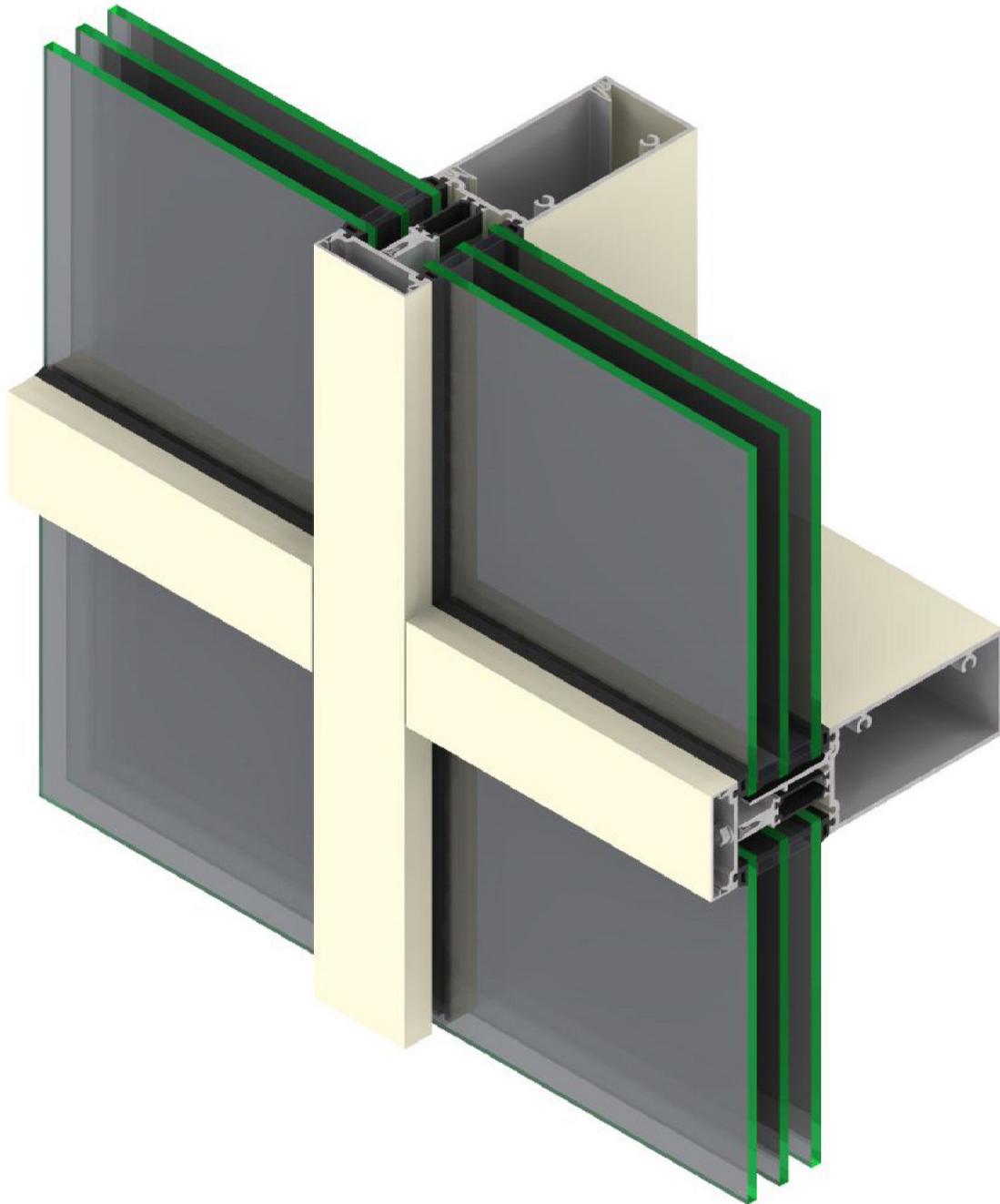


SERIES 5500 CURTAIN WALL
Assembly and Installation Instructions Section 1



April 2023

PART NO. YS57

WHERE WINDOWS ARE JUST THE BEGINNING



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Minimizing Condensation

Note: Please reference EFCO's "Understanding Condensation" brochure which can be obtained through your EFCO representative.

Condensation will form on any surface when unfavorable conditions (interior temperature and relative humidity and exterior temperature) are present. When the formation of excessive condensation is a concern, it is highly recommended that a design professional is utilized to perform an analysis of the shop drawings to recommend the best possible installation methods. Please contact your EFCO representative for information on EFCO's Thermal Analysis Services.

Many current installation practices lead to an increase in the possibility of the formation of condensation. Though not all inclusive, the list of examples below illustrates conditions under which condensation is likely to occur:

1. Bridging system thermal break with non-thermally broken metal flashing or lintels that are exposed to the exterior
2. System exposure to cold air cavities
3. Interior relative humidity levels not maintained at recommended levels, see EFCO's "Understanding Condensation" brochure
4. Inadequate separation between system and surrounding condition at perimeter
5. Product combinations during the shop drawing stage that result in bridging thermal breaks of one or all products involved

Note: Installation Instructions are provided as a supplement, and should be used in conjunction with the final approved shop drawings.

Section 1: General Notes And Guidelines

HANDLING / STORING / PROTECTING ALUMINUM

The following guidelines are recommended to ensure early acceptance of your products and workmanship.

- A. **HANDLE CAREFULLY** - Store with adequate separation between components so the material will not rub together. Store the material off the ground. Protect materials against weather elements and other construction trades.
- B. **KEEP MATERIAL AWAY FROM WATER, MUD, AND SPRAY** - Prevent cement, plaster, and other materials from contacting with and damaging the finish. Do not allow moisture to be trapped between the finished surface and the wrapping material.
- C. **PROTECT MATERIALS AFTER ERECTION** - Wrap or erect screens of plastic sheeting over material. Cement, plaster, terrazzo, and other alkaline materials are very harmful to the finish and are to be immediately removed with soap and water. Under no circumstances should these materials be allowed to dry or permanent staining may occur.

GENERAL GUIDELINES

The following practices are recommended for all installations:

- A. **REVIEW CONTRACT DOCUMENTS** – Become thoroughly familiar with the project. Check shop drawings, installation instructions, architectural drawings and shipping lists. The shop drawings take precedence and include specific details for the project. Shop drawings govern when conflicting information exists in the assembly and installation instructions. Note any **field verified** notes on the shop drawings prior to installing. EFCO assembly and installation instructions are general in nature and cover many conditions.
- B. **INSTALL ALL FRAMING MATERIAL PLUMB, LEVEL, AND TRUE** – Proper alignment and relationships to benchmarks and column centerlines, as established by the architectural drawings and the general contractor, must be maintained.
- C. **ERECTION SEQUENCE** - The sequence of erection should be coordinated with the project general contractor to prevent delays and minimize the risk of material damage. Note: When preset anchors are required, coordinate and supervise anchor and insert placement with the general contractor including insert layout drawings, where required.

- D. **PERIMETER CONDITIONS** - Verify that all job site conditions and accompanying substrates receiving the installation are in accordance with the contract documents. If deviations occur, notification must be given **in writing** to the general contractor and differences resolved before proceeding further with the installation in the area in question.
- E. **ISOLATION OF ALUMINUM** - Prevent all aluminum from coming in direct contact with masonry or dissimilar materials by means of an appropriate primer.
- F. **SHIPMENT VERIFICATION** - Verify contents of all material shipments received upon their arrival. Verify quantity and correct finishes. **Notify EFCO® immediately of any discrepancies or damage that may have occurred.**
- G. **SEALANT** - All sealant must meet [**ASTM C 920, CLASS 50**]. For the purposes of these instructions, sealant is to be defined as the following: **SEALANT** - A weather resistant, gunnable liquid filler which when cured provides a resilient, flexible ($\pm 50\%$ movement capability min.) air and water seal between similar and dissimilar materials.

All sealant must be compatible with all surfaces on which adhesion is required, including other sealant surfaces. All frame surfaces should be clean, dry, dust, and frost free. If a primer is required, it must be applied to clean surfaces. All perimeter substrates shall be clean and properly treated to receive sealant. All sealants and primers must be applied according to the sealant manufacturers instructions and recommendations.

This system is designed and has been tested to utilize silicone sealants at all internal joineries, i.e., joint plugs, gasket intersections, etc. It is the responsibility of the glazing contractor to submit a statement from the sealant manufacturer indicating that glass and glazing materials have been tested for compatibility and adhesion with glazing sealants, and interpreting test results relative to material performance, including recommendations for primers and substrate preparation required to obtain adhesion. The chemical compatibility of all glazing materials and framing sealants with each other and with like materials used in glass fabrication must be established.

Maintain caulk joints as shown in the approved shop drawings. A 3/4" minimum joint is required at the head and jamb condition to accommodate installation, building movements, and thermal expansion and contraction.

Section 1: General Notes And Guidelines

- H. **STRUCTURAL SEALANT JOINTS** - The maximum allowable size of the glass lite is controlled by the width and depth of the structural silicone joint combined with the specified design wind load (PSF or Pa). The stress on the structural silicone must not exceed 20 PSI (137 KPa) for a 6:1 safety factor.
- In order to determine the structural silicone sealant contact width or bite which adheres the glass to the frame, a calculation must be performed on a job by job basis. The formula which determines the sealant width is based on using a trapezoidal load distribution rule. This formula is expressed as follows:

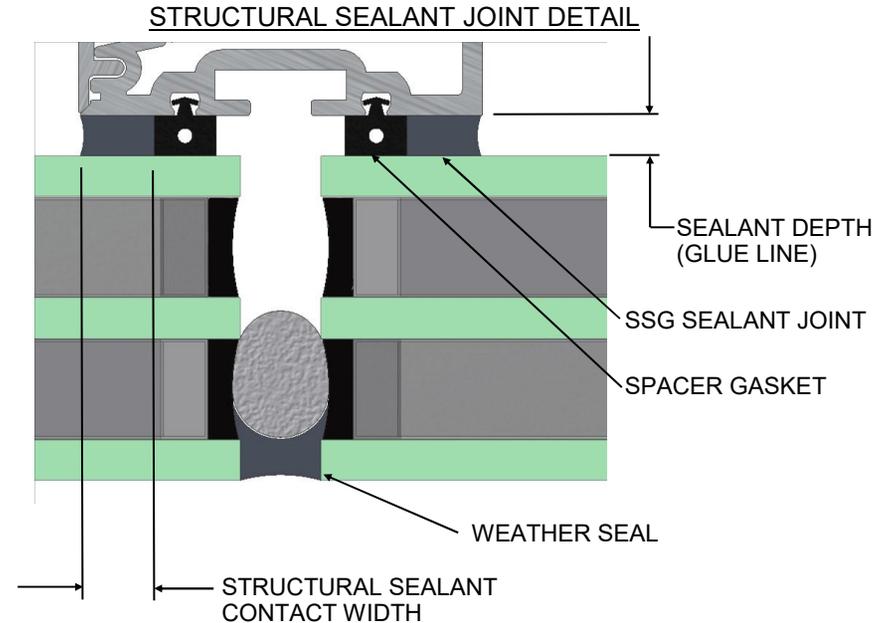
$$\text{Structural Sealant Bite or Contact Width (in)} = \frac{0.5 \times \text{Short Span (ft)} \times \text{Wind load (lb/ft}^2\text{)}}{\text{Sealant Design Strength (}=20 \text{ lb/in}^2\text{)} \times 12 \text{ in/ft}}$$

Example: Lite size is 48" x 60" and wind load for the project is 60 psf.

$$\text{Structural Sealant Bite or Contact Width (in)} = \frac{0.5 \times 4' \times 60 \text{ psf}}{20 \times 12} \text{ or } \frac{120}{240} \text{ or } .500''$$

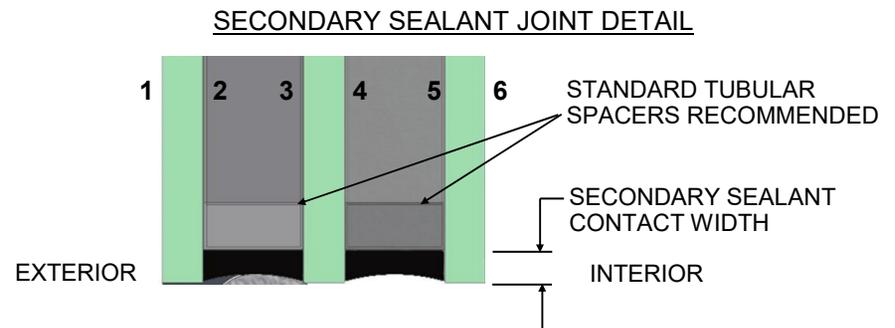
Sealant manufacturers, as a general rule, specify the structural sealant depth (glue line) to be one half of the contact width for a 2:1 width to height ratio. The glue line should not exceed 3/8" thick nor be less than 1/4" thick. The standard joint size for Series 8800 is 1/2" x 1/4".

- I. **APPROVED SOLVENT OR CLEANER** - Degreasing solvents, such as methyl ethyl ketone (MEK), toluene, xylene, acetone and mineral spirits can be used to remove oils or other surface contaminants, but may leave a residue film on the cleaned surfaces, which must be removed. A solution of fifty percent Isopropyl alcohol and fifty percent water is recommended for the final cleaning and preparation of substrates for sealant application. Refer to the sealant manufacturer's application instructions, ASTM C 1193 - 09, project specifications, and local environmental regulations for requirements.
- J. **SETTING BLOCKS** - Refer to the approved shop drawings for placement of setting blocks. Consult with the glass manufacturer for the correct setting block length for glass sizes over 40 square feet.



- K. **SECONDARY SEALANT JOINT DESIGN** - The design of the secondary sealant joint is based on the 50:50 load sharing principal where the I.G. unit is comprised of two symmetrical lites of glass. The secondary sealant joint that adheres the two lites of glass together only carries half the wind load applied to the I.G. unit. Since the load is halved, the secondary sealant contact width is half that of the SSG joint. Using the example earlier for the 1/2" x 1/4" SSG joint, the secondary sealant contact width for the I.G. unit in the example is 1/4".

Edge deletion is required on the coated surfaces (#2, #3, #4, #5, or #6) for hard or soft coated glazing products.



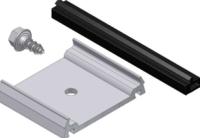
Section 2 - Parts Identification - Fasteners and Accessories

Fasteners					
Profile	Part #	Description	Profile	Part #	Description
	STC4	#12-11 X 5/8" HWH-SMS 18-8 A GM		SFQ5	1/4"-14 X 1 1/2" HWH SHOULDER- SMS 18-8 B
	SFZ8	#8-15 X 1/2" PL-FH-SMS 18-8		STT6	#8-18 X 9/16" PL-FH-SMS ZC TEK/2
	STK4	#8-18 X 1/2" PL-FH-SMS 410 TEK/2			

Accessories

Profile	Part #	Description	Material
	WEP8	Standard 1/4" Preset Glazing Gasket	Peroxide Cure 60 Duro Shore A EPDM
	WT01	Standard Isolator Gasket	Shore A 90 Duro General Purpose Flexible PVC
	WEQ4	Standard 1/4" Preset Perimeter Spacer Gasket	Peroxide Cure 70 Duro Shore A EPDM
	WEP0	Standard 1/4" Preset SSG Spacer Gasket	General Purpose 70 Duro Shore A Silicone

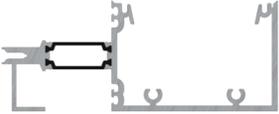
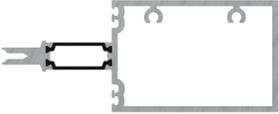
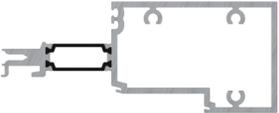
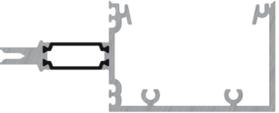
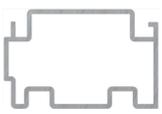
Section 2 - Parts Identification - Fasteners and Accessories

Accessories			
Profile	Part #	Description	Material
	HEN2	Standard 2" Setting Block	Shore A 85 Duro General Purpose Black EPDM
	LC08	Standard Perimeter Pocket Filler	Rigid PVC
	HCV9	Captured System Perimeter Joint Plug / Filler	Shore 00 60 Duro Black General Purpose Silicone
	HEN1	Captured System Intermediate Joint Plug	Shore 00 60 Duro Black EPDM Sponge
	HCV7	SSG System Perimeter Joint Plug / Filler	Shore 00 60 Duro Black General Purpose Silicone
	HCV8	SSG System Intermediate Joint Plug	Shore 00 60 Duro Black EPDM Sponge
	HGR4	SSG System Temporary Glazing Retainer	Chemlon 109 - SSG - Black
	KX90	Captured System Temporary Glazing Retainer	7089 X 2" Long (FC39), WEP8 X 4" Long, (1) STC4 Fastener

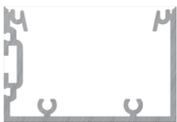
Section 2 - Parts Identification - Fasteners and Accessories

Accessories			
Profile	Part #	Description	Material
	WEP6	Expansion Mullion Finger Gasket	Shore A 70 Duro General Purpose Black EPDM
	WNA3	Wedge Gasket use with 17S7 Glazing adaptor	Shore A 60 Duro Santoprene

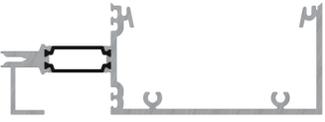
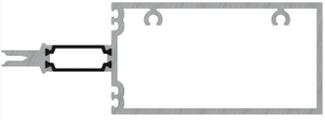
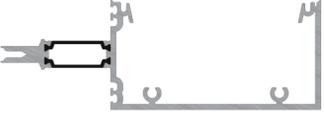
Section 3 - Parts Identification - 7" System

Profile	Part No.	Description	Tooling Drawing / Cut Formulas
	5G12	7" Head / Sill / Jamb	55XT-008
	5G13	7" Intermediate Horizontal	Cut to length = horizontal D.L.O.
	5G14	7" Door Header	Cut to length = horizontal D.L.O.
	5G15	7" Intermediate Vertical	55XT-001, 55XT-009
	FL04 (Made from 17S5)	Splice for 5G15, 5G12	Reference FL04 Part Drawing. 55XT-008
	5G16	7" Expansion Vertical	55XT-002, 55XT-006
	17S2	7" Expansion Vertical	55XT-003, 55XT-007
	FK34 (Made from 15H9)	7" Mullion Clip	Reference FK34 Part Drawing.

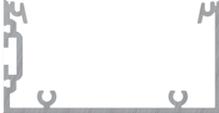
Section 3 - Parts Identification - 7" System

Profile	Part No.	Description	Tooling Drawing / Cut Formulas
	FK20 (Made from 15L9)	Splice for 5G16	Reference FK20 Part Drawing. 55XT-011
	FL06 (Made from 17S4)	Splice for 17S2	Reference FL06 Part Drawing. 55XT-012
	17S3	7" SSG Intermediate Vertical	55XT-004
	FL05 (Made from 17S6)	Splice for 17S3	Reference FL05 Part Drawing. 55XT-010
	15B7	7" Frame Filler Use with 5G12 and 5G15.	Cut to length = horizontal D.L.O. at std. head and sill. CW55-152 at verticals.
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	.	.	
	.	.	

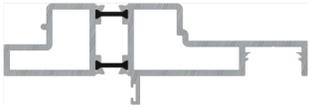
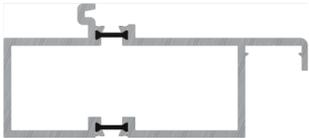
Section 4 - Parts Identification - 8" System

Profile	Part No.	Description	Tooling Drawing / Cut Formulas
	5G06	8" Head / Sill / Jamb	55XT-008
	5G07	8" Intermediate Horizontal	Cut to length = horizontal D.L.O.
	5G08	8" Door Header	Cut to length = horizontal D.L.O.
	5G09	8" Intermediate Vertical	55XT-001, 55XT-009
	FL01 (Made from 17P7)	Splice for 5G09, 5G06	Reference FL01 Part Drawing. 55XT-008
	5G10	8" Expansion Vertical	55XT-002, 55XT-006
	17P4	8" Expansion Vertical	55XT-003, 55XT-007
	FK35 (Made from 15K3)	8" Mullion Clip	Reference FK35 Part Drawing.

Section 4 - Parts Identification - 8" System

Profile	Part No.	Description	Tooling Drawing / Cut Formulas
	FK22 (Made from 15M2)	Splice for 5G10	Reference FK22 Part Drawing. 55XT-011
	FL03 (Made from 17P6)	Splice for 17P4	Reference FL03 Part Drawing. 55XT-012
	17P5	8" SSG Intermediate Vertical	55XT-004
	FL02 (Made from 17P8)	Splice for 17P5	Reference FL02 Part Drawing. 55XT-010
	15B2	8" Frame Filler Use with 5G06 and 5G09.	Cut to length x horizontal D.L.O. at std. head and sill. CW55-152 at verticals.
	.	.	
	.	.	
	.	.	

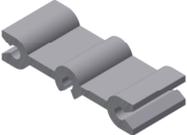
Section 5 - Parts Identification - Misc. Extrusions

Profile	Part No.	Description	Tooling Drawing / Cut Formulas
	5G11 – 1/2" Door Stop HT 5H68 – 5/8" Door Stop HT	Door Jamb Adapter	55XT-000974, 55XT-001649, 55XT-001679, 55XT-000823, 55XT-000878, 55XT-000846, 55XT-002487, 55XT-002520, 55XT-002523, 55XT-002524, 55XT-002525, 55XT-002526, 55XT-002533
	5G17	Door Header	55XT-000767, 55XT-00827, 55XT-00950, 55XT-000951, 55XT-00952, 55XT-002521, 55XT-002522, 55XT-002527, 55XT-002528, 55XT-002529, 55XT-002530, 55XT-002531, 55XT-002532
	1283	Snap Filler for 5G11, 5H68 and 5G17	Cut to length x horizontal D.O. minus 1/32".
	9155	Door Stop Snap Cover	Cut to length x horizontal D.O. minus 1/32".
	4437	Door Header Door Stop	Cut to length x horizontal D.O. minus 1/32". 55XT-000576
	9933	Door Header Door Stop	Cut to length x horizontal D.O. minus 1/32". 55XT-000953, 55XT-000954, 55XT-000605
	17R1	Door Header Filler	Cut to length x horizontal D.L.O. at side lite minus 1/32".
	FWF1	Strike Plate Adapter	Reference FWF1 Part Drawing.

Section 5 - Parts Identification - Misc. Extrusions

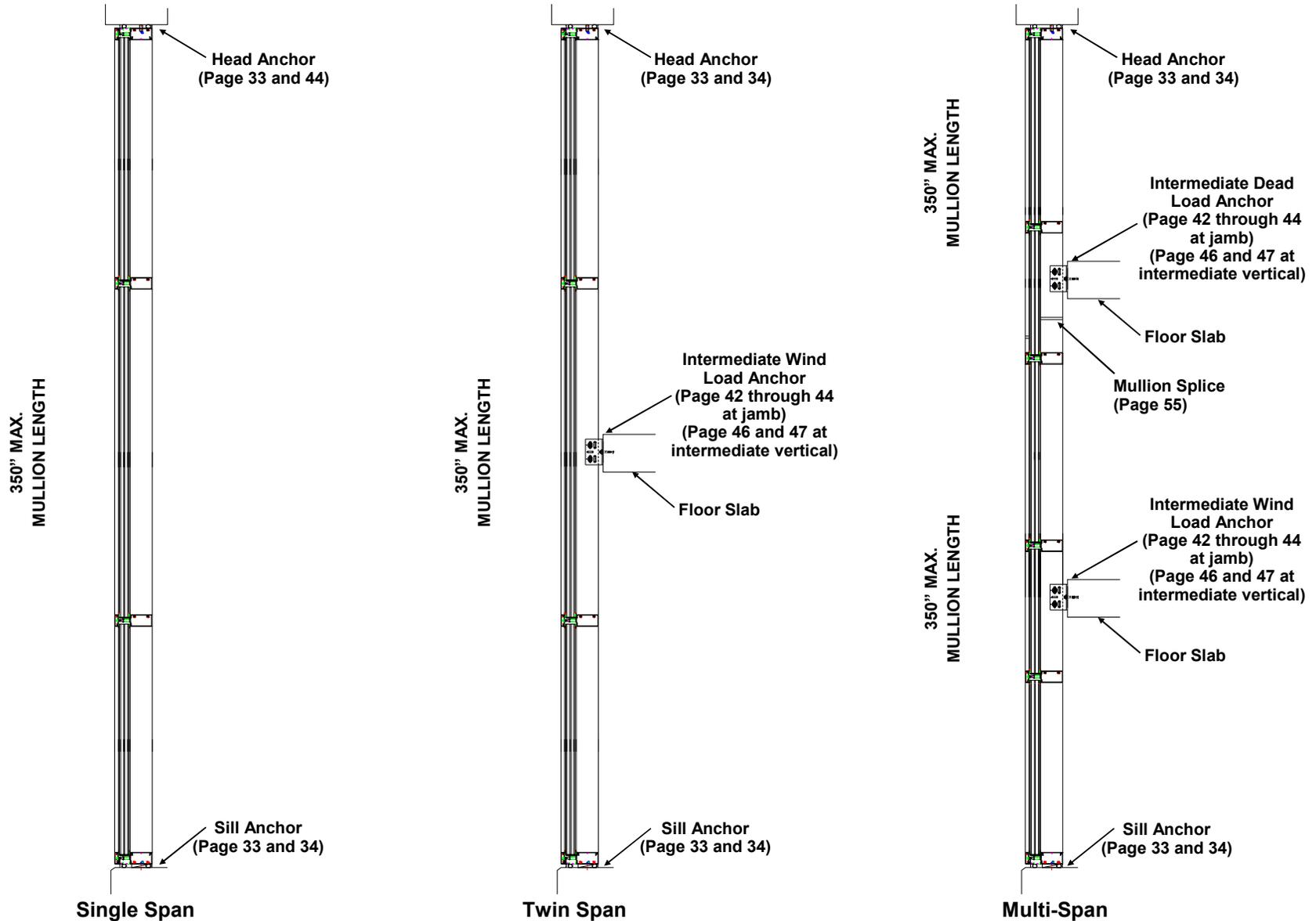
Profile	Part No.	Description	Tooling Drawing / Cut Formulas
	FWF2	Strike Plate Adapter	Reference FWF2 Part Drawing.
	FWF3	Strike Plate Adapter	Reference FWF3 Part Drawing.
	FWF4	Strike Plate Adapter	Reference FWF4 Part Drawing.
	FWF5	Strike Plate Adapter	Reference FWF5 Part Drawing.
	FL08	2" Glazing Setting Chair	Reference FL08 Part Drawing.
	KW95	Standard 2 1/2" Pressure Plate	Reference KW95 Part Drawing. CTWL-594F
	7090	Standard 2 1/2" X 3/4" Cover	Cut to frame dim. at vertical. CTWL-219A at horizontal.
	KZ54	2" Pressure Plate used at Door Header	Reference KZ54 Part Drawing.

Section 5 - Parts Identification - Misc. Extrusions

Profile	Part No.	Description	Tooling Drawing / Cut Formulas
	7419	2" x 3/4" Snap Cover used at Door Header	CTWL-219A
	17S7	1" Glazing Adapter (2" to 1" for 2 1/2" glazing pocket)	Cut to length Horizontal D.L.O. minus 1/16" Vertical D.L.O. Plus 1"
	FK12 (Made from 1835)	Head Pipe Sleeve Anchor x 1 3/8" Long (1/2" Dia. Fasteners)	Reference FL12 Part Drawing.
	FK81 (Made from 15Y7)	Head Pipe Sleeve Anchor x 1 3/8" Long (3/8" Dia. Fasteners)	Reference FK81 Part Drawing.
	FK82 (Made from 15Y8)	Head Pipe Sleeve Anchor x 1 3/8" Long (1/4" Dia. Fasteners)	Reference FK82 Part Drawing.
	FK18 (Made from 15H4)	Alternate Anchor x 1 3/8" Long	Reference FK18 Part Drawing.
	FK19 (Made from 15H5)	Alternate Anchor x 1 3/8" Long	Reference FK19 Part Drawing.

Section 6 - Typical Installation Configurations

The wall sections below depict the standard types of installations for the S-5500 X-Therm curtain wall. Refer to the approved shop drawings for dimensions and configurations of the frame, anchor and splice.



Section 7 - Frame Assembly

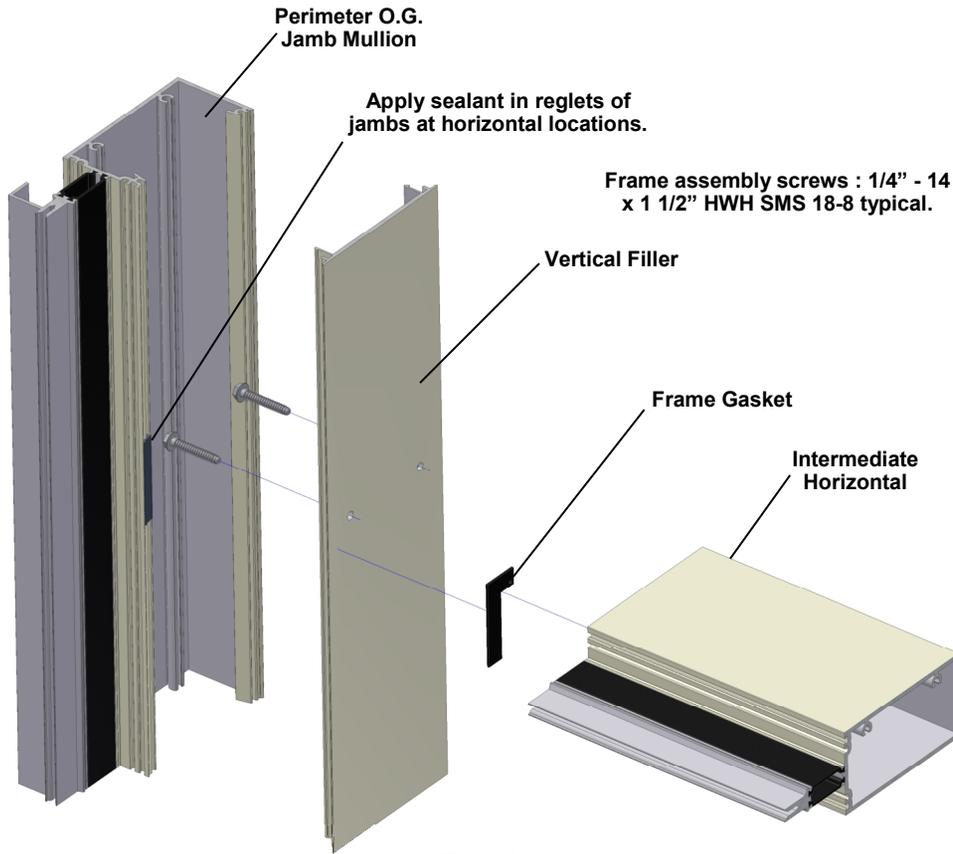


Figure 2

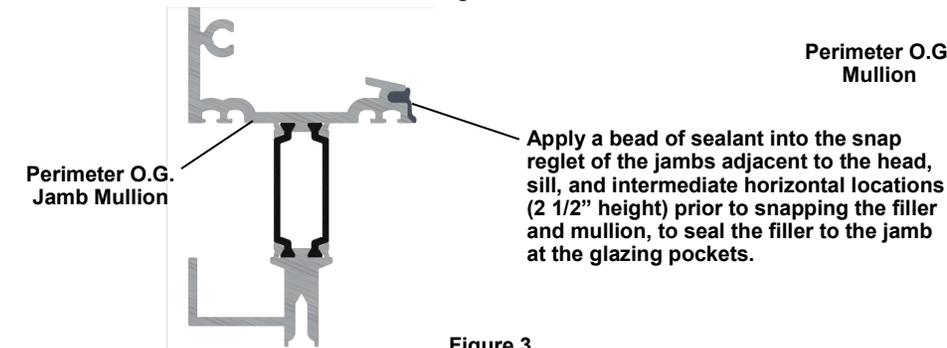


Figure 3

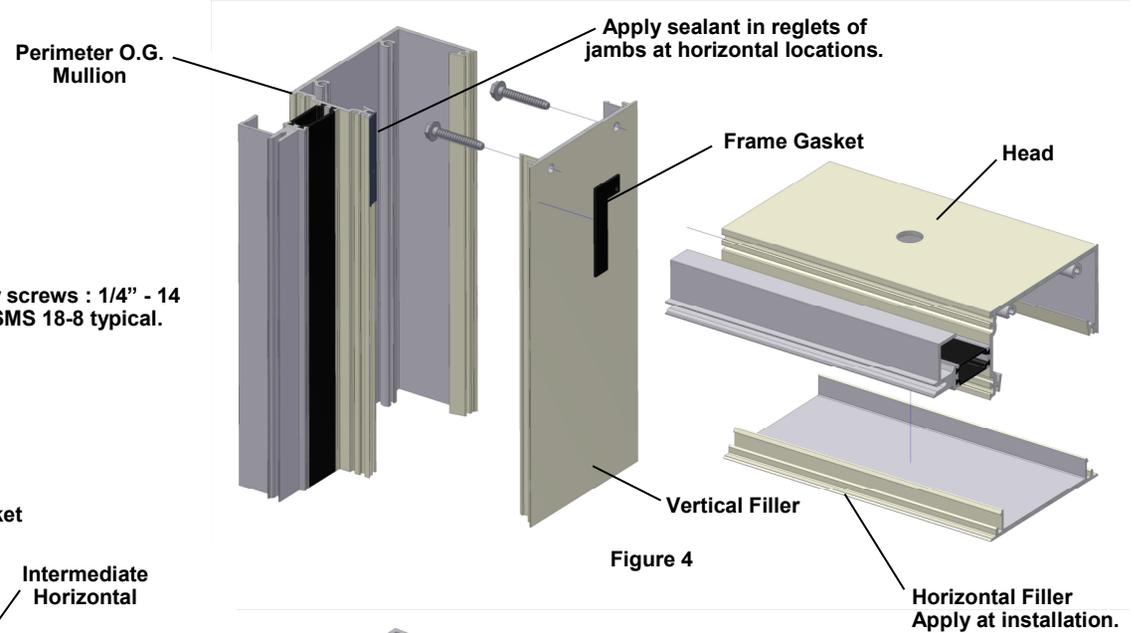


Figure 4

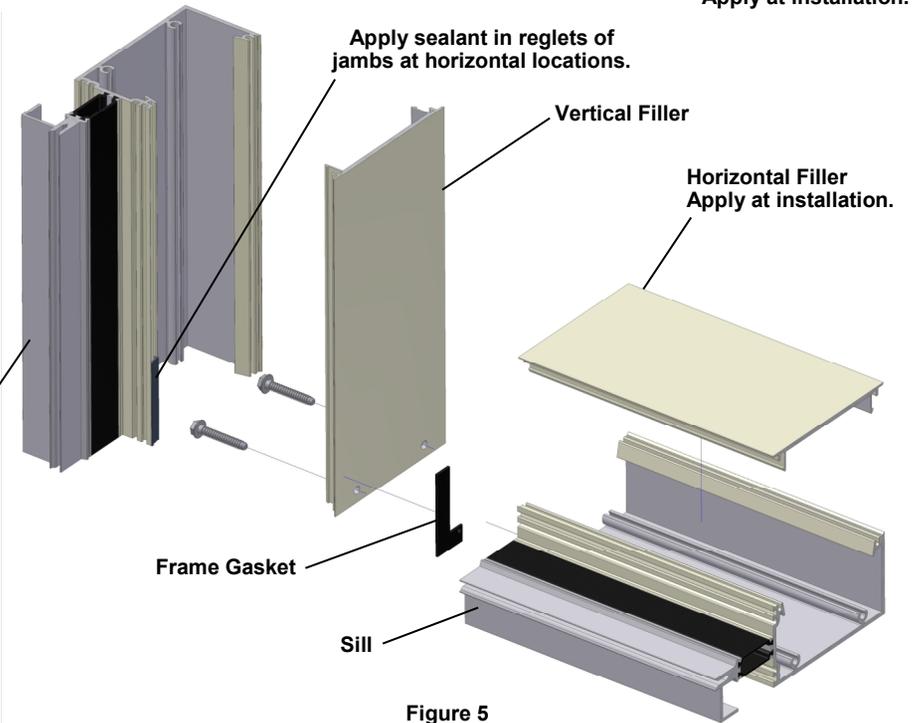


Figure 5

Section 7 - Frame Assembly

1. **Using an approved solvent or cleaner, clean the frame gasket contact surfaces of all oils and other contaminants.**
2. Remove the liner from the frame gaskets and apply them to the matching surfaces of the mullions ensuring the holes and edges align as required. See Figure 2, 3, 4, page 17. Butt sealing the ends of the horizontals may be used instead of applying frame gaskets, if desired.
3. Smooth out the frame gaskets onto the mullion surfaces by forcing out any remaining air bubbles.
4. Assemble the outside glazed framing members as shown below. Additional support for frames with the filler as a vertical on both sides may be needed depending on the overall frame size. See the note on page 17 for special sealant requirements at perimeter jamb, filler and horizontal intersections.
5. Carefully trim away excess gasket material around the exposed areas if required.

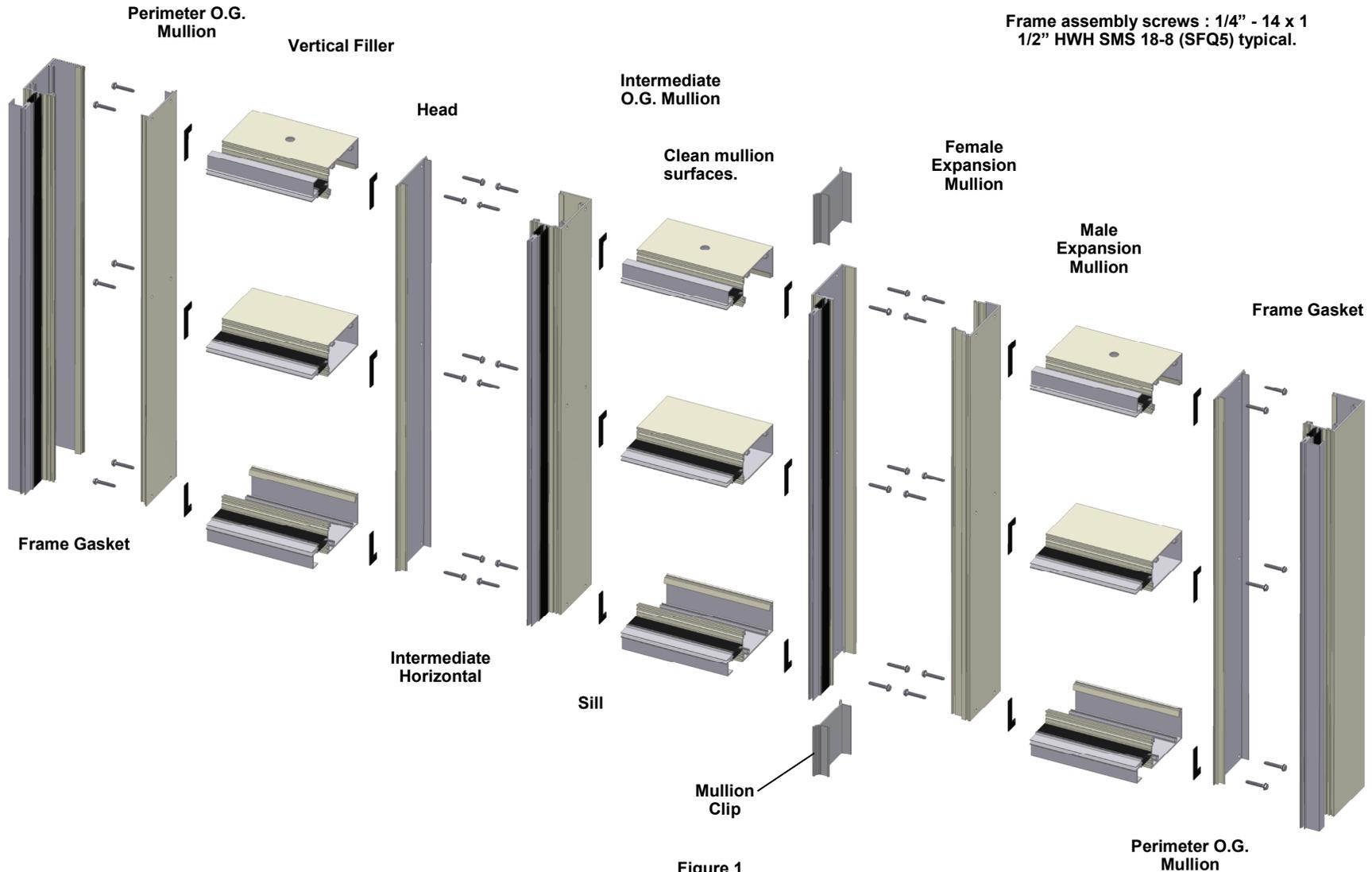


Figure 1

Section 7 - Frame Assembly

6. Seal the jamb as shown in Figures 3 thru 5 on page 17 at the horizontal locations, and snap the perimeter jamb mullion onto the filler portion of the assembled frame.
7. Fasten the jamb to the filler with SPC9 screws at the horizontal locations. The number of fasteners will vary with the length of the perimeter jamb member and the number of horizontals in the frame, but a minimum of 1 SPC9 per jamb is required. Jamb attachment is required for left and right jamb frame assemblies.

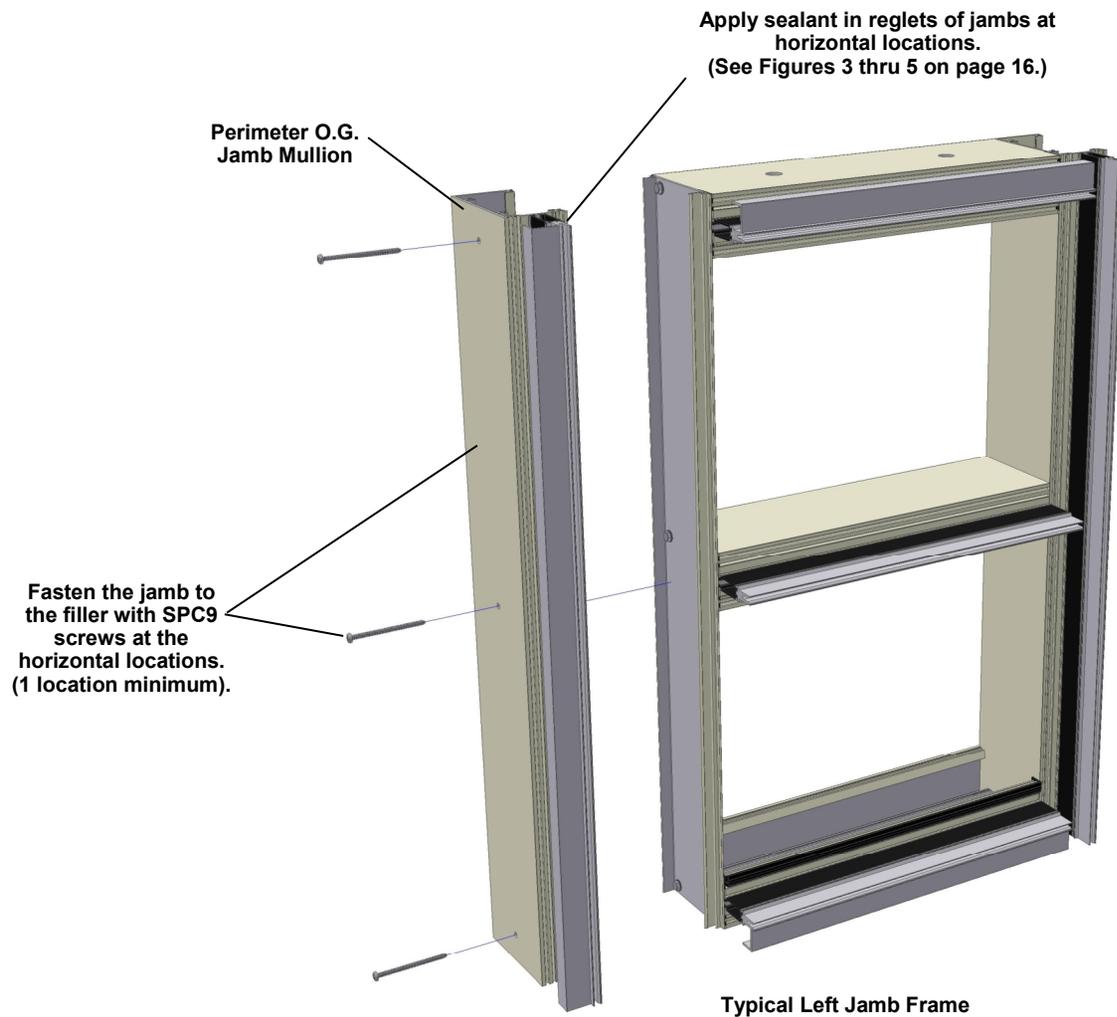


Figure 6

Section 8 - Shop Applied Joint Plugs

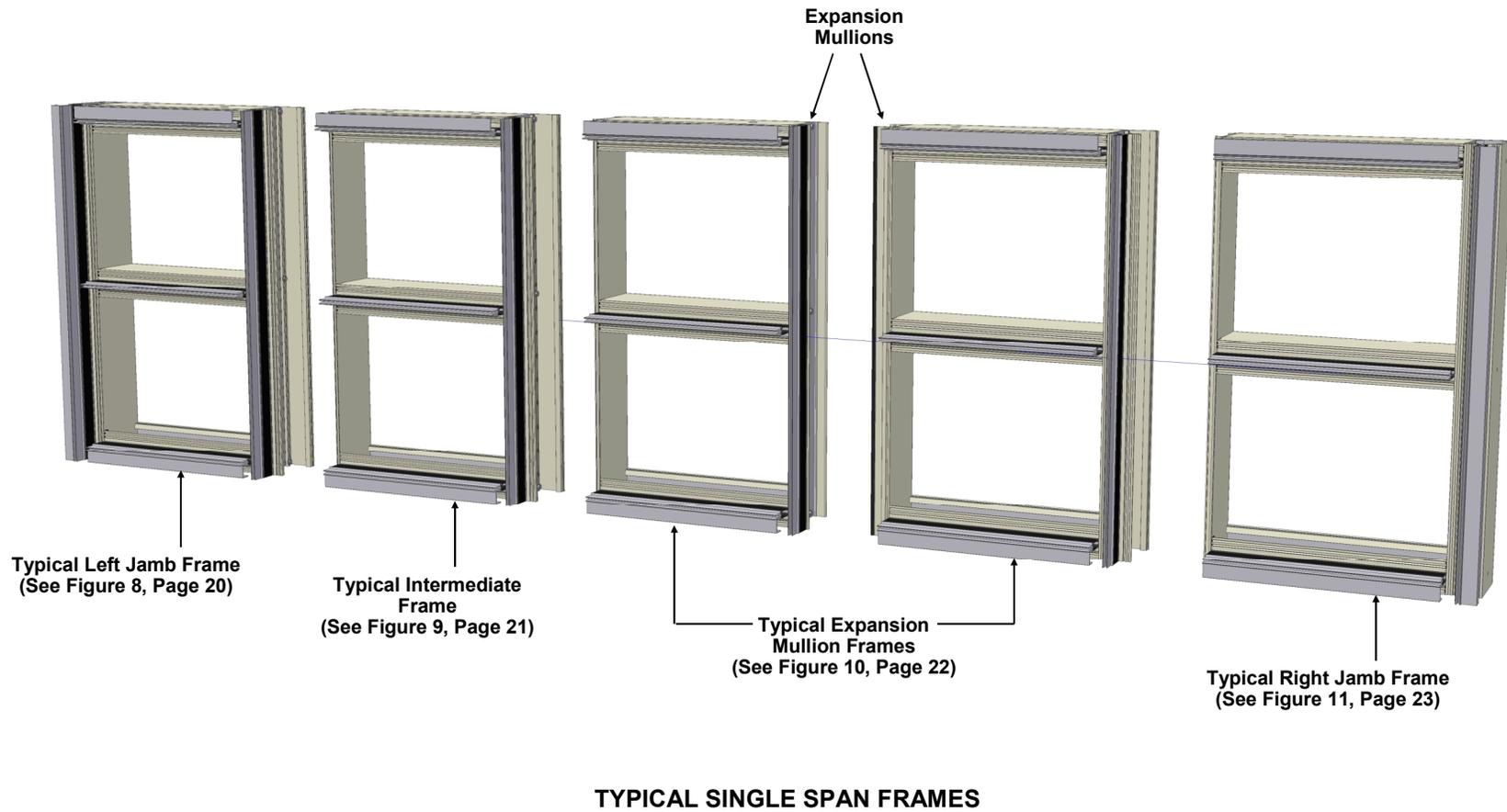


Figure 7

Section 8 - Shop Applied Joint Plugs

Apply all perimeter and intermediate joint plugs that can be pre-installed in the shop as shown and noted below.

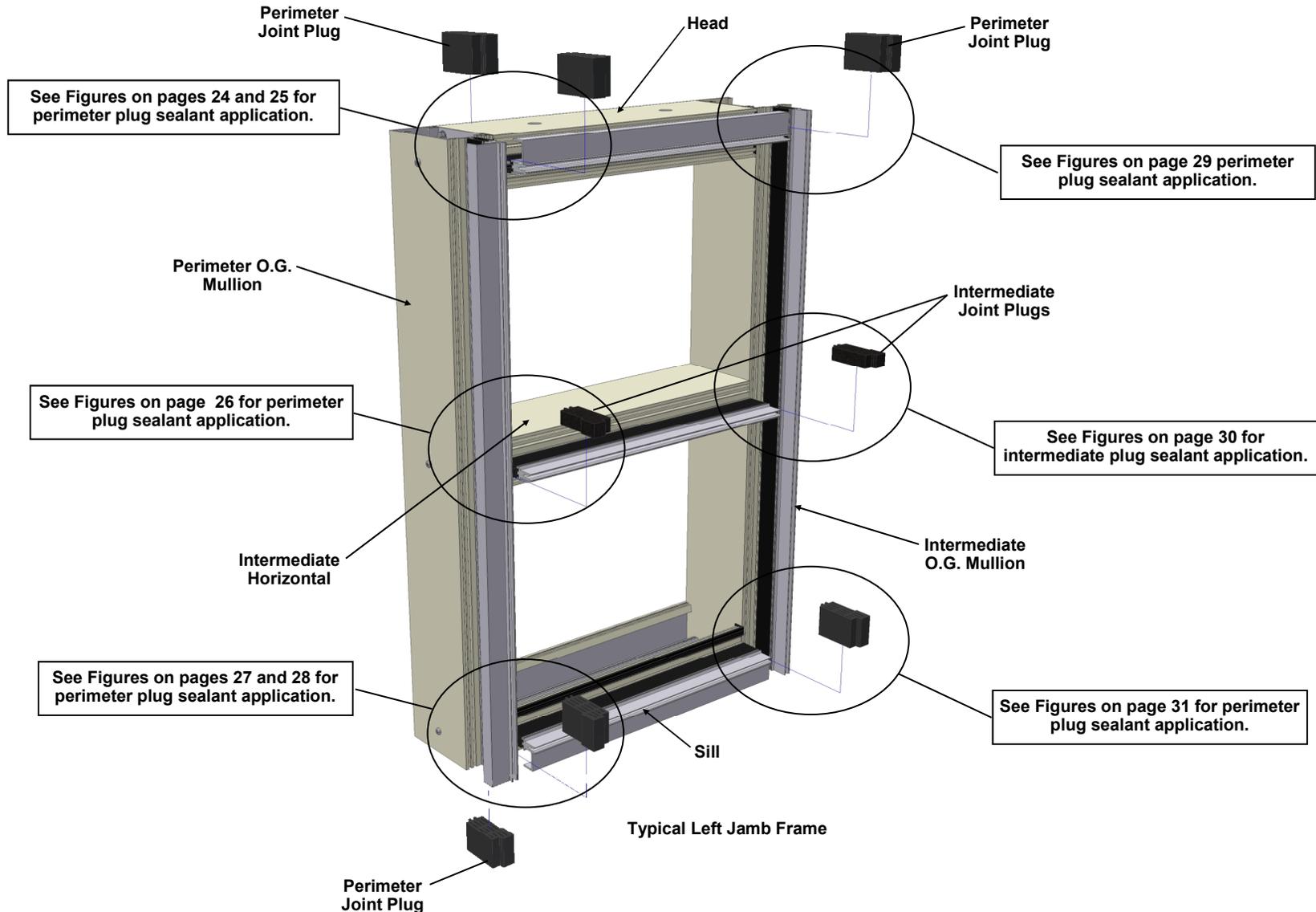


Figure 8

Section 8 - Shop Applied Joint Plugs

Apply all perimeter and intermediate joint plugs that can be pre-installed in the shop as shown and noted below.

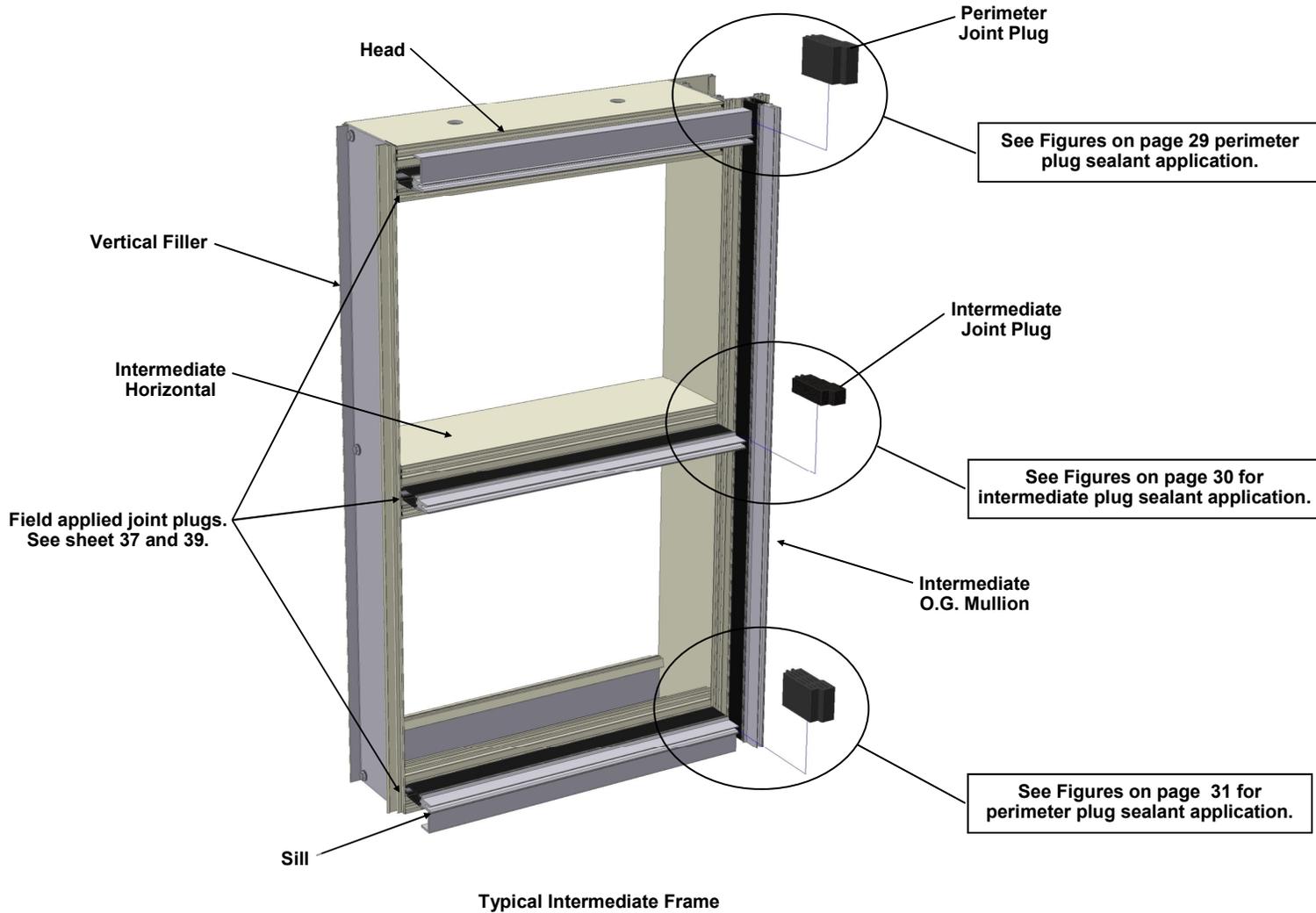
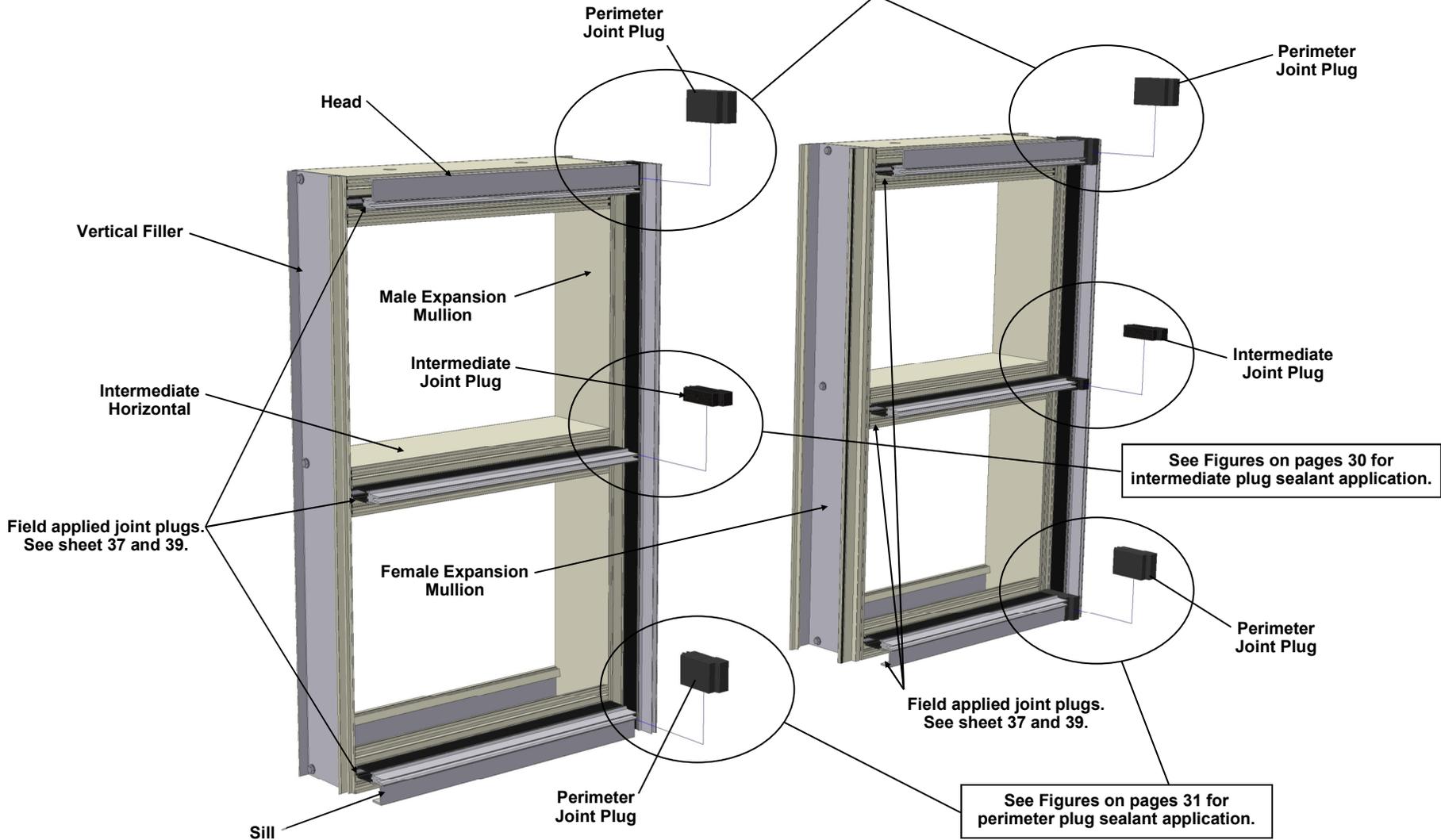


Figure 9

Section 8 - Shop Applied Joint Plugs

Apply all perimeter and intermediate joint plugs that can be pre-installed in the shop as shown and noted below.

See Figures on pages 29 perimeter plug sealant application.



Typical Expansion Mullion Frames

Figure 10

Section 8 - Shop Applied Joint Plugs

Apply all perimeter and intermediate joint plugs that can be pre-installed in the shop as shown and noted below.

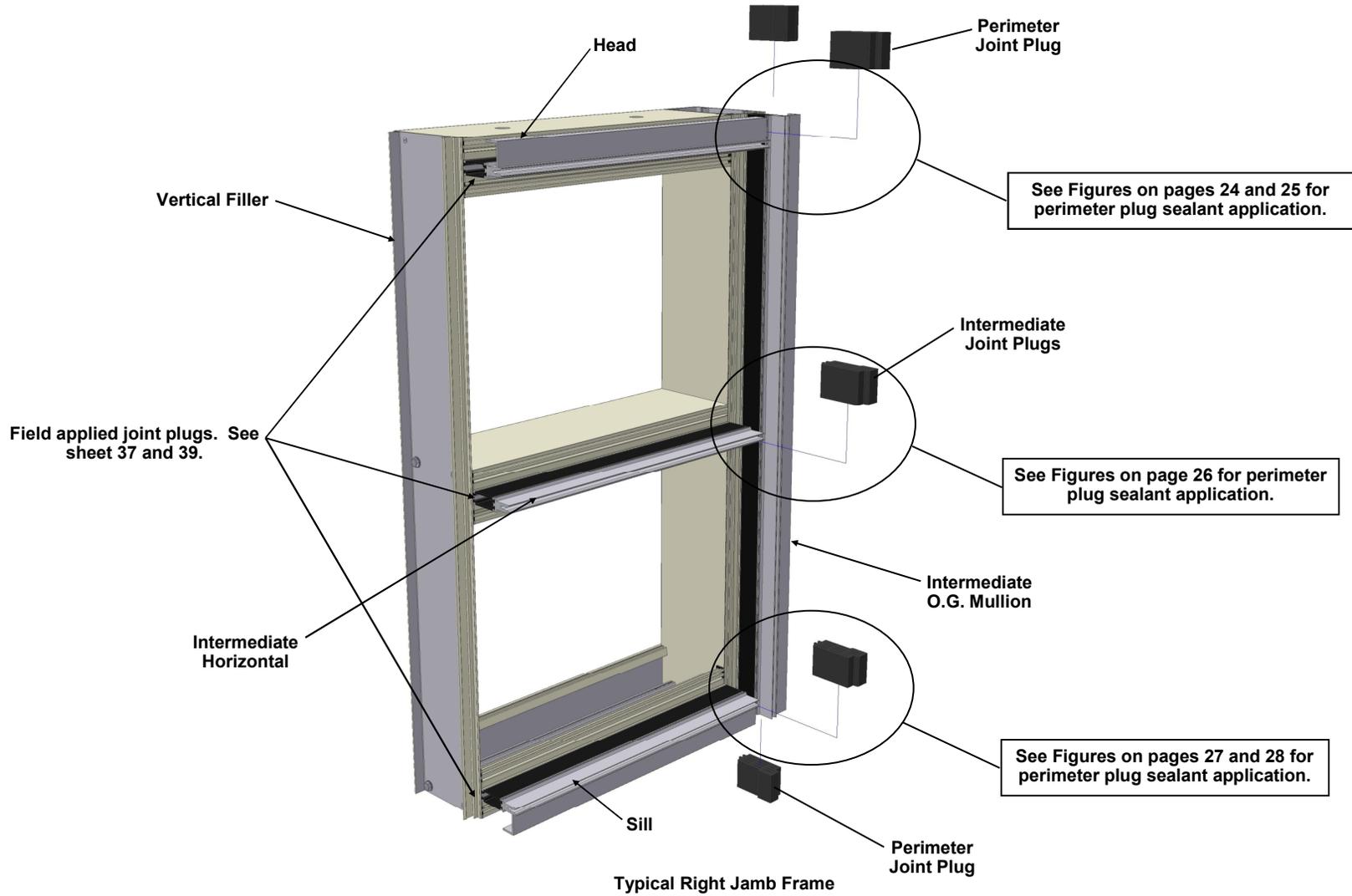
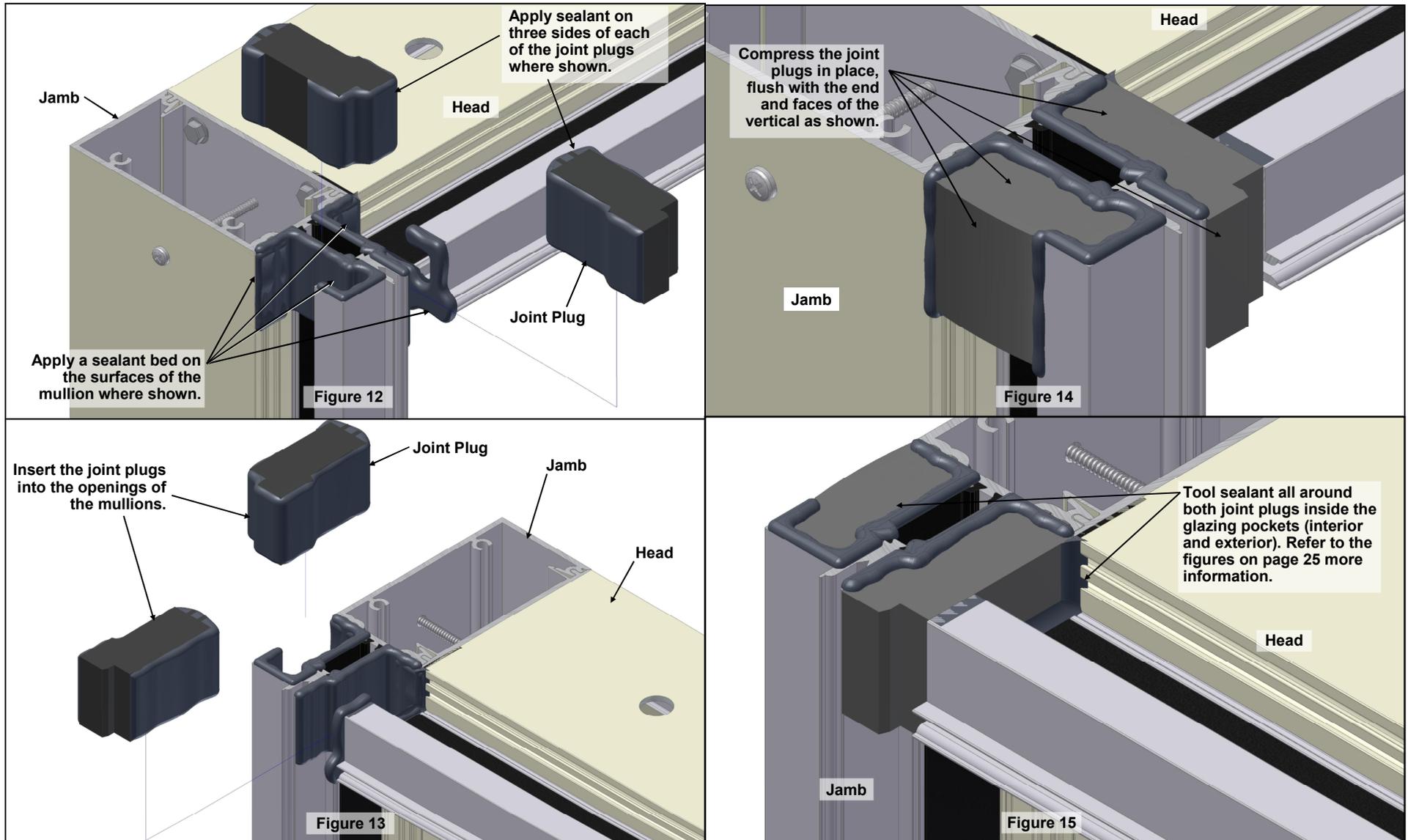


Figure 11

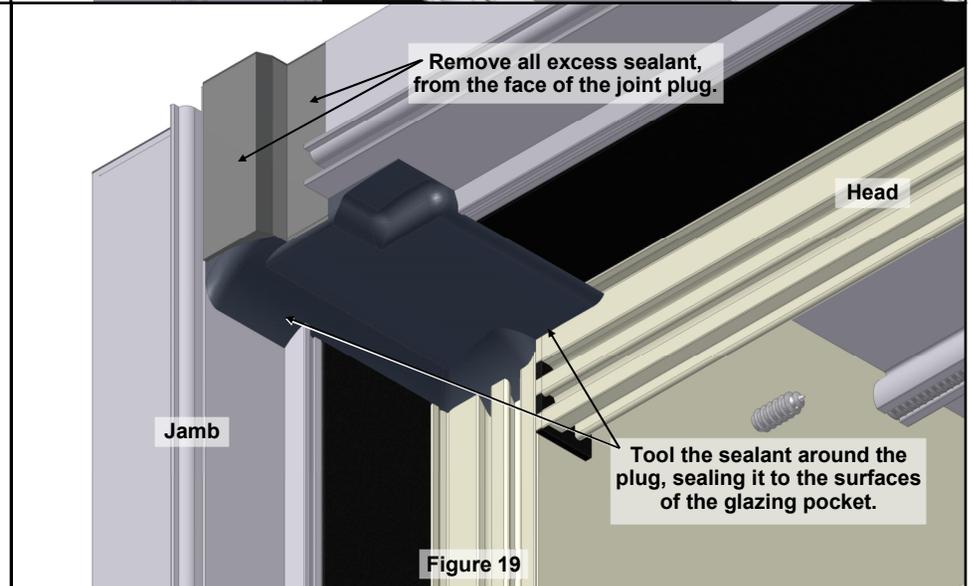
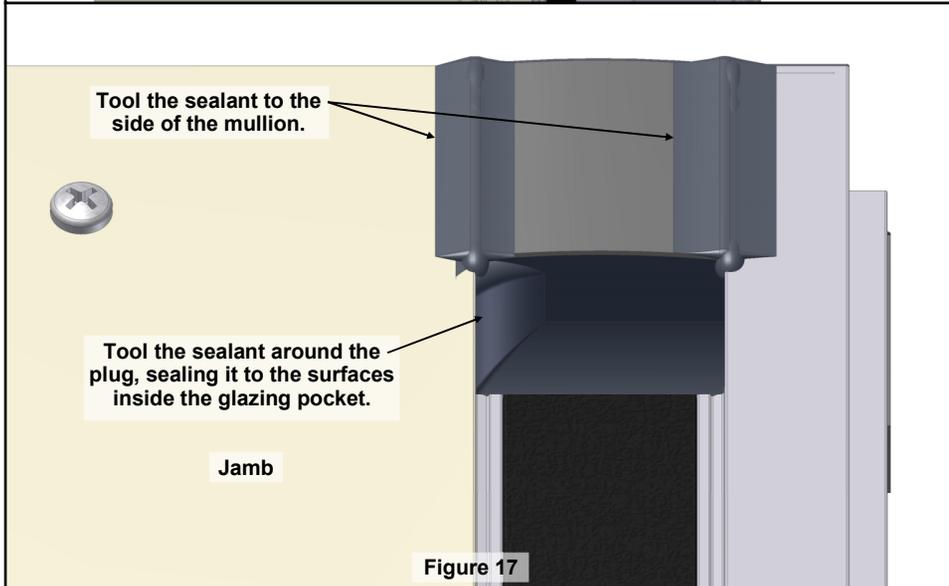
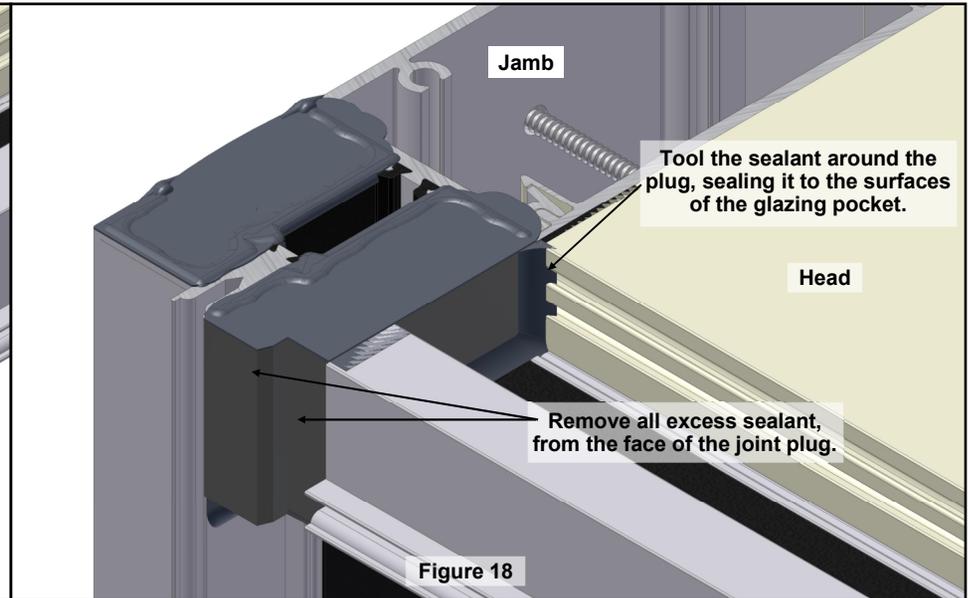
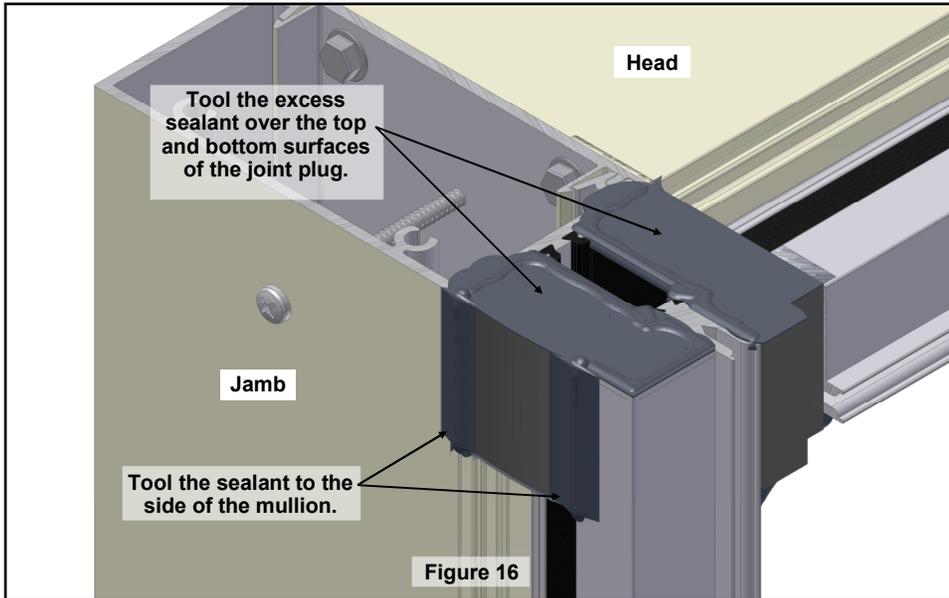
Section 8 - Shop Applied Joint Plugs

1. **Using an approved solvent or cleaner, clean the joint plug, and the joint plug sealant contact surfaces of the mullions of all oils and other contaminants.**
2. Apply sealant to the joint plugs and the joint plug sealant contact surfaces of the mullions as shown and noted below. Be sure to fill the gasket reglets in the vertical mullion at the sealant contact areas.
3. Insert the joint plugs into the openings oriented as shown, compressing them into place. The depression in the face of the joint plug is to allow clearance for the exterior glazing gasket to pass by when it is installed later.



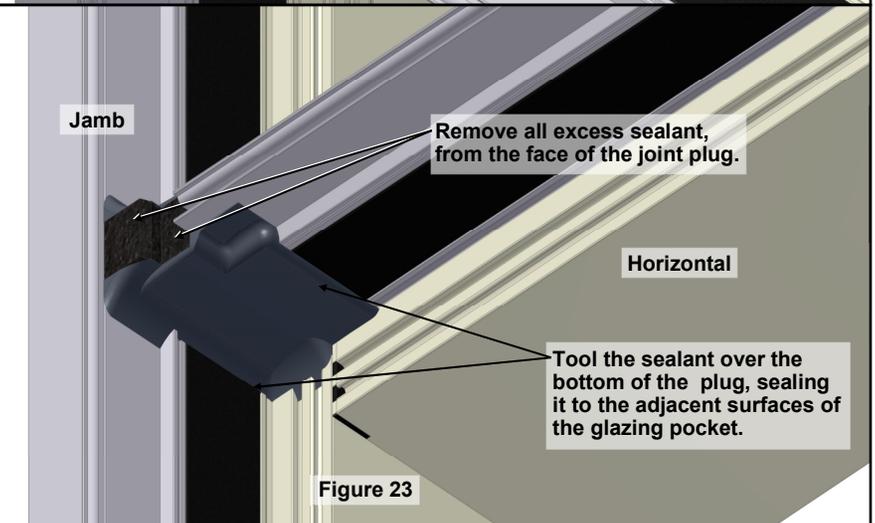
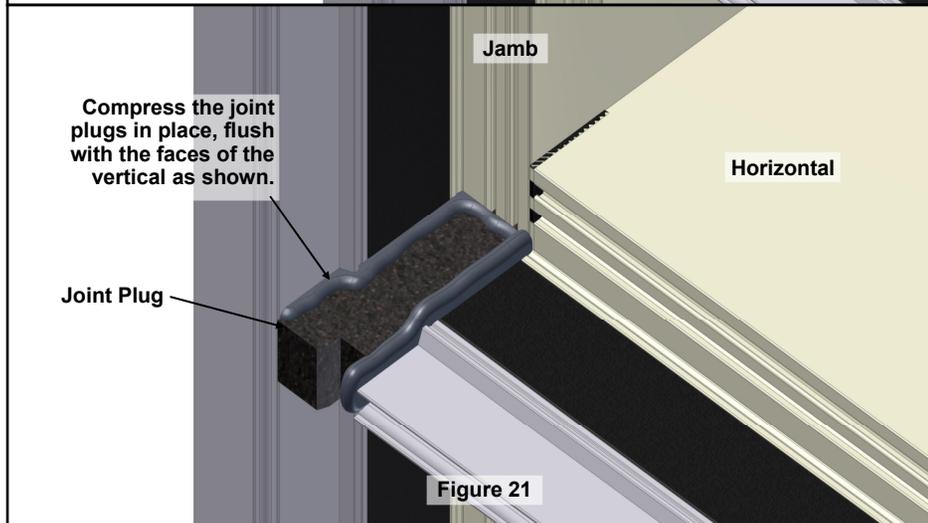
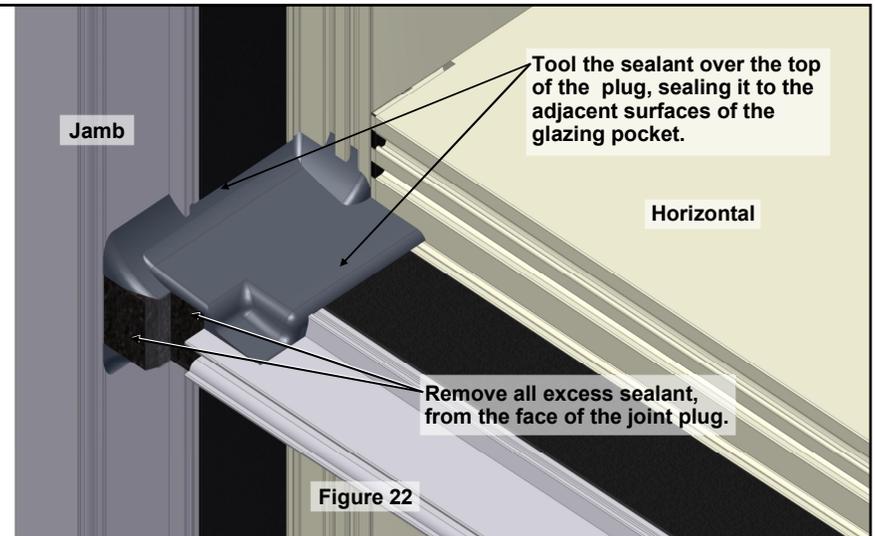
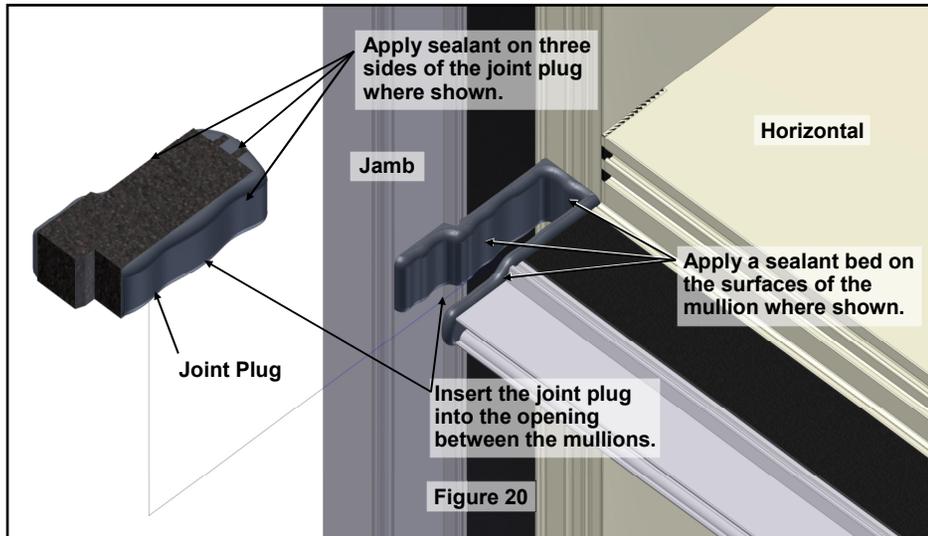
Section 8 - Shop Applied Joint Plugs

- Once the plugs are flush and in place as shown, tool the excess sealant over the top and bottom surfaces of the joint plug.
- Tool the sealant around the plug, sealing it to the surfaces of the glazing pocket, and side of the mullion on the exterior sides of the frame. See figures 16, 17 and 18.
- Tool the sealant over the joint plug blending it over the head and jamb at the interior glazing pocket as shown in Figure 19.
- Remove all excess sealant, particularly at the face of the joint plug, which will later marry into the exterior gasket and the back of the pressure plate.



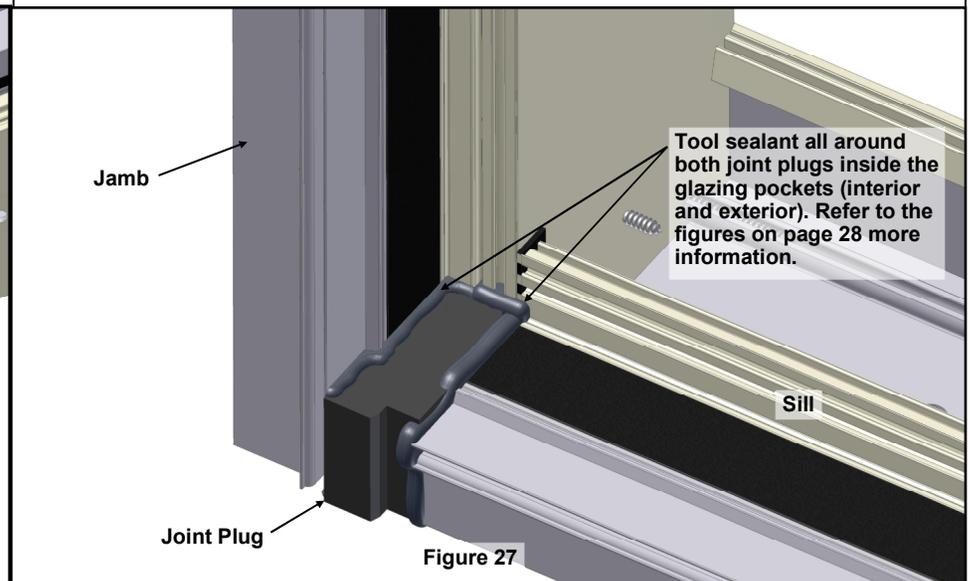
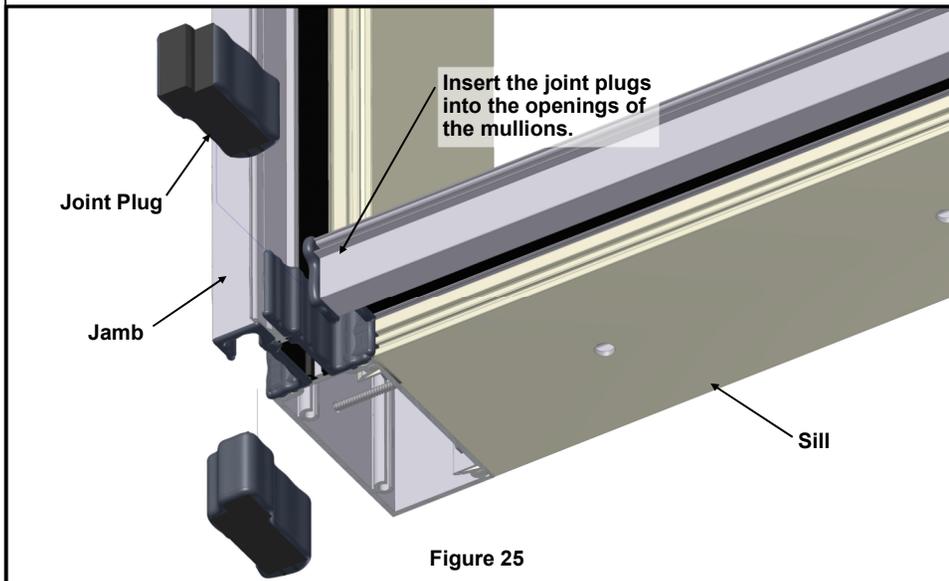
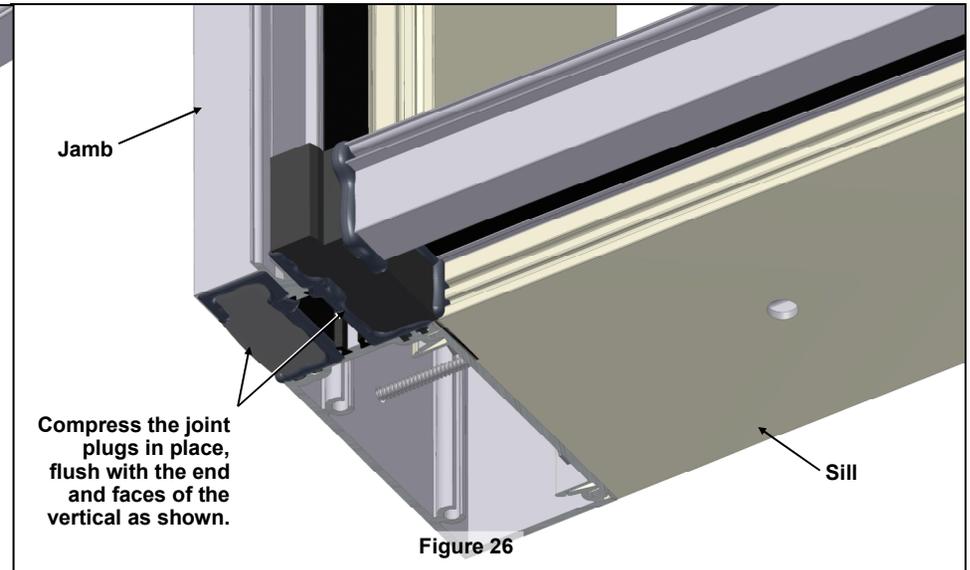
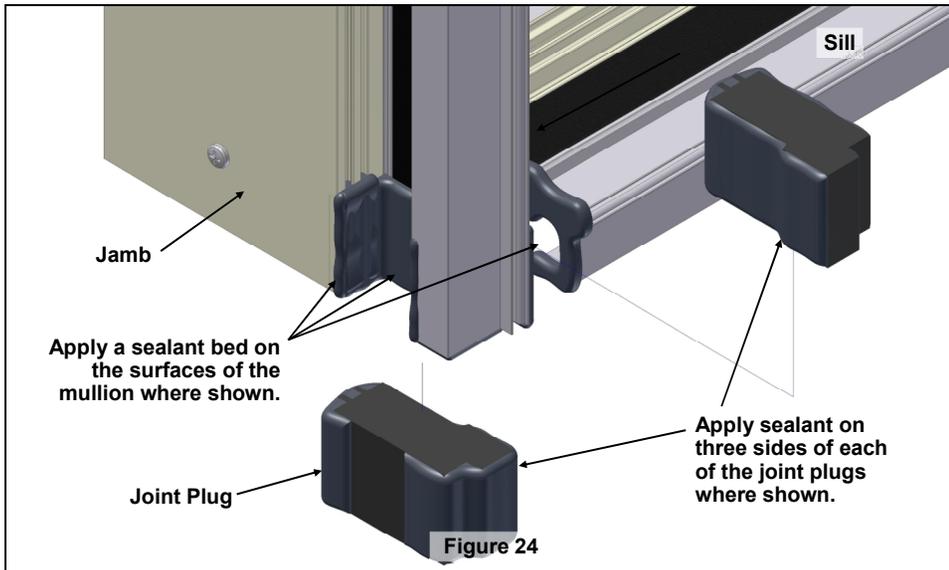
Section 8 - Shop Applied Joint Plugs

8. **Using an approved solvent or cleaner, clean the joint plug, and the joint plug sealant contact surfaces of the mullions of all oils and other contaminants.**
9. Apply sealant to the joint plug and the joint plug sealant contact surfaces of the mullions as shown and noted below. Be sure to fill the gasket reglets in the vertical mullion at the sealant contact areas.
10. Insert the joint plugs into the openings oriented as shown, compressing them in to place.
11. Once the plugs are flush and in place as shown, tool the excess sealant over the top and bottom surfaces of the joint plug, smoothing the sealant onto the adjacent surfaces.
12. Tool the sealant around the plug, sealing it to the surfaces of the glazing pocket. See figures 22, and 23.
13. Remove all excess sealant, particularly at the face of the joint plug, which will later marry into the exterior gasket and the back of the pressure plate.



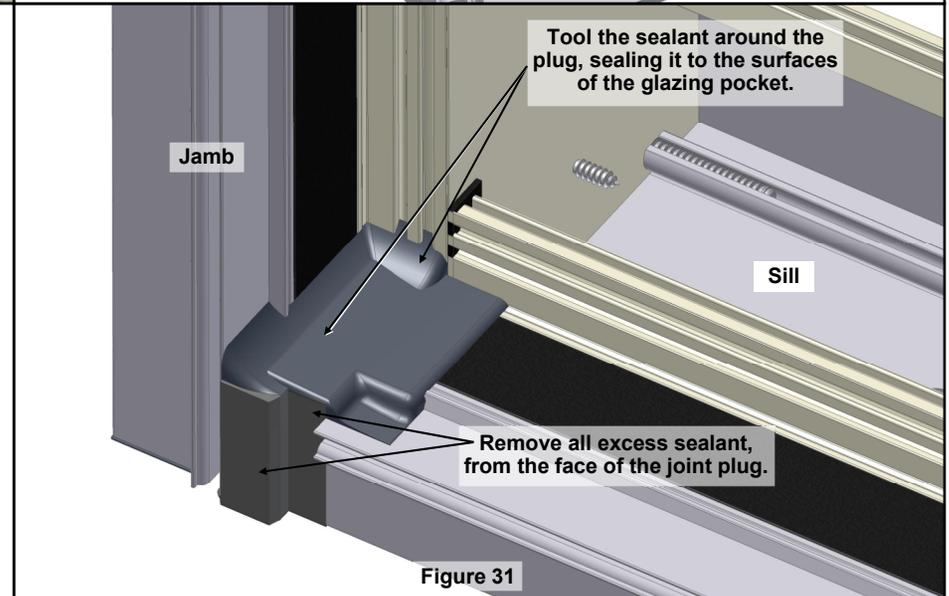
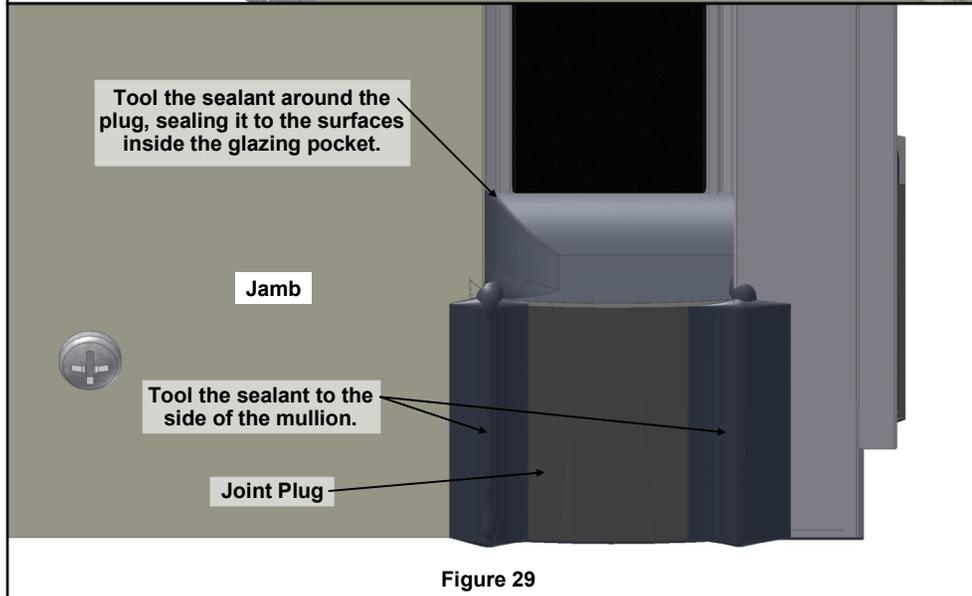
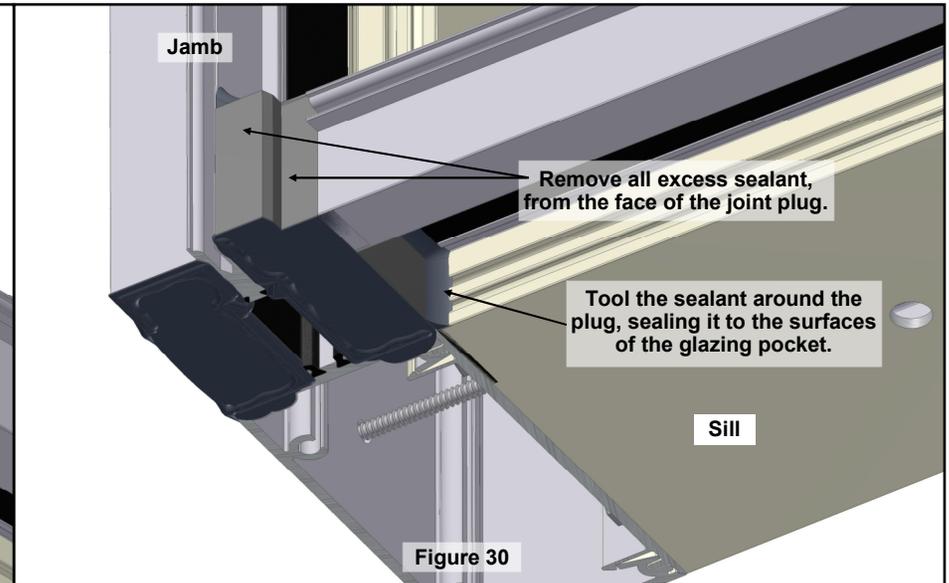
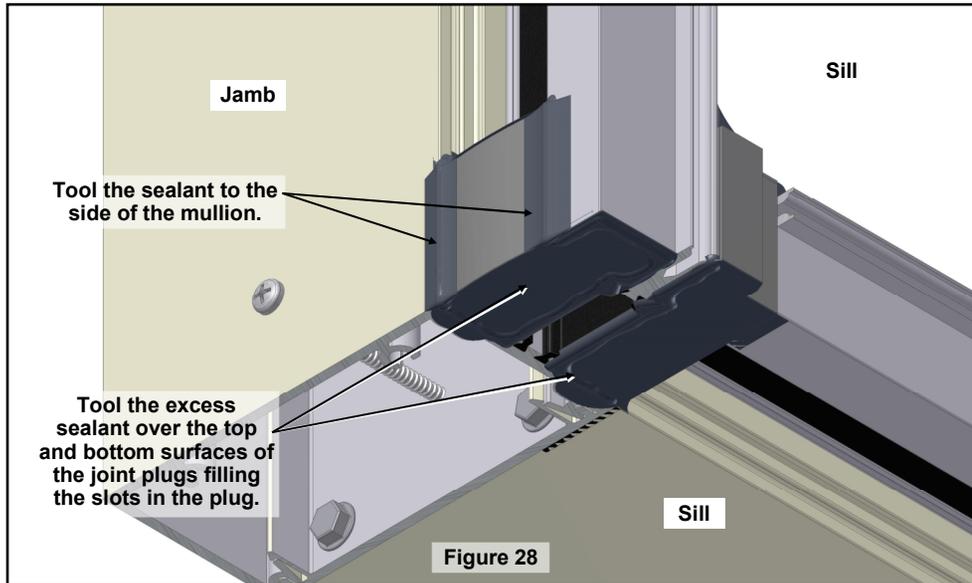
Section 8 - Shop Applied Joint Plugs

14. *Using an approved solvent or cleaner, clean the joint plug, and the joint plug sealant contact surfaces of the mullions of all oils and other contaminants.*
15. Apply sealant to the joint plugs and the joint plug sealant contact surfaces of the mullions as shown and noted below. Be sure to fill the gasket reglets in the vertical mullion at the sealant contact areas.
16. Insert the joint plugs into the openings oriented as shown, compressing them into place. The depression in the face of the joint plug is to allow clearance for the exterior glazing gasket to pass by when it is installed later.



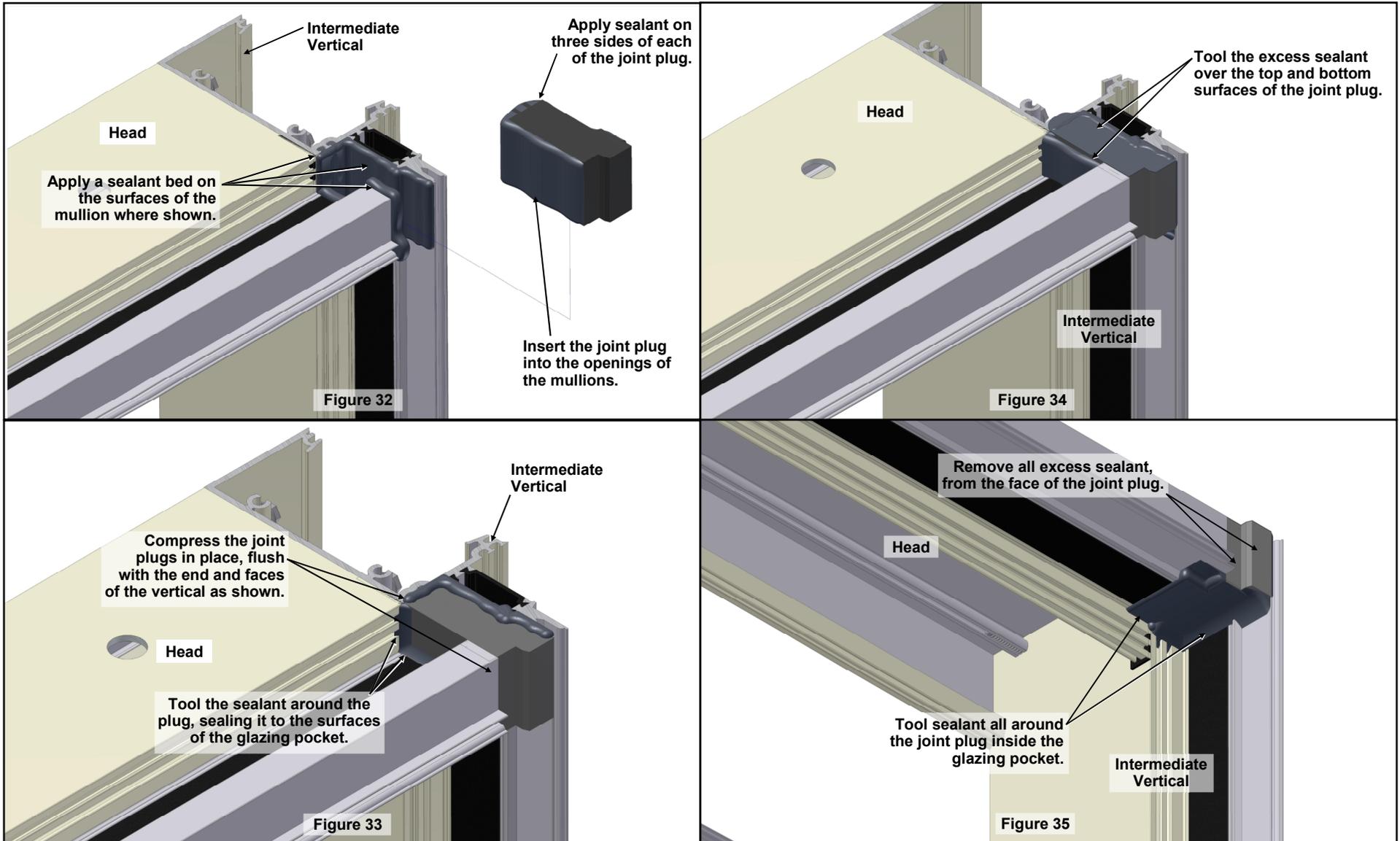
Section 8 - Shop Applied Joint Plugs

17. Once the plugs are flush and in place as shown, tool the excess sealant over the top and bottom surfaces of the joint plug.
18. Tool the sealant around the plug, sealing it to the surfaces of the glazing pocket, and side of the mullion on the exterior sides of the frame. See figures 28, 29 and 30.
19. Tool the sealant over the joint plug blending it over the head and jamb at the interior glazing pocket as shown in Figure 31.
20. Remove all excess sealant, particularly at the face of the joint plug, which will later marry into the exterior gasket and the back of the pressure plate.



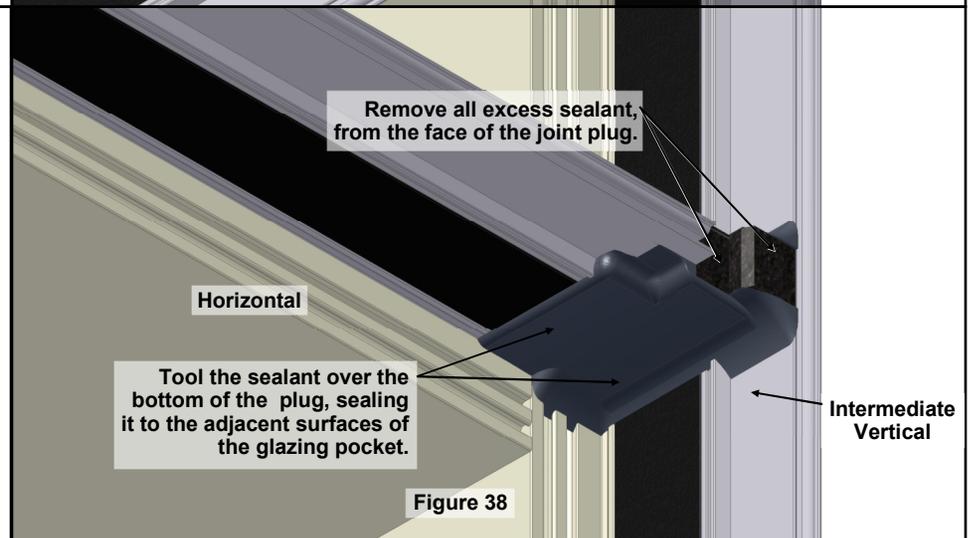
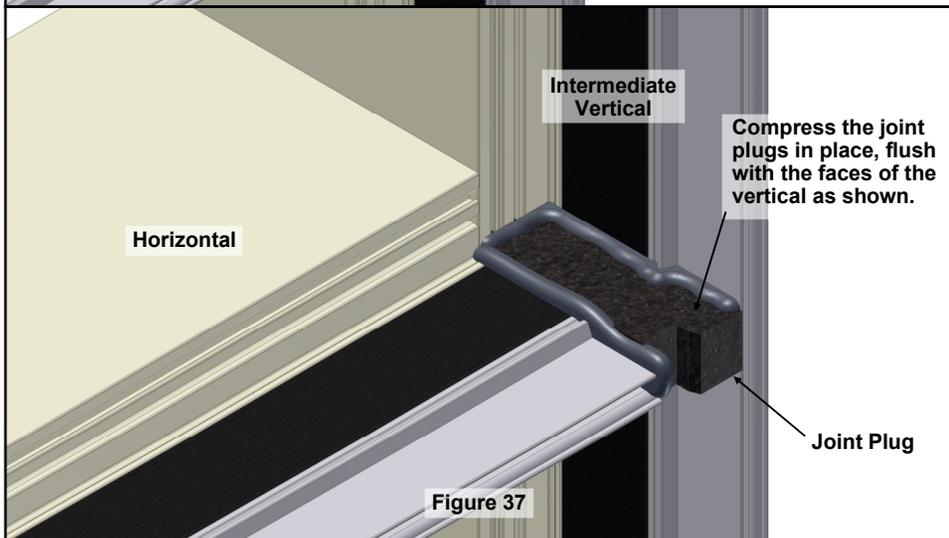
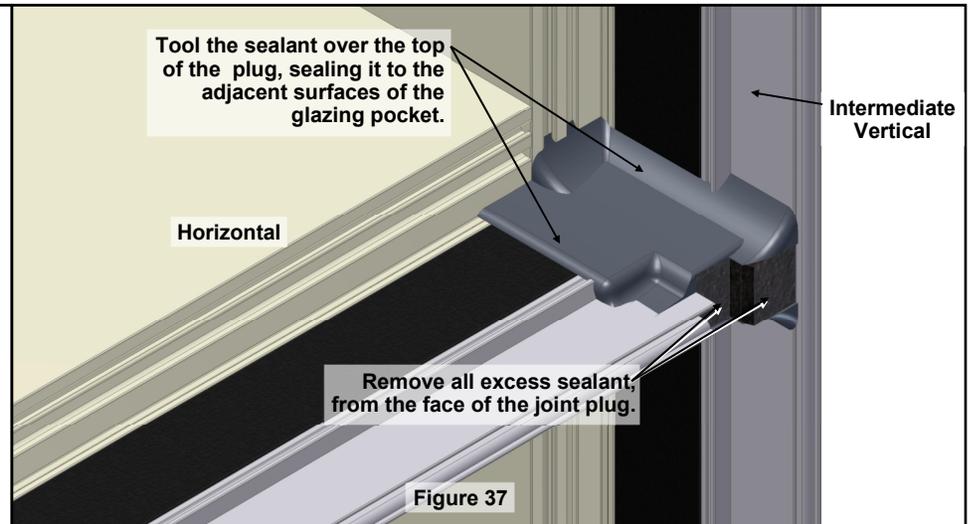
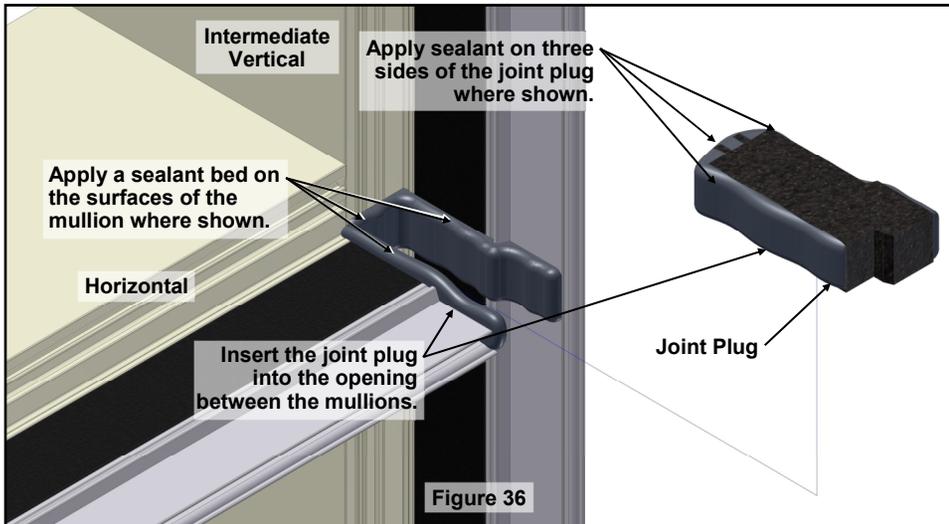
Section 8 - Shop Applied Joint Plugs

21. **Using an approved solvent or cleaner, clean the joint plug, and the joint plug sealant contact surfaces of the mullions of all oils and other contaminants.**
22. Apply sealant to the joint plugs and the joint plug sealant contact surfaces of the mullions as shown and noted below. Be sure to fill the gasket reglets in the vertical mullion at the sealant contact areas.
23. Insert the joint plugs into the opening oriented as shown, compressing it into place. The depression in the face of the joint plug is to allow clearance for the exterior glazing gasket to pass by when it is installed later.



Section 8 - Shop Applied Joint Plugs

24. **Using an approved solvent or cleaner, clean the joint plug, and the joint plug sealant contact surfaces of the mullions of all oils and other contaminants.**
25. Apply sealant to the joint plug and the joint plug sealant contact surfaces of the mullions as shown and noted below. Be sure to fill the gasket reglets in the vertical mullion at the sealant contact areas.
26. Insert the joint plugs into the openings oriented as shown, compressing them in to place.
27. Once the plugs are flush and in place as shown, tool the excess sealant over the top and bottom surfaces of the joint plug, smoothing the sealant onto the adjacent surfaces.
28. Tool the sealant around the plug, sealing it to the surfaces of the glazing pocket. See figures 37, and 38.
29. Remove all excess sealant, particularly at the face of the joint plug, which will later marry into the exterior gasket and the back of the pressure plate.



Section 8 - Shop Applied Joint Plugs

30. **Using an approved solvent or cleaner, clean the joint plug, and the joint plug sealant contact surfaces of the mullions of all oils and other contaminants.**
31. Apply sealant to the joint plugs and the joint plug sealant contact surfaces of the mullions as shown and noted below. Be sure to fill the gasket reglets in the vertical mullion at the sealant contact areas.
32. Insert the joint plugs into the openings oriented as shown, compressing them into place. The depression in the face of the joint plug is to allow clearance for the exterior glazing gasket to pass by when it is installed later.

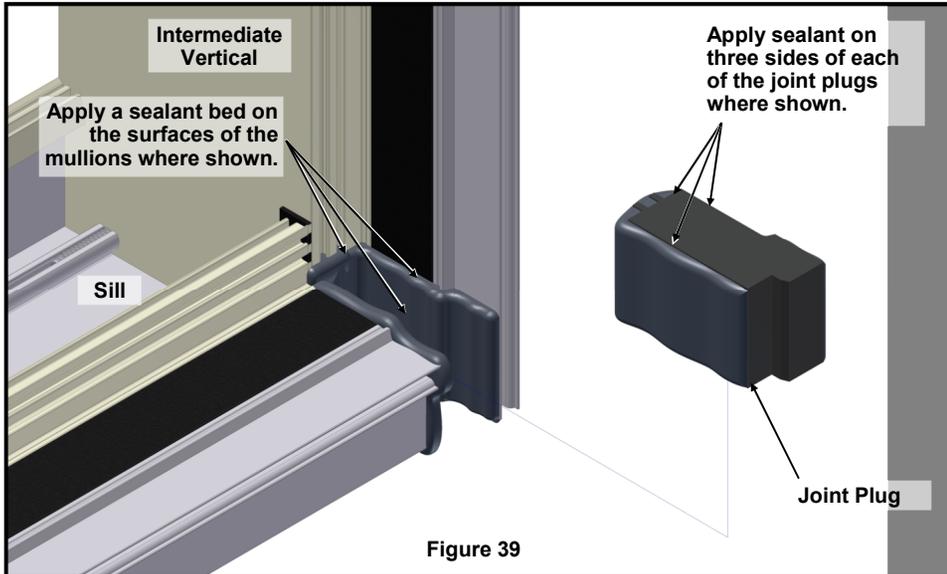


Figure 39

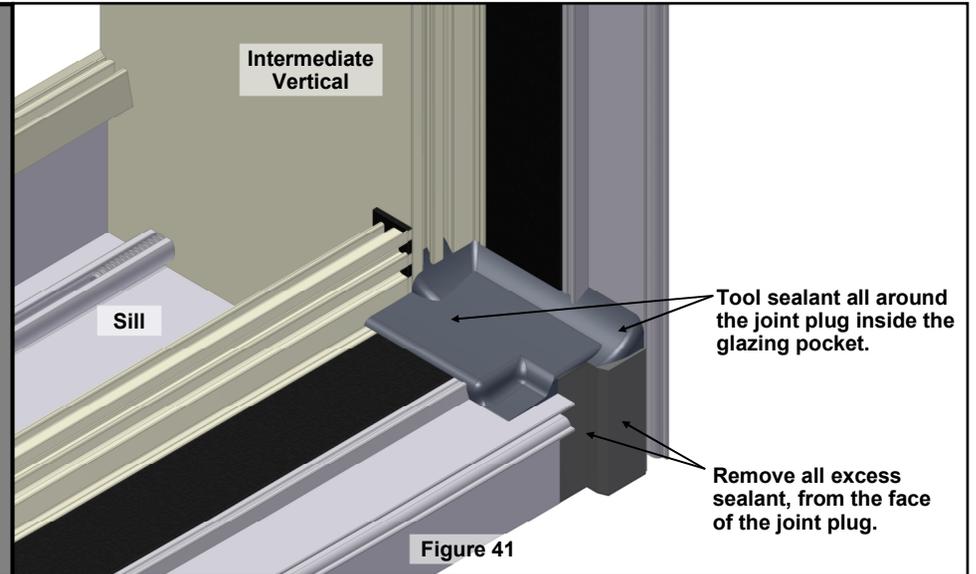


Figure 41

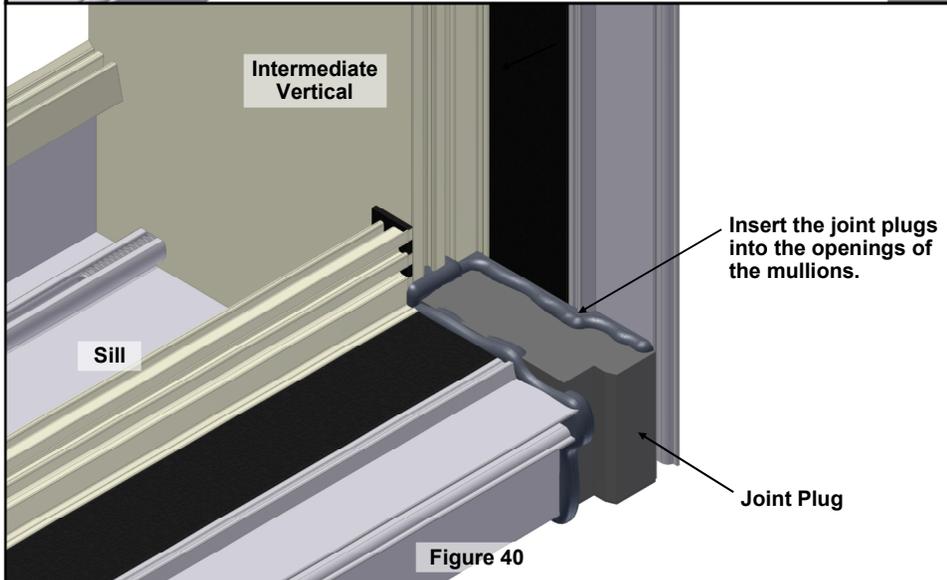


Figure 40

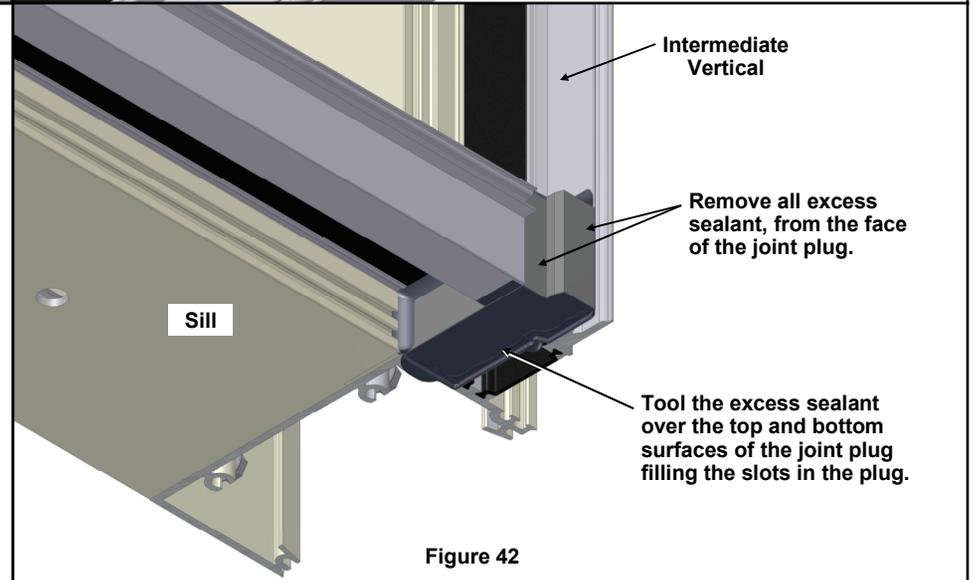
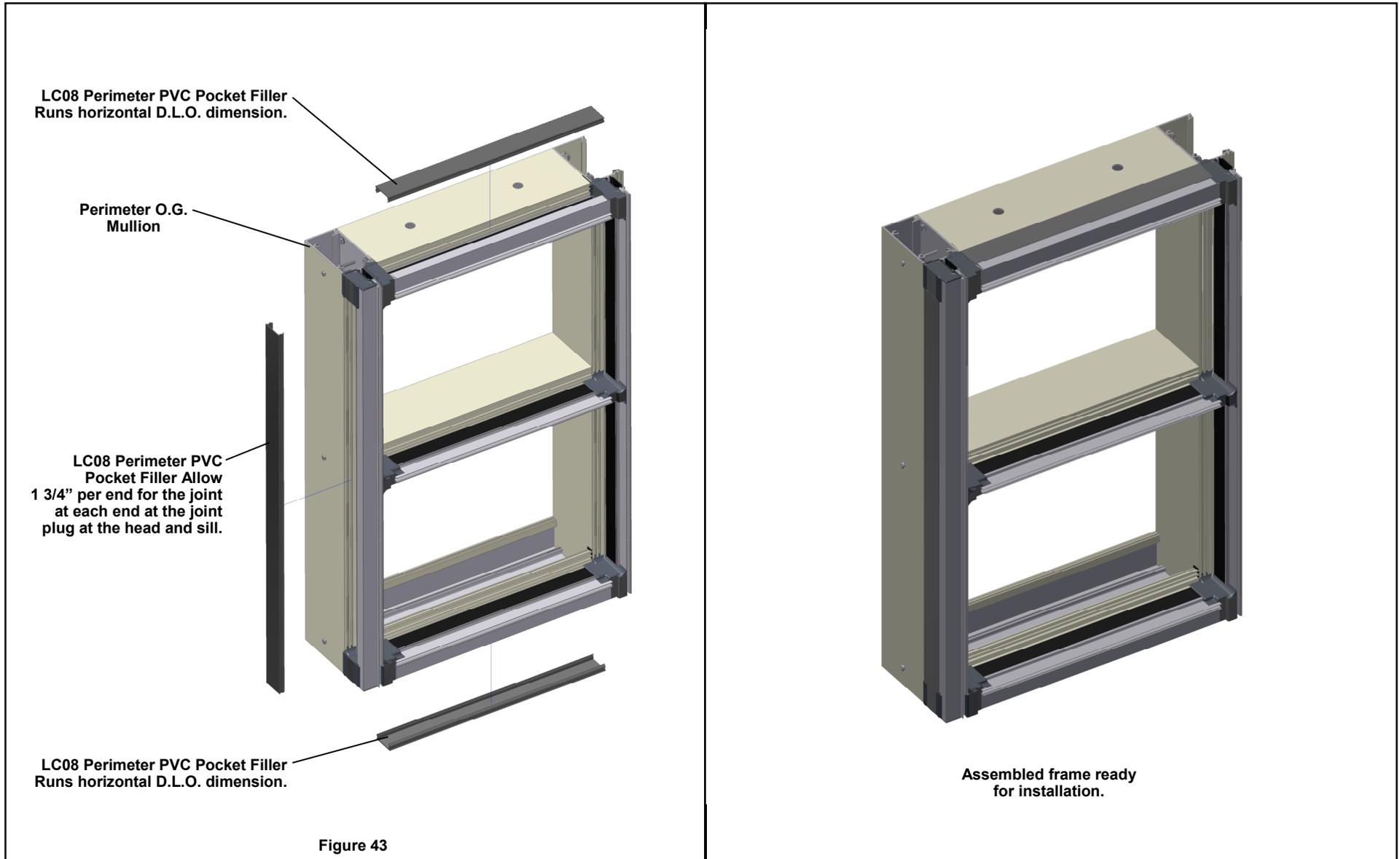


Figure 42

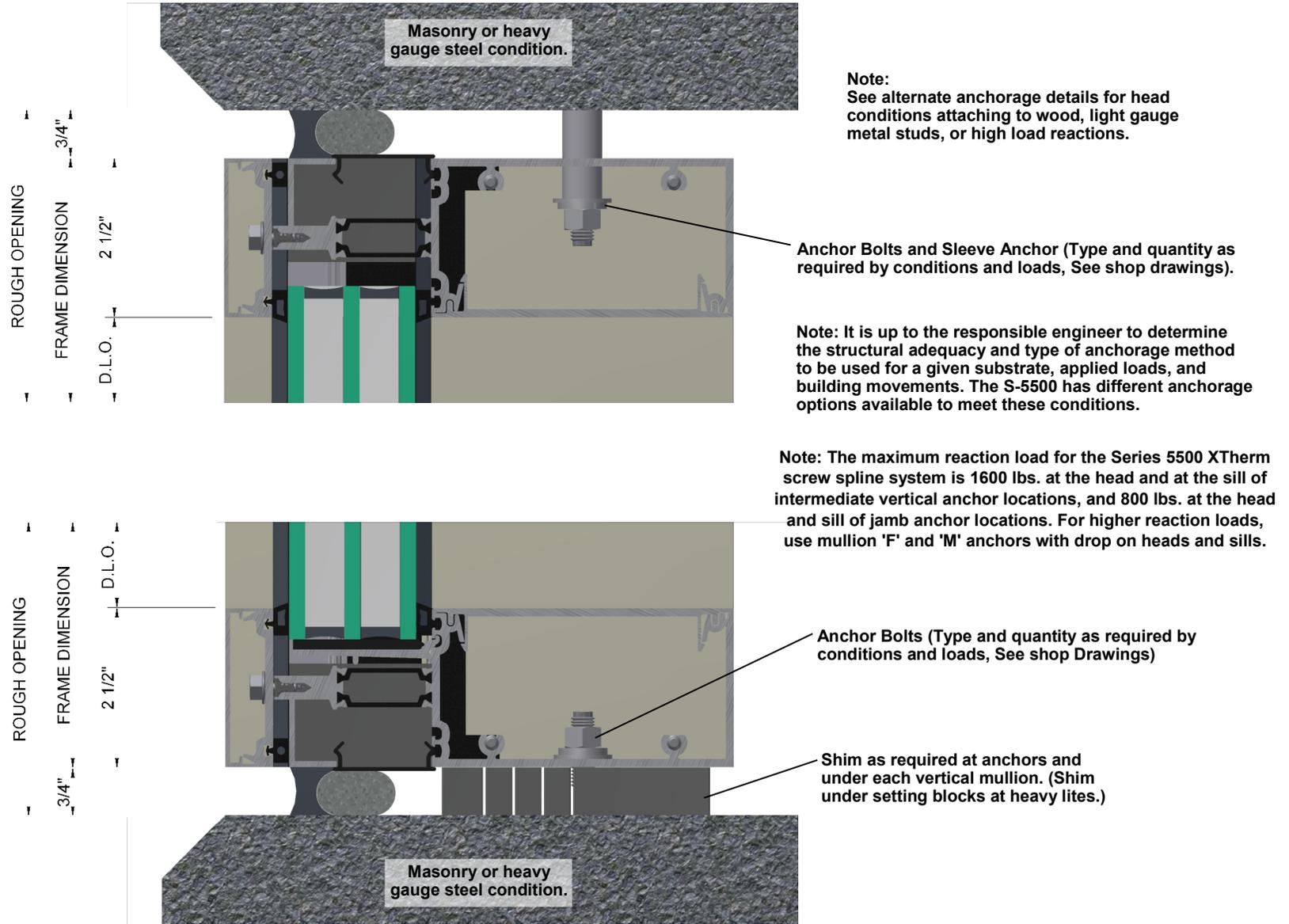
Section 9 - Perimeter Pocket Fillers

1. Apply the LC08 perimeter PVC pocket filler to the head, sill, and jamb of the jamb frames. Note that the LC08 stops 1 1/2" short at each end of the jambs to allow for the installation of the perimeter joint plug. The LC08 at the head and sill runs the length of the D.L.O. dimension.
2. Apply the LC08 perimeter PVC pocket filler to the heads and sills of the Intermediate frames.
3. Shop assembly is complete. Frames are ready for installation.
4. Avoid racking the frames during shipment and handling.



Section 10 - Standard Anchorage Method

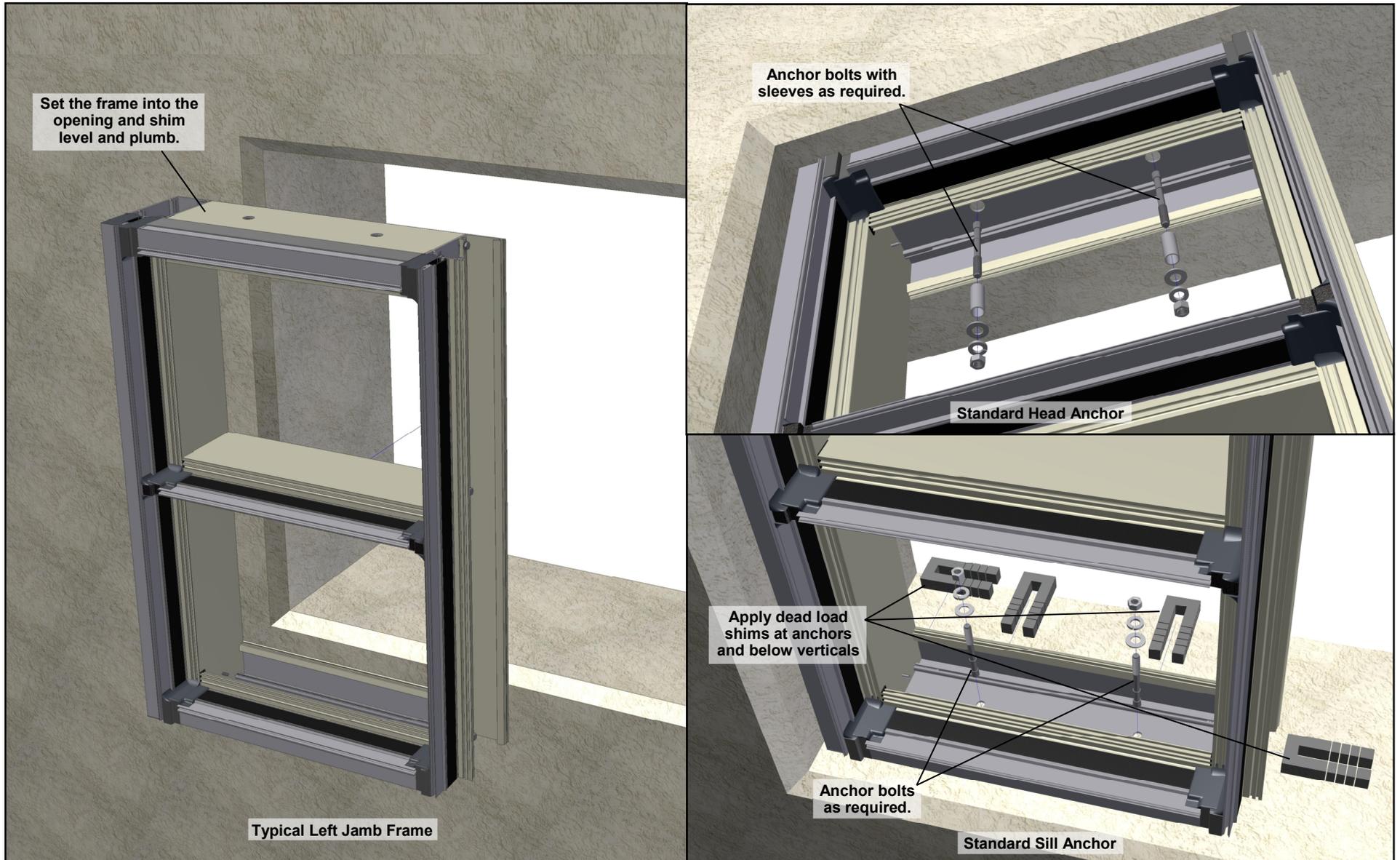
Refer to the approved shop drawings for job specific conditions, anchor type, anchor bolt sizes, and locations. Install anchor assemblies according to the final approved shop drawings. The anchor type used must be selected based on the structural requirements and the substrate.



Standard Head And Sill Anchorage

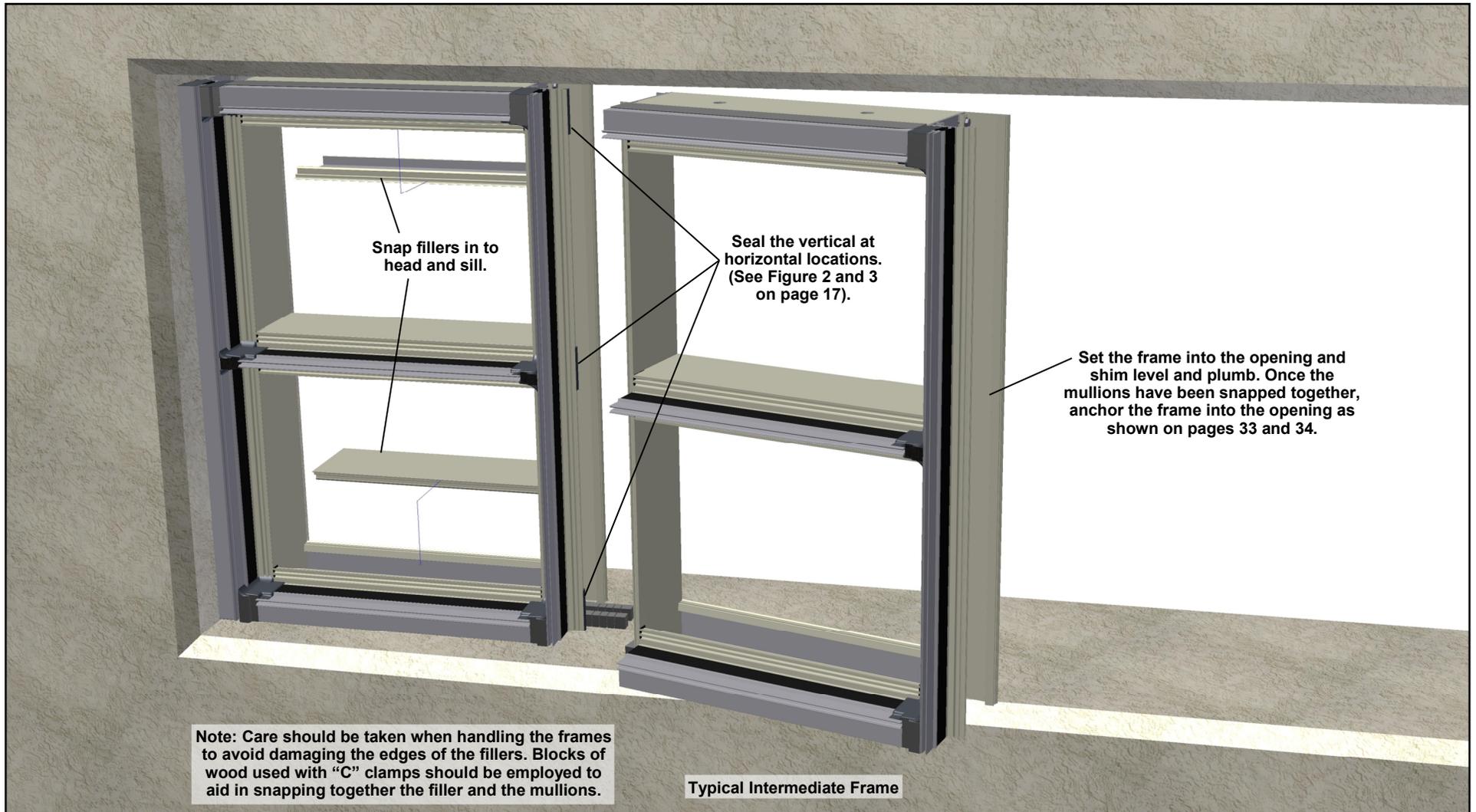
Section 11 - Install Single Span Frame Components

1. Set the first frame into the opening using dead load shims to level the frame, and make all necessary adjustments to properly locate the frame to established benchmarks.
2. After the frame is plumb and all adjustments have been made, match drill through the holes in the head and sill into the surrounding substrate, and apply the anchor bolts. Anchor bolt size, type, quantity, and location vary. Refer to the approved shop drawings for more information. The anchors at the head require an anchor bolt sleeve to accommodate thermal expansion and contraction, and building movements.



Section 11 - Install Single Span Frame Components

3. Apply sealant to the verticals as shown in Figures 2 and 3 on page 17, to seal the vertical and fillers at the intersection of the heads, sills, and intermediate horizontals. This seal should be made immediately before snapping the filler and the vertical mullions together.
4. Set the next frame in the run into the opening mating the filler with the intermediate vertical until the filler and vertical snap together.
5. Tool the sealant smooth with the face of the glazing pocket and remove excess sealant from the glazing reglets.
6. Repeating steps 1 and 2, page 34, set each successive frame into the opening, snapping and sealing the verticals and fillers at each frame, until all frames are installed up to the last frame at the opposite jamb or up to the expansion mullion frames.
7. Check frequently to ensure the installed framing is in the proper position with regard to established benchmarks and are level and plumb.
8. After securing the anchor bolts, snap in the head and sill fillers.



Section 11 - Install Single Span Frame Components

8. Expansion mullions are required for elevations wider than 20'-0". The maximum spacing between expansion mullions is 20'-0" to 25'-0" depending on lite size. Refer to the final approved shop drawings for specific locations and more information.
9. Slide mullion clips into the female mullion as shown in Figure 44 prior to installing the frame into the opening. Mullion clips may be shop installed at the time of frame assembly. Space the clips at 48" on center maximum.
10. Crimp the tabs of the vertical at each end of each mullion clip with a punch or similar tool to lock it in place. Refer to the approved shop drawings for more information.
11. Thread the finger gaskets (WEP6) into the reglets of the male half of the expansion mullion for the full length of the mullion as shown in Figure 45 below. Do not stretch the gaskets during insertion.
12. Crimp the reglet in the mullion at the finger gaskets about 1/2" from each end with a punch or similar tool to lock the gasket in place.

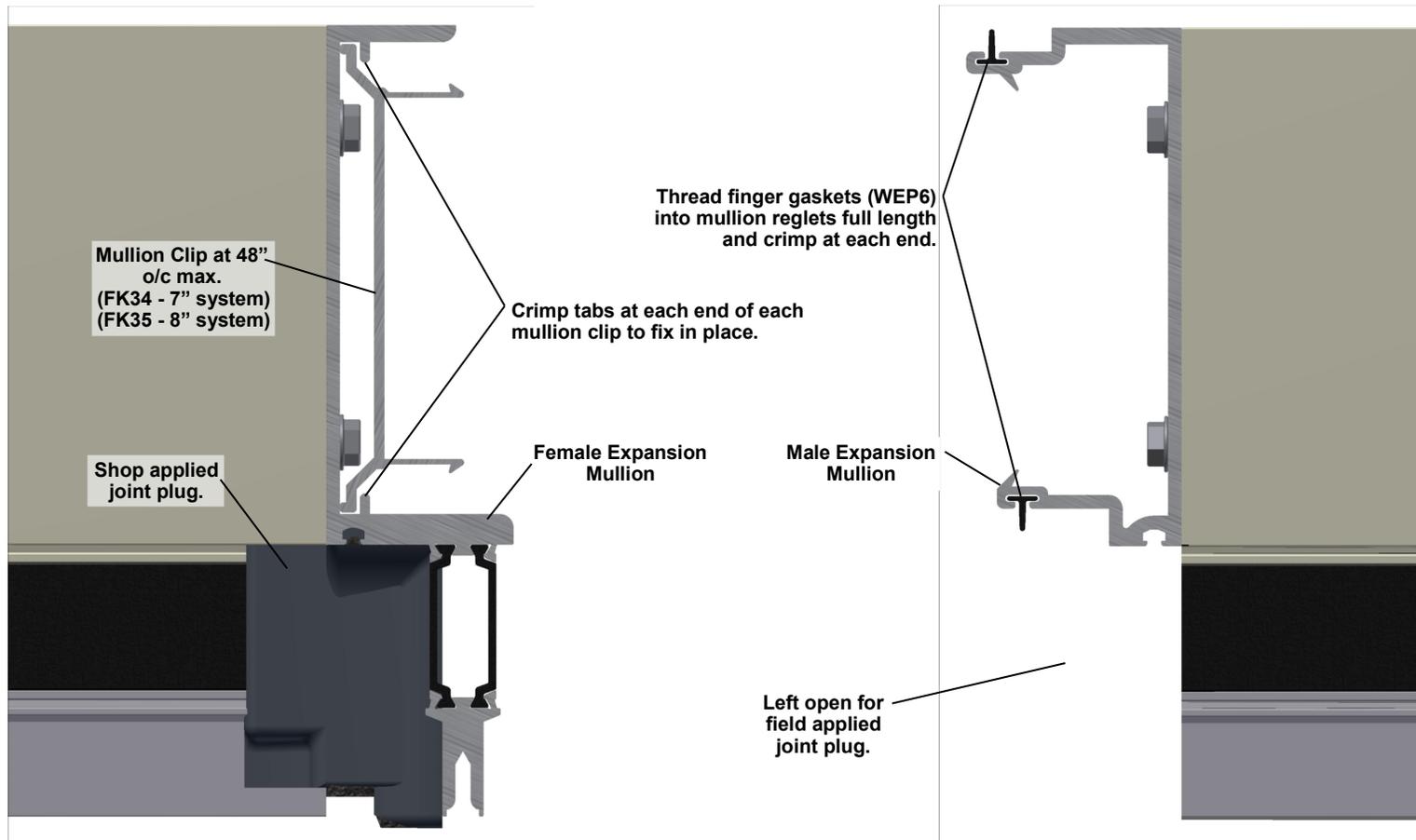
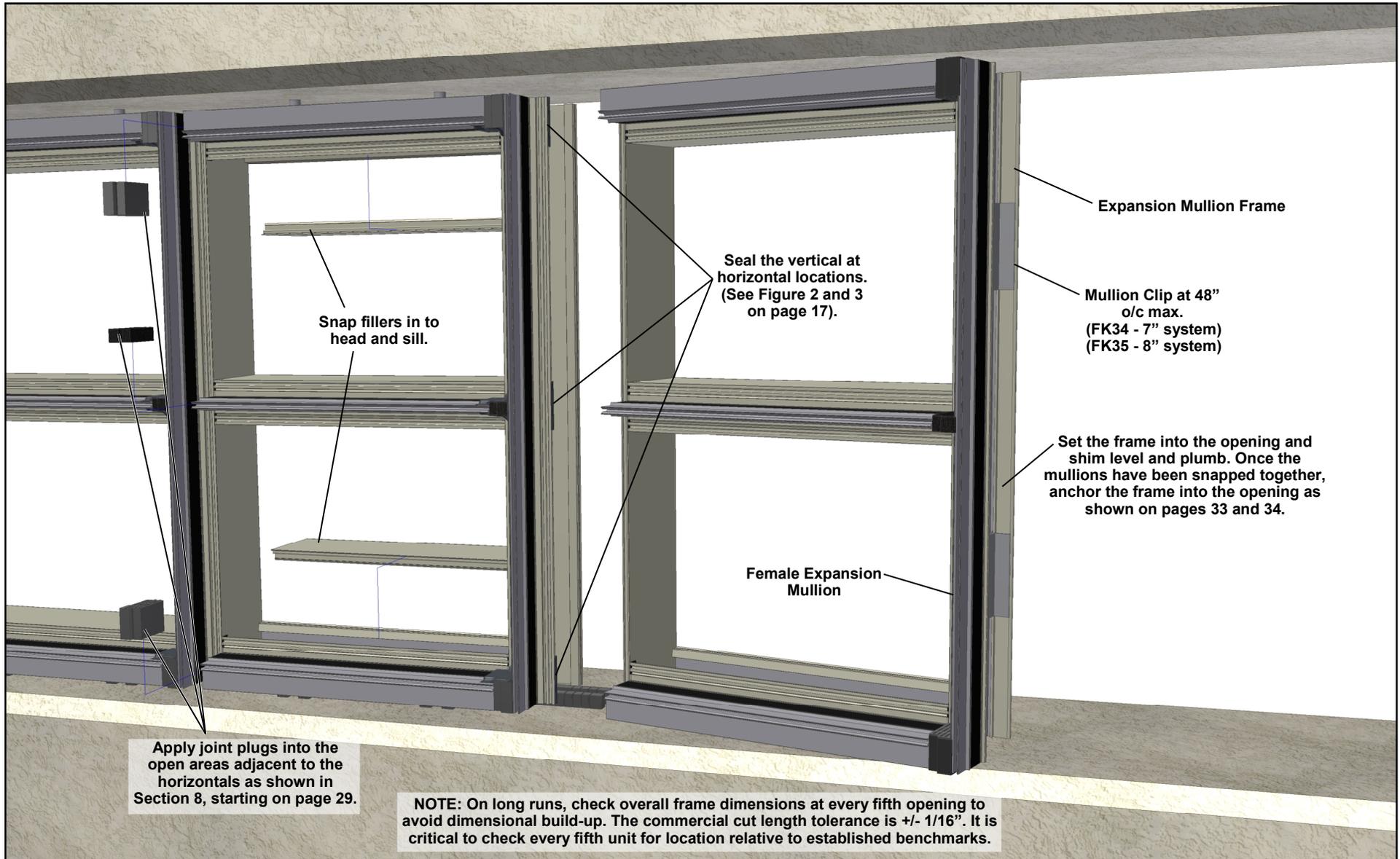


Figure 44

Figure 45

Section 11 - Install Single Span Frame Components

13. Apply joint plugs into the open areas of the glazing pocket of the vertical adjacent to the horizontals where the joints plugs were left open for field application as shown in Section 8, beginning on page 29.
14. NOTE: On long runs, check overall frame dimensions at every fifth opening to avoid dimensional build-up. The commercial cut length tolerance is +/- 1/16". It is critical to check every fifth unit for location relative to established benchmarks.



Section 11 - Install Single Span Frame Components

15. Once the first expansion mullion frame is installed as shown on page 37, stack in the other expansion mullion frame, mating the mullions together as shown below. The mullion clips will snap the mullions together during this process. Use 1/8" shims in the joint at the back of the mullion to set the joint to the nominal size as required. Blocks of wood used with "C" clamps should be employed to aid in snapping together the mullions. Silicone spray lubricant may be used to ease mullion assembly, provided the sealant contact surfaces where sealant will later be applied, are not contaminated in this step.
14. **Using an approved solvent or cleaner, ensure the joint in the glazing pocket of the verticals are cleaned free of all oils and other contaminants.**
15. Apply sealant into the prepared joint, continuously, for the full length of the verticals.
16. Tool the sealant into the joint taking care that the joint is filled and tooled smooth with the face of the glazing pocket as shown. This seal must marry into the joint plug seals when the joint plugs are later applied.

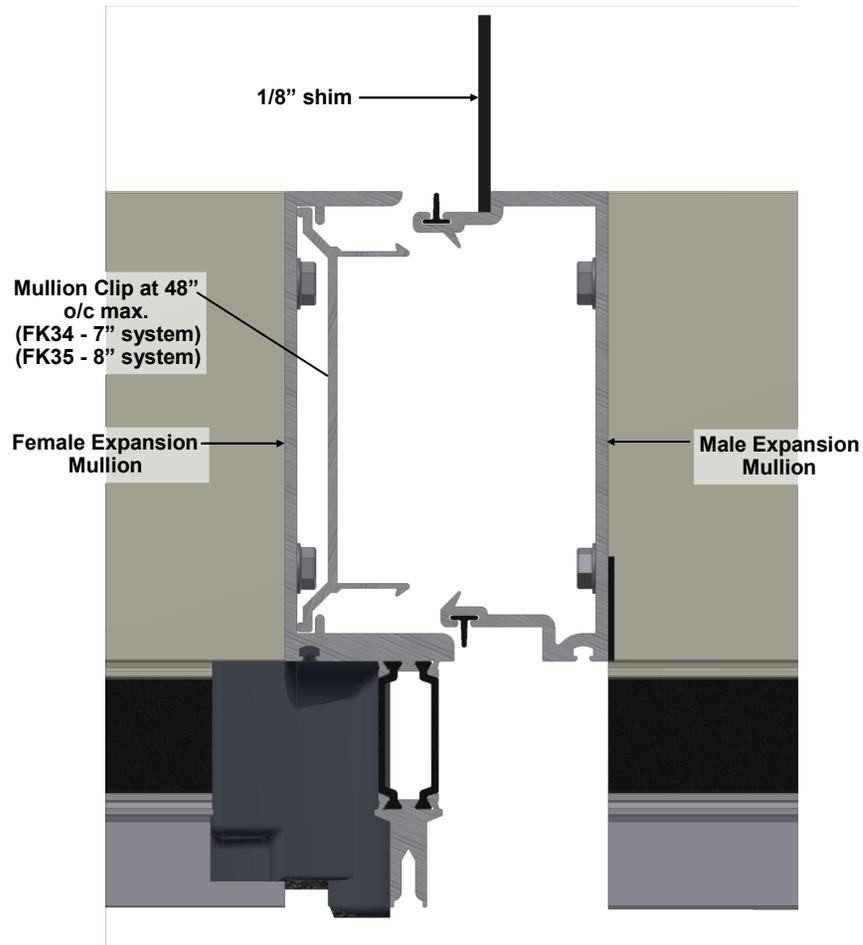


Figure 46

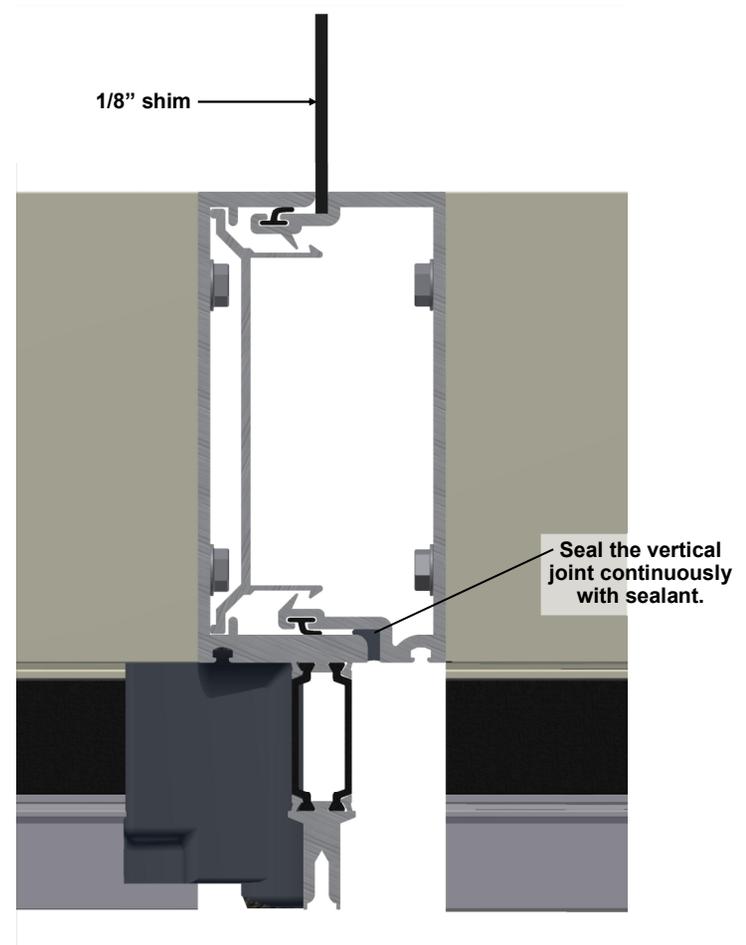
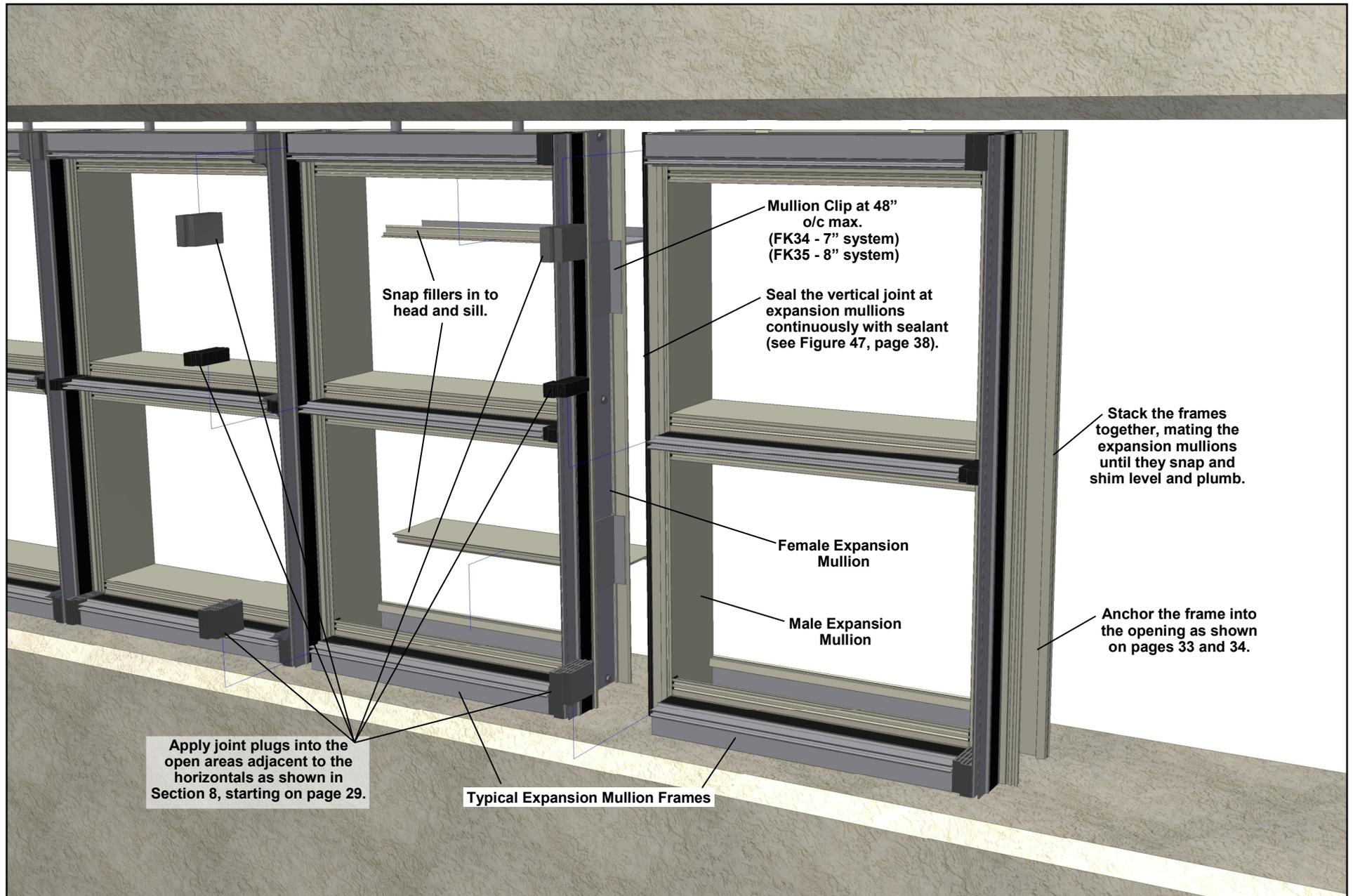


Figure 47

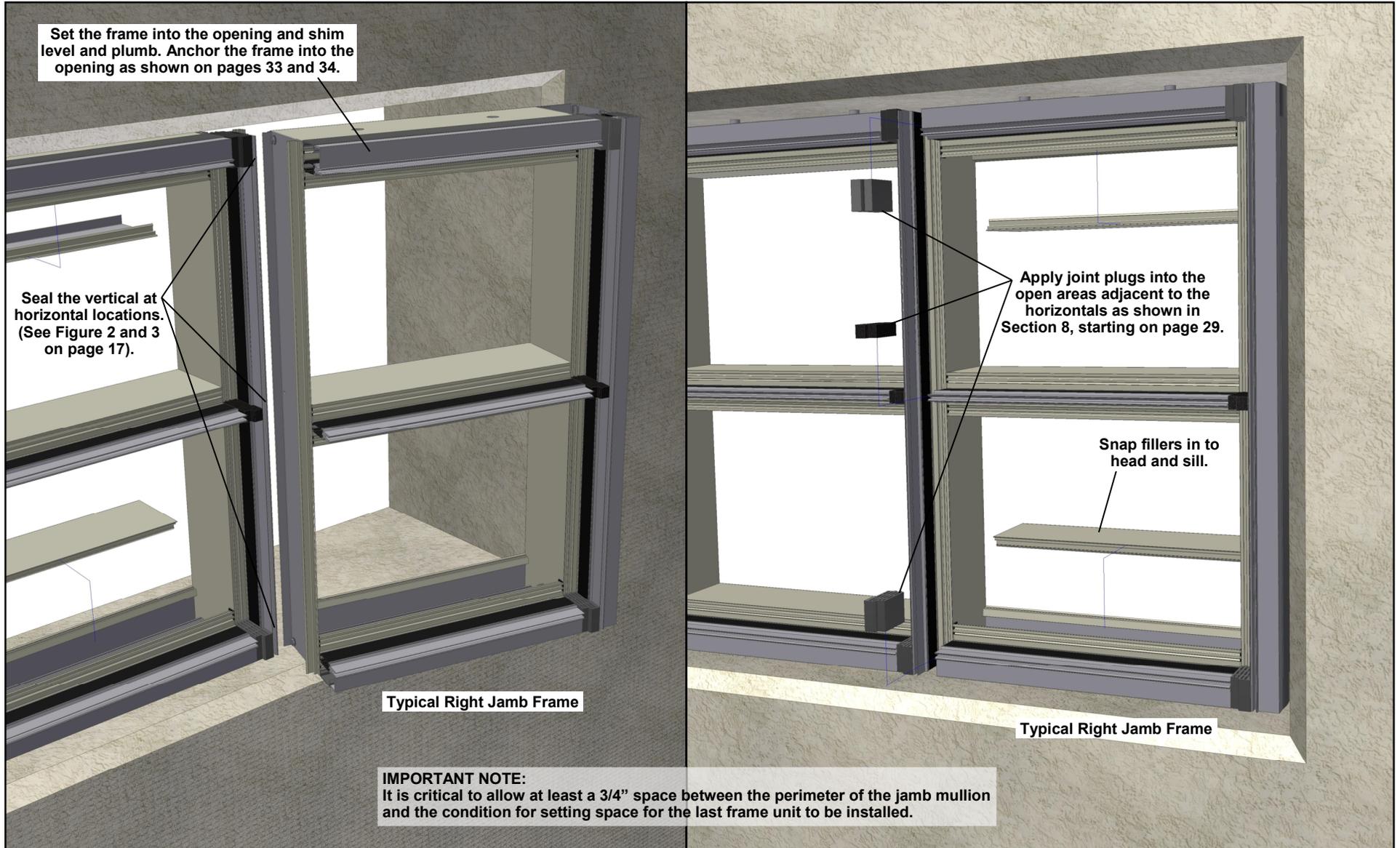
Section 11 - Install Single Span Frame Components

17. Stack the expansion joint frames together as described on page 38, and anchor once the frame is level and plumb.



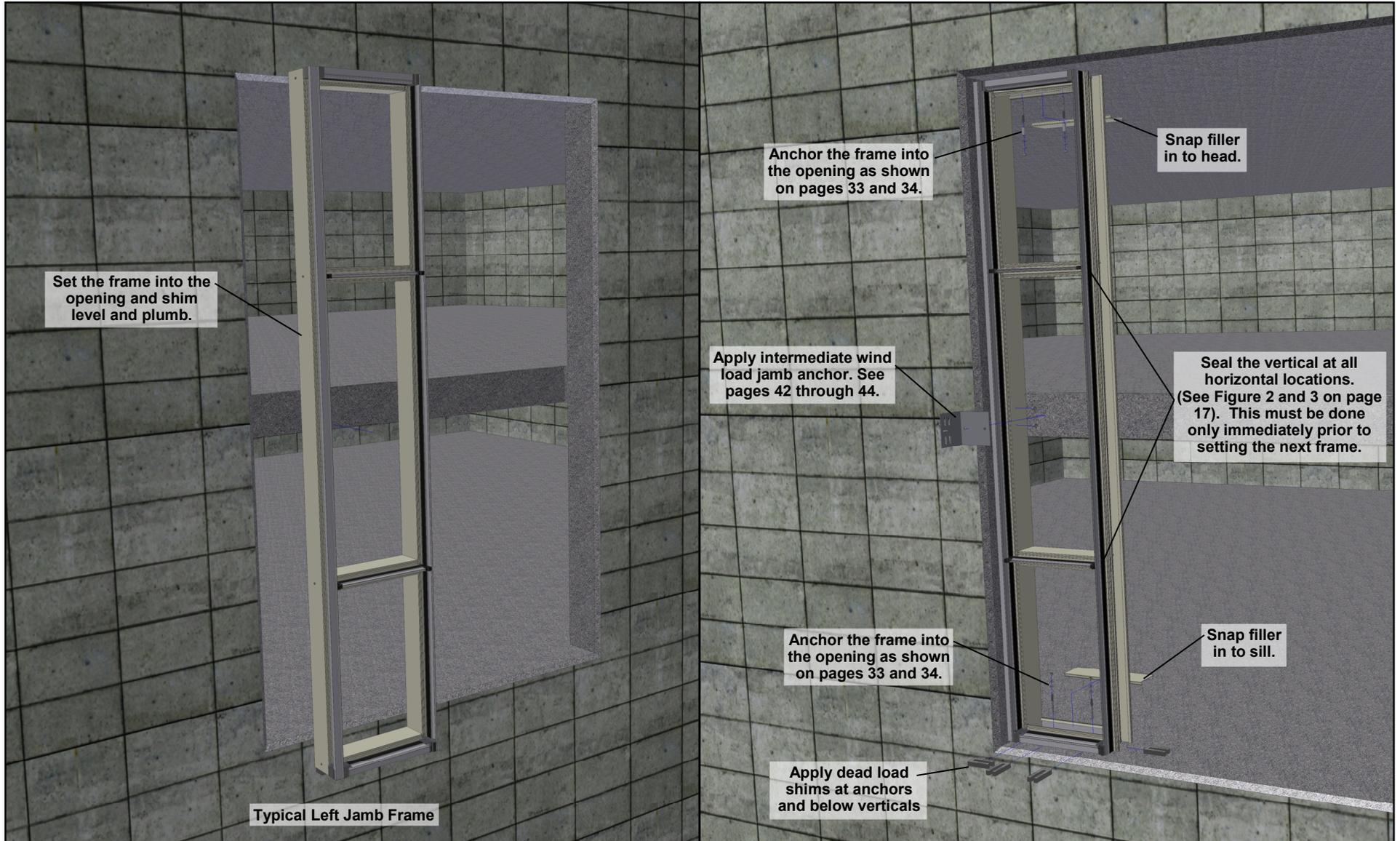
Section 11 - Install Single Span Frame Components

18. Seal the vertical at horizontal locations. (See Figure 2 and 3 on page 17).
19. Set the last frame in the run into the opening mating the filler with the intermediate vertical until the filler and vertical snap together.
20. When the frame is set level and plumb, apply the dead load shims below the verticals and anchor points, and apply anchors as shown on pages 33 and 34.
21. At least a 3/4" space between the perimeter of the jamb mullion and the condition for setting space for the last frame unit to be installed.
22. Apply the last set of joint plugs and noted in section 8, starting on page 29.



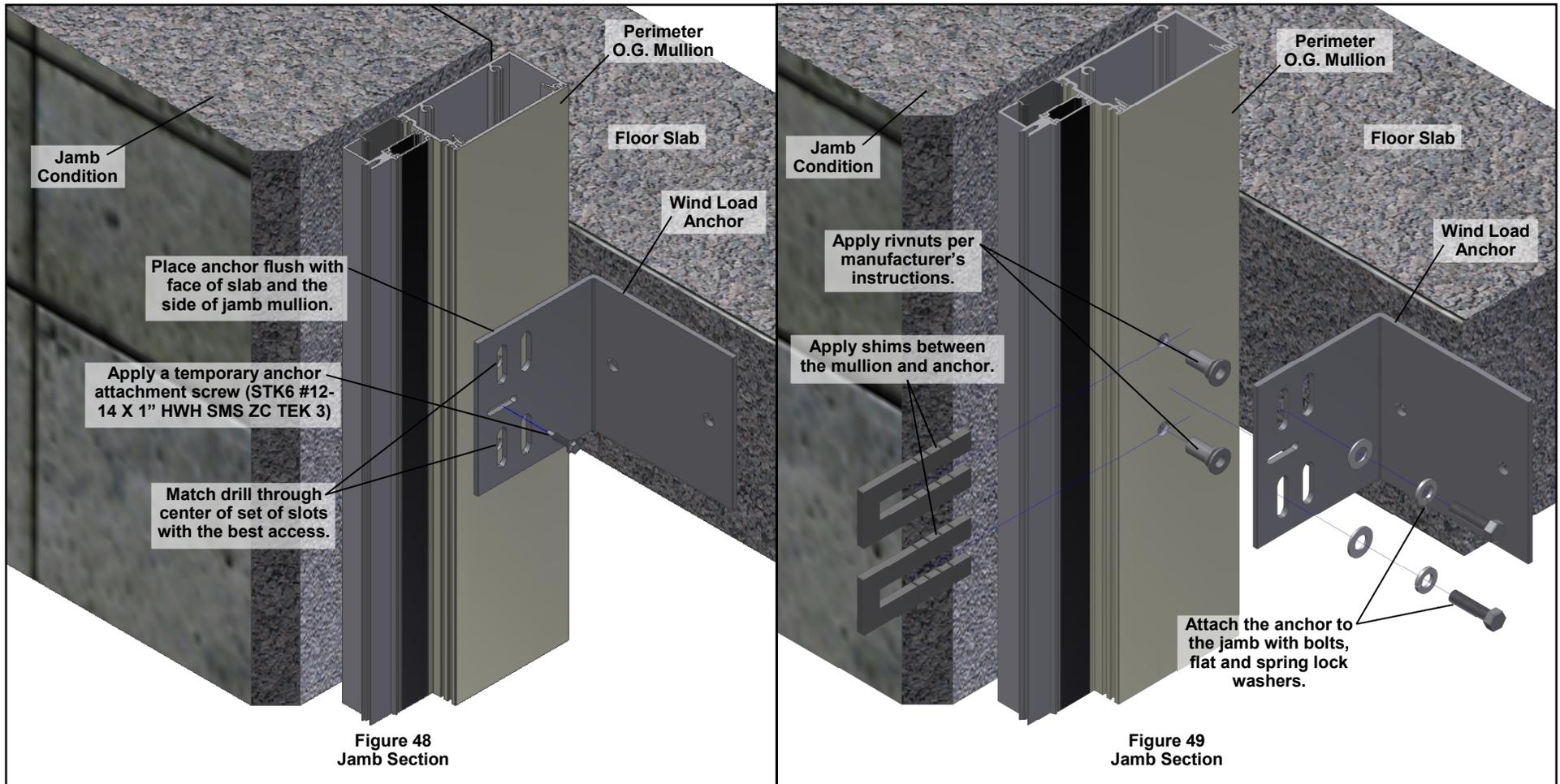
Section 12 - Install Twin Span Frame Components

1. Set the first frame into the opening using dead load shims at the sill to level the frame, and make all necessary adjustments to properly locate the frame to established benchmarks.
2. After the frame is plumb and all adjustments have been made, match drill through the holes in the head and sill into the surrounding substrate, and apply the anchor bolts at the head and sill. Anchor bolt size, type, quantity, and location vary. Refer to the final approved shop drawings for more information. The anchors at the head require an anchor bolt sleeve to accommodate thermal expansion and contraction, and building movements.
3. Apply intermediate wind load jamb anchor as shown and noted on pages 42 and 44.



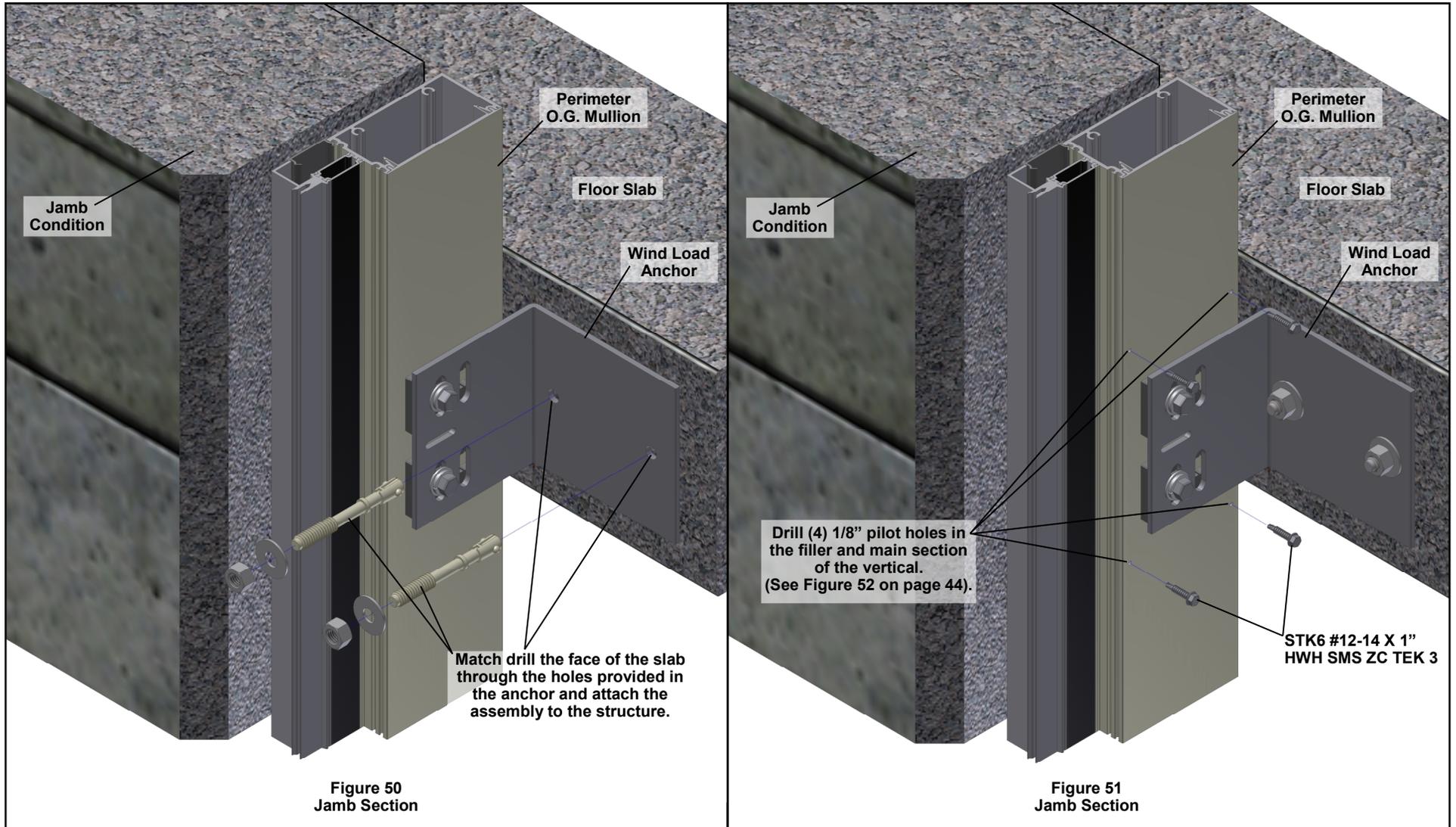
Section 12 - Install Twin Span Frame Components

- Once the frame has been properly set, and securely anchored at the head and sill, place the intermediate wind load anchor flush with the face of the slab and with the side of the jamb mullion as shown in Figure 48 below. Refer to the final approved shop drawings for exact anchor placement and minimum bolt edge distance requirements.
- Apply an anchor alignment screw (STK6 #12-14 X 1" HWH SMS ZC TEK 3) to hold the anchor temporarily in place. This fastener must be removed prior to final anchor attachment.
- Ensure the anchor is pressed firmly against the face of the floor slab and match drill the jamb mullion through the **center** of two of the slots in the anchor to prepare the mullion to receive rivnuts. Choose the set of slots which will allow the anchor bolt to be placed a minimum of 1 1/2" from the back of the mullion to clear the back flange of any steel reinforcement that may be required on the project. For steel reinforcement, anchor configuration, rivnut, bolt, and hole size requirements, refer to the final approved shop drawings.
- Remove the temporary fastener and anchor and apply two rivnuts into the match drilled holes in the jamb per the rivnut manufacturer's instructions. See Figure 49.
- Attach the anchor to the jamb, separating it from the mullion with shims, using bolts, and flat and spring lock washers as required. See Figure 49.



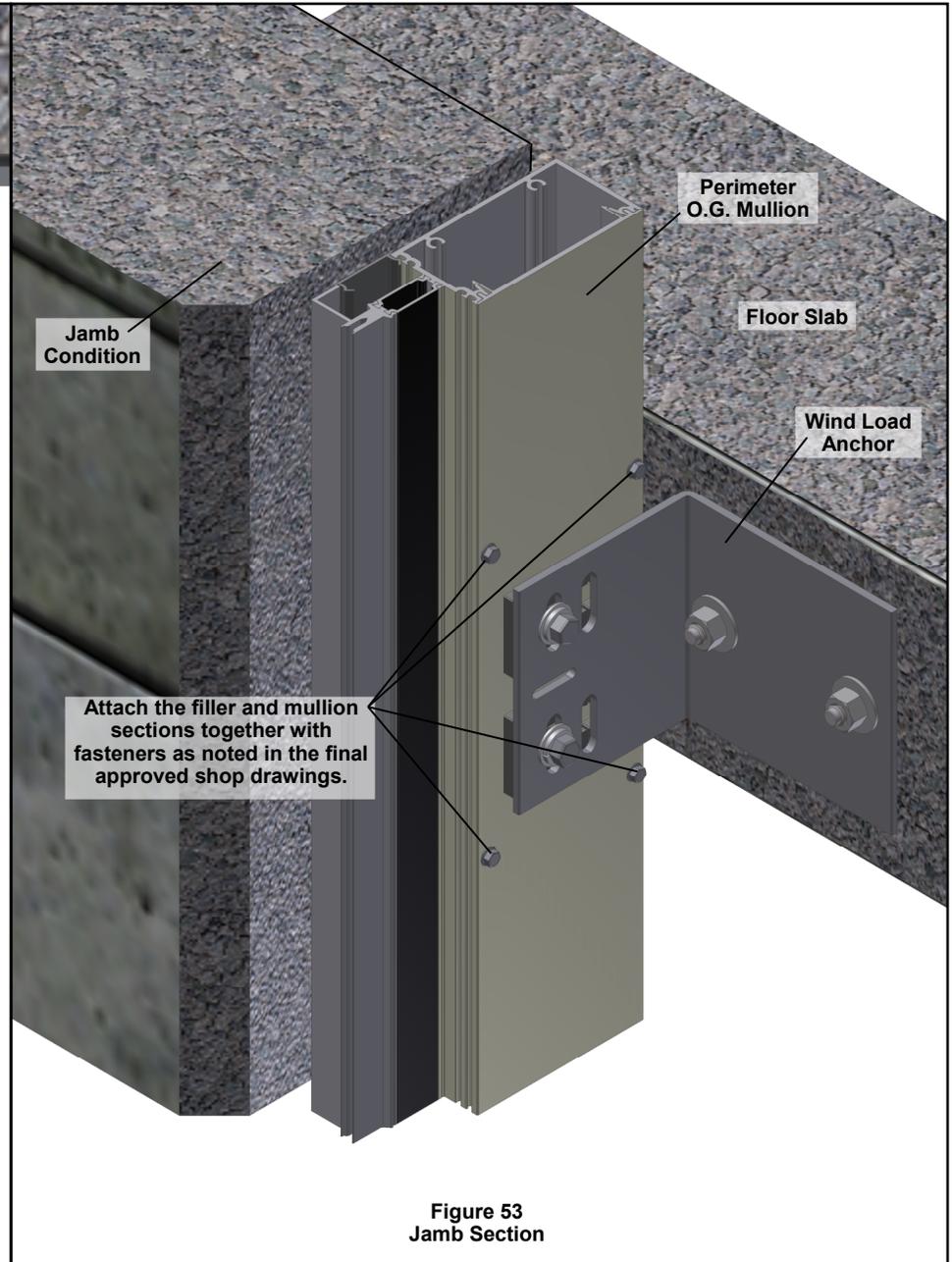
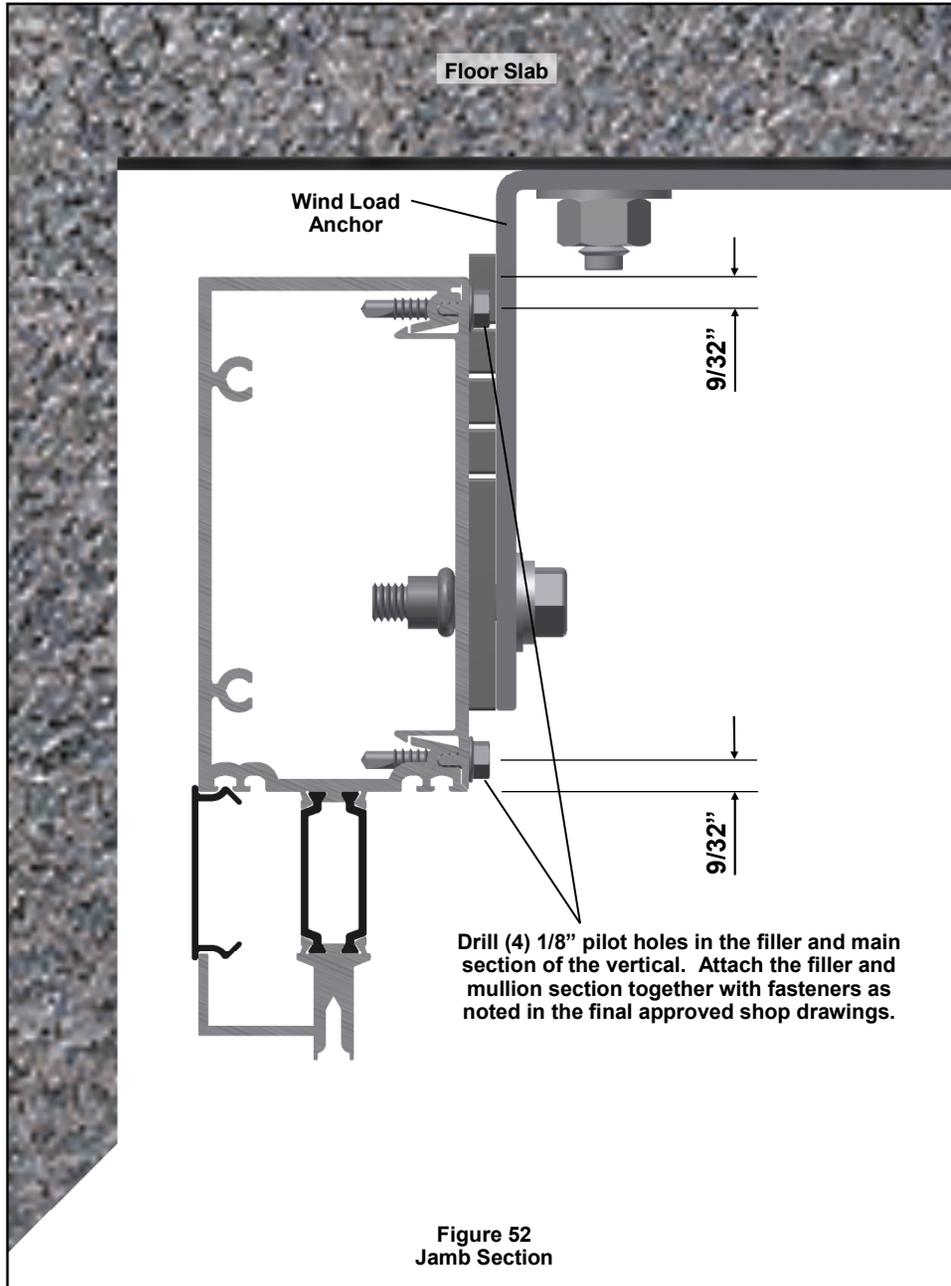
Section 12 - Install Twin Span Frame Components

- Match drill the face of the slab through the holes provided in the anchor and attach the assembly to the structure. Refer to the final approved shop drawings, and the bolt manufacturer's installation instructions for more information. See Figure 50 below.
- The filler must be attached to the main section of the mullion assembly at the jamb anchor locations. Once the anchor is secured to the structure in its final position, drill (4) 1/8" pilot holes in the filler and main section of the vertical. At least (2) holes 1" above and (2) holes 1" below the wind load anchor clip are required. Refer to the final approved shop drawings for size, quantity, and additional information. Attachment 1" above and below the anchor is required to allow free movement between the anchor and mullion during live load deflections and thermal movements. The screws must not interfere with this movement. See figure 52 on page 44 for addition dimensions and information.
- Attach the filler and mullion sections together with fasteners as noted in the final approved shop drawings. See Figure 53 on page 44.



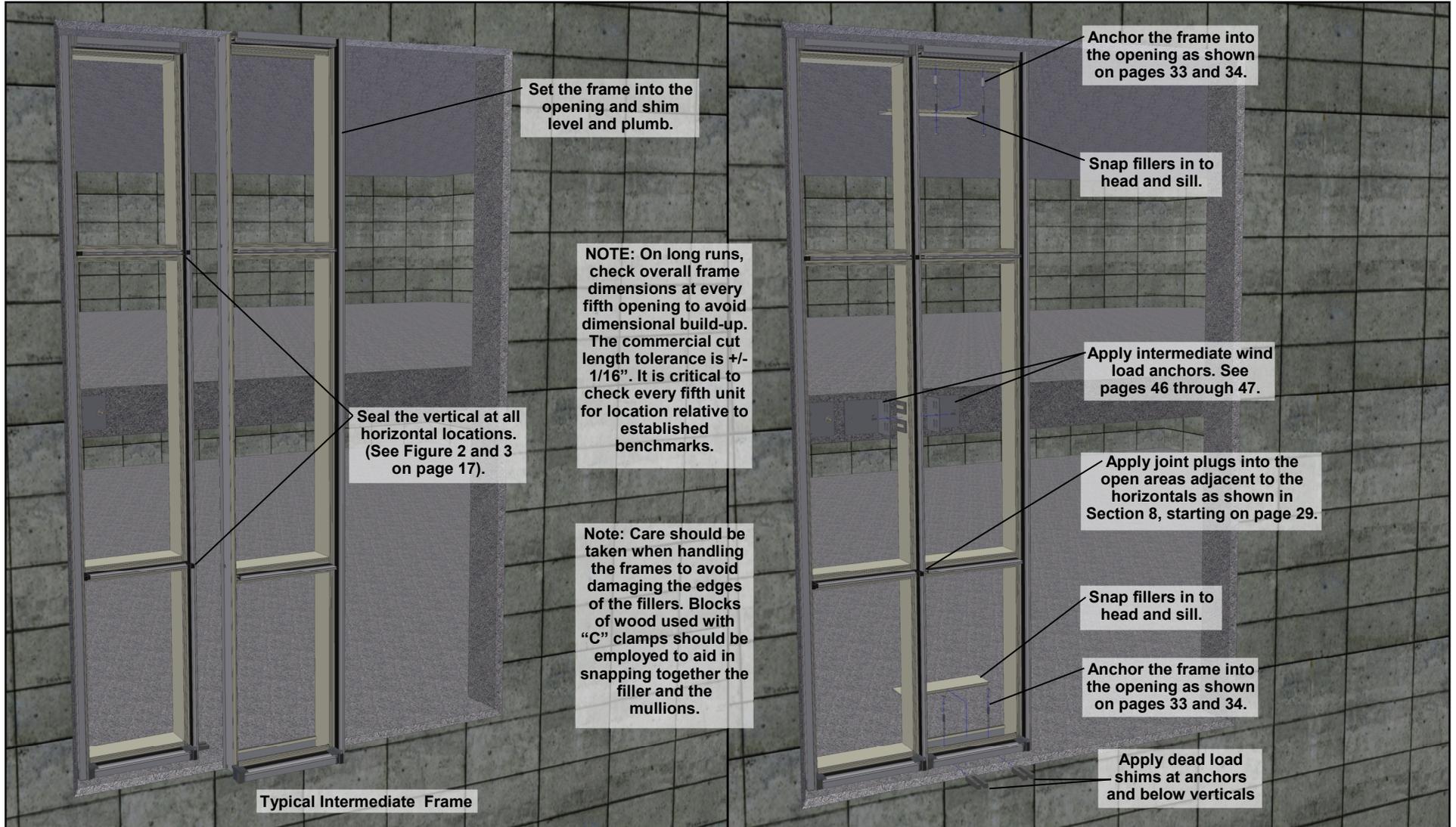
Section 12 - Install Twin Span Frame Components

12. Refer to the final approved shop drawings for the size, configuration, and other information for anchors welded to steel structure conditions.



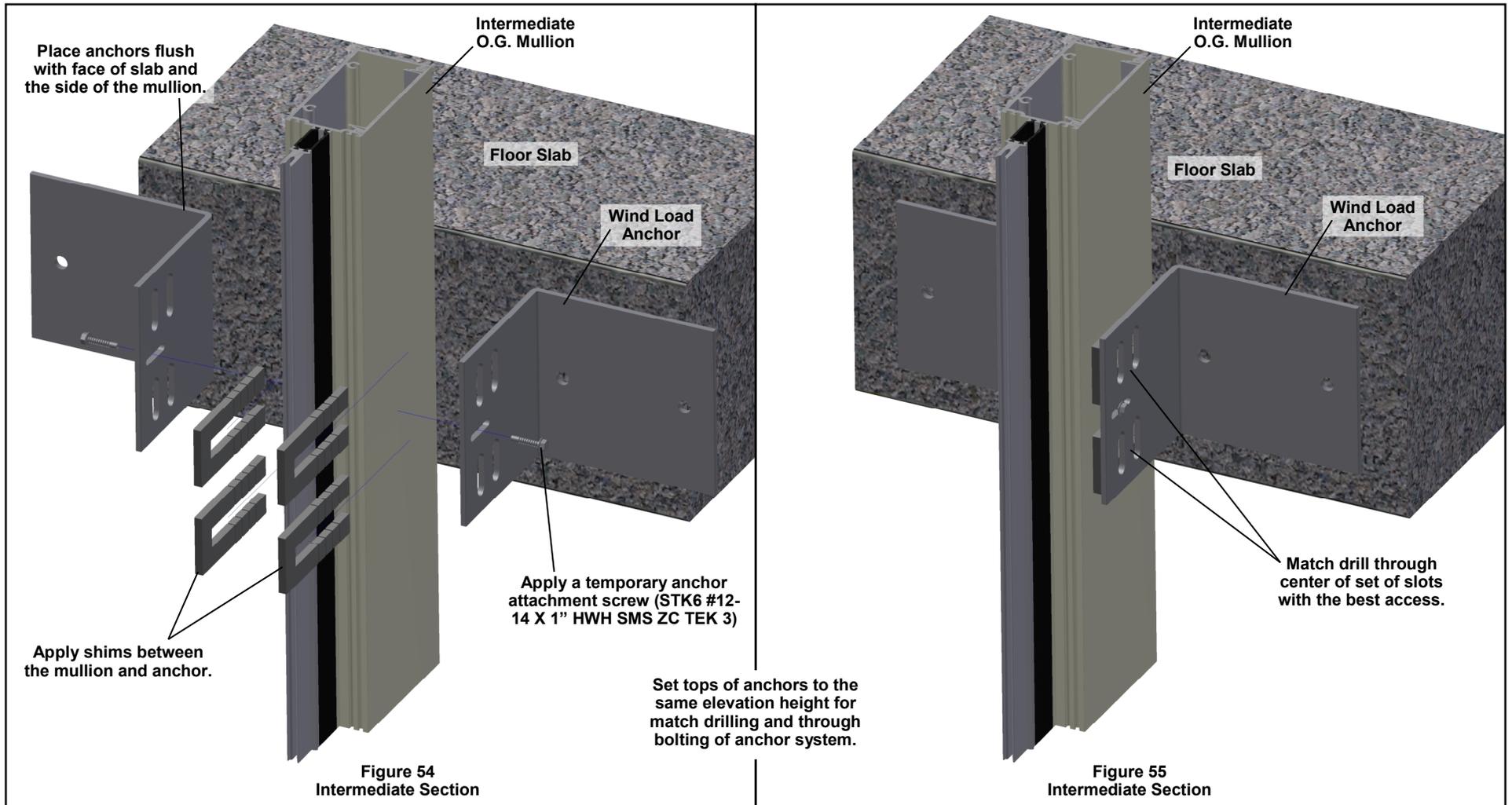
Section 12 - Install Twin Span Frame Components

13. Apply sealant to the verticals as shown in Figures 2 and 3 on page 17 to seal the vertical and fillers at the intersection of the heads, sills, and intermediate horizontals. This seal should be made immediately before snapping the filler and the vertical mullions together.
14. Set the intermediate frame into the opening mating the filler with the intermediate vertical until the filler and vertical snap together.
15. Use dead load shims at the sill to level the frame, and make all necessary adjustments to properly locate the frame to established benchmarks.
16. After the frame is plumb and all adjustments have been made, match drill through the holes in the head and sill into the surrounding substrate, and apply the anchor bolts at the head and sill. Anchor bolt size, type, quantity, and location vary. Refer to the final approved shop drawings for more information. The anchors at the head require an anchor bolt sleeve to accommodate thermal expansion and contraction, and building movements.
17. Apply intermediate wind load anchors as shown and noted on pages 46 and 47.



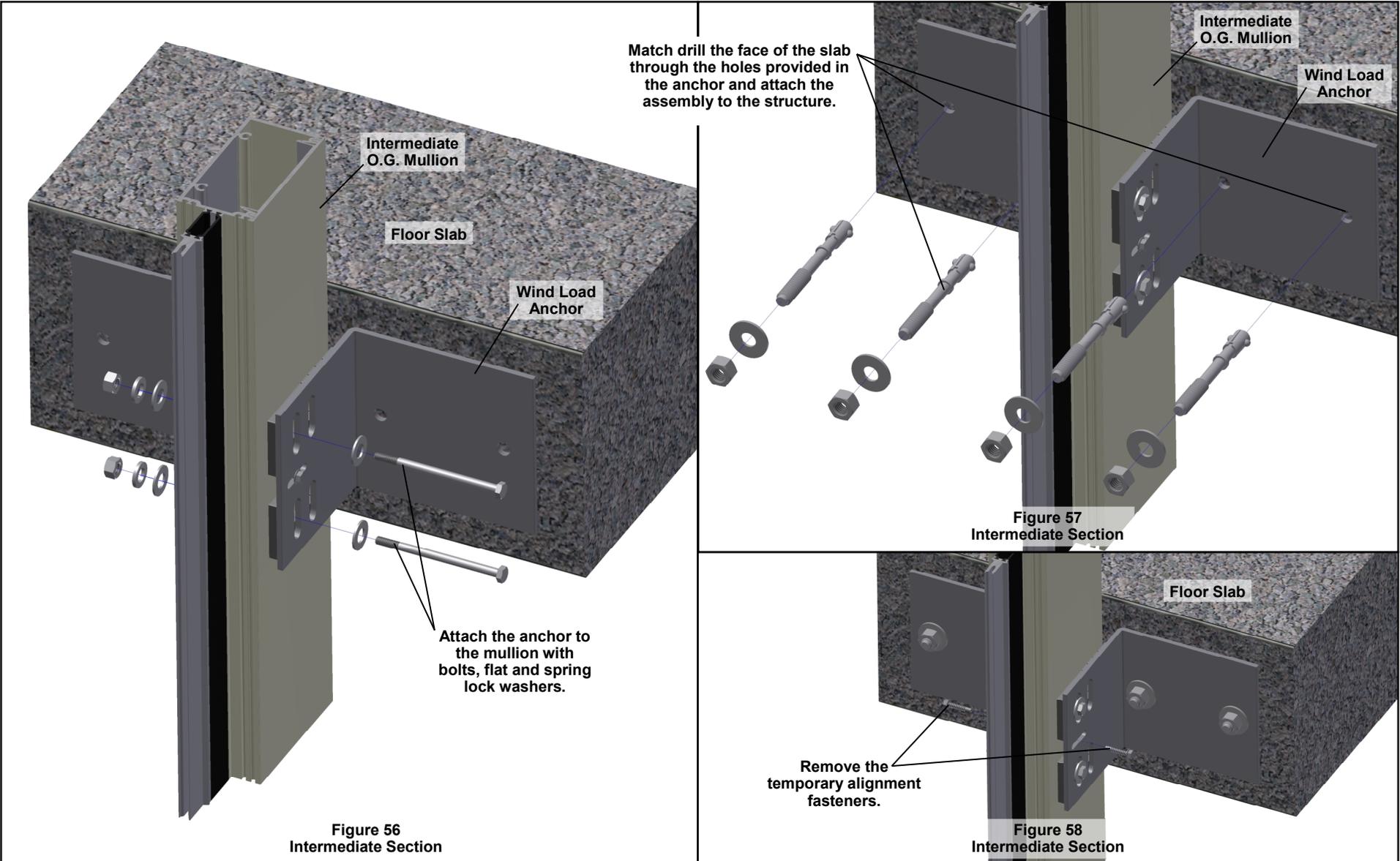
Section 12 - Install Twin Span Frame Components

18. Once the frame has been properly set, and securely anchored at the head and sill, place the intermediate wind load anchor flush with the face of the slab and with each side of the intermediate mullion shimming between the anchor and mullion as shown in Figure 54 below. Refer to the final approved shop drawings for exact anchor placement and minimum bolt edge distance requirements. Note it is critical that the tops of the anchors are aligned with each other so that the anchor bolts can be inserted through each anchor and the mullion after the mullion has been matched drilled as noted in Figure 55 below.
19. Apply anchor alignment screws (STK6 #12-14 X 1" HWH SMS ZC TEK 3) to hold the anchors temporarily in place. These fasteners must be removed after final anchor attachment.
20. Ensure the anchors are pressed firmly against the face of the floor slab and match drill the mullion through the **center** of two of the slots in the anchors for the through bolt connection. Choose the set of slots which will allow the anchor bolt to be placed a minimum of 1 1/2" from the back of the mullion to clear the back flange of any steel reinforcement that may be required on the project. For steel reinforcement, anchor configuration, bolt, and hole size requirements, refer to the final approved shop drawings.



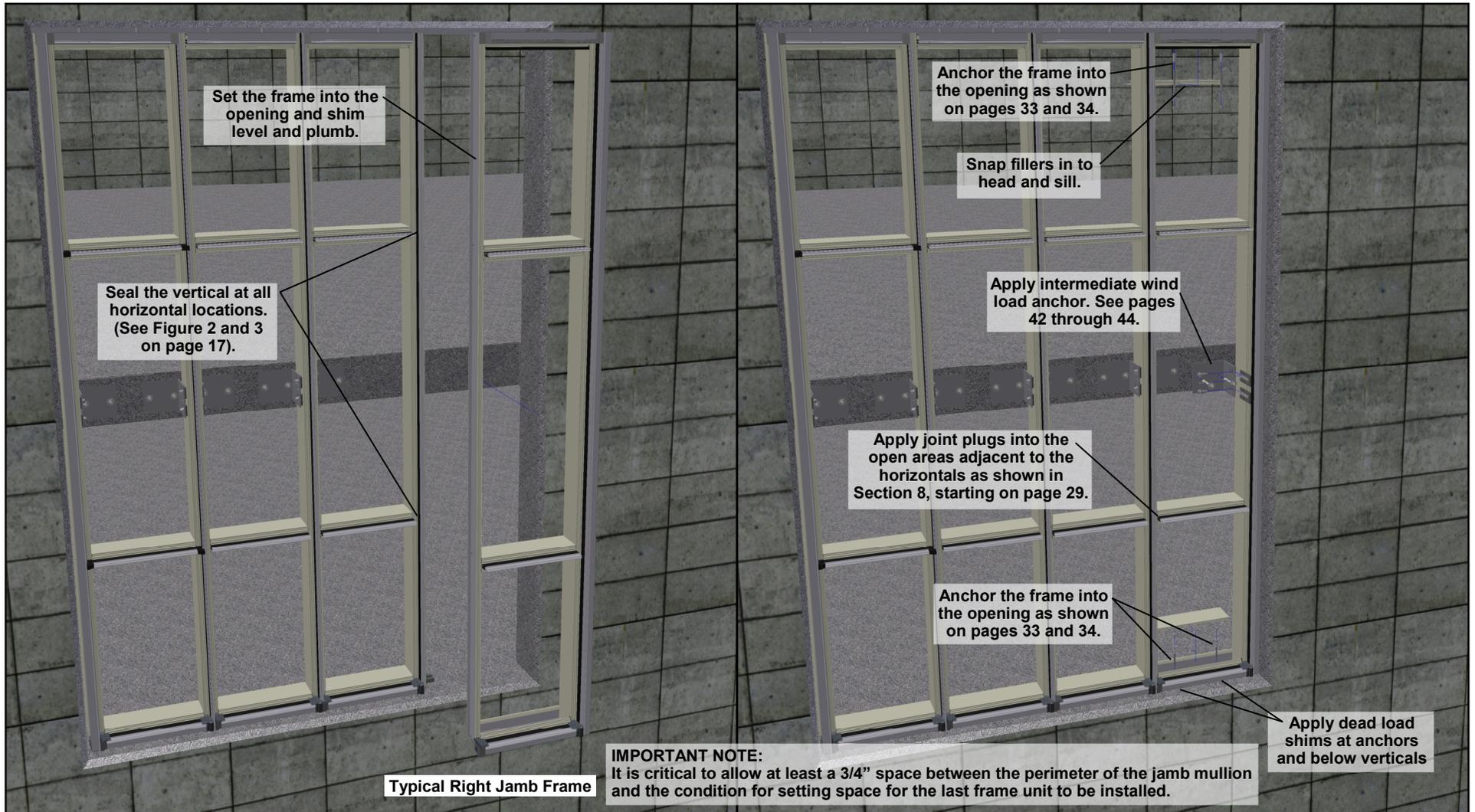
Section 12 - Install Twin Span Frame Components

21. Attach the anchors to the mullion using the specified anchor bolts, and flat and spring lock washers as required. See Figure 56.
22. Match drill the face of the slab through the holes provided in the anchor and attach the assembly to the structure. Refer to the final approved shop drawings, and the bolt manufacturer's installation instructions for more information. See Figure 57 below.
23. Remove the temporary fasteners to accommodate thermal expansion and contraction, and building movements. See Figure 58.
24. Refer to the final approved shop drawings for the size, configuration, and other information for anchors welded to steel structure conditions.



Section 12 - Install Twin Span Frame Components

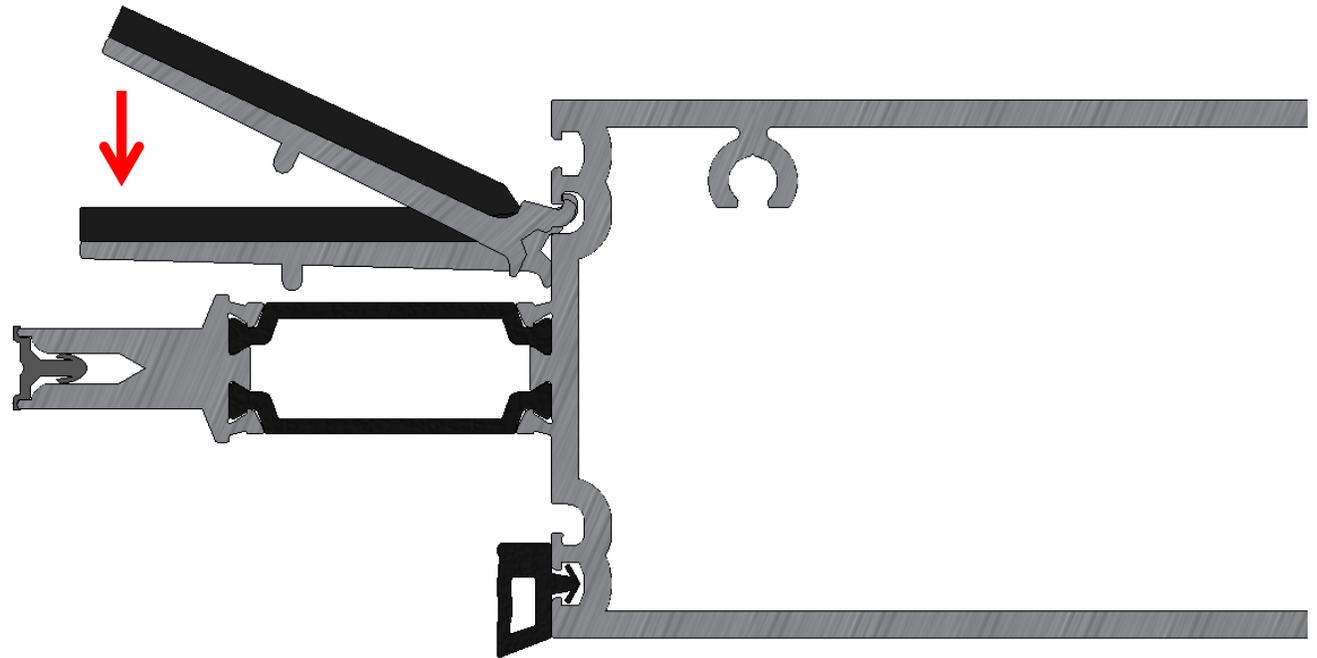
25. Continue setting all the intermediate frames following previous steps until all frames have been installed except the final jamb frame.
26. Check frequently to ensure the installed framing is in the proper position with regard to established benchmarks and are level and plumb.
27. Seal the vertical at horizontal locations including the head and sill. (See Figure 2 and 3 on page 17).
28. Set the last frame in the run into the opening mating the filler with the intermediate vertical until the filler and vertical snap together.
29. At least a 3/4" space between the perimeter of the jamb mullion and the condition for setting space for the last frame unit to be installed.
30. When the frame is set level and plumb, apply the dead load shims below the verticals and anchor points, and apply anchors as shown on pages 33 and 34.
31. After securing the anchor bolts, snap in the head and sill fillers.
32. Apply the last set of joint plugs and noted in section 8, starting on page 29.
33. Apply intermediate the jamb wind load anchor as shown and noted on pages 42 though 44.



Section 13 - Glazing Preparation

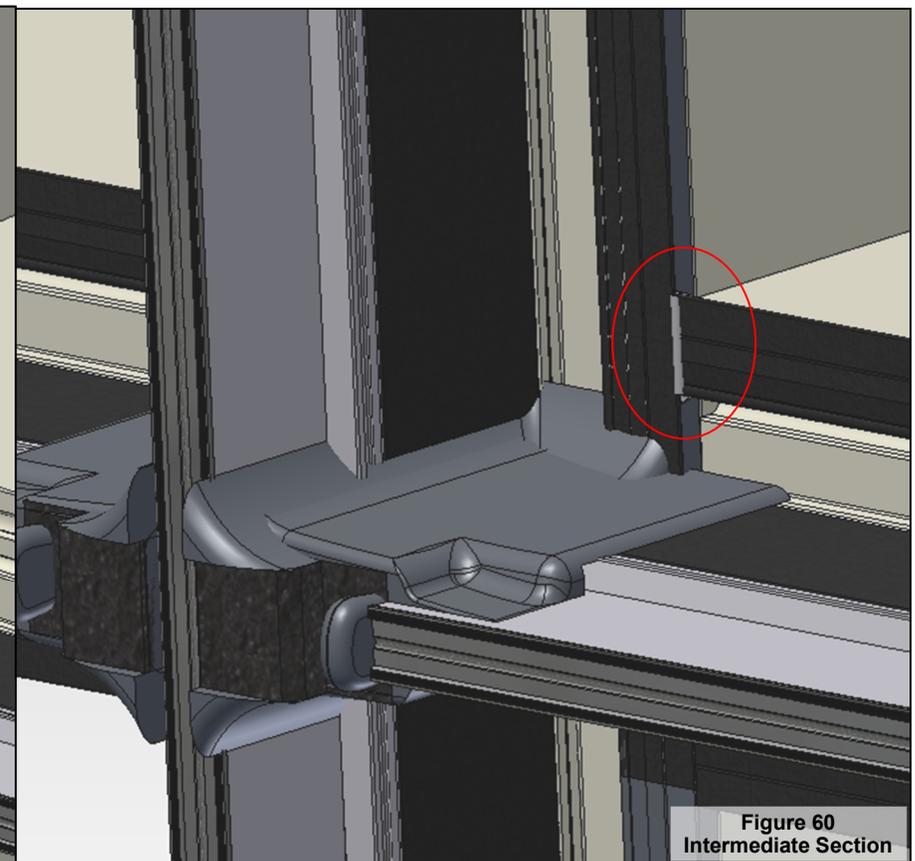
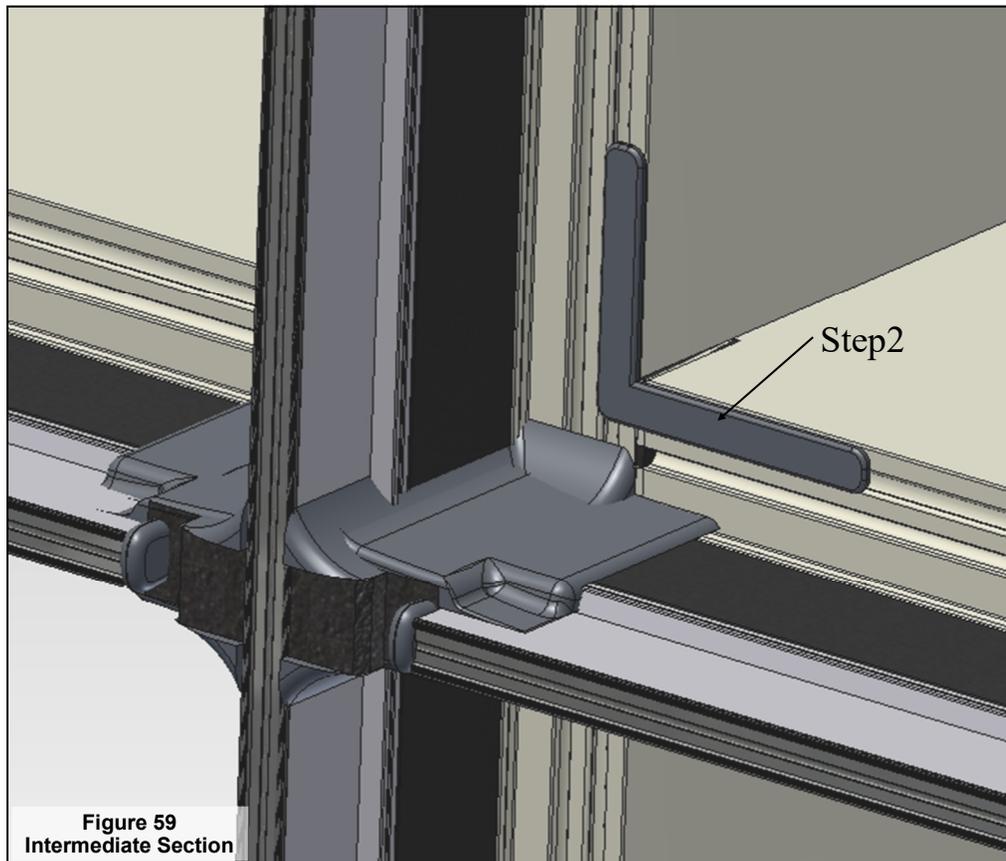
1. Install FI08 setting block into bottom reglet as shown below. Setting blocks are typically located at 1/4 points refer to shop drawings for special locations.

Customer / Installer Note: EFCO setting block are typically 4" in length with different depths. If the glazing infill is "NOT BY EFCO" and glazing sizes are larger than 40 square feet, then the glazing details must be reviewed by the glazing manufacturer for proper setting block size and location.



Section 13 - Glazing Preparation

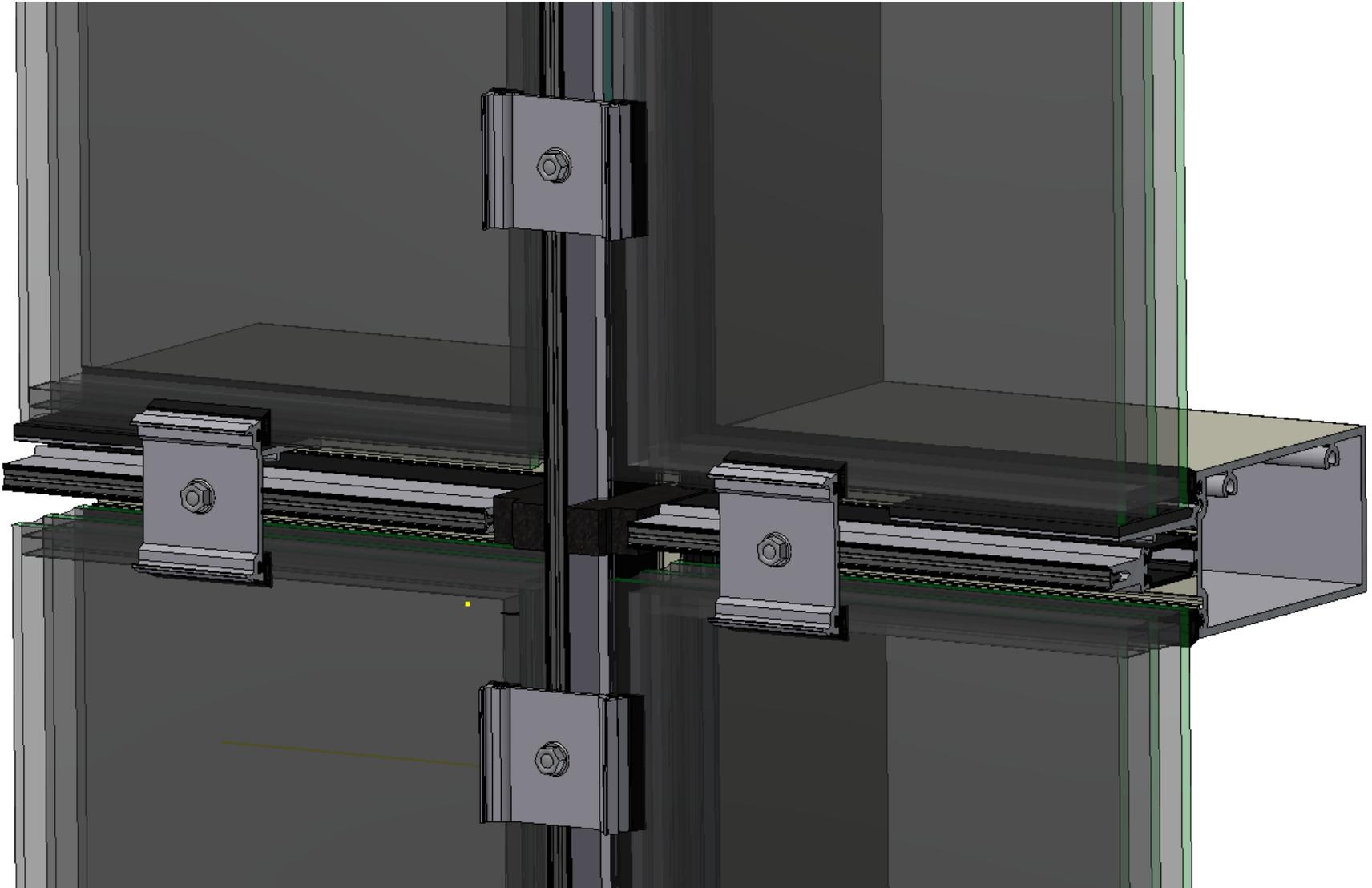
1. Remove glazing gasket from the reel and allow to shrink.
2. Apply sealant into gasket raceway a minimum of 2" in each direction from the corner. (Figure 59)
3. Once the gaskets have relaxed, cut and install into position. Vertical gaskets must ne cut vertical D.L.O. plus 1 3/4". Place into position starting a the center of the D.L.O. Crowd the excess at the ends, (take care not to stretch the gasket during installation)
4. Cut Horizontal gasket D.L.O. plus 1/2" and insert the gasket at the center of the D.L.O. and crowd excess at the ends. (take care not to stretch the gasket during installation)
5. Seal all gasket corners and butt joints as indicated below. (Figure 60)



Section 13 - Glazing Preparation

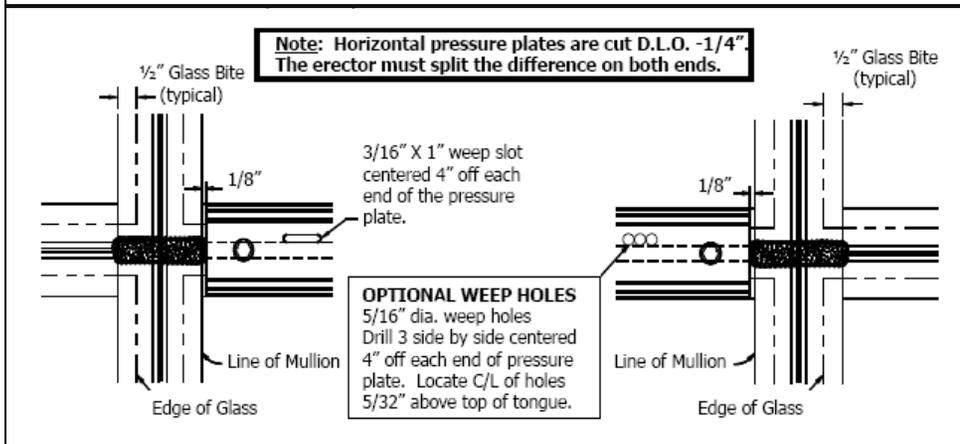
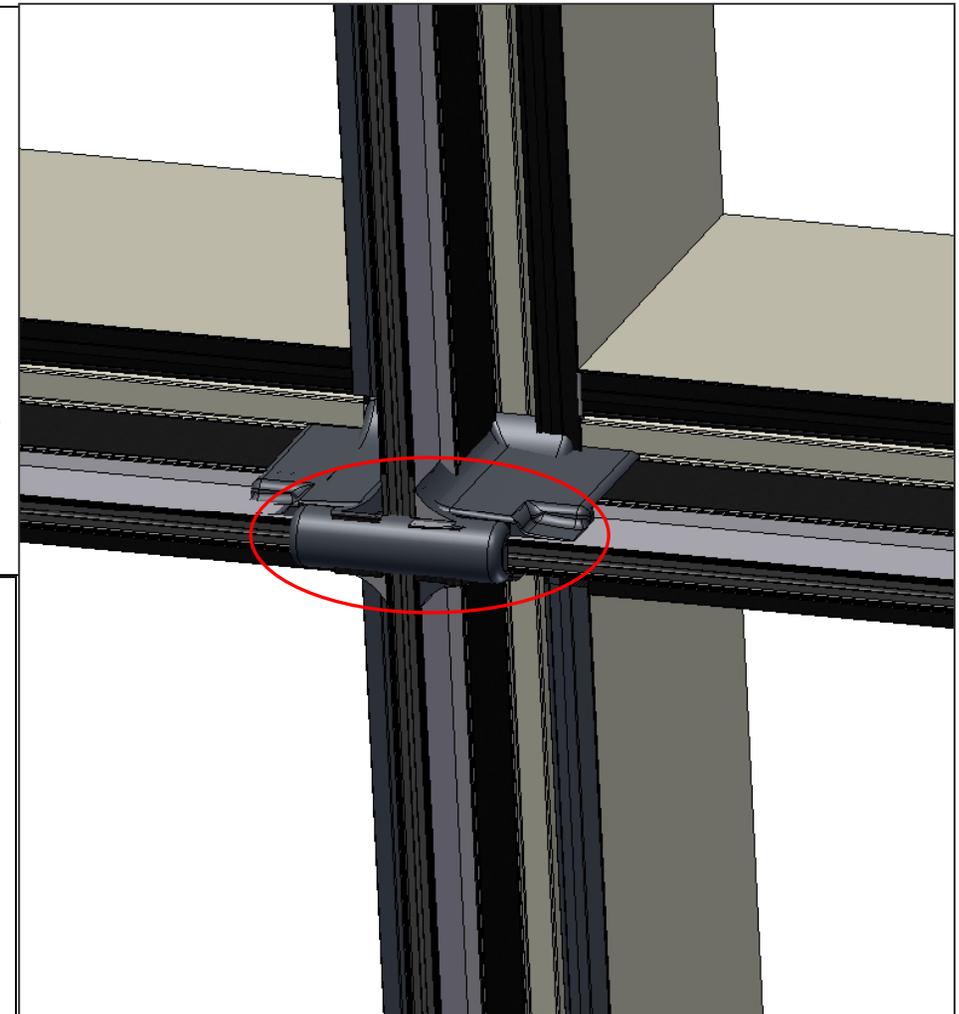
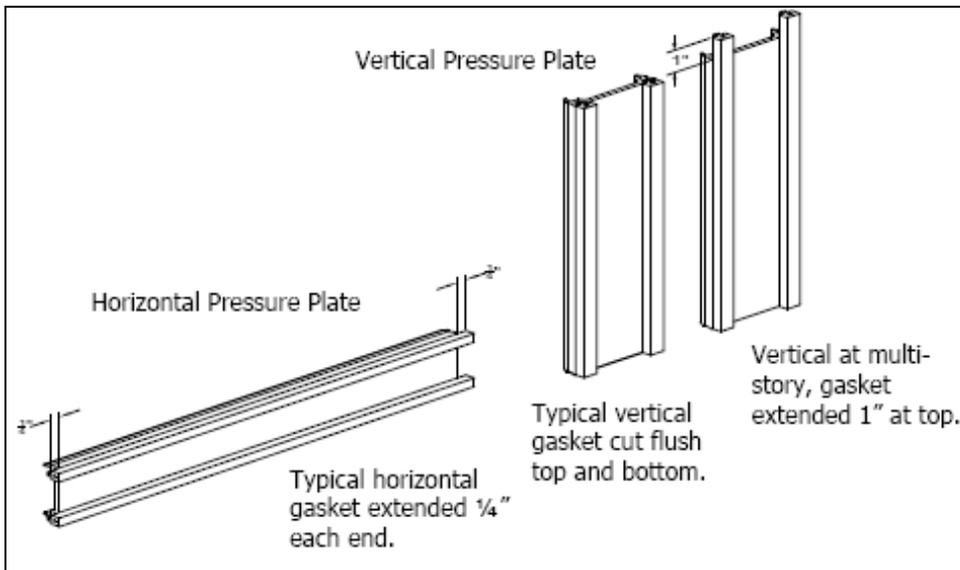
1. Depending on your specific installation sequence, it may be desirable to install temporary glazing retainers to hold the infill glazing in the opening. Apply the retainers as needed; however, it is suggested that they be spaced no more than 30" apart. They are intended for short term temporary applications only and are not to be left unattended, or overnight. **{Temporary Retainers do not meet structural requirements and can fail under structural loads.}**

Note: Temporary retainer clips are available from EFCO by request only and are NOT Included in the estimated cost of the materials for the job.



Section 13 - Glazing Preparation

1. Remove glazing gasket from the reel and allow to shrink.
2. Apply glazing gaskets to the pressure plates. Gaskets must be cut flush at both end of the vertical pressure plate except in multi-story applications, where gaskets are to extend 1" beyond the top end to cross the expansion joint. The pressure plate should extend 3" past the slice.
3. Cut the Horizontal gaskets 1/2" longer than the pressure plate length and apply so that 1/4" extends beyond each end.
4. Apply sealant to the face of the joint plug prior to installation of the vertical and horizontal pressure plates.



Section 13 - Glazing Preparation

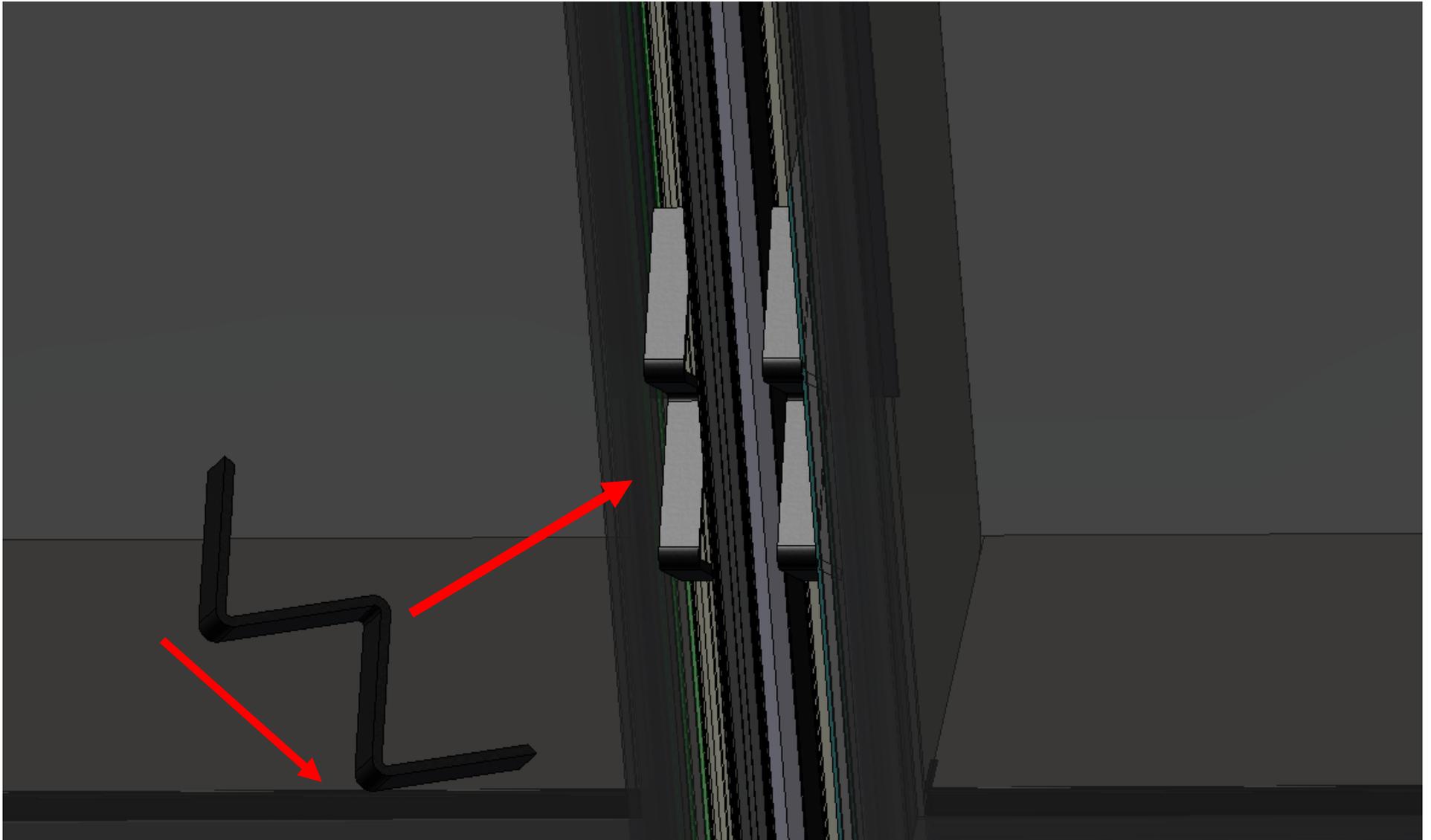
1. First attach vertical Pressure Plates and the Horizontal pressure plate into position using #12 x 5/8" S.S. Hex Head screws. Locate screws 6" O.C. and at a maximum of 3" from the ends of each pressure plate. Torque screws to 80 inch-pounds. When possible, work from the center outward on the horizontals and from the sill upward on the verticals
2. In cold weather, first torque all pressure plate screws to 40 inch-pounds. Once all four sides have been clamped down , torque all screws to 80 inch-pounds.
3. Seal all joints between the vertical and horizontal plates with sealant which will provide a water and airtight joint.

Note: The glazier should always place a screw in the vertical pressure plate opposite each horizontal. This is necessary to create a maximum control of pressure on the mullion plug, which provides the critical sealing function.



Section 13 - Glazing Preparation

1. Stretch “W” side blocks, install and position in the jamb cavity as indicated.



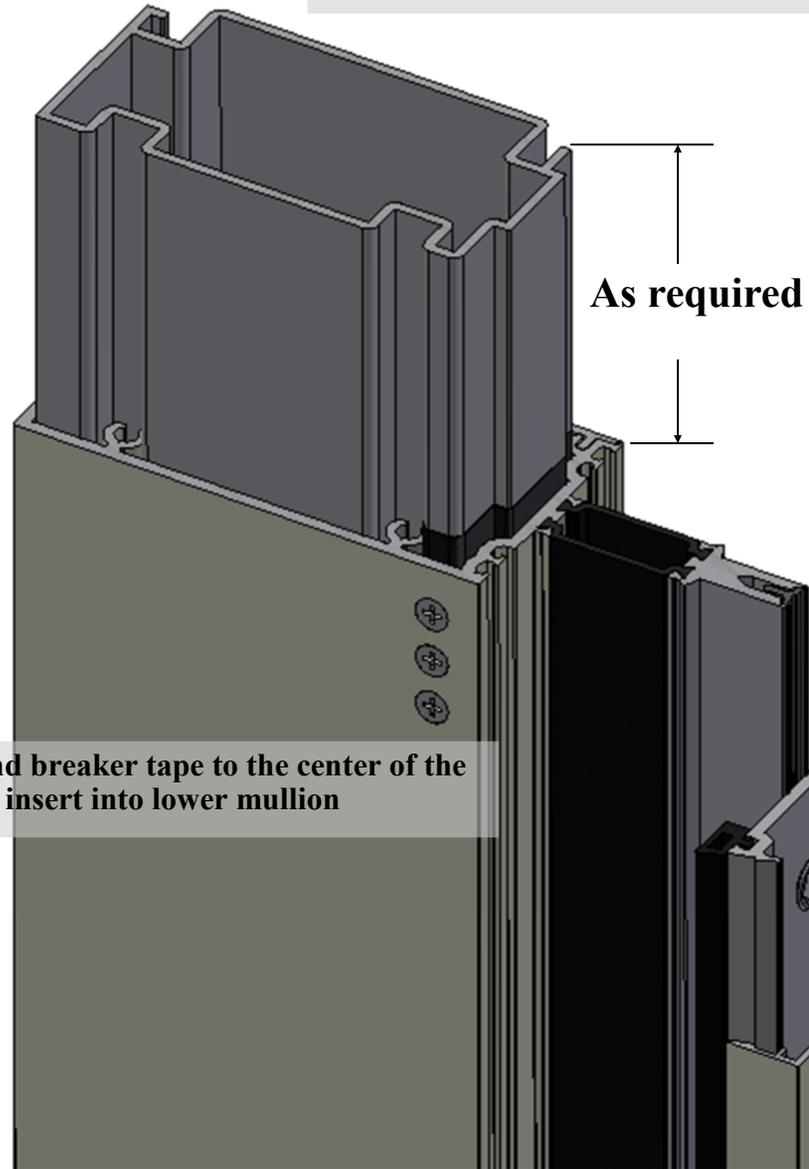
Section 14 - Vertical Splice Joints

1. Splice Joints should occur at the spandrel areas (if Possible). Refer to approved final shop drawings for actual locations.
2. Depending on the specific job requirements, splice sleeves may be shop or field assembled in the top of the lower mullion. If materials are field fabricated, use the following assembly instructions. Where head clearance is insufficient to allow the top mullion to be lifted over the splice sleeve, a retractable sleeve will be used. The sleeve must be taped into the bottom of the top mullion and dropped down to the stop screw in the mullion below.
3. **General Note:** The following page depicts a splice joint of 1/2". The required joint width must be determined in the design stage and shown on the approved Final Shop Drawings, on a job by job basis. Keep in mind that a typical curtain wall can accommodate **1/4" total vertical movement**. The splice joint, horizontal glazing pocket immediately above the splice, and slotted wind load anchors, must all be considered when vertical movement exceeds 1/4".
4. Refer to this section for cover splice, pressure plate splice relative locations, and sealing instructions.
5. Once a final check of expansion joint placement and mullion position is made, the final match drilling of mullion through anchor holes may be complete.

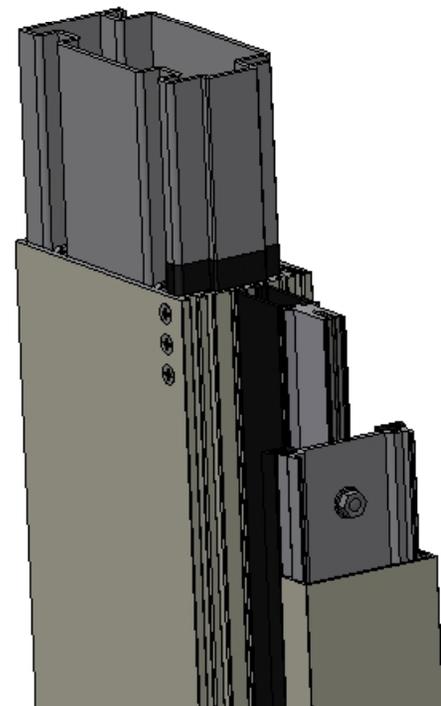
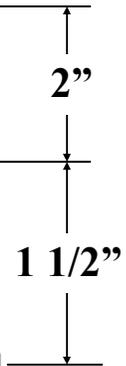
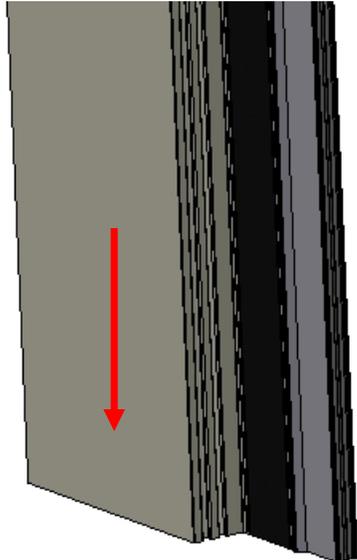


Section 14 - Vertical Splice Joints

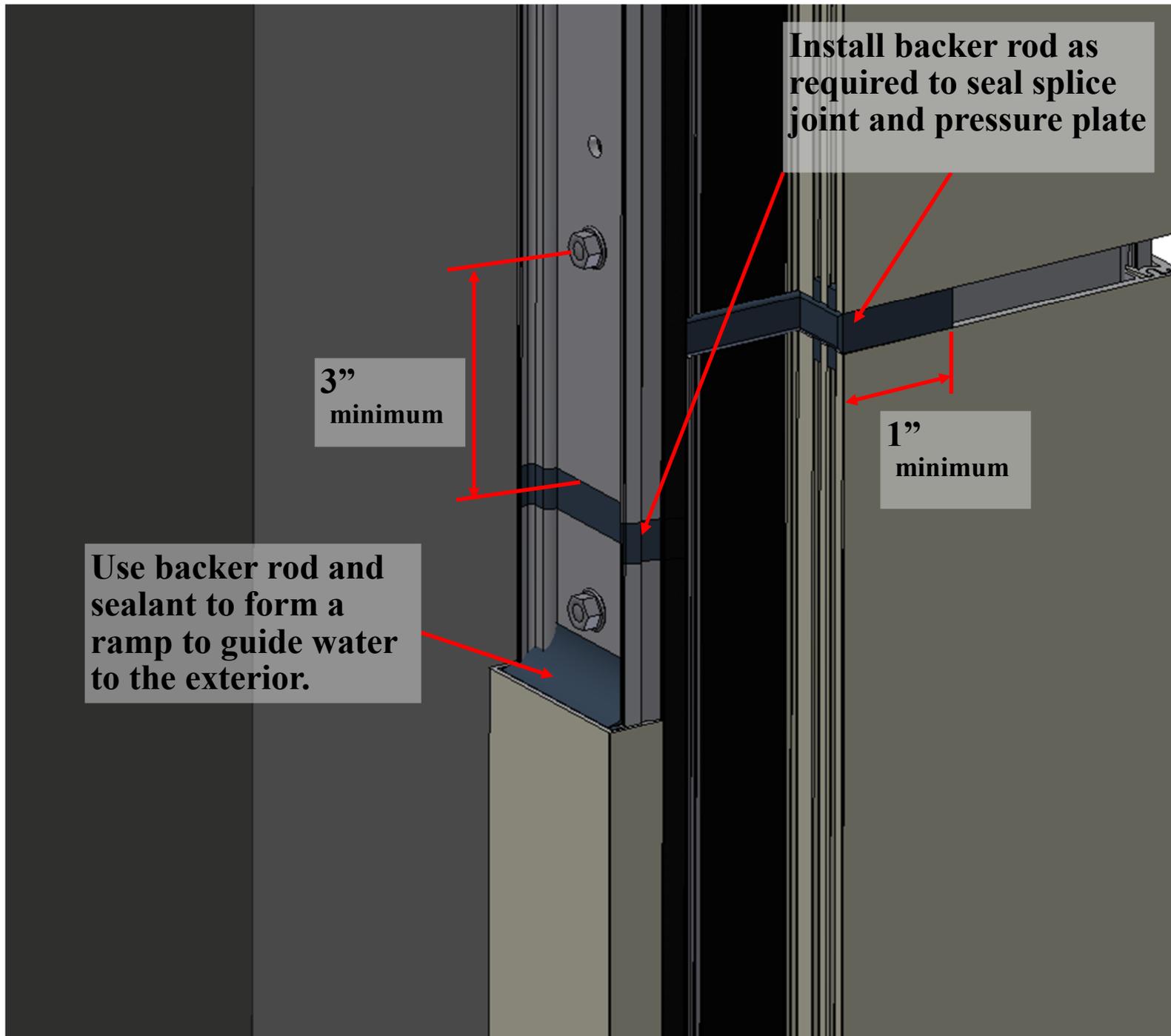
Splice sleeve will vary with the system mullion depth and requirements. Reference approved final shop drawing for splice details



Apply bond breaker tape to the center of the splice and insert into lower mullion



Section 14 - Vertical Splice Joints

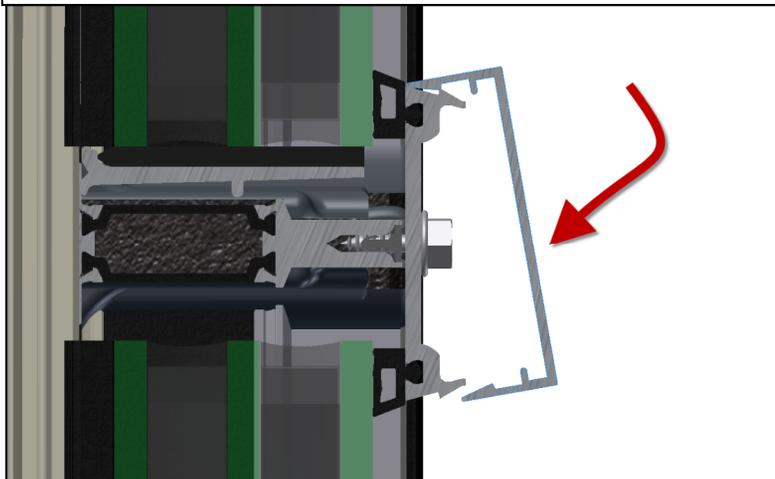
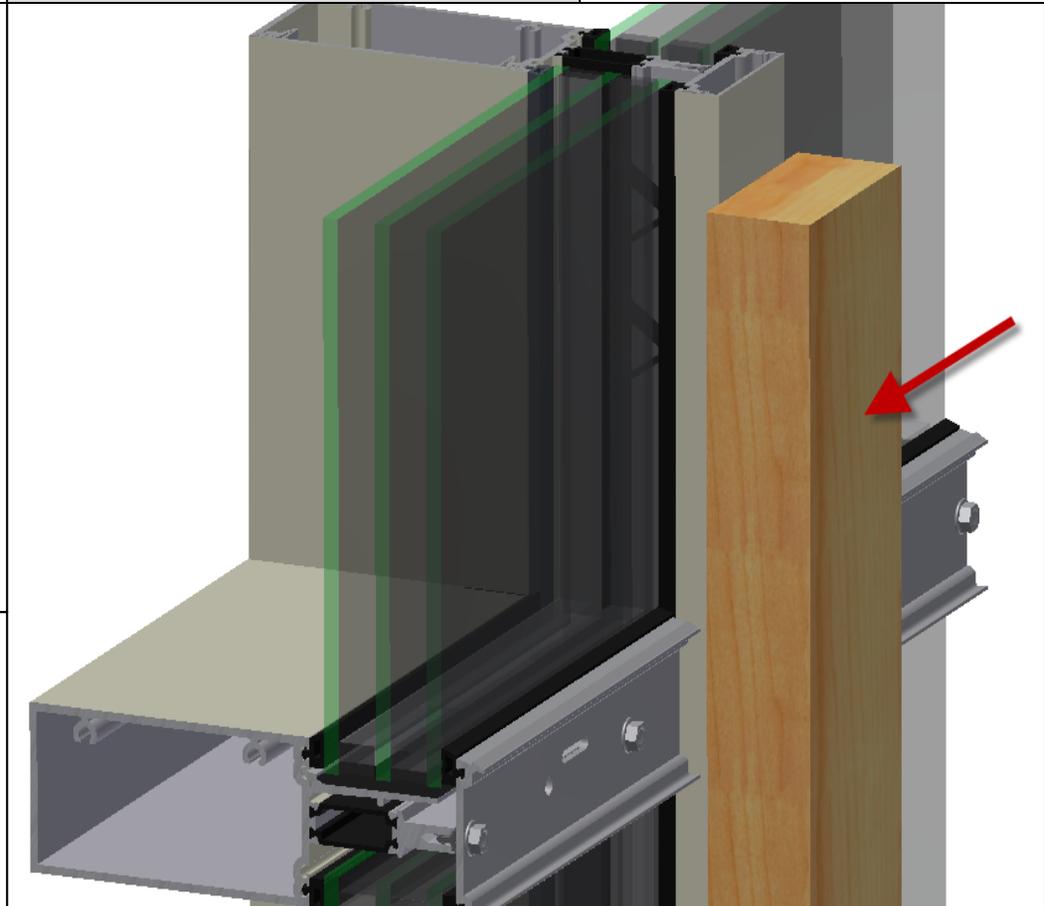
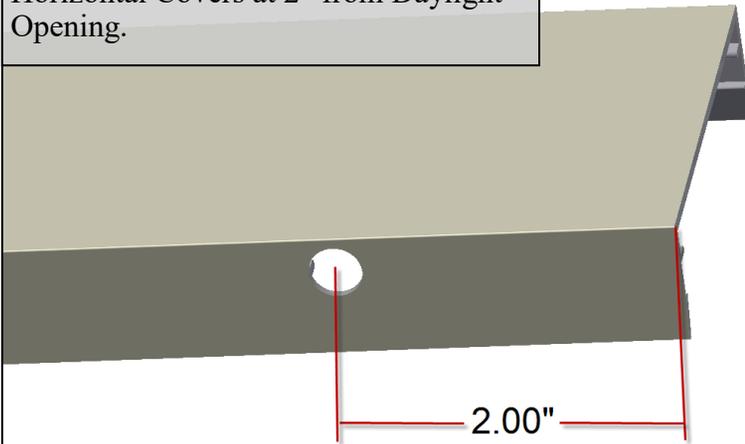


Section 15 - Exterior Cover Installation

1. Locate and apply vertical covers as shown on the approved Final shop drawings. Engage one side, then use the mallet and block to engage the opposite side.
2. Center the horizontal snap cover in the opening and apply it in the same manner. Gaps at the ends should be split equally and are to allow for thermal movement and weepage.

Note: Exterior Horizontal covers are cut D.L.O.—1/16". The erector must split the difference on both ends.

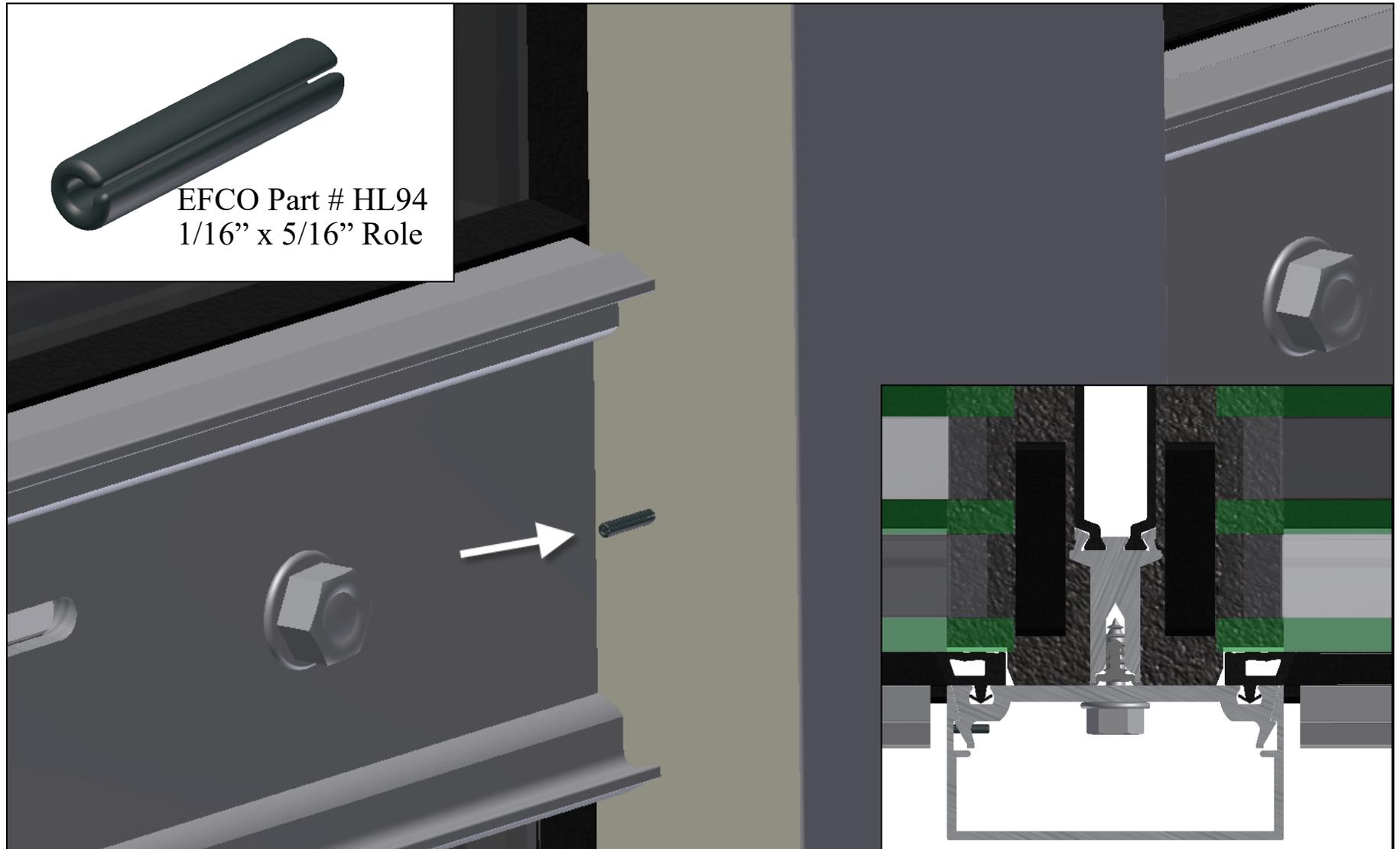
Drill 5/16" diameter weep holes in the Horizontal Covers at 2" from Daylight Opening.



Caution: Care must be taken to avoid damage to the covers during installation. Use a 12" long 2 x 4 with a mallet or hammer to seat the covers.

Section 15 - Exterior Cover Installation

1. On vertical covers 1" in depth and over, it is necessary to install a 1/16" x 5/16" roll pin at the horizontal cover locations to prevent slippage.
2. On Horizontal covers 1" in depth and over, it is necessary to mechanically attach the cover to the pressure plate similar to what is shown below to insure against disengagement of cover from the pressure plate.



Section 16 - Reinforcement

1. At large spans or in high load areas, internal steel reinforcement may be necessary. Reinforcement steel requirements will vary from job to job. Please reference the approved final shop drawings for steel reinforcement requirements.
2. When steel reinforcement is factory installed into the mullions, fasteners will be used to prevent damage or slippage of the steel during shipment.

