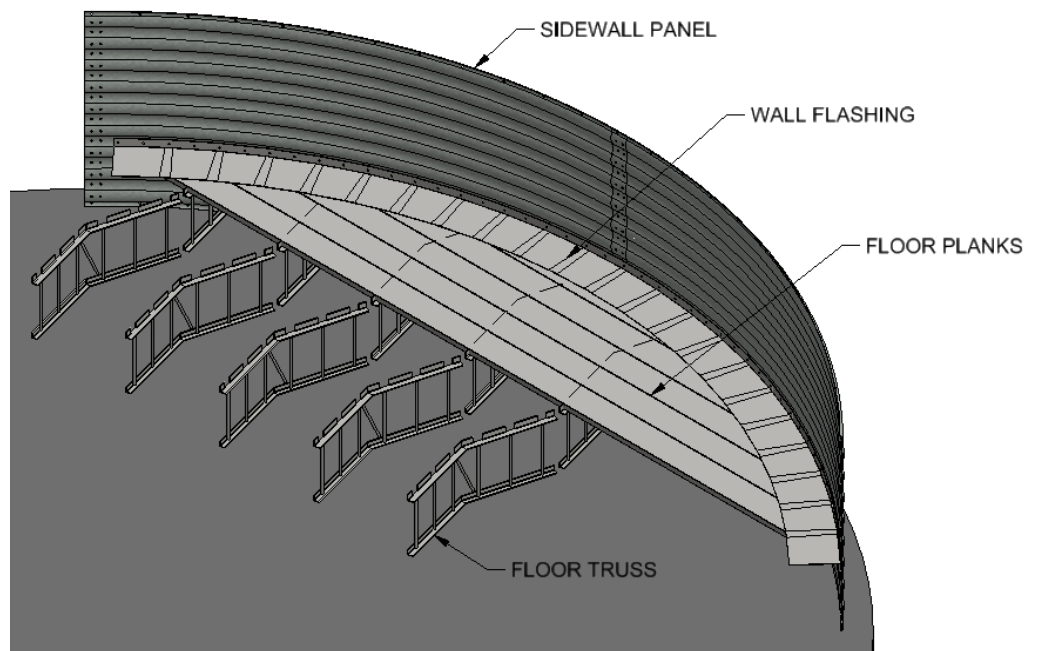




# AERATION FLOOR INSTALLATION MANUAL





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## INTRODUCTION

The objective of this manual is to provide the method for installing the Aeration Floor System for Corrugated Bins of different models (30 FT - 42 FT). This manual includes essential information and a step-by-step procedure of the Aeration Floor System installation at the site.

### 1) AERATION FLOOR SYSTEM ELEMENTS

The Aeration Floor System comprising the following

- a. Floor Truss
- b. Floor Planks
- c. Wall Flashing

Floor trusses are supported on the concrete floor and floor planks are fitted upon it. Wall flashings cover the gap between the floor planks and the Sidewall panel of bin.

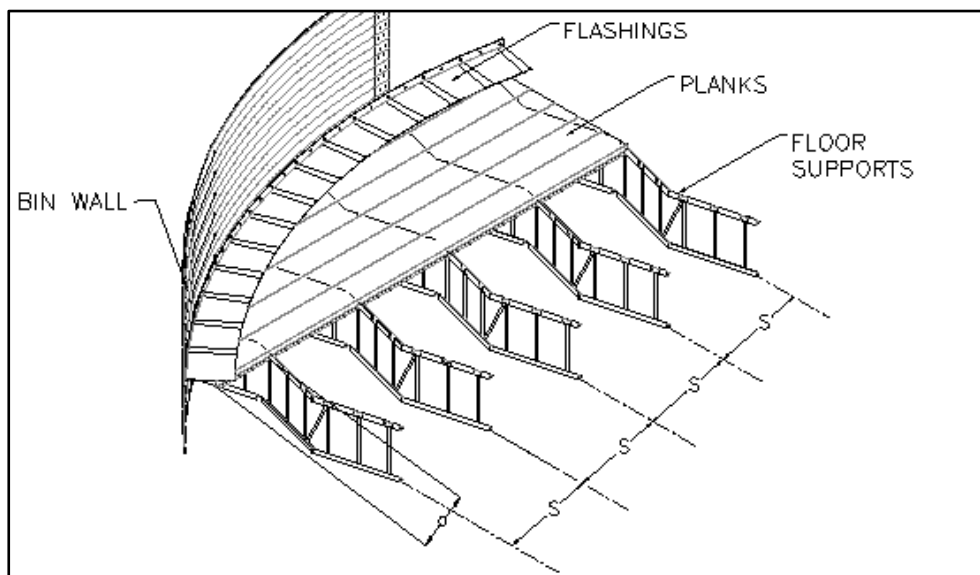
**Note:**

Please refer to the Bin Assembly Manual for bin sidewall specifications.

### 2) SITE REQUIREMENT

During the installation of an aeration floor, the following 3 points must be adhered to always, under all circumstances. If there is a shortage of floor supports when nearing the completion of a floor installation, additional supports should be obtained rather than compromising any of the following 3 points.

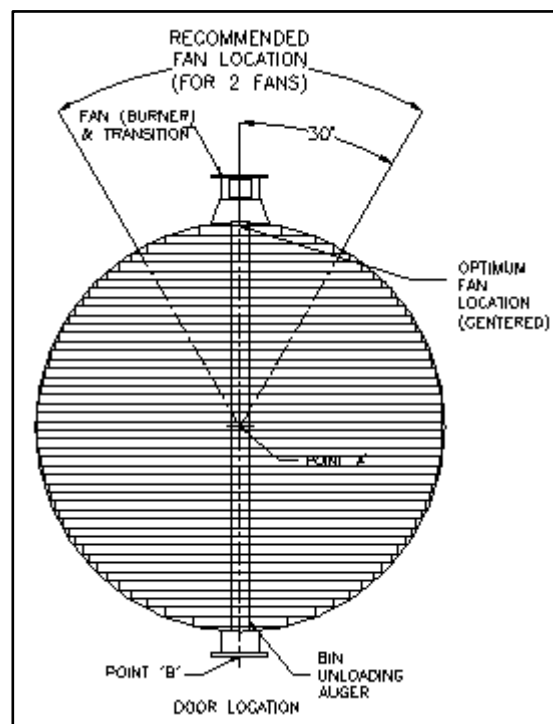
1. The spacing between adjacent floor supports being assembled for the floor should not exceed the "S" dimension and all 3 plank legs need to be supported.
2. Support within the overhang "O" dimension to be provided from every end of a plank against the wall, where the split planks come together, or where planks are cut to accommodate the unloading wells.
3. If there is a short plank created to accommodate an unloading well, at least two supports are required to support each end of the short plank, even after satisfying above two conditions.



### 3) SITE PLANNING

Plan the installation in advance. Few basic considerations are as follows:

1. Determine where the unload auger will exit the bin. Usually, this is directly below or near to the door to allow access into the bin once the grain stops flowing. When uprights are present, the unload auger discharge hole, and fan openings, must be between the uprights. These openings should also not be placed on vertical wall sheet seams.
2. To achieve maximum grain drying efficiency, the aeration fan and unloading auger should be on opposite sides of the bin. 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.



3. An oval bin can result in excessive gapping around the perimeter of the bin at some locations, and the need to trim multiple planks at other locations. Therefore, the aeration floors are designed with the assumption that the bin itself is round.
4. Aeration floors are designed to be supported by smooth, level concrete with little allowance for rough, uneven surfaces.

## 4) SITE PREPARATION

This is the pre-work that needs to be done before installation.

### a. UNLOAD AUGER INSTALLATION

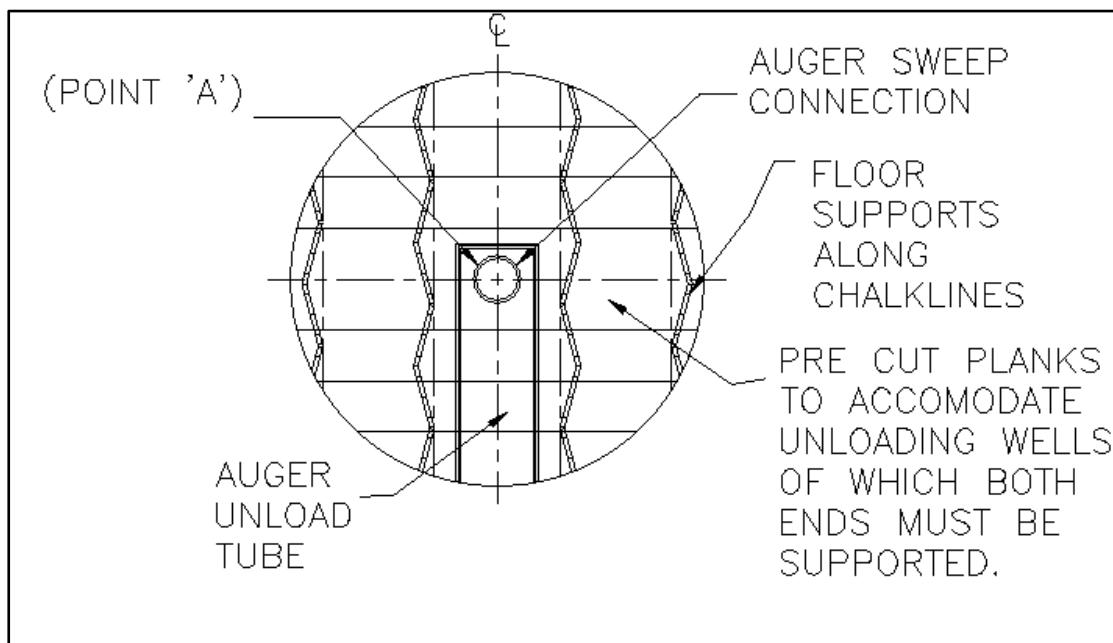
The unload auger must be installed prior to the floor installation.

Unload auger to be installed at the location determined in the Planning section and as per the manufacturer's instructions. The pivot point of the sweeping auger should be positioned directly over the centre of the bin (point A) and the auger tube should sit directly over the centre chalk line.

It may be necessary to raise and support the unload auger to ensure that the well flanges are properly positioned relative to the floor. Adequate support along the length of the auger shall be ensured. Ensure that the holes cut through the bin wall to accommodate the unload system 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 system and span over the tube. For smaller bins with larger support spacing's ( $S \geq 24"$ ), the required "S" spacing will accommodate the clearance required to span the unload auger. For bigger bins with smaller support spacing's ( $S < 24"$ ), the combination of truss supports and double supports will provide the necessary clearances. See the Floor Assembly Procedure for details.

The unloading wells must also be accommodated by planks to fit. For split floors, this may result in a short plank on one side of the unloading well. Both ends of this short plank segment must be supported.



## b. FAN TRANSITION INSTALLATION

Install the fan transition(s) prior to the floor installation. Install the fan transitions at the location(s) determined in the Planning section and as per the manufacturer's instructions. Transitions should be placed between stiffeners, and away from vertical wall seams. Vertical support within the fan transitions is required, especially for non-stiffened bins. Seal the openings against moisture penetration.

## 5) OVERVIEW OF LAYOUTS

### a. FLOOR SUPPORT LAYOUT

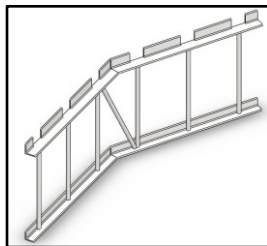
Floor support layouts are different for changing bin diameters and for the number of tiers of grain being supported. To properly assemble a floor for any given bin diameter and tier height, both the floor plank layouts and the floor support layouts are required. For the floor combination being assembled, consult the charts to determine the following variables. These will be required when assembling the floor.

S – The maximum spacing of the floor supports (floor support layout)

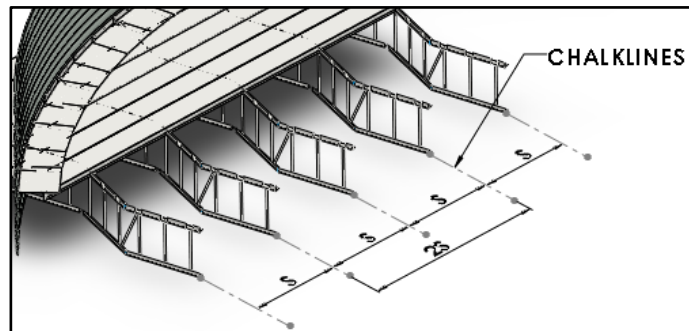
O – The maximum amount of overhang that the free end of a plank can extend beyond a floor support ( $O = S/3$ ) (floor support layout)

#### SUPPORT ORIENTATION

Floor Truss and are oriented as shown. Note that the upper support rails have notches to properly align the floor planks.



FLOOR TRUSS

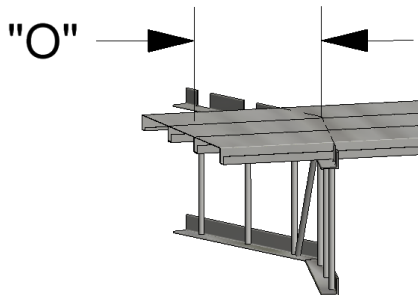


#### SUPPORT SPACING "S"

"S" dimension must not be exceeded for any given bin diameter and tier height. Supports should be positioned such that the distance between any corresponding points between adjacent supports does not exceed the maximum "S". The best method of establishing a consistent spacing is to orient the supports in the centre 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. See the Step by Step Instructions and specific floor support layouts for details.

## OVERHANG SPACING "O"

At the ends of planks, the unsupported overhanging plank lengths along both the plank sides must not exceed the "O" dimension provided. The short single supports are utilized to support the end of a single plank as illustrated. 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 both sides of the floor planks must be supported.



## b. FLOOR PLANK LAYOUT

Floor plank layouts are consistent for any given bin diameter. All the floor planks are pre-cut.

### AERATION FLOOR PLANK IDENTIFICATION

Floor plank details such as Quantity and Length are identified in the Floor Plank Layouts in section 8.

The first and last planks for the given bin diameter are noted in the Plank Layouts. Plank identification numbers then increase sequentially as they progress towards the centre of the bin. Centre plank may be unique depending on the configuration of the floor plank layout and numbered other than the above labelled "1" and "2". It must be the highest numerical values are the Refer "FLOOR PLANK LAYOUT" section in this manual.

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.

### CARE OF AERATION FLOOR PLANKS

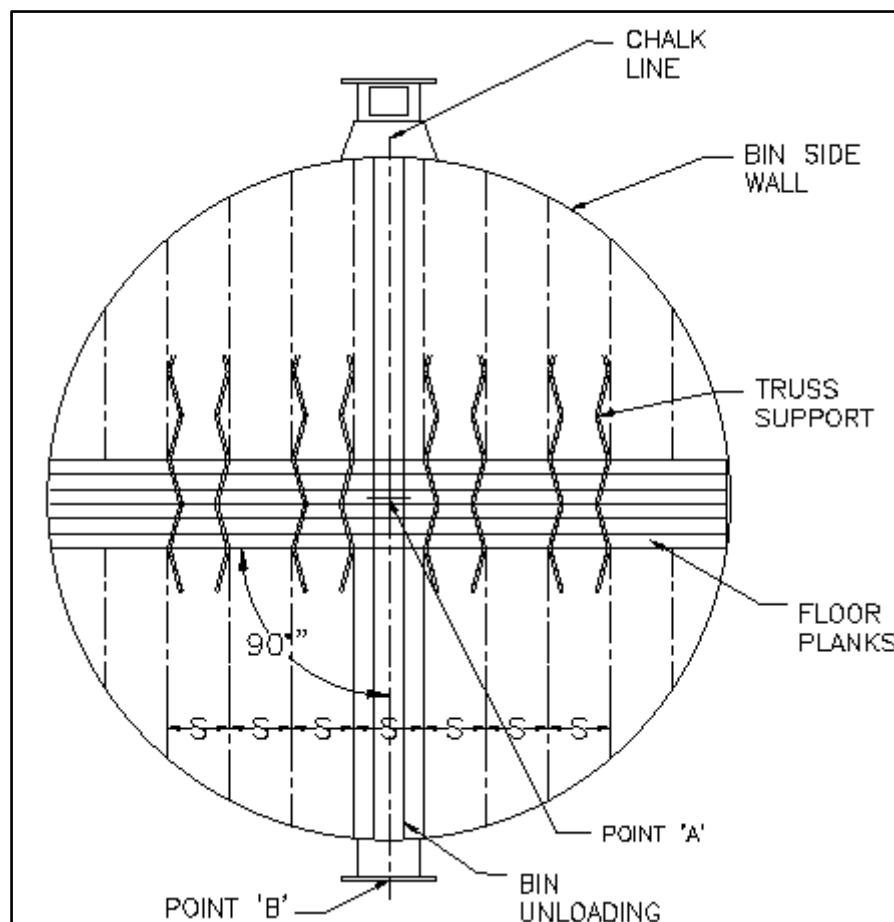
Proper care during transporting and handling must be observed to avoid damage to the planks. Damaged planks should be replaced or properly repaired before installation. Dirt or ice on the surfaces of the mating floor plank should be removed prior to installation to avoid damage and to ensure proper mating.





## 6) STEP BY STEP INSTRUCTIONS

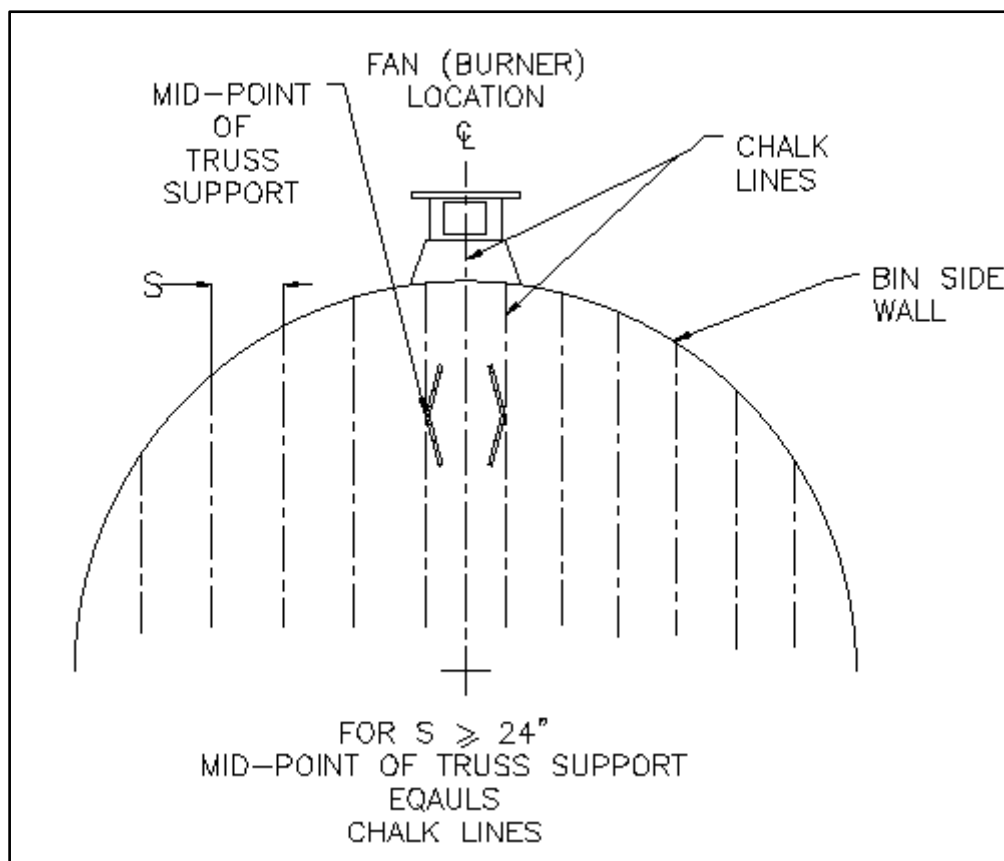
1. Firstly, ensure that the unload auger and fan transitions are installed. (See section on Site Preparation)
2. Next measure and locate the exact centre of the bin. mark this point as "A"
3. Then mark where the unload auger will exit the bin mark this point as "B" (See section on Site Preparation).
4. Now mark a chalk line across the complete centre of the bin starting at point B, passing through point A and continuing to the other side. This main centre 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.
5. Determine the floor support spacing "S" from the support layout charts for the bin diameter and tier height in question. From the centre chalk line already marked, measure S/2 on either side and mark two more chalk lines, each parallel to the centre line. Continue to mark parallel chalk lines at spacing's of "S" across the complete bin. The floor supports sit along these lines.
6. Note: Except where noted for an "S" spacing of  $S < 24$ " floor supports do not sit along the centre chalk line as this would interfere with the unload tube.



## 7. TRUSS SUPPORT INSTALLATION

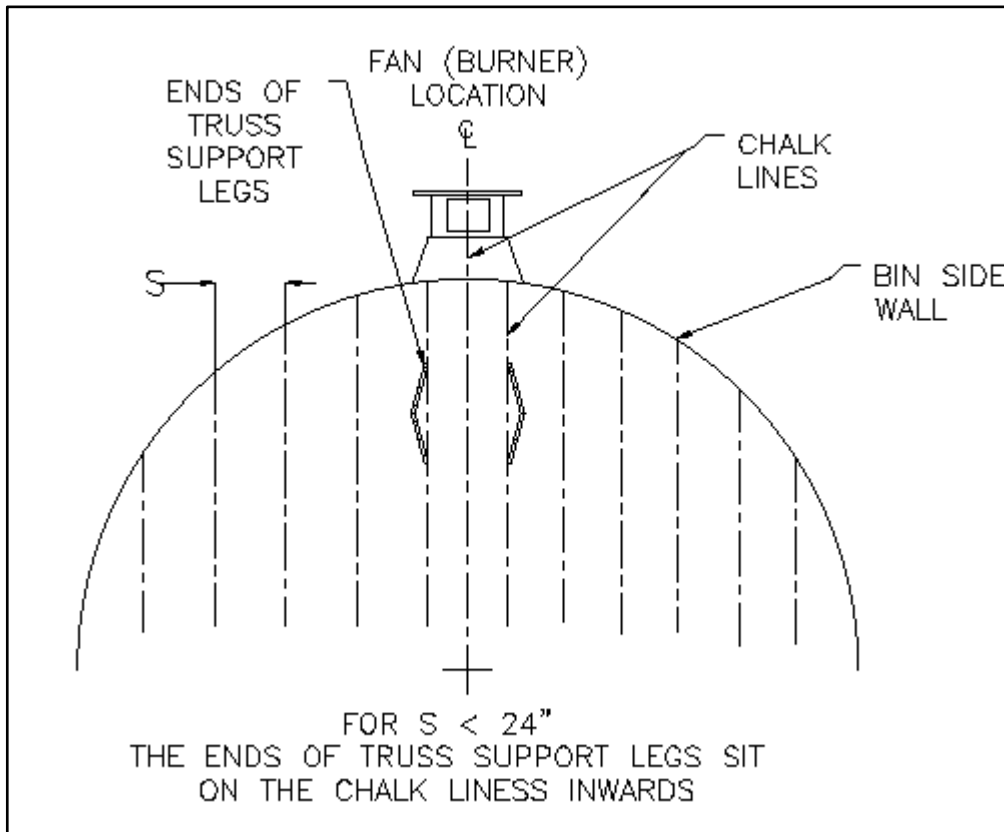
### FOR SUPPORT SPACINGS “S” $\geq$ 24”

1. Do not install a support along the centre line.
2. Place the first row of floor supports as illustrated, on the chalk lines spaced at the “S” dimension.
3. Note that the midpoint of the truss supports should sit on the chalk lines with the ends pointing inwards such that no corresponding distance between adjacent supports exceeds the “S” dimension.
4. For “S” spacing's  $\geq$  24” 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).



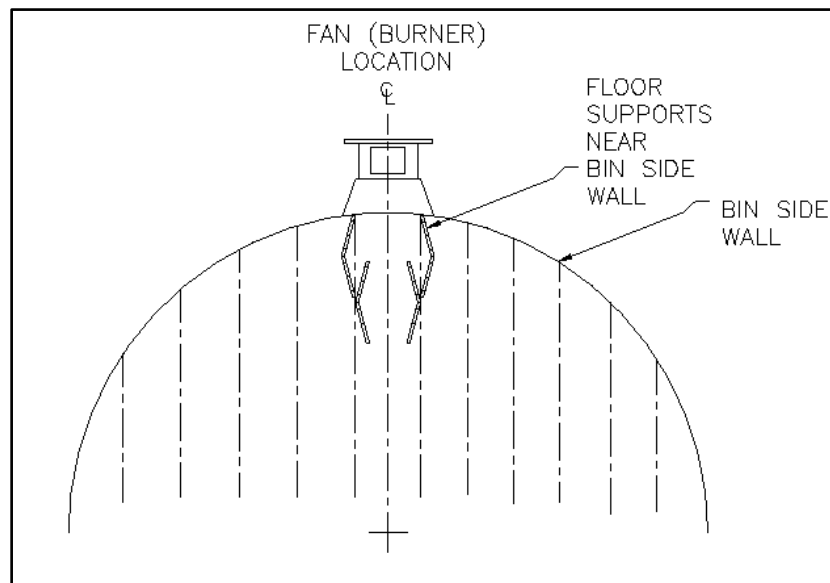
FOR SUPPORT SPACINGS "S" < 24"

1. Do not install a support along the centre line.
2. Place the first row of floor supports as illustrated, on the chalk lines spaced at the "S" dimension.
3. Note that the ends of both legs of the Truss supports sit on the chalk lines with the ends pointing inwards. i.e., With the ends of the two legs positioned along the chalk lines.

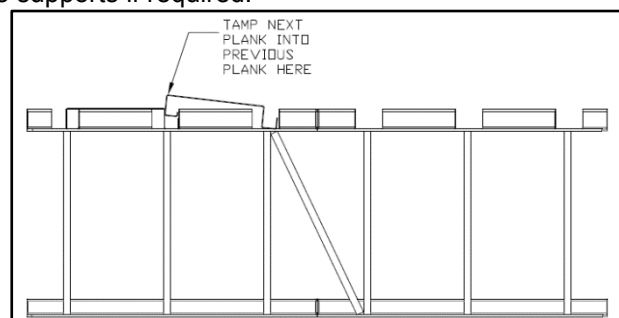


## 8. FLOOR PLANK INSTALLATION

- i. Place the 1st plank on top of the Truss supports and position such that the outer leg of the plank and the bin wall equals the plank measurement from the appropriate layout chart.
- ii. All planks should be centred such that the space at each end is equal. Add additional floor supports along the chalk lines where required. Check to ensure that the overhangs on the ends of the plank do not exceed the maximum allowable “O” dimension provided in the appropriate layout charts.
- iii. When installing truss supports near the bin wall, follow the drawings as close as possible to ensure maximum spacing between supports isn’t exceeded, using single supports where necessary.



- iv. Position the 2nd plank adjacent to the first and snap into place by applying downward pressure on the mating seam. Using a plastic-coated sledge hammer in a tamping motion works well...care must be taken to not damage the planks. Placement of planks will be perfect if the planks are properly aligned to the notch at the top of the support. This procedure is to be started at one end of the plank and continued to the other end. Add additional truss supports as required consistently along the chalk lines. Again, check the overhang to determine if the “O” dimension is being exceeded and add single supports if required.



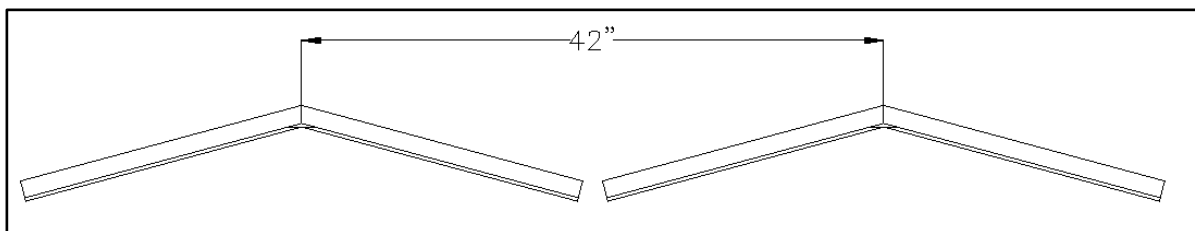
## IMPORTANT NOTE

Continue to install floor supports and planks as per the previous instructions, and work your way across the bin. The specific floor plank and support layout drawings for the bin are shown in Section 7. As planks cover supports spaced along any given chalk line, additional supports with two legs are added in columns to continue providing support along chalk lines. Review the floor plank layouts and floor support layouts for the specific bin in question for guidance.

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, 3 or 4 planks installed, another row of supports added and so on. Consistent support rows also ensure consistent “S” spacing’s. Remember that after installing any plank, the overhang dimension should be verified and a short single support added if necessary.

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 Truss supports in a column slightly differently, to provide overhang support and yet maintain the necessary “S” support spacing. Examples of this are provided within the accompanying illustrations and within the Support Layout drawings.

9. The distance between two floor supports shall be 42” such that each support is always supporting a full 4 plank widths, which are centred on every support. This is what is reflected in the support layout drawings



10. After installation of a few planks the floor may seem to be a bit unstable. The flashing pieces can start to be installed which will tie the floor to the bin wall and stabilize the system. Install the flashing as per the instructions provided in the Flashing section. If desirable, the flashing can continue to be installed as you go
11. It may be necessary to cut planks to accommodate the unloading wells of the unload auger. Install as per the guidelines provided in the Unload Auger Tube section. Ensure that the gaps around the unloading wells are not excessive and are covered by the well flanges, that the overhangs are properly supported and that the “O” dimension is not exceeded. Any planks cut completely should be supported within the allowable overhang dimension. Any planks that were notched should have the cut legs also supported within the “O” dimension. If a short plank is created in accommodating an unloading well, insure that supports are used to support