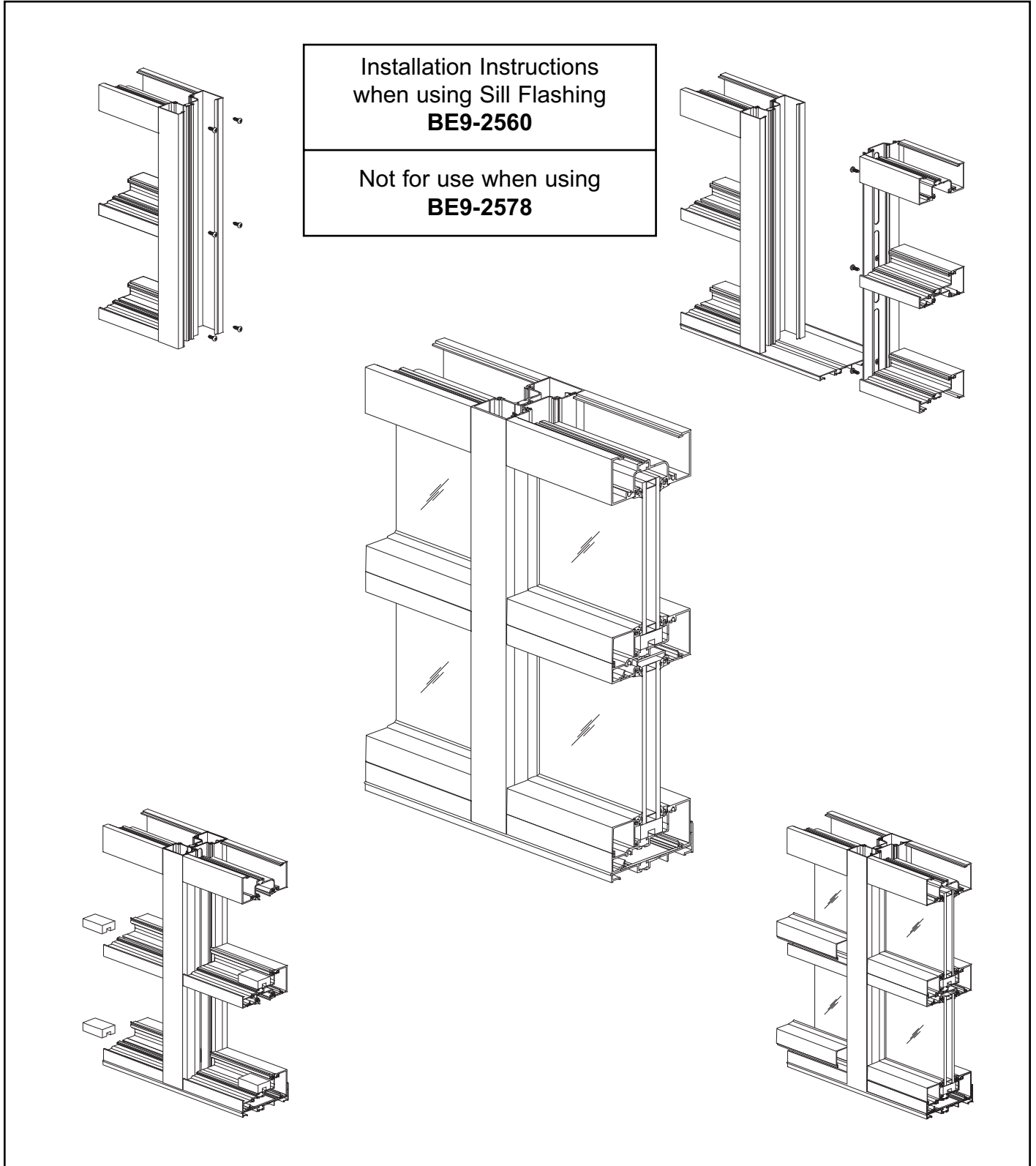


YES 45 TU Storefront System



Installation Manual

TABLE OF CONTENTS

Installation Notes Page ii

PARTS DESCRIPTION

Framing Members Page 1 & 2

Accessories Page 3

FRAME FABRICATION

Determine Frame Size Page 4

Fabricate Sill Flashing Page 5

Fabricate Two Piece Verticals for Screw Spline Assembly Page 6

Fabricate Tubular Verticals for Shear Block Assembly Page 7

Fabricate Head, Horizontal and Sill Members Page 8

Fabricate Glass Stops & Glazing Adaptors Page 8

FRAME ASSEMBLY

Assemble Frames For Screw Spline Assembly Page 9

Assemble Frames For Shear Block Assembly Page 10

FRAME INSTALLATION

Install Sill Flashing Page 11

Install Frames Page 12 & 13

Apply Perimeter Sealant Page 13

Install Water Deflectors Page 14

Apply Internal Sealant Page 15

Install Glazing Adaptors Page 15

GLAZING

Install Glazing Gaskets Page 16

Install Glass Page 17

Install Anti-Walk Blocks Page 18

Install Glass Stops Page 18



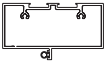

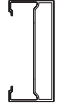



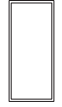




Installation Notes

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 shims, sealants, supplies and tools necessary for the installation.
4. Carefully check the openings and surrounding conditions that will receive your material. Remember, if the construction is not per the construction documents, it is your responsibility to notify the general contractor in writing. Any discrepancies must be brought to the general contractor's attention before you proceed with the installation.
5. Gather your shop drawings, materials, packing list, and this installation manual. Carefully review parts location, the sequence it goes therein, when you glaze it and how you seal it. Installation instructions are of a general nature and may not cover every condition you will encounter. The shop drawings and/or installation manuals were prepared specifically for the product.
6. Any material substitutions must be of equal or greater quality.
7. Make certain that material samples have been sent for compatibility testing for all manufacturer's sealants involved. Make certain sealants have been installed in strict accordance with the manufacturer's recommendations and specifications.
8. Remember to isolate, in an approved manner, all aluminum from uncured masonry or other incompatible materials.
9. System-to-structure fasteners are not supplied by YKK AP. Fasteners called out on shop drawings are to indicate minimum sizes for design loading.
10. Entrances are to be installed plumb, square, level and true.
11. If any questions arise concerning YKK AP products or their installation, contact YKK AP for clarification before proceeding.
12. 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 that you have proudly produced, because no one else will.
13. Cutting tolerances are plus zero (0"), minus one thirty second (-1/32") unless otherwise noted.
14. Check our website, www.ykkap.com, for the latest installation manual update prior to commencing work.

YES 45 TU FRAMING MEMBERS (2" x 4-1/2")

	Vertical / Jamb	BE9-2551		Expansion Mullion (Female)	BE9-2564
	Head / Vertical / Jamb	BE9-2553		Expansion Mullion (Male)	BE9-2565
	Horizontal	BE9-2556		Hinged Mullion (Male)	BE9-2557
	Sill	BE9-2554		Hinged Mullion (Female)	BE9-2558
	Glass Stop	E9-1015		90° Corner Mullion	BE9-2566
	Sill Flashing	BE9-2560		90° Corner Mullion	BE9-2567
	One Piece Vertical	BE9-2555		3-Way Corner Mullion	BE9-2568
	Heavy Duty Vertical Mullion	BE9-2561		135° Corner Mullion	BE9-2569
	Pocket Filler (Slotted)	BE9-2552		4-1/2" Horizontal/Sill	BE9-1513
	Head Receptor	BE9-2562		Flat Filler	E9-1038
	Head Receptor Stop	E9-1033		Glazing Adaptor For 5/8" & 3/4" glazing	E9-1039
	Deep Pocket Filler Use with BE9-2569	BE9-2559		Glazing Adaptor For 3/16", 1/4", 5/16" & 3/8" glazing	E9-1040

YES 45 TU DOOR FRAMING MEMBERS

	Single Acting Door Jamb Elastomer weathering E2-0051 included	AS-0411		Transom Glass Stop For 1/4" glazing	E9-0403
	Single Acting Door Head/Transom Bar Elastomer weathering E2-0051 included	AS-0412		Transom Glass Stop For 1" glazing	E9-0413
	Double Acting Door Jamb	E9-0415		Transom Glazing Pocket For 1/4" glazing	E9-0434
	Double Acting Door Head/Transom Bar Pile weathering E2-0062 included	AS-0426		Transom Glazing Pocket For 1" glazing	E9-0435
	Intermediate Door Jamb 2" x 4-1/2" Tube Use with AS-0401	E9-9312		Sash Base Use with E9-0403 or E9-0413 glass stops	E9-0408
	Deep Pocket Filler Use with door jambs	E9-1019		Threshold 1/2" x 4"	E9-0407
	Door Stop Assembly E9-0409 (mill) & E9-1113 Elastomer weathering E2-0051 included	AS-0401			

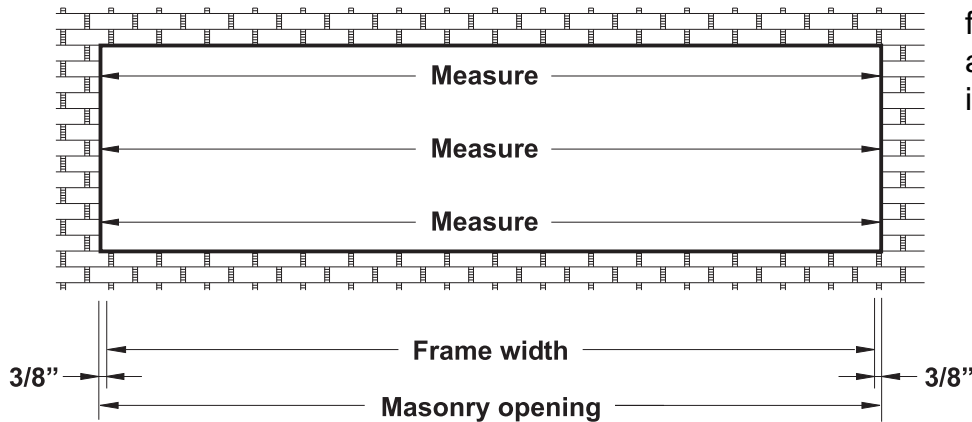
YES 45 TU ACCESSORIES

	Shear Block For Sill/Horizontal	E1-1058		Glazing Gasket	E2-0052
	Shear Block For Head	E1-1059		Glazing Gasket	E2-0053
	Shear Block For Transom Bar AS-0426	E1-0317		Glazing Gasket	E2-0064
	End Dam For Sill Flashing BE9-2560	E1-0168		Elastomer Weathering For Head Receptor	E2-0051
	Splice Sleeve For Sill Flashing BE9-2560	E1-1046		Weathering Gasket For Expansion Mullion	K2-2441
	Flat Filler Use at all anchor locations	E1-1054		#10 x 1-1/4" PHSMS Type "AB" For Sill to Sill Flashing	PC-1020
	Setting Block For outside glazed Horizontal & sill	E2-0020		#10 x 1-3/4" PHSMS Type "AB" For Attachment of Shear Blocks to Vertical	PC-1028
	Setting Block For inside glazed Intermediate horizontal	E2-0611		#12 x 1/2" PHSMS Type "AB" For Attachment of Sill & Horizontal to Shear Block	PC-1208
	Setting Block For 4-1/2" Horizontal	E2-0628		#12 x 1" PHSMS Type "AB" For Screw Spline Using BE9-2551	PC-1216
	Water Deflector	E2-0047		#12 x 1-1/4" PHSMS Type "AB" For Screw Spline Using BE9-2553	PC-1220
	"W" Side Block For Deep Pocket	E2-0153		#12 x 3/4" FHSMS Type "AB" For Attachment of Head to Shear Block	FC-1212
	Pile Weathering Seal	E2-0062			

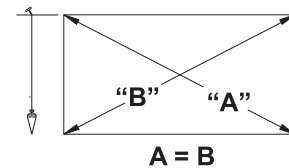
FRAME FABRICATION

STEP 1 DETERMINE FRAME SIZE

Determine Frame Width:



Note: Check the opening for squareness and plumb at both ends; units must be installed in a true rectangle.



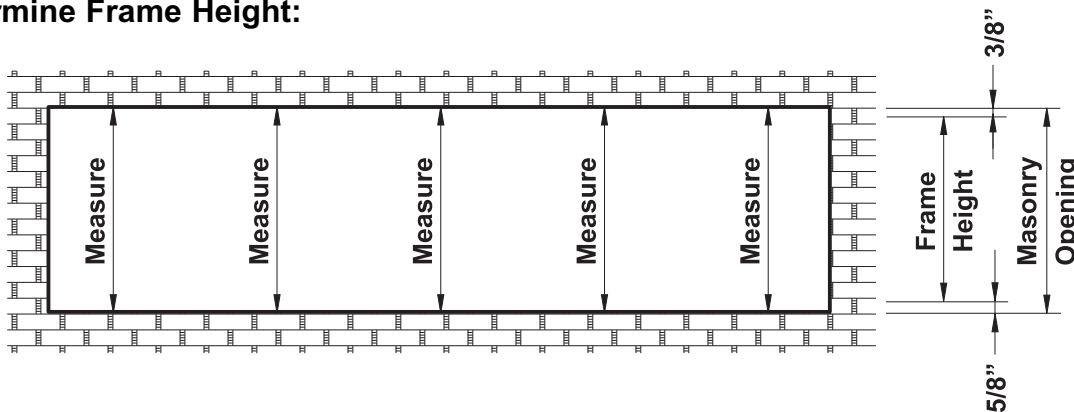
Detail 1

- Measure the width of the masonry opening at the top, middle and bottom.
- Select the smallest dimension measured and subtract 3/4" to the determine the frame width to be used.

See **Detail 1**.

NOTE: Frame widths over 24'-0" require expansion mullions every 12 to 15 feet.

Determine Frame Height:



Detail 2

- Measure the height of the masonry opening in several places along the entire length of the opening.
- Select the smallest dimension measured and subtract 1" to determine the frame height to be used:

- 3/8" shim/caulk joint at the head.
- 3/8" for sill flashing, BE9-2560.
- 1/4" shim/caulk joint below the sill flashing.

See **Detail 2**.

FRAME FABRICATION

**STEP 2
FABRICATE SILL FLASHING**

For elevations without door framing:

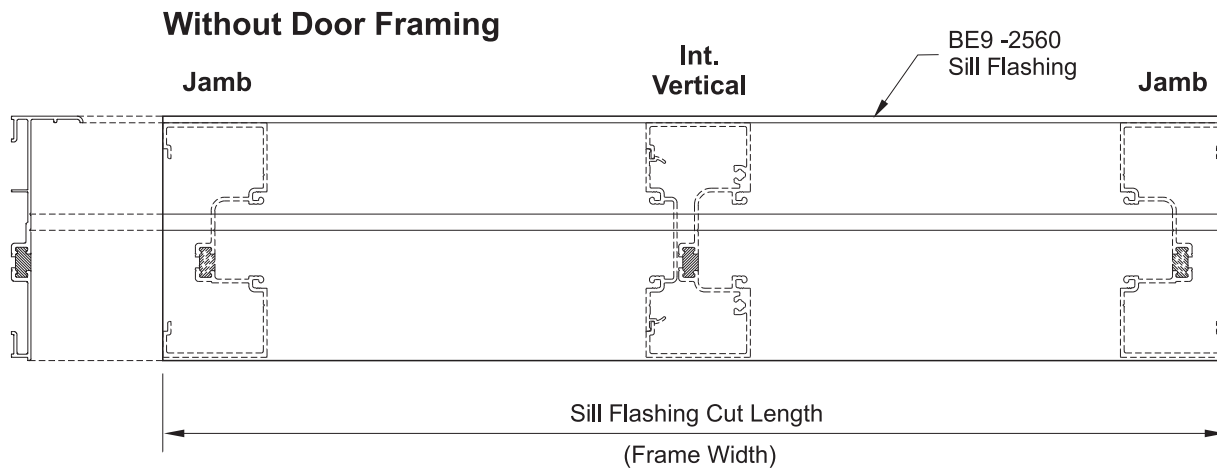
-Cut sill flashing, BE9-2560, to the frame width determined in Step 1.

For elevations with door framing:

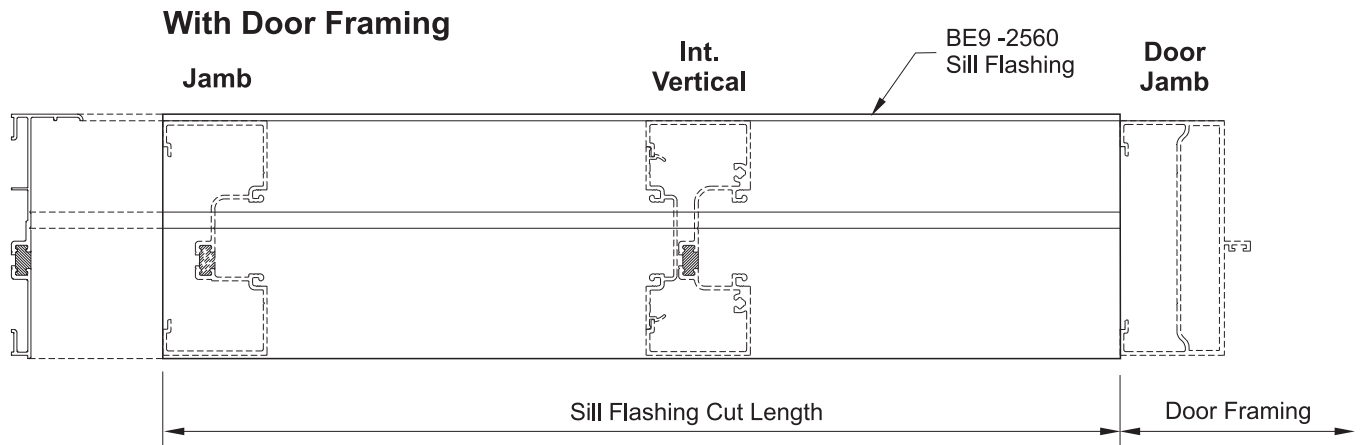
-Cut sill flashing, BE9-2560, from the end of the frame to the door jamb.
(See approved shop drawings for this dimension)

See **Detail 3**.

-For openings longer than 24'-0" the sill flashing needs to be spliced every twelve to fifteen feet.
-Allow for a 3/8" joint for expansion between sill flashing members.



Detail 3



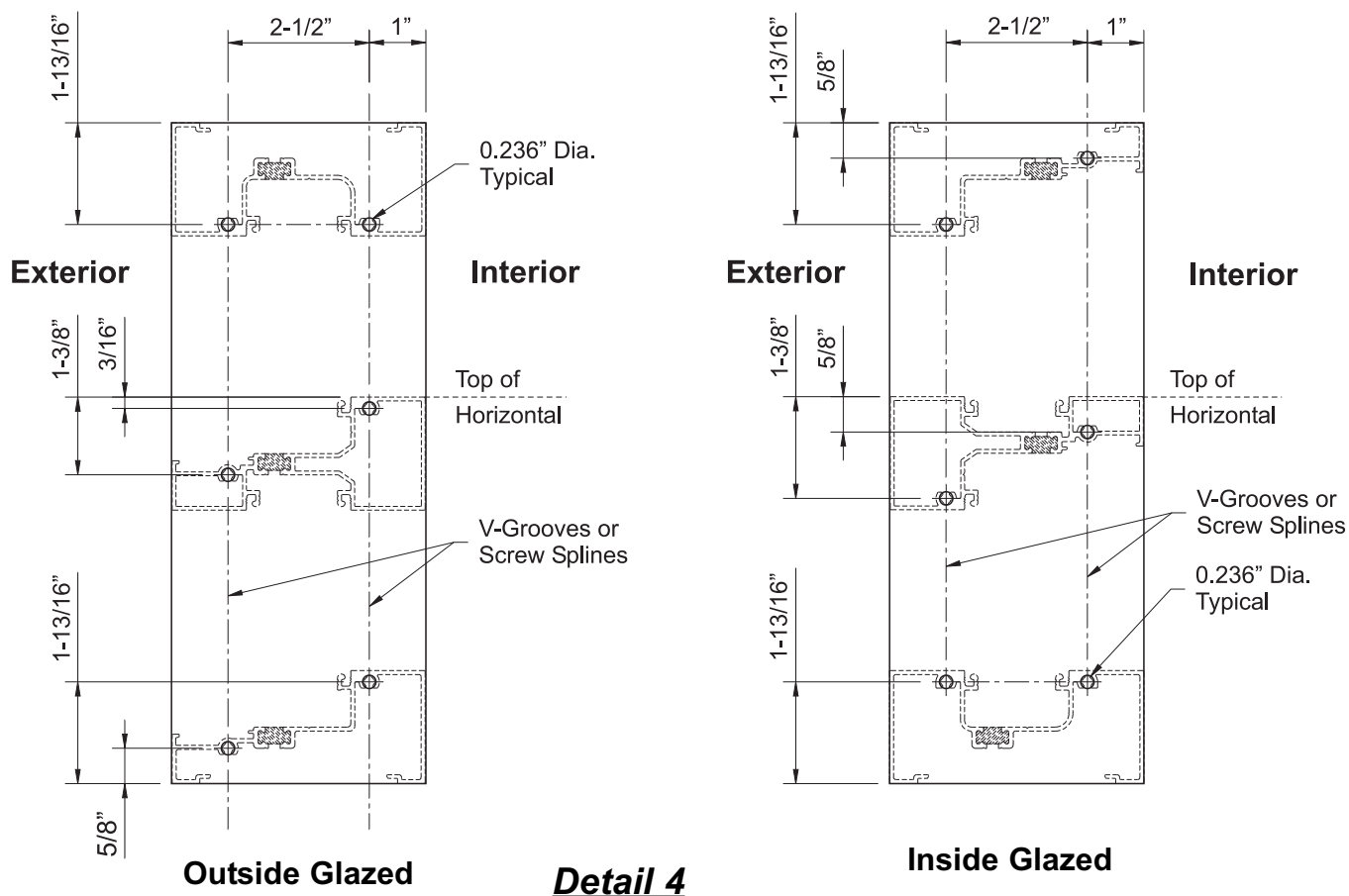
FRAME FABRICATION

STEP 3 FABRICATE TWO PIECE VERTICALS FOR SCREW SPLINE ASSEMBLY

-Cut the two piece vertical and jamb members to the frame height determined in Step 1.
-Fabricate holes in vertical members for screw spline attachment using one of the methods below:

1. Using a short piece of each horizontal member as a template, center the template on the face of the vertical and mark the location of each screw spline. Drill a 0.236" diameter (#B drill bit) hole at each location marked.
2. Layout the hole locations as shown in **Detail 4** and drill a 0.236" dia. (#B drill bit) clearance hole at each location marked.
3. Use the YKK AP drill fixture, H-7201, to drill the holes.
4. Use punch press with appropriate die set.

See **Detail 4**.



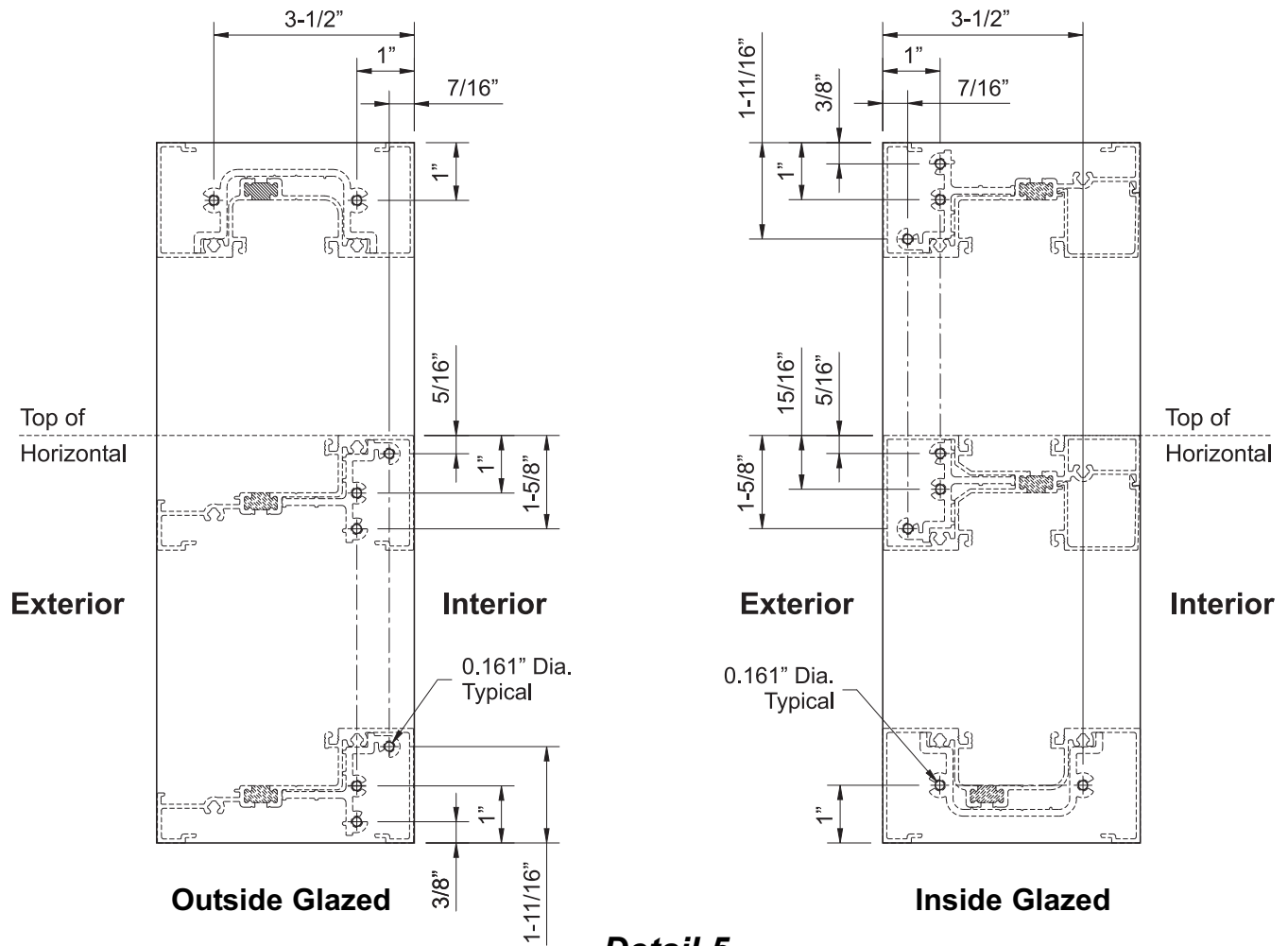
FRAME FABRICATION

**STEP 4
FABRICATE TUBULAR VERTICALS
FOR SHEAR BLOCK ASSEMBLY**

- Cut vertical and jamb members to the frame height determined in Step 1.
- Tubular verticals require shear blocks for the attachment of head, horizontal & sill members.
- Mark the location for each shear block fastener using one of the methods below:
 1. Use a short piece of each horizontal member with shear blocks installed as a template. Center the template on the face of the vertical and mark each hole location.

OR

 2. Layout hole locations for the shear blocks as shown in **Detail 5**.
- Drill a 0.161" dia. hole (#20 drill bit) at each location marked.



Detail 5

FRAME FABRICATION

STEP 5

FABRICATE HEAD, HORIZONTAL & SILL MEMBERS

-Cut head, horizontal, and sill members to the daylight opening (D.L.O.) as indicated on the shop drawings.

-Horizontal members that will be attached to shear blocks require additional fabrication:

BE9-2553 Horizontal Members:

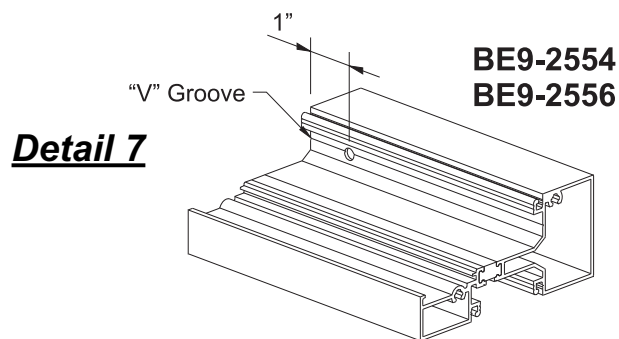
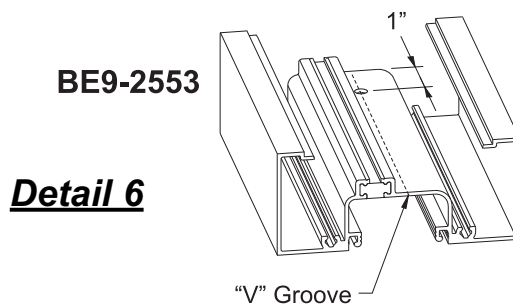
- Mark hole location at each end, 1" from the ends and centered along the "V"-groove.
- Drill a 0.236" diameter hole (# B drill bit) at each location marked and countersink for a #12 flathead fastener (FC-1212).

See **Detail 6**.

BE9-2554 & BE9-2556 Horizontal Members:

- Mark a hole location at each end, 1" from the ends centered along the "V"-groove.
- Drill a 0.236" diameter hole (# B drill bit) at each location marked.

See **Detail 7**.



STEP 6

FABRICATE GLASS STOPS & GLAZING ADAPTORS

-Cut glass stops to the same dimension as their respective horizontals minus(-) 1/32".

-Cut glazing adaptors to the daylight opening minus(-) 1/32".

FRAME ASSEMBLY

STEP 7 ASSEMBLE FRAMES

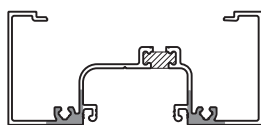
Screw Spline Assembly:

- Clean all joint surfaces using cleaner approved by sealant manufacturer.
- Apply (butter) sealant to both ends of head, horizontal and sill members just prior to assembly.
- Attach horizontal members to vertical members with two (2) PC-1216 fasteners at each end.

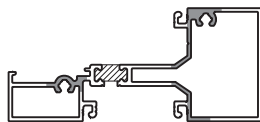
Note: Fasteners PC-1220 must be substituted for PC-1216 when using head member BE9-2553 (with screw splines) as a vertical.

- Tool the sealant into the joints and wipe away any excess sealant.

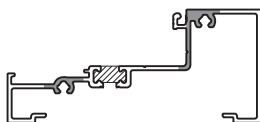
See **Detail 8**.



HEAD
BE9-2553

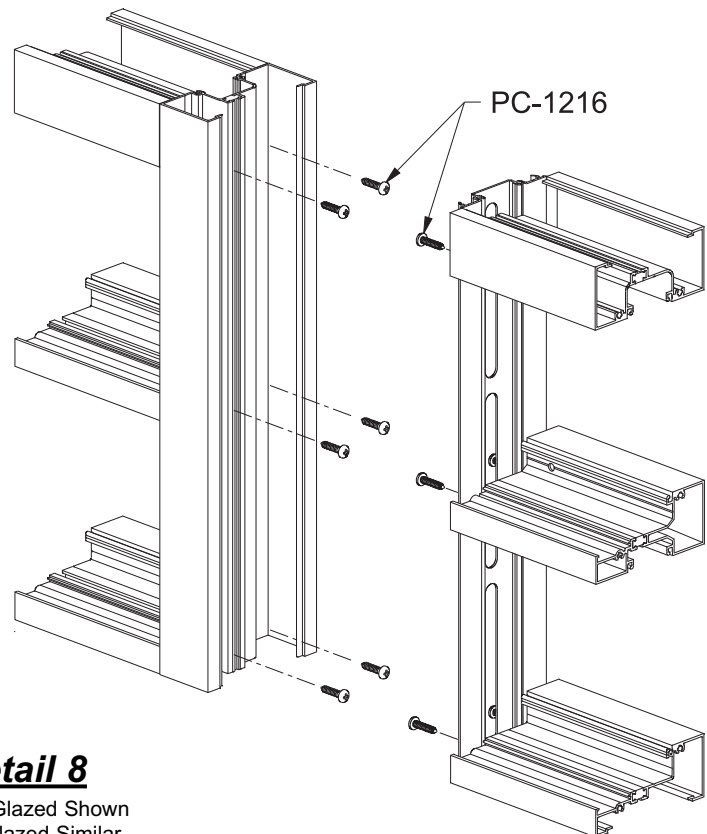


HORIZONTAL
BE9-2556



SILL
BE9-2554

Apply sealant to the shaded areas at each end.



Detail 8

Outside Glazed Shown
Inside Glazed Similar

CAUTION: Always assemble frames such that each lite of glass will have a minimum of one deep vertical glazing pocket.

FRAME ASSEMBLY

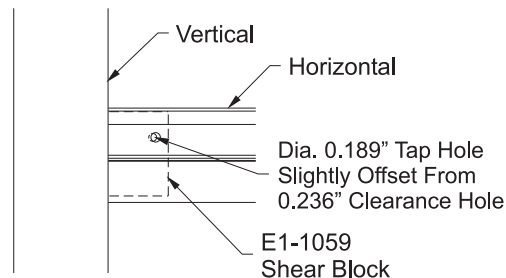
STEP 7 (Continued) ASSEMBLE FRAMES

Shear Block Assembly:

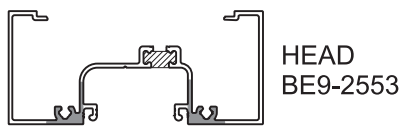
Horizontal attachment holes in shear blocks are not predrilled and must be match drilled:

- Hold fabricated horizontal member in place over the shear block tight against the vertical and mark the hole location on the shear block using the clearance hole previously drilled in the horizontal.
- Remove the horizontal and drill a 0.189" dia. hole (#12 drill bit) slightly offset towards the vertical at the location marked on the shear block to ensure a tight joint between the horizontal and vertical members.

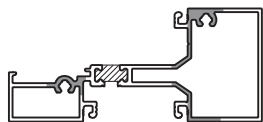
See **Detail 9**.



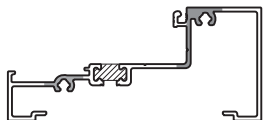
Detail 9



HEAD
BE9-2553



HORIZONTAL
BE9-2556

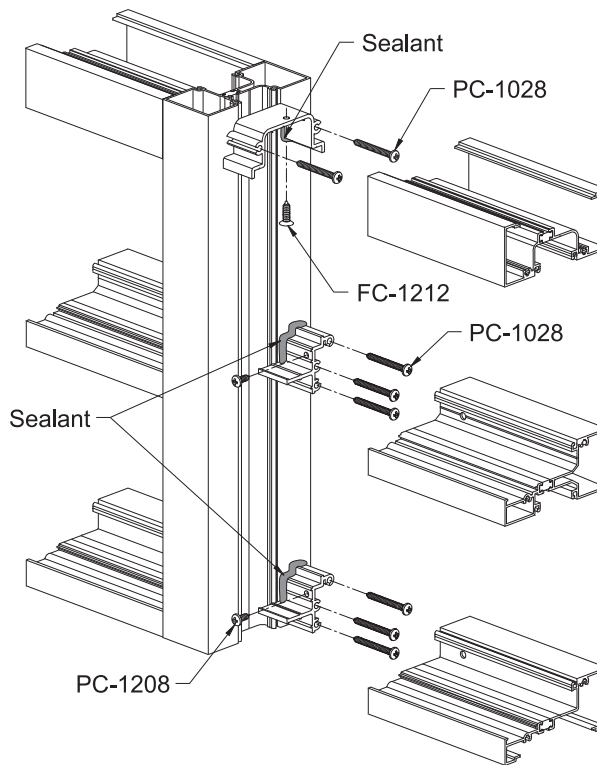


SILL
BE9-2554

Apply sealant to the shaded areas at each end.

Detail 10

Outside Glazed Shown
Inside Glazed Similar



- Clean all joint surfaces using cleaner approved by sealant manufacturer.
 - Apply (butter) sealant to both ends of head, horizontal and sill members just prior to assembly.
 - Apply sealant to the shear blocks as shown.
 - Attach head members to shear blocks with one (1) FC-1212 fastener at each end.
 - Attach horizontal and sill members to shear blocks with one (1) PC-1208 fastener at each end.
- See **Detail 10**.

Note: Open back horizontals must be used with shear blocks at end bays.

FRAME INSTALLATION

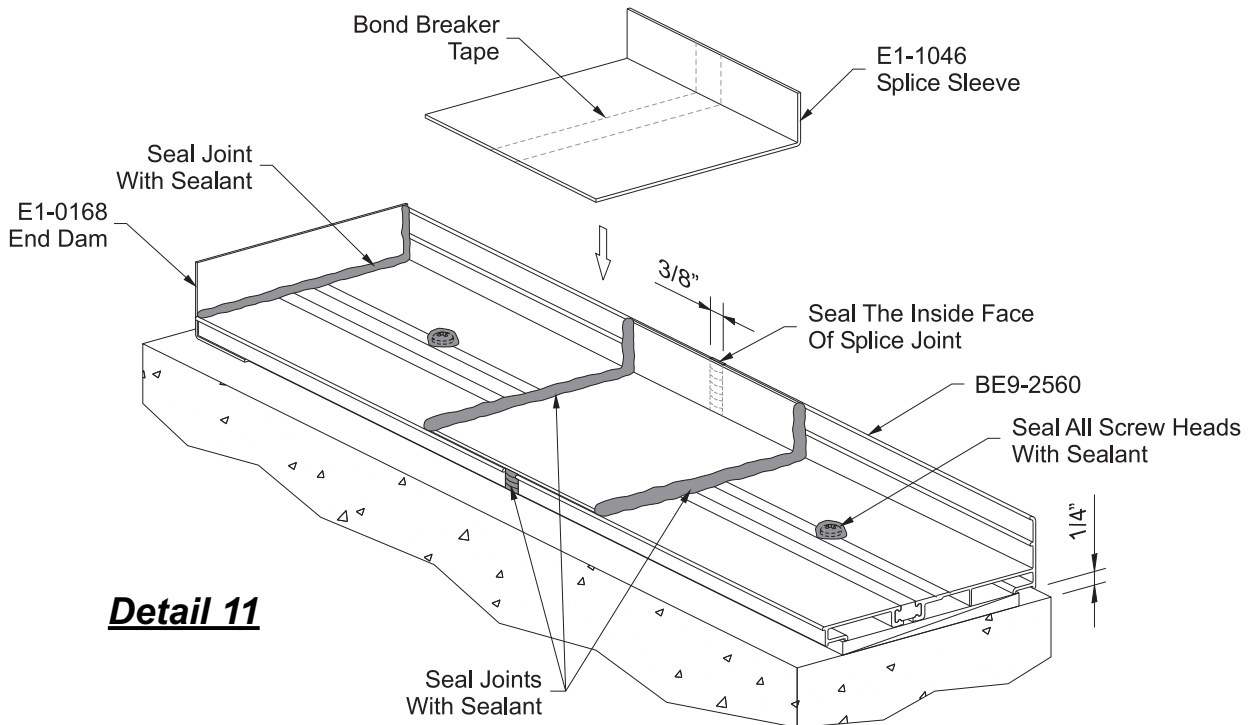
**STEP 8
INSTALL SILL FLASHING**

- Clean all joint surfaces using cleaner approved by sealant manufacturer.
- Install brake metal end dam, E1-0168, at each end of the sill flashing.
- Apply and tool sealant along the joint between the end dam and the sill flashing. Tape down the back corners to hold the end dam in place until the sealant cures.
- Starting at the smallest opening height, install the sill flashing with a minimum of 1/4" shim underneath. Sill flashing must be installed level.
- Anchor the sill flashing to the structure a maximum of 4" from each end and then 18" to 24" on center.
- Apply and tool sealant to cover the heads of all fasteners.

The sill flashing must be spliced every twelve to fifteen feet using splice sleeve, E1-1046:

- Apply bond breaker tape to center of the splice sleeve on the underside.
- Apply a generous amount of sealant to both sides of the sill flashing splice.
- Center the splice sleeve over the 3/8" splice joint.
- Tool the sealant up and over the edges of the splice sleeve to completely seal the joint.
- Apply and tool sealant at the front and back faces of the splice joint.

See **Detail 11**.



Detail 11

FRAME INSTALLATION

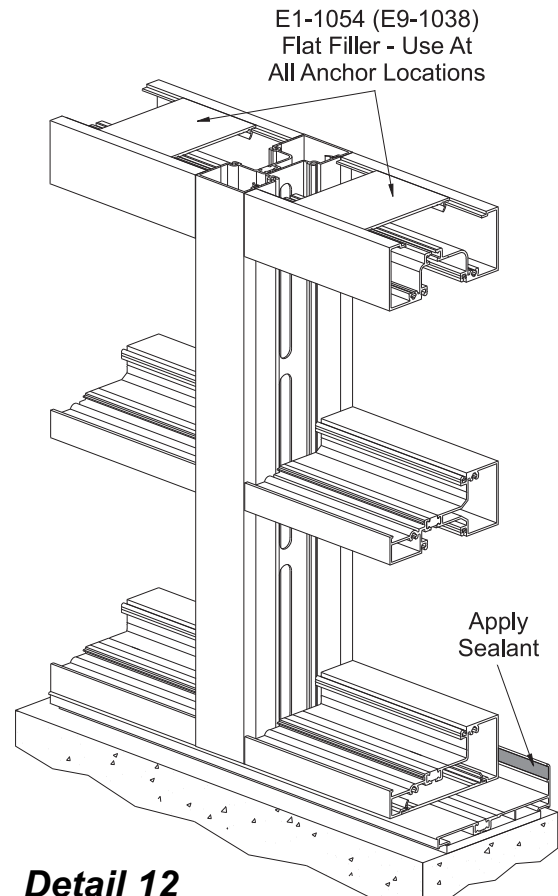
STEP 9 INSTALL FRAMES

- Snap in flat fillers, E1-1054, or 2-1/2" long pieces of E9-1038 at head, jamb, and sill anchor locations.
- Snap assembled frames together if using screw spline assembly.
- Apply sealant to the front of the back leg of the sill flashing and immediately set the frame into the opening.

See **Detail 12**.

- Shim jamb and head members with a minimum of 3/8" shim.
- Anchor the frame to the structure at the sill*, head, and jamb: 3" from the ends and then 18" to 24" on center.
- Always install a shim at all anchor locations.
- Seal all screw heads.

Note: Use only flat head fasteners at head and jamb conditions.



Detail 12

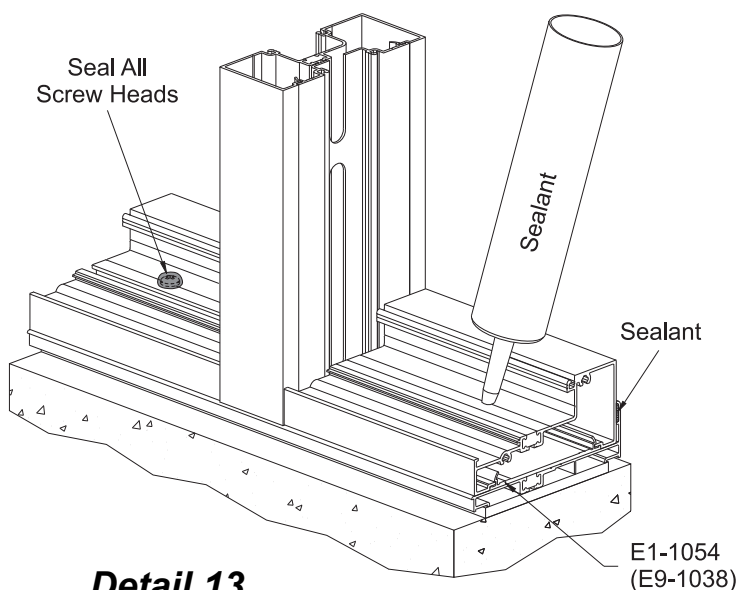
*Sill anchors penetrate the sill flashing and must be sealed watertight.

Prior to installing sill anchors:

- Force sealant down through the anchor holes in the sill member
- Apply sealant to the screw threads of the sill anchor fastener.

-Apply and tool sealant to cover the sill anchor screw heads.

See **Detail 13**.



Detail 13

FRAME INSTALLATION

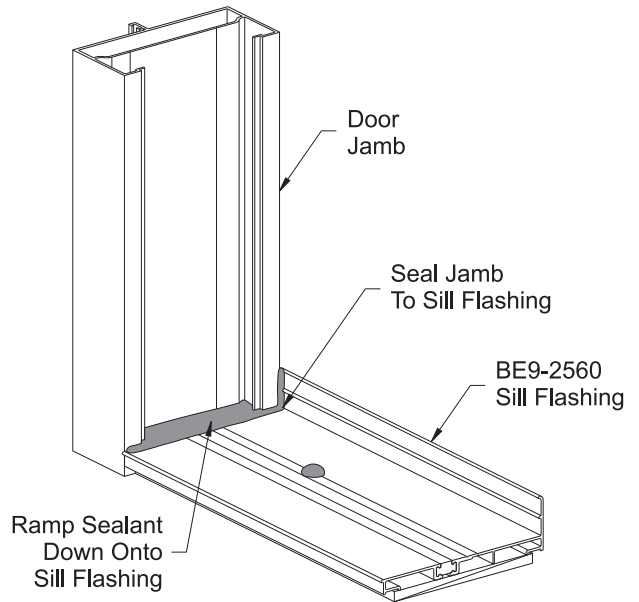
**STEP 9 (Continued)
INSTALL FRAMES**

Prior to snapping the assembled frames into the door jamb, the end of the sill flashing needs to be sealed to the door jamb.

- Apply and tool sealant to all sill flashing to door jamb joints.
- Apply a liberal amount of sealant to completely fill the door jamb cavity and ramp the sealant down onto the sill flashing.

See **Detail 14**.

Refer to the **20D, 35D, & 50D Entrances Installation Manual** for door installation instructions.

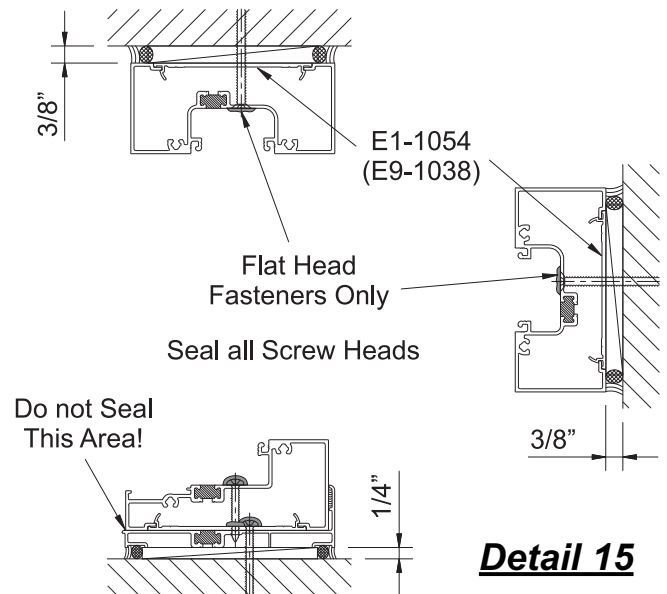


Detail 14

**STEP 10
APPLY PERIMETER SEALANT**

- Install backer rod around the perimeter of the frame.
- Apply a high grade of perimeter sealant to the joint between the frame and the structure.
- Do not** seal the joint between the sill and the sill flashing.
- Make sure all screw heads are sealed.

See **Detail 15**.



Detail 15

FRAME INSTALLATION

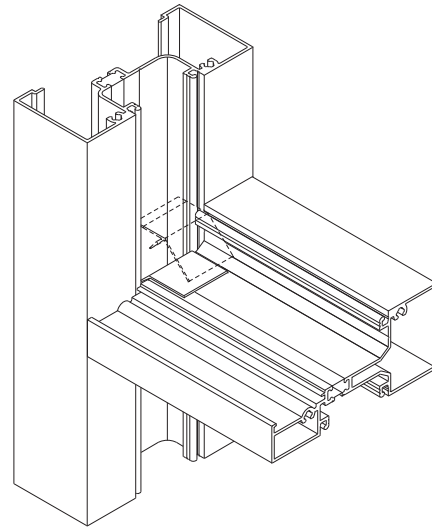
**STEP 11
INSTALL WATER DEFLECTORS**

YES 45 TU requires the installation of a water deflector, E2-0047, at the ends of every intermediate horizontal to keep water off of the insulated units.

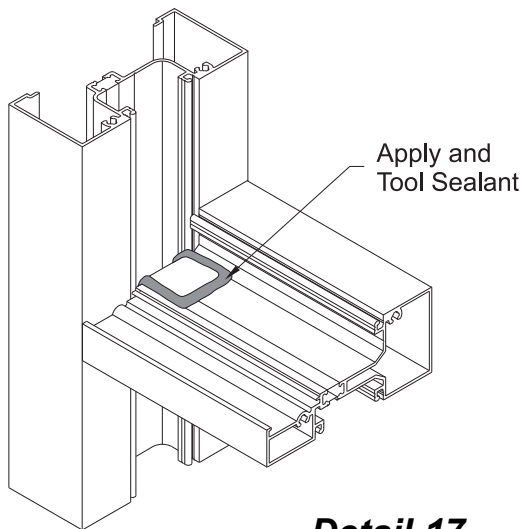
- Peel away the protective paper from the bottom of the water deflector, E2-0047, and install the water deflector by rotating it over each end of the horizontal.
- Position the vertical leg of the water deflector against the end of the horizontal.

Note: For best adhesion, make sure that the horizontal is clean and dry.

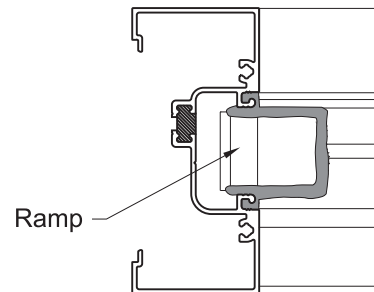
See **Detail 16**.



Detail 16



Detail 17



Detail 18

- Apply and tool sealant along the edges of the water deflector and down onto the horizontal.

See **Detail 17**.

- Seal the ramp of the water deflector to the sides of the vertical gasket reglets.

See **Detail 18**.

FRAME INSTALLATION

STEP 12

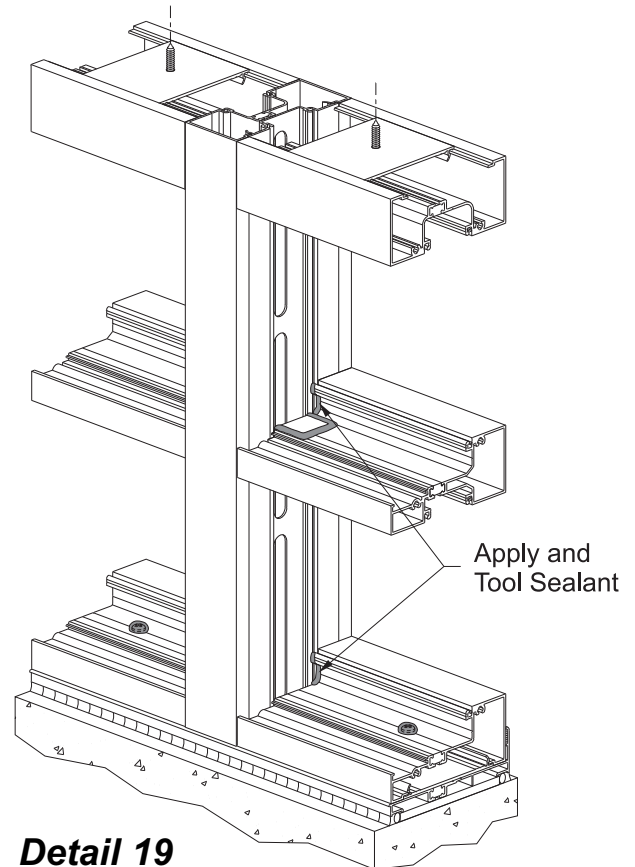
APPLY INTERNAL SEALANT

- Apply a generous amount of sealant to the vertical intersection of the horizontal and vertical members.
- Tool all of the sealant to ensure a water tight joint.
- Make sure all exposed screw heads are sealed.

See **Detail 19**.

Glazing Table - YES 45 TU

Glass Thickness	Adaptor	Exterior	Interior
3/16"	E9-1040	E2-0052	E2-0064
1/4"	E9-1040	E2-0052	E2-0052
5/16"	E9-1040	E2-0053	E2-0052
3/8"	E9-1040	E2-0053	E2-0053
1/2"	E9-1039	E2-0064	E2-0064
5/8"	E9-1039	E2-0052	E2-0052
3/4"	E9-1039	E2-0053	E2-0053
7/8"	—	E2-0064	E2-0064
1"	—	E2-0052	E2-0052



Detail 19

Outside Glazed Shown
Inside Glazed Similar

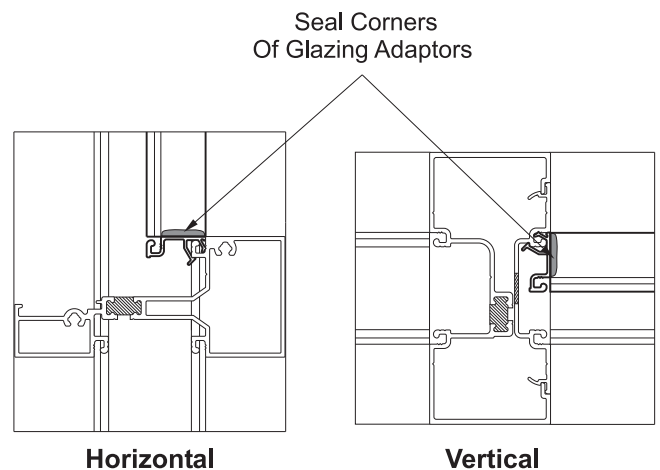
STEP 13 (Optional)

INSTALL GLAZING ADAPTORS

Glazing adaptors, E9-1039 and E9-1040, allow for glazing infills other than the standard 1". Please refer to the glazing tables above for possible adaptor/gasket combinations.

- Snap glazing adaptors into the interior gasket reglets of the verticals.
- Snap glazing adaptors into the interior gasket reglets of the horizontals.
- Apply and tool sealant to the joint between vertical and horizontal glazing adaptors.

See **Detail 20**.



Horizontal

Vertical

Detail 20

Outside Glazed Shown
Inside Glazed Similar

GLAZING

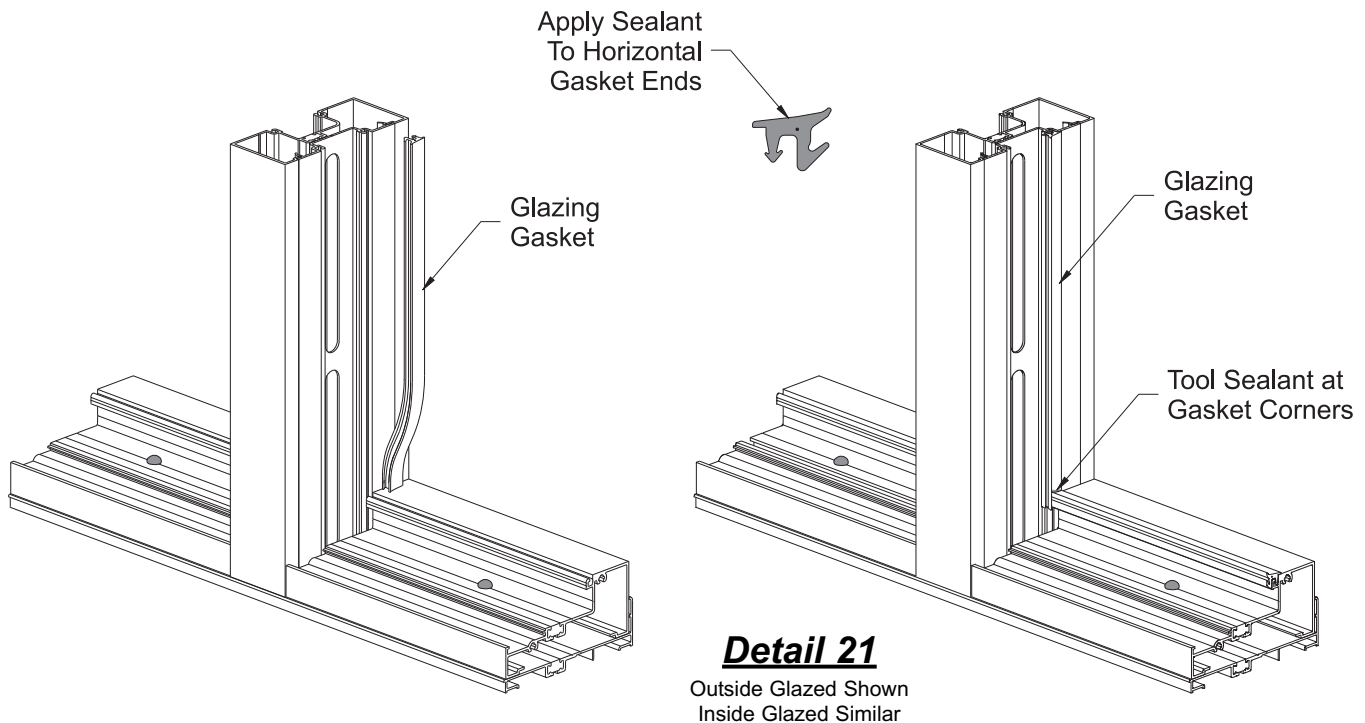
**STEP 14
INSTALL GLAZING GASKETS**

The interior glazing gaskets must be installed prior to the glazing process when outside glazing. The exterior glazing gaskets must be installed prior to the glazing process when inside glazing.

-Using a small brush clean out any dirt that may have accumulated in the gasket reglets.

Vertical glazing gaskets must be installed first:

- Cut vertical glazing gaskets to Daylight Opening plus(+) 3/16" for each foot of length.
- Insert the gasket into the reglet at each end first, and then insert the gasket at the midpoint of the opening.
- Push the gasket into the reglet starting at the midpoint and work towards each end.



Install horizontal glazing gaskets next:

- Cut horizontal glazing gaskets to Daylight Opening plus(+) 3/16" for each foot of length.
- Apply sealant to each end of the horizontal glazing gasket prior to inserting into the reglet.
- Insert the gasket into the reglet at each end first and push each end tight against the vertical gasket.
- Then insert the gasket at the midpoint of the opening and push the gasket into the reglet starting at the midpoint and work towards each end.
- Tool the excess sealant at the gasket corners to ensure a watertight seal.

See **Detail 21**.

GLAZING

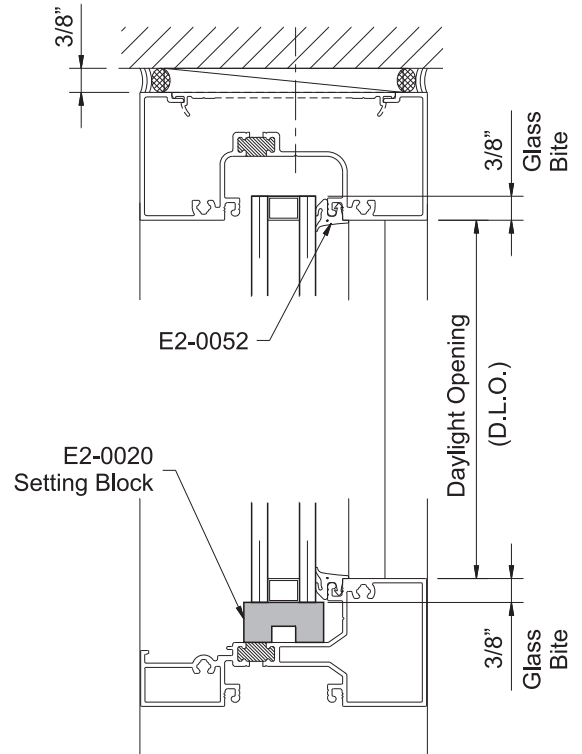
STEP 15
INSTALL GLASS

Determine the glass size:

Horizontal Glass Size = D.L.O. plus(+) 3/4"
Vertical Glass Size = D.L.O. plus(+) 3/4"

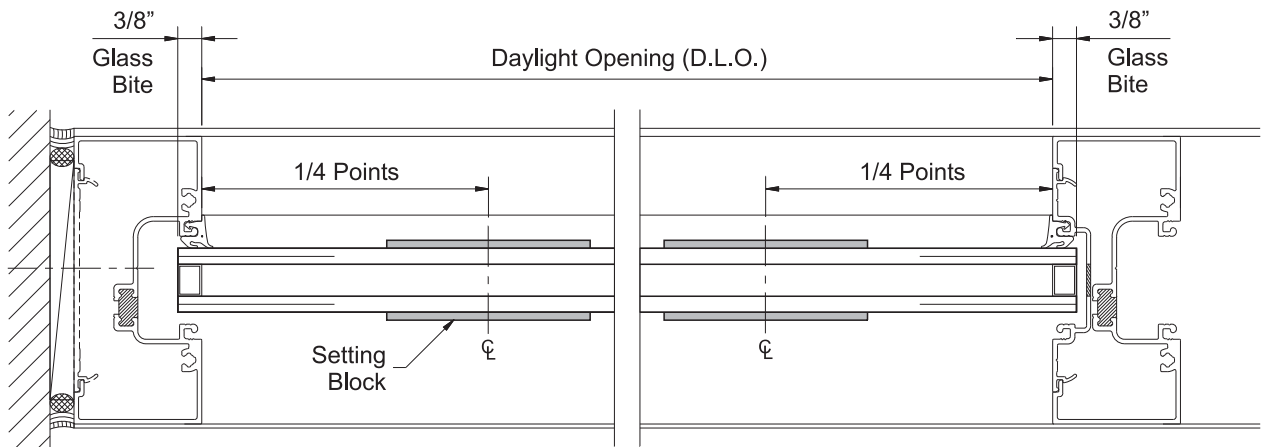
- Carefully install the glass into the opening: bring the lite up and into the deep pocket first and then rotate the other end in place.
- Carefully lift lite of glass, install setting blocks at quarter points of horizontal D.L.O. or according to engineering calculations.
- Make sure the glass is engaged with all setting blocks.

See **Detail 22**.



Detail 22

Outside Glazed Shown
Inside Glazed Similar

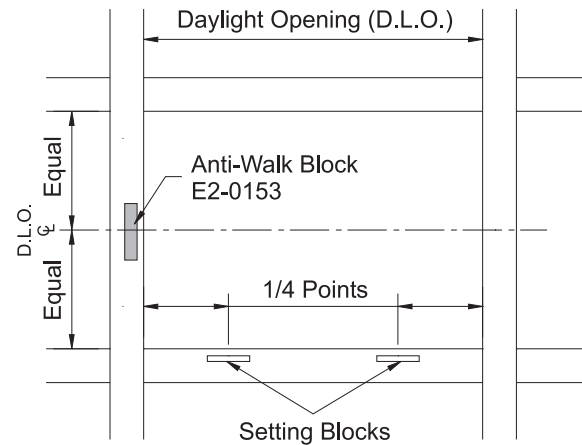


GLAZING

**STEP 16
INSTALL ANTI-WALK BLOCKS**

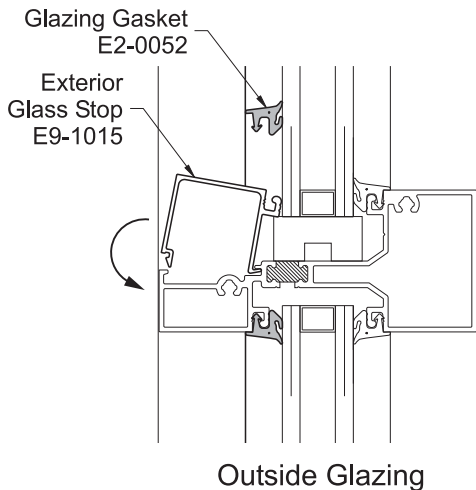
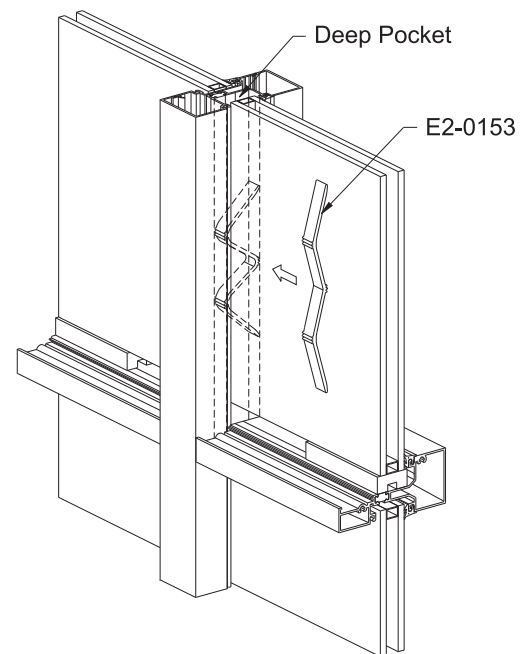
YES 45 TU require the installation of an anti-walk block, E2-0153, in the vertical deep glazing pocket of each lite centered along the daylight opening.

-Flatten the anti-walk block against the exterior surface of the glass and push it into the opening between the glass and the mullion until it is released into the glazing pocket.

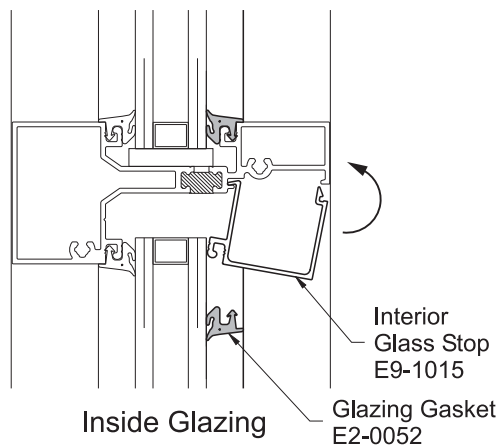


See **Detail 23**.

Detail 23



Outside Glazing



Inside Glazing

Detail 24

**STEP 17
INSTALL GLASS STOPS**

-Snap the exterior glass stops (OG) or interior glass stops (IG) into place as shown in **Detail 24**.
-Install the exterior (OG) or interior (IG) glazing gaskets using the same technique described in **Step 15 on Page-17**.
Always install the vertical glazing gasket first.

Repeat **Steps 15 through 17** until all lites are installed.



7680 The Bluffs
Suite 100
Austell, Georgia 30168
www.ykkap.com