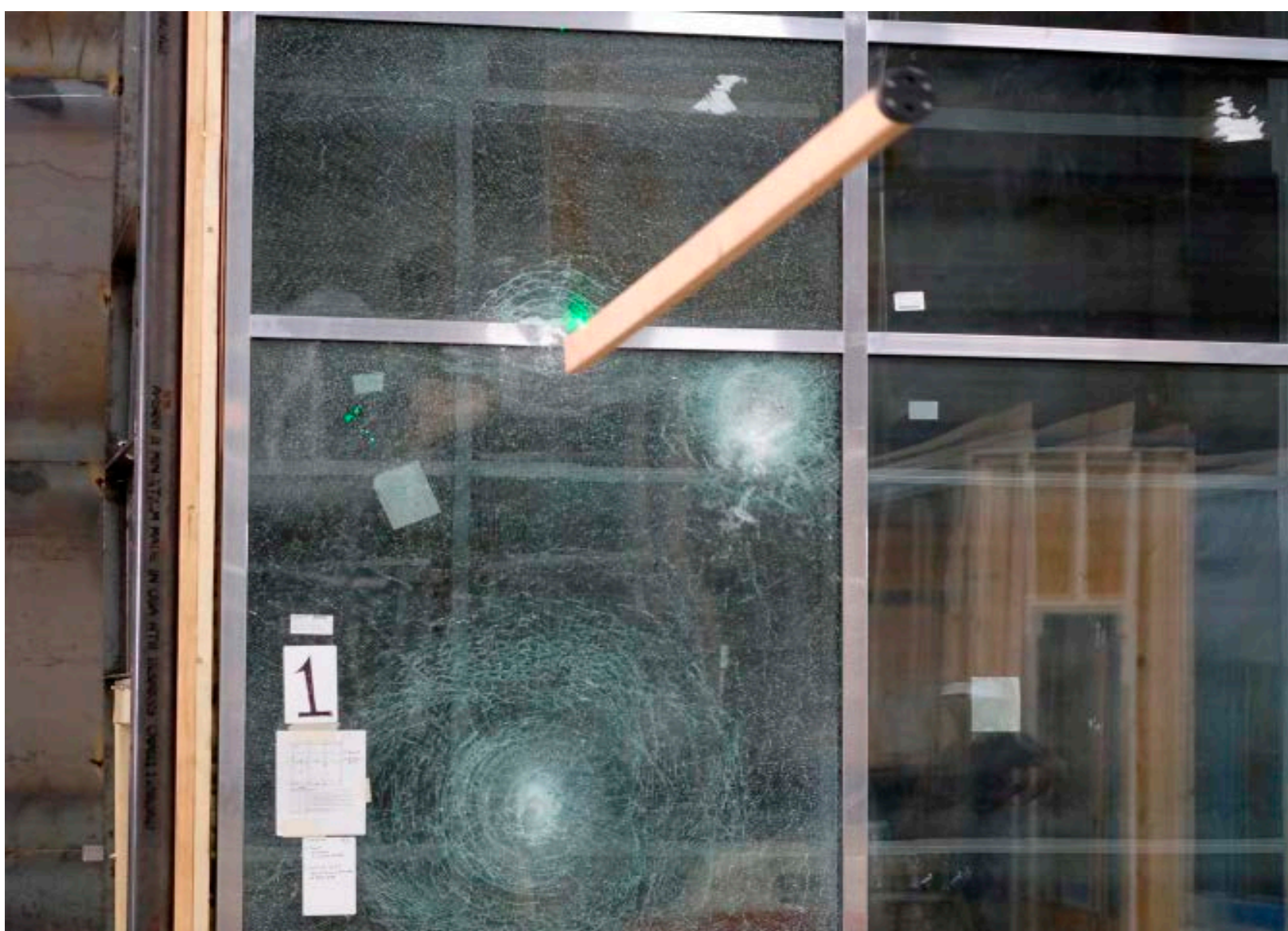




**Technical Glass Products
Product Installation Manual
Hurricane Impact Curtainwall Series**

FIREFRAMES® CURTAINWALL HURRICANE SERIES INSTALLATION MANUAL

The Fireframes® Curtainwall Series frame system allows for large, multi-story expanses of fire-rated glass and frames in both interior and exterior applications. Envision expansive window openings, with more glass and less frame. Along with exterior applications, lobbies and atriums are well suited to the use of fire rated curtain wall to provide uninterrupted views. Floor to ceiling fire-rated curtain walls can be used to divide interior spaces while offering security and aesthetic appeal as well as fire protection. Fireframes Curtainwall is just one of the many expressions of creativity that are changing traditional thinking about fire-rated glass and framing. The future of fire safety has never looked so good.

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Table of Contents

System Exploded Assembly	4
Material Key Chart	5
General Information	6
Sizing Guidelines	6
Fire-Rated Glazing Options	6
Glazing Specifications	7
Recommended Guidelines	8
Assembly and Installation	11
1 RECEIVING AND INSPECTION	11
2 PREPARE PERIMETER CONDITION	11
3 PREPARE FRAME FOR INSTALLATION	11
4 INSTALL VERTICAL MULLIONS	12
5 INTERMEDIATE WIND LOAD (DYNAMIC) AND DEAD LOAD (FIXED) ANCHORS	13
6 MULLION SPLICE CONDITIONS	14
7 INSTALL HEAD, SILL, AND INTERMEDIATE HORIZONTAL MULLIONS	16
8 MULLION GASKETS	18
9 FLEXIBLE FLASHING	21
10 SEALING GASKETS	23
11 CONNECTING PLATES	27
12 PERIMETER SPACERS	28
13 GLAZING	31
14 INSTALL COVER PLATES	35
15 INSTALL PRESSURE PLATES	36
16 FIRESAFING AND PERIMETER SEALS	39
17 COVER CAPS	40

System Exploded Assembly

ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION
1	ANCHOR, JAMB	12	GLAZING PLATFORM, BOLT ON	23	PLATE, T-JOINT COVER
2	ANCHOR, JAMB	13	M6x1x12mm FLAT HEAD SOCKET CAP SCREW	24	PLATE, INTERSECTION COVER
3	ANCHOR, INTERMEDIATE	14	PLATE, T-JOINT CONNECTING	25	BUSHING, SEPARATOR
4	M6x1x20mm FLAT HEAD SOCKET CAP SCREW	15	PLATE, X-JOINT CONNECTING	26	SEAL, PRESSURE PLATE
5	MILLION, VERTICAL, LEFT	16	SCREW, CONNECTING PLATE	27	PRESSURE PLATE, 60 mm
6	PROFILE, MULLION, VERTICAL, INTERMEDIATE	17	SPACER, PERIMETER, HARDWOOD	28	BUSHING, GUIDE
7	VERTICAL MULLION, RIGHT	18	SCREW, FLAT HEAD SELF-DRILLING	29	SCREW, GLAZING SUPPORT
8	PROFILE, MULLION, HORIZONTAL	19	SETTING PAD	30	COVER CAP, HORIZONTAL
9	CLIP, SLIDING SHEAR	20	GLAZING	31	COVER CAP, VERTICAL
10	M6x1x25mm FLAT HEAD SOCKET CAP SCREW	21	INTUMESCENT TAPE		
11	GASKET, INTERIOR	22	DIVERTER GASKET		

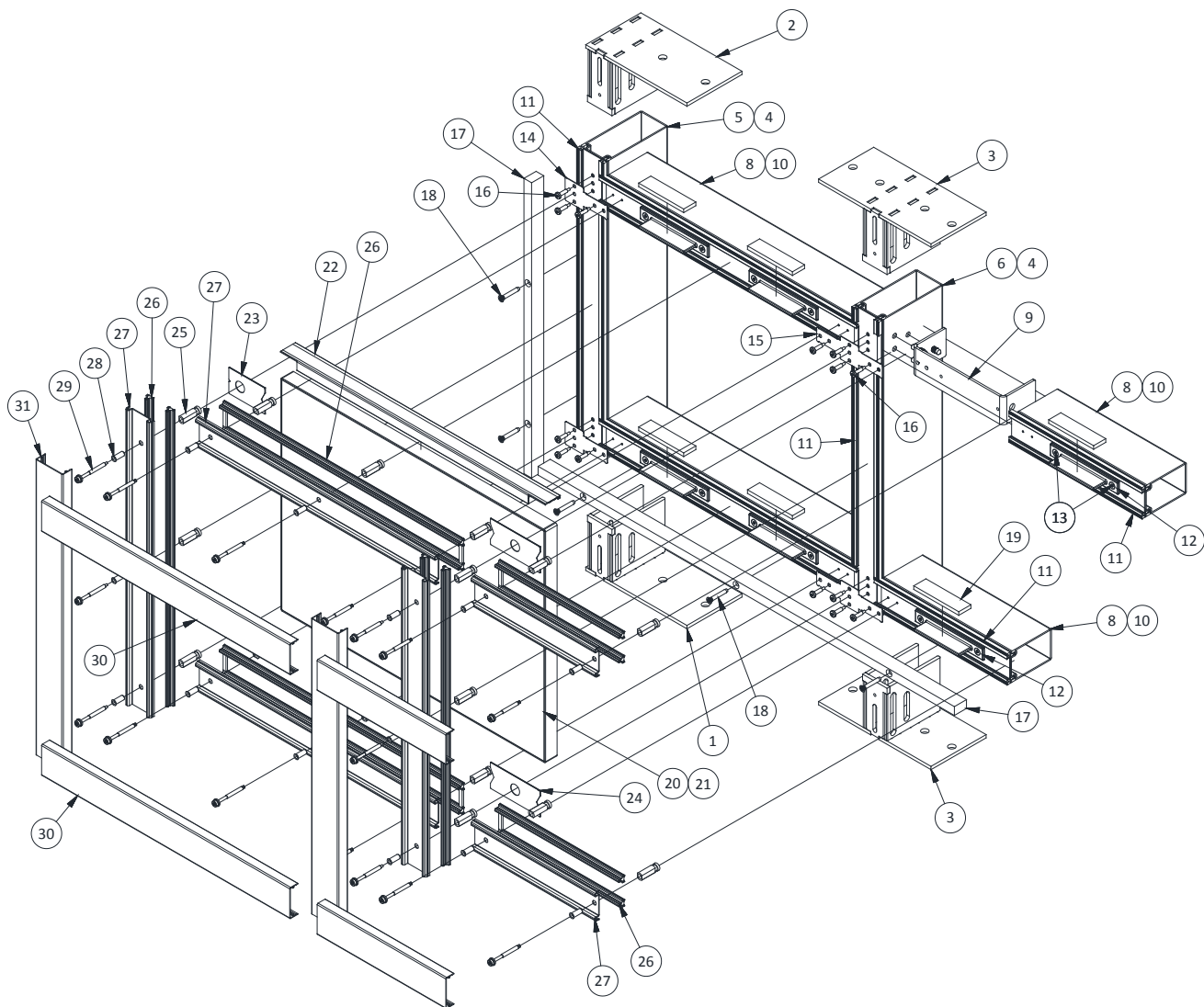


Figure 1 - System Exploded View

Material Key Chart

Material	Required Material NOT PROVIDED With Fireframes Curtainwall Series
ANCHORS (Special)	If required per the approved Fireframes drawings, intermediate wind-load (dynamic) and/or dead load (fixed) anchors provided by other trades.
ANCHOR FASTENER	As constructions vary widely in design, perimeter fasteners (anchors) are supplied by others.
FINISH SEALANT	Sealant installed into the interior and exterior perimeter cavity. Select color for sealant to match frame or as directed by project architect.
FIRESAFING	REQUIRED on all applications, mineral wool and/or fire rated caulking must be installed between the perimeter frame and surrounding conditions. Intumescent sealant or firmly packed mineral wool must be installed in a continuous fashion between frame assembly and wall construction, being interrupted only by the perimeter anchor shims. Sealant manufacturers such as Tremco, Pemko and many others supply intumescent sealants.
SHIMS	Perimeter shims at anchor locations are to be of hardwood (oak) or non-combustible (steel) materials. Plastic shims may not be used.
WEEPS AND BAFFLES	Weeps or baffles required at the sill condition of exterior applications. A 5/16" minimum inside diameter weep is recommended. A 30 ppi reticulated foam baffle, compressed to 50% original size is recommended.
WALL CONDITION	Rated wall construction by other trades.
Material	Fasteners Provided With Fireframes Curtainwall Series
CONNECTING PLATE SCREW	Connecting plate screws (Torx T25) for connecting "T" and "X" type connecting plates over mullion gasket intersections.
FACADE SCREW	Self-drilling screw (Torx T27) provided at appropriate length for connecting pressure plates and temporary pressure plates to mullions.
GLAZING PLATFORM SCREW	M6-1.0 x 16mm stainless steel flat head socket cap screws are provided for connecting bolt-on glazing platforms to horizontal mullions.
PERIMETER SPACER SCREW	#12-11 stainless steel Phillips flat head sheet metal screws are provided for connecting perimeter spacers to mullions.
SILL ANCHOR SCREW	Sill anchors that are not welded to the mullion will have an M6-1.0 x 25mm screw secure the anchor to the mullion.
SLIDING SHEAR CLIP SCREW	Frames using sliding shear clips have an M6-1.0 x 30mm screw used to lock the shear clip into position once installed.
Material	Components Provided With Fireframes Curtainwall Series
ANCHORS	Head and Sill anchors at vertical mullions are provided for jamb and intermediate mullion conditions.
CONNECTING PLATE	Connecting plates, "T" and "X" styles, fit over freshly sealed mullion gasket joints at horizontal and vertical mullion intersections.
COVER CAP	Snap on cover caps are provided for horizontal and vertical members.
COVER PLATE	Cover plates, similar to the connection plates, are used at the mullion gasket intersections at all horizontal and vertical intersections on the exterior side of the glass.
FIRE-RATED GLAZING MATERIAL	Refer to the Fire-Rated Glazing Options and Specifications, and Glazing Installation Instructions.
INTUMESCENT TAPE	REQUIRED on all applications, fire-rated intumescent tape as supplied must be installed on the glass at each opening.
PRESSURE PLATE	Pressure plate, gaskets, and guide bushings are provided.
SETTING BLOCKS	6mm calcium silicate setting blocks shipped loose for field installation. Hardwood or silicone setting blocks are also allowable.
SHEAR CLIPS	Sliding shear clips (or welded shear clips) are provided for each horizontal mullion.
MULLION GASKET	Black silicone gaskets are provided for the horizontal and vertical mullions and may be shipped loose for field installation.
TEMPORARY PRESSURE PLATE	A quantity of temporary pressure plates are provided to aid in the installation of the glass.

Figure 2 - Material Key Chart

General Information

This document is meant as a general description of typical installations. As such, it is the responsibility of the installer to ensure the frame materials are installed per the conditions that exist on any given project in accordance with these instructions and project drawings. TGP project drawings may detail modifications to the surrounding conditions required for a given project, (if architectural details or sketches were provided to TGP) and should be used in conjunction with these instructions. In the event of any conflict between these instructions and TGP project drawings, the TGP project drawings shall govern. TGP does not accept any warranty and / or liability for installations not in compliance with this document or other non-conforming use of the TGP products and / or system. Contact TGP with questions concerning these details as they apply to the particulars of a given project.

SIZING GUIDELINES

Refer to the Fireframes Curtainwall Series Architectural Specification Manual for sizing guidelines and limitations.

FIRE-RATED GLAZING OPTIONS

Technical Glass Products provides a complete line of fire-rated glazing options to complement the Fireframes Curtainwall Hurricane Series frame system. Refer to your Technical Glass Products SpecIFIRE® Selection Guide, available from your sales representative or online at www.fireglass.com.

Please consult your Technical Glass Products sales representative to determine the best option for your application.

General Information

GLAZING SPECIFICATIONS

Pilkington Pyrostop® fire resistant glass provides up to a two (2) hour fire rating. It can also be combined with other glazing products to achieve nearly any level of security protection and performance.

The Fireframes Curtainwall Series when combined with Pilkington Pyrostop at 60 minutes or greater, is classified and listed with UL as a transparent wall; a fire resistive assembly that blocks the transfer of radiant heat during a fire. Lower ratings (45 minute) are considered a window assembly.

Manufacturer's Designation	60-260 (TI) HR Triple 60-360 (TI) HR Triple	120-260 HR Triple 120-360 HR Triple
Fire Rating (minutes)	60	120
Glazing Type	Triple	Triple
Make-up outside in	6mm (¼") tempered (coated) 8mm SS Spacer 14mm HI Laminated glass with .090 SPG Interlayer 14mm SS Spacer 27mm PS 60-201 - PVB reversed	6mm (¼") tempered (coated) 8mm SS Spacer 14mm HI Laminated glass with .090 SPG Interlayer 14mm SS Spacer 40mm PS 120-202 - PVB reversed
Application	Exterior * ***	Exterior * ***
Nominal Thickness	69mm 2-11/16"	83mm 3-1/4"
Weight (approx.)	108.5 kg/m2 22.22 lbs./sq. ft.	136.5 kg/m2 27.96 lbs./sq. ft.
Daylight Transmission (approx.)	n/a	n/a
STC Rating (dB) (approx.)	n/a	n/a

NOTES: * Exterior IGU is available with Low E or Solar Control coating.

*** UL Listed as Wall Assembly as per ASTM E119 UL 263

Recommended Guidelines

1. REVIEW CONTRACT DOCUMENTS

Review architectural drawings, specifications, and approved TGP project drawings, installation instructions, and shipping lists to become thoroughly familiar with the project. The TGP project drawings take precedence and include specific details for your installation. These installation instructions are of a general nature and cover most conditions.

2. BUILDING CODES

Due to the diversity in local, state / provincial, or federal laws and the codes that govern design and application of architectural products, it is the responsibility of the individual architect / owner and installer to ensure that products selected for use on projects comply with all the applicable building codes and laws. Technical Glass Products exercises no control over the use or application of its products, glazing materials, and operating hardware and assumes no responsibility thereof. Compliance of TGP project drawings with applicable codes for a given project shall be the responsibility of the Buyer.

3. COORDINATION WITH OTHER TRADES

Coordinate with the general contractor any sequence with other trades which impact installation (i.e. fire proofing, back-up walls, partitions, ceilings, mechanical ducts, converters etc.) or in which installation may impact the work of adjacent trades.

4. INSTALLATION

All materials are to be installed plumb and level.

5. BENCH MARKS

All work should start from bench marks and/or column lines as established by the architectural drawings and the general contractor with guaranteed accuracy. Using these datum points and lines, determine:

- a. The plane of the wall in reference to offset lines provided on each floor;
- b. The finish floor lines in reference to bench marks on the outer building columns; and
- c. Mullion spacing from both ends of openings to prevent dimensional build-up of daylight opening.

6. SURROUNDING CONDITIONS

Unless specifically contracted to do so, TGP does not draw or detail the project specific surrounding conditions (the area of the building that surrounds the TGP framing). Coordination of adjacent material and construction tolerances to TGP's systems must be facilitated by the installer. TGP recommends that a professional engineer review the project drawings to verify the structural integrity of the installation. Please contact TGP if you would like a quote for fully detailed project drawings including surrounding details and or Professional Engineering (PE) services.

- a. Coordination of adjacent material and construction tolerances to TGP's systems may be facilitated by TGP as part of preparing project drawings, and these drawings may indicate acceptable tolerances for critical dimensions. The installer should verify that surrounding construction is in accordance with the approved project drawings. Do not accept rough opening dimensions less than shown on project drawings. It is assumed that the minimal joint dimensions shown on the TGP project drawings match the field conditions. A frame may fit within a given opening but sealants may not perform as detailed if a smaller sealant joint is installed. Expansion / contraction issues may also be compromised. IF THE JOINTS ARE SMALLER THAN THAT SHOWN ON THE TGP PROJECT DRAWINGS, DO NOT PROCEED. Notify the General Contractor that the conditions are not as detailed and wait for corrective work to be completed before starting this work.

Recommended Guidelines

- b. The installer MUST notify and receive approval from TGP and the general contractor when conditions are not in accordance with approved project drawings and/or change any aspect of the structural performance of the Fireframes Series before making any modifications to the TGP-furnished material or making changes which are different from those shown on the TGP project drawings. These conditions include, but are not limited to, anchor placement/location, changes in adjacent materials the anchor is being connected to or changes to dimensional relationships between framing, anchors and connection to adjacent materials.
- c. TGP must review and approve in writing any changes required prior to the subcontractor installing any “corrective” work. These reviews may incur additional charges, which must be approved by the TGP customer prior to TGP’s review.

7. FRAME CONSTRUCTION VARIES

All frames are shipped “K-D” (knock-down) and are to be assembled on site. TGP does not pre-assemble frames prior to shipment as the method for doing so is not intended for long shipping distances. Component parts such as anchors, spacers, and gaskets are shipped loose. Depending on the installer’s preference, some of these components may be pre-assembled at your shop prior to transporting to job site.

8. FASTENING

Within the body of these instructions, “fastening” means any method of securing one part to another or to adjacent materials by means other than welding, adhering or using a mechanical fastener as shown on the approved details. Per the UL test report ½” x 3-1/2” lag bolts have been tested, x2 at the jambs and x4 at the intermediate anchors. Any modifications to the installation due to perimeter conditions and/or performance requirements are at the discretion of the AHJ and can be calculated via comparative analysis provided by a PE.

9. SEALANTS

- a. Sealants must be compatible with all materials they are in contact with, including other sealant surfaces. Consult with sealant manufacturer for recommendations relative to joint size, shelf life, compatibility, cleaning/priming, tooling, adhesion, etc.
- b. The chemical compatibility and/or adhesion of all glazing materials and framing sealants with each other and with like materials used in glass and frame fabrication must be established by the installer. This is required on every project.
- c. If required by the project specifications, it is the responsibility of the glazing contractor to submit any documentation or samples from the sealant manufacturer indicating that glass and glazing material has been tested for chemical compatibility and / or adhesion with glazing sealants. **This applies to all TGP materials in contact with any sealant.** TGP will furnish samples of these materials upon request.
- d. The implementation of the test results is the responsibility of the installing contractor, and includes material performance and recommendations for primers and substrate preparation required to obtain adhesion.

10. PERIMETER JOINTS

Perimeter seals and/or expansion joints shown in these instructions and in the TGP project drawings are shown at nominal size. Actual dimensions may vary due to perimeter conditions and / or difference in metal temperature between the time of fabrication and the time of installation. Design and detailing have been based on a fabrication / installation temperature of 70° F (21° C). If extreme temperatures exist at time of installation, gaps between expansion members may require slight adjustment.

Recommended Guidelines

11. CLAMPING SCREW TORQUE

Edge pressure must not exceed 11.5 pounds per linear inch. This pressure is required on the Fireframes Curtainwall series mullion gaskets. It must be uniformly applied by the exterior mounted pressure plate, through the glass, to the mullion gaskets. **Excessive or irregular edge pressure WILL CAUSE deformation and breakage.**

12. WATER HOSE TEST

Exterior installations may require a water test in accordance with AAMA 501.2. As soon as a representative amount of the wall has been glazed (500 square feet or .46.5 square meters) a water hose test should be conducted. This test should be repeated for every 500 square feet (46.5 square meters), or as stipulated by specification, after all components have been installed.

13. FIELD ANCHORS

Steel or stainless steel anchors that are welded to steel structure or are bolted to embed must be line set before mullions are placed. Outstanding leg of anchors must be at 90° to offset lines. Mullion spacing should be held to $\pm 1/32"$ (0.8 mm). Anchor sometimes vary per job conditions. On stainless steel mullion projects, stainless steel anchors may be used, therefore, proper welding procedures must be followed. Always refer to approved project drawings for specific job site conditions.

- a. AWS-certified welders are recommended to be used to install all field weld conditions called out in the TGP project drawings. The responsibility of using experienced, certified welders is the installing contractor's, not TGP's.
- b. All field welding must be adequately shielded to avoid any splatter on glass or frame components. Results of inadequately shielded field welding will be unsightly and /or structurally unsound. Advise general contractor and other trades accordingly.
- c. TGP typically finishes all steel material to protect from corrosion during shipping and storage on site prior to installation. For powder coated finishes, it is required to grind off the finish at the expected weld location prior to welding operations. The field weld must be re-finished with a zinc rich primer (in unexposed areas) or with touch-up paint (in exposed areas) after the welding is completed. Welds should never be left unpainted or unfinished. TGP can furnish small quantities of touch-up paint as required to match the original finish.

14. STAINLESS STEEL

On projects with stainless steel mullions specified, certain precautions must be taken for proper installation.

- a. When fastening any screw into the mullion, a constant torque tool such as a regular drill or screw gun must be used. Impact style "bit-drivers" must NOT be used as the increased torque will likely break the screws.
- b. If field drilling the mullions is required, sharp drill bits must be used with constant pressure maintained on the drill bit at all times to avoid work-hardening the hole. Lubrication, such as a cutting fluid, is recommended.

ATTENTION: Stainless steel fasteners used on this system need special care during installation. Loctite® brand anti-seize must be used for all stainless steel fastener installation. If no lubrication is used, the fasteners have a higher chance of galling and seizing during installation; this will either strip or break fasteners. If the fastener seizes or strips, the fastener must be removed and replaced. Final fastener tightening should be done in accordance with other sections as described herein.

Assembly and Installation

1 RECEIVING AND INSPECTION

- 1.1 **CRITICAL:** Refer to **PRODUCT RECEIVING AND HANDLING** instructions provided separately for guidance on proper receiving and handling procedures.

2 PREPARE PERIMETER CONDITION

NOTE: CRITICAL: *Allow for joint sizes at all perimeter conditions per the approved Fireframes project drawings. It is presumed that the minimum joint dimensions shown on the approved Fireframes project drawings match the field conditions. If the joints are smaller than that shown, do not proceed. Notify the general contractor that the conditions are not as detailed and wait for corrective work to be completed before starting this work.*

- 2.1 Coordinate work with adjacent trades through the general contractor. Ensure all required materials are on-site and surrounding conditions are completed when the installation is scheduled to start.
- 2.2 Work with a general contractor to determine which layout control lines will be used for installation. Layout of wall and mullion placement is presumed to have already taken place in relation to:
- Building control lines;
 - Building grid or column lines;
 - Within rough openings, and;
 - Other conditions, as required by the specific project.
- 2.3 Remove loose debris.
- 2.4 Ensure adjacent trades are ready to receive framing and eventually receive perimeter sealant or other waterproofing as detailed on the approved Fireframes project drawings.

3 PREPARE FRAME FOR INSTALLATION

- 3.1 General.
- Refer to **System Exploded Assembly View** and **Material Key Chart** for list of typical parts used.
 - Refer to final approved revision of Fireframes project drawings for actual project conditions.
 - Coordinate work with adjacent trades through the general contractor.
 - Ensure all required materials are on-site and surrounding conditions are complete when the installation is scheduled to start. If they are not, do not begin.
 - If mullions have not already been gasketed, apply gaskets (Section 8) before installing mullions.
 - Protect frames during installation to avoid finish damage.
- 3.2 Locate Sill and Head Anchor Locations.

NOTE: *Steel anchors that weld to steel structure or are bolted to embeds, must be line set before mullions are placed. Upstanding leg of anchors, and hence vertical mullions, must be at 90° to offset lines. **Vertical mullion spacing should be held to 1/32" (0.8 mm).***

- Using building control lines, or other datum, independently locate each anchor position at head and sill condition.
- Mark location of perimeter anchor hole locations.
- Predrill anchor holes once all vertical mullion anchor locations are verified if bolted connections are required.

4 INSTALL VERTICAL MULLIONS

NOTE: If the approved drawings indicate an intermediate mullion splice or wind load or dead load anchors, then installing these anchors may be required prior to installing upper vertical mullions at head. See sections 5 and 6 before proceeding.

- 4.1 Work from one end of elevation to the other.
- 4.2 Sill Anchors are normally designed as “dead load” anchors and may be welded or mechanically fastened to the vertical mullions (Figure 5).
 - a. If mechanically fastened, secure sill anchors with supplied fastener to mullions.
 - b. If field welded, have an AWS certified welder attach anchors to mullions per project drawings.
 - c. If factory welded, continue to next step.

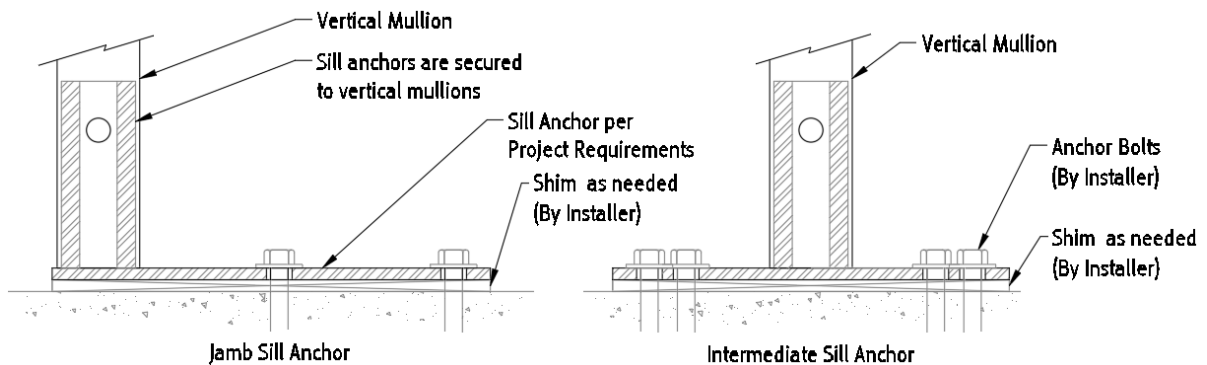


Figure 3 - Sill Anchor Installation

- 4.3 Slide dynamic head anchors (which allow for vertical movement) into top of vertical mullions (Figure 6).
- 4.4 Lift vertical mullions into position aligning head and sill anchors with predrilled anchor holes.

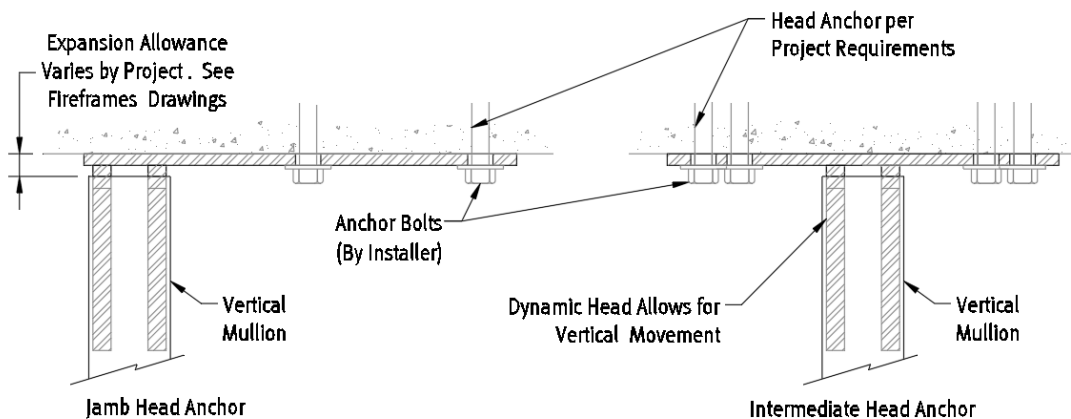


Figure 4 - Dynamic Head Anchor Installation

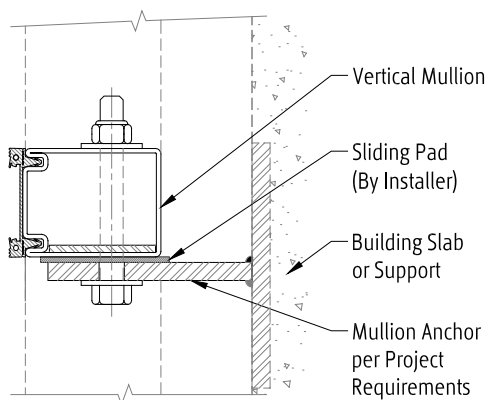
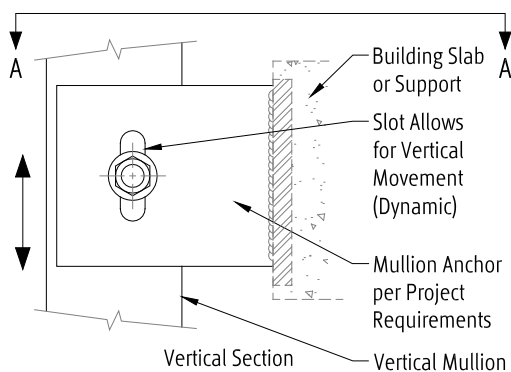
- 4.5 Shim if required.
 - a. Shims may be used at the sill anchors to ensure proper location and elevation of the vertical mullions.
 - b. Steel shims are recommended, but other nonflammable materials able to withstand the weight of the system may be used.
 - c. Shims must not be so tall that they compromise anchor bolt function and should be verified with engineer of record if taller than shown on approved drawings.
 - d. Shims at head should allow free movement of mullion on anchor as dimensioned on Fireframes drawings.
- 4.6 Install sill and head anchor bolts, but do not fully tighten.
- 4.7 Verify mullions are plumb and square, and correct spacing is maintained between verticals, adjusting if necessary.
- 4.8 Tighten anchor bolts.

5 INTERMEDIATE WIND LOAD (DYNAMIC) AND DEAD LOAD (FIXED) ANCHORS

NOTE: *Wind load anchors, if required, can be installed at any point during this sequence (Figure 7). Dead load anchors (Figure 8) must be installed before upper mullion section and head anchors are installed.*

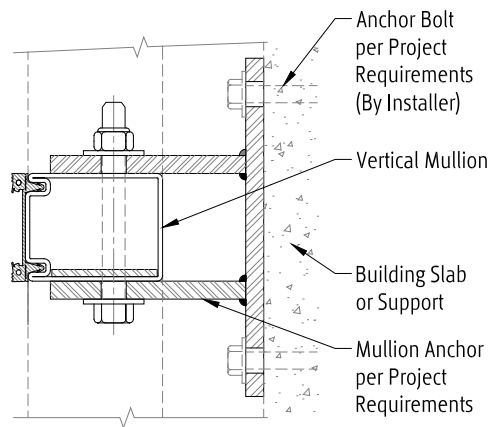
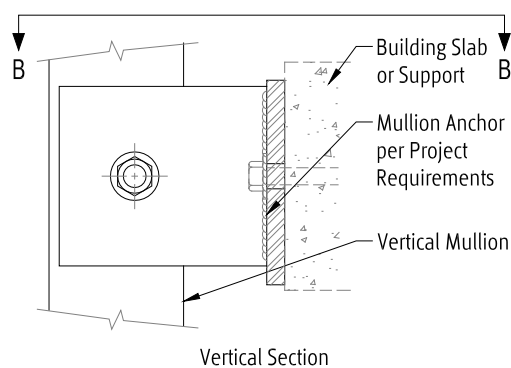
- 5.1 When conditions require on tall curtainwalls, the vertical mullions may be fabricated with additional intermediate dead load anchors, and/or intermediate wind load anchors. Install these anchors when standing the mullion prior to installing any additional mullions above and before installing the head anchors.
- 5.2 When field drilling mullion for anchor bolt, hole in mullion should be centered vertically in the slot of the intermediate wind load anchor.
- 5.3 When installing anchor bolt for wind load anchor, back off nut 1/4 turn after tightening to allow for thermal movement.

NOTE: *The minimum distance from anchor bolt / slot centerline to back of mullion. DO NOT drill mullion if dimension is smaller than shown on the approved Fireframes drawings. Written approval must be given if dimension is smaller than shown on drawings.*



Top Section View A - A

Figure 5 - Typical Intermediate Wind Load Anchors



Top Section View B - B

Figure 6 - Typical Intermediate Dead Load Anchors

6 MULLION SPLICE CONDITIONS

6.1 General.

- Vertical mullion splices are typically used when lengths over 19'-8" (6 meters) are required.
- Wherever practical, splices are located above an intermediate anchor, allowing mullion installation with two anchors per single mullion, per the previous instructions. Both anchors should be set prior to stacking the mullions at splices.
- Splice plates are factory welded to lower mullion section.
- Splices may be "fixed" where the upper mullion is fastened to the lower; or "dynamic" where no fastening is done to allow for expansion and building movement.
- The 60 mm profile width can accept a maximum dynamic splice joint of 3/8" (9.5 mm).
- The 45 mm horizontal profile width cannot be used with a dynamic splice as there is not enough room in the glazing pocket to allow for closure of the joint.
- Installation sequence below presumes space exists above upper mullion to raise and lower section onto mullion below. If not, preassembly of the splice may be required before erection.

6.2 Fixed (Hard) Splice Conditions.

- Slide upper mullion section squarely onto splice plates on lower mullion section.
- Secure upper mullion to lower mullion using fasteners as shown in project drawings through pre-drilled holes in mullion and pre-tapped holes in splice plate (Figure 9).
- Repeat at each mullion.

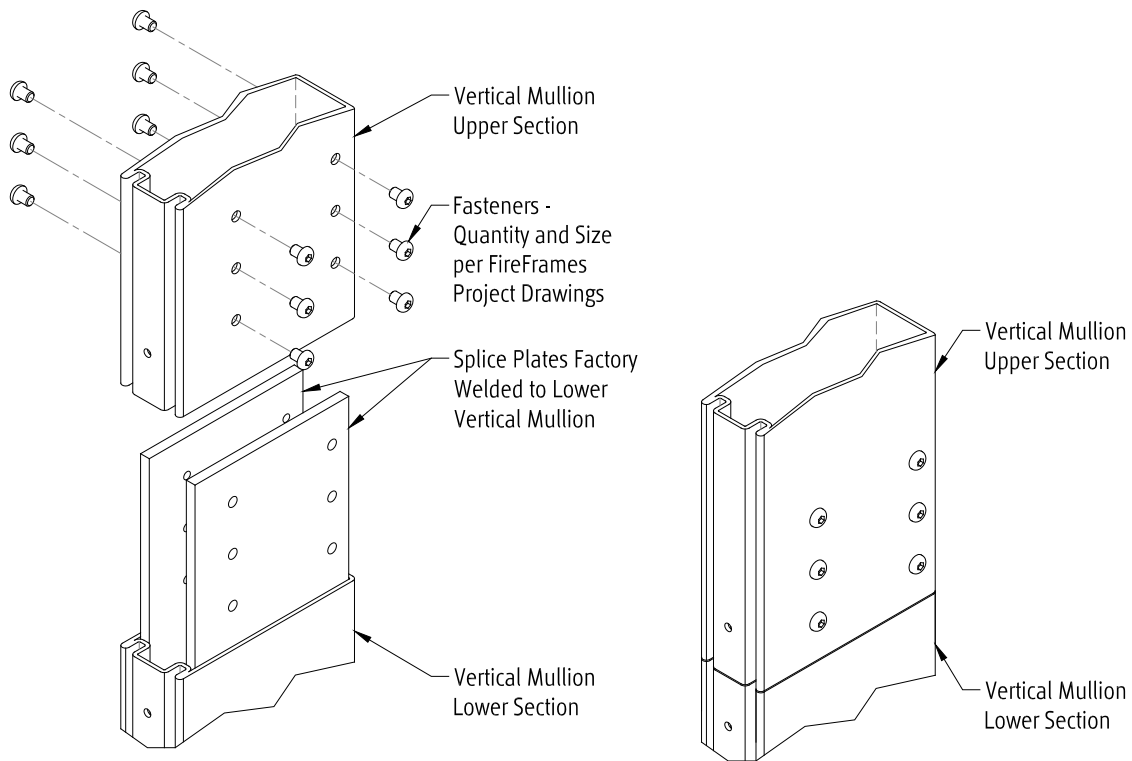


Figure 7 - Fixed Splice Detail

NOTE: A “Soft” splice condition may also be employed where fasteners are not required joining the upper mullion section to the welded splice plates on the lower mullion; and no gap for expansion is allowed at the splice unlike that of the Dynamic Splice Condition.

6.3 Dynamic Splice Conditions

- a. Slide upper mullion section squarely onto splice plates on lower mullion section (Figure 10).
- b. Allow for joint spacing as per approved project drawings. Hold gap with temporary shims if necessary until upper mullion fixed anchor can be installed.
- c. Repeat at each mullion.

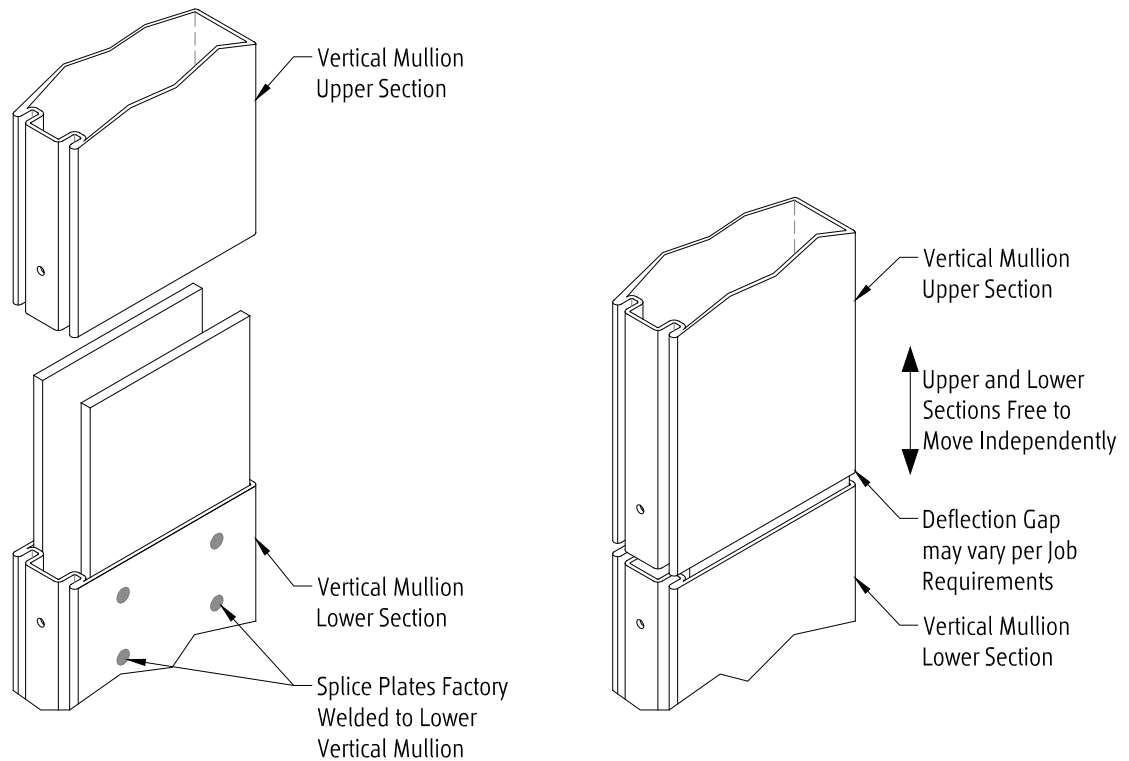


Figure 8 - Dynamic Splice Detail

7 INSTALL HEAD, SILL, AND INTERMEDIATE HORIZONTAL MULLIONS

7.1 General.

- There are two methods for connecting horizontal mullions to the vertical mullions: Sliding Shear Clips or Welded Shear Clips.
- Glazing platforms may be bolted (typical) or welded on depending on project requirements, and are factory installed on sill and intermediate horizontals.
- Determine which methods your project is using from the approved project drawings.
- Care must be taken not to scratch the vertical mullions during installation. Taping the vertical mullions is recommended **ONLY** if the tape used is low tack and is completely removed immediately after horizontal installation. Test tape in an inconspicuous area before use.

7.2 Sliding Shear Clip Method

- A U-shaped sliding shear clip must be located at each end of each horizontal with the legs pointing away from the glazing pocket, and the pins oriented out of the horizontal (Figure 11).
- Vertical mullions are pre-drilled to accept the sliding shear clip pins.
- A countersunk slot for one M6 screw (holding screw) is located under the gasket between the end of the mullion and the glazing platform.

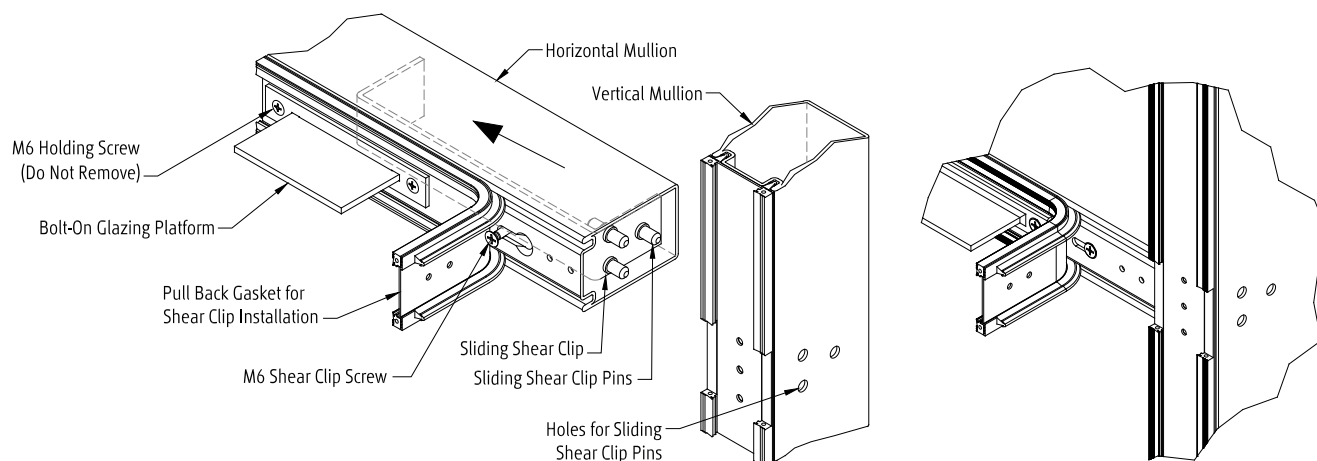


Figure 9 - Sliding Shear Clip Installation

NOTE: Holes shown in gasket web, here and in other illustrations are not pre-punched and are shown only to represent the underlying mullion holes for connecting plates. Hole will be made by the fastener when installing connecting plates.

- Partially lift gasket back from end of horizontal mullion near the glazing platform exposing the countersunk slot.
- Insert sliding shear clip into end of mullion with legs pointing away from gasket.
- Using the supplied M6-1x30 SS FMHS fasten the sliding shear clip to the horizontal mullion through the countersunk slot in the mullion. Screw should be loose enough to slide shear clip back and forth over the length of the slot.
- Repeat at opposite end of the horizontal mullion.
- Carefully install horizontal mullion between vertical mullions by sliding into place with as minimal up and down movement as possible to avoid marring the finish.
- Using the head of the loosened M6 fastener, carefully slide shear clip into place at each end until head of fastener is centered over countersunk hole at the end of the slot ensuring pins are fully engaged into vertical mullion.
- Tighten M6 fasteners until seated in countersunk end of the slots (Figure 12).
- Replace gasket where lifted back to expose slot.

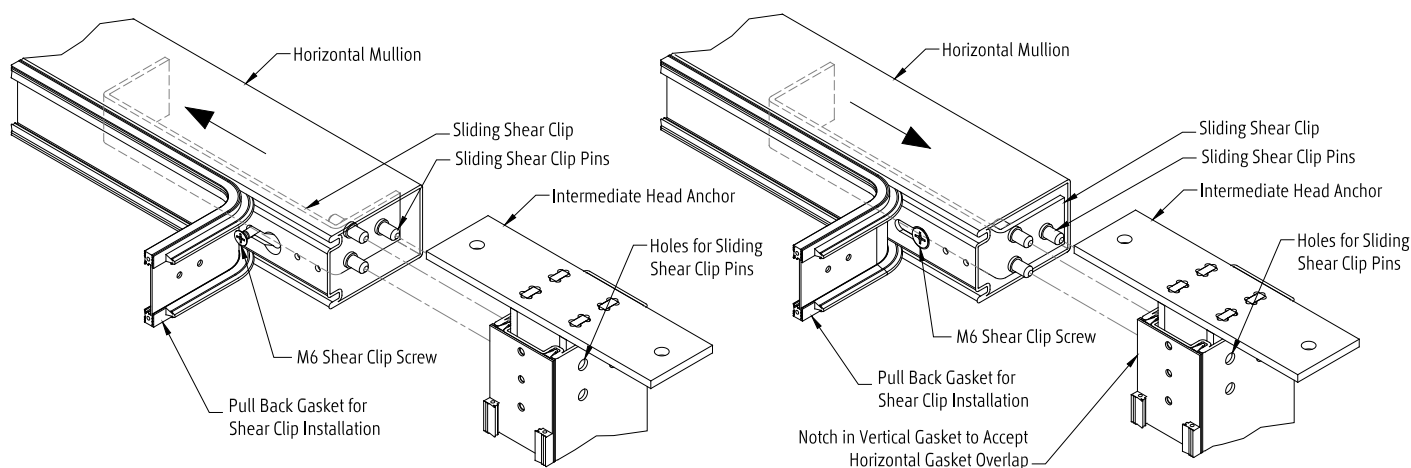


Figure 10 - Sliding Shear Clip Installation at Head

7.3 Glazing Platforms

- a. Bolted glazing platforms
 - (1) Are factory installed, and
 - (2) Should be checked for fastener tightness (5 ft.-lbs.) upon mullion installation to ensure screws did not loosen during transit.
- b. Should a mullion gasket becomes damaged or need replacing, the bolted glazing platforms will need to be removed and re-secured over the new gasket. See section 8.

Install FIRESAFEING

7.4 General.

- a. Minimum perimeter joint is ½" (13mm).
- b. See approved Fireframes project drawings for any project specific finish seals or trim required.
- c. See Figures 45 and 46 for typical installation.
- d. Firesafing and Perimeter Seals in many cases may be installed before Step 13 – Glazing at the installer's option.
- e. Glazing cavity should be cleared of debris before installing perimeter seals to ensure weeps (exterior applications) do not get blocked.
- f. Firesafing, sealants, weeps and weep baffles are supplied by others and are not included with the Fireframes system components.

7.5 Exterior Applications.

- a. Install fire rated insulation such as mineral wool, around the entire perimeter from both sides of the cavity, firmly packing it into place (Figure 47).
- b. Install a bead of fire rated caulk (e.g.: 3m CP25WP+) behind flexible flashing at perimeter, meeting ASTM E 1966 (UL 2079) standards for fire-resistive joints.

NOTE: This will expand filling the cavity as the flashing becomes sacrificed in a fire.

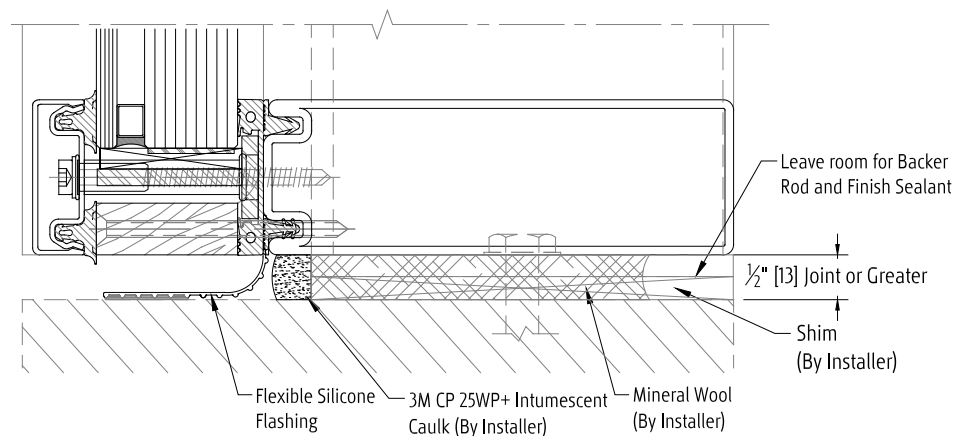


Figure 13 - Firesafing (Exterior Applications)

8 MULLION GASKETS

8.1 General.

- a. The horizontal and vertical mullion gaskets must be notched, overlapped, and must be sealed to fully perform in applications where air and water tightness is critical.
- b. Gaskets may be pre-fabricated and pre-applied, or may be supplied loose for field installation.
- c. If field application is selected, custom notching tools are available for purchase to aid in notching at verticals and the horizontal ends.
- d. Fabricated gaskets are sized 1% over the nominal length (1/8" per 12" of gasket). This added length (gasket "crowd") allows for shrinkage after installation.
 - (1) Vertical gaskets are sized equal to the mullion length, plus 3/8" for overlap at sill flashing, plus crowd.
 - (2) Horizontal gaskets are sized equal to the mullion length, plus 3/4" for overlap (3/8" at each end), plus crowd.
- e. Damaged gasket **MUST** be removed and replaced. Damage includes but is not limited to:
 - (1) Holes or cuts made in the web of the gasket,
 - (2) Punctures, gashes, etc. to any portion of the gasket along its length, or
 - (3) Any damage which would allow air or water penetration through the gasket.
- f. Care **MUST** be taken in cleaning, priming and/or sealing the gaskets as described herein to permit the system to perform as expected when installation is complete.
- g. Exterior mullion gaskets are typically extruded silicone. Interior mullion gaskets and all pressure plate gaskets are typically EPDM. Installer should verify gasket type at each location and select sealant compatible with these materials.
- h. Exterior horizontal mullion gaskets may be supplied with an integral diverter membrane attached to the lower bulb when installed. This diverter helps keep water off of the top of the glass and diverts water to the verticals.

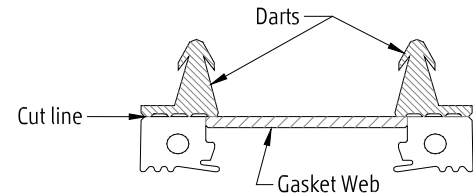


Figure 11 - Mullion Gasket

NOTE: For **INTERIOR APPLICATIONS**, gaskets may be shipped loose for field application. The installation method is the same, however, sealing of the joints is not required.

8.2 Vertical Gasket Notching

If gaskets require replacement, or if gaskets are to be field installed, follow these steps for typical gasket notching at horizontals. See 8.1.d for sizing.

- a. Vertical mullion gaskets are notched to either 44 mm (45 mm system width) or 59 mm (60 mm system width) depending on which system is employed.
- b. Refer to Figure 17 for appropriate notch size and location.
 - (1) Notches are to be centered with the centerline of the horizontal mullions.
 - (2) Notches at jamb verticals are only made to inboard leg of gasket.
 - (3) Notches at vertical intermediates are made to both legs of gasket.
 - (4) DO NOT cut or remove gasket web or darts.
 - (5) DO NOT oversize or MIS-LOCATE notches.

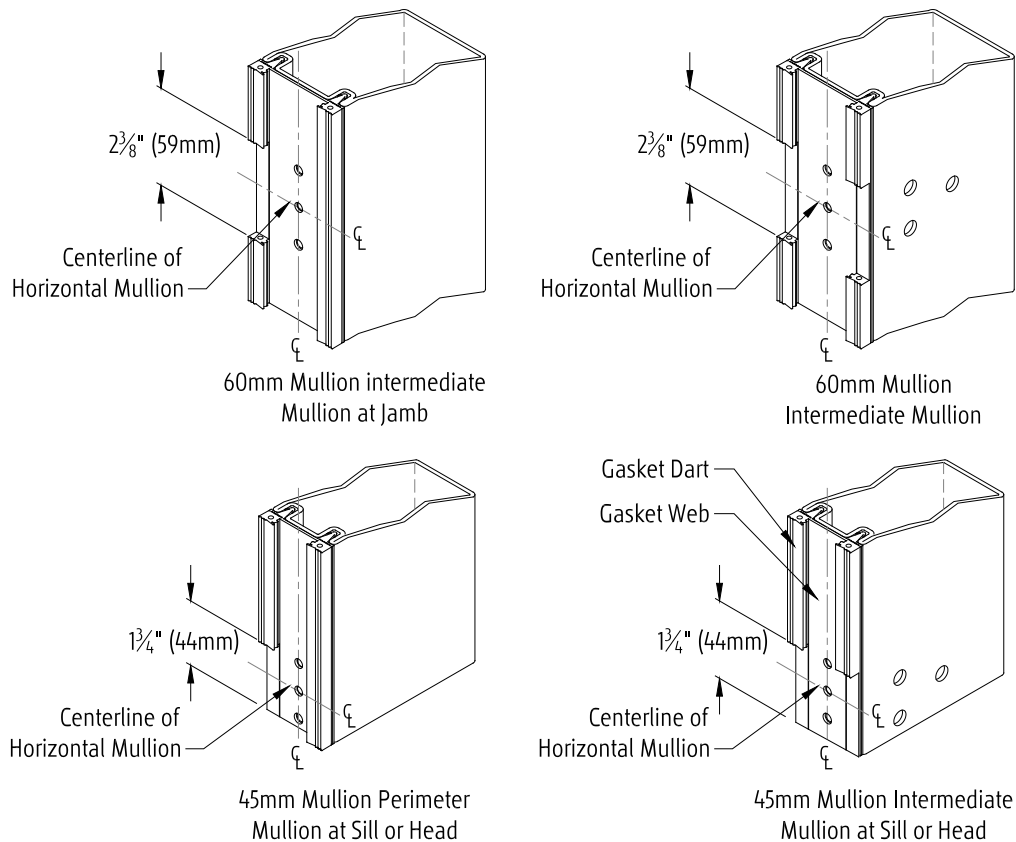


Figure 12 - Vertical Mullion Gasket Notching

8.3 Horizontal Gasket Notching.

If gaskets require replacement, or if gaskets are to be field installed, follow these steps for typical gasket notching at horizontals. See 8.1.d for sizing. All horizontals (head, sill, and intermediate intersections) are notched the same.

- Remove a 3/8" (9 mm) portion of each dart at each gasket end. The dart-less portion will overlap the web of the vertical gasket notch previously made.
- DO NOT cut or remove gasket web.

8.4 Gasket Installation.

- Install starting at one end of mullion, align darts with mullion end, and firmly press into gasket races approximately 1"-2" along length of mullion.
- At opposite mullion end, firmly press darts into gasket races, approximately 1"-2" along length.
- Move to middle of mullion, and firmly press darts into gasket races approximately 1"-2"
- Continue pressing gasket at midpoint of each two previously pressed in areas, to evenly distribute the 1% gasket crowd, until gasket is fully seated into gasket races.
- Verify notches in vertical mullion gasket are aligned correctly with horizontal locations and reset if necessary.
- Verify installed gasket has no damage as noted above.

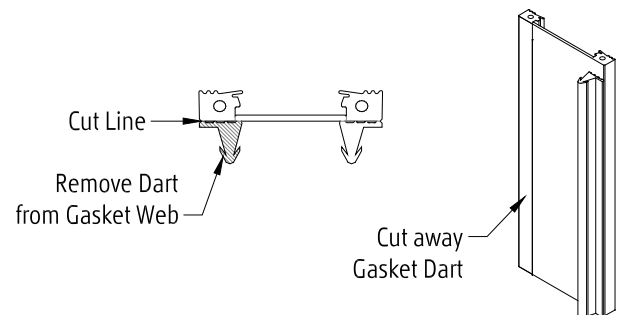


Figure 13 - Gasket Notching Detail

8.5 Gasket Across Mullion Splices

- a. Vertical gasket should extend continuously across splice in a single piece the length of the vertical where possible.
- b. If gasket splices are required, they should be located approximately 6" (150 mm) beneath splice in the two vertical mullions.
 - (1) Upper mullion gasket should be longer by 6" (150 mm) and the lower mullion gasket will be shorter by this amount.
 - (2) Lower mullion gasket will have the bulbs removed by 3/8" (9 mm).
 - (3) Upper mullion gasket will have the darts removed by 3/8" (9 mm).
 - (4) Web of upper mullion gasket should overlap web of lower mullion gasket when installed.

NOTE: For factory installed vertical gaskets over splices, the gasket is removed from the upper mullion section(s) and rolled up with the installed portion of the lower mullion gasket. It is **CRITICAL** when reapplying that the notch locations for horizontals are centered correctly, and the gasket crowd taken into consideration.

9 FLEXIBLE FLASHING

9.1 General.

- a. Exterior applications are typically supplied with a flexible silicone flashing for all perimeter mullions.
- b. The dart nearest the perimeter must be removed from the mullion gasket to make room for the flexible flashing which will be installed and sealed underneath the mullion gasket.
- c. Joints in straight runs should be minimized, but where required, allow for 1" of overlap.
- d. Molded corner gaskets may be supplied for transitioning jamb to sill and jamb to head conditions.

9.2 Remove gasket from horizontal mullion if installed.

9.3 Carefully remove dart from side nearest the perimeter as shown in Figures 19 and 20.

9.4 DO NOT cut into the webbing of the gasket.

9.5 Replace gasket into mullion as noted in section 8.4 above.

9.6 On horizontal gasket runs where a vertical intersects the gasket, notch the dart on the flexible flashing for overlap on the vertical mullion.

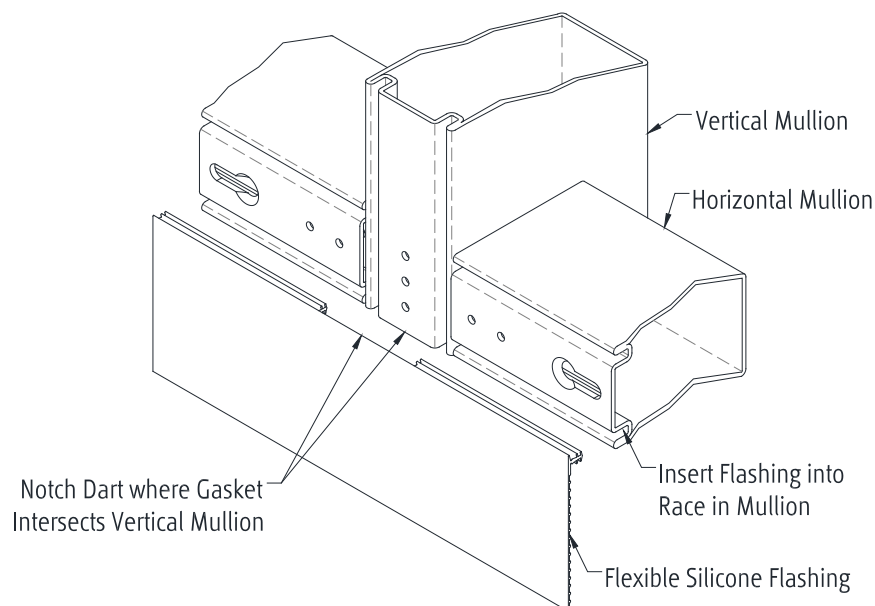


Figure 14 - Flexible Flashing at Exterior Perimeter Sill

- 9.7 Lift mullion gasket along edge where dart was removed.
- 9.8 Insert flexible flashing into each perimeter mullion's outer gasket race. Mullion gasket with dart removed will lay over flexible flashing and will be sealed as described in section 11.3.

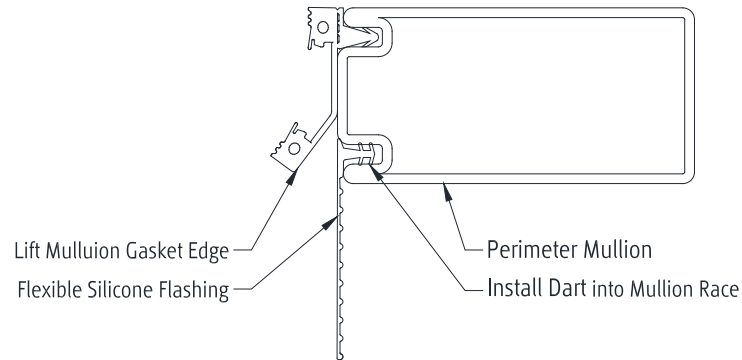


Figure 15 - Mullion Gasket Over Flexible Flashing

- 9.9 Install molded corner flashing at corners and lap ends of linear flexible flashing over molded corner piece.

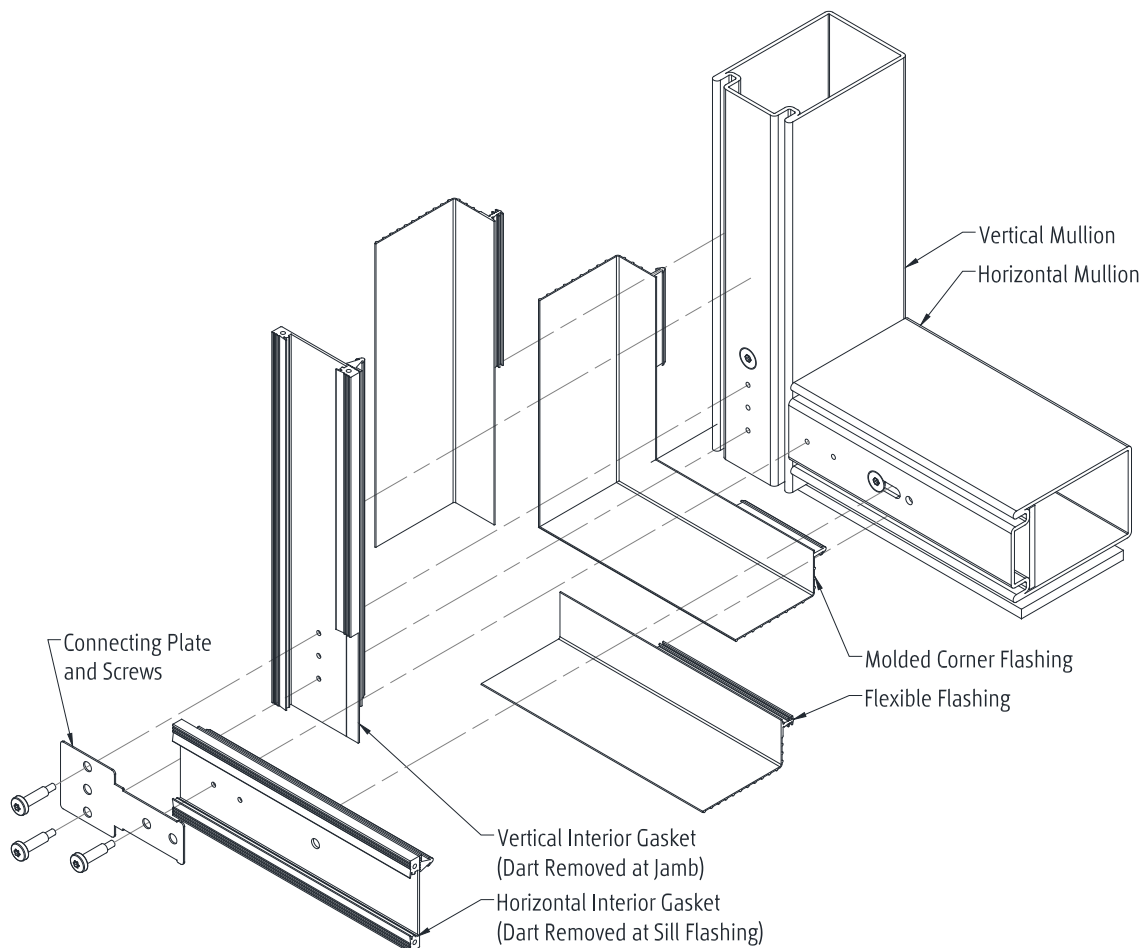


Figure 16 - Flexible Flashing at Corner Intersections

10 SEALING GASKETS

10.1 General

- Once all gaskets and flashings are properly installed the full surface contact between gaskets must be sealed with a compatible sealant.
- Any gaps between the gaskets must be sealed unless otherwise noted.
- Fresh sealant should be applied to visible gaps, leaving the glass area free and clear of any sealant.
- Ensure excess sealant does not remain on ribbed portion of gasket bulb. Excess cured sealant WILL NOT ALLOW the glass to be properly sealed on the gasket and leaks may occur; additionally, it may result in pressure points on glass, leading to breakage.**
- For interior applications, sealant of gaskets may be omitted if desired as noted in section 8.1 above.

NOTE: For **EXTERIOR APPLICATIONS**, full adhesion between the gaskets is mandatory to ensure a continuous weather seal!

10.2 Sealing Mullion Gasket Intersections.

- Clean and prime the gaskets per the sealant manufacturer's requirements.
- Generously apply a continuous bead of sealant to vertical gasket notch (top, back and bottom edges) before lapping the horizontal gasket over; repeating at all joints where horizontal and vertical mullion notches occur.
- DO NOT** let joints at intersections cure before installing the connecting plates (See section 12).

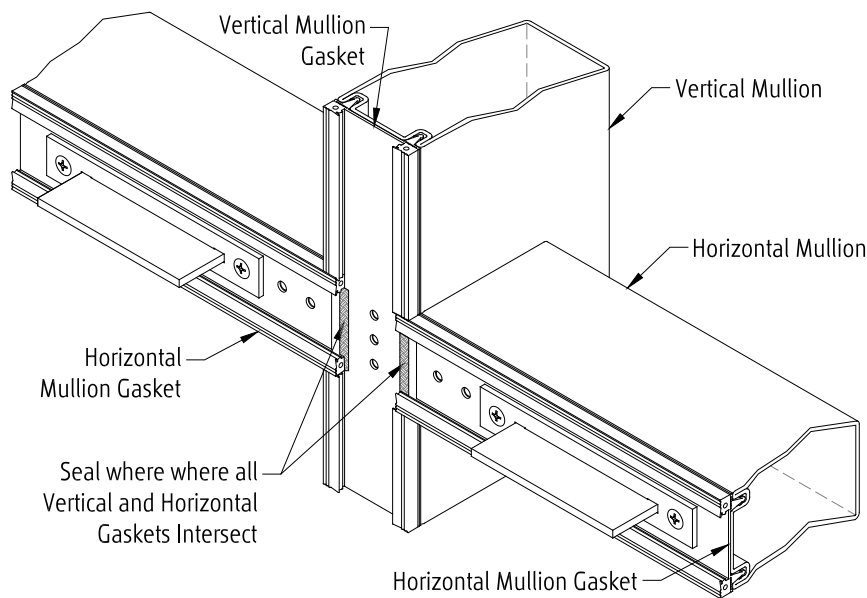


Figure 17 - Sealing Gasket Intersections

10.3 Sealing Flexible Flashing.

- Clean and prime the gaskets per the sealant manufacturer's requirements.
- Generously apply a continuous bead of sealant at all joints where flexible flashing and mullion gasket web overlap, including the corners and any vertical mullion gasket overlaps.
- Joints or overlaps in straight sections should be minimized, but if required seal the 1" overlap allowed for.

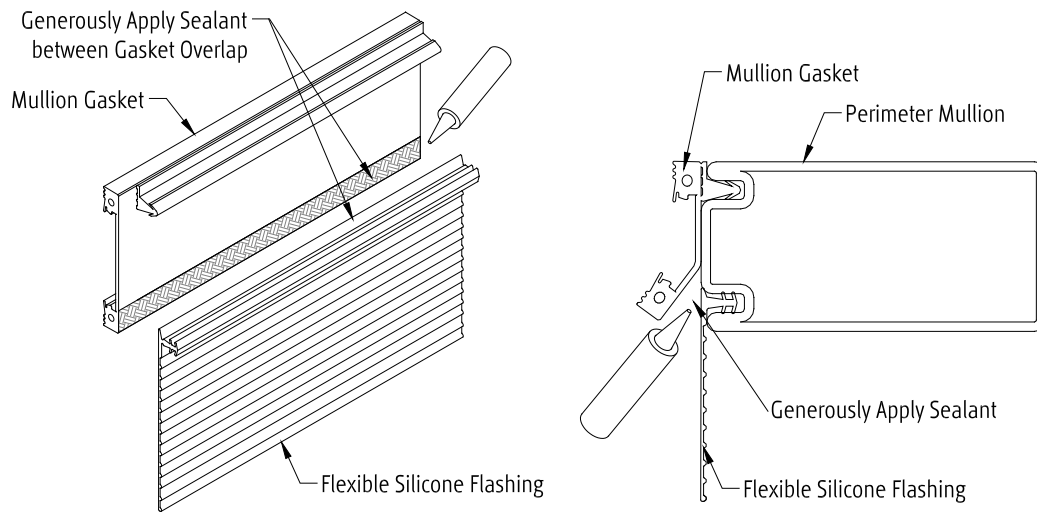
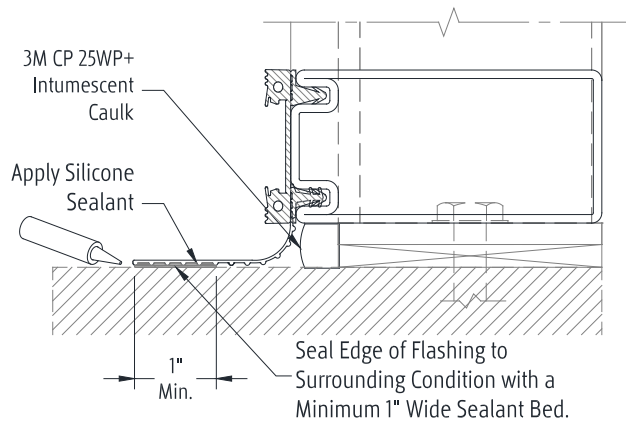


Figure 18 - Sealing Flexible Flashing Joints

- d. Molded Corner Flashings may have been supplied, and should be adequately sealed.
- e. Where linear flexible flashing meets a corner, ensure corner is covered by adjacent flashing by 1" minimum.



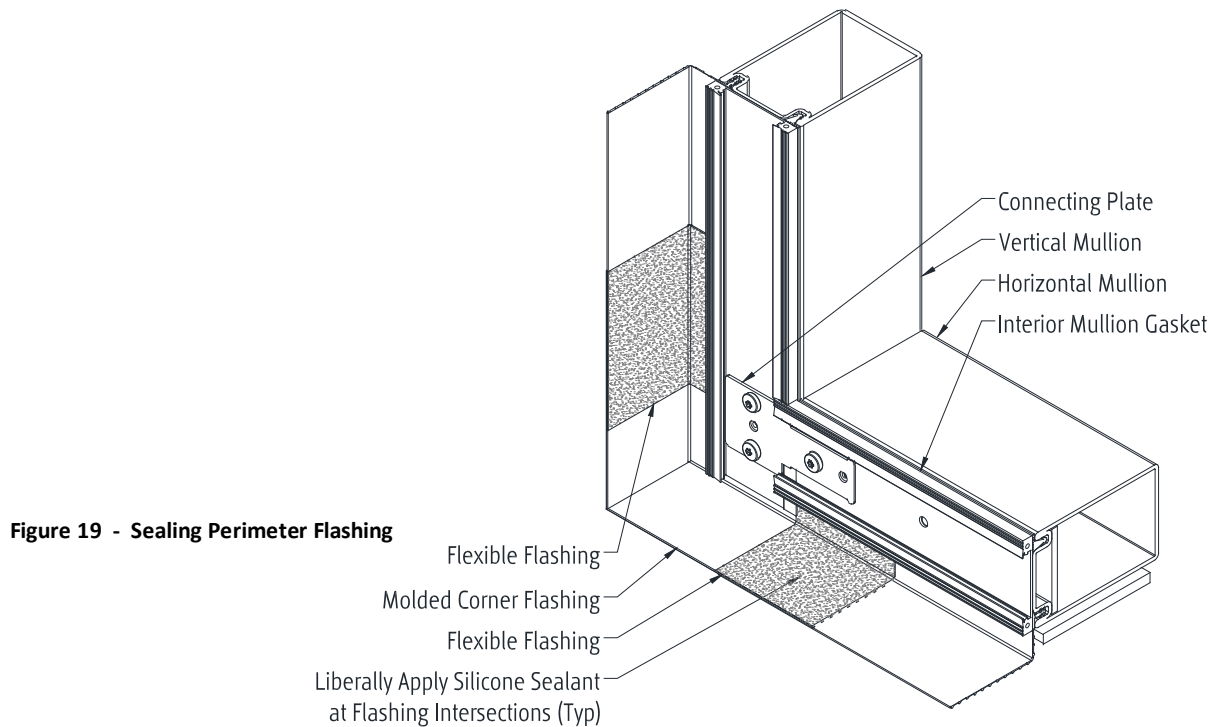


Figure 20 - Sealing Corner Flashing Joints

- f. Seal outside leg of flexible flashing to surrounding condition with 1" minimum of sealant coverage (Figure 24).

NOTE: See Section 16 Firesafing and Perimeter Seals. Before sealing leg of flexible flashing, ensure firesafing is installed behind flashing.

10.4 Sealing Vertical Mullion Splices.

- a. Mullions with splices may have gaskets installed in two or more sections.
- b. Gasket splice should be approximately six inches below the mullion splice.
- c. Top of lower mullion gasket will have 10mm of the bulbs removed.
- d. Bottom of upper mullion gasket will have 10mm of the darts removed and will overlap bottom gasket when installed.
- e. The web of both gaskets should remain intact.
- f. Apply silicone sealant to gasket edges and faces as shown in Figure 26.
- g. Install patch over gasket splice and tool sealant off as shown.
- h. **DO NOT** allow sealant to cure prior to installing glass at this joint as doing so may cause irregular pressure on the glass after installation.

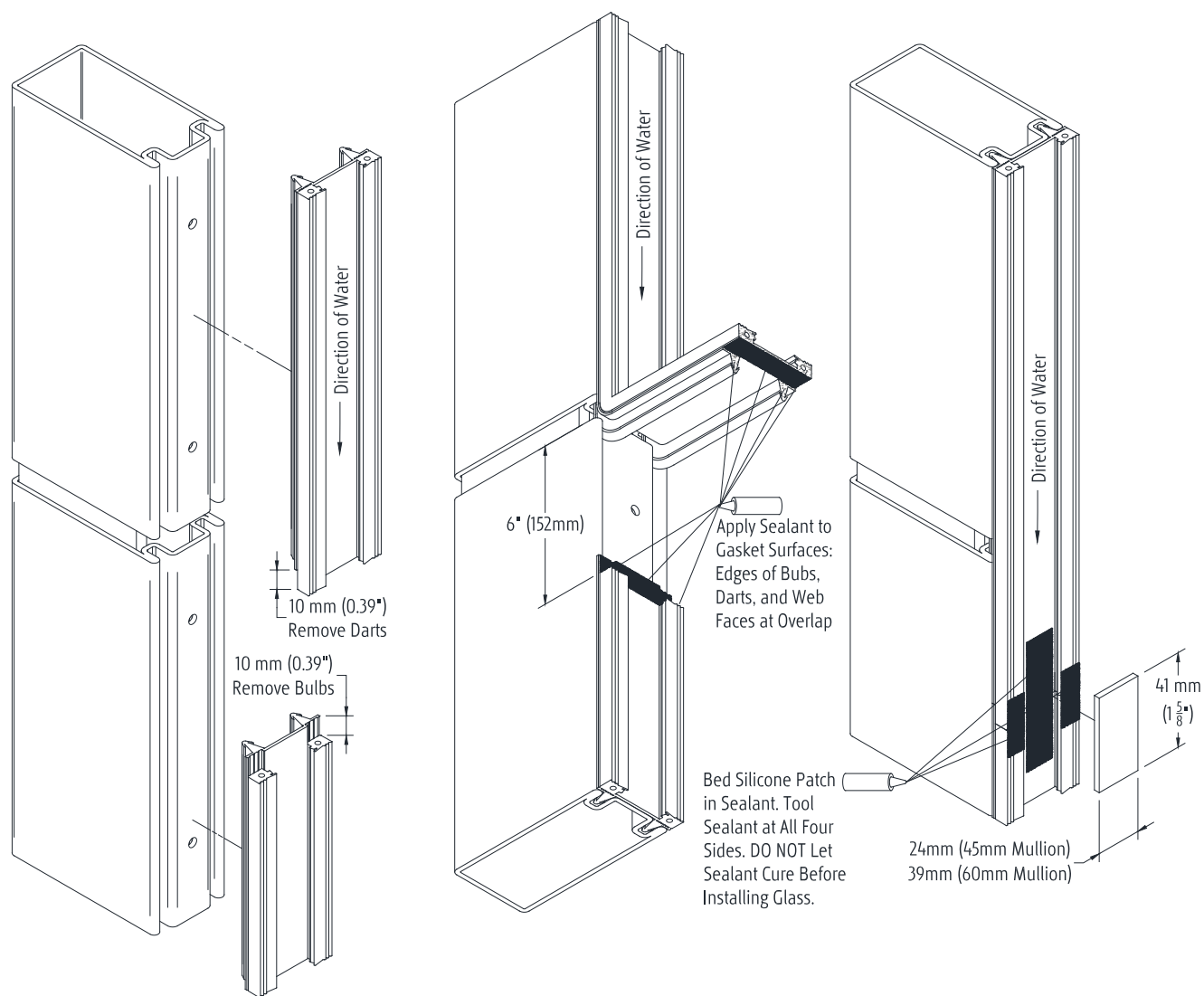


Figure 21 - Vertical Mullion Gasket Splice Sealant Detail

11 CONNECTING PLATES

11.1 General.

- Connecting plates fit over freshly sealed gasket joints.
- Single connecting plates are at “T” intersections where horizontal mullions are on only one side of a vertical mullion.
- Double connecting plates are used at “X” intersections where horizontal mullions are on both sides of a vertical mullion.

11.2 Install appropriate connecting plate at each intersection as you seal each joint.

11.3 Use the supplied self-drilling screws to fasten the plates to the mullions using the factory located pilot holes for alignment.

11.4 Ensure the connecting plate is fully seated with no gaps between connecting plate and gasket.

NOTE: *Not all holes in the connecting plates get fasteners at this point. Only locate screws in the holes as shown in Figures 24 and 25.*

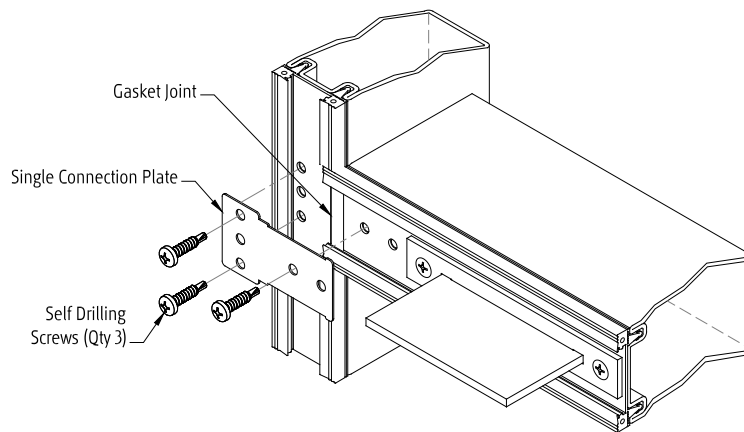


Figure 22 - Single Connecting Plate

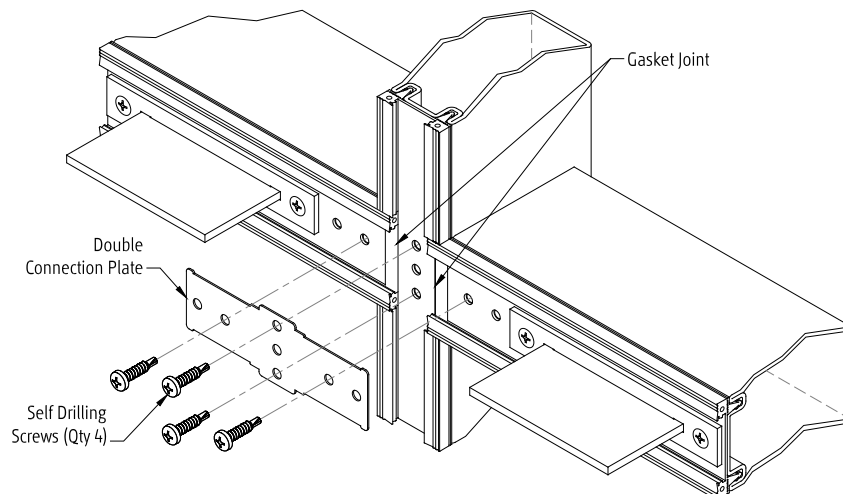


Figure 23 - Double Connecting Plate

12 PERIMETER SPACERS

12.1 General.

- Review section 2 above.
- The field installed perimeter spacers span the glazing pocket at all perimeter conditions to maintain even glazing pressure.
- Spacers are made of hardwood, and are typically supplied in stock lengths not exceeding 96" for field trimming.
- Spacers should have holes field drilled in them (approximately every 46") through which #12 stainless steel sheet metal screws may be used for ease of installation (Figure 26).
- Spacer surfaces in contact with any sealants should be lightly abraded (not left smooth) to attain an adequate seal.

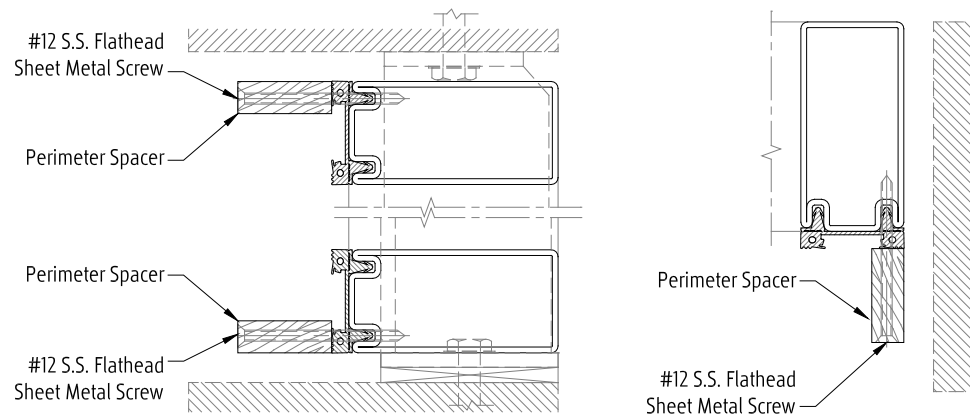


Figure 24 - Perimeter Spacer Installation

12.2 To mount spacer using screws:

- Using the spacer's holes as a jig, locate and drill holes using a 3/16" drill bit into the mullion's gasket race.
- Secure spacer to mullion using #12 stainless steel flat head sheet metal screws.
- DO NOT** over-tighten spacer screws, or pressure plates will not remain straight after installation.

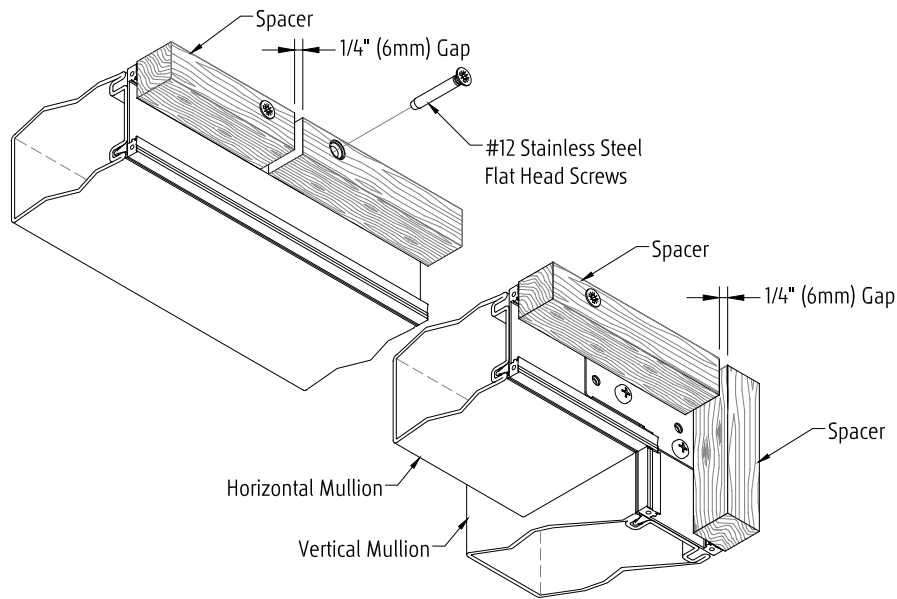


Figure 25 - Perimeter Spacer Details
(Perimeter Flashing Omitted for Clarity)

- 12.3 Vertical perimeter spacers are designed to run long, and horizontal spacers should have a 1/4" (6mm) gap at each corner intersection. (Figure 27),
- At each horizontal to vertical intersection, and
 - At any 1/4" (6mm) joint between adjacent spacer pieces where more than one spacer is required (i.e. areas longer than the typical stock spacer length of 96").
- 12.4 The gap behind the spacer at the gasket notch, at every head and sill vertical mullion location, must not be blocked or sealed with silicone sealant (Figure 28).

NOTE: These seals are CRITICAL for air and water performance of the system!

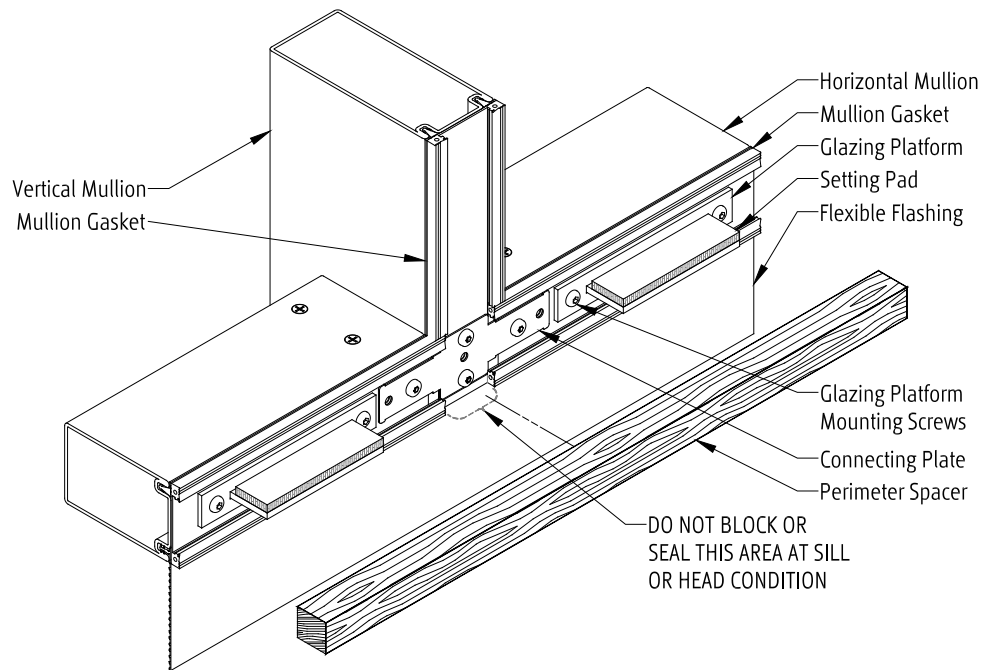


Figure 26 - Perimeter Spacer at Sill

- 12.5 Seal at least 1" from edge of flashing membrane (Figures 21 and 31).
- 12.6 Refer to section 16 Firesafing and Perimeter Seals for details.

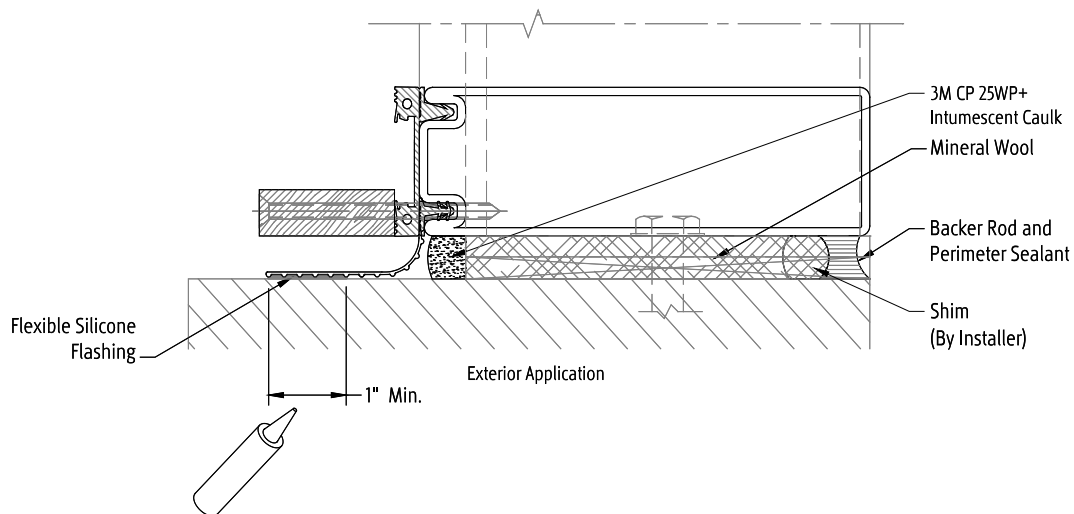


Figure 27 - Perimeter Spacer Detail

13 GLAZING

13.1 General

- Before glass installation, inspect each piece of glass for edge damage or surface imperfections, damaged glass should not be used without TGP's approval. Report any damage immediately to TGP or the Fireframes System authorized fabricator.
- The system has a glass bite of 20mm (13/16"). To determine glass dimension add 40mm (1-9/16") to the DLO dimension.
- Check detailing at expansion joint mullion splices as glass bite may be different at those locations.
- Corners and doors (or door adaptors) should be installed before installing glazing material.
- DO NOT** install glass if pressure plates cannot be installed the same day as the glass.
- Temporary clamping strips are not to be used for holding glass overnight or while unattended.**

READ BEFORE INSTALLING PILKINGTON PYROSTOP® GLASS

CAUTION: Pilkington Pyrostop® is a high-value, multi-layered laminated product. It must have been handled according to the supplied handling instructions, and installed when flat – without bow, twist or other distortion. It is supplied with a special edge protection tape which has been specifically tested by Pilkington for resistance against water as liquid and vapor. The edge tape is an integral part of the product as supplied. The silver and/or gray edge protection tape must not be removed or tampered with, either temporarily or permanently. It must not be replaced by any other tape. If the edge tape should be damaged then do not install the glass and please contact your Fireframes® representative for guidance.

13.2 Install Setting Blocks on Glazing Platforms.

- The supplied 1/4" (6 mm) calcium silicate setting blocks vary in depth depending on the thickness of the glazing. Alternately, hardwood or silicone setting blocks may have been supplied.
- Verify width of setting block matches thickness of glazing.
- Install one setting block per glazing platform, ensuring pad is properly aligned with glazing platform to carry glass load.

13.3 Install Intumescent Tape.

- Starting at the middle top of the interior glass edge, remove tape backing and press onto edge tape of Pilkington Pyrostop around perimeter of glass, aligning tape near edge of glass as you go.
- Avoid having tape extend proud of the glass face, as tape may interfere with gaskets.
- Omit intumescent tape only at the areas where the glass rests on the setting blocks.
- One or two widths of tape may be required depending on width of glass.

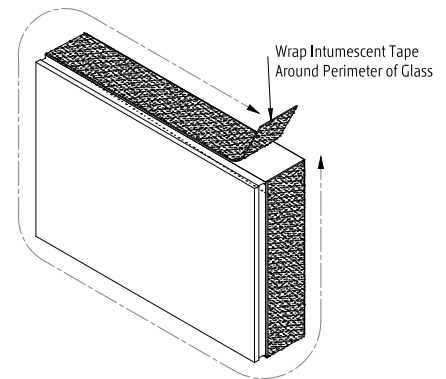


Figure 28 - Intumescent Tape Installation

13.4 Install Glass.

- Carefully set glass into opening without tilting or dragging the glass on its edge.
- Ensure the glass is centered within the opening and setting blocks are carrying the full thickness of the glass.
- Ensure glass is vertical and fully seated against the rear mullion gaskets.

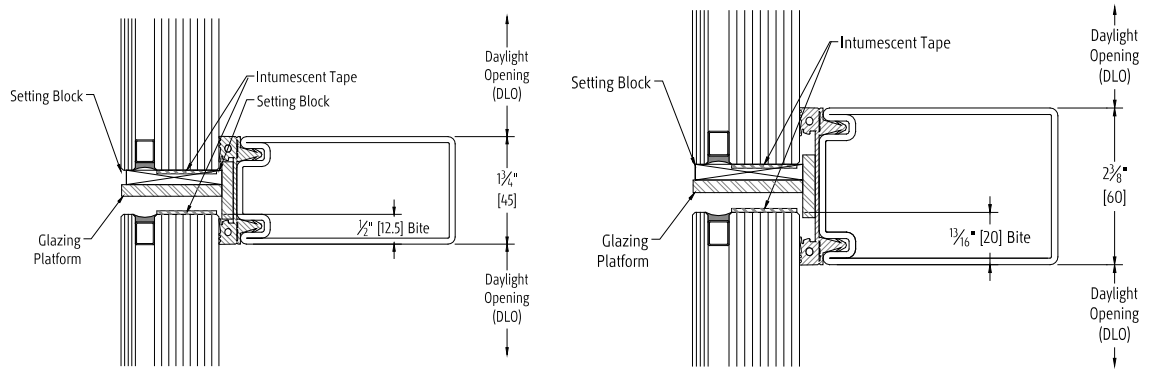


Figure 29 - Glass Installation

13.5 Temporary Clamping Strips.

- Temporary clamping strips may be used to support the glass near the horizontal mullion intersections. In exterior conditions, two temporary clamping strips at each intersection may be required. The edge of the temporary clamping strips should be placed not more than 25mm (1") above and/or below the horizontal intersection to allow for working space in the glazing pocket.
- Depending on size of the glass, additional clamping strips may be needed at the long edge of the glass. A maximum spacing of 36" between clamping points is recommended.
- Temporary clamping strips should be oriented with their gaskets in the direction of the glass edge.

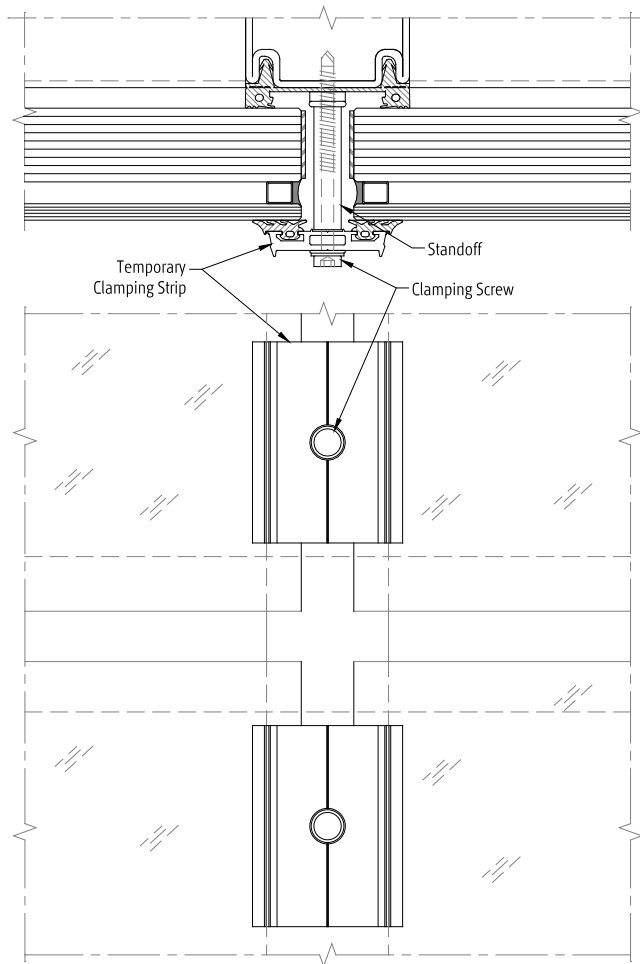


**Figure 30 - Temporary Clamping Strips
(Typical Exterior Installation)**

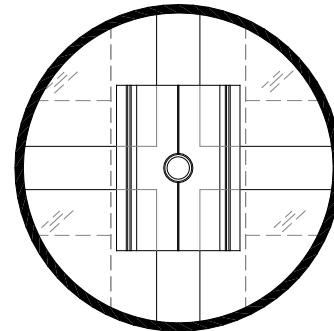


**Figure 31 - Temporary Clamping Strips
(Typical Interior Installation)**

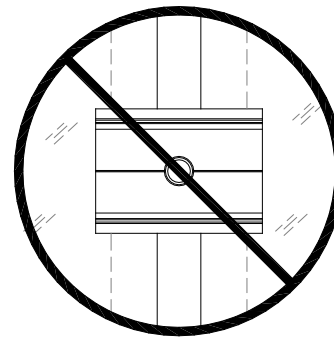


Figure 32 - Improper Installation

- d. **DO NOT** leave temporary clamping strips as sole means of glass support overnight or while glass is unattended.
- e. **DO NOT** cross rotate clamping strip over glass.
- f. **DO NOT** over tighten clamps as glass breakage may result. Resulting breakage may be immediate or can appear later as a result of this action.
 - (1) Use the Torx T-27 bit to start the self-drilling screws used to secure the temporary clamping strips. The high-speed revolutions needed to perform the drilling portion of the screw insertion may cause over tightening and glass breakage if care is not taken.
 - (2) An Inch-Pound beam type torque wrench is recommended.
 - (3) A maximum of 11.5 lbs. per linear inch is allowed between the gaskets and glass.
- g. When removing a temporary clamping strip, seal any hole(s) made in the gasket with the same sealant used to seal the gasket joints, and tool sealant over before proceeding.
- h. Once permanent vertical pressure plates are installed, if permanent horizontal pressure plates cannot be installed the same day, temporary clamping strips should be placed on the horizontals until the next day when the permanent horizontal pressure plate is installed.

NOTE: It is CRITICAL to seal all holes made in the mullion gasket when temporary clamping strips are removed and before the pressure plates are installed!

13.6 Diverter Gasket Installation.

- a. Exterior applications may use a diverter gasket to help keep water off the top of the glass unit and keep it flowing down the mullions eventually weeping at the sill.
- b. The diverter gasket may be integral to the horizontal mullion gasket, or it may be supplied as a separate gasket. See Fireframes project drawings for details.

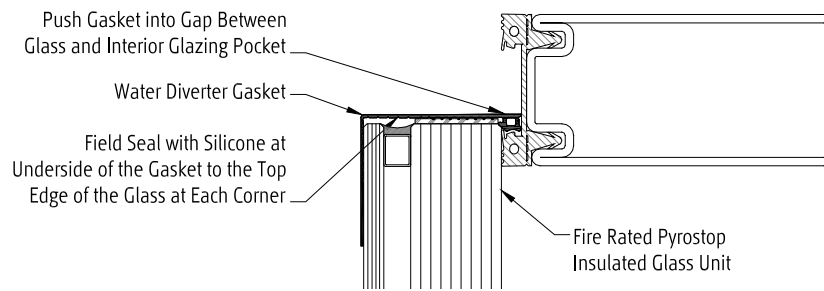


Figure 33 - Diverter Gasket Installation

- c. The diverter membrane of the gasket should be cut to match the width of each individual lite.
- d. Notch the membrane at the face of the glass to allow the cover plates to connect to glass as shown in Section 14.
- e. Seal each end of the diverter gasket to the top of the glass using silicone sealant to help prevent water from migrating under the gasket and sitting directly on the glass.
- f. Seal the end of the diverter membrane behind the glass down to the gasket bulb.
- g. Diverter membrane (integral diverter gasket) may be shorter than glass width. Tool sealant off from membrane to edge of glass (Figure 39).
- h. The diverter membrane is folded over the outside face of the glass.
- i. Tape may be used to temporarily hold the tail of the membrane in place against the face of the glass until the pressure plates are set.

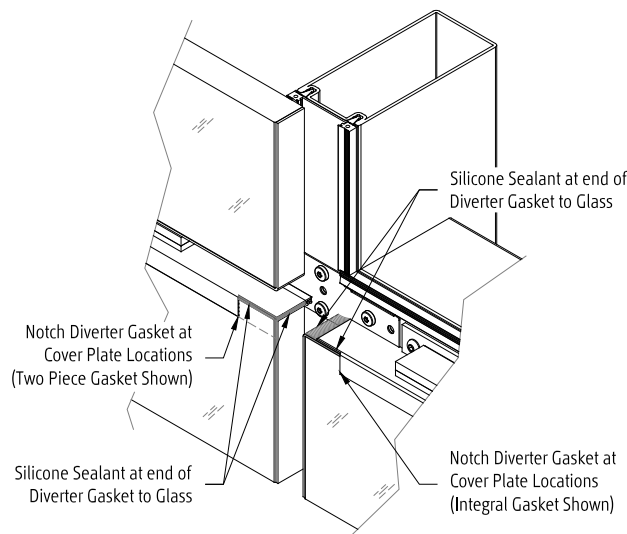


Figure 34 - Sealing Diverter Gasket
Detail of Two Piece and Integral Membrane Shown

14 INSTALL COVER PLATES

14.1 General.

- Cover plates, similar to the connection plates used at the mullion gasket intersections, are used at all horizontal and vertical intersections on the exterior side of the glass surface.
- Single cover plates are at intersections where horizontal mullions are on only one side of a vertical mullion.
- Double cover plates are used at intersections where horizontal mullions are on both sides of a vertical mullion.

14.2 Clean the glass at the joint.

14.3 Peel the protective film from the pressure sensitive tape on the cover plate.

14.4 Apply to the glass intersection as shown in Figure 39.

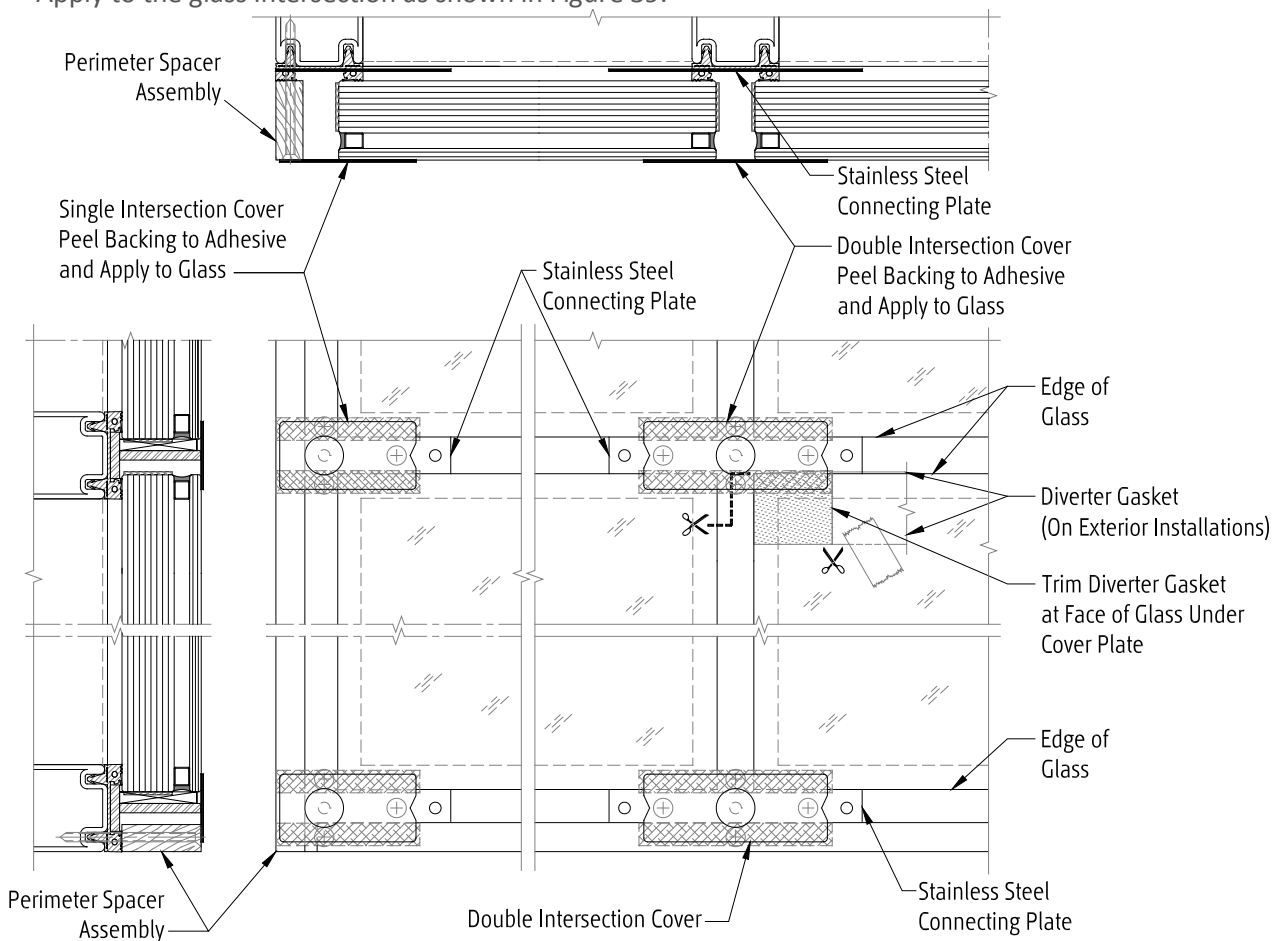


Figure 35 - Cover Plate and Diverter Gasket Installation Details

15 INSTALL PRESSURE PLATES

15.1 General

- a. See the warning at Section 13.1.
- b. **DO NOT** over tighten pressure plates as glass breakage may result. Resulting breakage may be immediate or can appear later as a result of this action.
 - (1) Use the Torx T-27 bit to start the self-drilling screws used to fasten the pressure plates. The high-speed revolutions needed to perform the drilling portion of the screw insertion may cause over tightening and glass breakage if care is not taken.
 - (2) An Inch-Pound beam type torque wrench is recommended to tighten screws slowly and evenly around each lite.
 - (3) A maximum of 11.5 lbs. per linear inch is allowed between the gaskets and glass.
 - (4) On exterior projects a *minimum* pressure of 4 lbs per linear inch is required to maintain a water tight system.
- c. Vertical pressure plates will normally be installed first though order is not critical.

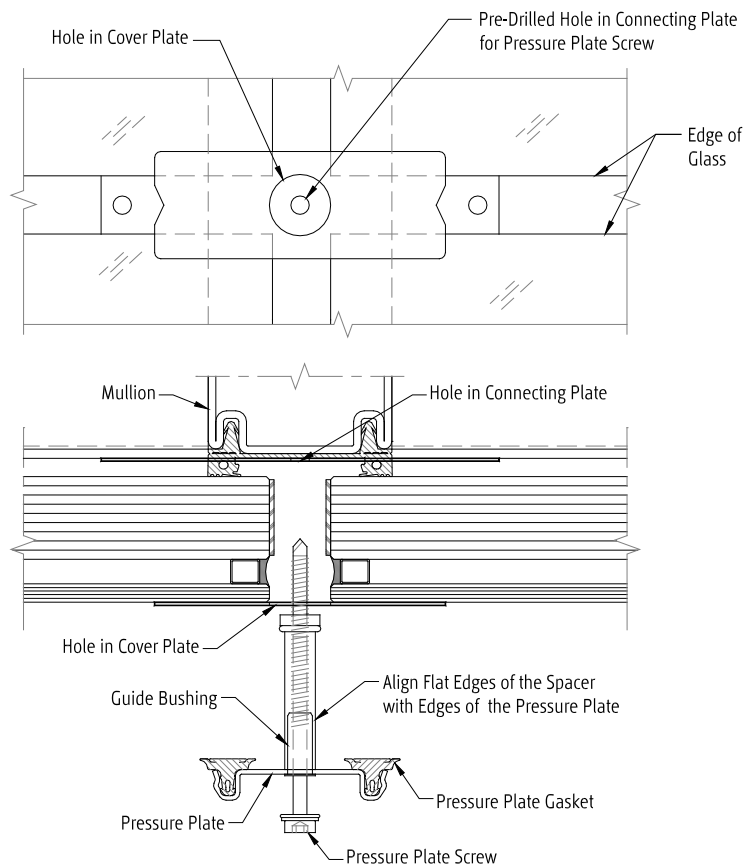


Figure 36 - Vertical Pressure Plate Detail
(Diverter gasket omitted for clarity)

15.2 Install Pressure Plates but DO NOT FULLY TIGHTEN

- First remove temporary clamping strips at the mullion being worked on, leaving the glass captured on at least three sides.
- Seal any holes made in the gasket with the same sealant used to seal the gasket joints, and tool sealant over before proceeding.
- Align vertical pressure plate in position.
- Insert screw into the hole in the pressure plate and ensure the screw is straight before drilling into the mullion.

NOTE: At the beginning of drilling maintain a minimum of 1500 RPM and a pressure of less than 65 lbs. Higher pressure does mean faster drilling, however it may cause the screw tip to break.

- Slow the drill speed down and reduce the drill clutch setting after initial thread cutting is completed to avoid overtightening.
- Tighten each screw so it is threaded all the way in **without applying pressure on the gasket**. Gasket should be straight, and not curled (Figure 43 Left).
- Repeat process above at next vertical mullion.
- Repeat process above for any horizontal mullions between installed verticals.

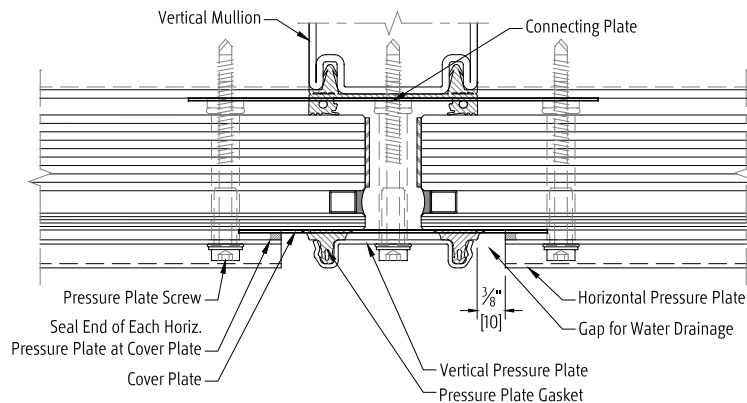


Figure 37 - Vertical Pressure Plate Installed

15.3 Diverter Gasket

- Trim away any excess length of the diverter gasket (Figure 41).

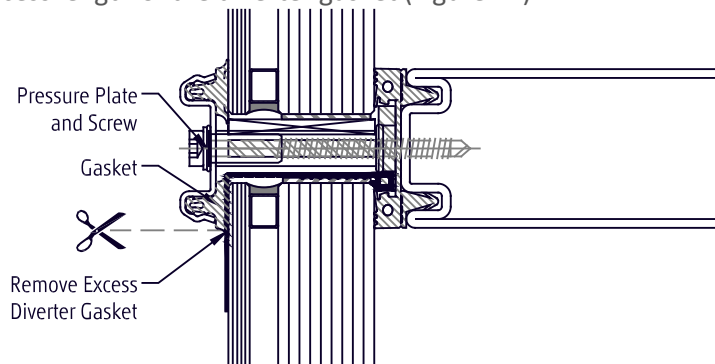


Figure 381 - Trim Excess Diverter Gasket

15.4 Tighten Pressure Plates.

- Tighten screws slowly and evenly around each lite until the gasket curls slightly, indicating a good seal has been made. The maximum edge pressure (11.5 pounds per linear inch) is typically achieved when the maximum allowable 15 inch-pounds of rotational force (torque) is reached on the hand torque wrench. **DO NOT** tighten past this point.

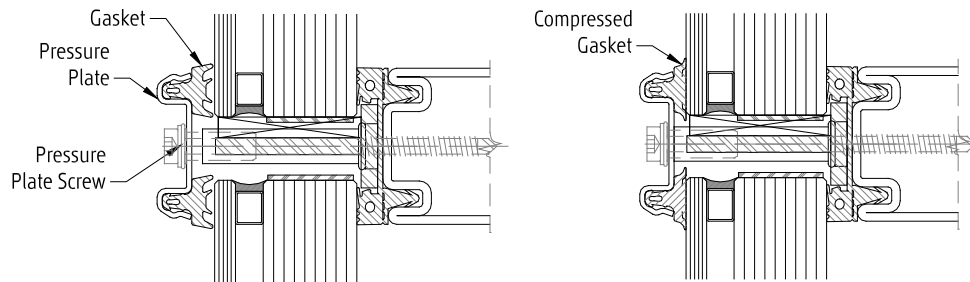


Figure 392 - Pressure Plate Gasket Loose (Left) and Tightened (Right)

15.5 Seal Horizontal Pressure Plates

- Using a compatible sealant, seal the ends of the horizontal pressure plate between the two pressure plate gaskets and the cover plate. (Figure 43)
- Ensure a minimum depth of 1/4".

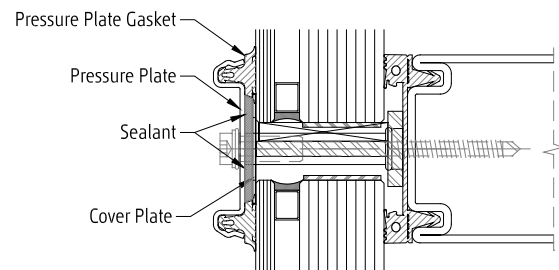


Figure 403 - Sealant at Ends of Horizontal Pressure Plates
(60mm System Shown)

15.6 Seal Top of Vertical Pressure Plates.

- Using a compatible sealant, seal the top end of each vertical pressure plate, between the two pressure plate gaskets and the perimeter spacer (Figure 45).
- Ensure a 1/4" minimum depth.
- Bottom of the vertical pressure plate should be left open** as a pressure equalizing air opening and a glazing channel weep opening.

NOTE: These seals are CRITICAL for air and water performance of the system!

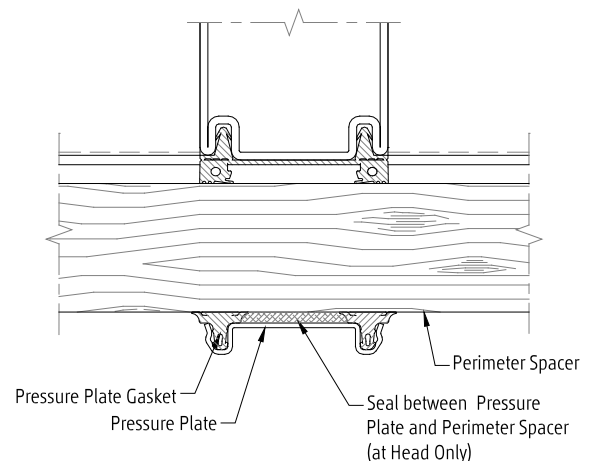


Figure 44 - Seal Vertical Mullion at Perimeter Spacer
(Pressure Plate and Back Mullion Gasket)

16 INSTALL PERIMETER SEALS

16.1 General.

- Minimum perimeter joint is $\frac{1}{2}$ " (13mm).
- See approved Fireframes project drawings for any project specific finish seals or trim required.
- See Figures 47 and 48 for typical installation.
- Firesafing and Perimeter Seals in many cases may be installed before Step 13 – Glazing at the installer's option.
- Glazing cavity should be cleared of debris before installing perimeter seals to ensure weeps (exterior applications) do not get blocked.
- Firesafing, sealants, weeps and weep baffles are supplied by others and are not included with the Fireframes system components.
- Install fire rated insulation such as mineral wool, around the entire perimeter from both sides of the cavity, firmly packing it into place (Figure 47).
- Install a bead of fire rated caulk (e.g.: 3M CP25WP+) behind flexible flashing at perimeter, meeting ASTM E 1966 (UL 2079) standards for fire-resistive joints.

NOTE: This will expand filling the cavity as the flashing becomes sacrificed in a fire.

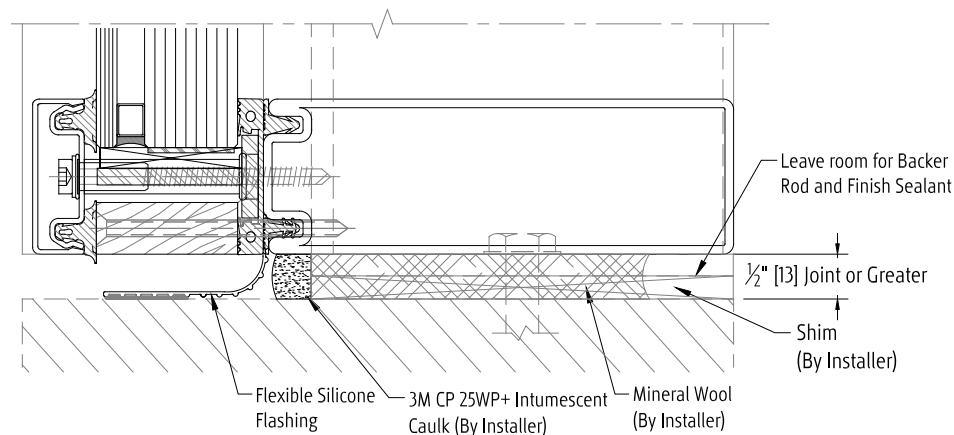


Figure 415 - Firesafing (Exterior Applications)

- If flexible flashing was specified per the Fireframes project drawings, seal at least 1" from edge of flashing membrane (Figures 21 and 47).
- Install backer rod and finish sealant continuously around the jambs and head between the frame and surrounding materials on the mullion side of the frame, and on the glass side of the frame (Figure 48).
- Install backer rod and finish sealant, per manufacturer's instructions, at the sill between the frame and surrounding materials on the mullion side of the frame, and on the glass side of the frame (Figure 48), allowing for weeps for water:
 - Weeps should be not more than every five (5) feet on center.
 - Weeps should be adequately sized to allow water to evacuate (typically a 5/16" minimum inside diameter tube).
 - Weeps should be baffled to prevent foreign objects entering (typically a 30 ppi baffle compressed to 50% of its original size when installed).

- I. The bottom of the vertical pressure plate should be left open as a pressure equalizing air opening and a glazing channel weep opening.

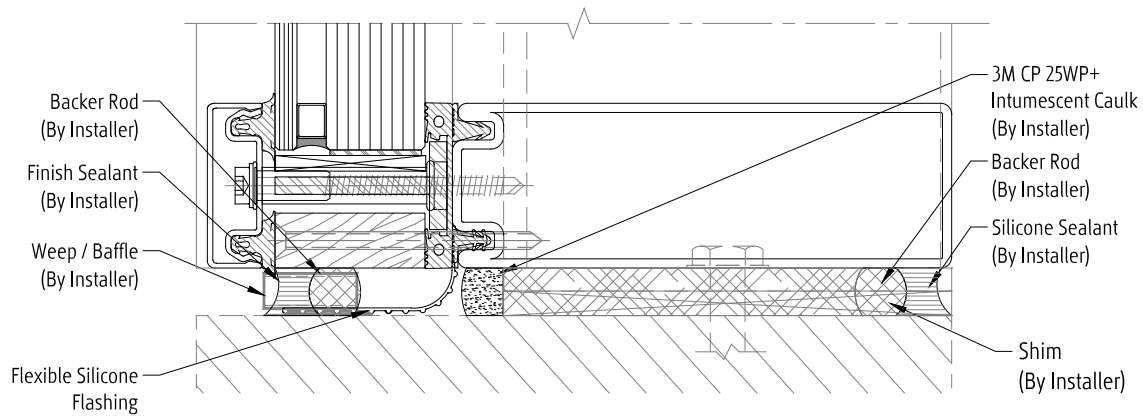


Figure 426 - Firesafing and Perimeter Seals

17 COVER CAPS

17.1 General

- a. In most cases the vertical cover caps are 1/8" (3mm) deeper than the horizontal cover caps.

17.2 Install all vertical cover caps first, aligning with vertical mullions.

17.3 Install horizontal cover caps between the vertical cover caps, allowing for 1mm (~1/16" max) gap between vertical and horizontal cover caps (Figure 49).

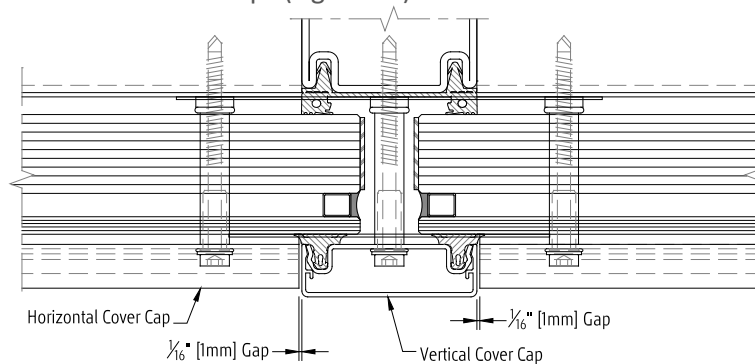


Figure 43 - Cover Cap Installation