

ALL SIZE PERFORATING

TRUSS

*Grain Bin Aeration Flooring System
with SYNTIRO Supports*

**Base Installation Manual For
Floors 42ft - 54ft**



Warranty

All Size Perforating Ltd. Warrants each new All Size Flooring Systems, which includes a TRUSS Floor installed with SYNTIRO Supports, manufactured by it to be free from defects in material or workmanship for a period of four (4) years from and after the date of initial installation by or for the original purchaser. If such a defect is found by the Manufacturer to exist within the applicable warranty period, the Manufacturer will, at its option, (a) replace such product free of charge, F.O.B. the factory of manufacture, or (b) refund to the original purchaser the original purchase price, in lieu of such repair or replacement. The Manufacturer does not cover labor costs associated with the replacement of the product.

CONDITIONS AND LIMITATIONS

1. The product must be installed and operated in accordance with instructions published by the Manufacturer or Warranty will be void.
2. All TRUSS Floors must be properly installed with the SYNTIRO Flooring supports in order for the four (4) year Warranty period listed above to apply. Otherwise, individual TRUSS Floors and components thereof will only be warranted for a period of one (1) year from and after the date of initial installation by or for the original purchaser. The ALL SIZE PERFORATING SYNTIRO Flooring Support is only to be used with the ALL SIZE PERFORATING TRUSS Floor. Otherwise, no Warranty will apply to the SYNTIRO Flooring Supports.
3. This product must be purchased from and installed by an authorized dealer or Certified Representative thereof or the Warranty will be void.
4. Malfunctions or failure resulting from misuse, abuse, negligence, alteration, accident, or lack of proper maintenance shall not be considered defects under this Warranty.
5. This Warranty applies only to systems for the care of grain and feed. Other applications in industry or commerce are not covered by this Warranty.

The Manufacturer shall not be liable for any consequential or special damage which any purchaser may suffer or claim to suffer as a result of any defect in the product. "Consequential" or "special damages" as used herein include, but are not limited to, lost or damaged products or goods, costs of transportation, lost sales, lost orders, lost income, increased overhead, labor and incidental costs and operational inefficiencies.

THIS WARRANTY CONSTITUTES THE MANUFACTURER'S ENTIRE AND SOLE WARRANTY AND THE MANUFACTURER EXPRESSLY DISCLAIMS ANY AND ALL OTHER WARRANTIES, INCLUDING BUT NOT LIMITED TO, EXPRESS AND IMPLIED WARRANTIES AS TO MERCHANTABILITY, FITNESS FOR PARTICULAR PURPOSES SOLD AND DESCRIPTION OR QUALITY OF THE PRODUCT FURNISHED HEREUNDER.

ALL SIZE PERFORATING dealers are NOT authorized to modify or extend the terms and conditions of this warranty in any manner or to offer or grant any other warranties for ALL SIZE products in addition to those terms expressly stated above.

ALL SIZE PERFORATING LTD.

Box 2670, Winkler, Manitoba
R6W 4C3

Phone: 1-204-325-9457 Fax: 1-204-325-9998

Website: www.allsize.com

We would like to **Thank you** for your recent ALL SIZE purchase. If a problem should arise, your All Size dealer can supply the necessary information to help you.

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Remember! Think SAFETY First!



Safe operation is ALL SIZE PERFORATING'S number one priority when designing products. This symbol is used throughout this Manual to identify particular stages where the Grain Bin Contractor and/or Operator need to take special note and precautions regarding the danger described in these Instructions. Please read all the SAFETY information and the instructions completely prior to beginning the construction.

Support Information

ALL SIZE PERFORATING products are designed for grains and/or free flowing materials. **Using this equipment for any other purpose or in a way not within the operating recommendations specified in this Manual will void the Warranty and may cause injury or death.** This Manual is designed to provide comprehensive planning and construction information for this ALL SIZE Floor. The table of contents provides a convenient overview of the information in this Manual.

Dealers: Please provide the Customer with the information to complete the easy reference below.

Dealer or Customer: Complete the following information about your ALL SIZE Floor. Store this Manual in a safe, dry place for future reference.

Your floor is made up of many parts and checked carefully at the time of shipment. However, use the packing slip and check your shipment on arrival to be sure it is complete.

Distributor and Installer Information

Please fill in the following information about your Product. Keep this Manual for future reference.	
Distributor's Name	_____
Distributor's Address	_____
Distributor's Phone	_____ Date of Purchase _____
Installer's Name	_____
Installer's Address	_____
Installer's Phone	_____ Date of Installation _____
System Specifications	_____

About this Manual

The intent of this Manual is to help you in two ways. One is to follow step-by-step in the order of assembly of your ALL SIZE TRUSS Grain Bin Aeration Flooring System with SYNTIRO Supports. The other way is for easy reference if you have questions in a particular area.

This Manual covers installation of:

- steel SYNTIRO Floor Supports and TRUSS Floor Planks
- full Floors with Unloading Augers
- Flashing around Inside Stiffeners

IMPORTANT!

Read ALL instructions carefully before starting construction. Pay particular attention to all SAFETY information on Pages 6-8 of this Manual.

- Metric measurements are shown in millimeters and in brackets following the English measurement, unless otherwise specified

- " equals inches and ' equals feet in English measurements

Example: $9 \frac{3}{8}'' = 238.1 \text{ mm}$, or (238.1) $32'' = 812.8 \text{ mm}$, or (812.8)

- Major changes from the last printing will be listed on back cover.

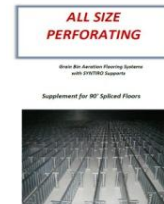


Supplemental Manuals for Spliced 42' - 90' Diameter Floors

There are several times in this Manual that a **sidebar** (see left) will appear. If you are installing a larger, **Splice Floor**, **STOP** at these points. On larger floors, installation differs or has additional considerations. If your Floor is 12'-36- (3,658-10,973) in diameter you will **not** need this Supplement. Pay attention and follow the additional information for these Spliced Floors in their Supplement, packaged in the Screw Kit bag.

22' x 35" Print Description for 90' Floors

90' (27,432) Floor w/9" (229) Spacing, 33-37 Ring/88'-99' (26,822-30,175) Eave
90' (27,432) Floor w/10" (254) Spacing, 25-32 Ring/66'-84' (20,117-25,603) Eave
90' (27,432) Floor w/11" (279) Spacing, 19-24 Ring/51'-62- (15,549-18,898) Eave
90' (27,432) Floor w/12" (305) Spacing, 13-18 Ring/33'-48' (10,058-14,630) Eave



Tools Needed

- Drill
- Hacksaw (to cut around Sump openings)
- Chalkline
- Screw gun
- Sledgehammer
- Hammer or mallet
- Tape measure

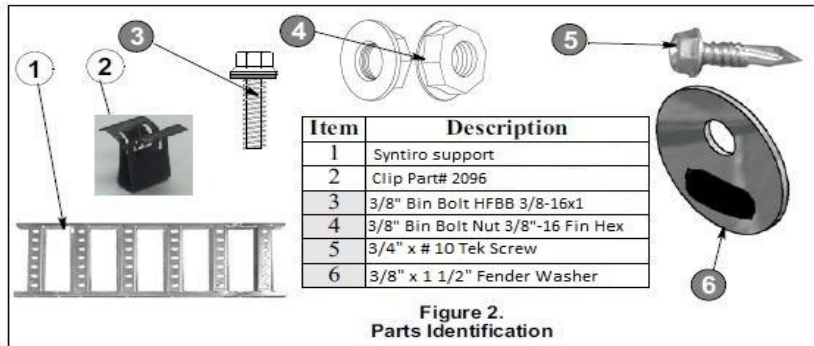


Figure 1.

Identification of Parts and Hardware

IMPORTANT!

No Hardware substitutions are permitted unless noted.



Diagrams are provided throughout this Manual to identify Parts and Hardware used in that application.

- Parts and basic components are identified in **Figures** and their accompanying Tables as "Items" with a black number in white circle.
- Hardware is identified with a white number in a **shaded** circle. See **Figure 2**. Hardware Item numbers are listed after the Parts in the **Figure Table**.
- Dimensions and lengths are noted with a white circle **on** an arrow or line, then identified with numeric values or a letter in the **Figure Table**.
- Specific holes, positions, or locations mentioned in the text are noted in the **Figure** with an ***asterisk**.

SAFETY



Recognize SAFETY Information

This is the Safety-Alert Symbol. When you see this symbol on your equipment or in this Manual, be alert to the potential for personal injury. Signal words **DANGER, WARNING OR CAUTION**, are used with the Safety-Alert Symbol.



Understand Signal Words

DANGER indicates an imminently hazardous situation which, if not avoided, **WILL** result in death or serious injury.

WARNING indicates a potentially hazardous situation which, if not avoided, **COULD** result in death or serious injury.

CAUTION indicates a hazardous situation which, if not avoided, **MAY** result in minor or moderate injury.

Follow SAFETY Instructions

Carefully read all SAFETY messages in this Manual, your base **Construction Manual**, and on your equipment SAFETY signs. Follow recommended precautions and safe operating practices. Keep SAFETY signs in good condition. Replace missing or damaged SAFETY signs.

Check all equipment for SAFETY Decals and their proper placement, BEFORE equipment is operated. NEVER use equipment if Decals are missing, improperly placed, damaged, or altered. Improper use of the Floor may cause Floor damage.

CAUTION! SYNTIRO Supports are designed to carry the Floor load. Any modifications to support or use of other manufacturer's supports on the TRUSS Floor Planks may cause Floor damage and will void your Warranty. The ALL SIZE SYNTIRO Floor Support is only to be used with the ALL SIZE TRUSS Floor. Otherwise, the Warranty is void. Refer to the Warranty on the inside front cover of this Manual.



CAUTION! Grain Bins using RECIRCULATING EQUIPMENT may require more Floor Supports. Failure to follow proper procedures for installation may casue Floor damage.

CAUTION! The Warranty does not cover damage to the TRUSS Floor or SYNTIRO Supports from the use of another manufacturer's equipment.



If you should need to enter the Grain Bin, enter only if you:

1. Shut off and LOCK OUT all power.
2. Use a SAFETY HARNESS and a SAFETY LINE.
3. Wear proper BREATHING equipment.
4. AVOID the center of the Tank.
5. Station people to help from OUTSIDE the Tank.

SAFETY HAZARDS AND RECOMMENDATIONS

1. Never enter a Grain Bin of flowing grain.
2. Never enter a Grain Bin when unloading equipment is **running**, whether or not grain is flowing.
3. Never enter a Grian Bin that has automatic unloading equipment without **LOCKING OUT** the control circuit.
4. Never enter a Grain Bin that you do not know the nature of previous grain removal, especially if there is any crusting evident.
5. **Always** be cautious before walking on any surface crust.
6. It is **Always** advisable to have three people involved, two on the outised and one inside, when entering a questionable Grain Bin/storage circumstance. The person in the Grain Bin should be secured or fastened to a safety rope with the two persons outside capable of lifting that person out without entering the Grain Bin. One person outside cannot do this, and cannot go for help and maintain preliminary aid.
7. **Never** work in obviously dusty-moldy grain without a respirator. Never work in such conditions, no matter whatr the protection, without a second perosn on safety standby.
8. Be aware that your tolerance to a given material may be limited, and that you should not deliberately and knowingly expose yourself on the idea that "it won't hurt me."
9. **Always** be cautious when you are working with grain that is not in good condition. You can have molds, blocked flow, cavities, cave offs, crusting-it is time to be alert.
10. **Never** depend on a second person, either on the Grain Bin roof, on the ground, or any other remote point to whom you shout instructions to start or stop equipment. Equipment noise can block out commands or cries for help.

In the event of EMERGENCY: Possible Corrective Measures

If you must enter a Grain Bin with evident danger, use a rope and SAFETY harness to support and lift you in the event of trouble.

Act responsibly NOW to reduce the risk of Emergency.

SAFETY

DANGER! There are Suffocation Hazards in Flowing Grain!

You CAN suffocate under material in a Grain Bin/Tank. Entry into ANY Grain Bin is a potential hazard. NEVER enter the Tank during loading or unloading.

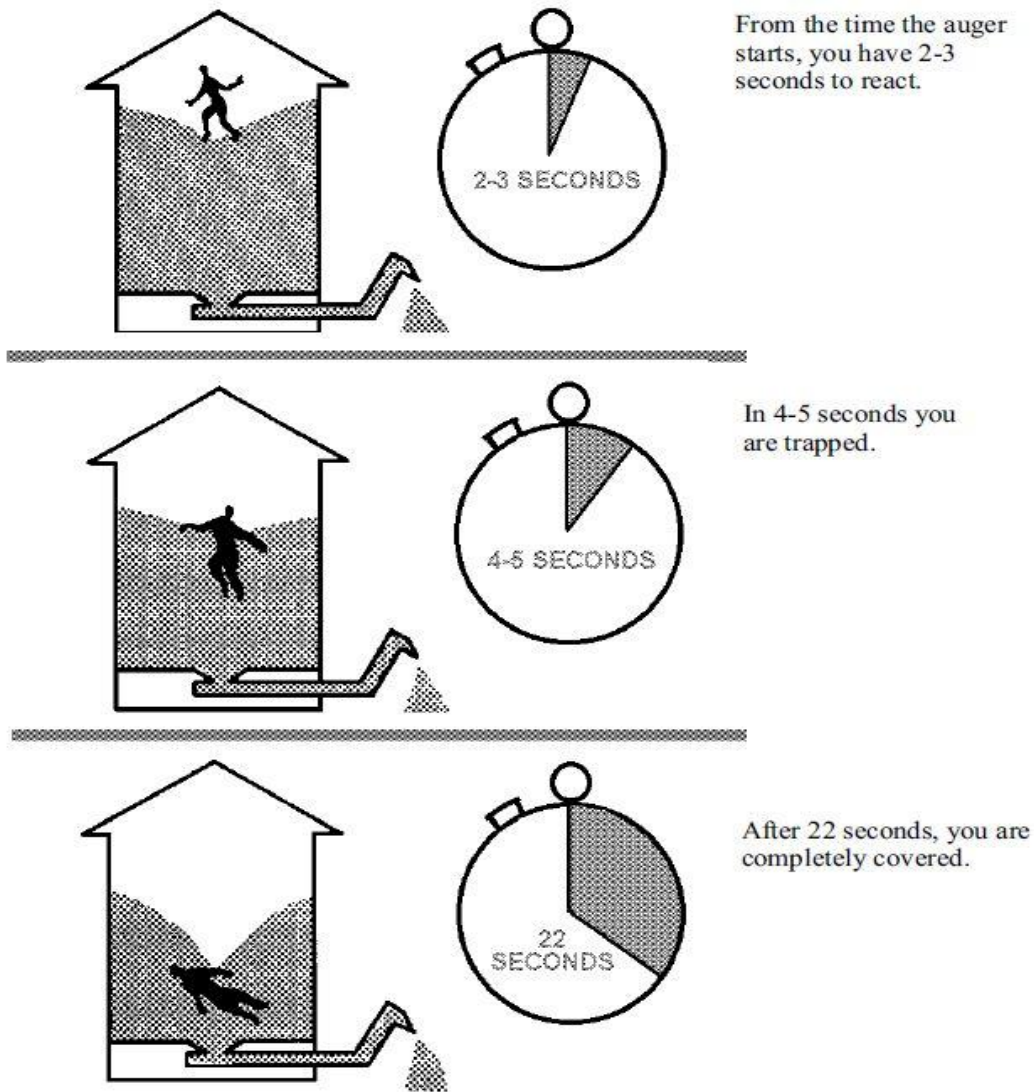


Figure 3.
Suffocation Hazards in Flowing Grain

Planning the Installation

CAUTION! Floor Planks and Floor Supports must be installed properly to prevent Floor damage!
"SEAMING" the Floor Plank connection means to lock it in place with the adjacent Plank, using vertical foot pressure or a sledgehammer as shown in **Figure 4**.

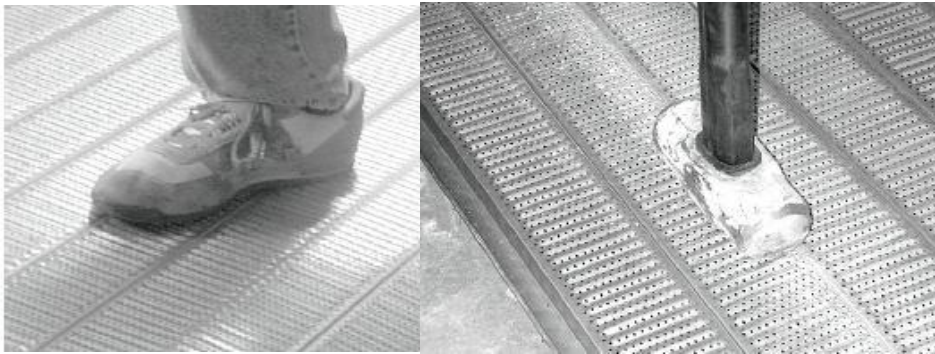


Figure 4. Seaming the Floor Planks

IMPORTANT! The SYNTIRO Support snaps together in a continuous row across the Bin concrete pad. It sets up right along the Support Chalkline and eliminates the need for using alternating Chalklines to install the Snap Lock Support.

IMPORTANT! The SYNTIRO Support will fit closely around the contour of the sidewall Flashing, eliminating the need for additional Supports around the Plank overhang at those areas.



Floor Support Diagrams for Single-Plank 12' - 36' Diameter Floors

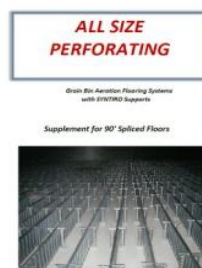
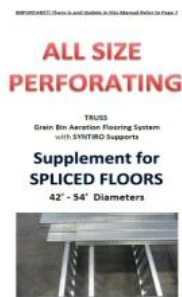
Support Spacing information for these Floors is located on Pages 24- last page of this Manual.

Floor Support Diagrams for Spliced 42' - 90' Diameter Floors

Support Spacing and Splice information for these Floors is located in the **Supplement**.

Support Spacing and Splice information for 90' (27,432) Floors is located in the supplement manual

Look also for the D-sized Print included with these Floors. See Pages 5 and 53.



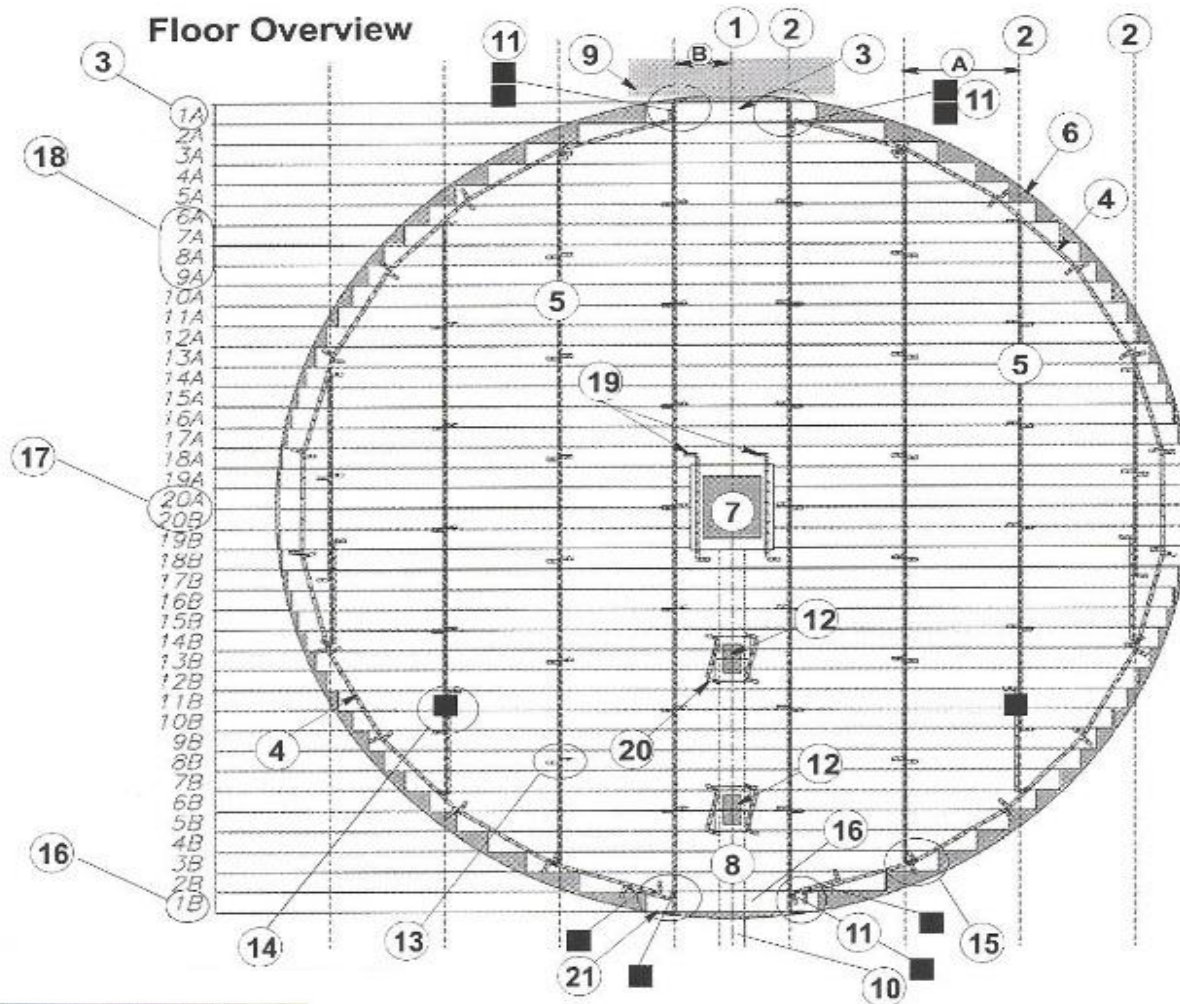


Figure 5.
Typical Support Installation (One-Piece/No Splice Floor Planks)
 24' on 36" Support Spacing shown (TOP VIEW)

Item	Description
A	SUPPORT spacing distance; Standard Chalkline Support Spacing Chart: Page 12. Floor Diagrams: Pages 34-51. Match Line A to Bin height. Spliced Floors: see Supplement 42ft - 78ft
B*	Distance from Centerline to first Chalkline, either side = 1/2 the Chalkline distance; normal: Page 11.
1	Centerline: Page 11.
2	Chalklines throughout: Page 11.
3	First Floor Plank. START here with Plank 1A against the Bin Sidewall at the Fan Transition: Pages 23-24.
4	Floor Support Half Circle: Pages 17-19.
5	Support Row: Pages 15, 20.
6	Bin Sidewall
7	Center Sump: Pages 25-26.
8	Auger location: Pages 25-26.
9	Fan Transition area: Pages 16, 19, 23-24.
10	Unload area: Page 27.

Item	Description
11	Center Row-to-Half-Circle connection: Page 18-19. Use Clips top and bottom.
12	Intermediate Sump: Pages 25-26.
13	Support connection: Page 14.
14	Support overlap (straight): Page 21-22.
15	Support Row-Half Circle treatments: Pages 21-22.
16	Last Floor Plank 1B: Pages 23, 27.
17	Longest Floor Plank(s): Page 23, 25-26
18	Plank Number Side Key
19	LONG Supports (2) at Center Sump: Pages 25-26.
20	SHORT Supports (2) at Intermediate Sump(s): Pages 25-26.
21	SHORT Support overlap on Half Circle: Page 18.

Floor Layout

Mark the Centerline

Plan your Floor so the Floor Planks are at a **right angle** to the under-floor unloading Auger. Preferably, locate your Fan Transition so it will be directly **opposite** the Unloading Auger discharge. See **Figure 6**. Locate the Grain Bin center point on the concrete. Snap a Chalkline **centered at** the Fan Transition, passing through the Center Sump to the opposite side of the Bin at the Discharge. Mark this Chalkline as the "Centerline."

IMPORTANT! The Centerline must go through the center point of the Bin (under the Center Sump.)

Position the UNLOAD equipment over the Centerline.

Mark Support Chalklines on Single Plank Floors 12' - 36'

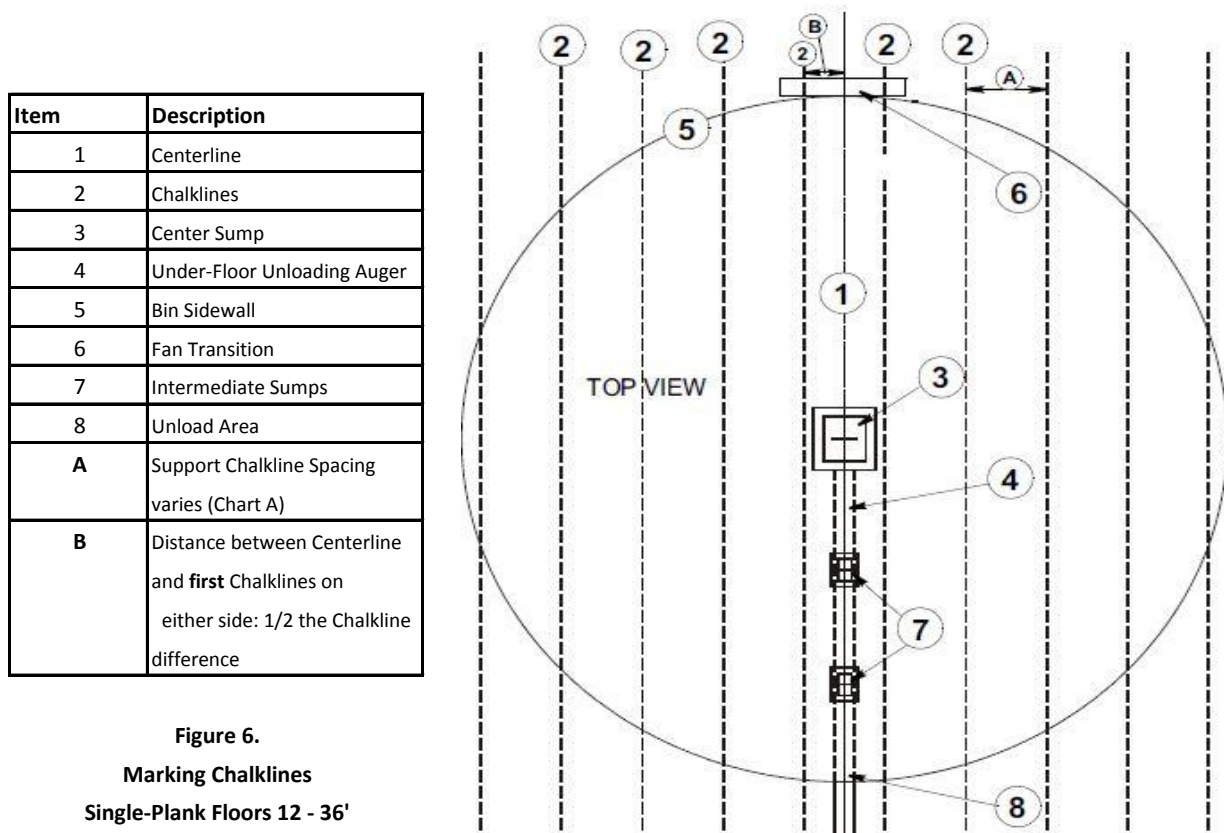
Spliced Floors 42' - 78': See "Marking Support Chalklines on Spliced Floors," Page 4-10 in the Supplemental Manual. **Spliced Floors 90'**: See "Marking Support Chalklines" on Page 3 in the Supplement Manual.

Snap parallel Chalklines on each side of the Centerline according to the Support Chalkline Spacing

Chart A on Page 12 of your Grain Bin Model.

Divide in half the Support Chalkline distance to the left and right sides of the Centerline.

See **Figure 6**. On Floors 12' - 36' there will **not** be a row of Supports on the Centerline.



Continue marking parallel Support Chalklines to the left and right of the Centerline until you have marked the entire floor area from sidewall to sidewall. When **all** Chalklines are drawn, you are ready to install Floor Supports.



CAUTION!

It is very important that the spacing specifications be followed. Failure to follow this instruction could result in Floor damage.

NORMAL Support Chalkline SPACING

= SUPPORT ROW SPACING

STANDARD Grain Bins

Bin Diameter	11'	15'	18'	22'	26'	29'	33'	37'	40'	48'	51'	59'	62'	70'	73'	81'	84'	88'	95'	99'				
Leave Height																								
44" Tiers	3	4	5	6	7	8	9	10	11	12-13	14	15-16	17	18-19	20	21-22	23	24	25-26	27				
32" Rings	4	5	6	7	8	9	10	11	12	13	14	15-16	17-18	19-20	21-22	23-24	25-26	27-28	29-30	31-32	33-34	35-36	37	
42' [12 802]	34	30	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6
48' [14 630]	33	29	26	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4
54' [16 459]	31	27	24	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2
60' [18 288]	29	26	24	22	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
72' [21 946]	27	24	22	20	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	0
75' [22 860]	26	23	21	20	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	0
78' [23 774]	25	23	21	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	0

RECIRCULATING Grain Bins

Bin Diameter	11'	15'	18'	22'	26'	29'	33'	37'
Leave Height								
44" Tiers	3	4	5	6	7	8	9	10
32" Rings	4	5	6	7	8	9	10	11
42' [12 802]	34	30	27	24	22	20	17	16
48' [14 630]	32	28	25	23	21	19	17	15
54' [16 459]	30	27	24	22	20	19	17	16

For Spliced Floors 42' to 78' diameter, refer to your All Size Perforating Supplement Manual. or Spliced Floors 90' diameter, refer to our All Size Perforating Supplement Manual.



English (inches) to Metric [mm] Conversion Table

English (inches)	in. = mm	in. = mm	in. = mm	in. = mm
16 [406]	23 [584]	30 [762]	37 [940]	44 [1118]
17 [432]	24 [610]	31 [787]	38 [965]	45 [1143]
18 [457]	25 [635]	32 [813]	39 [991]	46 [1168]
19 [483]	26 [660]	33 [838]	40 [1016]	47 [1194]
20 [508]	27 [686]	34 [864]	41 [1041]	48 [1219]
21 [533]	28 [711]	35 [889]	42 [1067]	49 [1245]
22 [559]	29 [737]	36 [914]	43 [1092]	50 [1270]

SYNTIRO Support Assembly

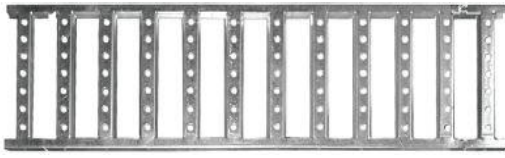


Figure 7A. SYNTIRO Support (LONG)

Part# 3572

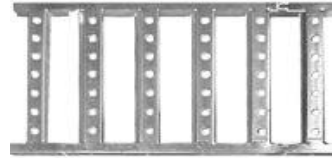


Figure 7B. SYNTIRO Support (SHORT)

Part# 3573

The SYNTIRO Support for Low Floors is 12 1/4" (311) high.

The SYNTIRO Support for High Floors is 16 15/16" (430) high.

On straight Chalkline rows: LONG supports span five (5) Floor Planks. SHORT Supports span two (2) Floor Planks

On curves around the sidewall: LONG and SHORT supports use varies. Follow the diagrams on

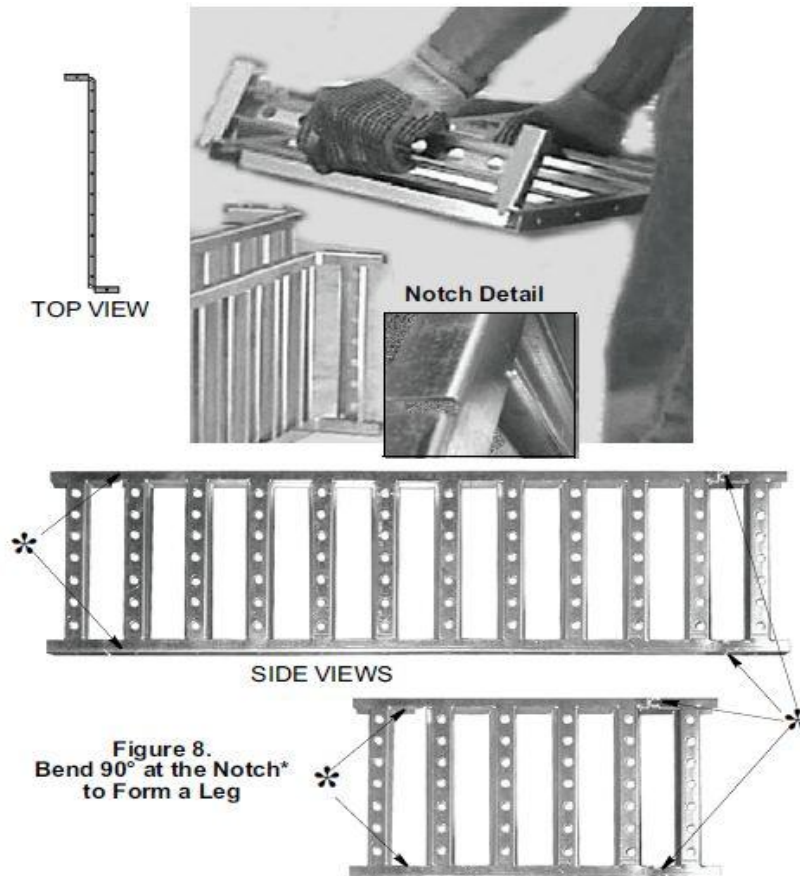
Pages 34-51 in this Manual for your diameter Floor 12' - 36' (3,658-10,973).

Spliced Floors 42' - 78' (12,802-27,432): follow the diagrams on Pages 14-49 of your Supplement Manual.



1. Fold the Support Legs 90° into a "Z" Shape

At the notches ***fold** the Support Legs in opposite directions. Supports are symmetrical so so there is no left, right, top or bottom. See **Figure 8**.



2. Interlock the Supports

Insert (upper and lower) Tabs of the first Support into the Slots of the second Support. Snap together. This is easier if you lay both Supports on their sides and tap the connections with a hammer or mallet. Be sure all Tabs and Slots interlock. See **Figure 10**.

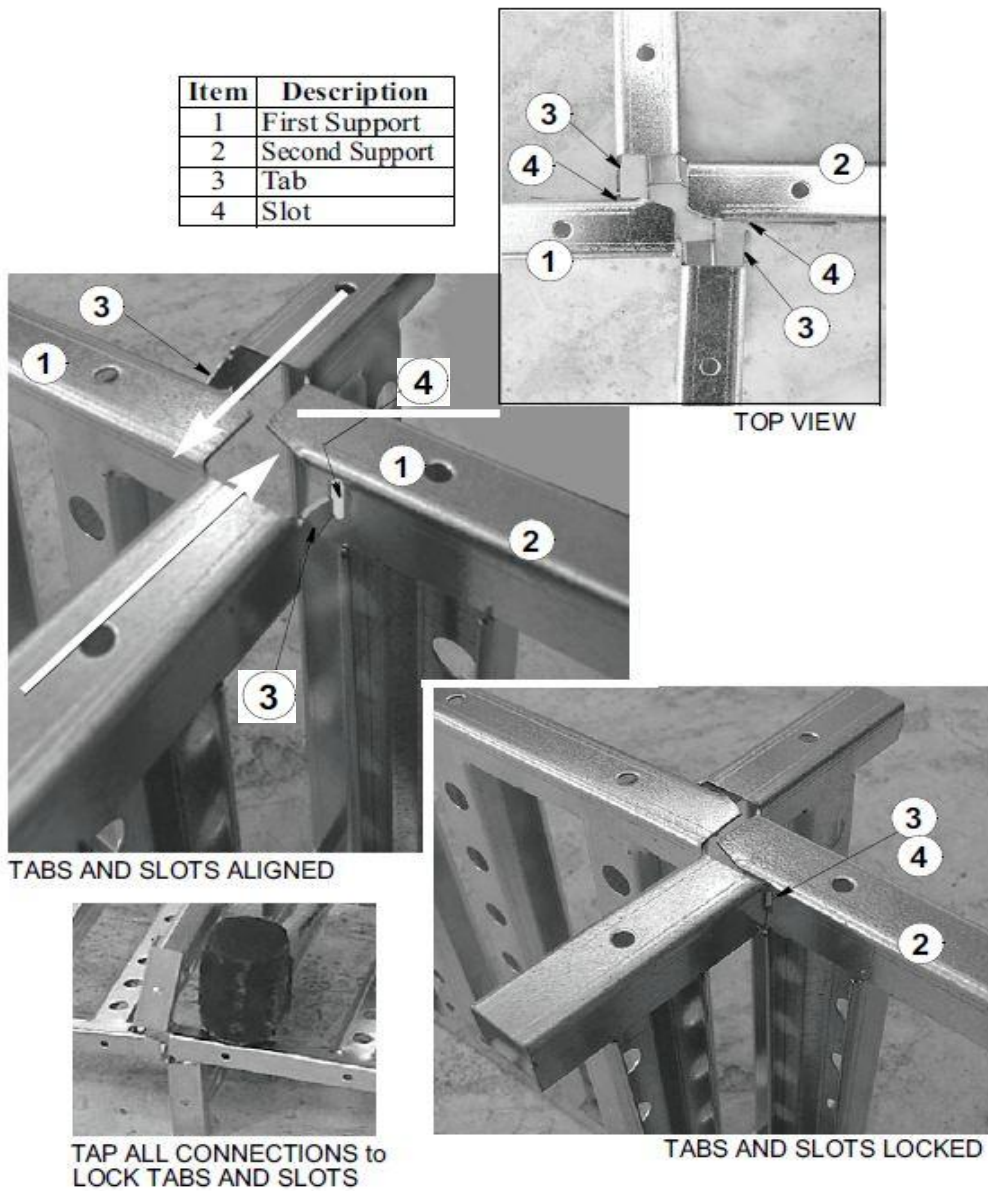


Figure 10.
Interlocking Two Supports

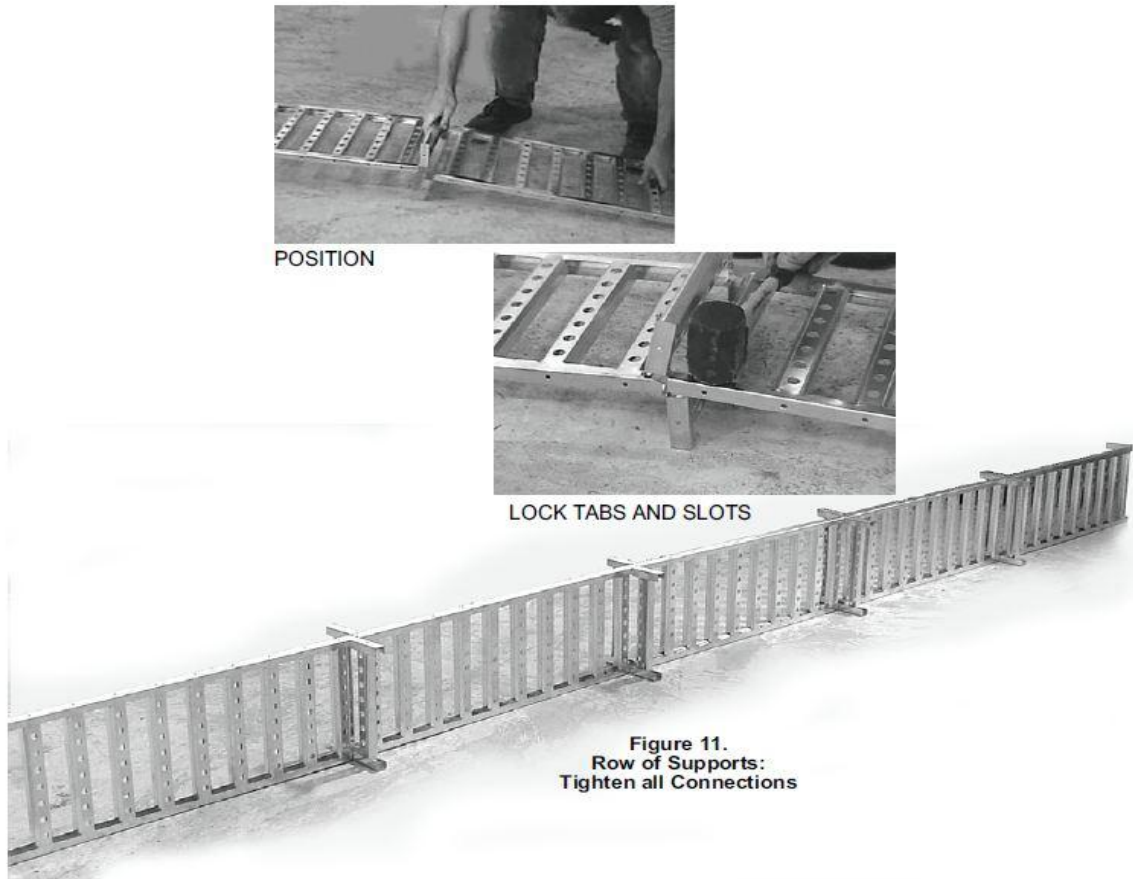
3. ASSEMBLE CENTER SUPPORT ROWS UNDER PLANK 1A

Assemble a row of Supports as shown in **Figure 11**. Continue the row across the entire Bin from the Fan area to the Unload.

Tilt the assembled Row up. Slide it into position on the Chalkline.

Re-check all Tab-to-Slot connections to make sure non have seperated due to movement.

(Continued on next page)



All center rows that fall under Plank #1A will be full-length from bin wall to bin wall.

Single-Plank Floors 12' - 36' (3,658 - 10,973) Diameter: go to Page 16 in this Manual.

Spliced Floors 42' - 78' (12,802 - 23,774): See also "Center Support Rows Under Plank 1A," in the Supplement Manual.

Spliced Floors 90' (27,432): See also Supplement Manual.

(Continued)



Step 3, (Cont'd)

Tilt the Support Row upright and set it on the **first Chalkline** left or right of the Centerline (Item 10, **Figure 12**). Continue this row until it spans wall-to-wall. **Refer to your diameter Diagram** on Pages 34-51 of this Manual.

The 24' Floor in **Figure 12** below shows a Row ending on a LONG Support.

The 24' (7,315) Floor show LONG Supports evenly spanning the Floor. However, the more common situation will require an additional Support to overlap and finish the Row to meet the Unload sidewall. Floors 12' -21': commonly overlap the final two LONG Supports. Floors 27' -36': commonly require an overlapped SHORT Support. **Overlap and clip the last Support to finish the Row if necessary.** Refer to Detail C to clip overlapped Planks.

Repeat and assemble an identical Support row for the first Chalkline on the other side of the Centerline. (Item 10).

IMPORTANT! Note the length of your starter Floor Plank numbered 1A. Assemble Support rows for all Chalklines that fall underneath Plank 1A.

When you have assembled Support Rows for **all the Chalklines supporting Plank 1A, running from the Fan Transition Sidewall to the Unload Sidewall**, proceed to **Step 4** on the next Page.

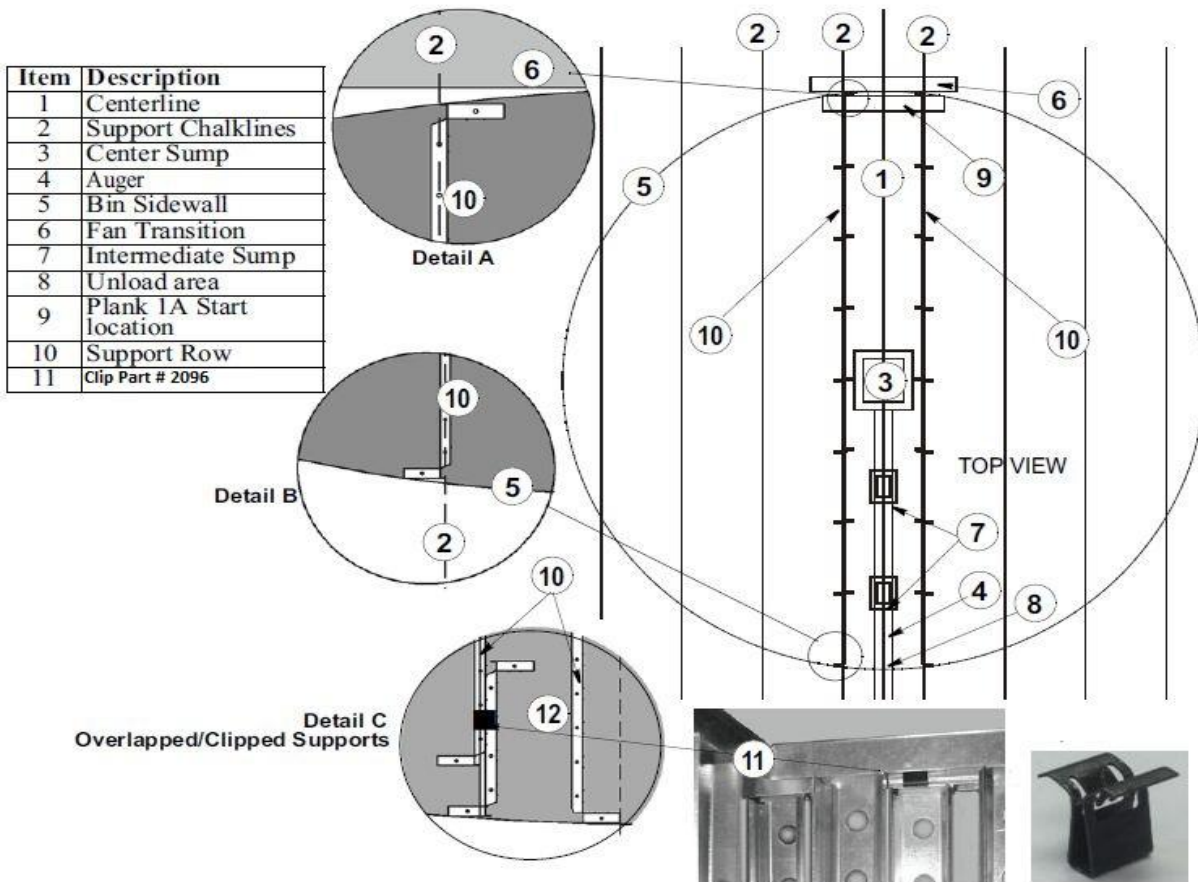


Figure 12.
Support Rows Under Starter Plank 1A
(24' Floor shown)

4. Set TWO Support Half Circles around the Sidewall

IMPORTANT! BEFORE beginning this Step: ALL center Support Rows that fall on Chalklines underneath Plank 1A - from the Fan Transition Sidewall to the Unload Sidewall - must be STANDING.

Continue to refer to the Diagram for your Floor on Pages 34-51 in this Manual or in your Supplement Manual (for larger Spliced Floors).

Assemble a row of Supports to construct one **Half Circle**. Note that SHORT Supports are used for Support Half Circles in 12' - 18' (3,658 - 5,486) diameter Floors. Floors 15' and 18' diameters alternate LONG and SHORT Supports. On 21' and larger diameters, all LONG Supports are used except the last ones to finish the circle.

See also **Figure 15**, Detail A. Assemble another row of Supports and push this line of Supports around the curve of the Grain Bin Sidewall. Starting at the Fan Entrance, butt the end of the Support Circle (Item 11) against the outermost Chalkline Support Row (Item 10).

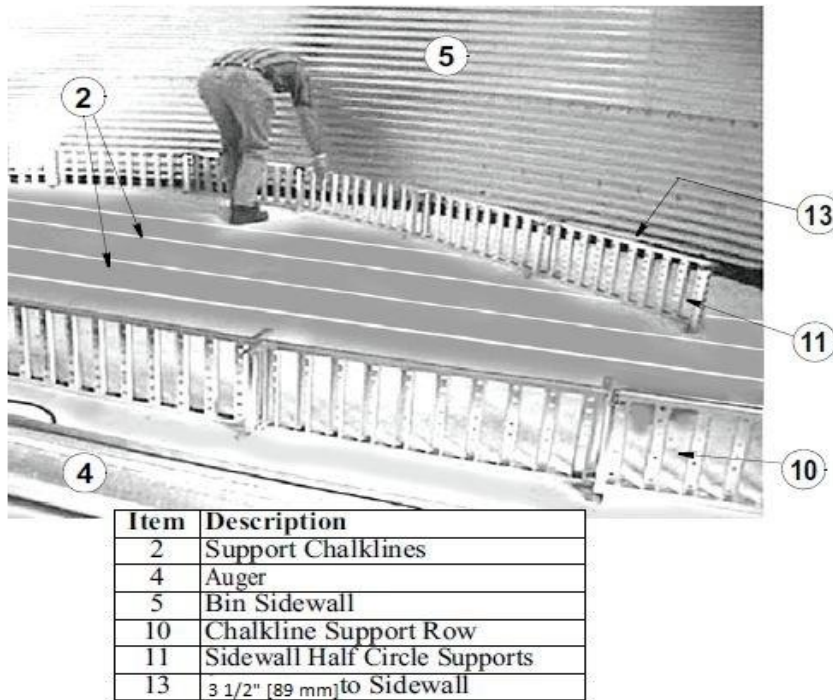
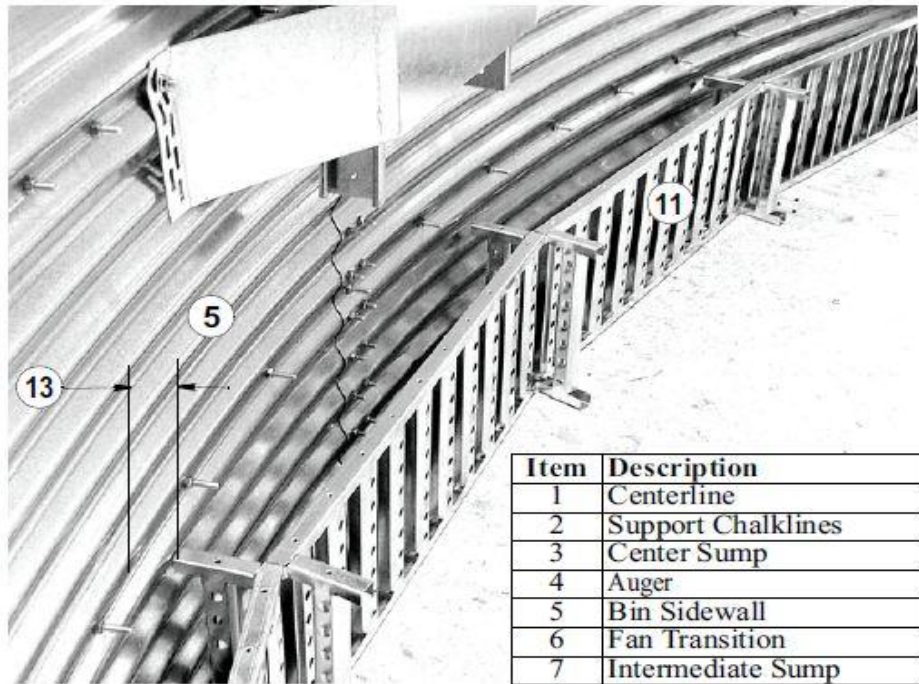


Figure 13.
Half Circle Against Sidewall

IMPORTANT! Position the Support Half Circle so the end of the Leg is spaced 3 1/2" away from the Grain Bin Sidewall. See Figures 14 and 15. As you add Supports to your Half Circle, be sure the entire path around the Sidewall is filled and butts against the outermost Chalkline Support Row at each end. If a Support is added, overlap a SHORT Support on the side nearest the center of the Grain Bin. Clip* (Item 12) the overlapped Supports together. See **Figure 3**, Detail B. Place Clip at the center of overlapped Supports.



Item	Description
1	Centerline
2	Support Chalklines
3	Center Sump
4	Auger
5	Bin Sidewall
6	Fan Transition
7	Intermediate Sump
8	Unload area
9	Plank 1A Start Location
10	Chalkline Support Row
11	Sidewall Half Circle Supports
12	Clip
13	3 1/2" [89] to Sidewall

Figure 14. Support Half Circle
(Recirculating Grain Bin shown)

IMPORTANT!

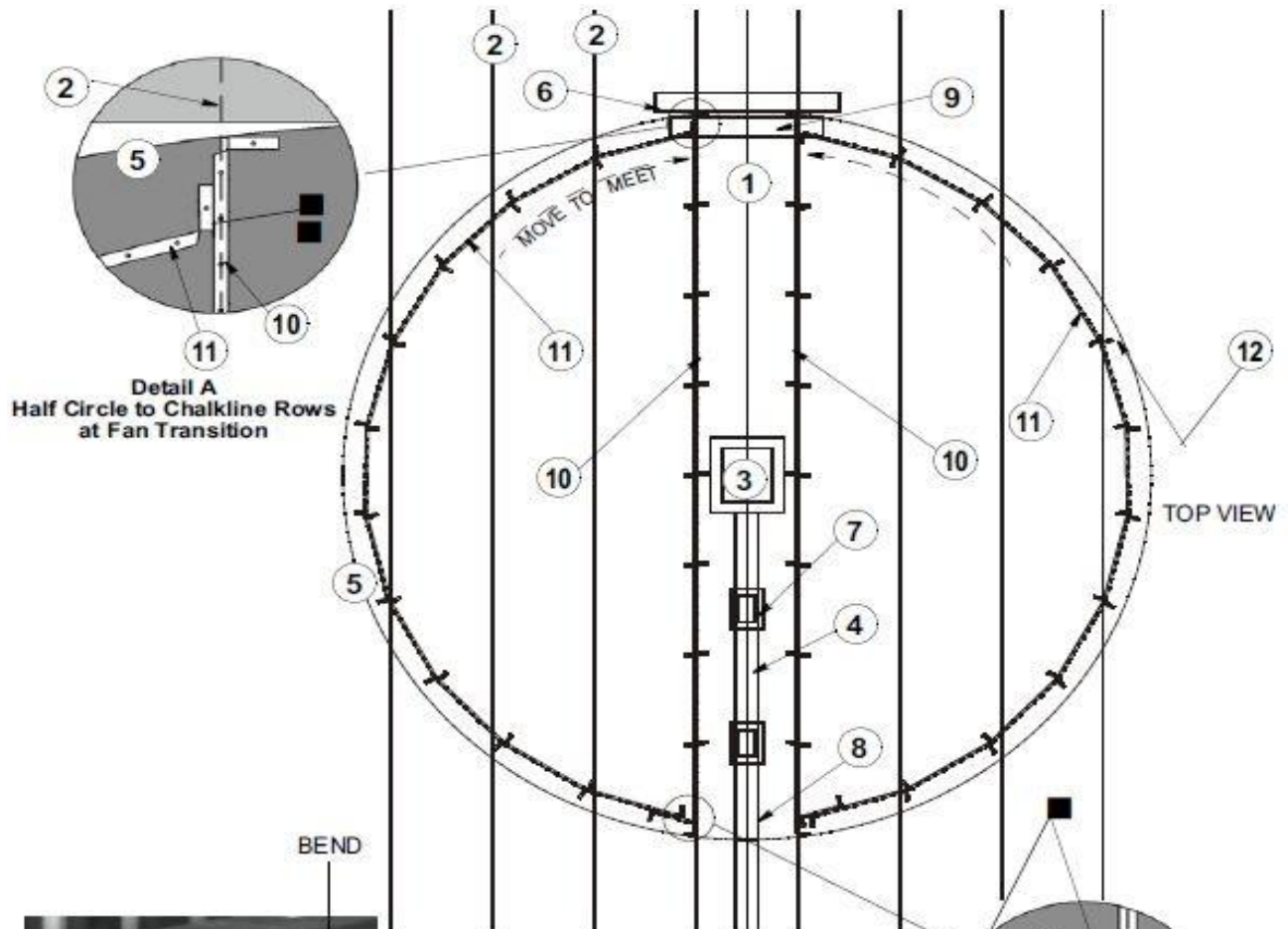
Do not overlap a LONG Support onto the Half Circle. A LONG Support will not allow the proper angle and positioning under the Floor Plank.

IMPORTANT!

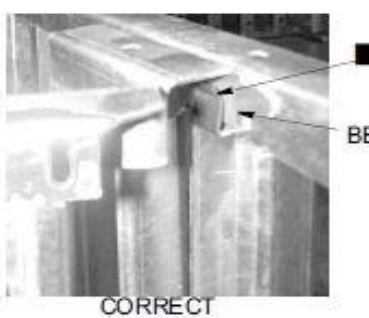
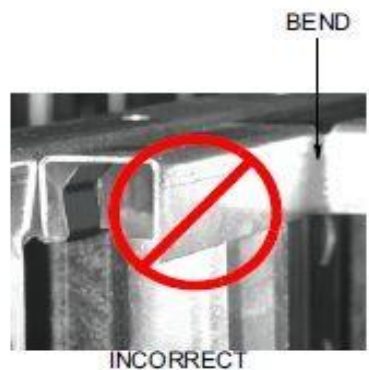
Half Circle Support ends MUST BE CLIPPED to Support Rows. Clip overlapped Supports to each other. Note where Clips are used in you Floor diagram.

Within 3' of the Fan Transition, make sure to clip the Support Rows to the Half Circle Supports. Clip at the TOP and BOTTOM. Locate the Clip as far back toward the Leg bend as possible.

Also in this area, **add extra clips** to the bottom of any **overlapped** Supports, See **Figure 19**, Details A and B. Or, a pop rivet can be used to secure these Supports to the wide Leg of the Floor Plank before placing the next Plank. Another option to anchor the Support to the concrete is to use powder-actuated fasteners available at most local hardware and building supply stores.

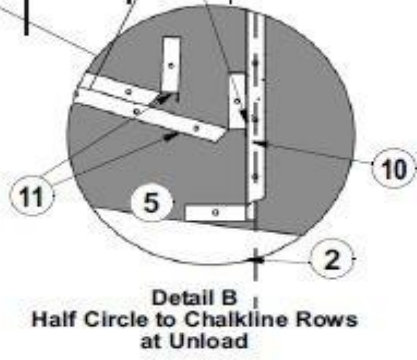


Detail A
Half Circle to Chalkline Rows
at Fan Transition




Detail C
Clip Connection

Item	Description
1	Centerline
2	Support Chalklines
3	Center Sump
4	Auger
5	Bin Sidewall
6	Fan Transition
7	Intermediate Sump
8	Unload area
9	Plank IA Start location
10	Chalkline Support Row
11	Sidewall Half Circle Supports
12	3 1/2" [89] to Sidewall
■	Clip top (and bottom near Fan)



Detail B
Half Circle to Chalkline Rows
at Unload

Figure 15.
Support Half Circles Extend to Meet
Center Support Rows



Notes location of clip part# 2096

5. SET UP REMAINING SUPPORT ROWS ON CHALKLINES

IMPORTANT!

BEFORE moving to this step: ALL Support Rows under Plank 1A (Step 3) and Half Circle Support Rows (Step 4) should be standing and clipped together.

Assemble and set up finished Support rows directly on top of all Chalklines. Butt the end of the Support row tightly against the perimeter Support Half Circle.

Starting at the Fan Transition end, use as many LONG (five-plank) Supports as possible first. It may be best to start each Row with the Leg pointed toward the center of the Bin.

To maintain freedom of movement across the Grain Bin concrete pad, and to access openings, finish Chalkline Support Rows **from the outside** and move toward the center.

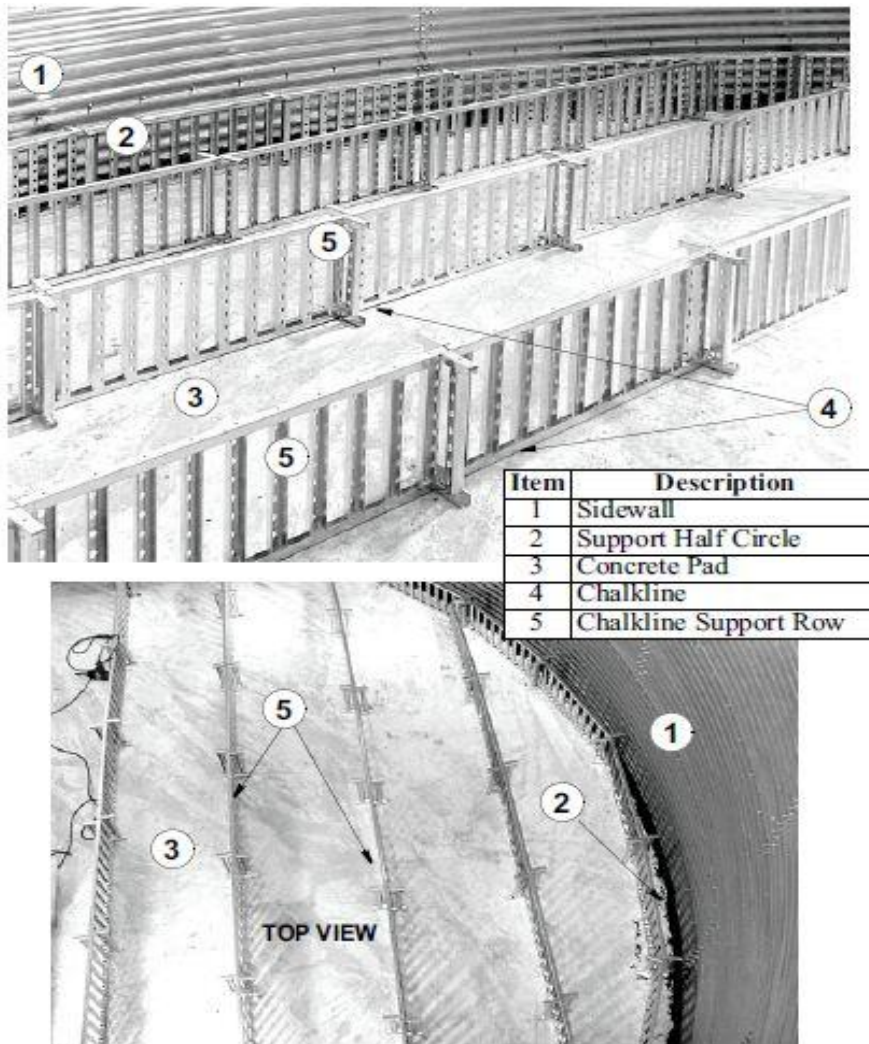


Figure 16.
Chalkline Support Rows

6. FINISH ENDS OF SUPPORT ROWS

IMPORTANT!

The entire length of Chalkline must be FILLED IN with Supports.

To extend the Support Row to the curve of the Sidewall Half Circle, the Support Leg is designed to **bend** a plus-or-minus (30°) from the standard ninety-degree (90°) bend.

See **Figure 17**.

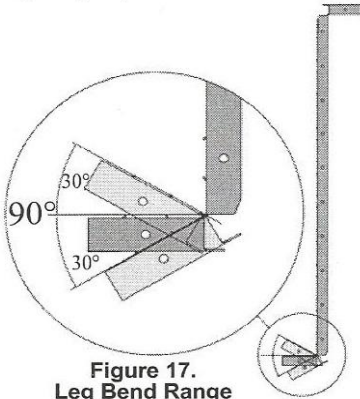


Figure 17.
Leg Bend Range

IMPORTANT!

DO NOT BEND the Support Leg more than 120°

There are several options for **finishing** the Support Row at the Unload end of the Bin.

In order of preference, these options are:

1. The Support Row ends **exactly** with all LONG Supports, or one SHORT Support at the end. The end Leg is bent as necessary to meet the Outer Half Circle. **Do not** use two(2) SHORT Supports together to end a Row. See **Figure 18,19**.

2. The last LONG Support does not reach the Outer Half Circle. One additional LONG or SHORT Support (whichever length best fills the remaining distance) is set against the last Support to **overlap** it and meet the Half Circle. The two overlapped Supports are clipped together, and the end Leg of the added Support is bent as necessary to meet the Outer Half Circle. See **Figure 20**.

See **Figure 20**.

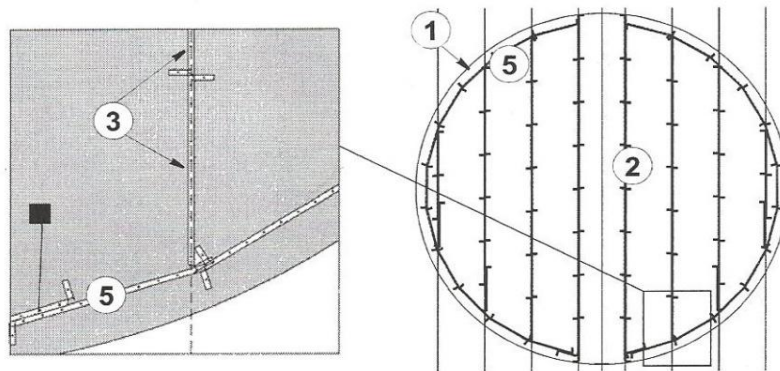


Figure 18. Option 1: LONG Supports Fill Chalkline
(24' Floor shown)

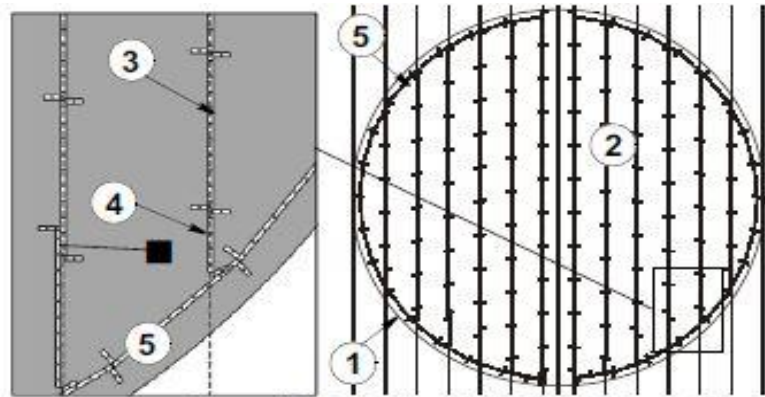


Figure 19. Option 1: Add a SHORT Support
(33' Floor shown)

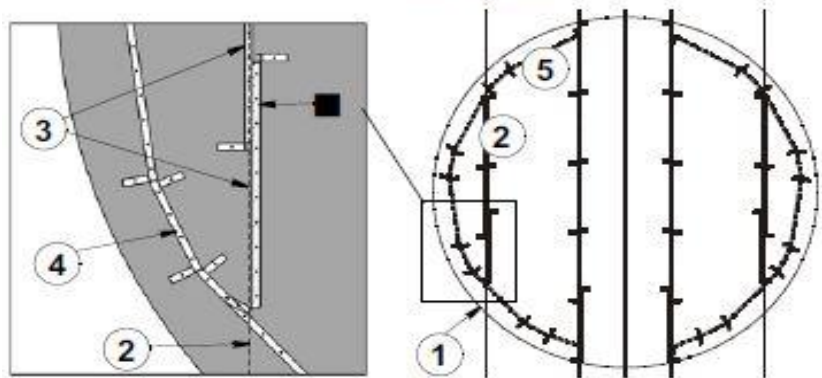



Figure 20. Option 2: Overlap a Support
(15' Floor shown)

Item	Description
1	Bin Sidewall
2	Chalkline/Support Row
3	LONG Support
4	SHORT Support
5	Sidewall Support Half Circle



(Continued next page)

IMPORTANT!

Clip overlapped Supports to each other at the top. Note where Clips  must be used in your Floor diagram.

See Figure 21 and details.

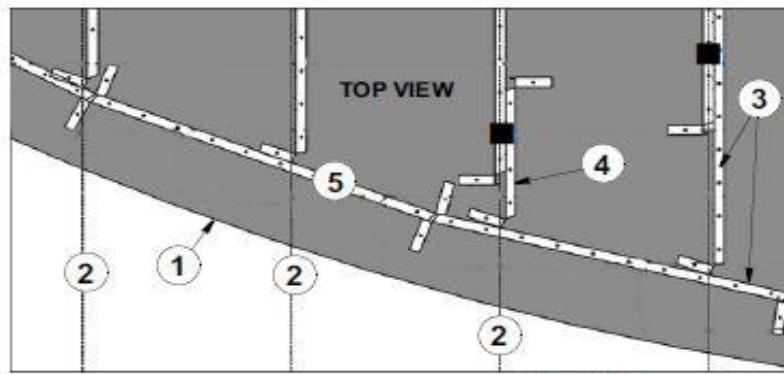
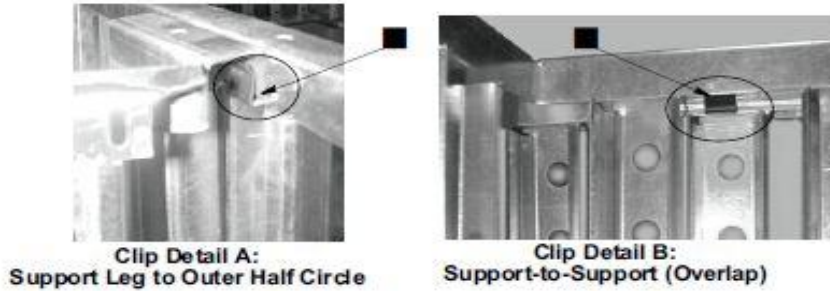


Figure 21.
Finishing Support Rows with Clips
(48" Dia. shown)

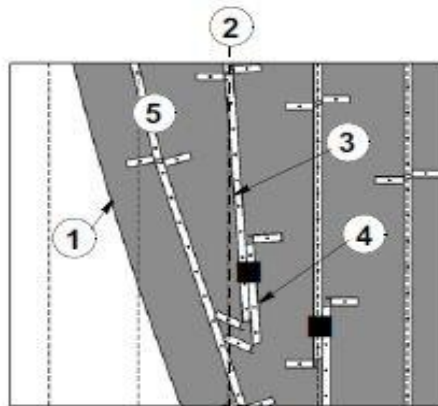


Figure 22.
Rotating Support Rows off Centerline
(78" Dia. shown)

Item	Description
1	Bin Sidewall
2	Chalkline/Support Row
3	LONG Support
4	SHORT Support
5	Sidewall Half Circle

 Notes location of clip part# 2096

There may be occasions where the last Support(s) on the outermost Chalkline must be set at a **slight angle** (to the Chalkline) in order to fit. See **Figure 22**. In this situation the Support(s) should be rotated toward the **center** of the Grain Bin.

In **Figure 22** above, there is a Clip required (Item 5) for the overlapped LONG and SHORT Supports (Items 3 and 4). As long as some part of the leg is still on the Chalkline, there is no Clip required where it makes contact with the Half Circle of Supports (Item 6).

Laying Floor Planks

IMPORTANT!

SYNTIRO Supports around the Grain Bin Sidewall and on center Chalklines must be installed BEFORE beginning to lay Floor Planks.

Floor Plank Numbers

The Floor Plank Number is marked on each Floor Plank with a marking pen. This number is also listed beside the Plank in Floor Diagrams.

Plank #1A at the Fan Transition is always the starter Plank.

Ascending Part Numbers are followed by "A" down to the center of the Grain Bin.

The highest number(s) and longest Plank(s) are at the center of the Bin.

On large Bins the adjacent Planks may also be the same length as the center Plank.

The second half of the Floor Planks have decreasing "B" Part Numbers.

The last Plank (#1B) may need the corners trimmed to fit.

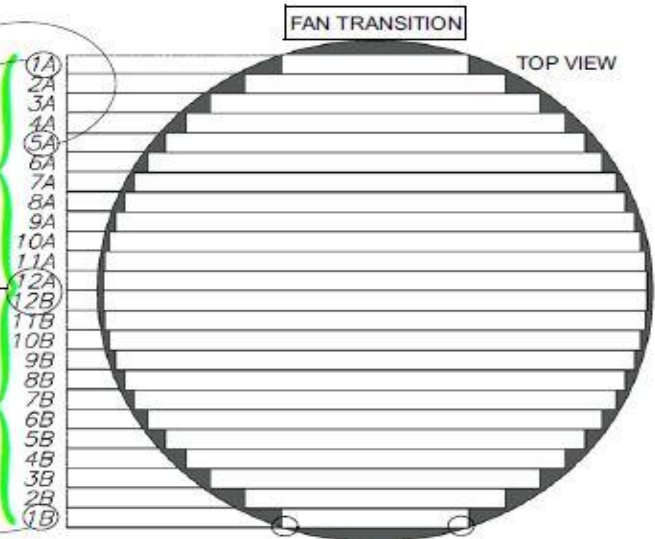


Figure 23.
Planning the Floor Layout
(15' dia. Floor shown)

Begin with Plank 1A at the Fan Transition

All Size Perforating Truss Floor Planks sit directly on top of SYNTIRO Supports. Begin with Floor Plank 1A and push it tightly up against the sidewall at the Fan Transition. See Figure 24 on the next page.

IMPORTANT!

Be sure all Chalkline Support Rows that fall under Plank 1A HAVE BEEN SET UP underneath Plank 1A.

Floor Planks are formed with three "Legs" (Item 8) and a Channel (Item9) to interlock into adjacent Floor Planks. See Figure 24 Detail A on the next Page. Planks numbered 2 and higher should end about 1" short of the Sidewall on the corner of each end. See Figure 25.

Secure the Floor Plank Start

Attach a few pieces of Flashing to secure the beginning Floor Planks. See Figure 24, Detail B. Follow instructions for Flashing on Pages 28-31. If your Grain Bin has Inside Stiffeners refer also to Page 32 in this Manual.

IMPORTANT!

Floor Planks REST on Support Rows and the Support Circle. Make sure all three Legs of the Plank at the end are laying on the Support Circle. REPOSITION the outer Support Circle if necessary to properly support all three Plank Legs.

See Detail on the next Page.

CAUTION!

Floor Planks and Supports must be installed properly to prevent Floor damage.

Lay Planks

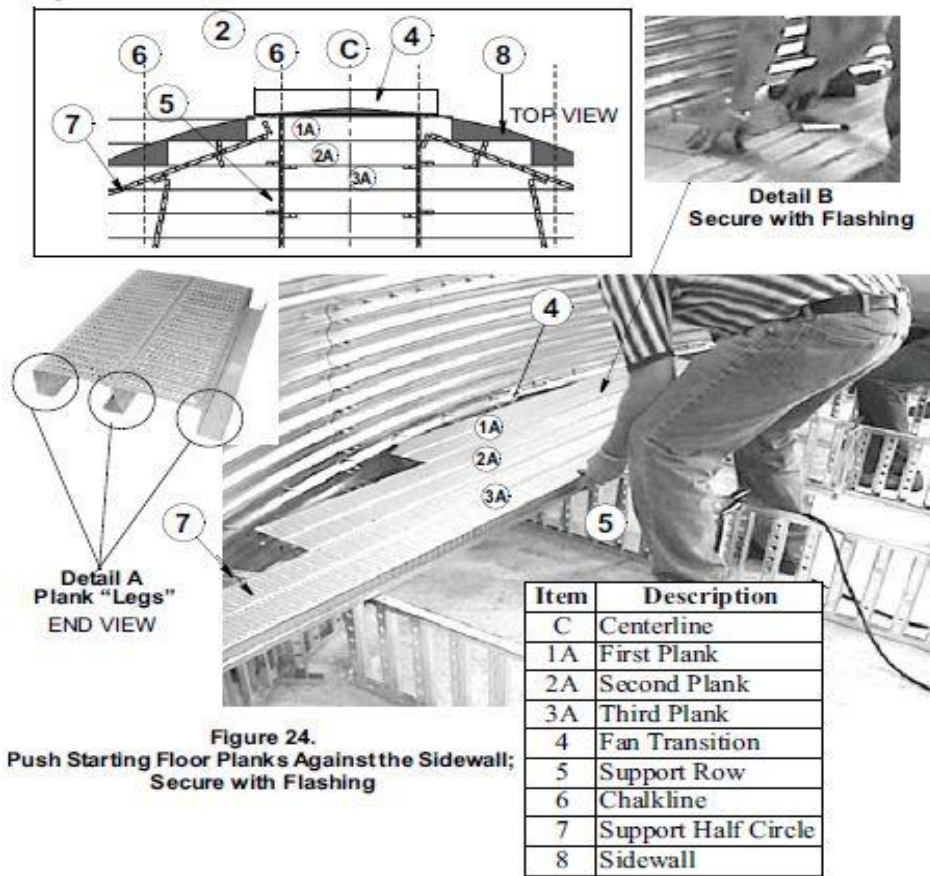


Figure 24.
Push Starting Floor Planks Against the Sidewall;
Secure with Flashing

Secure Floor Planks to each other by "seaming"

On Floors up to 36' with Single-Piece (not spliced) Planks, continue laying Planks across the Support Rows. Lay the incoming Plank into the channel of the last Plank. When you reach the Center Sump, see Pages 22-25 in this Manual. Be sure to "SEAM"(lock in place) the last Floor Plank to the adjacent, incoming Plank. Do this with each Plank before the next one is added. "SEAMING" the Floor Plank can be done using vertical foot pressure or a sledgehammer as shown in **Figure 25**.

IMPORTANT!

Floor Planks must be SEAMED together!



Figure 25.
Laying and Seaming Floor Planks



Splices in Larger Floors

In larger Spliced Floors 42' - 90' Single Plank installation will shortly change to Spliced (Two-Piece) Planks (and in 90' Floors, Three-Piece Planks).

For more information See the Supplement Manual for **Spliced Floors**.

CAUTION!



Support Sumps

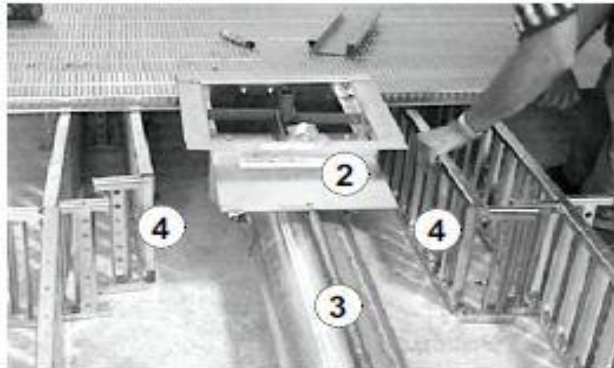
Additional Floor Supports must be added at the Sump and Auger areas.

Failure to do this could result in Floor damage.

Place on (1) LONG Support on **each side** of the Center Sump to support the cut ends of the Planks about 3" from the cut end of the Plank. See **Figure 26** and **Figures 28-30**. These Supports can face the same direction or can be symmetrical.

Exceptions: Sometimes Chalkline Support Rows fall directly under the Center Sump, or are too close to allow room for additional Supports; so LONG Supports on either side are not used. See **Figure 29**.

CAUTION!



Item	Description
1	Centerline
2	Center Sump
3	Auger
4	Long Support

Figure 26.
Extra Supports
Under Center Sump

Place one (1) SHORT Support on **each side** of each Intermediate Sump to support the Auger and cut ends/cutouts of the Planks about 3" from the cut end of the Plank. See **Figures 26** and **28-30**.

These Supports can face the same direction or be symmetrical.

Exceptions: Sometimes Chalkline Support **Rows** fall directly under the Intermediate Sumps, or are too close to allow room for additional Supports; so SHORT Supports on either side are not used. See **Figure 30**.

Finish the Sump area by trimming the Floor Planks to the proper length. Lift the Sump frame and place the Floor Planks underneath. See **Figure 27**.



Figure 27.
Floor Planks at the Sump

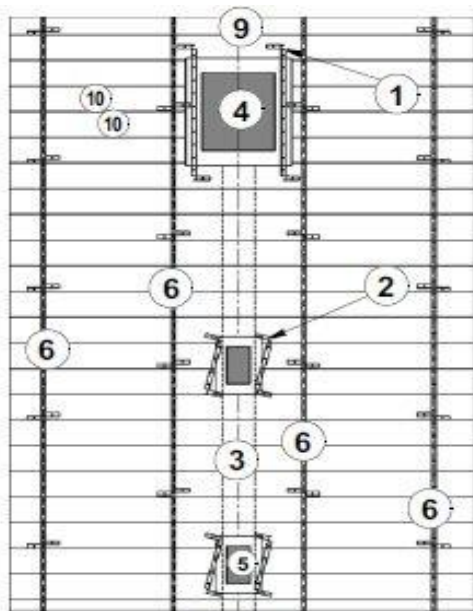


Figure 28.
LONG Supports at Center Sump;
SHORT Supports at Intermediate Sumps
 (30' with 32" spacing)

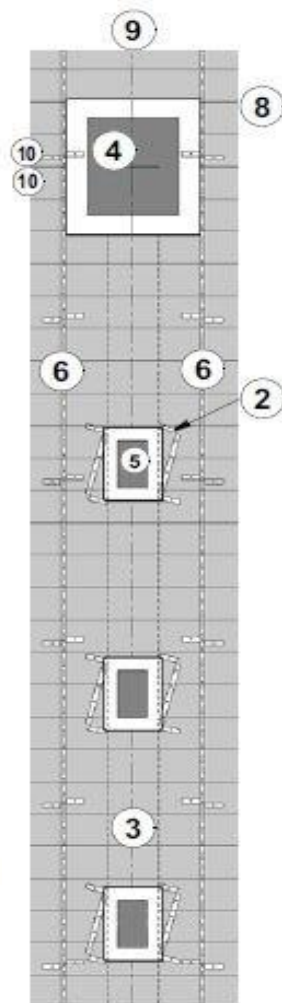


Figure 29.
Center Chalkline Support Row (instead of
LONG Supports) at Center Sump
 (36' with 27" spacing)

Item	Description
1	LONG Supports, Center Sump
2	SHORT Supports, Intermediate Sumps
3	Auger location
4	Center Sump
5	Intermediate Sump
6	NORMAL Chalkline Support Row
7	Plank Splice
8	Support Rows as close as possible to Auger
9	Centerline
10	Longest Floor Plank(s)
11	SPECIAL Center Chalkline Support Row

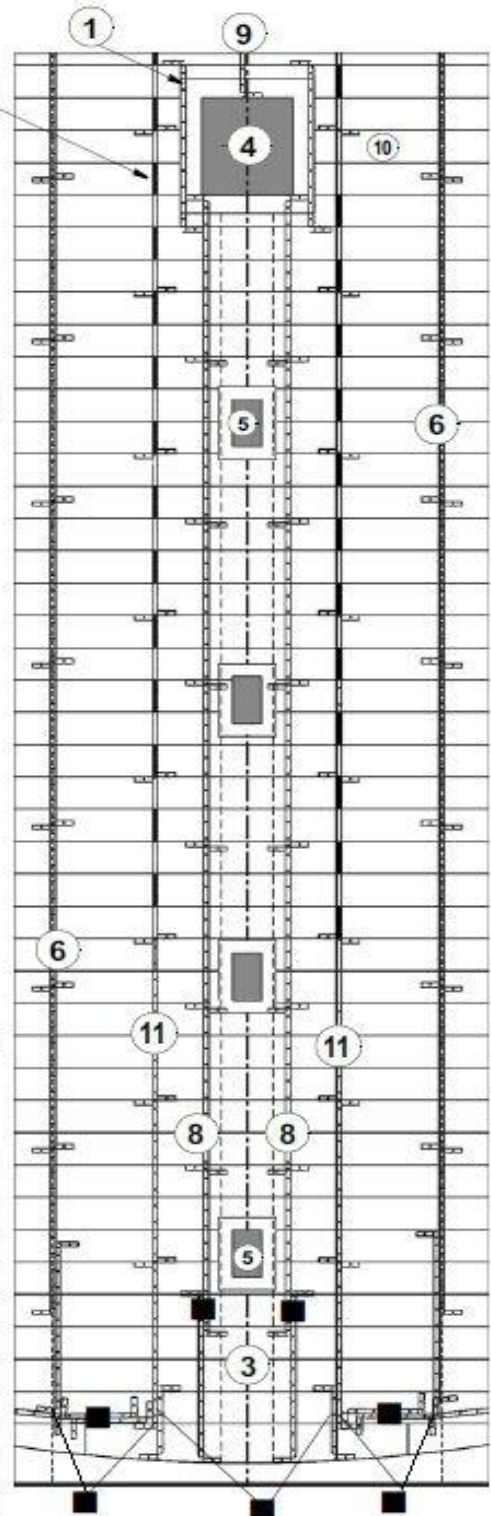


Figure 30.
Center Chalkline Supports
 (48' with 20" spacing)

Support Planks in the Auger-to-Unload Area



Spliced Floors 42' - 78' (12,802 - 23,774): See "Supporting Planks in the Auger-to-Unload Area" and accompanying Chart in the Supplement Manual.

Spliced Floors 90' (27,432): See "Add Support Rows at the Center Sump to the Unload" in the 90' Supplement Manual.

Final Planks

Depending on the tightness with which the Floor Planks were begun, it may be necessary to shorten a Plank corner on the last Plank by field-cutting it.

See **Figure 31**.



Figure 31.
Final Plank Length Adjustment

Parts Identification

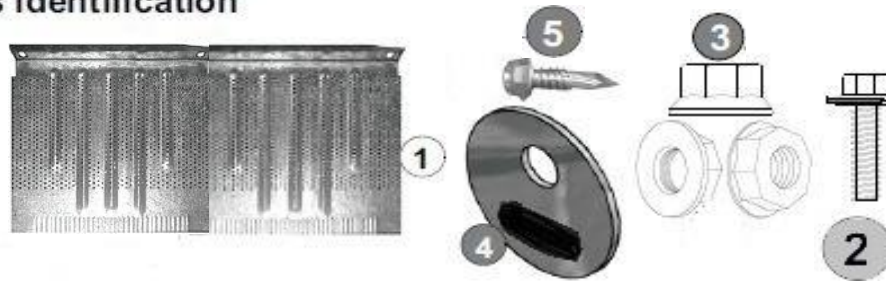


Figure 32. Flashing Parts

Item#	Item Description	Part#
1	Flashing 20"	312
2	3/8" Bin Bolt HFBB 3/8-16x1	209
3	3/8" Bin Bolt Nut 3/8"-16 Fin Hex Nut	2091
4	3/8" x 1 1/2" Fender Washer-Fend 3/8x 1 1/2 Z	2092
5	3/4" Tek Screw -10-16 x 3/4 HWH SDS3 Z	2094

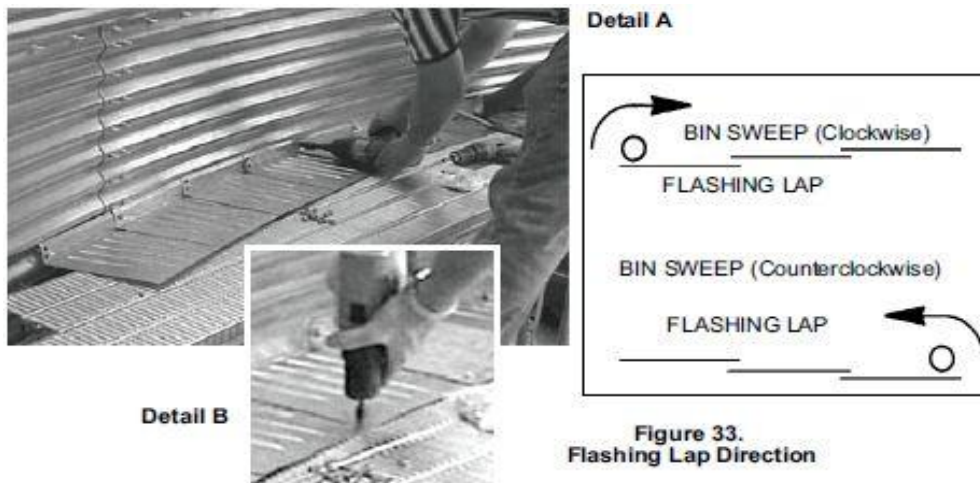


Figure 33. Flashing Lap Direction

IMPORTANT!

Make sure Floor Flashing is LAPPED correctly for the DIRECTION the sweep will be traveling. Do not change the lap direction. When lapped in the wrong direction the sweep auger drive wheel may bend up the edges of the Floor Flashing. See Figure 33.

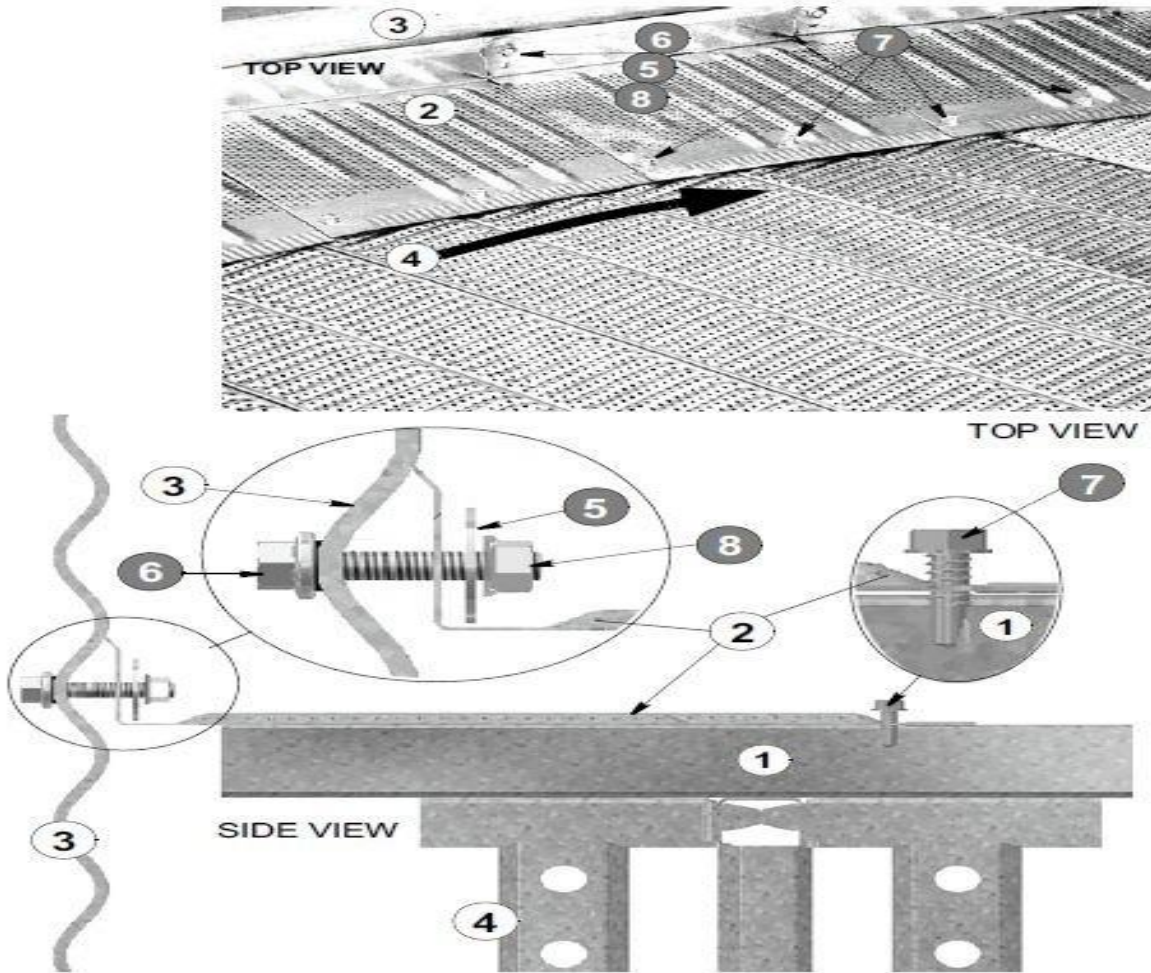
IMPORTANT!

Floor Flashing must lay FLAT on the Floor Planks.

2.67" Narrow Corrugation (32") Body Sheets

Lap and secure the Floor Flashing. Floor Flashing is secured to the Plenum Bolt using a 5/16" Hex Nut under the Flashing, and a 1 3/8" Cam Washer and Hex Nut outside the Flashing. See **Figure 34**.

Fasten the Floor Flashing to the Floor Planks (**Figure 43**, Detail B) with two (2) 3/4" Self drilling Screws at each overlap. The Plenum Bolt attachment will be on a **valley**. The Nut will therefore be a double Nut.



Item#	Item Description	Part#
1	Flooring plank	312
2	Floor Flashing	
3	Bin Sidewall	
4	Travel Direction of Sweep Auger	
5	3/8" x 1 1/2" Fender Washer	2092
6	3/8" Bin Bolt HFBB 3/8-16x1	209
7	3/4" Tek Screw -10-16 x 3/4 HWH SDS3 Z	2094
8	3/8" Bin Bolt Nut 3/8"-16 Fin Hex Nut	2091

Figure 34. Flashing overlap, NARROW corrugation

4" Wide Corrugation (44") Body Sheets

Lap and secure the Floor Flashing. Floor Flashing is secured to the Plenum Bolt using a 1 3/8" Cam Washer and a Hex Nut. See **Figure 33** and **Figure 35**.

Fasten the Floor Flashing to the Floor Planks with two (2) 3/4" Self Drilling Screws at each overlap. The Plenum Bolt attachment will be on a **hill**. Field drill* one hole through the Flashing at the Body Sheet vertical seam and one hole through the Body Sheet.

Bottom Body Sheets WITH a Base Angle:

Syntiro Supports and Truss Floor Planks are designed so that Floor Flashing attaches to the Plenum holes in bottom body sheets which have **no bottom flange**.

These Body Sheets are attached to Base Angles. See **Figure35**.

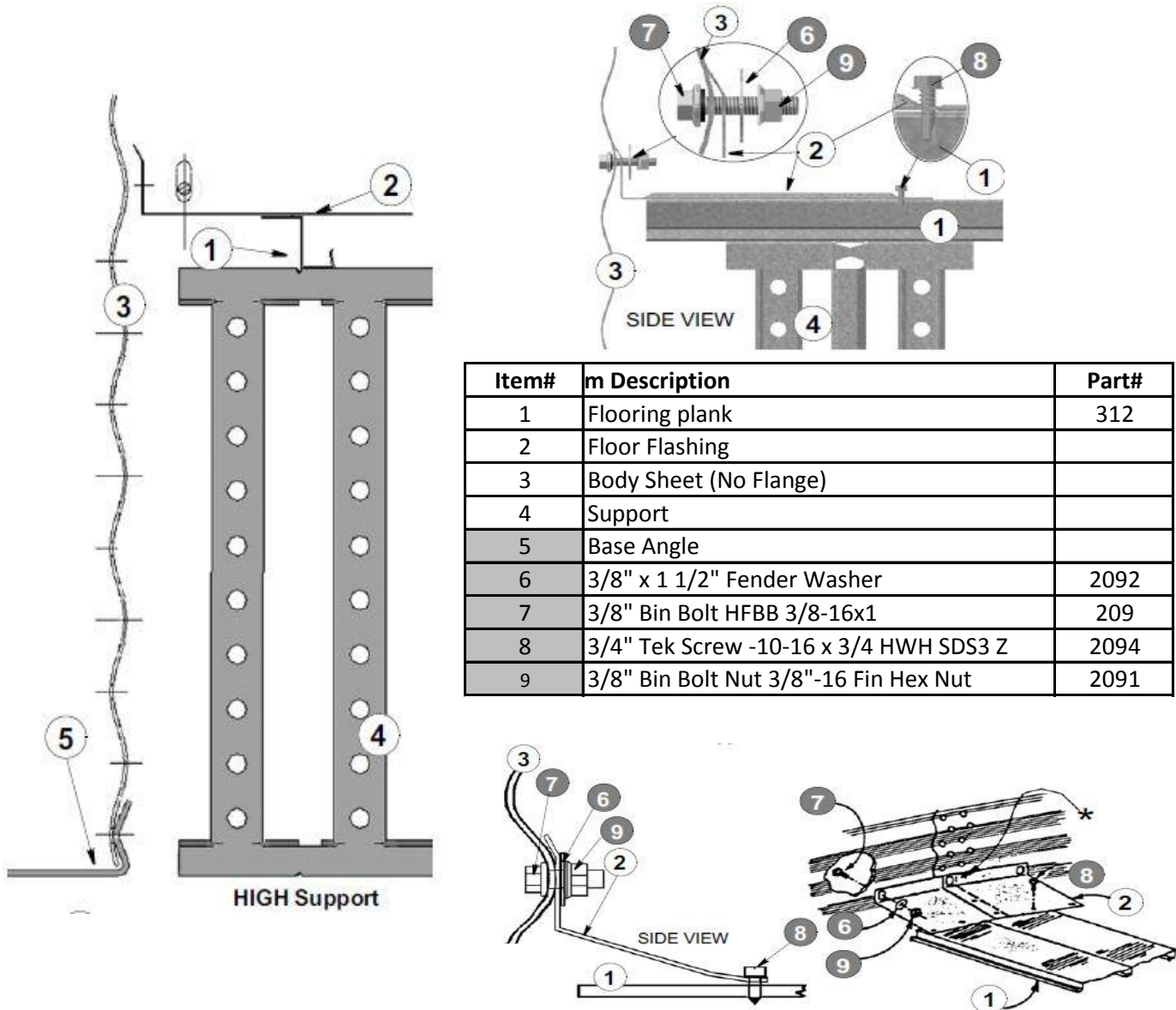


Figure 35.
Flashing Lap, WIDE 4" Corr.
NO FLANGE Bottom Body Sheet
(Base Angle used)

Bottom Body Sheets WITH a Base Flange:

If the Flashing attachment Bolt is too low, you may need to turn the Flashing upside-down and use Caulk between the Body Sheet and the Flashing. See **Figure 36**.

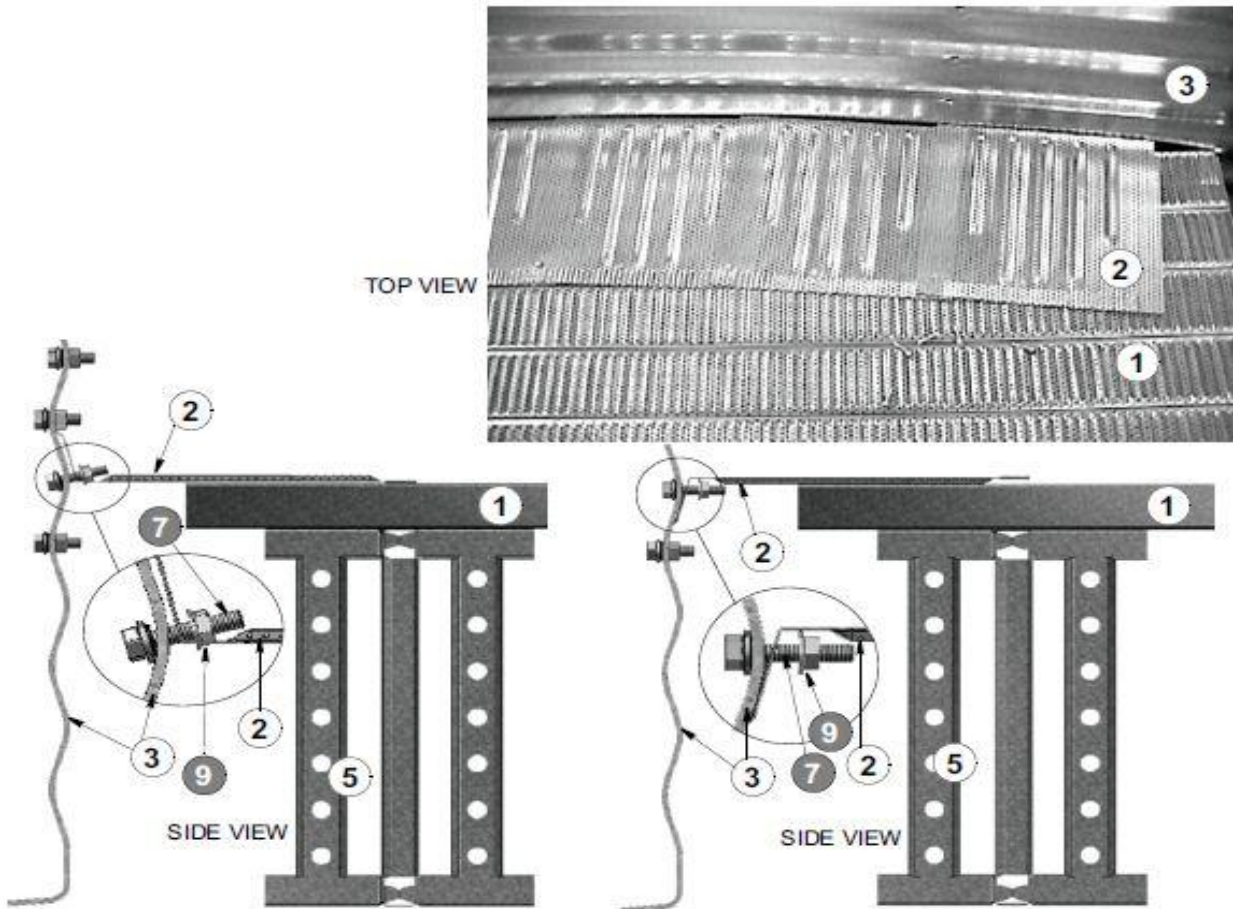


Figure 36.
Standard Flashing

Figure 37.
Flashing Upside-Down

Item#	m Description	Part#
1	Flooring plank	
2	Floor Flashing	312
3	Body Sheet (Flange)	
5	Support	
6	3/8" x 1 1/2" Fender Washer	2092
7	3/8" Bin Bolt HFBB 3/8-16x1	209
8	3/4" Tek Screw -10-16 x 3/4 HWH SDS3 Z	2094
9	3/8" Bin Bolt Nut 3/8"-16 Fin Hex Nut	2091

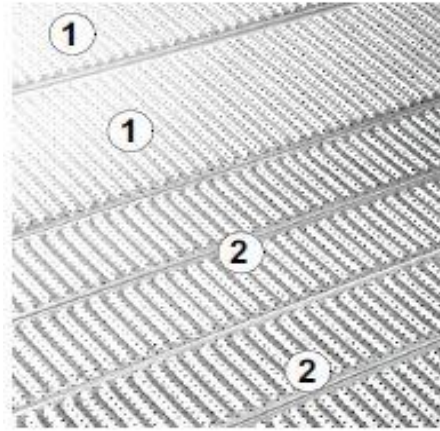
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Retrofit

All Size Perforating Truss Flooring Planks have been designed to snap into and fit in place of old-style Flooring.

Item	Description
1	Old All Size Floor Plank
2	New All Size Truss Floor Plank

Figure 39



Truss Floors must be properly installed together with the SYNTIRO Flooring Supports in order for the four (4) year period to apply.

Support Quantities
L = LONG Supports S = SHORT Supports

		STANDARD Bins										RECIRCULATING Bins			
32"	Eave Height	44"	42'	48'	54'	60'	72'	75'	78'	42'	48'	54'			
Rings	Height	Tiers	[12 802]	[14 630]	[16 459]	[18 288]	[21 946]	[22 860]	[23 774]	[12 802]	[14 630]	[16 459]			
4	11'	3	221L+6S	278L+12S	365L+12S	464L+14S	690L+15S	773L+16S	859L+19S	221L+6S	288L+14S	369L+16S			
5			237L+12S	306L+10S	399L+16S	502L+16S	760L+19S	859L+14S	925L+13S	237L+12S	318L+10S	399L+16S			
6	15'	4	257L+12S	330L+16S	441L+18S	536L+16S	822L+19S	927L+10S	991L+17S	257L+12S	344L+14S	441L+18S			
7	18'	5	263L+8S	354L+10S	473L+14S	576L+18S	890L+17S	961L+20S	1066L+23S	277L+14S	366L+16S	473L+14S			
8			265L+12S	366L+16S	489L+20S	620L+24S	970L+29S	1057L+16S	1137L+21S	295L+14S	396L+10S	507L+18S			
9	22'	6	265L+12S	374L+18S	507L+18S	652L+16S	1030L+24S	1120L+18S	1202L+36S	315L+16S	426L+14S	529L+22S			
10	26'	7	277L+14S	374L+18S	507L+18S	684L+16S	1084L+34S	1182L+16S	1270L+34S	343L+16S	446L+12S	594L+16S			
11	29'	8	285L+14S	396L+10S	529L+22S	684L+16S	1152L+24S	1246L+28S	1360L+24S	368L+14S	472L+18S	620L+20S			
12			285L+14S	396L+10S	529L+22S	724L+22S	1152L+24S	1246L+28S	1428L+34S	382L+16S	522L+18S	656L+20S			
13	33'	9	295L+14S	406L+16S	563L+22S	724L+22S	1152L+24S	1330L+18S	1428L+34S	402L+14S	522L+18S	692L+24S			
14	37'	10	305L+12S	406L+16S	563L+22S	724L+22S	1152L+24S	1330L+18S	1428L+34S	426L+16S	552L+16S	738L+24S			
15-16	40'	11	315L+16S	426L+14S	594L+16S	760L+26S	1222L+30S	1330L+18S	1526L+38S						
17-18	44'-48'	12-13	329L+12S	446L+12S	594L+16S	800L+26S	1222L+30S	1418L+26S	1526L+38S						
19-20	51'	14	343L+16S	472L+18S	620L+20S	800L+26S	1306L+30S	1418L+26S	1642L+34S						
21-22	55'-59'	15-16	343L+16S	494L+20S	656L+20S	854L+20S	1306L+30S	1528L+24S	1642L+34S						
23-24	62'	17	368L+14S	494L+20S	666L+20S	854L+20S	1398L+34S	1528L+24S	1642L+34S						
25-26	66'	18	382L+16S	522L+18S	692L+24S	908L+24S	1398L+34S	1528L+24S	1813L+41S						
27-28	70'-73'	19-20	382L+16S	522L+18S	692L+24S	908L+24S	1398L+34S	1681L+40S	1813L+41S						
29-30	77'	21	402L+14S	552L+16S	738L+24S	908L+24S	1550L+39S	1681L+40S	1813L+41S						
31-32	81'-84'	22-23	402L+14S	552L+16S	738L+24S	972L+32S	1550L+39S	1681L+40S	1979L+41S						
33-34	88'	24	402L+14S	586L+22S	790L+26S	972L+32S	1550L+39S	1837L+32S	1979L+41S						
35-36	92'-95'	25-26	426L+16S	586L+22S	790L+26S	1084L+30S	1694L+31S	1837L+32S	1979L+41S						
37	99'	27	426L+16S	586L+22S	790L+26S	1084L+30S	1694L+31S	1837L+32S	1979L+41S						