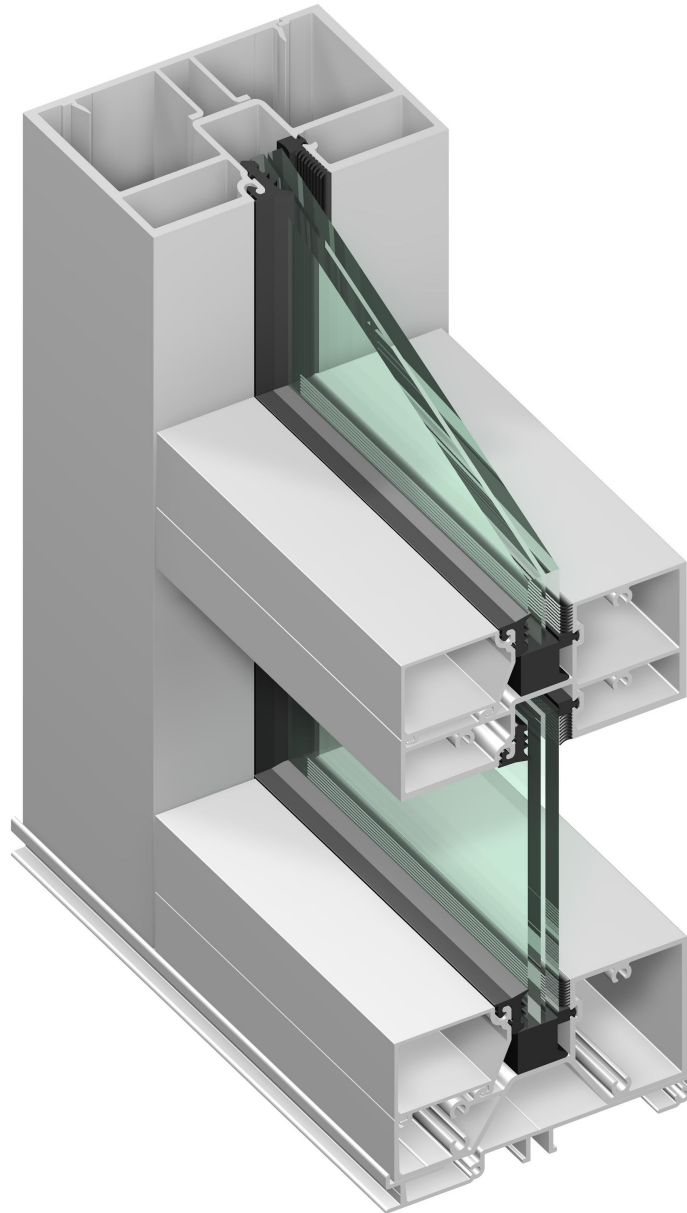


Installation Instructions

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



E44000 Series Storefront

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

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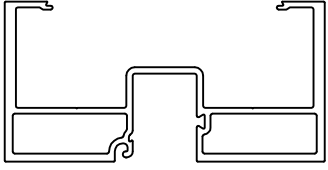
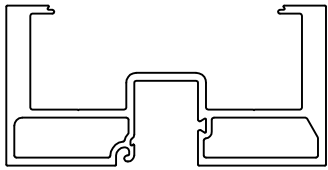
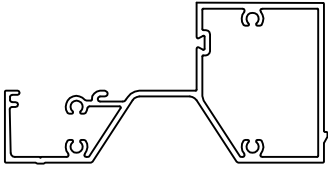
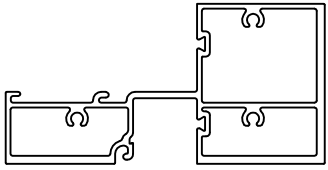
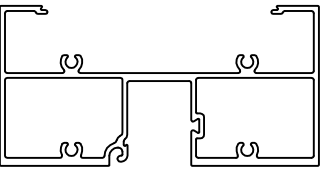
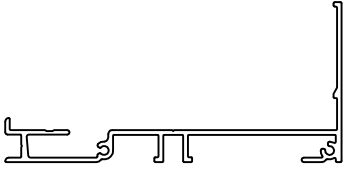
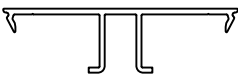

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GENERAL CONSTRUCTION NOTES

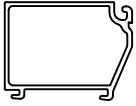



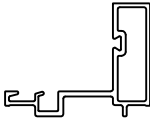
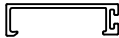

1. These instructions cover typical product application, fabrication, installation and standard conditions and are general in nature. They provide useful guidelines, but the final drawings may include additional details specific to this project. Any conflict or discrepancies must be clarified prior to 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 jams to allow for thermal expansion and contraction. Refer to final distribution drawings for joint sizes. Joints smaller than 1/4" 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










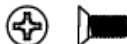



* Dimensions refer to back member depth, not system depth

Shape	Description	Part No.
	Jamb/vertical	E44144
	Heavy wall jamb/vertical	E44261
	Sill	E44240
	Intermediate horizontal	E44143
	Head horizontal	E44441
	Extruded sill flashing	E44259
	Perimeter filler	E44142
	9/16" glass closure pocket	E44022

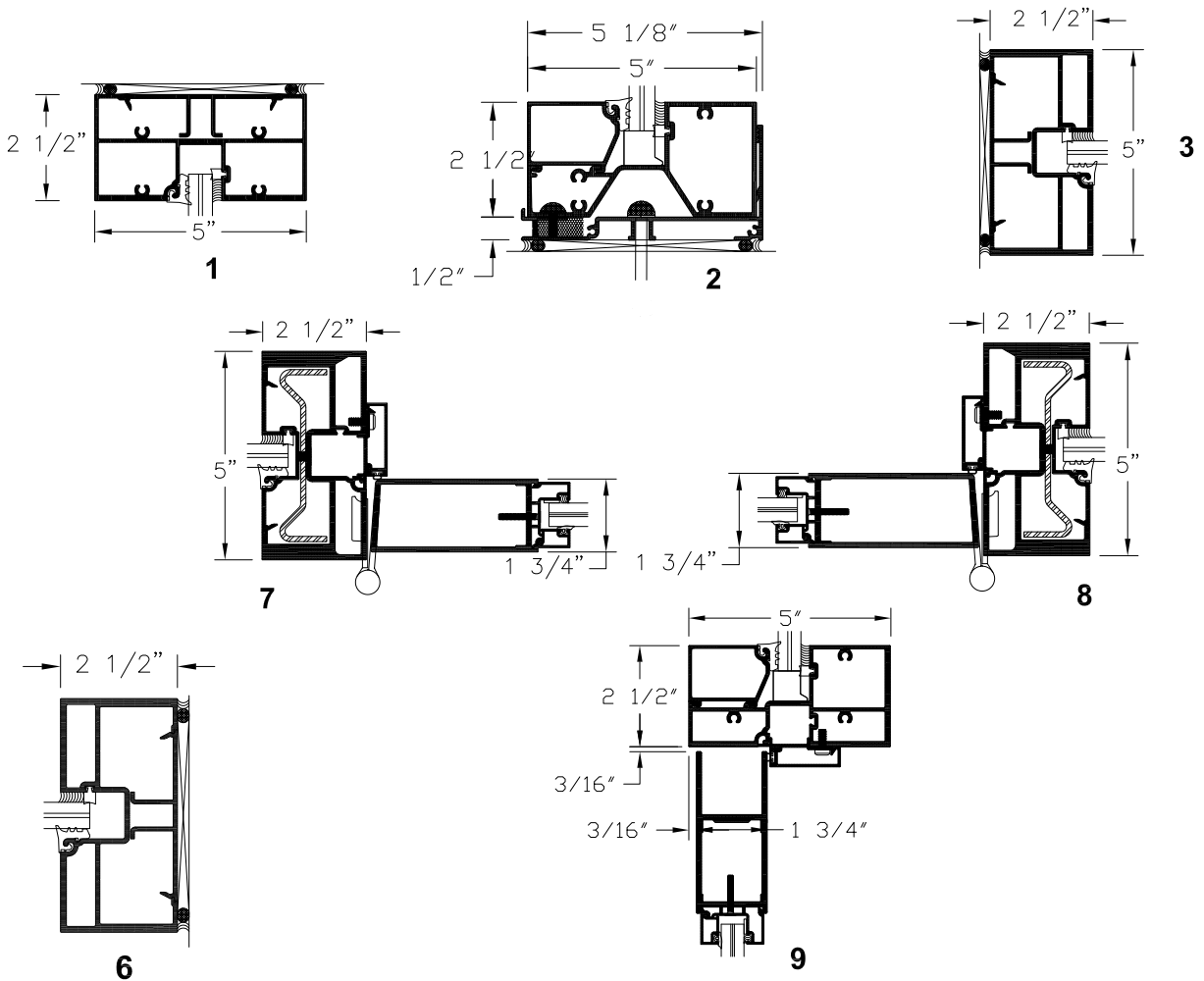
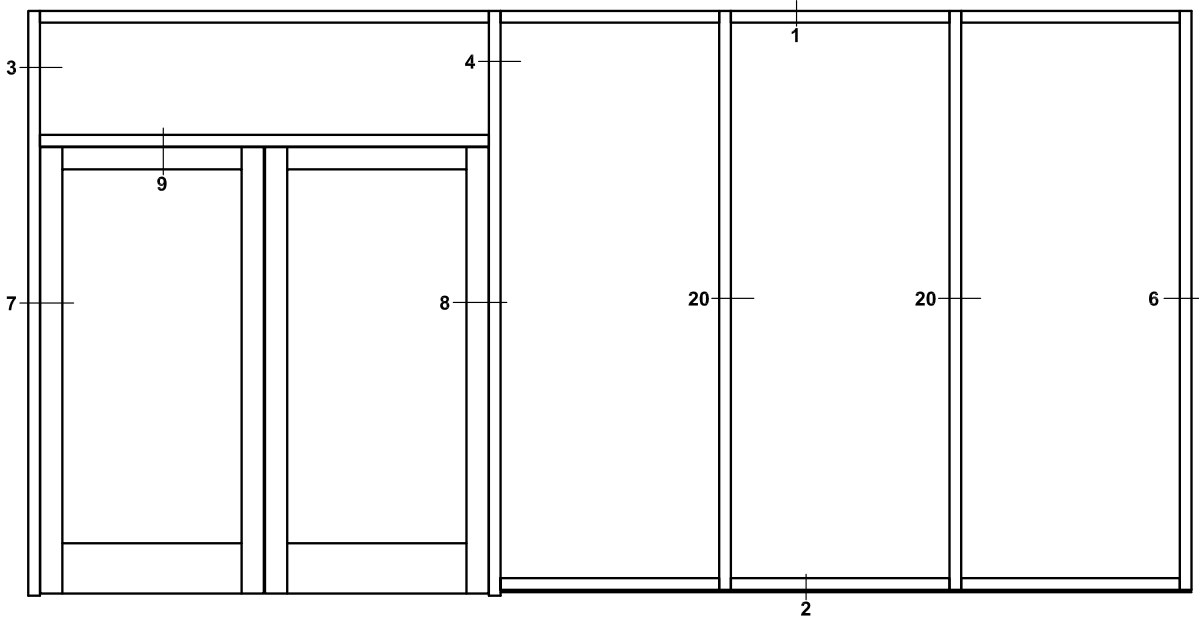
EXTRUSIONS

Shape	Description	Part No.
	9/16" glass stop sill/horizontal	E44104
	Head anchoring channel	E24032
	1" x 1" x 1/8" channel	E6504
	9/16" glass stop horizontal	E6644
	9/16" gutter horizontal	E6645
	Door stop	E6505
	Door stop base	E6507

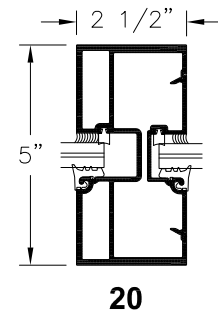
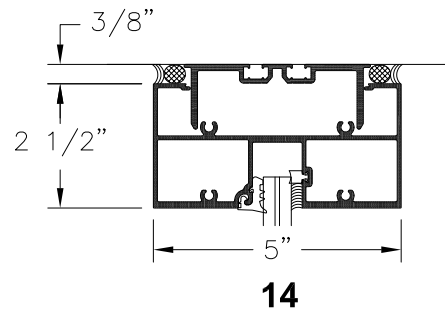
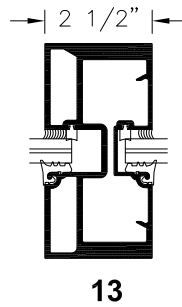
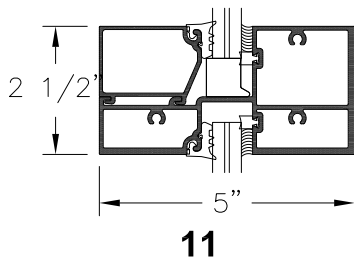
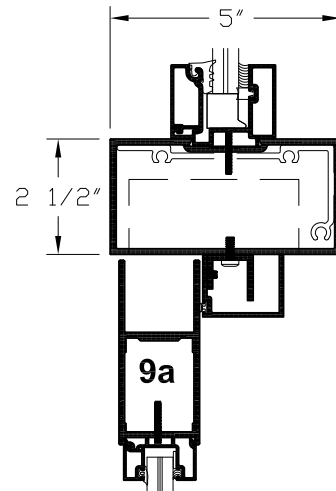
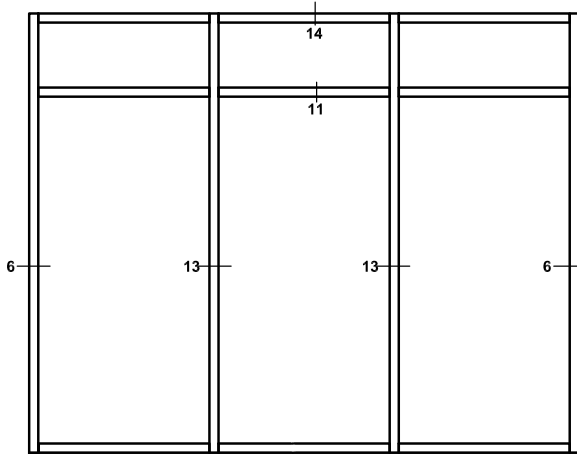
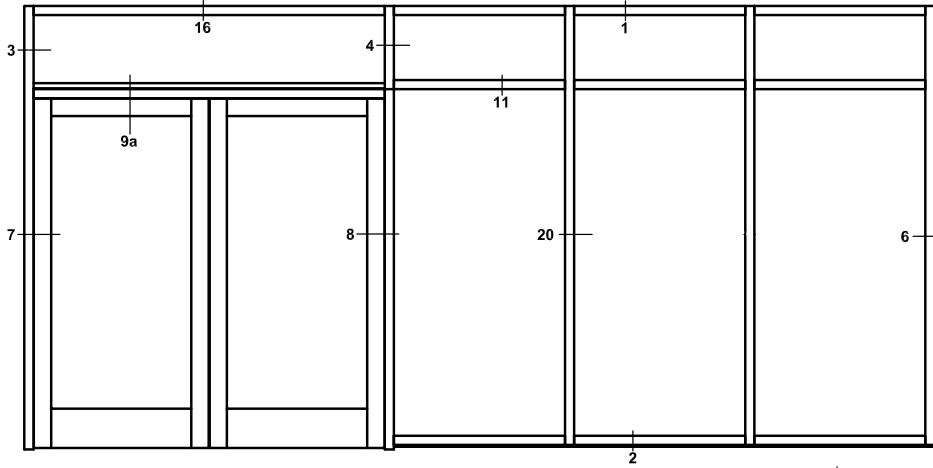
ACCESSORIES

Shape	Description	Part No.
	ForceFront threshold	P6525
	1/4" - 1" door glazing gasket	P0017
	Wet glazed gasket	P6587
	Exterior gasket	P6503
	Door stop bulb gasket	P6296
	6" snap-in anchor support	P4445-0R
	Door header frame clip	P4441
	Butt hinge reinforcement door and frame portion	P2093
	#12-14 x 1" hex head screw	S419
	#12-24 x 1/2" Phillips flat head undercut machine screw	S070
	#8-32 x 1/2" Phillips flat head machine screw	S174
	#10-24 x 1/2" type 23 Phillips pan head screw	S206
	#6-32 x 1" flat head screw	S6504

ELEVATION DETAILS



ELEVATION DETAILS

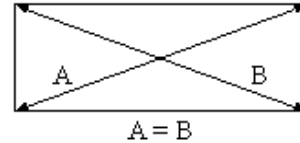


FRAME FABRICATION

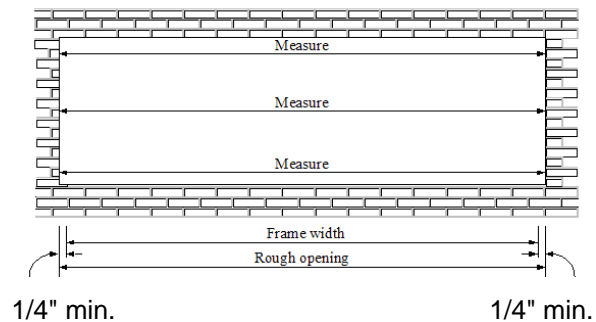
Step 1: Determine Frame Size

Determine Width

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

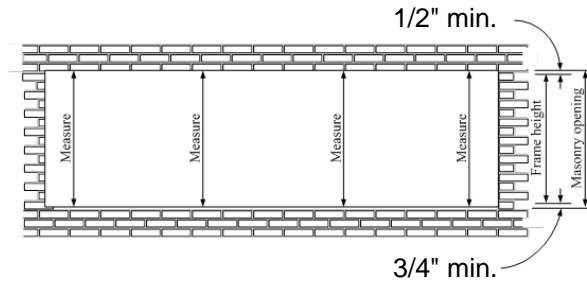


- Measure the width of the opening at the top, middle and bottom.
- Select the smallest dimension measured. To determine the frame width to be used, subtract a minimum of 1/2" from the smallest measured width, to allow a minimum of 1/4" at each jamb for shimming and caulking.
- Allow a larger clearance if necessary to accommodate building tolerances, an out-of-square opening, anticipated thermal expansion within the unit and/or as required by project.



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 1/4" to allow a minimum of 3/4" at the sill and 1/2" at the head 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 project.



Step 2: Cut Extruded Sill Flashing to Size

- Field cut extruded sill flashing to frame width + 1/8" determined in Step #1 (rough opening minus clearances). If the installation includes an entrance, flashing should butt against back of door jamb (no clearance).
- At 2" and 6" from the vertical, drill a pair of 5/16" holes to make a 5/8" x 5/16" weep slot in the flashing as shown in Figure 1.
- Install a weep baffle in the gutter of the flashing behind each weep slot.

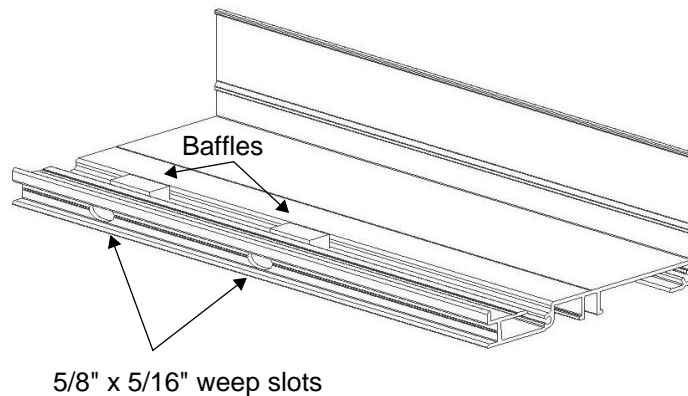


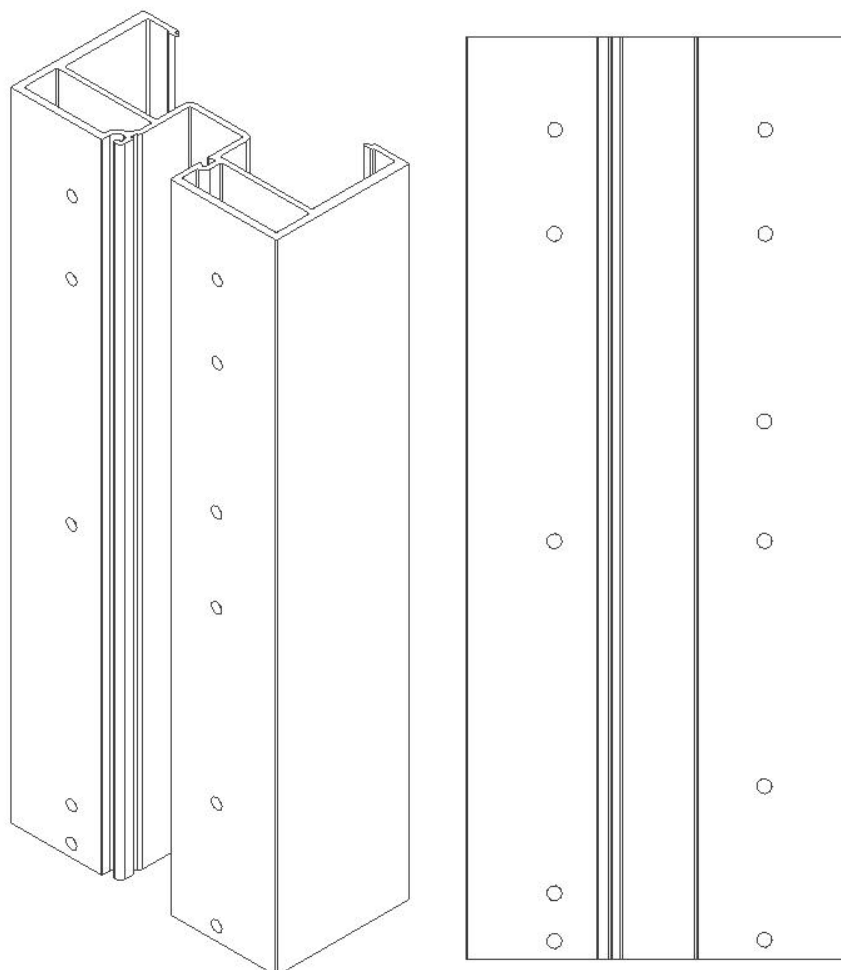
Figure 1: Field cut extruded sill flashing to frame width + 1/8" and drill a pair of weep slots in the flashing.

Step 3: Cut Mullions to Size

- Verticals should be frame height found in Step #1 (rough opening height minus clearances).
- Vertical framing members run through.
- Cut horizontal framing members to the daylight opening (the distance between verticals).

Step 4: Drill Holes in Vertical Members

- Drill holes in the vertical using a drill fixture as shown in Figure 2.
- Oversize the interior holes for screw head clearance with a 5/8" drill bit.



FRAME INSTALLATION

Step 5: Splice the Sill Flashing Where Required

- If there is an entrance, it should be installed first, taking care to locate it accurately within the opening.
- Properly prepare floor surface as recommended by sealant manufacturer.
- Flashing longer than 24' in length should be spliced as shown in Figure 2.
- Set splice in a bed of sealant at the predetermined location.
- Properly shim flashing off floor to allow for sealant joint width (refer to sealant manufacturer recommended joint width based on expected expansion/contraction of sill flashing).
- Place and anchor the sill in the opening. The gap between any two pieces of sill should be a minimum 3/8" to 1/2" wide, depending on the length of flashing used.
- Apply sealant between the two pieces of flashing spanning the splice joint as seen in Figure 3.

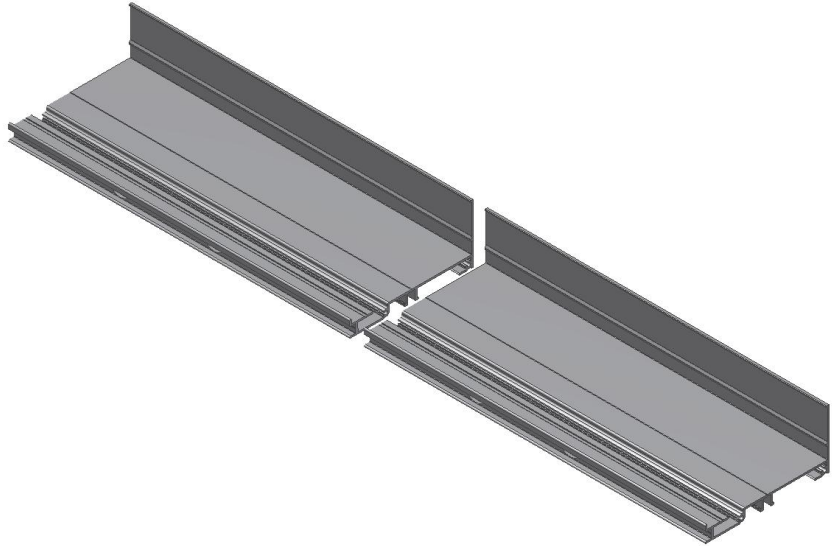


Figure 2: Extruded sill flashing longer than 24' in length should be spliced.

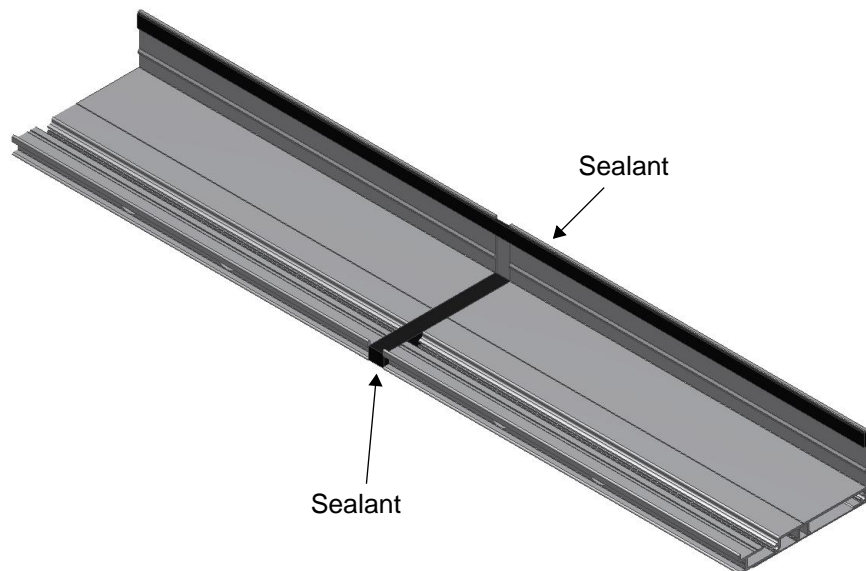


Figure 3: Apply sealant between the two pieces of sill flashing spanning the splice joint.

Step 6: Attach End Dam to Sill Flashing at Building Structure

- At a wall, attach a P1156 end dam to the end of the sill flashing with two S196 screws and seal the sill to the end dam as shown in Figure 4. Cap seal the S196 screws.
- End dam must be completely sealed on all sides.

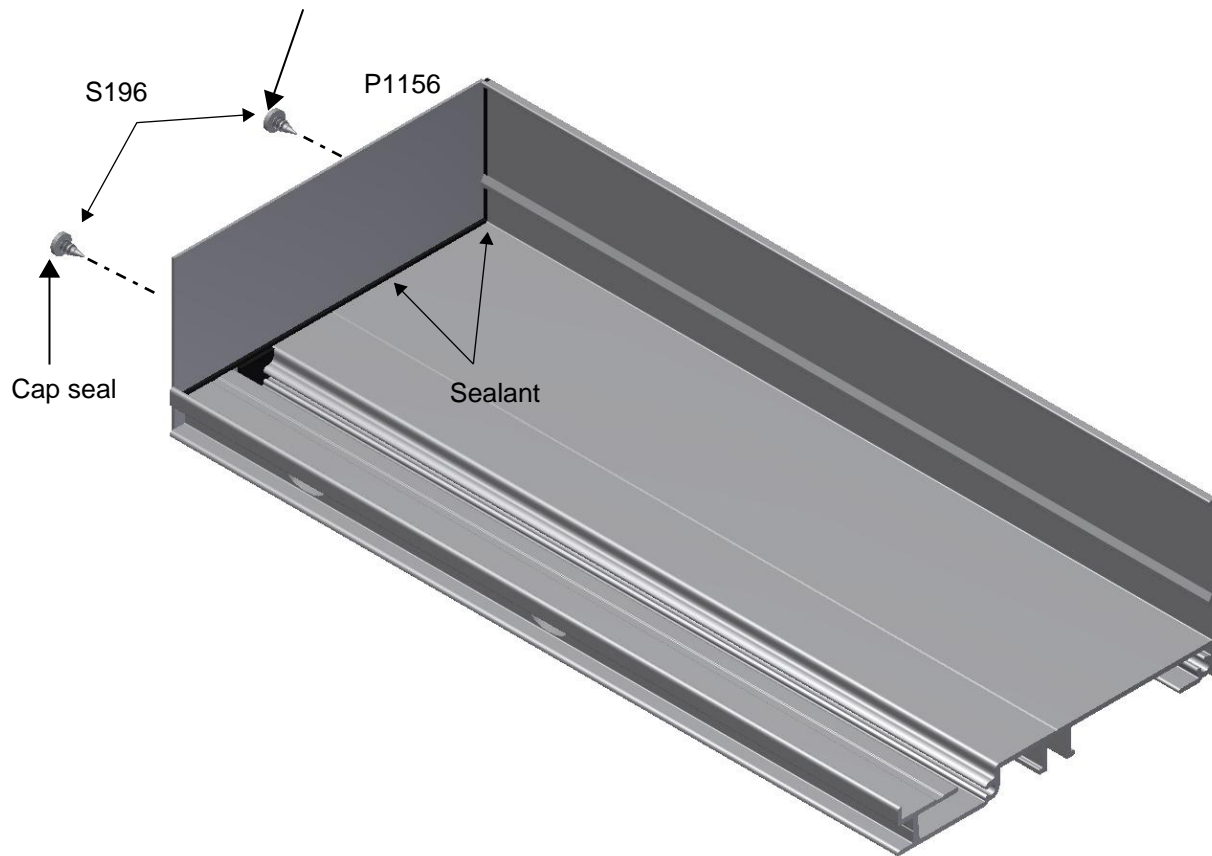


Figure 4: Attach an end dam to the end of the sill flashing at a wall.

Step 7: Seal and Anchor the Sill Flashing

- At jamb conditions, butt the sill flashing up against the back of the door jamb and seal the sill to the back of the entrance frame as shown in Figure 5. Place shims (not by Tubelite) under the flashing as needed to support the sill and level it.
- Fill the jamb pocket cavity completely with sealant.
- Drill holes for anchor bolts through the sill and into the masonry, and secure the sill with bolts, as specified in the approved shop drawings.
- Cap seal all anchor bolts with silicone sealant. Before the fastener is inserted, force sealant into the hole for the sill perimeter fastener to ensure that the hole through the sill is sealed.
- Do not block weep holes of sill flashing.

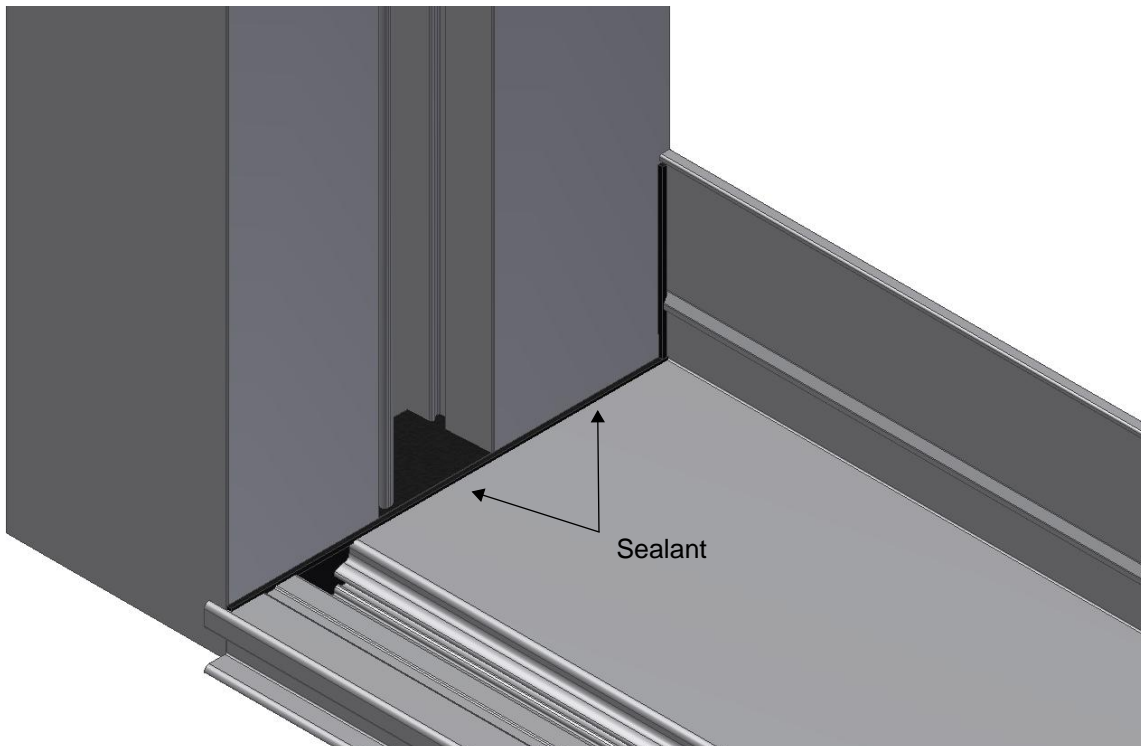


Figure 5: Butt the sill flashing up against the back of the door jamb.

Step 8: Secure Horizontals to Vertical

- Apply sealant to the ends of the horizontals.
- Attach horizontals to the vertical mullion using S419 screws as shown in Figure 6.

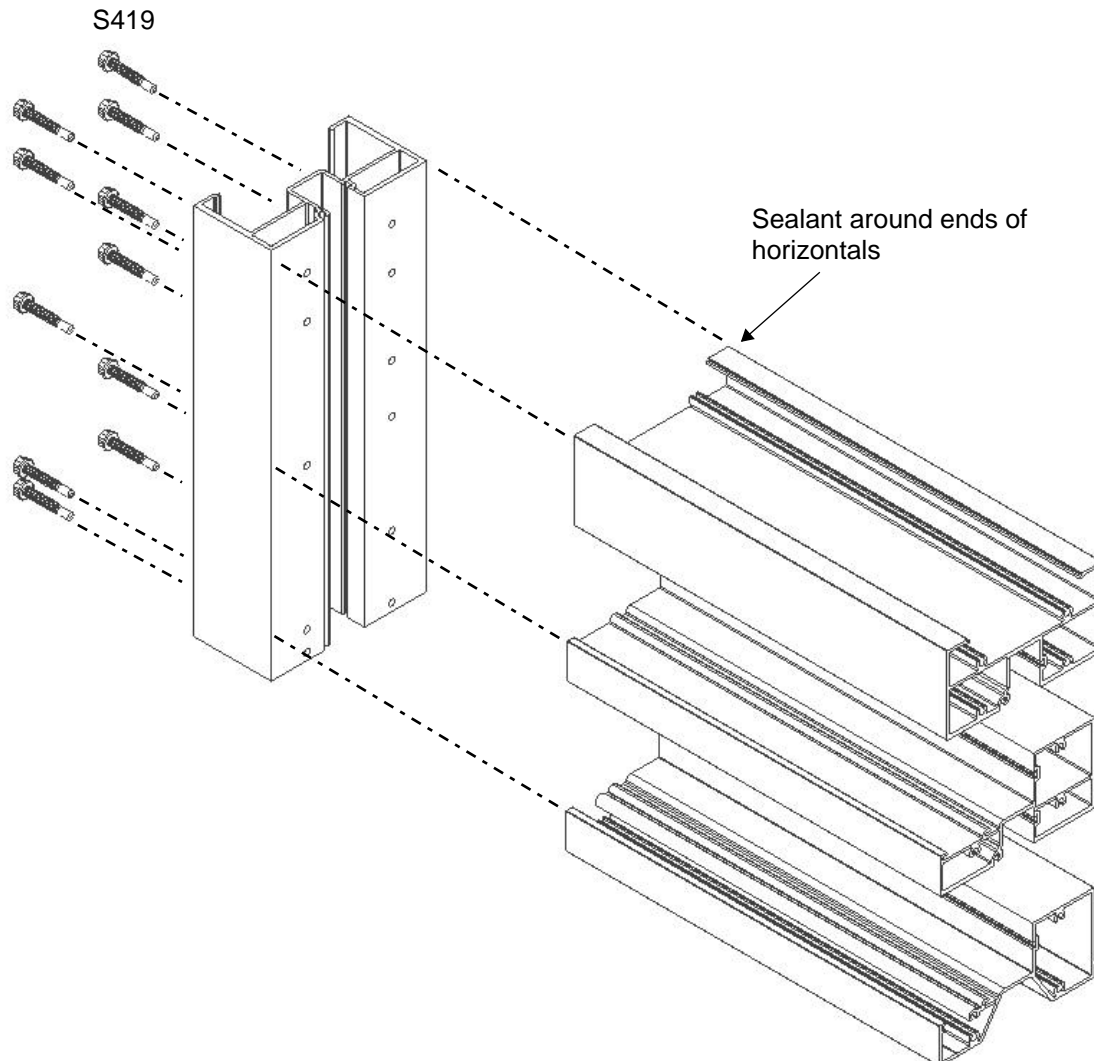


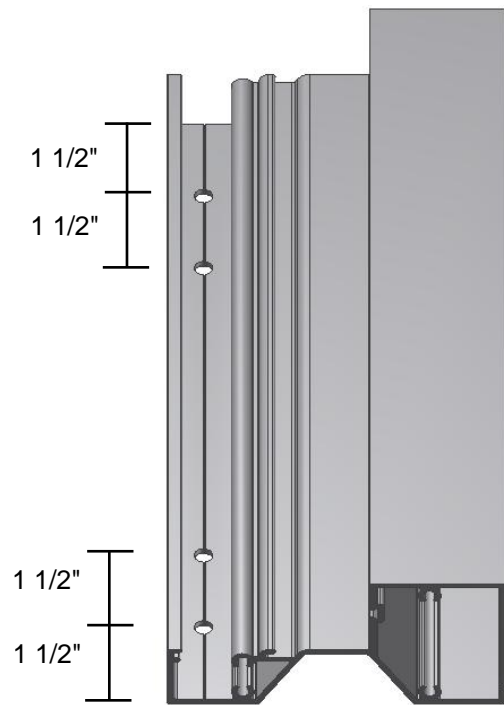
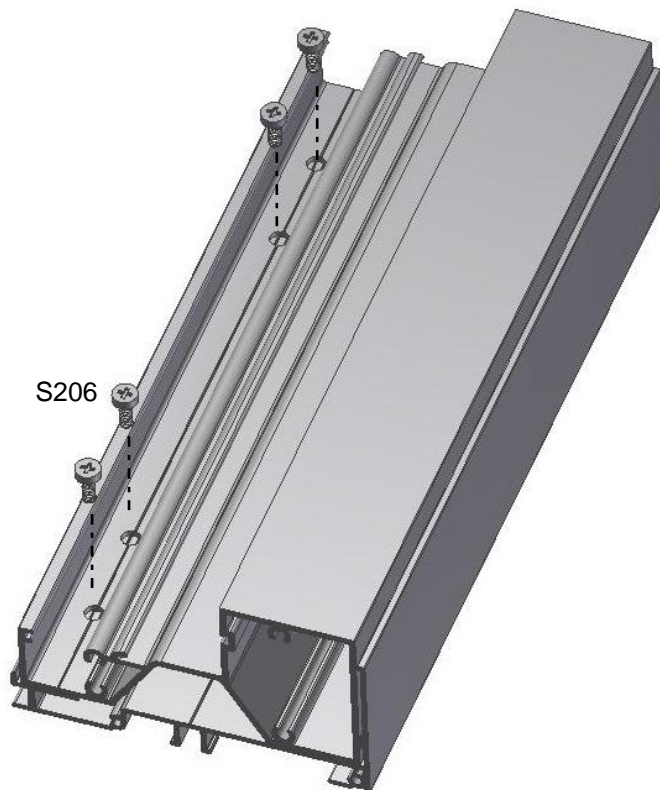
Figure 6: Attach the horizontals to the vertical mullion using S419 screws.

Step 9: Install Assembled Units

- Install the assembled units beginning at the entrance, and working toward the jambs. If there is no entrance, begin at one jamb and work toward the other.
- In the case of smaller units, the last two may need to be snapped together and then pivoted into position together.

Step 10: Anchor Sill To Sill Flashing

- Drill 0.281" anchor holes in the sill along the "v" groove, 1 1/2" and 3" from each end as shown at right.
- Match drill sill anchor holes to sill flashing.
- Anchor sill to sill flashing with S206 screws as shown below.
- Seal heads of anchor screws.



Step 11: Attach Frame to Building Structure

- Install shims at head and jambs and ensure frames are installed plumb and true.
 - Attach the jambs and head to the perimeter of the opening with suitable fasteners. Perimeter anchors should be located within 6" of each side of the vertical mullion.
- Note:** This is for general erection procedures only. For actual job conditions, refer to shop drawings for appropriate fastener and hole locations as determined by a qualified engineer or consult the project design professional.

Step 12: Attach Head Anchoring Channel (optional)

- If desired, attach a head anchoring channel (E24032) to the head horizontal, as shown in Figure 7.

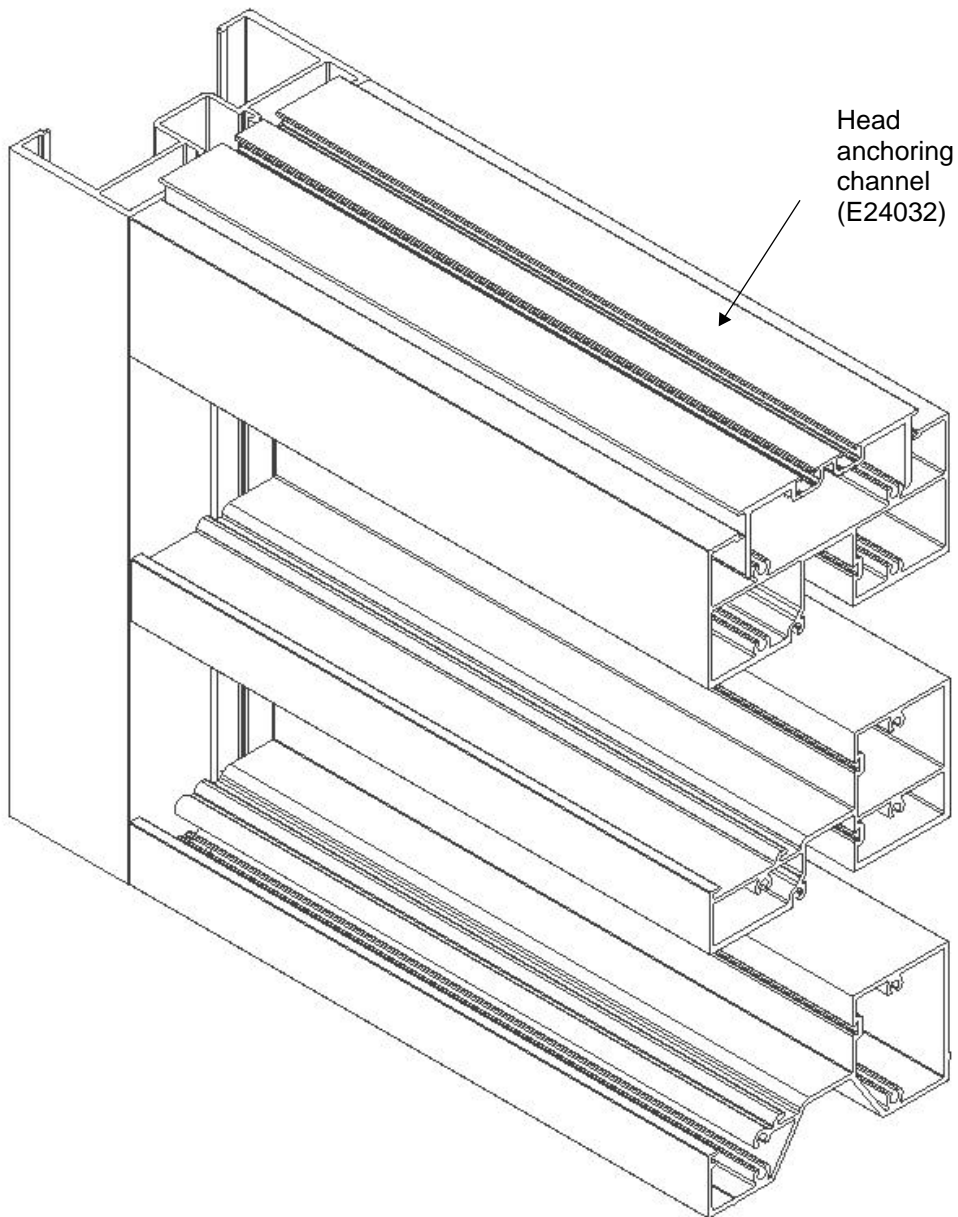


Figure 7: Attach a head anchoring channel (E24032) to the head horizontal, if desired.

Step 13: Install Water Diverter

- Use a solvent and a clean cloth to clean the surfaces of the intermediate horizontals where water diverter will be installed. Also clean the vertical reglets on both sides to at least 1" above the gasket reglets on the horizontal member.
- When the surfaces are dry, butter the underside of the P6597 water diverter with sealant and press the diverter to the horizontal in the glazing pocket as shown in Figure 8.
- Pump sealant into the vertical gasket reglets, and seal the edges of the diverter on all sides EXCEPT the edge facing the pocket. You must avoid getting sealant in this area in order to allow the system to drain.
- Seal the joint between the vertical and horizontal members from the diverter to the top of the horizontal gasket reglet.
- Embed water diverter in sealant.

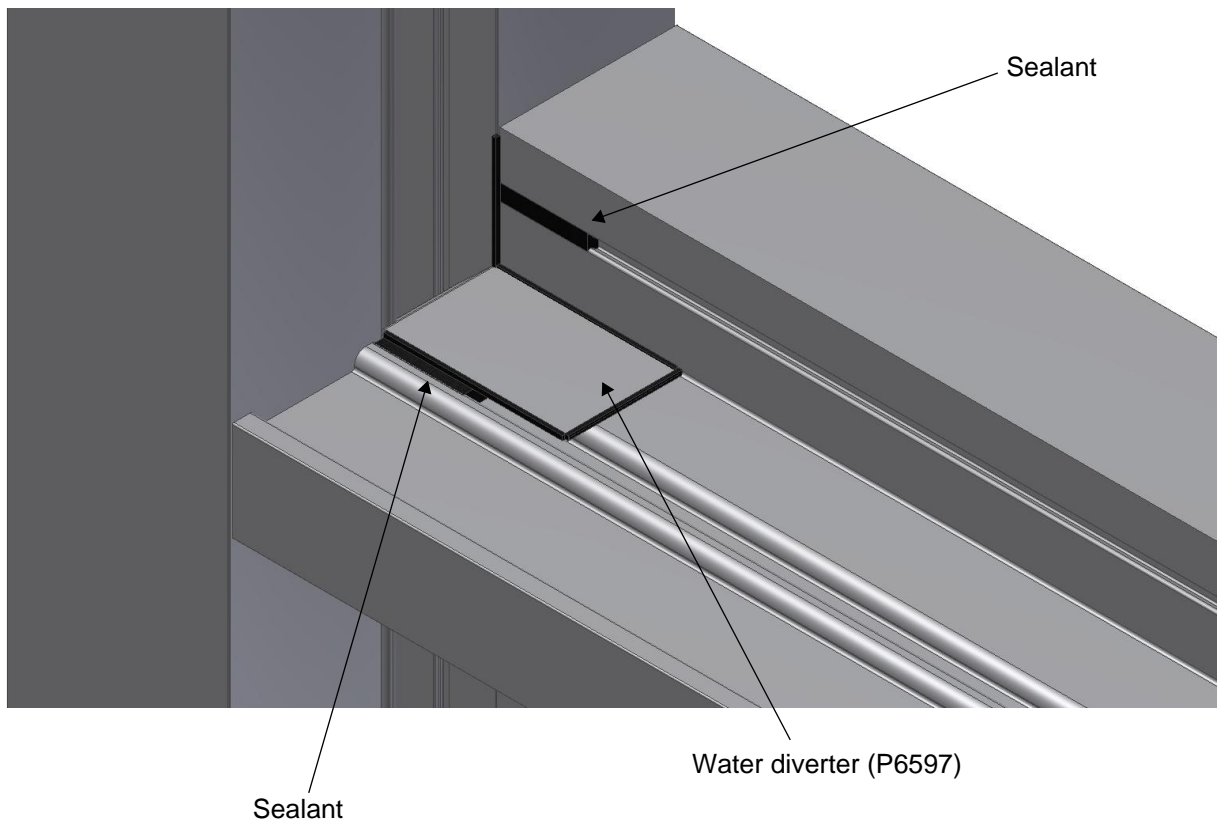


Figure 8: Place a water diverter on intermediate horizontals.

**Step 14: Add Steel
Reinforcement (if necessary)**

- Refer to approved shop drawings to determine whether the application requires steel reinforcement.
- Cut steel reinforcing channel, P1437, 4" shorter than mullion length. Paint ends to prevent rust.
- Insert steel into the mullion as shown in Figure 9. Align and center the steel with mullion, then drill .213" diameter holes through the mullion and steel at 12" O.C.
- Insert #12-14 x 3/4" flat head screw (not by Tubelite) 6" from the end and 12" on center through the glass pocket. Cut off and grind flush with steel.

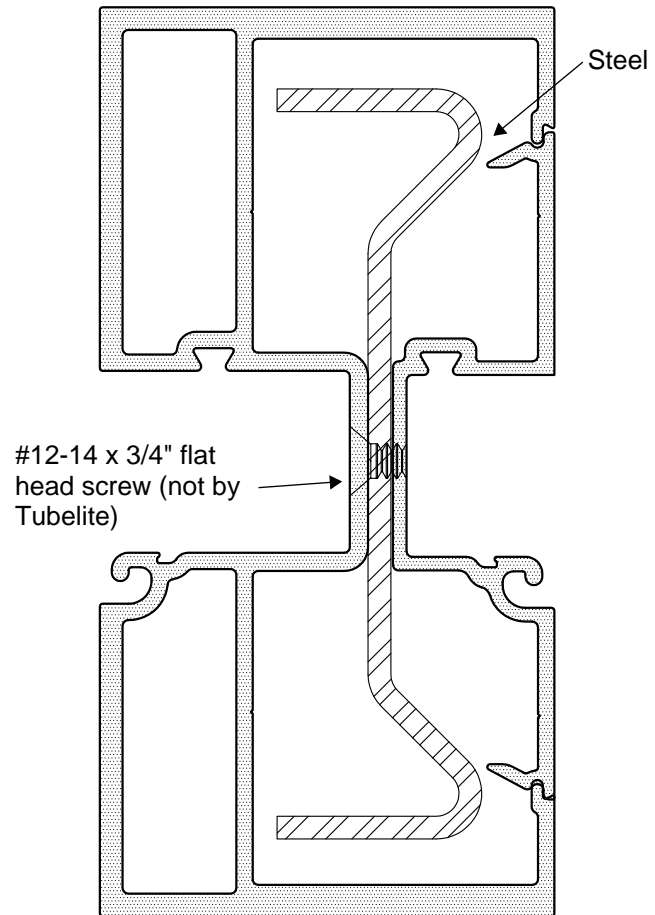


Figure 9: Install steel reinforcement if necessary.

GLAZING INSTALLATION

- All glazing pockets are 1" wide, and will accept glazing 9/16" thick, wet glazed.
- Glass dimensions should not exceed daylight opening (D.L.O.) plus 1 1/4". This formula does not take into account out-of-square openings or glass tolerances. Consult the glass manufacturer before determining final glass sizes.
- When cutting gaskets, add 1/16" to 1/8" per foot of daylight opening for shrinkage (an eighth of an inch per foot is approximately 1%). Open, unsealed gasket joints are a potential source of leakage and water damage to interior finishes.
- When installing gaskets, always begin at each end of the gasket and work toward the center. Do not stretch the gasket or it will return to its original form, creating gaps at the gasket intersections.

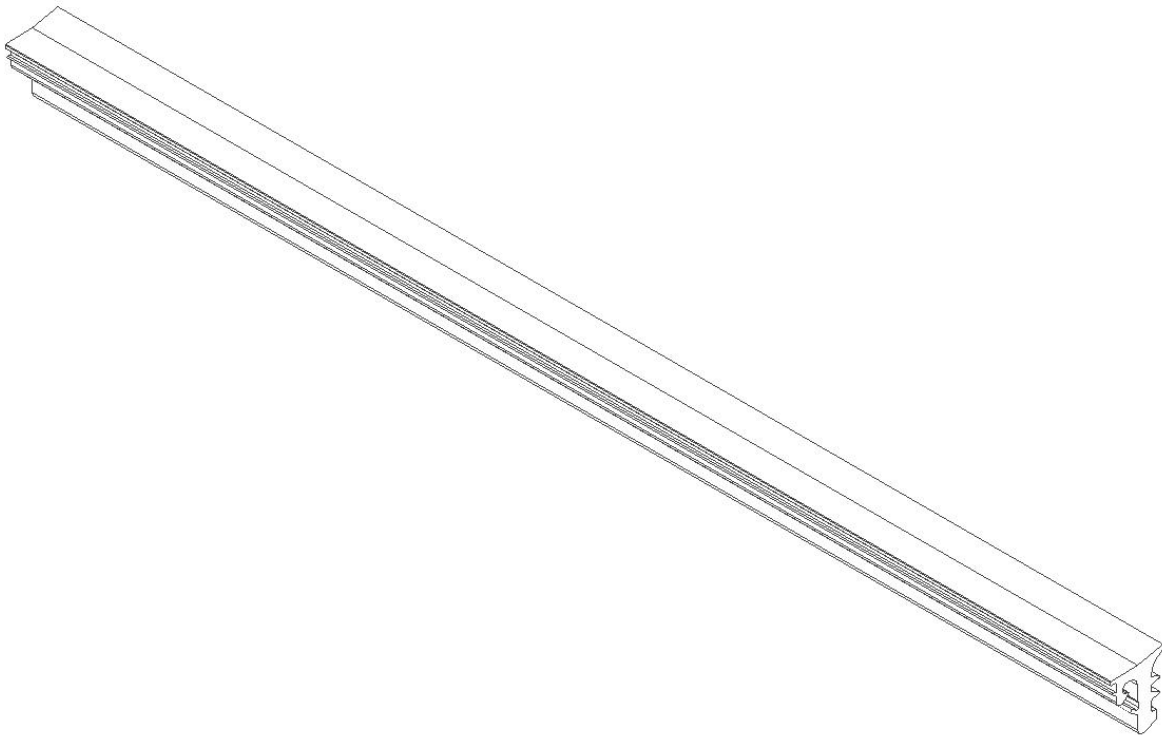


Figure 10: When cutting gaskets, add 1/16" to 1/8" per foot of daylight opening for shrinkage.

Step 15: Cut and Install Interior Gaskets

- Cut interior gaskets (P6587).
- Install gaskets on the side of frame opposite glass stop first.
- Install the interior gaskets at each end and work toward the center, firmly pushing the gasket in place, as shown in Figure 11.
- Apply sealant at the intersection to marry the vertical and horizontal glazing gaskets. Tool all sealant to present a neat, clean appearance.

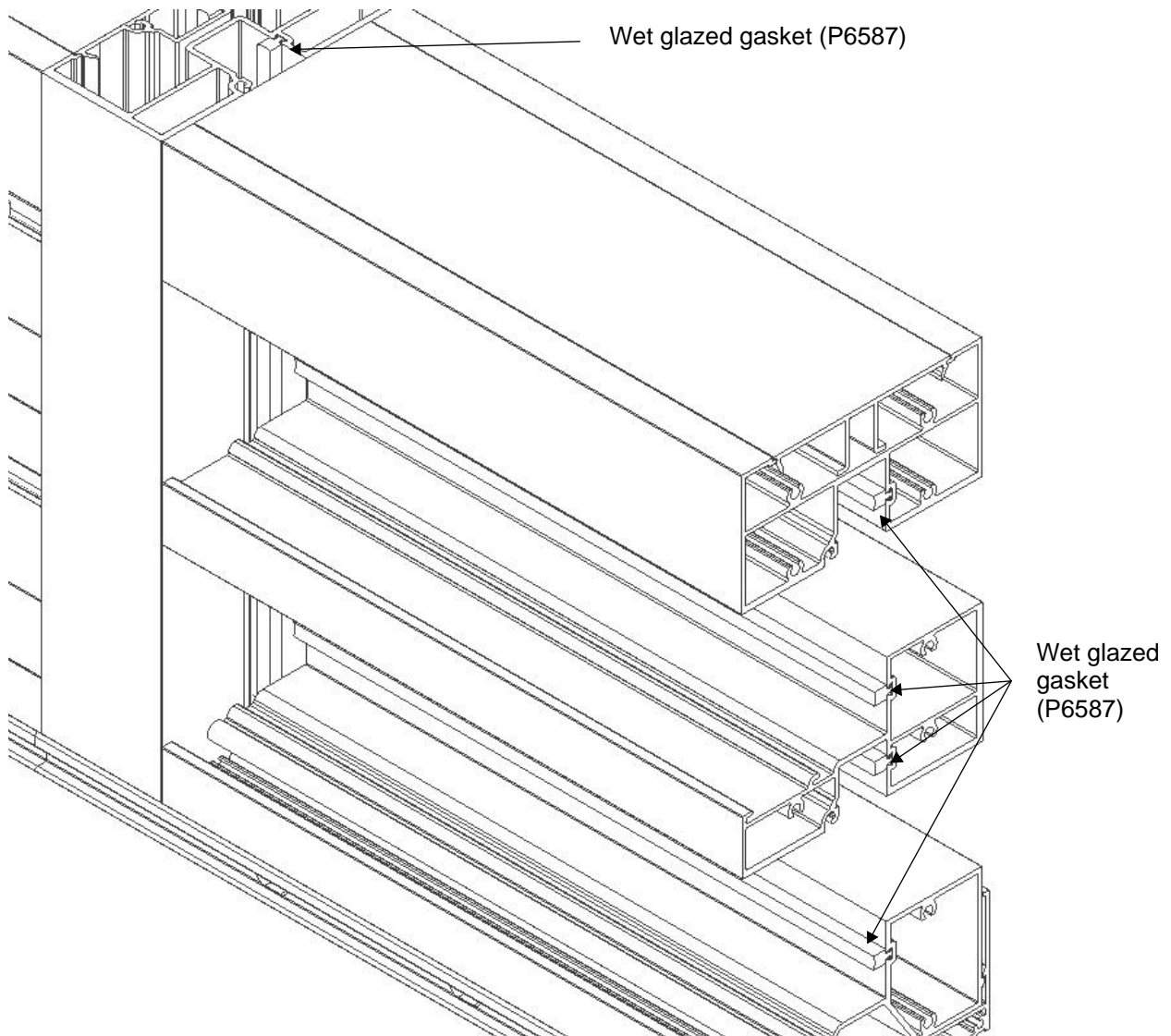
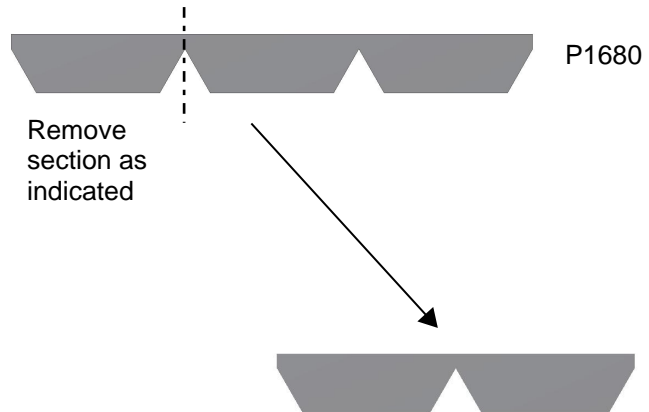


Figure 11: Install the interior gaskets at each end and work toward the center, firmly pushing the gasket in place.

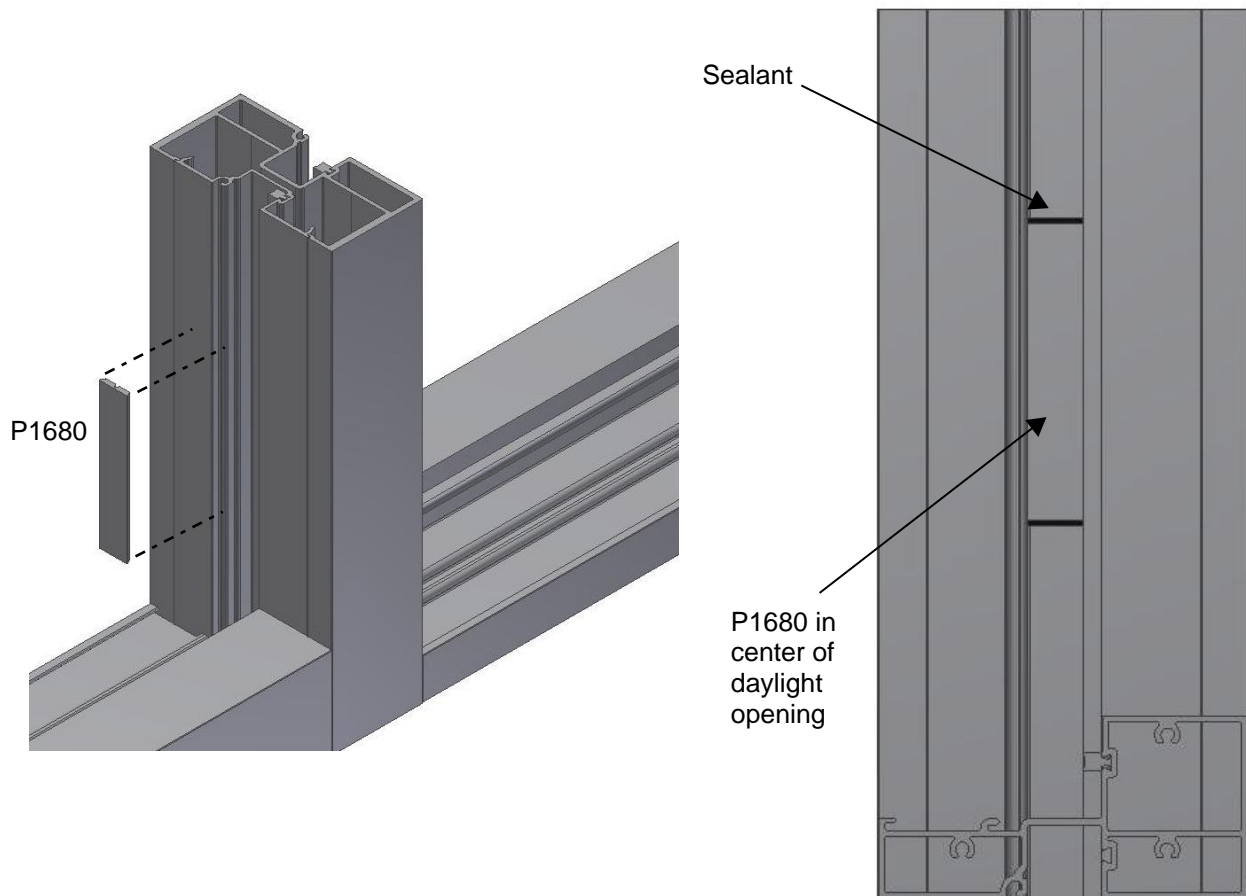
**Step 16: Cut
Anti-Walk Blocks
(shallow glass
pocket)**

- Cut one section of P1680 setting block off to fit in shallow glass pocket as shown at right. Use larger section.



Step 17: Install Anti-Walk Blocks (shallow glass pocket)

- Place P1680 setting block in shallow pocket at the center of the daylight opening as shown below. Seal side with notch to mullion.



Step 18: Install the Glass

- Position the glass in the frame.
- Raise the glass off the bottom horizontal, and place a setting block at each quarter point (two setting blocks per light) or as required by project.
- Lower the glass onto the setting block as shown in Figure 12.
- Consult glass manufacturer about setting blocks if glass size is more than 40".

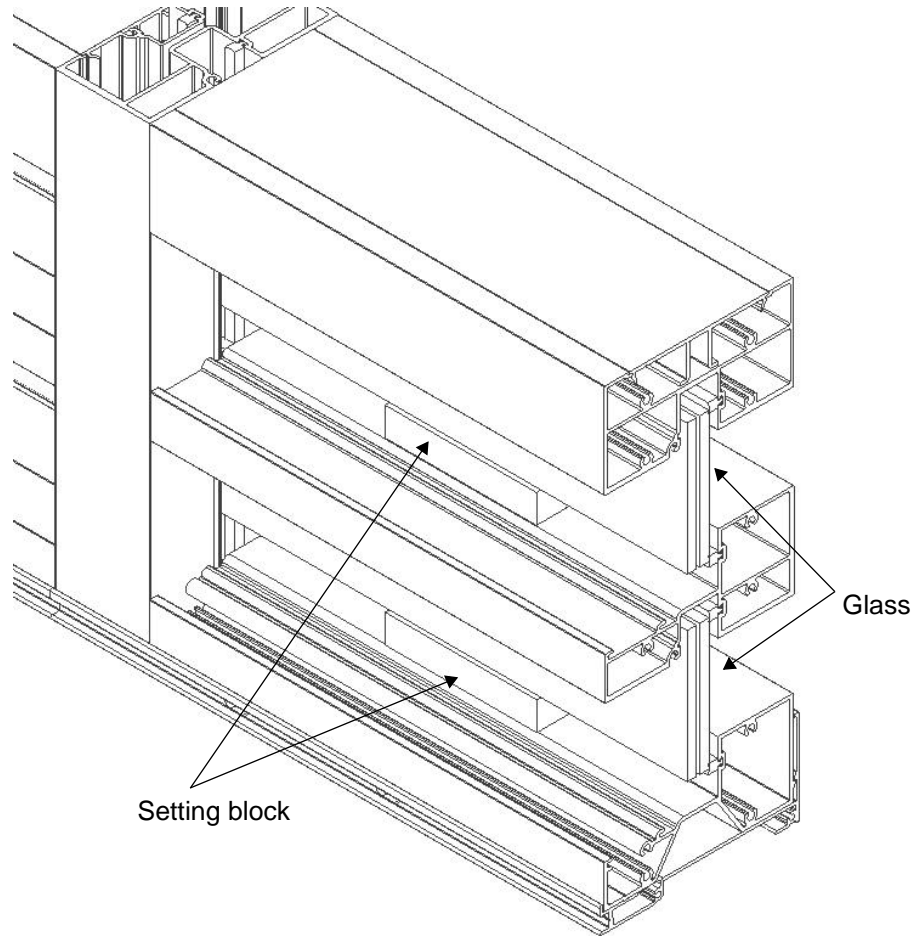


Figure 12: Lower the glass onto the setting block.

Step 19: Install Anti-Walk Blocks (deep glazing pocket)

- Flatten an anti-walk block (P1916) against the exterior of the glass at the center of the daylight opening and slide it between the glass and the mullion until it is released into the glazing pocket, as shown in Figure 13.
- Anti-walk block should be pushed in past the glass edge so it can expand, keeping the glass from shifting once blocks are installed on both sides.

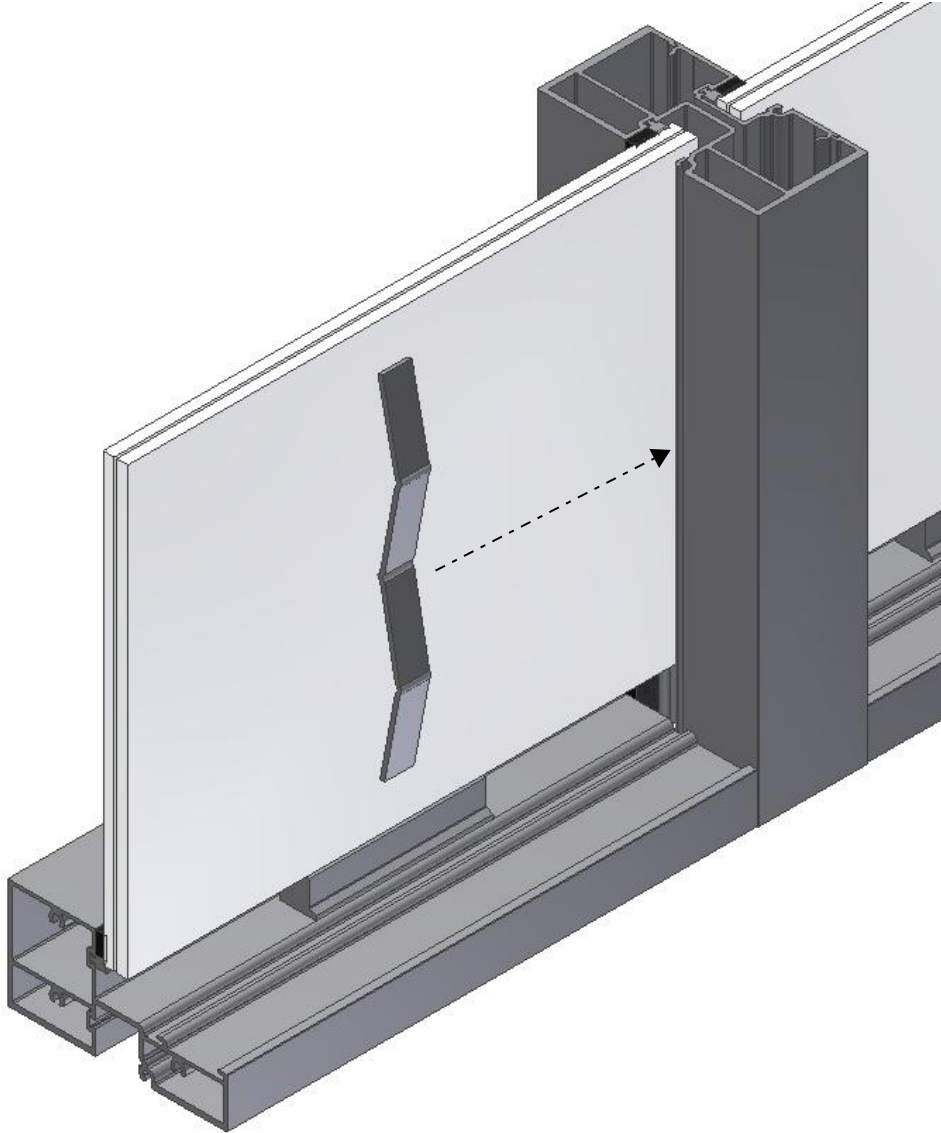


Figure 13: Flatten an anti-walk block (P1916) against the exterior of the glass at the center of the daylight opening and slide it between the glass and the mullion.

**Step 20: Install
Glass Stop**

- Install the glass stop into the horizontals after the glass has set, as shown in Figure 14.

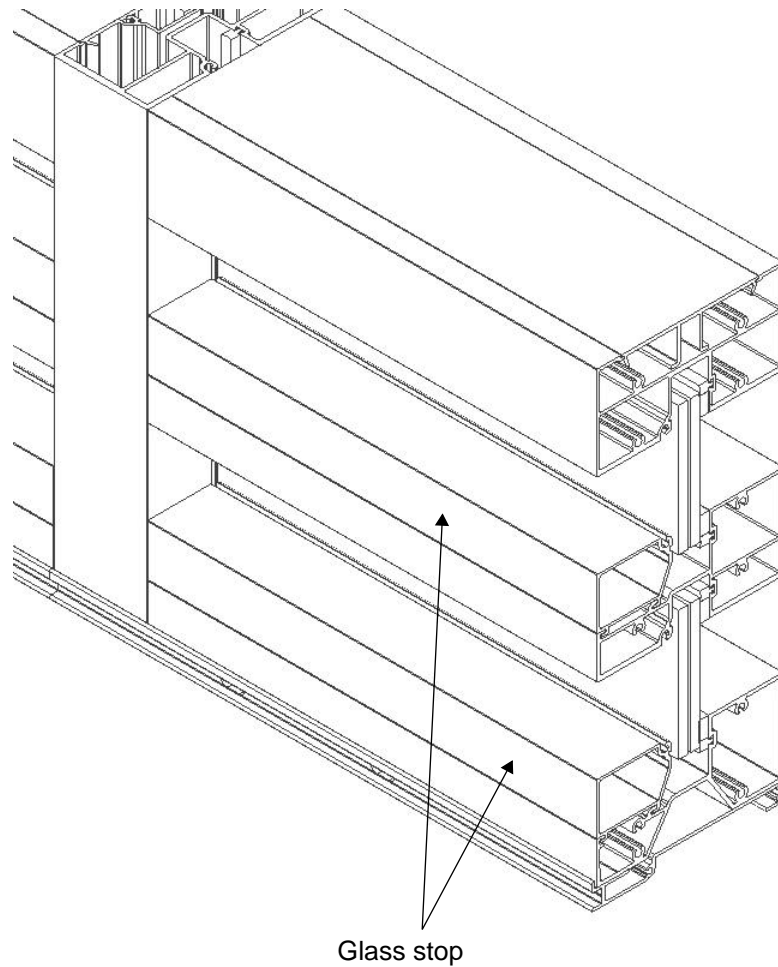


Figure 14: Install the glass stop into the horizontals after the glass has set.

Step 21: Cut and Install the Exterior Gaskets

- Cut the exterior gaskets (P6503).
- Install the exterior gaskets at each end and work toward the center, firmly pushing the gasket in place, as shown in Figure 15.
- Apply sealant at the intersection to marry the vertical and horizontal glazing gaskets. Tool all sealant to present a neat, clean appearance.

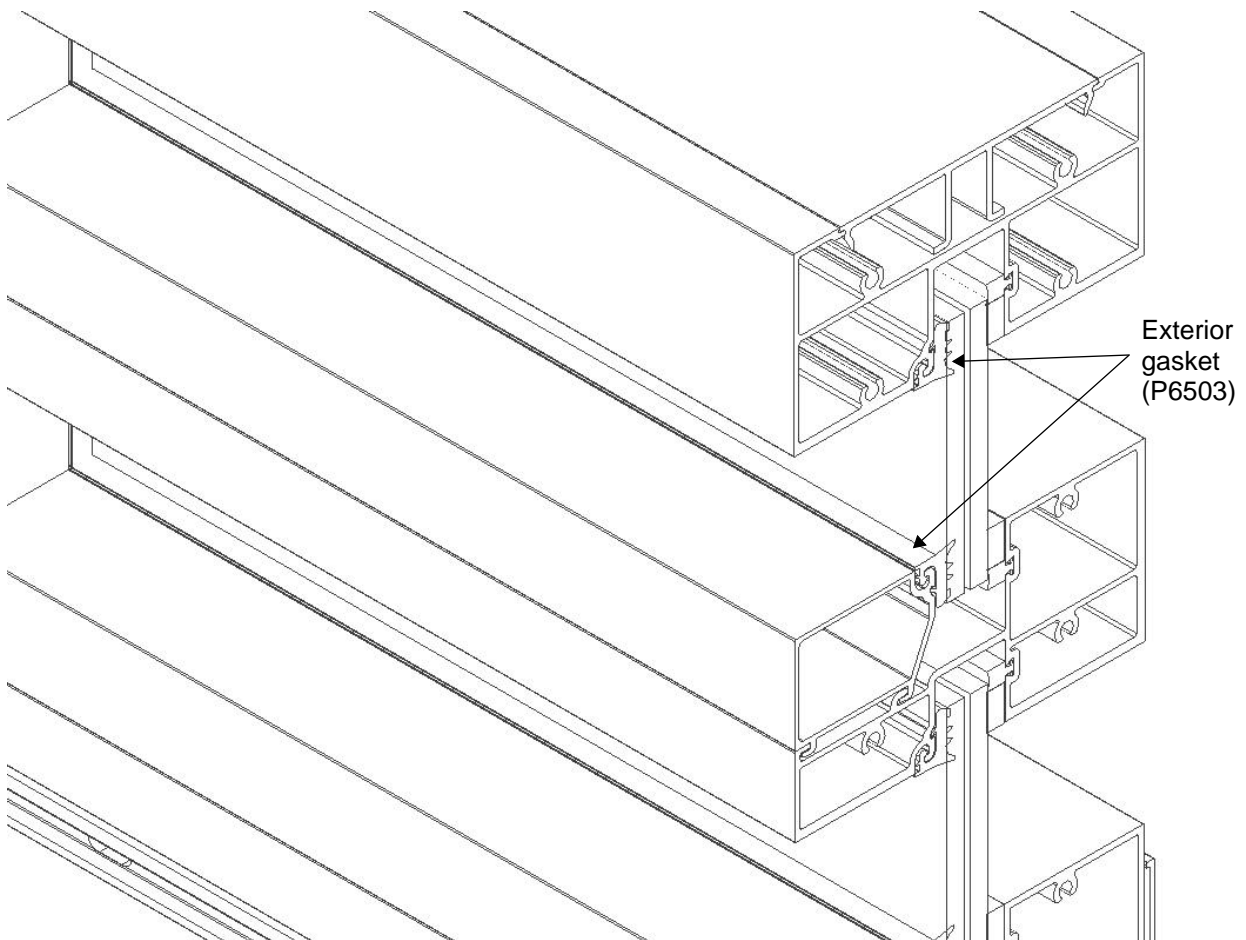


Figure 15: Install the exterior gaskets at each end and work toward the center, firmly pushing the gasket in place.

Step 22: Apply Sealant

- Apply Dow Corning 995 structural sealant between wet glazed gasket, mullion and glass as shown in Figure 16.

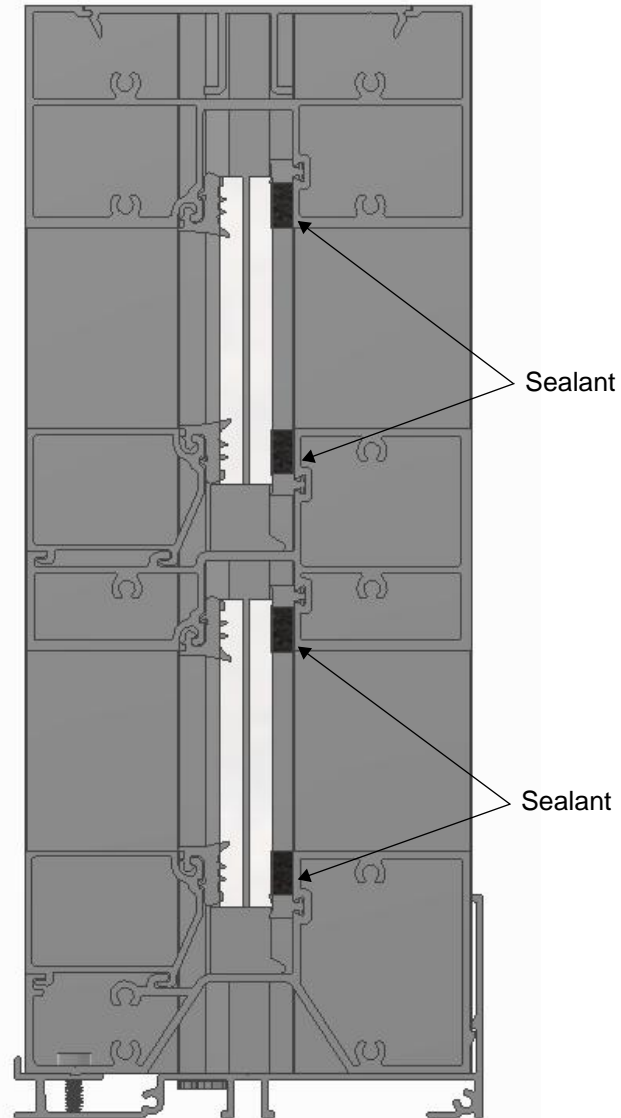


Figure 16: Apply sealant between wet glazed gasket, mullion and glass.

Step 23: Seal Perimeter of Installation

- The primary, critical seal location is at the interior leg of the framing members, including the interior leg at the bottom of the subsill.
- Insert backer rod into the gap between the frame and the building substrate on top, sides and bottom of the installation.
- Apply sealant to fill the void.
- Tool the sealant smooth.