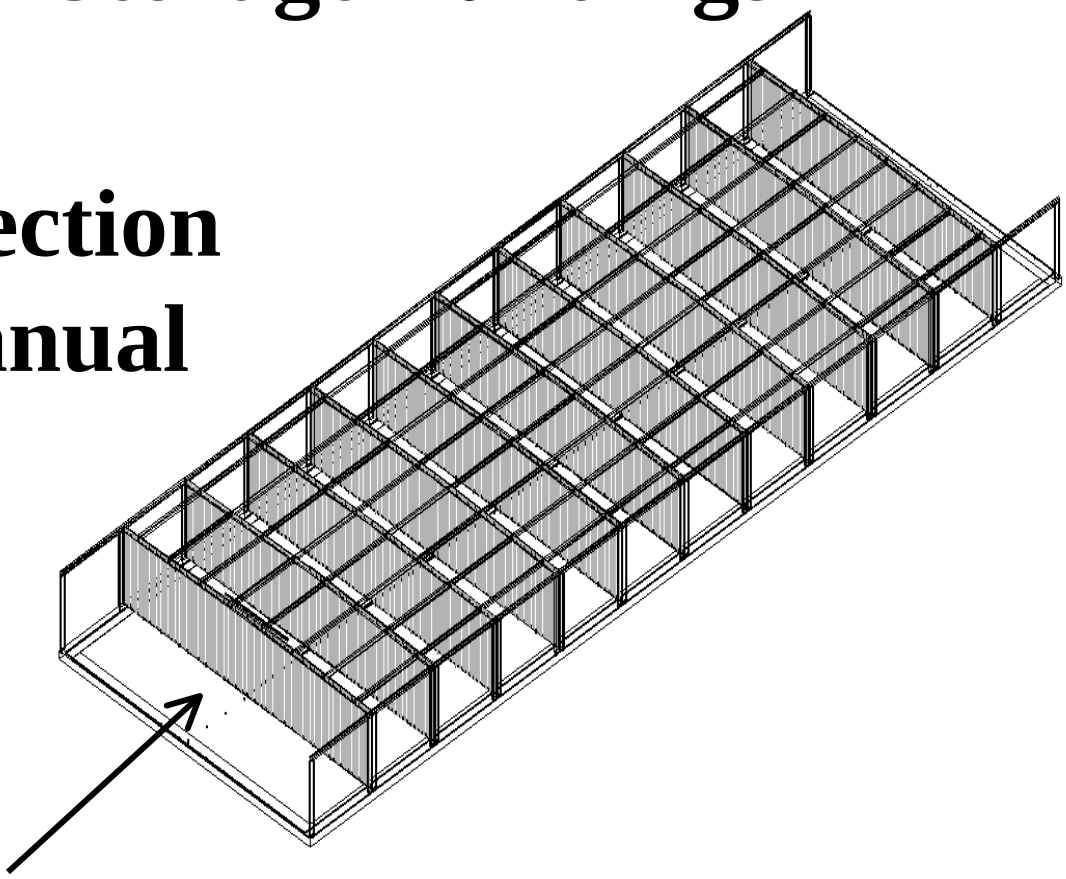
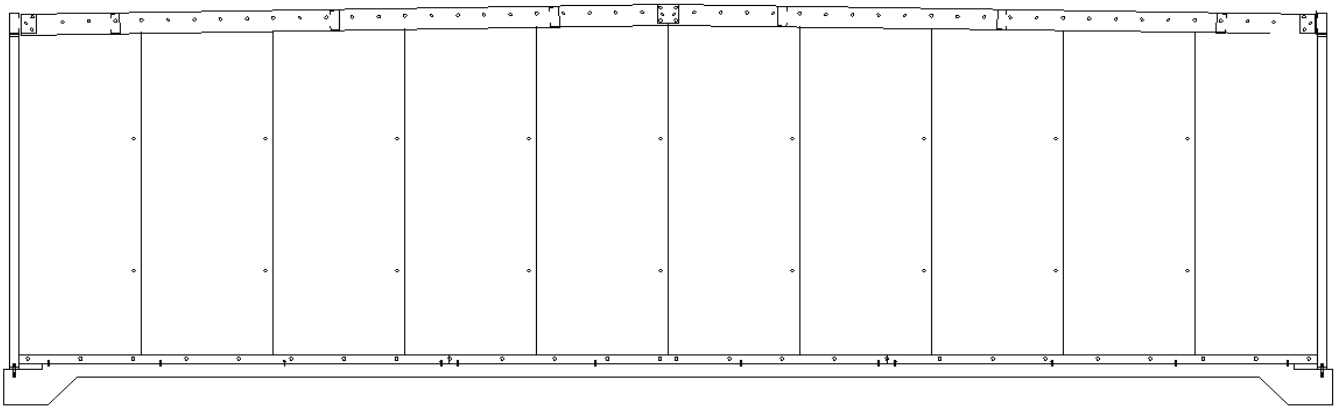
Flexospan

Self Storage Buildings

Erection Manual





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Self Storage Building

Erection Manual

Table of Contents

Tool List

Qty	
1	Fork truck or Skid loader
3	100’ Extension cords
3	50’ Extension cords
2	Screw guns
2	3/8” Variable speed drills
1	½” Hammer drill
1	Type D handled drill
1	Nibbler
2	Extra dies for nibbler
1	Can of 30 weight oil
1	Circular saw
	- Metal cutoff blades
	- Wood blade
5	½” Masonry drill bits
5	3/8” Masonry drill bits
10	¼” Masonry drill bits
1	Cone bit
12	3/16” Sheeting bits
4	¼” Nut setters
4	5/16” Nut setters
4	3/8” Nut setters
1	¾” Socket combination wrench

Qty	
4	Punches to line up holes
	Leather gloves
6	Standard vice grips with at least 4” of grip depth
2	Pairs of short billed tin snips
1	Sledge hammer
1	Pry bar
	Several claw rip hammers
2	4’ Levels
1	100’ Tape measures
1	50’ Tape measures
2	16’ Tape measures
	String line
	Several chalk boxes
	Extra chalk
2	Small come-alongs
2	Short ropes for hand lines
4	Scaffold sections with wheels
1	Pair of saw horses
	Wood planks
2	8’ Step ladders
1	First aid kit

Other required safety equipment

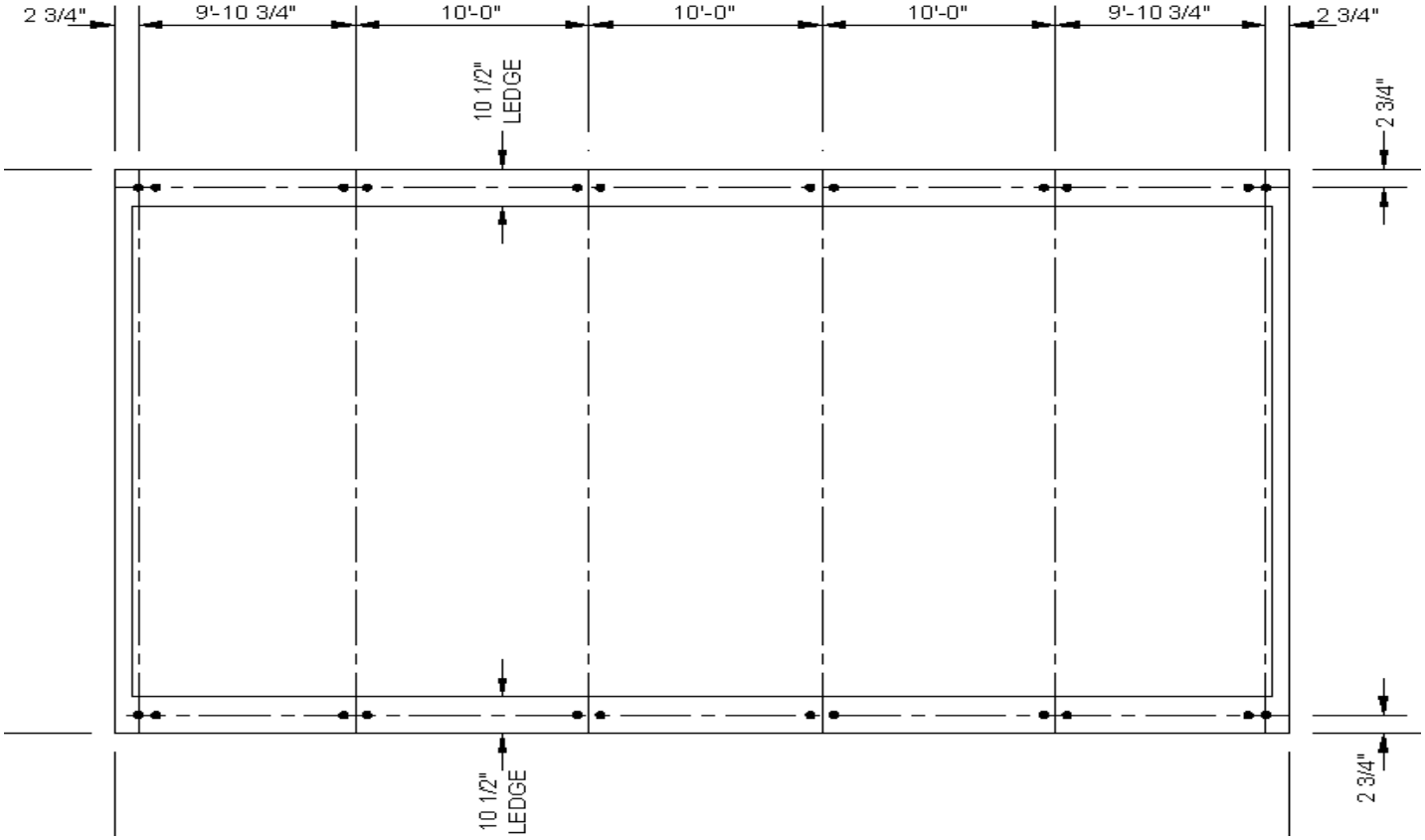
Receive Flexospan self-storage building parts.

Unload the truck and take a physical inventory of all the parts received and compare the count with the packing slip. The best method of doing this is to lay all of the parts out on to the cement pad near the locations where they will be used during the erection process.

1) Record any shortage or damage on the bill of lading that the truck driver will have you sign.
2) Layout Materials and make sure there are enough parts for each bay.

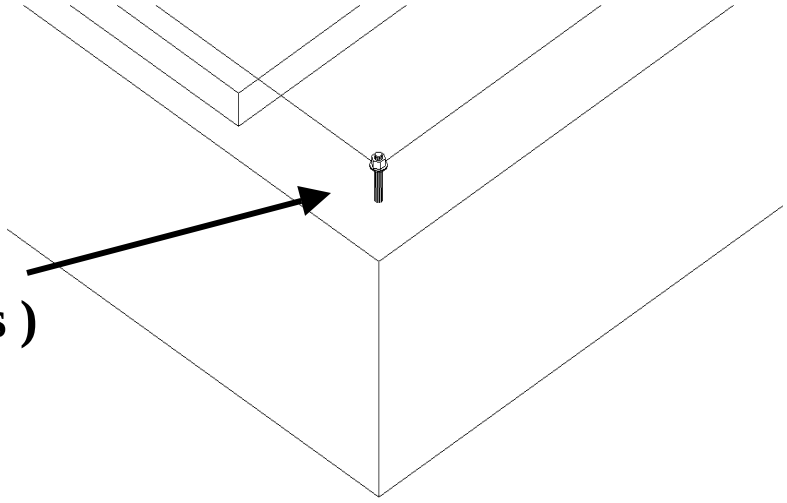
- **Door Jambs as per print.** 2 Jambs per bay.
- **Eave Struts.** 20' pieces that go on top of the jambs around the perimeter of the building. (Two eave struts spans two 10' bays. One on each sidewall of building).
- **Base Channel.** 10' U-Shaped channel that goes on the floor to receive the wall sheeting. (1 piece per every 10' of load-bearing wall. 1 piece per every 10' of interior partition wall).
- **Rafters.** Each interior wall receives four rafter sections. (Two rights and two lefts per each load-bearing wall).
- **Rafter Angle Clips (RA1).** These clips attach the rafter sections to the eave struts at the jambs. (Four angle clips per each load-bearing wall).
- **CP-1 Plates.** These plates are used to join the rafter ends at the center peak of the building. (2- CP-1 Plates per each load-bearing wall).
- **Roof Purlins.** These are bolted between the rafters to support the roof. (One purlin per each 5' of bay length).
- **Load Bearing Wall Sheeting**. These sheets have varying lengths. The shortest length is 8'4" and they are progressively longer in ¾" increments. Stack them in two piles for each load-bearing wall with the longest sheet on the bottom of one stack and the shortest (8'4") on the bottom of the other pile. The shortest (8'4") will be used first. Stack them progressively in ¾" intervals of length from the shortest to the longest and then back down to the shortest on the bottom of the second pile. (One sheet per each 3' of load-bearing wall. A standard 30' wide load-bearing wall will have 10 sheets. 2@8'4", 2@8'4-3/4", 2@8'5-1/2", 2@8'6-1/4", and 2@8'7").
- **Endwall Rafters.** These go at the end of the building and will not be needed until all the load-bearing walls are in place.
- **Flexbeam Exterior Sheeting**
- **FSS 1.5 Roof Sheeting**

Layout Anchor Bolts



- Check the concrete pad.
  - Make sure all dimensions are correct according to the drawing. This must be done because all anchor bolts are measured from the edges of the concrete pad.

Install the four corner anchor bolts

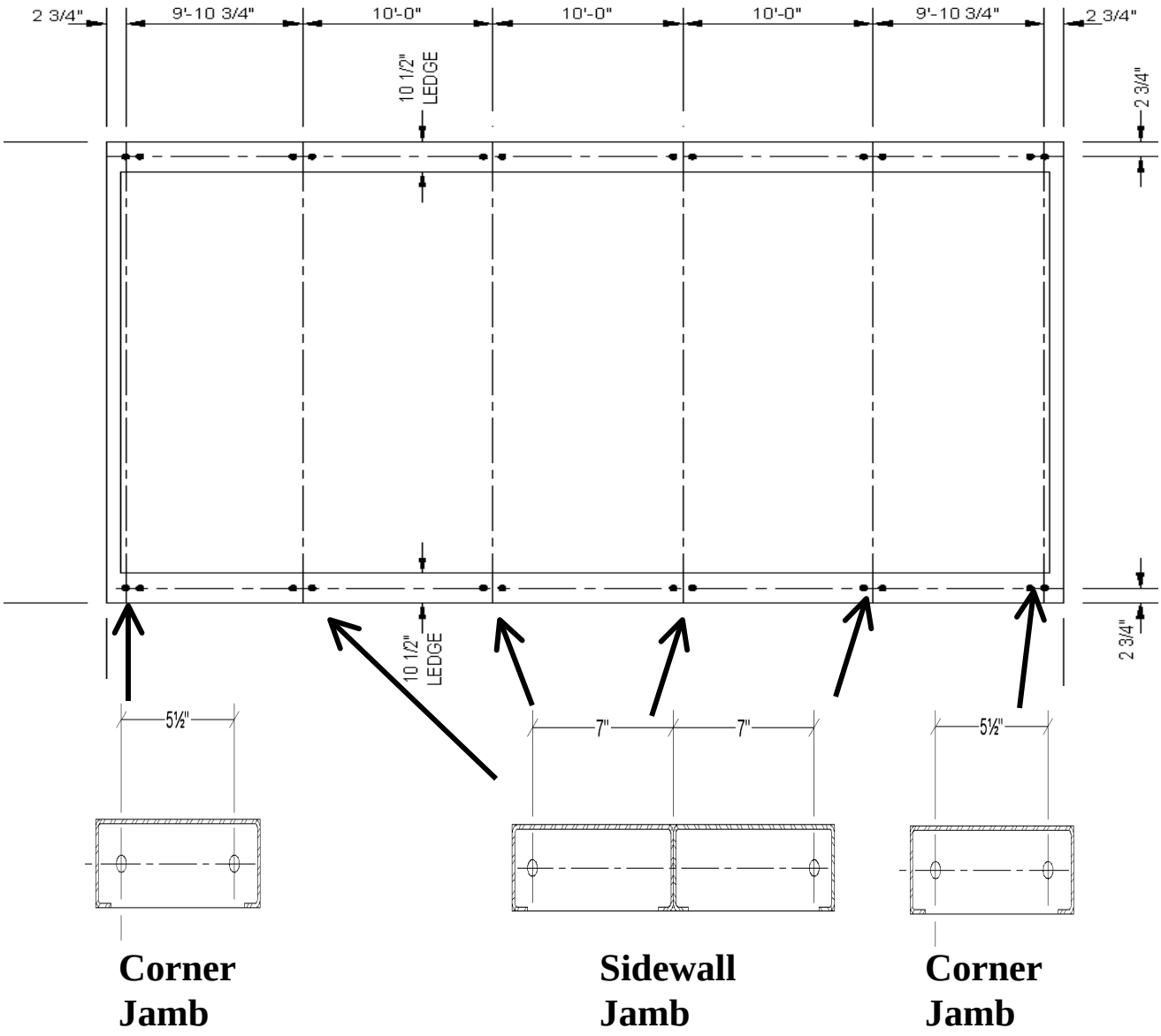


- Using a tape measure layout the four (4) corner anchor bolts, drill, and install.
- See Corner Jamb Detail Drawing.
  - Hint: Most standard buildings have the corner anchor bolts located 2-3/4” in from the edge of the concrete from both the endwall and sidewall on all four (4) corners.
- Run a string line around the building from all four (4) corner anchor bolts. This will give you the centerline of all the anchor bolts.
- Make sure the concrete pad is square.
  - Make sure one corner string is 90 Deg.
  - Cross measure to adjacent corners. Make sure both measurements are equal.

Layout Anchor Bolts

Mark the center of each jamb as per the erection drawings.

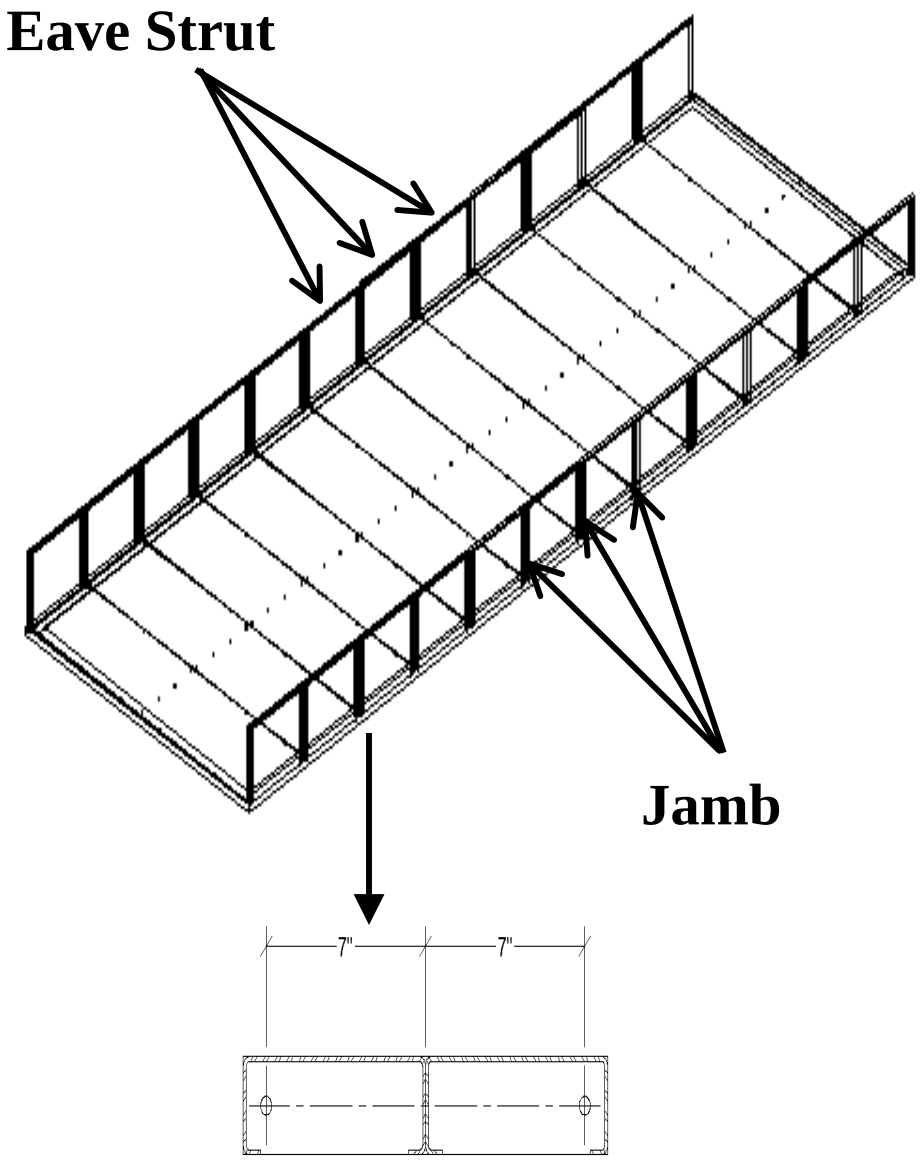
Note: Each end bay is 9’10-3/4” from the corner anchor bolt.



Make a template of the bottom of a jamb and use this to mark the bolt holes to be drilled. Note: Make certain that each standard 10’ bay is exactly 10’ between the center of the template of one Jamb to the center of the template of the next. Must measure and check each bay.

Layout Anchor Bolts

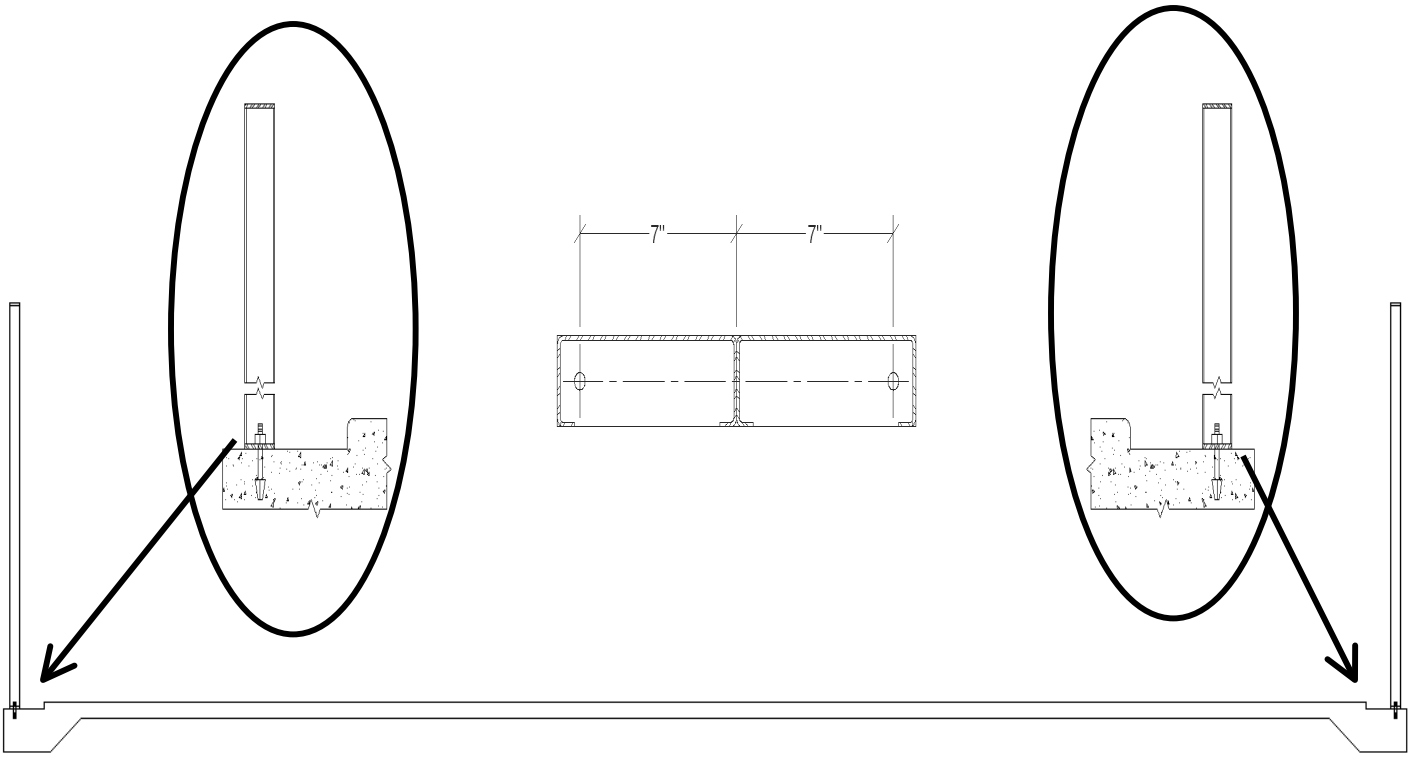
Install perimeter framing.



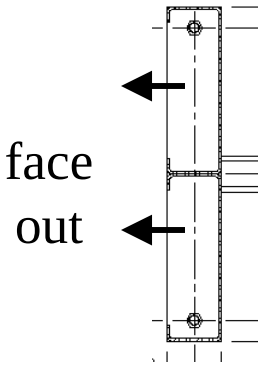
Caution: The open side of the jamb must face out.

Install perimeter framing.

1. Install sidewall jambs.



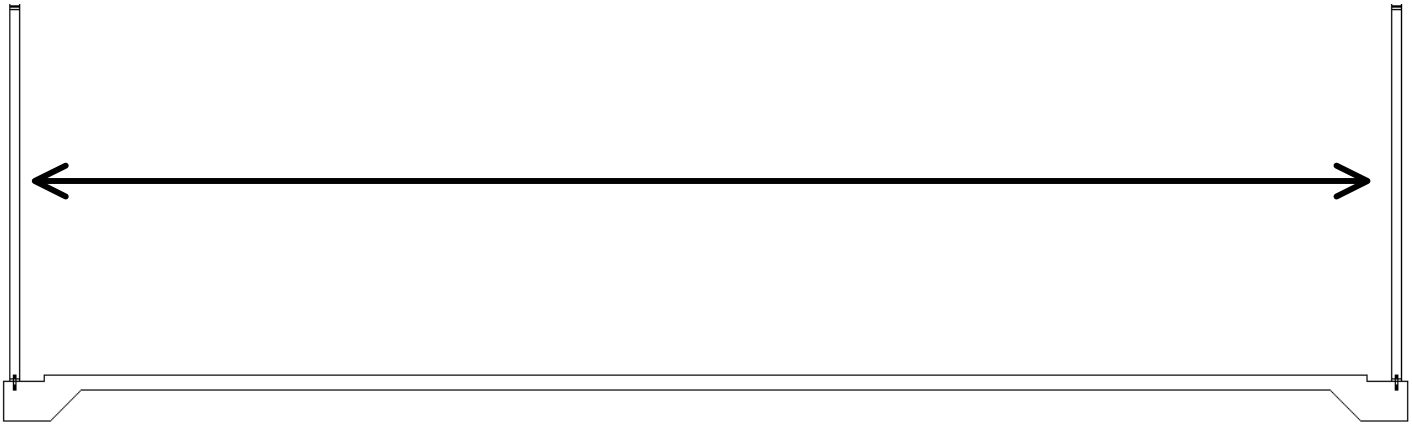
– You can install the jambs and bolts at the same time by holding the jamb over the holes and inserting the anchor bolts (thunder studs) through the base plate holes and into the drilled holes. Hammer the bolts into place and then snug up the nuts with a wrench. Note: You do not want to completely tighten these bolts, as you may need to move the jamb slightly when the eave strut is attached.



Caution: The open side of the jamb must face out.

Install perimeter framing.

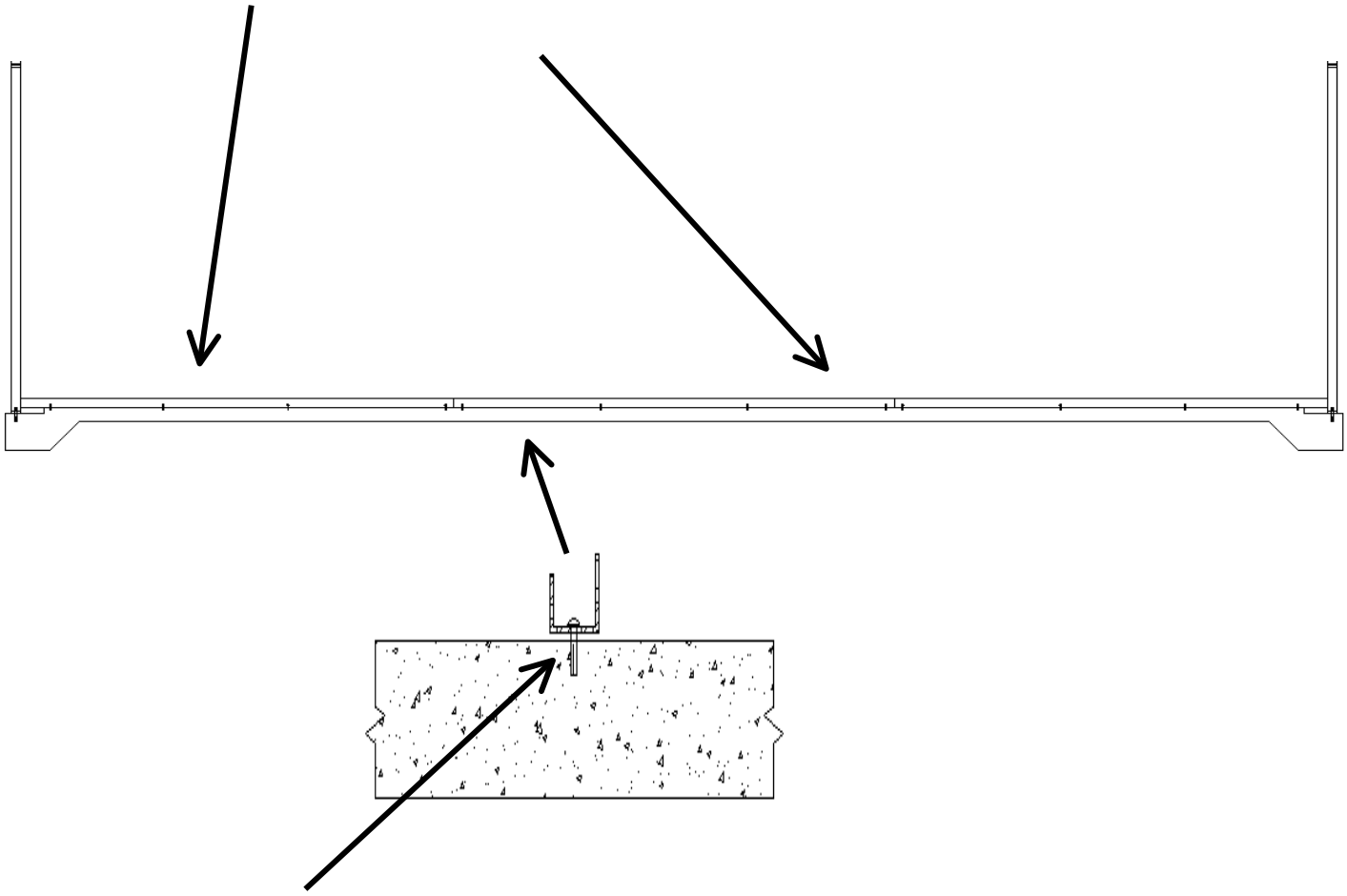
2. Install base channel on the floor.



- 2a. Mark the center of the load-bearing wall locations with a chalk line. Starting from one sidewall, run the chalk line across to the opposite sidewall.
  - Hint: The center of the load-bearing wall is normally the center of the jamb, but not always. Refer to the erection drawings.

Install perimeter framing.

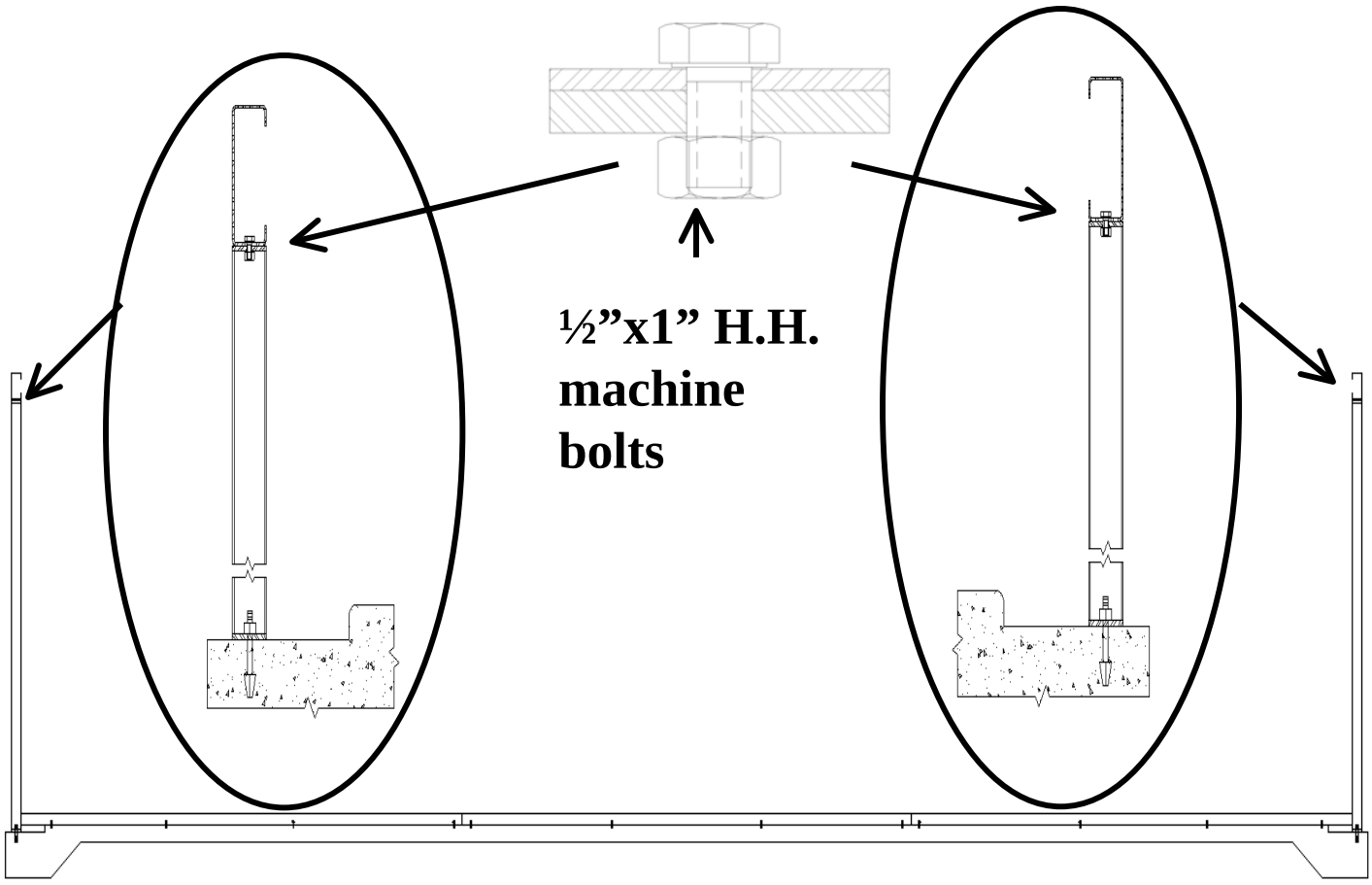
2b. Layout the base channel on the floor, centering it above the chalk line mark.



- Drill for the drive pins through the holes provided in the base channel.
- Install the drive pins using a hammer. Place a bar on top of the hit pin so the hammer does not bend the floor channel.

Install perimeter framing.

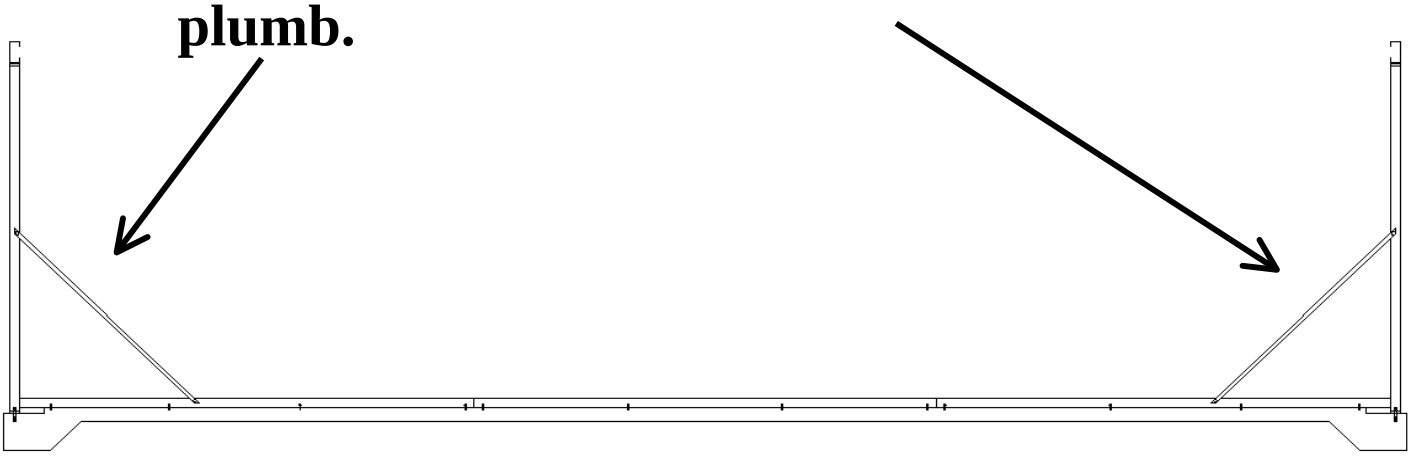
3. Install eave struts



- Install eave struts
  - Lay the eave struts on top of 3 jambs.
  - Fasten with the ½”x1” H.H. machine bolts provided.
  - Place a level on the jamb to insure it is plumbed laterally.
  - Temporary lateral bracing will have to be placed in at least one framed opening.

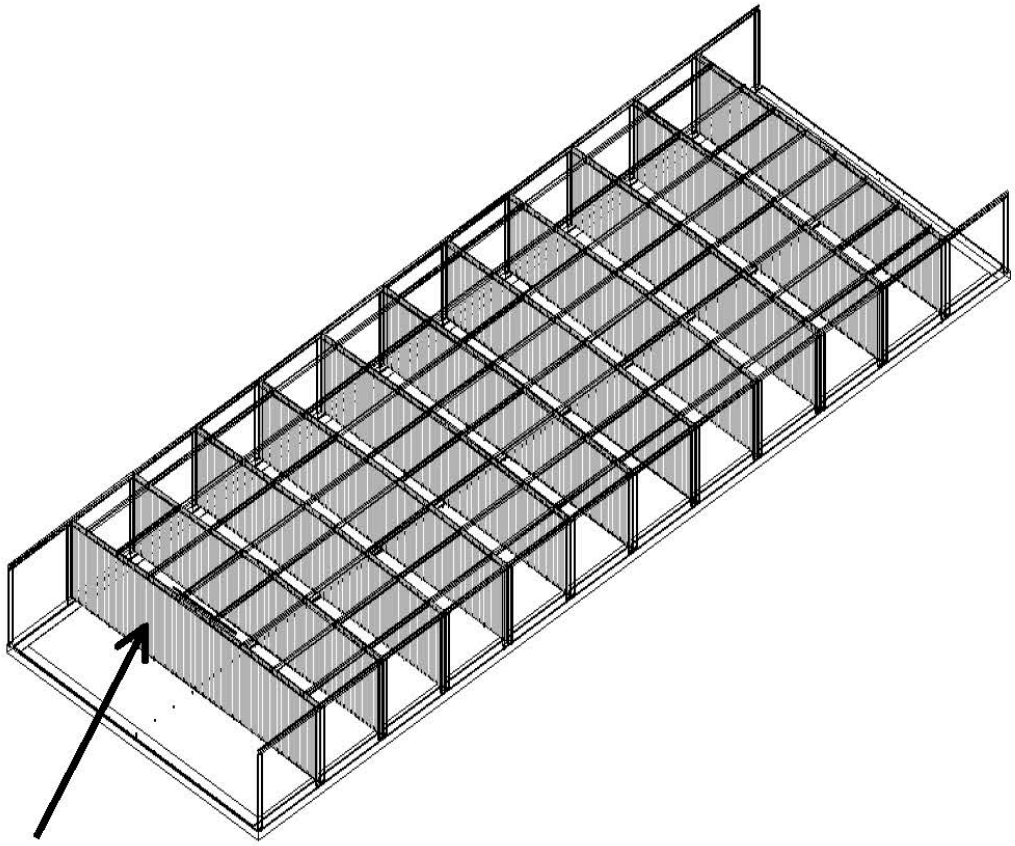
Install perimeter framing.

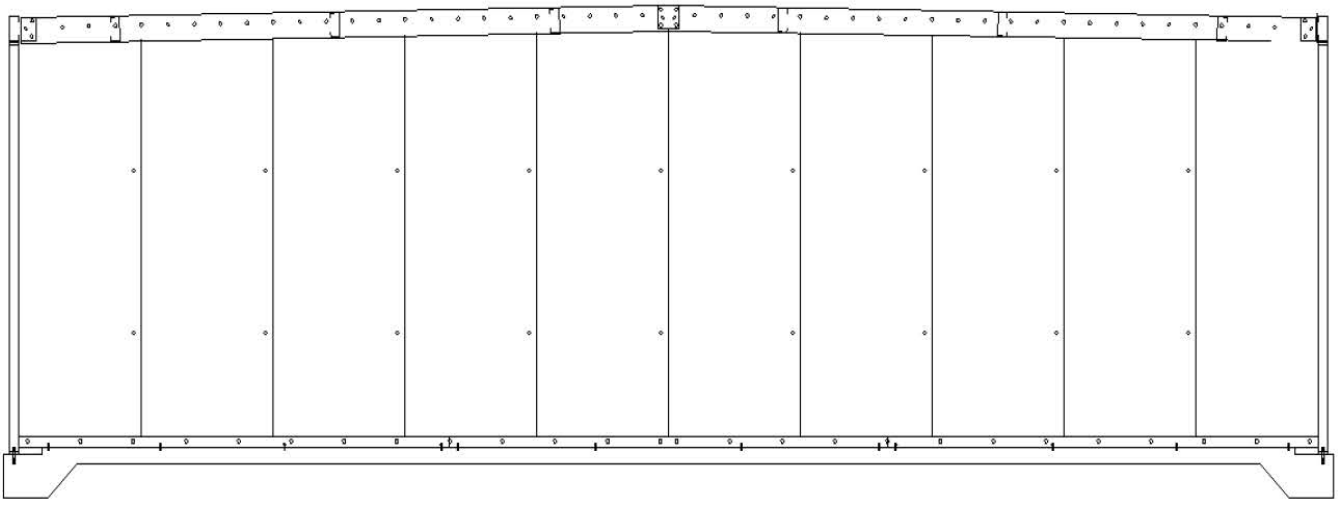
4. **Install temporary bracing to hold the jambs plumb.**



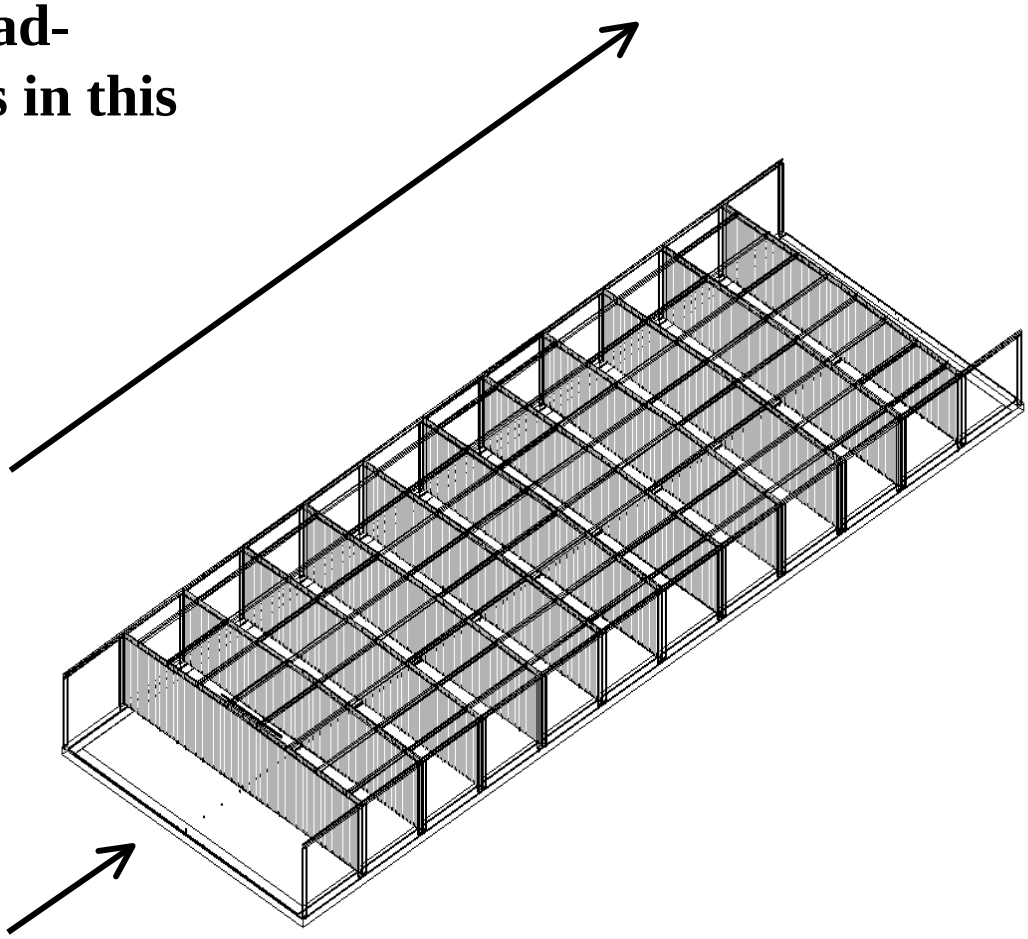
- Use the channel provided for the center partition wall as the temporary bracing. These channels will be removed later.
- Place a level on a jamb and hold it plumb.
- Attach the channel to the side of the jamb using a sheet metal screw.
- Attach the other end to the side of the base channel. Note: The temporary bracing channel will angle in slightly.

Flexospan Load-Bearing Wall System



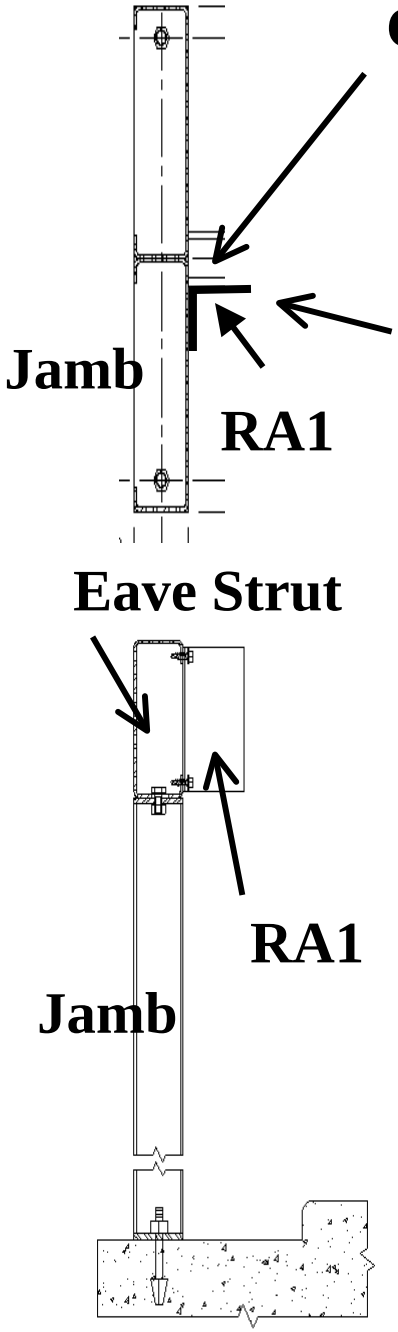


Install all of the Flexospan Load-Bearing Walls in this sequence



- The first load-bearing wall is one wall in from the endwall
  - Note: Do not install the two endwalls until after all of the interior load-bearing walls have been erected.
- Start with the first Load-Bearing Wall and assemble in order until they are all erected.
- Be sure to install temporary bracing on the first wall so the entire wall system stays plumb.

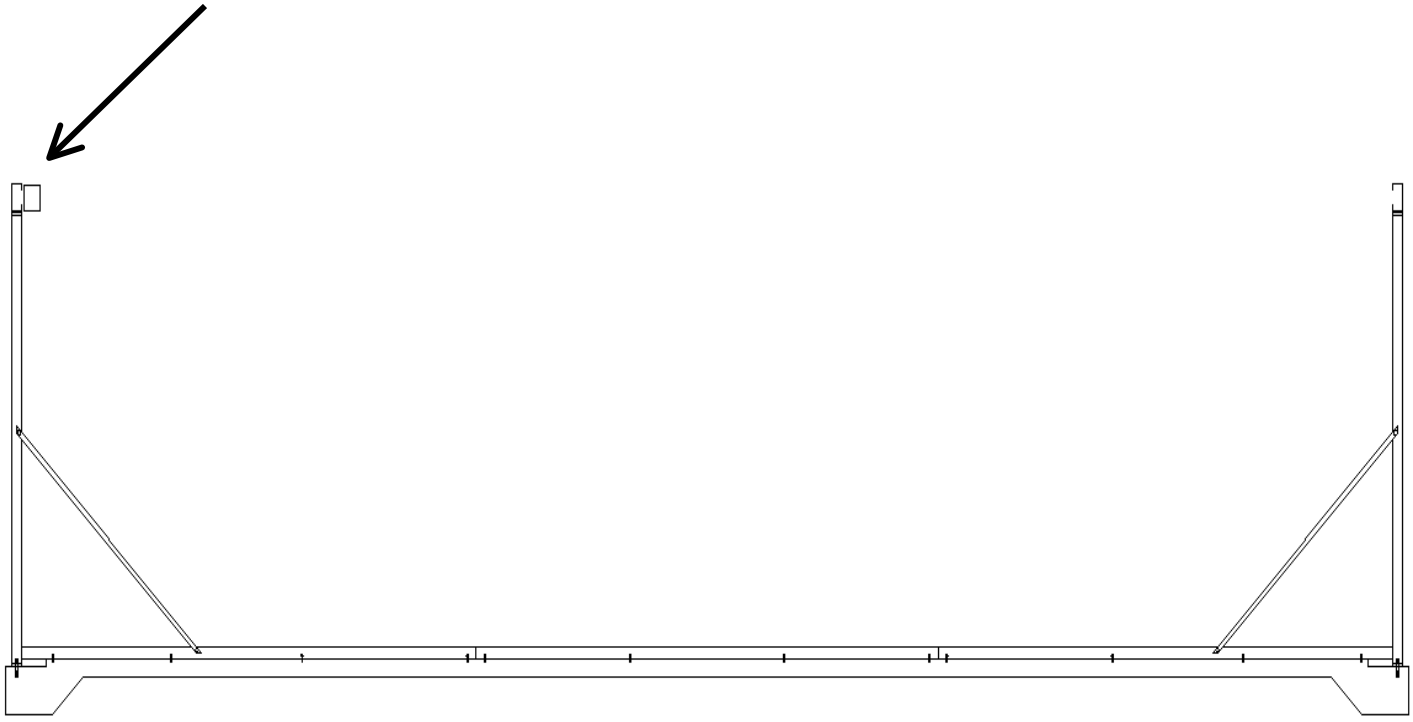
Position one Rafter Angle (RA1) clip on to the Eave Strut.



- Measure ¾” off center of the load-bearing wall. Make a mark.
- Note: This is half the thickness of the load-bearing wall sheeting. Two clips and rafters will eventually sandwich the wall sheeting.
- Hint: The center of the load-bearing wall is normally the center of the jamb, but not always. Refer to the erection drawings.
- Hint: The center of the base channel is the center of the load-bearing wall.

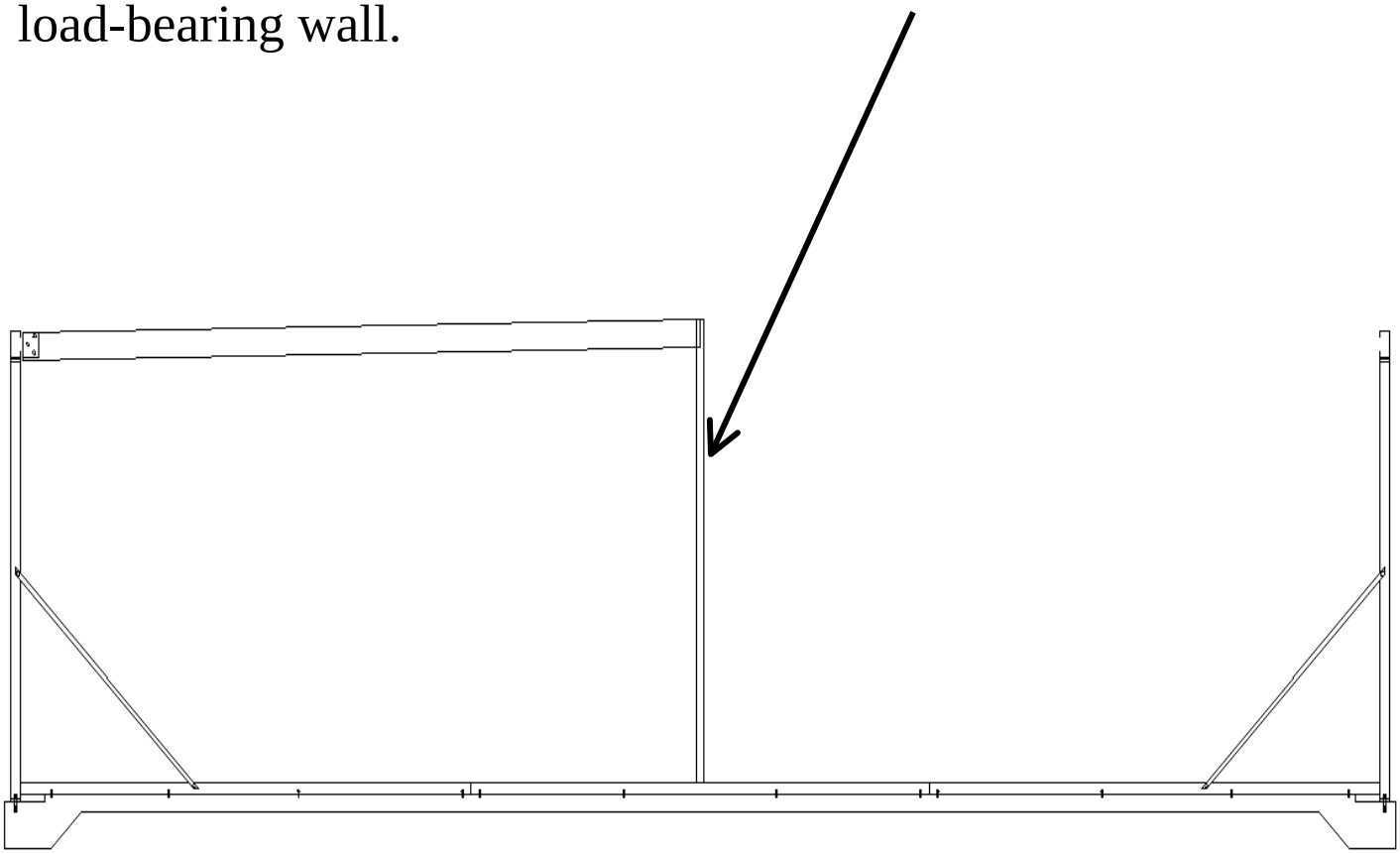
Attach one rafter angle (RA1) clip to the eave strut.

– This is the clip that attaches the rafter to the eave strut.



- Attach the rafter angle clip to the eave strut using 2-#12x3/4” SDMS.
- Place the rafter side of the clip protruding out from the eave strut and flush with the ¾” mark.
- Place the eave strut side of the clip facing away from the center of the load-bearing wall.

•Fabricate 1 temporary support column to hold up the roof peak end of the first rafter installed in the load-bearing wall. This also acts as a height template. Only one is needed because it is removed after 3 wall sheets are installed in each load-bearing wall.



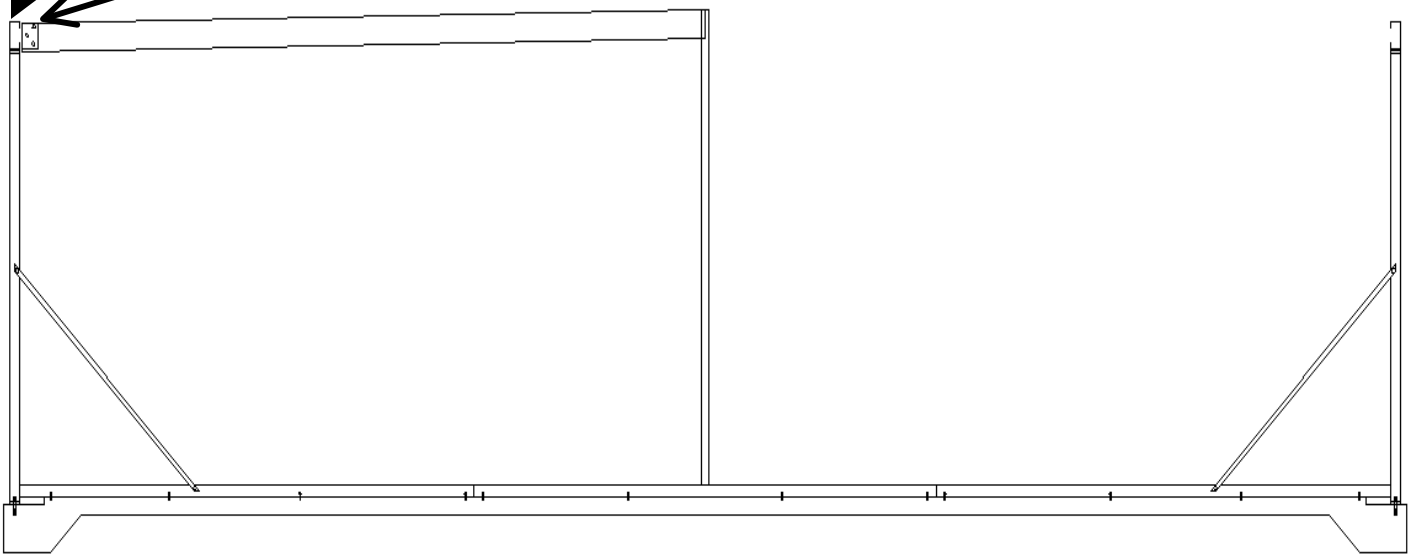
- A piece of base channel can be used to fabricate the temporary support column.
- Cut it to the proper length where the rafter flange can rest on top of the temporary support column. See erection drawings for the proper peak height of the rafter.
- Make sure the rafter can be clamped to the temporary support column using a pair of vise grips.

Attach the first rafter to the rafter angle clip.

Note: Top of rafter must be flush with top of the outside of the eave strut. This will cause water puddles if positioned wrong.

Clamp the temporary support column to the rafter using a pair of vise grips.

3- #12x3/4" SDMS



- Rest the top flange of the rafter on top of the rafter angle clip that is attached to the eave strut.
- The rafter is positioned on the outside of the rafter angle clip.
- Hold in place.
- Make sure the rafter clips are facing out away from the load-bearing wall. Rest the other end of the rafter flange on top of the temporary support column.
- This will set the peak height.
- Attach the rafter to the clip using 3- #12x3/4" SDMS.

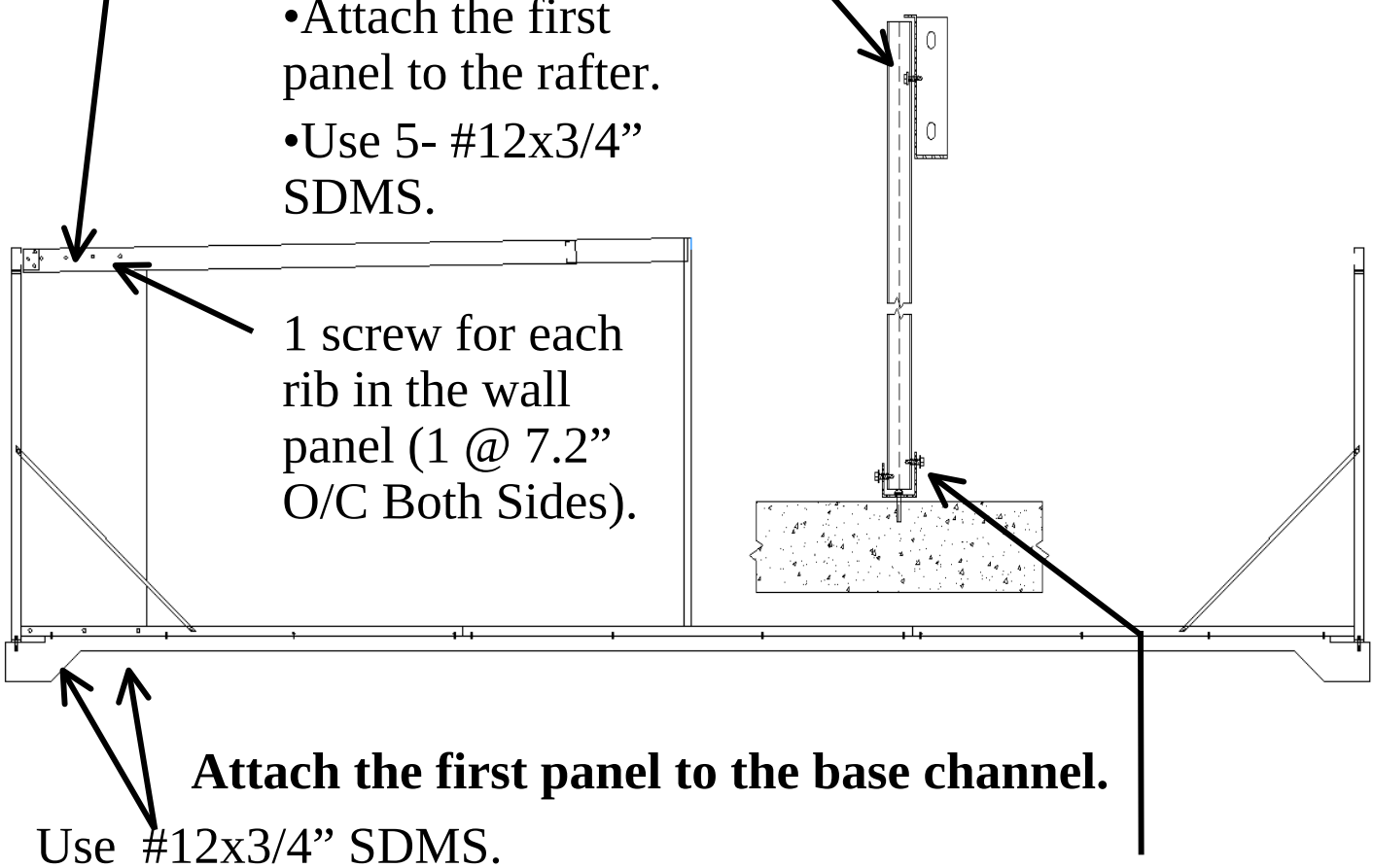
Install the first sections of the load-bearing wall sheeting panels.

Insert the shortest load-bearing wall panel into the base channel and locate it beside the jamb.

Insert screw through the panel first then into the rafter.

•Attach the first panel to the rafter.

•Use 5- #12x3/4” SDMS.



1 screw for each rib in the wall panel (1 @ 7.2” O/C Both Sides).

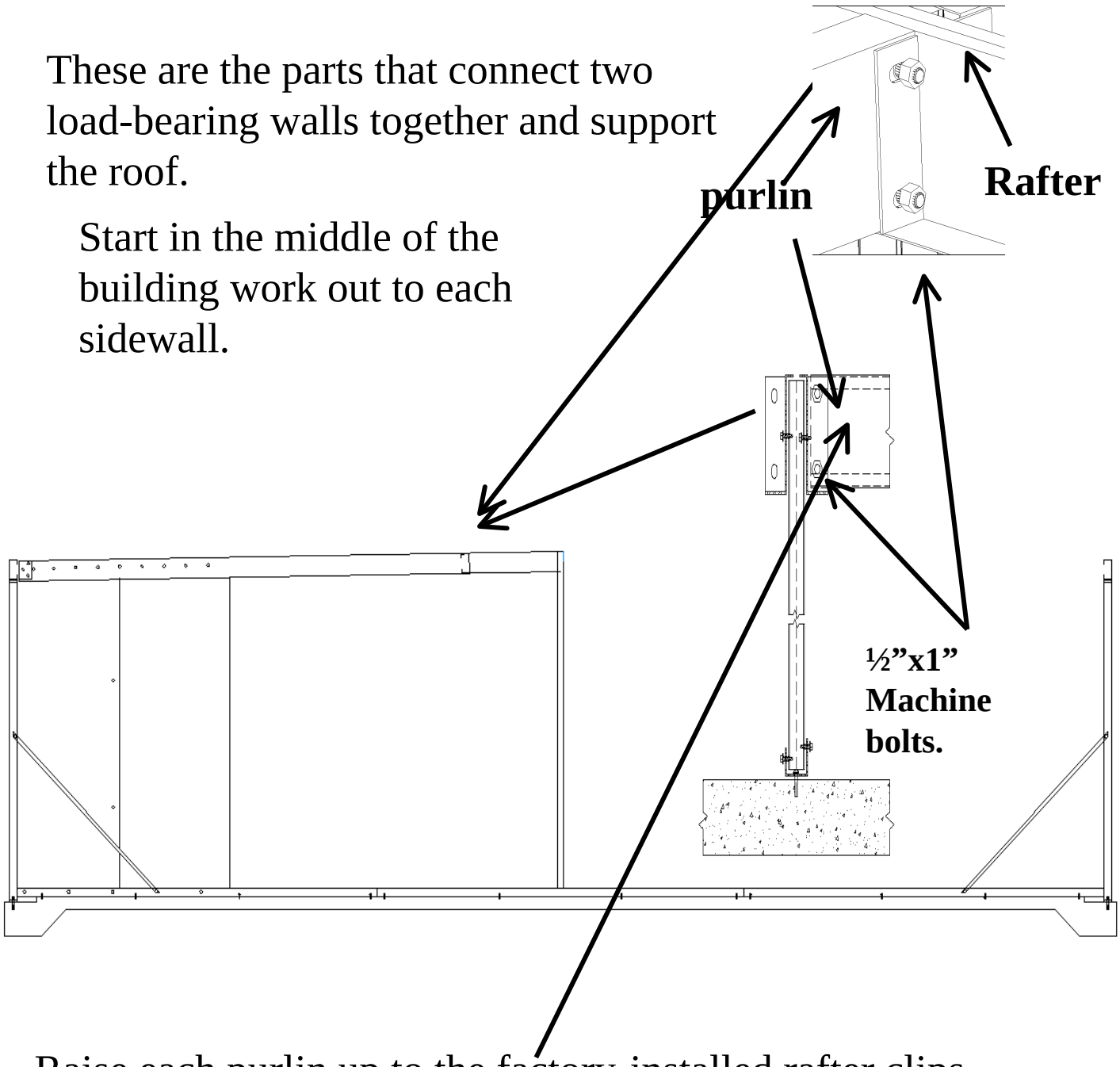
Attach the first panel to the base channel.

- Use #12x3/4” SDMS.
- 1 screw for every two ribs in the wall panel (1 @ 14.4” O/C).
- Insert screw through the base channel first then into the panel.
- Install the screws using this method on both sides of the load-bearing wall.

Install Roof Purlins.

These are the parts that connect two load-bearing walls together and support the roof.

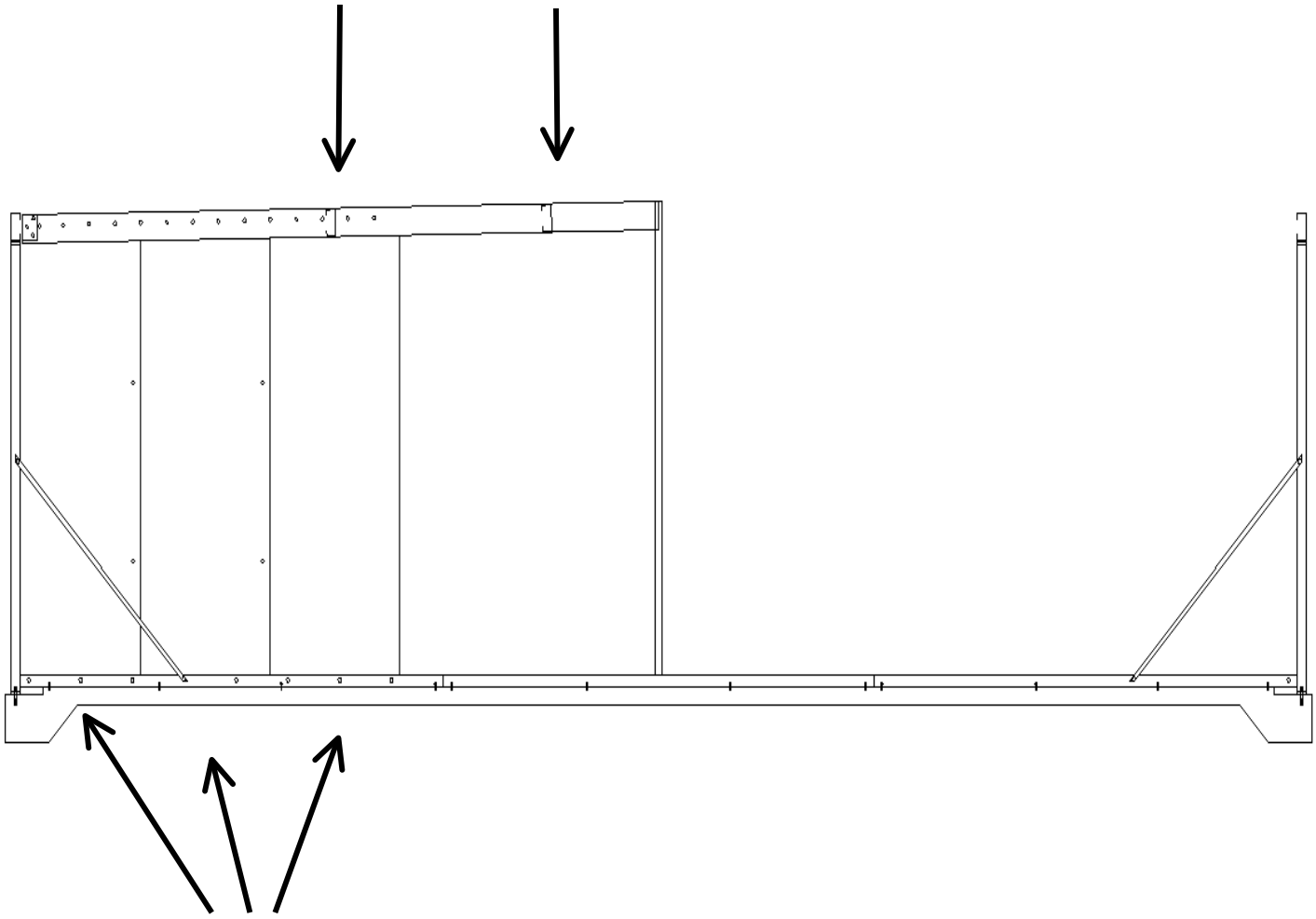
Start in the middle of the building work out to each sidewall.



- Raise each purlin up to the factory-installed rafter clips.
- Align the purlin holes with the holes in the rafter clips.
- Fasten using 4- ½”x1” Machine bolts.
- Place a level on the load bearing and tighten the bolts when it is plumb

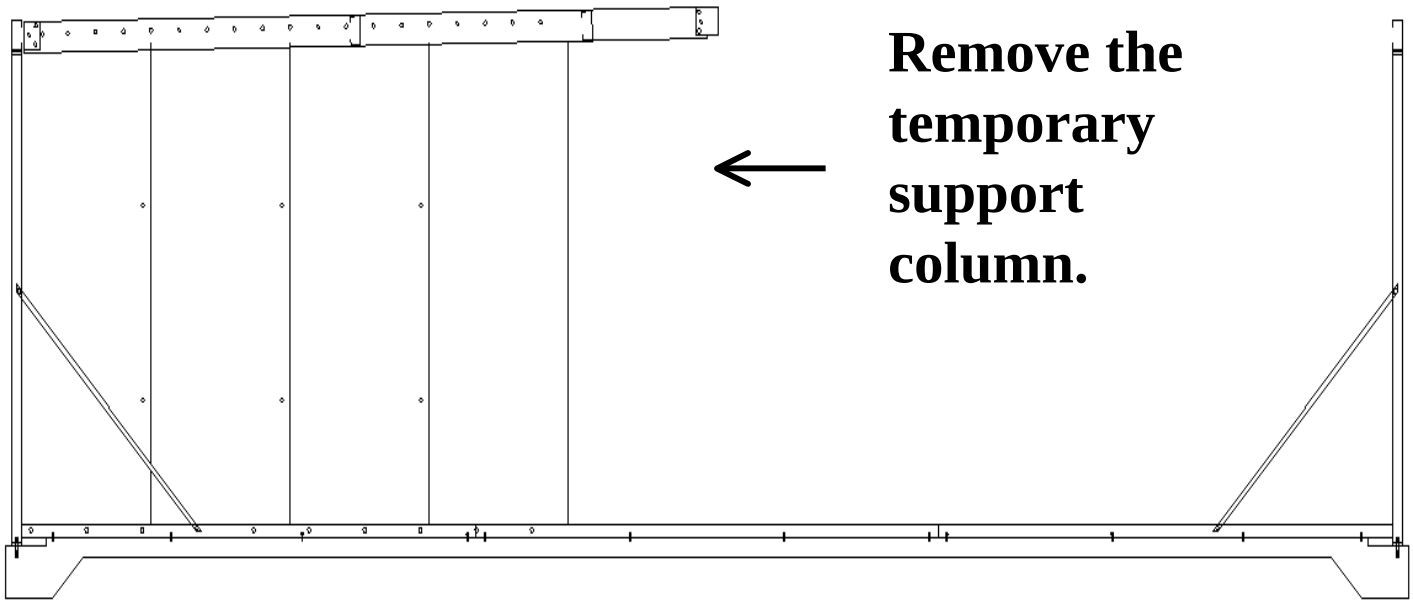
Continue this process to the center of the building.

- **Install roof purlins.**



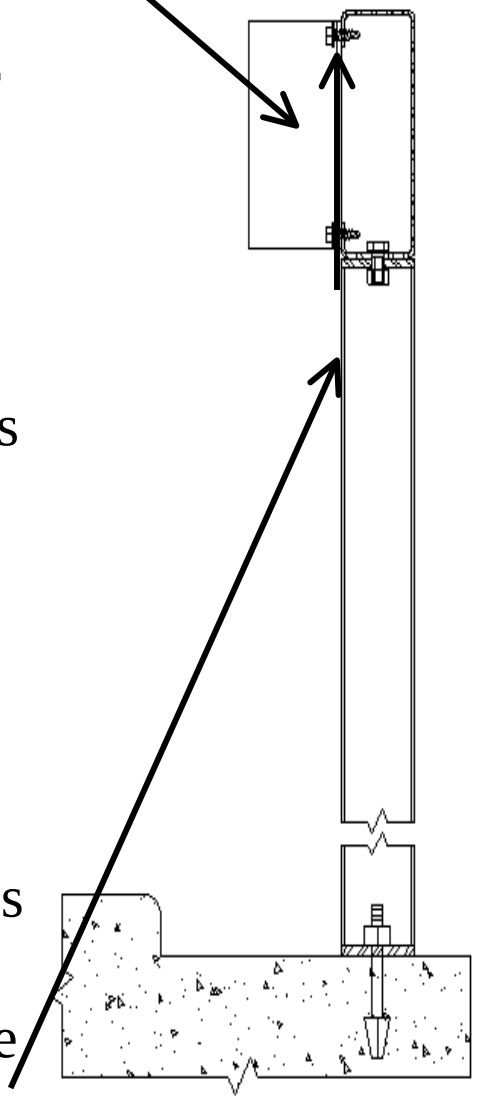
- Install load-bearing wall sheeting panels.

Continue this process to the center of the building.



Remove the temporary support column.

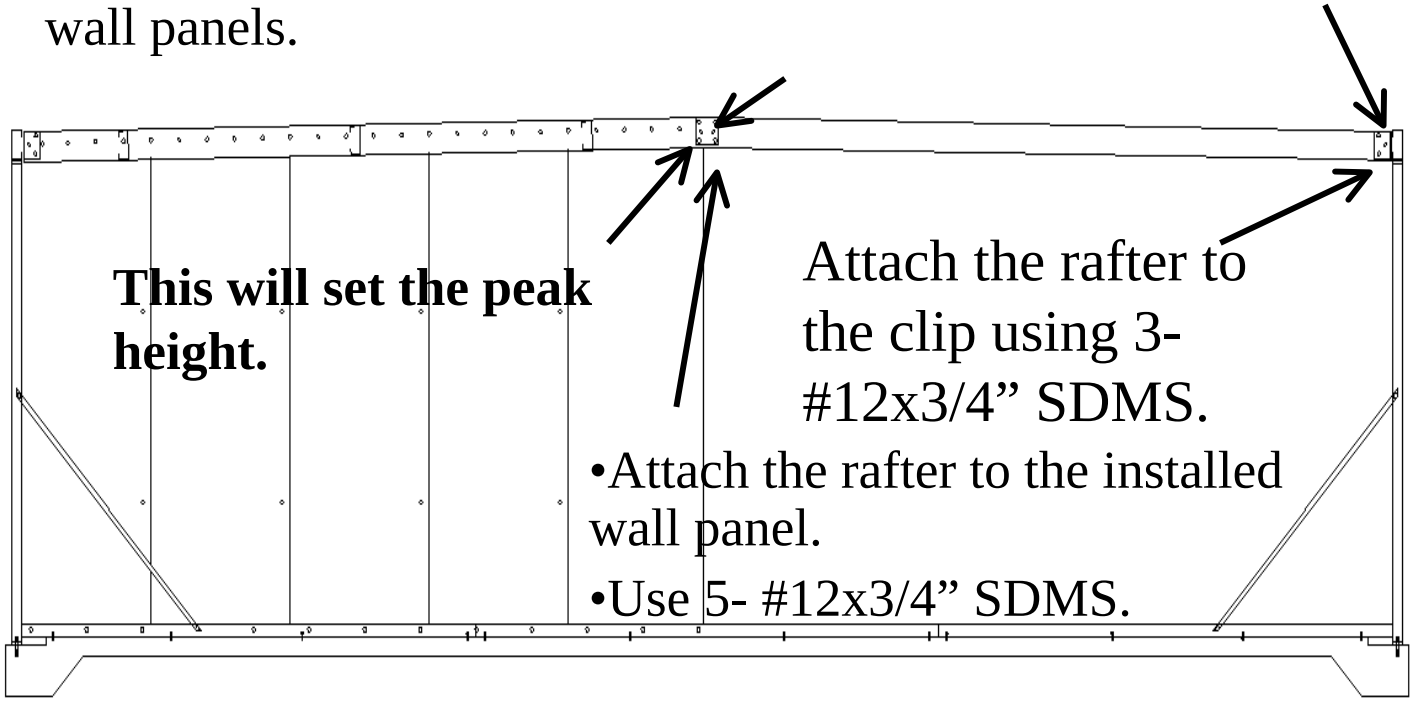
Attach one rafter angle (RA1) clip to the eave strut on the other side of the building.



- This is the clip that attaches the rafter to the eave strut.
- Measure ¾” off center of the load bearing wall. Make a mark.
- Note: This is half the thickness of the load-bearing wall sheeting. Two clips and rafters will eventually sandwich the wall sheeting.
- Hint: The center of the load-bearing wall is normally the center of the jamb, but not always. Refer to the erection drawings.
- Hint: The center of the base channel is the center of the load-bearing wall.
- Attach the rafter angle clip to the eave strut using 2- #12x3/4” SDMS.
- Place the rafter side of the clip protruding out from the eave strut and flush with the ¾” mark.
- Place the eave strut side of the clip facing away from the center of the load-bearing wall.

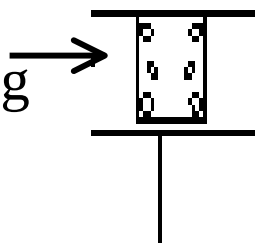
Attach second rafter to the other side of the building.

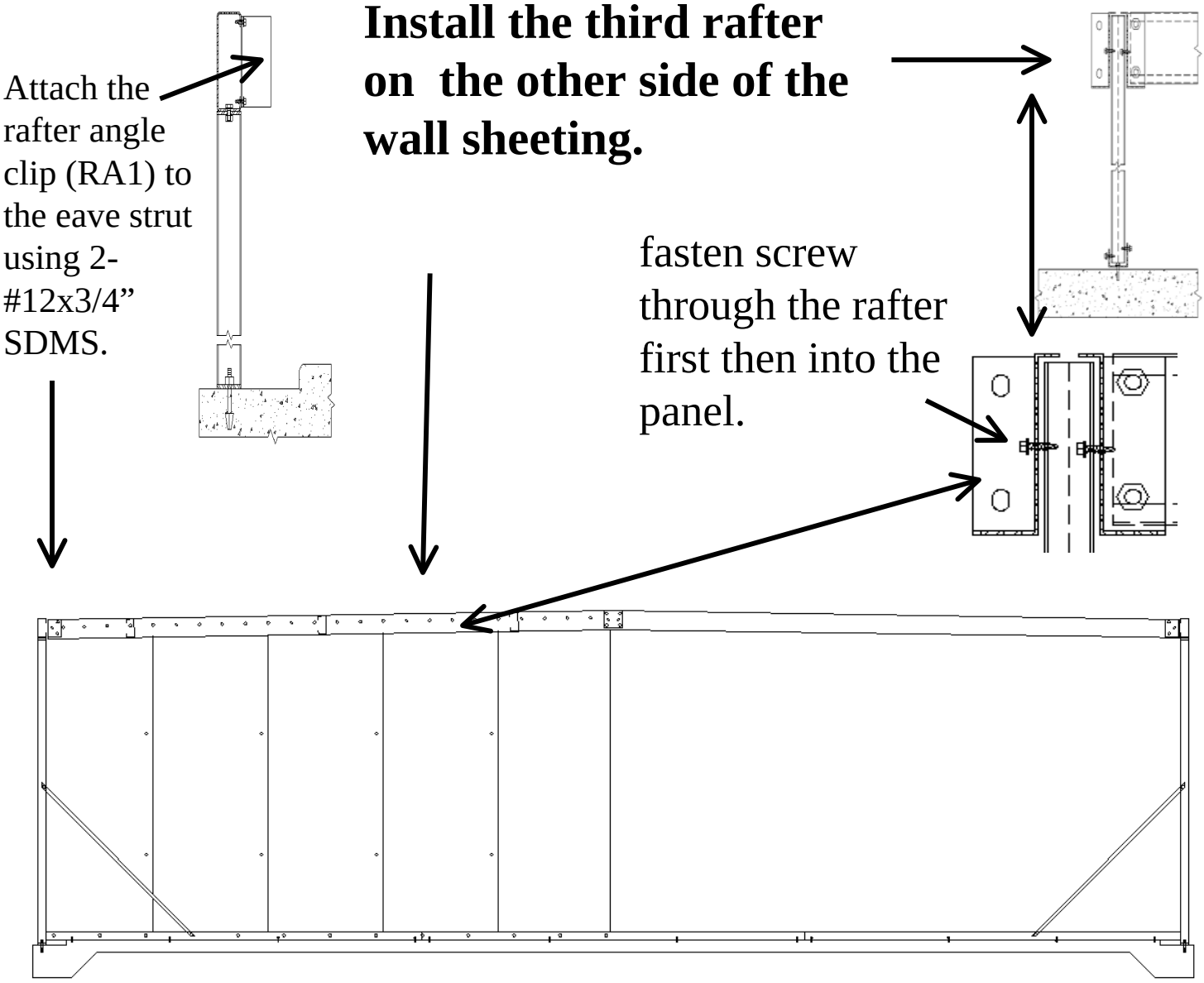
Rest the top flange of the rafter on top of the rafter angle clip and position on the outside. Hold in place. Make sure the purlin clips are facing out away from the load-bearing wall. Rest the other end of the rafter flange on top of the installed wall panels.



Note: Top of rafter must be flush with top of the outside of the eave strut. This will cause water puddles if positioned wrong.

Join the two ridge ends of the rafters using CP-1 Plate. Place a CP-1 plate on the end of both rafters at the roof peak. Attach CP-1 Plate using 6- #12x3/4” SDMS.

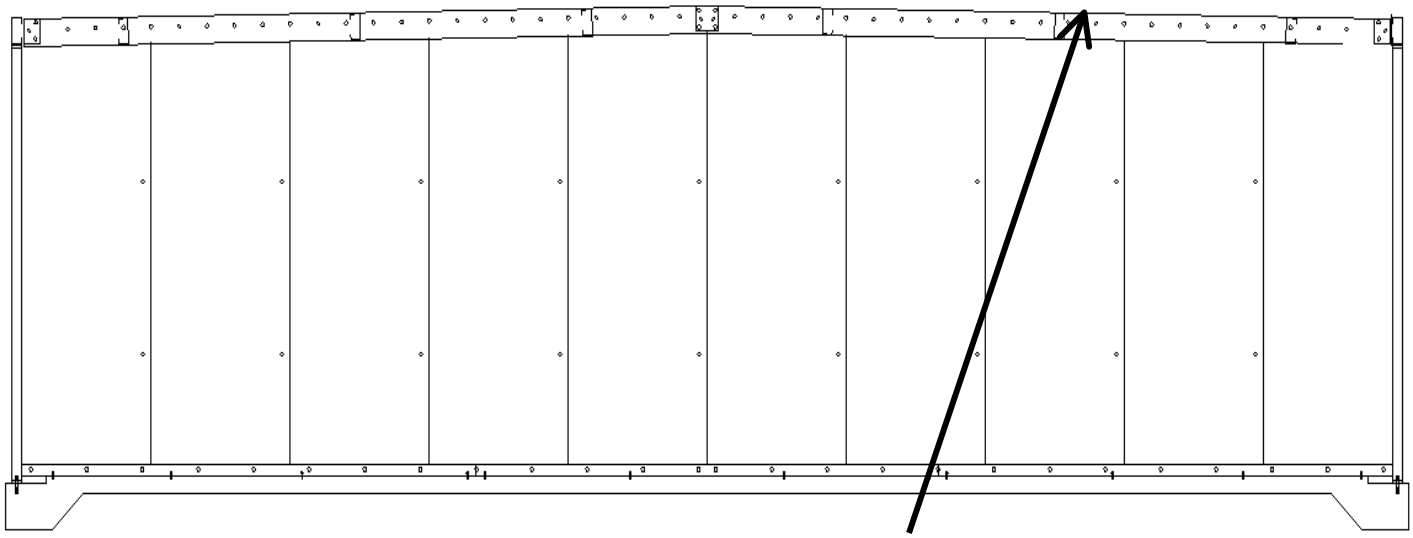




- Attach the rafter angle clip to the eave strut using 2- #12x3/4” SDMS..
- Rest the top flange of the rafter on top of the rafter angle clip that is attached to the eave strut and on top of the installed wall panel. Hold in place. Make sure the purlin clips are facing out away from the load-bearing wall.
- Attach the rafter to the rafter angle clip using 3- #12x3/4” SDMS
- Attach the rafter to the panels. Use 5- #12x3/4” SDMS.
- 1 screw for each rib in the wall panel (1 @ 7.2” O/C Both Sides).

Install the balance of the load-bearing wall sheeting panels and roof purlins.

Start at the center of the building. Install in descending order from tallest to shortest. Attach screws as described through the rafter and base channel. Remove the temporary jamb supports.



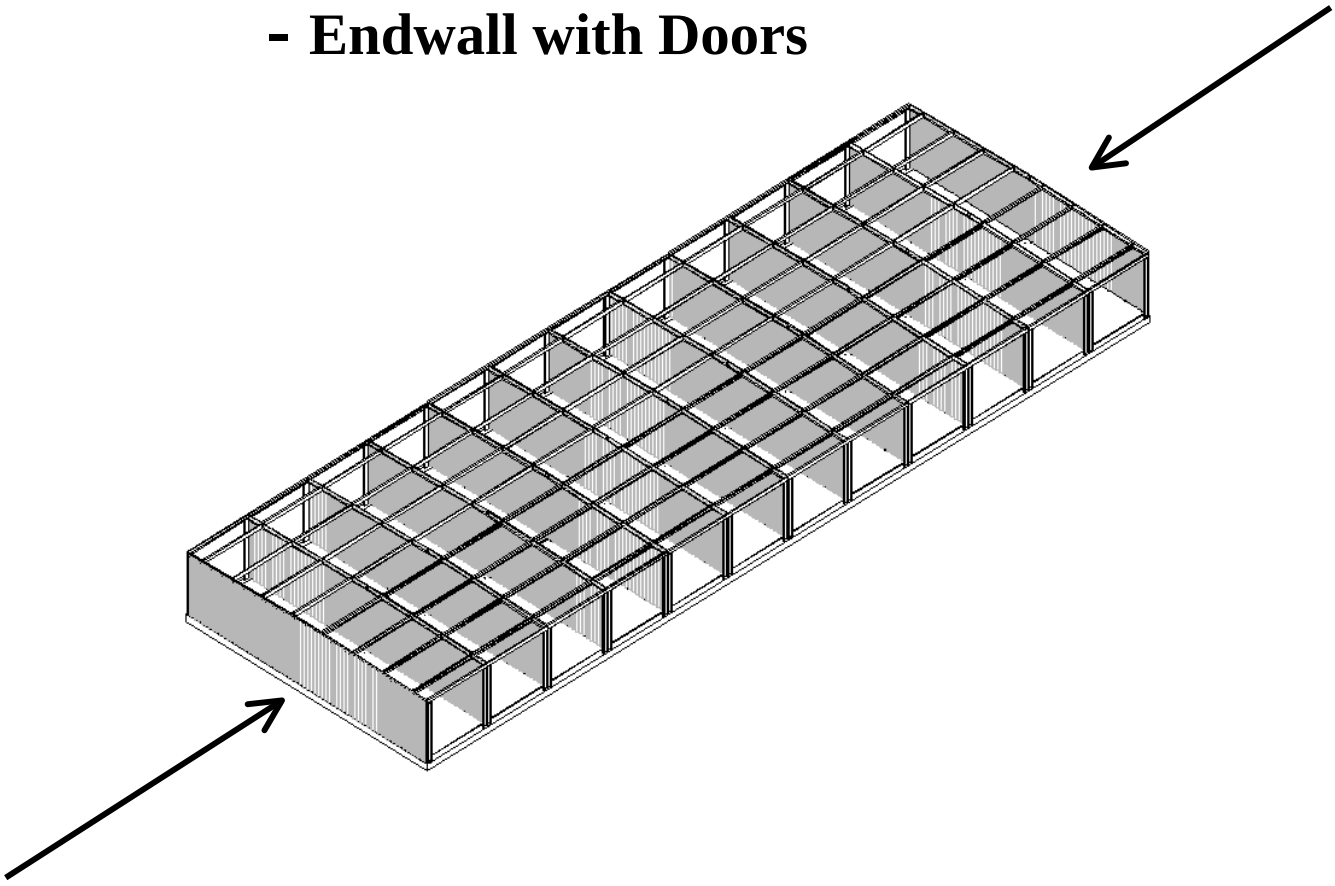
Install the fourth rafter on to the other side of the wall sheeting.

Attach the rafter angle clip (RA1) to the eave strut using 2- #12x3/4" SDMS. Rest the top flange of the rafter on top of the rafter angle clip that is attached to the eave strut and on top of the installed wall panel hold in place. Make sure the rafter clips are facing out away from the load-bearing wall. Attach the rafter to the RA1 clip using 3- #12x3/4" SDMS. Attach the rafter to the panels. Use 5- #12x3/4" SDMS. 1 screw for each rib in the wall panel (1 @ 7.2" O/C Both Sides). Insert screw through the rafter first then into the panel. Attach CP-1 Plate using 6- #12x3/4" SDMS.

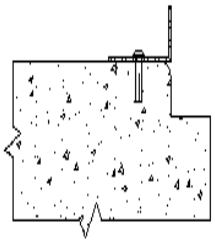
Install Endwalls

Two Types

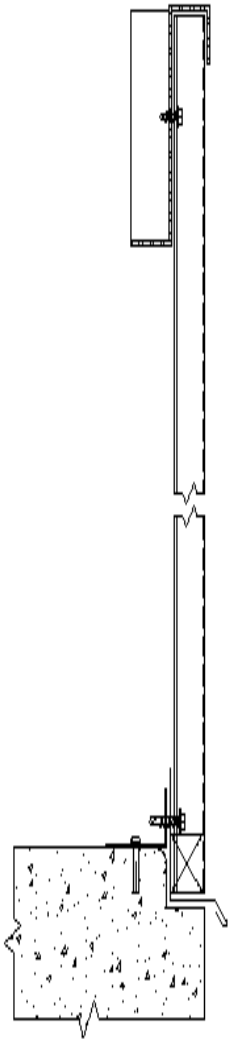
- **Sheeted Endwall**
- **Endwall with Doors**



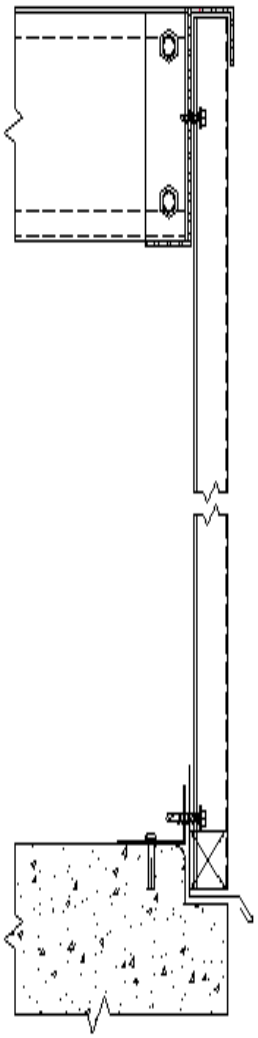
Sheeted Endwall



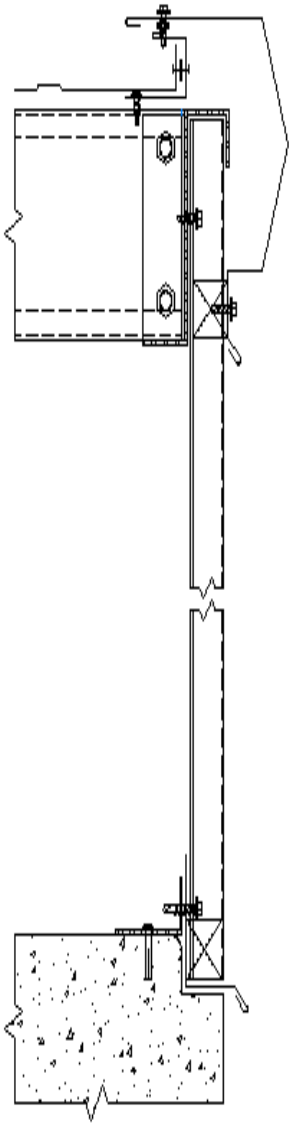
1. Install base angle (BA10X) using drive pins.



2. Install Endwall rafter, sheeting, and bottom closures.



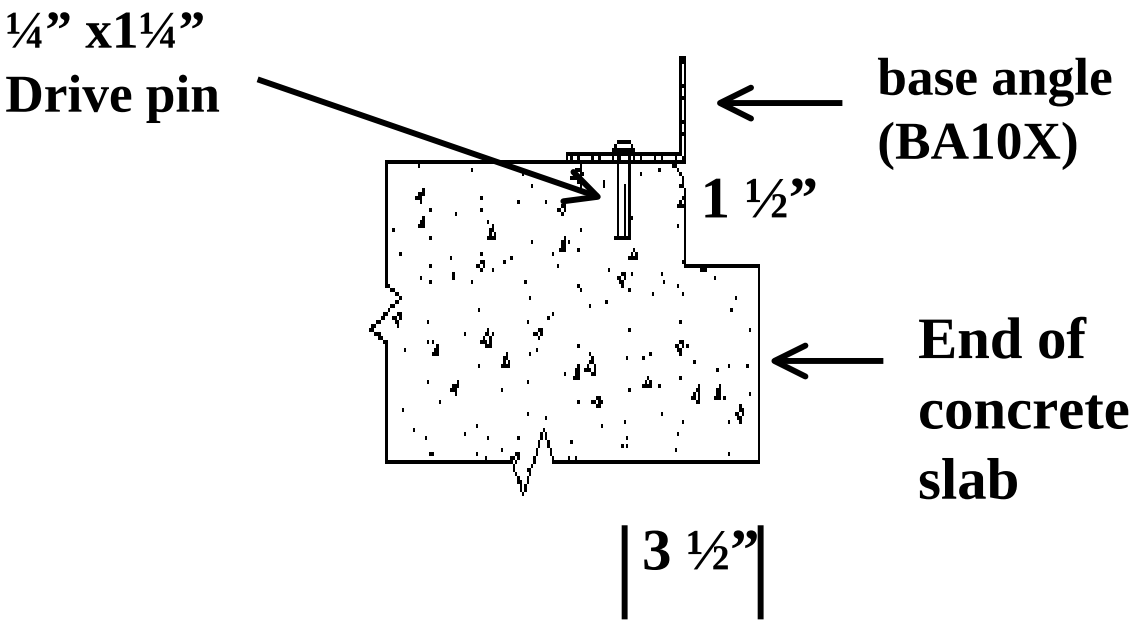
3. Install roof purlin.



4. Install trim, and top closures.

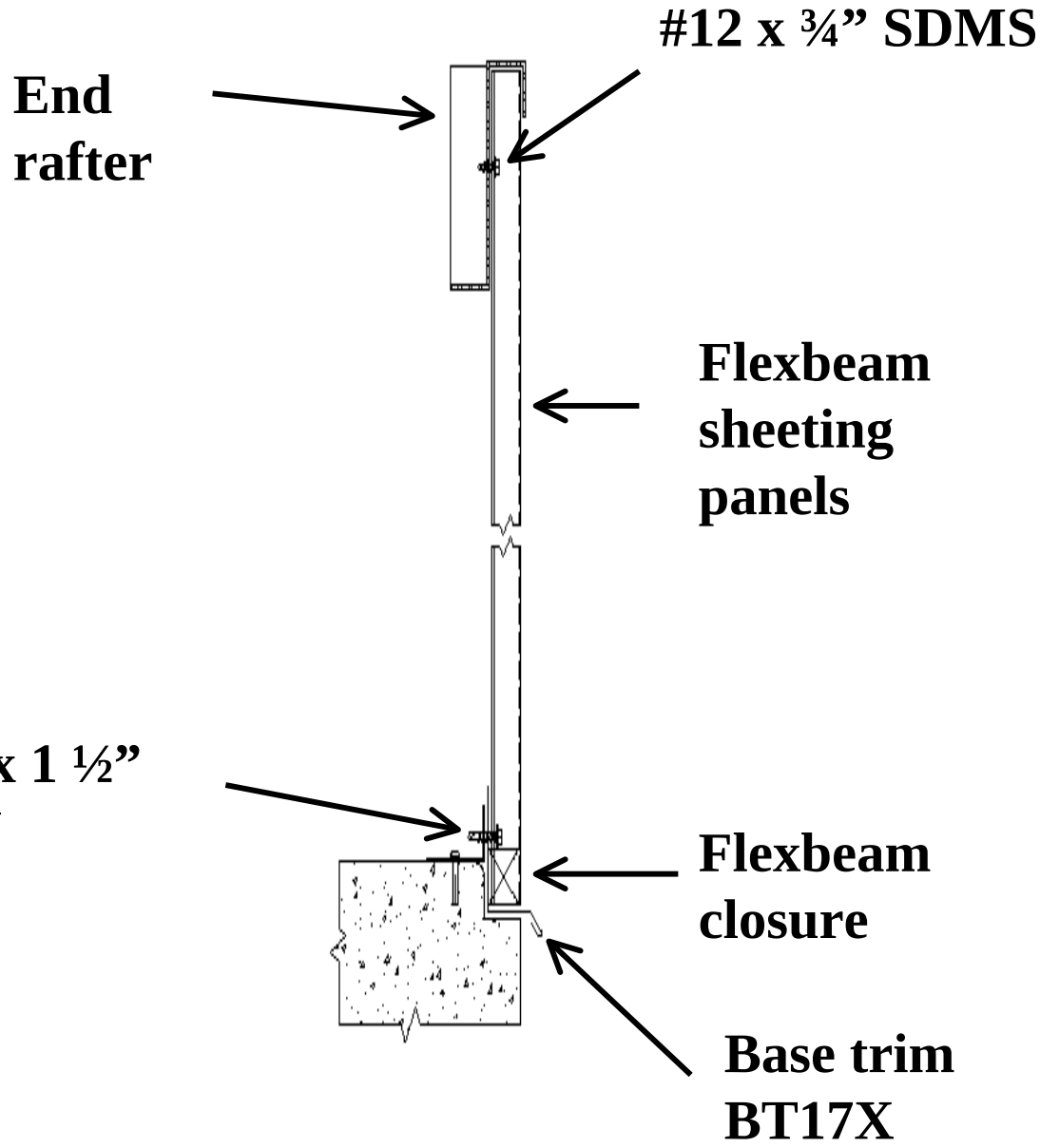
Sheeted Endwall

1. Install base angle (BA10X) using drive pins.



Sheeted Endwall

2. Install Endwall rafter and sheeting.



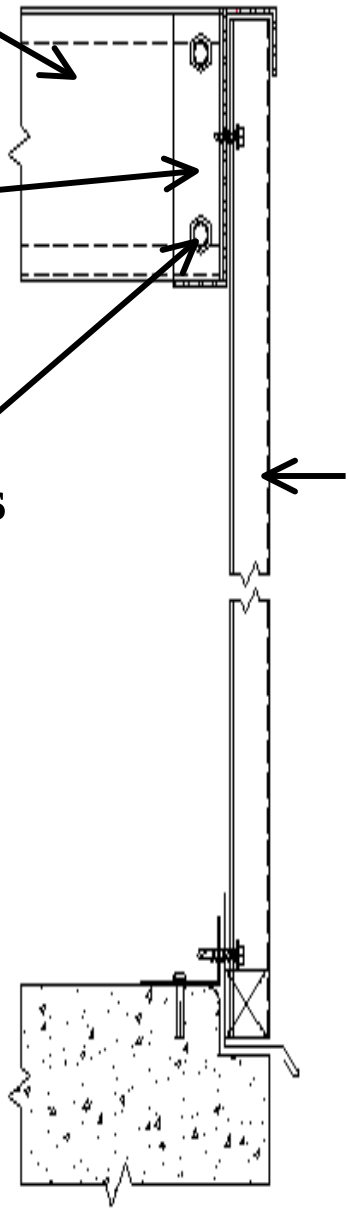
Sheeted Endwall

3. Install roof purlins.

8” x 2 ½” CEE Purlin

Factory installed clip

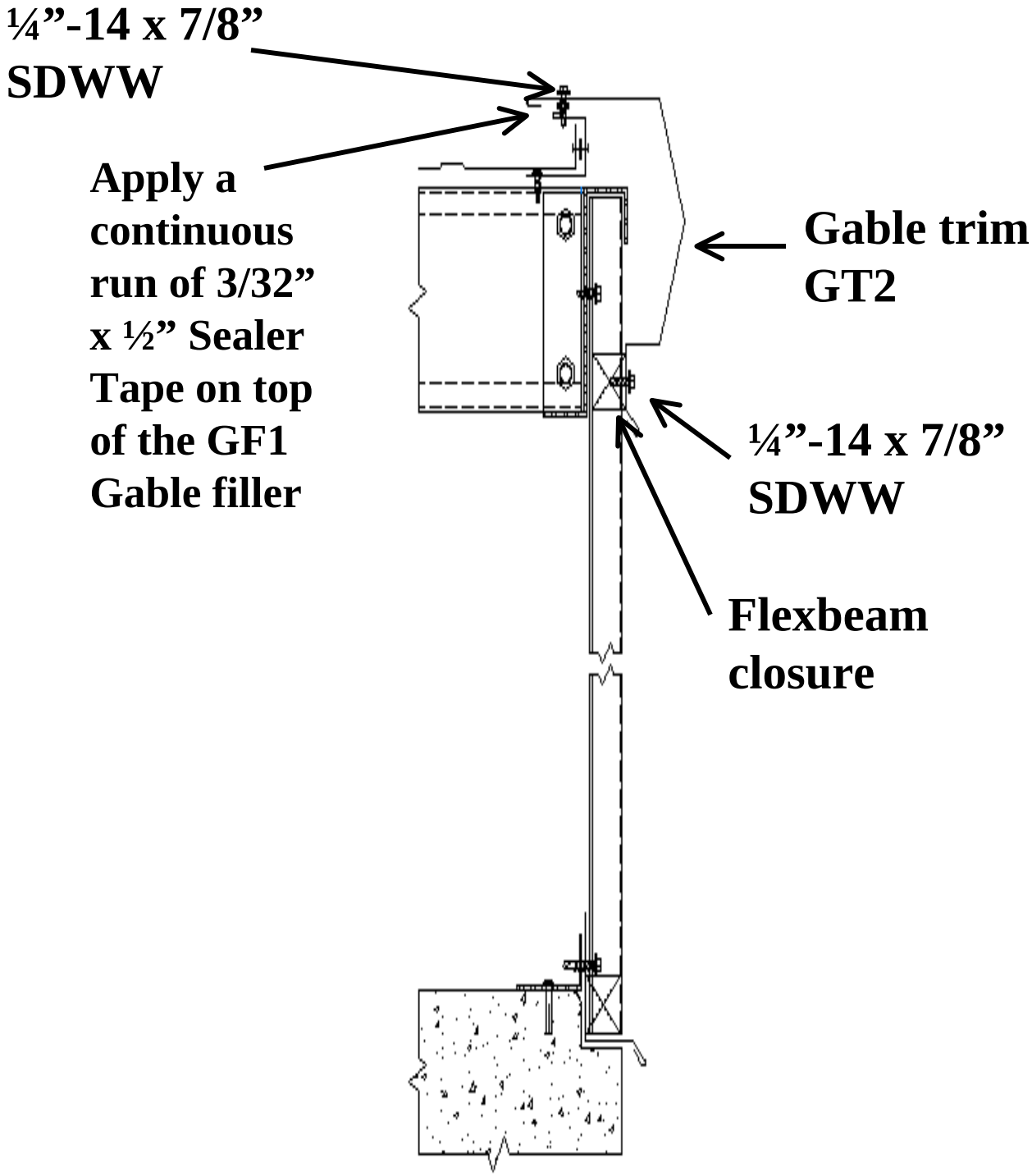
½” x 1” HH Machine Bolts



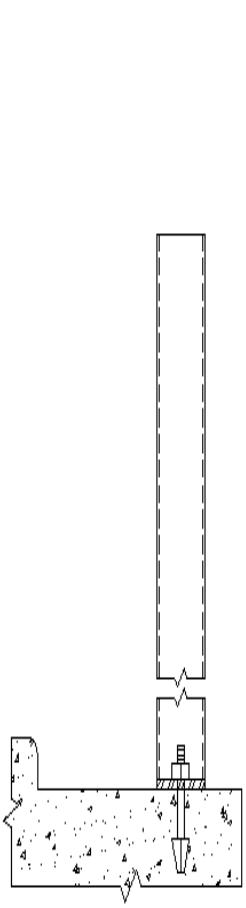
Using a level plumb the endwall while tightening the Machine Bolts

Sheeted Endwall

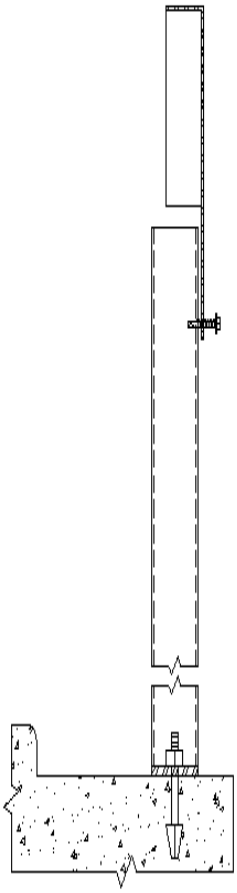
4. Install trim after roof sheeting.



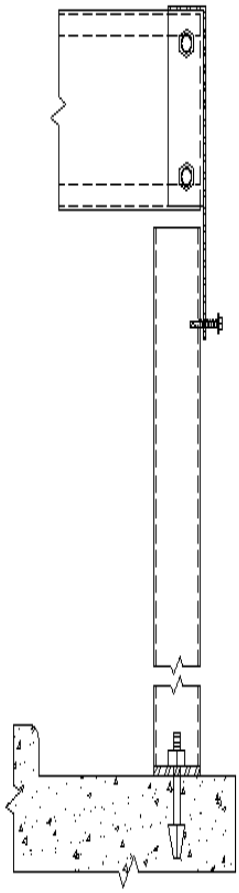
Endwall with Doors



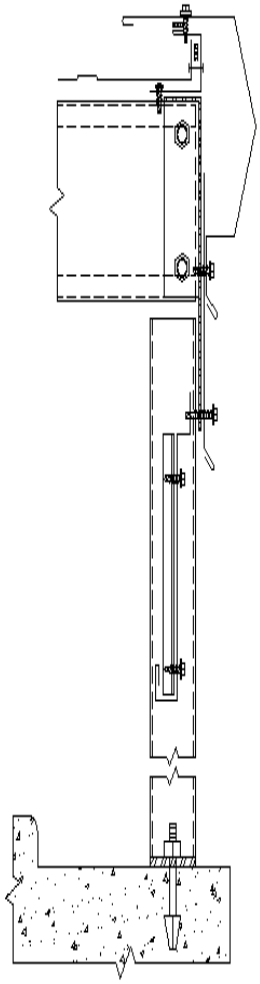
1. Install Jambs



2. Install Endwall rafter.



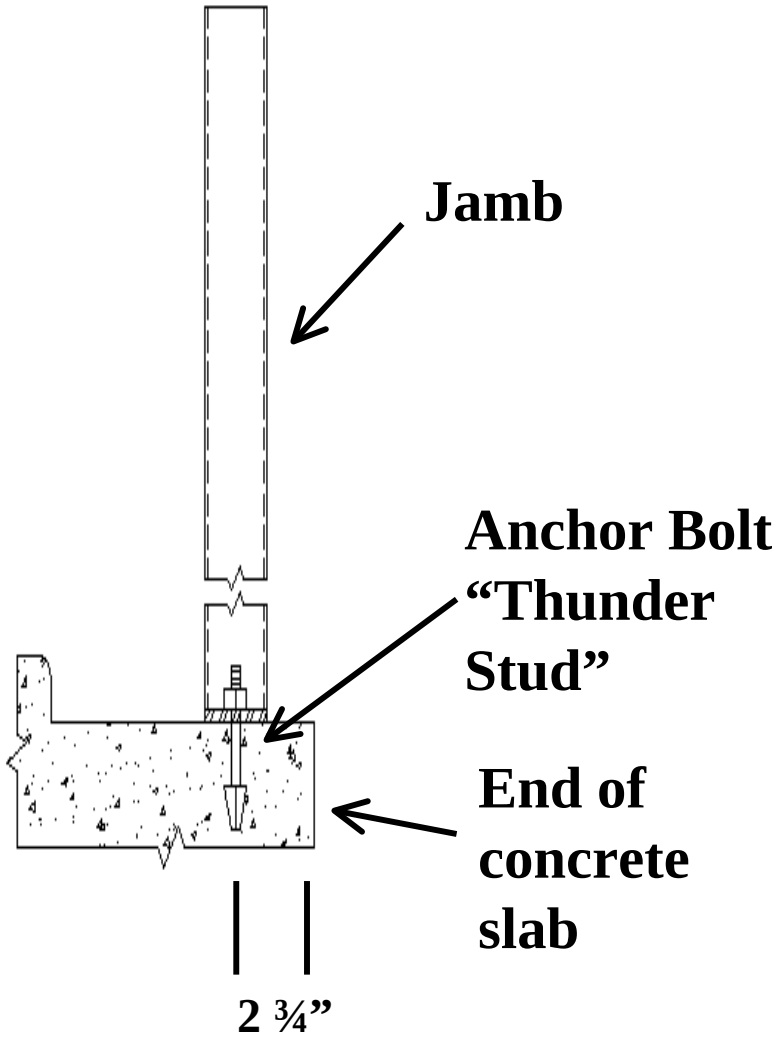
3. Install roof purlin



4. Install trim and closures

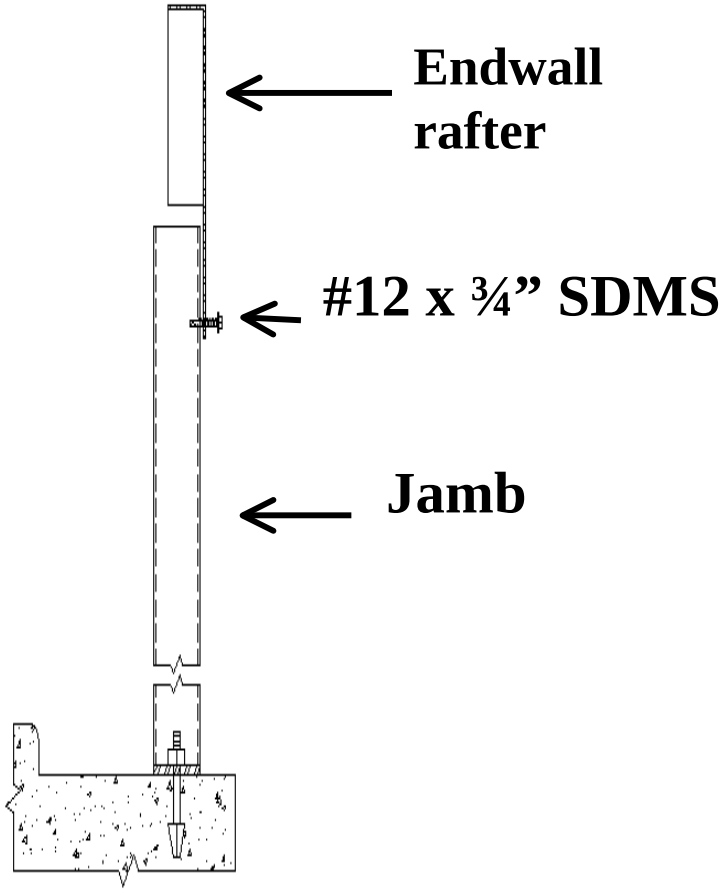
Endwall with Doors

1. Install Jambs



Endwall with Doors

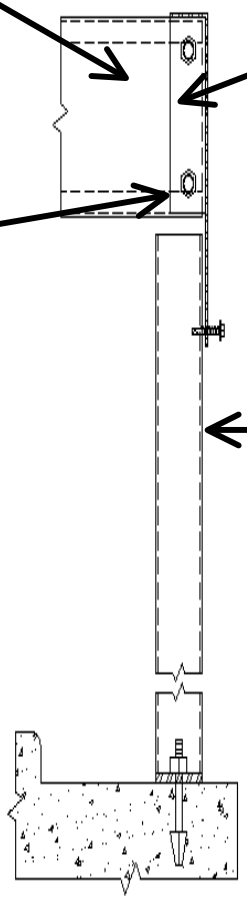
2. Install Endwall rafter.



Endwall with Doors

3. Install roof purlin

8” x 2 ½” CEE Purlin



Factory installed clip

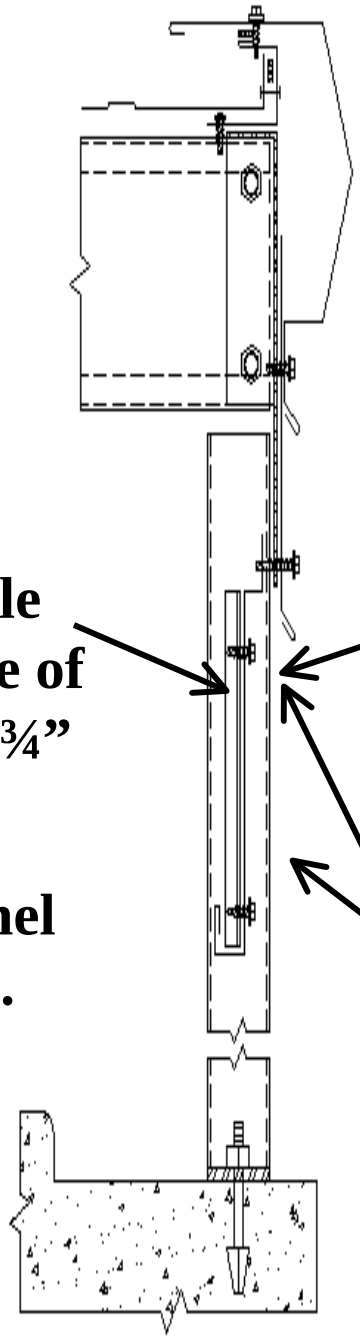
½” x 1” HH Machine Bolts

Using a 3’ level plumb the endwall while tightening the Machine Bolts

Endwall with Doors

4a. Install trim after roof sheeting.

- Filler panel



Attach 1” x 1” Angle (FPA1) to the inside of each jamb w/#12 x ¾” SDMS

Note: The filler panel attaches to this clip.

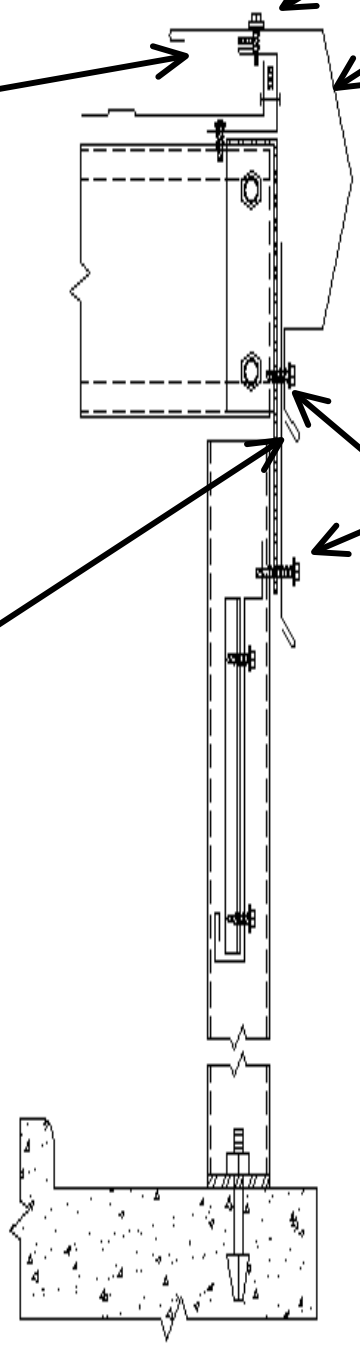
Filler Panel

¼”-14 x 7/8” SDWW

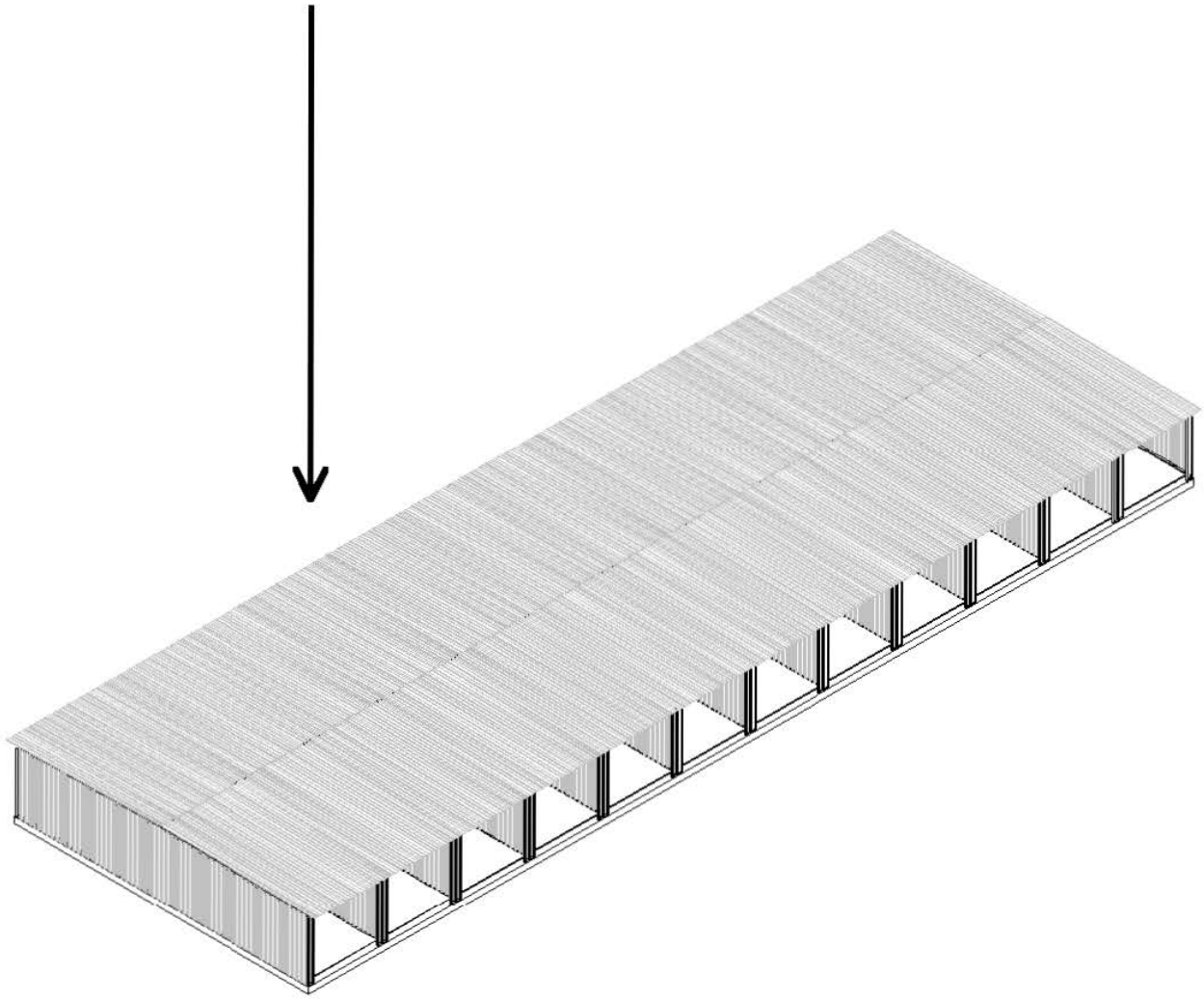
Endwall with Doors

4b. Install trim after roof sheeting.

- Gable trim & Gable filler

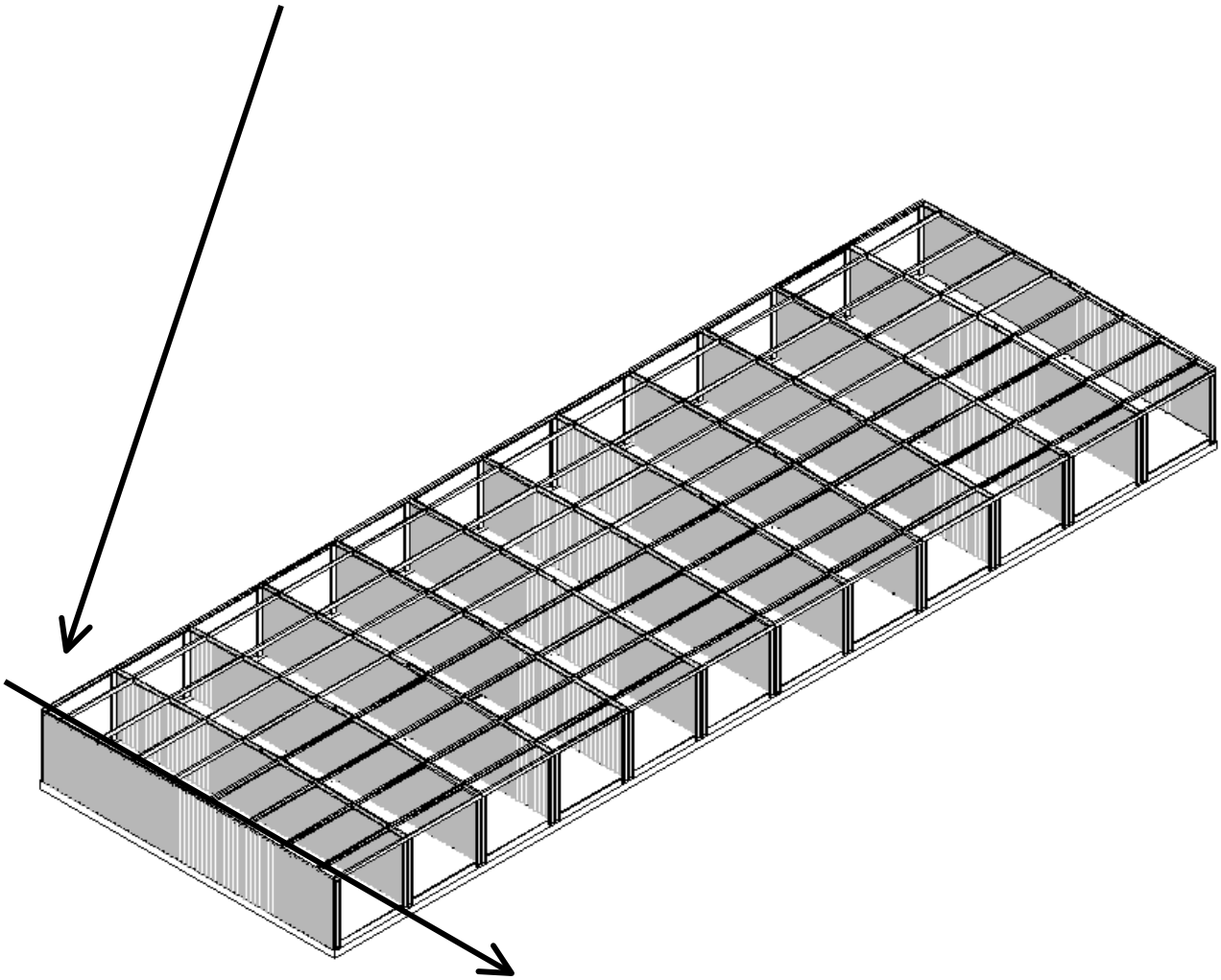


Install Flexospan FSS-1.5 Standing Seam Roof System



Flexospan FSS-1.5 Standing Seam Roof System

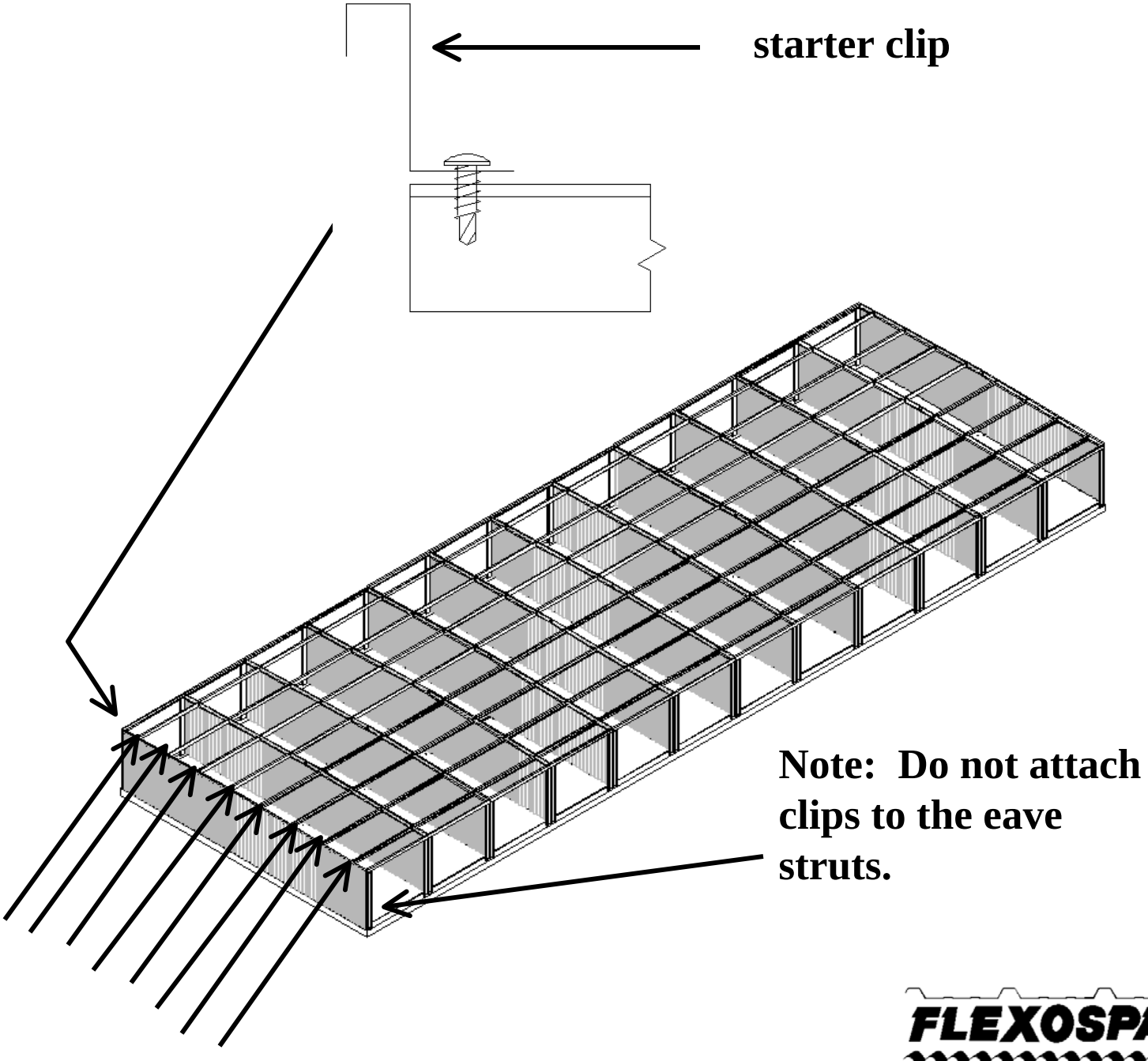
1. Run a chalk line along an end wall perpendicular to the eave line to insure the building and endwall is straight.



Note: See Insulation option at the end of this section before proceeding**.**

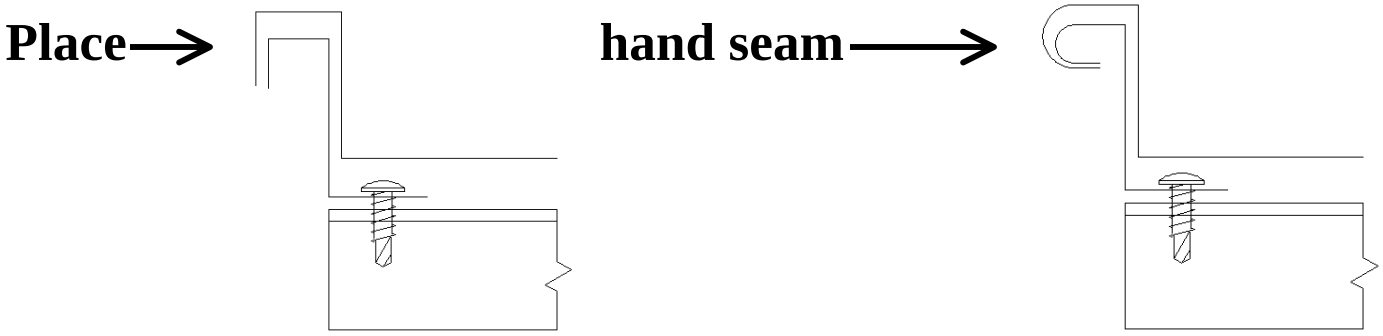
Flexospan FSS-1.5 Standing Seam Roof System

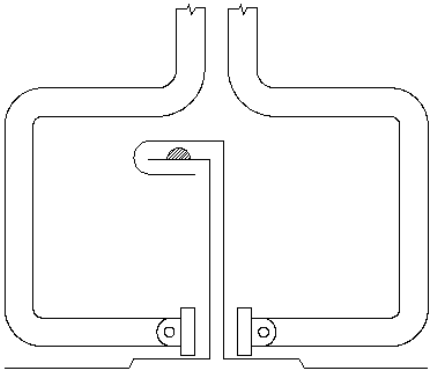
2. Attach starter clips to each roof purlin along the chalk line with 2-#10x1/2” Pan Head Screws SDMS.



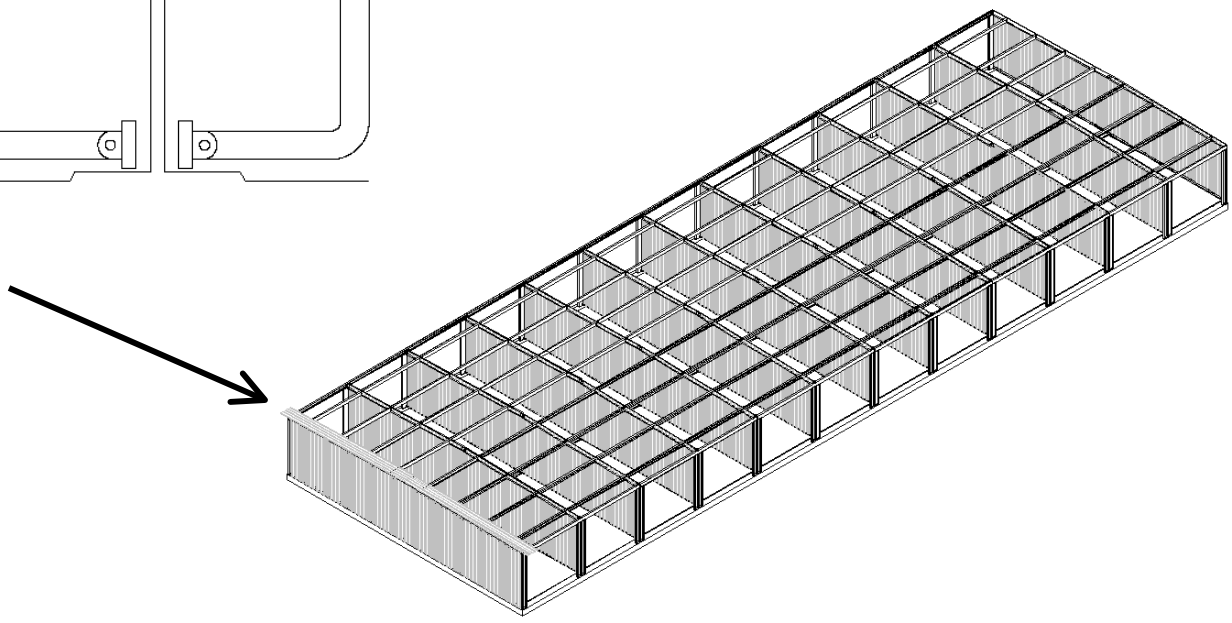
Flexospan FSS-1.5 Standing Seam Roof System

3. Place the female leg of the First FSS-1.5 roof panel over top of the starter clips. Clamp panel and clips together using vise clamps. Crimp the panel at each clip using a hand seamer. Remove the vise clamps.





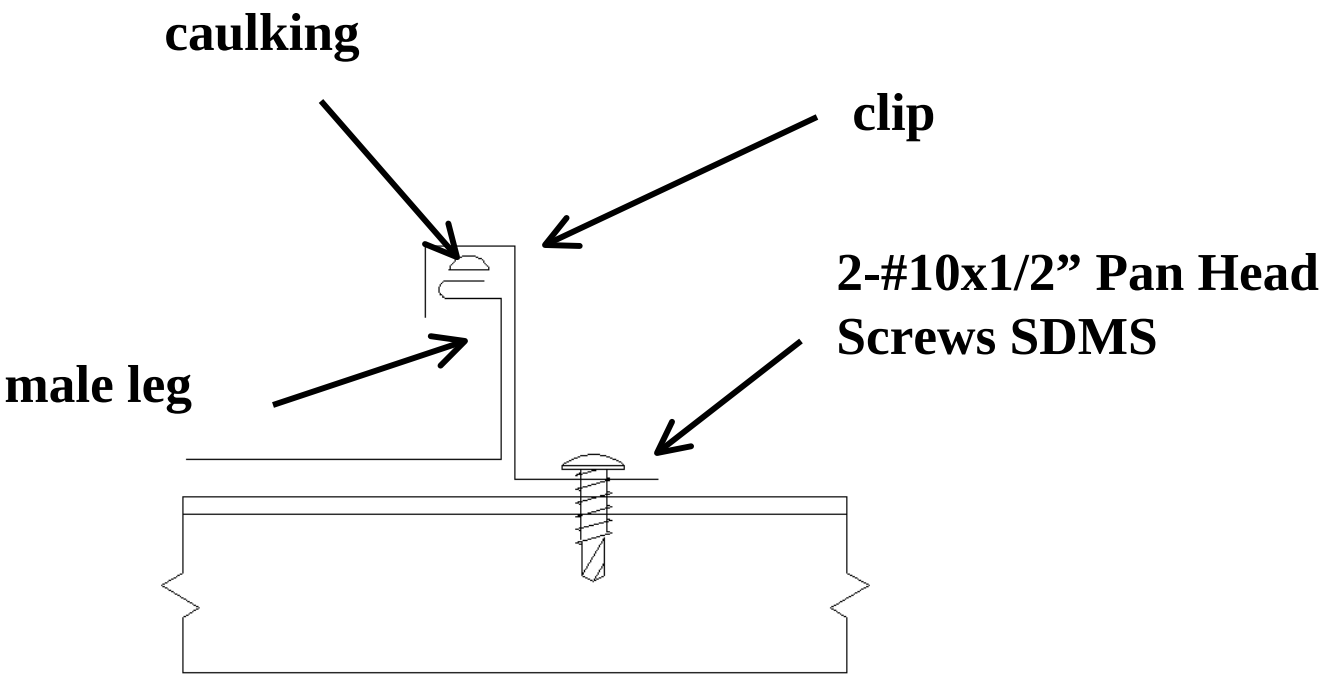
vise clamp



Flexospan FSS-1.5 Standing Seam Roof System

4. Apply caulking to the underneath side of the clips.
Note: This can be done by a person on the ground in large batches.

Attach clips at each roof purlin over top of the FSS-1.5 roof panel male leg with 2-#10x1/2” Pan Head Screws SDMS.



Note: Do not attach clips to the eave struts.

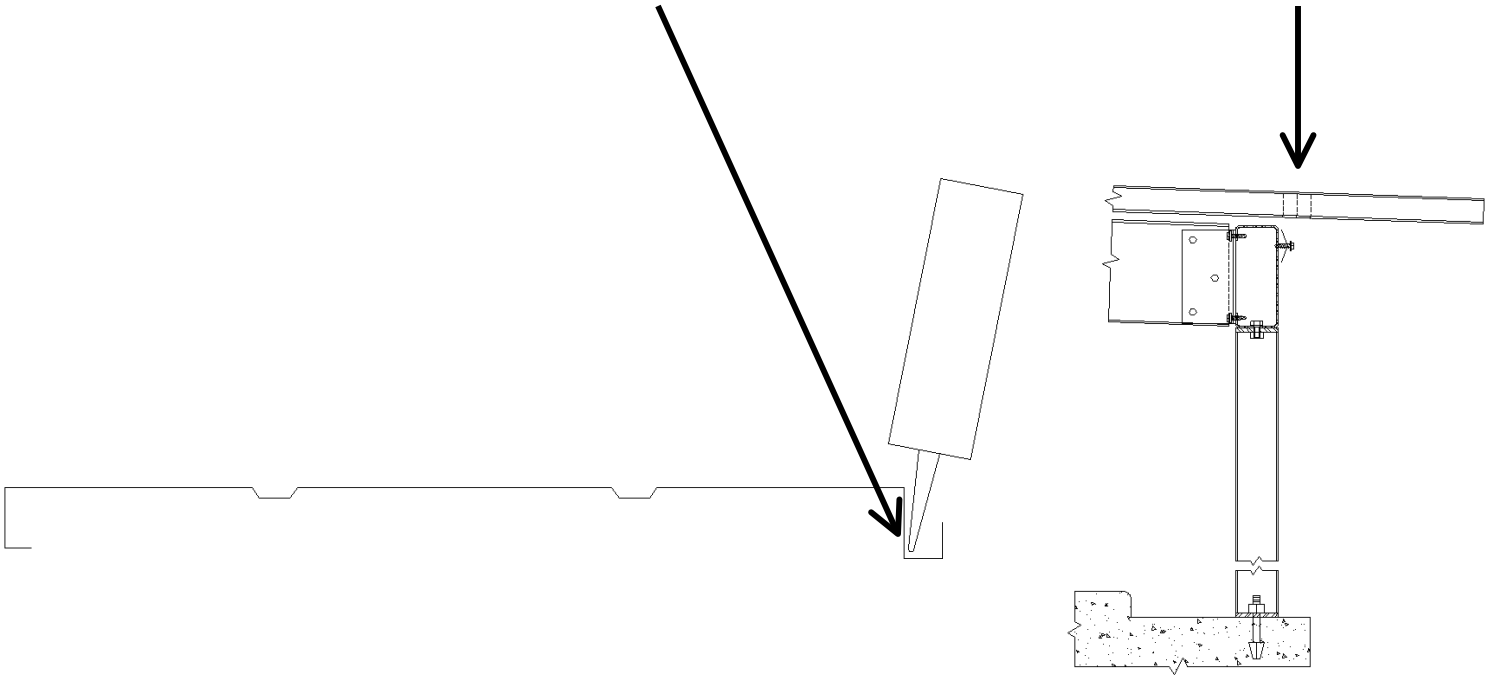
Flexospan FSS-1.5 Standing Seam Roof System

5. With the roof panel laying upside down apply a continuous bead of caulking into the female leg groove.

6. Apply 3 short beads of caulking vertically on the male leg of the panel where eventually the eave trim ET2X will fit up underneath the roof panel.

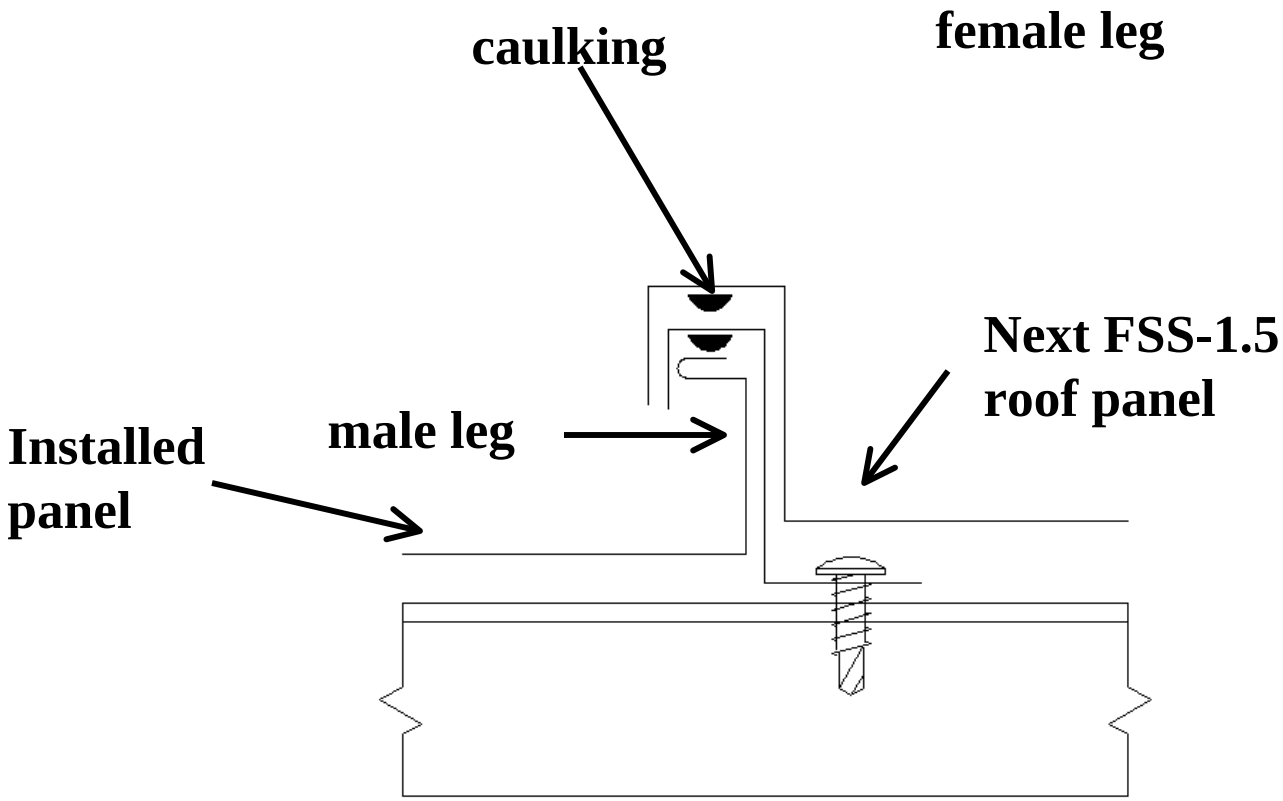
   Note: This will stop water from backing up between the roof panels when ice forms in the winter.

continuous bead of caulking **3 short beads of caulking**



Flexospan FSS-1.5 Standing Seam Roof System

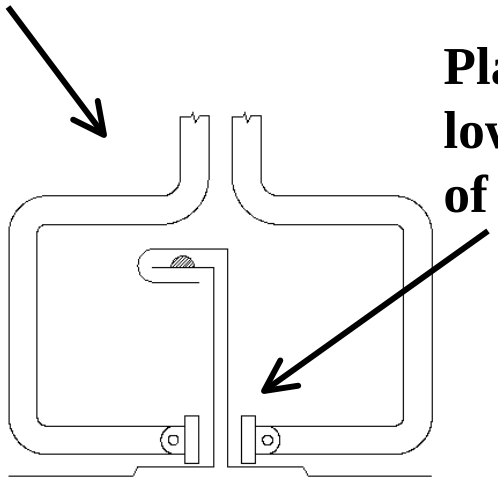
7. Spin the caulked panel right side up and place the female leg of the FSS-1.5 roof panel over top of the male leg and clips of the previously installed panel.



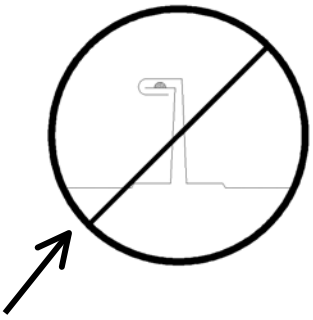
Flexospan FSS-1.5 Standing Seam Roof System

Next step is very important.

8. Vertical legs of the panels must be held tight together using clamps at the eave and clip locations. This maintains proper panel alignment.



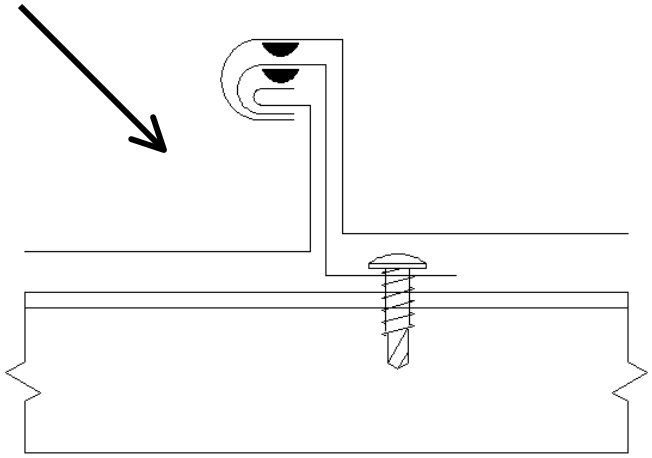
Place clamp low to the base of the leg.



This could cause weather tightness and alignment problems.

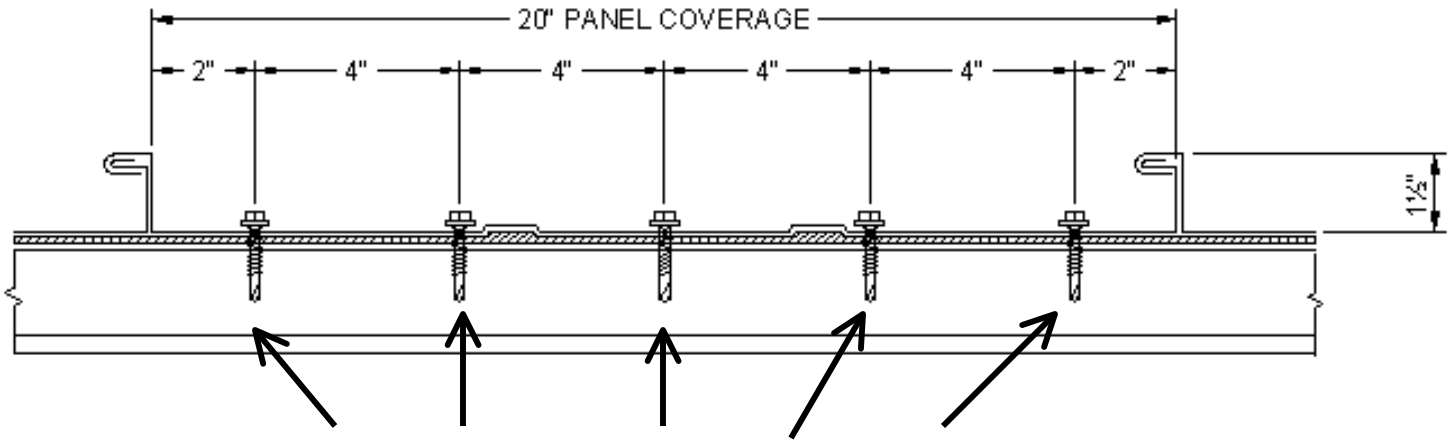
Hand crimp the two panels together at each clip location and 2' up from the ends of the panels at each eave using a hand seamer. Remove the clamps.

Run the electric seamer the entire length of the joined panels.



Flexospan FSS-1.5 Standing Seam Roof System

9. Fasten the panel to each eave strut using 5- #12/14 x 1 ½” Ultimate screws SDWW.

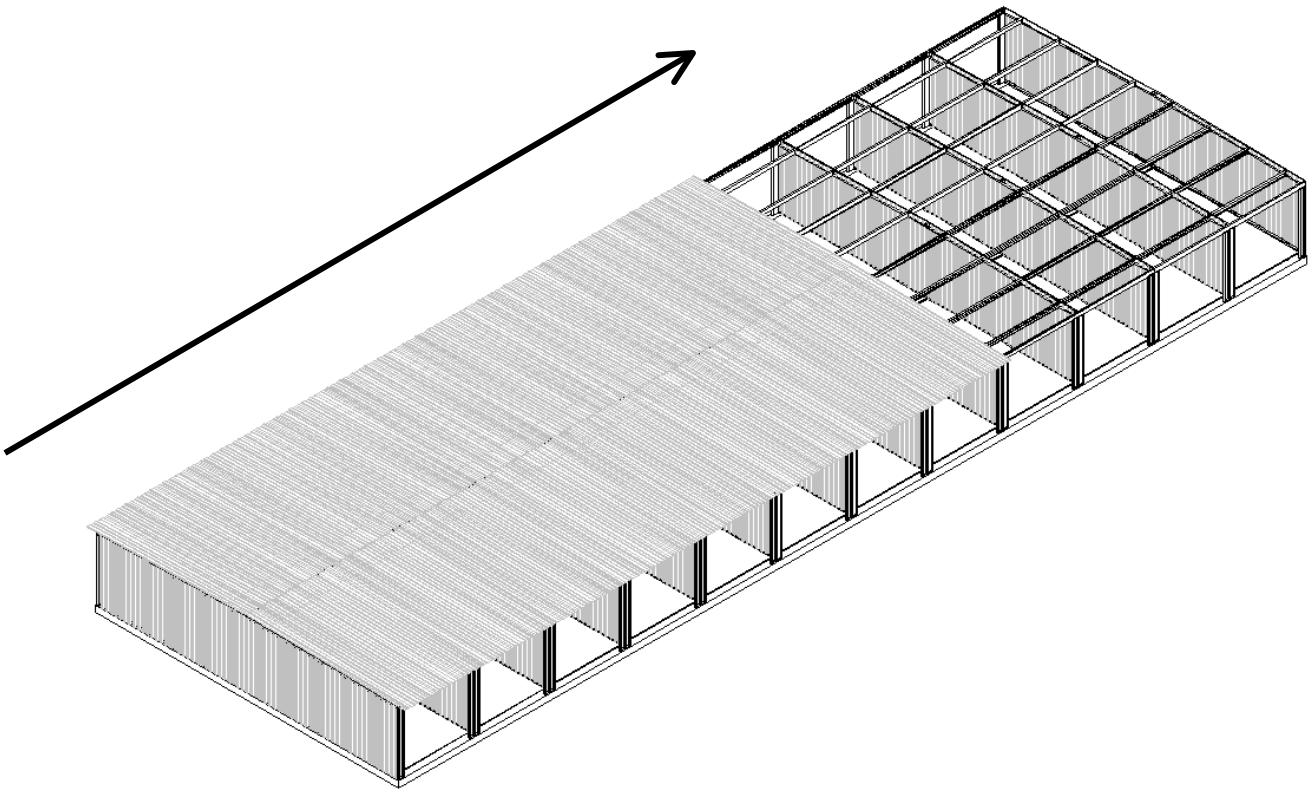


5- #12/14 x 1 ½” Ultimate screws SDWW

Flexospan FSS-1.5 Standing Seam Roof System

10. Continue the same process in steps 4 through 9 for each panel the entire length of the building.

Note: Do not install the last panel.

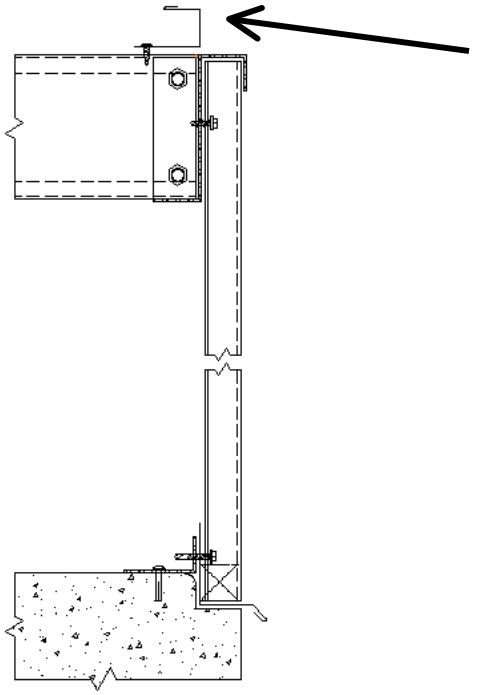


11. Install Gable Filler GF1.

Measure to the point where the outside of the vertical leg of the last panel will end.

Mark this point at each roof purlin and eave strut.

Place Gable Filler GF1 along the entire endwall positioned at these marks and attach to the purlins and eave struts using #10 x ½” Pan Head Screws SDMS (2/connection).



Gable Filler GF1

Flexospan FSS-1.5 Standing Seam Roof System

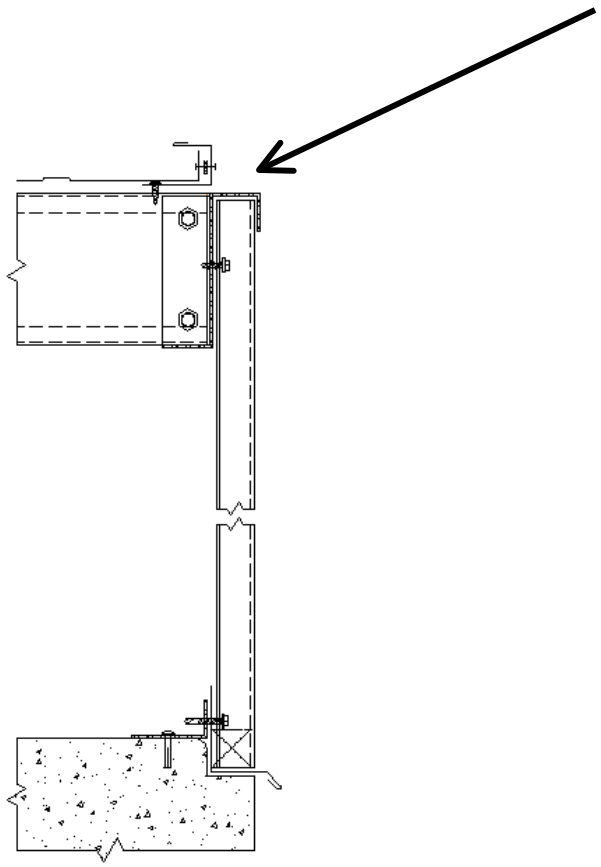
12. Install the last panel.

Place 3/32” x ½” sealer tape along the outside of the male vertical leg of the last panel.

Position the male leg of the last panel underneath of the installed Gable Filler GF1 and place the female leg over the previous panel.

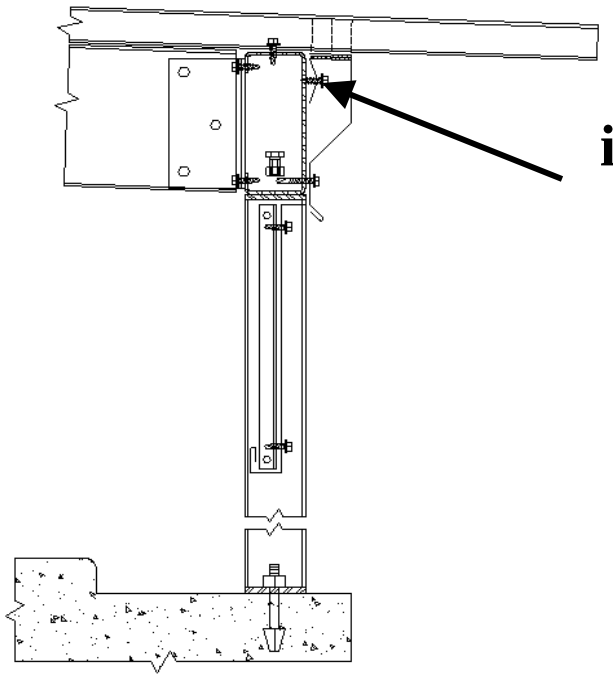
Clamp and seam.

Attach the Gable Filler GF1 to the last panel using 1/8” pop rivets @ 15” O/C.



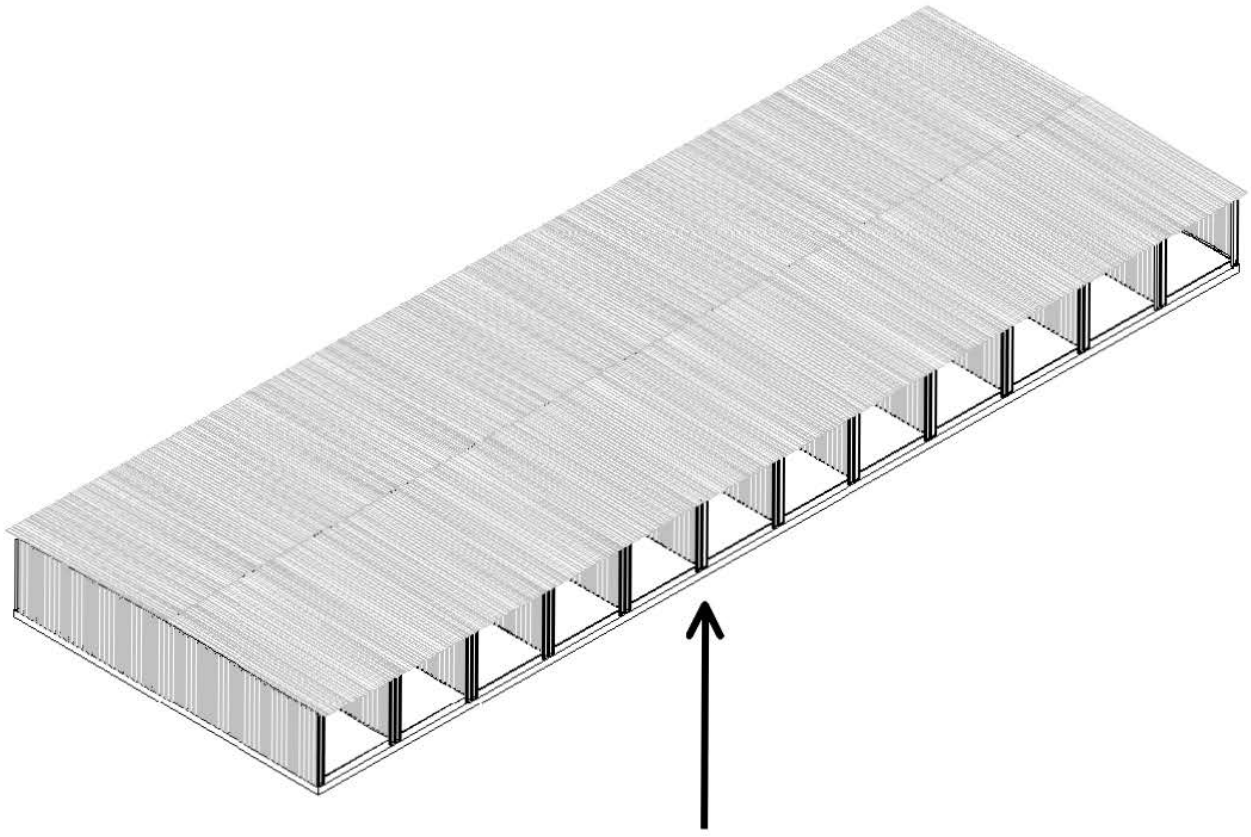
Optional Insulation procedure

- Install insulation under the roof panels as they are being installed.
- Clamp an end of a roll of insulation to an eave strut using an insulation eave strip (ES1) & #12 x ¾” screws SDMS @ 2’ O/C max.
- Unroll the insulation out over the roof to over top of the eave strut on the other side of the building.
- Pull the insulation tight.
- Clamp the other end of the roll of insulation to the eave strut using an insulation eave strip (ES1) & #12 x ¾” screws SDMS @ 2’ O/C max.
- Cut the insulation below the eave strip (ES1).
- Staple the insulation side tabs together 4” O/C.



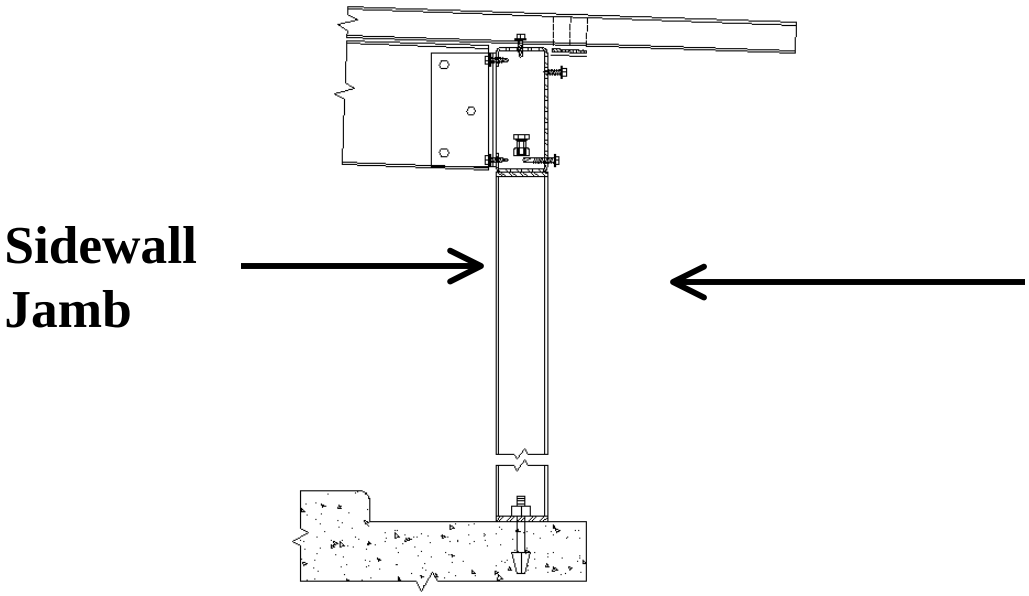
insulation eave strip (ES1)
#12 x ¾” screw SDMS

Install Sidewall Trim



Install Sidewall Trim

1. Install Jamb Trim JT16Y

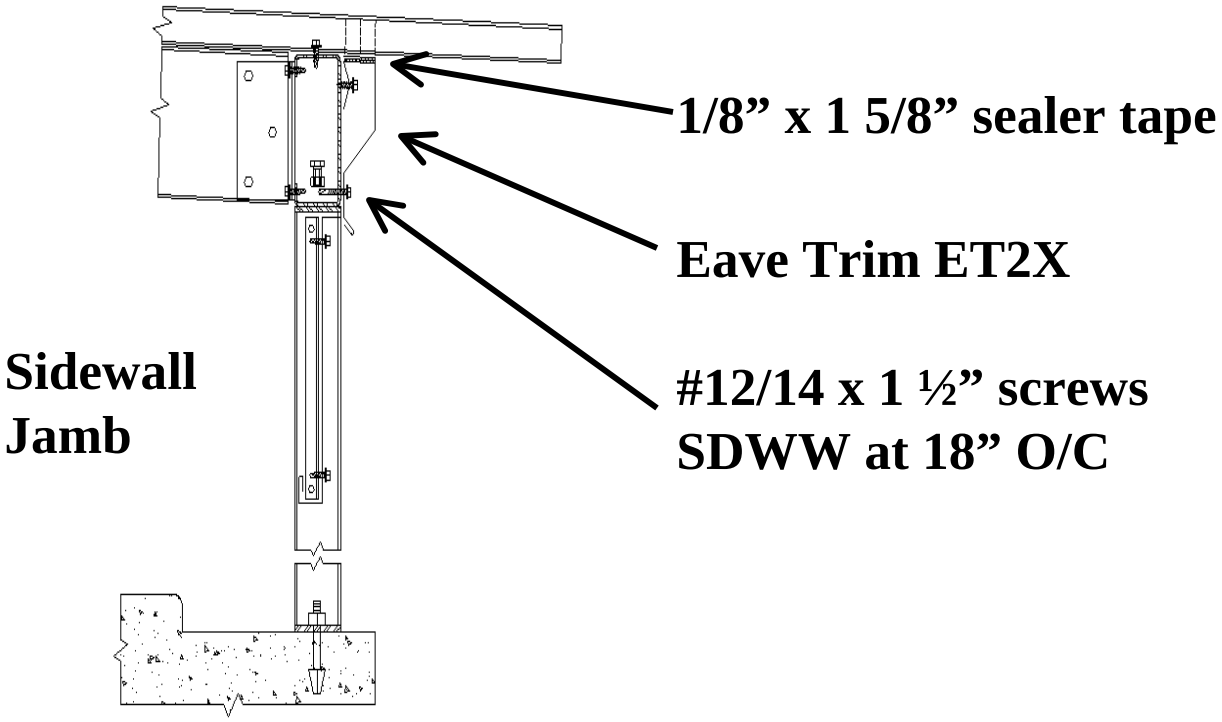


Install Sidewall Trim

2. Install Eave Trim ET2X.

Apply 1/8” x 1 5/8” sealer tape along the top side of the eave trim ET2X.

Hold eave trim up under roof panel and against the eave strut. Attach trim to eave strut using #12/14 x 1 ½” screws SDWW at 18” O/C.

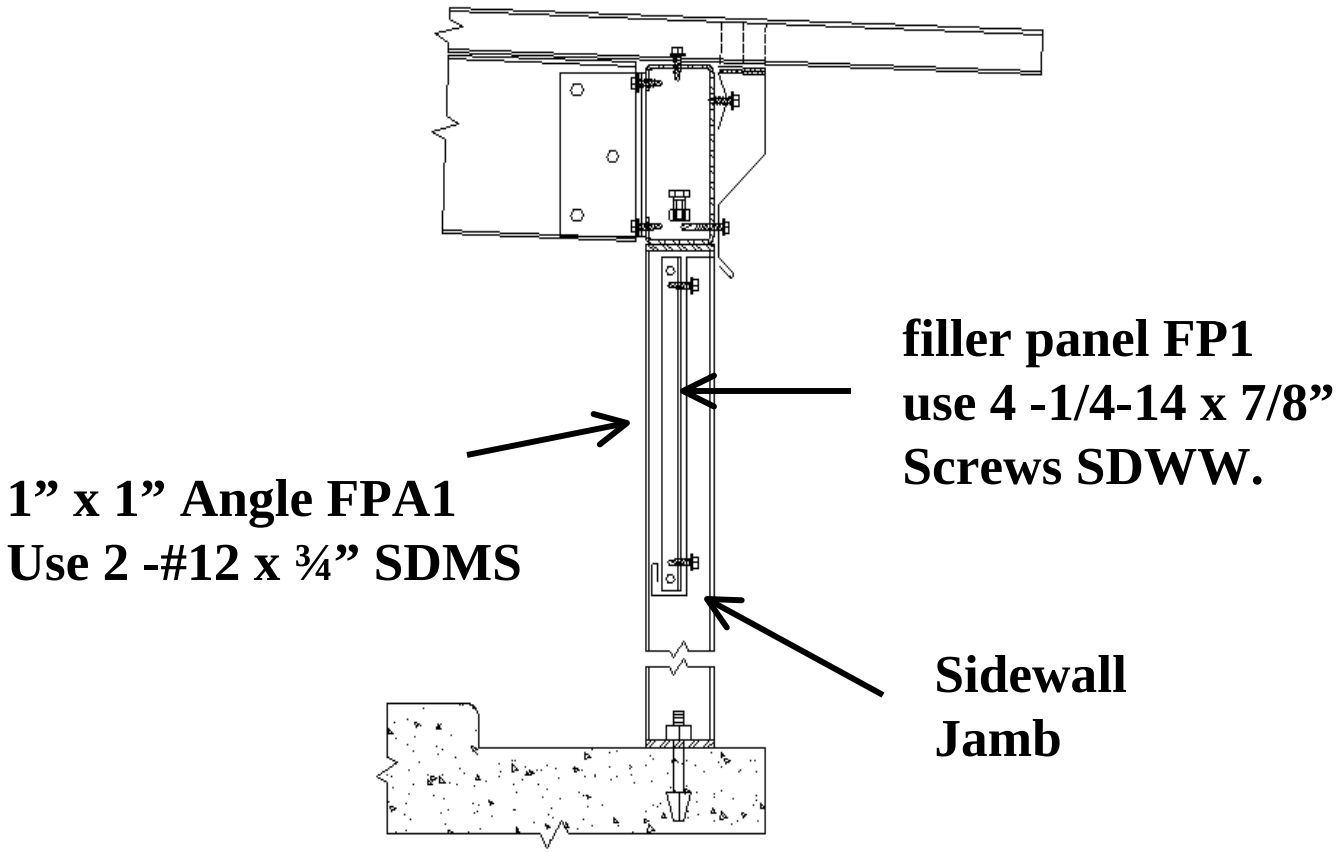


Install Sidewall Trim

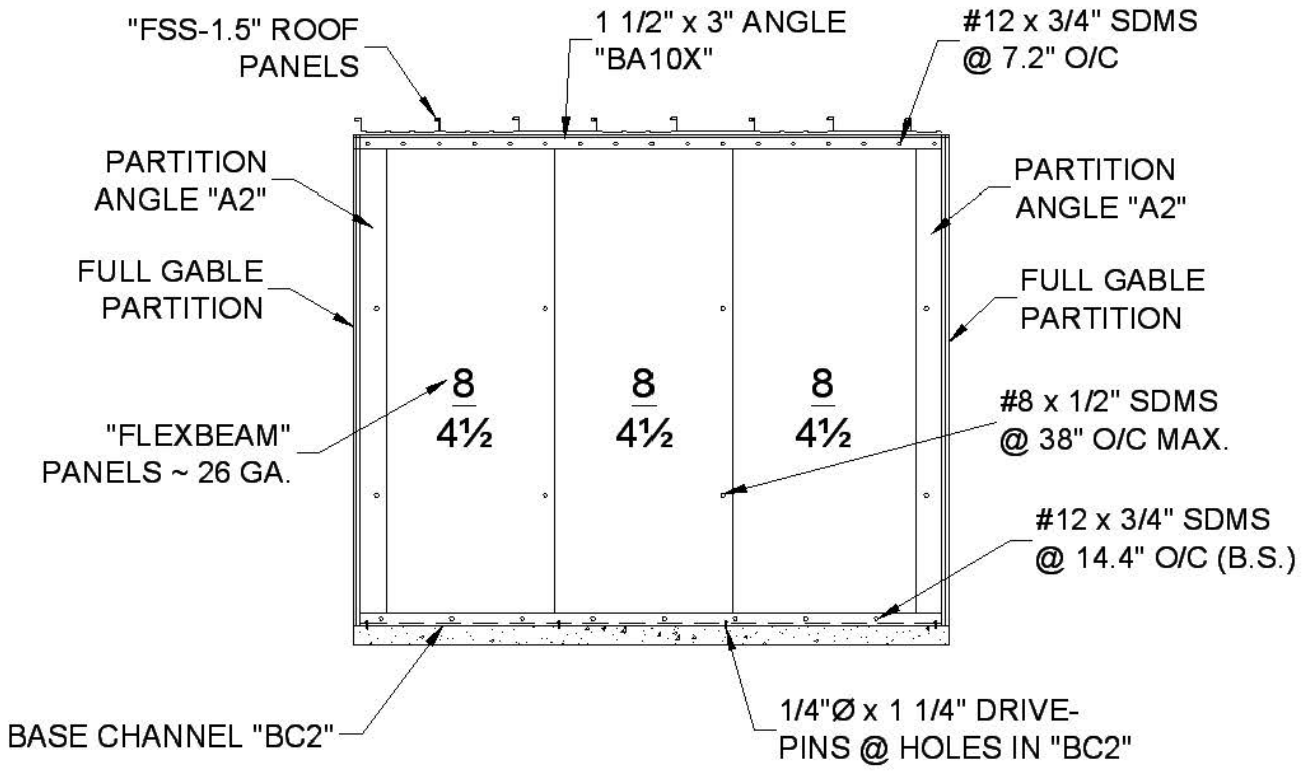
3. Install Filler Panel FP1

Attach 1” x 1” Angle FPA1 along the inside of the framed opening on the top part of the jamb. Use 2 -#12 x ¾” SDMS

Attach the filler panel FP1 to the Attach 1” x 1” Angle FPA1 using 4 -1/4-14 x 7/8” Screws SDWW.

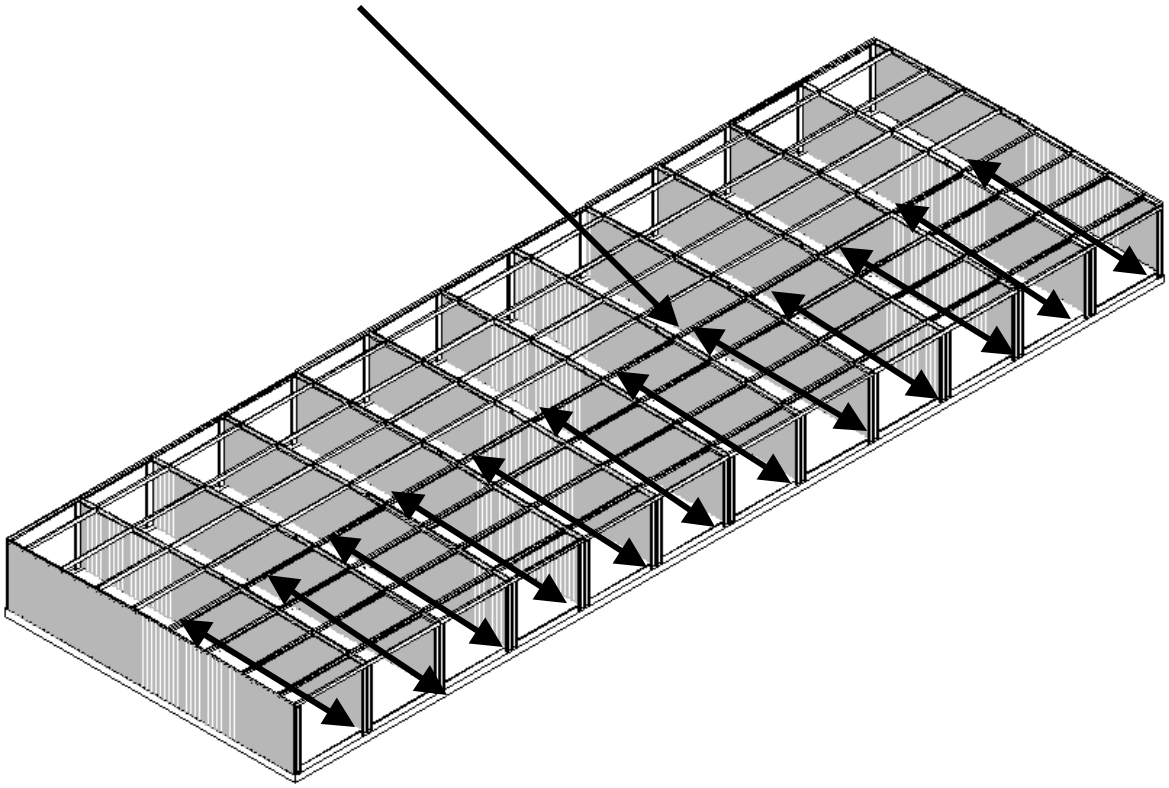


Install Non Load-Bearing Interior Partition Walls



Install Interior Partition Walls

Measure and mark the location of the interior partition wall



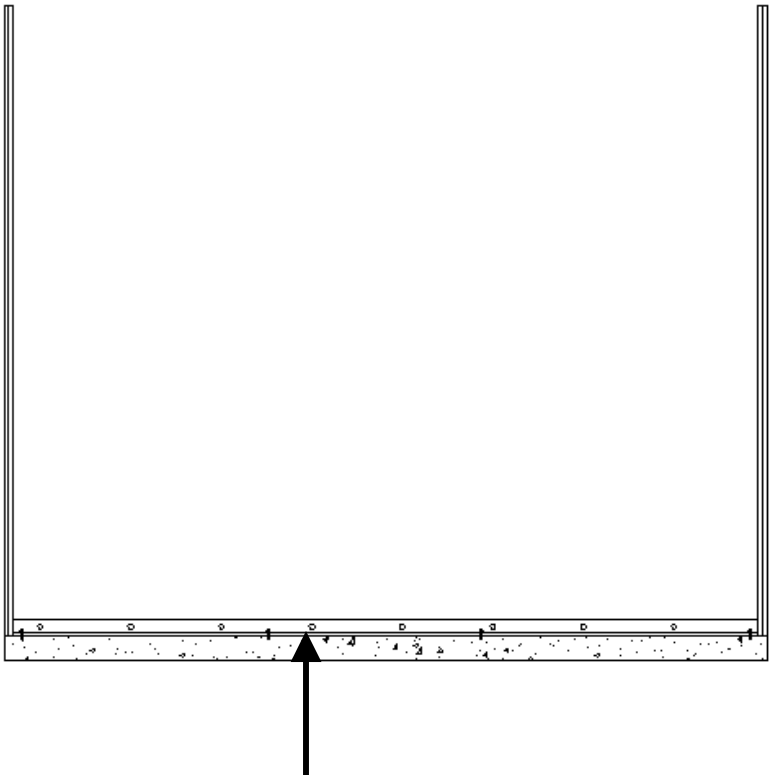
•Measure from outside of the jamb to the planned center of the partition wall.

•Refer to the erection drawings for bay depth sizes.

•Measure in from both sidewalls to ensure accuracy.

•Mark the center with a chalk line.

Install Interior Partition Walls



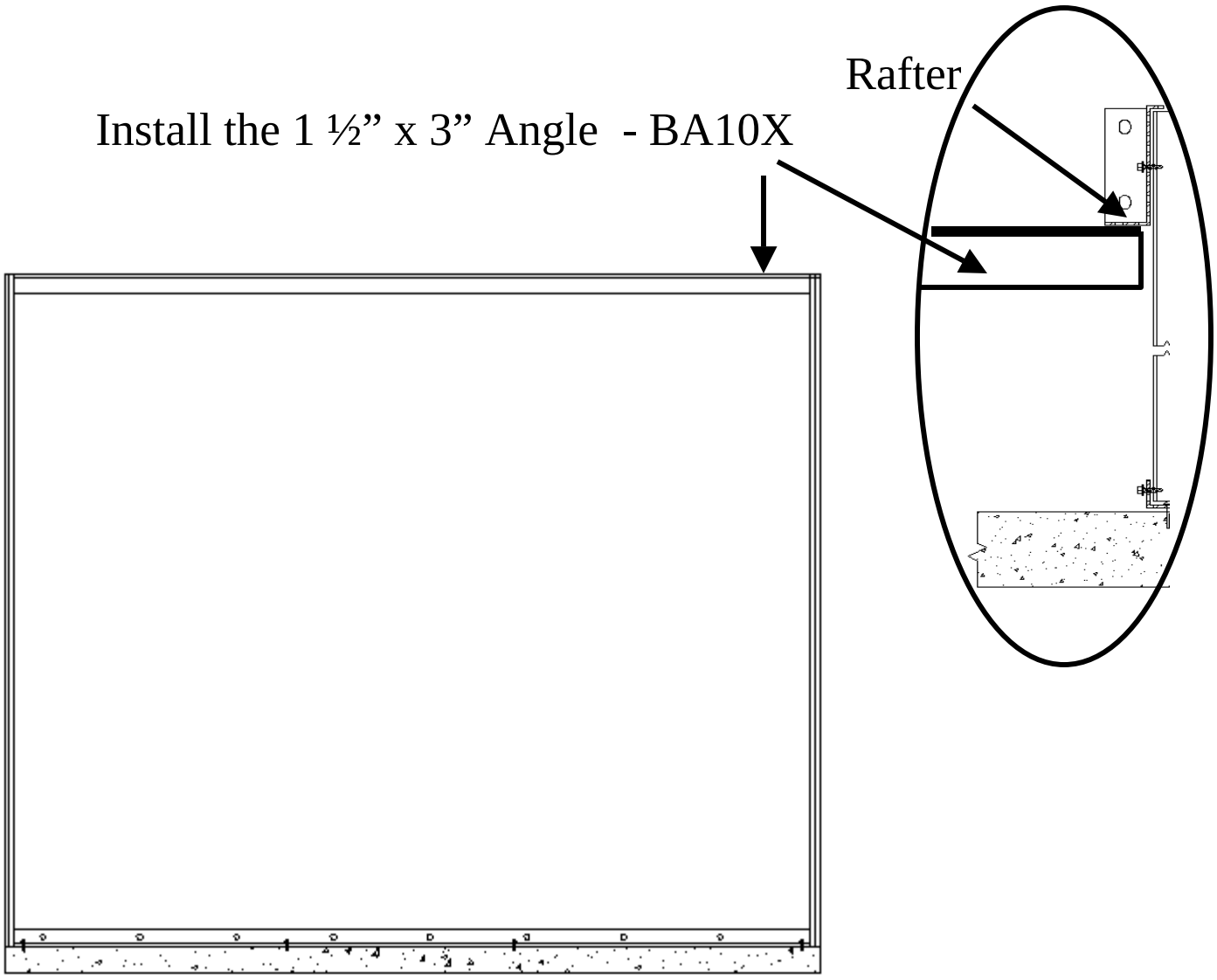
Install Base Channel - BC2

•Lay base channel over the center line mark.

•Drill drive pin holes through the holes provided in the base channel.

•Hammer drive pins into the holes. Place a bar on top of the drive pins so the base channel will not get damaged.

Install Interior Partition Walls

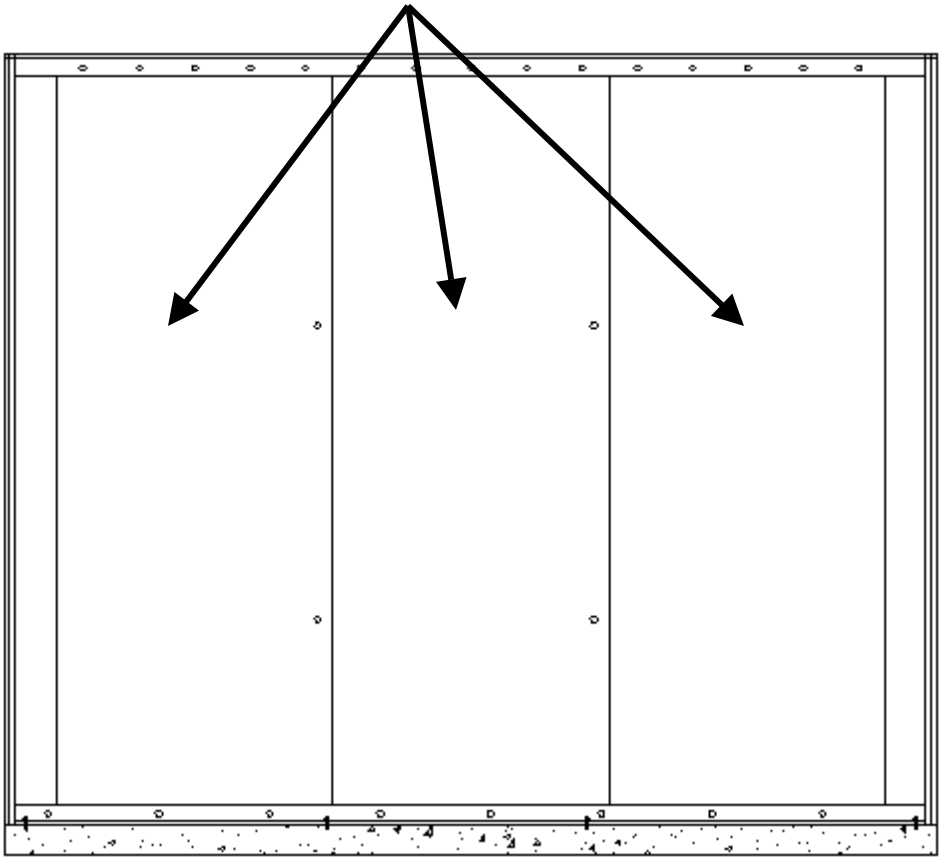


•Use a level to make a mark straight up from the base channel to the bottom flange of the rafters on both sides of the bay.

•Fasten the BA10X to the bottom of each rafter flange using 2 - #12 x ¾” screws SDMS.

Install Interior Partition Walls

Install 3 – 26 GA Flexbeam panels



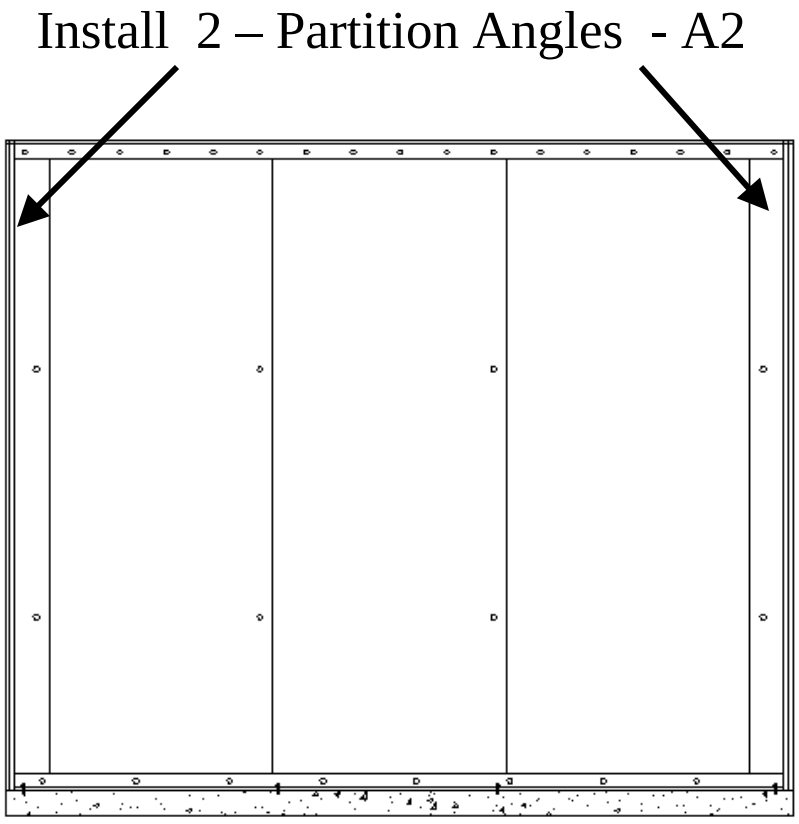
•Place each panel into the base channel BC2 and position all three of them in the center of the bay.

•Fasten the top of the panels to the BA10X Angle using #12 x ¾” screws SDMS @ 7.2” O/C.

•Fasten the bottom of the panels to the base channel BC2 using #12 x ¾” screws SDMS @ 14.4” O/C from both sides.

• Stitch the sides of the panels to each other using #8 x ½ ” screws SDMS @ 38” O/C.

Install Interior Partition Walls

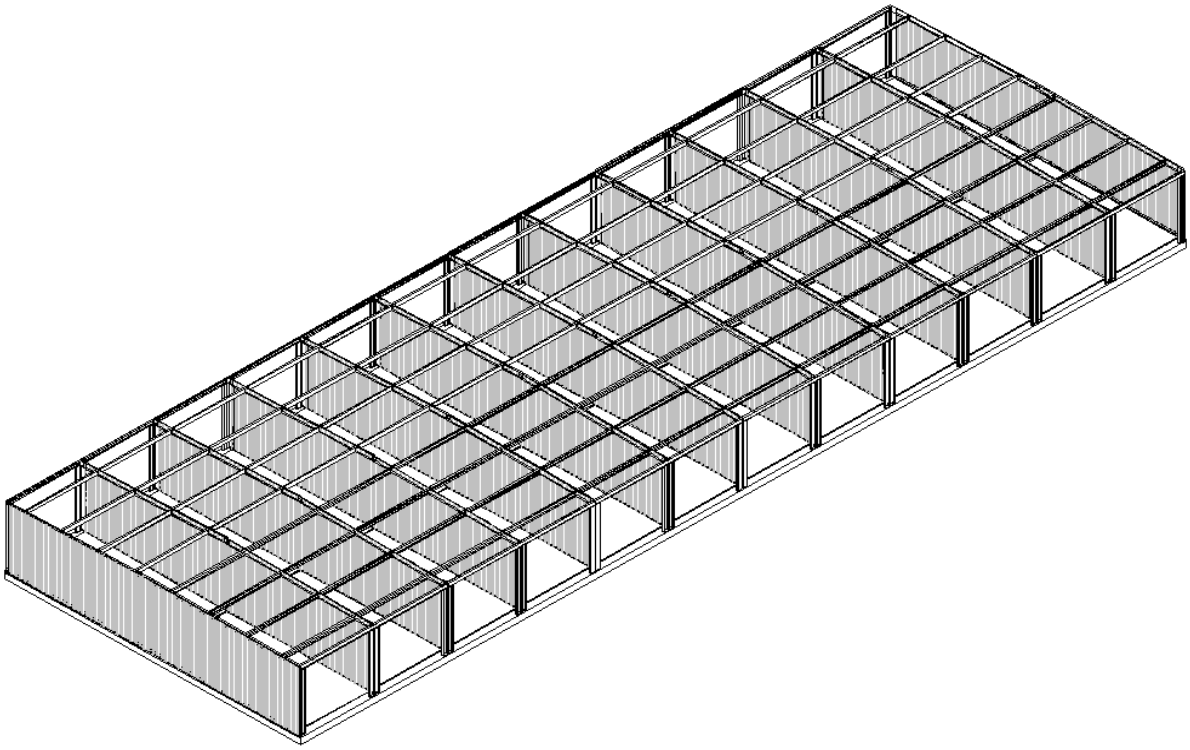


•Hold the Partition Angle – A2 to the Flexbeam partition wall panel and fasten using 3 - #8 x ½ “ screws SDMS @ 38” O/C max.

•Fasten the Partition Angle – A2 to the Flexbeam Load-bearing wall panel using 3 - #8 x ½ “ screws SDMS @ 38” O/C max.

Flexospan

Self Storage Buildings



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- Flexible standardized components
- Wall meets the roof
- No unsightly support posts
- 24 gauge load-bearing wall panels
- Panels are installed vertically
- Walls are fastened from both sides

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