

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 quality and quantity upon receipt, YKK AP must be notified immediately of any discrepancies in shipment. Check to make sure that you have the required materials including but not limited to, 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 and approved prior to its use.

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 YKK AP. Fasteners called out on shop drawings are to indicate minimum sizes for design loading.

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

11. YKK AP 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.ykkap.com, for the latest installation manual update prior to commencing work.

Important Notice for SSG Curtain Wall Systems:

In order to properly perform and to maintain structural integrity, in addition to all other installation requirements, structurally glazed curtain wall systems rely specifically upon effective and appropriate structural sealant selection and installation.

It is the responsibility of the glazing contractor to take all steps to ensure the installed structural sealant is capable of meeting all applicable project requirements in accordance with industry standards. Such steps on each project may include, but are not limited to, design reviews, formal adhesion testing, project specification compliance, validating applications, field testing, auditing, sealant design strength analysis, and the quality control review of the installation and surrounding conditions.

Subject to project specific design pressures, requirements, and/or specifications, the structural sealant that is used between the glass and framing system must be capable of withstanding tensile and shear stresses imposed by the curtain wall without failing adhesively or cohesively.

The structural sealant's capability to withstand these stresses are dependent on several factors including, but not limited to, type of structural sealant, method of application (i.e. cleaning, primer), construction of glazing material (i.e. insulating glass unit (IGU), other infill, and finish of framing (i.e. anodizing, paint).

- Adhesive failure occurs when sealant pulls away from substrate cleanly, leaving no sealant material behind.

- Cohesive failure occurs when sealant breaks or tears within itself but does not separate from each substrate because sealant-to-substrate bond strength exceeds sealant's internal strength.

The IGU and/or other infill must be constructed for installation into structurally sealant glazed curtain walls. Notify the manufacturer or fabricator of the IGU and/or infill and advise of the product's application into 2 or 4-sided structurally sealant glazed curtain walls along with the project's design requirements so that appropriate fabrication steps are taken.

Secondary Notice for SSG Curtain Wall Systems:

Standard product details and system offering supports single and twin span applications only. For multi-span applications or elevation configurations that require the application of vertical expansion components, please contact YKK AP engineering for review.

FRAMING MEMBERS

Vertical / Horizontal 2-1/2" x 8-1/4"	E9-3430		Horizontal Flush Filler Use with E9-3428	E9-8489
Vertical / Horizontal 2-1/2" x 6-3/4"	E9-3426		Horizontal Flush Filler Use with E9-3403	E9-3162
Vertical / Horizontal 2-1/2" x 5-1/4"	E9-3402		Horizontal Flush Filler Use with E9-3424	E9-3595
Horizontal 2-1/2" x 5-1/4"	E9-3404	ریم ریم	Horizontal Adaptor	E9-3406
Vertical / Horizontal 2-1/2" x 3-3/4"	E9-3423		Cassette Perimeter	E9-3405
Vertical Heavy Duty 2-1/2" x 5-1/4"	E9-3401	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Corner Cassette Perimeter	E9-3412
Head/Sill/Horizontal Open Back 2-1/2" x 8-1/4"	E9-3431		Perimeter Trim	E9-3408
Head/Sill/Horizontal Open Back 2-1/2" x 6-3/4"	E9-3428		90° Outside Corner SSG Mullion Adaptor	E9-3413
Head/Sill/Horizontal Open Back 2-1/2" x 5-1/4"	E9-3403		Corner Trim	E9-3414
Head/Sill/Horizontal Open Back 2-1/2" x 3-3/4"	E9-3424		90° Outside Corner Toggle Bar	E9-3411
Horizontal Flush Filler Use with E9-3431	E9-3188	şk	90° Outside Corner Interior Cover Base Use with E9-1281	E9-1280



FRAMING MEMBERS

	90° Outside Corner Interior Cover	E9-1281	Door Jamb Adaptor Use with AS-0417	E9-2344
di al	Single Acting Transom Bar Elastomer Weathering E2-0051 Included	AS-0402	Snap-In Door Stop Elastomer Weathering E2-0051 Included Use with E9-2344	AS-0417

ACCESSORIES

Standard Shear Block For 3-3/4" Depth Members Use (2) PF-2528 & (2) FC-1212	E1-3425		Setting Block Chair For 2 Sided Toggle Assembly	E1-3544
Standard Shear Block For 5-1/4" to 8-1/4" Depth Members Use (2) PF-2528 & (2) FC-1212	E1-3542	A A A A A A A A A A A A A A A A A A A	Perimeter Trim Clip	E1-3543
RH Shear Clip For 90°	E1-3540A		Temporary Retaining Clip	E1-3547
LH Shear Clip For 90°	E1-3540B		End Cap For Perimeter Trim	E1-3578
Mullion Joint Sleeve 18" Long For E9-3401 and E9-3402	E1-3548		Intermediate Vertical "T" End Anchor* For E9-3423	E1-1229
Mullion Splice Sleeve 18" Long For E9-3426	E1-3427		Intermediate Vertical "T" End Anchor* For E9-3401	E1-1222
Mullion Splice Sleeve 18" Long For E9-3430	E1-3566		Intermediate Vertical "T" End Anchor* For E9-3402	E1-1208
Spacer For 90° Corner Use With E9-3411	E1-3550		Intermediate Vertical "T" End Anchor* For E9-3426	E1-3580

ACCESSORIES

Intermediate Vertical "T" End Anchor* For E9-3430	E1-3568		Setting Block (Silicone) With Pressure Sensitive Adhesive Use With E1-3544	E2-0513S
Corner Vertical "T" End Anchor* For E9-3423	E1-1229A		Wind Load Anchor* Refer to Shop Drawings For Anchor Dimensions	E1-1204
Corner Vertical "T" End Anchor* For E9-3401	E1-1222A		Dead Load Anchor* Refer to Shop Drawings For Anchor Dimensions	E1-1205
Corner Vertical "T" End Anchor* For E9-3402	E1-1208A	0 0 0 0	Jamb Anchor Plate	E1-3536
Corner Vertical "T" End Anchor* For E9-3426	E1-3580A		Steel Reinforcing 2" x 4" x 1/4" Steel Tube	E1-0162
Corner Vertical "T" End Anchor* For E9-3430	E1-3568A		Steel Reinforcing 2" x 4" x 1/4" Steel Tube & (2) 1/4" x 1-3/4" Steel Bars	E1-0154
Jamb "F" End Anchor* For E9-3423	E1-1230		Silicone Splice Sleeve	E2-0070
Jamb "F" End Anchor* For E9-3401	E1-1234		Glazing Spacer Tape	E2-0110
Jamb "F" End Anchor* For E9-3402	E1-1233	()t	SSG Cassette Gasket	E2-0262
Jamb "F" End Anchor* For E9-3426	E1-3581	0	SSG Glazing Spacer Use with E1-3547	E2-0261
Jamb "F" End Anchor* For E9-3430	E1-3569		Weep Tube	E3-0102

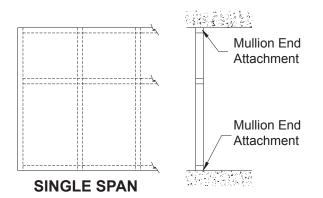


ACCESSORIES

	Nylon Slip Pad For Wind Load & Dead Load Anchor	E3-0103		1/4"-20 x 3/4" PHMS Stainless Steel For Attachment of Perimeter Trim Clip to Mullion	PM-2512-SS
	Drill Fixture	H-7210	Junux	#10 x 3/8" PHMS Stainless Steel For Attachment of Perimeter Trim Clip to Perimeter Trim	PM-1006-SS
over	Toggle Bar Assembly Install at 9" Max. O.C.	H-3541	()	1/4"-20 x 1-1/2" PHMS Stainless Steel For Attachment of the Toggle Bar to Mullion	PM-2524-SS
(Januara)	#10 x 5/8" PHSMS Type AB, Zinc Plated Steel For Attachment of Interior Cover Base	PC-1010		1/4"-20 x 5/8" HWHS Type F, Zinc Plated Steel For Attachment of Shear Clip to Corner Mullion	HF-2510-W1
Enning	#12 x 5/8" PHSMS Type AB Zinc Plated Steel For Attachment of End Cap to Perimeter Trim	PC-1210		1/4"-20 x 1" HWHS Type F, Zinc Plated Steel For Attachment of Shear Clip to Corner Mullion with Steel Reinforcing	HF-2516-W1
Jannina	#12 x 5/8" FHSMS Type AB Zinc Plated Steel, For Attachment of Mitered Horizontal to Shear Block (Exposed Fastener)	FC-1210		1/4"-20 x 1" PHMS Stainless Steel, for Attachment of Temporary Retaining Clip	PM-2516-SS
	#12 x 3/4" FHSMS Type AB Zinc Plated Steel, For Attachment of Horizontal to Shear Block (Exposed Fastener)	FC-1212		1/2"–13 x 2" HWHMS Zinc Plated Steel, For Attachment of Windload/ Deadload Anchor at Jamb	HM-5032
Junnunnun	#12 x 1-1/4" FHSMS Type AB , Zinc Plated Steel, For Attachment of Mitered Horizontal to Corner Mullion	FC-1220		1/2"–13 x 4-1/2" HWHMS Zinc Plated Steel, For Attachment of Windload/ Deadload Anchor at Mullion	HM-5072
	#14 x 5/8" FHSMS Type AB Zinc Plated Steel, For Attachment of FW-2500-SS Vertical Mullion End Cap to Vertical Mullion	FC-1410		1/2"-13 Nut HHMS Zinc Plated Steel For Attachment of Mid-Anchors (Wind Load / Dead Load)	HM-5000
0	1/4" Fender Washer Stainless Steel Used as Vertical Mullion End Cap	FW-2500-SS	\bigcirc	1/2" Flat Washer Zinc Plated Steel, For Attachment of Mid-Anchors (Wind Load / Dead Load)	WW-5000
Summund	#8 x 3/4" PHSMS Type AB Zinc Plated Steel, For Assembly of Glazing Cassettes	PC-0812	\bigcirc	1/2" Lock Washer Zinc Plated Steel, For Attachment of Mid-Anchors (Wind Load / Dead Load)	WS-5000
	1/4-20 x 1-3/4" LG Type F Zinc Plated Steel For Attachment of Vertical to Shear Block	PF-2528			

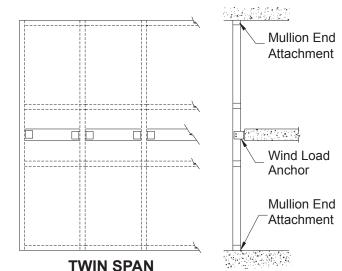
FRAME TYPES / ANCHORING METHODS

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



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.

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



FRAME TYPES / ANCHORING METHODS

YKK

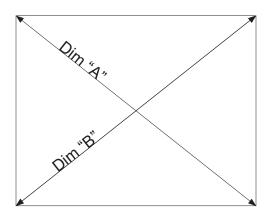
Mullions can be pre-assembled with shear blocks/clips, end anchors, and steel or aluminum reinforcing if necessary.

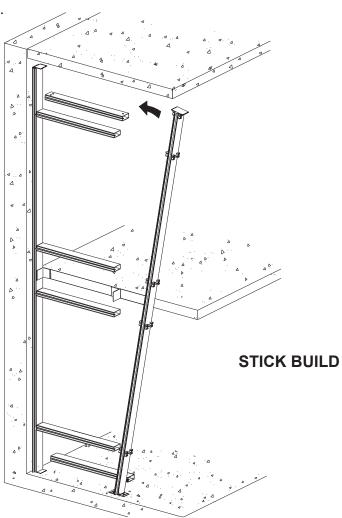
Smaller units may be assembled on the ground and lifted into place. Larger units require being stick assembled in place.

Framing Members for Stick Build:

Tubular horizontal members are used at all intermediate locations except at end bays.
Open back intermediate horizontals are used at end bays to clear the shear blocks, and at head and sill to access "T" and "F" anchor bolts.

Note: When using stick build construction, check overall frame width every fifth mullion as the wall is installed to prevent the buildup of cumulative tolerance errors. Mullions must be installed plumb, horizontals must be installed level. Check diagonals to confirm squareness of daylight openings. Adjust mullion height to square daylight openings. Daylight openings must be within 1/16" to ensure frame squareness.

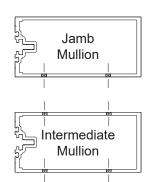




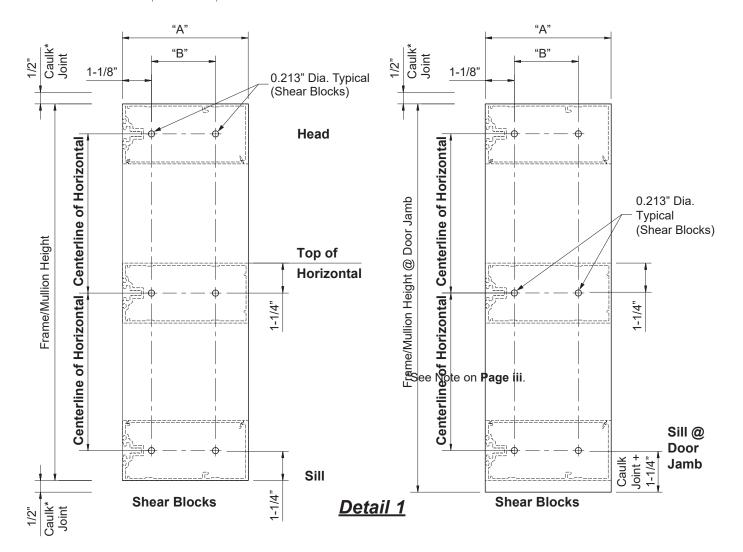
STEP 1 FABRICATE MULLIONS

-Mullion hole locations for shear blocks are shown below.

-Drill 0.213" dia. (#3 drill bit) holes for shear block attachment at the locations indicated. See **Detail 1.**



Dim "A"	Dim "B"
8-1/4"	2-3/4"
6-3/4"	2-3/4"
5-1/4"	2-3/4"
3-3/4"	1-1/2"



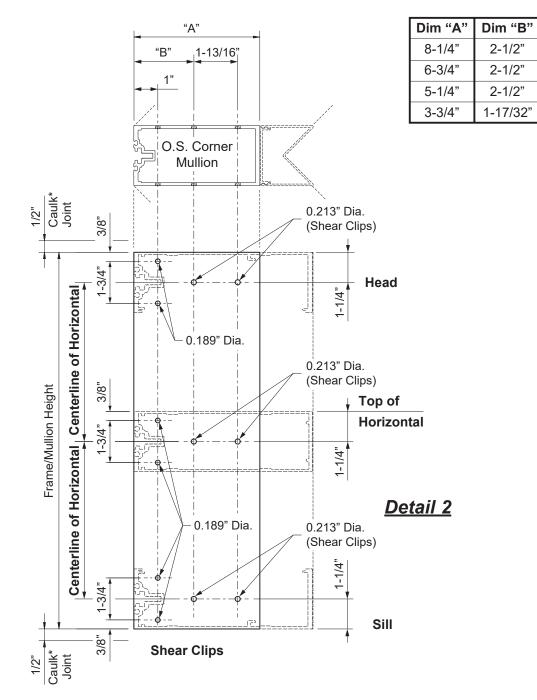


STEP 1 (Continued) FABRICATE 90° OUTSIDE CORNER MULLIONS

-Mullion hole locations for shear blocks are shown below.

-Drill 0.213" dia. (#3 drill bit) holes for shear block attachment at the locations indicated. -Drill 0.189" dia. holes 1" from the face of the mullion at the locations indicated.

See Detail 2.

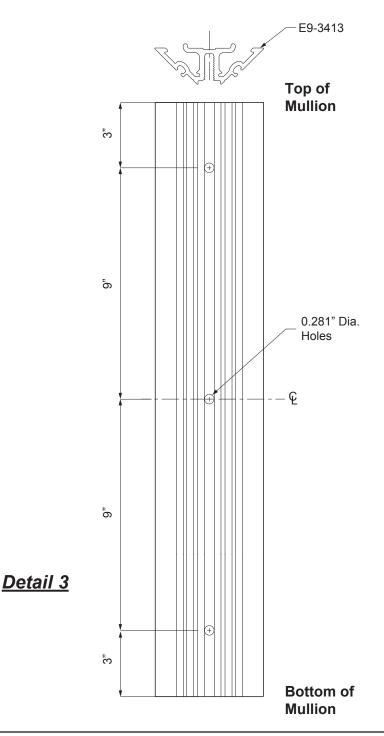


STEP 1 (Continued) FABRICATE CORNER GLAZING ADAPTOR

-Cut E9-3413 outside corner mullion adaptor to mullion length.

-Drill 0.281" dia. (9/32 bit) clear holes every 9" on center, and 3" maximum from each end.

See Detail 3.



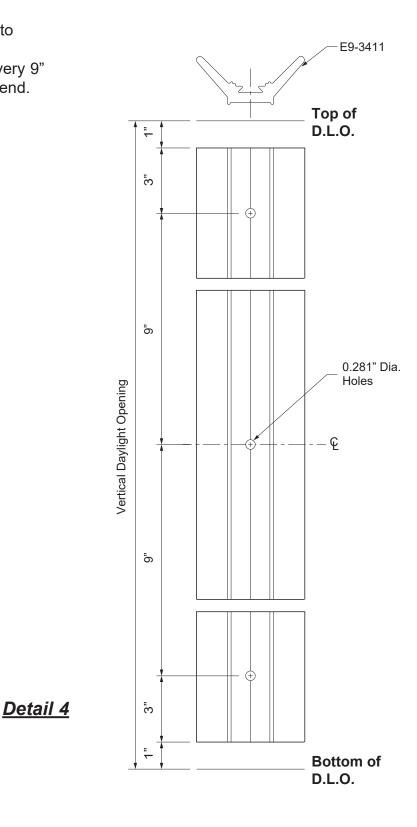




STEP 1 (Continued) FABRICATE 90° OUTSIDE CORNER SSG CORNER ADAPTOR

-Cut E9-3411 outside corner toggle bar to D.L.O minus(-) 2".
-Drill 0.281" dia. (9/32 bit) clear holes every 9" on center, and 3" maximum from each end.

See Detail 4.





STEP 2 USING ALTERNATE REINFORCING

Engineering calculations may require the mullions to be reinforced with either steel or aluminum.

-Reinforcing shall be attached to the mullion in accordance with engineering requirements -Slide the reinforcing into the mullion and into position.

-When attaching reinforcing at shear block locations, drill a 0.281" diameter (#9/32 bit) hole in the mullion, being careful not to drill a hole in reinforcing.

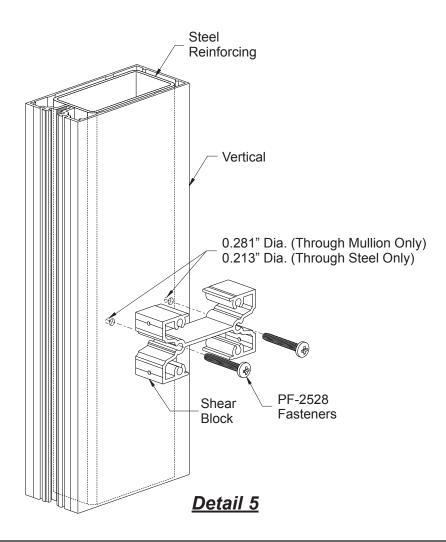
-Drill a 0.213" diameter (#3 bit) hole in the reinforcing through the previous holes.

-Tap the 0.213" hole to accomodate a 1/4-20 fastener.

-Attach the shear blocks to the mullion and steel with two PF-2528 fasteners per block. See **Detail 5**.

Note: Reinforcing to be determined by a qualified engineer.

Steel reinforcing must be coated to insulate the steel from the aluminum.





STEP 3 ATTACH MULLION END CAPS

Mullion end caps are required at the head and sill of jamb and mullions.

-Clean the mullion ends and mullion end caps with a cleaner and method approved by the sealant manufacturer.

-Apply sealant to the spline cavity and along the front of the mullions on both ends prior to installing mullion end caps, FW-2500-SS.

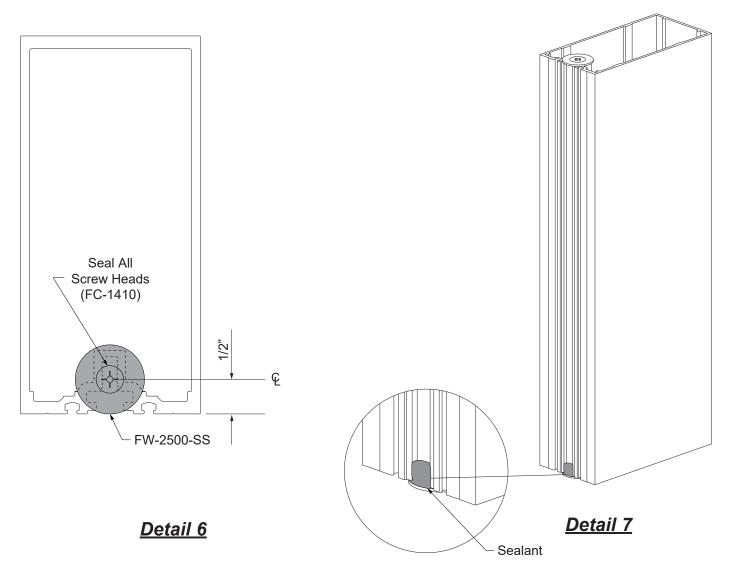
-Attach the mullion end caps to each end of the mullion with FC-1410 fasteners as shown in **Detail 6**.

-Tool the excess sealant flush between the mullion end cap and the mullion.

-Seal over all screw heads.

-At the bottom of the mullions, apply sealant to the center cavity to a height of 1/2".

See Detail 7.



STEP 3 (Continued) ATTACH MULLION END CAPS AT CORNER MULLIONS

At the outside corners,end caps are installed at the outside corner mullion adaptors.

-Clean the corner adaptor ends and mullion end caps with a cleaner and method approved by the sealant manufacturer.

-Apply sealant to the spline cavity and along the front of the adaptor on both ends prior to installing mullion end caps, FW-2500-SS.

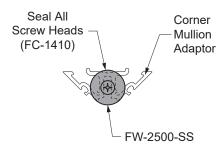
-Attach the mullion end caps to each end of the adaptor with FC-1410 fasteners as shown **Detail 8**.

-Tool the excess sealant flush between the corner adaptor end cap and the mullion.

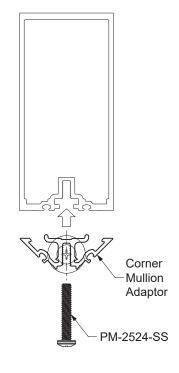
-Seal over all screw heads.

-Fasten the corner mullion adaptor onto the corner mullion using PM-2524-SS screws at 9" on center. Tighten the screws to 70 inch-pounds.

See Detail 9.







<u>Detail 9</u>

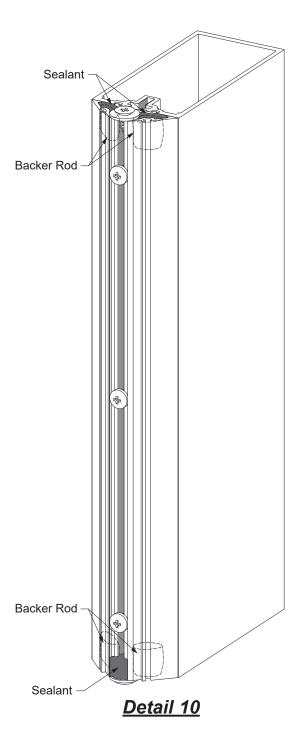


STEP 3 (Continued) ATTACH MULLION END CAPS AT CORNER MULLIONS

-At the bottom of the corner adaptor, apply sealant to the screw raceway to a height of 1/2".-Insert backer rods inside the cavities at the top and

bottom of the corner adaptor and apply sealant to close off the cavities.

See Detail 10.





STEP 4 ATTACH SHEAR BLOCKS FOR HORIZONTALS

Shear blocks are used to attach horizontal members to the jamb and mullions:

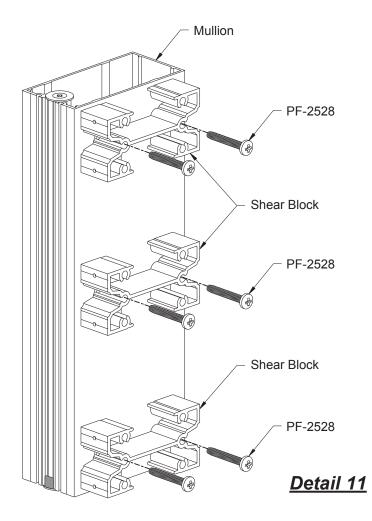
-Attach the shear blocks to jambs and mullions with two PF-2528 fasteners per block.

See Detail 11.

Note: Tight tolerance will ensure proper fit and appearance of the pre-glazed cassettes into the daylight openings.

-Additional fasteners may be required to accomodate special project conditions.

Note: See Step 2 on Page 11 when using reinforcing.





STEP 4 (Continued) ATTACH SHEAR BLOCKS FOR HORIZONTALS

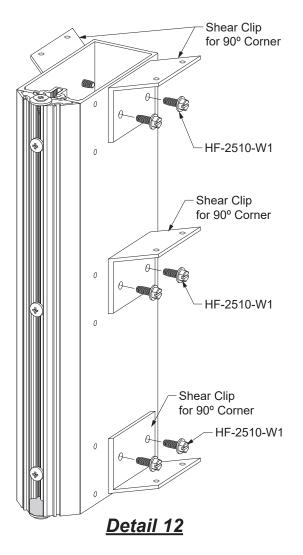
E1-3540A and E1-3540B shear clips are used to attach horizontal members to the corner mullions:

-Attach the shear blocks to jambs and verticals with two HF-2510-W1 fasteners per block (HF-2516-W1 where steel reinforcing is used.)

See Detail 12.

Note: Tight tolerance will ensure proper fit and appearance of the pre-glazed cassettes into the daylight openings.

-Additional fasteners may be required to accomodate special project conditions. -Alternate holes can be utilized to correct fabrication errors.



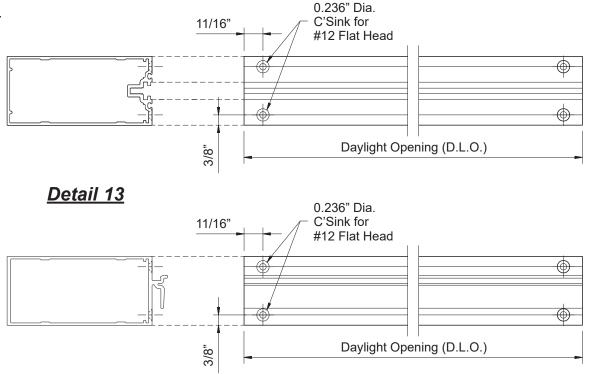
STEP 5 FABRICATE HORIZONTAL MEMBERS

Horizontals with Concealed Fasteners:

-Layout hole locations on the face of the horizontal at both ends as shown below.

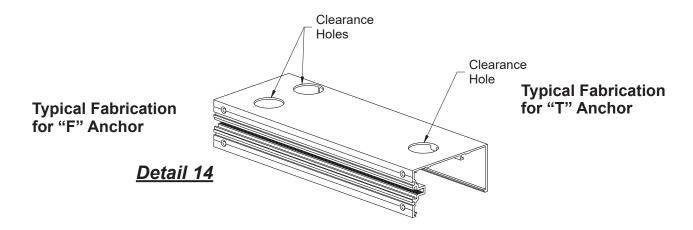
-Drill 0.236" diameter (#B bit) holes and countersink for #12 flat head fasteners. Screw heads must be flush with face of horizontal.

See Detail 13.



Head and Sill Horizontal Member Anchor Preps:

-Drill appropriate size clearance holes at each end of the mullion as shown in **Detail 14**, or according to shop drawings or engineering calculations to align with corresponding anchor holes in "T" and "F" end anchors.

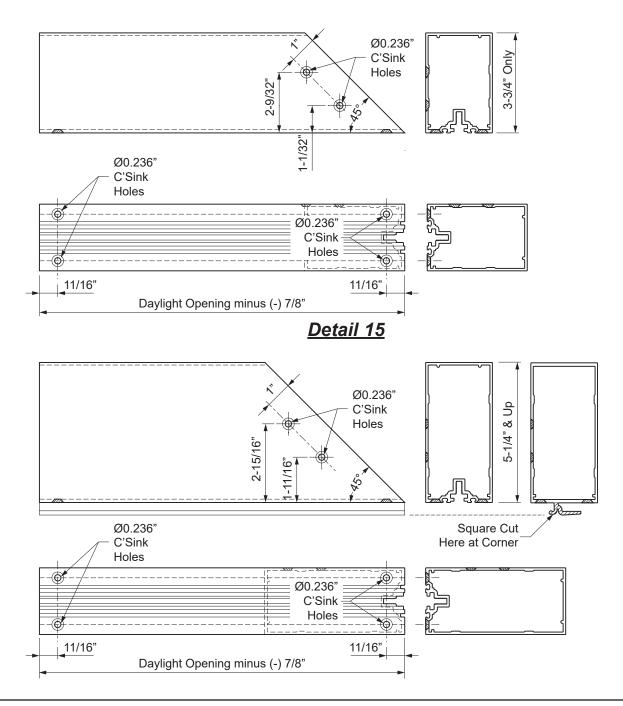




STEP 5 (Continued) FABRICATE HORIZONTAL MEMBERS

Mitered Horizontal at Corners:

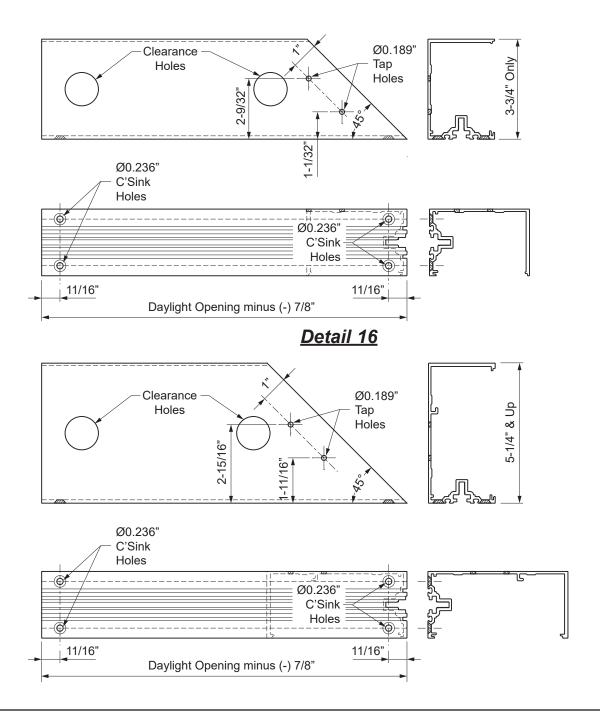
-Layout hole locations from the face of the tubular horizontal at both ends as shown below. -Drill 0.236" diameter (#B bit) holes and countersink for #12 flat head fasteners. Screw heads must be flush with face of horizontal. See **Detail 15**.



STEP 5 (Continued) FABRICATE HORIZONTAL MEMBERS

Mitered Head and Sill Horizontal Member Anchor Preps:

-Drill appropriate size clearance holes at each end of the mullion as shown in **Detail 16**, or according to shop drawings or engineering calculations to align with corresponding anchor holes in "T" and "F" end anchors.



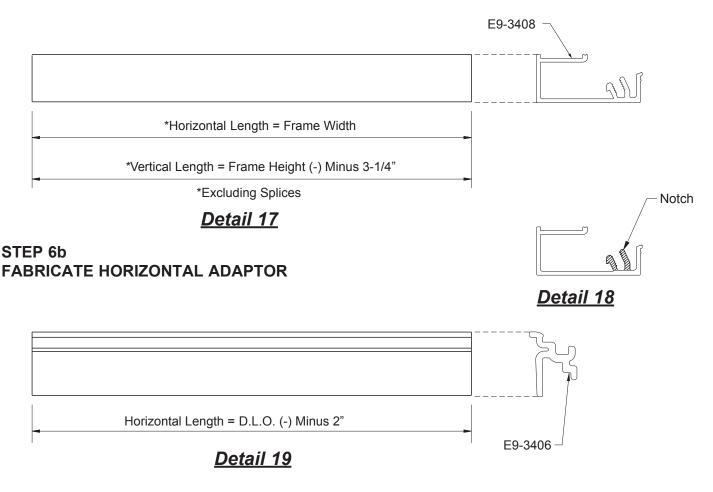


STEP 6a FABRICATE PERIMETER TRIM

-Cut E9-3408 perimeter trim as shown in Detail 17.

-For elevations over 24' in length or height, perimeter trim must be spliced. Perimeter trim splice joint must be 1/2" and located no more than 18' between splice joints. Refer to **Detail 52** on **Page 41.**

-Notch perimeter trim 1-1/4" from each splice end as shown in **Detail 18**. Do not notch the horizontal perimeter trim at the jambs.



-Cut the E9-3406 horizontal adaptor as shown in Detail 19.



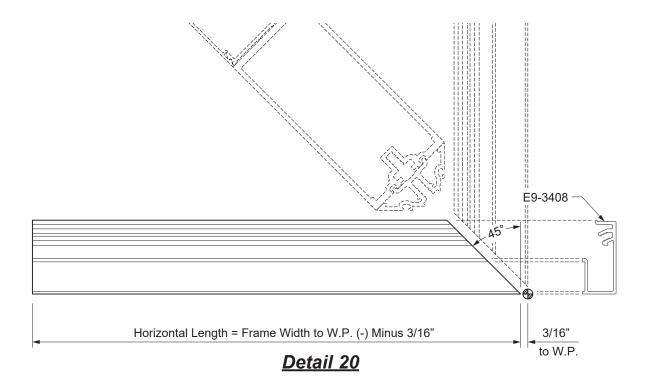
STEP 6c FABRICATE PERIMETER TRIM AT 90° CORNER

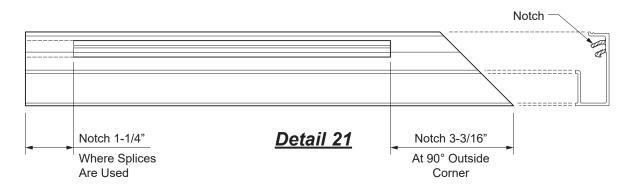
-Miter cut E9-3408 perimeter trim as shown in Detail 20.

-Notch the mitered end by 3-3/16" as shown in **Detail 21**.

-For elevations over 24' in length, perimeter trim must be spliced. Perimeter trim splice joint must be 1/2" and located no more than 18' between splice joints. Refer to **Detail 52** on **Page 41.**

-Notch the end at the splice by 1-1/4". Do not notch the horizontal perimeter trim at the jambs. -Refer to **Detail 56** on **Page 44** for perimeter trim splice at corner mullions.







STEP 7 FABRICATE/ASSEMBLE GLAZING CASSETTES

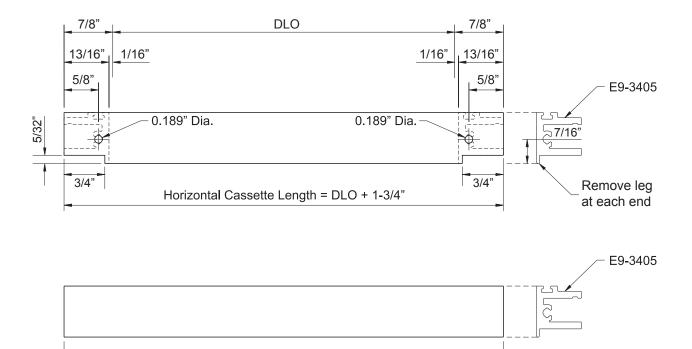
For Typical Cassette Fabrication:

-Cut E9-3405 glazing cassette horizontal to Daylight Opening plus (+) 1-3/4". -Drill 0.189" dia. (#12 drill bit) holes into the glazing cassette horizontal for vertical glazing cassette attachment at the locations indicated.

-Remove 3/4" of both ends of the legs as shown below.

-Cut E9-3405 glazing cassette vertical to Daylight Opening plus (+) 1/8".

See Detail 22.



Detail 22

Vertical Cassette Length = DLO + 1/8"



STEP 7 (Continued) FABRICATE/ASSEMBLE GLAZING CASSETTES

For 90° Outside Corner Cassette Fabrication:

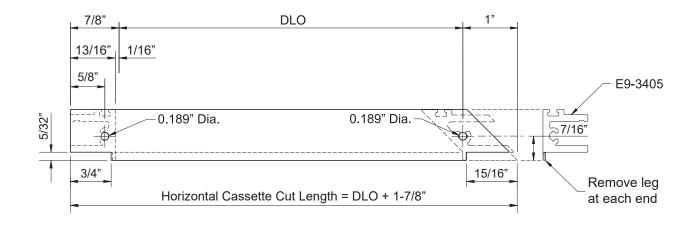
-Cut E9-3405 glazing cassette horizontal to Daylight Opening plus (+) 1-7/8", miter cut 45° at the corner.

-Drill 0.189" dia. (#12 drill bit) holes into the glazing cassette horizontal for vertical glazing cassette attachment at the locations indicated. Do this prior to notching the legs.

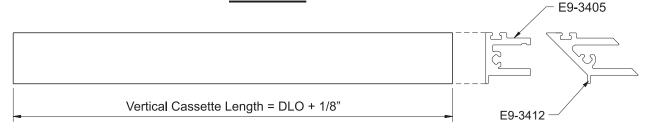
-Remove 3/4" from the leg at the intermediate mullion, and 15/16" from the leg at the corner.

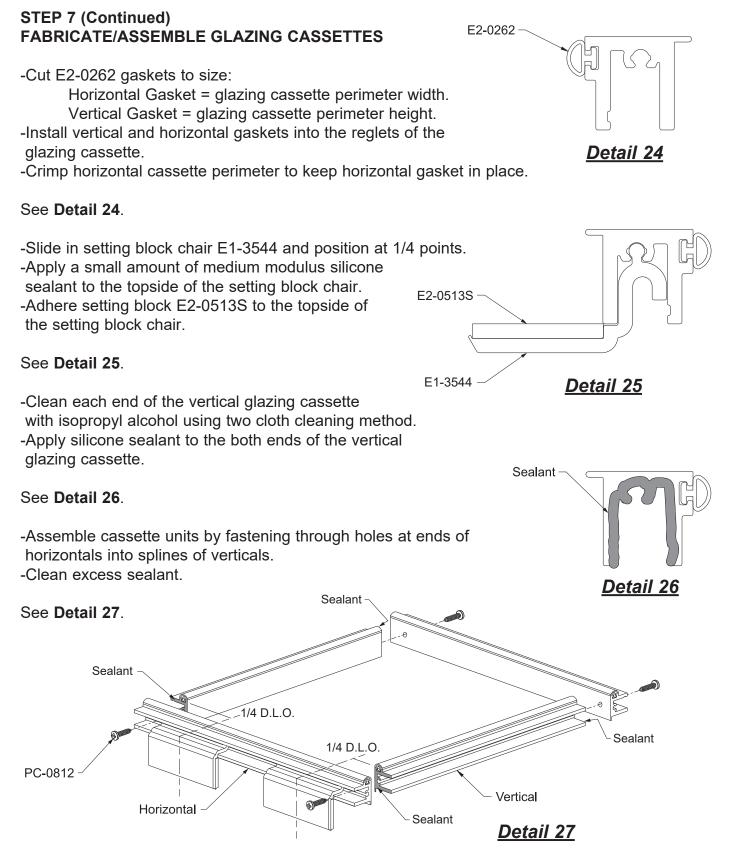
-Cut E9-3405 and E9-3412 glazing cassettes vertical to Daylight Opening plus (+) 1/8".

See Detail 23.



Detail 23





/KK

STEP 7 (Continued) FABRICATE/ASSEMBLE GLAZING CASSETTES

Apply Glazing Spacer Tape

-Cut E2-0110 spacer tape to size:

Horizontal Spacer Tape = glazing cassette length minus (-) 1". Vertical Spacer Tape = glazing cassette length.

-Clean surfaces of the glazing cassette that will come into contact with the spacer tape with isopropyl alcohol.

-Horizontal spacer tape is centered on the glazing cassette, leaving 1/2" from each end.

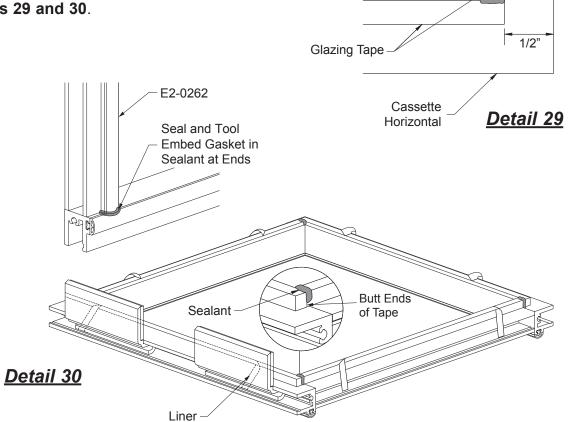
-Tape locations are as shown. Apply pressure to bond the tape to the glazing cassette. Do not allow the tape to twist or catch debris.

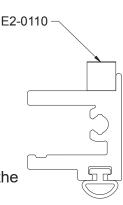
See Details 28 and 29.

-Pull back the liner of the glazing tape 3" from each end. Do not allow the tape to catch debris.

-Apply and tool sealant to the joints of the spacer tape.

See Details 29 and 30.





Cassette

Vertical





STEP 7 (Continued) FABRICATE/ASSEMBLE GLAZING CASSETTES

-Lay the glass on a flat surface with the interior glass surface facing up.

-Check the assembled cassette frame for squareness prior to application of structural silicone sealant. -Prepare glass and frame for application of structural silicone sealant in accordance with sealant manufacturer's instructions. See note on **Page iii**.

Note: Tight tolerance will ensure proper fit and appearance of the pre-glazed cassette into the daylight openings. If the glass is over/under sized, align the bottom of the cassette with the bottom of the glass and center the frame vertically, and consult with a qualified engineer.

-Adhere the cassette to the glass using the E2-0110 glazing tape. Ensure the 3" of exposed glazing tape liner is exposed for removal.

-Ensure squareness of cassette with insulating glazing unit.

-Peel off the remaining glazing tape liner.

-Press the frame firmly onto the glass for good adhesion.

See Detail 31.

-Ensure all areas of glass and frame that will contact the structural silicone sealant have been prepared to recieve the sealant prior to its application. See note on **Page iii**.

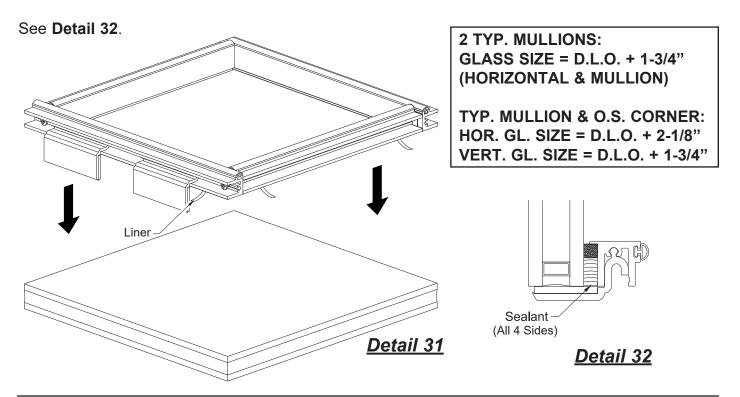
-Ensure setting blocks contact glass at sill/base of glass.

-Apply and tool structural silicone sealant in accordance to sealant manufacturers instructions.

-Allow sealant to fully cure per the sealant manufacturers recommendations

before installing cassettes.

-Inspect to make certain there are no voids or gaps in sealant. See note on Page iii.





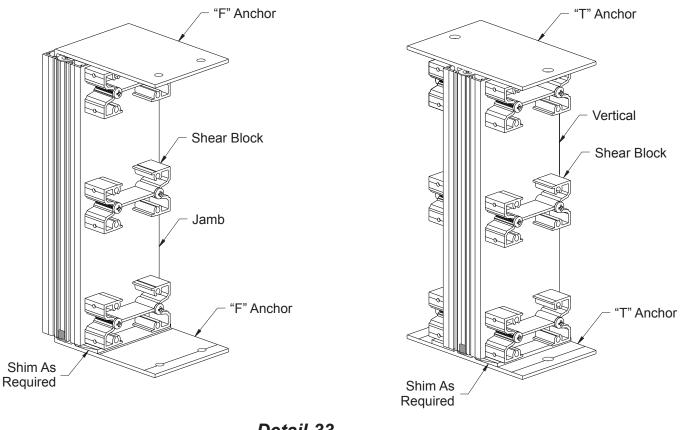
STEP 8 JAMB/MULLION INSTALLATION WITH MULLION END ANCHORS

-Insert mullion "T" and "F" end anchors into the top and bottom of the mullions before erecting them into the opening.

-Position the jamb and intermediate mullions and attach them to the structure.

See Detail 33.

Note: Shim under the mullions to transfer glazing dead loads to the building structure.



<u>Detail 33</u>

STEP 8A VERTICAL INSTALLATION AT DOOR JAMB END ANCHORS

The mullions at the door jambs are set directly upon the sill substrate without any shims and are sealed against the substrate. The anchors to be used at this location are specified by the approved shop drawings and or P.E. calculations.

-Locate the mullion anchor for the door jamb and install it to the substrate according to the approved shop drawings and P.E. calculations.

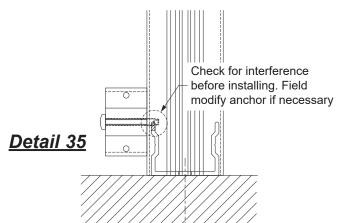
Note: if using an exposed fasteners shear block as a mullion anchor, check to ensure the sill shear block fasteners will not cause interference. Field modify the shear block anchor as required. See **Detail 35**.

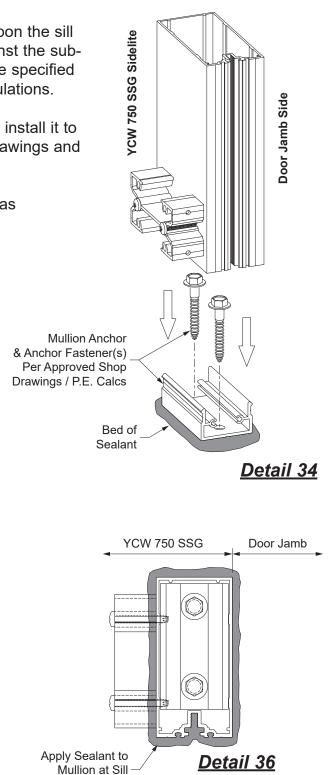
- -Clean all contact surfaces as recommended by sealant manufacturer.
- -Set the mullion on the anchor, directly onto the sill substrate in a bed of sealant. Avoid using shims at this location.

See Detail 34.

- -Refer to the approved shop drawings for any additional fasteners required at anchor.
- -Tool sealant at the bottom of the mullion at the sill substrate around the perimeter of the mullion.

See Detail 36.





Substrate



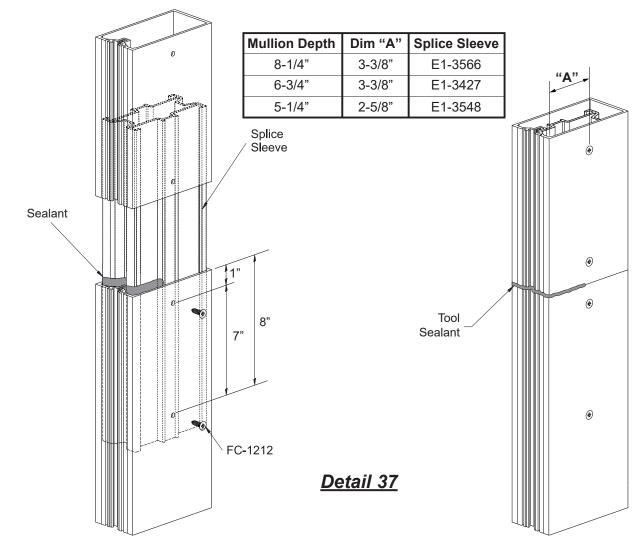
STEP 9 TYPICAL MULLION SPLICE

-Clean all surfaces as recommended by sealant manufacturer.

-Drill 0.236" splice sleeve attachment holes into the upper and lower mullion. Attachment hole locations should be drilled as shown in chart below from the front and back of mullion, and 1" and 8" down from the top of the lower mullion and 1" and 8" up from the bottom of the upper mullion. -Lower the splice sleeve into top of lower mullion 9". Match drill 0.189" splice sleeve anchor holes into the splice sleeve and attach with (2) two FC-1212 fasteners, on both sides of the lower mullion.

-Slide the upper mullion down over the splice sleeve flush with the top of the lower mullion. Match drill 0.189" splice sleeve anchor holes into the splice sleeve and attach with (2) two FC-1212 fasteners, on both sides of the upper mullion.

-Apply and tool sealant to the face and sides of the splice sleeve. See Note on Page iii.

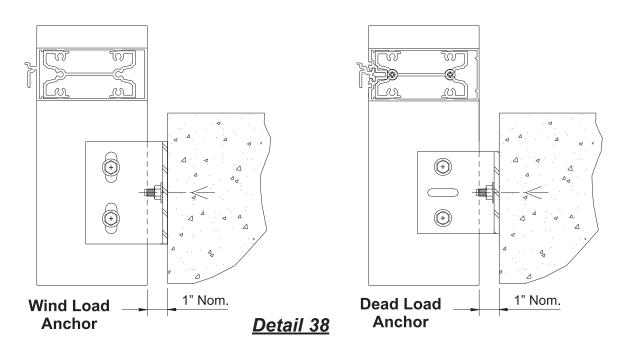


See Detail 37.



STEP 10 INSTALL WIND LOAD / DEAD LOAD ANCHORS

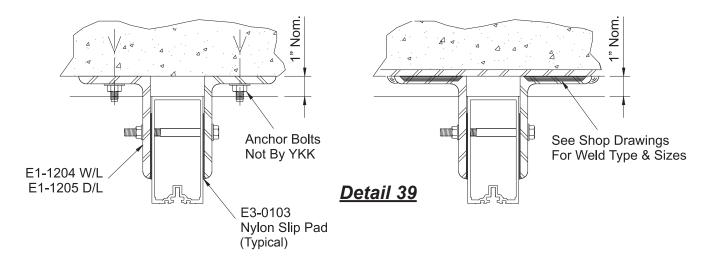
-Install steel wind load and dead load anchor clips. Anchor clips are normally template or line set before mullions are insatlled. When using standard YKK AP anchors, typical space between the back of the mullion and the anchoring substrate to be 1" nominal. See **Detail 38**.



-After positioning mullions, drill and install appropriate diameter anchor bolts.

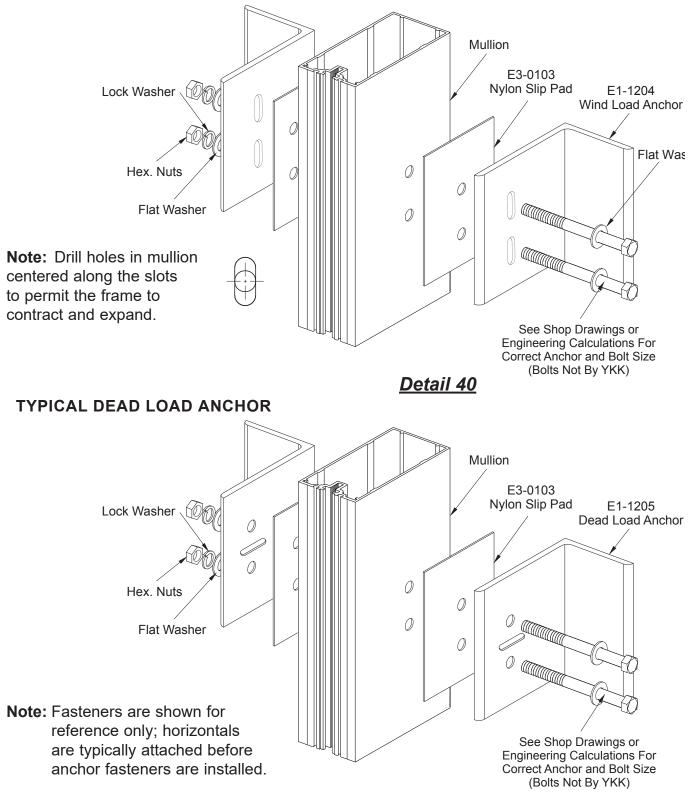
All anchors and bolts must be checked by a qualified engineer.

-Nylon slip pads, E3-0103, must be installed between mullion and anchor. See **Details 39 & 40**.

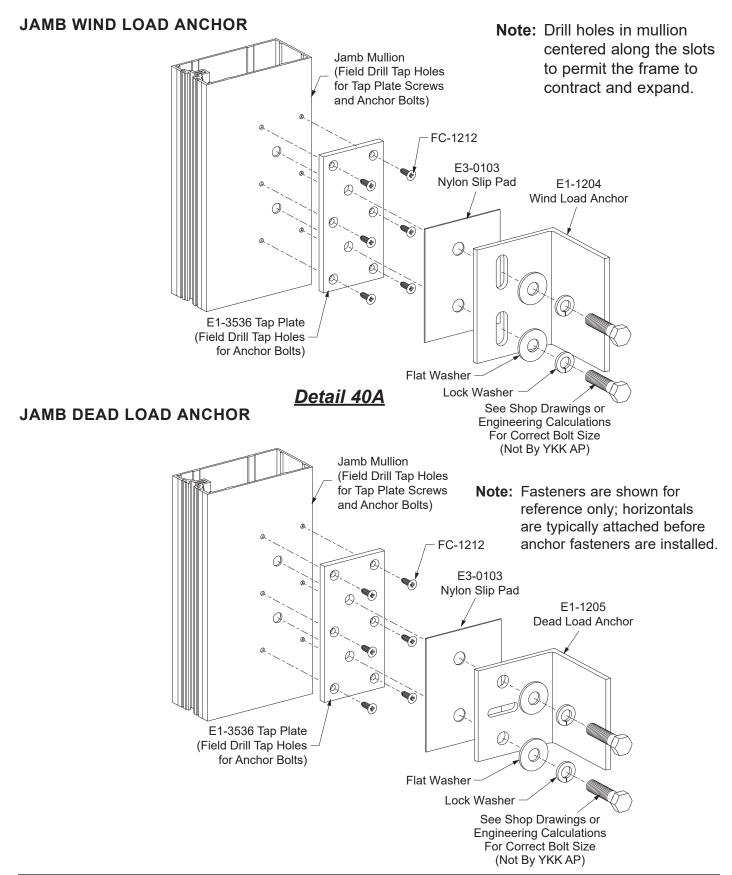


ap Akk

TYPICAL WIND LOAD ANCHOR







STEP 11 ATTACH HORIZONTAL MEMBERS

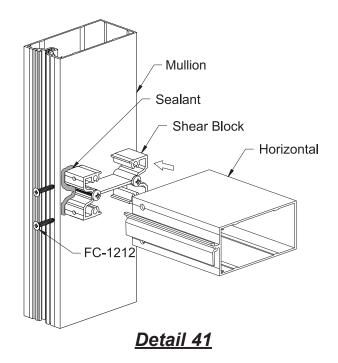
Note: Before applying any sealant, clean aluminum surfaces using cleaner and method approved by sealant manufacturer.

-Just prior to attaching the horizontal members to the mullion, apply sealant to the front of the shear block as shown.

-Slide the horizontal members towards the mullion and attach them to the shear blocks at each end with two FC-1212 fasteners.

-Tool and wipe away any excess sealant at the mullion to horizontal joints.

-Seal horizontal to shear block fastener heads. See **Detail 41**.



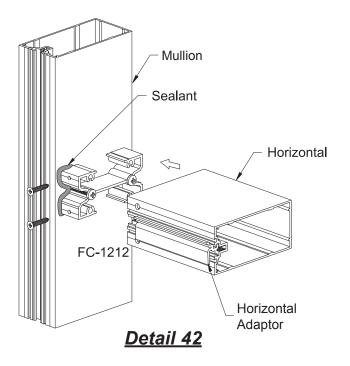
For Horizontals Using Horizontal Adaptors:

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 mullion, apply sealant to the front of the shear block as shown.
- -Slide the horizontal members towards the mullion and attach them to the shear blocks at each end with two FC-1212 fasteners.
- -Tool and wipe away any excess sealant at the mullion to horizontal joints.

-Seal horizontal to shear block fastener heads.

See Detail 42.





STEP 11 (Continued) ATTACH HORIZONTAL MEMBERS

For Two Piece Horizontals:

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

-Prior to attaching horizontal members to the mullion, slide in the horizontal adaptor, and center on the open back horizontal.

-Just prior to attaching the horizontal members to the mullion, apply sealant to the front of the shear block as shown.

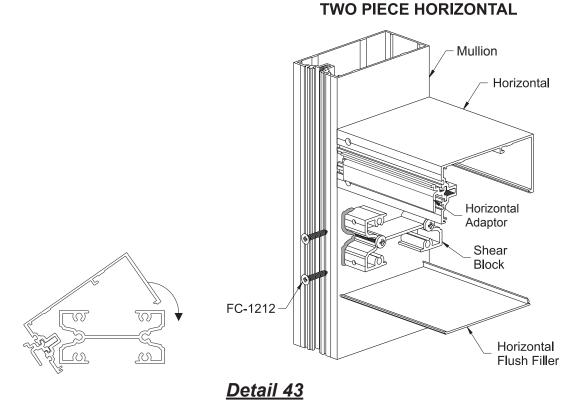
-Rotate the horizontal down over the shear clip. Make sure the horizontal and mullion glazing pockets are flush.

-Attach the horizontals to the shear blocks with two FC-1212 fasteners.

-Snap on the horizontal flush filler.

-Seal horizontal to shear block fastener heads.

See Detail 43.





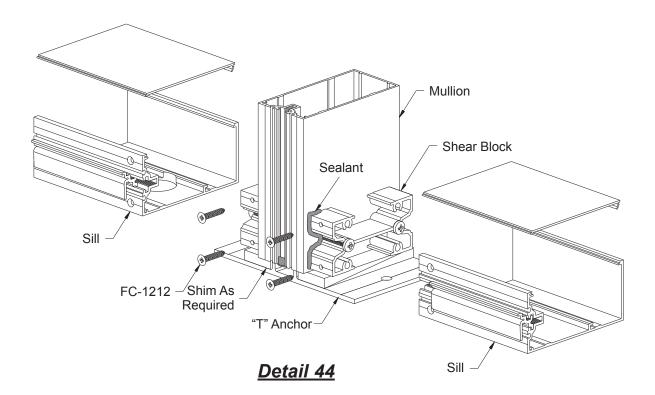
STEP 11 (Continued) ATTACH HEAD AND SILL MEMBERS

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 mullion, apply sealant to the front of the shear block as shown.

-Seal head/sill to shear block fastener heads.

See Detail 44.





STEP 11 (Continued) ATTACH HEAD AND SILL MEMBERS

Open Back Head & Sill Members at End Bays:

-To clear the mullions at end bays shear blocks must be pre-attached to the head and sill members through the face of the mullion with FC-1212 fasteners.

-Just prior to attaching the horizontal members to the mullion, apply sealant to the front of the horizontal and shear block as shown.

-Position the head/sill members into place and attach the shear blocks to the mullions with two PF-2528 fasteners per shear block.

-Provide anchor fasteners per approved shop drawings or engineering calculations.

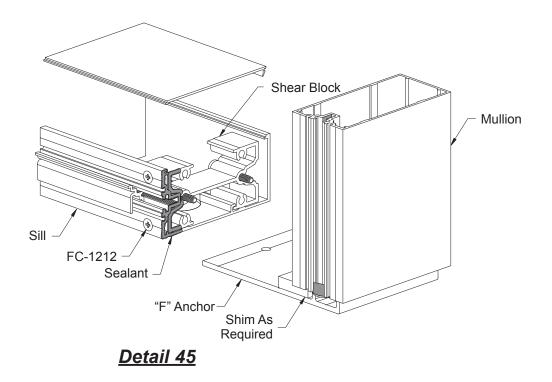
-Install the anchor fasteners as recommended by fastener manufacturer.

-Snap on the mullion flush filler.

-Seal head/sill to shear block fastener heads.

See Detail 45.

Caution: A solid shim <u>must</u> be placed under the mullion to transfer glazing dead loads to the foundation.



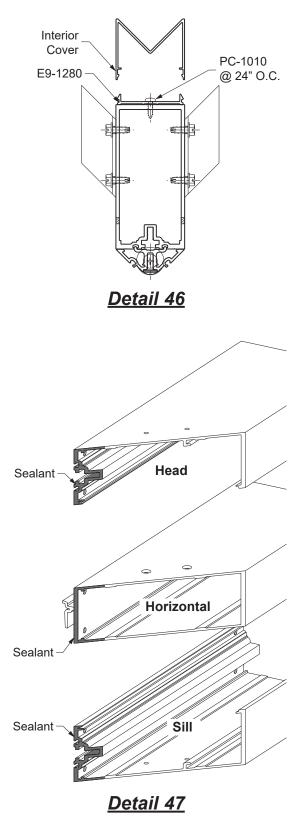
STEP 11 (Continued) ATTACH HORIZONTAL MEMBERS AT 90° CORNER MULLIONS

-Prior to attaching the mitered head, sill, and horizontals to the corner mullion, the interior covers must be installed. Attach the interior cover base E9-1280 to the back of the corner mullion with PC-1010 screws at 24" maximum on center. Then snap on the interior cover.

See Detail 46.

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 corner mullion, apply sealant to the front of the horizontal at the mitered end as shown in **Detail 47**.





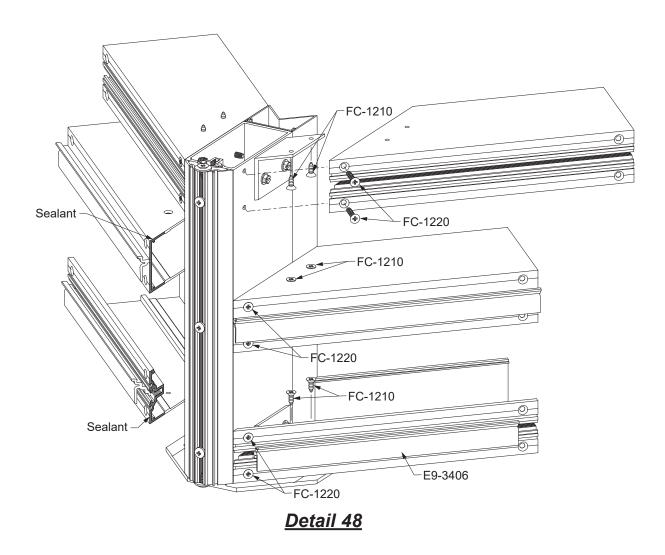
STEP 11 (Continued) ATTACH HORIZONTAL MEMBERS AT 90° CORNER MULLIONS

-Insert E9-3406 horizontal adaptors into the sill prior to attaching it to the corner mullion. -Attach the horizontal members at the mitered end to the corner mullion at the shear blocks with two FC-1210 fasteners.

-Tool and wipe away any excess sealant at the vertical to horizontal joints.

-Fasten FC-1220 screws into the front of the mitered horizontals into the corner mullion. Seal these fastener heads.

See Detail 48.





STEP 12 APPLY PERIMETER SEALANT

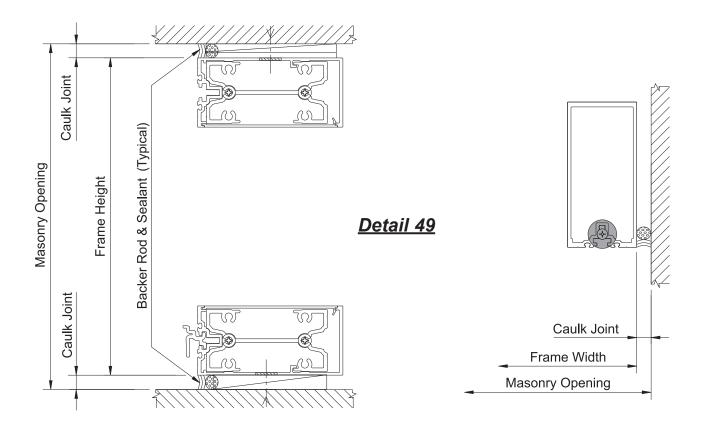
-Clean the area around the perimeter of the frame with cleaner and method approved by sealant manufacturer.

Note: Taping the front face of the mullion is recommended to keep the surface free of sealant. -Place backer rod between the perimeter of the frame and the substrate.

-Apply and tool sealant to the substrate and the curtain wall frame.

See Detail 49.

Note: Additional space at the caulk joint may be required to allow for expansion and/or contraction of the system per a qualified engineer's review, (1/2" minimum).





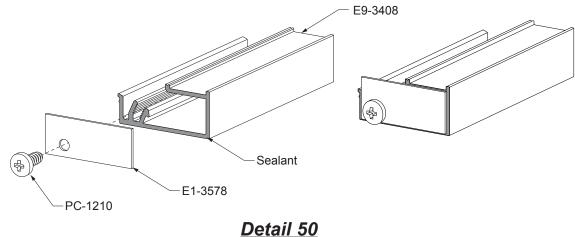
STEP 13 ATTACH PERIMETER TRIM

Sill and Jamb Perimeter Trim

Note: E1-3578 end dam must be attached at each end of the E9-3408 head, sill and jamb. perimeter trim.

-Clean all joint surfaces using cleaner approved by sealant manufacturer. -Apply sealant to the E9-3408 perimeter trim as shown in **Detail 50**. -Fasten the E1-3578 end dam to the E9-3408 perimeter trim with one PC-1210 screw. -Clean and remove excess sealant.

See Detail 50.

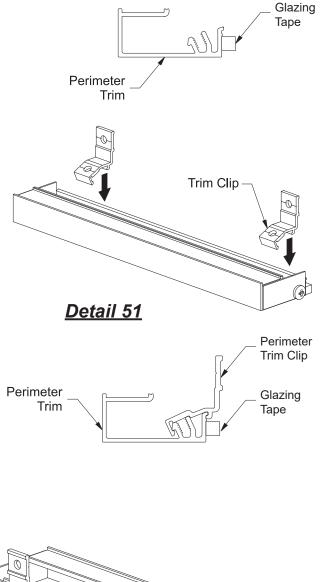


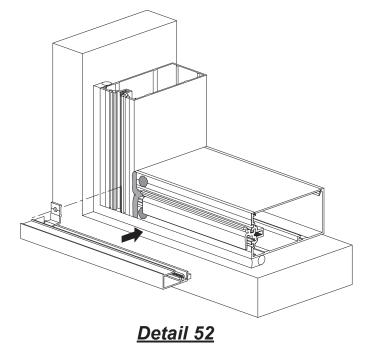
STEP 13 (Continued) ATTACH PERIMETER TRIM

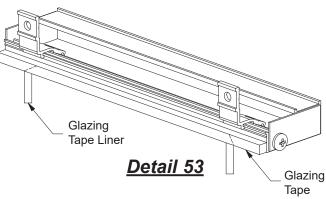
Sill Perimeter Trim

-Apply E2-0110 spacer tape to the entire length of the E9-3408 perimeter trim member.
-Attach E1-3543 perimeter trim clip to the E9-3408 perimeter trim member 1-1/4" from each end and at all intermediate mullion locations. Trim clip locations can be adjusted after perimeter trim is adhered to the sill member
See Detail 51.

Pull back the tapes liner of the perimeter trim 2" from each end to expose the adhesive backing.
Press the perimeter trim firmly onto the sill member.
Pull the remaining tape liner from the tape of the perimeter trim while continuing to press the perimeter trim firmly against the sill member.
See Detail 52 and Detail 53.







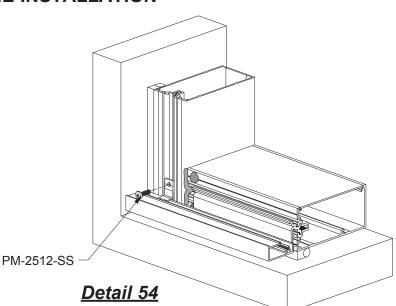


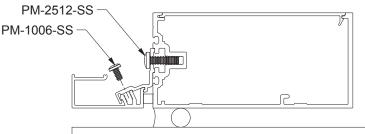
STEP 13 (Continued) ATTACH PERIMETER TRIM

Sill and Head Perimeter Trim

- -Using PM-2512-SS fasteners, fasten the perimeter trim clips into the spline of the mullions.
- -Using PM-1006-SS fasteners, fasten the perimeter trim clip into the spline of the perimeter trim.

See Detail 54.



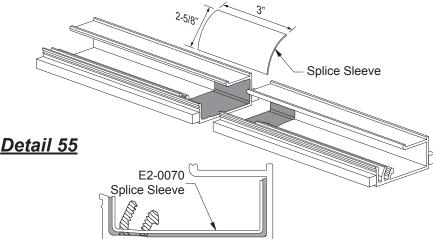


Sill Perimeter Trim Splice

- -Cut E2-0070 silicone splice sleeve to 3" x 2-5/8".
- -Clean perimeter trim and silicone splice sleeve per sealant manufacturer's recommendations at the splice location. -Seal the perimeter trim at the splice location as shown in **Detail 55**, before positioning the silicone splice sleeve. Fit the silicone splice sleeve into the perimeter trim. -Tool excess sealant.

Sealant

See Detail 55.





STEP 13 (Continued) ATTACH PERIMETER TRIM

Jamb Perimeter Trim

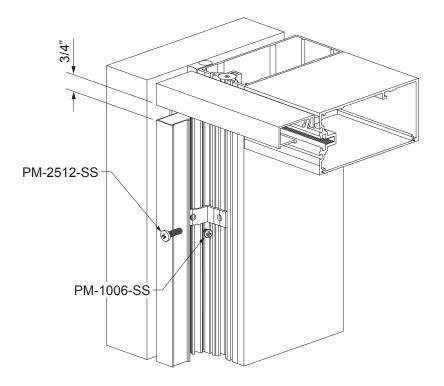
-Prepare the perimeter trim at jamb locations as stated on Page 39.

-Trim clips should be located 2" from each end of the perimeter trim, and 3' on center.

-Using PM-2512-SS fasteners, fasten the perimeter trim clips into the spline of the jamb member.

-Using PM-1006-SS fasteners, fasten the perimeter trim clip into the spline of the perimeter trim.

See Detail 56.



<u>Detail 56</u> Head Condition Shown, Sill Condition Similar



STEP 13 (Continued) ATTACH PERIMETER TRIM

90° Outside Corner Perimeter Trim

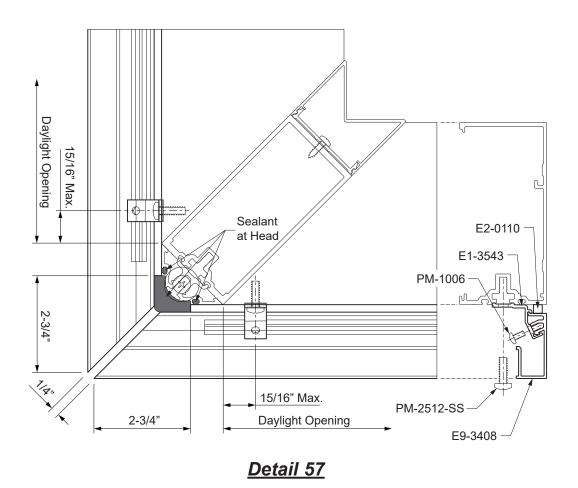
-Cut E2-0110 spacer tape to mitered perimeter trim length minus 2-3/4", and adhere it to the mitered perimeter trim.

-Adhere the mitered perimeter trim to the head and sill, leaving a 1/4" gap at the corner.

-Trim clips should be located no more than 15/16" from the end of the daylight opening and at 3' on center thereafter.

-Using PM-2512-SS fasteners, fasten the perimeter trim clips into the spline of the jamb member. -Using PM-1006-SS fasteners, fasten the perimeter trim clip into the spline of the perimeter trim. -At the head, fill the void between the perimeter trim and the mullion with backer rods and sealant.

See Detail 57.





STEP 13 (Continued) ATTACH PERIMETER TRIM

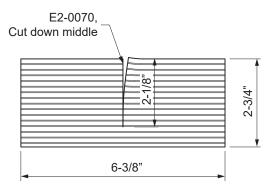
90° Outside Corner Perimeter Trim

-Cut a E2-0070 silicone sheet to the dimensions shown on **Detail 58**.

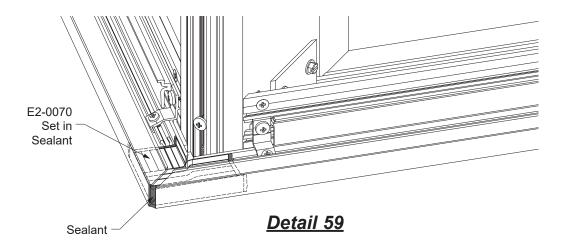
-Cut the sheet down the middle to allow the sheet to be folded over and overlapped. -Adhere the sheet into place with sealant.

-Apply sealant to the face and substrate side of the gap in the corner perimeter trim.

See Detail 59.



Detail 58





STEP 13A INSTALL PERIMETER TRIM AT DOOR JAMB

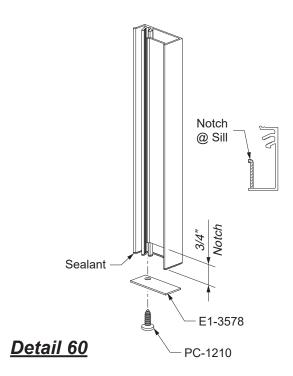
-Cut the vertical perimeter trim to Door Opening Height minus 3/4" and minus the Caulk Joint at the sill.

-Notch the bottom of the perimeter trim by 3/4" as shown in **Detail 60**.

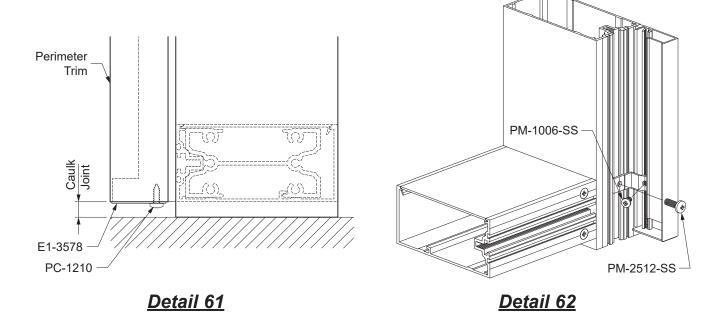
-Apply sealant to the ends of the vertical trim, and attach E1-3579 end caps at each end with PC-1210 fasteners.

-Cut E2-0110 spacer tape to the length of the perimeter trim, and apply it to the perimeter trim as previously stated in **Page 41**.

-Attach perimeter trim clips to the perimeter trim at 2" from each end and at 3' maximum on center, shown similarly on **Detail 56** on **Page 43**.
-Using PM-2512-SS fasteners, fasten the perimeter trim clips into the spline of the mullion.
-Using PM-1006-SS fasteners, fasten the perimeter trim clip into the spline of the perimeter trim. Allow the same space above the sill substrate as the caulk joint at the sill.



See Details 61 & 62.



STEP 13A (Continued) INSTALL PERIMETER TRIM AT DOOR JAMB

Perimeter trim at the sill member is to be cut to overlap the mullion at the door jamb by 7/8". This perimeter trim is also to be notched at the end by 1-1/4" as previously shown on **Page 21**.

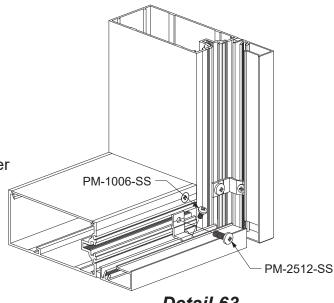
-Cut E2-0110 spacer tape to the length of the perimeter trim, and apply it to the perimeter trim as previously stated in **Page 40**.

-Using PM-2512-SS fasteners, fasten the perimeter trim clips into the spline of the sill. -Using PM-1006-SS fasteners, fasten the perimeter trim clip into the spline of the perimeter trim.

See Detail 63.

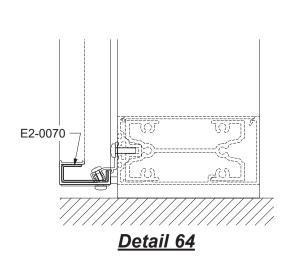
-Cut a 2-1/4" x 2" piece of E2-0070 silicone sheet, and adhere it with sealant to span the gap between the sill perimeter trim and the trim at the door jamb.

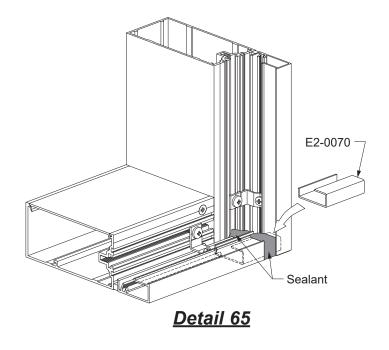
-Apply sealant to the front of the sheet and the cavity behind the sheet.



Detail 63

See Details 64 & 65.







STEP 14 INSTALL DOOR SUBFRAMES

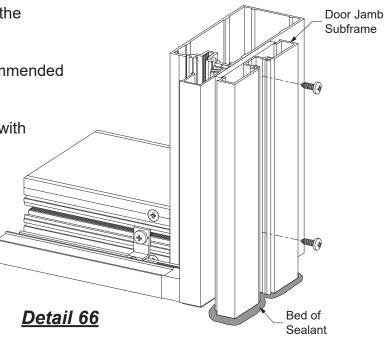
YKK

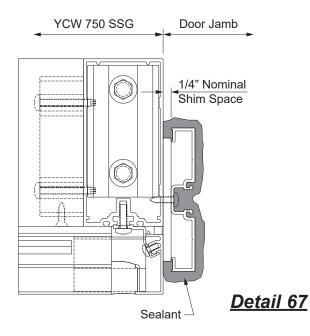
Refer to the **Entrances Installation Manual** for assembly of the door subframes. These subframes are typically installed into the curtain wall framing at the jambs, and set directly upon the sill substrate. The subframe members are determined by the approved shop drawings.

-Clean all sealant contact surfaces as recommended by the sealant manufacturer.

-Install the jamb subframe onto the mullion with fasteners according to the approved shop drawings and/or P.E. calculations, setting the subframe jambs in beds of sealant as shown in **Detail 66**.

-Apply and tool sealant to the bottom of the jamb subframe as shown in **Detail 67**.





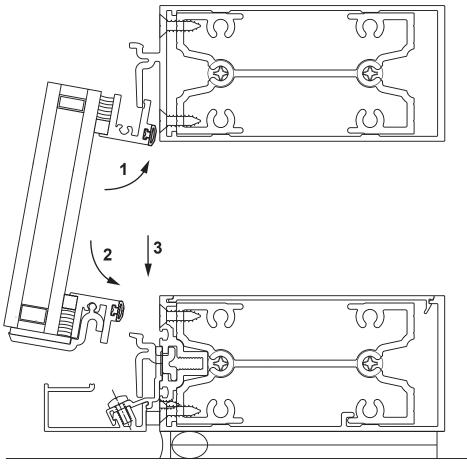


STEP 15 INSTALL CASSETTES USING HORIZONTAL ADAPTORS

-Note, toggle bar assemblies are located 9" OC as a standard, or possibly closer per engineering calculations and approved shop drawings. It would be wise to properly mark the toggle bar fastener locations on each mullion and horizontal before the glass is in place. This will enable the glazers to locate the temps between the clips, thus avoiding the same hole location being used twice.

-Center the glazed cassette unit vertically into the opening, tilting the top of the glass inward. Gently rest the weight of the glass onto the lower integral/slide in horizontal adaptor.

See Detail 68.



Detail 68

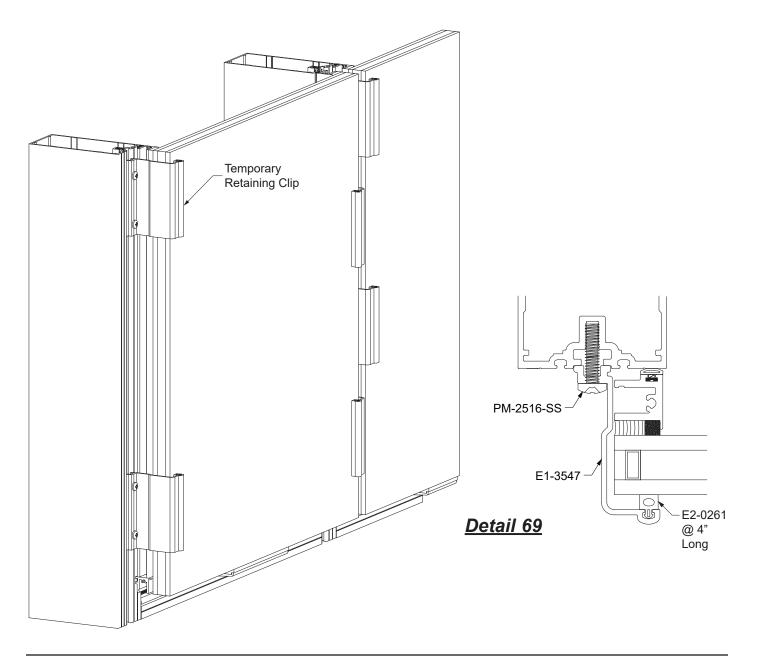


STEP 16 INSTALL TEMPORARY RETAINING CLIPS

-Immediately install E1-3547 temporary retaining clips, every 2' on center, into the center spline of the mullion along the vertical edge of the unit with (2) PM-2516-SS fasteners per clip and 4" of E2-0261 SSG glazing spacer per clip.

See Detail 69.

-Check to see if the inside of the cassette is centered with the daylight opening. The cassette should be 1/16" inward at each of the vertical and horizontal mullions.

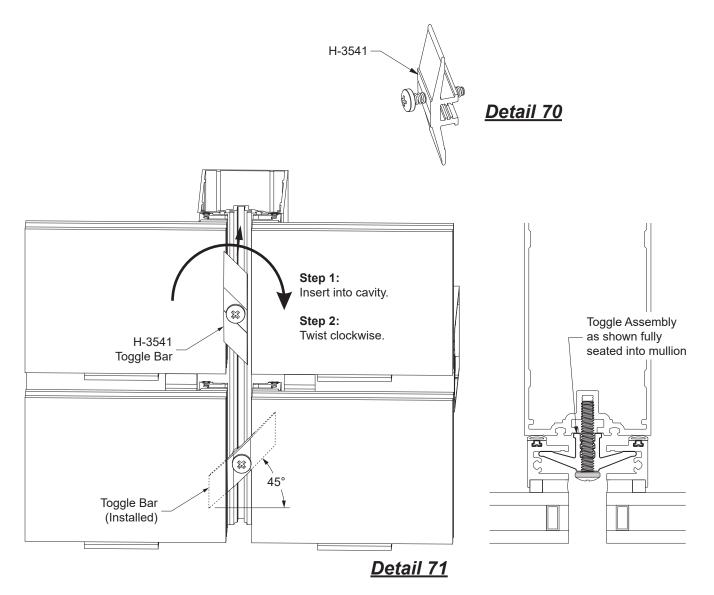




STEP 17 INSTALL TOGGLE BAR ASSEMBLIES

-After the adjoining glass is installed, the H-3541 toggle bar assembly (shown in **Detail 70**) can then be installed at 9" maximum on center. Slide the toggle assembly into 3/4" gap between the glass. Slowly start the fastener the first 45°, which should turn the toggle bar 45° and engage itself into the proper position within the two adjoining cassettes. Continue screwing the fastener approx. 3/8" deep until the toggle is fully seated against the mullion, fully engaging the cassettes. Remove temporary clips after toggles are installed.

NOTES: Do not re-use a screw location twice, which may weaken the strength of the attachment. If a toggle bar strips the tongue of the mullion, relocate the toggle bar approximately 1/2" away from the intended location. Toggles will not fully seat onto the mullion unless they are positioned at a 45° angle as shown in **Detail 71**.



GLAZING

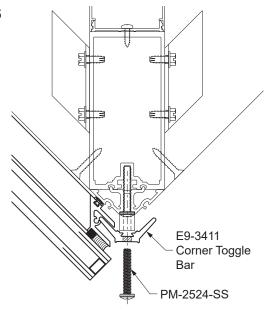
STEP 17 (Continued) INSTALLING CASSETTES AT 90° OUTSIDE CORNERS

-Install the first glazed unit at one side of the corner. -Install the toggle bar assemblies on the other side of the cassette not at the corner.

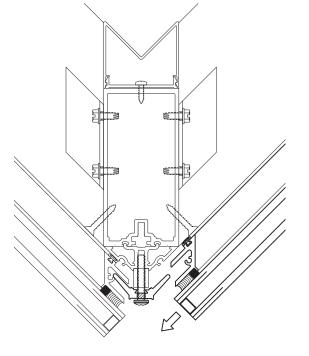
-Install the corner adaptor with PM-2524-SS screws, leaving a 1/4" short of full engagment. See **Detail 72**. -Install the second cassette on the other side of the corner, and slide it inward to the corner as shown in **Detail 73**.

-Install the toggle bar assemblies for this cassette, and tighten the fasteners for the corner toggle bar to 70 inch-pounds.

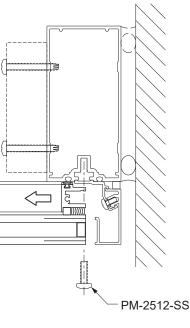
Note: If the other side of the corner glazing unit is at a jamb, then the PM-2512-SS screws at the jamb trim clip will need to be temporarily removed to allow the corner cassette to slide. Reinstall the screws after the cassette is set into place. See **Detail 73A**.







<u>Detail 73</u>



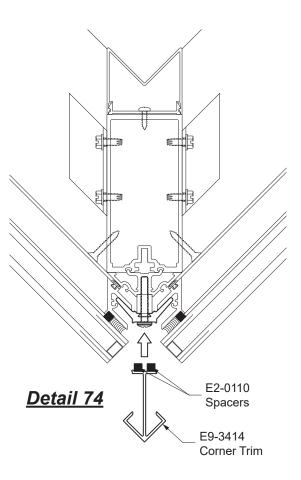
Detail 73A



STEP 17 (Continued) INSTALLING CASSETTES AT OUTSIDE CORNERS

-Cut the E9-3414 corner trim to length of the jamb perimeter trim and adhere E2-0110 spacers to the corner trim also cut to the same length.

-Adhere the corner trim to the corner toggle bar as shown in **Detail 74**.



GLAZING

STEP 18 APPLY EXTERIOR WEATHERSEAL

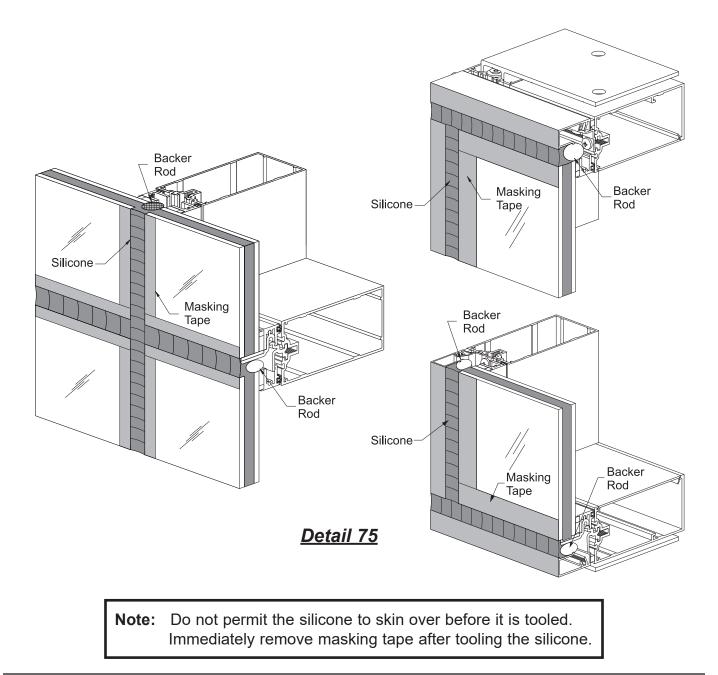
-After toggle bars are in place, insert a backer rod into the glass joint.

-Clean all silicone contact surfaces and joints (including the outside SSG corner) with cleaner and method recommended by sealant manufacturer.

-Apply masking tape to the edges of the glass as shown in **Detail 75**.

-Apply silicone sealant into the cavity between the lites of glass. Tool the silicone sealant immediately after running the joint.

-Remove the masking tape. Do not allow the sealant to skin over.



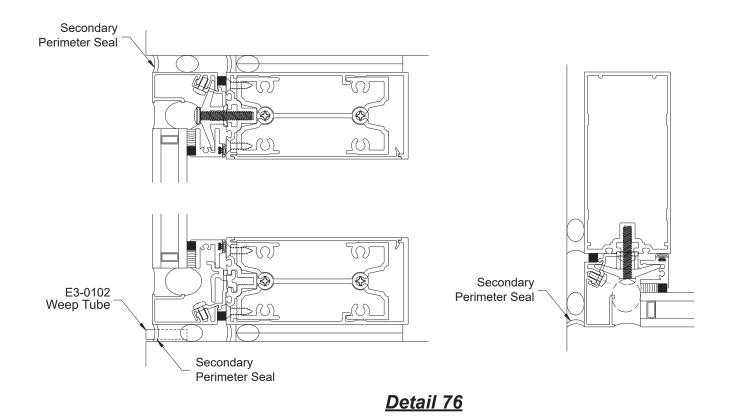
STEP 19 INSTALL SECONDARY PERIMETER SEALS

-Carefully read and follow sealant manufacturers sealant recommendations.

-Make sure all silicone contact surfaces and joints have been cleaned with cleaner and method recommended by sealant manufacturer.

-Install backer rod and apply sealant to the areas indicated in Detail 76.

-Apply E3-0102 weep tubes, 2 per DLO at 1/4 points.





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