Oldcastle BuildingEnvelope®

RELIANCE™-LT

INSTALLATION AND GLAZING MANUAL

NOTE:

THE ASSEMBLY DETAILS FOUND IN THIS PACKAGE ARE GENERIC AND ARE FOR REPRESENTATION ONLY WITH THE INTENT OF GIVING THE ASSEMBLY TEAM A VISUAL REPRESENTATION AS TO HOW THE ASSEMBLIES TYPICALLY ASSEMBLE. 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 MANUFACTURES RECOMMENDATIONS FOR USE AND APPLICATION OF WEATHER SEAL SILICONE SEALANT.

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

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1-866-OLDCASTLE (653-2278)
Web: www.obe.com

RELIANCE™ CURTAIN WALL GLAZING MANUAL

TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

Quick Reference Guide:

1. Aluminum pressure plate fasteners - Torque to 90 in-lbs.

2. Polyamide pressure plate fasteners - Torque to 60 in-lbs.

3. Glass sizing: Captured System: DLO plus 1" for width and height
SSG System: DLO plus 1 1/2" for width. DLO plus 1" for height.

4. Locate pressure plate screws @ 9" o.c. (1-1/2" from ends)

TABLE OF CONTENTS

PRODUCT USE

The Reliance™-LT curtain wall system is intended for installation by glazing professionals with appropriate experience. Subcontractors without experience should employ a qualified person to provide field instruction and project management.

Oldcastle BuildingEnvelope® does not control the application or selection of its product configurations, sealant or glazing material 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.

Consult sealant manufacturer for review and recommendation of sealant application. Follow sealant manufacturer's recommendations and literature for proper installation.

The air and water performance of the Reliance™-LT curtain wall system is directly related to the completeness and integrity of the installation process both the seal installed at the shear blocks and the glazing gasket installed at the interior side of the glass. All pressure plates must also be installed properly. To ensure top performance for this system, particular attention should be given the following procedures:

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. The interior glazing gasket should be installed so as to avoid stretching, buckles or tears. Corners must be cut square, sealed and butted together. To avoid damage to gasket and corner joints during glazing, glass should be level and straight during installation.
3. Vertical movement of mullion at intermediate floors requires special expansion joints and glazing materials. See pages 14-15 & 31-36 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.

Variations on the details shown are inevitable and are not the responsibility of Oldcastle BuildingEnvelope® when drawn by others. Oldcastle BuildingEnvelope® strongly encourages its customers to use its Engineering department for calculations and shop drawings.

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.

Consult glass manufacturer for correct setting block location and length for glass sizes in excess of 40 sq/ft.

GENERAL INFORMATION

PROTECTION AND STORAGE

Handle all material carefully. Do not drop from the truck. Stack with adequate separation so the material will not rub together. Store material off the ground, protecting against the elements and other construction hazards by using a well ventilated covering. Remove material from package if wet or located in a damp area. For further guidelines consult AAMA publication CW-10, "Care and Handling of Architectural Aluminum From Shop to Site."

CHECK MATERIAL

Check glass dimensions for overall size as well as thickness. Oldcastle BuildingEnvelope® cannot be held responsible for gaskets that are not water tight due to extreme glass tolerances. The Reliance™-LT curtain wall system is designed to accommodate glass or panels measuring 1" and 1/4" in thickness. (+/- 1/32")

Check all material upon arrival at job site for quality and to determine any shipping damage.

Using the contract documents, completely check the surrounding conditions that will receive your materials. Notify the general contractor by letter of any discrepancies before proceeding with the work. Failure to do so constitutes acceptance of work by other trades.

Check shop drawings, installation instructions, architectural drawings and shipping lists to become familiar with the project. The shop drawings take precedence and include specific details for the project. The installation instructions are of a general nature and cover the most common conditions. Due to varying job conditions all sealant used must be approved by the sealant manufacturer to ensure it will perform per the conditions shown on the instructions and shop drawings. The sealant must be compatible with all surfaces in which adhesion is required, including other sealant surfaces. Use primers where directed by sealant manufacturer. Properly store sealant at the recommended temperatures and check sealant for remainder of shelf life before using.

FIELD CONDITIONS

All material to be installed must be plumb, level and true. Aluminum to be placed in direct contact with masonry or incompatible material should be isolated with a heavy coat of zinc chromate, bituminous paint or non-metallic material.

After sealant is set and a representative amount of the wall has been 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.

CLEANING MATERIALS

Cement, plaster terrazzo, alkaline and acid based materials used to clean masonry are very harmful to finishes. Any residue should be removed with water and mild soap immediately or permanent staining will occur. A spot test is recommended before any cleaning agent is used. Refer to Architectural Finish Guide in the Detail Catalog.

GENERAL INFORMATION

EXPANSION JOINTS

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

SUGGESTIONS FOR IMPROVING SYSTEM THERMAL PERFORMANCE

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

A. Blinds or drapes prevent warm air from adequately flowing over the window surface.

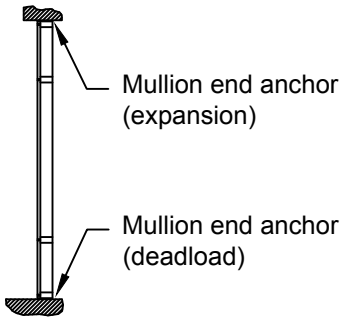
B. Warm air ventilators too far from the window will not adequately wash the window with air to prevent condensation.

C. In extreme conditions the fan of the heating system should not cycle on and off, but should run continuously.

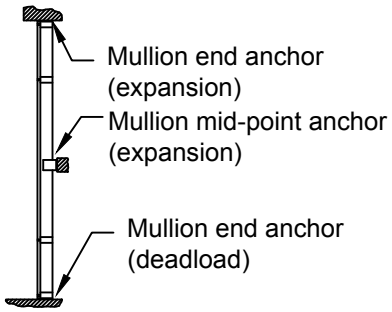
D. Some heating systems have a water injection feature that can raise humidity levels. the higher the humidity level the more likely condensation or frost will form. Raising the temperature and reducing humidity will usually solve the problem.

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.

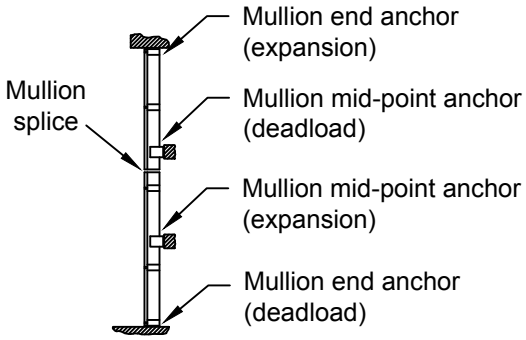
The following diagrams represent common types of installations for this product. Refer to approved shop drawings for specifics regarding splicing and anchoring of frame.



Single Span
Refer to steps 2.1.1 - 2.1.3



Twin Span
Refer to steps 2.1.4 - 2.1.8



Multi-Span
Refer to steps 2.1.9 - 2.1.16

INSTALLATION TYPES

Unless otherwise noted, the details shown in these instructions reflect the 7 1/4" system for 1" glazing.

NOTE: Structural silicone glazed vertical mullion is referred to as "SSG mullion".

1.1 Measure ROUGH OPENING to determine FRAME WIDTH and FRAME HEIGHT dimensions. Allow 1/2" minimum clearance for shimming and caulking around perimeter of frame.

1.2 Cut material to size. **SEE FIGURE 1 page 6** for guide.

Frame Members

Verticals	Frame Height (Rough Opening minus top & bottom joints)
Vertical pressure plates	Frame Height minus 1/4"
Vertical face covers	Frame Height (vertical covers run through)
Intermediate horizontals (tubular)	Daylight Opening (D.L.O.)
Intermediate horizontals (rollover)	D.L.O. minus 1/16"
Head and sill	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"
Perimeter Filler (Horizontal)	D.L.O. minus 1/16"
Perimeter Filler (Jamb)	Frame Height
Expansion Gasket Retainer (Jamb)	D.L.O. + 2 7/8"
Expansion Gasket Retainer(Typ.)	D.L.O. + 1 3/4"

Accessories

Glazing gaskets

Exterior	Pressure plate length plus allowance*
Interior at verticals	D.L.O. plus 1" plus allowance* (vertical gasket run through)
Interior at horizontals	D.L.O. plus allowance*
Silicone spacer gaskets	D.L.O. plus 1" plus allowance*

*Glazing gaskets should be cut 1/4" longer per foot. Set aside and lay flat until ready to glaze.

Other Members (as required)

Glazing adaptors

Horizontal	D.L.O. minus 1/32"
Vertical	D.L.O. plus 1"

Door subframe

Jamb	Door Opening plus 1"
Header	Door Opening minus 1/32"

Flush door pressure plate

Jamb	Door Opening plus 3/4"
Header	Door Opening

Flush door face cover

Jamb	Door Opening plus 2"
Header	Door Opening minus 1/16"

CUT LIST

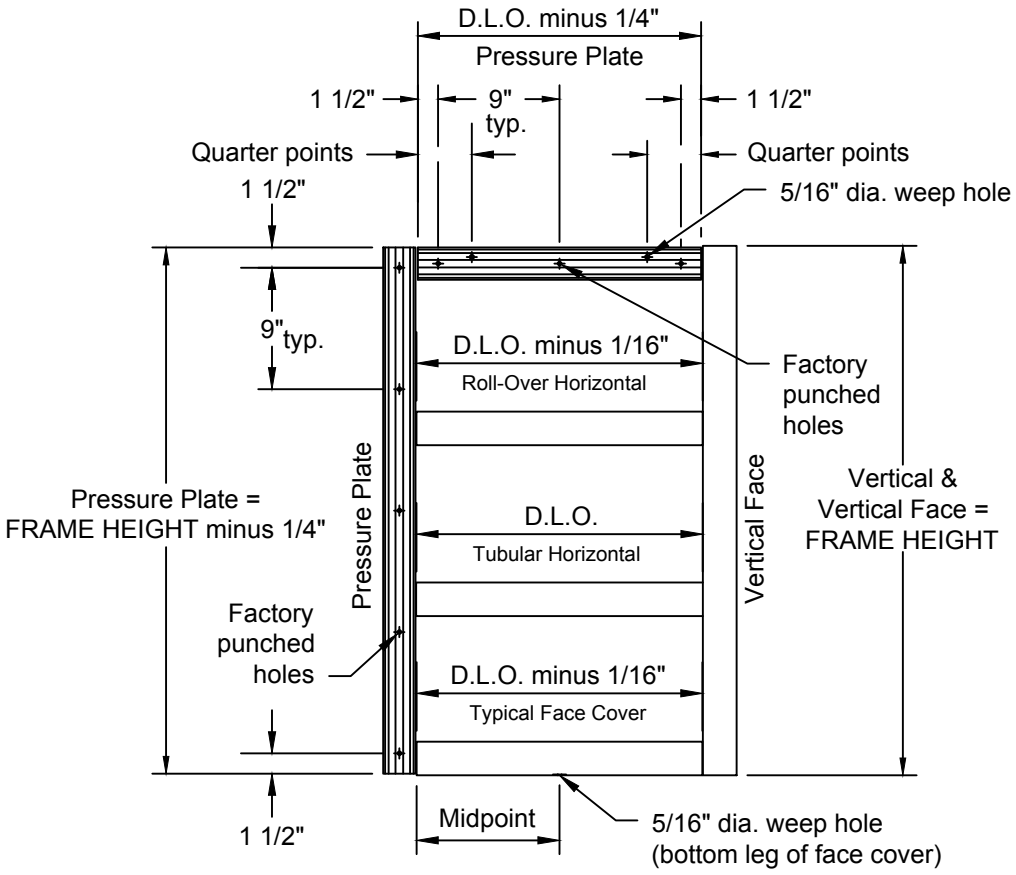


FIGURE 1
Material Fabrication Guide

1.3 Fabricate vertical mullions for horizontal members, using DJ-117 drill jig. Drill holes for shear block using holes marked “A” and “B”. SEE FIGURE 2. When working off horizontal centerlines, use the slot milled into the drill jig to align the jig with the centerline.

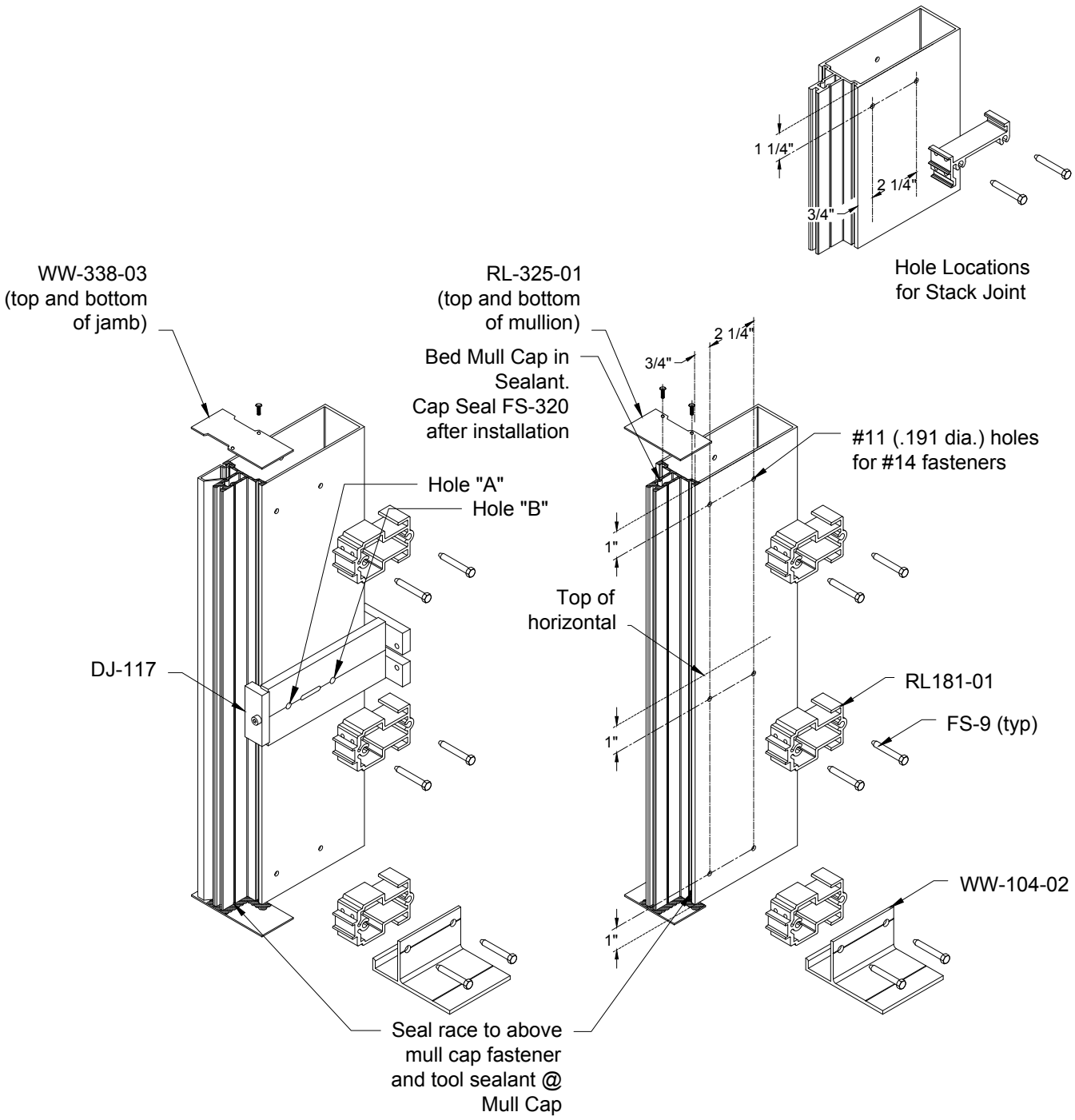
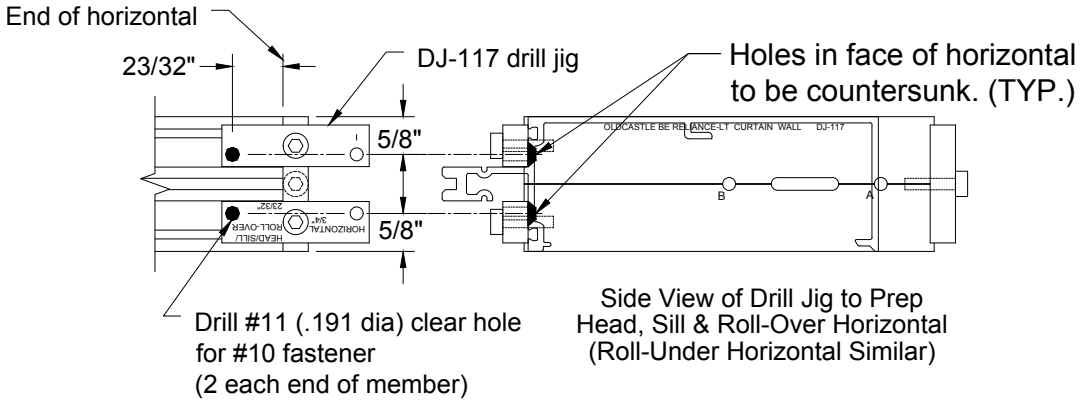


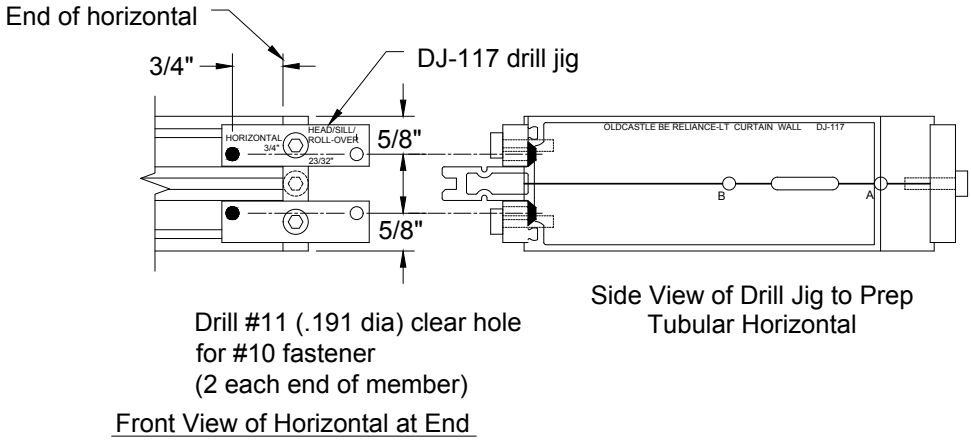
Figure 2
Vertical Fabrication

1.4 Install and seal end caps to top and bottom of all jamb and intermediate vertical mullions with (2) FS-320 #10 x 5/8" Drive screw (only (1) required at jambs). **SEE FIGURE 2**.

1.5 Fabricate ends of horizontal members for shear block screws, using DJ-117 drill jig. **SEE FIGURE 3**. **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".**

FRAME FABRICATION





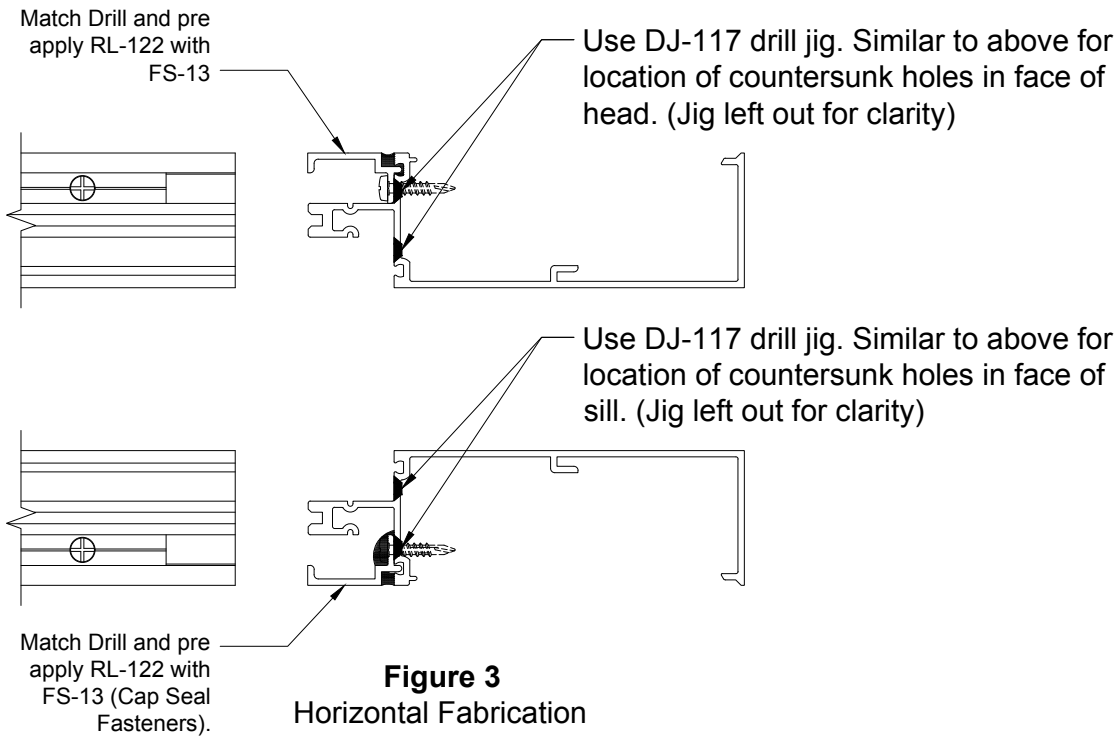


Figure 3
Horizontal Fabrication

HORIZONTAL FABRICATION

1.6 Drill 5/16” diameter weep holes at 1/4 points in the horizontal pressure plate. Drill (1) 5/16” diameter weep hole at the bottom of each horizontal face cover at centerline of D.L.O.
For SSG applications, face covers typically run across mullions, so there will be multiple holes in each horizontal face cover. See **FIGURE 23, Page 6**.

1.7 All pressure plates have factory-punched holes for screws 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 4**.

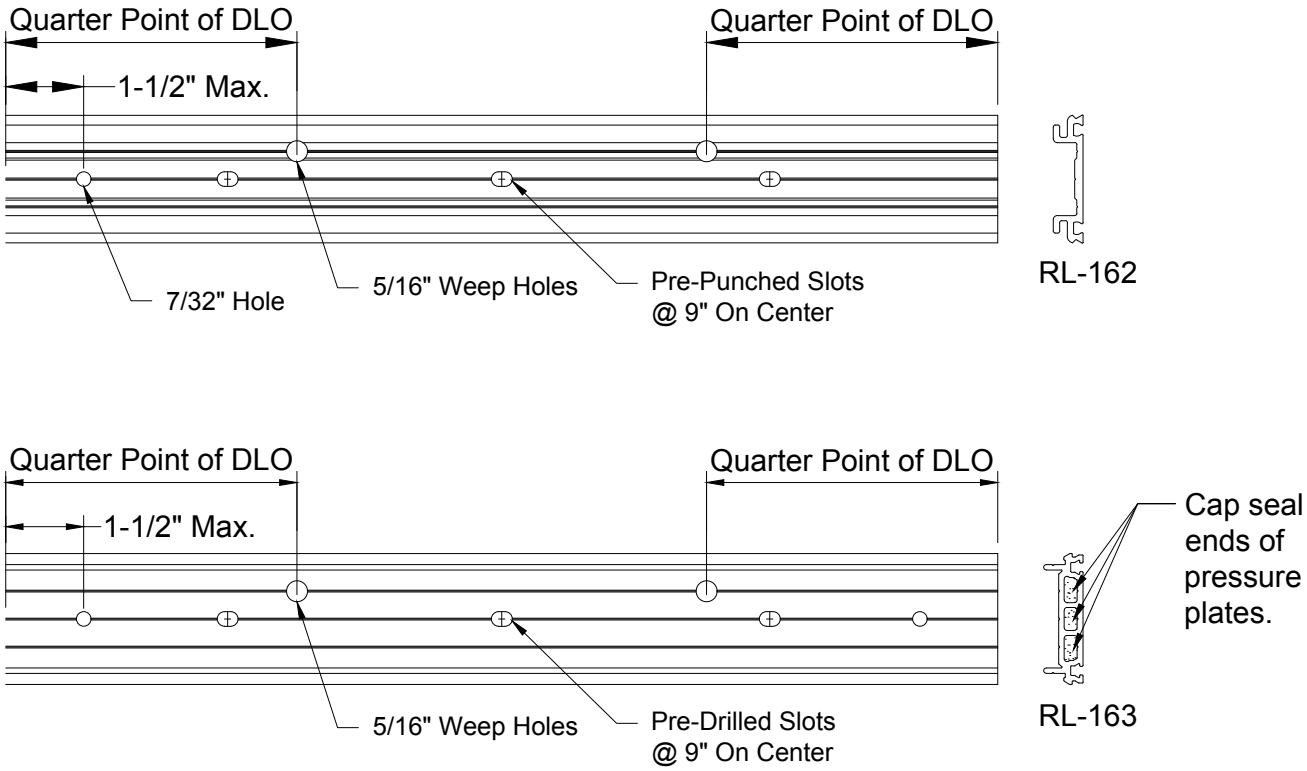


Figure 4
Pressure Plate Fabrication

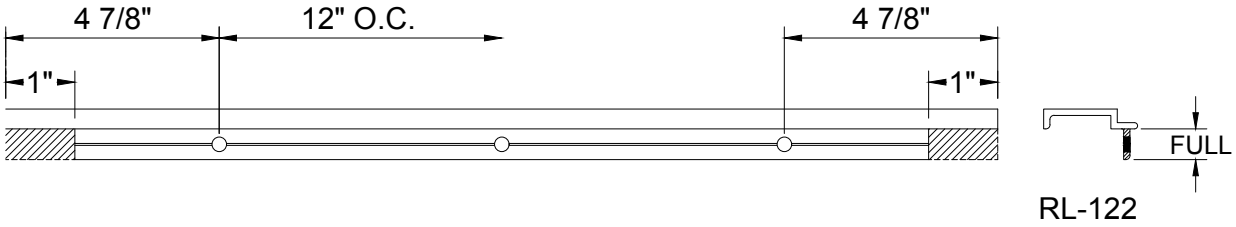


Figure 5
Pocket Filler Fabrication

FRAME INSTALLATION

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.

SINGLE SPAN INSTALLATION:

2.1.1 Attach shear blocks to all vertical members. The shear block anchors are designed for use with standard shear blocks. See FIGURE 6 & 7, page 10. for proper orientation and installation onto mullion. Tee anchors may also be used for single span installations. Refer to TWIN SPAN INSTALLATION.

2.1.2 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 7 page 10.

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

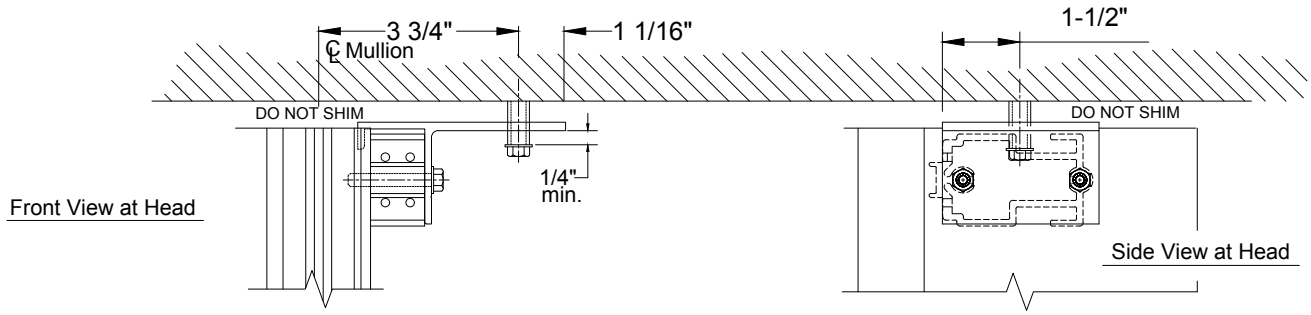


Figure 6
Single Span Head Anchorage
(Captured Mullion Shown; SSG Mullion Similar)

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.

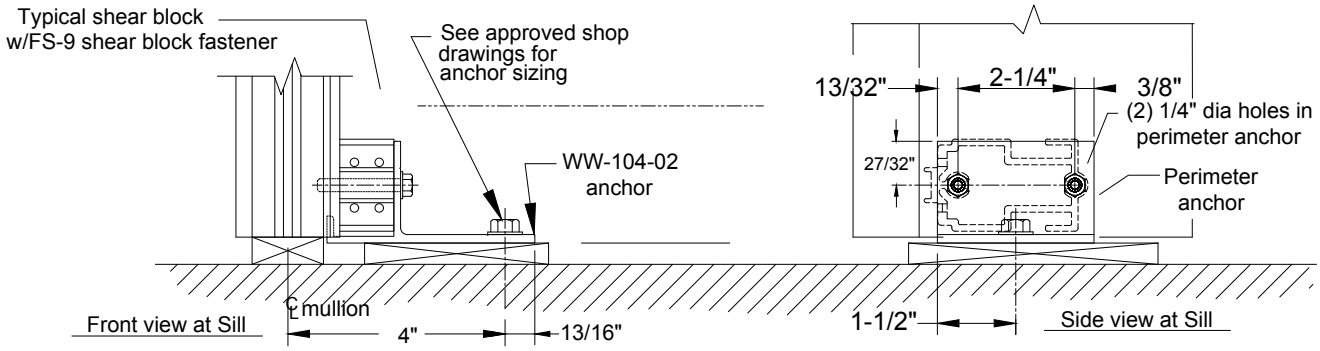


Figure 7
Shear Block Orientation
and Single Span Sill Anchorage
(Captured Mullion Shown; SSG Mullion Similar)

FRAME INSTALLATION

TWIN SPAN INSTALLATION:

2.1.4 Attach shear blocks to all vertical members. **SEE FIGURE 7, Page 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 tee anchors can be used to anchor the wall. **See page 10** for shear block anchor load capacity.

2.1.5 When using tee anchors, slide tee anchors into top and bottom of vertical mullions. The tee anchors are designed to clear the shear block fasteners.

2.1.6 Install verticals plumb and level, ensuring proper spacing out from floor slab or beam.
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.
Tee Anchor Method: Place shims under vertical mullion (tee 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 13 page 11. Option: Use roll-over horizontals at last bay to avoid notch.

2.1.7 Anchor the mullion to floor slab or beam. **See page 13** Do not over tighten bolt(s). For expansion anchors, back off nut ¼ turn and stake bolt.

2.1.8 Check D.L.O. every four bays to ensure correct spacing and prevent dimensional buildup.

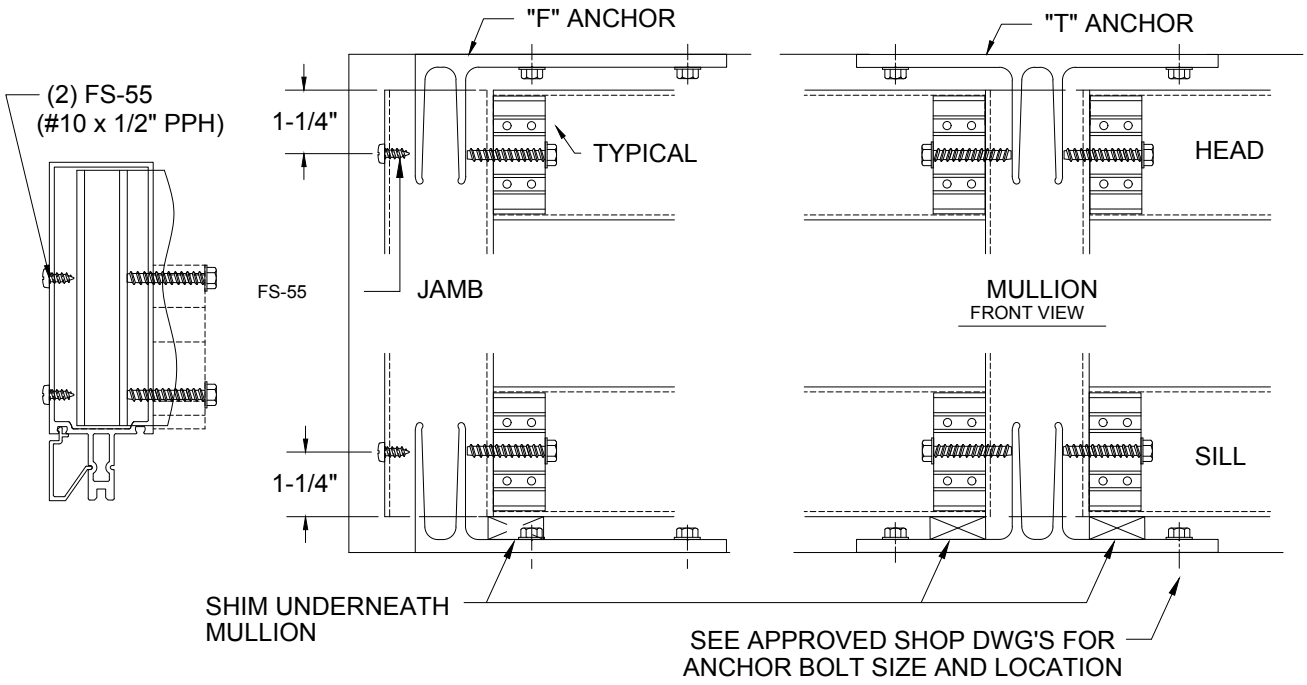


Figure 8
Head and Sill Anchors

FRAME INSTALLATION

MULTI-SPAN INSTALLATION:

2.1.9 Install tee anchors at the sill condition prior to setting mullions. Each tee anchor must be anchored with a minimum of two anchor bolts. See approved shop drawings for bolt size and location.

2.1.10 Attach shear blocks to all vertical members. **SEE FIGURE 2, page 07** for proper orientation on mullion.

2.1.11 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.

2.1.12 Anchor the mullion to floor slab or beam. **See FIGURE 9, page 13**. Do not over tighten bolt(s).

2.1.13 Repeat steps 2.1.11 and 2.1.12 until all lower verticals are in place. Check the D.L.O. every four bays to ensure correct spacing and prevent dimensional buildup.

2.1.14 Install the next vertical above, temporarily shimming between verticals to maintain proper splice joints (refer to approved shop drawings). **See FIGURE 10, page 14**.

2.1.15 Slide tee anchors into top of upper-most mullions. The tee anchors are designed to clear the shear block fasteners. **See FIGURE 8, page 11.** Attach tee anchor to building condition.

2.1.16 When the wall is set, remove shims between vertical mullions at splices, back off nut 1/4 turn at expansion anchors and stake bolts.

Continue with step 2.2 for remaining installation after all verticals have been erected.

2.2 **See FIGURE 9, page 13** as a guide for horizontal layout. Seal around shear blocks prior to installing each horizontal mullion. Install horizontal mullions as shown in **FIGURE 9, Page 13**. Prior to attaching screws, 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 #10 x 3/4" Phillips Flat Head screw at each end of horizontal. Check head of screw to insure proper seal.

2.3 If applicable, install cover plates for roll-over horizontals.

2.4 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.

2.5 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 12, Page 16.**

2.6 When all framing members are installed, apply the perimeter seal. **See FIGURE 12, Page 16**. 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.

FRAME INSTALLATION

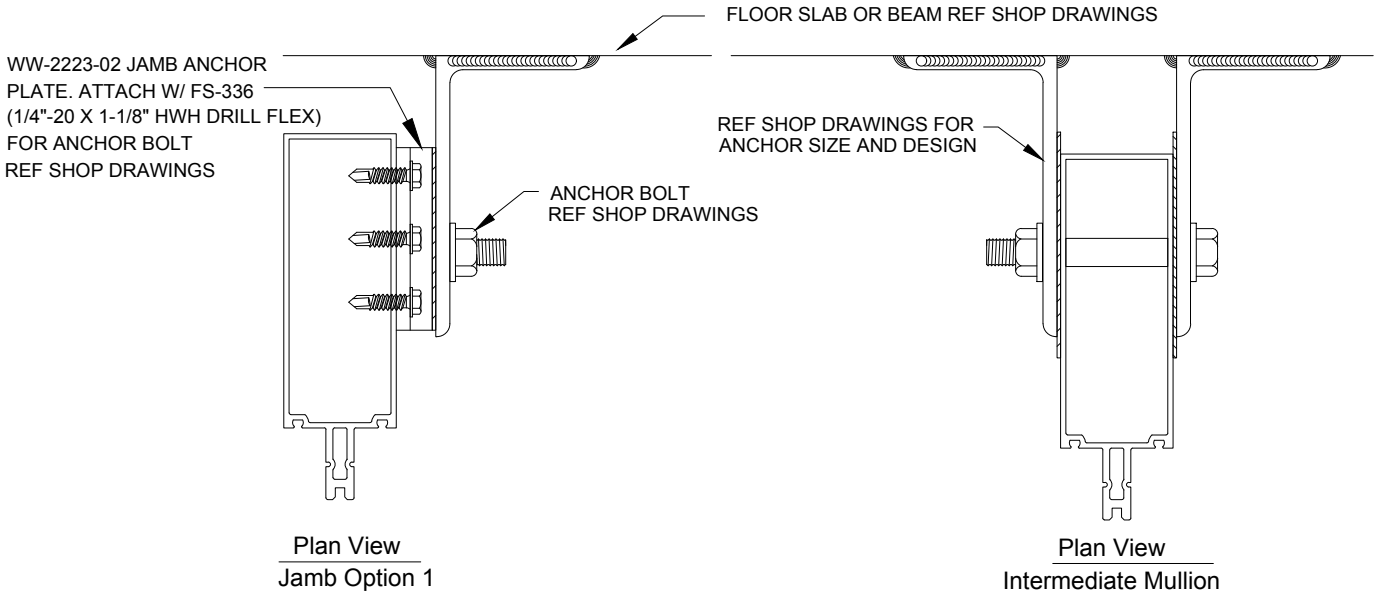
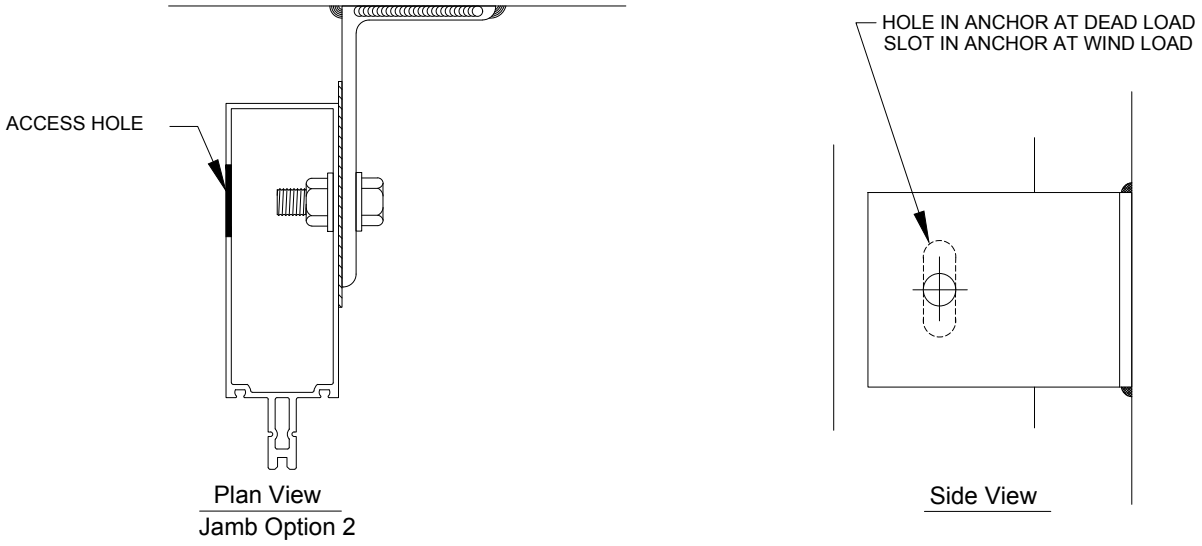


Figure 9
Floor Slab Anchor Details



FLOOR SLAB ANCHOR

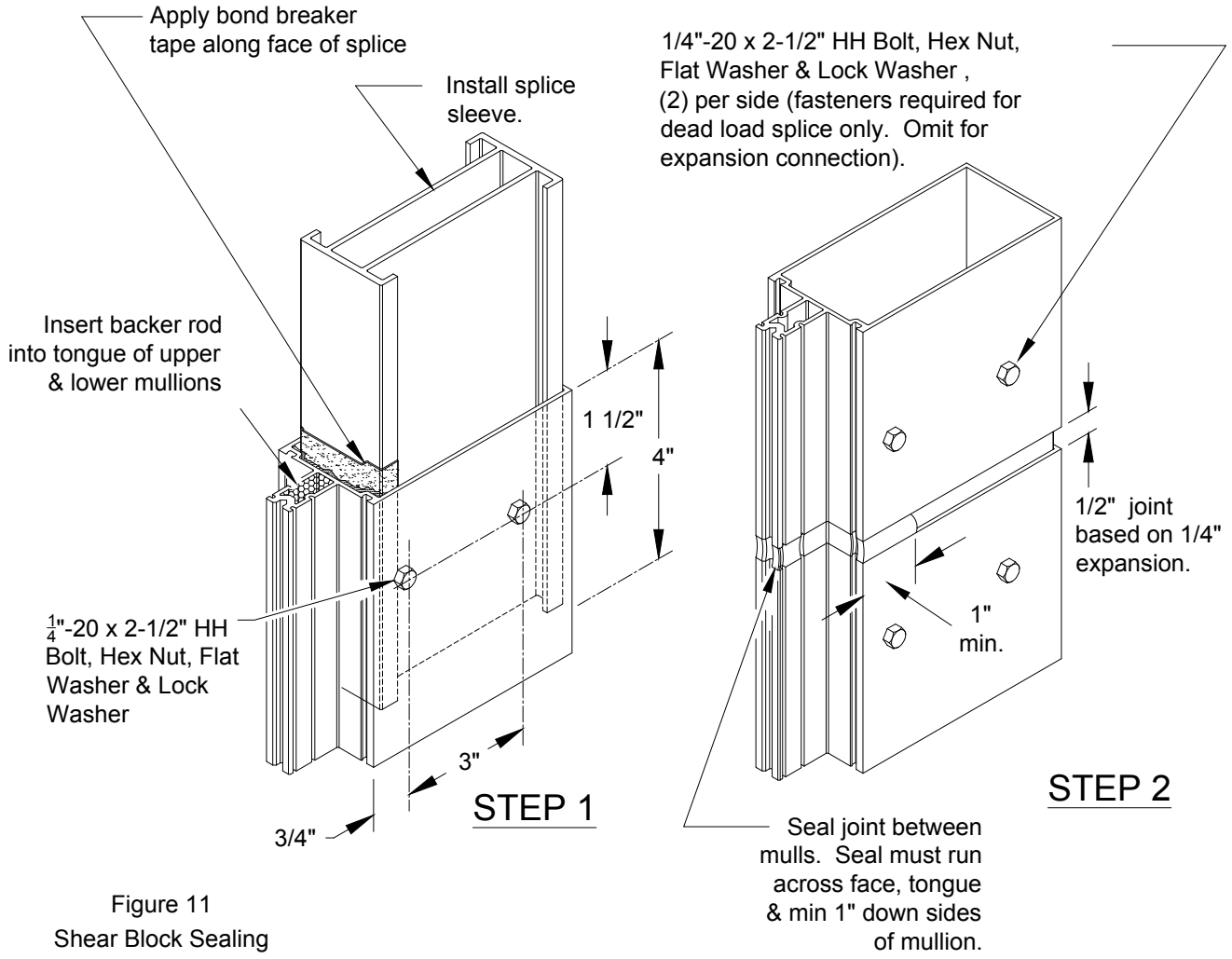


Figure 11
Shear Block Sealing

Figure 10
Vertical Splice Details

VERTICAL SPLICE DETAIL

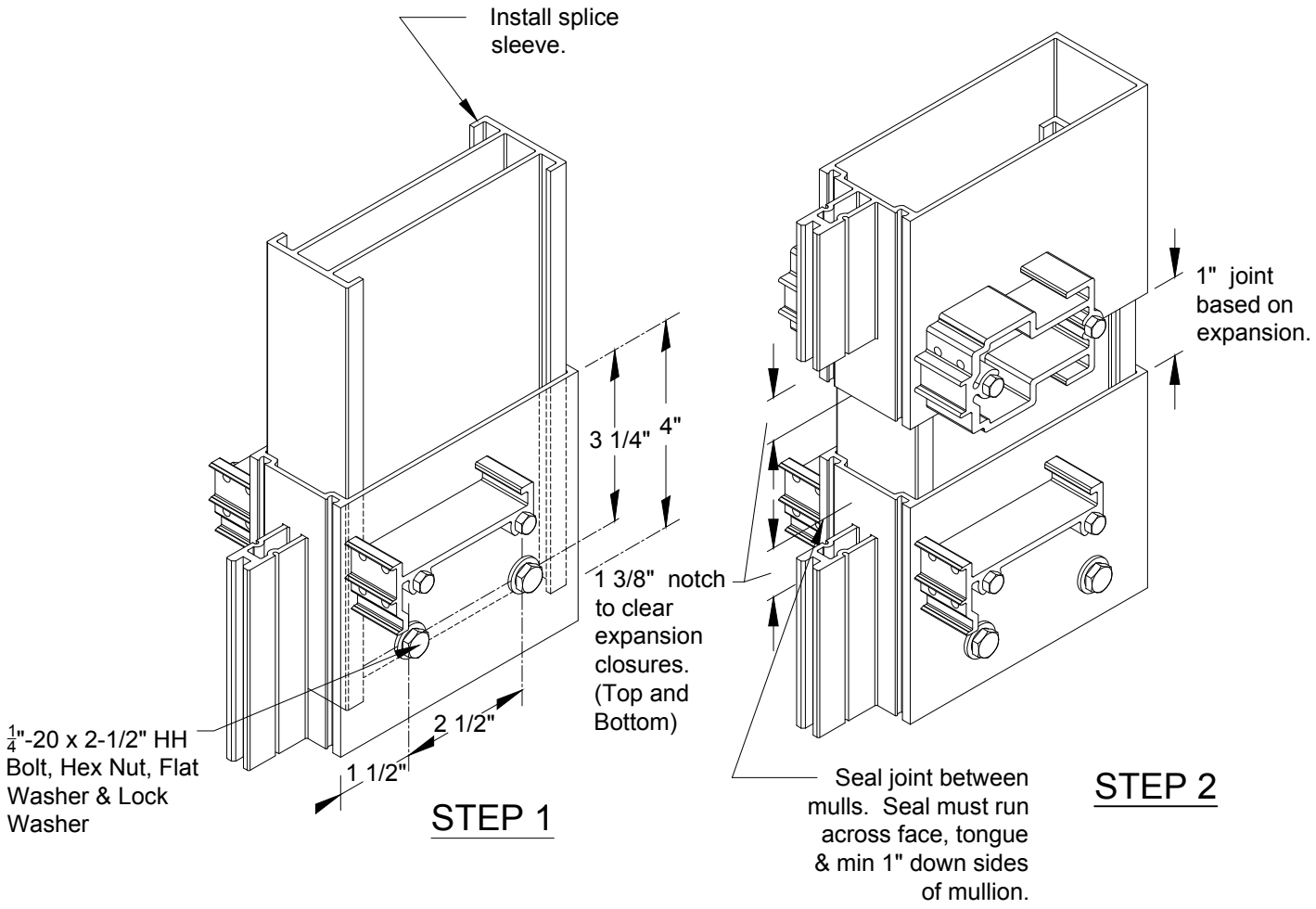


Figure 11
Vertical Splice Details
(@ Stack)

VERTICAL SPLICE DETAIL (@ STACK HORIZONTAL)

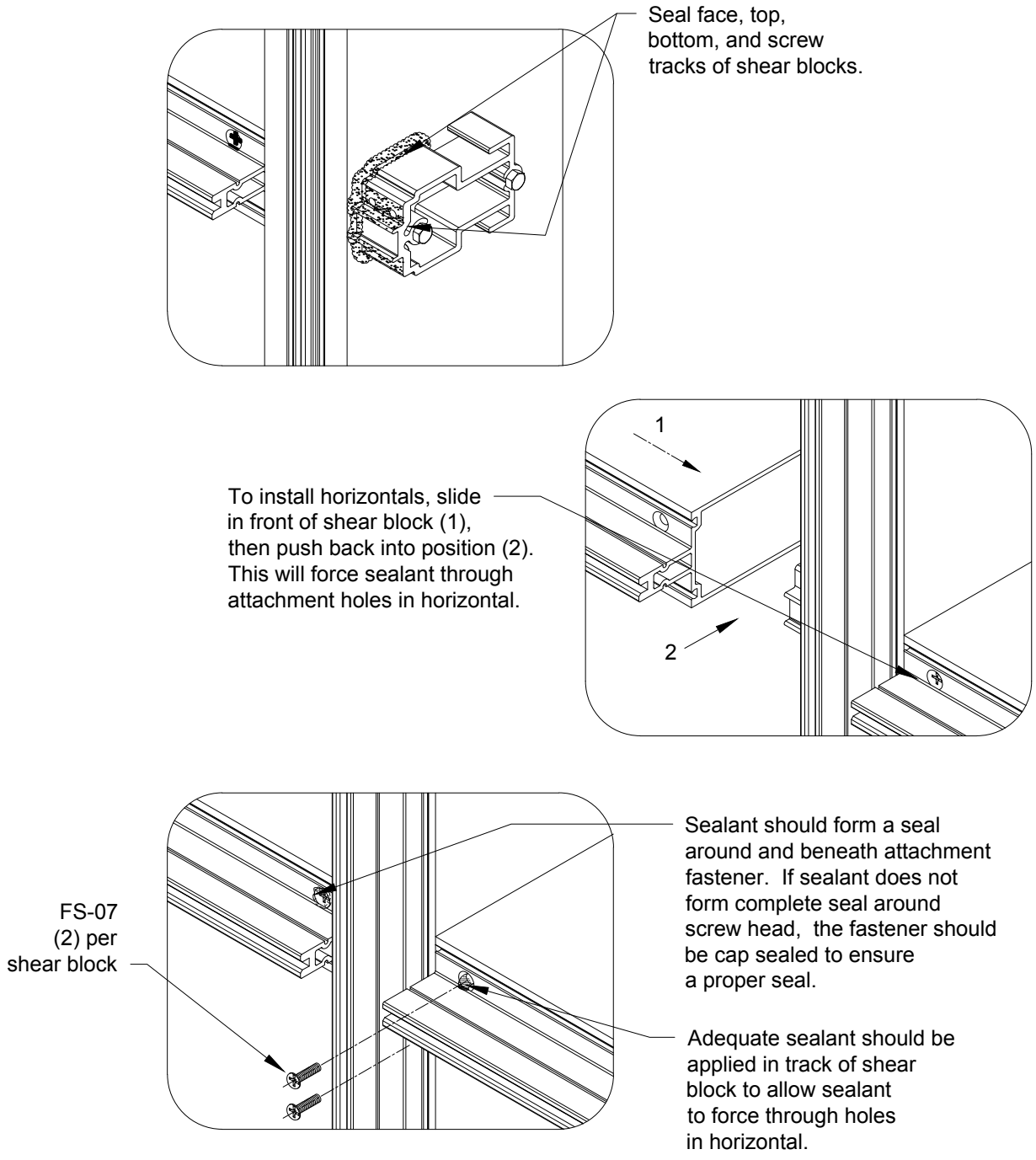
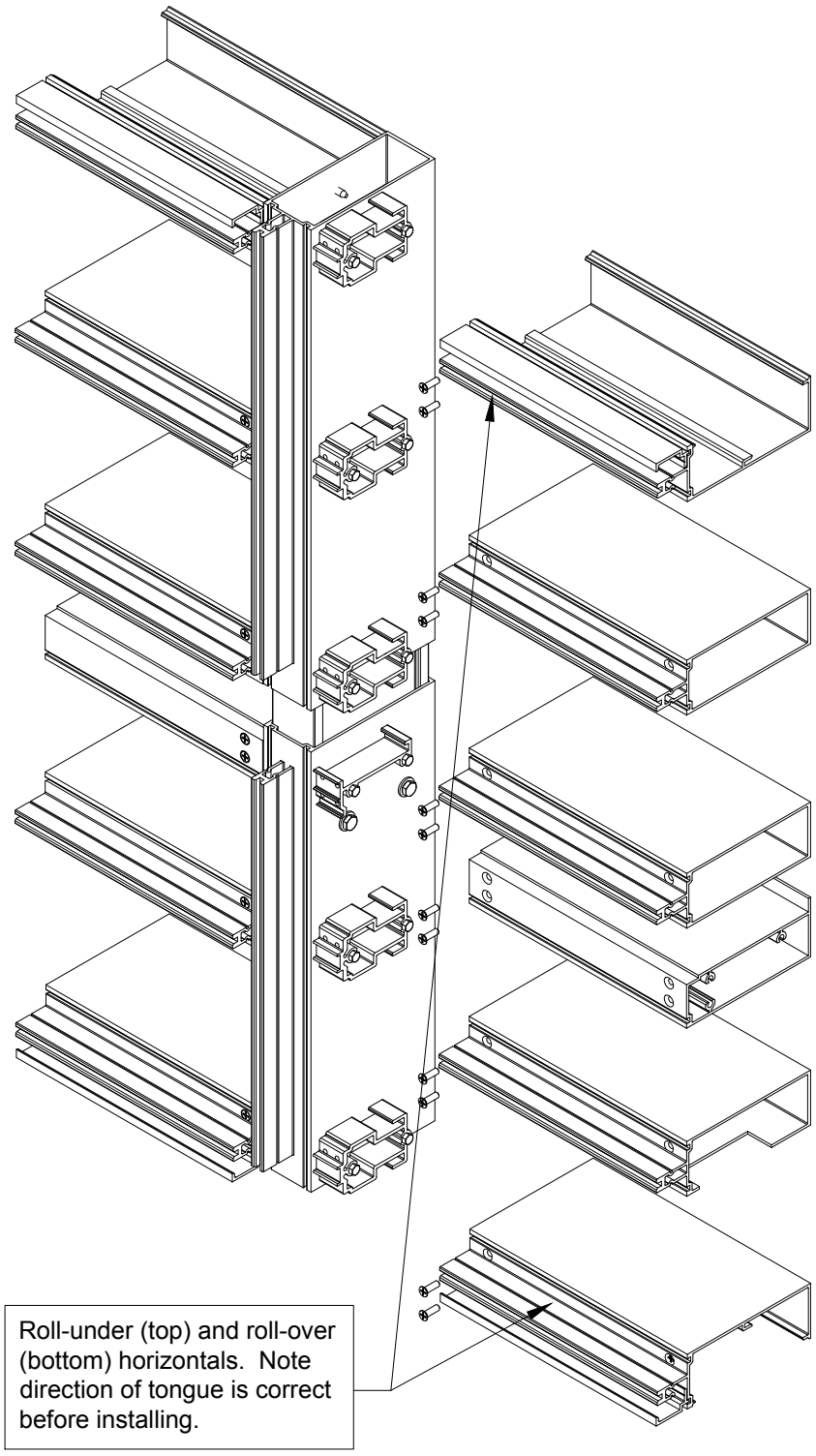


Figure 12
Shear Block Sealing

SHEAR BLOCK SEALING



Roll-under (top) and roll-over (bottom) horizontals. Note direction of tongue is correct before installing.

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 6. Option: Use roll over horizontals at last bay to avoid notch.

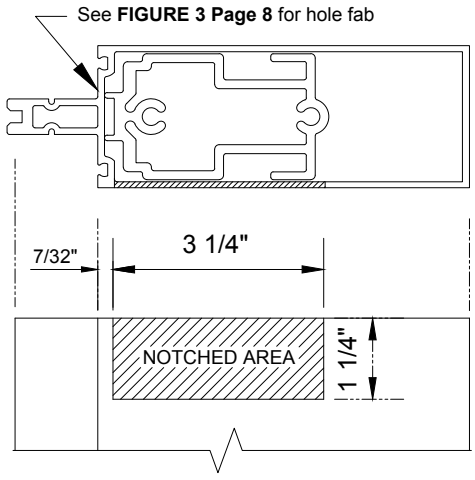


Figure 13
Horizontal Layout & Last Bay Horizontal Notch

HORIZONTAL LAYOUT

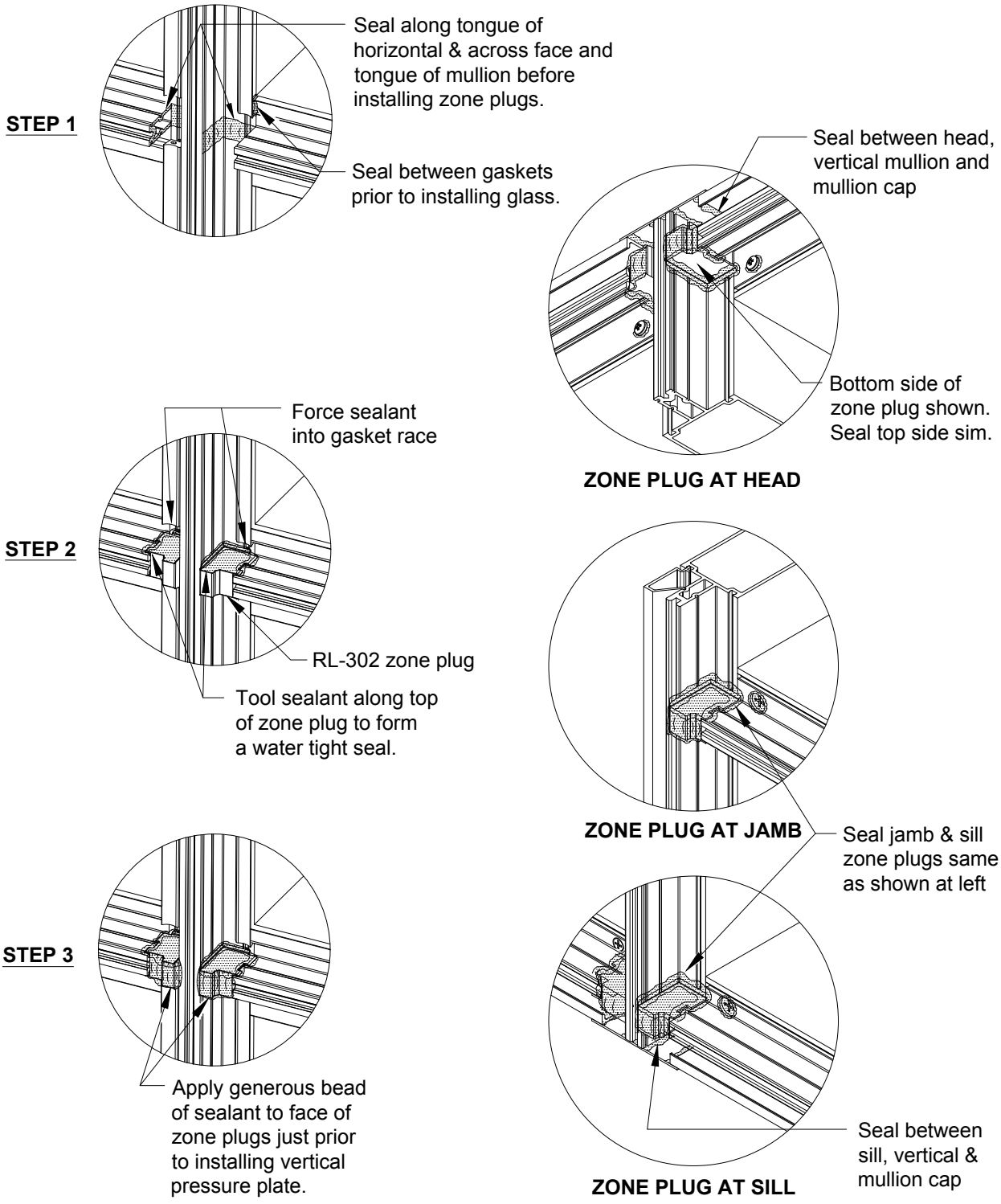


Figure 14
Zone Plug Installation

ZONE PLUG INSTALLATION

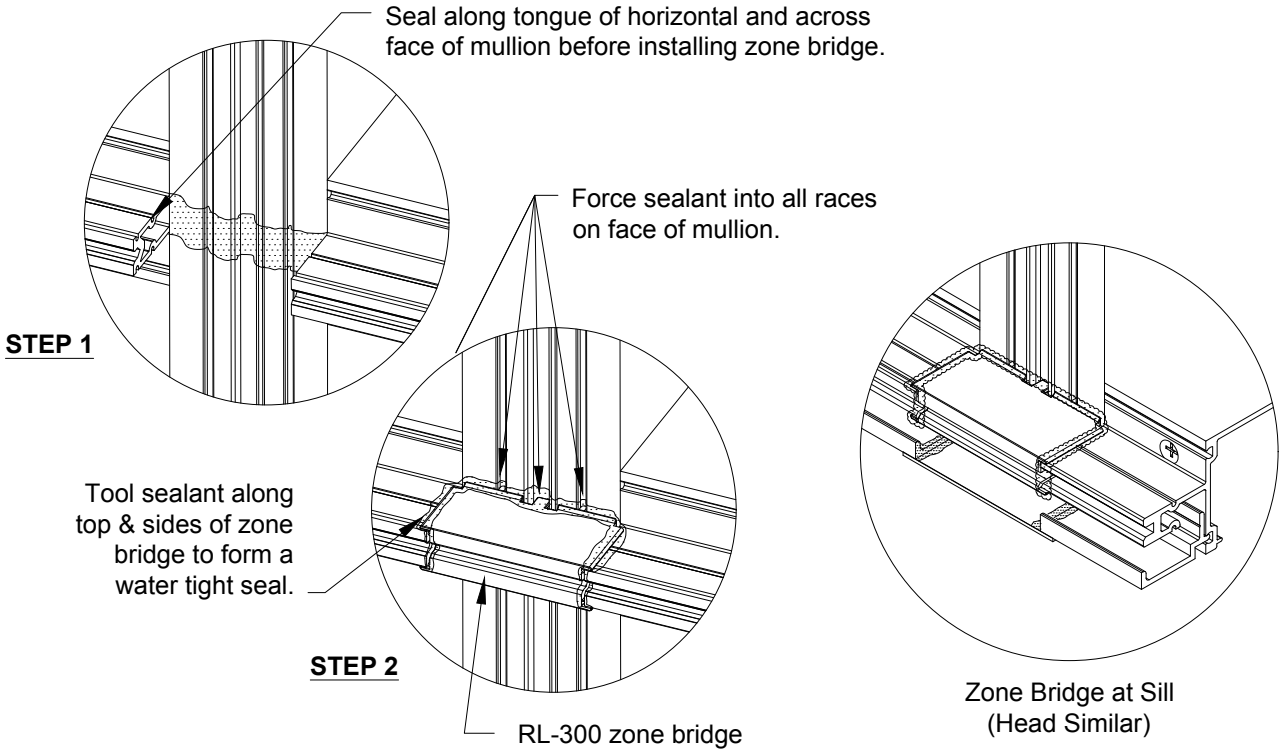


Figure 14 (continued)
Zone Plug Installation

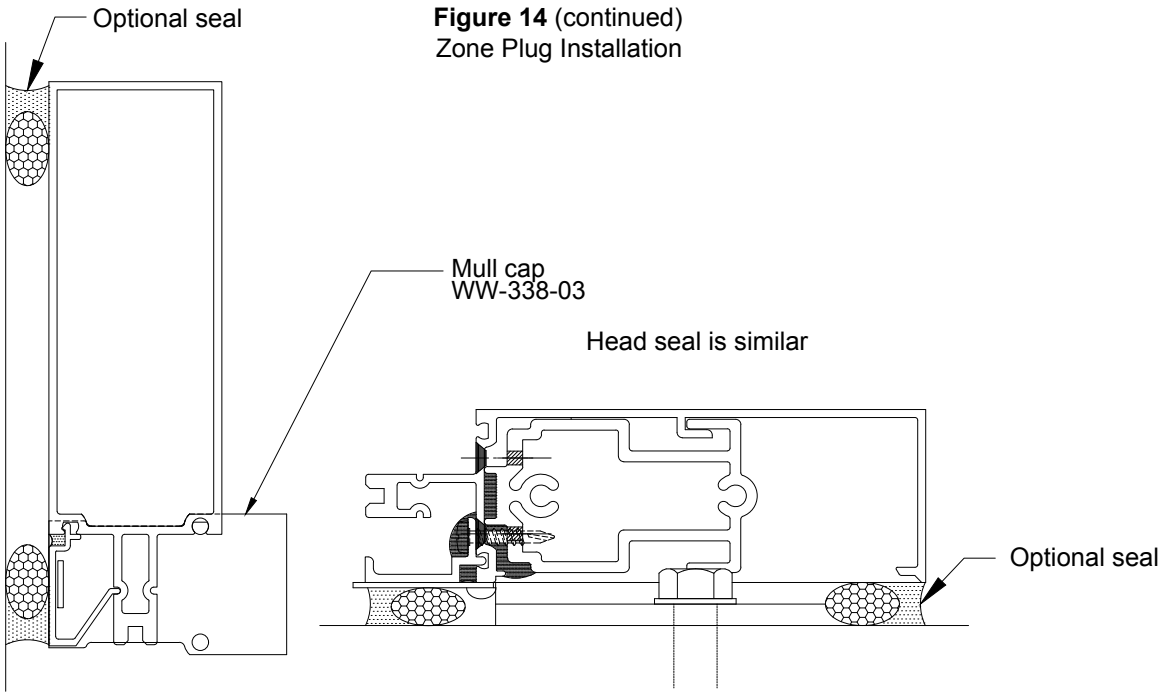


Figure 15
Perimeter Seal

ZONE BRIDGE INSTALLATION / PERIMETER SEAL

GLASS SIZE CALCULATION =
D.L.O. plus 1" for WIDTH & HEIGHT at Captured System
SEE FIGURE 16 for calculation at corner mullions

Note: Steps 3.1 through 3.16 refer to standard glazing of 1" infill. For openings requiring transition glazing with adaptors, refer to "TRANSITION GLAZING", page 30-31.

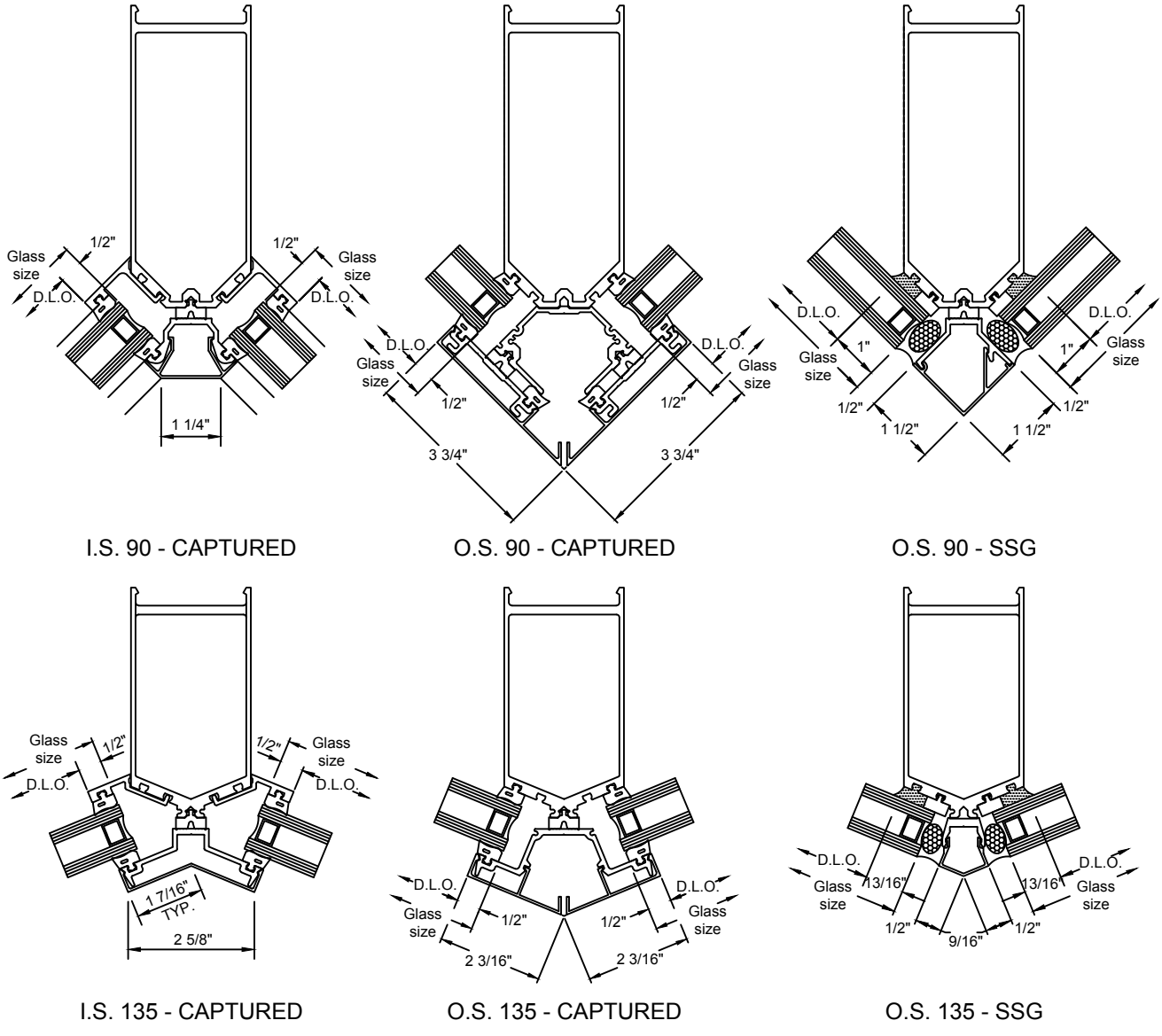


Figure 16
Glass Size Calculation at Corners
SOME PARTS NOT SHOWN FOR CLARITY

GLASS CALCULATIONS AT CORNERS

Glazing:

3.1 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.

3.2 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 17**.

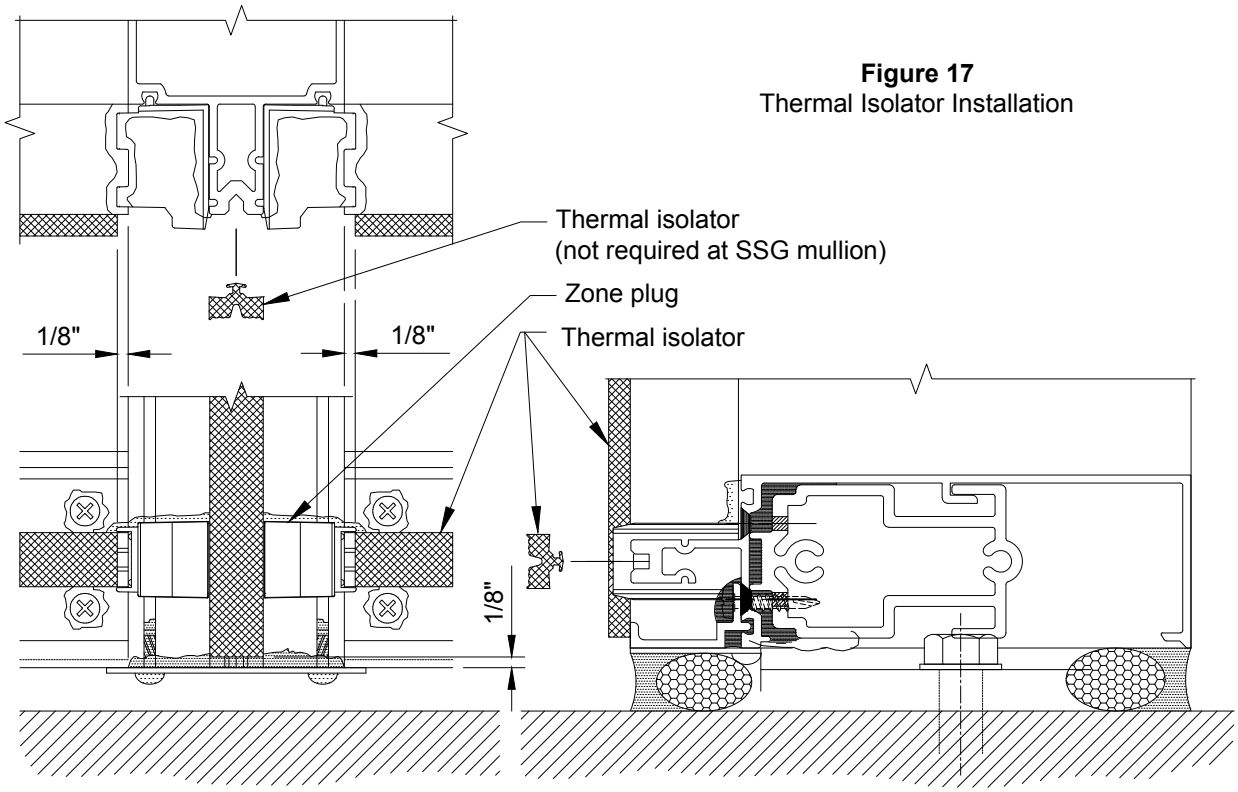


Figure 17
Thermal Isolator Installation

3.3 **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.

3.4 Position setting blocks at correct location (two per lite). Refer to approved shop drawings or dead load charts. 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.

THERMAL ISOLATOR INSTALLATION

3.5 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.
(Captured glass bite = 1/2", SSG mullion = 3/4", Reference shop drawings for custom conditions.)

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

- 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.
- Retainers are intended for short term use only. Additional retainers may be required to withstand full design wind load pressures.
- Full length pressure plates must be installed if severe weather or high wind loads are anticipated. **See FIGURE 18 & 19**

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

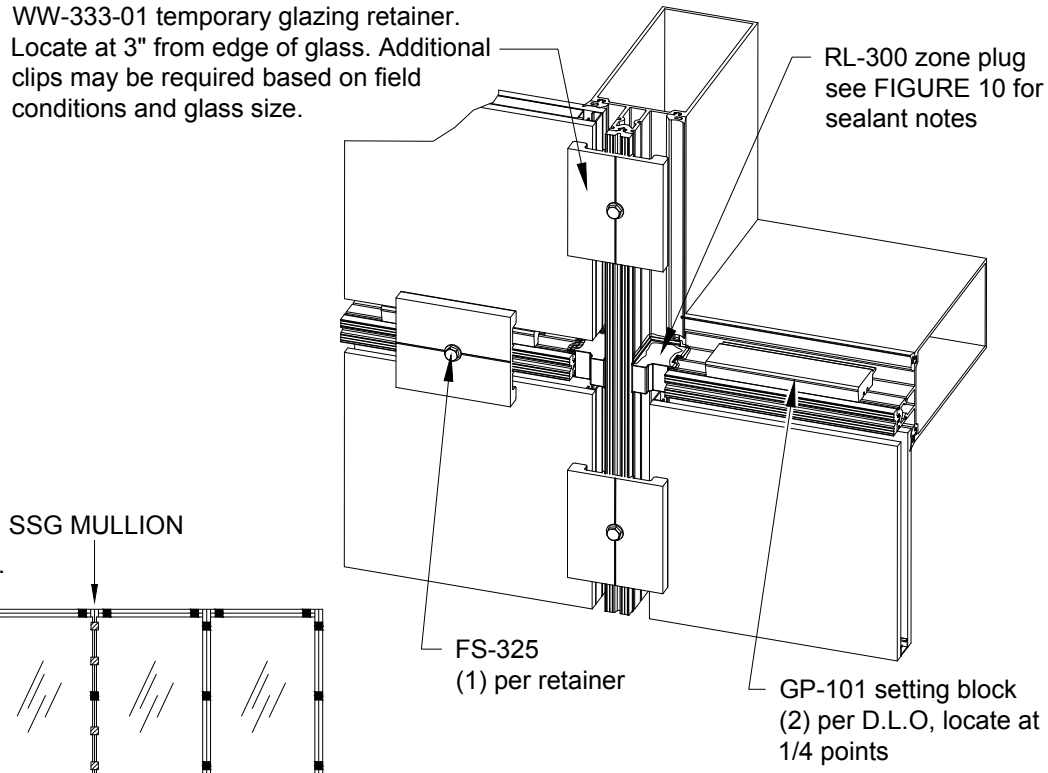


Figure 18
Glazing Instructions

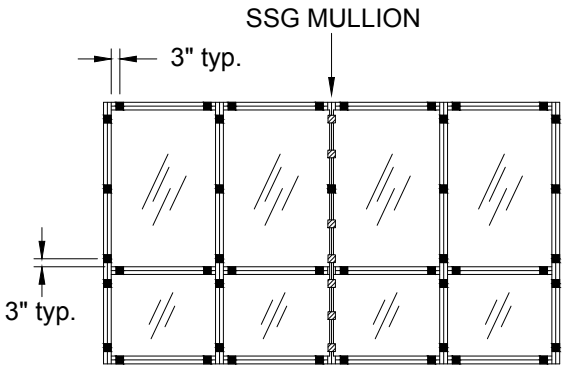


Figure 19
Typical Location of
Temporary Glazing Retainers

3.7 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.

3.8 Repeat steps 3.3 through 3.7 until all glass is set, working row by row up the elevation. For elevations requiring vertical mullion splices, refer to the VERTICAL SPLICING section, page 31-32, before continuing the installation.

3.9 Prior to installing vertical pressure plates, apply sealant to the face of each horizontal zone plug. **See FIGURE 20 Page 23**. Vertical pressure plates and face caps must be installed before the horizontal pressure plates are applied.

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.

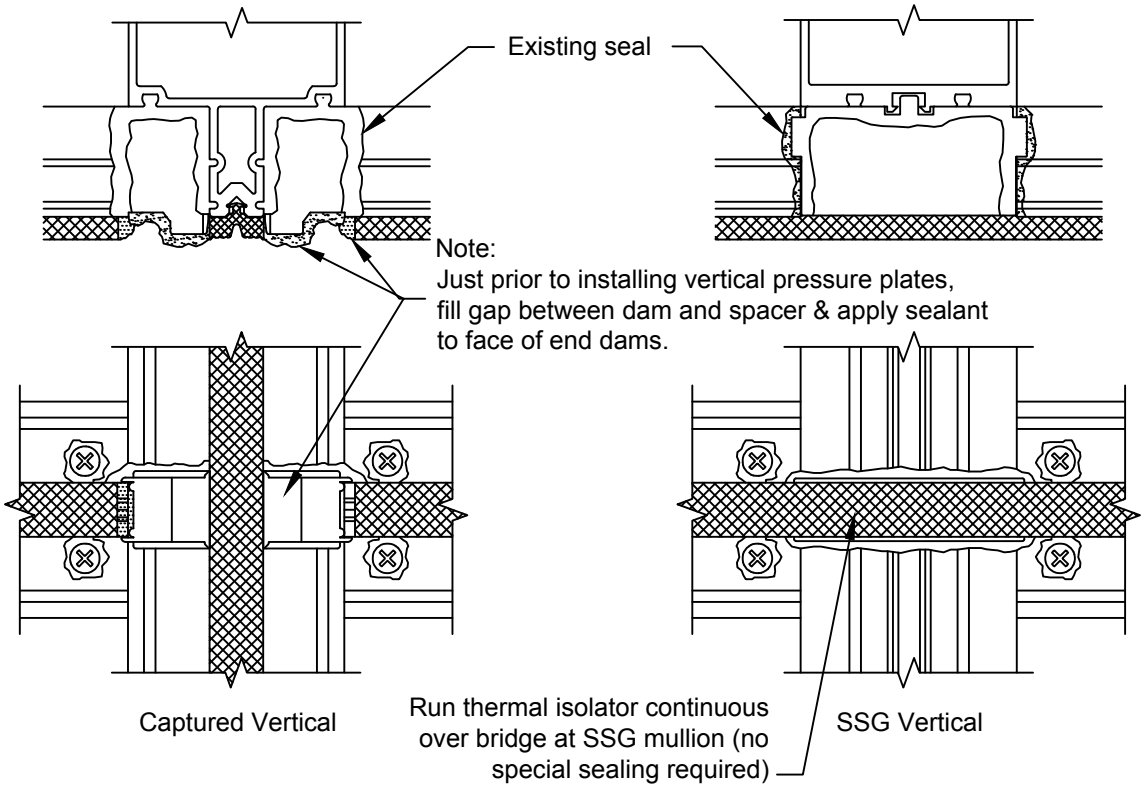


Figure 20
Sealing for Pressure Plates

3.10 After removing vertical temporary retainers, install vertical pressure plates with FS-325 (@ Aluminum) or FS-315 (@ Polyamide) screws, holding back 1/8" from the ends of the vertical mullion.

3.11 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 21, page 24 for splicing and sealing instructions.**

SEALING PRESSURE PLATES

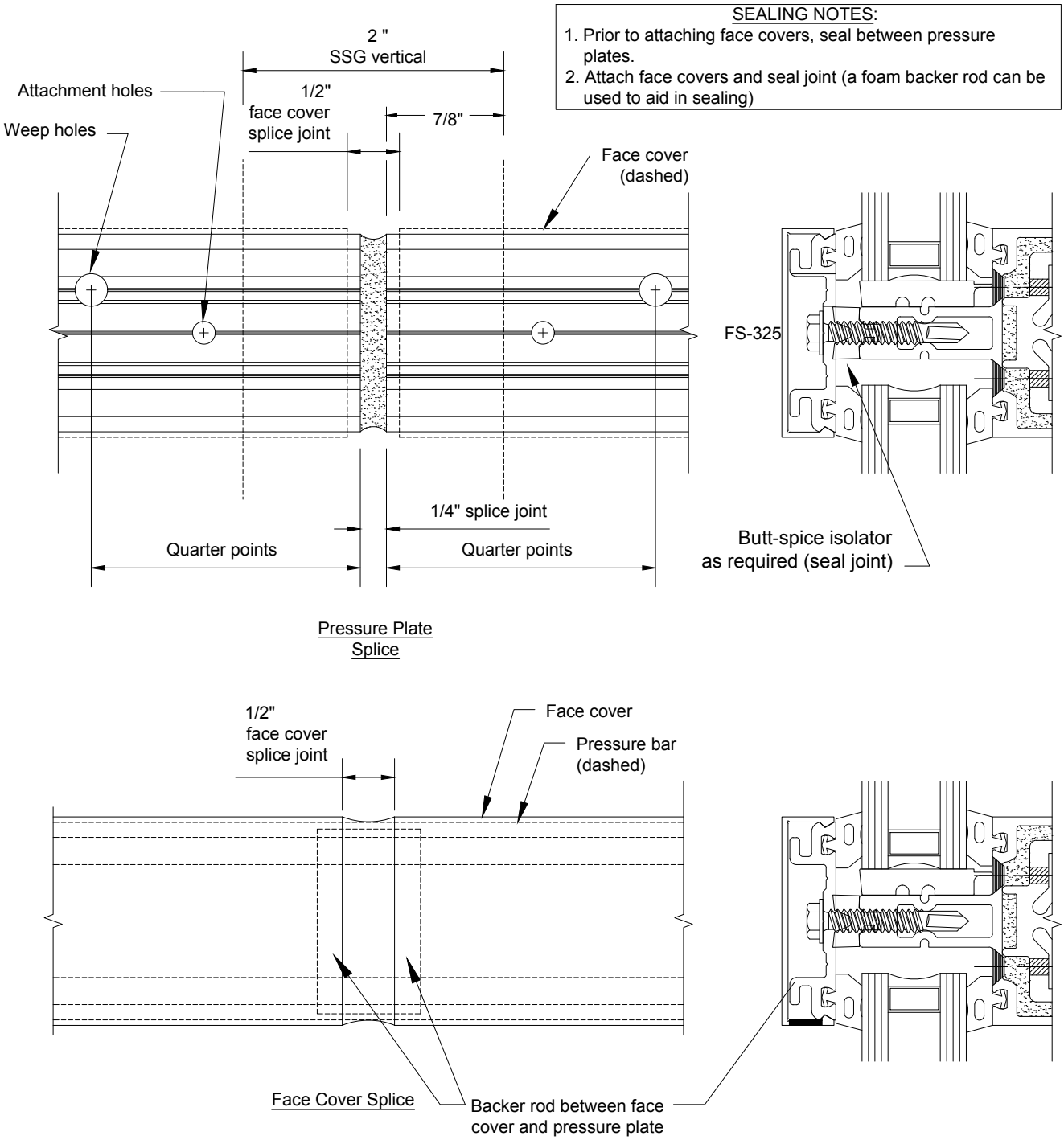


Figure 21
Pressure Plate/Face Cap Splicing & Sealing @ SSG Mullions
(Intermediate Horizontal Shown; Head & Sill Similar)

PRESSURE PLATE & FACE CAP SPLICE

3.12 After all pressure plates are installed on the frame, torque FS-325 (1") 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. (When installing the FS-315 and FS-325 self drilling screws the fastener manufacturer recommends using a screw gun with an 1800 rpm drill speed.)

3.13 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 24, page 27** for further information for fastening of covers.)

3.14 Insert backer rod into cavity at the top of each vertical mullion. Seal off end of vertical, sloping sealant **See FIGURE 22**. back to marry with the perimeter seal.

3.15 Seal horizontal pressure plates against the vertical face covers. Tool sealant into the joint. **See FIGURE 23, page 26**.

3.16 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.

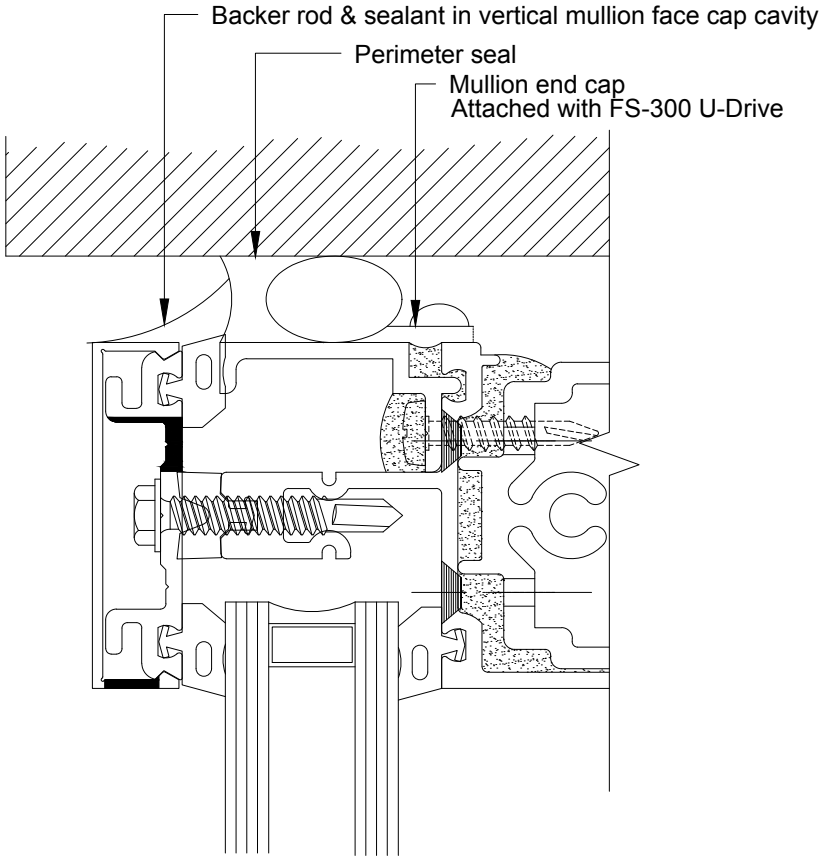
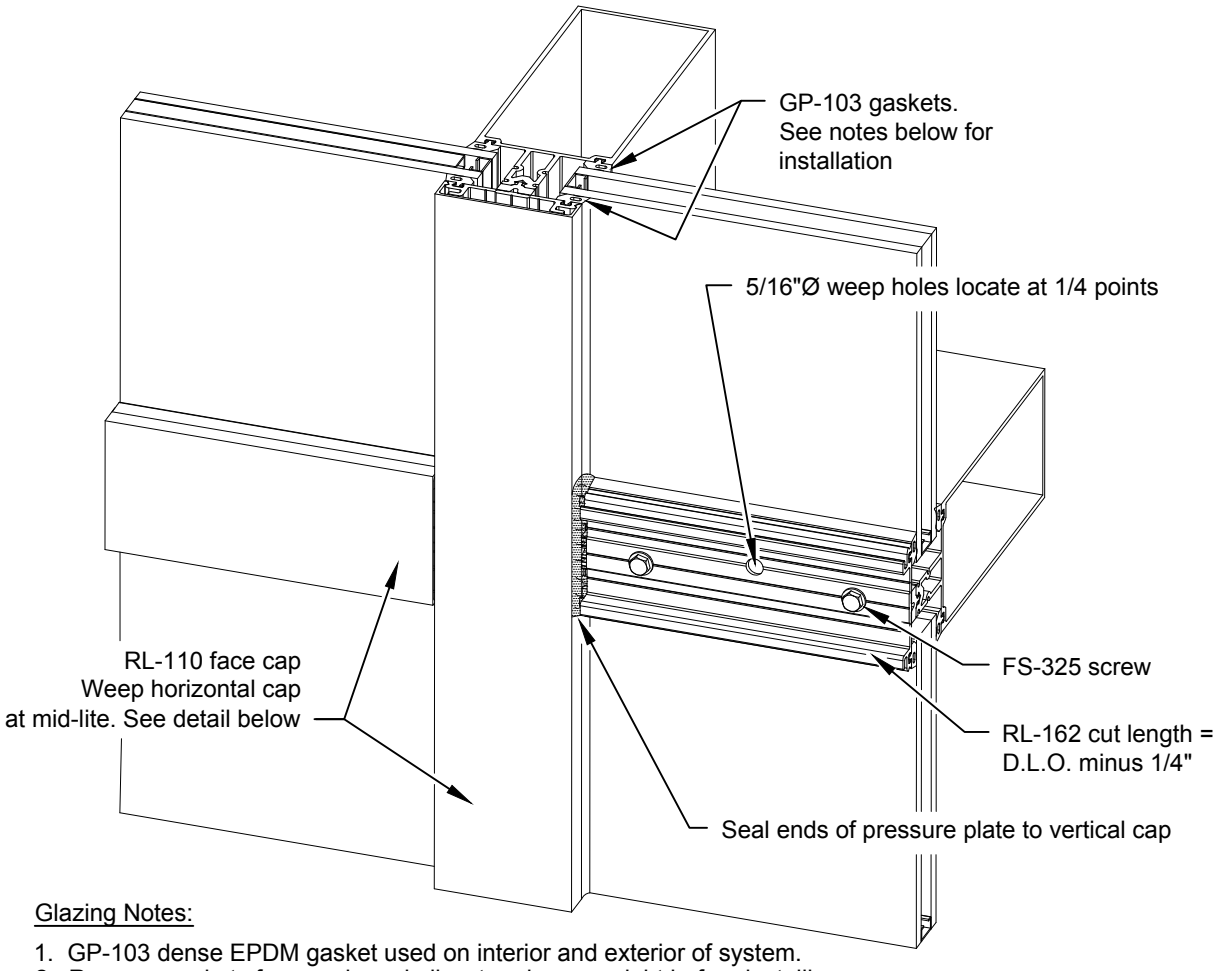


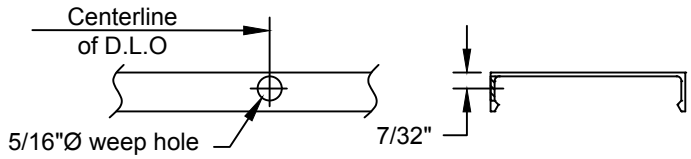
Figure 22
Sealing Top of Captured Verticals

SEALING TOP OF VERTICAL



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 23
Glazing Instructions

GLAZING INSTRUCTIONS

Vertical Face Covers:

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.

Horizontal Face Covers:

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.

See **FIGURE 24** 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)1/8" x 3/4" S.S. Headed Roll Pin. Drill cap and pressure plate with a 1/8" (.125") clearance hole.

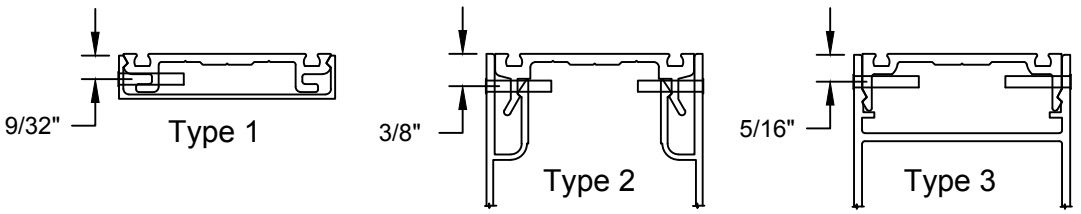


Figure 24
Face Cover Fabrication

FACE CAP INSTALLATION

A.1 Install vertical adaptors 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 25**. Refer to VERTICAL SPLICING, page 31 & 32 if vertical mullion is spliced within a spandrel lite. Transition adaptors must be installed after mullion splice is sealed.

A.2 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 #12 x 1 ¾" Phillips Flat Head screw 3" from the ends and 12" O.C. **See FIGURE 25**.

A.3 Install horizontal adaptors maintaining an equal gap at each end. **Note:** For horizontal adaptors 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 26**. Once all adaptors have been installed in the opening, seal all joints between the vertical and horizontal adaptors. Run a bead of sealant in the groove formed between the adaptor and mullion. This seal must be continuous around opening and must marry with the seal at the horizontal to vertical adaptor joints. **See FIGURE 27**.

See page 29 for optional glazing thickness.

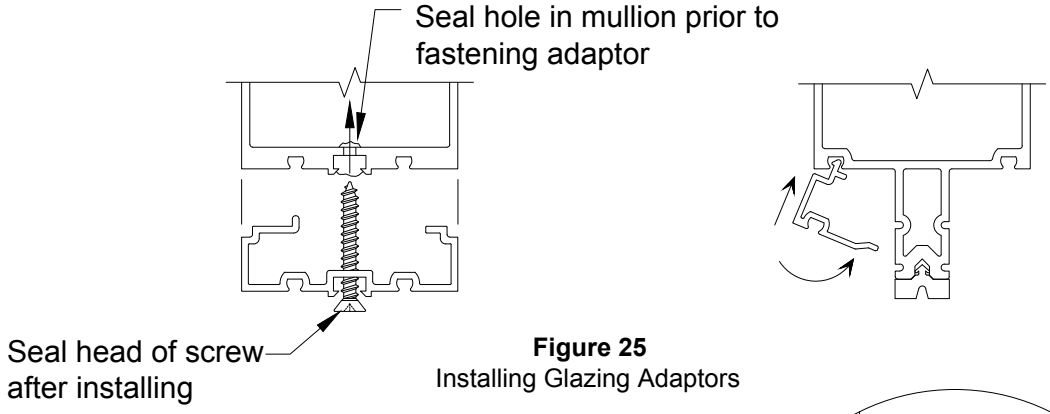


Figure 25
Installing Glazing Adaptors

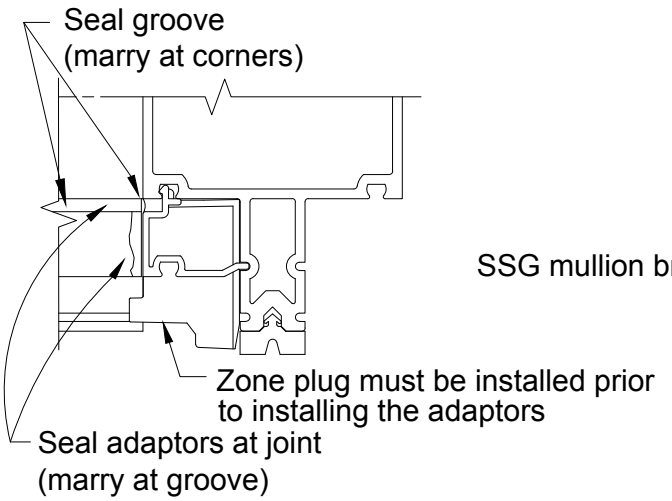


Figure 27
Sealing Glazing Adaptors
(Vertical Shown - Horizontal Similar)

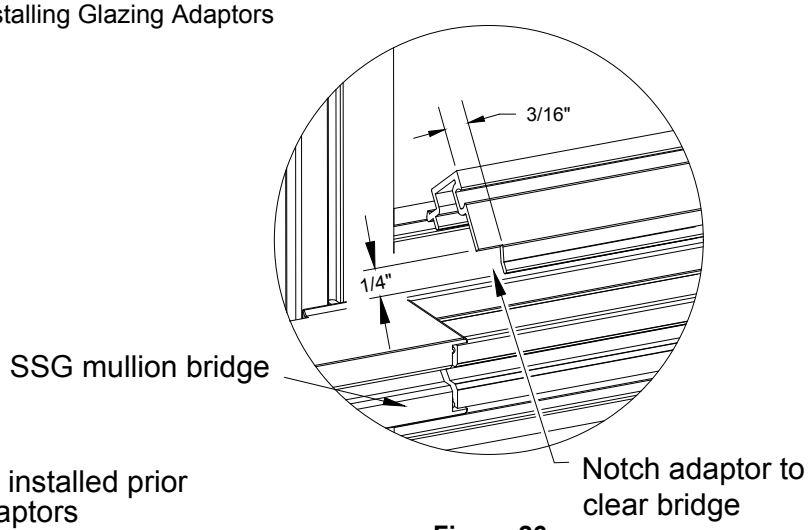
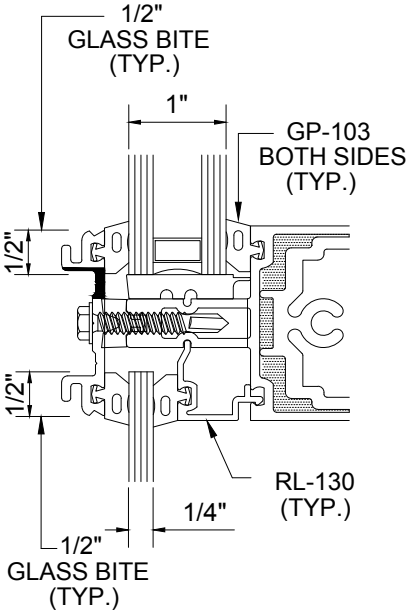
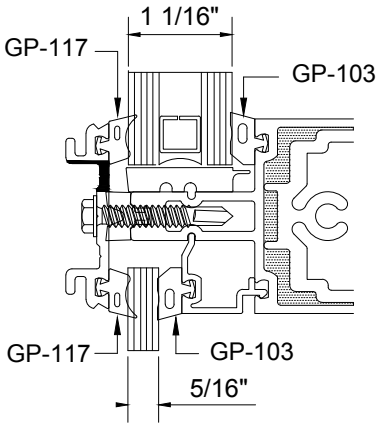
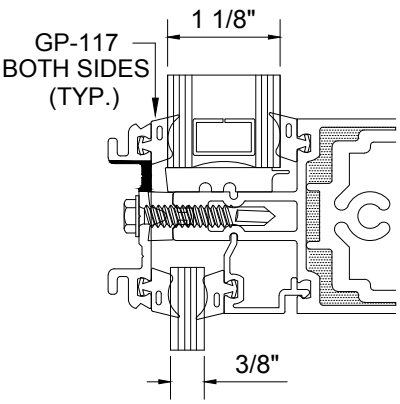


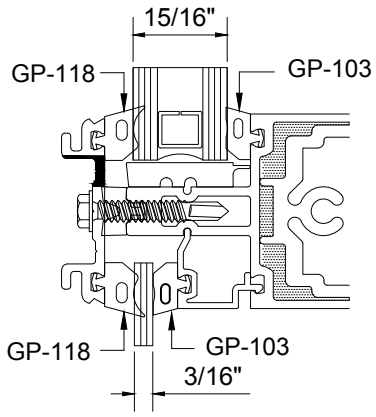
Figure 26
Notching Adaptor for
SSG Mullion Bridge

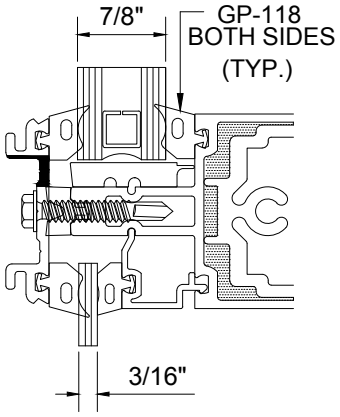
INSTALLING GLAZING ADAPTORS

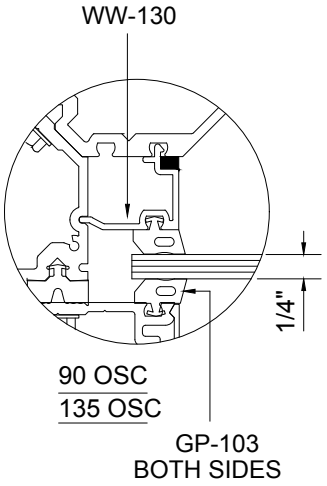


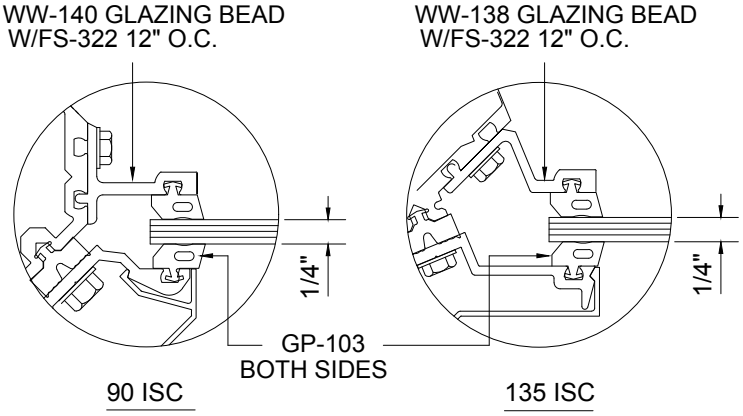












SEE PAGE 20 FOR GLASS BITE AT CORNERS.

1-1/2" GLASS POCKET

WW-162 PRESSURE PLATE w/ GP-107 ISOLATOR (TYPICAL)

GLASS OPTIONS

A.4 When using RL-141 to create a captured opening using the SSG vertical mullion. The adaptor MUST be slid in place and fastened to mullion prior to erecting mullion.

A.5 The RL-141 adaptor will be attached to mullion with a FS-318 (12 x 1-3/4" PFH). Location and spacing will be determined by Engineer's review.

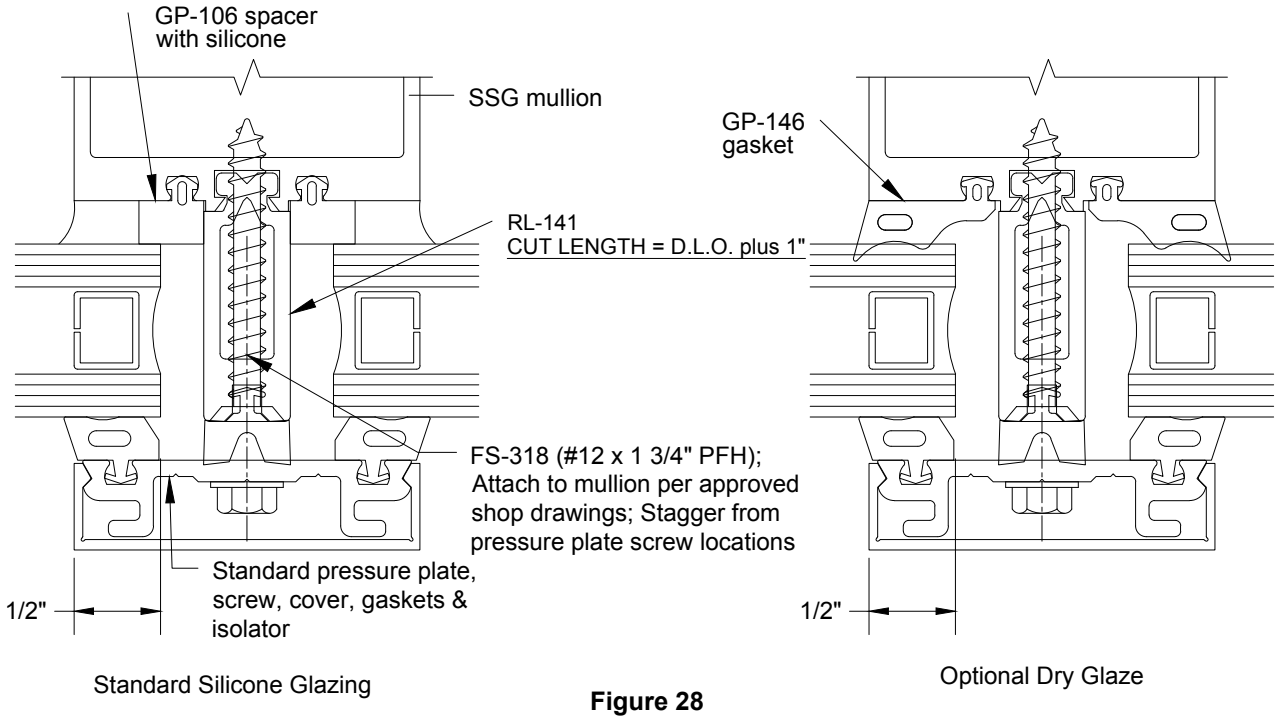


Figure 28
Captured Glazing Adaptor for SSG Mullion

Refer to **MULTI-SPAN INSTALLATION, page 4** for splice applications.

Follow sealant manufacturer's guidelines for proper joint width based on anticipated movement. A minimum ½" joint is recommended. **Note: 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.

B.1 Offset pressure plates and face covers per **FIGURE 29, page 31.** Seal the pressure plate and face cover joints as shown in **FIGURE 30, page 32.**

B.2 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 insure a good seal when gaskets are installed. **SEE FIGURE 30, page 32.**

B.3 Discontinue glazing adaptors at splice joints. Install backer rod into cavity and seal between adaptors. Marry adaptor seal with main mullion seal. Refer to step B.1 above for sealing notes at glazing reglets.

CAPTURED ADAPTOR AT SSG MULLION

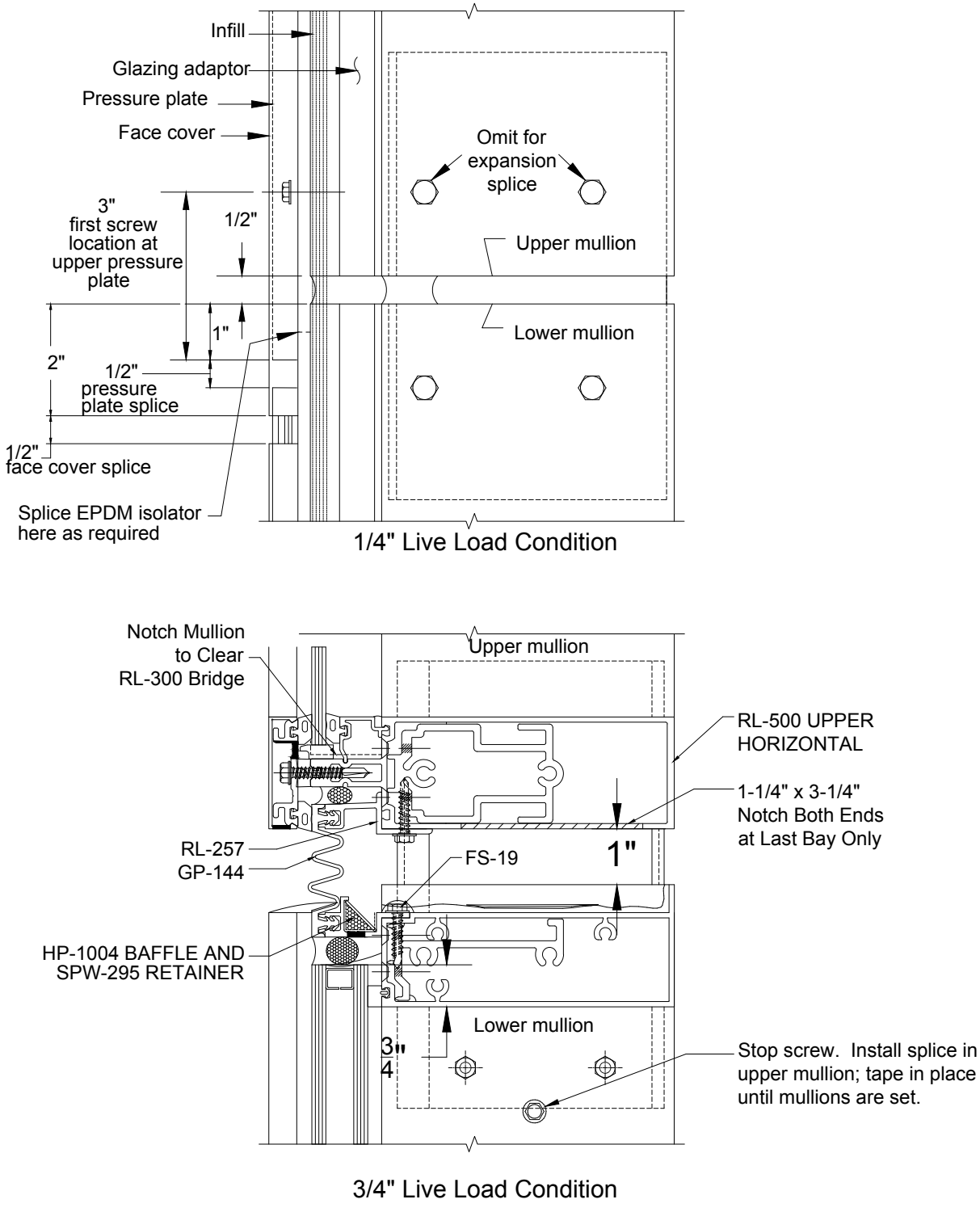


Figure 29
Vertical Mullion Splice

SPLICE LAYOUT

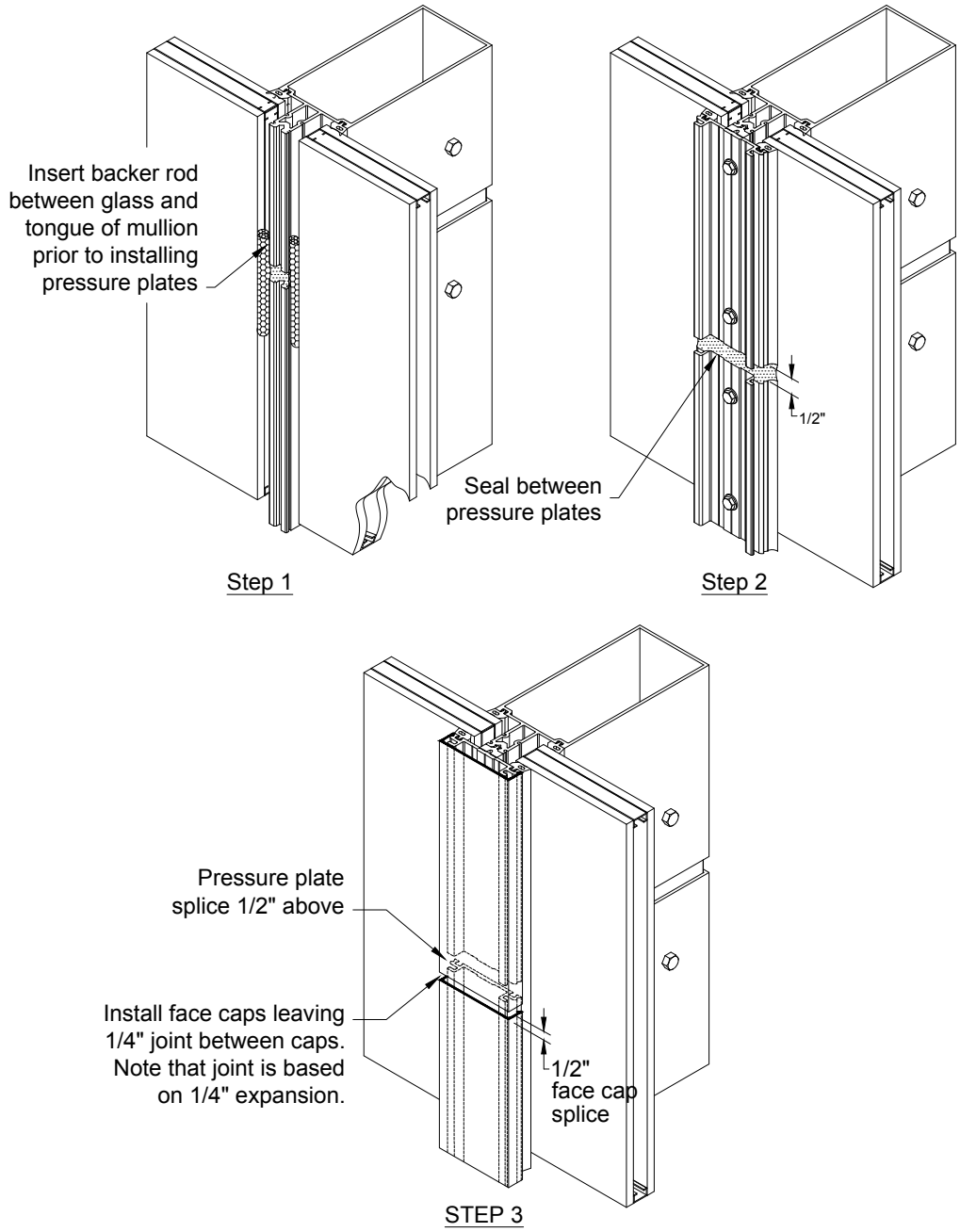


Figure 30
Splice Joint Sealing Instructions

SPLICE JOINT SEALING

6.9 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 (#10 x 5/8" HWH Tek) at 9" on center.

6.10 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. Assembly and sealing of gasket retainer should be performed as part of shop assembly of screw spline frames.

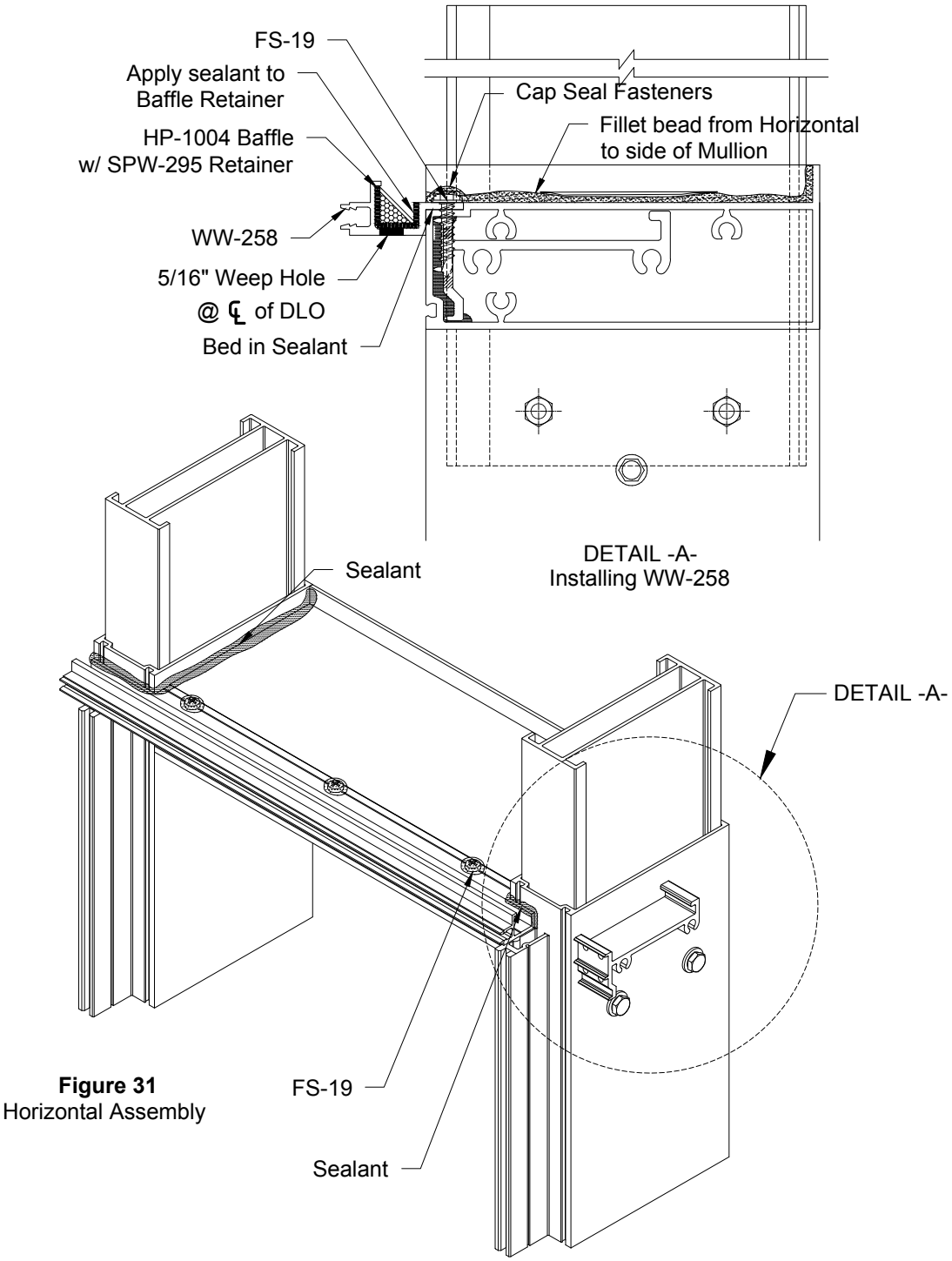


Figure 31
Horizontal Assembly

SEALING HORIZONTAL @ LOWER SPLICE JOINT

6.11 Install WW- 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 (#10 x 5/8" HWH Tek) at 9" on center.

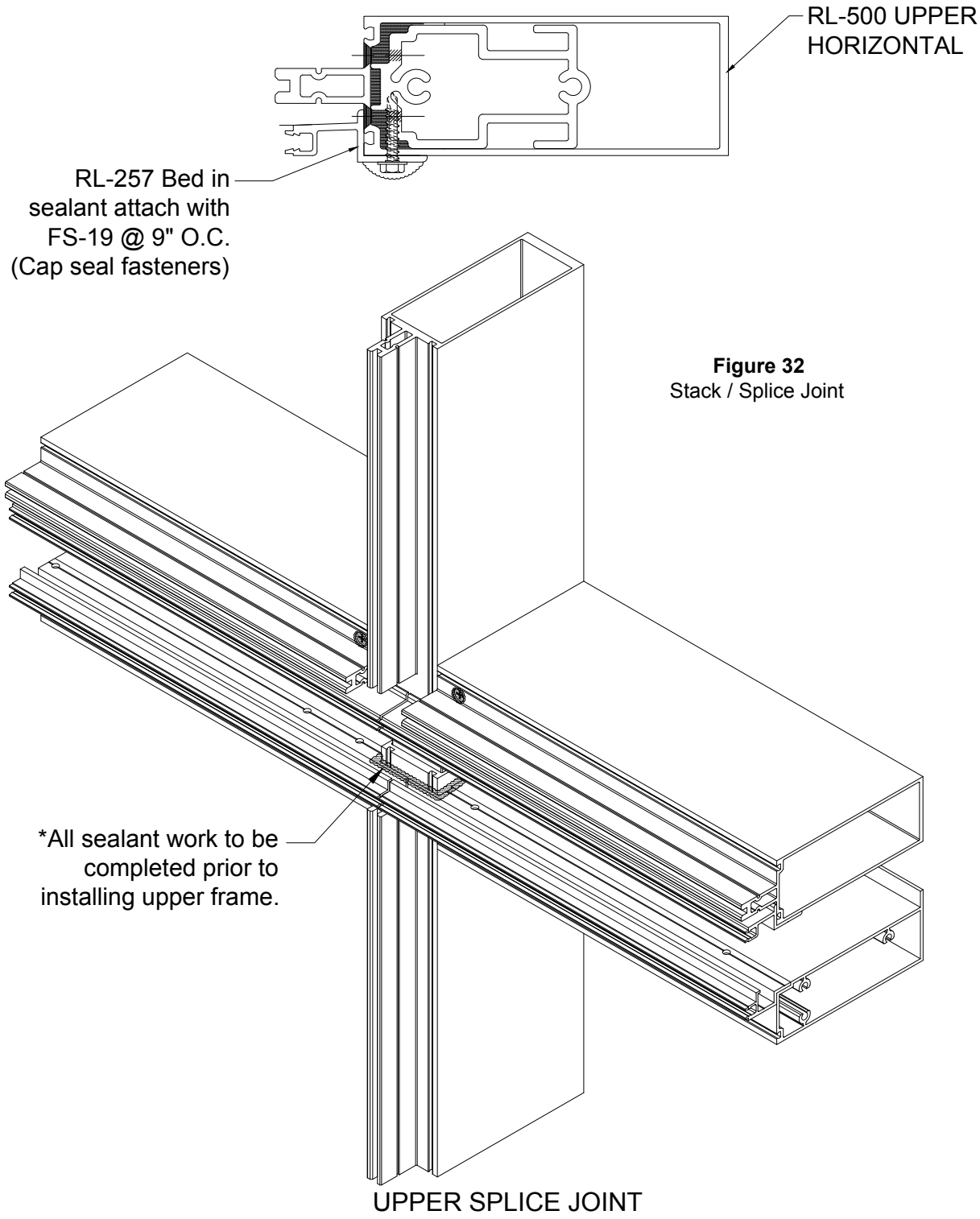


Figure 32
Stack / Splice Joint

6.13 After Reliance-SS framing is installed, install 4" long strips of Silicone Sheet to WW-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 33**

6.14 Gasket race of WW-257 to be filled with continuous bead of sealant and GP-144 gasket inserted into races for WW-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 34**

6.15 Install GP-144-01 jamb sleeve (corner gasket similar) by sealing WW-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 water tight seal. **See FIGURE 35**

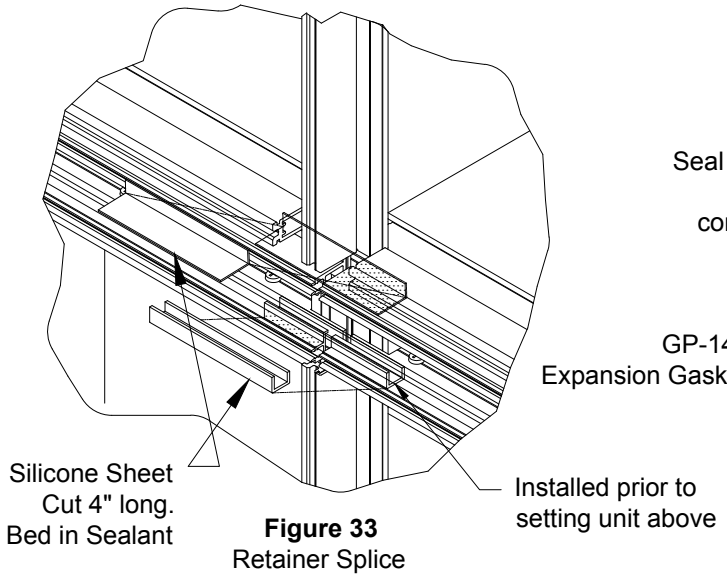


Figure 33
Retainer Splice

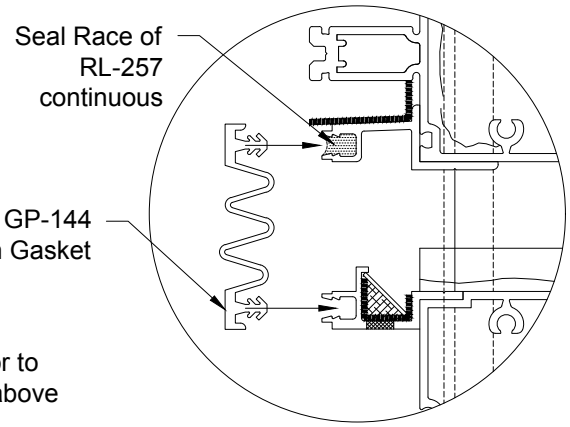


Figure 34
Expansion Gasket Installation

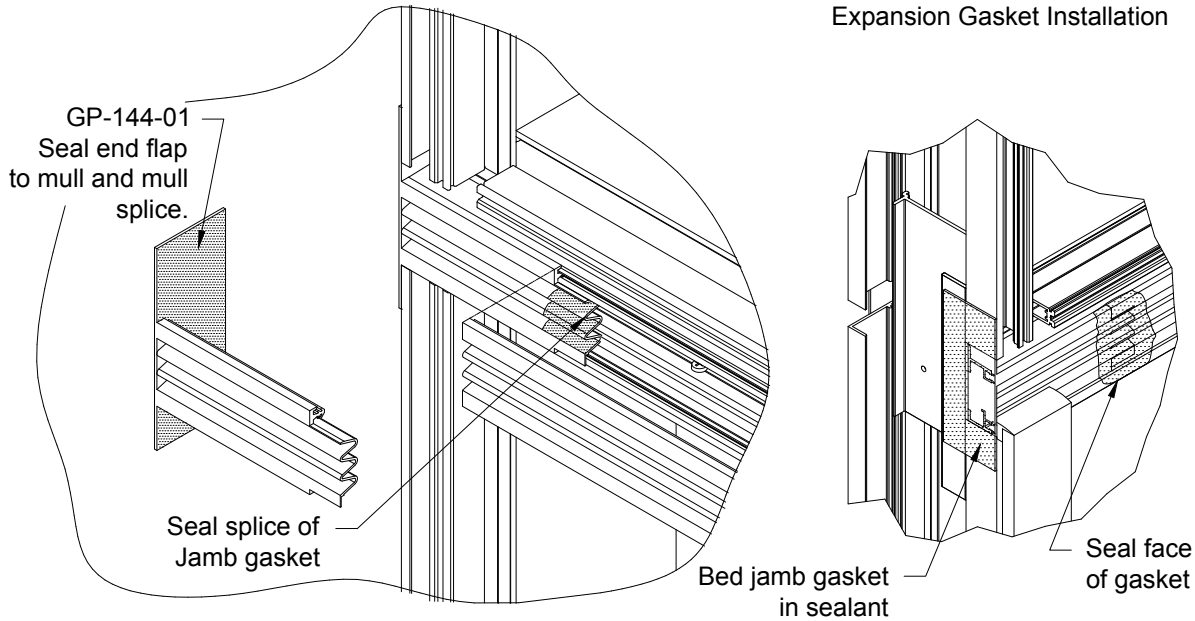


Figure 35
Expansion Gasket Installation

EXPANSION GASKET

6.16 Glaze Reliance LT per instructions in glazing section of this manual.

6.17 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 36**. Do not obstruct weep hole in WW-258 gasket retainer.

6.18 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 Reliance LT instructions page 5. Multi span will repeat cut lengths for lower units as needed.

6.19 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 37**.

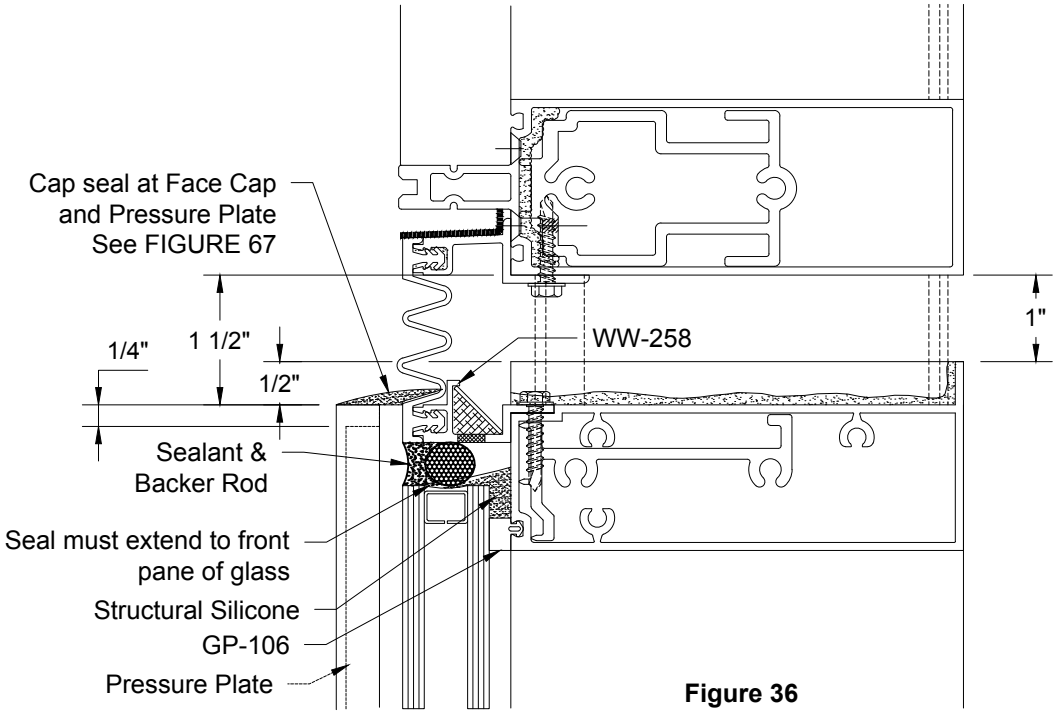


Figure 36
Structural Seal at Lower Units

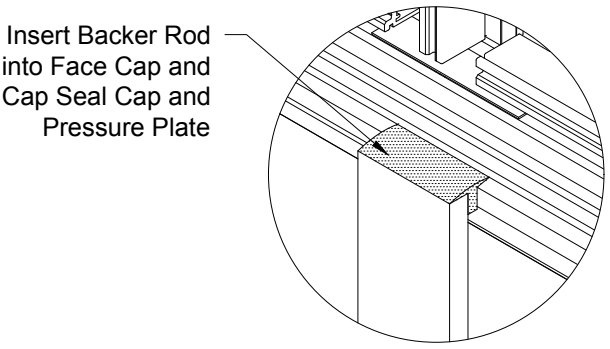


Figure 37
Face Cap / Pressure Plate Seal

EXPANSION GASKET

6.20 When using the optional WW-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 3" at jambs to extend to edge of jamb. If cover is ran to cross vertical mullions then a 3" notch will also be fabricated at these locations. Where the cover needs to be spliced at intermediate mullions the notch will be 1-1/2" long and cover will be cut mullion centerline minus 1/16" to form a 1/8" joint. **See FIGURE 38** below for fabrication and **FIGURE 39** for butt joint.

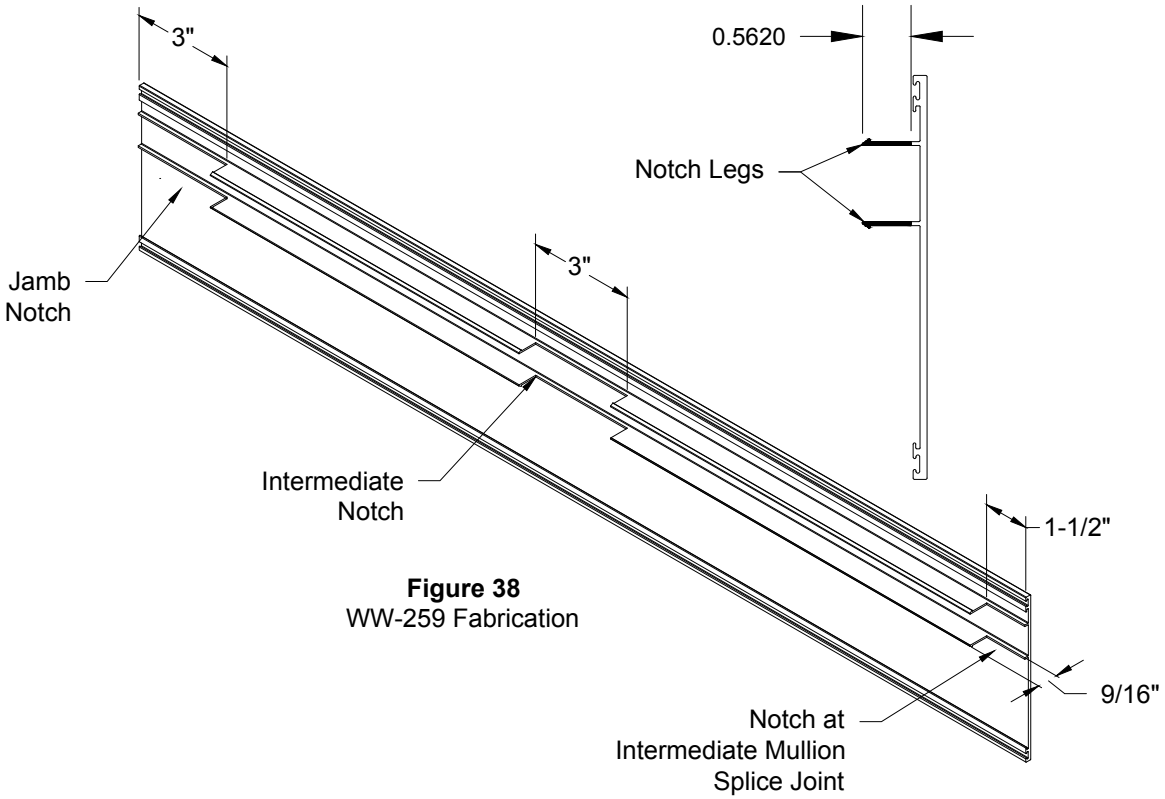


Figure 38
WW-259 Fabrication

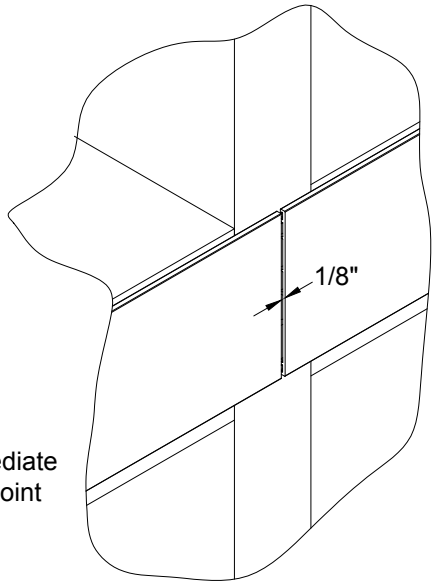


Figure 39
WW-259 Intermediate
Mullion Splice Joint

ALTERNATE SPLICE JOINT CLOSURE

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. Refer to pages 38 thru 41 for door fabrication and installation instructions.

C.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 45, page 41** for suggestions on anchoring door jamb mullion.

C.2 SUBFRAME INSTALLATION

C.2.1 Attach TH-44 threshold clip to bottom of each jamb subframe with two (2) FS-256 #8 x 1 1/2" Phillips Round Head screws.

C.2.3 Bed subframes in sealant. Anchor to curtain wall framing members with FS-316 1/4"-20 x 2" HWH Drill Flex at 18" O.C. Cap seal all fasteners and seal joint between jamb and header subframes. Seal tops of the jamb subframes. **See FIGURE 40**

C.2.4 Bed threshold in sealant, attaching to TH-44 clips with FS-42 #12 x 1/2" Phillips Flat Head screws. Marry threshold seal with subframe and main system seal. **See FIGURE 40**

C.2.5 Install door stops in subframe. The vertical stops run through.

C.2.7 Install door per DOOR & FRAME INSTALLATION & GLAZING MANUAL.

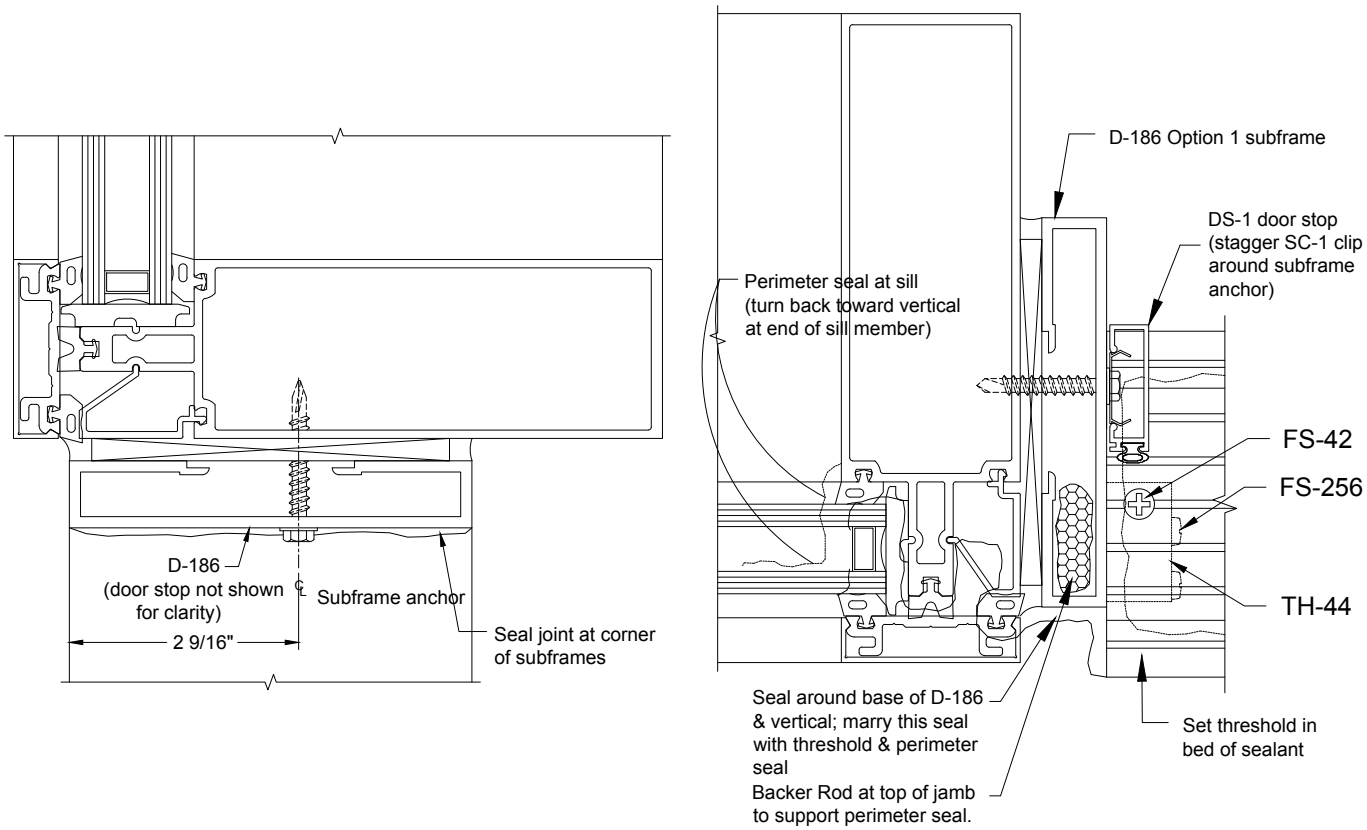


Figure 40
Attaching Subframes

ATTACHING DOOR SUB-FRAMES

C.3 FLUSH DOOR INSTALLATION:

C.3.1 Drill 1/2" diameter access holes in flush door pressure plates 1 ½" from ends and 12" O.C. **See FIGURE 41**.

C.3.2 Attach TH-44 threshold clip to bottom of each vertical pressure plate with two (2) FS-256 #8 x 1 1/2" Phillips Round Head screws.

C.3.3 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 #12 x 3/4" Phillips Pan Head screw 1 1/2" from each end and 12" O.C. **See FIGURE 37** and **FIGURE 39, page 40**.

C.3.4 Apply continuous seal to horizontal tongue before installing horizontal pressure plate. Seal ends of horizontal pressure plate to vertical pressure plates. **See FIGURE 43,page 40**.

C.3.5 Bed threshold in sealant, attaching to TH-44 clips with FS-42 #12 x 1/2" Phillips Flat Head screws. Marry threshold seal with subframe and main system seal. **See FIGURE 44, page 40.**

C.3.6 Drill #11, .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 44, page 40**. Vertical stops run through.

C.3.7 Install face covers onto pressure plates. **See FIGURE 41, page 41**.

C.3.8 Install door per DOOR & FRAME INSTALLATION & GLAZING MANUAL.

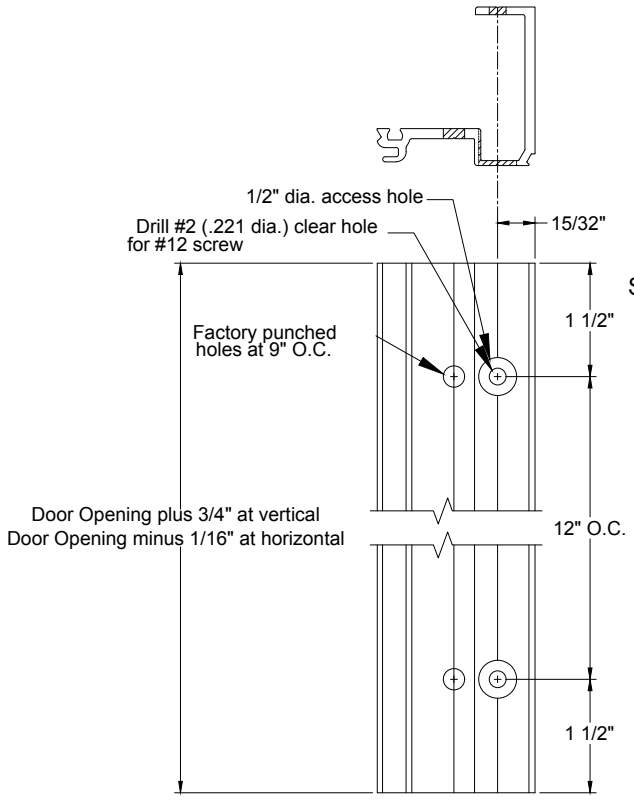


Figure 41
Flush Door Pressure Plate Fab

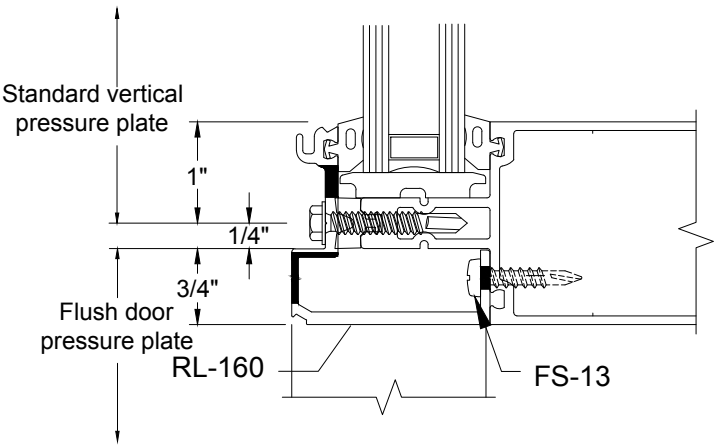


Figure 42
Flush Door Vertical
Pressure Plate Layout

FLUSH DOOR VERTICAL PRESSURE PLATE LAYOUT

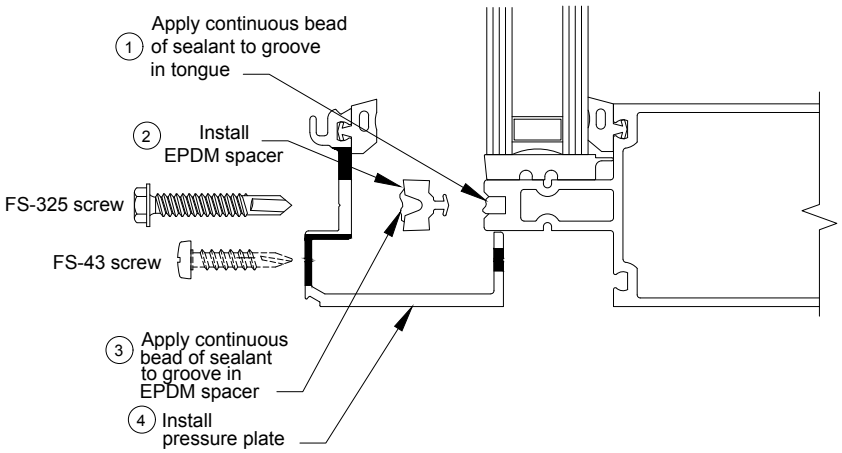


Figure 38
Door Header Pressure Plate Fabrication (left detail)
Flush Door Pressure Plate Seal (right detail)

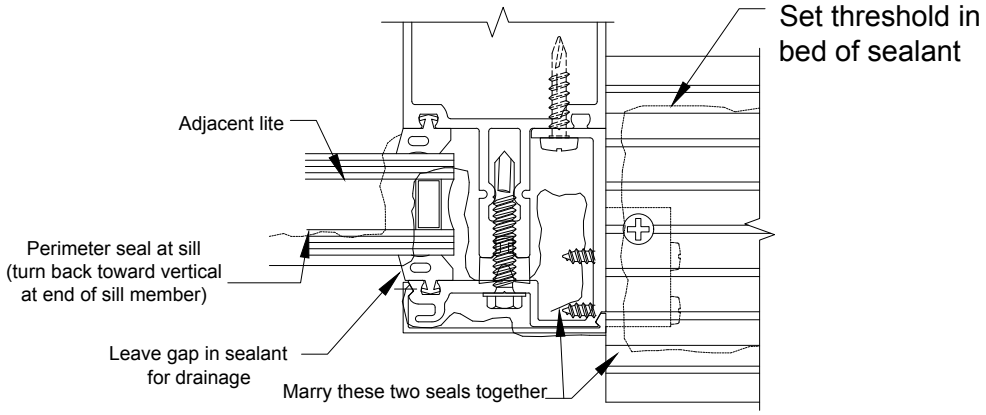


Figure 43
Flush Door Sealing

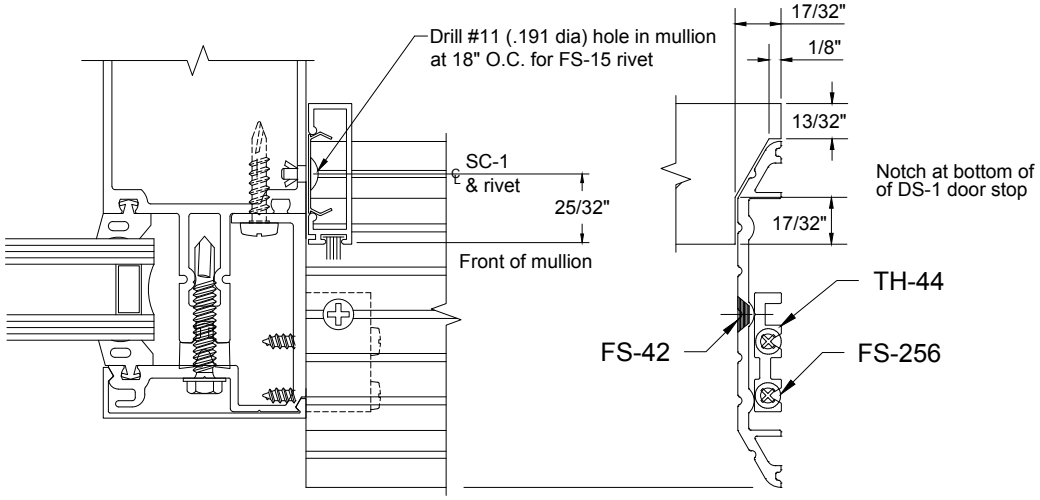


Figure 44
Door Stop Fab & Attachment
(Sealant & Adjacent Lite Not Shown for Clarity)

FLUSH DOOR INSTALLATION

Figure 41
Vertical Face Cover
Location at Door Header

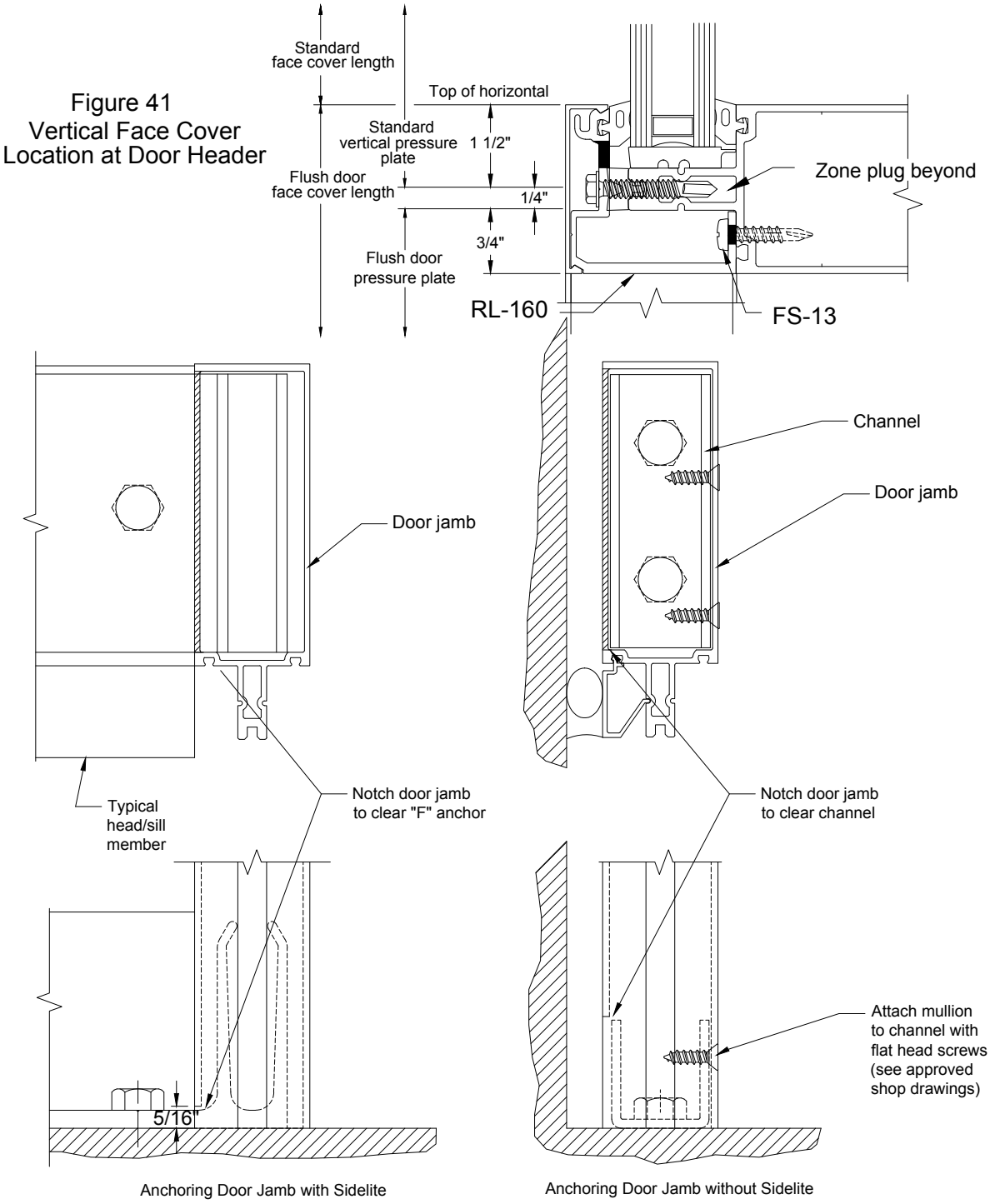


Figure 45
Anchoring Door Jamb Mullions

FLUSH DOOR INSTALLATION

E.1 Reglazing must be done from the exterior. Carefully remove face covers surrounding the lite of glass to be deglazed. **See FIGURE 46**.

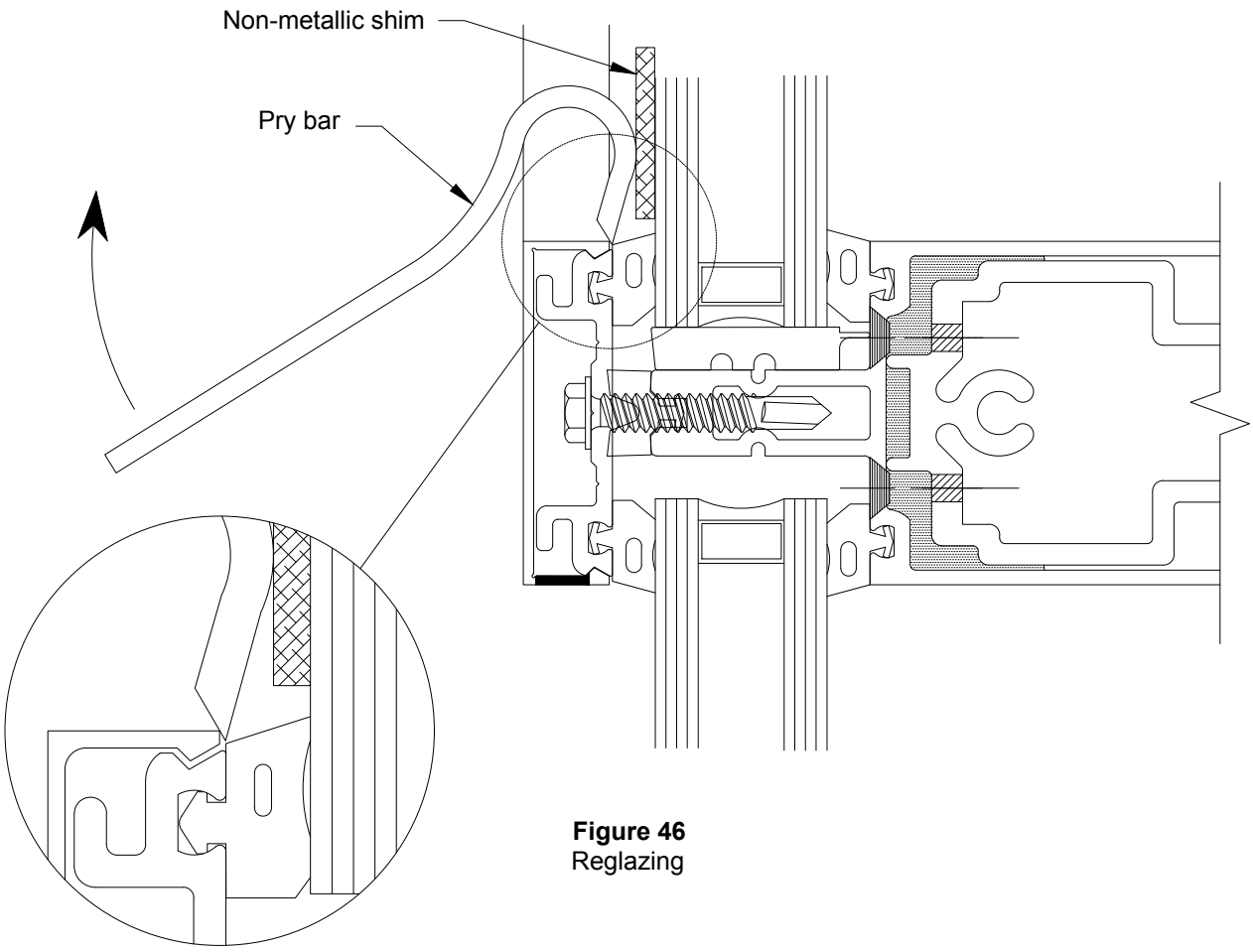


Figure 46
Reglazing

E.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 3.6, page 22 for instructions on locating the retainers.

E.3 Remove lite of glass and existing gaskets from opening. Clean debris and sealant from aluminum framing members and pressure plates.

E.4 Install new gaskets into framing and install new lite of glass. See glazing section of this manual for proper procedure.

E.5 Reinstall pressure plates and seals per glazing section of this manual.

REGLAZE PROCEDURE

FIGURE 47 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.

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.

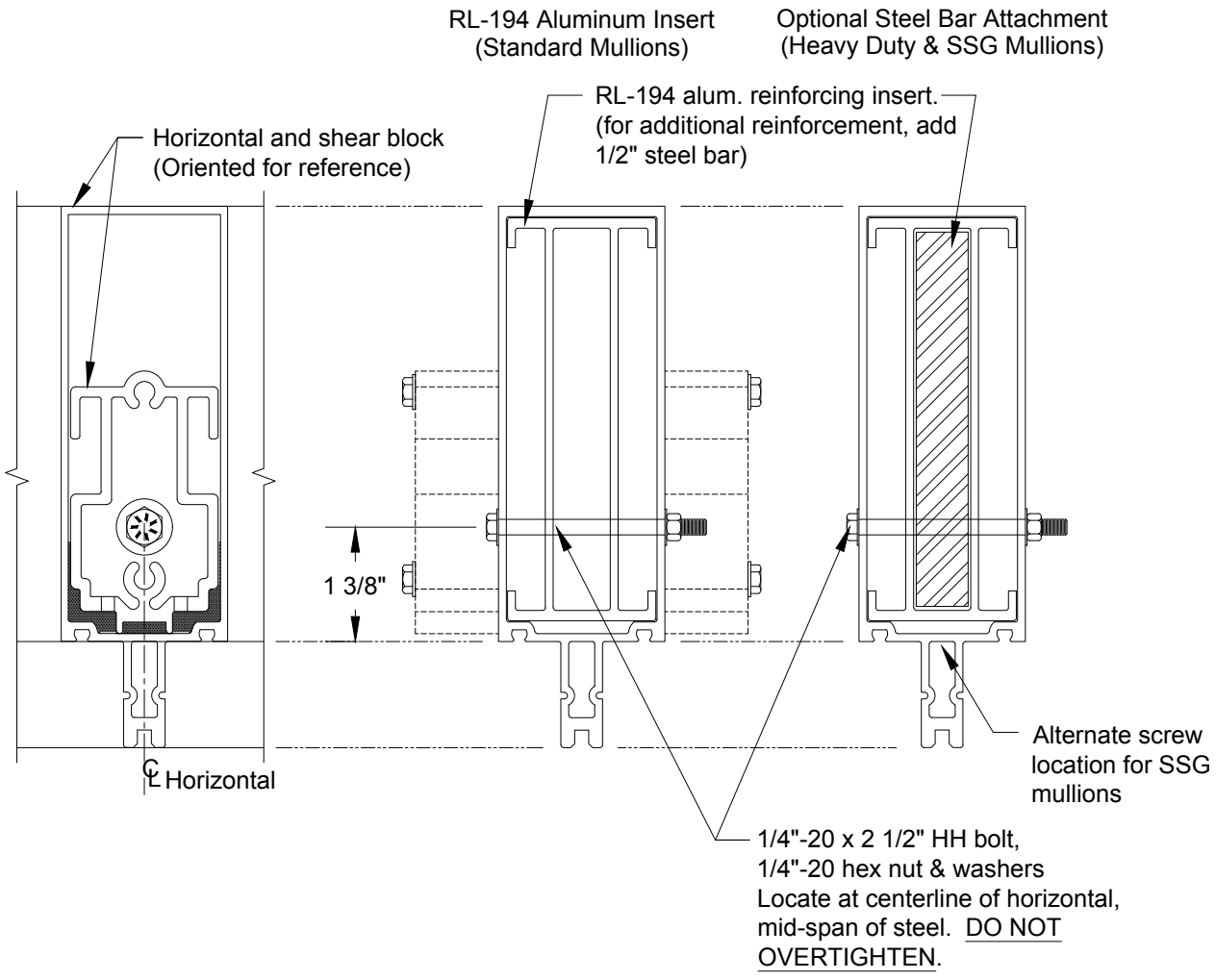


Figure 47
Typical Reinforcement Attachment
(SSG Mullion Similar)

MULLION REINFORCING

FIGURE 51 through FIGURE 57 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.

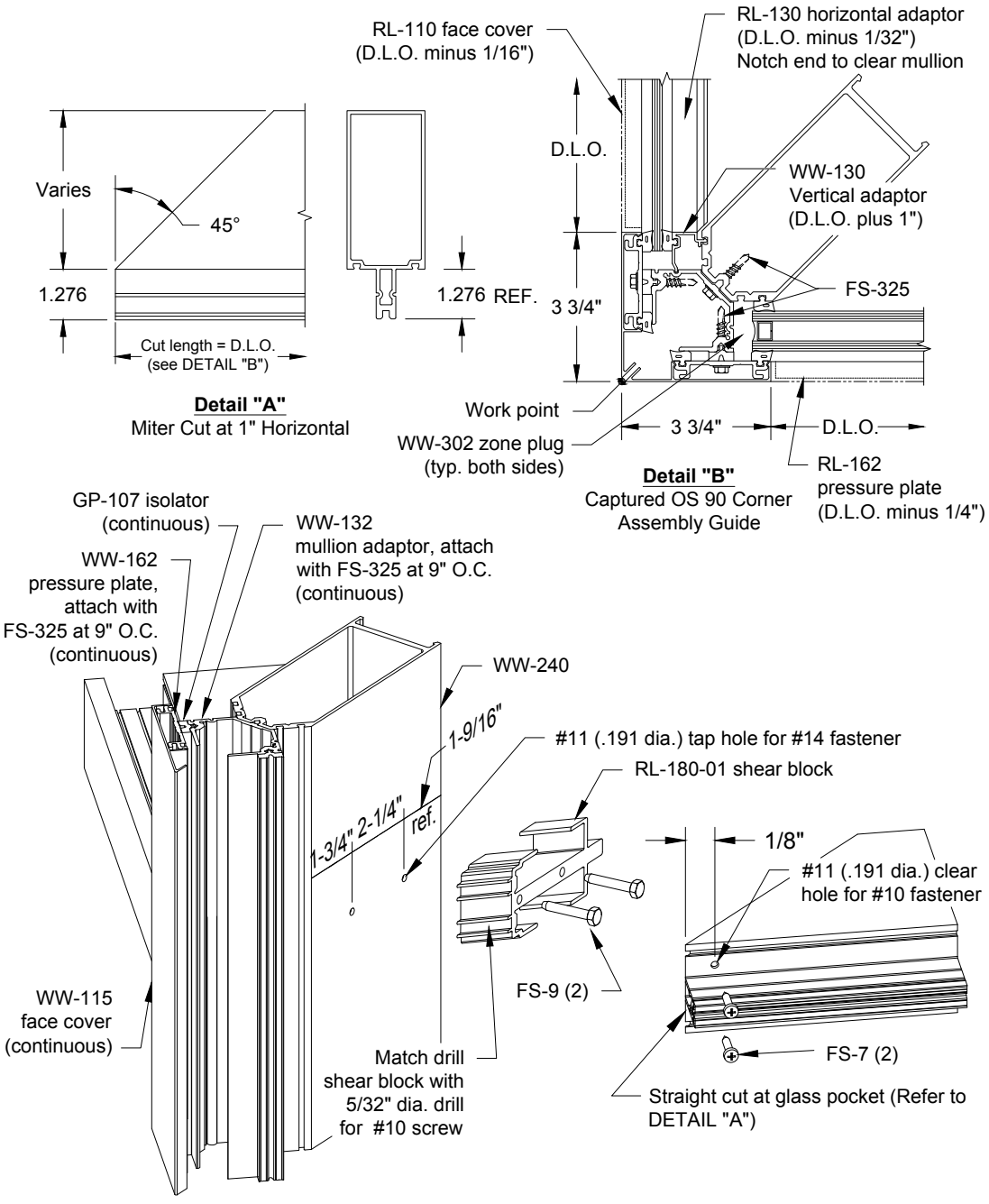


Figure 48
Captured OS 90° Corner Assembly
(Cut Lengths in Parentheses)

90° INSIDE CORNER SSG

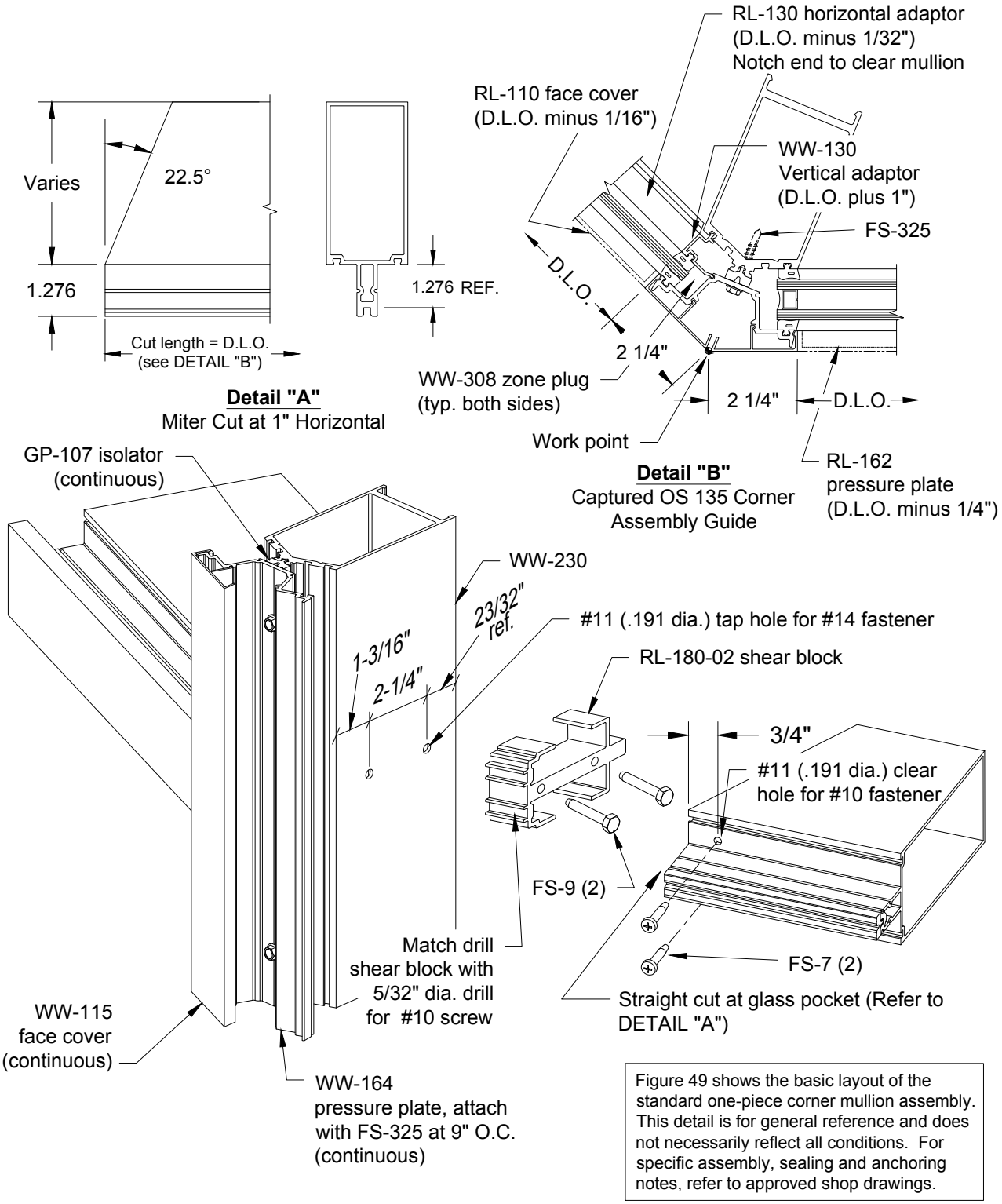
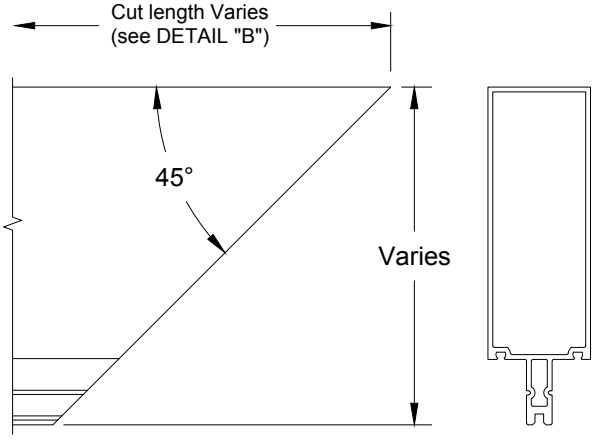


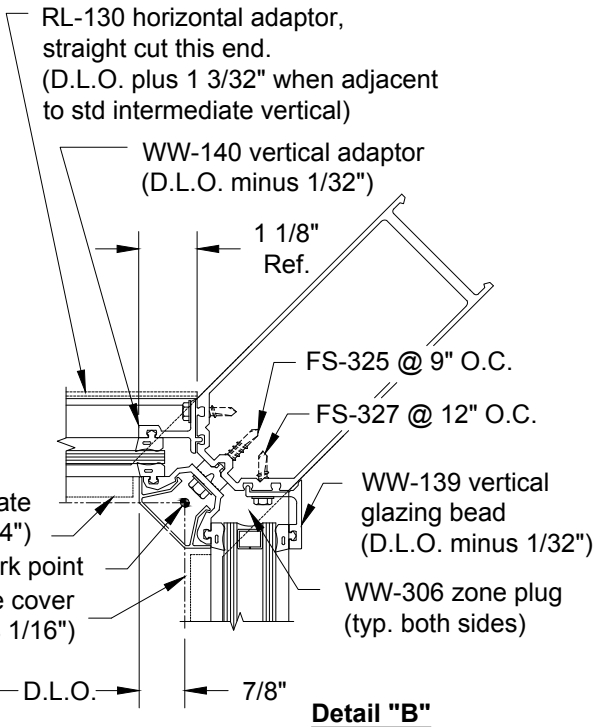
Figure 49 shows the basic layout of the standard one-piece corner mullion assembly. This detail is for general reference and does not necessarily reflect all conditions. For specific assembly, sealing and anchoring notes, refer to approved shop drawings.

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

135° OUTSIDE CORNER SSG



Detail "A"
Miter Cut at 1" Horizontal



Detail "B"
Captured IS 90 Corner
Assembly Guide

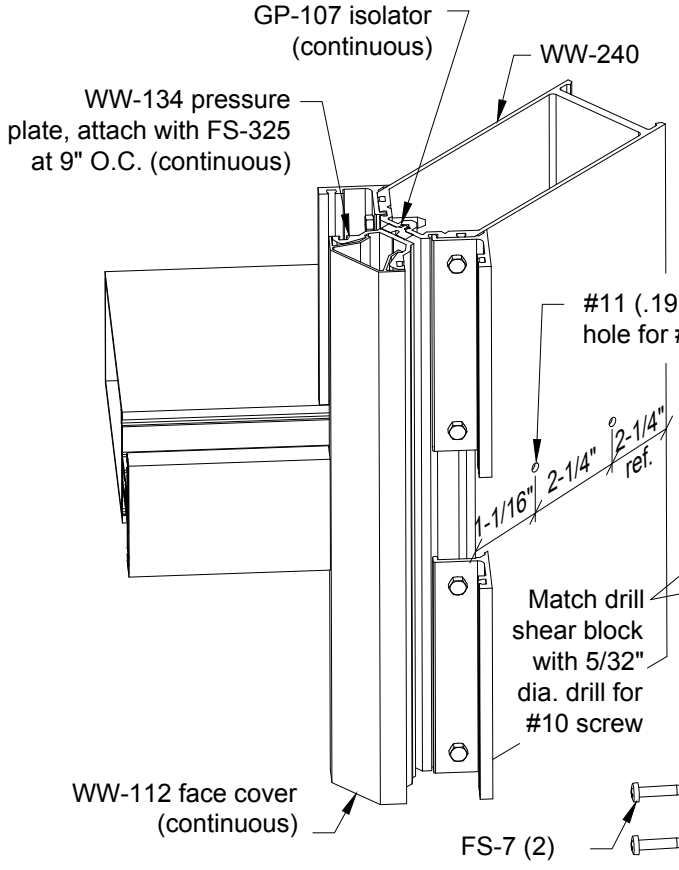


Figure 50 shows the basic layout of the standard one-piece corner mullion assembly. This detail is for general reference and does not necessarily reflect all conditions. For specific assembly, sealing and anchoring notes, refer to approved shop drawings.

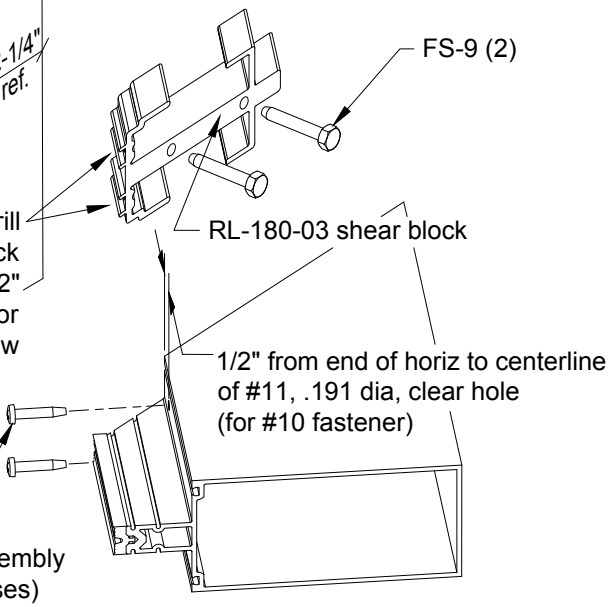


Figure 50
Captured IS 90° Corner Assembly
(Cut Lengths in Parentheses)

90° OUTSIDE CORNER

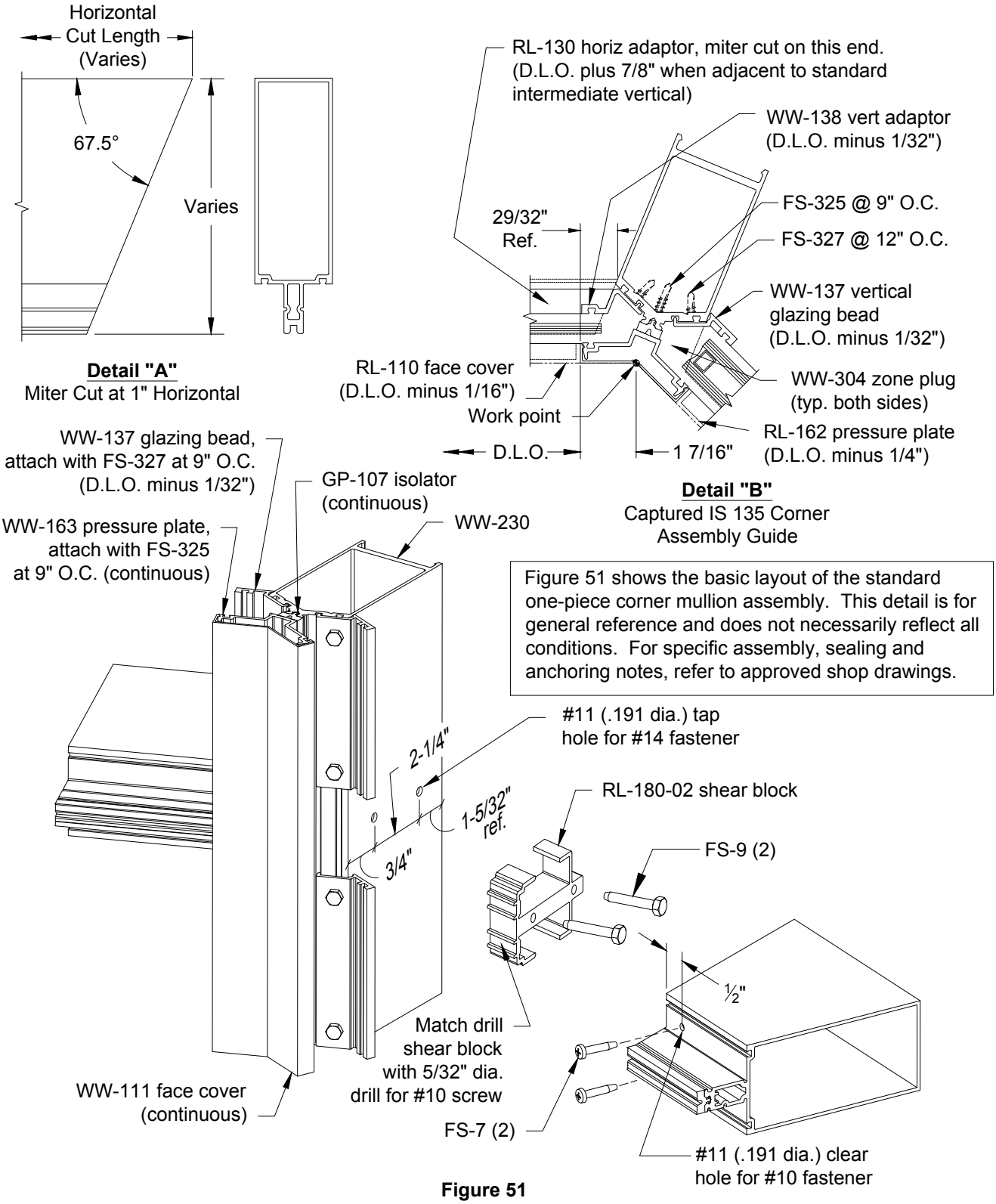
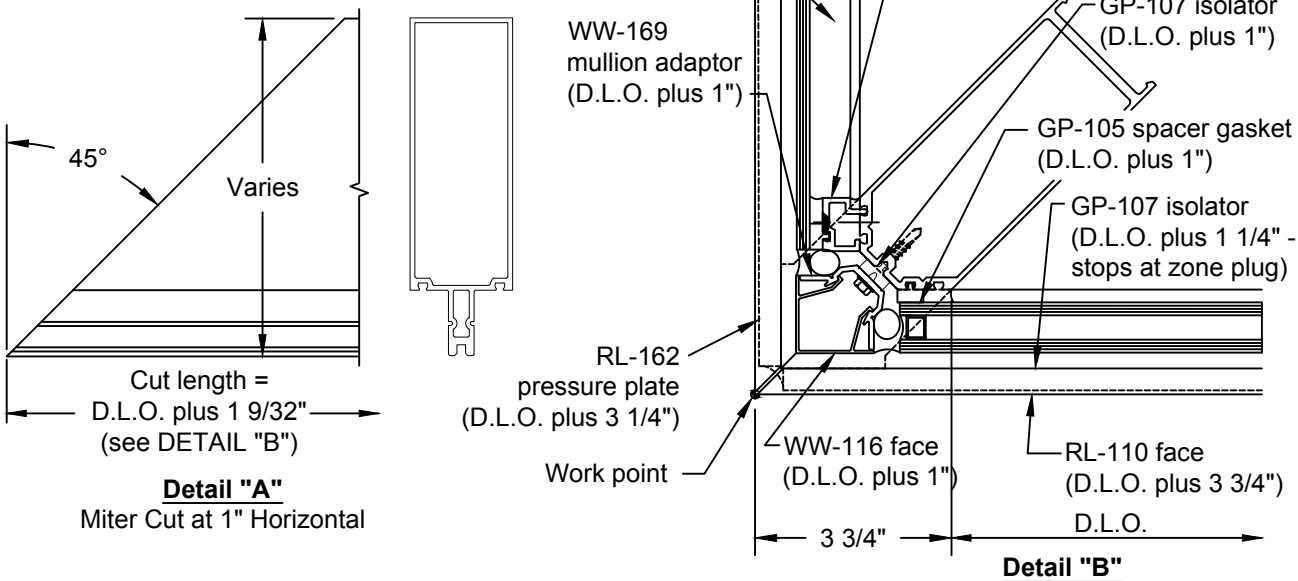


Figure 51
Captured IS 135° Corner Assembly
(Cut Lengths in Parentheses)

135° INSIDE CORNER



Detail "A"
Miter Cut at 1" Horizontal

Detail "B"
SSG OS 90 Corner
Assembly Guide

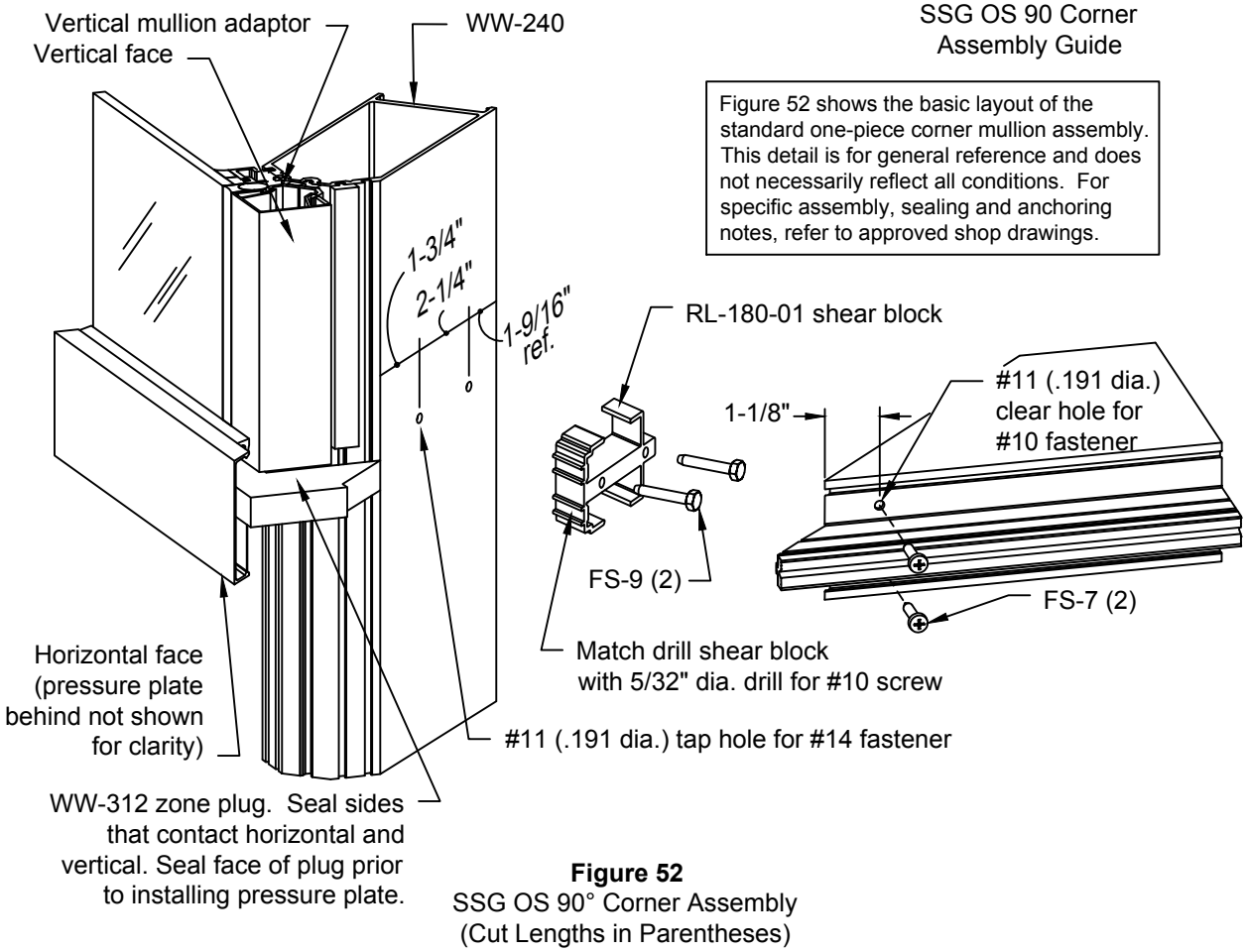


Figure 52 shows the basic layout of the standard one-piece corner mullion assembly. This detail is for general reference and does not necessarily reflect all conditions. For specific assembly, sealing and anchoring notes, refer to approved shop drawings.

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

90° OUTSIDE CORNER SSG

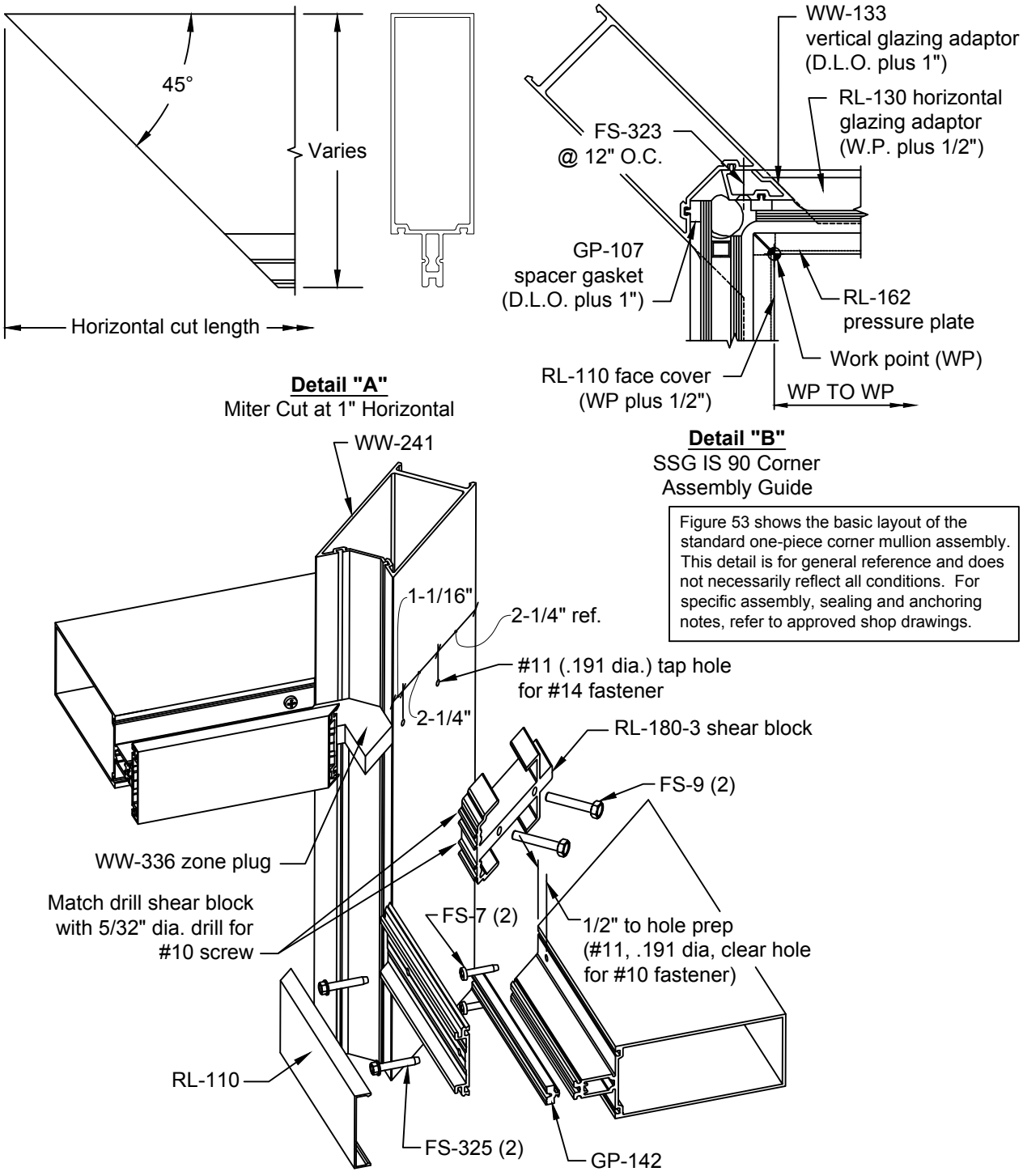


Figure 53
SSG IS 90° Corner Assembly
(Cut Lengths in Parentheses)

90° INSIDE CORNER SSG

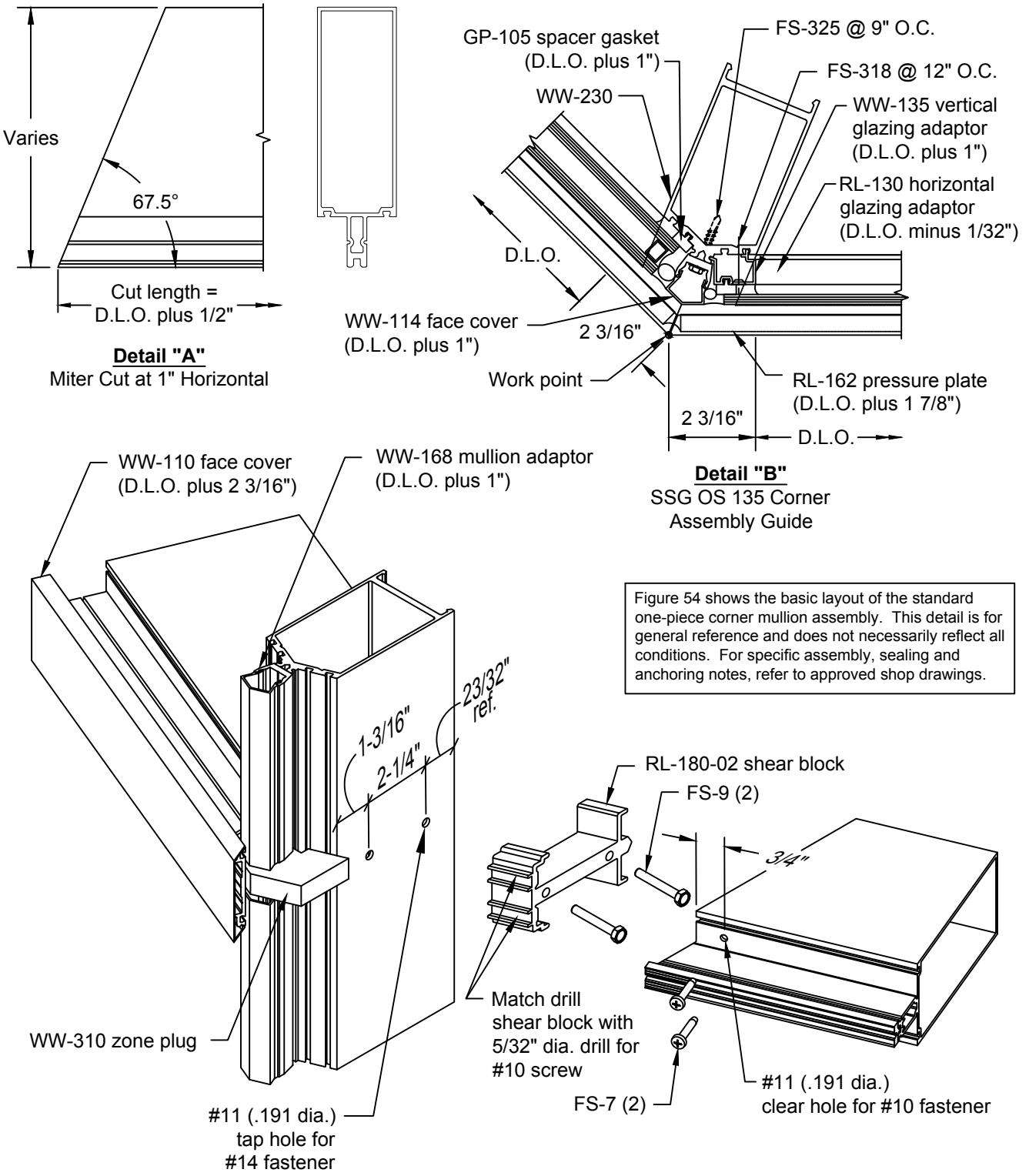
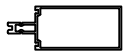
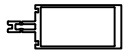
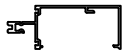


Figure 54 shows the basic layout of the standard one-piece corner mullion assembly. This detail is for general reference and does not necessarily reflect all conditions. For specific assembly, sealing and anchoring notes, refer to approved shop drawings.

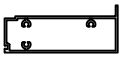
Figure 54
SSG OS 135° Corner Assembly
(Cut Lengths in Parentheses)

135° OUTSIDE CORNER SSG

2" x 6" System

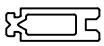
ITEM	DESCRIPTION
 RL-400	Captured Mullion
 RL-404	SSG Mullion
 RL-410	Heavy Mullion
 RL-432	Roll-Over / Under Horizontal / Sill
 RL-433	Roll-Over / Under Horizontal / Head
 WW-484	Lower Expansion Horizontal
 RL-192	Reinforcement for RL-400
 RL-193	Reinforcement for RL-404 & RL-410

2" x 7 1/4" System

ITEM	DESCRIPTION
 RL-500	Captured Mullion
 RL-504	SSG Mullion
 RL-510	Heavy Mullion
 RL-532	Roll-Over / Under Horizontal / Sill
 RL-533	Roll-Over / Under Horizontal / Head
 RL-583	Upper Expansion Horizontal - Vision
 WW-584	Lower Expansion Horizontal
 RL-194	Reinforcement for RL-500
 RL-195	Reinforcement for RL-504 & RL-510

PARTS LIST

Shared Common Extrusions

ITEM	DESCRIPTION
 RL-110	Typical Face Cover (Use w/ RL-162)
 RL-216	3/4" Face Cover (Use w/ RL-163)
 RL-122	Horizontal Pocket Filler
 RL-123	Jamb Pocket Filler
ITEM	**DESCRIPTION**
 WW-236	Roll-Over Horizontal Filler for RL-432/RL-433
 WW-237	Roll-Over Horizontal Filler for RL-532/RL-533
 RL-130	1" to 1/4" Glazing Adaptor Captured System
 RL-131	1" to 1/4" Glazing Adaptor SSG System
 RL-141	SSG Tongue Adaptor
 RL-257	Upper Expansion Gasket Retainer
 WW-258	Lower Expansion Gasket Retainer

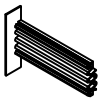
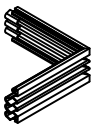
 RL-162	Standard Pressure Plate
 RL-163	Polyamide Pressure Plate
 AN-1	3/4" x 3/4" x 1/8" Angle

PARTS LIST

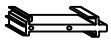
Door Extrusions

ITEM	DESCRIPTION
 D-186	Door Subframe (3/4" sightline)
 FG-3160	Door Header OHCC (2" sightline)
 DS-1	Door Stop
 DS-104	Door Stop OHCC
 TD-105	Thermal Door Stop Use with SC-1 Clip
RL-117	Flush Door Frame Face Cap
 RL-160	Flush Door Frame
 FG-3534	Thermal Door Subframe (1" sightline)

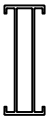
Standard Accessories

ITEM	DESCRIPTION
 GP-103	Standard Dense Gasket Interior & Exterior (Interior Only at Vertical)
 GP-106	Spacer Gasket Lower Expansion Horizontal
 GP-117	Optional Dense Gasket 3/16" Face Clearance
 GP-118	Optional Dense Gasket 5/16" Face Clearance
 GP-142	Standard Isolator Gasket
 GP-144	Expansion Gasket
 GP-144-01	Expansion Gasket Jamb Seal
 GP-144-02	Expansion Gasket OS90 Seal
 GP-145	Standard Spacer Gasket SSG Vertical Mullions 3/8" Silicone Joint Width
 GP-146	Optional Spacer Gasket SSG Vertical Mullions 1/2" Silicone Joint Width
GP-114	Side Block
 GP-101	Setting Block

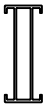
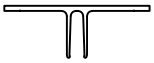
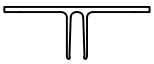
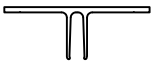
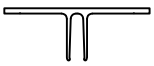
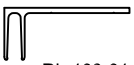
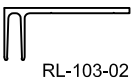
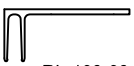
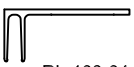
Standard Accessories

 SC-1	Spring Clip for DS-1 and TD-105
 WW-312	OS90 Zone Plug for WW-240
 WW-323	Mullion Cap 90° Outside Corner Captured & SSG
 RL-325	Mullion Cap Type II Verticals
 RL-327	Mullion Cap SSG Verticals
 WW-338-03	Jamb Mullion Cap
 RL-181-01	Type II Shear Block
 RL-180-01	Shear Block Use with WW-240 OS90° Corner Mullion
 RL-180-02	Shear Block Use with WW-241 IS90° Corner Mullion
 RL-180-03	Shear Block Use with WW-230 135° Corner Mullion
 WW-276-01	Lower Expansion Horizontal Shear Block
 WW-283-01	OS90 Expansion Horizontal Shear Block
 WW-283-02	OS90 Expansion Horizontal Shear Block
WW-333-01	Temporary Glazing Retainer at Outside Glaze Horiz.

Standard Accessories

 RL-300	SSG Mullion Bridge
 SPW-PP-3	Temporary Glazing Retainer at SSG Verticals
 RL-302	Zone Plug
 DJ-117	Drill Jig Vertical Mullions
 HP-1004	Optional Weep Baffle
 SPW-295	Baffle Retainer
 WW-104-02	Shear Block Anchor
 WW-2223-02	Jamb Anchor Plate
 RS-12	1/2" x 3" Steel Bar (use with RL-192 & RL-193) 20'-0" Lengths
 RS-13	1/2" x 4" Steel Bar (Use with RL-194 & RL-195) 20'-0" Lengths
 RL-192-01	Splice Sleeve Use with RL-400
 RL-193-01	Splice Sleeve Use with RL-404
 RL-194-01	Splice Sleeve Use with RL-500

Standard Accessories

 RL-195-01	Splice Sleeve Use with RL-504
 WW-191-01	Splice Sleeve Use with WW-240 OS90 Corner Mull
 WW-202-01	Splice Sleeve Use with WW-241 IS90 Corner Mull
 RL-102-01	"T" Anchor Use with RL-400
 RL-102-02	"T" Anchor Use with RL-500
 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	Jamb "F" Anchor Use with RL-400
 RL-103-02	Jamb "F" Anchor Use with RL-500
 RL-103-03	Jamb "F" Anchor Use with RL-410
 RL-103-04	Jamb "F" Anchor Use with RL-510
 FSN-37	1/4-20 Hex Nut
 FSW-65	1/4" Lockwasher

Standard Accessories

 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-119	#10 x 1 3/8" Phillips Flat Head
 FS-315	#12-14 x 1-19/32" Hex Gr.5 Lg. Washer Head Self Drilling Screw
 FS-316	#1/4-20 x 2" Hex Head Self Drilling Screw
FS-317	5/32" X 3/4" Spring Pin
 FS-320	#10 x 3/4" U-Drive at Head/Sill End Dams
 FS-325	#12-14 x 1-11/32" Gr. 5 Hex Washer Head Self Drilling Screw
 FS-318	#12 x 1 3/4" Phillips Flat Head
 FS-336	1/4"-20 x 1-1/8" HWH Type F
 FS-319	1/4-20 x 3" Hex Head Bolt