

SERIES 5600

INTERIOR GLAZED CURTAIN WALL

INSTALLATION INSTRUCTIONS



Part NO. Y304

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 quantity 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 on which 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.

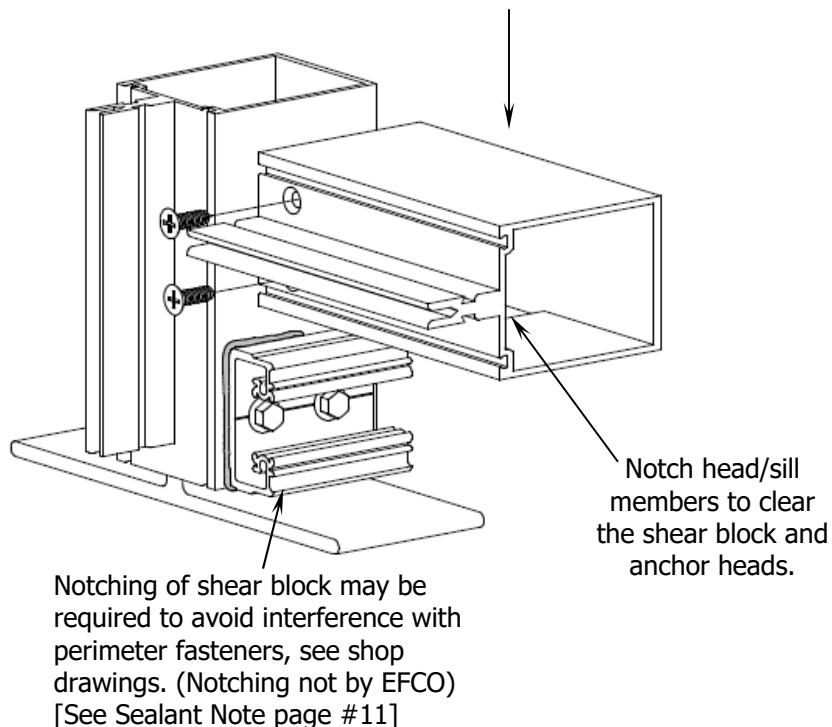
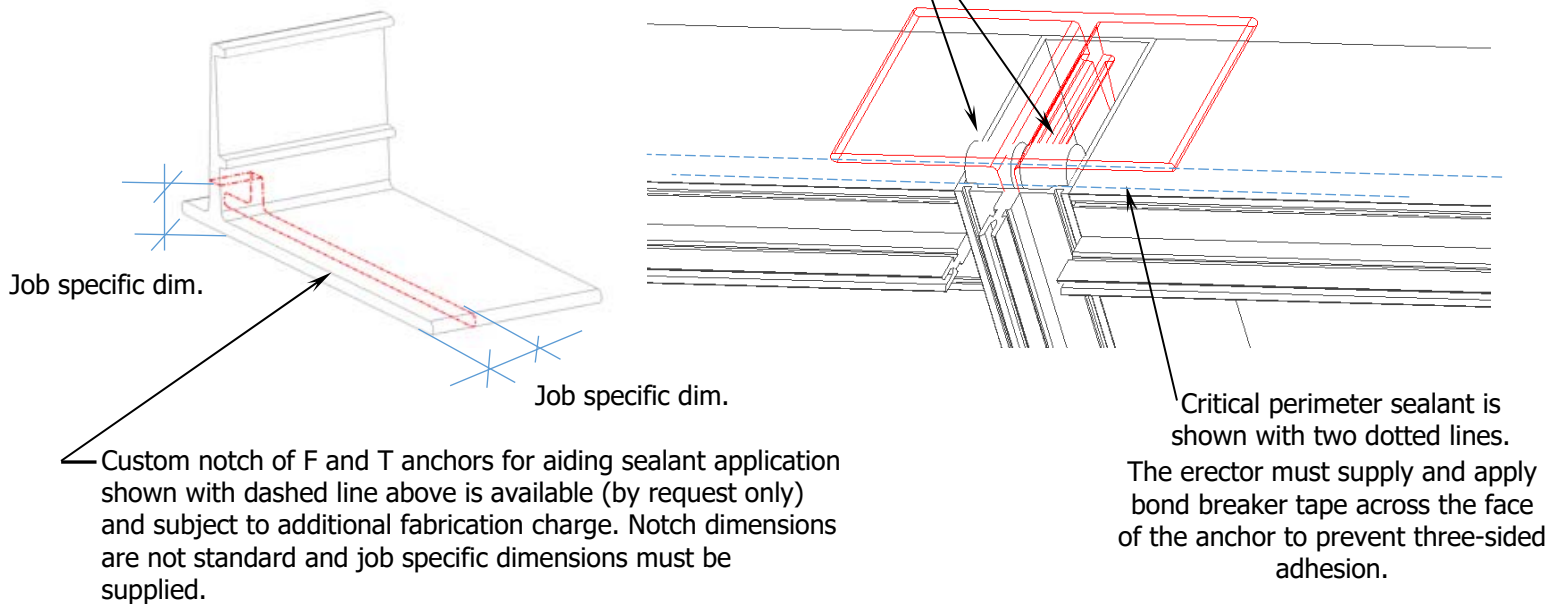
Maintain caulk joints as shown in the approved shop drawings. Unless specified otherwise, most sealant manufacturers recommend a 3/8" minimum perimeter caulk joint. A 3/4" minimum joint is recommended at the head condition to accommodate thermal expansion and contraction.

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**

Weld to the building structure
per approved shop drawings

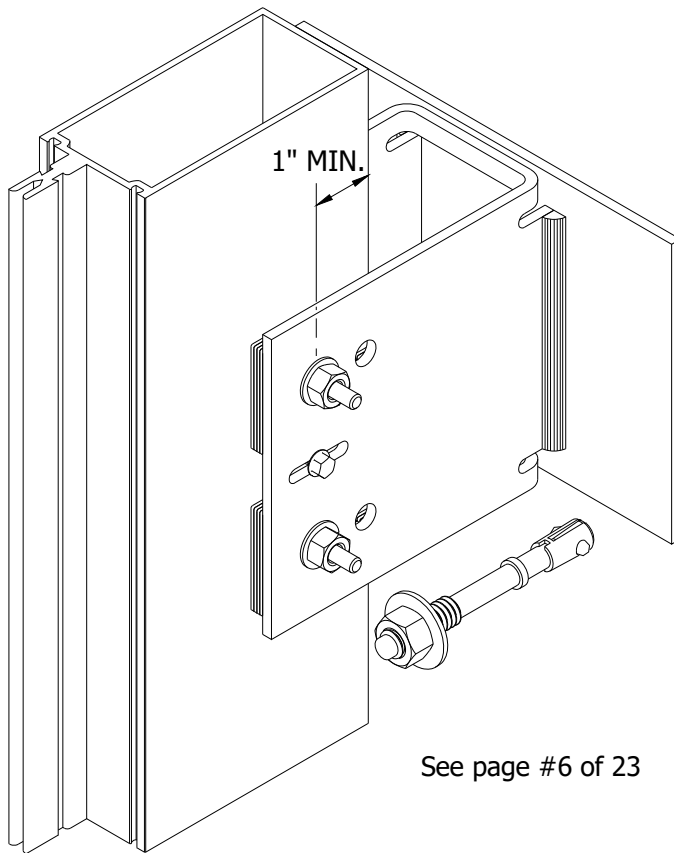
Dead-Load Anchor
Weld to building structure

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

Bolts, Nuts and Washers per
Approved Final Shop Drawings

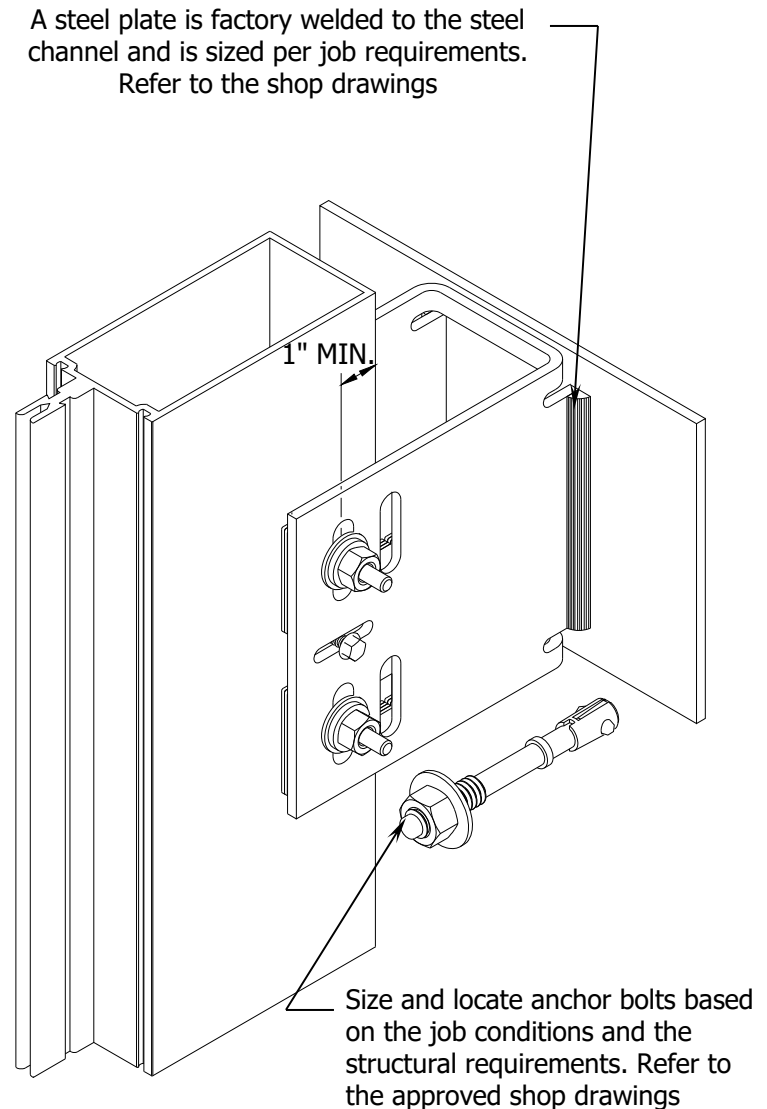
Wind-Load Anchor
Welded to building structure

Section III: Anchor Installation



See page #6 of 23

Dead-Load Anchor
Bolted to building structure



Wind-Load Anchor
Bolted to building structure

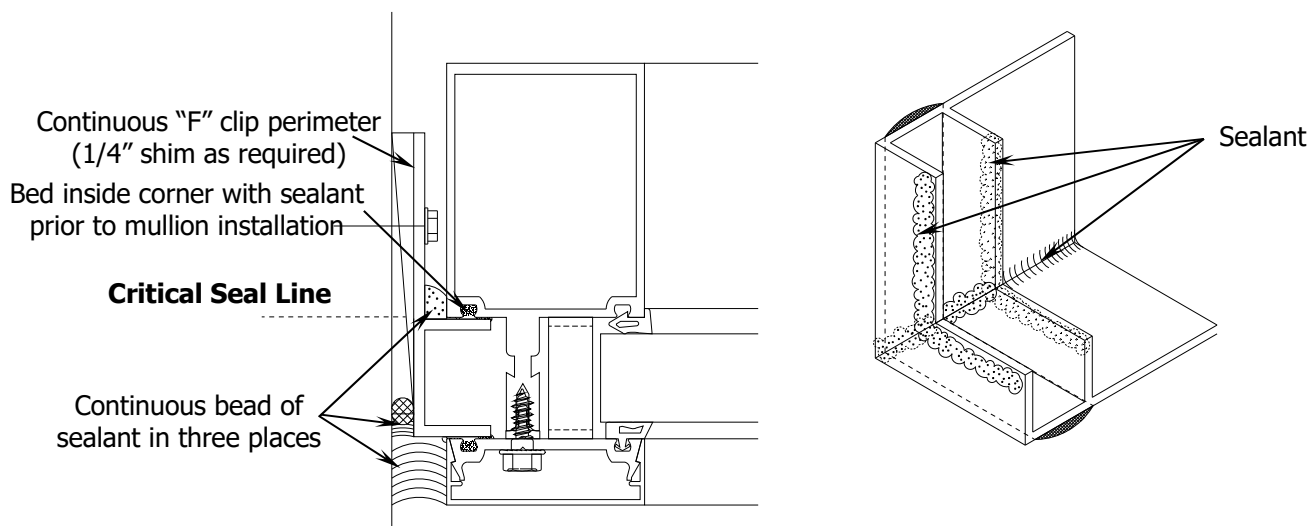
Note: Elevation of slab must be within the adjustment limits of the anchoring system.
See approved shop drawings for limitations

Section IV: Perimeter Application

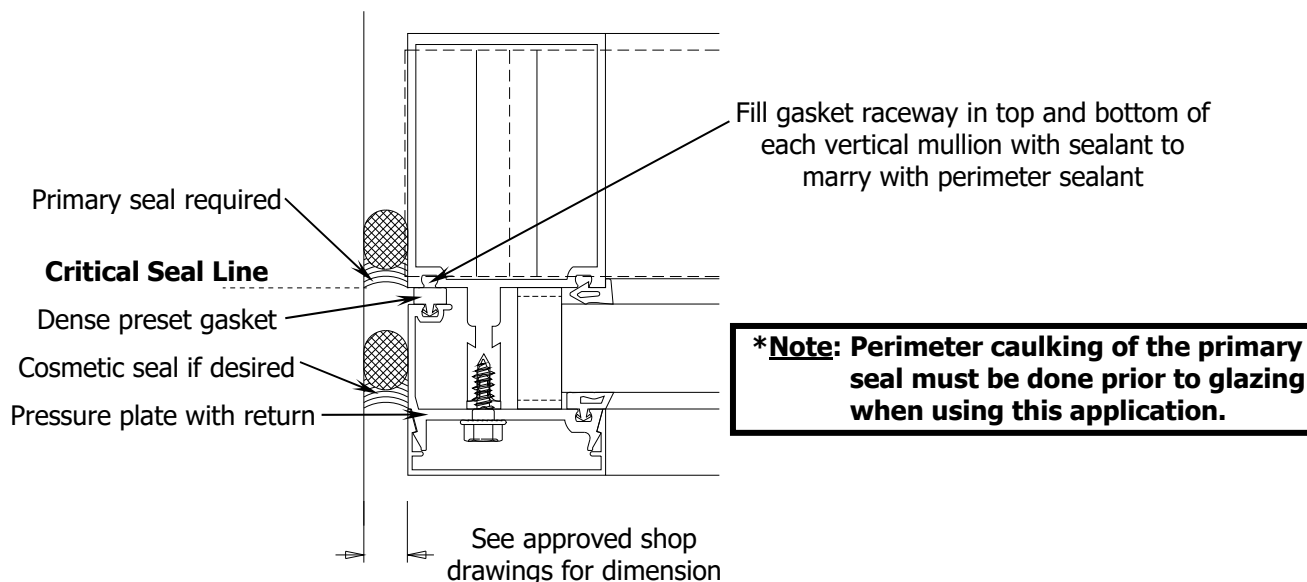
Determine Installation Method

- 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

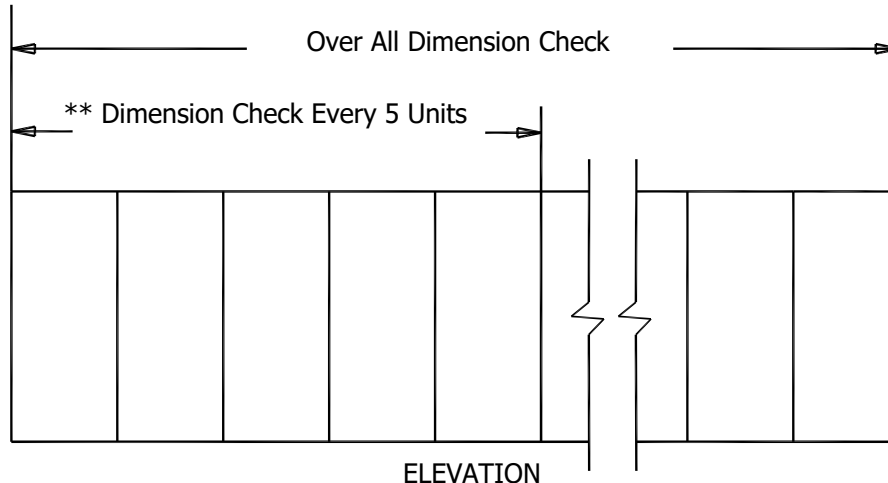


Section V: General Frame Assembly Notes

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. Fasten with screws in hidden locations where possible.

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

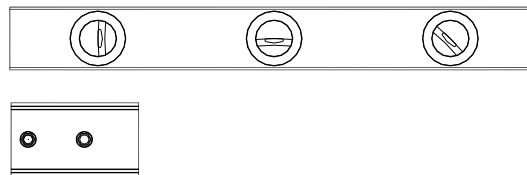


Step #2 Install Frame Components

- 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 horizontal slip-in rails.

Note: Frames are designed to stack from left to right. The interior glazed heads and intermediate horizontals slide onto the shear blocks. Sill members are notched to drop on the shear blocks over the mullion anchors. Tubular intermediate horizontals, where required, must be stacked on as the mullions are erected and slide on only in the last D.L.O. unless noted otherwise on the approved shop drawings

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



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

Properly support the horizontals until both ends are securely fastened.

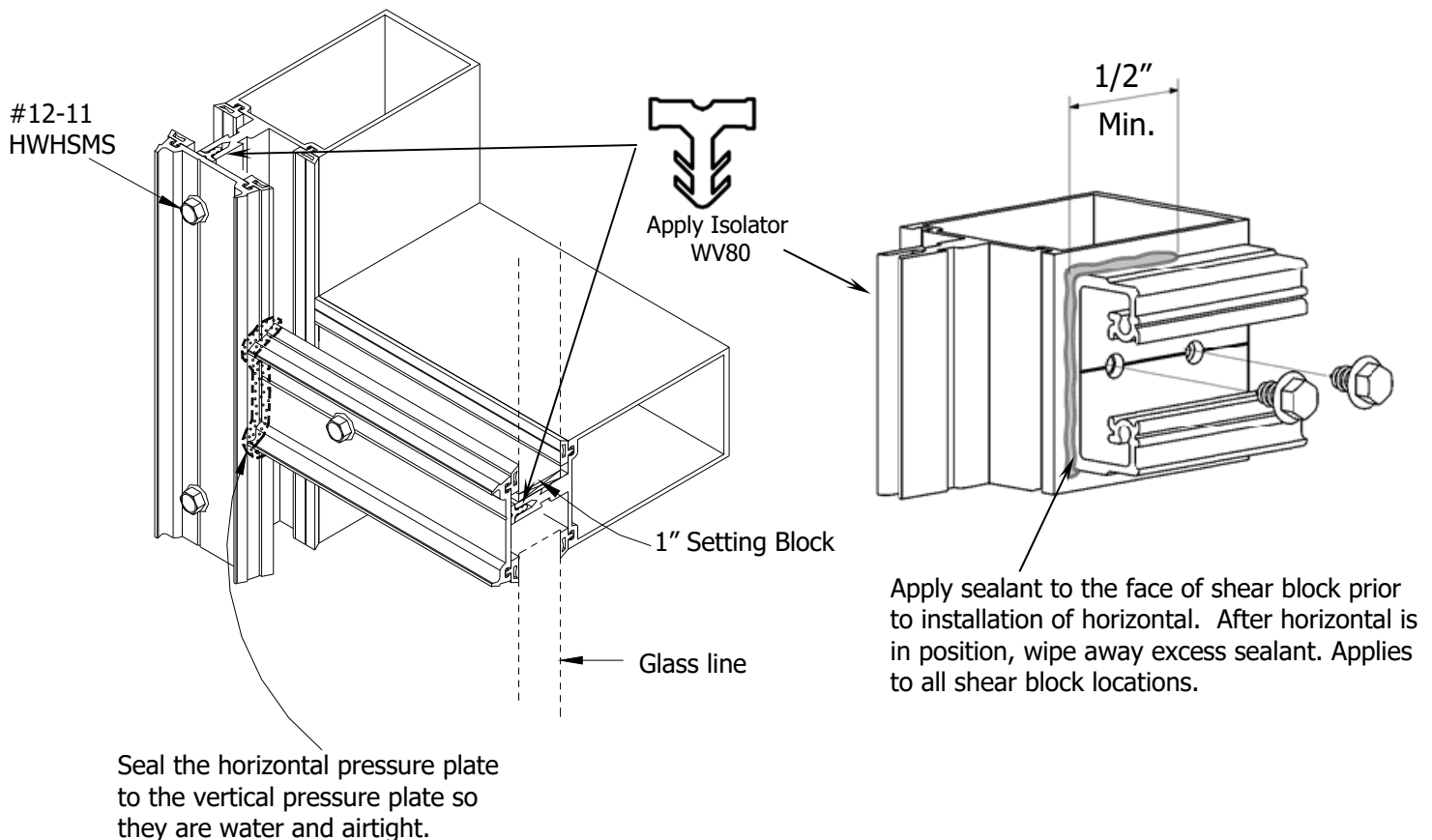
Space vertical mullion expansion joints per approved shop drawings. Keep in mind that spacing is theoretical and will vary with the job site temperature. On multiple stacked applications, key horizontals must be installed to establish grades regardless of the expansion joint dimension

Section V: General Frame Assembly Notes

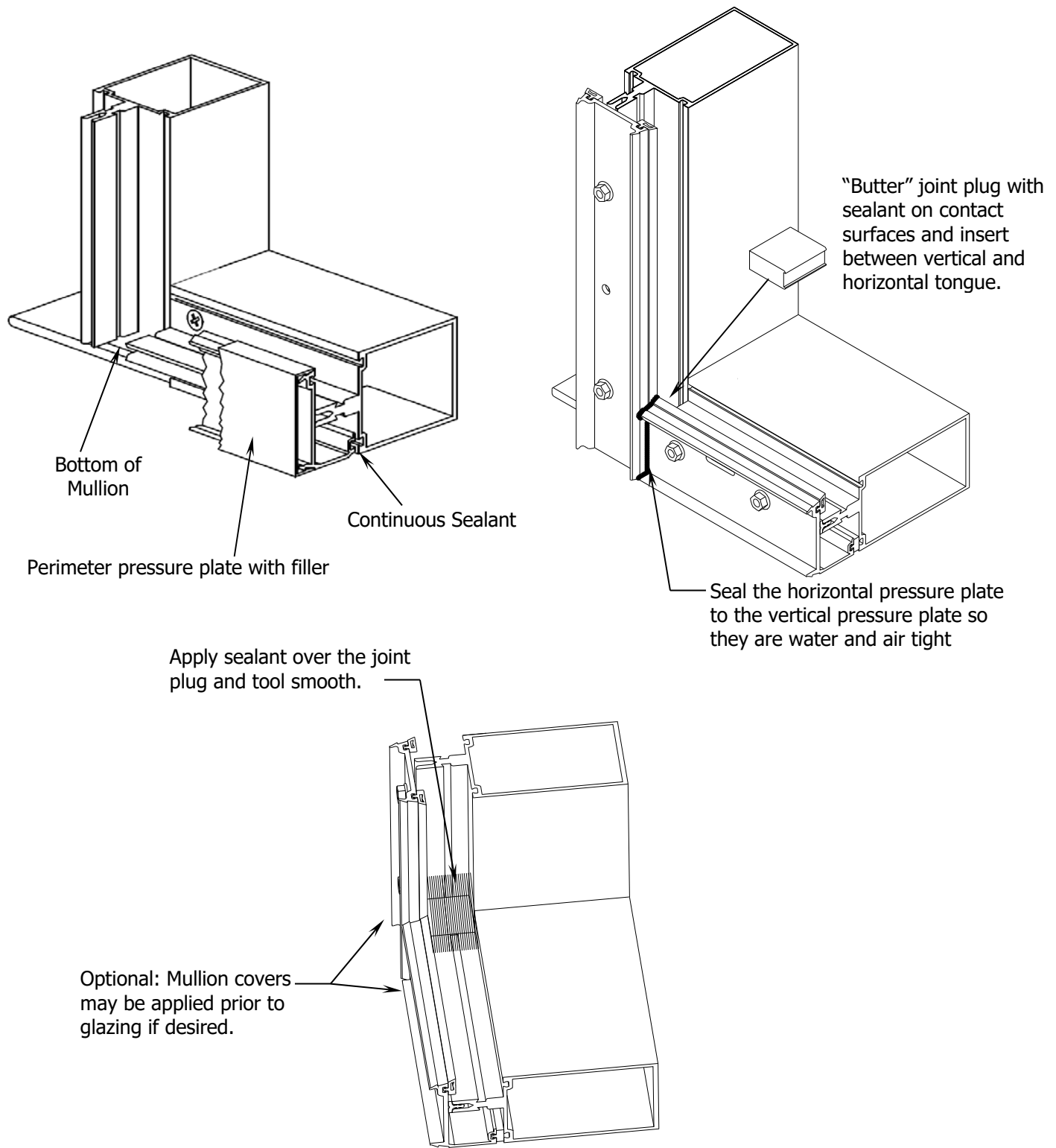
- A.) First attach the vertical pressure plates and then the horizontal pressure plates into position using #12-11 stainless steel hex washer head screws. Locate screws at 6" O.C. and at a maximum of 3" from the ends of each pressure plate. Torque screws to 80 inch-pounds. When possible, work from the 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.) 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 maximum control of pressure on the mullion plugs, which provide the critical sealing function.

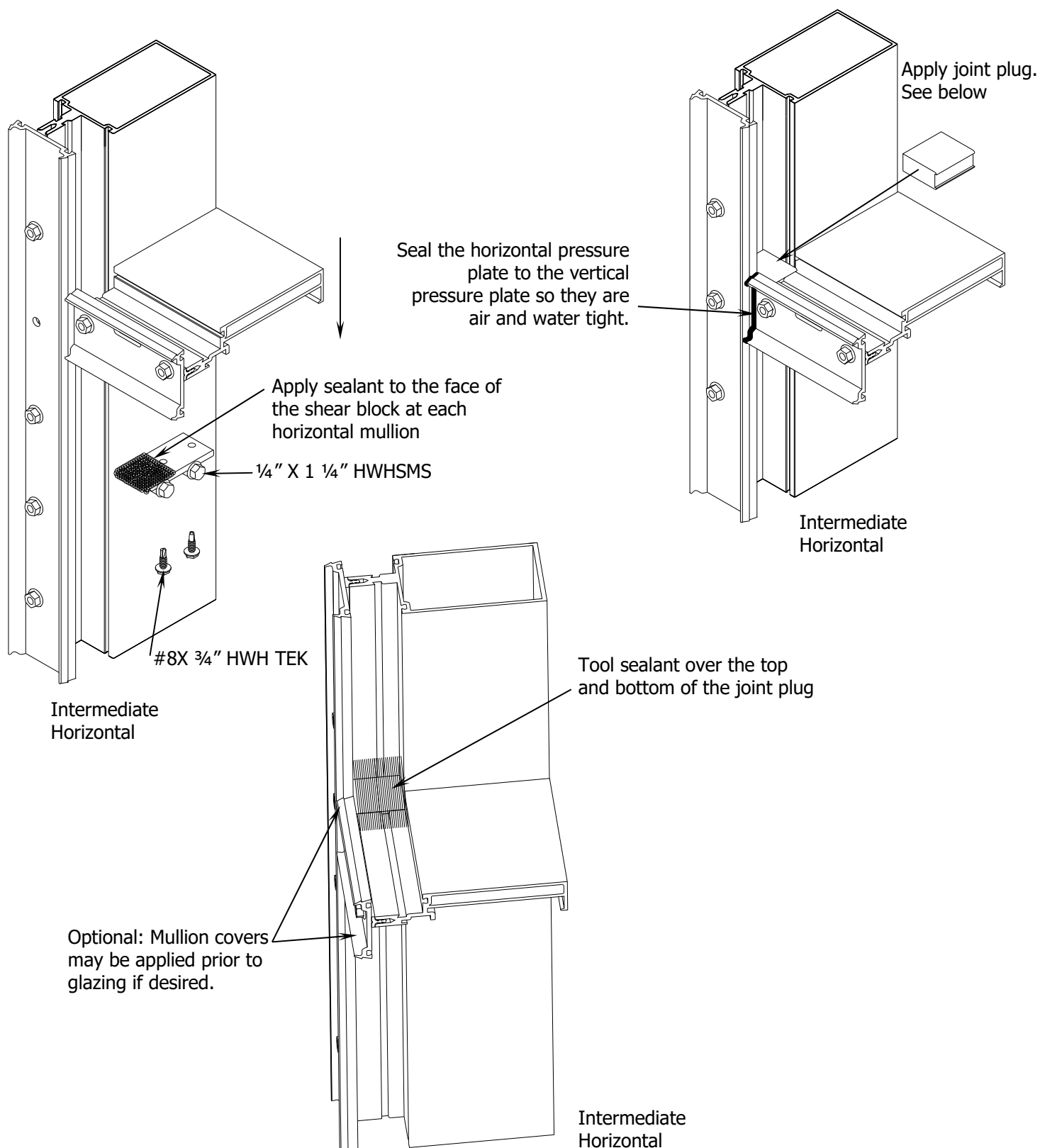
Customer / Installer Note: EFCO setting blocks are typically 4" in length with different depths. If the glazing infill is "NOT BY EFCO" and glazing sizes are larger than 40 square feet, then the glazing details must be reviewed by the glazing manufacturer for proper setting block size.



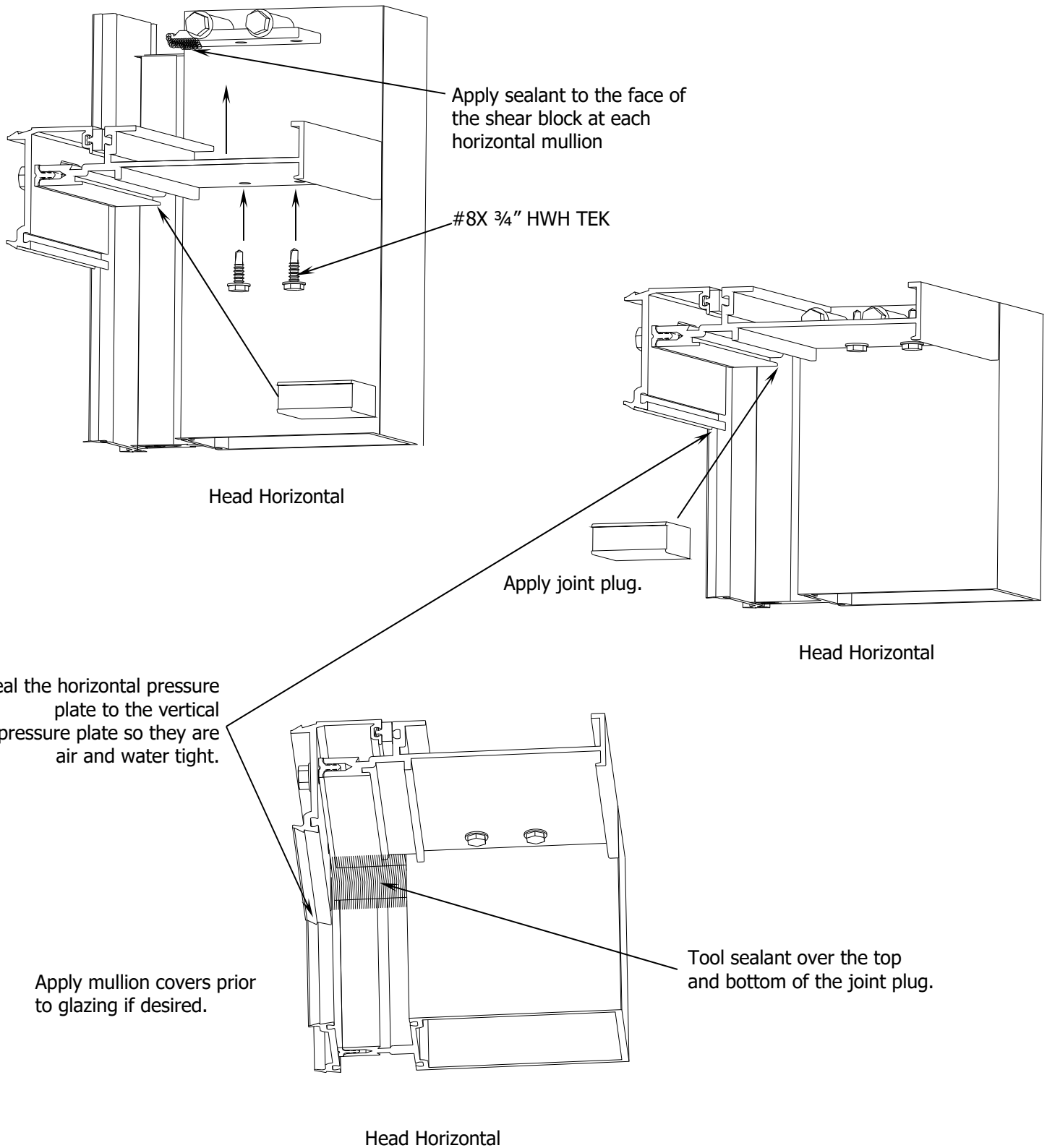
Section VI: Frame Assembly - Sill



Section VII: Frame Assembly - Intermediate Horizontal



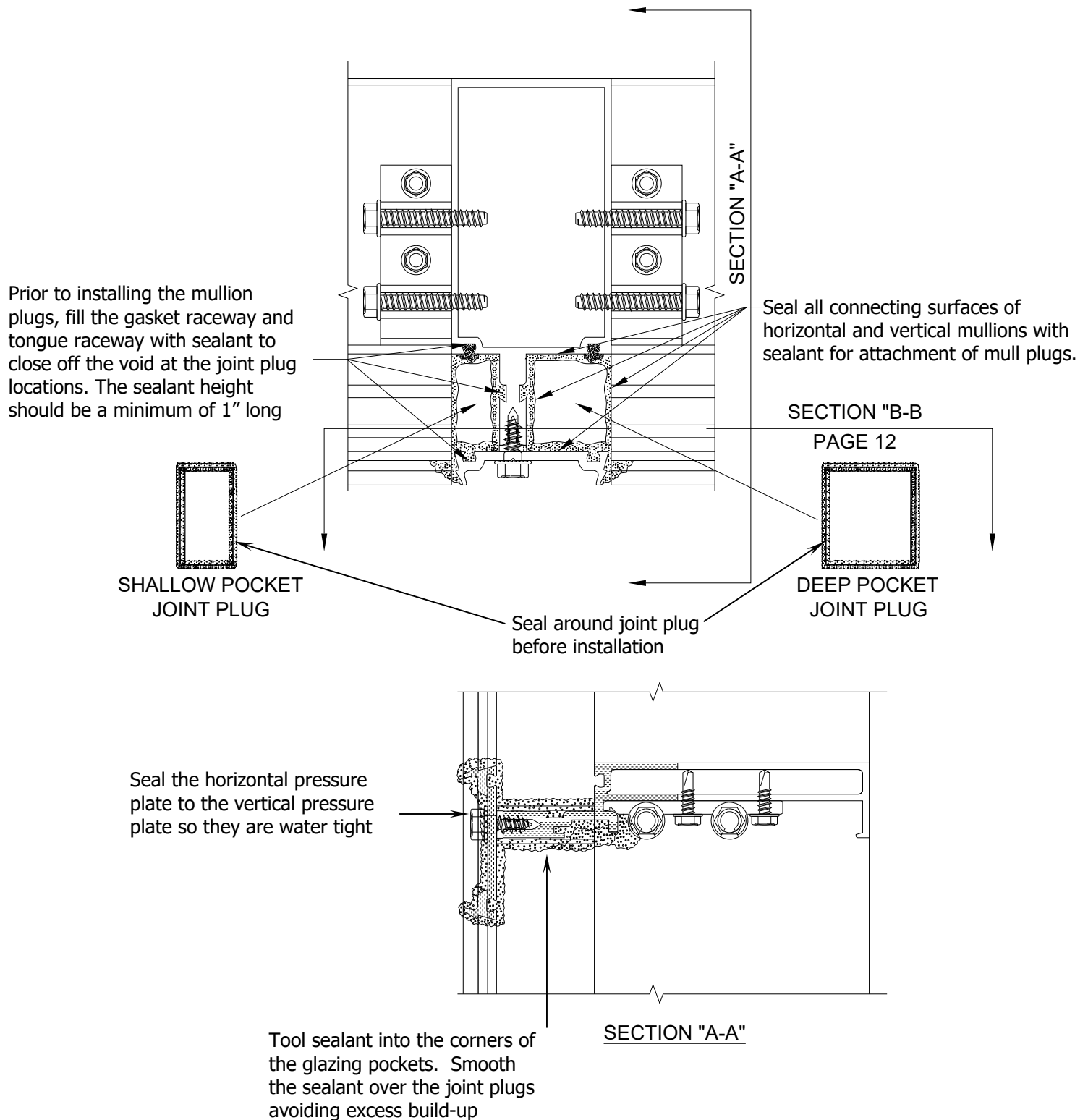
Section VIII: Frame Assembly – Head Horizontal



Section IX: Glazing Preparation

Step #1 Install Joint Plugs

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

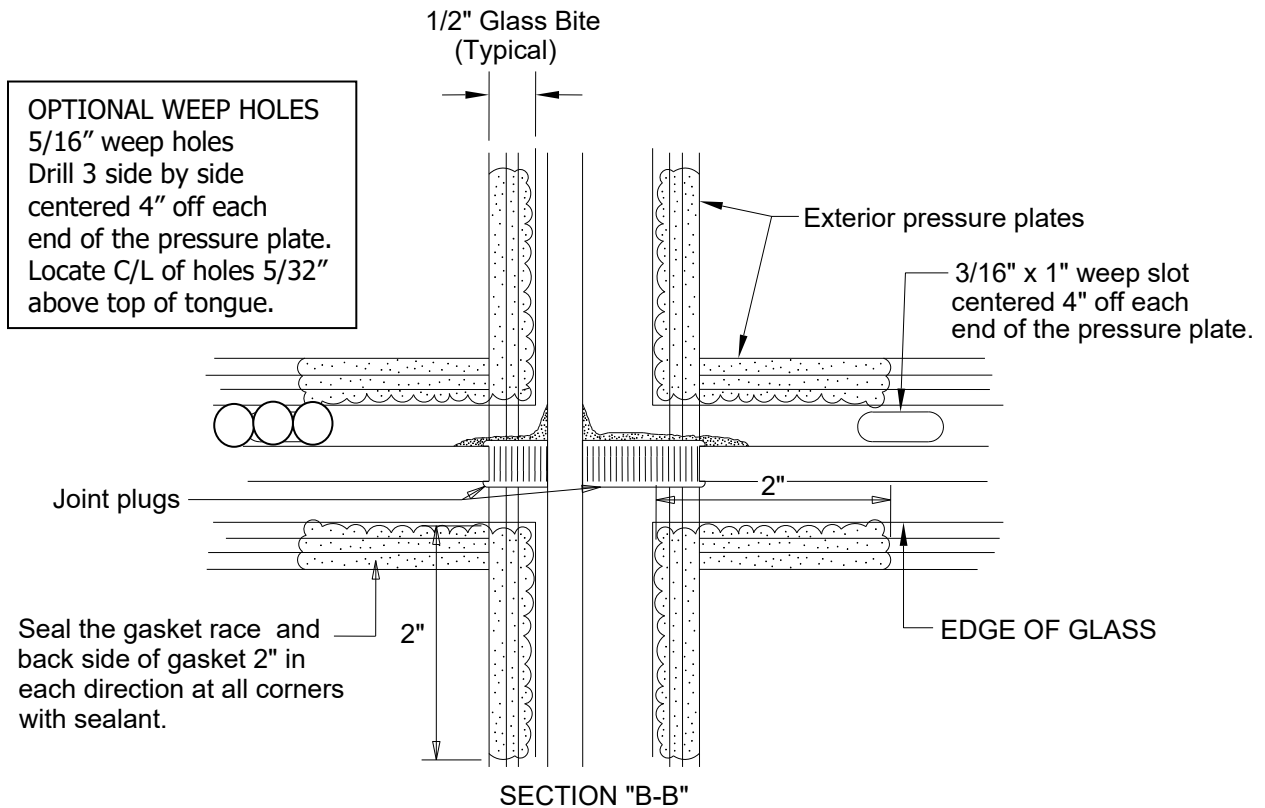


Section IX: Glazing Preparation

Step #2 Install Gaskets into Mullions

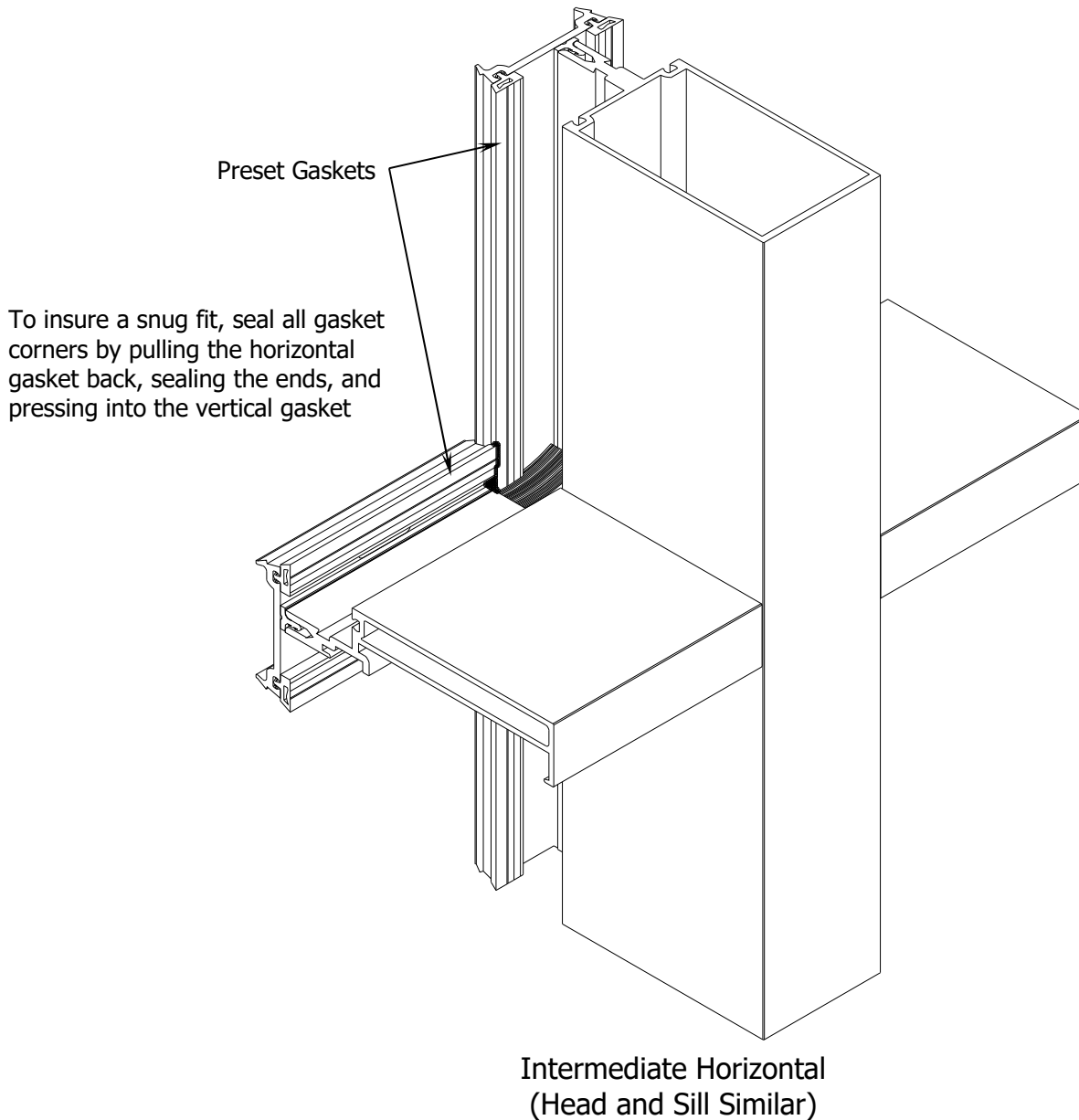
NOTE: Clean all glazing pockets prior to glazing. This is necessary to avoid clogging the weep system as well as to prevent staining of the exterior metal and glass surface.

- A.) Remove glazing gaskets from the reel and allow to relax and shrink.
- B.) Apply sealant into the raceway a minimum of 2" in each direction from the corner on the exterior side of the glazing pocket. (Refer to the illustration below.)
- C.) Once the gaskets have relaxed, cut and install them into position to the exterior side of the glazing pockets. Vertical gaskets must be cut vertical D.L.O. plus 1 $\frac{3}{4}$ ". Place the gaskets into position starting at the center of the D.L.O. Crowd in the excess at the ends.
- D.) Cut the horizontal gaskets D.L.O. plus $\frac{1}{2}$ " and insert the gasket as indicated above.



Section IX: Glazing Preparation

E.) Seal all gasket corners and butt joints as indicated below.



Step #3 Install Setting Blocks

A.) Position and install setting blocks as directed on the approved shop drawings.

Section IX: Glazing Preparation

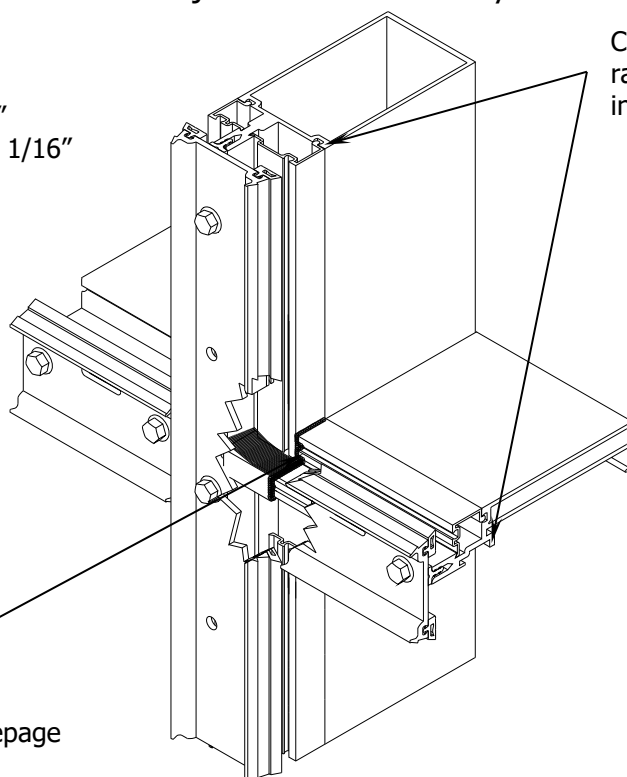
Step #4 Install Glazing Adaptors

- 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.
- C.) Butter the ends of the horizontal adaptors prior to setting into position. Snap horizontal adaptors in place between the 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>Glazing Infill Thickness</u>	<u>Adaptors</u>		<u>Gaskets</u>	
	<u>Shallow Pocket</u>	<u>Deep Pocket</u>	<u>Exterior Preset</u>	<u>Interior Wedge</u>
1/4"	X	X	X	X
5/16"	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 infill requires a NON-Standard pressure plate to be used.

Section X: Glazing Installation

Step #1 Install Glazing Materials

- A.) Install the proper glazing product into the opening using section cups to hold the infill above the sill horizontal and set the jamb side of the glass into the deep pocket. Swing the opposite side of the glass into the shallow pocket. Gently lower the material onto the setting blocks with the exterior face of the glass pushed up against the exterior gasket. Take care not to roll the gasket while shifting the glass.
- B.) Position the glazing in the center of the opening maintaining a ½" glass bite around the entire perimeter.
- C.) Install the interior wedge gasket in short lengths to 3 edges of the glass to hold the glass temporarily.
- D.) Install the glazing bead at the intermediate horizontal and at the head. (See page 20 and 21).

Note: Seal along the backside of the glazing bead to provide a weather seal. Tool sealant as shown in FIG. "A".

Note: The typical glass bite is ½". Glass sizes are based on D.L.O. plus 1".

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.

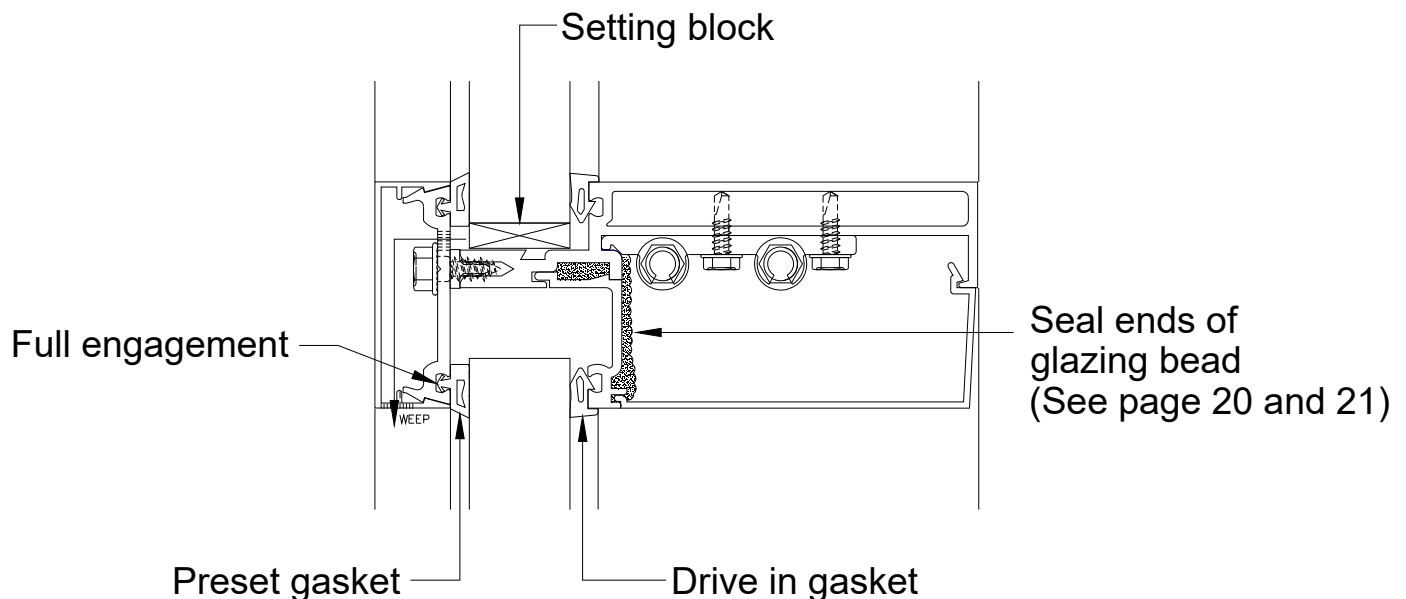
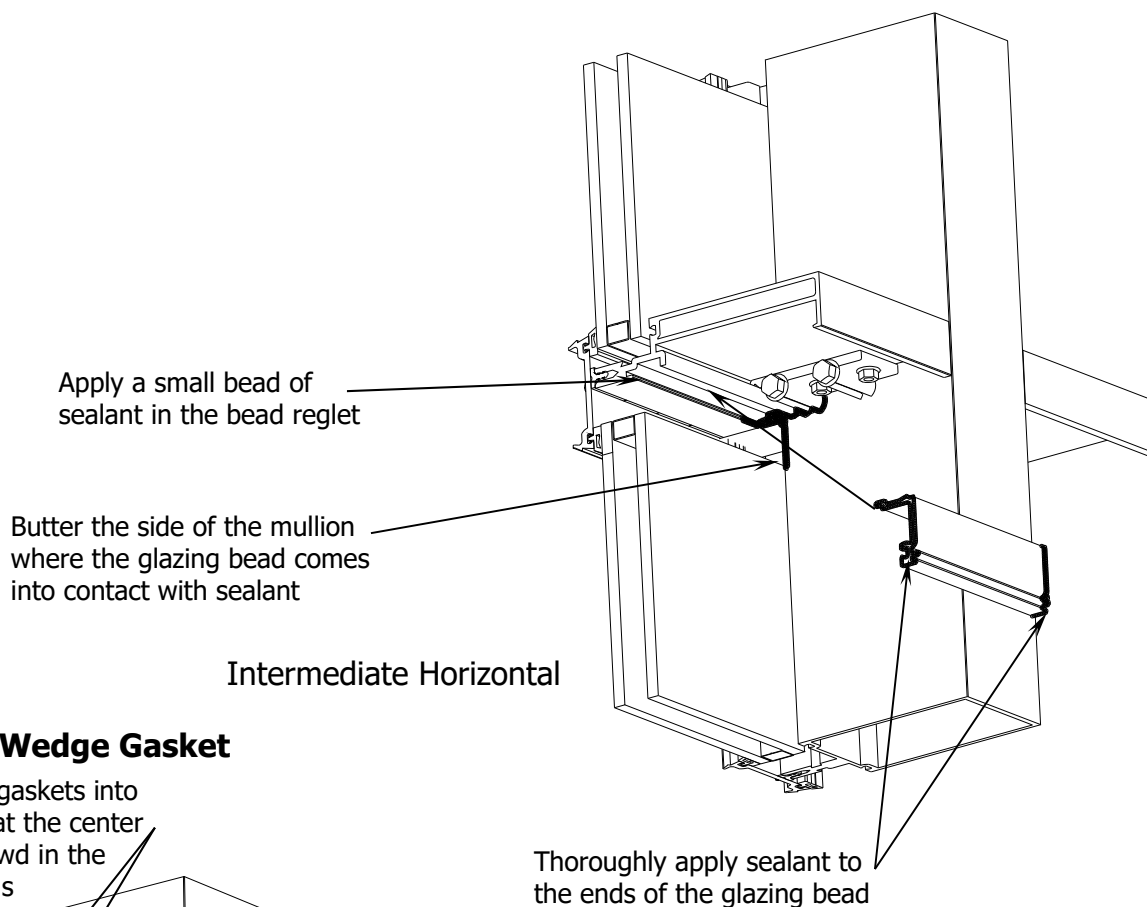


FIG. A

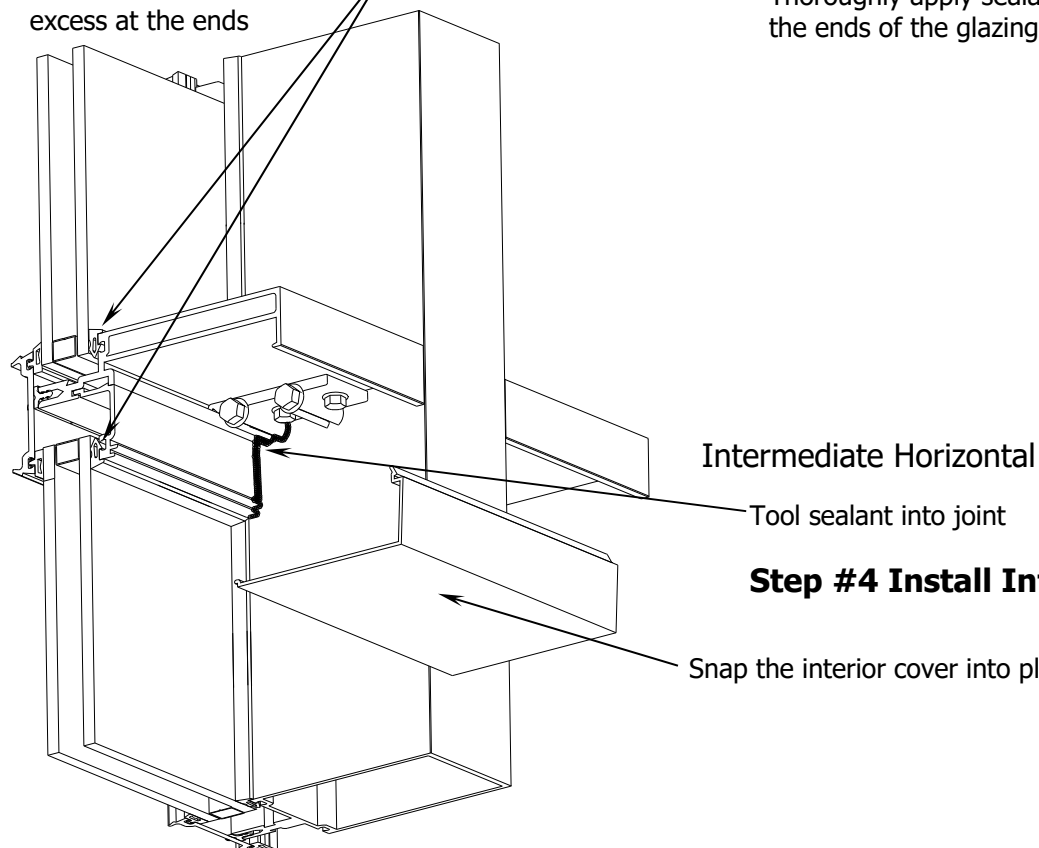
Section X: Glazing Installation

Step #2 Install Glazing Bead



Step #3 Install Wedge Gasket

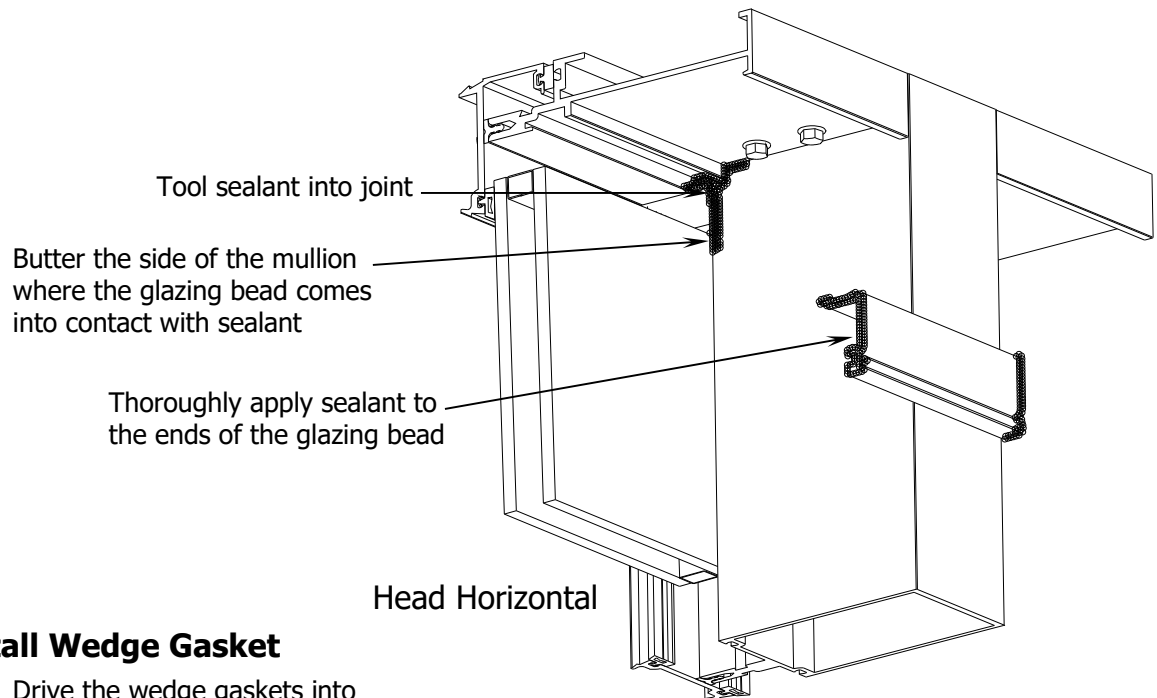
Drive the wedge gaskets into position starting at the center of the D.L.O. Crowd in the excess at the ends



Step #4 Install Interior Cover

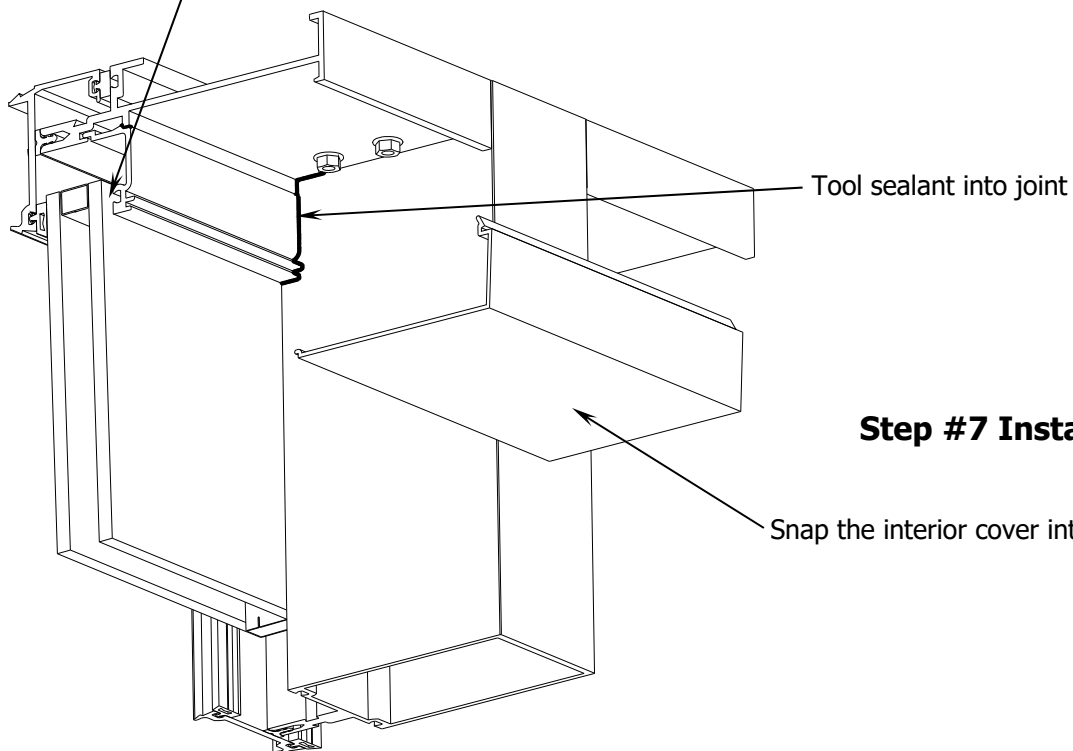
Section X: Glazing Installation

Step #5 Install Glazing Bead at Head



Step #6 Install Wedge Gasket

Drive the wedge gaskets into position starting at the center of the D.L.O. Crowd in the excess at the ends



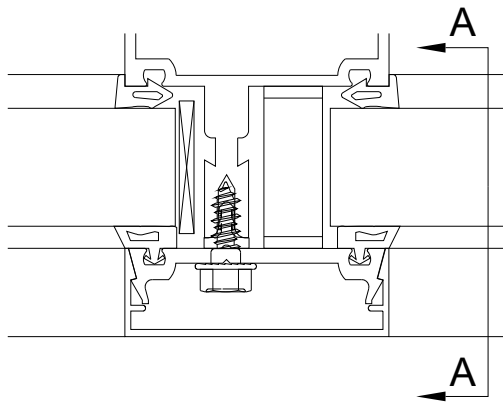
Step #7 Install Interior Cover

Snap the interior cover into place

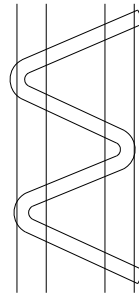
Section X: Glazing Installation

Step #8 Install Side Blocks

A.) Install and position side blocks in the jamb pocket cavity at the approximate midpoint as indicated.

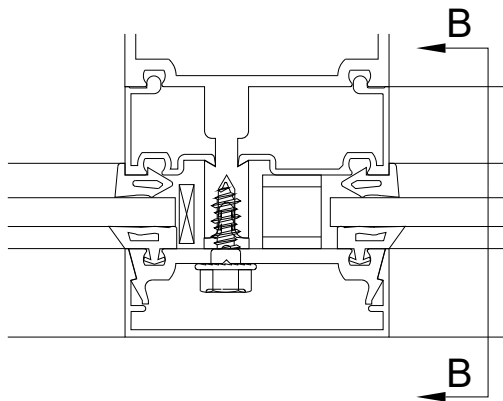


SECTION "A-A"



"W" type jamb spacer
block at approximate
midpoint of glass D.L.O.

1" Insulated Glass



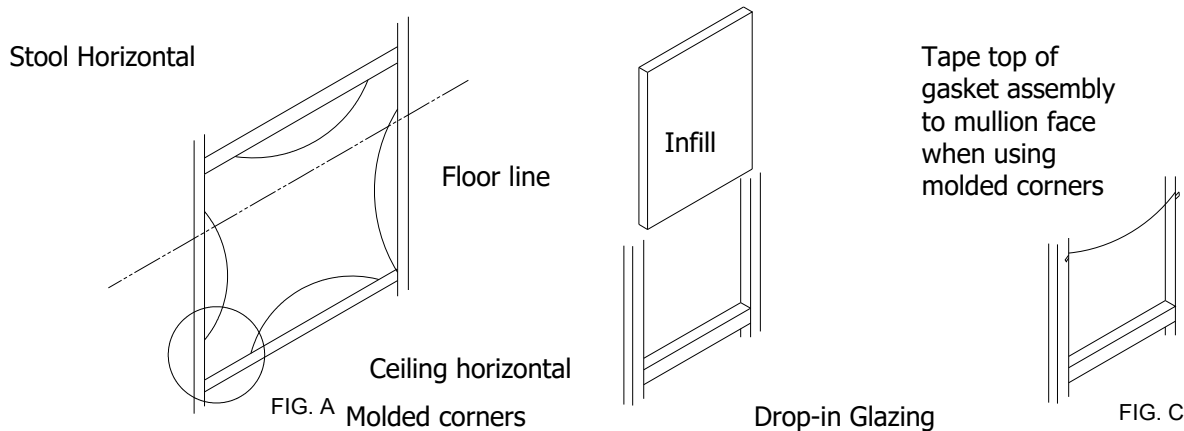
SECTION "B-B"



"W" type jamb spacer
block at approximate
midpoint of glass D.L.O.

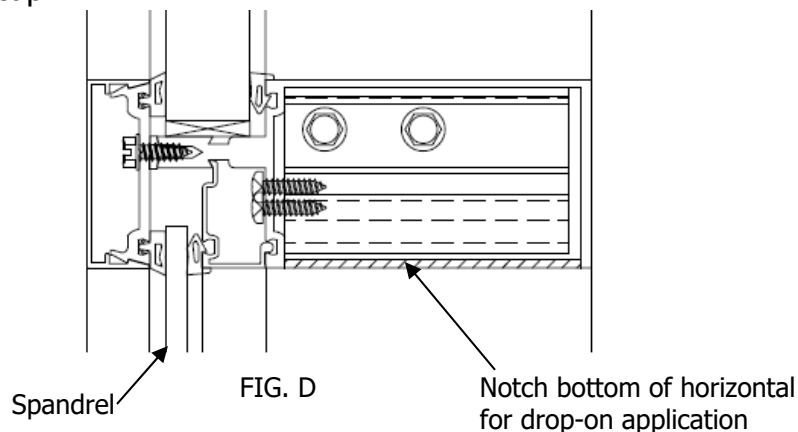
1/4" Glass

Section X: Glazing Installation



Step #9 Glazing the Spandrel Areas at Floor Lines

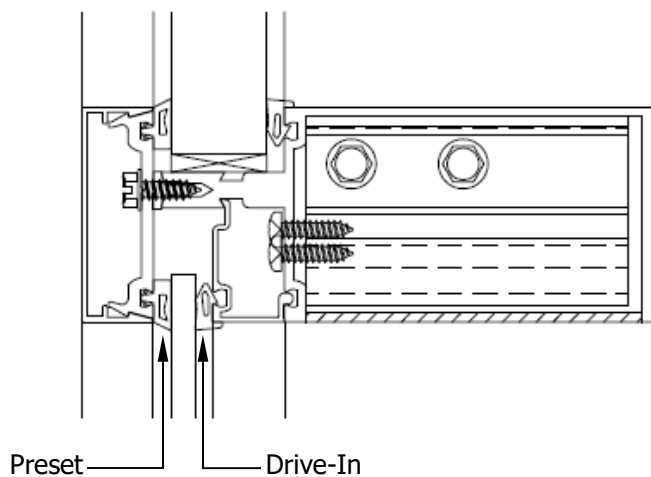
- A.) The top of each spandrel glass should consist of a horizontal assembly with bolt-on pressure plate as shown in FIG. "D" below.
- B.) Leave the horizontal above the floor line off (stool horizontal) while erecting frames.
- C.) Set the exterior preset gasket in two sides and the sill of the opening for the spandrel glass. Tape the top of the gasket on the mullion face. See FIG. "C" above.
- D.) From the floor line, drop infill down into the glazing pocket, onto pre-located setting blocks and into final position as shown in FIG. "B" above.
- E.) Drop the sill horizontal down over the top of the glass and onto pre-attached shear blocks.
 - *If molded corner gaskets are used, the exterior preset gasket must be installed into the horizontal pressure plate prior to dropping it over the glass. Do not fully tighten the pressure plate screws until after the horizontal is in final position. This will allow for easy slip-on and alignment.
- F.) Attach the horizontal to the shear block and torque the pressure plate screws as required. Seal the horizontal and pressure plate as shown on page 9 - 10. Install the horizontal face cap.



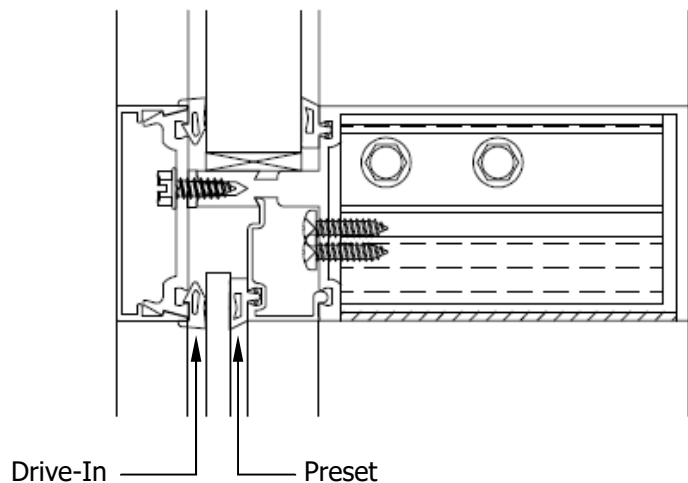
Section X: Glazing Installation

Re-glaze of Spandrel Glass From Exterior

- A.) Remove the broken or damaged glass and gasket material.
- B.) Remove the pressure plate at the top of the glass lite. See FIG. "D".
- C.) Re-install the preset gasket to the interior side of the glass pocket.
(Replace the gasket if damaged).
- D.) Set the replacement glass down on top of the pre-located setting blocks and tight against the preset gasket.
- E.) After the glass is in the final position, apply the pressure plate and face cap to the horizontal at the top of the lite. Reseal all joints as shown on page 16. Apply the drive-in wedge to the exterior side of the glass.



Before Re-glaze

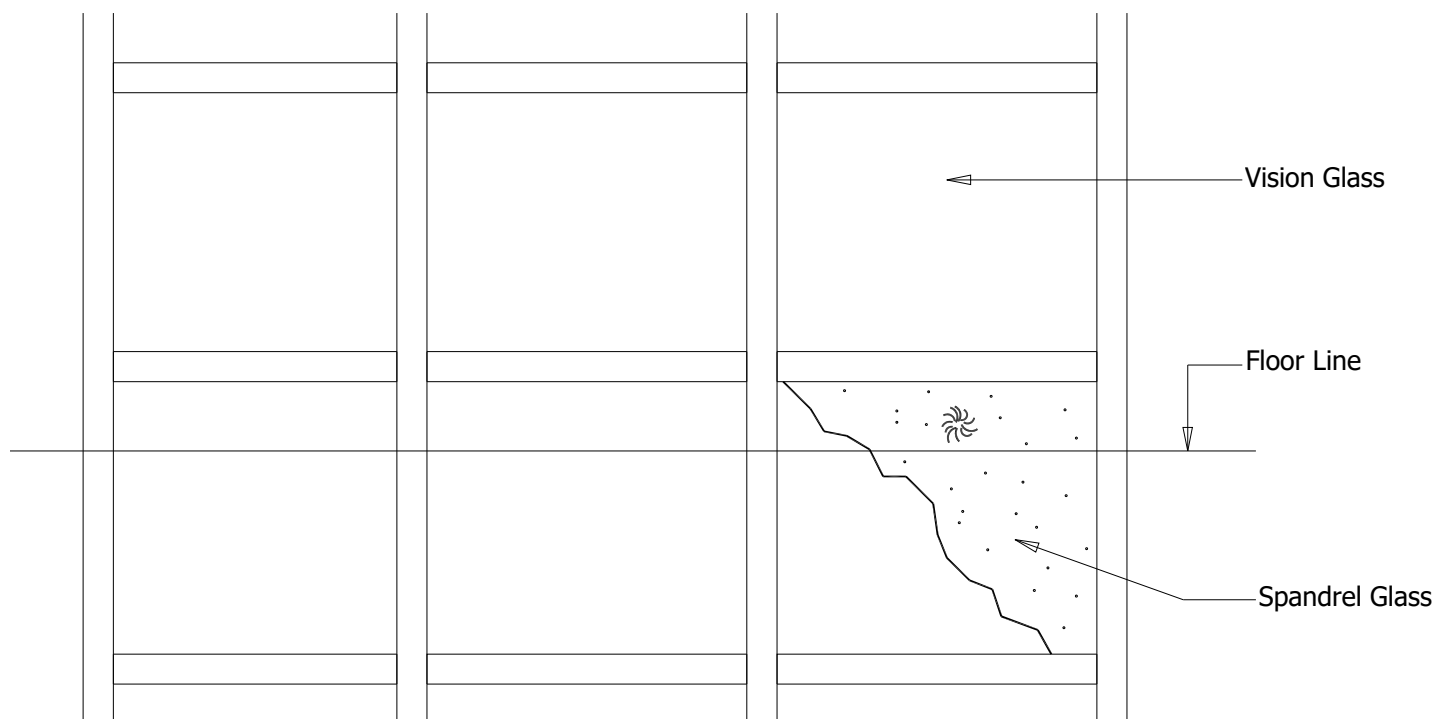


After Re-glaze

Section X: Glazing Installation

Re-glaze of Spandrel Glass From Interior

- A.) The vision lite above the damaged or broken spandrel glass must be deglazed.
1. Remove the interior wedge.
 2. Remove the glazing bead at the head.
 3. Remove the glass.
 4. Remove the horizontal at the top of the damaged or broken spandrel glass.
- B.) Remove the damaged or broken glass and glazing material from the spandrel area.
- C.) Remove any excess debris from the gutter that would clog-up the weep system or cause staining of the glass and metal below.
- D.) Follow the steps in "C" through "F" in "Glazing Installation" on page 23.
Note: It may be necessary to remove the ceiling line from the floor below to gain access for gasket installation.
- E.) Follow the steps in Section X to install the vision lites.



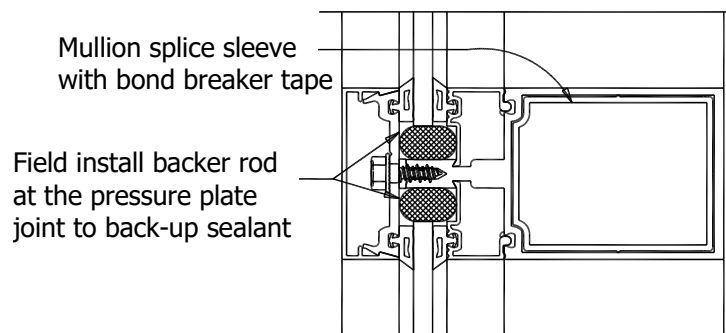
Section XI: Vertical Splice Joints

Step #1 Locate Splice Joints

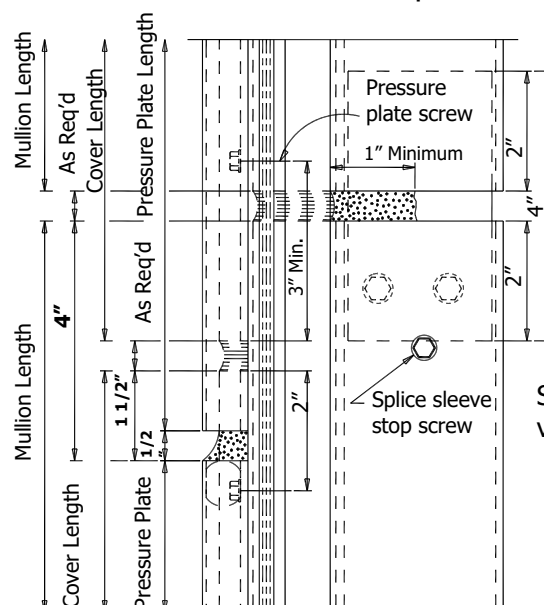
- A.) Splice joints should occur at the spandrel areas (if possible). Refer to Approved Final Shop Drawings for actual locations.
- B.) Depending on the specific job requirements, splice sleeves may be shop or field assembled in the top of the lower mullion. If materials are field fabricated, use the 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 is to be taped into the bottom of the top mullion and dropped down to the stop screw in the mullion below.
- C.) The splice joint width should be based on the sealant movement capabilities and the following formula:

$$\text{Linear expansion for aluminum in inches} = \text{Length (inches)} \times \text{Degrees (F) Temperature Range} \times .0000129$$

- 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.

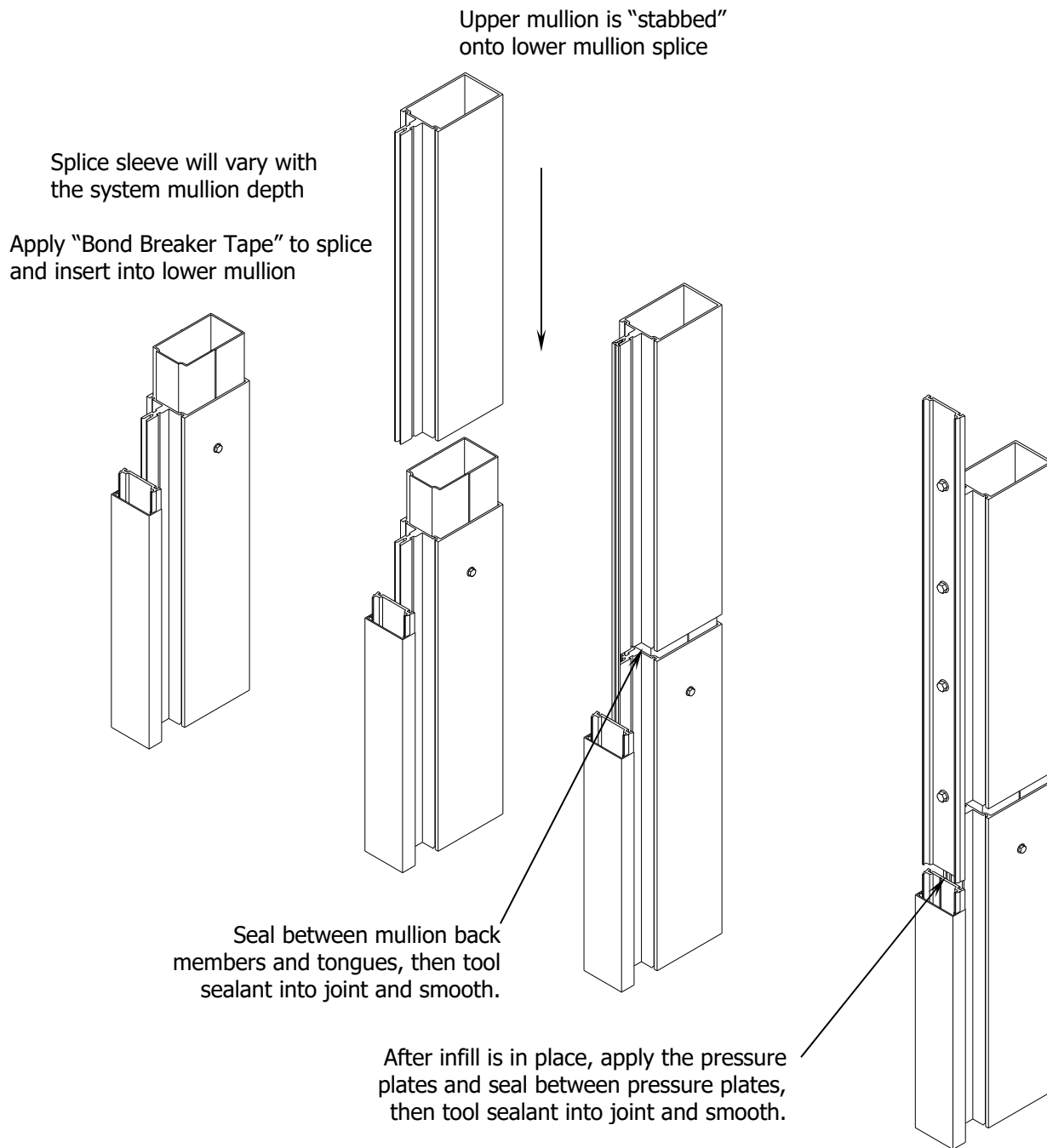


Plan View – Mullion Splice



Side View – Mullion Splice

Section XI: Vertical Splice Joints



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.

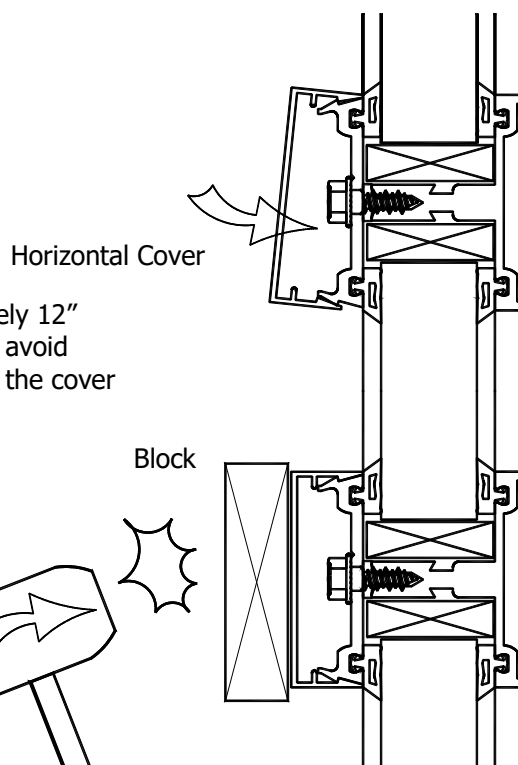
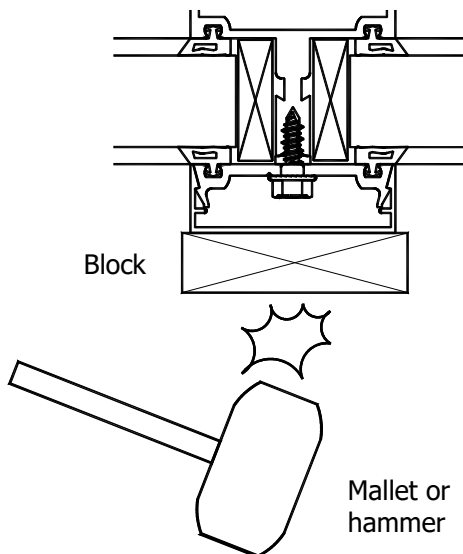
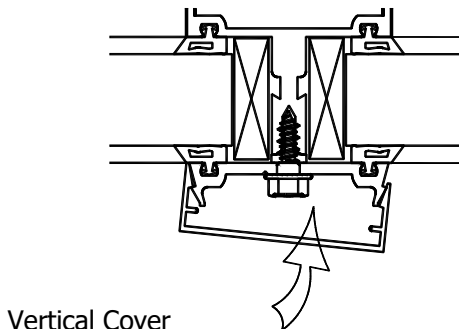
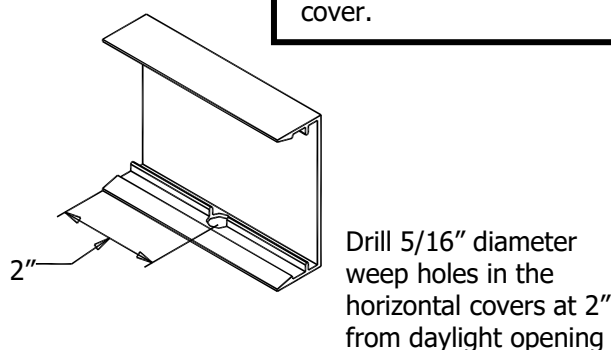
Section XII: Exterior Cover Installation

Step #1 Apply Exterior Covers

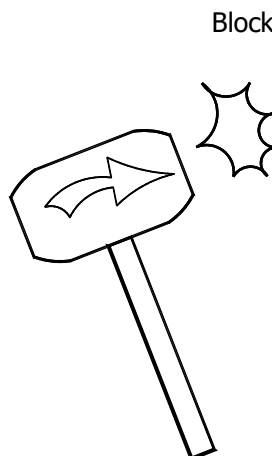
- A.) Locate and apply vertical covers as shown on the Approved Final Shop Drawings. Engage one side, then use the mallet and block to engage the opposite side.
- B.) Center the horizontal snap cover in the opening and apply it in the same manner. Gaps at the ends should be split equally and are to allow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



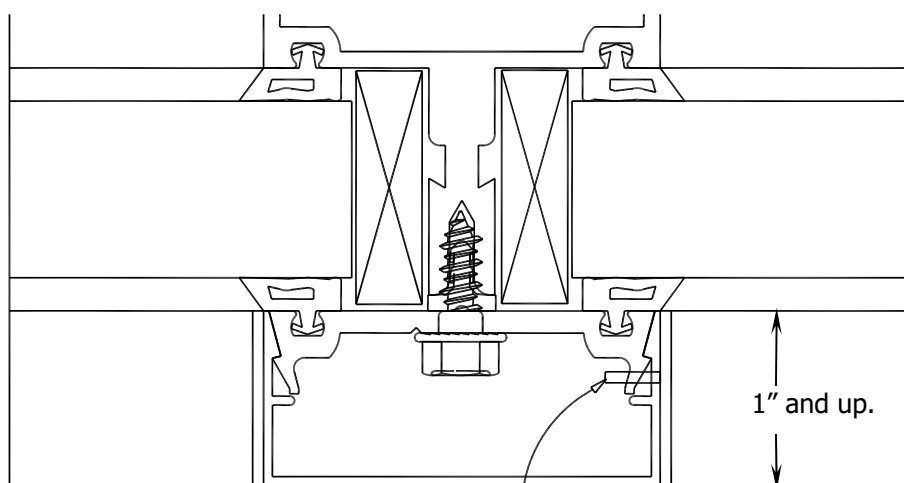
Use an approximately 12" long wood block to avoid denting or bending the cover



Section XII: Exterior Cover Installation

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.



Note: Horizontal covers with a depth of more than 1" are to be mechanically attached.

1/16" X 5/16" Roll Pin at the center of the cut length is recommended to prevent slippage. The roll pin can be located at the horizontal to eliminate exposure

Section XIII: Reinforcing

Step #1 Install Reinforcing Steel

- A.) At large spans or in high wind load areas, internal steel reinforcement may be necessary. Reinforcement steel requirements will vary from job to job. Please reference the Approved Final Shop Drawings for steel reinforcement requirements.
- B.) When steel reinforcement is factory installed into the mullions, fasteners will be used to prevent damage or slippage of the steel during shipment.

