1	TWO-RING TYPE "C" BACKSIDE STIFFENER
4	1	TWO-RING TYPE "D" FRONTSIDE STIFFENER
5	1	TWO-RING TYPE "E" MIDDLE STIFFENER
6	1	TWO-RING TYPE "F" FRONTSIDE STIFFENER

NOTICE TYPE "A", TYPE "B", TYPE "C", TYPE "D", TYPE "E" AND TYPE "F" IDENTIFY SPECIFIC HOLE PUNCHING DESIGNATIONS. TAKE NOTE OF BLIND HOLE CALL OUT LOCATIONS AS THESE SIGNIFY SLOT LOCATIONS THAT WILL NOT HAVE A CORRESPONDING HOLE IN THE SIDEWALL SHEET AND NO FASTENER WILL BE REQUIRED. ALL STIFFENER TO SIDEWALL CONNECTION LOCATIONS REQUIRE A 7/16" BIN BOLT AND 7/16" WHIZ NUT.

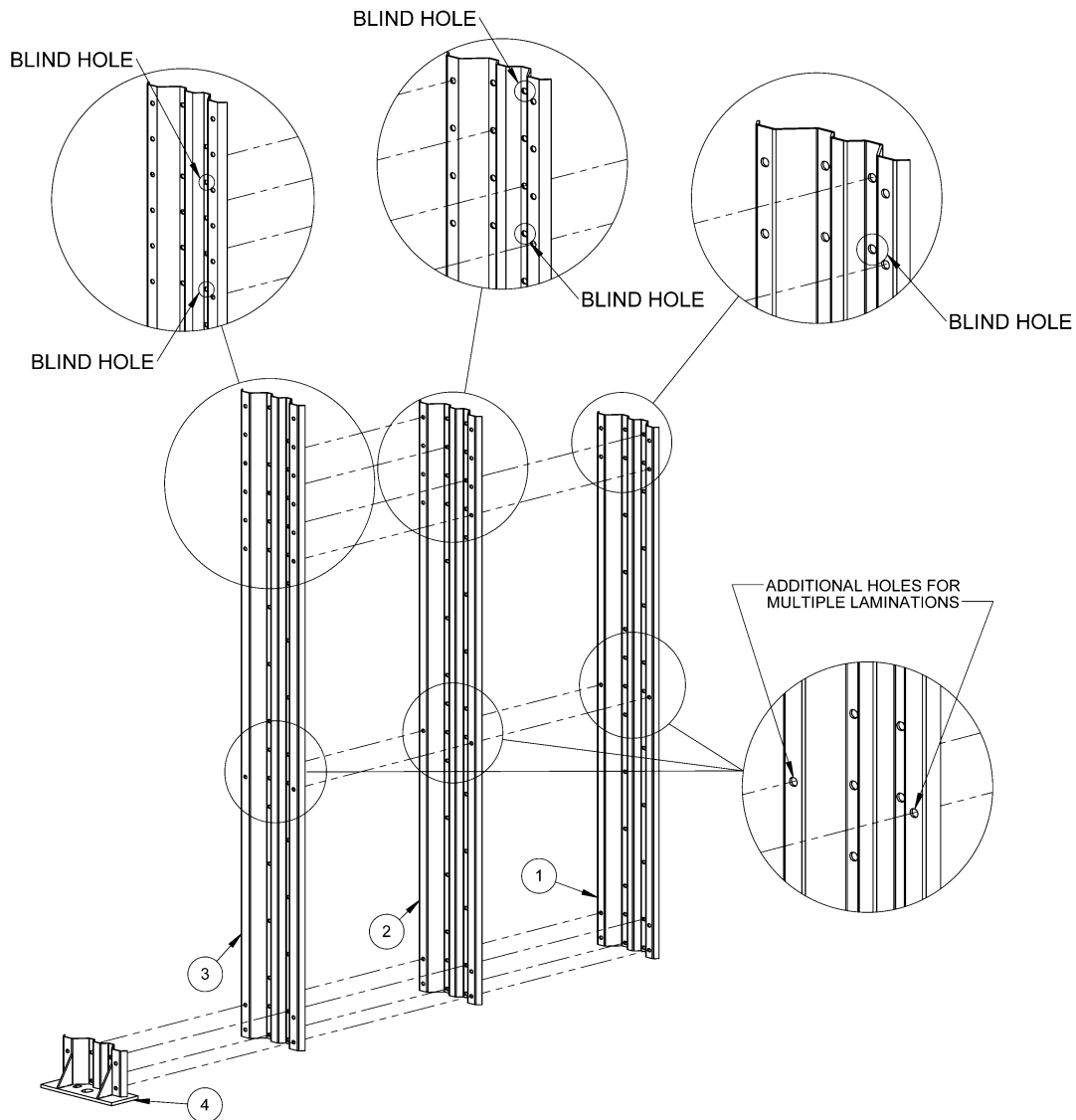


CB GRAIN BIN 5SL MANUAL

2-RING TRIPLE LAMINATION BOTTOM STIFFENER STACK UP ASSEMBLY:

ITEM	QTY	DESCRIPTION
1	1	TWO-RING TYPE "BTTM1" BACKSIDE DBL & BACKSIDE TRPL STIFFENER
2	1	TWO-RING TYPE "BTTM2" FRONTSIDE DBL/MIDDLE TRPL STIFFENER
3	1	TWO-RING TYPE "BTTM3" FRONTSIDE TRPL STIFFENER
4	1	ANCHOR WDMT W/ STIFFENER PROFILE

NOTICE TYPE "BTTM1", TYPE "BTTM2" AND TYPE "BTTM3" IDENTIFY SPECIFIC HOLE PUNCHING DESIGNATIONS. TAKE NOTE OF BLIND HOLE CALL OUT LOCATIONS AS THESE SIGNIFY SLOT LOCATIONS THAT WILL NOT HAVE A CORRESPONDING HOLE IN THE SIDEWALL SHEET AND NO FASTENER WILL BE REQUIRED. ALL STIFFENER TO SIDEWALL CONNECTION LOCATIONS REQUIRE A 7/16" BIN BOLT AND 7/16" WHIZ NUT.

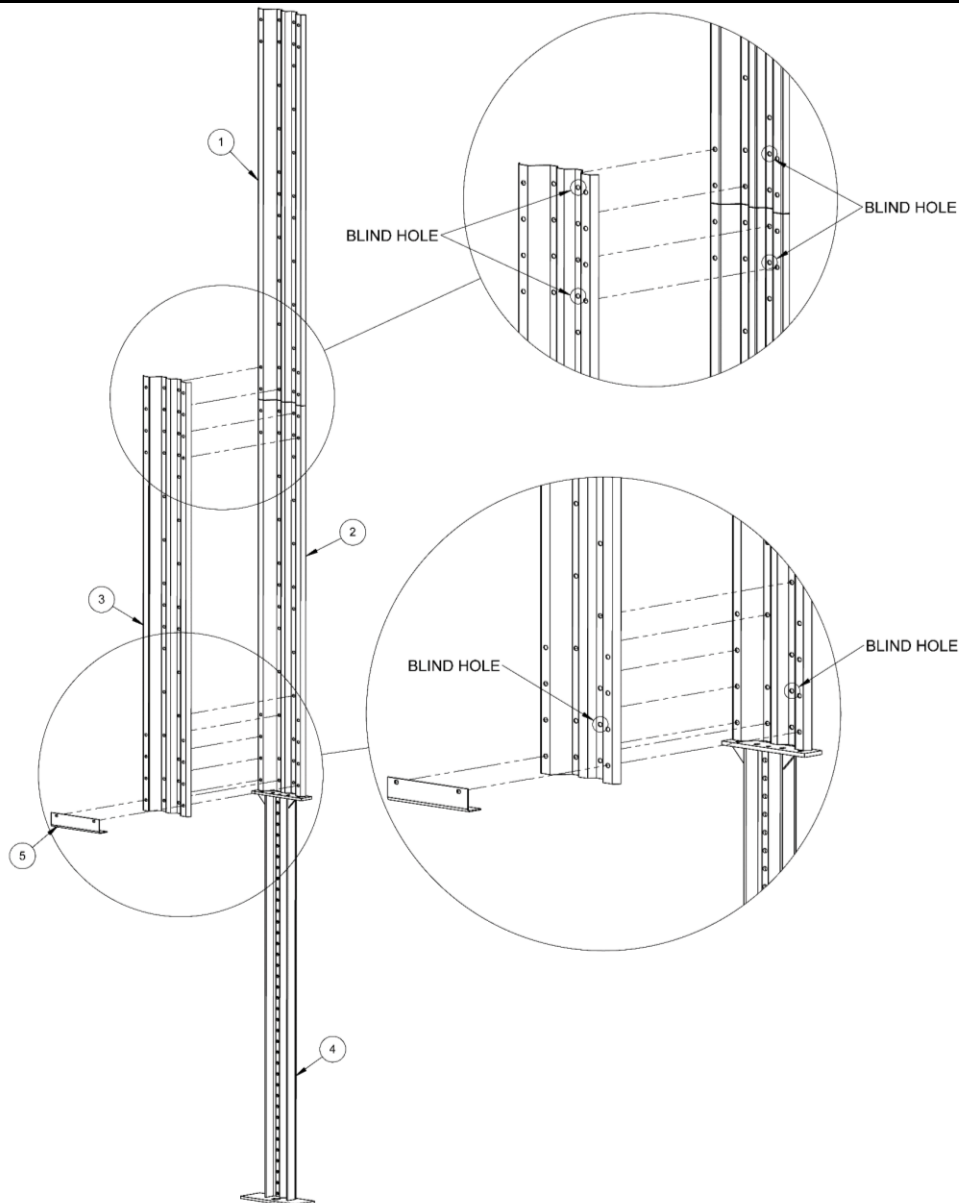


CB GRAIN BIN 5SL MANUAL

2-RING DOUBLE LAMINATION BOTTOM DOOR STIFFENER STACK UP ASSEMBLY:

ITEM	QTY	DESCRIPTION
1	1	TWO-RING TYPE "A" SINGLE STIFFENER
2	1	TWO-RING TYPE "B" BACKSIDE STIFFENER
3	1	TWO-RING TYPE "DRST1" FRONTSIDE STIFFENER
4	1	TWO-RING COMMERCIAL DOOR STIFFENER
5	1	DOOR STIFFENER ENDCAP

NOTICE TYPE "A", TYPE "B" AND TYPE "DRST1" IDENTIFY SPECIFIC HOLE PUNCHING DESIGNATIONS. TAKE NOTE OF BLIND HOLE CALL OUT LOCATIONS AS THESE SIGNIFY SLOT LOCATIONS THAT WILL NOT HAVE A CORRESPONDING HOLE IN THE SIDEWALL SHEET AND NO FASTENER WILL BE REQUIRED. ALL STIFFENER TO SIDEWALL CONNECTION LOCATIONS REQUIRE A 7/16" BIN BOLT AND 7/16" WHIZ NUT.

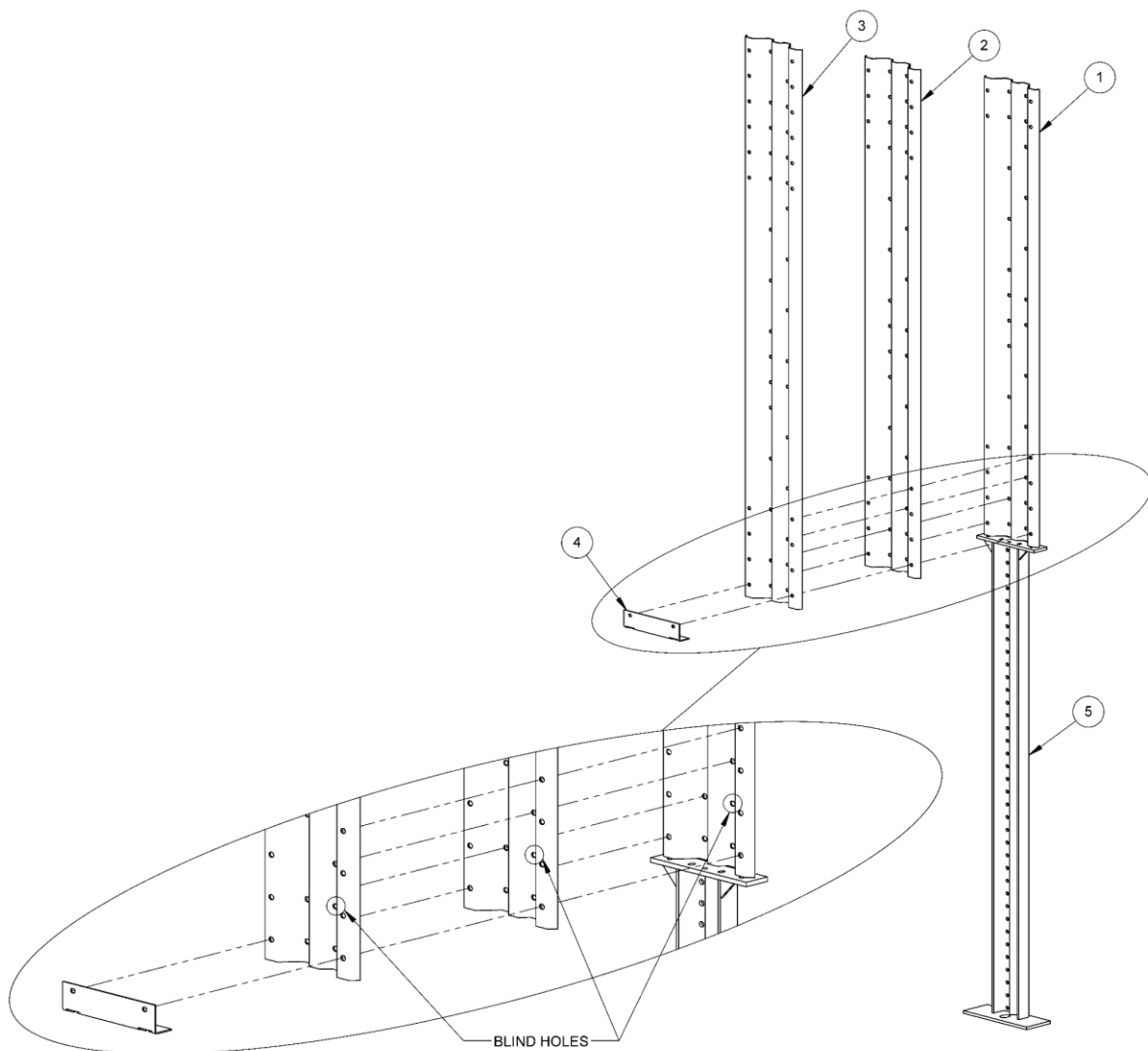


CB GRAIN BIN 5SL MANUAL

2-RING TRIPLE LAMINATION BOTTOM DOOR STIFFENER STACK UP ASSEMBLY:

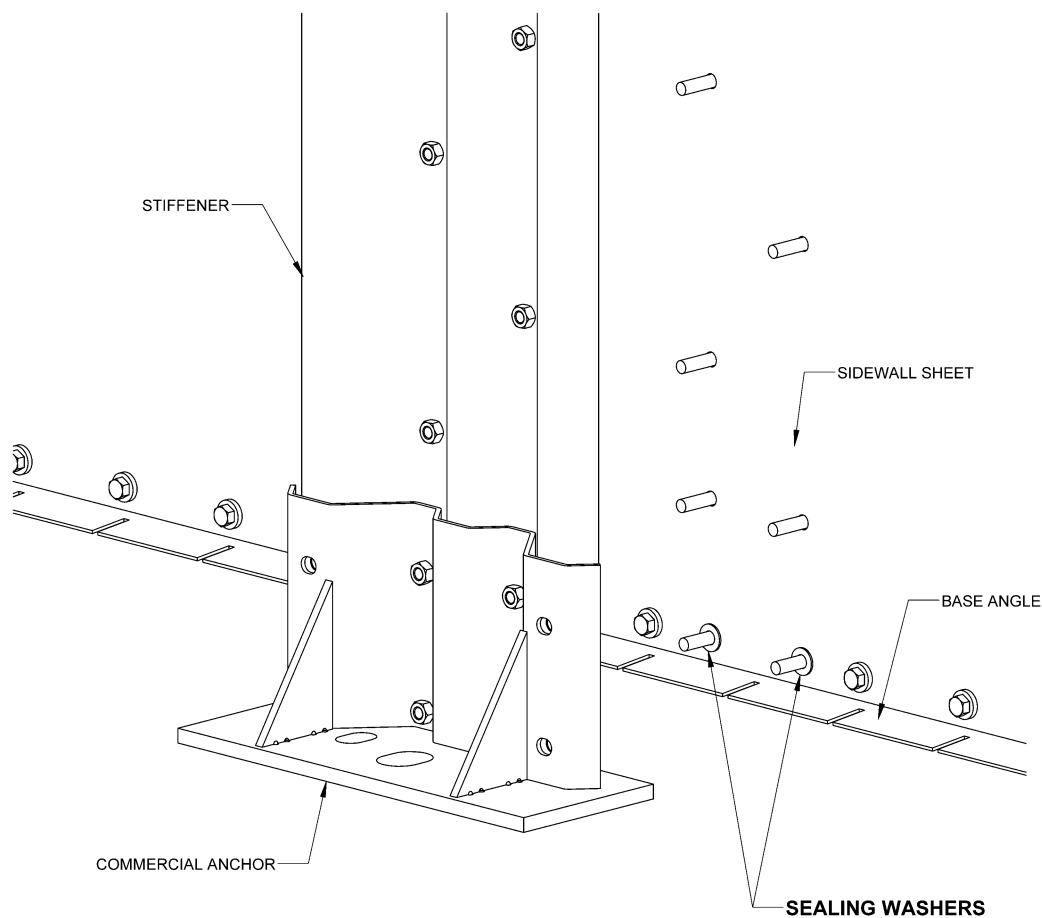
ITEM	QTY	DESCRIPTION
1	1	TWO-RING TYPE "A" SINGLE STIFFENER
2	1	TWO-RING TYPE "B" BACKSIDE STIFFENER
3	1	TWO-RING TYPE "DRST1" FRONTSIDE STIFFENER
4	1	DOOR STIFFENER ENDCAP
5	1	TWO-RING COMMERCIAL DOOR STIFFENER

NOTICE TYPE "A", TYPE "B" AND TYPE "DRST1" IDENTIFY SPECIFIC HOLE PUNCHING DESIGNATIONS. TAKE NOTE OF BLIND HOLE CALL OUT LOCATIONS AS THESE SIGNIFY SLOT LOCATIONS THAT WILL NOT HAVE A CORRESPONDING HOLE IN THE SIDEWALL SHEET AND NO FASTENER WILL BE REQUIRED. ALL STIFFENER TO SIDEWALL CONNECTION LOCATIONS REQUIRE A 7/16" BIN BOLT AND 7/16" WHIZ NUT.



CB GRAIN BIN 5SL MANUAL

At the base of the Grain Bin where the fasteners pass through the base angle, sidewall, bottom stiffener and anchor it will be necessary to add (2) two sealing washers between the sidewall sheet and the bottom stiffener to assist in sealing these two holes.



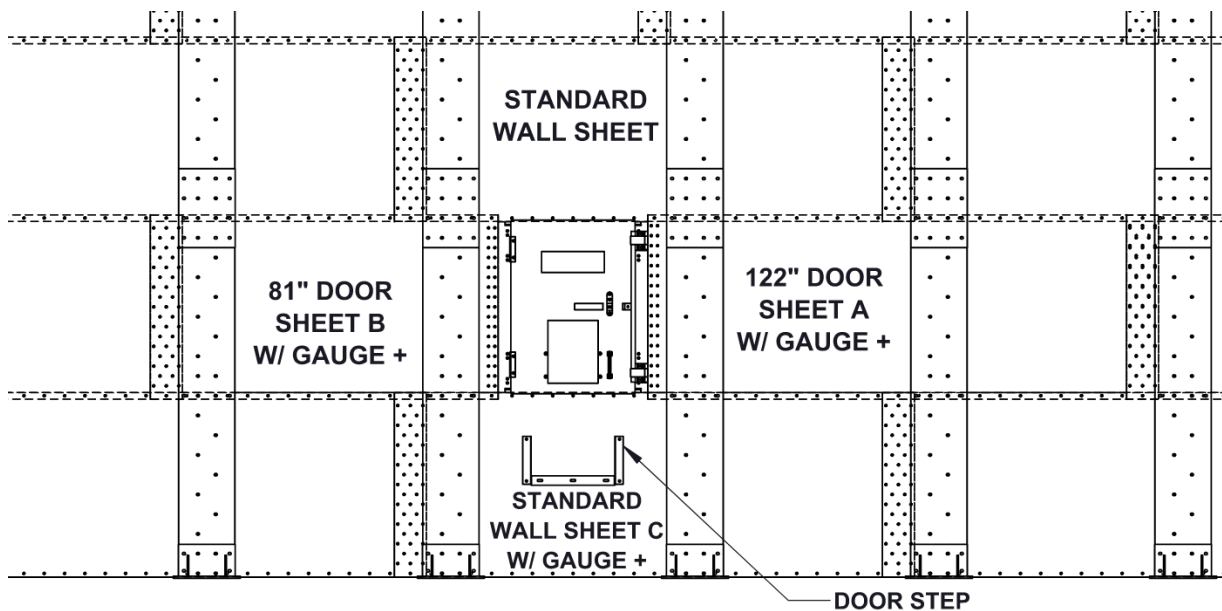
CB GRAIN BIN 5SL MANUAL

SECTION 5: ACCESS DOORS

1 RING FARM DOOR ASSEMBLY:

The 1 ring door is used to access the interior of the bin and is located in the 2nd ring up from the bin foundation. Verify the location of the special long and short door sheets and door sidewall stiffener.

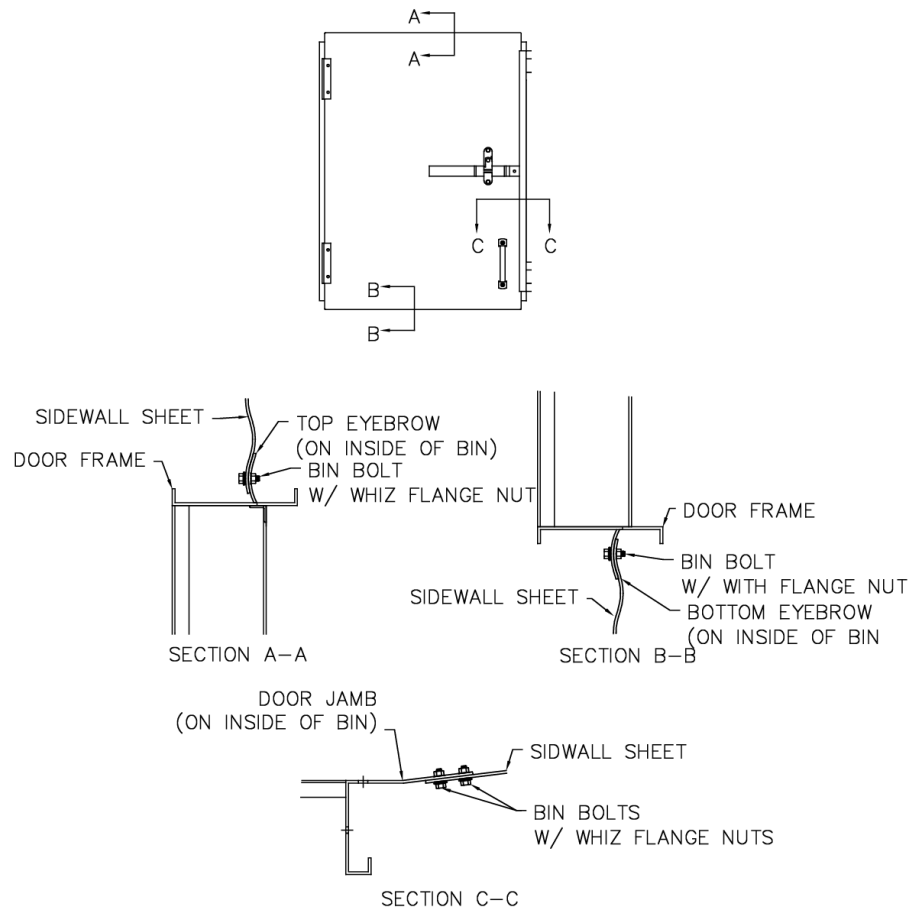
2-STIFFENED FARM CRAWL DOOR



All sidewall sheets are installed on the outside of the door frame, except for the sidewall sheet below the door. The sidewall sheet below the door is installed on the inside of the door frame.

CB GRAIN BIN 5SL MANUAL

FARM CRAWL DOOR 26" X 38" OPENING



Start by placing foam tape sealant around the edges of the door frames. Next bolt the inner and outer frame to the bin sidewall with 7/16-14 x 3.0" bin bolts. Finally install the inner and outer protective weather door covers and verify that foam tape is placed where the covers will close against the frames. Install sealant as needed around the interior door frame and sidewall sheets.

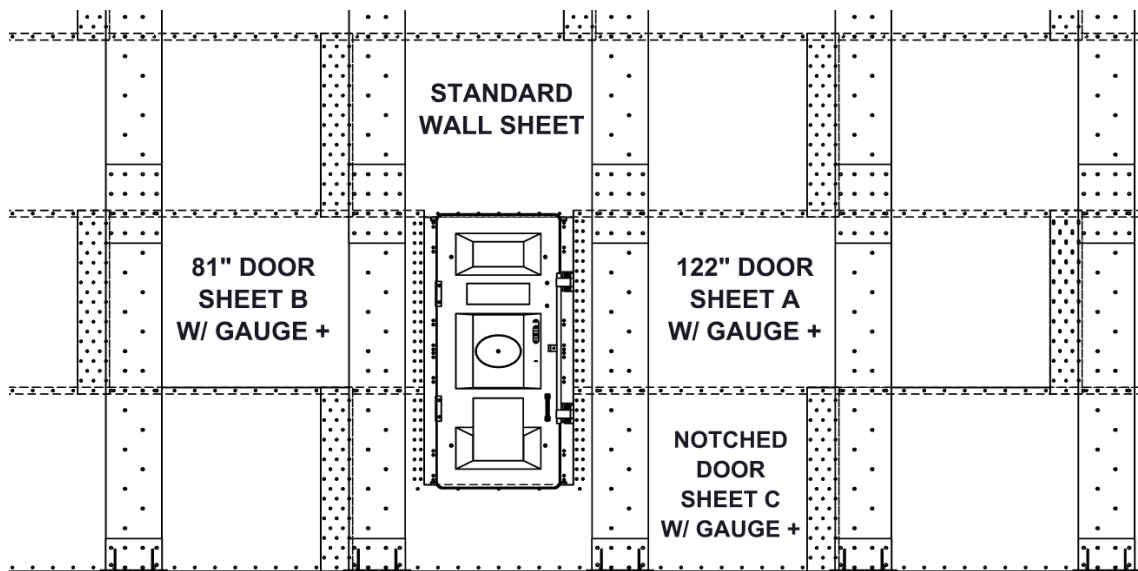
CB GRAIN BIN 5SL MANUAL

2 RING FARM DOOR ASSEMBLY:

The 2-ring door is used to access the interior of the bin and is located in the 1st and 2nd ring up from the bin foundation. Verify the location of the special long and short door sheets and door sidewall stiffener.

The following illustrations are used to verify the placement of the top ring stiffeners in relation to the sidewall door and door sidewall sheets.

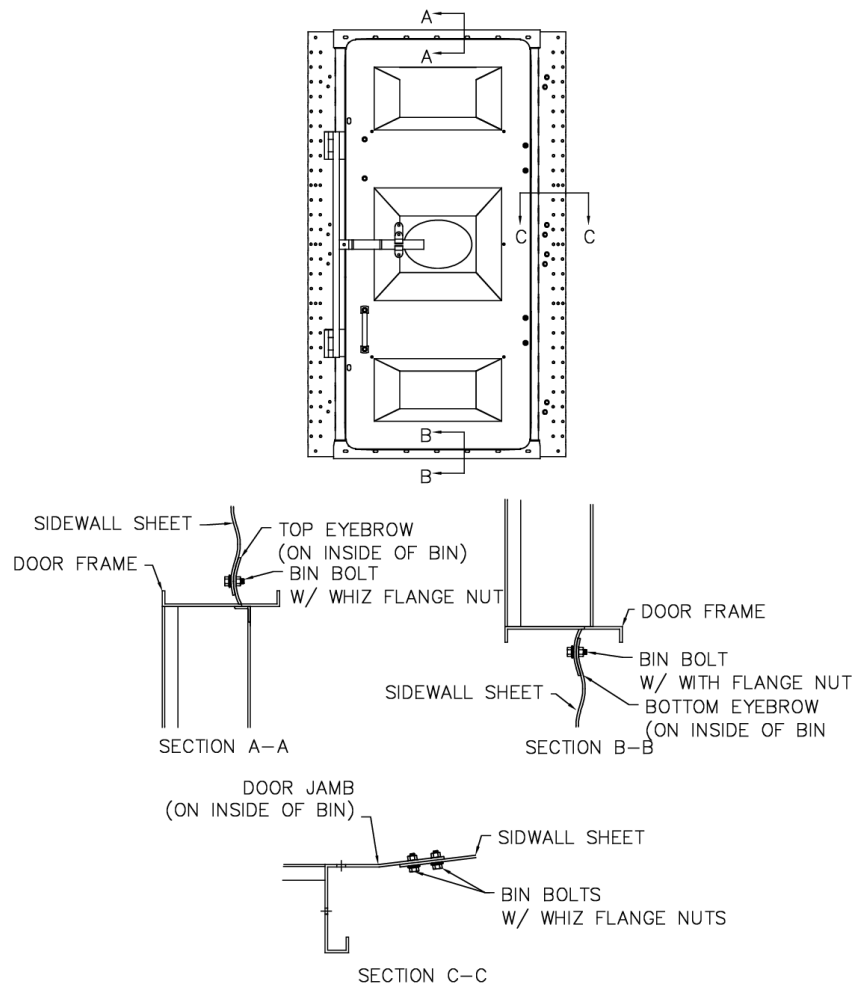
2-STIFFENED FARM WALK DOOR



All sidewall sheets are installed on the outside of the door frame, except for the sidewall sheet below the door. The sidewall sheet below the door is installed to the inside of the door frame.

CB GRAIN BIN 5SL MANUAL

FARM WALK DOOR 26" X 62" OPENING



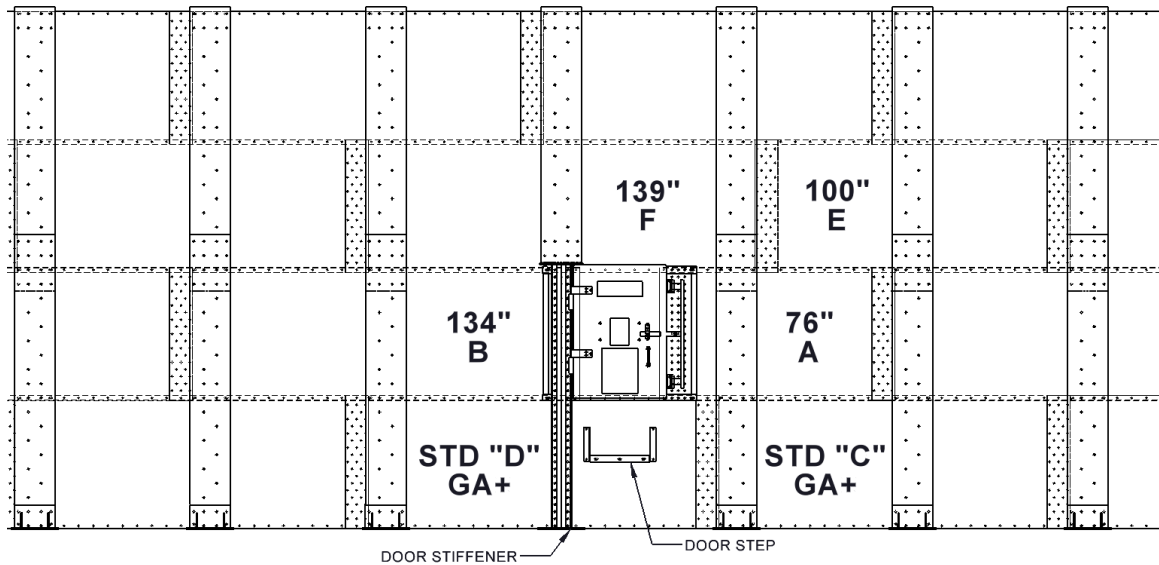
Start by placing foam tape sealant around the edges of the door frames. Next bolt the inner and outer frame to the bin sidewall with 7/16-14 x 3.0" bin bolts. Finally install the inner and outer protective weather door covers and verify that foam tape is placed where the covers will close against the frames. Install sealant as needed around the interior door frame and sidewall sheets.

CB GRAIN BIN 5SL MANUAL

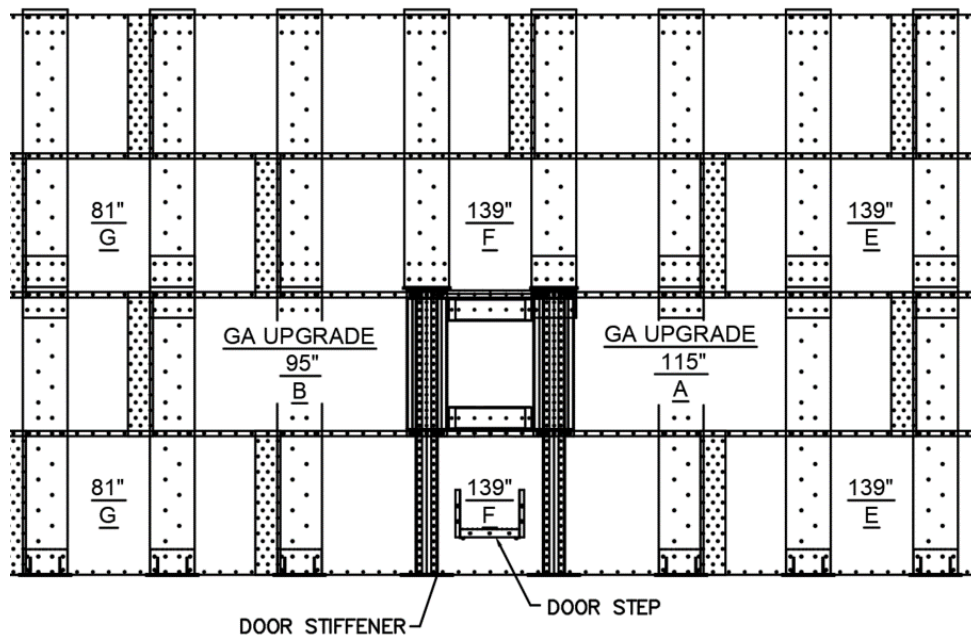
COMMERCIAL DUTY 1 RING DOOR ASSEMBLY:

The 1 ring door is used to access the interior of the bin and is located in the 2nd ring up from the bin foundation. Verify the location of the special long and short door sheets and door sidewall stiffener. The following illustrations are used to verify the placement of the top ring stiffeners in relation to the sidewall door and door sidewall sheets.

2 STIFFENED 1 RING COMMERCIAL DOOR WITH 3 ENDLAP

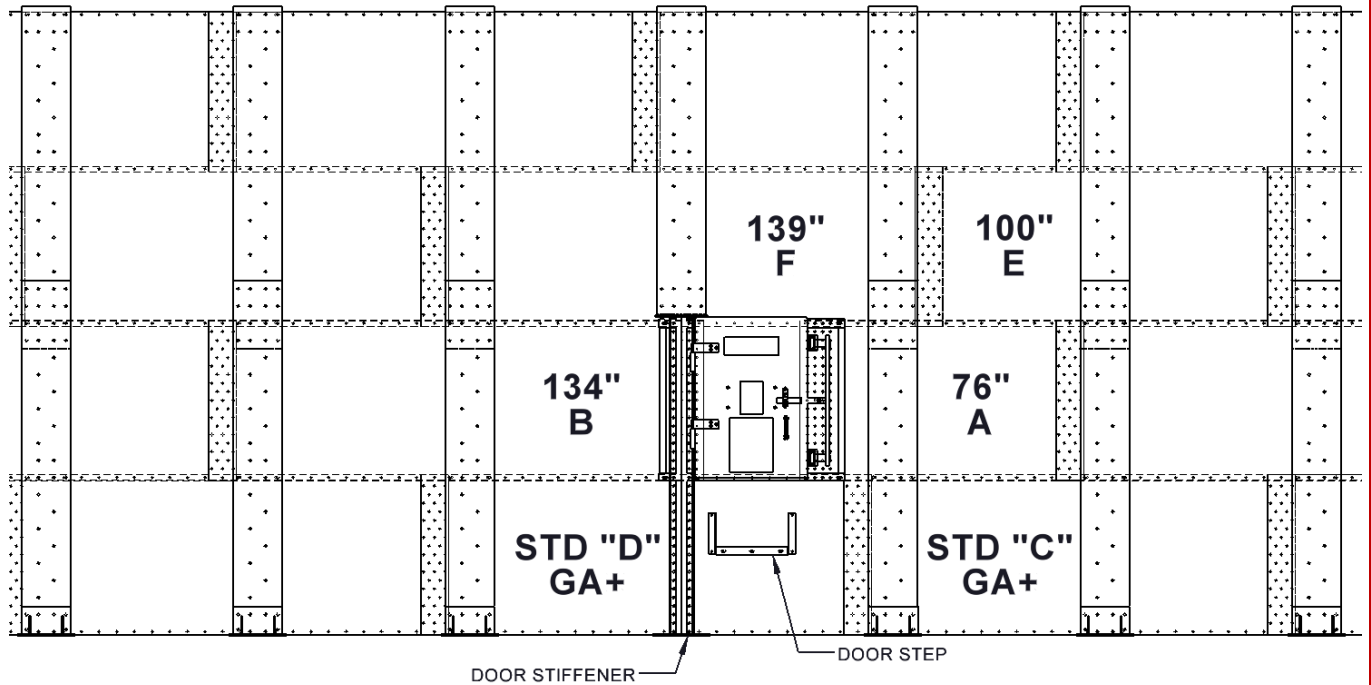


3 STIFFENED 1 RING COMMERCIAL DOOR WITH 3 ENDLAP

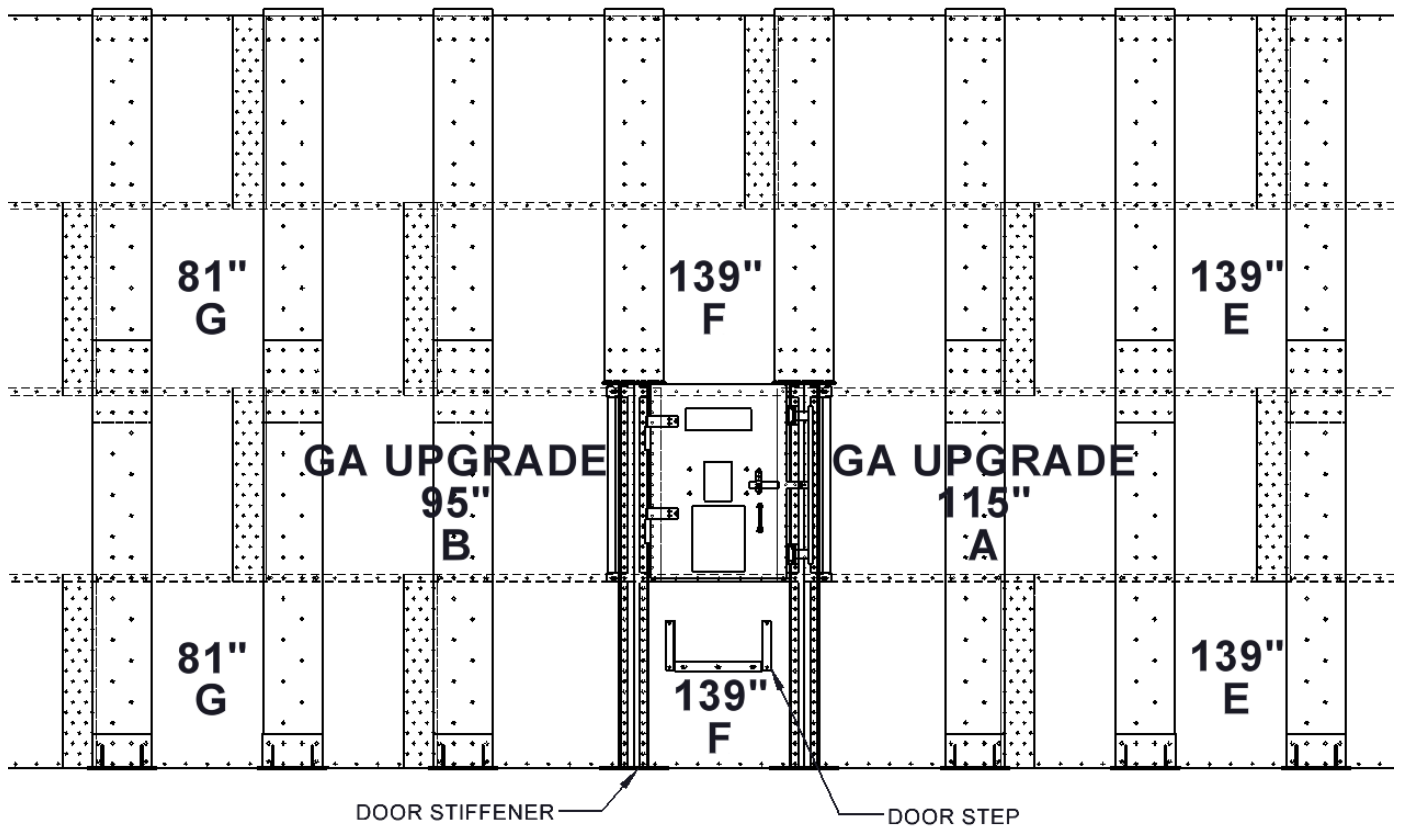


CB GRAIN BIN 5SL MANUAL

2 STIFFENED 1 RING COMMERCIAL DOOR WITH 4 ENDLAP

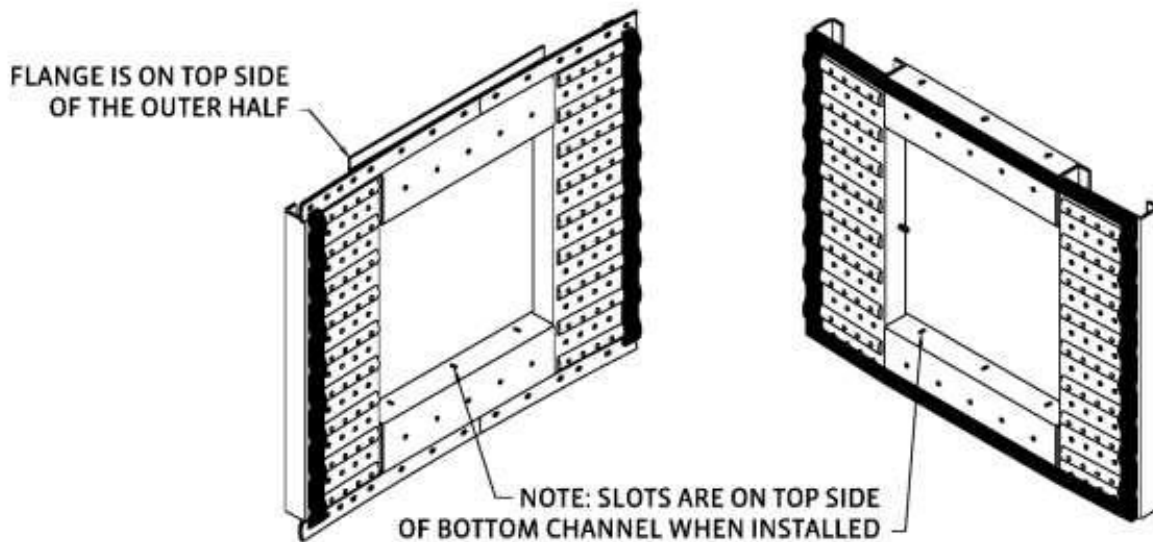


3 STIFFENED 1 RING COMMERCIAL DOOR WITH 4 ENDLAP

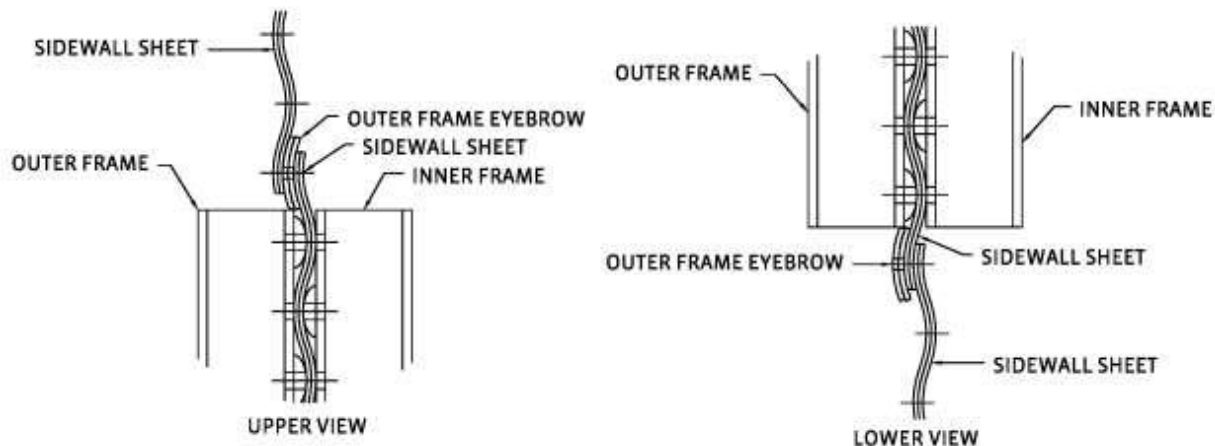


CB GRAIN BIN 5SL MANUAL

Start by placing foam tape around the edges of the door frames as shown in the following illustration.

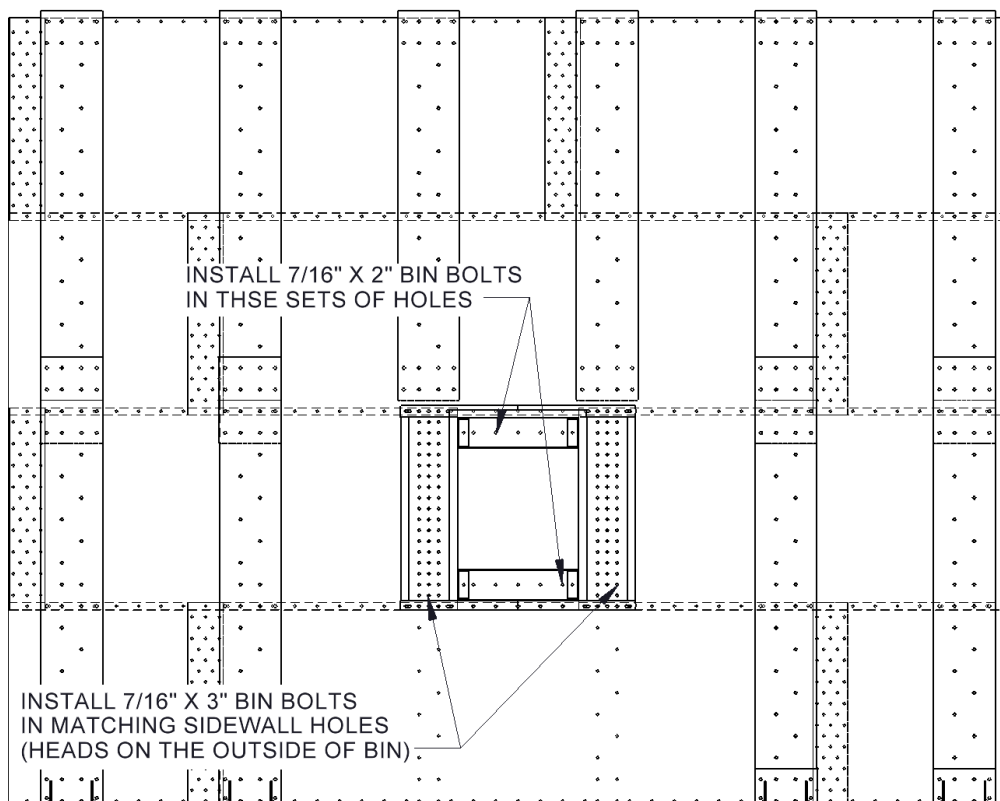
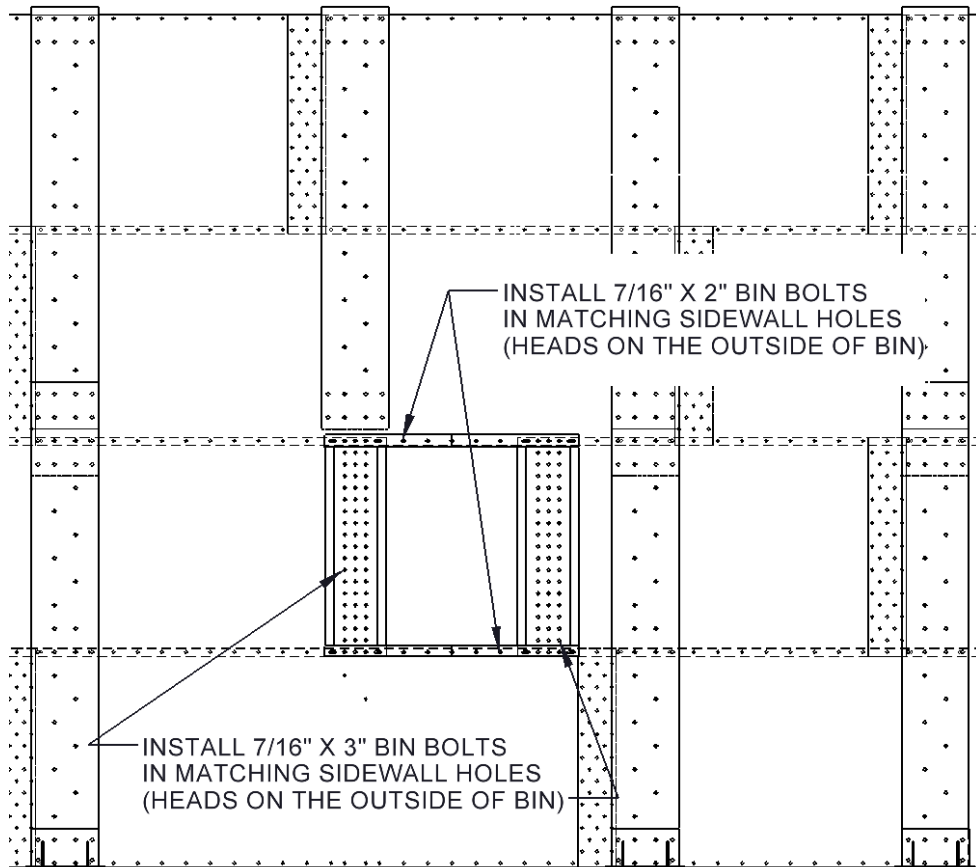


Bolt the inner and outer frame to the bin sidewall with 7/16-14 x 3.0" bin bolts, making sure to only place bolts in the holes shown in the following illustrations. The top eyebrow on the outer frame is to be placed behind the sheet above the door. The bottom eyebrow is to be placed on the outside of the sheet below the door. Bolt the upper and lower channel frame together with 7/16-14 x 2.0" bin bolts and whiz flange nuts.



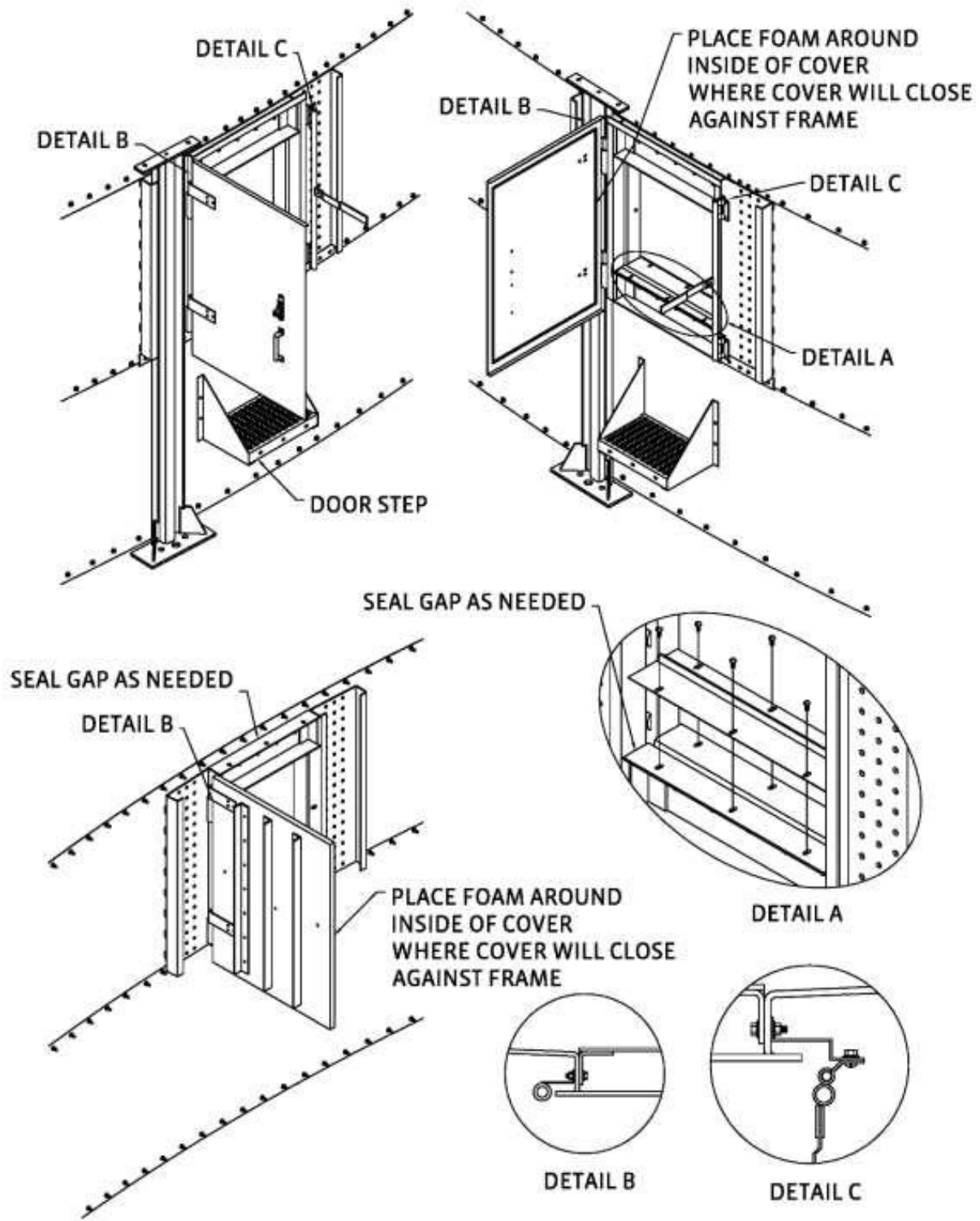
For 2 and 3 stiffened bin designs, 7/16-14 x 3.0" bolts with the heads located on the exterior of the bin will be used in the left and right channels at the locations shown below, and 7/16-14 x 2.0" bolts with the heads located on the exterior of the bin will be used in the top and bottom channels at the locations shown below.

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Before installing the outer protective weather door cover, verify that the mounting hinges are installed as shown in the following illustrations. Install foam tape on interior of the door protective weather cover where the cover will close against the exterior door frame.



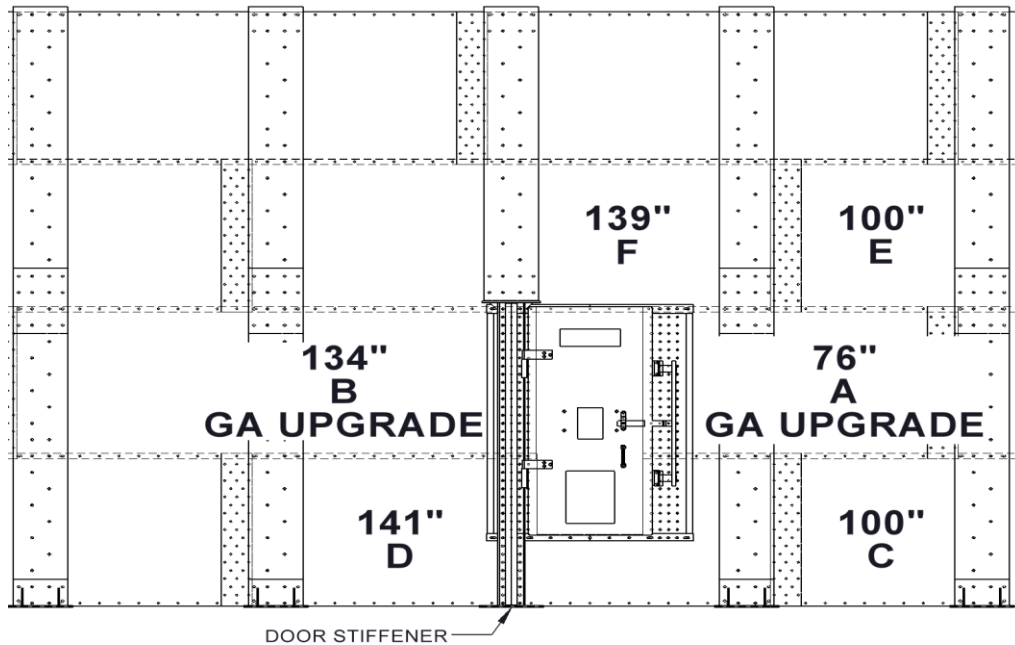
CB GRAIN BIN 5SL MANUAL

COMMERCIAL DUTY 2 RING DOOR ASSEMBLY:

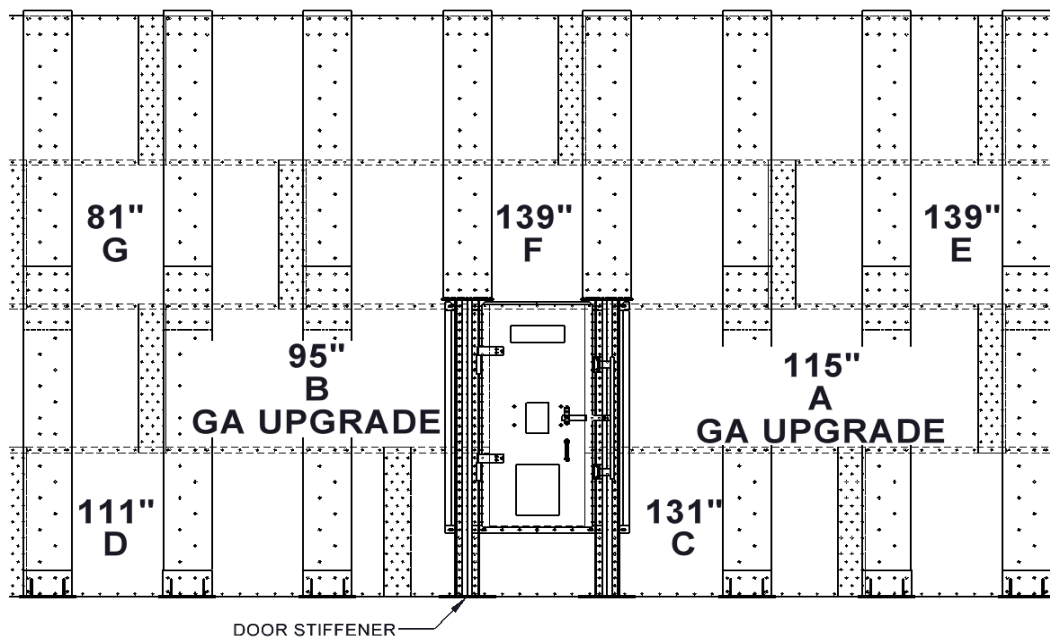
The 2 ring door is used to access the interior of the bin and is located in the 1st and 2nd ring up from the bin foundation. Verify the location of the special long and short door sheets and door sidewall stiffener.

The following illustrations are used to verify the placement of the top ring stiffeners in relation to the sidewall door and door sidewall sheets.

2 STIFFENED 2 RING COMMERCIAL DOOR WITH 4 ENDLAP

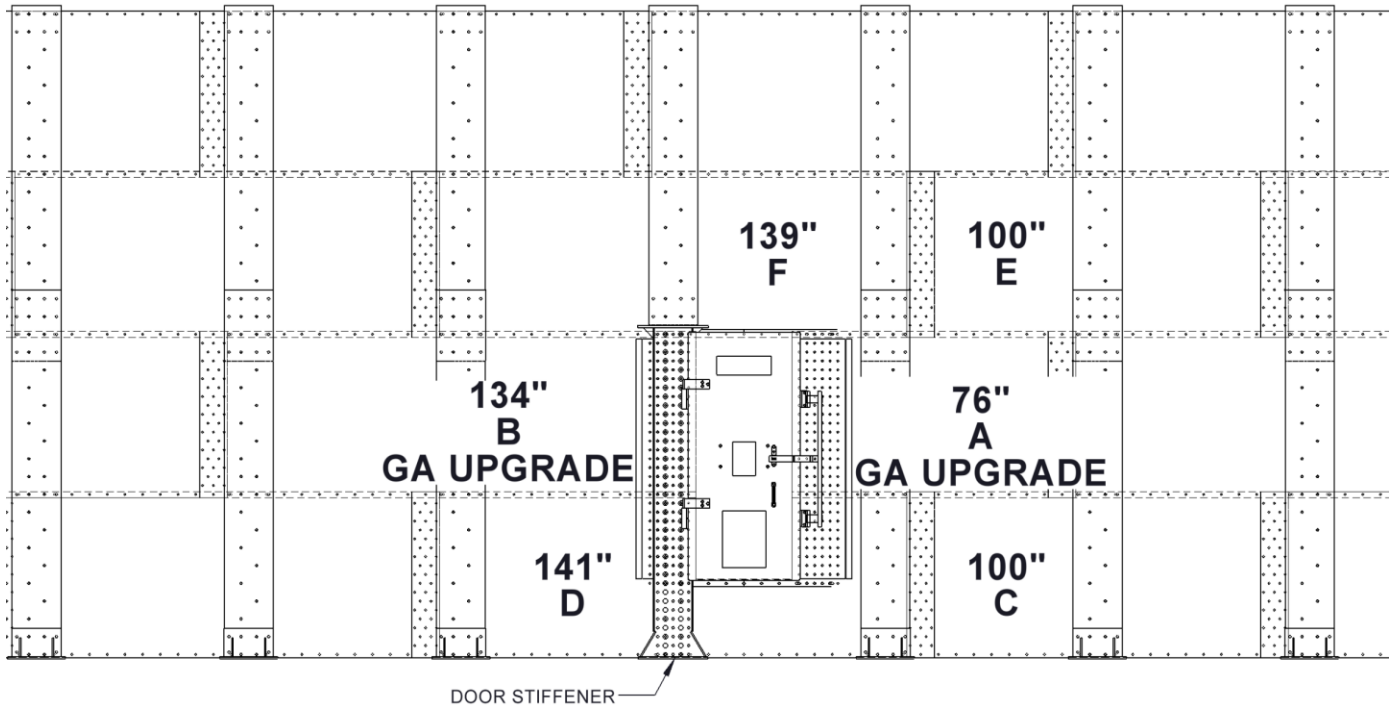


3 STIFFENED 2 RING COMMERCIAL DOOR WITH 4 ENDLAP

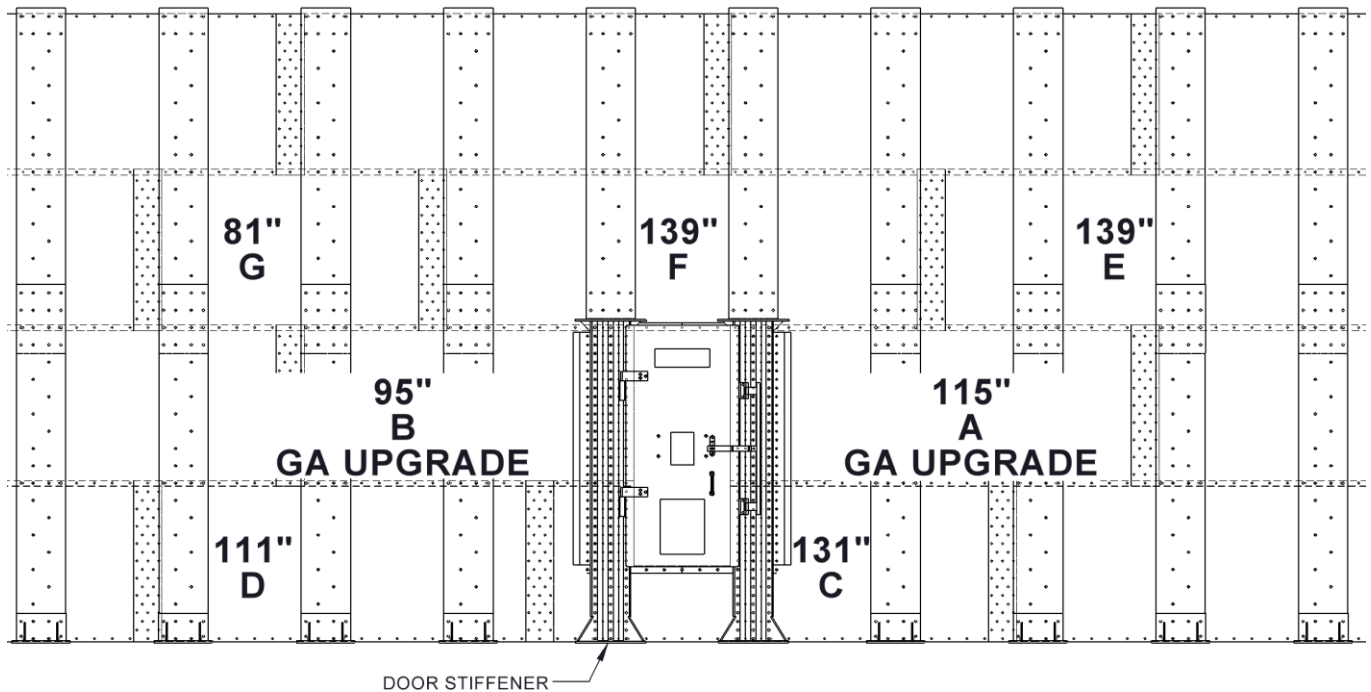


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2 STIFFENED 2 RING COMMERCIAL DOOR WITH 6 ENDLAP

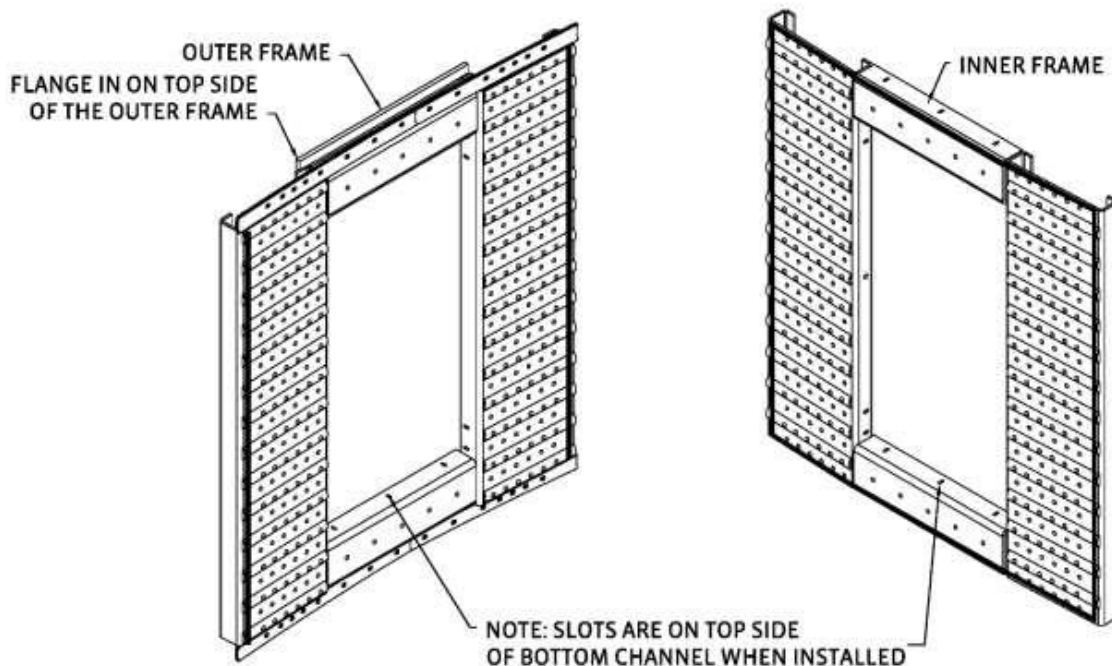


3 STIFFENED 2 RING COMMERCIAL DOOR WITH 6 ENDLAP

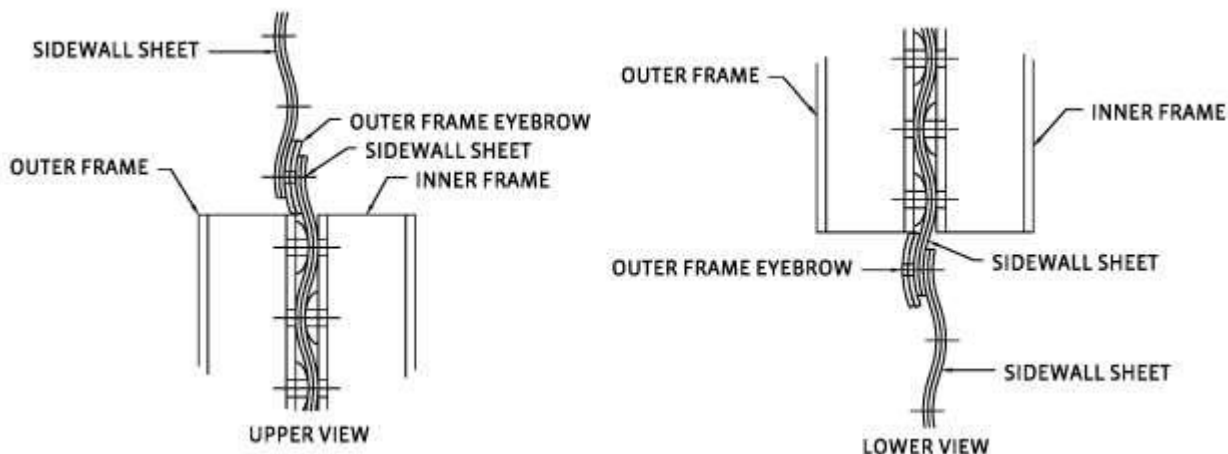


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Start by placing foam tape around the edges of the door frames as shown in the following illustration:

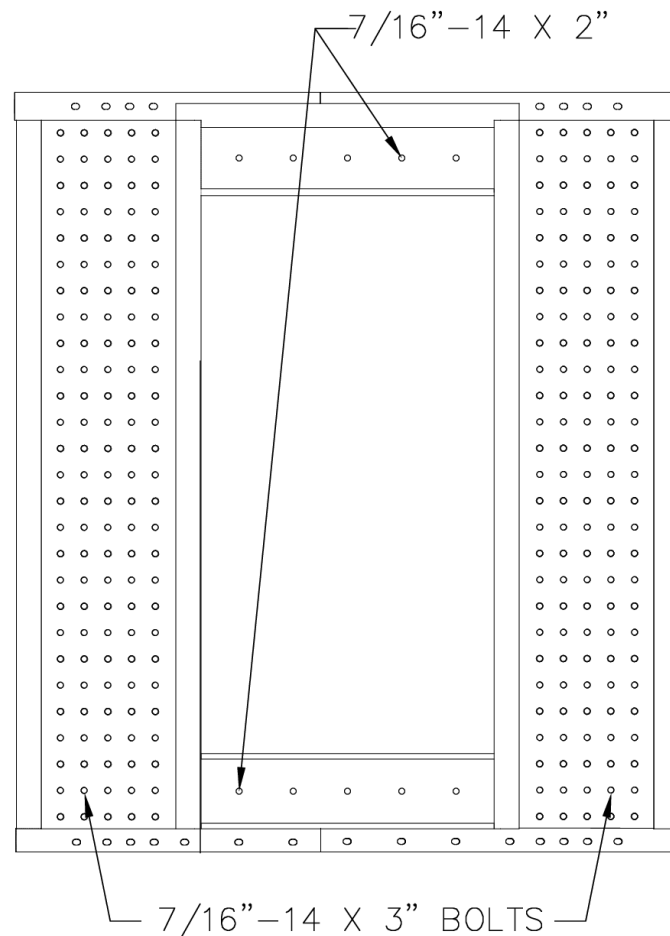


Bolt the inner and outer frame to the bin sidewall with 7/16-14 x 3.0" bin bolts, making sure to only place bolts in the holes shown in the following illustrations. The top eyebrow on the outer frame is to be placed behind the sheet above the door. The bottom eyebrow is to be placed on the outside of the sheet below the door. Bolt the upper and lower channel frames together with 7/16-14 x 2.0" bin bolts and whiz flange nuts.



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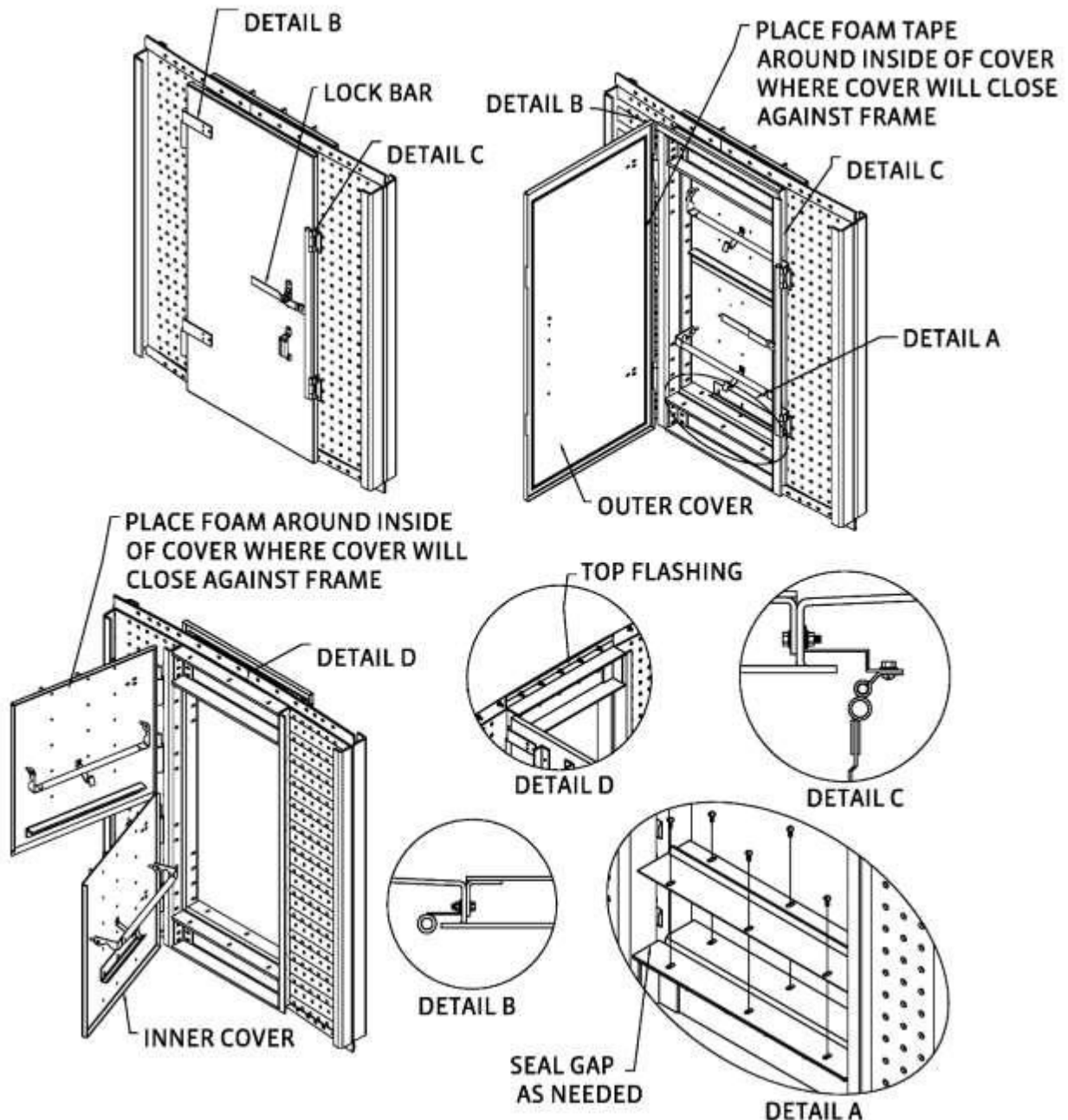
For 2 and 3 stiffened bin designs, 7/16-14 x 3.0" bolts with the heads located on the exterior of the bin will be used in the left and right channels at the locations where holes are present and 7/16-14 x 2.0" bolts with the heads located on the exterior of the bin will be used in the top and bottom channels at the locations shown below.



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Before installing the outer protective weather door cover, verify that the mounting hinges are installed as shown in the following illustrations. Install foam sealant on interior of the door protective weather cover where the cover will close against the exterior door frame.

Install foam sealant on interior of the door cover where the cover will close against the interior door frame. Install sealant as needed around the interior door frame and sidewall sheets.



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SECTION 6: BOTTOM OF BIN COMPONENT INSTALLATIONS:

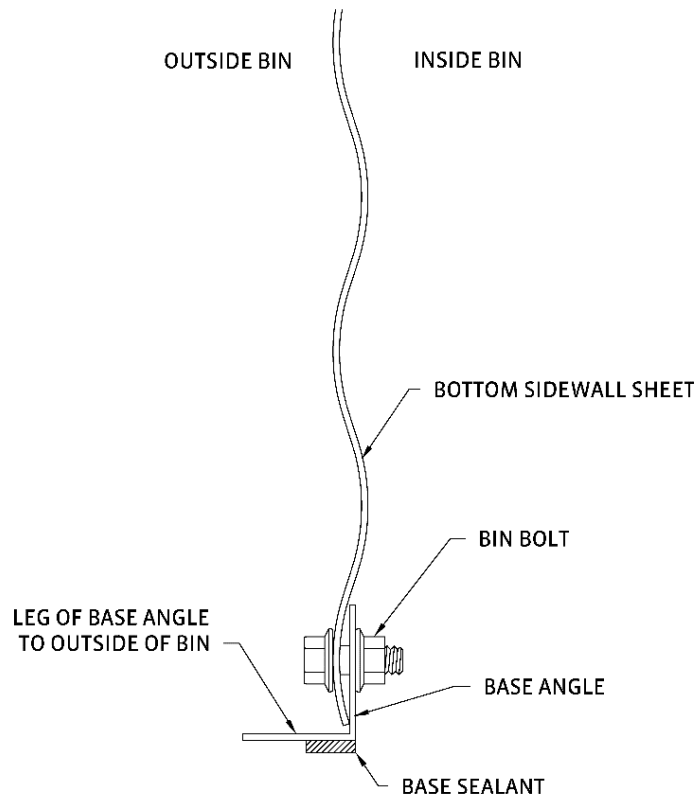
BASE ANGLE INSTALLATION:

After all rings of the bin have been installed, the base angle will be installed on the bottom sidewall sheet. A base angle shim must be installed under all anchor brackets. This shim must be equal to the thickness of the base angle and be placed under the entire width of the anchor bracket, with the edge of the shim flush against the base angle.

Important Note: Always use the minimum number of shims required to correct a deviation in the concrete and provide full bearing contact of the anchor bracket.

Important Note: Install base sealant to the bottom of the base angle prior to installing the base angle to the sidewall sheet. The sidewall sheets must be wiped clean of all oil and residue before applying the base sealant. Once installed, the sealant applied between the base angle and the concrete foundation provides a watertight seal

Prior to setting bin down onto the foundation, verify that the base angle is tight to the bottom of the sidewall sheet and evenly spaced prior to tightening the base angle bolts. After hardware is tightened, verify paper backing is removed from the base sealant strips (if using paper backed sealant) and proceed to set bin down on the foundation.



BASE ANGLE DETAIL

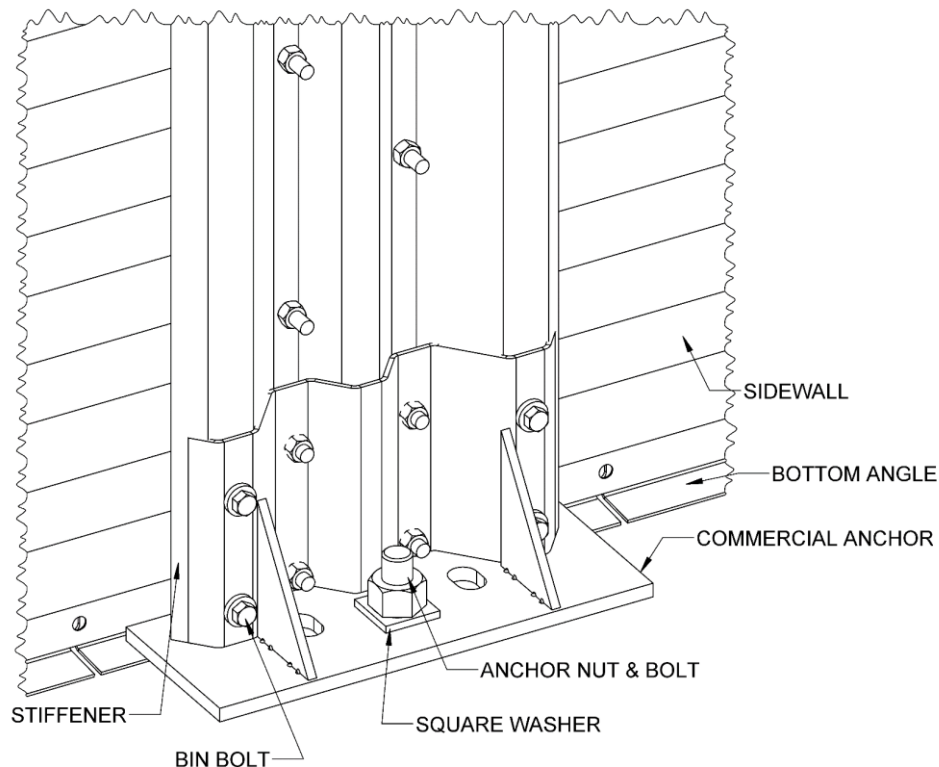
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HEAVY BIN STIFFENER ANCHOR:

Heavy bin Stiffener anchors allow up to 3 anchor bolts to be used at each anchor location. There are (2) 1" (2.54cm) diameter and (1) 1-1/2" (3.81cm) diameter holes in each bin stiffener anchor. There are several different combinations that Chief recommends to anchor the bin to the foundation.

- (1) 1-1/4" x 12" (3.17cm x 30.48cm) anchor bolt may be used in the 1-1/2" (3.81cm) diameter hole.
- (2) 3/4" x 12" (1.90cm x 30.48cm) anchor bolts may be used in the two 1" (2.54cm) diameter holes.
- If larger anchor bolts or 3 anchor bolts are required due to seismic conditions or high wind loads, consult Chief for recommendations.

The bin stiffener anchor bracket utilizing (1) anchor bolt is shown in the following illustration.



If anchor bolts are not precast as stated above, and the anchor bolt radius is not held, the bins warranty will be nullified. All anchor bolts must project a minimum of 2" (5.08cm) above the concrete floor. It is recommended to keep anchor bolt projection to a maximum of 3" (7.62cm) above the concrete.

All anchor bolts, nuts and washers shall conform to ASTM A307 unless otherwise noted.

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To install heavy anchor brackets to the bottom stiffener:

1. Start by hand tightening anchor brackets to the bottom 2 ring stiffener. After the bottom ring is attached, lower the bin carefully and place all anchor brackets over the anchor bolts.
2. When the full weight of the bin is on the concrete, shim the anchors as necessary by placing shim plates between the concrete and the anchor bracket.

Important Note: All anchors must be firmly bearing upon the concrete or shimmed to develop full bearing contact with the concrete foundation.

3. Anchors placed over aeration trenches must be supported from the bottom of the trench using Chief transition stiffeners.
4. After all anchor brackets are shimmed correctly to provide full bearing contact, place 2 square washers over each anchor bolt and tighten to the required specifications.

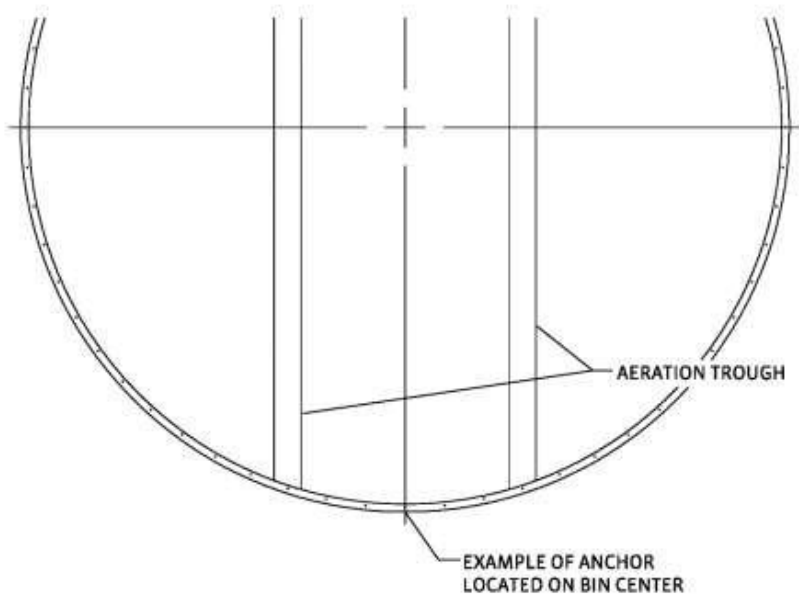
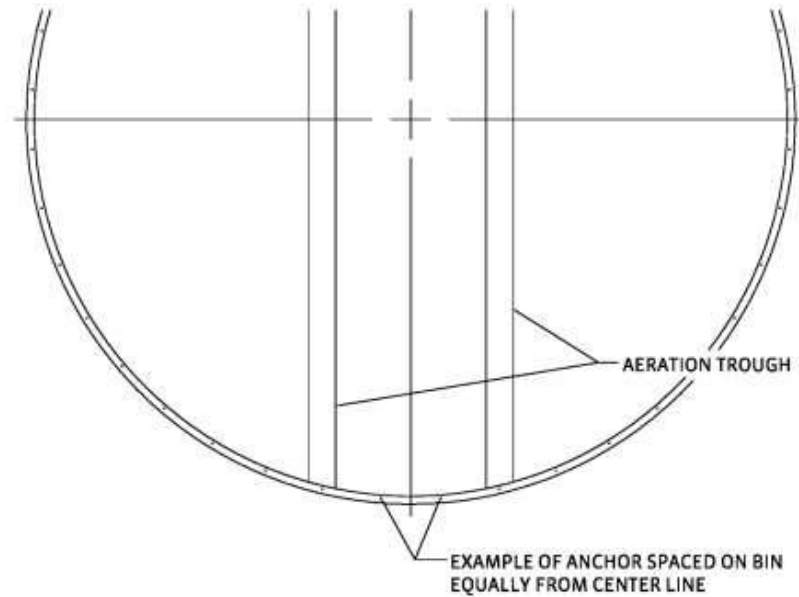
Important Note: All anchor bolts must be retightened after the bin has been filled to capacity for the first time.

If wedge type anchor bolts are used to replace damaged anchor bolts, the bolt radius circle must be checked at replacement locations so that the bin is round when anchored. Chief recommends using wedge anchors that meet 10,000 LB Pull-Out and 7,500 LB shear criteria.

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AERATION TRANSITION STIFFENERS:

Trough transition stiffeners are used when a flush floor aeration system is incorporated into the bin floor. The formed concrete dimensions and the anchor bolt placement are important for the correct installation of the transition stiffeners. When forming the concrete, the aeration troughs should be located as specified in Chief's aeration layout. The anchor bolt locations for the bin need to be oriented to make sure that the number of anchors over the aeration trough is minimized. When installing the anchor bolts, the bolt radius and bolt chord must be correct and must also be placed according to the following details.



Important Note: Do not install the expansion type anchor bolts inside the aeration trench at this time.

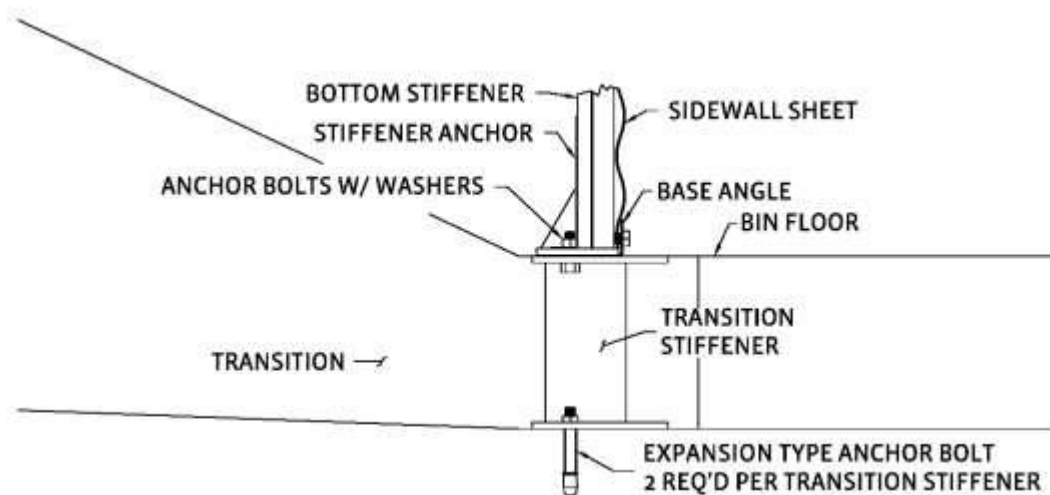
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1. When the bin and anchor brackets are installed and located correctly as described previously, insert the transition in the aeration trough. Using 1 of the 2 holes that are 1.0" diameter (2.54cm) in the anchor bracket as a guide, drill a 3/4" (1.90cm) hole through the top of the transition. Slide the transition stiffener inside the transition and line it up with the previously drilled hole. Loosely install the 5/8" x 1-1/2" (1.58cm x 3.81cm) A325 bolts to fasten the stiffener anchor to the top of the transition and transition stiffener. Rotate the transition stiffener body so that it is centered under the bin wall anchor bracket. Drill the second 3/4" (1.90cm) hole through the top of the transition and install the second 5/8" x 1-1/2" (1.58cm x 3.81cm) A325 bolt to fasten the stiffener anchor bracket to the top of the transition and transition stiffener.
2. **The transition stiffener must be anchored to the foundation** with two (2) 5/8" x 6" (1.58cm x 15.24cm) wedge type anchor bolts. The holes for these anchor bolts should now be located. With a punch, mark two holes in the bottom of the transition using the holes in the transition stiffener base plate as guides.
3. Remove the transition stiffener and the aeration transition. Locate the two anchor bolt locations previously marked with the punch in the bottom of the transition. Drill two (2) 3/4" (1.90cm) in these locations. Re-insert the transition in the aeration trough and verify that the transition stiffener is directly under and in line with the anchor. Make adjustments if necessary. Mark the location of these holes on the concrete. Remove the transition and drill (2) holes for the 5/8" x 6" (1.58cm x 15.24cm) anchor bolts.

Important Note: Do not install the anchor bolts at this time.

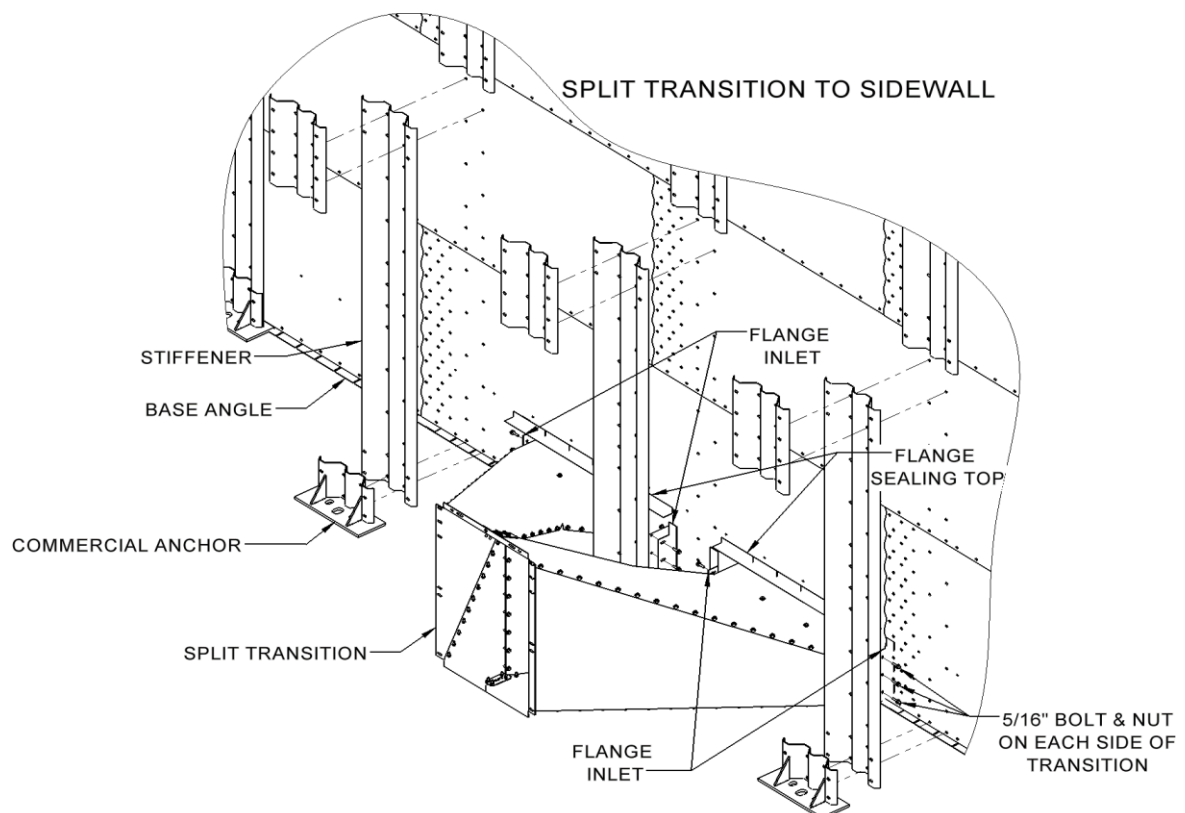
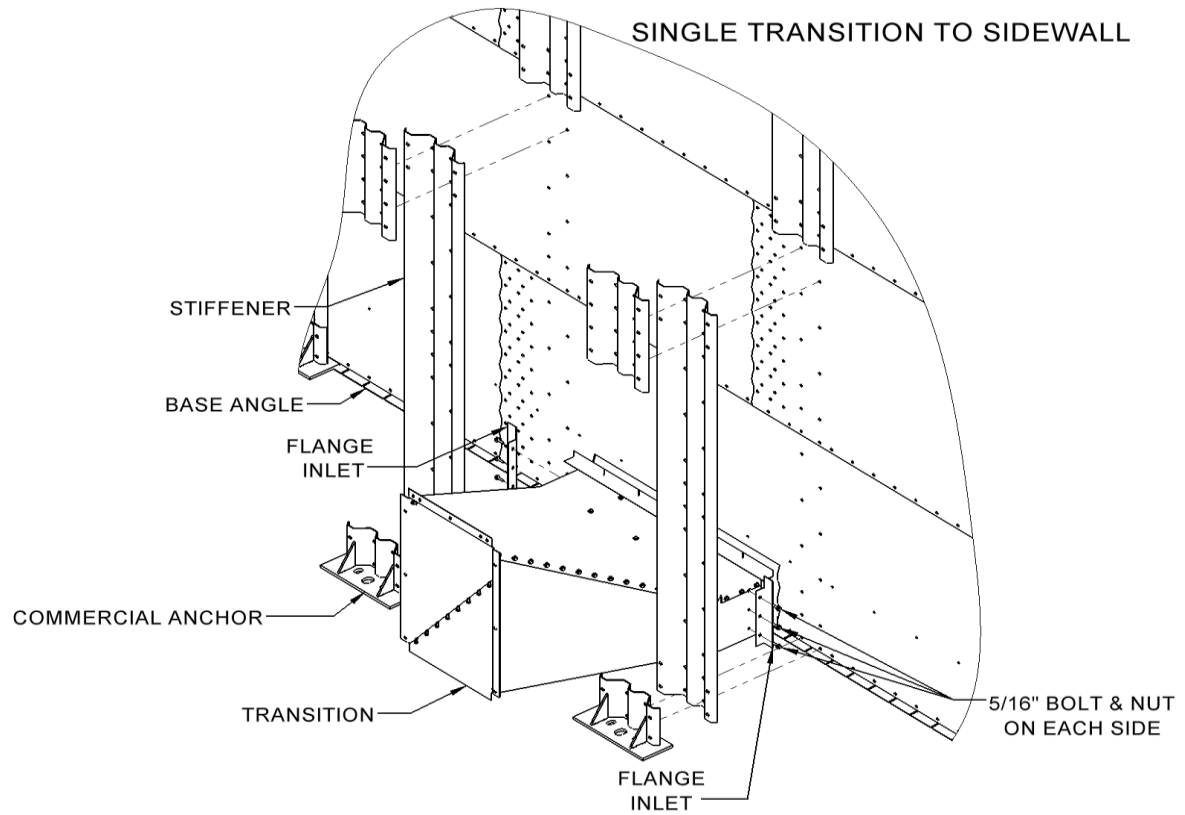
4. Reinstall the transition and slide the transition stiffener into position. Loosely install the 5/8" x 1-1/2" (1.58cm x 3.81cm) A325 bolts and rectangular washers at the anchor bracket location. The (2) 5/8" x 6" (1.58cm x 15.24cm) wedge-type anchor bolts should now be installed. Securely tighten the 5/8" (1.58cm) bolts at the anchor bracket. Sealant should be applied to the transition opening.

Important Note: Transition stiffeners support the bin anchors. The transition must also be supported inside the bin. Refer to the supplied Chief aeration layout for instructions on supporting the transition.

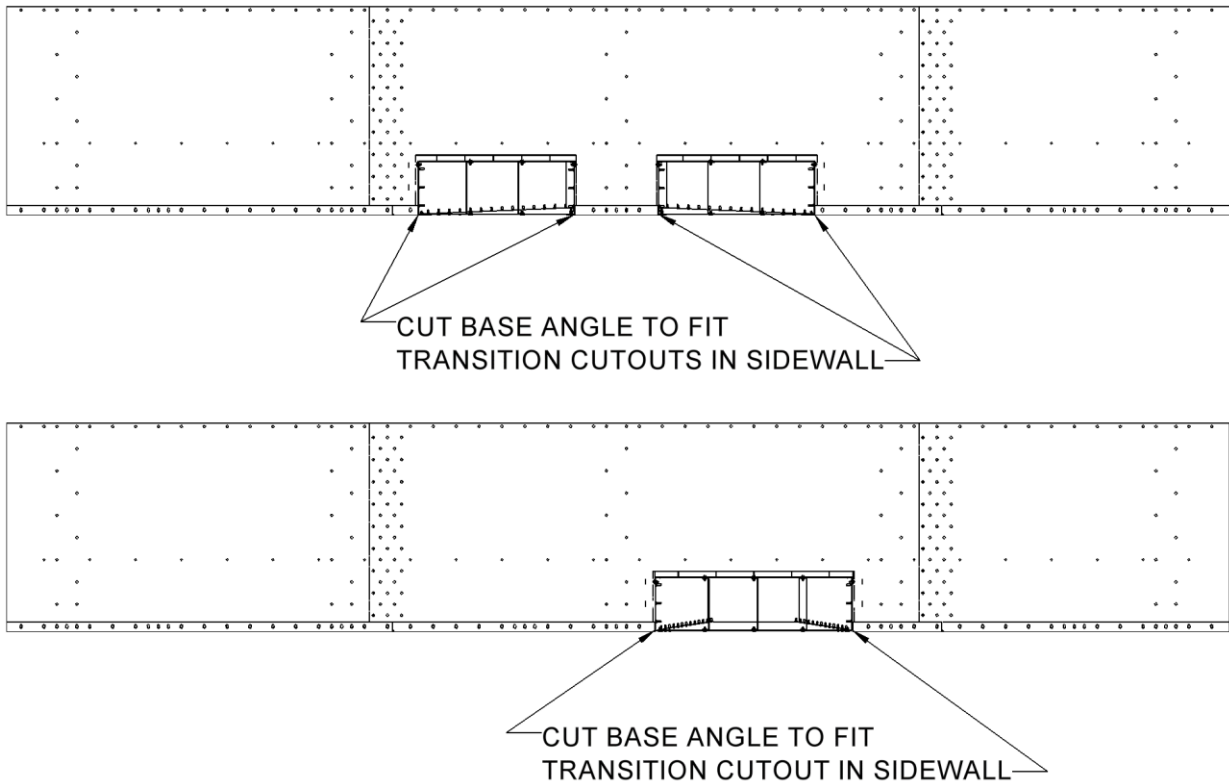


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AERATION TRANSITIONS TO SIDEWALL:



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Important Note: Use sealant at all flange locations around transition to sidewall cutouts.

SECTION 7: EAVE AND ROOF COMPONENT INSTALLATIONS:

GRAIN HANDLING SUPPORT STRUCTURES:

For standard bin models independent support towers located between the bins should support overhead equipment such as conveyors, augers, and catwalks. The bin walls or roof should not support the load from these items. When an alternate site design is required, the grain bin can be specifically designed to support concentrated loads at the bin roof eave with upgraded design stiffeners to support the overhead load.

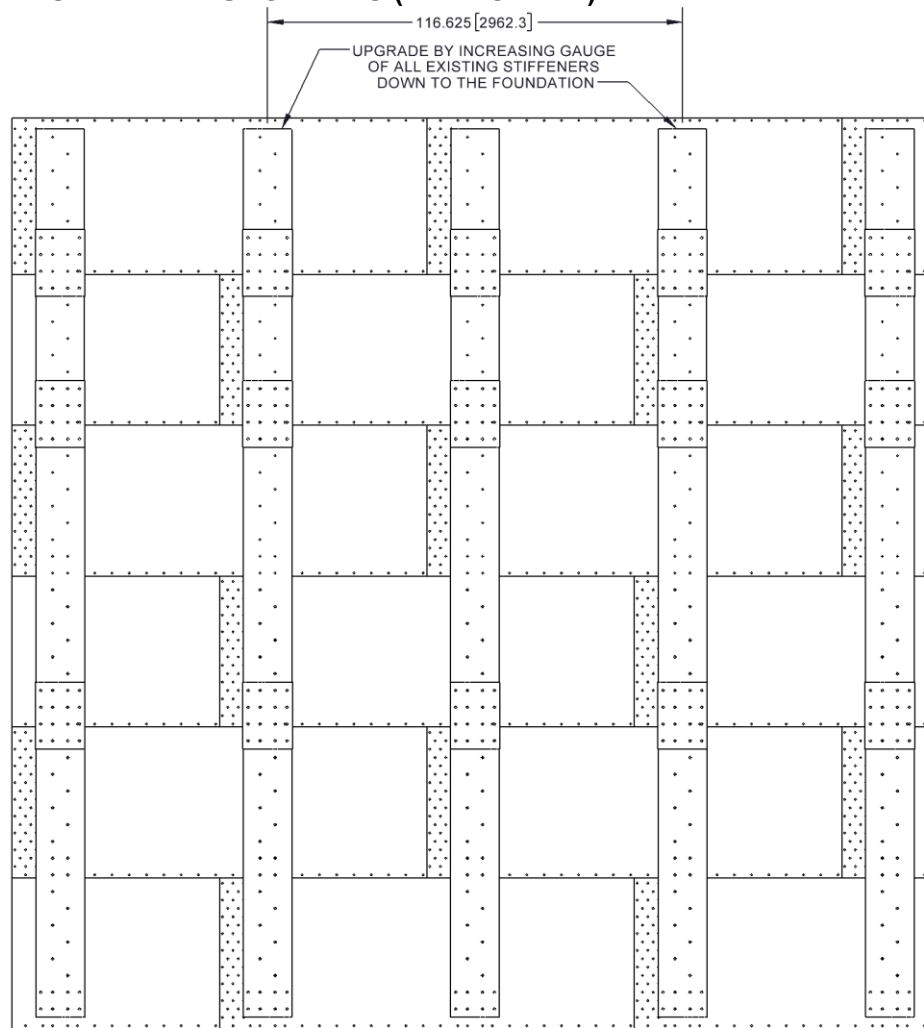
When an eave support is being attached to bin, supplied stiffeners will be upgraded at the eave support location. These stiffeners will be installed the entire length from the bin eave to the foundation during the grain bin installation.

Important Note: Fill conveyors and catwalks must not be supported by a standard design bin wall.

Important Note: A stiffener gauge upgrade will support 6,000 lbs. (2721 kg) per column.

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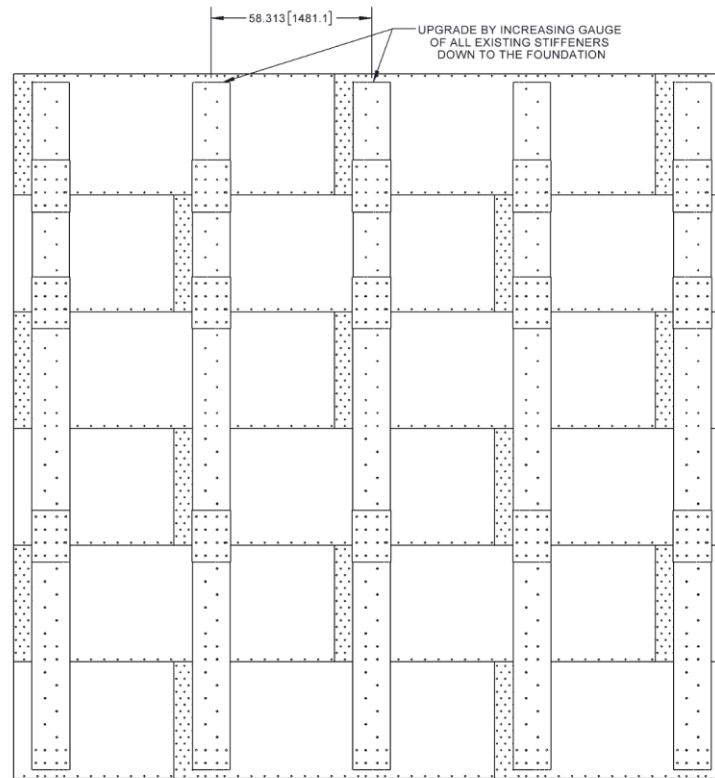
EAVE SUPPORT STIFFENER UPGRADES (METHOD "P")



EXAMPLE OF 2-STIFFENED SIDEWALL

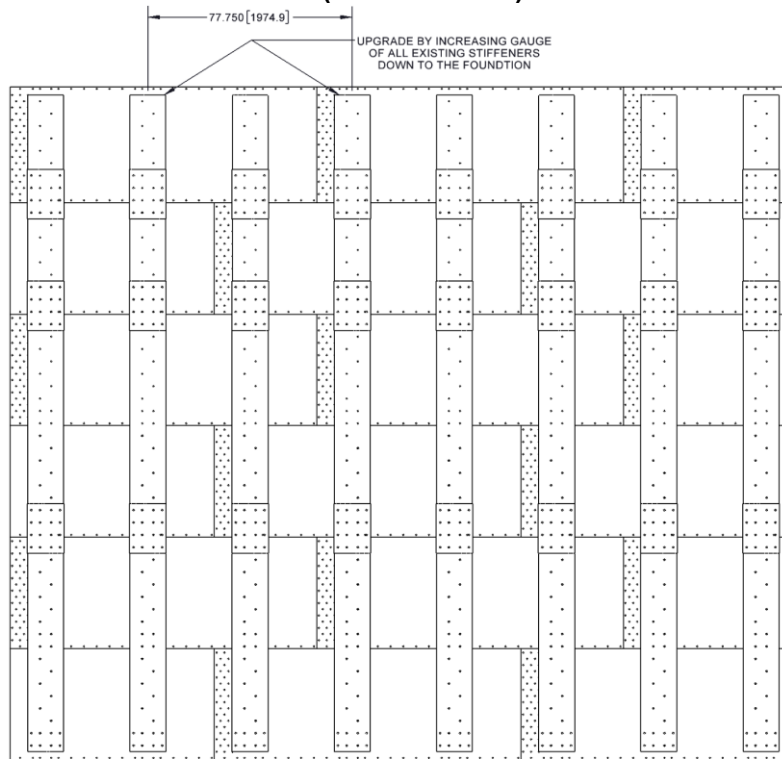
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EAVE SUPPORT STIFFENER UPGRADE (METHOD “Q”)



EXAMPLE OF 2-STIFFENED SIDEWALL

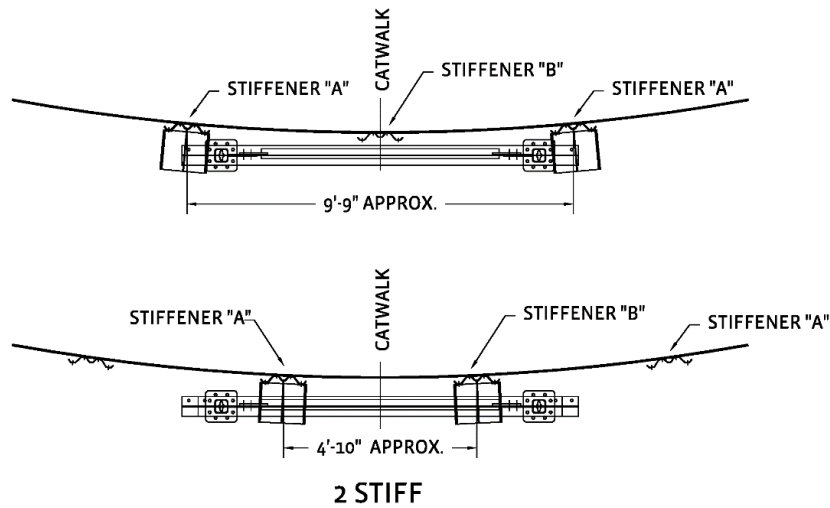
EAVE SUPPORT STIFFENER UPGRADE (METHOD “P”)



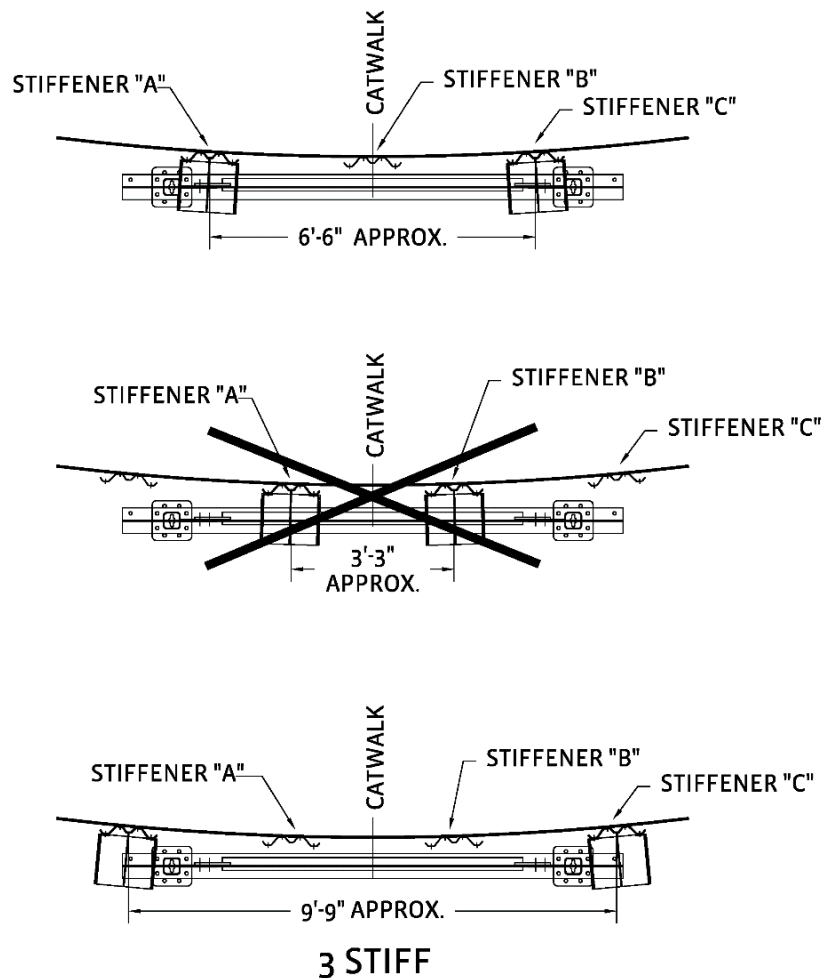
EXAMPLE OF 3-STIFFENED SIDEWALL

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EAVE SUPPORT BEAM PLACEMENT (2-STIFFENED):

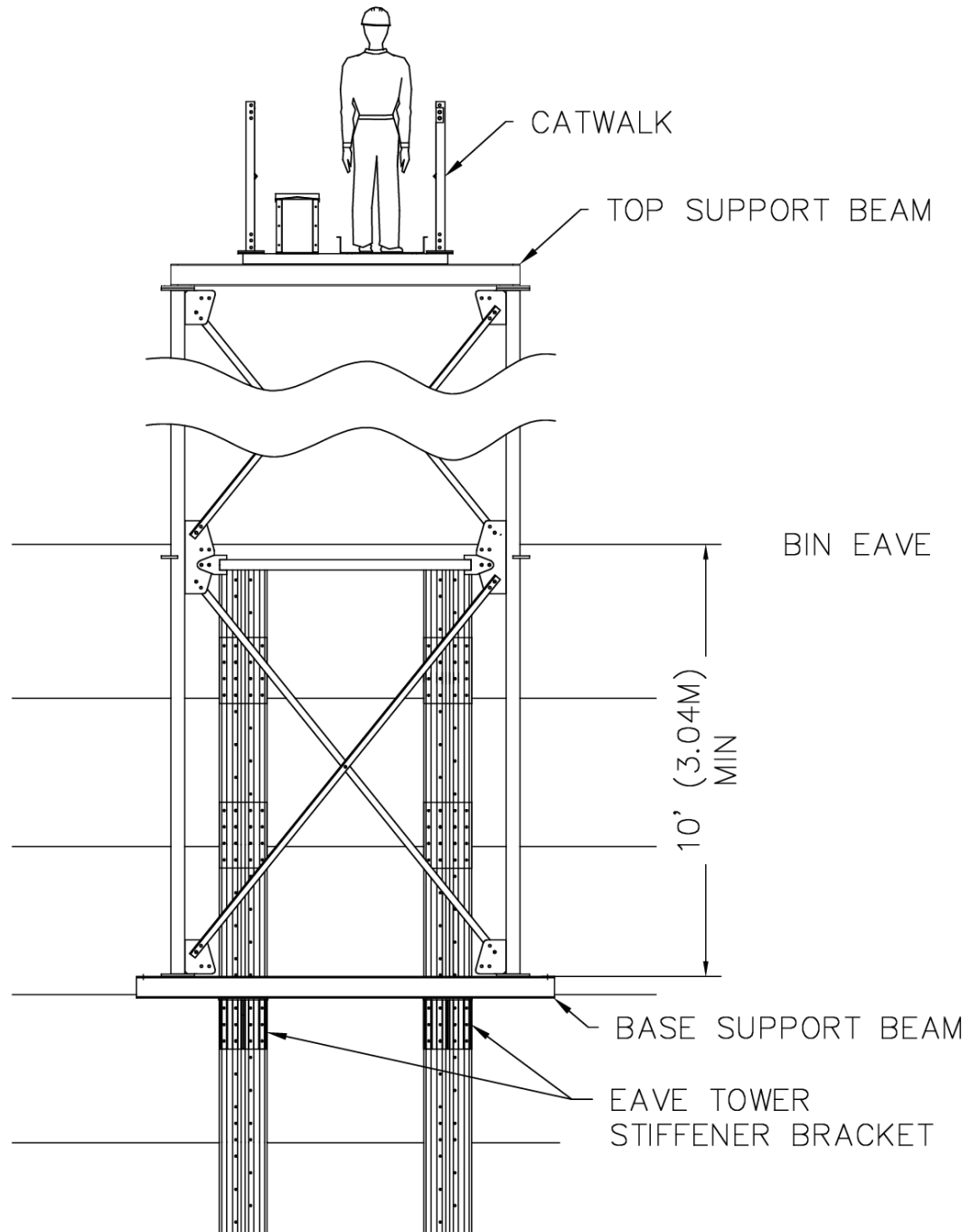


EAVE SUPPORT BEAM PLACEMENT (3-STIFFENED)



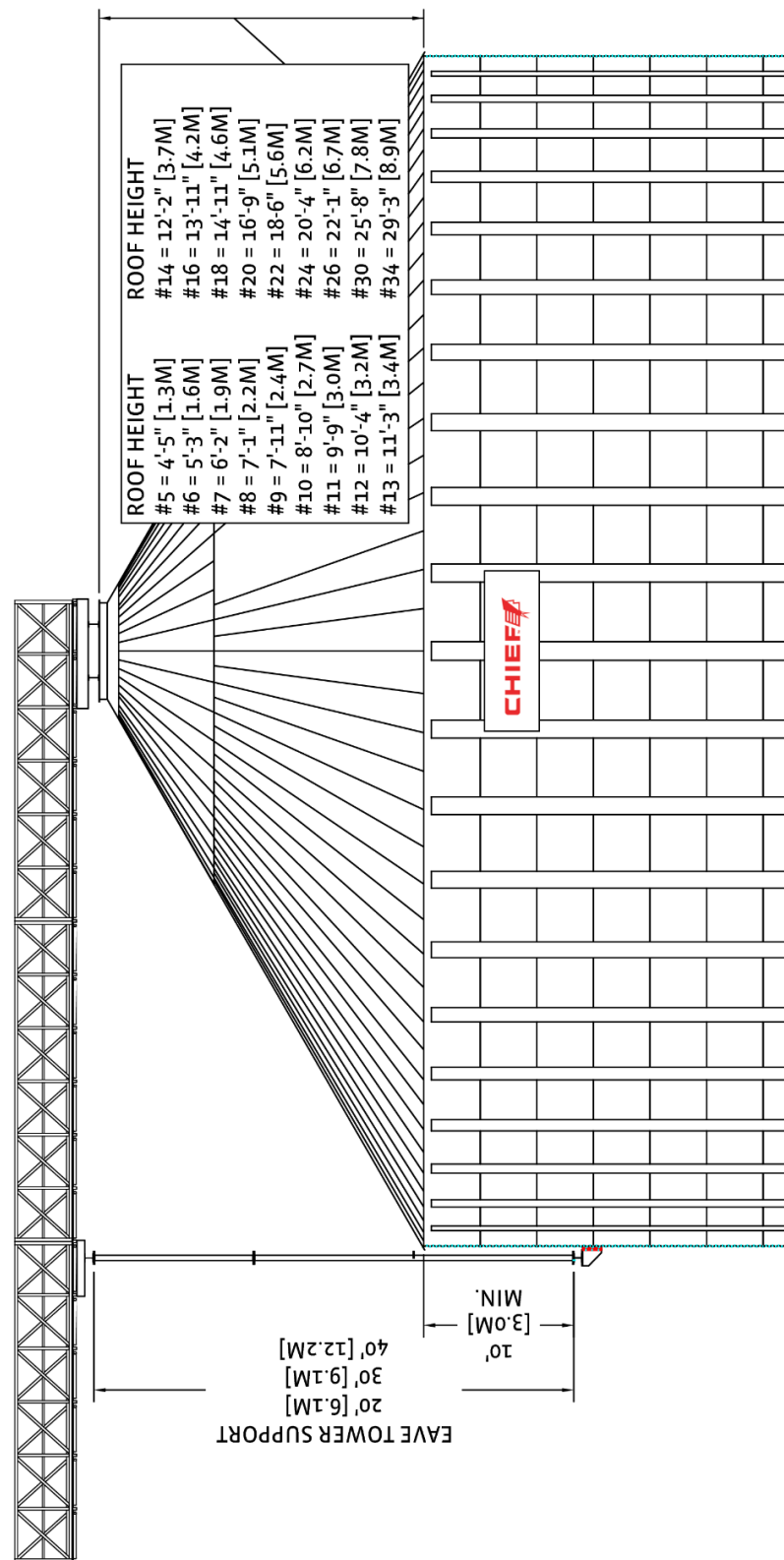
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Important Note: All eave support towers must be located a minimum distance of 10' (3.04m) below the roof eave.



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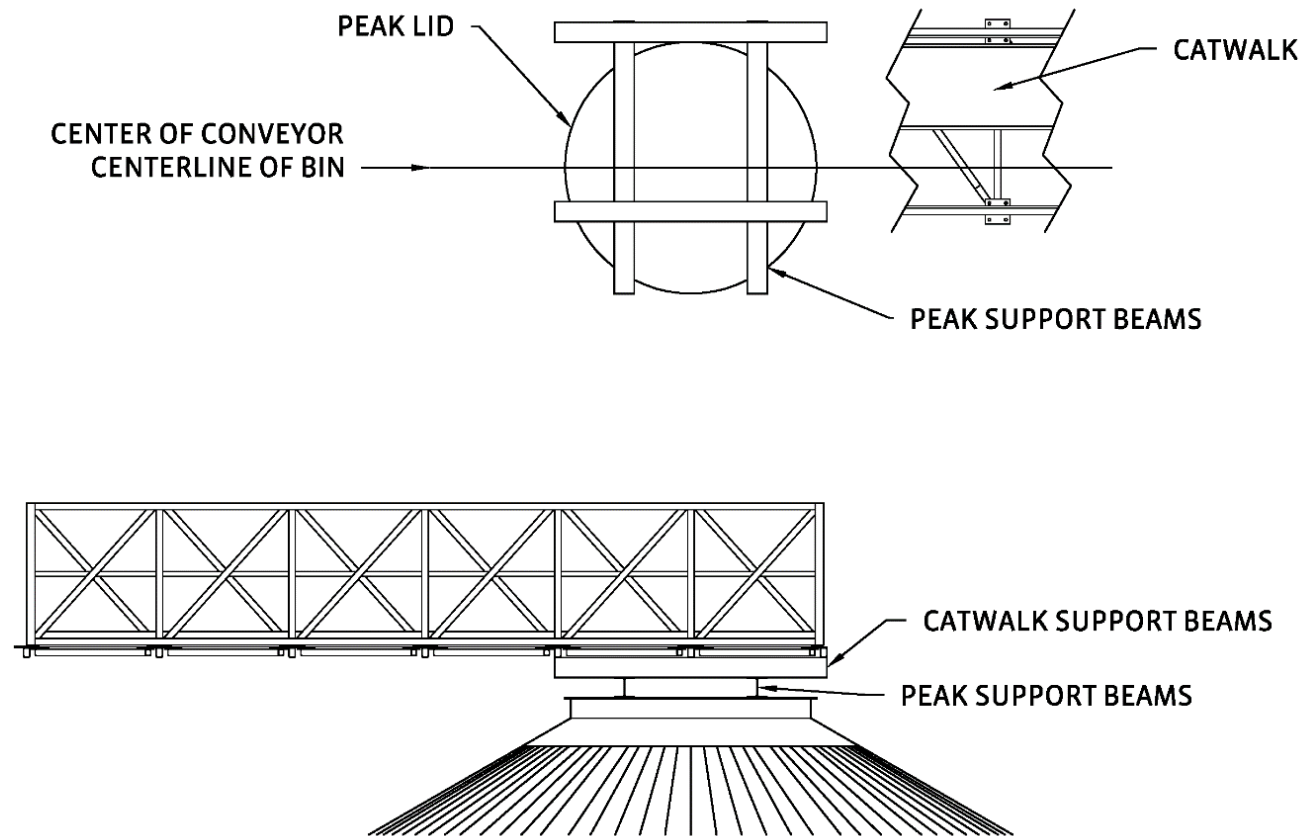
The following illustrates the roof height of various models to assist in selecting the correct height of eave tower support.



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CATWALK PEAK SUPPORT INSTALLATION:

Installation of a catwalk and material handling equipment on the roof peak requires support beams to be orientated correctly according to the following illustration.



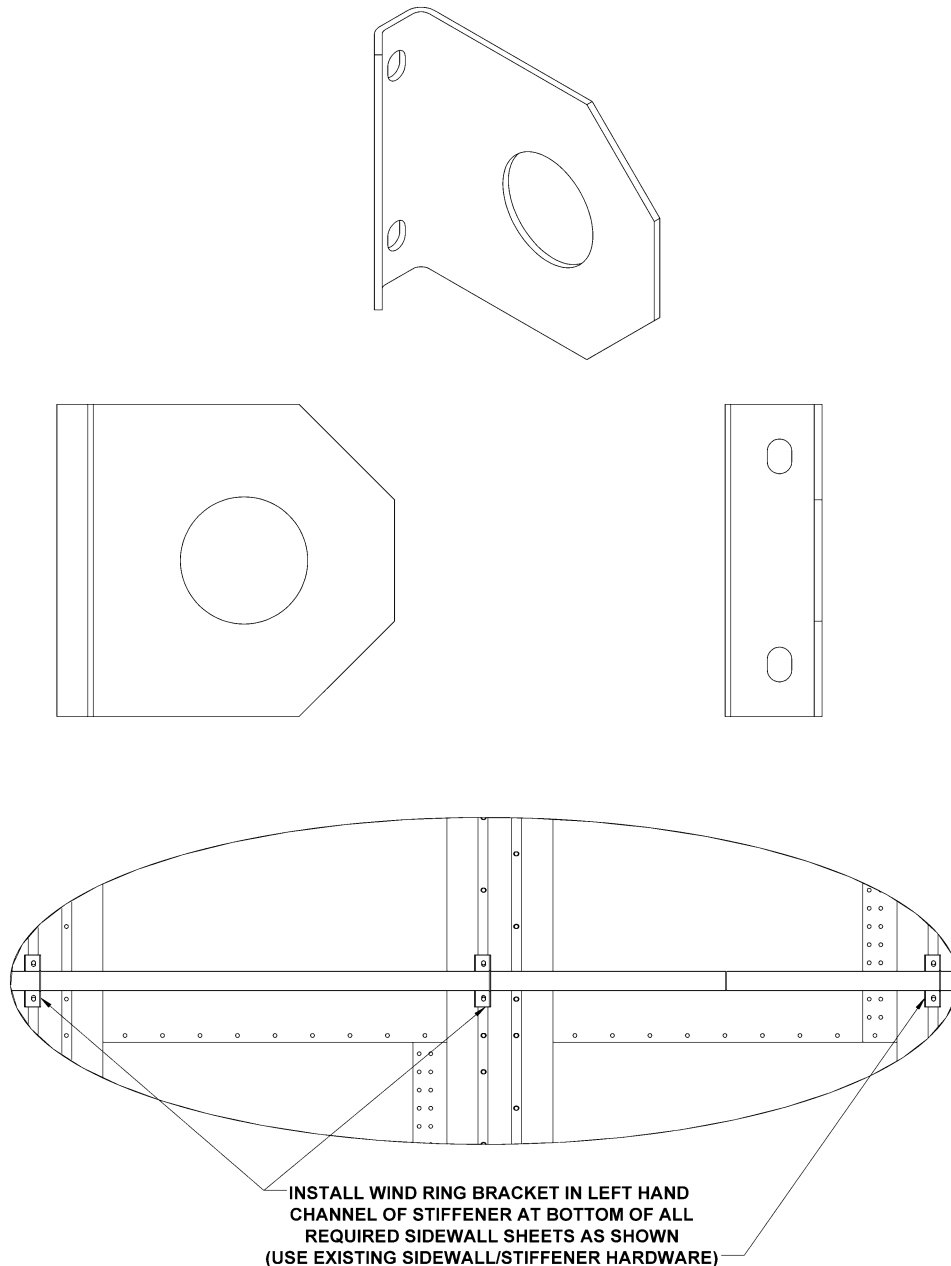
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WIND RING INSTALLATION:

Wind rings are used to provide additional reinforcement to the bin sidewall. The quantity of wind rings is application specific and may vary depending upon the size of the bin, and any accessories provided (ex. a side draw system). For quantities and placement of wind rings required, refer to the wind ring information packet supplied with your order.

IMPORTANT NOTE: Wind rings are located at the bottom of each ring specified.

The wind rings will be attached to the sidewall using brackets specifically formed to bolt directly to the sidewall vertical stiffener holes. These brackets will be located on each vertical stiffener. The wind ring segments are joined together using a bolted coupler.



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IMPORTANT NOTE: All wind ring segments are 248" long and may require a field cut to keep couplers in between the wind ring brackets.

To install a wind ring package:

1. Determine the proper location for the first or top wind ring. Install wind rings in a counterclockwise direction, working from the exterior of the bin.
2. Bolt the appropriate wind ring bracket to the sidewall stiffener holes as shown in the previous illustration. Use the stiffener attachment bolts and whiz flange nuts.

Important Note: Install brackets in a counterclockwise sequence.

3. When 4 wind ring brackets have been installed, slide the 1st wind ring segment through the hole in the 4 brackets, leaving a 29" (73.66cm) portion of the wind ring tube extending past the last bracket.
4. Bolt 4 more additional brackets in place and slide the next wind ring tube through the brackets. Position the end of this tube segment against the end of the previous tube segment.
5. After verifying that the ends of the pipe are flush to each other, connect the wind ring tube segments together using a pipe coupler. Fully tighten the hardware in the pipe coupler.
6. Repeat the previous steps until all wind ring segments have been installed. The last wind ring tube segment will need to be field cut to length prior to mounting. Verify that all hardware is securely fastened on all pipe couplers.

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SECTION 8: MAINTENANCE INSTRUCTIONS:

- Roof
 - An annual inspection of the roof structure should be made to verify there are no holes in the roof panels and that all connections are completely sealed. If leaks should occur, apply weatherproof sealant in the area of concern.
- Sidewall
 - An annual inspection of the sidewall should be made. If leaks should occur, apply weatherproof sealant in the area of concern. If spoilage has occurred, thoroughly clean all surfaces. If oxidation is present, remove the oxidation and apply corrosion resistant paint.
 - An annual inspection of the sidewall structure should be made to verify bolts are tight and torque recommendation maintained, and that washer heads have maintained a proper seal. Re-tighten hardware as required.
- Base
 - Inspect the base as often as possible for spoilage, as this is a direct indication of excess moisture. If spoilage has occurred, thoroughly clean all surfaces. If oxidation is present, remove the oxidation and apply corrosion resistant paint. After the paint has dried, apply base sealant to the affected area.
- Doors
 - Inspect the door and manholes as often as possible to verify a proper seal is maintained.
- Decals
 - Verify all warning decals are installed in the proper locations. Replace all damaged or unreadable warning decals.

Important Note: All ANCHOR BOLTS MUST BE RE-TIGHTENED AFTER THE BIN HAS BEEN FILLED TO CAPACITY FOR THE FIRST TIME.

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Should you have any questions concerning assembly instructions, parts or drawings, please feel free to contact us at any of the following.

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