

SERIES 5900

INSIDE GLAZED CURTAIN WALL

INSTALLATION INSTRUCTIONS



Part NO. Y352

APRIL 12, 2019

WHERE WINDOWS ARE JUST THE BEGINNING®



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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 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.

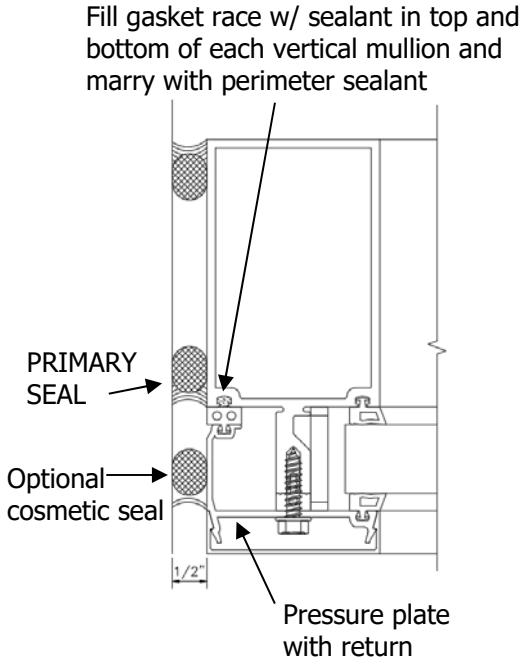
Anchoring surfaces of perimeter construction must be level and plumb within the adjustable limits of the head, jamb, and sill framing.

Section II: Perimeter Application

Perimeter Application

- A.) For anchoring to perimeter and providing a spacer for glazing pockets at head, jamb, and sill.

Note: Anchoring surfaces of perimeter constructions must be level and plumb within the adjustments of the head, jamb, or sill. See "APPROVED" shop drawings for adjustment limits.

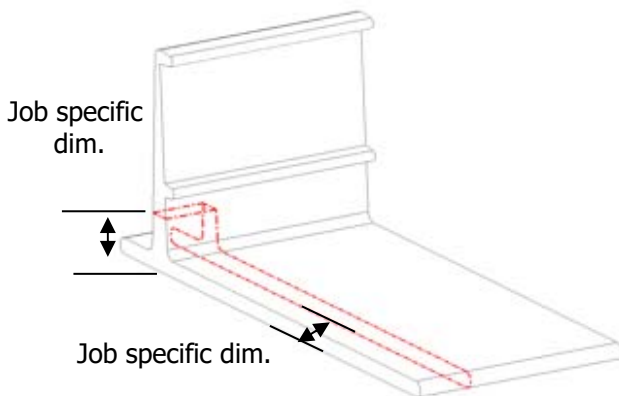
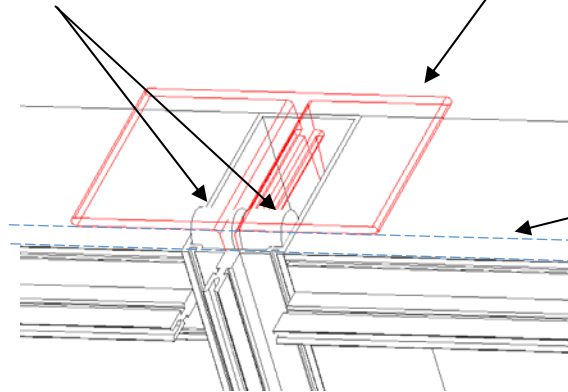


Plug open end of vertical each side of anchor stem to assist with carrying perimeter seal across the verticals. Head shown, sill similar. Plug material not by EFCO

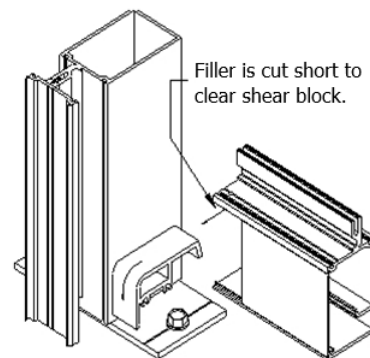
"T" anchor at intermediate mullion. See approved drawings for fastener requirements

The erector must supply and apply bond breaker tape across the face of the anchor to prevent three-sided adhesion

Critical perimeter sealant is shown with two dotted lines.



Custom notch of F and T anchors for aiding sealant application shown with dashed line above is available (by request only) and subject to additional fabrication charge. Notch dimensions are not standard and job specific dimensions must be supplied.



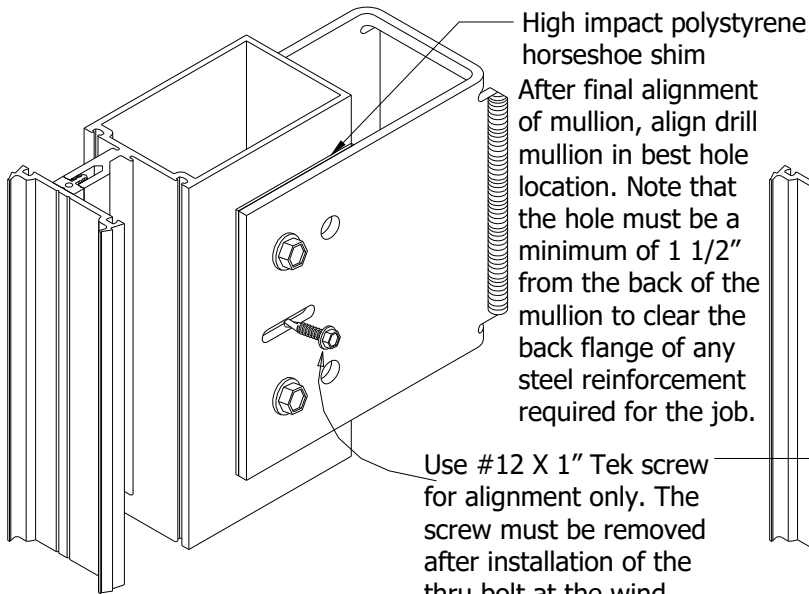
Refer to page #7 for further information on horizontal installation and sealant methods

Note: The perimeter caulking must be done prior to glazing. Reference the "APPROVED" shop drawings for caulk joint size unless otherwise specified. Most sealant manufacturers recommend a 3/8" minimum joint width.

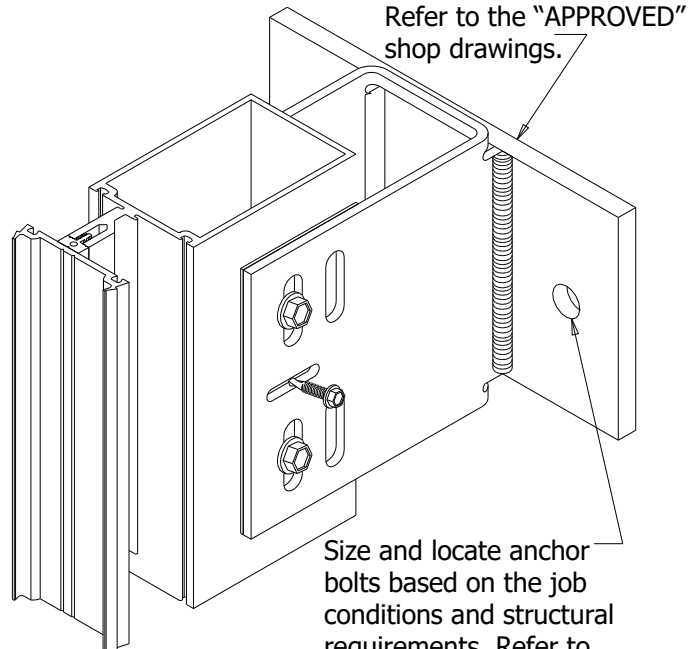
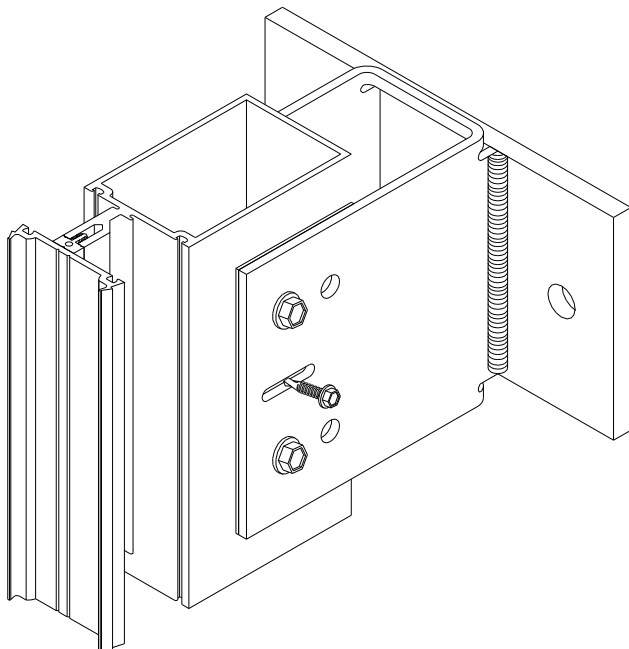
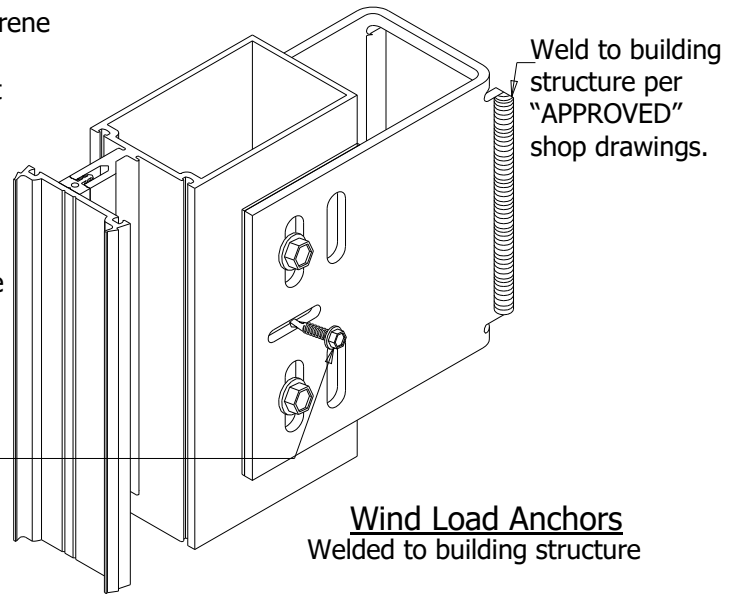
Section III: Anchor Installation

Anchor Installation

- A.) Attach anchors to mullions with temporary alignment screws as shown below.
- B.) Install the vertical mullions in position and attach anchors to the building structure per the "APPROVED" shop drawings.



Dead Load Anchors
Welded to building structure

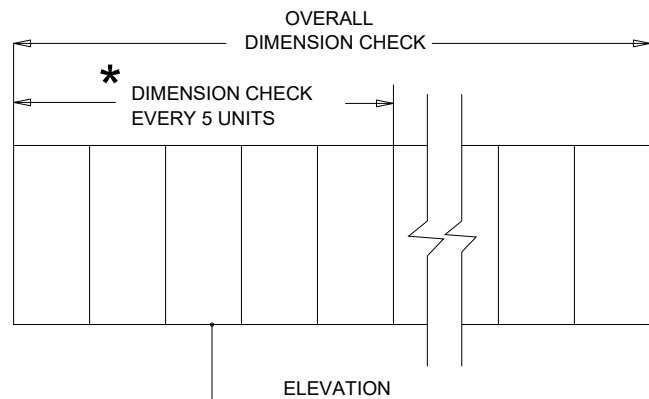


Note: Elevation of slabs must be within adjustment limits of the anchorage system. See "APPROVED" shop drawings for allowable adjustment.

Section IV: Frame Assembly

Frame Assembly

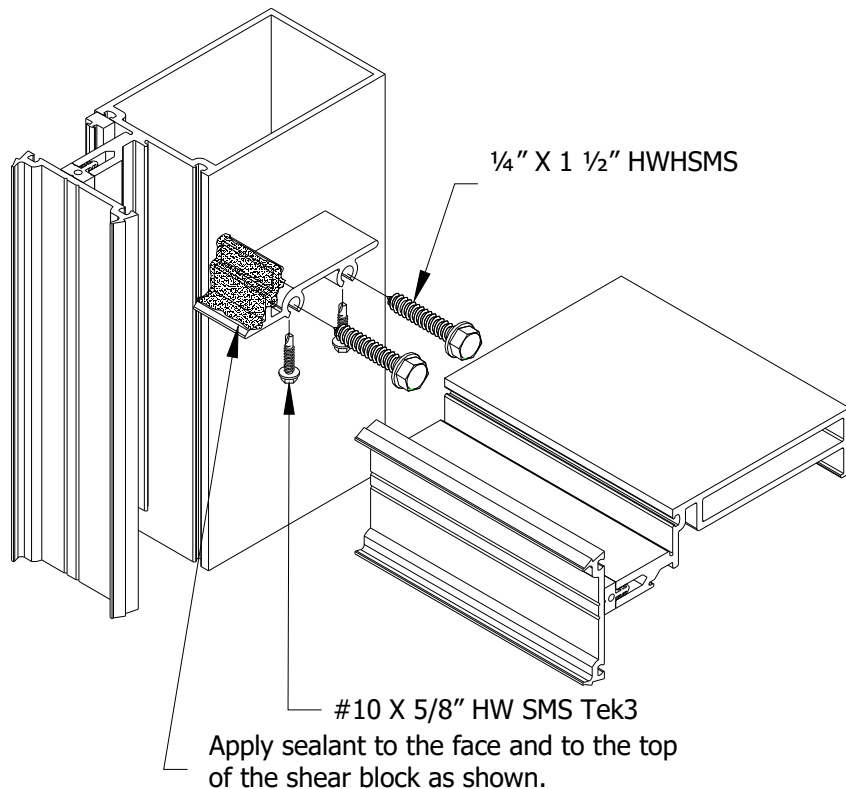
- A.) Assemble shear blocks, splices, anchors, etc. to mullions as required.
- B.) Install the exterior gaskets in the vertical pressure plates as required. The exterior vertical gaskets are to run continuous, butted together at the splice joints.
- C.) Install and anchor the vertical mullions to form the vertical sections per the "APPROVED" shop drawings.
- D.) Attach horizontal members to the shear blocks. Fasten with screws thru the underside of the horizontal members.
- E.) Interior horizontals are cut D.L.O. – 1/32". The erector is to split the difference on both sides.



Note: Check overall frame dimensions on every 5 openings on long runs to avoid dimensional build-up.

*** Note: The commercial cut to length tolerance is $\pm 1/16"$. It is critical to check every 5th "UNIT" for location.**

- F.) The horizontals can be dropped in from the top.
- G.) After the horizontal is in position, attach with #10 X 5/8" HW SMS Tek3 fasteners from the underside.
- H.) Wipe away excess sealant from the face and top of the horizontals.

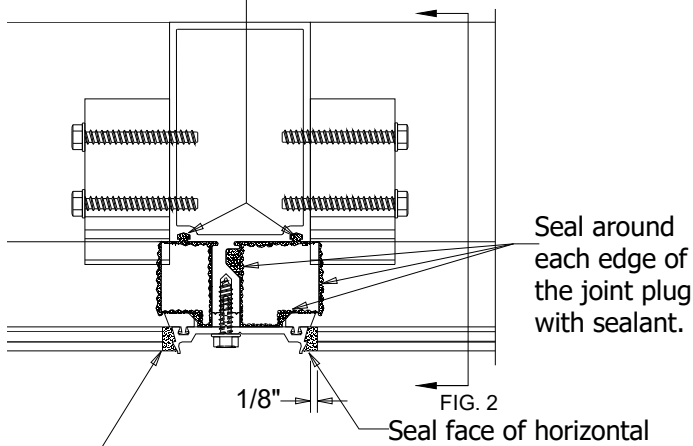


Section V: Frame Installation

Frame Installation

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

Note: Prior to installing the mullion plugs, seal the gasket raceway and the four sides of the metal where the joint plug will sit to close the void at the joint plug locations. (Seal all four sides of mull plug before reinstallation so that sealant on mull plug will marry into sealant that is placed in the pocket.)



Seal the horizontal pressure plate to the vertical pressure plate to insure an air and water tight intersection. Install the covers immediately after applying sealant

FIG. 1

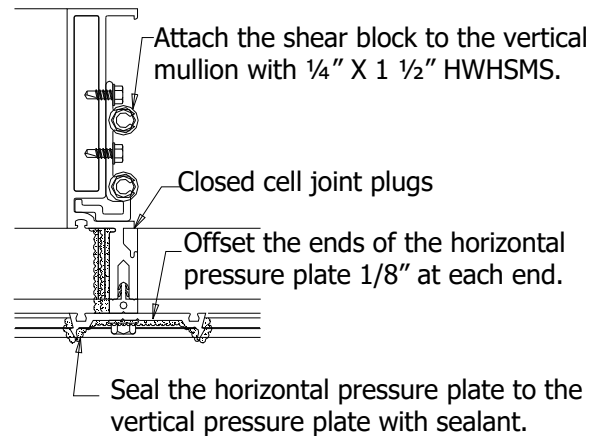
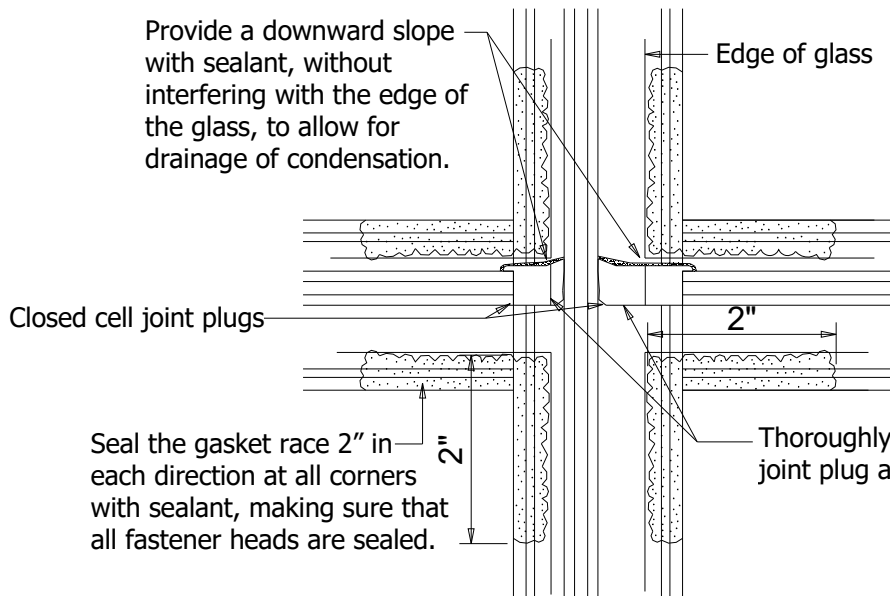


FIG. 2

Horizontal to Mullion Joinery



Note: Each daylight opening should be sealed individually with gaskets and glazing installed immediately, followed with pressure at the corners.

Elevation of Joinery Prior to Setting the Glass

VI: Vertical Splice Joints

Vertical Splice Joints

- A.) Space vertical mullion expansion joints per "APPROVED" shop drawings.
- B.) Keep in mind that spacing may vary with job site temperature. On multiple stacked applications, key horizontals must be installed to establish grades regardless of expansion joint dimension.
- C.) Splice joints should occur at spandrel areas.
- D.) Mullion splice joints for this system are not designed to compensate for varying floor levels. (Reference "APPROVED" shop drawings for allowable adjustment, i.e., anchors.)
- E.) The splice joint width should be based on sealant movement capabilities and the following formula.

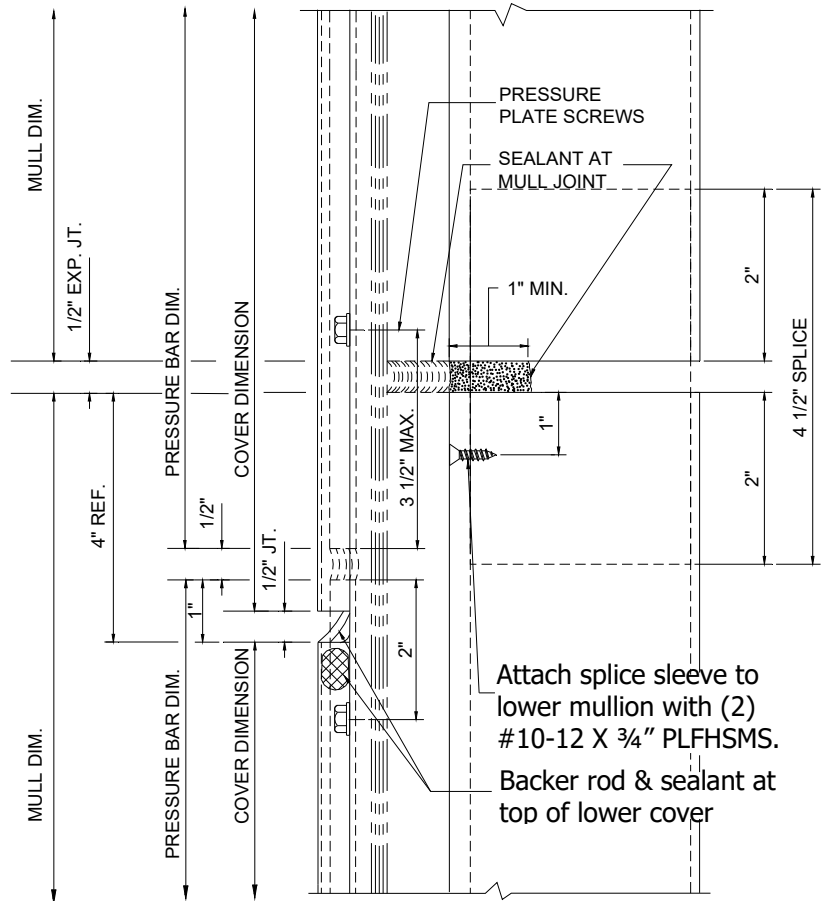
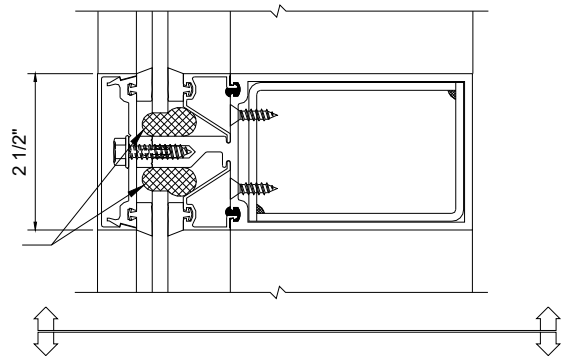
Linear expansion for aluminum in inches = Length X F (temperature degrees difference in Fahrenheit) X .0000129.

- F.) Where head clearance is insufficient to allow top mullions to be lifted over the splice sleeve, a retractable sleeve will be used. The sleeve is taped in the top mullion and dropped to the stop screw in the mullion below.
- G.) Do not match drill anchors until a check of expansion joints and wall installation is performed.

Note: All anchors must be fixed before glazing begins.

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

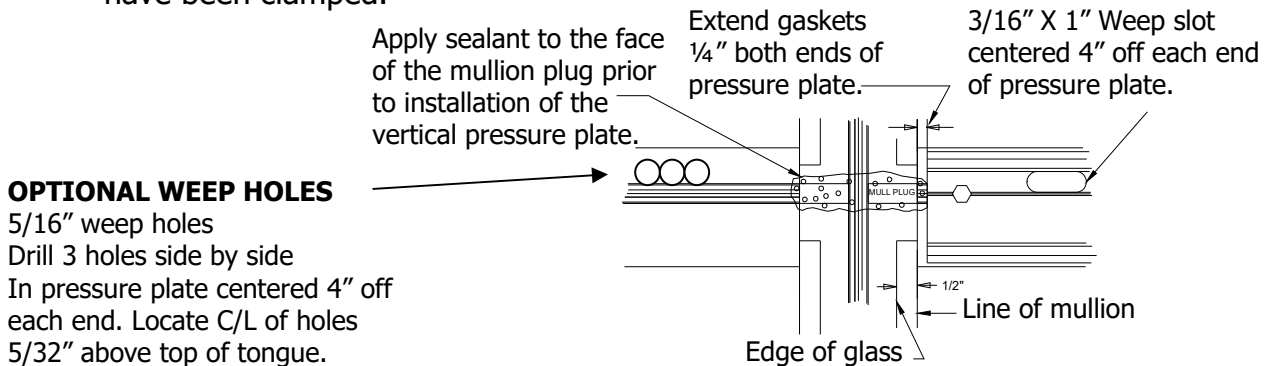
Erector Note: Apply no screws below splice in the upper pressure plate.



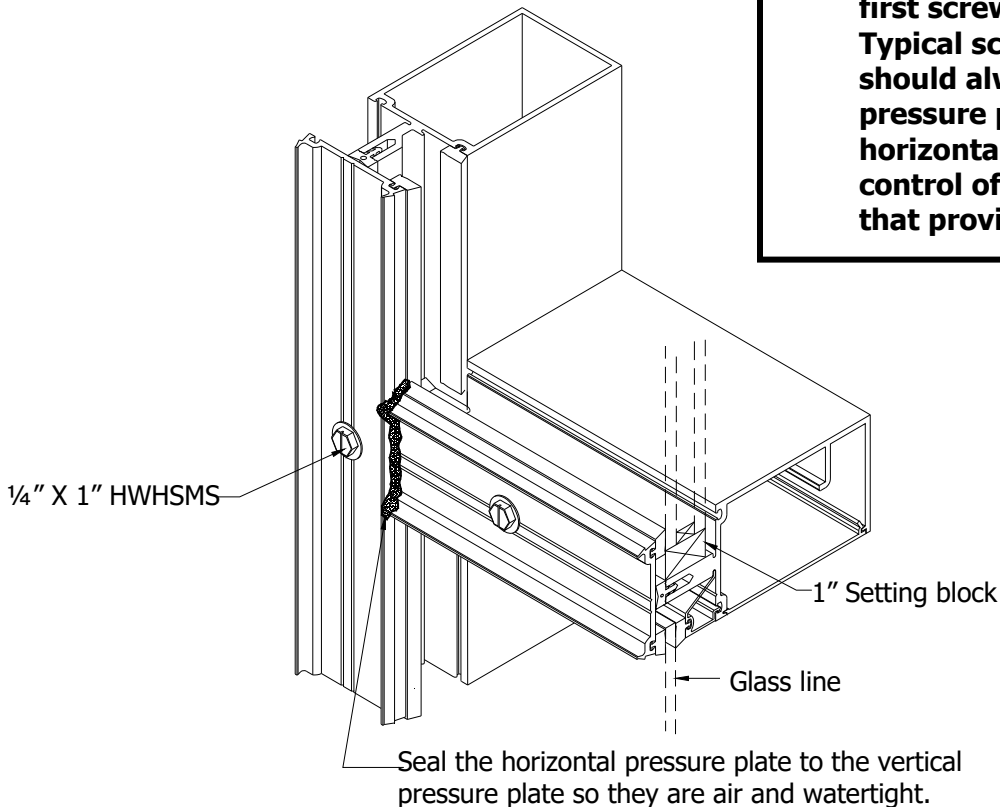
Section VII: Exterior Cover Installation

Pressure Plate Attachment

- A.) Attach pressure plates with 1/4" X 1" stainless steel hex washer head pressure plate screws. Typical spacing is 6" on center.
- B.) Torque screws to 80 inch pounds. In cold weather, first torque all screws to 40 inch pounds.
- C.) When possible, work from the center outward on horizontals and from the sill upward on verticals.
- D.) Torque all screws to the full 80 inch pounds after all four sides of the opening have been clamped.



Note: Reference page #9 for recommended pressure plates at the splice. Install the first screw approx. 3" from the end. Typical screw spacing is 6" O.C. Glazier should always place a screw in the vertical pressure plate directly opposite each horizontal. This will provide maximum control of pressure on the mullion plugs that provides critical sealing function.

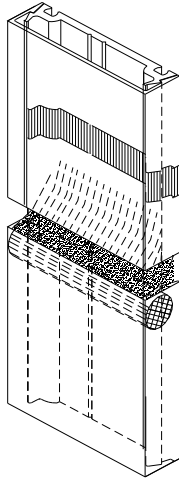
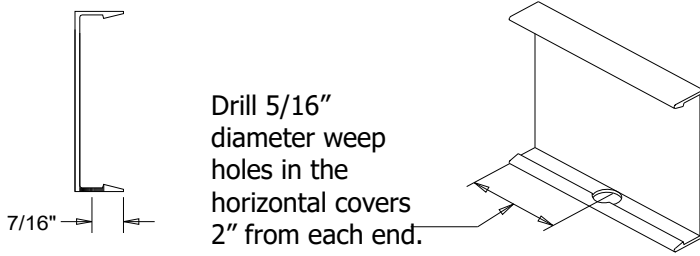


Customer / Installer Note: EFCO setting blocks are typically 4" in length with different depths. If the glazing infill is "NOT BY EFCO" and glazing sizes are larger than 40 square feet, then the glazing details must be reviewed by the glazing manufacturer for proper setting block size.

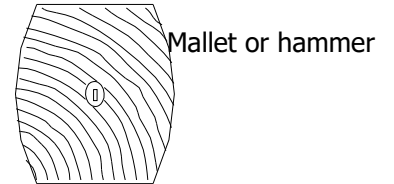
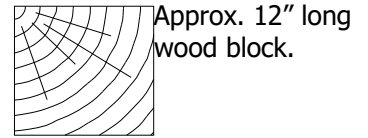
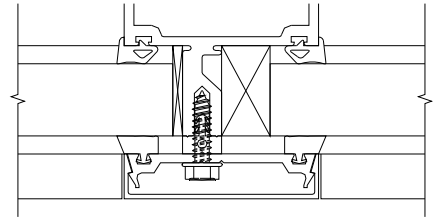
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Snap On Exterior Covers

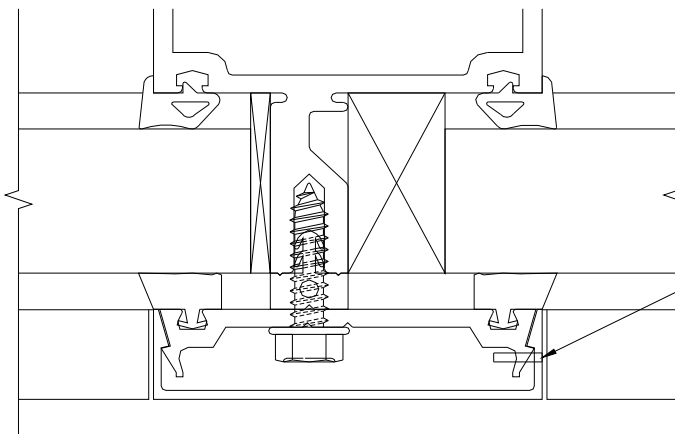
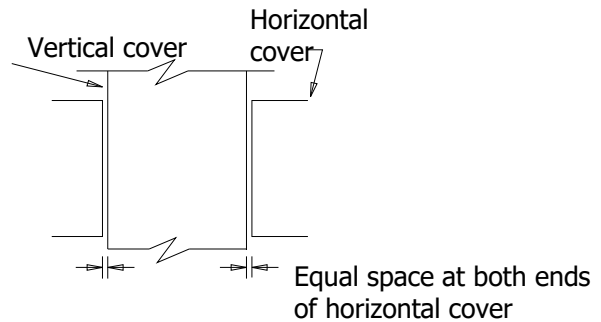
- A.) Set vertical covers as shown on "APPROVED" shop drawings.



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



- B.) Center the horizontal snap cover in the opening, align and engage one side, then use a block and mallet to engage the opposite side.
- C.) Gaps at the ends should be equalized, and are provided to allow installation, thermal movement and weepage.
- D.) Exterior horizontal covers are cut D.L.O. – 1/16".
- E.) The erector is to split the difference on both ends.



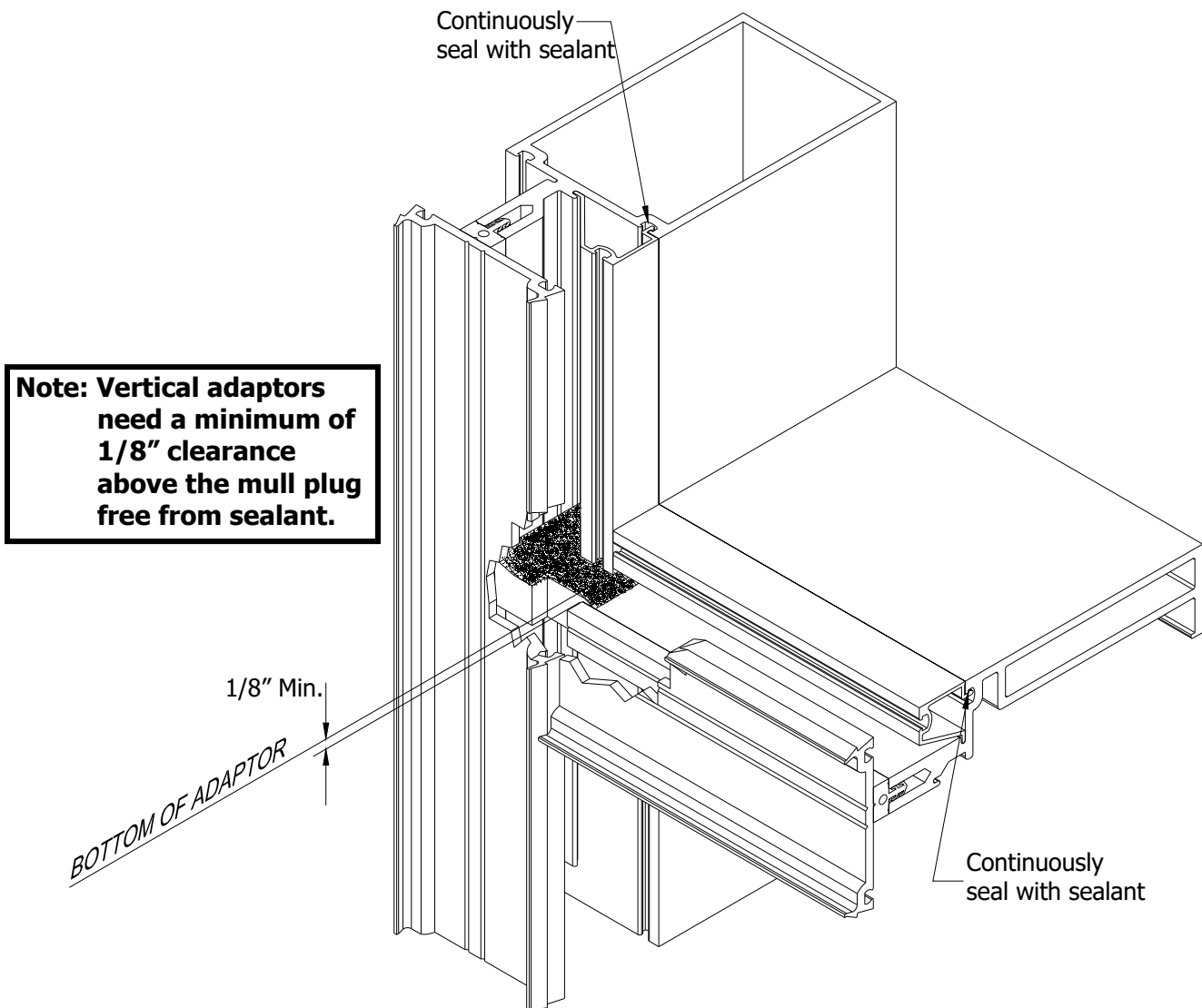
Note: Horizontal covers 1" or more in depth must be mechanically attached, similar to detail below.

A 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 VIII: Glazing Adaptor Installation

Installation of Glazing Adaptors at Openings for 1/4" Infill

- A.) Position the vertical adaptors as shown.
- B.) Place the horizontal adaptors between the verticals.
- C.) Seat the adaptors by applying silicone sealant to all four corners.



Note: Continuously seal the gasket raceway with a generous bead of sealant prior to installing the adaptors. After the adaptors are installed wipe away excess sealant.

Section IX: Glazing

Glazing

- A.) Clean all glazing pockets prior to glazing. This is necessary to avoid clogging the weep system and staining the exterior metal and glass surfaces.
- B.) Apply the preset glazing gaskets to the horizontal exterior glazing pockets.

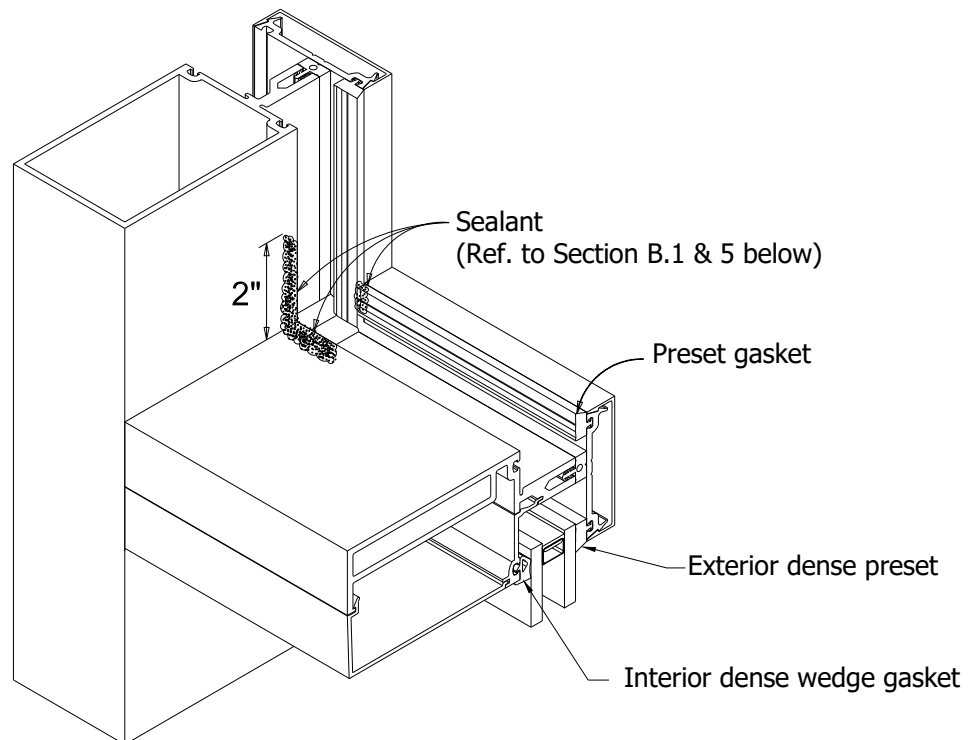


FIG. 3

Note: If the exterior gaskets are difficult to install into the glazing race, a light coat of mineral spirits may be applied to the gasket.

- 1.) Apply silicone sealant into the raceway a minimum of 2" each way at all corners to the inside face of the glazing pocket. See FIG. 3
- 2.) Gaskets can become somewhat deformed during storage in cartons. The gaskets should be removed from the cartons and / or rolls several hours prior to use and laid flat or hung to allow for recovery of the correct shapes. The temperature must be at least 50 degrees to allow this recovery.
- 3.) Cut vertical gaskets D.L.O. + 1 3/4"
- 4.) Cut horizontal gaskets D.L.O. + 1/2"

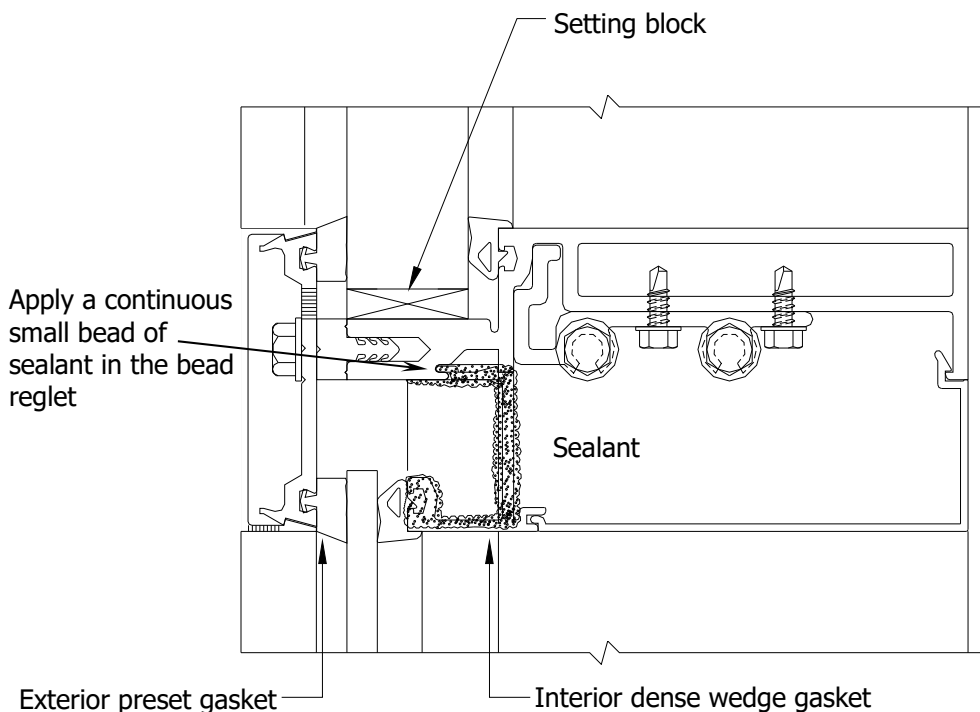
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- 5.) Seal all corners. Pull the horizontal gaskets, seal the ends with sealant, and jam into the vertical gasket to insure a snug fit as shown in FIG. 3 above.

Section IX: Glazing

Glazing

- C.) Position and install the setting blocks and shallow pocket jamb spacers per the "APPROVED" shop drawings.
- D.) Install infill; typical edge bite is 1/2".
- 1.) Hold infill above the sill horizontal and load the jamb side into the deep pocket. Rotate the opposite side of the infill into the shallow pocket, and position infill into the opening. Set the infill squarely onto the setting blocks with the exterior face of the infill pushed up against the exterior gasket. Take care not to roll the exterior gasket out of the race.
 - 2.) Install the interior wedge in short lengths to 3 edges of the infill to hold temporarily.
 - 3.) Install the glazing bead at the head. NOTE: Seal along the face of the mullion prior to installation of the glazing bead to provide a weather tight seal. Tool and clean excess sealant from the exposed surfaces after the bead is positioned as shown in FIG. 4.
 - 4.) Install the jamb spacers as shown in FIG. 5 on page #15.



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. 4

Section IX: Glazing

Glazing

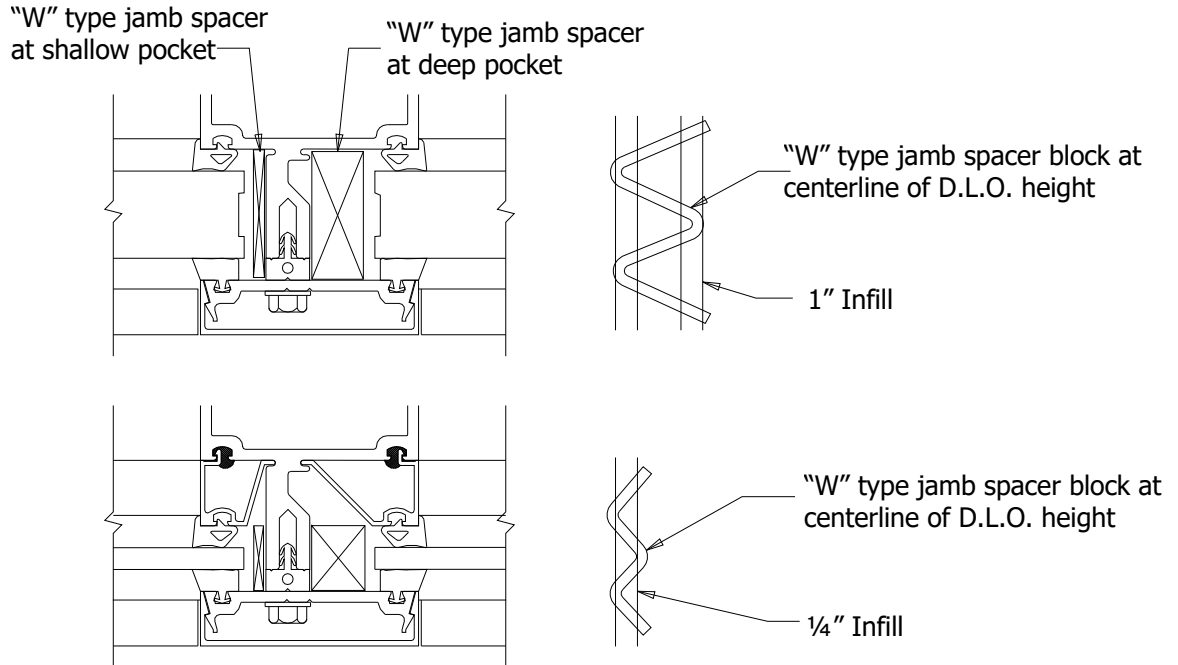
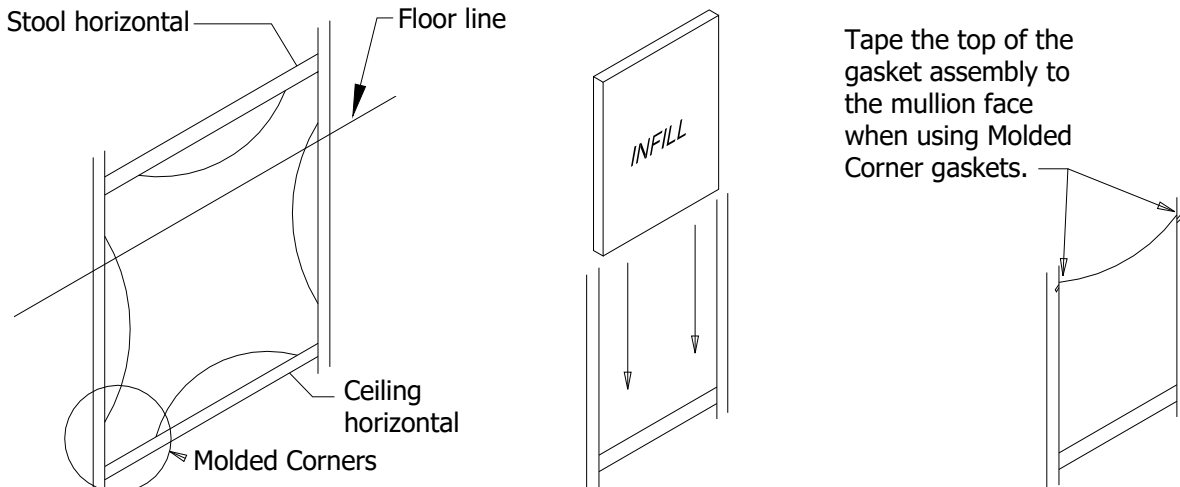


FIG. 5

- 5.) Remove the temporary glazing wedges and install the interior wedge. Cut the gasket the same as noted in page #13.
- 6.) Gaskets with factory molded (Vulcanized) corners are optional. If molded corners are used, installation should be as follows:
 - a.) Start at the top and bottom corners and work to the center. Make sure the corners are square and true, and that full engagement of the gasket is achieved. The gasket should be slightly larger requiring some "crowding". Gaskets should **NEVER BE STRETCHED TO FIT.**



Section IX: Glazing

Glazing Spandrel Areas at Floor Lines

- A.) The top of each spandrel infill should consist of a horizontal assembly with a bolt on pressure plate as shown in FIG. 9 below.
- B.) Leave the horizontal above the floor line off (stool horizontal) while erecting the frames.
- C.) Set the exterior preset gasket in 2 sides and the sill of the opening for spandrel infill. Tape the top of the gasket to the mullion face, if using Molded Corner gaskets. See FIG. 8 page #15.
- D.) From the floor line, lower the infill down into the glazing pocket onto pre-located setting blocks and into the final position as shown in FIG. 7 on page #15.
- E.) Drop the stool horizontal down over the top of the infill onto the pre-located shear blocks sealed as shown on page #8. The exterior preset must be installed into the horizontal pressure plate prior to dropping the horizontal on the shear blocks.
- F.) Attach the horizontal to the shear blocks. Install the glazing bead and interior gaskets as described on pages #14 and #15.
- G.) The spandrel areas can be glazed from the exterior as noted in the reglaze instructions below, if desired, in lieu of drop-in glazing.

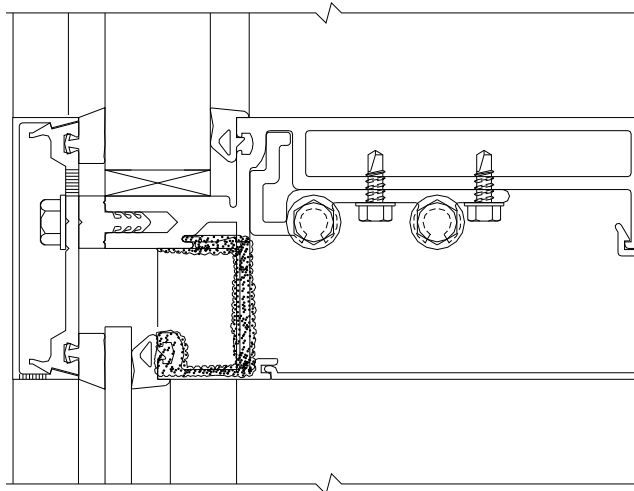


FIG. 9

Glaze Spandrel Infill From Exterior

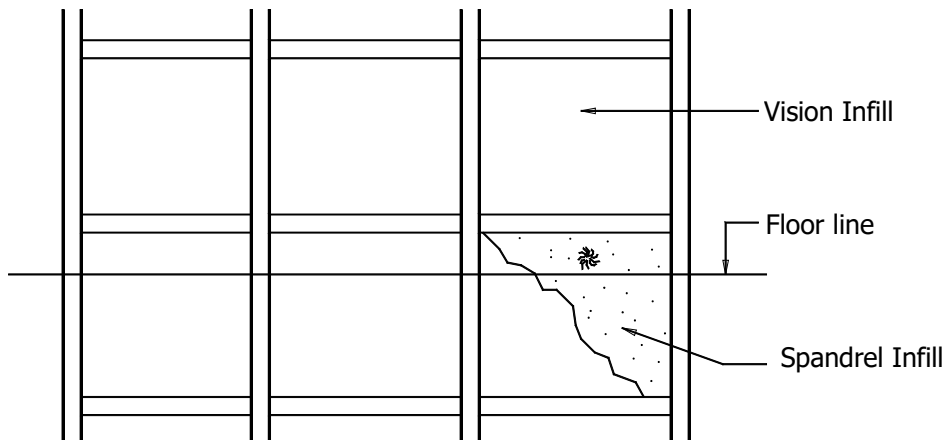
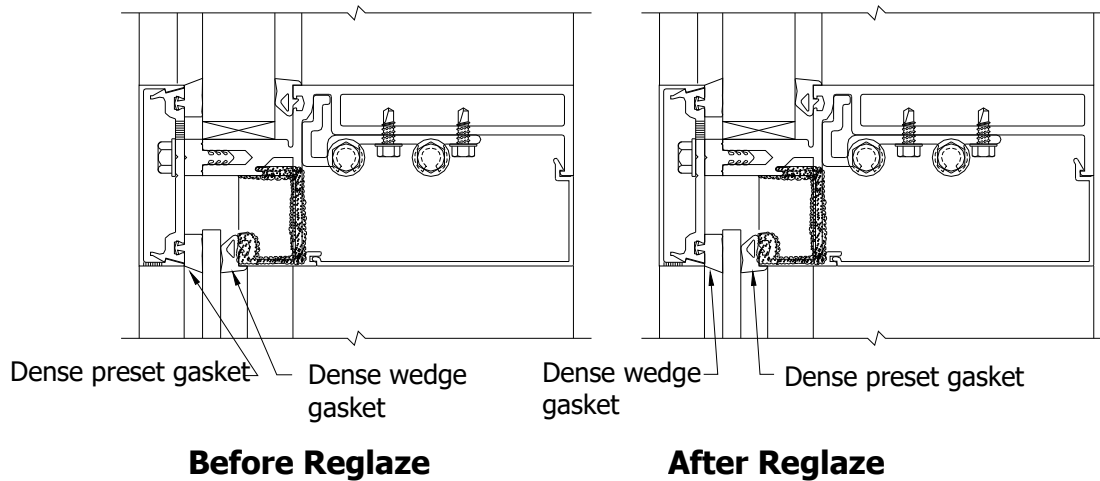
- A.) Remove the broken or damaged infill and gasket material.
- B.) Remove the pressure plate at the top of infill lite. Ref. FIG. 9.
- C.) Reinstall the preset gasket to the interior side of the glazing pocket. (Replace if damaged)
- D.) Set the replacement infill down on top of the pre-located setting blocks and tight against the preset gasket.

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- E.) After the infill is in the final position, apply the pressure plate and cover to the top of the lite. Reseal all joints per page #9 "Frame Installation". Apply the dense wedge to the exterior side of the infill.

Section IX: Glazing

Glaze Spandrel Infill From Exterior



Glaze Spandrel Infill From Interior

- A.) The vision lite above the damaged or broken spandrel infill must be deglazed.
- 1.) Remove the interior wedge gasket.
 - 2.) Remove the glazing bead at the head.
 - 3.) Remove the infill.
 - 4.) Remove the horizontal mullion at the top of the damaged or broken spandrel infill.
- B.) Remove the gasket material from the spandrel area.
- C.) Remove any excess debris from the gutter that could clog the weep system or cause staining of the infill and metal below.

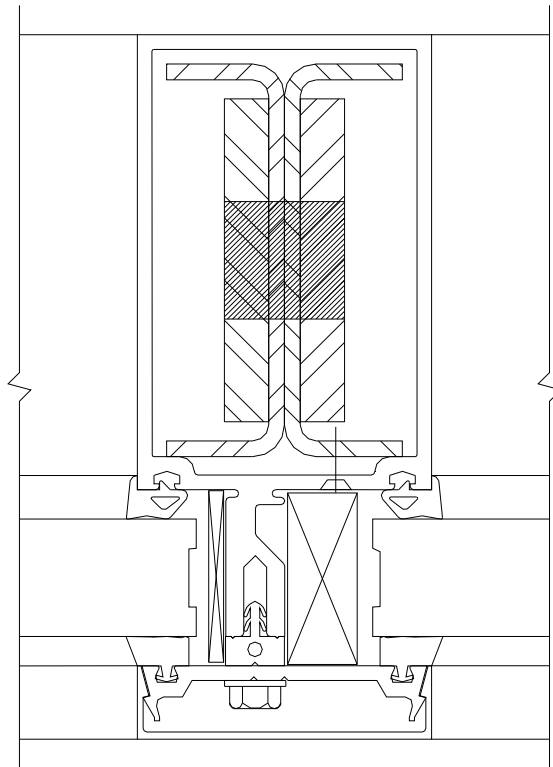
Series 5900 Inside Glazed Curtain Wall Installation Instructions

- D.) Follow instructions on pages 8 thru 14 in glazing the spandrel areas at floor lines. It may be necessary to remove the ceiling line from the floor below to achieve access for gasket installation.
- E.) Follow instructions in standard glazing procedures to reinstall vision lites.

Section X: Steel Reinforcement

Steel Reinforcement

- A.) At large spans or in high wind load areas, steel reinforcement may be necessary.
- B.) Reinforcement requirements will vary on a per job basis.
- C.) Reference the "APPROVED" shop drawings for steel requirements and locations.



- D.) When steel reinforcement is factory installed in the mullions, use fasteners to prevent damage or slippage of the steel during shipping.