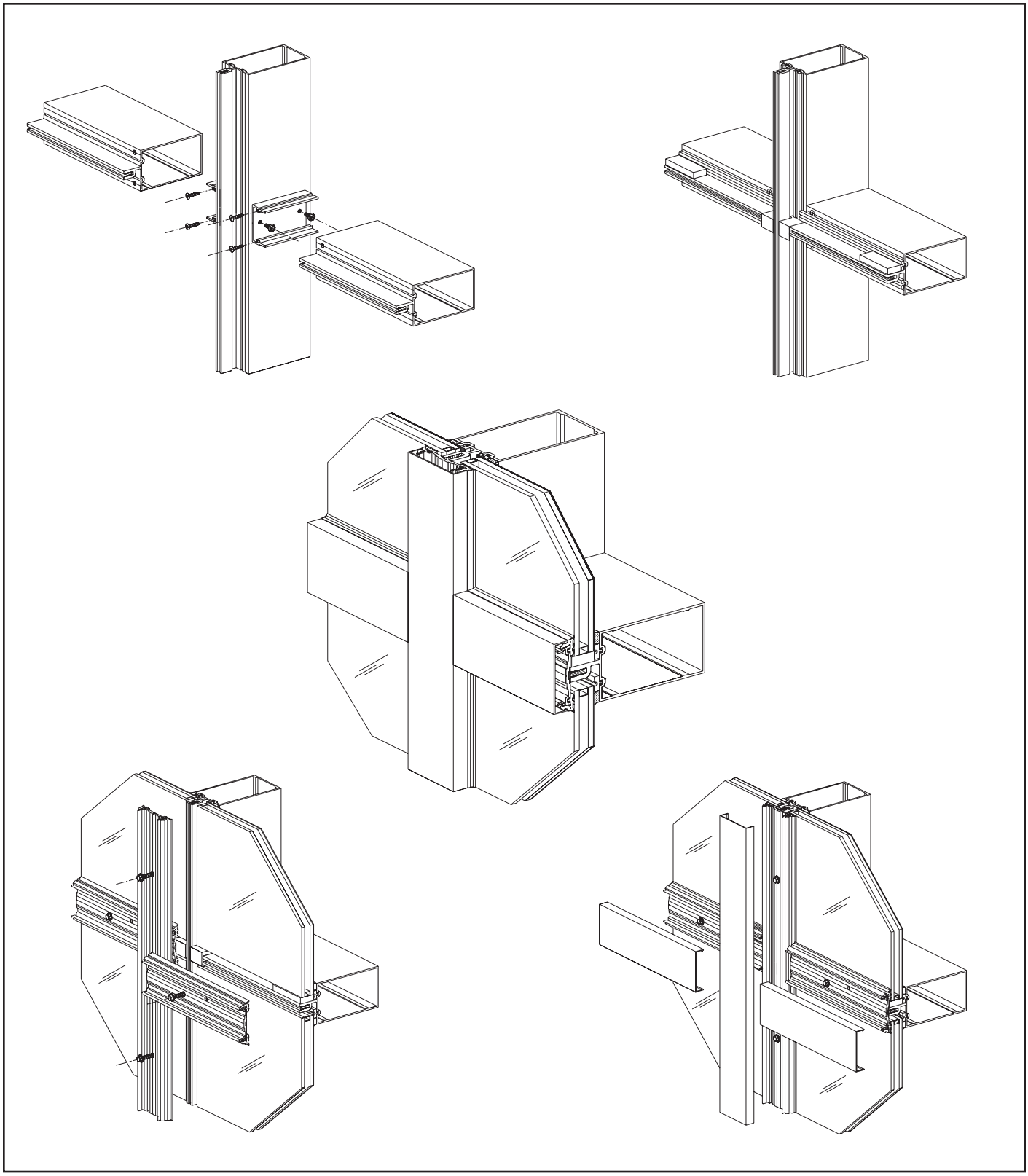
YHC 300 OG Outside Glazed Curtain Wall System



Installation Manual

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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 quantity and quality upon receipt, YKK AP 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. All work must start from, and be referenced to bench marks, offset lines and/or column centerlines established by the architectural drawings and the general contractor.

6. All vertical mullions must be installed plumb, square, level, and true, and in accordance with approved shop drawings, these installation instructions and AAMA Book 8, installation of aluminum curtain walls.

7. 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.

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

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

A. Specified metal to metal joints use DOW CORNING® 795 or 995.
B. All metal to Large Missile Impact glazing, must use DOW CORNING® 995.
C. Perimeter caulk joints must use DOW CORNING® 795.
D. Outside of Dade County YKK AP recommends DOW CORNING® 795 for perimeter and metal to metal joints or equal product.

Dade County installation must always be items A, B, and C.

Effective Date: November 8, 2007

Installation Notes

10. Consult sealant manufacturer for proper backer rod selection.

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

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

13. All substrates which the framing system is anchored to must be structurally sound.

14. Entrances are to be installed plumb, square, level, and true.

15. If any questions arise concerning YKK AP products or their installation, contact YKK AP for clarification before proceeding.

16. YKK AP 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 that you have proudly produced, because no one else will.

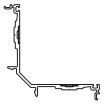
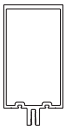
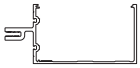
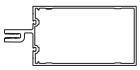
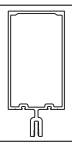
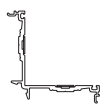
17. Concrete, mortar, plaster, muriatic acid and other alkaline and acid based construction and cleaning materials may be very harmful to finishes and should be removed with water and mild soap immediately or permanent damage or staining of the finishes will occur. A spot test is recommended before any cleaning agent is used, and abrasive type cleaners must never be used.

18. YKK AP cutting tolerances are plus zero, minus one thirty second unless otherwise noted.

19. Glass and glazing building codes governing the design and use of products vary widely. YKK AP America Inc., does not control the selection of products, product configurations, operating hardware, and function, or glazing materials, and YKK AP assumes no responsibility for these design considerations. It is the responsibility of the design professional, owner, architect, specifier, general contractor, and the installer to make these selections in strict accordance with all applicable codes.

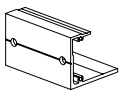
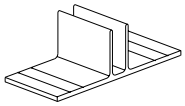
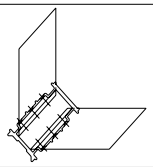
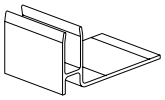
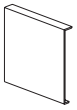
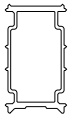
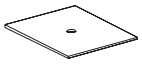
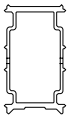
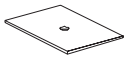
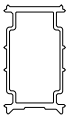
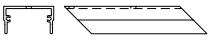
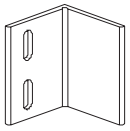
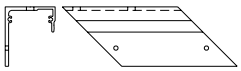
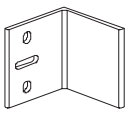
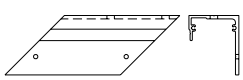
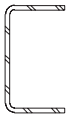
20. Check our website, www.ykkap.com, for the latest installation manual update prior to commencing work.

FRAMING MEMBERS

	**Head / Horizontal / Sill** For Single Glazing	**E9-3105**		**90° Corner Pressure Plate*** For Insulated Glazing With PVC Isolator	**AS-3135**
	**Horizontal** For Single Glazing	**E9-3106**		**Face Cover**	**E9-3161**
	**Jamb / Vertical** For Single Glazing	**E9-3103**		**90° Outside Corner Interior Cover*** Use with E9-1280	**E9-3165**
	**Head / Horizontal / Sill** For Insulated Glazing	**E9-3104**		**90° Outside Corner Interior Cover Base*** Use with E9-3165	**E9-1280**
	**Horizontal** For Insulated Glazing	**E9-3102**		**90° Outside Corner Face Cover*** For Single Glazing	**E9-3164**
	**Jamb / Vertical** For Insulated Glazing	**E9-3101**		**90° Outside Corner Face Cover*** For Insulated Glazing	**E9-3163**
	Flush Filler Use with E9-3104 & E9-3105	**E9-3162**		**Glazing Adaptor** For Single Glazing	**E9-3141**
	**Pressure Plate** For Single Glazing With PVC Isolator	**AS-3140**		**Glazing Adaptor*** For Single Glazing	**E9-3142**
	**Pressure Plate** For Insulated Glazing With PVC Isolator	**AS-3138**		**90° Outside Corner Glazing Adaptor*** For Single Glazing	**E9-3146**
	**Perimeter Pressure Plate** For Single Glazing With PVC Isolator	**AS-3144**		**90° Outside Corner Glazing Adaptor*** For Insulated Glazing	**E9-3145**
	**Perimeter Pressure Plate** For Insulated Glazing With PVC Isolator	**AS-3143**		**1-1/2” x 1-1/2” Angle**	**E9-9303**
	**90° Corner Pressure Plate*** For Single Glazing With PVC Isolator	**AS-3136**			

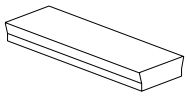
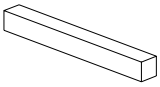
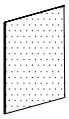
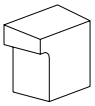
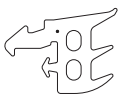
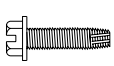
* Not tested for Metro-Dade County, Florida

ACCESSORIES

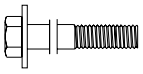
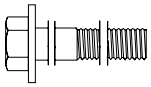
	**Shear Clip**	**E1-3001**		**Shear Clip (RH)** For 90° Corner Mullion	**E1-3016**
	**“J” Anchor**	**E1-3002**		**Shear Clip (LH)** For 90° Corner Mullion	**E1-3017**
	**Intermediate Vertical Mullion End “T” Anchor** Requires Anchor Sleeve	**E1-3003**		**Mullion End Anchor** For 90° Corner Mullion	**E1-3018**
	**Jamb Mullion End “F” Anchor** Requires Anchor Sleeve	**E1-3004**		**Face Cover Splice Sleeve** Use with E9-3161	**E1-3009**
	**Mullion Splice Sleeve** 6” Long	**E1-3005**		**Mullion End Cap** For Insulated Glazing	**E1-3010**
	**Mullion Anchor Sleeve** Use with E1-3003 & E1-3004, 3” Long	**E1-3006**		**Mullion End Cap** For Single Glazing	**E1-3011**
	**Mullion Reinforcement Sleeve** 29” Long	**E1-3007**		**Temporary Pressure Plate**	**E1-3012**
	**Shear Clip** For 90° Corner Mullion	**E1-3013**		**Wind Load Anchor*** Refer to Shop Drawings For Anchor Dimensions	**E1-1204**
	**“J” Anchor (RH)** For 90° Corner Mullion	**E1-3014**		**Dead Load Anchor*** Refer to Shop Drawings For Anchor Dimensions	**E1-1205**
	**“J” Anchor (LH)** For 90° Corner Mullion	**E1-3015**		**Steel Channel** 2-1/2” x 4-1/2” x 3/16”	**E1-0175**

***Note:** Exact size of anchors should be determined from loads calculated on each individual curtain wall.

ACCESSORIES

	**Setting Block** For Insulated Glazing	**E2-0375**		**Bulb Gasket** Use with E9-3141 & E9-3142	**E2-0354**
	**Setting Block** For Single Glazing	**E2-0357**		**Wind Load / Dead Load Anchor Slip Pad**	**E3-0103**
	**Joint Plug** For Insulated Glazing	**E2-0355**		**#8-32 x 1/2” FHTCS Type F** For Attachment of Face Cover Splice Sleeve	**FF-0808**
	**Joint Plug** For Single Glazing	**E2-0358**		**#10 x 1” FHSMS Type AB** For Attachment of Single Glazing Adaptor	**FC-1016**
	**Isolator Tape** 1/8” x 11/16” , Use with AS-3143 & AS-3144	**E2-0356**		**#12 x 3/4” FHSMS Type AB** For Attachment of Mullion Splice Sleeve	**FC-1212**
	**Exterior Glazing Gasket** 3/16” Face Clearance	**E2-0351**		**#12 x 1-1/4” FHSMS Type AB** For Attachment of Horizontal To Shear Clip	**FC-1220**
	**Exterior Glazing Gasket** 5/16” Face Clearance	**E2-0352**		**#14 x 5/8” FHSMS Type AB** For Attachment of Mullion End Cap	**FC-1410**
	**Exterior Glazing Gasket** 7/16” Face Clearance	**E2-0360**		**#10 x 5/8” PHSMS Type AB** For Attachment of E1-3006 Anchor Sleeve	**PC-1010**
	**Interior Glazing Gasket** 1/4” Face Clearance For Small Missile Impact	**E2-0376**		**1/4”-20 x 5/8” HWHTCS Type F** For Attachment of Shear Clip to Vertical	**HF-2510-W1**
	**Interior Glazing Spacer** 1/4” Face Clearance For Large Missile Impact	**E2-0353**		**1/4”-20 x 1” HWHTCS Type F** For Attachment of Shear Clip To Vertical w/ Steel Reinforc.	**HF-2516-W1**

ACCESSORIES

	**1/4”-20 x 1” HWHMS** For Attachment of Pressure Plate to Mullion	**HM-2516-W3**		**3/8”-16 x 1” HHMS** Grade 5, For Attachment of “J” Anchor at Jamb	**HM-3816**
	**3/8”-16 Nut HHMS** For Attachment of “J” Anchor	**HM-3800**		**1/2”-13 Nut HHMS** For Attachment of Wind Load & Dead Load Anchors	**HM-5000**
	**3/8” Flat Washer** For Attachment of “J” Anchor	**WW-3800**		**1/2” Flat Washer** For Attachment of Wind Load & Dead Load Anchors	**WW-5000**
	**3/8” Lock Washer** For Attachment of “J” Anchor	**WS-3800**		**1/2” Lock Washer** For Attachment of Wind Load & Dead Load Anchors	**WS-5000**
	**3/8”-16 x 4” HHMS** Grade 5, For Attachment of “J” Anchor at Int. Vertical	**HM-3864**		**1/2”-13 x 4-1/2” HHMS** Grade 5, For Attachment of Wind & Dead Load Anchors	**HM-5072**

FOR DADE COUNTY APPLICATIONS

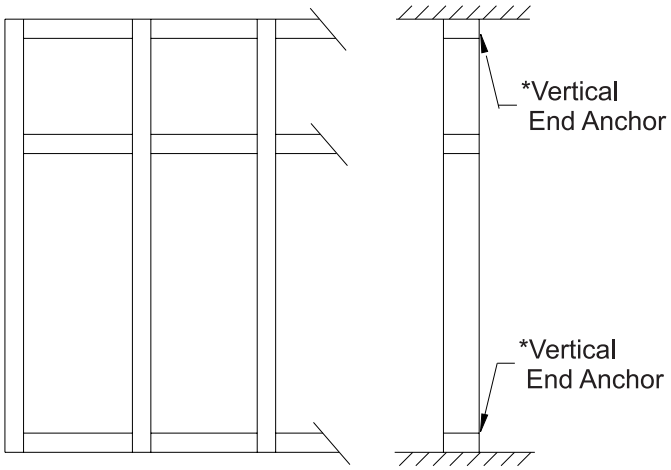
*Anchor	Supplier	Part No.	Qty.	Diameter	Edge Distance	Embedment
“F” Anchor	POWERS-BOLT	6916	2	3/8”	2-5/8”	3-1/2”
“F” Anchor	HILTI	HVA CAPSULE 256693 ROD 68658	2	1/2”	2 5/8”	4 1/4”
“T” Anchor	POWERS-STUD	7424	2	1/2”	4”	4”
“T” Anchor	POWERS-STUD	7434	2	5/8”	4”	4”
“J” Anchor	POWERS-BOLT	6916	2	3/8”	2 5/8”	2 1/2”
“J” Anchor	HILTI	HVA CAPSULE 256693 ROD 68658	2	1/2”	2 5/8”	4 1/4”
“J” Anchor	POWERS-STUD	7424	2	1/2”	4”	3”
“J” Anchor	POWERS-STUD	7424	2	1/2”	4”	4”
“J” Anchor	POWERS-STUD	7434	2	5/8”	4”	4”

***Note:** Anchor fasteners are not furnished by YKK AP.
All anchors are assumed in 3,000 PSI concrete.
Anchor bolt size and location will vary according to engineering calculations.

FRAME FABRICATION

FRAME TYPES / ANCHORING METHODS:

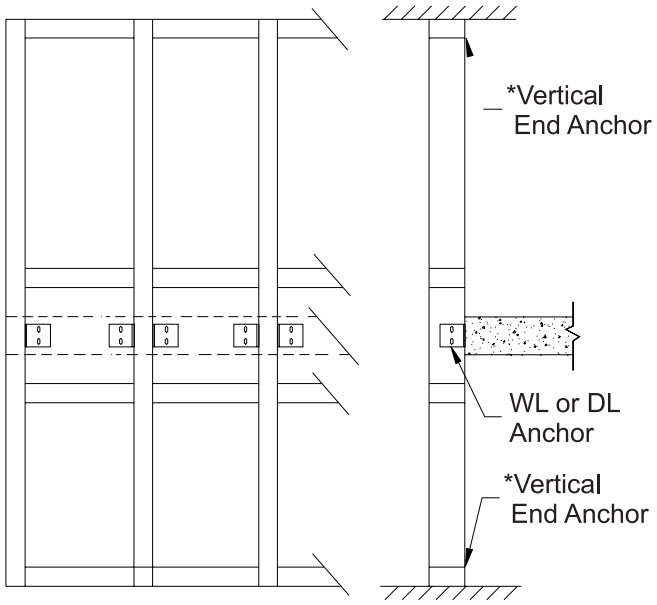
Note: The following is a guideline for types of frames. Refer to the shop drawings or consult YKK AP for exact layout of frames. These installation instructions are to be used in conjunction with approved shop drawings. Consult shop drawings for anchorage of mullions to structure.



SINGLE SPAN

Smaller units may be assembled on the ground and tipped in place.

Larger units require being stick assembled in place.



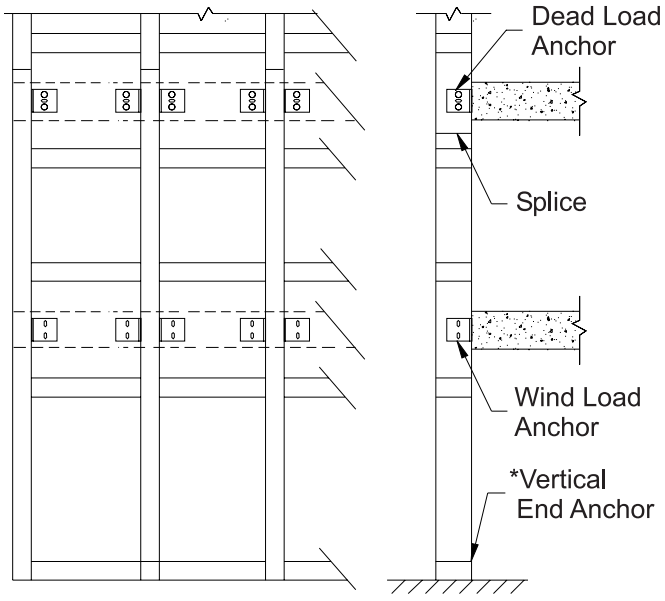
TWIN SPAN

Note: If YKK AP does not prepare the shop drawings for the project, a qualified engineer must approve all anchors and mullions for wind load and dead load.

*Vertical end attachment will be “J”, “F”, and/or “T” mullion end anchors. Refer to shop drawings or consult YKK AP.

Note: Structure must be capable of resisting all loads imposed by anchor reactions.

Fabrication of YHC 300 OG Curtain Wall varies depending on which anchors are required for a given project.



MULTI-SPAN

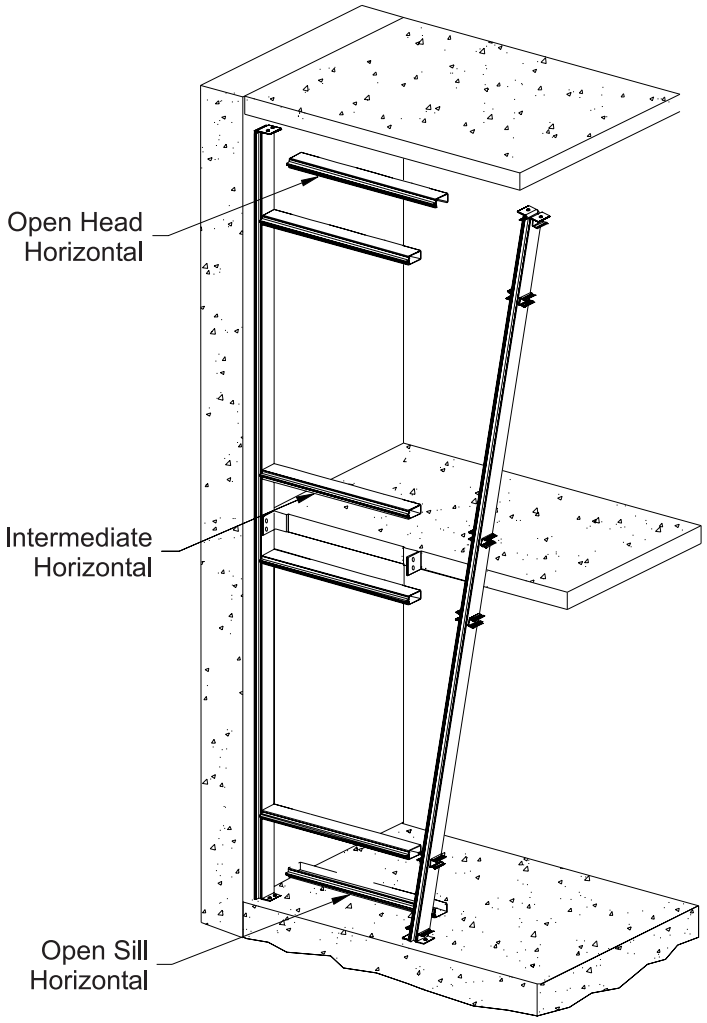
FRAME FABRICATION

Using mullion end anchors:

YHC 300 OG has three possible end anchoring conditions: “J”, “T”, and “F”.

-”J” anchors are used with jambs and intermediate verticals at the sill only.
-”T” anchors are used with intermediate verticals at the head and sill.
-”F” anchors are used with jamb mullions at the head and sill.
-Anchor usage depends on end reaction, stress, and attachment.

Mullions should be pre-assembled with shear clips, end anchors, and steel or aluminum reinforcing if necessary.



Framing members:

-Open back members, E9-3104 & 3105, are used for all head and sill members.
-Closed horizontal members, E9-3102 & E9-3106, are used at all intermediate locations with the exception of end bays.
-Open back members, E9-3104 & 3105, are used for intermediate horizontals at end bays, to slide over the shear clips.

Note: When using stick built construction, check for plumb, level, and overall frame width every fifth mullion. This helps to avoid the build up of cumulative tolerance errors. Also check that all anchors are secure and firmly attached to the building.

FRAME FABRICATION

FABRICATE VERTICAL MULLIONS

STEP 1

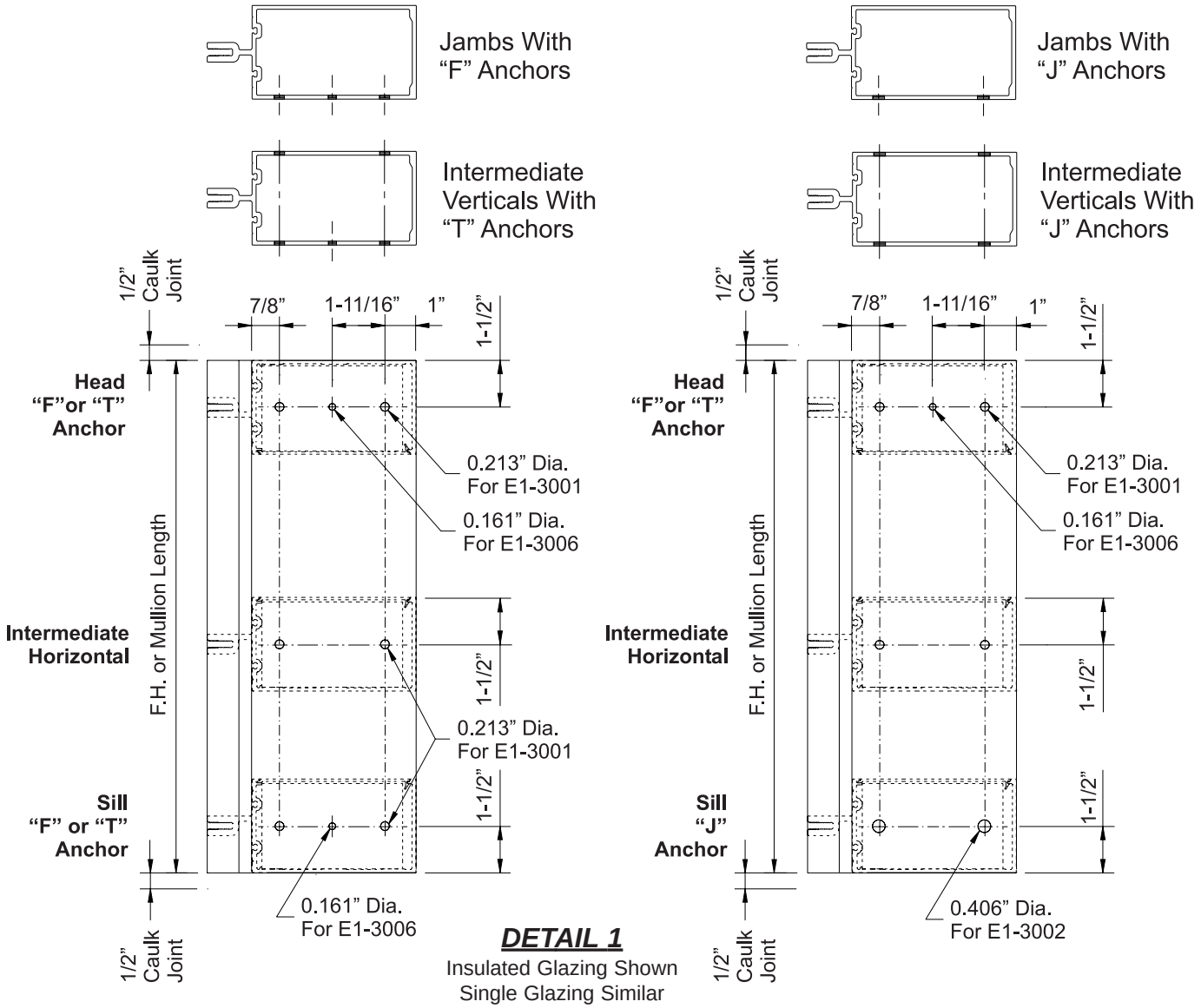
-Cut all vertical and jamb mullions to dimensions as shown on shop drawings.
Allow 1/2” for splices and 1/2” caulk joint around the perimeter of the frame.

Step 2

Mullion hole locations for attachment of shear clip, E1-3001, or “J” anchor, E1-3002 are shown below:

-Locate and drill holes in vertical and jamb mullions at the locations shown in **Detail 1**.

Note: Mullion hole locations and diameters vary depending on shear clip or “J” Anchor usage. “J” Anchors are used at the sill only.



DETAIL 1

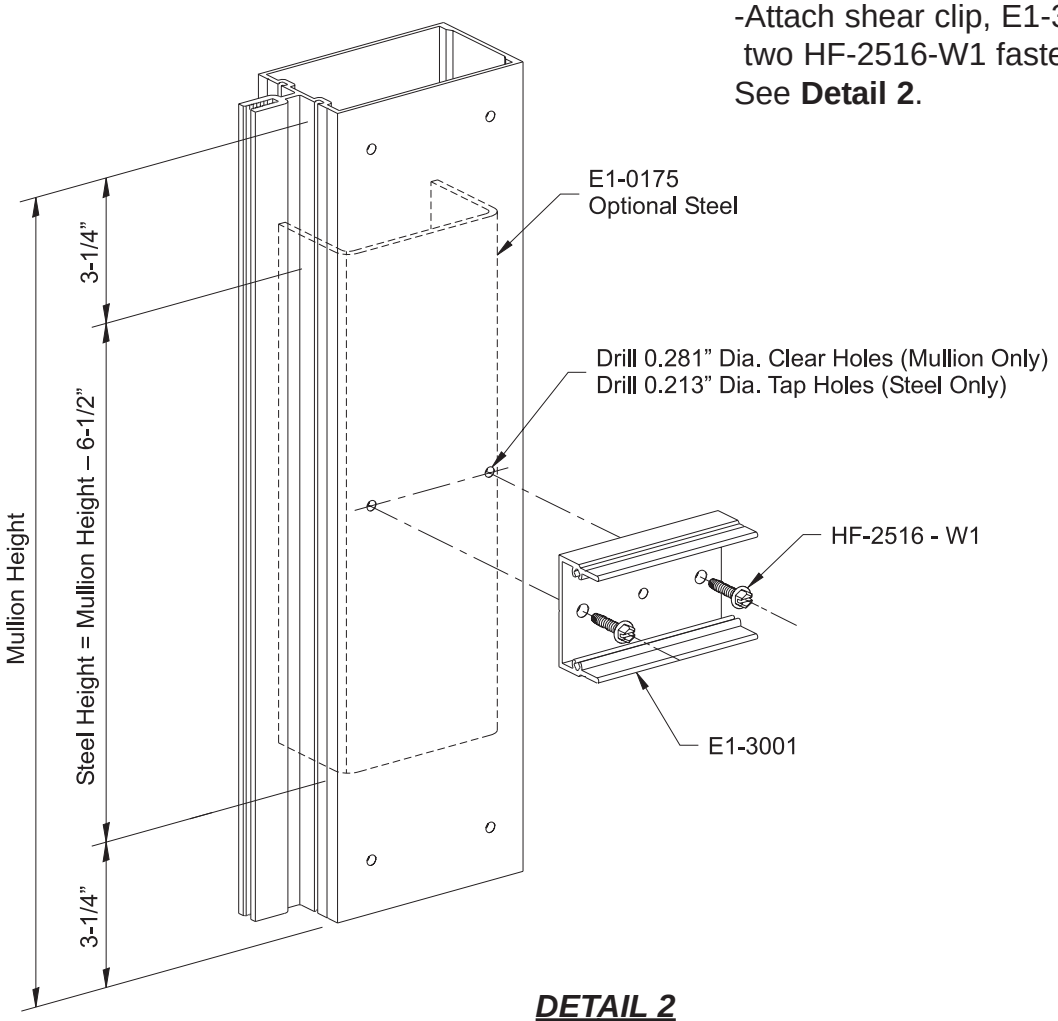
Insulated Glazing Shown
Single Glazing Similar

FRAME FABRICATION

STEP 3
USING ALTERNATE REINFORCEMENT, E1-0175

-Reference your shop drawings for the location of horizontals. Steel channel, E1-0175 is always fastened through the shear clip, E1-3001.
-Drill a 0.281” diameter hole in the vertical mullion being careful to not drill a hole in steel channel.
-Reinforcing must allow clearance for anchor sleeve; locate reinforcing a minimum of 3-1/4” from the end of the mullion.
See **Detail 2**.

-Drill a 0.213” diameter hole in steel channel through the same hole locations using a #3 diameter drill bit.
-Attach shear clip, E1-3001 using two HF-2516-W1 fasteners per clip.
See **Detail 2**.

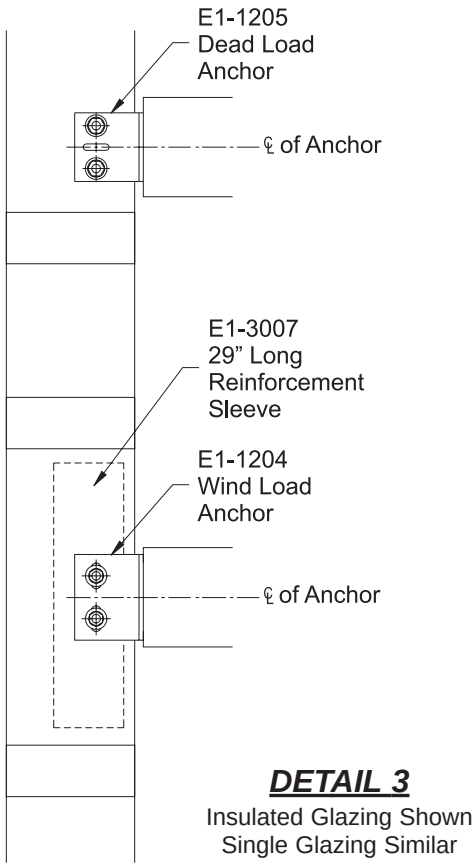


DETAIL 2
Insulated Glazing Shown
Single Glazing Similar

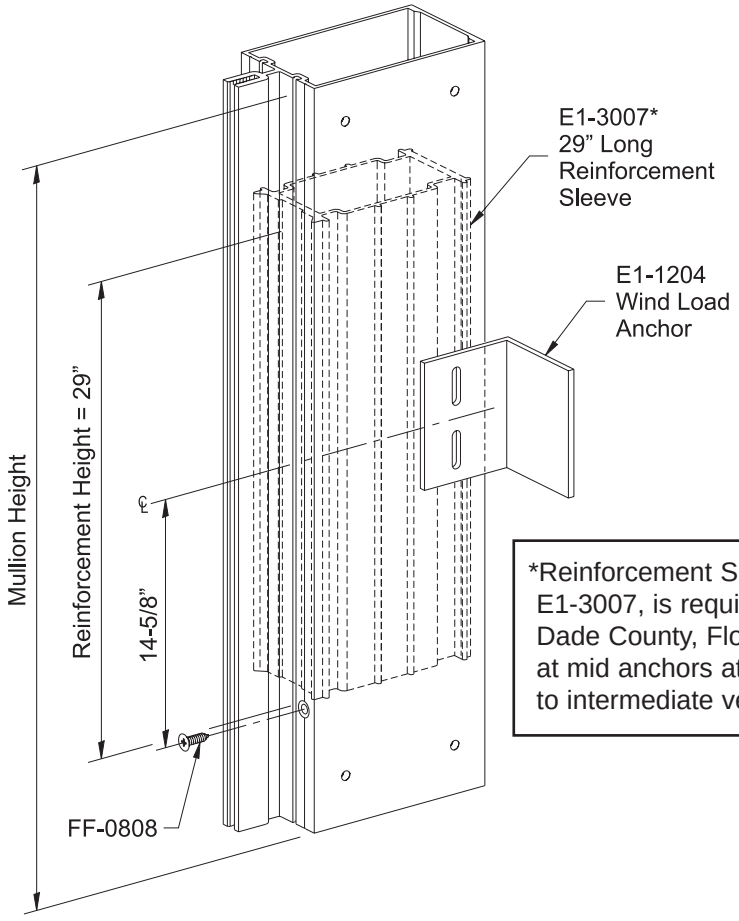
FRAME FABRICATION

STEP 3 (Continued)
USING ALTERNATE REINFORCEMENT, E1-3007

If the engineering calculations require the vertical mullions to be reinforced with additional aluminum, E1-3007 reinforcement sleeve may be used. Checking stress levels at point load areas will require different anchors or possibly steel reinforcing. A qualified engineer should do these calculations.



DETAIL 3
Insulated Glazing Shown
Single Glazing Similar



*Reinforcement Sleeve, E1-3007, is required in Dade County, Florida, at mid anchors attached to intermediate verticals.

-When locating E1-3007 at wind load or dead load anchors see **Detail 3**.
-Reference your shop drawings for the exact location of the centerline of the wind load/dead load anchors.
-From the centerline measure down 14-5/8” along the “V”-groove of the vertical and locate hole for FF-0808 fastener as a stop for E1-3007 reinforcement sleeve.
-Drill a 0.141” diameter hole into the V-Groove of vertical.
-Countersink for #8 flat head screw and install FF-0808 fastener.
See **Detail 3**.

FRAME FABRICATION

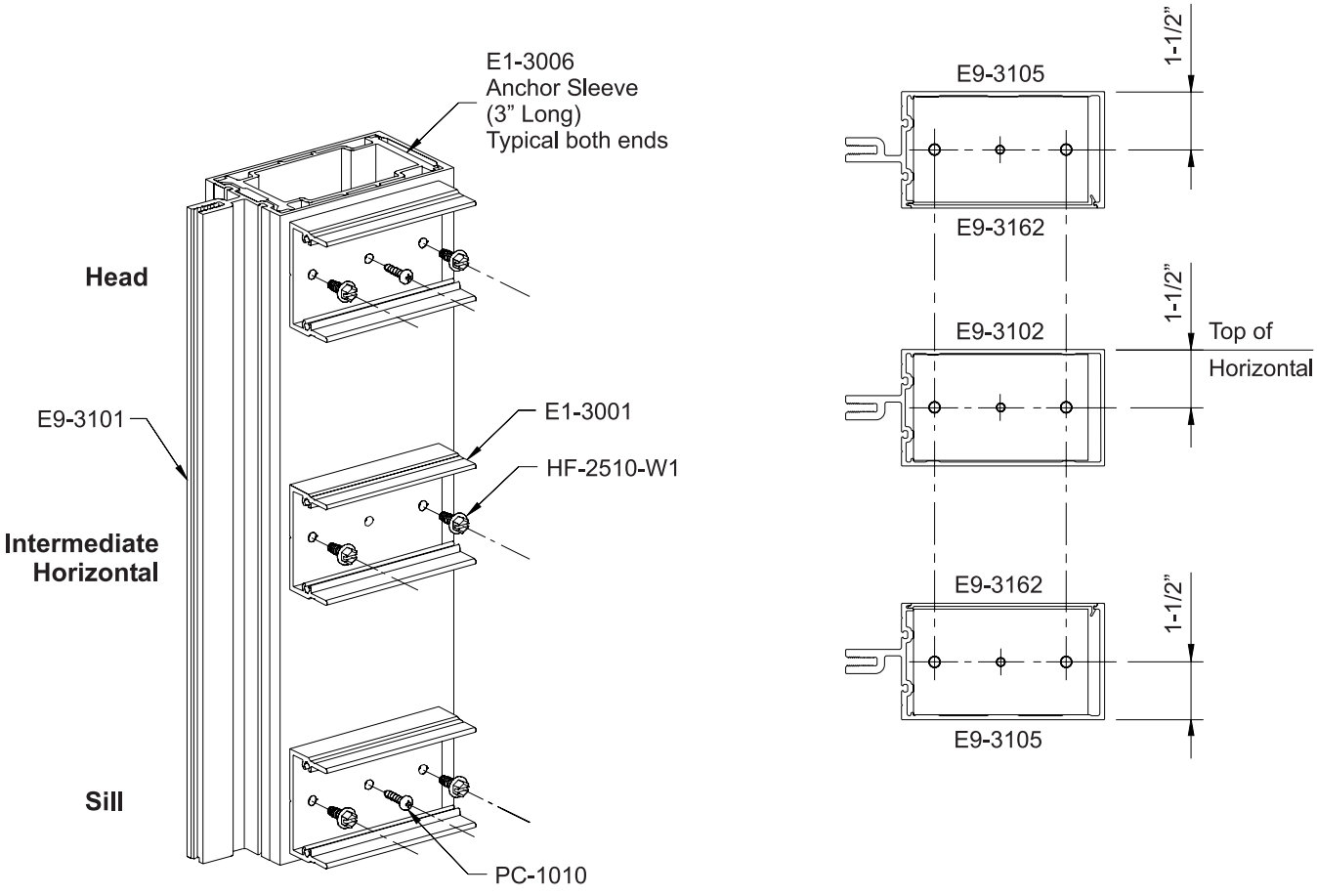
Mullions with “F” or “T” Anchors at Head & Sill

STEP 4
SHEAR CLIPS FOR HORIZONTALS

Shear clips, E1-3001, are used to attach horizontal members to the jamb and vertical mullions.
-Fasten shear clips to the mullion with two HF-2510-W1 fasteners per clip.

Anchor sleeve, E1-3006, centers the “F” and “T” mullion end anchors and must be installed when using “T” anchor, E1-3003, and “F” anchor, E1-3004. Anchor sleeves are not required when using “J” anchor, E1-3002.
-Attach the anchor sleeve to the mullion and shear clip with one PC-1010 fastener. Anchor sleeves are attached only on one side of the mullion.

See **Detail 4**.



DETAIL 4
Insulated Glazing Shown
Single Glazing Similar

FRAME FABRICATION

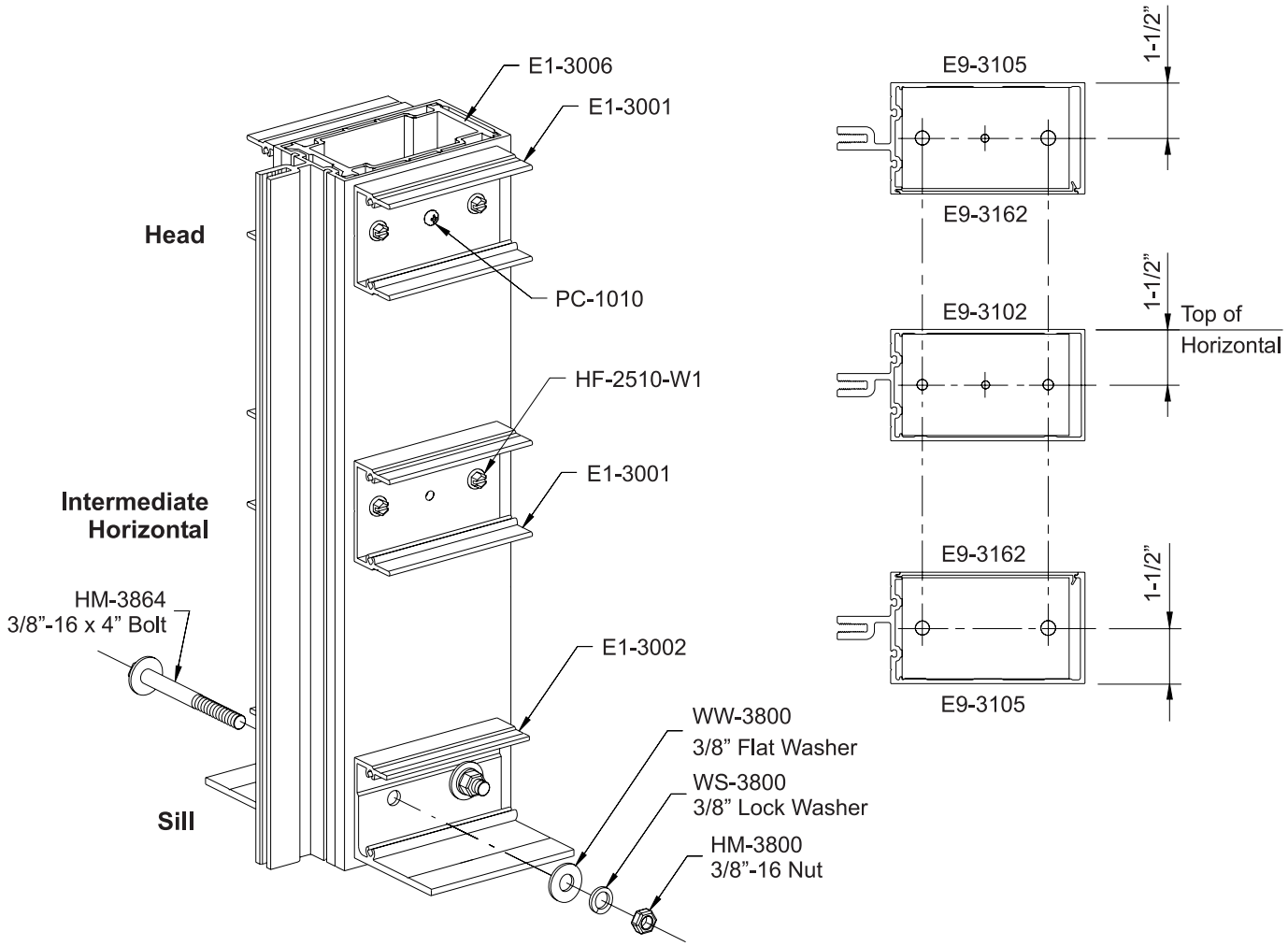
Mullions with “T” Anchor at Head & “J” Anchor at Sill

STEP 5
“J” ANCHORS AT INTERMEDIATE VERTICALS

“J” anchor, E1-3002, is installed without anchor sleeve, E1-3006, and is designed to be attached to intermediate verticals using two through bolts as shown below.

-Align the “J” anchors and insert the HM-3864 bolts through both anchors and the mullion.
-Install 3/8” flat washers and 3/8” lock washers between the anchor and HM-3800 hex nuts.

See **Detail 5**.



DETAIL 5
Insulated Glazing Shown
Single Glazing Similar

FRAME FABRICATION

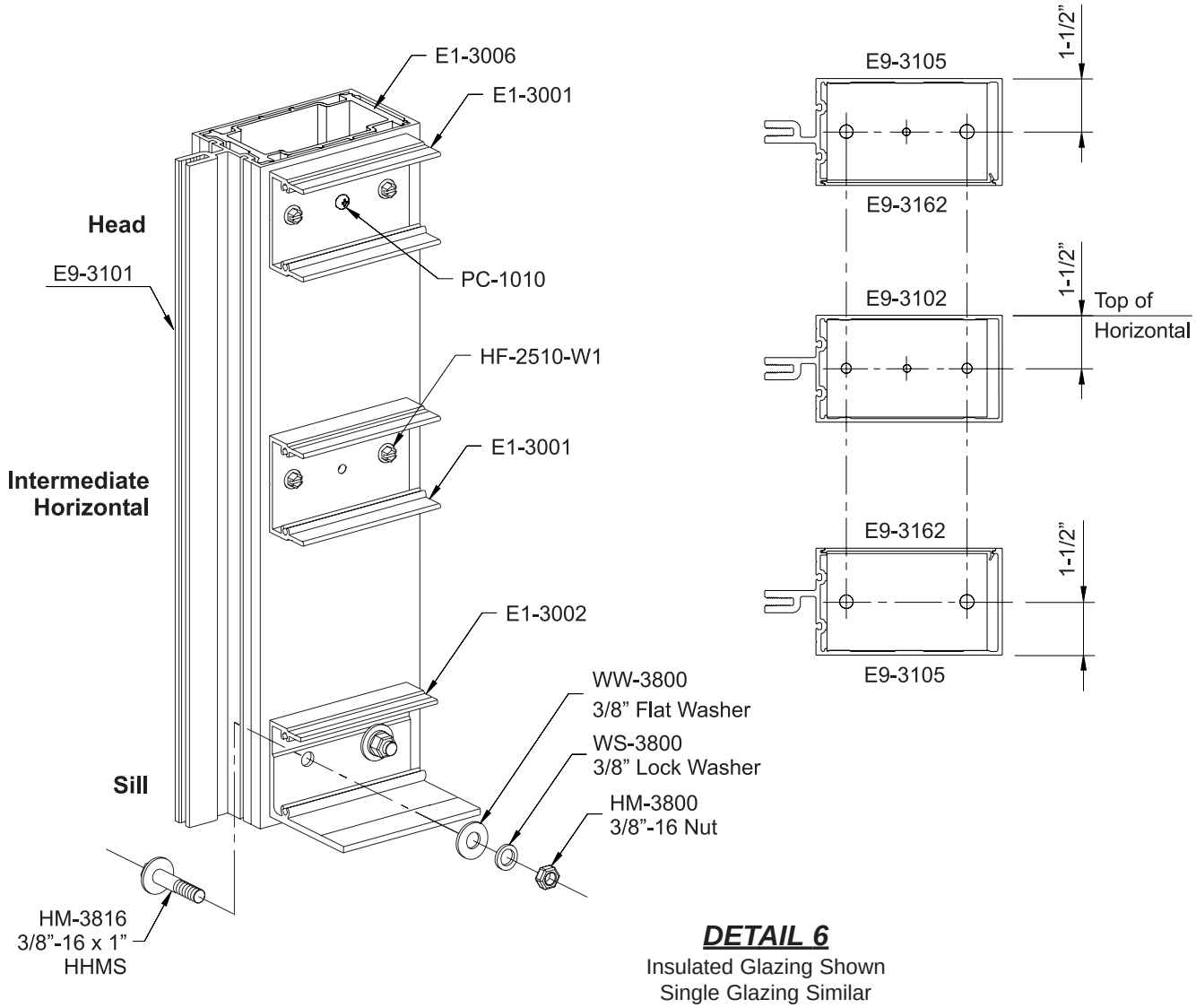
Mullions with “T” Anchor at Head & “J” Anchor at Sill

STEP 5 (Continued)
“J” ANCHORS AT JAMB CONDITIONS

“J” anchor, E1-3002, is installed without anchor sleeve, E1-3006, and is designed to be attached to jamb mullions using two 3/8” x 1” bolts as shown below.

-Align the “J” anchor with the mullion and insert the HM-3816 bolts through the inside of the mullion and out the “J” anchor.
-Install 3/8” flat washers and 3/8” lock washers between the anchor and HM-3800 hex nuts.

See **Detail 6**.



DETAIL 6
Insulated Glazing Shown
Single Glazing Similar

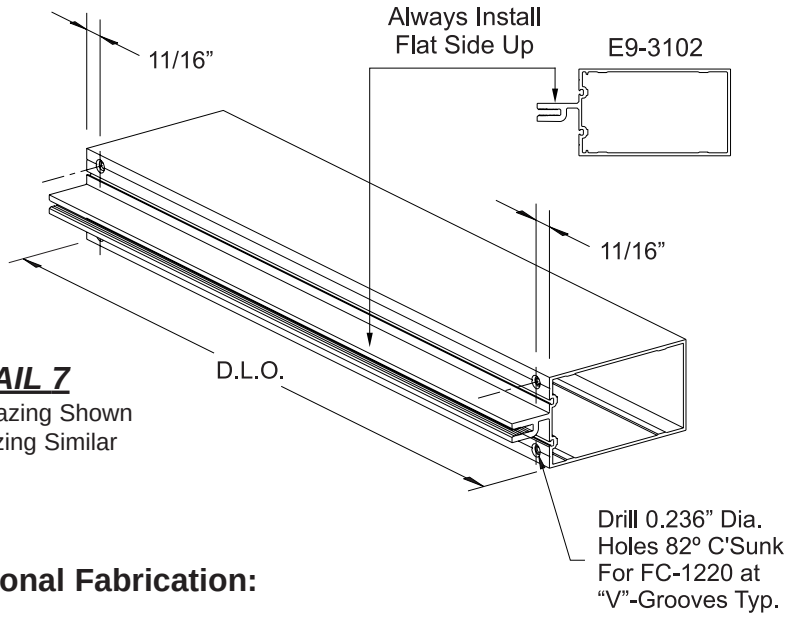
FRAME FABRICATION

STEP 6
FABRICATE HORIZONTAL MEMBERS

-Cut all head, horizontal, sill members, and flush fillers to the daylight opening.
-Drill two 0.236" (#B) dia. holes along the "V"-Grooves above and below the mullion tongue on both ends of the mullion to attach members to the shear clips.

Note: Closed back horizontals, E9-3102 & E9-3106, are not to be used at head or sill conditions.

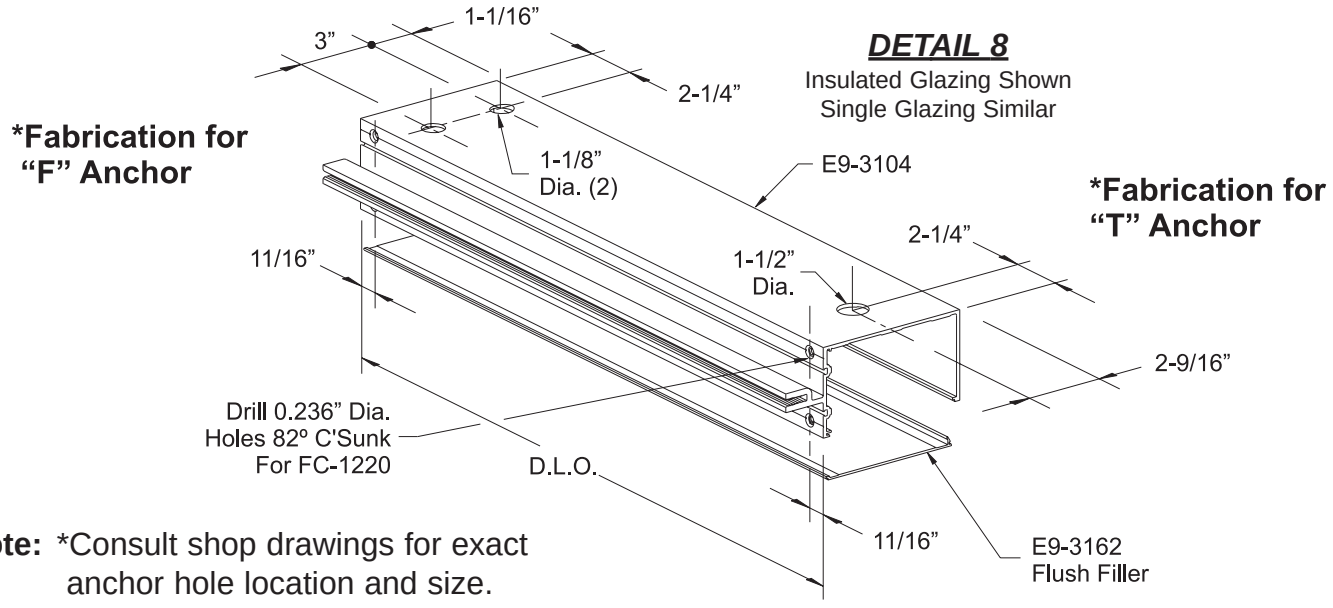
See **Details 7 & 8**.



DETAIL 7
Insulated Glazing Shown
Single Glazing Similar

Head and Sill Members Require Additional Fabrication:

-Drill appropriate size clearance holes at each end of the mullion as shown in **Detail 8**, or according to shop drawings or engineering calculations to clear anchor bolts and nuts.



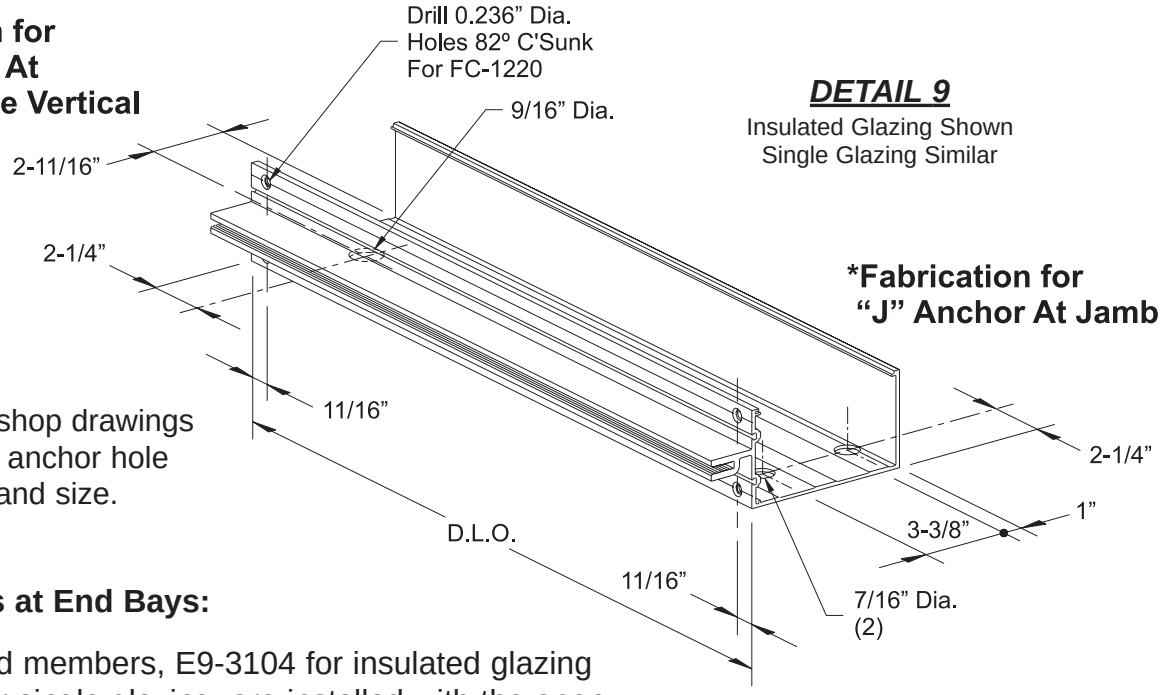
DETAIL 8
Insulated Glazing Shown
Single Glazing Similar

Note: *Consult shop drawings for exact anchor hole location and size.

FRAME FABRICATION

STEP 6 (Continued)
FABRICATE HORIZONTAL MEMBERS

-When using “J” anchors, drill appropriate size clearance holes at each end of the sill member as shown in **Detail 9**, or according to shop drawings or engineering calculations to clear anchor bolts.



DETAIL 9
Insulated Glazing Shown
Single Glazing Similar

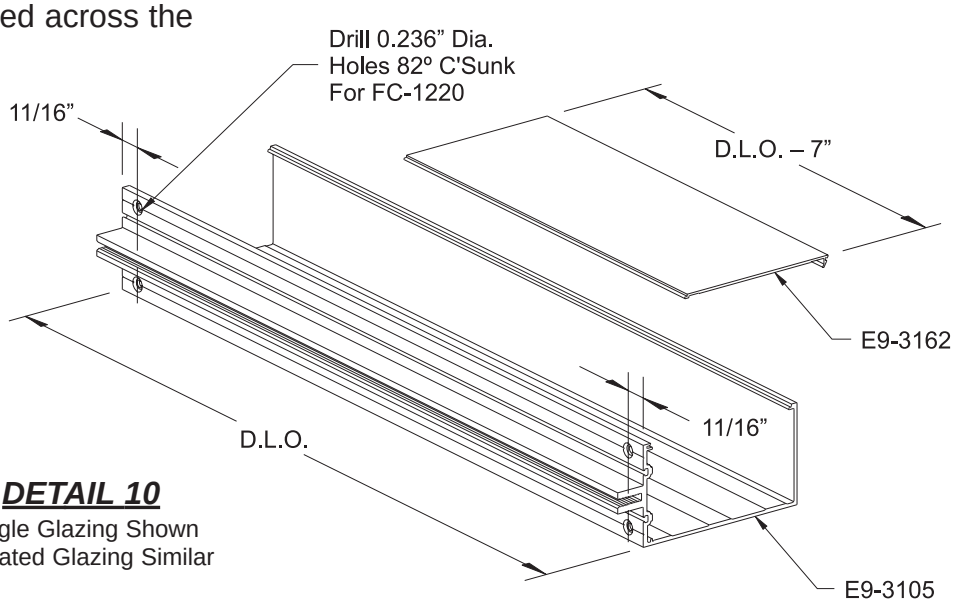
Note: *Consult shop drawings for exact anchor hole location and size.

Head Members at End Bays:

Open back head members, E9-3104 for insulated glazing and E9-3105 for single glazing, are installed with the open side facing the structure at end bays. To clear the anchor bolts:

-Cut the flush filler to Daylight Opening minus(–) 7”.
-Snap in the flush filler centered across the width of the mullion.

See **Detail 10**.



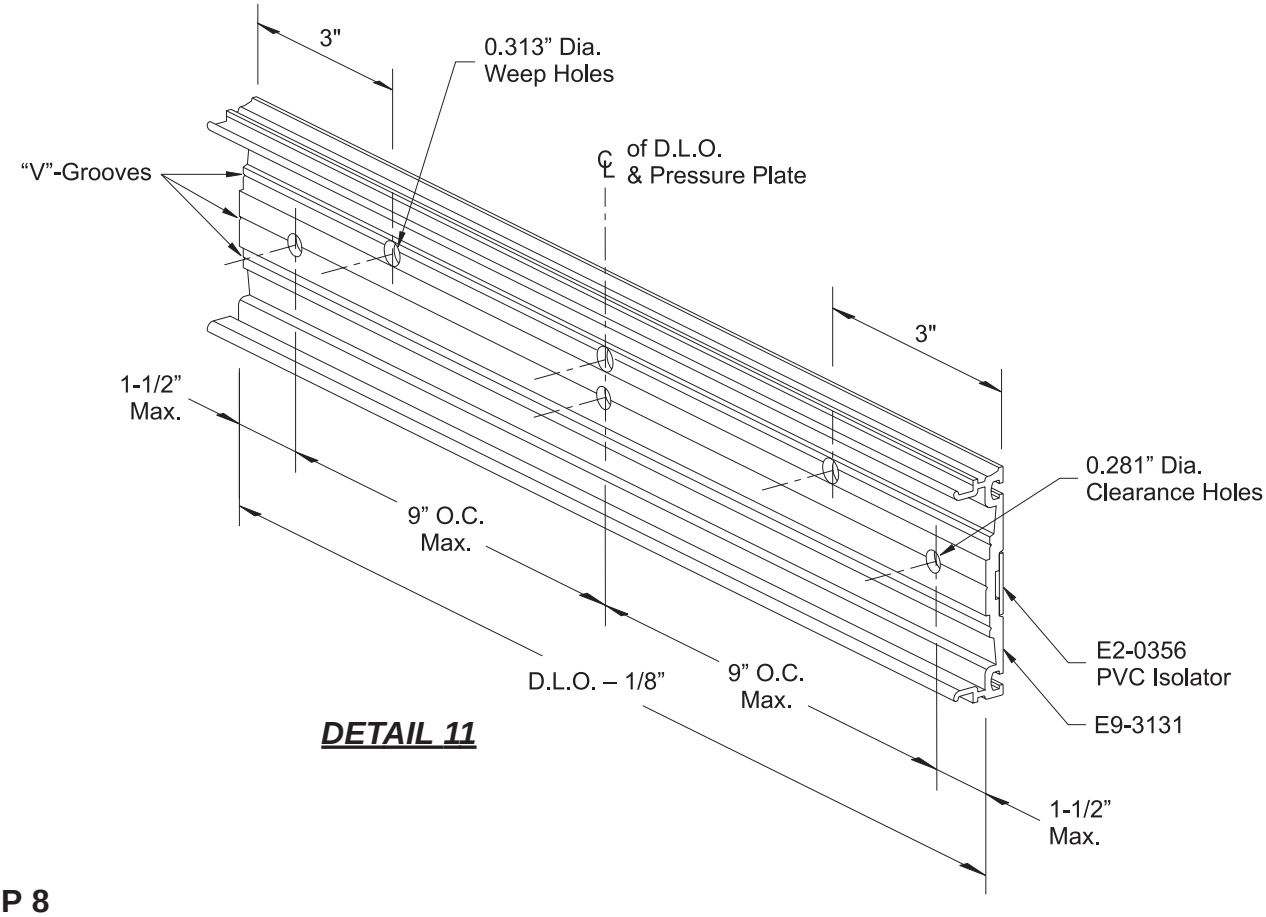
DETAIL 10
Single Glazing Shown
Insulated Glazing Similar

FRAME FABRICATION

STEP 7
FABRICATE HORIZONTAL PRESSURE PLATES

-Cut horizontal pressure plates to the daylight opening between verticals minus(–) 1/8”.
-Pressure plate stock lengths have 0.281” dia. holes factory punched every 9”. After cutting, drill additional holes if required to ensure that end holes are within 1-1/2” of each end.
-Drill two 0.313” (5/16”) diameter weep holes 3” from each end and one at the centerline of the pressure plate.

See **Detail 11**.



DETAIL 11

STEP 8
FABRICATE VERTICAL PRESSURE PLATES

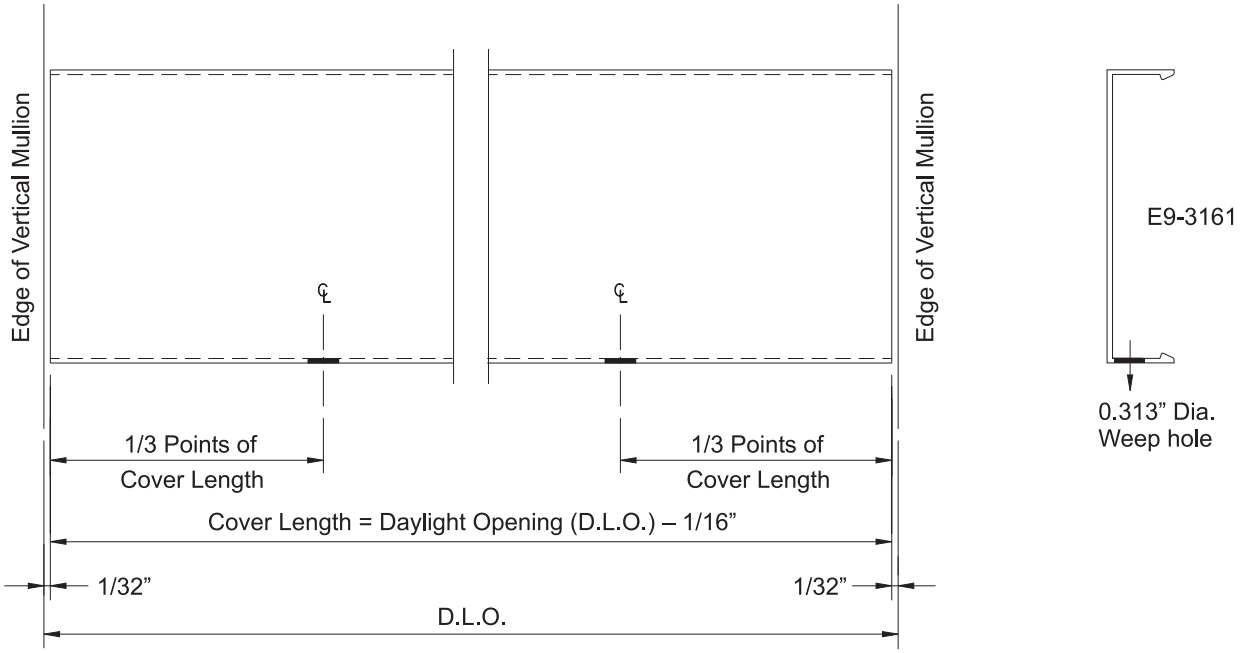
-Cut vertical and jamb pressure plates to the same length as the vertical mullions unless verticals are spliced.
-If vertical mullions are spliced, cut pressure plates to accommodate for 1/2” expansion joint as shown in **Detail 14** on **Page-18**.
-Drill additional attachment holes if required to ensure that end holes are within 1-1/2” of each end.

FRAME FABRICATION

STEP 9
FABRICATE HORIZONTAL FACE COVERS

-Cut horizontal face covers, E9-3161, to the daylight opening between verticals minus(–) 1/16”.
-Drill two 0.313” (5/16”) diameter weep holes at 1/3 points of cover as shown.

See **Detail 12**.



DETAIL 12

STEP 10
FABRICATE VERTICAL FACE COVERS

-Cut vertical face covers to the same length as the vertical mullions unless the verticals are spliced.
-If vertical mullions are spliced, cut vertical covers to accommodate for the 1/2” expansion joint as shown in **Detail 14** on **Page-18**.

FRAME FABRICATION

STEP 11
FABRICATE VERTICALS FOR SPLICES

Splice locator screw:

-Measure down 2-5/8” on the “V”-groove on the face of the mullion and mark the hole location.

-Drill a 0.141” diameter (#28 drill bit) diameter hole and countersink for a #8 flat head fastener for the splice locator screw.

Splice sleeve attachment fasteners:

-Measure down from the top of the mullion 1” on both sides and draw a line parallel with the top of the mullion.

-Measure in from both, the front and the back of the mullion,1-1/2” and mark the hole locations on the previously drawn lines.

-Drill a 0.236” diameter (#B drill bit) diameter hole at each hole location and countersink for a #12 flat head fastener.

Install splice sleeve beveled end up:

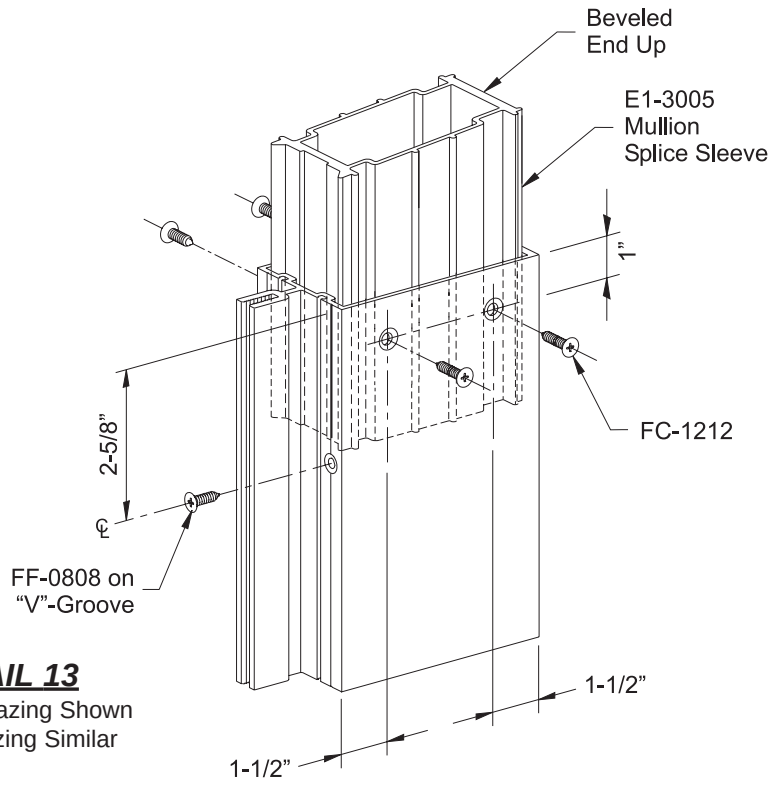
-Install one (1) FF-0808 fastener into the face of the mullion to properly locate the splice.

-Carefully slide the splice sleeve down into the end of the mullion with the beveled end up (the beveled end will ease the stacking of the next mullion).

-Match drill 0.189” diameter (#12 drill bit) holes in the splice sleeve through the holes previously drilled in the mullion for the splice sleeve attachment fasteners.

-Attach the splice sleeve with two FC-1212 fasteners on each side of the mullion.

See **Detail 13.**



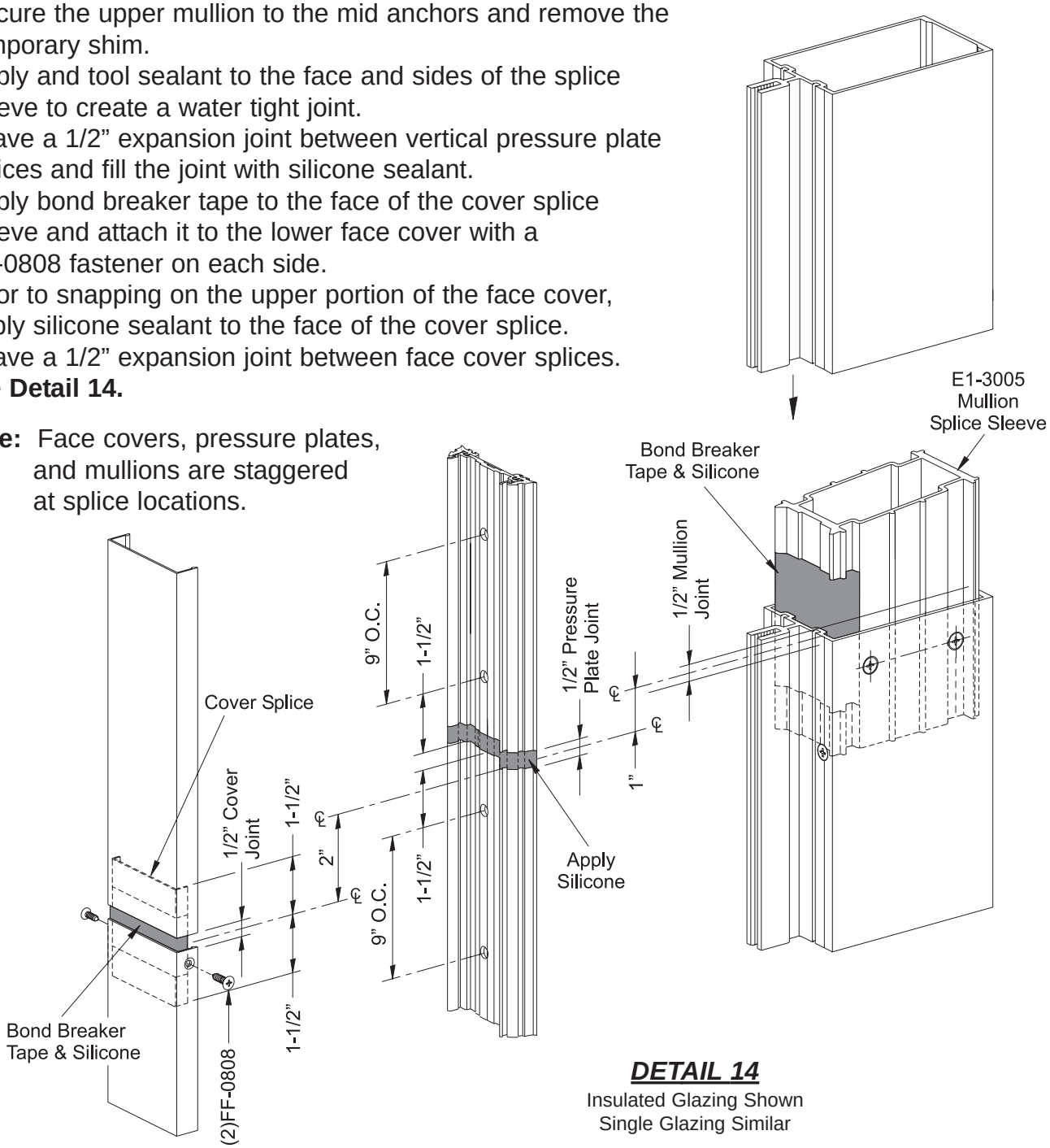
DETAIL 13
Insulated Glazing Shown
Single Glazing Similar

FRAME INSTALLATION

STEP 12
TYPICAL VERTICAL SPLICE

-Clean all contact surfaces as recommended by sealant manufacturer.
-Apply bond breaker tape to the face of the mullion splice sleeve.
-Carefully slide the next mullion down onto the splice sleeve and place a 1/2” temporary shim between the mullions to properly locate them.
-Secure the upper mullion to the mid anchors and remove the temporary shim.
-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 silicone sealant.
-Apply bond breaker tape to the face of the cover splice sleeve and attach it to the lower face cover with a FF-0808 fastener on each side.
-Prior to snapping on the upper portion of the face cover, apply silicone sealant to the face of the cover splice.
-Leave a 1/2” expansion joint between face cover splices.
See **Detail 14.**

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



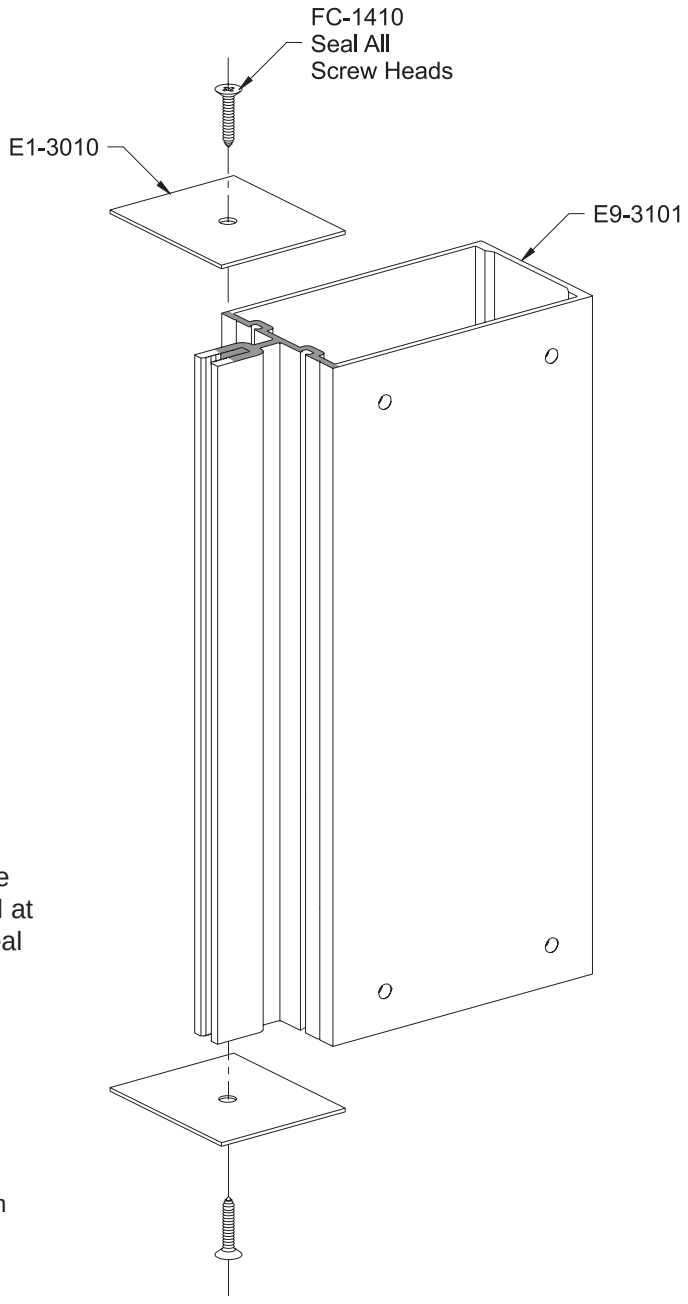
DETAIL 14
Insulated Glazing Shown
Single Glazing Similar

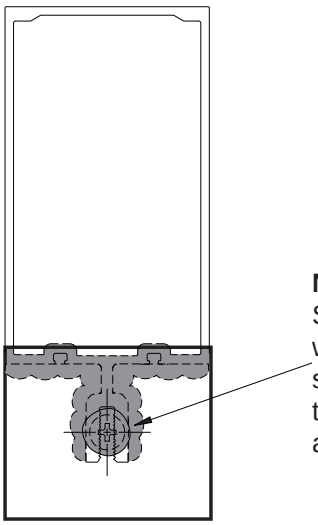
FRAME INSTALLATION

STEP 13
INSTALL MULLION END CAPS

-Clean all contact surfaces as recommended by the sealant manufacturer.
-Apply silicone sealant to screw raceway and edge of mullion prior to installing mullion end caps, E1-3010 for E9-3101 (insulated glazing) or E1-3011 for E9-3103 (single glazing).
-Prior to erecting vertical mullions, install mullion end caps using one FC-1410 fastener at each end of the mullion.
-Apply and tool sealant to all screw heads.

See **Detail 15.**





Note:
Seal mullion end cap water tight with silicone sealant around vertical at top and bottom and seal all screw heads.

DETAIL 15
Insulated Glazing Shown
Single Glazing Similar

CAUTION: Make sure that mullion end cap location does not interfere with the installation of mullion end anchors.

FRAME INSTALLATION

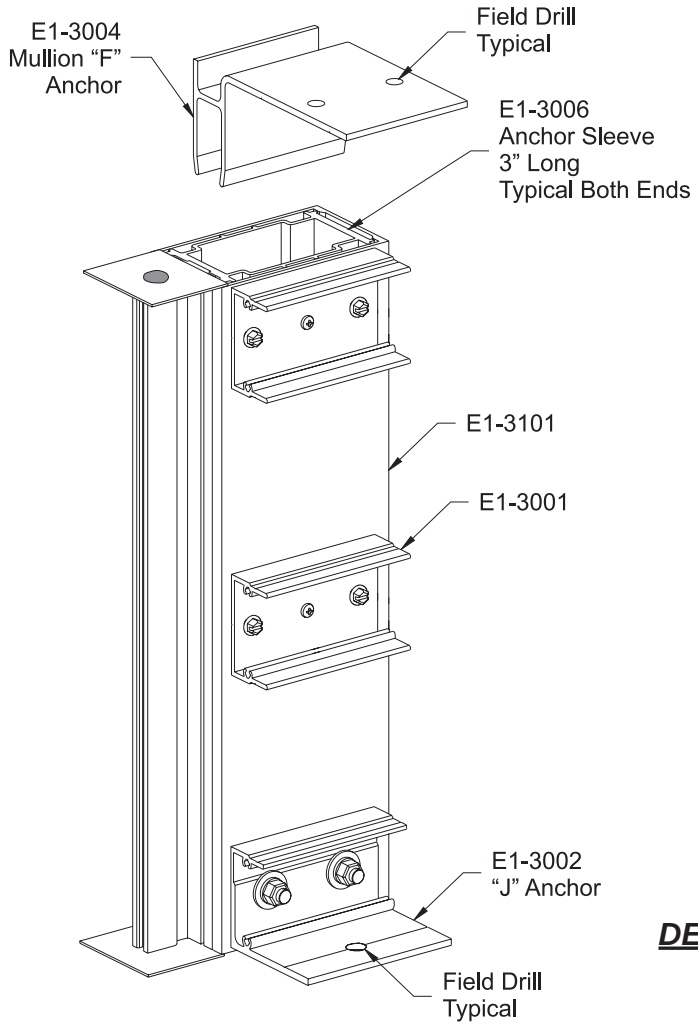
STEP 14
INSTALL JAMB AND VERTICAL MULLIONS

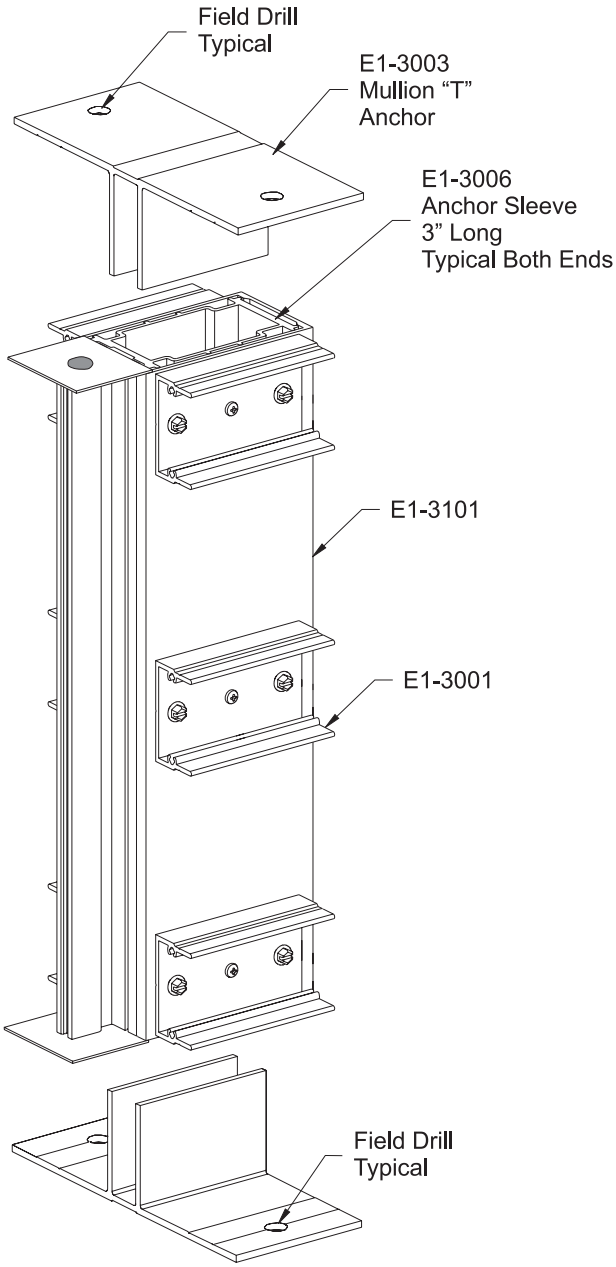
-Insert mullion “T” anchors, E1-3003, and “F” anchors, E1-3004, into the top and bottom of the mullions before erecting them into the opening.
-Erect and locate the jamb and vertical mullions and temporarily attach them to the structure.

Note: All mullions must be installed plumb and true.

-Field drill holes in “T”, “F”, and “J” anchors for appropriate anchor fasteners according to engineering calculations. Consult YKK AP if load requirements are in question.

See **Detail 16**.





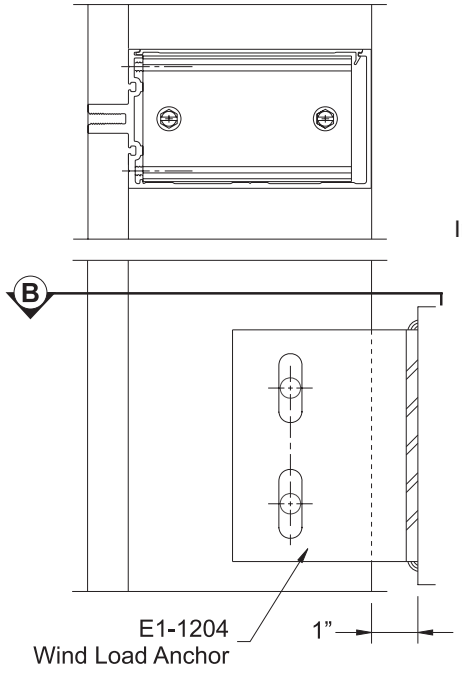
DETAIL 16

FRAME INSTALLATION

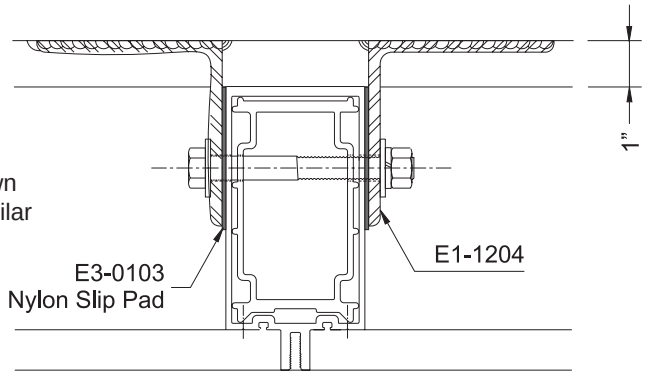
STEP 15
INSTALL WIND LOAD/DEAD LOAD ANCHORS

-Install steel mullion mid anchors:
Wind Load Anchor, E1-1204. See **Detail 17.**
Dead Load Anchor, E1-1205. See **Detail 18.**

Note: Required anchors and bolt size will vary based on project requirements. Consult a qualified engineer or YKK AP.

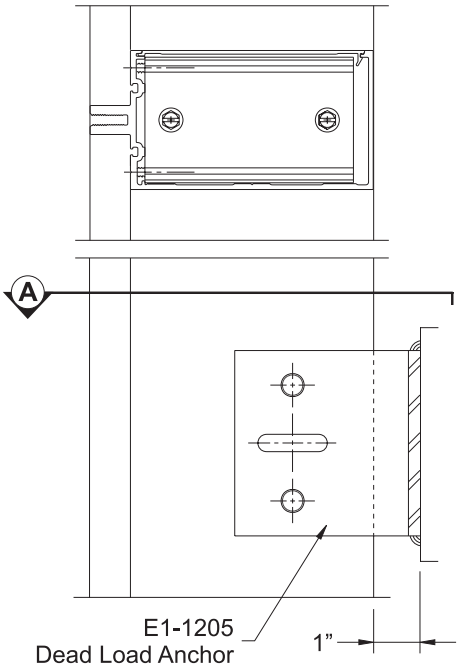


DETAIL 17
Single Glazing Shown
Insulated Glazing Similar

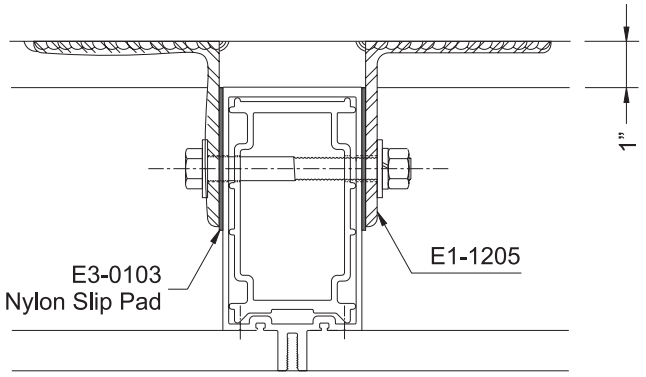


SECTION B

-Mid anchors are normally template or line set before mullions are hung.
-Slotted or drilled leg of clip must be set at 90° to offset leg. See shop drawings for details of mid anchor attachment.
-Install plumb and align vertical mullions, drill appropriate size holes for anchor bolts as shown in shop drawings.
-Anchor bolts are fastened **after** horizontals are attached.
-Nylon slip pads, E3-0103, **must** be installed between mullion and mid anchors.



DETAIL 18
Single Glazing Shown
Insulated Glazing Similar

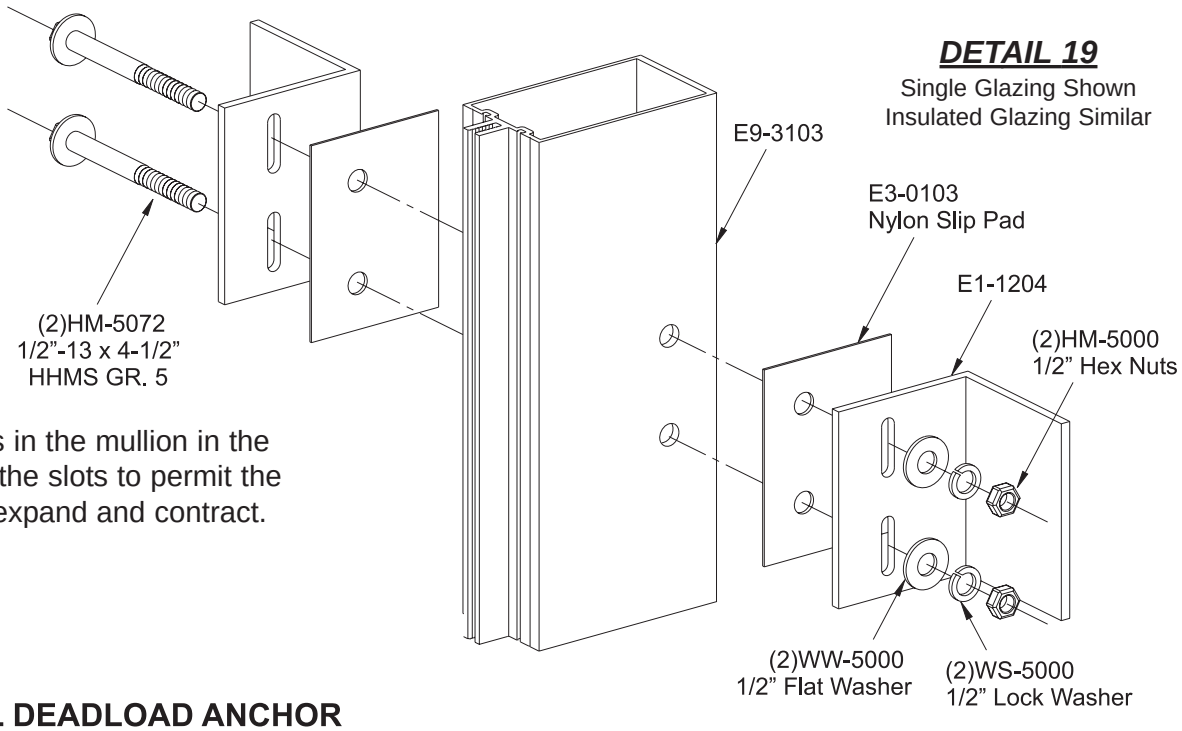


SECTION A

FRAME INSTALLATION

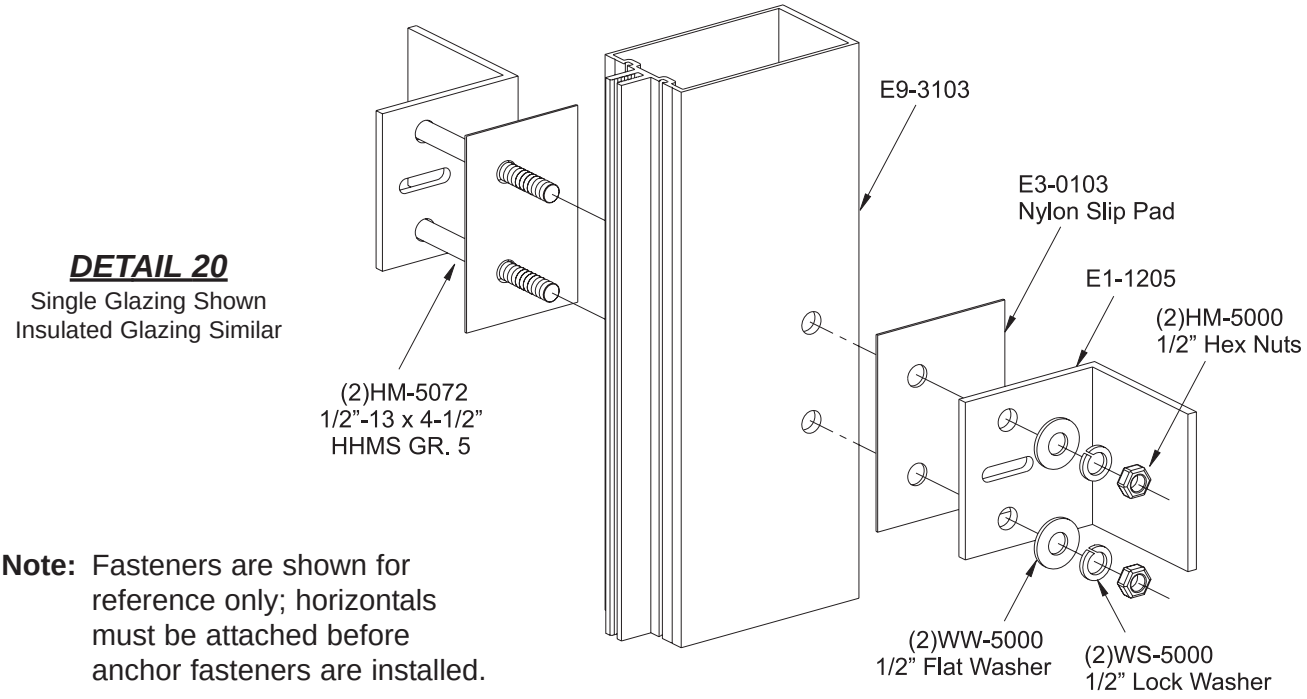
STEP 15 (CONTINUED)
INSTALL WIND LOAD/DEAD LOAD ANCHORS
-Refer to shop drawings or engineering calculations for anchor requirements.

TYPICAL WIND LOAD ANCHOR



-Drill holes in the mullion in the center of the slots to permit the frame to expand and contract.

TYPICAL DEADLOAD ANCHOR



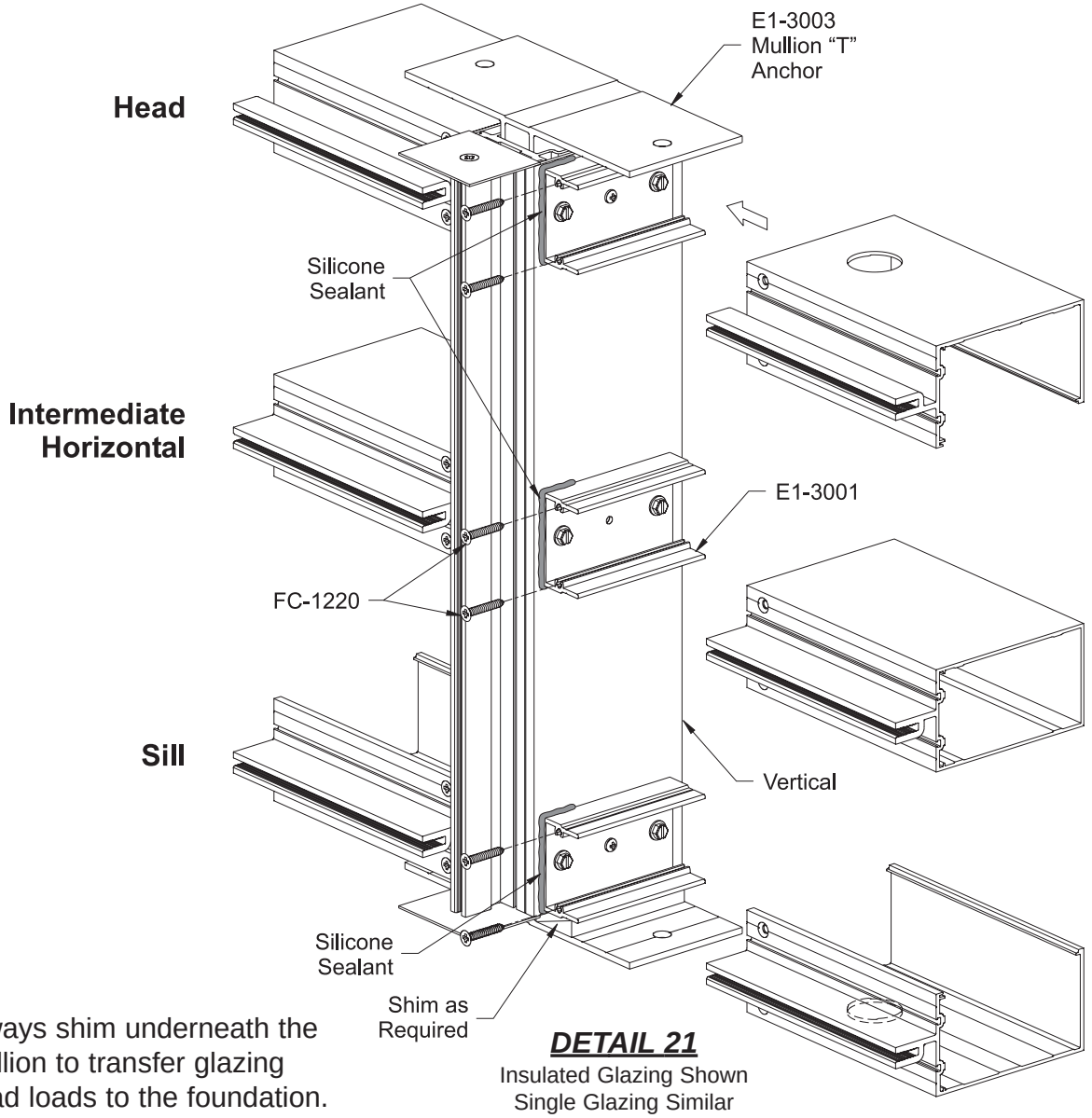
Note: Fasteners are shown for reference only; horizontals must be attached before anchor fasteners are installed.

FRAME INSTALLATION

STEP 16
ATTACH HORIZONTAL MEMBERS

-Just prior to attaching the horizontal members to the vertical, apply sealant to the front of the shear clip as shown.
-Slide the horizontal members towards the shear clips and attach them to the shear clips with two FC-1220 fasteners at each end.
-Tool and wipe away any excess sealant.
See **Detail 21**.

Note: Before applying any sealant, clean aluminum surfaces using cleaner and method approved by Dow Corning for 795 silicone sealant.



DETAIL 21
Insulated Glazing Shown
Single Glazing Similar

Note: Always shim underneath the mullion to transfer glazing dead loads to the foundation.

FRAME INSTALLATION

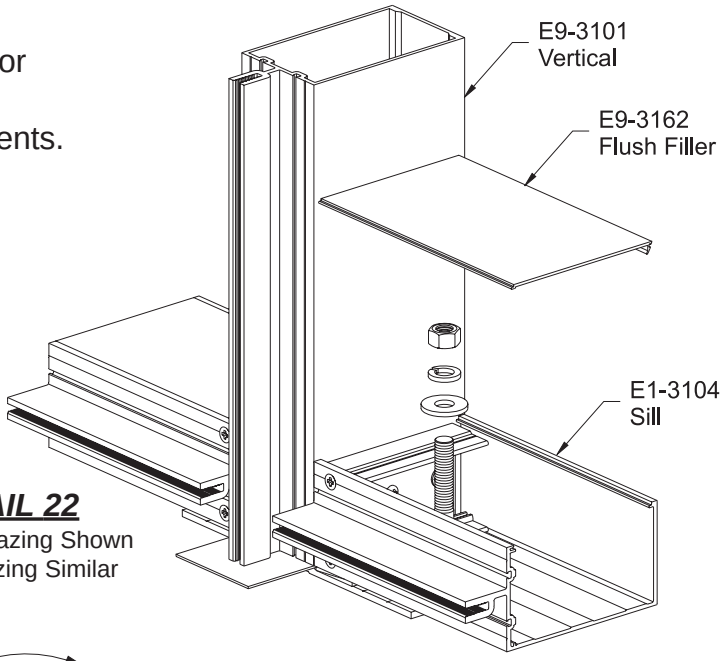
STEP 16 (Continued)
ATTACH HORIZONTAL MEMBERS

-Drill appropriate size holes into the structure for the anchor fasteners.
-Provide anchor fasteners as per job requirements. See approved shop drawings or engineering calculations for appropriate anchor fasteners.
-Install the anchor fasteners.

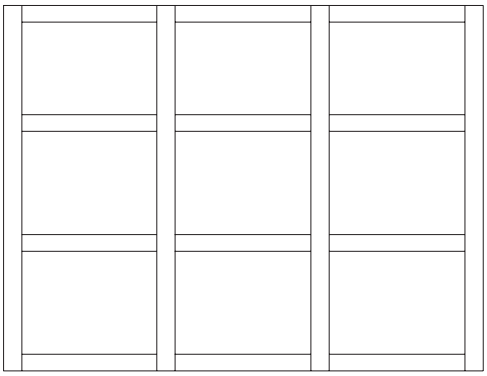
Caution: There must always be a shim under the mullion to transfer glazing dead loads to the foundation.

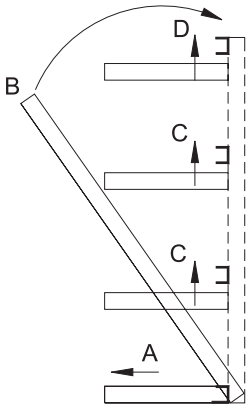
-Install the flush filler, E9-3162, after tightening the anchor fasteners.

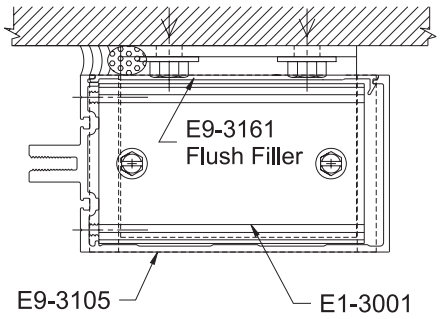
See **Detail 22**.



DETAIL 22
Insulated Glazing Shown
Single Glazing Similar







DETAIL 23
Single Glazing Shown
Insulated Glazing Similar

Horizontal Attachment at End Bays:

A: Bring the horizontal members into position and secure loosely.

B: To install vertical jamb, engage bottom shear clip or “J” anchor with the sill member. Pivot vertical jamb member into position and anchor loosely.

C: Use open back horizontal members at intermediate locations, bring them from under the shear clips and lift into position. Fasten the horizontals to the shear clips.
D: Secure top and bottom end anchors permanently; then install the head member with the open side facing up to clear the shear clips. Fasten the head member to the shear clips.

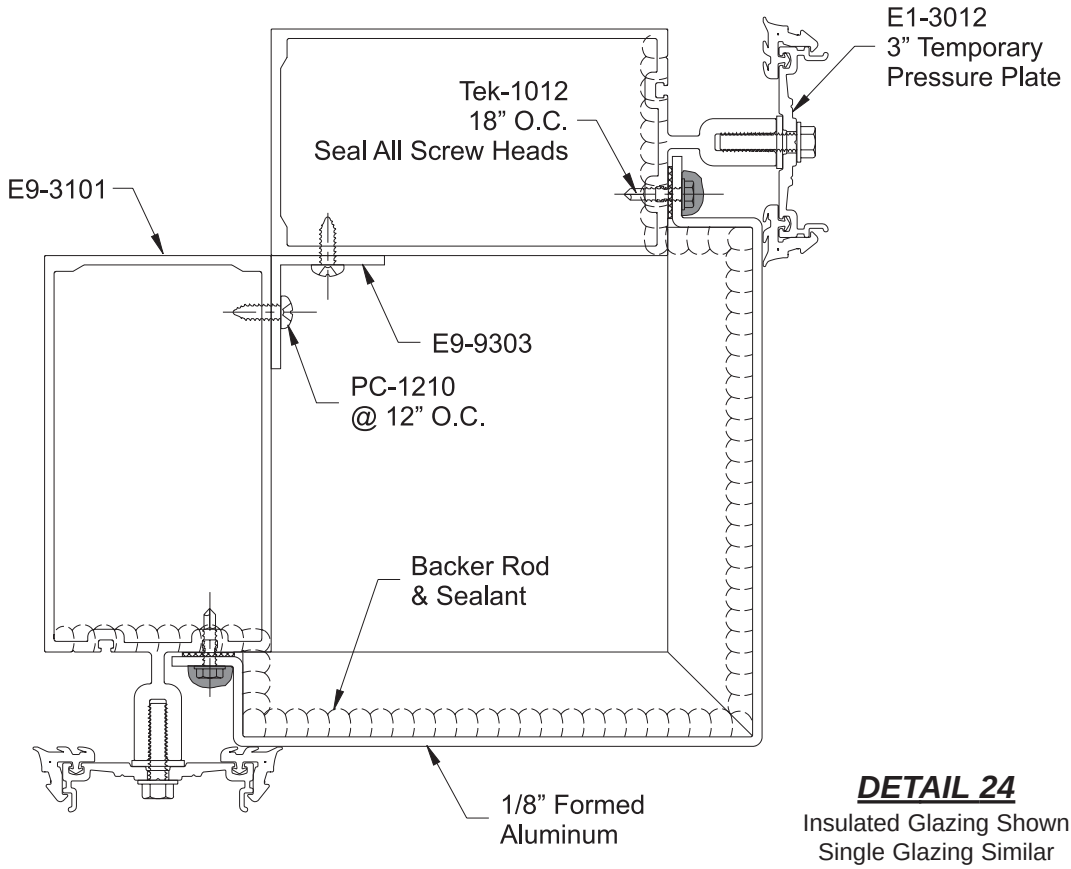
See **Detail 23**.

FRAME INSTALLATION

STEP 17
90° CORNER ASSEMBLY

-Locate both vertical mullions perpendicular to each other as shown in **Detail 24**.
-Anchor head and sill ends with appropriate end anchors - “J”, “F”, or “T”.
Refer to shop drawings for wind load / dead load anchors.
-Position angle E9-9303 into corner between the two vertical mullions and fasten both legs every 12” on center (o.c.) using PC-1010 fasteners.
-Position 1/8” formed aluminum cover between the verticals and install temporary pressure plates, E1-3012, every two to three feet to hold the aluminum cover in place.
-Fasten the aluminum cover to the face of the mullion every 18” on center (o.c.) with 3/4” long #10 Tek screws.
-Seal all exposed screw heads and remove the temporary pressure plates.
-Do not span formed aluminum cover more than 12’-6”; leave 1/2” joint between spans of 12’-6”.
-Clean area around joint with isopropyl alcohol (50%) and wipe clean with lint free cotton cloths using the “two cloth method”. Priming may be required for certain finishes.
-Compress backer rod into the 1/2” joint. Apply and tool Dow Corning 795 silicone to the joint.

See **Detail 24**.



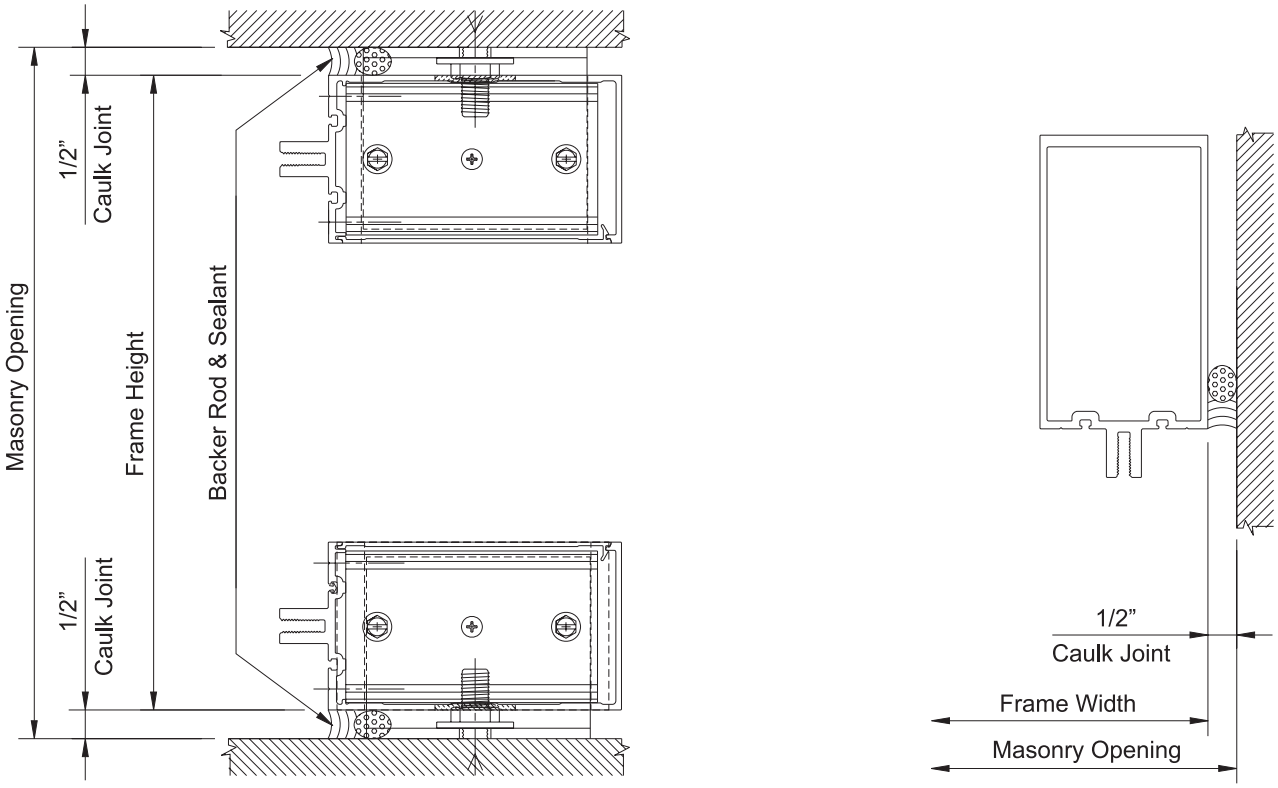
DETAIL 24
Insulated Glazing Shown
Single Glazing Similar

FRAME INSTALLATION

STEP 18
APPLY PERIMETER SEALANT

-Position backer rod around the perimeter of the frame.
-Clean area around the perimeter of the frame with isopropyl alcohol (50%) and wipe clean with lint free cotton cloths using the “two cloth method”.
-Apply Dow Corning 795 silicone sealant to the perimeter of the frame.

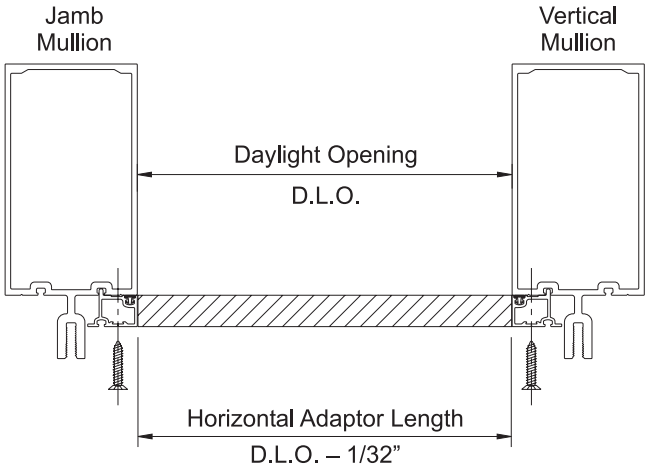
See **Detail 25**.

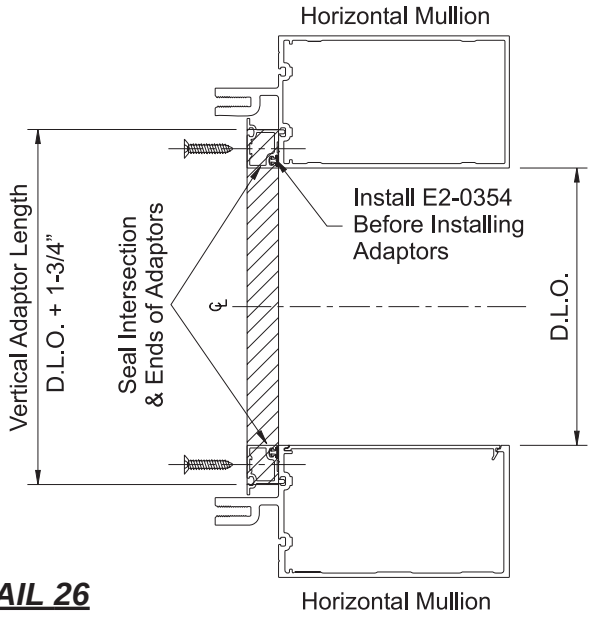


DETAIL 25
Single Glazing Shown
Insulated Glazing Similar

GLAZING

STEP 19
INSTALL 1/4” GLAZING ADAPTORS (When Required)



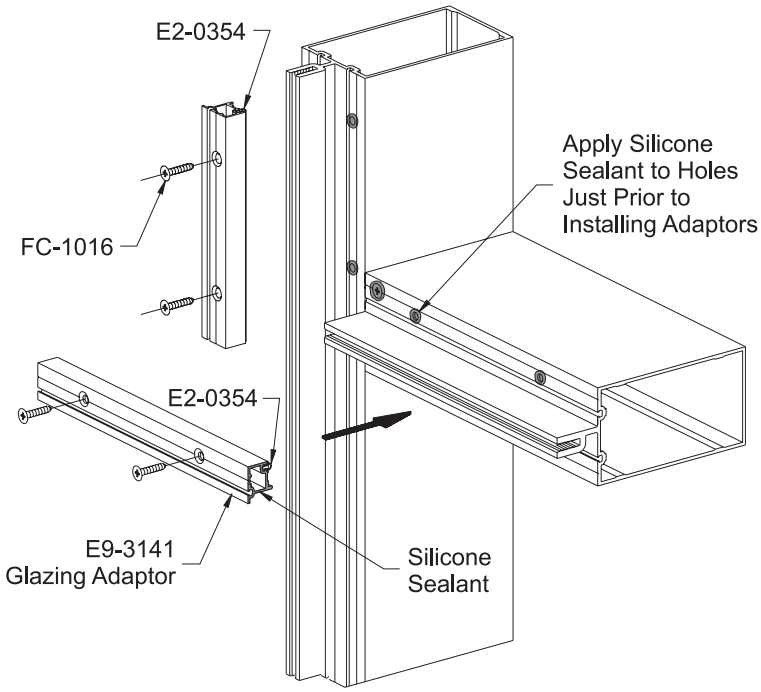


DETAIL 26

-Cut glazing adaptors for verticals:
Cut Length = D.L.O. plus(+) 1-3/4”.
-Cut glazing adaptors for horizontals:
Cut Length = D.L.O. minus(–) 1/32”.

-Slide bulb gasket, E2-0354, into the reglet at the back of the glazing adaptors.
-Predrill 0.213” dia. holes countersunk for #10 fastener along the “V”-groove of each adaptor: 2” from each end and 18” on center.
-Center the vertical glazing adaptors along the opening as shown.

-Dry fit the glazing adaptors and match drill 0.161” dia. holes in the mullion.
-Remove the glazing adaptors and apply silicone sealant over the drilled holes.
-Reinsert the adaptors and secure them to the mullions with FC-1016 fasteners.
-Install vertical adaptors first and butter each end of the horizontal adaptors with silicone sealant before installing them.



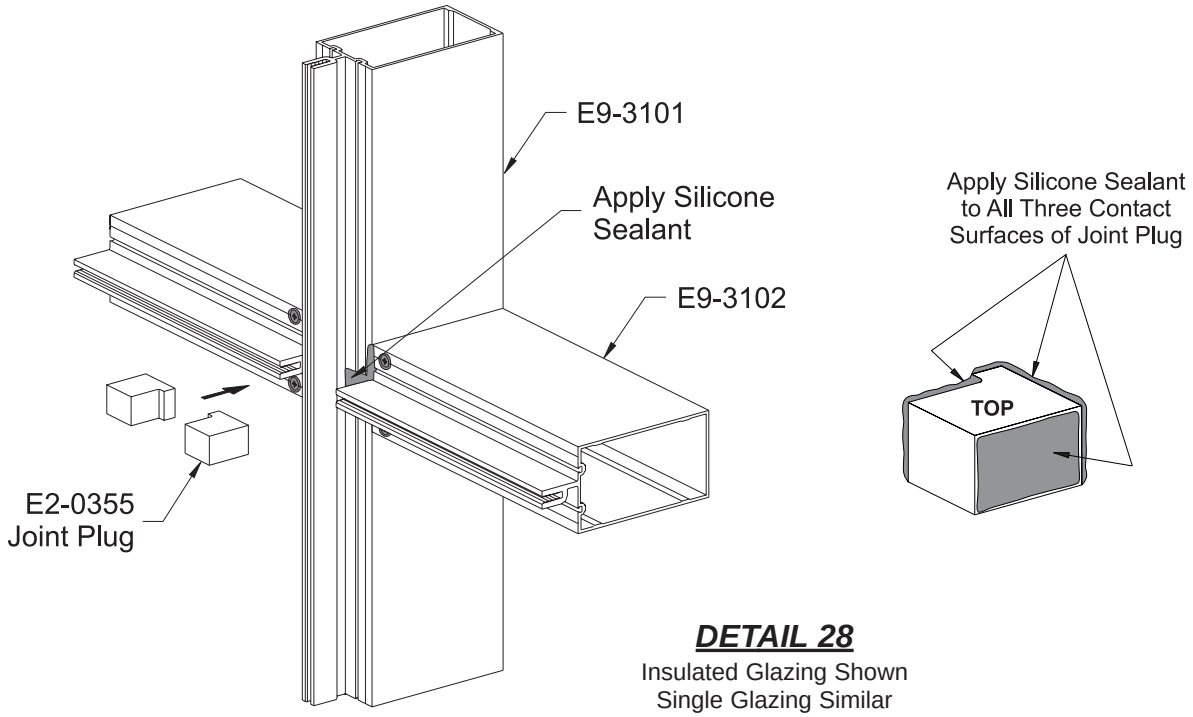
DETAIL 27

See **Details 26 & 27**.

GLAZING

STEP 20
INSTALL JOINT PLUGS

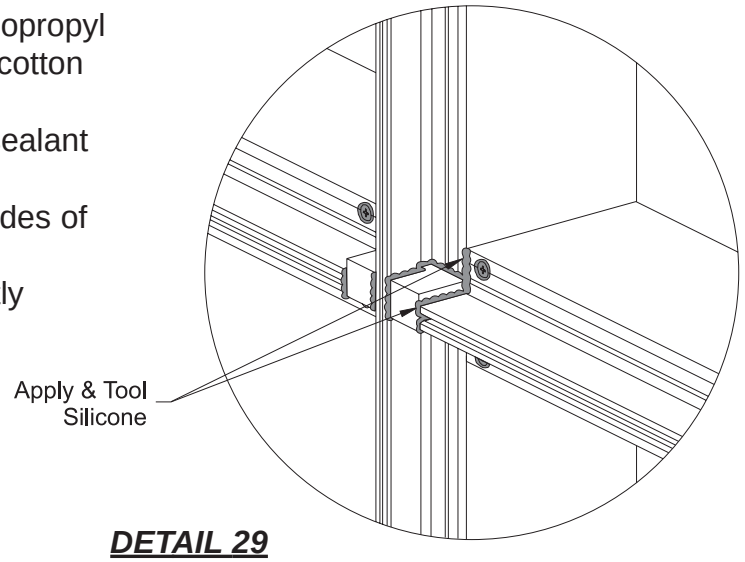
The tongue of each horizontal must be sealed to the tongue of the vertical mullion. The space between the two tongues is plugged with joint plugs, E2-0355 for insulated glazing or E2-0358 for single glazing.



DETAIL 28
Insulated Glazing Shown
Single Glazing Similar

-Clean the vertical to horizontal joints with isopropyl alcohol (50%) and wipe clean with lint free cotton cloths using the “two cloth method”.
-Apply and tool Dow Corning® 795 silicone sealant to the vertical to horizontal joints.
-Apply silicone sealant to all three contact sides of the joint plugs.
-Apply silicone sealant into all cavities directly behind where each joint plug will go.
-Insert the joint plugs into the opening and press them firmly against the face of the mullions.

See **Details 28 & 29**.

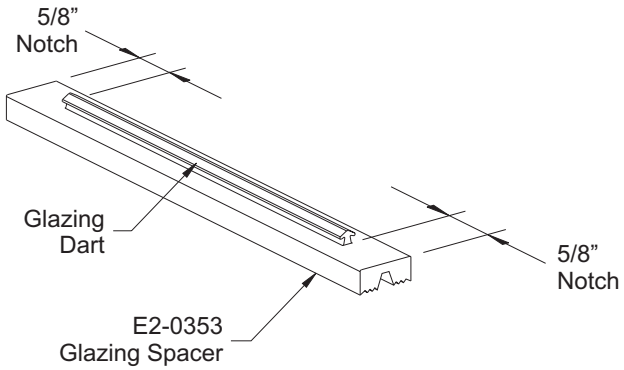


DETAIL 29

GLAZING

STEP 21
INSTALL INTERIOR GLAZING SPACERS

-Cut interior vertical glazing spacers, E2-0353, to daylight opening plus(+) 2".
-Cut the horizontal glazing spacers, E2-0353, to daylight opening plus(+) 1" and add 3/16" for each foot of opening width.
-Trim off 5/8" of the glazing dart at each end of the horizontal glazing spacers.
See **Detail 30**.



DETAIL 30

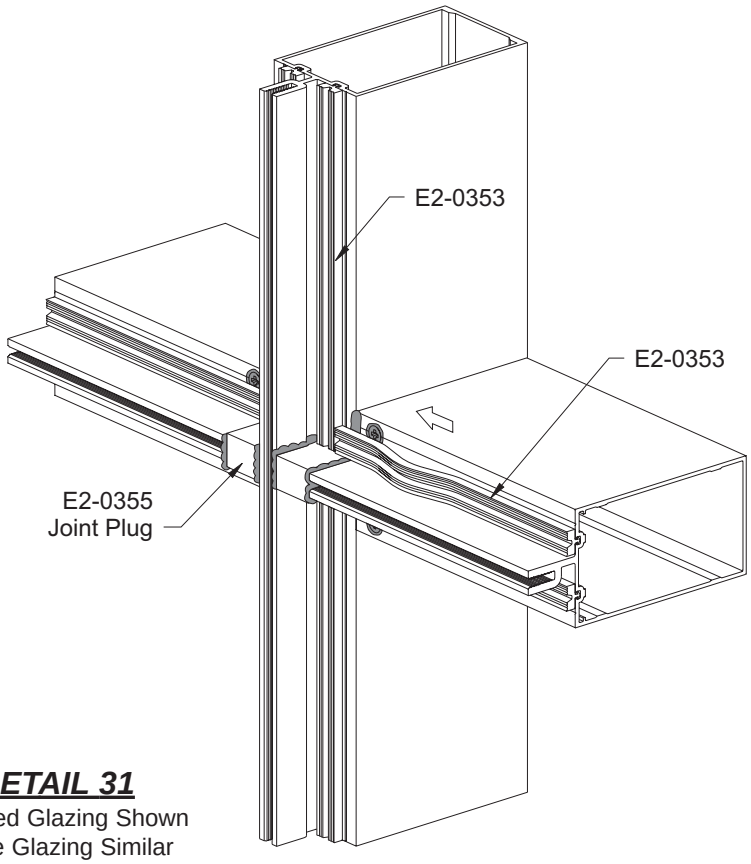
-Install vertical glazing spacers first:
  -Install vertical glazing spacer centered along the daylight opening.
  -Insert the spacer into the reglet starting at the center and work towards each end.

Note: **Do not** stretch the glazing spacer while snapping it into the reglet.

-Install horizontal glazing spacers next:
  -Insert the glazing spacer into the reglet at each end first.
  -Snap the rest of the glazing spacer into the reglet starting at the center and work towards each end.

Note: Horizontal spacer ends should always overlap the verticals by 1/2" at each end.

See **Detail 31**.

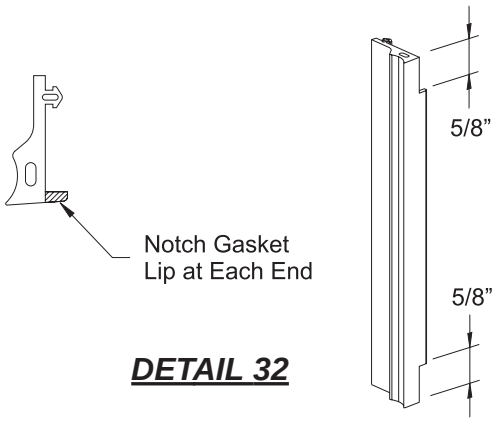


DETAIL 31
Insulated Glazing Shown
Single Glazing Similar

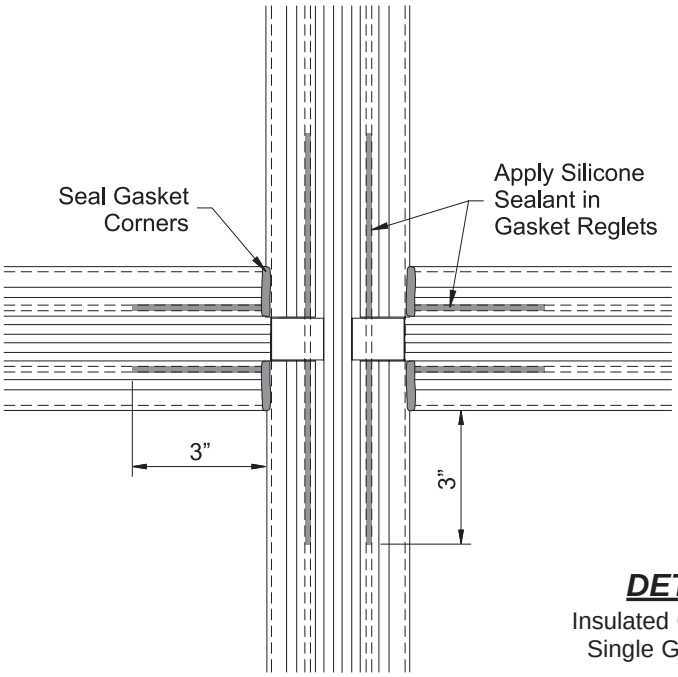
GLAZING

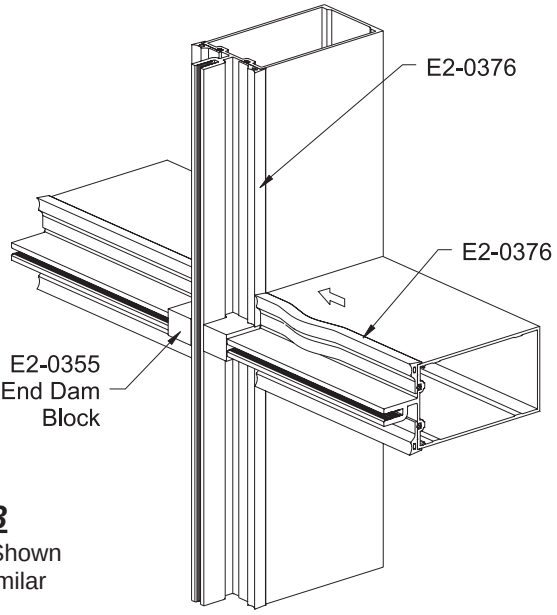
STEP 22
INSTALL INTERIOR GLAZING GASKETS
(FOR SMALL MISSILE IMPACT ONLY)

-Cut interior vertical glazing gaskets, E2-0376, to daylight opening plus(+) 2".
-Cut the horizontal glazing gaskets, E2-0376, to daylight opening plus(+) 3/16" for each foot of opening width.
-Trim off 5/8" of the gasket lip at each end of the vertical glazing gaskets as shown in **Detail 32**.



DETAIL 32





DETAIL 33
Insulated Glazing Shown
Single Glazing Similar

-Just prior to installing the gaskets, apply silicone sealant to the gasket reglets at the horizontal/vertical intersections as shown in **Detail 33**.
-Install vertical glazing gaskets first:
  -Install vertical glazing gasket centered along the daylight opening.
  -Insert the gasket into the reglet starting at the center and work towards each end.
-Install horizontal glazing gaskets next:
  -Apply silicone sealant to both ends of the horizontal glazing gasket.
  -Insert the glazing gasket into the reglet at each end first. Then snap the rest of the glazing gasket into the reglet starting at the center and work towards each end.
  -Tool the excess sealant at the gasket corners to ensure a watertight seal.

Note: Do not stretch the glazing gasket while snapping it into the reglet.

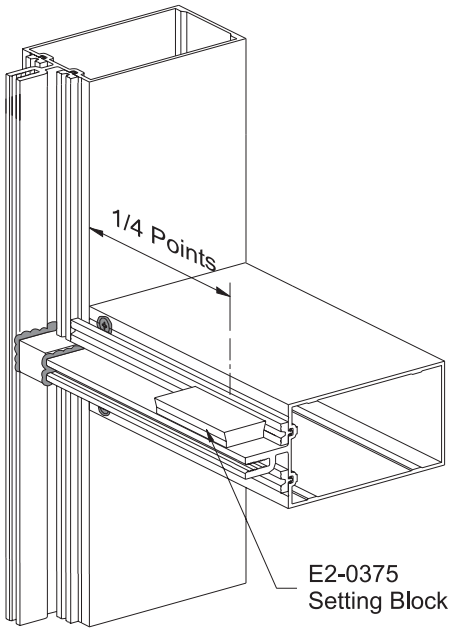
See **Detail 33**.

GLAZING

STEP 23
INSTALL GLASS

-Clean all glazing surfaces and joints of foreign matter and contaminants such as grease, oil, dust, frost, and surface dirt. Do not use water or soap to clean surfaces or to tool the sealant.
-Install setting blocks, E2-0375 for insulated glazing or E2-0357 for single glazing, at 1/4 points of horizontal.

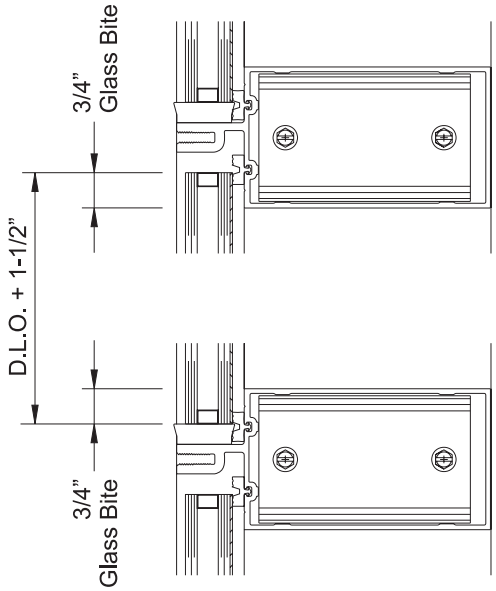
See **Detail 34**.

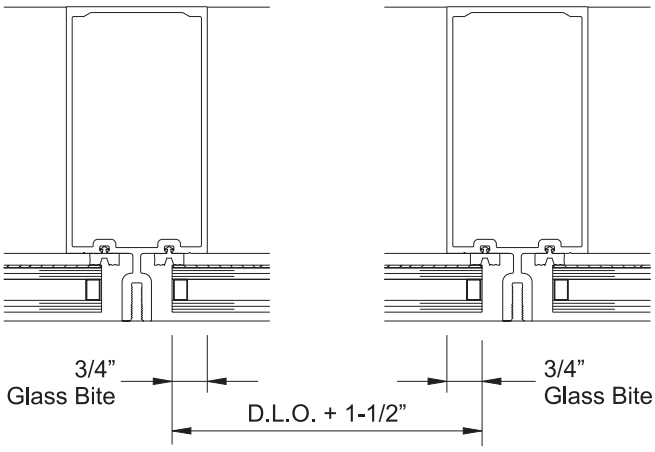


DETAIL 34
Insulated Glazing Shown
Single Glazing Similar

-If using Dupont SentryGlas®, peel the protective film on the glass away from the edges (2”-3”).
-Clean all silicone contact surfaces and joints with isopropyl alcohol (50%) and wipe clean with lint-free cotton cloths using the “two cloth method.” Priming may be required for certain finishes.
-Carefully install glass into the frame. Make sure setting blocks and spacers are properly aligned with glass.
-Install a minimum of three temporary pressure plates per width and height depending on glass size and job site conditions.

See **Details 35 & 36**.





DETAIL 35
Insulated Glazing Shown
Single Glazing Similar

GLASS SIZE = D.L.O. + 1-1/2”
(HORIZONTAL & VERTICAL)

GLAZING

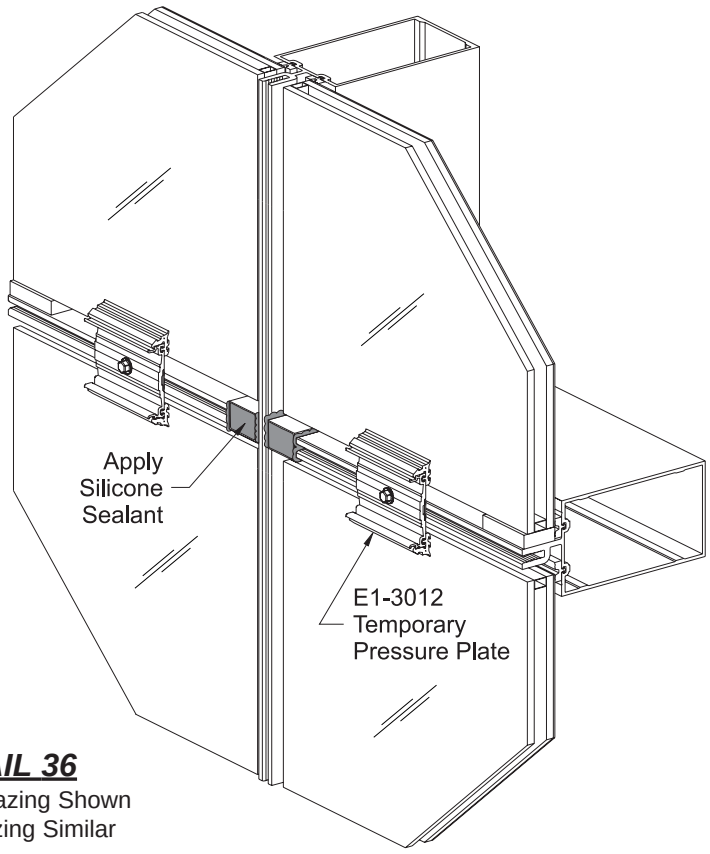
STEP 24
INSTALL PRESSURE PLATES

-Cut exterior vertical gaskets to the same length as the vertical pressure plates.
-Cut exterior horizontal gaskets to daylight opening plus(+) 3/16" extra per foot of width for shrinkage.
-Install the exterior gaskets into the reglets of the pressure plates.

Note: See Glazing Table below for proper gasket usage.

-Apply silicone sealant to face of joint plug just prior to installing pressure plate. Sealant must form a complete seal between the exterior gasket, the pressure plate, the thermal isolator, and the joint plugs.

See **Detail 36**.



DETAIL 36
Insulated Glazing Shown
Single Glazing Similar

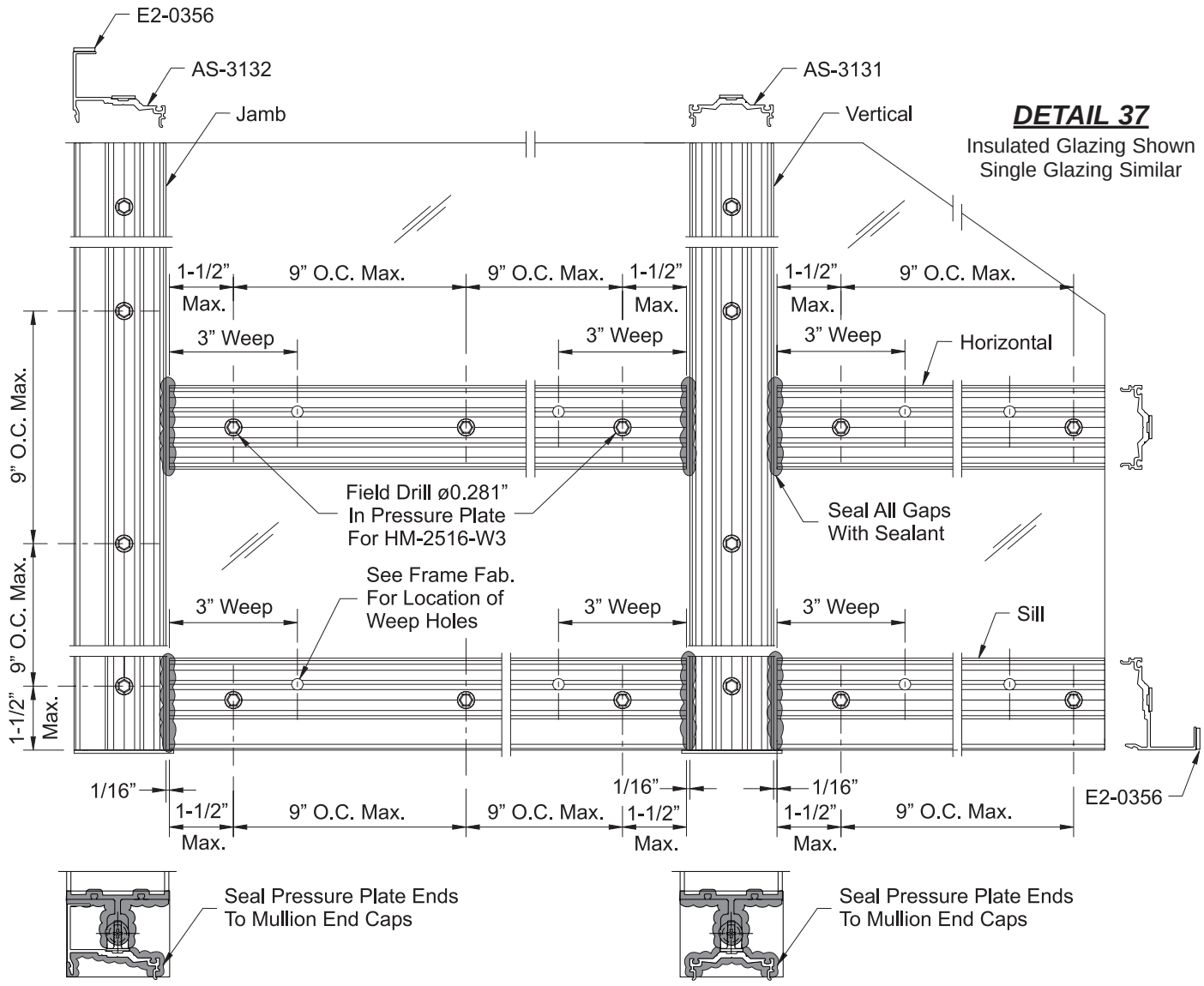
YHC 300 OG GLAZING TABLE

Glass Size		Exterior Gasket	Interior Spacer	Glazing Adaptor	Pressure Plate	Perimeter P. Plate
Single	1/4"	E2-0360	E2-0353	—	AS-3140	AS-3144
	3/8"	E2-0352	E2-0353	—	AS-3140	AS-3144
	7/16"	E2-0352	E2-0353	—	AS-3140	AS-3144
	9/16"	E2-0351	E2-0353*	—	AS-3140	AS-3144
Insulated	1/4"	E2-0360	E2-0353	E9-3141†	AS-3138	AS-3143
	1"	E2-0360	E2-0353	—	AS-3138	AS-3143
	1-3/16"	E2-0352	E2-0353	—	AS-3138	AS-3143
	1-5/16"	E2-0351	E2-0353*	—	AS-3138	AS-3143

* Glazing gasket E2-0376 may be substituted for Small Missile Impact.
† Glazing Adaptor E9-3142 may be used outside of Metro-Dade County.

GLAZING

STEP 24 (Continued)
INSTALL PRESSURE PLATES



-Apply isolator tape, E2-0356, to the inside leg of all perimeter pressure plates.
-Install vertical pressure plates first: fasten with HM-2516-W3 fasteners.
-Center horizontal pressure plates in the opening, leave a 1/16" gap at the ends.
-Initially torque fasteners to 30 in pounds with a speed wrench or torque limiting screw gun. Work from the bottom up.
-Apply and tool sealant to completely seal the gaps at horizontal pressure plate ends.
-Torque all fasteners to 50 inch pounds.
-Caulk and seal the ends of vertical pressure plates to the mullion end caps with sealant.

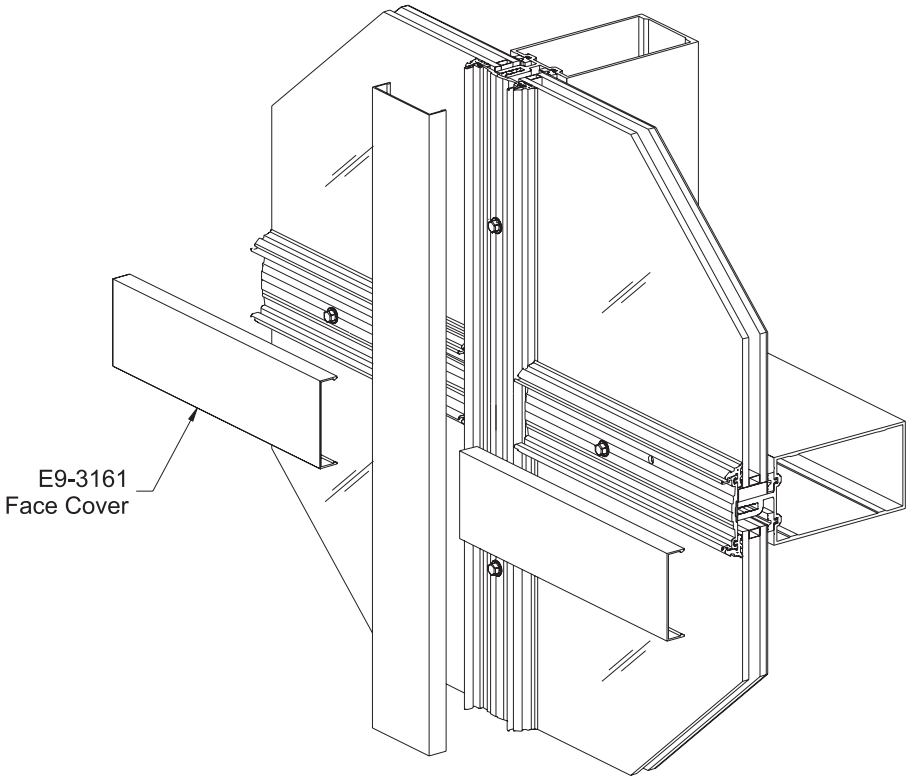
See **Detail 37**.

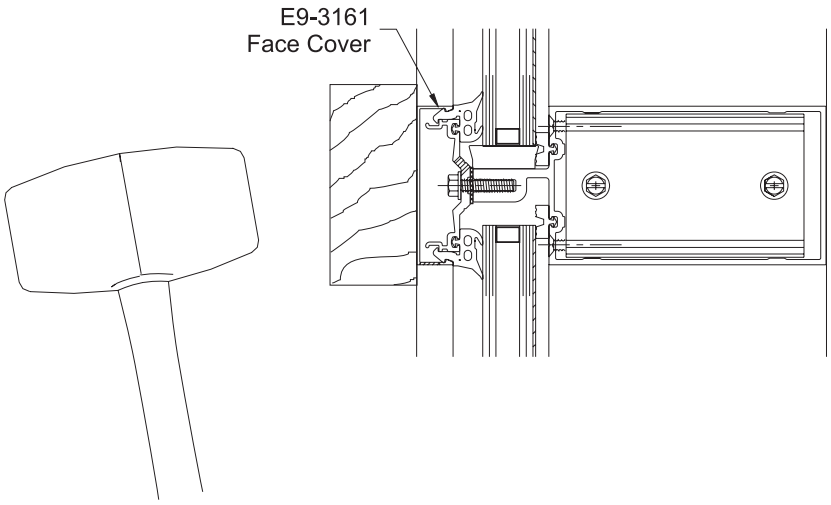
GLAZING

STEP 25
INSTALL EXTERIOR FACE COVERS

-Snap on exterior face covers using a mallet and a clean scrap piece of lumber. Start at one end and work down the vertical and across the horizontal.

See **Detail 38**.





DETAIL 38
Insulated Glazing Shown
Single Glazing Similar

GLAZING

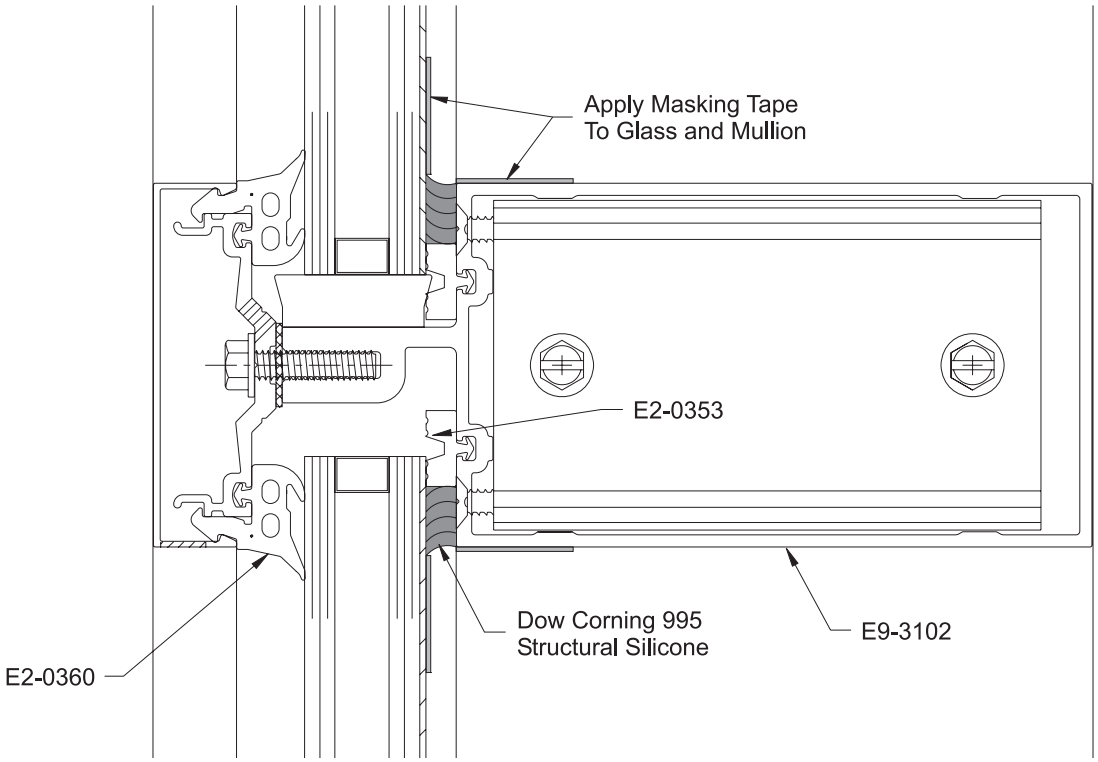
STEP 26
APPLY INTERIOR SILICONE SEALANT

-Make sure all silicone contact surfaces and joints have been cleaned with isopropyl alcohol (50%) and wipe clean with lint free cotton cloths using the “two cloth method”.
-Apply masking tape to the mullion and glass as shown in **Detail 39**.
-Apply Dow Corning 995 structural silicone sealant into the cavity between the mullion and glass starting from the bottom and work towards the top. Use positive pressure so that the silicone sealant completely fills the cavity.
-Using a spatula or other non-scratching implement, tool the silicone sealant immediately after running the joint. Exert positive pressure while tooling to ensure that the silicone sealant makes complete contact with all surfaces.

Caution: Be careful not to remove too much silicone sealant.

-Remove masking tape within ten minutes of tooling; do not allow silicone to skin over.

Caution: Do not permit the silicone sealant to skin over before it is tooled. Immediately remove masking tape after tooling silicone sealant.



DETAIL 39
Insulated Glazing Shown
Single Glazing Similar

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