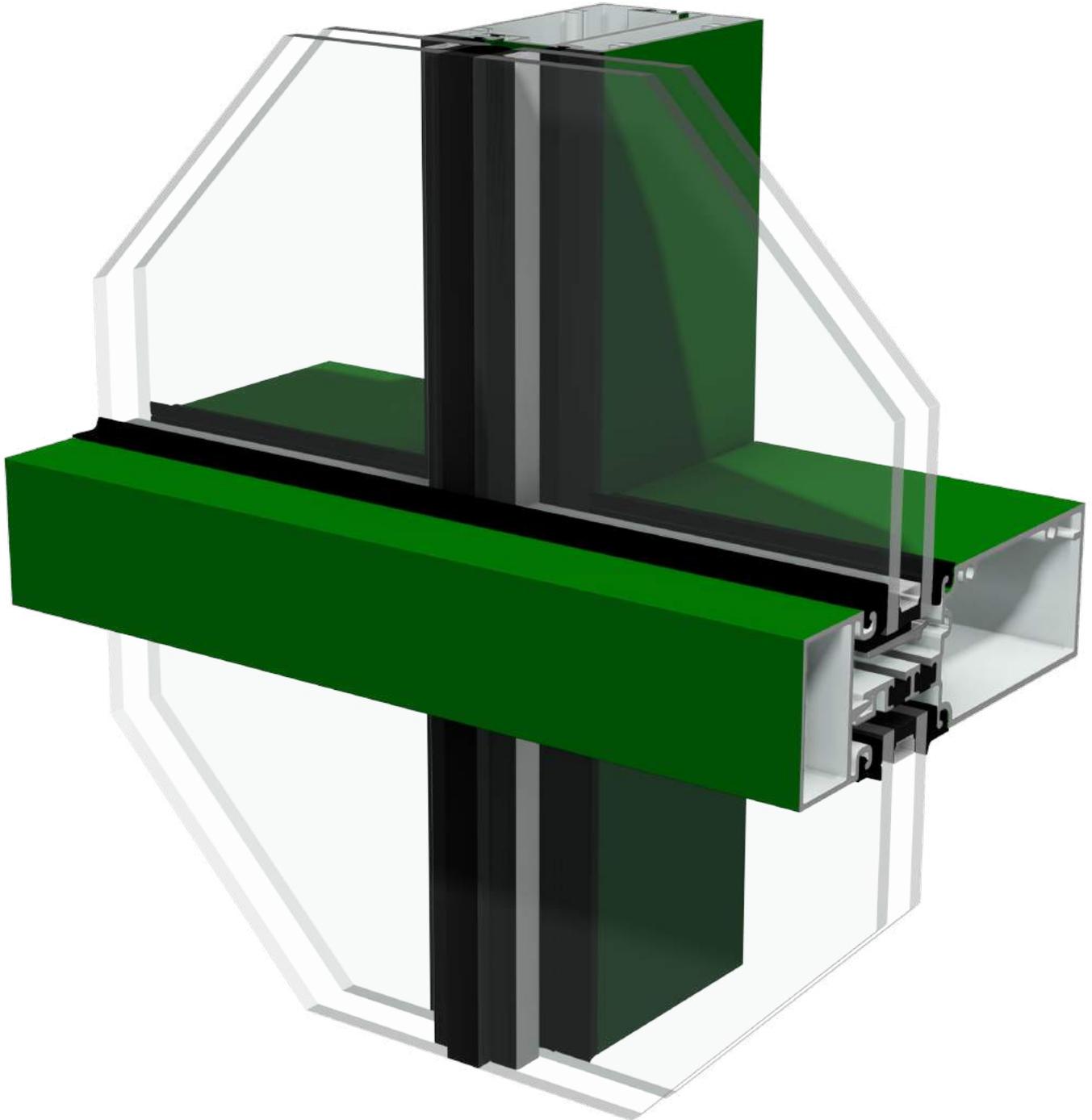


TUBELITE®

DEPENDABLE

**LEADERS IN ECO-EFFICIENT STOREFRONT,
CURTAINWALL AND ENTRANCE SYSTEMS**



E/T/TU24650 SERIES STOREFRONT

INSTALLATION INSTRUCTIONS

3056 Walker Ridge Dr. NW, Suite G • Walker, MI 49544 • 800-866-2227

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GENERAL CONSTRUCTION NOTES

1. These instructions cover typical product application, fabrication, installation and standard conditions and are general in nature. They provide useful guidelines, but the final shop drawings may include additional details specific to the project. Any conflict or discrepancies must be clarified prior to execution.
2. Materials stored at the job site must be kept in a safe place protected from possible damage by other trades. Stack with adequate separation so materials will not rub together and store off the ground. Cardboard or paper wrapped materials must be kept dry. Check arriving materials for quantity and keep a record of where various materials are stored.
3. All field welding must be done in accordance with AISC guidelines. All aluminum and glass should be shielded from field welding to avoid damage from weld splatter. Results will be unsightly and may be structurally unsound. Advise general contractor and other trades accordingly.
4. Coordinate protection of installed work with general contractor and/or other trades.
5. Coordinate sequence of other trades which affect framing installation with the general contractor (e.g. fire proofing, back up walls, partitions, ceilings, mechanical ducts, HVAC, etc.).
6. General contractor should furnish and guarantee bench marks, offset lines and opening dimensions. These items should be checked for accuracy before proceeding with erection. Make certain that all adjacent substrate construction is in accordance with the contract documents and/or approved shop drawings. If not, notify the general contractor in writing before proceeding with installation because this could constitute acceptance of adjacent substrate construction by others.
7. Isolate all aluminum to be placed directly in contact with masonry or other incompatible materials with a heavy coat of zinc chromate or bituminous paint. Fasteners attaching framing to building structure are typically not provided by Tubelite.
8. Sealant selection is the responsibility of the erector, installer and/or glazing contractor and must be approved by the sealant manufacturer with regard to application and compatibility for its intended use. All sealants must be used in strict accordance with the manufacturer's instructions and applied only by trained personnel to surfaces that have been properly prepared.
9. For cold weather installations, glazing materials (including but not limited to glazing gaskets, isolators and gaskets for air seals and expansion mullions) can become more rigid and thus more difficult to install. These materials should be installed at temperatures above 40°F for proper system performance and ease of installation. A hot box may be required to warm the glazing materials prior to installation. Allow glazing materials to lay flat at 50°F minimum temperature for several hours prior to installing.

GENERAL CONSTRUCTION NOTES (Continued)

10. Sealant must be compatible with all materials with which they have contact, including other sealant surfaces. Consult the sealant manufacturer for recommendations relative to shelf life, compatibility, cleaning of substrate, priming, tooling adhesion, etc. Recommend sealant manufacturer perform adhesion "pull test" at "wet" glazing for quality assurance.
11. Drainage gutters and weep holes must be kept clean at all times. Tubelite will not accept responsibility for improper drainage as a result of clogged gutters and weep holes.
12. This product requires clearances at the head, sill and jambs to allow for thermal expansion and contraction as well as construction tolerances. Refer to final distribution drawings for joint sizes. Joints smaller than $\frac{1}{4}$ " may be subject to failure. Consult the sealant manufacturer for proper sizing of joints.
13. All framing members, entrances and other materials are to be installed plumb, level and true with regard to established bench marks, column center lines or other working points established by the general contractor and checked by the erector, installer and/or glazing contractor.
14. After sealant is set and a representative amount of the wall has been glazed (500 square feet or more), run a water hose test to check installation. On large projects, a hose test should be repeated during glazing operation. This testing should be conducted in accordance with AAMA 501.2 specifications.
15. Cleaning of exposed aluminum surfaces should be done per AAMA recommendations.
16. Due to varying perimeter conditions and job performance requirements, anchor fasteners are not specified in these instructions. For anchor fastening, refer to the shop drawings or consult the fastener supplier.
17. Care must be taken when assembling aluminum framing components. Over tightening any fastener may cause stripping or fastener failure. Tubelite recommends the use of clutched drivers to provide satisfactory tightening of the screw while preventing over torque. The use of impact drill motors is not recommended due to the absence of a clutch device.
18. Codes governing the design and use of products vary widely. Tubelite does not control the selection of products configurations, operating hardware, or glazing materials, and assumes no responsibility for these conditions. It is the responsibility of the owner, specifier, architect, general contractor, and the installer to make these selections in strict conformance with all applicable code.
19. Check www.tubeliteinc.com for any installation instruction updates.

CAUTION

Mandatory Installer Requirements for Structural Glazed Applications

The performance and structural integrity of a structural sealant glazed (SSG) framing system is dependent upon proper sealant selection and installation procedures.

Structural sealant selection and application is the responsibility of the erector, installer and/or glazing contractor and must be approved by the sealant manufacturer with regard to application and compatibility for its intended use. All sealants must be used in strict accordance with the sealant manufacturer's instructions and applied only by trained personnel to surfaces that have been properly prepared.

The structural sealant affixes the glazing infill to the framing system and must not experience adhesive or cohesive failures from structural or environmental project design requirements. The sealant's ability to perform depends on many factors including but not limited to proper sealant selection, surface preparation, infill type, frame finish type, environmental conditions at application and curing, horizontal and vertical system movements, sealant shelf life, cure time, handling, and compatibility of other materials in contact.

Proper adhesion to infill and framing is critical. Structural sealant must be compatible with all materials in contact, including frame finish (paint, anodize, power coating, etc.), glazing materials (gaskets, tapes, sealants, etc.), infill surface (glass, panel, etc.), and cleaning materials. Consult the sealant manufacturer for compatibility assessment, application instructions, and adhesion testing. Special surface preparations such as priming may be required by the sealant manufacturer.

It is the responsibility of the installer to ensure all glazing infills be reviewed and approved by the infill manufacturer for use in SSG applications. Infills include but are not limited to glass, metal panels, stone, etc. Design modifications of the infill may be required for use in SSG applications.

Mandatory Installer Certification Required for 3M VHB Tape Applications

The performance and structural integrity of a VHB tape glazed framing system is dependent upon proper VHB tape selection and installation procedures.

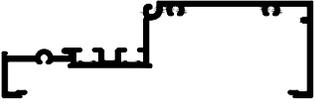
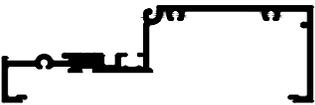
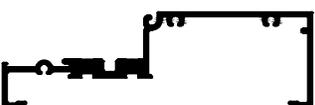
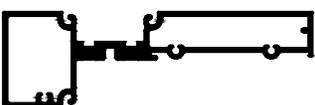
Installers are required to be trained and certified by qualified 3M personnel prior to VHB tape procurement, application, and glass installation. See 3M website (<https://www.3m.com/>) for contact information.

In addition to training and certification, approved shop drawings including design loads, infill type, frame finish, frame sizes, frame installation, and finished sections of the framing must be sent to 3M for approval.

HORIZONTAL EXTRUSIONS

SHAPE	DESCRIPTION	PART No.
	Standard Open Back Head/Jamb/Vertical	E24661
		T24661
	Open Back Head/Jamb/Vertical	E24641
		T24641
		TU24641
	Tubular Horizontal (Optional Sill)	E24643
		T24643
		TU24643
	Intermediate Horizontal for SSG Vertical	E24675
		T24675
		TU24675

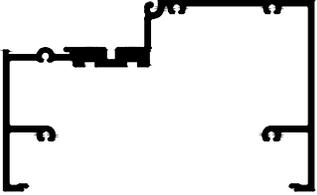
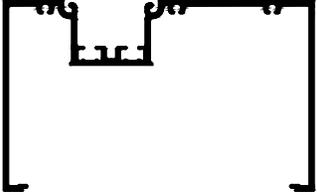
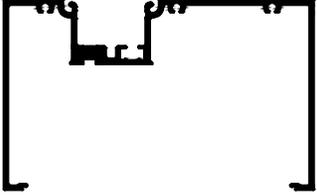
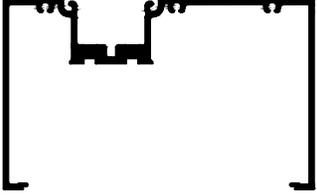
VERTICAL EXTRUSIONS

SHAPE	DESCRIPTION	PART No.
	Open Back Sill	E24640
		T24640
		TU24640
	Inside Set Head	E24645
		T24645
		TU24645
	Inside Set Horizontal	E24603
		T24603
		TU24603
	Thermal Sill Flashing	E24659
		T24659
		TU24659

EXTRUSIONS

SHAPE	DESCRIPTION	PART No.
	Open Back Heavy Wall Vertical	E24621
		T24621
	SSG Vertical Mullion	E24670
	SSG Expansion Vertical Mullion Half - Female	E24671
	SSG Expansion Vertical Mullion Half - Male	E24672
	SSG Split Corner Mullion Half - Male	E24673
	SSG Split Corner Mullion Half - Female	E24674
	Expansion Mullion - Male	E24636
		T24636
		TU24636
	Expansion Mullion - Female	E24646
		T24646
		TU24646

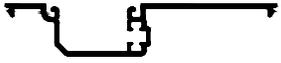
EXTRUSIONS

SHAPE	DESCRIPTION	PART No.
	<p>4" OPEN BACK SILL / HORIZONTAL</p>	E24662
		T24662
		TU24662
	<p>4" HEAD / JAMB / VERTICAL</p>	E24660
		T24660
		TU24660

EXTRUSIONS

SHAPE	DESCRIPTION	PART No.
	Female Head Receptor	E24629
		T24629
		TU24629
	Male Head Receptor	E14130
	Sunshade Vertical	E24649
		T24649
		TU24649
	Outside Set Glazing Stop	E14104
	Inside Set Glass Stop	E24604
	SSG Glazing Face Cover	E24676
	SSG Shallow Glazing Face Cover	E24677

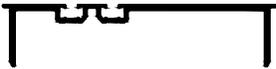
FILLER EXTRUSIONS

SHAPE	DESCRIPTION	PART No.
	Standard Shallow Pocket Closure	A246040
	Standard Deep Pocket Closure	A246150
	(Optional) Pocket Closure	E14642
		T14642
	(Optional) Pocket Closure	E14362
		T14362
	Thermal Perimeter Closure	T24642
		TU24642
	6" Filler Plate for Thermal Applications	P2460
		P2461
	Snap In Adaptor for High Sidelite Base	E24648
		T24648
		TU24648
	Flat Snap-in PVC Filler	P4554
	6" Filler Plate for Non-Thermal Applications	P1148

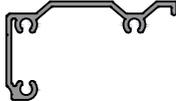
GLAZING ADAPTER EXTRUSIONS

SHAPE	DESCRIPTION	PART No.
	Reducer at Typical SSG Vertical For 1/4" Glazing	E24678
	Reducer at Outside 90° SSG Vertical For 1/4" Glazing	E24679
	Snap-in 1" Pocket Filler	E1411
	Snap-in 1" PVC Pocket Filler	P4563
	Snap-in 1/4" Glazing Adapter	E14036
	Snap-in 1/2" Glazing Adapter	E14061
	PVC Snap-in Filler	P2473

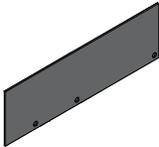
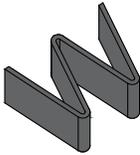
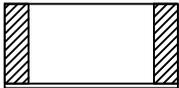
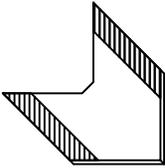
MISCELLANEOUS ACCESSORIES

SHAPE	DESCRIPTION	PART No.
		E24632
	Head U-anchor Channel	T24632
		TU24632
	Setting Chair for E/T/TU24675	P4623

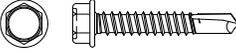
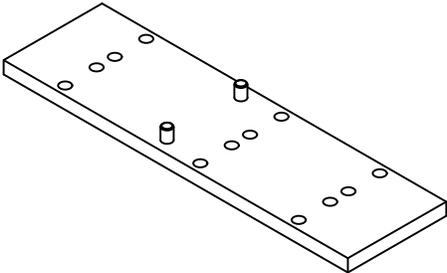
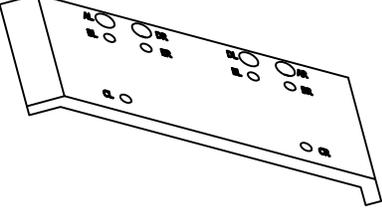
MISCELLANEOUS ACCESSORIES and SETTING BLOCKS

SHAPE	DESCRIPTION	PART No.
	Reinforcing Receiver	E2463
	Door Stop	E4531
	Shear Block at Head, Sill, and Intermediate Horizontals	P2462
	Shear Block at Intermediate Horizontals, Alternate Head with Head Receptor, and Alternate Head	P2434
	Shear Block at Head	P2433
	Shear Clip for Horizontal At SSG Vertical	P2468
	Setting Block (Standard)	P1180 (EPDM)
		P1167S (Silicone)
	1/4" Setting Block at Inside Glazed Horizontals	P2413 (EPDM)
		P2413S (Silicone)
	Setting Block for Setting Chair	P2471 (EPDM)
		P2471S (Silicone)
	Setting Block at Sash	P4720 (EPDM)
		P4732 (Silicone)

WATER CONTROL ACCESSORIES

SHAPE	DESCRIPTION	PART No.
	Roll-in Glazing Gasket for 1" Glass (standard)	P2728
	Roll-in Glazing Gasket for 1-1/8" Glass	P487
	Roll-in Glazing Gasket for Undersized Glass	P2428
	Wiper Gasket for Expansion Mullions (T24636 & T24646)	P1221
	Wet Glazed Gasket	P6587
	Bulb Gasket for Head Receptor (E14130 & T24629)	P2511
	Sill Flashing End Dam	P2465
	EPDM Anti-Walk "W" Block (Optional) (Use at Deep Pockets on Verticals and Jamb)	P1917
	Water Diverter (Use at Intermediate Horizontals)	P1135
	SSG Water Diverter	P2466
	SSG Water Diverter	P2467
	Translucent Silicone Sheet (.040" x 4", 15' roll)	P3444

SYSTEM SCREWS and DRILL GUIDE

SHAPE	DESCRIPTION	PART No.
	<p>#12-24 x 5/8" Type 23 UC FH (Fastens Head Member to Clips)</p>	<p>S286</p>
	<p>#12-24 x 3/4" Philips Flat Head (Fastens Steel Stiffener to Mullion)</p>	<p>S149</p>
	<p>#10 x 1-3/4" type B Philips Pan Head (Fastens Shear Block to Vertical)</p>	<p>S009</p>
	<p>#10 x 1/2" Philips Truss Head (Attach Horizontal and Sill Members to Clips)</p>	<p>S191</p>
	<p>#8 x 3/8" Philips Pan Head (Attach End Dam to Sill Flashing)</p>	<p>S196</p>
	<p>#12-14 x 1-1/2" Hex Washer Head (Frame Assembly Screw at Screw Spline and Steel to Steel Reinforcing Receiver)</p>	<p>S419</p>
	<p>Drill Guide</p>	<p>P1159</p>
	<p>SSG Corner Mullion Drill Guide</p>	<p>P2469</p>

QUICK REFERENCE CHART

1. Make sure the opening is square and the caulk joints are 1/4" minimum around the frame. Note: Frames that utilize the T24659 sill flashing must have a minimum of 3/8" caulk joint at head.
2. Ensure surfaces that will be sealed are free of contaminants that can lead to adhesion issues.
3. Sill flashing must be properly shimmed and level from left to right and front to back for proper drainage.
4. A continuous line of sealant must be applied between the sill and the top interior leg of the sill flashing.
5. Check that all weeps and baffles (if required) conform to the locations and sizes called out in these instructions.
6. Ensure that sill flashing weep holes are not plugged by the perimeter seal.
7. A sill flashing splice is needed in openings larger than 24 feet. Follow instructions for installing and sealing.
8. End dams must be installed and sealed onto the sill flashing. Fasteners used must also be sealed.
9. Where the sill flashing abuts a door jamb, the jamb pocket cavity must be completely sealed to dam this area.
10. Cap seal any exposed anchor or screw.
11. Butter seal ends of horizontal frame members that are joined to vertical members.
12. Water diverter installation and sealing is critical. Check installation against instructions to ensure conformity.
13. Apply sealant between all corner gasket joints.
14. Glass bites must be equal on all sides.
15. Double check anchor size and location against installation instructions or approved shop drawings.
16. Ensure that interior seal is married to sill flashing interior leg.

GLASS SIZE CALCULATION
Width tolerance = + 0", - 1/16"

Typical Framing:

Glass Width = D.L.O + 3/4" (3/8" Glass Bite)
Glass Height = D.L.O + 3/4" (3/8" Glass Bite)

Transoms with Sash:

Glass Width = Pocket filler D.L.O + 3/4" (3/8" Glass Bite)
Glass Height = Pocket filler D.L.O + 3/4" (3/8" Glass Bite, Ref. Fig.16.1)

SSG Framing:

Glass Width = D.L.O. + 1 1/2" (3/4" Glass Bite)
Glass Height = D.L.O. + 3/4" (3/8" Glass Bite)

SSG Framing:

SSG to Captured Glass Width = D.L.O. + 1 1/8" (3/4" Glass Bite at SSG, 3/8" Glass Bite at Captured)
SSG to SSG Glass Width = D.L.O. + 1 1/2" (3/4" Glass Bite at each SSG)
SSG to SSG Expansion Glass Width = D.L.O. + 1 3/4" (3/4" Glass Bite at SSG, 1" Glass Bite at SSG Expansion)
SSG Expansion to Captured Glass Width = D.L.O. + 1 3/8" (1" Glass Bite at SSG Expansion, 3/8" Glass Bite at Captured)
Glass Height = D.L.O. + 3/4" (3/8" Glass Bite)

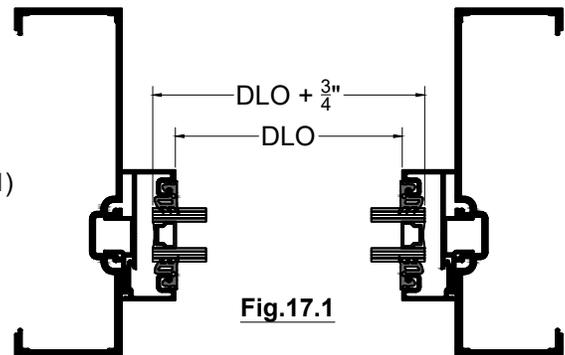
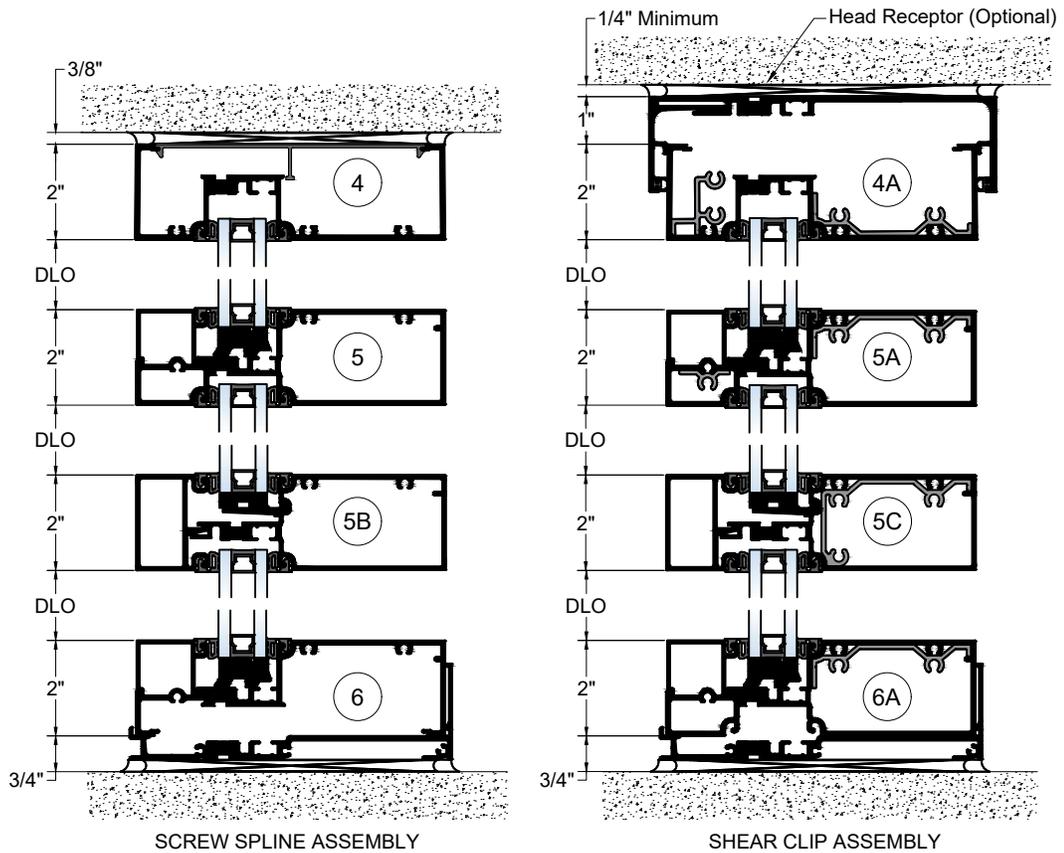
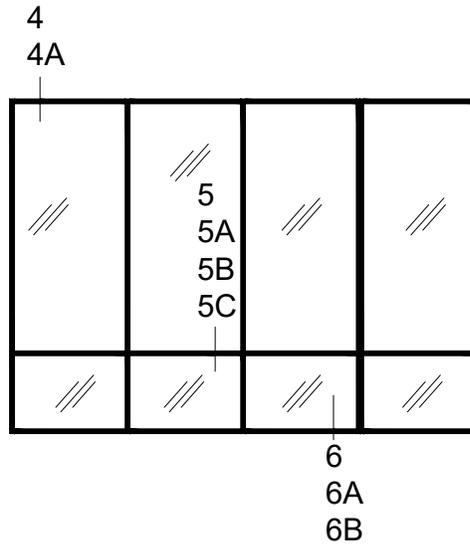
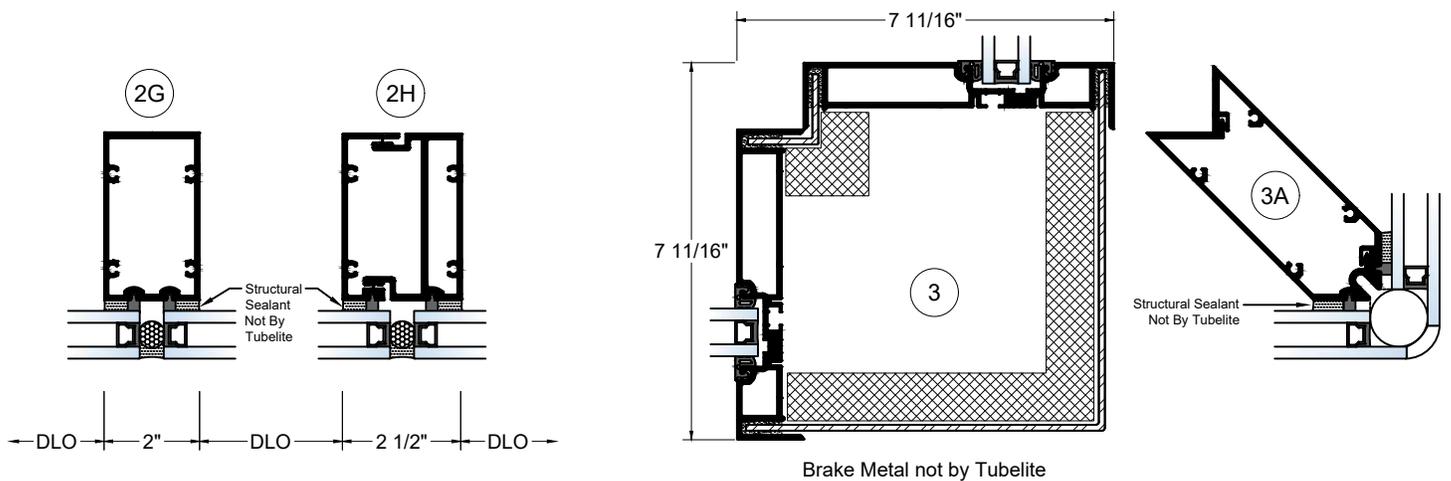
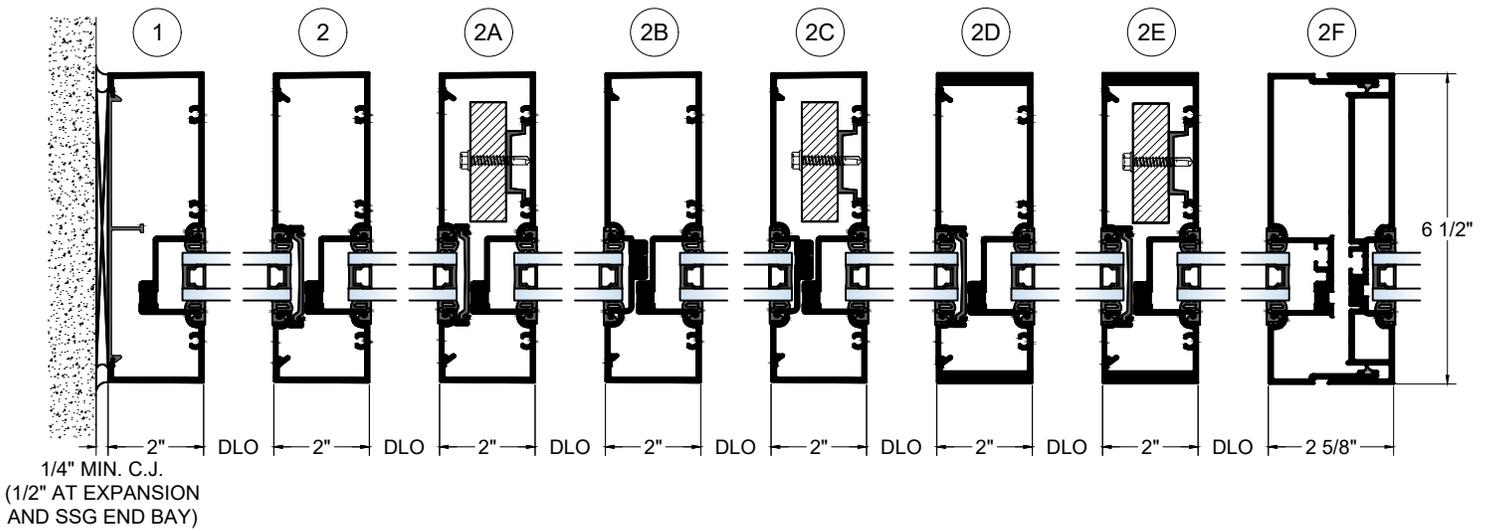
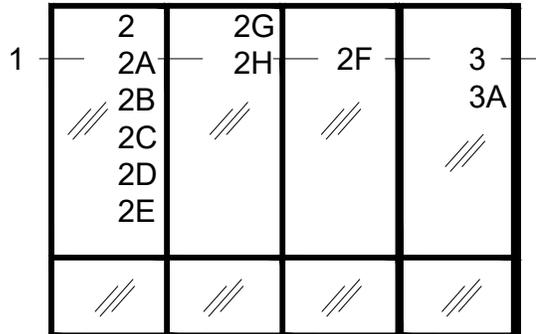


Fig.17.1

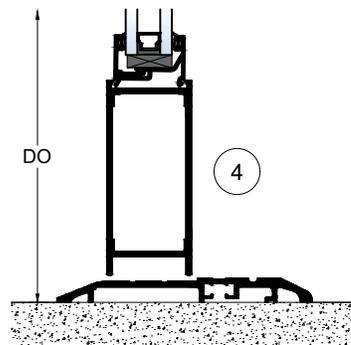
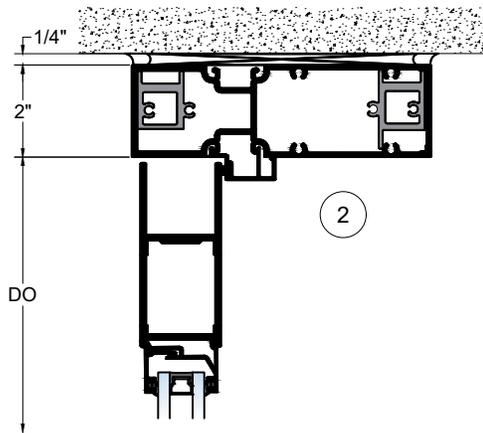
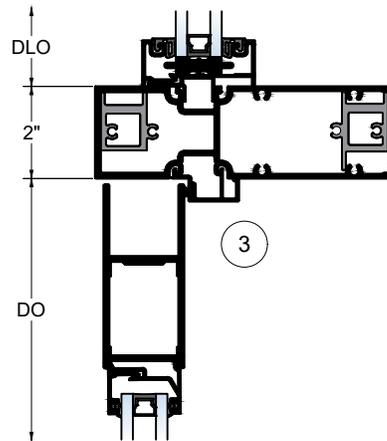
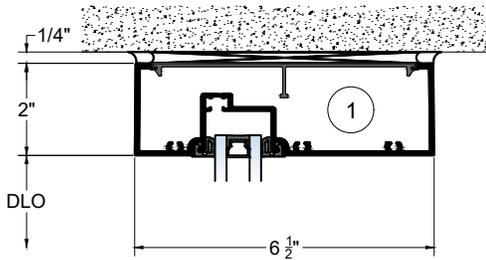
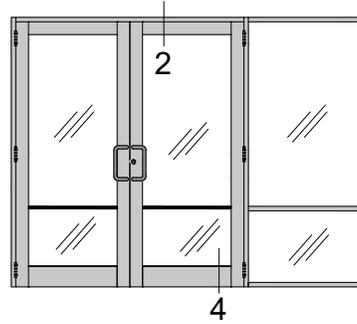
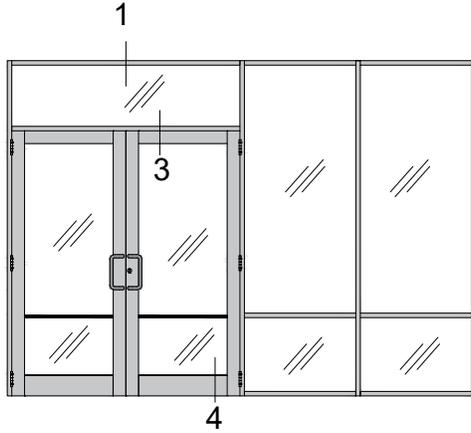
TYPICAL HORIZONTAL ELEVATION with DETAILS



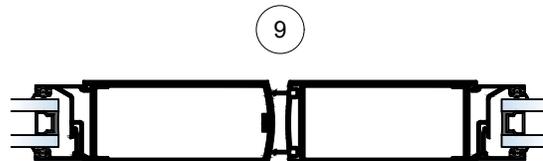
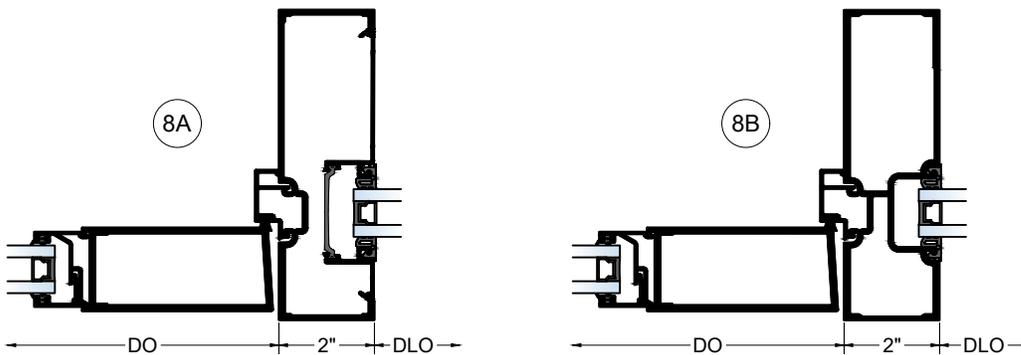
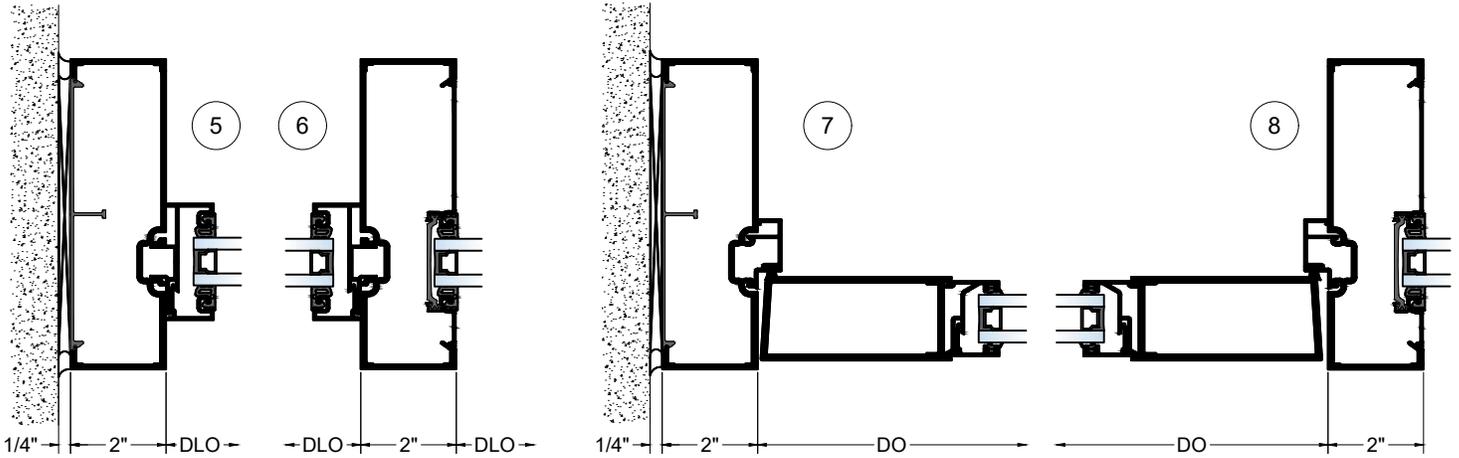
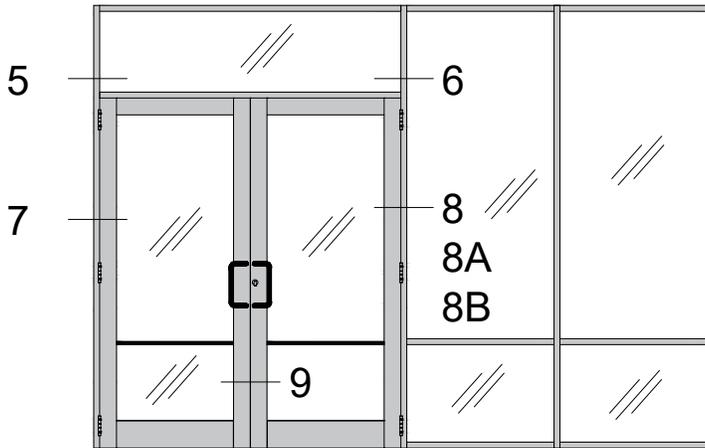
TYPICAL VERTICAL ELEVATION with DETAILS



**DOOR FRAME ELEVATION
 with HORIZONTAL DETAILS**



DOOR FRAME ELEVATION with VERTICAL DETAILS



FRAME FABRICATION

NOTE: Non-thermal extrusions are shown in these instructions for clarity. Fabrication and installation of thermal members are the same.

Step 1: Determine Frame Size

Frame Width

- A. Make sure the opening is square and plumb. Measure each diagonal of the opening. **SEE Fig. 23.1.**
- B. Measure the width of the opening at the top, middle and bottom. Select the smallest of these dimensions and subtract the left and right caulk joint width per approved shop drawings (1/4" min caulk joint at each jamb, 1/2" for SSG and Expansion frames). **SEE Fig. 23.2.**

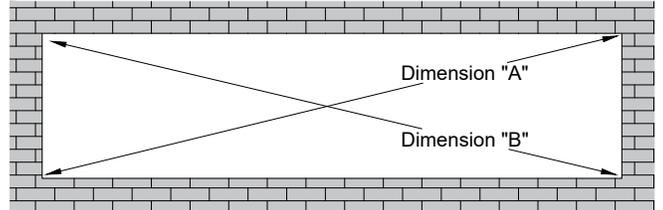


Fig 23.1

Dimension "A" = "B"

Frame Height

- C. Measure the height of the opening at several points along the entire width of the opening. Select the smallest of these dimensions and subtract 1 1/4" to allow a minimum of 3/4" at sill and 3/8" at head for shimming and caulking. Allow larger clearance if necessary to accommodate building tolerances or out of square openings. **SEE Fig. 23.3.**

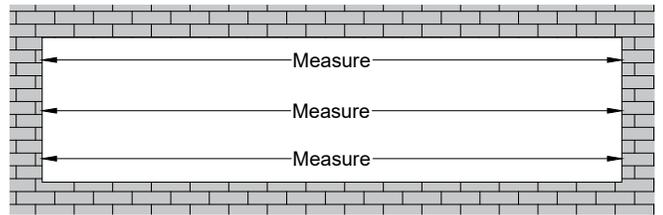


Fig 23.2

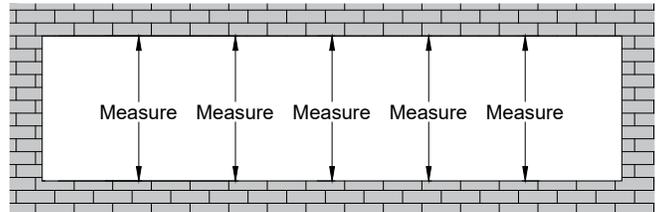


Fig 23.3

Step 2: Cut Material to Size

Note: Door framing material comes cut to size from the factory. In cases of door frames with transoms, the door jambs must be cut down in the field to size and head member attached per standard instructions shown within this manual.

Framing Members

- Sill Flashing with Entrance. Door Jamb to End of Frame + 1/8" (**SEE Fig. 23.4**)
- Sill Flashing without Entrance..... Frame Width + 1/4"
- Captured Verticals..... Frame Height. **See Fig. 23.4**
- SSG Verticals..... Frame Height - 4"
- Head Receptor Frame Width + 1/4"
- Head Receptor Snap Stop..... Frame Width + 1/4"
- Head, Horizontal & Sill..... D.L.O.
- Horizontal & Sill Glass Stops..... D.L.O. - 1/32"
- Closure Pockets at Verticals..... **See Fig. 23.4**
- Glazing Adaptors..... D.L.O. - 1/32"
- Snap-In Fillers..... Refer to Approved Shop Drawings

Accessories

- Exterior Gasket..... D.L.O. + Allowance*
- Interior Gasket..... D.L.O. + Allowance*

*Allowance = 1/8" extra length per foot of D.L.O.

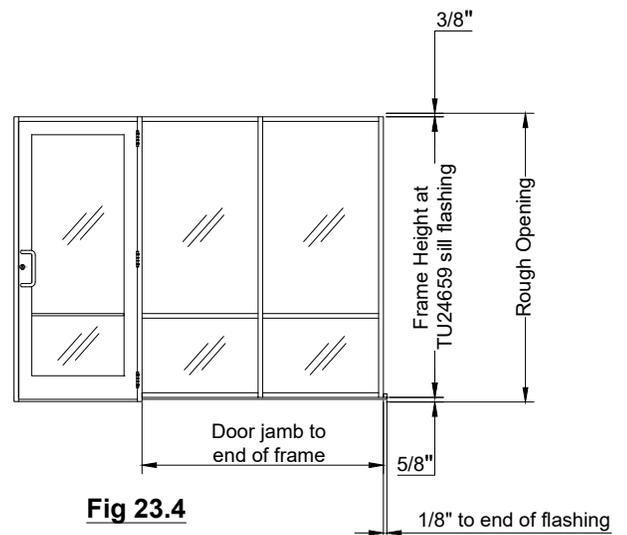


Fig 23.4

Sill Flashing Note:

For openings wider than 24', the sill flashing must be spliced at the center line of a D.L.O. every twelve to fifteen feet. Splice joint should be 3/8" wide. **SEE Step 14, Page 38 & 39** for sill flashing splice details.

FRAME FABRICATION

Step 3: Fabricate Sill Flashing

A. When using T24659, drill two 5/16" dia. weep holes at 2" and 6" from each side of the verticals

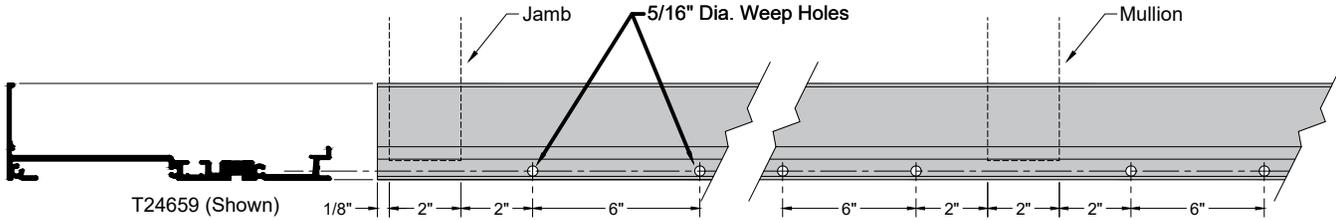
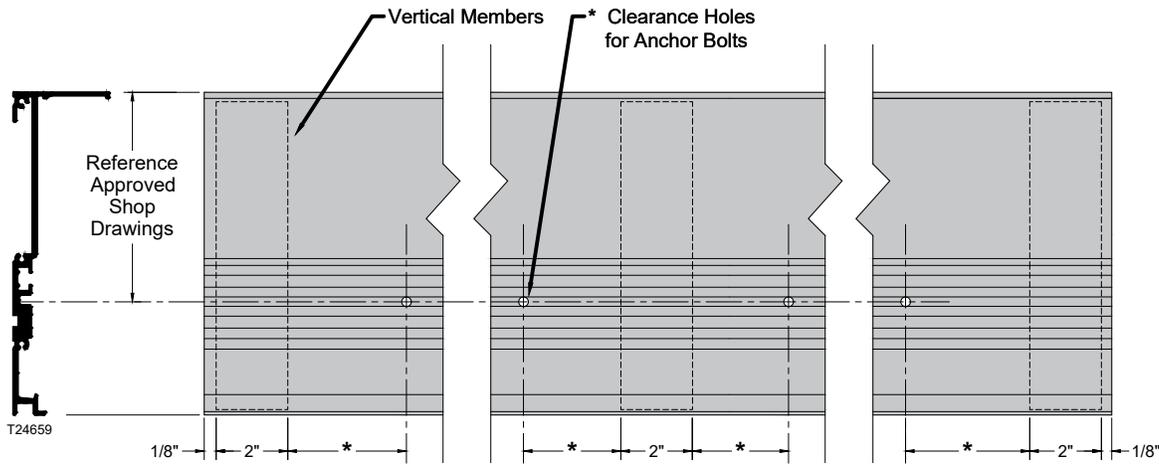


Fig.24.1

B. Drill clearance holes for perimeter anchors. Size and quantity vary per job. Refer to approved shop drawings.

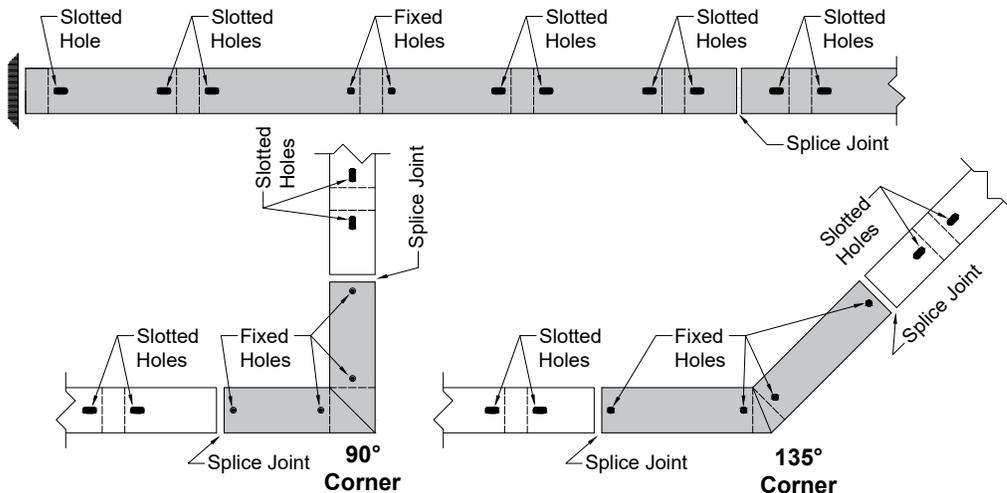
Note: if head receptors are used, follow the same procedure as on the sill flashing



NOTE:
Additional fasteners may be required on either side of mullion

* Reference approved shop drawings for anchor hole sizes, locations, and quantity

Fig.24.2



Typical Sill Flashing Anchor Hole Patterns (Head channel similar)
(Refer to approved shop drawings for project requirements)

Fig.24.3

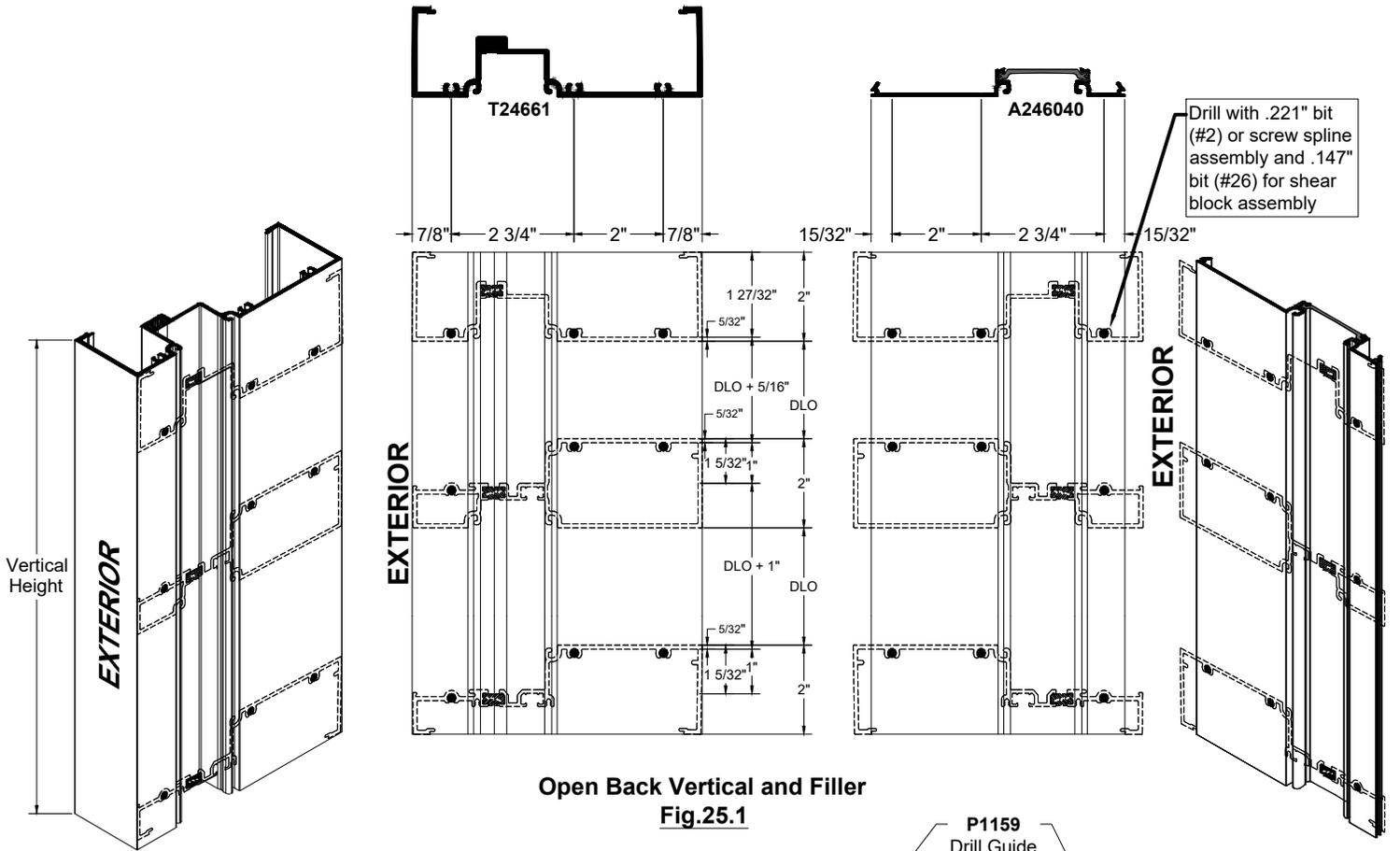
FRAME FABRICATION

Step 4: Fabricate Verticals & Closure Pockets for Horizontals

A. Drill Frame assembly holes in verticals, jambs, & closure pockets with drill fixture P1159

SEE Fig.25.1 & Fig.25.2.

- a. T24661 head, outside glazed - holes D, H, N
- b. T24645 head, inside glazed - holes D, F, K
- c. T24643 horizontal, outside glazed - holes C, E, J
- d. T24603 horizontal, inside glazed - holes D, F, K
- e. T24640 sill, outside glazed - holes C, E, J
- f. T24661 sill, inside glazed - holes A, E, J



Open Back Vertical and Filler
Fig.25.1

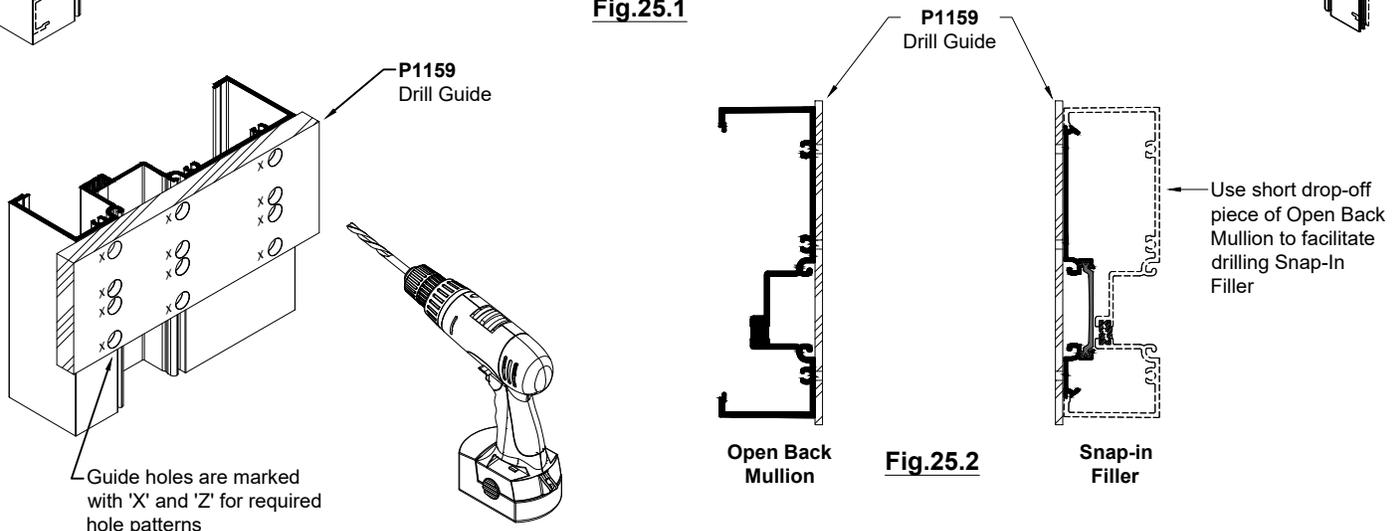
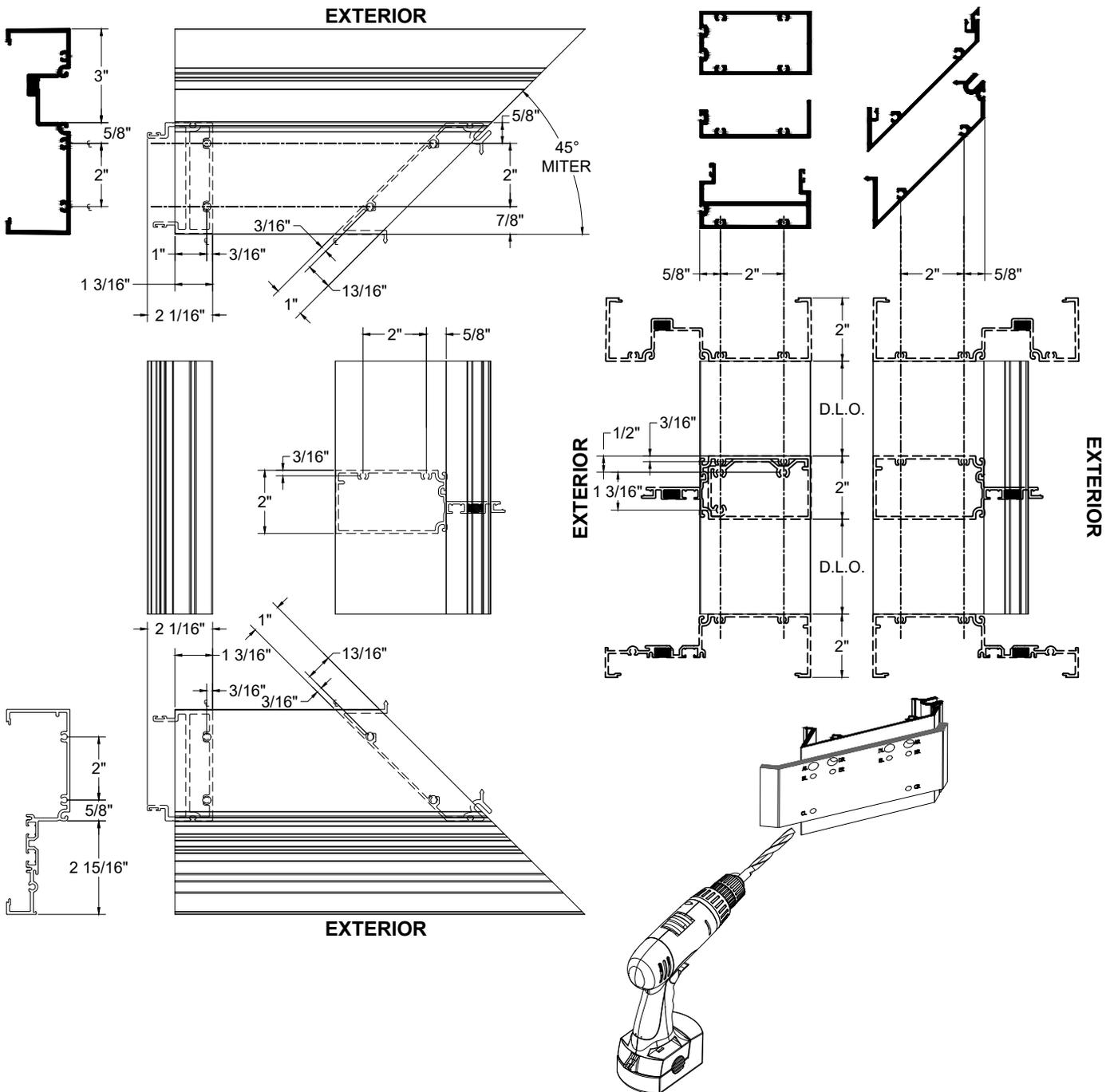


Fig. 25.2

FRAME FABRICATION

Step 5: Fabricate Head, Sill for SSG Verticals

- A. Head and sill members will run through at SSG mullion locations. Holes will need to be drilled where fasteners will attach to screw race within the SSG vertical. See **Fig.26.1**.
- B. P2568 Shear Clip use holes BL, CL, and EL (glaze side facing left) or BR, CR, and ER (glaze side facing right).
- C. T/TU25675 use holes AL and DL (glaze side facing left) or AR and DR (glaze side facing right).



FRAME FABRIATION

Step 6: Fabricate Horizontal Members for Shear Blocks

- A. For shear block assembly, drill .201 dia holes in the head, horizontal and sill members. Countersink these holes for the head members only. SEE Fig. 27.1 & Fig. 27.2

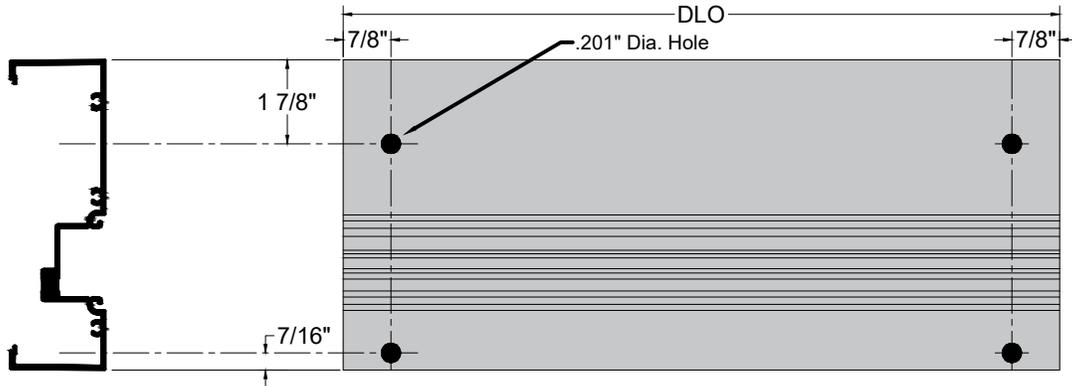


Fig.27.1

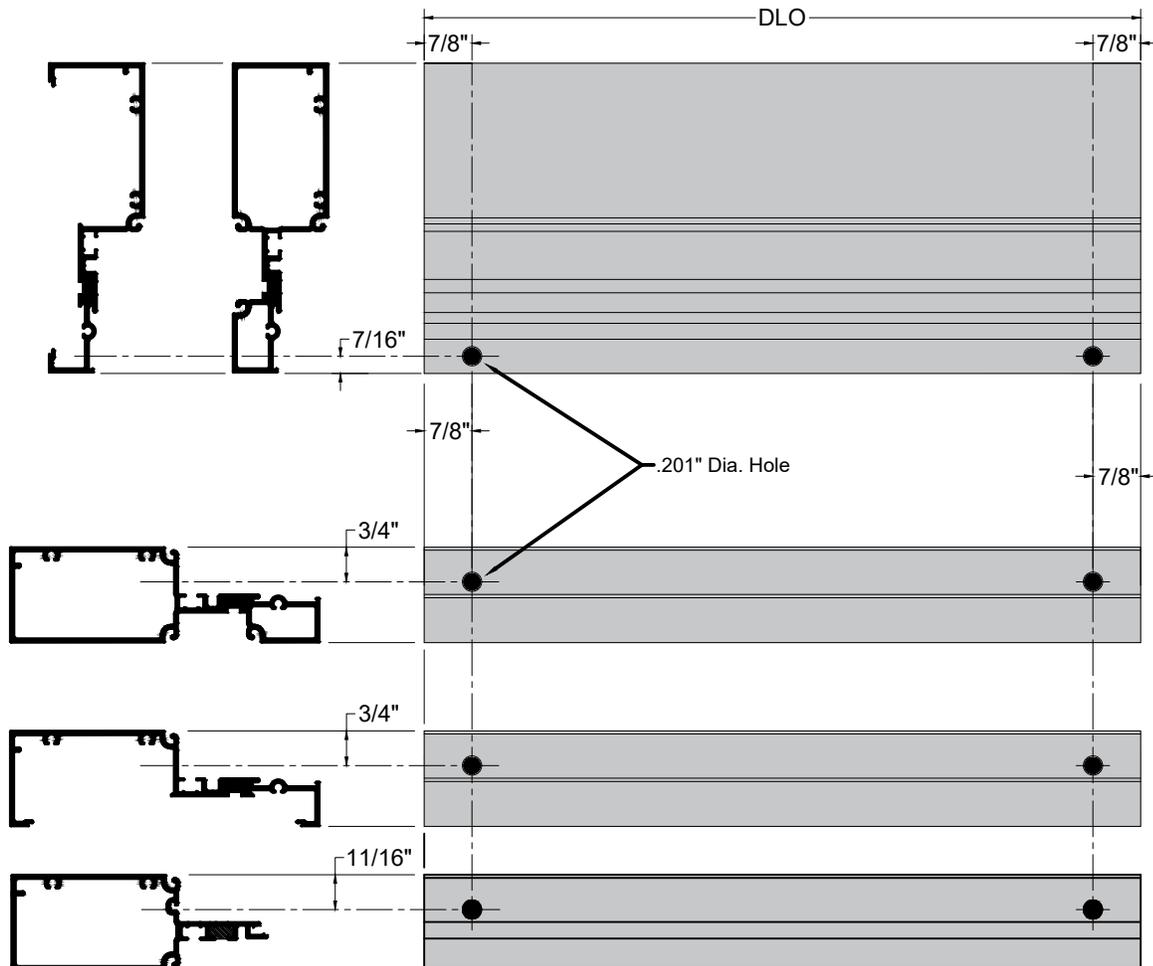


Fig.27.2

FRAME FABRICATION

Step 7: Fabricate Shear Blocks (As Required)

- A. For shear block assembly, P2434 and P2462 shear blocks must be modified
- B. **SEE Fig.28.1 & Fig.28.2** for instructions on modifying for the various sections.

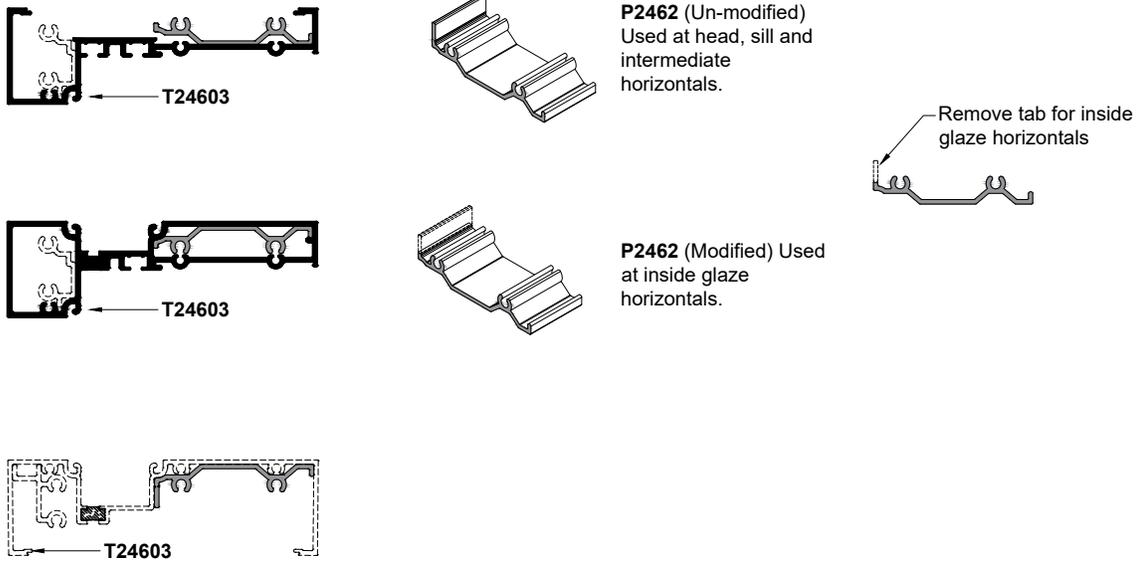


Fig.28.1
Inside Glaze

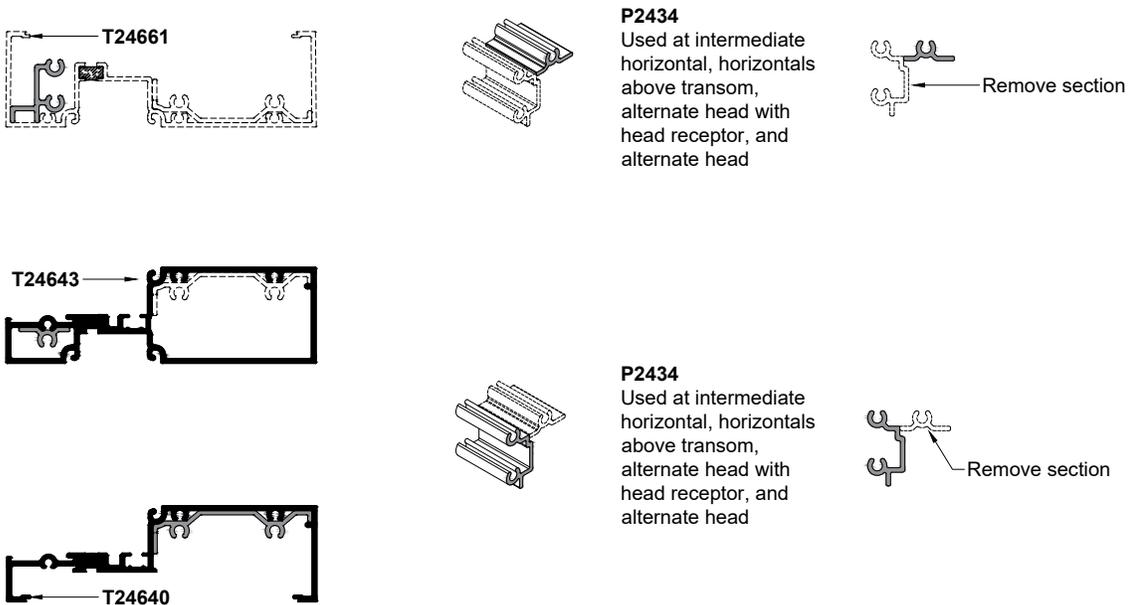


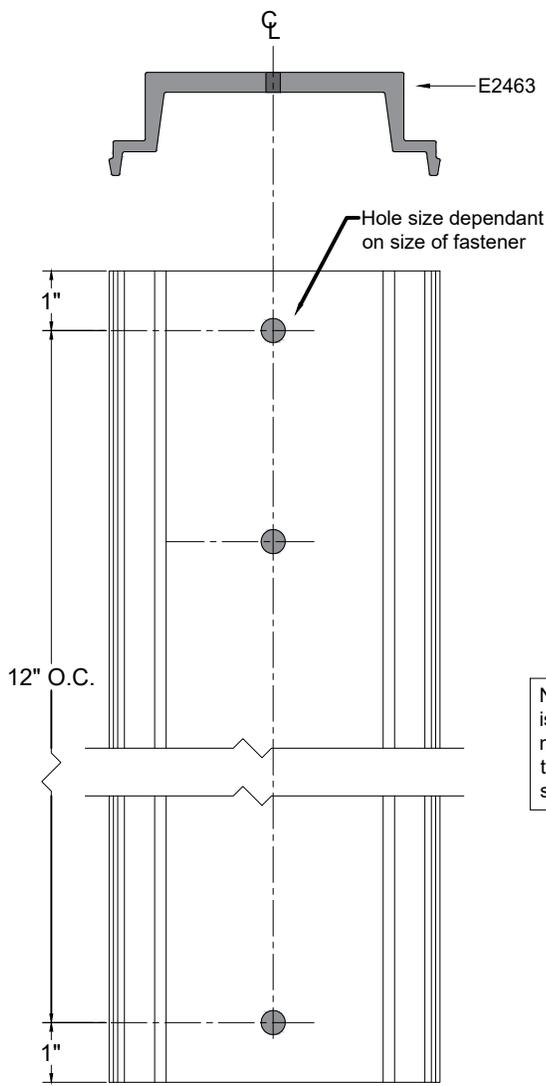
Fig.28.2
Outside Glaze

FRAME FABRICATION

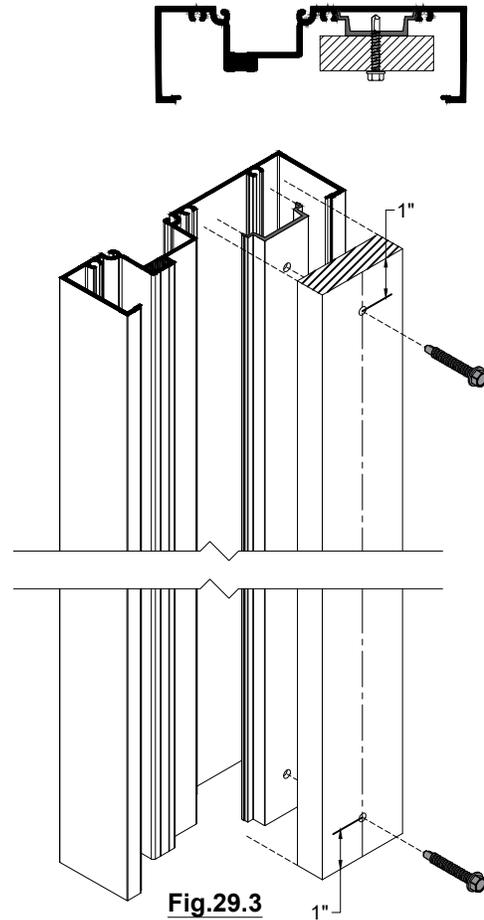
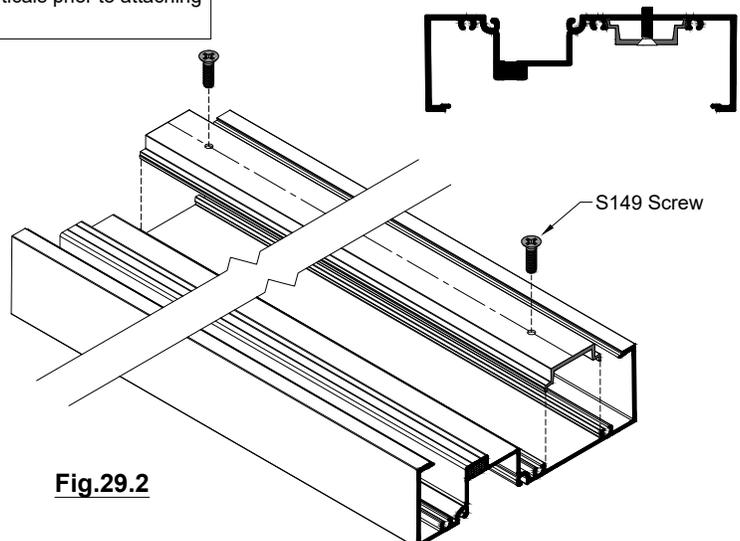
Step 8: Steel Stiffener (As Required)

- A. If steel stiffeners are required (refer to approved shop drawings), cut to mullion length. Paint ends to prevent rust.
- B. Attach steel reinforcing receiver to mullion with S149 at head and sill locations (& horizontals, if any) to conceal screw and to prevent movement during transportation and fabrication, **SEE Fig. 29.2.**
- C. Attach steel to steel reinforcing receiver (E2463) **SEE Fig. 29.3.**

Note: ensure screws are sized appropriately for steel being used so that they do not penetrate the mullion side-walls except at head, sill, and horizontal.



NOTE: when steel reinforcing is required, the horizontal members must be attached to the verticals prior to attaching steel



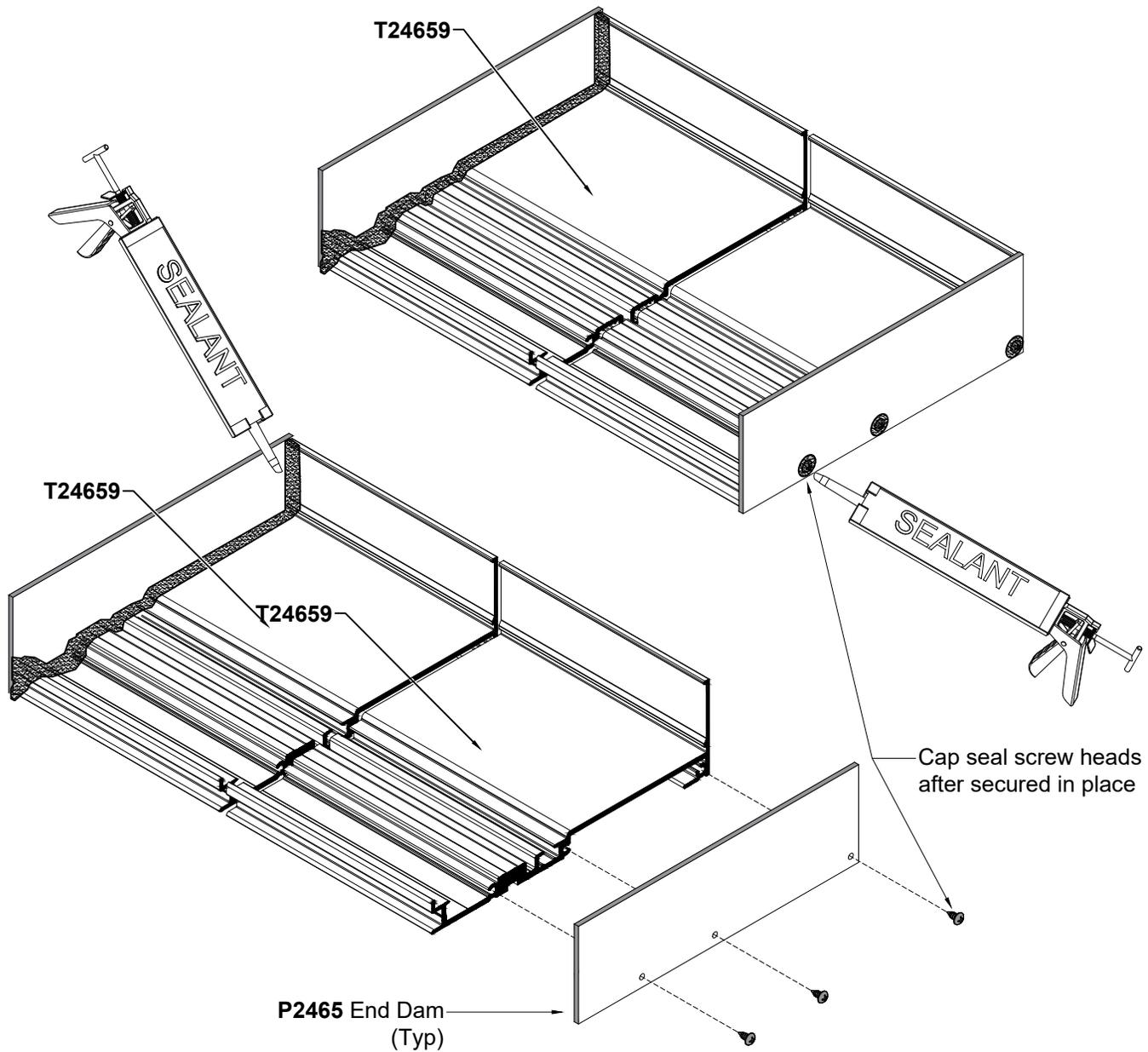
FRAME ASSEMBLY

Step 9: Install Sill Flashing Ends Dams

- A. Install P2465 end dam at each end of sill flashing with (3) S196 #8 x $\frac{3}{8}$ " PH screws. Set aside and allow sealant to cure.

NOTE:

If sill flashing is spliced, install end dams on jamb-end only. Refer to **Step 14, page 38-39** for splicing instructions

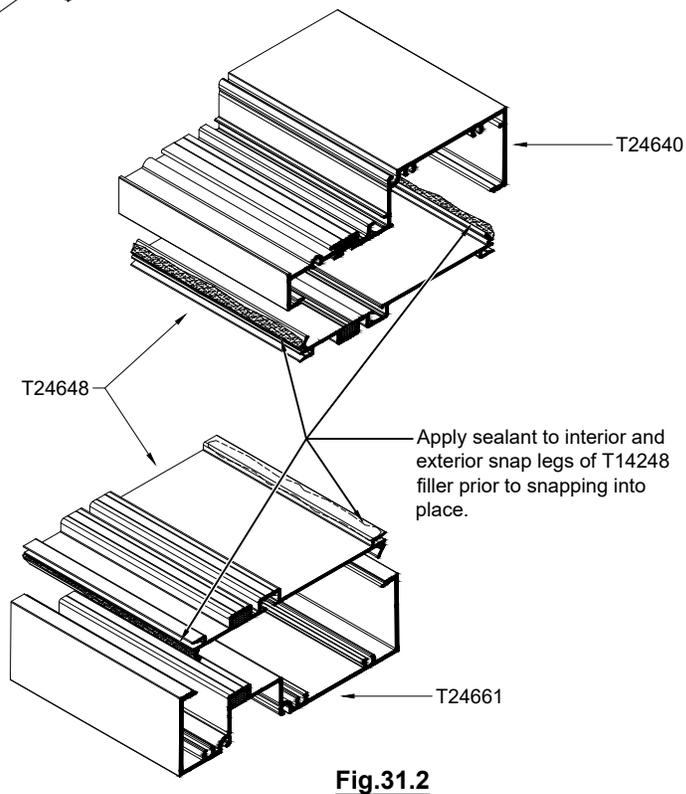
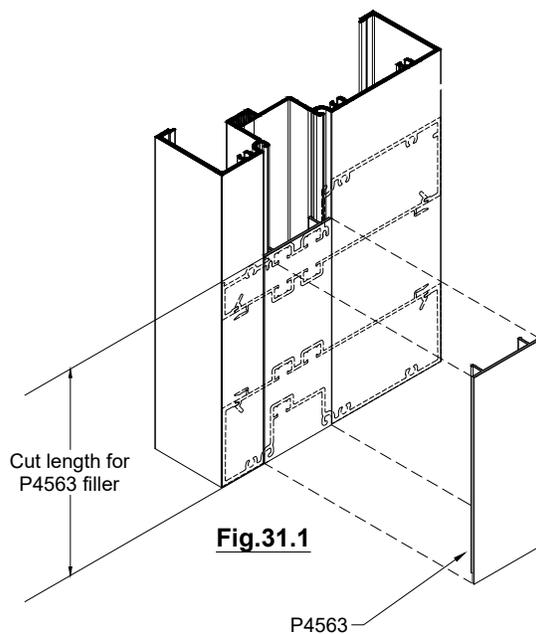


FRAME ASSEMBLY

Step 10: Optional High Sidelite Bases

Prior to assembling frames, follow these steps if using high sidelite base members

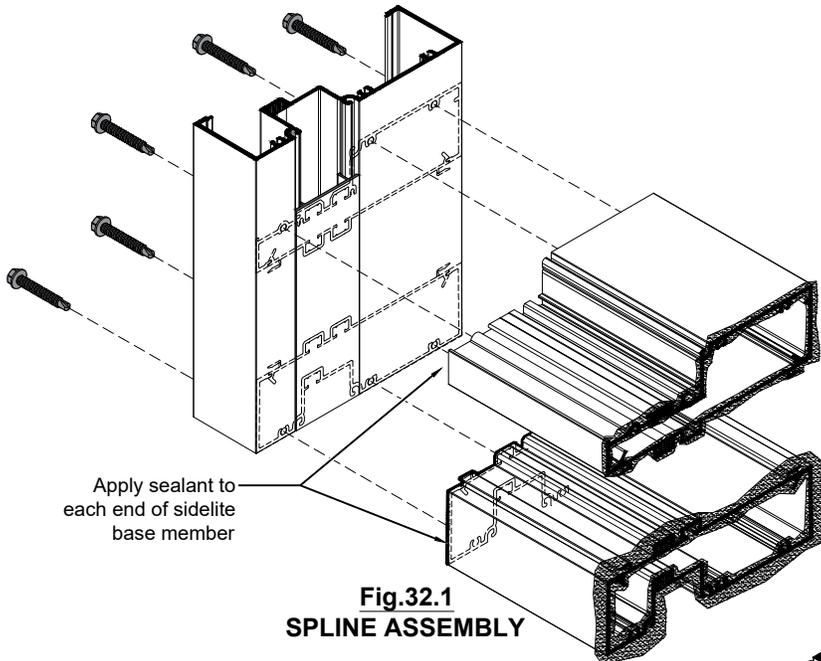
- A. Pre-attach P4563 pocket filler into the pocket of the vertical mullion and closure pocket members.
Cut length of the filler can be determined by measuring from the bottom of the vertical mullion/closure pocket to the underside of the water diverter at the high sidelite base. **SEE Fig.31.1**
- B. Attach snap-in adaptor T24648 to the T24661 horizontal (lower member of the sidelite base) **SEE Fig.31.2**
- C. Seal joints between the adaptor and horizontal
- D. Attach snap-in adaptor T24648 to the T24640 open back sill (upper member of the sidelite base) **SEE Fig.31.2**



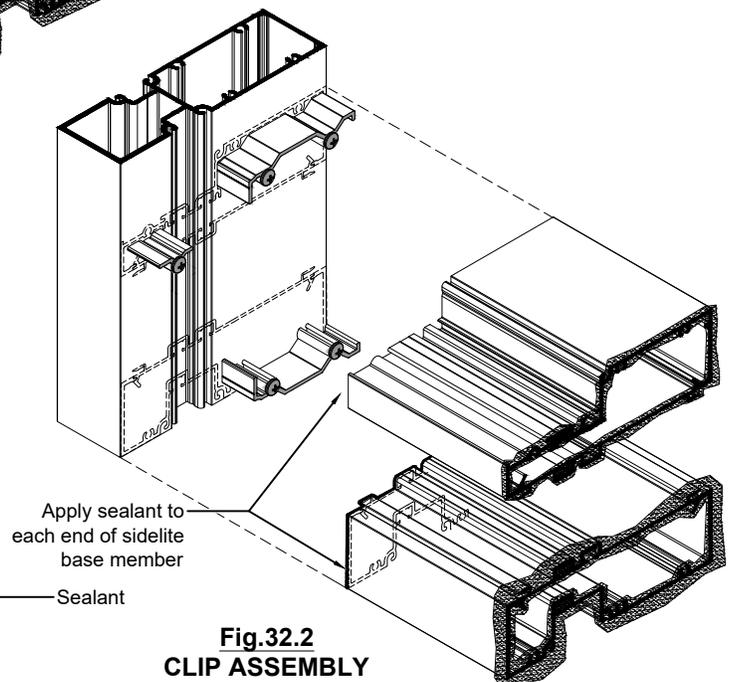
FRAME ASSEMBLY

Step 10: Optional High Sidelite Bases (Continued)

- E. Seal ends of the upper and lower members where it will contact the vertical mullion and closure pocket. **SEE Fig. 32.1 & Fig. 32.2.**
- F. Before attaching the upper and lower members to the vertical, determine the height of the snap cover to be used. Attach the lower and upper members of the sidelite base to the vertical and closure pocket.
- G. *Optional:* Place one-sided closed cell adhesive tape along the edges of the vertical where the sidelite base covers will be installed. Place a bead of sealant onto the tape. **SEE Fig. 32.3.**
- H. Place a bead of sealant into the receptor areas of the snap-in adapter. **SEE Fig. 32.3.**



**Fig.32.1
SPLINE ASSEMBLY**



**Fig.32.2
CLIP ASSEMBLY**

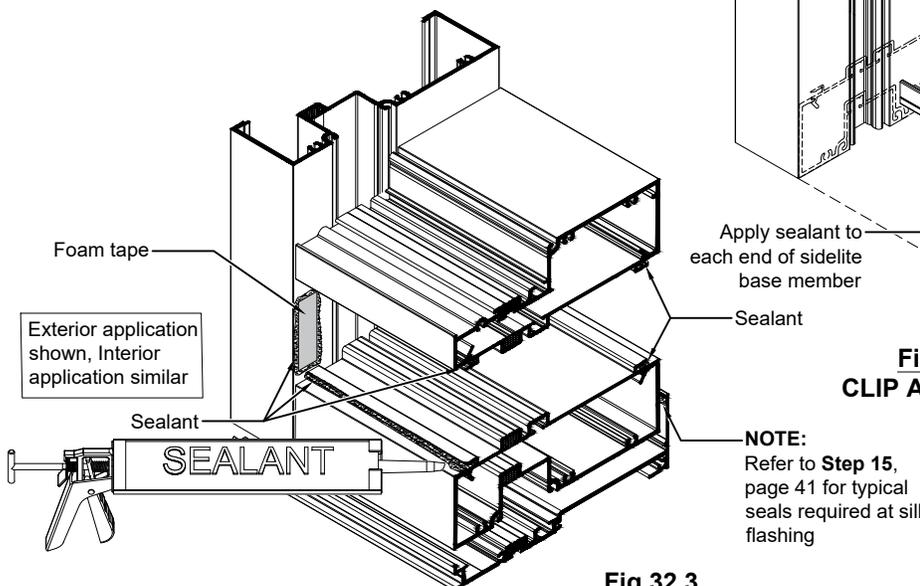
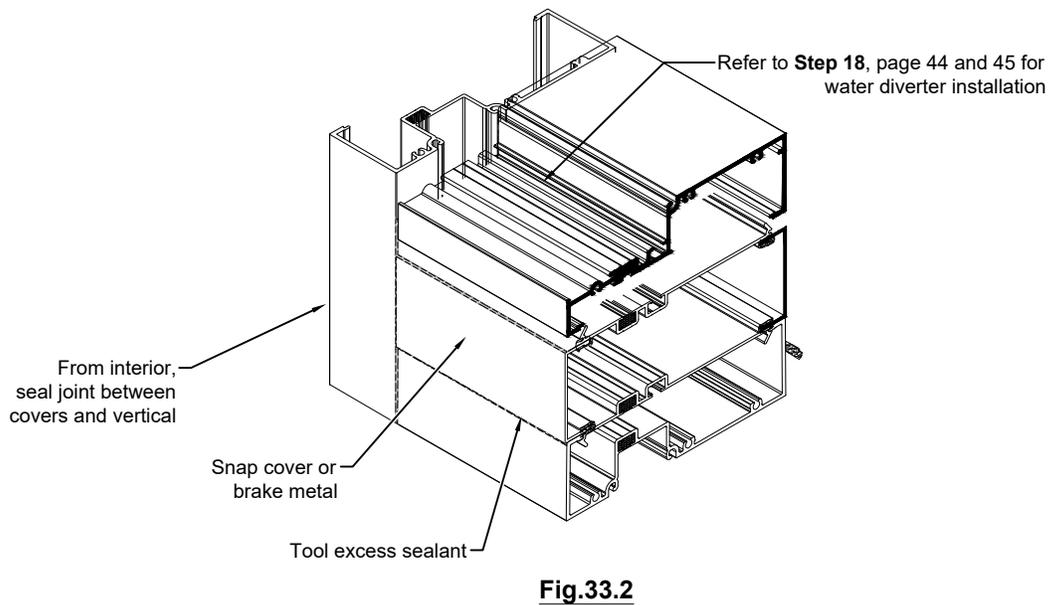
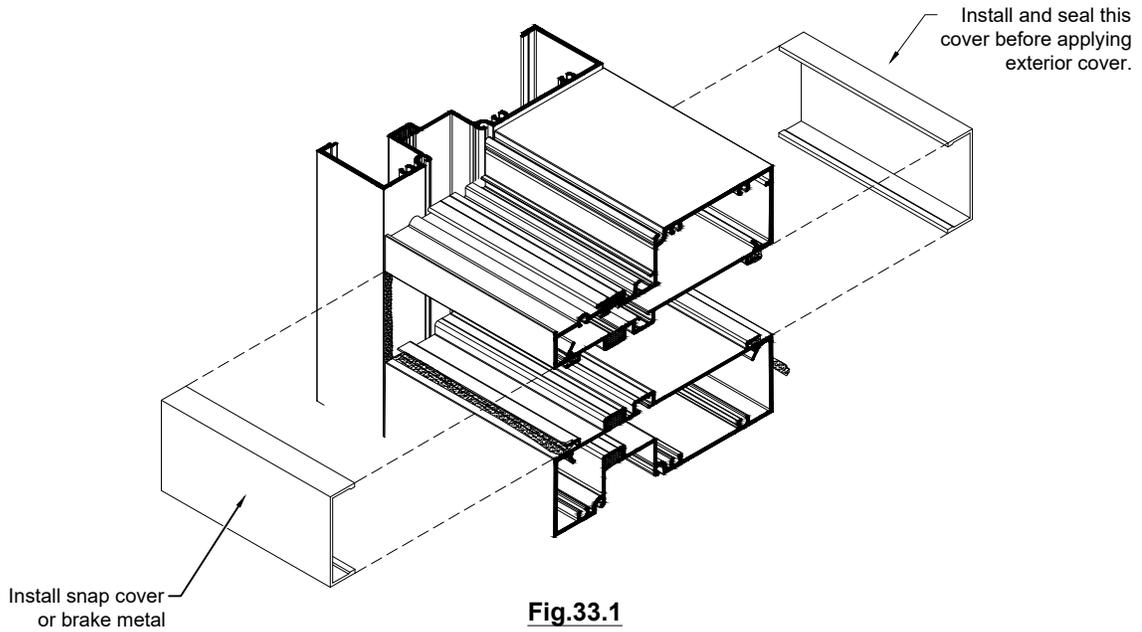


Fig.32.3

FRAME ASSEMBLY

Step 10: Optional High Sidelite Bases (Continued)

- I. Attach a snap cover or brake metal to the inside surface of the sidelite base. **SEE Fig.33.1**
- J. From the exterior, seal joints between the snap cover and vertical members. **SEE Fig.33.2**
- K. Attach a snap cover or brake metal to the exterior. **SEE Fig.33.1**



FRAME ASSEMBLY

Step 11: Assemble Frames

Screw Spline Assembly

- A. Clean all mating surfaces on horizontal & vertical.
- B. Apply sealant to ends of the head, horizontal and sill members prior to attaching to the vertical members. **SEE Fig. 33.1.**
- C. Attach head, horizontal and sill members to the vertical and closure pocket members with S419 #12-14 x 1/2" HWH Self Drilling #3 pt frame assembly screw.
- D. Tool sealant at each joint.

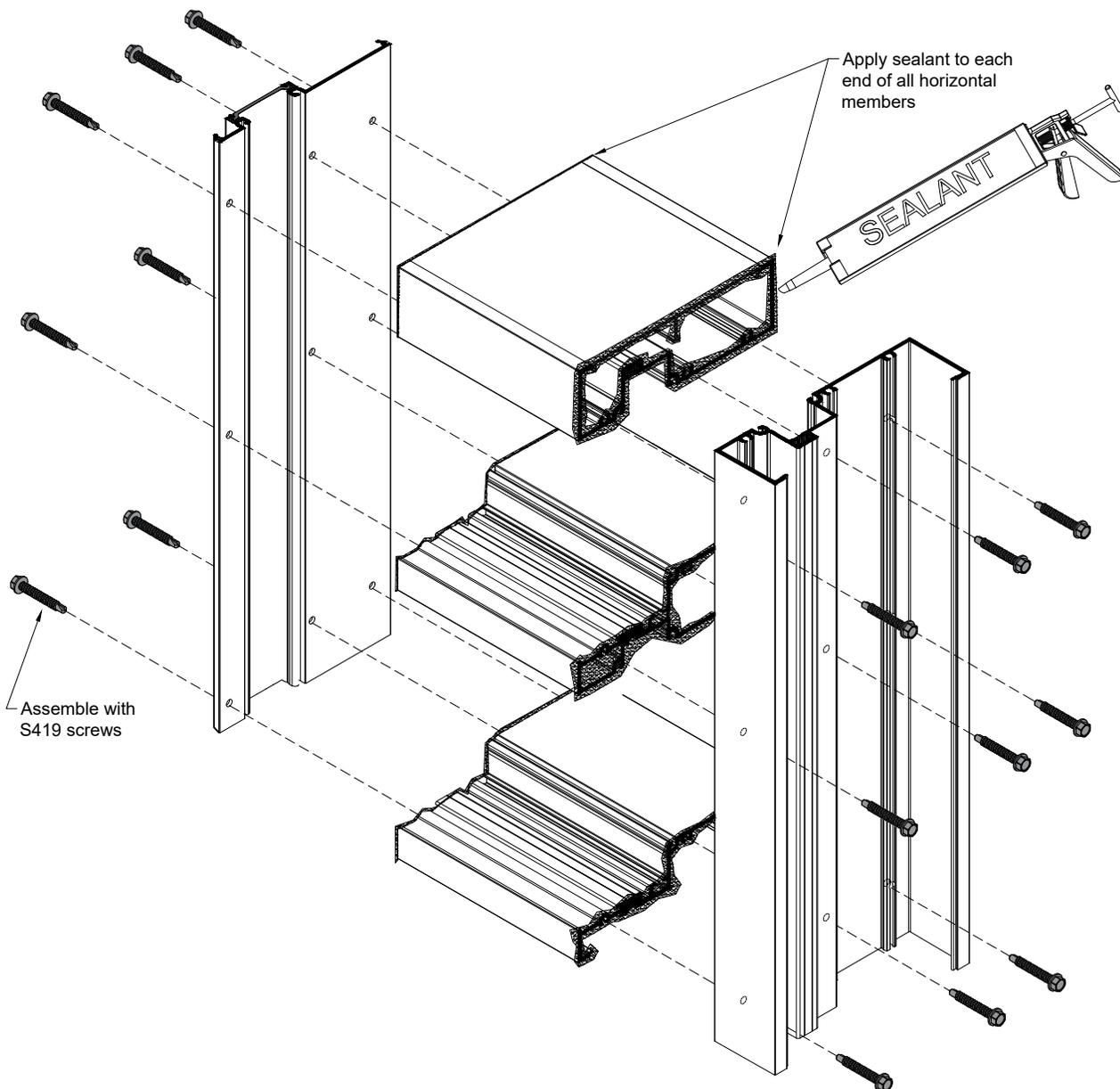


Fig.33.1

FRAME ASSEMBLY

Step 11: Assemble Frames (Continued)

Shear Block Assembly

- A. Install shear blocks onto vertical members with S009 #10 x 1 3/4" PH screw as shown in **Fig. 35.1**.
- B. Clean all mating surfaces on horizontal, vertical and shear block.
- C. Apply sealant to ends of the head, horizontal and sill members shear blocks prior to attaching the horizontal members to the vertical members. See **Fig. 35.1**.
- D. Install head, horizontal and sill members over the shear blocks.
- E. Match drill tap hole in head shear block with drill #14 (.182 dia) for #12 screw.
- F. Match drill tap hole in horizontal and shear blocks with drill #23 (.154 dia) for #10 screw.

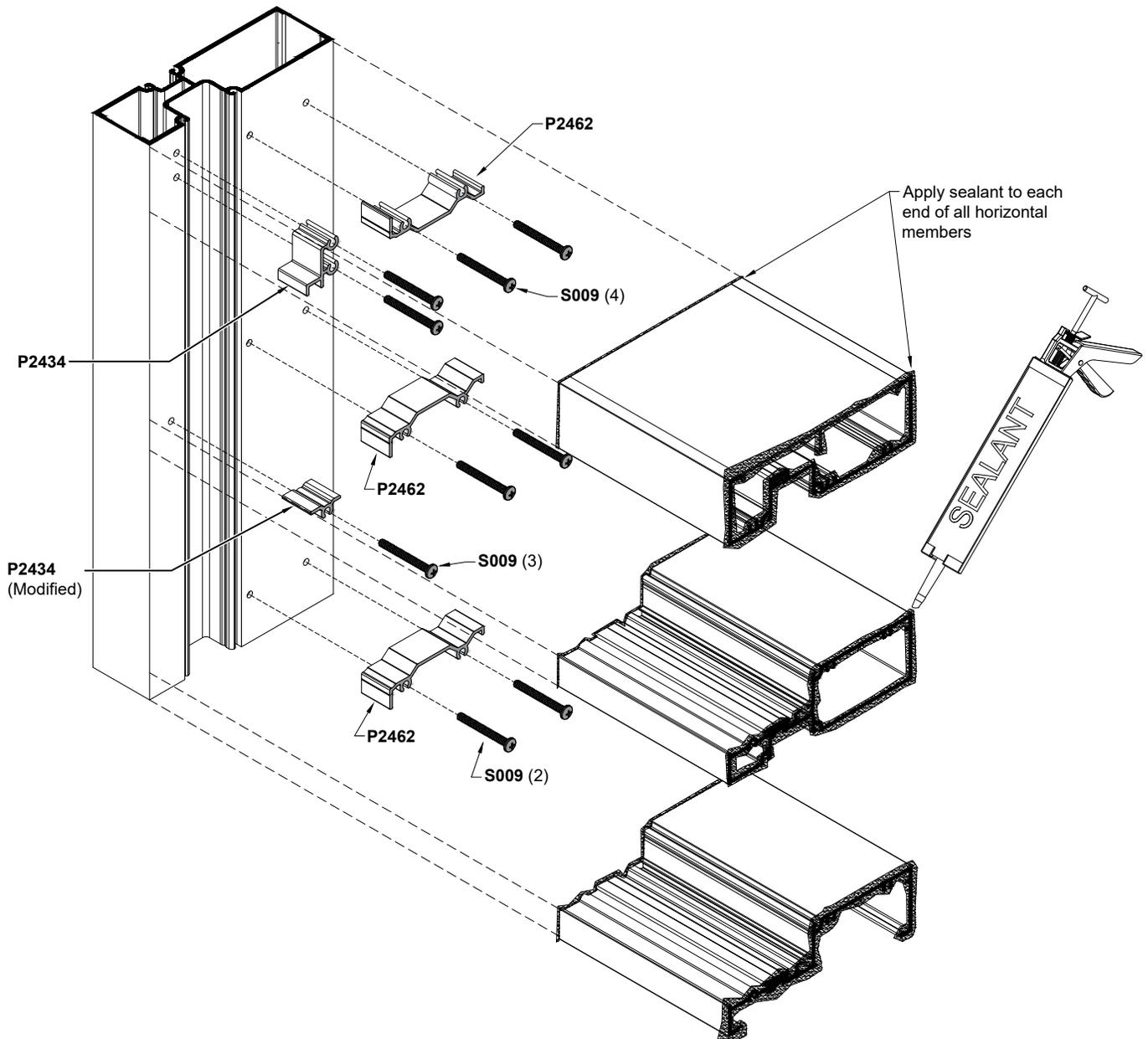
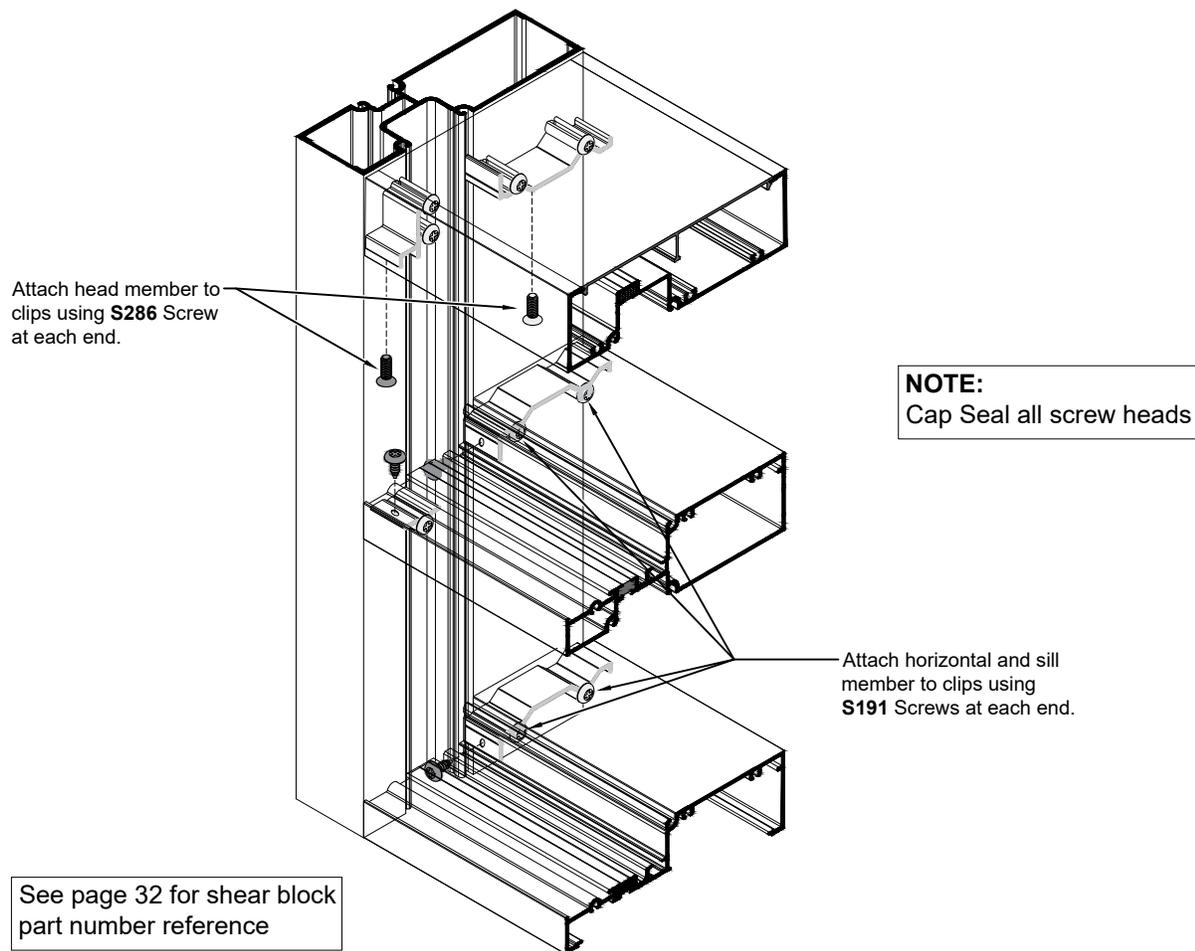


Fig.35.1

FRAME ASSEMBLY**Step 11: Assemble Frames** (Continued)

Shear Block Assembly (Continued)

- G. Secure head member to shear block with S286 #12-24 x 3/4" Phillips Flat Head screw. Secure horizontal and sill members with S191 #10 x 1/2" truss head screw. See **Fig. 36.1**.
- H. Cap seal heads of screws at horizontal and sill members.

**Fig.36.1**

Step 11: Assemble Frames (Continued)

SSG Assembly

- I. Head and sill members are to run through and intermediate horizontals butt in between vertical mullions.
- J. Head and sill members are to be cut to be aligned with the back of the Expansion SSG verticals members. See **Fig. 37.1**
- K. It is recommended that the SSG Expansion vertical members should be reviewed on a per project basis for proper spacing.
- L. The exterior lip of the head and sill member should be cleaned and have sealant added prior to assembling with the SSG mullion.

FRAME ASSEMBLY

Head and Sill need to align with the back of the SSG Expansion vertical

S419 fasteners used to join the horizontal and vertical members

1/4" Nominal Joint

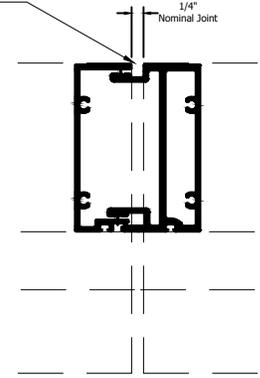


Fig.37.1

Head / Sill Splice

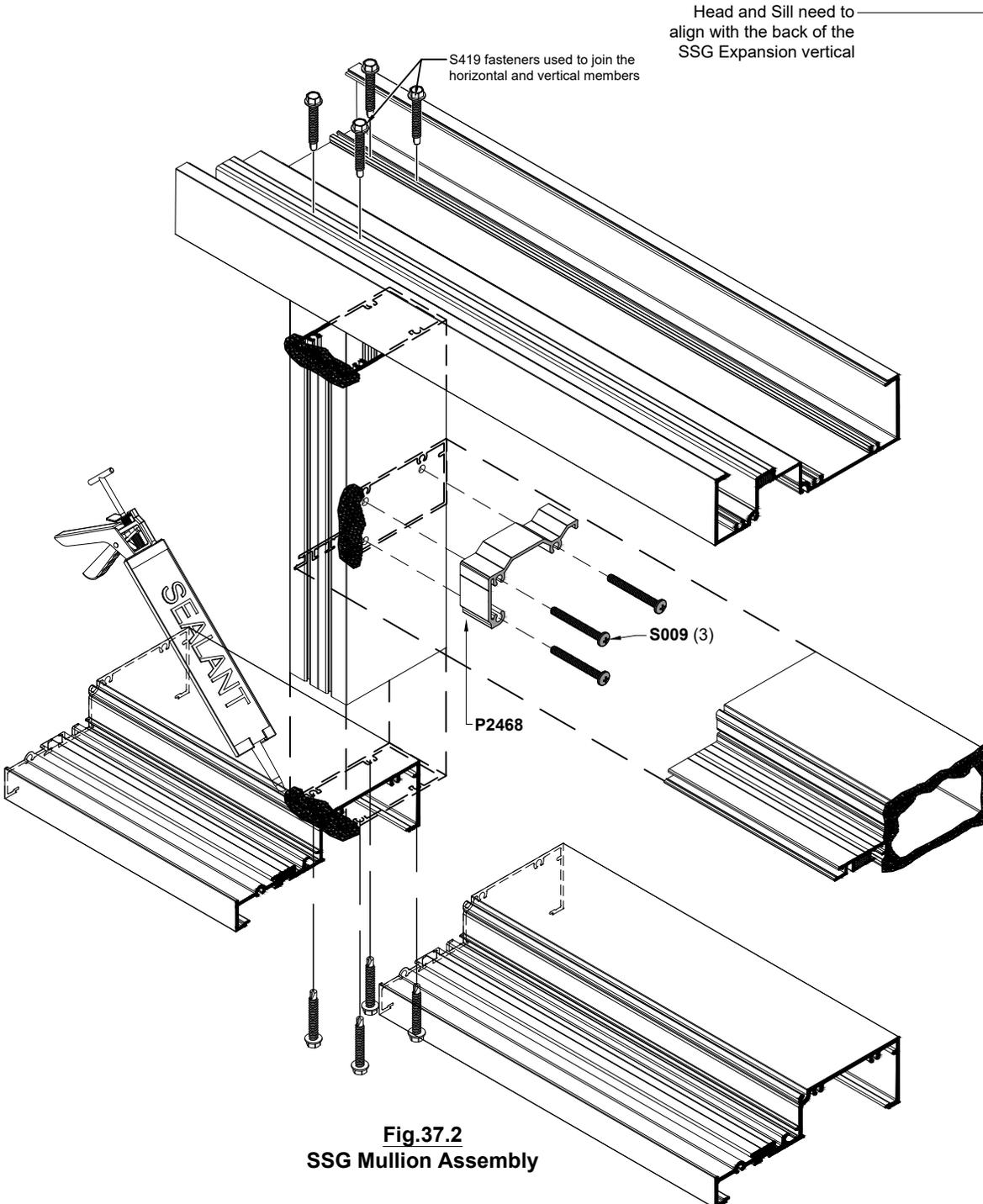


Fig.37.2

SSG Mullion Assembly

OUTSIDE GLAZE GUIDELINES

SSG expansion vertical shown, SSG tubular mullion similar assembly with head and sill running through without a splice. For tubular SSG mullions, shear blocks must be used to attach horizontals.

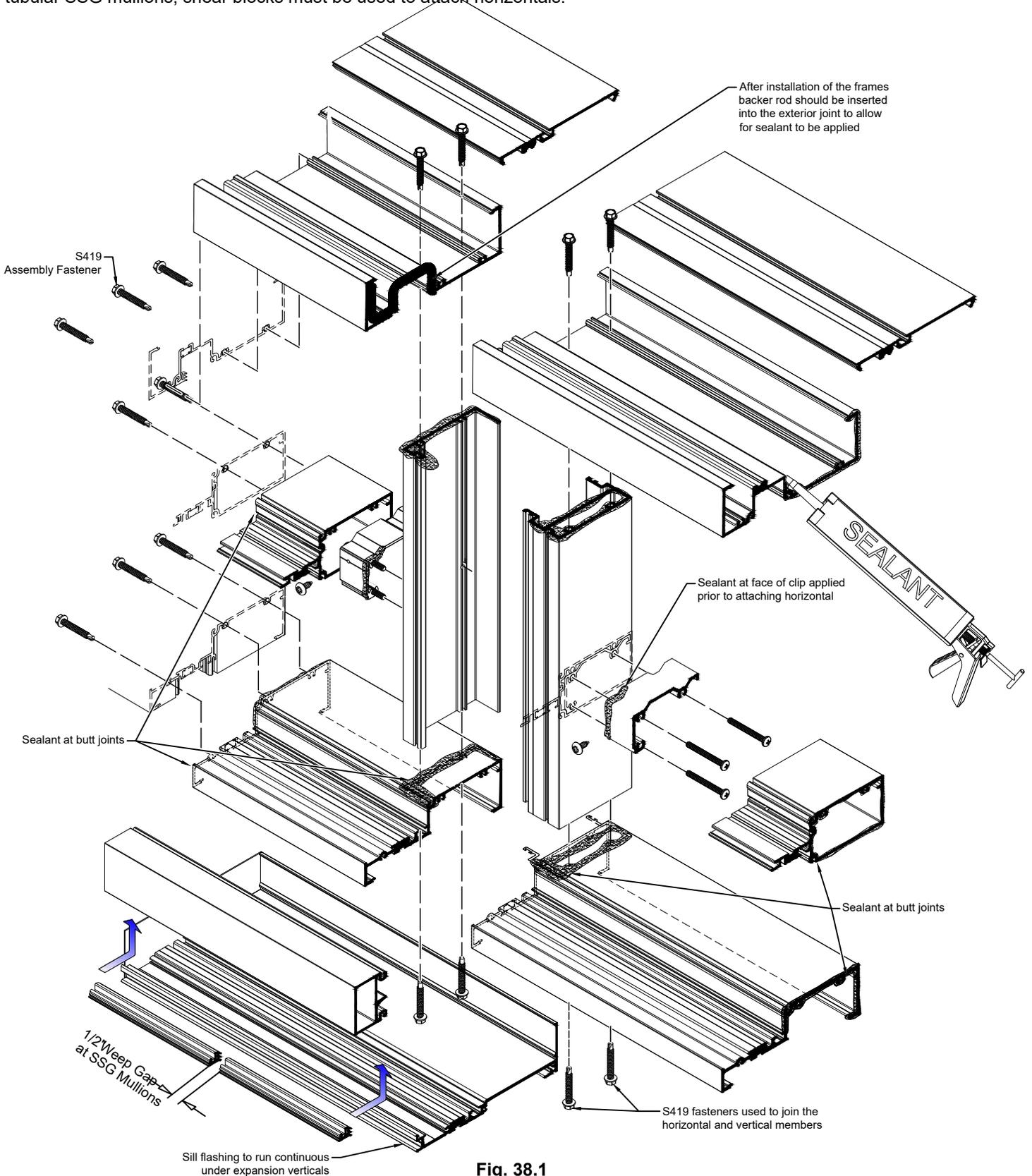


Fig. 38.1

FRAME INSTALLATION

Step 12: Install Gaskets

- A. Install glazing gasket on one side of the framing member, depending upon direction of glazing.
 - a. For inside glazing, install gaskets on exterior side of framing first.
 - b. For outside glazing, install gaskets on interior side of framing first.

Start at the center of D.L.O. and work towards the ends.

Allowance = 1/8" extra length per foot of D.L.O.

IMPORTANT NOTE: Clean ends of the gaskets with IPA prior to sealing the corners.

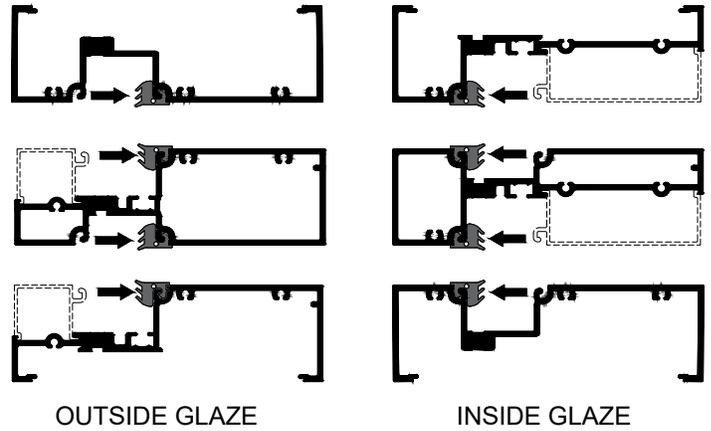


Fig.39.1

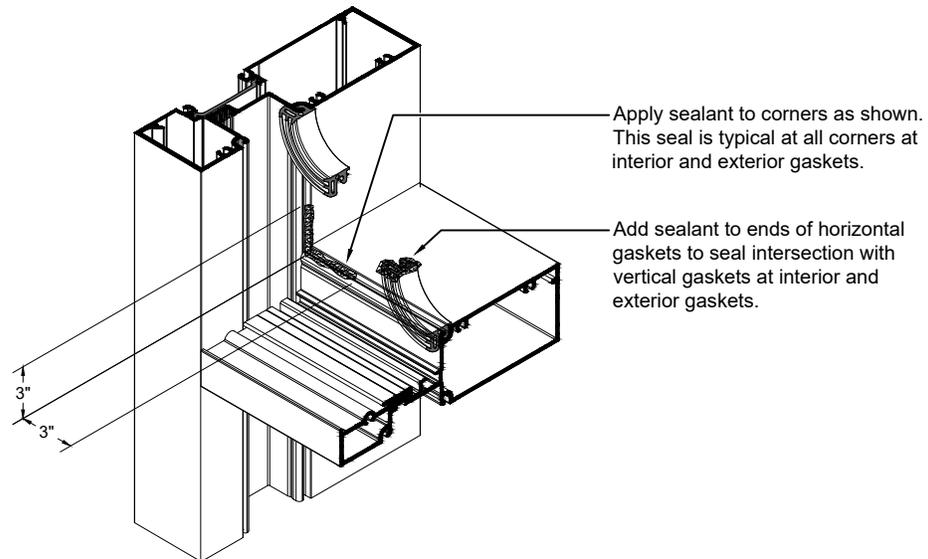
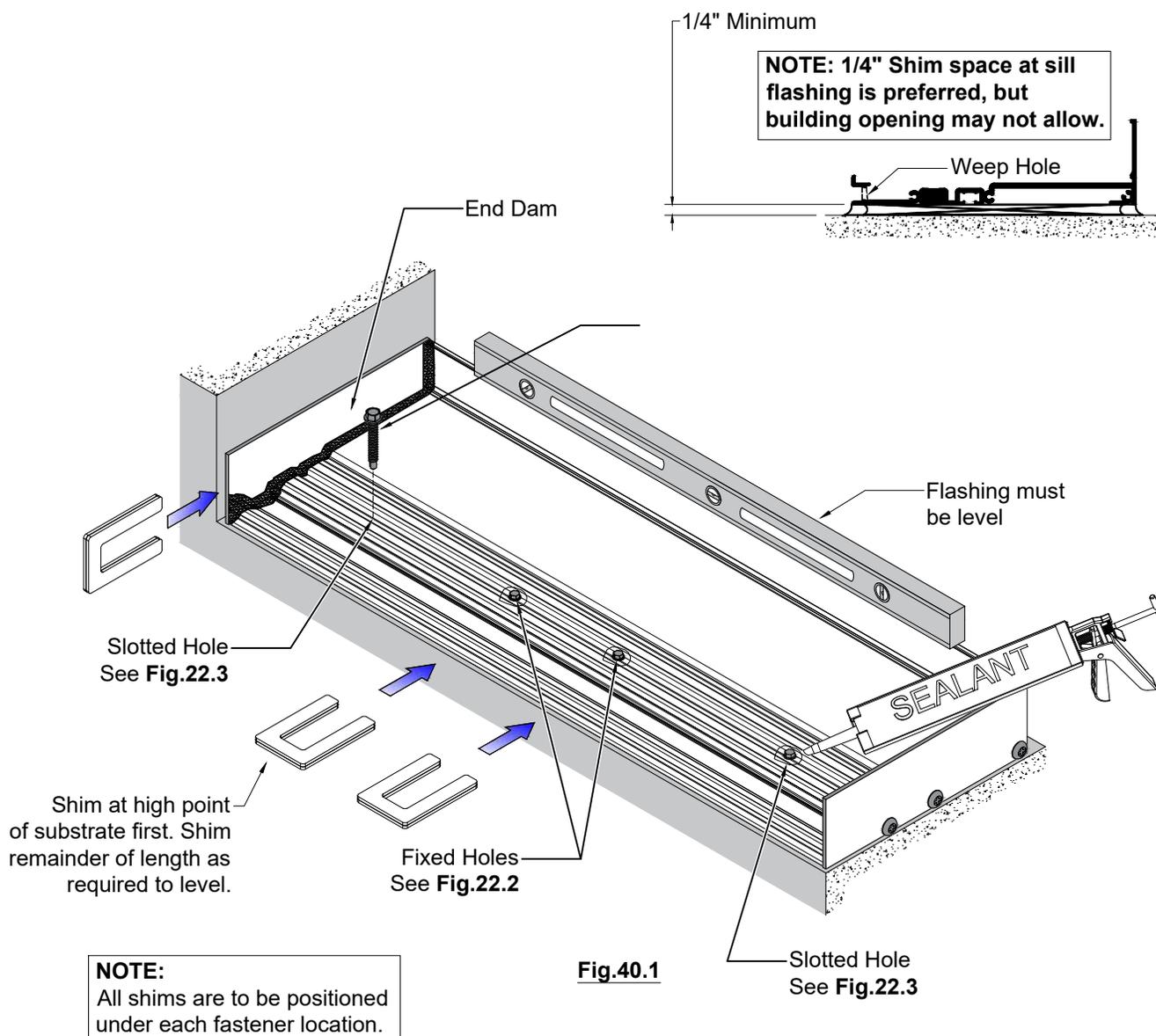


Fig.39.2

FRAME INSTALLATION

Step 13: Install Sill Flashing

- Center the sill flashing in the opening. If sill flashing is spliced, be sure the joint at the jamb is per approved shop drawings (jamb caulk joint minus 1/8"). **If there is an entrance door in the opening, leave a gap in the sill flashing for the door frame to be installed and refer to Step 14, page 41 for sealing instructions.** Splice joint to be 3/8" minimum.
- At the highest point of the sill (smallest rough opening height), shim the sill flashing with a minimum 1/4" shim space. Sill flashing must be installed level side to side and front to back.
- Shim tight between the sill flashing end dam and building condition to ensure end dam is not dislodged during frame installation. Remove shim after frames are set in place.
- Anchor sill flashing to building substrate per approved shop drawings. Cap seal anchors after installation. Where the sill flashing abuts a door jamb, the sill flashing anchor must be located within 6" of the door jamb.



FRAME INSTALLATION

Step 14: Sill Flashing Splicing

Standard Silicone Splice - Fig.41.1

- A. Continue installing sill flashing per Step 13 across the opening.
- B. Lay P3444 silicone sheet into sill flashing at splice location (center of D.L.O.) and cut to length
- C. Install backer rod under the sill flashing at the splice joint
- D. Clean surfaces where splice will be applied. Apply sealant as shown in **Fig.41.1**
- E. Maintain 3/8" minimum splice joint gap at the sill flashing prior to anchoring.
- F. Set silicone splice sleeve in place and tool sealant. Seal front and back joints.
- G. Do not locate a splice directly below a vertical mullion. Center line of D.L.O. is preferred.

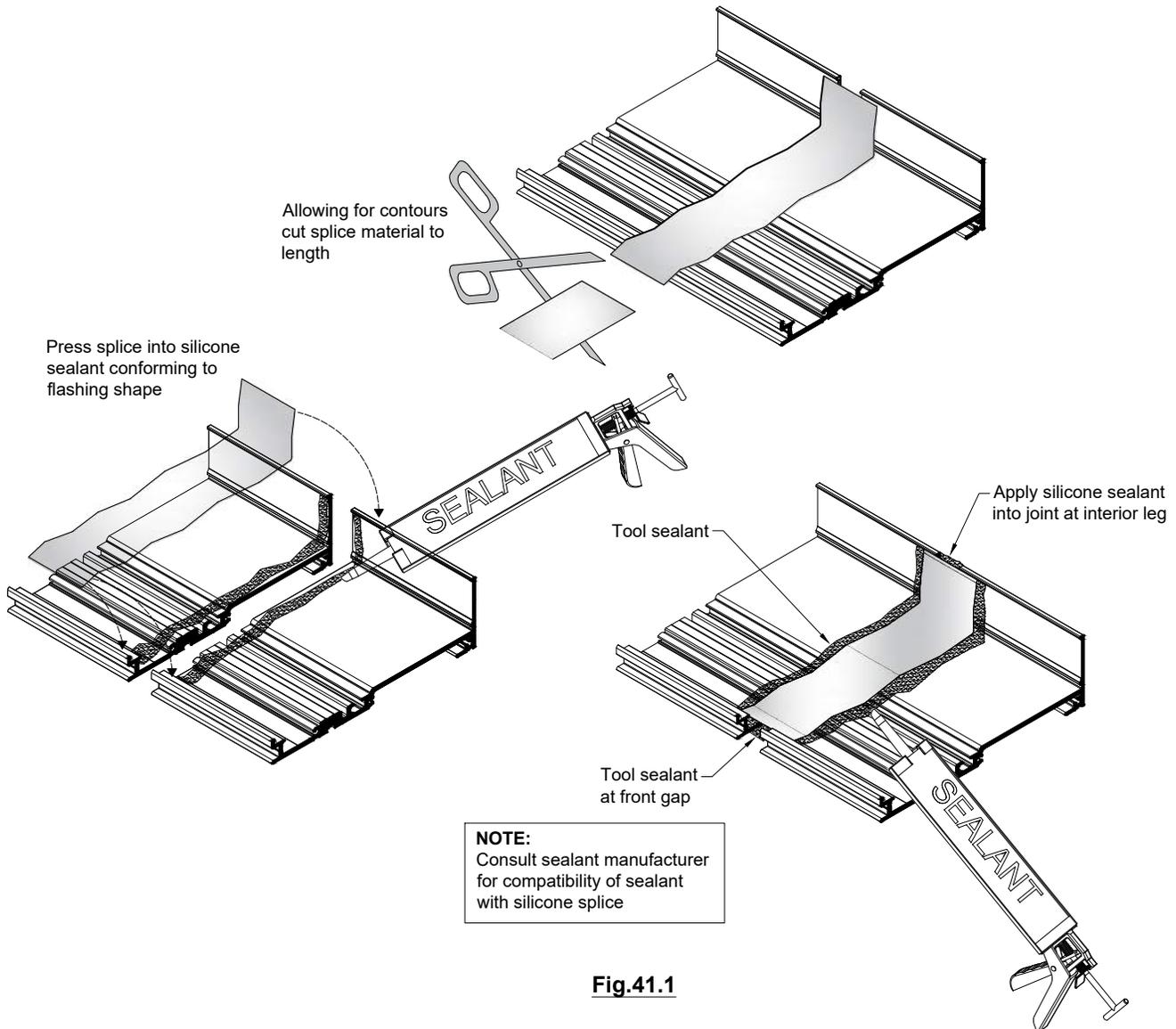


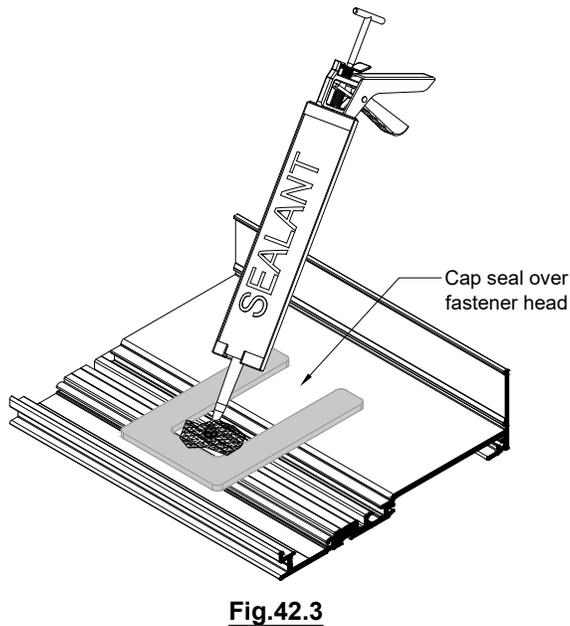
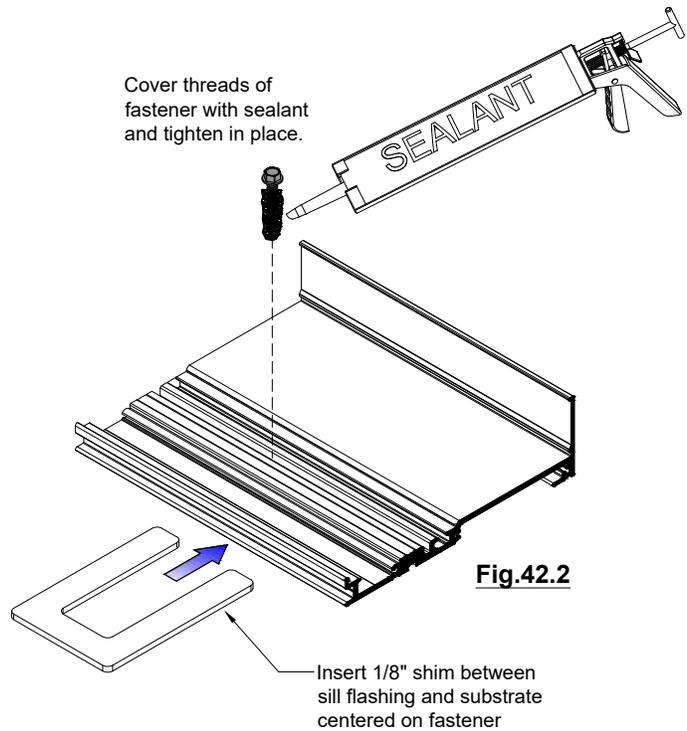
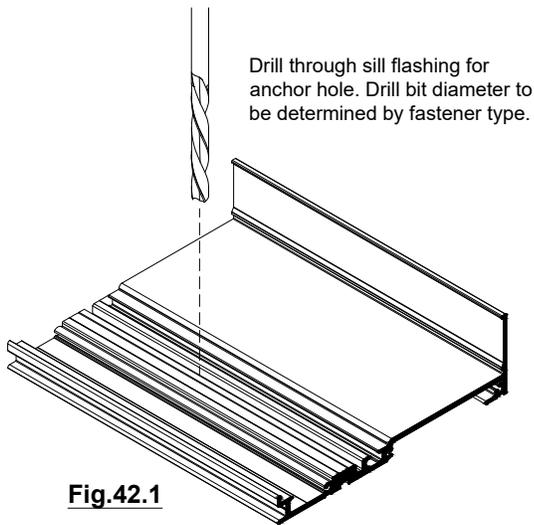
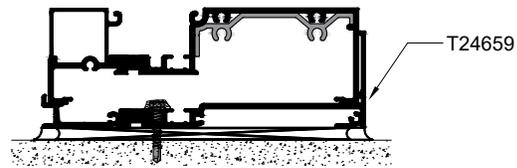
Fig.41.1

FRAME INSTALLATION

Step 15: Install Frames

Frame installation when using the T24659 sill flashing.

- A. Drill through sill flashing for anchor holes. See **Fig.42.1**. Sill anchor not by Tubelite and is to be sized according to project loading requirements.
- B. Shim between sill and flashing centered on anchor. See **Fig.42.2**.
- C. Apply sealant to threads of fastener and secure sill flashing. See **Fig.42.2**.
- D. Cap seal all fastener heads. See **Fig.42.3**.



FRAME INSTALLATION

Step 15: Install Frames (Continued)

- E. Starting on one side of the opening, apply a bead of silicone to the back leg of the sill flashing and the end dam prior to installing each frame. Apply a sealant bead on the back leg of the flashing only for the frame to be installed.
- F. Lift the first frame onto the sill flashing, with 1/4" spacing against the end dam or 1/2" when using expansion vertical.

Seal vertical mullion reveal 3" up from sill flashing at sill and 3" down from top of mullion at head

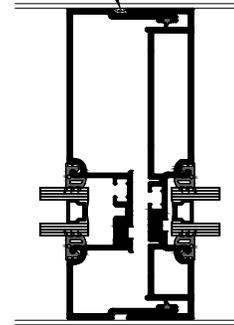


Fig.43.1

NOTE:
6" long filler is required at bottom of jamb for seal between jamb and flashing end dam.

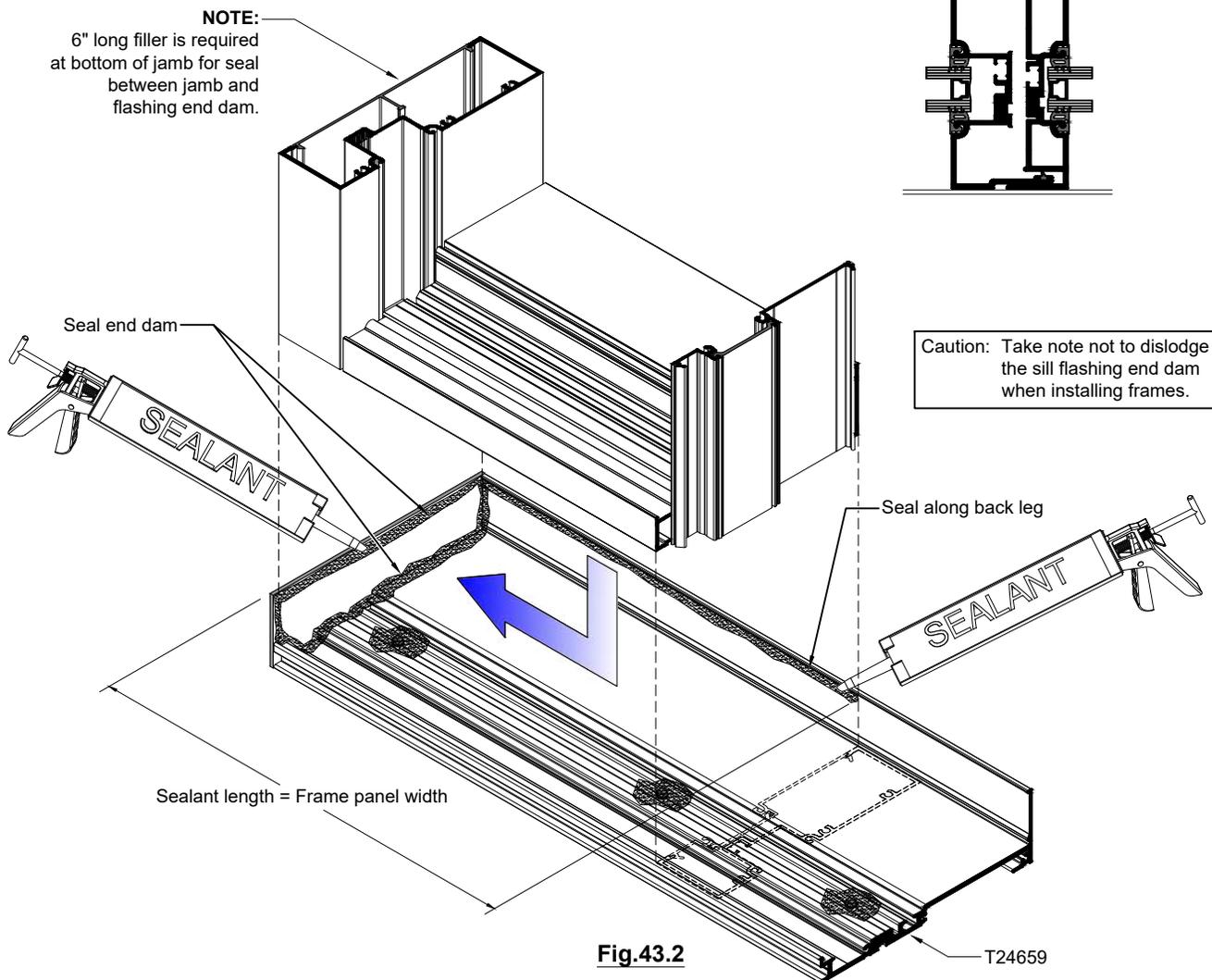


Fig.43.2

- G. Lift each frame onto the sill flashing and engage with the previous frame.
- H. Check to ensure frame is plumb, level and jamb caulk joint as per approved shop drawings.
- I. Shim head and jamb at anchor points and attach to the building structure. Size, quantity, and location of anchors are per approved shop drawings.
- J. When the frame is anchored to the structure, apply the exterior perimeter seal at the head, sill, and jambs. Interior perimeter seal must be applied to the head, sill, and jambs.

Step 15: Install Frames (continued)

Expansion/ Expansion SSG Bays:

- A. When assembling bays with expansion mullions start at one end of the opening and set the first frame unit into the sill flashing and anchor into place. Continue with the next bay and ensure there is a proper gap between the expansion mullion halves. Follow this process until the last bay is installed. See **Fig. 44.1** (SSG Expansion shown, Expansion mullions similar).

Note: Double check that the sill flashing has been cut long enough so that the end dam will be cleared during the installation of the last section of the frame.

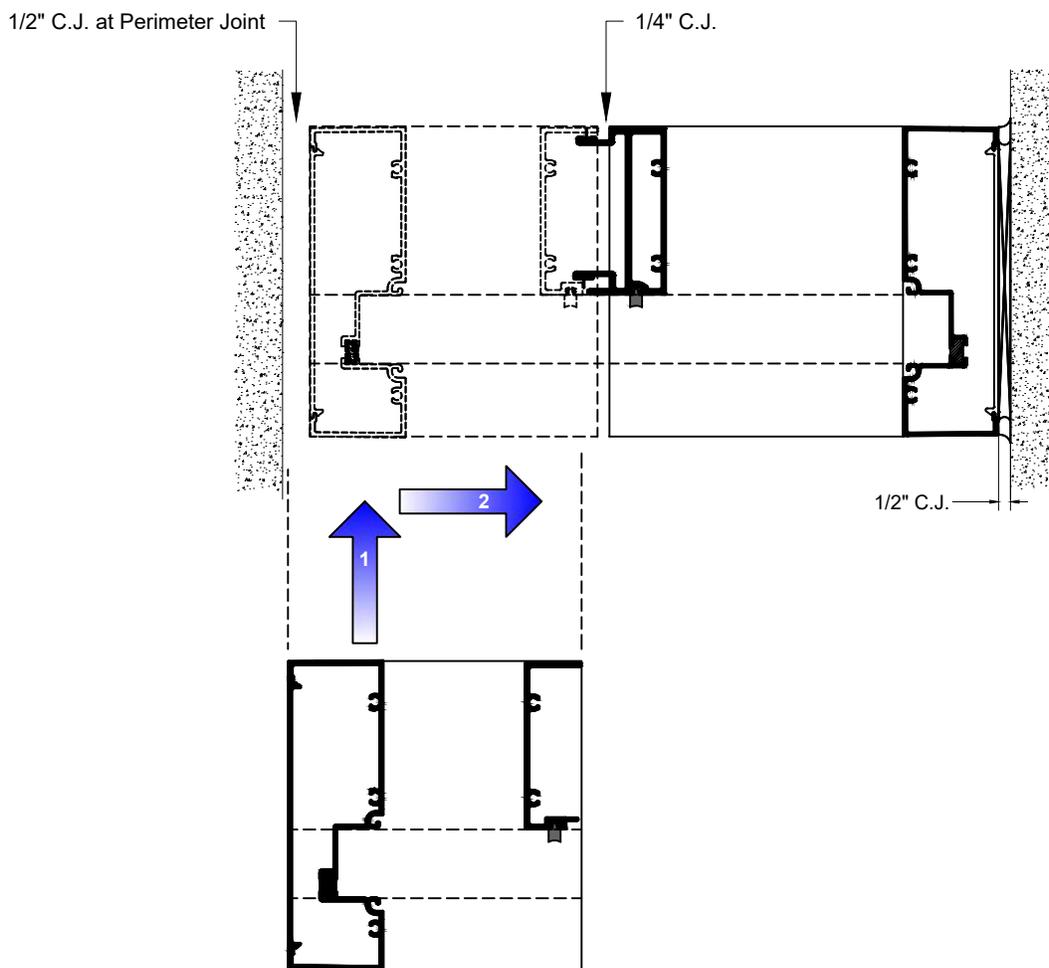
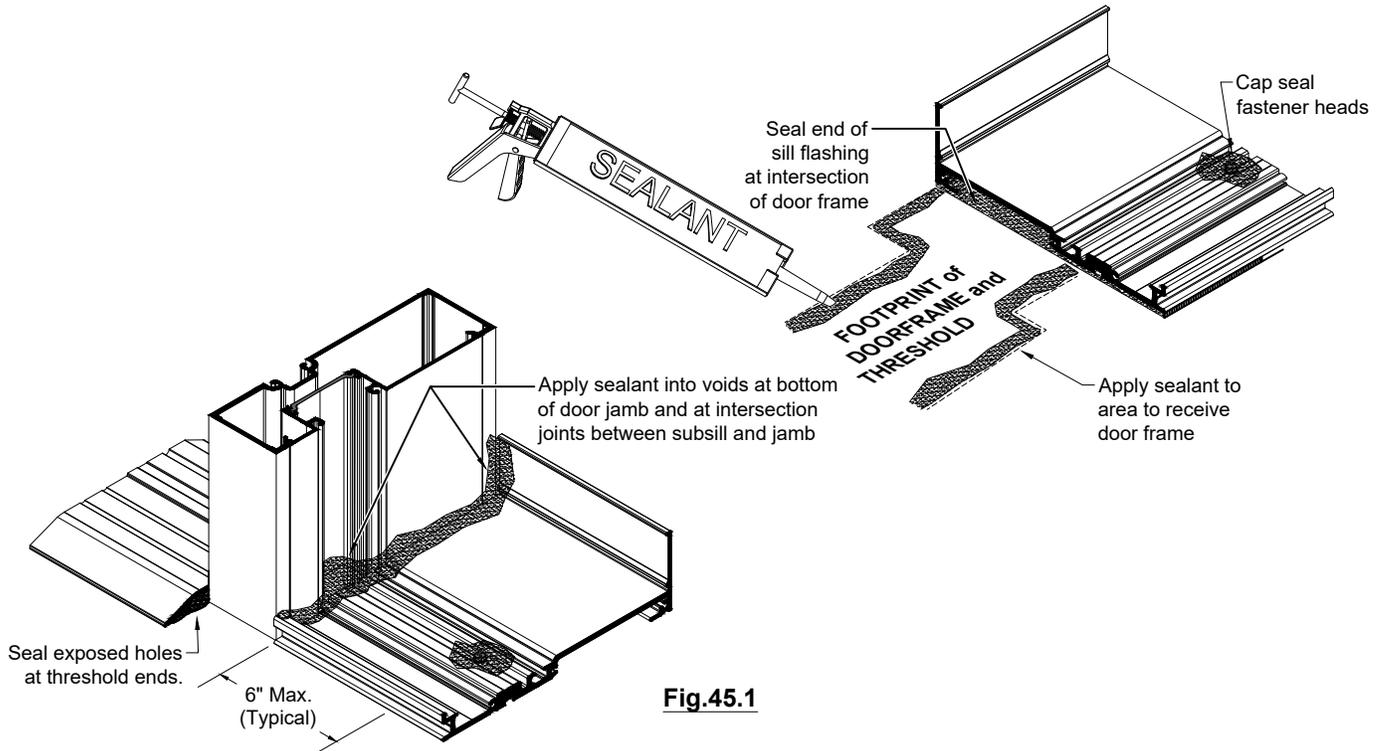


Fig. 44.1

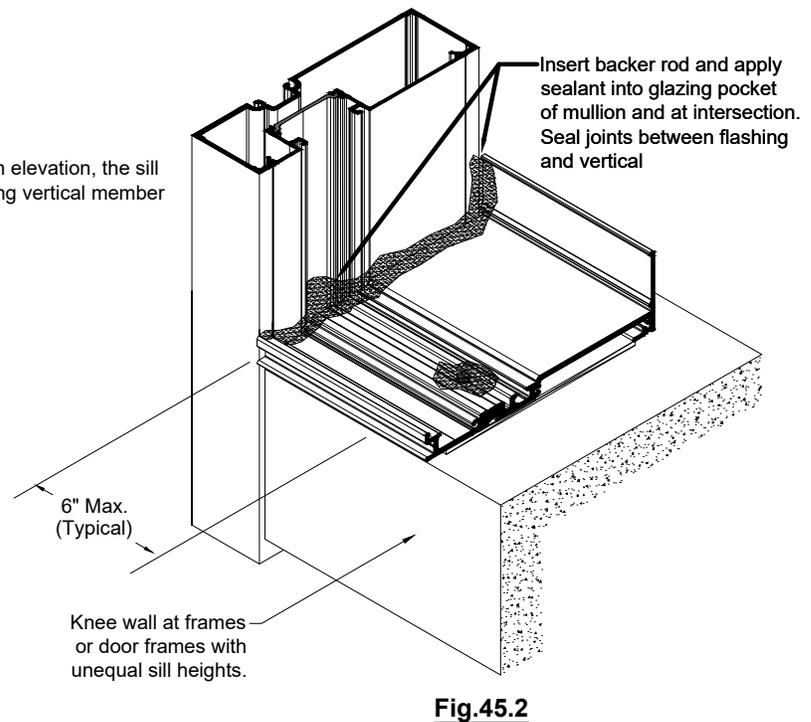
FRAME INSTALLATION

Step 16: Sealing Sill flashing at Door Jamb

- A. Install door frame into the opening where sill flashing is discontinued
- B. Seal the bottom of the door jamb mullion to the building substrate and to the sill flashing
- C. Fill the door jamb cavity completely and marry to the sill flashing.



NOTE:
When a "Knee Wall" occurs within an elevation, the sill flashing must be sealed to intersecting vertical member as shown in [Fig.45.2](#)

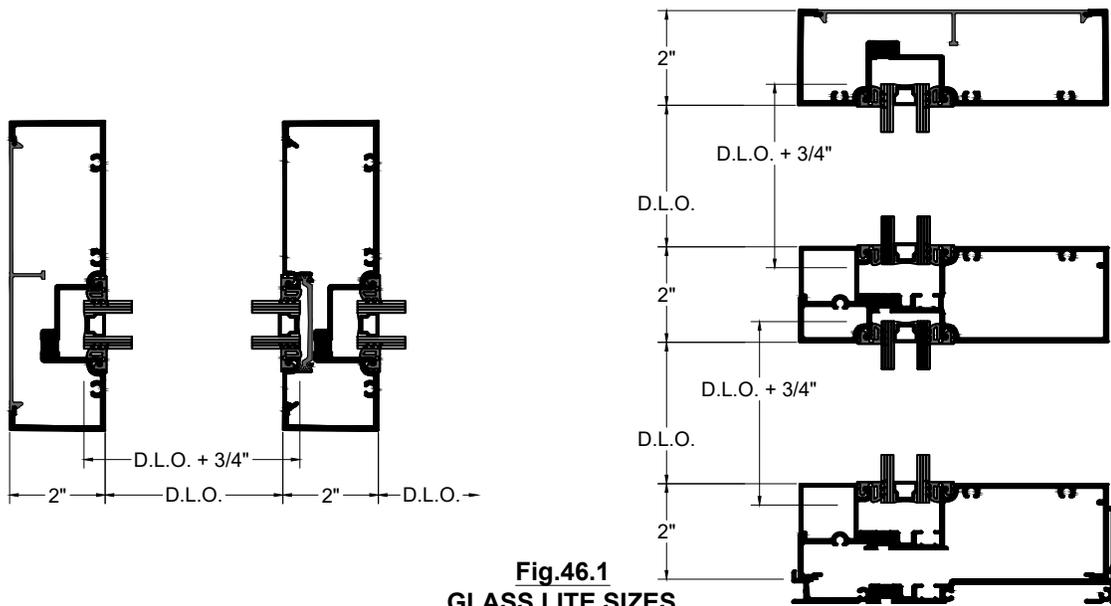


GLAZING

Step 17: Glazing Preparation

- A. Remove any debris from the glazing pockets.
- B. Trim excess silicone from edges of glazing units to allow for maximum glazing clearance.

Glazing pockets are designed to accept IGU's up to and including 1-1/8" thick. Refer to online perimeter sheet details for glazing infill options.



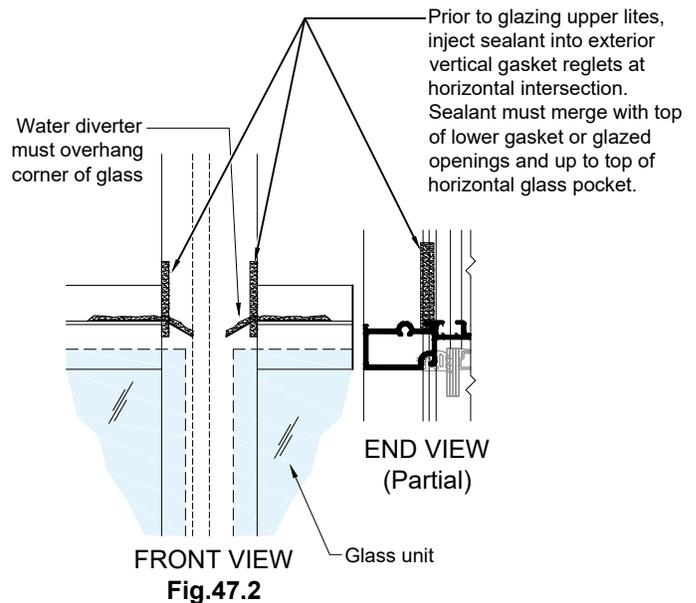
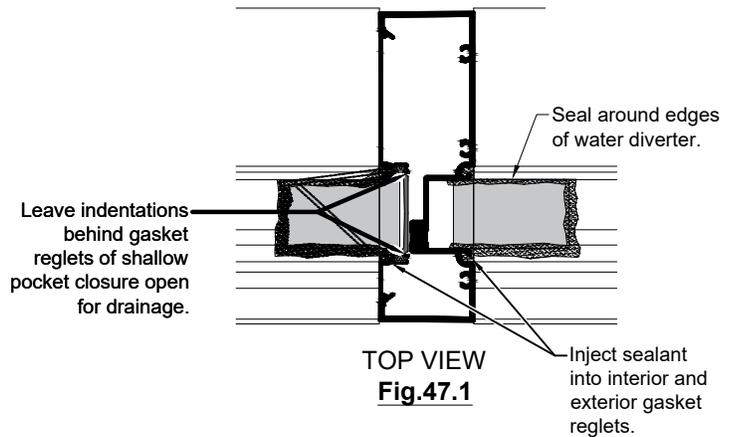
GLAZING

Step 18: Installing the Glazing Units: Captured Frames

NOTE: Glazing must be done from bottom of frame up.

- A. Seal the corners of the previously installed gaskets (refer to Step 12, page 36).
- B. Set the glass by installing into the deep pocket of the vertical first, then carefully sliding into the shallow pocket. Set glass onto (2) setting blocks located at quarter points or per approved shop drawings. Consult glass manufacturer if glass size exceeds 40 sq. ft.
- C. In applications where glass shifting is anticipated through seismic activity or other forces acting on the frame, install P1917 anti-walk blocks into the deep pocket side of the vertical per glazing manufacturer recommendations.
- D. Install remaining gaskets on the vertical sides of the glass, holding back at the bottom to allow for glass stop installation.
- E. Install glass stop at the bottom of the lite.
- F. Pump sealant into glazing reglet 1" away from each corner and the horizontal-to-vertical joint from the water diverter up to the glazing reglet.
- G. Finish installing gaskets at top and bottom of D.L.O.
- H. Repeat steps 17 A-G for the remaining row of lites.
- I. Prior to glazing the next row of lites, install water diverter P1135 at ends of intermediate horizontals. See **Fig. 47.1**.

Note: For frames using SSG vertical members the glass should be set from the exterior to facilitate the application of the temporary glazing retainers, and horizontal face covers, that may be required. Structural silicone will need to be applied from the interior.



NOTE: Position water diverter to cover glass corner. Seal diverter to horizontal, leaving the gap at the front and side open in the vertical glazing pocket. See **Fig. 47.1 & 47.2**. (Also see isometric details on page 46)

GLAZING

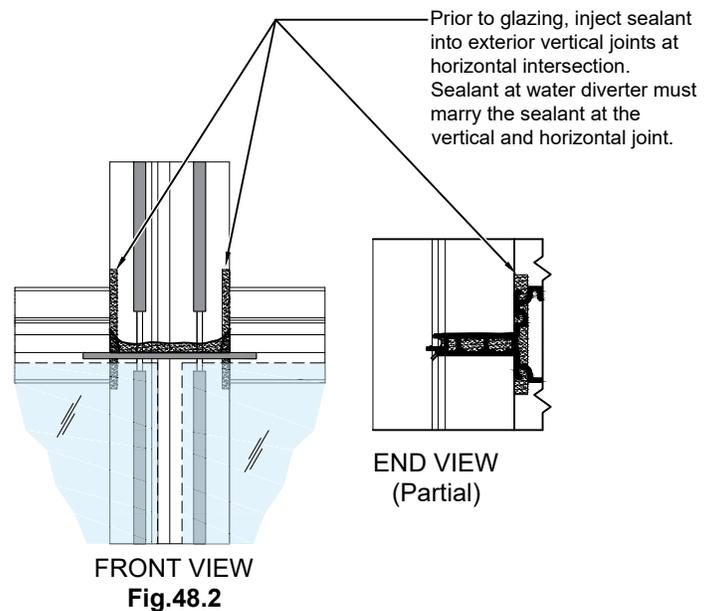
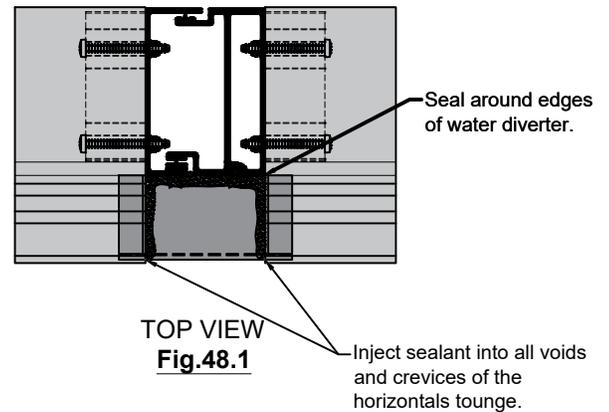
Step 18: Installing the Glazing Units: SSG Frames

NOTE: Glazing must be done from bottom of frame up, and when using SSG mullions use temporary retaining clips along the vertical SSG mullion. **The SSG mullion gasket should be installed prior to setting the glass.** The installation of the glazing bead and its gasket will need to be handled from the exterior side.

- A. Set the exterior gaskets of the captured vertical and horizontal members, and the interior gaskets of the intermediate horizontal.
- B. For the intermediate horizontal install the setting chairs and setting blocks at quarter points or per approved shop drawings. Consult the glass manufacturer if glass size exceeds 40 sq. ft..
- C. Set the glass at bays with captured mullions first by installing the glass into the deep pocket of the captured vertical first, then carefully sliding into position over the SSG mullion.

NOTE: Monitor the setting chair location when setting the glass to prevent catching or flipping up the setting chair, or setting block.
When used with captured verticals install the setting chair and setting block after installing the glass.

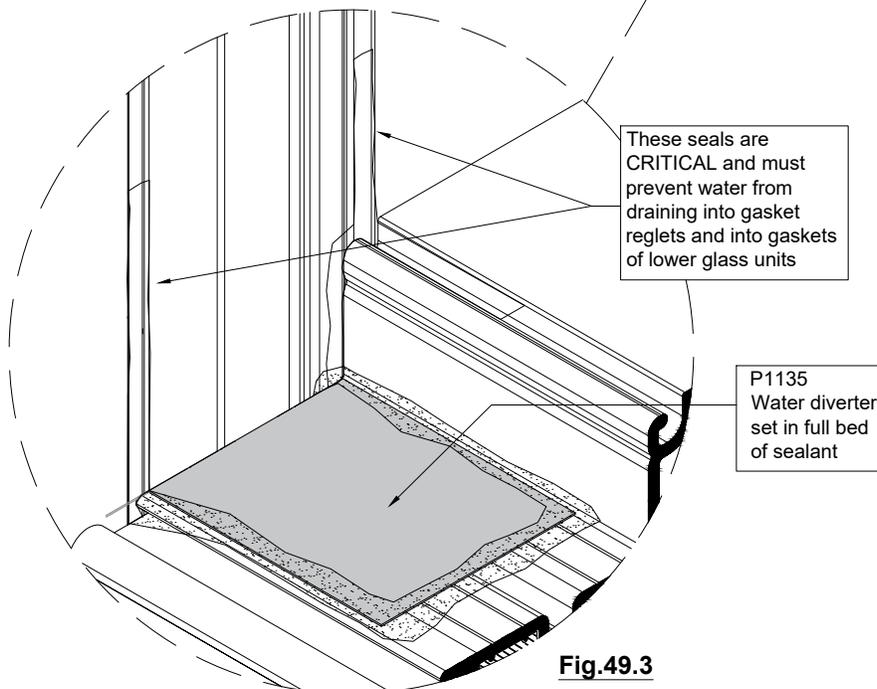
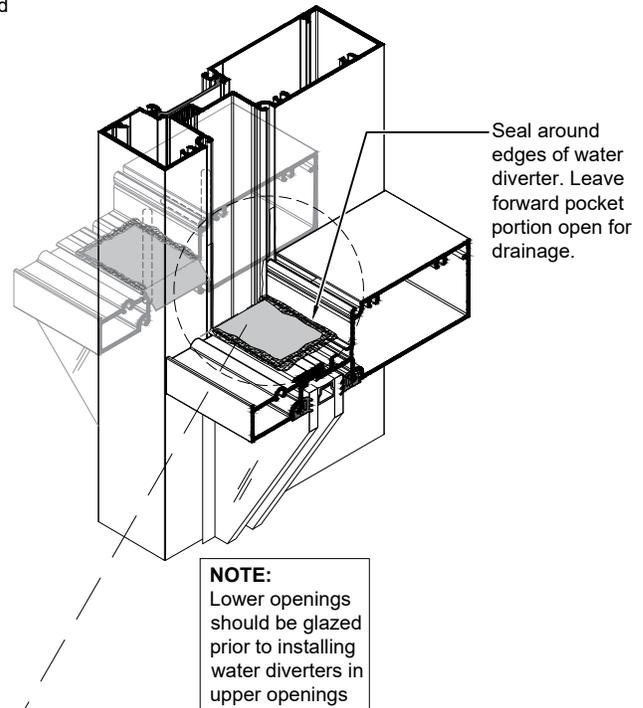
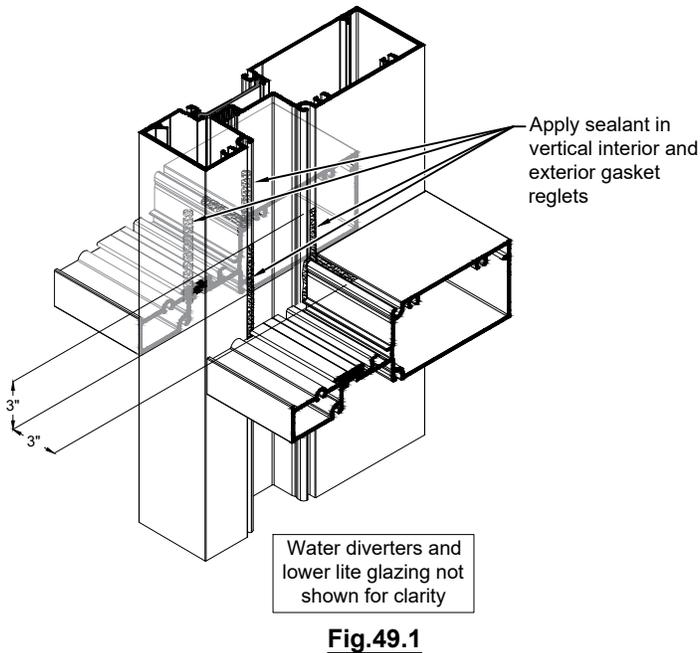
- D. In applications where glass shifting is anticipated through seismic activity or other forces acting on the frame, install P1917 anti-walk blocks into the deep pocket side of the vertical per glazing manufacturer recommendations.
- E. Repeat steps A thru D for the remainder of the row placing temporary glazing retainers as needed at the SSG vertical mullions from the exterior.
- F. Prior to glazing the next row of lites, install water diverters at ends of the intermediate horizontals. See **Fig. 48.1 & 48.2.**
- G. The exterior glazing bead for the intermediate horizontal for SSG vertical can be installed once the glass below and above it have been set with the top gasket going in first. For the wedge gasket placed at the underside of the cover leave a 1/2" gap for drainage.
- H. Install remaining gaskets on the captured vertical sides of the glass, holding back at the bottom to allow for glass stop installation. Seal the corners of the previously installed gaskets (refer to Step 12, Page 36).
- I. Install the glass stop at the sill.
- J. Pump sealant into glazing reglet 1" away from each corner and the horizontal-to-vertical joint from the water diverter up to the glazing reglet.
- K. Finish installing gaskets at top and bottom of D.L.O.



Note: Position the SSG water diverter to cover from face of horizontal past the exterior face of the glass. Seal diverter to SSG mullion and adjacent horizontals, leaving the exterior portion free of sealant to allow water to escape through the face cap. See **Fig. 48.1 & 48.2.**

GLAZING

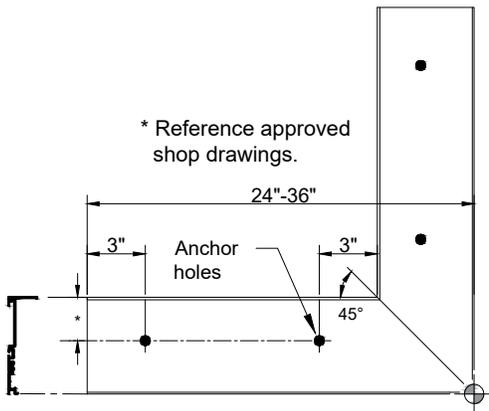
Step 18: Installing the Glazing Units (continued)



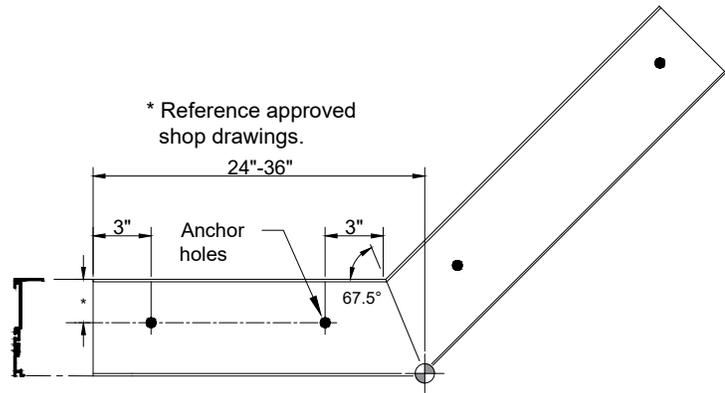
CORNER CONDITIONS

Step 1: Corner Sill Flashing Fabrication

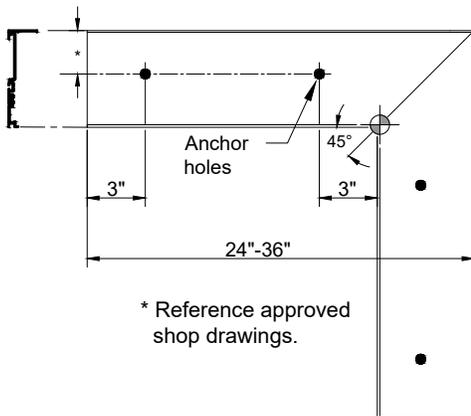
- A. Miter ends of sill flashing as shown in **Figs. 50.1, 50.2, 50.3, & 50.4.** (One left hand and one right hand.)
- B. Drill anchor holes as shown.



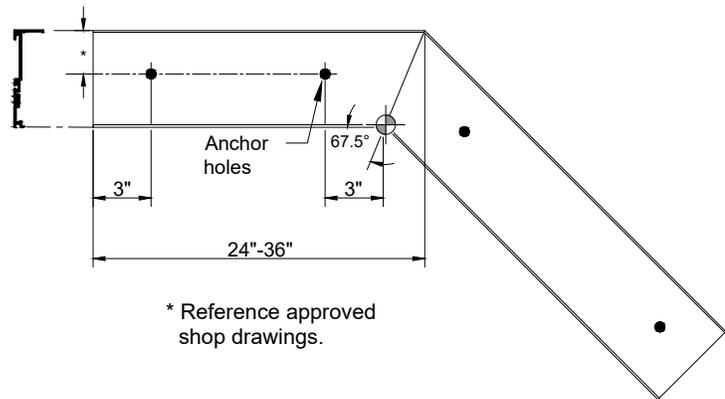
90° OUTSIDE CORNER
Fig. 50.1



135° OUTSIDE CORNER
Fig. 50.2



90° INSIDE CORNER
Fig. 50.3



135° INSIDE CORNER
Fig. 50.4

CORNER CONDITIONS

Step 2: Corner Sill Flashing Installation

- A. Install flashing corner members in place.
- B. Apply sealant full length of mitered joint. See **Fig. 51.2**.
- C. Splice corner flashing to sill flashing using procedures shown on page 38 and **Fig.38.1**.

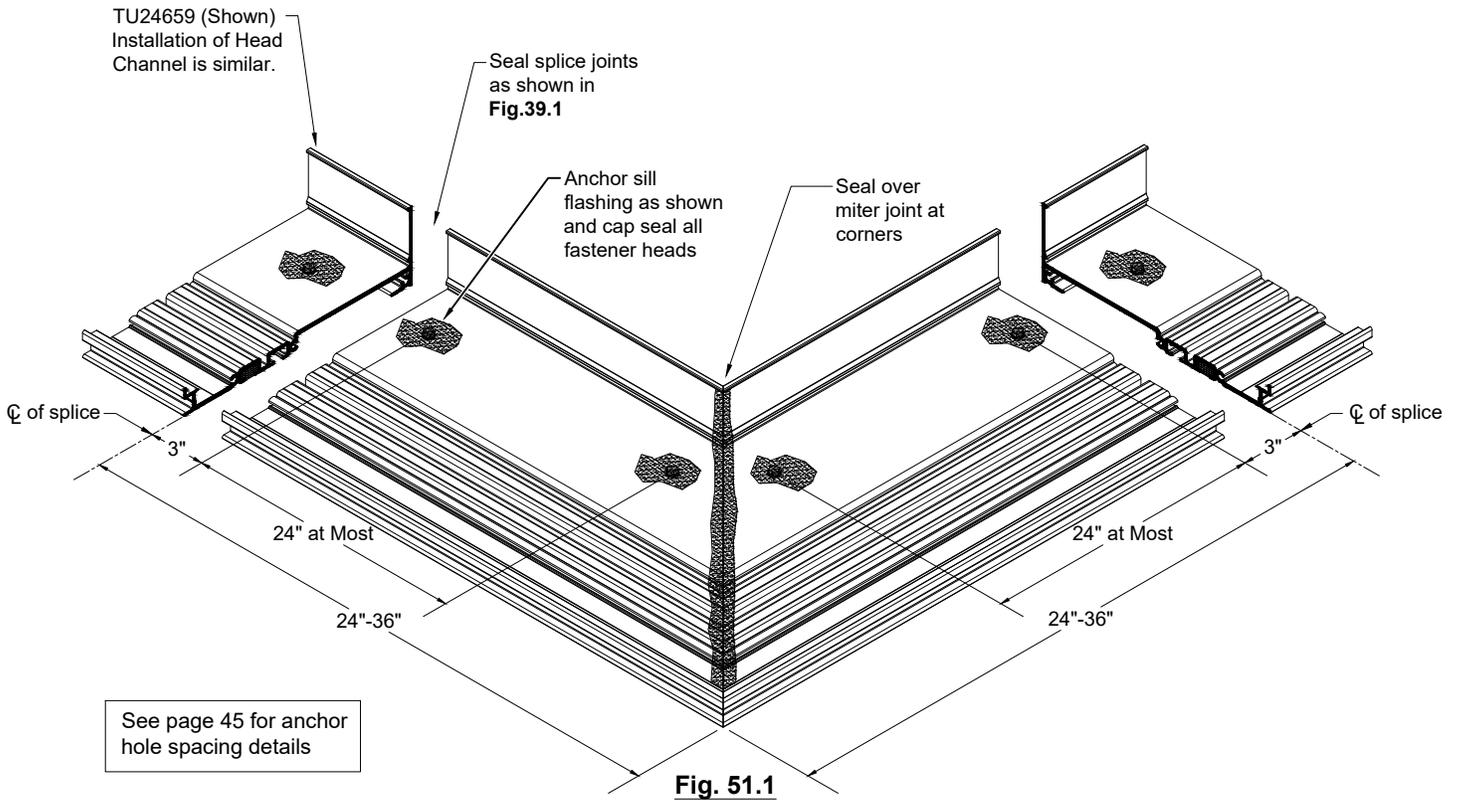


Fig. 51.1

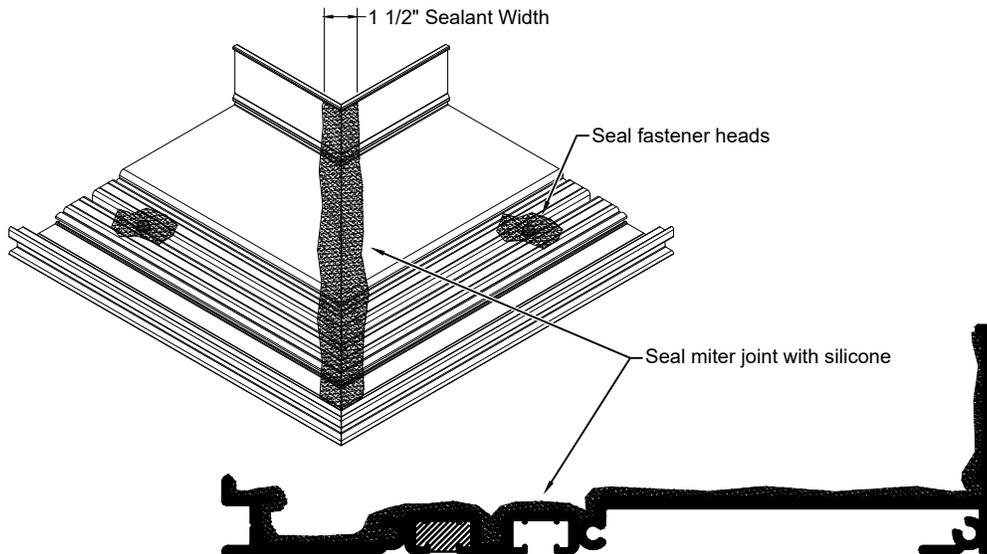
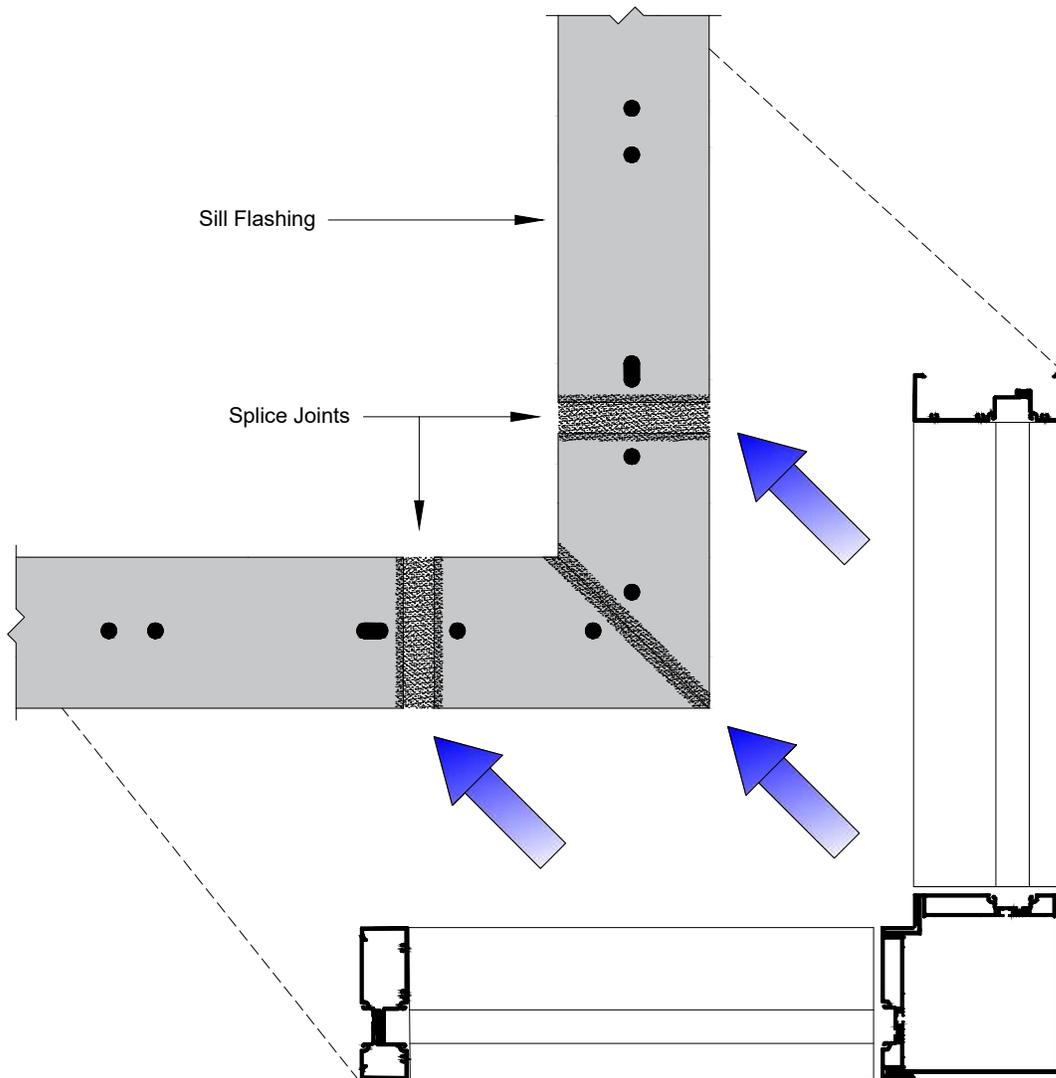


Fig. 51.2

CORNER CONDITIONS

Step 3: Assemble Frames

- A. Assemble corner bay frames as a unit and set onto the sill flashing. See **Fig. 52.1**
- B. Complete the installation per standard instructions within this manual.



Assemble and install corner unit in one piece
(90° corner shown. 135° corner is similar)

Fig. 52.1

CORNER CONDITIONS

Step 3: Assemble Frames (continued)

SSG Corner Bay:

- A. When assembling bays with SSG mullions start at one end of the opening and set the first frame unit into the sill flashing and anchor into place.
- B. Set the next corner half by allowing a space between the corner halves and carefully pivoting the frame in to the sill flashing and sliding it over to close the gap between the corner halves until they snap together. Anchor the frame to the opening.

Note: For frames with SSG, or SSG Expansion, vertical members there must be a minimum 1/2" gap between the substrate and vertical jamb member

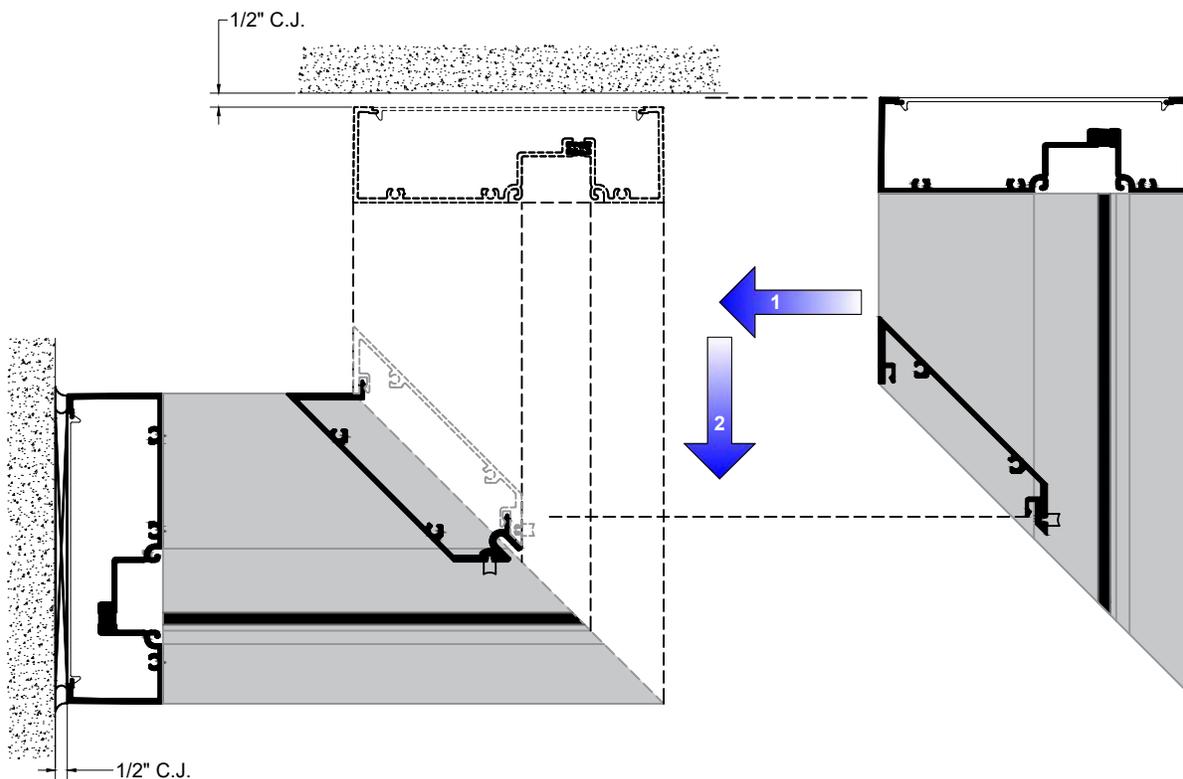
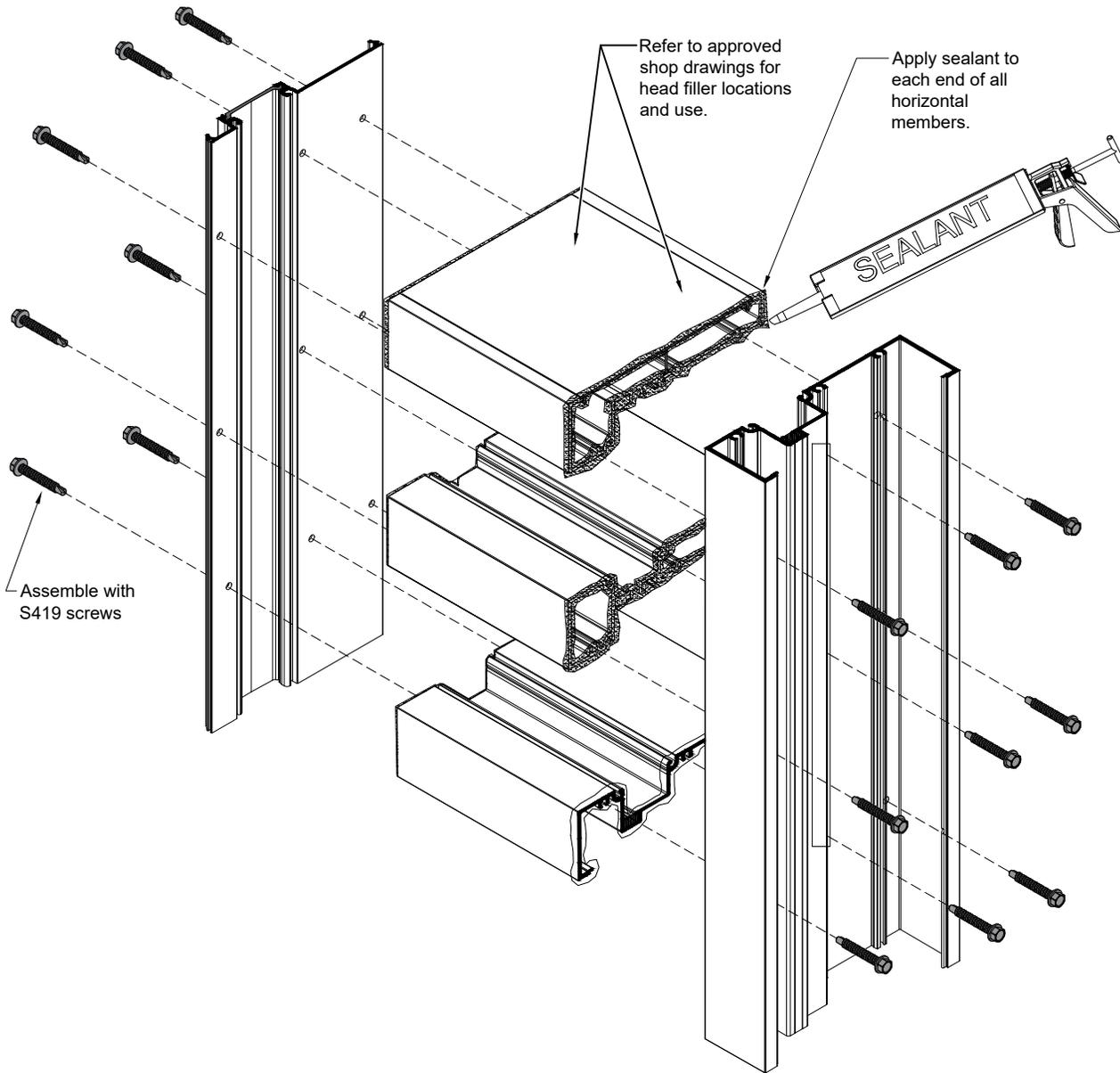
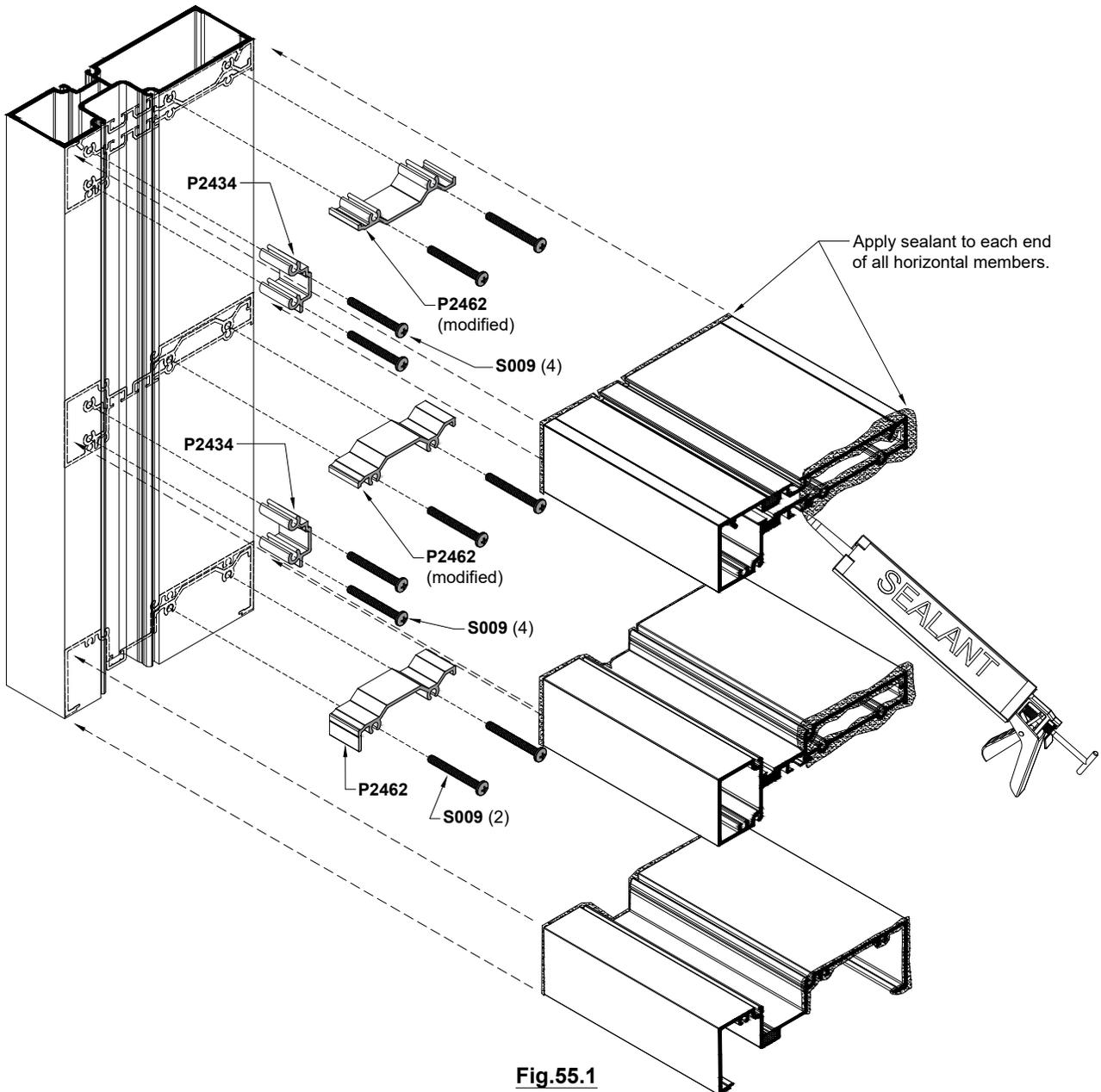


Fig. 53.1

INSIDE GLAZE



INSIDE GLAZE



INSIDE GLAZE

INSIDE GLAZE GUIDELINES

SSG expansion vertical shown, SSG tubular mullion similar assembly with head and sill running through without a splice. For tubular SS mullions, shear blocks must be used to attach horizontals.

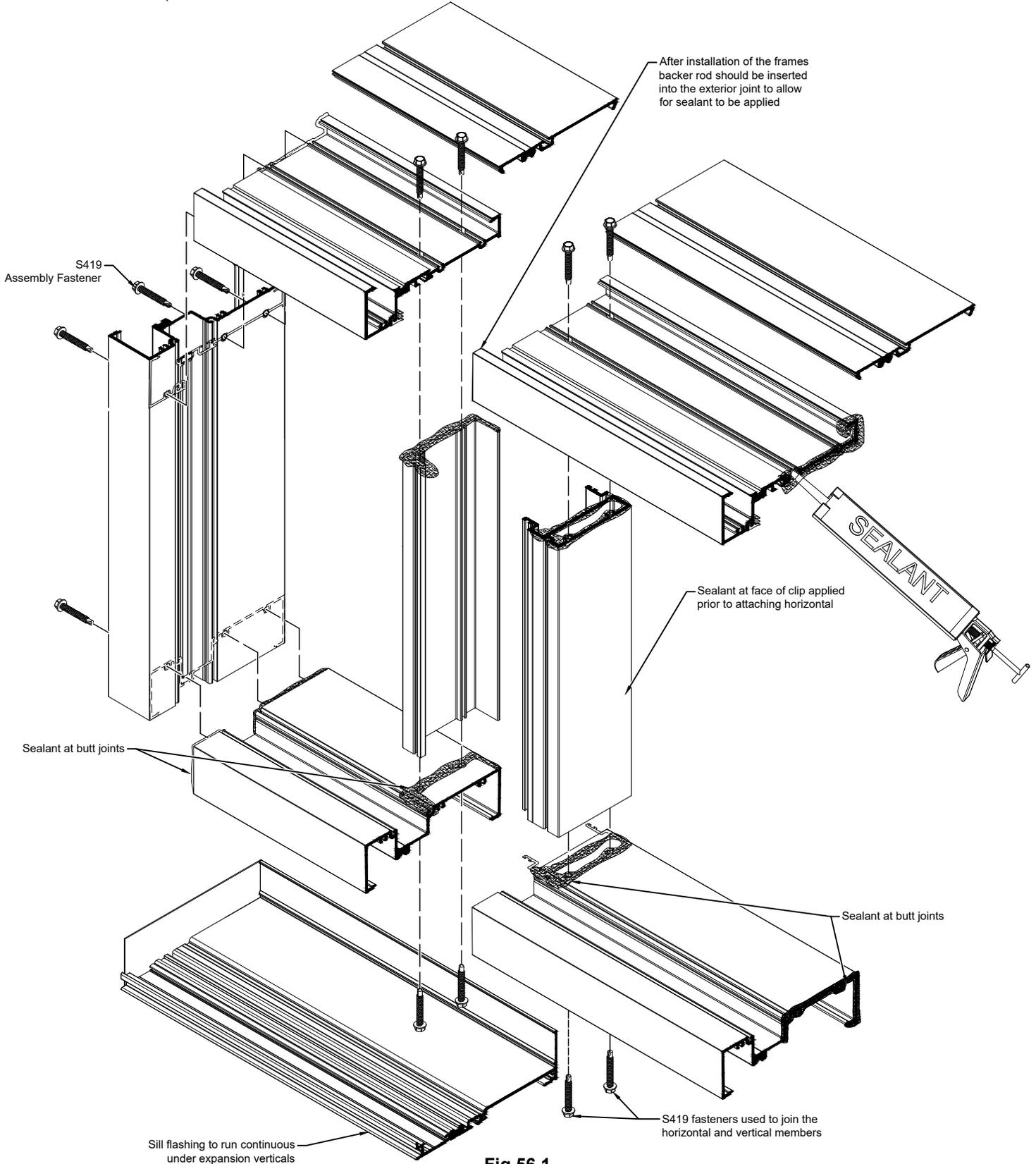


Fig.56.1