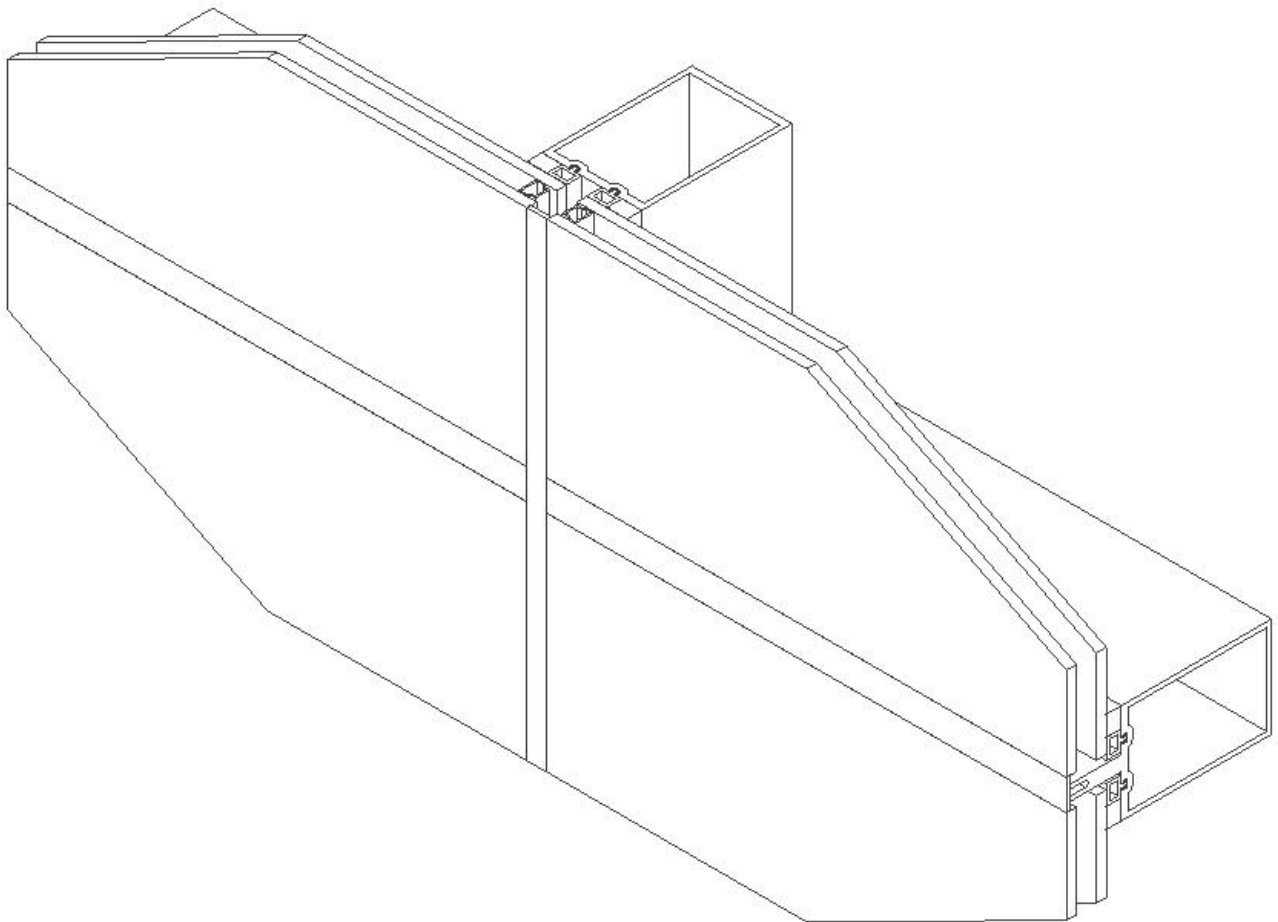


Installation Instructions

TUBELITE[®]
DEPENDABLE
LEADERS IN ECO-EFFICIENT STOREFRONT,
CURTAINWALL AND ENTRANCE SYSTEMS



SSG 400 Series Curtainwall

3056 WALKER RIDGE DR. NW, SUITE G WALKER, MI 49544
800-866-2227 dependable@tubeliteinc.com

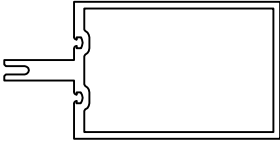



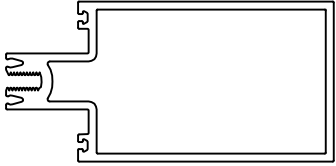
TABLE OF CONTENTS

GENERAL CONSTRUCTION NOTES	3
PARTS LIST	4
FRAME FABRICATION	7
Step 1: Determine Frame Size	7
Determine Frame Width	7
Determine Frame Height	8
Step 2: Cut Vertical Mullions to Size	8
Step 3: Cut Horizontal Mullions to Size	8
Step 4: Notch Sills and Heads to Clear Anchor Clips (if necessary)	9
Step 5: Add Steel Reinforcing (if necessary)	9
CURTAINWALL INSTALLATION	10
Step 6: Fasten Shear Block to Vertical	10
Step 7: Drill Holes in Horizontal for Shear Block	11
Step 8: Attach Horizontal to Vertical	12
Step 9: Install Water Dam at Captured Horizontal and SSG Vertical	13
Step 10: Install Water Dam at SSG Horizontal and Captured Vertical	14
Step 11: Drill Weep Holes in Vertical Pressure Plate	15
Step 12: Cut and Split Spacers	16
Step 13: Notch Spacer for Horizontal	16
Step 14: Install Spacers	17
Step 15: Place Setting Block	18
Step 16: Set the Glass	18
Step 17: Apply Tape to Glass and Mullion	19
Step 18: Apply Structural Sealant	20
Step 19: Tool Sealant and Remove Tape	21
CONNECTION AT PERIMETER	22
SSG Option	22
F Perimeter Runner Option	23
Return Leg Pressure Plate Option	24
SUNSHADE ATTACHMENT	25

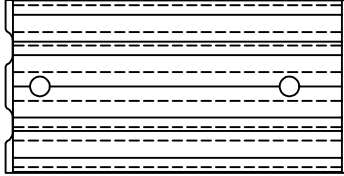

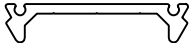
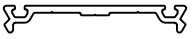

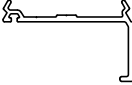
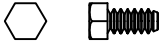




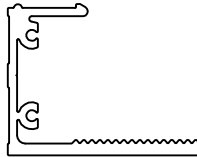
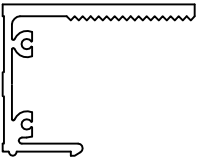
GENERAL CONSTRUCTION NOTES

1. These instructions cover typical product application, fabrication, installation and standard conditions and are general in nature. They provide useful guidelines, but the final drawings may include additional details specific to this project. Any conflict or discrepancies must be clarified prior to execution.
2. Materials stored at the job site must be kept in a safe place protected from possible damage by other trades. Stack with adequate separation so materials will not rub together, and store off the ground. Cardboard or paper wrapped materials must be kept dry. Check arriving materials for quantity and keep record of where various materials are stored.
3. All field welding must be done in accordance with AISC guidelines. All aluminum and glass should be shielded from field welding to avoid damage from weld splatter. Results will be unsightly and may be structurally unsound. Advise general contractor and other trades accordingly.
4. Coordinate protection of installed work with general contractor and/or other trades.
5. Coordinate sequence of other trades which affect framing installation with the general contractor (e.g. fire proofing, back up walls, partitions, ceilings, mechanical ducts, HVAC, etc.).
6. General contractor should furnish and guarantee bench marks, offset lines and opening dimensions. These items should be checked for accuracy before proceeding with erection. Make certain that all adjacent substrate construction is in accordance with the contract documents and/or approved shop drawings. If not, notify the general contractor in writing before proceeding with installation because this could constitute acceptance of adjacent substrate construction by others.
7. Isolate all aluminum to be placed directly in contact with masonry or other incompatible materials with a heavy coat of zinc chromate or bituminous paint.
8. Sealant selection is the responsibility of the erector, installer and/or glazing contractor and must be approved by the sealant manufacturer with regard to application and compatibility for its intended use. All sealants must be used in strict accordance with the manufacturer's instructions and applied only by trained personnel to surfaces that have been properly prepared.
9. Sealant must be compatible with all materials with which they have contact, including other sealant surfaces. Consult sealant manufacturer for recommendations relative to shelf life, compatibility, cleaning of substrate, priming, tooling adhesion, etc.
10. Drainage gutters and weep holes must be kept clean at all times. Tubelite will not accept responsibility for improper drainage as a result of clogged gutters and weep holes.
11. This product requires clearances at head, sill and jambs to allow for thermal expansion and contraction. Refer to final distribution drawings for joint sizes. Joints smaller than ¼" may be subject to failure. Consult your sealant supplier.
12. All materials are to be installed plumb, level and true with regard to established bench marks and column center lines established by the general contractor and checked by the erector, installer and/or glazing contractor.
13. Cleaning of exposed aluminum surfaces should be done per AAMA recommendations.
14. Due to varying perimeter conditions and job performance requirements, anchor fasteners are not specified in these instructions. For anchor fastening, refer to the shop drawings or consult the fastener supplier.
15. Check tubeliteinc.com for any updates on installation instructions.

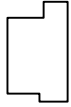
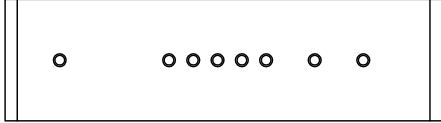
EXTRUSIONS

Shape	Description	Part No.
	Silicone glazed horizontal	E4TB239: 4" E5TB108: 5" E55TB108: 5 1/2" E6TB108: 6" E7TB108: 7"
	Face cover	E4TB77: 2 1/2" x 5/8" E4TB64: 2 1/2" x 3/4" E4TB33: 2 1/2" x 1" E4TB05: 2 1/2" x 1 1/2" E4TB220: 2 1/2" x 1 3/4" E4TB215: 2 1/2" x 1 7/8" E4TB30: 2 1/2" x 2" E4TB06: 2 1/2" x 2 1/2"
	Silicone glazed vertical	E4TB128: 4" E5TB105: 5" E55TB04: 5 1/2" E6TB64: 6" E7TB64: 7" E8TB64: 8"
	F perimeter runner	E3162
	Back member	E4TB216: 1 7/8" E2680: 2 5/8" E4TB206: 3 1/16" E4TB171: 3 1/4" E4TB81: 3 5/8" E4TB02/E4TB223: 4" E45TB02: 4 1/2" E5TB02/E5TB223: 5" E55TB02/E55TB223: 5 1/2" E6TB02: 6" E7TB02: 7" E8TB02: 8" E4TB95: 3" x 4"

ACCESSORIES

Shape	Description	Part No.
	Shear block	PTB96A: For E4TB239 PTB96C: For E5TB108 PTB96D: For E55TB108 PTB96E: For E6TB108 PTB96F: For E7TB108
	Spacer for silicone glazed back members	PTB75
	Temporary glazing clip	P1194
	Typical pressure plate	M4TB224
	Fixed glazing gasket	PTB28
	Pressure plate for perimeter glass pocket	M4TB225
	Shear block attachment screw	S139
	Pressure plate screw	S362A
	Horizontal tube to clip concealed fastener	S270
	Water dam	PTB76A: Double glazed PTB76B: Single glazed
	Setting block	P946
	Sill anchor	PTB46: For E4TB81 PTB47: For E4TB02 PTB48: For E5TB02 PTB49: For E55TB02 PTB50: For E6TB02 PTB51A: For E7TB02 PTB51B: For E8TB02 PTB51C: For E2680 PTB51D: For E4TB206
	Head anchor	P2056: For E4TB02 P2056A: For E45TB02 P2056B: For E4TB81 P2056C: For E2680 P2057: For E5TB02 P2058: For E6TB02 P2059: For E7TB02 P2060: For E8TB02 P2061: For E55TB223

ACCESSORIES

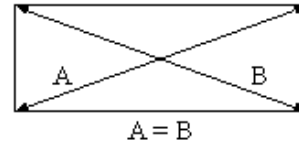
Shape	Description	Part No.
	1" single pocket water dam	PTB93
	Drill fixture	P2091

FRAME FABRICATION

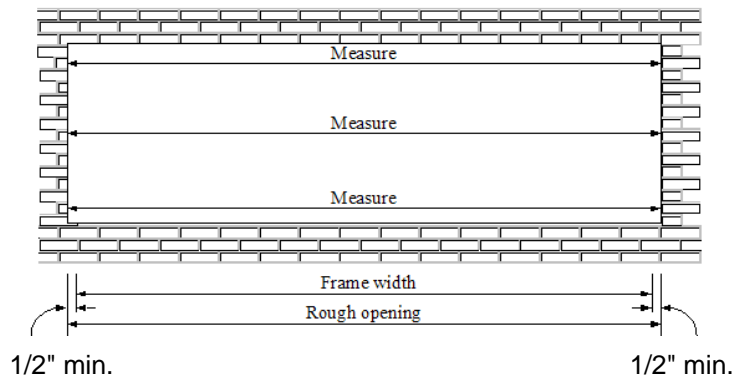
Step 1: Determine Frame Size

Determine Width

- Check that the opening is square and plumb at both ends. Units must be installed in a true rectangle.

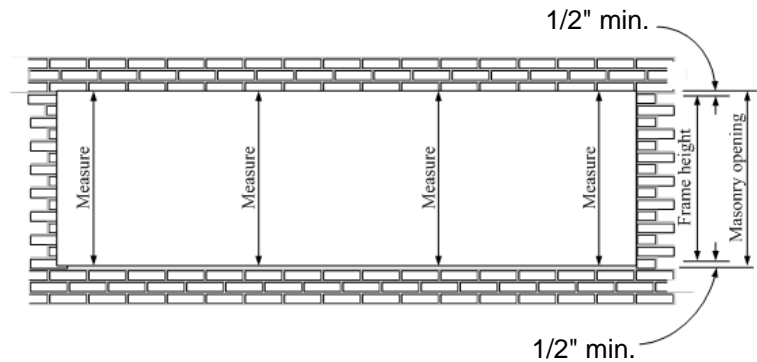


- Measure the width of the opening at the top, middle and bottom.
- Select the smallest dimension measured. To determine the frame width to be used, subtract a minimum of 1" from the smallest measured width, to allow a minimum of 1/2" at each jamb for shimming and caulking.
- Allow a larger clearance if necessary to accommodate building tolerances, an out-of-square opening, anticipated thermal expansion within the unit and/or as required by shop drawings.



Determine Height

- Measure the height of the opening in several places along the entire length of the opening.
- To determine the frame height to be used, select the smallest dimension measured and subtract 1" to allow a minimum of 1/2" at sill and 1/2" at head for shimming and caulking.
- Allow a larger clearance if necessary to accommodate building tolerances, an out-of-square opening and/or anticipated thermal expansion within the unit.



Step 2: Cut Vertical Mullions to Size

- Verticals should be frame height found in Step #1 (rough opening height minus clearances).

Step 3: Cut Horizontal Mullions to Size

- Cut horizontal framing members to the daylight opening (the distance between verticals) minus 1/16".

Step 4: Notch Sills and Heads to Clear Anchor Clips

- Notch sills and heads to clear anchor clips.
- Where anchor clips would interfere with sills and heads, notches must be cut in the bottom of the sills and tops of the heads to provide clearance.
- The notch must not damage the vertical walls of the tube, but should remove the top or bottom of the tube from wall to wall, to a depth of 3 1/16" from the end of the sill or head as shown in Figure 1.

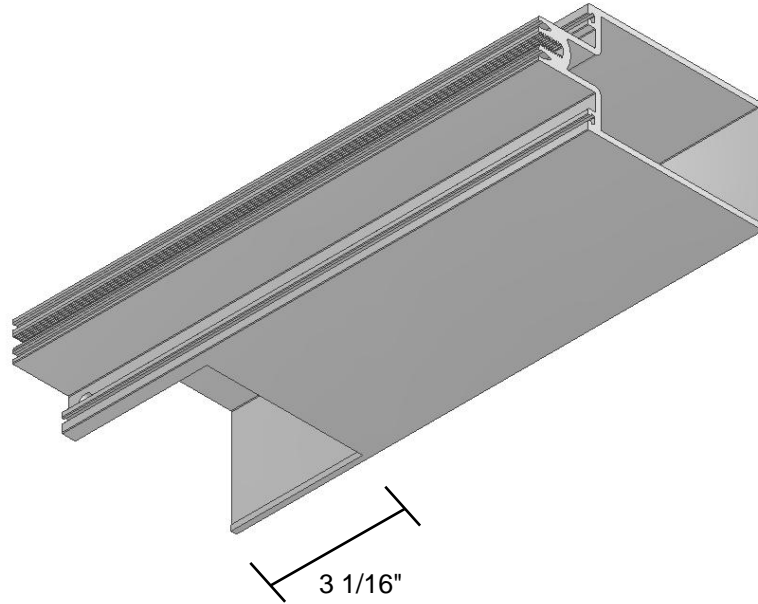


Figure 1: Notch the sills and heads to fit in the anchor clips.

Step 5: Add Steel Reinforcement (if necessary)

- Refer to approved shop drawings to determine whether the application requires steel reinforcement.
- If full-length steel reinforcement is required, cut steel to 6" less than the frame height.
- Slide the steel into the vertical mullion from one end, recessing it 3" in from the end of the vertical.
- Drill pilot holes through the steel and the vertical mullion at 12" on center or according to project specifications, and anchor the steel to the vertical using fasteners of an appropriate size (not supplied by Tubelite).

CURTAINWALL INSTALLATION

Step 6: Fasten Shear Block to Vertical

- Drill holes in the vertical member using Tubelite's P2091 drill fixture, as shown in Figure 2.
- Fasten the shear block to the vertical using S139 fasteners and the previously drilled holes, as shown in Figure 2.
- Apply sealant around the perimeter of the shear block as shown in Figure 2.

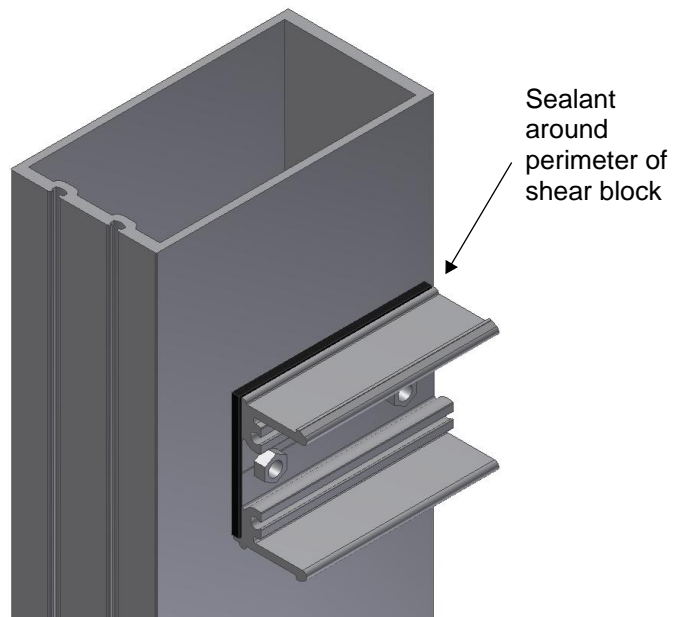
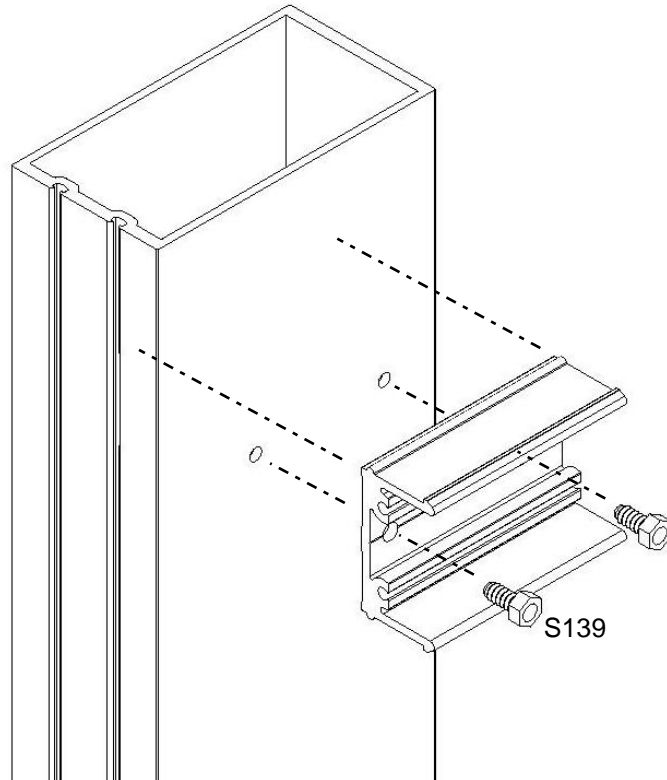


Figure 2: Install shear block to vertical member and apply sealant.

Step 7: Drill Slots in Horizontal for Shear Block

- Drill two slots in the front of the horizontal back member.
- The slots will be .201" x .281" as shown in Figure 3.

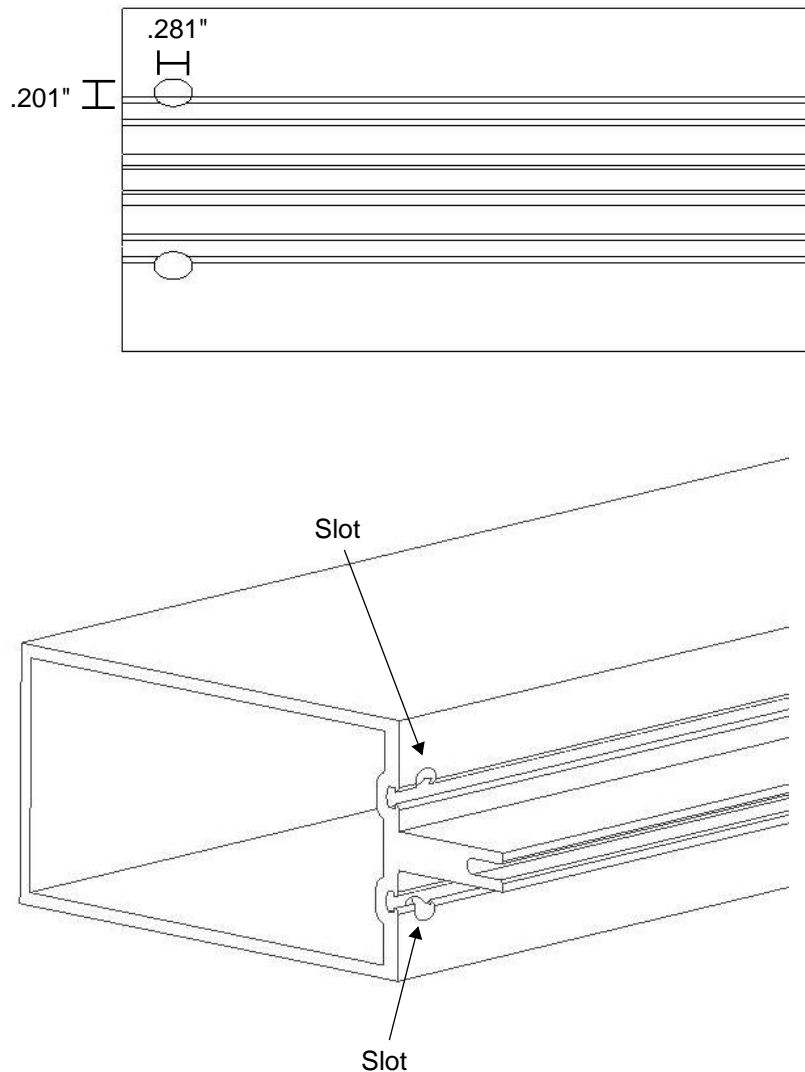


Figure 3: Slot holes in the horizontal back member.

Step 8: Attach Horizontal to Vertical

- Attach horizontal to vertical using two S270 fasteners, as shown in Figure 4.
- Critical: Seal fastener heads watertight.

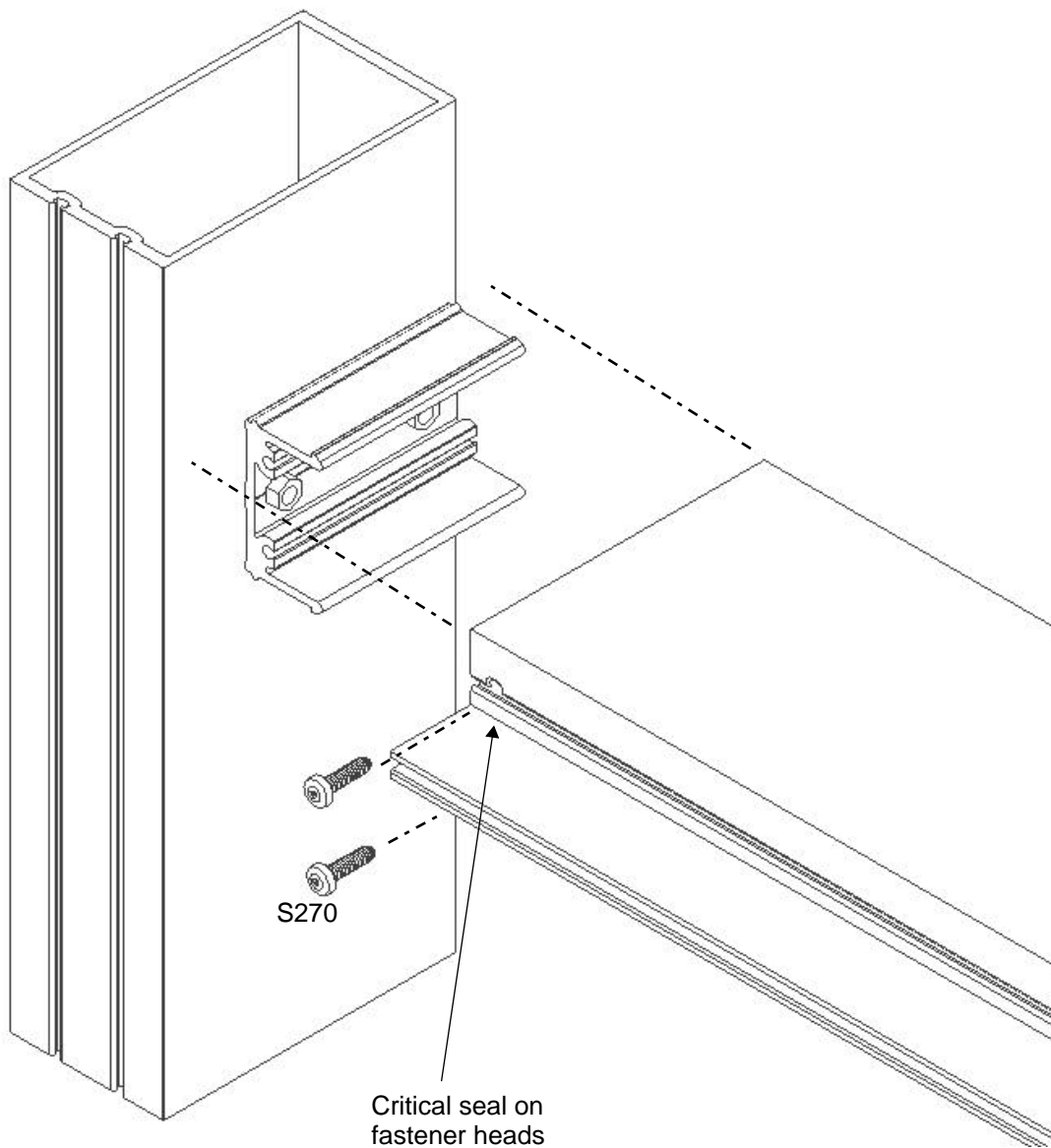


Figure 4: Attach horizontal to vertical.

Step 9: Install Water Dam at SSG Vertical

- For SSG verticals, a water dam (PTB76A or PTB76B) is needed.
- After attaching horizontals to vertical and prior to glazing, apply butyl sealant where a water dam will slide in as shown in Figure 5.
- Place a water dam next to the vertical mullion between the two horizontal members as shown in Figure 5.
- Reseal over and around the water dams with more sealant.
- Tool sealant smooth, to prevent excess build-up.

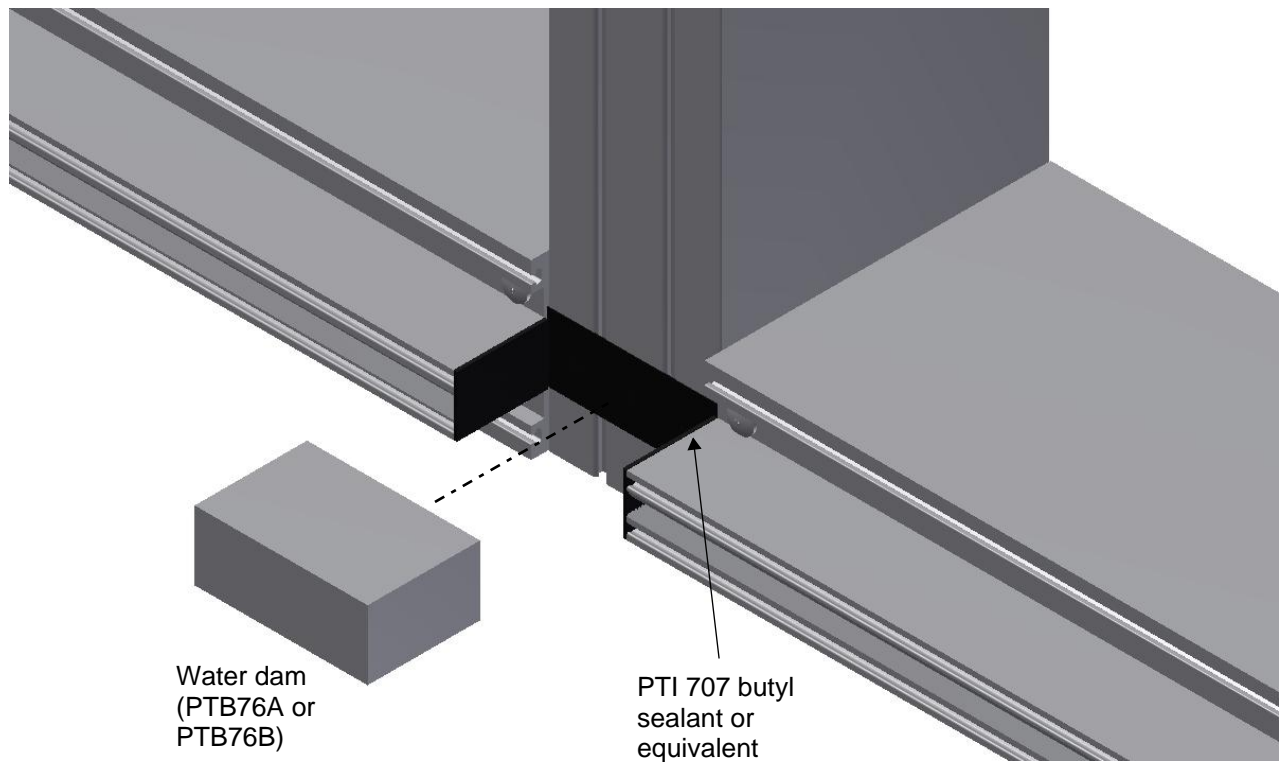


Figure 5: After applying sealant, place water dam (PTB76A or PTB76B) between horizontal members at the vertical mullion at the intermediate sill.

Step 10: Install Water Dam at Intersection of SSG Horizontal and Captured Vertical

- Where a captured vertical meets an SSG horizontal, modified water dams (PTB93) are needed.
- Due to the narrower tongue in an SSG horizontal, the PTB93 will need to be cut down from 7/8" to 3/8" to sit flush with the top of the tongue.
- After attaching horizontals to the vertical, liberally apply butyl sealant where water dams will slide in.
- Place water dams into the void between the horizontal rails as shown in Figure 6.
- Reseal over and around the water dams with more sealant.
- Tool sealant smooth, to prevent excess build-up.

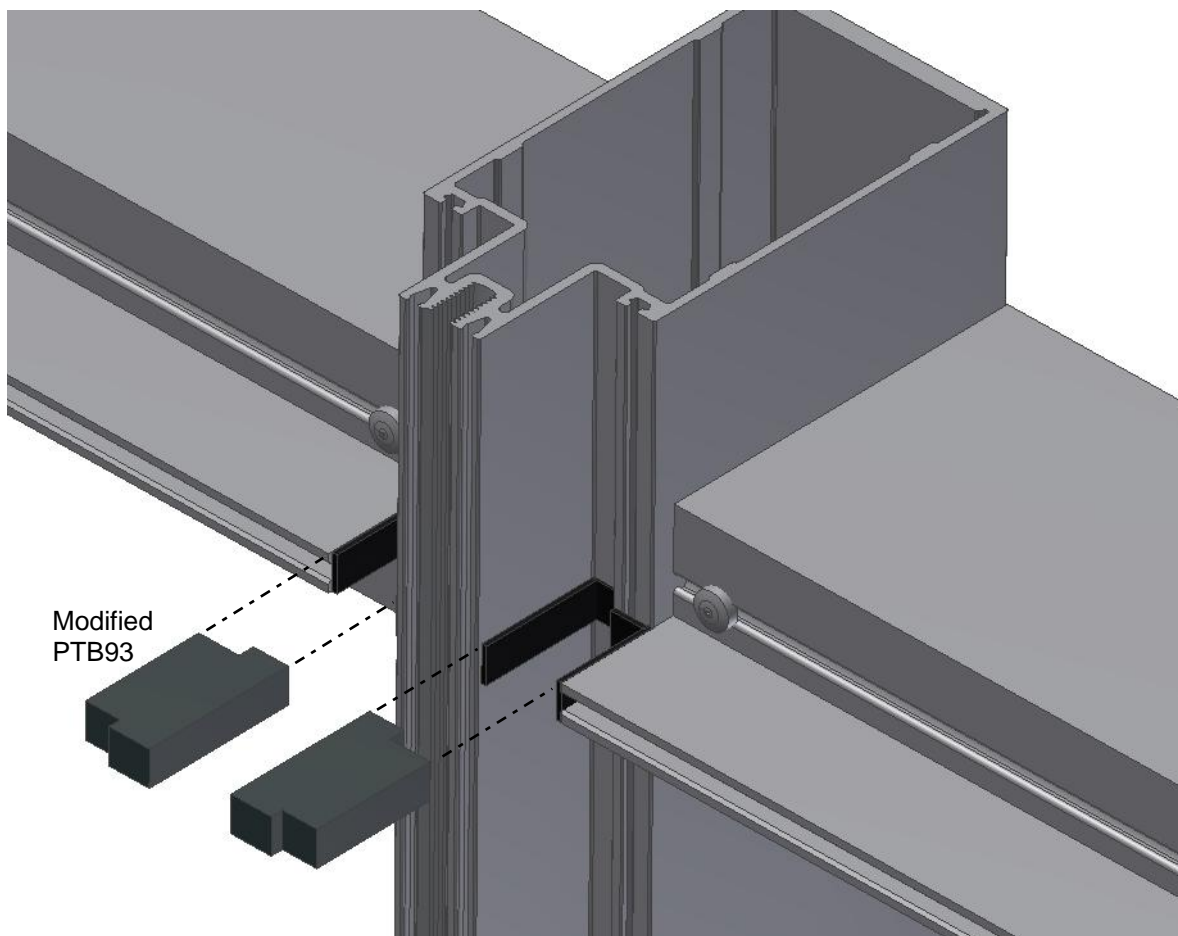


Figure 6: Install water dams (PTB93) where a captured vertical meets an SSG horizontal.

Step 11: Drill Weep Holes in Vertical Pressure Plate

- Where a captured vertical meets an SSG horizontal, weep holes will be needed in the vertical pressure plate.
- Install weep holes in the V-shaped notches of the vertical pressure plate on each side of the vertical mullion tongue just above the water dam as shown in Figure 7. The bottom edge of the weep hole should be at the top edge of the water dam.

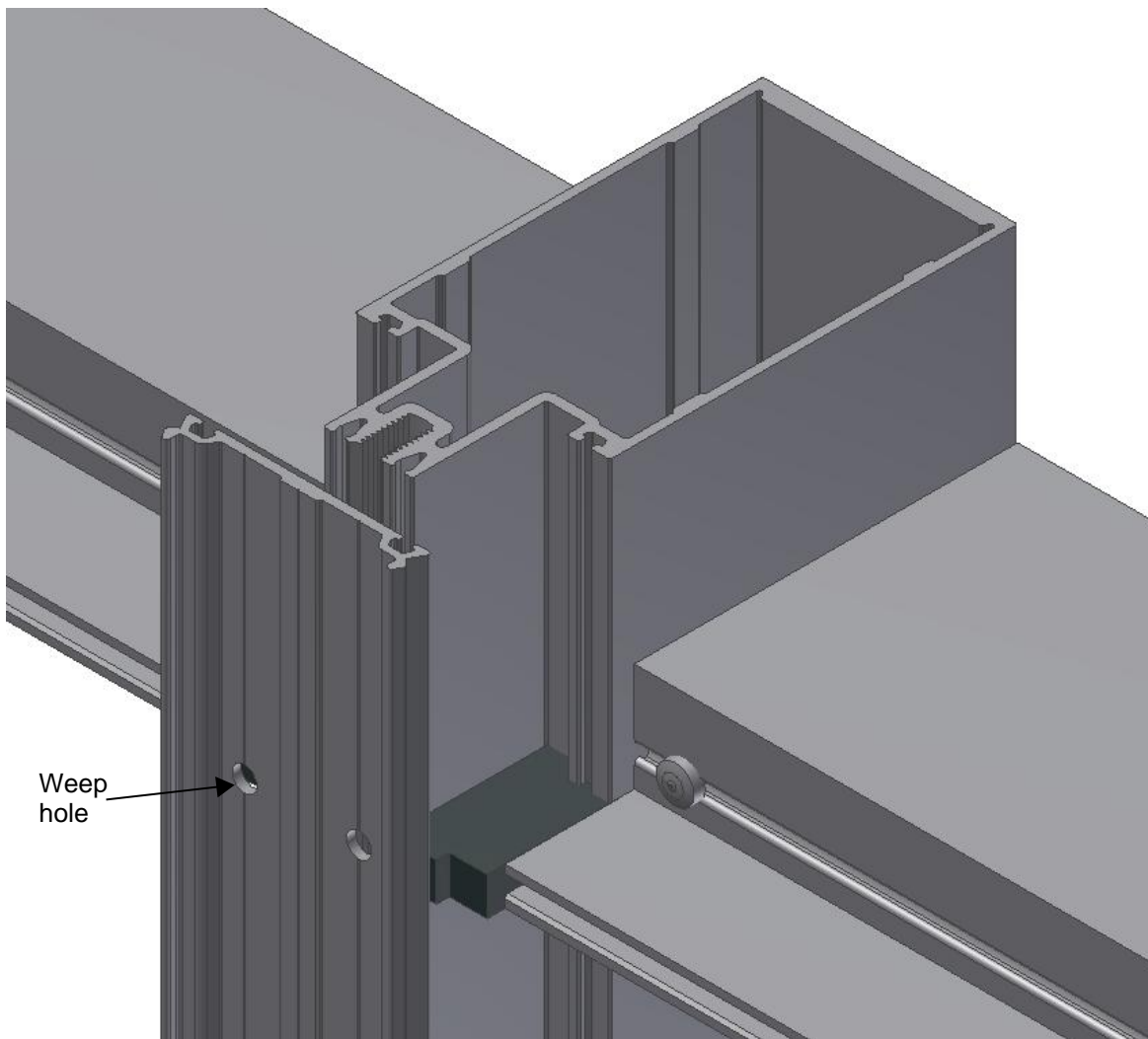
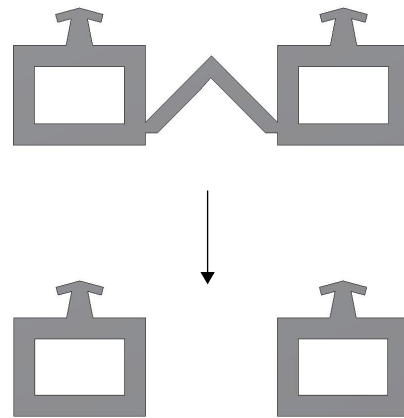


Figure 7: Weep holes must be installed in the vertical pressure plate where a captured vertical meets an SSG horizontal. The bottom edge of the weep hole should be at the top edge of the water dam.

Step 12: Cut and Split Spacers

- Cut spacers 1/16" long per foot of mullion length. For spacers installed on horizontals, cut 3/4" short per vertical to leave room for shear block attachment.
- Take a set of spacers and split them.
- Remove the joining legs, as shown at right.



Step 13: Notch Spacer for Horizontal

- Notch the spacer to be placed on top of the horizontal mullion tongue to make room for the setting block, as shown in Figure 8.

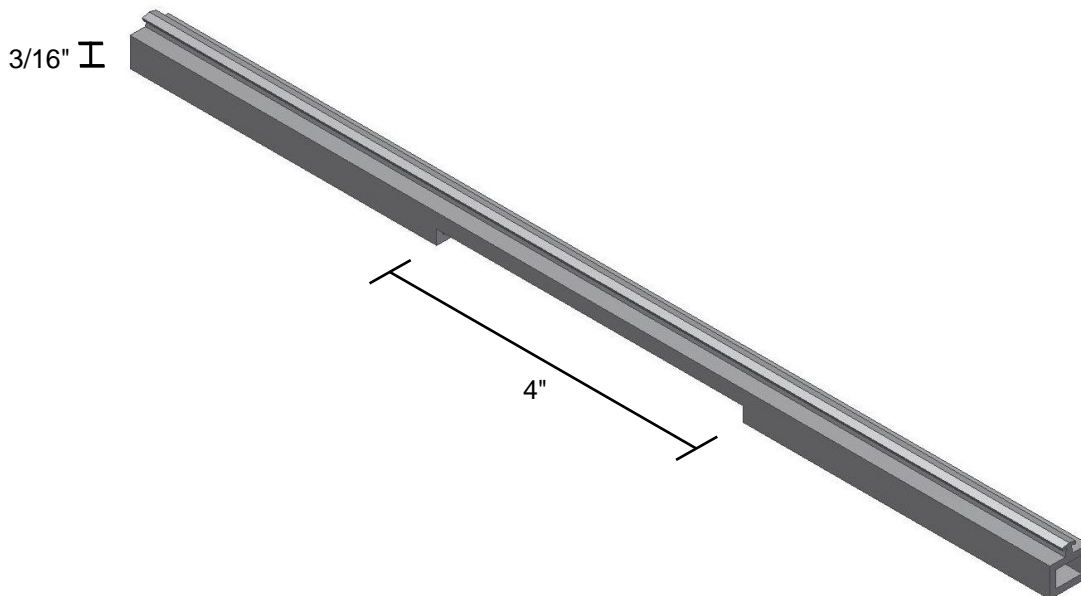


Figure 8: Notch the spacer to be placed on top of the horizontal mullion tongue to make room for the setting block.

Step 14: Install Spacers

- Install spacer PTB75 in reglet as shown in Figure 9. Make sure to leave room where horizontals meet verticals for shear block attachment.

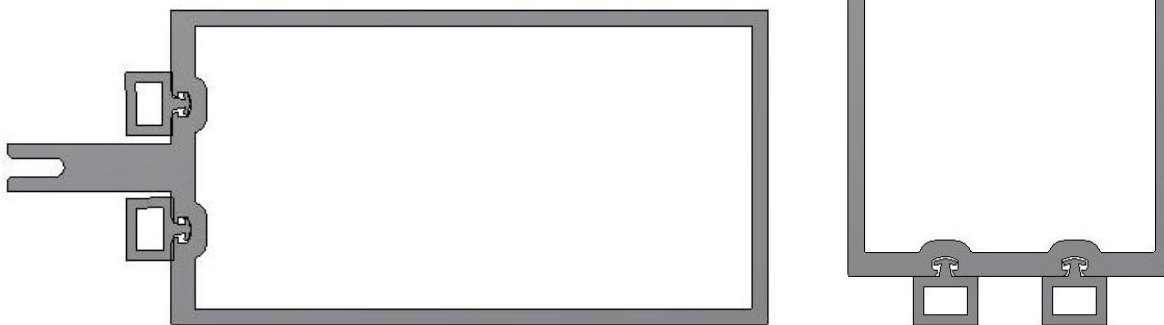


Figure 9: Attach spacers to the horizontal and vertical mullions.

Step 15: Place Setting Block

- Place a 3/16" thick by 13/16" x 4" long setting block (not by Tubelite) on the tongue of the horizontal member at the quarter point of each lite or as specified by shop drawings, as shown in Figure 10.

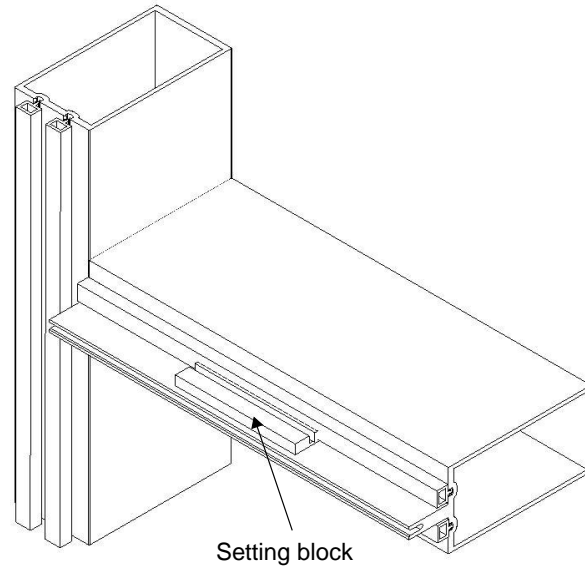


Figure 10: Place a 3/16" x 13/16" x 4" setting block (not by Tubelite) on the tongue of the horizontal member.

Step 16: Set the Glass

- Glass size is calculated as daylight opening + 2" for width and DLO + 1 3/4" for height, except with sunshades, which are DLO + 1 1/4".
- Set the glass.
- Hold in place using P1194 temporary glazing clips (available by request) and S139 fasteners, as shown in Figure 11.
- Clips should be used approximately every 18 to 24 inches.
- Temporary glazing clips are intended for short-term use. If high wind loads are anticipated prior to installing permanent pressure plates, more temporary clips may be required.

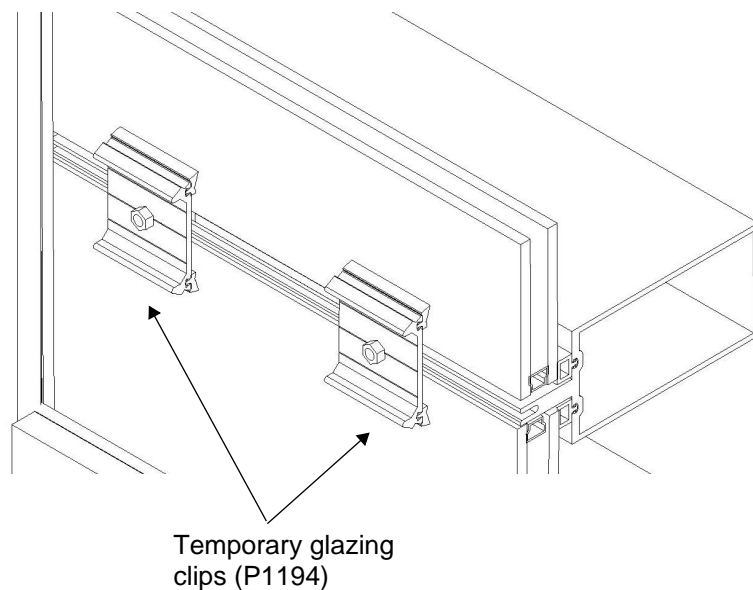


Figure 11: Set the glass and hold it in place with temporary glazing clips (available by request).

Step 17: Apply Tape to Glass and Mullion

- Apply masking tape to interior-facing glass and the side of the vertical mullions to prevent sealant from getting onto undesired areas, as shown in Figure 12.

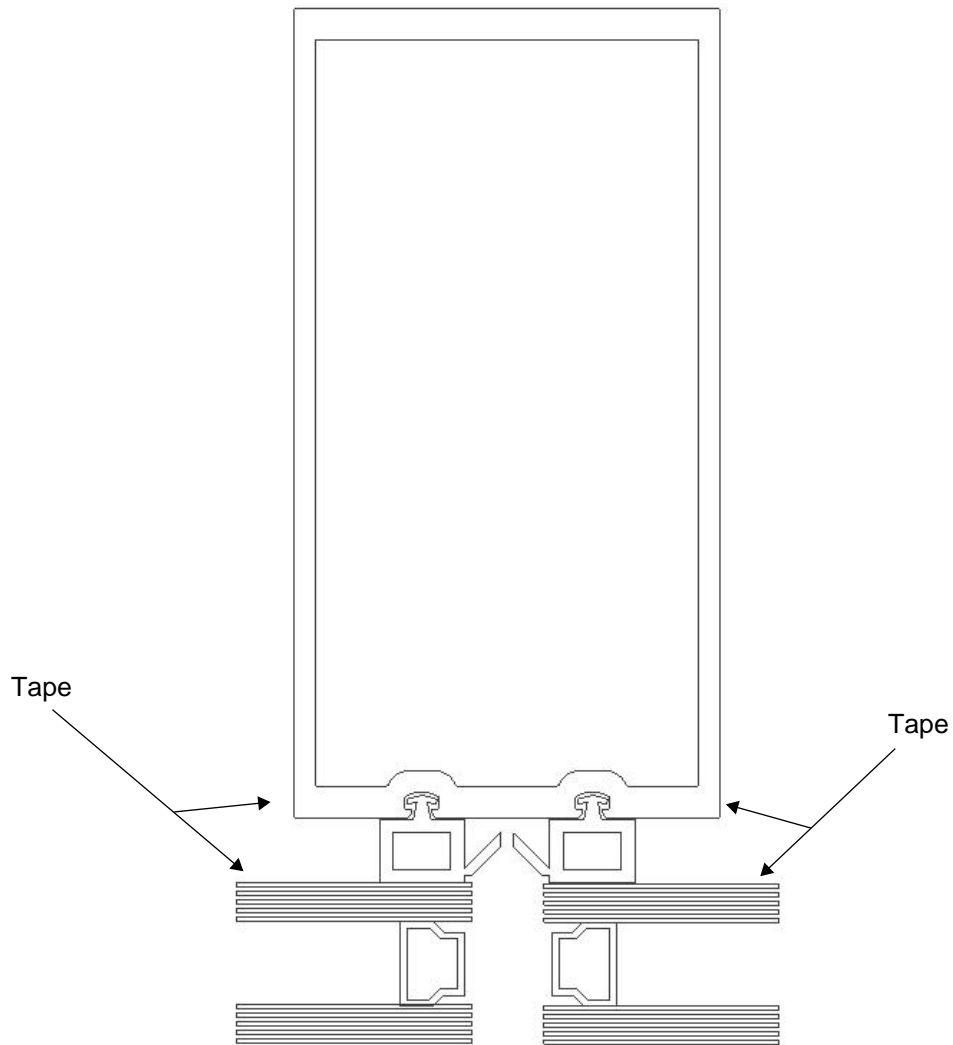
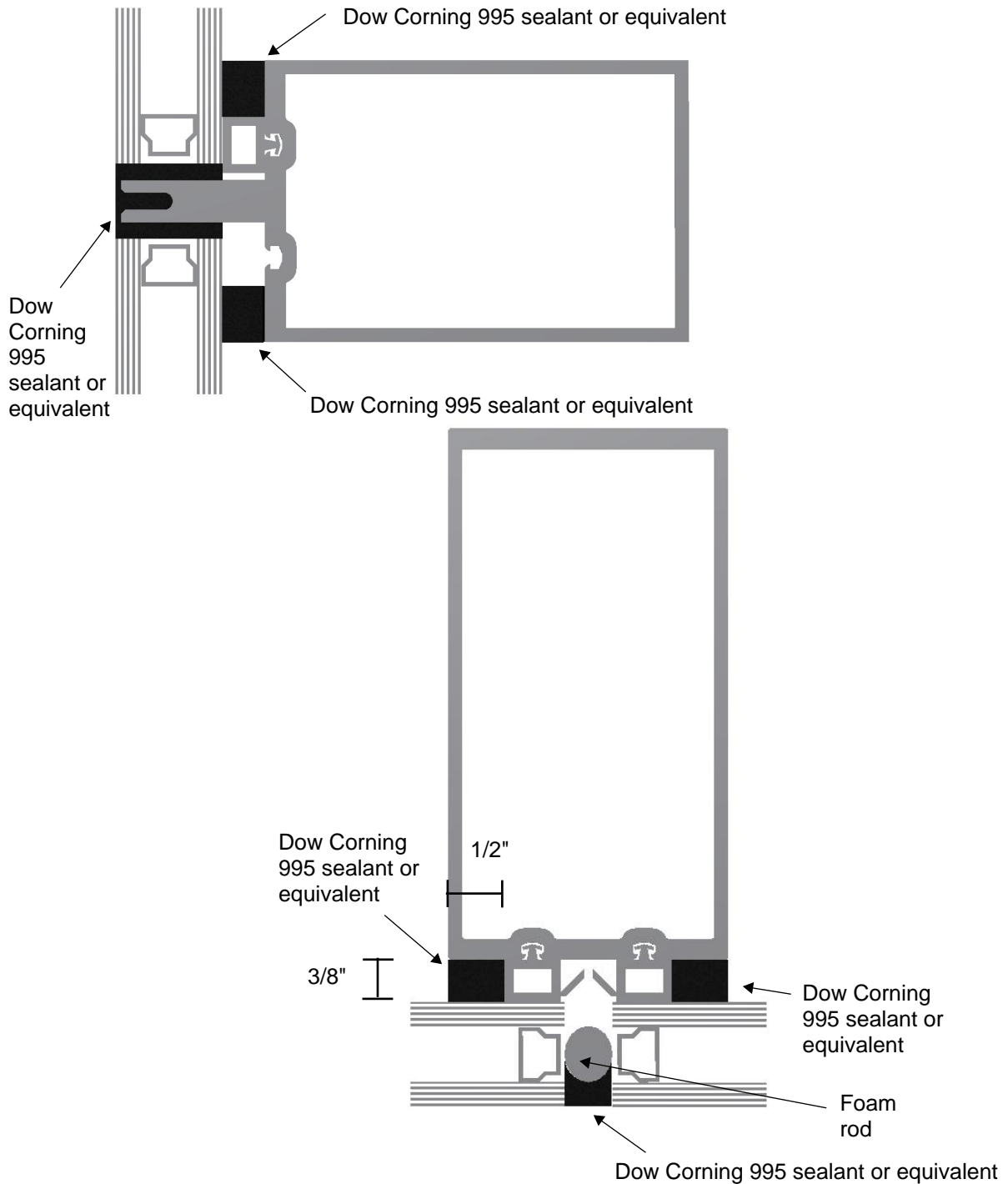


Figure 12: Apply masking tape to the glass.

Step 18: Apply Structural Sealant

- Place foam rod in back members as shown below.
- Fill the spaces between the glass and back member with structural sealant, as shown below.
- Ensure all cavities are sealed and sealant has made complete contact with all surfaces.



Step 19: Tool Sealant and Remove Tape

- Tool sealant, then remove masking tape before sealant cures.
- After sealant has cured, remove temporary glazing clips.
- Apply sealant where glazing clips previously had been, as shown in Figure 13.
- Tool sealant and allow to cure.

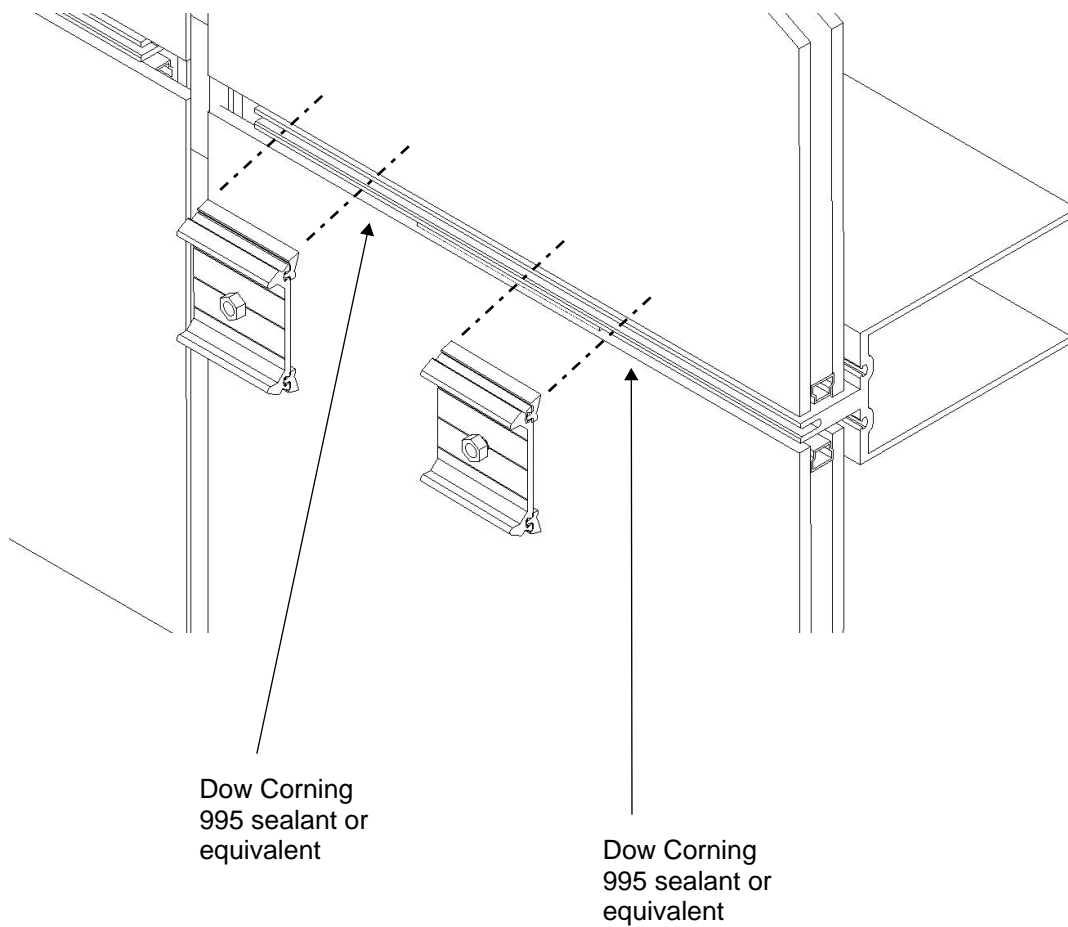
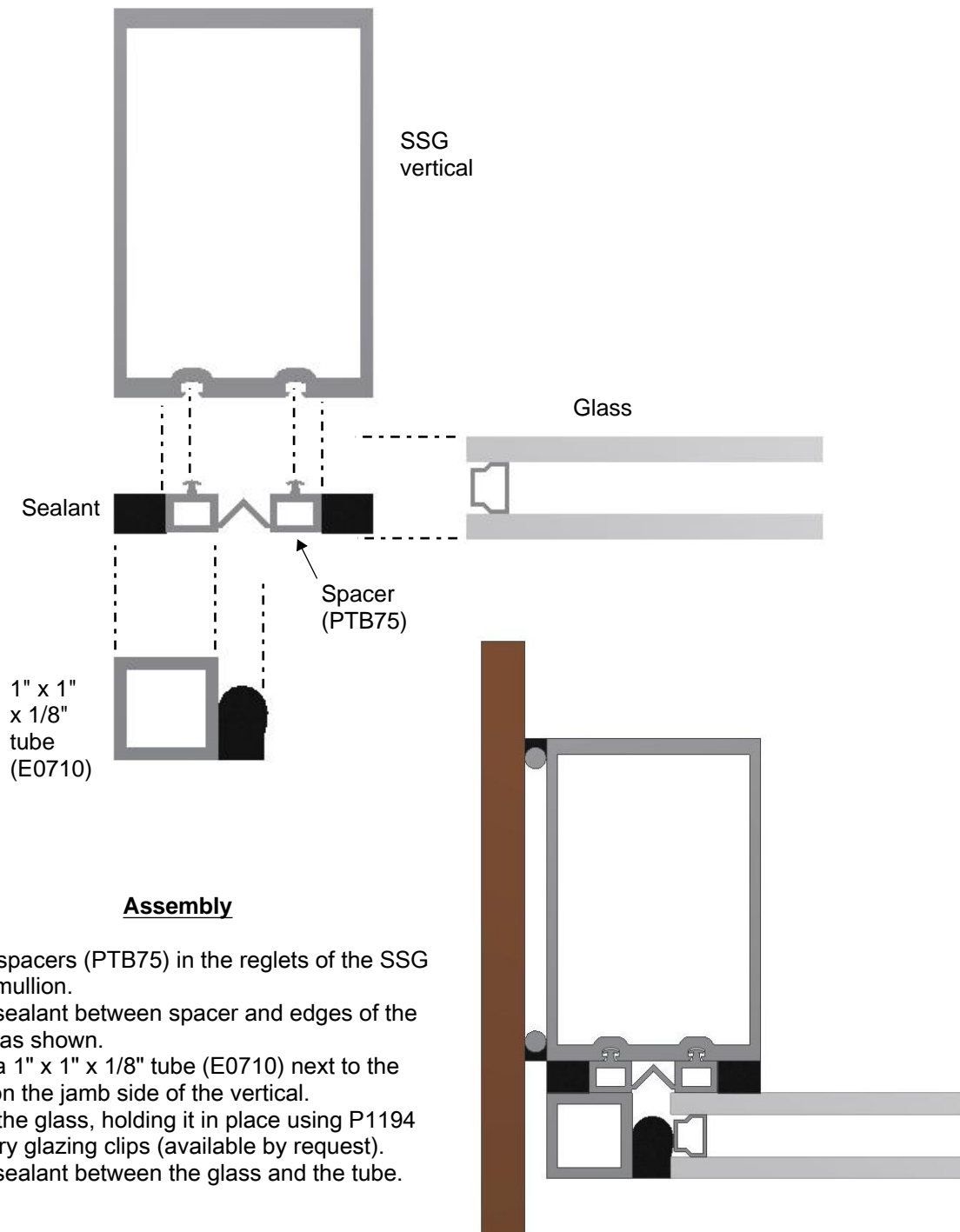


Figure 13: Apply sealant where glazing clips previously had been.

CONNECTION AT PERIMETER

SSG Option

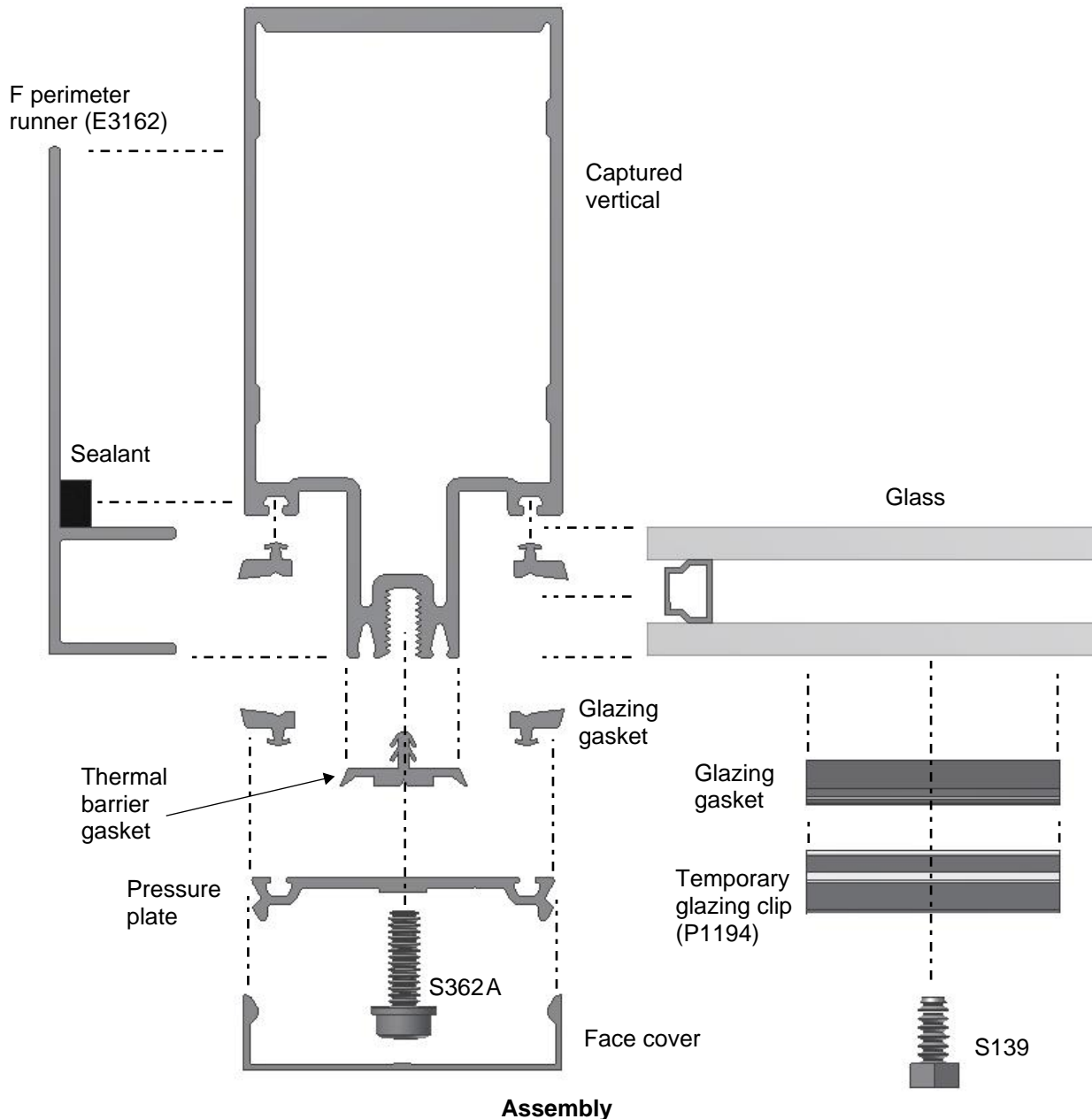


Assembly

- Install spacers (PTB75) in the reglets of the SSG vertical mullion.
- Apply sealant between spacer and edges of the vertical, as shown.
- Place a 1" x 1" x 1/8" tube (E0710) next to the spacer on the jamb side of the vertical.
- Install the glass, holding it in place using P1194 temporary glazing clips (available by request).
- Apply sealant between the glass and the tube.

CONNECTION AT PERIMETER

F Perimeter Runner Option

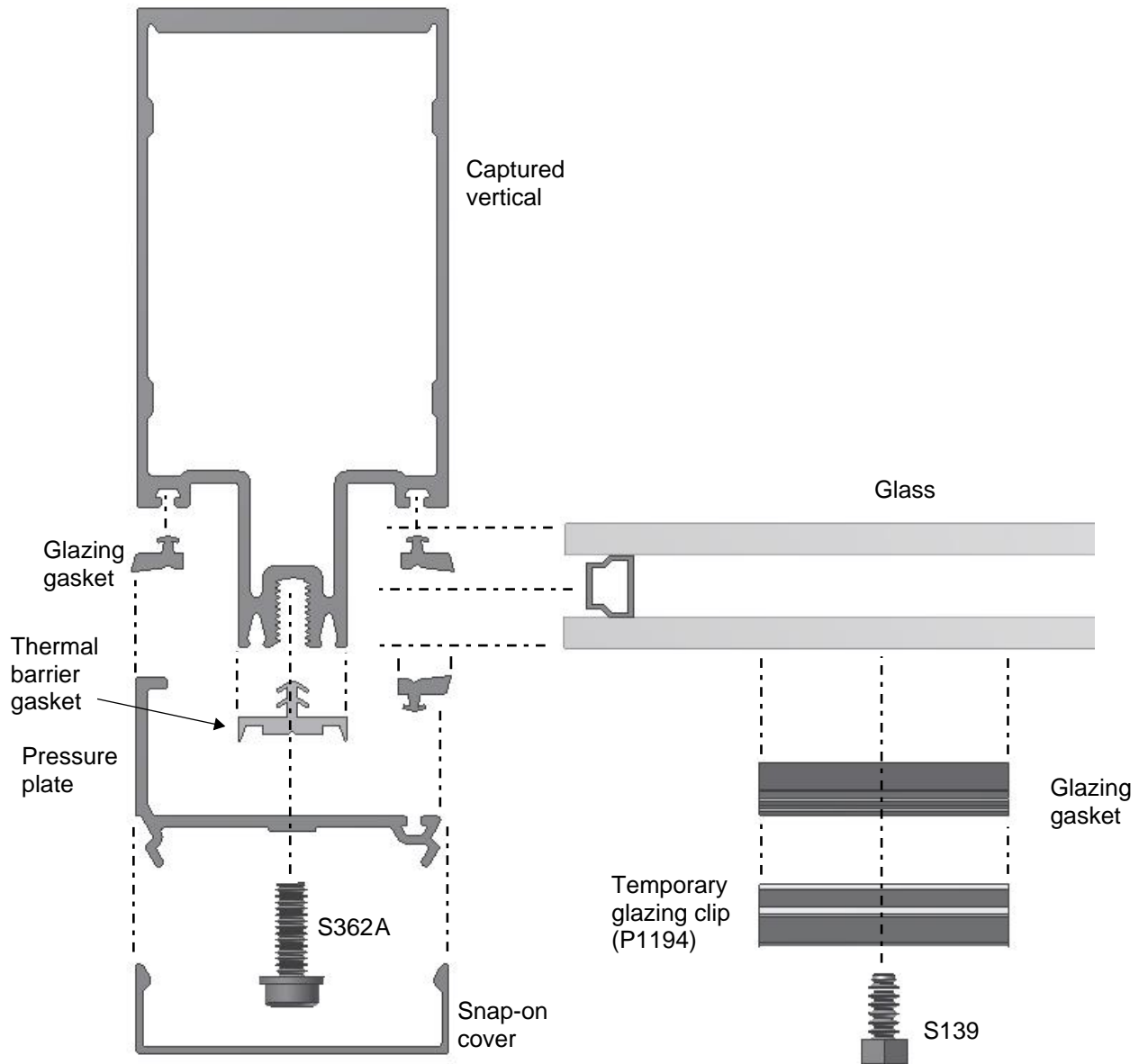


Assembly

- Install an F perimeter runner in the frame opening.
- Install glazing gaskets (PTB28) in the reglets of the standard 400 Curtainwall Series vertical mullion.
- Apply sealant in corner between F perimeter runner, vertical mullion and glazing gasket.
- Install the vertical mullion next to the F perimeter runner, with the front of the anchor flush with the tongue of the mullion.
- Install the glass, holding it in place using P1194 temporary glazing clips (available by request).
- Install the pressure plate (M4TB224) to the vertical mullion with a thermal barrier gasket (PTB94) using S362A fasteners.
- Install the snap cover to the pressure plate.

CONNECTION AT PERIMETER

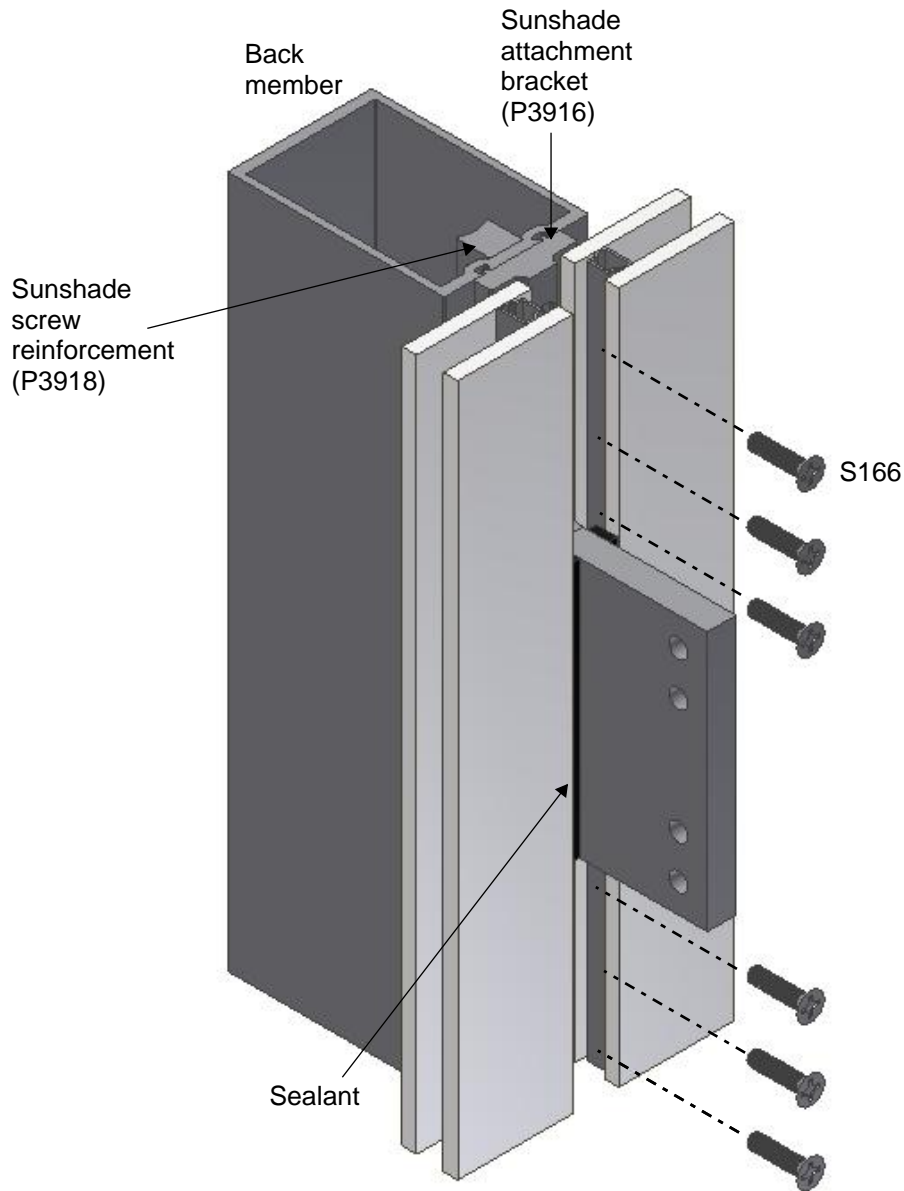
Return Leg Pressure Plate Option



Assembly

- Install glazing gaskets (PTB28) in the reglets of the standard 400 Curtainwall Series vertical mullion.
- Install the glass, holding it in place using P1194 temporary glazing clips (provided by request).
- Install a glazing gasket (PTB28) to the return leg pressure plate (M4TB225).
- Install the return leg pressure plate to the vertical mullion with a thermal barrier gasket (PTB94) using S362A fasteners.
- Install snap-on cover (E4TB64) to pressure plate.

SUNSHADE ATTACHMENT

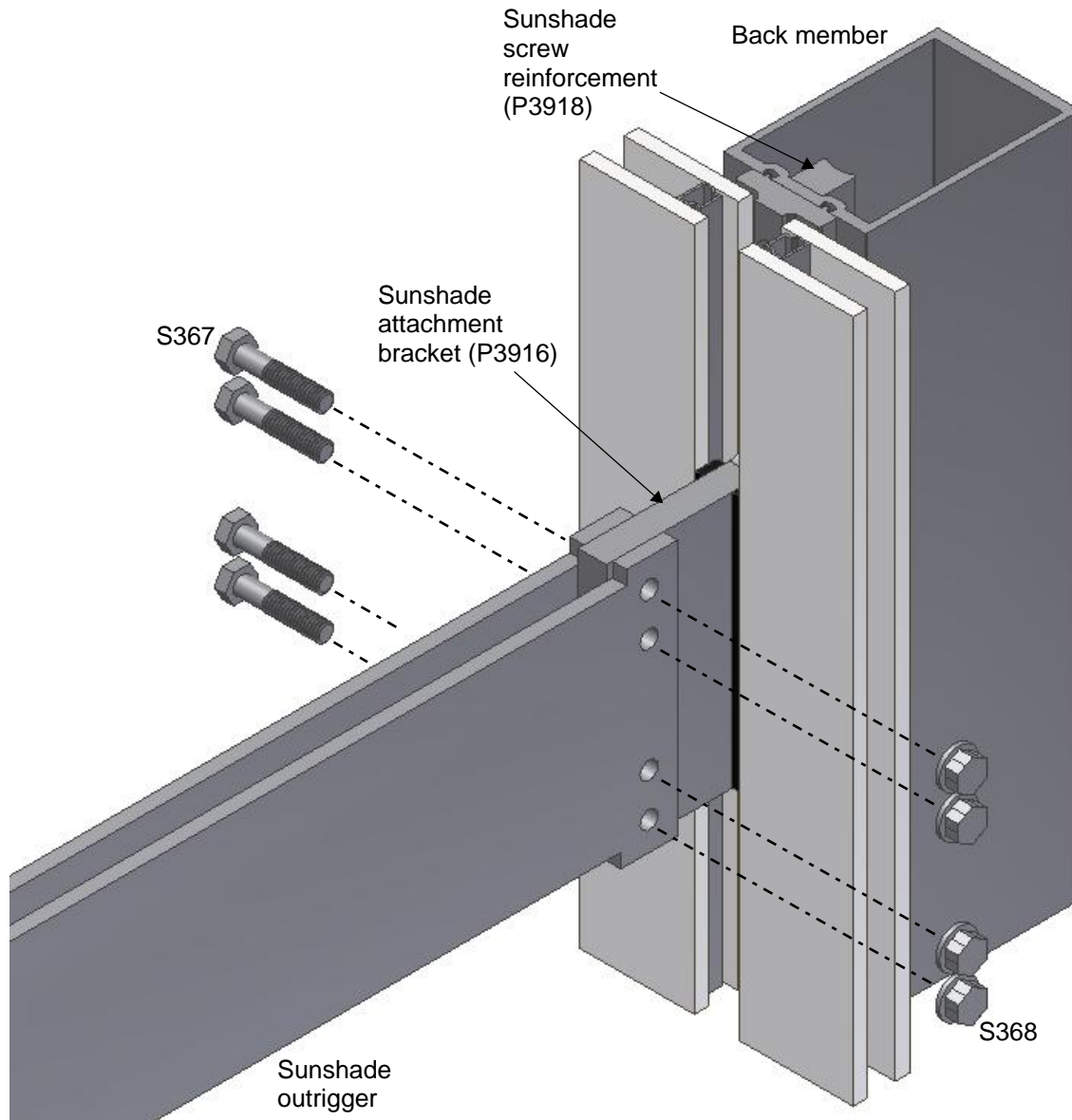


Assembly

NOTE: Use of P3916 bracket requires the typical 400 SSG curtainwall glass width to be reduced 3/8".

- Install gaskets and glass prior to attaching sunshade brackets.
- If necessary, install P3918 screw reinforcement.
- Attach sunshade attachment bracket (P3916) to SSG back member using six S166 fasteners. Seal glass to bracket.

SUNSHADE ATTACHMENT



Assembly

- Using four S367 fasteners and four S368 hex nuts, attach the sunshade outrigger to the sunshade attachment bracket.