

Sub Frame / Strut-Receptor Installation Configuration / Fabrication Options

The Strut Receptor system can be purchased in 3 different configurations:

- a - All Extrusions are furnished in Stock Length, all fabrication will performed by the installer's crew at the installer's facility or at the project site.
- b - All Extrusions are furnished Cut Square and Long. The R.O. dimensions are rounded up to the nearest full inch and 2 inches are added to ensure sufficient material is furnished for minor variations in opening sizes. All cutting / fabrication of the receptor system is done at the installer's facility or at the project site.
- c - All Extrusions are furnished factory cut to exact length and factory prepped for assembly. The Head is cut to length, both ends are miter cut at 45°. The Jambs are cut to length with a 45° miter cut at the head and square cut at the sill end. Both ends have thru-holes drilled for the frame assembly screws. The Sub-Sill is cut to exact length. The receptor components are shipped "knocked down" (KD) to avoid racking and deformation at the corners. Assembly screws are furnished by WINCO. Silicone is furnished by the installer.

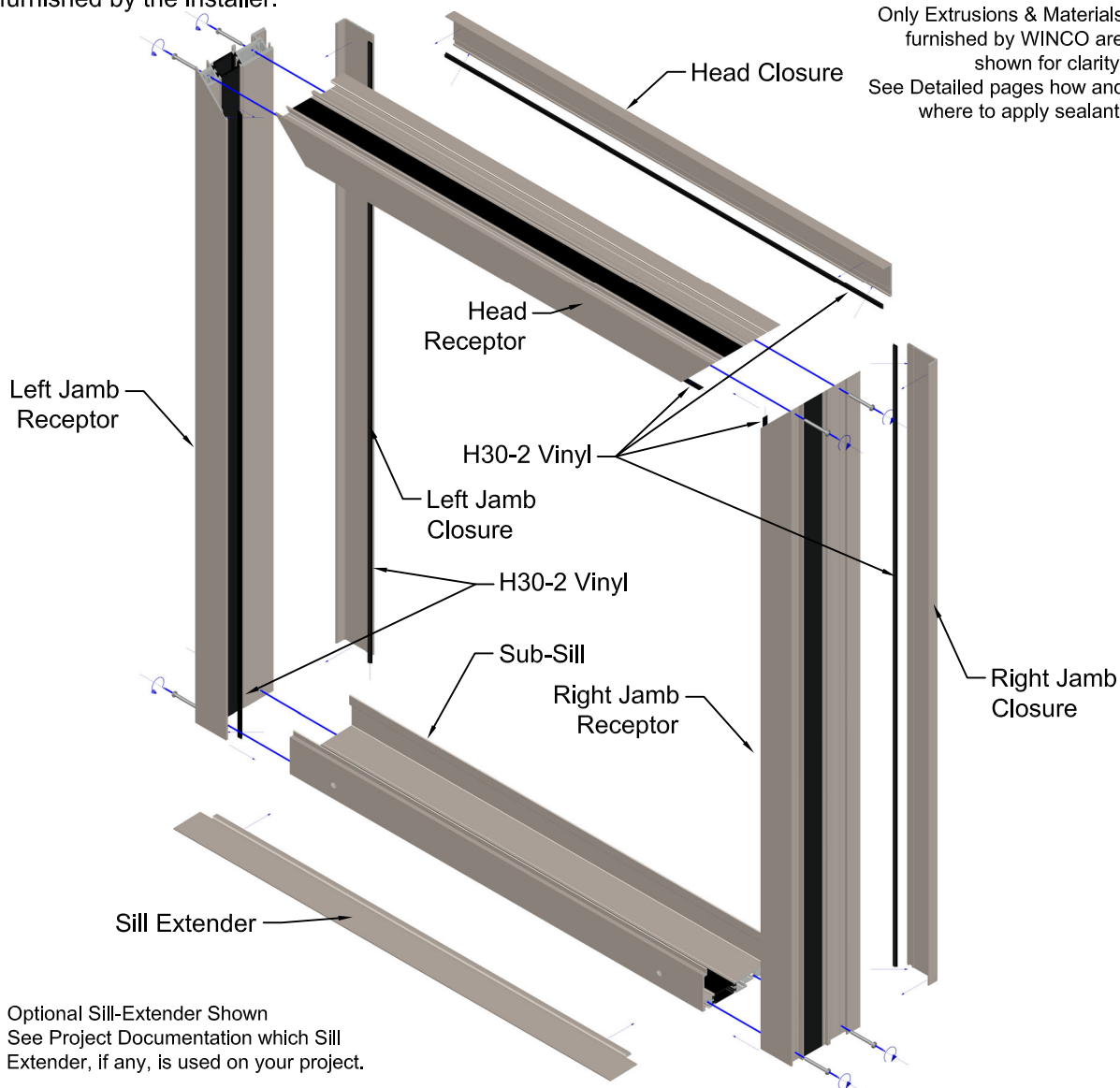


Figure 1

Sub Frame / Strut-Receptor Installation

Sizing of Strut Receptor Components

Generic frame and trim extrusions shown, actual extrusions used may differ.

The Strut Receptor System is intended for use as a 4-sided system to house the window units. While it could be deployed in a Head & Sill only configuration, that is not the design intent for this system and size rules for variations are not covered in this installation manual.

These Installation Instructions apply all kinds of water resistant barrier, regardless if this is membrane or liquid applied. The water resistant barrier must be installed before Receptor & Window installation can begin. Throughout this manual, the water resistant barrier is not shown for clarity.

Measure the Rough Opening and check for square, Plumb and Level condition. If the opening is more than 1/16" out of square, out of plumb or out of level, measure the opening width near the head, the middle and near the sill. likewise, measure the opening height near the right jamb, middle and left jamb. See Fig. 2 Use the narrowest opening width and the shortest opening height to determine the Receptor system size per the formula:

Receptor Tip to Tip Width = R.O. Width_{narrow} - (desired sealant joint x 2)

Receptor Tip to Tip Height = R.O. Height_{short} - (desired sealant joint x 2)

(This formula is only valid for reasonable square / rectangular openings)

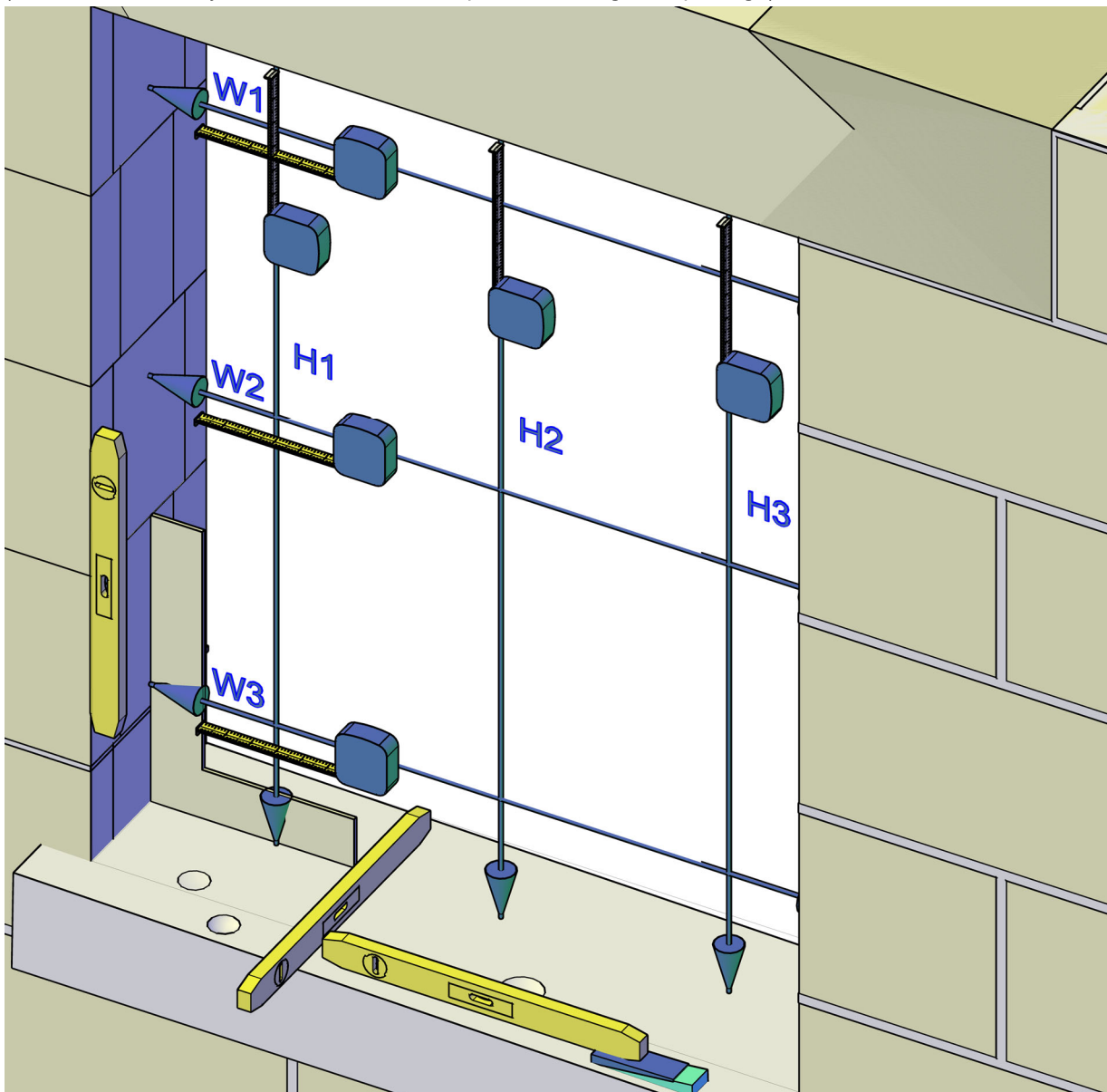


Fig. 2 - Field Measure the Rough Opening (Water Resistant Barrier not shown for clarity)

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Sub Frame / Strut-Receptor Installation

Sizing Formulas for Strut Receptor

Generic frame and trim extrusions shown, actual extrusions used may differ.

Strut Receptor and Sub-Sill sizing formulas: (see Fig 2a for layout)

Head Receptor = Rough Opening Width minus 2 times the Sealant Joint Allowance

The Head Receptor is mitered on both sides, no holes or other fabrication is required

Sub-Sill = Rough Opening Width minus 2 times the Sealant Joint Allowance minus 1-1/2 inches

The Sub-Sill is square cut on both sides, weep holes are required on each end, see instructions on paragraph 4 and illustrations 5a thru 5f

Optional Sill Extender = Rough Opening Width minus 2 times the Sealant Joint Allowance

The optional Sill-Extender is cut square on both ends, but requires a 3/4 inch wide by 3/8 inch deep notch on both ends so the rail will not interfere with the jamb receptor. Notching the jamb would increase the leak potential. (see Fig. 6)

Jamb Receptor = Rough Opening Height minus 2 times the Sealant Joint Allowance

The Jamb receptor is miter-cut at the head end and square cut at the sill end. both end require drilling of clear thru holes to mechanically connect the intersecting frame components. (see paragraph 2 and Fig. 3a & 3b)

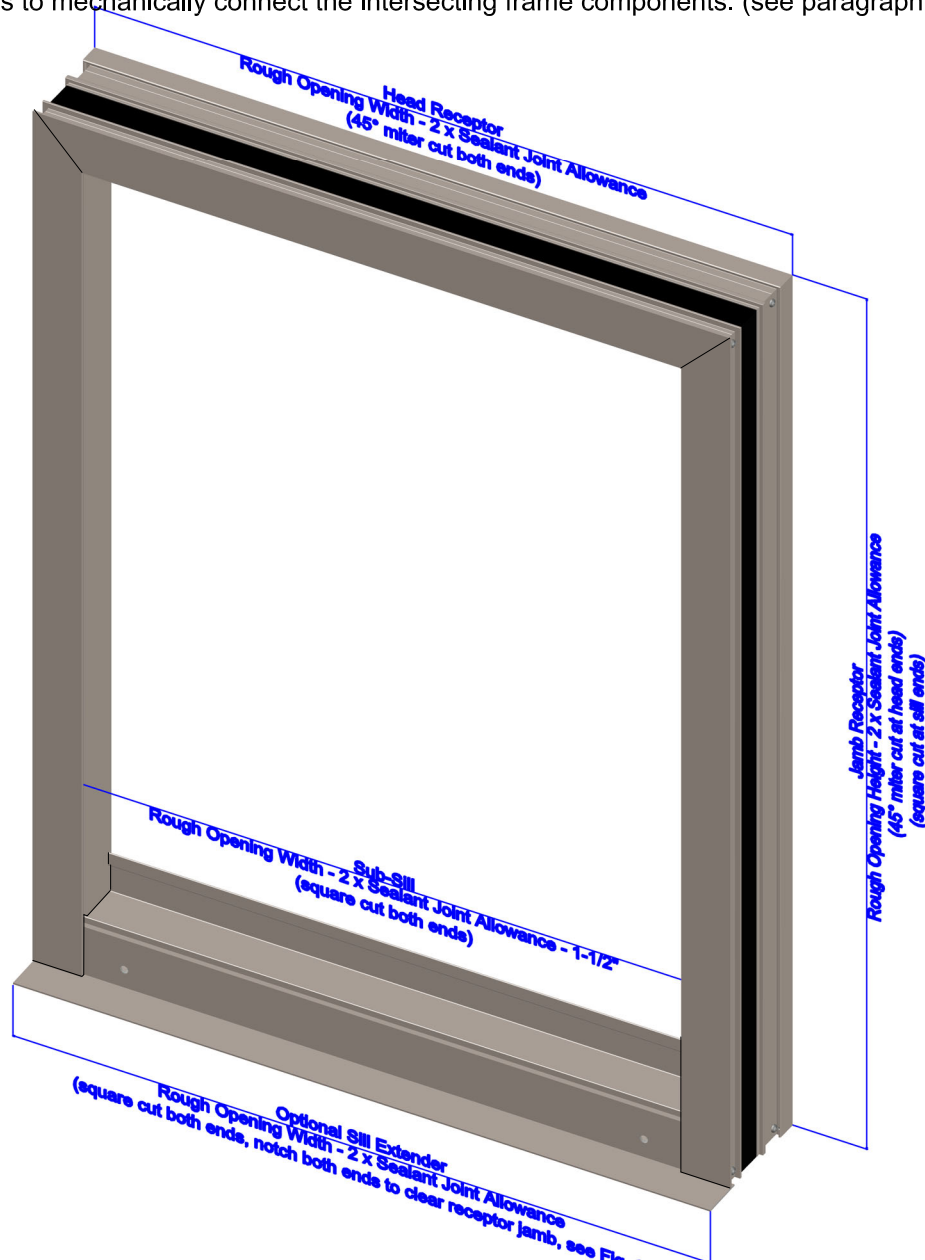


Fig. 2a - Visualized Cut Length Formula for Receptor, Sub-Sill and Sill-Extender

Sub Frame / Strut-Receptor Installation

Sizing Formulas for Strut Receptor Closure Plates

Generic frame and trim extrusions shown, actual extrusions used may differ.

Strut Receptor Closure sizing formulas: (see Fig. 2b for layout)

Head Receptor Closure = Rough Opening Width minus 2 times the Sealant Joint Allowance

The Head Receptor Closure is mitered on both sides, no holes or other fabrication is required.

Jamb Receptor Closure = Rough Opening Height minus 2 times the Sealant Joint Allowance minus 1-15/16 inch.

The Jamb Receptor Closure is square cut at the both ends. both end require drilling of clear thru holes to mechanically connect the intersecting frame components, no holes or other fabrication is required.

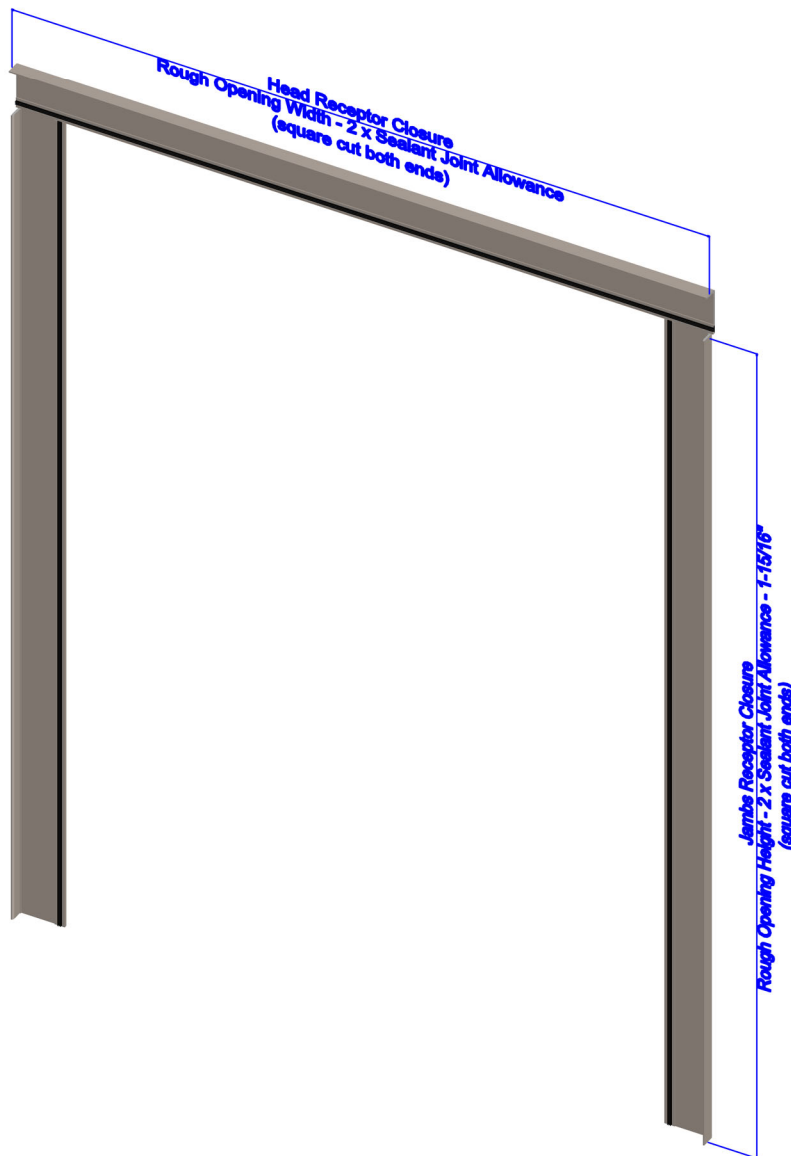


Fig. 2b - Visualized Cut Length Formula for Receptor Closure Plates

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Sub Frame / Strut-Receptor Installation

Sizing Formulas for Mullion in Strut Receptor

Generic frame and trim extrusions shown, actual extrusions used may differ.

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3-Piece Mullion sizing formulas: (see Fig 2c for layout)

Mullion = Rough Opening Width minus 2 times the Sealant Joint Allowance minus 1-15/16 inch.

The Mullion is square cut at the head and notched at the sill to clear the Sub-Sill. The sill notch is to be at least 2-1/4 inch tall to no more than 2-1/2 inch tall and extends the full depth of the mullion web, including the thermal barrier.

Holes for $\varnothing 1/4$ inch fasteners for the mullion anchor must be drilled at both ends. Since the position of the mullion anchor depends on the project specific wall make-up, no detailed instructions are given in this manual.

Mullion Pressure clips / clamp. If the Mullion pressure clamp is installed full length, the cut length measures the same as the mullion. If the pressure clips are used (more common), the bottom most clip should be located as close to the sub-sill as possible. The top-most clip should be located no more than 2 inches below the end. Intermittent pressure clips are spaced no more than 16 inches on center unless the project documentation requires a more conservative spacing.

The Mullion Cover = Rough Opening Height minus 2 times the Sealant Joint Allowance. Both ends are cut square.

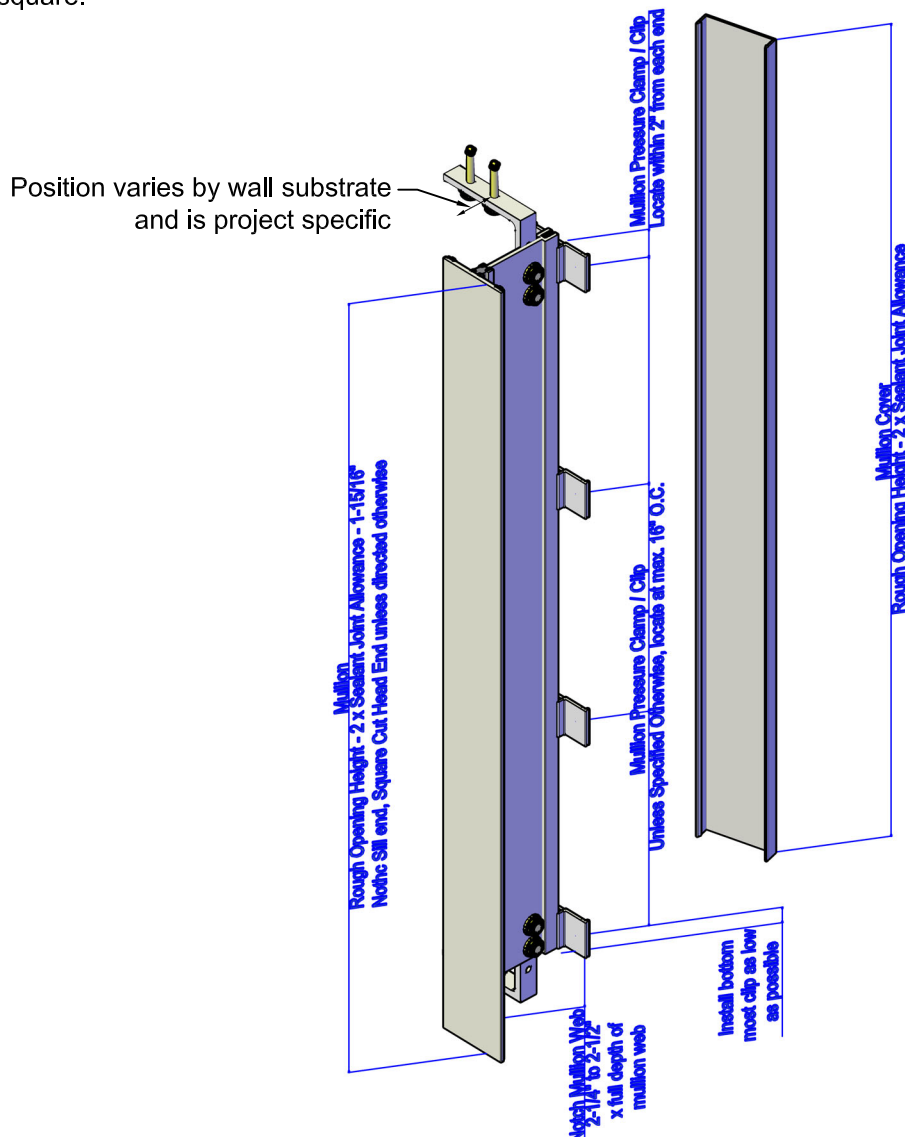


Fig. 2c - Visualized Cut Length Formula for Mullion & Mullion Components

Sub Frame / Strut-Receptor Installation

Sizing of Strut Receptor Components

Generic frame and trim extrusions shown, actual extrusions used may differ.

1) Determine the final length of the head receptor and cut to size. (Actual Rough Opening Width minus 2 times the shim stack / sealant joint allowance). Both ends of the head receptor are intended to be cut at a 45° miter as viewed from the building exterior.

The cut length of the head closure is identical to cut length of the head receptor. Both ends of the closure plates are to be cut square.

2) Determine the final length of the Jamb receptor and cut to size. (Actual Rough Opening Height minus 2 times the shim stack / sealant joint allowance). The head end of the jamb receptors are intended to be cut at a 45° miter as viewed from the building exterior. The sill ends of the jamb receptor are cut square. The Jamb Receptor must be pre-drilled to receive the assembly screws for the head receptor and the sub-sill. Since the jamb receptor acts as the end-dam for the sub-sill these screws are critical for the water resistance function of the system and not optional.

The cut length of the jamb closure is 1-15/16" shorter than the jamb receptor cut to length. Both ends of the closure plates are to be cut square.

The No.10 assembly screws require 3/16" clear holes at the head and sill end of the jamb receptor.

See Fig. 3a for the hole pattern at the head end and Fig. 3b for the hole pattern at the sill end.

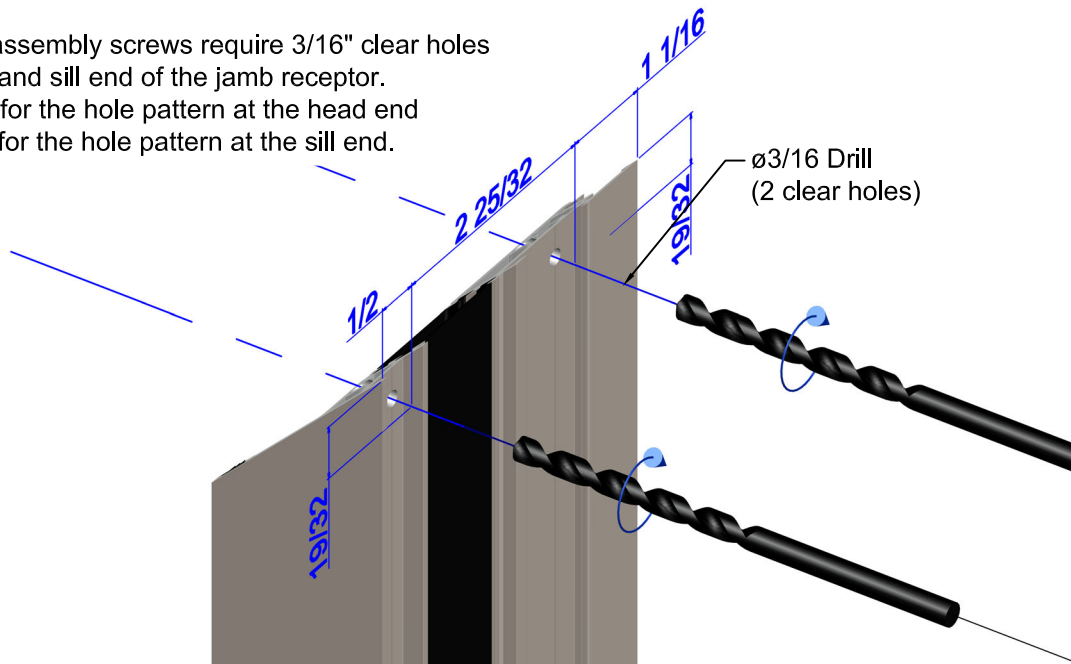


Fig. 3a - Receptor Jamb Hole Pattern at Head

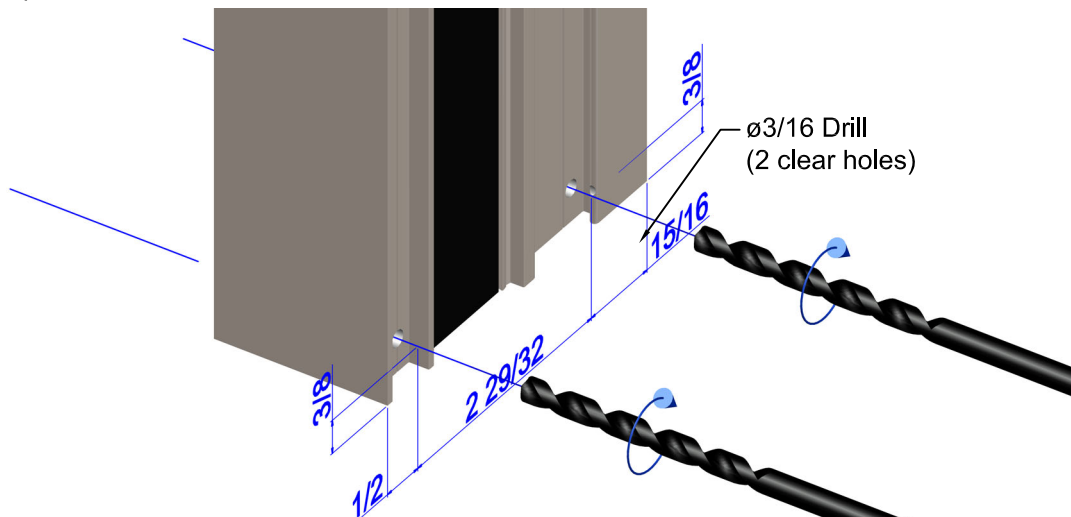


Fig. 3b - Receptor Jamb Hole Pattern at Sill (Right Jamb is shown, Left Jamb is mirror imaged)

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Sub Frame / Strut-Receptor Installation Configuration / Weep Holes

The Sub-Sill must be wept in order for incidental water to be routed out of the opening for a weather resistant installation.

3) Weep holes:

Option a - $\varnothing 5/16$ " round weep holes are drilled at the project site. The weep holes can be drilled pre-assembly or post assembly with drill templates furnished by WINCO.
(see Fig. 4a)

See next page for detailed instruction how to drill the Weep Holes

Option b - WINCO can also furnish weep holes with a weep hole cover (see Fig. 4b)
This option is not suitable for field application since it requires a specialized hydraulic punch set-up.

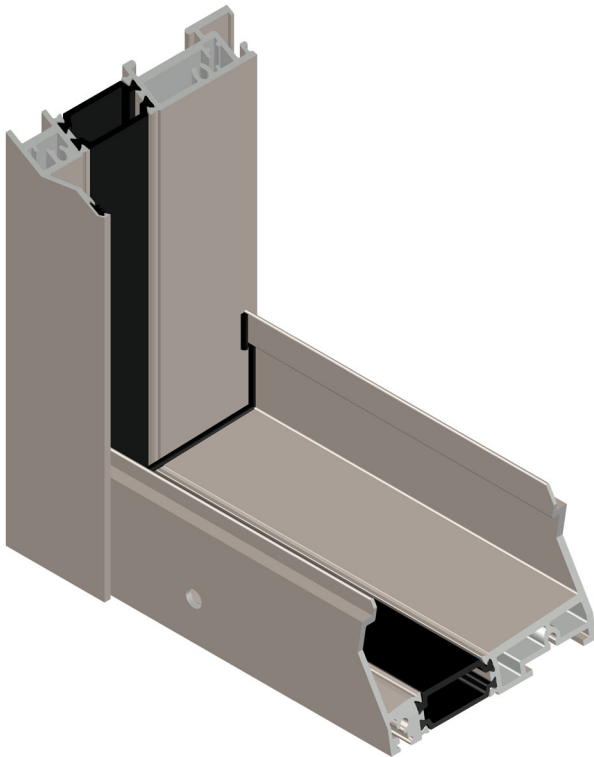


Figure 4a: $\varnothing 5/16$ drilled weep holes

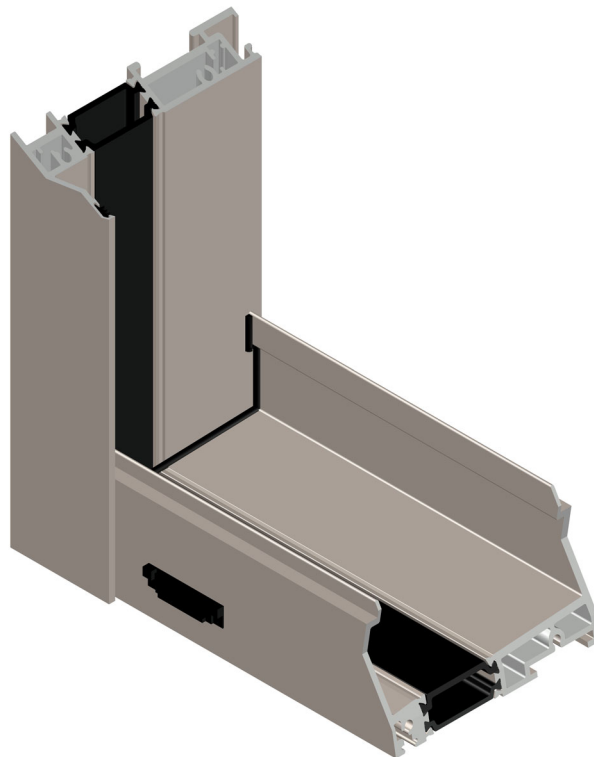


Figure 4b: factory punched weep holes w/ cover

Sub Frame / Strut-Receptor Installation Configuration / Weep Holes

4) Field Drilling of Weep Holes:

The weep holes can field drilled pre-assembly or post-assembly.

Weep holes:

- 4a - The $\varnothing 5/16$ " weep holes can be drilled pre-assembly (see Fig. 5a and Fig. 5b)
- 4b - The $\varnothing 5/16$ " weep holes can optionally be drilled at post-assembly of receptor system. (see Fig. 5c and Fig. 5d)

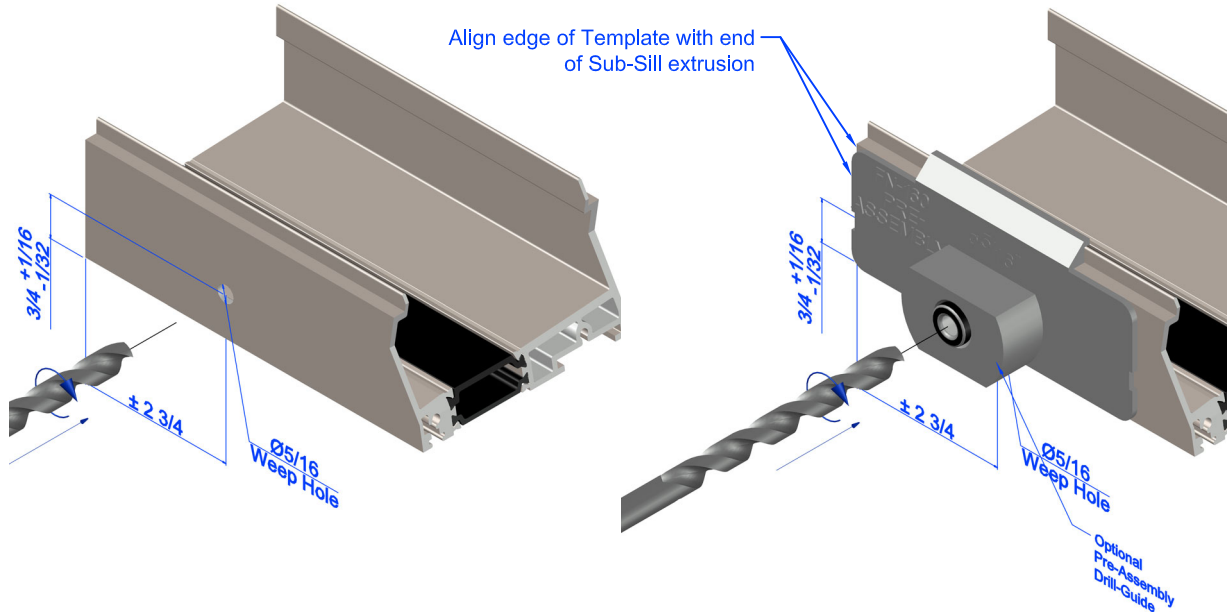


Figure 5a without drill guide

Figure 5b with optional drill guide

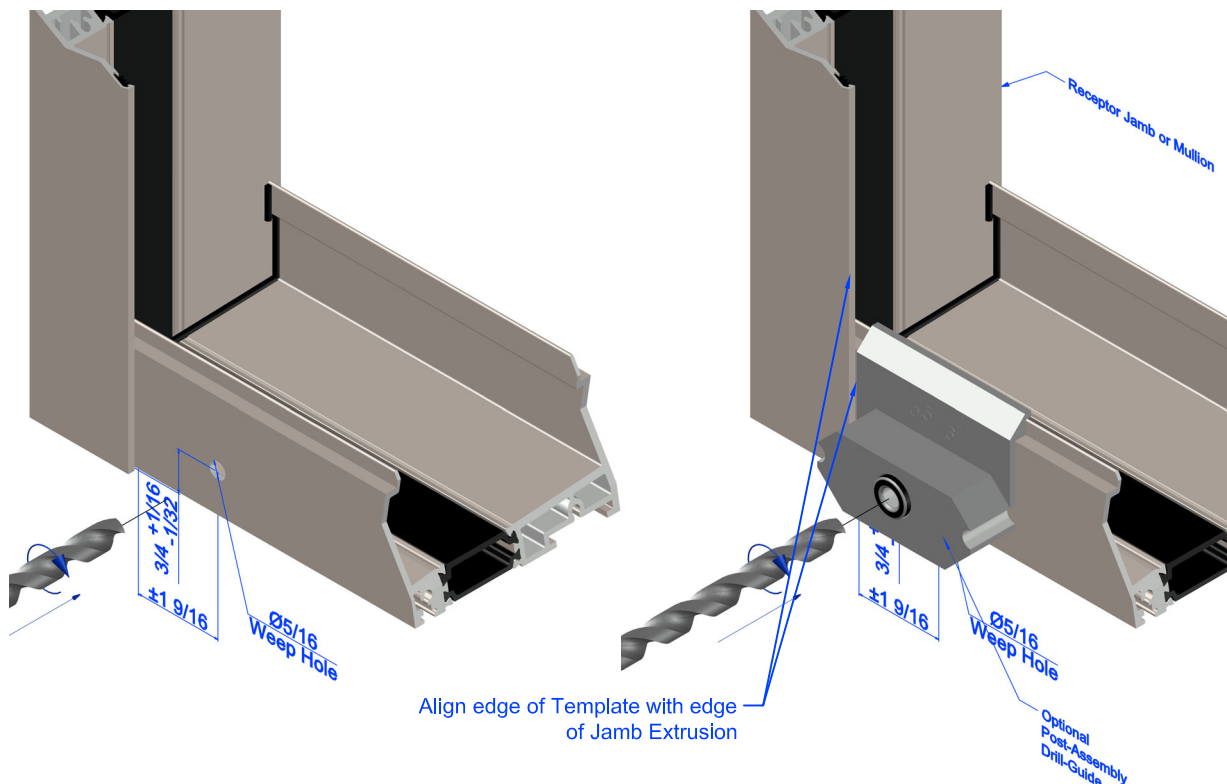


Figure 5c without drill guide

Figure 5d with optional drill guide

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Sub Frame / Strut-Receptor Installation Configuration / Weep Holes at Mullion Locations

5) Field Drilling of Weep Holes at Mullions:

The weep holes can field drilled pre-assembly or post-assembly.

Weep holes:

- 5a - The $\varnothing 5/16$ " weep holes can be drilled pre-assembly or post-assembly. (see Fig. 5e)
- 5b - The $\varnothing 5/16$ " weep holes can optionally be drilled at post-assembly of mullion. (see Fig. 5f)

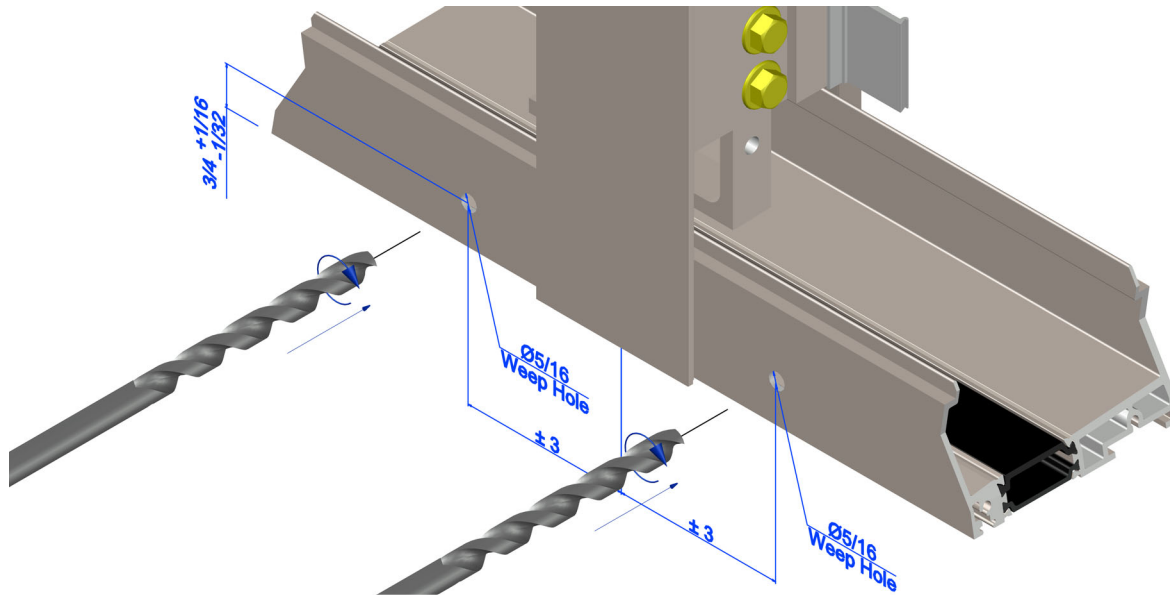


Figure 5e without drill guide

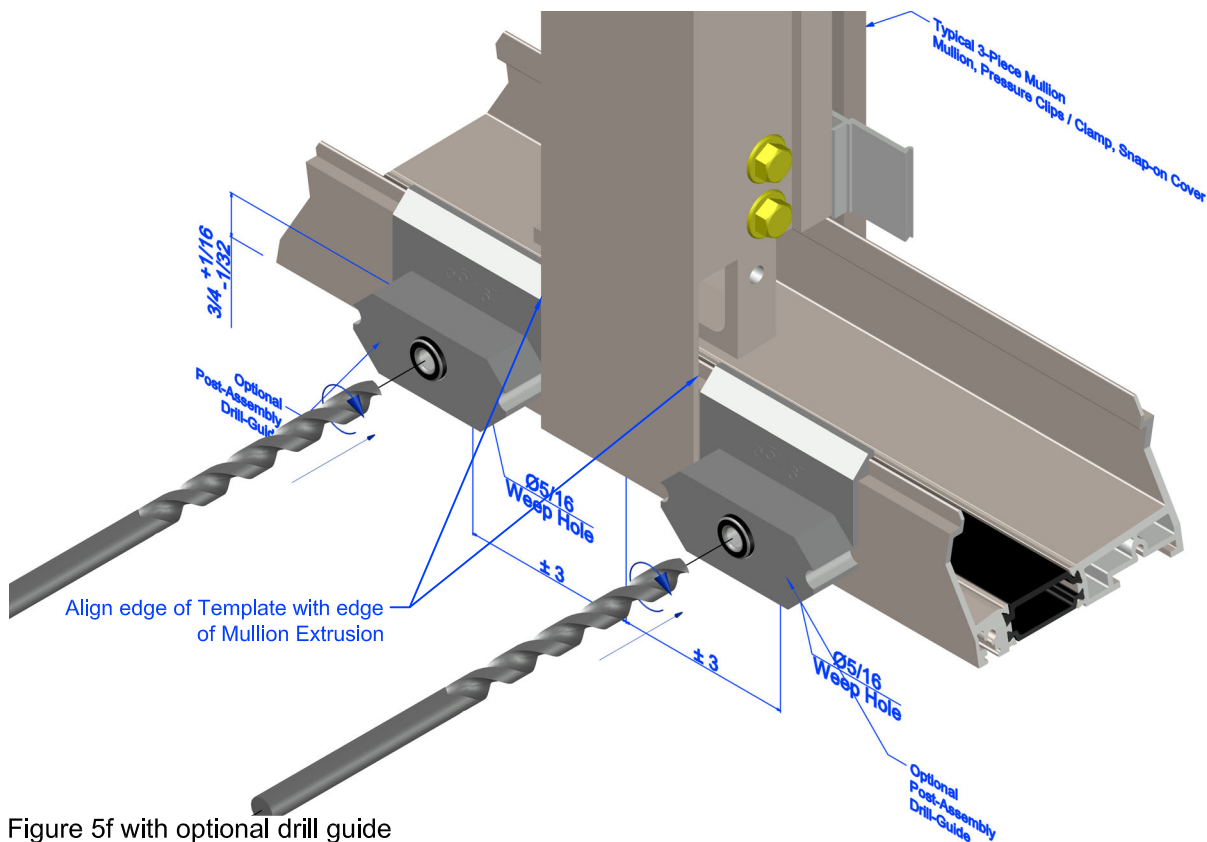


Figure 5f with optional drill guide

Sub Frame / Strut-Receptor Installation

Optional Sill Extender

Generic frame and trim extrusions shown, actual extrusions used may differ.

- 6) If a sill extension is used, the sill extender must be cut to final length and notched at both ends to avoid clearance conflict with the receptor jambs.

Determine the final length of the sill extender (Sub-Sill +1-1/2" or Overall Receptor Width) and cut to size.
(Actual Rough Opening Width minus 1/2" for 1/4" nominal sealant joint allowance)

Notch the track portion of the extrusion at least 3/4" from each end to clear the jamb receptor. The depth of cut should be at least 3/8", but no more than 1/2". Make sure the saw cuts are burr free and all chips & debris are removed from sill extender before proceeding to next step.

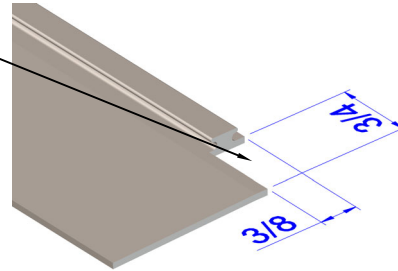


Fig. 6

7) Sill Extender installation

(If the project does not require extruded sill extender(s), skip figures 3, 4 and 5)

Lay a bead of Silicone Sealant along the entire length of the sub sill before inserting the sill extender. This prevents wicking of water through the capillary joint between the extrusions. The sealant used must be compatible with the silicone used for the primary weather seal.

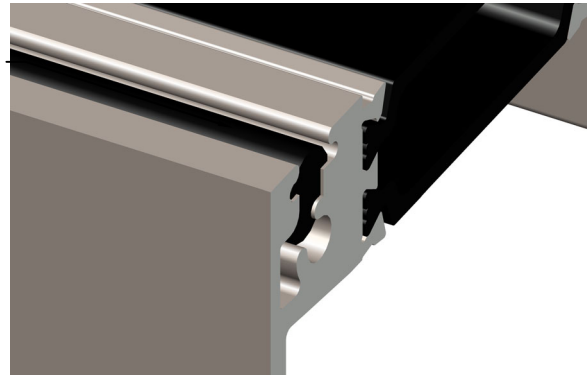


Fig. 7

(Sub Sill is upside down for this step)

Insert Sill Extender into the keyed groove and slide into position. Once final position is achieved, tool all visible sealant to ensure a water tight seal.

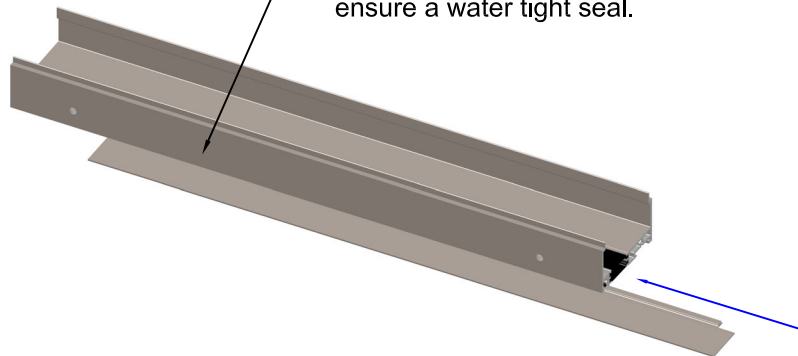


Fig. 8

Sub Frame / Strut-Receptor Installation

Receptor System Assembly

Generic frame and trim extrusions shown, actual extrusions used may differ.

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8) The receptor jamb acts as end dam for the sub-sill. It is critical that the joint between these elements is sealed w/ silicone and tooled. The hole pattern lines up with the screw bosses in the sub sill. Since the holes may be offset, the correct orientation of the end dam needs to be established prior to applying sealant.

Lay a number of silicone beads to "butter" the bottom 3/4" of the jamb receptor where it will come into contact with the sub sill.

Lay a number of horizontal silicone bead over the sub-sill where it will intersect with the jamb receptor. This sealant joint prevents "snorkeling" moisture up thru the cavity between receptor flange and the sub-sill front.

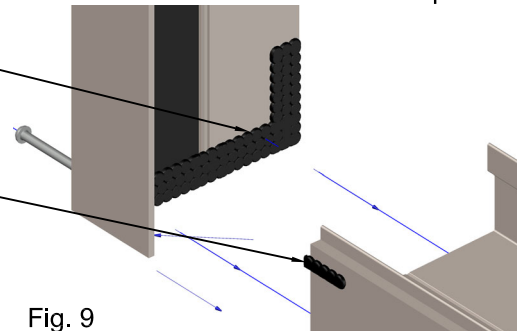


Fig. 9

9) Before assembling the receptor system, make sure that the 3-Finger Vinyl (WINCO Part # H30-2) is inserted into the groove of the Head and Jamb Receptors.

This vinyl functions as a Bond Breaker & Baker Rod for the final sealant between window frame and receptor system.

"Butter" the mating joints of the Head & Jamb Receptors with Silicone Sealant. Bring the Receptor Head and Jamb Receptor into position and insert the factory supplied screw (Bill of Lading item X-955 or X-955-S) into the holes. With a No. B2 Quad screw driver, tighten the screws to a snug fit. Clean any excess sealant on the exposed exterior face. See Fig. 10

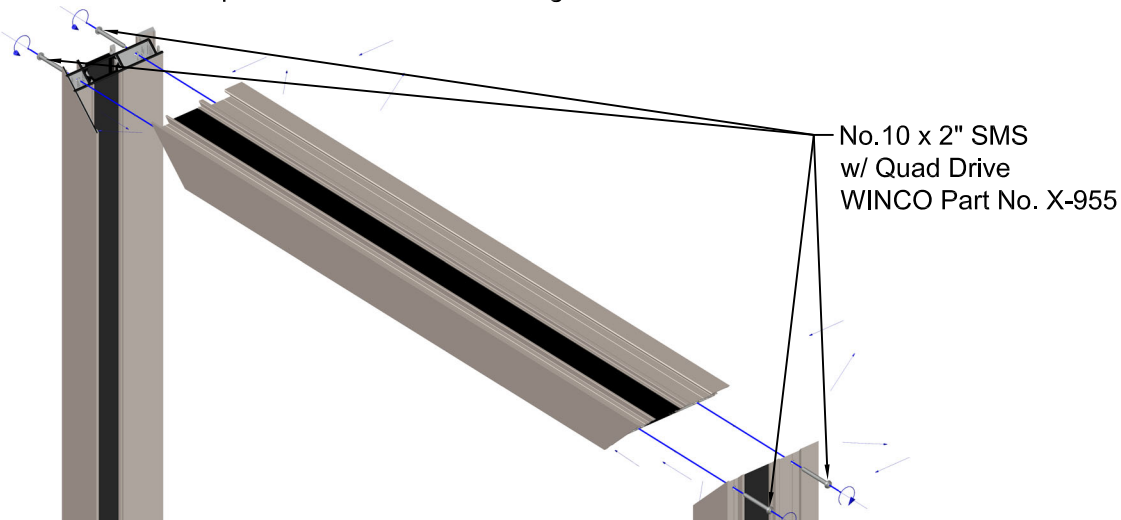


Fig. 10

10) Bring the Sub-Sill and Jamb Receptor into position and insert the factory supplied screw (Bill of Lading item X-950) into the holes. With a No. B2 Quad screw driver, tighten the screws to a snug fit. Tool any exposed sealant to ensure a watertight fit. See Fig. 11

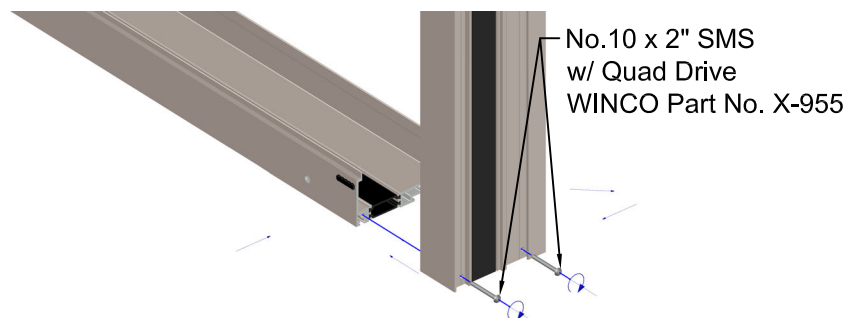


Fig. 11

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Sub Frame / Strut-Receptor Installation

Installing Strut Receptor into Opening

Generic frame and trim extrusions shown, actual extrusions used may differ.

11) The water resistant barrier must be sandwiched between the window receptor system's shims and the wall condition. Place the assembled receptor system into position and insert shims below to achieve a square, plumb & level installation plane. The shim stack height should be no less than 1/4" to afford sufficient space for the primary silicone weather seal. Consult the sealant manufacturer's documentation to ensure their minimum recommended sealant gap is achieved. Establish the anchor locations and anchor size. The thermal barrier of the sub sill may not be penetrated by the anchor or the anchor's clearance hole.

Anchor design, (type, diameter, minimum embedment, minimum edge distance, maximum O.C. spacing, etc. are project specific as well as specific to each window opening type. Unless specifically contracted to do so, WINCO will not provide an anchor schedule or make anchor recommendations. WINCO does not provide perimeter anchors / fasteners.

All anchor locations must be fully supported by a shim stack made from non-compressible shims to prevent bowing or twisting of the receptor or sub-sill when the anchors are tightened. See Fig. 12 & 13

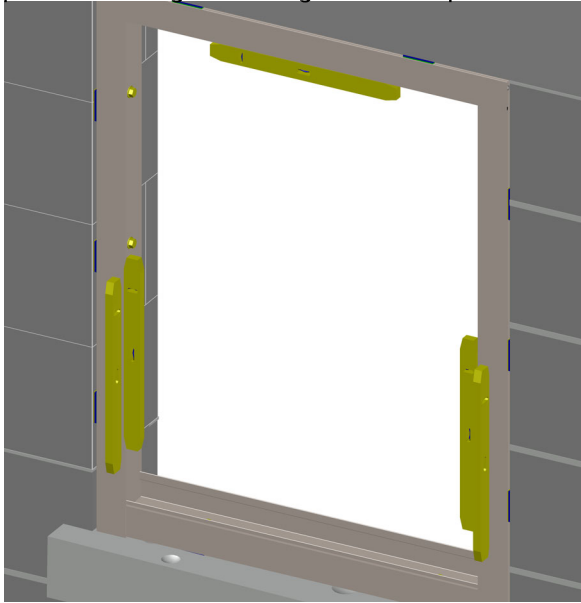
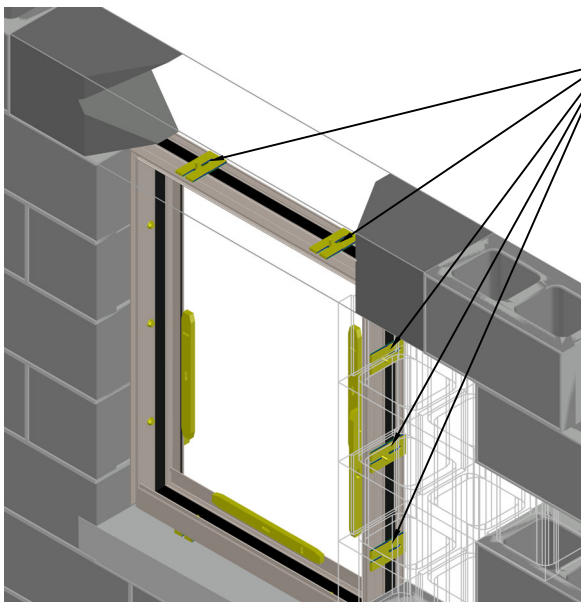


Fig. 12 - Viewed from Building Exterior (Water Resistant Barrier not shown for clarity)



Shims at all anchor locations to achieve a plumb and level installation of the window unit(s) and allow the recommended sealant gap.

Fig. 13 - Viewed from Building Interior

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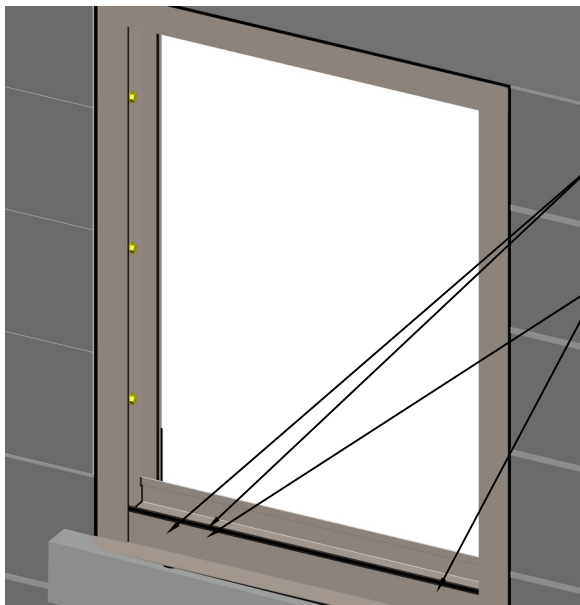
Sub Frame / Strut-Receptor Installation

Installing Strut Receptor into Opening

Generic frame and trim extrusions shown, actual extrusions used may differ.

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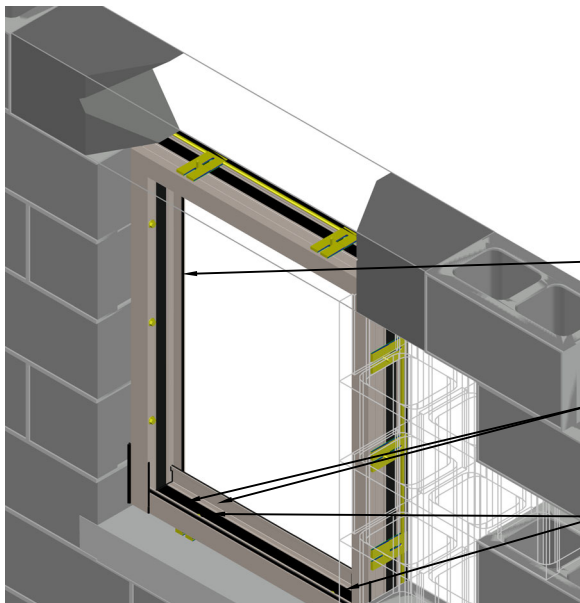
12) Seal all sill anchor heads with silicone sealant. Inspect and make sure that no debris is left in the sub sill which might clog the weep holes. Lay a small continuous bead of silicone sealant on each of the horizontal surfaces of the sub sill which will support the window unit(s). See Fig. 14 & 15
Lay a continuous bead of silicone along the interior edge of the receptor alongside of the 3 finger vinyl. This seal will limit water intrusion between window and receptor frame. The 3 finger vinyl acts as backer rod and bond breaker. It is not designed as a substitute for sealant. See Fig. 15



Place a bead of silicone sealant along the interior and exterior receiving surfaces of the sub sill.

Be sure to seal all sill anchor heads with silicone sealant.

Fig. 14 - Viewed from Building Exterior (Water Resistant Barrier not shown for clarity)



Place a continuous bead of silicone sealant along the interior edge of the receptor along side the 3 finger vinyl. (Head and both jambs)

Place a bead of silicone sealant along the interior and exterior receiving surfaces of the sub sill.

Be sure to seal all sill anchor head with silicone sealant.

Fig. 15 - Viewed from Building Interior

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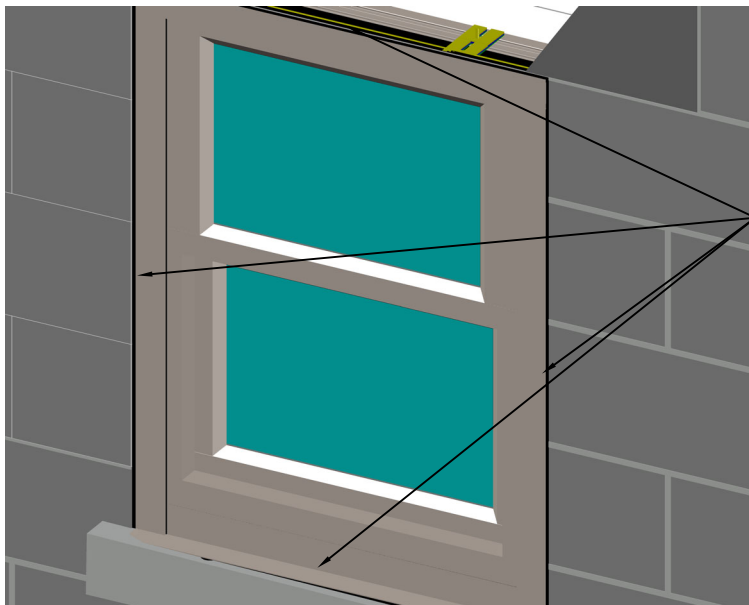
Sub Frame / Strut-Receptor Installation

Installing Strut Receptor into Opening

Generic frame and trim extrusions shown, actual extrusions used may differ.

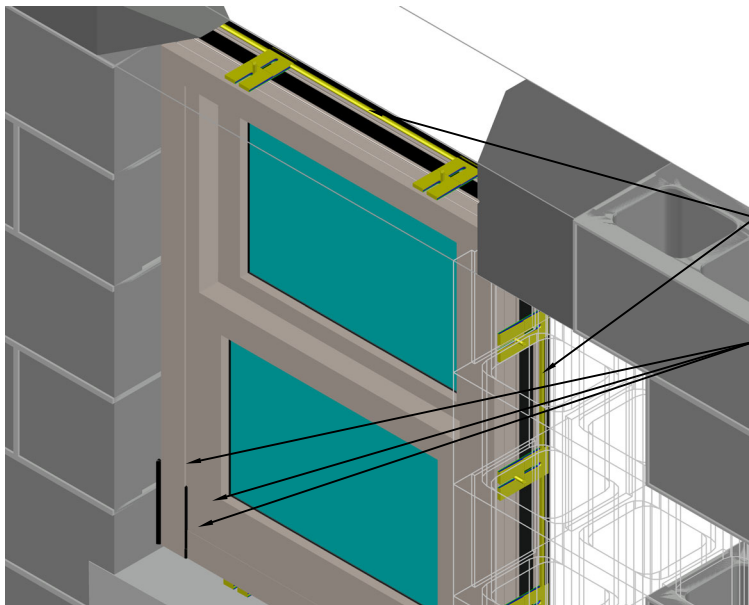
13) Set window unit into position. Insert Foam Backer Rod on all four sides to act as a bond breaker for the exterior primary water seal. See Fig. 16 & 17

14) Apply Two (2) 6 Inch tall bead of sealant approximately 2 inches apart and a horizontal bead connecting the two at each sill end of the jambs. This serves to prevent ingress of any water into the occupied space should the sill weep slower than a potential water intrusion during unusually heavy rainfall and concurrent extreme wind condition. The vertical beads seal the closure against window and wall substrate, the horizontal bead will seal the closure against the sub sill. See Fig. 17



Place backer rod on all 4 sides of the exterior to act as bond breaker for the exterior primary seal.

Fig. 16 - Viewed from Building Exterior (Water Resistant Barrier not shown for clarity)



Place backer rod on all 4 sides of the exterior to act as bond breaker for the exterior primary seal.

On the Building Interior side, place a horizontal bead of sealant 2 inches long on each end of the sub sill as shown connected to 2 vertical beads to 6" elevation on the wall side and where the jamb closure will terminate.

Fig. 17 - Viewed from Building Interior

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Sub Frame / Strut-Receptor Installation

Installing Strut Receptor into Opening

Generic frame and trim extrusions shown, actual extrusions used may differ.

15) Apply primary sealant to exterior sides & tool sealant. See Fig. 18 & 19

16) Snap head & jamb receptors into position to securely attach window to receptor. Tool any sealant squeeze-out at the sill.

Note that the shim stack will remain visible to the interior on all four sides. This is typically concealed with drywall and a sill stool. The gap between receptor / sub sill and the wall is protected by the primary sealant. WINCO does not require additional sealant on the interior edge. However, ASTM E2112 recommends sealing the interior gap as well to limit air movement between the occupied space and the "raw" wall substrate. If the shim stacks are exposed to view after windows are installed, Painter's caulk can be applied for cosmetic purposes.

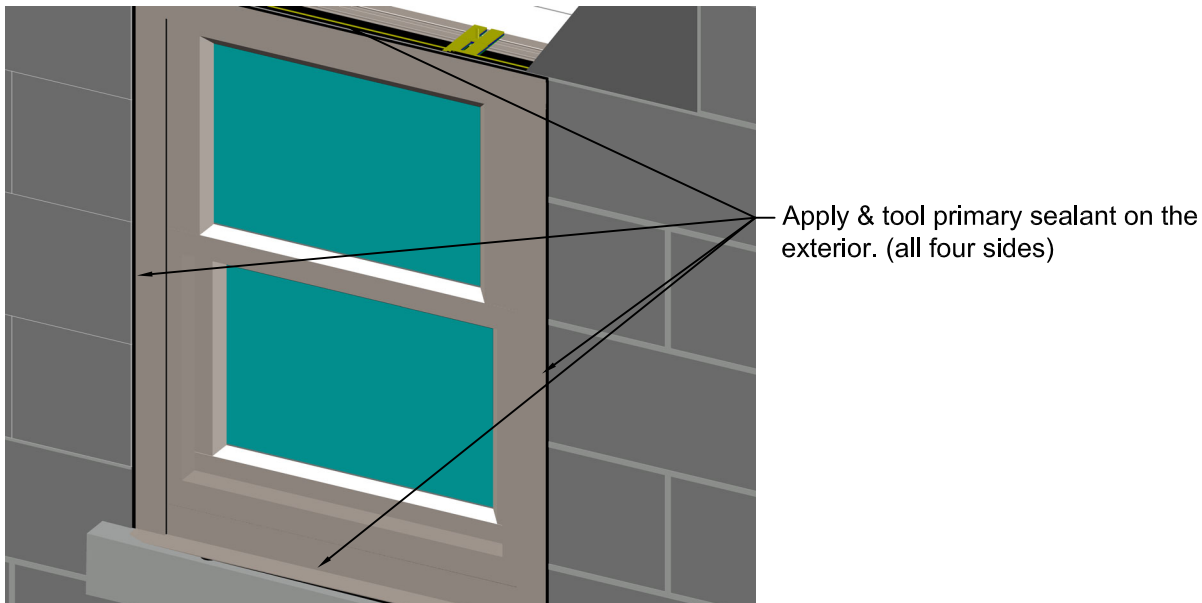


Fig. 18 - Viewed from Building Exterior (Water Resistant Barrier not shown for clarity)

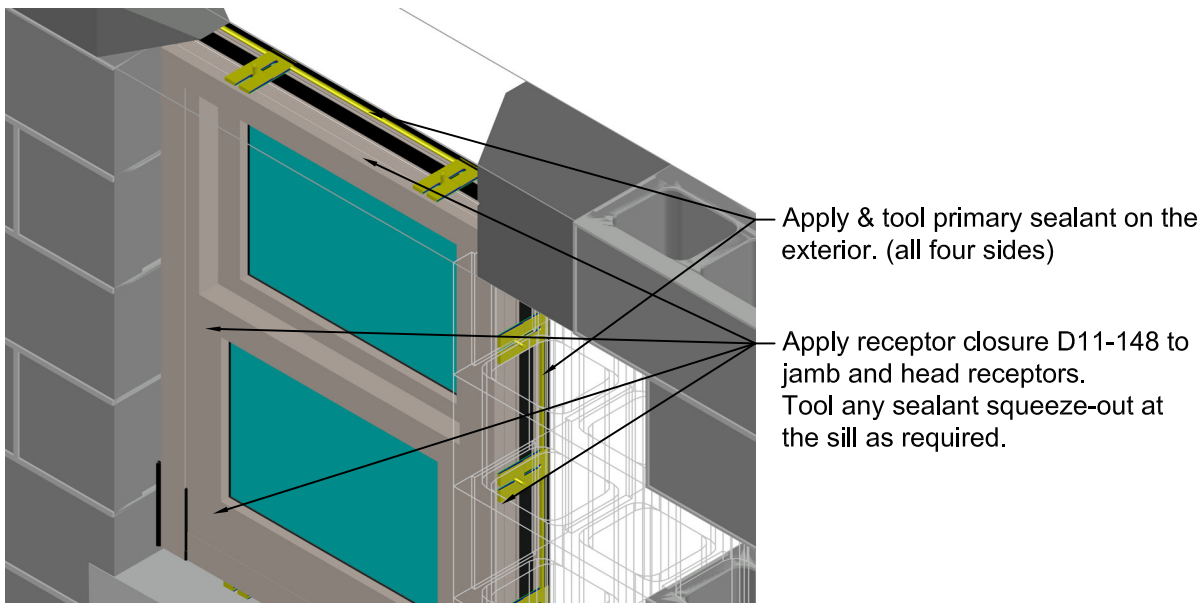


Fig. 19 - Viewed from Building Interior

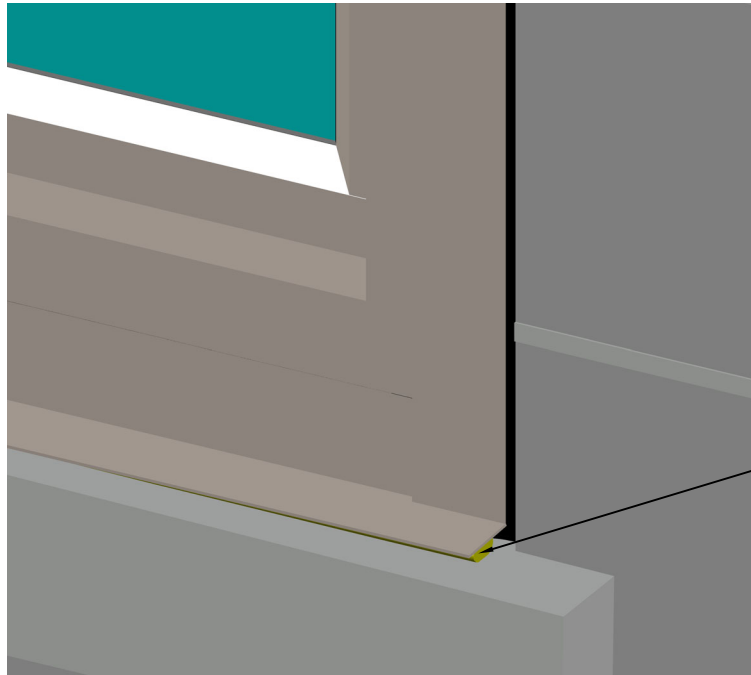
Sub Frame / Strut-Receptor Installation

Installing Strut Receptor (w/ Sill Extender) into Opening

Generic frame and trim extrusions shown, actual extrusions used may differ.

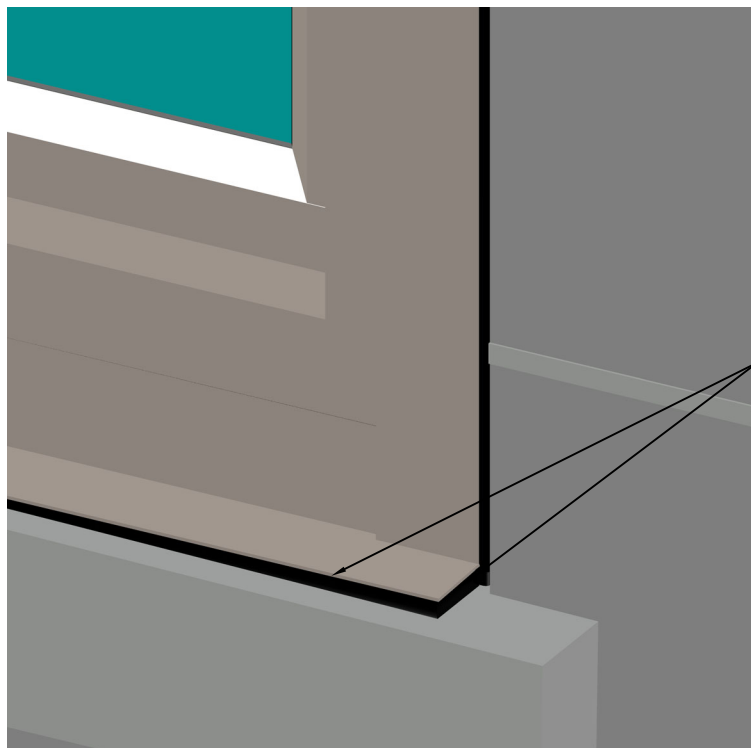
17) If a sill extender is used, insert a foam backer rod between the sill extender and the wall condition. See Fig. 20

18) Apply a bead of silicone sealant and tool as required. See Fig. 21



Insert backer rod between sill extender and wall

Fig. 20 (Water Resistant Barrier not shown for clarity)



Apply & tool primary sealant at sub sill and wall interface

Fig. 21 (Water Resistant Barrier not shown for clarity)

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