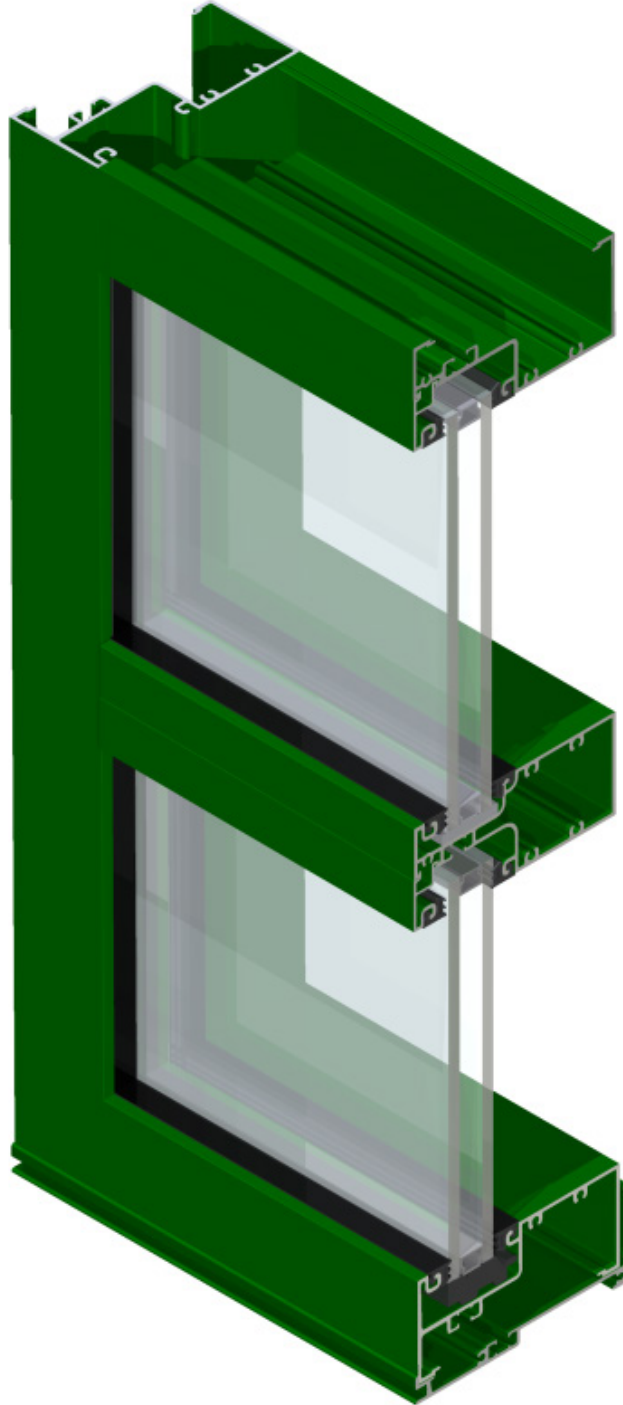


# TUBELITE®

## DEPENDABLE

LEADERS IN ECO-EFFICIENT STOREFRONT,  
CURTAINWALL AND ENTRANCE SYSTEMS



### 14000 I/O STOREFRONT

# INSTALLATION INSTRUCTIONS

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

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## THERMAL PERFORMANCE TIPS

Tubelite's thermal systems are designed to provide optimum thermal performance within the guidelines for which the product was designed. However, it is recommended to choose the best installation method of our framing systems and how they interact with the building surround to achieve optimal performance. A thorough review of shop drawings is recommended prior to installation.

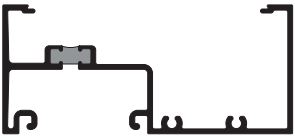
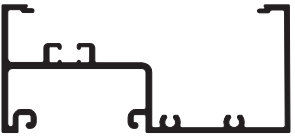

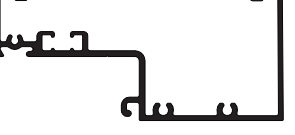

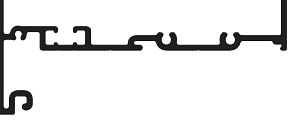

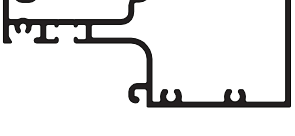

The following are among the more common installation practices that can increase the possibility of unwanted condensation forming on interior surfaces:

1. Bridging the thermal break designed into the framing system by a number of items such as metal flashing that is exposed to the exterior.
2. Excessively high interior relative humidity levels
3. Lack of proper air movement or 'washing' over the interior of the framing system.  
For example, the use of window blinds or drapes can limit air movement.
4. Improper separation of building components from the framing system around the perimeter of the frame
5. Incorrect product usage during the development of shop drawings

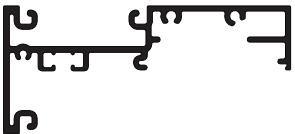
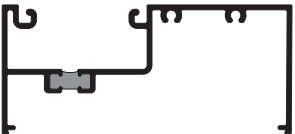
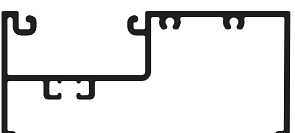
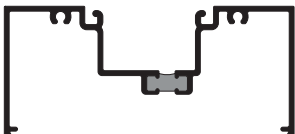
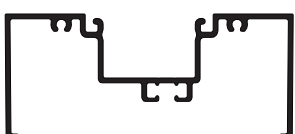
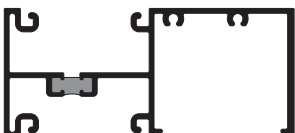
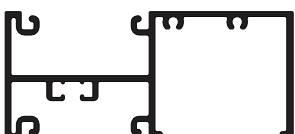
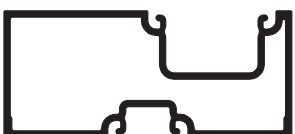

## GENERAL CONSTRUCTION NOTES

1. These instructions cover typical product application, fabrication, installation and standard conditions and are general in nature. They provide useful guidelines, but the final distribution drawings may include additional details specific to this 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 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, ceiling, mechanical ducts, convectors, 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.
8. Sealant selection is the responsibility and option 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. Sealant must be compatible with all materials with which they have contact, including other sealant surfaces. Consult sealant manufacturer for recommendations relative to shelf life, compatibility, cleaning of substrate, priming, tooling adhesion, etc.
10. Drainage gutters and weep holes must be kept clean at all times. Tubelite cannot accept responsibility for improper drainage as a result of clogged gutters and weep holes.
11. This product requires clearances at head, sill and jambs to allow for thermal expansion and contraction. Refer to final distribution drawings for joint sizes. Joints smaller than 1/4" may be subject to failure. Consult your sealant supplier for proper sizing and joint design.
12. All materials are to be installed plumb, level and true with regard to established bench marks and column center lines established by the general contractor and checked by the erector, installer and/or glazing contractor.
13. Cleaning of exposed aluminum surfaces should be done per AAMA recommendations.
14. 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.
15. Check our website, [www.tubeliteinc.com](http://www.tubeliteinc.com), for the latest installation manual prior to commencing work.


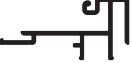
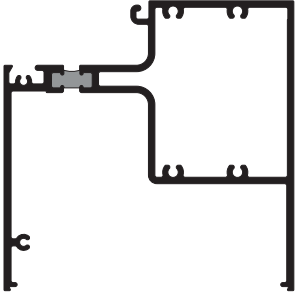
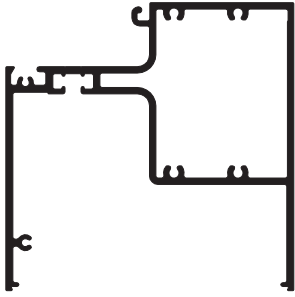
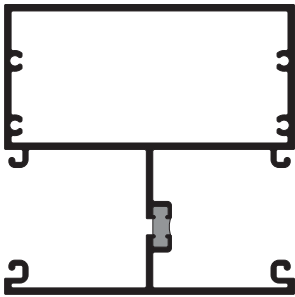
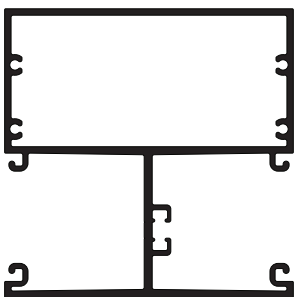
## EXTRUSIONS

SHAPE	DESCRIPTION	PART No.
	Head/Jamb/Sill	<b>T14301</b>
	Head/Jamb/Sill	<b>E14301</b>
	Head - Outside Glazed	<b>T14310</b>
	Head - Outside Glazed	<b>E14310</b>
	Head - Inside Glazed	<b>T14300</b>
	Head - Inside Glazed	<b>E14300</b>
	Intermediate Horizontal - Outside Glazed	<b>T14313</b>
	Intermediate Horizontal - Outside Glazed	<b>E14313</b>
	Intermediate Horizontal - Inside Glazed	<b>T14303</b>

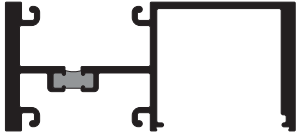
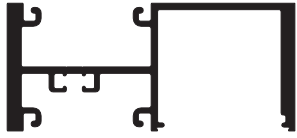
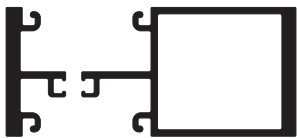
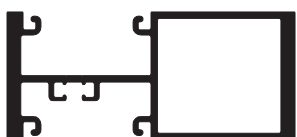
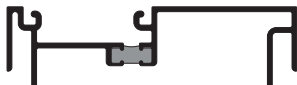



## EXTRUSIONS

SHAPE	DESCRIPTION	PART No.
	Intermediate Horizontal - Inside Glazed	E14303
	Intermediate Vertical	T14311
	Intermediate Vertical	E14311
	Intermediate Vertical - Center Glazed	T14321
	Intermediate Vertical - Center Glazed	E14321
	Intermediate Vertical	T14306
	Intermediate Vertical	E14306
	Door Jamb	E14341
	Door Jamb	E14305

## EXTRUSIONS

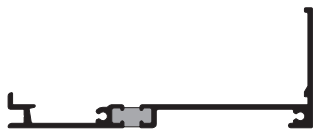

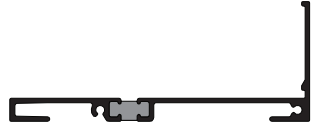
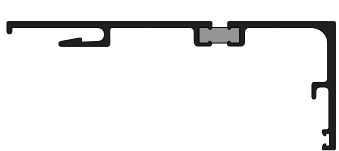


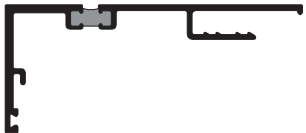


SHAPE	DESCRIPTION	PART No.
	Snap-in Transom Gutter - Header for 1" Glass or Panel	E14315
	Snap-in Transom Gutter - Jambs for 1" Glass or Panel	E14325
	4 1/2" x 4 1/2" Horizontal	T14347
	4 1/2" x 4 1/2" Horizontal	E14347
	4 1/2" x 4 1/2" Vertical	T14396
	4 1/2" x 4 1/2" Vertical	E14396

## EXTRUSIONS

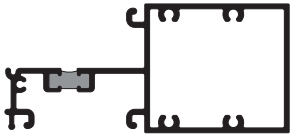
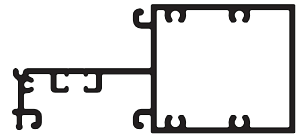

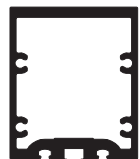
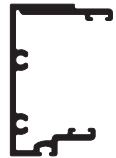
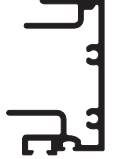
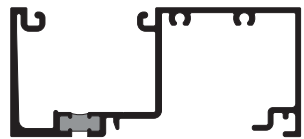
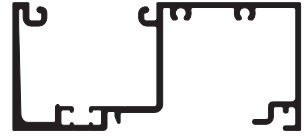

SHAPE	DESCRIPTION	PART No.
	Heavy Wall Vertical	<b>T14356</b>
	Heavy Wall Vertical	<b>E14356</b>
	Heavy Wall Tubular Vertical	<b>T14366</b>
	Heavy Wall Tubular Vertical	<b>E14366</b>
	Female Expansion Mullion	<b>T14346</b>
	Female Expansion Mullion	<b>E14346</b>
	Male Expansion Mullion	<b>T14336</b>
	Male Expansion Mullion	<b>E14336</b>



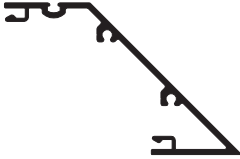
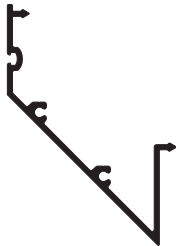
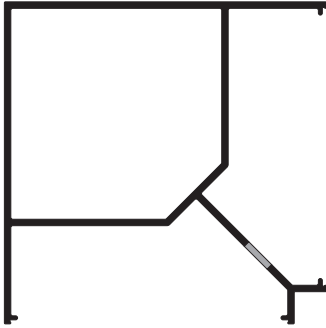
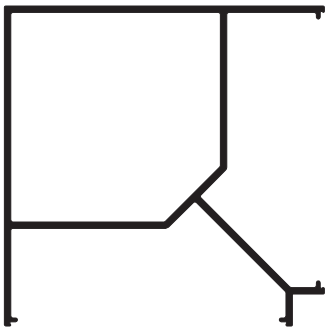
## EXTRUSIONS

SHAPE	DESCRIPTION	PART No.
	Extruded Sill Flashing	T14259
	Extruded Sill Flashing	E14059
	Extruded Sill Flashing	T14055
	Female Head Receptor	T14129
	Female Head Receptor	E14129
	Male Head Receptor	E14130
	Female Head Receptor	T14329
	Female Head Receptor	E14329
	Male Head Receptor	E14339

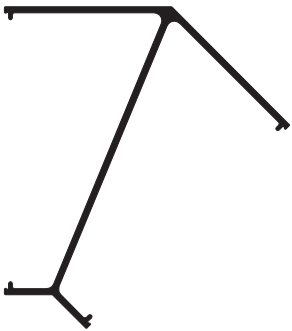


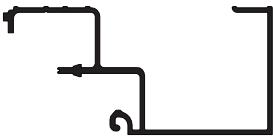

## EXTRUSIONS

SHAPE	DESCRIPTION	PART No.
	Intermediate Horizontal - Outside Glazed (SSG Intermediate Horizontal)	<b>T14323</b>
	Intermediate Horizontal - Outside Glazed (SSG Intermediate Horizontal)	<b>E14323</b>
	Glass Stop - Outside Glazed	<b>E14324</b>
	SSG Vertical	<b>E14326</b>
	Male Expansion SSG Mullion	<b>E14376</b>
	Female Expansion SSG Mullion	<b>E14386</b>
	SSG Sill - option	<b>T14340</b>
	SSG Sill - option	<b>E14340</b>
	Sill Runner	<b>E1360</b>












## EXTRUSIONS

SHAPE	DESCRIPTION	PART No.
	90 Degree Female SSG Corner	E14349
	90 Degree Male SSG Corner	E14348
	90 Degree Corner	T14309 (Thermally improved, not thermally broken)
	90 Degree Corner	E14309










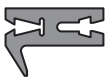






## EXTRUSIONS

SHAPE	DESCRIPTION	PART No.
	135 Degree Corner	<b>E14319</b>
	Glass Stop - Inside Glazed	<b>E14304</b>
	Glass Stop - Outside Glazed	<b>E14314</b>
	Perimeter for Curving - Back	<b>E14388</b>
	Perimeter for Curving - Face	<b>E14389</b>

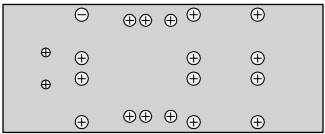
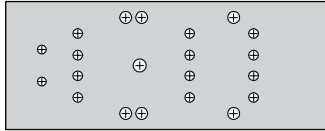



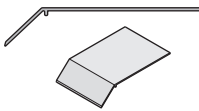
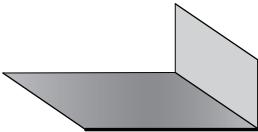



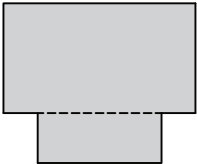
## EXTRUSIONS

SHAPE	DESCRIPTION	PART No.
	Flat Snap-in Aluminum Filler (Use at perimeter anchor locations)	E4543
	Vertical Filler	E14302
	Pocket Closure	T14312
	Pocket Closure	E14312
	Pocket Closure	T14342
	Pocket Closure	E14342
	Deep Pocket Closure	T14332
	Deep Pocket Closure	E14332
	Glazing Adapter for 1/2" Glass	E14061
	Glazing Adapter for 1/4" Glass	E14036
	Temporary Glazing Clip	P1108


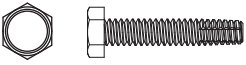


## ACCESSORIES

SHAPE	DESCRIPTION	PART No.
	Roll-in Glazing Gasket - 1" Glass	P2728
	Roll-in Glazing Gasket	P487
	Gasket for Undersized Glass - 1/8" & 7/8"	P2428
	Wiper Gasket	P1221
	Bulb Gasket	P2511
	SSG Glazing Gasket - Silicone Spacer	P2310
	Frame Clip Inside Head and Horizontal	P2402
	Frame Clip Outside Head and Sill	P2403
	Frame Clip Outside Horizontal	P2404
	Clip for Perimeter Curving Section	P1707
	SSG Sill Setting Chair	P2408
	4" Setting Block (Silicone)	P1131
	4" Setting Block (EPDM)	P1132
	Setting Block for 1" Glass	P946
	3/16" Setting Block (for horizontal)	P2400
	1" x 1/8" Diameter Roll Pin	P2401

## ACCESSORIES

SHAPE	DESCRIPTION	PART No.
	Drill Fixture Screw Spline	P2405
	Drill Fixture Shear Block	P2406
	Flat Snap-In Ridge PVC Filler (Optional filler for use between aluminum fillers as required)	P4543
	Rigid PVC Pocket Filler	P4563
	3" Long Weep Baffle	PTB42
	Water Diverter	P1135
	Sill Flashing Splice	P1144
	Sill Flashing Silicone Splice Sleeve	P3444
	End Dam for Sill Flashing	P2455
	SSG Water Dam (use with T/E14340 sill)	P2409
	SSG Water Diverter	P2407

## ACCESSORIES

SHAPE	DESCRIPTION	PART No.
	#10 X 1/2" Type B Phillips Pan Head (Horizontal to shear block fastener)	<b>S191</b>
	#10-24 X 1" Hex IND Type F Screw (Frame assembly screw at screw splines)	<b>S449</b>
	#10 X 1 3/4" Type F Phillips Pan Head (Shear block to vertical fastener)	<b>S009</b>
	#8 X 3/8" Type A Phillips Pan Head (End dam to sill flashing fastener)	<b>S196</b>



## QUICK REFERENCE CHECKLIST

1. Make sure the opening is square and the caulk joints are 1/4" minimum around the frame.  
Note: Frames that utilize the T14259 or E14059 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. Insure that interior seal is married to sill flashing interior leg.

## GLASS SIZE CALCULATION

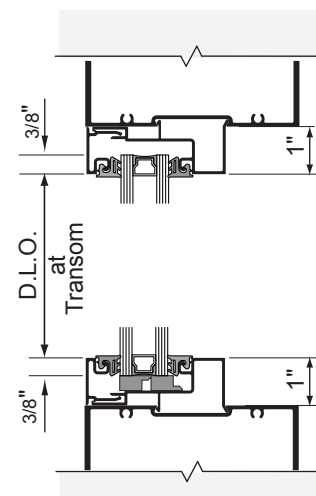
Width tolerance = + 0", - 1/16"

### Typical Framing:

Glass Width = D.L.O. plus 3/4"  
Glass Height = D.L.O. plus 3/4"

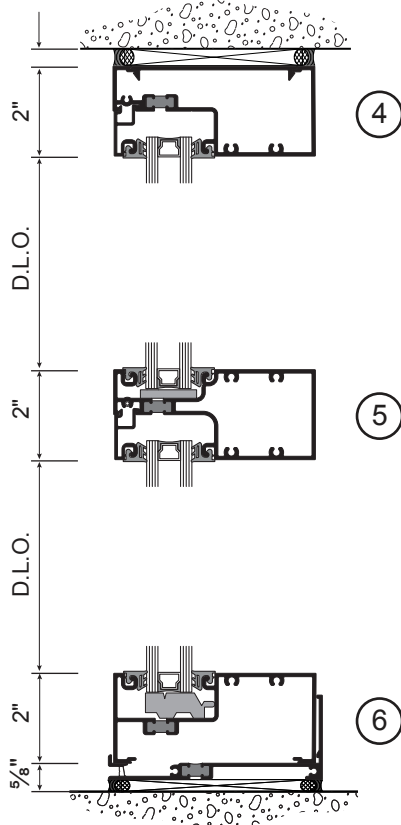
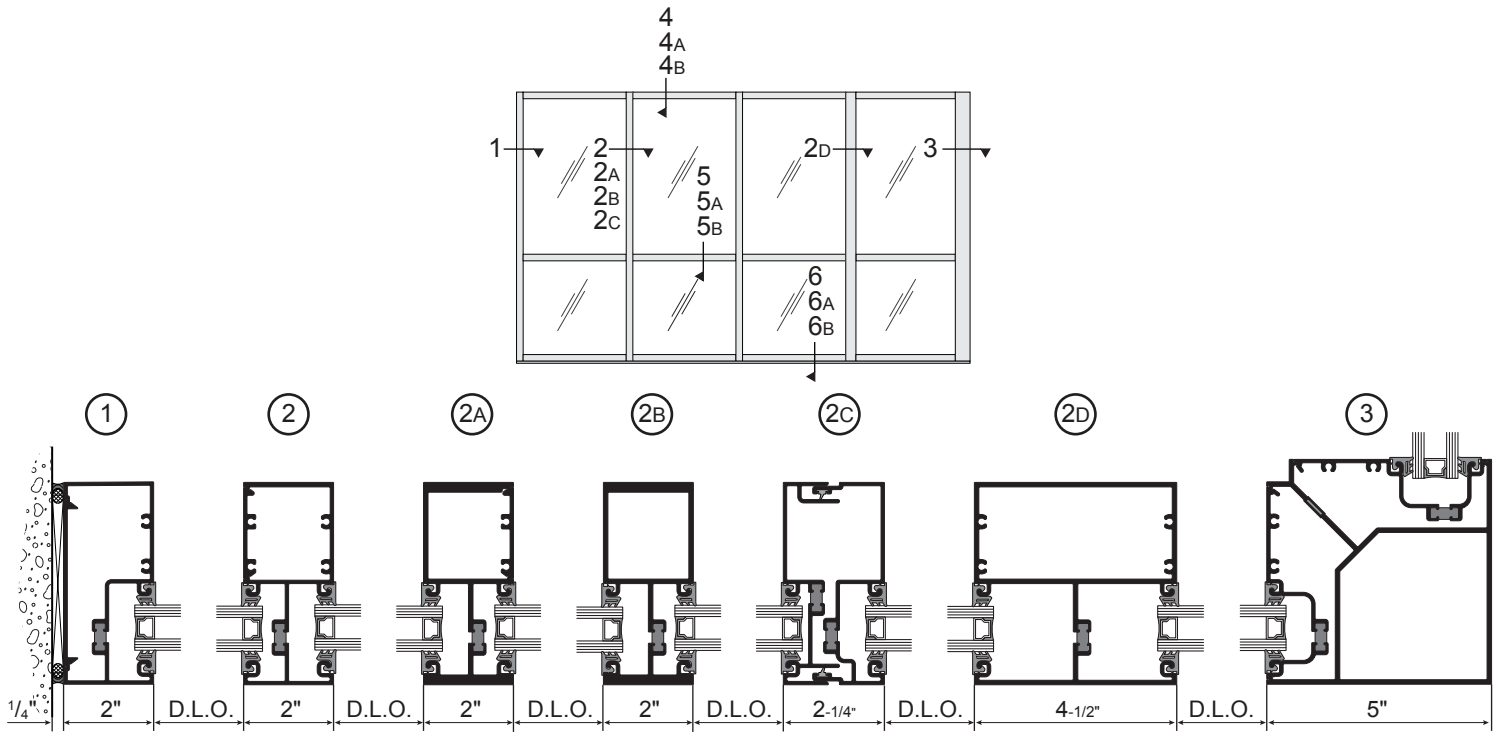
### Transoms with Sash:

Glass Width = D.L.O. plus 3/4"  
Glass Height = D.L.O. plus 3/4" (Ref. Fig.17.1)

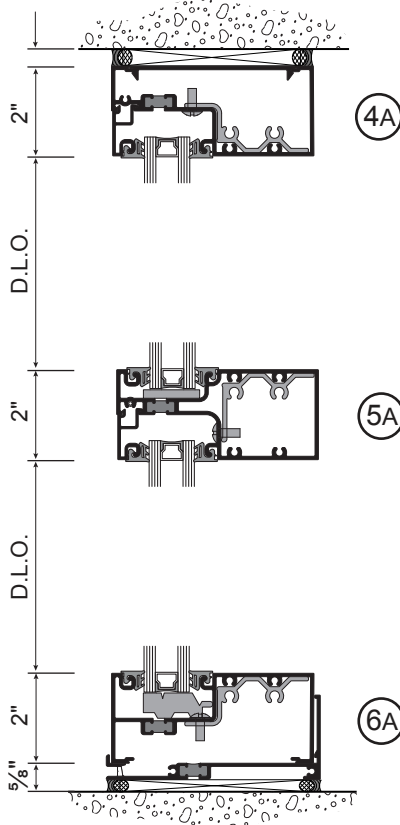


**Fig. 17.1**

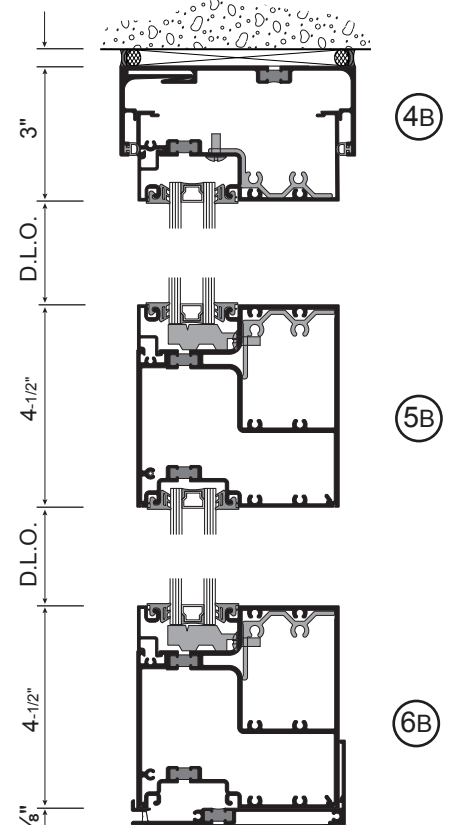
## TYPICAL ELEVATION WITH DETAILS OUTBOARD PLANE - OUTSIDE GLAZE



SCREW SPLINE  
 ASSEMBLY  
 OUTBOARD PLANE - OUTSIDE GLAZE

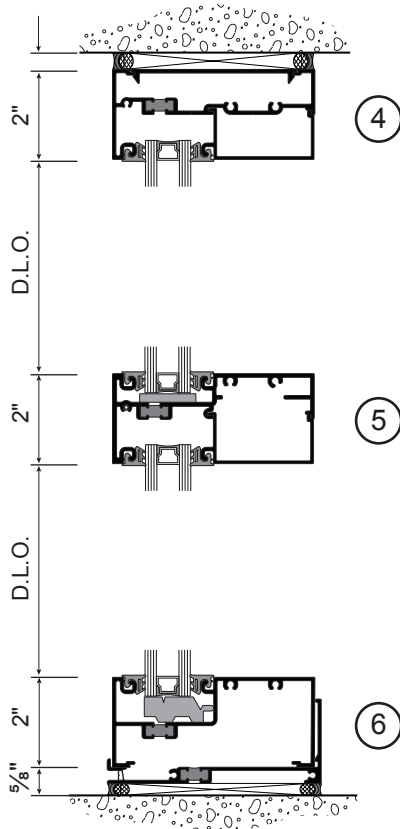
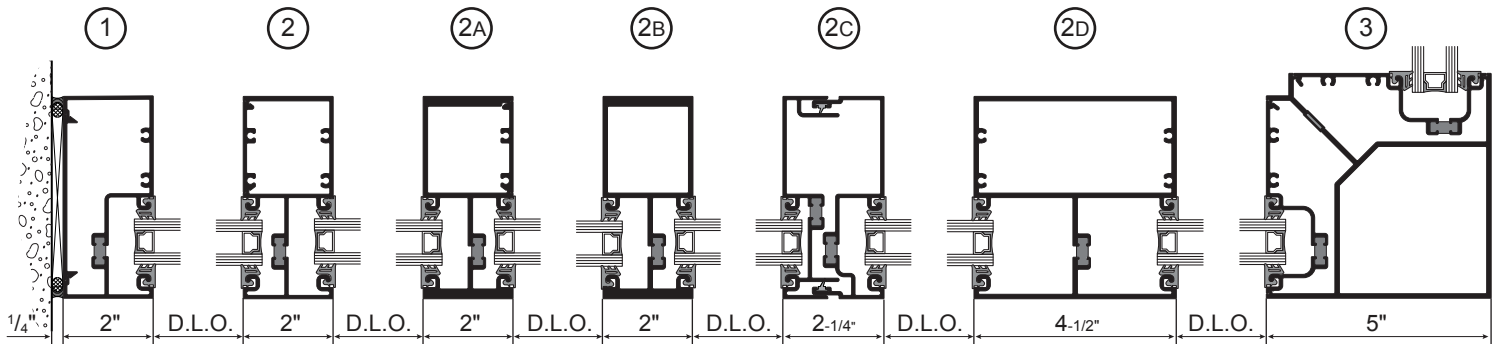
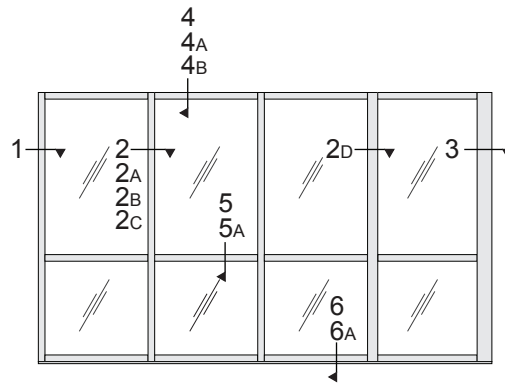


SHEAR CLIP  
 ASSEMBLY  
 OUTBOARD PLANE - OUTSIDE GLAZE



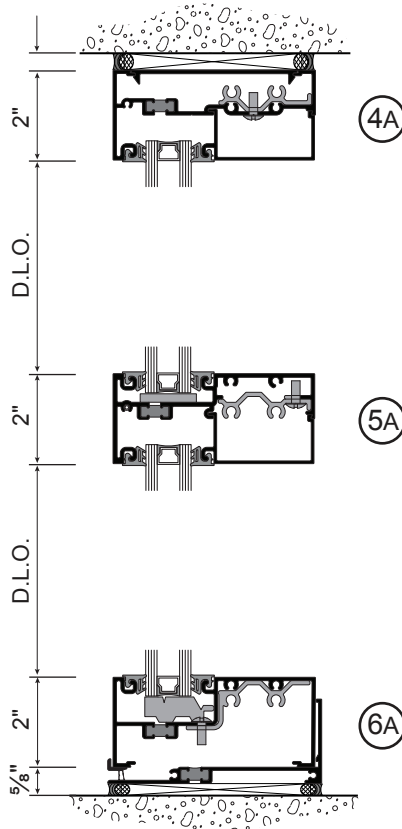
Shown with shear clips.  
 Screw spline assembly similar without clip.  
 OUTBOARD PLANE - OUTSIDE GLAZE

## TYPICAL ELEVATION WITH DETAILS OUTBOARD PLANE - INSIDE GLAZE



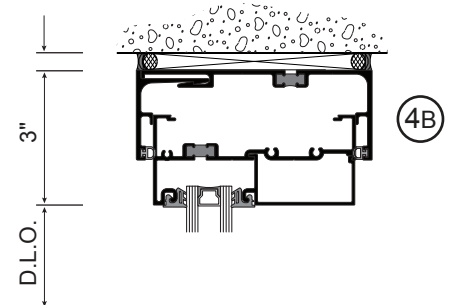
SCREW SPLINE  
ASSEMBLY

OUTBOARD PLANE - INSIDE GLAZE

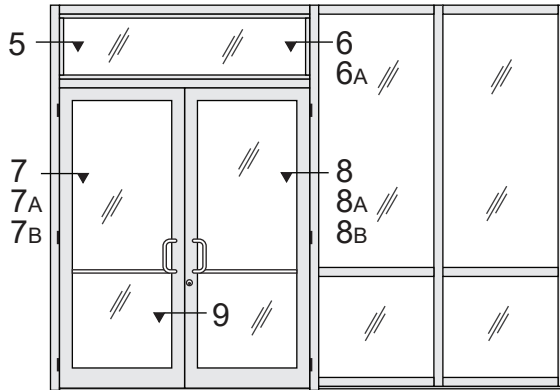


SHEAR CLIP  
ASSEMBLY

OUTBOARD PLANE - INSIDE GLAZE

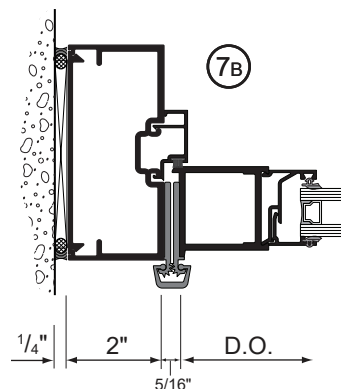
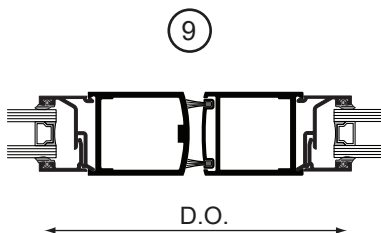
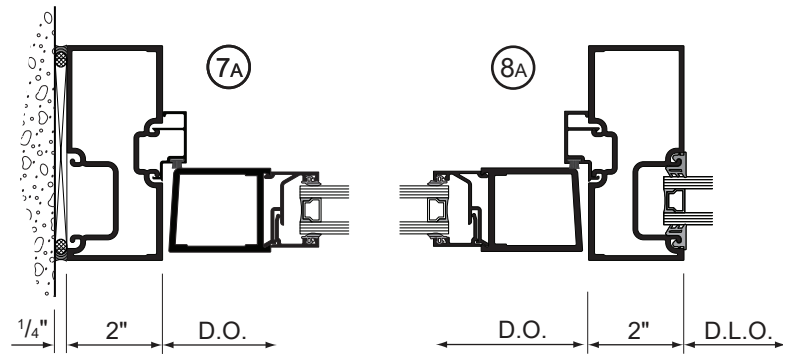
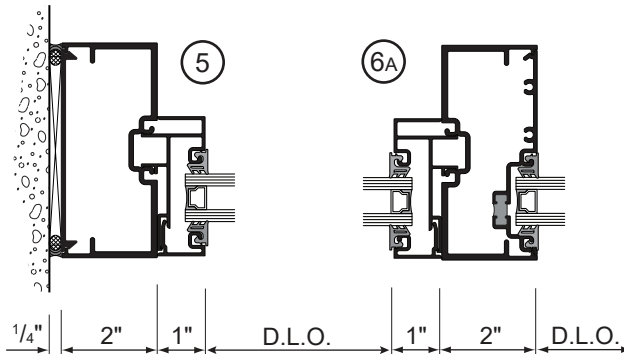
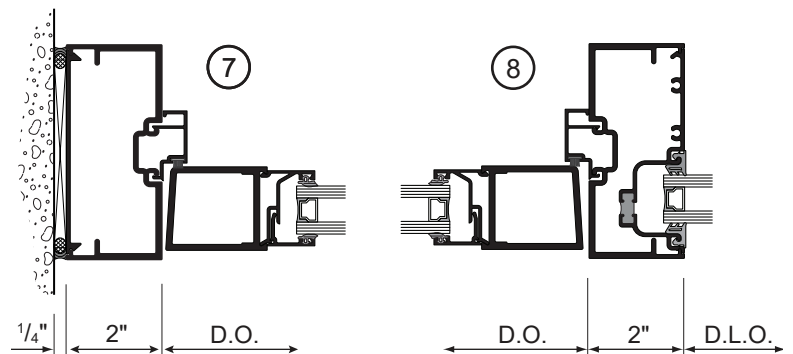
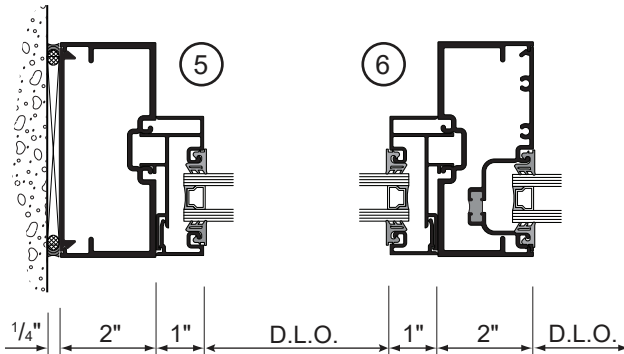


## DOOR FRAME ELEVATION WITH VERTICAL DETAILS - OUTBOARD PLANE

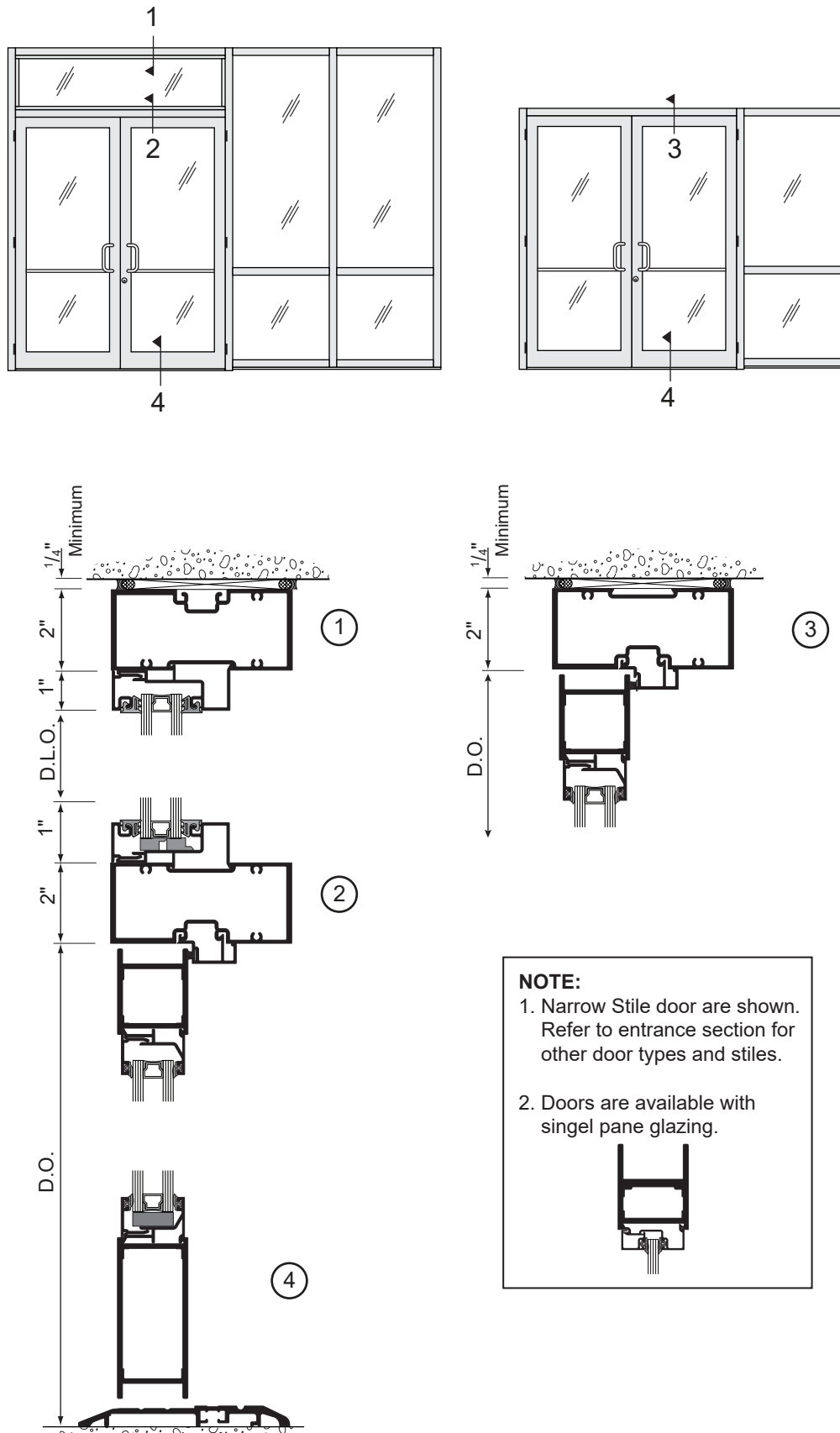


**NOTE:**

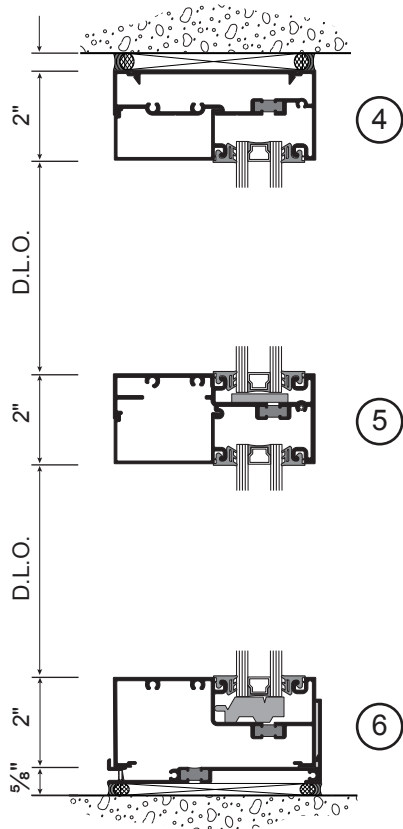
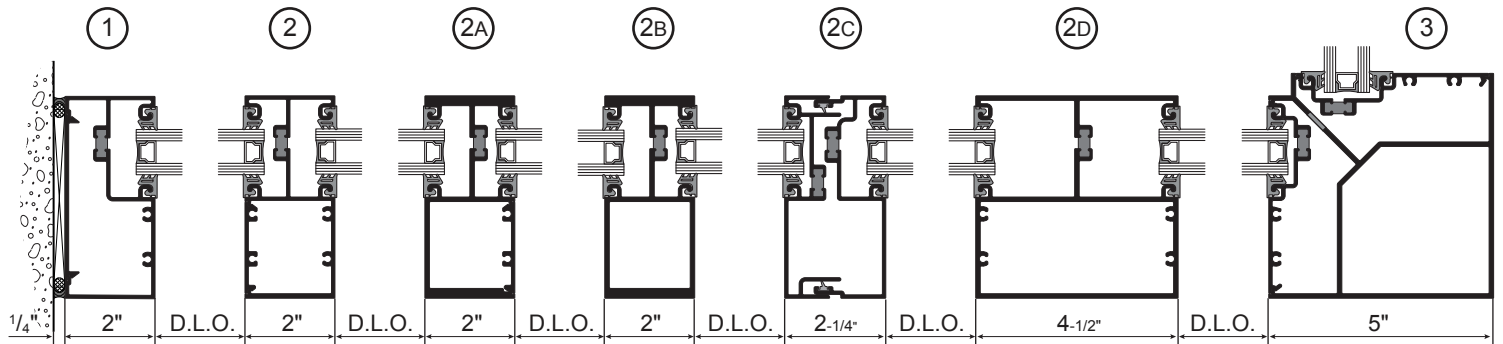
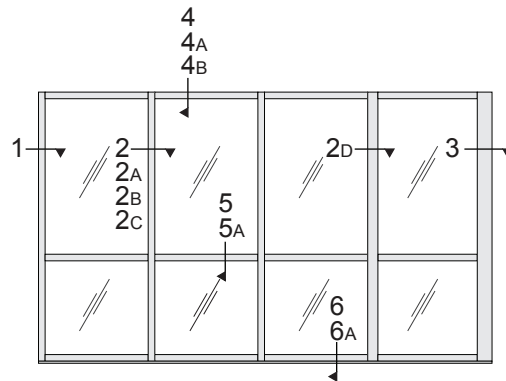
1. Narrow Stile door are shown. Refer to entrance section for other door types and stiles.
2. Doors are available with single pane glazing.



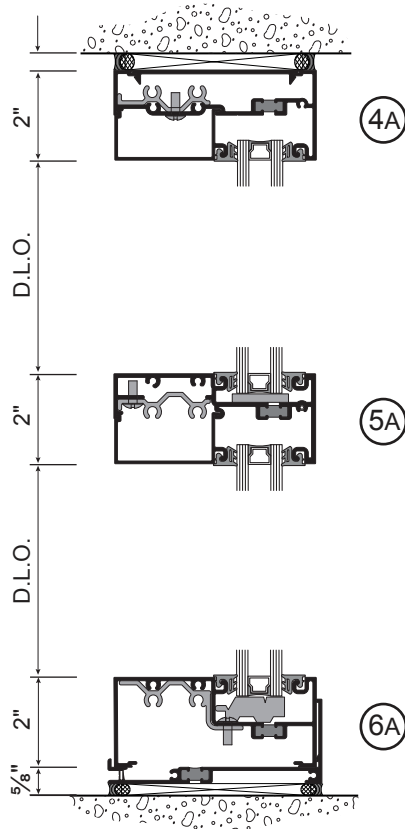
## DOOR FRAME ELEVATION WITH HORIZONTAL DETAILS - OUTBOARD PLANE



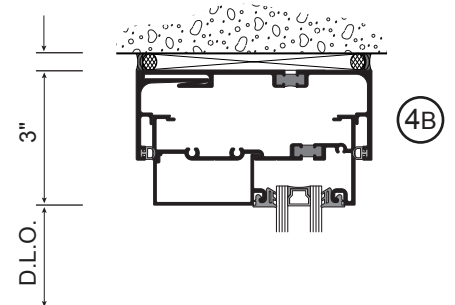
## TYPICAL ELEVATION WITH DETAILS INBOARD PLANE - OUTSIDE GLAZE



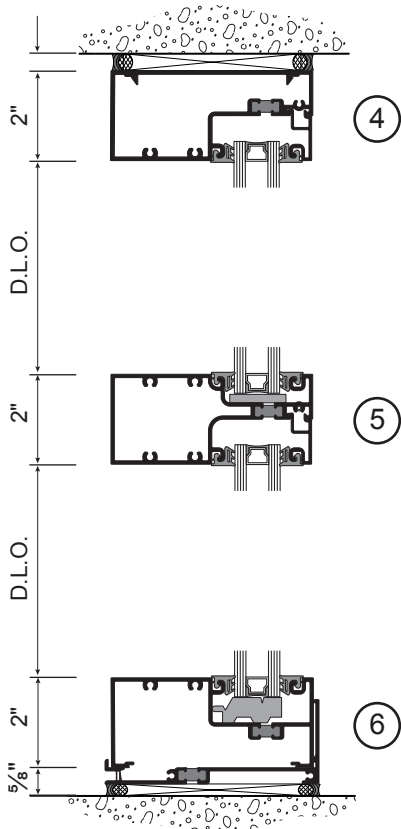
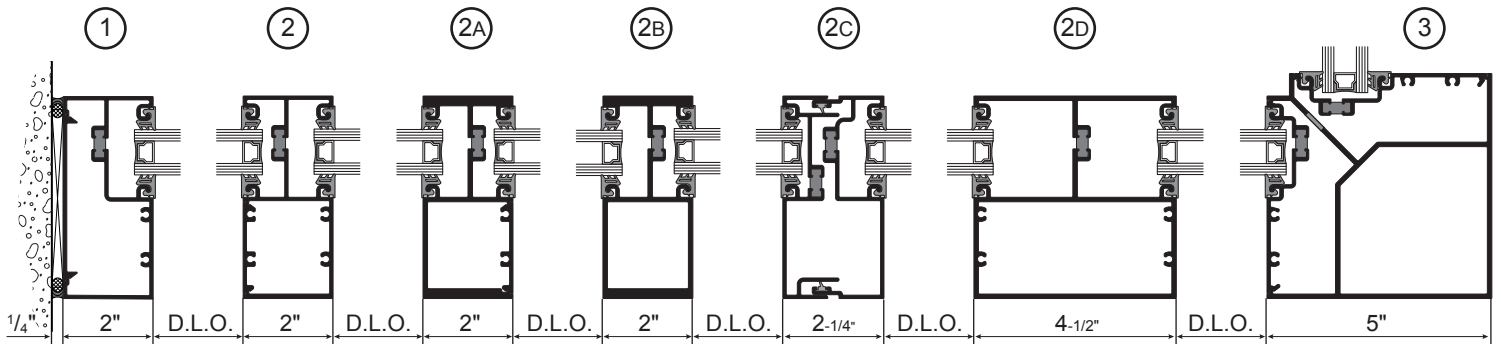
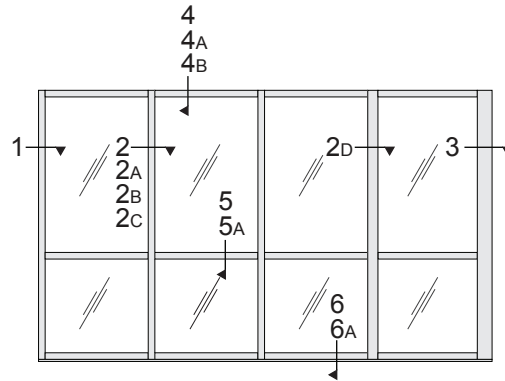
SCREW SPLINE  
 ASSEMBLY  
 INBOARD PLANE - OUTSIDE GLAZE



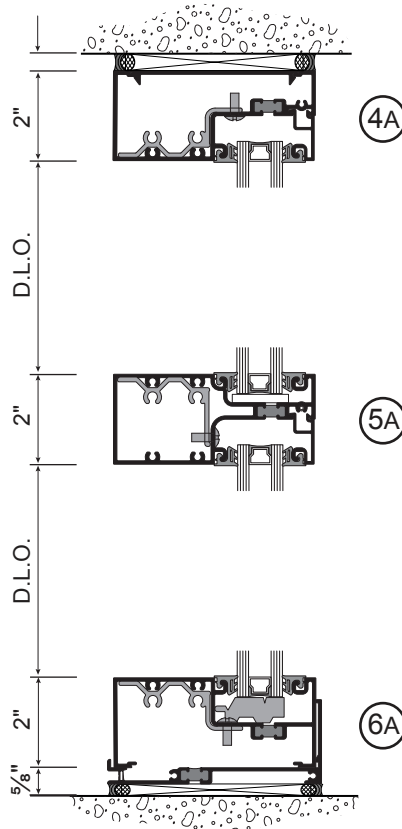
SHEAR CLIP  
 ASSEMBLY  
 INBOARD PLANE - OUTSIDE GLAZE



## TYPICAL ELEVATION WITH DETAILS INBOARD PLANE - INSIDE GLAZE



SCREW SPLINE  
 ASSEMBLY  
 INBOARD PLANE - INSIDE GLAZE



SHEAR CLIP  
 ASSEMBLY  
 INBOARD PLANE - INSIDE GLAZE

## 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

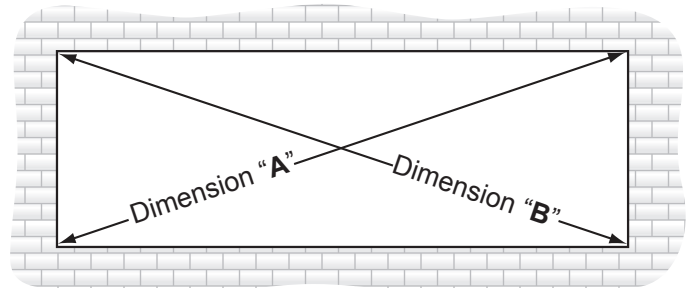
A. Make sure the opening is square and plumb. Measure each diagonal of the opening. Units must be installed in a true rectangle. See **Fig. 24.1**

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" minimum caulk joint at each jamb)  
See **Fig. 24.2**

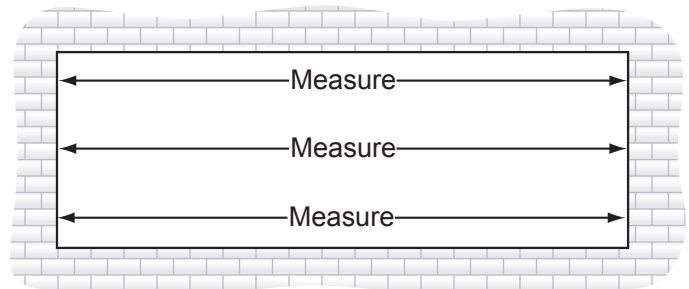
#### Frame Height

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 the top and bottom caulk joint height per approved shop drawings

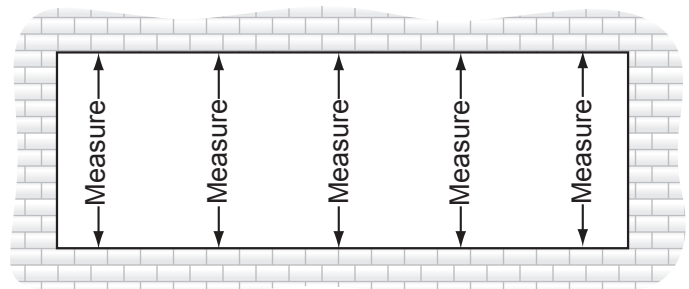
(1/4" minimum caulk joint at sill. At head, caulk joint can be 1/4" when using T14055 or similar flashing. When using T14259 or E14059 sill flashing, head caulk joint must be 3/8").  
See **Fig. 24.3**



**Fig. 24.1** Dimension "A" = "B"



**Fig. 24.2**



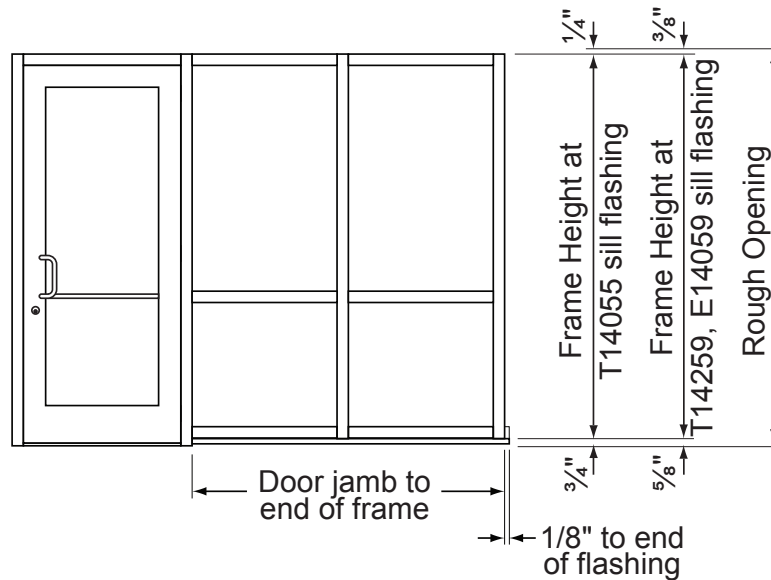
**Fig. 24.3**



## FRAME FABRICATION

### 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.



**Fig. 25.1**

### Framing Members:

Sill Flashing with Entrance (Door Jamb to end of frame see **Fig. 25.1**) = Frame width + 1/8"  
 Sill Flashing without Entrance = Frame width + 1/4"

#### **Sill Flashing Note:**

For openings wider than 24', the sill flashing must be spliced at the center line of a D.L.O. every 12 to 15 feet. Splice joint should be 3/8" wide. **See Step 10, Page 37 & 38** for sill flashing splice details.

Verticals	= See <b>Fig. 25.1</b>
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 <b>Fig. 25.1</b>
Horizontal Glazing Adaptors	= D.L.O. - 1/32"
Vertical Glazing Adaptors	= D.L.O. + 1/32"
Snap-In Fillers	= Refer to approved shop drawings

### Accessories:

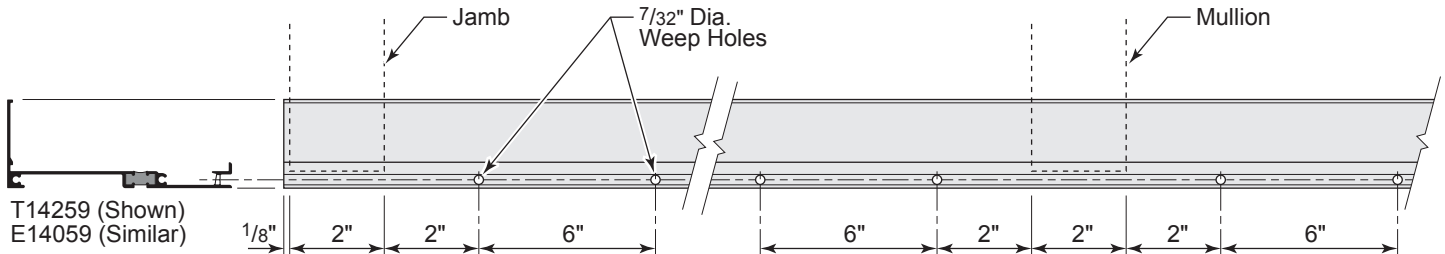
Exterior Gasket	= D.L.O. + Allowance*
Interior Gasket	= D.L.O. + Allowance*

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

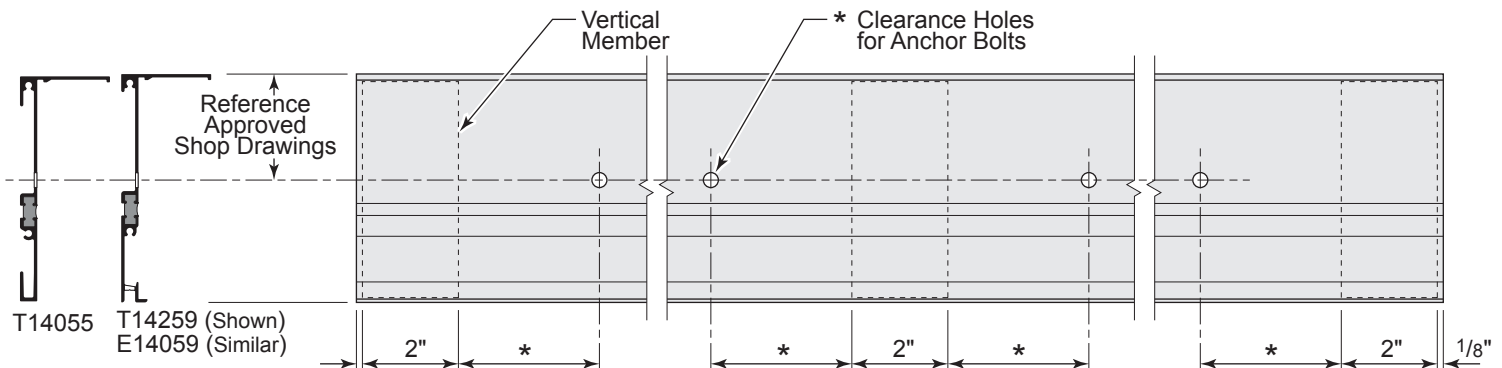
## FRAME FABRICATION

### Step 3: Fabricate Sill Flashing

- A. When using T14259 or E14059, drill two 7/32" dia. weep holes at 2" and 6" from each side of the verticals.  
See **Fig 26.1**
- B. Drill clearance holes for perimeter anchors. Size and quantity vary per job. Refer to approved shop drawings.  
See **Fig 26.2** Note: If head receptors are used, follow the same procedure as on the sill flashing.
- C. Optional: Install a weep baffle (PTB42) in the gutter of sill flashing behind each weep hole. See **Fig 26.3**



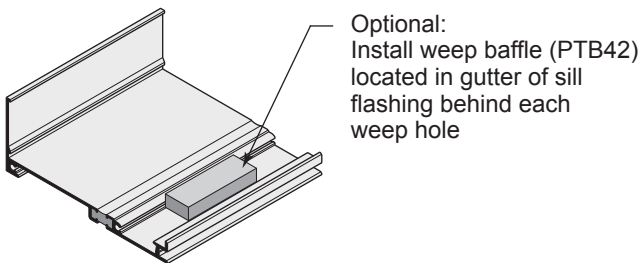
**Fig. 26.1**



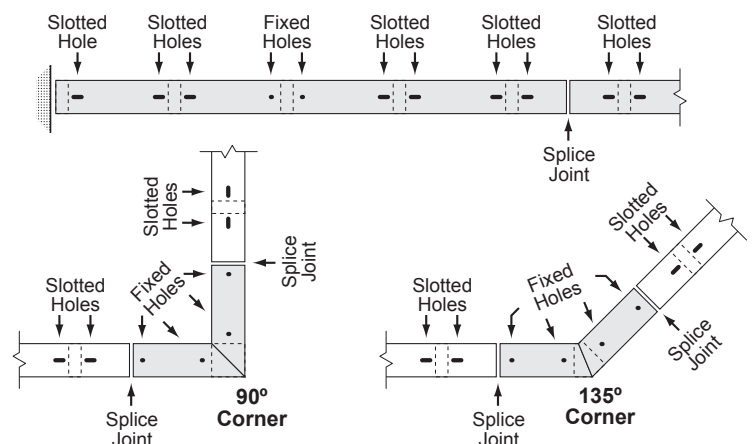
**NOTE:**  
DLO's larger than 42" require an additional anchor hole at mid-point of bay.

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

**Fig. 26.2**



**Fig. 26.3**



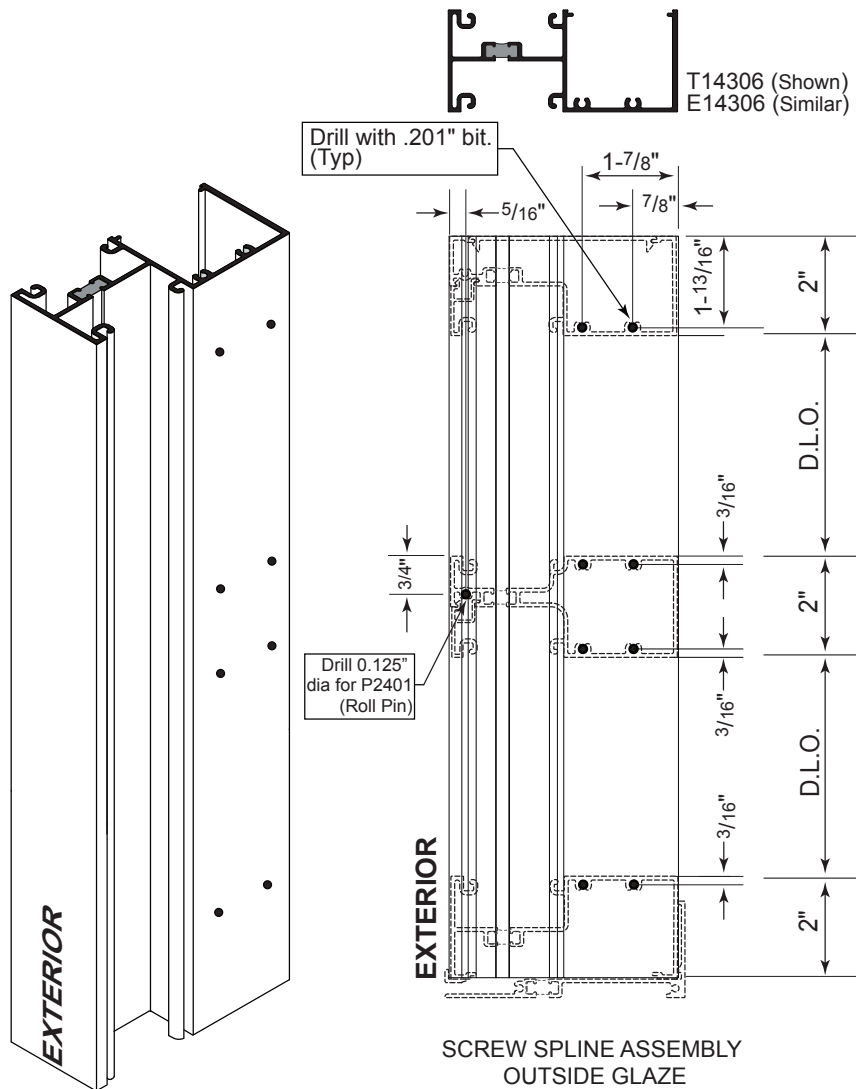
**Typical Sill Flashing Anchor Hole Patterns (Head channel similar)**  
(Refer to approved shop drawings for project requirements)

**Fig. 26.4**

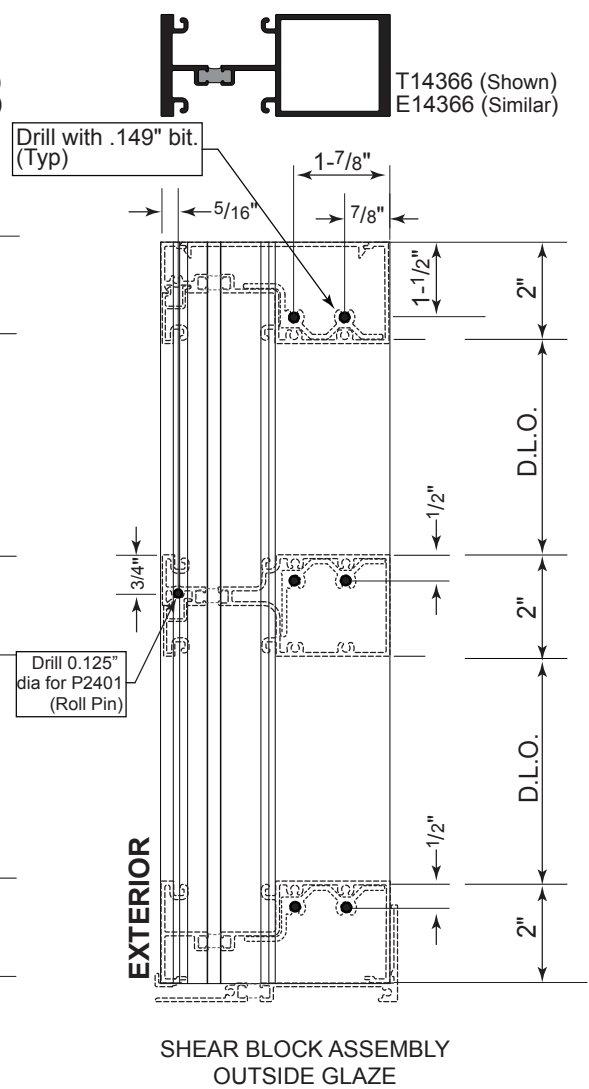
## FRAME FABRICATION VERTICALS OUTBOARD PLANE - OUTSIDE GLAZE

### Step 4: Fabricate Verticals Framing Members

- A. Drill frame assembly holes in verticals, jambs & closure pockets with drill fixture. See **Fig. 27.1** & **Fig. 27.2**
- For screw spline assembly, use drill guide P2405.
  - For shear block assembly, use drill guide P2406.
- B. Per approved shop drawings, drill hole to accommodate for P2401 Roll Pin. See **Fig. 27.1** & **Fig. 27.2**



**Fig. 27.1**

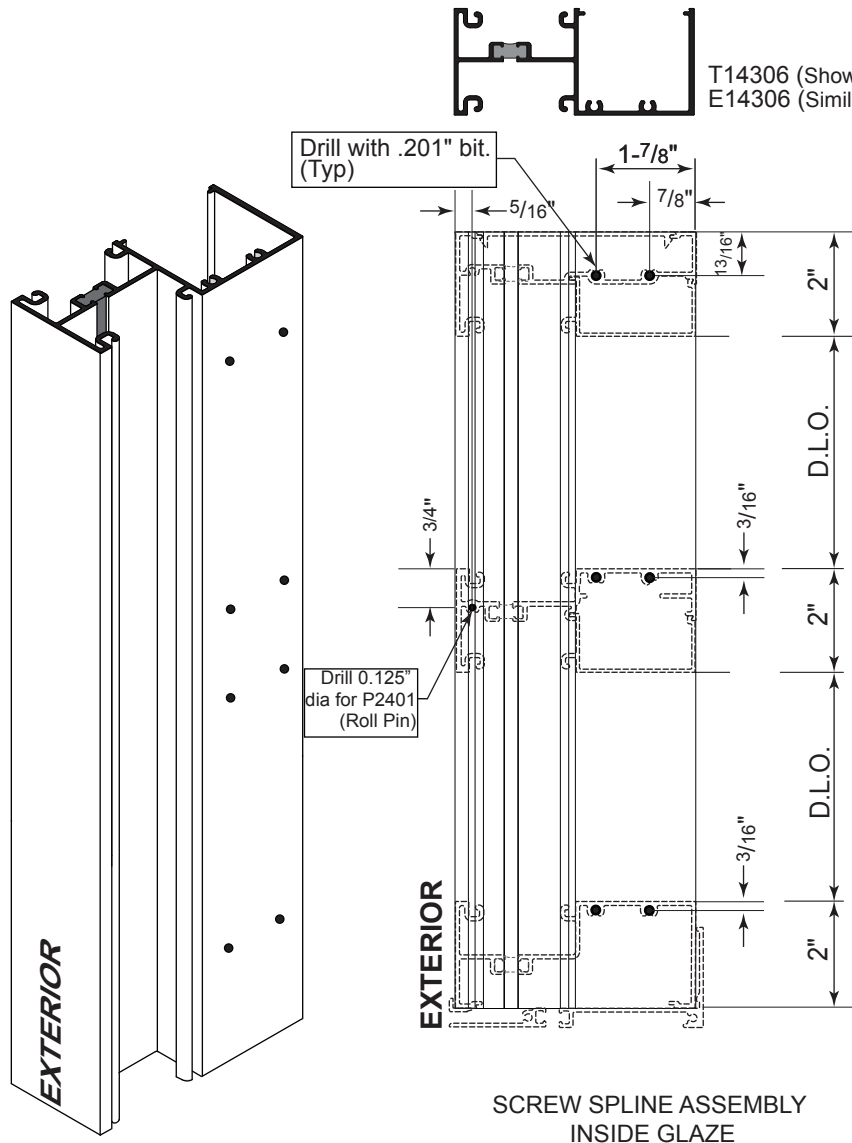


**Fig. 27.2**

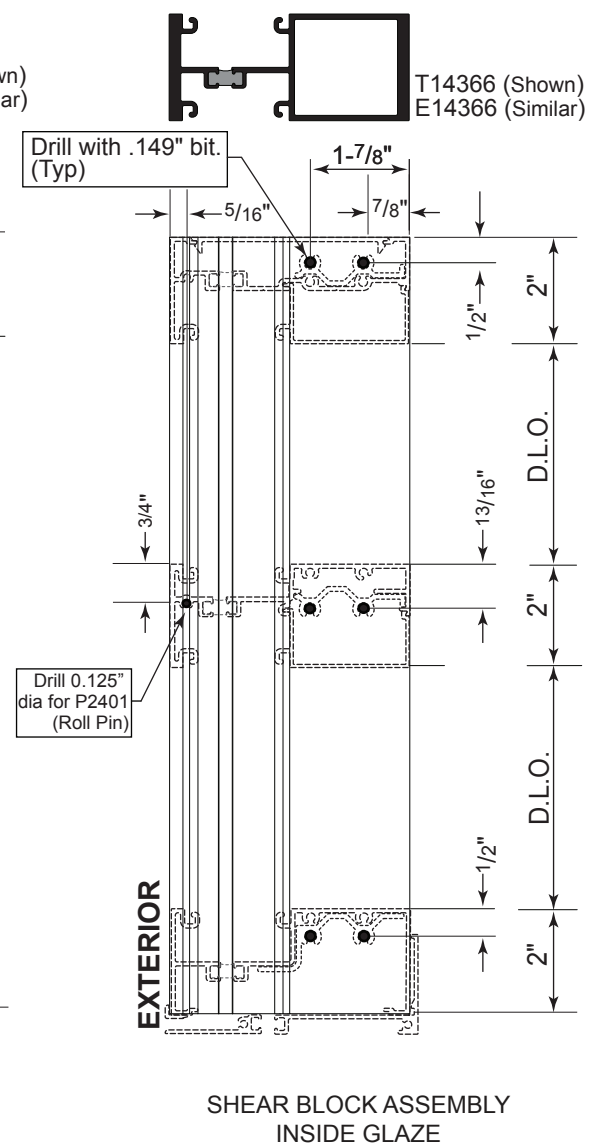
## FRAME FABRICATION VERTICALS OUTBOARD PLANE - INSIDE GLAZE

### Step 4: Fabricate Verticals Framing Members (Continued)

- A. Drill frame assembly holes in verticals, jambs & closure pockets with drill fixture. See **Fig. 28.1** & **Fig. 28.2**
- For screw spline assembly, use drill guide P2405.
  - For shear block assembly, use drill guide P2406.
- B. Per approved shop drawings, drill hole to accommodate for P2401 Roll Pin. See **Fig. 28.1** & **Fig. 28.2**



**Fig. 28.1**

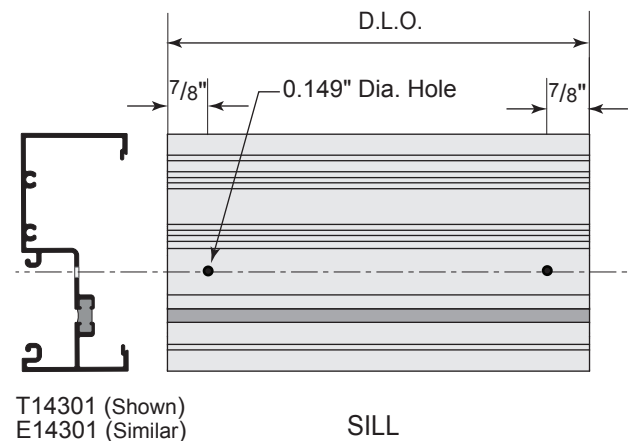
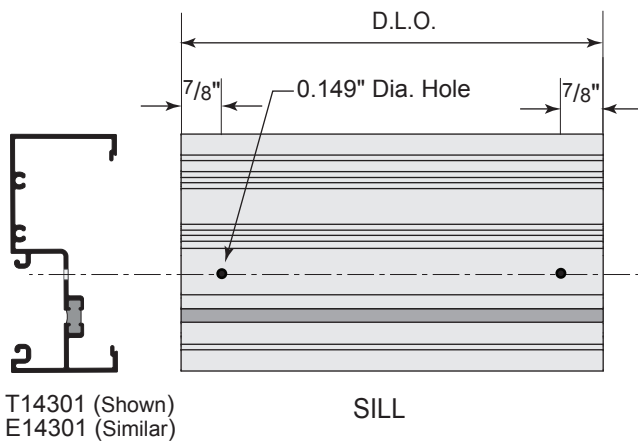
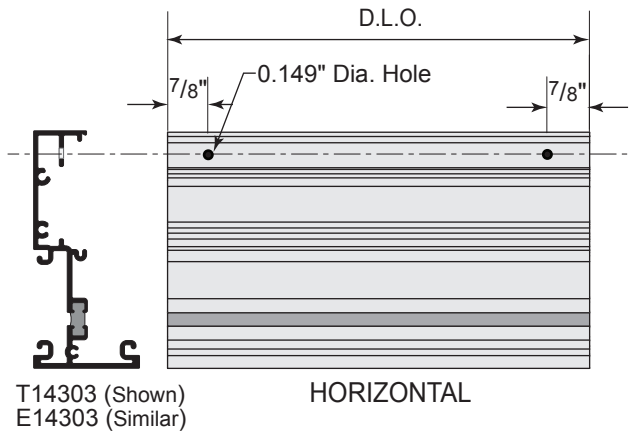
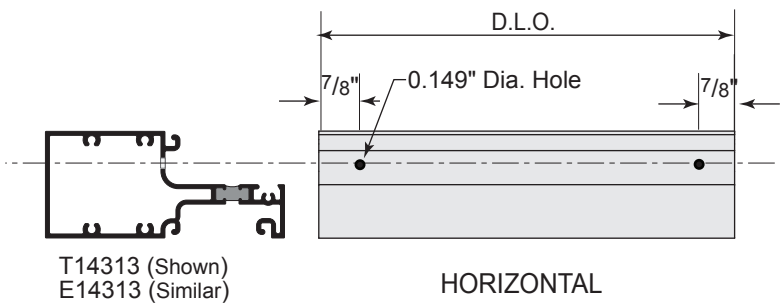
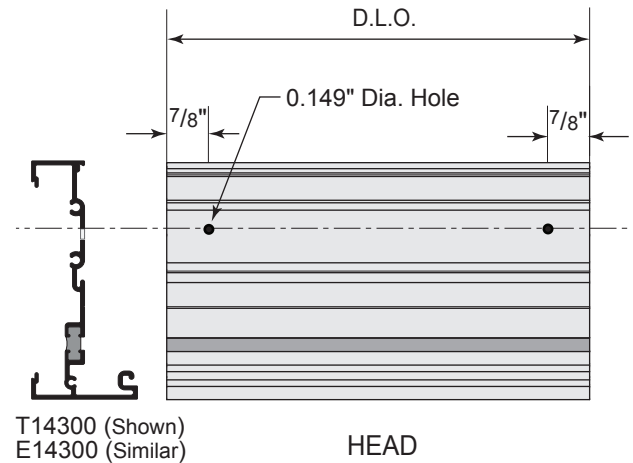
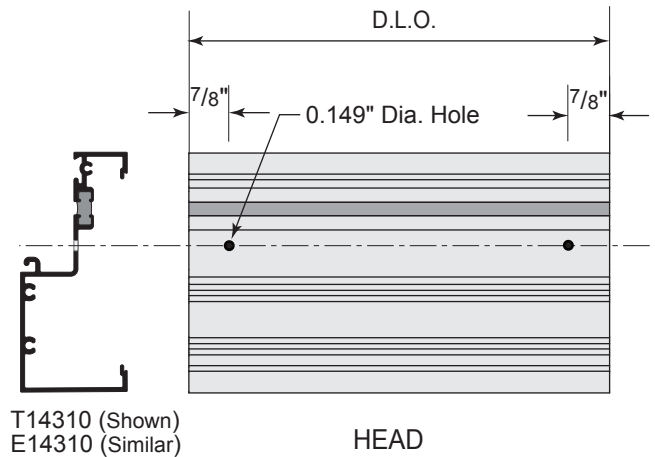


**Fig. 28.2**

## FRAME FABRICATION - HORIZONTALS

### Step 5: Fabricate Horizontal Members for Shear Blocks

A. For shear block assembly, drill .201" dia holes in the head, horizontal and sill members as shown in **Fig. 29.1** & **Fig. 29.2**



SHEAR BLOCK ASSEMBLY  
**OUTSIDE SET**  
**Fig. 29.1**

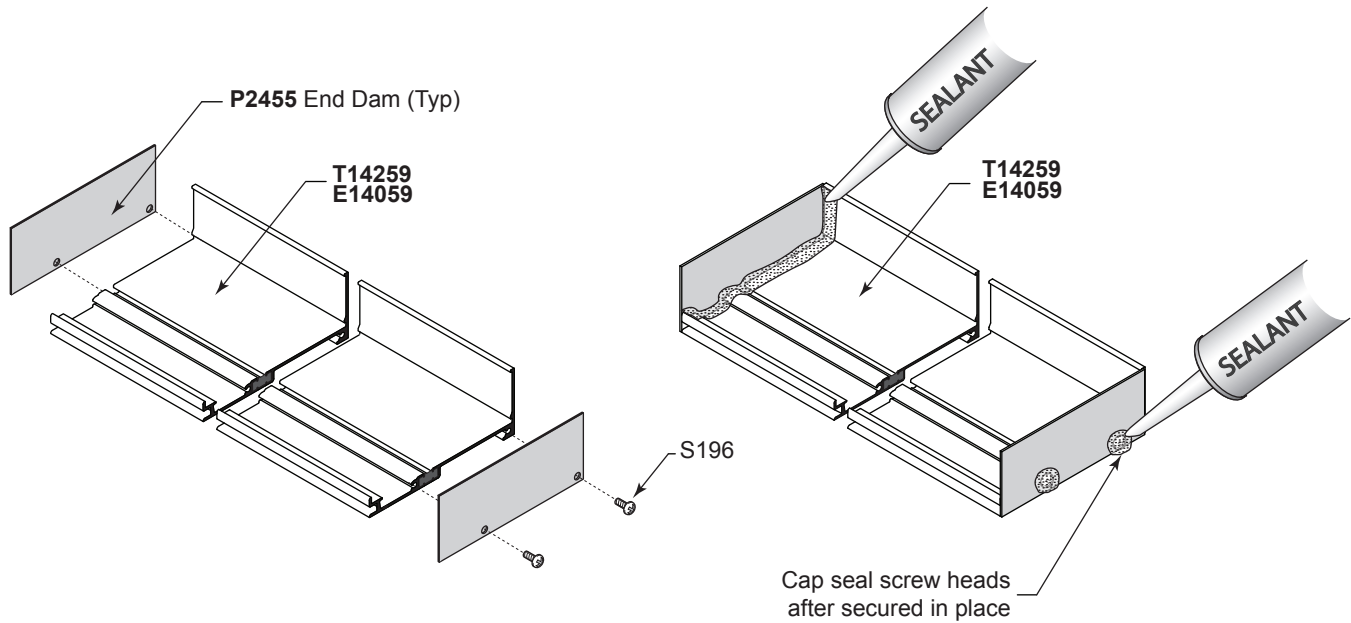
SHEAR BLOCK ASSEMBLY  
**INSIDE SET**  
**Fig. 29.2**

## FRAME ASSEMBLY

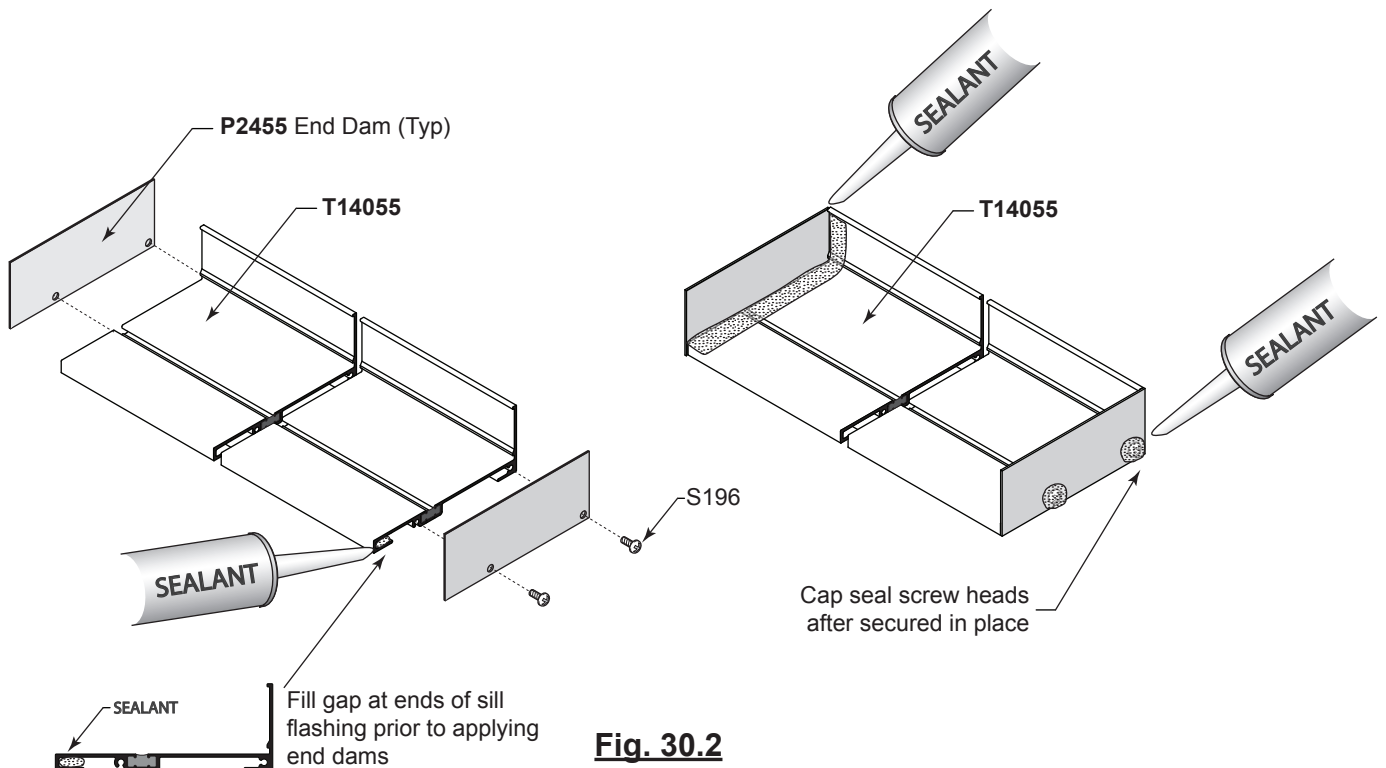
### Step 6: Install Sill Flashing End Dams

- A. Install P2455 end dam at each end of sill flashing with (2) S196 #8 x  $\frac{3}{8}$ " PH screws. Seal end dam and cap seal fastener heads. Set aside and allow sealant to cure. For T14259 flashing see [Fig. 30.1](#). For T14055 flashing see [Fig 30.2](#)

**NOTE:** If sill flashing is spliced, install end dams on jamb-end only. Refer to **Step 10, page 37-38** for splicing instructions.



**Fig. 30.1**



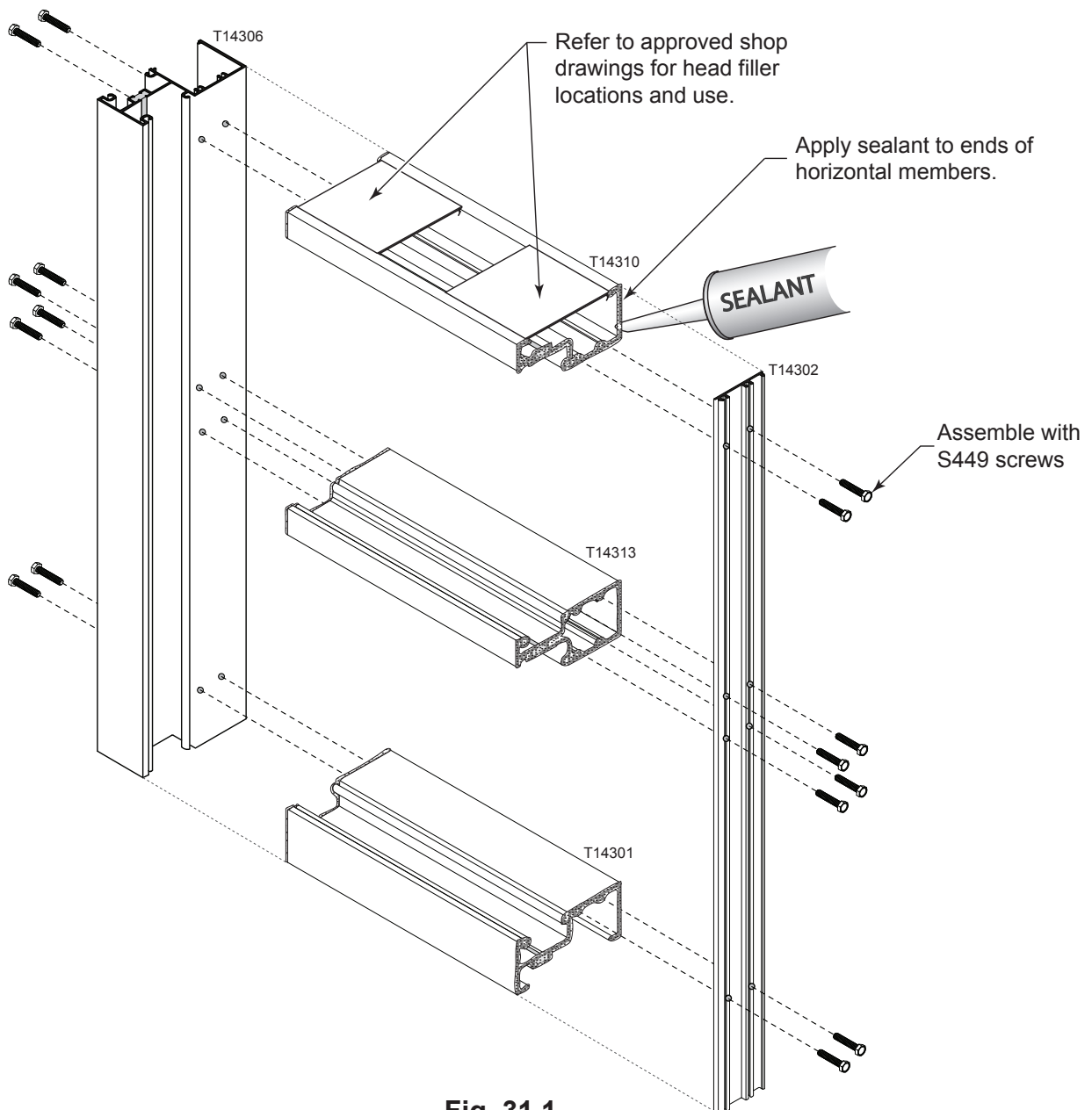
**Fig. 30.2**

## FRAME ASSEMBLY

### Step 7: Assemble Frames

#### Screw Spline Assembly - Outboard Plane - Outside Glaze

- 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. 31.1**
- C. Attach head, horizontal, and sill members to the vertical and vertical filler members with S449 #10-24 x 1" HEX IND Type F frame assembly screw.
- D. Tool sealant at each joint.



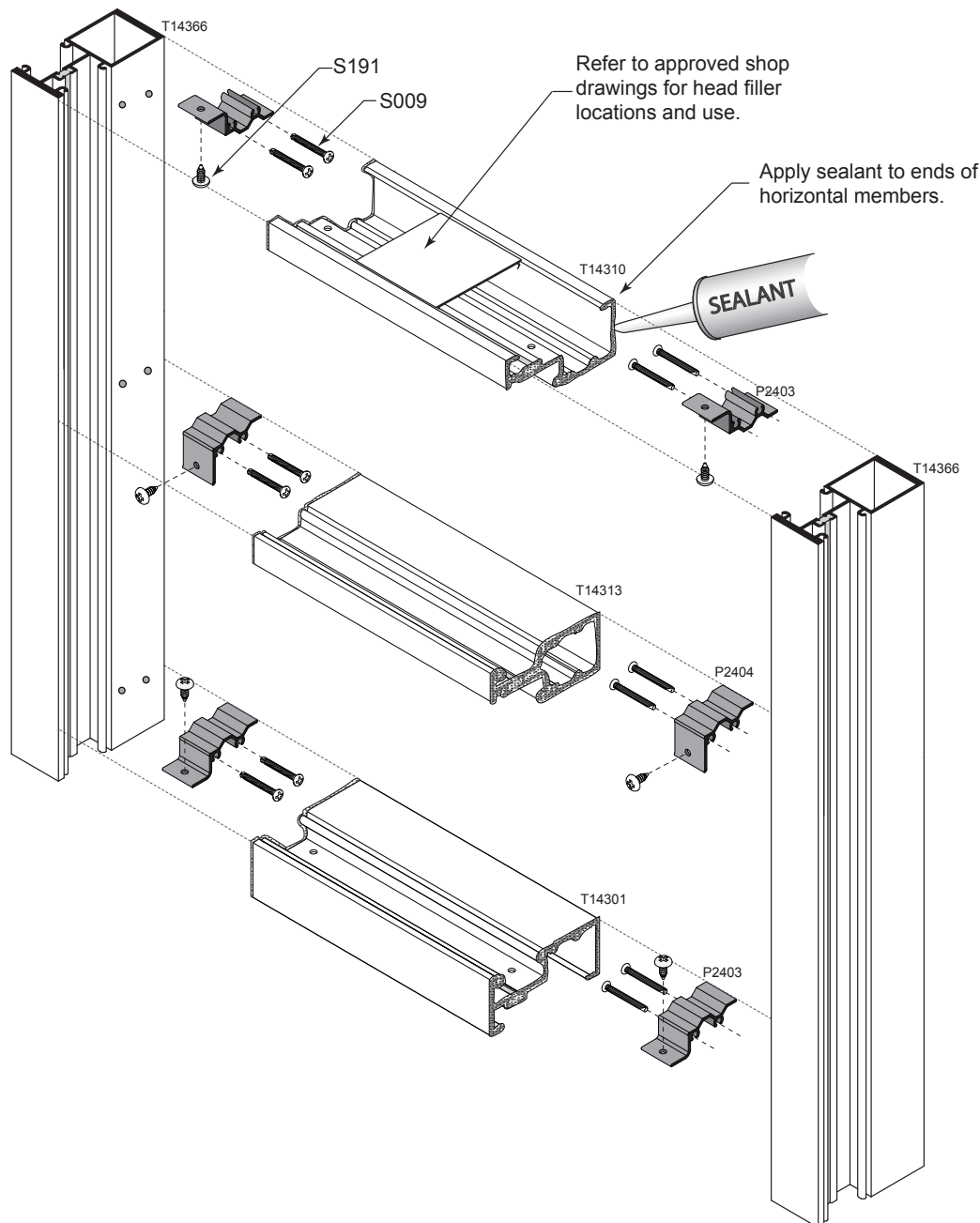
**Fig. 31.1**

## FRAME ASSEMBLY

### Step 7: Assemble Frames (Continued)

#### Shear Block Assembly - Outboard Plane - Outside Glaze

- A. Install shear blocks onto verticals with S009 #10 x 1 3/4" PH screw as shown in **Fig. 32.1**.
- B. Clean all mating surfaces on horizontal, vertical, and shear block.
- C. Apply sealant to ends of the head, horizontal, and sill members and to perimeter of shear blocks prior to attaching the horizontal members to the vertical members.
- D. Slide head, horizontal, and sill members over the shear blocks.
- F. Match drill tap holes in head, horizontal, and sill shear blocks with drill for #10 screw.
- G. Secure head, horizontal, and sill members with (1) S191 #10 x 1/2" truss head screw. See **Fig. 32.1**.
- H. Cap seal heads of screws at horizontal and sill members.



**Fig. 32.1**

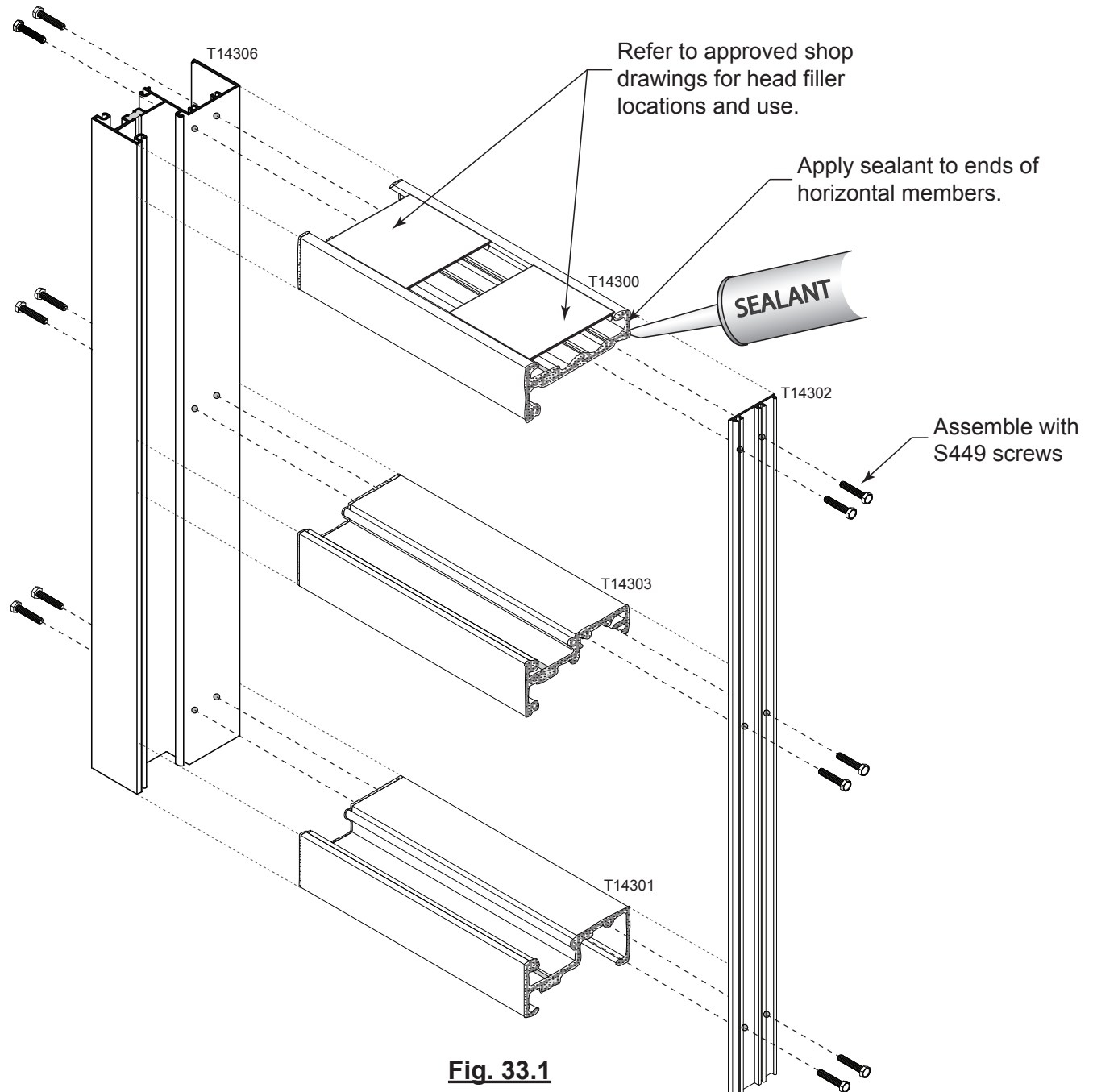


## FRAME ASSEMBLY

### Step 7: Assemble Frames

#### Screw Spline Assembly - Outboard Plane - Inside Glaze

- 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 vertical filler members with S449 #10- 24 x 1" HEX IND Type F frame assembly screw.
- D. Tool sealant at each joint.



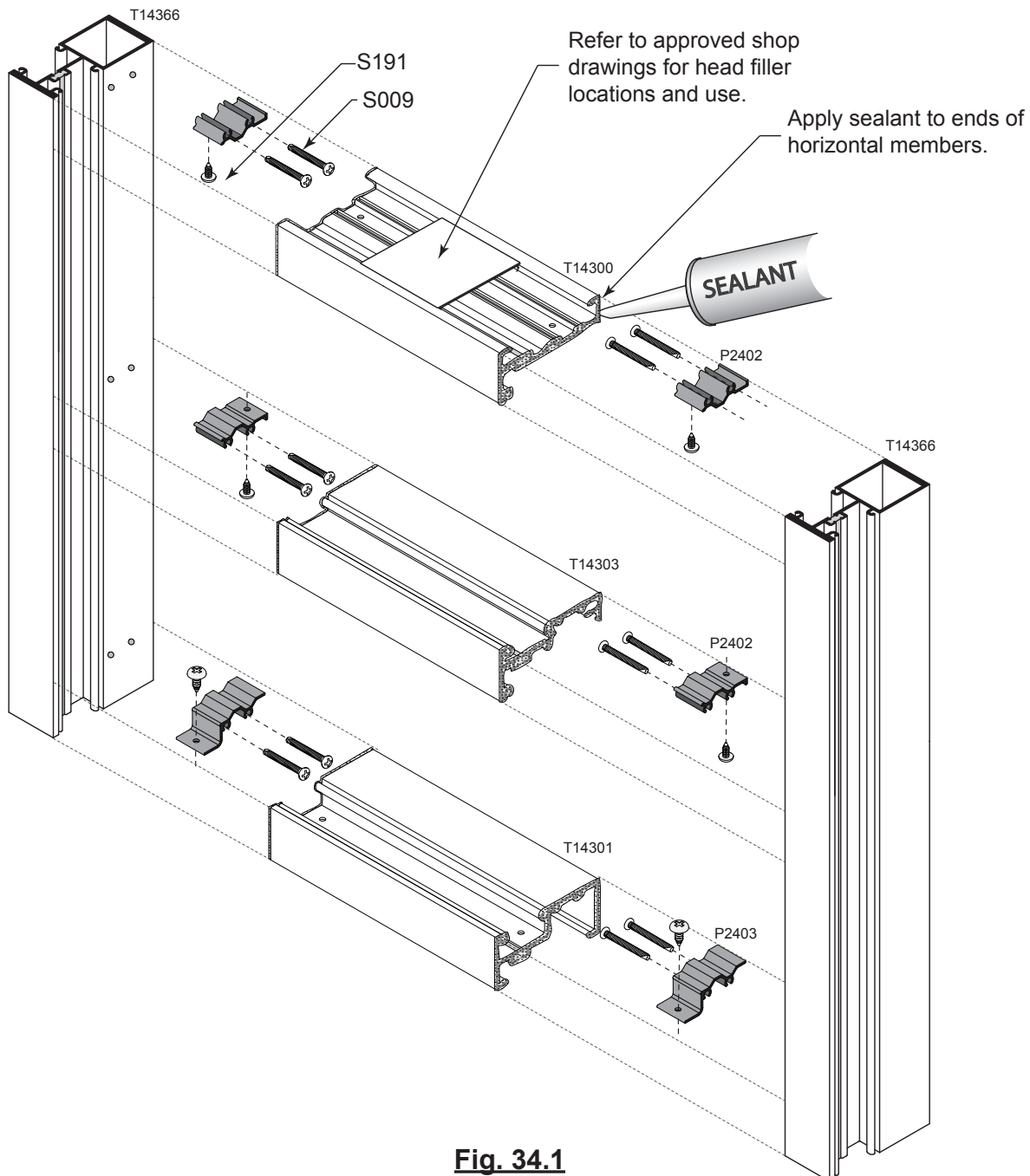
**Fig. 33.1**

## FRAME ASSEMBLY

### Step 7: Assemble Frames (Continued)

#### Shear Block Assembly - Outboard Plane - Inside Glaze

- A. Install shear blocks onto vertical with S009 #10 x 1 3/4" PH screw as shown in **Fig. 34.1**.
- B. Clean all mating surfaces on horizontal, vertical, and shear block.
- C. Apply sealant to ends of the head, horizontal, and sill members and to perimeter of shear blocks prior to attaching the horizontal members to the vertical members.
- D. Slide head, horizontal and sill members over the shear blocks.
- F. Match drill tap holes in head, horizontal, and sill shear blocks with drill for #10 screw.
- G. Secure head, horizontal, and sill members with (1) S191 #10 x 1/2" truss head screw. See **Fig. 34.1**.
- H. Cap seal heads of screws at horizontal and sill members.



**Fig. 34.1**

## FRAME INSTALLATION

### Step 8: Install Gaskets

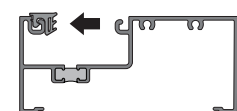
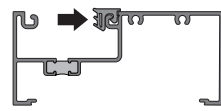
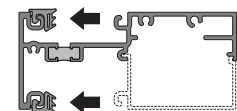
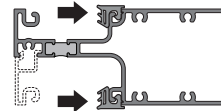
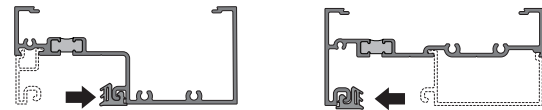
A. Install glazing gasket on one side of the framing member, depending upon direction of glazing.

- a. For outside glazing, install gaskets on interior side of framing first.
- b. For inside glazing, install gaskets on exterior side of framing first.

DO NOT STRETCH GASKETS WHEN INSTALLING.  
Start at the center of D.L.O. and work towards the ends.

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

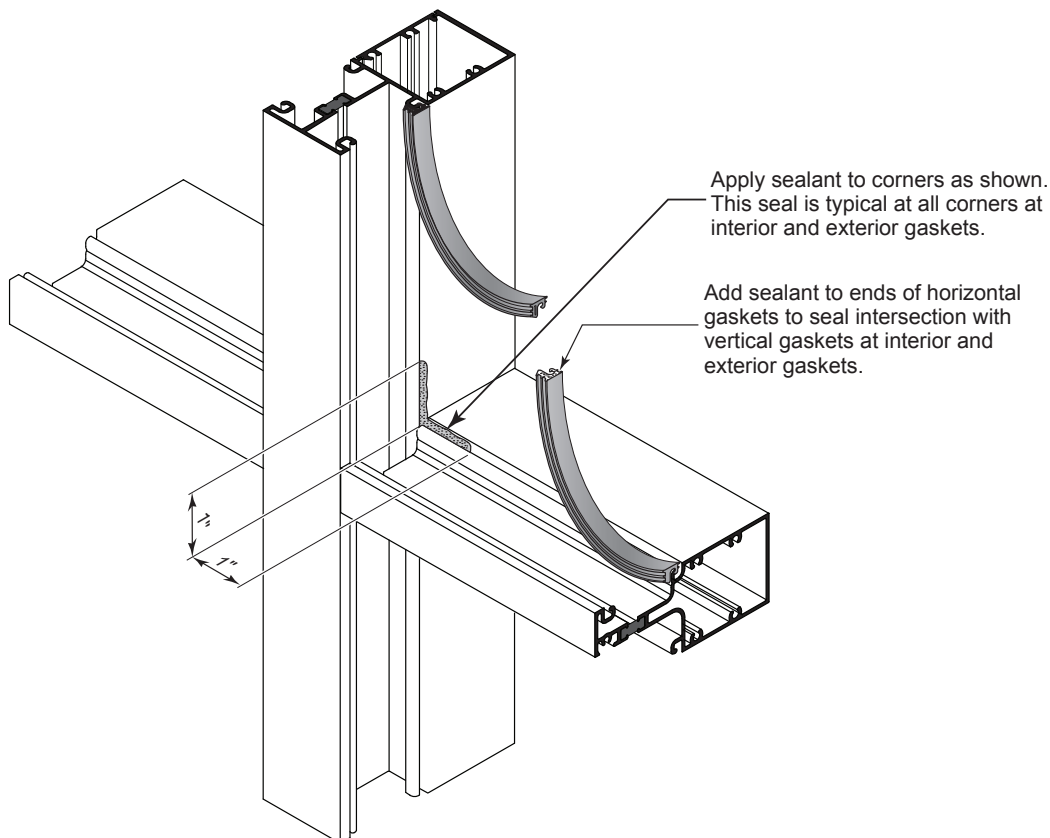
**IMPORTANT NOTE:** Clean ends of the gaskets with IPA prior to sealing the corners.



OUTSIDE GLAZE

INSIDE GLAZE

**Fig. 35.1**



**Fig. 35.2**

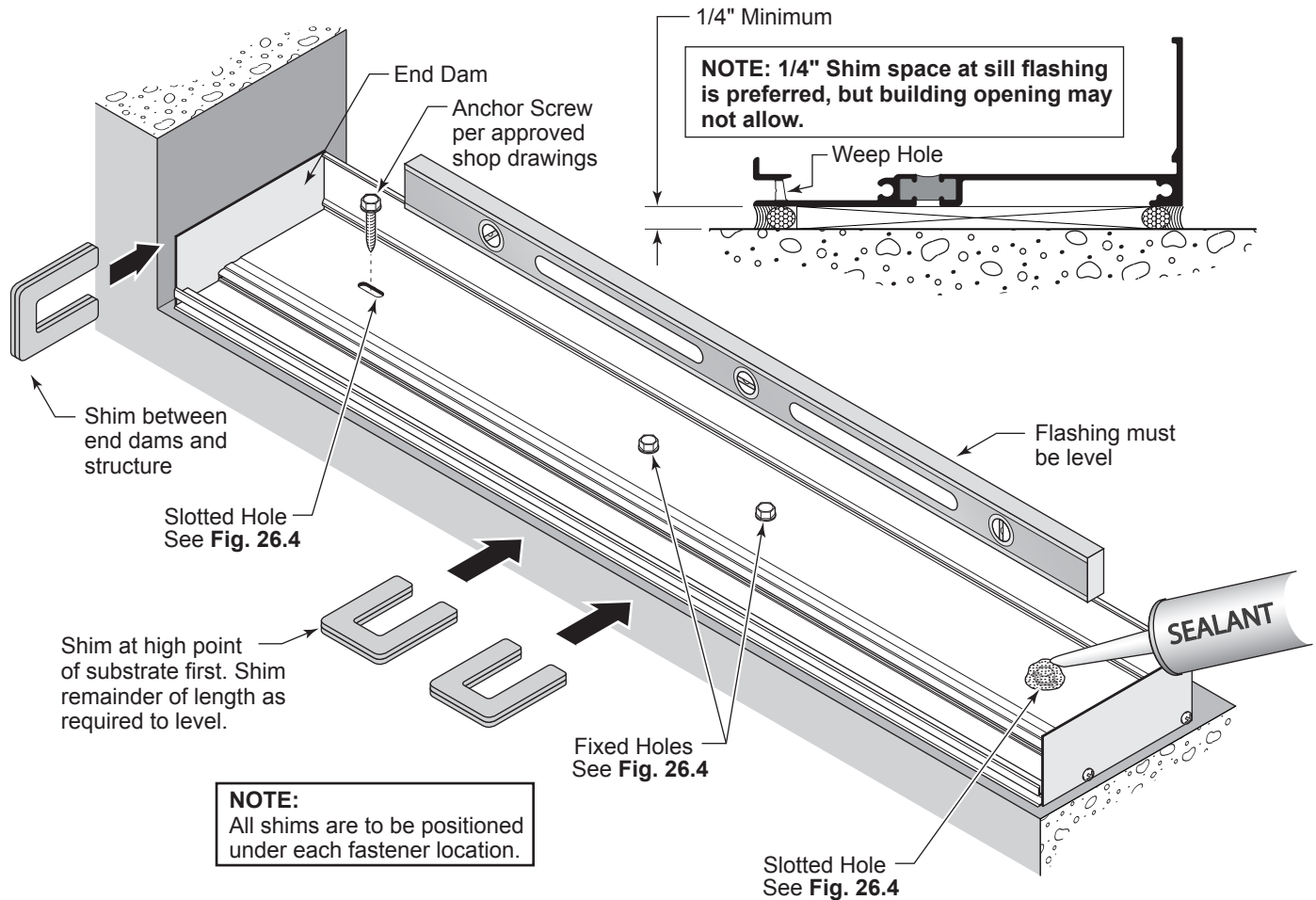
## FRAME INSTALLATION

### Step 9: Install Sill Flashing (If required)

- A. 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"). Sill Flashing longer than 24' in length should be spliced. Splice joint to be 3/8" minimum.

**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 12, page 41 for sealing instructions.**

- B. 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.
- C. 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.
- D. 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.



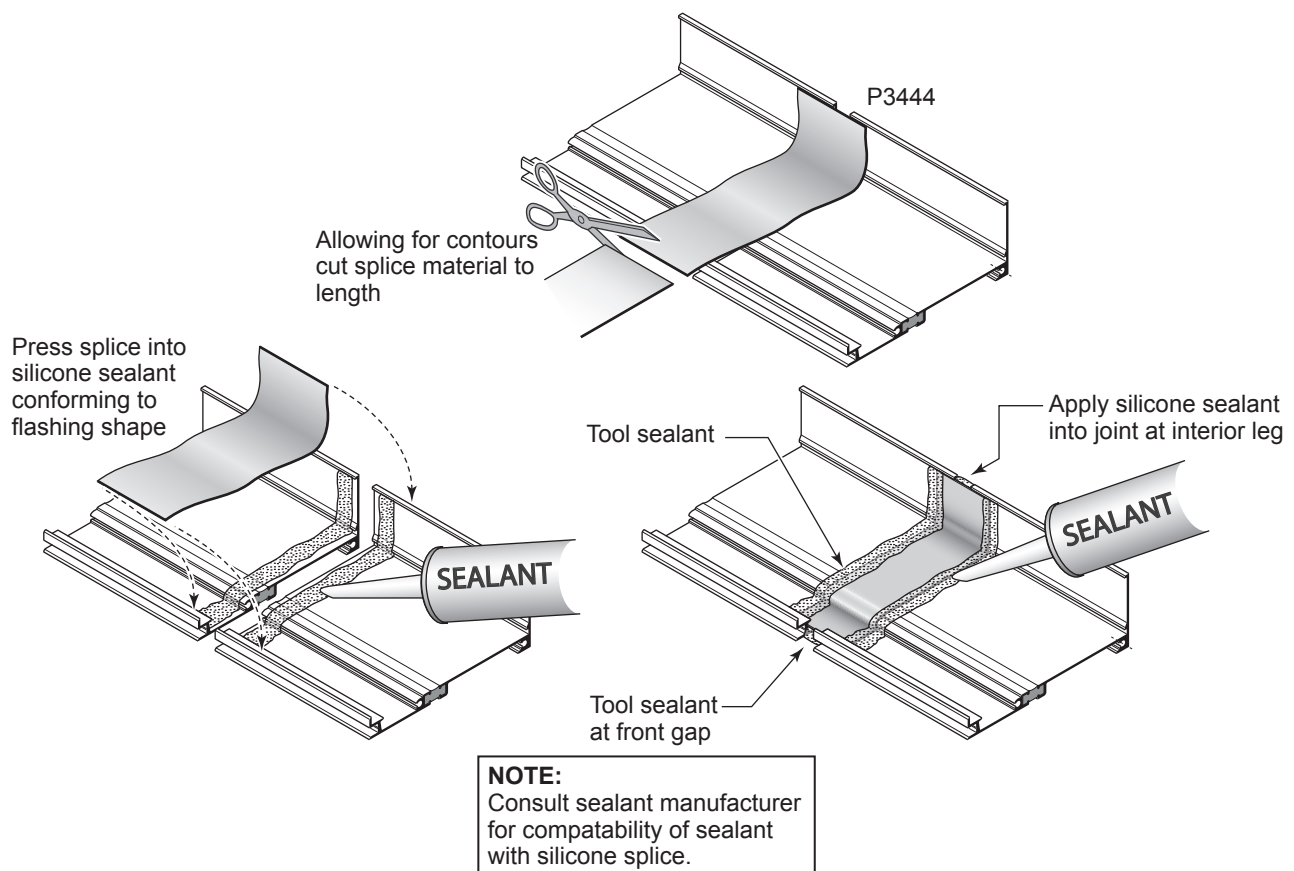
**Fig. 36.1**

## FRAME INSTALLATION

### Step 10: Sill Flashing Splice

#### Standard Silicone Splice - **Fig. 37.1**

- Continue installing sill flashing per Step 9 across the opening.
- Lay P3444 silicone sheet into sill flashing at splice location (center of D.L.O.) and cut to length.
- Install backer rod under the sill flashing at the splice joint.
- Clean surfaces where splice will be applied. Apply sealant as shown in **Fig. 37.1**.
- Set silicone splice sleeve in place and tool sealant. Seal front and back joints.
- Do not locate a splice directly below a vertical mullion. Center line of D.L.O. is preferred.



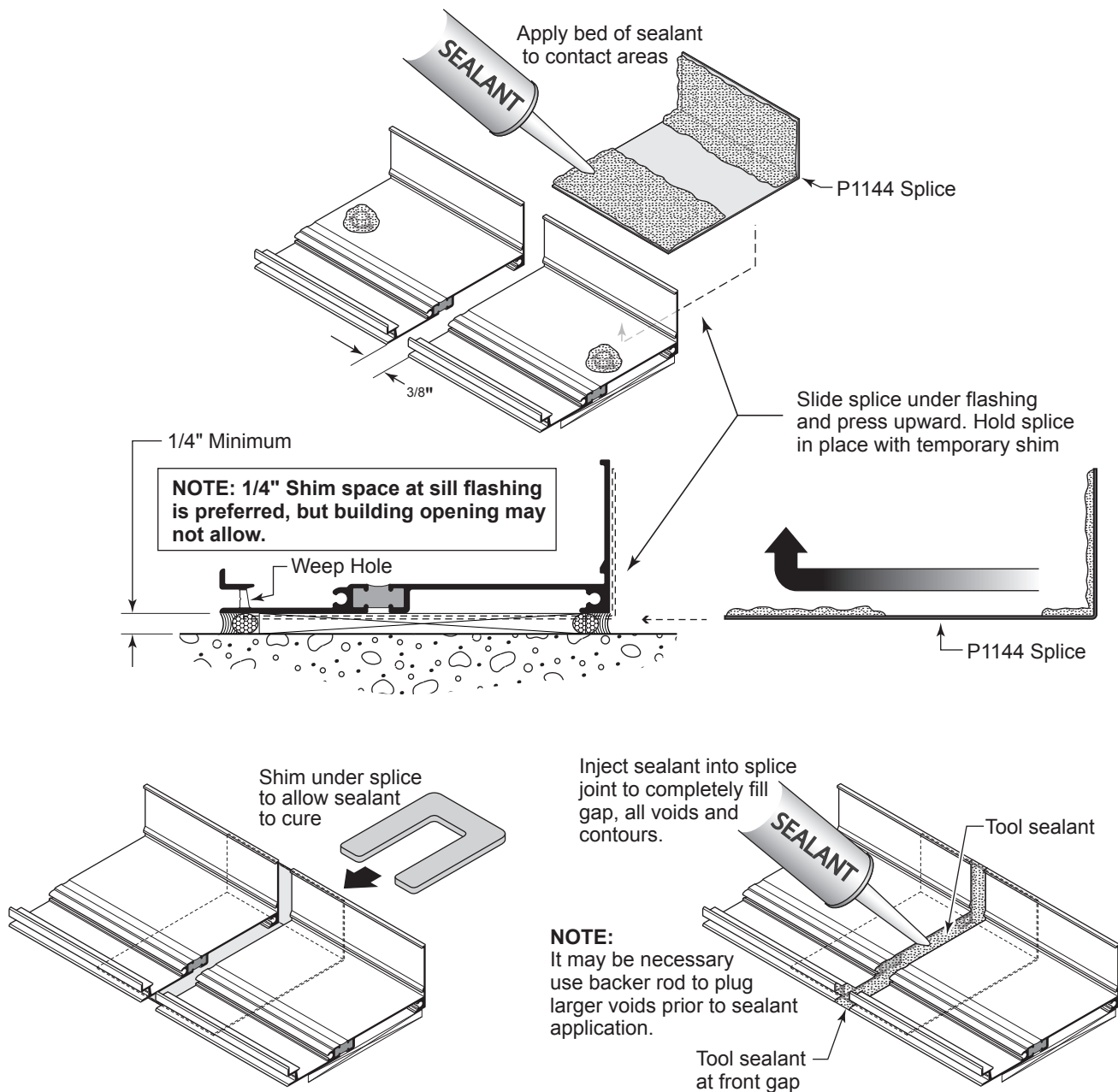
**Fig. 37.1**

## FRAME INSTALLATION

### Step 10: Sill Flashing Splice (Optional)

#### Optional Aluminum Splice - **Fig. 38.1**

- Continue installing sill flashing per Step 9 across the opening.
- Set P1144 splice sleeve in a bed of sealant under the sill flashing at the splice location as shown in **Fig. 38.1**.
- Maintain 3/8" minimum splice joint gap at the sill flashing prior to anchoring.
- Apply sealant at the sill flashing splice joint.
- Do not locate a splice directly below a vertical mullion. Center line of D.L.O. is preferred.



**Fig. 38.1**



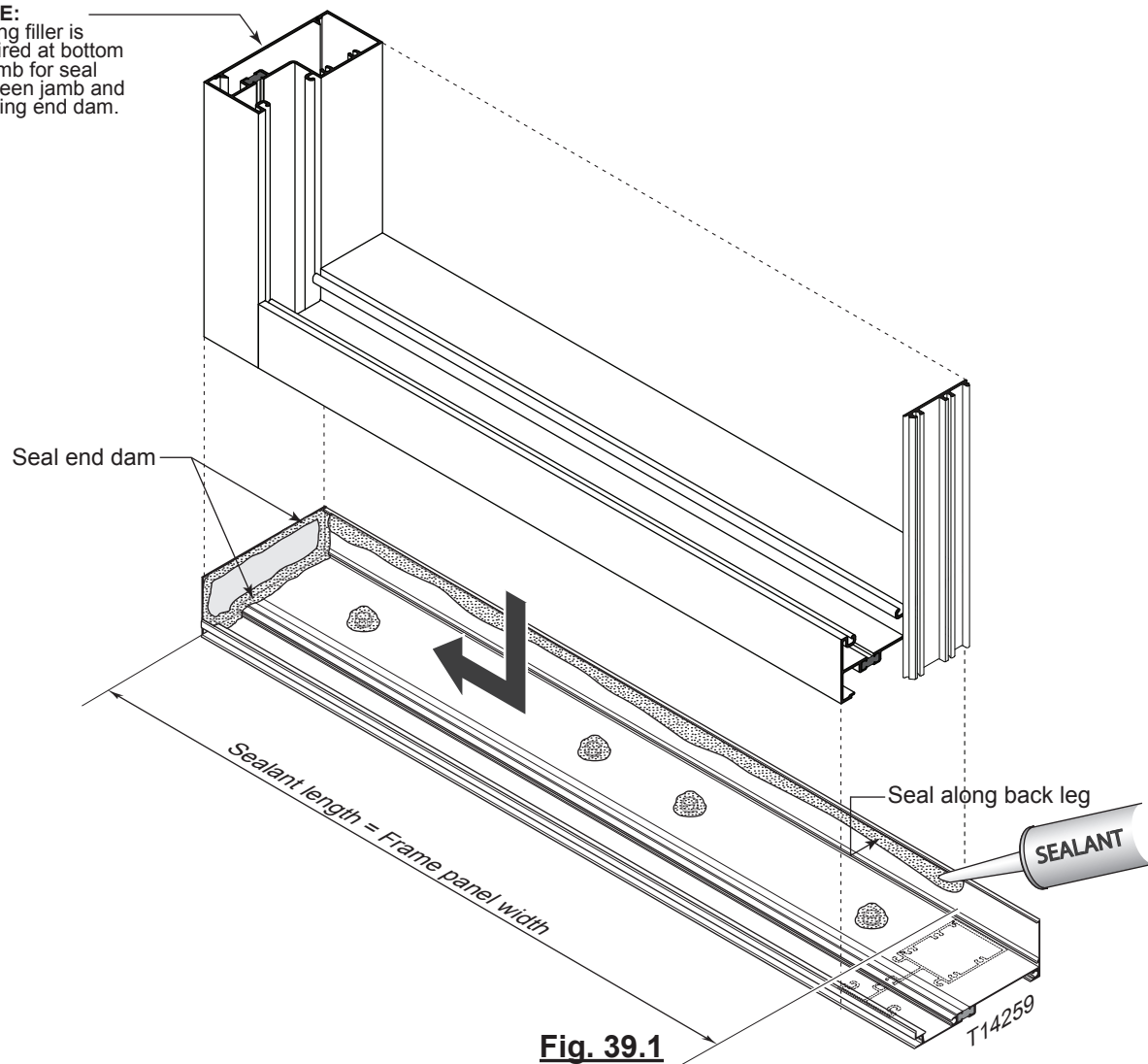
## FRAME INSTALLATION

### Step 11: Assemble Frames

- A. 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.
- B. Lift the first frame onto the sill flashing, snug against the end dam.

**NOTE:** Use PVC fillers as required between aluminum fillers. Aluminum fillers are used at anchor locations.

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



**Fig. 39.1**

- C. Lift each frame onto the sill flashing and engage with the previous frame.
- D. Check to ensure frame is plumb, level, and jamb caulk joint is per approved shop drawings.
- E. Shim head and jamb at anchor points and attach to the building structure. Size, quantity and location of anchors are per approved shop drawings. Remove shims between sill flashing end dams and secure before proceeding.
- F. 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.

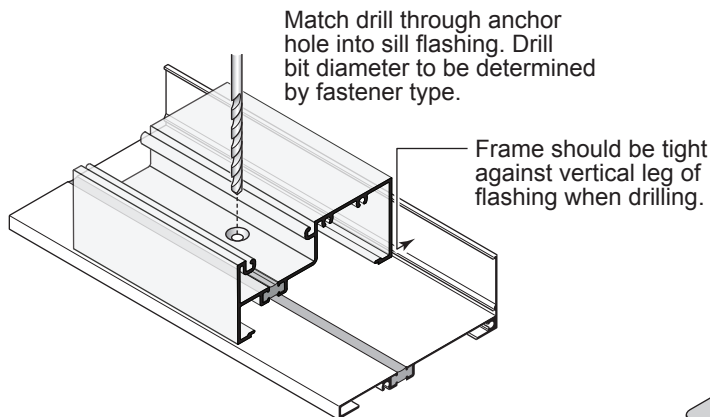
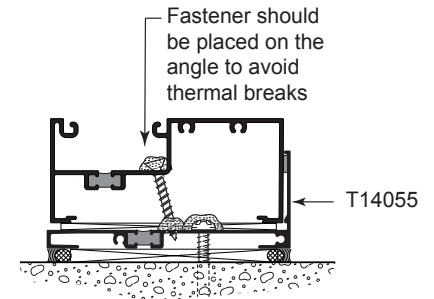
## FRAME INSTALLATION

### Step 11: Assemble Frames (Continued)

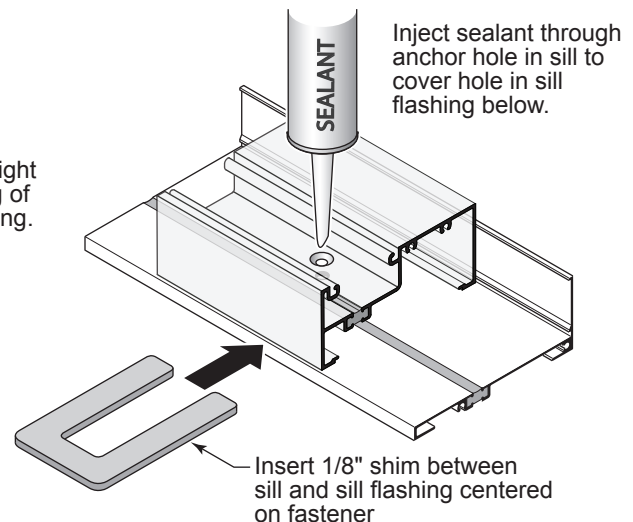
#### Frame installation when using the optional T14055 sill flashing.

(Note: Avoid drilling through the thermal break of T14055 as this could void the warranty)

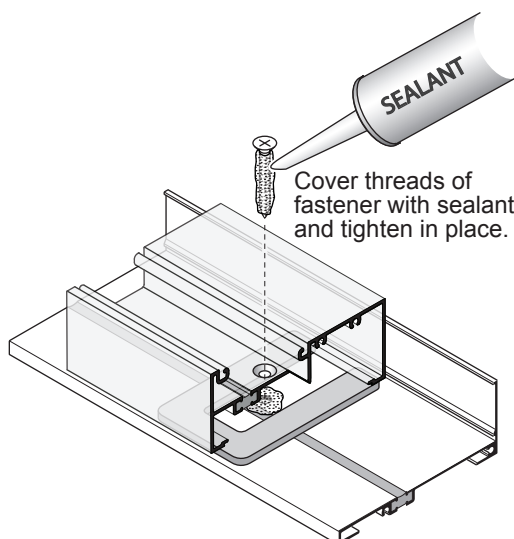
- G. Install frame units as directed in steps A and B on page 39.
- H. Push frame tight to vertical fin of sill flashing and match drill through sill anchor holes into sill flashing. Do not drill through the thermal barrier. See **Fig. 40.1**. Sill anchor not by Tubelite and is to be sized according to project loading requirements.
- I. Shim between sill and flashing centered on anchor. See **Fig. 40.2**.
- J. Inject sealant into anchor hole to cover hole in flashing. See **Fig. 40.2**.
- K. Apply sealant to threads of fastener and secure frame to sill flashing. See **Fig. 40.3**.
- L. Cap seal all fastener heads. See **Fig. 40.4**.



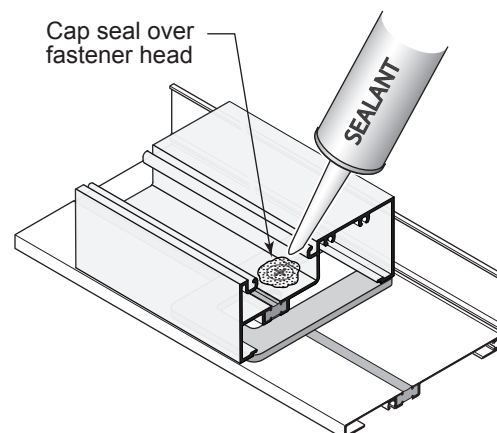
**Fig. 40.1**



**Fig. 40.2**



**Fig. 40.3**



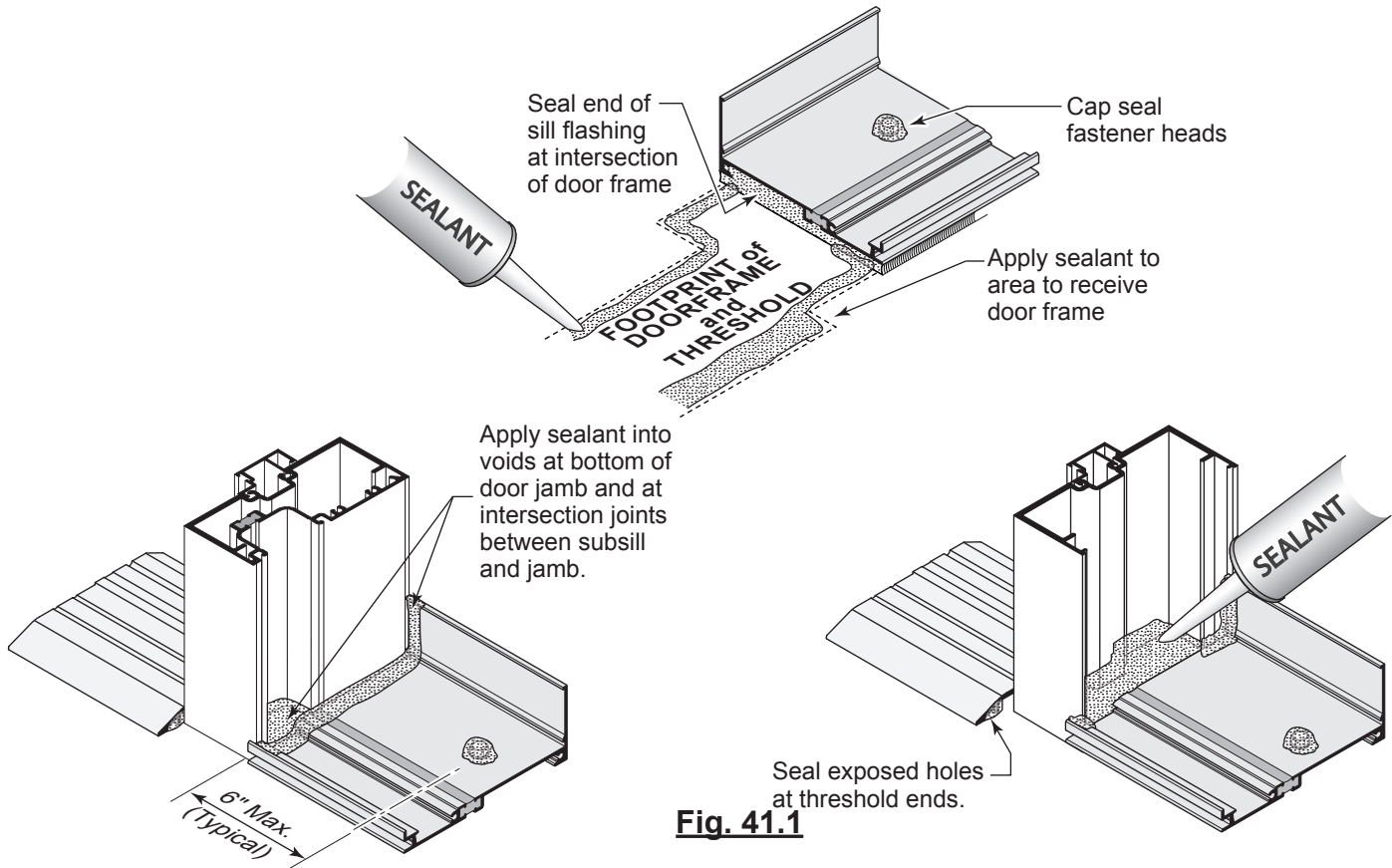
**Fig. 40.4**



## FRAME INSTALLATION

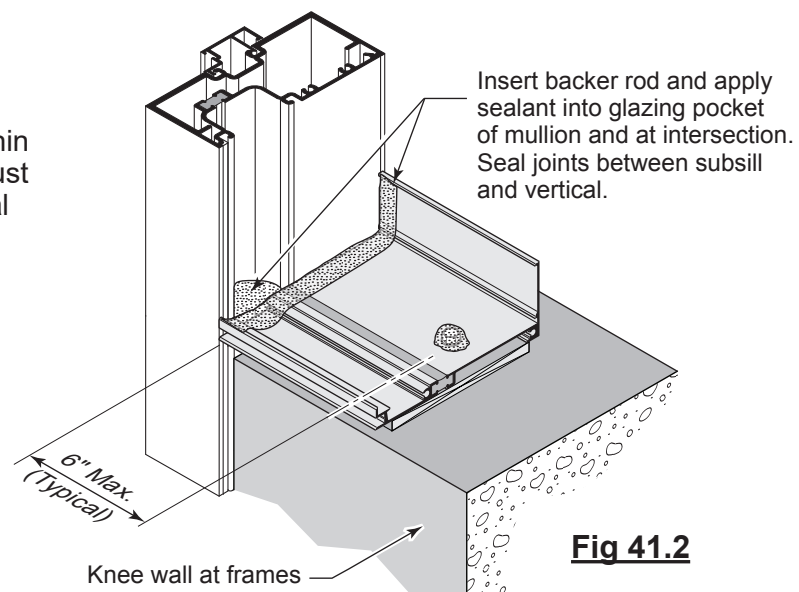
### Step 12: Sealing Sill Flashing at Door Jamb

- 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. 41.2**.



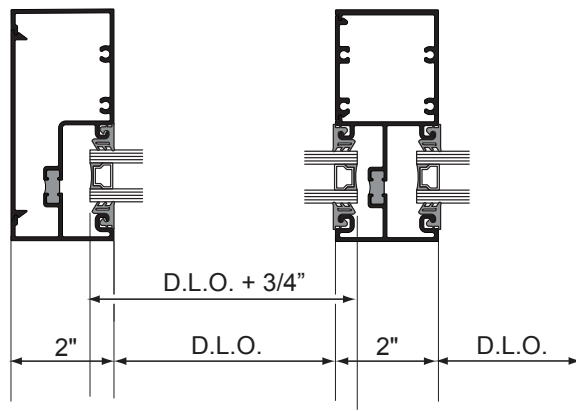
## GLAZING

### Step 13: Glazing Preparation

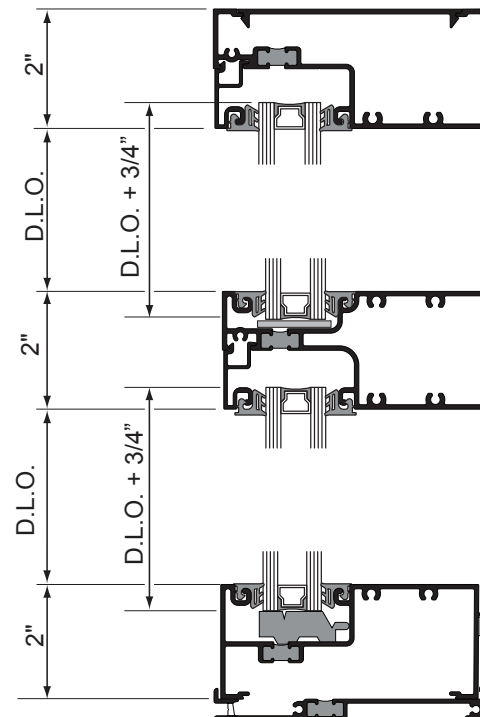
- A. Remove any debris from the glazing pockets and clean all surfaces.
- B. Trim excess silicone from edges of glazing units to allow for maximum glazing clearance. Glass dimensions should not exceed the daylight opening (D.L.O.) plus  $3/4"$

Glazing pockets are designed to accept IGU's up to and including 1-1/8" thick. Refer to our online System Glazing Chart for a full list of glazing size options for this system:

[http://www.tubeliteinc.com/wp-content/uploads/2014/05/Tubelite\\_Glazing\\_Chart.pdf](http://www.tubeliteinc.com/wp-content/uploads/2014/05/Tubelite_Glazing_Chart.pdf)



**Fig. 42.1**



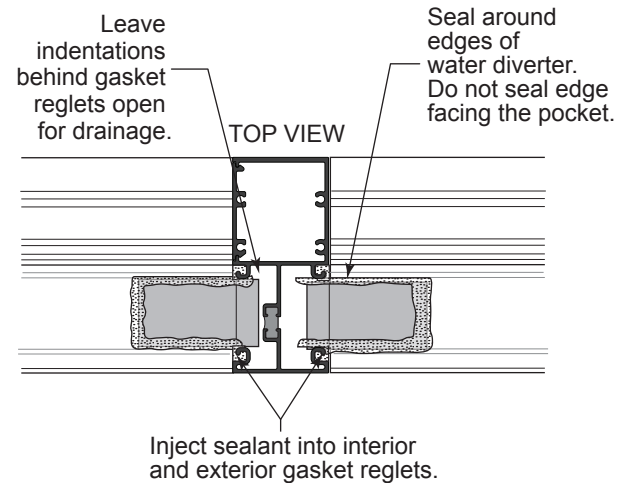
**Fig. 42.2**

## GLAZING

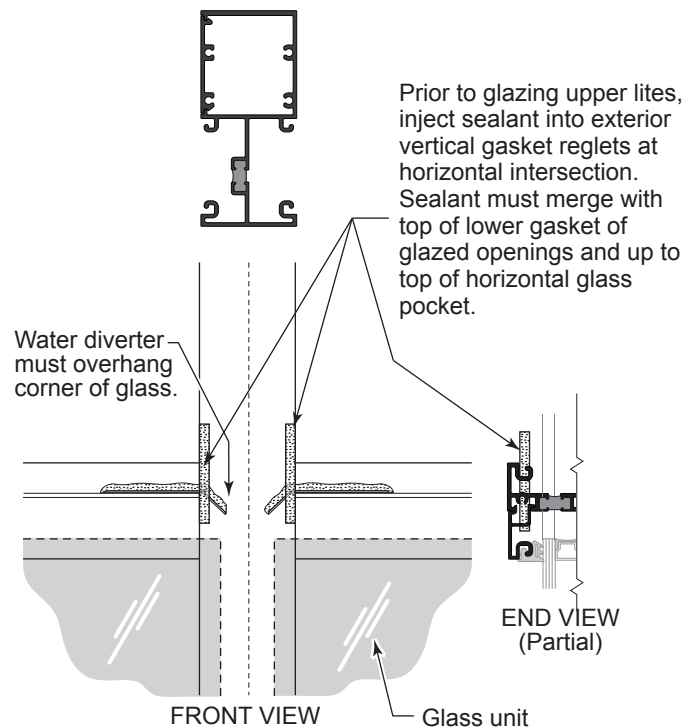
### Step 14: Installing the Glazing Units

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

- A. Seal the corners of the previously installed gaskets (refer to Step 8, page 35).
- 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 P1916 anti-walk blocks into both left and right glass pockets of the vertical per glazing manufacturer recommendations.
- D. Install remaining gaskets on the vertical sides of the glass, holding back 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 14 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. 43.1**.



**Fig.43.1**

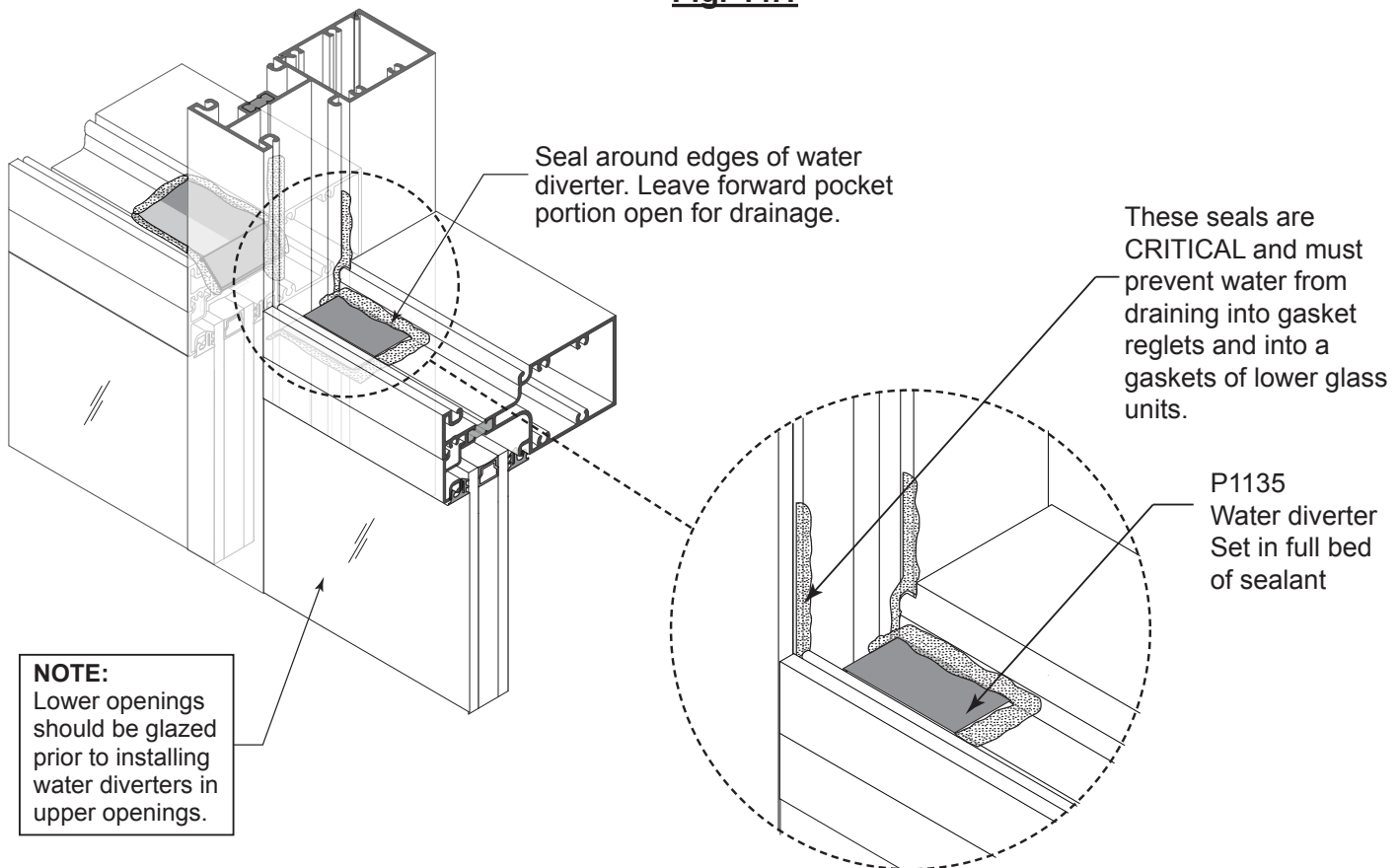
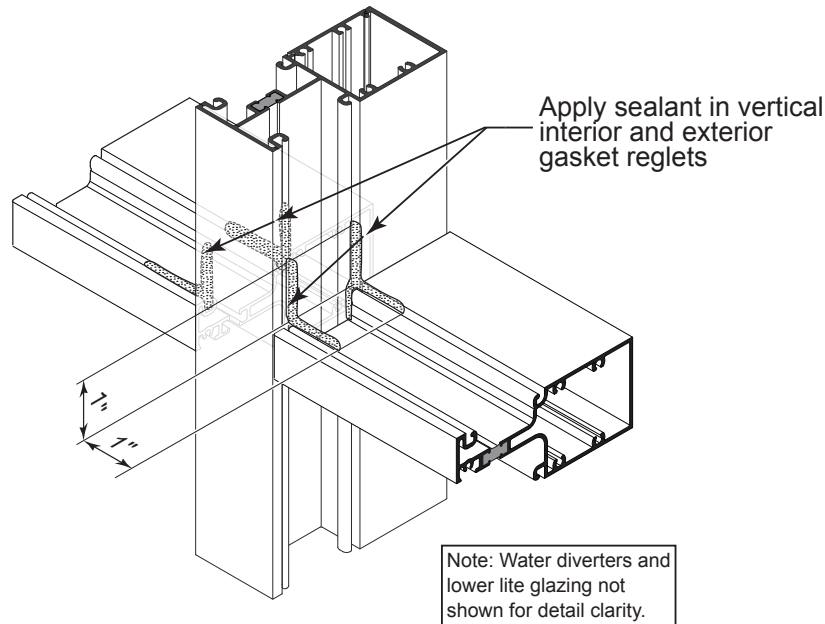


**Fig.43.2**

**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. 43.1 & 43.2**.  
(Also see isometric details on page 44)

## GLAZING

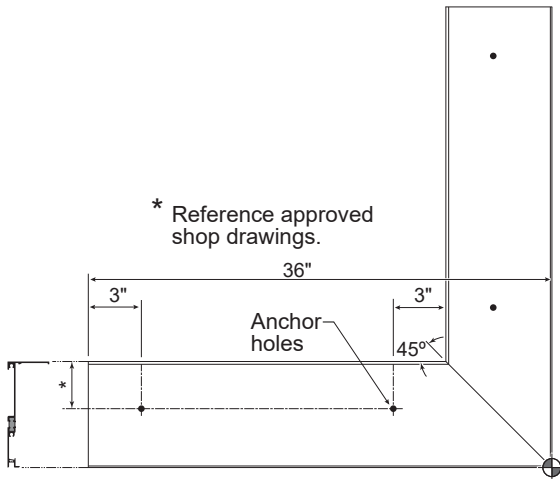
### Step 14: Installing the Glazing Units (Continued)



## CORNER CONDITIONS

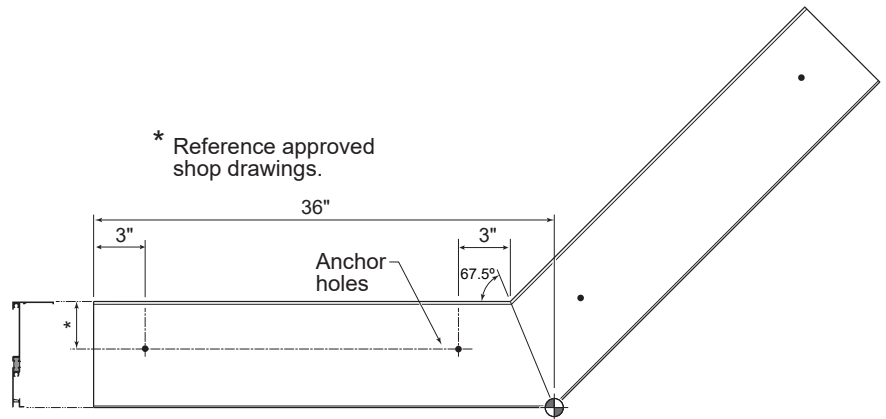
### Step 1: Corner Sill Flashing Fabrication

- A. Miter ends of sill flashing as shown in **Figs. 45.1, 45.2, 45.3 & 45.4**. (One left hand and one right hand.)
- B. Drill anchor holes as show.



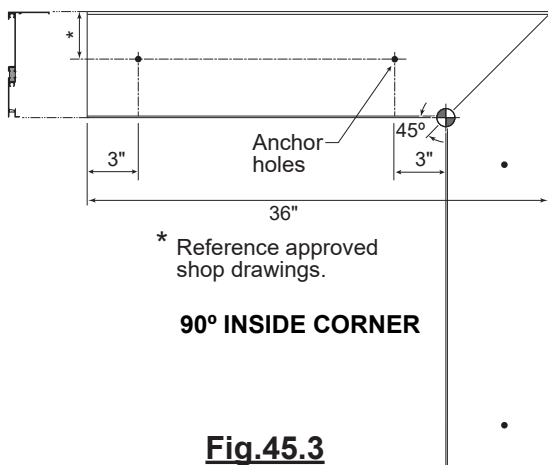
**90° OUTSIDE CORNER**

**Fig.45.1**



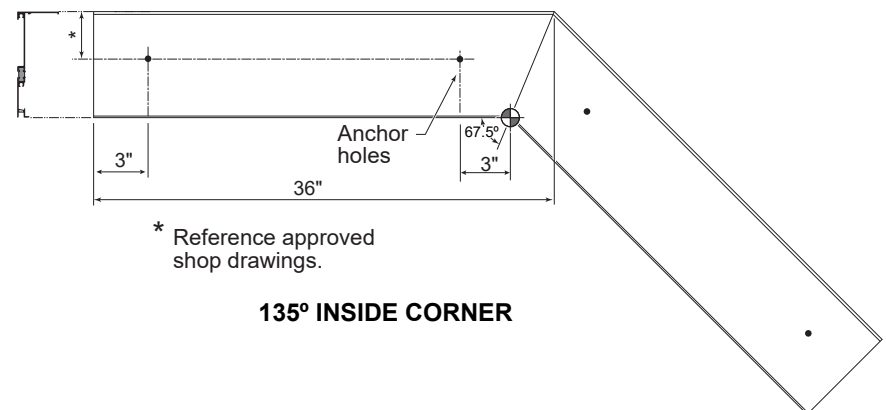
**135° OUTSIDE CORNER**

**Fig.45.2**



**90° INSIDE CORNER**

**Fig.45.3**



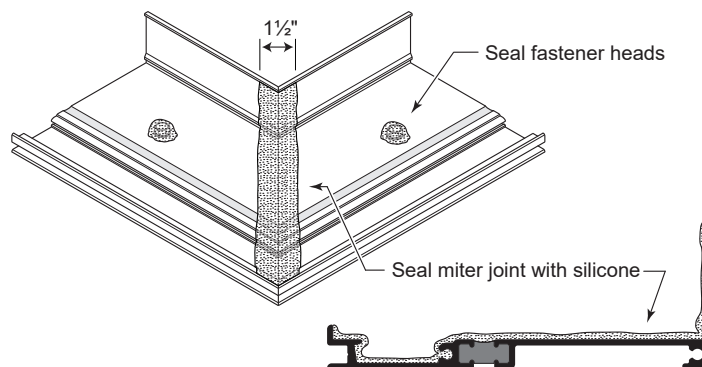
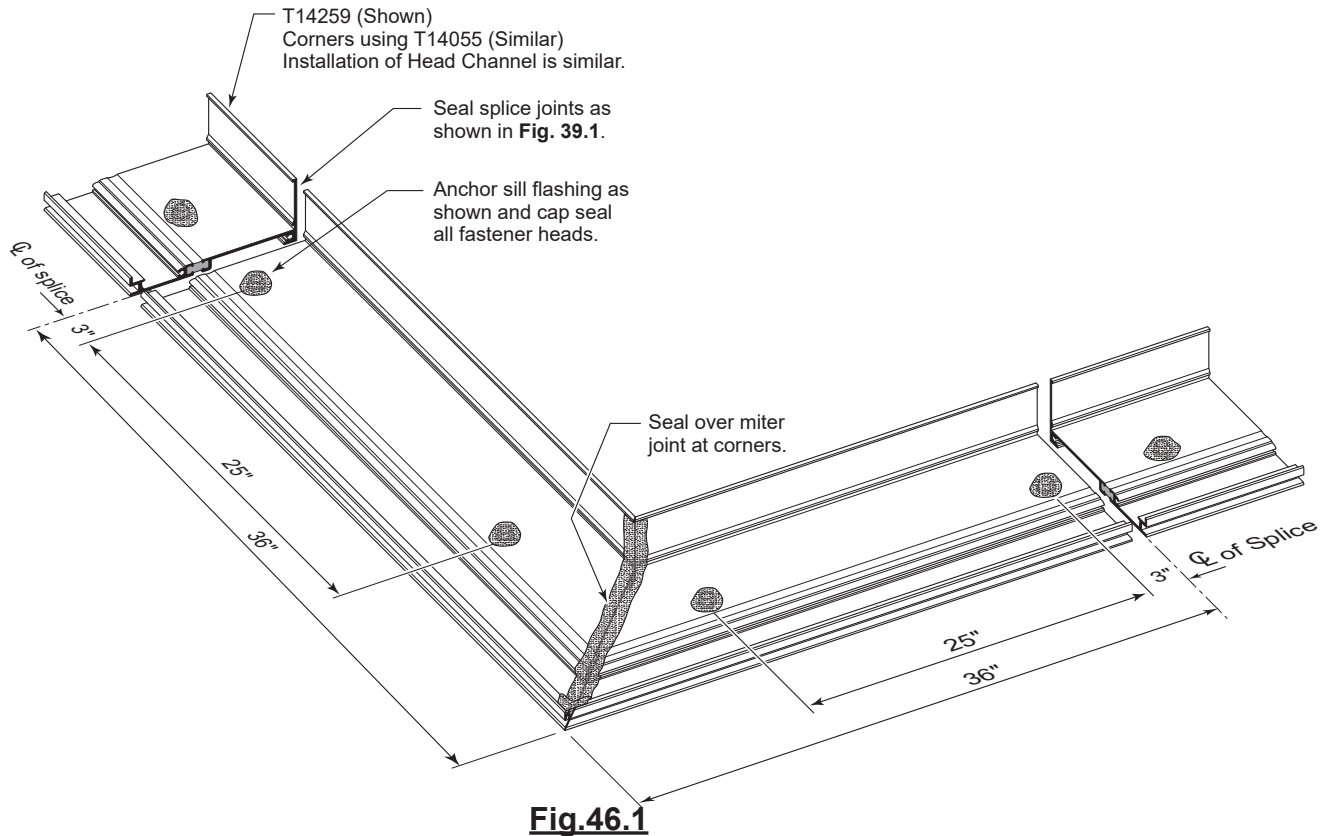
**135° INSIDE CORNER**

**Fig.45.4**

## 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. 46.2**.
- C. Splice corner flashing to sill flashing using procedures shown on page 37 and 38. See **Fig. 37.1** & **Fig 38.1**



## CORNER CONDITIONS

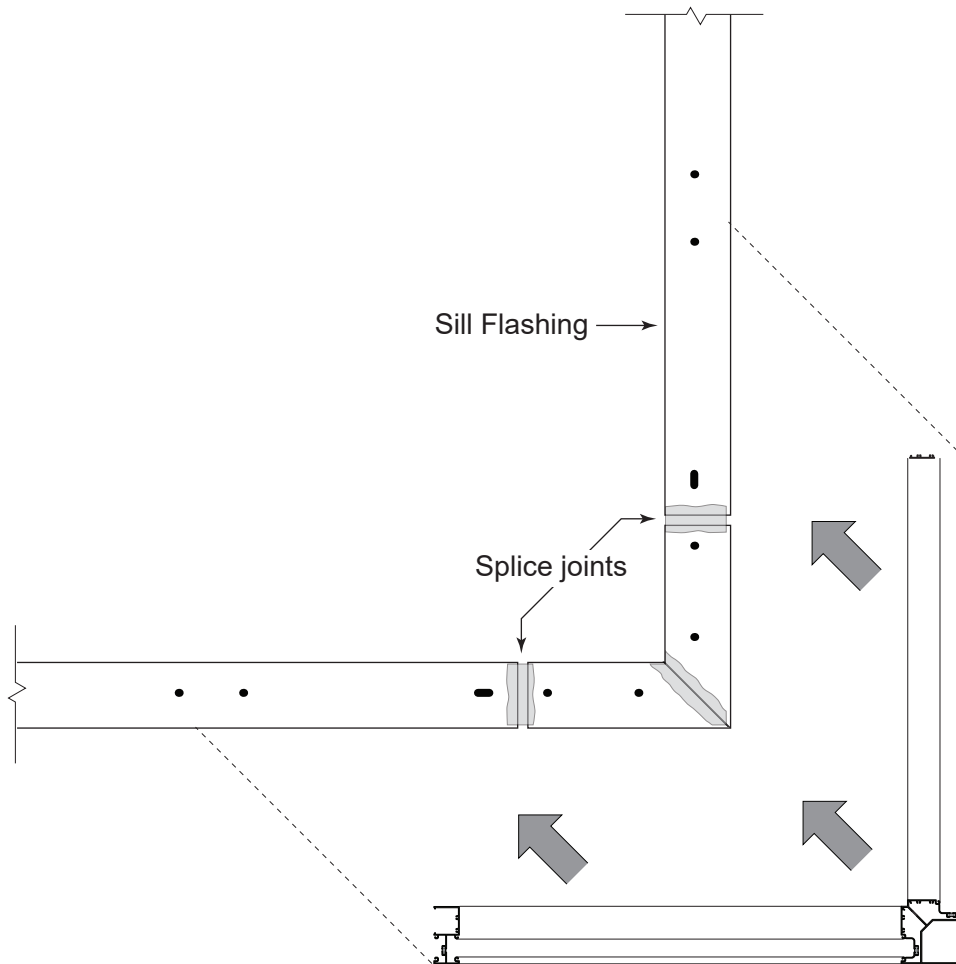
### Step 3: Assemble Frames

- A. Assemble corner bay frames as a unit and set onto the sill flashing. See **Fig. 47.1**

Note: For **Outboard Plane** 135 degree **inside corners**, shallow pocket closures must be used (T14312).

Note: For **Inboard Plane** 135 degree **outside corners**, shallow pocket closures must be used (T14312).

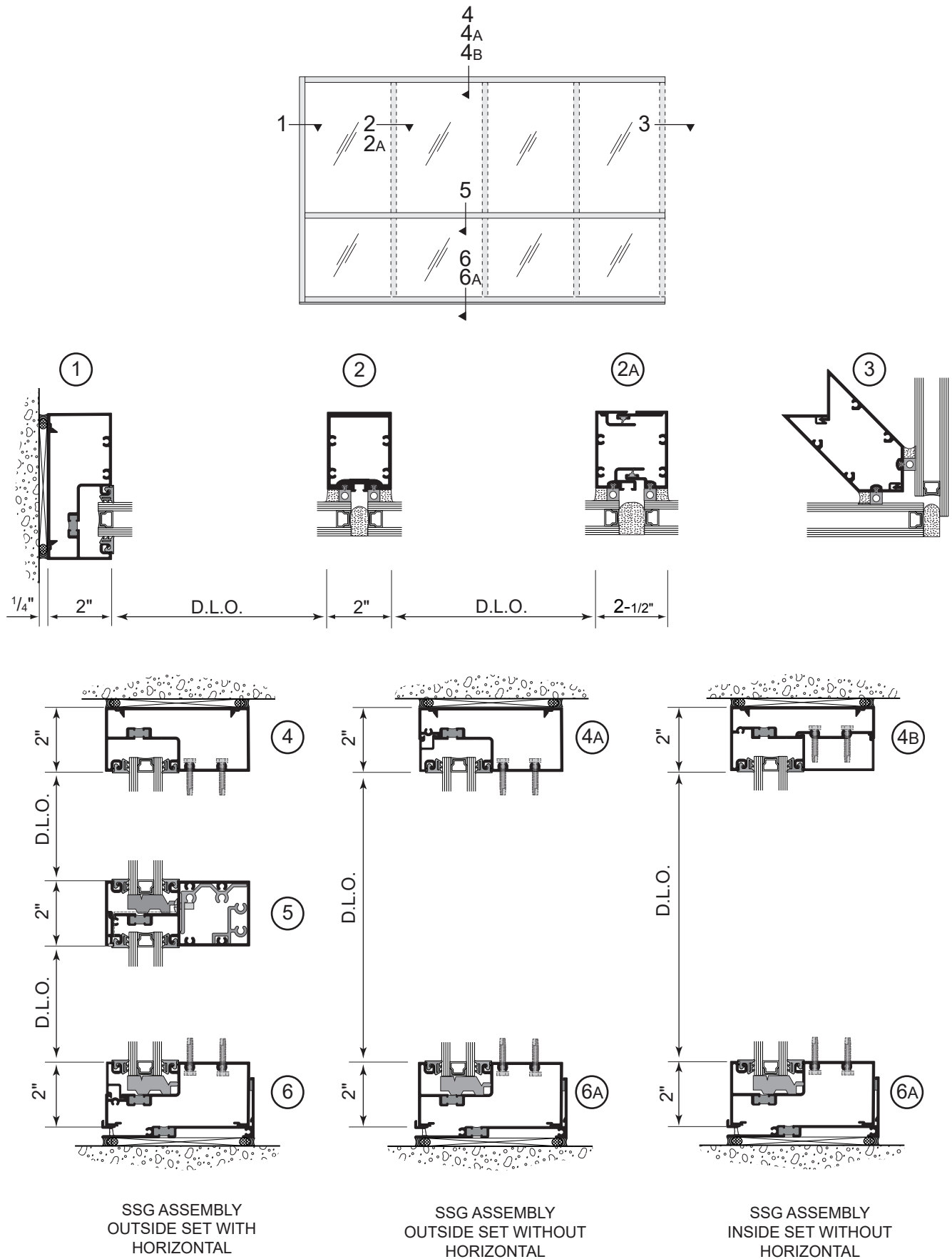
- B. Complete the installation per standard instructions within this manual.



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

**Fig.47.1**

## STRUCTURAL SILICONE GLAZED - SSG TYPICAL ELEVATION WITH DETAILS





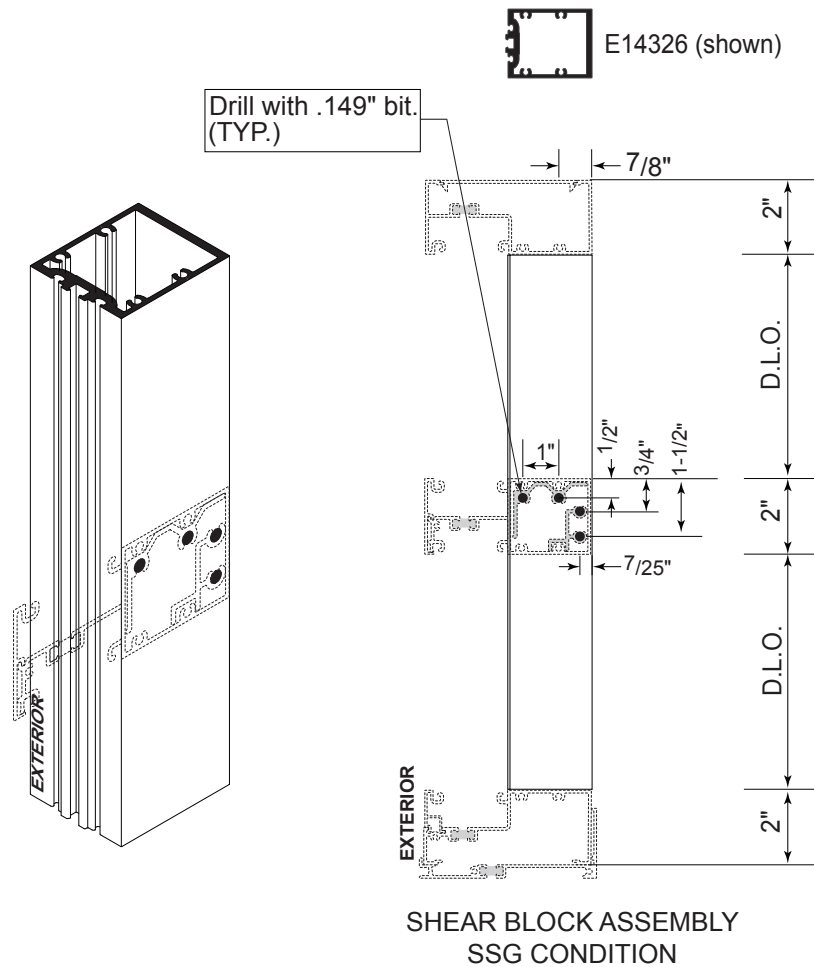
## STRUCTURAL SILICONE GLAZED - SSG

### Step 1: Fabricate Sill Flashing

- A. Refer to Step 3 of Frame Fabrication on page 26

### Step 2: Fabricate Vertical Framing Members

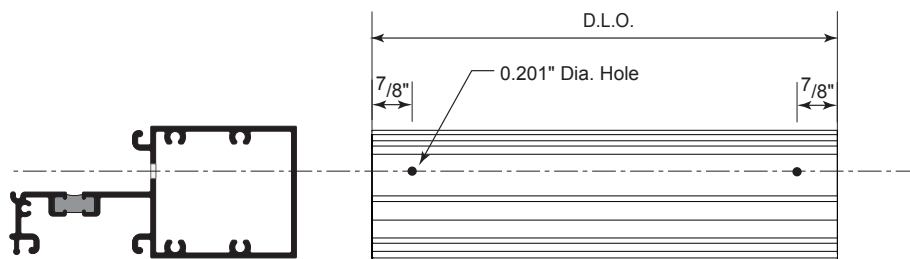
- A. Drill frame assembly holes in verticals & jambs with drill fixture. See **Fig. 49.1**



**Fig.49.1**

### Step 3: Fabricate Horizontal Members for Shear Blocks

- A. For SSG condition, shear block assembly must be used. Drill 0.201" dia holes in the horizontal members as shown in **Fig. 49.2**



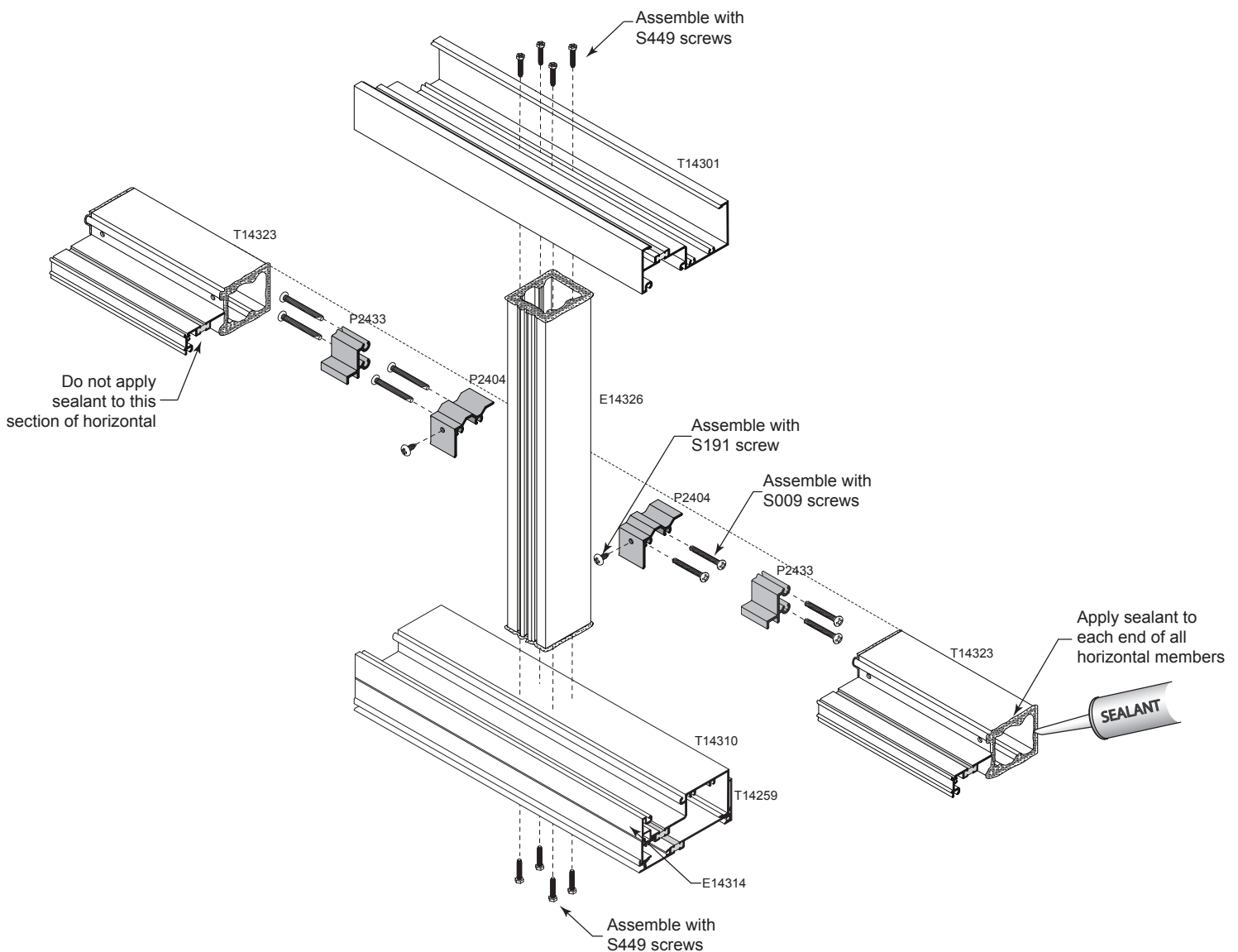
**Fig.49.2**

## STRUCTURAL SILICONE GLAZED - SSG

### Step 4: Assemble Frames

#### Shear Block Assembly - SSG

- A. Install shear blocks onto vertical with S009 #10 x 1 3/4" PH screw as shown in **Fig. 50.1**.
- B. Clean all mating surfaces on horizontal, vertical, and shear blocks.
- C. Apply sealant to ends of the horizontal and shear blocks prior to attaching the horizontal members to the vertical members.
- D. Slide horizontal over the shear blocks.
- E. Match drill hole in horizontal shear blocks with drill for #10 screws
- F. Secure intermediate horizontal with (1) S191 #10 x 1/2" truss head screw. See **Fig. 50.1**.
- G. Head and sill members run through between jambs.



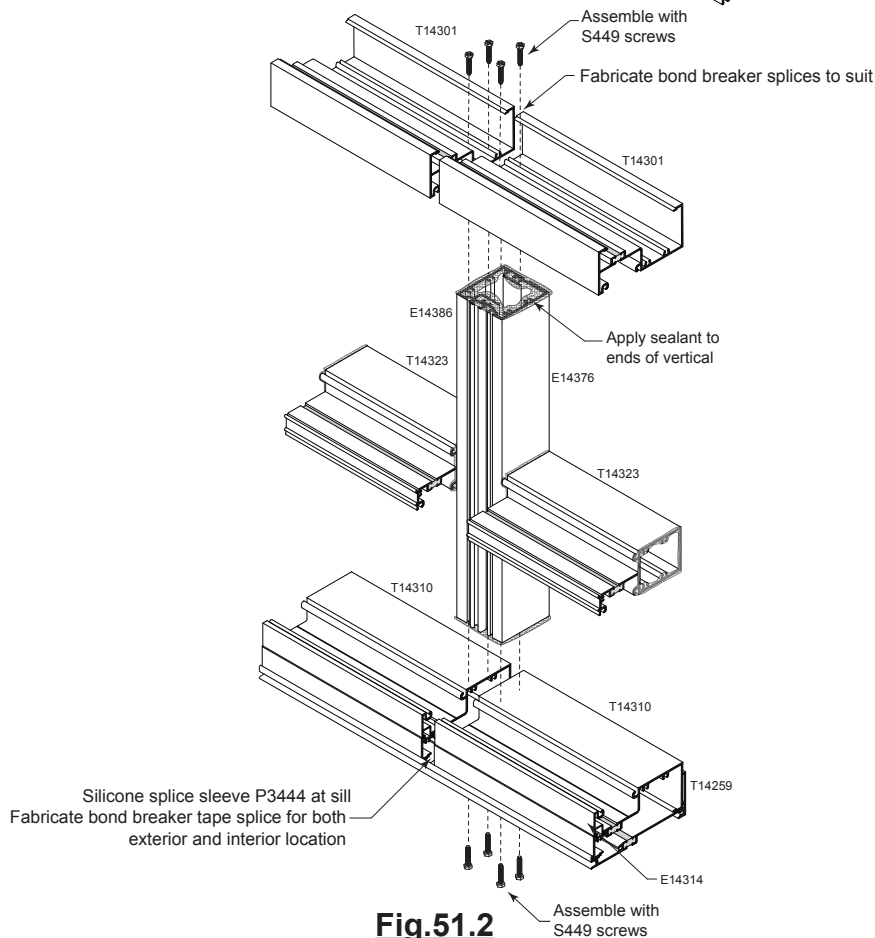
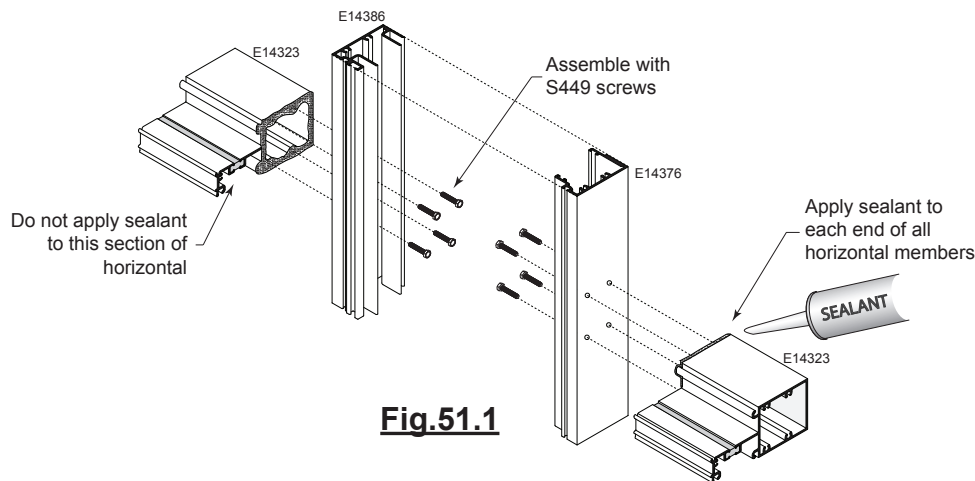
**Fig.50.1**

## STRUCTURAL SILICONE GLAZED - SSG

### Step 4: Assemble Frames

#### Shear Block Assembly - **SSG Expansion Mullion**

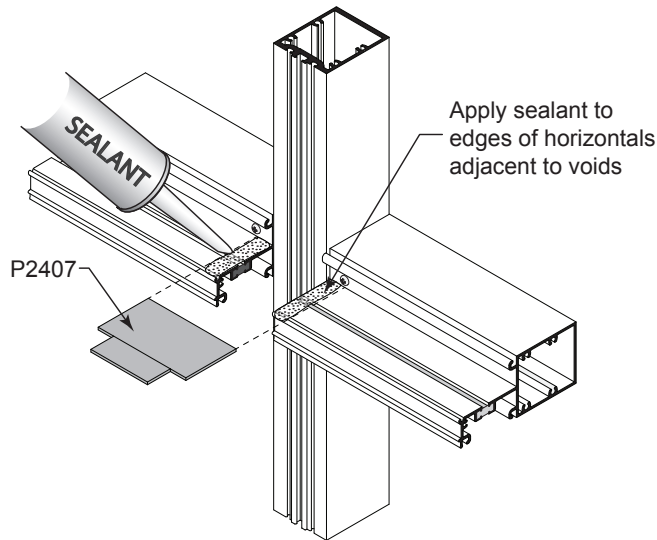
- A. Clean all mating surfaces on horizontals & verticals.
- B. Apply sealant to ends of the horizontal, prior to attaching to the vertical members.
- C. Attach horizontal members to expansion verticals with (4) S449 screw. See **Fig. 51.1**.
- D. Attach head & sill members to verticals with (4) S449 screws. **Fig. 51.2**.
- E. Fabricate bond breaker splices at head and sill for both exterior and interior locations. **Fig. 51.2**.
- F. Head and sill members run through between jambs.



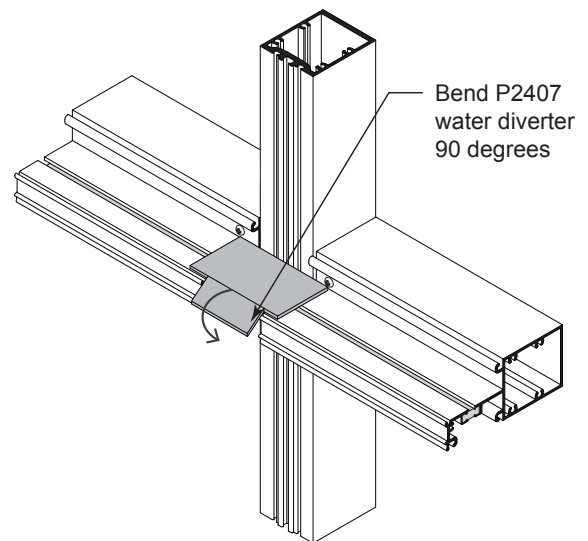
## STRUCTURAL SILICONE GLAZED - SSG

### Step 5: Install Water Diverter

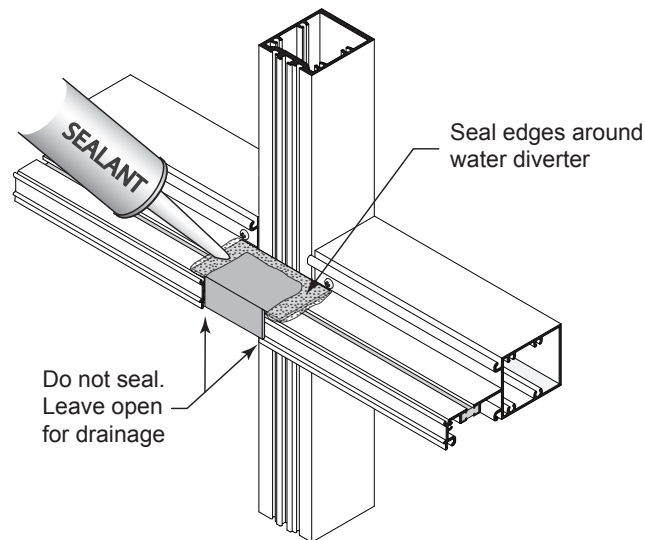
- A. Water diverters can only be installed once the frame is assembled.
- B. Apply silicone to horizontal glazing pocket where the water diverter will be resting. See **Fig 52.1**
- C. Place P2407 water diverter evenly across the horizontal to cover the void between the horizontal members
- D. Bend the water diverter 90 degrees
- E. Seal around edges of water diverter. **THIS IS A CRITICAL SEAL.** Do not seal front of water diverter. See **Fig 52.3**



**Fig.52.1**



**Fig.52.2**



**Fig.52.3**

## STRUCTURAL SILICONE GLAZED - SSG

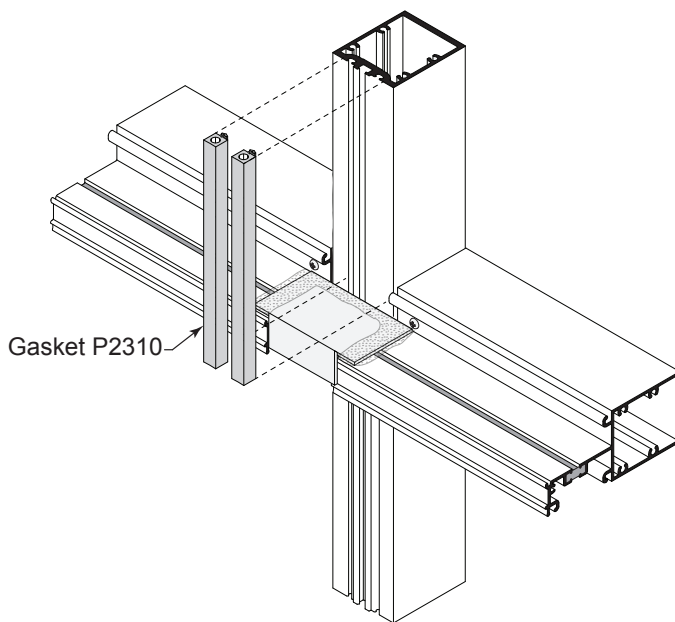
### Step 6: Install Glazing Gaskets

- A. Remove any debris from the glazing pockets and reglets.
- B. Install P2310 gasket onto reglets of the vertical mullion. See **Fig 53.1**
- C. Install glazing gasket P2728 on head, horizontal, and sill members on interior side of framing first. See **Fig 53.2**

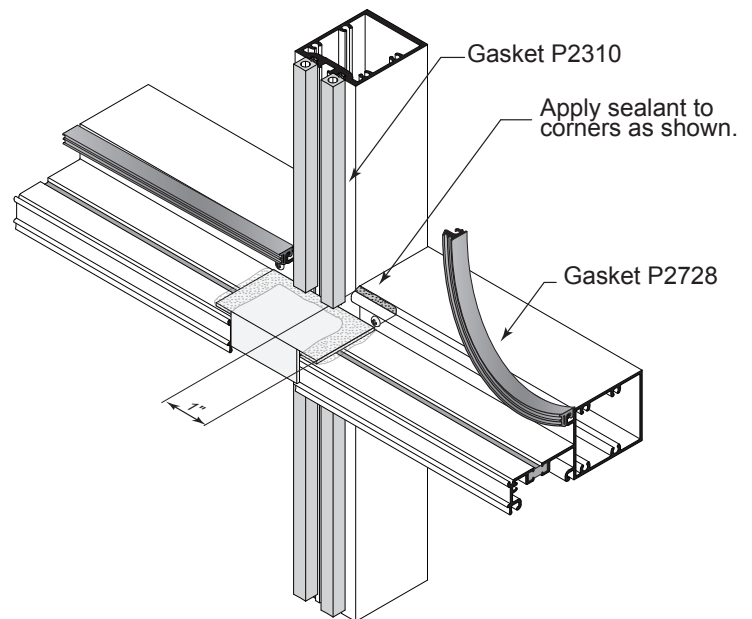
### **DO NOT STRETCH GASKETS WHEN INSTALLING**

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

NOTE: Allowance = 1/8" extra length per foot of D.L.O. to allow for gasket to relax after installation.



**Fig.53.1**

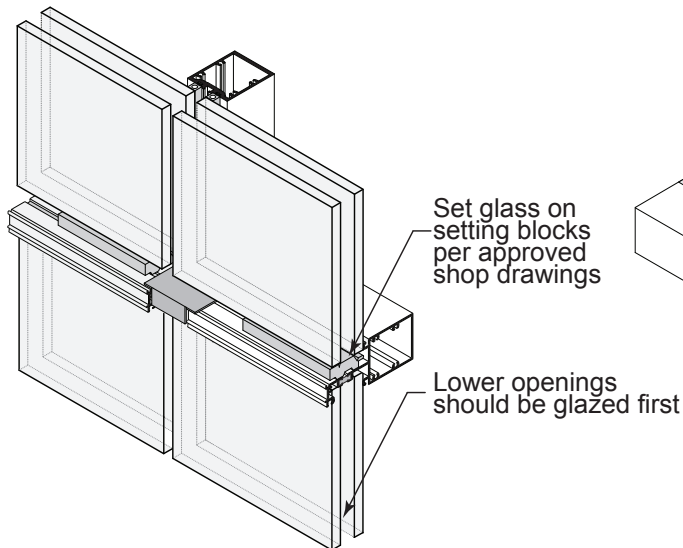


**Fig.53.2**

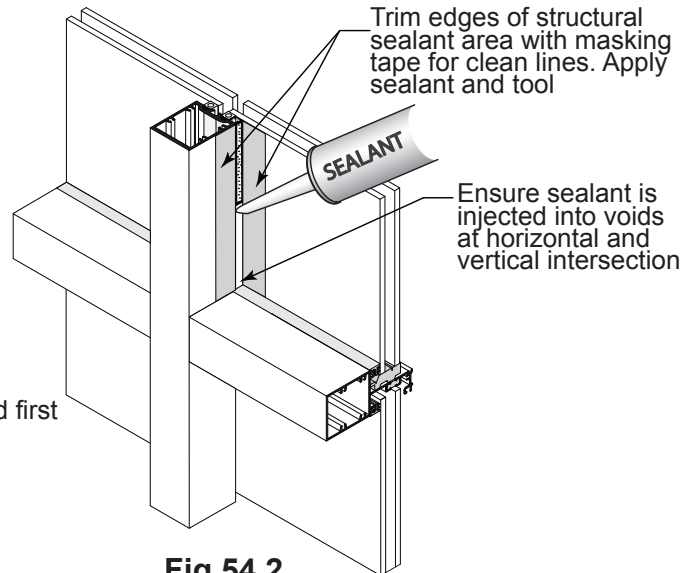
## STRUCTURAL SILICONE GLAZED - SSG

### Step 7: Install Glazing Units

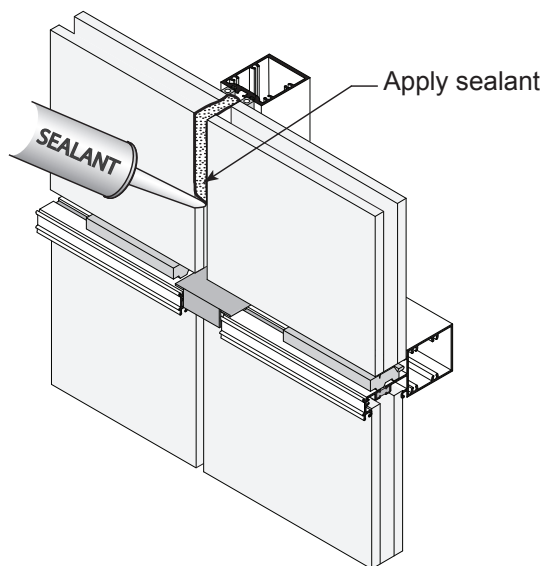
- A. Set glass onto (2) setting blocks located at quarter points or per approved shop drawings.
- B. Tape off side of SSG vertical and glass prior to applying structural sealant. Apply structural sealant as shown on interior. See **Fig 54.2**. Use P1108 temporary glazing clip to secure glass as interior seal cures.
- C. Apply structural sealant as shown in **Fig 54.3**.
- D. Install exterior gaskets (P2728) on head, horizontal, and sill. Install outside glass stop (E14324) on horizontal. See **Fig 54.4**.



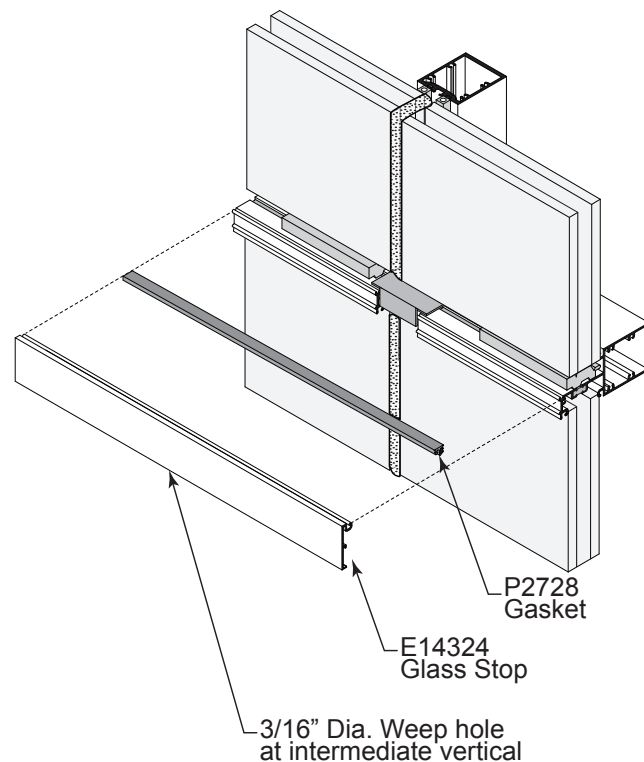
**Fig.54.1**



**Fig.54.2**



**Fig.54.3**

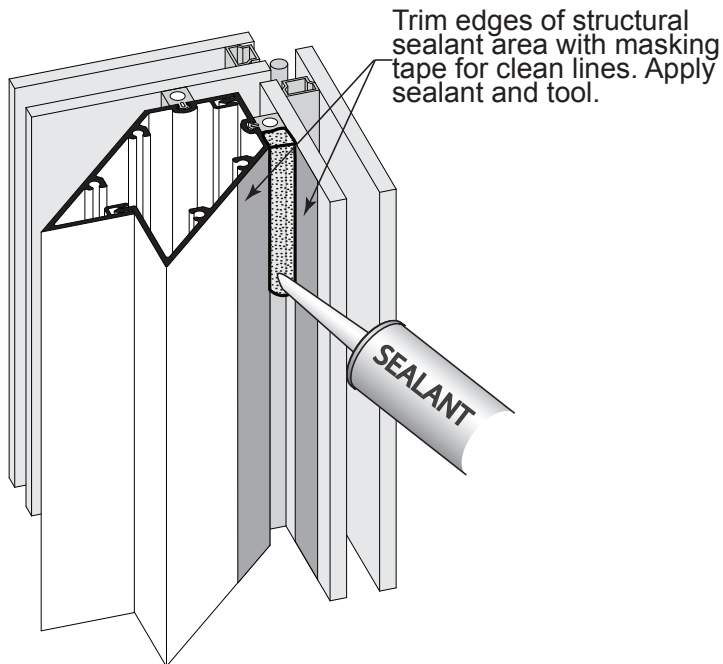


**Fig.54.4**

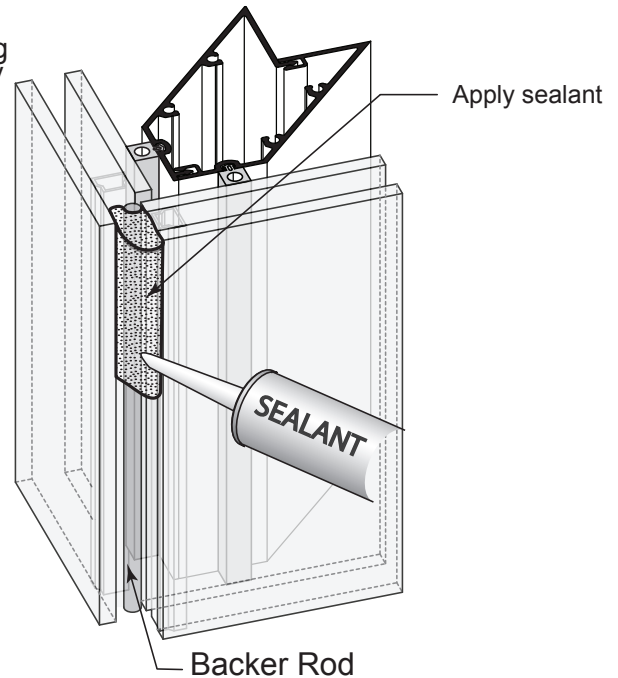
## STRUCTURAL SILICONE GLAZED - SSG

### Step 8: Install SSG Corner

- A. Place the male SSG corner member (E14348) and female SSG corner member
- B. Install P2310 glazing gaskets to corner members
- C. Set glass. Tape off side of SSG vertical and glass prior to applying structural sealant. Apply structural sealant and backer rod as shown in **Fig 55.1** & **Fig 55.2**



**Fig.55.1**



**Fig.55.2**