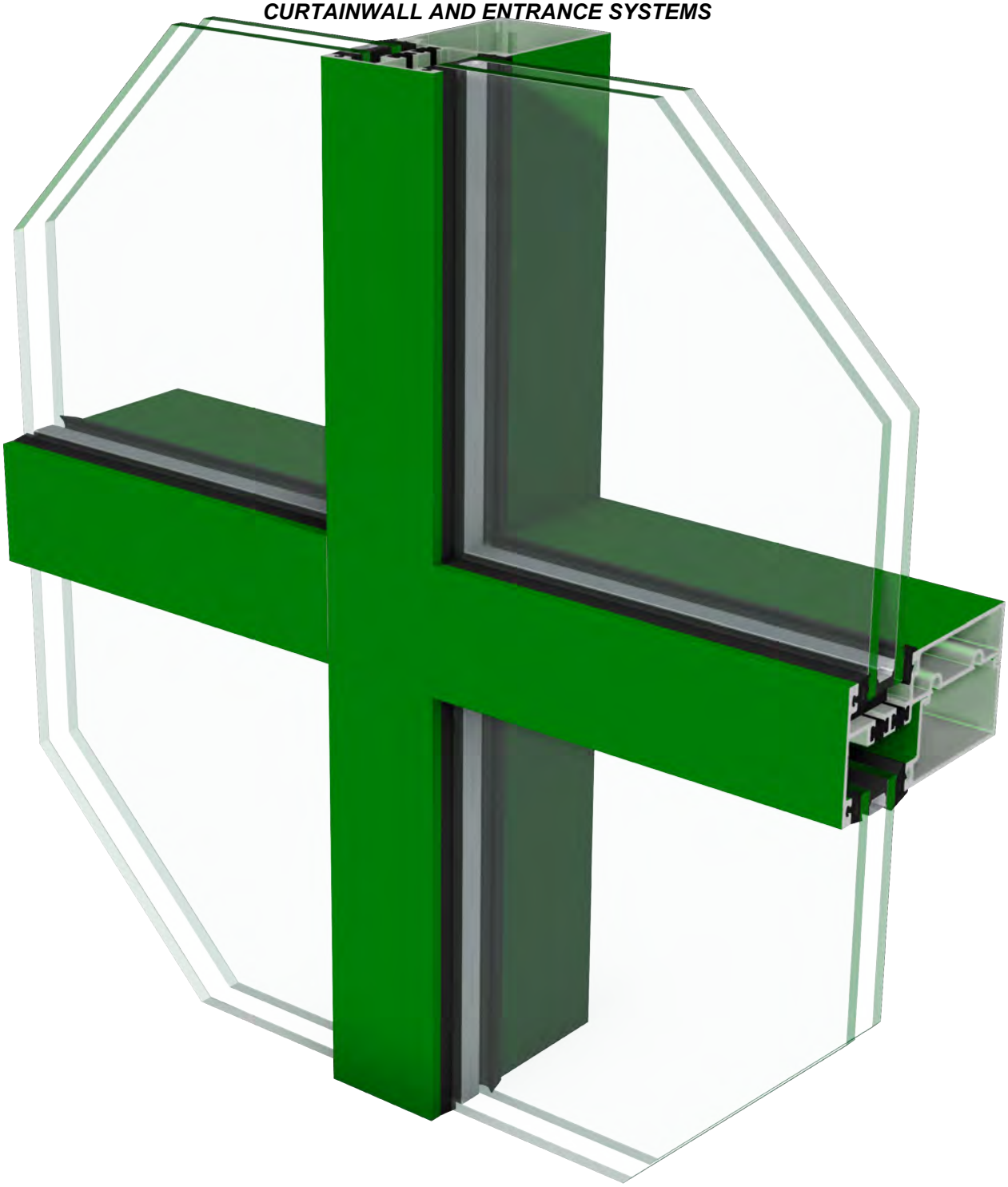
TUBELITE®

DEPENDABLE

LEADERS IN ECO-EFFICIENT STOREFRONT, CURTAINWALL AND ENTRANCE SYSTEMS



900 SERIES RIBBON WINDOW

INSTALLATION INSTRUCTIONS

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

TUBELITE®
DEPENDABLE
LEADERS IN ECO-EFFICIENT STOREFRONT, CURTAINWALL AND ENTRANCE SYSTEMS

TABLE OF CONTENTS

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 prior to installing.

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.

TUBELITE®
DEPENDABLE
LEADERS IN ECO-EFFICIENT STOREFRONT, CURTAINWALL AND ENTRANCE SYSTEMS

GENERAL CONSTRUCTION NOTES

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 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 considerations. It is the responsibility of the owner, specifier, architect, general contractor and the installer to make these selections in strict conformance with all applicable codes.

19. Check www.tubeliteinc.com any installation instruction updates prior to commencing work.

QUICK REFERENCE CHECKLIST

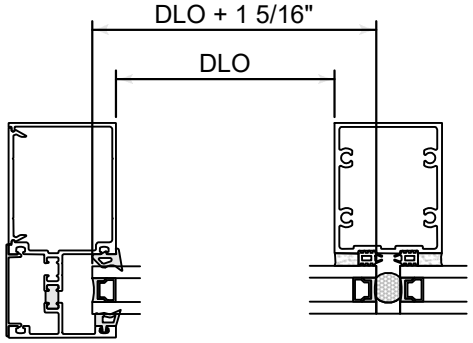
1. Make sure the opening is square and the caulk joints are 1/2" minimum around the frame.
2. Ensure surfaces that will be sealed are free of contaminants that can lead to adhesion issues.
3. Sill flashing must be properly shimmed and level from left to right and front to back for proper drainage.
4. A continuous line of sealant must be applied between the sill and the bottom 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. Exception is the SSG mullion which requires a 7/8" glass bite.
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

Typical Framing:
Glass Width = D.L.O. plus 7/8"
Glass Height = D.L.O. plus 1"

SSG Mullion:
Glass Width = D.L.O. plus 1 3/4"
Glass Height = D.L.O. plus 1"

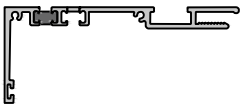
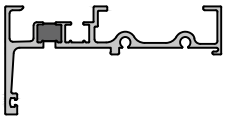
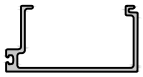
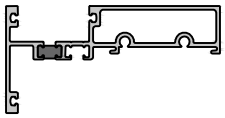
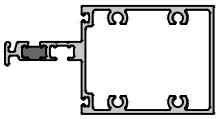
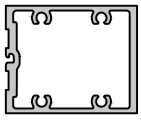
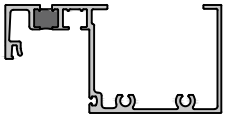
SSG Horizontal:
Glass bite is 7/8”



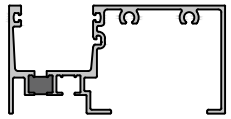
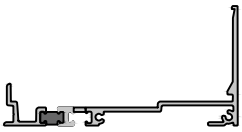
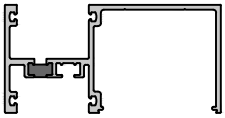
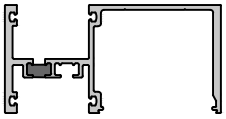
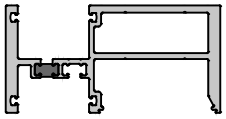
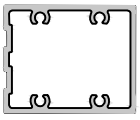
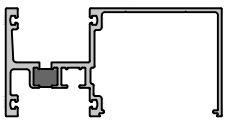
Captured to SSG

TUBELITE®
DEPENDABLE
LEADERS IN ECO-EFFICIENT STOREFRONT, CURTAINWALL AND ENTRANCE SYSTEMS

TYPICAL FRAMING EXTRUSIONS

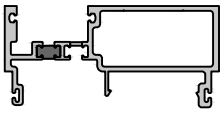
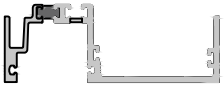
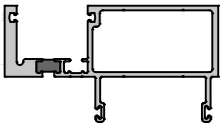
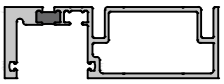
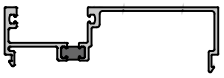
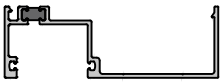
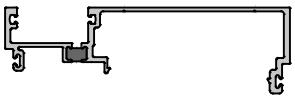
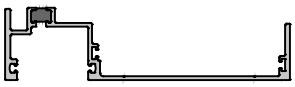
SHAPE	DESCRIPTION	DEPTH	SINGLE P&D	DOUBLE P&D
	Head Receptor Female	4 ½”	T9420	TU9420
		6”	T9620	TU9620
	Head Receptor Male		E9410	E9410
	Inside Glaze Head	4 ½”	T9465	TU9465
		6”	T9665	TU9665
	Glass Stop, Inside Glaze	4 ½”	E9416	E9416
		6”	E9616	E9616
	Inside Glaze Horizontal	4 ½”	T9466	TU9466
		6”	T9666	TU9666
	Shear Block Horizontal, Outside Glaze	4 ½”	T9485	TU9485
		6”	T9685	TU9685
	Glass Stop, OS Glaze, Shear Block Horizontal	-	E9487	E9487
	SSG Horizontal	**4 ½”**	E9474	E9474
		6”	E9674	E9674
	Outside Glazed Head	**4 ½”**	T9467	TU9467
		6”	T9667	TU9667
	Stop For Outside Glazed Head	-	E9415	E9415

TYPICAL FRAMING EXTRUSIONS

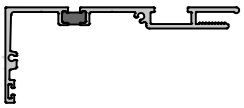
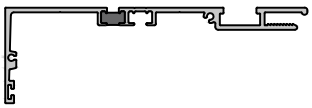
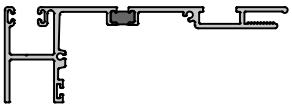
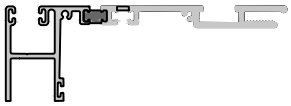
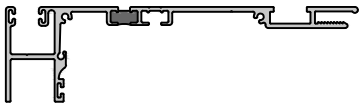
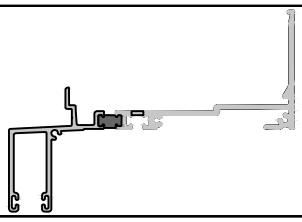
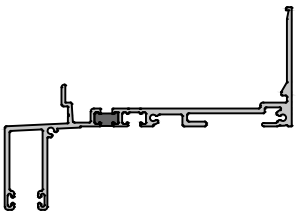
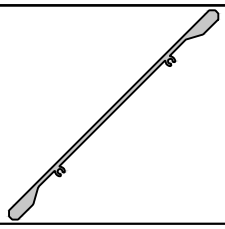
SHAPE	DESCRIPTION	DEPTH	SINGLE P&D	DOUBLE P&D
	Sill	4 ½”	T9462	TU9462
		6”	T9662	TU9662
	Sill Flashing	4 ½”	T9469	TU9469
		6”	T9669	TU9669
	Vertical	4 ½”	T9450	TU9450
		6”	T9650	TU9650
	Heavy Wall Vertical	4 ½”	T9454	TU9454
		6”	T9654	TU9654
	Heavy Wall Reinforced Vertical Mullion	4-1/2"	T9455	TU9455
		6"	T9655	TU9655
	Vertical Filler	4 ½”	E9451	E9451
		6”	E9651	E9651
	SSG Vertical Mullion	4 ½”	E9430	E9430
		6”	E9630	E9630
	Jamb	4 ½”	T9449	TU9449
		6”	T9649	TU9649

TUBELITE®
DEPENDABLE
LEADERS IN ECO-EFFICIENT STOREFRONT, CURTAINWALL AND ENTRANCE SYSTEMS

TYPICAL FRAMING EXTRUSIONS

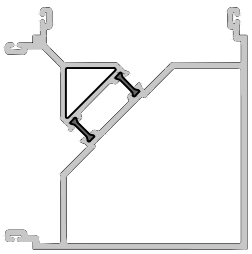
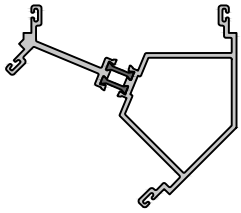
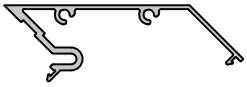
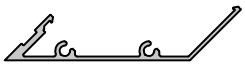
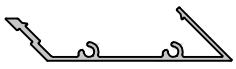
SHAPE	DESCRIPTION	DEPTH	SINGLE P&D	DOUBLE P&D
	Vertical Expansion Mullion, Male	4 ½”	T9452	TU9452
		6”	T9652	TU9652
	Expansion Mullion, Female	4 ½”	T9453	TU9453
		6”	T9653	TU9653
	Sunshade Vertical Expansion Mullion - Male	4-1/2"	T9432	TU9432
		6"	T9632	TU9632
	Sunshade Vertical Expansion Mullion - Female	4-1/2"	T9433	TU9433
		6"	T9633	TU9633
	Split Vertical Mullion Half - Male	4-1/2"	T9471	TU9471
		6"	T9671	TU9671
	Split Vertical Mullion Half - Female	4-1/2"	T9472	TU9472
		6"	T9672	TU9672
	Split Vertical Mullion Half with Anti-Buckling Clip - Male	6"	N/A	TA9681
	Split Vertical Mullion Half with Anti-Buckling Clip - Female	6"	N/A	TA9682

RECEPTOR AND SLAB COVER EXTRUSIONS

SHAPE	DESCRIPTION	DEPTH	SINGLE P&D	DOUBLE P&D
	Heavy Duty Head Receptor - Female	4-1/2"	T9428	N/A
		6"	T9628	N/A
	Heavy Duty Head Receptor - Female	6"	N/A	TU9680
	Heavy Duty Head Receptor at Slab Cover - Female	4-1/2"	T9429	N/A
		6"	T9629	N/A
	Heavy Duty Head Receptor at Slab Cover - Female	4-1/2"	T9423	TU9423
	Heavy Duty Slab Cover Head Receptor - Female	6"	T9683	TU9683
	Heavy Duty Head Receptor - Male	4-1/2" & 6"	E9418	E9418
	Sill Flashing at Slab Cover	4-1/2"	T9470	TU9470
		6"	T9670	TU9670
	Extended Sill Flashing at Slab Cover	4-1/2"	T9479	TU9479
		6"	T9677	TU9677
	Slab Cover - 8"		E9414	E9414

TUBELITE®
DEPENDABLE
LEADERS IN ECO-EFFICIENT STOREFRONT, CURTAINWALL AND ENTRANCE SYSTEMS

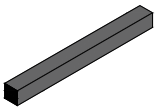
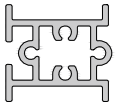
CORNER EXTRUSIONS

SHAPE	DESCRIPTION	DEPTH	PART No.
	Corner Mullion 90°	4-1/2"	A944041
		6"	A964041
	Corner Mullion 135°	4-1/2"	A944243
		6"	A964243
	Inside 90° SSG Corner Mullion Half - Male	4-1/2"	E9456
		6"	E9656
	Inside 90° SSG Corner Mullion Half - Female	4-1/2"	E9457
		6"	E9657
	Outside 90° SSG Corner Mullion Half - Male	4-1/2"	E9458
		6"	E9658
	Outside 90° SSG Corner Mullion Half - Female	4-1/2"	E9459
		6"	E9659

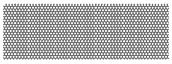
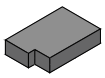
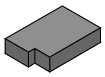
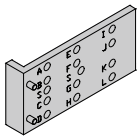
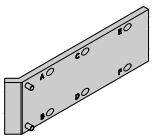
SHAPE	DESCRIPTION	PART No.
	Typical Glazing Gasket	P2929
	Wedge Gasket	P2538
	Silicone Glazing Gasket	PTB40
	Dual-Durometer Bulb Gasket	P6296
	Sill Flashing Wedge Gasket	P2901
	Setting Block - EPDM	P2075
	Setting Block - Silicone	P2505
	Setting Block - EPDM	P1912
	Setting Block - Silicone	P1912S
	Setting Chair	P4623

TUBELITE®
DEPENDABLE
LEADERS IN ECO-EFFICIENT STOREFRONT, CURTAINWALL AND ENTRANCE SYSTEMS

ACCESSORIES

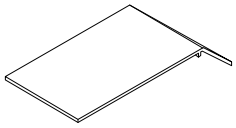
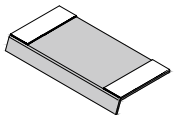
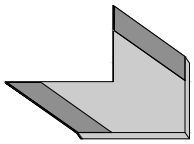
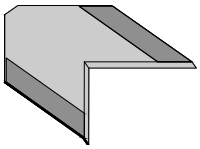
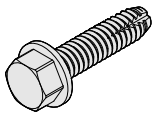
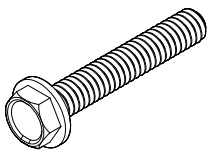
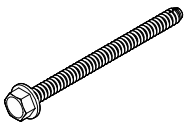
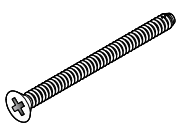
SHAPE	DESCRIPTION	PART No.
	Gasket - Slab Cover, Expansion Mullion	P4630
	Slab Cover Setting Block	P2902
	SSG Spacer Gasket	P1690
	Silicone Splice Sleeve	P3444
	Anti-Buckling Clip (Required quantity is project specific)	P4615
	Anti-Walk Block	P1917
	3/16" Silicone Edge Block	P2504
	Shear Block	P2930

ACCESSORIES

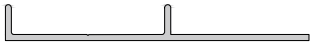
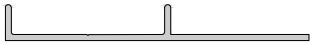
SHAPE	DESCRIPTION	PART No.
	Screw Applied End Dams (sizes and holes will vary)	
	Use with T/TU9420	P2904
	Use with T/TU9423	P2905
	Use with E9414	P2907
	Use with T/TU9620	P2910
	Use with T/TU9623	P2912
	Use with T/TU9469	P2925
	Use with T/TU9470	P2926
	Use with T/TU9669	P2927
	Use with T/TU9670	P2928
	Open Cell Weep Baffle	PTB42
	Water Dam - Use at Vertical - Shallow Pocket Required when using sill anchor clips	P2914
	Water Dam - Use at Vertical - Deep Pocket Required when using sill anchor clips	P2915
	Water Dam - Use at Expansion Vertical - Shallow Pocket Required when using sill anchor clips	P2916
	Water Dam - Use at Expansion Vertical - Female Required when using sill anchor clips	P2917
	Drill Jig for Standard Vertical Mullions	P2940
	Drill Jig for OS 90° and IS 90° SSG Corners	P2949

TUBELITE®
DEPENDABLE
LEADERS IN ECO-EFFICIENT STOREFRONT, CURTAINWALL AND ENTRANCE SYSTEMS

ACCESSORIES

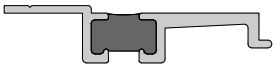
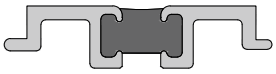
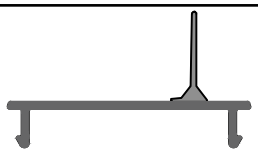
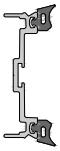
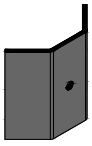
SHAPE	DESCRIPTION	PART No.
	Water Diverter	P1135
	Water Diverter - SSG Mullion	P2936
	SSG Outside 90° Water Diverter	P2946
	SSG Inside 90° Water Diverter	P2948
	1/4 - 20 x 1" Hex Washer Head Type 23, Frame Assembly Screw	S403
	1/4 - 20 x 1-1/2" Hex Washer Head Type 23, Horizontal Assembly at SSG OS/IS 90°	S427
	#8 x 3/8" PH Pan Head, Type A, End Cap Screw	S196
	#23 - 1/4-20 x 3" HWH, Type F - Used at OS 90° Temp Clip (P2947)	S390
	#24 - 1/4-20 x 3" FH, Type F - Used at IS 90° Temp Clip (E0192)	S391

ACCESSORIES

SHAPE	DESCRIPTION	PART No.
	Anchor - Use at Head 4 ½" & 6" Depth	P2918
	Anchor - Use at Head Channel 4 ½" Depth	P2919
	Anchor - Use at F-Clip 4 ½" Depth	P2920
	Anchor - Use at Sill (Windloaded) 4 ½" Depth	P2921
	Anchor - Use at Head Channel 6" Depth	P2922
	Use at F-Clip 6" Depth	P2923
	Use at Sill (Windloaded) 6" Depth	P2924
	Use at F-Clip 6" Depth	P2923
	Use at Sill (Windloaded) 6" Depth	P2924
	Splice Sleeve - Head 6" Depth	P2931
	Splice Sleeve - Head 4-1/2" Depth	P2932

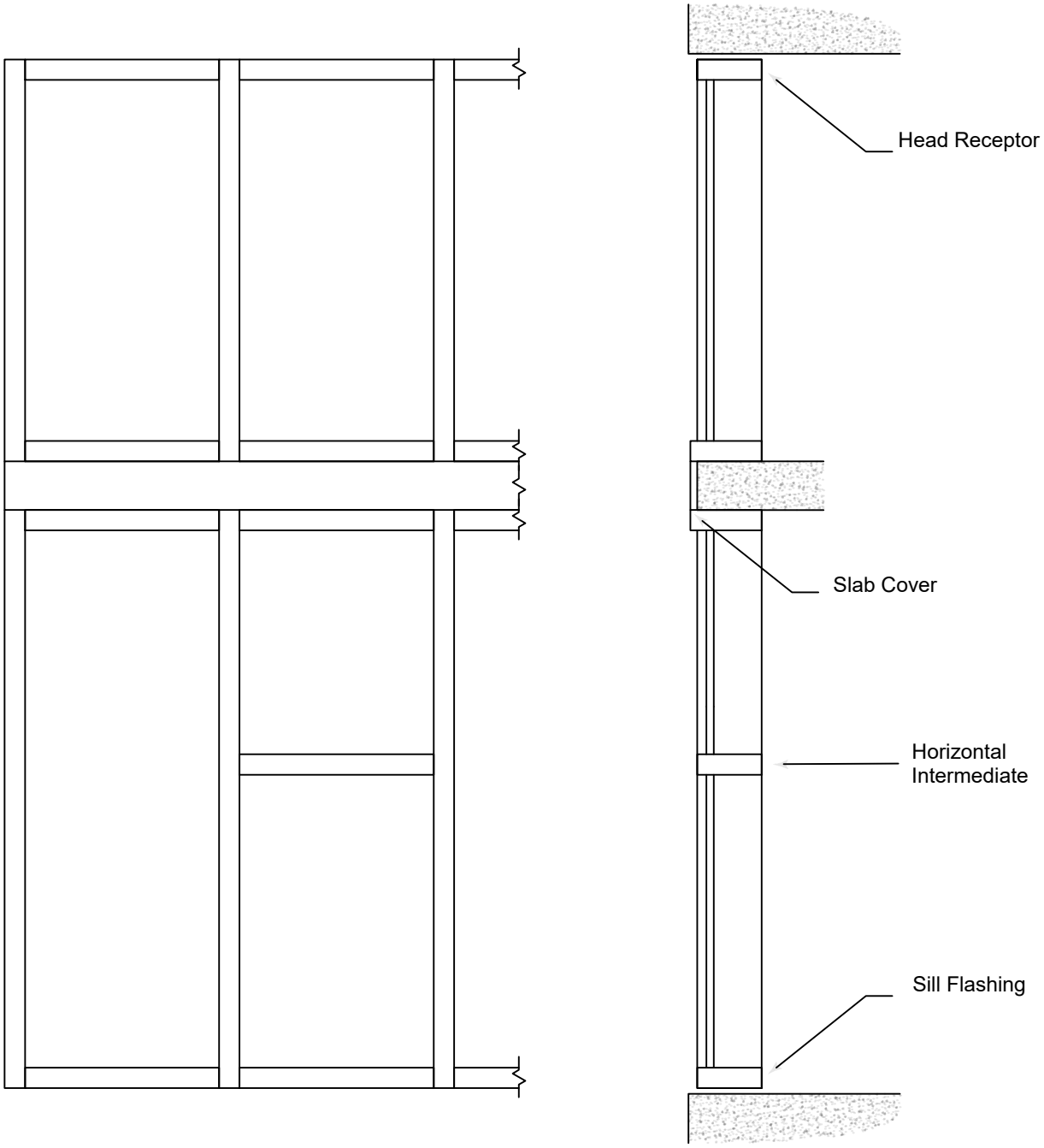
TUBELITE®
DEPENDABLE
LEADERS IN ECO-EFFICIENT STOREFRONT, CURTAINWALL AND ENTRANCE SYSTEMS

ACCESSORIES

SHAPE	DESCRIPTION	PART No.
	Splice Sleeve - Head / Sill	P2933
	Splice Sleeve - Head 6" Depth	P2934
	Splice Sleeve - Head 4-1/2" Depth	P2935
	Glazing Pocket Filler	P2500
	Pocket Filler with Fastener Leg for Operable Windows	TA9404
	Slide-In Pocket Filler	TA311TU
	Glazing Pocket Filler for use with Phantom Vent	P2937
	Temporary Glazing Clip	P4634
	Outside 90° SSG Corner Temporary Clip - Use with (4) P4604 bocks and S390 Fastener	P2947
	Aluminum Angle (Field Cut to 3" Long for Temp Clip with (4) P4604 blocks and S391 Fastener)	E0192
	Setting Block (Use with Temp Clips)	P4604

TYPICAL WINDOW WALL ELEVATION and SECTION

The 900RW series window wall system is designed for a floor to floor application. Refer to approved shop drawings for specific guidance on splicing and anchoring.



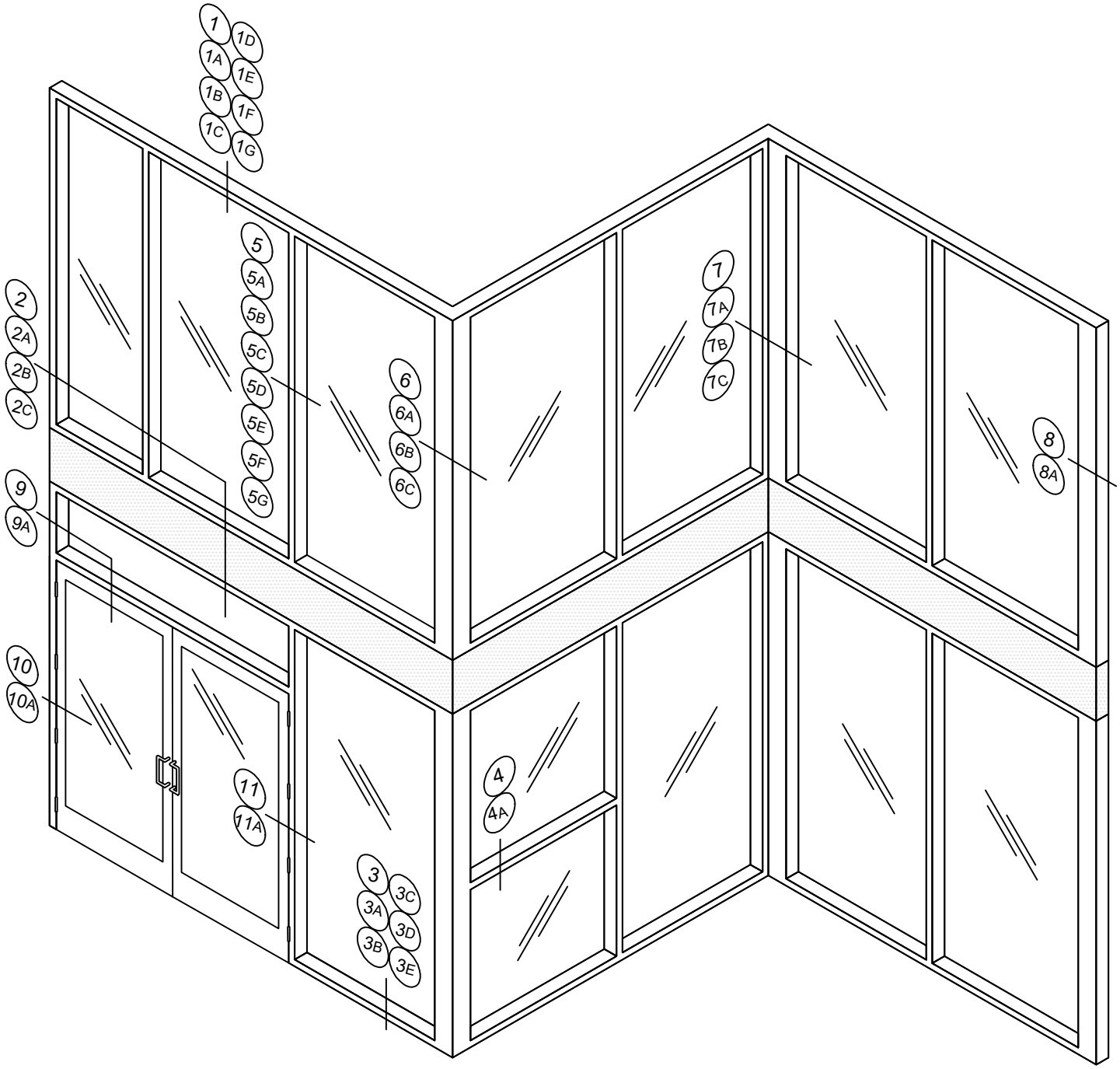
Span Configurations will vary per project requirements.

Conditions must be approved by engineer calculations.

TUBELITE®
DEPENDABLE
LEADERS IN ECO-EFFICIENT STOREFRONT, CURTAINWALL AND ENTRANCE SYSTEMS

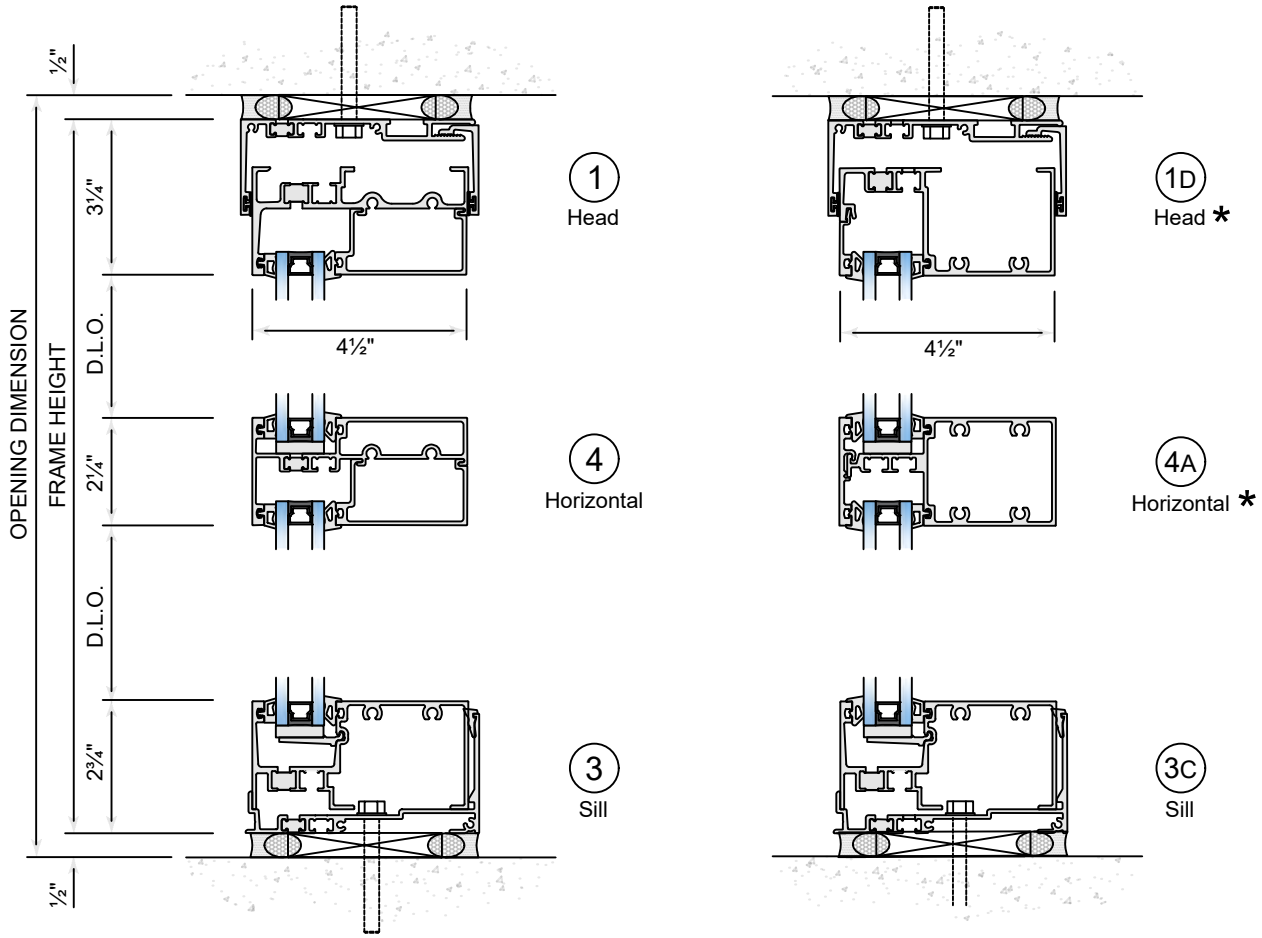
TYPICAL WINDOW WALL ELEVATION and DETAILS

The illustration below shows the elevation view of a typical 900RW Series installation.



TYPICAL ELEVATION

HORIZONTAL DETAILS

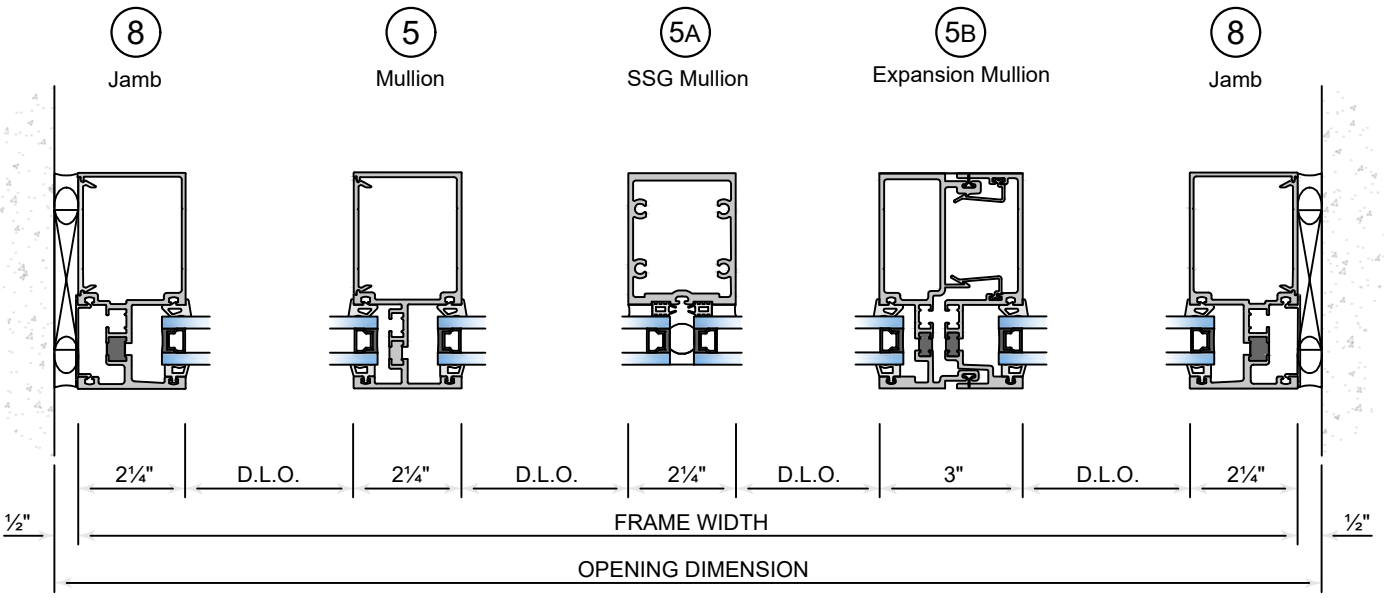


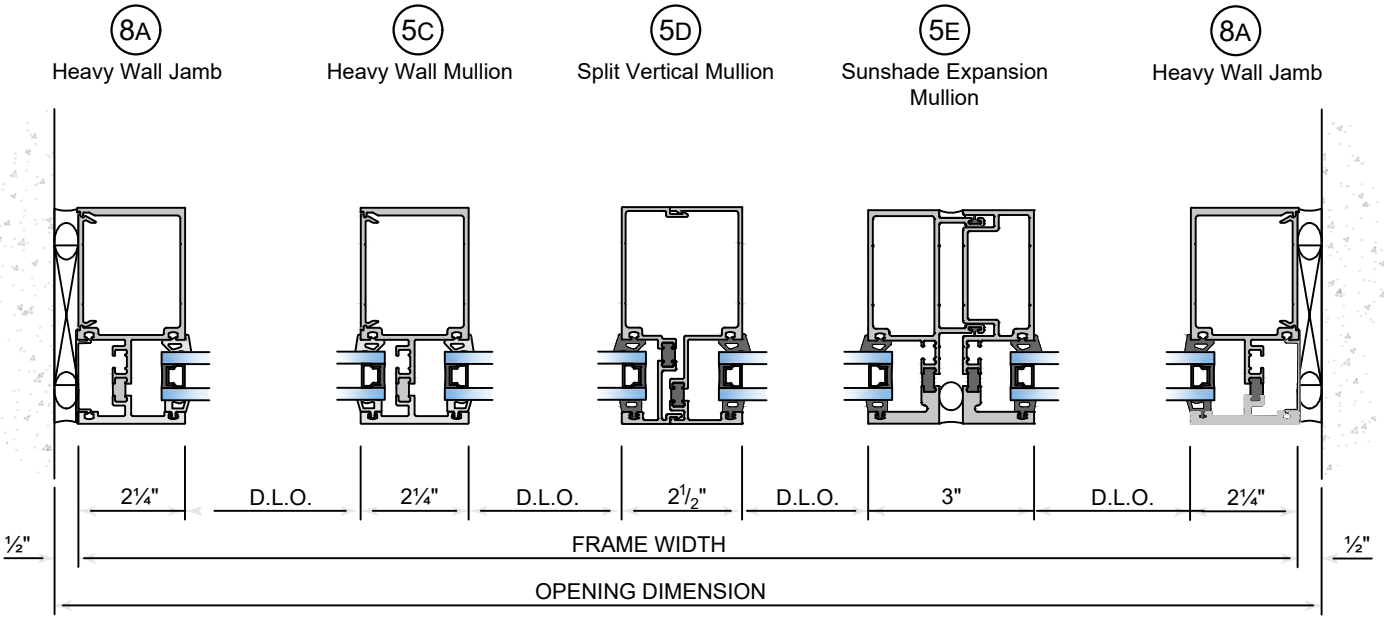
Inside Glaze **Outside Glaze**

***** **NOTE:** For **OUTSIDE GLAZE** head members using the **E9415 glazing stop**, apply sealant at the receiving joint of the horizontal prior to installing the stop. Ref. **Fig. 56.2**

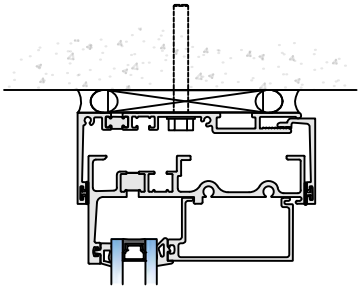
TUBELITE®
DEPENDABLE
LEADERS IN ECO-EFFICIENT STOREFRONT, CURTAINWALL AND ENTRANCE SYSTEMS

VERTICAL DETAILS

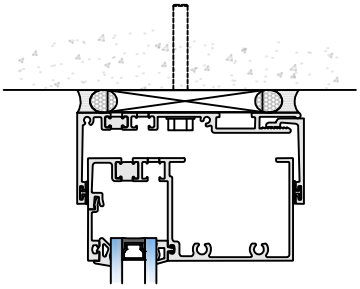




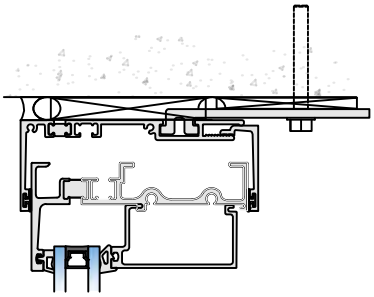
HEAD DETAILS



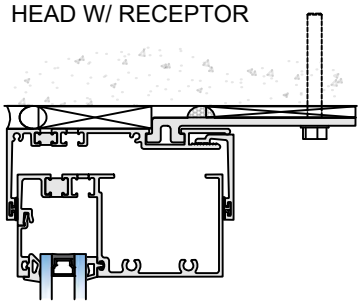
1
HEAD W/ RECEPTOR



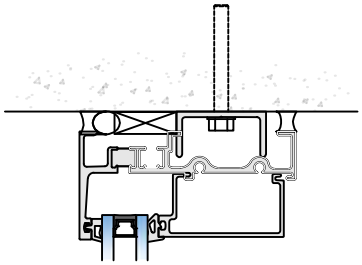
1D
OUTSIDE GLAZE *
HEAD W/ RECEPTOR



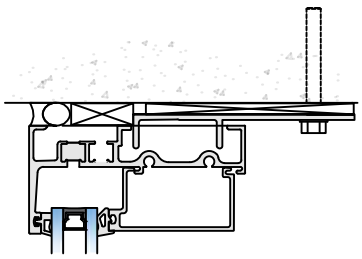
1A
HEAD W/ ALTERNATE ANCHOR



1E
OUTSIDE GLAZE *
HEAD W/ ALTERNATE ANCHOR



1B
STANDARD HEAD W/ ANCHOR CHANNEL



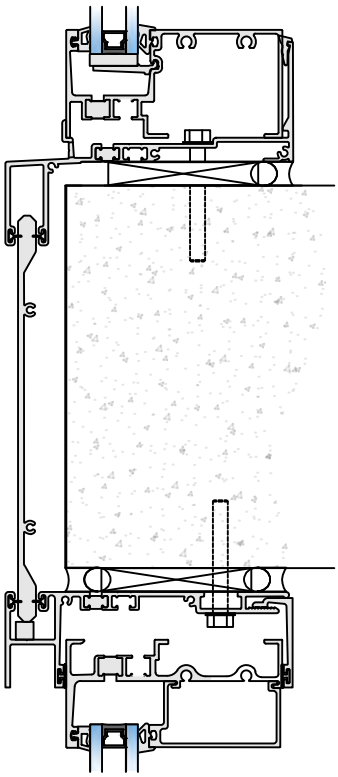
1C
HEAD W/ F-CLIP ANCHOR

* **NOTE:** For **OUTSIDE GLAZE** head members using the **E9415 glazing stop,** apply sealant at the receiving joint of the horizontal prior to installing the stop. Ref. **Fig. 56.2**

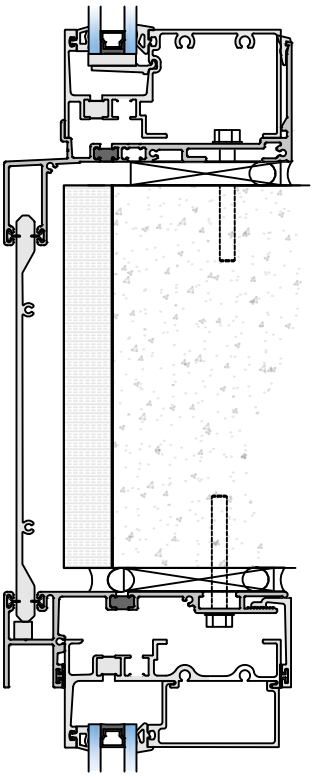
TUBELITE®
DEPENDABLE
LEADERS IN ECO-EFFICIENT STOREFRONT, CURTAINWALL AND ENTRANCE SYSTEMS

SLAB COVER and HORIZONTAL DETAILS

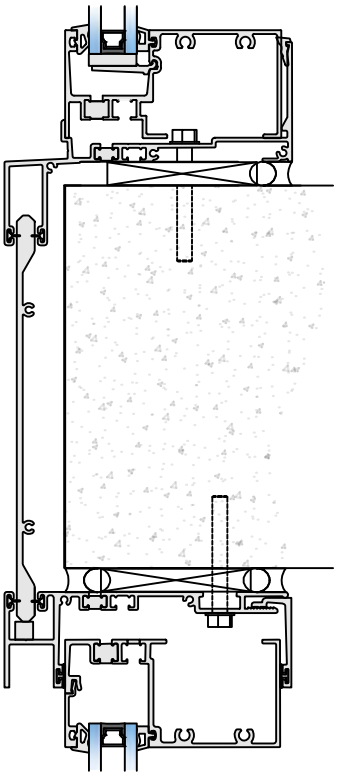
(2) INSIDE GLAZE SLAB COVER



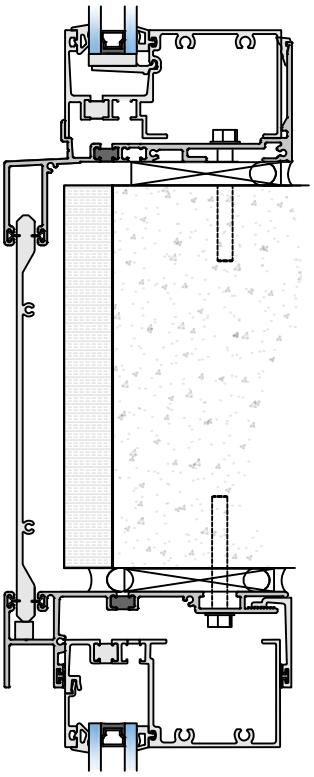
(2A) INSIDE GLAZE EXTENDED SLAB COVER



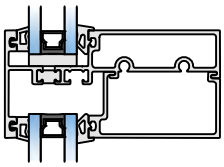
(2B) OUTSIDE GLAZE SLAB COVER



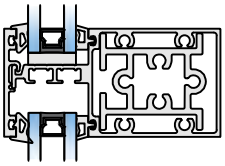
(2C) OUTSIDE GLAZE EXTENDED SLAB COVER



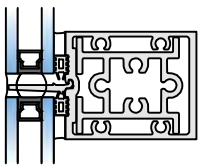
(4) STANDARD HORIZONTAL



(4A) OPTIONAL SHEAR BLOCK HORIZONTAL - OUTSIDE GLAZE

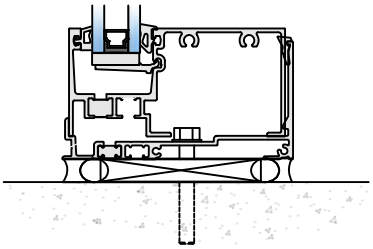


(4B) OPTIONAL SSG HORIZONTAL

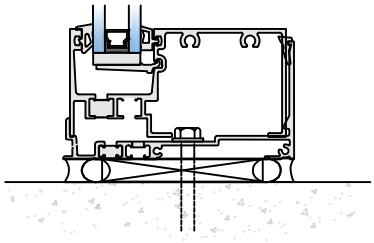


SILL DETAILS

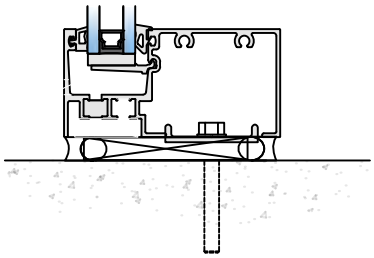
(3)
STANDARD SILL



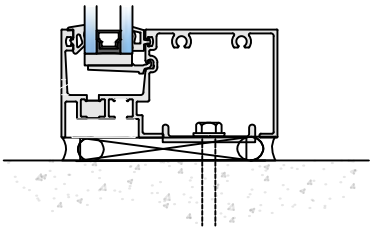
(3C)
OUTSIDE GLAZE SILL



(3A)
SILL CHANNEL ANCHOR

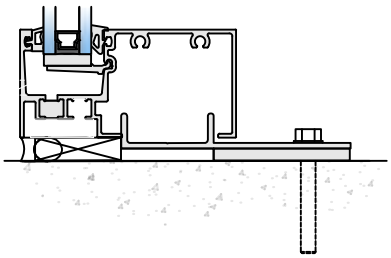


(3D)
OUTSIDE GLAZE
SILL CHANNEL ANCHOR

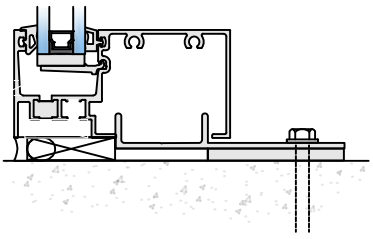


INSTALLER NOTE:
USE OF SILL WITHOUT FLASHING (DETAILS 3A, 3B, 3D & 3E) REQUIRE WEEP HOLE AT FACE OF SILL MEMBER (5/16" DIA HOLES, TWO PER LITE AT 1/4 POINTS).

(3B)
SILL W/ F-CLIP

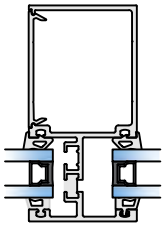


(3E)
OUTSIDE GLAZE
SILL W/ F-CLIP

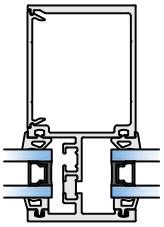


TUBELITE®
DEPENDABLE
LEADERS IN ECO-EFFICIENT STOREFRONT, CURTAINWALL AND ENTRANCE SYSTEMS

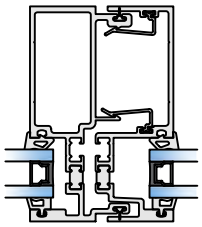
VERTICAL and JAMB DETAILS



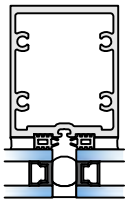
5
STANDARD VERTICAL



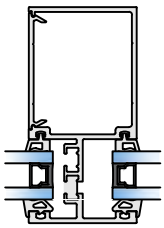
5A
HEAVY WALL VERTICAL



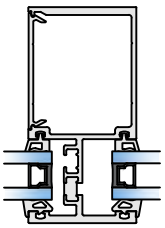
5B
EXPANSION VERTICAL



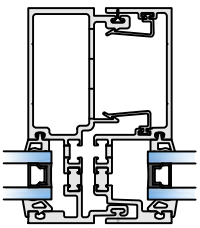
5C
SSG MULLIOIN



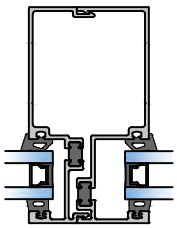
5D
OUTSIDE GLAZE
SLAB COVER



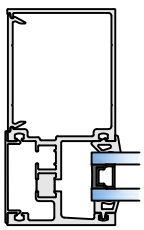
5E
OUTSIDE GLAZE
HEAVY WALL VERTICAL



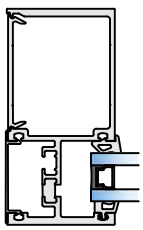
5F
OUTSIDE GLAZE
EXPANSION VERTICAL



5G
PRE-GLAZE VERTICAL

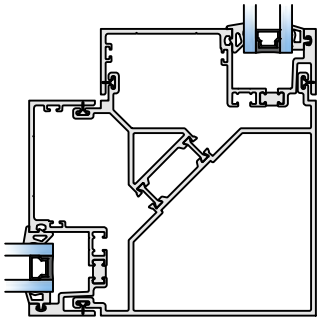


8
STANDARD JAMB

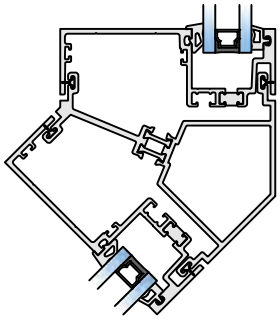


8A
HEAVY WALL JAMB

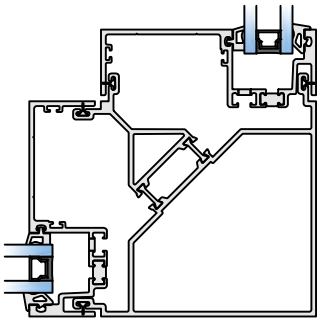
OUTSIDE CORNER DETAILS



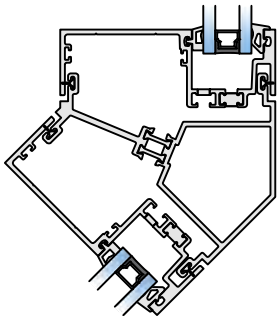
6
90° OUTSIDE CORNER



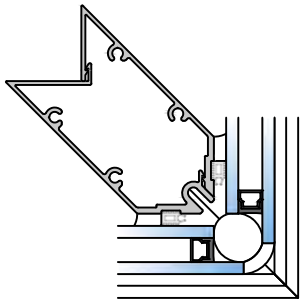
6B
135° OUTSIDE CORNER



6A
OUTSIDE GLAZE
90° OUTSIDE CORNER



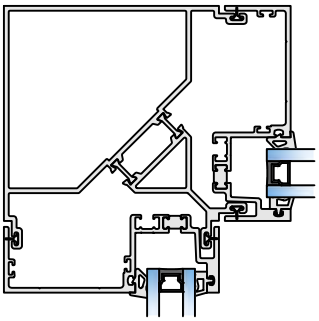
6C
OUTSIDE GLAZE
135° OUTSIDE CORNER



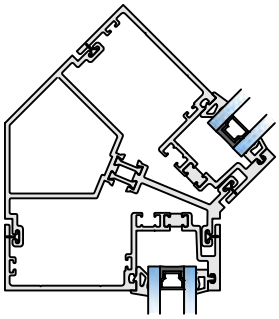
6A
SSG GLAZE
90° OUTSIDE CORNER

TUBELITE®
DEPENDABLE
LEADERS IN ECO-EFFICIENT STOREFRONT, CURTAINWALL AND ENTRANCE SYSTEMS

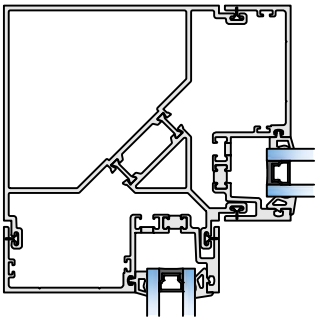
INSIDE CORNER DETAILS



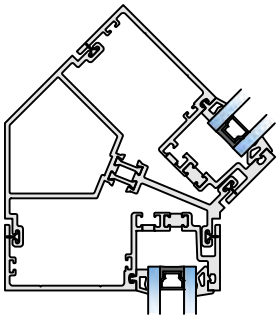
7
90° INSIDE CORNER



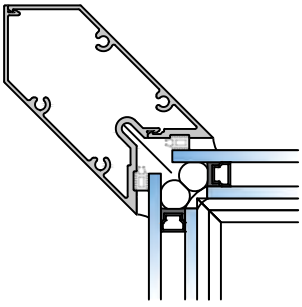
7B
135° INSIDE CORNER



7A
OUTSIDE GLAZE
90° INSIDE CORNER

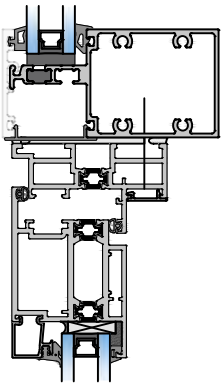


7C
OUTSIDE GLAZE
135° INSIDE CORNER

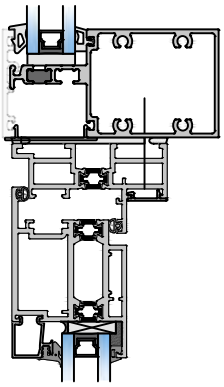


6A
SSG GLAZE
90° OUTSIDE CORNER

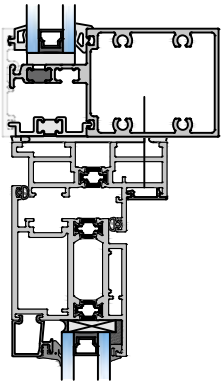
DOOR HEAD DETAILS



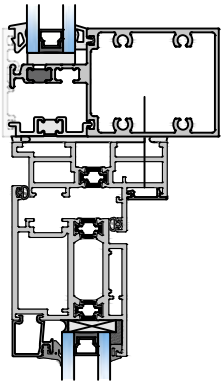
9
STANDARD DOOR HEAD



9A
DOOR HEAD
W/ GLAZED TRANSOM



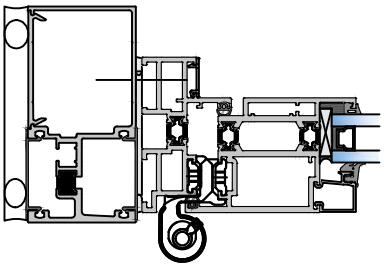
9B
DOOR HEAD
W/ POCKET FILLER



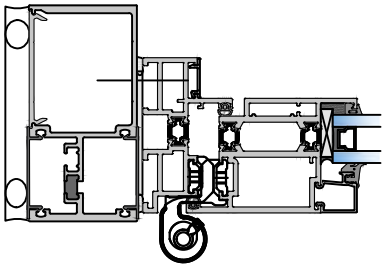
9C
DOOR HEAD
W/ POCKET FILLER
& GLAZED TRANSOM

TUBELITE®
DEPENDABLE
LEADERS IN ECO-EFFICIENT STOREFRONT, CURTAINWALL AND ENTRANCE SYSTEMS

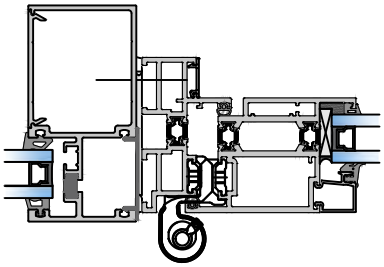
DOOR JAMB DETAILS



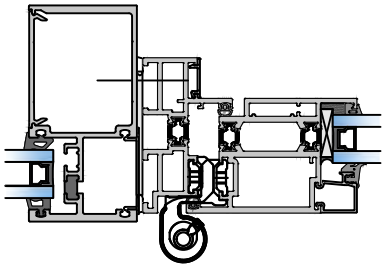
10
STANDARD DOOR JAMB



10A
HEAVY WALL DOOR JAMB



11
STANDARD DOOR JAMB



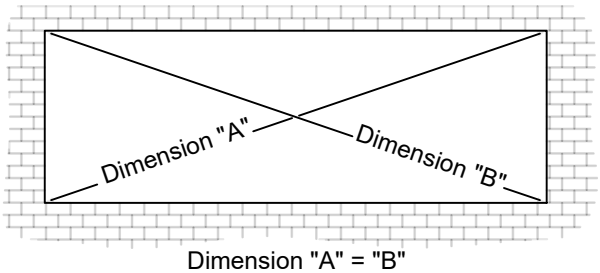
11A
HEAVY WALL DOOR JAMB

FRAME FABRICATION

Step 1: Determine Frame Size

Determine Frame Width

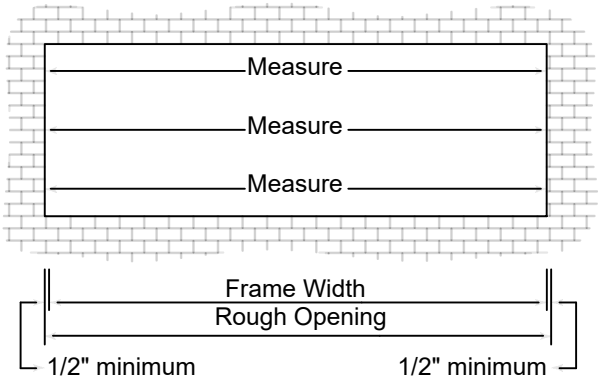
A. Check that the opening is square and plumb at both ends. Units must be installed in a true rectangle.



Dimension "A" = "B"

B. Measure the width of the masonry opening at the top, middle and bottom.

C. Select the smallest dimension measured. To determine the frame width to be used, subtract a minimum of 1" from the smallest measured width, to allow a minimum of 1/2" at each jamb for shimming and caulking. Allow a larger clearance if necessary to accommodate building tolerances, an out-of-square opening, and/or anticipated thermal expansion within the unit.

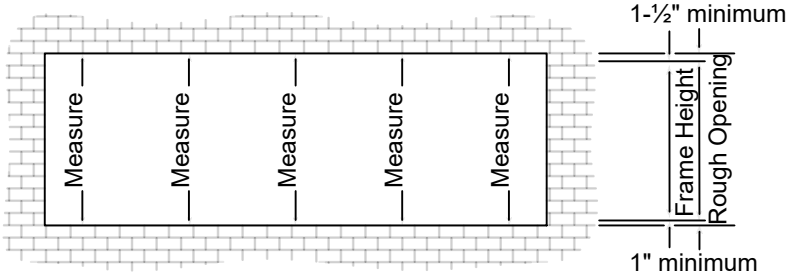


Determine Frame Height

D. Measure the height of the rough opening in several places along the entire length of the opening.

E. To determine the frame height to be used, select the smallest dimension measured.

1. For receptor installation subtract 2 1/2" to allow a minimum of 1" at sill and 1 1/2" at head for receptors, shimming and caulking and to accommodate building tolerances, an out-of-square opening, and/or anticipated thermal expansion within the unit.
2. For anchored installation subtract 1" to allow a minimum of 1/2" at sill and 1/2" at the head for shimming, caulking and to accommodate building tolerances, an out of square opening, and/ or anticipated thermal expansion within the unit.



FRAME FABRICATION

Step 2: Cut Head Receptor and Sill Flashing to Size

A. Cut sill flashing to frame width plus 3/4".
B. Cut head receptors to frame width plus 3/4".
C. Receptors/ flashing longer than 24' in length must be spliced using part number P3444 silicone splice sleeve. If receptors must be spliced, allow 3/8" to 1/2" for the width of the splice.
D. Expansion mullions are required between every 16' - 20' feet of run with corresponding receptor splice located at the center of the daylight opening between vertical mullions. The dimension of the expansion mullion assembly should be adjusted based on the temperature at the time of assembly and expected high and low service temperatures. For example, the sight line will be reduced slightly when installed in hot weather and increased slightly when installed in cold weather.

Step 3: Cut Vertical Framing Members to Size

A. Verticals should be the frame height found in Step #1 above (rough opening height minus clearances).
B. Vertical framing members run through with standard captured vertical mullion (not SSG vertical).

Step 4: Cut Horizontal Framing Members to Size

A. Cut horizontal framing members to the daylight opening (the distance between verticals).

C. For easier installation, cut horizontal glass stops 1/32" shorter than the horizontal framing member.

Step 5: Machine Weep Holes in Extruded Sill Flashing

A. T/TU9469, T/TU9470, T/TU9669 and T/TU9670 extruded sill flashing require two weep holes per lite, located at quarter points. As shown in the illustration below, the weep holes should be 5/16" by 5/8" s.r slots.

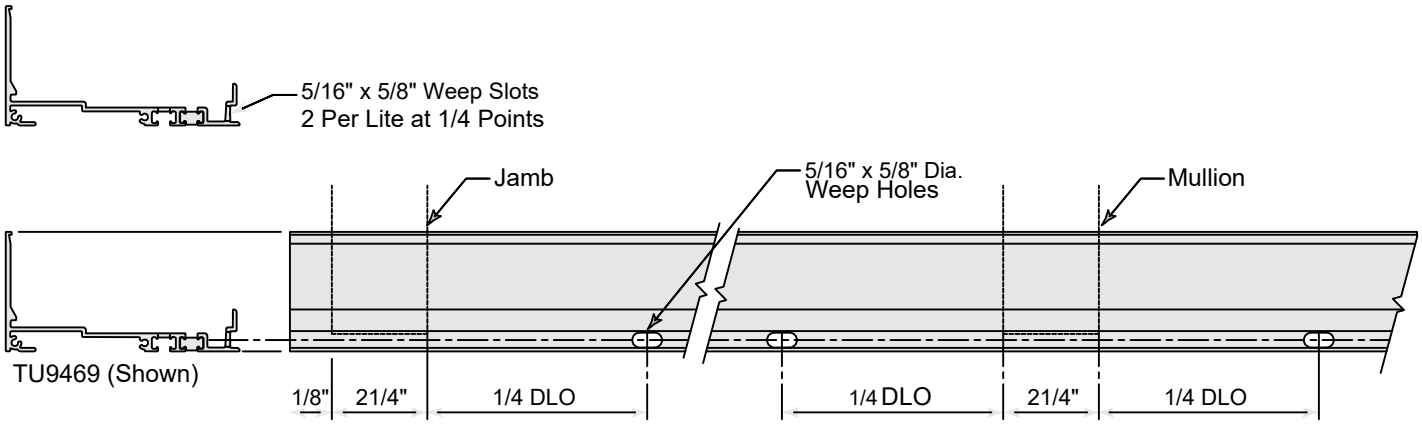
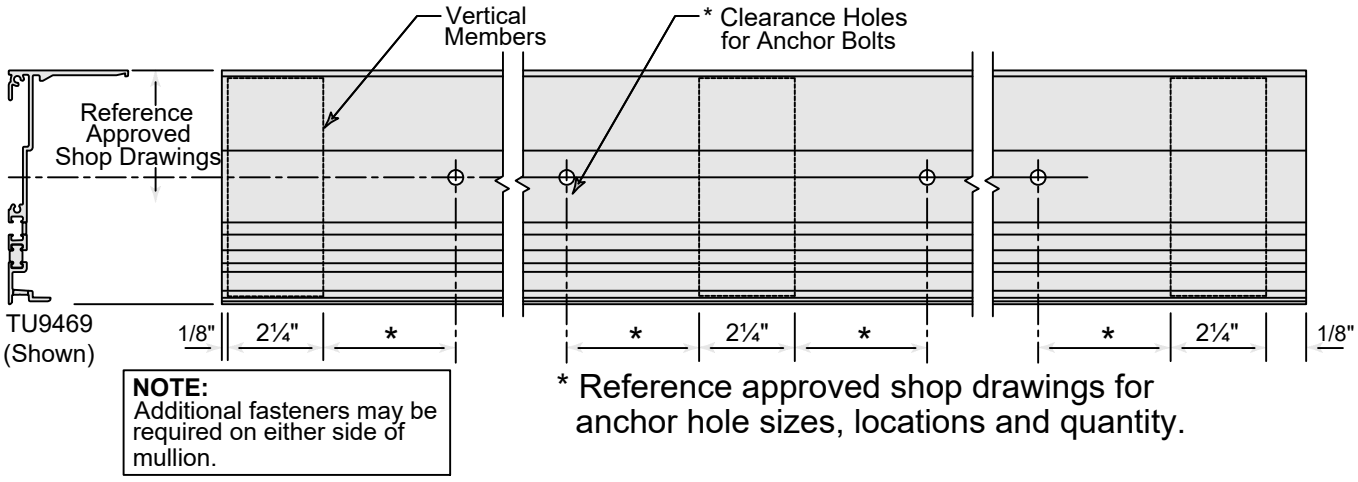


Fig. 30.1

FRAME FABRICATION

Step 6: Machine Anchor Holes in Extruded Receptors and Flashing

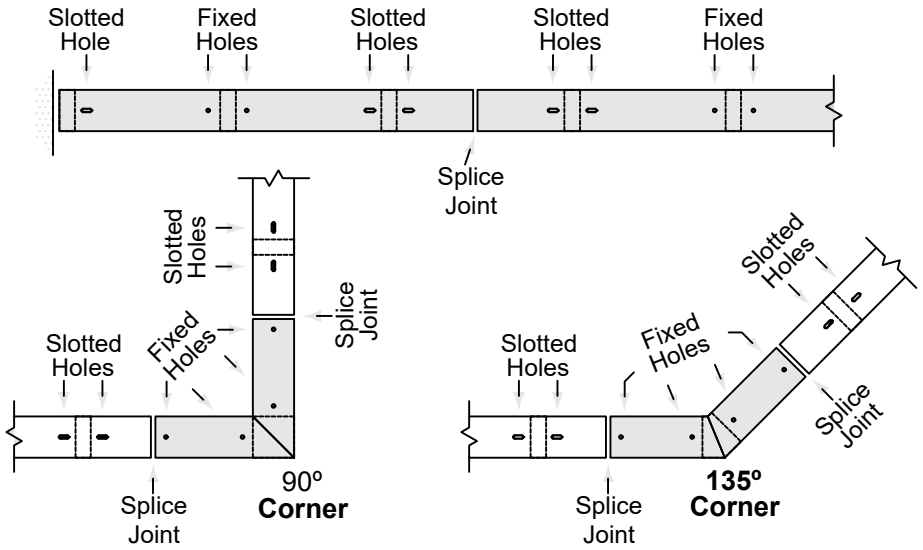
A. Provide clearance holes for perimeter anchors. Size and quantity vary per job. Refer to approved shop drawings.



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

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

Fig. 31.1



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

Fig. 31.2

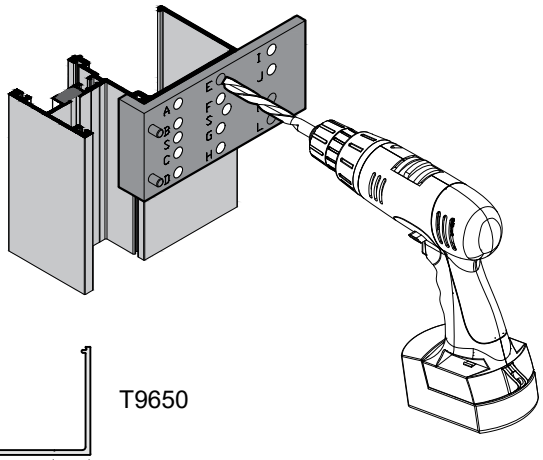
TUBELITE®
DEPENDABLE
LEADERS IN ECO-EFFICIENT STOREFRONT, CURTAINWALL AND ENTRANCE SYSTEMS

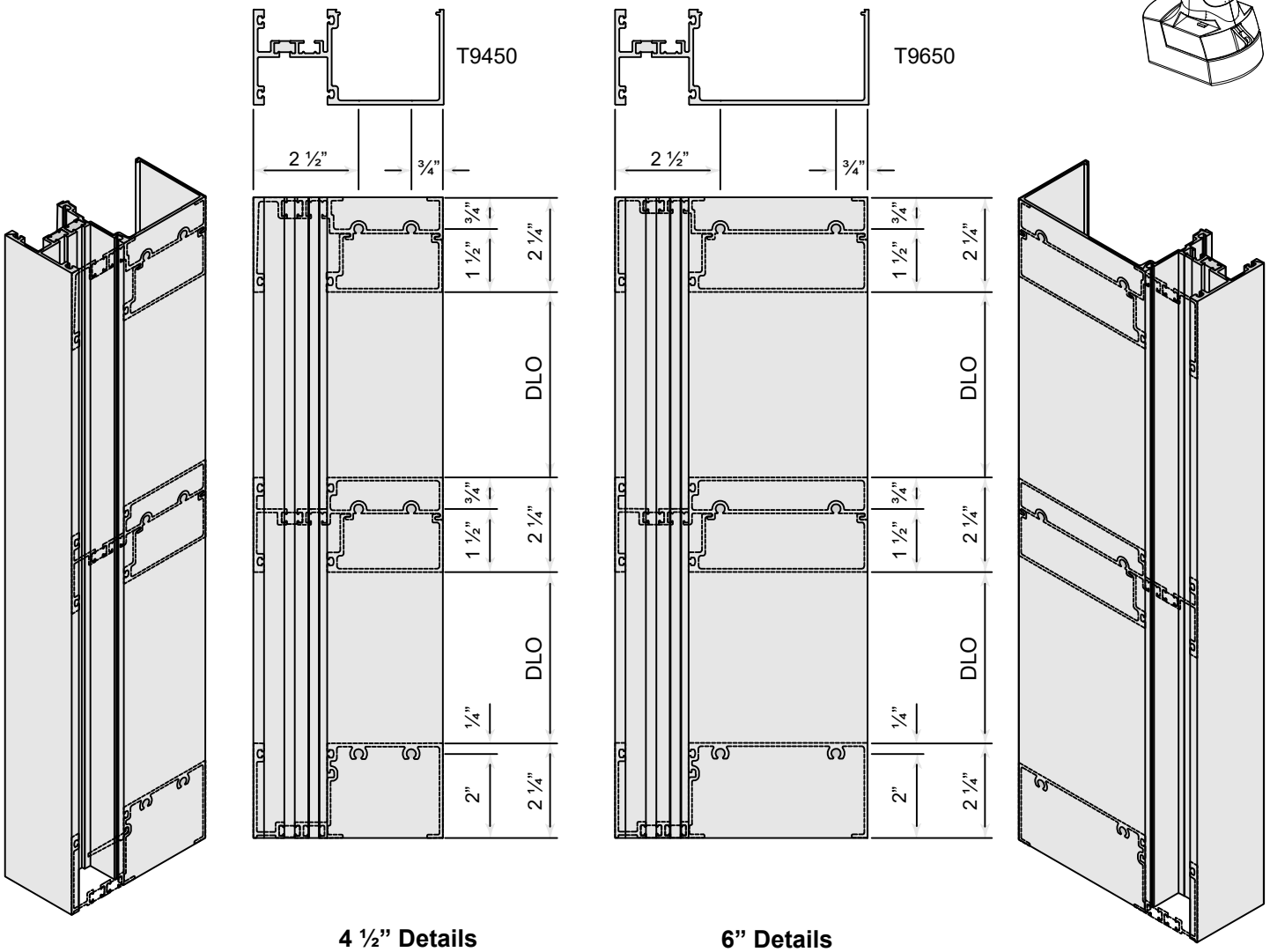
FRAME FABRICATION

Step 7: Drill Holes in Vertical Framing Members

In screw-spline assembly, screws are driven through holes in the vertical members, directly into screw splines on the horizontal members. These screws are what support the horizontal members and the glass. The drawings in this section show where to drill the holes in the vertical members so that they line up with the screw splines on the horizontals.

A. The screw used for screw-spline assembly is 1/4"-20 x 1" hex (S-403). To accommodate this type of screw, the holes in the vertical framing members must be .257" in diameter, corresponding to an “F” drill.
B. Use P2940 drill jig for typical vertical mullions;
   B.1. Sill = A, E or I, or D, H or L holes
   B.2. Head or Inter. Horizontal = B, F or J, or C, G or K holes
   B.3. Intermediate Horizontal at SSG = A, E or I, and D, H or L
   B.4. Shear Clip = S holes
C. Use P2949 drill jig for intermediate horizontals E9485 and E9673 at the 90°outside and inside corners.





4 ½” Details **6” Details**

FRAME ASSEMBLY

Step 8: Assemble Bays

A. Starting with the left jamb of the opening, lay out the verticals and horizontals for the correct assembly of the bay.
B. Clean mating surfaces on horizontal and vertical.
C. Apply sealant to ends of the horizontals prior to attaching to the verticals.
D. Assemble the horizontals to the verticals with 1/4"-20 x 1" HWH (S-403).
E. When using Anti-Buckling Clips insert at intervals recommended by engineer.

NOTE: Tool sealant after sections screwed together.

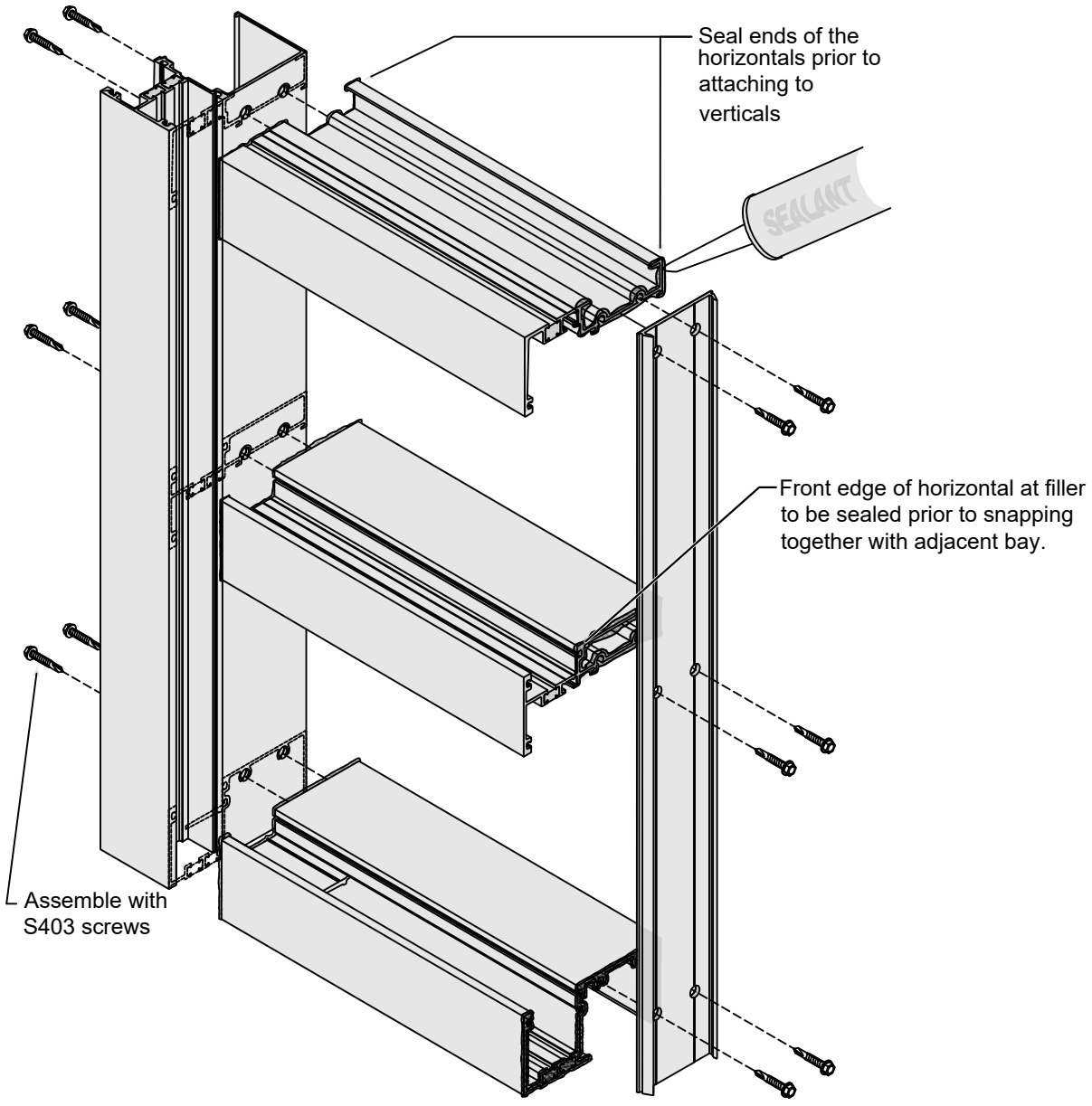


Fig. 33.1

TUBELITE®
DEPENDABLE
LEADERS IN ECO-EFFICIENT STOREFRONT, CURTAINWALL AND ENTRANCE SYSTEMS

FRAME ASSEMBLY

Step 9: Assemble Pre-Glazed Bays

A. Set frame on a horizontal surface glazing pocket down. Frame must be square and should be braced intermittently on both sides of the mullion to prevent distortion when inserting gaskets. See Fig. 34.1.
B. Place setting blocks at sill member per approved shop drawings.
C. Seal corners of interior gaskets prior to setting the glass. See Fig. 34.1.
D. For bays with two deep pockets insert P1917 anti-walk blocks into one side of the frame, or for shallow pockets insert P1912S silicone blocks.
E. Set glass in place and slide glass over to the edge of the glass unitil it butts the edge blocks.
F. Insert P1917 anti-walk blocks into the opposing deep pocket and slide glass back to ensure a 7/16" glass bite at the vertical mulls and 1/2" glass bite at head and sill. Block, or shim, head to hold glass in place during transport. See Fig. 34.2.
G. Exercise care in moving frame unit so as to not rack the frames.

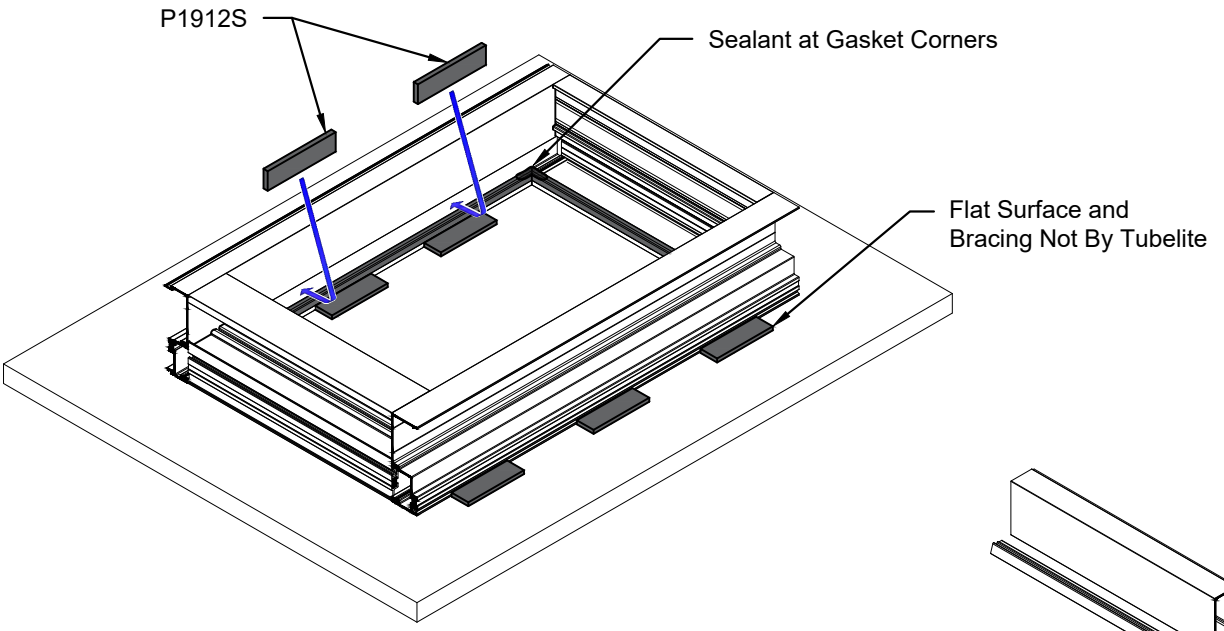
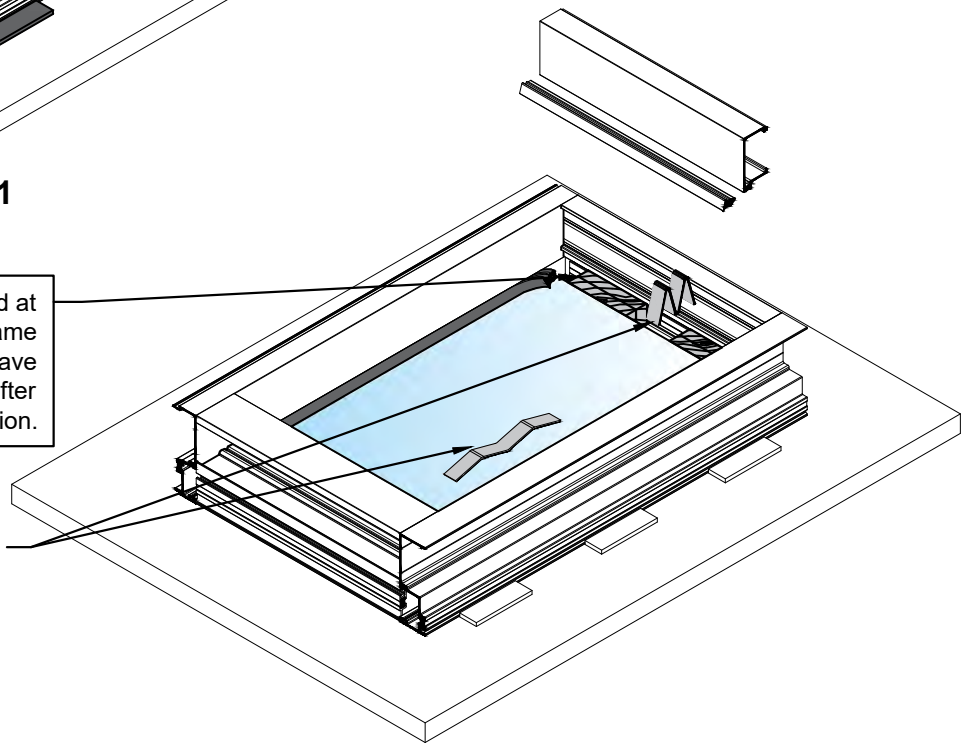


Fig. 34.1



Stacked blocking to be used at head while transporting frame units, it is acceptable to leave head-blocking installed after installation.

Anti walk block installation:
1. Orient P1917 Anti-Walk Block as shown on glass (forms an "M").
2. Pull ends to flatten
3. Slide into deep pocket between the glass and the frame.

Once inside the pocket the anti walk block will expand and provide a "hard block" for the glass.

Fig. 34.2

FRAME ASSEMBLY

Step 10: Assemble Sill Flashing

A. Install 2 rows of gaskets, P4630 at the slab edge cover pocket side of the plate adapter.

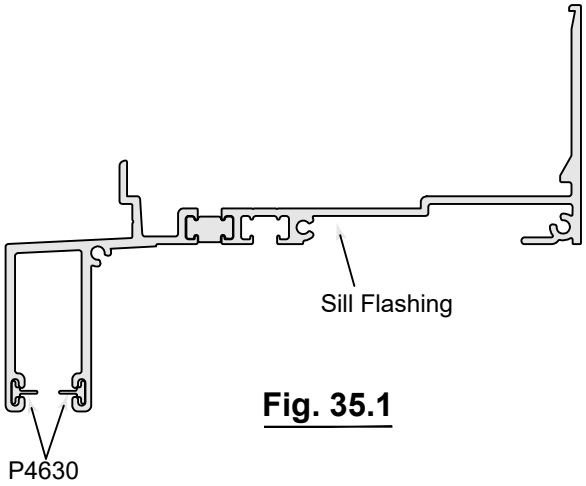


Fig. 35.1

Step 11: Assemble Slab Edge Cover

A. Clean the ends of the slab edge cover and attachment areas of end caps using a cleaner approved by sealant manufacturer.
B. Apply and tool sealant to each end of the slab edge cover prior to attaching the end dams.
C. Attach end dams (P2907) to each end of the slab edge cover using (2) S196 fasteners.
D. Tool and wipe away any excess sealant at the joints.

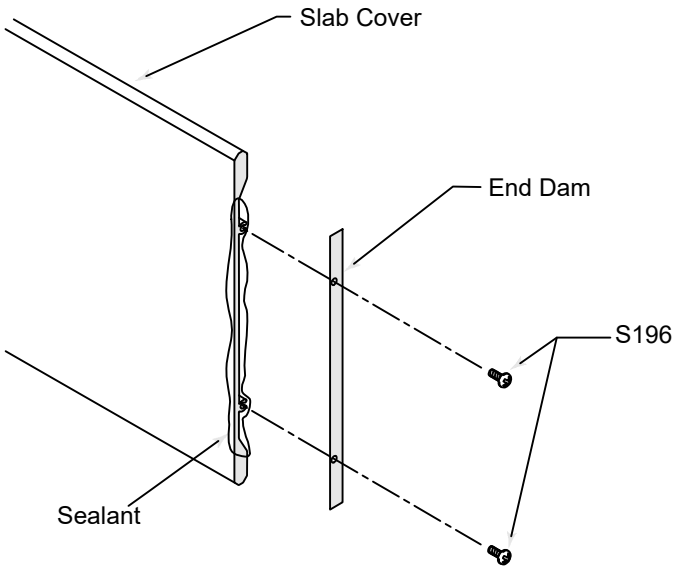


Fig. 35.2

FRAME INSTALLATION

If there is an entrance, you should install it first, taking care to locate the entrance frame accurately within the opening.

Step 12: Install Sill Flashing End Dams

Determine Frame Width

A. Install P2925 end dam at each end of sill flashing with (2) S196 #8 x 3/8" PH screws.
B. End dam must be completely sealed on all sides.
C. Set aside and allow sealant to cure.
D. If sill flashing is spliced, install end dams on jamb-end only. See splicing instructions

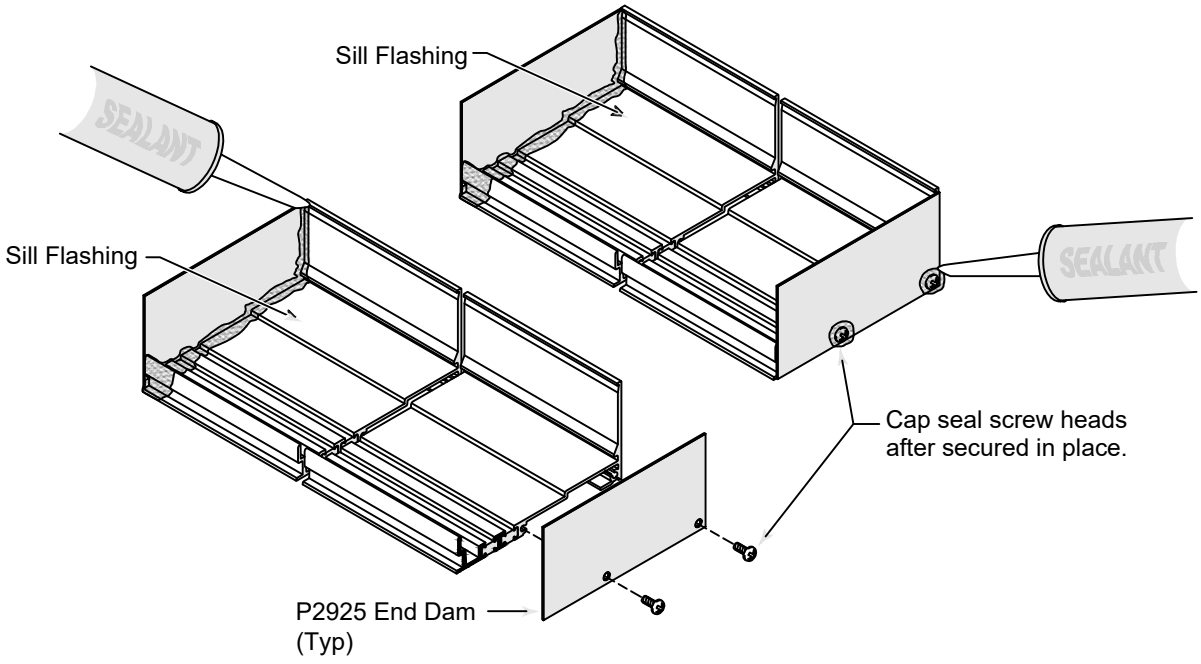


Fig. 36.1

FRAME INSTALLATION

Step 13: Install Head Receptor

A. Clean all joint surfaces using cleaner approved by sealant manufacturer.
B. Install brake metal end cap at each jamb end of the head receptor with two (2) S196 fasteners.
C. Apply and tool sealant along the joint between the end cap and the head receptor.

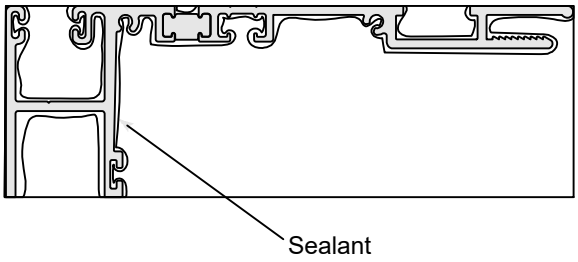


Fig. 37.1

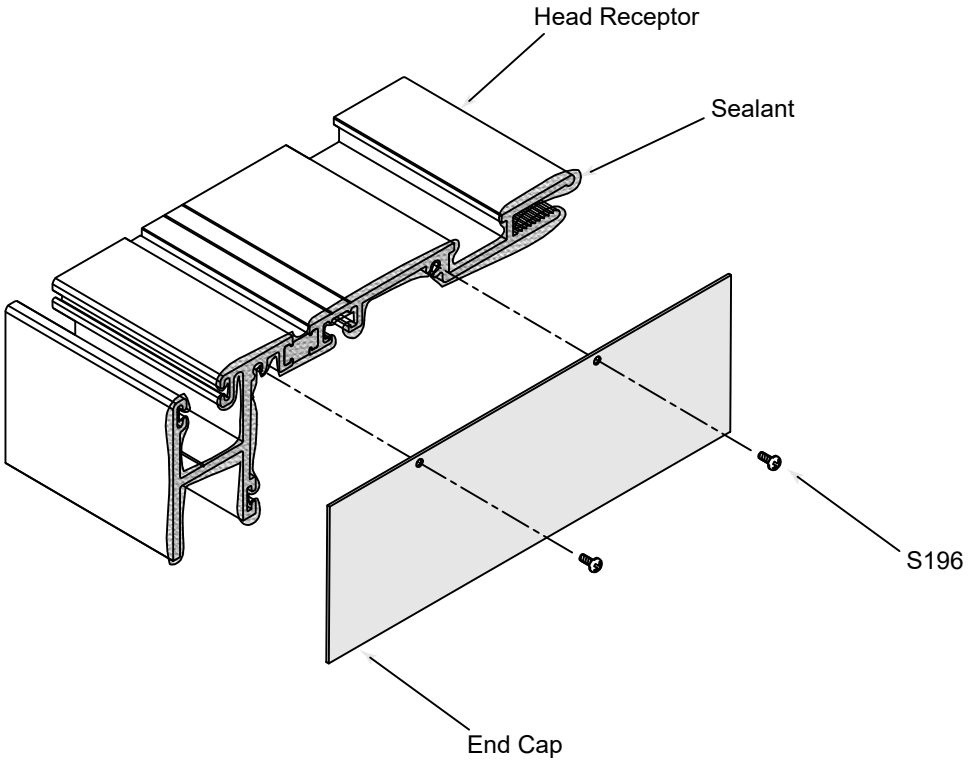


Fig. 37.2

TUBELITE®
DEPENDABLE
LEADERS IN ECO-EFFICIENT STOREFRONT, CURTAINWALL AND ENTRANCE SYSTEMS

FRAME INSTALLATION

Step 14: Install Sill Flashing

A. Center sill receptor 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").
B. If there is an entrance door in the opening leave a gap in the sill flashing for the door frame to be installed.
C. At the highest point of the sill, shim the flashing with a minimum 1/2" shim space. The flashing must be installed level side to side and front to back.
D. 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.
E. Anchor sill flashing to building substrate per approved shop drawings. Cap seal anchors after installation. Where the flashing abuts a door jamb, the anchor must be located within 6' of door jamb.
F. Install foam baffle (PTB42) at each weep hole.

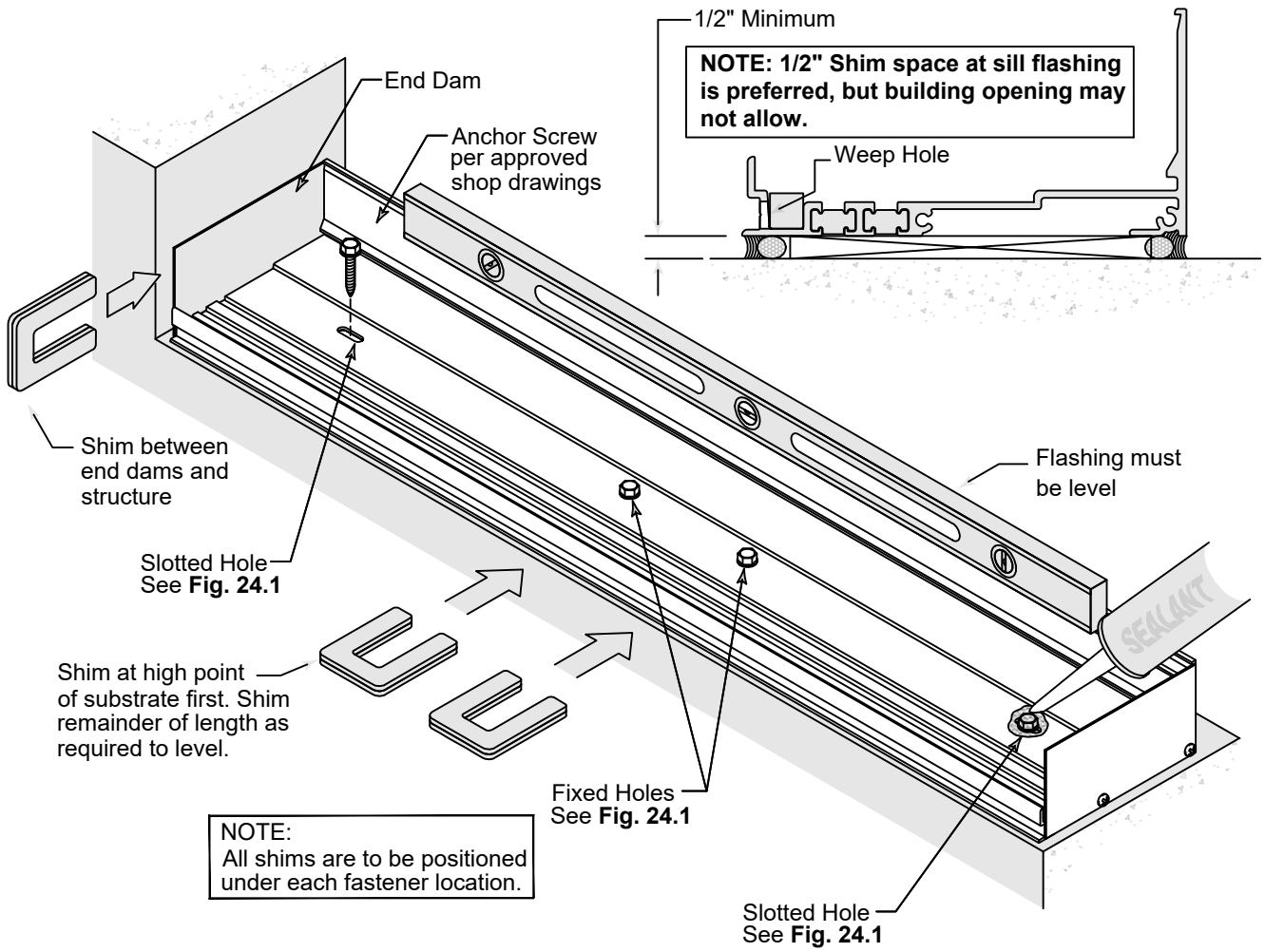


Fig. 38.1

FRAME INSTALLATION

Step 15: Anchor Head Receptor and Sill Flashing

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

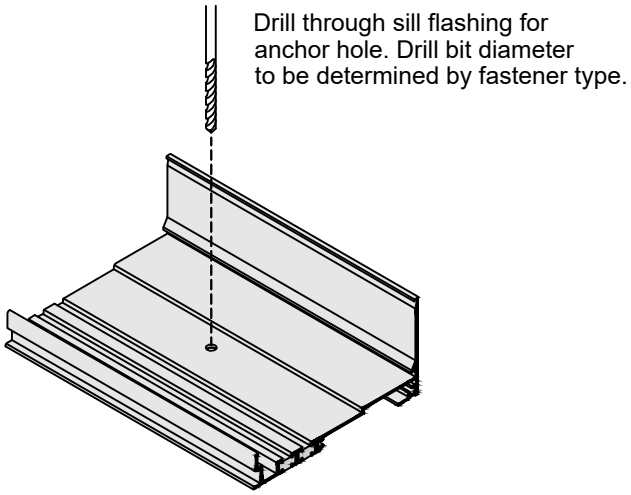


Fig. 39.1

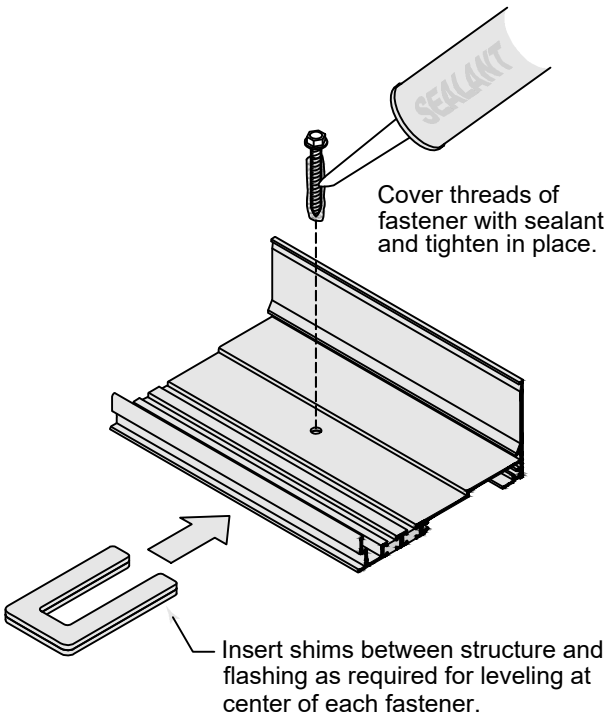


Fig. 39.2

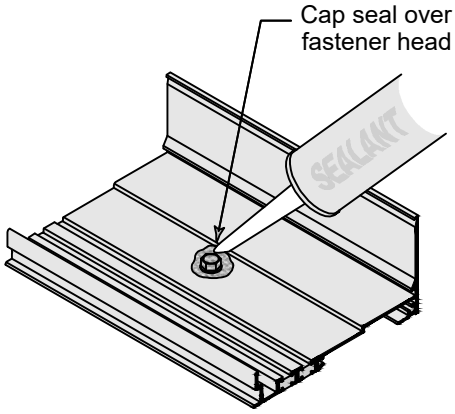


Fig. 39.3

FRAME INSTALLATION

Step 16: Install Splices at Sill Flashing and Head Receptor

A. Continue installing flashing across the opening.
B. Lay P3444 silicone sheet into sill flashing at splice location (center of DLO) 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.
E. Set silicone splice sleeve in place and tool sealant. Seal front and back joints.
F. Don't locate a splice directly below a vertical mullion. Center line of DLO is preferred.

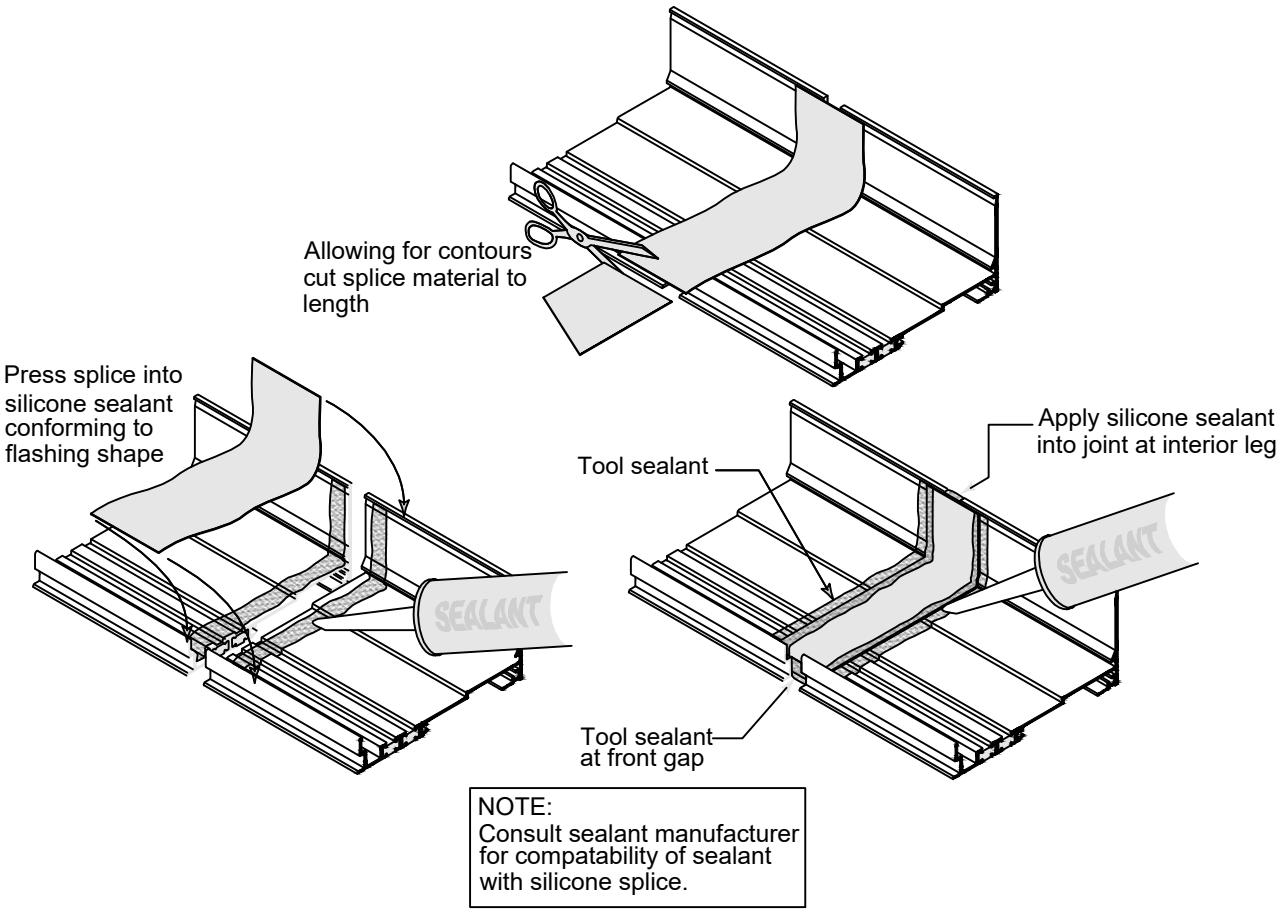


Fig. 40.1

FRAME INSTALLATION

Step 17: Corner Flashing Installation

A. Anchor flashings and receptors according to approved shop drawings and step #3.
B. Apply sealant full length of mitered joint.
C. Splice corner to adjacent flashing using procedures in step #4.

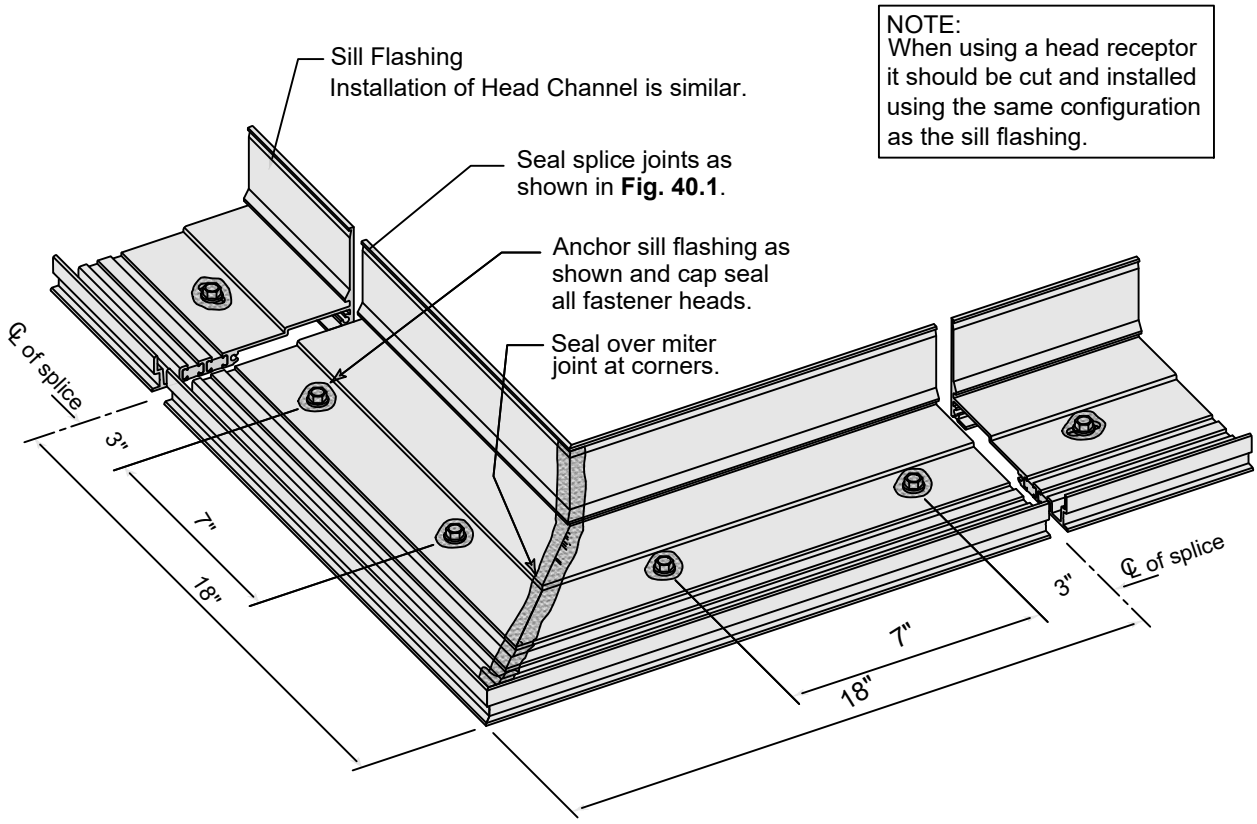


Fig. 41.1

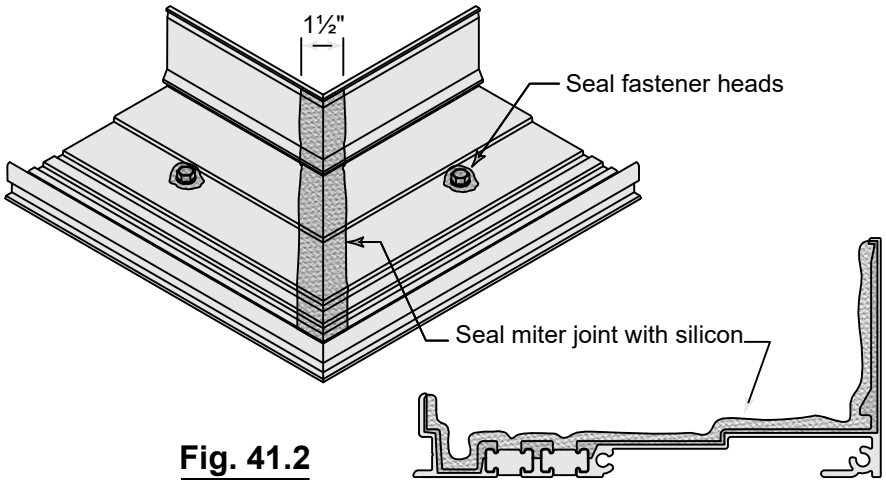


Fig. 41.2

TUBELITE®
DEPENDABLE
LEADERS IN ECO-EFFICIENT STOREFRONT, CURTAINWALL AND ENTRANCE SYSTEMS

FRAME INSTALLATION

Step 18: Sealing Sill Flashing at Door Jamb

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

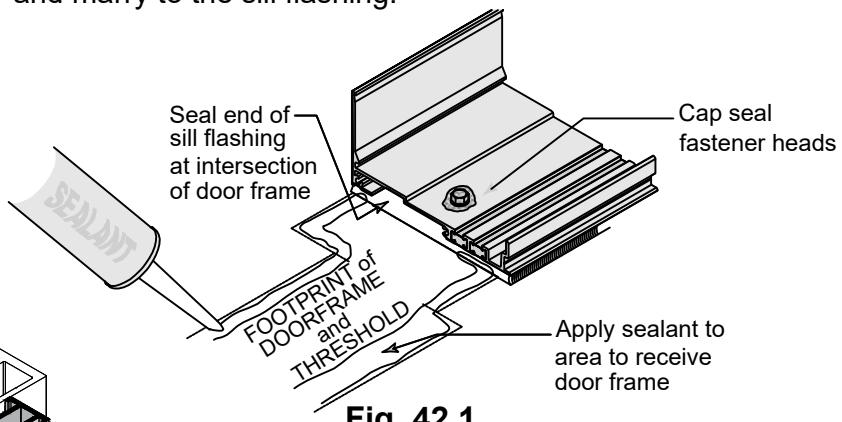


Fig. 42.1

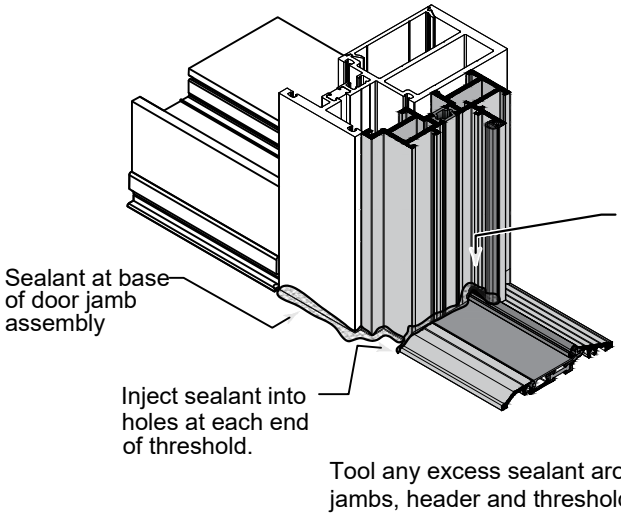


Fig. 42.2

NOTE:
When a “Knee Wall” occurs within an elevation, the sill flashing must be sealed to intersecting vertical member as shown in **Fig. 36.3**.

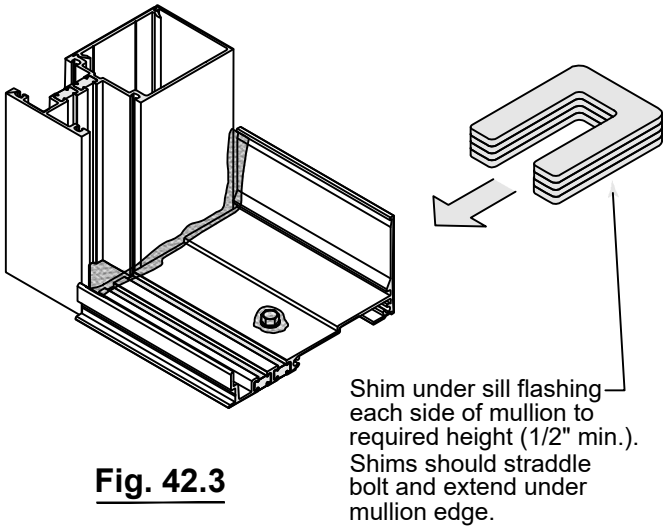


Fig. 42.3

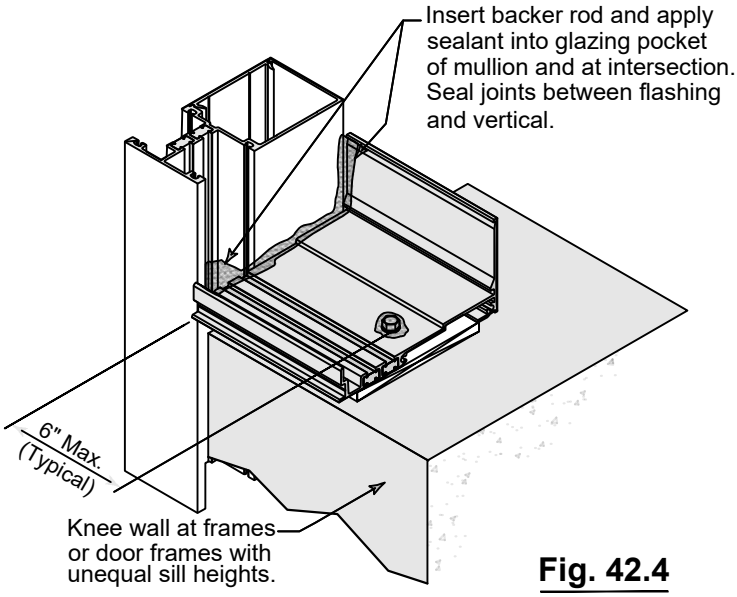


Fig. 42.4

FRAME INSTALLATION

Step 19: Install Frames

A. Starting on one side of the opening, apply a sealant bead to the end dam. Frames are set into sill flashing & tipped into head receptor. For lites wider than 5 ft OR taller than 7 ft, add 1/8" shims between the sill member & the sill flashing directly above sill flashing shim locations. See Fig. 43.2.
B. The unit should be installed snug against end dam. Make sure gap between end dam & frame at the last bay is fully sealed & married to the perimeter seal.
C. Temporary support should be provided to secure unit until the male head receptor extrusion is applied.
D. Lift each adjacent frame onto sill flashing (refer to step A for 1/8" sill member shims), rotate into head receptor, & engage with previous frame. Continue to provide temporary support at the head receptor until the male head receptor can be installed. See Fig. 43.1 for sealing interior gap of expansion verticals.
E. Install wedge gasket at sill flashing ensuring that gasket is fully engaged.
F. Install male head receptor extrusion at head receptor & verify frames are plumb, level, & square.
G. Install perimeter sealant per approved shop drawings at head receptor, sill flashing, & jamb conditions.
H. If project does not employ head receptor or sill flashings, refer to approved shop drawings for anchorage & sealant details. Ensure drainage is specified & all water within the system is drained to exterior.

DO NOT EXTEND FRAMING PAST EDGE OF SLAB WHERE THERMAL BREAK IS UNSUPPORTED. USE STRUCTURAL MEMBERS TO SUPPORT FRONT OF FRAME AS NECESSARY. SEE FIG. 43.3

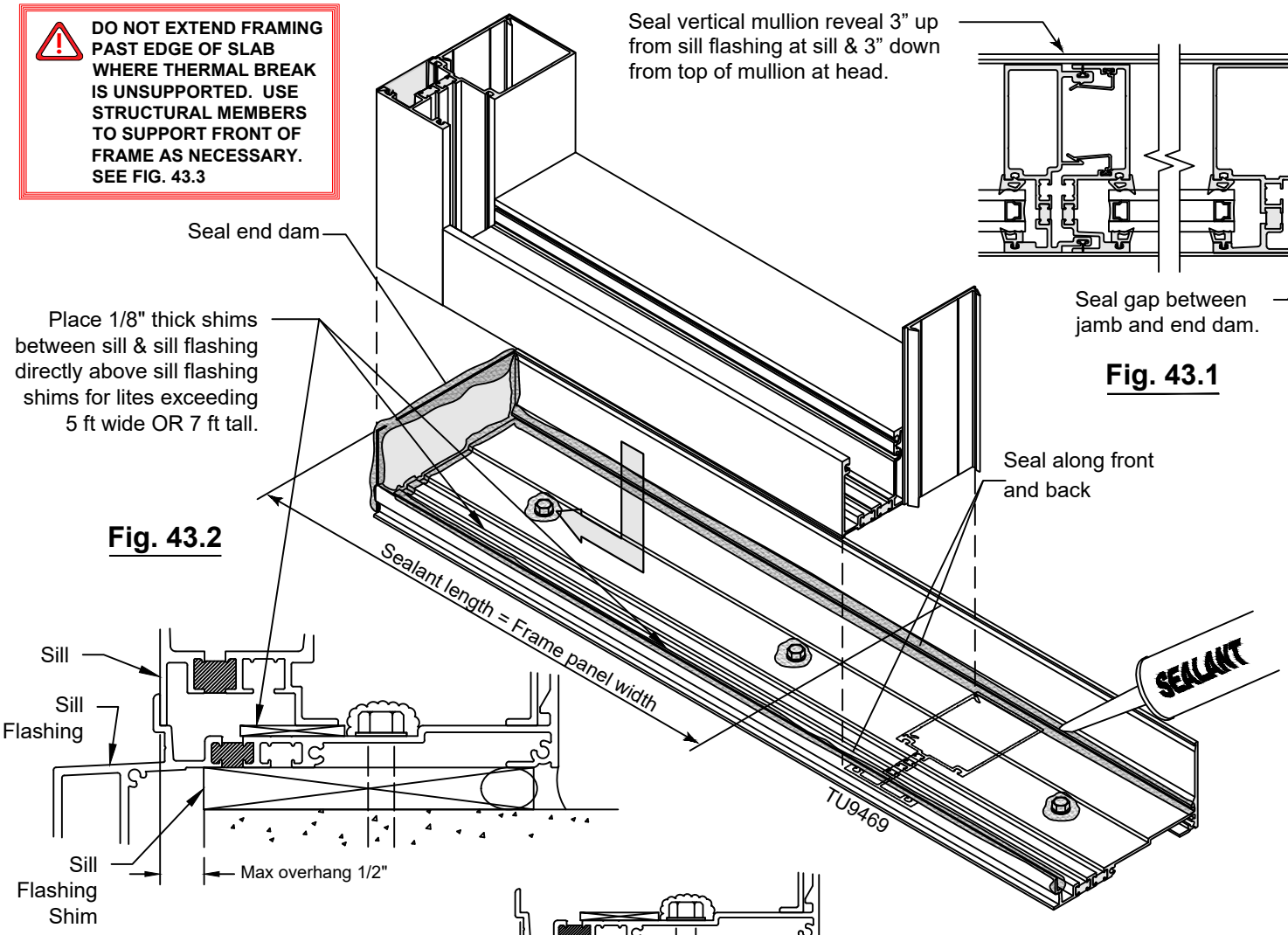


Fig. 43.1

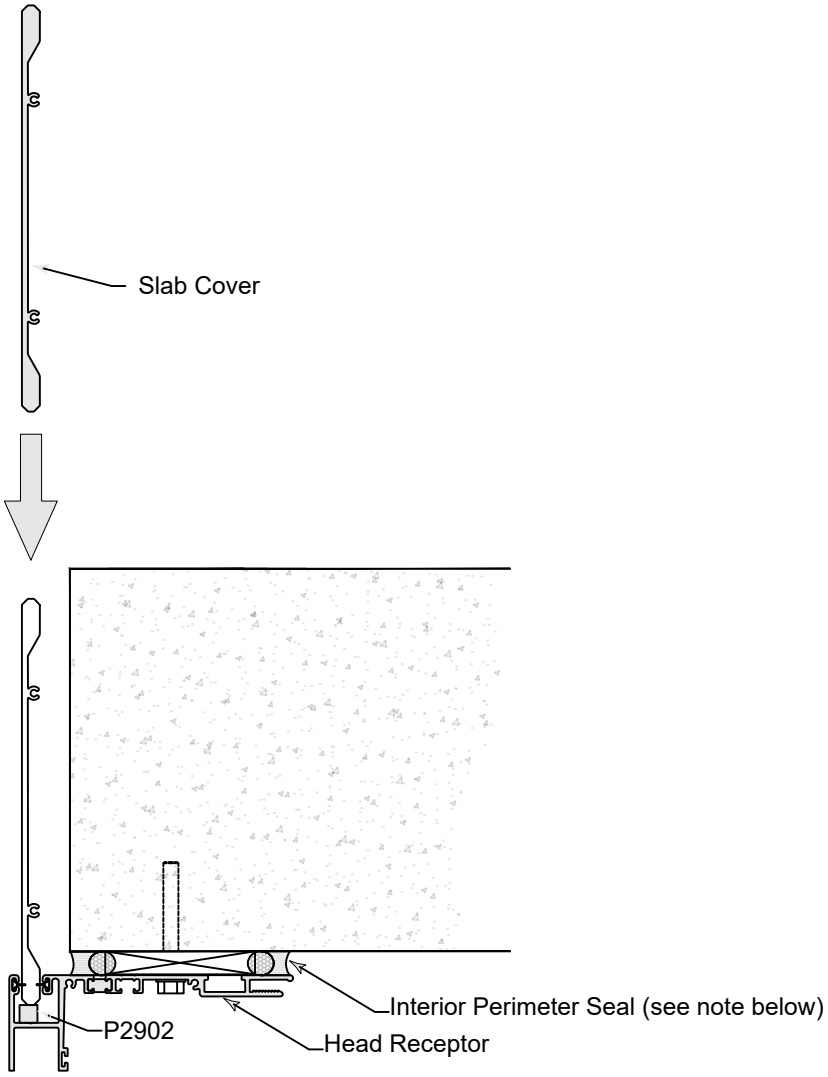
Fig. 43.2

Fig. 43.3

FRAME INSTALLATION

Step 20: Install Slab Edge Cover

A. Push slab edge cover into the head receptor to make contact with setting block, P2902.



NOTE: The 900RW system requires both an interior and exterior perimeter seal to assure proper system performance.

GLAZING

Step 21: Glazing Preparation

A. Remove any debris from the glazing pockets.
B. Trim excess silicone from edges of glazing units to allow for maximum clearance.
C. Glazing must be done from bottom of the frame up.
D. Install glazing gaskets at exterior leg (interior leg for exterior glazed).
E. 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. P2504 used at the shallow pocket side.
F. Install (2) setting blocks at quarter points or per approved shop drawings. Setting chairs must be installed first at the sill members. Consult glass manufacturer if glass size exceeds 40 sq. ft.. Install wedge gasket to secure glass at jambs and sill.
G. Set the glass by installing into the deep pocket of the vertical first, then carefully sliding into the shallow pocket.
H. Install water diverters over hanging corner of glass at horizontal intermediates. Seal to horizontal leaving. Gap at the front and side open in the vertical glazing pocket. Seal around edges.
I. Install glass stops and remaining wedge gaskets.
J. Repeat at all remaining openings.

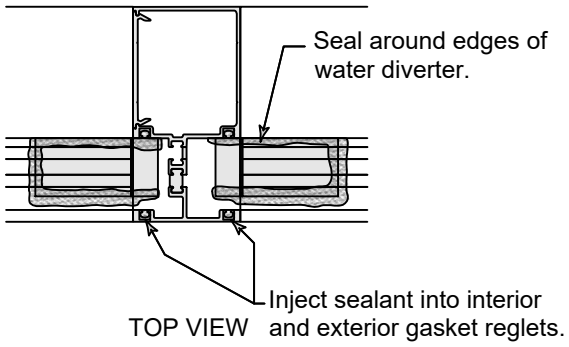


Fig. 45.1

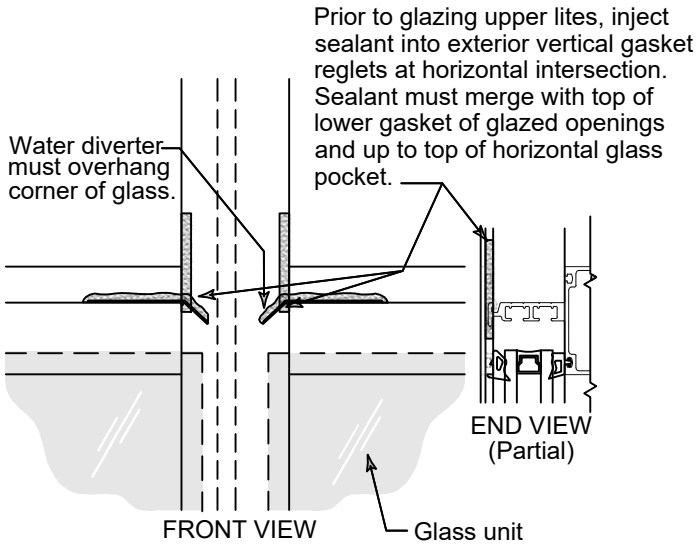


Fig. 45.2

GLAZING

Step 22: 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.

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

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

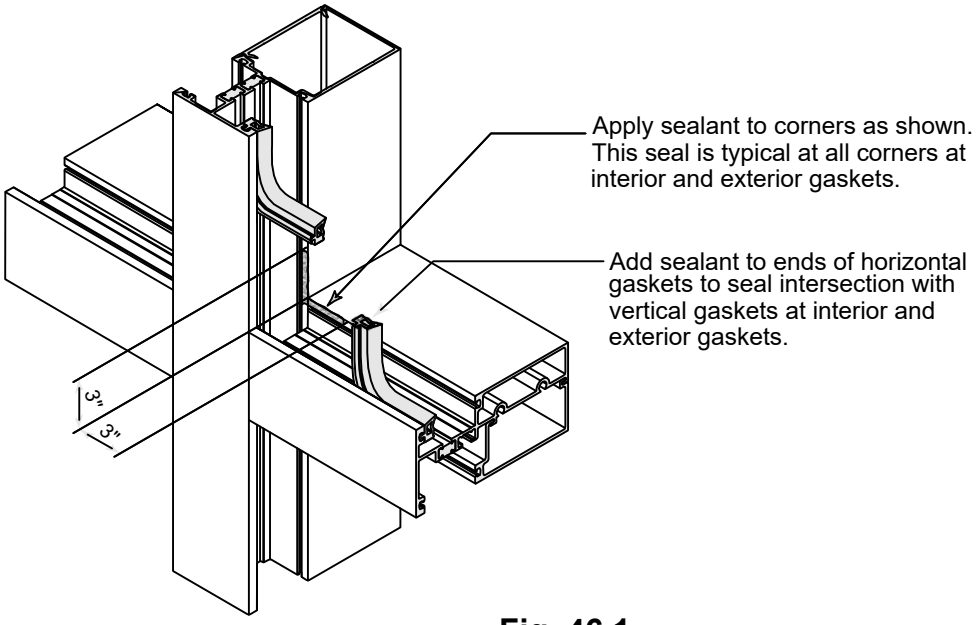


Fig. 46.1

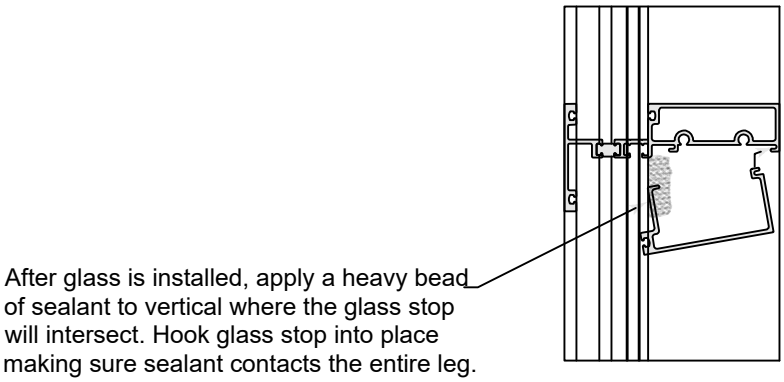


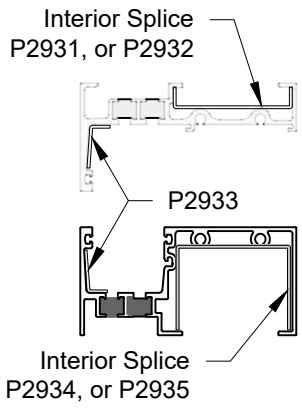
Fig. 46.2

STRUCTURAL SILICONE GLAZING - SSG

Step 23: Install Splices at Continuous Head and Sill Frames - 15' maximum between splices

A. Clean all surfaces where splice will be applied.
B. Apply bond breaker tape to the splice sleeves at center line of the side facing the frames. **See Fig. 47.1**
C. Apply sealant to both halves of the frames where the splice sleeves will be inserted. Apply sealant to all contact areas of the splice sleeves. **See Fig. 47.1 & Fig. 47.2**
D. Insert splice sleeves into position in frames with the bond breaker tape centered on the joint.
E. Slide the next frame into place leaving a 1/2" gap between the frames. **See Fig. 47.3**
F. Firmly press the splice sleeves into the sealant. Apply and tool sealant to gaps in the frames.

INSIDE GLAZE SPLICE



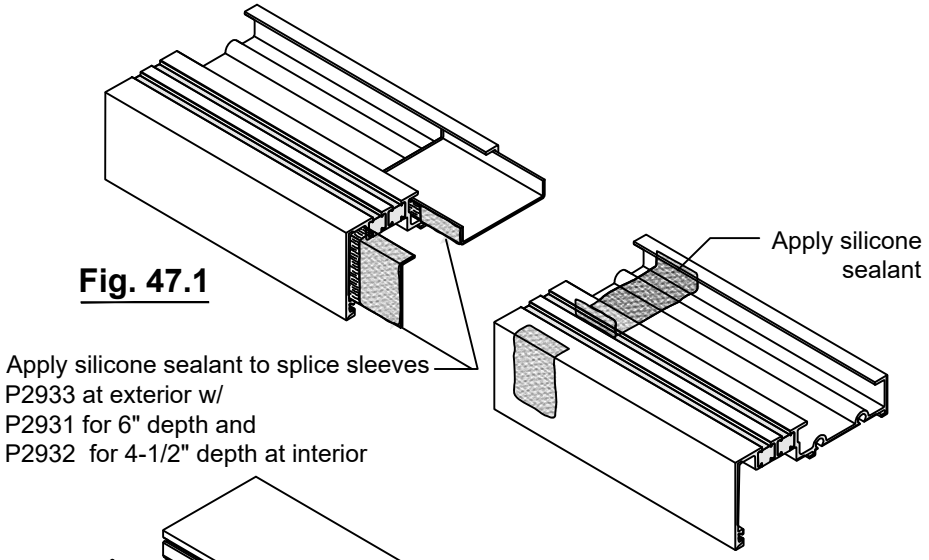
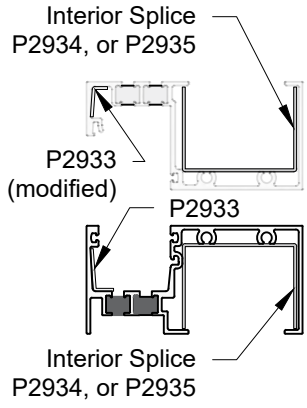


Fig. 47.1

OUTSIDE GLAZE SPLICE



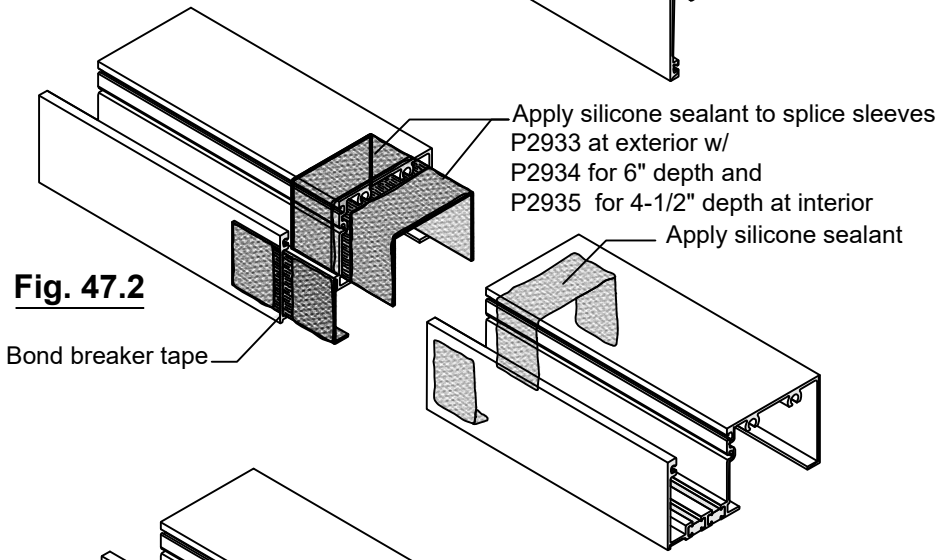
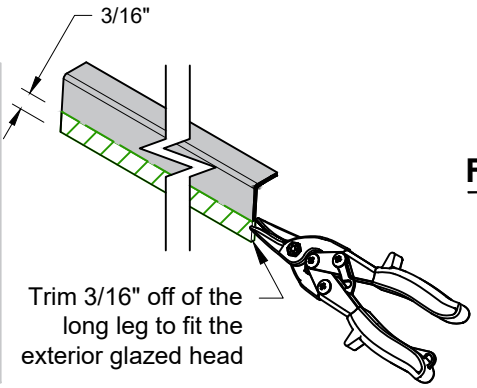


Fig. 47.2

P2933 MOD.



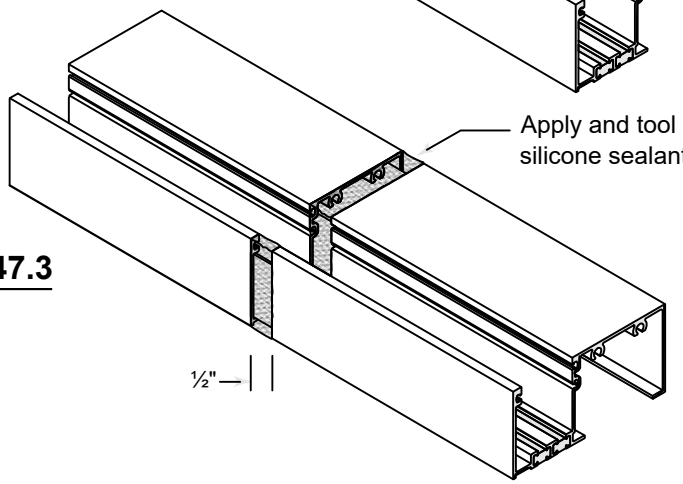


Fig. 47.3

Step 24: Fabricate the Vertical SSG Mullions

A. Drill frame assembly holes in verticals and jambs. **See Fig. 48.1**

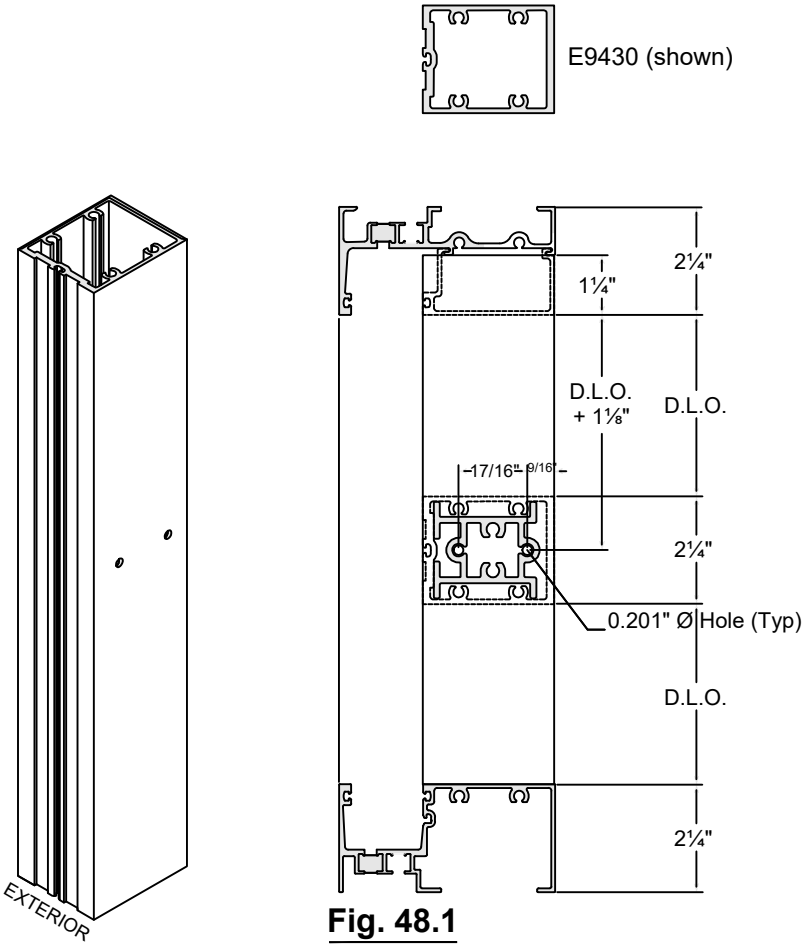


Fig. 48.1

Step 25: Fabricate Horizontal Members for Shear Blocks

A. For SSG mullions, shear block assembly must be used. Drill 0.201" diameter holes in horizontal members as shown. **See Fig. 48.2**

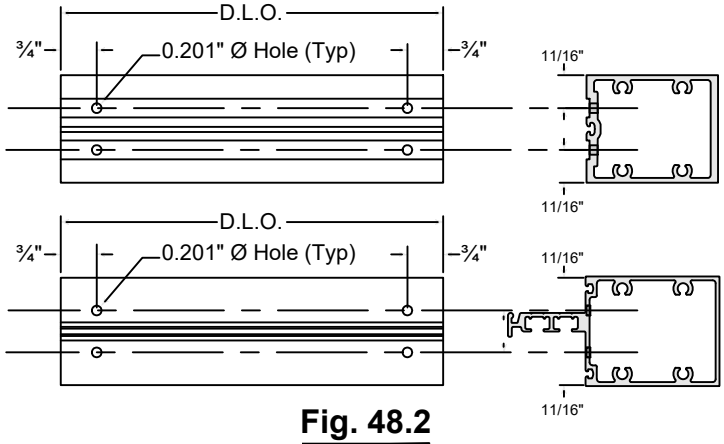


Fig. 48.2

STRUCTURAL SILICONE GLAZING - SSG

Step 26: Assemble Frames

Shear Block Assembly - SSG

A. Install shear blocks onto vertical with S359 1/4"-20 x 1-1/2" HWH screw as shown in **Fig. 50.1.**
B. Clean all mating surfaces on horizontal, vertical, and shear block.
C. Apply sealant to ends of the horizontal and vertical members and to perimeter of shear blocks prior to attaching the horizontal members to the vertical members.
D. Head and sill members run through. Attach head and sill members to verticals with (4) S403 screws.
E. Slide horizontal over the shear blocks.
F. Match drill tap holes in horizontal shear blocks with drill for #10 screw.
G. Secure intermediate horizontal with (2) S426 #10 x 5/8" pan head screw.

STRUCTURAL SILICONE GLAZING - SSG

Step 26: Assemble Frames (Continued)

Shear Block Assembly - SSG (Continued)

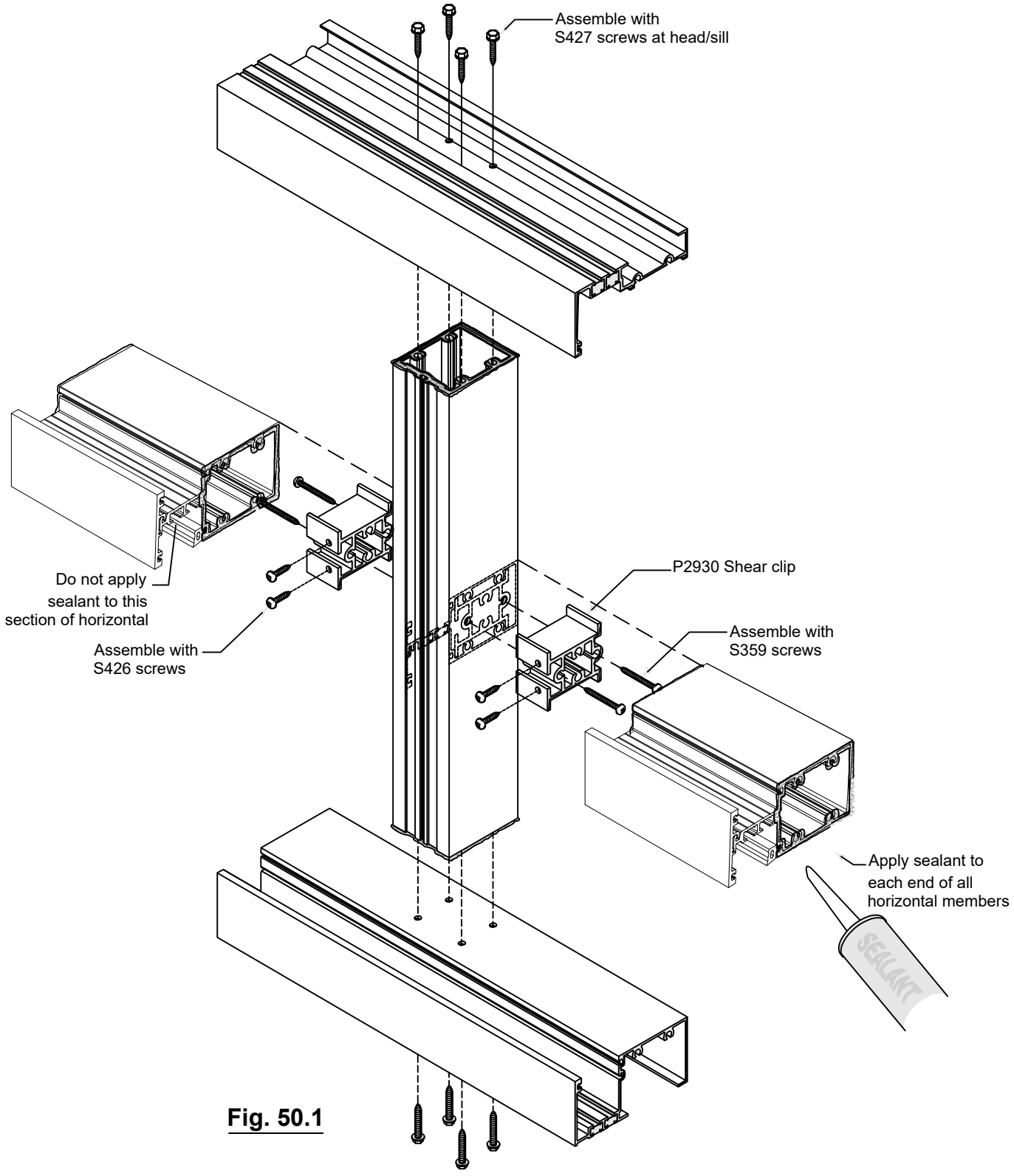


Fig. 50.1

Step 26: Assemble Frames (Continued)

Screw Spline Assembly - SSG Corner

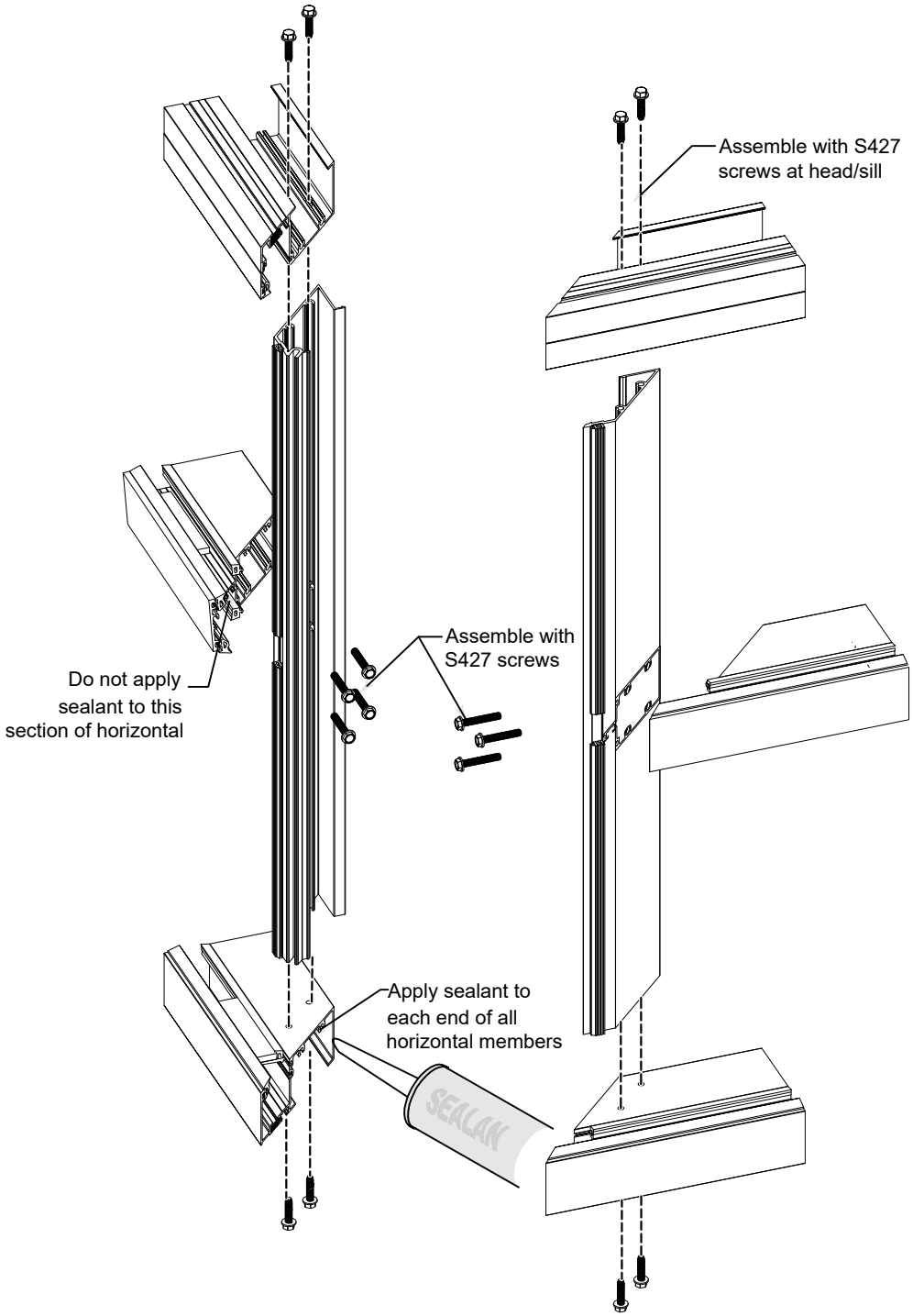


Fig. 51.1

Step 27: Install Water Diverter

A. Water diverters can only be installed once the frame is assembled.
B. Remove backer from tape and attach P2936 to underside of horizontal members. **See Fig. 52.1**.
C. P2936 water diverter should be placed evenly to cover the void between the horizontal members.
D. Seal around edges of water diverter. THIS IS A CRITICAL SEAL. Do not seal front of water diverter. See **Fig. 52.2**.

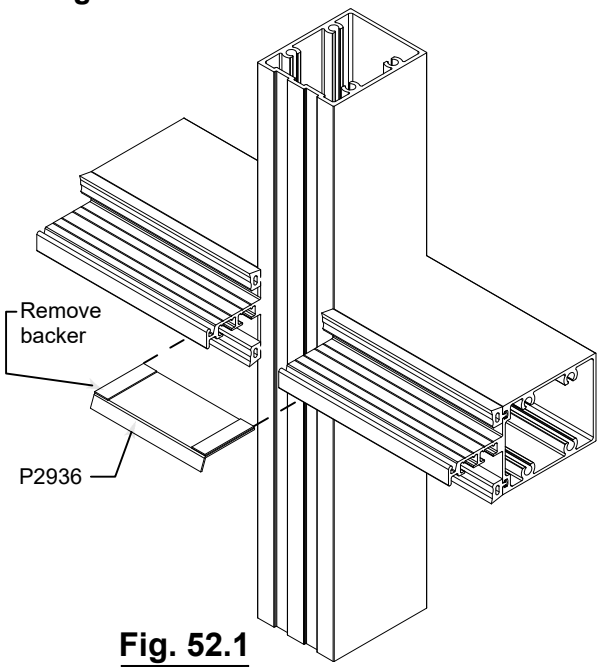


Fig. 52.1

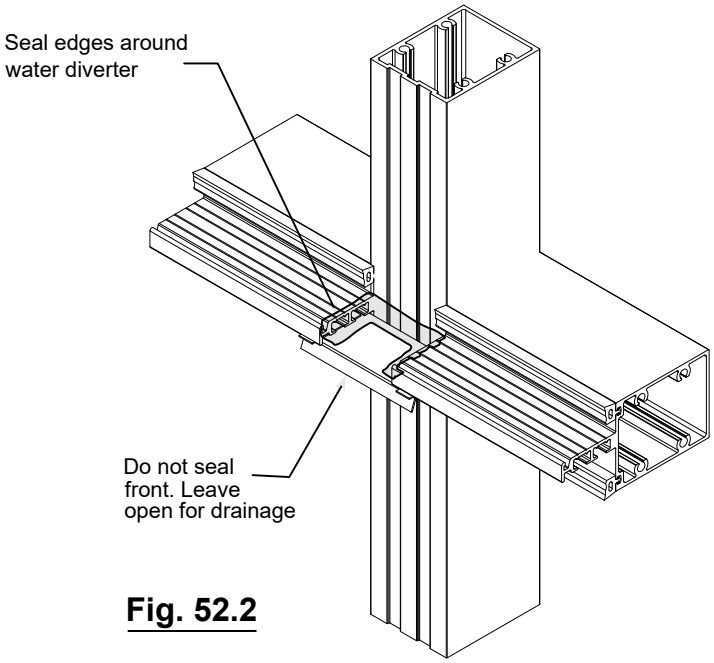


Fig. 52.2

Step 28: Install Glass Stop and Wedge Gasket

A. Leave a 1/2” gap between the wedge gaskets at bottom side of glass stop for drainage.
B. Glass stop E9487 can be run 3 lites wide or a maximum of 15 feet long. A 1/2” gap should be maintained between pieces to line up with the exterior caulk joint at the center of the mullions.

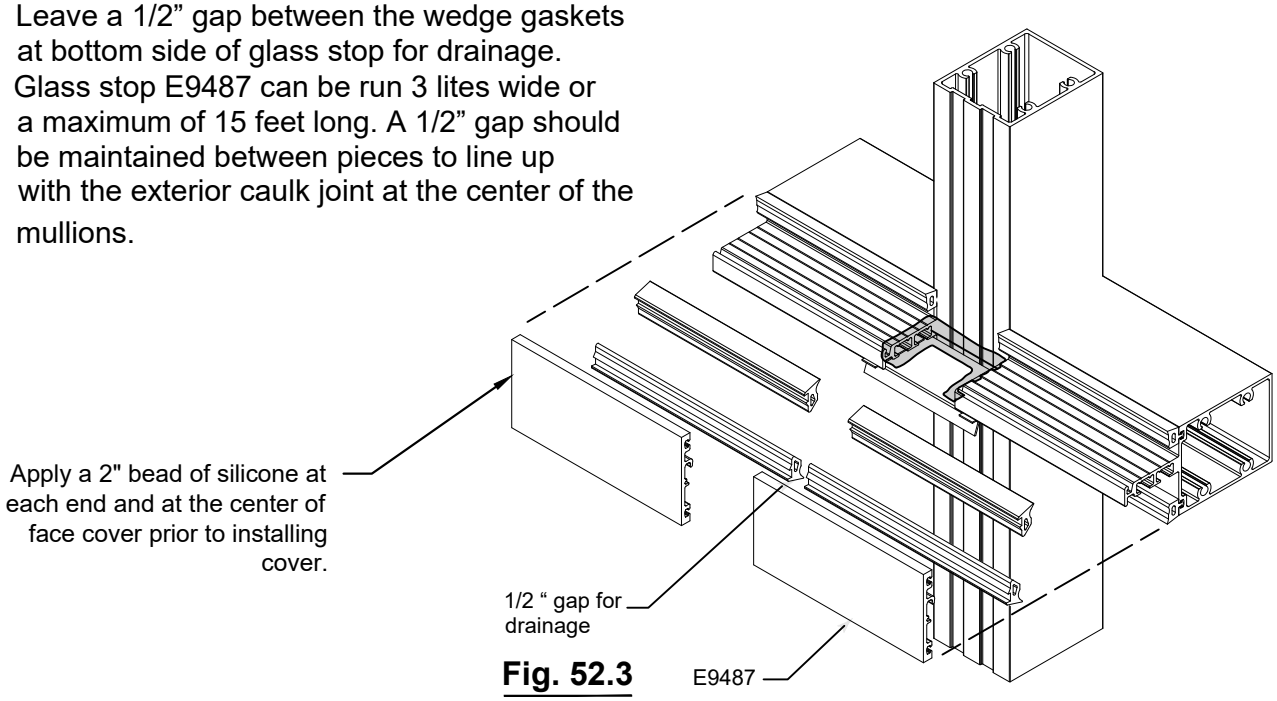


Fig. 52.3

FRAME ASSEMBLY

Step 29: Install Water Dams

A. Drill two weep slots per D.L.O. The holes should be a 5/16" diameter at 1/4 points.
B. Apply sealant to all contact surfaces that receive the water dams. This sealant should be applied liberally. **See Fig 53.3.** Note: Both head and sill members to receive water dams.
C. Insert water dam into the void between the horizontal member and the vertical. **See Fig 53.4.**
D. After the water dam is in place, apply silicone over the top of the water dam from the stem of the vertical back to the end of the horizontal. Silicone should be tooled completely to create a water tight seal between the horizontal and vertical members. **THIS IS A CRITICAL SEAL.**

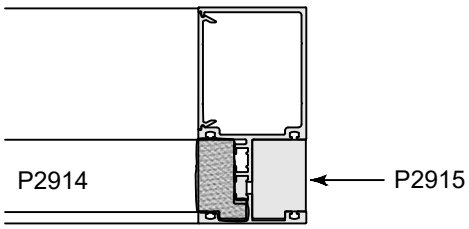


Fig. 53.1

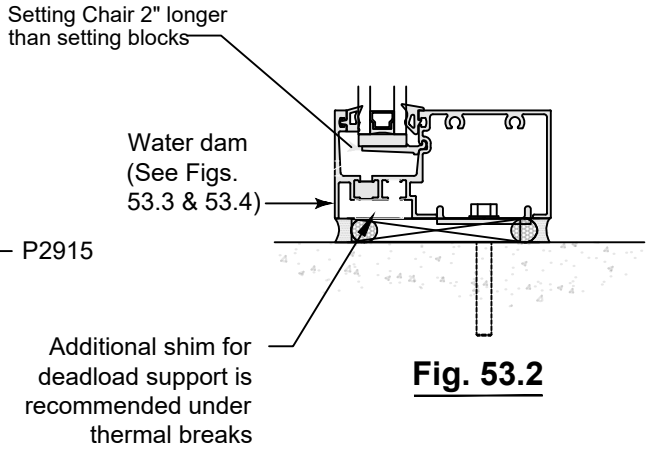


Fig. 53.2

NOTE:
Required when extruded flashing is not used, or required when anchor clip is used.

INSTALLER NOTE:
USE OF SILL WITHOUT FLASHING IN FIG. 53.2 REQUIRE WEEP HOLE AT FACE OF SILL MEMBER (5/16" DIA HOLES, TWO PER LITE AT 1/4 POINTS).

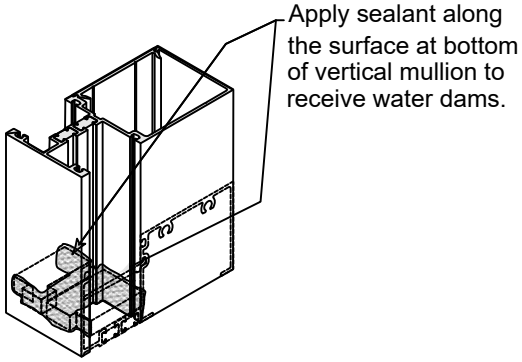


Fig. 53.3

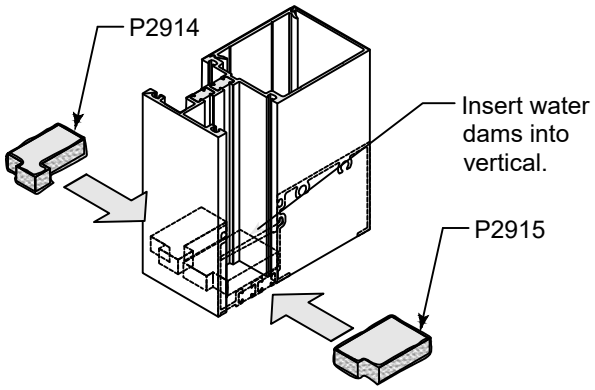


Fig. 53.4

GLAZING

Step 30: Apply Interior Structural Silicone

A. Run a piece of masking tape vertically on the glass with one edge in line with the side of the mullion.
B. Run another piece of masking tape vertically along the edge of the vertical nearest to the glass.
C. Check to make sure that the structural silicone spacers are ½" from the edge of the vertical in order to

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

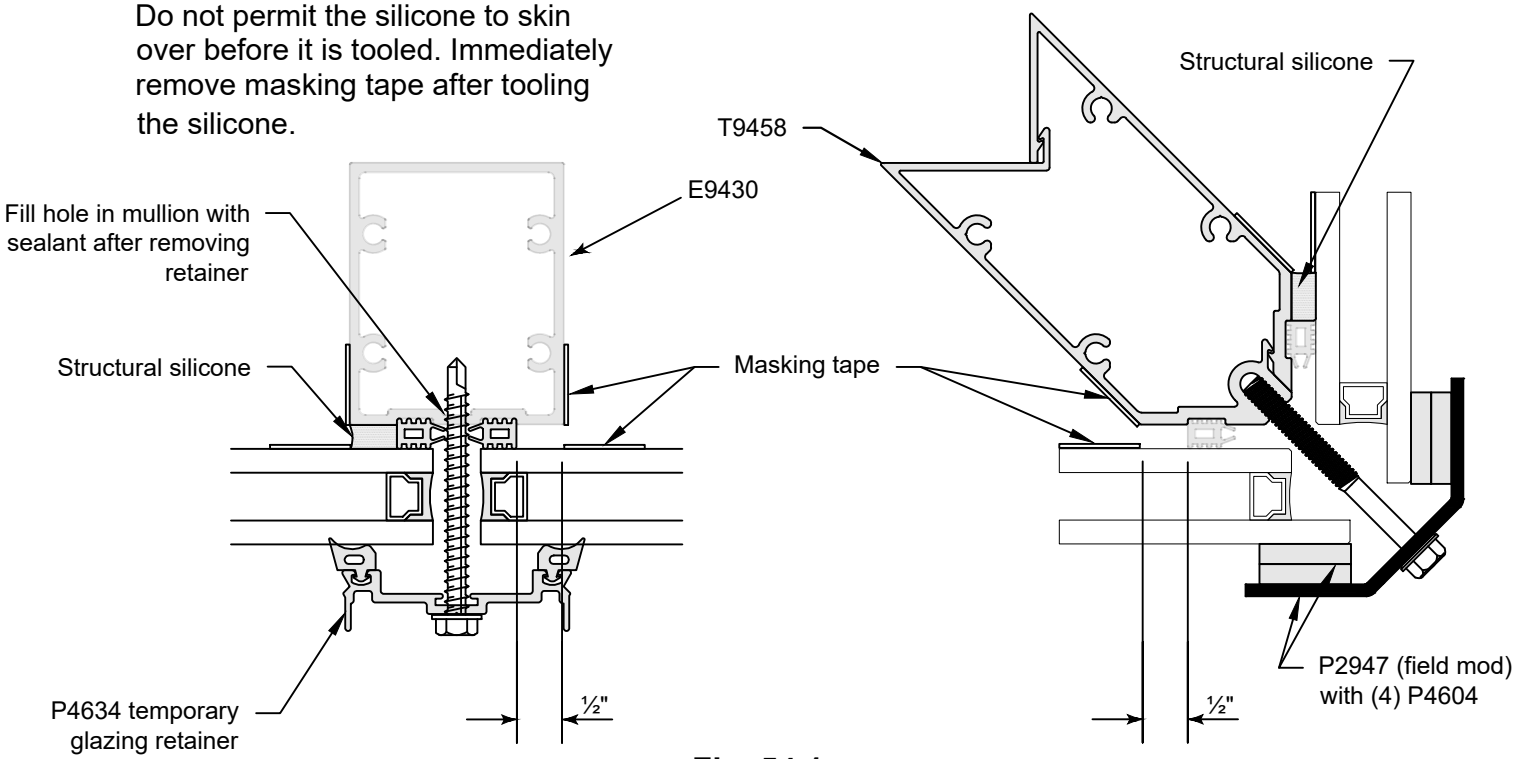


Fig. 54.1

D. Prior to applying the structural silicone, clean all contact surfaces using an approved cleaner.
E. Apply an approved structural silicone from the bottom to the top of the joint. Use positive pressure to completely fill the cavity between the glass and vertical mullion.
F. Using a nylon spatula or other non-scratching implement, tool the silicone immediately after running the vertical joint. Exert positive pressure while tooling to ensure that the silicone completely fills the cavity.
G. Be careful not to remove too much silicone. The silicone should make complete contact with the glass and aluminum surfaces. The finished joint should be flush with the edge of the vertical.

GLAZING

Step 31: Apply Exterior Weather Seal

Once the interior of structural silicone has cured, it is necessary to seal the 1/2" wide exterior joint between the lites of glass.

NOTE:
Please consult sealant manufacturer for recommended cure time

A. Remove the temporary glass retainers, fill fastener holes with sealant, and insert an approved, open cell polyurethane backer rod between the lites of glass.
B. Clean all contact surfaces with an approved cleaner and apply masking tape to both vertical edges of the glass.
C. Starting at the bottom of the lite, pump an approved structural silicone into the joint between the lites of glass. Apply moderate pressure so that the void is completely filled.

NOTE:
Be careful not to puncture the backer rod or push it out of the way.

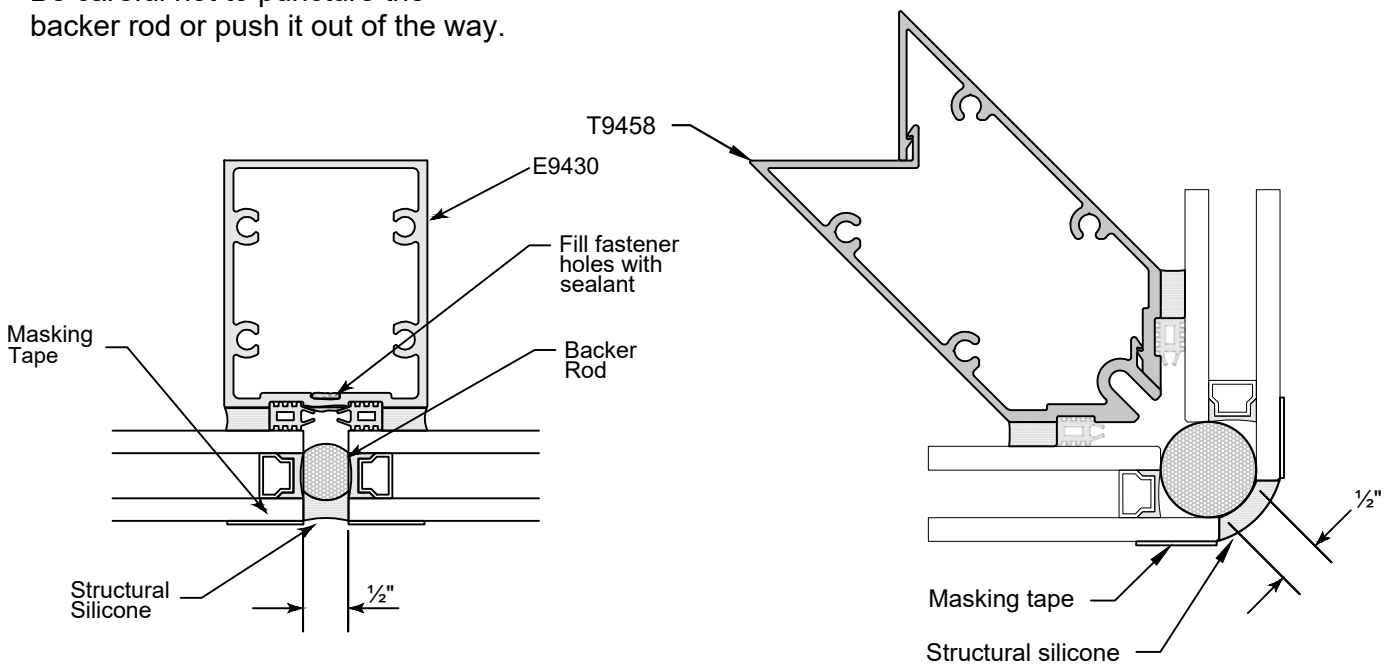
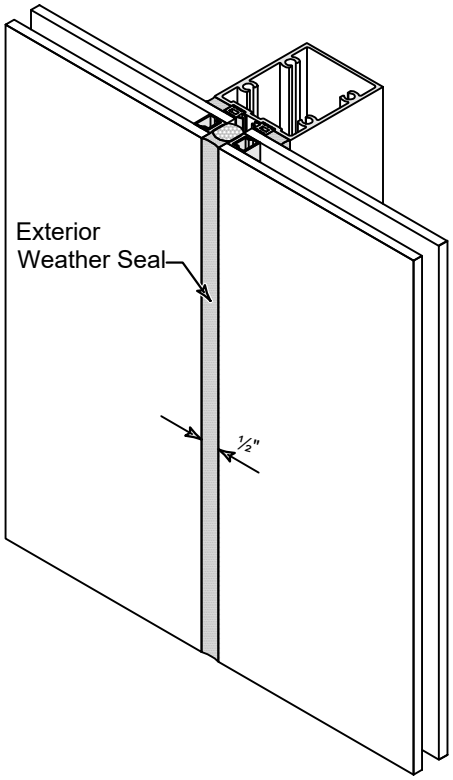


Fig. 55.1

GLAZING

Step 31: Apply Exterior Weather Seal (continued)

D. Using a nylon spatula or other non-scratching implement, tool the silicone immediately after running the vertical joint. Exert positive pressure while tooling to ensure that the silicone completely fills the cavity.
E. Be careful not to remove too much silicone. The silicone should make complete contact with both glass surfaces. The finished joint should be flush with the edge of the vertical.



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

Fig. 56.1

NOTE: For **OUTSIDE GLAZE** head members using the **E9415 glazing stop, apply** sealant at the receiving joint of the horizontal prior to installing the stop.

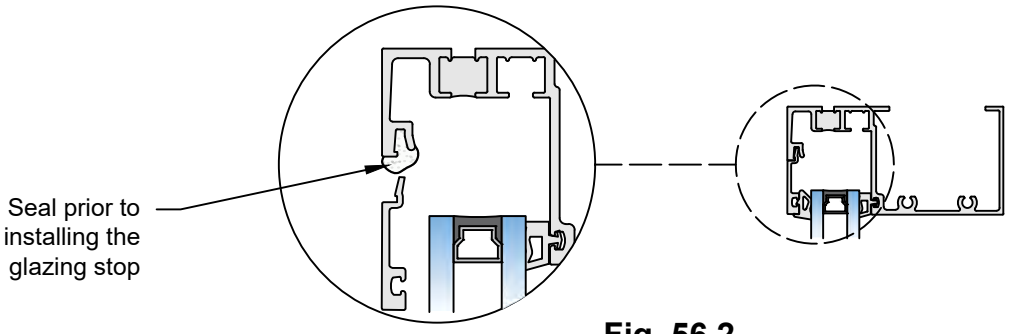


Fig. 56.2