



Oldcastle BuildingEnvelope®

RELIANCE™-LT

installation & glazing manual

NOTE

THE INSTALLATION DETAILS FOUND IN THIS PACKAGE ARE GENERIC AND ARE FOR REPRESENTATION ONLY WITH THE INTENT OF GIVING THE INSTALLATION TEAM A VISUAL REPRESENTATION AS TO HOW THE ASSEMBLIES TYPICALLY INSTALL. THE SHOP SUBMISSION DRAWINGS AND DETAILS ARE THE GOVERNING DOCUMENTS AND AS SUCH THIS PACKAGE IS TO BE USED ONLY AS A RESOURCE.

FOLLOW SEALANT MANUFACTURERS' RECOMMENDATIONS FOR USE AND APPLICATION OF ALL STRUCTURAL SILICONE SEALANT AND WEATHER SEAL SILICONE SEALANT.

CUSTOMER / PROJECT QUALITY ASSURANCE PROCEDURES ARE SEPARATE DOCUMENTS AND ARE TO BE FOLLOWED IN CONJUNCTION WITH THIS MANUAL.

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RELIANCE™ -LT Curtain Wall Installation and Glazing Manual

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QUICK REFERENCE GUIDE:

- Aluminum Pressure Plate Fasteners – Torque to 90 in-lbs.
- Polyamide Pressure Plate Fasteners – Torque to 60 in-lbs.
- Glass Sizing
 - Captured System: D.L.O plus (+) 1" for width and height
 - SSG System: D.L.O plus (+) 1-1/2" for width; D.L.O plus (+) 1" for height
- Locate Pressure Plate Fasteners @ 9" O.C. and 1-1/2" from each end

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IMPORTANT NOTICE:

Completely read these instructions prior to beginning work. These recommendations are for general erection/installation procedures only. For actual job conditions, see shop drawings if applicable. For perimeter anchor types and spacing, refer to the approved shop drawings or consult structural engineer/project design professional.

GENERAL NOTES

The **Reliance™-LT** curtain wall system is intended for fabrication, assembly, sealing, installation and glazing by professionals with appropriate knowledge and experience of the system(s) and their incorporation into various building conditions.

Check all shop drawings and installation instructions to become familiar with the project before work begins. The shop drawings take precedence and include specific details for the project. The installation instructions are of a general nature and only cover the most common conditions.

GLAZING PRACTICES

The air and water performance of the **Reliance™-LT** curtain wall system is directly related to the completeness and integrity of the installation process, including but not limited to the assembly seals of the framing joinery, the installed glazing gaskets, and the alignment of the framing joinery glazing plane. Before glazing, verify the glazing pocket width and glazing infill thickness, as both must be in tolerance to assure adequate edge pressure and to achieve the desired air and water performance levels. (In general, framing systems utilizing 1" insulating glass are designed to accommodate a thickness variance of $\pm 1/32"$). Note: Excessive pressure can cause glass breakage and/or IGU failure. Consult the glass manufacturer for their recommended edge pressure per lineal inch. To achieve the designed and tested air and water performance, best practices include:

1. Surfaces to be sealed should be cleaned with isopropyl alcohol or solvent and dried as recommended by sealant manufacturer to remove all dirt and cutting oils. Sealant at shear blocks should be a minimum 3/16" diameter nominal placed completely around the top, face and bottom of the shear block without gaps in the sealant. Exposed surfaces should be cleaned after installing the horizontal. Inspect joint for complete sealant contact, especially where the horizontal meets the face of the vertical member. Repair joint as required.
2. Glazing gaskets should be cut $\frac{1}{4}"$ longer per foot, and lay flat, preferably for 24 hours.
3. Gaskets should be cut as single monolithic pieces and "crowded" during their installation to avoid corner gaps caused by post-installation relaxation.
4. The interior glazing gasket should be installed so as to avoid stretching, buckles, or tears.
5. Corners must be cut square, and at a slight angle when required to conform to the bevel on the intersecting gasket; sealed and butted together.
6. Gasket corner joinery must also be crowded, and sealant applied onto the gasket contact frame surface and into gasket reglet raceway where applicable.
7. Gasket corner seals are to be done just prior to installing glass, while the sealant is still wet and uncured, and ensure exterior gaskets are installed so as to place the glass into it's final in service condition and allow the sealant to conform to optimum configuration. Note: If the sealant cures prior to glazing, the cured sealant could create excessive edge pressure onto the glass and has the potential to cause glass breakage.
8. The glass must be checked for squareness, size dimension, and thickness along the edges paying attention to any variances from center edge to corner edge.
9. Check the placement of the installed glass and verify there is proper edge bite into the pocket, and proper edge clearance from framing elements.
10. After sealant has set and a representative amount of the wall has been installed and glazed (250 square feet or more) run a water hose test in accordance with AAMA 501.2 specifications to check installation. On large projects the hose test should be repeated during the glazing operation. Consult and follow NGA's GANA Manual and FGMA Glazing Manual for proper glazing technique and procedure.

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Vertical movement of mullion at intermediate floors requires special expansion joints and glazing materials. See *Figure 13*, *Figure 14*, and *Figure 23* for details which permit 1/4" & 3/4" movement. For designs and applications that may require greater movement or special considerations please contact your local Oldcastle BuildingEnvelope® facility.

ARCHITECTURAL PRODUCT

It is the responsibility of Oldcastle BuildingEnvelope® to supply a system to meet the architect's specification.

BUILDING CODES

Oldcastle BuildingEnvelope® does not control the application nor selection of its product configurations, sealant, or glazing materials, and assumes no responsibility thereof. It is the responsibility of the owner, architect, and installer to make these selections in strict compliance with applicable laws and building codes.

STRUCTURAL SEALANTS

All structural sealants used should be approved by the sealant manufacturer to ensure the sealant will function for the conditions shown in these instructions and shop drawings. Sealants must be compatible with all surfaces where adhesion is required, including other sealant surfaces. Use primers where directed by sealant manufacturer. Be sure to store sealants at recommended temperature and check container for remainder of shelf life before using.

For Structural Silicone Glazing applications, the stress on the silicone shall not exceed 20 PSI. Consult sealant manufacturer for specific applications to ensure proper loading on silicone joint. Alternate spacer gaskets are available to accommodate larger sealant contact widths. Consult your nearest Oldcastle BuildingEnvelope® facility for assistance.

The fabrication and installation of a structural silicone-glazed (SSG) or wet glazed system requires more technical knowledge and experience than is required for a conventional pressure-glazed or dry glazed system. The glazing contractor should take all steps as outlined and required by the structural silicone sealant manufacturer, glass fabricator, framing manufacturer, and the project professional engineer of record as well as follow local building code requirements and industry best practices to ensure the proper installation and safe performance of the SSG system.

The glazing contractor for each project needs to ensure compliance with each step, including, but not limited to, design reviews, formal adhesion testing, formal compatibility testing, project specification compliance, validating procedures, field testing, and quality control validation of installed product and surrounding conditions.

Testing of component materials for use in a SSG or wet glazed system is mandatory to fulfill project specifications and warranty requirements and must be submitted by the glazing contractor to the structural silicone manufacturer. All materials that comprise the structural silicone joint, such as the framing system (with the job-specific finish) and job-specific glass must be tested by the structural silicone manufacturer for compatibility and adhesion. All other accessory materials in contact with the structural silicone, such as setting blocks, spacers, gaskets, sweeps, air seals and expansion joints, must also be submitted to the silicone sealant manufacturer for compatibility testing.

To ensure that nothing has changed in formulation or chemistry since the initial tests, subsequent testing during periodic time frames of the project is to be conducted to confirm continued acceptance of the material for use on the project. To ensure the structural performance and integrity of the insulating glass unit (IGU), the glazing contractor must submit the project shop drawings to the glass fabricator to obtain approval for use of their product(s) in any 2, 3 or 4-sided SSG applications.

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Quality control procedures for field glazing are to be increased beyond those required for shop glazing. Job conditions will normally have dust, dirt, and other construction debris on the surfaces where structural silicone is to be applied. Great care should be exercised in cleaning and preparing these surfaces for silicone application. The recommendations of the silicone sealant manufacturer are to be strictly enforced and followed. The fabrication and installation of the SSG system and its components, whether shop or field glazed, should be governed by a quality control program, and all steps, procedures, and test reports should be documented throughout the project.

Prior to installation of any SSG system, refer to industry documents (e.g., AAMA Curtain Wall Design Guide Manual, ASTM C1401-14, and AAMA SSGDG-17) for detailed instructions and recommendations.

THE GLAZING CONTRACTOR ASSUMES FULL RESPONSIBILITY FOR ENSURING COMPLIANCE WITH THE ABOVE AND ASSUMES FULL LIABILITY FOR ANY ISSUES ARISING FROM NONCOMPLIANCE.

PERIMETER SEALANTS

Due to varying job conditions, all perimeter sealants used should be approved by the sealant manufacturer to ensure the sealant will function for the conditions shown in these instructions and shop drawings. Sealants must be compatible with all surfaces where adhesion is required, including other sealant surfaces. Use primers where directed by sealant manufacturer. Be sure to store sealants at recommended temperature and check container for remainder of shelf life before using.

MATERIAL AND WORK ACCEPTANCE

OLDCASTLE BUILDINGENVELOPE® MATERIALS

Check all material upon arrival for quality and to assure against shipping damage. Any visible damage must be noted on the freight bill at the time of receipt. If a claim is required, then the receiving party must process a claim with the freight company.

OTHER TRADES WORK

Completely check construction that will receive your materials against contract documents. Notify general contractor by letter of any discrepancies before proceeding with work. Failure to do so constitutes acceptance of work by other trades.

MATERIAL HANDLING, PROTECTION, AND STORAGE

Handle the material carefully. Do not drop from the truck. Stack with adequate separation so that the material will not rub together. Store material off the ground. Protect against the elements and other construction hazards by using a well-ventilated covering away from other trades. Remove material from package if it is wet or located in a damp area.

SHOP

- Cardboard wrapped or paper interleaved material must be kept dry. Immediately remove aluminum from cardboard or paper interleaved materials should it get wet to prevent staining or etching the aluminum finish.
- Check arriving materials for quantity and keep record of where various materials are stored.

JOB SITE

- Material at job site must be stored in a safe place well removed from possible damage by other trades.
- Cardboard wrapped or paper interleaved materials must be kept dry. Immediately remove aluminum from cardboard or paper interleaved materials should it get wet to prevent staining or etching the aluminum finish.
- Keep record of where various materials are stored.

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- Protect materials after erection. Cement, plaster, and other alkaline solutions are very harmful to the finish.

EXPANSION JOINTS

Expansion joints and perimeter seals shown in these instructions and in the shop drawings are shown at standard size. Actual dimensions may vary due to perimeter conditions and/or differences in metal temperature between the time of fabrication and time of installation. For example, a 12-foot unrestrained length of aluminum extrusion can expand or contract 3/32 of an inch over a 50-degree Fahrenheit change. Any movement potential should be accounted for at time of the installation.

GLASS

Glazing gaskets are designed for a compression fit against glass and can accommodate (+/- 1/32"). Be sure to check overall glass size and thickness. Consult glass manufacturer for correct setting block location and length for glass sizes in excess of 40 sq./ft.

CLEANING

Final cleaning of exposed aluminum surfaces should be done in accordance with AAMA 609.1 for anodized aluminum and AAMA 610.1 for painted aluminum. Cement, plaster, terrazzo, alkaline and acid-based materials used to clean masonry are very harmful to finishes and should be removed immediately or permanent staining will occur. A spot test is recommended before any cleaning agent is used. Aluminum shall be cleaned with plain water containing a mild detergent. No abrasive agent shall be used.

GENERAL CONSTRUCTION NOTES

- Study these instructions, shop drawings, erection drawings, and architectural drawings before starting any work. Follow installation and glazing instructions.
- Completely check construction which will receive your materials against contract documents. Notify the general contractor by letter of any discrepancies before proceeding with your work since this constitutes acceptance of work by other trades.
- Coordinate protection of installed materials with general contractors and other trades.
- Do not install wall if there is a walkway with a downslope towards an entrance or a storefront.
- All materials are to be installed plumb and level.
- All work should start from an established benchmark and column centerlines established by the architect and the general contractor.
- Protect all aluminum to be placed directly in contact with uncured masonry or incompatible materials with a heavy coat of zinc chromate or bituminous paint.
- After sealant is set and a representative amount of the wall has been glazed (500 square feet or more), run a water hose test to check installation. On large jobs, hose test should be repeated during glazing operation. Test should be conducted in accordance with AAMA 501.2 specifications. This test should not be performed at entrances installed in the system.

SUGGESTIONS FOR IMPROVING SYSTEM THERMAL PERFORMANCE

To maintain or improve your wall installation the following items should be considered.

- Blinds or drapes prevent warm air from adequately flowing over the window surface.
- Warm air ventilators too far from the window will not adequately wash the window with air to prevent condensation.
- In extreme conditions the fan of the heating system should not cycle on and off, but should run continuously.
- Some heating systems have a water injection feature that can raise humidity levels. the higher the humidity level the more likely condensation or frost will form. Raising the temperature and reducing humidity will usually solve the problem.

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- E. On rare occasions an extremely cold storm may cause frost to appear on the glass framing. A space heater and electric fan blowing along the plane of the window wall can reduce or eliminate this temporary condition.

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FRAME FABRICATION

1.0 Determine Installation Type

The following diagrams represent common types of installation for this product. Refer to approved shop drawings for specifics regarding splicing and anchoring of frame.

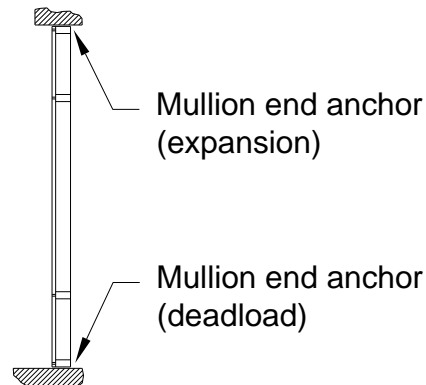


Figure 1: Single Span

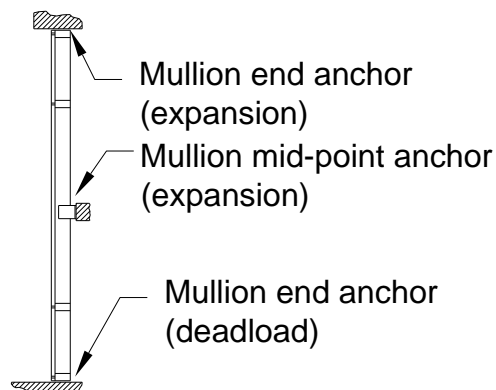


Figure 2: Twin Span

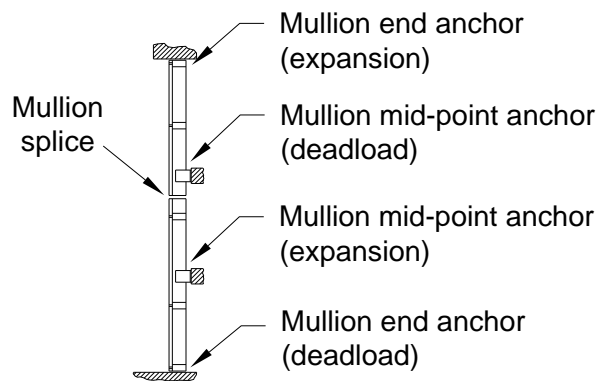


Figure 3: Multi-Span

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2.0 Establish Frame Size

NOTE: The opening must be square and plumb before installation.

When measuring the rough opening, take multiple measurements and use the smallest dimension. This assures a proper fit of the storefront system.

Measure width of Rough Opening.

- A. Measure opening at bottom.
- B. Measure opening at center.
- C. Measure opening at top.

The Frame Width will be the smallest dimension minus (-) 1/2" allowing for a minimum of 1/4" caulk joint at each jamb.

Repeat process to determine Frame Height.

- A. Measure opening from top to bottom of left side.
- B. Measure opening from top to bottom of middle.
- C. Measure opening from top to bottom of right side.

The Frame Height will be the smallest dimension minus (-) 1/2". This allows for a 1/4" caulk joint at both the Head and Sill.

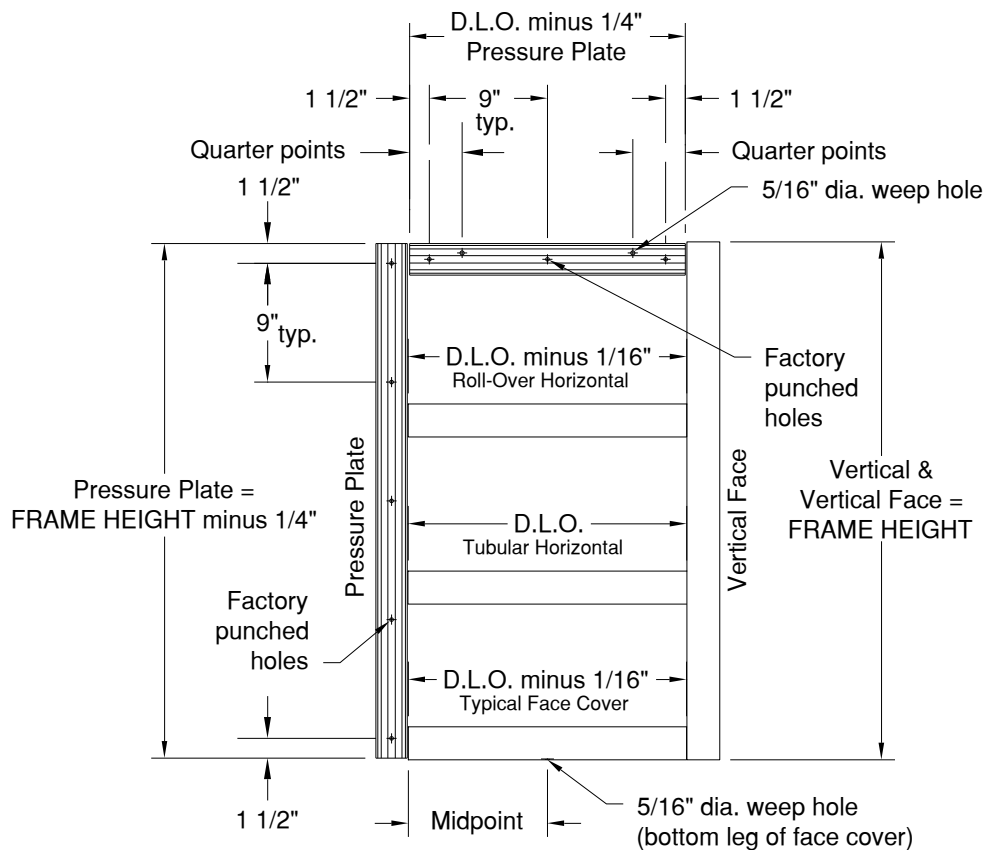


Figure 4: Fabrication Guide

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3.0 Cut Members to Size

Vertical Framing Members

Vertical Members.....	Frame Height
Vertical Pressure Plates	Frame Height minus (-) 1/4"
Vertical Face Covers	Frame Height
Pocket Filler (Jamb Perimeter)	Frame Height
Pocket Filler (Vertical, e.g., at Vents)	D.L.O. plus (+) 1"
Expansion Gasket Retainer (Jamb)	D.L.O. plus (+) 2-7/8"
Pocket Filler (Vertical, at Door Subframing)	D.O.H. plus (+) 1-1/2"

Horizontal Framing Members

Head and Sill Members.....	D.L.O. minus (-) 1/16"
Intermediate Horizontals (Tubular)	D.L.O.
Intermediate Horizontals (Rollover)	D.L.O. minus (-) 1/16"
Horizontal Pressure Plates	D.L.O. minus (-) 1/4"
Horizontal Face Covers	D.L.O. minus (-) 1/16"
Horizontal Interior Trim (For Rollover)	D.L.O. minus (-) 1/16"
Pocket Filler (Horizontal)	D.L.O. minus (-) 1/16"
Expansion Gasket Retainer (Typical)	D.L.O. plus (+) 1-3/4"
Expansion Gasket Retainer (Jamb to Int. Mullion)	D.L.O. plus (+) 2-7/8"
Expansion Gasket Retainer (Jamb to Jamb)	D.L.O. plus (+) 4"

Accessories

Exterior Glazing Gaskets	Pressure Plate Length plus (+) 1/4" per foot
Interior Glazing Gasket at Verticals.....	D.L.O. plus (+) 1/4" per foot plus (+) 1"
Interior Glazing Gasket at Horizontals	D.L.O. plus (+) 1/4" per foot
Silicone Spacer Glazing Gaskets	D.L.O. plus (+) 1/4" per foot plus (+) 1"

Other Members (as Required)

Horizontal Glazing Adapter	D.L.O. minus (-) 1/32"
Vertical Glazing Adapter	D.L.O. plus (+) 1"
Door Subframe (Jambs)	D.O.H. plus (+) 3/4"
Door Subframe (Header)	D.O.W. minus (-) 1/32"
Flush Door Pressure Plate (Jambs).....	D.O.H. plus (+) 3/4"
Flush Door Pressure Plate (Header)	D.O.W. minus (-) 1/16"
Flush Door Face Cover (Jambs)	D.O.H. plus (+) 2"
Flush Door Face Cover (Header)	D.O.W. minus (-) 1/16"

Abbreviations used within these instructions:

D.L.O. = Day Light Opening

D.O.H. = Door Opening Height

D.O.W. = Door Opening Width

Ø = Diameter

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4.0 Vertical Fabrication

- 4.1 Fabricate vertical mullions for horizontal members, using DJ-117 drill jig. Drill holes for shear block using holes marked "A" and "B". See *Figure 5*. When working off horizontal centerlines, use the slot milled into the drill jig to align the jig with the centerline.
- 4.2 Install and seal end caps to top and bottom of all jamb and intermediate vertical mullions with (2) FS-320 fasteners (only (1) required at jambs). See *Figure 5*.

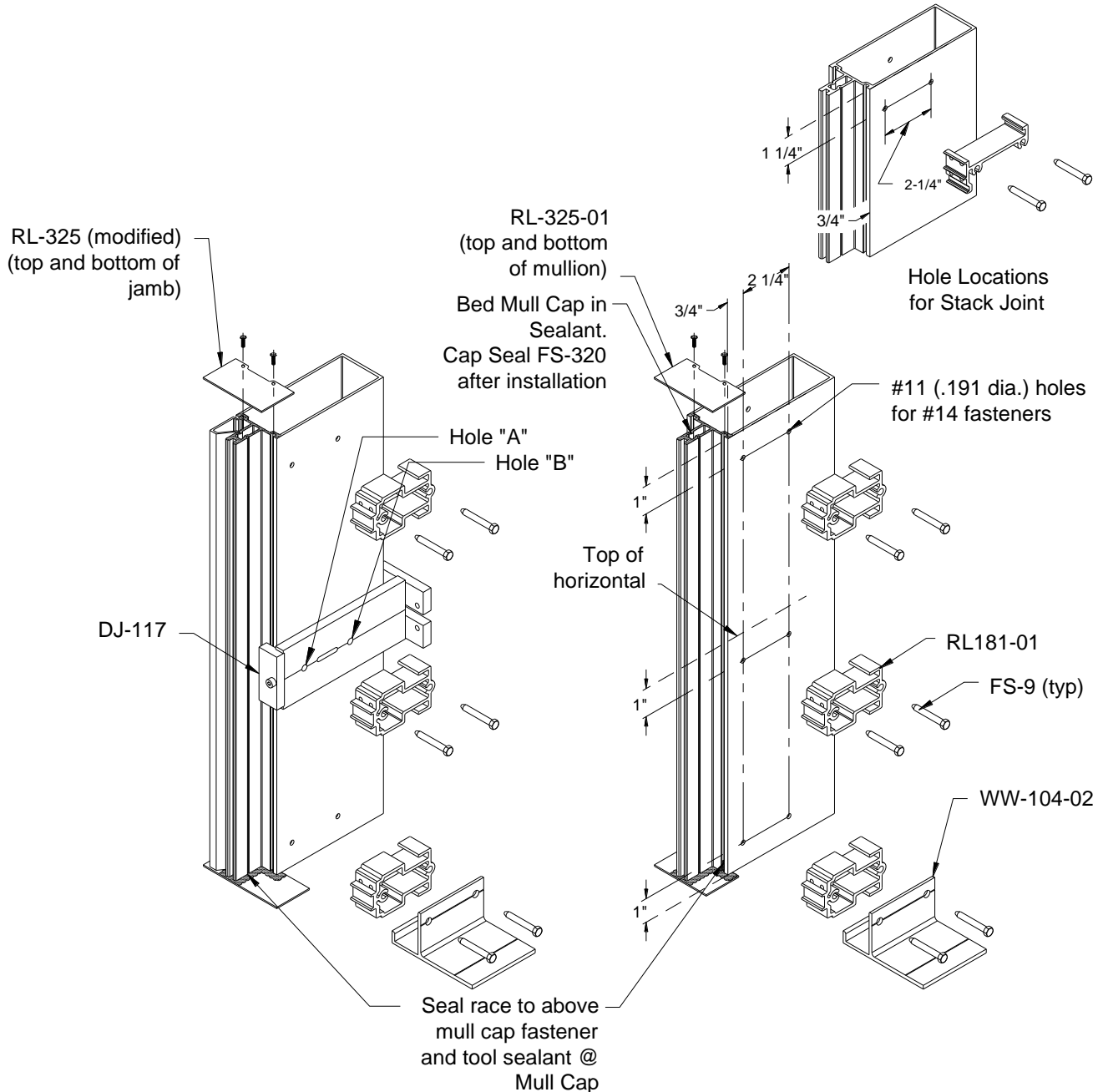
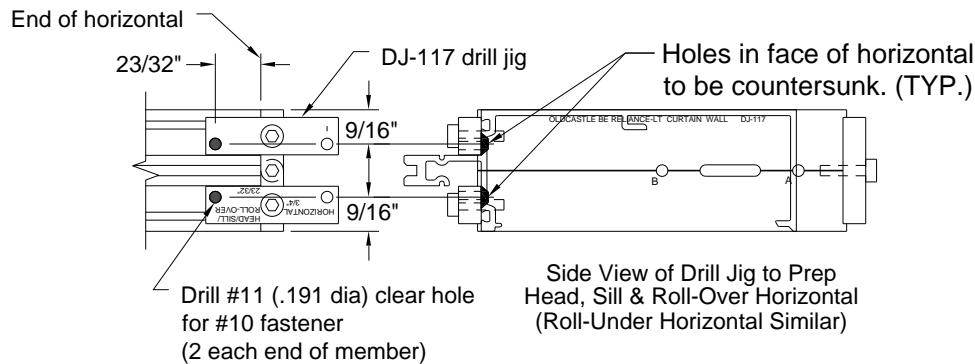


Figure 5: Vertical Mullion Fabrication

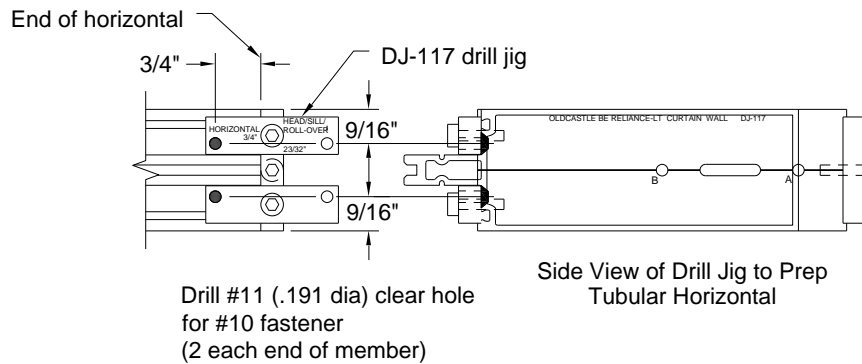
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5.0 Horizontal Fabrication

Fabricate ends of horizontal members for shear block fasteners, using DJ-117 drill jig. See *Figure 6*. Note: When fabricating tubular (one-piece) horizontals, use the side of the drill jig stamped "Horizontal". When fabricating head, sill and roll-over horizontals, use the side stamped "Head/Sill/Rollover".



Front View of Horizontal at End



Front View of Horizontal at End

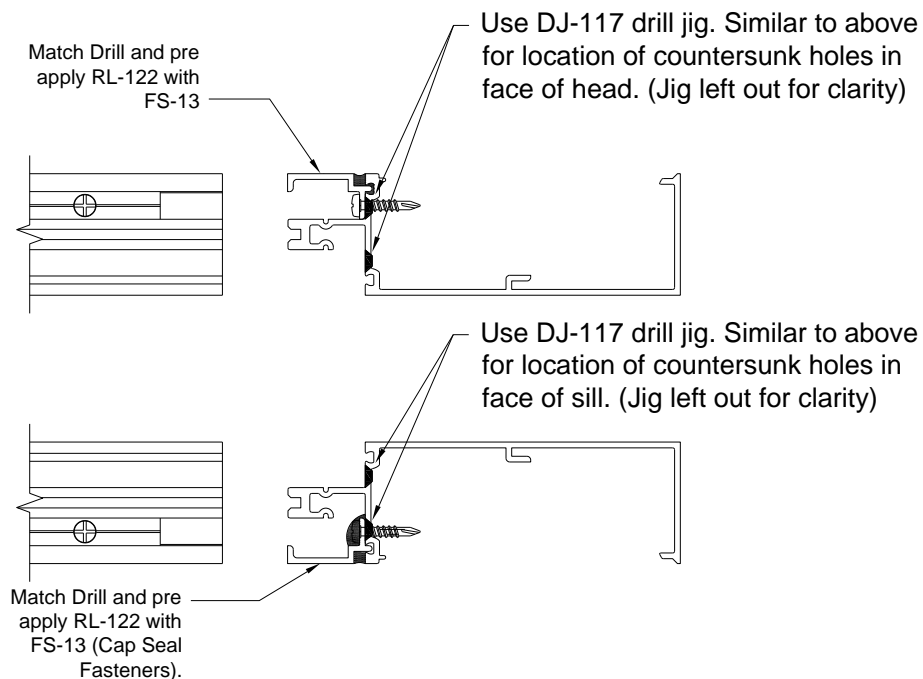


Figure 6: Horizontal Fabrication

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6.0 Pressure Plate & Pocket Filler Fabrication

- 6.1 Drill 5/16" diameter weep holes at 1/4 points in the horizontal pressure plate.
- 6.2 Drill (1) 5/16" diameter weep hole at the bottom of each horizontal face cover at D.L.O. centerline. See Figure 4.
- Note:** For SSG applications, face covers typically run across mullions, so there will be multiple holes in each horizontal face cover.
- 6.3 All pressure plates have factory-punched holes for fasteners at 9" O.C. To ensure proper pressure on the glazing, 7/32" diameter holes may need to be drilled at the ends of each horizontal pressure plate as required. Locate at 1-1/2" maximum from the ends. See Figure 7.

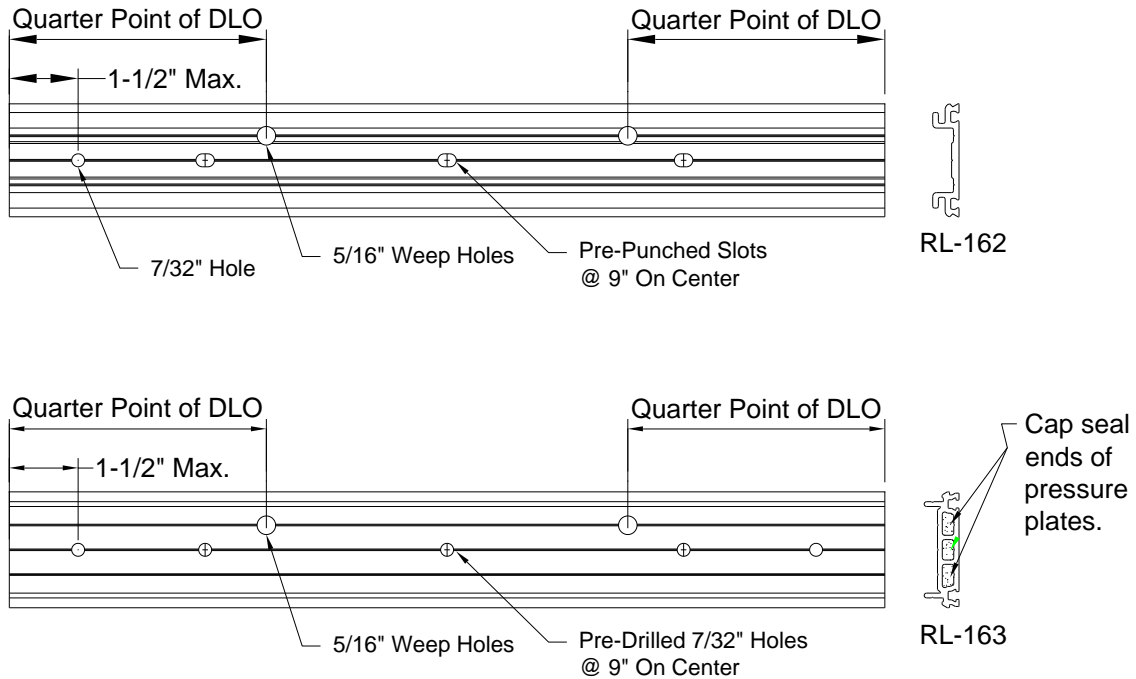


Figure 7: Pressure Plate Fabrication

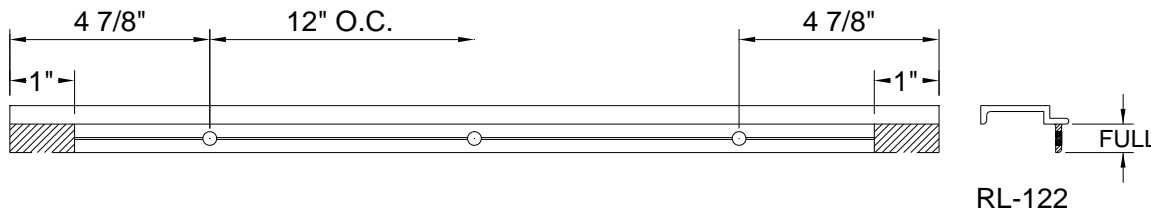


Figure 8: Pocket Filler Fabrication

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FRAME INSTALLATION

NOTE: Anchor type and sizes vary per job requirements. Details shown in these instructions are to be used as a guide only. Refer to approved shop drawings for actual conditions.

7.0 Single Span Vertical Installation

- 7.1 Attach shear blocks to all vertical members using FS-9 fasteners. The shear block anchors are designed for use with standard shear blocks. See Figure 9 and Figure 10. For proper orientation and installation onto mullion.
- 7.2 If using "F" or "T" anchors, slide anchors into top and bottom of vertical mullions. The anchors are designed to clear the shear block fasteners. See Figure 11.
- 7.3 Install verticals plumb and level. Place shims under vertical mullion at sill to evenly distribute dead load from wall. Install pipe sleeve anchor at head to allow for thermal movement of the vertical mullions. See Figure 9 and Figure 10.

NOTE: If roll-over horizontals are used, all vertical mullions can be installed first. If tubular horizontals are used, the wall must be stick erected. Last bay tubular horizontals must be notched. See Figure 16. Option: Use roll-over horizontals at last bay to avoid notch.

- 7.4 Check D.L.O. and diagonal dimensions every four bays to ensure correct spacing and frame squareness to prevent dimensional buildup.

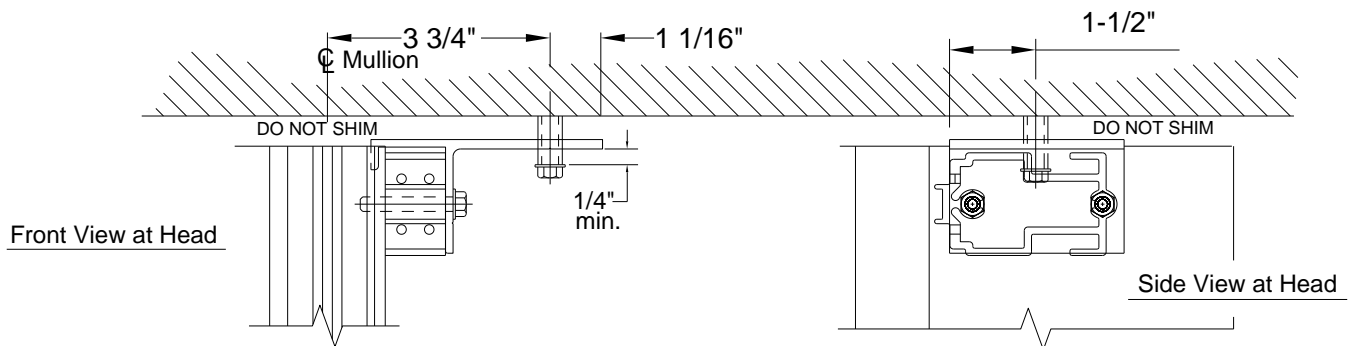


Figure 9: Single Span Head Anchorage
Captured Mullion Shown; SSG Mullion Similar

The WW104-02 shear block anchor at head & sill.
Maximum load 375 lbs. per anchor, (750 lbs with anchor on both sides of mullion). These capacities are based on proper design for anchor fastener to surrounding conditions.

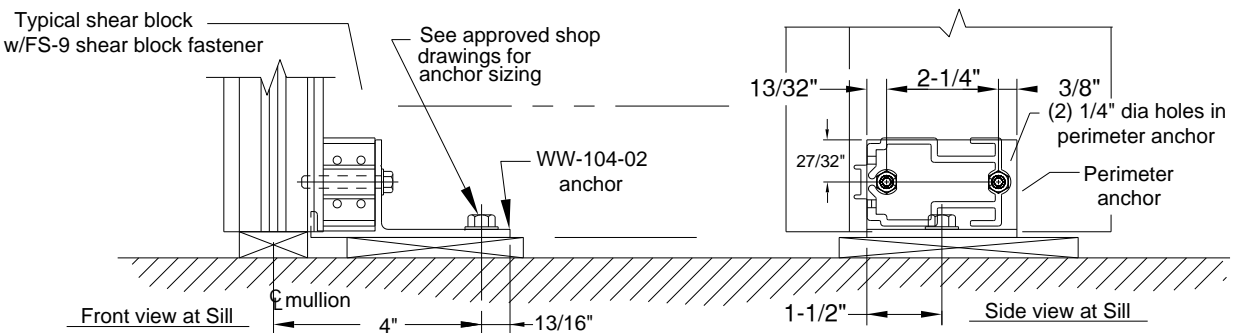


Figure 10: Single Span Sill Anchorage & Shear Block Orientation
Captured Mullion Shown; SSG Mullion Similar

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8.0 Twin Span Vertical Installation

- 8.1 Attach shear blocks to all vertical members using FS-9 fasteners. See *Figure 10* for proper orientation on mullion. For installations using the shear block anchors, attach to head and sill shear block.

NOTE: Depending on the end reactions, either the shear block anchor or "F" or "T" anchors can be used to anchor the wall. See Figure 10 for shear block anchor load capacity.

- 8.2 When using "F" or "T" anchors, slide anchors into top and bottom of vertical mullions. The anchors are designed to clear the shear block fasteners.
- 8.3 Install verticals plumb and level, ensuring proper spacing out from floor slab or beam.

8.3.1 Shear Block Anchor Method: Place shims under vertical mullion and anchor at sill to evenly distribute dead load from wall. Anchor top and bottom of mullions to structure.

8.3.2 "F" or "T" anchor Method: Place shims under vertical mullion (Anchor is set on building condition) and anchor at sill to evenly distribute dead load from wall. Anchor top and bottom of mullions to structure.

***NOTE:** If roll-over horizontals are used, all vertical mullions can be installed first. If tubular horizontals are used, the wall must be stick erected. Last bay tubular horizontals must be notched. See Figure 16. Option: Use roll-over horizontals at last bay to avoid notch.*

- 8.4 Anchor the mullion to floor slab or beam. See *Figure 12* Do not over tighten bolt(s). For expansion anchors, back off nut 1/4 turn and stake bolt.
- 8.5 Check D.L.O. every four bays to ensure correct spacing and prevent dimensional buildup.

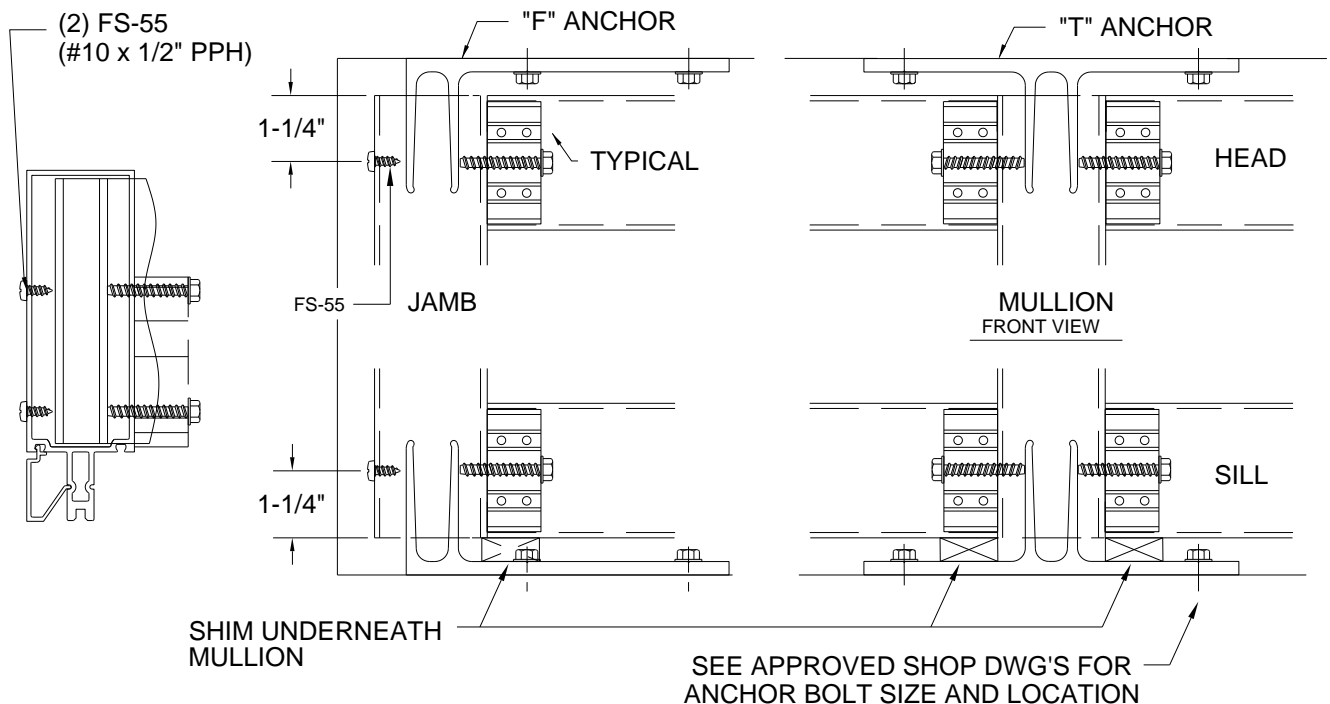


Figure 11: Head & Sill Anchors

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9.0 Multi-Span Vertical Installation

- 9.1 Install "F" or "T" anchors at the sill condition prior to setting mullions, see *Figure 11*. Each anchor must be anchored with a minimum of two anchor bolts. See approved shop drawings for bolt size and location.
- 9.2 Attach shear blocks to all vertical members. See *Figure 10* for proper orientation on mullion.
- 9.3 Install lower verticals plumb and level, ensuring proper spacing out from floor slab or beam. Place shims under vertical mullion at sill to evenly distribute dead load from wall.
NOTE: If roll-over horizontals are used, all vertical mullions can be installed first. If tubular horizontals are used, the wall must be stick erected. Last bay tubular horizontals must be notched. Option: Use roll-over horizontals at last bay to avoid notch.
- 9.4 Anchor the mullion to floor slab or beam. See *Figure 12*. Do not over tighten bolt(s).
- 9.5 Repeat steps above until all lower verticals are in place. Check the D.L.O. every four bays to ensure correct spacing and prevent dimensional buildup.
- 9.6 Install the next vertical above, temporarily shimming between verticals to maintain proper splice joints (refer to approved shop drawings). See *Figure 13* and *Figure 14*.
NOTE: Refer to Section 12.0 Horizontal Expansion / Vertical Splice Installation & Sealing for more information.
- 9.7 Slide "F" or "T" anchors into top of upper-most mullions prior to erecting. The "F" or "T" anchors are designed to clear the shear block fasteners. See *Figure 11*. Attach "F" or "T" anchor to building condition.
- 9.8 When the wall is set, remove shims between vertical mullions at splices, back off nut 1/4 turn at expansion anchors and stake bolts.

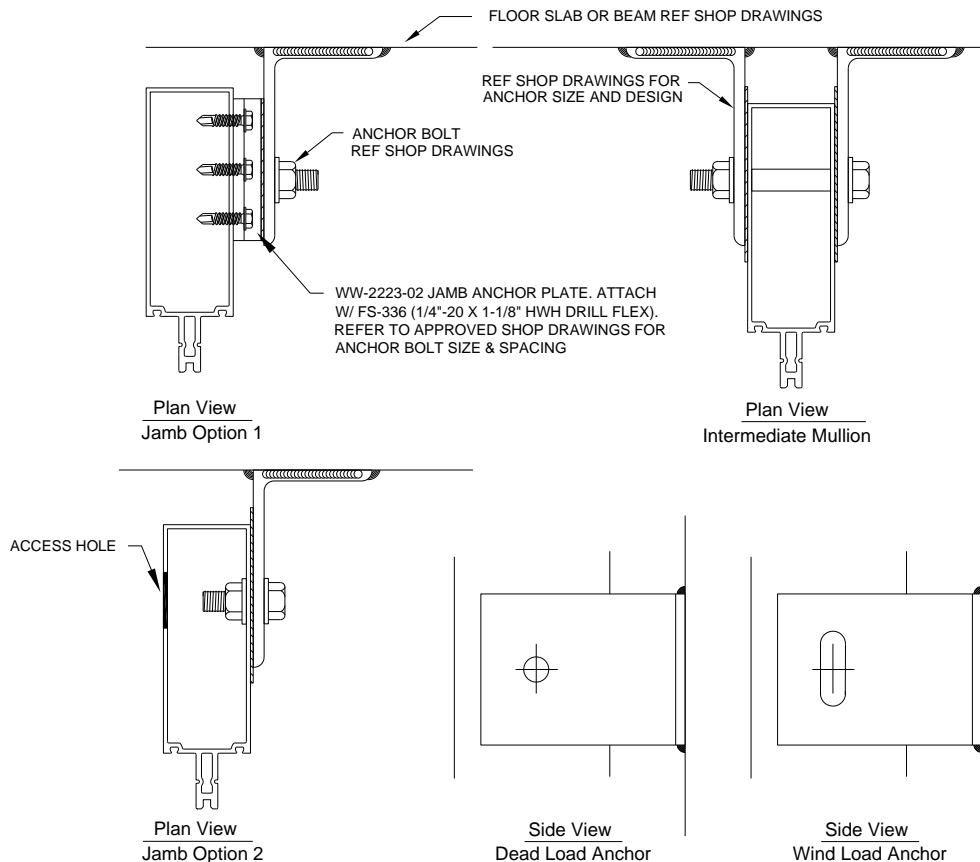


Figure 12: Face of Slab Anchoring Details

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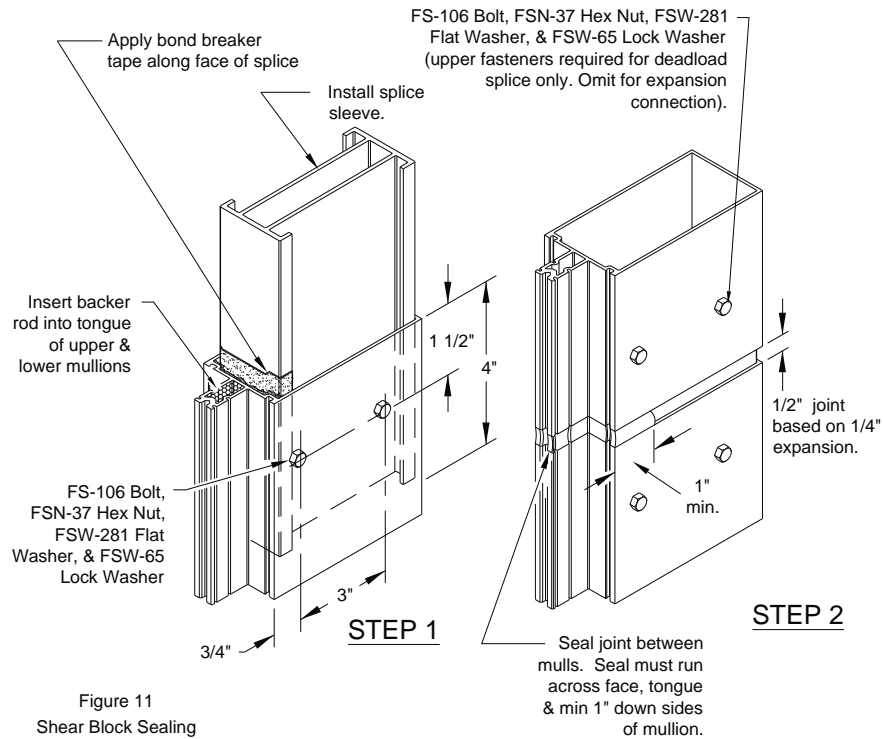
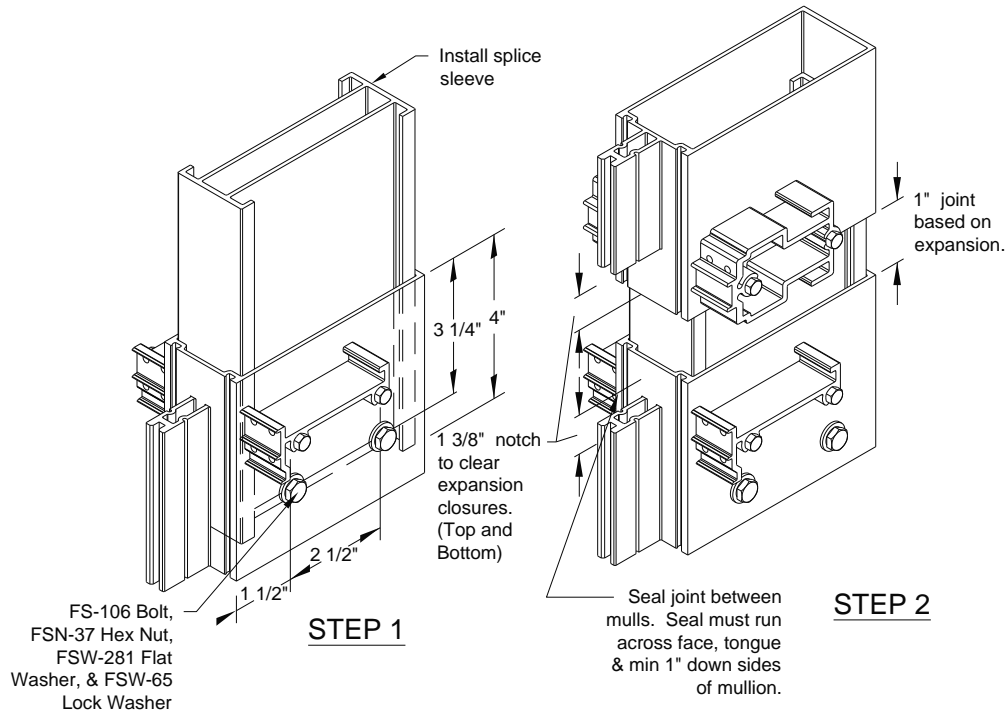


Figure 13: Vertical Splice Details - Typical



10.0 Optional Vertical Mullion Reinforcement

Figure 15 shows the typical attachment method for reinforcing in the vertical mullion. Refer to approved shop drawings for placement, size and quantity of reinforcing required and means of attachment.

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Refer to wind load charts in the detail catalog for single span and equal twin span conditions. For all other conditions such as unequal twin spans, knee brace and multi-span conditions, contact your local Oldcastle BuildingEnvelope® facility for mullion reinforcing requirements or a qualified professional engineer.

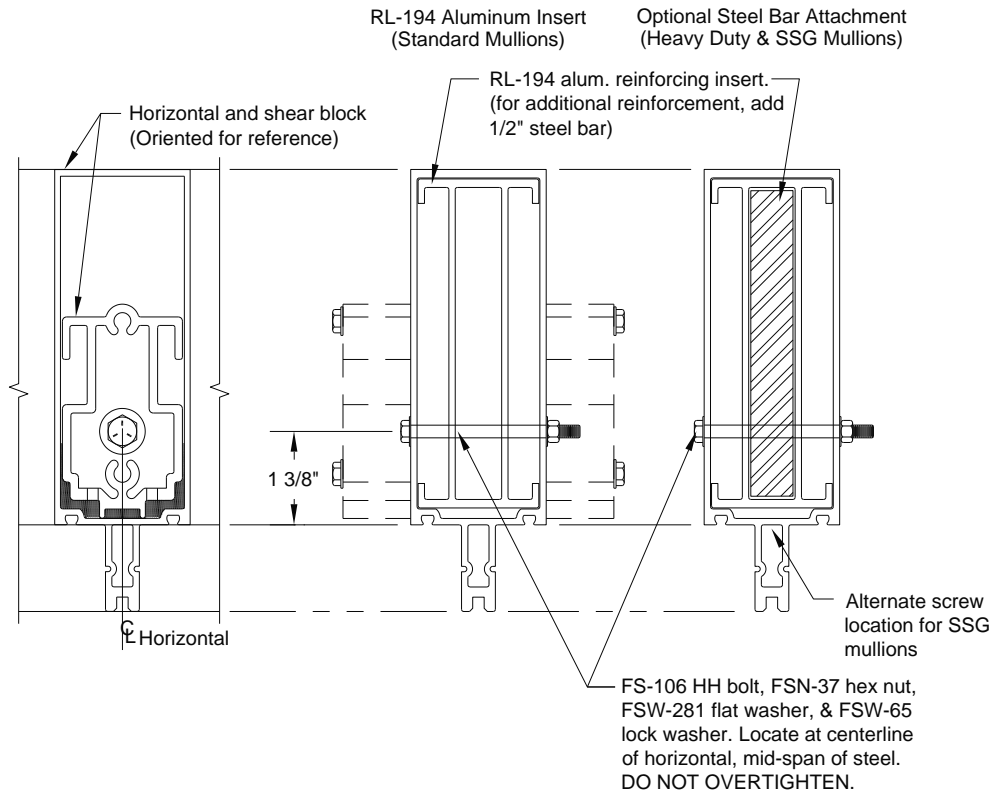


Figure 15: Typical Reinforcement Attachment
Captured Mullion Shown; SSG Mullion Similar

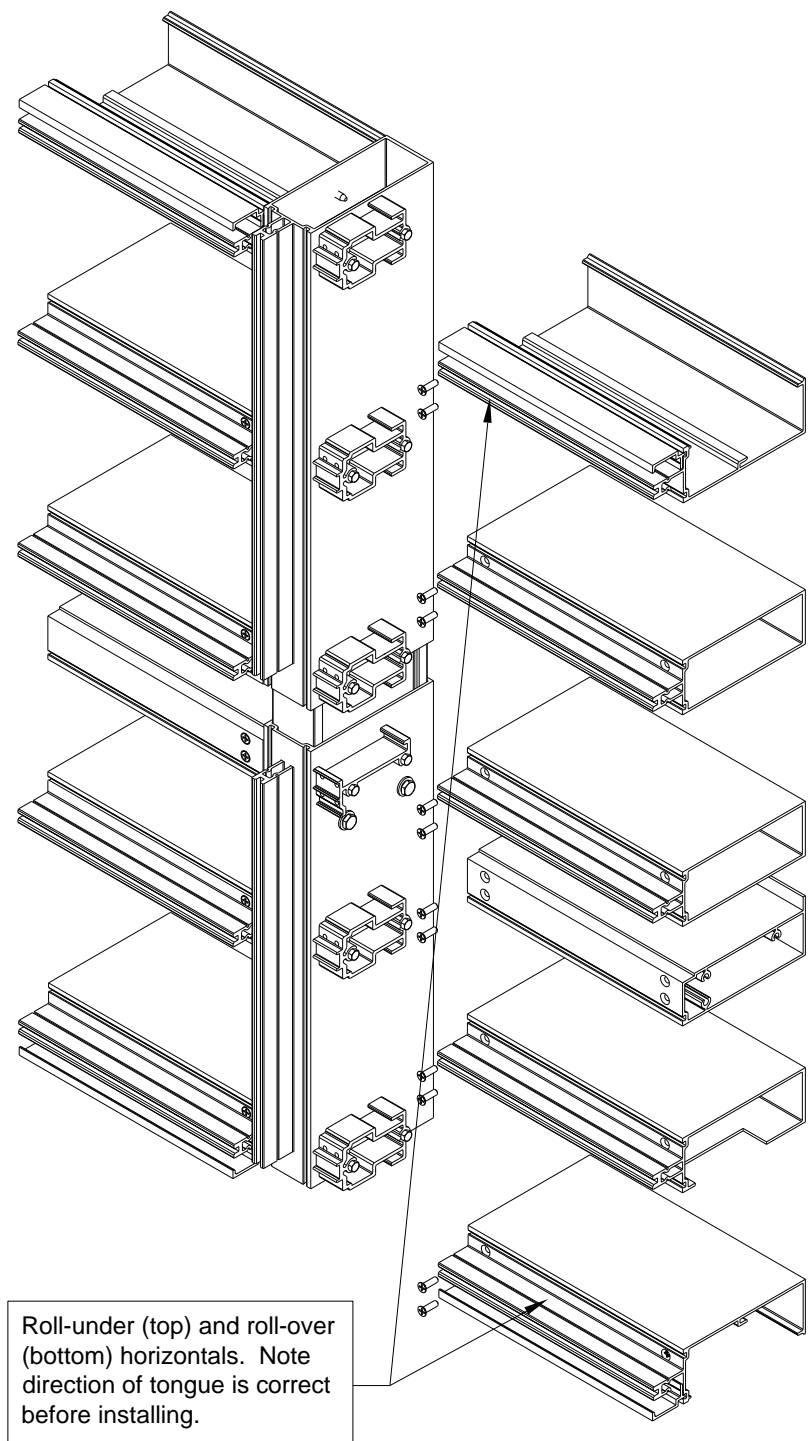
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11.0 Horizontal Installation and Sealing

NOTE: Typically completed after installation/erection of all verticals.

- 11.1 See *Figure 16* as a guide for horizontal layout. Seal around shear blocks prior to installing each horizontal mullion. See *Figure 17*. Install horizontal mullions as shown in *Figure 17*. Prior to attaching fasteners, make sure sealant has been forced out of the holes in horizontal. If not, apply a liberal amount of sealant into each hole. Secure horizontals to shear block with two (2) FS-7 fasteners at each end of horizontal. Check head of fastener to insure proper seal.
- 11.2 If applicable, install cover plates for roll-over horizontals.
- 11.3 Wipe excess sealant from exposed areas. Tool sealant into the joint between the horizontal and vertical at the glazing pocket. Avoid a buildup of sealant on the gasket surfaces or in the gasket reglets.
TIP: Use a short piece of interior glazing gasket to clean out excess sealant in glazing reglets. Also wipe excess sealant away from the horizontal filler snap areas on roll-over horizontals.
- 11.4 Apply sealant to all contact surfaces on vertical and horizontal mullions where zone plugs will be installed. Apply sealant to horizontal tongue receptor on zone plug and install at the end of each horizontal, head and sill. Tool any excess sealant around front end of zone plug where thermal spacer abuts the zone plug. Tool sealant in the glazing pockets to ensure a watertight fit. See *Figure 18* and *Figure 19*.
- 11.5 When all framing members are installed, apply the perimeter seal. See *Figure 20*. The interior perimeter seal is not required for system performance, but can be installed for cosmetic purposes. Perimeter sealing must be completed prior to glazing.

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NOTE: If roll-over horizontals are used, all vertical mullions can be installed first. If tubular horizontals are used, the wall must be stick erected. Last bay tubular horizontals must be notched. Option: Use roll over horizontals at last bay to avoid notch.

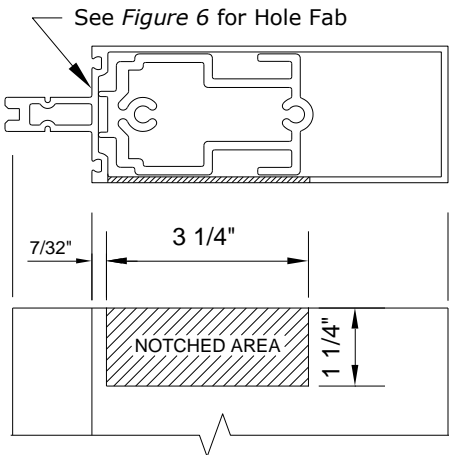


Figure 16: Horizontal Layout & Last Bay Notch

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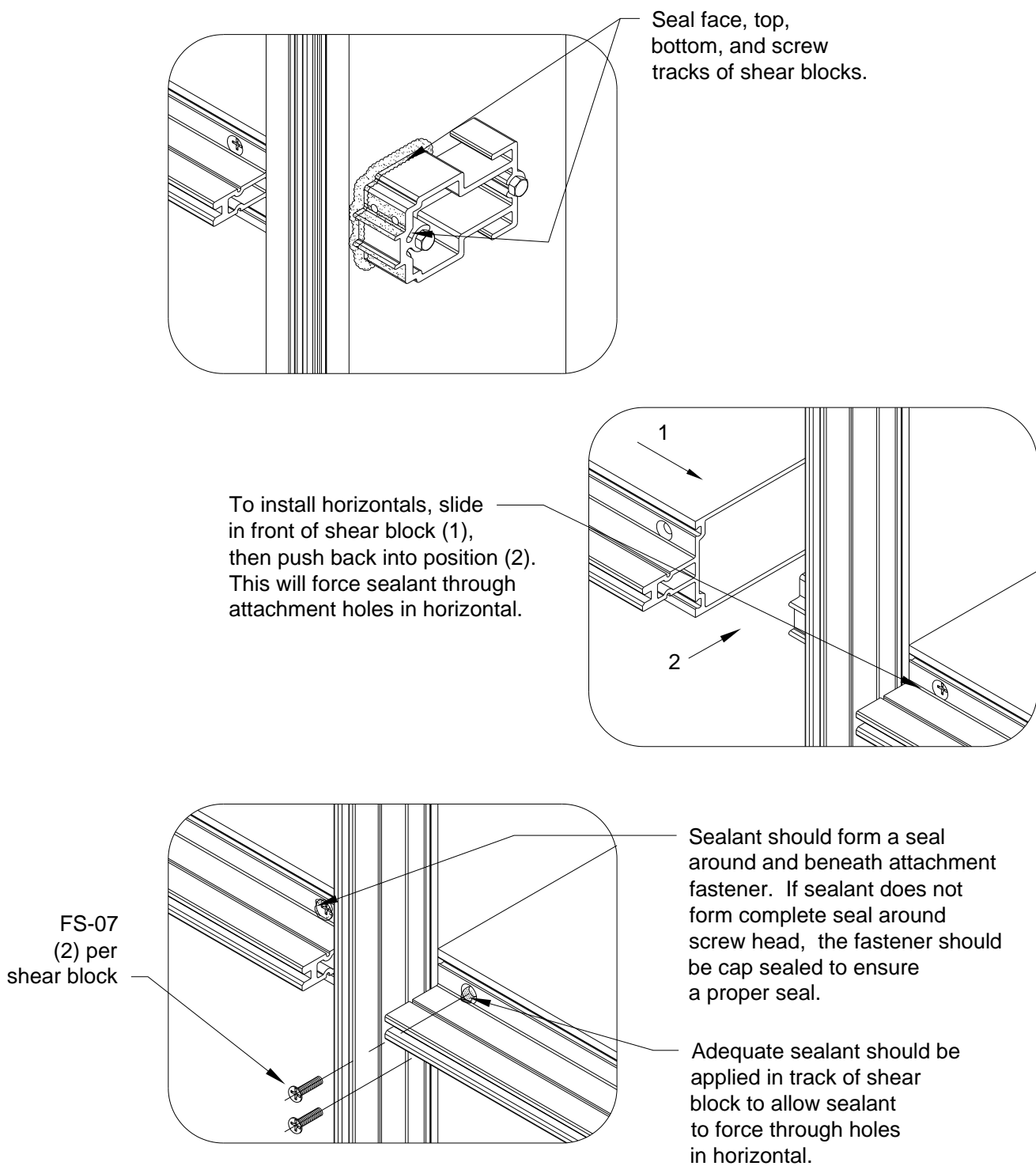
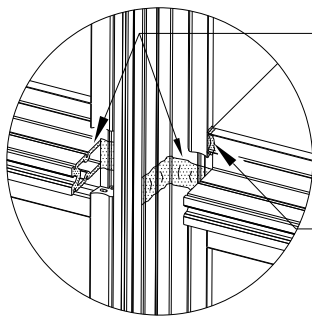


Figure 17: Shear Block Installation & Sealing

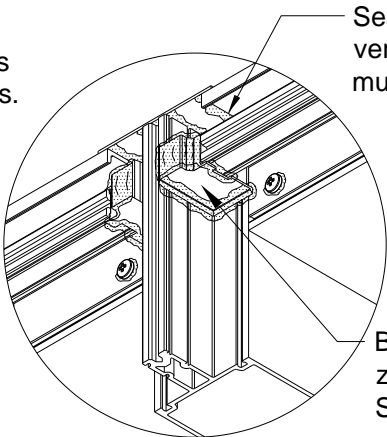
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STEP 1



Seal along tongue of horizontal & across face and tongue of mullion before installing zone plugs.

Seal between gaskets prior to installing glass.

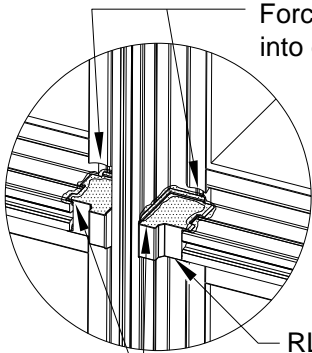


Seal between head, vertical mullion and mullion cap

Bottom side of zone plug shown. Seal top side sim.

ZONE PLUG AT HEAD

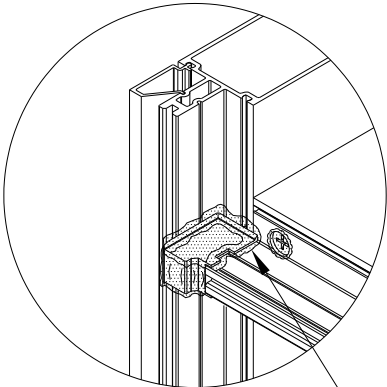
STEP 2



Force sealant into gasket race

RL-302 zone plug

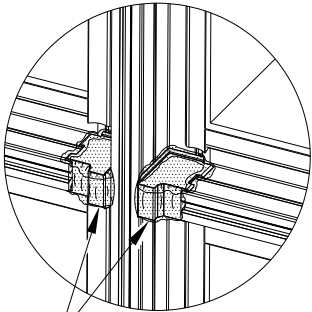
Tool sealant along top of zone plug to form a water tight seal.



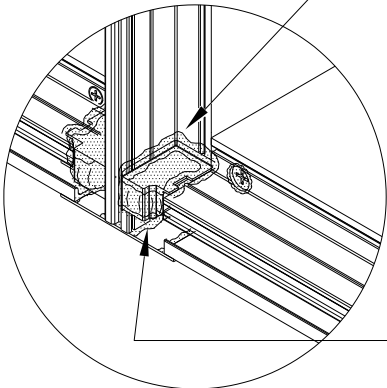
ZONE PLUG AT JAMB

Seal jamb & sill zone plugs same as shown at left

STEP 3



Apply generous bead of sealant to face of zone plugs just prior to installing vertical pressure plate.

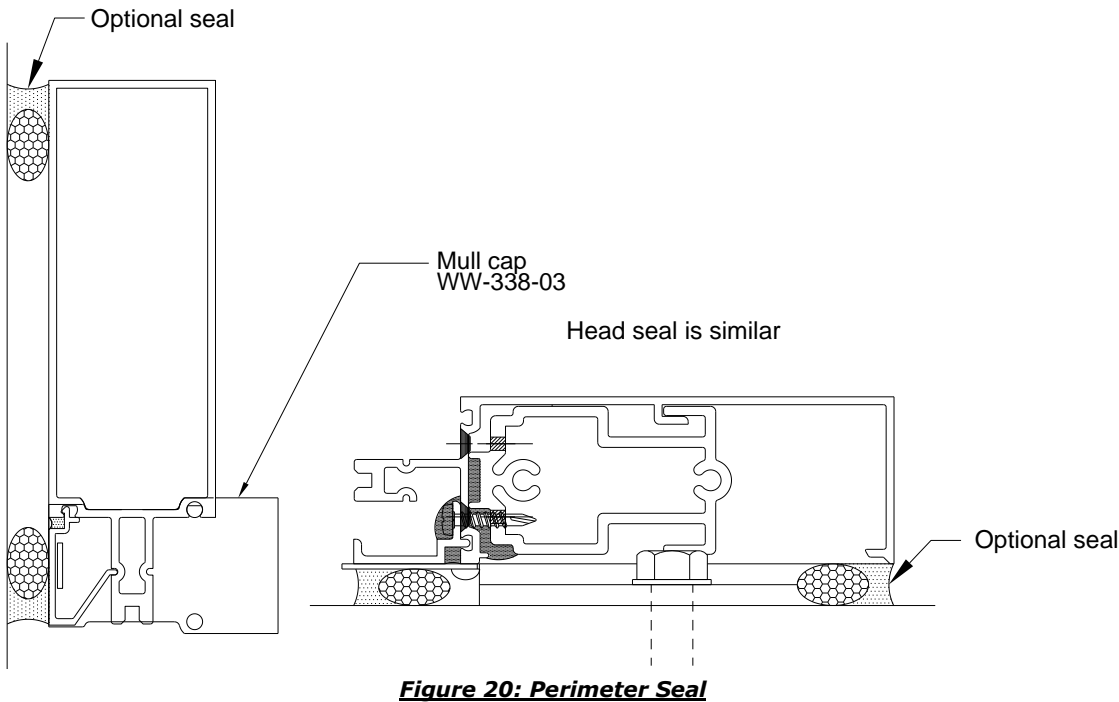
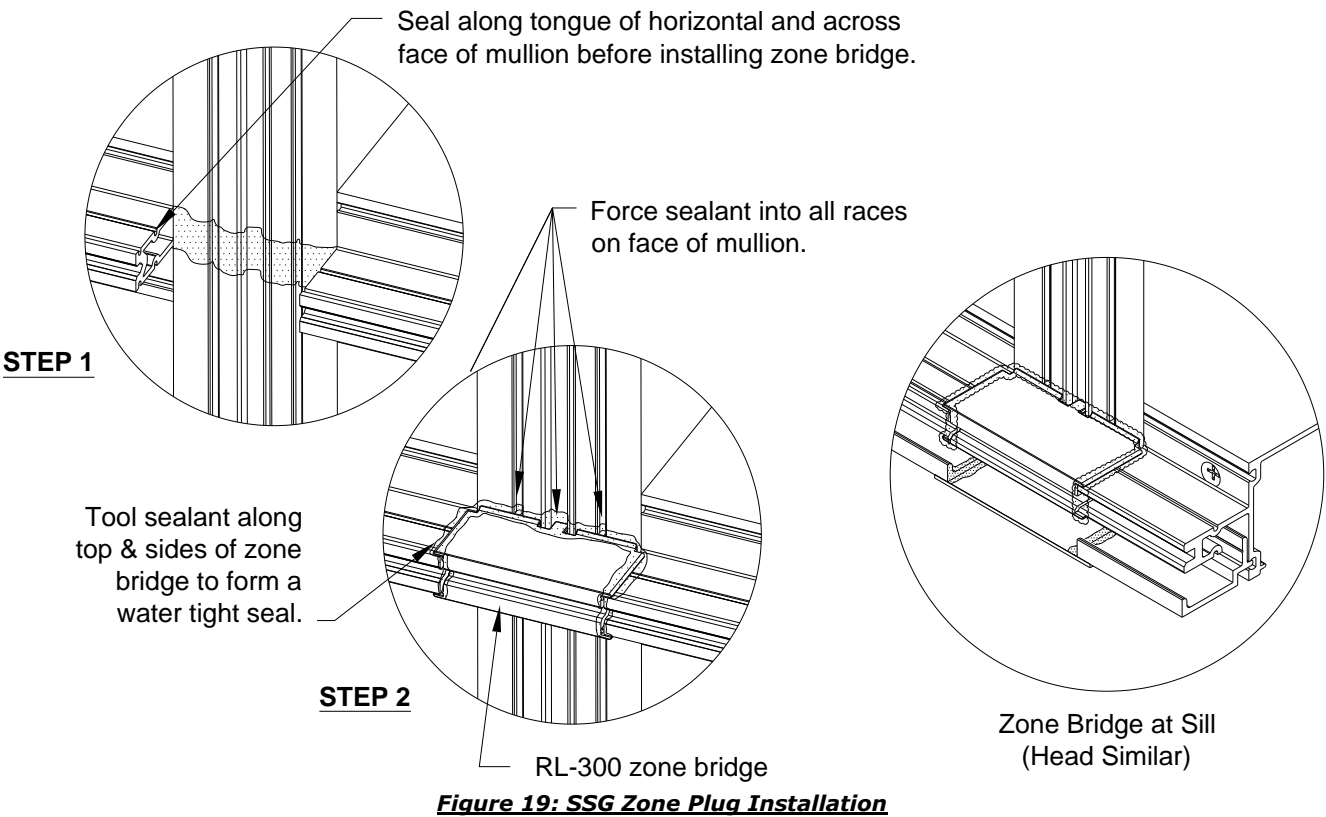


ZONE PLUG AT SILL

Seal between sill, vertical & mullion cap

Figure 18: Zone Plug Installation

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12.0 Horizontal Expansion / Vertical Splice Installation & Sealing

Note: Follow sealant manufacturer's guidelines for proper joint width based on anticipated movement. A minimum 1/2" joint is recommended. Standard splice joints are engineered to accommodate thermal expansion only. They do not allow for movement in floor levels. Refer to approved shop drawings for special circumstances, or contact your nearest Oldcastle BuildingEnvelope® facility.

- 12.1 Bellows gasket retainers, RL-257 & WW-258 will be fabricated to run from mullion center to mullion center except at jambs. These will be cut to extend full width of jamb mullion. A 1/4" joint will be located between retainers at each intermediate mullion. Retainers will be cut D.L.O. plus (+) 2" at jambs and D.L.O. plus 7/8" at each intermediate vertical. RL-257 will be notched to clear mullion as shown in RL-257 Fabrication *Figure 21*. WW-258 will be notched to clear mullions as shown in *Figure 22* below. Notch 2-1/8" at Jambs and 15/16" at Intermediate Vertical Mullions.
- 12.2 RL-257 upper gasket retainer will be square cut typical, miter as required at corners. Drill #11 (.191) holes at 12" on center. See *Figure 21*.
- 12.3 WW-258 lower gasket retainer will be square cut typical, miter as required at corners. Drill #11 (.191) holes at 12" on center for attachment. 5/16" dia. weep holes must also be drilled in upper channel at centerline of day light opening. See *Figure 22*.

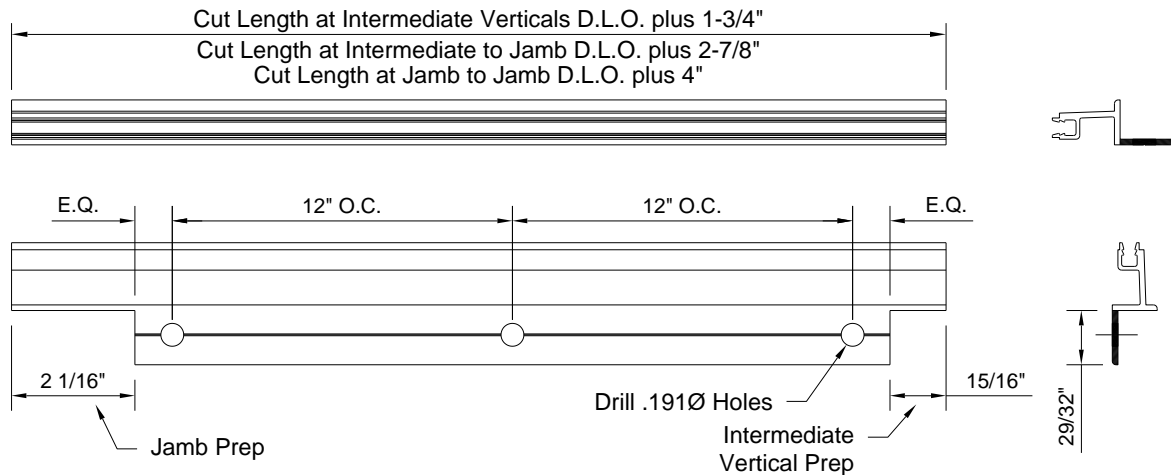


Figure 21: RL-257 Fabrication

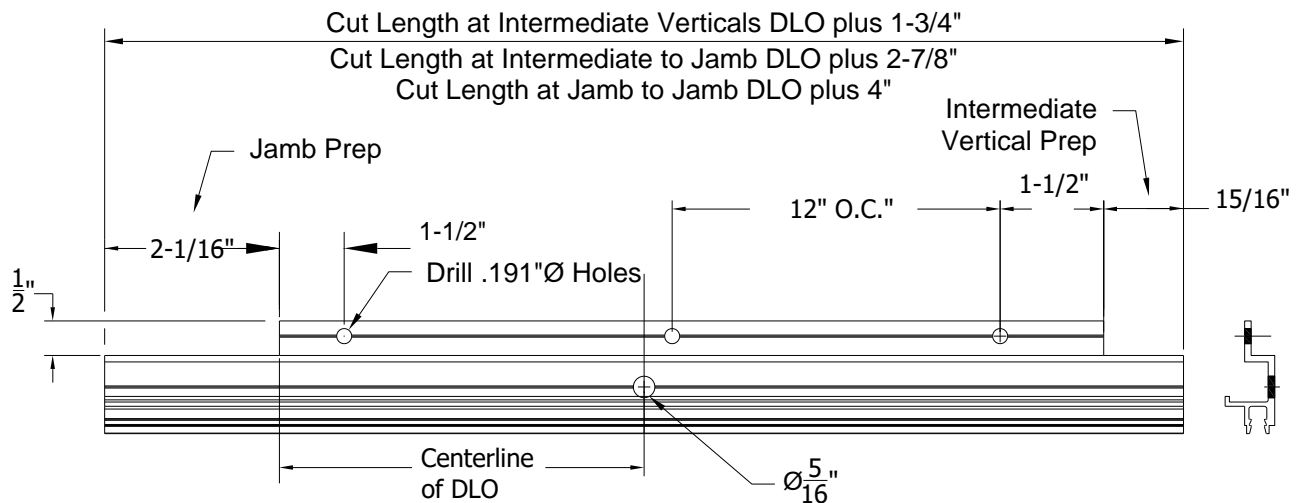


Figure 22: WW-258 Fabrication

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- 12.4 Offset pressure plate and face cover joint locations per *Figure 23*. Seal the pressure plate and face cover joints as shown in *Figure 24*.
- 12.5 Apply bond breaker tape to the face of splice sleeves, returning back on the sides 1" minimum. Insert backer rod into the hollow of the vertical mullion, top and bottom. Seal between top and bottom mullion from the front of the tongue to 1" behind glass pocket. Follow the contour of the glazing reglets with the sealant to ensure a good seal when gaskets are installed. See *Figure 24*.
- 12.6 Discontinue glazing adapters at splice joints. Install backer rod into cavity and seal between adapters. Marry adapter seal with main mullion seal. Refer to step 12.5 above for sealing notes at glazing reglets. Install "F" or "T" anchors at the sill condition prior to setting mullions. Each anchor must be anchored with a minimum of two anchor bolts. See approved shop drawings for bolt size and location.

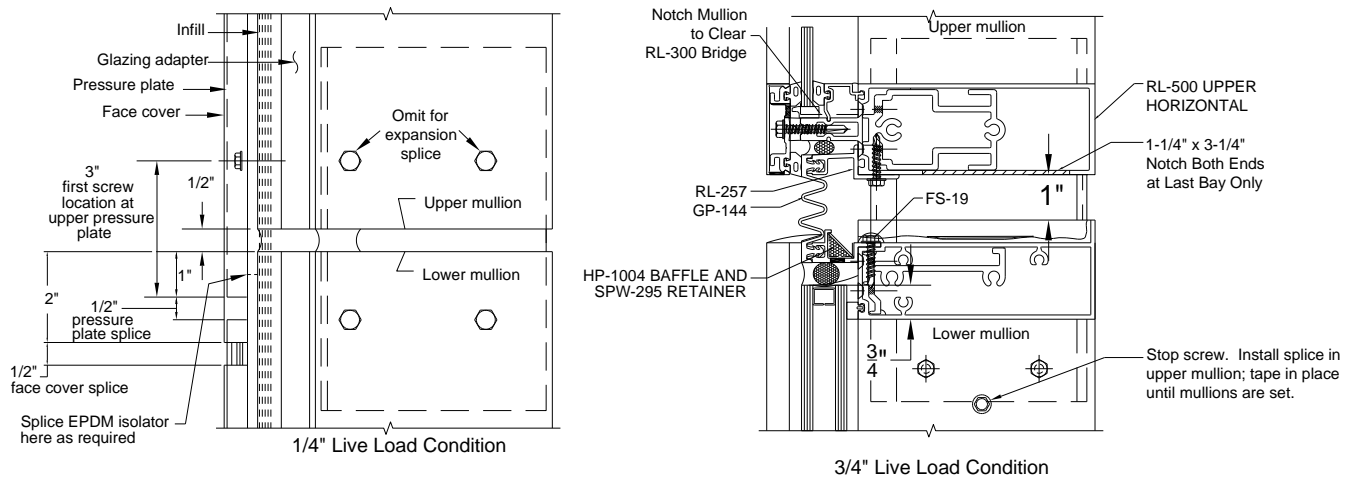


Figure 23: Vertical Mullion Splice

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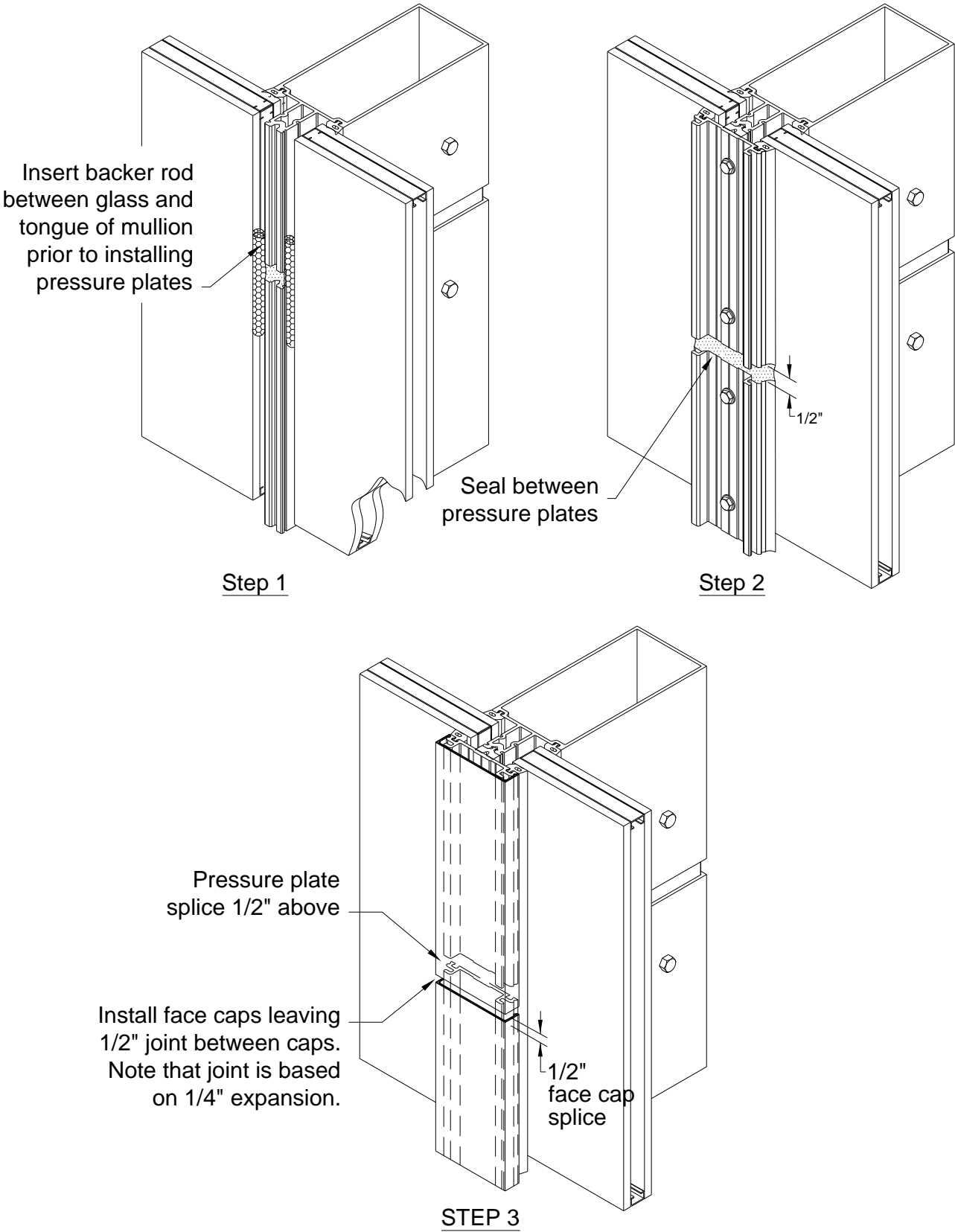


Figure 24: Splice Joint Sealing Instructions

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- 12.7 Install WW-258 lower gasket retainer to face of horizontal. Bed in continuous bead of sealant and cap seal all fasteners. A 1/4" joint will be located at mull centerlines. Attach with FS-19 fasteners at 9" on center.
- 12.8 Install HP-1004 baffles, held in place using SPW-295 baffle retainer. Apply a small amount of sealant to back edge of SPW-295 to hold in place during shipment. Seal ends of horizontal to vertical mullions as shown in *Figure 25*. Assembly and sealing of gasket retainer should be performed as part of shop assembly of screw spline frames.

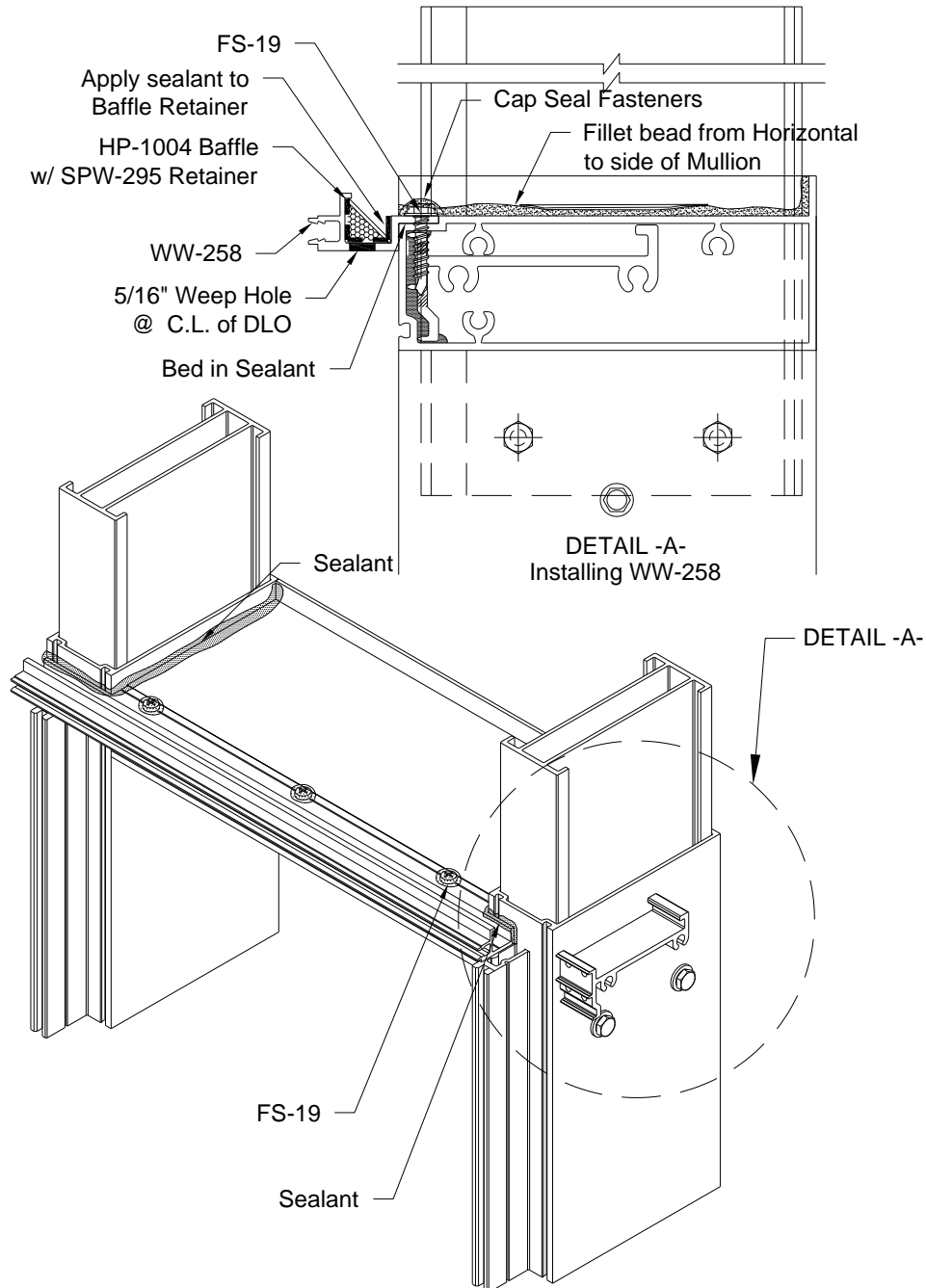


Figure 25: Horizontal Assembly

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- 12.9 Install RL-257 upper gasket retainer to face of horizontal. Bed in continuous bead of sealant and cap seal all fasteners. A 1/4" joint will be located at mull center lines. Attach with FS-19 at 9" on center.

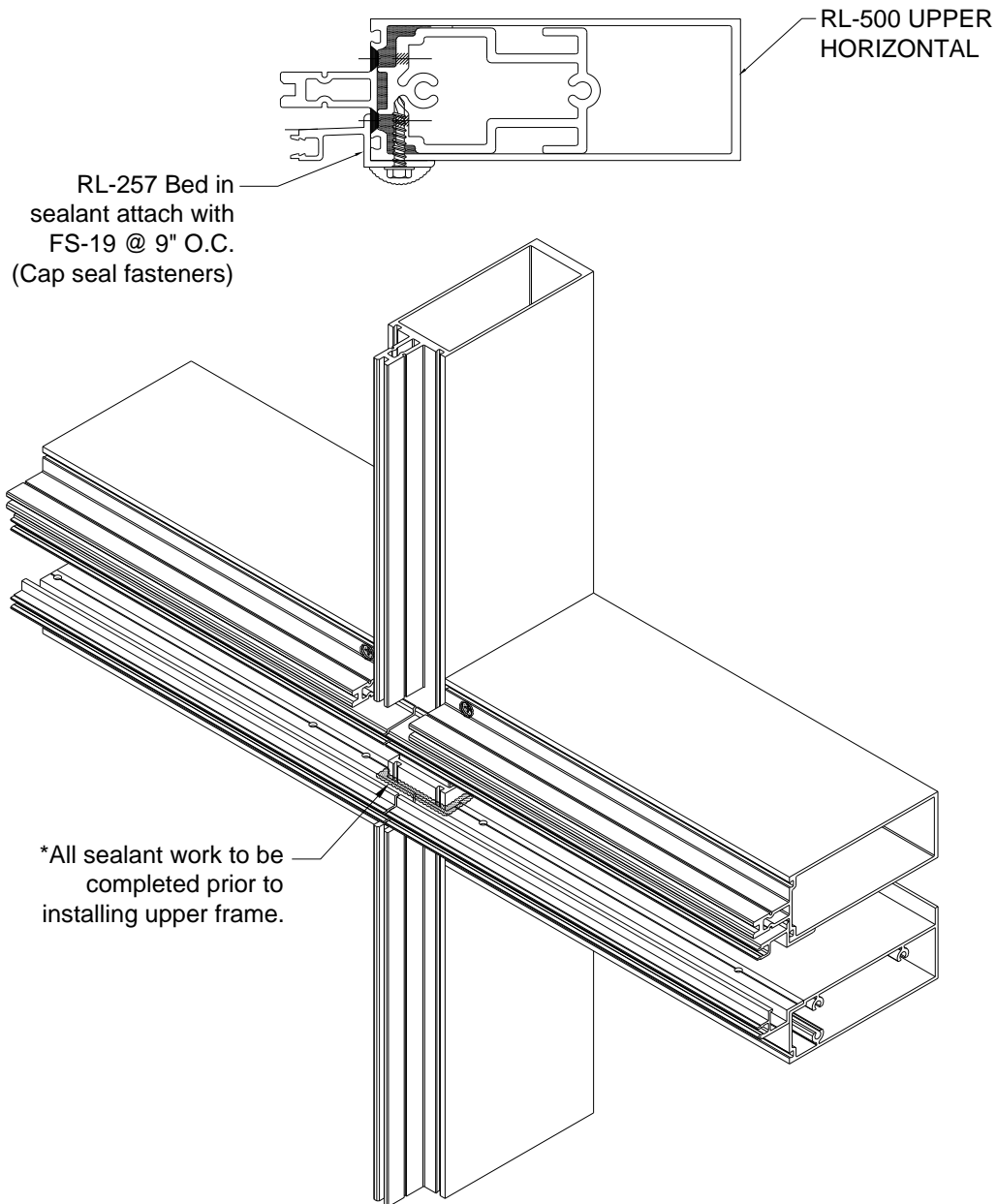


Figure 26: Stack/Splice Joint

- 12.10 After framing is installed, install 4" long strips of Silicone Sheet to RL-257 and WW-258 retainers at center line of each vertical mullion. Sheet to be bed in sealant and tooled to form a splice connection. Install Silicone Sheet and sealant at WW-258 in lower unit prior to installing unit above. See *Figure 27*.
- 12.11 Gasket race of RL-257 to be filled with continuous bead of sealant and GP-144 gasket inserted into races for RL-257 and WW-258. Leave ends of gasket loose at jambs or corners and set once molded jamb or corner gaskets are installed. See *Figure 27*.

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- 12.12 Install GP-144-01 jamb sleeve (corner gasket similar) by sealing RL-257 gasket race, sealing end flap and installing onto mullion and mull splice. Once in place, run bead of sealant across splice section of jamb gasket. Install GP-144 gasket over jamb splice and then run exterior bead of sealant over splice area to create watertight seal. See *Figure 27*.

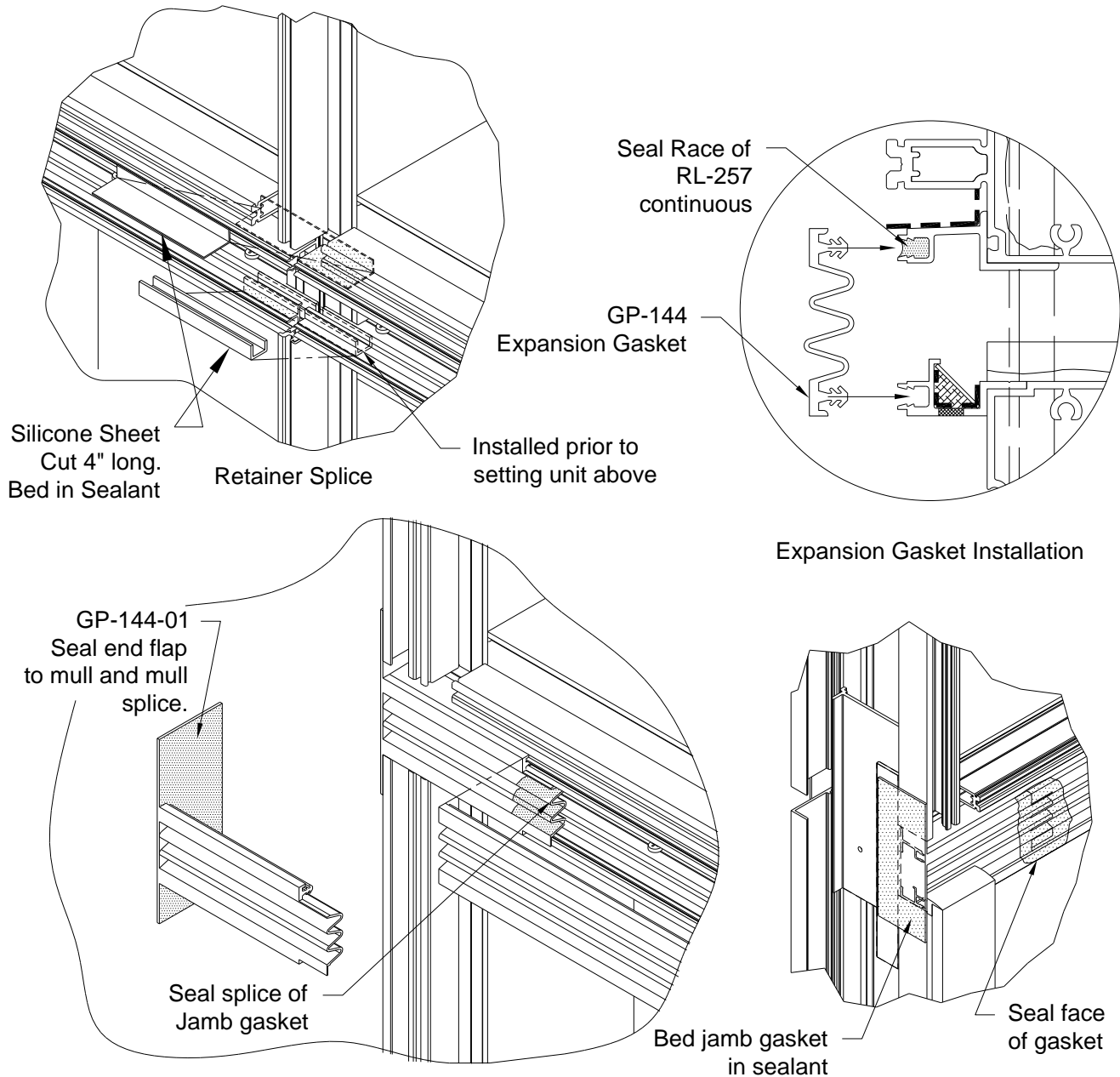


Figure 27: Expansion Gasket Installation

- 12.13 Glaze per instructions in *GLAZING* section of this manual.
- 12.14 Structural Silicone seal is required at top of glass of lower units. This seal must extend forward to cover top of glass. Insert backer rod and seal face of glass to lower side of WW-258 gasket retainer. See *Figure 28*. Do not obstruct weep hole in WW-258 gasket retainer.
- 12.15 Face caps for lower units will be cut Mullion Length minus 1/2". Pressure plate Mullion Length minus 3/4". Upper unit will cut per standard see section 3.0. Multi span will repeat cut lengths for lower units as needed.

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- 12.16 Once pressure plates and face caps are installed. Top side of face cap will have backer rod inserted into opening and sealant applied to seal pressure plate and cap. See *Figure 29*.

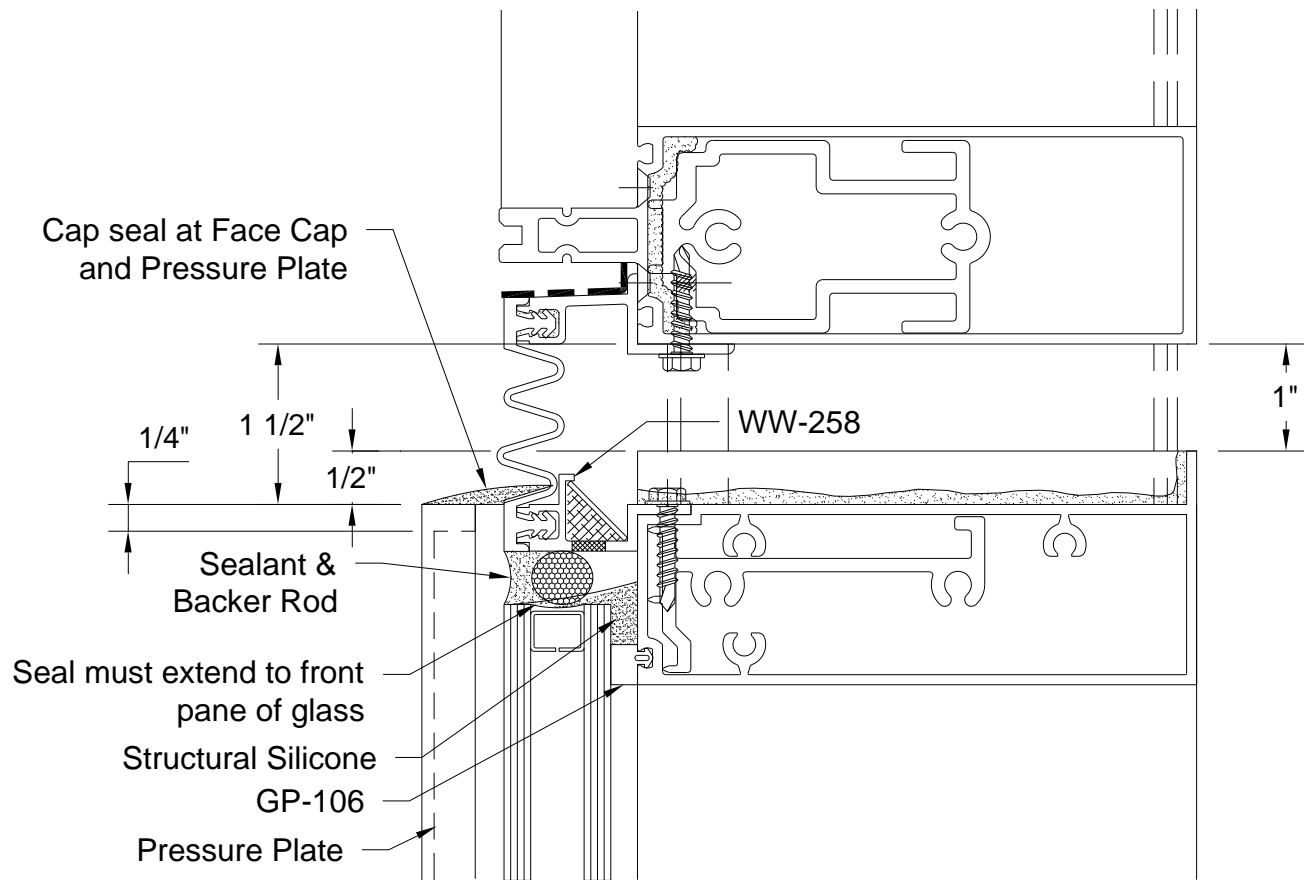


Figure 28: Structural Seal at Lower Units

Insert Backer Rod into Face Cap and Cap Seal Cap and Pressure Plate

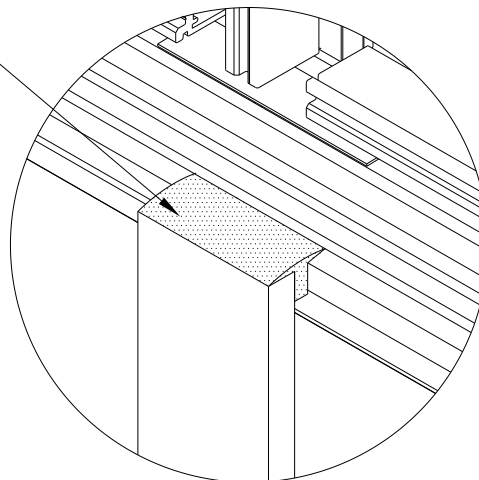


Figure 29: Face Cap / Pressure Plate Seal

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- 12.17 When using the optional RL-583 (WW-483) upper horizontal a WW-259 interior snap on cover will be required. The cover must be notched to clear jamb mullions and intermediate mullions. Ends of cover will be notched 2-1/2" at jambs to extend to edge of jamb. If the cover is run across intermediate vertical mullions then a 2-1/2" notch will also be fabricated at these locations. Where the cover needs to be spliced at intermediate mullions the notch will be 1-1/4" long and cover will be cut mullion centerline minus 1/16" to form a 1/8" joint. See *Figure 30* below for fabrication and *Figure 31* for butt joint.

Note: GP-32007 gaskets are to be pre-installed into the WW-259 trim prior to installation. Cut to trim length, slide into gasket races and stake at both ends to secure.

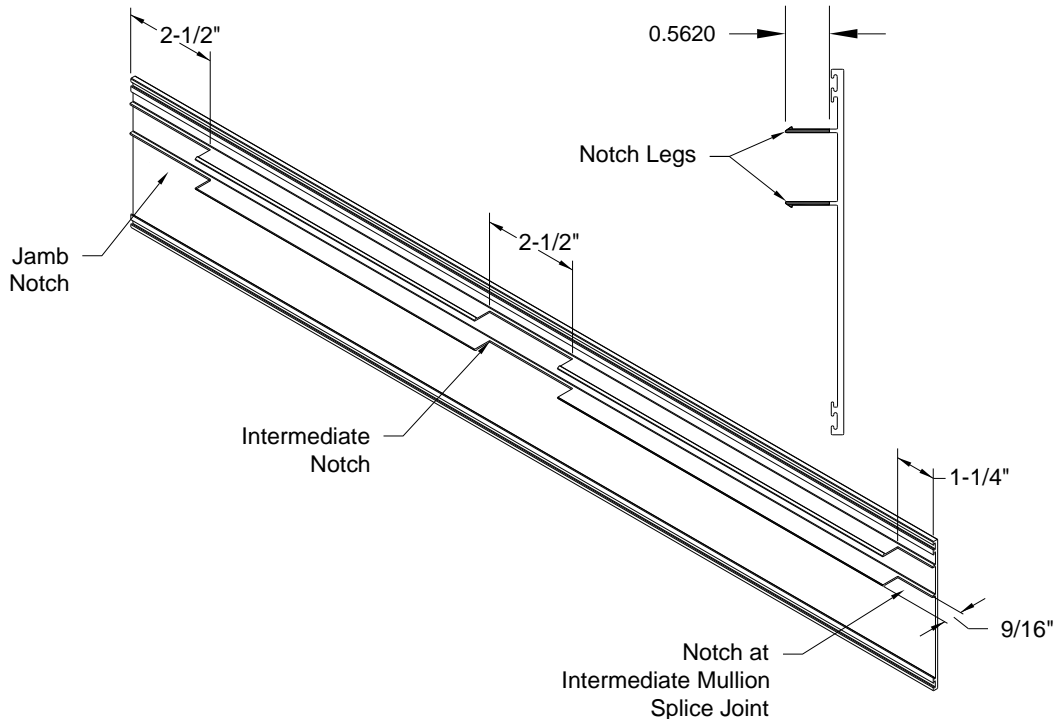


Figure 30: WW-259 Fabrication

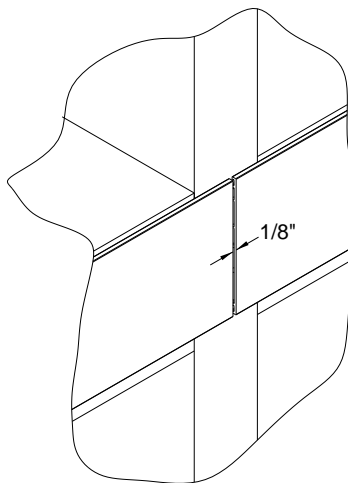


Figure 31: WW-259 Intermediate Mullion Splice Joint

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GLAZING

13.0 Glass Sizing

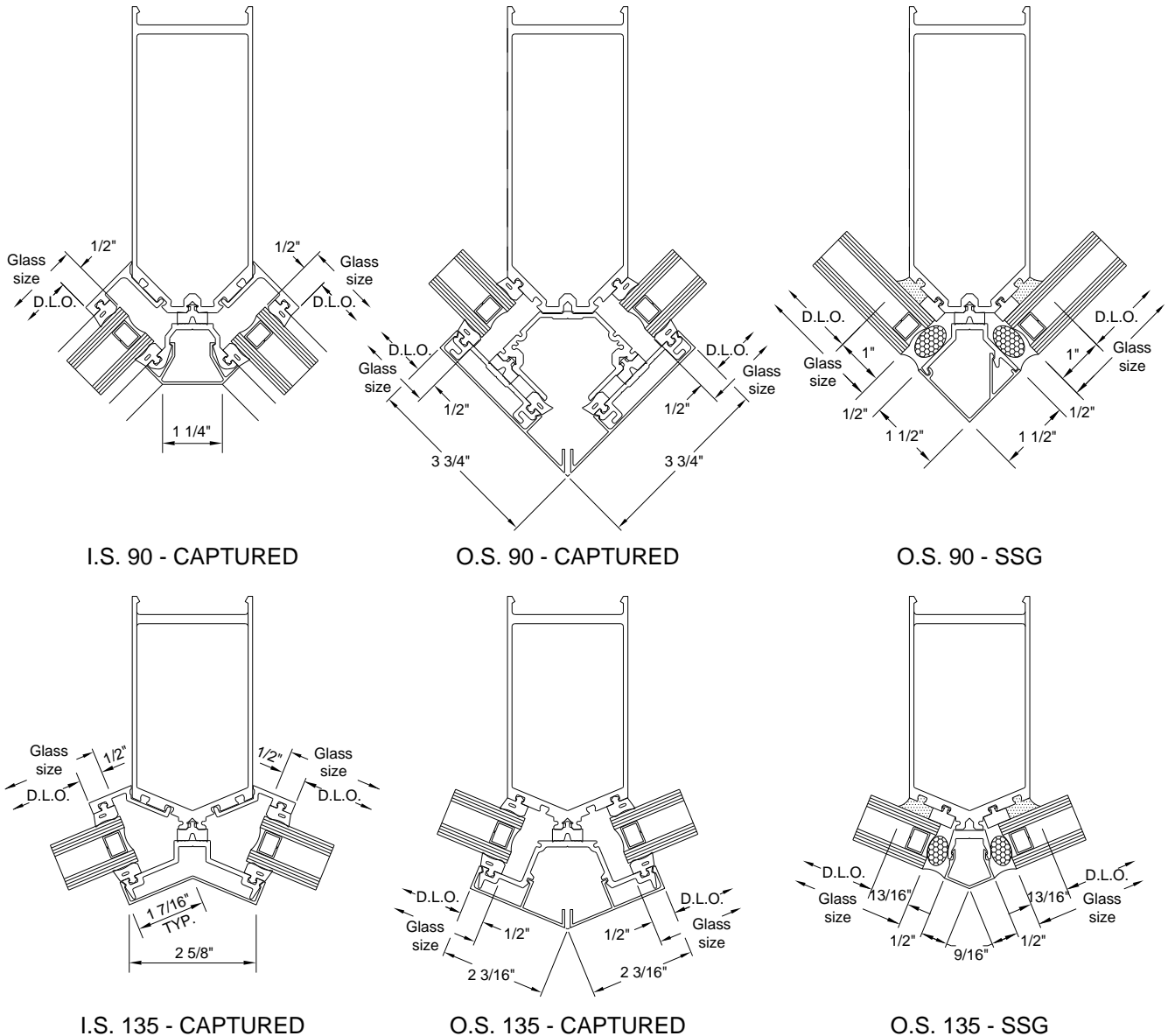
Note: Glass tolerances are not addressed in the formula below. Consult glass manufacturer for glass tolerances prior to ordering.

13.1 Glass Size Calculation

13.1.1 Captured System Glass Size = D.L.O. plus (+) 1" for WIDTH and HEIGHT

13.1.2 SSG System Glass Size = D.L.O plus (+) 1-1/2" for WIDTH; D.L.O plus (+) 1" for HEIGHT

13.2 See Figure 32 for calculation at corner mullions



SOME PARTS NOT SHOWN FOR CLARITY

Figure 32: Glass Size Calculation at Corners

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14.0 Optional Glazing Adapter Installation

- 14.1 See *Figure 36* for glazing options.
- 14.2 Install vertical adapters first, leaving an equal overlap into each pocket. For captured verticals and all horizontals, insert the hook side into the glazing reglet, then insert leg into reveal on mullion. See *Figure 33*. Refer to section 12.0 if vertical mullion is spliced within a spandrel lite. Glazing adapters must be installed after mullion splice is sealed.
- 14.3 For SSG mullions, install locator leg into one of the glazing reglets. Locate, match drill, and seal penetrations, then secure to mullion with FS-318 fastener 3" from the ends and 12" O.C. See *Figure 33*.
- 14.4 Install horizontal adapters maintaining an equal gap at each end. Once all adapters have been installed in the opening, seal all joints between the vertical and horizontal adapters. Run a bead of sealant in the groove formed between the adapter and mullion. This seal must be continuous around opening and must marry with the seal at the horizontal to vertical adapter joints. See *Figure 35*.

Note: For horizontal adapters that are adjacent to SSG mullions, a small notch must be made to the tongue engagement hook in order to clear the SSG mullion bridge. See *Figure 36*.

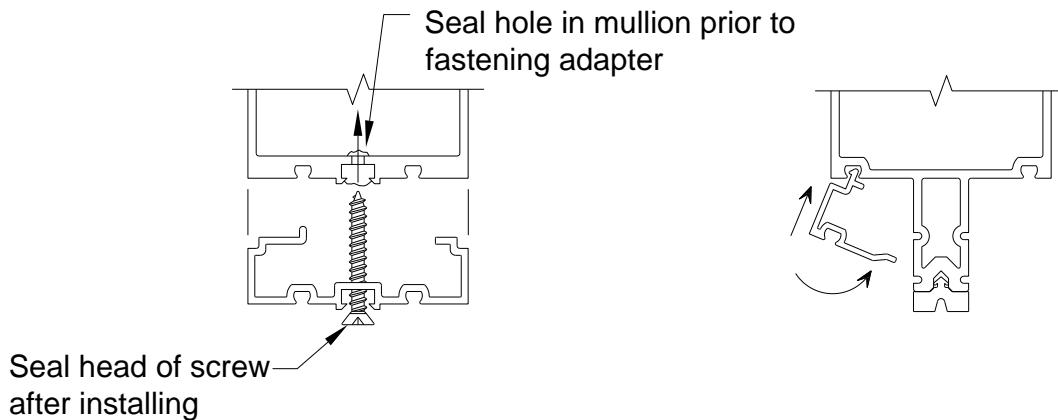


Figure 33: Installing Glazing Adapters

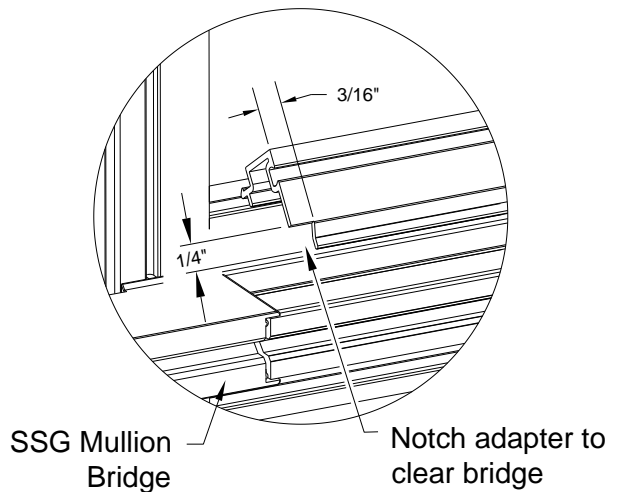


Figure 34: Notching Adapter for SSG Mullion Bridge

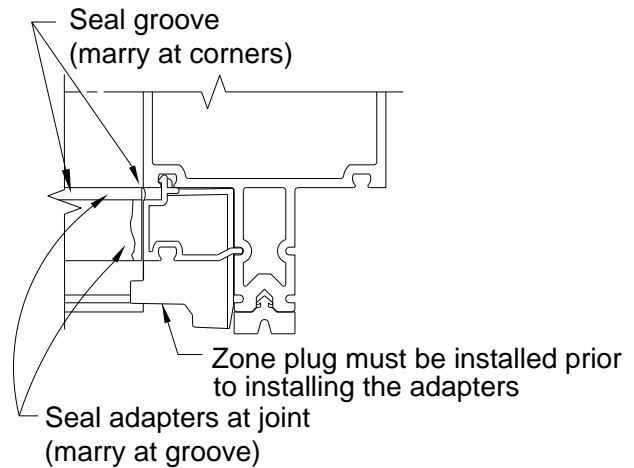


Figure 35: Sealing Glazing Adapters
Vertical Shown; Horizontal Similar

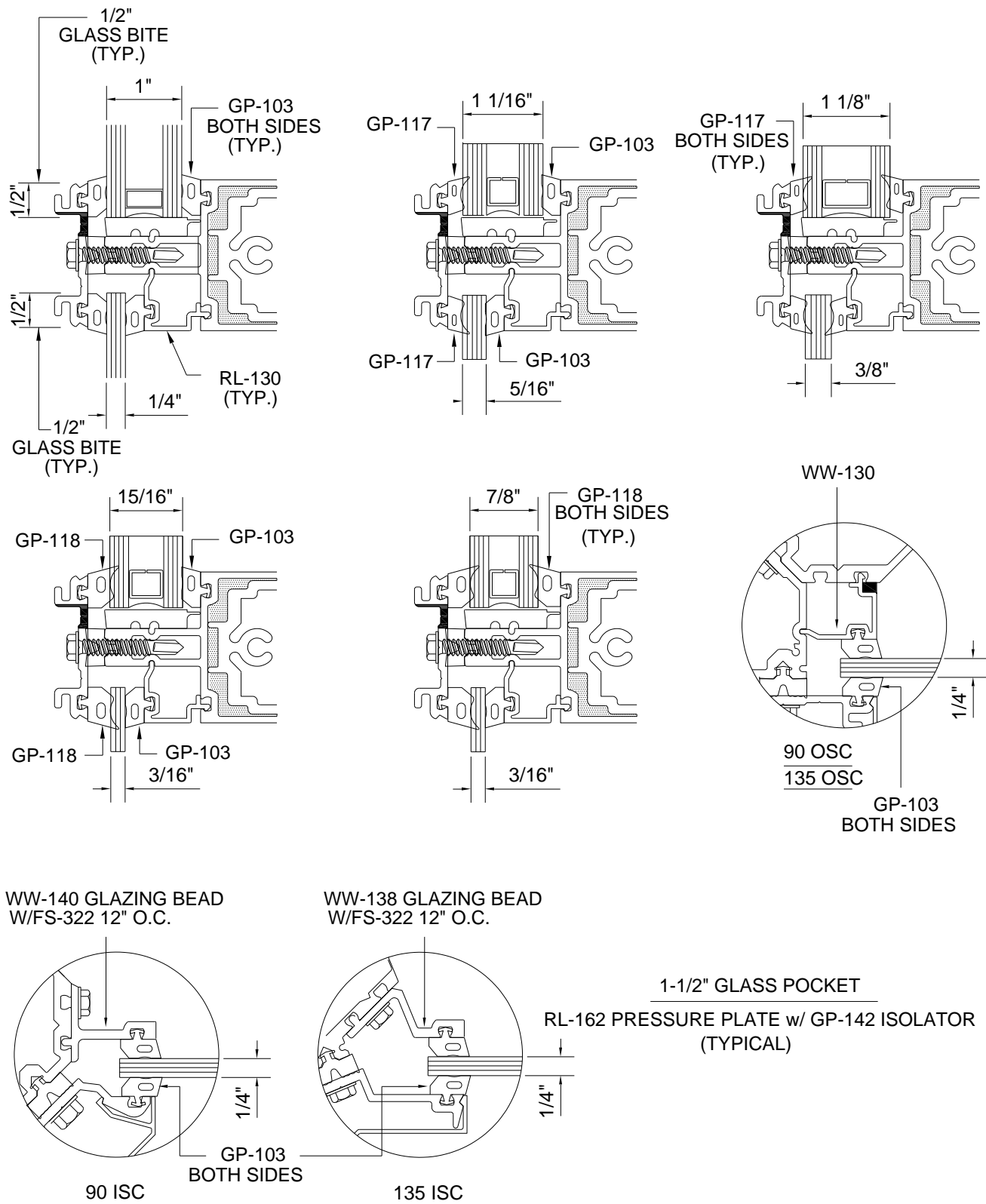


Figure 36: Glazing Options

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15.0 Optional Transition Glazing (SSG to Captured)

- 15.1 When using RL-141 to create a captured opening using the SSG vertical mullion. The adapter **MUST** be slid in place and fastened to mullion prior to erecting mullion.
- 15.2 The RL-141 adapter will be attached to mullion with a FS-318 fastener. Location and spacing will be determined by Engineer's review. See *Figure 37*.

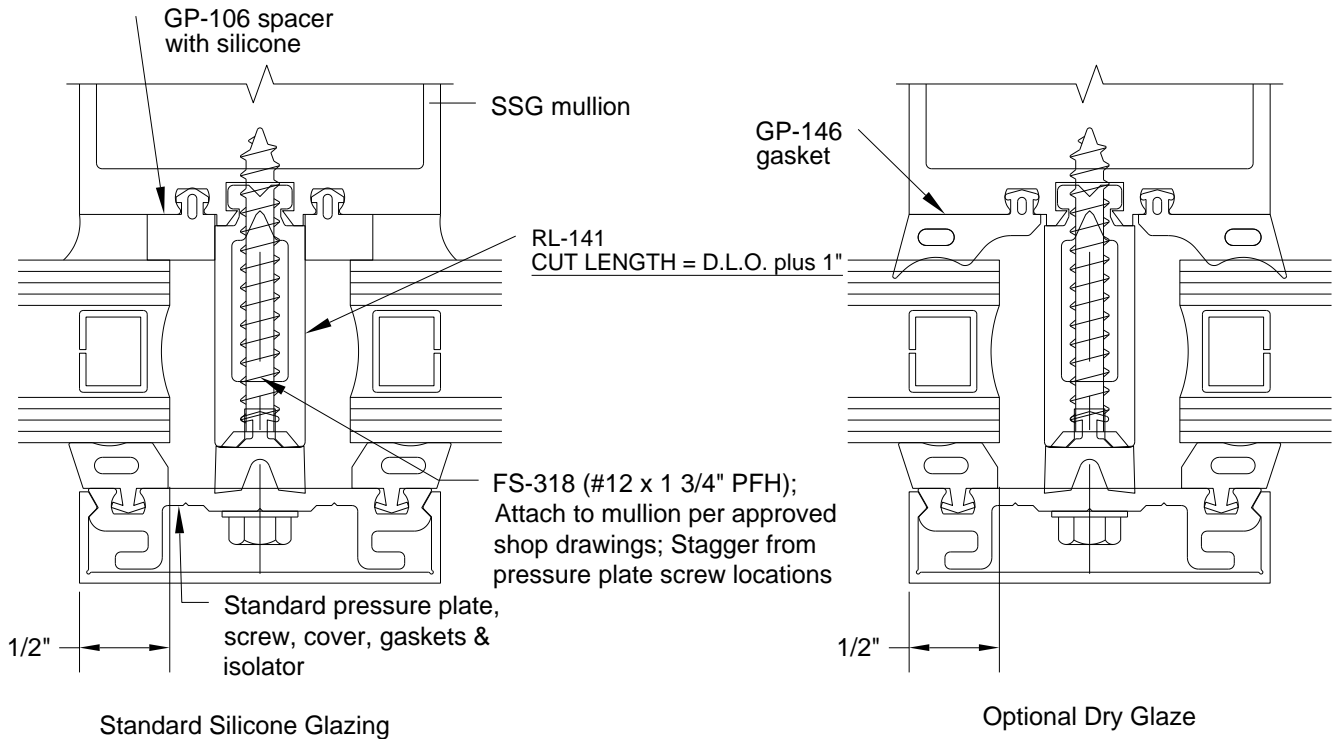


Figure 37: Captured Glazing Adapter for SSG Mullion

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16.0 Preparation of Frame Opening for Glass

- 16.1 Prepare the frame opening by removing all dirt and debris from the glazing pockets, pressure plates and gasket reglets.

SETTING BLOCKS

- 16.1.1 Set glass on two setting blocks, part number noted in the shop drawings. The preferred location is at the 1/4 points.

DEFLECTION

- 16.1.2 If the 1/4 point location causes excessive deflection of the intermediate horizontal, move the setting blocks equally towards the corners of the lite as far as the 1/8 points. The outer end of the block **CANNOT** be closer than 6" to the corner of the glass.
- 16.1.3 The intermediate horizontal must not exceed 1/8" and a door header is limited to 1/16". Check deadload charts for proper setting block locations.

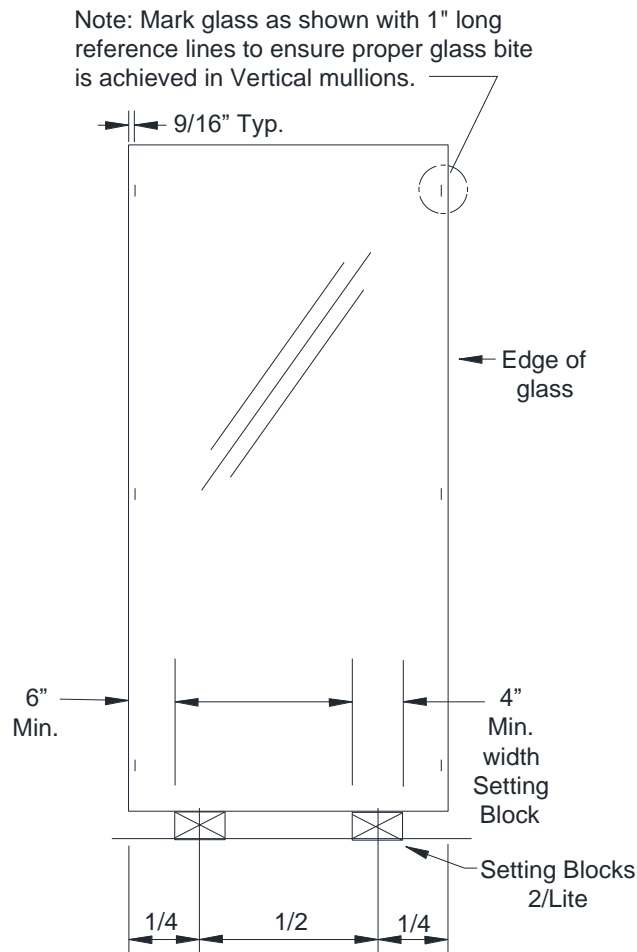


Figure 38: Glass Marking and Setting Blocks

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17.0 Interior Gasket and Setting Blocks

- 17.1 Install face gaskets into all pressure plates. Install silicone spacer gaskets into the SSG mullions. Crowd all gaskets into members to avoid gaps caused by relaxation of gasket material.
- 17.2 Install thermal spacer into groove on face of mullion tongues. Run through at vertical splice joints. Cut short 1/8" from each end of the mullion. See Figure 39.

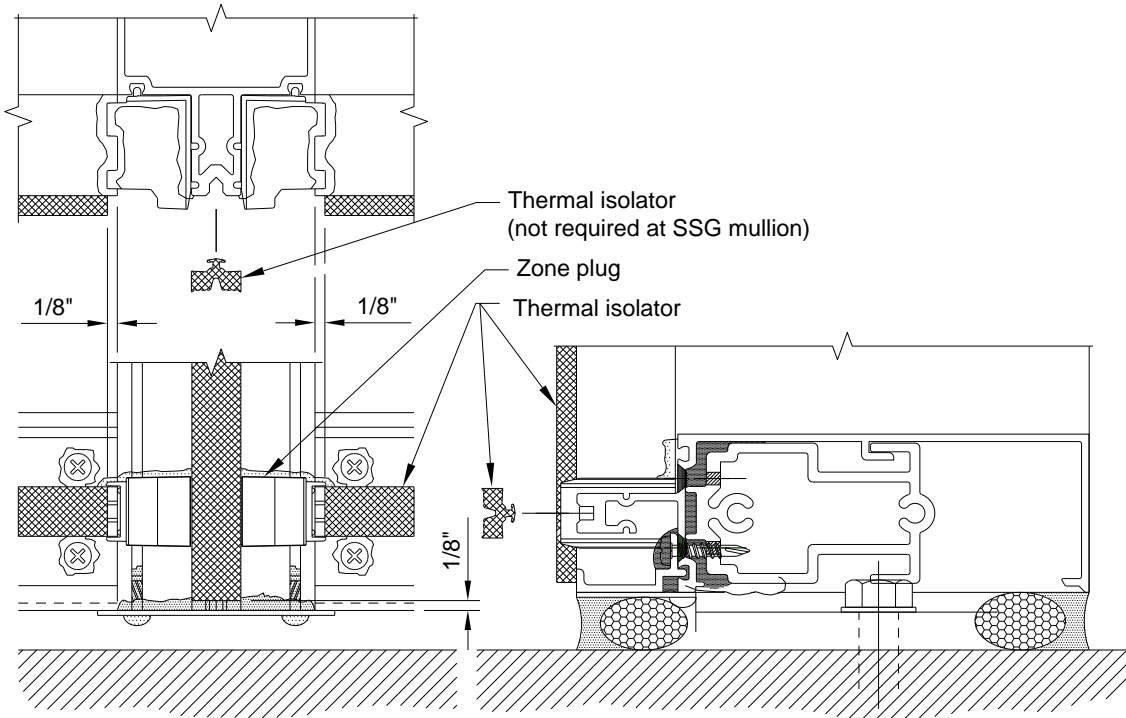


Figure 39: Thermal Isolator Installation

Note: To avoid silicone curing before glass is set in place and contamination from job-site debris, glazing prep must be done as each opening is glazed. Do not pre-seal the gaskets in the entire frame; seal only the gaskets in the opening for which you are ready to set glass.

- Install interior gaskets into back member (vertical gaskets first). If mullion is spliced, run gasket through the splice joint, setting in fresh silicone at the joint. Trim the gasket dart as required to form an air-tight seal. (Glazing gaskets at verticals run through; horizontal gaskets butt into the vertical gaskets.
- Crowd gaskets into corners, cutting horizontal gaskets at a slight angle to conform to the bevel on vertical gaskets.
- Pulling the horizontal gasket back at the ends, seal joint at gasket corners **JUST PRIOR TO GLAZING THE OPENING**. Release the gasket back to its original position, making sure sealant fills entire joint.
- Tool corner joints after glass is set and temporary glazing retainers are in place.

Note: Sealant is not required at the horizontal gasket abutting an SSG mullion. This gap will be sealed during application of structural silicone.

- 17.3 Position setting blocks at correct location (two per lite). Refer to Section 16.0 for setting block locations. Lubricating the top of setting blocks with glass cleaner or soapy water will help ensure proper setting of glass. **Note: Consult glass manufacturer for correct setting block location and length for glass sizes in excess of 40 sq./ft.**

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18.0 Setting Glass

- 18.1 Set glass in opening. Ensure that correct glass bite is maintained on all sides. **CAUTION** Be certain that glass is placed firmly against interior gasket to ensure a proper seal and to avoid binding of the glass on the setting block.

18.1.1 Captured Mullion Glass Bite = 1/2"

18.1.2 SSG Mullion Glass Bite = 3/4"

18.1.3 Reference shop drawings for custom conditions

- 18.2 Temporarily hold glass in the opening with WW-333 temporary glazing retainers & FS-325 fastener. Use SPW-PP-3 retainer for SSG verticals. Torque the FS-325 fastener to **60 in-lbs.**

18.2.1 WW-333 temporary glazing retainers must be applied at each glass edge 3" from the corner (minimum of 8 per lite). Glass edges greater than 4' in length but less than 8' require an additional retainer at the glass mid-span.

18.2.2 Retainers are intended for short term use only. Additional retainers may be required to withstand full design wind load pressures.

18.2.3 Full length pressure plates must be installed if severe weather or high wind loads are anticipated. See *Figure 40* and *Figure 41*.

NOTE: Temporary retainers are not intended to meet safety glazing fall out requirements!

WW-333-01 temporary glazing retainer.

Locate at 3" from edge of glass. Additional clips may be required based on field conditions and glass size.

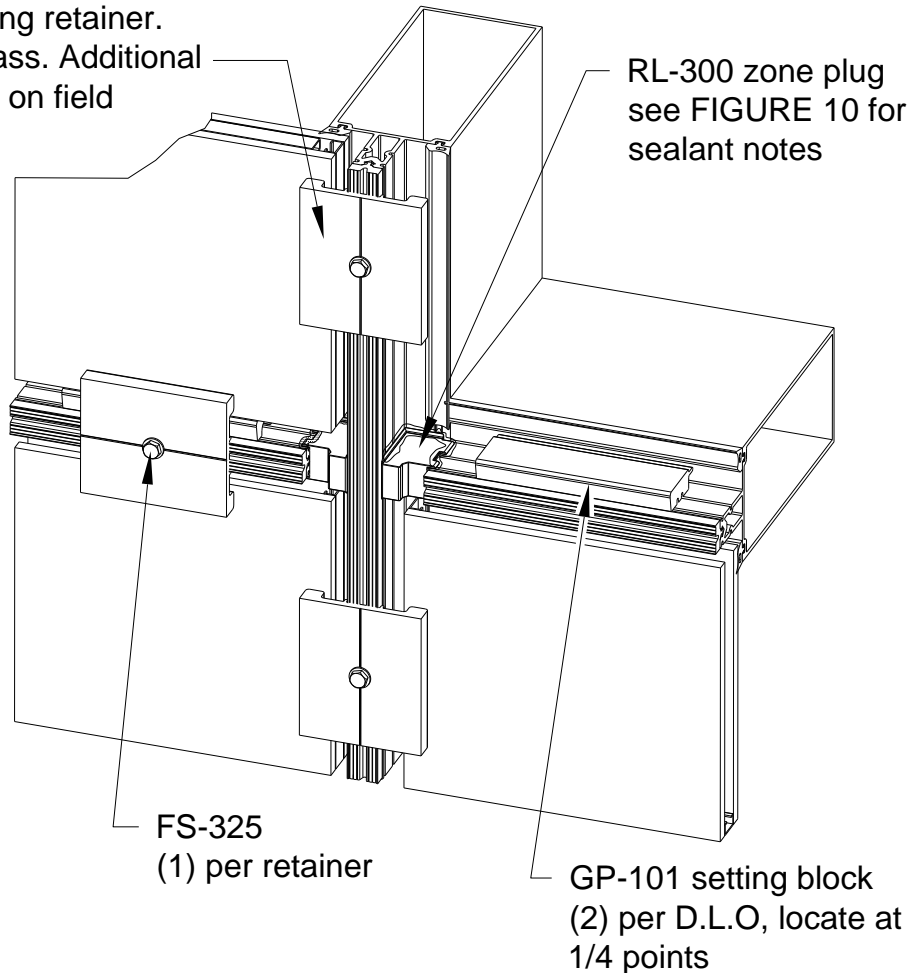


Figure 40: Glazing Instructions

SSG MULLION

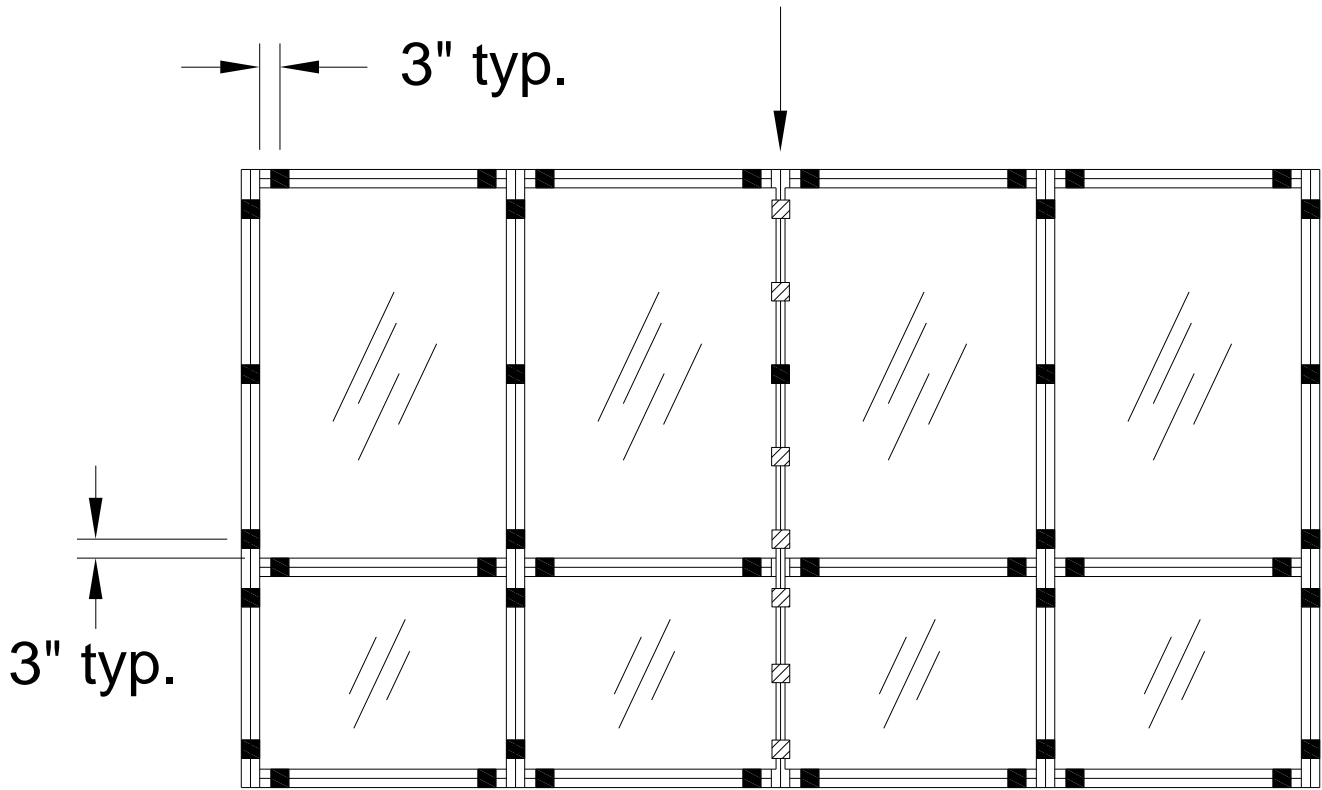


Figure 41: Location of Temporary Glazing Retainers (Typ.)

19.0 Pressure Plate Sealing & Installation

- 19.1 If required, install GP-114 side blocks with silicone at centerline of each lite of glass, along vertical edges, or per approved shop drawings. For framing that will be subjected to seismic events, consult glass manufacturer for preferred location. **NOTE:** Side blocks are not required at SSG mullions.
- 19.2 Repeat steps in Section 17.0, Section 18.0 and Section 19.1 until all glass is set, working row by row up the elevation. For elevations requiring vertical mullion splices, refer to section 12.0, before continuing the installation.
- 19.3 Prior to installing vertical pressure plates, apply sealant to the face of each horizontal zone plug. See Figure 42. Vertical pressure plates and face caps must be installed before the horizontal pressure plates are applied.

Note: FS-325 (@ Aluminum) or FS-315 (@ Polyamide) pressure plate fasteners must be located 1-1/2" from horizontal/vertical mullion intersections in order to maintain proper compression on the glass. Drill 7/32" holes in pressure plates as required.

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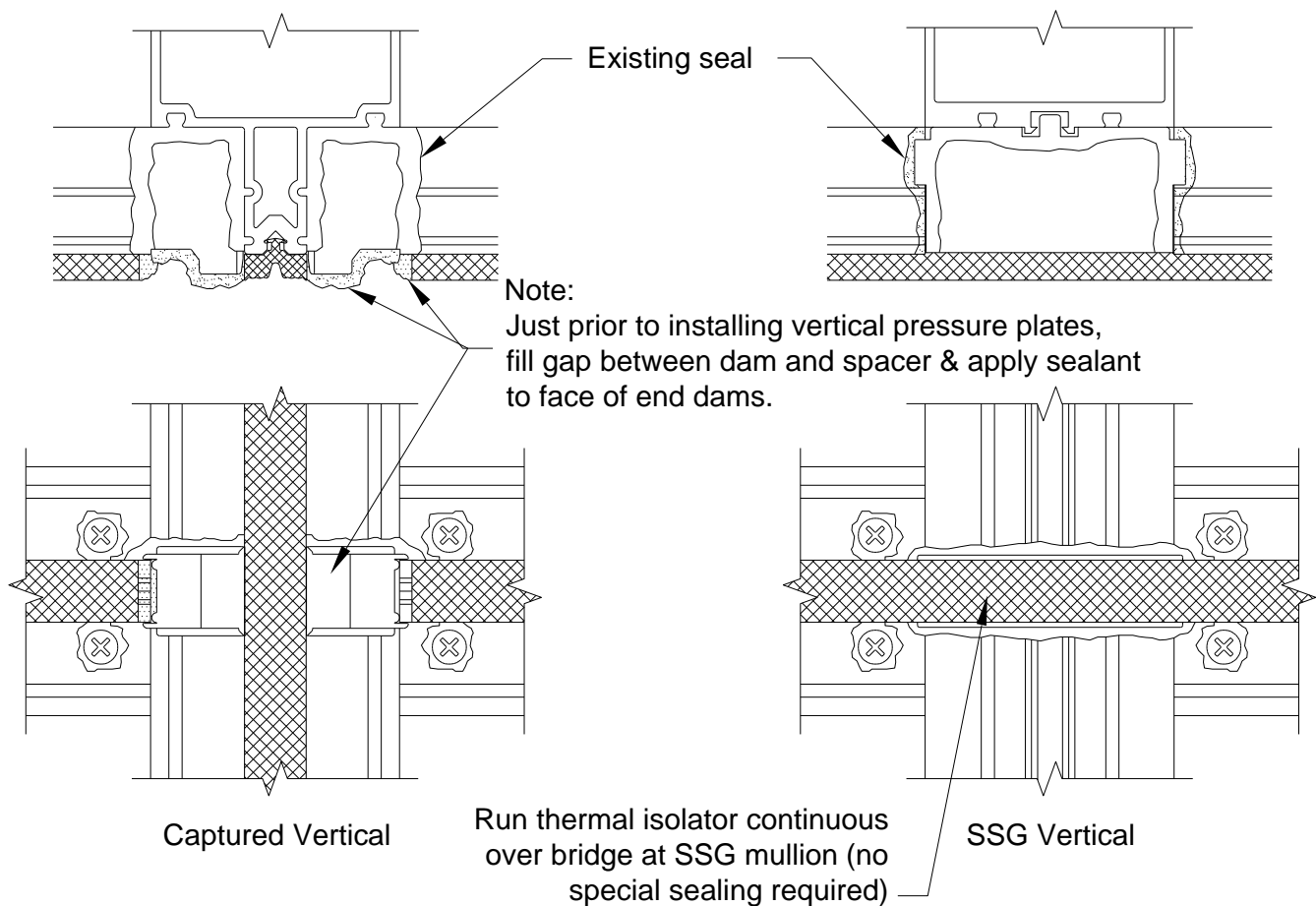


Figure 42: Sealing for Pressure Plates

- 19.4 After removing vertical temporary retainers, install vertical pressure plates with FS-325 (@ Aluminum) or FS-315 (@ Polyamide) fasteners, holding back 1/8" from the ends of the vertical mullion.
- 19.5 After removing horizontal temporary retainers, center horizontal pressure plates in opening, leaving 1/8" gap on each end. Make sure that weep holes are on the top side of the pressure plate.

NOTE: Horizontal pressure plates and face covers run continuous over SSG mullions, not to exceed 3 lites in length. See Figure 43 for splicing and sealing instructions.

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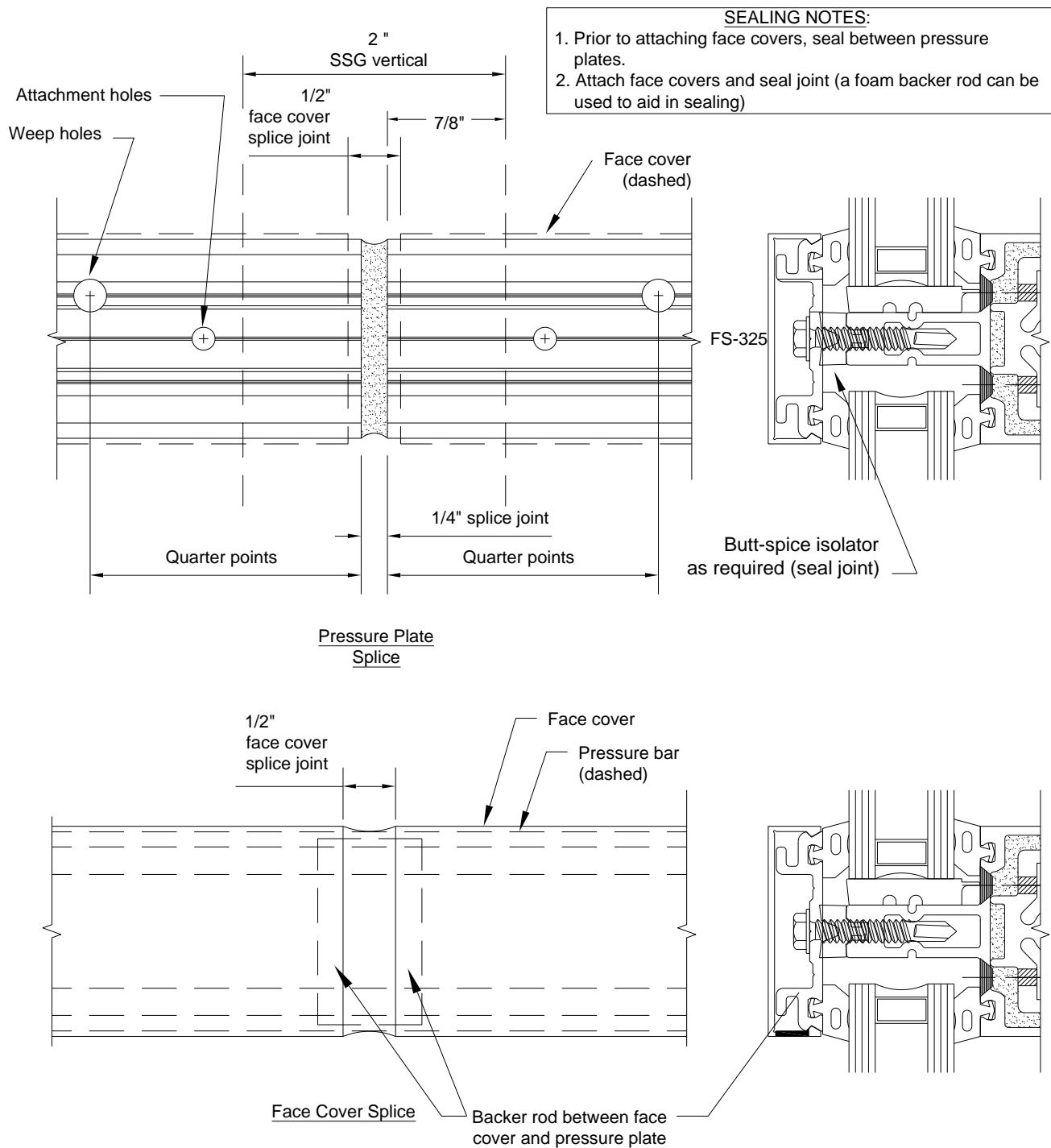


Figure 43: Pressure Plate/Face Cap Splicing & Sealing @ SSG Mullions
(Intermediate Horizontal Shown; Head & Sill Similar)

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- 19.6 After all pressure plates are installed on the frame, torque FS-325 to 90 in-lbs. (FS-315 @ 60 in-lbs. for polyamide.) The use of either a drill motor with a torque limiter or torque wrench can be used. If using a cordless drill, check torque periodically since battery usage will affect the torque setting.
- Note:** When installing the FS-315 and FS-325 self-drilling fasteners the fastener manufacturer recommends using a screw gun with an 1800 rpm drill speed.
- 19.7 Install vertical face covers. Using a wood block to protect the cover, apply with dead blow soft face hammer. Pin the vertical face covers once per length as required, concealing pin at a horizontal location. See *Figure 46* further information for fastening of covers.
- 19.8 Insert backer rod into cavity at the top of each vertical mullion. Seal off end of vertical, sloping sealant back to marry with the perimeter seal. See *Figure 44*.
- 19.9 Seal horizontal pressure plates against the vertical face covers. Tool sealant into the joint. See *Figure 45*.
- 19.10 Install horizontal face covers, leaving an equal gap at each end. Make sure that the weep hole in the face cover is on the bottom.

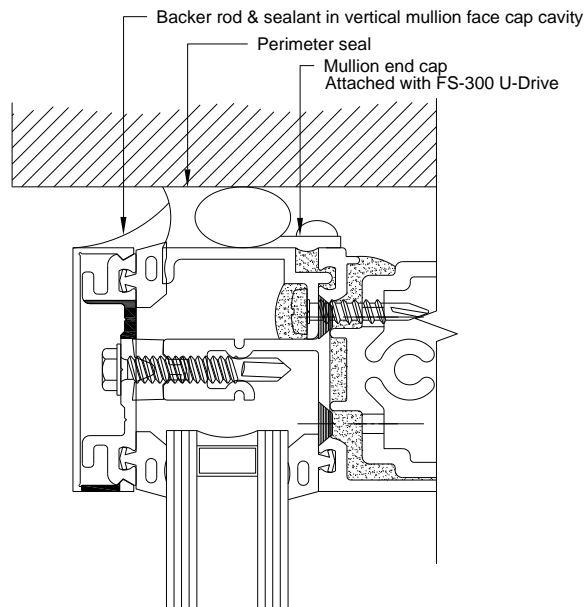
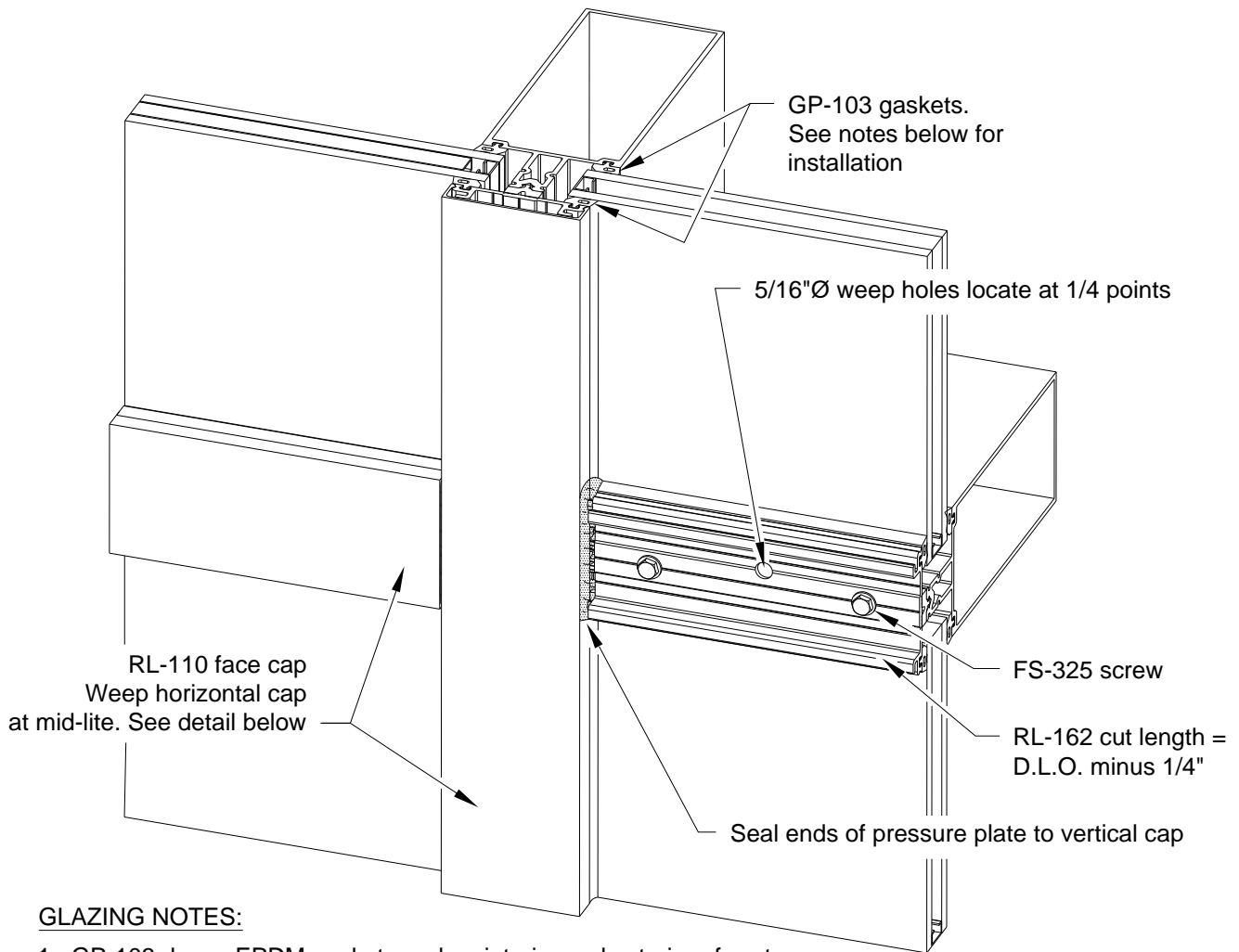


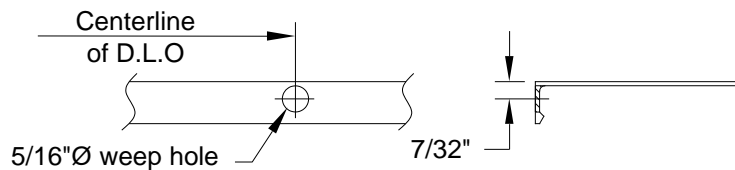
Figure 44: Sealing Top of Captured Verticals

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GLAZING NOTES:

1. GP-103 dense EPDM gasket used on interior and exterior of system.
2. Remove gaskets from reels and allow to relax overnight before installing.
3. Cut gaskets to allow minimum 1/4" per foot for any relaxation of gasket that may occur after installation.
4. To ensure proper pressure on glazing, 7/32" diameter holes may be drilled at the ends of each horizontal pressure plate as required. Locate at 1 1/2" maximum from the ends.



Horizontal Face Cap Fabrication

Figure 45: Horizontal Glazing

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20.0 Face Cap Fastening (Safety Fasteners)

20.1 Vertical Face Covers

20.1.1 The use of safety fasteners to mechanically fasten exterior face covers is required for all vertical covers which run through at the head and sill, and all covers, both vertical and horizontal with a depth greater than 3/4". Spacing of the safety fastener is dependent on cover depth, wind load, and snow and ice load conditions. For a standard depth vertical cover up to 14'-0" in length, a single fastener on one side of the cover should be sufficient. Location of the fastener in the center of the length is preferable, but not absolute. For aesthetics, it may be desirable to locate the fastener at a horizontal, so fastener is concealed underneath the horizontal face cover. For vertical covers which are 4" or greater in depth, two fasteners, one on each side of the cover, opposing each other, are required. Again, location of the fasteners in the center of the length is preferred but not absolute. For vertical covers which are 8" or greater in depth, multiple fasteners, placed on each side of the cover opposing each other, may be required. Harmonics caused by wind vibration must be considered, as well as lateral wind load on the cover itself, wind load deflection of the mullion and cover, and snow and ice load.

20.2 Horizontal Face Covers

20.2.1 For a horizontal cover up to 8'-0" in length and up to 4" deep, a single fastener located at the center of the length on the top side of the cover should be sufficient. Location of the horizontal fasteners on the top side is the best practice. For horizontal covers greater than 8'-0" or deeper than 4", multiple fasteners may be required. Harmonics caused by wind vibration must be considered, as well as wind load deflection of the horizontal and cover, and snow and ice load.

20.2.2 See *Figure 46* for three common pressure plate and face cap installations, other custom profiles may be used and attached following this method. Type 1 may be used up to 4" in depth. Type 2 and 3 are for caps 4" or greater, with type 3 being preferred for any cap or cap assembly greater than 8". All caps shown below will be attached using a FS-317 Roll Pin. Drill cap and pressure plate with a 1/8" (.125") clearance hole.

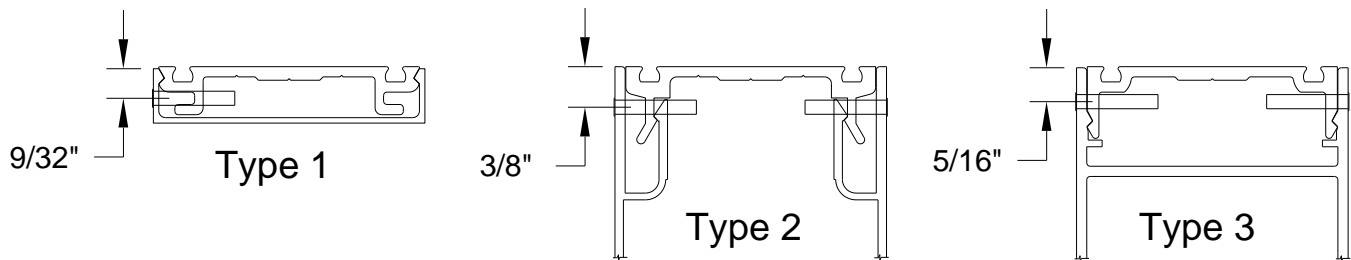


Figure 46: Face Cover Fabrication

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REGLAZING

21.0 Reglazing Procedure

- 21.1 Reglazing must be done from the exterior. Carefully remove face covers surrounding the lite of glass to be deglazed. See *Figure 47*.

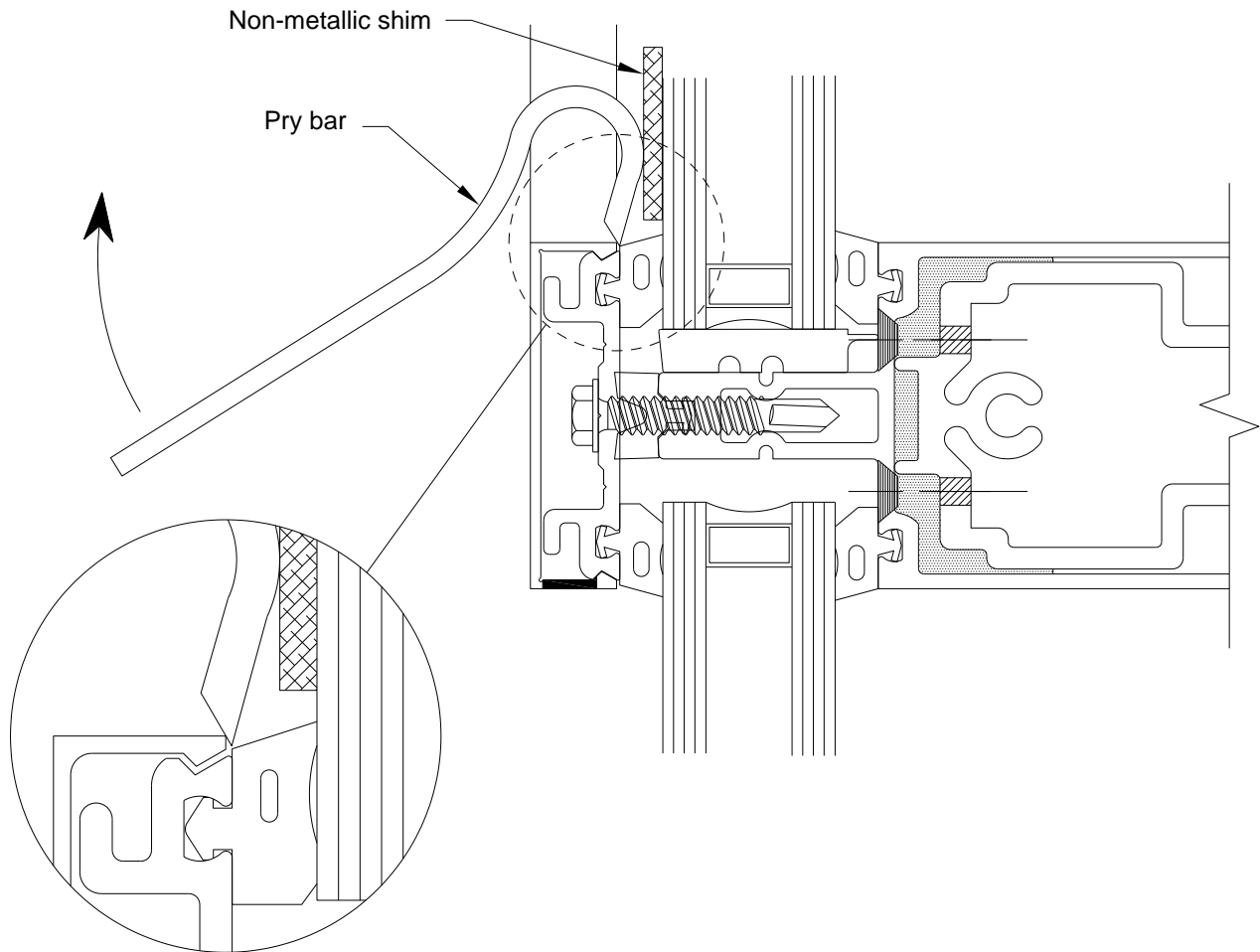





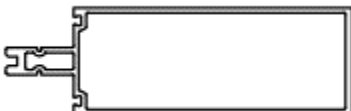






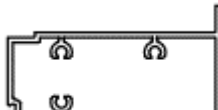



Figure 47: Deglazing

- 21.2 Remove vertical and horizontal pressure plates adjacent to lite that must be replaced. Temp surrounding glass in place with WW-333 temporary glazing retainers. Torque to 60 in-lbs. Refer to step 18.2 for instructions on locating the retainers.
- 21.3 Remove lite of glass and existing gaskets from opening. Clean debris and sealant from aluminum framing members and pressure plates.
- 21.4 Install new gaskets into framing and install new lite of glass. See *GLAZING* section of this manual for proper procedure.
- 21.5 Reinstall pressure plates and seals per *GLAZING* section of this manual.

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PARTS LIST

Parts not shown to scale.

2" x 6" System		RL-193 	Reinforcement for RL-404 & RL-410
RL-400 	Captured Mullion	2" X 7-1/4" System	
RL-404 	SSG Mullion	RL-500 	Captured Mullion
RL-410 	Heavy Mullion	RL-504 	SSG Mullion
RL-432 	Roll-Over / Under Horizontal / Sill	RL-510 	Heavy Mullion
RL-433 	Roll-Over / Under Horizontal / Head	RL-532 	Roll-Over / Under Horizontal / Sill
WW-484 	Lower Expansion Horizontal	RL-533 	Roll-Over / Under Horizontal / Head
RL-192 	Reinforcement for RL-400	RL-583 	Upper Expansion Horizontal - Vision

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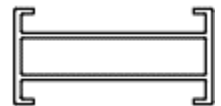



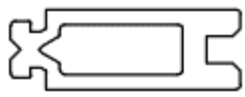






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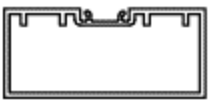



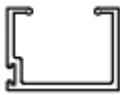



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WW-584 	Lower Expansion Horizontal	WW-236 	Roll-Over Horizontal Filler for RL-432/RL-433
RL-194 	Reinforcement for RL-500	WW-237 	Roll-Over Horizontal Filler for RL-532/RL-533
RL-195 	Reinforcement for RL-504 & RL-510	RL-130 	1" to 1/4" Glazing Adapter Captured System
Shared Common Extrusions		RL-131 	1" to 1/4" Glazing Adapter SSG System
RL-110 	Typical Face Cover (Use w/ RL-162)	RL-141 	SSG Tongue Adapter
RL-216 	3/4" Face Cover (Use w/ RL-163)	RL-257 	Upper Expansion Gasket Retainer
RL-122 	Horizontal Pocket Filler	WW-258 	Lower Expansion Gasket Retainer
RL-123 	Jamb Pocket Filler	RL-162 	Standard Pressure Plate

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RL-163 	Polyamide Pressure Plate	RL-117 	Flush Door Frame Face Cap
AN-1 	3/4" x 3/4" x 1/8" Angle	RL-160 	Flush Door Frame
Door Extrusions		FG-3534 	Thermal Door Subframe (1" Sightline)
D-186 	Door Subframe (3/4" Sightline)	Standard Accessories	
FG-3160 	Door Header OHCC (2" Sightline)	GP-103 	Standard Dense Gasket Interior & Exterior (Interior Only at Vertical)
DS-1 	Door Stop	GP-106 	Spacer Gasket Lower Expansion Horizontal
DS-104 	Door Stop OHCC	GP-117 	Optional Dense Gasket 3/16" Face Clearance
TD-105 	Thermal Door Stop Use with SC-1 Clip	GP-118 	Optional Dense Gasket 5/16" Face Clearance

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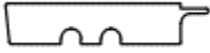

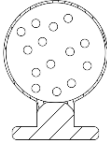
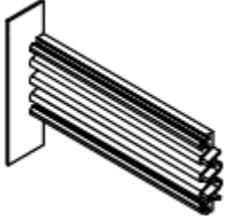

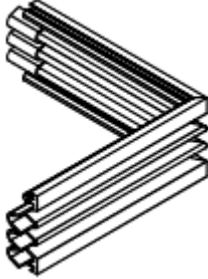






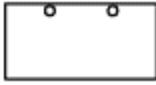
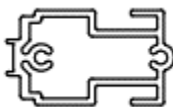
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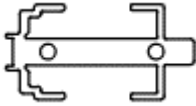
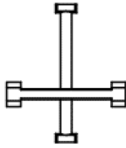
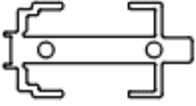

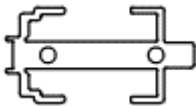

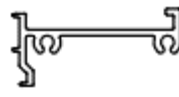

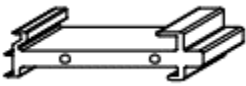

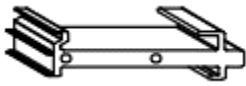




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GP-142 	Standard Isolator Gasket	GP-101 	Setting Block
GP-144 	Expansion Gasket	GP-32007 	Bulb Gasket for WW-259 Expansion Trim
GP-144-01 	Expansion Gasket Jamb Seal	SC-1 	Spring Clip for DS-1 and TD-105
GP-144-02 	Expansion Gasket OS90 Seal	WW-312 	OS90 Zone Plug for WW-240
GP-145 	Standard Spacer Gasket SSG Vertical Mullions 3/8" Silicone Joint Width	WW-323 	Mullion Cap 90° Outside Corner Captured & SSG
GP-146 	Optional Spacer Gasket SSG Vertical Mullions 1/2" Silicone Joint Width	RL-325 	Mullion Cap Type II Verticals
GP-114 	Side Block	RL-327 	Mullion Cap SSG Verticals
		RL-181-01 	Type II Shear Block

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RL-180-01 	Shear Block Use with WW-240 OS90° Corner Mullion	SSW-PP-3 	Temporary Glazing Retainer at SSG Verticals
RL-180-02 	Shear Block Use with WW-230 OS135° Corner Mullion	RL-302 	Zone Plug
RL-180-03 	Shear Block Use with WW-241 IS90° Corner Mullion	DJ-117 	Drill Jig Vertical Mullions
WW-276-01 	Lower Expansion Horizontal Shear Block	HP-1004 	Optional Weep Baffle
WW-283-01 	IS90 Expansion Horizontal Shear Block	SPW-295 	Baffle Retainer
WW-283-02 	OS90 Expansion Horizontal Shear Block	WW-104-02 	Shear Block Anchor
WW-333-01 	Temporary Glazing Retainer at Outside Glaze Horiz.	WW-2223-02 	Jamb Anchor Plate
RL-300 	SSG Mullion Bridge		

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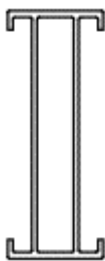
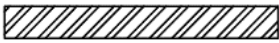
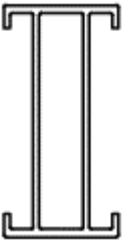

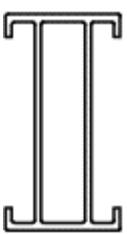

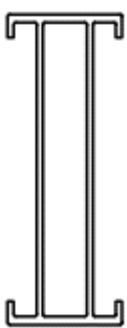
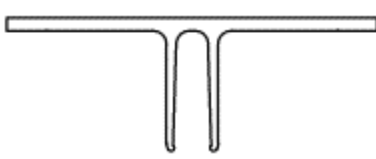
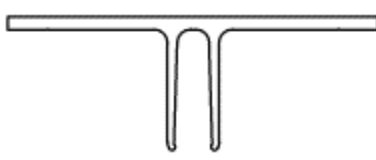
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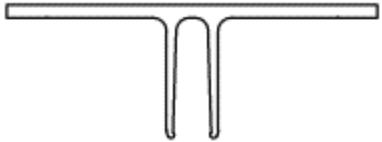
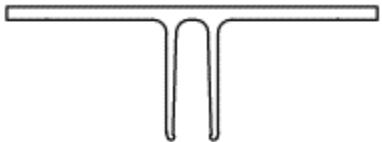
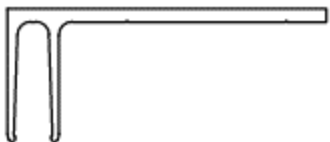
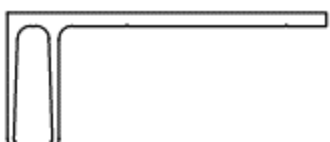
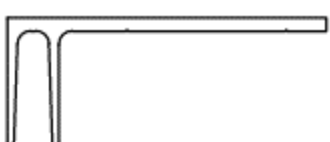
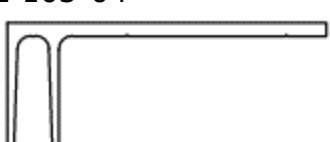


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







<p>RS-12</p> 	<p>1/2" x 3" Steel Bar (Use with RL-192 & RL-193) 20'-0" Lengths</p>	<p>RL-195-01</p> 	<p>Splice Sleeve Use with RL-504</p>
<p>RS-13</p> 	<p>1/2" x 4" Steel Bar (Use with RL-194 & RL-195) 20'-0" Lengths</p>		
<p>RL-192-01</p> 	<p>Splice Sleeve Use with RL-400</p>	<p>WW-191-01</p> 	<p>Splice Sleeve Use with WW-240 OS90 Corner Mullion</p>
<p>RL-193-01</p> 	<p>Splice Sleeve Use with RL-404</p>	<p>WW-202-01</p> 	<p>Splice Sleeve Use with WW-241 IS90 Corner Mullion</p>
<p>RL-194-01</p> 	<p>Splice Sleeve Use with RL-500</p>	<p>RL-102-01</p> 	<p>"T" Anchor Use with RL-400</p>
		<p>RL-102-02</p> 	<p>"T" Anchor Use with RL-500</p>

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RL-102-03 	"T" Anchor Use with RL-404 & RL-410
RL-102-04 	"T" Anchor Use with RL-504 & RL-510
RL-103-01 	"F" Anchor Use with RL-400
RL-103-02 	"F" Anchor Use with RL-500
RL-103-03 	"F" Anchor Use with RL-410
RL-103-04 	"F" Anchor Use with RL-510
FSN-37 	1/4-20 Hex Nut
FSW-65 	1/4" Lock washer

FS-7 	#10 X 1" Phillips Flat Head
FS-9 	#14 x 1-1/2" Phillips Hex Head
FS-13 	#10 x 1" Phillips Pan Head Tek
FS-15 	3/16" x 7/16" Drive Rivet Fastens SC-1 Clip
FS-19 	#10 x 5/8" Hex Head Tek
FS-55 	#10 x 1/2" Phillips Round Head
FS-106 	1/4-20 x 2-1/2" Hex Cap Screw
FS-119 	#10 x 1-3/8" Phillips Flat Head

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FSW-281 	1/4" Flat Washer		
FS-315 	#12-24 x 1.60" Hex Oversize Washer Head Self Drilling Screw		
FS-316 	#14-20 x 2" Hex Head Self Drilling Screw		
FS-317 	5/32" x 3/4" Spring Pin		
FS-318 	#12 x 1-3/4" Phillips Flat Head		
FS-320 	M4 x 16mm Helical Knurled Pin		
FS-325 	#12-24 x 1-11/32" Gr. 5 Hex Washer Head Self Drilling Screw		
FS-336 	1/4-20 x 1-1/8" HWH Drill Flex		

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APPENDIX A – CORNER DETAILS

APPENDIX A – CORNER DETAILS shows the basic layout of the standard one-piece corner mullion assemblies. These details are for general reference and do not necessarily reflect all conditions. For specific assembly, sealing and anchoring notes, refer to approved shop drawings

A1 Captured Corners

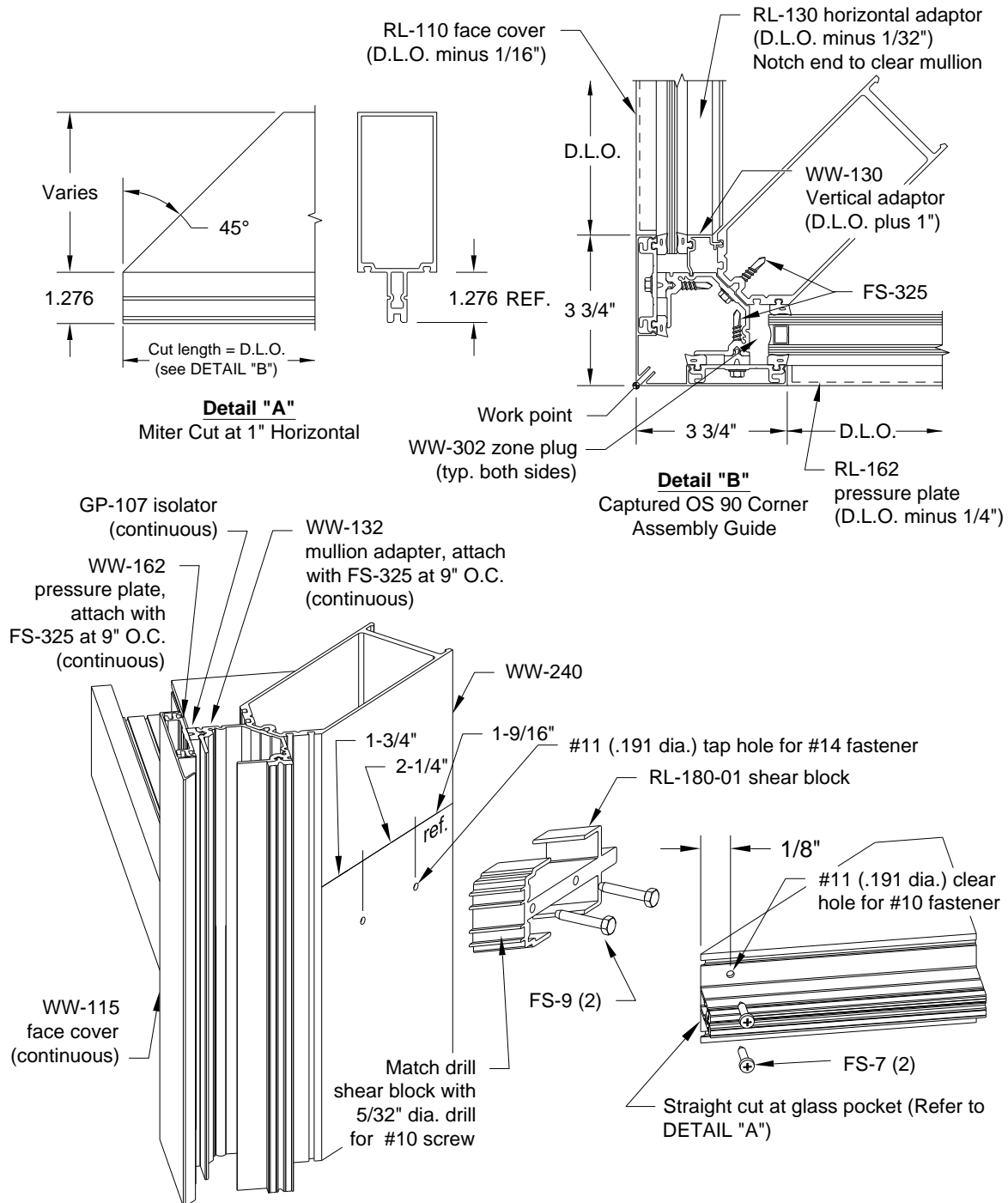


Figure 48: Captured OS 90° Corner Assembly
(Cut Lengths in Parentheses)

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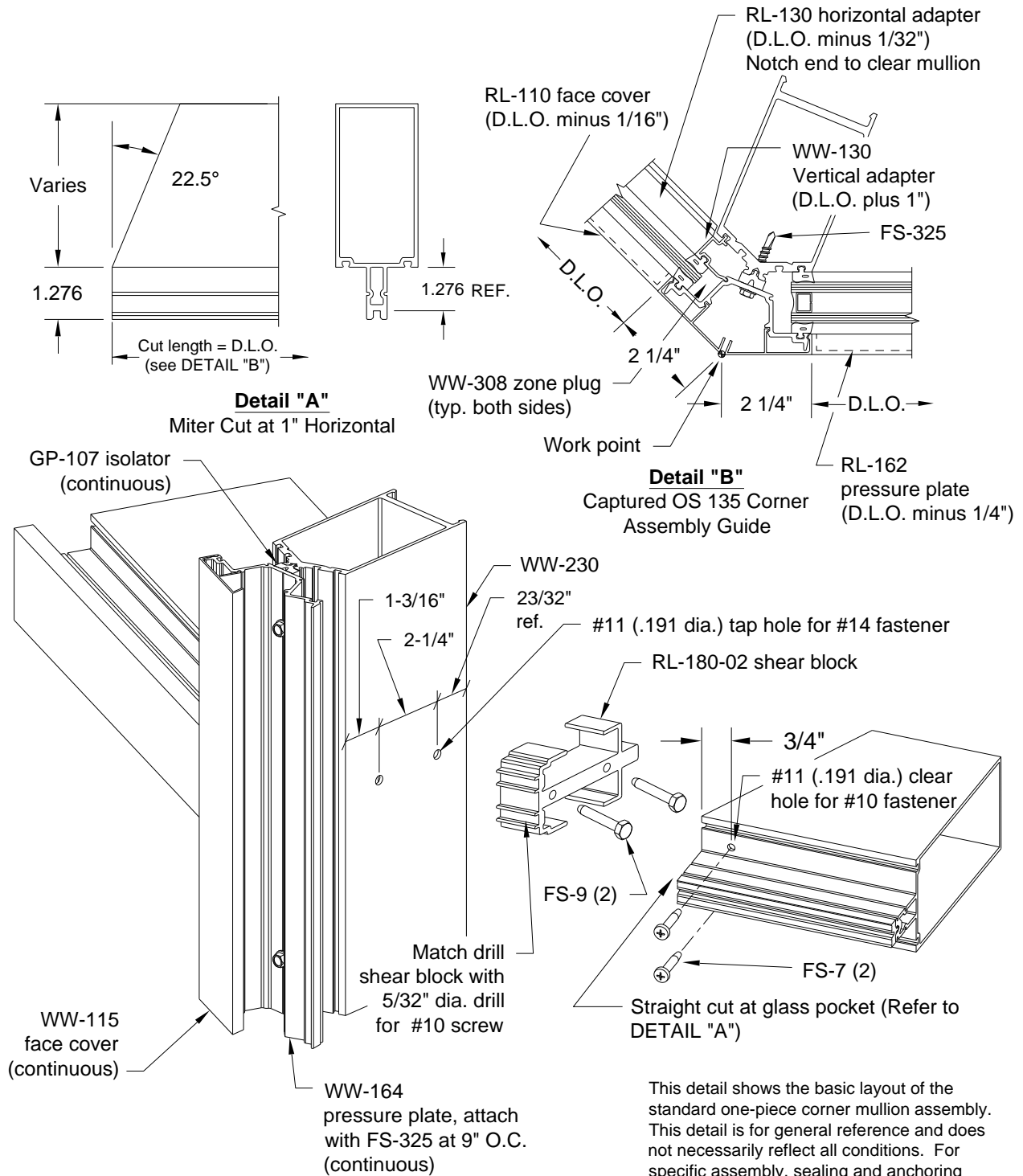


Figure 49: Captured OS 135° Corner Assembly
(Cut Lengths in Parentheses)

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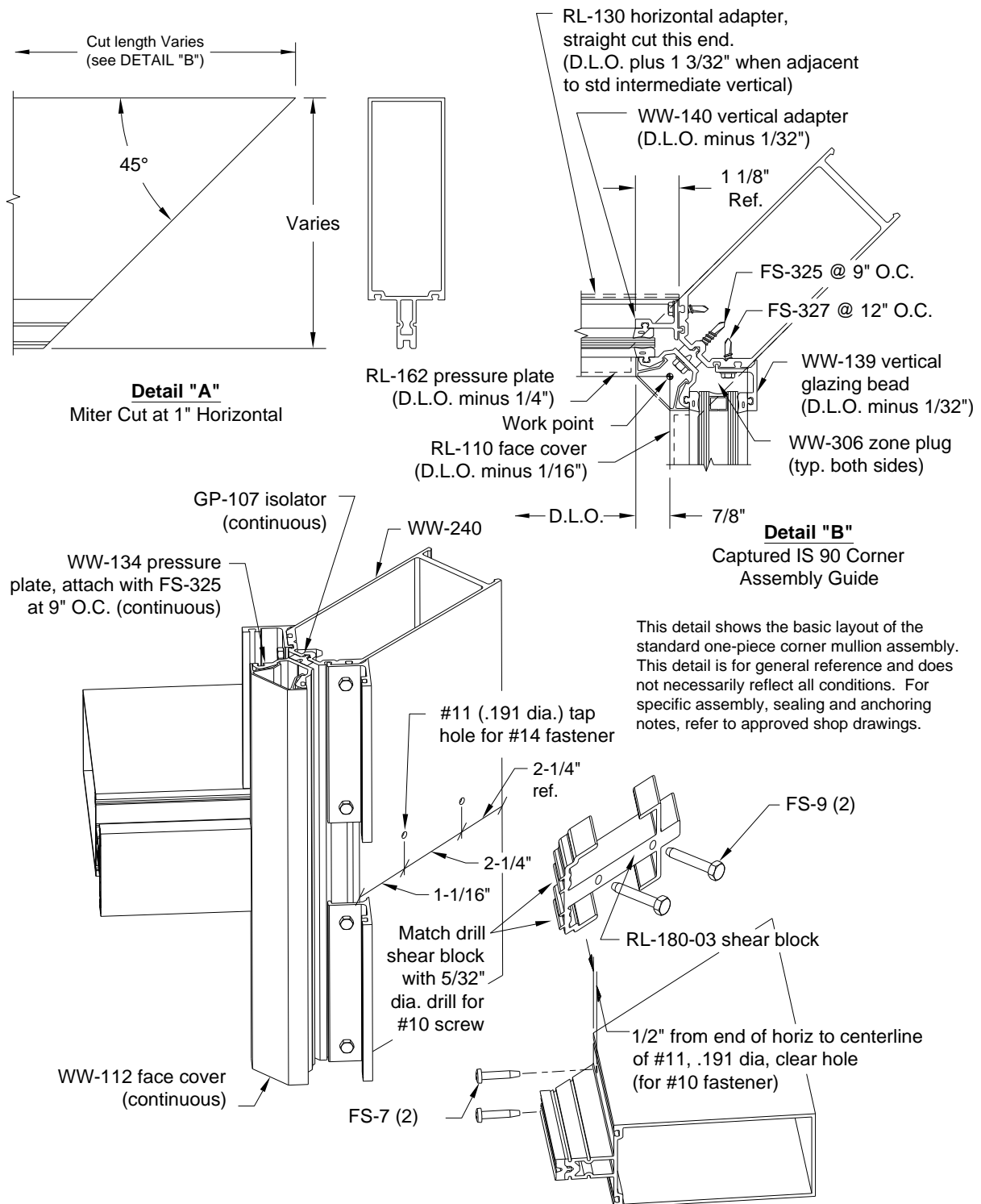


Figure 50: Captured IS 90° Corner Assembly
(Cut Lengths in Parentheses)

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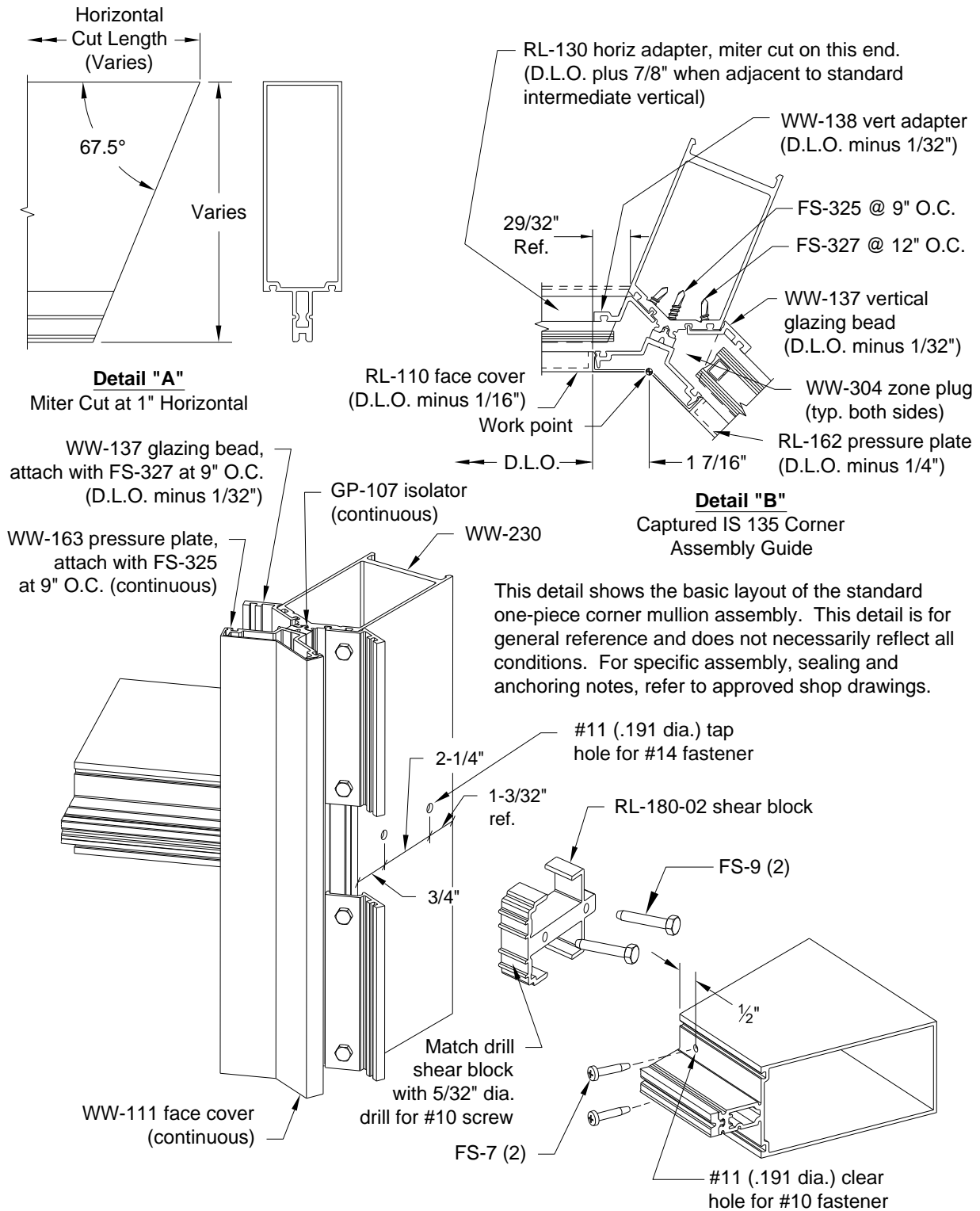


Figure 51: Captured IS 135° Corner Assembly
(Cut Lengths in Parentheses)

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A2 SSG Corners

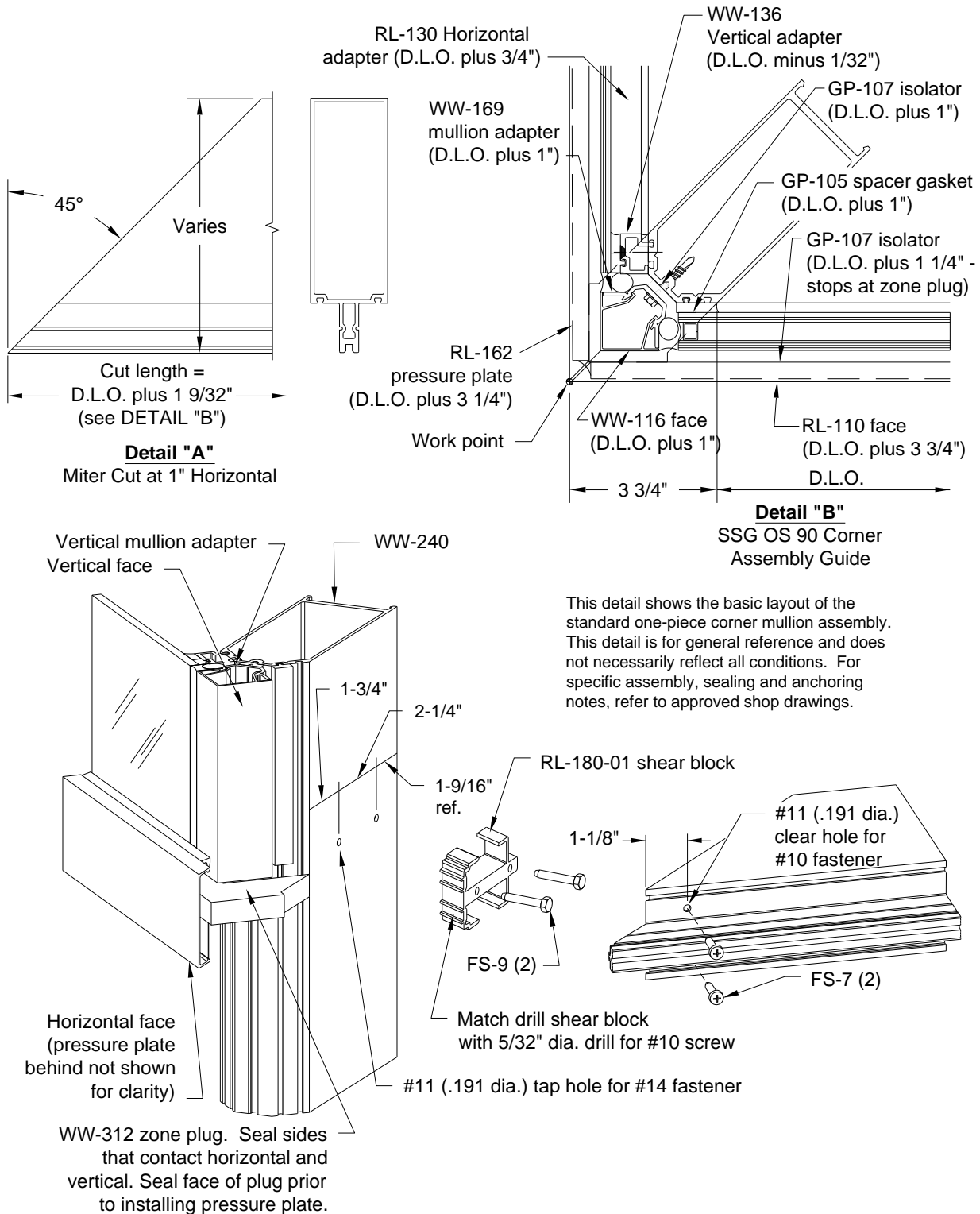


Figure 52: SSG OS 90° Corner Assembly
(Cut Lengths in Parentheses)

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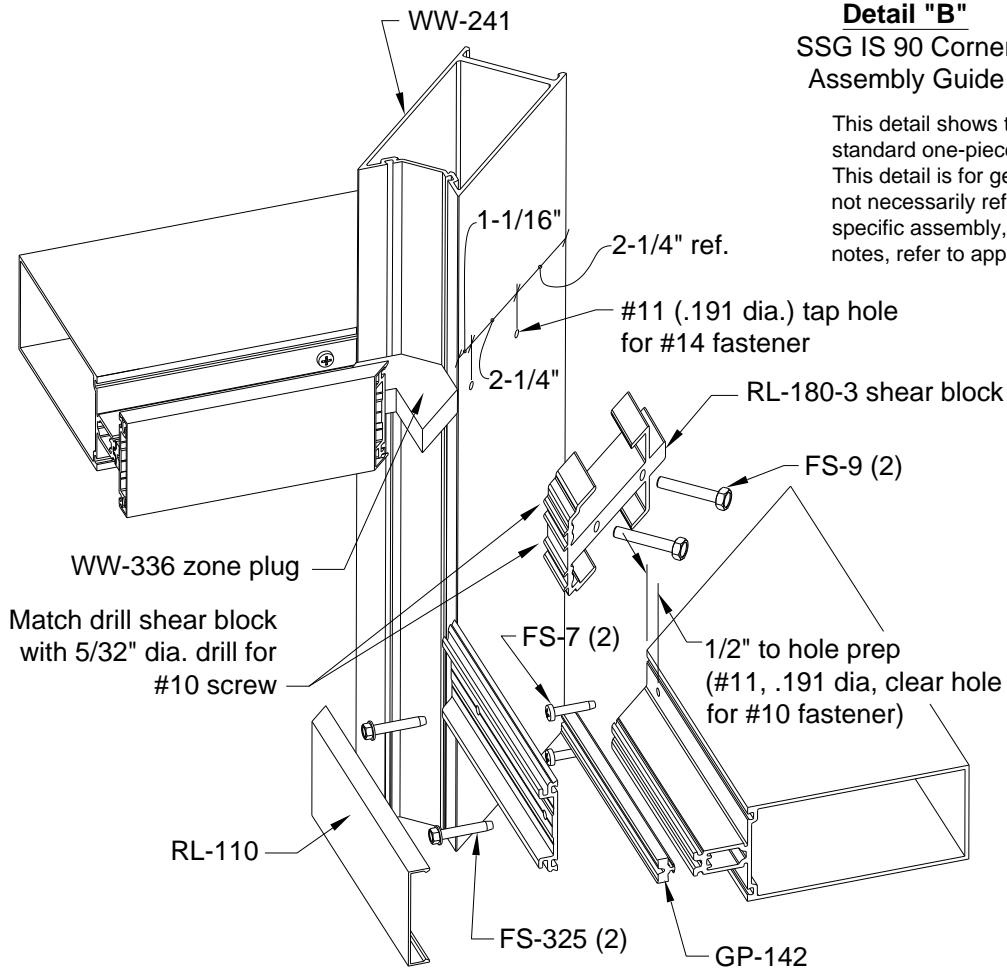
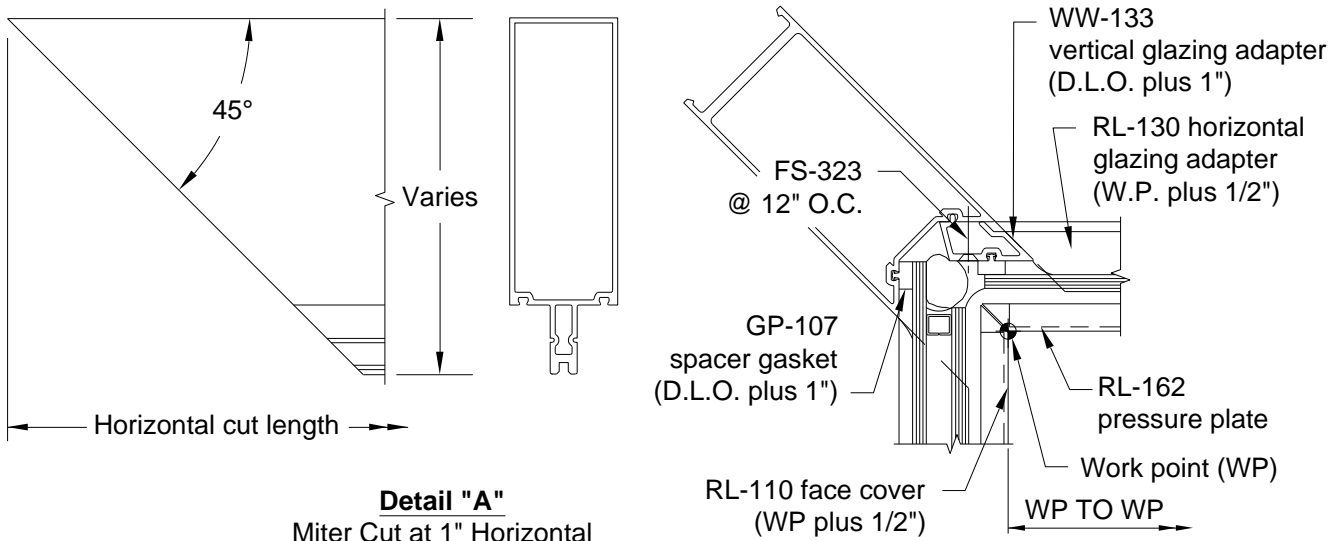


Figure 53: SSG IS 90° Corner Assembly
(Cut Lengths in Parentheses)

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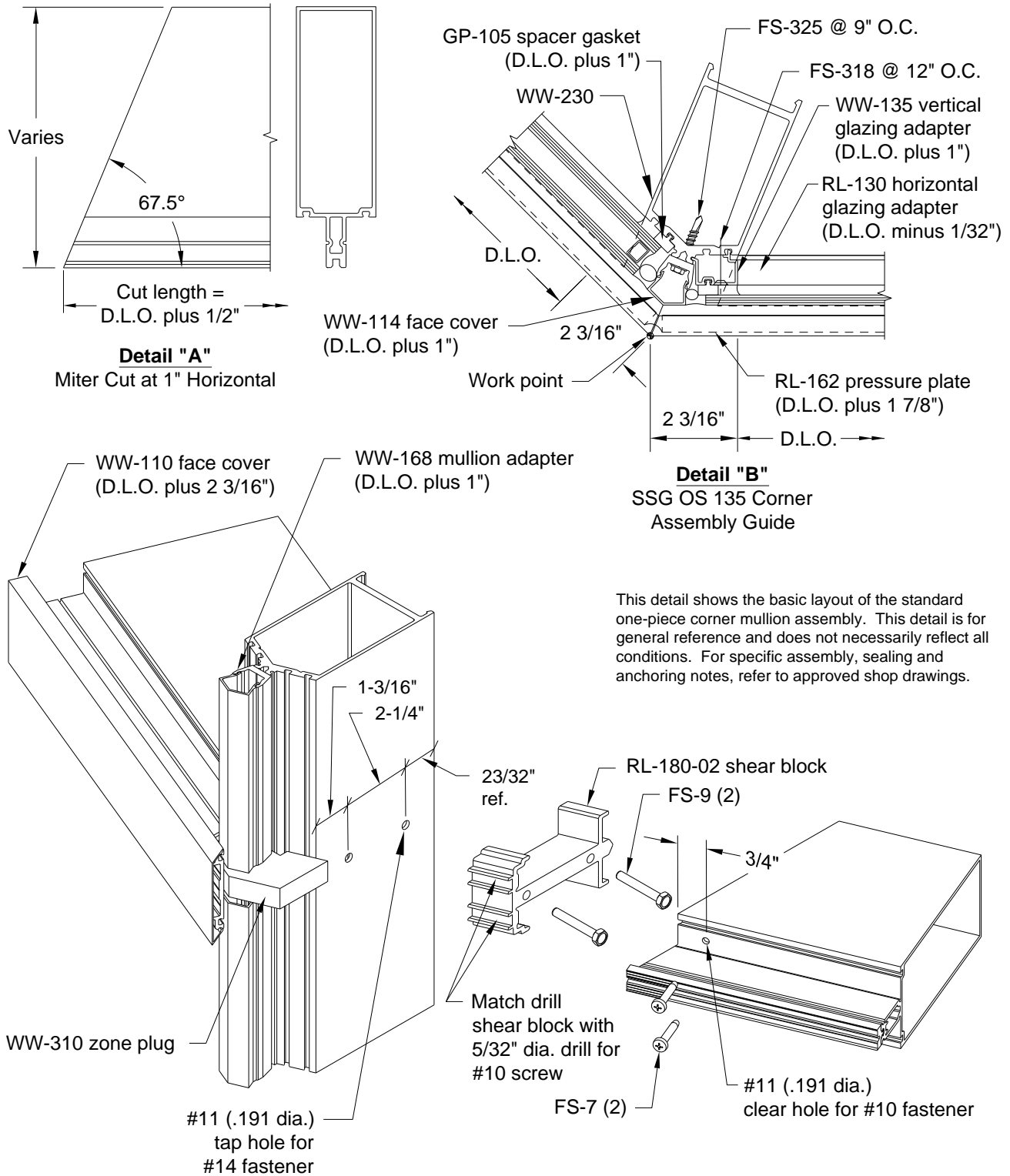


Figure 54: SSG OS 135° Corner Assembly
(Cut Lengths in Parentheses)

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APPENDIX B – ENTRANCE SUBFRAME INSTALLATION

All door framing components are shipped fabricated from the factory. The main curtain wall framing can be erected prior to installing the doors. Lites adjacent to doors must be temporarily secured in place until after door framing is installed.

B1 Subframe Installation

- B1.1 Curtain wall verticals and door subframes run through to finished floor. Bed adjacent curtain wall verticals in sealant and anchor to floor per approved shop drawings. See *Figure 62* for suggestions on anchoring door jamb mullion.
- B1.2 Attach TH-44 threshold clip to bottom of each jamb subframe with two (2) FS-256 fasteners.
- B1.3 Bed subframes in sealant. Anchor to curtain wall framing members with FS-316 fasteners at 18" O.C. Cap seal all fasteners and seal joint between jamb and header subframes. Seal tops of the jamb subframes. See *Figure 55*.
- B1.4 Bed threshold in sealant, attaching to TH-44 clips with FS-42 fasteners. Marry threshold seal with subframe and main system seal. See *Figure 55*.
- B1.5 Install door stops in subframe. The vertical stops run through.
- B1.6 Install door per Appropriate **DOOR & FRAME INSTALLATION & GLAZING MANUAL**.

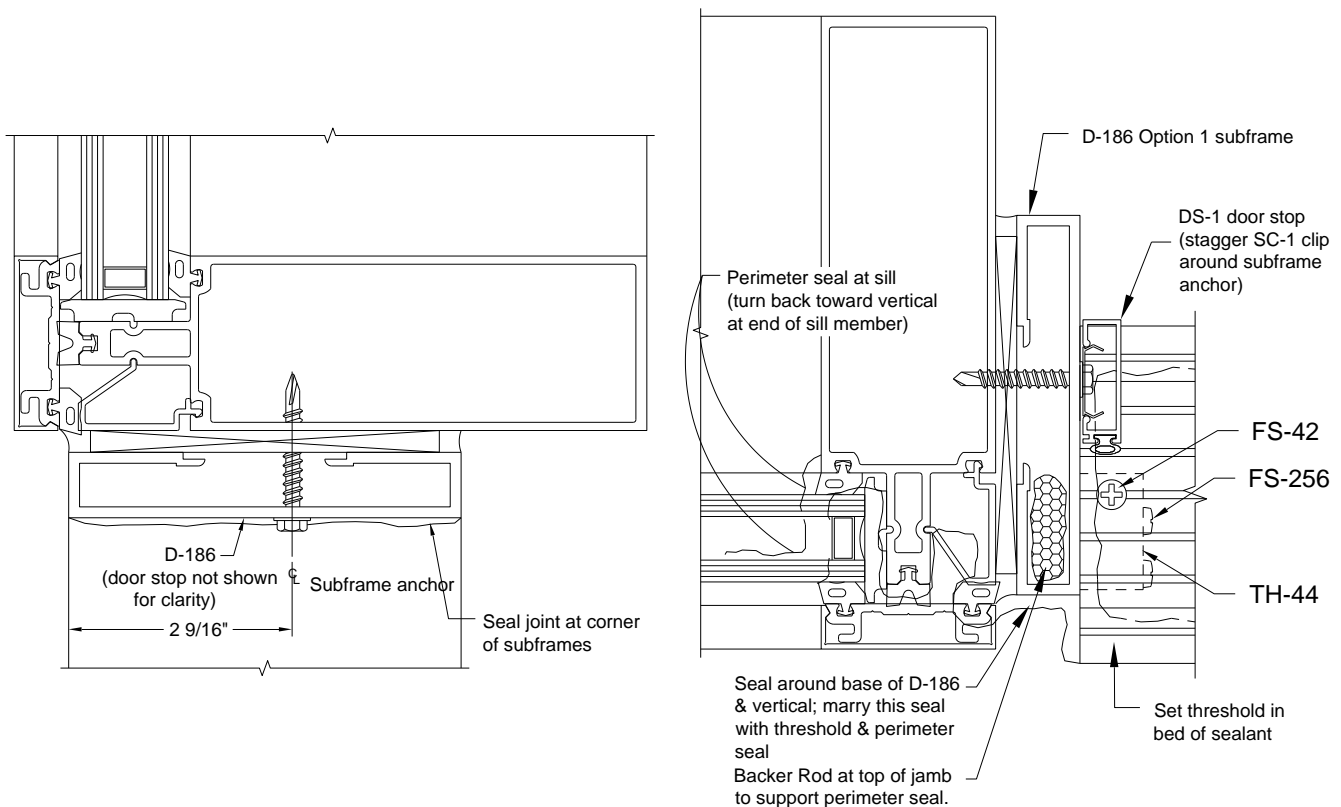


Figure 55: Attached Subframes

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B2 Flush Door Installation

- B2.1 Drill 1/2" diameter access holes in flush door pressure plates 1-1/2" from ends and 12" O.C. See *Figure 56*.
- B2.2 Attach TH-44 threshold clip to bottom of each vertical pressure plate with two (2) fasteners.
- B2.3 Complete the glazing adjacent to the door frame, installing the flush door pressure plates per standard procedures previously outlined. Bed vertical pressure plates in sealant at sill and attach through access holes to mullion with FS-43 fastener 1-1/2" from each end and 12" O.C. See *Figure 57* and *Figure 58*.
- B2.4 Apply continuous seal to horizontal tongue before installing horizontal pressure plate. Seal ends of horizontal pressure plate to vertical pressure plates. See *Figure 59*.
- B2.5 Bed threshold in sealant, attaching to TH-44 clips with FS-42 fasteners. Marry threshold seal with subframe and main system seal. See *Figure 60*.
- B2.6 Drill #11 (0.191) diameter holes in curtain wall mullions for FS-15 rivets. Install door stops onto mullion with SC-1 clips at 18" O.C. See *Figure 60*. Vertical stops run through.
- B2.7 Install face covers onto pressure plates. See *Figure 61*.
- B2.8 Install door per applicable **DOOR & FRAME INSTALLATION & GLAZING MANUAL**.

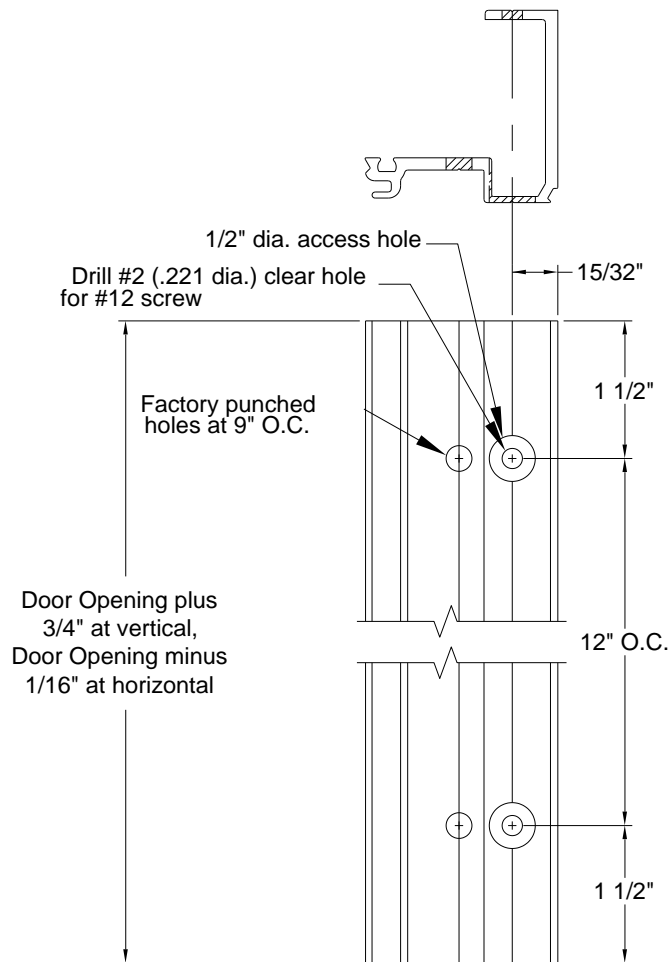


Figure 56: Flush Door Pressure Plate Fab

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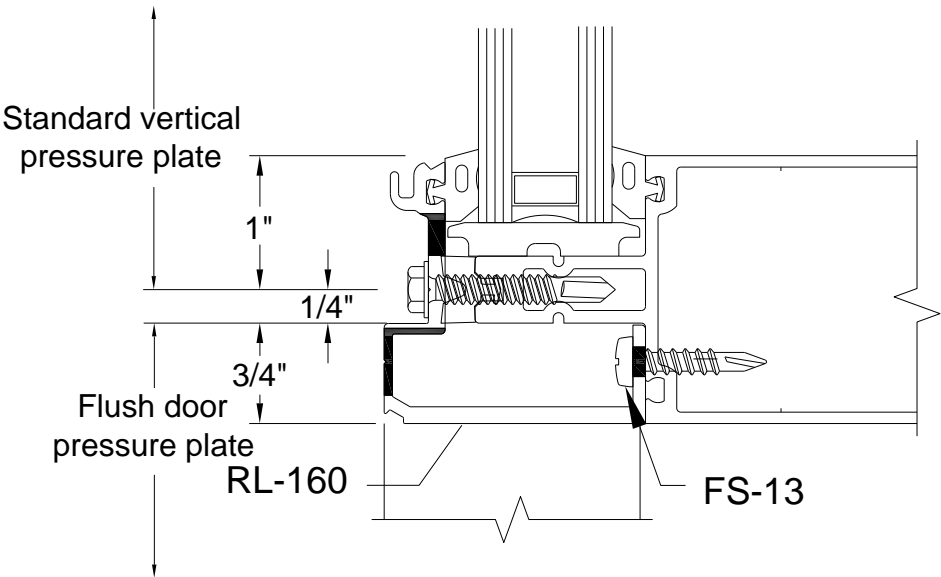


Figure 57: Flush Door Pressure Plate Layout

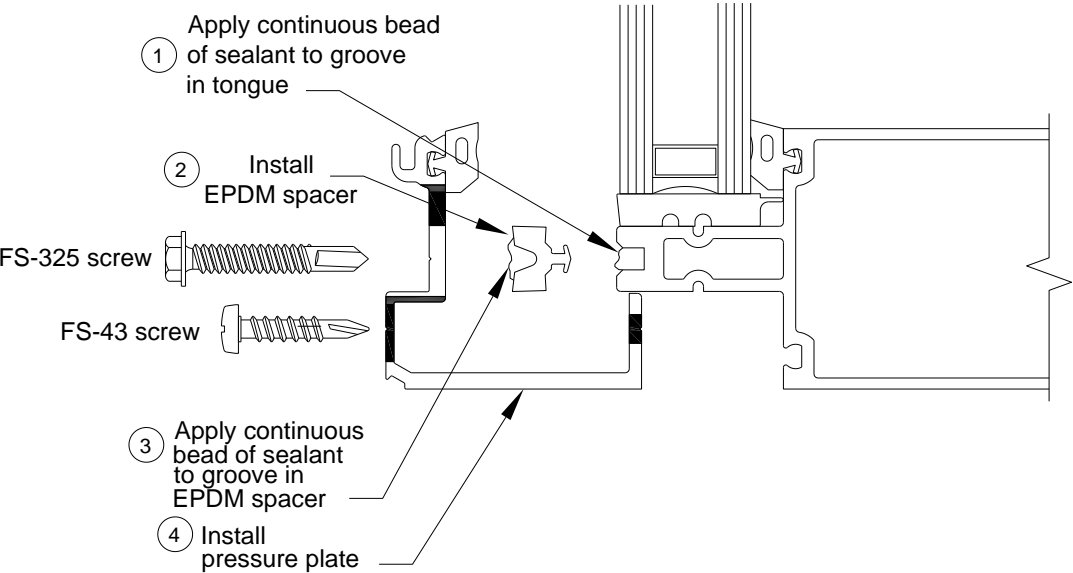


Figure 58: Flush Door Pressure Plate Installation

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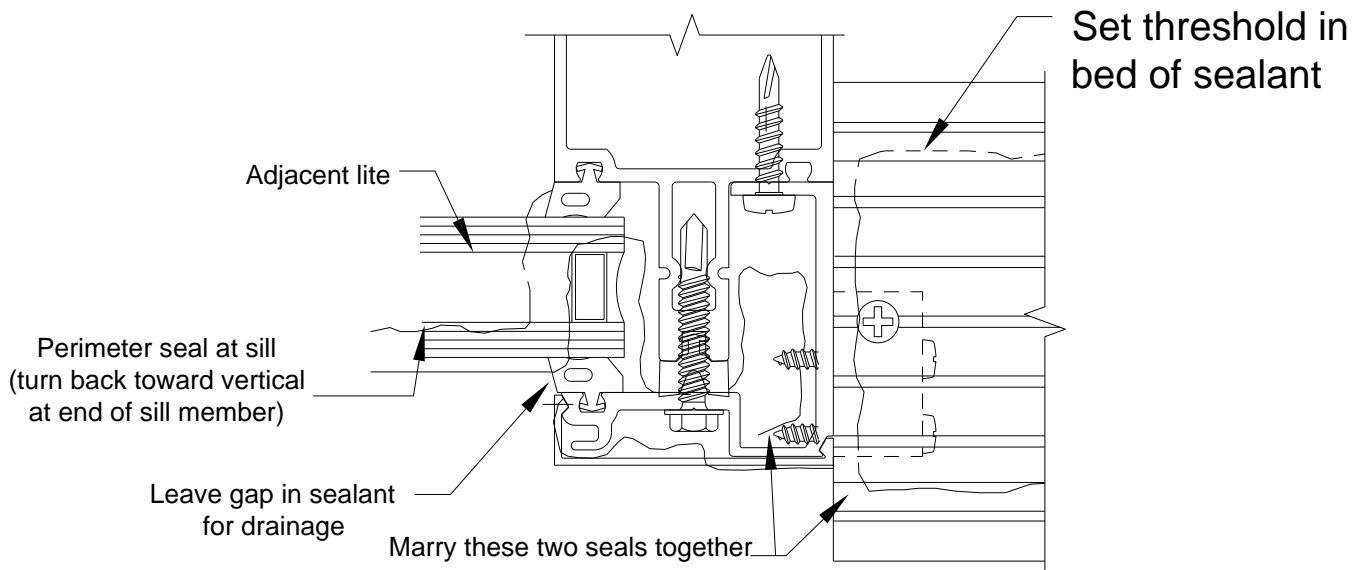
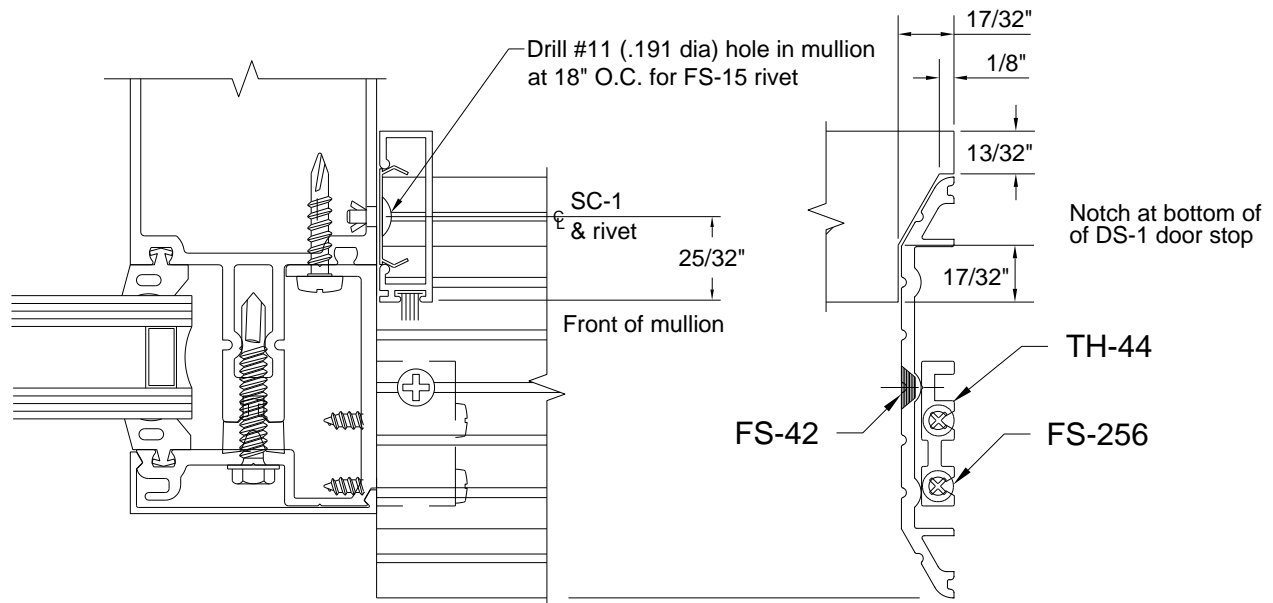


Figure 59: Flush Door Sealing



**Figure 60: Door Stop Fab & Attachment
(Sealant & Adjacent Lite Not Shown for Clarity)**

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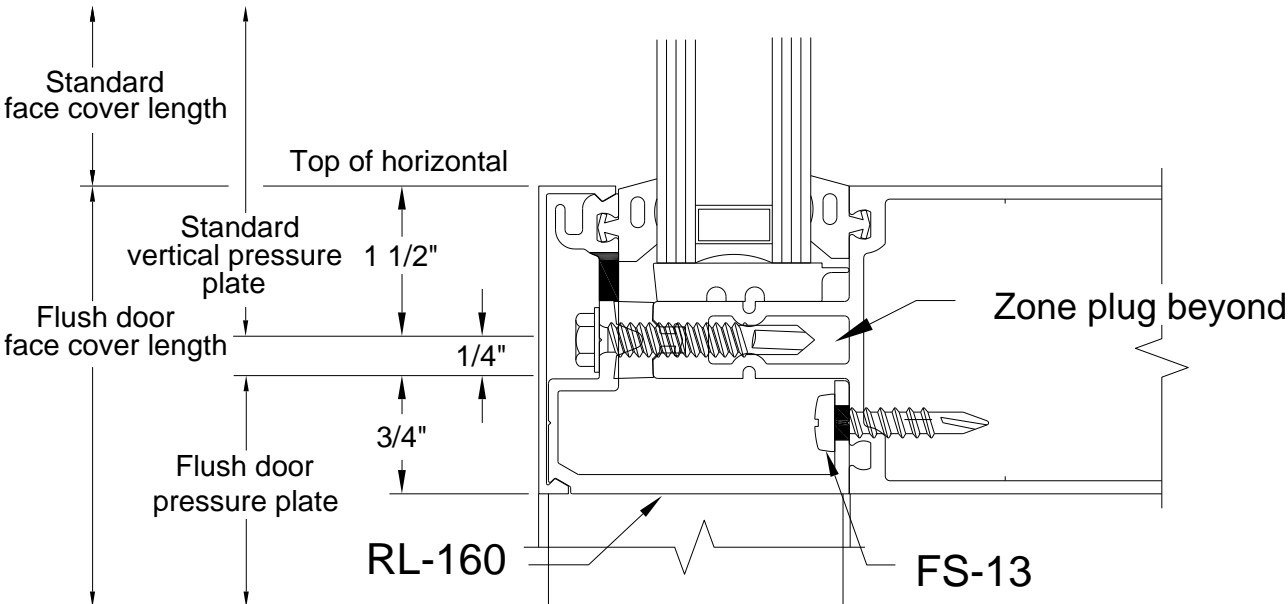


Figure 61: Vertical Face Cover Location at Door Header

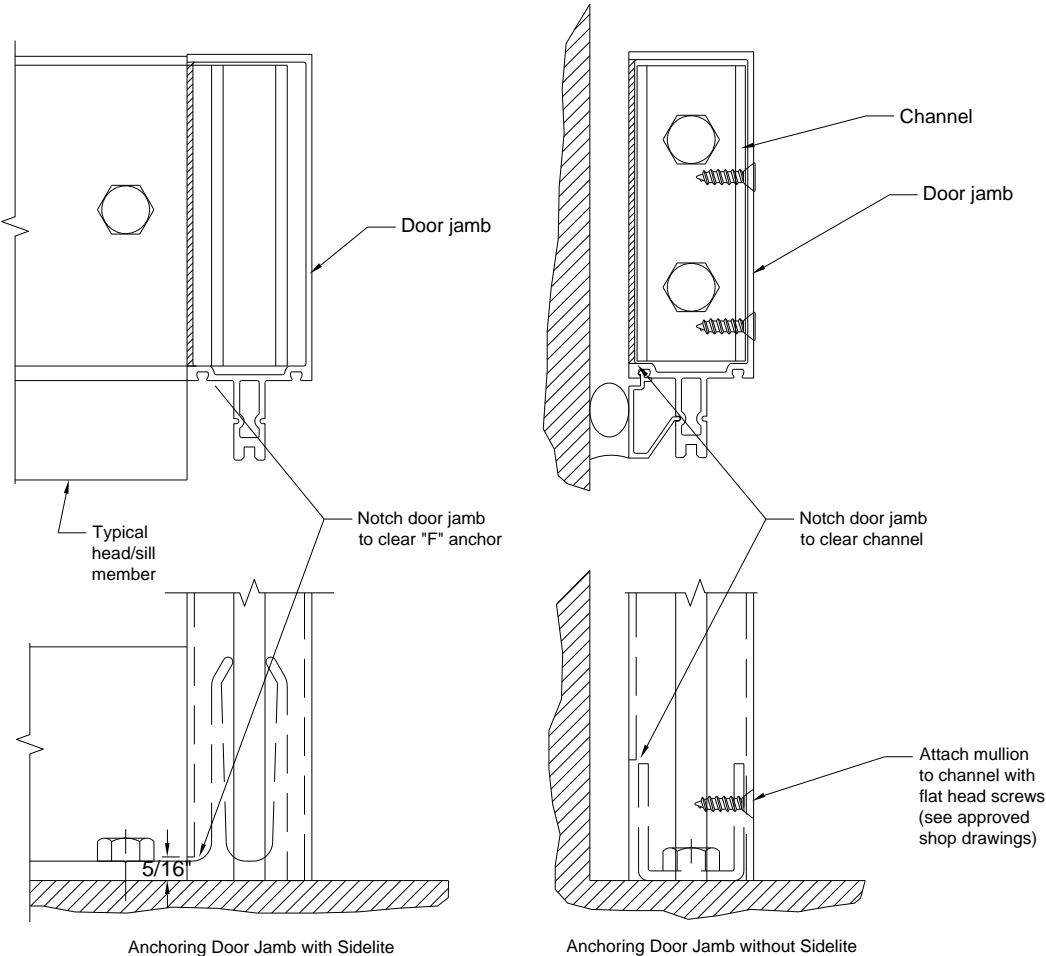


Figure 62: Anchoring Door Jamb Mullions