

**Oldcastle BuildingEnvelope®**

*RELIANCE*  
*2 pc. Horizontal Expansion Joint,*  
*Back Pan & Dual Seal*  
*INSTALLATION AND 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 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 structural silicone sealant and weather seal silicone sealant.

Note: Customer / Project quality assurance procedures are separate documents and are to be followed in conjunction with this manual.

**RELIANCE™ CURTAIN WALL - STACK HORIZONTAL & DUAL SEAL INSTALLATION MANUAL  
GENERAL INFORMATION**

**General**

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## GENERAL INFORMATION

### PRODUCT USE

The **Reliance**™ 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.

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

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.

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.**

## GLAZING PRACTICES

The air and water performance of the **Reliance™** 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 +/- 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 ¼" 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.

Vertical movement of mullion at intermediate floors requires special expansion joints and glazing materials. See page 13 for details which permit 1/2" movement. For designs and applications that may require greater movement or special considerations please contact your local Oldcastle BuildingEnvelope facility.

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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 utilize Oldcastle BuildingEnvelope supplied calculations and shop drawings.

For Structural Silicone Glazing applications, the stress on the silicone should 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.

## **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.

## **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.

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 the Architectural Finish Guide in the Detail Catalog.

## EXPANSION JOINTS

Expansion joints and perimeter joints shown in these instructions and in the shop drawings are shown at 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° F. Any movement potential should be accounted for at the time of the installation.

## SUGGESTIONS FOR IMPROVING SYSTEM THERMAL PERFORMANCE

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

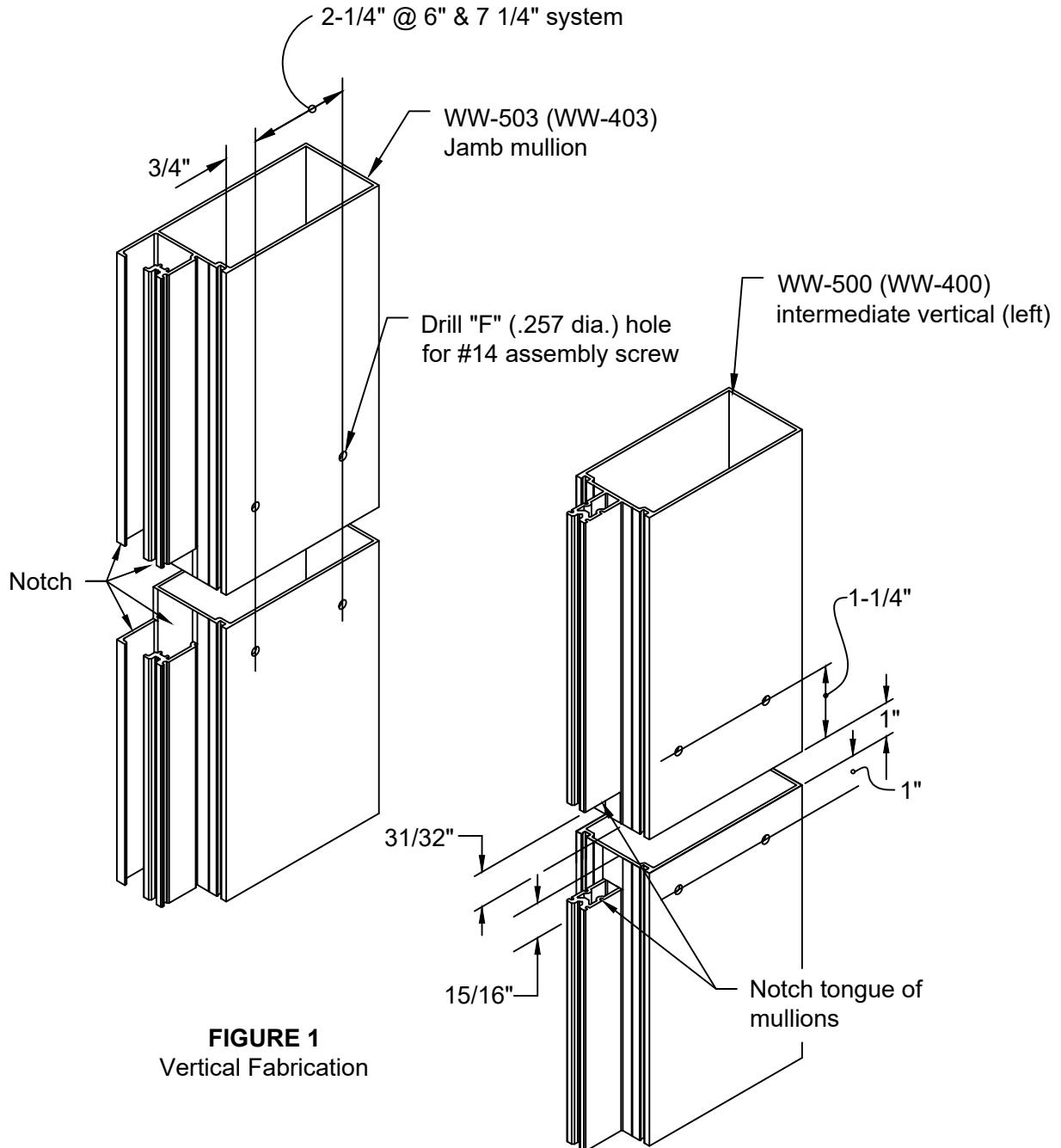
- A. Blinds or drapes prevent warm air from adequately flowing over the window surface.
- B. Warm air ventilators too far from the window will not adequately wash the window with air to prevent condensation.
- C. In extreme conditions the fan of the heating system should not cycle on and off but should run continuously.
- D. Some heating systems have a water injection feature that can raise humidity levels. The higher the humidity levels 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.

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**STACK JOINT HORIZONTAL INSTALLATION**

1.1 Stack horizontal installation may be used when movement greater than 1/4" is expected. This section may be used to accommodate up to a maximum of 3/4".

1.2 Notch tongue of upper mullion 31/32" and lower mullion 15/16" as shown in **FIGURE 1**. Notch flush with face of mullion to allow installation of WW- 257 & WW-258 expansion joint gasket retainers.

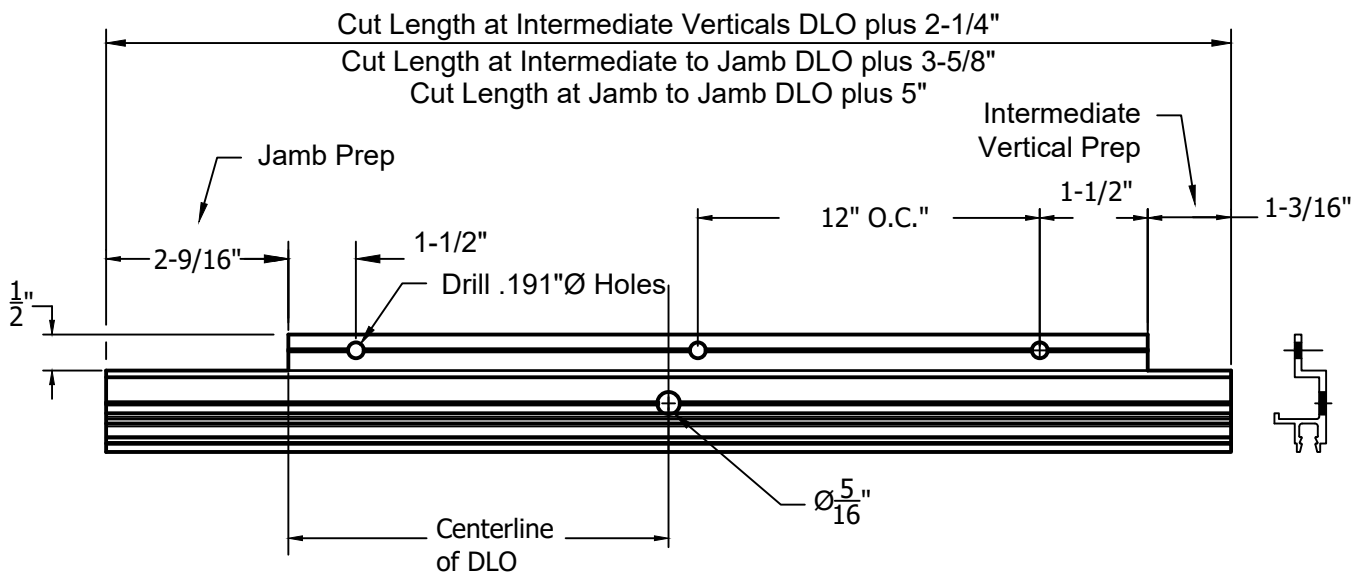
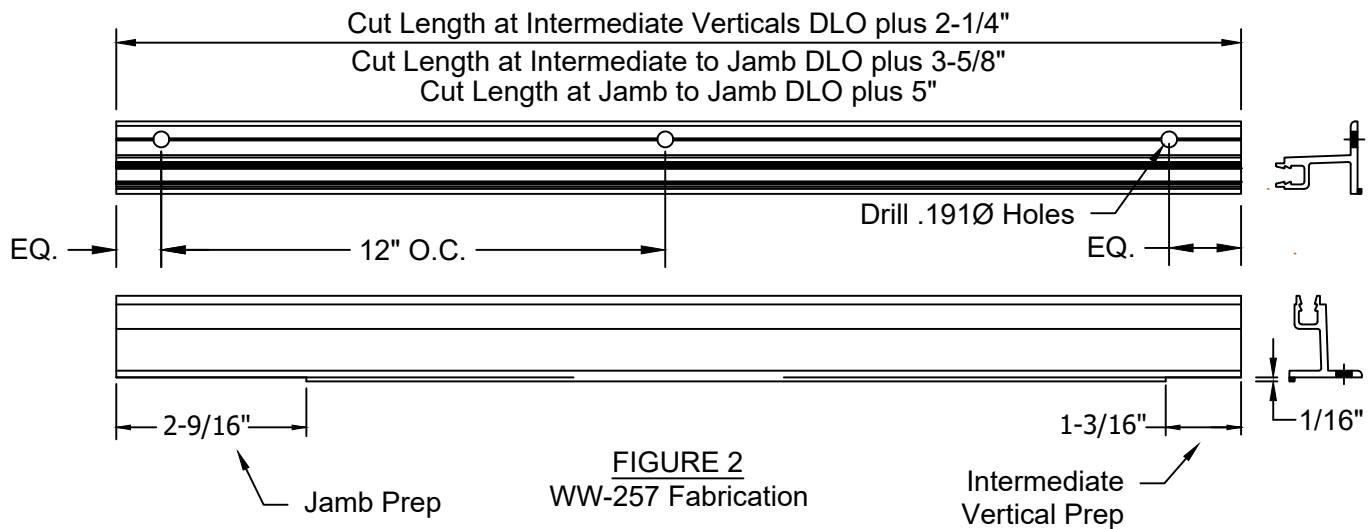
1.3 Drill mullions using "F" (.257Ø) drill bit. Upper mullion may use either standard WW-400 or WW-500 horizontal or WW- 483 or WW-583 at exposed expansion conditions. Lower mullion fabricated for WW-486 or WW-586 horizontals. **See FIGURE 1**.



**FIGURE 1**  
Vertical Fabrication

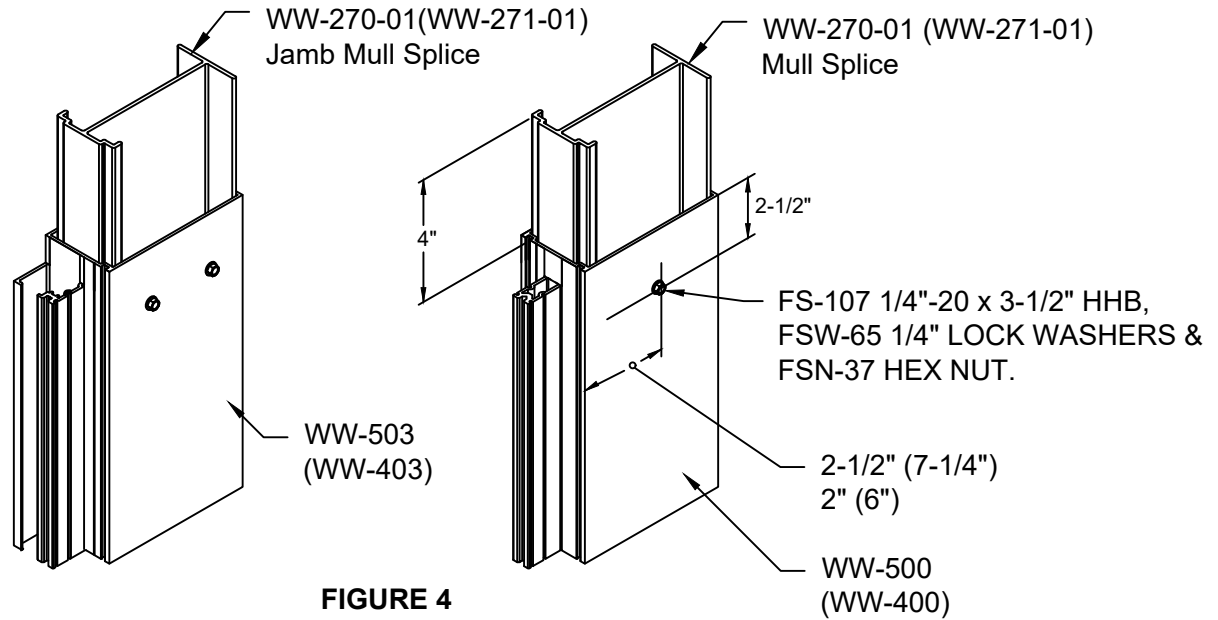
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**STACK JOINT HORIZONTAL INSTALLATION**

- 1.4 Bellows gasket retainers, WW-257 & WW-258 will be fabricated to run from mull center to mull 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 Day Light Opening plus 2-1/2" at jambs and DLO plus 1-1/8" at each intermediate vertical. WW-257 will be notched to clear mullion as shown in FIGURE 2. WW-258 will be notched to clear mullions as shown in FIGURE 3 below. Notch 2-9/16" at Jambs and 1-3/16" at Intermediate Vertical Mullions.
- 1.5 WW-257 upper gasket retainer will be square cut typical , miter as required at corners. Drill #11 (.191) holes at 12" on center. See **FIGURE 2**
- 1.6 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 3**

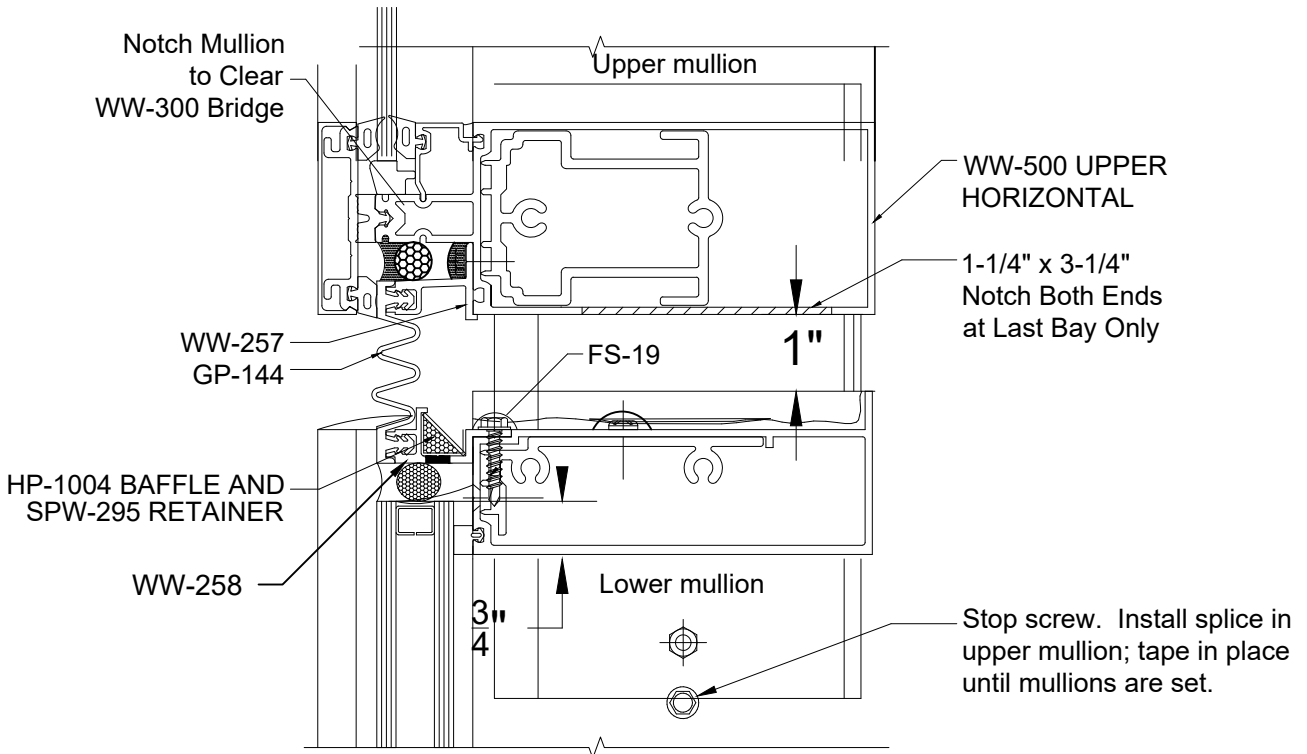


**RELIANCE™ CURTAIN WALL - STACK HORIZONTAL & DUAL SEAL INSTALLATION MANUAL**  
**STACK JOINT HORIZONTAL INSTALLATION**

1.7 Install splices in top of lower mullion assemblies. Splices are 8" long and will be inserted into mullion 4" and attached using (1) FS-107 (1/4-20 X 3-1/2" Hex Bolt) FSN-37 Nut and FSW-65 lock washers. **See FIGURE 4 & 5.** If project configuration does not allow for splice installation as shown below, reference Reliance Installation Manual for alternate splice install.



**FIGURE 4**  
Splice Installation

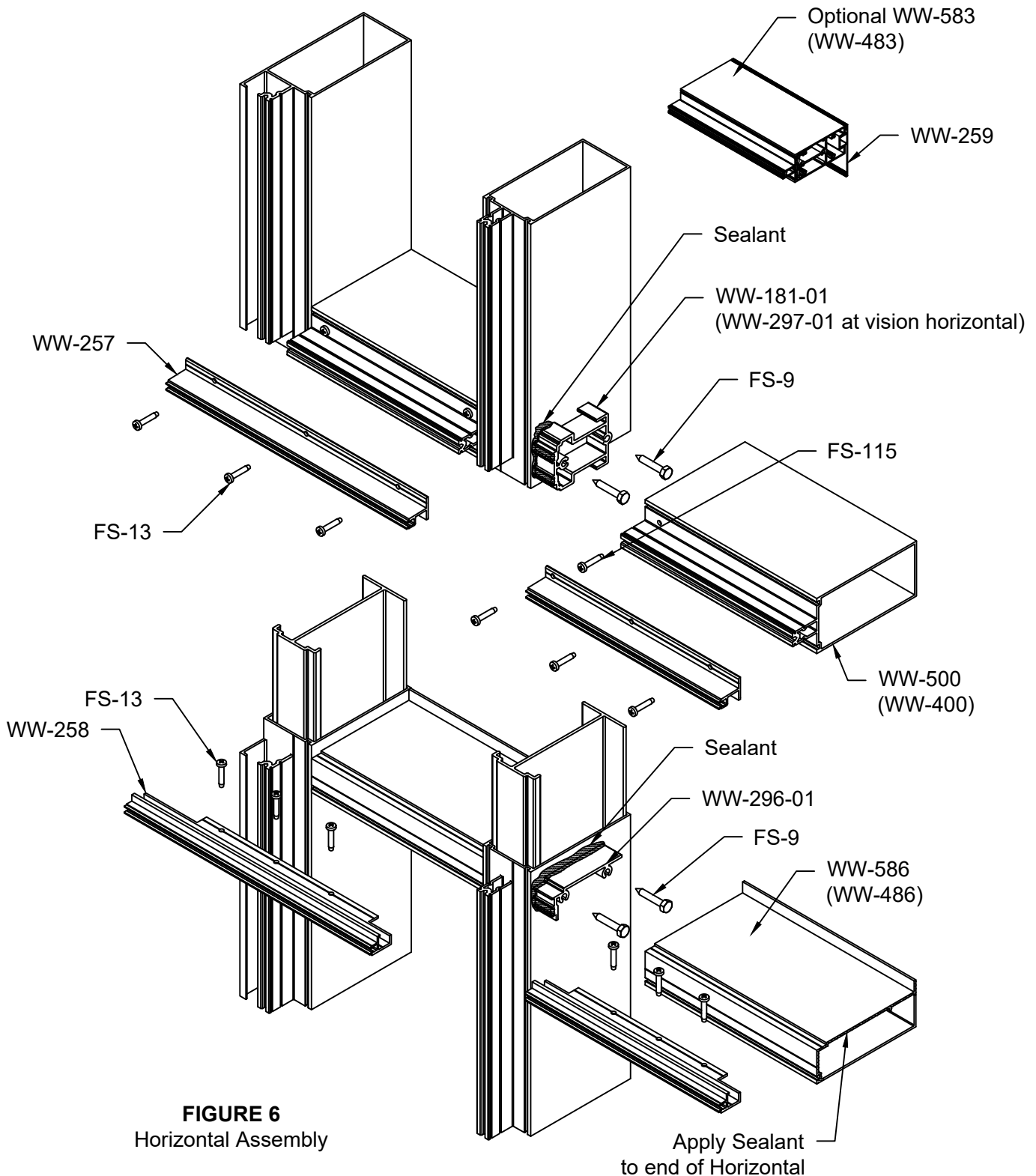


3/4" Live Load Condition

**Figure 5**  
Vertical Mullion Splice

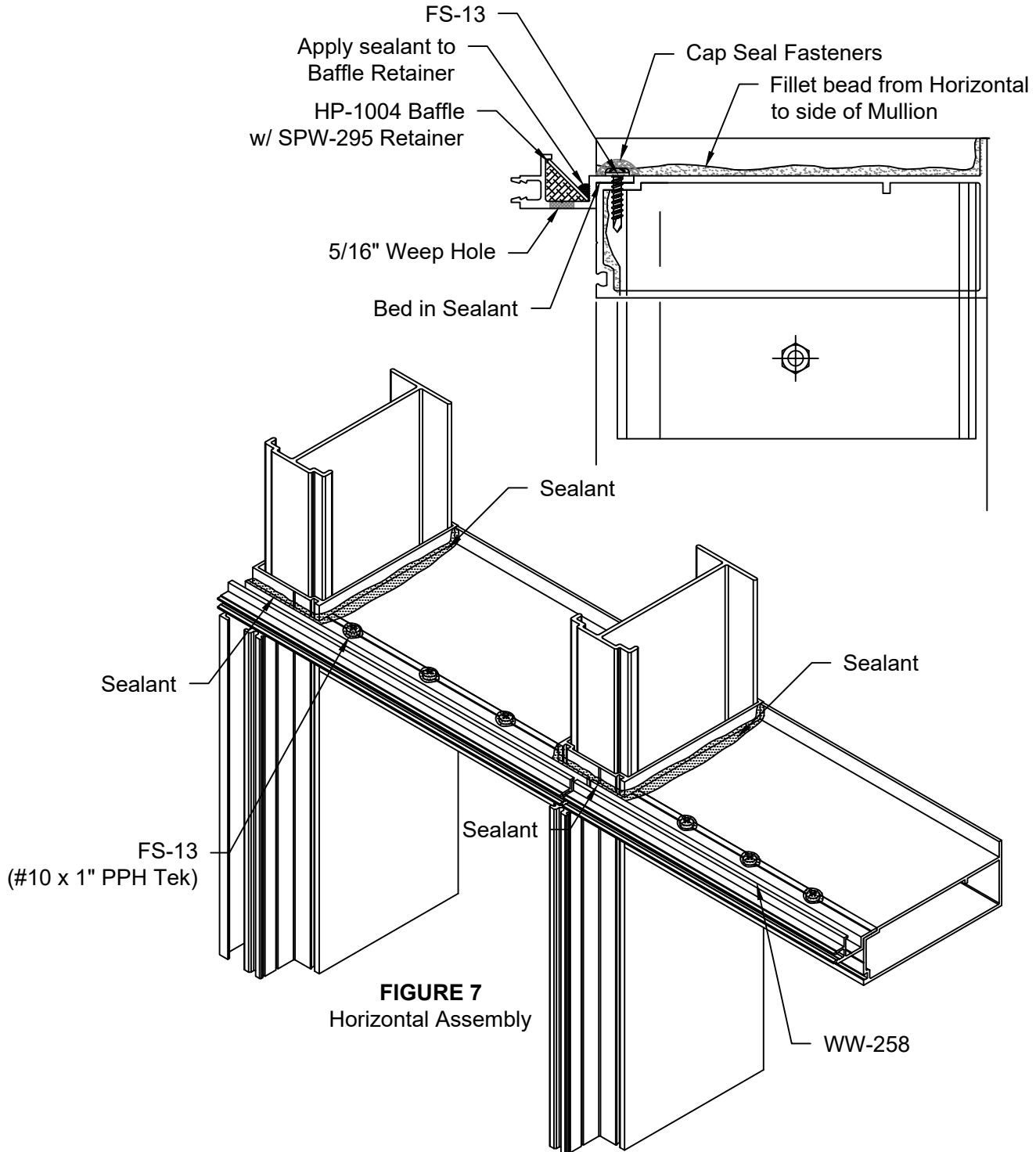
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**STACK JOINT HORIZONTAL INSTALLATION**

1.8 Assemble each frame with stack horizontals at top or bottom as shown in figure below. Lower section will be assembled with WW-586 (WW-486) horizontal located at top of unit, back leg of horizontal will be located flush with top of lower mullion. Upper frame section will use either typical WW-500 (WW-400) intermediate horizontal at bottom of assembly or for vision areas may use WW-583 (WW-483) horizontal with WW-297-01 Shear Block and WW-259 interior trim. All horizontal shear blocks will be attached to vertical mullions using FS-9 (#14 x 1-1/2" HHSTS). See **FIGURE 6**



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**STACK JOINT HORIZONTAL INSTALLATION**

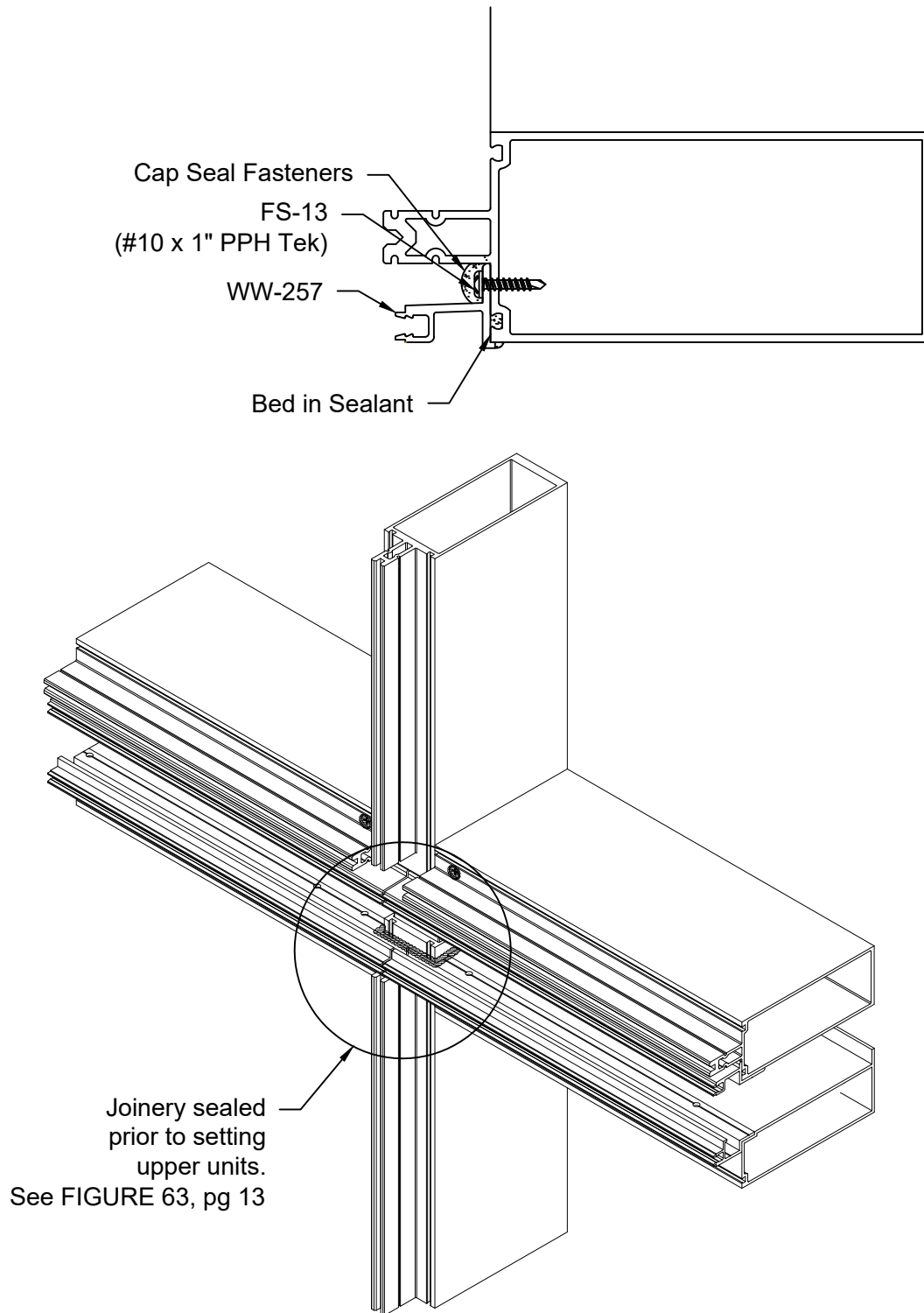
- 1.9 Install WW- 258 lower gasket retainer to face of horizontal. Bed in continuous bead of sealant and cap seal all fasteners. A 1/4" joint will be located at mull center lines. Attach with FS-13 (#10 x 1" PPH Tek) at 12" on center. **See FIGURE 7**
- 1.10 Install HP-1004 baffles , held in place using 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 **FIGURE 7**. Assembly and sealing of gasket retainer should be performed as part of shop assembly of screw spline frames.



**FIGURE 7**  
Horizontal Assembly

**RELIANCE™ CURTAIN WALL - STACK HORIZONTAL & DUAL SEAL INSTALLATION MANUAL**  
**STACK JOINT HORIZONTAL INSTALLATION**

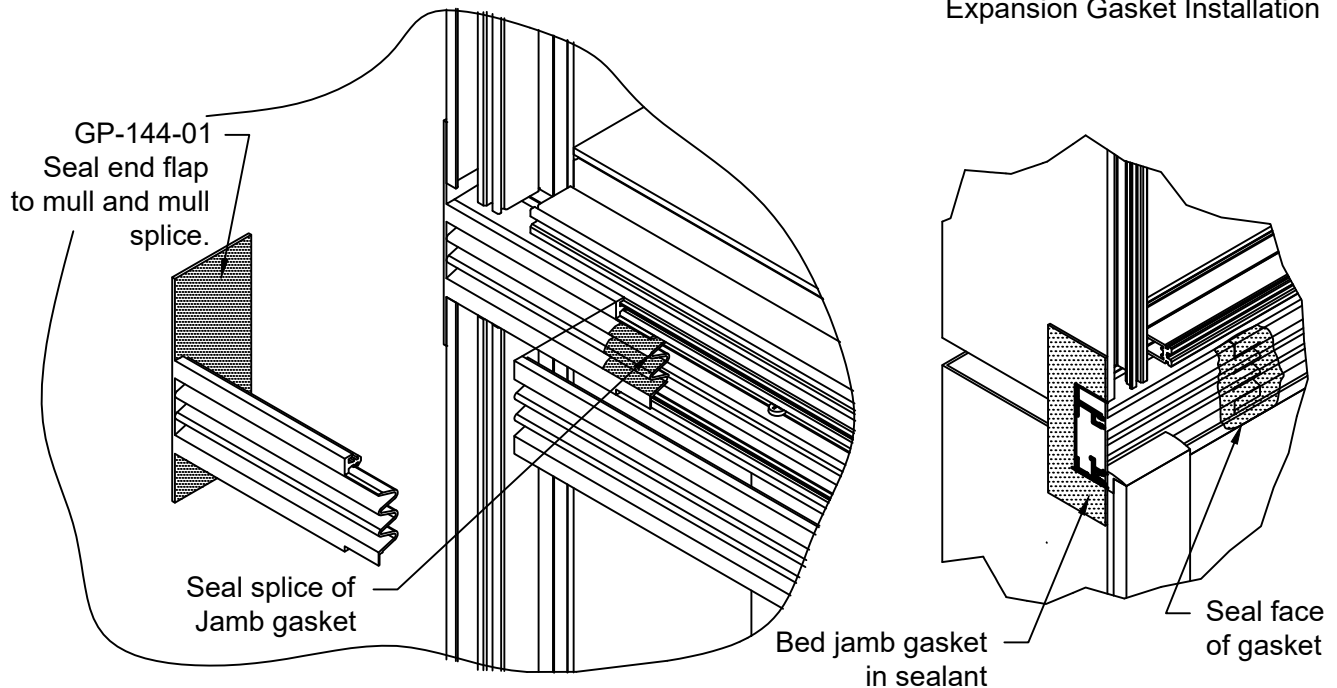
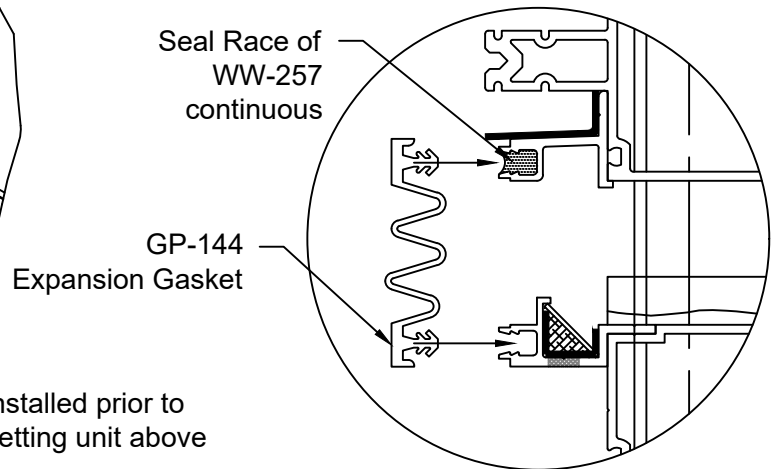
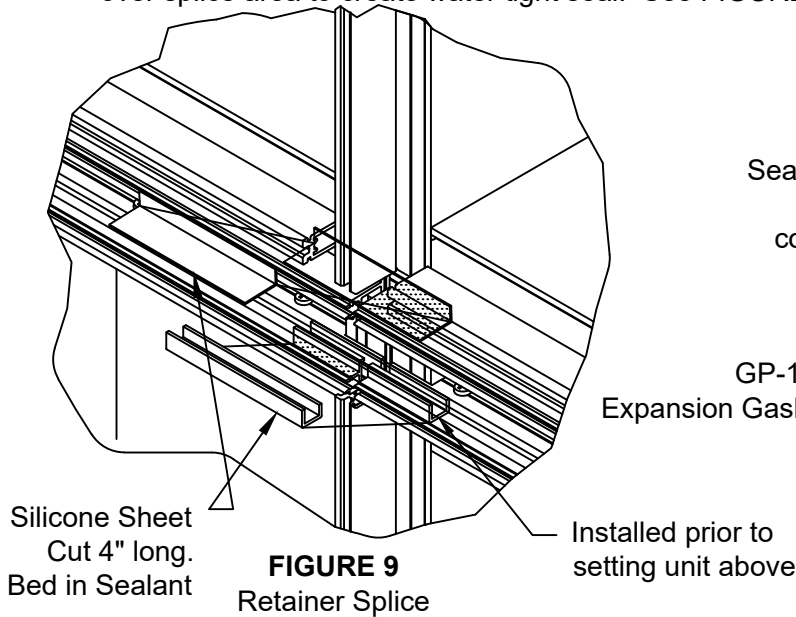
- 1.11 Install WW- 257 upper gasket retainer to face of horizontal. Bed in continuous bead of sealant and cap seal all fasteners. A 1/4" joint will be located at mull center lines. Attach with FS-13 (#10 x 1" PPH Tek) at 12" on center. **See FIGURE 8**



**FIGURE 8**  
Horizontal Assembly

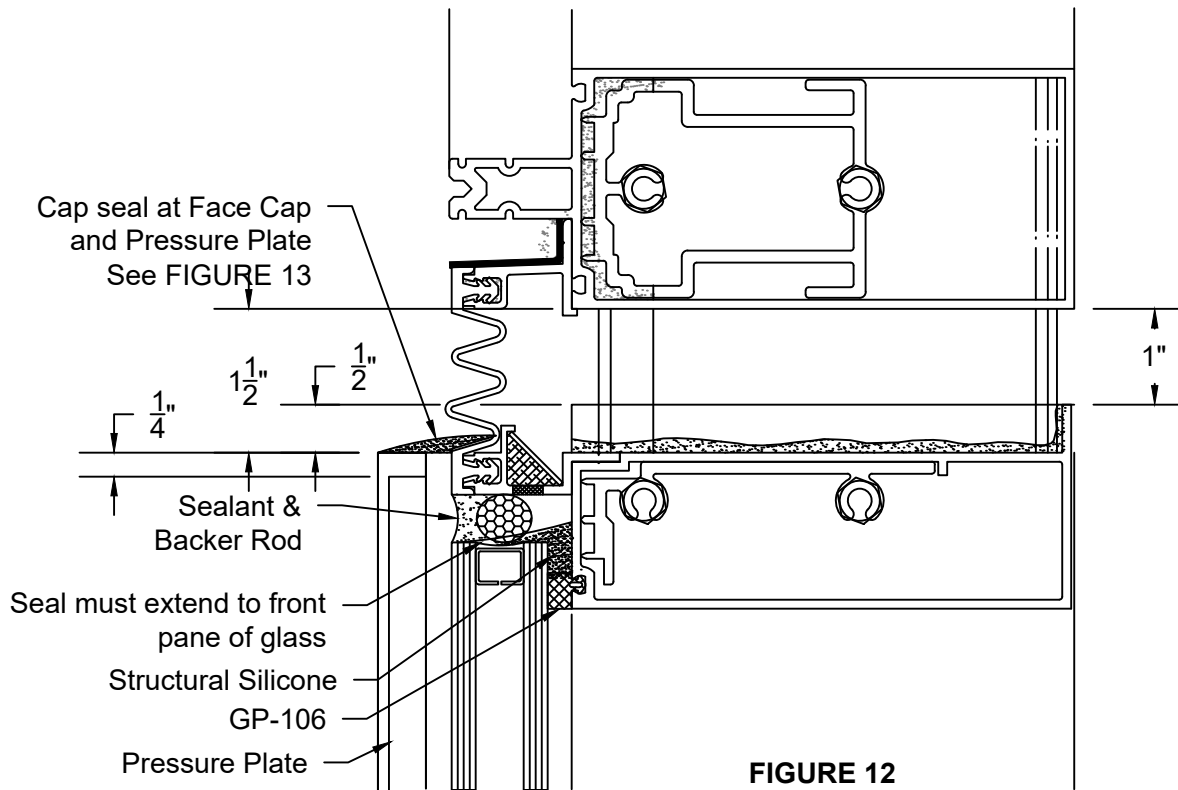
**RELIANCE™ CURTAIN WALL - STACK HORIZONTAL & DUAL SEAL INSTALLATION MANUAL**  
**STACK JOINT HORIZONTAL INSTALLATION**

- 1.12 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 9
- 1.13 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 10
- 1.14 Install GP-144-01 jamb sleeve (corner gasket similar) by sealing WW-257 gasket race, sealing end flap and installing onto mullion and mullion 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 11



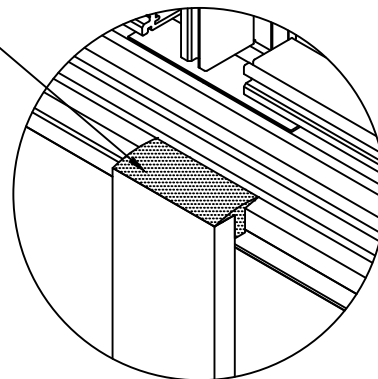
**RELIANCE™ CURTAIN WALL - STACK HORIZONTAL & DUAL SEAL INSTALLATION MANUAL**  
**STACK JOINT HORIZONTAL INSTALLATION**

- 1.15 Glaze Reliance per instructions in glazing section of this manual.
- 1.16 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 12**. Do not obstruct weep hole in WW-258 gasket retainer.
- 1.17 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 instructions page 4. Multi span will repeat cut lengths for lower units as needed.
- 1.18 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 13**.



**FIGURE 12**  
Structural Seal at Lower Units

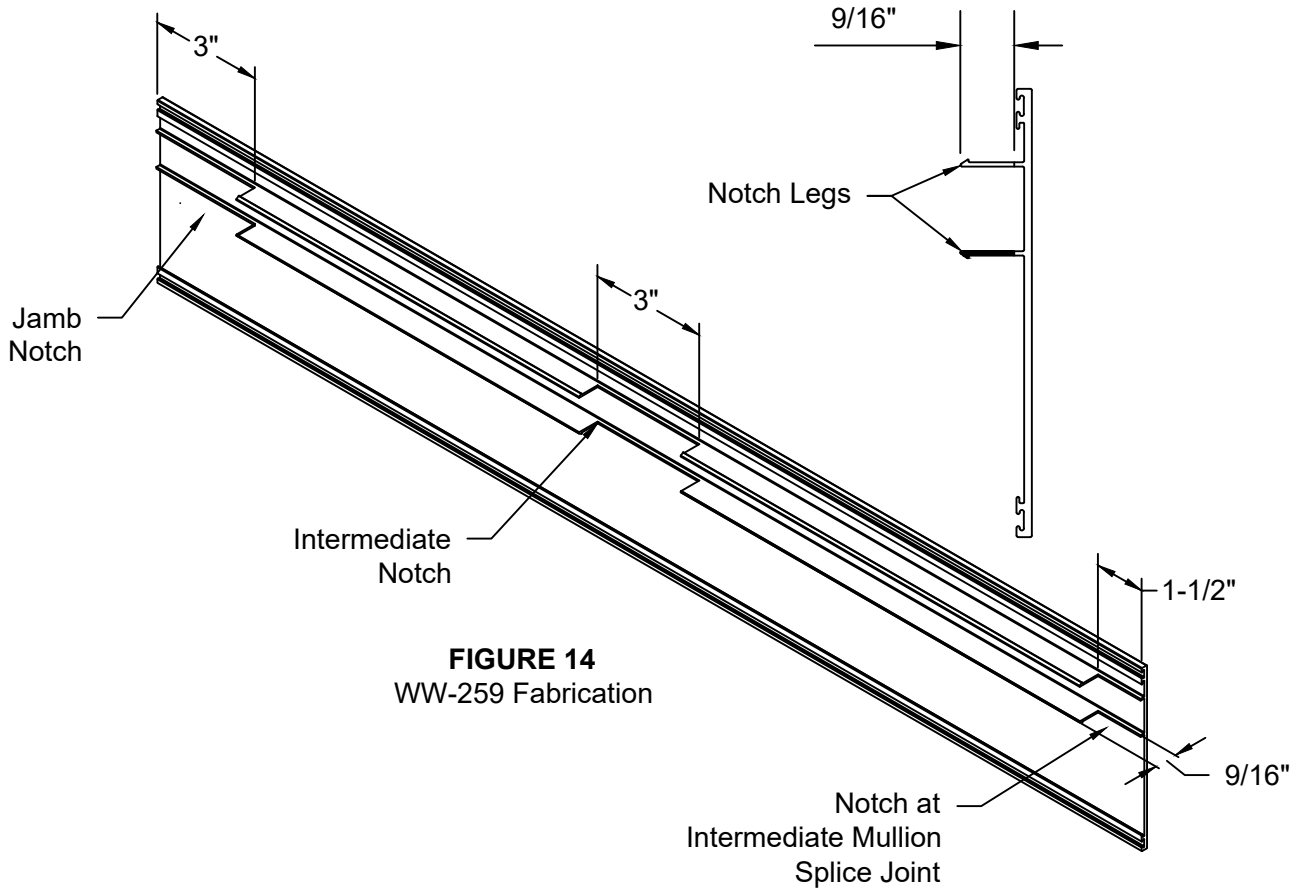
Insert Backer Rod into Face Cap and Cap Seal Cap and Pressure Plate



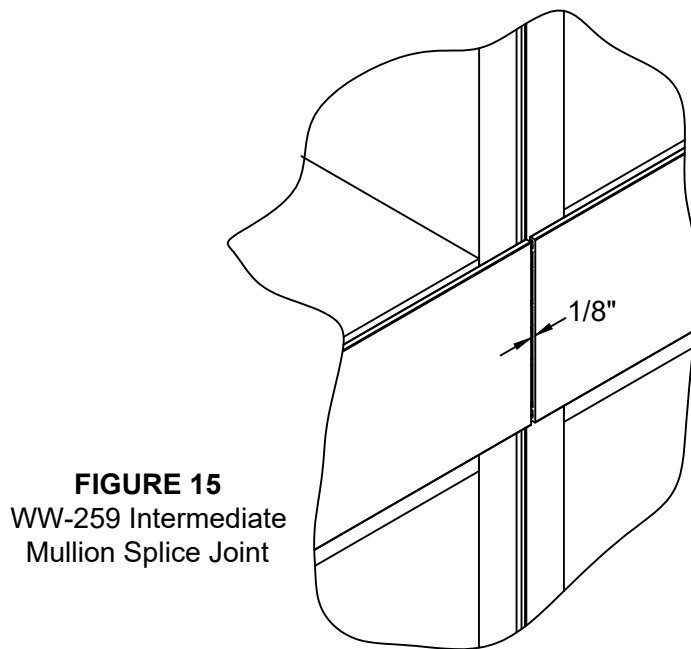
**FIGURE 13**  
Face Cap / Pressure Plate Seal

**RELIANCE™ CURTAIN WALL - STACK HORIZONTAL & DUAL SEAL INSTALLATION MANUAL**  
**STACK JOINT HORIZONTAL INSTALLATION**

1.19 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 14 below for fabrication and FIGURE 15 for butt joint.



**FIGURE 14**  
 WW-259 Fabrication

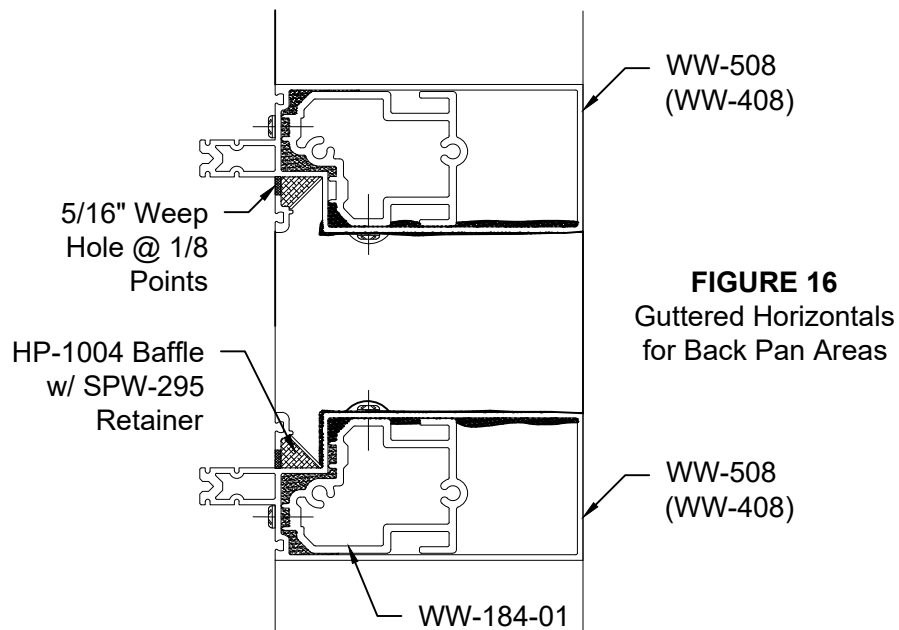


**FIGURE 15**  
 WW-259 Intermediate  
 Mullion Splice Joint

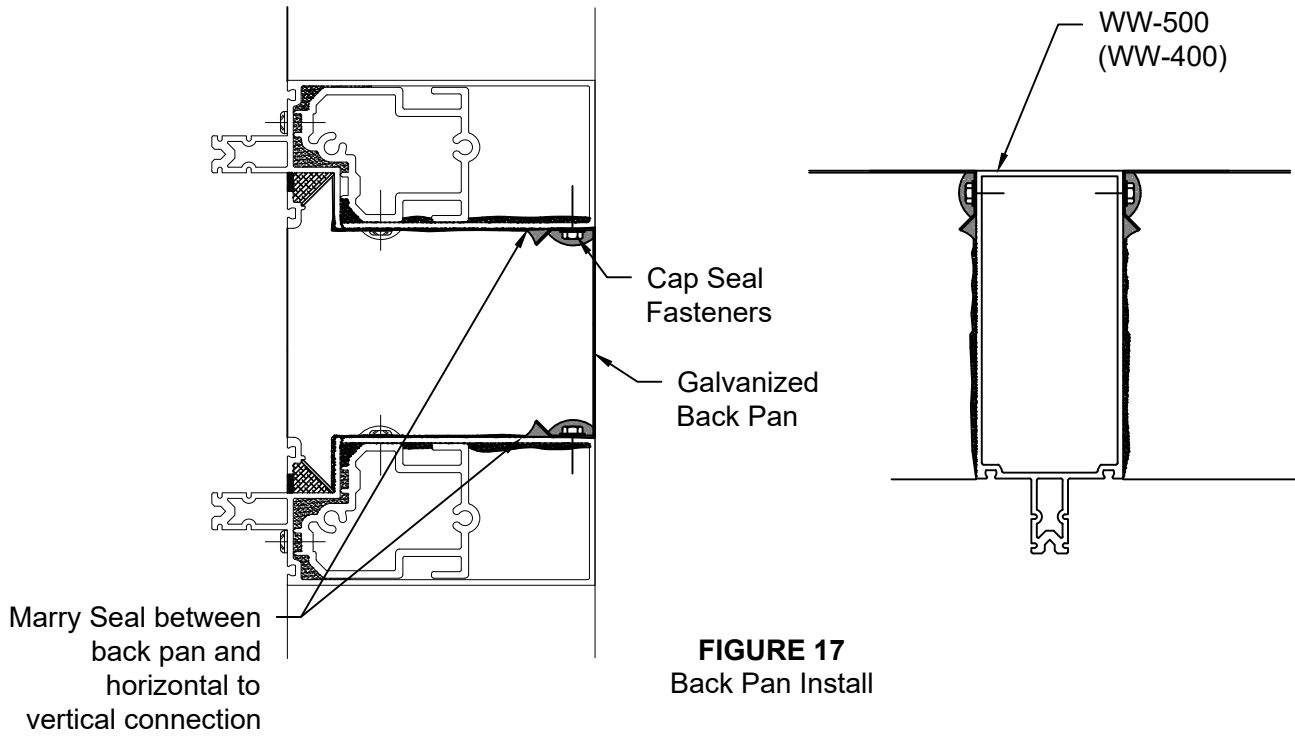
# RELIANCE™ CURTAIN WALL - STACK HORIZONTAL & DUAL SEAL INSTALLATION MANUAL

## BACK PAN INSTALLATION

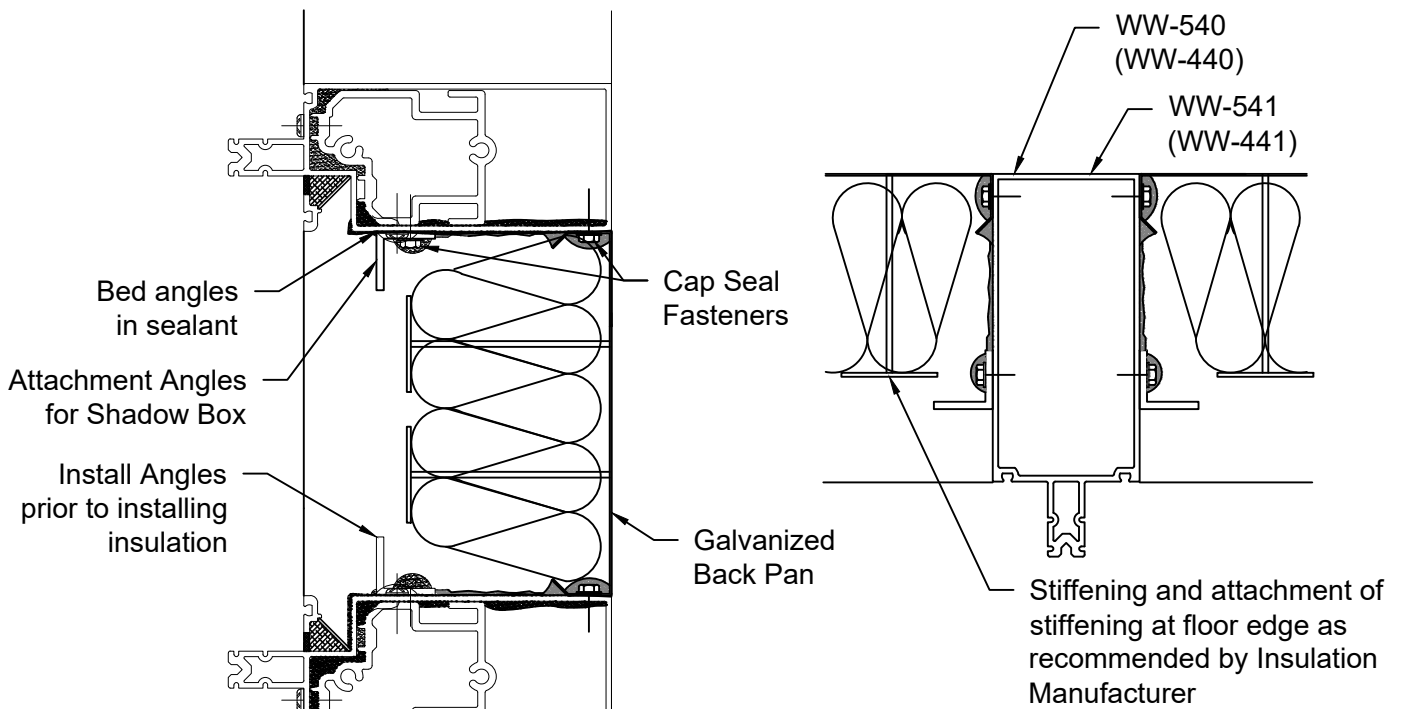
- 2.1 When installing back pans into Reliance™, use the WW-508 (WW-408) horizontal at top and bottom of back pan areas. These will have 5/16" vent holes drilled into guttered area located at 1/8 points of horizontal span. Each vent location to be baffled using a HP-1004 baffle held in place with an SPW-295 retainer. See **FIGURE 16**.
- 2.2 The back pan is installed at back of horizontal from exterior and fully sealed around perimeter, cap seal fasteners and marry seal with seals at verticals to horizontals connections See **FIGURE 17, page 17**.
- 2.3 Install shadow box attachment angles around perimeter as shown in **FIGURE 18, page 17**. Bed angles in sealant and cap seal attachment fasteners. Note: angles are only required for shadow box application.
- 2.4 Insulation will be placed into cavity. See **FIGURE 18, page 17**.
- 2.5 Shadow box is installed onto attachment angles. Note: The shadow box is not required to be sealed if back pan and horizontals are sealed as described above. See **FIGURE 19, page 19**.
- 2.6 Reference Reliance Installation and Glazing Manual, pages 23 thru 28 for glazing information.



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**BACK PAN INSTALLATION**

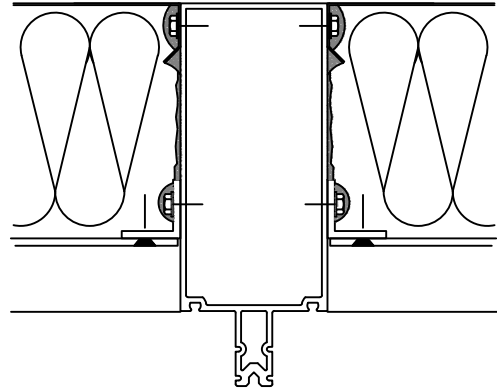
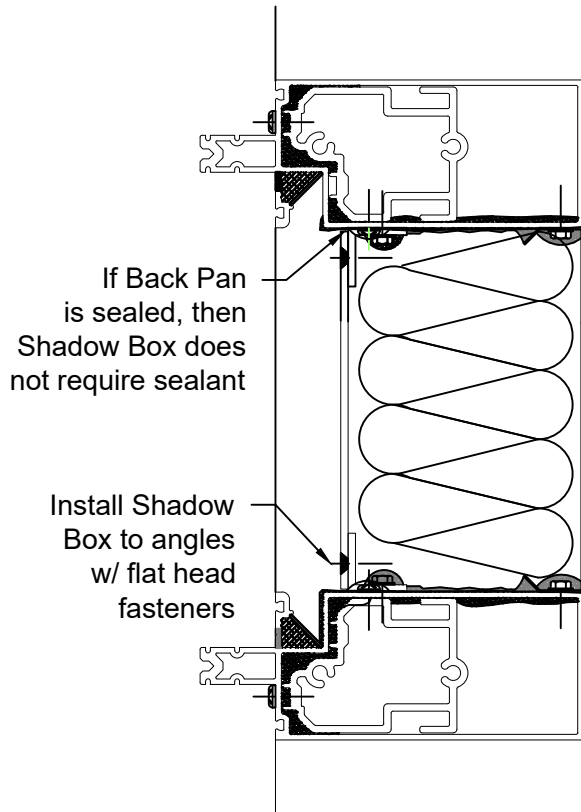


**FIGURE 17**  
Back Pan Install



**FIGURE 18**  
Insulation and Support Angle Installation

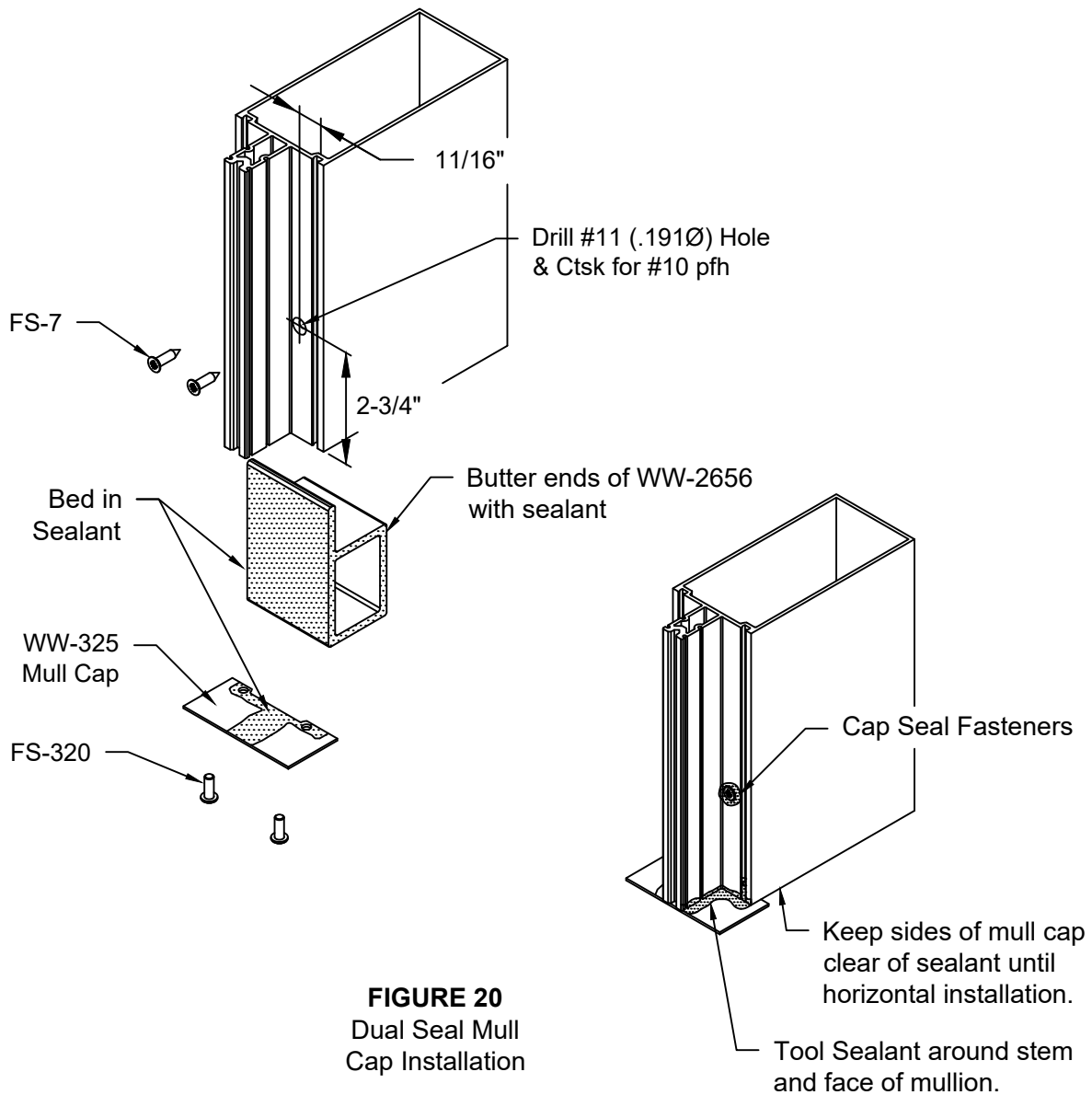
**RELIANCE™ CURTAIN WALL - STACK HORIZONTAL & DUAL SEAL INSTALLATION MANUAL**  
**BACK PAN INSTALLATION**



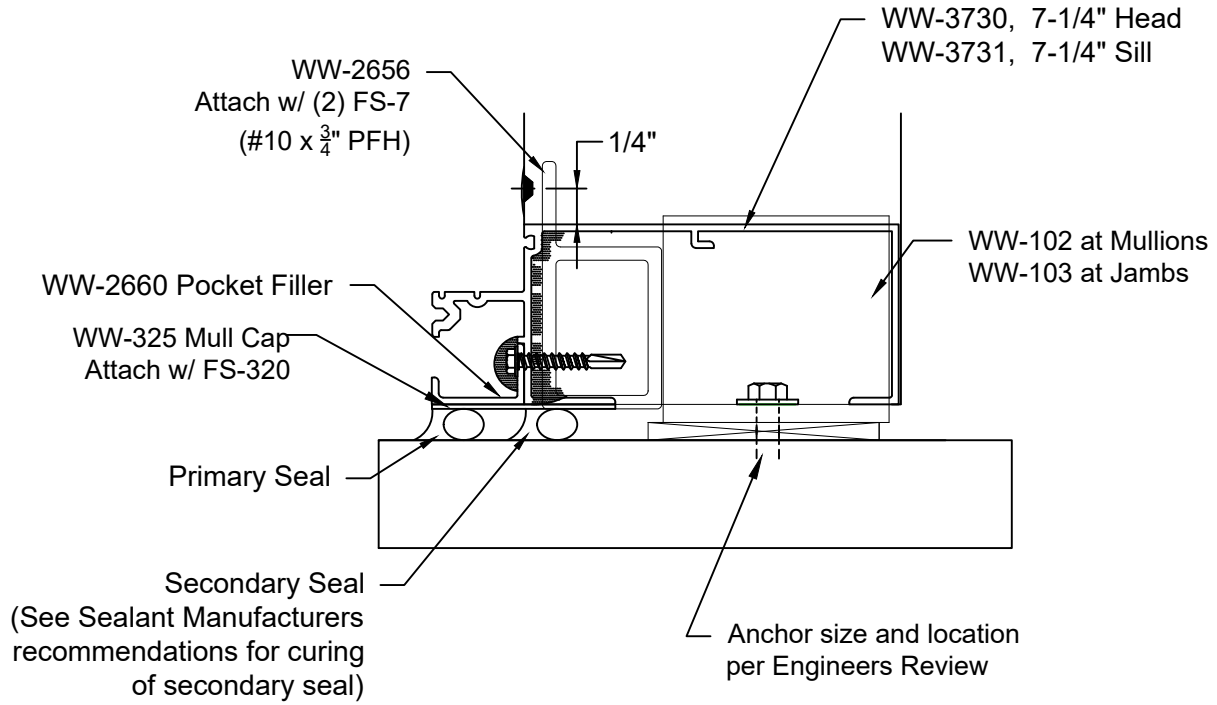
**FIGURE 19**  
Back Pan Horizontal  
& Vertical Details

**RELIANCE™ CURTAIN WALL - STACK HORIZONTAL & DUAL SEAL INSTALLATION MANUAL**  
**DUAL SEAL INSTALLATION**

- 3.1 Drill two countersunk holes in face of mullion as shown in **FIGURE 20** for attachment WW-2656 dual seal anchor bearing tube. NOTE: anchors are sized per project requirements. Apply sealant to face and ends of WW-2656 and insert into top and bottom of mullion at head and sill. Attach block with two FS-7 (#10 x  $\frac{3}{4}$ " PFH) fasteners.
- 3.2 Apply sealant to WW-325 mull cap and attach to top and bottom of mullion at head and sill with two FS-320 drive screws. Tool sealant along mull stem and mull face to insure water tight joints.
- 3.3 Prior to glazing run secondary seal along the face plane of curtain wall. Sealant manufacturers recommendations for curing of secondary seal prior to installing primary seal must be followed. See **FIGURE 21, page 20.**



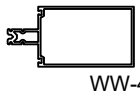
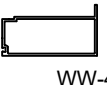
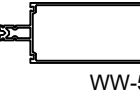

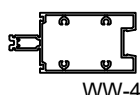
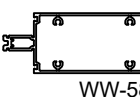
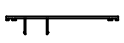






**RELIANCE™ CURTAIN WALL - STACK HORIZONTAL & DUAL SEAL INSTALLATION MANUAL**  
**DUAL SEAL INSTALLATION**



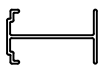
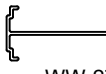


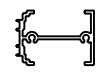
**FIGURE 21**  
Dual Seal Sill Detail  
(Head Similar)

**PARTS LIST**

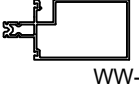
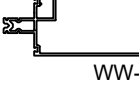

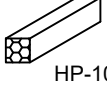


**EXPANSION STACK & ACCESSORIES**

 WW-400	Horizontal - Upper Stack Spandrel Area 6"
 WW-486	Horizontal - Lower Stack 6"
 WW-500	Horizontal - Upper Stack Spandrel Area 7-1/4"
 WW-586	Horizontal - Lower Stack 7-1/4"
 WW-483	Horizontal - Upper Stack Vision Area 6"
 WW-583	Horizontal - Upper Stack Vision Area 7-1/4"
 WW-259	Interior Trim for WW-483 & WW-583
 WW-257	Upper Expansion Gasket Retainer
 WW-258	Lower Expansion Gasket Retainer
 GP-144	Expansion Gasket
 GP-144-01	Expansion Gasket for Jamb Mullion
 GP-144-02	Expansion Gasket for O.S.90 Corners
 GP-144-03	Expansion Gasket for I.S.90 Corners







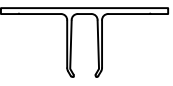
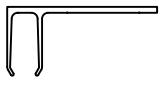
**EXPANSION STACK & ACCESSORIES**

 WW-271-01	Splice Sleeve for WW-400
 WW-270-01	Splice Sleeve for WW-500
 FS-13	#10 X 1" PPH Tek
 WW-296-01	Shear Block for WW-486 & WW-586
 WW-297-01	Shear Block for WW-483 & WW-583

**GUTTERED HORIZONTAL & ACCESSORIES**

 WW-408	Guttered Horizontal 6"
 WW-508	Guttered Horizontal 7-1/4"
 AN-2	Shadow Box Attachment Angle
 HP-1004	Weep Baffle for WW-258
 SPW-295	Baffle Retainer
 WW-184-01	Shear Block for WW-408 & WW-508

**DUAL SEAL EXTRUSIONS & ACCESSORIES**

 WW-3730	Head Horizontal for Dual Seals
 WW-3731	Sill Horizontal for Dual Seals
 WW-2660	Pocket Filler for Dual Seals
 WW-2656	Dual Seal Bearing Tube
 WW-325	Captured Mullion Cap
 WW-338-01	Captured Mullion Cap at Jamb Mullions 1" Infill
 WW-102	Mull Anchor
 WW-103	Jamb Anchor