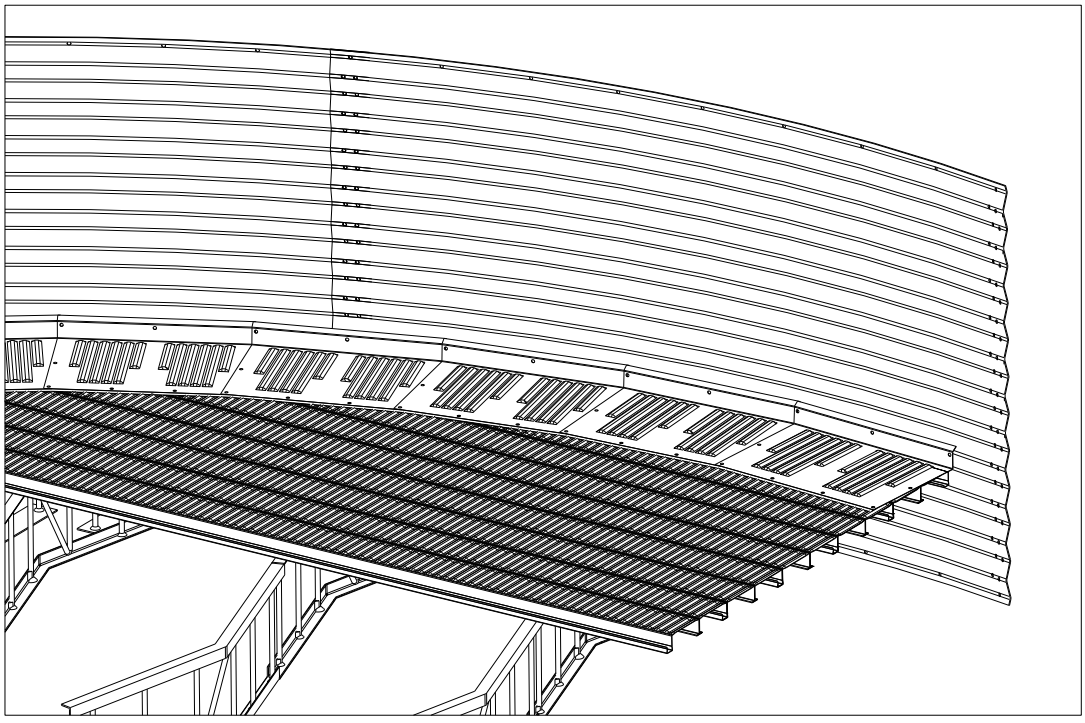
Full Floor Aeration System (with Welded Supports)

14’ & 19’ Standard Corr Grain Bins
Installation and Storage Instructions

Original Instructions



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

Part Number: 198930 R4
Revised: Nov. 2018

New in this Manual

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

Description	Section
Updated Safety Decal Locations	2.6. Safety Decal Locations and Details on page 7

CONTENTS

1. Introduction

This manual describes how to assemble a Westeel Full Floor Aeration System (with Welded Supports).

Before assembling the full floor aeration system, please read this manual. Familiarize yourself with the process and the necessary precautions for efficient and safe assembly.

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

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

2. Safety

2.1. Safety Alert Symbol and Signal Words

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

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

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

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

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

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

2.2. General Product Safety

YOU are responsible for the **SAFE** use and maintenance of your full floor aeration system. **YOU** must ensure that you and anyone else who is going to work around the full floor aeration system understands all procedures and related **SAFETY** information contained in this manual.

Remember, **YOU** are the key to safety. Good safety practices not only protect you, but also the people around you. Make these practices a working part of your safety program. All accidents can be avoided.

- It is the full floor aeration system owner, operator, and maintenance personnel's responsibility to read and understand **ALL** safety instructions, safety decals, and manuals and follow them when operating, or maintaining the equipment.

- Owners must give instructions and review the information initially and annually with all personnel before allowing them to operate the full floor aeration system. Untrained users/operators expose themselves and bystanders to possible serious injury or death.
- The full floor aeration system is not intended to be used by children.
- Use the full floor aeration system for its intended purposes only.
- Do not modify the full floor aeration system in any way without written permission from the manufacturer. Unauthorized modification may impair the function and/or safety, and could affect the life of the full floor aeration system. Any unauthorized modification will void the warranty.

2.3. Personal Protective Equipment

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

Safety Glasses

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

Coveralls

- Wear coveralls to protect skin.

Hard Hat

- Wear a hard hat to help protect your head.

Steel-Toe Boots

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

Work Gloves

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

2.4. Safety Decals

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

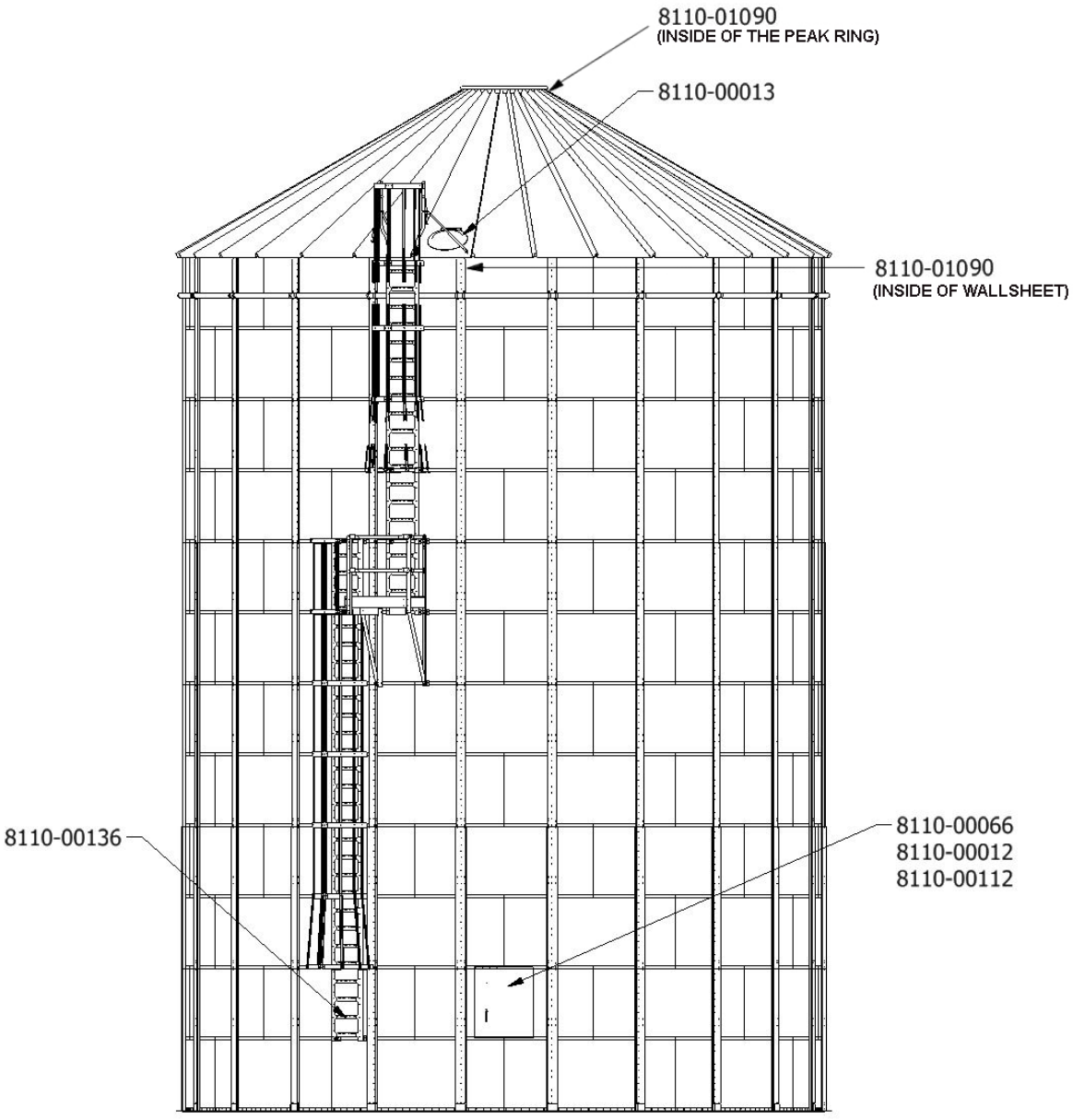
2.5. Decal Installation/Replacement

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

2.6. Safety Decal Locations and Details

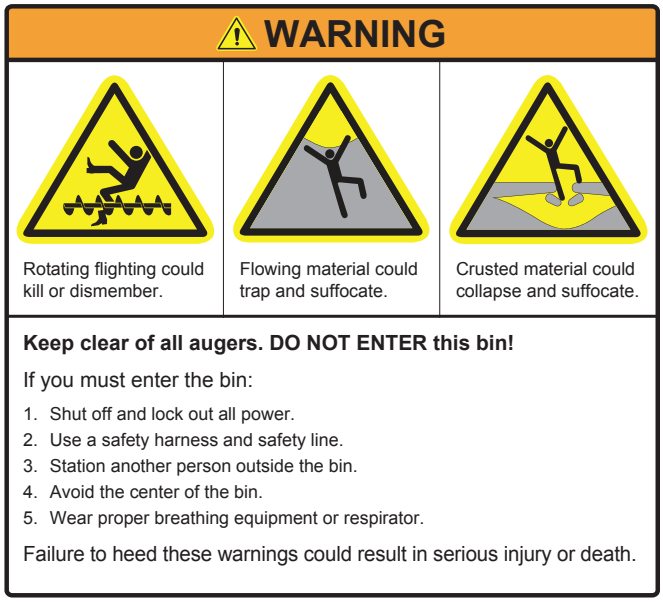
Replicas of the safety decals that are attached to the full floor aeration system and their messages are shown in the figure(s) that follow. Safe operation and use of the full floor aeration system requires that you familiarize yourself with the various safety decals and the areas or particular functions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

Figure 1. Safety Decals



Part Number: 8110–00012

Part Number: 8110–00013



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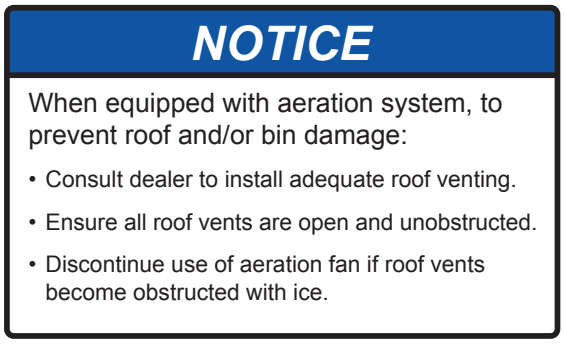


Part Number: 8110–00066

Part Number: 8110–01090

3. Before You Begin

3.1. Bin Design and Capacity

These Westeel Grain Bins are designed for:

1. Non-corrosive free-flowing materials up to 55 lbs/ft^3 (880 kg/m^3) average compacted bulk density.
2. Maximum horizontal gusted wind speed of 94 mph (151 km/h)
3. Seismic zone 2a (U.B.C. 1997).
4. Roof Loading

Snow Load		Peak Load			
		15’ — 24’ bins		27’ — 48’ bins	
Imperial	Metric	Imperial	Metric	Imperial	Metric
15.0 lbs/ft^2	.72 kPa	4000 lbs.	17.8 kN	5000 lbs.	22.2 kN
24.0 lbs/ft^2 (when optional roof stiffening rings installed)	1.15 kPa (when optional roof stiffening rings installed)				

3.2. Foundation Design and Loads

The foundations for the stiffened bin models are based on 4000 lbs. per sq. ft. (192 kPa) soil bearing capacity. All foundation designs use 3000 lbs. per sq. in. (21 MPa) ultimate compressive strength (after 28 days) for concrete and 43,500 lbs. per sq. in. (300 MPa) re-bar. The foundation designs included in this manual are suggestions only, and will vary according to local soil conditions. Westeel will not assume any liability for results arising from their use.

Important

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

3.3. Site and Assembly

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

- Bin location and bin siting
- Soil conditions and corresponding foundation requirements (note that the examples provided in manuals are for specifically stated soil conditions)
- Bin assembly (Westeel recommends the use of qualified bin installers; contact Westeel for information on installers in your area)
- Field modifications or equipment additions that affect the bin structure
- Interconnections with neighboring structures

- Compliance with all applicable safety standards, including but not limited to fall restraint systems (ladders or other systems). Local safety authorities should be contacted as standards vary between jurisdictions.

3.4. Methods of Installation

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

1. Wall sheets and/or uprights not specified for a given tier are used.
2. Foundations are found to be inadequate or out-of-level.
3. Anchor bolts (cast-in-place, drill-in, chemical type or other) are found to be inadequate.
4. Off-center loading or unloading is used. (This does not apply to the use of approved side unloading systems.)
5. Materials stored are not free-flowing or have a compacted bulk density greater than 55 lbs/ft^3 (880 kg/m^3).

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

3.5. Critical Assembly Requirements

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

1. Comply with all local code and jurisdictional requirements applicable to your full floor aeration system installation.
2. Design and build foundations with the necessary strength for the loads they must support, and for local soil conditions. Westeel foundation guidelines are based on specific stated conditions and may not be applicable to local conditions.
3. Your foundation must provide uniform and level support to the structure being supported. Surface imperfections causing gapping must be remedied. This may involve, but not be limited to a) grouting under the bottom ring of a non-stiffened bin or tank, and b) shimming under the uprights of a stiffened bin or tank, or under the legs of a hopper.
4. Make sure that the proper hardware is utilized for all bolted connections. If a shortage occurs, do not substitute. Take the necessary steps to obtain the proper hardware. Make sure nuts are tightened to the required torque values as specified in the appropriate assembly manual.
5. Comply with all assembly instructions provided in the appropriate assembly manual to make sure your whole full floor aeration system is constructed safely. **Important: Do not deviate from the wall sheet and upright layouts provided.**
6. Before anchoring your structure to its foundation, make sure the structure is round. The maximum variation from perfect roundness is 3/4" on the radius. Locate anchor bolts toward the outside of the anchor bolt holes (away from the circle) to permit the incremental expansion that can occur with the initial filling.
7. When installing roof stiffening rings, if it is necessary to shorten the stiffening ring tubes, shorten them as little as possible. Initially the nuts on the expanders should be centered and as close together as possible. When tightening, share the amount of take-up between expanders such that the nuts remain centered, and the amount of engagement between all expanders on the same ring is equalized.
8. If extending an existing bin or tank, ensure that the foundation is adequate for the increased loads it must support.

9. If installing an existing bin on a hopper, make sure the bin is designed for a hopper application, and that the foundation is capable of withstanding the substantial point loads that the hopper legs apply. If uprights are present, make sure that they are supported.
10. Make sure that an integral end-to-end connection exists between all mating uprights. Successive uprights must not overlap.
11. Vertical tolerances between uprights and wall sheets are tight. This can be affected by “jacking” techniques, which can allow the tolerance to grow or shrink depending on the technique used. The gapping between successive uprights must be monitored to ensure that upright holes align with wall sheet holes.
12. If catwalks are being installed on the structure, upright catwalk upgrades are likely required. The upgraded stiffeners must be installed in the correct locations to support the intended catwalk loads. Also, the structure must be properly oriented to ensure the eventual correct alignment between the catwalks and the supporting uprights. Finally, the connectors that tie into the uprights and support the catwalks are best installed during assembly of the structure. See the catwalk assembly manual for additional details.

3.6. Product Storage

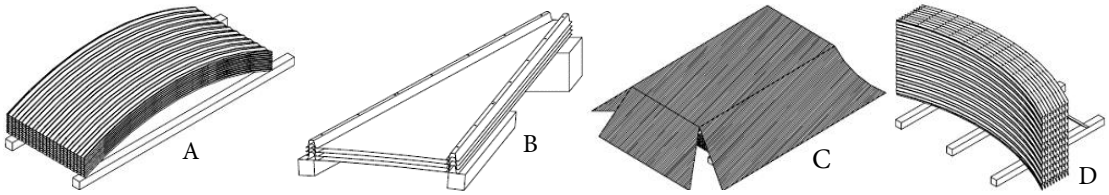
Rust on Galvanized Parts

1. White rust forms when moisture is allowed to collect on galvanized surfaces that have yet to develop the durable zinc oxide layer. This zinc oxide layer naturally occurs as the surface interacts with carbon dioxide, and is characterized over time by the dull grey appearance that weathered galvanized surfaces get.
2. Parts that are not well ventilated or well drained can collect water between surfaces and develop white rust.
3. White rust is not a structural concern if its development is stopped in the early stages. A light film or powdery residue can occur after a period of heavy rainfall or a short time of improper storage. If white rust has started to develop, separate parts and wipe off any moisture. Next, using a clean cloth, apply a thin layer of petroleum jelly or food-grade oil to the entire part.
4. If moisture is left on parts, this white rust can become more aggressive and turn into red rust. Red rust can cause degradation in the material and become a structural concern. Any parts that have red rust should be replaced immediately.

Storage Guidelines

- Keep all bundles dry before assembly of the bin.
- Start assembly as soon as possible.
- Do not lay bundles on the bare ground. Raise all bundles 6" to 8" off the ground on wood blocks or timbers. (See Detail A in Figure 2 on page 13.)
- Store curved wall sheets ‘hump-up’. (See Detail A in Figure 2 on page 13.)
- All other bundles material should be placed so that they are well sloped to promote good drainage. (See Detail B in Figure 2 on page 13.)
- Roof sheets must be elevated at least 12" at the small end of the sheets. (See Detail B in Figure 2 on page 13.)
- Temporary storage can be provided by erecting a simple framework supporting a waterproof tarp. (See Detail C in Figure 2 on page 13.)
- All bin boxes, ladder boxes and hardware boxes should be stored inside. These are not waterproof, and will deteriorate in normal weather conditions, allowing moisture to contact the parts inside.

Figure 2. Product Storage



If Parts Become Wet

1. If parts become submerged or wet, the bundles should be opened as soon as possible, sheets or material separated and dried. Keep separated until assembly.

   Brace parts properly so as to avoid damage or injury from material falling when in storage. (See Detail D in Figure 2 on page 13.)

2. Any boxed parts that become wet should be dried and stored in a new box that is free of moisture.
3. In addition to wiping down wall sheets, a food-grade oil can also be applied with a clean, lint-free cloth. This will assist in preventing any further moisture from contacting the galvanizing on the steel. Due to safety concerns with installation and use, Westeel does not recommend the use of oil on other parts such as roof sheets and safety ladders.

3.7. Grain Bin Use

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

3.8. Important Notes

- Westeel does not provide a foundation design for this product, and is not liable for any damages or injuries related to inadequately designed or constructed foundations. Customers must contract professional services for all foundation design and construction work. For information on foundation design requirements, refer to Section 3.2. – Foundation Design and Loads on page 10.
- In order to maintain your wall sheets in good condition separate sheets and allow air circulation between them. Store sheets in a dry place. Do not store sheets with sheet ends pointing upwards.
- To keep an even pressure on walls, the bin must always be unloaded from the centre.

- Contact local power officials for minimum power line clearance.
- See Section 3.5. – Critical Assembly Requirements on page 11 for mandatory siting and assembly requirements.
- Store only non-corrosive, free-flowing materials up to 55 lbs/ft^3 (800 kg/m^3) average compacted density in Westeel bins.
- Tighten all bolts to the recommended torque settings.
- Do not locate grain bins close to high buildings, which might cause snow to fall onto or build up on the roof of the grain bin. Consider future expansion and allow space for loading and unloading of the bin. Your dealer and local government agricultural consultants can help you plan your storage system for maximum efficiency.

4. Preparation

4.1. Check Shipment

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

Report damaged parts or shortages immediately to the delivering carrier, followed by a confirming letter requesting inspection by the carrier, if required. Order any replacement parts immediately to ensure that assembly will not be held up by missing parts. All parts will be charged for and credit will be issued by party at fault. No credit will be issued if freight bills are signed as received in good condition.

4.2. List of Tools and Equipment

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

Tools

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

Minimum Recommended Safety Equipment

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

4.3. Order Optional Equipment

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

5. Assembly

Before continuing, ensure you have completely read and understood this manual’s Safety section, in addition to the safety information in the section(s) below.

5.1. Assembly Safety

WARNING

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

5.2. Planning the Floor Layout

Westeel aeration bins are built on aeration floors consisting of floor planks on top of supports. This section describes how floor planks are laid out and supported.

Floor Plank and Support Layouts:

Layouts (diagrams illustrating the locations, sizes and assembly order of floor plank and floor supports) are contained in Section 6. – Appendix on page 31. These pages also contain tables that specify quantities, dimensions and types of supports and planks.

It is important to understand that:

- **Floor plank layouts** are consistent for any given bin diameter.
- **Floor support layouts** are different for various bin diameters and number of tiers.

Layouts provide key information needed to properly assemble a floor for all bin diameters and tier heights. For the floor combination being assembled, consult the charts to determine the applicable dimensions, quantities and values.

The layouts provide the following information, each represented by a letter:

Letter	Information
S	The maximum spacing of the floor supports (floor support layout)
O	The maximum amount of overhang that the free end of a plank can extend beyond a floor support (O = S/3) (floor support layout)

Important

To ensure a successful aeration floor installation, implement the following process as closely as possible:

1. Make sure the spacing between adjacent floor supports does not exceed the maximum spacing of the floor supports (dimension S on the floor support layout diagrams) for the floor being assembled.
2. Make sure all three plank legs are supported.
3. Make sure the free ends of planks do not extend beyond a floor support more than the maximum allowable distance (dimension O from the floor support layout diagrams), whether the end is against the wall, at a location where split planks come together, or when planks are cut to accommodate the unloading wells.
4. When short planks are created to accommodate an unloading well, make sure both ends of the short plank are supported, even if the above conditions are otherwise met.

Note

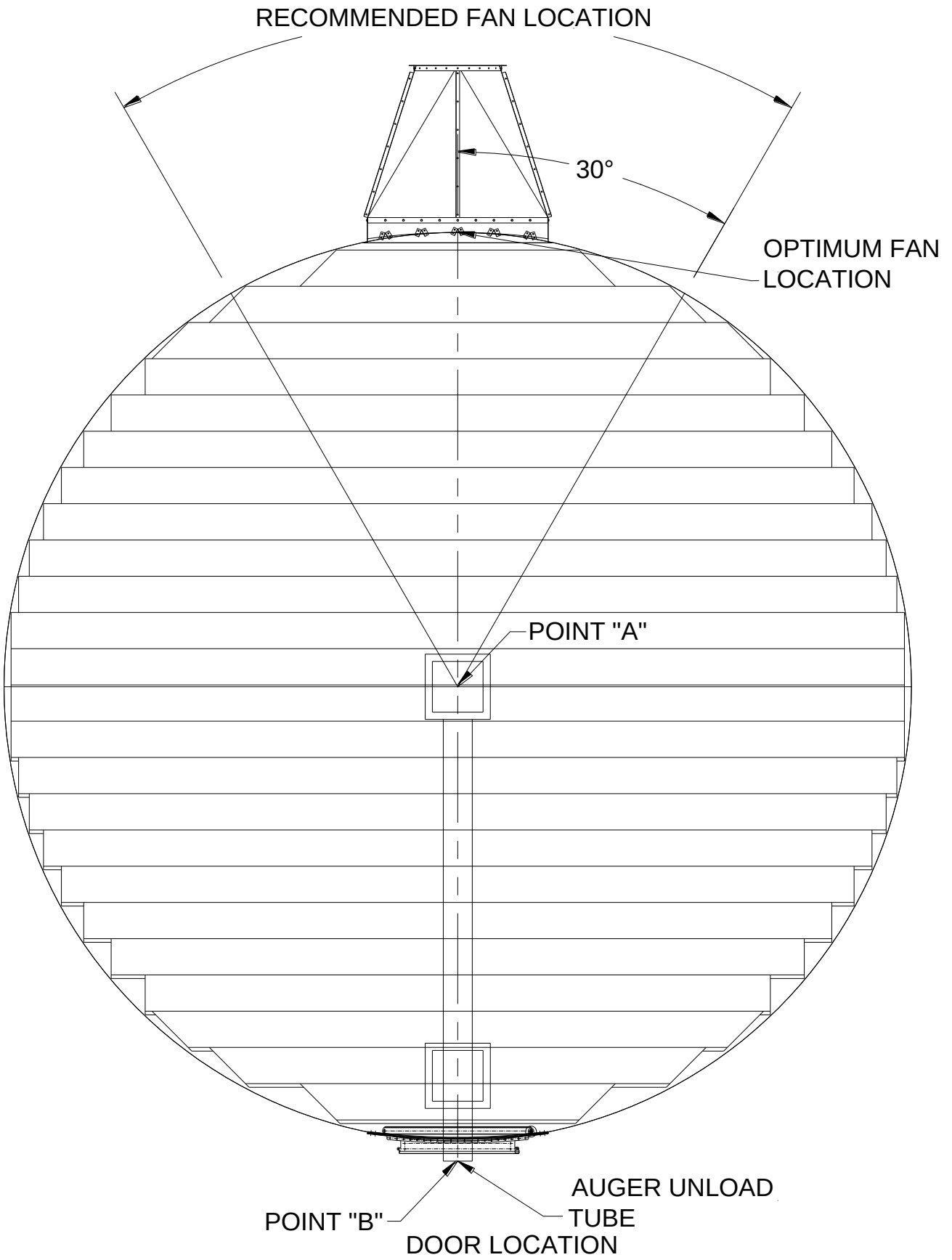
When nearing the completion of a floor installation, if there is a shortage of floor supports, obtain additional supports rather than compromise any of these points.

Planning the Locations of Fans and Auger Unload Tubes

Take care to ensure that the results of an installation meet the customer’s expectations. A few basic considerations follow:

1. Determine where the unload auger will exit the bin. Typically the unload auger is located directly below the door, or very close to the door, to permit access into the bin once the grain stops flowing.
2. When uprights are present, the unload auger discharge hole and fan openings must be between the uprights (unless otherwise specified by Westeel).
3. Openings should not be placed on vertical wall sheet seams.
4. For maximum grain drying efficiency, the unload auger discharge hole should be directly across from the fan.
5. If two fans are used, they should be placed no more than 60° apart, and the auger discharge hole should be located directly opposite of the midpoint between the fans.

Figure 3. Recommended Locations for Fan and Auger Unload Tube



The aeration floors are designed on the assumption that the bin itself is round. A bin that is slightly oval in shape can result in excessive gapping around the perimeter of the bin at some locations, and the need to trim multiple planks at other locations.

Aeration floors are designed to be supported by smooth, level concrete. There is minimal allowance for rough, uneven surfaces.

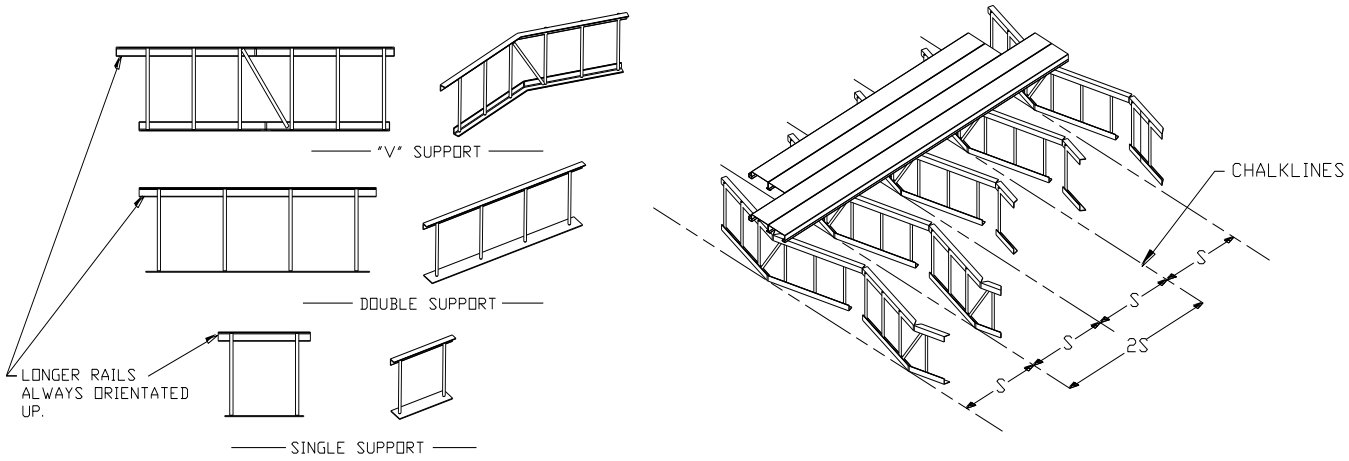
Support Orientation:

There are three styles of welded supports:

- V-supports
- Single supports
- Double supports

V-supports make up the majority of the supports and are oriented as shown in Figure 4 on page 20. Note that the upper support rails are longer than the bottom rails. The single supports and the double supports have the light gauge flat bars at the bottom.

Figure 4. Types and Orientation of Supports



Support Spacing (S):

For any given bin diameter and tier height, the maximum spacing of the floor supports (dimension S on the floor plank layout diagram) must not be exceeded. This holds for all three legs on any given plank. Due to the bend in the V-supports dimension S can vary from one end of the support to the other. In general the supports should be positioned such that the distance between any corresponding points between adjacent supports does not exceed the maximum spacing S. The best method of establishing a consistent spacing is to orient the supports in the center sections of the bin to be lined up in a grid pattern of columns and rows both along the S chalk lines and perpendicular to the S chalk lines. There are also two methods of establishing the two center courses of supports: one for S dimensions less than 24”, and one for S dimensions 24” and greater. See Section 5.3. – Floor Assembly Procedure on page 24, and the specific floor support layouts (in Section 6.2. – Floor Support Layouts on page 33) for details.

Overhang Spacing (O):

At the ends of planks, the unsupported overhanging plank lengths along all three plank legs must not exceed dimension O. In general, the short single supports are utilized to support the end of a single plank. This occurs at plank ends, at the joint of split planks, and where cut-outs are required around unloading wells. For the angled cut planks at the start and completion of the floor, it would be beneficial to angle the single supports

slightly to better support the angled cut ends. However this angle cannot be too great as all three legs on the floor planks must be supported.

Aeration Floor Plank Identification:

The floor layouts identify planks by number, starting with plank #1 located at the edge of the bin. These “plank identification numbers” are also stenciled onto the side of the floor planks. The values of the plank identification numbers increase sequentially as they progress towards the center of the bin. The planks with the highest numerical values are the center planks. The plank identification numbers then decrease sequentially back to plank #1 at the opposite edge of the bin.

The lengths of the planks, and corresponding identification markings, are provided on the tables adjacent to the diagram. Note that the first and last planks (both labeled 1) are identical. The second plank and the second last plank (both labeled 2) are identical, and so on. The center plank may be unique, depending on the configuration of the floor plank layout.

The first few planks on either side of the bin must have their corners cut. These are identified with a C. Therefore planks identified as 1C, 2C, 3C, etc. must have their corners cut.

Note

Representative layouts of floors and floor support layouts are provided within the manual for select combinations of bin diameter and bin tier height. These are primarily for illustration purposes only. Specific layouts for all combinations can be obtained online at www.westeel.com. Follow the links to the aeration section of the website, and then to the aeration floor layouts.

Cutting Planks:

The first few planks on either side of the bin require the corners to be cut. The number of planks (C) requiring this can be obtained from the floor plank layout information for the diameter of the bin in question. In addition, the planks requiring cutting are identified by a C that is stenciled along the edge of the plank. For example, in a 21’ bin, all planks on both sides labeled 1C, 2C and 3C (or 6 planks in total) are required to be cut.

Important

Planks on opposite sides of the bin with the same number are not cut the same. The planks on the side of the bin where the installation starts, have the cuts made on the side of the planks with the flat side and the mating leg folded underneath. The planks on the side of the bin where the floor installation finishes, have the cuts made on the side of the plank where the mating leg is visible (see illustration).

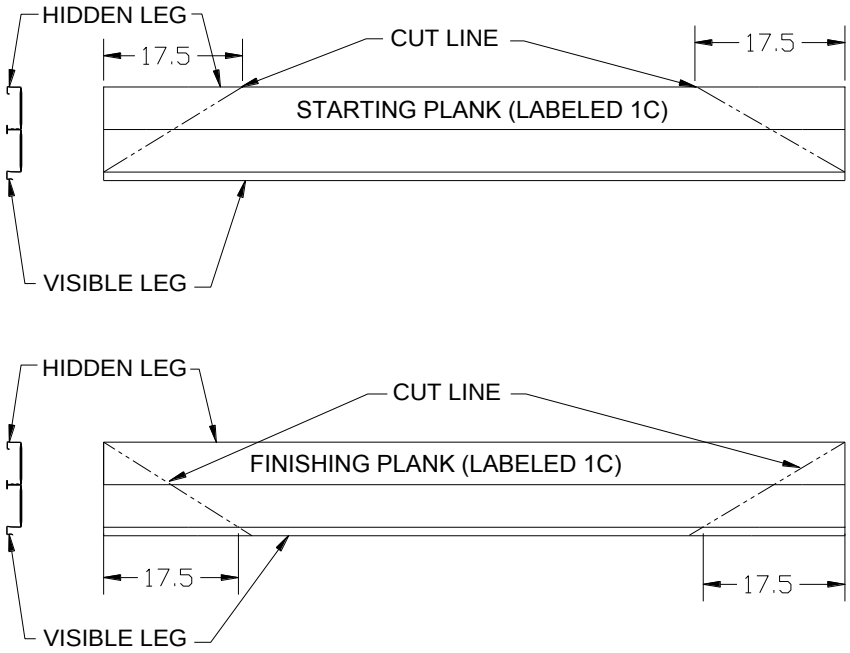
The first and last plank: The starting and the finishing plank (both labeled 1C), have the cuts made as illustrated below. The cut starts at the corner of the plank and runs across the complete plank at about a 30º angle. Therefore the end of the cut is 17 1/2” from the end of the plank. There is also an opposing cut made at the other end of the plank. Remember that the cuts made to the two planks labeled 1C are not identical as per the Important note above. All of the other planks that are required to be cut (2C, 3C and all others labeled with a C) are cut at 45º angle (as illustrated). In this case the ends of the cut are 10” from the ends of the plank. Again planks on opposite sides of the bin are cut differently as per the Important Note above. Sometimes on larger bins a split plank is also a cut plank. In these occasions only one end of each split plank pair is cut.

Figure 5. Cut Detail of the First and Last Planks

Note

Note orientation of the plank with respect to the visible leg, and the leg hidden underneath.

Figure 5 Cut Detail of the First and Last Planks (continued)

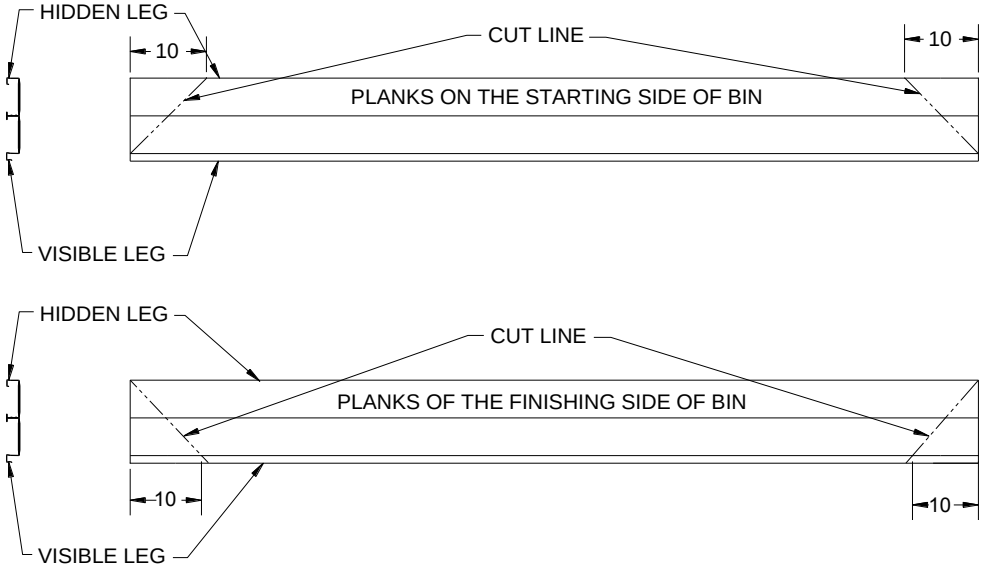


All other planks: All of the other planks that are required to be cut (2C, 3C and all others labeled with a C) are cut at 45º angle (as illustrated). In this case the ends of the cut are 10” from the ends of the plank. Again planks on opposite sides of the bin are cut differently as per the Important Note above. Sometimes on larger bins a split plank is also a cut plank. In these occasions only one end of each split plank pair is cut.

Figure 6. Cut Detail of Other Planks

Note

Note orientation of the plank with respect to the visible leg, and the leg hidden underneath.



Important

Only cut those planks with a C in the description. Check the floor layouts for the number of cut planks

Flashing:

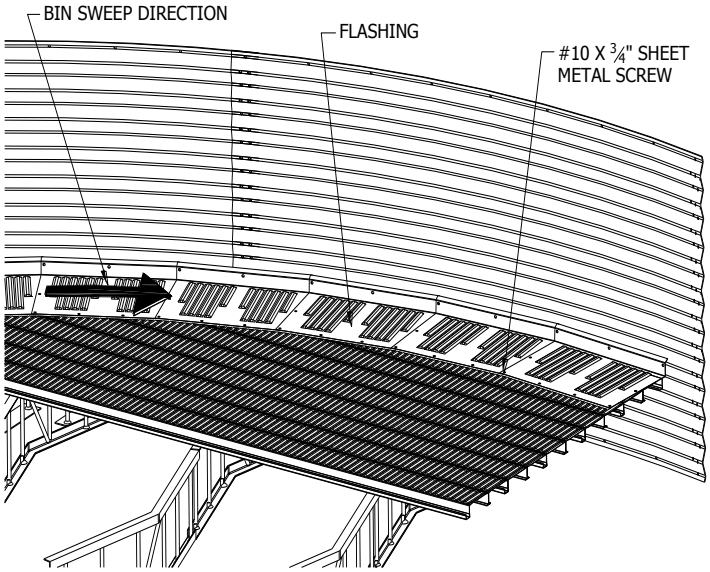
Flashings cover the gap between the floor planks and the bin wall. The overlap on mating flashings should be installed such that the sweep wheel “steps up” from flashing to flashing. Bolt the flashings to the bin wall, at the pre-punched hole locations, using the 3/8” bolts and nuts provided with the bin and the 3/8” washers provided with the floor.

Note

The flashings will need to be field drilled at Wide Corr vertical wall sheet seams. All holes in Standard Corr bins must be field drilled.

Flashings are secured to the floor using the self drilling screws that are provided. Four screws are provided for each flashing. They should be installed towards the inside of the bin to secure overlapping corners and free edges. Flashing must be cut to accommodate internal protrusions such as internal uprights. Caulk as necessary.

Figure 7. Cut Detail of the First and Last Planks

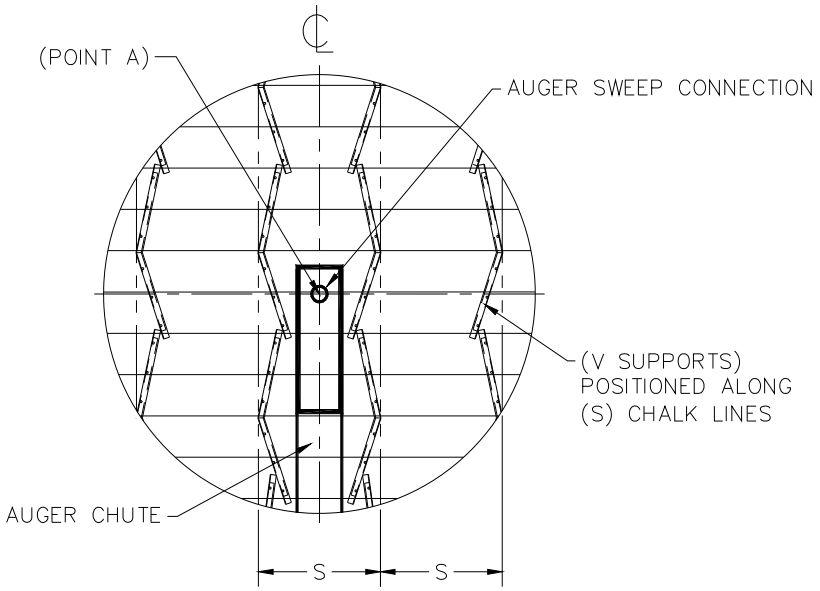


Unload Auger Tube Installation:

The unload auger must be installed prior to the floor installation. Install the unload auger at the location determined in Section 5.2. – Planning the Floor Layout on page 17 and as per the manufacturer’s instructions. The pivot point of the sweeping auger should be positioned directly over the center of the bin (point A) and the auger tube should sit directly over the center chalk line. The top of the aeration floor is located 13 ¼” above the concrete floor. It may be necessary to raise and support the unload auger to ensure that the well flanges are properly positioned relative to the floor. Make sure adequate support is provided along the length of the auger. Make sure the holes cut through the bin wall to accommodate the auger tube and control rods are properly bridged and sealed. The top surface of the auger tube must be flush to or lower than the floor supports. The floor planks cannot bear on the auger tube.

Generally the floor planks run perpendicular to the unloading tube and span over the tube. For smaller bins with larger support spacing's (S ≥ 24”), the required dimension S spacing will accommodate the clearance required to span the unload tube. See Section 5.3. – Floor Assembly Procedure on page 24 for details.

Figure 8. Floor Support Spacing (S) Accommodates Unload Tube on Smaller Bins



Fan Transition Installation:

Install the fan transition(s) prior to the floor installation. For best locations, consult Section 5.2. – Planning the Floor Layout on page 17 and the manufacturer’s instructions. Transitions should be placed between stiffeners, and away from vertical wall seams. Vertical support within the fan transitions is required for non-stiffened bins. Seal the openings against moisture penetration.

Care of Aeration Floor Planks:

The planks can be easily damaged so proper care when transporting and handling must be observed. Damaged planks should be replaced or properly repaired before installation. Dirt or ice can accumulate on the surfaces of the mating floor plank components. This should be removed prior to installation to avoid damage and to insure proper mating.

5.3. Floor Assembly Procedure

Important

To ensure a successful aeration floor installation, implement the following process as closely as possible:

1. Make sure the spacing between adjacent floor supports does not exceed the maximum spacing of the floor supports (dimension S on the floor support layout diagrams) for the floor being assembled.
2. Make sure all three plank legs are supported.
3. Make sure the free ends of planks do not extend beyond a floor support more than the maximum allowable distance (dimension O from the floor support layout diagrams), whether the end is against the wall, at a location where split planks come together, or when planks are cut to accommodate the unloading wells.
4. When short planks are created to accommodate an unloading well, make sure both ends of the short plank are supported, even if the above conditions are otherwise met.

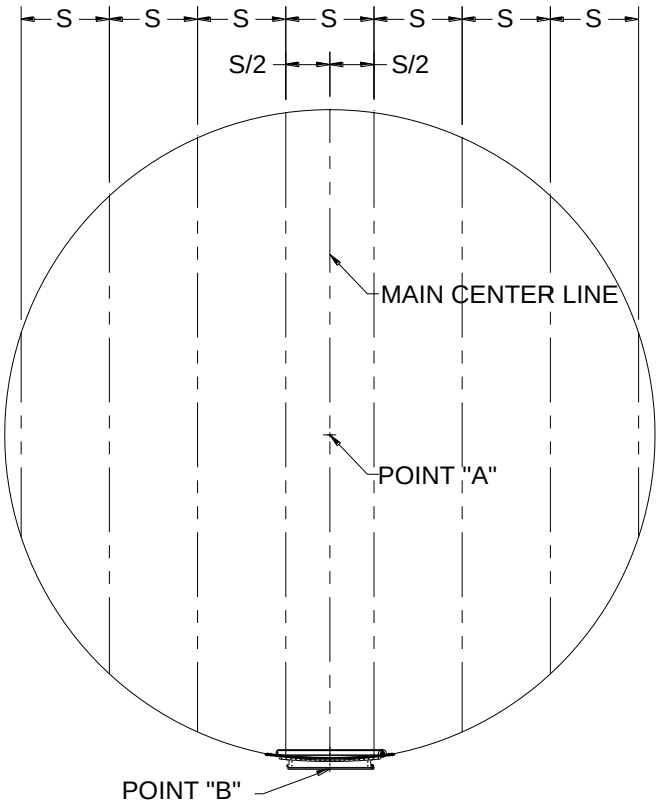
Measure and Mark Spacings

1. Measure to determine the exact center of the bin. Mark this as point A.
2. Mark the location the unload auger will exit the bin as point B. (See Section 5.2. – Planning the Floor Layout on page 17). The unload auger and fan transitions must be installed before the floor.
3. Mark a chalk line across the complete center of the bin starting at point B, passing through point A and continuing to the other side. This main center line should dissect the bin into two equal halves. The unload auger tube sits over this line. The aeration floor supports are installed on lines that run parallel to this line. The floor planks run perpendicular to this line.
4. Determine the floor support spacing S from the support layout charts for the bin diameter and tier height in question. From the center chalk line already marked, measure a distance of S/2 on either side and mark two more chalk lines, each parallel to the center line. Continue to mark parallel chalk lines at spacings of S across the complete bin. The floor supports sit along these lines.

   Note

   Except where noted for an S spacing of S < 24” floor supports do not sit along the center chalk line as this would interfere with the unload tube.

Figure 9. Marking Dimensions for Floor Assembly



Install Supports

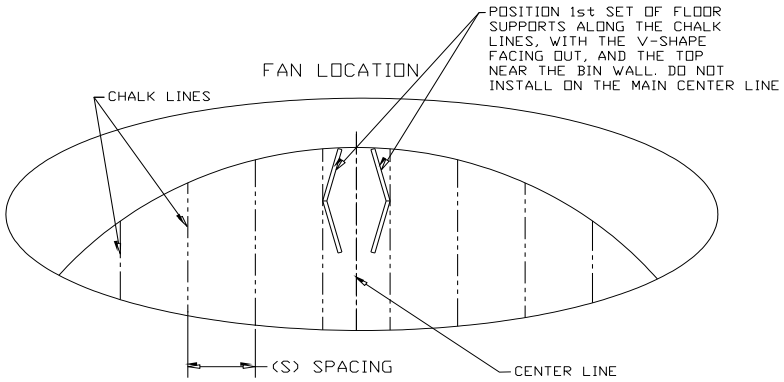
1. To install supports:
   a. Place the first row of floor supports as illustrated, on the chalk lines spaced at the S dimension.
   b. Do not install a support along the center line.
   c. Note that the midpoint of the V-supports should sit on the chalk lines with the ends pointing inwards such that no corresponding distance between adjacent supports exceeds the S dimension.

d. This method of positioning the supports relative to the chalk lines would remain consistent for all other supports (i.e. with the midpoint of the V sitting on the chalk line).

Note

Specific floor support layouts for the bin diameter and tier height in question can be found at www.westeel.com.)

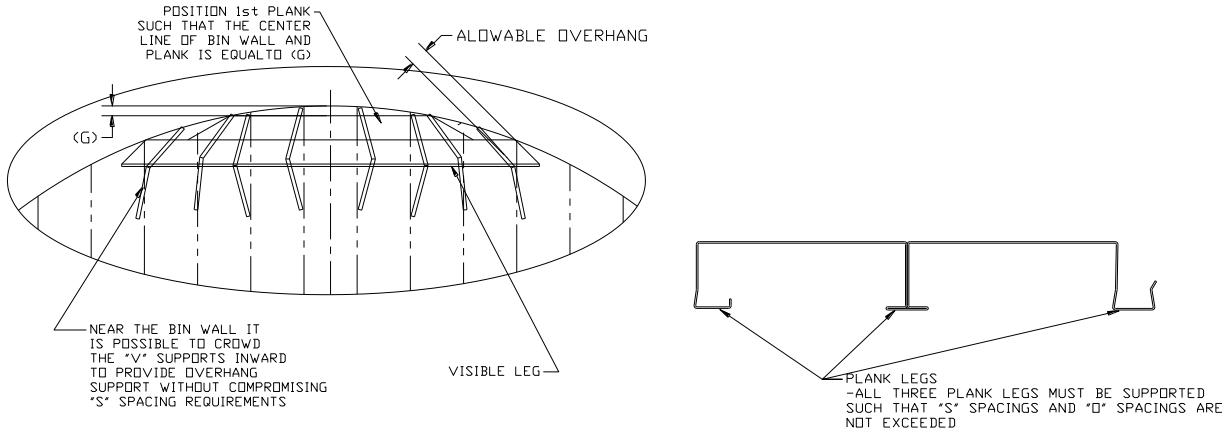
Figure 10. Positioning Floor Supports



Cut and Install Planks

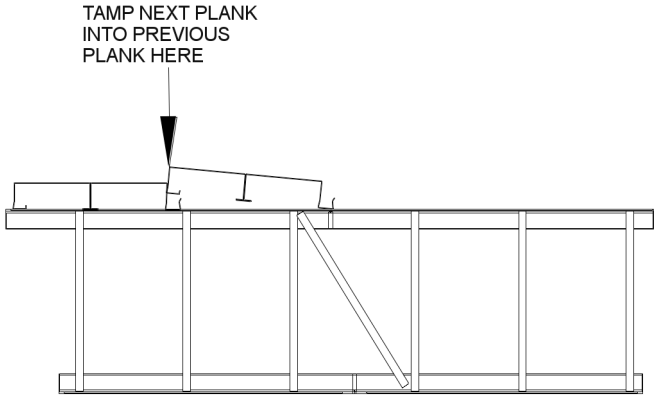
1. Cut the first plank (1C), and other required planks, as per the instructions provided in Cutting Planks on page 21.
2. Place the first plank on top of the floor supports
   a. Position the plank so the gap between the outer leg of the plank (when measured at the mid point) and the bin wall, equals the measurement G taken from the appropriate layout chart.
   b. Make sure all three plank legs are supported.
   c. Verify that the planks are centered so the space at each end is equal.
   d. Install additional V-supports along the chalk lines where required.
   e. Make sure the overhangs on the ends of the plank do not exceed the maximum allowable O dimension provided in the appropriate layout charts.
   f. When installing V-supports in the vicinity of the bin wall it is often possible to crowd the ends inward to provide overhang support without compromising the required S spacing.
   g. See corresponding floor support layouts for an indication of this.
   h. If it is not possible to use the V-supports to provide overhang support, it may be necessary to position single supports under the plank ends, near the bin wall.
   i. For angled cut planks it would be beneficial to angle the supports to provide maximum support to the plank legs.

Figure 11. For S Spacing Equal to or Greater than 24"



3. Position the second plank adjacent to the first and snap into place by applying downward pressure on the mating seam.
   a. Using a plastic coated sledge hammer in a tamping motion works well.
   b. Take care not to damage the planks
   c. Start at one end of the plank and work towards the other end.
   d. Install additional V supports as required consistently along the chalk lines.
   e. Again check the overhang to determine if the O dimension is being exceeded and add single supports if required.

Figure 12. Installing a Second Plank



4. Using the preceding instructions, and the appropriate floor plank and support drawings, install the remaining floor supports and planks:
   a. As planks cover supports spaced along each chalk line, install additional supports along the chalk lines.
   b. Remember that all three legs of every plank must be supported.
   c. Review floor plank layouts and floor support layouts for the specific bin in question for guidance.

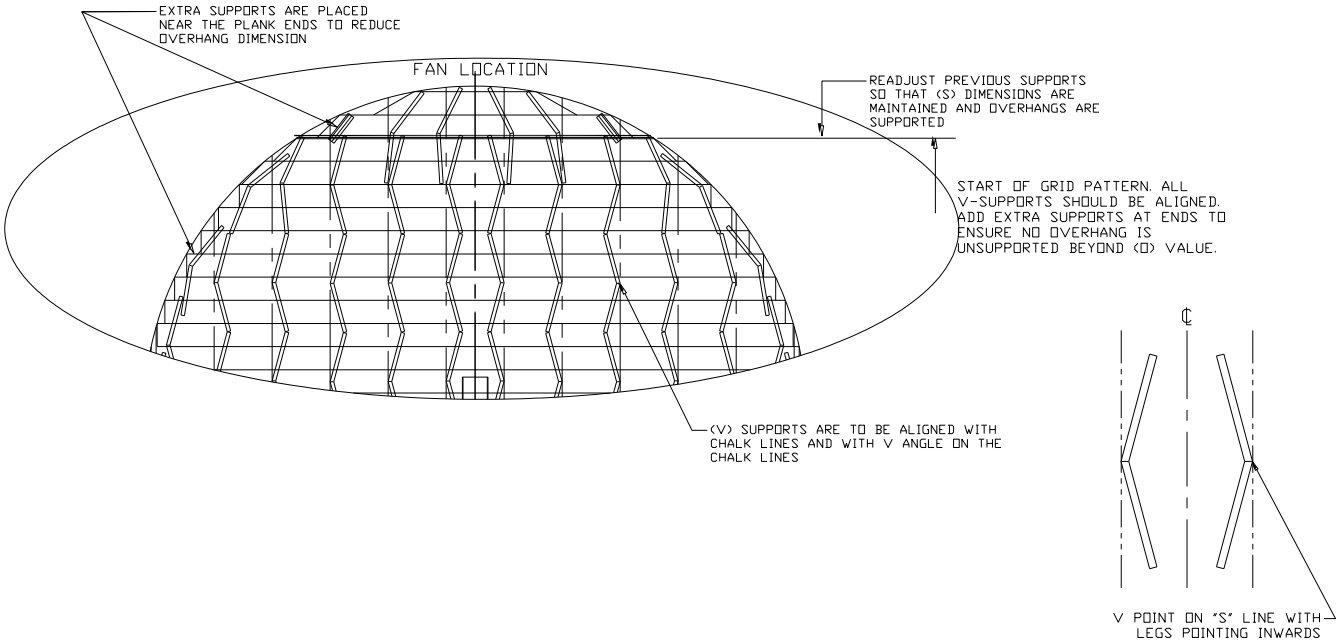
Note

The first few rows can be confusing as the bin wall will interfere with the establishment of a consistent support grid pattern that runs in two directions. However once the first few rows of supports are positioned a support grid of rows and columns should be established. This will aid in the overall ease of the installation as a row of supports can be positioned, three or four planks installed, another row of supports added, and so on. Consistent support rows also ensure consistent S spacings. Remember that after installing any plank, the overhang dimension should be verified and a short single support added if necessary.

Note

Around the perimeter of the bin, the respective support spacing S, and overhang length O, must not be exceeded. However there is latitude to shrink these dimensions and orient the outer V-supports in a column slightly differently, in order to provide overhang support and yet maintain the necessary S support spacing. Examples of this are provided within the accompanying illustrations and in the Support Layout drawings.

Figure 13. For S Spacing Equal to or Greater than 24”



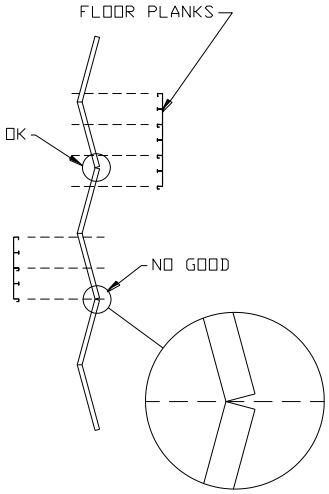
Overlap V-Supports

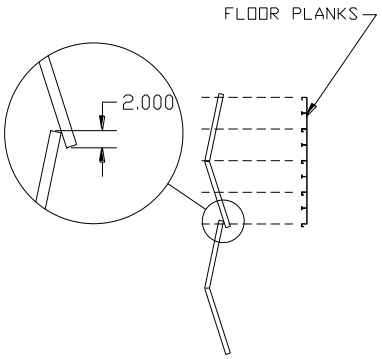
The V-supports are 42” from point to point along the top rail. The aeration planks are 10” wide so one support will support 4 full plank widths.

1. When aligning supports end to end with each other, it is acceptable to butt them end to end, but care needs to be taken that a plank support leg (either the outside legs or the middle leg) does not fall directly on the weak area of vertical support where the V-supports meet. This can be difficult to detect.
2. A better strategy is to overlap successive V-supports by 2” such that each support is always supporting a full 4 plank widths, which are centered on every support. This is what is reflected in the support layout drawings.

Figure 14. Overlapping V-Supports

If "V" supports are placed end to end, do not allow plank legs to sit directly on the location where two supports meet, as shown below.





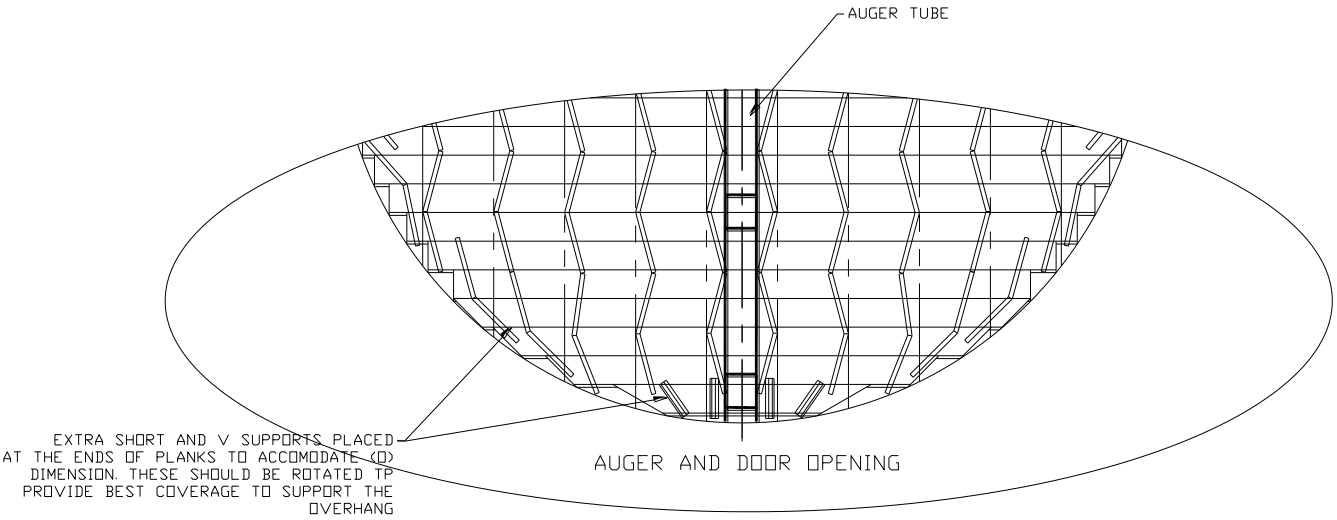
A better strategy is to overlap successive "V" supports by 2" and center 4 full planks on every support, as shown above.

3. After installation of a few planks the floor may seem to be a bit unstable. The flashings can start to be installed which will serve to tie the floor to the bin wall. Install the flashing as per the instructions provided in the Flashing section. If desirable, the flashing can continue to be installed as you go.

Install the Second Half

1. After the center of the bin is reached successive planks will get shorter. Proceed, using the same installation rules.
2. Continue adding supports along the chalk lines to provide continuous rows of support across the bin, along every support chalk line.
3. Remember the rules governing plank overhangs and provide the necessary support as required.
4. Once again adjustments may need to be made to accommodate the encroaching bin wall. See Section 6.2. – Floor Support Layouts on page 33 for technique ideas.

Figure 15. Adding supports as the planks get shorter (S equal or greater than 24”)



Important

To ensure a successful aeration floor installation, implement the following process as closely as possible:

1. Make sure the spacing between adjacent floor supports does not exceed the maximum spacing of the floor supports (dimension S on the floor support layout diagrams) for the floor being assembled.
2. Make sure all three plank legs are supported.
3. Make sure the free ends of planks do not extend beyond a floor support more than the maximum allowable distance (dimension O from the floor support layout diagrams), whether the end is against the wall, at a location where split planks come together, or when planks are cut to accommodate the unloading wells.
4. When short planks are created to accommodate an unloading well, make sure both ends of the short plank are supported, even if the above conditions are otherwise met.

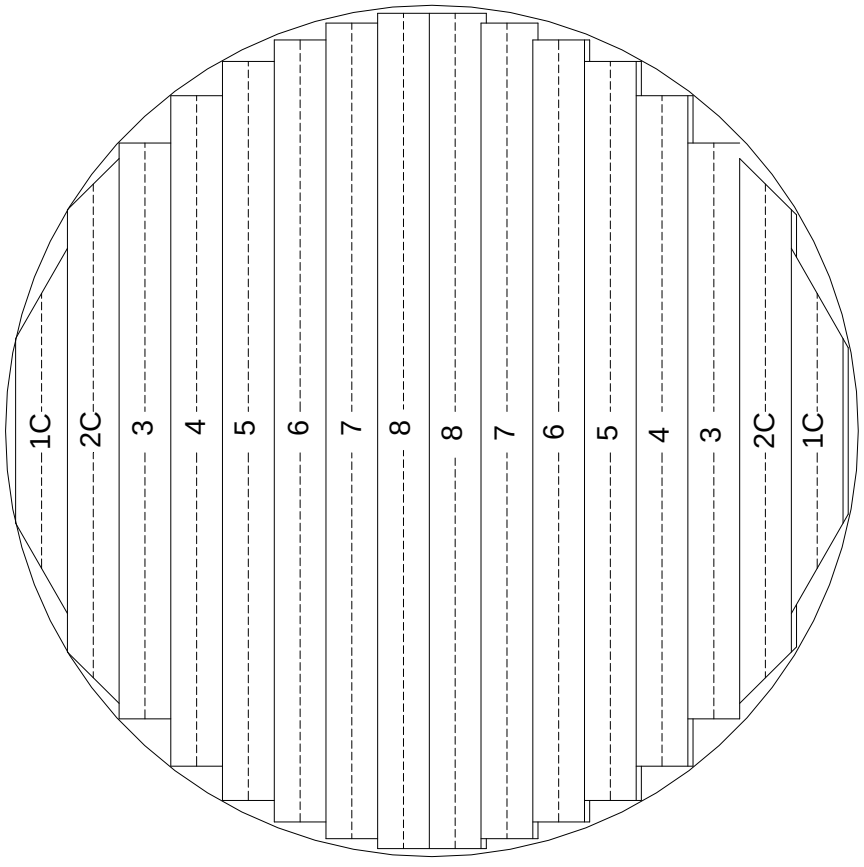
6. Appendix

6.1. Floor Plank Layouts

Figure 16. Floor Plank Layout — 14’ Floor

G = 1 15/16”
C = 4

14' SC Floor Planks		
Plank ID	Length (in)	Qty
1C	70.8	2
2C	105.6	2
3	111.6	2
4	129.9	2
5	143.2	2
6	151.5	2
7	158.0	2
8	161.8	2
Flashing (196621)		28
3/8" Washer (75)(235957)		1
Screws (150)(235990)		1

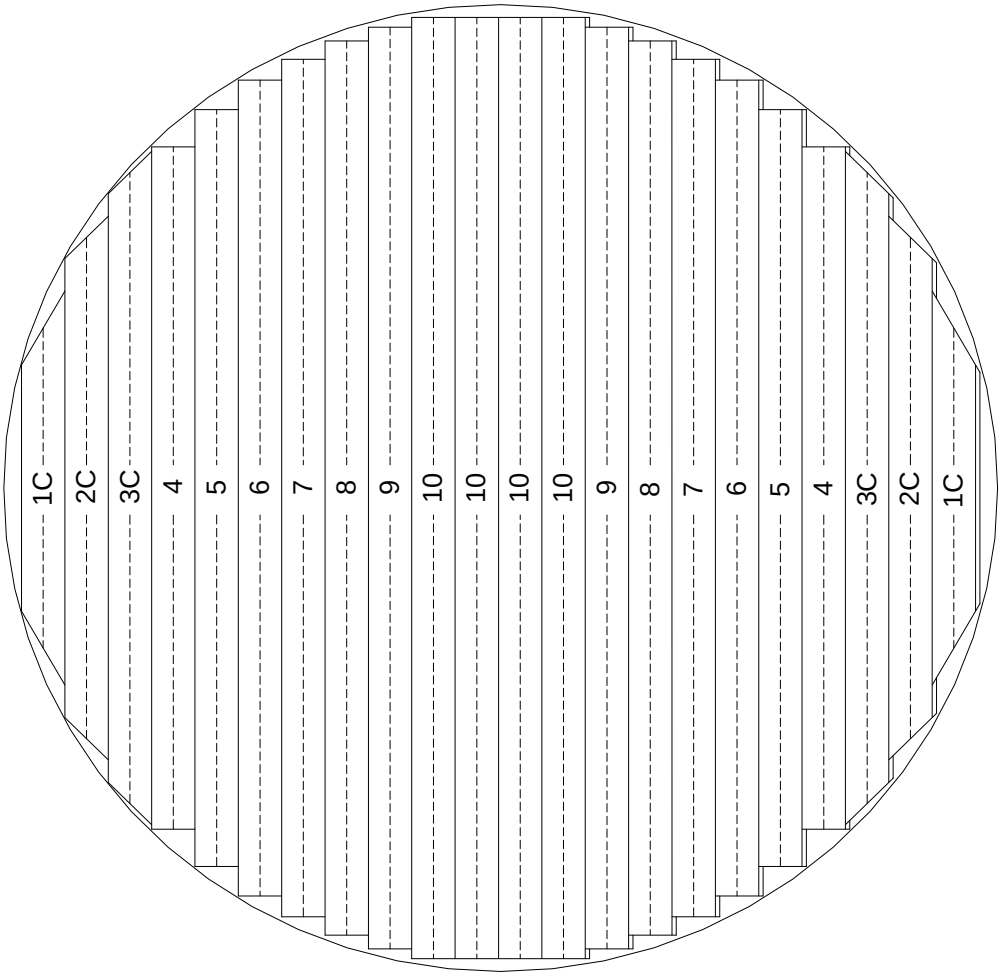


Perforation	Floor Kit	Floor Bundle	Ship Wt. (lbs)
.054	198011	198071	407
.094	198041	198101	416

Figure 17. Floor Plank Layout — 19’ Floor

G = 3 3/4"
C = 6

19' SC Floor Planks		
Plank ID	Length (in)	Qty
1C	93.4	2
2C	128.9	2
3C	159.6	2
4	161.8	2
5	179.4	2
6	193.4	2
7	203.3	2
8	212.0	2
9	218.5	2
10	223.1	4
Flashing (196621)		39
3/8" Washer (75)(235957)		1
Screws (180)(235990)		1



Perforation	Floor Kit	Floor Bundle	Ship Wt. (lbs)
.054	198014	198074	784.4
.094	198044	198104	800.0

6.2. Floor Support Layouts

Figure 18. 19’ SC Support Layout — Full Plank

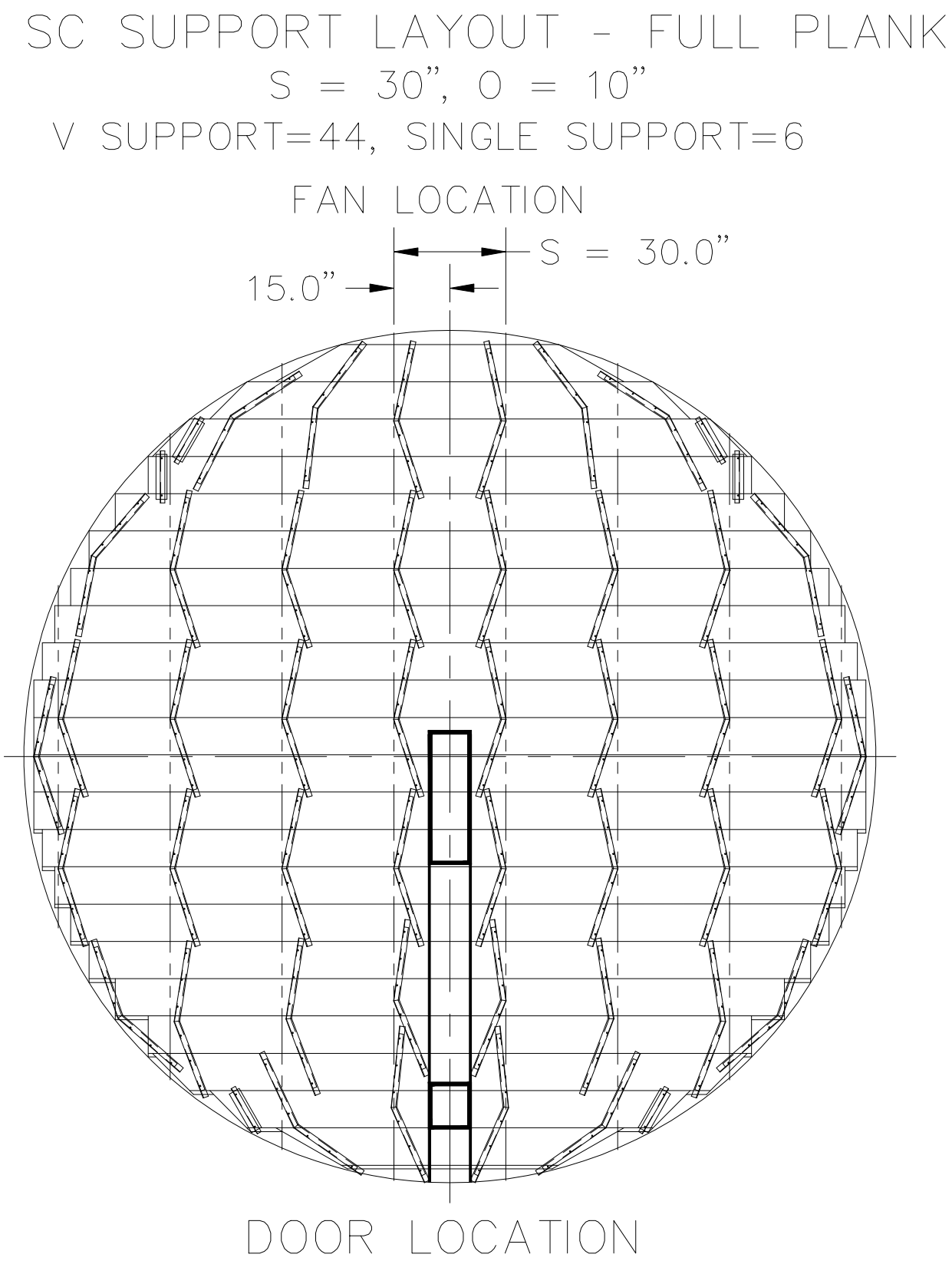
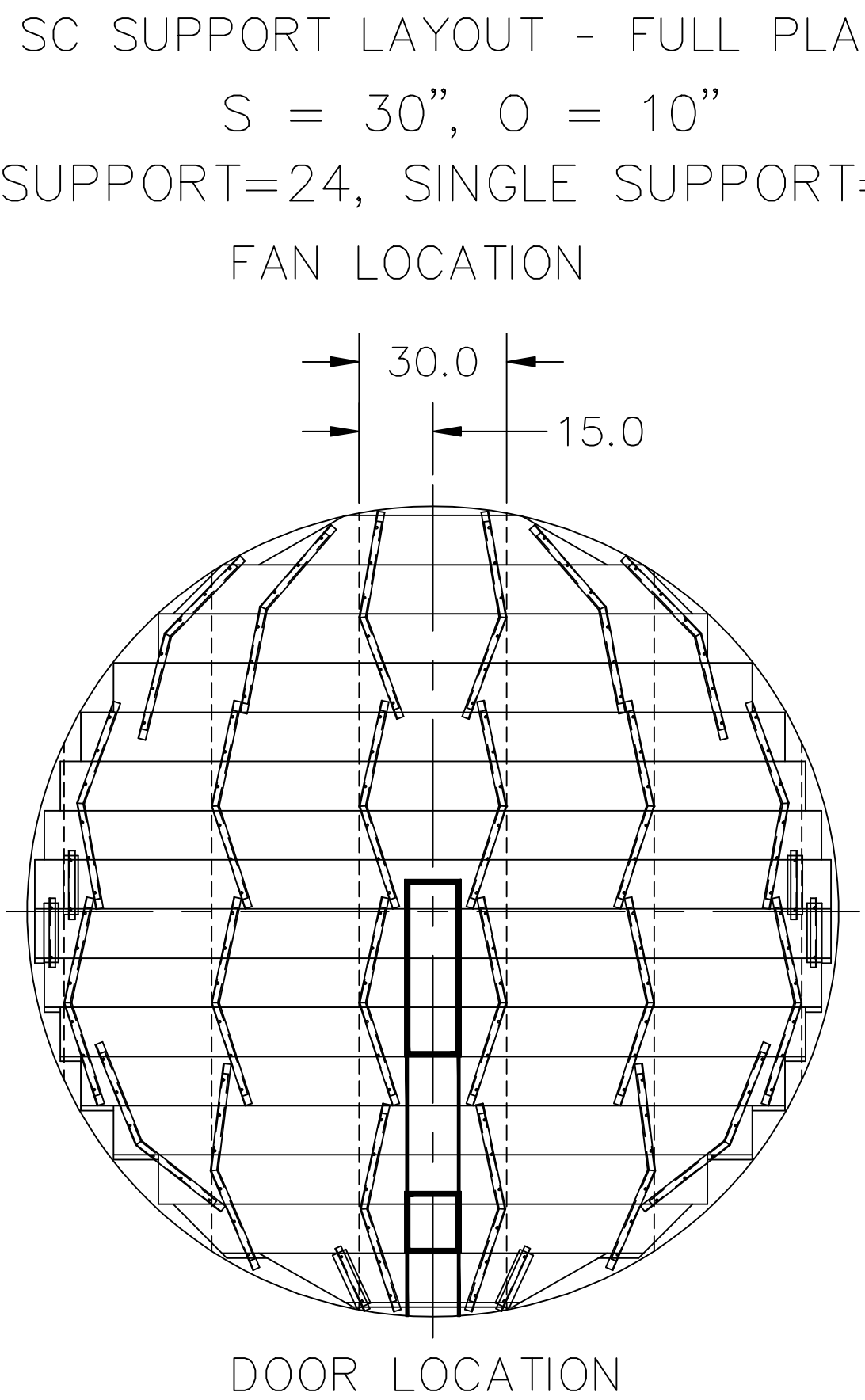


Figure 19. 14’ SC Support Layout — Full Plank



7. Limited Warranty: Westeel Grain Bin Products

Westeel – Ag Growth International ("Westeel") warrants products that it has manufactured and/or that are branded with its name (the "goods") subject to the following terms and limitations, (the "warranty"):

Duration of Warranty

This warranty will run from the date of purchase from the dealer or distributor, authorized by Westeel. The duration of the warranty is limited as follows:

Galvanized Bins	5 years
EasyFlow2	24 months
Westeel Fans	36 months
Floors	12 months
Catwalk	12 months
Bulk Feed Tanks	24 months
SeedStor-K Cones	
Paint	12 months
Structural	30 months
Elite Cones	
Paint	30 months
Structural	10 years
WESTEEL cones	
Paint	No Warranty
Structural	12 months
Smooth Wall Bins	
Paint	60 months
Structural	10 years
Commercial Smooth Wall Bins	
Paint	12 months
Structural	10 years

Limitation of Remedies Replacement

Within the warranty period, Westeel will replace the goods and/or original manufactured components thereof which are found, to Westeel's satisfaction, to be defective. Westeel is not responsible for direct, indirect, special, consequential, or any other damages of any kind, including personal injury to any individual, howsoever caused, including caused by transportation of the goods for repair or replacement.

Procedure for Obtaining Service

In the event of a warranty claim, the purchaser must complete any and all information required by Westeel in order to properly assess or investigate the claim. Westeel will not be responsible for the removal of any of the goods found to be defective, or transportation charges to and from Westeel's authorized dealer or distributor, or for installation of any replacement goods and/or parts furnished under the warranty.

Limitations as to Scope of Warranty

The warranty does not extend to defects or damage caused, in whole or in part, by:

1. use of a kind and/or to a degree not reasonably expected to be made of the goods;
2. improper storage of the goods both prior to and after purchase;
3. damage caused by, or in the course of, installation or assembly;
4. any use of the goods which is not an intended use as specified in Westeel's published product literature, or otherwise specified by Westeel in writing;
5. any equipment attached to or used in conjunction with the goods;
6. any field modifications or substitutions to original bin components;
7. inadequate ventilation or any other circumstance not in keeping with proper maintenance and/or use of the goods;
8. Acts of God, accident, neglect or abuse of the goods by the purchaser and/or any other individual or entity; or
9. Any use or installation inconsistent with Westeel’s Standard Disclaimers.

Limitations as to Manufacturer

The warranty does not cover products sold by Westeel that are not manufactured by Westeel. In those circumstances, the purchaser is referred to the manufacturer of those products.

Limitation of Implied Warranties and Other Remedies

To the extent allowed by law, neither Westeel nor its dealers, nor any company affiliated with Westeel makes any warranties, representations, or promises as to the quality, performance, or freedom from defect of any Product covered by this Warranty.

WESTEEL HEREBY DISCLAIMS, TO THE EXTENT APPLICABLE, ANY AND ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. A PURCHASER’S ONLY REMEDIES IN CONNECTION WITH THIS WARRANTY ARE THOSE SET FORTH IN THIS WARRANTY. IN NO EVENT WILL WESTEEL, ITS DEALERS, OR ANY COMPANY AFFILIATED WITH WESTEEL BE LIABLE FOR INCIDENTIAL, CONSEQUENTIAL OR PUNITIVE DAMAGES.

Some jurisdictions do not allow waivers of certain warranties, so the above waivers may not apply to you. In that event, any implied warranties are limited in duration to ninety (90) days from delivery of the products. You may also have other rights which vary from jurisdiction to jurisdiction.

Exclusive Warranty

This warranty is the only warranty provided by Westeel and all other warranties and/or commitments, whether express or implied and no matter by whom made, statutory or otherwise, are subsumed and replaced by it and are of no legal effect. If any provision of the warranty is held by a court of

competent jurisdiction to be void or unenforceable, in whole or in part, such provision shall be deemed severable and will not affect or impair the legal validity of any other provision of the warranty.

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