

SERIES 5600

OUTSIDE GLAZED CURTAIN WALL

INSTALLATION INSTRUCTIONS



Part NO. Y302

APRIL 12, 2019

WHERE WINDOWS ARE JUST THE BEGINNING®



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Note: these installation instructions are a supplement to the approved shop drawings and are to be used in conjunction with those drawings.

Minimizing Condensation

Note: Please reference EFCO's "Understanding Condensation" brochure which can be obtained through your EFCO representative.

Condensation will form on any surface when unfavorable conditions (interior temperature and relative humidity and exterior temperature) are present. When the formation of excessive condensation is a concern, it is highly recommended that a design professional is utilized to perform an analysis of the shop drawings to recommend the best possible installation methods. Please contact your EFCO representative for information on EFCO's Thermal Analysis Services.

Many current installation practices lead to an increase in the possibility of the formation of condensation. Though not all inclusive, the list of examples below illustrates conditions under which condensation is likely to occur:

1. Bridging system thermal break with non-thermally broken metal flashing or lintels that are exposed to the exterior
2. System exposure to cold air cavities
3. Interior relative humidity levels not maintained at recommended levels, see EFCO's "Understanding Condensation" brochure
4. Inadequate separation between system and surrounding condition at perimeter
5. Product combinations during the shop drawing stage that result in bridging thermal breaks of one or all products involved

Section I: General Notes & Guidelines

- I. HANDLING / STORING / PROTECTING ALUMINUM** - The following precautions are recommended to assure early acceptance of your products and workmanship.
- A. HANDLE CAREFULLY** - Store with adequate separation between components so the material will not rub together. Store material off the ground. Protect materials against weather elements and other construction trades.
 - B. KEEP MATERIAL AWAY FROM WATER, MUD, AND SPRAY** - Prevent cement, plaster, and other materials from contacting with and damaging the finish. Do not allow moisture to be trapped between the finished surface and the wrapping material.
 - C. PROTECT MATERIALS AFTER ERECTION** - Wrap or erect screens with plastic sheeting over material. Cement, plaster, terrazzo, and other alkaline materials are very harmful to the finish and are to be removed with soap and water before hardening. Under no circumstances should these materials be allowed to dry or permanent staining will occur.
- II. GENERAL GUIDELINES** - The following practices are recommended for all installations:
- A. REVIEW APPROVED SHOP DRAWINGS** – Become thoroughly familiar with the project. Shop drawings govern when conflicting information exists in these installation instructions.
 - B. INSTALL ALL FRAMING MATERIAL PLUMB, LEVEL, AND TRUE** – Proper alignment and relationships to benchmarks and column centerlines, as established by the architectural drawings and the general contractor, must be maintained.
 - C.** The sequence of erection should be coordinated with the project superintendent to prevent delays and minimize the risk of material damage.
Note: If preset anchors are required, coordinate and supervise anchor placement with the general contractor.
 - D.** Verify that all job site conditions and accompanying substrates receiving the installation are in accordance with the contract documents. If deviations occur, notification must be given **IN WRITING** to the general contractor and differences resolved before proceeding further with the installation in the questionable area.
 - E.** Prevent all aluminum from coming in direct contact with masonry or dissimilar materials by means of an appropriate primer.

Section I: General Notes & Guidelines

- F.** Follow EFCO framing installation and glazing instructions.
- G.** Verify contents of all material shipments received upon arrival. Verify quantities and correct finishes. **NOTIFY EFCO IMMEDIATELY OF ANY DISCREPANCIES OR DAMAGE, THAT MAY HAVE OCCURRED.**
- H.** Throughout these instructions the term “**SEALANT**” will appear. For the purposes of these instructions, sealant is to be defined as the following:

SEALANT - A weather resistant, gunnable liquid filler which when cured provides a resilient, flexible (\pm 50% movement capability) air and water seal between similar and dissimilar materials.

All sealant must meet **ASTM C 920, CLASS 50.**

BUTYL SEALANT- A non-skinning, non-hardening material (**NAAMM Reference Standard 5C-1**)

NOTE: All sealant must be compatible with all surfaces where adhesion is required, including other sealant surfaces. All frame surfaces should be clean, dry, dust, and frost free. If a primer is required, it must be applied to clean surfaces. All perimeter substrates shall be clean and properly treated to receive sealant.

This system is designed and has been tested to utilize butyl or silicone sealants at all internal joineries, i.e., joint plugs, gasket intersections, etc.

Regardless of the sealant used, the customer should contact the sealant manufacturer to determine compatibility and adhesion. Follow sealant manufacturer's proper application procedures and quality assurance programs for weather sealing.

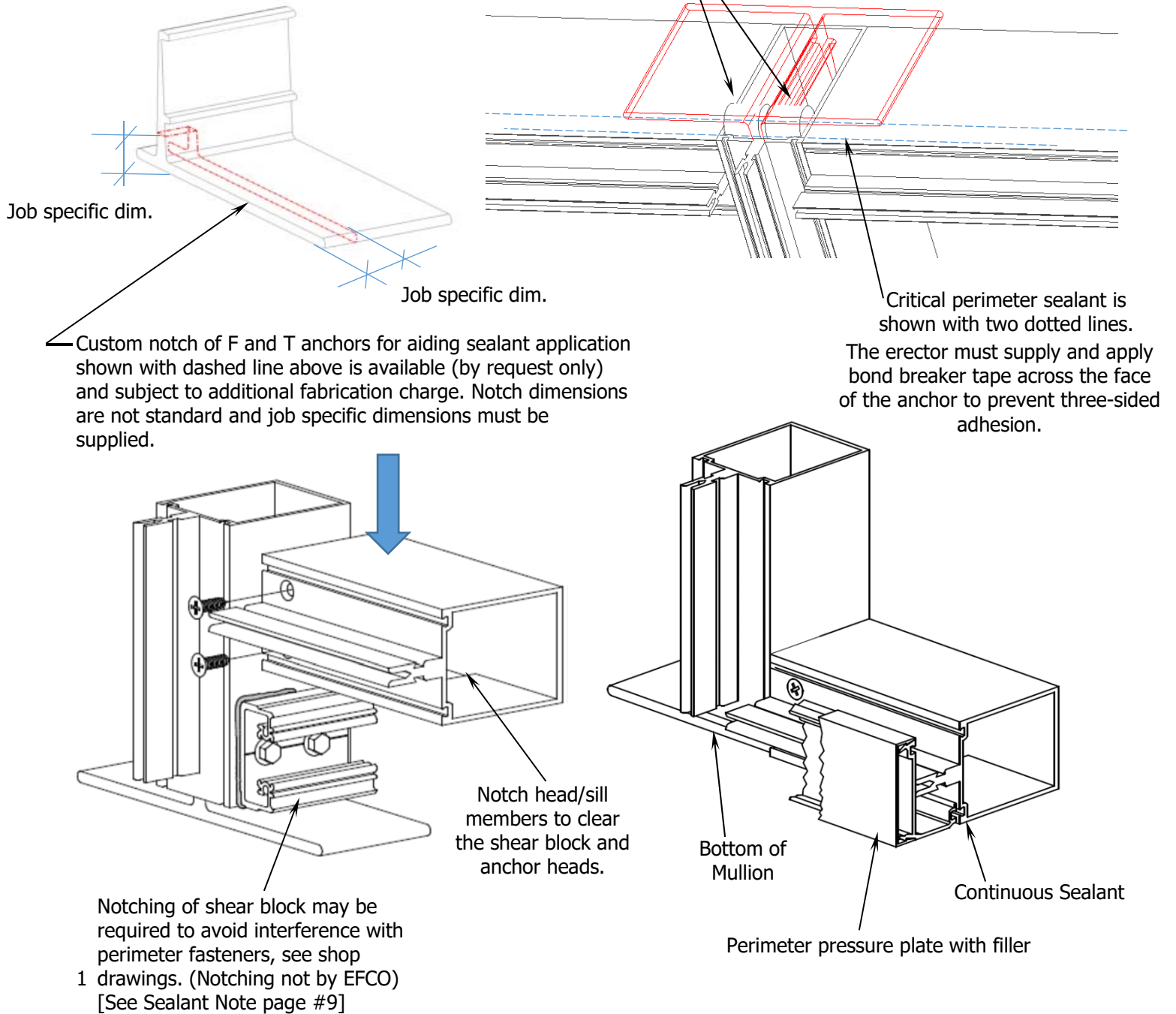
Maintain caulk joints as shown in the approved shop drawings. Unless specified otherwise, most sealant manufacturers recommend a 3/8" minimum perimeter caulk joint. A 3/4" minimum joint is recommended at the head condition to accommodate thermal expansion and contraction.

Anchoring surfaces of perimeter construction must be level and plumb within the adjustable limits of the head, jamb, and sill framing.

Section II: Mullion Anchor & Frame Assembly

Plug open end of vertical either side of anchor stem to assist with carrying perimeter seal across the verticals.

"T" Anchor at Intermediate Mullion.
See approved drawings for fastener requirements



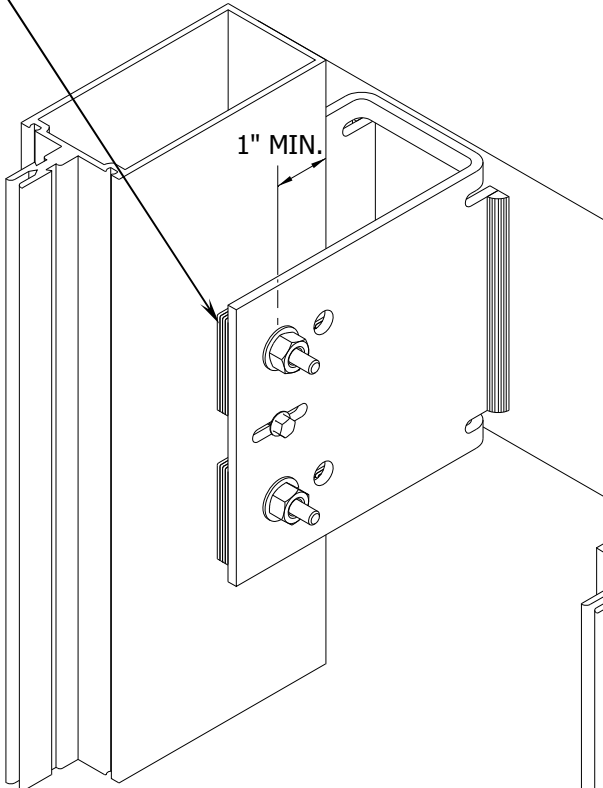
Section III: Anchor Installation

Apply Appropriate Anchors

- A.) Attach anchors to the mullion with temporary alignment screws as shown in the detail below.
- B.) Install the vertical mullions into position and attach anchors to the building structure per approved shop drawings.
- C.) After final alignment of the mullion, align drill the mullion through the best hole location available. Note: The hole used must be a minimum of 1 1/2" from the back of the mullion to clear the back flange of any steel reinforcement located inside the system, as may be required for the project.

High Impact Polystyrene
Horseshoe Shim

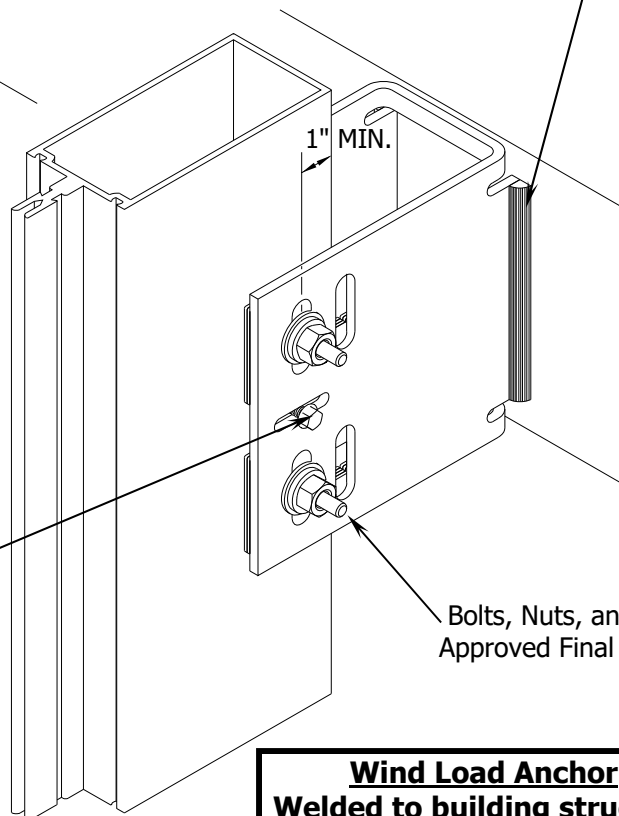
Note: When welding, protect installed glass and metal from weld splatter



Dead Load Anchor
Weld to building structure

Use #12 X 1" TEK screw for alignment only. It must be removed after installation of the through bolt at the wind load anchor to allow for thermal expansion and contraction.

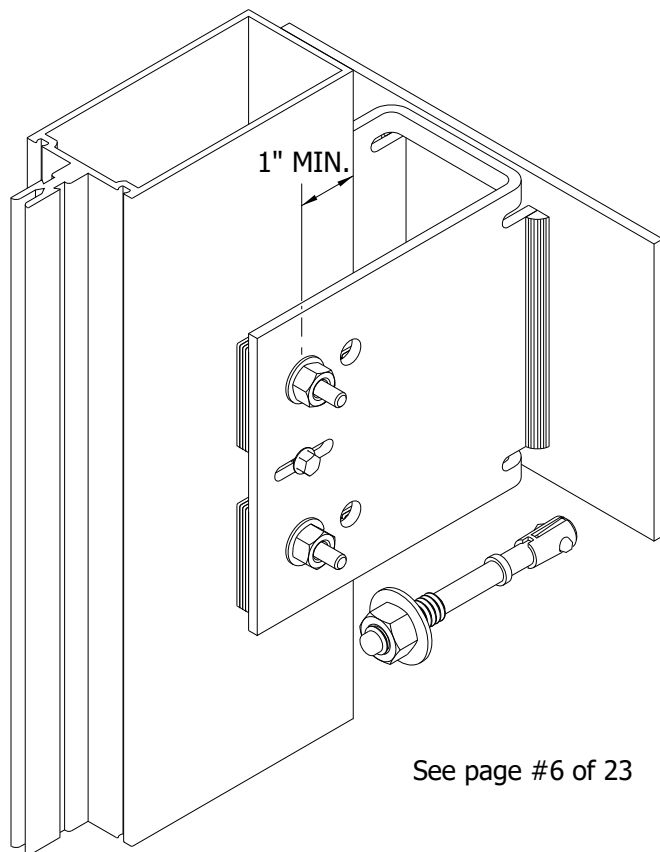
Weld to the building structure
per approved shop drawings.



Wind Load Anchor
Welded to building structure

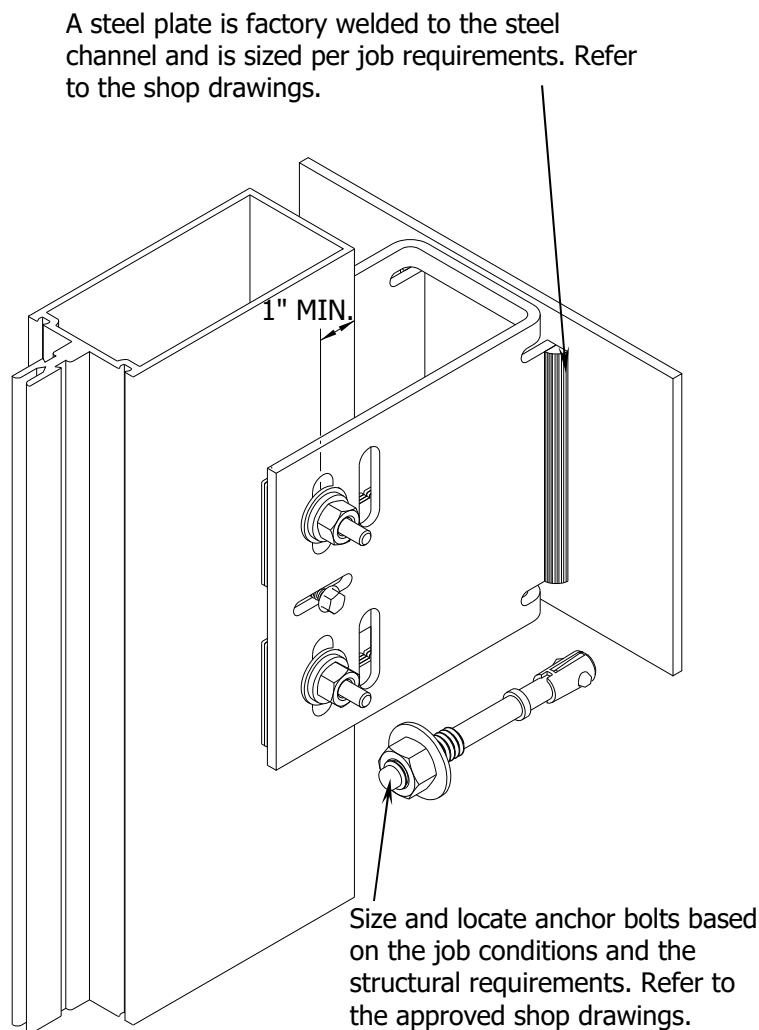
Bolts, Nuts, and Washers Per
Approved Final Shop Drawings

Section III: Anchor Installation



See page #6 of 23

Dead Load Anchor
Bolted to building structure



Wind Load Anchor
Bolted to building structure

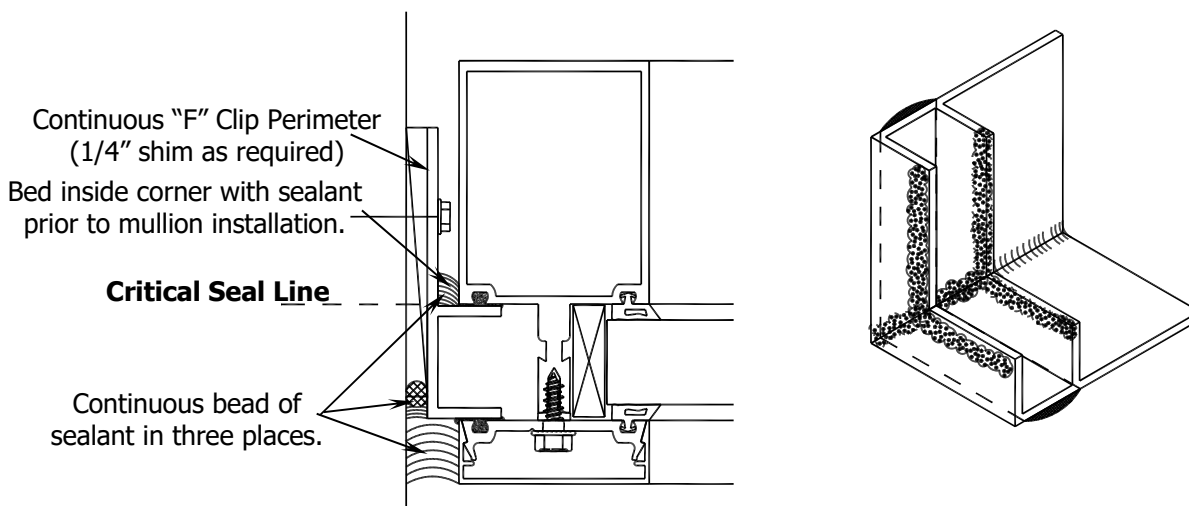
Note: Elevation of slab must be within the adjustment limits of the anchoring system. See approved shop drawings for limitations.

Section IV: Perimeter Application

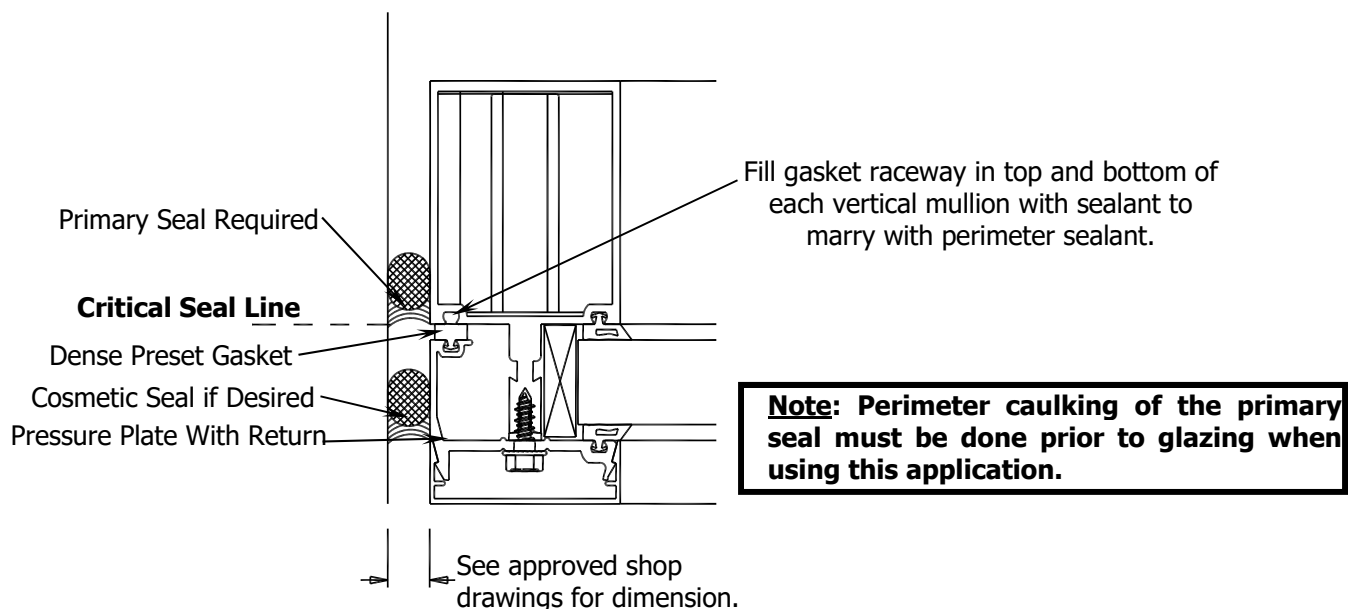
Determine Installation Method

- A.) Two types of perimeter applications are possible, including "F" perimeter anchors or mullion anchors with continuous pressure plate pocket fillers. "F" perimeter anchors should only be used in small "punched" openings that can be assembled on the floor and set into the opening. Mullion anchors are generally used in situations where mullions are erected one at a time, in sequence with corresponding horizontals. Regardless of the installation method selected, the remaining installation instructions are consistent between the two systems.

Perimeter With Continuous "F" Extrusion



Perimeter With Continuous Pressure Plate Pocket Filler

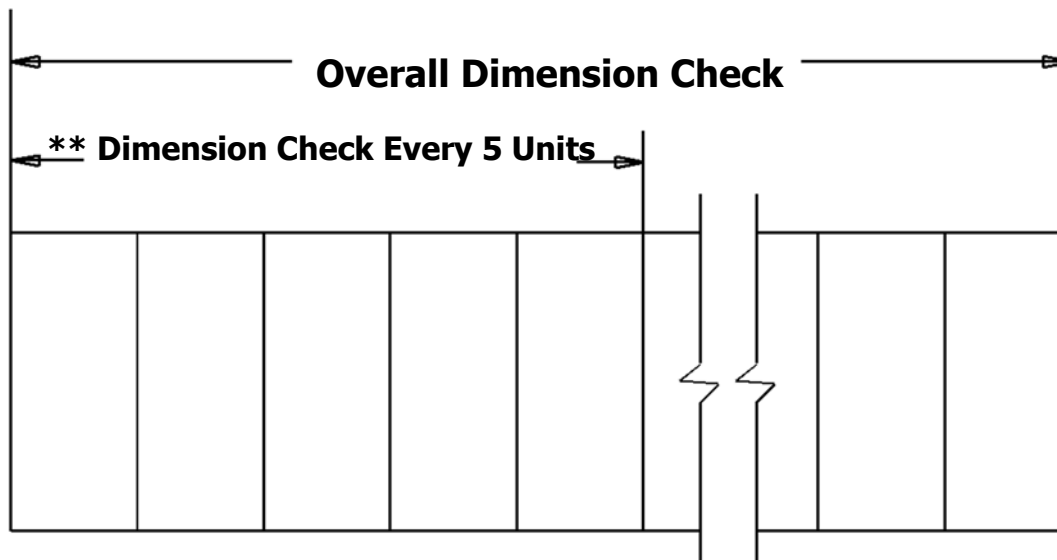


Section V: Frame Assembly

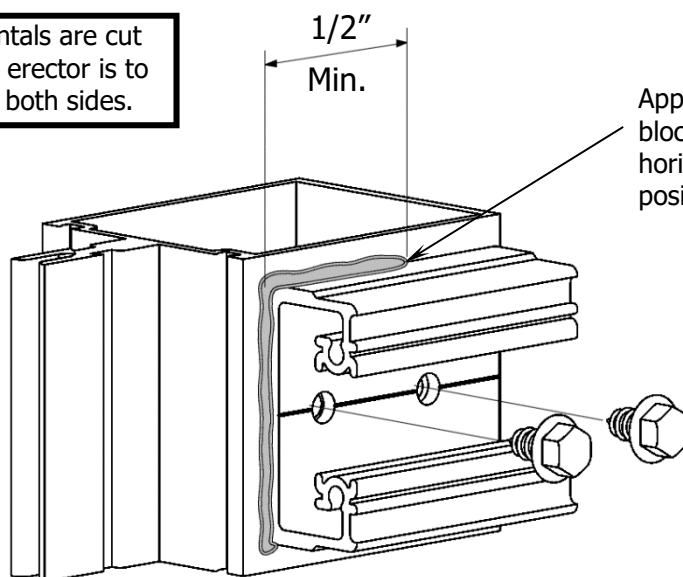
Step #1 Assemble Frame Components

- A.) Assemble shear blocks, splice sleeves, anchors, etc., to the mullions as required per approved shop drawings.
- B.) Apply sealant to the shear blocks and attach horizontal rails.

Note: On long runs, check overall frame dimensions at every fifth opening to avoid dimensional build-up.



Interior tubular horizontals are cut **D.L.O. – 1/32"**. The erector is to split this difference on both sides.



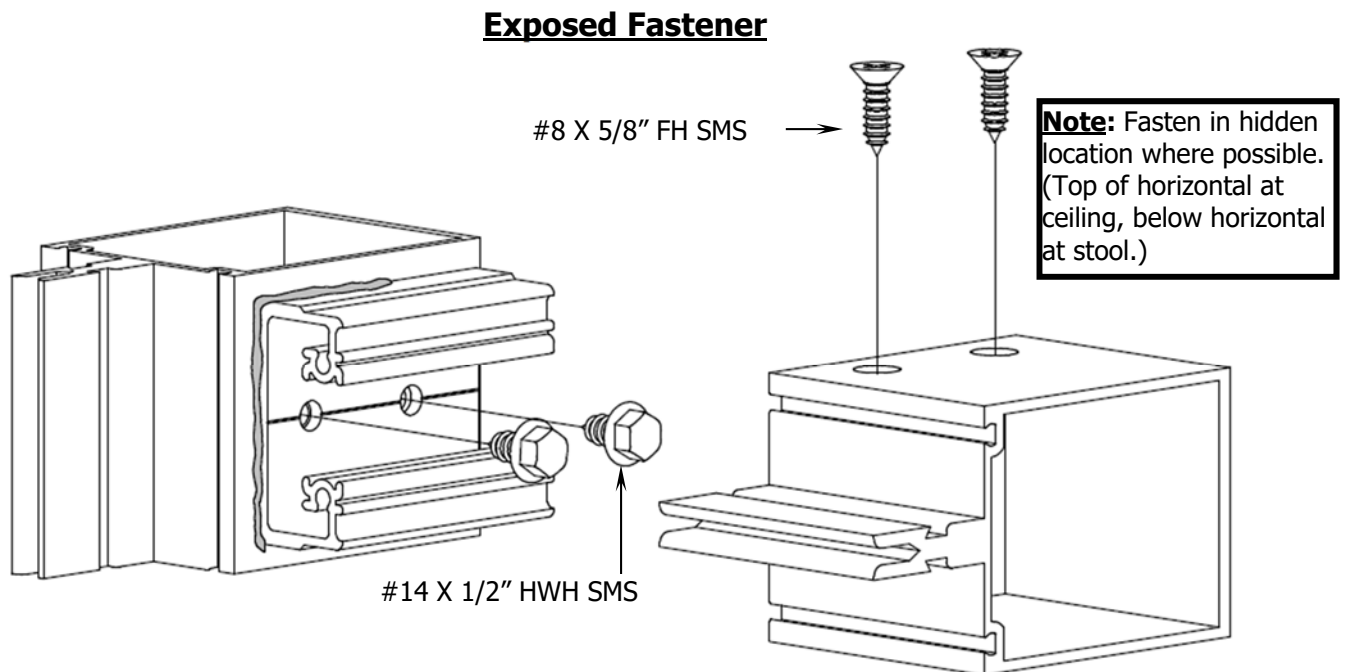
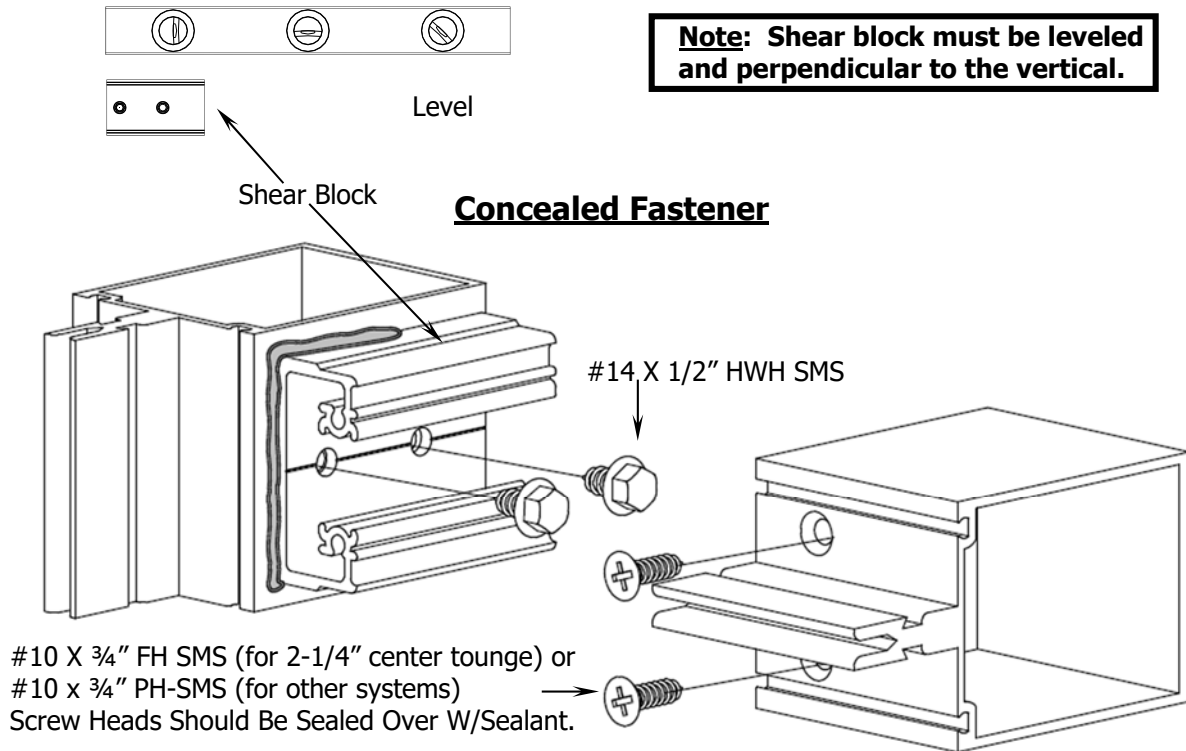
Note: The shear block must be leveled, perpendicular to the verticals, before the #14 attachment screws are tightened.

Note: The commercial cut to length tolerance is +/- 1/16". It is critical to check every fifth unit for location.

Section V: Frame Assembly

Step #2 Install Frame Components

- A.) Refer to the approved shop drawings for job conditions. Install assembled frames according to the approved shop drawings.



Note: Level shear block before fully tightening screws

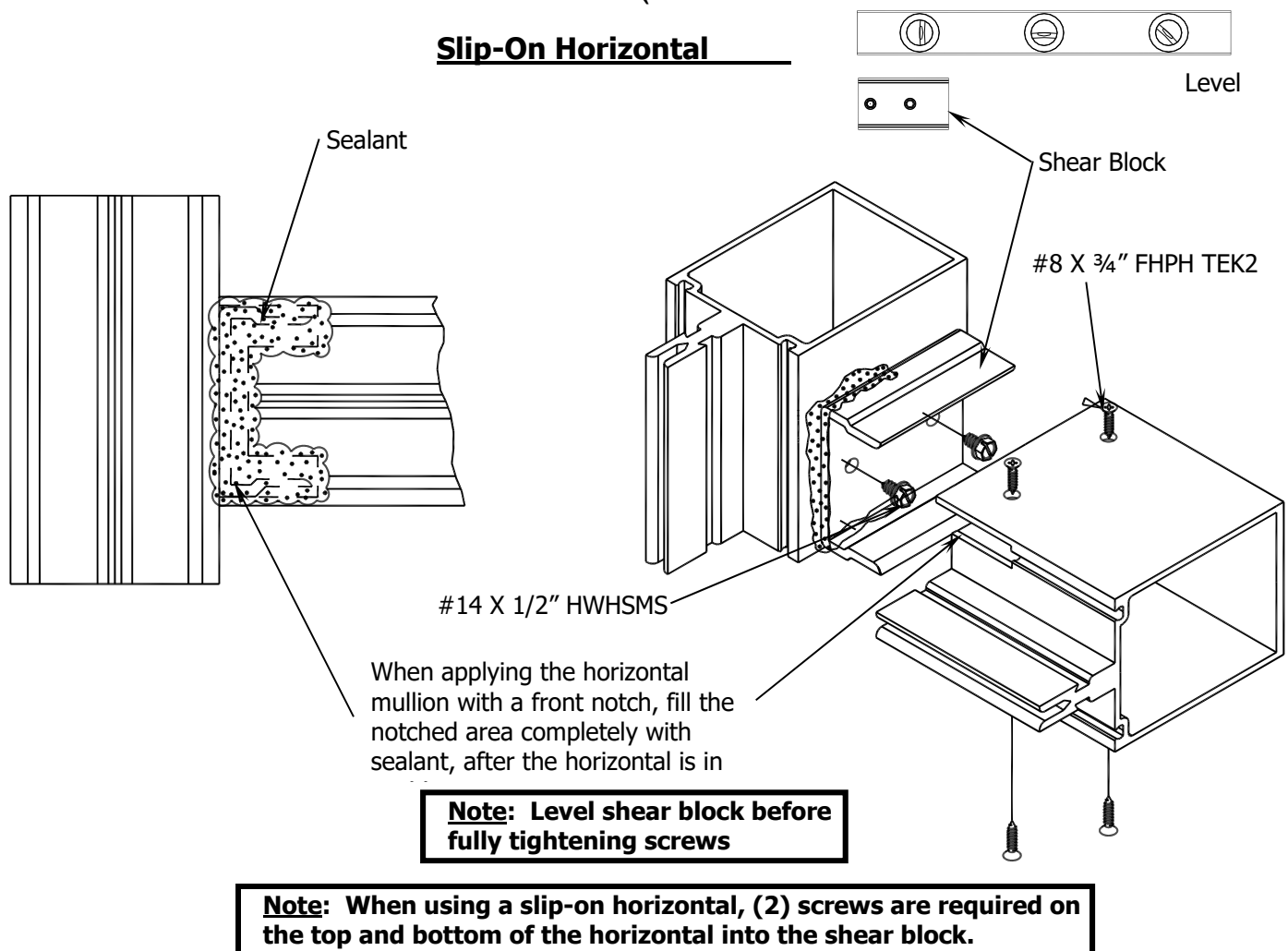
Section V: Frame Assembly

Step #2 Install Frame Components

A.) Refer to the approved shop drawings for job conditions. Install assembled framed according to the approved shop drawings. The approved shop drawings will also indicate the location of horizontal slip-on rails.

Note: Frames are designed to stack from left to right, horizontals slide on **ONLY** in the last D.L.O. unless otherwise noted on the approved FINAL drawings.

Note: Shear block must be leveled and perpendicular to the vertical.



Properly support the horizontal until securely fastened.

Space vertical mullion expansion joints per approved drawings.

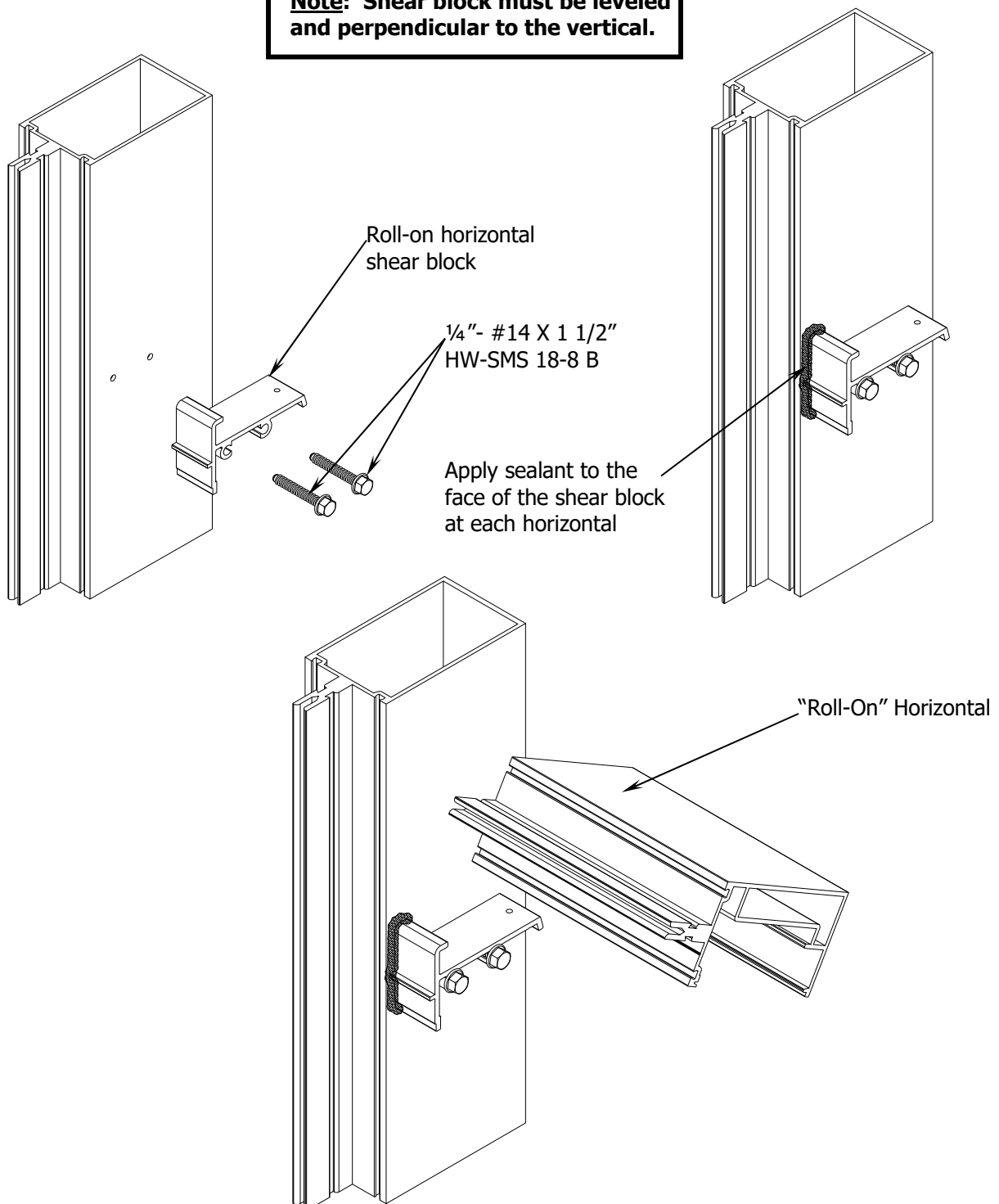
Keep in mind that the calculated cut length is theoretical and will vary with the job site conditions, i.e., temperature and construction tolerances. On multiple stacked applications, key horizontals must be installed to establish grades, regardless of the expansion joint dimension.

Section V: Frame Assembly

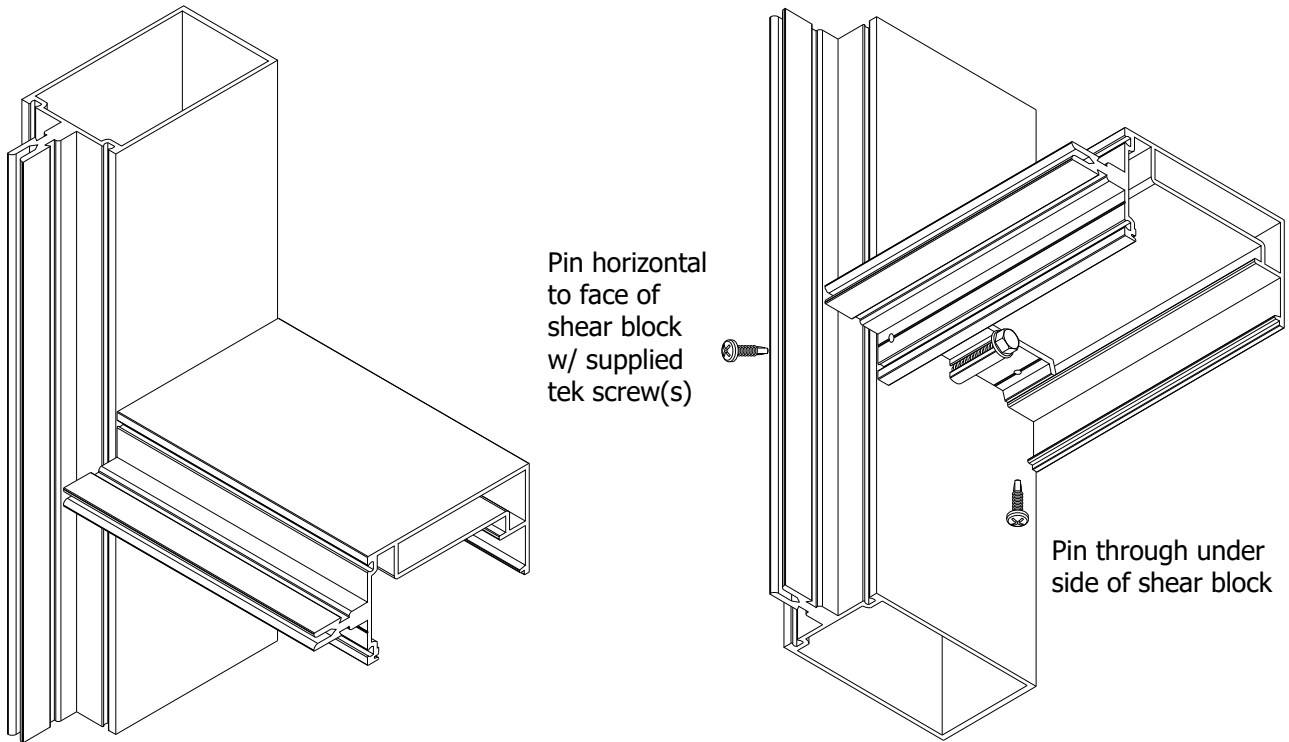
Step #2 Optional "Roll – On Horizontal" Components

A.) Refer to the approved shop drawings for job conditions. Install assembled frames according to the approved shop drawings. The approved shop drawings will also indicate the location of "Roll – On" horizontal.

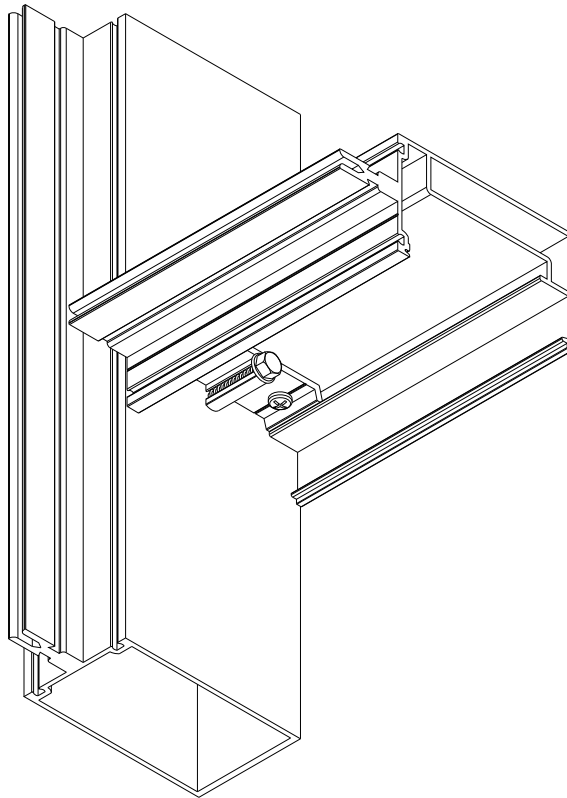
Note: Shear block must be leveled and perpendicular to the vertical.



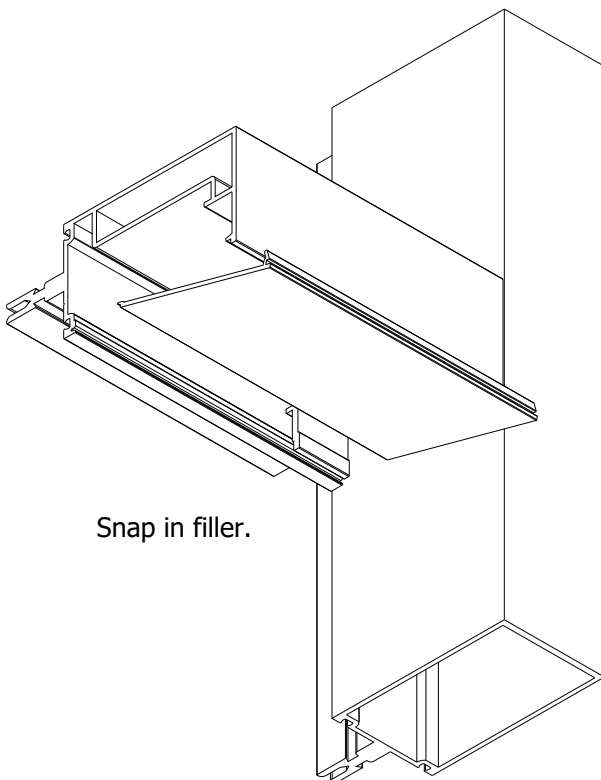
Section V: Frame Assembly



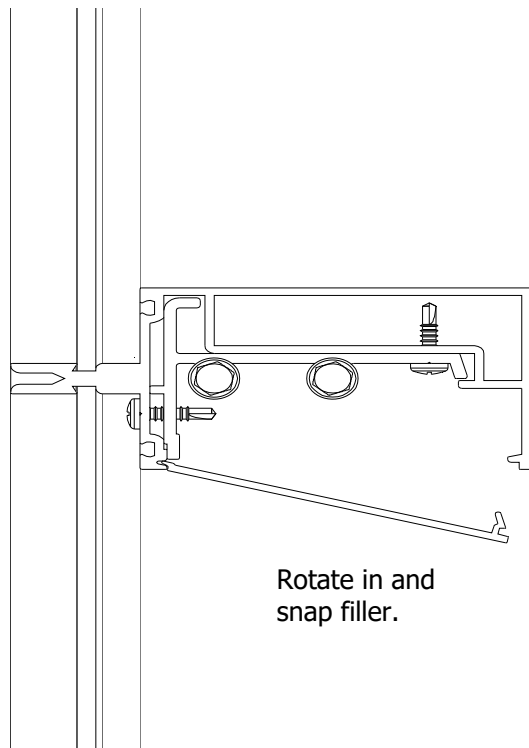
Note: Horizontal must be leveled and perpendicular to the vertical.



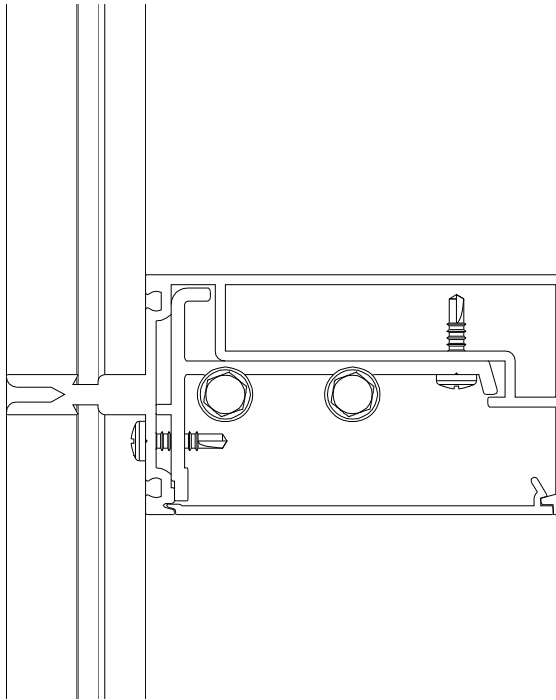
Section V: Frame Assembly



Snap in filler.



Rotate in and
snap filler.



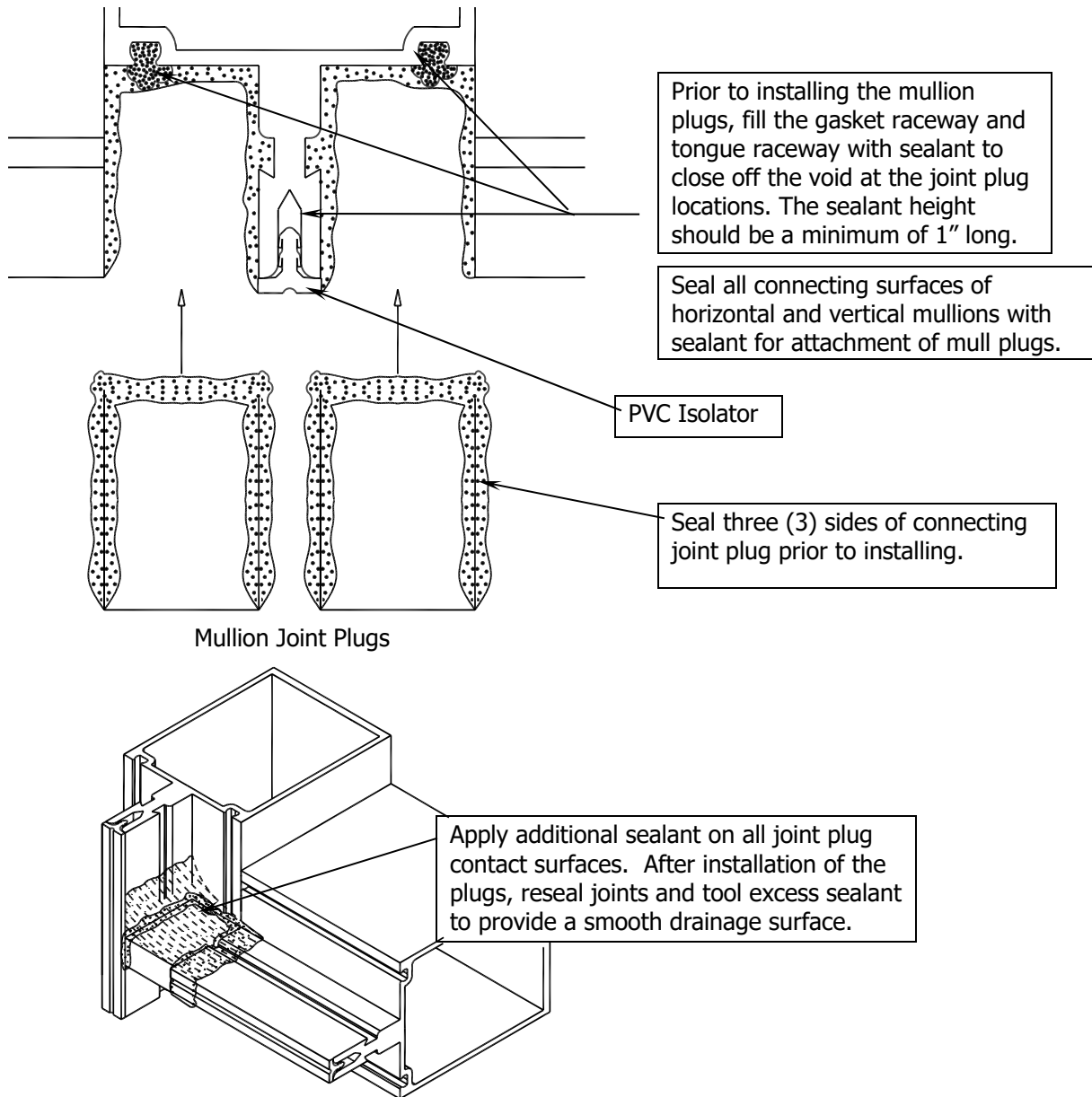
Section VI: Glazing Preparation

Step #1 Install Thermal Isolator

- A.) Remove thermal isolator from reels and allow to relax and shrink.
DO NOT stretch isolator prior to installation.
- B.) Install the 90 durometer PVC thermal isolator into position in the screw raceway of the vertical and horizontal mullions.
- C.) Run the vertical isolators continuous and butt together as required.
Run the horizontal isolator to the ends of the horizontal members.

Step #2 Install Joint Plugs

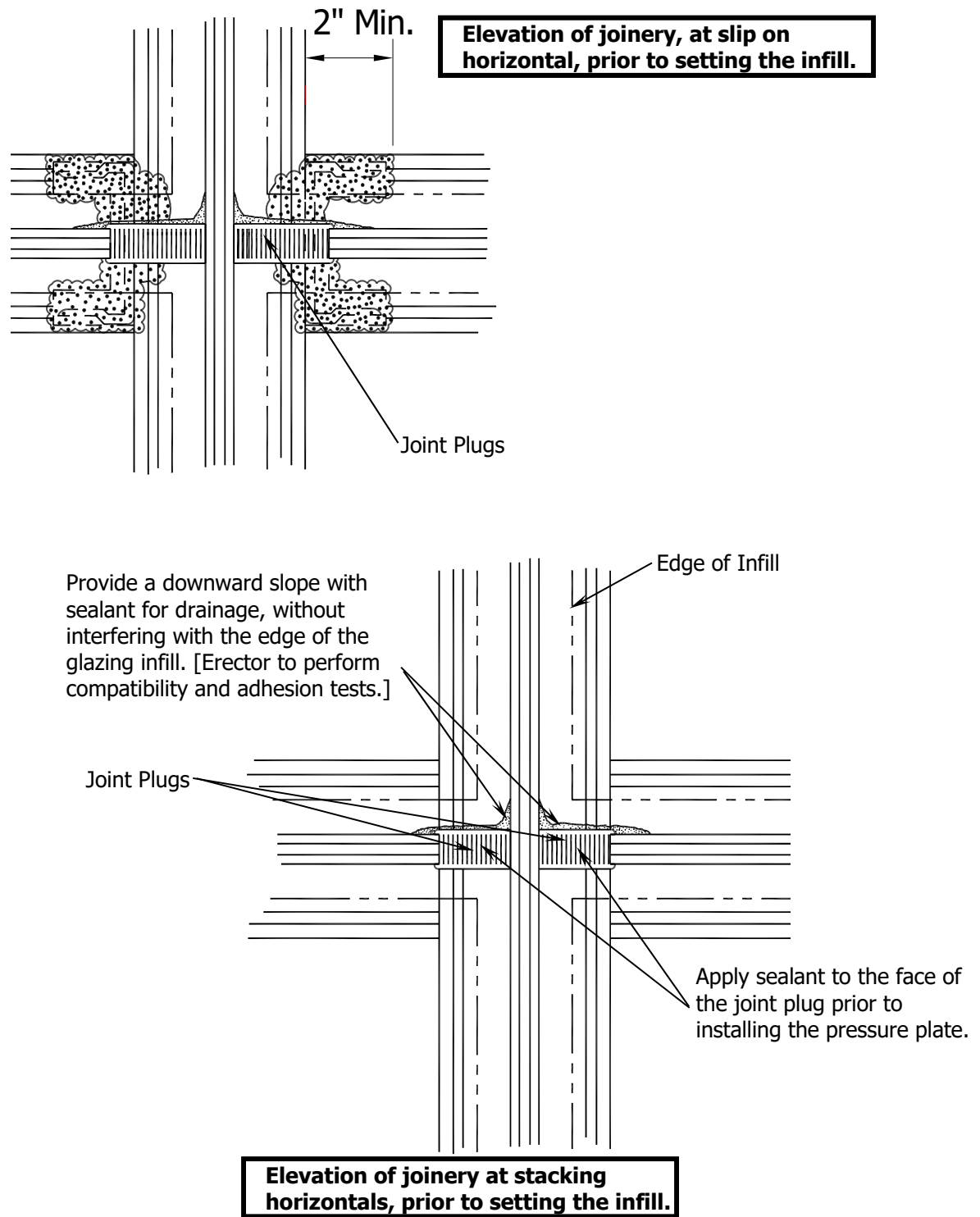
- A.) Seal the vertical gasket raceway and slip-in the joint plugs at the horizontal to vertical intersections as indicated.



Section VI: Glazing Preparation

Step #3 Seal Slip-In Horizontal Joints

- A.) At slip-in horizontals, install backer rods and completely seal over the notch in the horizontal framing members as indicated. Apply sealant a minimum of 2" in each direction from the intersecting members.



Section VI: Glazing Preparation

Step #4 Install Glazing Infill Adaptors

- A.) Prior to installing the glazing adaptors, seal the entire gasket raceway with sealant.
- B.) Snap glazing adaptors in place into sealant starting with the verticals. Allow at least 1/8" clearance from the bottom of the glazing adaptor to the top of the joint plug to allow for weepage.

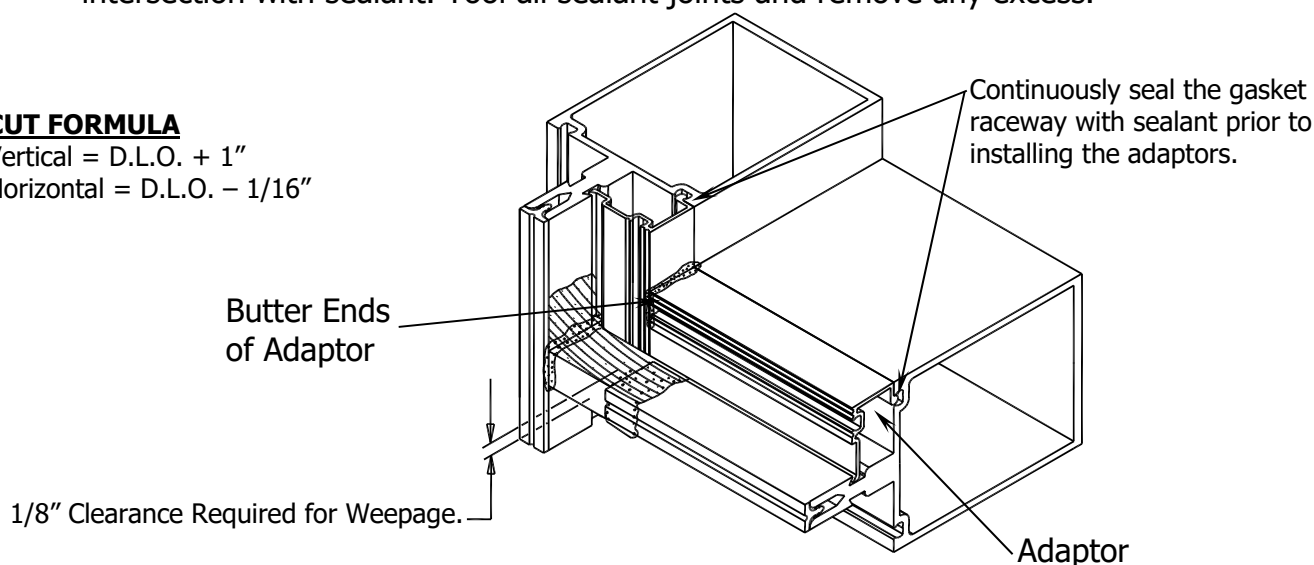
Series 5600 Outside Glazed Installation Instructions

- C.) Butter the ends of the horizontal adaptors prior to setting into position. Snap horizontal adaptors in place between vertical adaptors. Face seal the adaptor intersection with sealant. Tool all sealant joints and remove any excess.

CUT FORMULA

Vertical = D.L.O. + 1"

Horizontal = D.L.O. - 1/16"



Note: Vertical adaptors will need clearance above the joint plug, free from sealant, for weepage.

Glazing Combinations

<u>Adaptors</u>				<u>Gaskets</u>	
<u>Glazing Infill Thickness</u>	<u>Center Stem</u>	<u>Shallow Pocket</u>	<u>Deep Pocket</u>	<u>Exterior Preset</u>	<u>Interior Preset</u>
1/4"	X	X	X	X	X
5/16"	X	X	X	X	X
1/2"		X	X	X	X
9/16"		X	X	X	X
1"		X	X	X	X
1 1/4"		* See Note Below		X	X
1 5/16"		* See Note Below		X	X

***1-1/4" & 1-5/16" glazing infills require a non-standard pressure plate.**

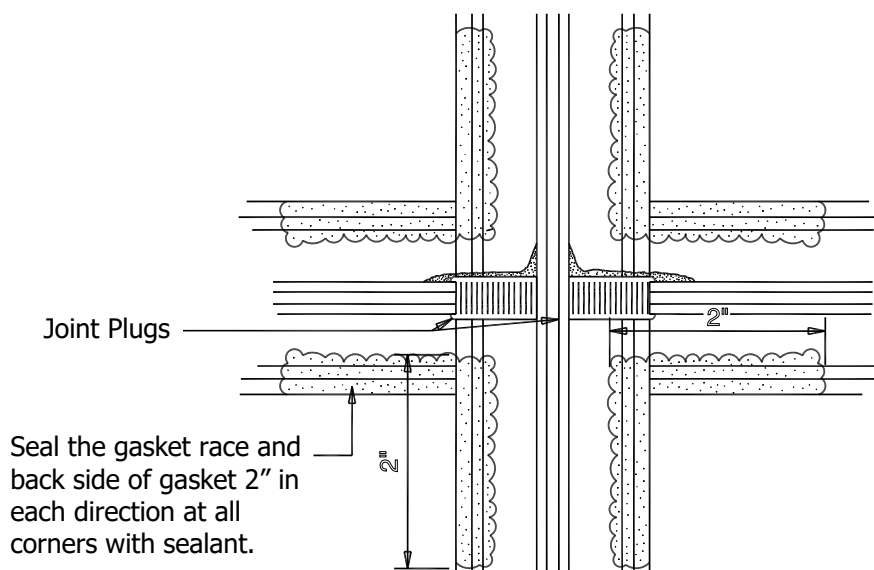
Section VI: Glazing Preparation

Step #5 Install Glazing Gaskets In Mullions

- A.) Remove glazing gaskets from the reel and allow to relax and shrink.
 B.) Apply sealant into raceway a minimum of 2" in each direction from the corner.
 (Refer to illustration below.)

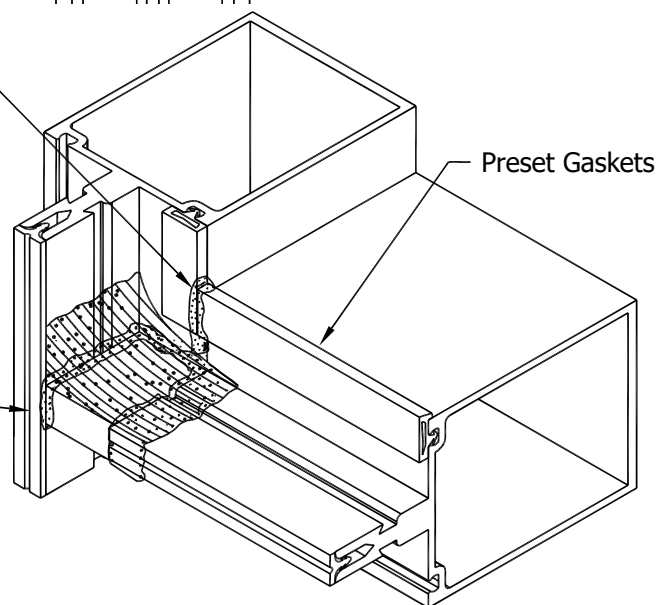
Series 5600 Outside Glazed Installation Instructions

- C.) Once the gaskets have relaxed, cut and install into position. Vertical gaskets must be cut vertical D.L.O. plus 1 $\frac{3}{4}$ ". Place into position starting at the center of the D.L.O. Crowd the excess at the ends. [DO NOT STRETCH]
- D.) Cut the horizontal gasket D.L.O. plus $\frac{1}{2}$ " and insert the gasket as indicated above.
- E.) Seal all gasket corners and butt joints as indicated below.



To insure a snug fit, seal all gasket corners by pulling the horizontal gasket back, sealing the ends, and pressing into the vertical gasket.

Seal across face of mullion joint plug before installing pressure plate.



Step #6 Installing Setting Blocks

- A.) Position and install setting blocks as directed on the approved Final drawings. [Usually located at quarter points of D.L.O. unless noted otherwise.]
- B.) Refer to additional note for setting block requirements on page 20.

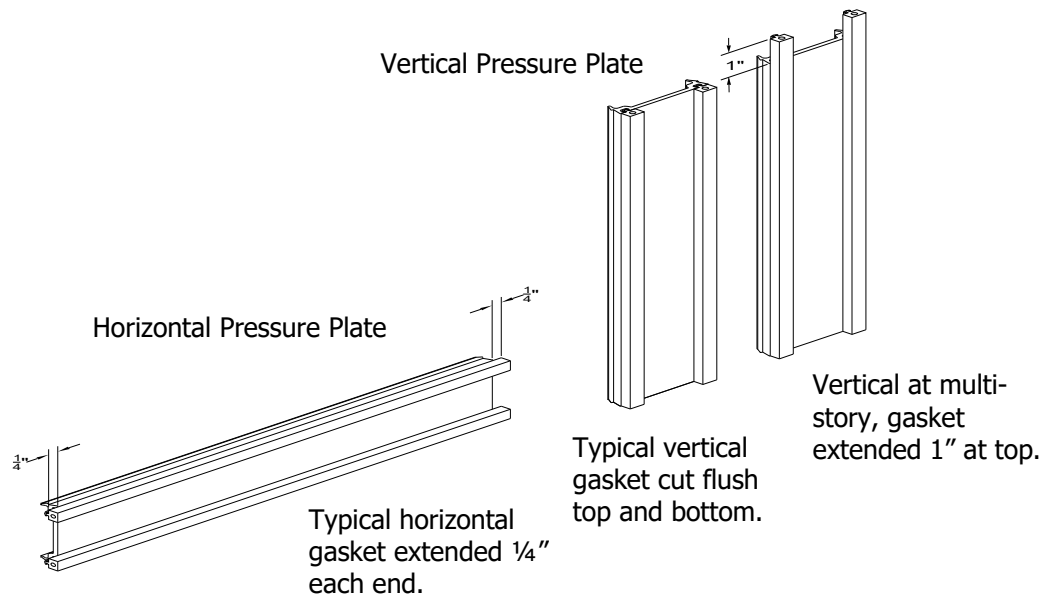
Section VII: Glazing Installation

Note: All anchors must be "FIXED" before glazing installation begins.

Step #1 Prepare Exterior Pressure Plates

Series 5600 Outside Glazed Installation Instructions

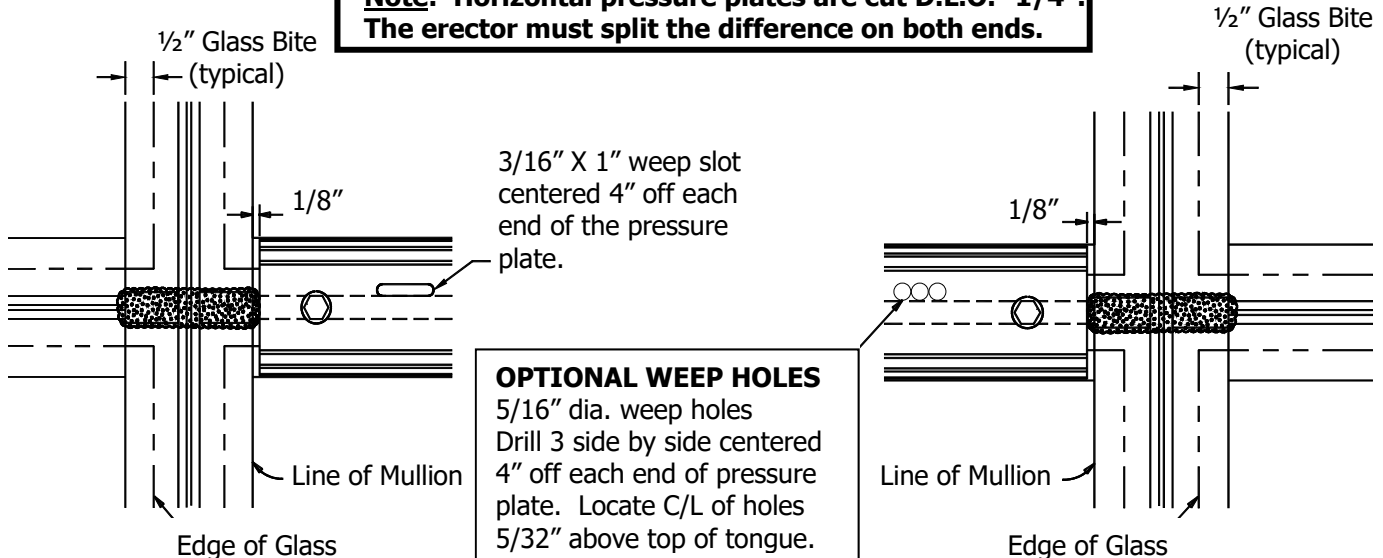
- A.) Remove exterior gasket material from the reel and allow to relax and shrink.
- B.) Apply glazing gaskets to the pressure plates. Gaskets must be cut flush at both ends of the vertical pressure plate except in multi-story applications, where gaskets are to extend 1" beyond the top end to cross the expansion joint. The pressure plate should extend 3" past the splice. [See Section IX: Vertical Splice Joints]
- C.) Cut the horizontal gaskets $\frac{1}{2}$ " longer than the pressure plate length and apply so that $\frac{1}{4}$ " extends beyond each end.



Step #2 Apply Exterior Pressure Plates

- A.) Apply sealant to the face of the joint plugs prior to installation of the vertical and horizontal pressure plates.

Note: Horizontal pressure plates are cut D.L.O. $-\frac{1}{4}$ ". The erector must split the difference on both ends.



Section VII: Glazing Installation

Step #3 Install Infill Glazing Materials

- A.) Install proper infill into the opening using suction cups to gently lower the infill material onto the setting blocks.

Series 5600 Outside Glazed Installation Instructions

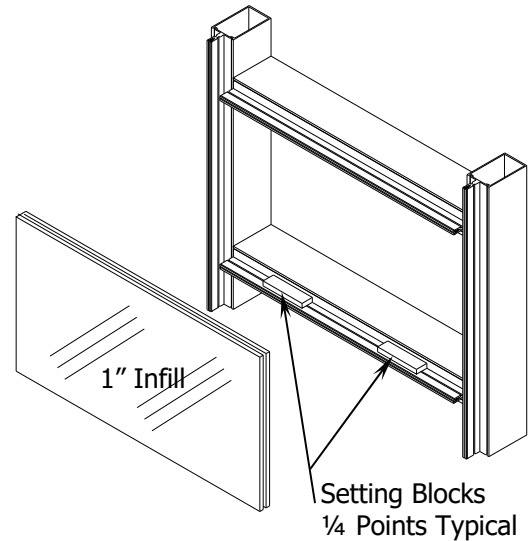
Note: Do Not Seal the Setting Blocks to the Tongue of Horizontal Mullion.

- B.) Position the infill in the center of the opening maintaining a 1/2" glass bite around the entire perimeter.
- C.) Lift the infill slightly off the setting blocks and press the infill firmly against the interior glazing gaskets at the sill horizontal.

Note: The typical glass bite is 1/2". Glass sizes are based on D.L.O. plus 1".

Note: Impact glazing glass bite is 3/4" minimum. Glass sizes are based on D.L.O. plus 1 1/2".
[See Final Shop Drawings]

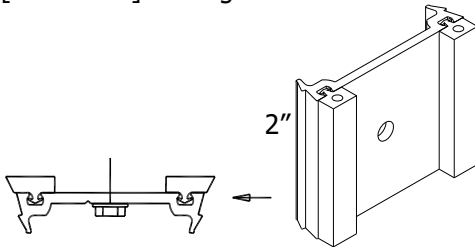
Customer / Installer Note: EFCO setting blocks are typically 4" in length with different depths. If the glazing infill is "NOT BY EFCO" and glazing sizes are larger than 40 square feet, then the glazing details must be reviewed by the glazing manufacturer for proper setting block size.



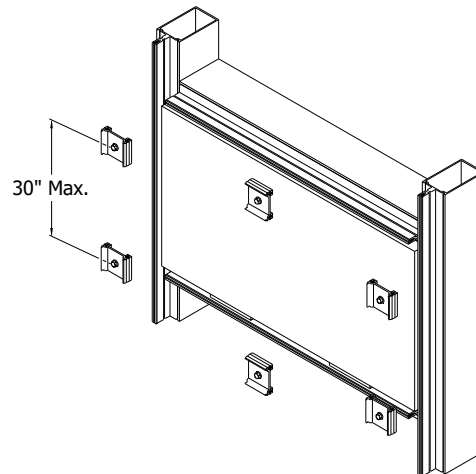
Step #4 Install Temporary Retainers

- A.) Depending on your specific installation sequence, it may be desirable to install temporary glazing retainers to hold the infill glazing in the opening. Apply the retainers as needed; however, it is suggested that they be spaced no more than 30" apart. They are intended for short term temporary applications only and are not to be left unattended, or overnight. **[TEMPORARY RETAINERS DO NOT MEET STRUCTURAL REQUIREMENTS AND CAN FAIL UNDER STRUCTURAL LOADS.]**

Typical temporary infill glazing retainer clips
[Dutchman] 2" long minimum



Typical Pressure Plate Dutchman

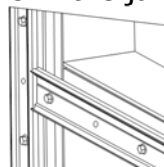


Note: Temporary retainers are available from EFCO by request only and are NOT INCLUDED in the estimated cost of the materials for the job.

Section VII: Glazing Installation

Step #5 Install Side Blocks

- A.) Install and position side "W" blocks in the jamb cavity as indicated.

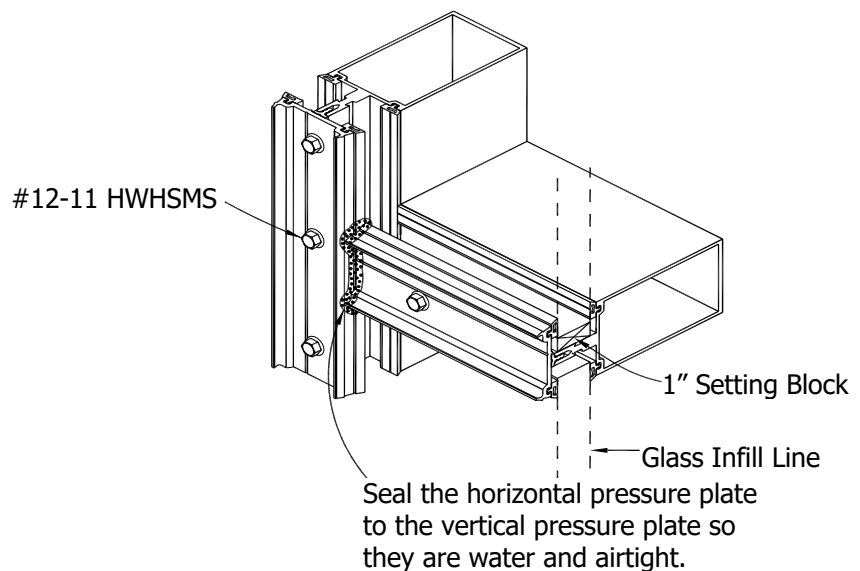


Stretch "W" side blocks
and insert into pocket.
Typical at both jambs.

Step #6 Apply Exterior Pressure Plates

- A.) First attach the vertical pressure plates and then the horizontal pressure plates into position using #12-11 S.S. Hex Washer Head screws. Locate screws 6" O.C. and at a maximum of 3" from the ends of each pressure plate (Unless stated otherwise in shop drawings). Torque screws to 80 inch-pounds. When possible, work from the center outward on the horizontals and from the sill upward on the verticals.
- B.) In cold weather, first torque all pressure plate screws to 40 inch-pounds. Once all four sides have been clamped down, torque all screws to 80 inch-pounds.
- C.) Seal all joints between the vertical and horizontal pressure plates with sealant which will provide a water and airtight joint.

Note: The glazier should always place a screw in the vertical pressure plate directly opposite each horizontal. This is necessary to create a maximum control of pressure on the mullion plugs, which provides the critical sealing function.

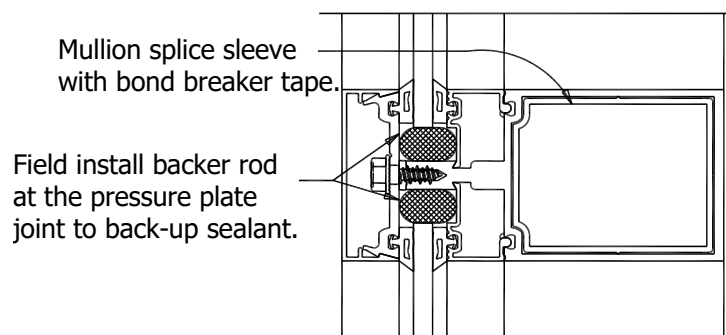


Section XIII: Vertical Splice Joints

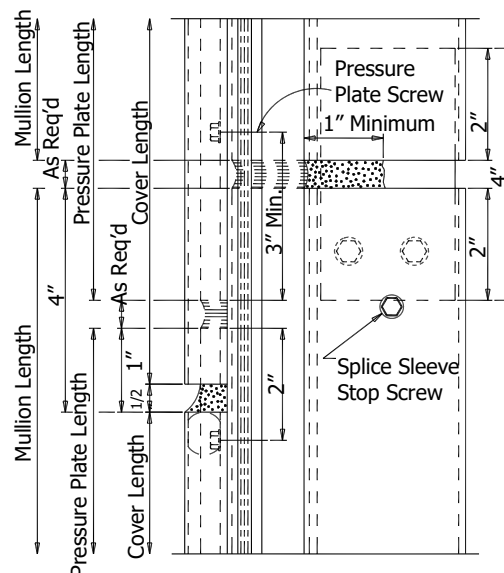
Step #1 Locate Splice Joints

Series 5600 Outside Glazed Installation Instructions

- A.) Splice joints should occur at the spandrel areas (if possible). Refer to approved final shop drawings for actual locations.
- B.) Depending on the specific job requirements, splice sleeves may be shop or field assembled in the top of the lower mullion. If materials are field fabricated, use the following assembly instructions. Where head clearance is sufficient to allow the top mullion to be lifted over the splice sleeve, a retractable sleeve will be used. The sleeve must be taped into the bottom of the top mullion and dropped down to the stop screw in the mullion below.
- C.) GENERAL NOTE: The following page depicts a splice joint of $\frac{1}{2}$ ". The required joint width must be determined in the design stage and shown on the approved Final shop drawings, on a job-by-job basis. Keep in mind that a typical curtain wall can accommodate **$\frac{1}{4}$ " total vertical movement**. The splice joint, horizontal glazing pocket immediately above the splice, and slotted wind load anchors, must all be considered when vertical movement exceeds $\frac{1}{4}$ ".
- D.) Refer to this section for cover splice, pressure plate splice relative locations, and sealing instructions.
- E.) Once a final check of expansion joint placement and mullion position is made, the final match drilling of mullion through anchor holes may be completed.



Plan View – Mullion Splice

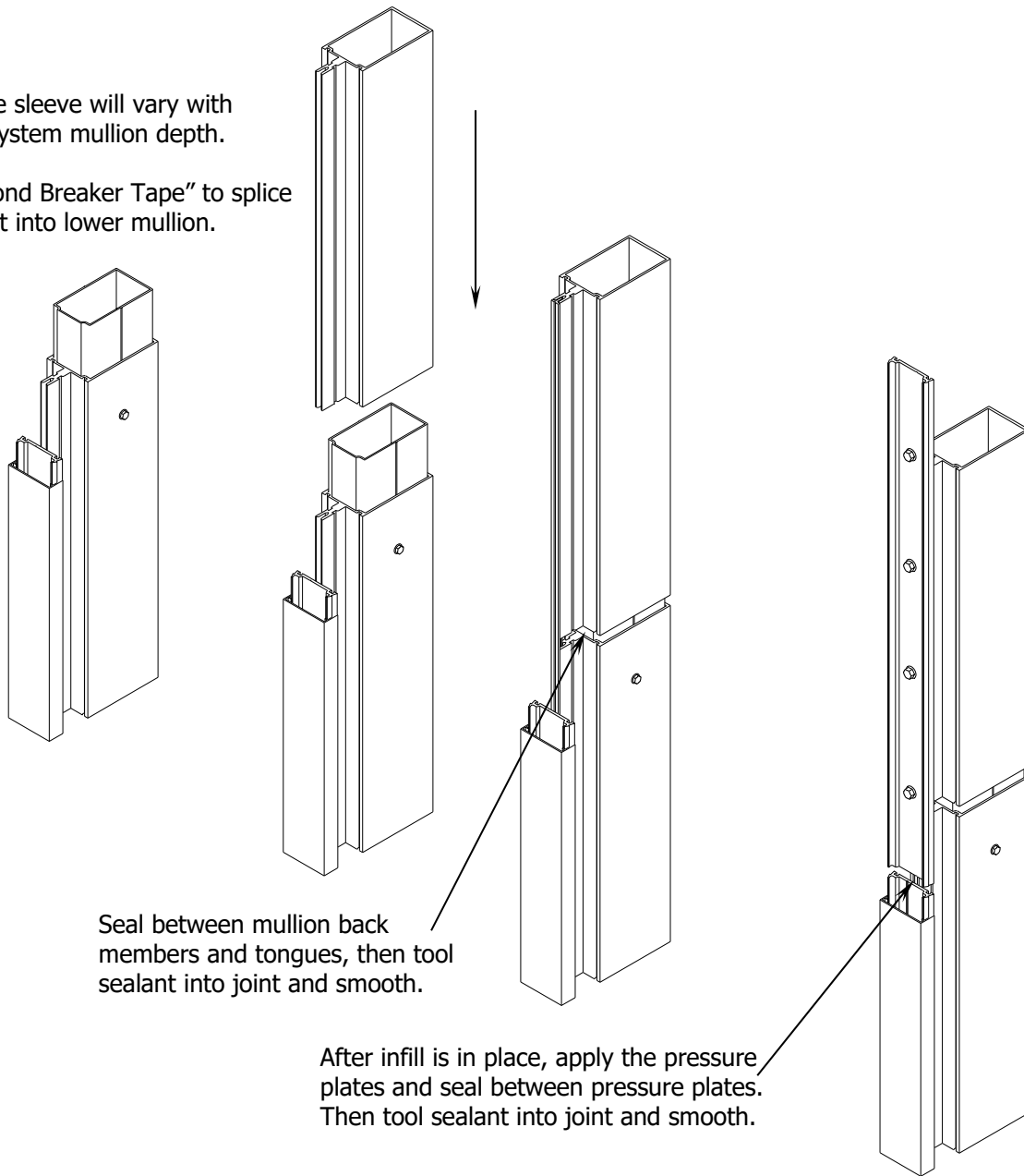


Side View – Mullion Splice

Section XIII: Vertical Splice Joints

Splice sleeve will vary with the system mullion depth.

Apply "Bond Breaker Tape" to splice and insert into lower mullion.



Note: All anchors must be "FIXED" before glazing installation begins.

Note: When the mullion splice is shop installed into the lower mullion, shear block screws will be used in standard locations as shown.

Section IX: Exterior Cover Installation

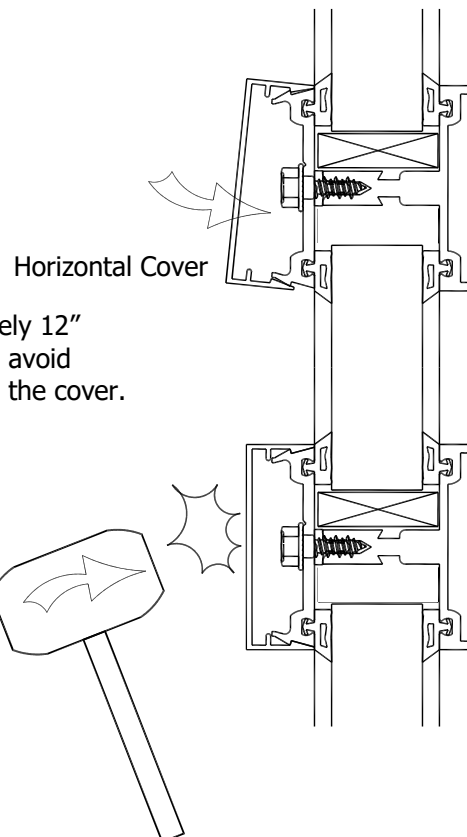
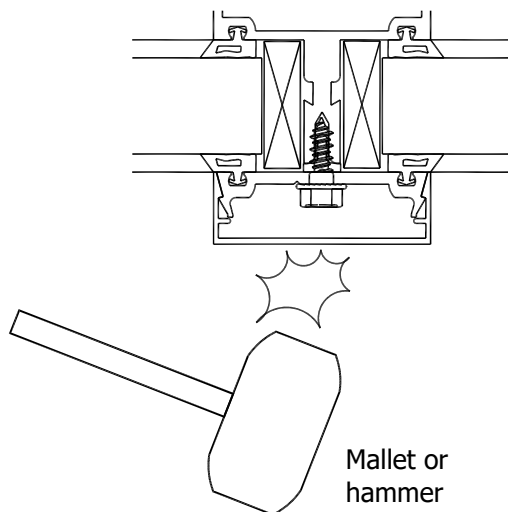
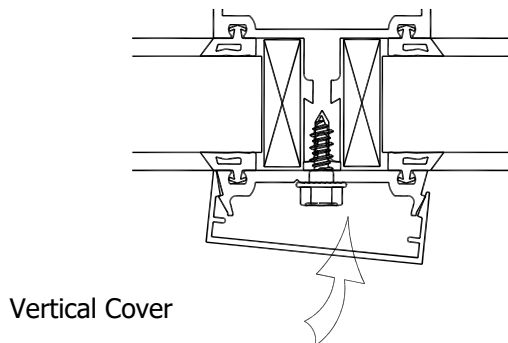
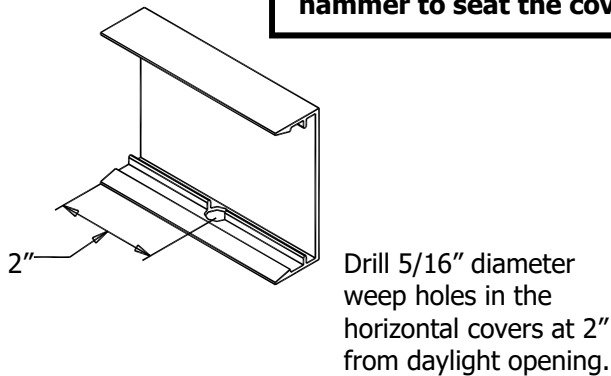
Step #1 Apply Exterior Covers

Series 5600 Outside Glazed Installation Instructions

- A.) Locate and apply vertical covers as shown on the approved Final shop drawings. Engage one side, then use the mallet and block to engage the opposite side.
- B.) Center the horizontal snap cover in the opening and apply it in the same manner. Gaps at the ends should be split equally and are to allow for thermal movement and weepage.

Note: Exterior horizontal snap covers are cut D.L.O. $-1/16"$. The erector must split the difference on both ends.

Caution: Care must be taken to avoid damage to the covers during installation. Use a 12" long 2 X 4 with a mallet or hammer to seat the cover.



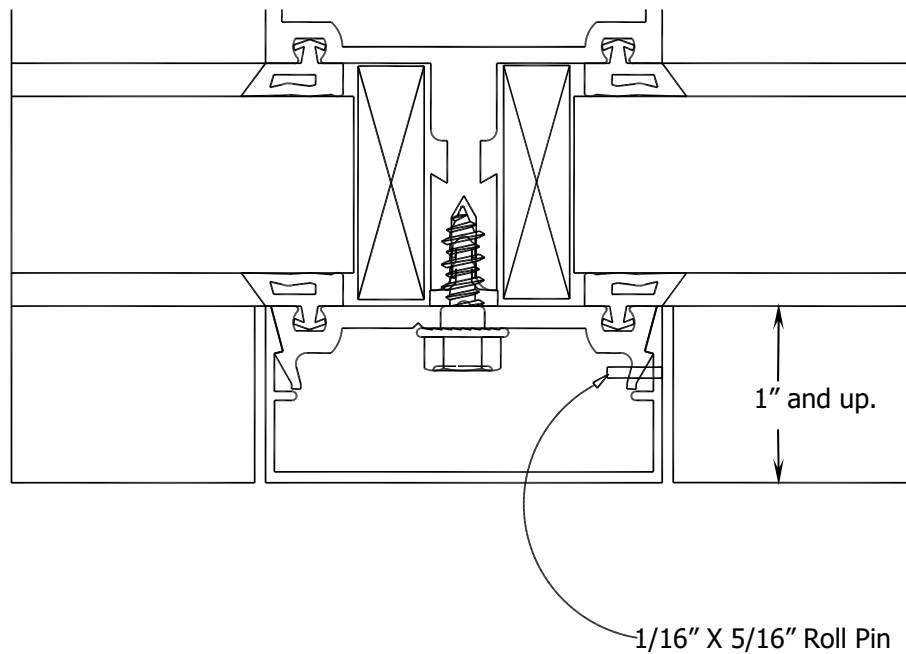
Use an approximately 12" long wood block to avoid denting or bending the cover.

Section IX: Exterior Cover Installation

Series 5600 Outside Glazed Installation Instructions

Step #2 Secure Exterior Covers

- A.) On vertical covers 1" in depth and over, it is necessary to install a 1/16" X 5/16" roll pin at the horizontal cover locations to prevent slippage.
- B.) On horizontal covers 1" in depth and over, it is necessary to mechanically attach the cover to the pressure plate similar to what is shown below to insure against disengagement of cover from pressure plate.



Section X: Reinforcing