

# ROOFSCREEN INSTALLATION MANUAL



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Toll Free 866-766-3727

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## INTRODUCTION

### THE ROOFSCREEN SYSTEM

The RoofScreen system was designed to simplify the process of building roof-top equipment screens. Our bolt-together pre-manufactured system is easy to install and does not require any special skills. Your basic construction experience and this installation manual are all you need. We have reduced the normal learning curve for you by providing all the methods, tricks and tips we have developed over time for installing the RoofScreen system. When you follow this manual, you will be pleased at how fast and simple this system is.

### THIS MANUAL

This manual is designed to illustrate the basics of installing our RoofScreen System. Every job is different and may require variations from the procedures and materials shown in this manual. However, this will give you the concept of how the system is used, and will illustrate the versatility and flexibility of the design.

### APPLICATION

Our RoofScreen system is designed to be installed on flat to medium sloped roofs with any type of deck and framing system. However, this system is very versatile, and can be used in a variety of other conditions. It is important to understand that any installation requires engineering calculations by a licensed structural engineer to ensure its adequacy for the specific conditions that apply.

## SYSTEM OVERVIEW

### COMPONENTS

The following components are for typical installations. Consult your shop drawings for specifics regarding your project and components that may not be included in this manual.

#### BASE SUPPORT

These are the steel stanchions that mount the RoofScreen System to the roof structure. They are 6"x 6" steel boxes with holes in the bottom for the attachment bolts to the structure.

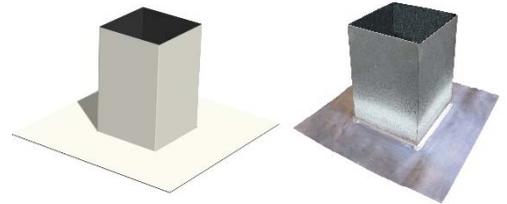


BASE EXTENSION

Base Extensions bolt directly to the top of a Base Support when extra height is needed for thick insulation. Consult your shop drawings to determine if they are included in your order and how they should be fastened.

ROOF FLASHING

Flashings, available in PVC, TPO, Galvanized and Lead, are optional components from RoofScreen. Check your order and shop drawings to determine if they were included.

BASE GASKET (BG11)

The Base Gasket is a self-adhesive EPDM foam seal that is applied around the top of the Flashing before the Base Assembly is installed.

BASE ASSEMBLY (A10, A12, A18)

Depending on your frame configuration, the Base Assemblies may be with, or without end connectors attached. Consult your shop drawings to ensure the correct assembly is installed in the proper location.

FIELD CONNECTOR WITH END CONNECTOR (A13 ASSEMBLY)

This fitting connects the end of a tube to any point along the length of another tube. For convenience, these fittings are supplied with the bolt, nut and washer loosely installed for quick access during installation.



### TUBING (T10, T11, T13, T12)

Tubing is provided in different diameters and gauges as required by the structural calculations. It is important to carefully review the shop drawings to determine the proper locations for each tube.



### HAT SECTIONS (H10, H13, H20)

Hat Sections are typical members used as horizontal girts to span between the RoofScreen Frames, and allow the panels to mount in a vertical orientation. Hat sections would not be included in your order if the panels are designed to be in horizontal orientation.



### BOLT WITH POLY WASHER (B11)

This is the bolt used to fasten the Base Assembly to the top of the Base Support. It features a special undercut shoulder and sealing washer. Note that the washers are designed for one use only. If you remove the bolt after tightening, you should replace it with a new bolt to ensure a watertight seal.



### TEK 3 SCREWS (S10)

The S10 Tek 3 Self-Drilling Screw is the fastener used for most of the fittings on RoofScreen Framing. Tek 3 screws have a short drilling point and are typically used when fastening to thin metal like tubing and hat sections. There are occasions when a different screw is specified so please carefully review your shop drawings.



### TEK 5 SCREWS (PART NUMBERS VARY)

Tek 5 Self-Drilling Screws have a longer drilling point and are useful for fastening to thick metal like steel joists and wide flange beams. Types and lengths of these screws vary by project so please carefully review your shop drawings.



## DEFINITIONS

For clarity, it is helpful to understand some of our standard terms. Please refer to Figure 1 below and review the following terms. The frame shown is typical and may not match the configuration of your project. Review your shop drawings for specifics.

### FRAMES

The assembly of Tubes and Connectors, typically in a triangular configuration, mounted on 2 Base Supports, similar to the illustration in Figure 1.

### FRAME SPACING

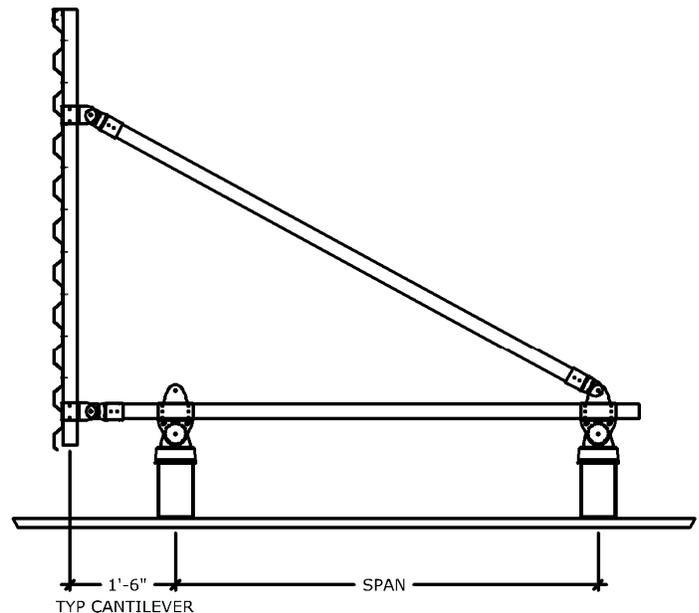
Distance from frame to frame across the roof. Spacing may vary depending on wind load and other factors. Consult shop drawings for specifics.

### SPAN

Center-to-center distance from the front Base Support to the rear Base Support on any given frame (see Figure 1). Span may vary depending on frame height, wind loads and other factors. Consult shop drawings for specifics

### CANTILEVER

Distance from the center of the front Base Support to the vertical tube (see Figure 1). The Cantilever allows front-to-back adjustment of the screen to plane out the panels during installation.



TYPICAL ROOFSCREEN FRAME

**FIGURE 1**

## PREPARATION

### MATERIAL HANDLING

When receiving material, check to see that the shipping documents match the shipment. Count the number of packages and quantities within each package to the extent possible. Check for damage at the same time. If damage or other discrepancies are found, write a note to that effect on the bill of lading, and have it signed by the driver.

Tubing and hat sections for large orders may be delivered via flatbed truck in bundles with metal bands. For smaller orders, tubing and hat sections may be in wood crates and delivered via flatbed or enclosed trailer. Fittings and hardware are packaged in heavy cardboard pallet crates. These materials are heavy and will require a fork lift or crane to unload.

- ! Do not lift bundles by the metal bands. Either use a fork lift from underneath, or use straps around the entire bundle.
- ! Do not lift wood crates by the slats or cross members. Either use a fork lift from underneath, or use straps around the entire crate.
- ! When using a fork lift, spread the forks as far as possible to balance the load. Drive slowly when moving long bundles over uneven surfaces to avoid tipping the load.
- ! When using a crane or any other type of hoist, position the sling straps so that the space between the straps is at least 1/3 the length of the bundle. Use sling straps with looped ends, running one end of the strap through the loop at the other end to cinch the bundle when lifted.
- ! When setting the load on the roof, put wood blocks under it to protect the roof and allow space to remove the sling straps.
- ! Heavy bundles and crates should be spread out on the roof to avoid overloading the roof structure. Place the material directly over major supports such as beams or trusses.
- ! Bundles of tubing should be positioned parallel to the slope of the roof so they don't roll down-slope when unbundled.
- ! Use caution when cutting metal bundle straps as the tension on the strap may cause it to spring up potentially causing injury.

## MATERIAL STORAGE

If the material is going to be stored outdoors for any period of time, we recommend covering it with plastic or tarps. Bundles of tubing and hat section can be left uncovered if the load is raised at one end to allow water to run off.

## TOOLS

The following is a list of recommended tools to perform the installation:

1. 200' tape measure
2. String line
3. Levels (large one and 6" "torpedo")
4. Construction crayon
5. Ear plugs
6. Safety glasses
7. Heavy duty extension cords
8. Large Vise Grip Clamps
9. Open end and socket wrench set
10. Power drill
11. ½" drive power impact driver
12. Cordless drill/driver gun
13. Self-leveling laser level with tripod.
14. Power skill saw with metal cutting blade
15. Reciprocating saw with metal cutting blade

# INSTALLATION

This manual covers the techniques and procedures for installing a typical RoofScreen. There are many variables that make each project unique and it would be impossible to cover all of them in these instructions. Please use this manual as a general guideline that covers the basic concepts for installing our product. If you have a specific question that is not covered in this manual, or you would like some help with your installation, please feel free to contact us at 866-766-3727.

## REVIEW SHOP DRAWINGS

At this point, it is a good idea to read this entire installation manual in conjunction with reviewing the shop drawings. The shop drawings are very detailed and contain specific information about how to properly install the RoofScreen that may not be covered in this manual. It is highly recommended to obtain a full-size print of the drawings so all of the details and dimensions are readable.

The drawings will include one or more section details of the RoofScreen frames, similar to Figure 2.

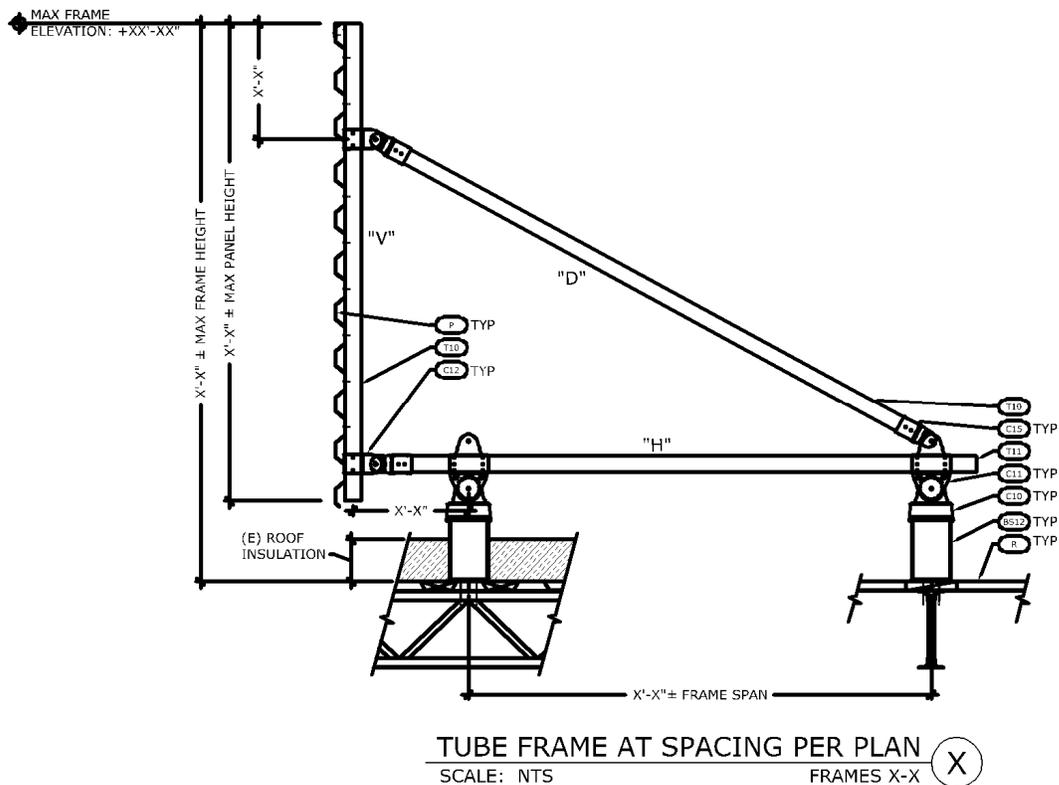


FIGURE 2

The frame configurations are based on engineering calculations and should be followed exactly. If any parameters cannot be followed, please contact us at 866-766-3727 for assistance. The only parameters that can be field adjusted without violating the engineering constraints are the following:

- **Frame Spacing:** The frame spacing dimension may not be exceeded, but the frames may be placed closer together if necessary.
- **Cantilever:** The cantilever (distance from the center of the front Base Support to the center of the vertical tube) cannot be exceeded, but it may be shortened if necessary.

The section detail(s) cross reference to the roof plan layout on the drawings. If multiple frame types are included in your project, it is important to ensure you build the frames to the specifications in the details, and place them in the correct locations in the layout. Please also note the callout bubbles on the details, which reference the specification notes. These notes contain important information about the installation, including quantity and type of fasteners required for different components.

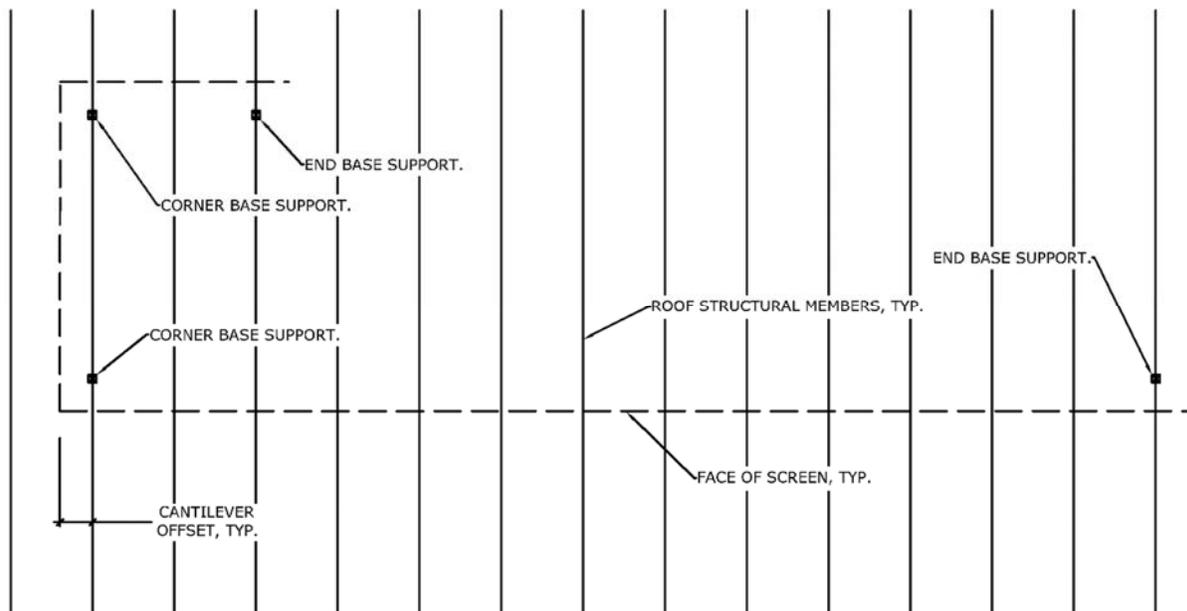
The frame details also contain the tubing labels, typically H, V and D (horizontal, vertical and diagonal), to correspond with the pre-cut tubes in your shipment.

## INSTALL BASE SUPPORTS

### STEP 1: INSTALL THE CORNER AND END BASE SUPPORTS

Using a long tape measure, lay out the corners and ends of the new RoofScreen by measuring from roof edges, parapet walls or other features on the roof. Mark the location for each corner & end Base Support (see Figure 3).

Keep in mind that the face of the screen will be offset by the cantilever distance designed into the frame. These corner and end Base Supports can be fastened to the roof structure according to the specs and details shown in the drawings.



**FIGURE 3**

**STEP 2: INSTALL REMAINING BASE SUPPORTS**

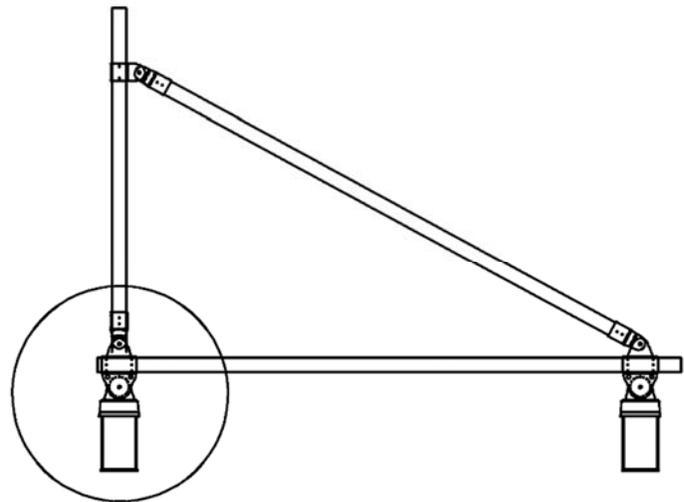
Install the remaining Base Supports, following the layout in the shop drawings. Base Supports should be installed in a straight line. The level of accuracy for getting the Base Supports in a straight line depends on the type of frame you are installing, as explained below.

**Cantilevered Frame:** A cantilevered RoofScreen frame has a “front cantilever” as shown in Figure 1. This cantilever is designed to allow front to back adjustment of the horizontal tube. This adjustment allows the face of the screen to be in plane, even if the Base Supports are not installed in a perfect line. For this standard type of frame, the Base Supports can be as much as 2” out of plane, and the frame adjustment can make up for it later.

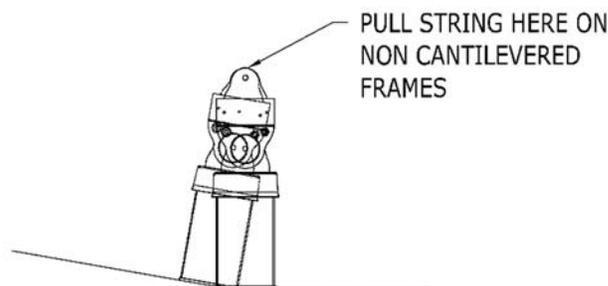
Pull a string line tightly between corner Base Supports to use as a guide for lining up the rest of the supports along that segment. If the distance between corners is too far to use a string, you will need to use a laser level set up in vertical mode.

**Non-Cantilevered Frame:** Sometimes, due to engineering or space constraints, the frames are configured without a front cantilever. An example of such a frame is shown in Figure 4. With this type of frame there is no front-to-back adjustment capability to plane out the face of the screen. Notice the vertical tube connects directly to the top of the Base Assembly, so it is critical to install the Base Supports in a perfectly straight line.

Since the supports must be in a perfectly straight line for this type of frame, it is recommended to install the Base Assemblies on the corner Base Supports and use the bolt hole in the top of the Assembly as the tie-off point for the string line. This ensures the vertical tube will be in plane even if Base Supports are tilted in different directions due to bumps or slope in the roof (see Figure 5). The remaining Base Supports should then be installed by temporarily mounting a Base Assembly on each one to line up the top bolt hole along the string.

**FIGURE 4**

If the distance between corners is too far to use a string, you will need to use a laser level set up in the vertical mode.

**FIGURE 5**

**STEP 3: INSTALL FLASHING AND ROOFING**

Have a qualified professional roofing contractor install the Flashings over the Base Supports and roof them in with appropriate methods for the type of roofing system being used.

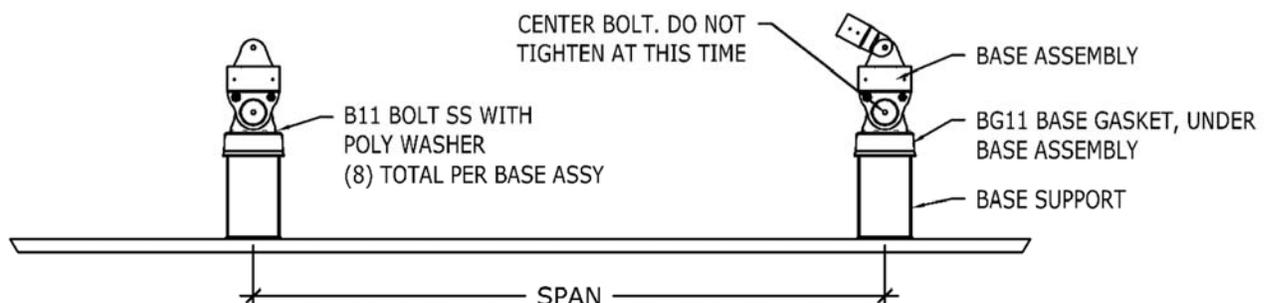
Note: Use care in handling the Flashing Boots. If they are bent and dented from rough handling, they may not fit easily over the Base Supports.

Either the roofer or the RoofScreen installer should adjust the height of the Flashing Boots to account for thickness of roofing and insulation. The Base Flashing should terminate flush with the top of the Base Support when possible, but not more than ½" below.

**STEP 4: INSTALL BASE GASKETS AND BASE ASSEMBLIES**

With all Base Supports installed and roofed in, install the Base Gaskets over the flashings. The gasket strip is self-adhering and has a removable backing. Peel the backing off and stick the gasket on the outside of the flashing, flush with the top. The gasket is not meant to be pulled or stretched during installation however it may be necessary to stretch it slightly at the end so the ends meet evenly.

After the Gaskets are in place, install the Base Assemblies. Refer to the shop drawings to determine the correct Base Assembly for each frame. Base Assemblies are attached with (8) Bolts with Poly Washers, Part# B11. The bolts thread into pre-tapped holes in the top of the Base Support. Start the bolts by hand, threading each one a few turns to make sure they are not cross-threaded. Once all 8 bolts are started, tighten the bolts moving in a crisscross pattern similar to tightening lug nuts on a car wheel. Do not tighten the center bolt in the RotoLock of the Base Assembly at this time. See Figure 6.



**FIGURE 6**

## ASSEMBLE FRAMES

### STEP 5: DETERMINE FRAME HEIGHT

Sloped roofs will have varying Frame Heights. The frame detail(s) shown in the shop drawings represents the tallest frame allowed by engineering. All tubes are pre-cut and delivered to dimensions of that tallest frame. Since the top of the screen is typically at a consistent elevation, the tallest frame on the project is where the roof slope is at its lowest point. Frames located where the roof slope rises beyond the lowest point will be built shorter as necessary by trimming the tubing lengths. See Figure 7.

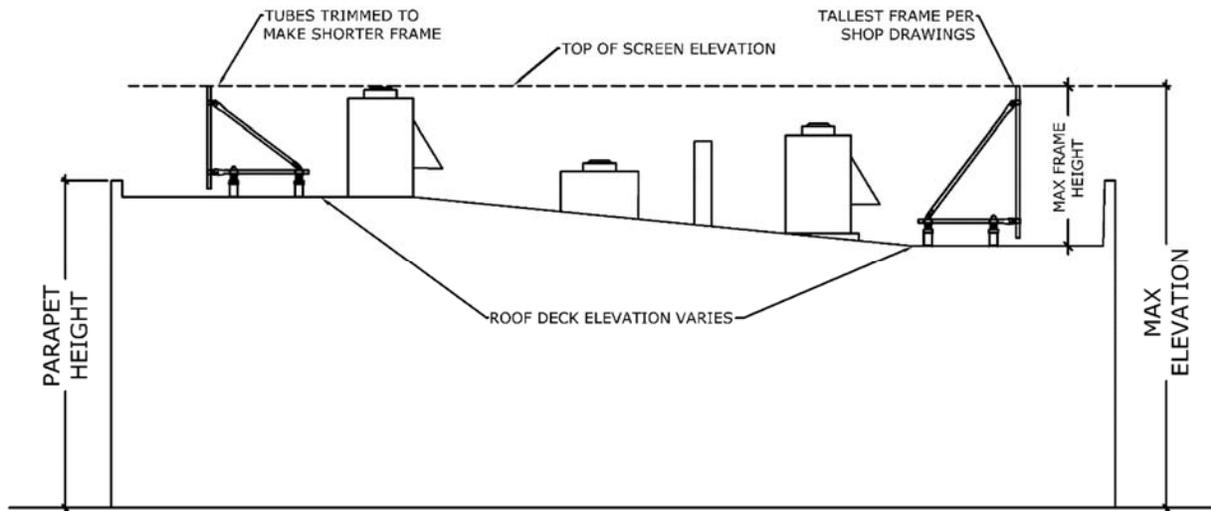


FIGURE 7

The detail(s) in the shop drawings also show the maximum elevation to the top of the screen from ground level. This maximum engineered height cannot be exceeded. Set a laser level to the desired top-of-screen elevation and measure from the laser beam to the lowest point in the roof (where a screen will be located). This measurement represents the tallest frame on the project and must be equal or less than the max frame height shown on the shop drawings.

### STEP 6: INSTALL HORIZONTAL TUBES

Locate the horizontal tubes labeled H, and A13 Field with End Connector Assemblies. Attach the assemblies to tube ends with (4) Tek 3 Self Drilling Screws, P/N S10. See Figure 8.

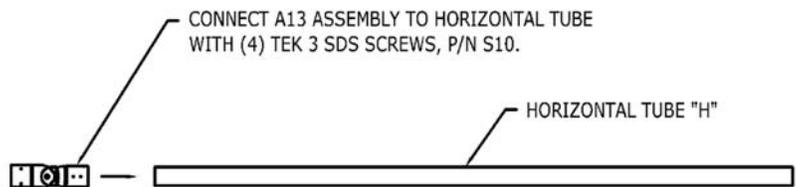


FIGURE 8

Slide the tubes through the Base Assemblies as shown in Figure 9. To ensure the wall is straight when complete, it is critical that the A13 assemblies installed on the horizontal tubes are in a straight line along each segment of the RoofScreen. This is done by sliding the horizontal tubes in or out of the Base Assemblies. For short runs, use a string line for this step. The most effective method is to set the tubes on the first and last frames in a run, then pull a string line between the two to set the remaining tubes. If the run is long (over 50'), or if it is a windy day, it is recommended to use a laser level in vertical mode instead of a string line. Remember, the frame cantilever dimension noted on the shop drawings should not be exceeded.

Once all horizontal tubes are properly aligned, install the Self-Drilling Tek Screws, Part# S10, in each Base Assembly. Note that not all holes in the Base Assemblies need screws. Refer to your shop drawings for correct quantity and location of required screws. Before these Tek Screws are installed, it is important that the A13 assemblies are oriented vertically to allow the Vertical Tube (installed in the next step) to be vertical and plumb.

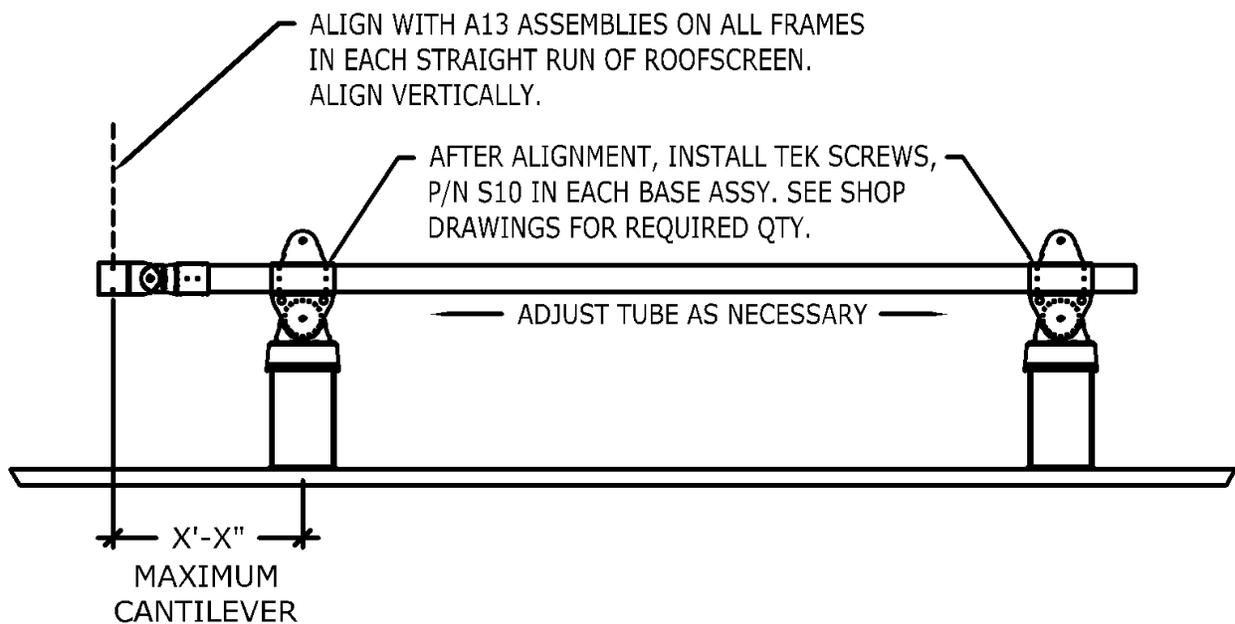
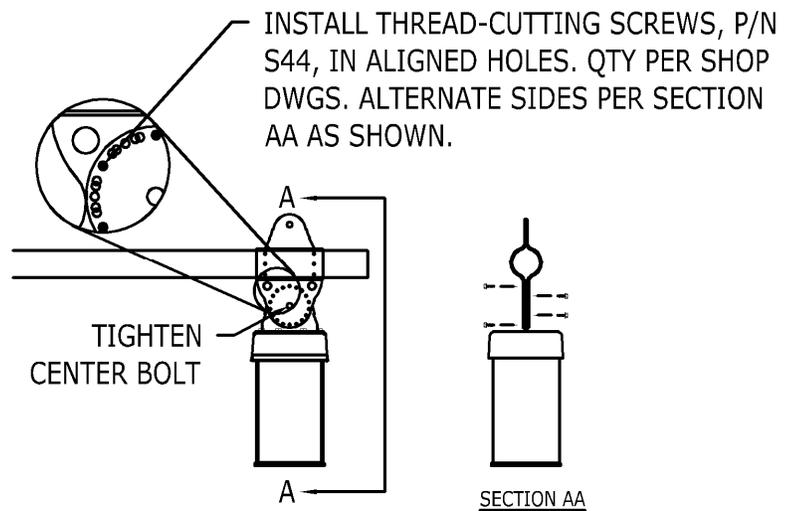


FIGURE 9

Next, install the Thread-Cutting Screws (Part# S44) in the aligned holes of the RotoLock feature of the Base Assembly. Alternate sides per screw as shown in Figure 10 so that approximately ½ of the screws are installed from each direction.

**Important Note: The quantity of S44 Thread-Cutting Screws is critical to the strength of the RoofScreen Frame and its ability to resist wind loads. Please refer to shop drawings for exact quantity required.**

To finish this step, tighten the center bolt in the RotoLock feature. This bolt, as all bolts in the RoofScreen system, only need to be reasonably tightened and do not need to be torqued to any specific setting.



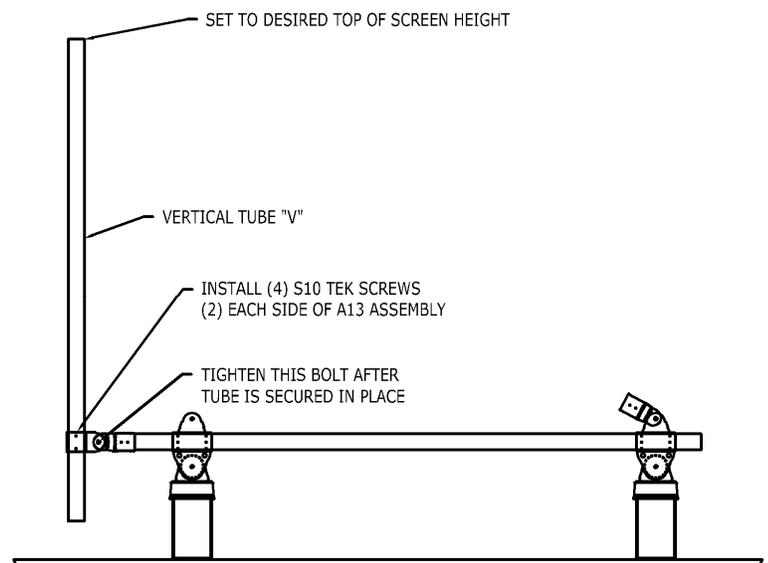
**FIGURE 10**

**Important:** Be sure to sweep or vacuum metal shavings from the top of the Base Assemblies after drilling Tek Screws to prevent rust from forming on the shavings. The Base Assemblies are stainless steel, so no harm will come to them from rusted shavings. However, it is not aesthetically pleasing and the end customer may think the parts are rusting.

#### STEP 7: INSTALL VERTICAL TUBES

Locate the vertical tubes labeled V and install them on the first and last frames in a straight run as follows. Slip the tube into the A13 Assembly installed in the previous step. Hold the tube in position with the top of the tube at the desired height and secure it with (4) Tek Screws, Part# S10, through the pre-punched holes in the fitting (see Figure 11). If the tubing does not easily fit into the A13, try loosening the bolt to allow the connector to expand. Tighten the bolt in the A13 when the tube is secured in place.

Depending on how tall the vertical tube is, it may stand up on its own at this point simply by tightening the bolt in the A13. If not, you may have to install the diagonal tube as well to keep it in position. If this is the case, skip to Steps 8 and 9 for the first and last frame in the straight run, then return to this step for the remaining frames.



**FIGURE 11**

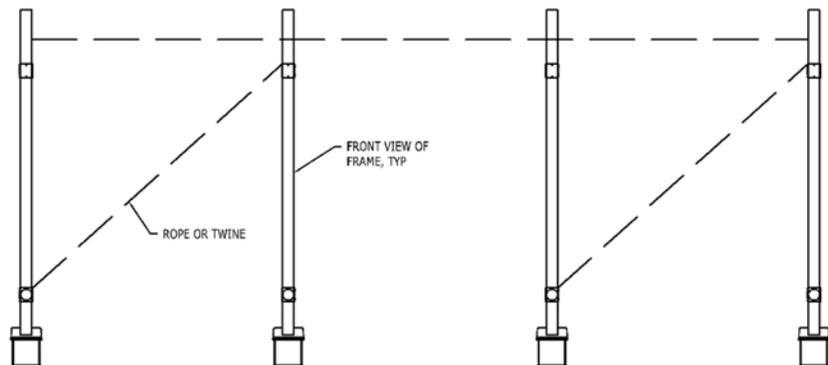
To install the remaining vertical tubes, pull a string line from the top of the first frame to the top of the last frame. If the vertical tube bends over sideways when pulling the string, you may need to temporarily brace it with a 2x4. Install each vertical tube as described above, using the string as a guide for the top of tube height. For long runs, it may be easier and more accurate to use a laser level instead of a string line. If the tubes are too tall to stand up on their own by tightening the bolt in the A13's, it is okay to let them lay down on the roof until the next step.

#### STEP 8: INSTALL LATERAL BRACE ASSEMBLIES

Lateral braces will be explained in step 10, but now is a good time to place the assemblies. On the shop drawing layout, locate the lateral braces to identify which frames need these assemblies. Slip an A13 Assembly onto the two adjacent frames where the lateral brace will be located. Do not screw in the assemblies or tighten the bolts at this time. See Figure 15 in Step 10.

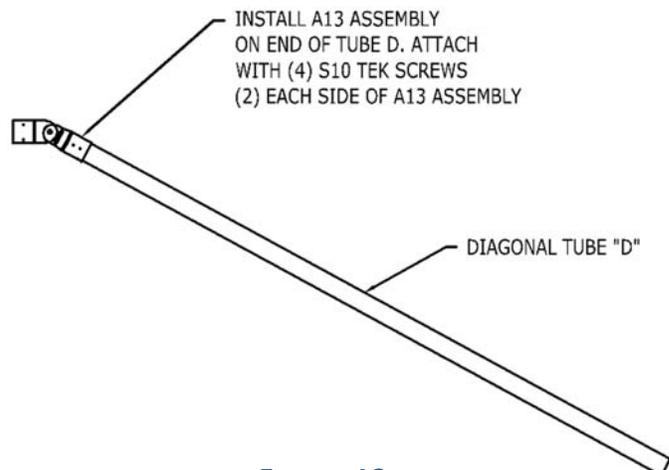
#### STEP 9: INSTALL DIAGONAL TUBES

In this step, the assembly of each frame will be completed. The frames will be very flexible side-to-side until the Hat Sections and/or Panels are installed. If the frames are short, they will stand on their own until they are all tied together. However, if they are very tall, the weight of the frame may cause them to tip all the way over, potentially bending the connector fittings. If this appears to be the case, it is recommended to use rope or twine to temporarily tie the frames together. See Figure 12.



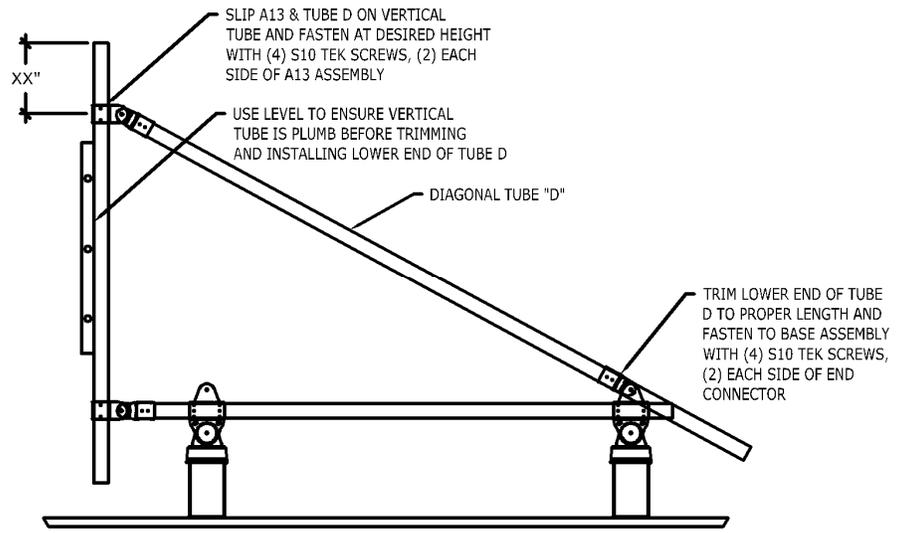
**FIGURE 12**

Locate the diagonal tubes labeled D and install the A13 Assemblies on the ends as shown in Figure 13. Do not tighten the bolt on the A13 at this time.



**FIGURE 13**

Next, slide the upper end with the A13 over the vertical tube and fasten with S10 screws at the height specified on the shop drawings. Use a level to plumb the vertical tube while marking the desired length of the diagonal tube by holding it next to the End Connector on the rear Base Assembly. Cut the diagonal tube to the proper length and install it into the End Connector. Fasten the tube to the end connector with S10 screws. See Figure 14.



**FIGURE 14**

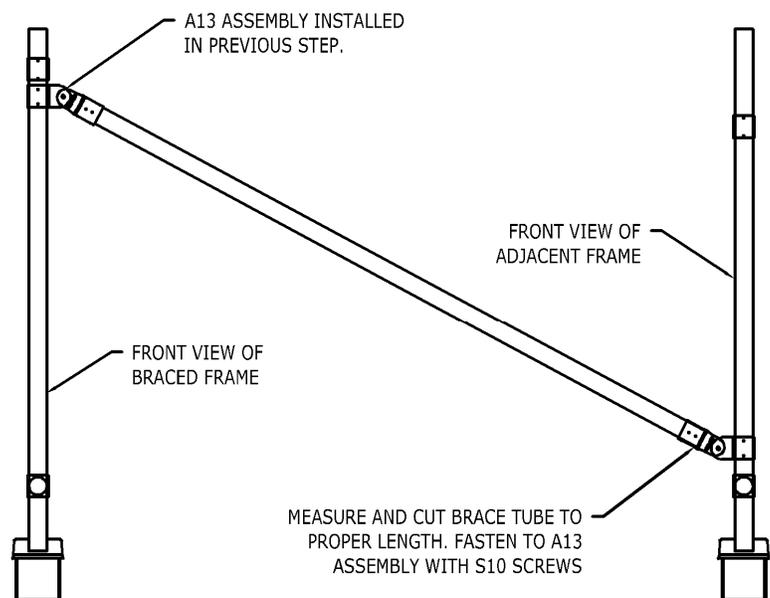
#### STEP 10: INSTALL LATERAL BRACES

Lateral braces, typically used at corner conditions, resist forces in the lateral direction of a RoofScreen. They are designed to connect to the top of the vertical tube on a frame being braced, to the low end of an adjacent frame.

If all lateral braces for the project are identical, they will be labeled LB. If there are various lengths or sizes of braces, they will be marked with unique numbers that correspond to labels in the shop drawings showing where each brace is to be installed.

Connect the brace tube to the A13 Assembly installed in Step 8 that will receive the uphill end of the brace with (4) S10 Tek Screws. Slip the A13 Assembly with the brace tube connected as high as it will go on the vertical tube and fasten it to the vertical tube with (4) S10 screws.

Measure and cut the length of the brace tube to fit between the frames, as shown in Figure 15, using the same technique as described in Step 9 for measuring and cutting the diagonal tubes. Once cut to length, connect the lower end of the brace tube to the A13 Assembly and secure in place with (8) Tek Screws, (4) in the brace tube and (4) in the vertical tube.



**FIGURE 15**

**STEP 11: INSTALL ALL TEK SCREWS AND TIGHTEN ALL BOLTS**

With all the frames installed and plumbed, go around the entire RoofScreen and install all the Tek Screws (Part# S10). Not every pre-punched hole in the connector fittings requires a screw, so check the specifications on the shop drawings to ensure proper screw quantity and location for each fitting. While doing this, also tighten all the bolts on the entire system.

**HAT SECTIONS**

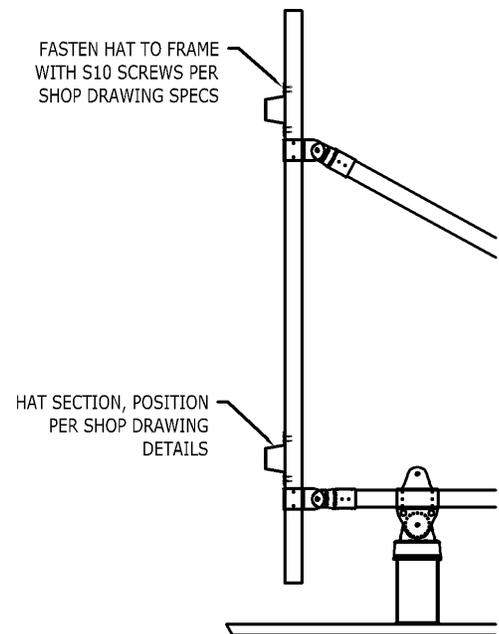
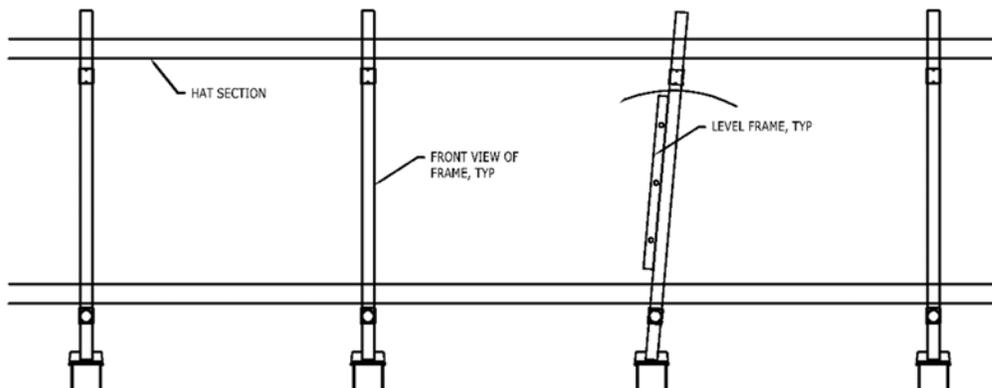
*If panels are to be installed in horizontal orientation, please skip this section.*

**STEP 12: INSTALL HAT SECTIONS**

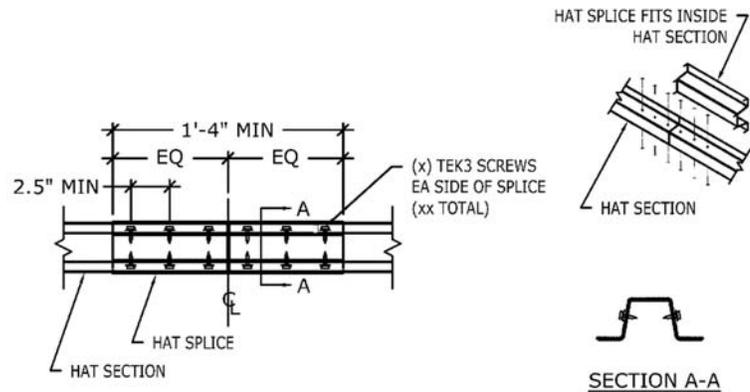
Hat sections mount horizontally across the frames and become the attachment supports for vertically mounted panels, see Figure 16. If exposed fastener panels will be used on the project, keep in mind the hat rows should be as straight as possible because the screw line on the face of the panels will be visible.

Refer to the shop drawing details to determine the hat position on the frames. Measure down from the top of each vertical tube and make a mark for each row. Install the top row first. During this process, use a level to plumb the frames side-to-side. This top row will hold the frames plumb while the lower rows are installed, see Figure 17.

Starting in one corner, hang the first piece of hat section past the last frame far enough to tie into the row coming from the other direction. With two people, hold the piece in place and attach to the frame tubes with S10 screws. Check the specifications in the shop drawings for the quantity of screws per attachment point. Use a level to keep the frames plumb while installing the screws. It can be helpful to use large Vise Grip clamps to hold the hat to the frame tube while adjusting it and putting in the screws.

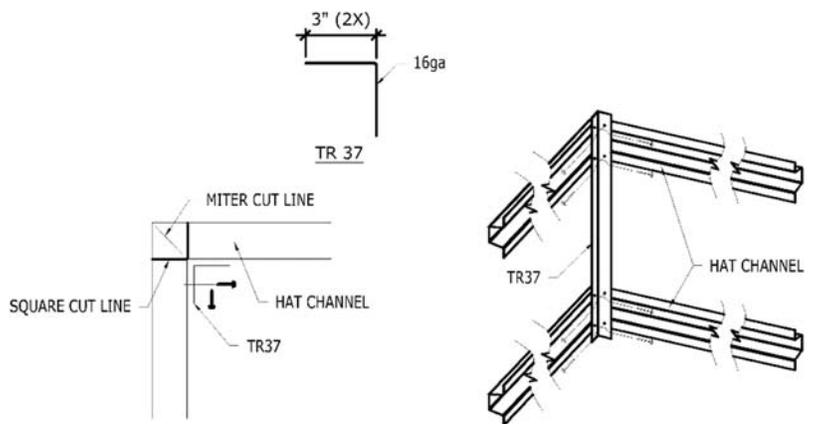
**FIGURE 16****FIGURE 17**

Continue installing the rows of hat, completing the top row first, then the lower rows. Hat sections are supplied in 20' lengths. To splice hats end-to-end, refer to the detail in the shop drawings. The detail will show how many screw to use in the splice, similar to Figure 18. Splices may be installed at any point along the screen and are not required to be located over a vertical frame tube. Use Vise Grip clamps to hold the splice tight to the hat. Position the splice with ½ slipped into the installed hat and ½ extending out to receive the next length of hat. Install the S10 screws on the top and bottom as shown in Figure 18. Don't put the screws in the face of the hat as the screw heads may interfere with the panels later.



**FIGURE 18**

To join corners, use the TR37 3" x 3" Stiffener as shown in Figure 19. Fasten ends of hats to stiffeners with S10 screws as detailed in the shop drawings. Hat ends may be square cut or miter cut. If square cut, the corner will have a 3" gap that will need to be covered by the panels and trim. Typical trim is 5" x 5" for outside corners, so a square cut is usually adequate. Check your shop drawings for information on panels and trims to ensure the corner will be covered correctly.



**FIGURE 19**

If the project includes gates, review step 15 to ensure the hats are properly placed for the gate openings.

## PANELS AND TRIM

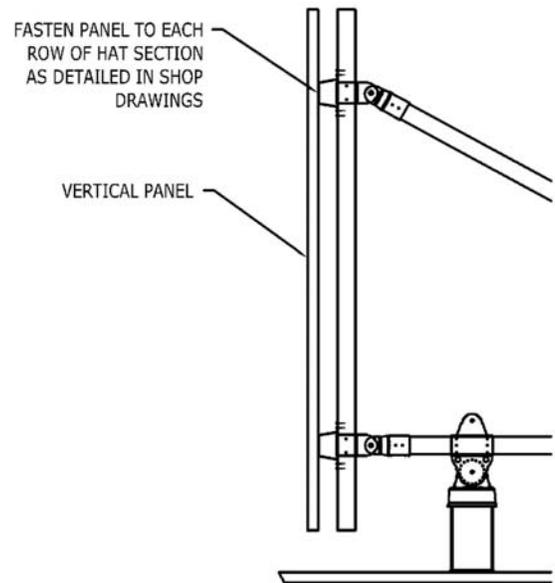
### STEP 13: INSTALL PANELS

Installing panels is quite different for vertical and horizontal panel orientation. Please skip to the applicable instructions below.

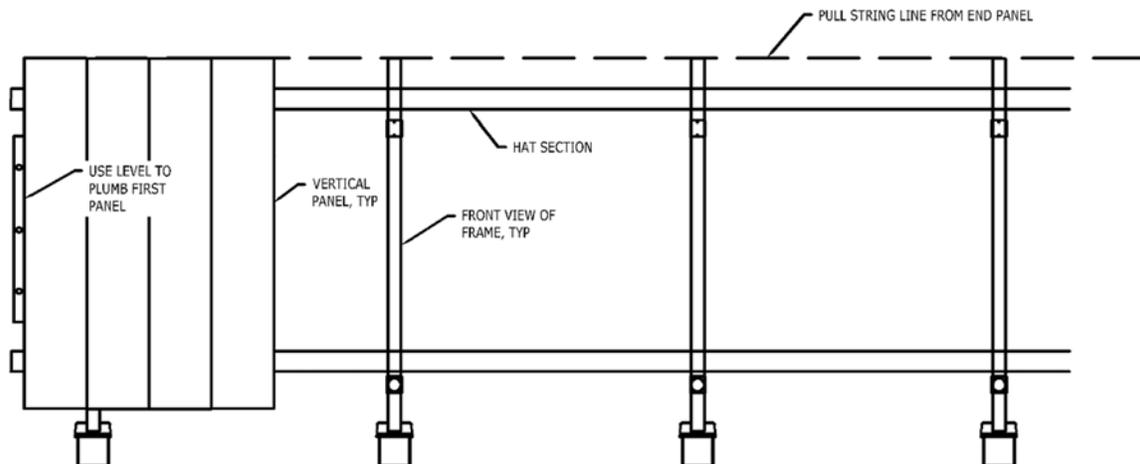
#### Vertical Panel installation

As illustrated in Figure 20, vertically oriented panels are mounted to the hat sections installed in the previous step. Panel extension past the upper and lower hats should follow the dimensions on the frame detail(s) in the shop drawings. The shop drawings will also specify the type and quantity of screws used to fasten the panels.

To keep panels level at the top during installation, use a nylon string line stretched end to end on each straight section of screen. See Figure 21. To use the string, you must first install the starting panel. Start at one end and screw in the first panel at the correct height. Use a level to ensure it is perfectly plumb. Next, install a vertical support on the opposite end of the wall to support the other end of the string at the correct height (a 2x4 clamped on the Hat Sections with Vise Grip clamps works well for this). If the run is long, or it is windy, this may need to be done in shorter segments. Attach the nylon string line to the top of the first panel installed, and pull it to the vertical support on the opposite end. Stretch it as tight as possible and sight down the string to make sure it does not sag.



**FIGURE 20**



**FIGURE 21**

Install the remaining panels, sliding each one up to the string, but do not touch the string. This is important because if the panels push the string up even a fraction, your panels will start to go uphill. When you come to the end of a wall or a corner, the method used to terminate the panels will depend on the type of panel being used. Here are a couple of general guidelines:

- For through fastened ribbed panels, simply cut the last panel with a metal cutting skill saw to the width necessary to fill the gap between the last full panel and the corner.
- For standing seam or flat wall panels cut the last panel to the proper width and either screw a stiffener channel on the flimsy (cut side) of the panel, or use a hand seamer to bend an edge. This will allow for a straight edge to fasten the corner trim.

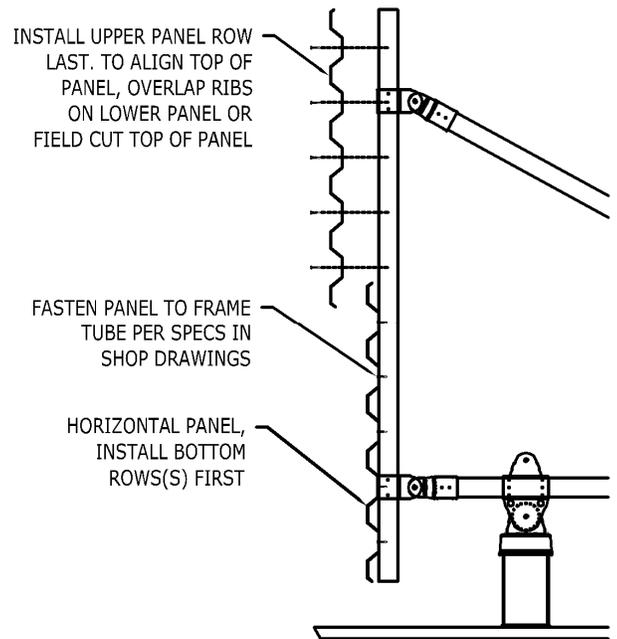
**Horizontal Panel Orientation**

As illustrated in Figure 22, horizontally oriented panels are mounted directly to the vertical frame tubes. Horizontal Panels are typically ribbed style and should be fastened through the face of the panel with color matched screws as specified in the shop drawings.

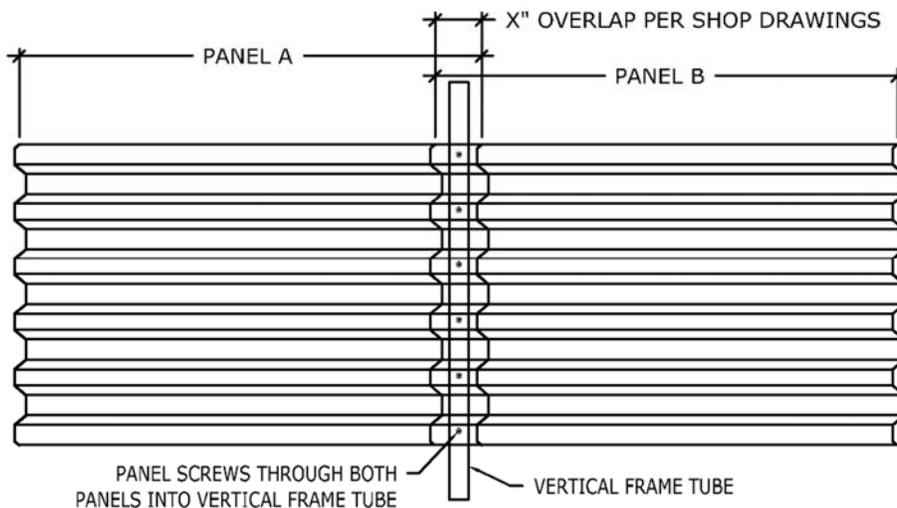
Depending on the screen height, multiple horizontal rows of panels may be required. Install the lower row first and upper row(s) last. To terminate the top of the panel at the desired screen height, overlap ribs on the panel below, or cut the top of the panel to the desired height.

As illustrated in Figure 23, panel end laps must fall on vertical frame tubes and cannot be lapped mid-span. For horizontal projects, a frame layout plan is included in the shop drawings.

If the project includes gates, review step 15 to ensure the panels are properly placed for the gate openings.



**FIGURE 22**



**FIGURE 23**

**STEP 14: INSTALL TRIM**

Once all panels are installed, finish trims can be installed on the top, corners and end conditions to provide a clean, finished look. Methods for installing trims depend on the type of panels being used, as well as the style of trim. Typically, a trim cap is installed along the top edge of the panel, fastened approximately every 36" with S16 color matched screws. Corner trim and edge trims are typically fastened approximately every 12", also with S16 screws. Please see details in the shop drawings for specifics.

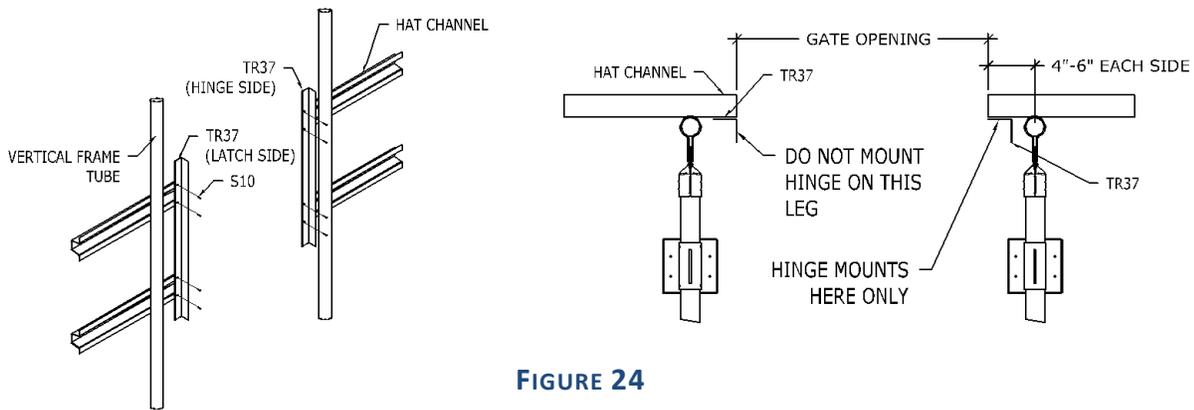
**GATES**

Gate details shown are for our standard installation configuration with gaps on each side between the gate and screen panels. It is also possible to configure the installation so the panels overlap and conceal the gaps. However, we recommend this type of installation only for more experienced metal roofing and siding contractors.

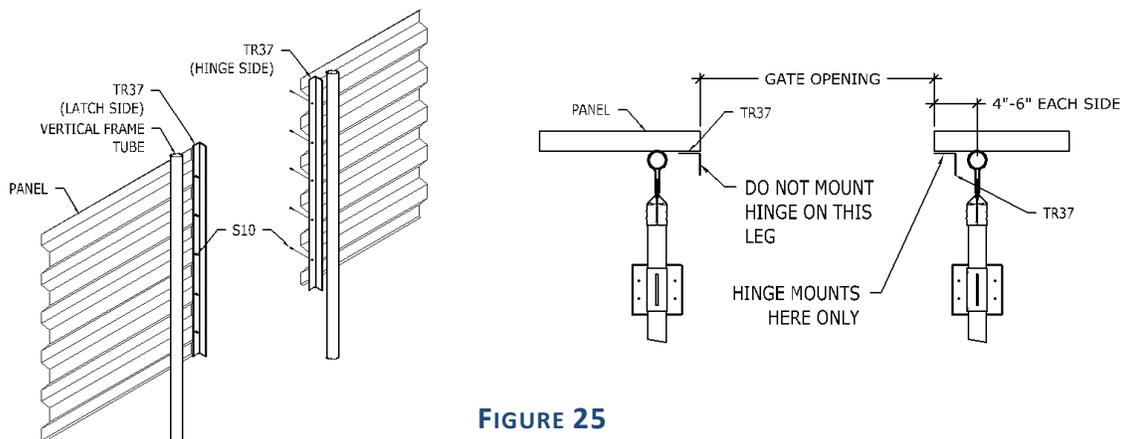
**STEP 15: PREPARE GATE OPENING**

The size of the gate opening is detailed on the shop drawings, and frames built in previous steps should be located in the proper position for the gate. See Fig 24 below for vertical panels and Fig 25 for horizontal panels.

At the gate opening, extend the hats or horizontal panels 4"-6" past the frame tubes and attach a TR37 stiffener at the end of the hats or panels so that they are vertically level as illustrated in Figures 24 and 25. Note that the stiffener does not mount the same way for the hinge side and the latch side.



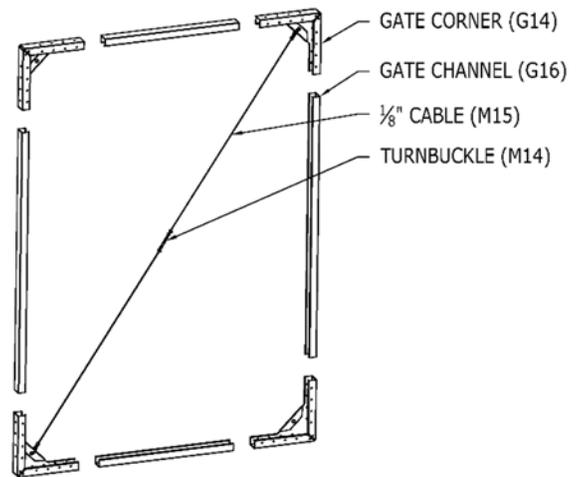
**FIGURE 24**



**FIGURE 25**

**STEP 16: ASSEMBLE GATE FRAME**

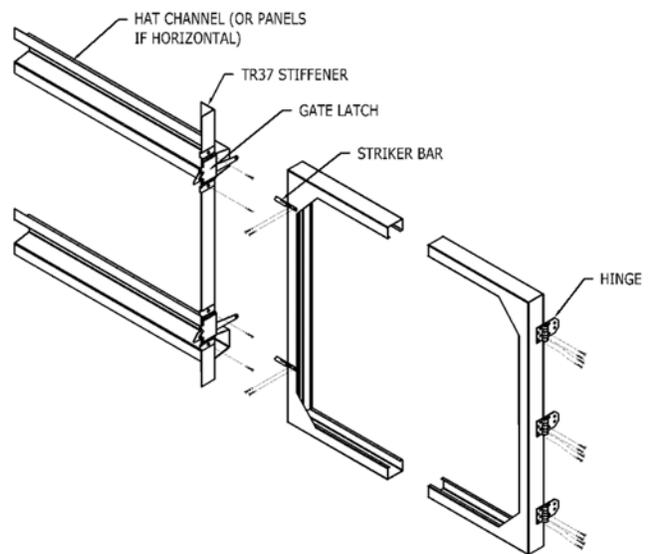
Assemble gate frames as shown in Figure 26. To determine the width of your gate, measure the width of the gate opening and subtract 2". Gate opening refers to the distance between the inside edges of the two TR37 stiffeners installed the previous step (see Figures 24 and 25). This ensures a 0.5" spacing for the hinge and a 1.5" spacing for the gate latch. Subtracting 2" is a general guideline and depending on your panel and hat channel configuration, field adjustments may be necessary to ensure the gate does not bind. Slide gate channel into gate corners to achieve the necessary gate height and width. Fasten the gate corners to the channel with S10 screws through the pre-punched holes in the corner pieces. Attach the gate cable and turnbuckle between corners after the frame has been assembled.

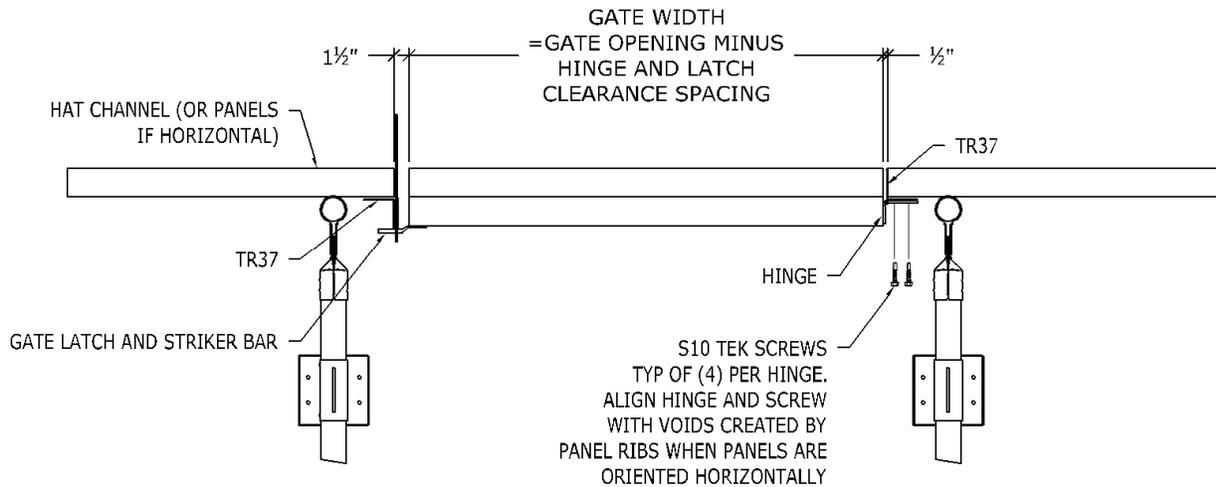
**FIGURE 26****STEP 17: INSTALL GATE**

Attach gate hardware as shown in Figure 27. Mount the hinges to gate frame, and gate latches to the TR37 stiffener installed in step 15. Position the striker bars to align with the latches and fasten them to the gate frame.

**Important:** For horizontal panel orientation, make sure to align hinges with high flutes of panels to allow the screws to extend into the voids.

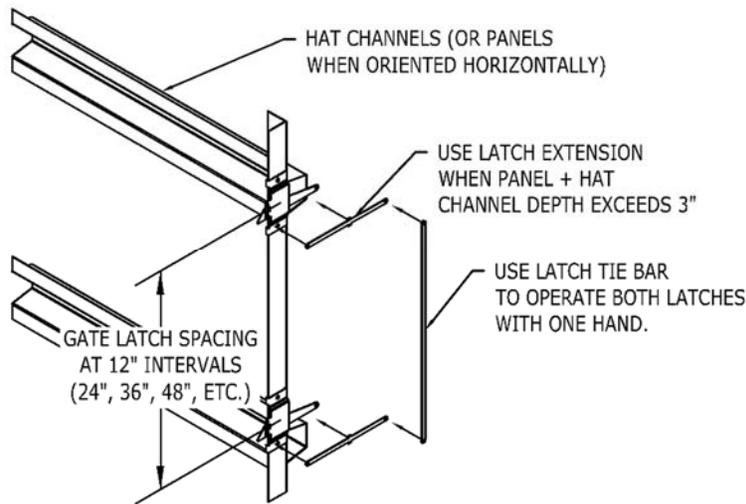
To install the gate, hold it in position and fasten the hinges to the TR37 stiffeners as shown in Figure 28.

**FIGURE 27**



**FIGURE 28**

In cases when the combined depth of the hat channels and panels exceeds 3", the gate latch handle needs to be lengthened with a Latch Extension so it can be operated. An optional Latch Tie Bar is also available to connect both gate latches together so it can be operated with one hand. See Figure 29.



**FIGURE 29**

**STEP 18: FINAL QUALITY CHECK**

Perform a final quality control inspection. Check that all the Tek screws have been installed in the frames. Make sure that all the assembly bolts are tight. Vacuum or sweep all metal shavings left over from the installation of Tek screws off the roof surface and RoofScreen parts to prevent rust from forming. Pick up any screws and other miscellaneous items that may have been dropped to prevent damaging the roof membrane should someone step on them. Check the gate to make sure it opens and closes properly.