ONE SOURCE. ONE SOLUTION.

Grain Bin

Assembly Manual

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Inspection Upon Delivery

Upon arrival thoroughly check your shipment and ensure that it corresponds with the shipping statement Any discrepancies should be taken care of immediately. Report any damages or shortage of parts to the delivering carrier as soon as possible. Lambton Conveyor's responsibility to damaged equipment ends with your acceptance of the delivery. Save all paperwork and documentation.

Causes and Prevention of "White Rust"

Galvanized steel sheets and panels when nestled together can very quickly become stained by moisture trapped between them. Sometimes this can occur as rapidly as overnight. Moisture most frequently is trapped between bin body sheets and roof panels subjected to rain in un-tarped trucks or during storage in buildings subjected to high humidity or wide temperature variations causing excessive condensation.

To prevent "white rust" prior to erecting your bin, separate all sheets promptly on delivery and stand them on edge so that adequate airflow is allowed to flow between each sheet. If erection of the bin is not planned in the near future all bin sheets should be stored inside a dry building, preferably heated.

Should your bundled sheets or panels get rained on during delivery they should be wiped dry immediately upon arrival and a light coating of diesel oil should be applied. At the first indication of "white rust" wiping the area with kerosene will arrest the staining and perhaps restore the original appearance. Grey or dark stains associated with "white rust" will not progress into "red rust" once the bin is erected and will not affect the structural strength of the bin.

Damage Due to Moisture

Lambton Conveyor takes no responsibility for water markings, "white rust", stains or any other damage which may have occurred when packaged or nestled materials are exposed to excessive moisture. Such claims are properly charged by the owner against the carrier or against the persons allowing the materials to become wet due to rain, natural condensation, or other causes.

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Warranty

LAMBTON CONVEYOR LIMITED WARRANTS ALL PRODUCTS MANUFACTURED BY LAMBTON CONVEYOR TO BE FREE OF DEFECTS IN MATERIAL AND WORKMANSHIP UNDER NORMAL USAGE AND CONDITIONS FOR A PERIOD OF 2 YEARS AFTER RETAIL SALE TO THE ORIGINAL END USER OF SUCH PRODUCTS. LAMBTON CONVEYOR'S ONLY OBLIGATION IS, AND PURCHASER'S SOLE REMEDY SHALL BE FOR LAMBTON CONVEYOR, TO REPAIR OR REPLACE, AT LAMBTON CONVEYOR'S OPTION AND EXPENSE, PRODUCTS THAT, IN LAMBTON CONVEYOR'S SOLE JUDGMENT, CONTAIN A MATERIAL DEFECT DUE TO MATERIALS OR WORKMANSHIP. ALL DELIVERY AND SHIPMENT CHARGES TO AND FROM LAMBTON CONVEYOR FACTORY WILL BE PURCHASER'S RESPONSIBILITY. EXPENSES INCURRED BY OR ON BEHALF OF THE PURCHASER WITHOUT PRIOR WRITTEN AUTHORIZATION FROM AN EMPLOYEE OF LAMBTON CONVEYOR LIMITED SHALL BE THE SOLE RESPONSIBILITY OF THE PURCHASER.

EXCEPT FOR THE ABOVE STATED EXPRESS LIMITED WARRANTIES, LAMBTON CONVEYOR LIMITED MAKES NO WARRANTY OF ANY KIND, EXPRESSED OR IMPLIED, INCLUDING, WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY OF FITNESS FOR A PARTICULAR PURPOSE OR USE IN CONNECTION WITH (I) PRODUCT MANUFACTURED OR SOLD BY LAMBTON CONVEYOR LIMITED OR (ii) ANY ADVICE, INSTRUCTION, RECOMMENDATION OR SUGGESTION PROVIDED BY AN AGENT, REPRESENTATIVE OR EMPLOYEE OF LAMBTON CONVEYOR LIMITED REGARDING OR RELATED TO THE CONFIGURATION, INSTALLATION, LAYOUT, SUITABILITY FOR A PARTICULAR PURPOSE, OR DESIGN OF SUCH PRODUCT OR PRODUCTS.

IN NO EVENT SHALL LAMBTON CONVEYOR LIMITED BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING, WITHOUT LIMITATION, LOSS OF ANTICIPATED PROFITS OR BENEFITS. PURCHASER'S SOLE AND EXCLUSIVE REMEDY SHALL BE LIMITED TO THAT STATED ABOVE, WHICH SHALL NOT EXCEED THE AMOUNT PAID FOR THE PRODUCT PURCHASED. THIS WARRANTY IS NOT TRANSFERABLE AND APPLIES ONLY TO THE ORIGINAL PURCHASER. LAMBTON CONVEYOR LIMITED SHALL HAVE NO OBLIGATION OR RESPONSIBILITY FOR ANY REPRESENTATIVE OR WARRANTIES MADE BY OR ON BEHALF OF ANY DEALER, AGENT OR DISTRIBUTION OF LAMBTON CONVEYOR LIMITED.

LAMBTON CONVEYOR ASSUMES NO RESPONSIBILITY FOR FIELD MODIFICATIONS OR ERECTION DEFECTS, WHICH CREATE STRUCTURAL OR STORAGE QUALITY PROBLEMS. MODIFICATIONS TO THE PRODUCT NOT SPECIFICALLY COVERED BY THE CONTENTS OF THIS MANUAL WILL NULLIFY ANY PRODUCT WARRANTY THAT MIGHT HAVE BEEN OTHERWISE AVAILABLE.

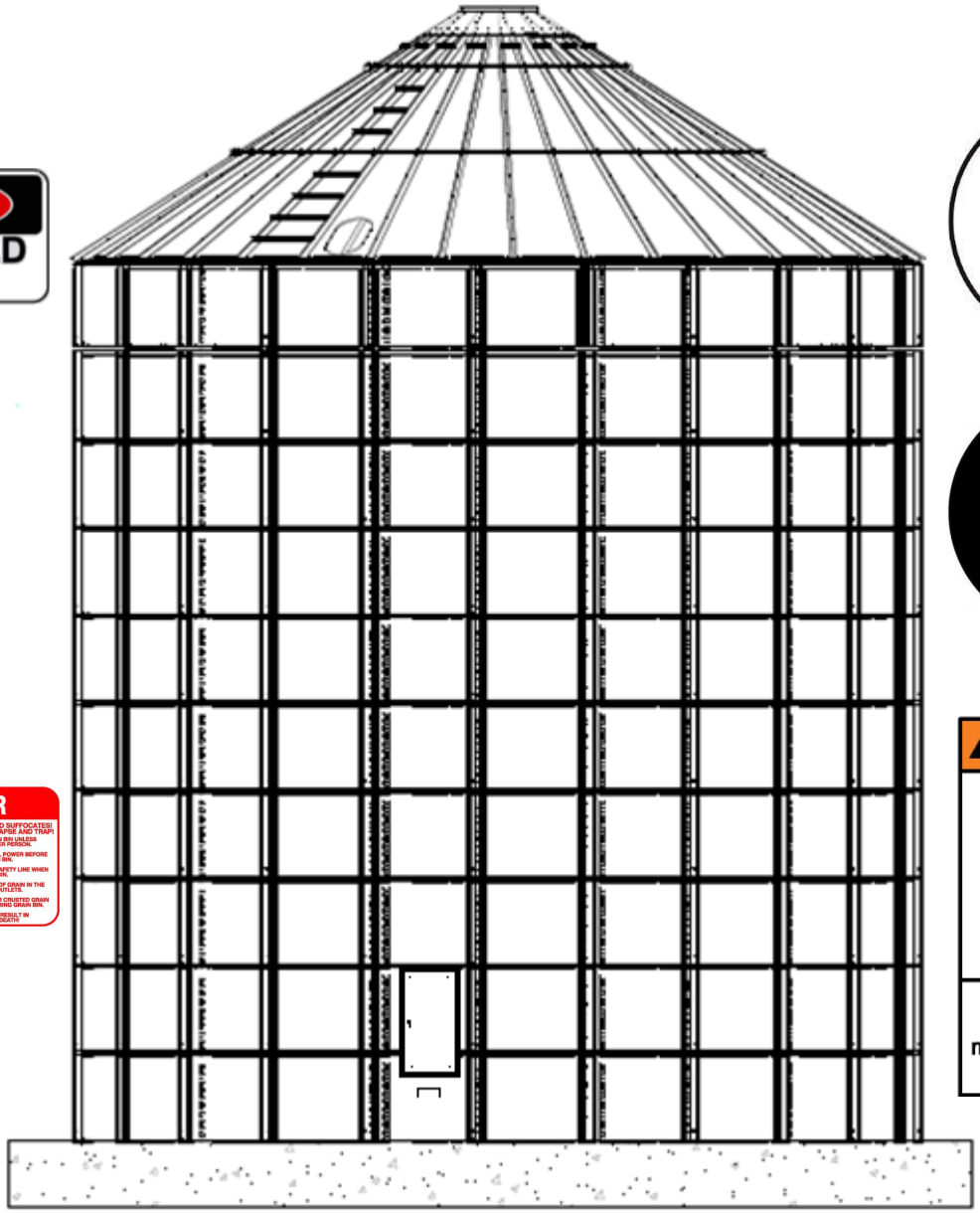
THE FOREGOING WARRANTY SHALL NOT COVER PRODUCTS OR PARTS, WHICH HAVE BEEN DAMAGED BY NEGLIGENT USE, MISUSE, ALTERNATION OR ACCIDENT. THIS WARRANTY COVERS ONLY PRODUCTS MANUFACTURED BY LAMBTON CONVEYOR LIMITED. THIS WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES EXPRESS OR IMPLIED. LAMBTON CONVEYOR LIMITED RESERVES THE RIGHT TO MAKE DESIGN OR SPECIFICATION CHANGES AT ANY TIME.

PRIOR TO INSTALLATION, PURCHASER HAS THE RESPONSIBILITY TO RESEARCH AND COMPLY WITH ALL FEDERAL, PROVINCIAL AND LOCAL CODES WHICH MAY APPLY TO THE LOCATION AND INSTALLATION.

ROOF DAMAGE WARNING AND DISCLAIMER

LAMBTON CONVEYOR LIMITED DOES NOT WARRANT ANY ROOF DAMAGE CAUSED BY EXCESSIVE VACUUM OR INTERNAL PRESSURE FROM FANS OR OTHER AIR MOVING SYSTEMS. ADEQUATE VENTILATION AND/OR "MAKE-UP AIR" DEVICES SHOULD BE PROVIDED FOR ALL POWERED AIR HANDLING SYSTEMS. LAMBTON CONVEYOR LIMITED DOES NOT RECOMMEND THE USE OF DOWNWARD FLOW SYSTEMS (SUCTION). SEVERE ROOF DAMAGE CAN RESULT FROM ANY BLOCKAGE OF AIR PASSAGES. RUNNING FANS DURING HIGH HUMIDITY/COLD WEATHER CONDITIONS CAN CAUSE AIR EXHAUST OR INTAKE PORTS TO FREEZE.

Grain Bin Safety



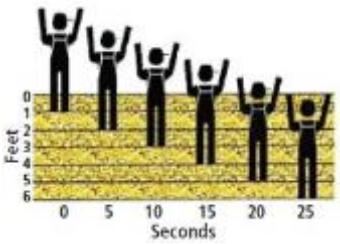
General Safety Warning

SAFETY Warning: Flowing Grain is Dangerous

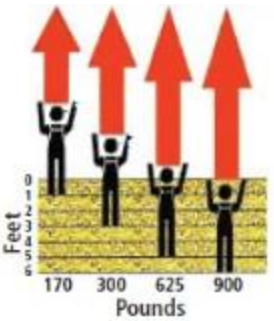
Never enter a grain bin or other grain storage area while the grain is flowing. Flowing grain will exert forces against the body great enough to pull the average size person under the grain in only a few seconds, leading to death by suffocation.

How Does it Happen?

How Fast Does It Happen?



What Does it Take to Pull out a 165lb. Person?



It is the owner's / operator's responsibility to inform operators and persons working in the area of the many dangers associated with grain bins, silos, and trucks. All unauthorized personnel should be kept clear of any potentially dangerous situations.

Silo & bin openings should be secured to prevent casual entry, all warnings stickers should be in place, and all external ladders should start above child height.

Keep clear when opening grain outlets on trucks and Grain Bins. Trucks should have mechanisms for opening gates from either side.

Don't treat going into a Grain Bin lightly.

Entrapment and toxic atmospheres are real possibilities. Don't go in if you can do the job from outside, particularly when dislodging hang-ups or breaking down bridged or crusted grain.

If you have to go into a grain bin, make sure no grain can possibly be filled into the bin or emptied out of it by any normal operation or by any error ensure all equipment is locked out. Ventilate the bin and measure the composition of the atmosphere, particularly if it has been sealed for insect control. Check especially for carbon dioxide, fumigants and lack of oxygen. Ventilate further if necessary, and re-measure any contaminants until you know the atmosphere is safe to breathe. Make sure you have a safe way of getting into and out of the bin. It is advisable to wear a safety harness. Post someone at the opening to watch you and to summon help if you get into difficulties. The watcher must not enter because you could both be trapped. The watcher will also need help to pull you out.

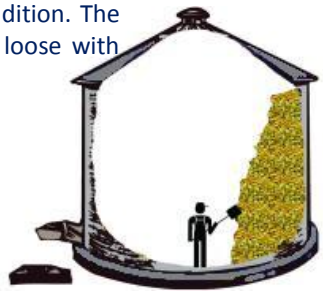
Make sure you stay on the ladder above the level of any compacted grain in a bin before dislodging it. Keep a safe distance from any grain that is capable of flowing.

Safety Instruction

Bridging & Collapsed Grain

Spoiled grain tends to clump together and grain that is stored in cold temperatures can appear to have a solid surface while, in reality, it may collapse if walked upon. Be aware of a potential engulfment hazard when walking on surface crust. Never enter a bin unless you know the nature of previous grain removal, especially if any crusting is evident and proper safety precautions have been taken. **After grain has been removed, look for a funnel shape at surface of grain mass. If grain appears to be undisturbed, then it has bridged and created a cavity.**

Grain can form in a large mass against wall, when it has been stored improperly or in poor condition. The mass of grain can cause engulfment or crushing hazards to workers who attempt to break it loose with shovels or other objects.



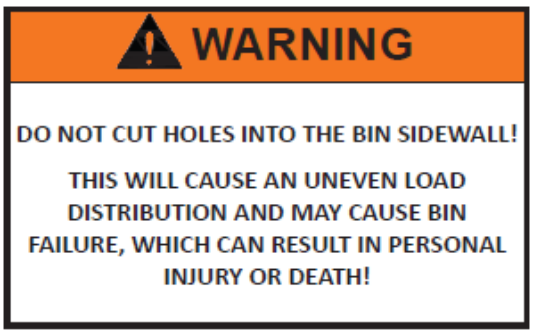
This risk increases as the capacity of bins increase. A person lying prone and covered by one (1) foot of grain will be subjected to a force of more than 300 lbs. Be alert while working with grain that has gone out of condition. Entering a bin when there may be molds, blocked flow, cavities, crusting, and possible cave-ins can cost you your life. When you are breaking up large masses of vertically crusted grain, do so with a long wooden pole from manhole above grain.

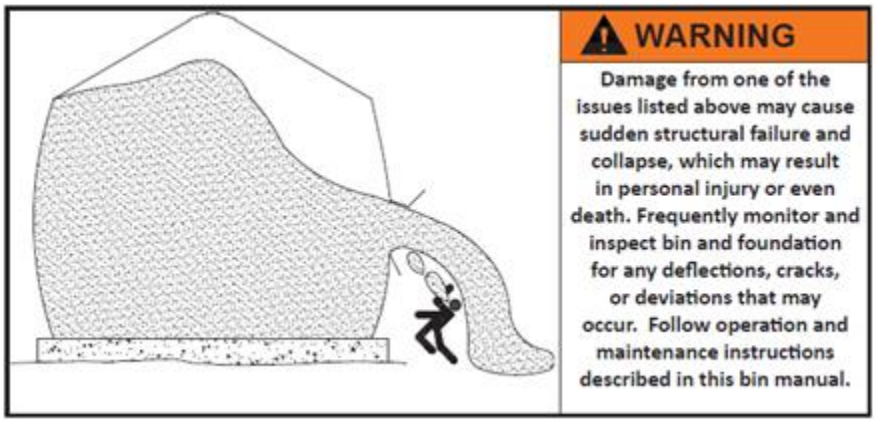
Bridging Grain

Bridging grain may create air spaces in a partially unloaded bin, see Figure 3. As grain is removed from a bin, a cavity develops under the crusted surface. This situation presents several dangers. First, the person may break through the surface and be trapped instantly in the flowing grain. Another danger is that a large void may be created under the bridge by previous unloading so that a person who breaks through the crust may be buried under grain and suffocate, even without an auger running. The third hazard is that, if grain is wet enough to mold and bridge across bin, there may be little oxygen present in the cavity due to microbial gases. A person falling into a cavity will be forced to breathe toxic gases, even though his head is above surrounding grain. From outside the bin, use a pole or other object to break bridge, causing it to collapse.

Top Causes of Bin Failure

- Off-center (eccentric) unloading and/or loading
- Non free-flowing grain (spoiled, frozen, crusted, etc.)
- Door panels not tightly secured against inner door frame
- Augers, spouts, or conveyors improperly attached to roof
- Side draw improperly installed and/or operated
- Rusted wall sheets
- Simultaneous loading and unloading
- Settling of foundation (uneven pad)
- Improper storage and aeration
- Storing wet and dry grain in the same bin without stirring
- Neglect of bin maintenance
- Modifications made during installation or assembly
- Incorrectly installed sidewall sheets and/or stiffeners
- Blocked roof vents cause excessive pressures on roof (overfilling, frosted vents, etc.)
- Improper temperature cable support and/or placement





Falls & Obstructions

Falls from grain bins at any height can cause injury. Ladders on bins can become very slippery or icy in inclement weather. Maintain a secure hand-hold and foothold when climbing on the bin. Metal is slippery when wet. Never carry items while climbing on bins. Also, be certain no obstacles are in front of ladder.

Slippery metal, broken or loose ladder rungs and loose hand-holds can be very dangerous. Repair loose ladder rungs and hand-holds as soon as they are discovered. Follow maintenance guidelines listed at the back of the operation manual to prevent serious injury.

Make sure there are no obstructions near ladder rungs which could cause a fall.

When ladders are used to ascend heights exceeding 20', the American Society of Agricultural and Biological Engineers (ASABE) standards state that landing platforms shall be provided at each 30' of height. Center of the outside ladder must be at least 7" from sidewall.

NOTE: Failure to purchase ladder and safety cages and use of fall restraints and arrest systems correctly may cause serious injury or even death. Contact your dealer if proper ladder and accessories are not installed.

Fall Restraints & Arrest Systems

When working on a bin at a height where fall hazards exist, always use a fall restraint or fall arrest system. Inspect fall restraint and arrest components before each use for wear, damage and other deterioration. Remove defective components from service according to manufacturer instructions. Failure to heed this warning may cause serious injury or death.

A **fall restraint system** consists of a body belt or harness, lanyard and anchor. The system is arranged so the individual is prevented from falling. Fall restraint systems should be used in accordance with manufacturer's recommendations and instructions.

A **fall arrest system** consists of a harness, lanyard and anchor. The system exposes a worker to a fall, but stops the fall within specified parameters. Fall arrest systems should be used in accordance with manufacturer's recommendations and instructions.

Lifelines and safety harnesses are used with both systems. A lifeline is a component consisting of a flexible line (rope or cable) for connection to an anchorage at one end to hang vertically (vertical lifeline), or for connection to anchorages at both ends to stretch horizontally (horizontal lifeline). Lifelines also serve as a means for connecting other components of a fall protection system. A safety harness has straps that wrap around an individual in a manner that will distribute the fall arrest forces over thighs, pelvis, waist, chest, and shoulders with a means of attaching it to other components of a fall protection system. Follow manufacturer's instructions when using a lifeline and safety harness.

Individuals who enter a grain storage structure from a level at or above stored grain should be equipped with a lifeline and harness. When entering any bin or storage unit, have multiple people outside and one inside. A single person cannot go for help and give first aid simultaneously.

Connections outside the bin on the roof should be made to the peak ring. Lifelines should not let an individual extend past the eaves of the roof. If work needs to be done on portions of the sidewall, proper equipment such as lifts or cranes should be used. When working inside the bin, appropriate connections should be made to the rafters, peak ring or sidewall.

Sharp Edges & Obstacles

When working on or near a bin, remember that metal edges are sharp. Care must be taken when handling or working near various pieces of the grain bin. To avoid injuries, wear protective clothing and handle equipment and parts with care. An excellent safety practice is to keep the bin sites clear of scrap iron and other foreign materials that may get covered up by snow or tall grass.
Any item or debris left near bin site will interfere with safe, unobstructed movement around the bin.

Be aware of trucks, tractors, wagons, augers, hoppers and pits, etc. Never allow anyone to ride on trucks equipped with grain beds or gravity dump wagons. Keep children off of grain vehicles and out of bins while loading and unloading. Always know where all employees or family members are (especially children) at all times when grain is being loaded, unloaded, moved, or otherwise handled.

Entering a Grain Bin

Individuals should never enter a grain bin while the bin is being loaded or unloaded. This involves a risk of being crushed or suffocated by flowing grain. Entering a bin that has bridged grain is very dangerous. Working in grain bins without following proper operational procedures increases an individual's chance of being suffocated. If stored grain is peaked close to the roof, be extremely cautious. Crawling between the roof and the peaked grain can cause grain to cave and block the exit.

When entering a bin, owners/operators are responsible for following site-specific confined space entry procedures. OSHA's confined space entry procedures (29CFR 1910.146) can be obtained at www.osha.gov.

Lock-Out/Tag-Out

Lock Out/Tag Out refers to specific practices and procedures to safeguard unexpected energizing or startup of machinery and equipment, or release of hazardous energy during service or maintenance activities. This requires, in part, that an authorized individual isolate machinery or equipment from its energy source(s) before performing service or maintenance. It also requires authorized individual(s) to either lock or tag energy-isolating device(s) to prevent release of hazardous energy, and take steps to verify energy has been isolated effectively.

Grain storage structures and handling equipment may create hazardous work areas. Individuals should make sure they take proper steps to prevent injuries, illness, or even death. Be certain proper lockout/tag-out procedures are followed before performing any service on equipment or entering bin.

Lock-Out refers to a device that uses a lock, either key or combination type, to hold an energizing isolating device in a safe position and prevent energizing of a machine or equipment. This device ensures that equipment being controlled cannot be operated until the lockout device is removed. Tags must be used with all locking devices. Tags should be affixed in such a manner that clearly identifies the individual servicing the equipment.

Tag-Out refers to placement of a tag on a device that is not capable of being locked out, to indicate equipment may not be operated until tag device is removed. These tags are singularly identified with the individual applying the device and servicing the equipment. These tags **do not** provide physical restraint on those devices that require a restraint.

Owners/Operators are responsible for developing site-specific Lock Out/Tag Out procedures based on equipment, conditions, and situations at their individual locations. OSHA's Lock Out/Tag Out procedures (29CFR 1910.147) can be obtained at www.osha.gov.

Ventilation

When entering an inadequately ventilated area, individuals may be at risk of being overcome by respiratory hazards (gases, fumes and dust) that can cause permanent lung damage or even death. Working in grain bins without proper respiratory protection increases a person's chance of developing a respiratory disease.

Owners/Operators are responsible for developing site-specific personal protective equipment standards. OSHA's personal protective equipment standards (29CFR1910.134) can be obtained at www.osha.gov.

Moving Parts

When the bin is nearly empty, the sweep (floor) augers travel at faster speeds around the bin. The danger of the auger lies with how the auger works to move the grain. If caught in the rotating shaft, a body part can be pulled along with the grain, cutting and tearing the flesh. Also, remember that an exposed auger in the sumps can cause serious injury if stepped or fallen into. All shields should be in place to prevent body parts from getting caught.

NEVER ENTER A BIN WHEN IT IS BEING LOADED OR UNLOADED!

In order to help prevent any tragedy, **SAFETY SHOULD BE THE TOP PRIORITY**. Preparation is the first and most important step. Failure to follow the precautions listed below may cause serious injury or even death.

• Keep hands, feet and clothing away from moving parts. Loose clothing can become entangled in rotating parts and cause serious injury or death.

• Guards and shields are provided for your protection. Make sure they are all secure and in place while the machine is in operation.

• Replace safety shields that may have been damaged or removed for servicing purposes and fasten securely.

• Be sure to wear tight-fitting clothing when working near a grain auger. Loose, floppy clothing, long shoestrings and drawstrings on hooded jackets can easily become entangled in rotating parts. Entangled clothing will pull the body into moving machinery and severe injury or death will result.

• Limit the number of people around augers when in use. Only those who are essential to the job should be there.

• Watch children closely. Keep them away from vehicles, flowing grain, and moving parts. Small hands and feet can penetrate even properly shielded augers, belts, and PTO's. Teach them which areas are safe and which are not.

• Be certain all machinery is in good working condition

Construction Safety

To avoid serious injury or even death, it is important that the owner/operator becomes knowledgeable of operational procedures of a grain bin. Carefully review detailed information presented in this grain bin operation manual. Following proper operational procedures will not only ensure safety of owner/operator, but will give many years of extended service from the product.

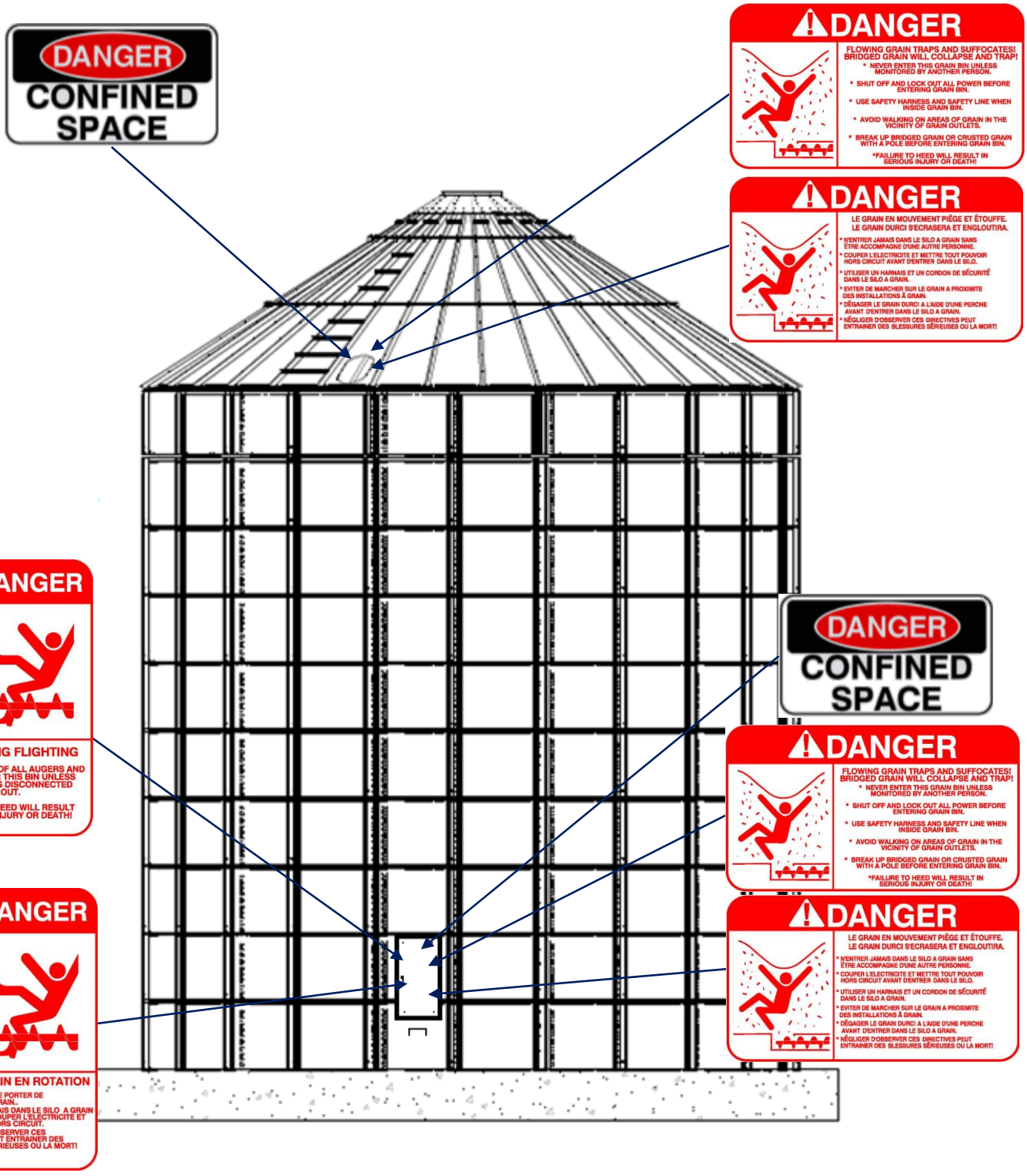
On grain bin construction sites, carelessness and/or operator error may result in serious injury or even death. Hazard control and accident prevention are dependent upon awareness, cautiousness, and proper training of personnel involved in construction of the product. Be certain all crew members are properly trained and thoroughly familiar with all aspects of grain bin construction.

Listed below are items construction crew members should be knowledgeable of to minimize risk of injury to personnel and damage to equipment.
Note: the following items are examples taken from a broad list of OSHA's Safety and Health Regulations for Construction. Generally, these are common requirements/items necessary on grain bin construction sites.

- **Personal Protective Equipment**
  - Head Protection
  - Hearing Protection
  - Eye and Face Protection
  - Steel Toed Boots/Shoes
  - Gloves
  - Breathing Protection
- **Concrete Construction**
- **Material Handling & Storage**
- **Tools – Hand and Power**
- **Welding and Cutting**
- **Electrical**
- **Ladders**
- **Scaffolds and Working Platforms**
- **Fall Protection**
- **Steel Erection**
  - Center Pole (Roof) Jack*
  - Bin Jacks*
- **Powered Equipment**
  - Trenchers
  - Forklifts
  - Skidsteers
  - Telehandlers
  - Boom Lifts
- **Cranes and Hoists**
- **Signs and Signals for Use of Powered Equipment**

***NOTE:** Be certain to read and fully understand correct operating procedures for bin jacking equipment. This equipment is provided with the understanding that the purchaser/operator are thoroughly familiar with correct applications and proper usage techniques. Jack manufacturers will assume no responsibility for damage to equipment or any injury resulting from operation of their equipment.

When constructing a grain bin, erectors/contractors are responsible for developing site-specific construction guidelines and procedures based on equipment, conditions and situations at their individual location. OSHA's Safety and Health Regulations for Construction (29CFR1926) can be obtained at www.osha.gov.


DANGER
CONFINED SPACE
DANGER
FLOWING GRAIN TRAPS AND SUFFOCATES! BRIDGED GRAIN WILL COLLAPSE AND TRAP!
* NEVER ENTER THIS GRAIN BIN UNLESS MONITORED BY ANOTHER PERSON.
* SHUT OFF AND LOCK OUT ALL POWER BEFORE ENTERING GRAIN BIN.
* USE SAFETY HARNESS AND SAFETY LINE WHEN INSIDE GRAIN BIN.
* AVOID WALKING ON AREAS OF GRAIN IN THE VICINITY OF GRAIN OUTLETS.
* BREAK UP BRIDGED GRAIN OR CRUSTED GRAIN WITH A POLE BEFORE ENTERING GRAIN BIN.
*FAILURE TO HEED WILL RESULT IN SERIOUS INJURY OR DEATH!
DANGER
LE GRAIN EN MOUVEMENT PIÈGE ET ÉTOUFFE. LE GRAIN DURCI S'ECRASERA ET ENGLOUTIRA.
* N'ENTRER JAMAIS DANS LE SILO A GRAIN SANS ÊTRE ACCOMPAGNÉ D'UNE AUTRE PERSONNE.
* COUPER L'ELECTRICITE ET METTRE TOUT POUVOIR HORS CIRCUIT AVANT D'ENTRER DANS LE SILO.
* UTILISER UN HARNAIS ET UN CORDON DE SÉCURITÉ DANS LE SILO A GRAIN.
* EVITER DE MARCHER SUR LE GRAIN A PROXIMITE DES INSTALLATIONS À GRAIN.
* DÉGAGER LE GRAIN DURCI A L'AIDE D'UNE PERCHE AVANT D'ENTRER DANS LE SILO A GRAIN.
* NÉGLIGER D'OBSERVER CES DIRECTIVES PEUT ENTRAINER DES BLESSURES SÉRIEUSES OU LA MORT!
DANGER
ROTATING FLIGHTING
KEEP CLEAR OF ALL AUGERS AND NEVER ENTER THIS BIN UNLESS ALL POWER IS DISCONNECTED AND LOCKED OUT.
FAILURE TO HEED WILL RESULT IN SERIOUS INJURY OR DEATH!
DANGER
VIS A GRAIN EN ROTATION
-RESTER HORS DE PORTER DE TOUTES VIS A GRAIN.
-N'ENTRER JAMAIS DANS LE SILO A GRAIN SANS AVOIR COUPER L'ELECTRICITE ET L'AVOIR MIS HORS CIRCUIT.
-N'EGLIGER D'OBSERVER CES DIRECTIVES PEUT ENTRAINER DES BLESSURES SERIEUSES OU LA MORT!
DANGER
CONFINED SPACE
DANGER
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DANGER
LE GRAIN EN MOUVEMENT PIÈGE ET ÉTOUFFE. LE GRAIN DURCI S'ECRASERA ET ENGLOUTIRA.
* N'ENTRER JAMAIS DANS LE SILO A GRAIN SANS ÊTRE ACCOMPAGNÉ D'UNE AUTRE PERSONNE.
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* NÉGLIGER D'OBSERVER CES DIRECTIVES PEUT ENTRAINER DES BLESSURES SÉRIEUSES OU LA MORT!

Grain Bin Operation Loading and Unloading

WARNING

OBSERVE ALL SAFETY PRECAUTIONS IN THIS MANUAL!

WARNING

Do not enter this bin while it is being loaded or unloaded!

Initial Fill Of The Bin

Inspection Checklist Before First Operational Use

- Bin has been properly anchored to foundation.
- All bolts are in place and properly tightened.
- All guards and shields are in place. Safety decals are legible and in correct locations.
- Ladders, handrails, platforms, stair and steps are securely in place.
- The unloading equipment and unload gates function correctly and are closed.
- The working areas surrounding the bin are clean and clear of clutter.
- Check electrical performance and install lockouts (if needed) on equipment.
- Any temperature cables, if used, must be fastened to floor according to the manufacturer's recommendation to prevent displacement during filling.
- Know who or where to call for immediate help in case of an emergency or injury.

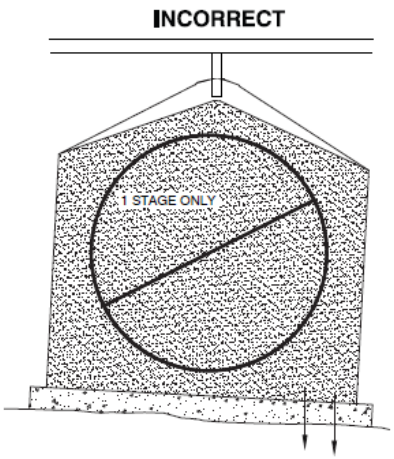
On larger bins, filling in several stages as described below, is required to prevent uneven settlement. These instructions are general guidelines. Follow the civil engineer's instructions on initial filling.

IMPORTANT COMMERCIAL BIN INFORMATION:

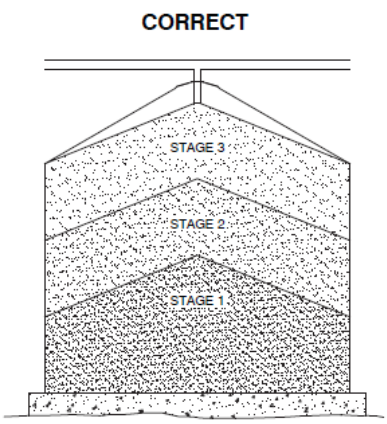
Lambton Conveyor requires stage loading to prevent excessive uneven differential settlement after first initial fill. It Is recommended that for first stage, the grain bin be filled to 1/3 of eave height. It would then take 10 days for desired consolidation to occur. For the second stage it is recommended that the grain bin be filled to 2/3 of eave height. It would then take another 10 days for the desired consolidation to occur. Then the final 1/3 may be filled. See images below

IMPORTANT FARM BIN INFORMATION:

If the eave height is greater than bin diameter, the bin should be filled in two stages. The first stage should be to the height of the bin's diameter. Take 10 days for consolidation to occur, and then continue to fill the rest of the bin. If the height is not greater than the bin diameter, the initial fill can be completed in a 24-hour period.



Filling taller larger bins with 1 stage only may cause uneven soil bearing pressures and off-centered settlement of bin.



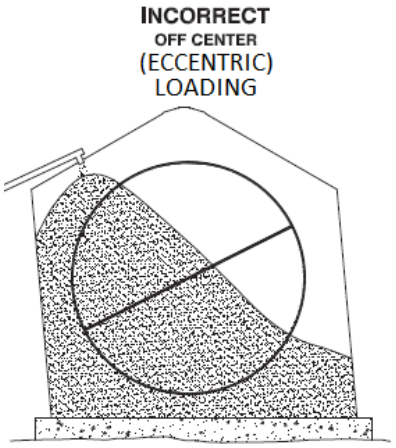
Filling taller larger bins in multiple stages will allow proper settlement.

Grain Bin Operation Loading and Unloading

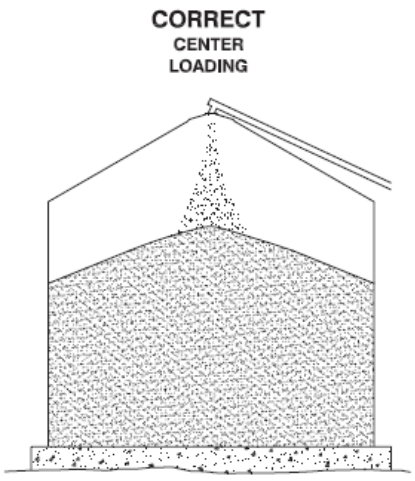
Loading The Bin

CHECKLIST FOR FILLING THE BIN

- Check that the bin has been cleaned after the last filling.
- Check that unloading equipment is functioning correctly.
- Close all intermediate gates.
- Place power sweep auger, if equipped, over intermediate sumps.
- If temperature cables are used, attach them to the floor as specified by the manufacturer's recommendations.
- Make certain that everyone is out of the bin before filling the bin
- Shut the sidewall door(s) properly. The inner door panels must be closed, sealed, and latched.
- Fill only through center peak ring.
- Know the maximum capacity of your bin. Overfilling may cause bin failure. Use spout /chute lengths to prevent overfilling.
- Grain must be center filled and not allowed to be pushed horizontally to one side of the bin or filled off center See Images to the right
- Continue to fill the bin to the desired level based on its use.
- Fill to the roof eave level.



Off center (eccentric) loading on sidewalls can cause an excessive moment at the base of the bin which can result in the bin leaning or tipping and/or sidewall stiffener buckling



Lambton Grain Bins must be loaded through the center of the roof cap to have evenly distributed grain inside the bin

Grain Bin Operation Loading and Unloading

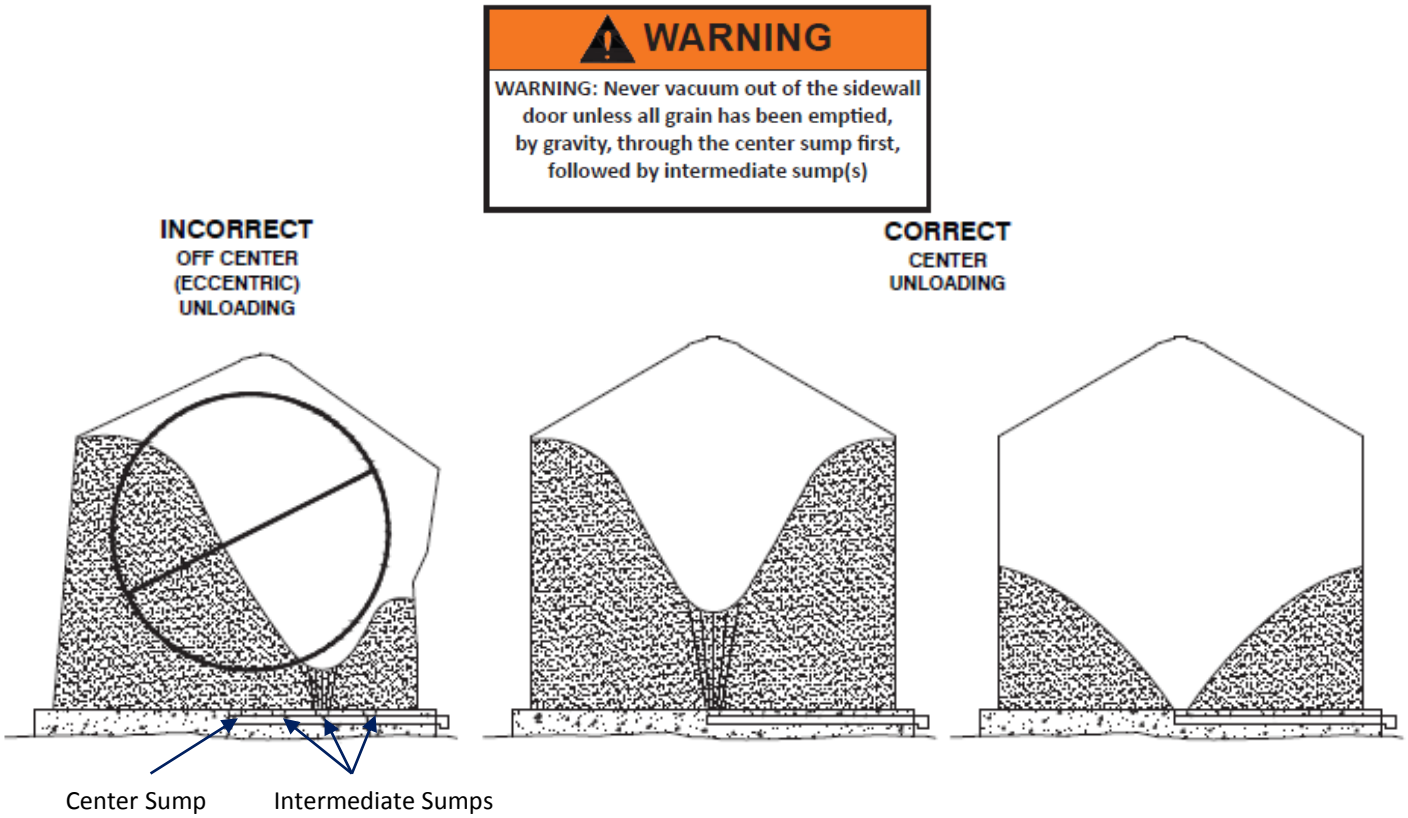
Unloading The Bin

To maintain uniform loads on the sidewalls, grain must be unloaded from the center of the bin. The center sump must be opened first. Intermediate sump(s) must not be used until all grain is completely emptied through the center sump See image below

IMPORTANT: DO NOT Simultaneously Fill and Discharge. Simultaneous filling and unloading results in grain behaving more like a fluid than granular material. Increased fluidic behavior of grain can cause increased sidewall loads. Service life of the bin can be drastically reduced and risk of structural failure, economic loss and personnel injury will increase by simultaneously loading and unloading.

Do not empty the bin through sidewall door or cut a hole in the bin sidewall. This will cause uneven load distribution and excessive down pressure that may result in grain bin failure.

Make certain there are adequate vents installed on the bin to prevent a vacuum from forming in the upper portion of the bin during unloading. The pressures on the roof caused by such a vacuum could damage or cause structural failure to the grain bin roof.



Off Center (eccentric) unloading at floor or wall can cause excessive down pressure and can result in sidewall buckling.

Lambton Grain Bins must be unloaded through the center sump until all grain has emptied through this sump. Then, and only then, can auxiliary sumps be utilized.

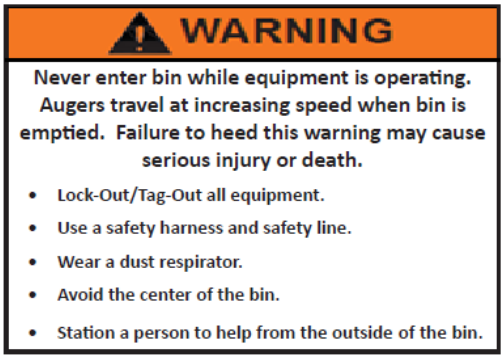
Grain Bin Operation Loading and Unloading

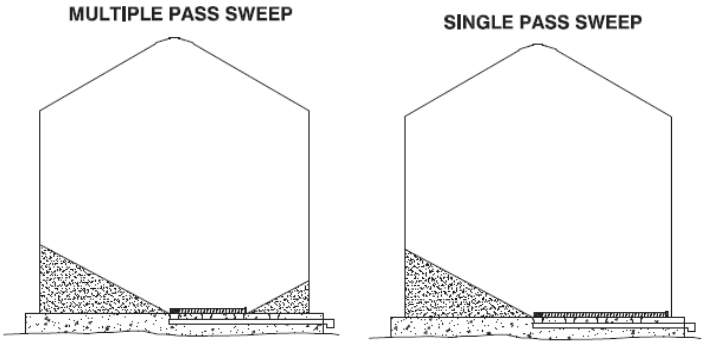
Sweeping The Bin

When inside the grain bin, performing cleaning or maintenance, perform LOCK-OUT and TAG-OUT procedures to disengage power to all unloading equipment power and to prevent reenergizing. **NEVER enter a bin when unloading equipment is operating, as you may become entangled in the sweep or the unloading auger! Failure to heed this warning may result in serious personal injury or death!**

STEPS TO SWEEPING THE BIN

- Be certain that no bridged grain or vertical crusting is evident.
- Start to sweep the bin after all grain has flowed by gravity through center and intermediate sumps.
- If you have a multiple-pass sweep auger, lock out the inner sweep system before adding the outer sweep section See image to the right. Have another person present.
- If the sweep auger fails to operate, call the sweep auger manufacturer.
- Return the sweep to original position over intermediate sump gates.



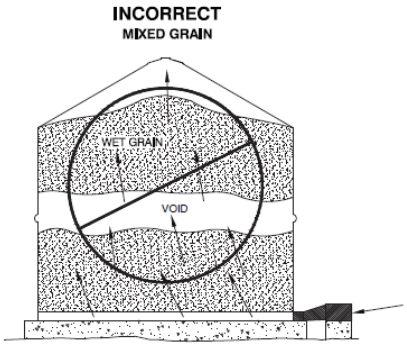


Material Stored

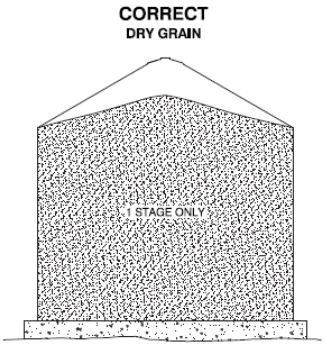
Storage bins are designed to store only dry, free-flowing grain, with a density of up to 52 lbs/ft3, and that has been cooled. **Do not put grain exceeding 16% moisture in a storage bin.** Only drying bins using a stirring machine can hold a mix of wet and dry grain for a limited amount of time. **Note:** Buckling of sidewall sheets can occur due to grain on the bottom of the bin drying and shrinking. This allows wet grain above to be supported only by the bin sidewall. Failure generally develops in the area of drying front

Do not mix quantities of wet grain with dried grain unless it's in a bin with an operating stirring machine. Partially dried grain shrinks and causes voids. Sidewall and stiffeners can buckle under immense pressure. Standard storage bins are not designed for storage of high-moisture grains.

High moisture grain **(over 15-16%)** will go out of condition quickly. Grain that is out of condition can spoil and will not flow freely and may cause other problems. Only bins designed for drying may hold high moisture grain for a short period of time. Lambton Conveyor grain bins are not designed to hold wet grain for long periods of time.



Grain partially dried, shrinks and causes a void. Buckling can occur within the sidewalls and stiffeners

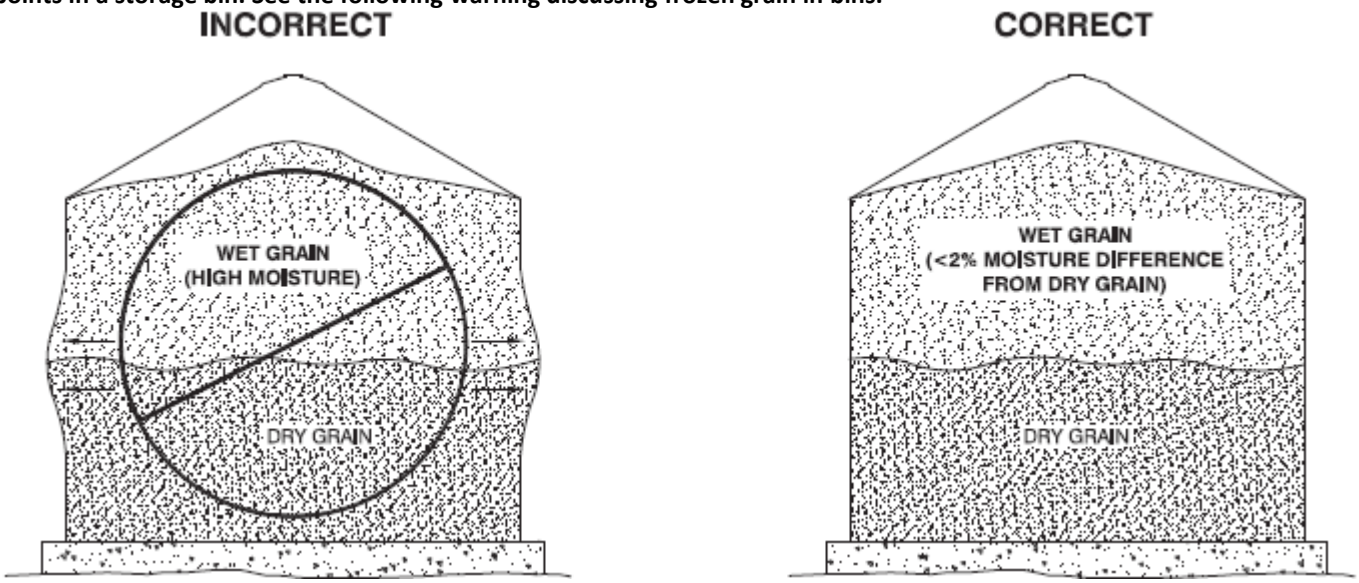


Lambton Conveyor Grain bins are designed to store dry, free-flowing grain with a density of up to 52 lbs/ft^3. They are not designed for storage of high moisture grain.

Grain Bin Operation Material Storage

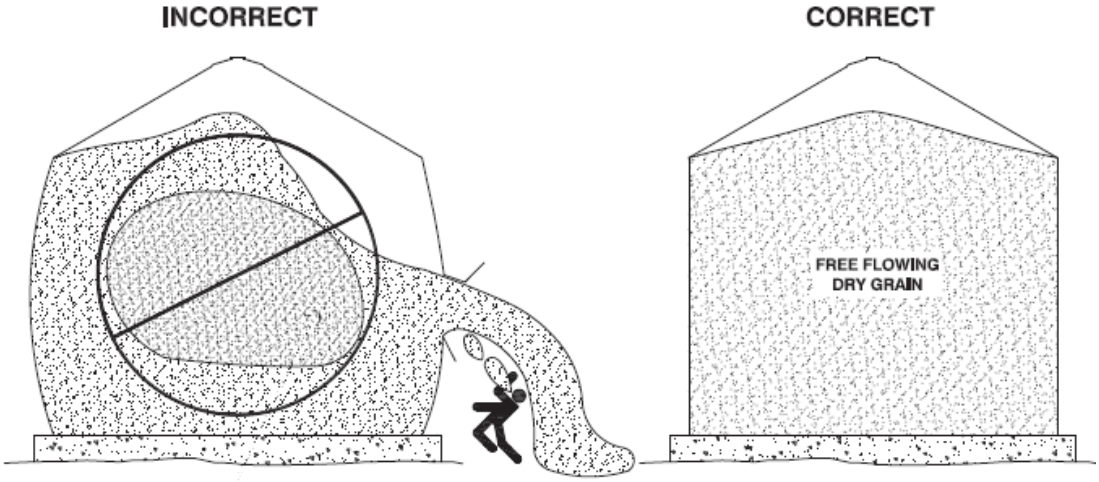
Material Stored

To guard against excess sidewall loads caused by grain kernel expansion, **grain bins must be managed to prevent grain moisture from increasing above 16% during storage. In addition, do not have grain moisture content variations of more than 2 moisture points in a storage bin. See the following warning discussing frozen grain in bins.**



Grain Expansion

DO NOT FREEZE GRAIN due to problems it can create, particularly during warming in larger bins. Condensation during aeration can be a problem in grain cooled below freezing. It will be difficult to warm grain in the spring without condensation forming and freezing into ice. Frozen chunks block aeration warming cycles and grain unloading. **Condensation also re-wets grain and can cause sudden bin failure and collapse due to expansion of kernels.** If grain does freeze, begin thawing it once the average outdoor temperature is 10° to 15° degrees F (6° to 8°C) above grain temperature. Follow steps outlined in segment below. **Failure to follow instructions for thawing frozen grain may result in sudden bin collapse and failure**



FROZEN GRAIN MASS

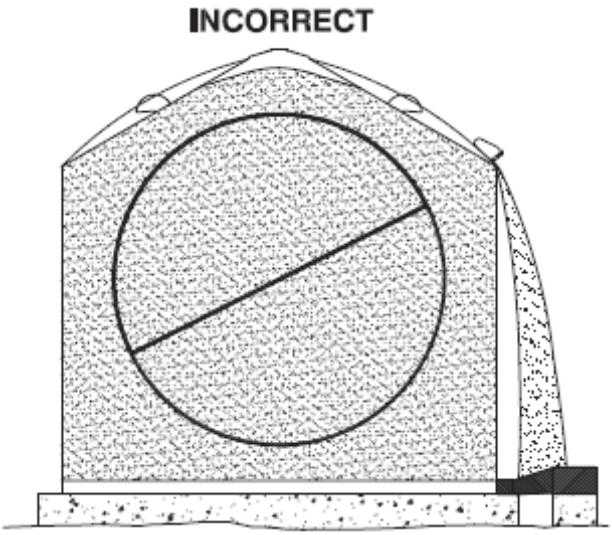
WARNING

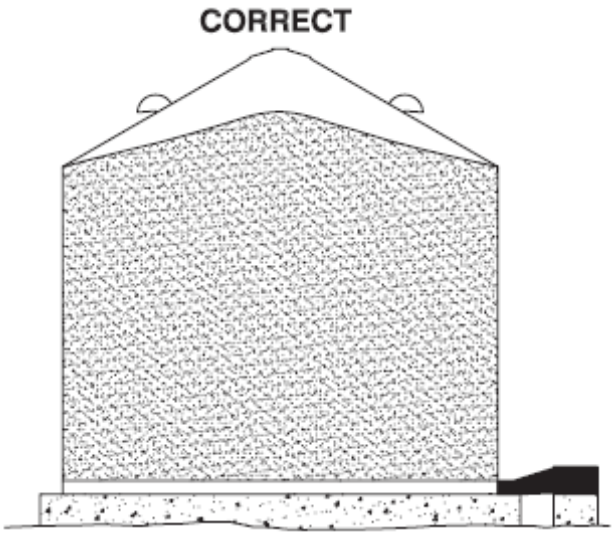
Damage from frozen grain may cause sudden structural failure and collapse, which may result in personal injury or even death. Frequently monitor and inspect bin. Follow operation and maintenance instructions described in this bin manual.

Grain Bin Operation Material Storage

Managing Grain in Spring and Summer – Start the fan when the average outdoor temperature is within 10° to 15° F (6° to 8° C) above the grain temperature. Once the warm-up cycle is started, do not turn the fan off. Stopping the warming front before a cycle is completed encourages condensation of moisture and spoilage. As outside temperatures continue to warm, repeat this cycle as often as needed until average grain temperature is 50° to 60° F (10° to 16° C). **Maintain the grain temperature within 15° F (8° C) of the average monthly temp.** Do not warm the grain to summer temperatures above 60° F (16° C) in the southern U.S. or 50° F (10° C) in the northern U.S. due to insect infestation and other storage issues. In some instances it may be desirable to fumigate the stored grain. Consult your local extension service for proper and safe fumigation techniques.

Filling grain up against roof sheets may cause the roof to expand outward and fail. Opening a roof door when the bin is overfilled will cause grain to spill out, possibly resulting in someone being caught in grain flow. Check for overfilling by tapping against roof door cover before opening. A hollow sound means it's acceptable to open the door. A solid sound means grain is against it. **DO NOT OPEN roof door when there is grain against it.** Unload the bin to get grain away from the roof. Be certain ladder cages and platform handrails are in place and correctly installed. See the Spout/Chute Lengths section of this manual.



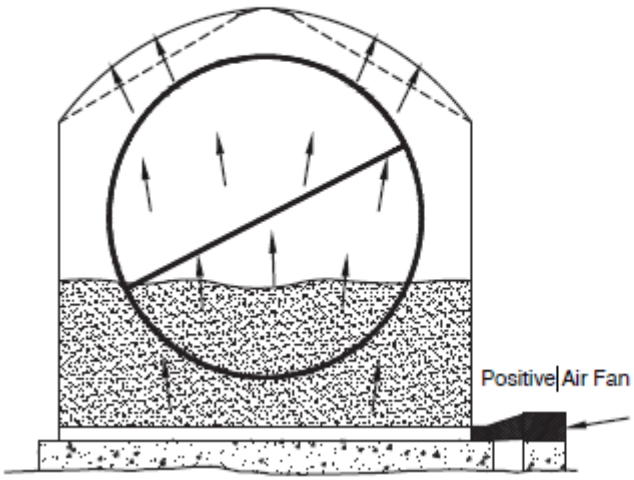


Grain Bin Operation Air Flow

Ventilation

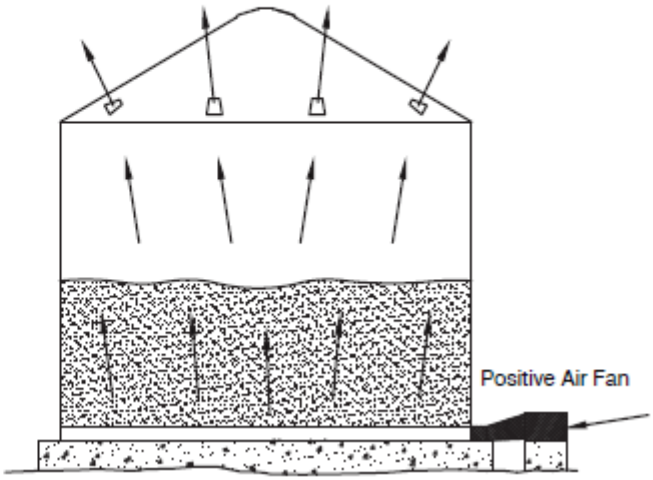
Grain bin roofs are not designed to withstand excessive air pressure differentials. General ventilation recommendations are 1 ft^2 (0.093 m^2) of vent area for every 1,000 cfm (28.3 m^3 /min). Maximum recommended pressure differential in the roof area is 1" w.c. (water column) Be alert to the possibility of frost build-up on air passage screens to a point of complete blockage.

INCORRECT
Failure to open roof vents when the fan is turned on



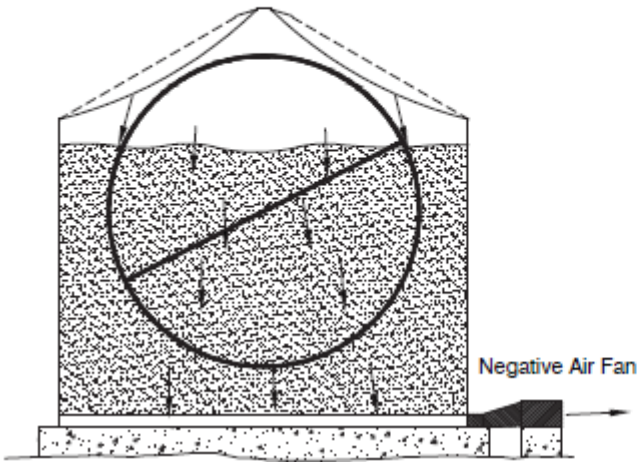
When internal air pressure is higher than the outside air pressure then the grain bin roof may possibly dome

CORRECT
All roof vents are open



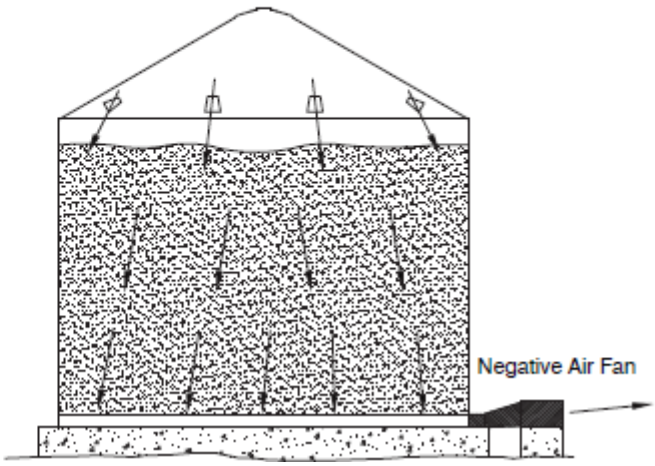
Lambton Conveyor Grain Bin with an adequate area of roof ventilation

INCORRECT
Failure to have adequate roof vents for air inlet



When internal air pressure is lower than the outside air pressure then the grain bin roof may possibly cave in.

CORRECT
Adequate roof vents for air inlet

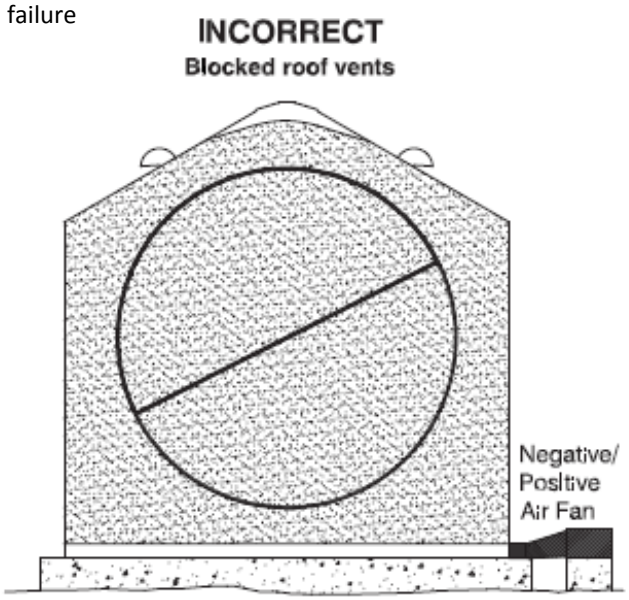


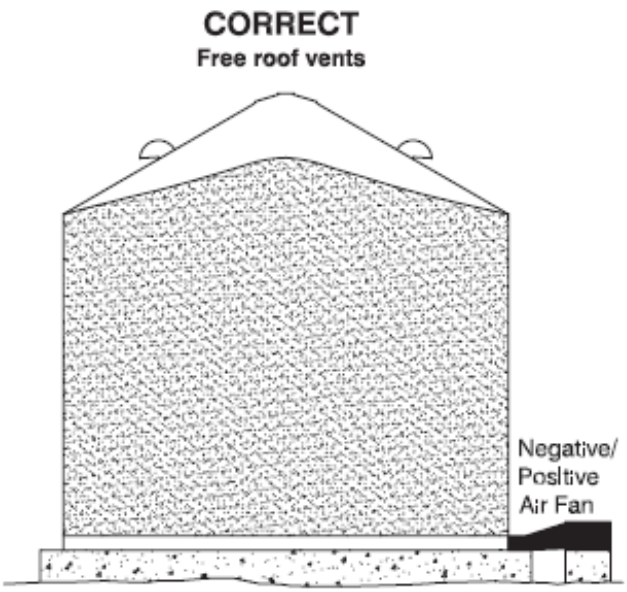
Lambton Conveyor Grain Bin with an adequate area of ventilation

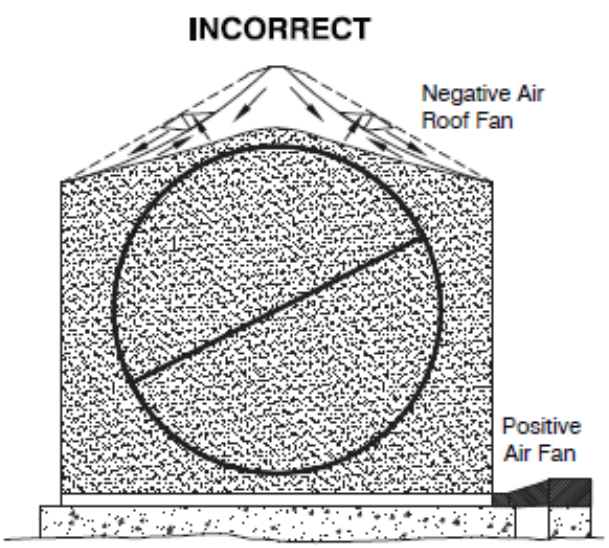
Grain Bin Operation Air Flow

Do not pile grain against the roof. Grain piled too high will block the roof vents. Blockage of the roof vents will restrict the effective vent area by 95-98%, virtually eliminating the vent area. The area above the surface of the grain must allow for free movement of air to the vents. Be aware of the possibility that the screens of the roof vent may collect moisture and freeze shut. This can happen when high relative humidity, high grain temperatures, or high grain moisture levels are combined with freezing or near freezing temperatures. Do not run the fan(s) during these conditions. Running the fan(s) during these conditions can create frost build-up and airflow blockage causing the roof to dome.

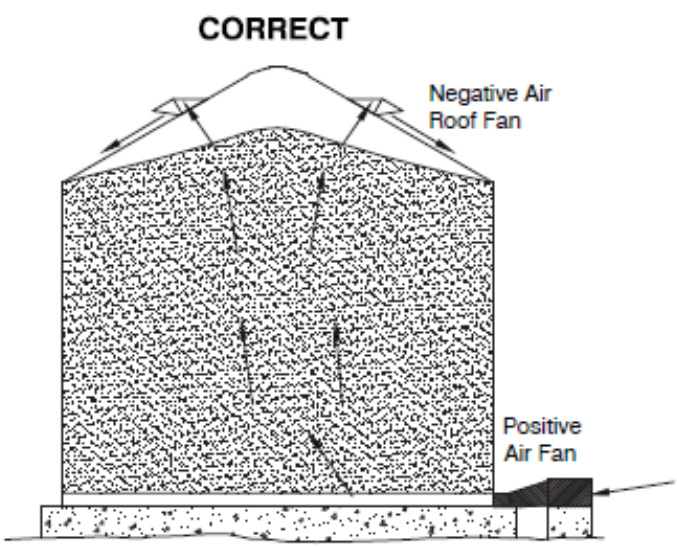
If negative air roof fans are used in the roof vents, they must operate simultaneously with the positive air fans at the base of the bin. They need to be wired so that negative air fans start a few seconds after the positive air fan. This is done so the air has enough time to be pushed through grain to replace the air that leaves through the roof. Failure to do this could result in roof failure







To prevent roof cave-in, fans should be wired so that Negative Air Roof Fans start within a few seconds after the Positive Air Fans.



The Negative Air Roof Fans start within a few seconds after the Positive Air Fans.

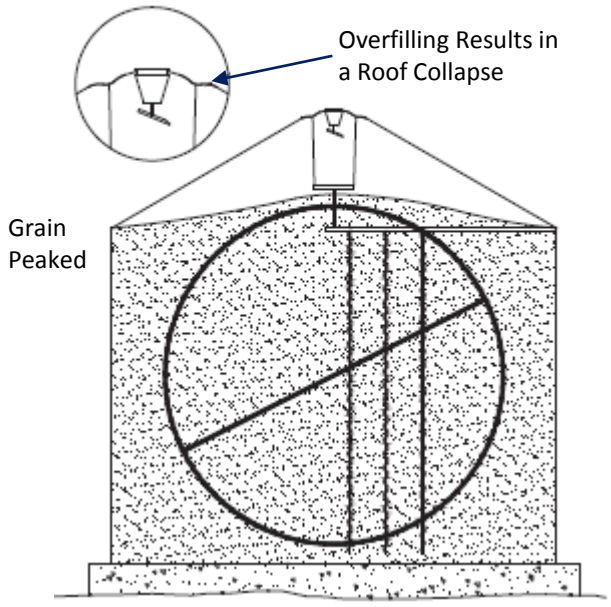
Grain Bin Operation Stirring and Recirculating

Stirring and Recirculating Augers

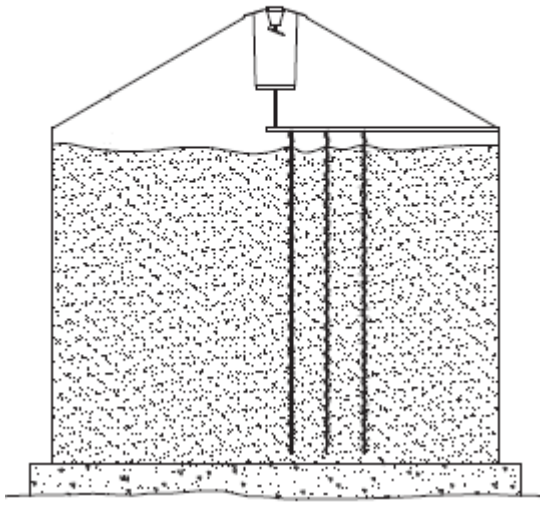
Stirring augers should be run continuously while filling. Do not fill bin with grain above stirring auger. Grain should be level 30" below the eaves. Roof peak ring failure can occur, especially during unloading. See image below to the left. Down augers should be free prior to start-up. Please read the stirring auger manufacturer's operation manual before operating.

When using stirring augers, do not operate them or start them near the bin sidewall image below to the right. Stirring augers must be kept at a safe distance from the bin sidewalls. Contact your Lambton Conveyor Representative to consult with engineering to see if additional wall stiffeners or floor supports are required.

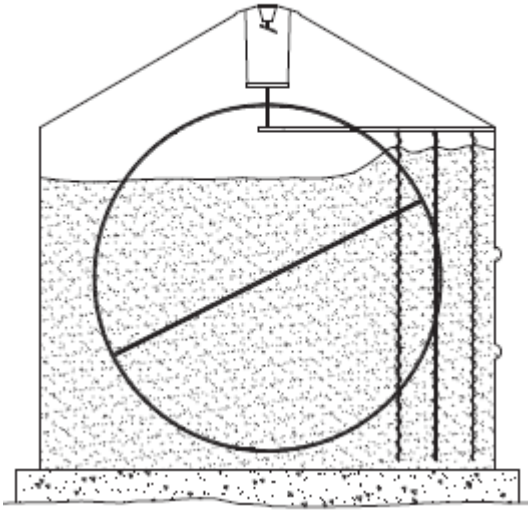
INCORRECT



CORRECT

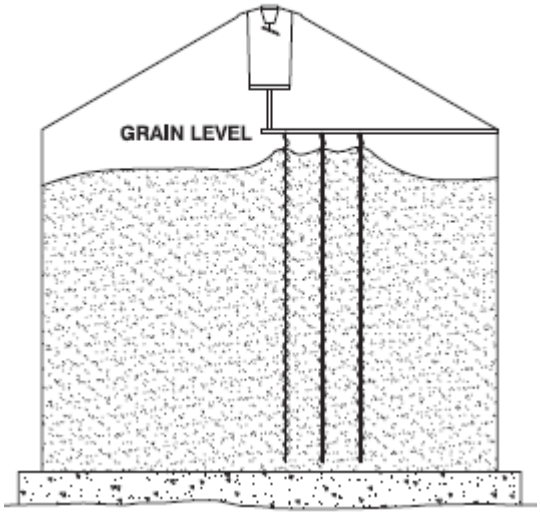


INCORRECT



Don't Start the stirring device near the walls. The sidewalls and stiffeners could buckle if the screws are against the sidewall. Screws should be free prior to start up

CORRECT

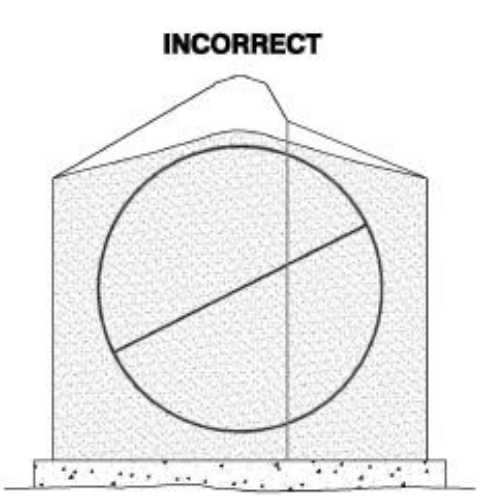


The Stirring device screws should be started near the center of the grain bin

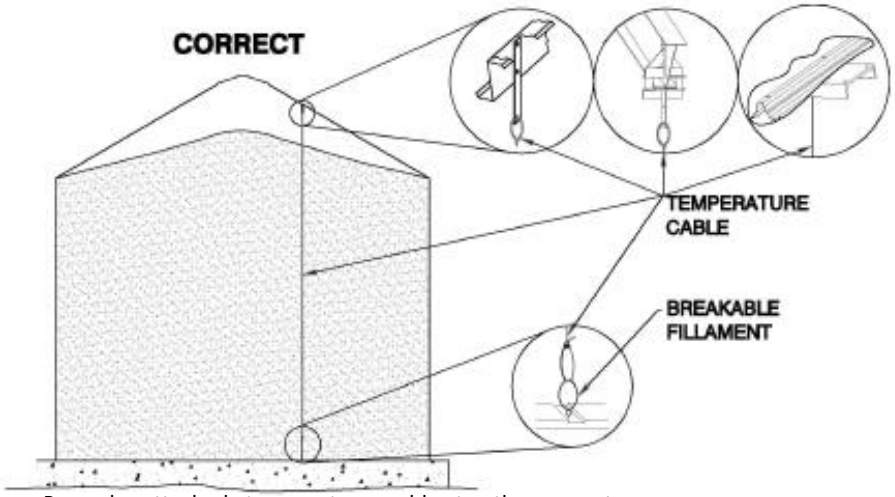
Grain Bin Operation Roof Loading

Temperature Cables

Refer to the Lambton Conveyors assembly instructions for support requirements and necessary items for temperature cables. Depending upon the series and model of bin you have, temperature cables are attached to the appropriate roof attachment bracket designed for that type of bin. Improper installation of temperature cables may cause damage to roof due to down-pull when filling, settling, and emptying of grain. Tie cables to the floor or concrete with breakable filament (baling twine), if a sweep auger is in use. Refer to the cable manufacturer installation instructions to see other methods of attachment of the cable to the floor of the bin



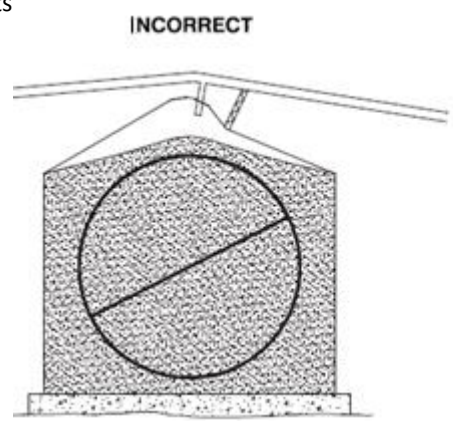
An improperly attached temperature cable to the roof or floor could cause roof damage. Consult the Lambton Conveyor assembly instructions and cable manufacturer installation instructions



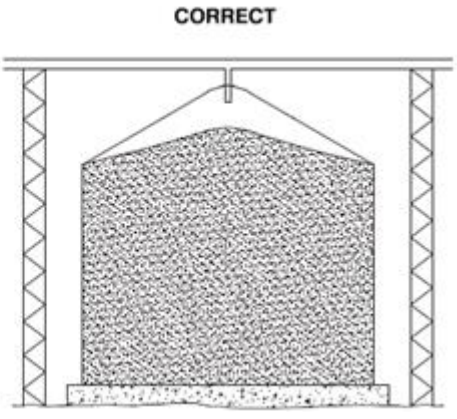
Properly attached temperature cable to the correct Lambton Conveyor designed roof temperature cable bracket. The proper breakable filament is attached to the bottom of the temperature cable and floor

Loads Concentrated on Roof

IMPORTANT: Loads created by additional components must not exceed the design ratings for the specific Lambton Conveyor bin. Load ratings for standard Lambton Conveyor bins are listed in the grain structure specifications and the Lambton Conveyor quote. Ratings for special Lambton Conveyor bin roofs are specified on the quotation form and assembly instructions. Peak loads are designed to handle loads in excess of the roof snow loads. These include spouts, catwalks, conveyors, spreaders, stirring augers, and other equipment. If multiple items are supported by the roof the sum of their weights must be used to check capacity. **All concentrated loads on roof must be UNIFORMLY DISTRIBUTED to the peak ring.** Use of separate support towers may be needed to properly distribute overhead loads. Please contact Lambton Conveyor Engineering for specifically designed sidewall supports



Unevenly placed roof peak loads and loads concentrated on the roof other than the roof peak could cause roof failure



External loads shall be uniformly loaded onto the peak roof ring and towers or sidewall supports

Grain Bin Operation Stiffener Loads

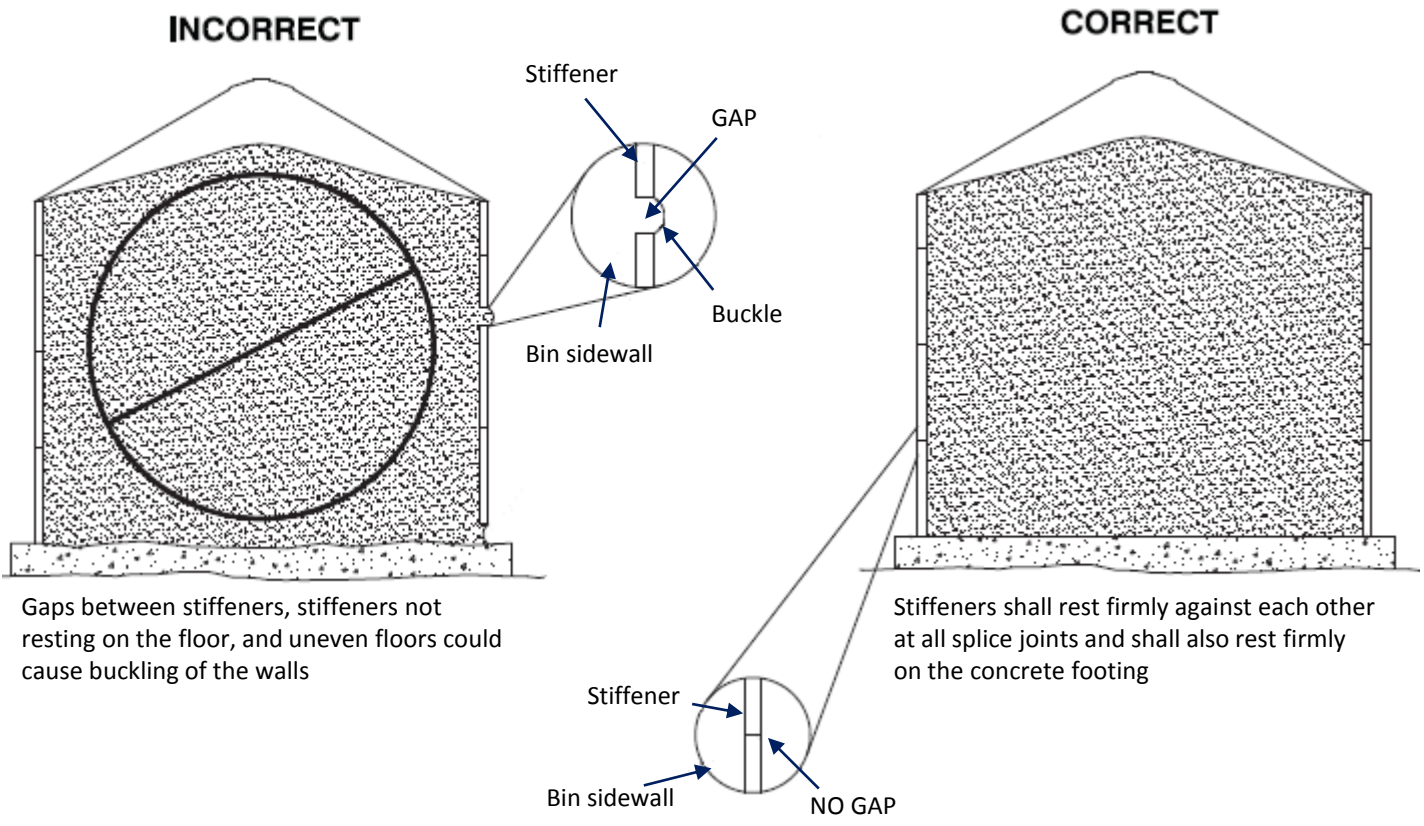
Stiffener Loads

The stiffeners carry the vertical wall loads on the bin, therefore serving as columns for the structure. They should be attached to the sidewall and each other exactly as described in Lambton Conveyor Assembly Instructions. They must form a continuous column from the eave to the concrete floor. Do not cut stiffeners for any reason. The stiffeners shall rest firmly against each other at all splice joints and shall also rest firmly on the floor

If a situation occurs where a stiffener rests over a tunnel, or a fan transition is too large to fit between two stiffeners, adequate support must be provided that will continue to support the stiffeners through the tunnels. Contact Lambton Conveyor Engineering for support recommendations. It is very important that the bottom stiffener rest on a concrete pad.

INCORRECTLY INSTALLED
- Gaps between the stiffeners
- Sidewall buckling
- Stiffeners not resting on the concrete footing
- Concrete not level

CORRECTLY INSTALLED
- No gaps between the stiffeners
- No buckling
- Stiffeners resting flat on the concrete footing
- Level concrete



Gaps between stiffeners, stiffeners not resting on the floor, and uneven floors could cause buckling of the walls

Stiffeners shall rest firmly against each other at all splice joints and shall also rest firmly on the concrete footing

Grain Bin Operation Side Draw

Side-Draw System

• Side discharge is only permitted in Lambton Conveyor bins when a Lambton Conveyor manufactured side-draw system has been installed. No corrugated steel bin should be unloaded through the sidewall without installation of a side-draw system and the permission of the manufacturer

• Interior baffles channel grain from the top storage to the discharge chute because grain flows off the top of the grain surface when withdrawn from below (funnel flow).

• The use of a side-draw system should be reviewed with a geotechnical or foundation engineer. Geotechnical investigations or past experience may indicate significant foundation level soil variations or a site propensity toward differential settlement, under these conditions side-draw usage may be prohibited or severely restricted.

• Installation of a side-draw system may require installation of additional wind rings and larger diameter anchor bolts. Installation of multiple systems requires approval of Lambton Conveyor Engineering.

• A side-draw system should not be the only discharge system available. A standard center discharge and conveyor must be installed. A side-draw system is not intended to be used as a continuous fill/empty system.

• **NEVER add a side-draw to existing bins without consulting a Lambton Conveyor Engineer**

NOTICE

IMPORTANT GUIDELINES FOR SIDE-DRAW USE!

• Intended for use with dry freely flowing grain only. Do not use a side-draw system with poorly flowing and dirty grain

• Side-draw systems are not to be considered the primary outlet. Standard center sumps and conveyors should be installed. A side-draw system is not intended to be used as a continuous fill/empty system.

• Filling should not be occurring at the same time as grain is being withdrawn through the side-draw system.

• In multiple side-draw systems, only one side-draw system may be used at a time.

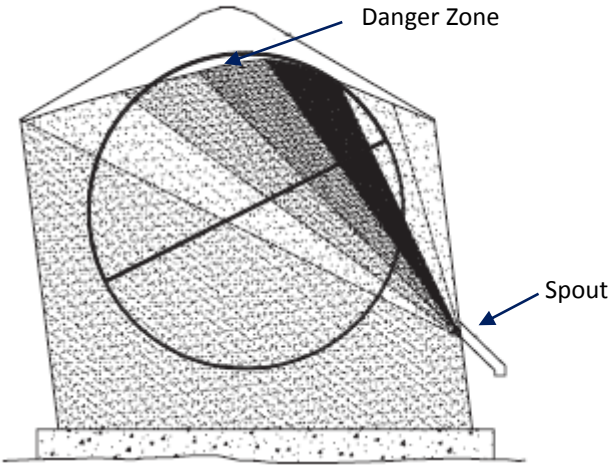
• Side-draw systems will leave grain in a sloped position, creating off center loads.

NOTE: Before refilling, unload through center sump so that the grain reaches equal wall heights around entire bin. Grain must be level or in a cone down position before adding more grain. See the following section.

• Prolonged storage of grain in the sloped condition produced by the side-draw discharge may accelerate differential settlement resulting in deformations of the bin/silo.

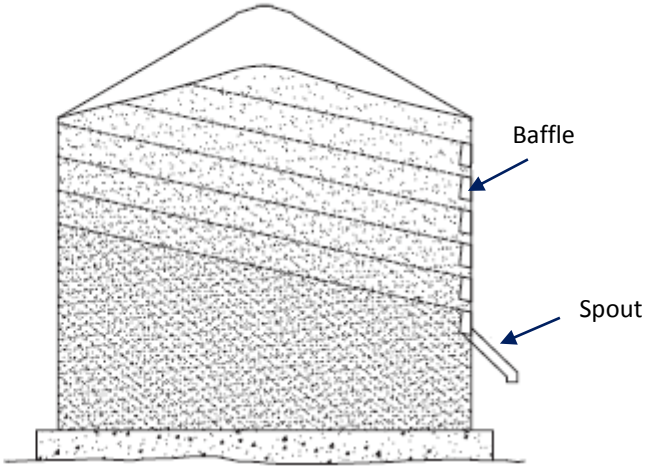
• After using the side-draw system, the sloped grain should be returned to near level by use of a center discharge. This will help prevent differential foundation settlement and bin deformations.

INCORRECT



Side Discharge without a side draw system could cause an unbalanced grain condition

CORRECT



Use of an approved side draw system is the only accepted side discharge permitted

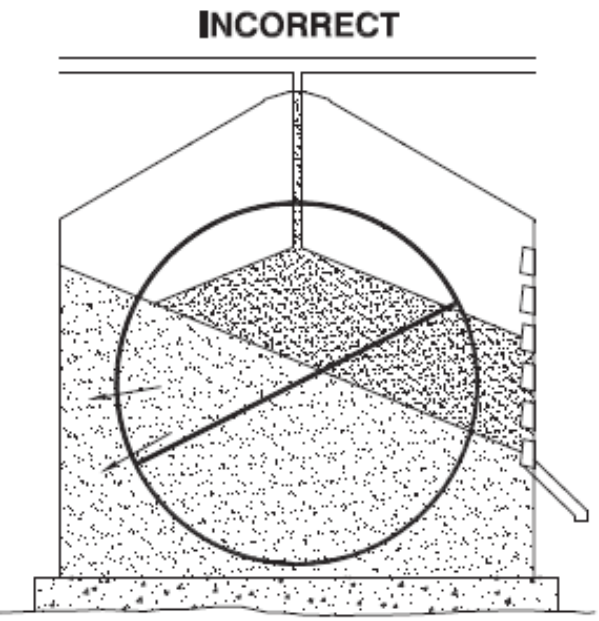
Grain Bin Operation Side Draw

Refilling After Side-Draw System Use

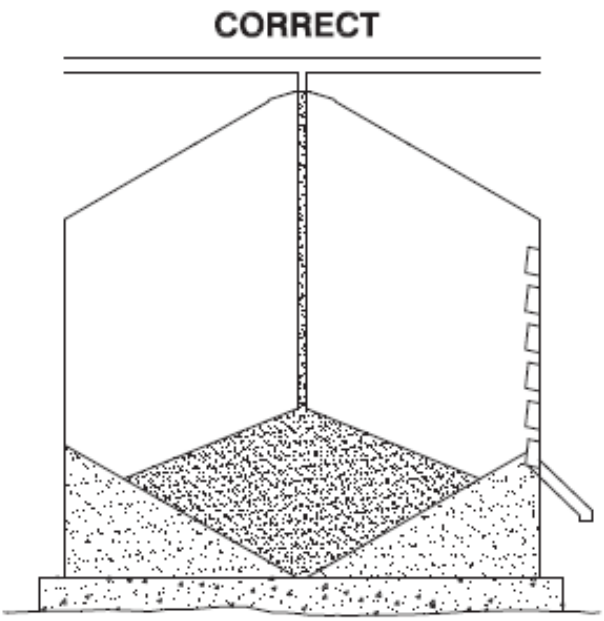
Before a bin can be refilled after being even partially unloaded with a side-draw system, grain needs to be leveled or completely emptied through center sump. It is important that sidewall pressure is equal before refilling. Lambton Conveyor recommends unloading grain through center sump until grain reaches equal wall heights so that an inverted cone is formed in the remaining grain. Once an inverted cone is achieved and sidewall pressures are equal, it is safe to refill bin through center peak ring

Note: The design of baffles can be used only with a side-draw system. Intermediate sumps located near side-draws cannot be used as the primary outlet. Unloading must be done correctly through side-draw, center sump, and then intermediate sumps. **Never use intermediate sumps until all grain has flowed by gravity through center sump. Unloading through intermediate sump initially will cause uneven load distribution that may cause bin failure.**

Before a grain bin can be refilled, it should be completely emptied. Total clean-out of the bin prevents build-up of compacted grain, which cannot be emptied by gravity flow. Also, be certain no grain is matted to the sidewall. If matting occurs, remove moldy grain with a wire brush and repaint. Since grain cannot be completely emptied using a side-draw, grain must be emptied through center sump to form an inverted cone (cone-down position) in the remaining grain. Formation of inverted cone will help evenly distribute lateral forces on bin sidewalls.



Refilling without grain being level or in a cone down position will create uneven sidewall pressures and may cause bin failure. Prolonged storage of grain in this condition may accelerate differential settlement resulting in deformations of the grain bin



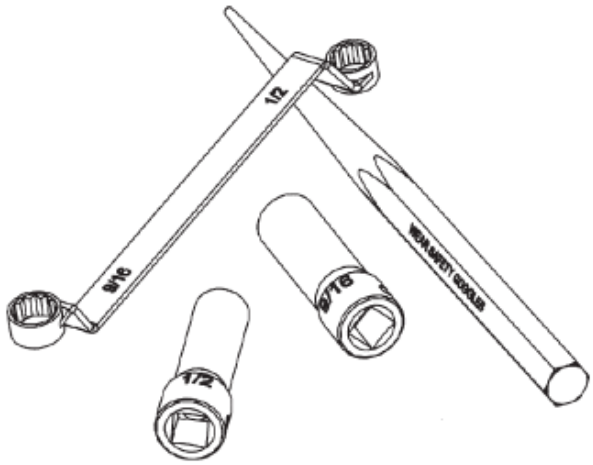
Before refilling, unload through the center sump so that the grain reaches equal heights around the entire bin. Grain must be level or in a cone down position before adding more grain.

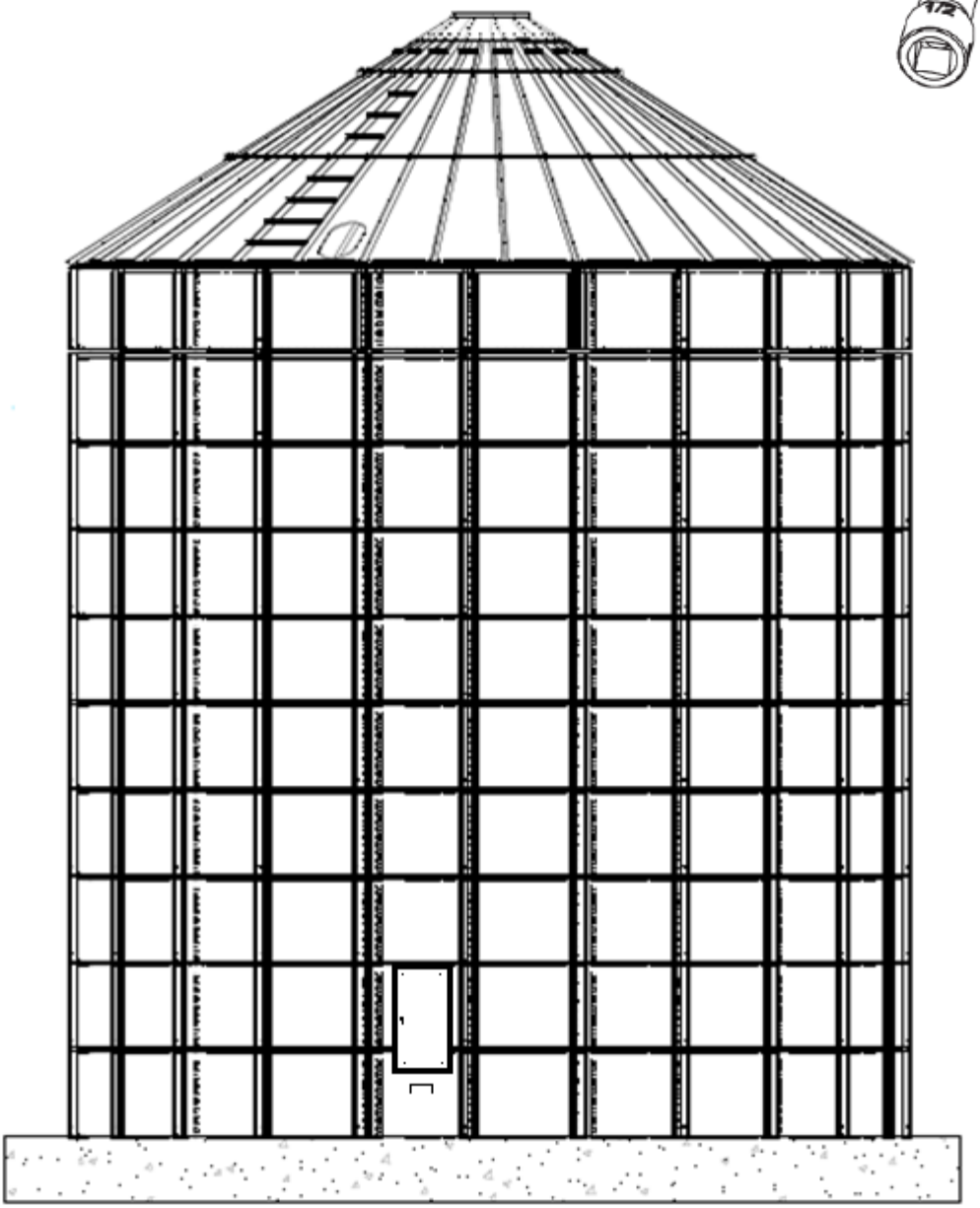
SAFETY SIGN OFF SHEET

This page is provided for recording which personnel is trained with regards to operation and hazards with regards to your Grain Storage Bin.

Date	Employee Signature	Employer Signature

Grain Bin Assembly





General Information

Upon arrival thoroughly check your shipment and ensure that it corresponds with the shipping statement Any discrepancies should be taken care of immediately. Report any damages or shortage of parts to the delivering carrier as soon as possible. Lambton Conveyor's responsibility to damaged equipment ends with your acceptance of the delivery. Save all paperwork and documentation.
This manual should be considered a permanent part of the equipment and should be easily accessible when needed.

Read this manual carefully. This manual will provide instructions on building the sidewall. Other instructions and manuals are required to build this tank. Some of the additional materials needed are detailed below.

A stiffener and sidewall gauge layout chart is needed. If a chart is not included with this manual, Contact Lambton.

Roof instructions are located in Section 5

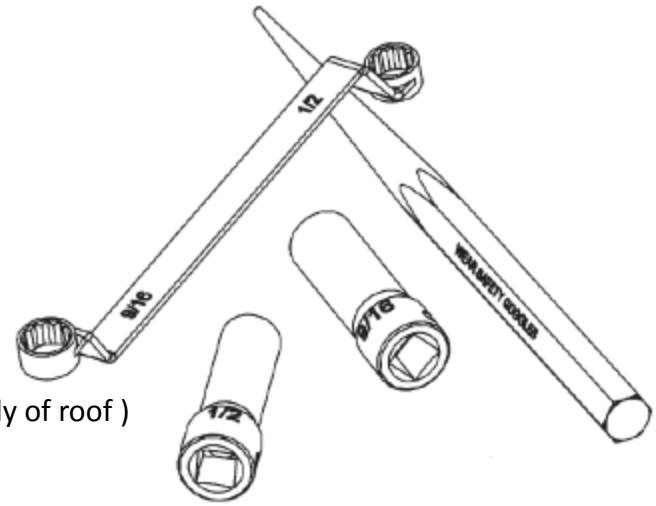
Aeration systems and transitions are to be installed according to the instructions provided with the system or transition located in Section 6

Ladders, roof stairs, roof handrails and other products are covered in Section 7

Anchor bolt placement details are provided in Section 3 Foundations

Tools and Equipment Required:

- ❑ 7/16" X 1/2" Box End Wrenches
- ❑ 1/2" X 9/16" Box End Wrenches
- ❑ 5/8" X 3/4" Box End Wrenches
- ❑ 7/16" Box End Wrenches
- ❑ 5/16" and 3/8" Nut setters (for self-tapping screws)
- ❑ 12" Long Drift Punches
- ❑ Hammer
- ❑ Screwdriver
- ❑ Speed Wrench and Sockets
- ❑ Impact Wrench and Sockets
- ❑ Protective Eyewear, Footwear and Gloves
- ❑ Center Ring Support Jack or Tower (to aid in assembly of roof)
- ❑ Lifting Jacks (to lift bin)
- ❑ Lifting Brackets

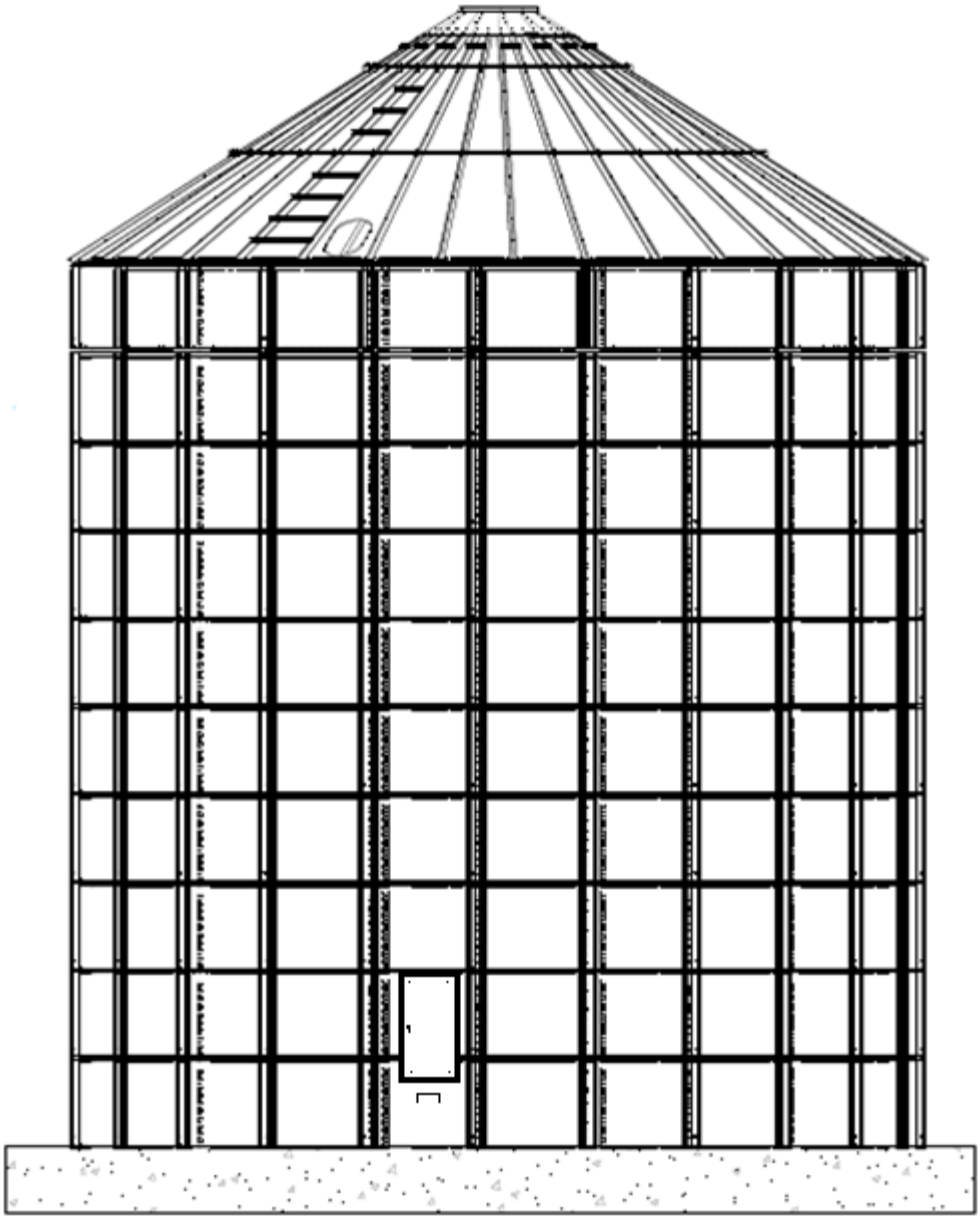


General Information

Plan your layout before commencing construction

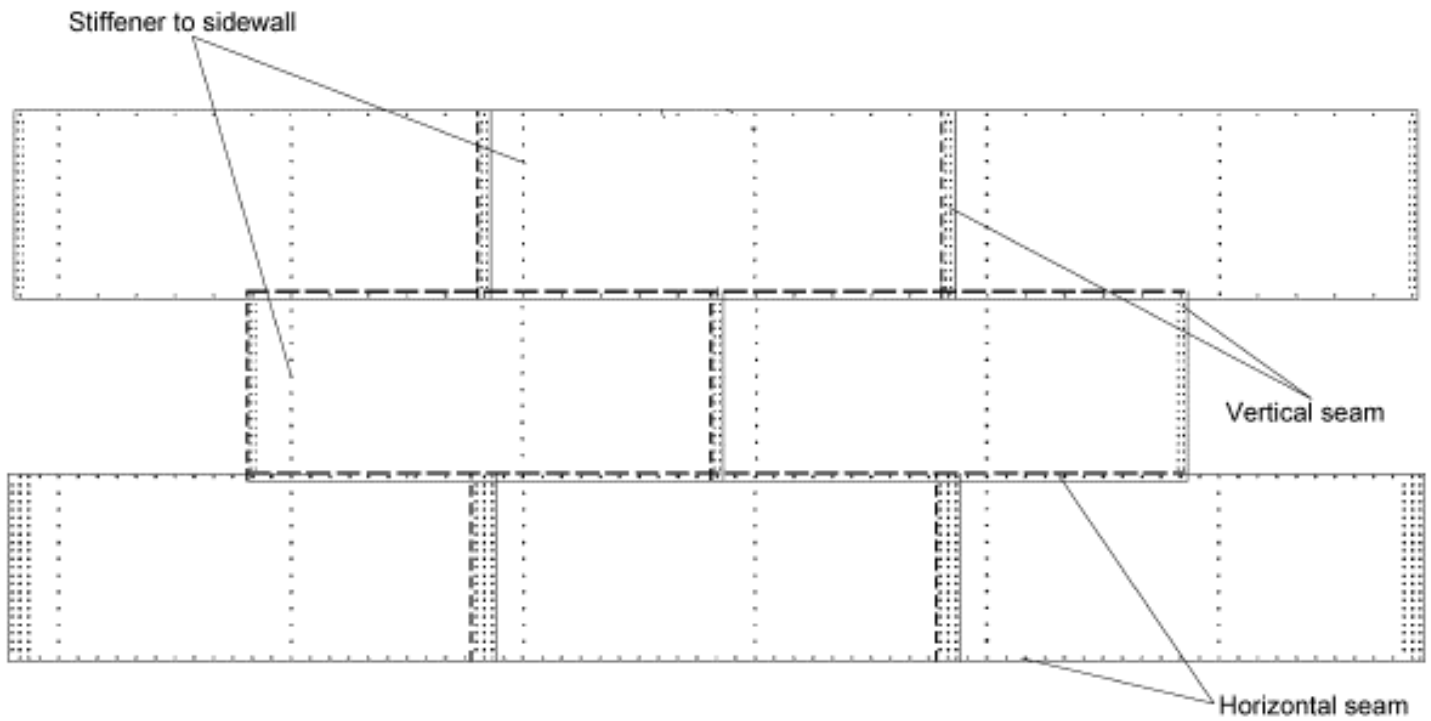
Prepare sketches of where you want to place key components:

- ❑ Bin Door
- ❑ Unloading Equipment
- ❑ Roof Vents
- ❑ Roof Stairs
- ❑ Roof Man Door
- ❑ Inside and Outside Ladder
- ❑ Eave Towers for Overhead Conveyors
- ❑ Fans



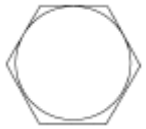
Bolting Requirements

Sidewall Gauge	Horizontal Seam	Vertical Seam	Stiffener to Sidewall	Stiffener Joiners	Stiffener Laminates	Base Plate to Sidewall	Base Plate to Stiffener
15 -20 Gauge	3/8" x 3/4"	3/8" x 3/4"	3/8" x 1"	3/8" x 1"	3/8" x 1"	3/8" x 1 ½"	3/8" x 1"
Part#	HDBF006012JCBA	HDBF006012JCBA	HDBF006100JCBA	HDBF006100JCB	HDBF006100JCB	HDBF006108JCBA	HDBF006100JCB
Qty Per Sheet	13	24	24	16	28	3	12
10 - 14 Gauge	3/8" x 1"	3/8" x 1"	3/8" x 1 ½"	3/8" x 1"	3/8" x 1"	3/8" x 1 ½"	3/8" x 1"
Part#	HDBF006100JCBA	HDBF006100JCBA	HDBF006100JCBA	HDBF006100JCB	HDBF006100JCB	HDBF006108JCBA	HDBF006100JCB
Qty Per Sheet	13	44	24	16	28	3	12
8 Gauge	3/8" x 1"	3/8" x 1"	3/8" x 1 ½"	3/8" x 1"	3/8" x 1"	3/8" x 1 ½"	3/8" x 1"
Part#	HDBF006100JCBA	HDBF006100JCBA	HDBF006100JCBA	HDBF006100JCB	HDBF006100JCB	HDBF006108JCBA	HDBF006100JCB
Qty Per Sheet	13	65	24	16	28	3	12
13-8 Gauge (Laminated)	3/8" x 1 ½"	3/8" x 1 ½"	3/8" x 1 ½"	3/8" x 1"	3/8" x 1"	3/8" x 1 ½"	3/8" x 1"
Part#	HDBF006100JCBA	HDBF006100JCBA	HDBF006100JCBA	HDBF006100JCB	HDBF006100JCB	HDBF006100JCBA	HDBF006100JCB
Qty Per Sheet	13	65	24	16	28	3	12
Nut Type	Hex Nuts	Hex Nuts	Flanged Nuts	Flanged Nuts	Flanged Nuts	Hex Nuts	Flanged Nuts
Part#	HDNH006JCD	HDNH006JCD	HDNFS006JCD	HDNFS006JCD	HDNFS006JCD	HDNH006JCD	HDNFS006JCD



Hardware

Grade 2 bolts are designated with a plain head.
NOTE: Grade 2 bolts are designated with a plain head.



Grade 5 bolts are designated by three (3) slash marks on the head.

Grade 8 bolts are designated by six (6) slash marks on the head.

Grade 8.2 bolts are designated by six (6) slash marks on the head in sunrise pattern.

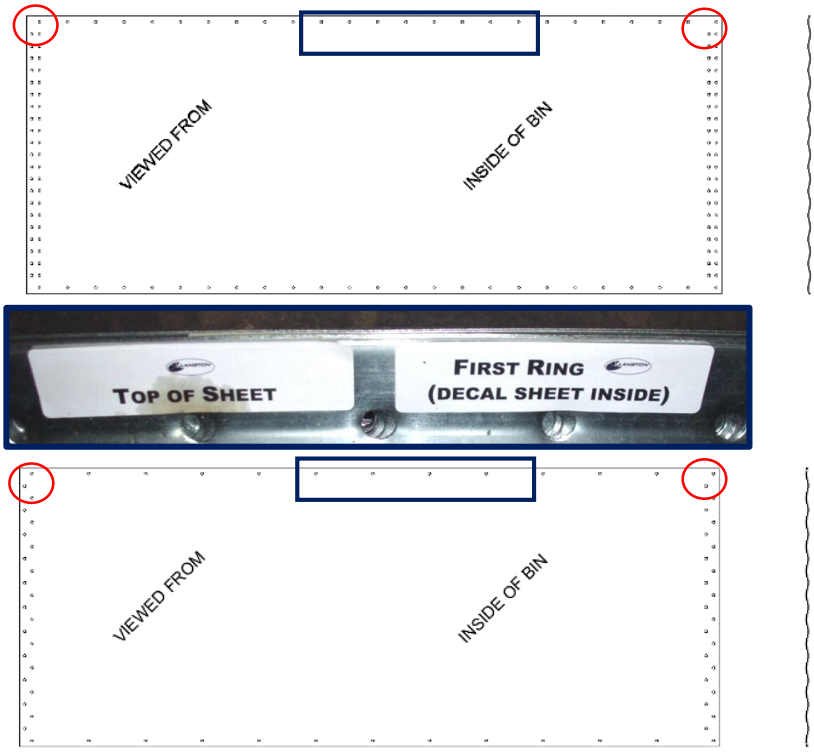
Bolt Size	Torque (Ft. Lbs)	
	Minimum	Maximum
5/16"-18	15	20
3/8"-16	35	42
7/16"-14	65	72
1/2"-13	95	105

Wall Sheet Assembly and Caulking

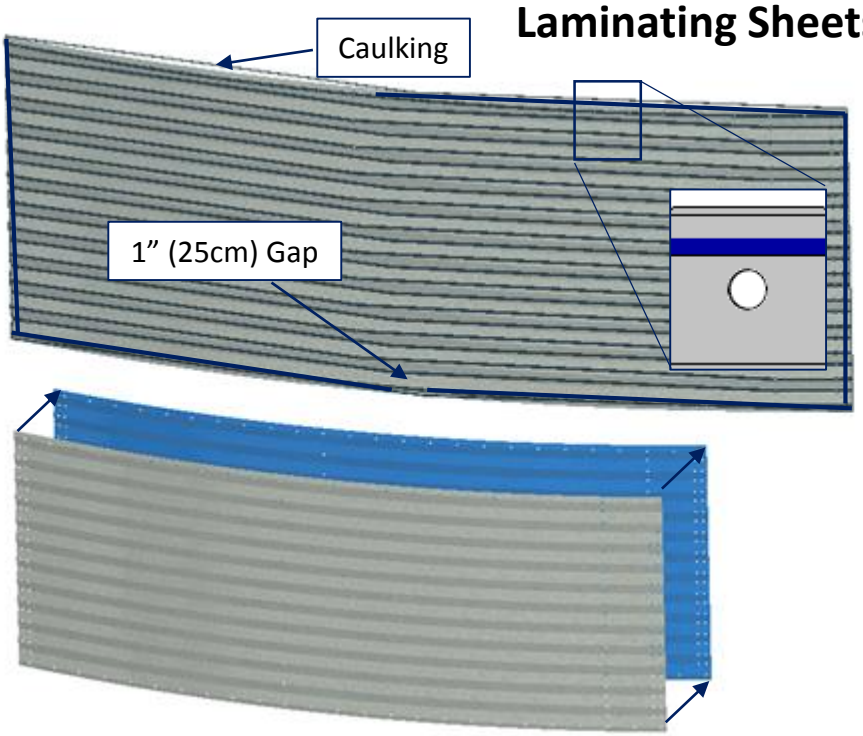
BIN SIDEWALL SHEETS

Bin sidewall sheets have a bottom and top. Colour code for gauge designation is always at the top corners of the sheet. The TOP ring in the bin will be labeled with **"FIRST RING"** stickers and "**TOP OF SHEET**".

FOR THE BIN SHEET TO BE RIGHT SIDE UP THE BOLT PATTERN MUST MATCH THE PICTURE BELOW.



Laminating Sheets



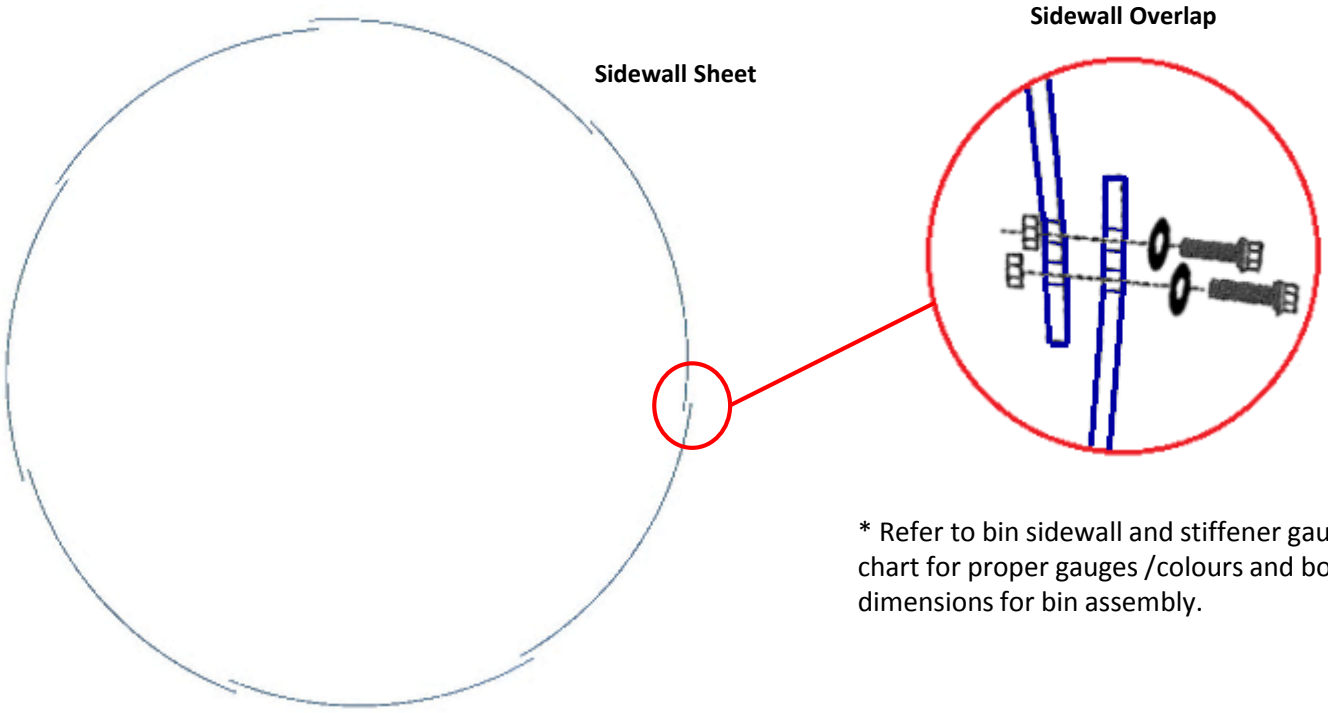
In some applications, sidewall sheets need to be laminated together to form a stronger single sheet

To laminate two sidewall sheets:

1. Ensure that a 1" (25 mm) area around the edges of both sidewall sheets to be laminated is free from dust, oil or grease.
2. Apply caulking along the edges of sidewall sheet, outside the bolt holes. Approximately in the middle at the bottom part of the sheet, leave a 1" (25 mm) of the seam uncaulked for water drainage
3. Place a second identical sheet on top of the first sheet, and press the two sheets together.
4. When moving newly laminated sheets for installation, make sure that they are supported together in such a way that they do not separate.

Wall Sheet Assembly and Caulking

NOTE: Installation of bin wall sheets will be done in a counter clockwise rotation



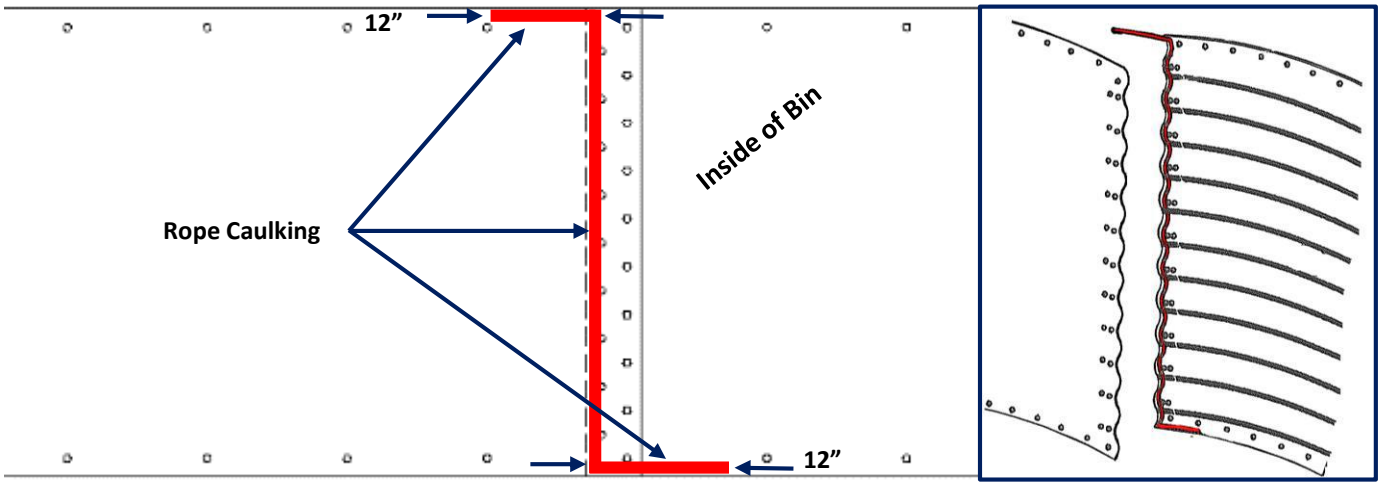
* Refer to bin sidewall and stiffener gauge chart for proper gauges /colours and bolt dimensions for bin assembly.

Rope Caulking Requirements

- Outside edge of Vertical Overlaps
- Along Horizontal edge both top and bottom from outside vertical edge to next horizontal bolt, to fill and seal the gap created due to overlap

Bolts and Washers

- Head of bolts and sealing washers must be on outside of bin
- Do not tighten Bolts until a complete ring is assembled



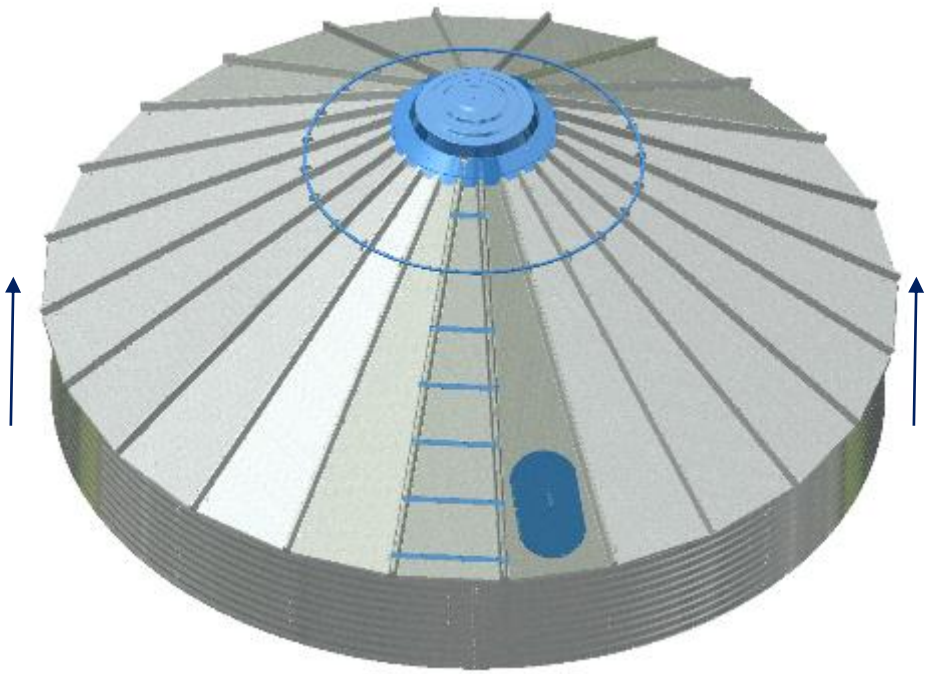
Wall Sheet Assembly Order

AFTER ASSEMBLING THE FIRST (TOP) RING

The next step after assembling the top ring is to construct the bin roof. Refer to Roof Assembly Manual for Bin Roof installation instructions.

INSTALLATION OF THE SECOND RING & OTHERS

After completion of the roof installation (see Roof Assembly Manual), the second ring is ready to install. Lifting brackets should be attached to the stiffener mounting location for **stiffened** bin do not attach lifting lug to any other location on bin sheet only were stiffeners are located. If your bin is an **unstiffened** bin fasten to the bottom of the vertical seams . If the lifting jacks are securely anchored, it is ready to start lifting. **If using Bin Jacks: Always lift on an upright. Choose a hoist with a suitable capacity for the expected empty bin dead load. Make sure the rated capacity of the hoist is not exceeded.** Lift all jacks closely at the same rate and continue lifting to get enough space for the installation of the next ring. Install the stiffeners every 2 rings and continue up to door level in the same manner.



Wall Sheet Assembly Chart

Below is an example of the sidewall assembly chart that is shipped with your bin. This chart tells you which gauge should be used at each ring for side wall sheets, stiffeners, joiners and laminate stiffeners along with wind ring locations. If you did not receive a sidewall assembly chart please contact your Dealer or Lambton Conveyor to obtain your sidewall assembly chart.

Gauge Colour Chart
20 (Red)
18 (Grey)
17 (Yellow)
16 (Orange)
15 (Light Blue)
14 (Green)
13 (Brown)
12 (Black)
11 (Pink)
10 (Blue)
8 (Copper)

Ring	Sidewall Gauge	Main Stiffener	Joiner Gauge	Laminate stiffener
1	15 (light blue)	17 (yellow)		none
2	18 (grey)		17 (yel	none
3	18 (grey)	17 (yellow)		none
4	18 (grey)		light	none
5	17 (yellow)	15 (light blu		none
6	16 (orange)		(Brown)	none
7	15 (light blue)	n)		none
8	15 (light blue)		10 (blue)	none
9	14 (green)	11 (k)		none
10	14 (en)		8 (copper)	none
11	(Brow	8 (copper)	none	none
12	Brown)		none	
13	black)	8 (copper)	none	12 (black)
1	2 (black)		none	
15	12 (black)	8 (copper)	none	12 (black)
16	11 (pink)		none	
17	11 (pink)	8 (copper)	none	10 (blue)
18	11 (pink)		none	
19	11 (pink)	8 (copper)	none	8 (copper)
20	11 (pink)		none	
21	10 (blue)	8 (copper)	none	8 (copper)
22	10 (blue)		none	
23	10 (blue)	8 (copper)	none	8 (copper)

Example

For size of Hardware refer to Section 5.4 for which length to use and Section 5.5 for required torque

General Stiffener Installation Information

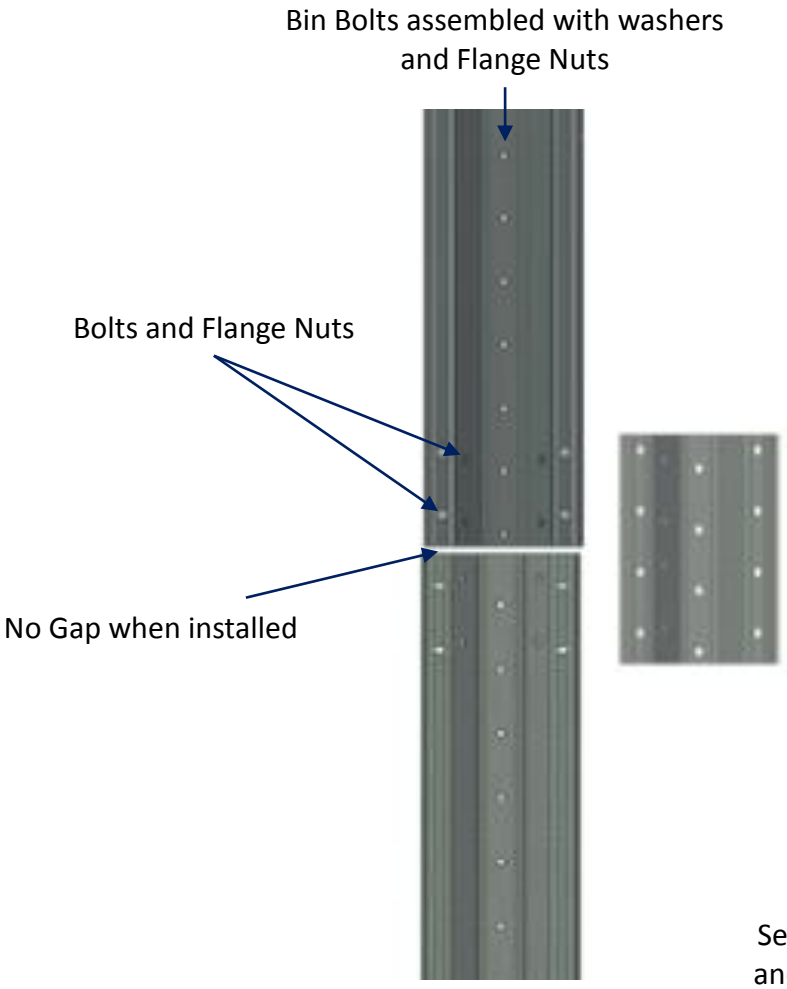
Stiffener are installed to the outside of the sidewall sheets with bolt heads on the inside of the bin to create a seal with the assembled washer.

When bolting joiners, laminates, or Swedged stiffeners to stiffeners in the flange locations bolts with out washer are used.

Starter Stiffeners can cover 1 or 2 sidewall sheets in height depending on the if the bin is even or odd number of rings.

Each full stiffener will cover 2 sidewall sheets in height.

When installing stiffeners ensure the stiffener is pushed up with a punch when tightening to ensure stiffeners are in the highest position with the supplied holes. There should be no gaps between Stiffeners

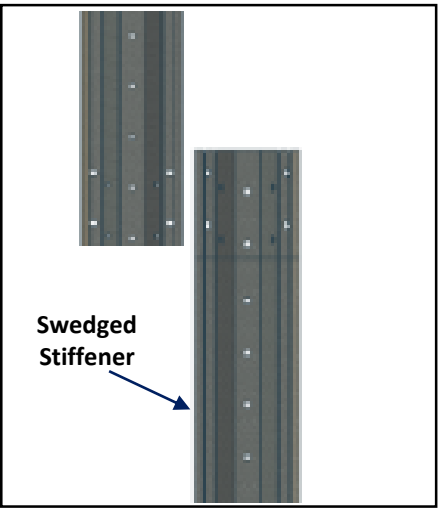


For size of Hardware refer to Section 5.4 for which length to use and Section 5.5 for required torque

12” Stiffener Mounting Detail

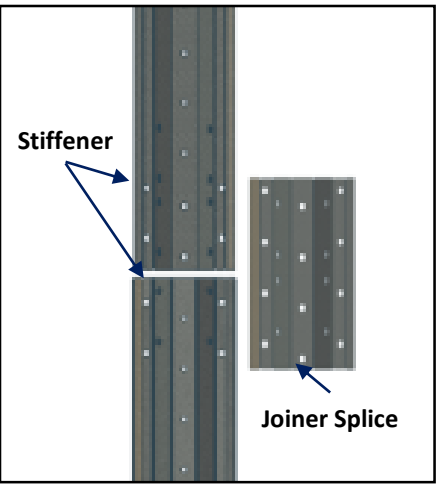
Stiffener Joints

Between each stiffener there is a joint, below are the possible joints for the 12” stiffener type



Swedge Joint

From top to bottom the next stiffener will overlap the previous stiffener to create a joint between the two stiffeners.

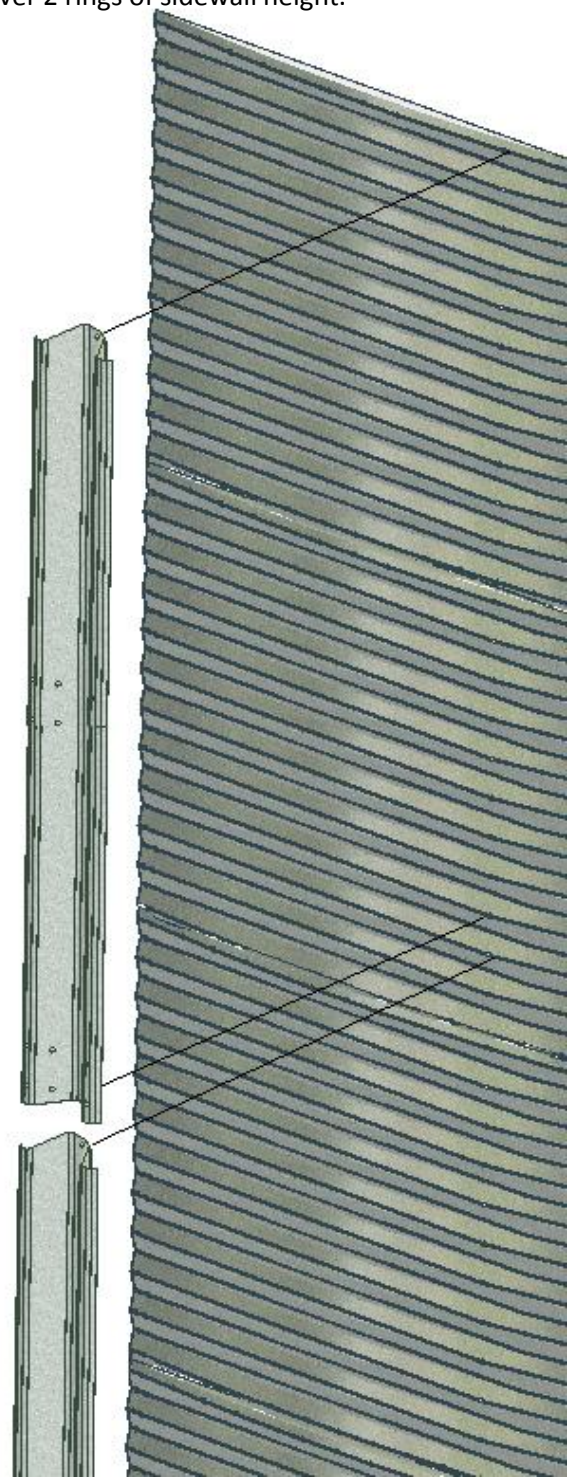


Splice Joint

To join two stiffeners the stiffeners will butt to each other, and a splice stiffener will overlap the seam and fasten to each stiffener

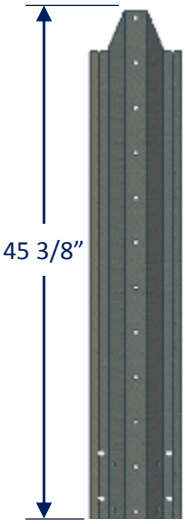
Stiffener Mounting

Each sidewall has 2 rows of stiffeners that need to mount to the vertical holes in the sheet as the bin is assembled. When mounting a stiffener to the side wall the head of the bin bolt will be on the inside of the bin to create a seal. Stiffeners are long enough to cover 2 rings of sidewall height.



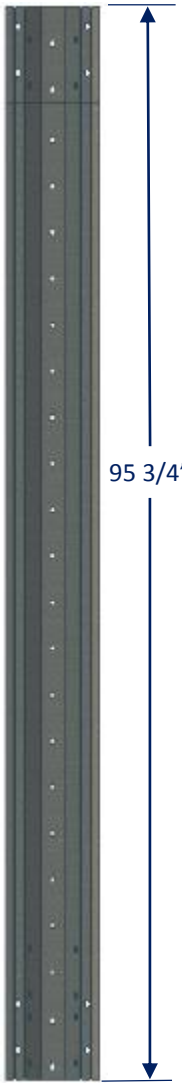
12” Stiffener Detail

* Dimensions are rounded for simplicity

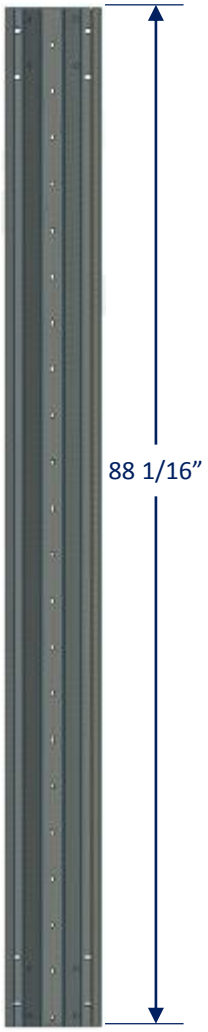


Top Stiffener-Half
Used on odd # ring bins

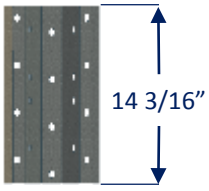
Top Stiffener-Full
Used on even # ring bins



Swedged Stiffener



Stiffener

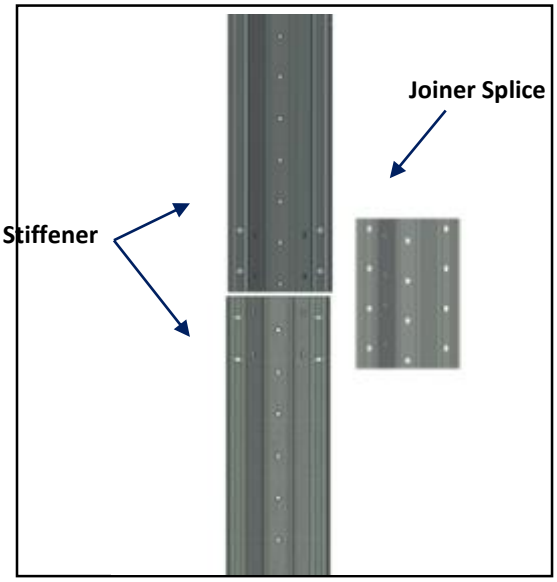


Joiner Splice
Used splice location
between two Stiffeners

16” Stiffener Mounting Detail

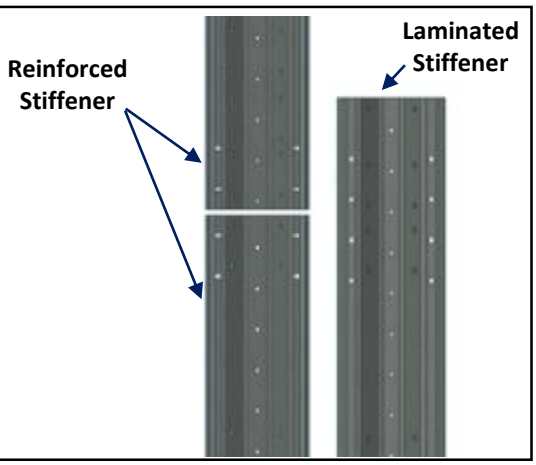
Stiffener Joints

Between each stiffener there is a joint, below are the possible joints for the 16” stiffener type



Splice Joint

To join two stiffeners the stiffeners will butt to each other, and a splice stiffener will overlap the seam and fasten to each stiffener

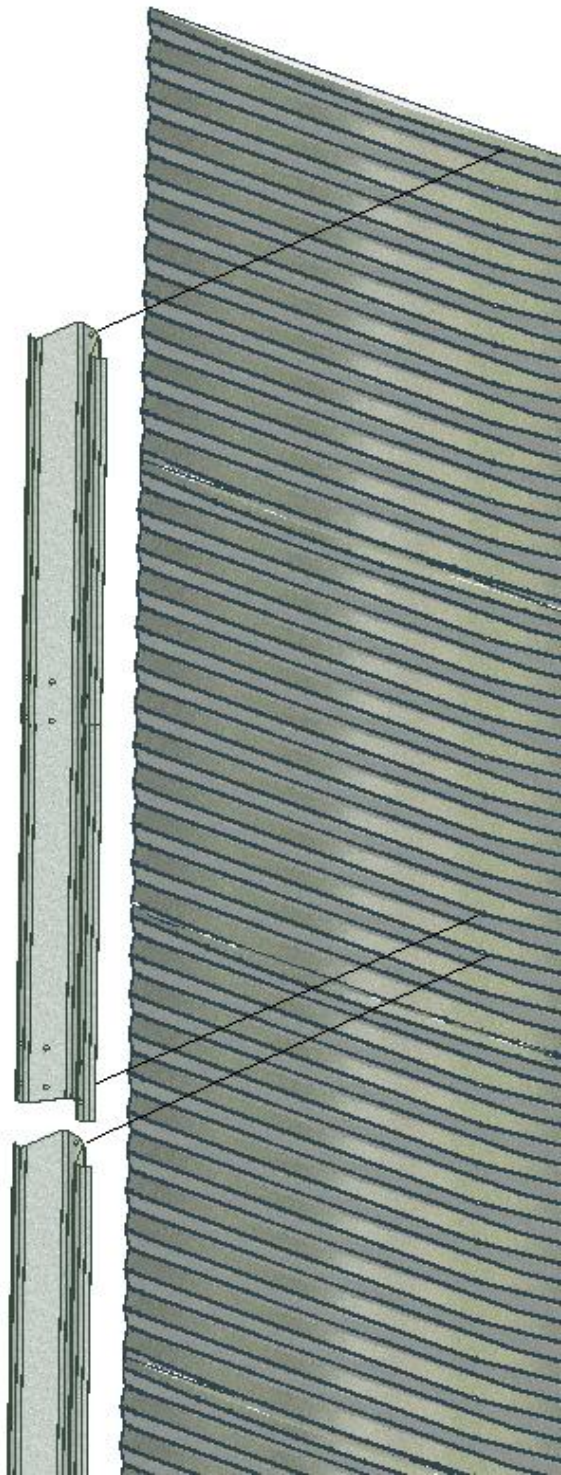


Laminate Joint

With a laminate joint the reinforced stiffeners will butt up to each other and the laminate stiffener will overlap the seam of the two reinforced stiffeners.

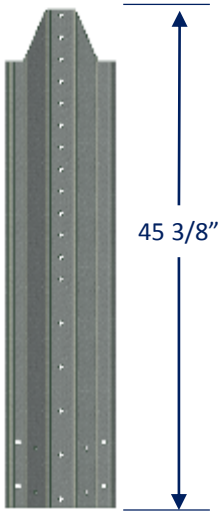
Stiffener Mounting

Each sidewall has 2 rows of stiffeners that need to mount to the vertical holes in the sheet as the bin is assembled. When mounting a stiffener to the side wall the head of the bin bolt will be on the ins
long enough to c

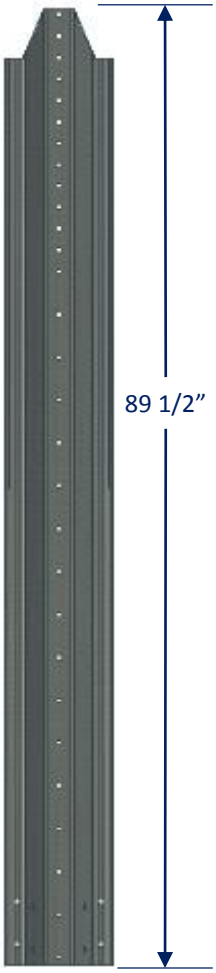


16” Stiffener Detail

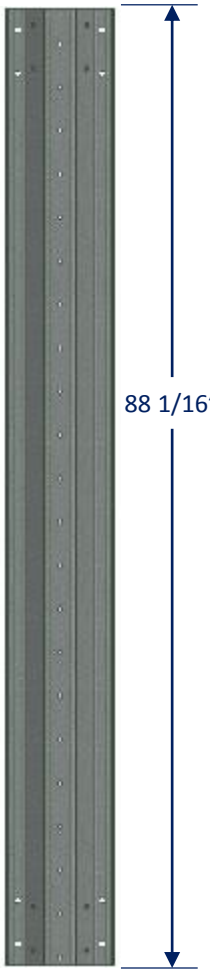
* Dimensions are rounded for simplicity



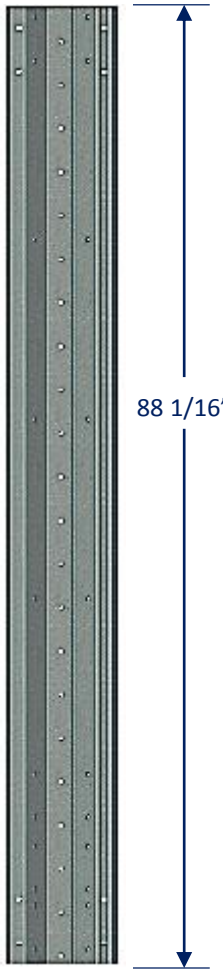
Top Stiffener-Half
Used on odd # ring bins



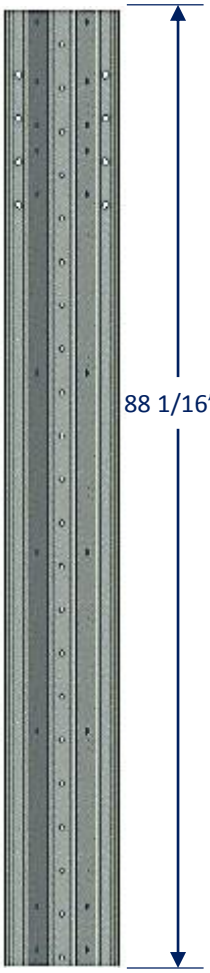
Top Stiffener-Full
Used on even # ring bins



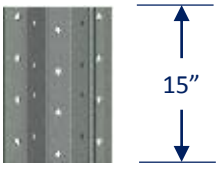
Stiffener



Reinforced Stiffener



Laminated Stiffener

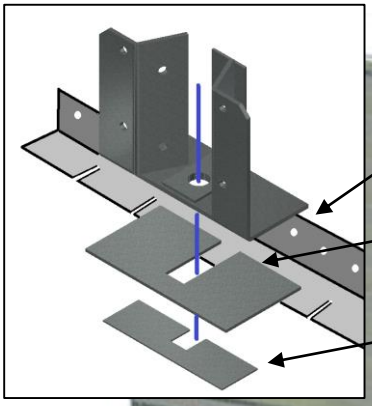


Joiner Splice
Used splice location
between two Stiffeners

Base Angle Installation

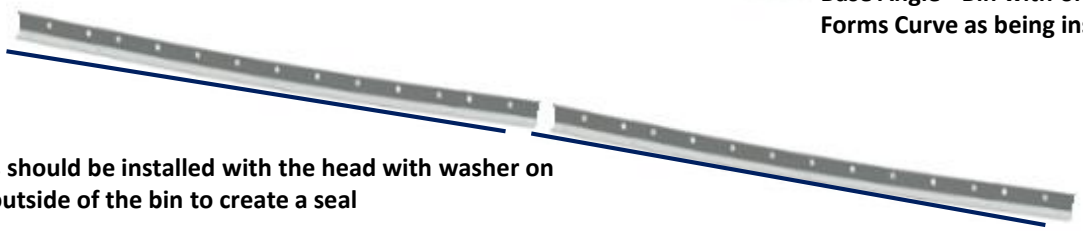
Base Angle

- Base angles are bolted to the bottom edge of the bottom sidewall sheet with the vertical lip of the angle on the inside of the bin
- When attaching the next piece of base angle it will overlap the previous by 1 hole
- Once the base angles are installed apply base sealer to the bottom of the base angle. At this point the bin can be carefully lowered ensuring roundness of the bin and check the seal for proper placement against foundation.



Example of Shim Use

Base Angle - Bin with or with out 12" Stiffeners Forms Curve as being installed



Bolts should be installed with the head with washer on the outside of the bin to create a seal

Base Angle – Bin with 16" Stiffeners pre rolled curve Used on larger bins

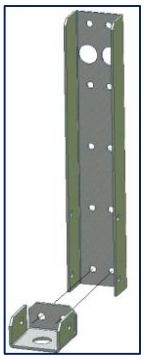
Base Sealer

Note: Base angles are drilled to install anchor bolts to the foundation. To install these anchors the foundation is drilled and the anchor driven into the foundation then the supplied nut is tightened down fastening the base angle to the foundation

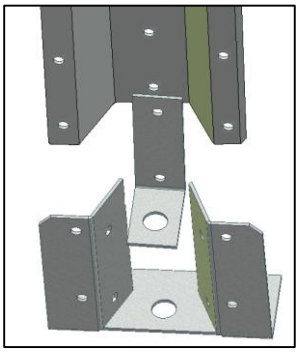
3/8" x 4" wedge anchors are recommended* ensure all anchors are installed to ensure proper sidewall support for bin sweeps

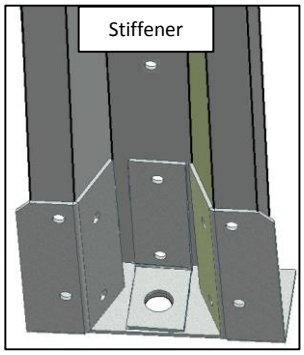
*Base angle anchor bolts are not provided with bin assemblies. If you require anchor bolts they can be purchased through Lambton Conveyor.

Base Plate Installation

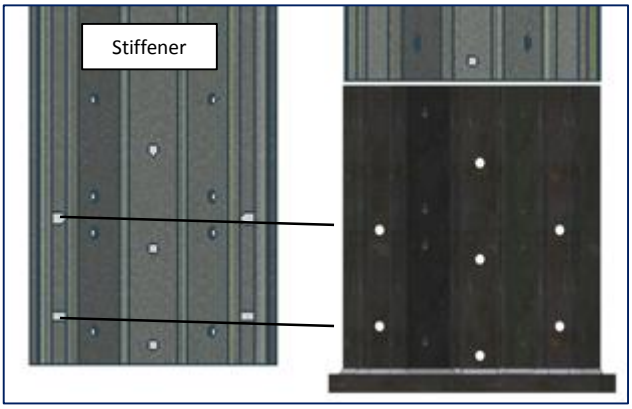


Base Plate
To the left is the base plate assembly that is used with bin that are not stiffened. The base plate components will mount to the bottom of the bin sidewall sheet and will anchor to the foundation.

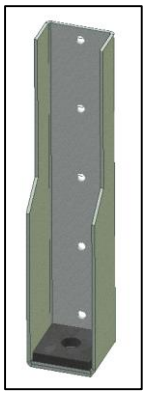




Base Plate
To the left is the base plate assembly that is used with bins that use 12” stiffener without laminates. The base plate components will mount to the bottom of the bottom stiffener as shown, and will anchor to the foundation. (Shims may be needed under base plate depending on foundation conditions)



Base Plate
To the left is the base plate that is used with bins that use 16” stiffeners. The base plate will mount to the bottom outside of the bottom stiffener and will anchor to the foundation (Shims may be needed under base plate depending on foundation conditions)

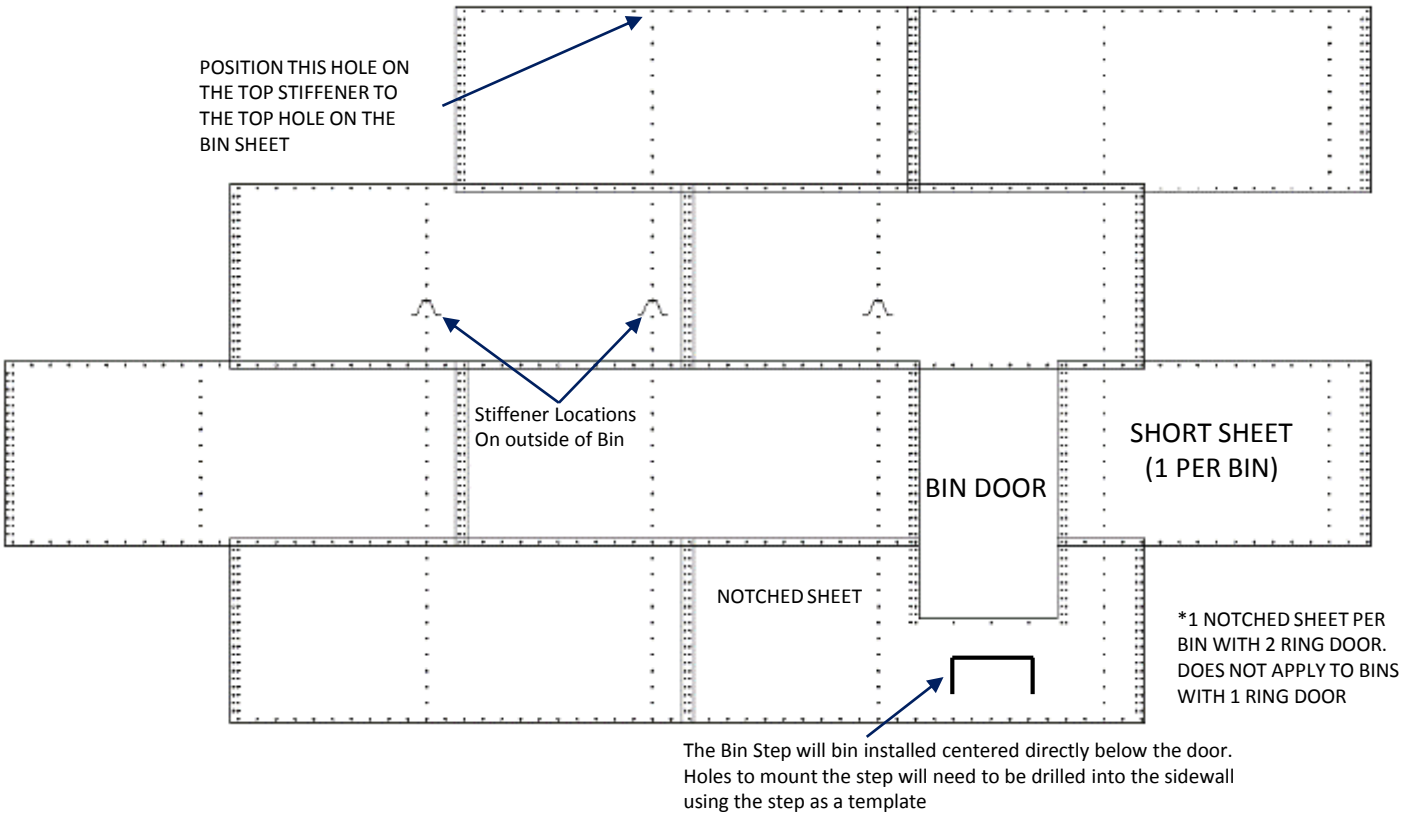


Intermediate Base Plate
To the left is the intermediate base plate that is used with bins that additional anchoring around the base of the bin. Example would be a large diameter bin with a power sweep unloading system. This base plate will mount directly to the outside of the sidewall on the bottom ring of the bin located between the stiffeners. These base plate will also be anchored to the foundation.

Door Placement

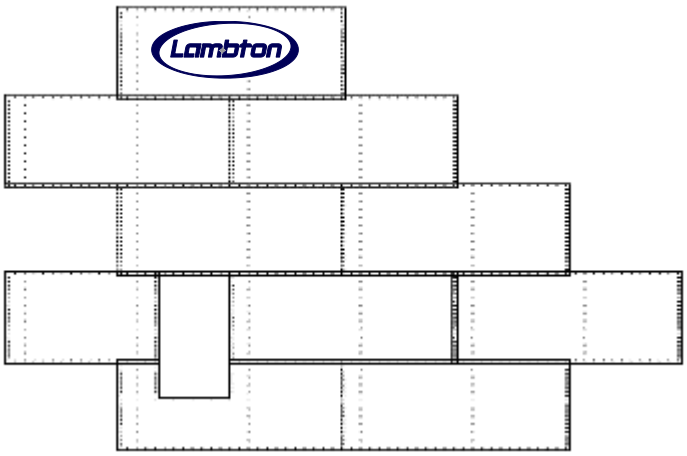
INSTALL BIN DOOR ACCORDING TO THE DRAWING BELOW

VIEWED FROM INSIDE THE BIN

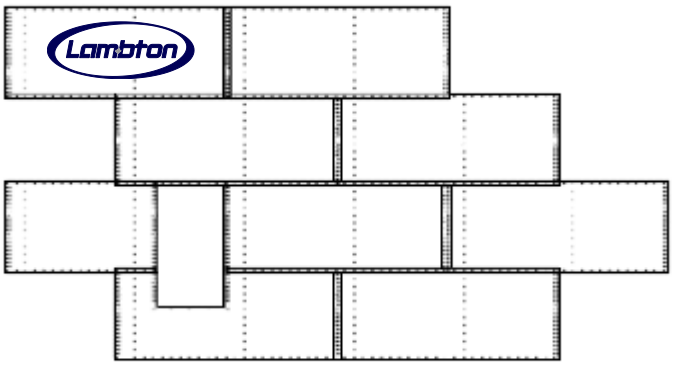


VIEW BELOW IS FROM OUTSIDE OF BIN

ODD NUMBER OF RINGS

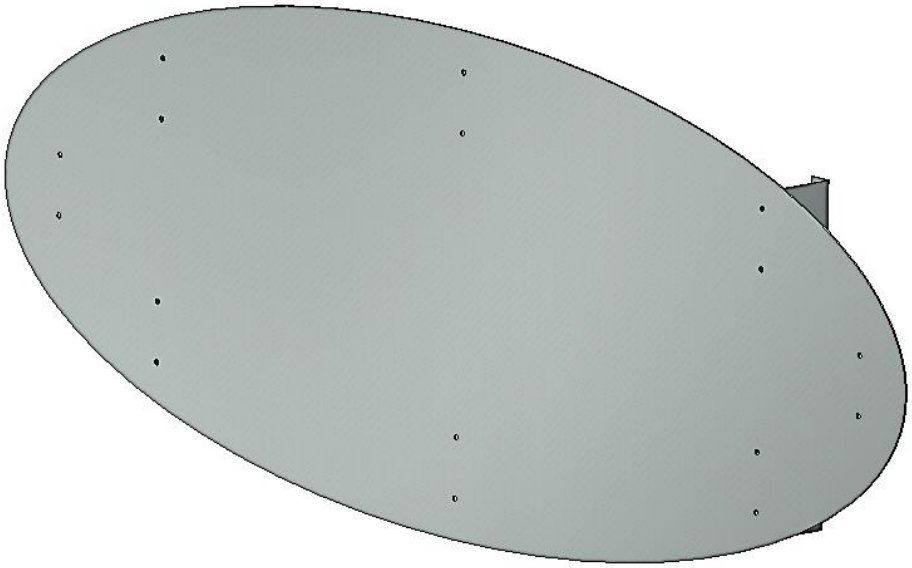


EVEN NUMBER OF RINGS

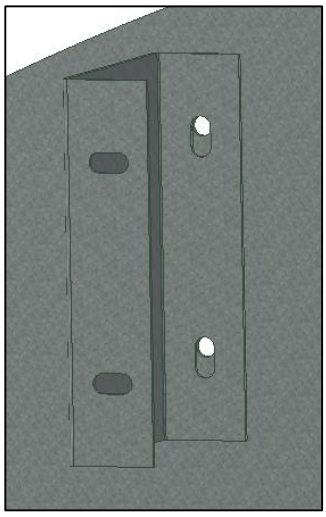


On Stiffened bins the logo is mounted on a plate and mounts to the bin using 4 brackets and will mount with the stiffeners to the bin sidewall.

Front of Sign

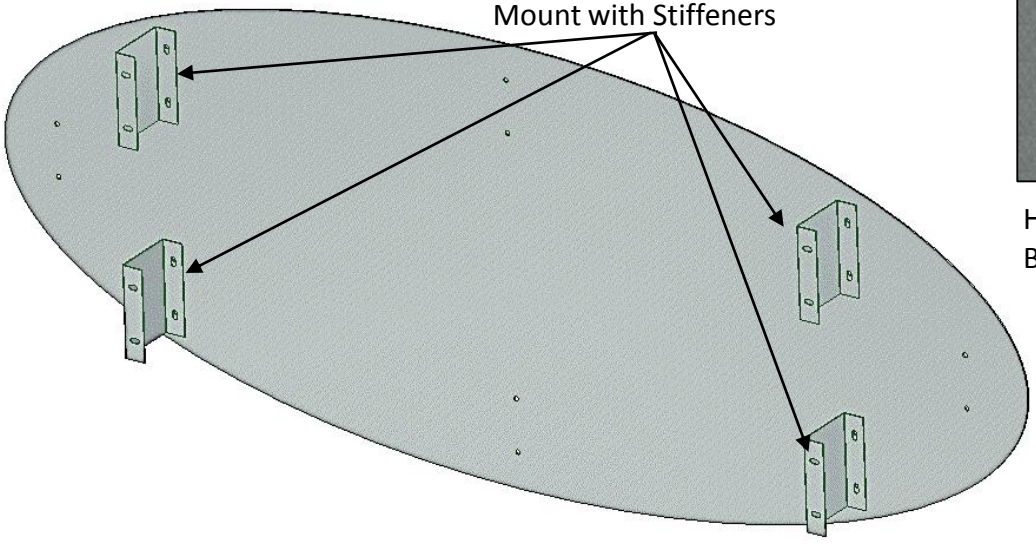


Vertical Slots in Bracket go to Logo Plate



Back Side of Sign

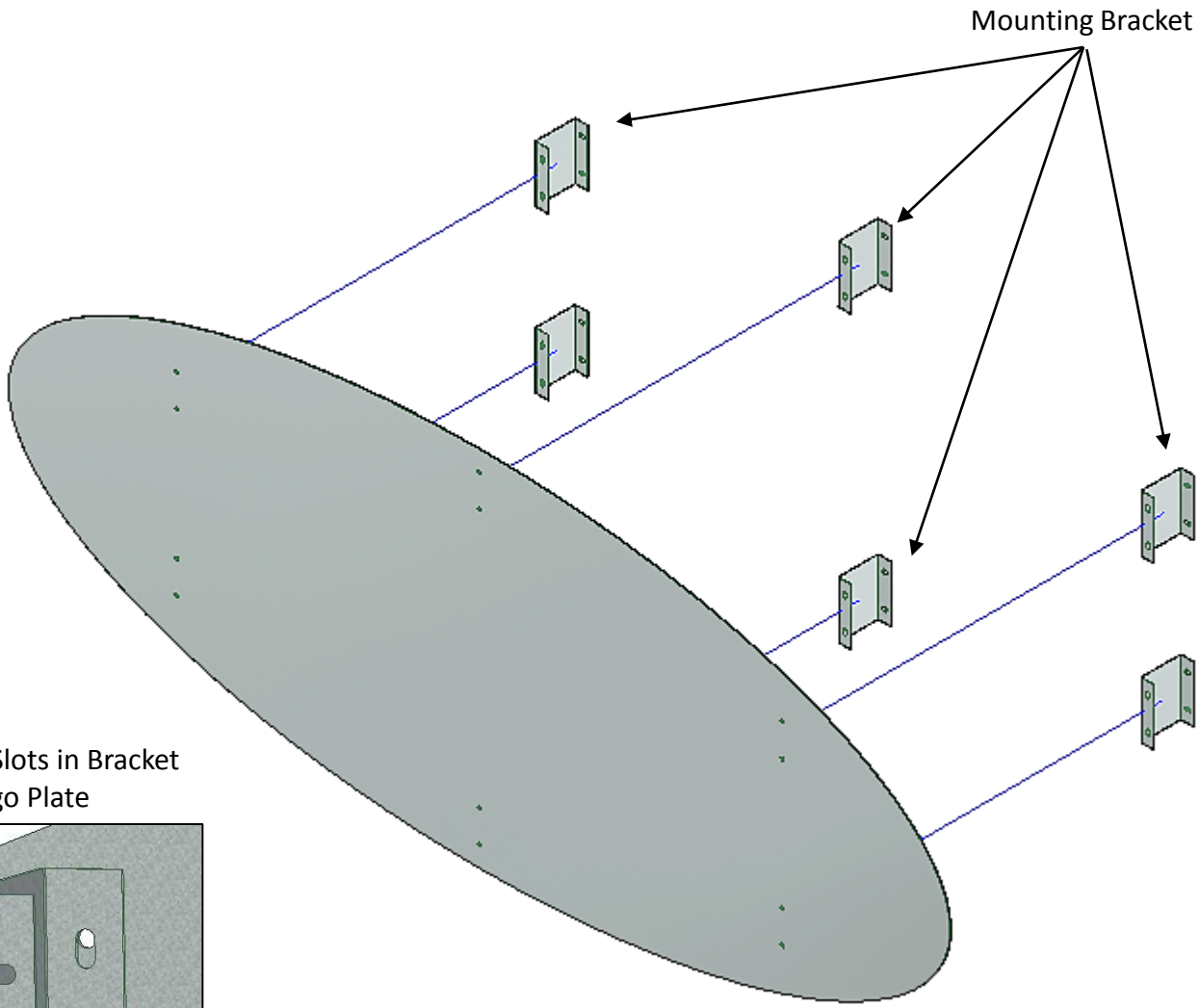
4 Brackets for mounting
Mount with Stiffeners



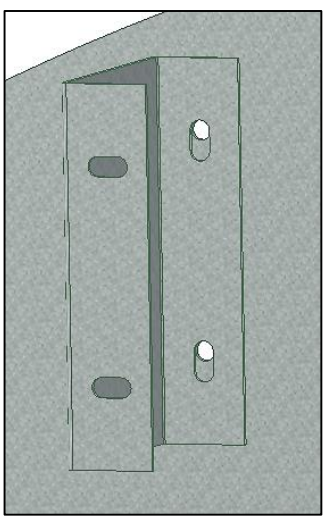
Horizontal Slots in Bracket go to Sidewall

4 Brackets are used to mount the Commercial Logo Plate. The center 2 brackets are mounted along the center of the bin stiffeners, the remaining 4 brackets to the center of the stiffeners to either side of the center stiffener.

Use 3/8" x ¾" bolts and nuts to sign, use stiffener hardware for that location to mount brackets to bin



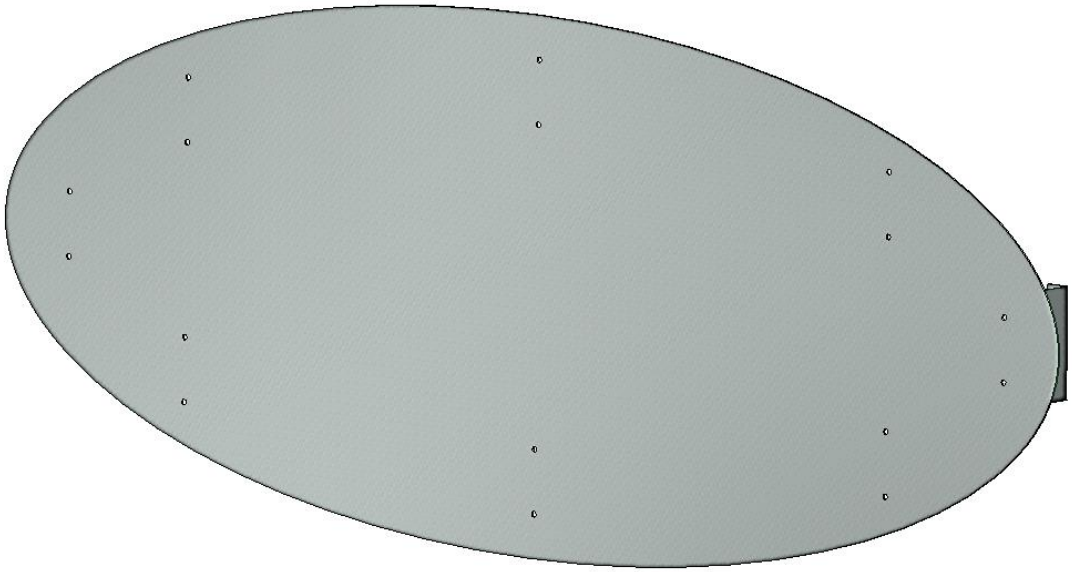
Vertical Slots in Bracket go to Logo Plate



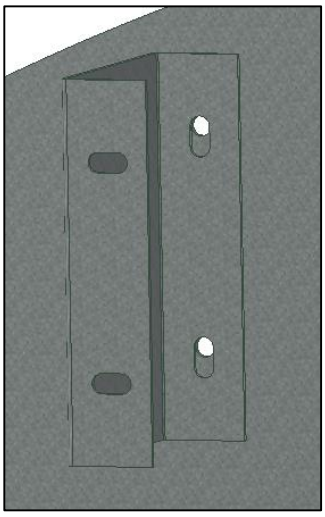
Horizontal Slots in Bracket go to Sidewall

On Stiffened bins the logo is mounted on a plate and mounts to the bin using 4 brackets and will mount with the stiffeners to the bin sidewall.

Front of Sign

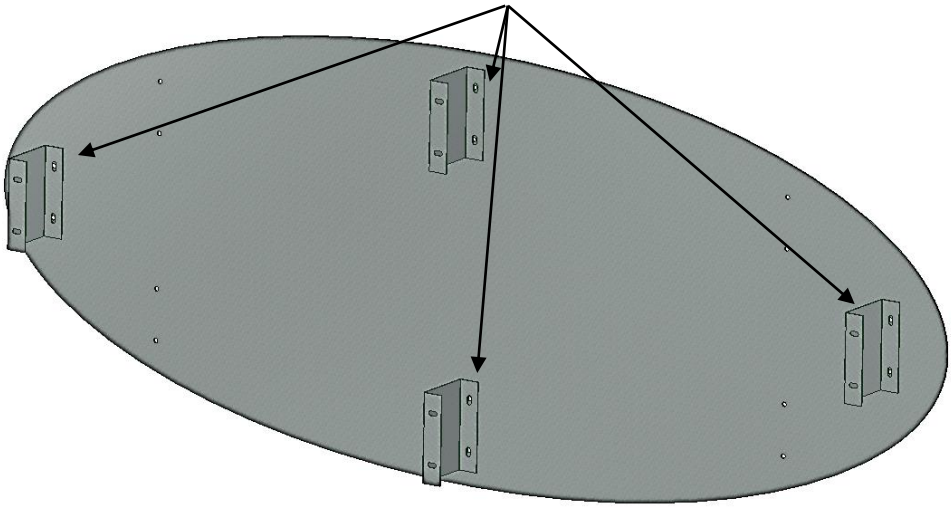


Vertical Slots in Bracket go to Logo Plate



Back Side of Sign

4 Brackets for mounting
Mount with Stiffeners



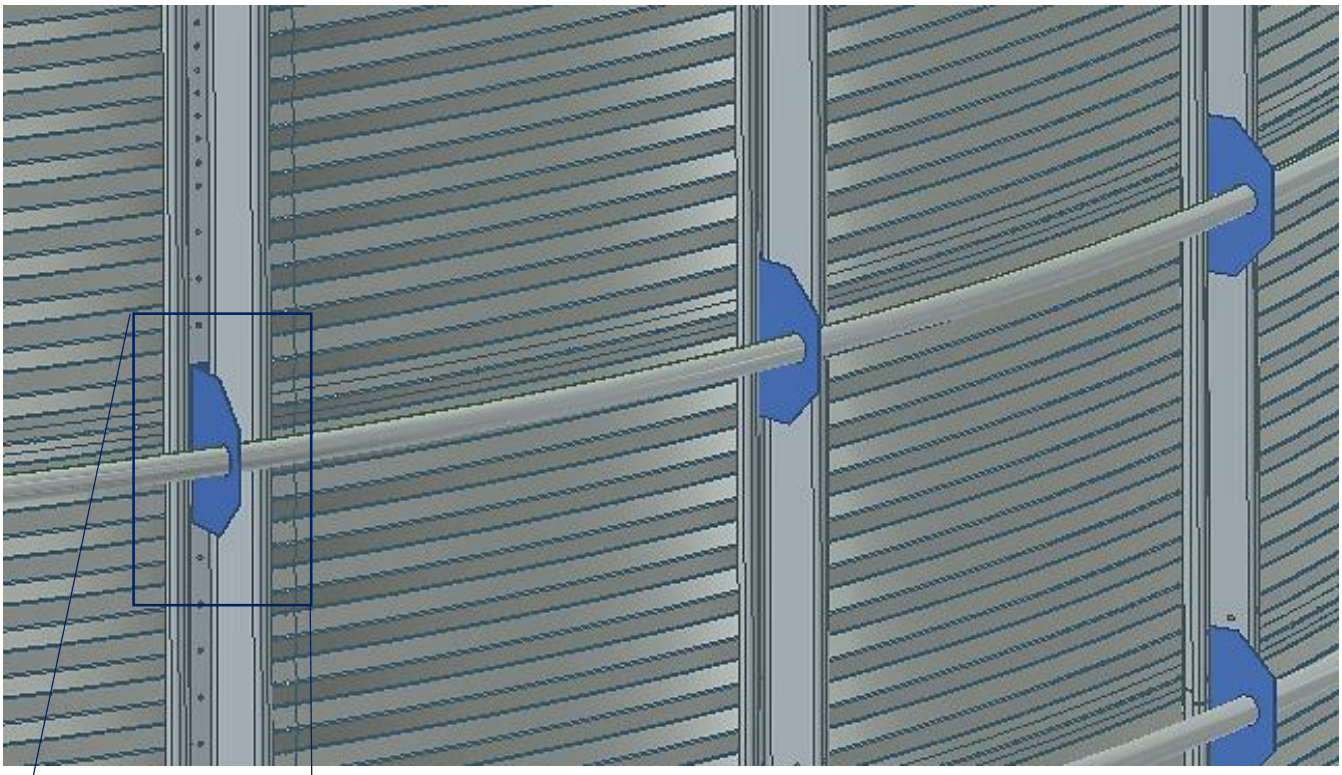
Horizontal Slots in Bracket go to Sidewall

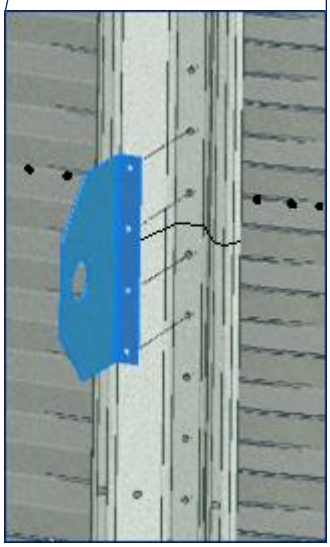
Wind Ring Assembly

Wind Ring Installation

Start with installing the wind ring brackets with the stiffeners in the location required (refer to sidewall assembly chart for wind ring locations).

Slide wind ring tubes through brackets around the bin, to join each tube see below. The last wind ring tube needs to be cut to fit on site.

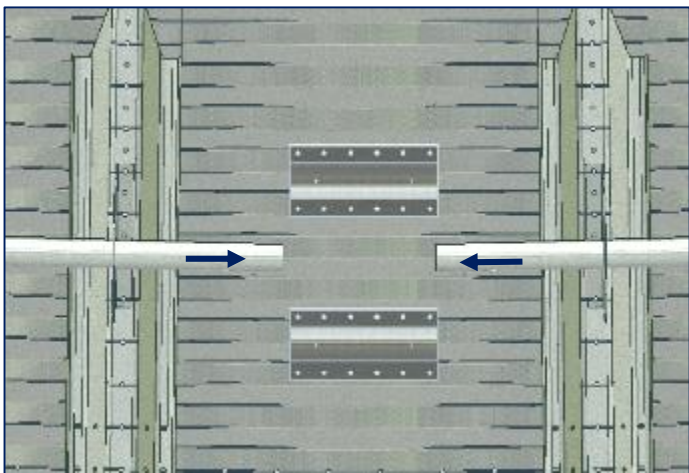




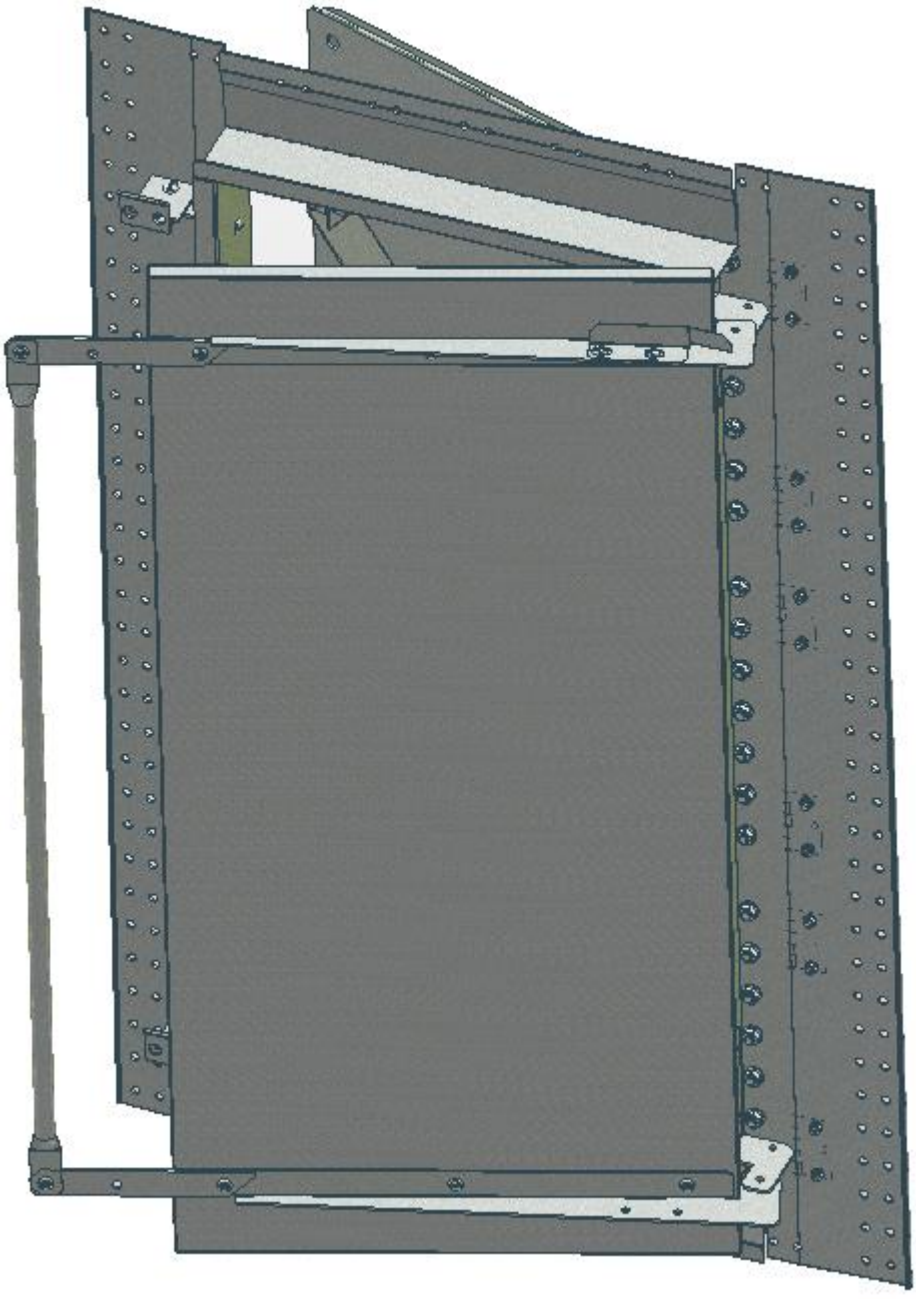
Wind Ring Joining

When joining 2 wind ring pieces use 2 joiner half saddles, 4 self drilling screws, and 12pcs 5/16” bolts.

Push the 2 wind ring tubes together and then wrap the seam with the joiner halves, fasten the 2 halves together with the 5/16” hardware, then install the self drilling screws locking the joiners to the tubes

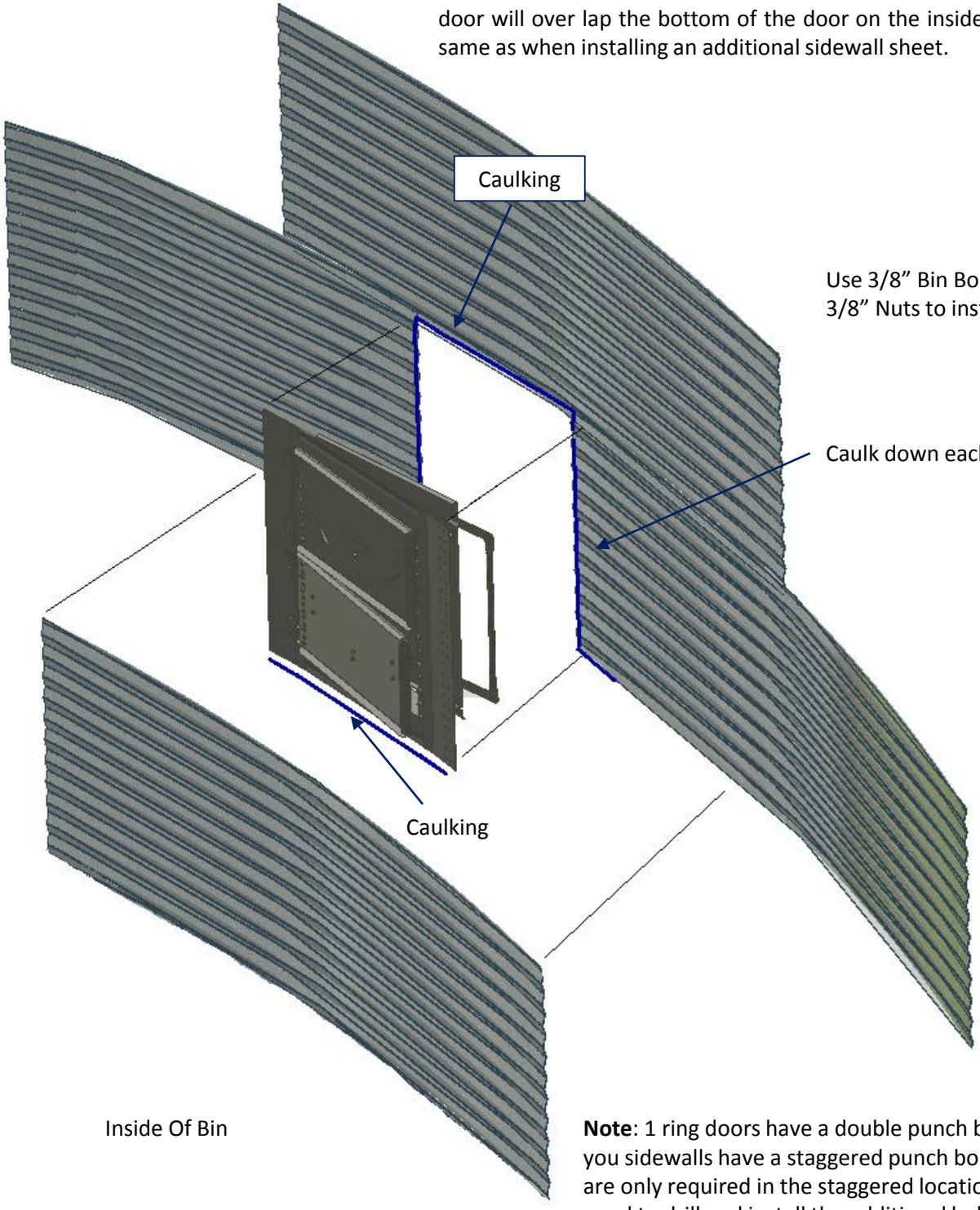


Bin Door Installation



44” 1 Ring Door

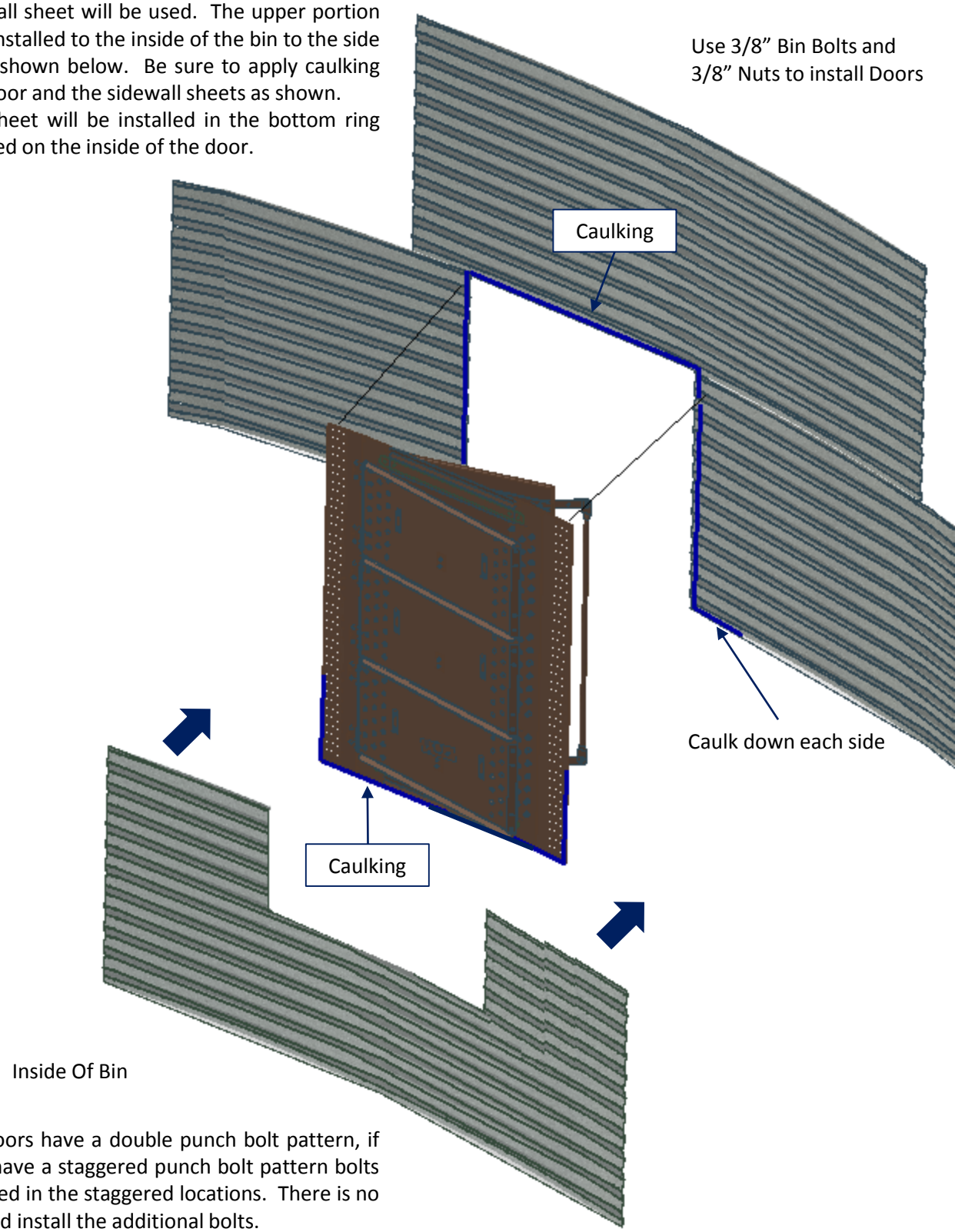
When installing a 1 Ring Door it should be installed in the second ring from the bottom of the bin. The top and both sides of the door should be installed on the inside of the sidewall sheets. Next to the door will be a short sidewall sheet. The sidewall sheet to be installed under the door will over lap the bottom of the door on the inside of the bin, the same as when installing an additional sidewall sheet.



Note: 1 ring doors have a double punch bolt pattern, if you sidewalls have a staggered punch bolt pattern bolts are only required in the staggered locations. There is no need to drill and install the additional bolts.

66” 2 Ring Door

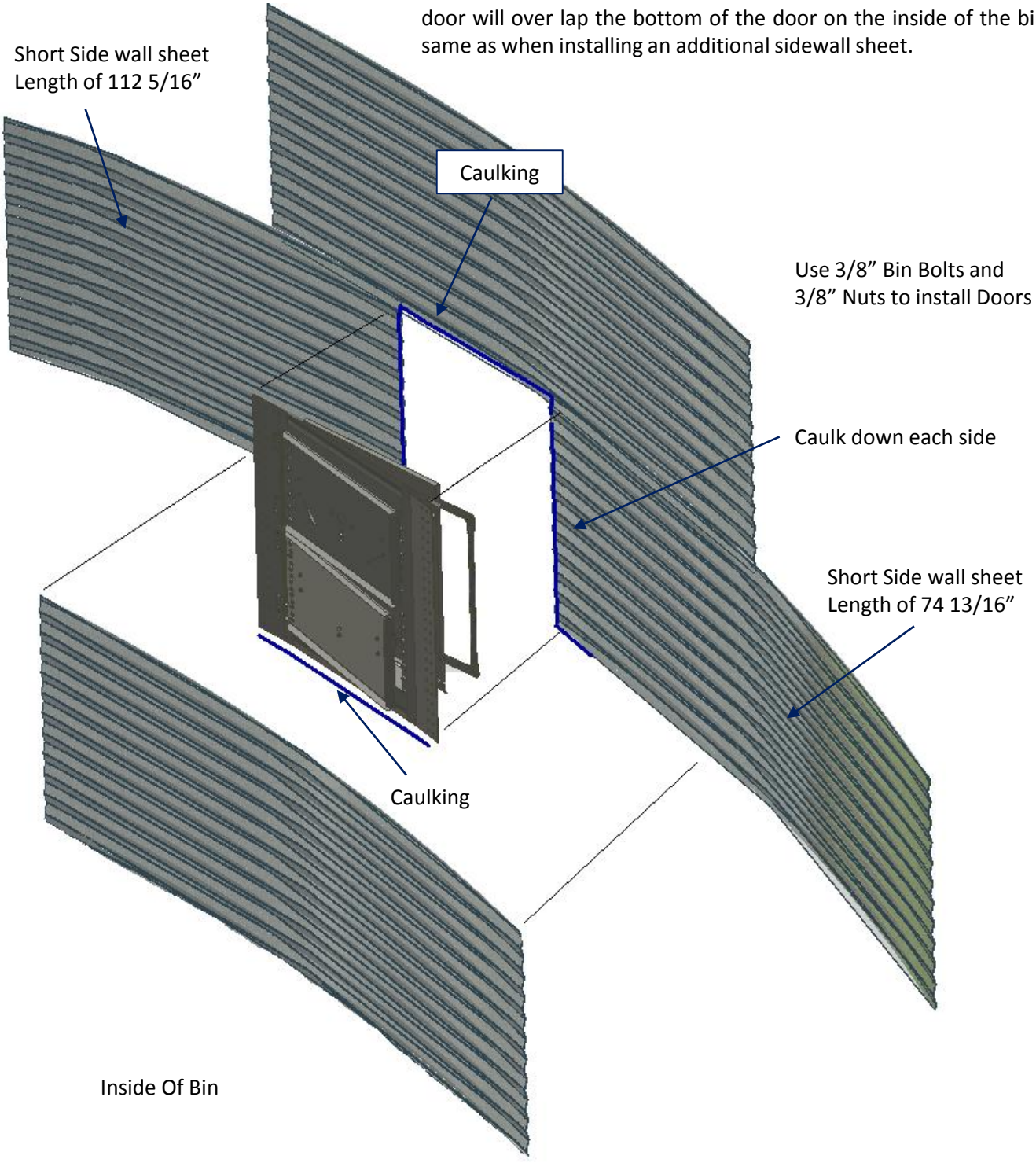
When installing a 2 Ring 66” Door a short sheet and a notched sidewall sheet will be used. The upper portion of the door is installed to the inside of the bin to the side wall sheets as shown below. Be sure to apply caulking between the door and the sidewall sheets as shown.
The notched sheet will be installed in the bottom ring and is positioned on the inside of the door.



Note: 2 ring doors have a double punch bolt pattern, if you sidewalls have a staggered punch bolt pattern bolts are only required in the staggered locations. There is no need to drill and install the additional bolts.

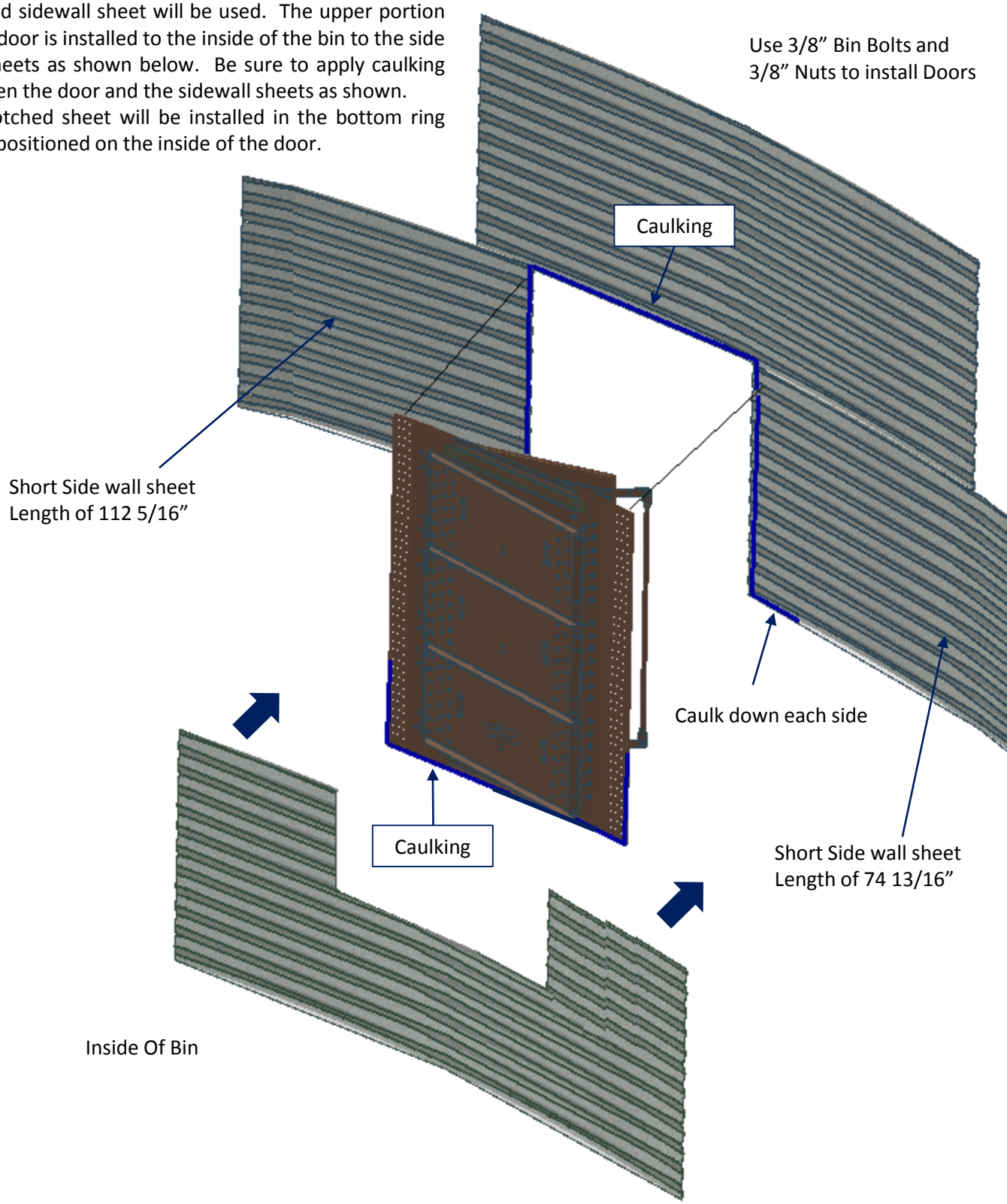
44” 1 Ring Commercial Door

When installing a 1 Ring Door it should be installed in the second ring from the bottom of the bin. The top and both sides of the door should be installed on the inside of the sidewall sheets. Next to the door will be a short sidewall sheet. The sidewall sheet to be installed under the door will over lap the bottom of the door on the inside of the bin, the same as when installing an additional sidewall sheet.



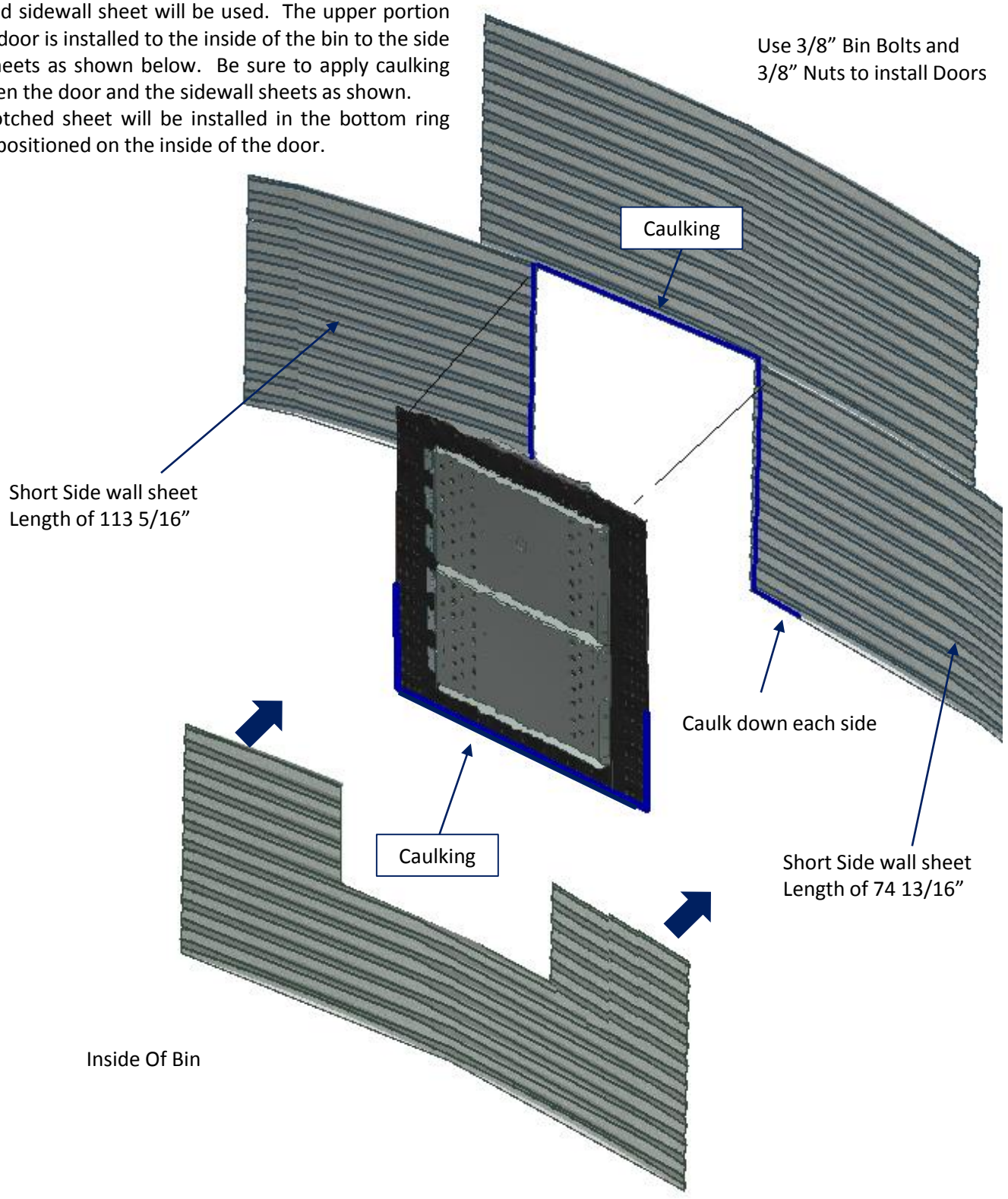
66” 2 Ring Commercial Door

When installing a 2 Ring 66” Door a short sheet and a notched sidewall sheet will be used. The upper portion of the door is installed to the inside of the bin to the side wall sheets as shown below. Be sure to apply caulking between the door and the sidewall sheets as shown.
The notched sheet will be installed in the bottom ring and is positioned on the inside of the door.



66” 2 Ring Commercial Door

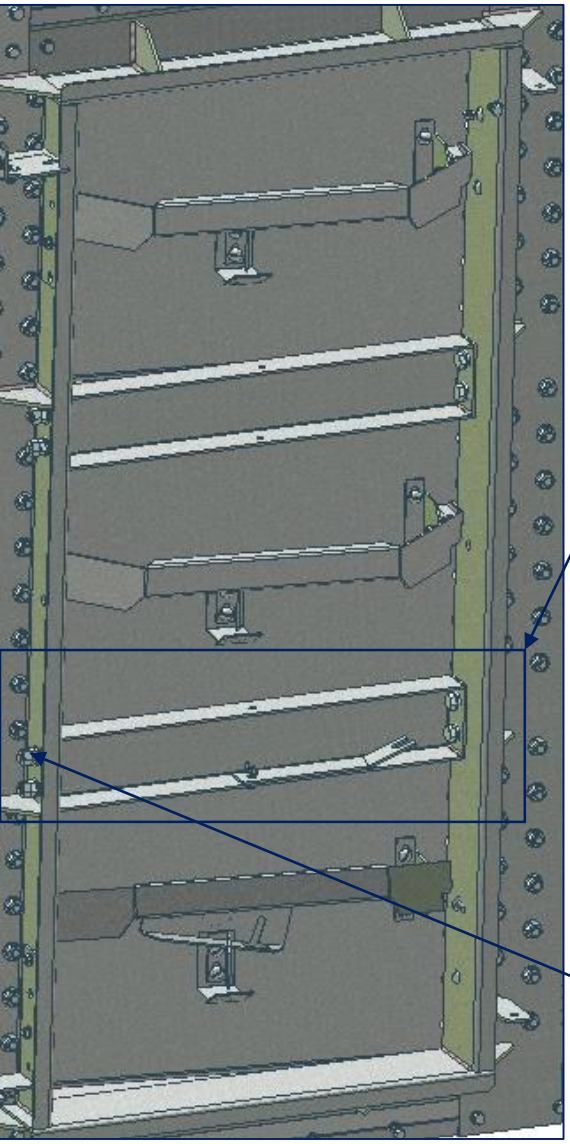
When installing a 2 Ring 66” Door a short sheet and a notched sidewall sheet will be used. The upper portion of the door is installed to the inside of the bin to the side wall sheets as shown below. Be sure to apply caulking between the door and the sidewall sheets as shown.
The notched sheet will be installed in the bottom ring and is positioned on the inside of the door.



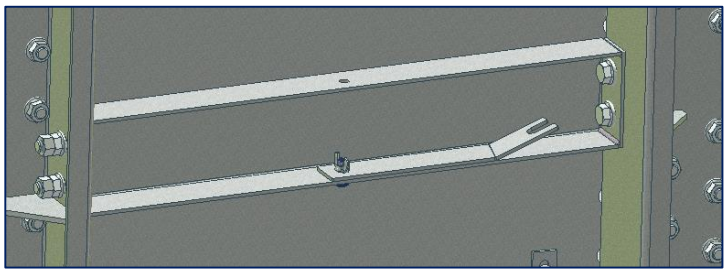
Commercial Door Tie Rod Assembly

Tie Rod Tightening Instructions

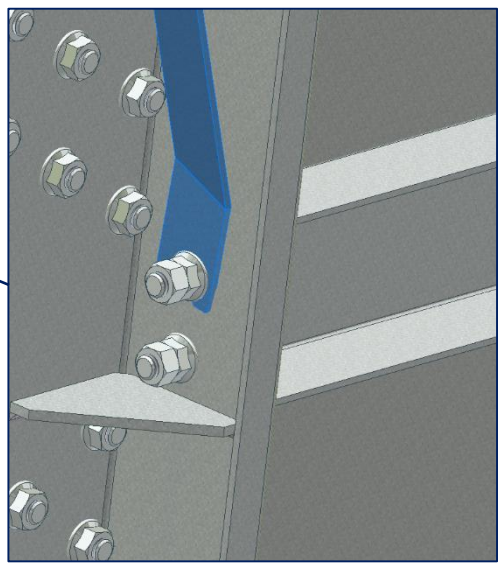
When closing door and preparing it to refill the bin install 2 Tie Rods to the door. Install the tie rods with the bolt heads pointing to the center of the door. 4 bolting locations per tie rod are required.



Use the 10 gauge shim tool to set the required gap on the tie rod bolts on the Door Handle side (Tighten hinge side as normal). The shim is stored on the center of one of the tie rods

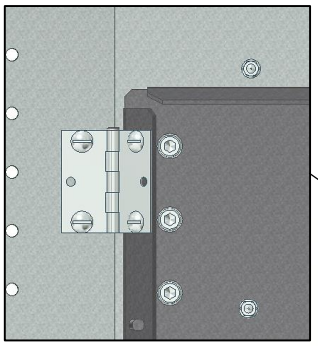


Use the shim tool by placing it between the nut and the door frame. Tighten the nut and bolt for the tie rod until it makes snug contact with the shim tool. Then install a second nut to act as a Jam nut and tighten to prevent the hardware from loosening. This should leave a 10 gauge gap between the nut and door frame. Remove the shim tool and repeat for remaining mounting locations. Remember to store the shim tool on tie rod when complete.

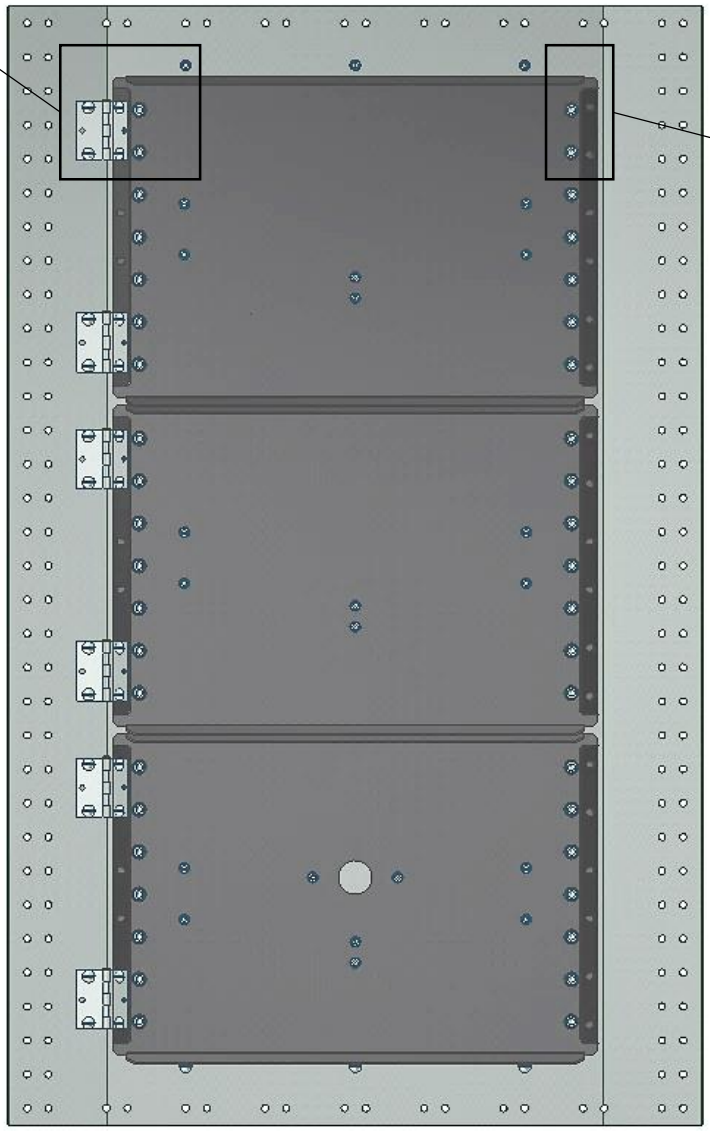


After the bin has been cycled it is possible the fitment of the inner doors will not be as true as the original fitment. In order to correct this condition, from the inside of the bin loosen the hinges for the inner door panel and close the panel over the dowels, try to hold the door with an equal gap around the dowel to the door panel and re-tighten the hinges. Repeat these steps for all 3 panels. If there is not enough movement in the hinge mounting to correct the fit, the dowel pins may need to be loosened and adjusted to achieve desired fitment.

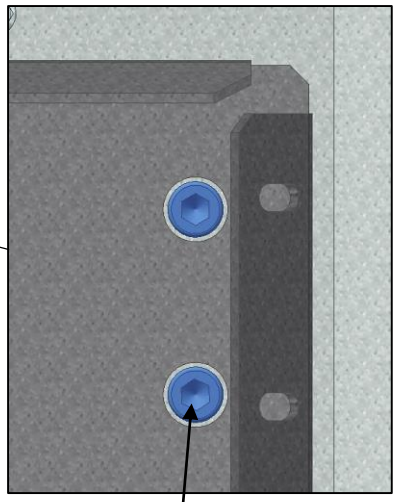
Inner Door Hinge



Door From Inside Of Bin



Inner Door Dowel Location



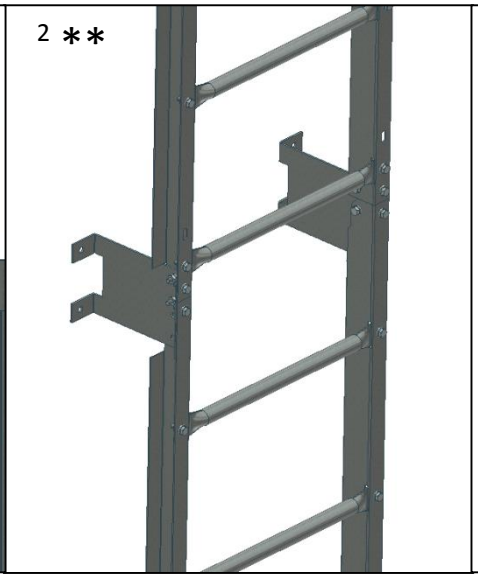
Inner Door Dowel

Bin Ladder Assembly

Ladder Brackets

All ladder assemblies are the same. There are 3 general types of ladder brackets ; a top bracket, an intermediate bracket, and a bottom bracket. The different bracket and how they attach are shown below.

Top Bracket bolts to ladder rails and then to the top row of holes in the top sidewall of the bin

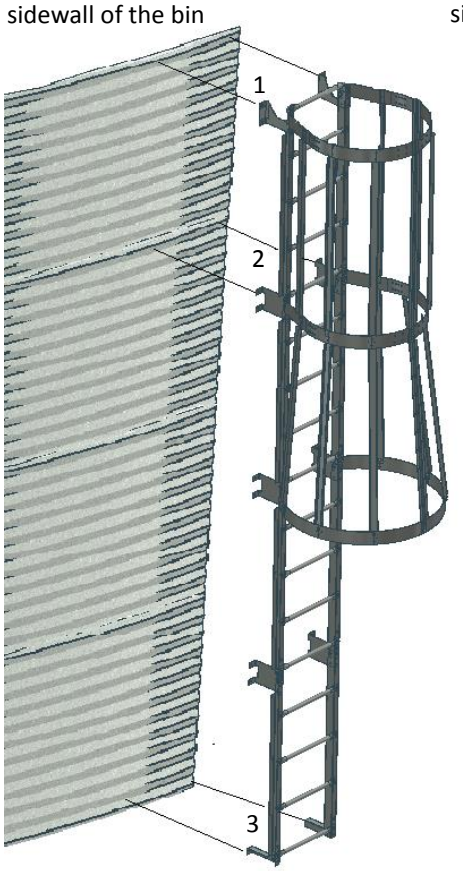


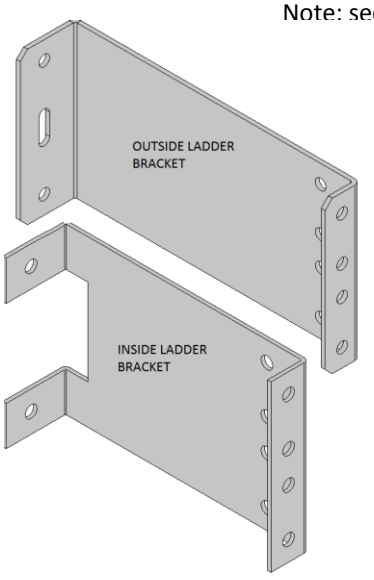
Intermediate Bracket bolts to ladder rails and then to the seam between sidewall sheets

Lower Bracket bolts to ladder rails and to bottom rib of bottom sidewall sheet

Install Ladder from the first ring and assemble 1 ladder section on every ring.

Note: see Ladder Cage assembly on next page





** Inside Ladders assemble in the same fashion only using an intermediate bracket at the top in place of the regular top bracket. Note: inside ladder brackets are shorter in length then the outside brackets

*The top style bracket is also used at any location where there is a wind ring present in order to clear the wind ring with out modifying an intermediate bracket

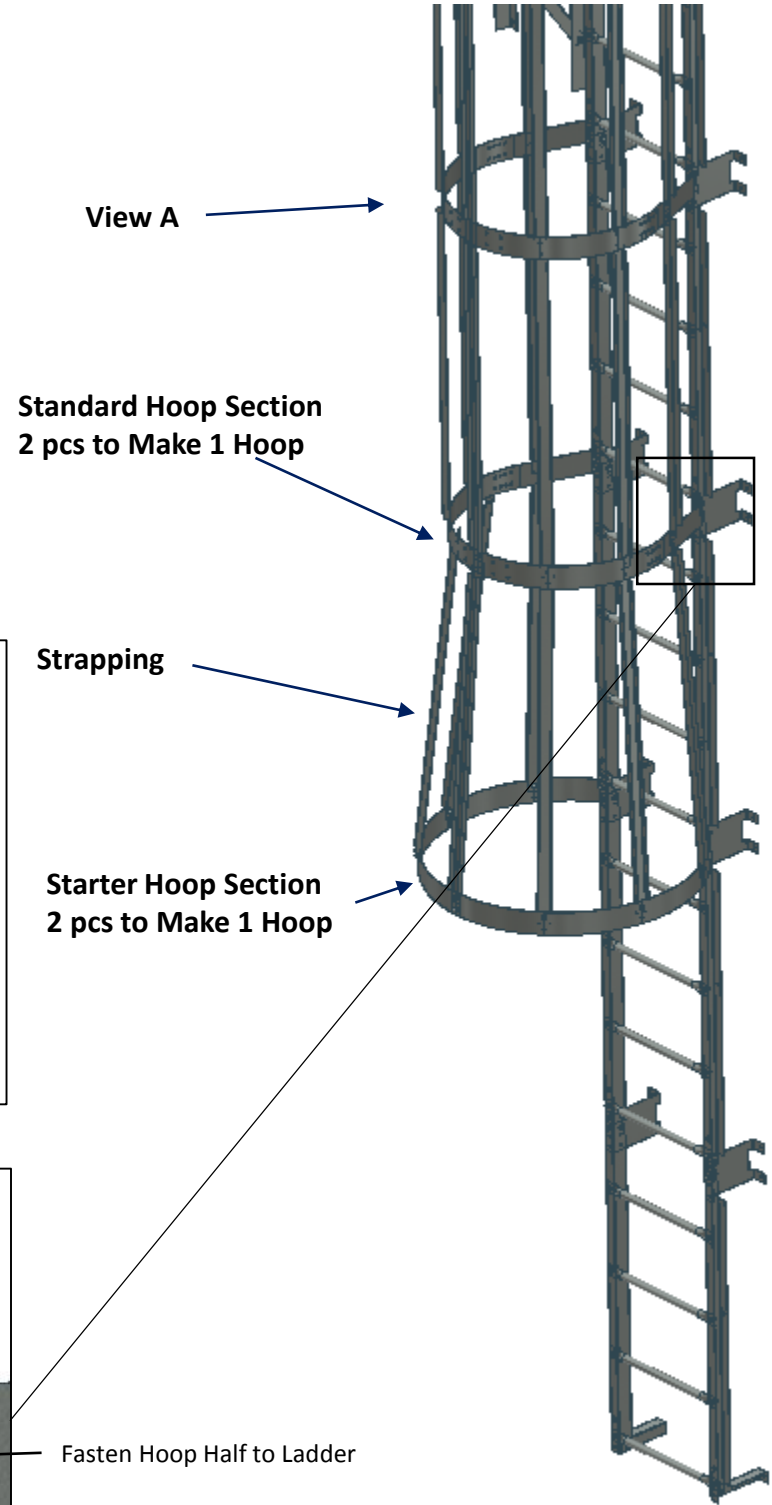
Bin Ladder Cage Assembly

Install the cage hooping and strapping as shown in the diagram.

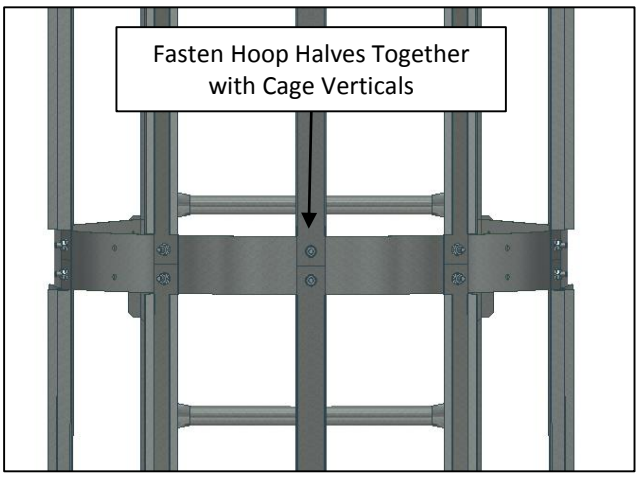
The starter section of hooping is located at the bottom of the safety cage.

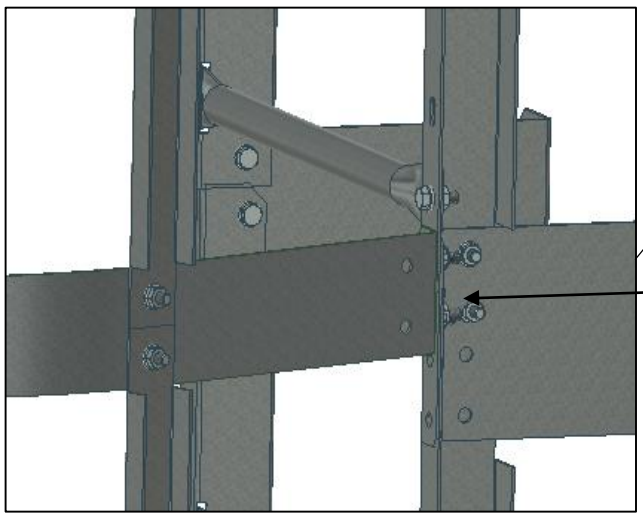
The strapping will need to be bent slightly in order to bolt to the hooping.

Use 5/16” x 3/4” button head bolts to fasten the strapping to the hooping with the head of the bolt facing in towards the ladder.



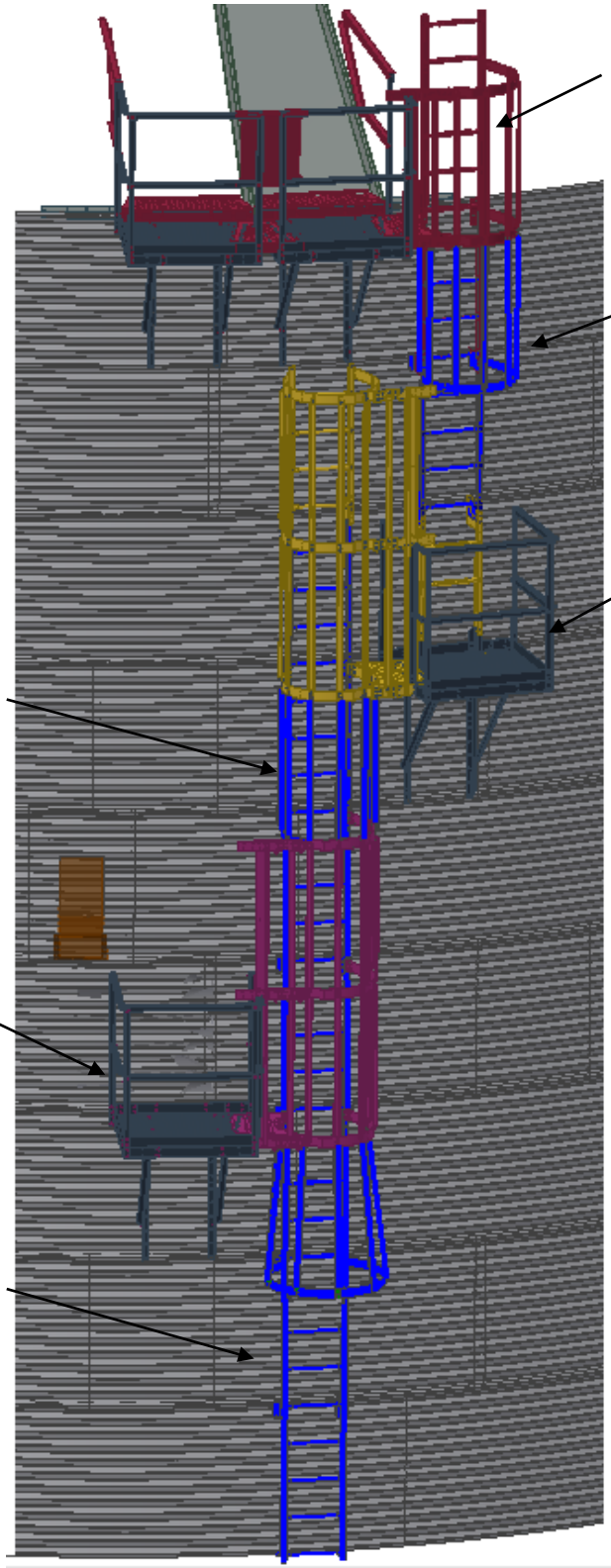
View A





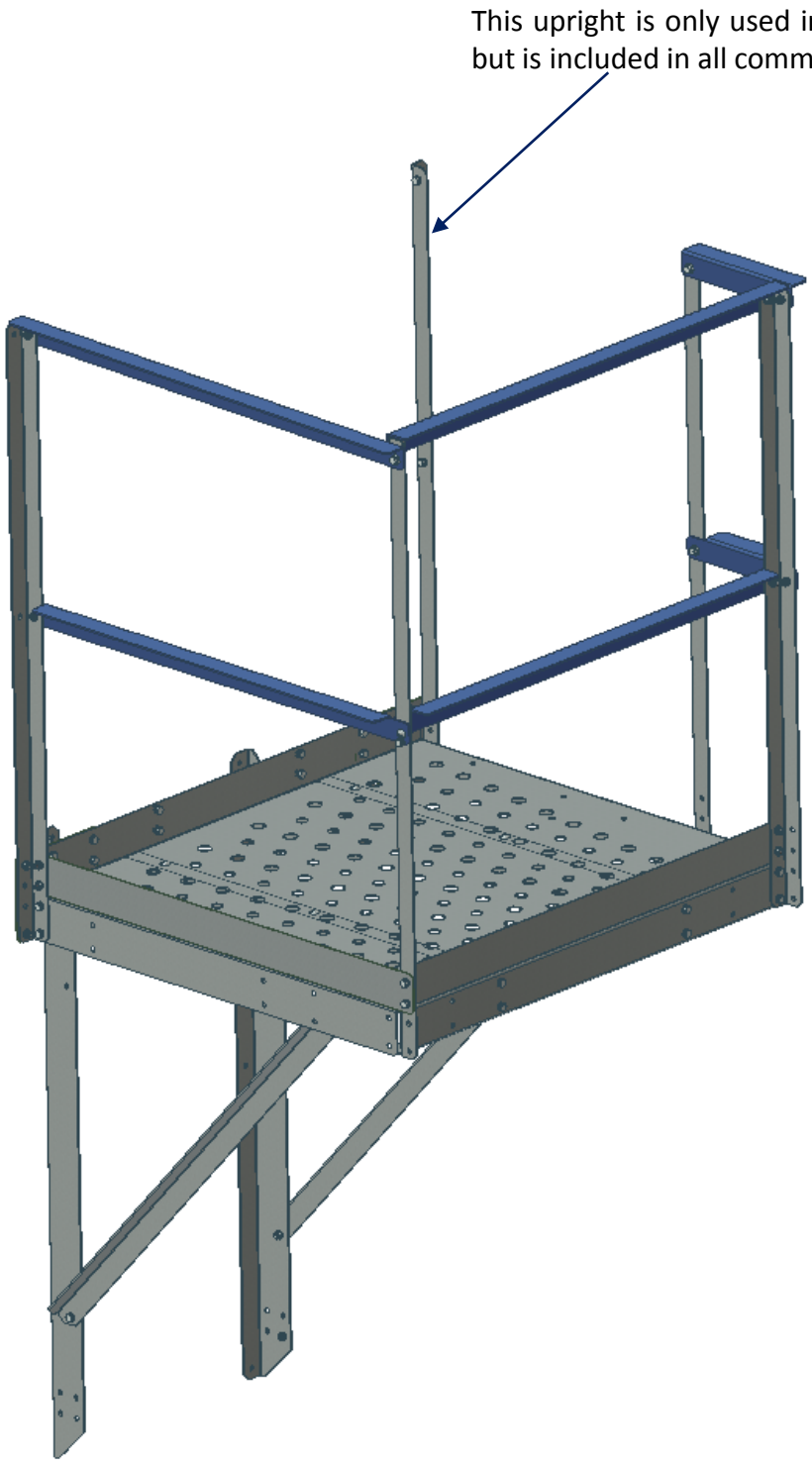
Platforms

The platforms are suitable to install from 15’ to 90’ diameter grain bins and can also be installed right or left hand side of ladders. Below is an example layout of the different types of platforms and their relationship with the bin ladders.



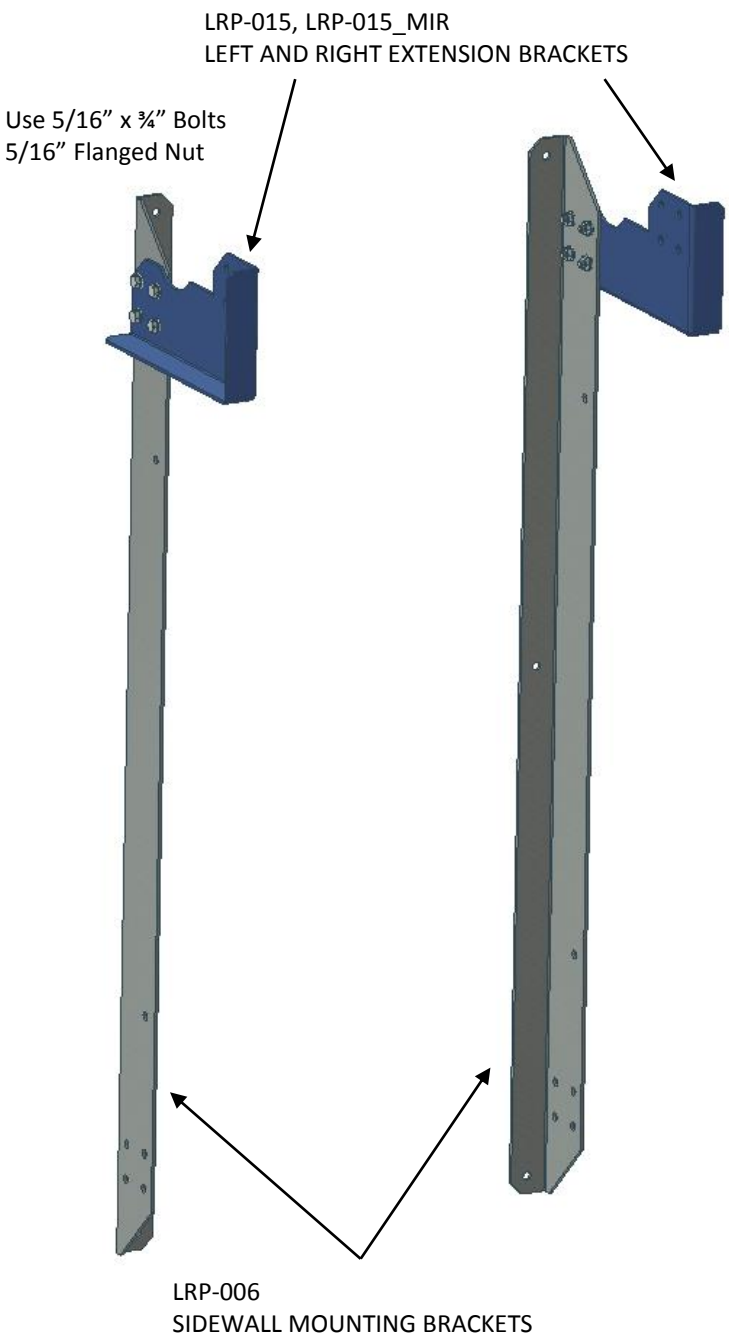
Common Platform Assembly

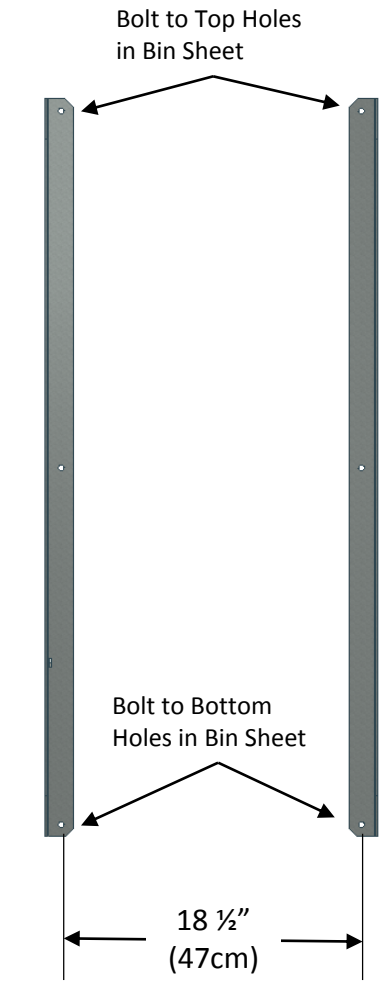
The Common Platform assembly is a portion of all platforms used on a bin. The common platform will be used in the Rest Platform, Side Draw Platform, and Eave Platform. Below is an overview and instructions on the assembly of the Common Platform. All platforms are designed for left or right entry. These instructions will give an example of assembling a left entry, for a right entry the assembly is mirrored.



Common Platform Assembly

The common platform begins assembly by fastening the left and right extension brackets to the sidewall mounting brackets as shown below.

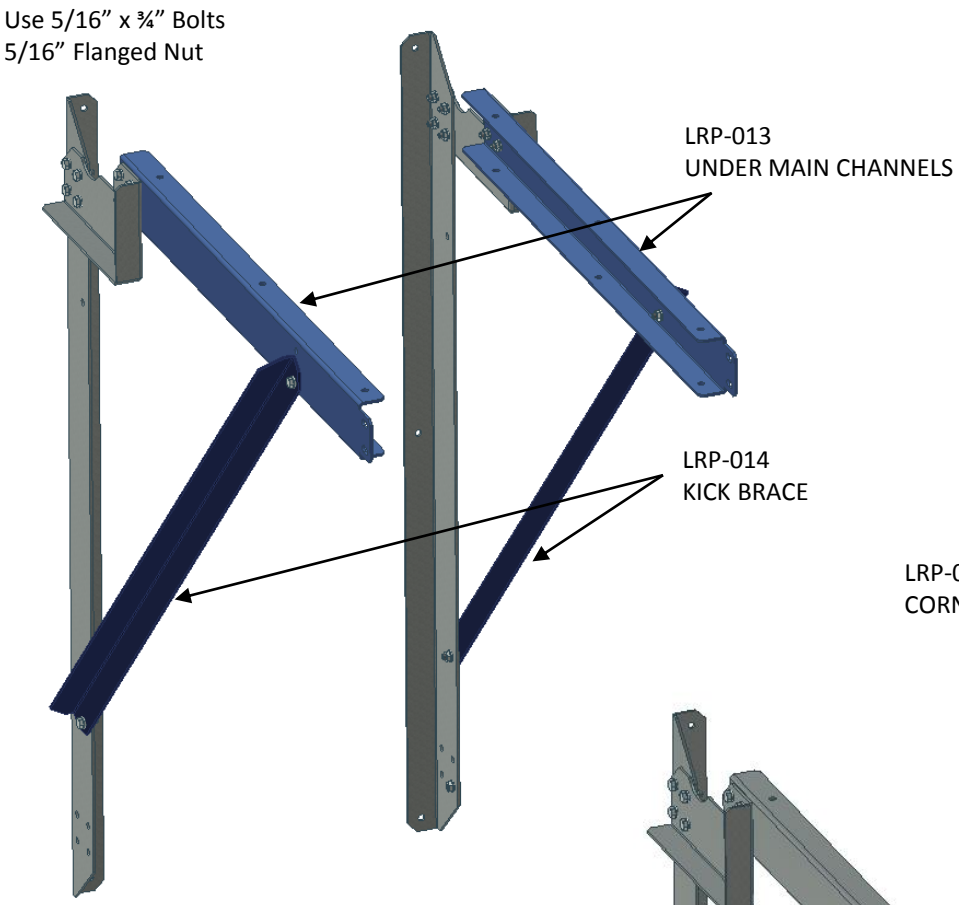




Sidewall Mounting bracket spacing when installed to bin sidewall

Common Platform Assembly

Next install the under main channels and kick braces to the sidewall mounting brackets as shown.

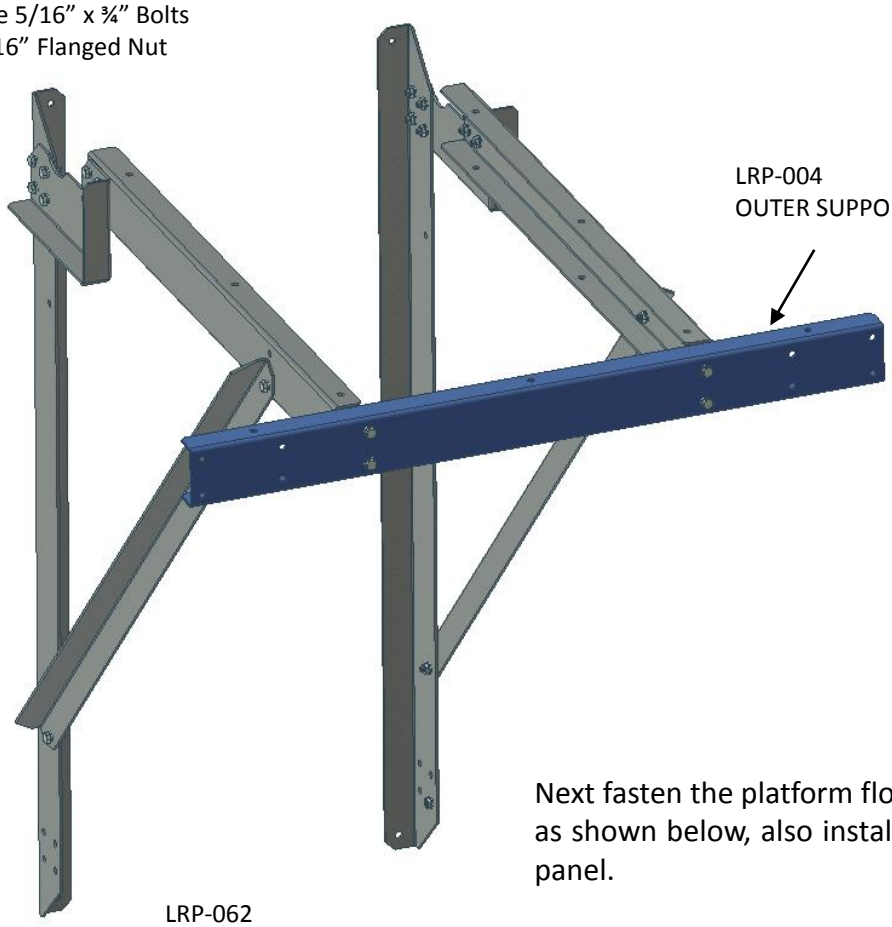


Next fasten the corner connection flanges to the ends of the under main channels

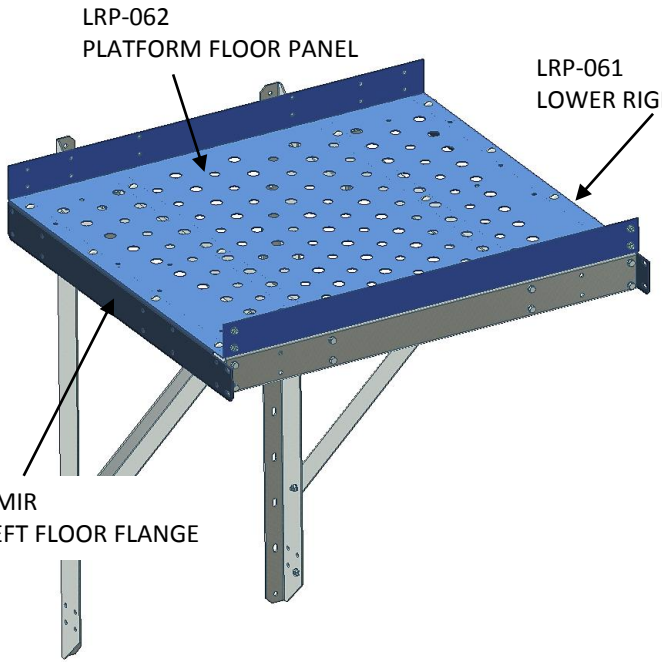
Common Platform Assembly

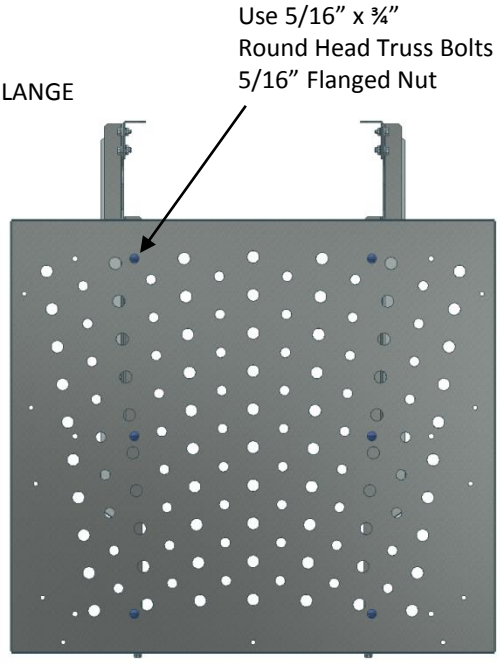
Fasten the outer support channel to the corner connection flanges as shown

Use 5/16” x ¾” Bolts
5/16” Flanged Nut



Next fasten the platform floor panel to the under main channels as shown below, also install the lower floor flanges to the floor panel.

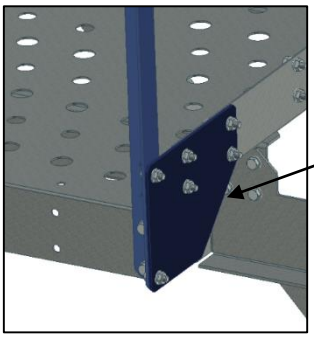




Common Platform Assembly

Next install 2 back rail post support plates to the back corners on the platform as shown in view A and B. Next install 4 handrail post and 1 corner tie to the platform as shown. Install 5 handrail post to the platform if the platform will be used as an eave platform.

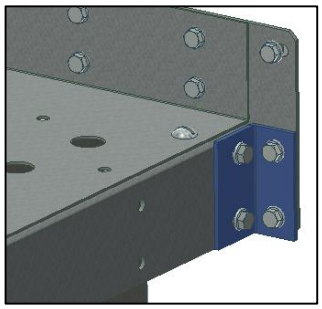
Use 5/16" x ¾" Bolts 5/16" Flanged Nut



VIEW A

LRP-044
BACK RAIL POST SUPPORT PLATE

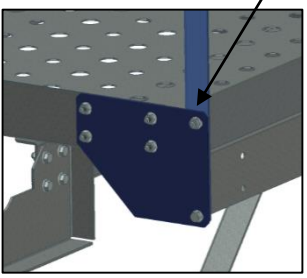
LRP-065
Corner Tie Flange



VIEW C With Rest & Side Draw Platform

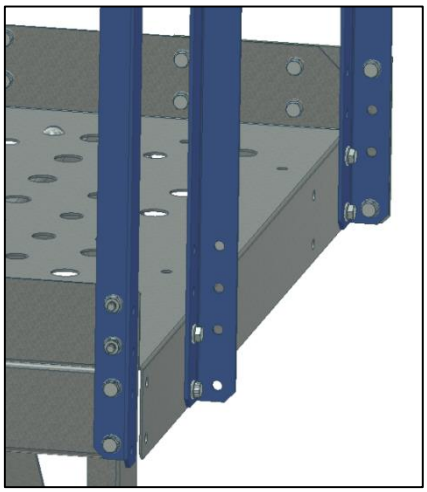
ONLY USED WITH EAVE PLATFORMS

LRP-008
HANDRAIL POST



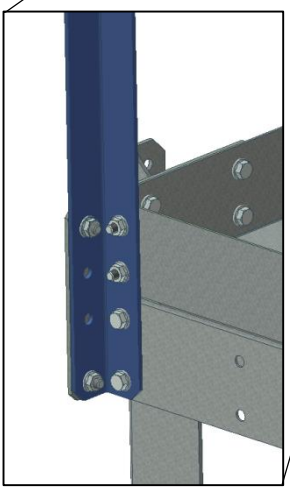
VIEW B

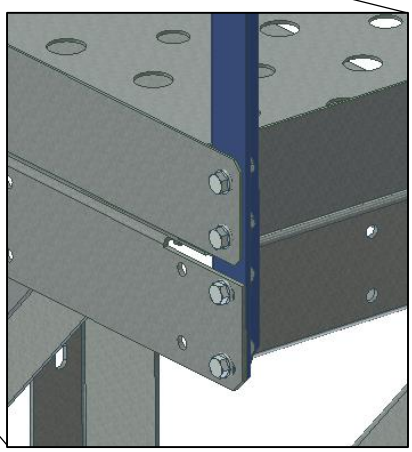
VIEW A



VIEW C With Eave Platform
VIEW C

VIEW B

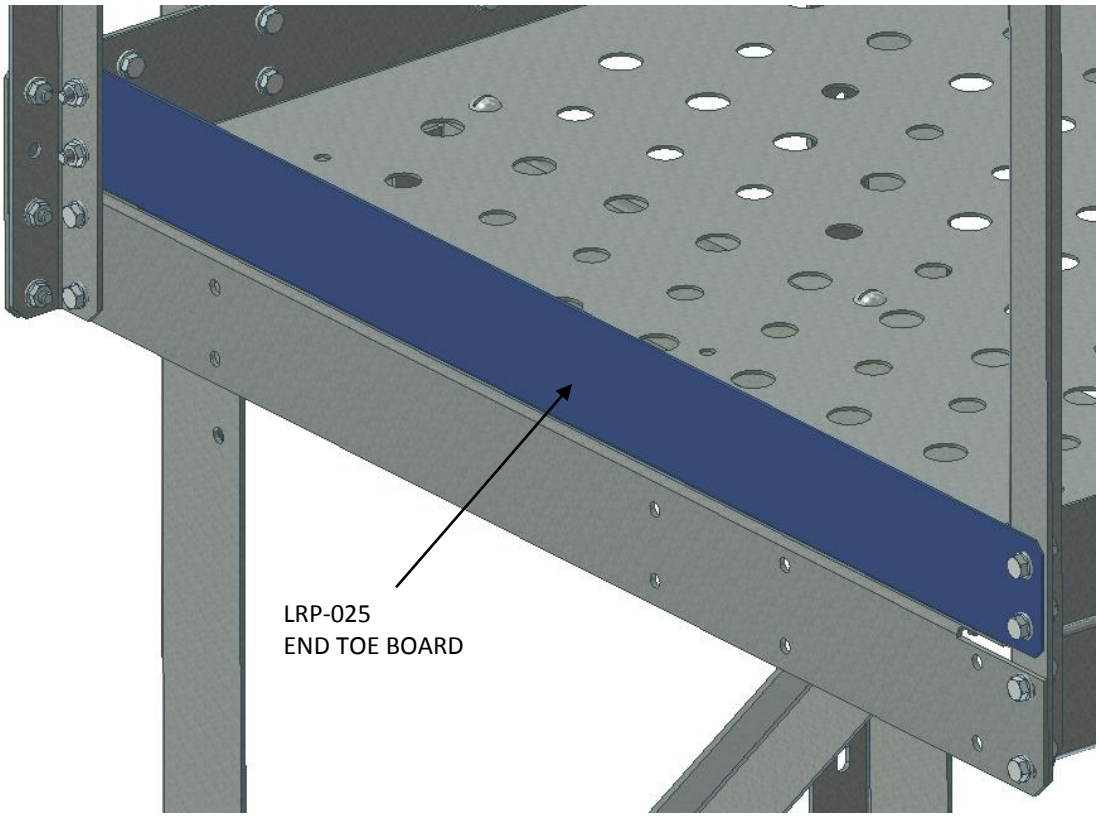




Common Platform Assembly

Next install the end toe board to the handrail posts to the opposite end that the ladder will be located on

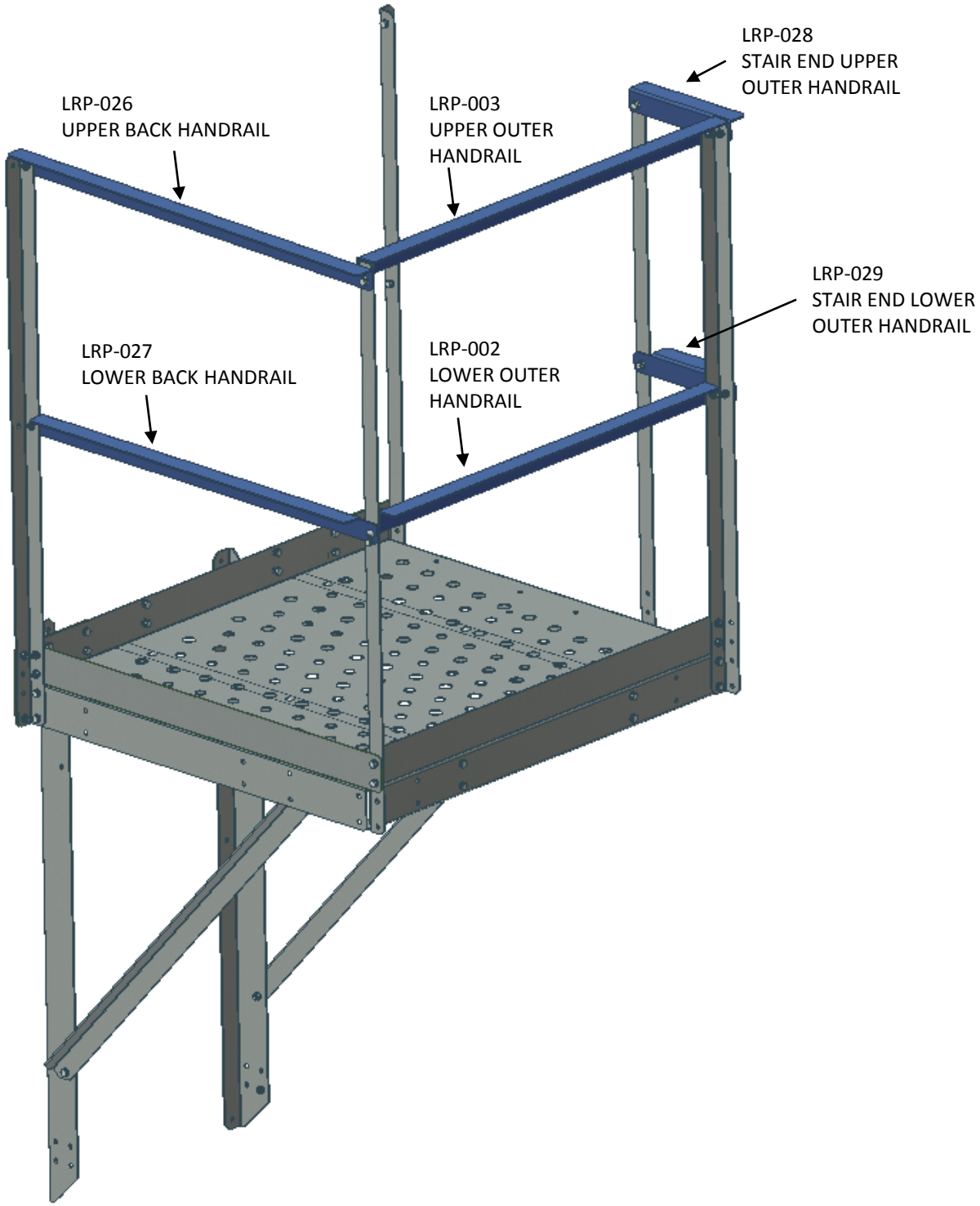
Use 5/16” x ¾” Bolts 5/16” Flanged Nut



Common Platform Assembly

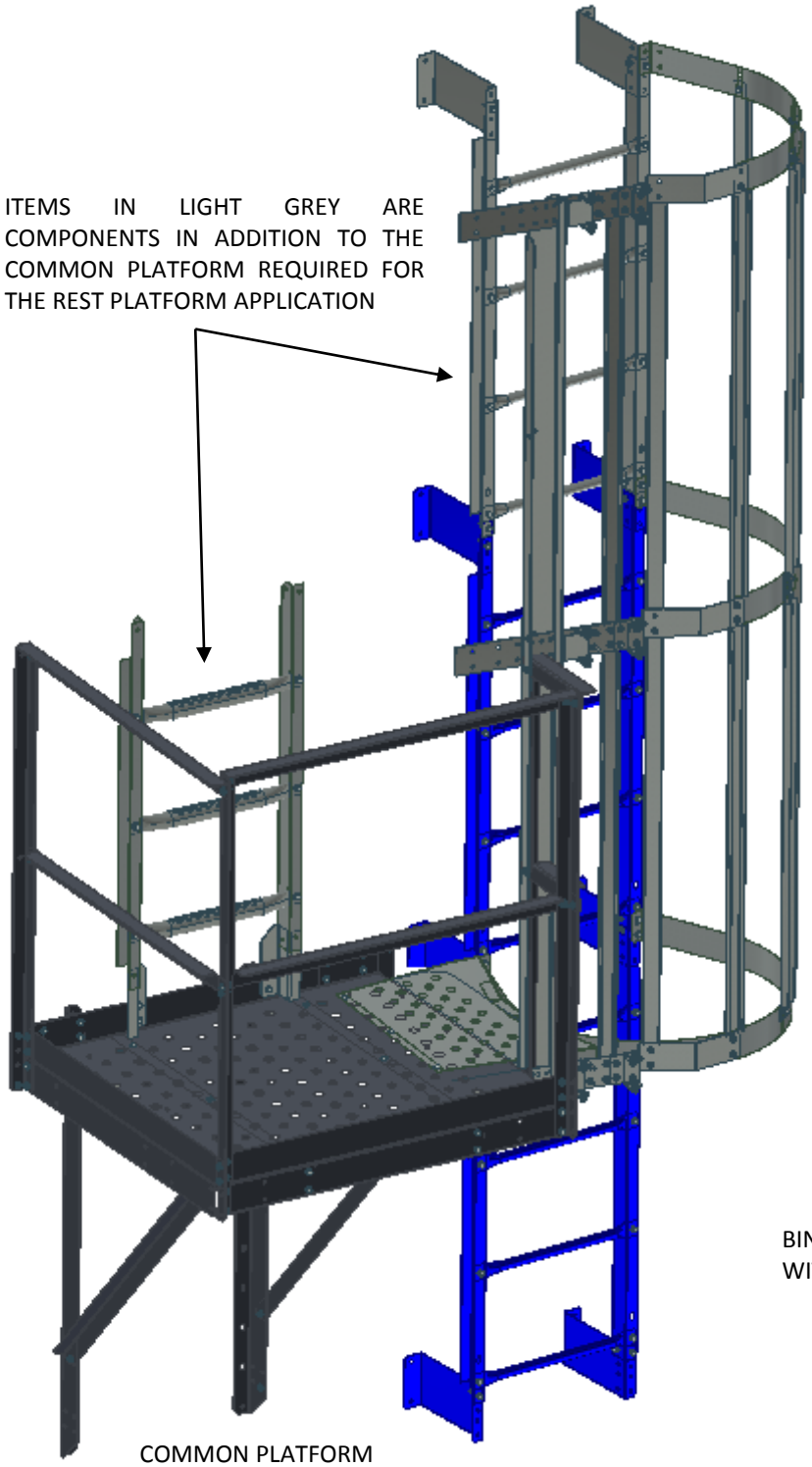
Now install the handrails to the handrail posts as shown.

Use 5/16” x ¾” Bolts 5/16” Flanged Nut



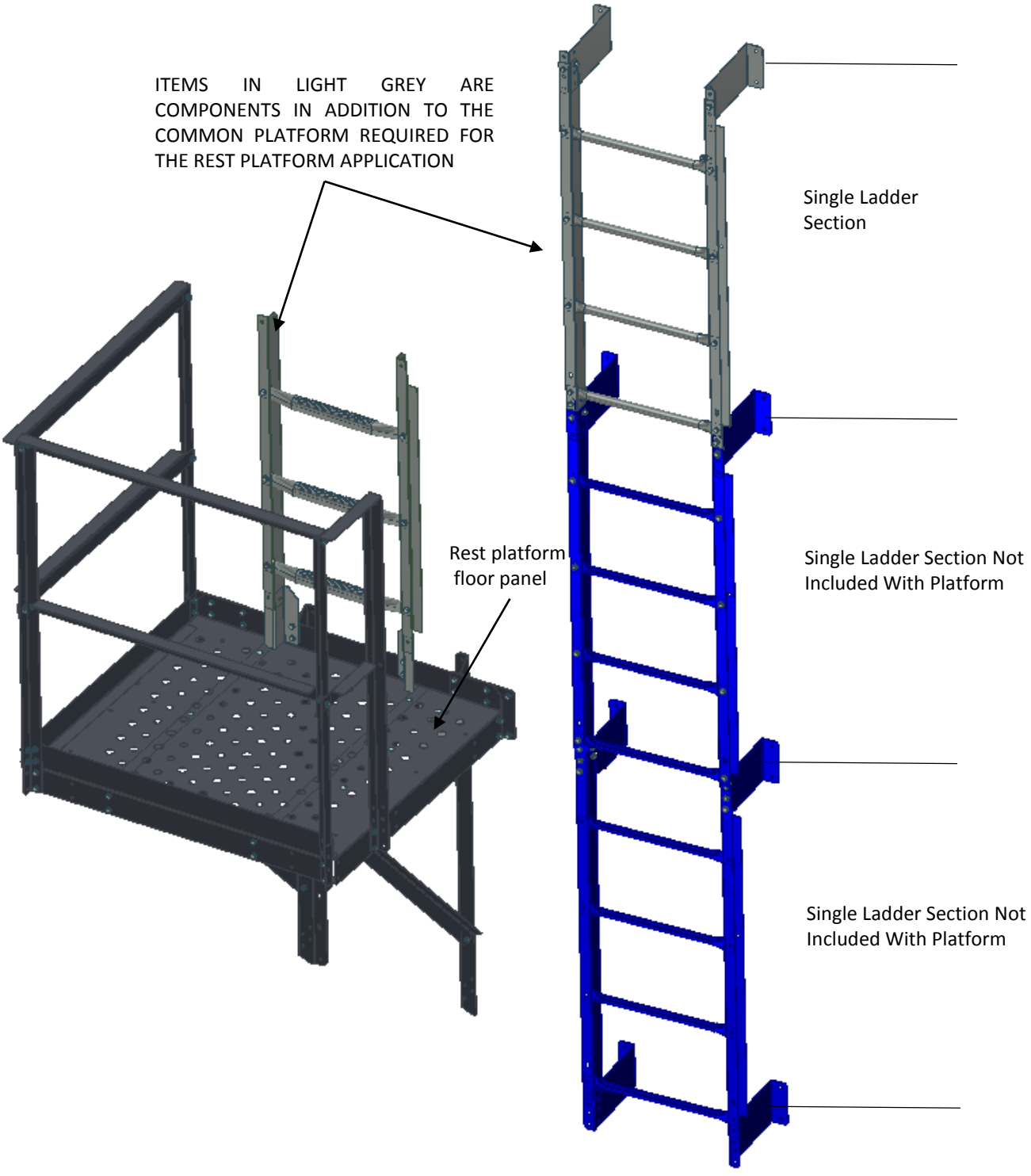
Rest Platform Assembly

The rest platform is made up of the common platform with 2 sections of cage, an additional ladder section, a short ladder section, and a platform extension. The next few pages will show how to assemble these additional items to the common platform to make the rest platform.



Rest Platform Assembly

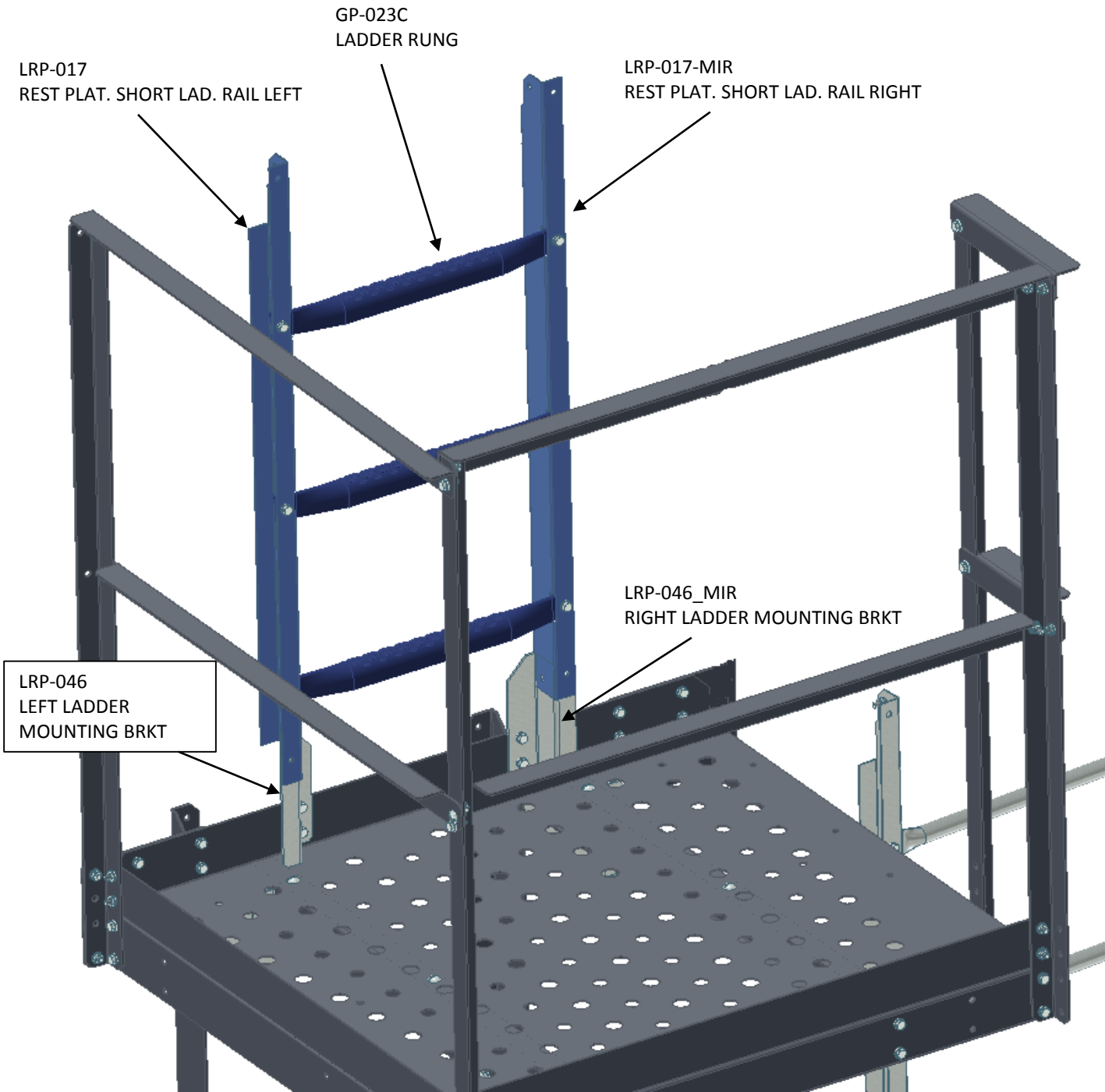
The rest platform can be mounted to the left or the right of the ladder. The Ladder sections will be installed to the left or right of the platform ensuring the ladder is 2 section higher than platform floor panel height. See Ladder assembly section of this manual for instructions on how to assemble ladder sections



Rest Platform Assembly

The rest platform has a small section of ladder that installs to the flange of the platform closest to the bin. First assemble the left and right ladder mounting bracket to the platform flange. Next assemble the small ladder section. The short section assembles very similarly to a full section except there is a left and right short rail and only 3 ladder rungs are used. Then assemble the short ladder to the ladder mounting brackets.

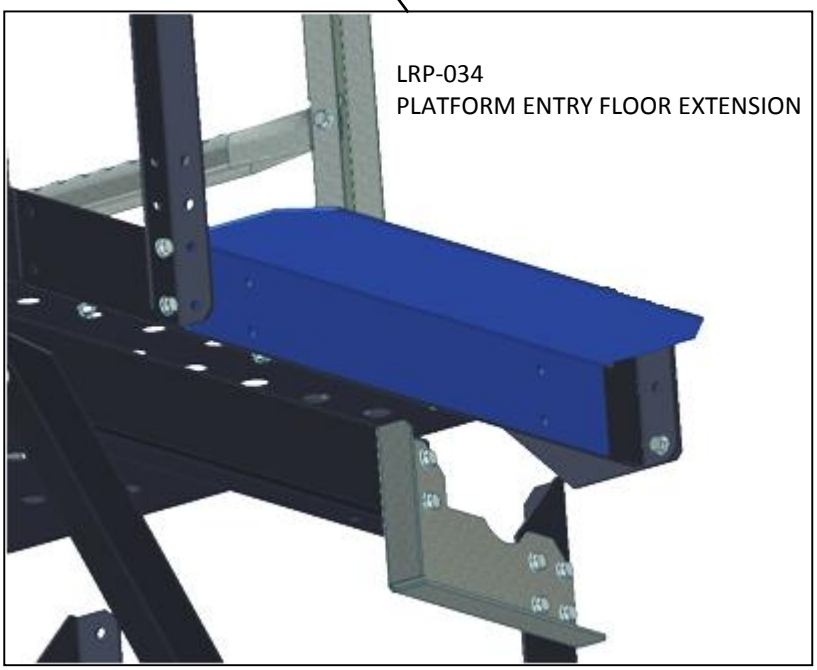
Use 5/16" x ¾" Bolts 5/16" Flanged Nut



Rest Platform Assembly

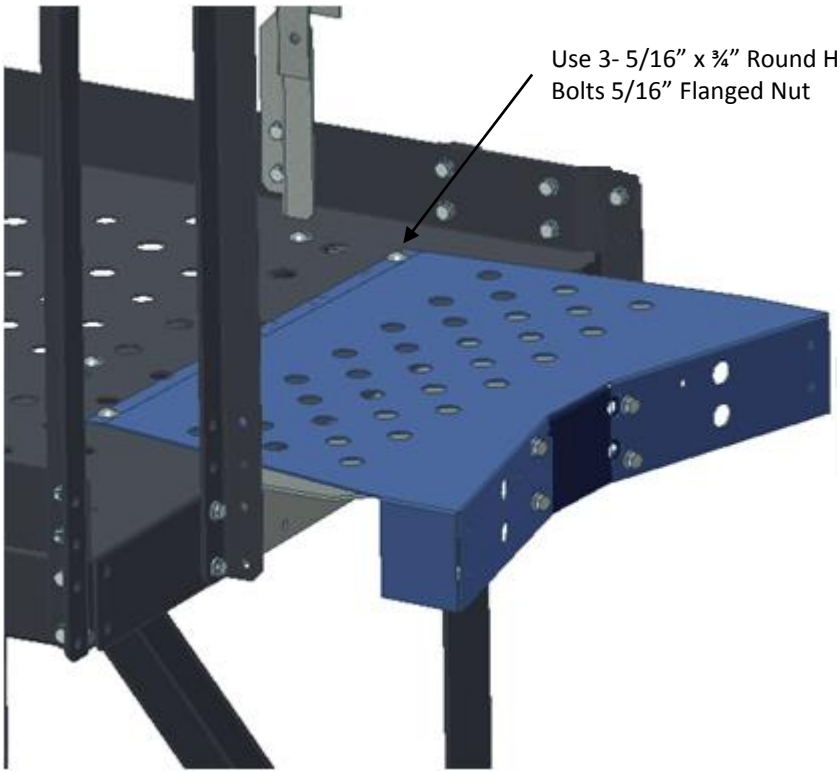
Next install the platform entry floor extension to the side of the platform using 4 bolts and nuts.

Use 5/16” x ¾” Bolts 5/16” Flanged Nut

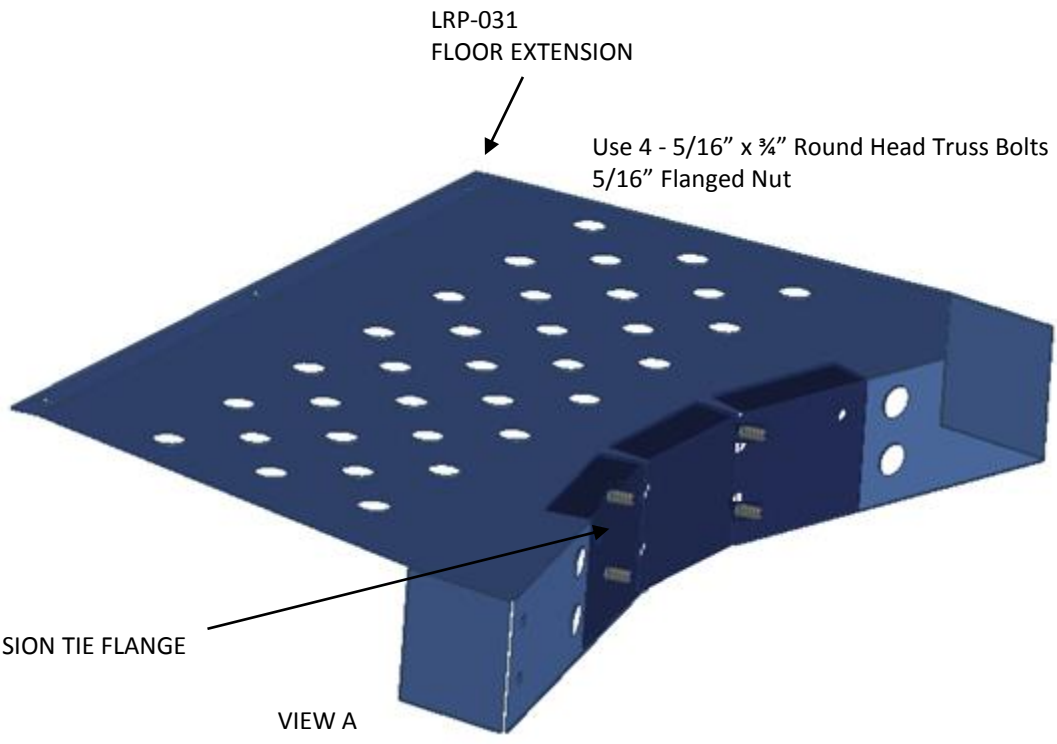


Rest Platform Assembly

Next install the platform floor extension and the floor extension tie flange. Start by assembling the platform floor extension and floor extension tie flange together. Then mount to the platform floor panel.



VIEW A



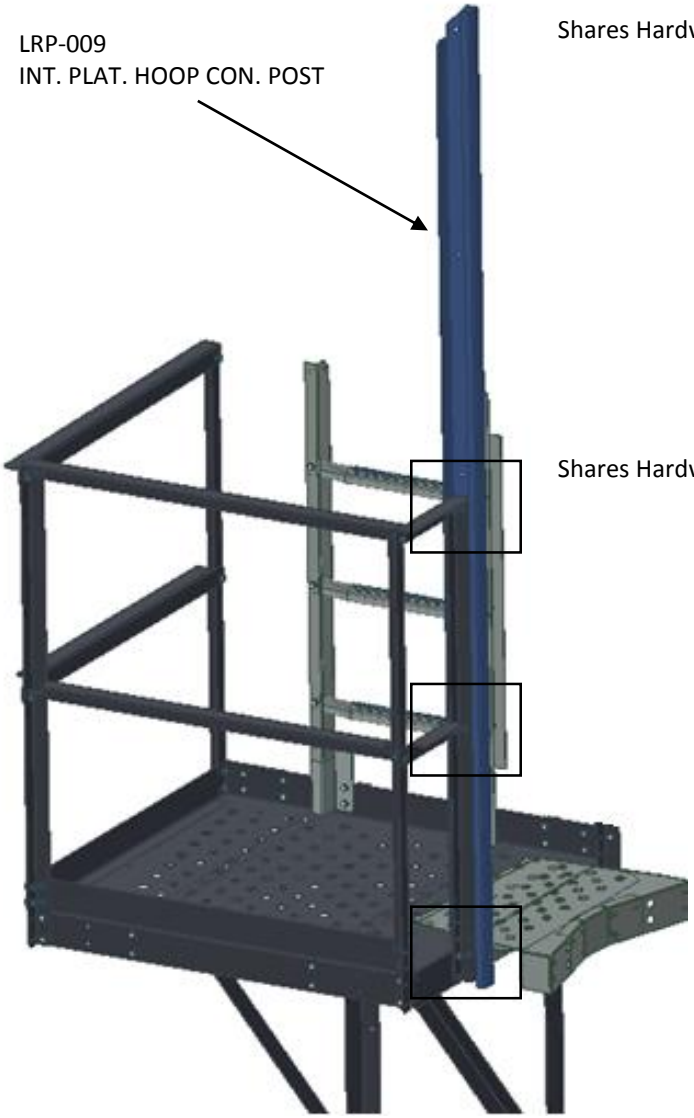
VIEW A

Rest Platform Assembly

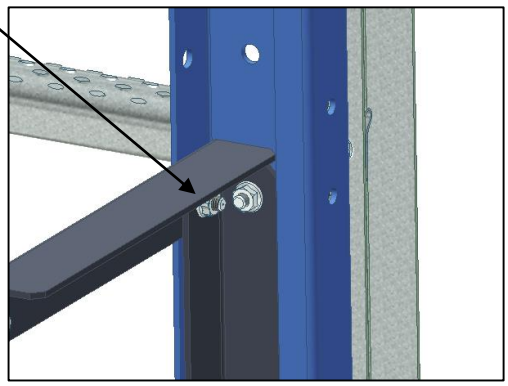
Next install the intermediate platform hoop connection post by fastening it to the handrail post as shown below.

Use 3 - 5/16” x ¾” Bolts 5/16” Flanged Nut

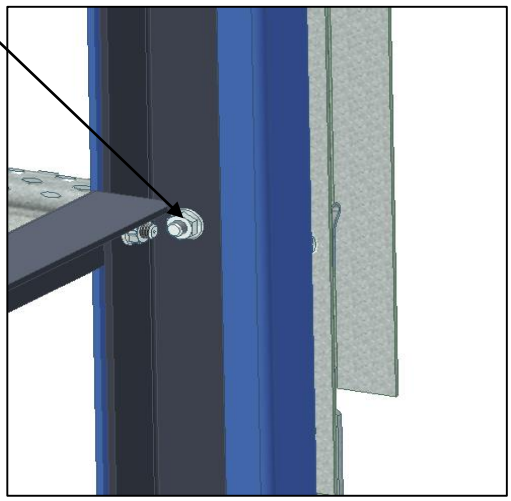
LRP-009
INT. PLAT. HOOP CON. POST

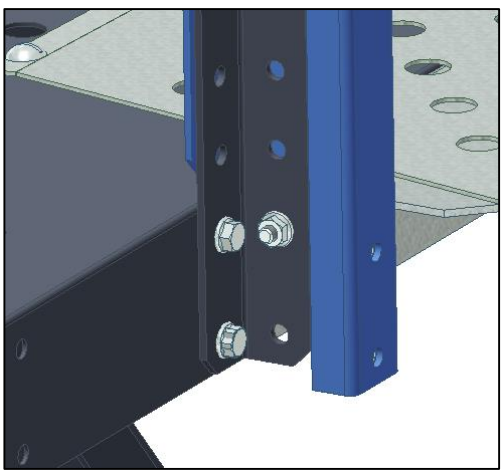


Shares Hardware with Handrail



Shares Hardware with Handrail

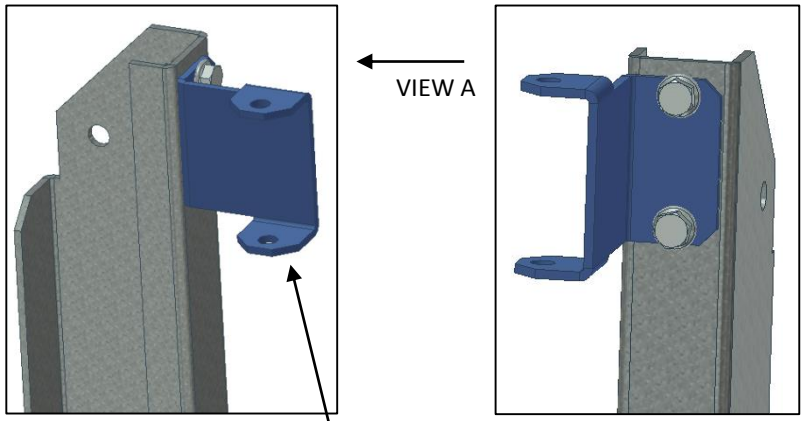


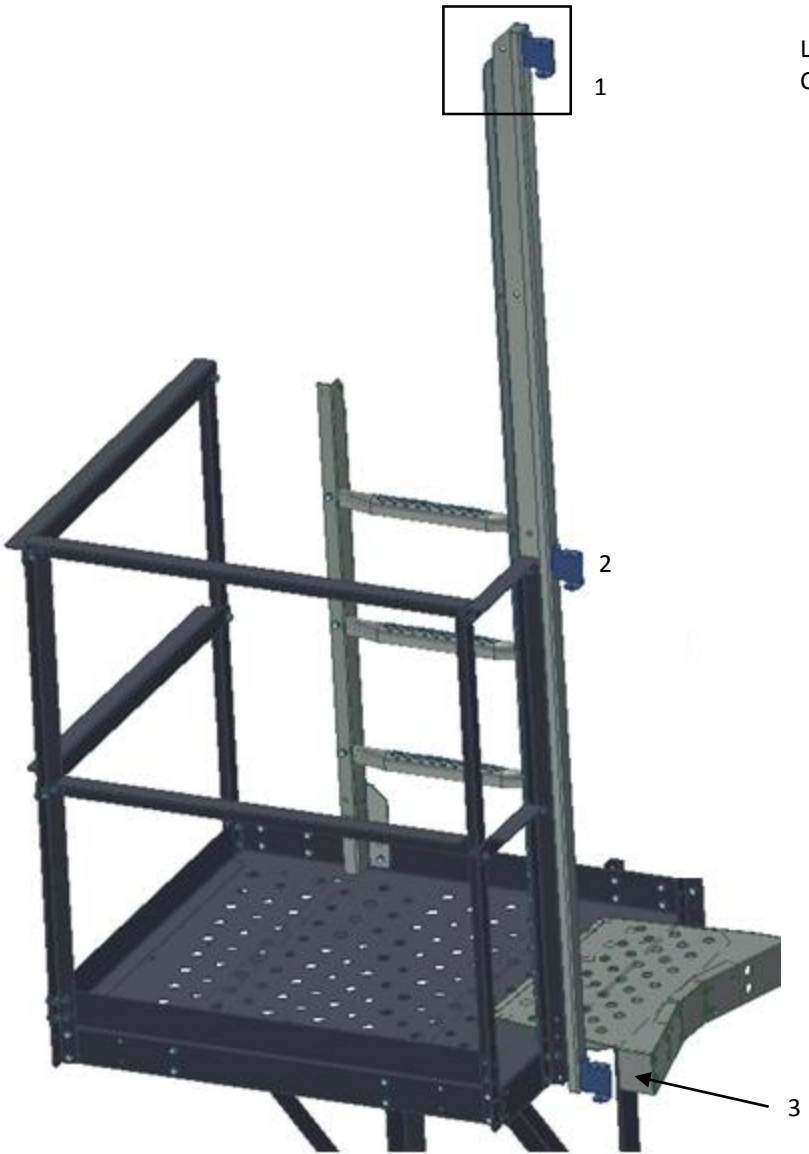


Rest Platform Assembly

Install 3 cage connection brackets to the intermediate platform hoop connection post as shown.

Use 5/16" x ¾" Bolts 5/16" Flanged Nut

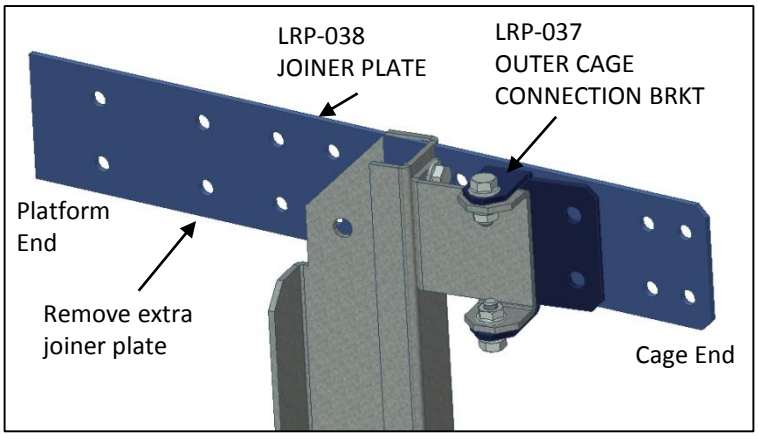


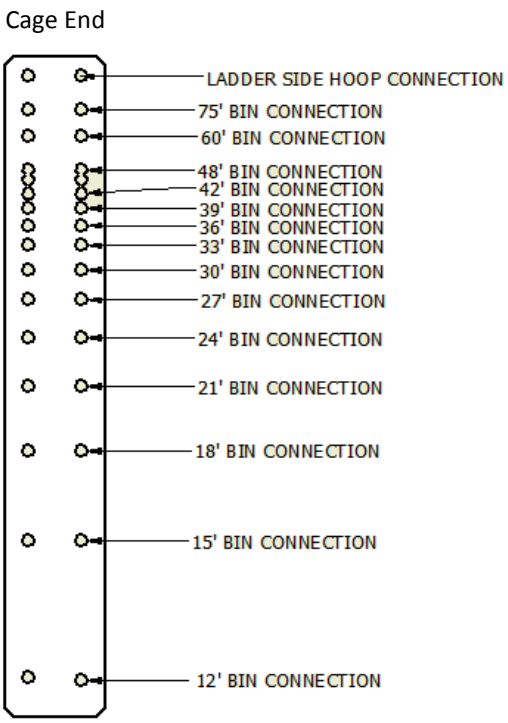


Rest Platform Assembly

Next assemble the outer cage connection bracket to the joiner plate. Ensure the outer cage connection bracket is assembled to the correct set of holes for the bin diameter being worked on (see diagram below). The remaining length of joiner plate after the outer cage connection bracket is mounted can be cut off as to not interfere with other components. This will need to be installed in 3 locations as shown below.

Once assembled attach the assembly to the cage connection brackets that were just installed.

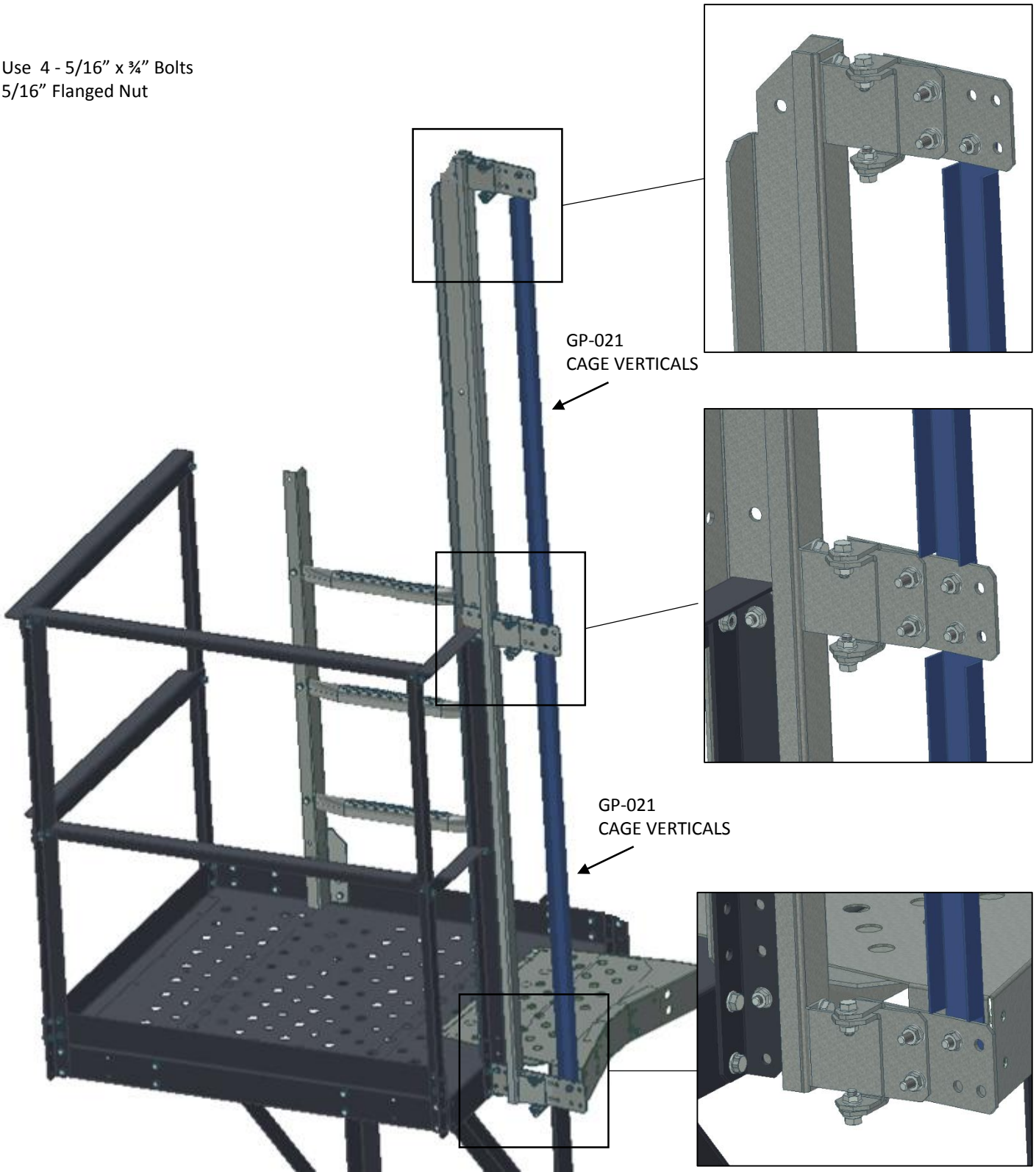




Rest Platform Assembly

Install 2 pieces of cage verticals to the joiner plate as shown below

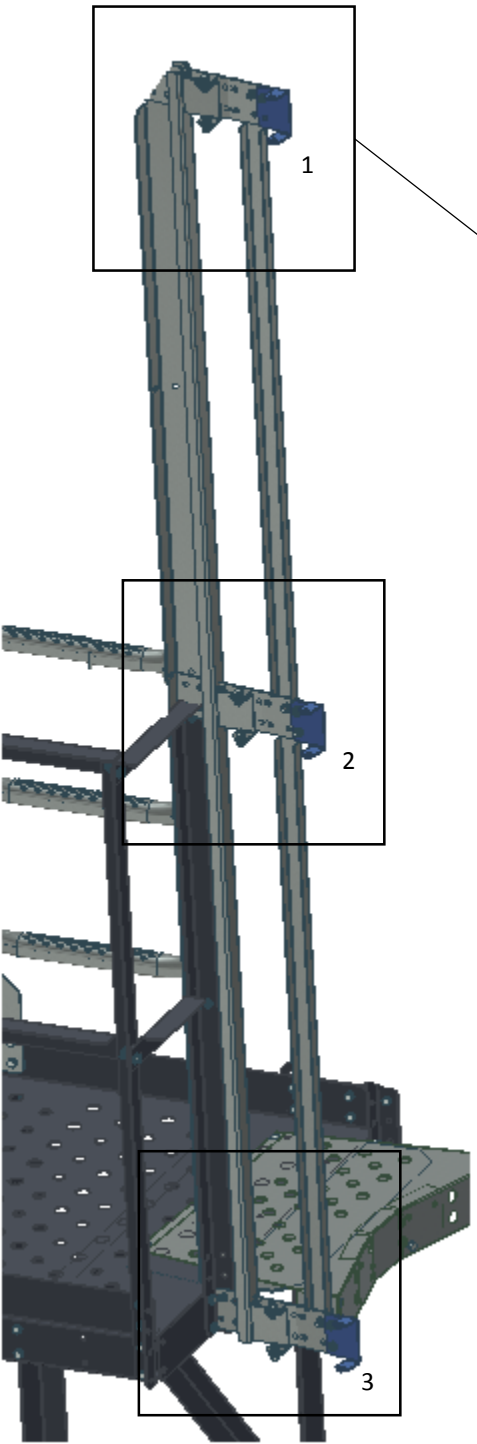
Use 4 - 5/16" x ¾" Bolts
5/16" Flanged Nut

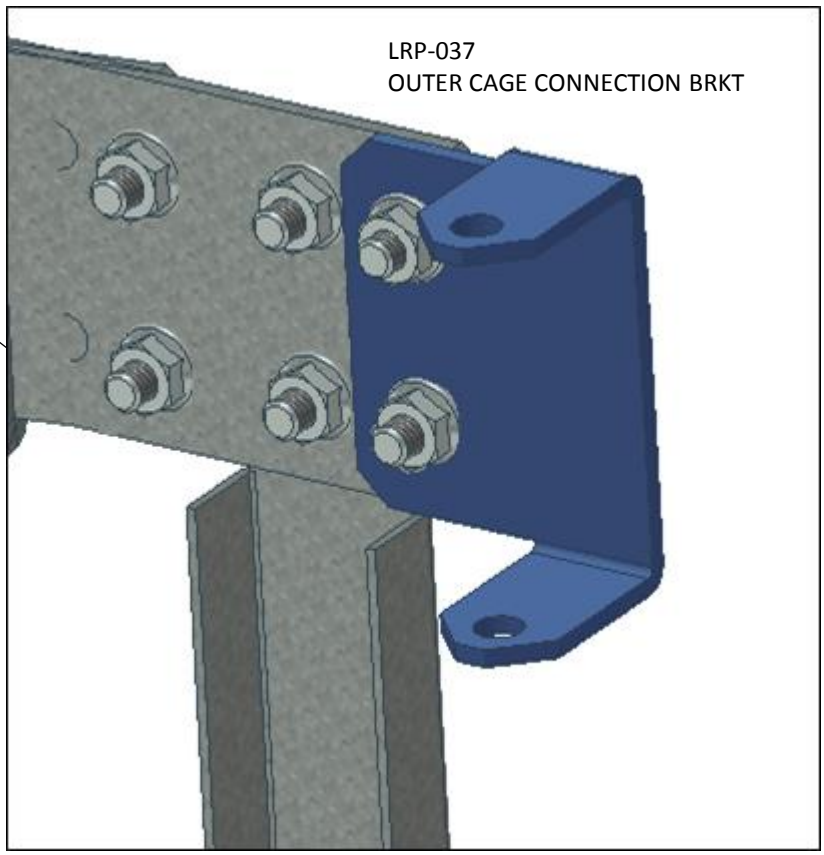


Rest Platform Assembly

Next install 3 more outer cage connection brackets to the cage end of the joiner plates.

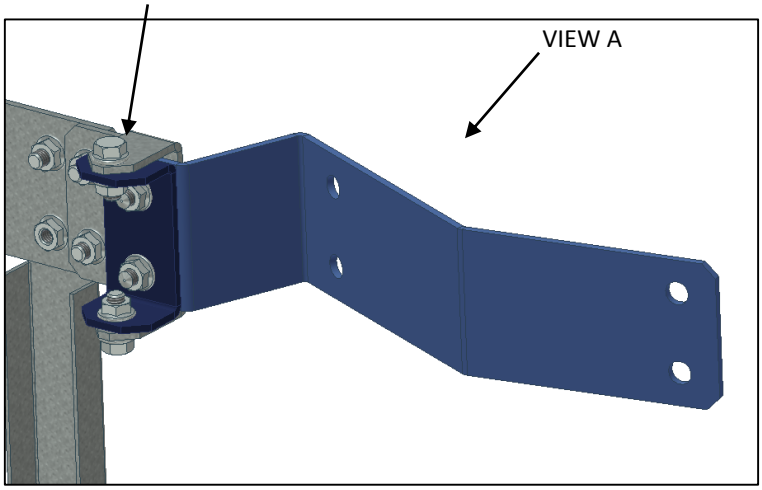
Use 5/16” x ¾” Bolts
5/16” Flanged Nut

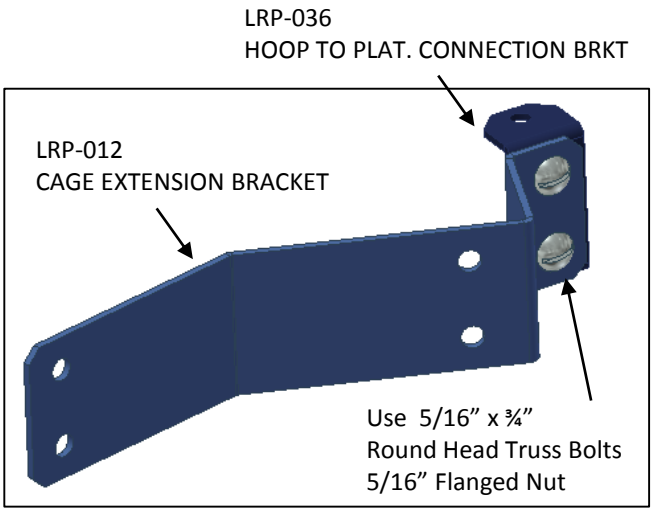




Rest Platform Assembly

Next assemble the cage extension bracket and hoop to platform connection bracket together as shown. Then mount this assembly to the outer cage connection brackets. Do this for 3 locations.



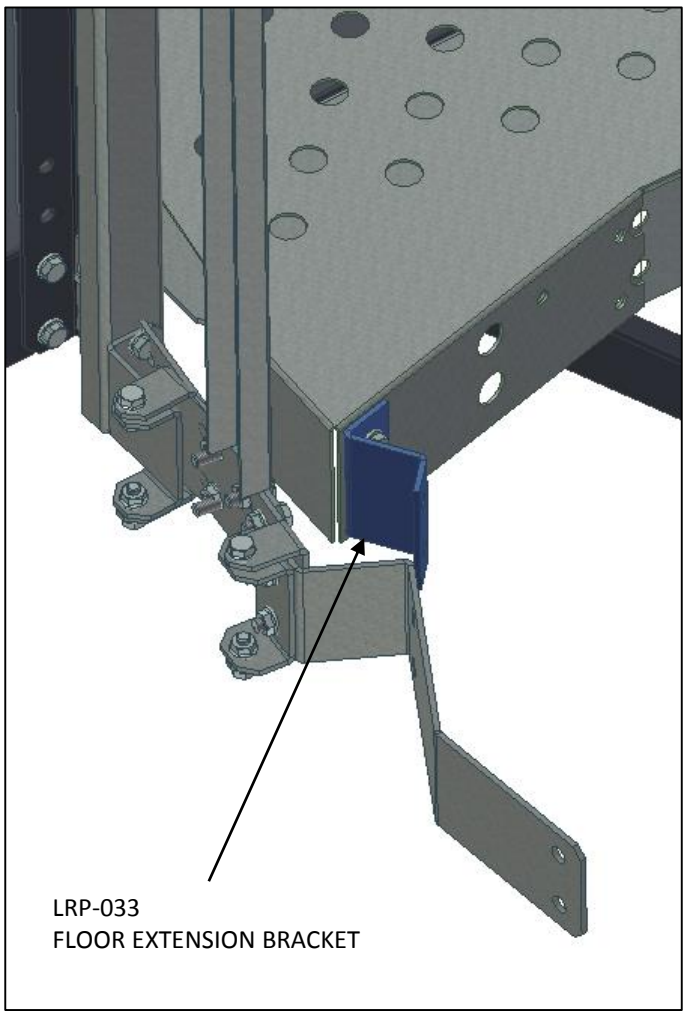


VIEW A

Rest Platform Assembly

Assemble the floor extension bracket to the platform extension as shown.

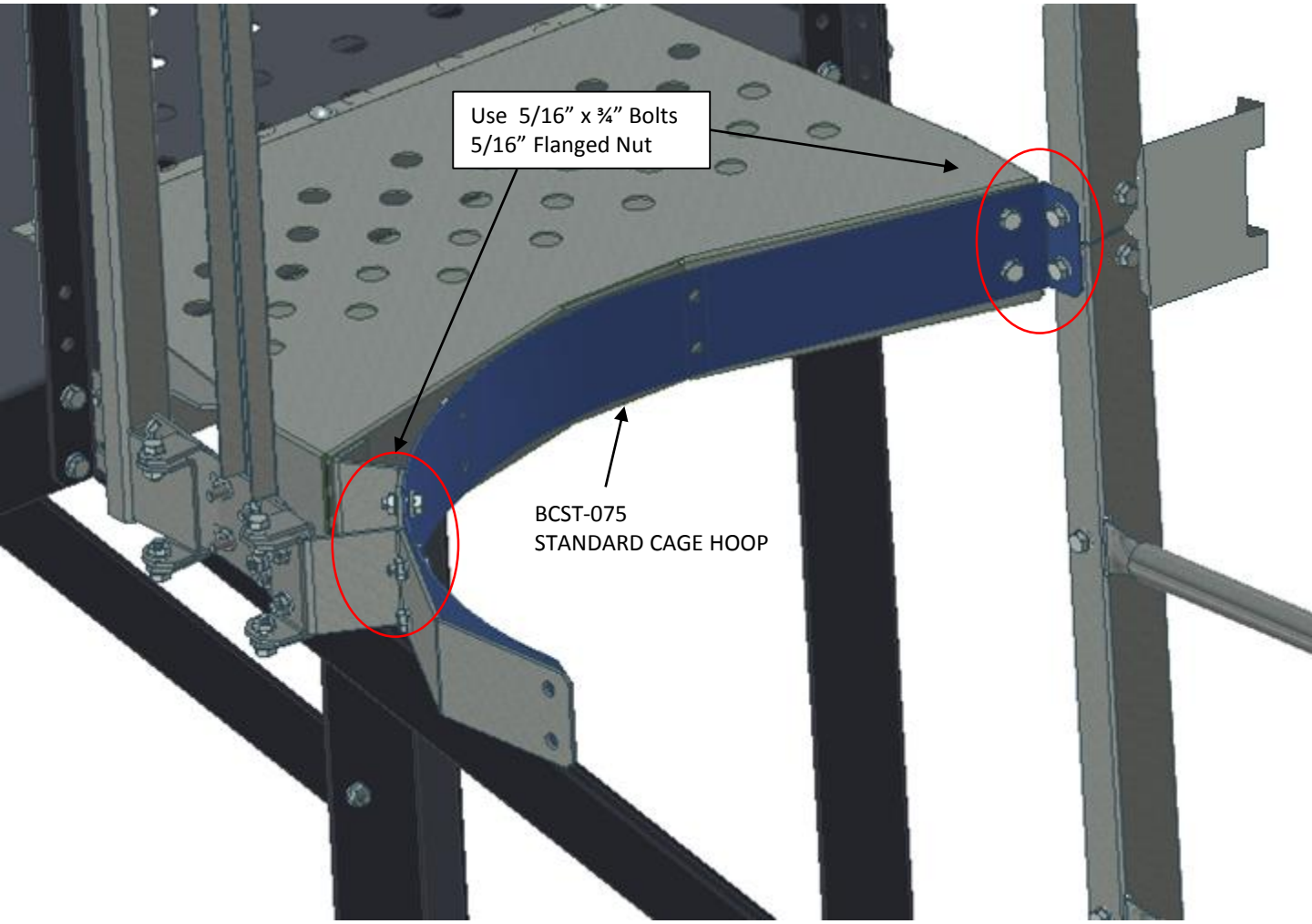
Use 5/16" x ¾" Bolts
5/16" Flanged Nut



VIEW A

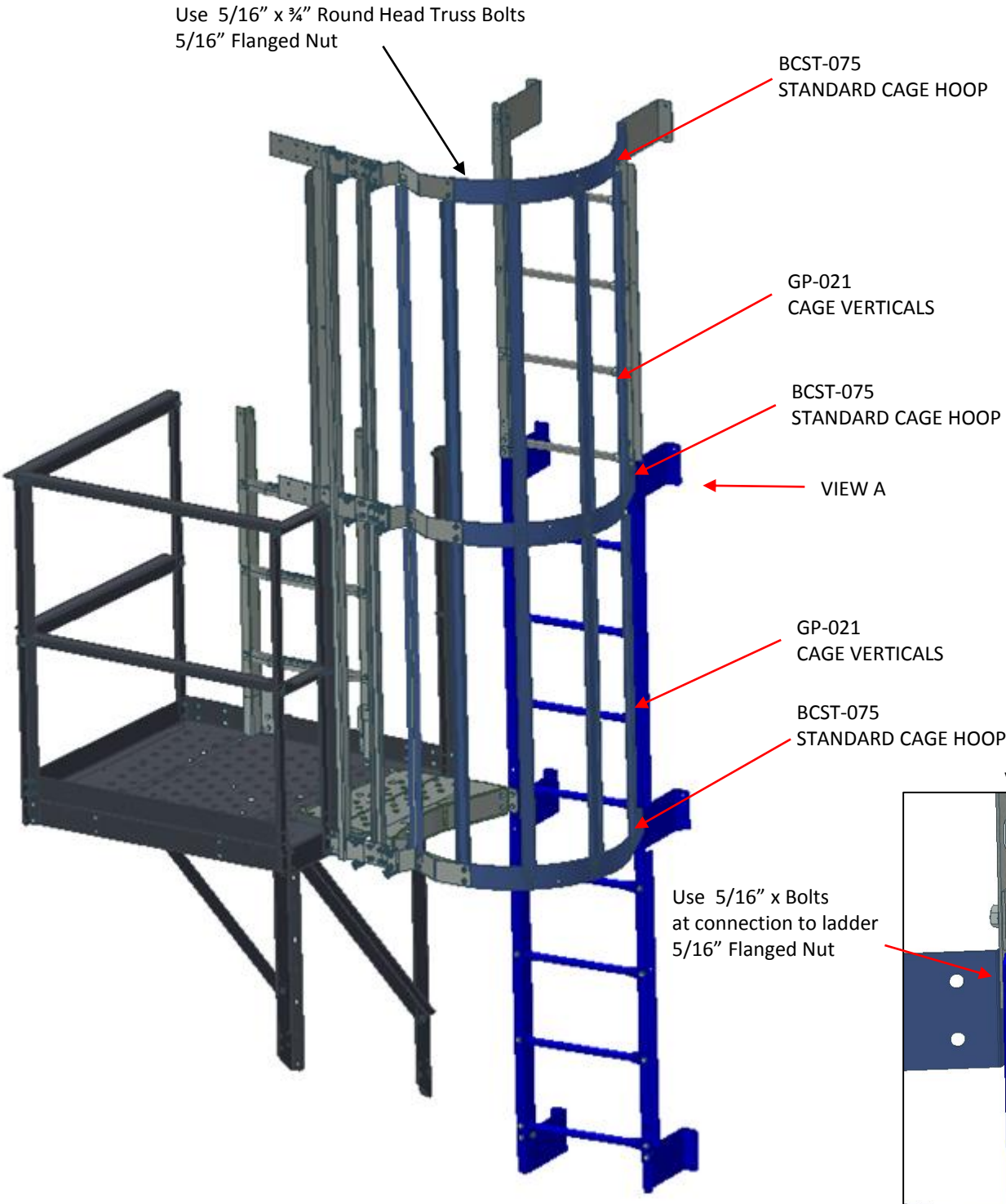
Rest Platform Assembly

Install a standard cage hoop to the platform extension and ladder. There are 8 bolt locations as shown below.

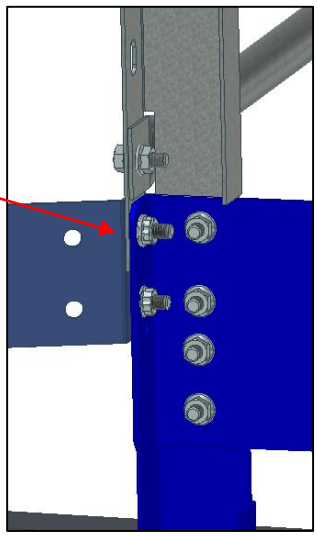


Rest Platform Assembly

Next install the remaining cage components to create the cage as shown below. 3 standard cage hoops, and 10 cage verticals will be used.

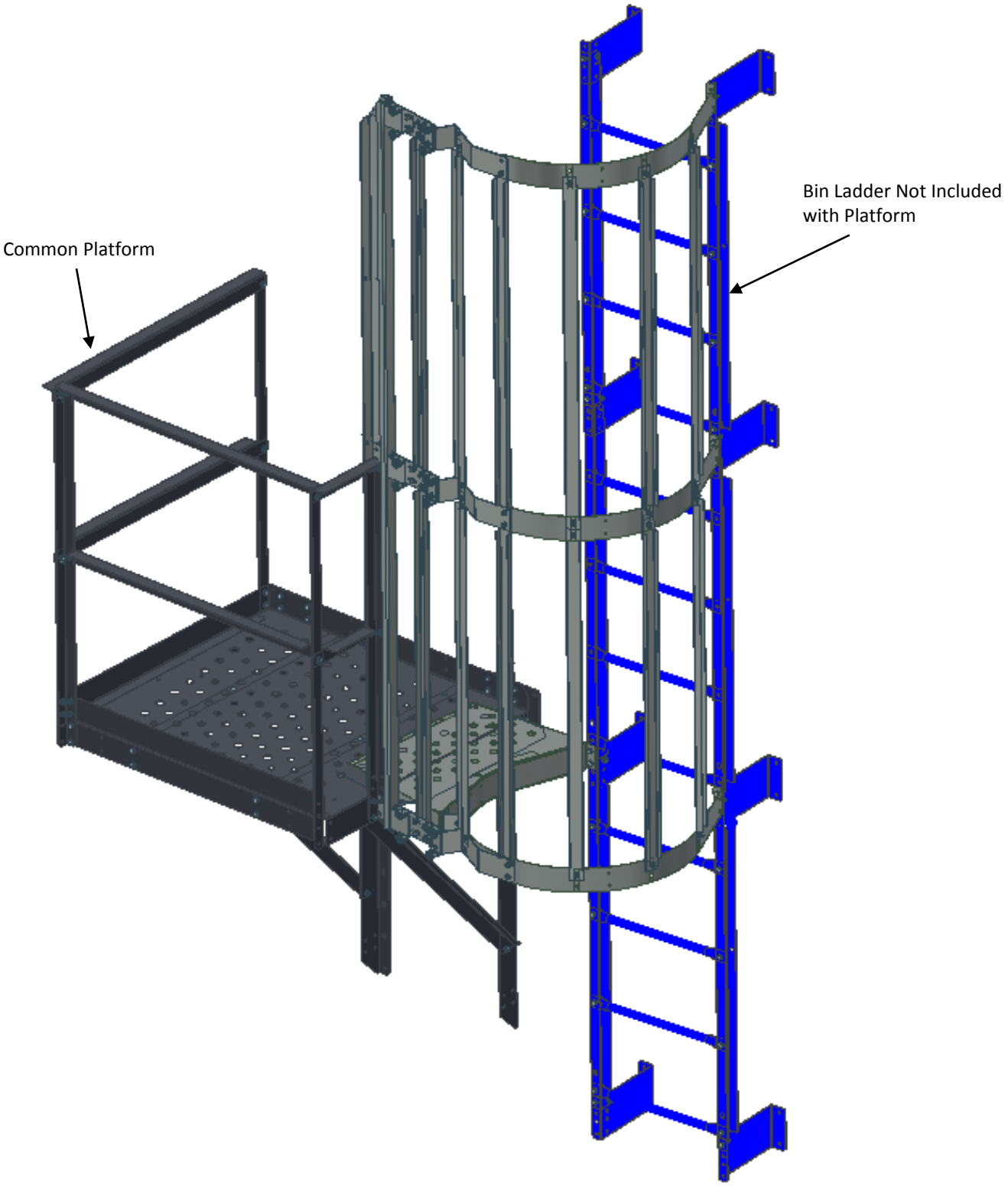


VIEW A



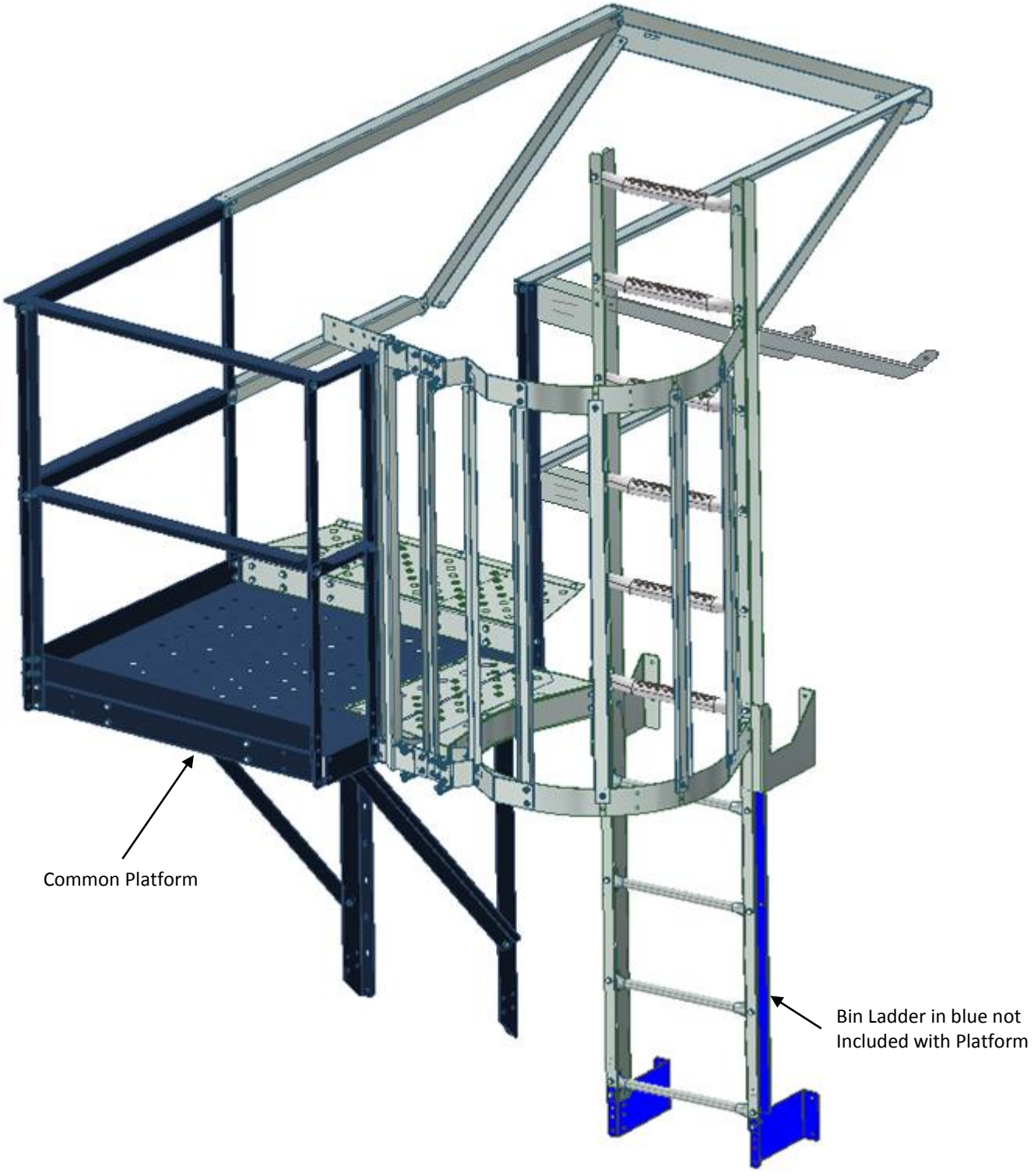
Side-Draw Platform

The Side Draw Platform will assemble the same as the Rest Platform (see rest platform). The only exception is there is no additional ladder involved with the Side Draw Platform.



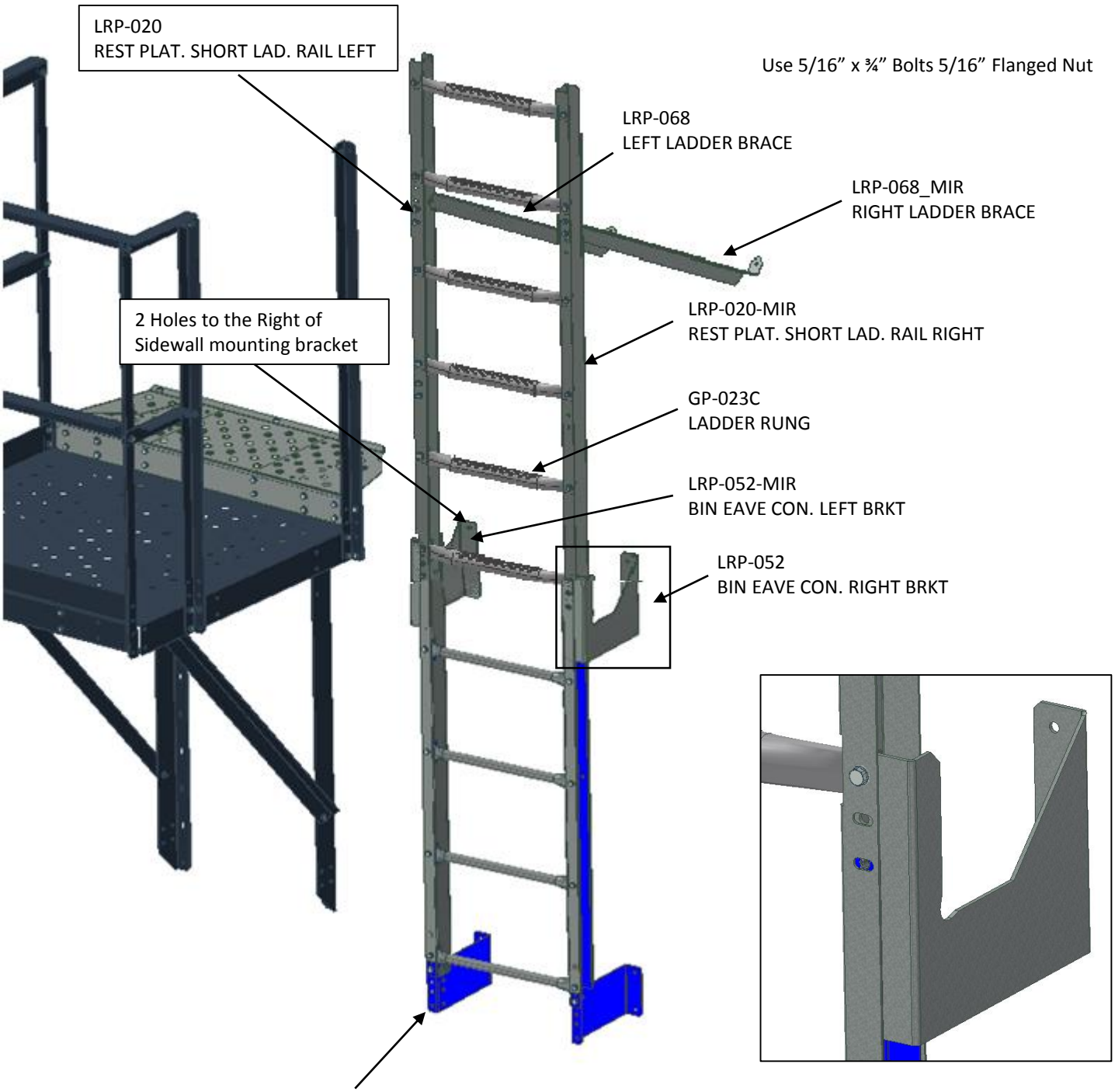
Eave Platform Assembly

The Eave Platform starts with the common platform and then a single section of cage, a ladder extension, and then hand rail to roof extensions are added. The eave platform can be installed for left or right entrance. These instructions show a right entrance, to install with left just follow these instructions in a mirror fashion on the other side of the platform.



Eave Platform Assembly

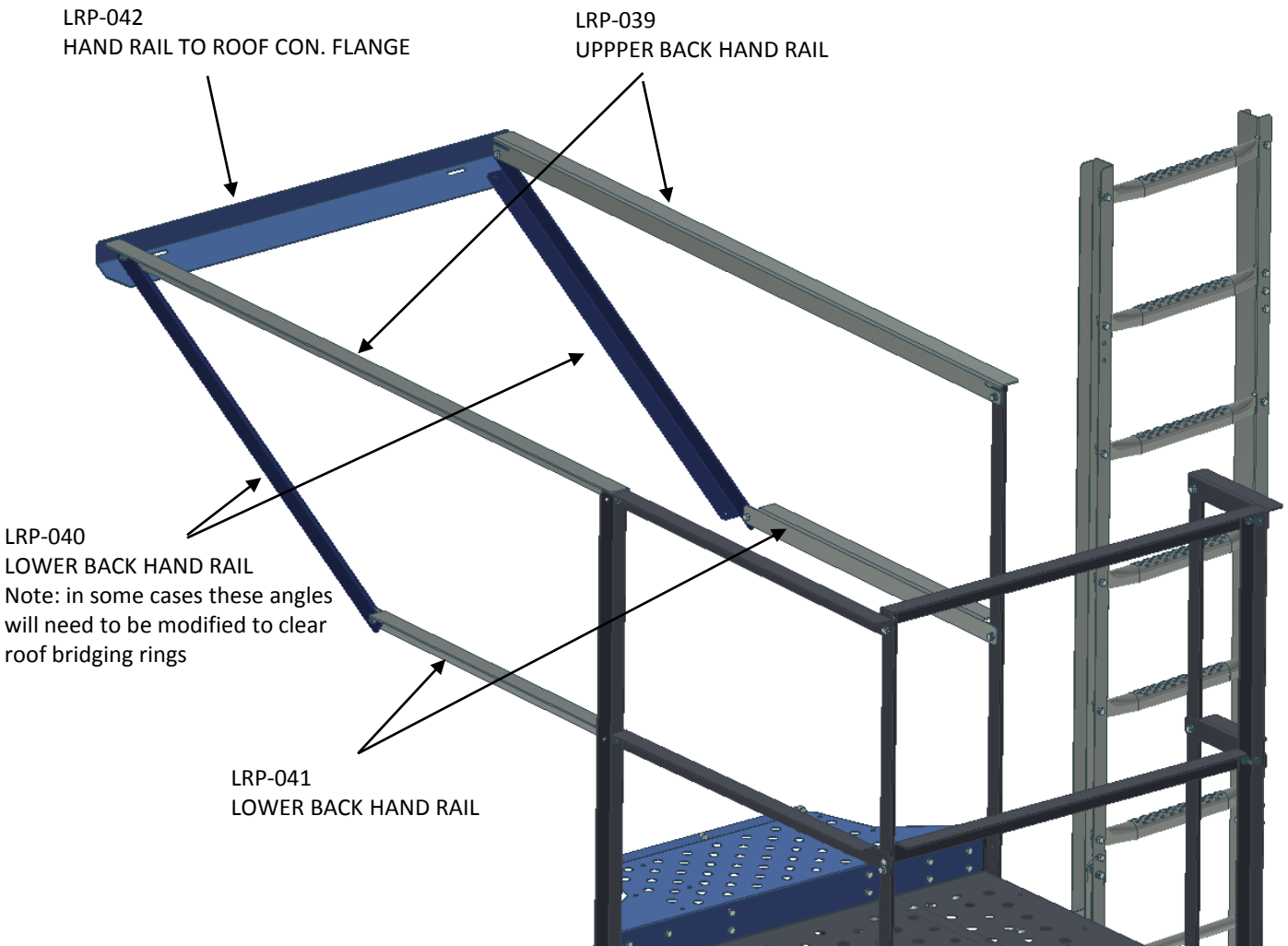
The rest platform short ladder rails will need to be installed to the bin ladder section. There is a left and right rail to this ladder extension, and these left and right rails will slide over the standard ladder section rails. Then the ladder rungs can be installed to construct the ladder as shown below. The top ladder eave brackets will be included with the platform and are to be installed to the ladder as shown below. Also install the left and right ladder braces by fastening to the ladder and field drilling the brace and mounting to the roof.



Eave Platform Assembly

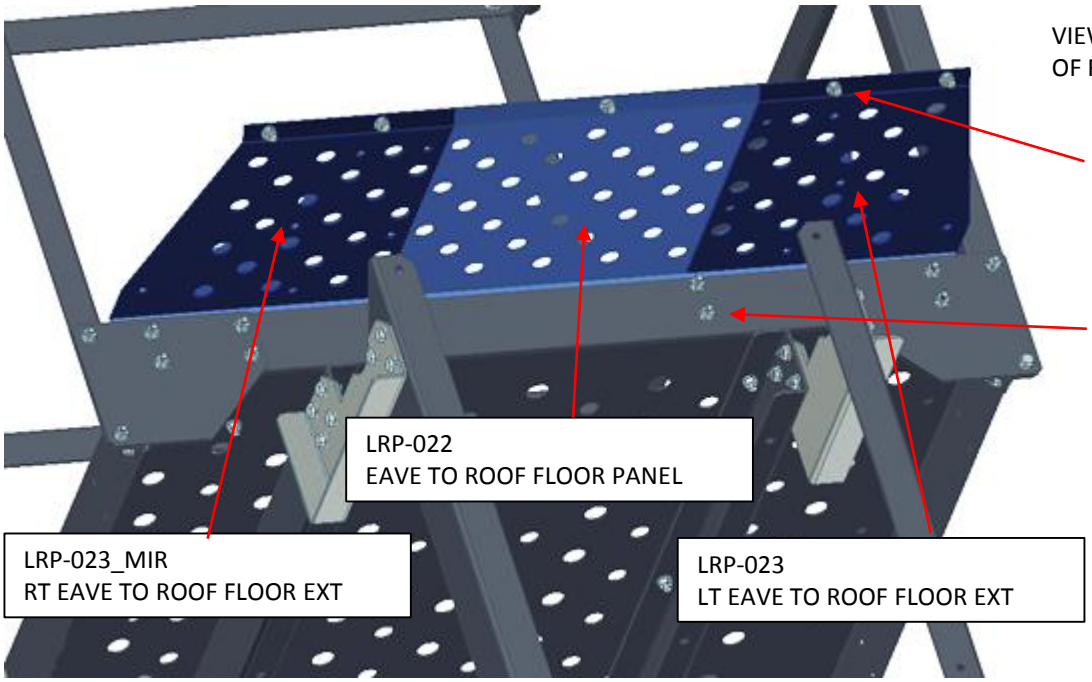
Next the hand rail extensions will need to be installed with the hand rail to roof connection flange. The hand rail to roof connection flange will be fastened to the roof ribs using the hardware provided with for the roof ribs. Then install the hand rail extensions to the platform hand rails as shown.

Use 5/16” x ¾” Bolts 5/16” Flanged Nut

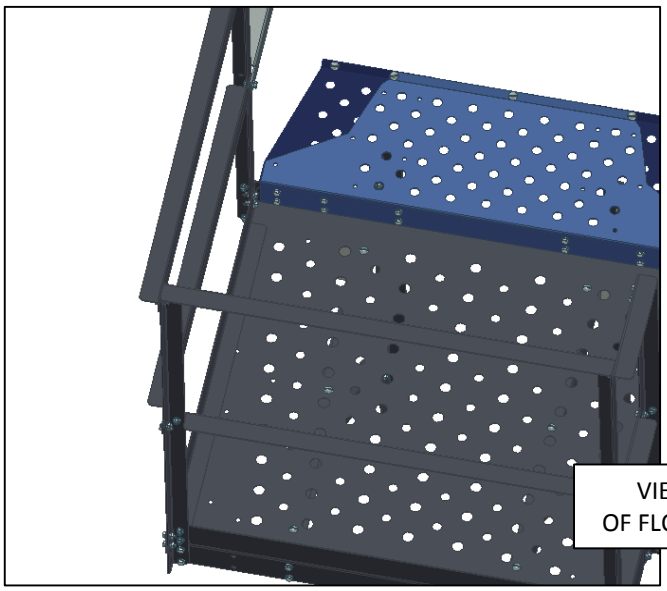


Eave Platform Assembly

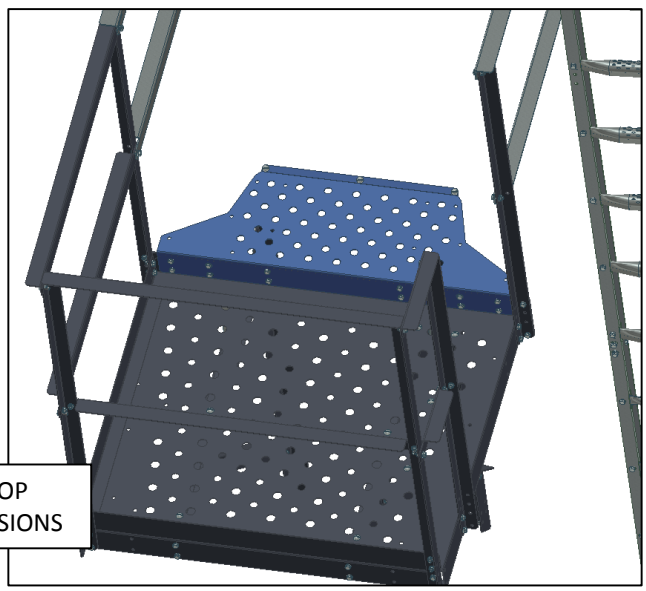
There is a floor extension that is to be installed to the platform that will extended the floor to the roof panel. There are 2 configurations for this floor extension, a roof with 3 roof panels per sidewall sheet and a roof with 4 panels per sidewall sheet. The extension is bolted to the back flange of the platform either 1 single center piece or 3 pieces, a center and 2 side pieces. Where the extensions meet the roof, the mounting holes are to be field drilled into the roof panel and fastened to the roof.



3 ROOF PANELS PER SIDEWALL



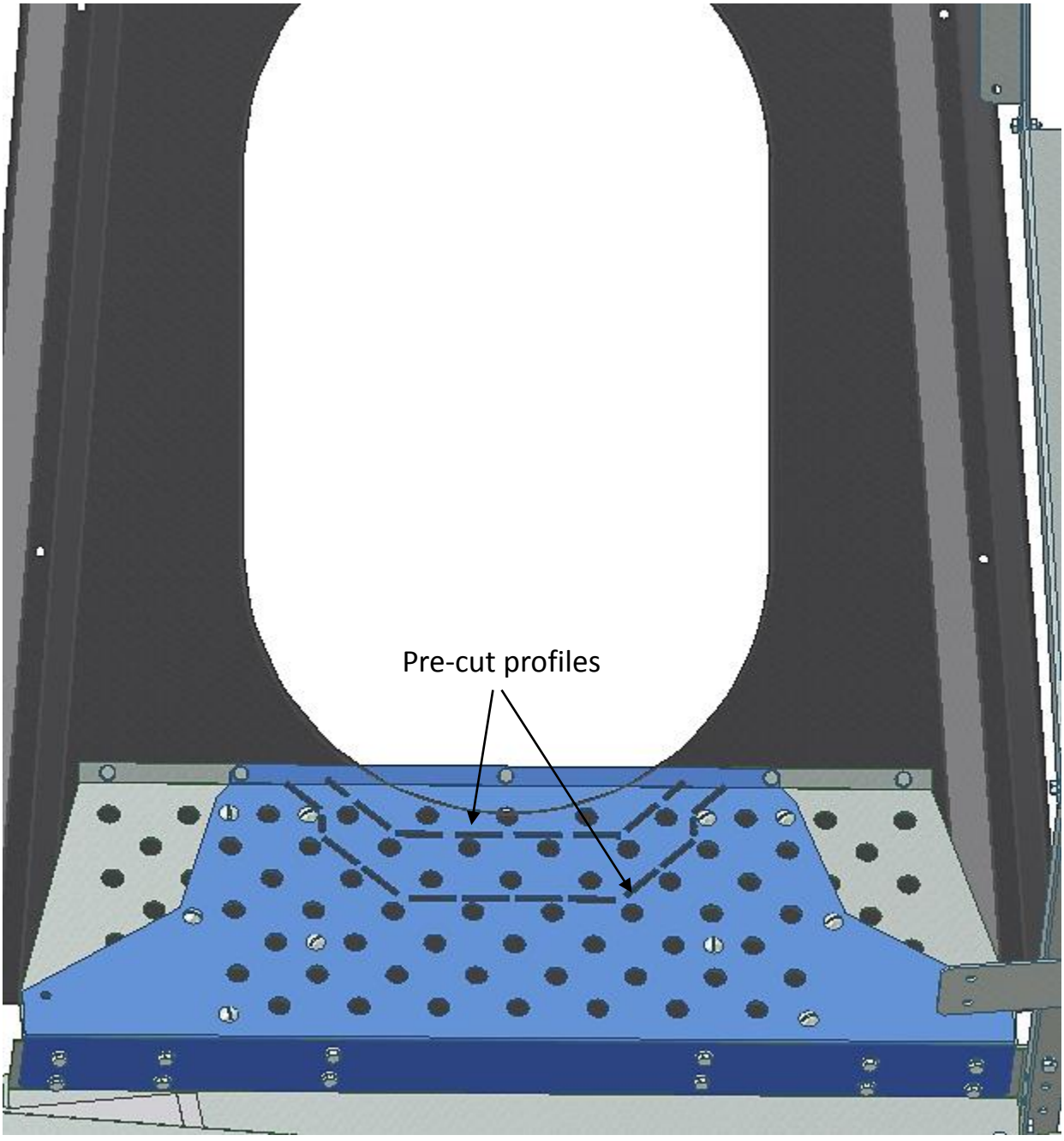
4 ROOF PANELS PER SIDEWALL



VIEW FROM TOP
OF FLOOR EXTENSIONS

Eave Platform Assembly

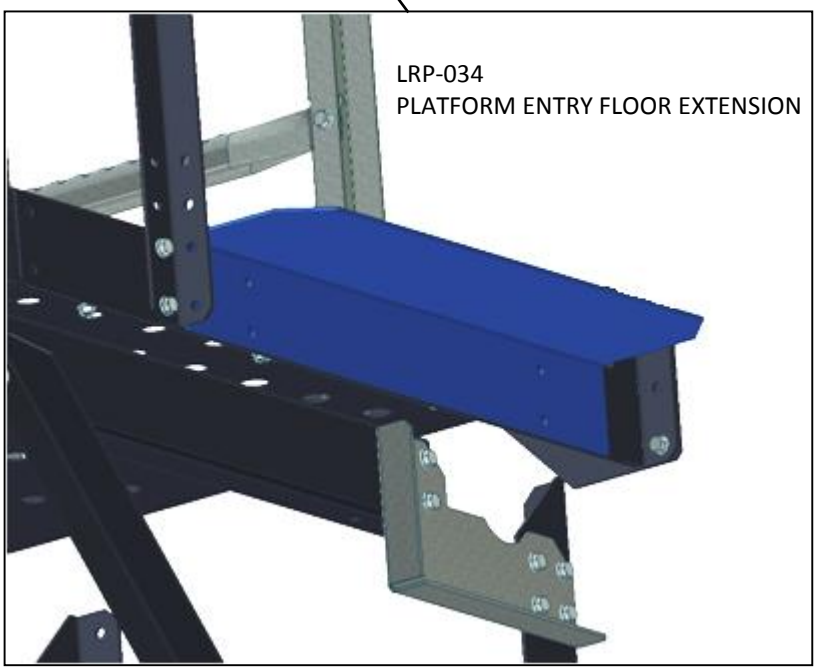
When installing the floor extensions towards the roof panels, if you are installing in a location with a man door present you will have to cut a clearance section out of the center extension following the profile pre-cut in the panel.



Eave Platform Assembly

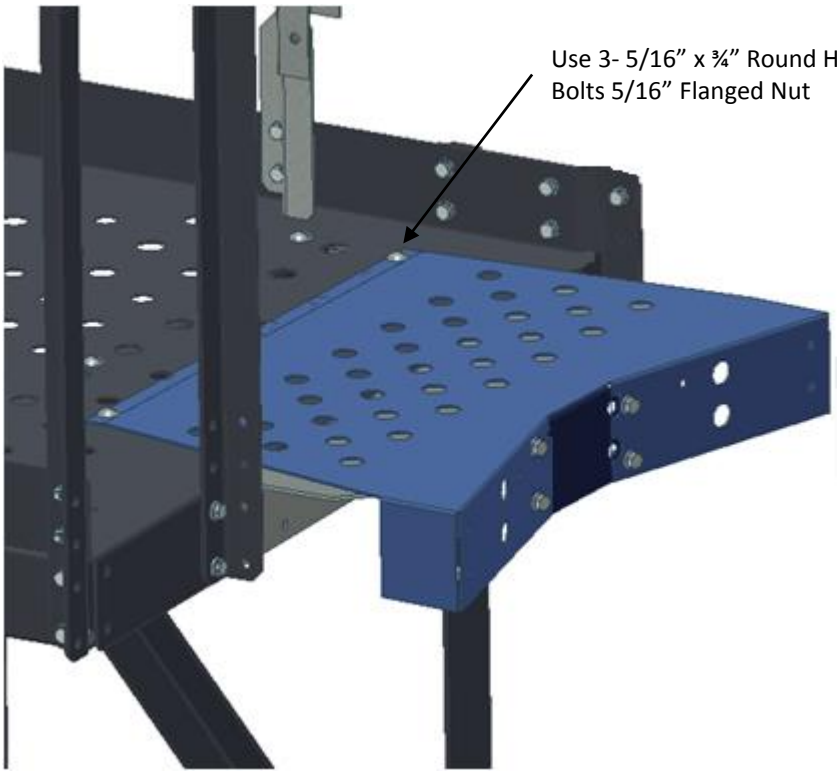
Next install the platform entry floor extension to the side of the platform using 4 bolts and nuts.

Use 5/16” x ¾” Bolts 5/16” Flanged Nut

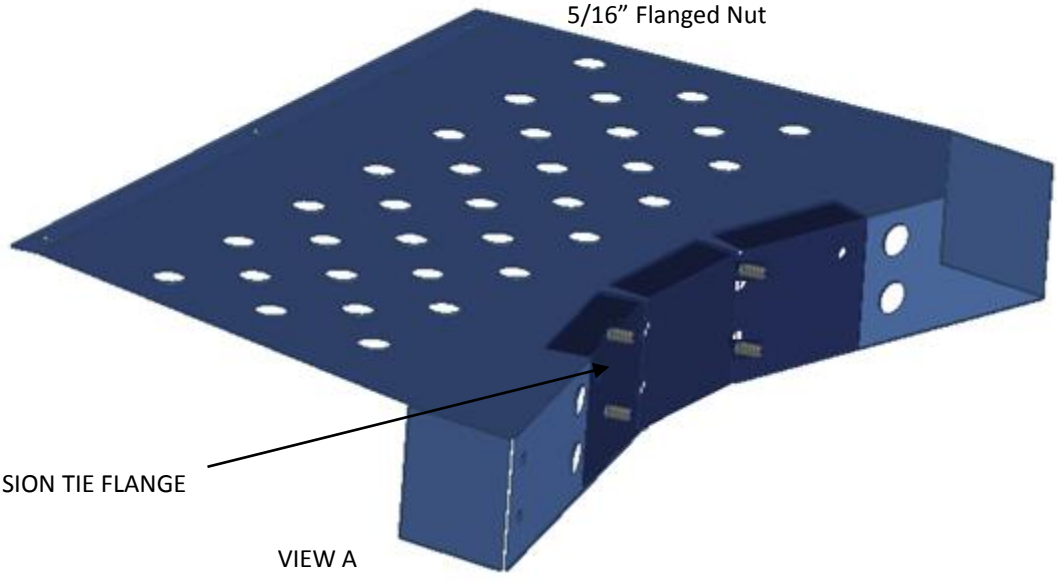


Eave Platform Assembly

Next install the platform floor extension and the floor extension tie flange. Start by assembling the platform floor extension and floor extension tie flange together. Then mount to the platform floor panel.



VIEW A

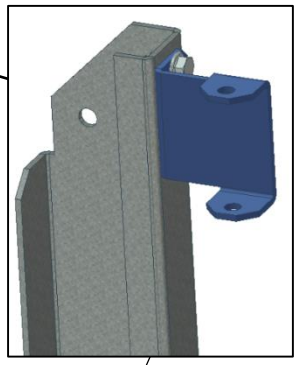


VIEW A

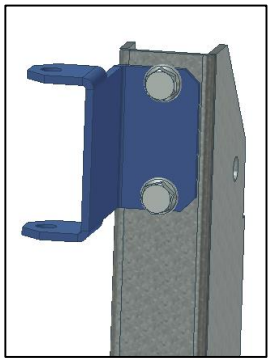
Eave Platform Assembly

The next step is to install the cage, the cage will install the same as the Rest Platform the difference being only 2 sets of cage hoops will be used and a shorter platform to cage connection post is used. See below.

LRP-035
CAGE CONNECTION BRACKET

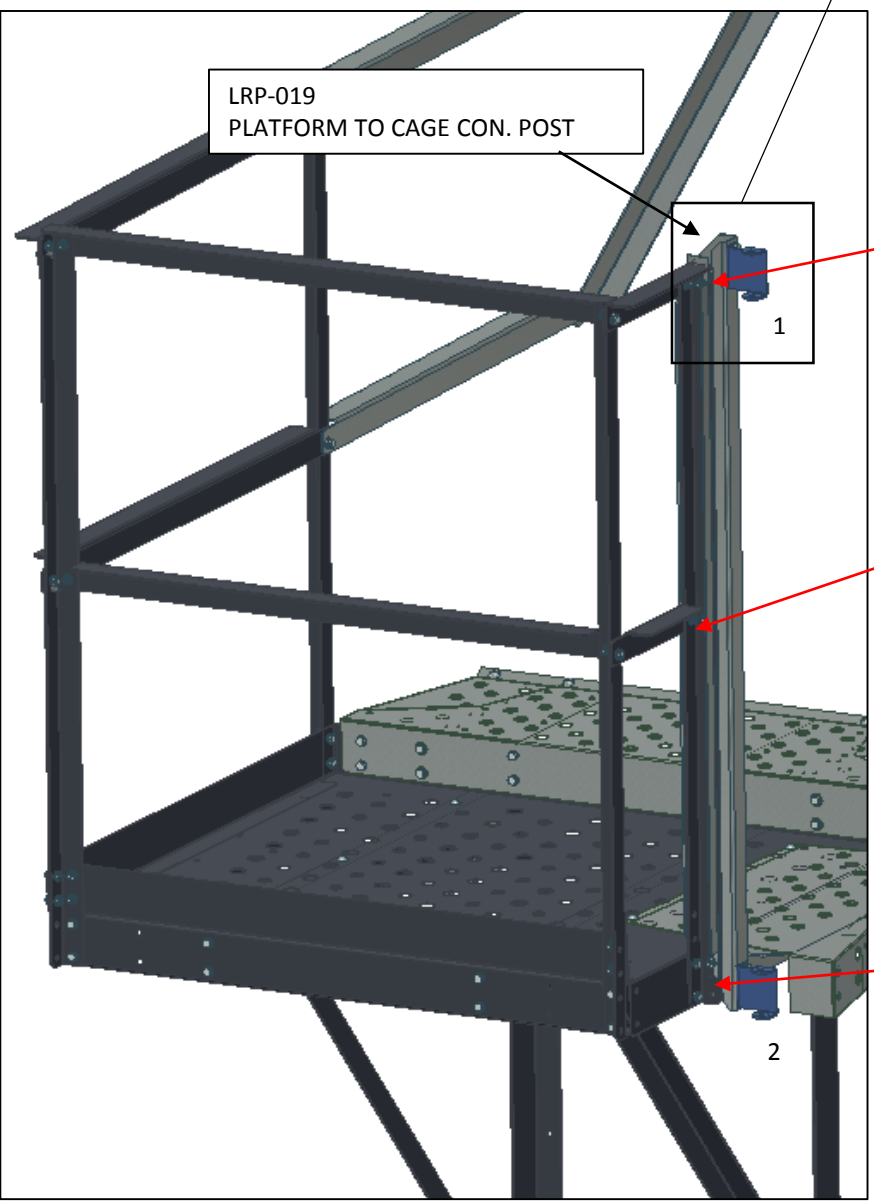


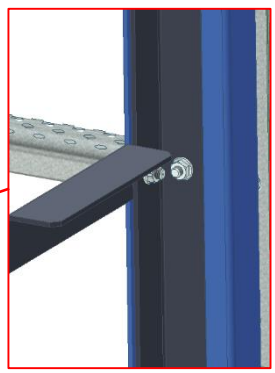
VIEW A

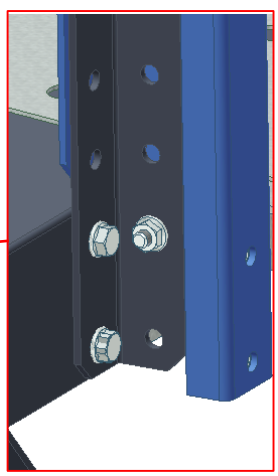


Use 5/16" x ¾" Bolts 5/16" Flanged Nut

LRP-019
PLATFORM TO CAGE CON. POST



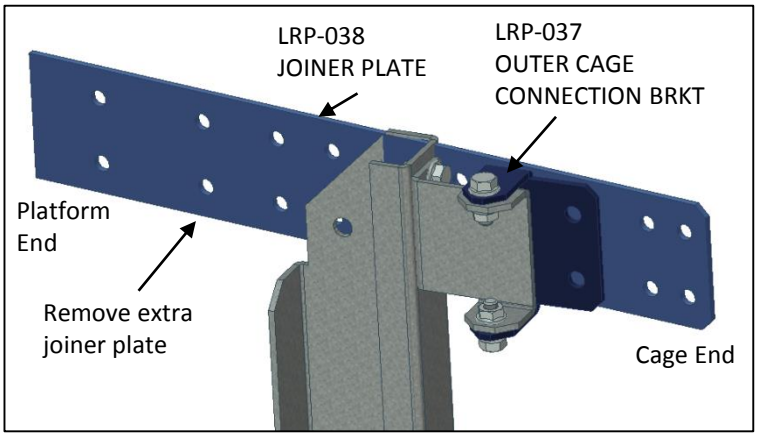


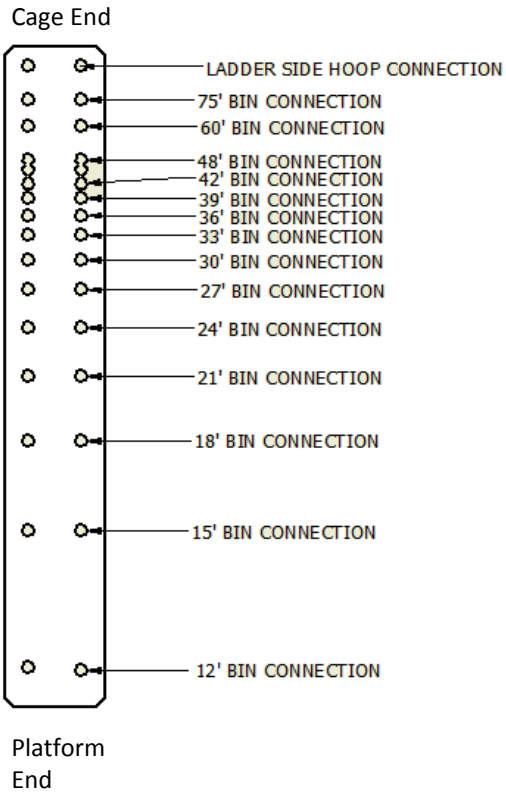


Eave Platform Assembly

Next assemble the outer cage connection bracket to the joiner plate. Ensure the outer cage connection bracket is assembled to the correct set of holes for the bin diameter being worked on (see diagram below). The remaining length of joiner plate after the outer cage connection bracket is mounted can be cut off as to not interfere with other components. This will need to be installed in 2 locations as shown below

Once assembled attach the assembly to the cage connection brackets that were just installed.

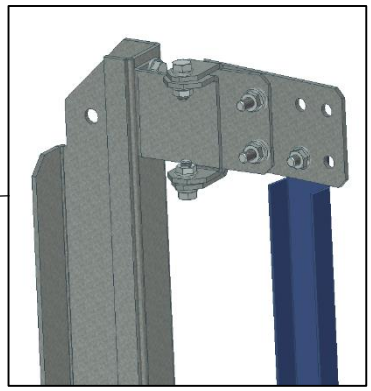


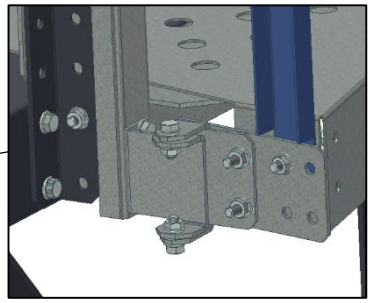


Eave Platform Assembly

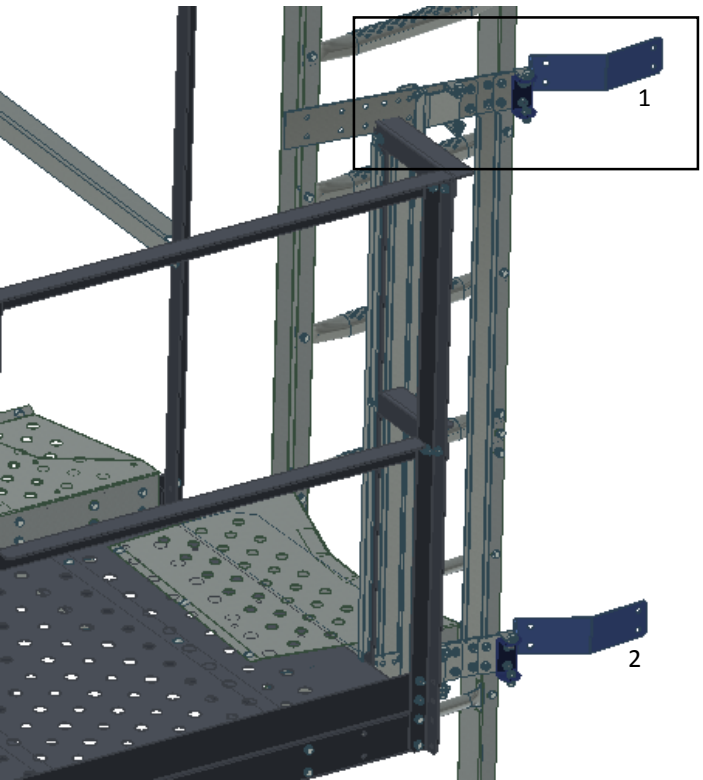
Use 4 - 5/16" x ¾" Bolts
5/16" Flanged Nut

GP-021
CAGE VERTICAL

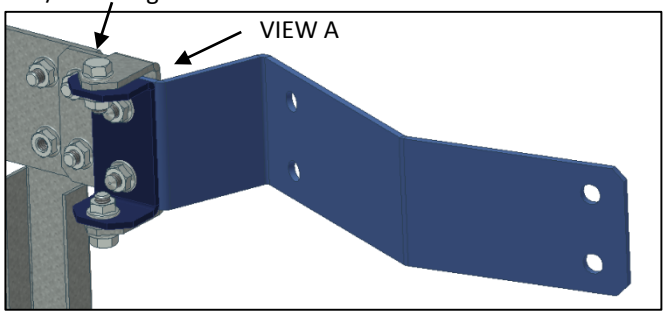




Next assemble the cage extension bracket and hoop to platform connection bracket together as shown. Then mount this assembly to the outer cage connection brackets. Do this for 2 locations.

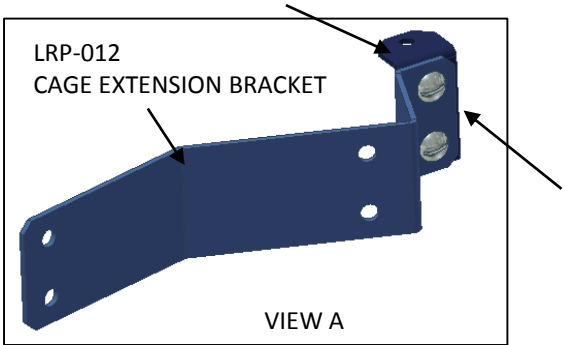


Use 5/16" x ¾" Bolts
5/16" Flanged Nut



LRP-036
HOOP TO PLAT. CONNECTION BRKT

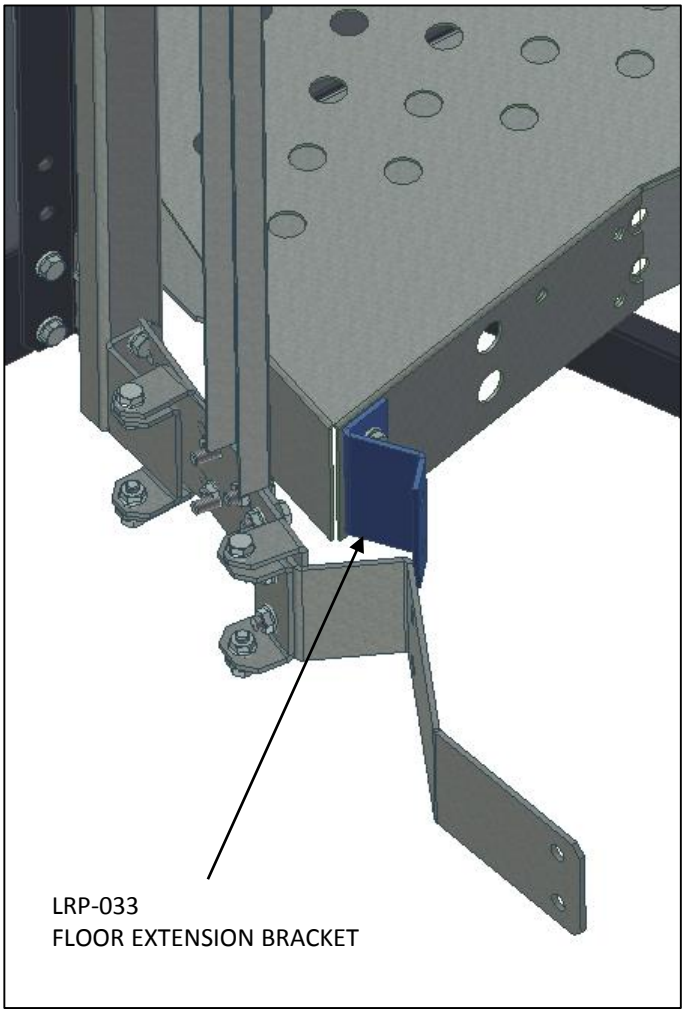
LRP-012
CAGE EXTENSION BRACKET



Eave Platform Assembly

Assemble the floor extension bracket to the platform extension as shown.

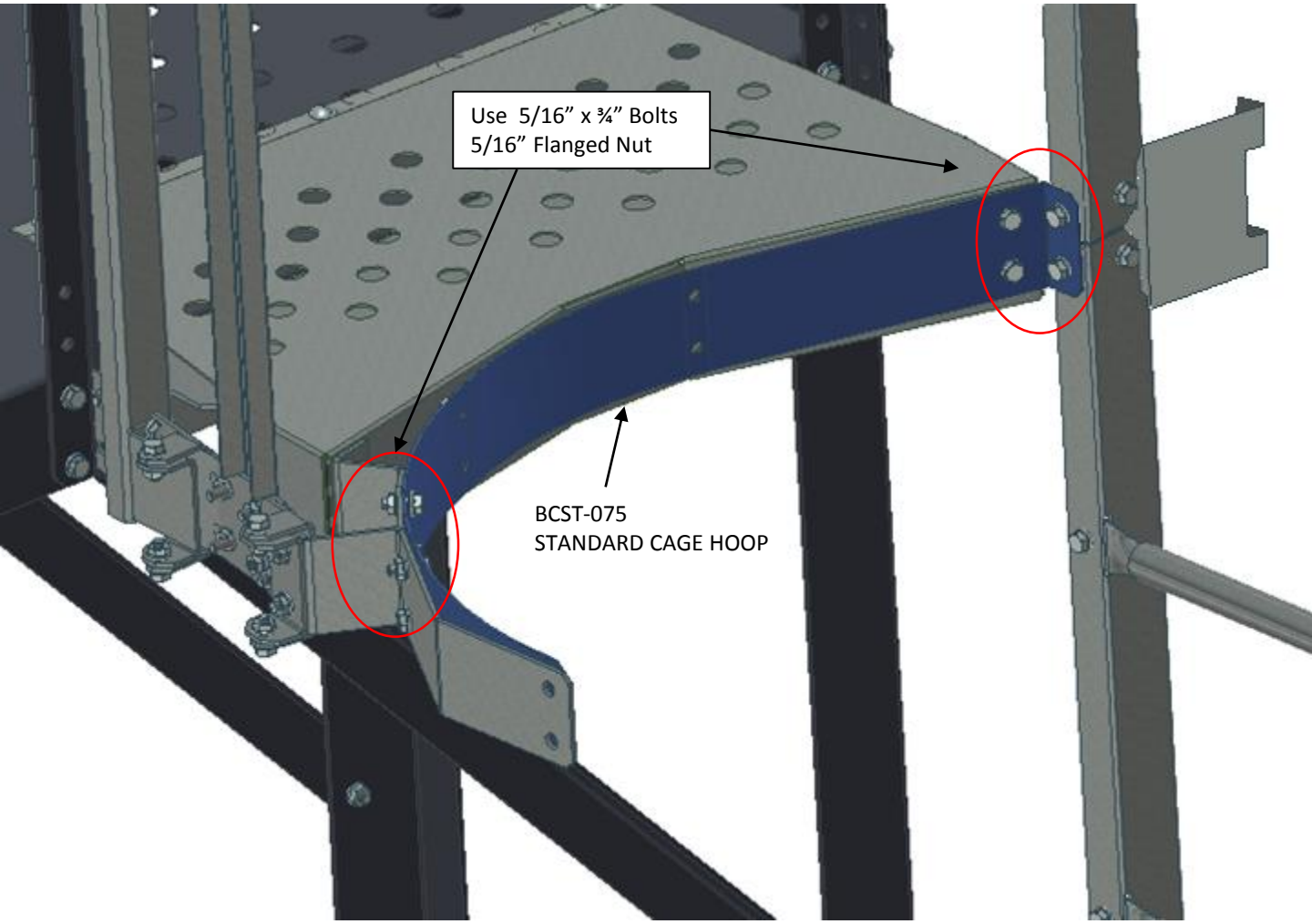
Use 5/16" x ¾" Bolts
5/16" Flanged Nut



VIEW A

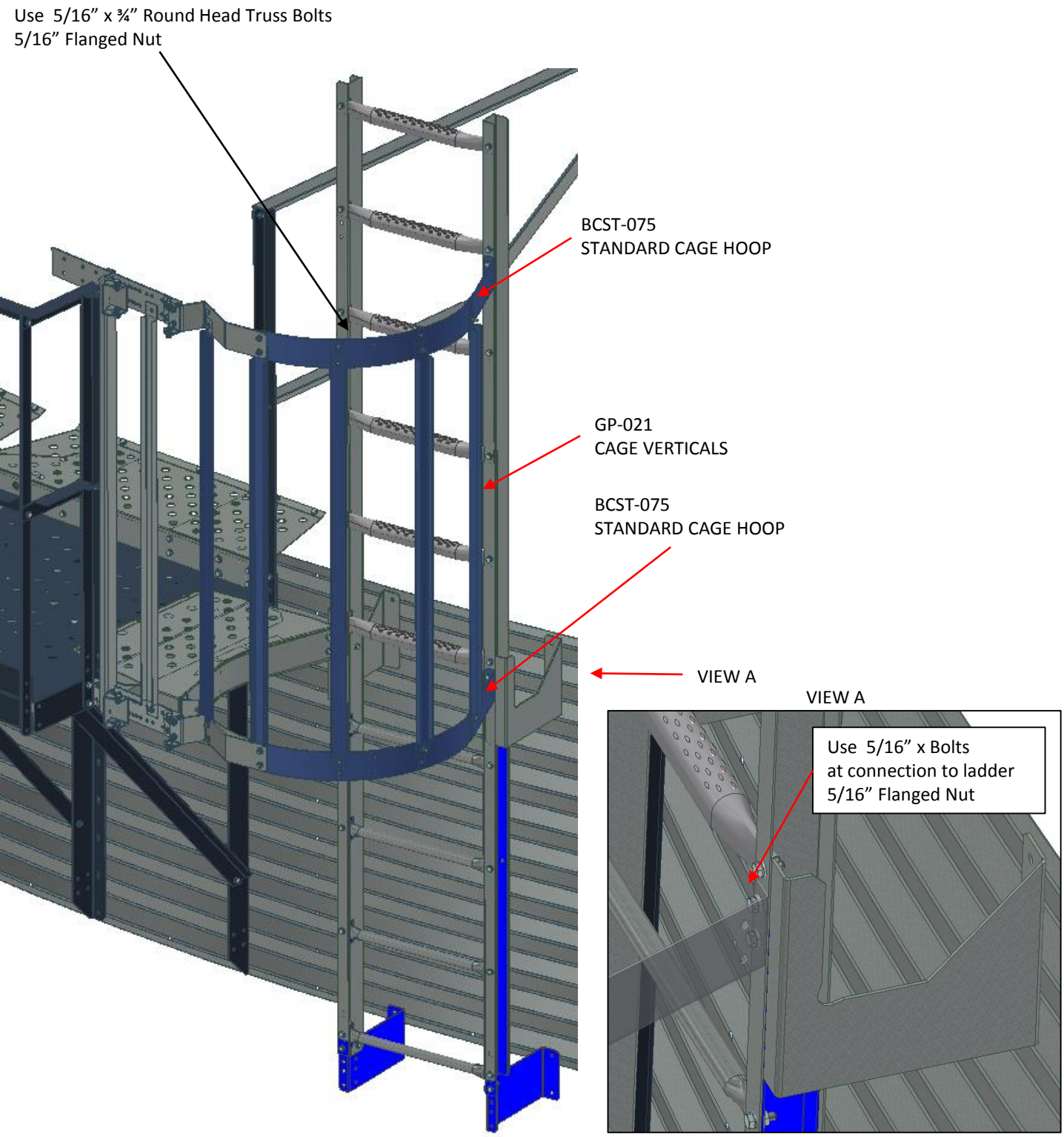
Eave Platform Assembly

Install a standard cage hoop to the platform extension and ladder. There are 8 bolt locations as shown below.



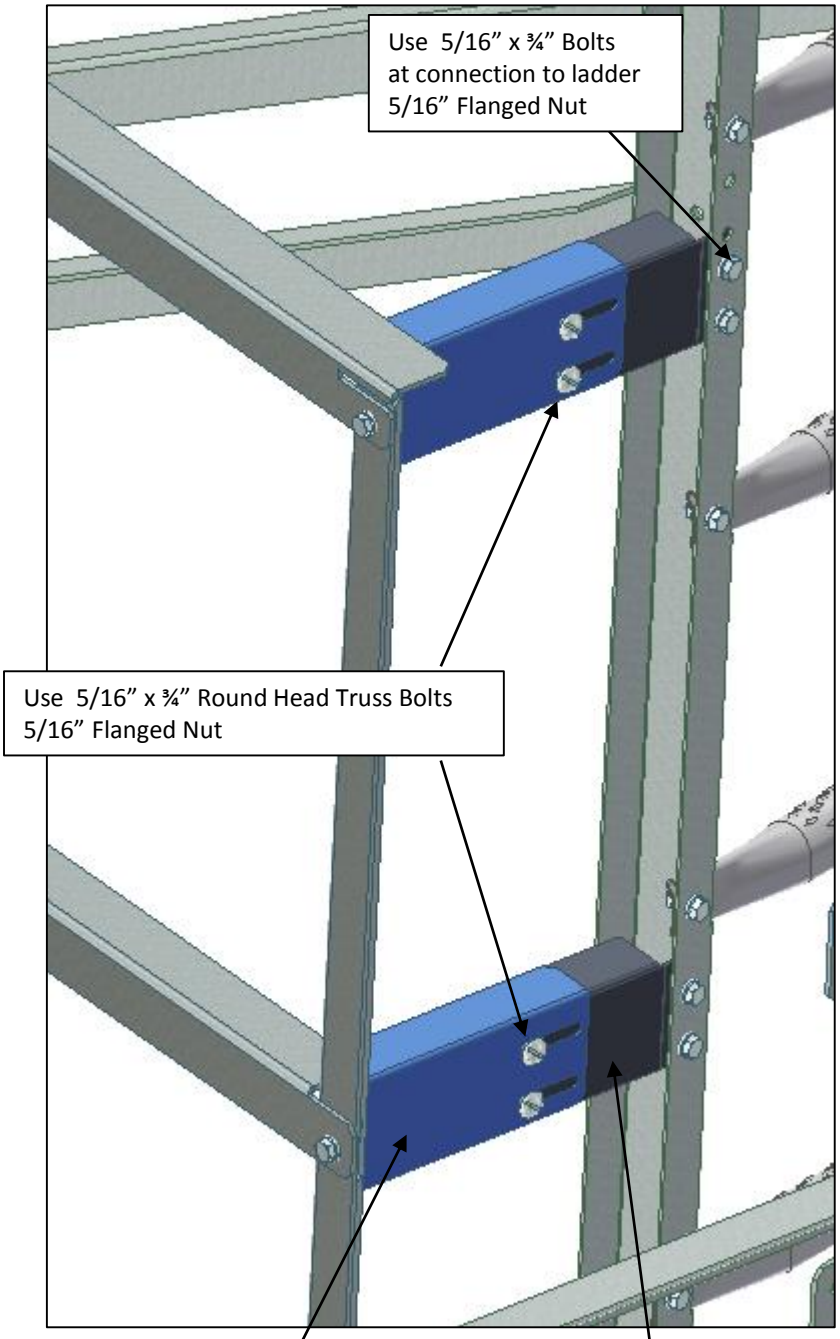
Eave Platform Assembly

Next install the remaining cage components to create the cage as shown below. 2 standard cage hoops, and 5 cage verticals will be used.



Eave Platform Assembly

Next install the ladder connection brackets between the ladder vertical and the back post on the platform.



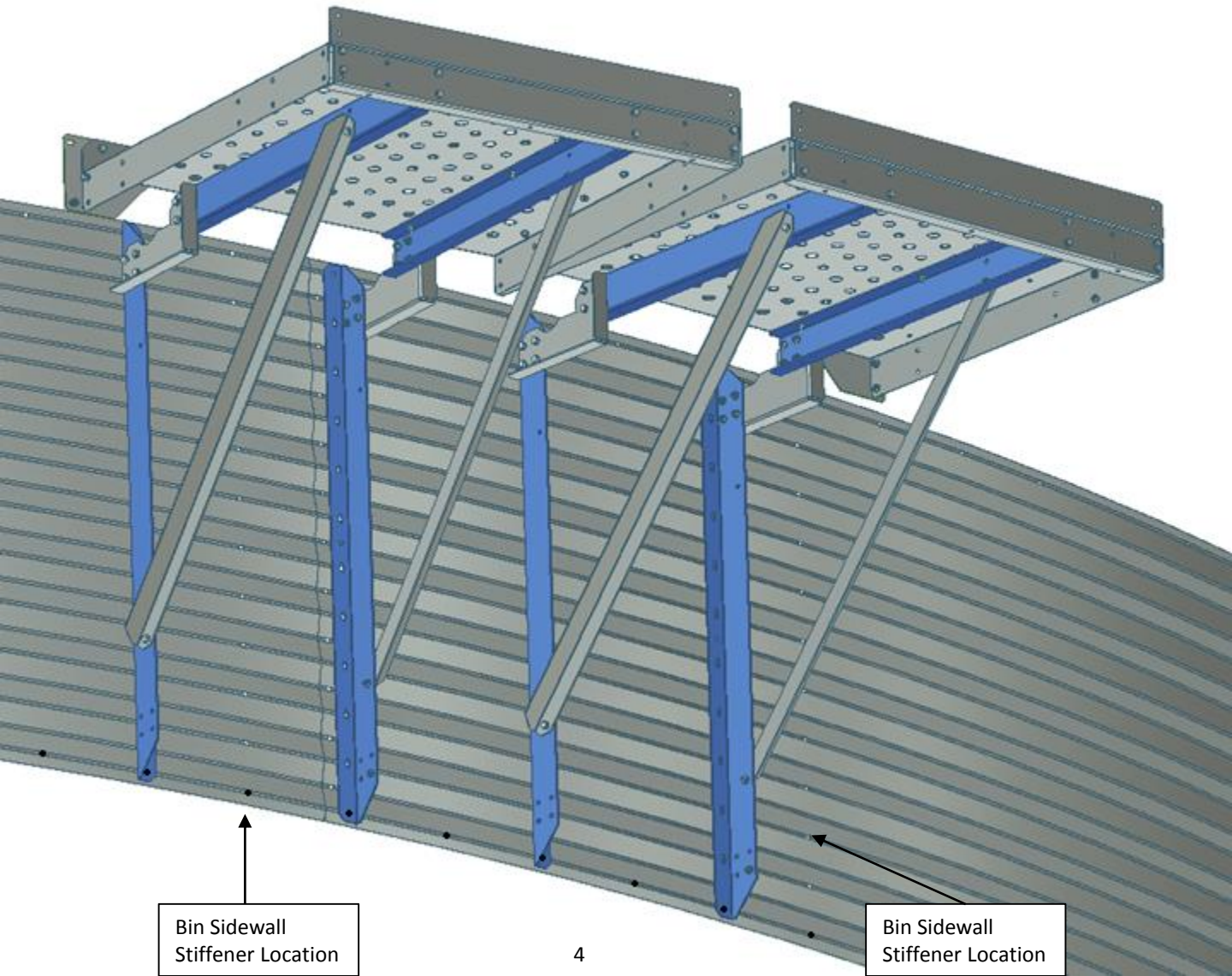
Double Eave Platform Assembly

The Double Eave Platform is made up of an eave platform with an additional common platform, a hand rail joiner and a center floor panel. The next few pages will show the assembly of the double eave platform. The double eave platform can be configured for left or right entrance from the ladder. These instructions show entering from the right, but to install from the left follow a mirror of each step. Start with installing the ladder to the side of the platform as seen in the Eave Platform Assembly instructions (see 7.4.24) then follow the rest of these instructions.

Double Eave Platform Assembly

To start assembly of the double eave platform, first you assemble 2 common platforms up to the point the hand rail posts would be installed as shown below.

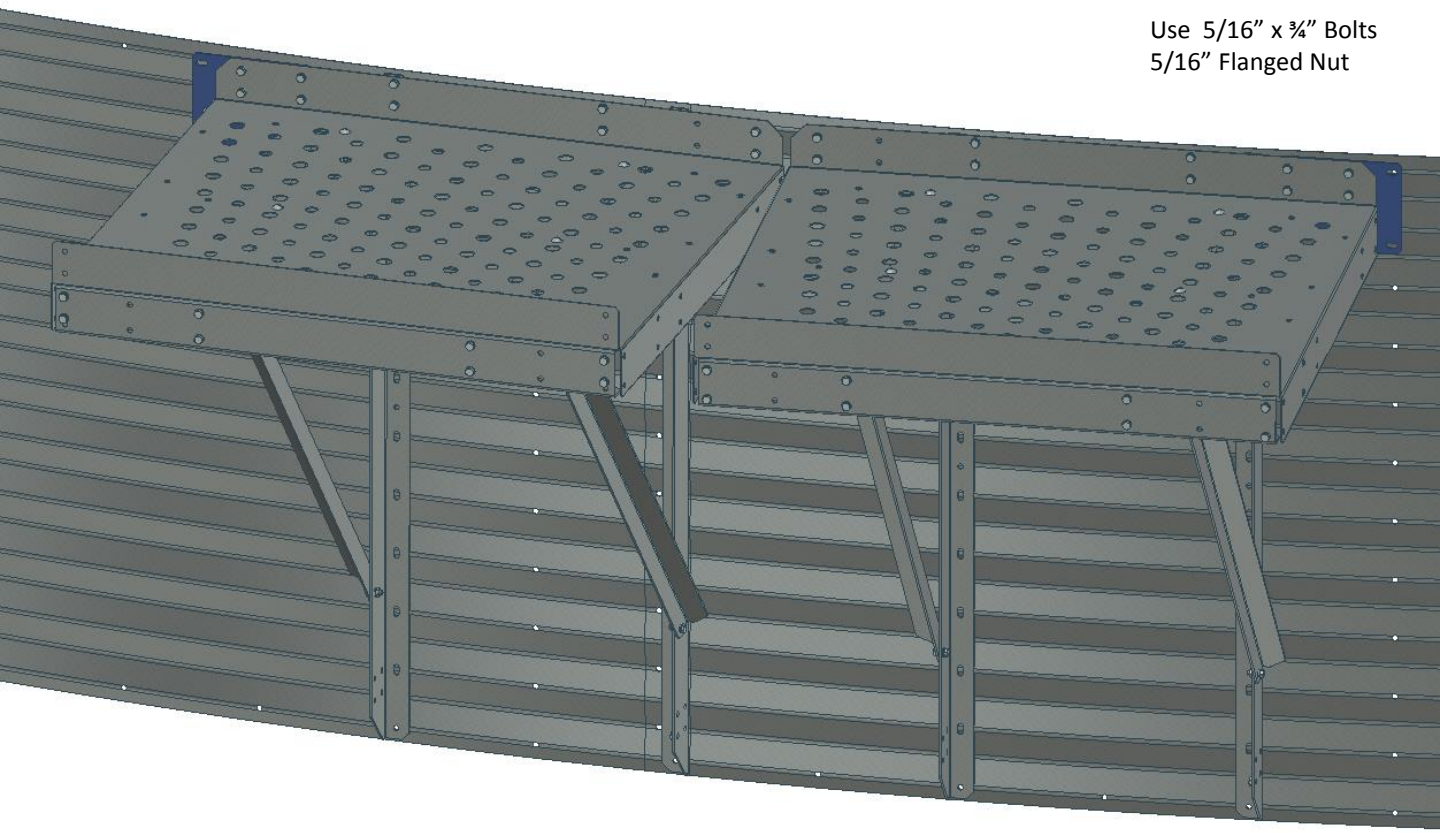
Use 5/16" x ¾" Bolts
5/16" Flanged Nut



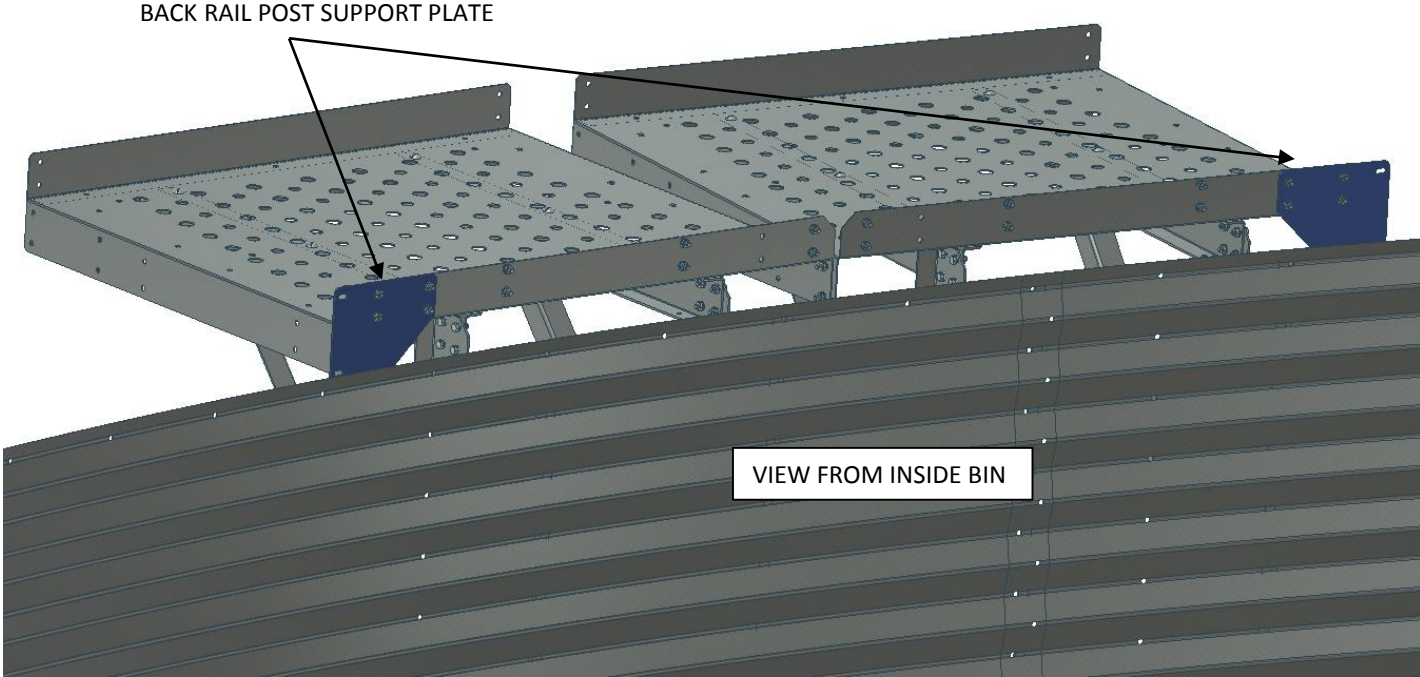
Double Eave Platform Assembly

Next assemble 2 back rail post support plates to the outer edge on each platform as shown here.

Use 5/16” x ¾” Bolts
5/16” Flanged Nut



LRP-044
BACK RAIL POST SUPPORT PLATE

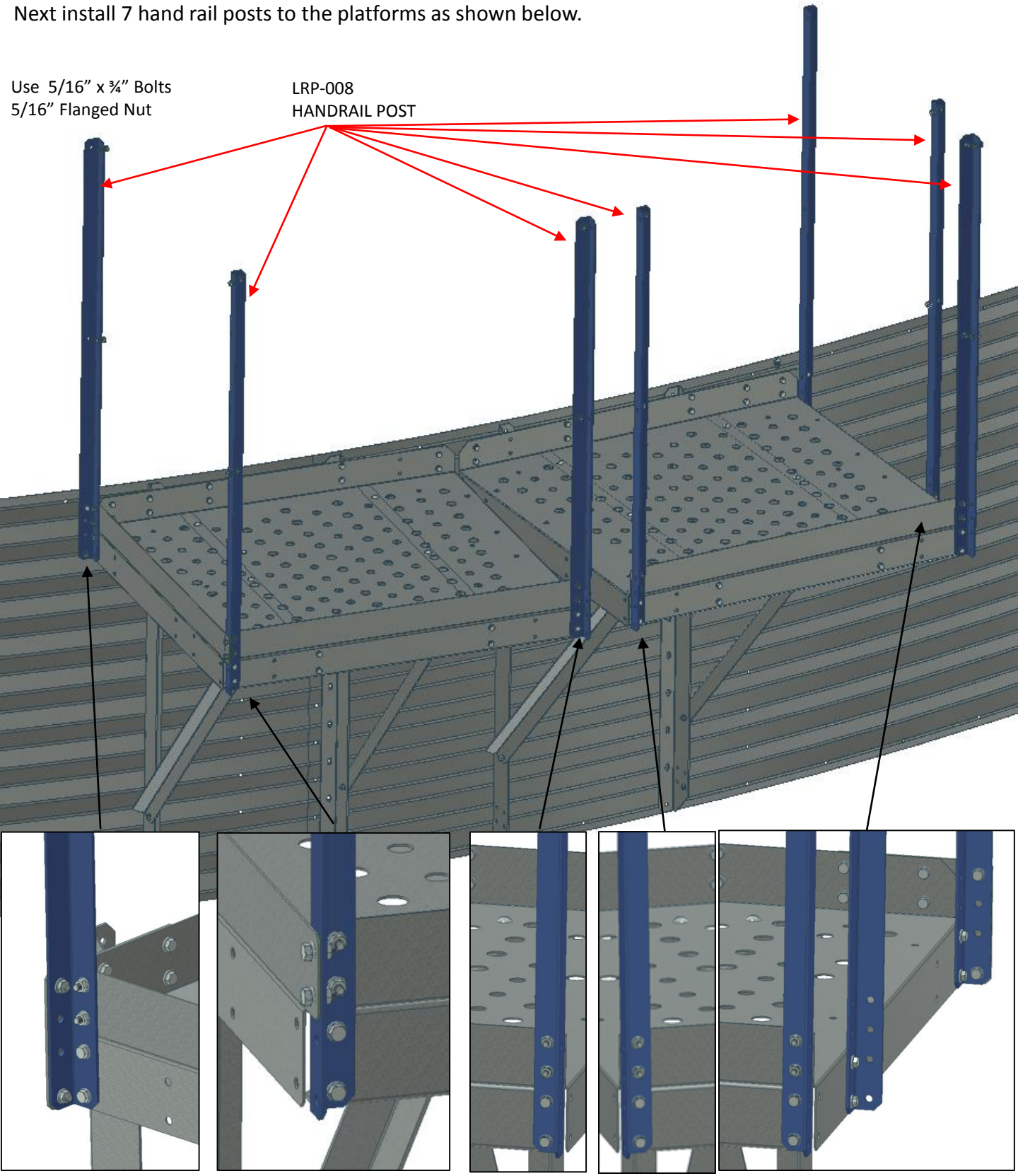


Double Eave Platform Assembly

Next install 7 hand rail posts to the platforms as shown below.

Use 5/16” x ¾” Bolts
5/16” Flanged Nut

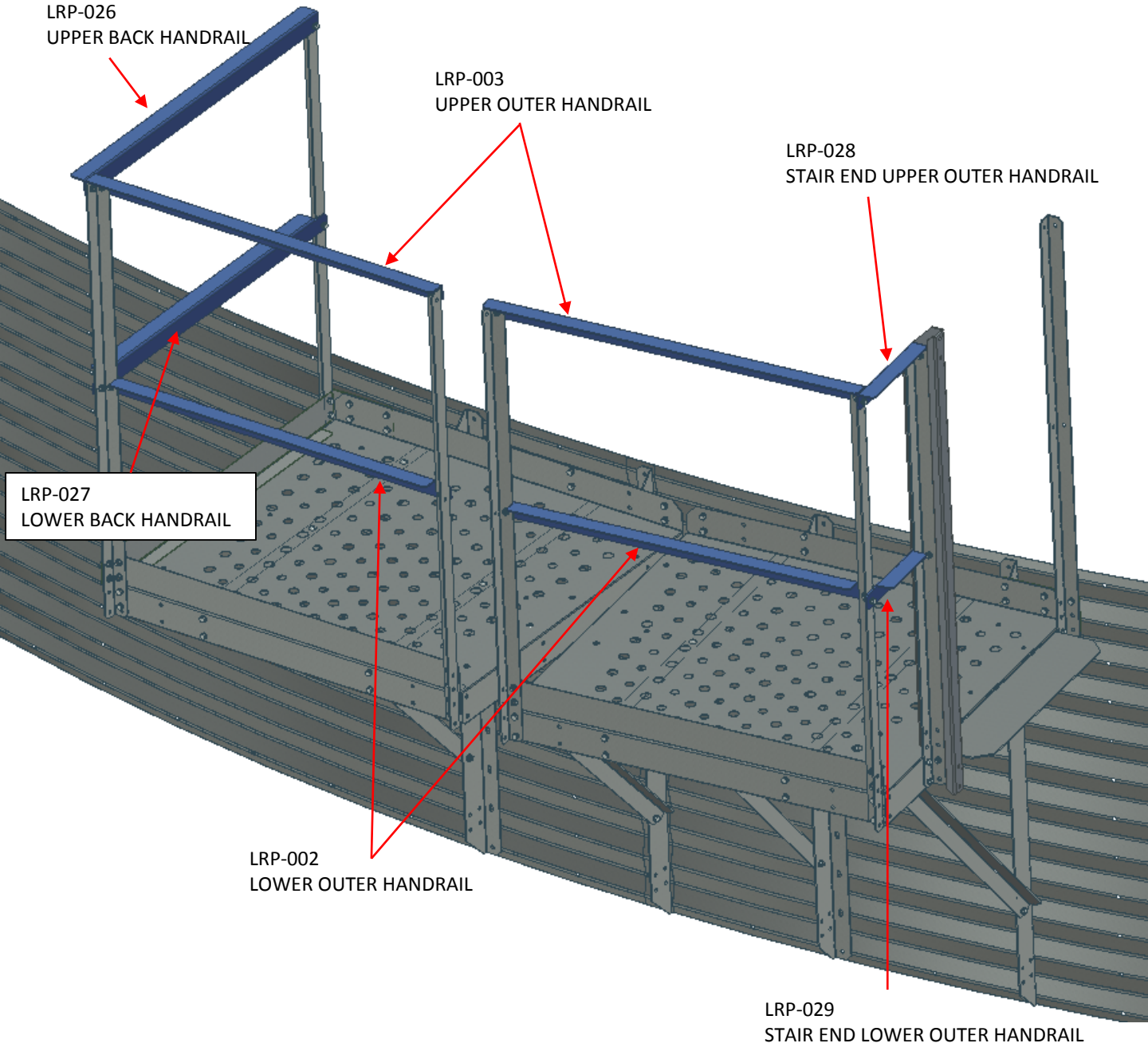
LRP-008
HANDRAIL POST



Double Eave Platform Assembly

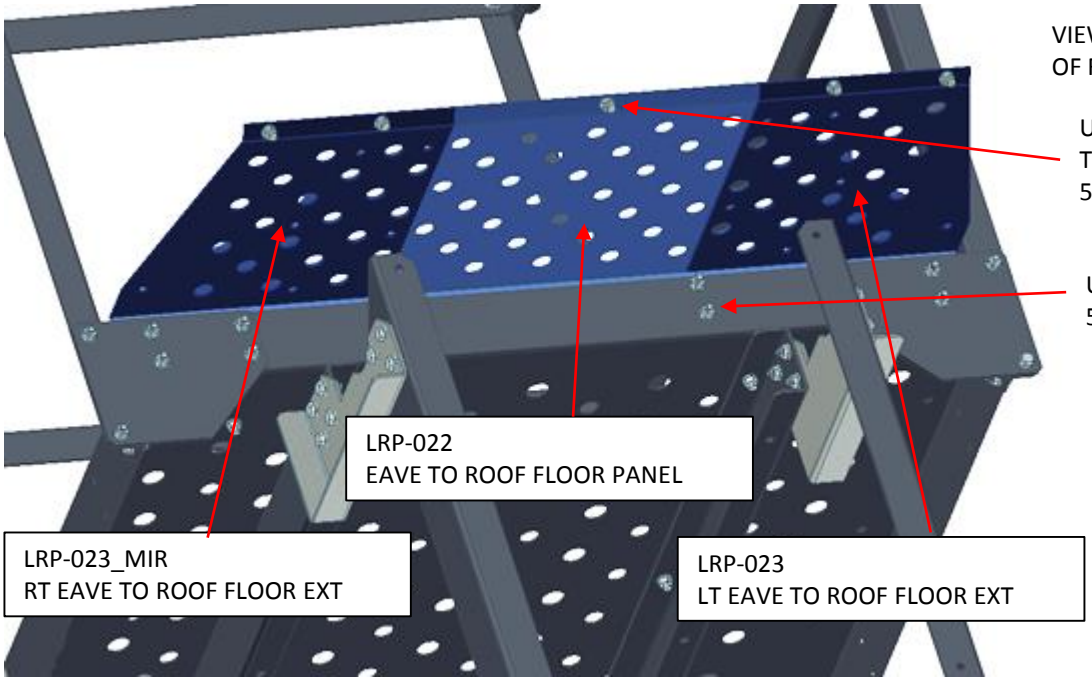
Next install the hand rails to the platforms as shown below.

Use 5/16” x ¾” Bolts
5/16” Flanged Nut

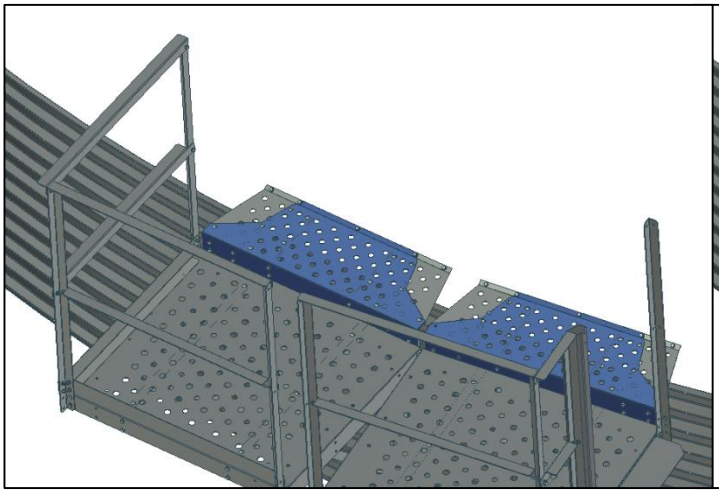


Double Eave Platform Assembly

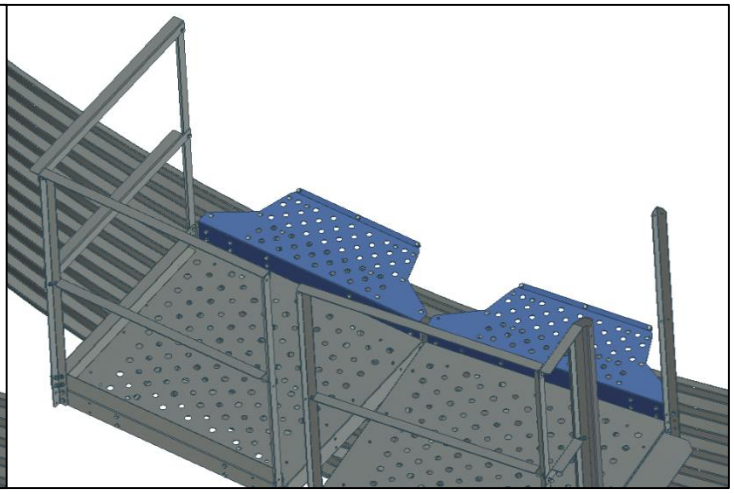
There is a floor extension that is to be installed to the platforms that will extended the floor to the roof panel. There are 2 configurations for this floor extension, a roof with 3 roof panels per sidewall sheet and a roof with 4 panels per sidewall sheet. The extension is bolted to the back flange of either platform, 1 single center piece or 3 pieces, a center and 2 side pieces. Where the extensions meet the roof, the mounting holes are to be field drilled into the roof panel and fastened to the roof.



3 ROOF PANELS PER SIDEWALL

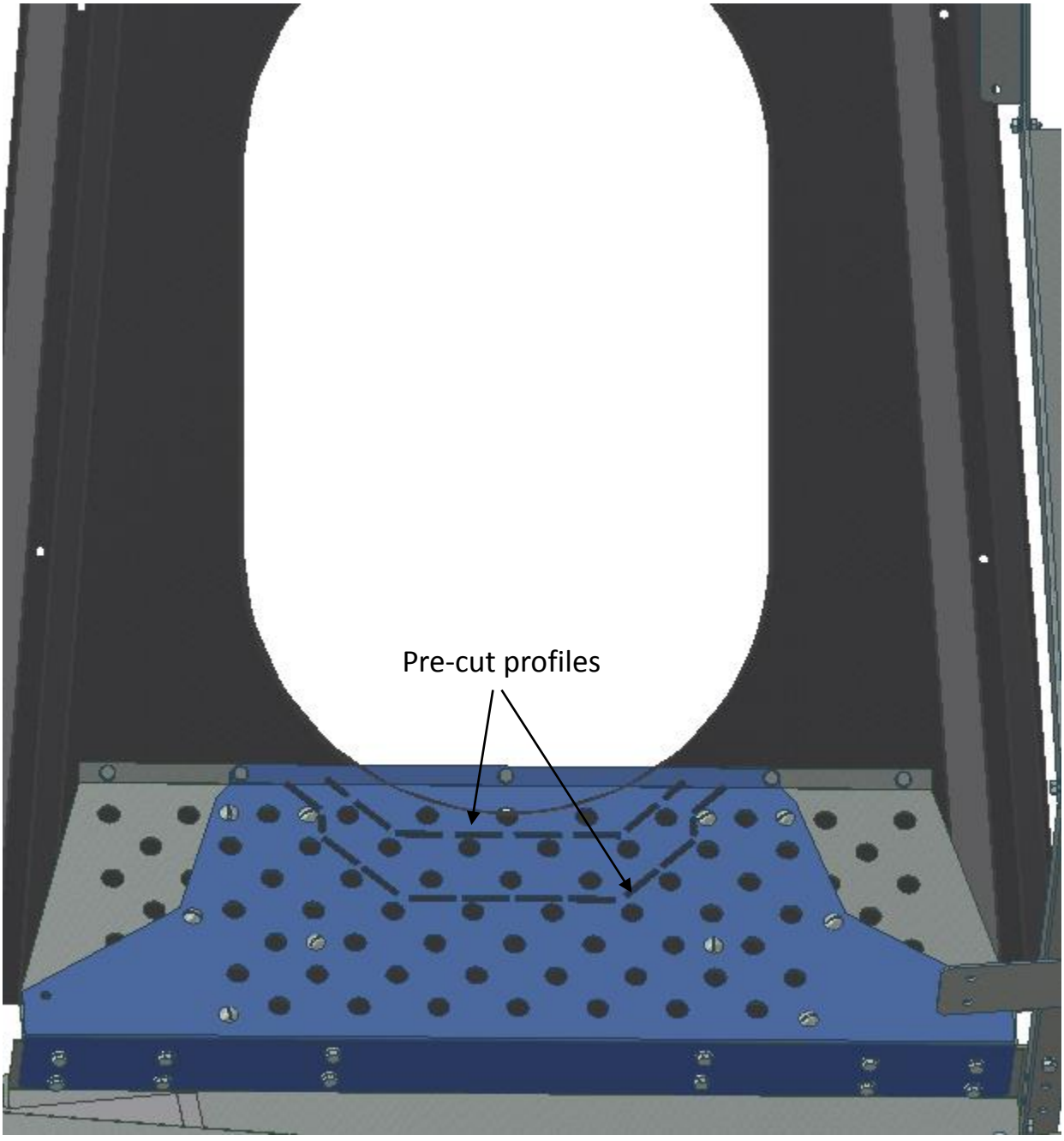


4 ROOF PANELS PER SIDEWALL



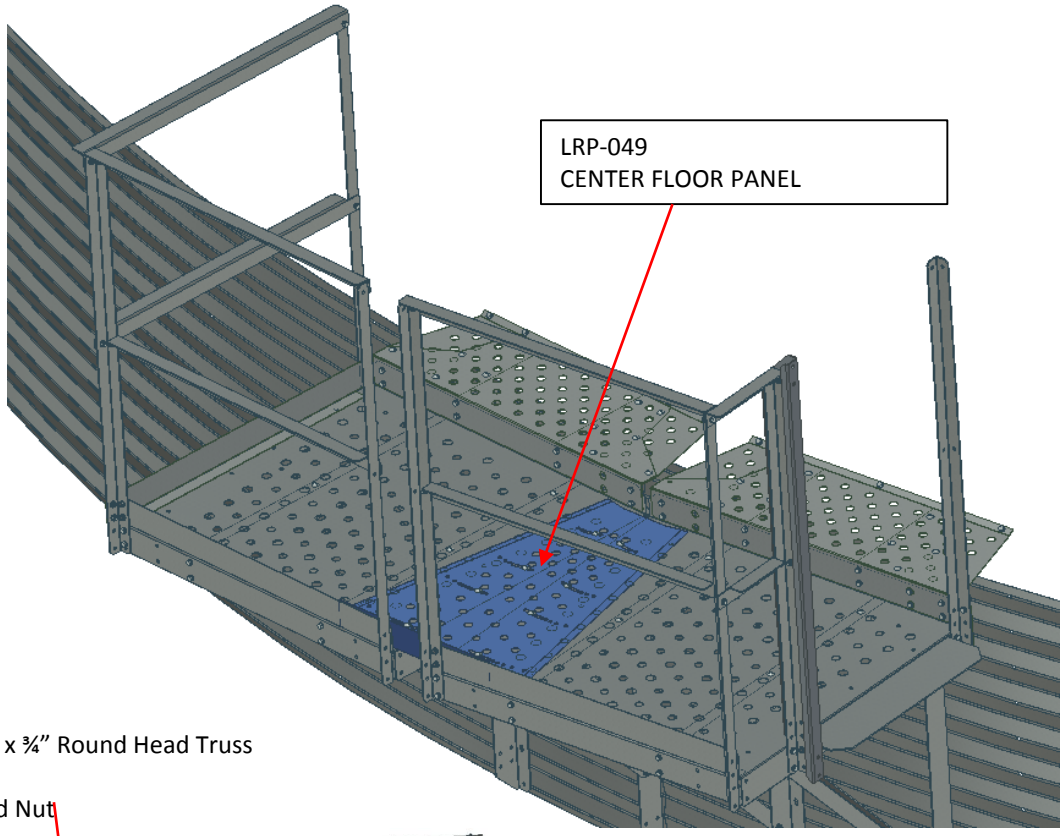
Double Eave Platform Assembly

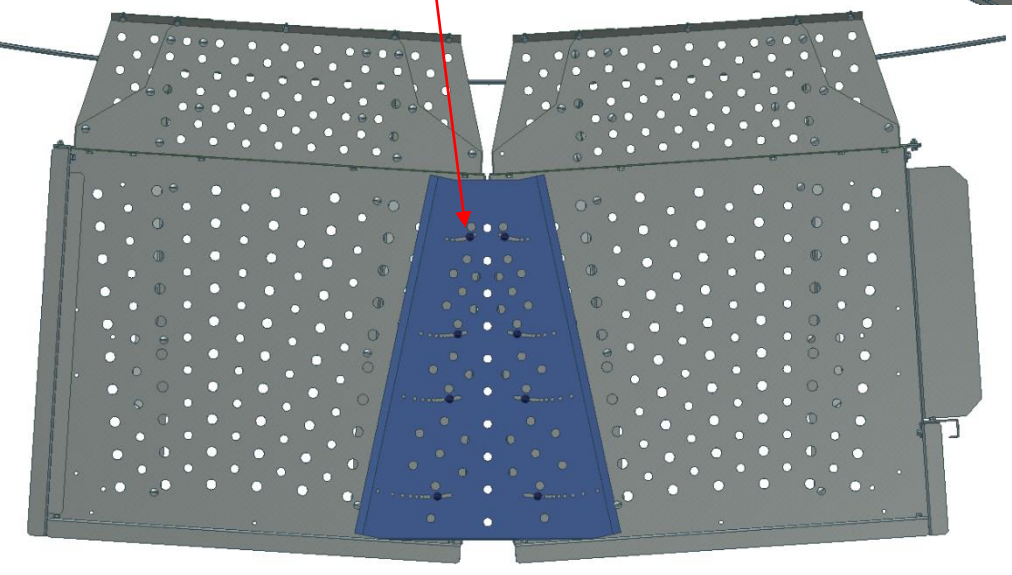
When installing the floor extensions towards the roof panels, if you are installing in a location with a man door present you will have to cut a clearance section out of the center extension following the profile pre-cut in the panel.



Double Eave Platform Assembly

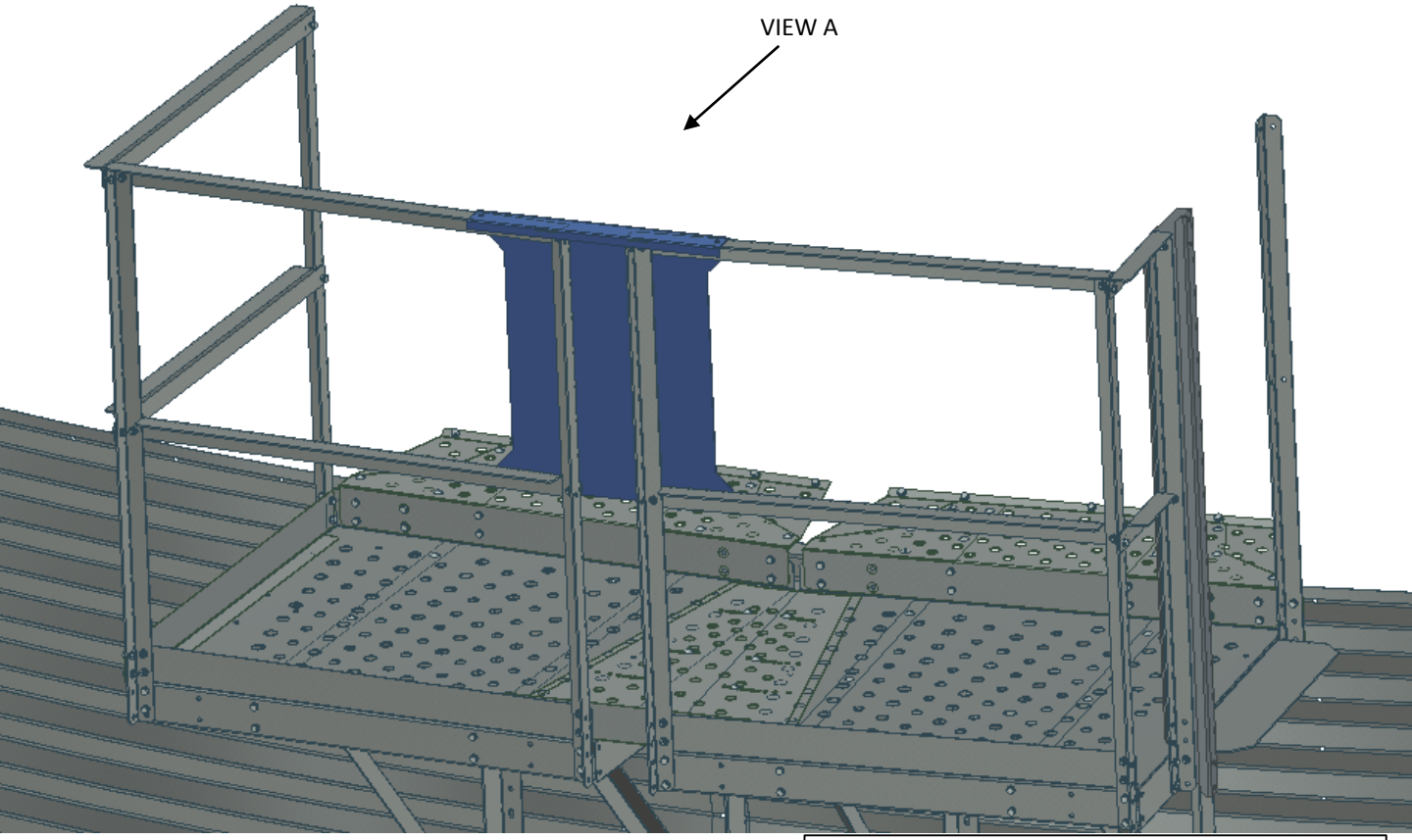
Next install the center floor panel over the gap between the 2 platforms. Depending on the size of the bin the gap will vary, but the center floor panel is designed with multiple mounting holes to adjust for this variation. Install as shown below.



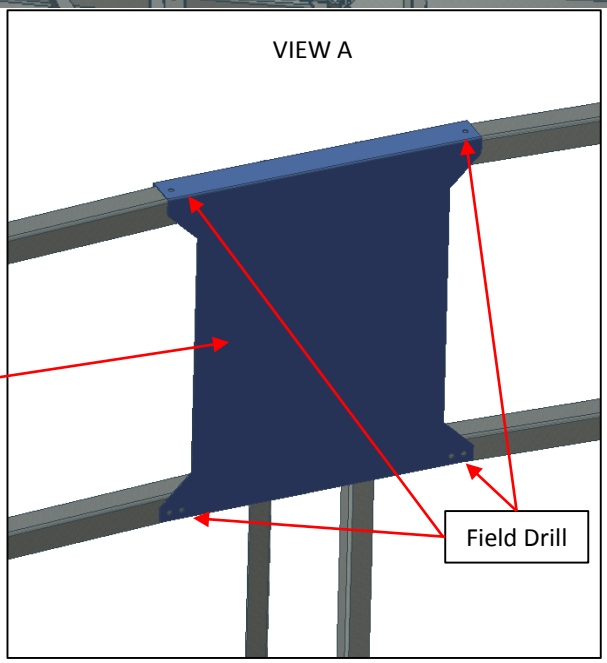


Double Eave Platform Assembly

Next install the center hand rail joiner bracket over the top hand rail of each platform covering the gap as shown below. This bracket is installed by centering the bracket and then use the bracket as a template to field drill 6 holes in the hand rails and then fasten the center hand rail joiner bracket using 5/16" x ¾" round head truss bolts and nuts.

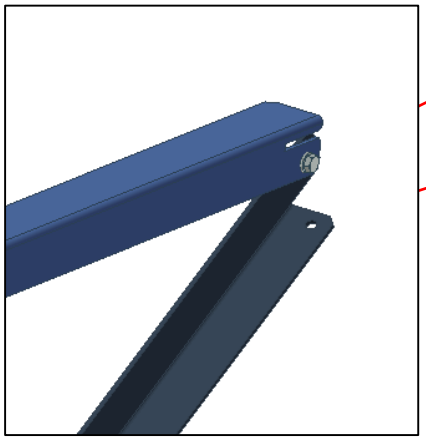


LRP-050
CENTER HANDRAIL JOINER BRKT



Double Eave Platform Assembly

Next the hand rail extensions will need to be installed. The hand rail extensions will be fastened to the roof ribs using the hardware provided for the roof ribs. The lower back hand rail LRP-040 will mount to the roof ribs and will need to be aligned to the roof ribs. The mounting holes for the lower back hand rails will need to be drilled on site in the roof panels and then fastened. The other hand rails will then mount from here to the hand rails on the platform as shown.



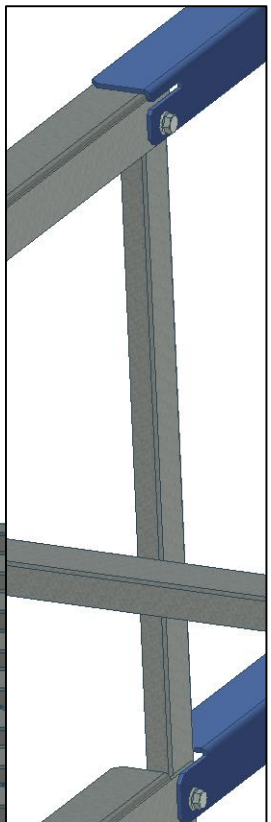
Use 5/16" x ¾" Bolts
5/16" Flanged Nut

Use Roof Rib Hardware
Field Drill Hole In Roof Rib
Both End of Angles

LRP-039
UPPPER BACK HAND RAIL

LRP-040
LOWER BACK HAND RAIL
Note: in some cases these angles will need to be modified to clear roof bridging rings

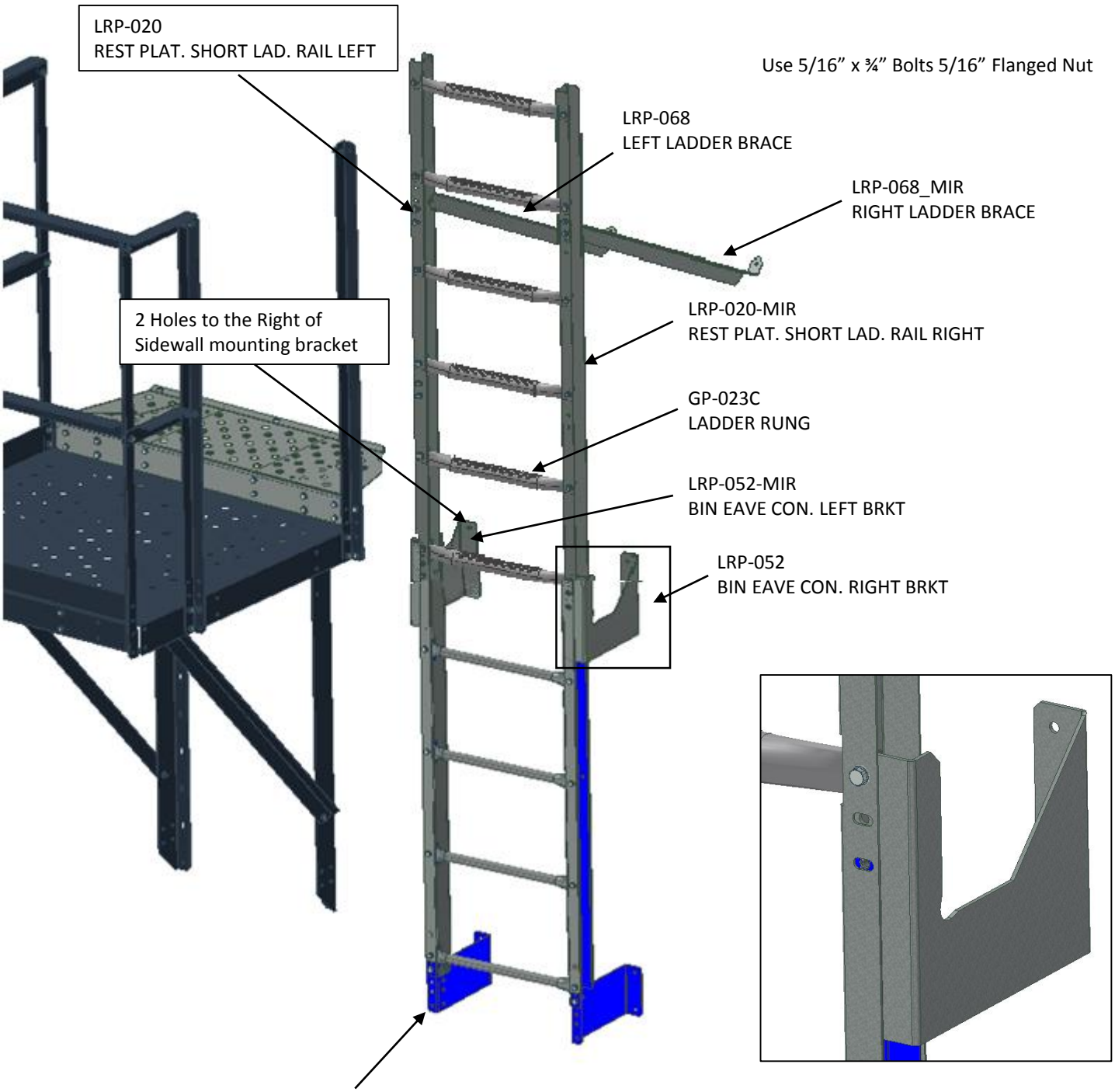
Use 5/16" x ¾" Bolts
5/16" Flanged Nut



LRP-041
LOWER BACK HAND RAIL

Double Eave Platform Assembly

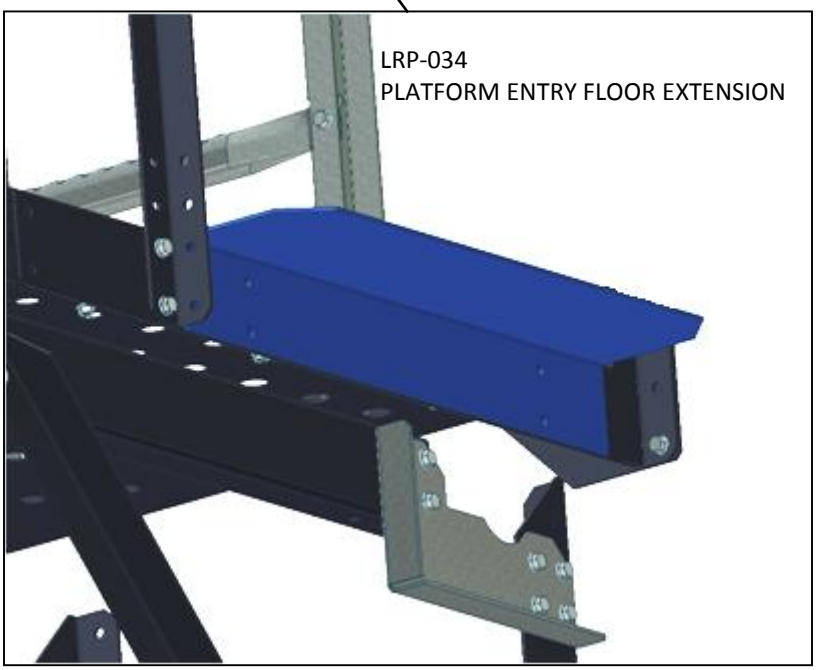
The rest platform short ladder rails will need to be installed to the bin ladder section. There is a left and right rail to this ladder extension, and these left and right rails will slide over the standard ladder section rails. Then the ladder rungs can be installed to construct the ladder as shown below. The top ladder eave brackets will be included with the platform and are to be installed to the ladder as shown below. Also install the left and right ladder braces by fastening to the ladder and field drilling the brace and mounting to the roof.



Double Eave Platform Assembly

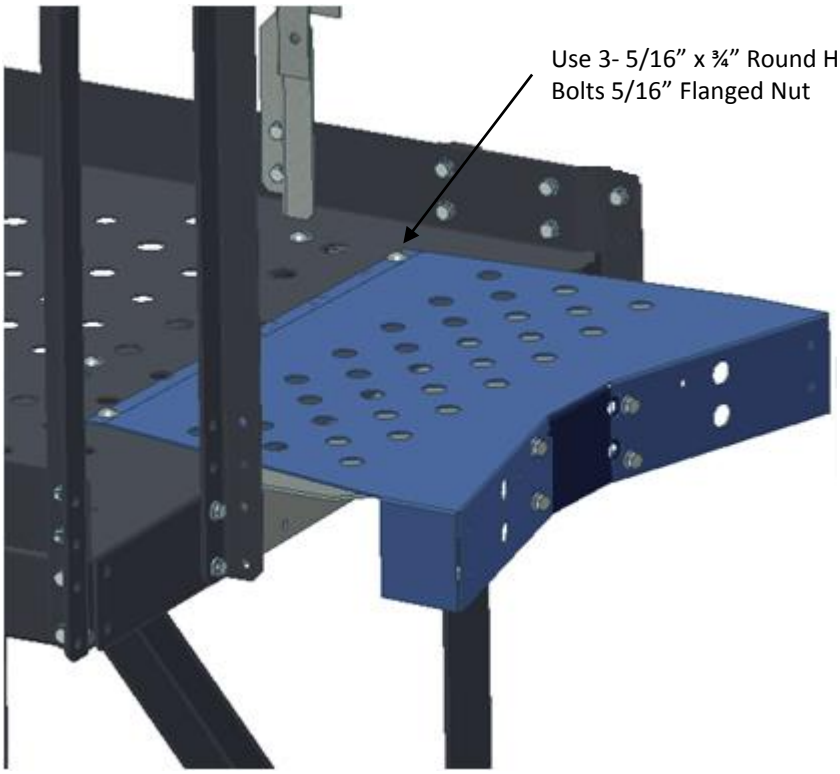
Next install the platform entry floor extension to the side of the platform using 4 bolts and nuts.

Use 5/16” x ¾” Bolts 5/16” Flanged Nut

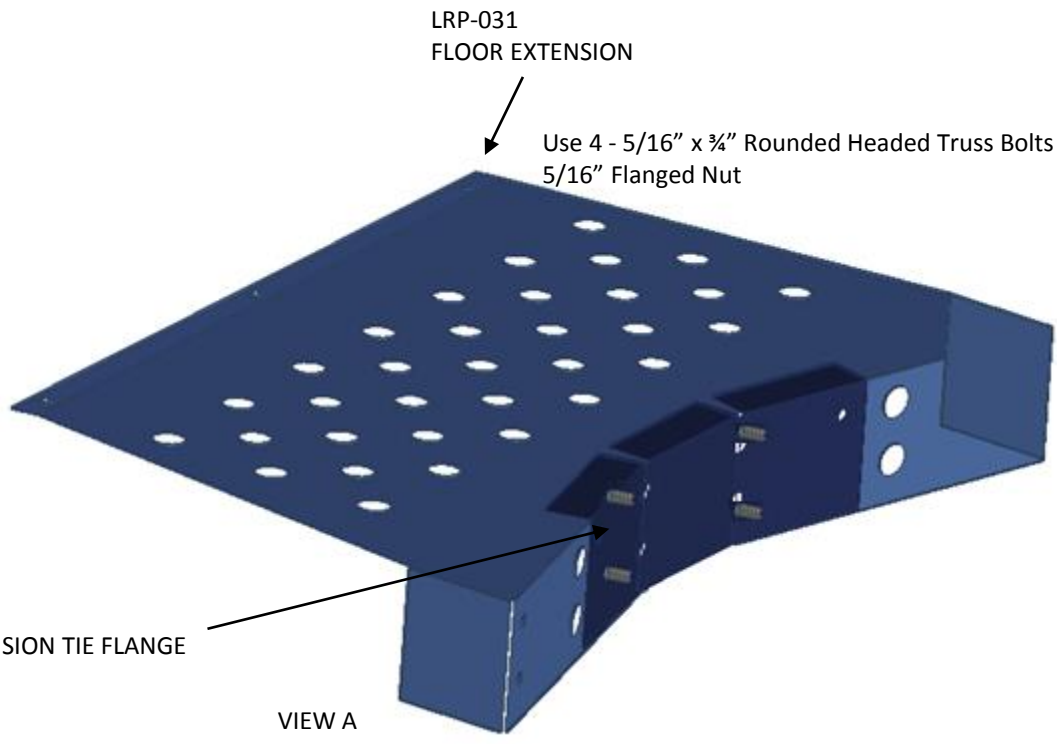


Double Eave Platform Assembly

Next install the platform floor extension and the floor extension tie flange. Start by assembling the platform floor extension and floor extension tie flange together. Then mount to the platform floor panel.



VIEW A

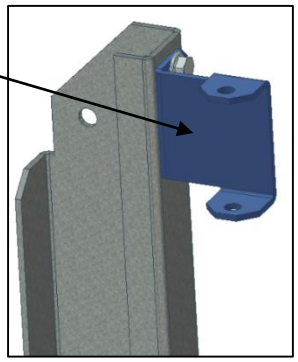


VIEW A

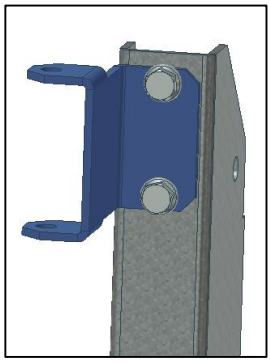
Double Eave Platform Assembly

The next step is to install the cage. The cage will install the same as the Rest Platform the difference being only 2 sets of cage hoops will be used and a shorter platform to cage connection post is used. See below

LRP-035
CAGE CONNECTION BRACKET

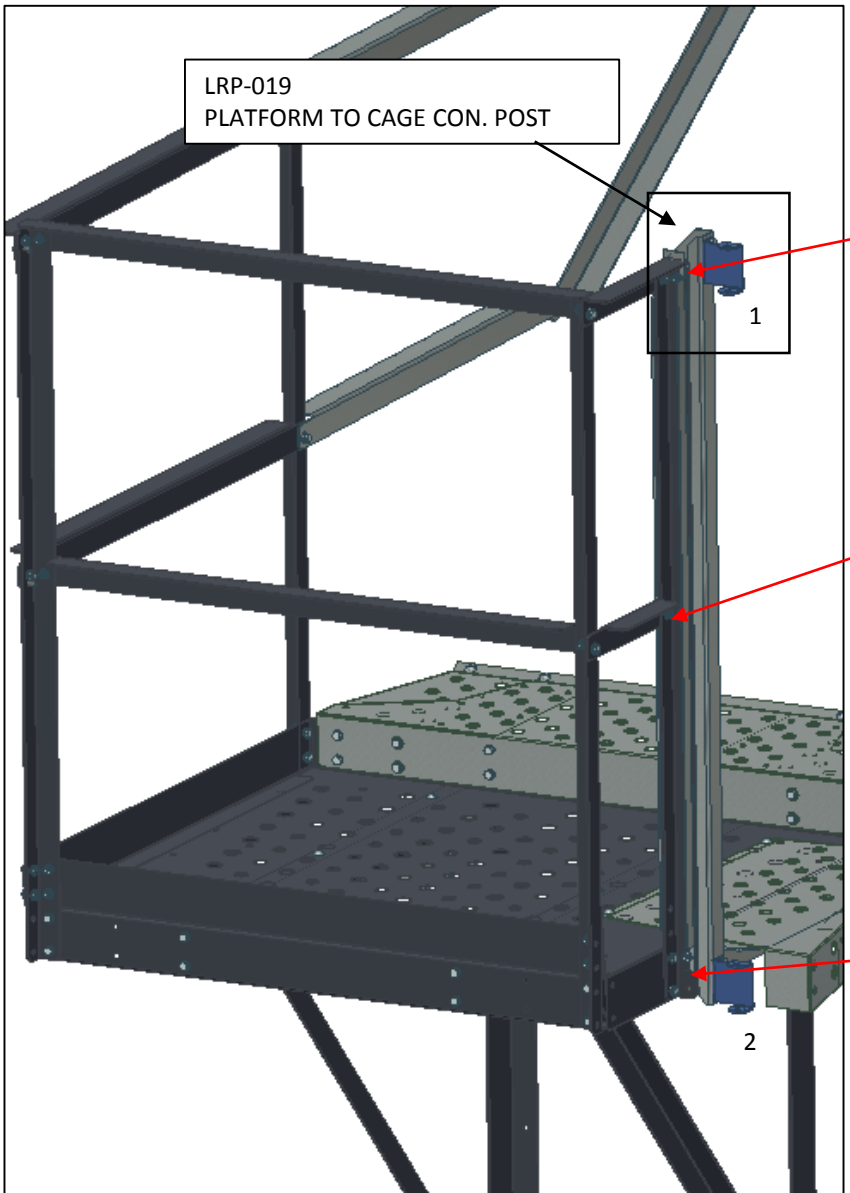


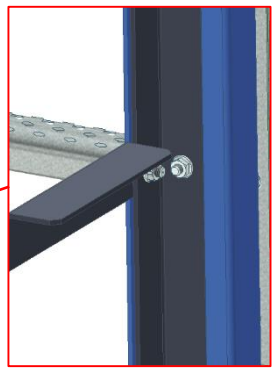
VIEW A

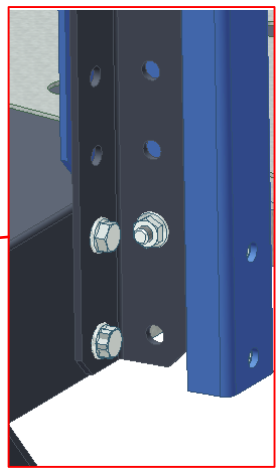


VIEW A

Use 5/16" x ¾" Bolts 5/16" Flanged Nut



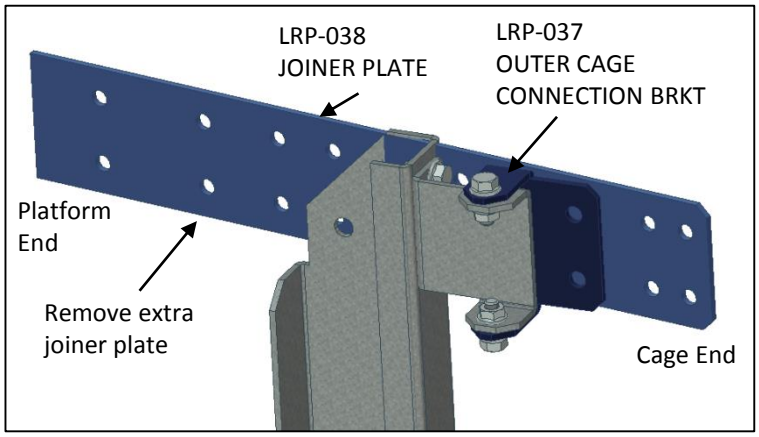


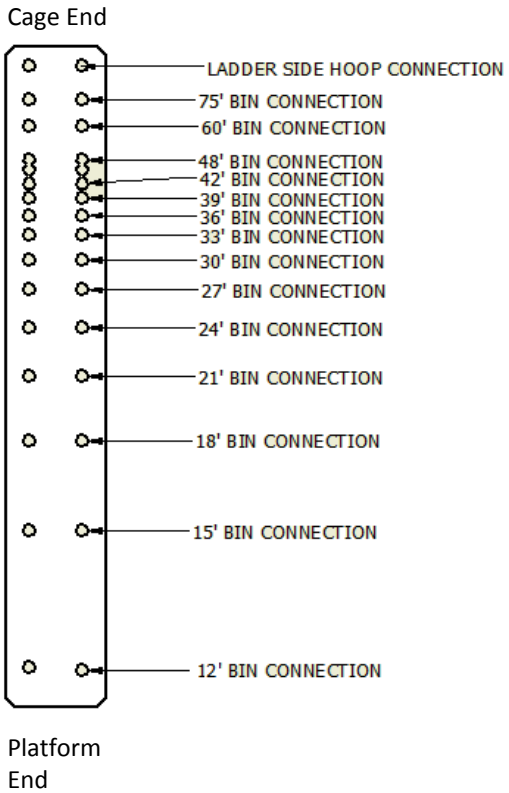


Double Eave Platform Assembly

Next assemble the outer cage connection bracket to the joiner plate. Ensure the outer cage connection bracket is assembled to the correct set of holes for the bin diameter being worked on (see diagram below). The remaining length of joiner plate after the outer cage connection bracket is mounted can be cut off as to not interfere with other components. This will need to be installed in 2 locations as shown below.

Once assembled attach the assembly to the cage connection brackets that were just installed.

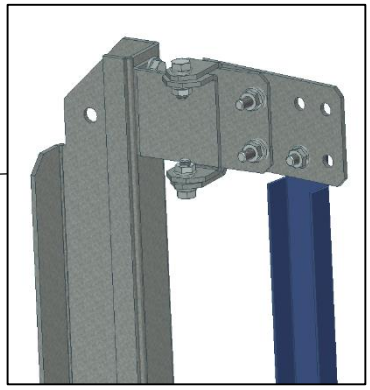




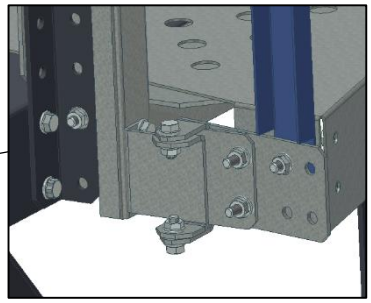
Double Eave Platform Assembly

Install a cage vertical to the joiner plate as shown below.

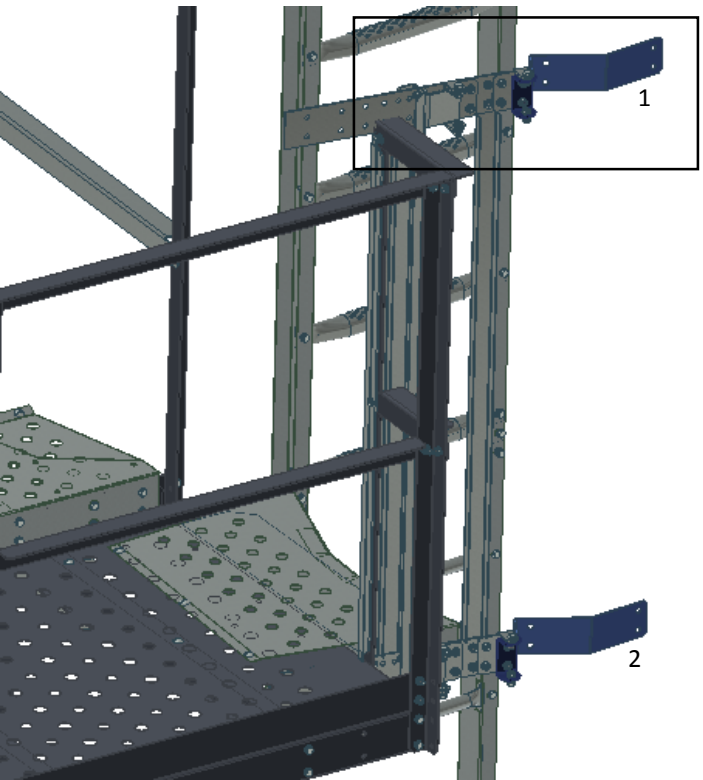
Use 4 - 5/16" x ¾" Bolts
5/16" Flanged Nut



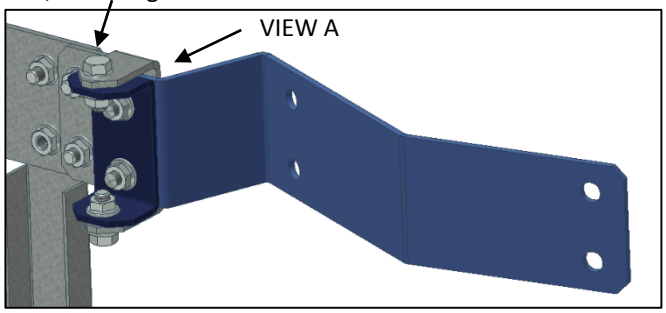
GP-021
CAGE VERTICAL



Next assemble the cage extension bracket and hoop to platform connection bracket together as shown. Then mount this assembly to the outer cage connection brackets. Do this for 2 locations.

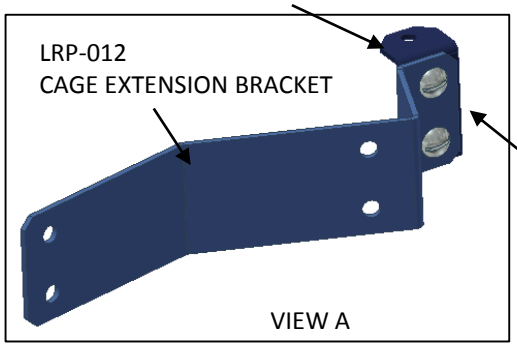


Use 5/16" x ¾" Bolts
5/16" Flanged Nut



LRP-036
HOOP TO PLAT. CONNECTION BRKT

LRP-012
CAGE EXTENSION BRACKET

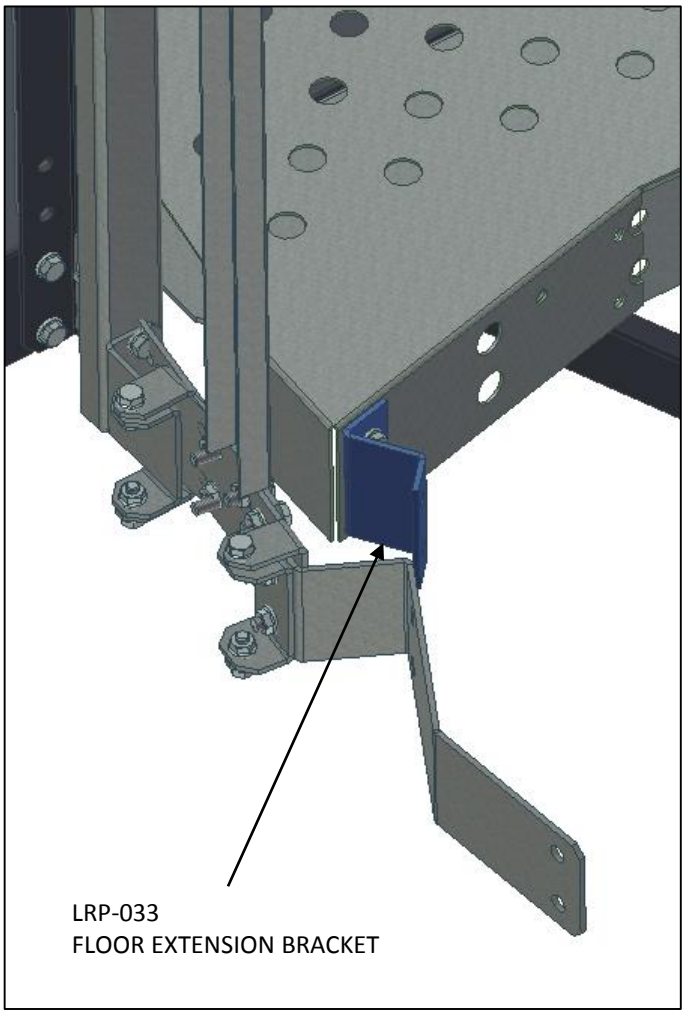


Use 5/16" x ¾"
Round Head
Truss Bolts
5/16" Flanged
Nut

Double Eave Platform Assembly

Assemble the floor extension bracket to the platform extension as shown.

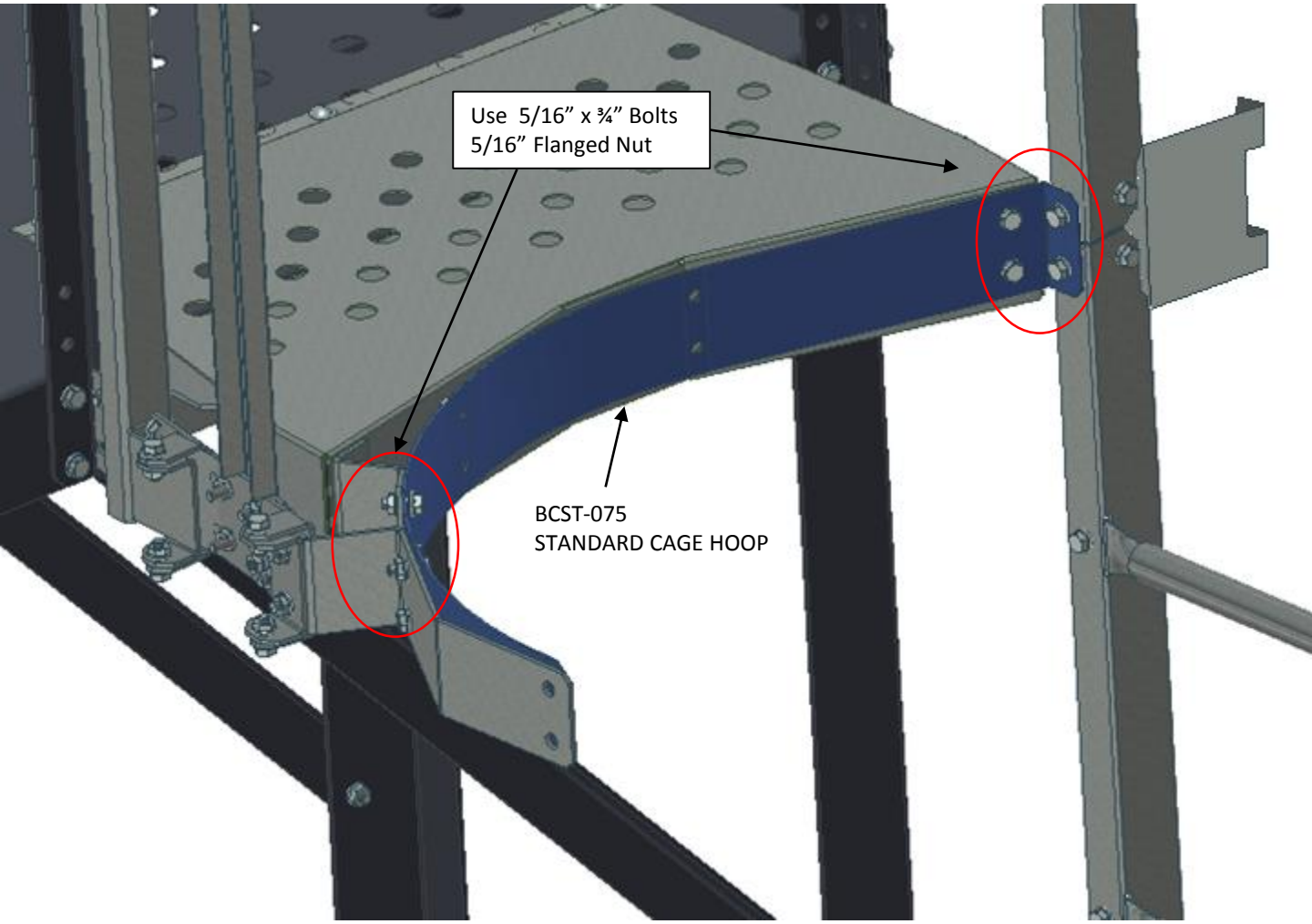
Use 5/16" x ¾" Bolts
5/16" Flanged Nut



VIEW A

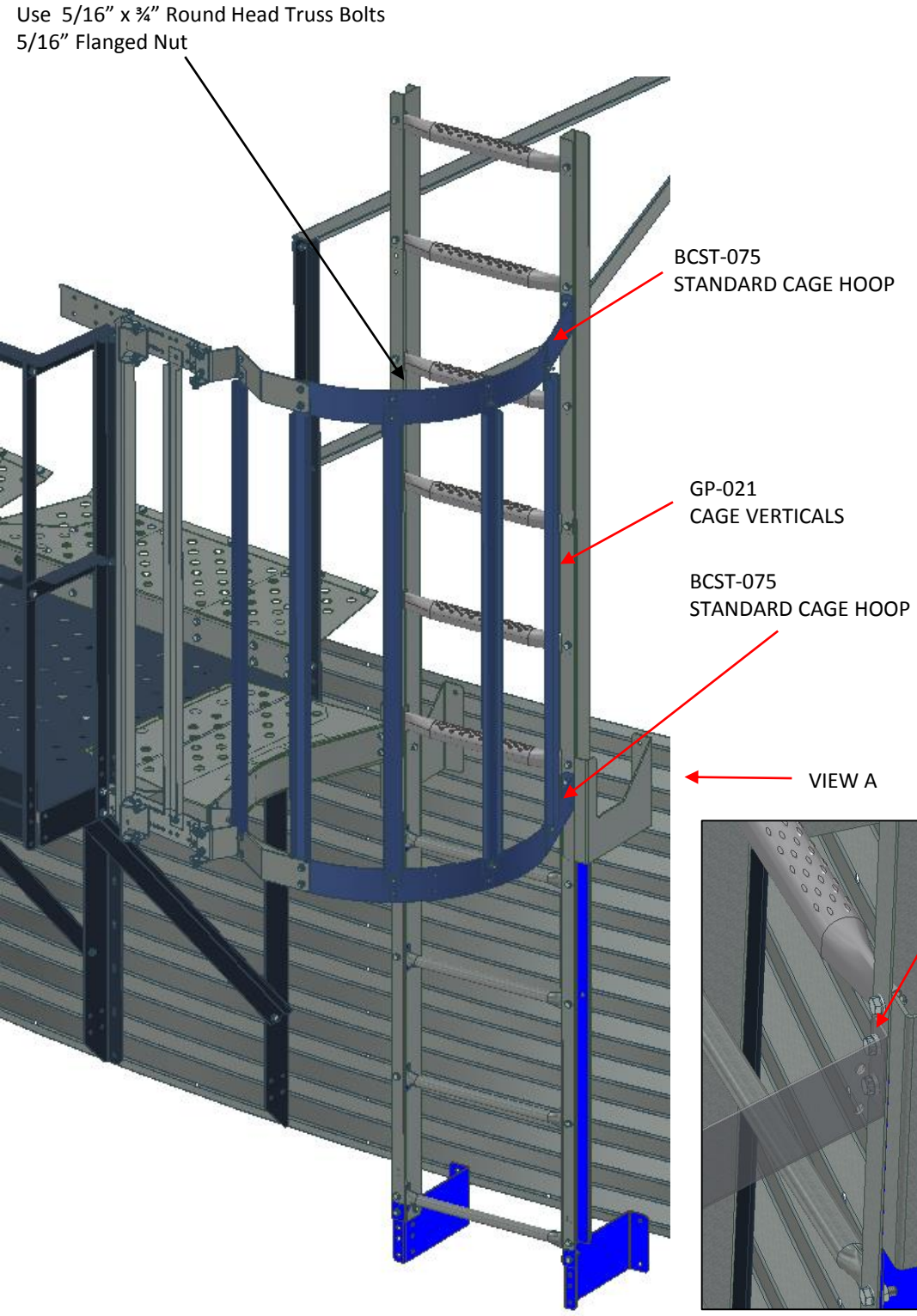
Double Eave Platform Assembly

Install a standard cage hoop to the platform extension and ladder. There are 8 bolt locations as shown below.

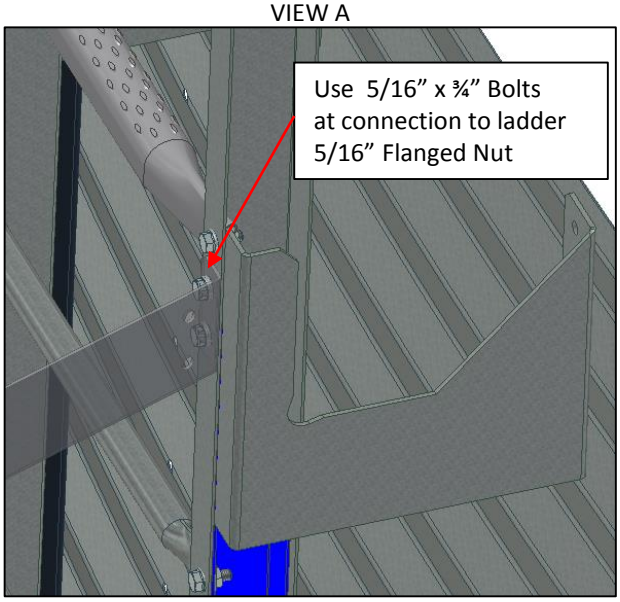


Double Eave Platform Assembly

Next install the remaining cage components to create the cage as shown below. 2 standard cage hoops, and 5 cage verticals will be used.

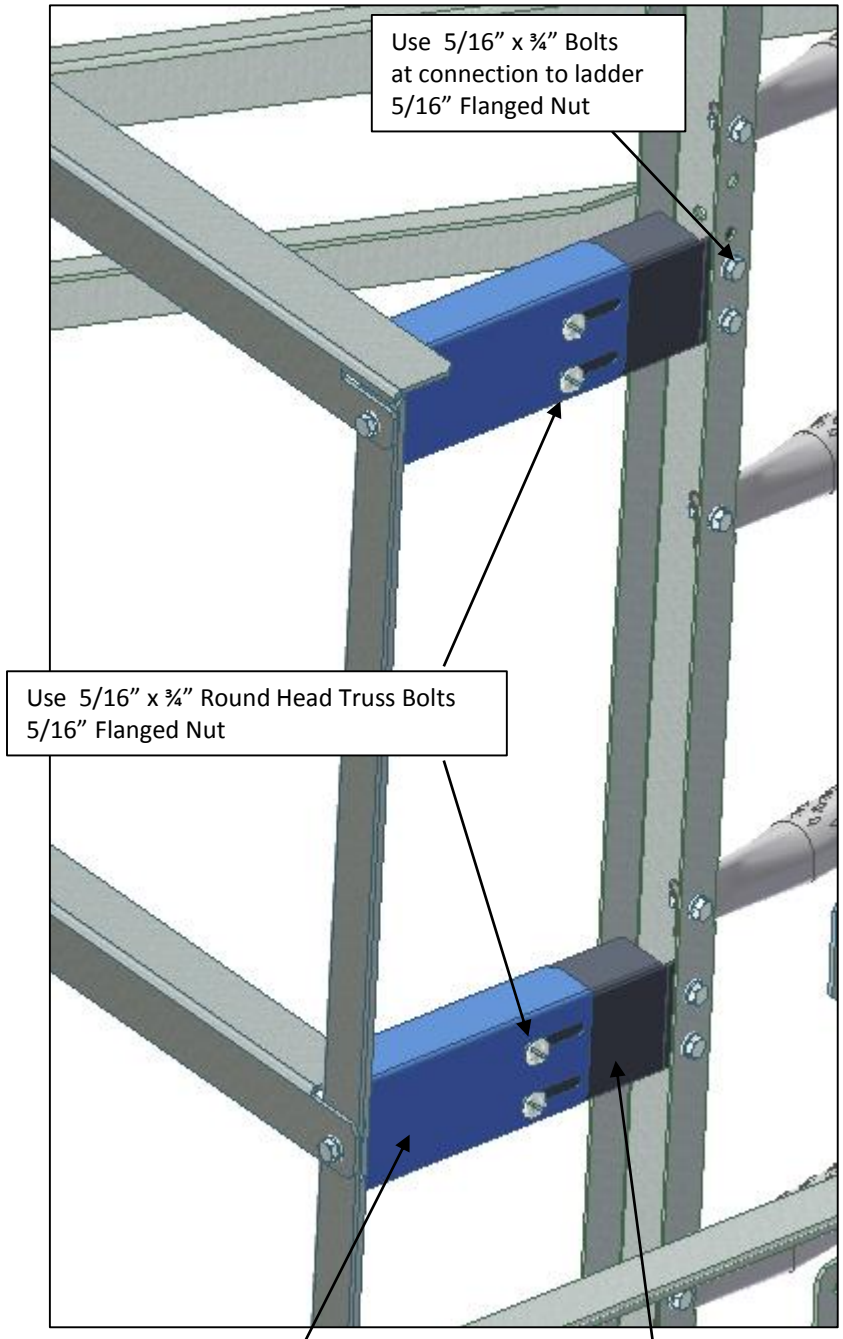


VIEW A



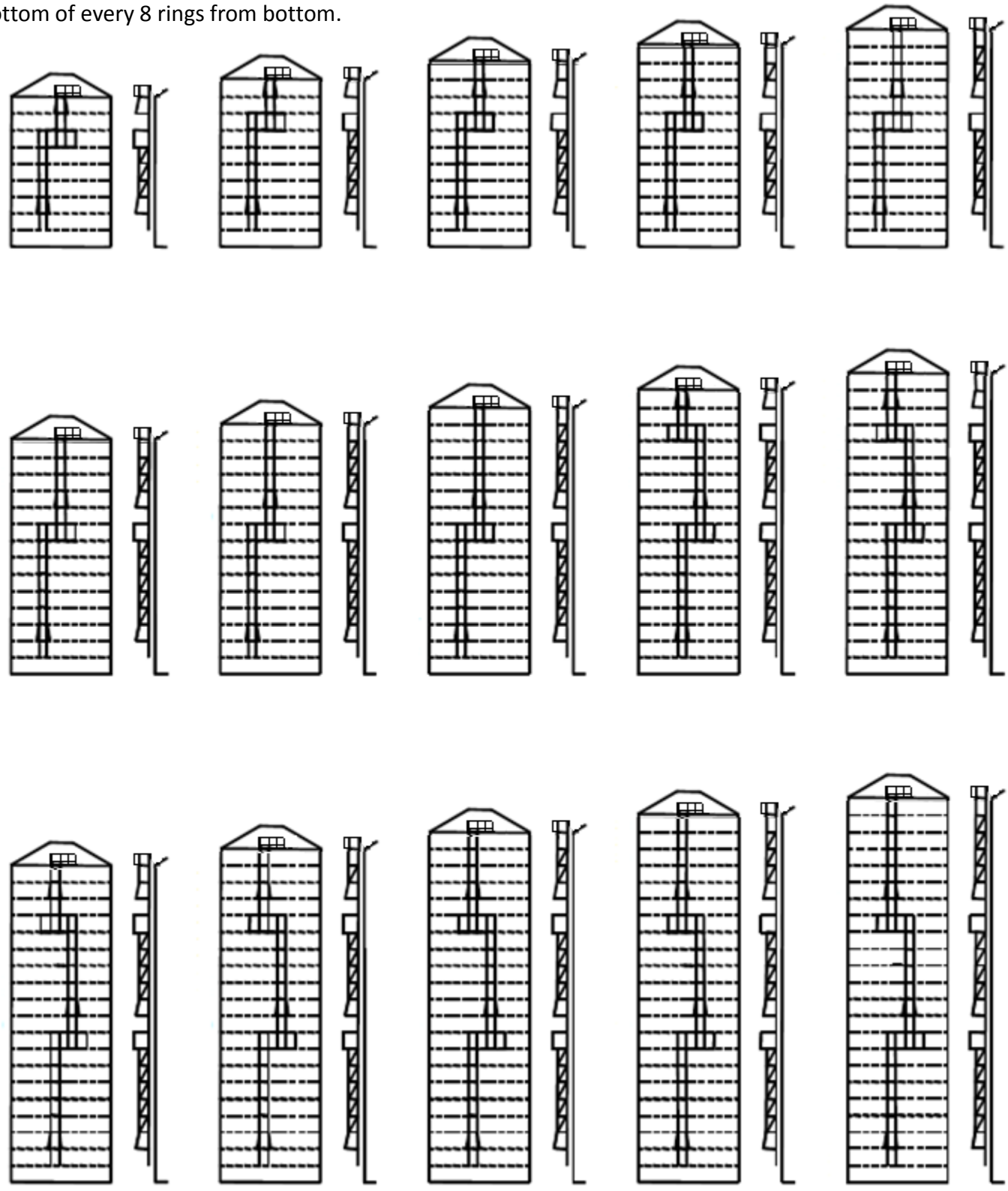
Double Eave Platform Assembly

Next install the ladder connection brackets between the ladder vertical and the back post on the platform.



General Platform and Ladder Layouts

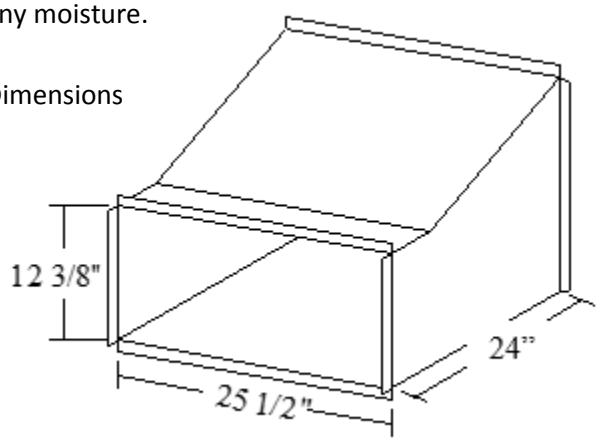
Below is general layouts of ladder and platform placements. General rule is rest platforms should be at the bottom of every 8 rings from bottom.



Small Fan Transition Assembly

The following outlines the assembly of a small fan transition. Dimensions are given to help you with mounting the transition to the bin and a parts list has been included to assist in locating parts. The hole should be cut as low as possible on the bin, and a high quality sealer (not supplied) should be used at all seams and around the bin to lock out any moisture.

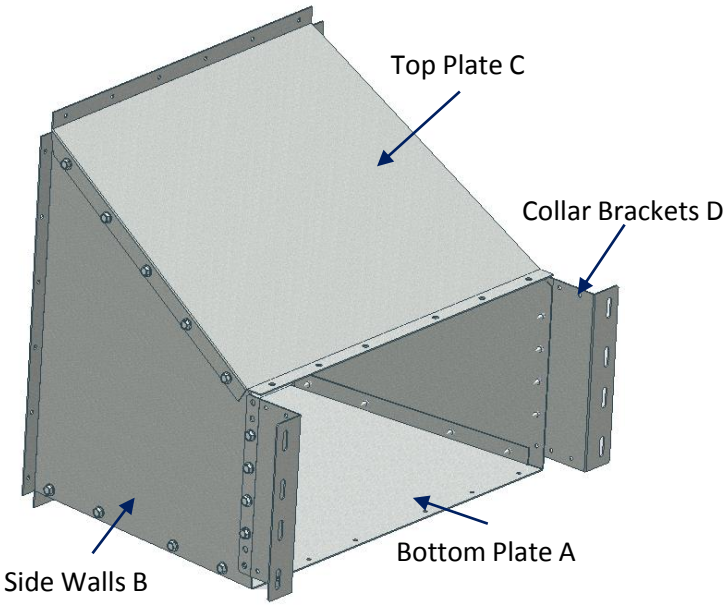
Dimensions



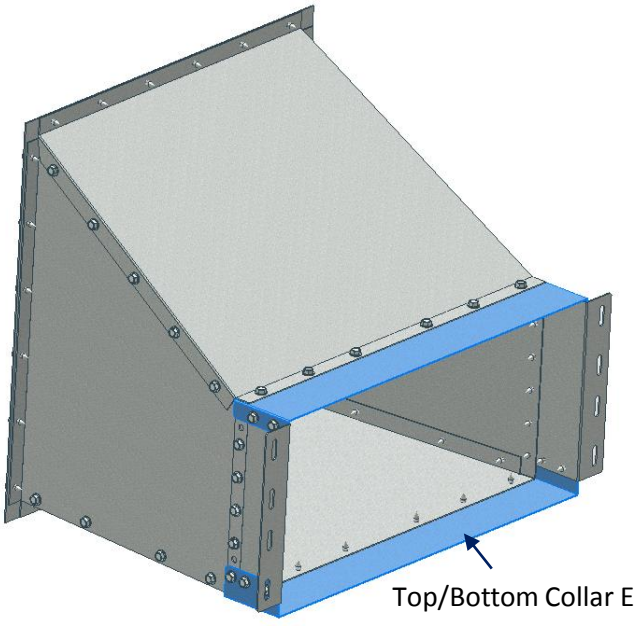
Part	Letter	Part#	Qty
Bottom Section	A	transit.003	1
Side Walls (L/R)	B	transit.001	2
Top Plate	C	transit.002	1
Collar Brackets	D	transit.004	2
Top/Bottom Collar	E	transit.006	2
Flashing Angle	F	transit.007	1

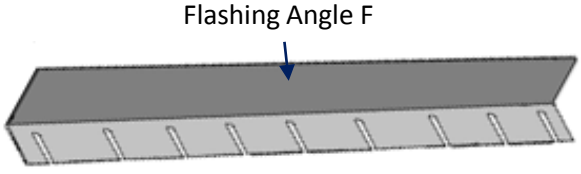
Note: Use 5/16" x ¾" Self-tapping screws for assembly

Step 1 Locate the Bottom Plate (A) and fasten the two Side Walls (B) into place as shown in the diagram. The Top Plate (C) and Collar Brackets (D) can also be mounted during this step.



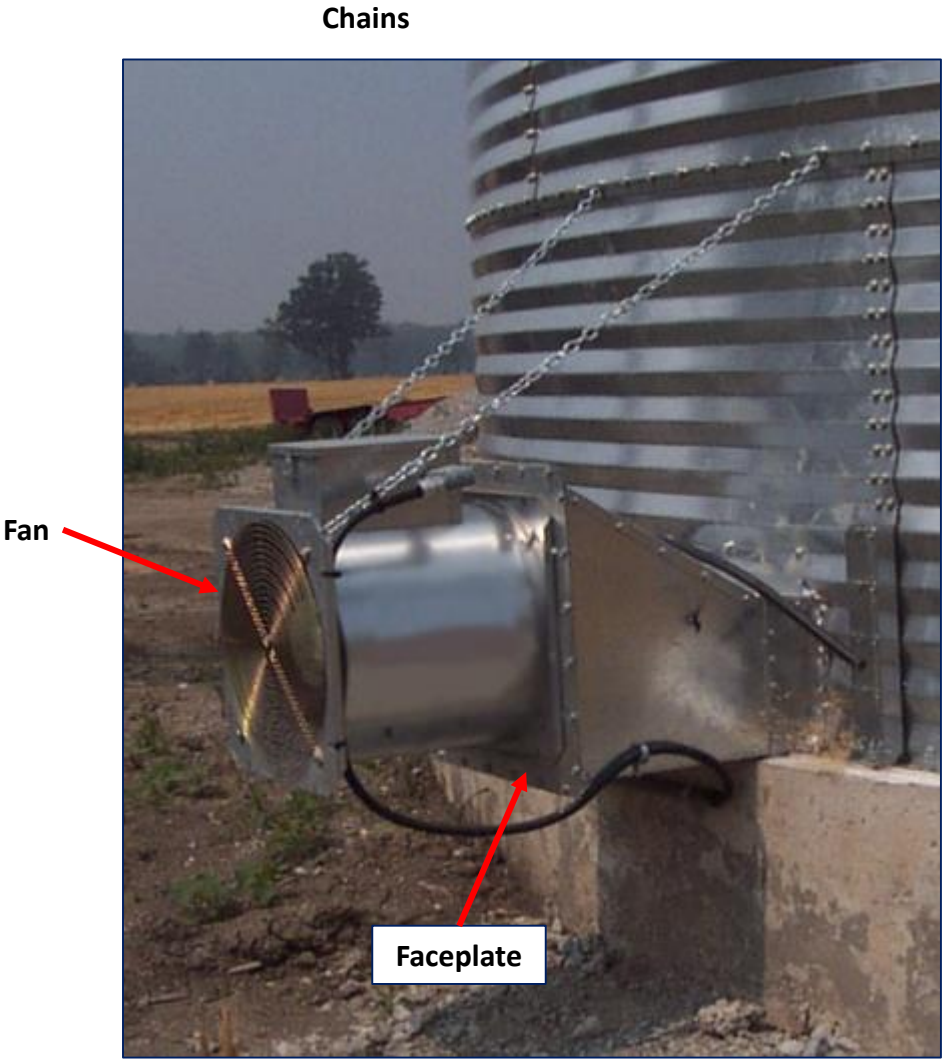
Step 2 Attach the Top/Bottom Collars (E) to the transition. The Flashing Angle (F) will need to be fastened using self-drilling screws after the transition has been mounted to the bin to allow for the proper curvature around the contour of the bin





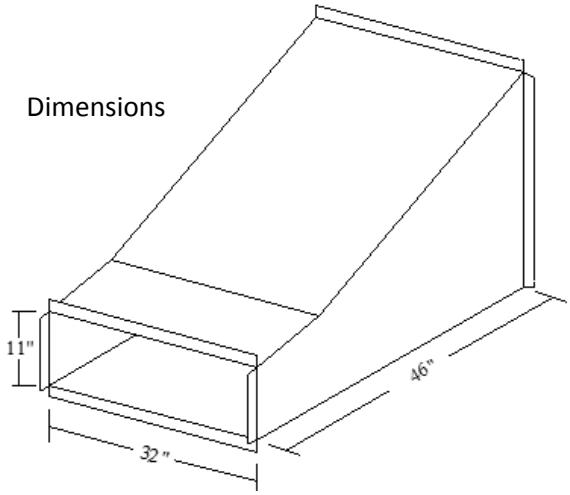
Small Fan Transition Assembly

The fan transition is now finished and should resemble the picture after the faceplate and fan have been mounted. Note: when mounting the fan to the transition, the weight of the fan must either be supported by a cement pad, or chains (shown). When supporting by chains/cable they should be mounted to the top corners of the transition or fan and fastened to a solid point on the bin sidewall at an appropriate angle (approximately 45 degrees).



Large Fan Transition Assembly

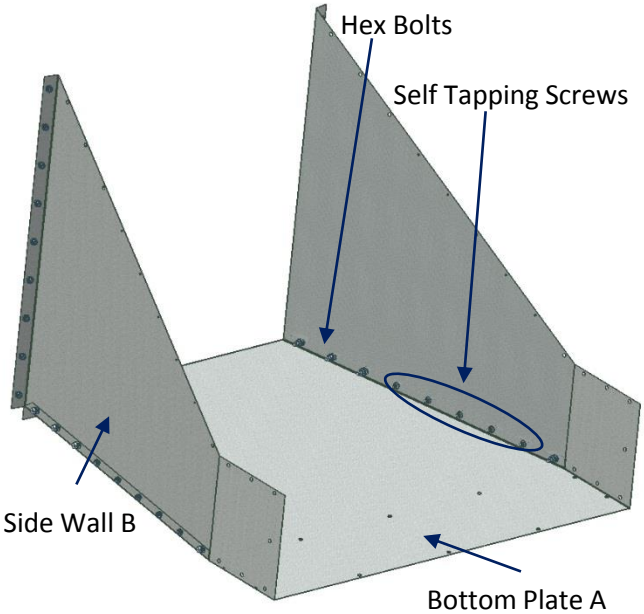
The following outlines the assembly of a large fan transition. Dimensions are given to help you with mounting the transition to the bin and a parts list has been included to assist in locating parts. The hole should be cut as low as possible on the bin, and a quality sealer (not supplied) should be used at all seams during the assembly as well as between the bin and fan transition to lock out all moisture.



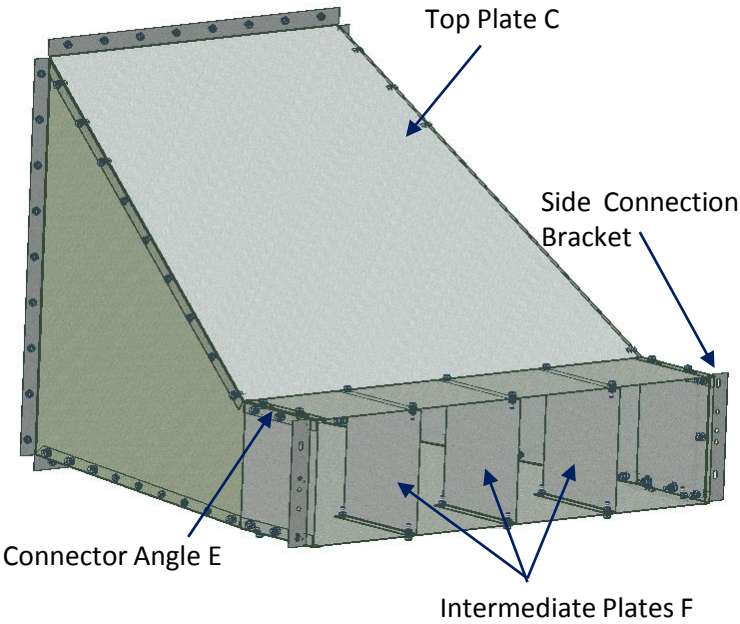
Part	Letter	Part #	Qty
Bottom Plate	A	T1144.01	1
Side Wall	B	T1144.02M	2
Top Plate	C	T1144.03	1
Side Connection Bracket	D	T1144.06	2
Connector Angles (L/R)	E	T1144.07	4
Intermediate Plates	F	T1144.04	3
Top Connection Bracket	G	T1144.05	1

Note: Use 5/16" x ¾" hex head bolts, or Self-tapping screws for assembly

Step 1 Start by locating the Bottom Plate (A), and the two Side Walls (B). The sidewalls fasten to the bottom plate using the applicable hardware.

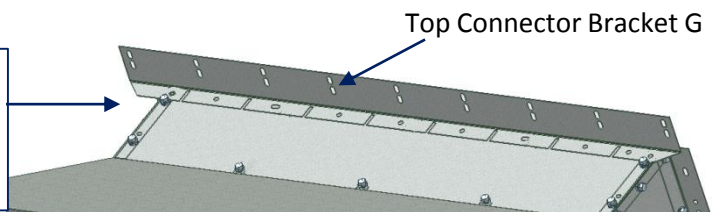


Step 2 Next locate the Top Plate (C) and fasten into place. The two Side Connection Brackets (D), and four Connector Angles (E) can also be fastened into place. Note: connector angles are left/right applications and will not fit if reversed.



The three Intermediate Plates (F), can now be installed on the transition

Top Connector Bracket (G) can now be installed on the transition. Your assembly is now finished with the exception of the faceplate which will be specific to your application and needs.

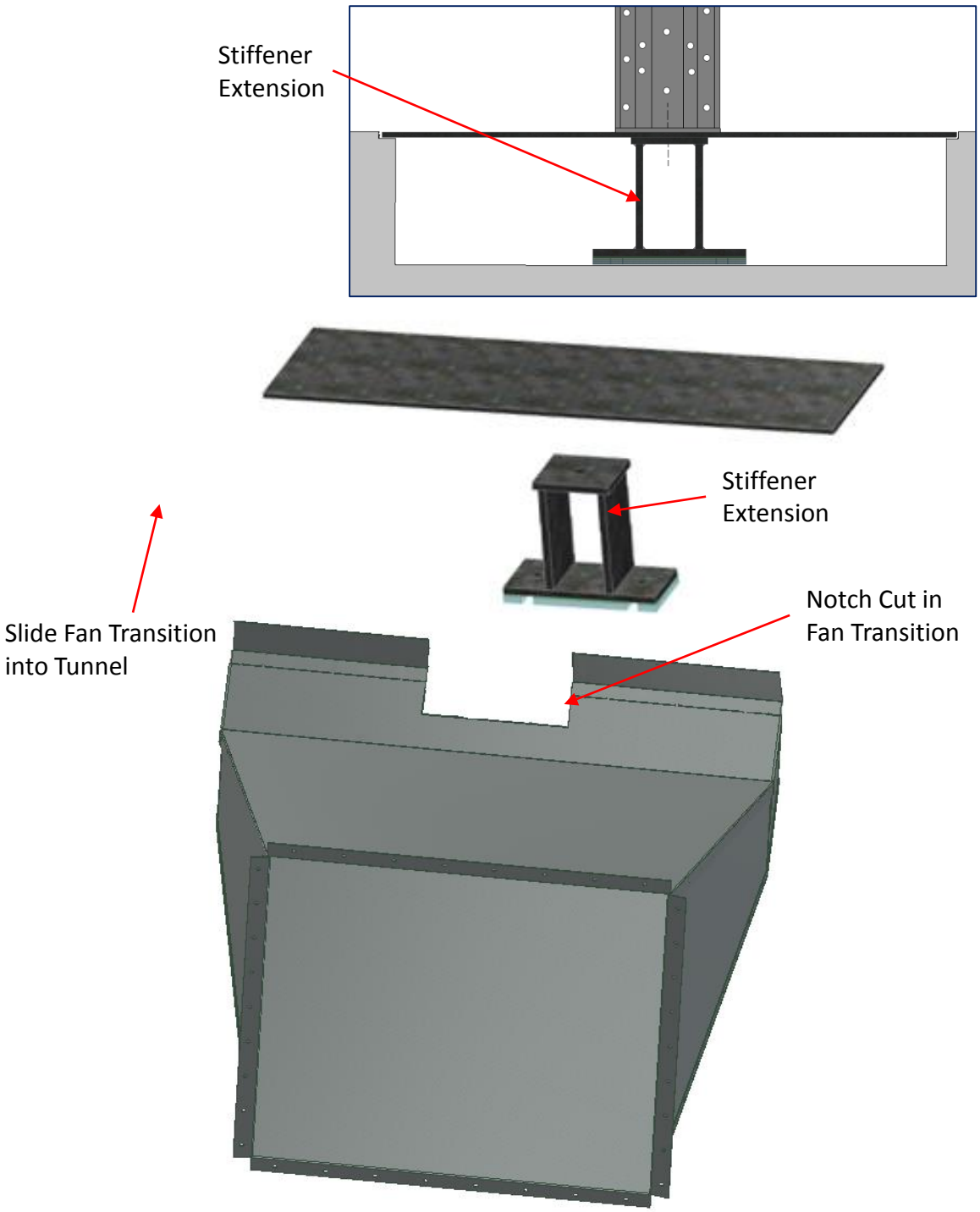


Large Fan Transition Assembly

The fan transition is now finished and should resemble the picture after the faceplate and fan have been mounted. Note: when mounting the fan to the transition, the weight of the fan must either be supported by a cement pad, chains or cables (shown). When supporting by chains/cables they should be mounted to the top corners of the transition or fan and fastened to a solid point on the bin sidewall at an appropriate angle (approximately 45 degrees).

Fan Transition with Partial Aeration Floor

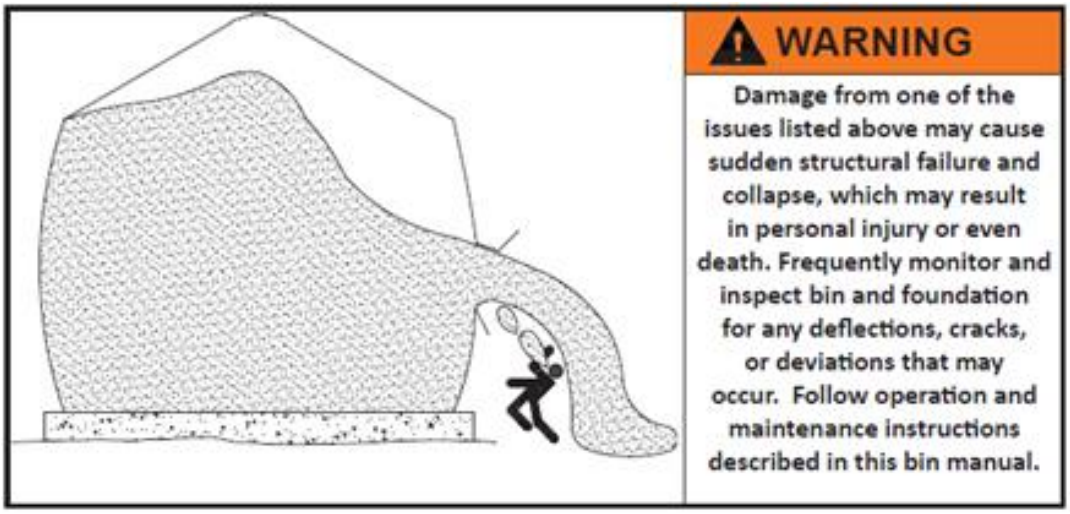
When installing a fan transition to a partial aeration floor, the outlet end of the transition will slide inside the aeration tunnel formed in the concrete. Any gaps around the edges will need to be sealed to prevent leaks in the aeration system. Note: in some cases a stiffener extension is used in the aeration tunnel, and the fan transition may need to be cut out to clear this extension to be able to insert the transition into the tunnel.



General Maintenance

General

Proper grain bin and equipment maintenance before and during harvest season will help ensure that good quality grain will be stored and preserved. The grain bin will provide many years of extended service if properly maintained. Information listed below outlines maintenance inspections that should be performed on a regular basis. Use this list as a maintenance checklist.



Roof, Stairs, and Vents

• **NOTE: Clean debris off of bin roof, peak ring, roof vents, and stairs at the end of each harvest season.**
Dust and debris can cause damage to roof as well as make steps/rungs slippery and unsafe to walk on. Not cleaning debris above roof vents can cause white and brown rust to develop on galvanized metal.

• If an excessive amount of heavy snow accumulates or builds up unevenly on one side of roof, it must be removed immediately.

• **Important:** Inspect the grain bin roof and sidewall for leaks, loose or sheared bolts, and rust or other corrosion. Caulk any cracks, replace and tighten all missing bolts and nuts with the correct type and size, and remove rust or corrosion with wire brush and paint over the area. Contact Lambton Conveyor if there is a problem.

• Ensure proper function of attachments to all grain bin openings such as roof doors and roof caps. Be sure all latches and hold-down clips are used as intended. Also, make certain the roof cap has a tight weather seal and is in the correct position if an overhead conveyor is mounted. Spouts require the roof cap to be permanently fixed.

• Tighten any loose bolts used to attach the roof ladder or stairs to the roof ribs and, if necessary, install handrails to increase worker safety and prevent accidents. Also, be certain the roof guard rail is secure. Because of workers being at extensive heights, it is important that all roof components be rigid.

• Whenever on the roof, inspect all roof panels, supporting ribs, stairs, steps, vents, and especially all connections to be certain accidents do not occur. Roof vents should be checked for blockage caused by dirt, dust, debris, frost, ice, bird nests, etc. Clean any debris to allow free airflow and to prevent damage to roof.

General Maintenance

Ladders, Catwalks, and Supports

• Be certain that access ladders, catwalks and platforms are complete and securely fastened to the grain bin.
• Catwalks are often supported by steel structures bolted to the grain bin sidewall stiffeners. Make sure to perform frequent inspection on all connections between catwalks and supports. Bent braces, loose bolts and sidewall damage are all extreme situations that could put someone's safety in serious danger.
• While climbing a ladder, check for any worn-out or loose rungs, loose or missing bolts, and dangerous jagged edges protruding from the ladder or safety cage. Determine the cause and fix or replace the item. If a sheared bolt is discovered, contact Lambton Conveyor. It may be an indication of a more serious problem.

Sidewall Sheets, Stiffeners and Doors

• Periodically inspect the exterior of the grain bin. Check for sheared or missing bolts, buckled or torn sheets, sidewall bulges, or any unusual changes in bin's appearance. Pay particular attention to bolted joints, noting any waviness along the edges, elongated bolt holes, or cracks, all of which are signs of over-stress. If a problem is detected, contact Lambton Conveyor.
• Ensure each stiffener base is correctly anchored to foundation. If the base plate is not bearing uniformly on the concrete foundation, buckling of the stiffener somewhere above the base could occur.
• Visually inspect stiffeners and splices to ensure there are no gaps. Improperly connected stiffeners will cause sidewall and stiffener buckling. Be certain the stiffener base is level on the concrete pad, all bolts and nuts are tight, and stiffeners are supported through an aeration tunnel.
• Before filling, be sure doors are shut and seal against the frame. Remember to lock the inner doors tight against the frame to ensure no structural damage occurs or leakage of water into the grain.

Foundations and Tunnels

• Inspect the grain bin foundations for structural problems. Uneven foundation settlement can cause gaps at the bottom of the bin, resulting in spilled grain, entry points for water, insects, rodents, and allow forced air to escape, reducing efficiency and increasing costs.
• **Inspect concrete routinely for exposed rebar, unusual cracking, or spalling of concrete.**
• **Be sure all anchor bolts are tightened and undamaged.** Cracks that develop around anchor bolts result in the grain bin being susceptible to wind damage. Be certain the base of the bin is uniformly resting on the foundation and sealant is intact. If gaps occur, caulk between the bottom of the bin and the foundation.
• Sidewall and tunnel failure may occur if the tunnel is not correctly constructed or supported at the tunnel outlet on the stem wall. If cracks or breaks occur in the stem wall, contact the structural engineer immediately for proper instructions and measures to correct damage.
• Inspect the tunnel roofs on a regular basis for cement spalling, cracks, and deflections. Inform the concrete contractor of appearance of cracks or impending failure of the tunnel roofs. Removable conveyor cover plates must be fitted, flashed, and sealed to prevent accidental leakage into the conveyors, which could result in eccentric discharge of grain from bin.

Aeration Systems

• Periodically remove fan transitions and check beneath the floor for condition of the supports, presence of pests, dust buildup, and foreign material. Clean and repair if required.
• Check fans, heaters, transitions, and ducts for corrosion. Remove any accumulated dust and dirt that will reduce operating efficiency. Be sure all wire and pipe connections are tight and in place.
• Inspect aeration system by looking for grain leaks and grain remaining in the trenches. Find the source and remove any grain in the way. Caulk any holes or cracks to prevent insects or water from getting in and grain from getting out.
• Grease motor bearings (if required) per the manufacturer's recommendations. Operate fans per the manufacturer's operations manual.

General Maintenance

Electrical

• Wiring for fans and other electrical components should be inspected for corrosion and cracked, frayed, or broken insulation. Exposed wiring should be run through waterproof, dust-tight conduit. Make sure all connections are secure.
• Check control boxes for rodent damage. If found have a licensed electrician clean and repair or replace broken wiring, relays, and other components and seal over openings that allowed rodent entry.

Site Maintenance

• Remove any spilled grain from the grain bin site. Mow around the bins to reduce likelihood of insect or rodent infestation and to make certain water drains away from the bin foundations. Items or debris left near the bin site may interfere with safe, unobstructed movement around bin.
• Treat the outside of the grain bin at the foundation and around doors, ducts, and fans with insecticide if an insect problem arises.
• Thoroughly clean all bins by removing all old grain. Do not put new grain on top of old. This will help prevent mold and insect infestation of the new grain. Remove all traces of old grain from combines, truck beds, grain carts, augers, or any other equipment used for harvesting.
• Remove all rust and cover with rust-inhibiting primer or paint. It is better to take care of problems in the early stages of corrosion.

NOTICE

If for any reason you find buckled sheets, sidewall bulges, or any changes in the grain bin's appearance, please contact Lambton Conveyor Engineering to determine if there is a problem and to find a solution

Replacement Parts

Modifications and repairs are often needed due to weather, deterioration, usage, and mishaps. The key to constantly having your grain bin in first-rate condition is to frequently review the maintenance checklist on the pages in this section and repair any problems promptly.

Wiring for fans and other electrical components should be inspected for corrosion, cracks, and frayed insulation. Exposed wiring should be routed through a waterproof, dust-tight conduit. Avoid kinks in conduit and make sure all connections are secure. Procure the services of a licensed electrician if any electrical components or wiring requires repair or replacement.

To replace any deteriorated parts, contact your local dealer/distributor. **Note: Do not substitute materials for replacement parts.** Your grain bin is assembled with certain materials at specific thicknesses. Do not replace parts without contacting your local dealer/distributor.