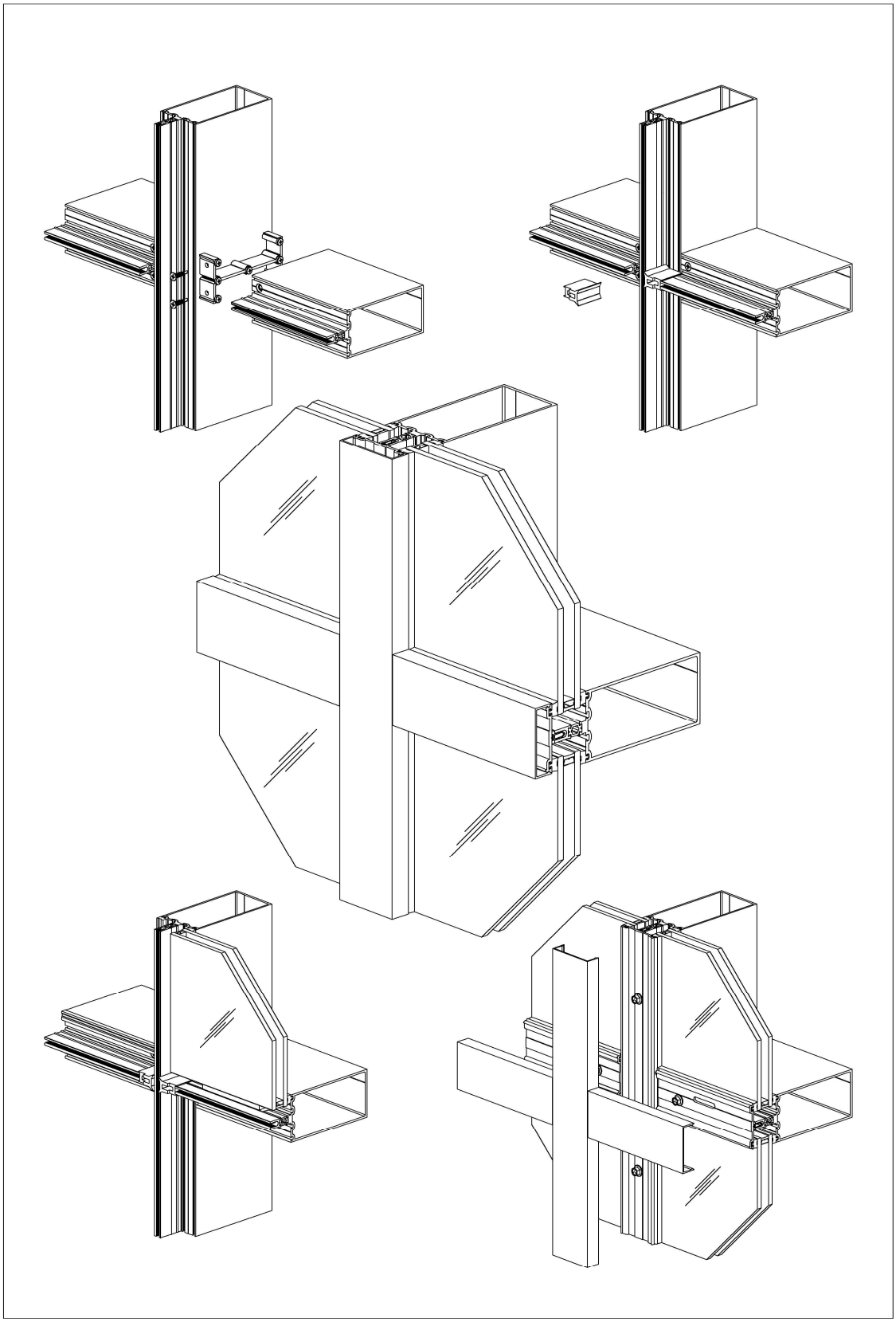
ACRO 3000 Thermal Series Curtain Wall System



Installation Manual

Installation Notes

1. Do not drop, roll or drag boxes of aluminum framing. Move and stack boxes with proper support to prevent distortion. If fork lifts are used, be especially careful about striking the boxes when lifting or moving.

2. Store in a dry, out of the way area. If rain exposure, condensation or any water contact is likely, then all packaging material should be removed. Wet packaging materials will discolor and may stain aluminum finishes and paints.

3. All materials should be checked for quality and quantity upon receipt, ACRO must be notified immediately of any discrepancies in shipment. Check to make sure that you have the required shims, sealants, supplies and tools necessary for the installation.

4. Carefully check the openings and surrounding conditions that will receive your material. Remember, if the construction is not per the construction documents, it is your responsibility to notify the general contractor in writing. Any discrepancies must be brought to the general contractor's attention before you proceed with the installation.

5. Gather your shop drawings, materials, packing list, and this installation manual. Carefully review parts location, the sequence it goes therein, when you glaze it and how you seal it. Installation instructions are of a general nature and may not cover every condition you will encounter. The shop drawings and/or installation manuals were prepared specifically for the product.

6. Any material substitutions must be of equal or greater quality.

7. Make certain that material samples have been sent for compatibility testing for all manufacturer's sealants involved. Make certain sealants have been installed in strict accordance with the manufacturer's recommendations and specifications.

8. Remember to isolate, in an approved manner, all aluminum from uncured masonry or other incompatible materials.

9. System-to-structure fasteners are not supplied by ACRO. Fasteners called out on shop drawings are to indicate minimum sizes for design loading.

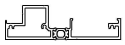
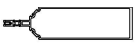
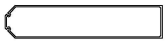
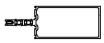
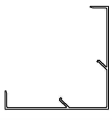
10. Please contact the ACRO DirecTech application engineering department for any project specific condition not covered by these instructions.

11. ACRO storefront and/or curtain wall framing is typically completed before drywall, flooring and other products which may still be in process. Take the extra time to wrap and protect the work produced.

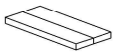
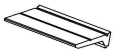
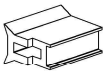
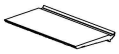
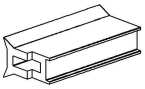
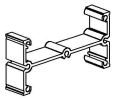
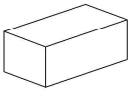
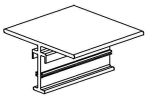
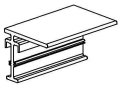
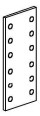
12. Cutting tolerances are plus zero, minus one thirty second unless otherwise noted.

13. Check our website, www.acroaluminum.ca, for the latest installation manual update prior to commencing work.

CURTAIN WALL PROFILES

	**Horizontal / Mullion / Head / Sill / Jamb** 2-1/2" x 5-1/8"	**TCW111**		**Jamb Cap** 1" x 3/4" For SSG	**TCW286**
	**Horizontal / Mullion / Head / Sill / Jamb** 2-1/2" x 5-1/8" For SSG	**TCW110**		**Door Subframe**	**TCW260 /TCW261**
	**Horizontal / Mullion / Head / Sill / Jamb** 2-1/2" x 8"	**TCW119**		**Door Subframe** For 1-3/4" Triple Glazing	**TCW260 /TCW263**
	**Horizontal / Mullion / Head / Sill / Jamb** 2-1/2" x 8" For SSG	**TCW118**		**Door Stop Bracket**	**TCW265**
	**90° Outside Corner Mullion** 2-1/2" x 5-1/8"	**TCW272**		**Door Stop**	**TCW267**
	**90° Outside Corner Mullion** 2-1/2" x 8"	**TCW279**			
	**Horizontal / Mullion / Head / Sill / Jamb** 2-1/2" x 5-1/8" For 1-3/4" Triple Glazing	**TCW112**			
	Standard Pressure Plate Drilled 9" O.C.	**TCW255**			
	**Standard Face Cover** 2-1/2" x 3/4"	**TCW120**			
	**Glazing Adaptor** For 1/4" Glazing In Triple System	**TCW286**			
	**Glazing Adaptor** For 1/4" Glazing	**TCW287**			
	**90° Outside Corner Pressure Plate** Drilled 9" O.C.	**TCW271**			
	**90° Outside Corner Face Cover** 4" x 4"	**TCW280**			

ACCESSORIES(1" GLAZING)

 **Standard Glass Chair** For 1" Glazing 6" Long	**TCW331**	 **Setting Block** For 1-3/4" Glazing 4" Long	-
 **Glass Chair** For SSG 1" Glazing 6" Long	**TCW335**	 **Standard Joint Plug** For 1" Glazing	-
 **Glass Chair** For 1-3/4" Glazing 6" Long	**TCW337**	 **Standard Joint Plug** For 1-3/4" Glazing	-
 **Standard Shear Block** For 5-1/8" & 8" Depth Members	**TCW280**	 **PVC Anti-Rotation** For 1" Glazing	**TCW320**
 **"T" Anchor** For 5-1/8" Depth Members	-	 **Anti-rotation Foam** 1" Thick. 25 psf Density foam	-
 **"F" Anchor** For 5-1/8" Depth Members	-		
 **"T" Anchor** For 8" Depth Members	-		
 **"F" Anchor** For 8" Depth Members	-		
 **Mullion Splice Plate** For 5-1/8" Depth Members 16" Long	-		
 **Mullion Splice Plate** For 8" Depth Members 16" Long	-		
 **Temporary Glass Retainer** 2" Long	-		
 **Setting Block** For 1/4" Glazing 4" Long	-		
 **Setting Block** For 1" Glazing 4" Long	**TCW332**		

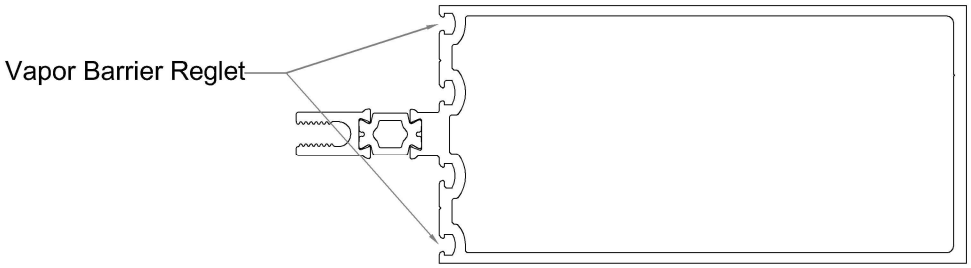
FASTENERS(1" GLAZING)

 **#10 x 1" FH S/S** For Attachment of Horizontal to Standard Shear Block	**TCW326**		
 **#10 x 2" PHSMS** For Attachment of Standard Shear Block to Mullion	**TCW325**		
 **1/4 - 20 x 3/4" PH S/S MS** For Attachment of Pressure Plate to Mullion	**TCW330**		
 **#12 x 2" FH S/S** For Attachment of F/T Anchor to Ceiling & Sill angle to Floor	-		
 **#10 x 1" F/H Self Drilling** For Sill Angle to CW Frame	-		

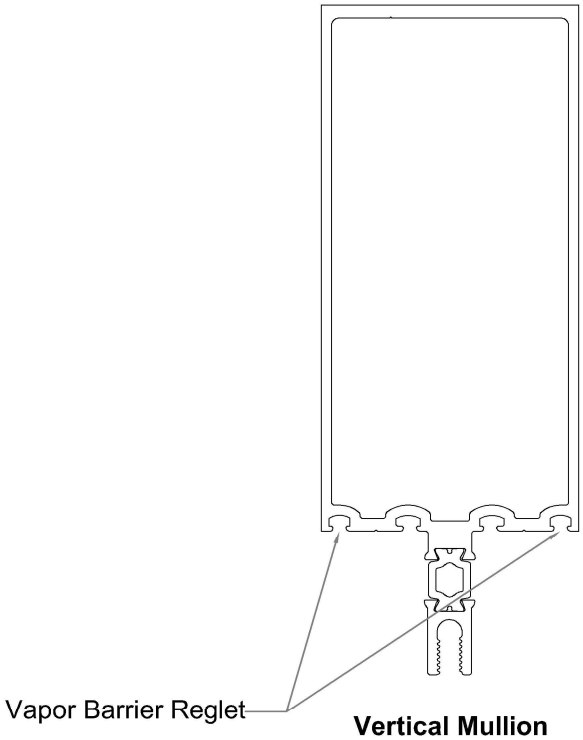
VAPOR BARRIER

ATTACHING VAPOR BARRIER TO ACRO 3000

Vapor barriers can be installed to both mullions and horizontals by means of vapor barrier reglets, see image below. Please follow the vapor barrier manufacturer's installation instructions for correct installation of the vapor barrier.



Horizontal Mullion

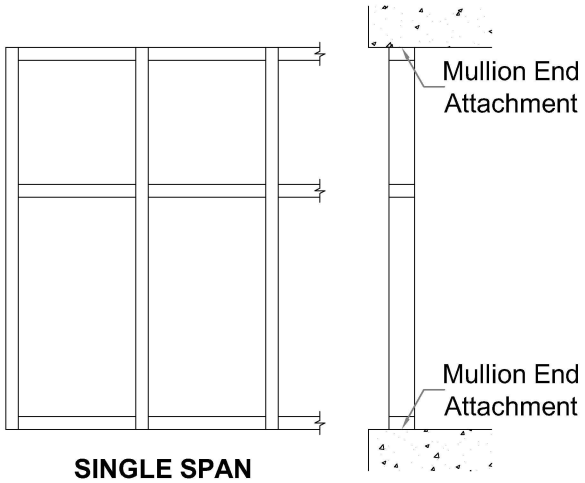


Vertical Mullion

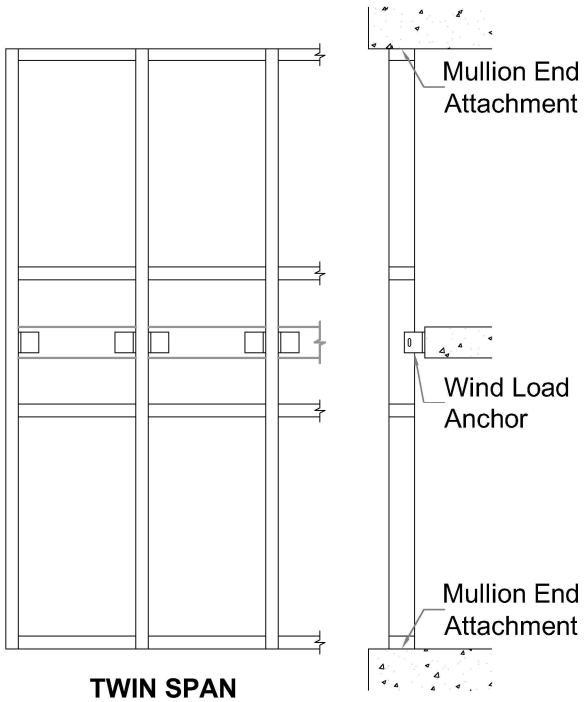
FRAME FABRICATION

FRAME TYPES / ANCHORING METHODS

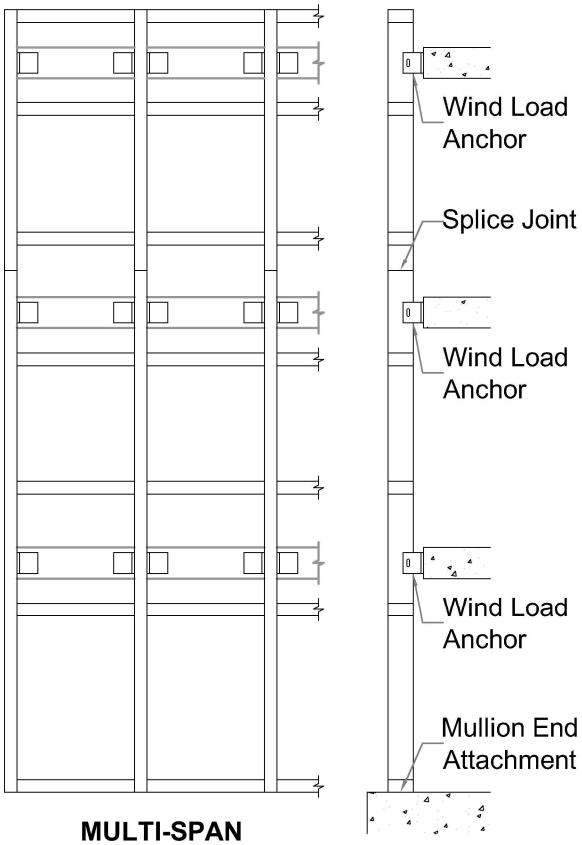
The following is a guideline for common types of frames. Refer to shop drawings for exact layout of frames.



SINGLE SPAN



TWIN SPAN



MULTI-SPAN

Smaller units may be assembled on the ground and tipped in place. Larger units require being stick assembled in place.

Note: If ACRO does not prepare the shop drawings for this project, a qualified engineer must approve all anchors, their arrangement, and mullion selection.

All anchors must be attached to structurally sound material that will accommodate the anchor reactions.

FRAME FABRICATION

FRAME TYPES / ANCHORING METHODS

Using Perimeter Anchor:

-Mullions must be notched as shown in **Detail 1** on **Page-6**

Using Mullion End Anchors:

ACRO 3000 has two possible end anchoring conditions: "T" and "F".

-"T" anchors are used with intermediate mullions at the head.

-"F" anchors are used with jamb mullions at the head.

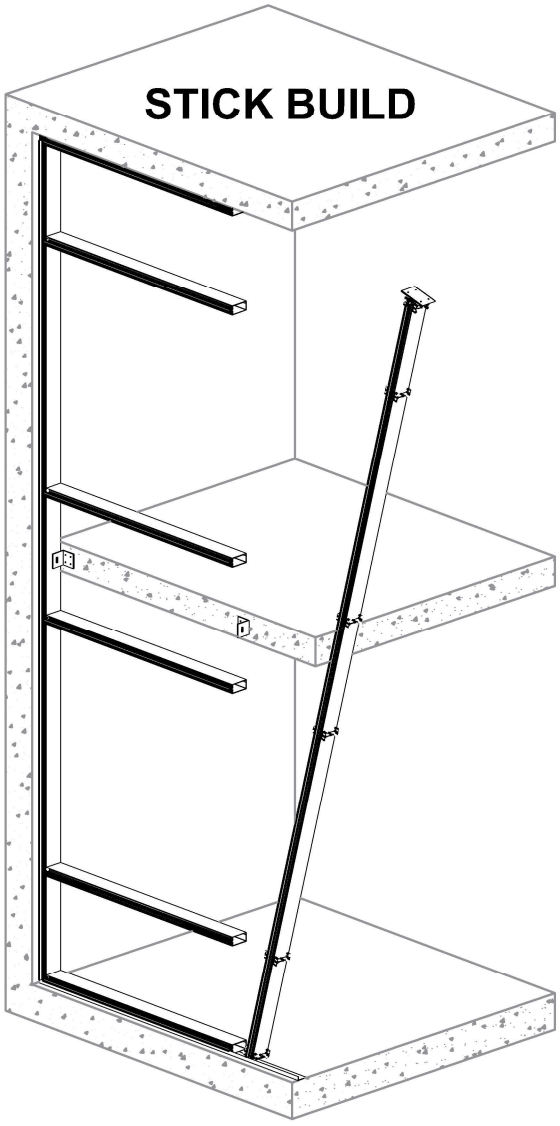
Mullions should be pre-assembled with shear blocks, end anchors, and steel or aluminum reinforcing if necessary.
End anchors should be pre-drilled for anchor fasteners according to approved shop drawings or engineering calculations.

Framing Members for Stick Build:

-Notched head members are used at end bays to clear the shear blocks.

-Closed horizontal members are used at all intermediate locations except at end bays.

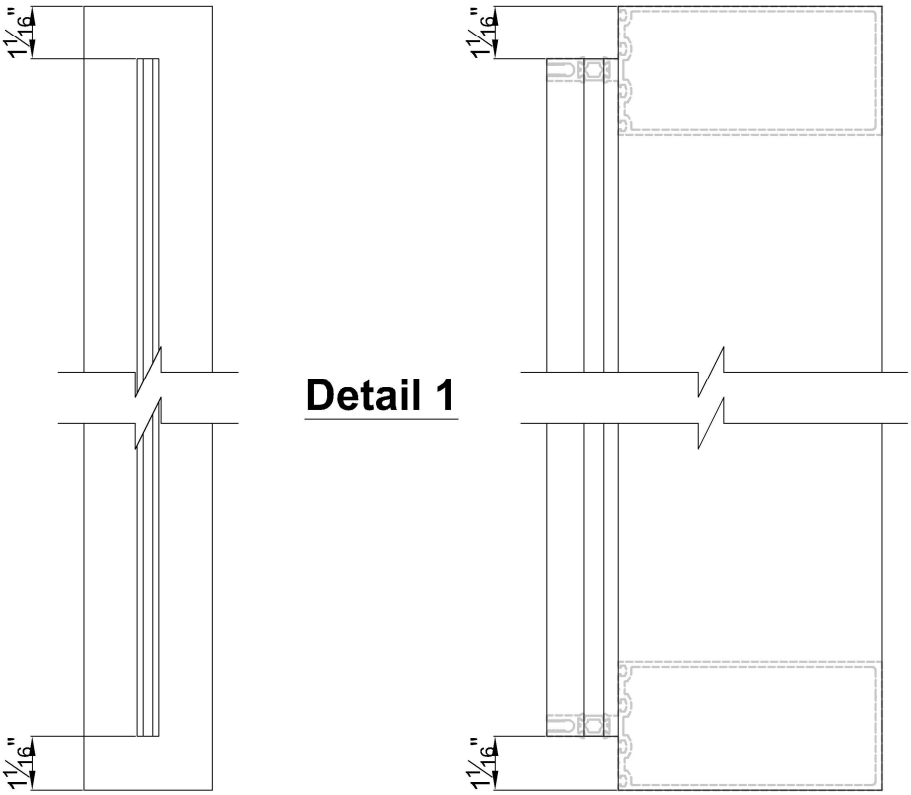
Note: When using stick build construction, check overall frame width every fifth mullion as the wall is installed. A buildup of cumulative tolerance errors may occur, resulting in excessive DLO spacing.



Detail 1

FRAME FABRICATION

FABRICATE MULLIONS



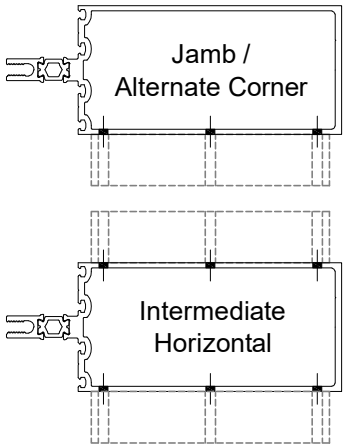
Step 1
Allow for 3/4" caulk joint at top of frame.
Allow for 1/2" caulk joint at bottom of frame.
Allow for 3/8" caulk joint at left & right sides of frame.
Allow for 1/2" joint at vertical splices.
Note: Mullions at door jambs are sealed against the substrate at the sill without a shim space at that location.

Step 2
Cut all typical and jamb mullions members to dimensions as shown in **Detail 1**.

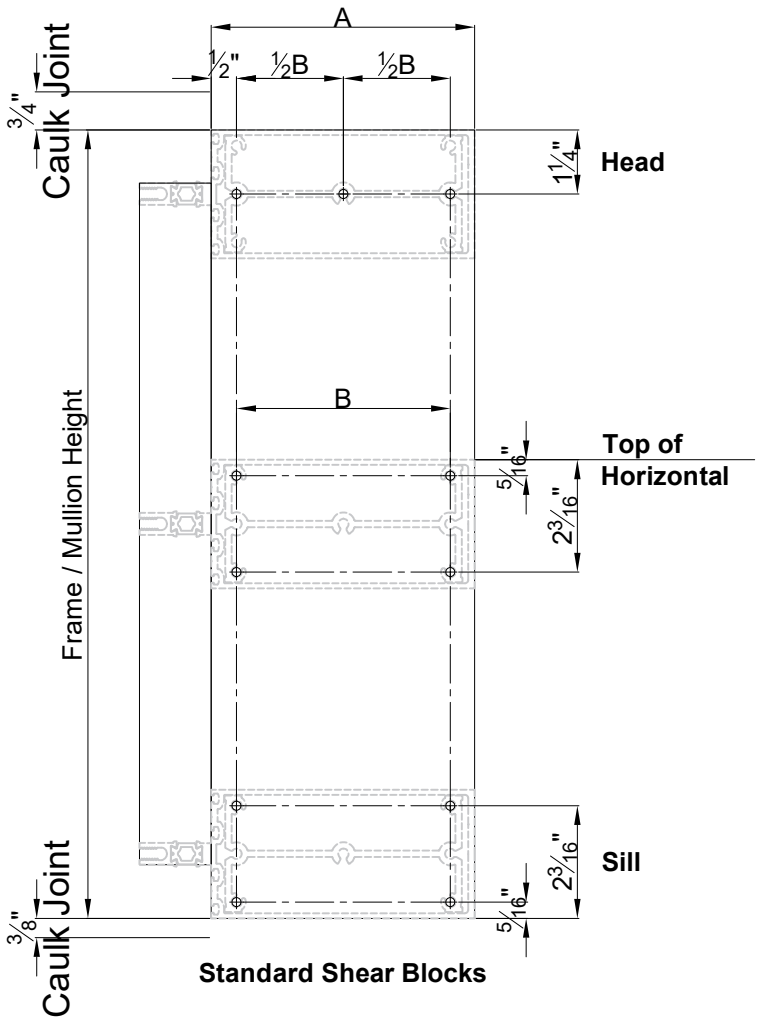
FRAME FABRICATION

STEP 3
FABRICATE MULLIONS

-Mullion hole locations for shear blocks are shown below.
-Drill 0.117" dia. holes for shear block attachment at the locations indicated.
See **Detail 2**.



Dim"A"	Dim"B"
5-1/8"	4-3/16"
8"	4-3/16"

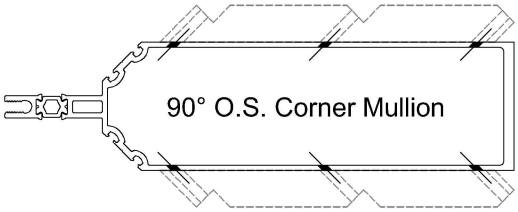


Detail 2

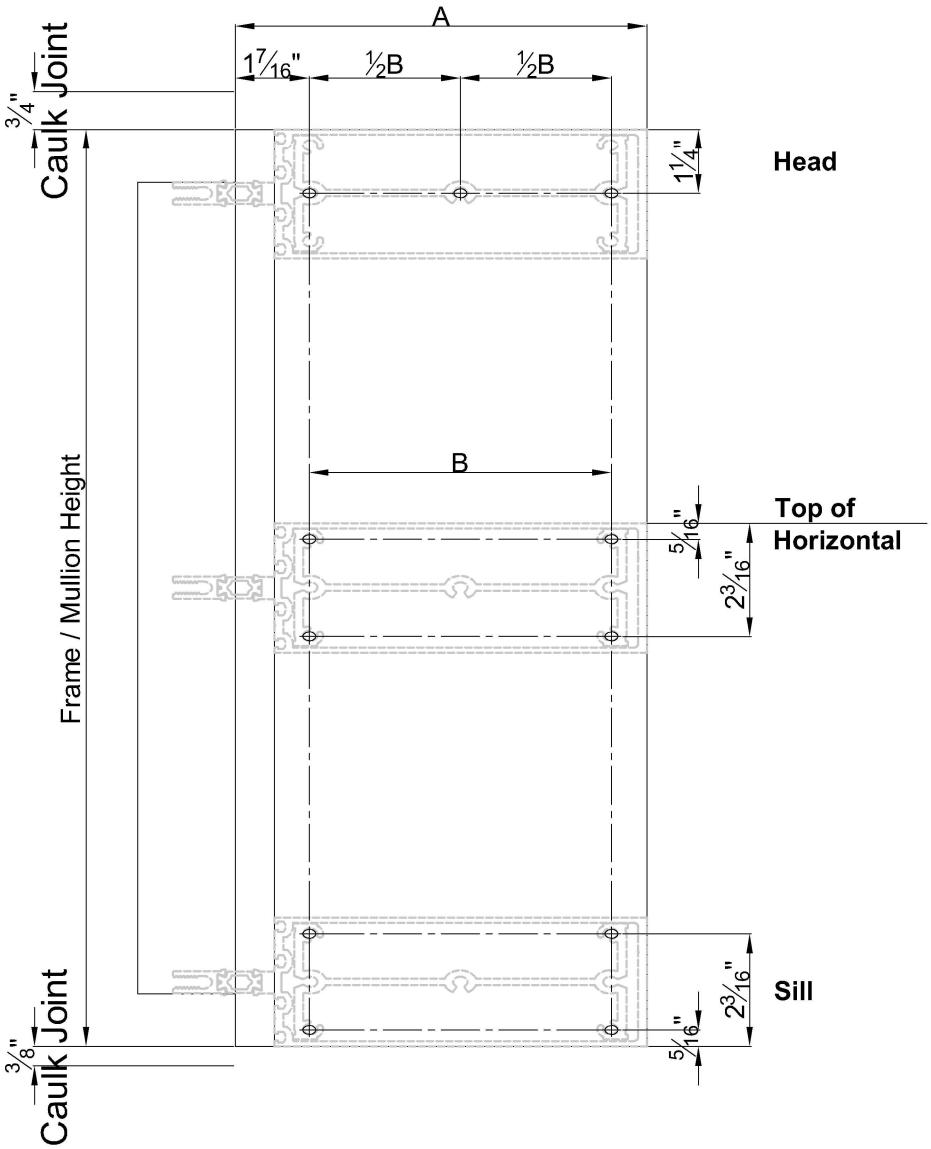
FRAME FABRICATION

STEP 3 (Continued)
FABRICATE 90° OUTSIDE CORNER MULLIONS

-Mullion hole locations for shear blocks are shown below.
-Drill 0.117" dia. holes for shear block attachment at the locations indicated.
See **Detail 3**.



Dim"A"	Dim"B"
5-1/8"	5-7/8"
8"	5-7/8"



Detail 3

FRAME FABRICATION

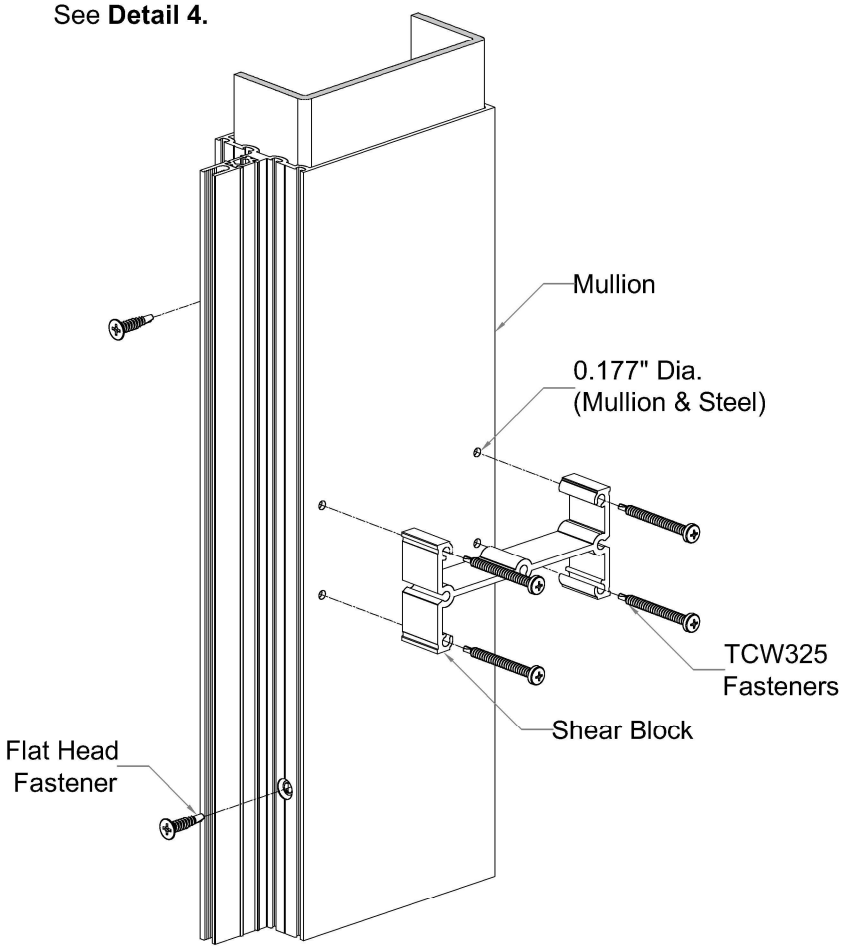
STEP 4 (Optional)
USING STEEL REINFORCING

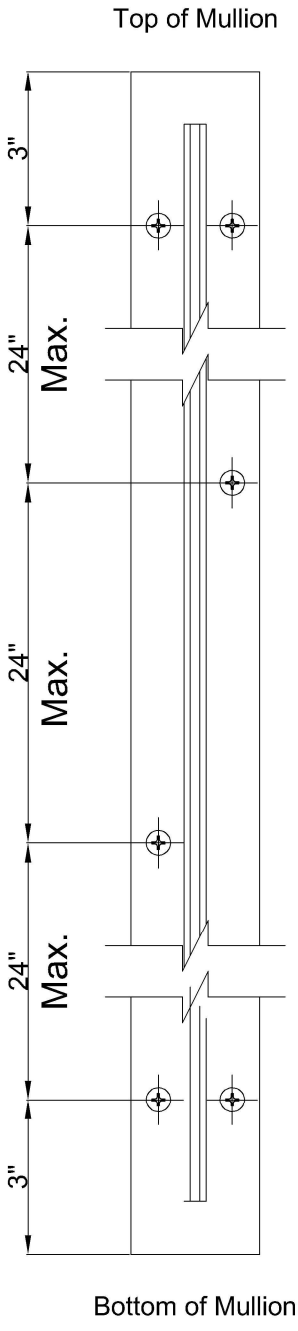
When engineering calculations require the mullions to be reinforced with steel, secure the reinforcing to the mullion using the appropriate fasteners.
- -Start 3" from both ends of the mullion and install a fastener on both sides of the mullion tongue.
- -Stagger the fasteners on either side of the tongue going up the mullion.
- -Seal all screw heads with sealant.

Note: Exact size of reinforcing, size and location of fasteners to be determined by a qualified engineer.

Steel reinforcing is also attached on the sides of the mullion with the attachment of shear blocks.
- -Drill 0.177" dia. clear holes in the mullion only.
- -Match drill 0.177 dia. tap holes in the reinforcing only.
- -Attach the shear blocks with TCW325 fasteners.

See **Detail 4.**





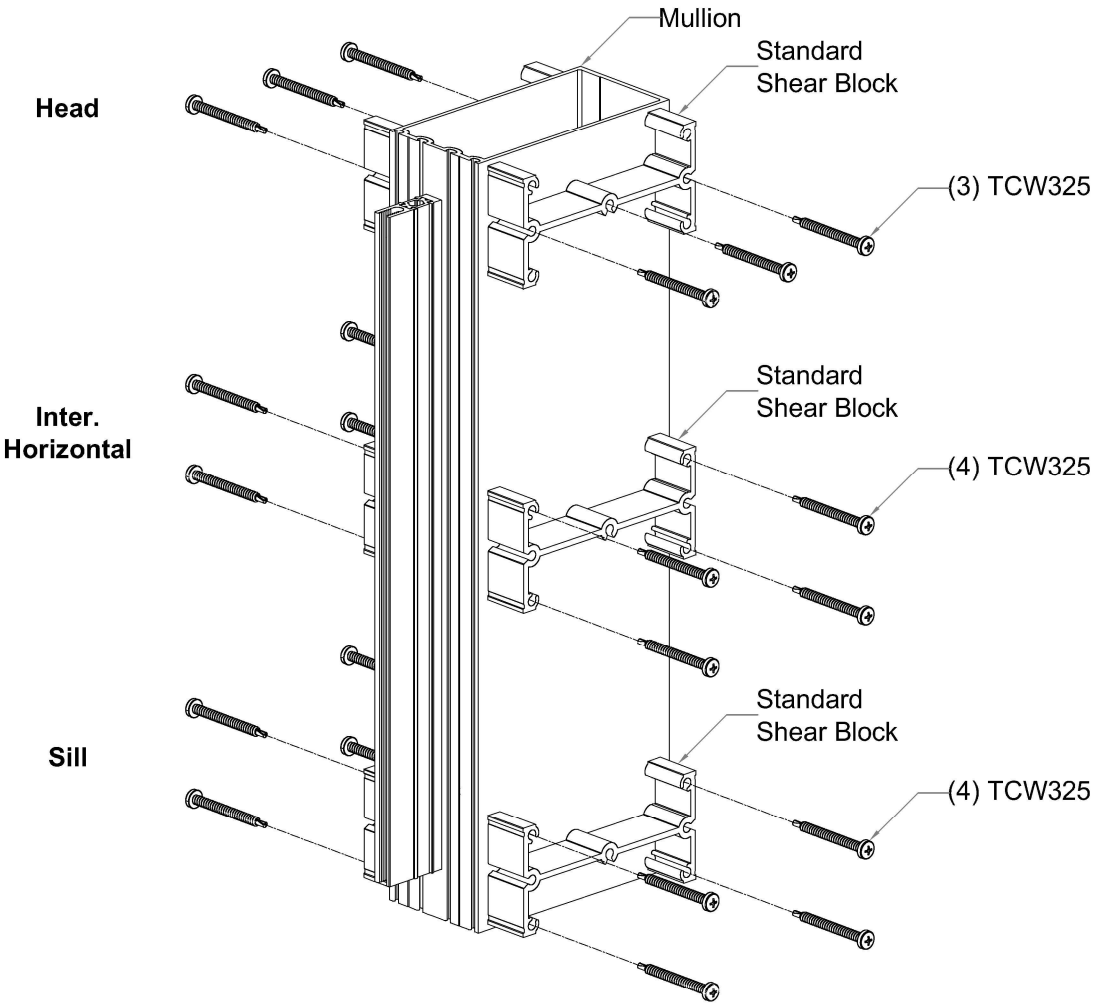
Detail 4

FRAME FABRICATION

STEP 5
ATTACH SHEAR BLOCKS FOR HORIZONTAL

Standard shear blocks are used to attach horizontal members to the jambs and mullions.
Attach top shear blocks to jambs and mullions with (3) TCW325 fasteners in center holes.
Attach intermediate and sill shear blocks to jambs and mullions with (4) TCW325 fasteners in four corners.
Add additional fasteners on oversize glass to support deadload.

See **Detail 5.**



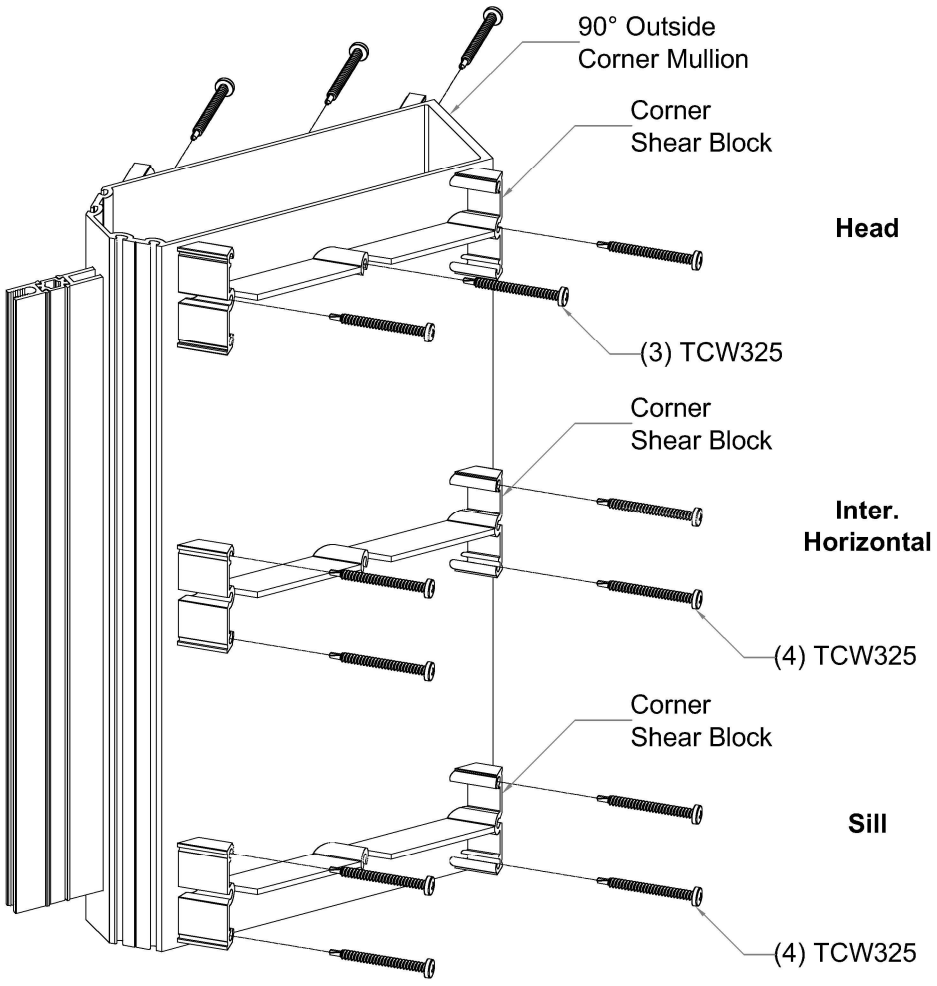
Detail 5

FRAME FABRICATION

STEP 5 (Continued)
ATTACH SHEAR BLOCKS FOR HORIZONTAL

Standard shear blocks are used to attach horizontal members to the jambs and mullions.
Attach top shear blocks to jambs and mullions with (3) TCW325 fasteners in center holes.
Attach intermediate and sill shear blocks to jambs and mullions with (4) TCW325 fasteners in four corners.
Add additional fasteners on oversize glass to support deadload.

See **Detail 6.**



Detail 6

FRAME FABRICATION

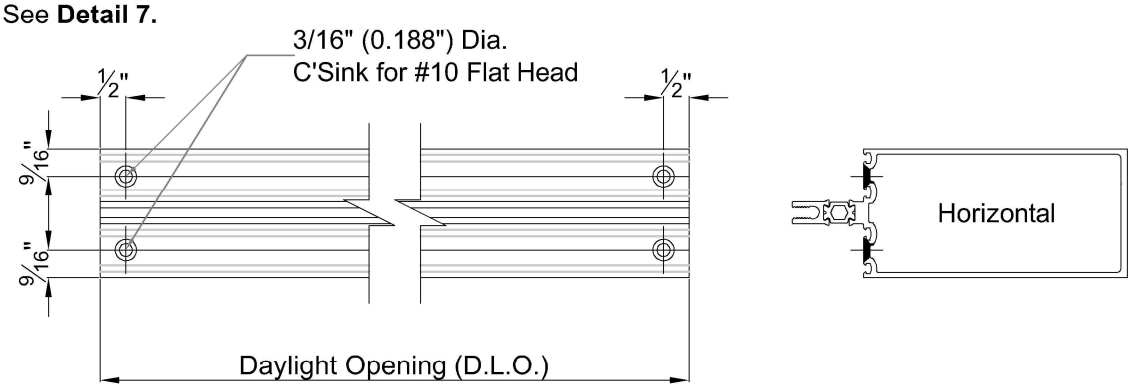
STEP 6
FABRICATE HORIZONTAL MEMBERS

-Cut all horizontal members to the daylight opening as shown in shop drawings.
-Horizontal members must be fabricated for shear block attachment as follows:

Horizontals with Concealed Fasteners:

-Layout hole locations on the face of the horizontal at both ends as shown below.
-Drill 3/16" (0.188") dia. holes and countersink for #10 flat head fasteners.

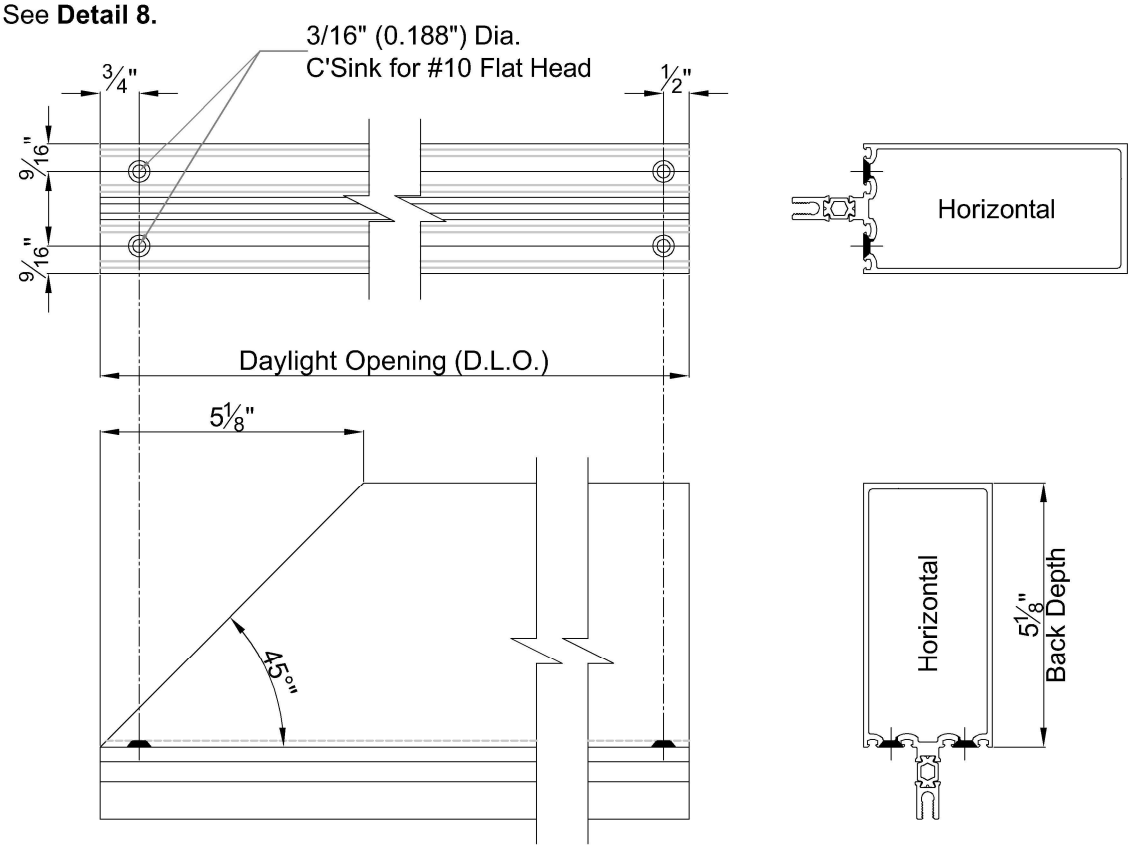
See **Detail 7.**



Detail 7

FABRICATE HORIZONTAL MEMBERS @ 90° OUTSIDE CORNER

See **Detail 8.**



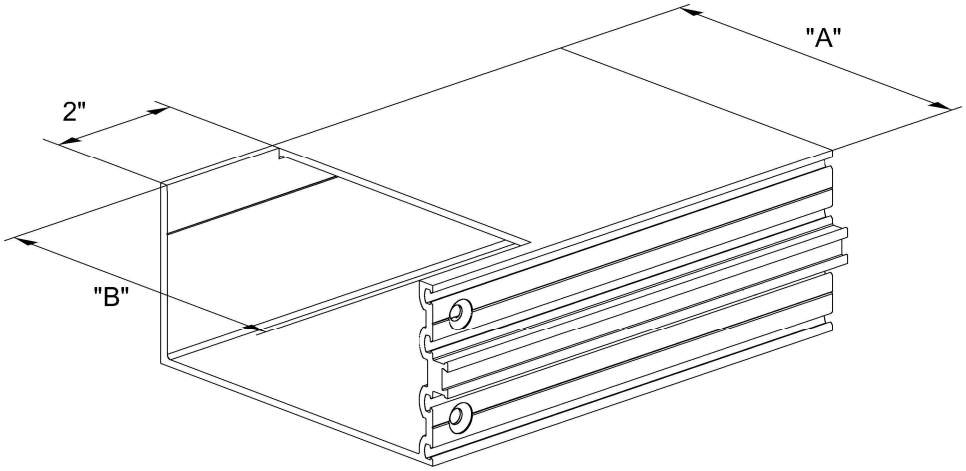
Detail 8

FRAME FABRICATION

STEP 6 (Continued)
FABRICATE HORIZONTAL MEMBERS

Head Horizontal with Shear Block at End Bays:

-All head horizontal must be notched at each end to clear mullion end shear block and block screws.
-See **Detail 9** below for notch dimensions.



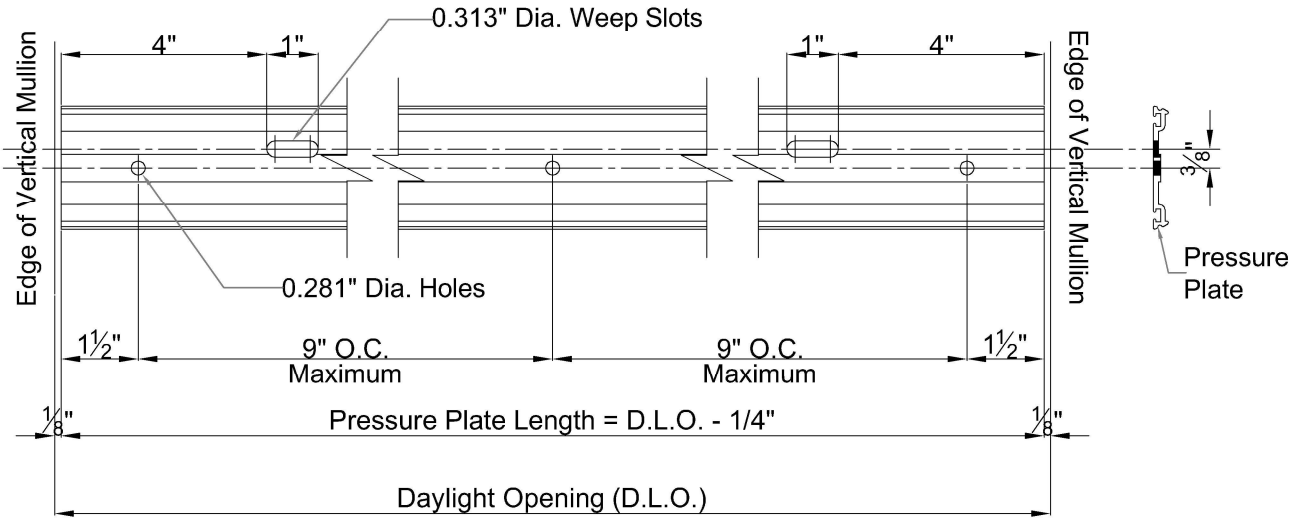
Dim"A"	Dim"B"
5-1/8"	4-3/4"
8"	4-3/4"

Detail 9

FRAME FABRICATION

STEP 7
FABRICATE PRESSURE PLATES

-Cut horizontal pressure plates to the daylight opening between verticals minus(-) 1/4".
-Pressure plate stock lengths have 0.281" dia. attachment holes factory made every 9".
-After cutting, drill additional holes if required to ensure that end holes are 1-1/2" from each end.
-Drill 2 weep slots per daylight opening (D.L.O.). Weep slots must be 0.313" x 1" and must be located 4" from each end of D.L.O. as shown in **Detail 10.**



Detail 10

Vertical Pressure Plates:

-Cut mullion and jamb pressure plates to the same length as the mullions.
-If mullions are spliced, cut pressure plates to accommodate for 1/2" expansion joint as shown in **Step 12** on **Pages 17 & 18.**
-Drill additional attachment holes if required to ensure that end holes are 1-1/2" from each end.

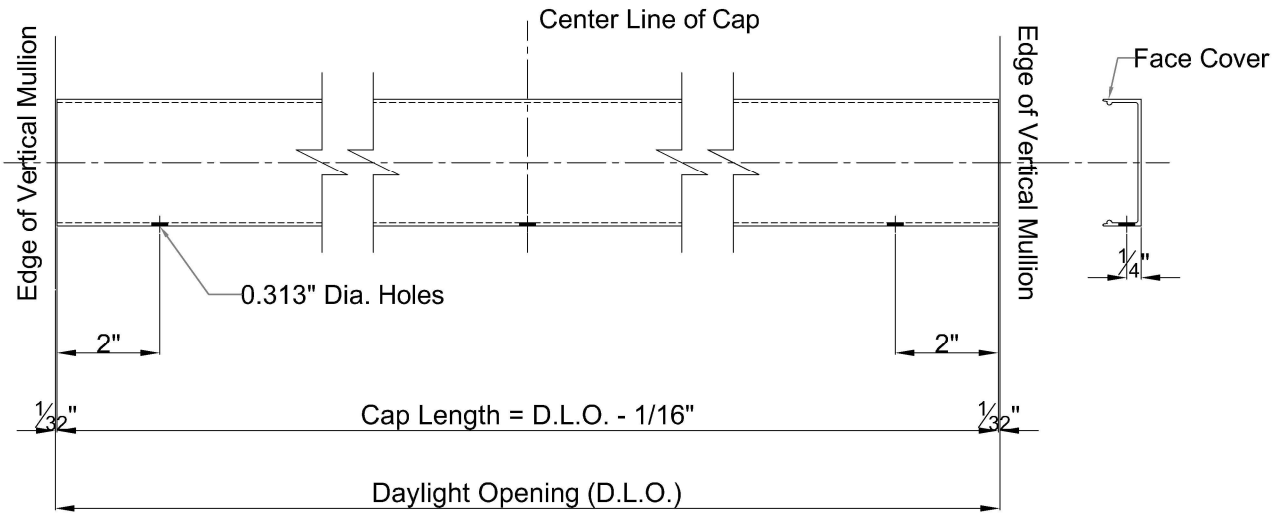
FRAME FABRICATION

STEP 8
FABRICATE FACE COVERS

Horizontal Face Covers:

-Cut horizontal face covers to the daylight opening between mullions minus(-) 1/16".
-Drill two 0.313" diameter weep holes and must be located 2" from each end of face cover as shown below.
-If the cap length longer than 48", need to drill a 0.313" diameter holes in the middle.

See **Detail 11.**



Detail 11

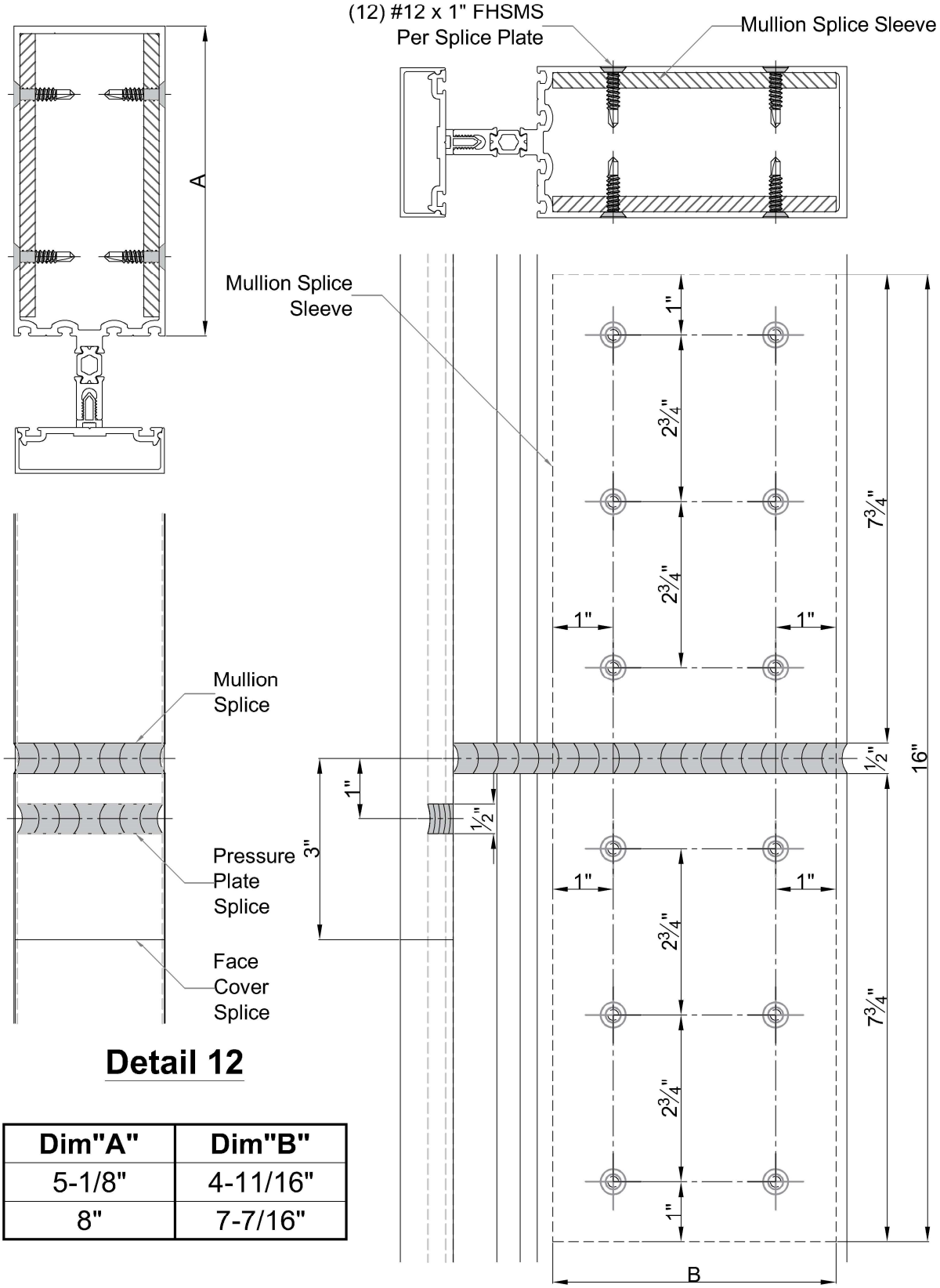
Mullion Face Covers:

-Cut mullion face covers to the same length as the mullions unless the verticals are spliced.
-If mullions are spliced, cut mullion face cover to accommodate for 1/2" expansion joint as shown in **Step 12** on **Pages 17 & 18.**

FRAME INSTALLATION

STEP 9
TYPICAL VERTICAL SPLICE

Stagger Mullion, Pressure Plate, and Face Covers Splice Joints as Shown Below.
-Drill 0.117" dia. holes on splice plate at the locations indicated.
-Drill 0.25" dia. holes and countersink on mullion for #12 flat head fasteners.



Detail 12

Dim"A"	Dim"B"
5-1/8"	4-11/16"
8"	7-7/16"

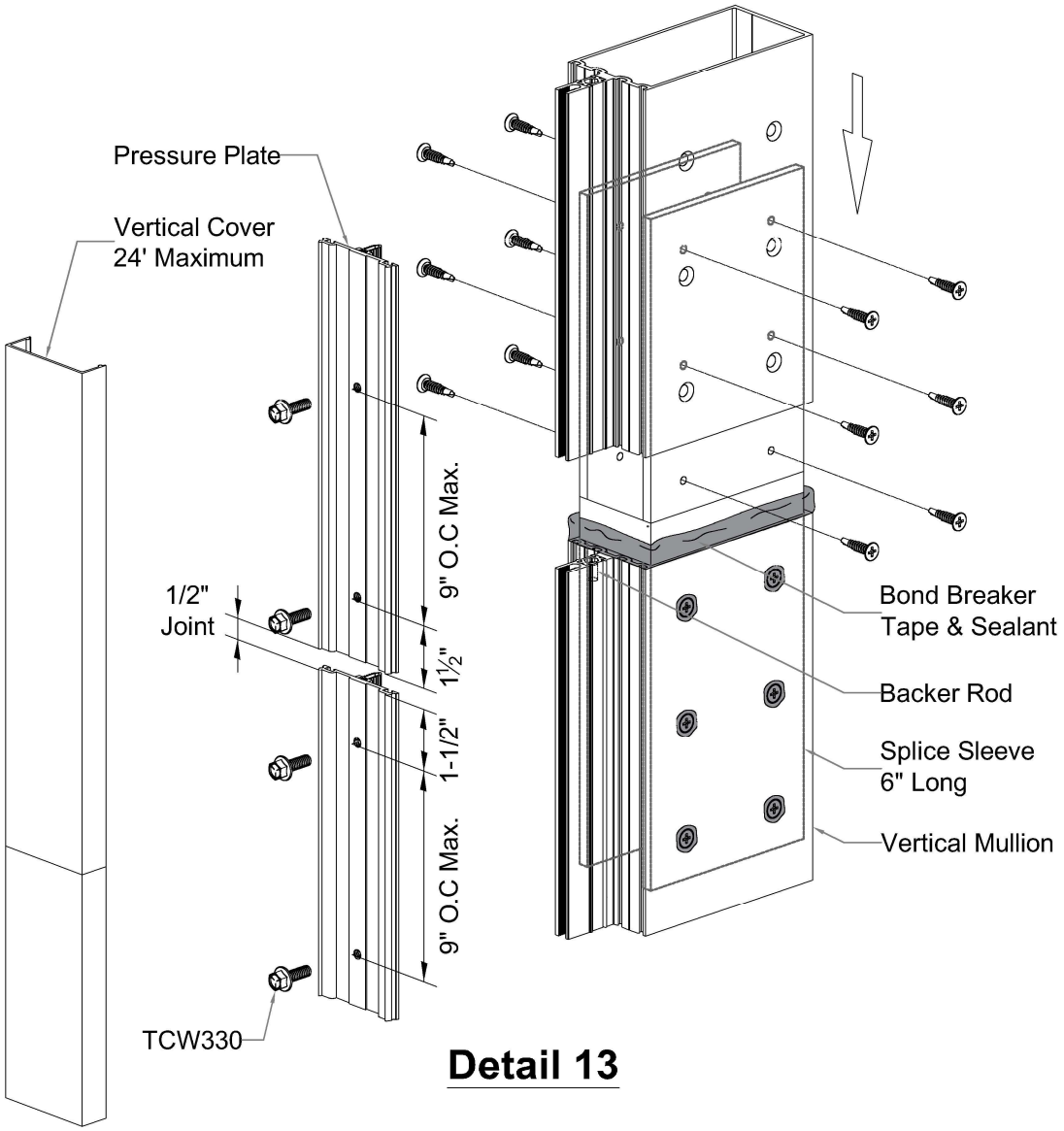
FRAME INSTALLATION

STEP 9 (Continued)
TYPICAL VERTICAL SPLICE

-Clean all surfaces as recommended by sealant manufacturer.
-Attach splice plate to the lower mullion with (6) #12 x 1" FHSMS on both sides.
-Apply bond breaker tape to the face of splice sleeve at top of the lower mullion.
-Lower the upper mullion and attach to the splice plate with (6) #12 x 1" FHSMS on both sides.
-When using 1" glazing mullions, stuff a small piece of backer rod 1/2" down the cavity behind mullion tongue and pump in sealant to fill the cavity.
-Apply sealant to the face of sleeve on the upper half and carefully slide the upper mullion down onto the splice sleeve. Place a 1/2" temporary shim between the mullions to locate them.
-Secure the upper mullion to the mid anchors and remove the temporary shims.
-Apply and tool sealant to the face and sides of the splice sleeve to create a water tight joint.
-Leave a 1/2" expansion joint between vertical pressure plate splices and fill the joint with sealant.
-Locate pressure plate fasteners 1-1/2" from each end of pressure plate splice as shown.

See **Detail 13.**

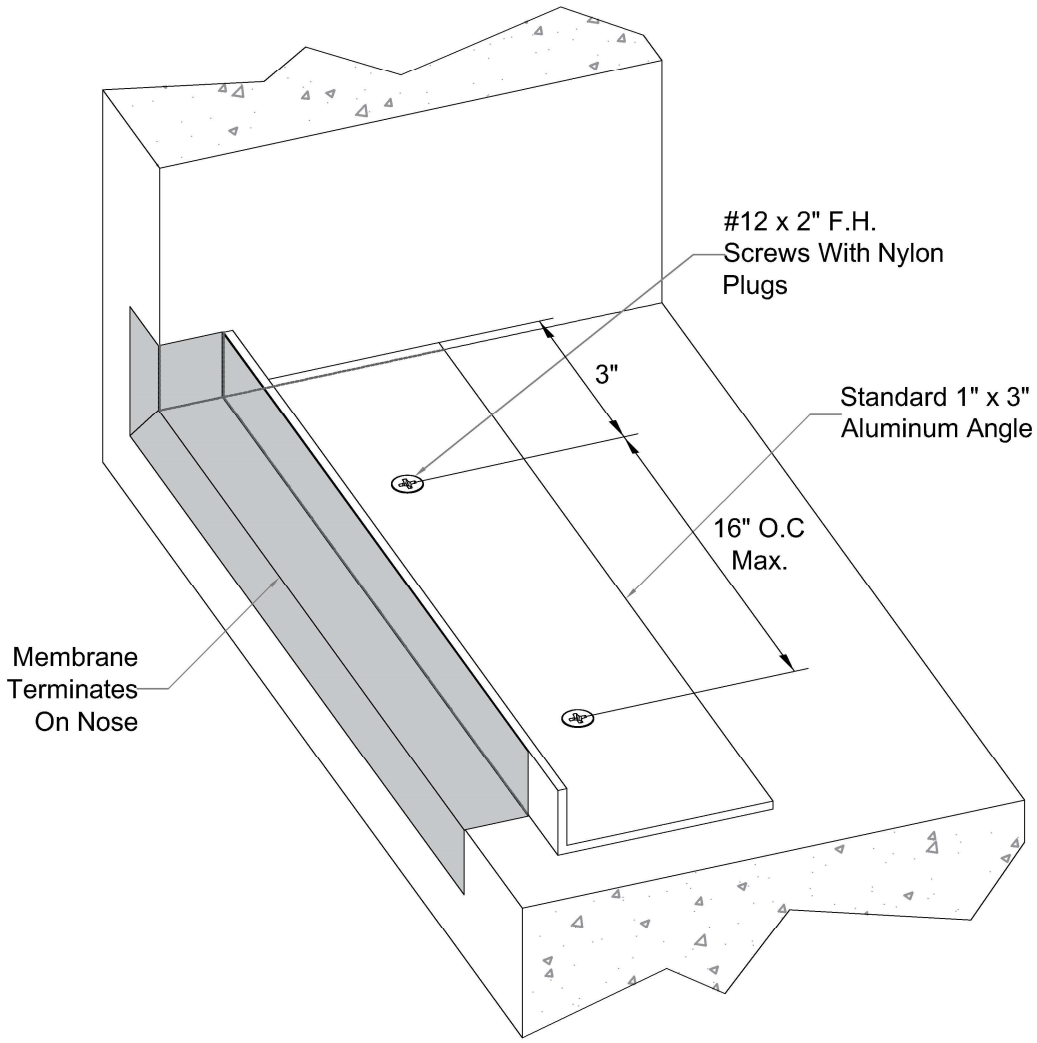
Note: Face covers, pressure plates and mullions are staggered at splice locations.



Detail 13

FRAME INSTALLATION

STEP 10
INSTALL CONTINUOUS SILL ANGLE



Detail 14

-Cut L angles to size:
Aluminum angle stop 1/8" short of the structure.
-Prepare structure for Aluminum angle attachment.
-Install Aluminum angle with appropriate perimeter fasteners. Refer to shop drawings or engineering calculations for type and spacing of fasteners.
-ACRO to peel & stick membrane from curtain wall throat onto building membrane, 6" maximum.

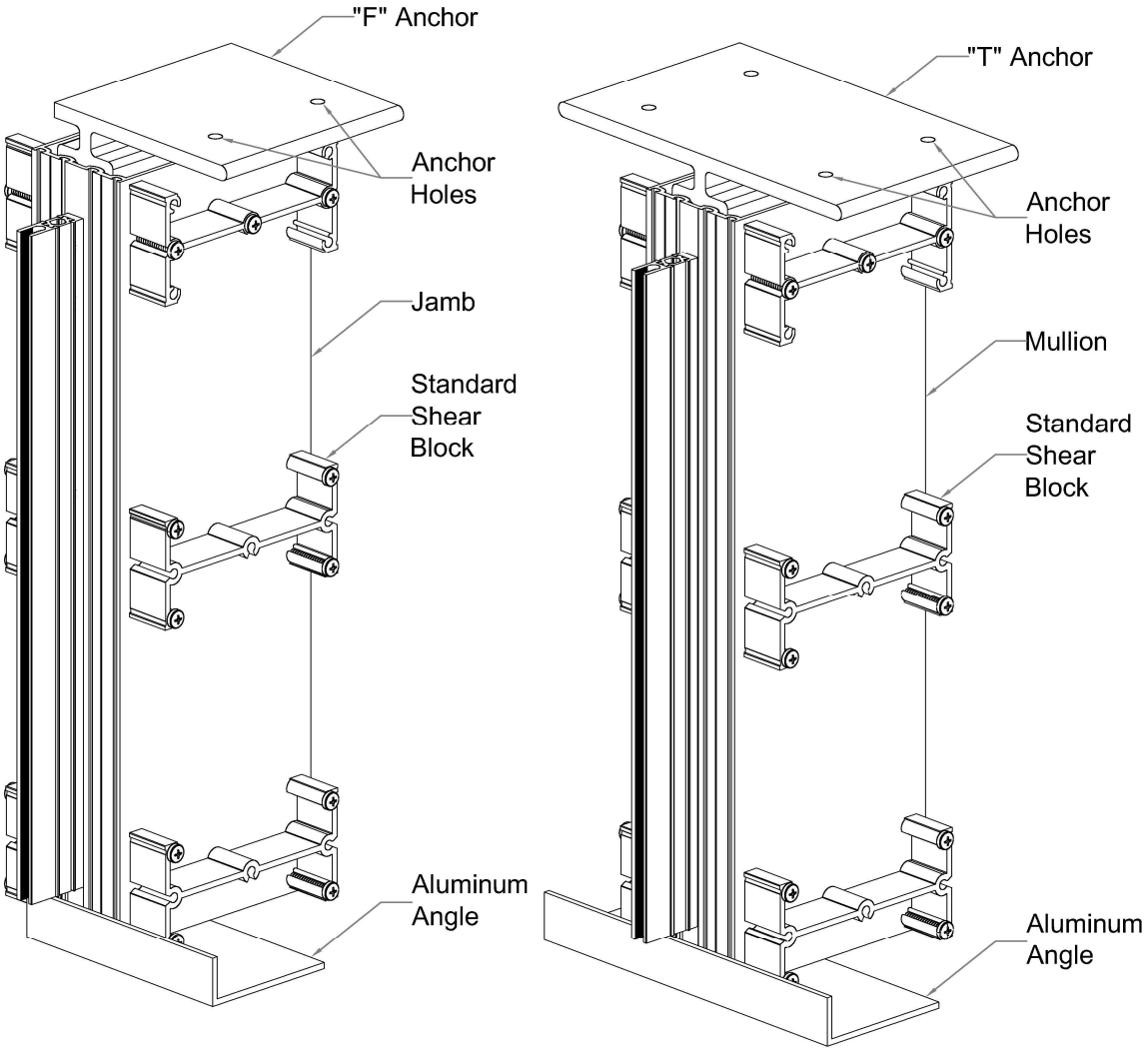
See **Detail 14.**

FRAME INSTALLATION

STEP 11
JAMB / VERTICAL INSTALLATION WITH MULLION END ANCHORS

-Insert mullion "T" and "F" anchors into the top of the mullions before erecting them into the opening.
-Erect and locate the jamb and mullions and temporarily attach them to the structure. All mullions must be installed plumb and true.
-Drill through the pre-drilled holes in "T" & "F" anchors into structure for the appropriate anchors fasteners according to approved shop drawings or engineering calculations.

See **Detail 15.**



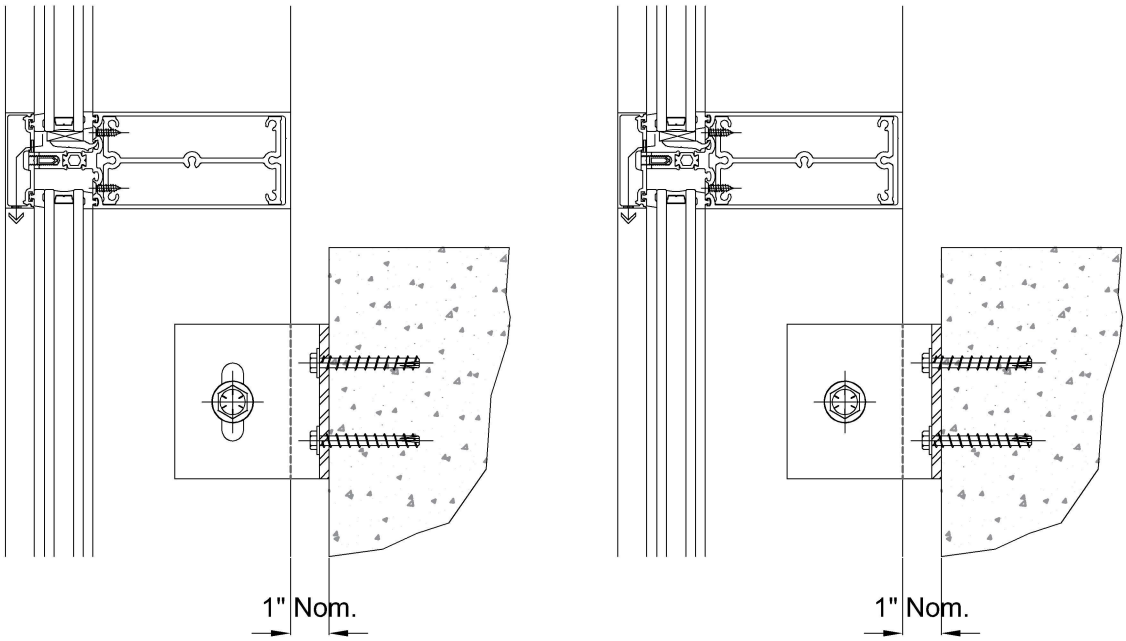
Detail 15

FRAME INSTALLATION

STEP 12
INSTALL WIND / DEAD LOAD ANCHORS

-Install steel wind and dead load anchors. Anchor are normally template or line set before mullions are hung. Outstanding leg of anchor must be set at 90° to offset line.
The back of the mullion should set about 1" from the anchoring substrate.

See **Detail 16.**

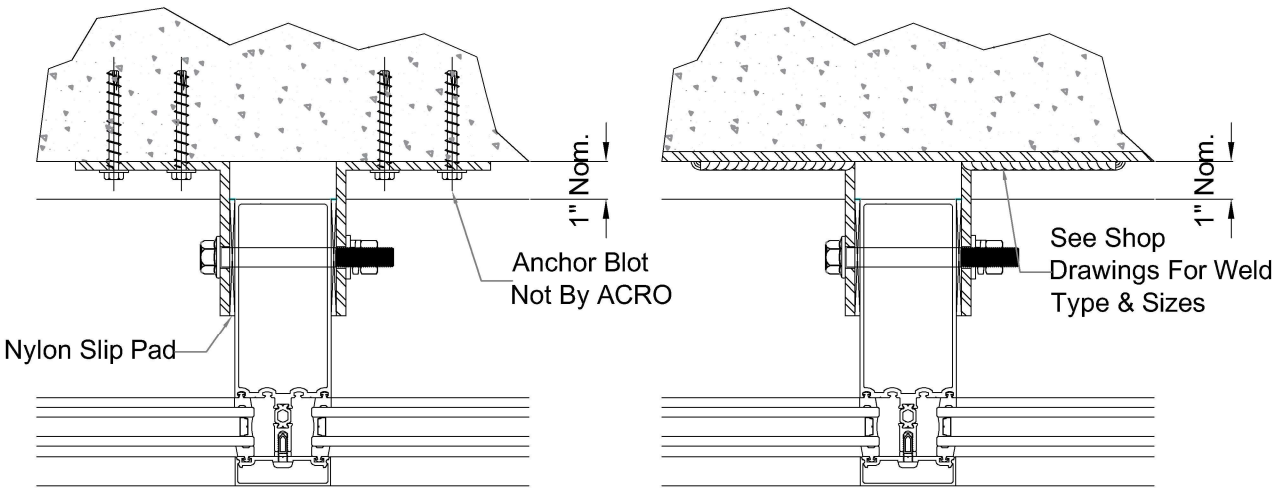


Wind Load Anchor **Dead Load Anchor**

Detail 16

-Install, plumb, and align mullions. Drill and install appropriate diameter anchor blots per approved shop drawings or engineering calculations.
-Nylon slip pads must be installed between mullion and anchors.

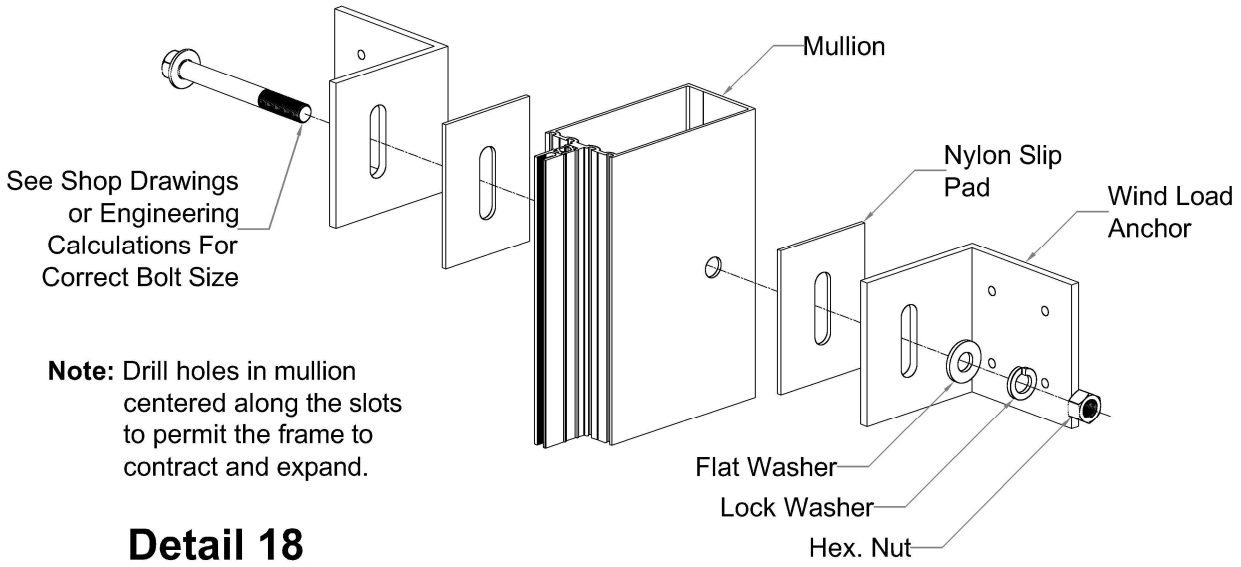
See **Detail 17.**



Detail 17

FRAME INSTALLATION

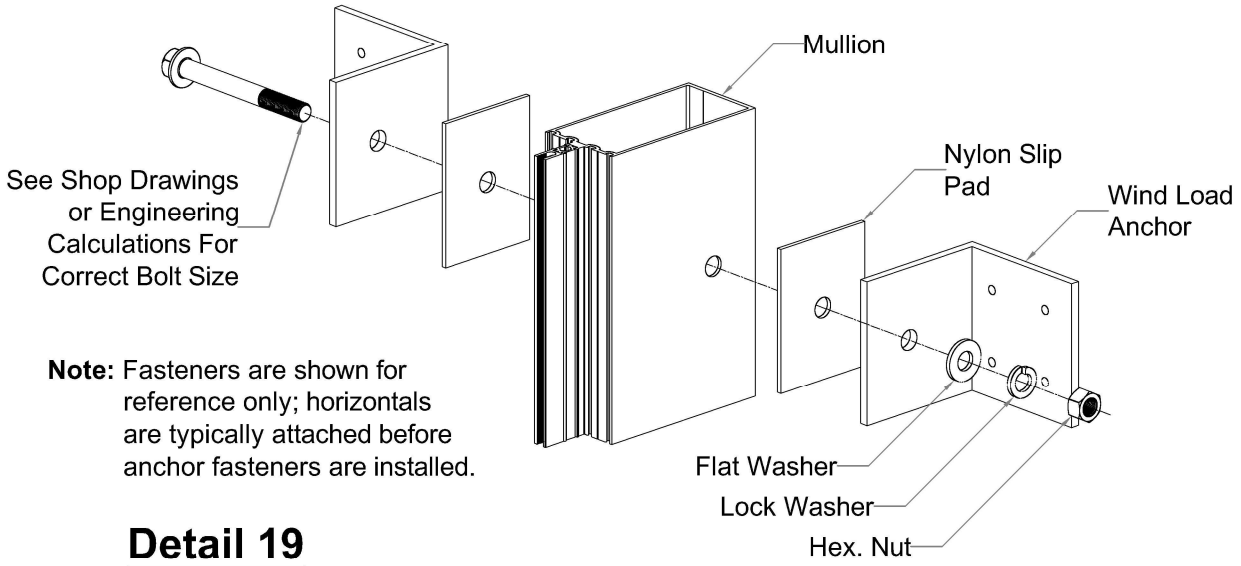
TYPICAL WIND LOAD ANCHOR



Note: Drill holes in mullion centered along the slots to permit the frame to contract and expand.

Detail 18

TYPICAL DEAD LOAD ANCHOR

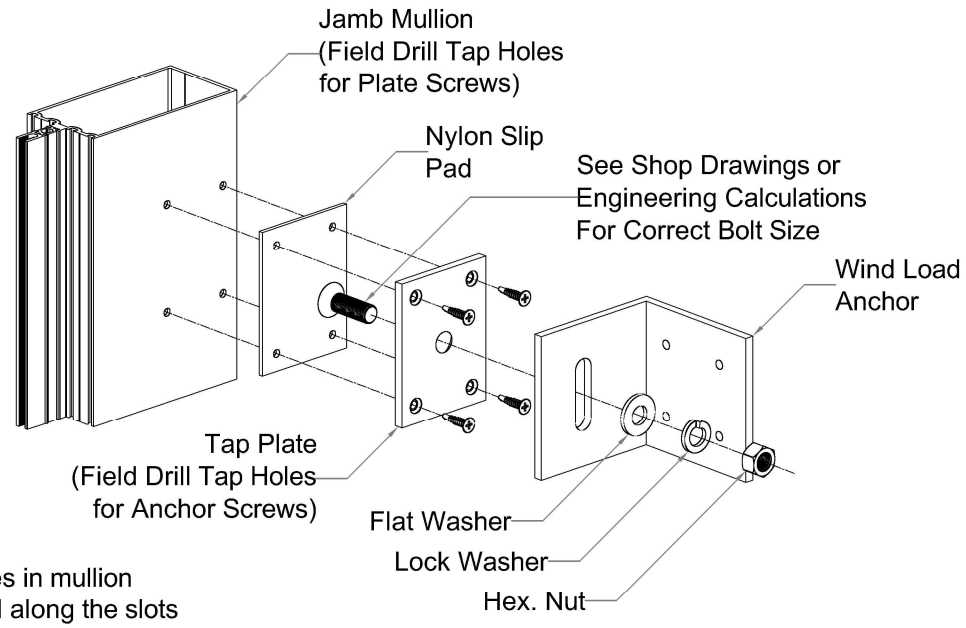


Note: Fasteners are shown for reference only; horizontals are typically attached before anchor fasteners are installed.

Detail 19

FRAME INSTALLATION

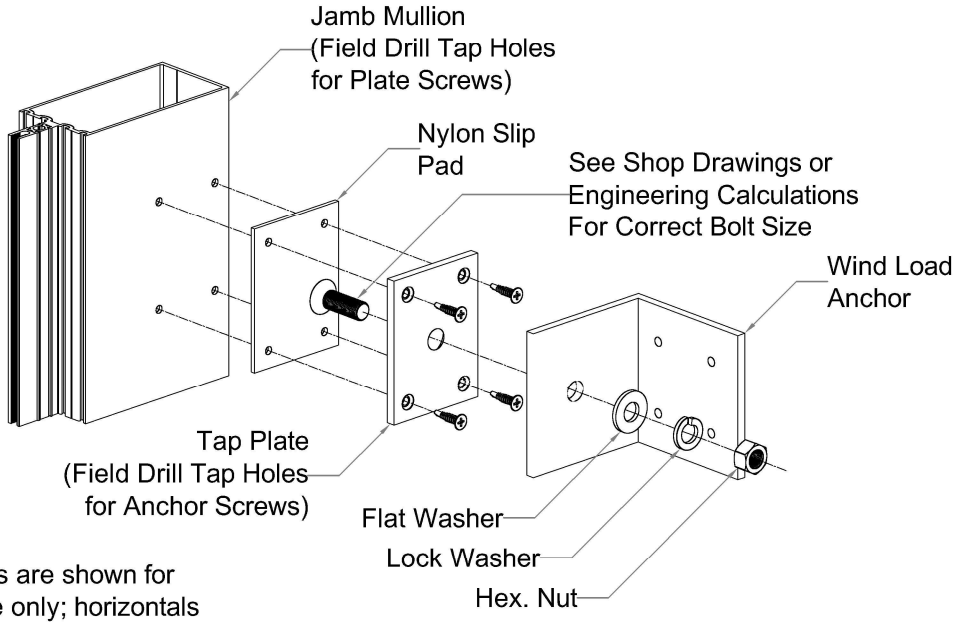
JAMB WIND LOAD ANCHOR



Note: Drill holes in mullion centered along the slots to permit the frame to contract and expand.

Detail 20

JAMB DEAD LOAD ANCHOR



Note: Fasteners are shown for reference only; horizontals are typically attached before anchor fasteners are installed.

Detail 21

FRAME INSTALLATION

STEP 13
ATTACH HORIZONTAL MEMBERS

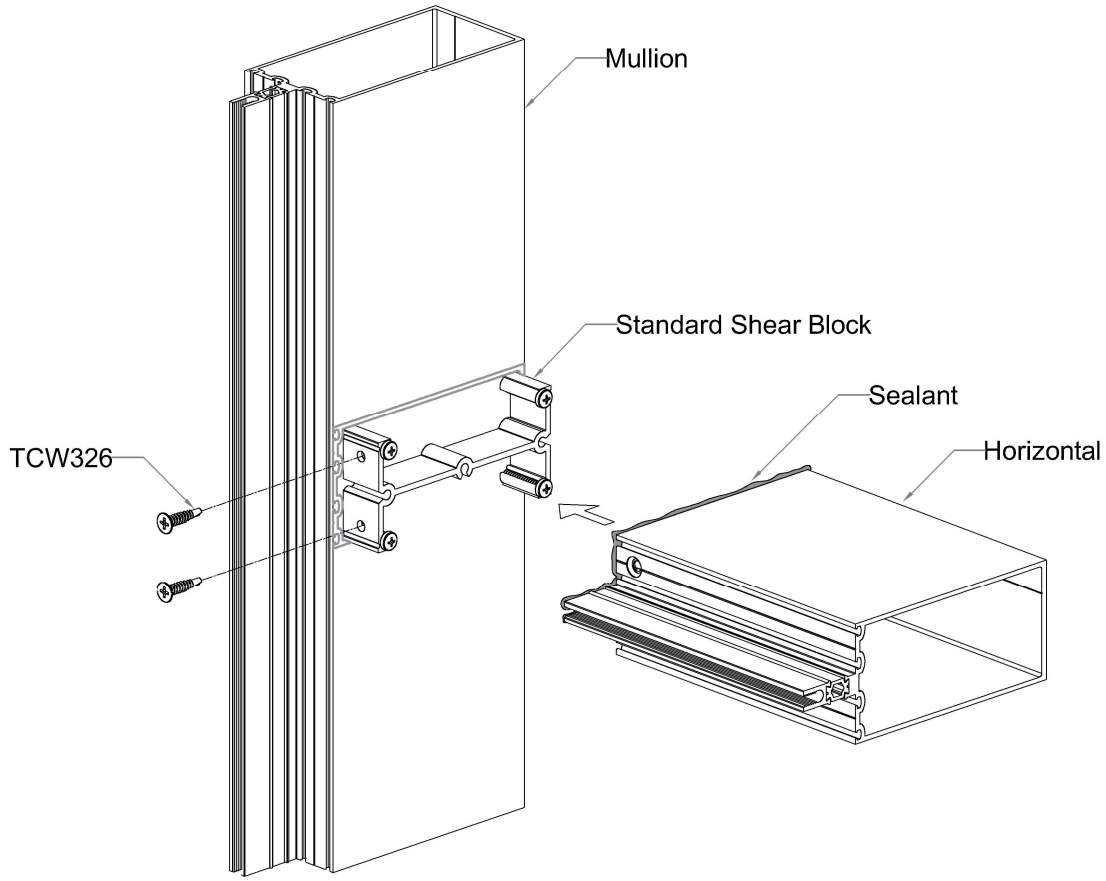
Note: Before applying any sealant, clean aluminum surfaces using cleaner and method approved by sealant manufacturer.

-Just prior to attaching the horizontal members to the mullions, apply sealant around the end of horizontal as shown.

Horizontals with Concealed Fasteners:

-Slide the horizontal members towards the mullion and attach them to the shear blocks at each end with TWC326 fasteners.
-Tool and wipe away any excess sealant at the mullion to horizontal joints, and exposed front fasteners.

See **Detail 22.**



Detail 22

FRAME INSTALLATION

STEP 13 (Continued)
ATTACH HORIZONTAL MEMBERS AT 90° OUTSIDE CORNER MULLIONS

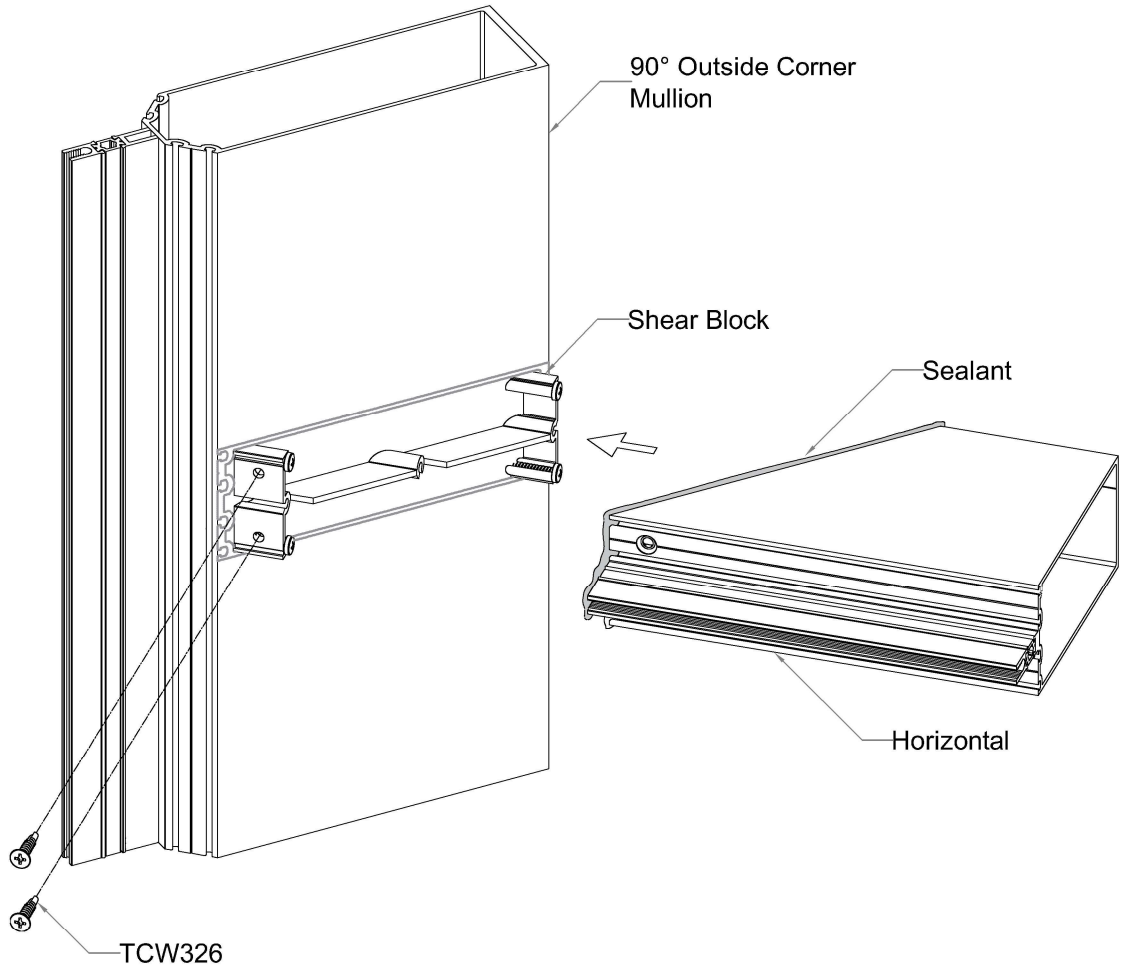
Note: Before applying any sealant, clean aluminum surfaces using cleaner and method approved by sealant manufacturer.

-Just prior to attaching the horizontal members to the mullions, apply sealant around the end of horizontal as shown.

Horizontals with Concealed Fasteners:

-Slide the horizontal members towards the mullion and attach them to the shear blocks at each end with TWC326 fasteners.
-Tool and wipe away any excess sealant at the mullion to horizontal joints, and exposed front fasteners.

See **Detail 23.**



Detail 23

FRAME INSTALLATION

STEP 14
INSTALL DOOR SUB-FRAMES

Note: Door sub-frames for ACRO Thermal Doors are installed later during pressure plate installation on **Page 33.**

Doors are shipped assembled, and door sub-frames will be fabricated and shipped knocked down. Refer to the **ACRO Aluminum Thermal Door Manual** for assembly of the door subframes. These subframes are typical glazed into the curtain wall framing at the jambs, and set directly upon the sill substrate without any shims. The sub-frame members are determined by the approved shop drawings.

-Drill 0.2" diameter holes and must be located 1-1/2" from each end of subframe jamb for #10 pan head fasteners as shown below.
-Clean all sealant contact surfaces as recommended by the sealant manufacturer.

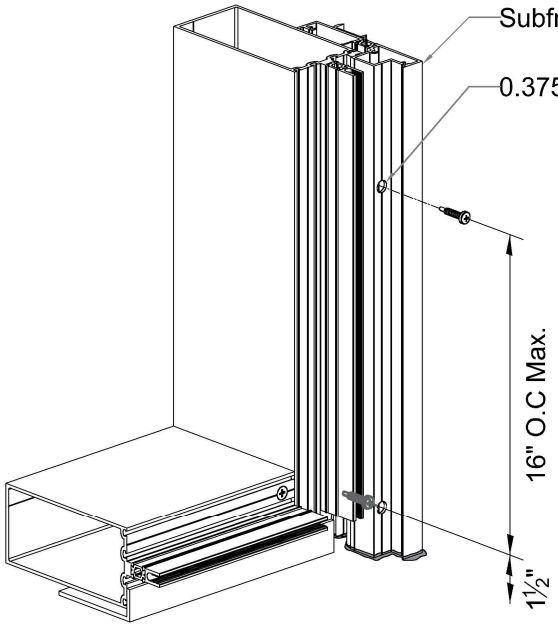
Horizontals with Concealed Fasteners:

-Install the jamb subframe onto the mullion with #10 x 1" self drilling pan head screws.Setting the subframe jambs in beds of sealant.
-Apply and tool sealant to the bottom of the jamb sub-frame.

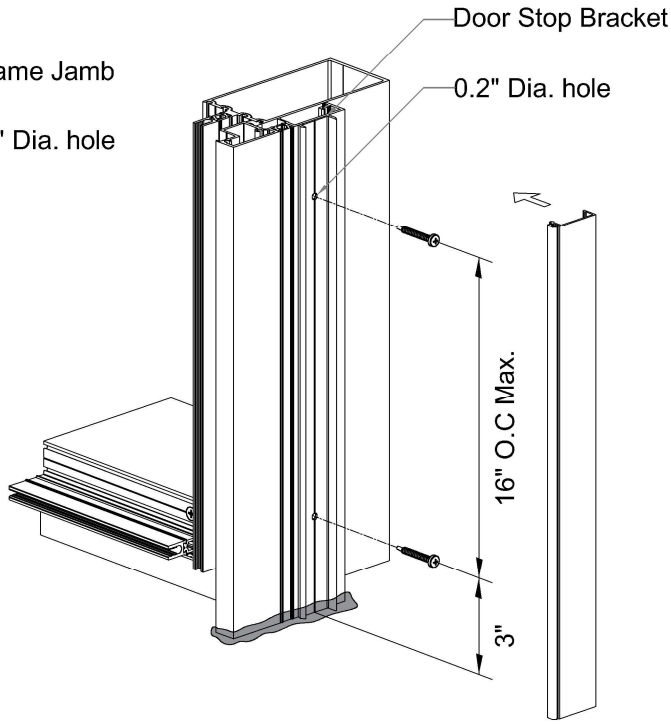
See **Detail 24.**

-Drill 0.2" diameter holes and must be located 3" from each end of door stop bracket for #10 pan head fasteners as shown below.
-Drill 3/8" (0.375") diameter holes to clear head of #10 screw heads on sub-frame jamb as shown below. And it should be going into the front side if the mullion (glazing side).
-Install door stop bracket onto subframe with #10 x 1-1/2" self drilling pan head screws.
-#10 x 1-1/2" self drilling pan head screw should be going through door adapter & CW.

See **Detail 25.**



Detail 24



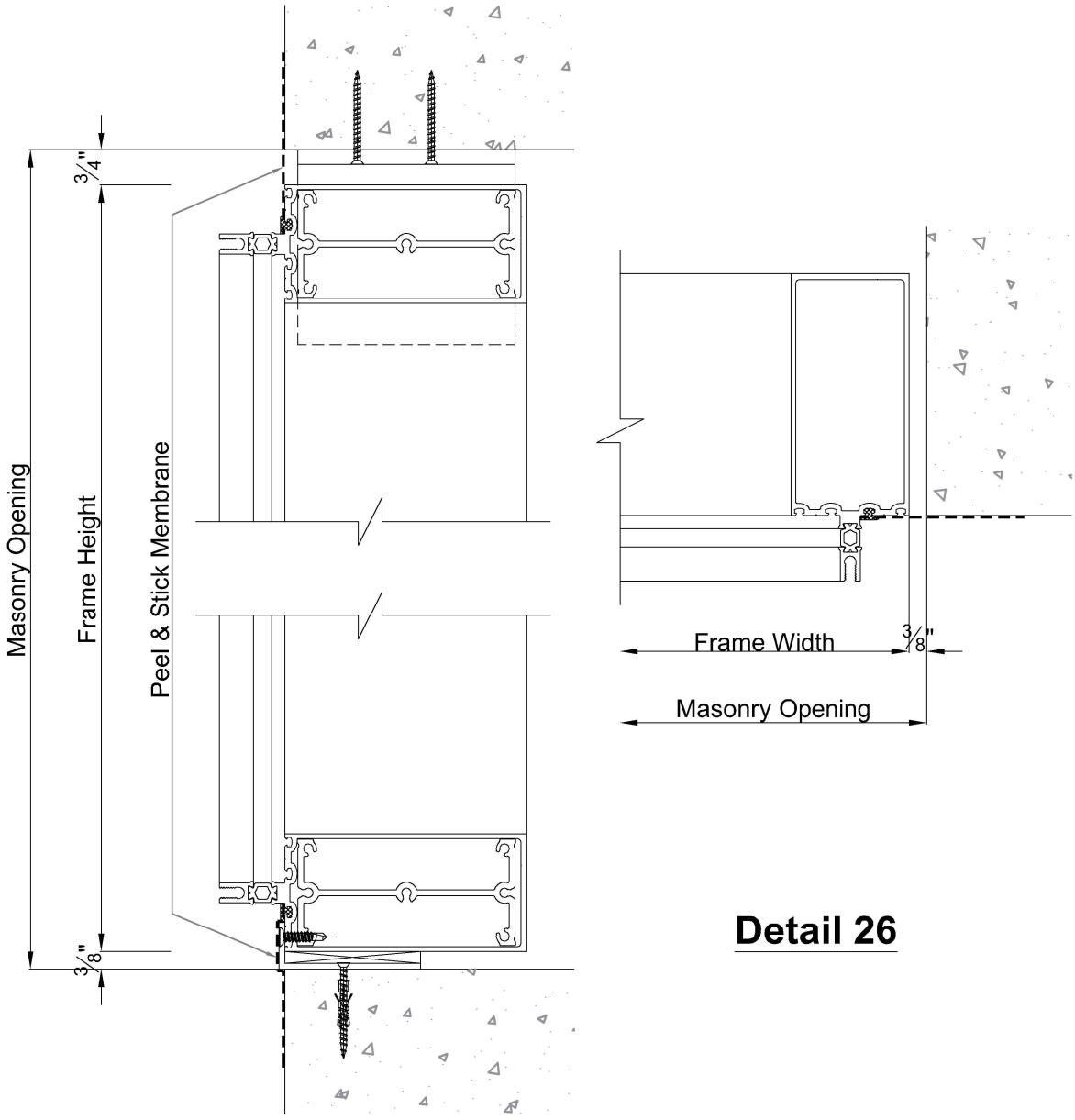
Detail 25

FRAME INSTALLATION

STEP 15
PEEL & STICK MEMBRANE

-Clean the area around the perimeter of the frame with cleaner and method approved by membrane manufacturer.
-Peel & stick membrane to perimeter of the frame.

See **Detail 26.**



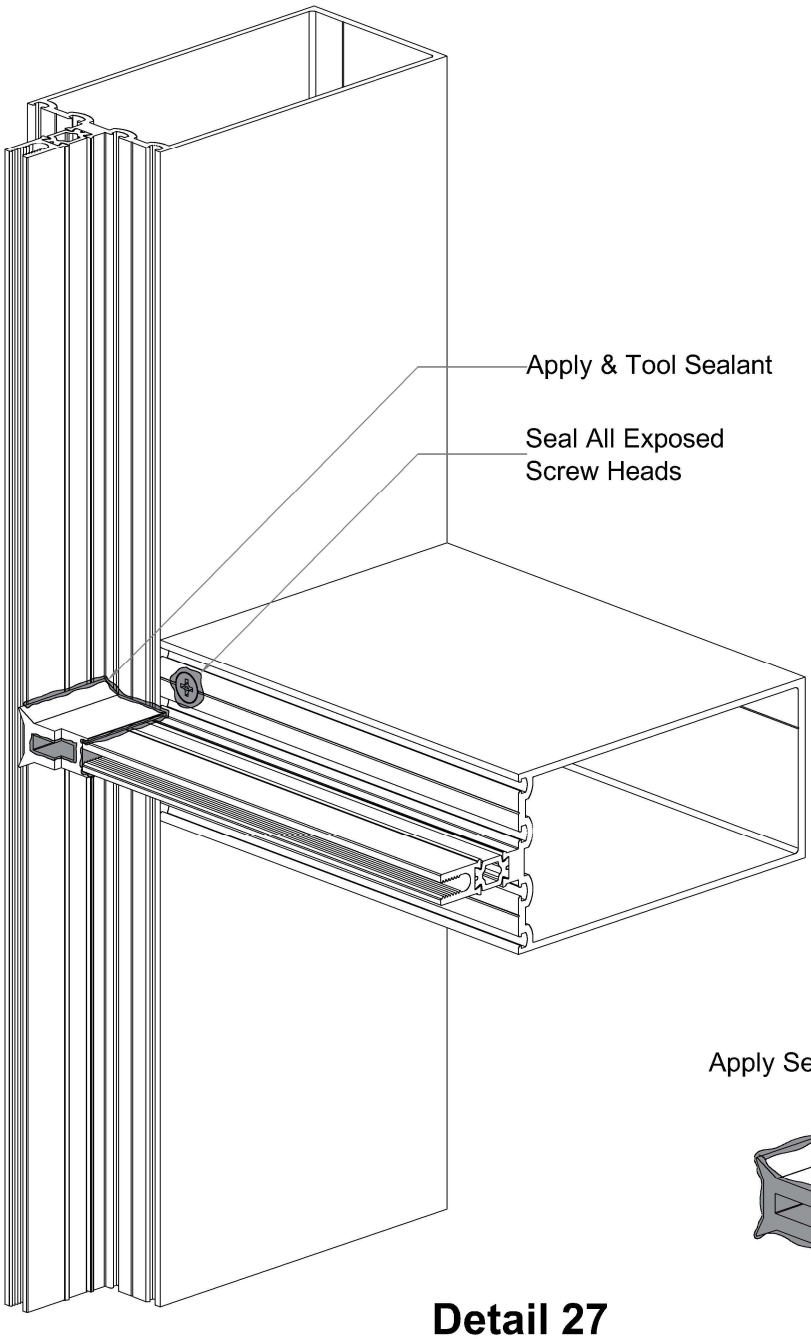
Detail 26

FRAME INSTALLATION

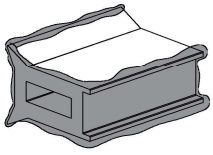
STEP 16
INSTALL JOINT PLUGS

-Clean the area around the mullion tongue ends with an approved cleaner.
-Apply and tool sealant to the three contact sides of the joint plug. Fill all gazing reglet cavities in the mullion's front face.
-Press the joint plug firmly against the face of the mullion and the mullion tongue.
-Tool the sealant to ensure a watertight seal.
-Apply and tool sealant over fastener heads on horizontal. Make sure raceway adjacent to fastener head is effectively sealed.

See **Detail 27.**



Apply Sealant To 3 Sides



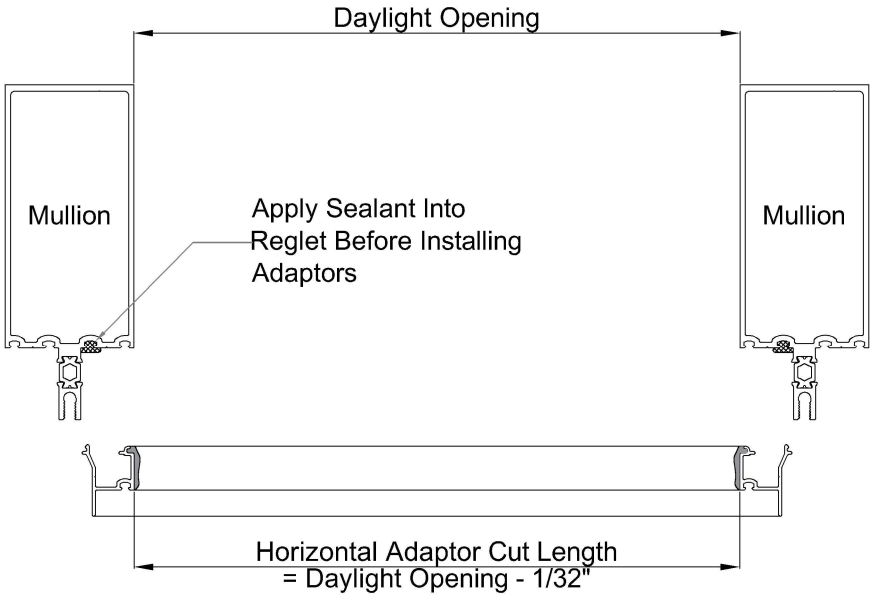
Detail 27

GLAZING

STEP 17
INSTALL GLAZING ADAPTORS

Note: 1/4" glazing adaptor for 1" glazing

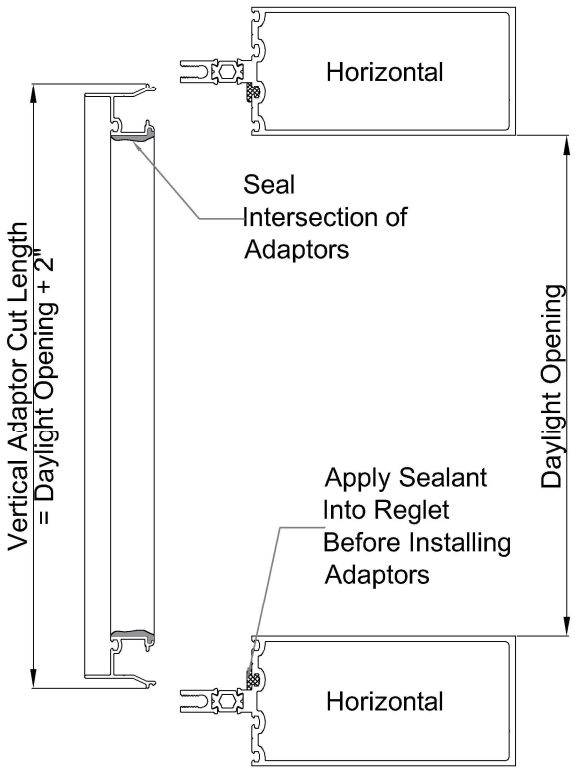
See **Detail 28.**



Detail 28

-Cut glazing adaptors to:
Vertical Cut Length = D.L.O. + 2".
Horizontal Cut Length D.L.O. - 1/32".

-Clean the area around the mullion glazing reglet and the glazing adaptor with a cleaner approved by the sealant manufacturer.
-Apply sealant into the glazing reglet of the mullion and the ends of horizontal adaptors.
-Install the vertical adaptors first; make sure they are centered along the day light opening.
-Tool sealant at all adaptor intersections.



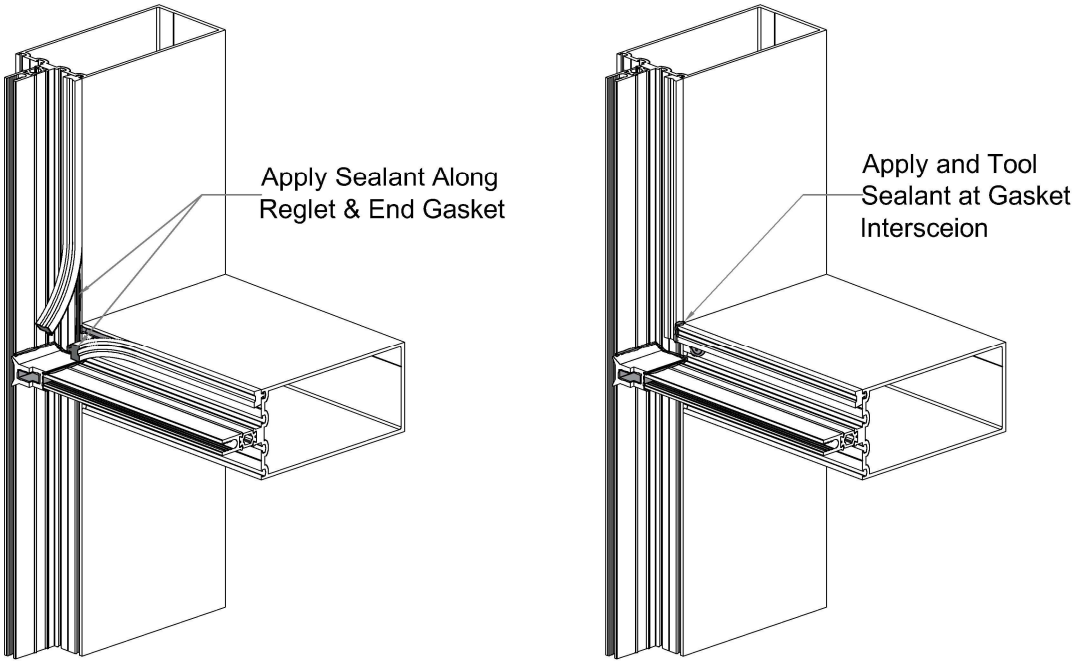
GLAZING

STEP 18
INSTALL INTERIOR GLAZING GASKETS

-Cut interior glazing gaskets to size:
Vertical Gasket = Daylight Opening + 1/2".
Horizontal Gasket = Daylight Opening + 1/4" per each foot of opening width.

-Install vertical gaskets first, centered along the daylight opening.
-Install horizontal glazing gaskets next.
-Insert the glazing gasket into the reglet at each end first.
-Snap the rest of the glazing gasket into the reglet starting at the center and work towards each end.

See **Detail 29.**



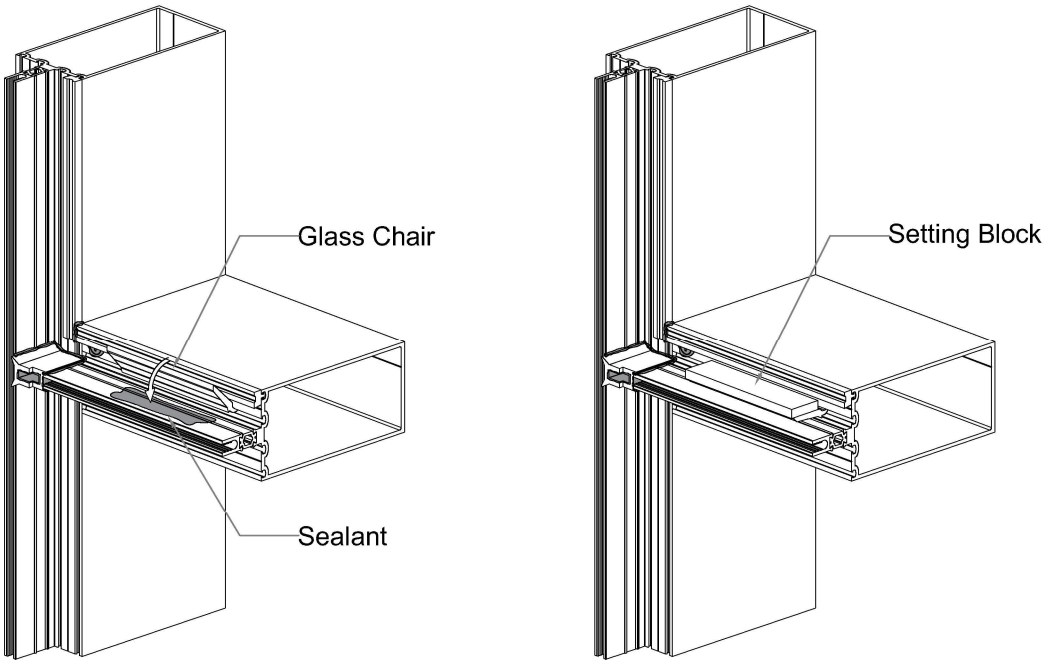
Detail 29

-Pull the last 3" of each gasket away from the reglet.
-With gasket end held out of the way, run a 2-3" bead of sealant into the reglet at the ends.
-Apply sealant at the ends of the horizontal gaskets.
-Reinsert the ends of the gaskets pressing them firmly against the face of the mullions.
-Apply and tool sealant at the intersection of the vertical and horizontal gaskets.

GLAZING

STEP 19
INSTALL GLASS CHAIRS AND SETTING BLOCKS

Note: For correct placement of glass chairs and setting blocks, see **Detail 27.**
Consult ACRO for setting block requirements on units that exceed 60" x 90" or 40 sq. ft.
-Install the glass chair at 1/4 points as shown in **Detail 30.**
-Apply a small amount of silicone sealant to the tongue of the horizontal to keep the glass chair correctly positioned prior to the glass being set.



Detail 30

STEP 20
INSTALL EXTERIOR GLAZING GASKETS

-Cut exterior vertical glazing to the same length as the vertical pressure plates. Note that pressure plates used on the corner mullion will have gaskets covering the corner trim.
-Cut exterior horizontal glazing gaskets to daylight opening plus 1/4" per foot of opening width.
-Install vertical glazing gaskets onto the vertical pressure plates.
-Install horizontal gaskets by pushing each end into the reglet of the pressure plate. Next press center of gasket into reglet; then push gasket into reglet working from center towards the ends.
Caution: Do not stretch the gaskets.

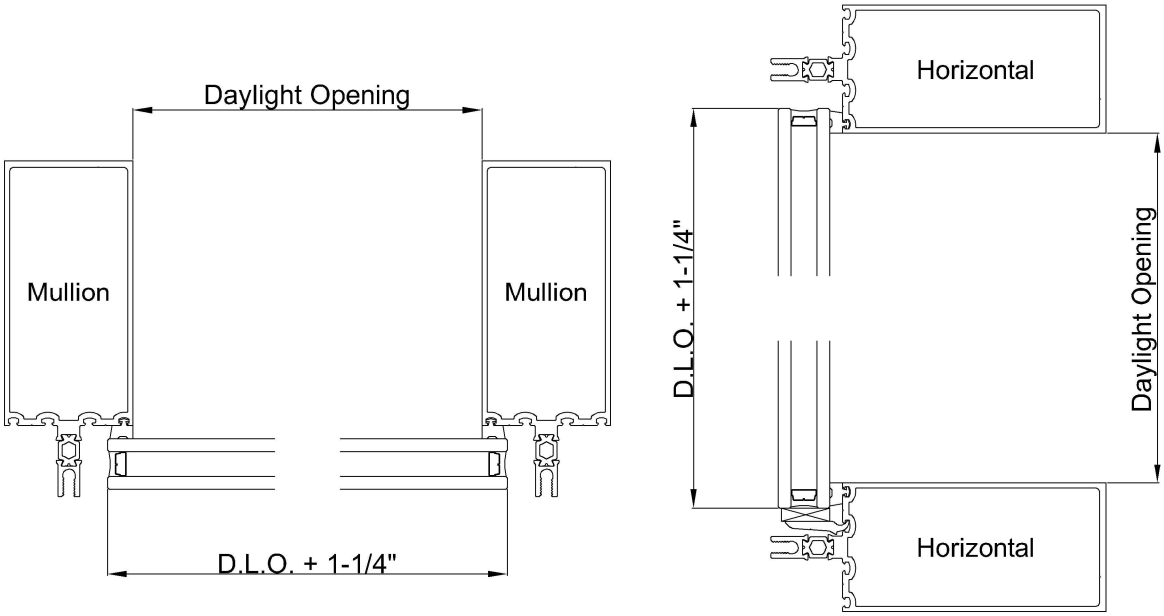
GLAZING

STEP 21
INSTALL GLASS

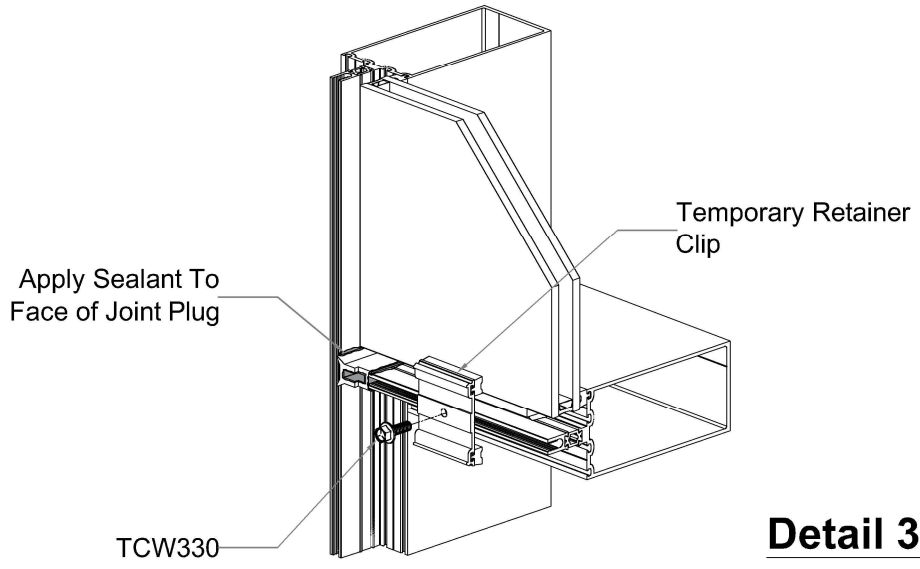
-As each lite is installed, attach a temporary retaining clip in the middle of each horizontal and 4" from glass edge at each end using TCW330 fasteners.
-Reuse the temporary retaining clips.
-Apply sealant to the face of the joint plugs just prior to installing vertical pressure plates. Do not allow sealant to skin over prior to installing pressure plates.

Note: Sealant must form a complete seal between the exterior gasket, pressure plate, thermal isolator and the joint plug.

See **detail 31 & 32.**



Detail 31

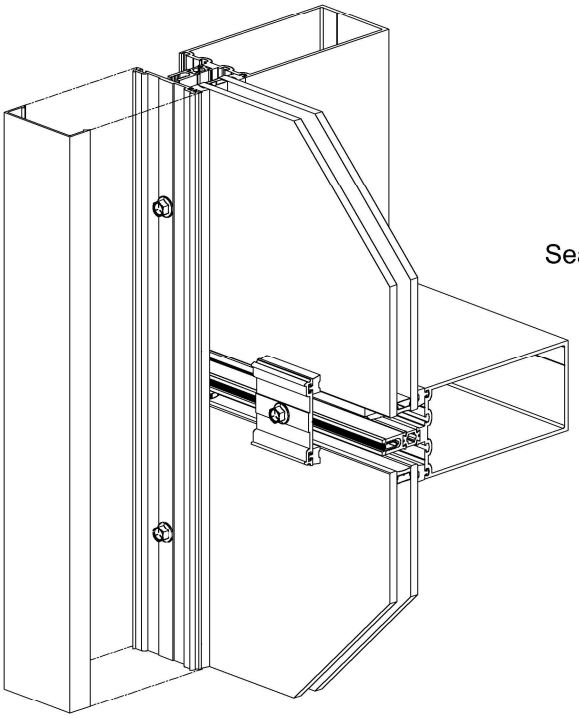


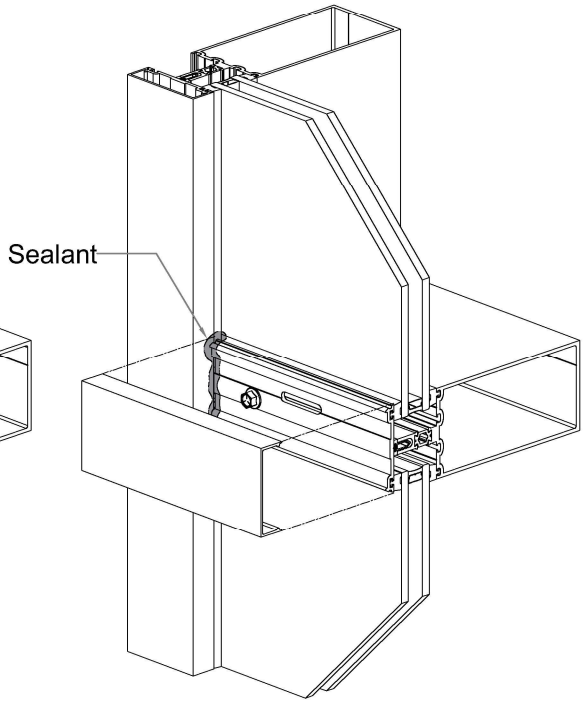
Detail 32

GLAZING

STEP 22
INSTALL EXTERIOR FACE COVERS

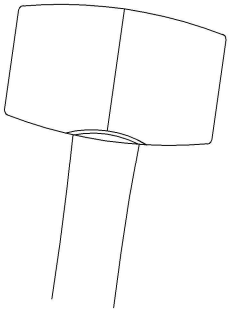
-Apply and tool sealant to completely seal between the ends of the horizontal pressure plates and vertical covers. See **Detail 33.**
-Install horizontal face cover.
-Snap on horizontal face covers using a mallet and a wooden block. Start at one end and work across the horizontal. See **Detail 34.**

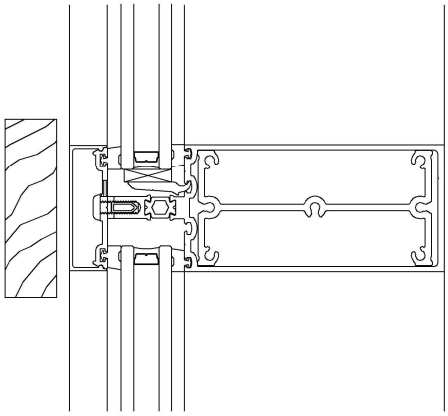




Detail 33

Detail 34



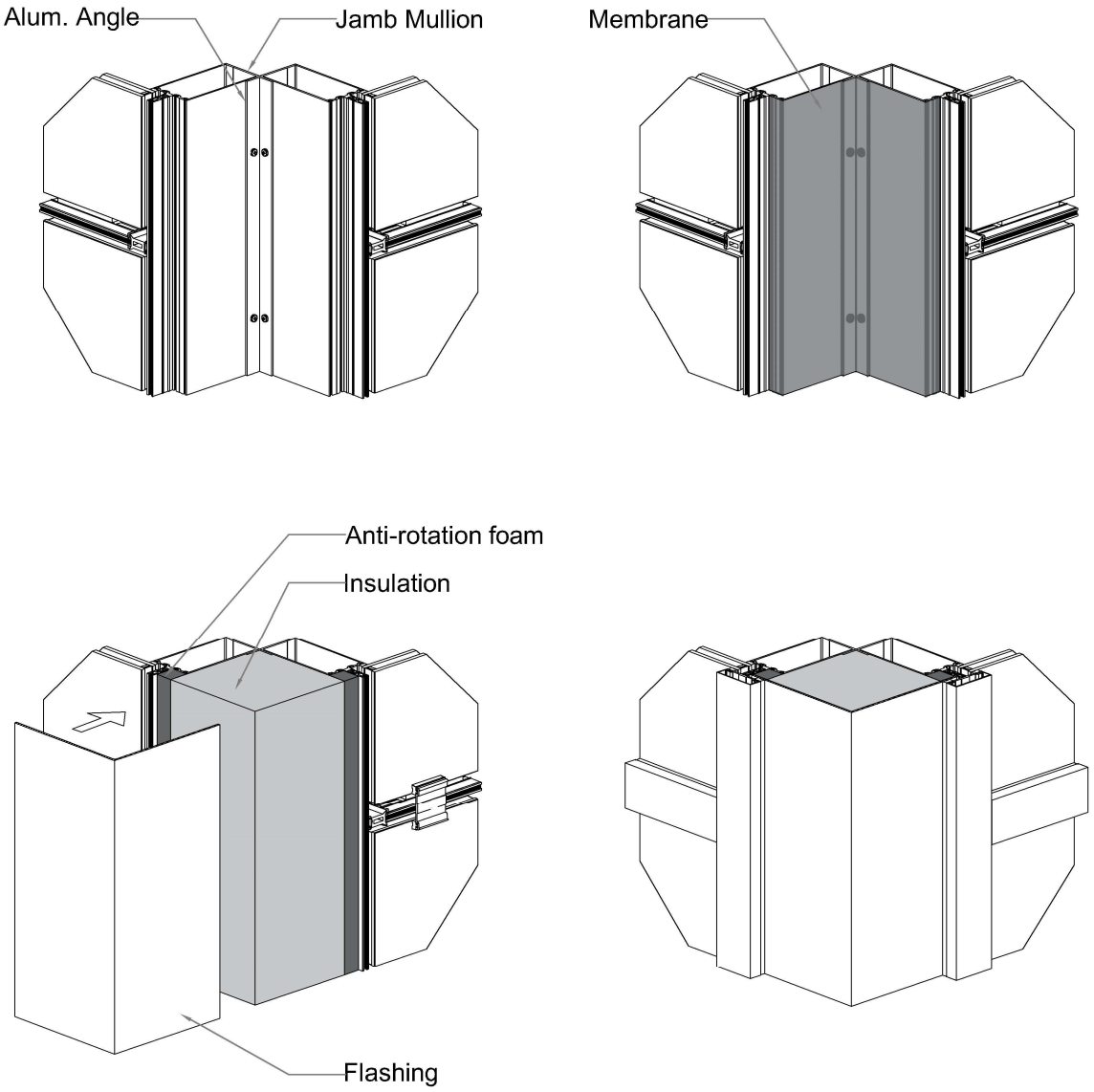


GLAZING

STEP 23 (Optional)
ALTERNATIVE 90° OUTSIDE CORNER WITH FLASHING

-Attach 1" x 1" x ⅛" aluminum angle onto two jambs with #10 x 1" self drilling pan head screws and must be located 3" from each end @ 16" O.C..

See **Detail 35.**



Detail 35