### Minimizing Condensation

**NOTE:** Please reference EFCO’s "Understanding Condensation" brochure which can be obtained through your EFCO representative.

Condensation will form on any surface when unfavorable conditions (interior temperature and relative humidity and exterior temperature) are present. When the formation of excessive condensation is a concern, it is highly recommended that a design professional is utilized to perform an analysis of the shop drawings to recommend the best installation methods. Please contact EFCO representative for information on EFCO’s Thermal Analysis Services.

Many current installation practices lead to an increase in the possibility of the formation of condensation. Though not all inclusive, the list of examples below illustrates conditions under which condensation is likely to occur:

1. Bridging system thermal break with non-thermally broken metal flashing or lintels that are exposed to the exterior.
2. System exposure to cold air cavities.
3. Interior relative humidity levels not maintained at recommended levels, see EFCO’s "Understanding Condensation" brochure.
4. Inadequate separation between system and surrounding condition at perimeter.
5. Product combinations during the shop drawing stage that result in bridging thermal breaks of one or all products involved.
SECTION I - GENERAL NOTES AND GUIDELINES
SERIES 955 5" TECH SET

NOTE: THESE INSTALLATION INSTRUCTIONS ARE A SUPPLEMENT TO THE APPROVED SHOP DRAWINGS AND MUST BE USED IN CONJUNCTION WITH THOSE DRAWINGS. THESE INSTALLATION INSTRUCTIONS ARE ALSO WRITTEN TO ACCOMMODATE THE STOCK LENGTH PURCHASE OF ALL MATERIALS, PARTS, AND EXTRUSIONS.

1. HANDLING-STORING-PROTECTING ALUMINUM- The following precautions are recommended to assure early acceptance of your products and workmanship.
   A. HANDLE CAREFULLY- Store with adequate separation between components so material will not become scratched or rubbed at points of contact. Store off the ground. Protect against weather elements and other construction trades in adjacent areas of the job site.
   
   B. KEEP MATERIAL AWAY FROM WATER, MUD, AND SPRAY- Prevent cement, plaster, and other materials from coming in contact with and damaging the finish. Do not allow moisture to be trapped between the finished surface and the wrapping material.
   
   C. PROTECT MATERIALS AFTER ERECTION- Wrap or erect visqueen screens. Cement, plaster, terrazzo, and other alkaline materials are very harmful to the finish and must be removed with water and mild soap before setting occurs. Under no circumstances should these materials be allowed to dry or permanent staining will occur.

2. GENERAL GUIDELINES- The following practices are recommended for all installations.
   
   A. Review the approved shop drawings to become thoroughly familiar with the project.
   
   B. All thermal strut horizontal and sill members require sealant applied to the upper most cavity of the thermal strut race. Refer to typical details of this system.
   
   C. Install all framing materials plumb, level, and true. Proper alignment and relationships to benchmarks and column center lines, as established by the architectural drawings and the general contractor, must be maintained.
SECTION I - GENERAL NOTES AND GUIDELINES

D. The sequence of erection should be coordinated with the project superintendent so delays are prevented and the risk of material damage is minimized. If preset anchors are required, coordinate with the general contractor and supervise the locations.

E. Verify that all job site conditions and accompanying substrates receiving the installation are in accordance with the contract documents. If deviations occur, notification must be given IN WRITING to the general contractor and differences resolved before proceeding further with the installation in the questionable area.

F. Coat all aluminum, to be placed directly in contact with masonry or dissimilar materials, with a heavy coating of bituminous primer such as zinc chromate.

G. Follow EFCO’s framing installation and glazing instructions.

H. Verify the contents of all material shipments upon arrival. Verify quantities and correct finishes.

I. Throughout these instructions the term SEALANT will appear. For the purpose of these instructions, sealant is defined as follows:

SEALANT- A weather resistant, gunniable, liquid filler which when dry provides a resilient, flexible air and water seal between similar and dissimilar materials. Use Dow Corning 795 or equal. All sealant must meet FEDERAL SPECIFICATION TT-S-00227E, TT-S-001543A, AND TT-S-00230G.

NOTE: All sealant must be compatible with all surfaces on which adhesion is required, including other sealant surfaces. All frame surfaces should be clean and dry. All perimeter substrate shall be cleaned and properly treated to receive sealant.

NOTE: DUE TO THE SCREW TENSIONS REQUIRED FOR CORRECT INSTALLATION, IT WILL BE NECESSARY TO ‘WAX’ THE FRAME ASSEMBLY SCREWS TO PREVENT GALLING AND BREAKAGE.

TOOLS NEEDED:

1. Wedge hammer and/or gasket roller
2. Putty knife
3. Level and square
4. Cutting tool, hand pruner, etc.
5. #2 Phillips tipped screwdriver
6. Flat pry bar
7. Soft faced mallet
8. Tube wax
### SECTION II: PARTS IDENTIFICATION

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<th>DESCRIPTION</th>
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MH 11/20018
# SECTION II: PARTS IDENTIFICATION

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## 955 TECHSET
### SECTION II: PARTS IDENTIFICATION

#### CONT.

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SECTION III - DRILL JIGS

DRILL JIG #H262 CAN ALSO BE PURCHASED

DRILL FIXTURE FOR INTERMEDIATE HORIZONTALS, VERTICALS AND JAMBS

The drill guide shown below is designed to be field prepared from 1" x 3" aluminum angle. The drill guide is used by aligning off the back and ends of the member being prepared.

[Diagram]

A = #7 (.201 dia.) drill for all screw spline

B = #21 (.159 dia.) drill shear block to vertical mullion

C = #7 (.201 dia.) intermediate horizontal to shear block

REF. TOOLING DRAWING (001052 S.B. TO VERT. PREP)

REF. TOOLING DRAWING (001051 HORIZ. END PREP)
SECTION III - DRILL JIGS

DRILL JIG #DJ06 FOR INTERMEDIATE HORIZONTALS #1G72 AND #1G73

The drill guide is used by aligning off the back and ends of the members being prepared for shear blocks.

For the left side vertical members, drill from this side as shown below. For the right side vertical members, turn the drill jig over and drill from the opposite side.

- **B** = #21 (.159 dia.) drill shear block to vertical mullion
- **C** = #7 (.201 dia.) intermediate horizontal to shear block
SECTION III - DRILL JIG GUIDE

DRILL FIXTURE FOR INTERMEDIATE HORIZONTALS, INTERMEDIATE VERTICALS AND JAMBS

The drill guide is used by aligning off the back and ends or center lines of the member being prepared.

REFER TO PAGE #6 FOR SPECIFIC HOLE LOCATIONS.

= A = #7 (.201 dia.) drill for all screw spline

= B = #21 (.159 dia.) drill shear block to vertical mullion

= C = #7 (.201 dia.) intermediate horizontal to shear block
SECTION III - DRILL JIG GUIDE

LEFT JAMB SHOWN, RIGHT JAMB AND INTERMEDIATE VERTICALS ARE PREPARED SIMILAR.

REFER TO PAGE #6 FOR SPECIFIC HOLE LOCATIONS ON THE DRILL JIG.

Detail #2
SECTION III - DRILL JIG GUIDE

DRILL JIG #DJ06 FOR INTERMEDIATE HORIZONTALS #1G72 AND #1G73

INTERMEDIATE HORIZONTAL TO SHEAR BLOCK ATTACHMENT

This drill guide is used by aligning off the ends of the horizontal intermediate member being prepared.

See Detail #3 below.

Detail #3

⊕ = C = #7 (.201 dia.) intermediate horizontal to shear block
REFER TO PAGE #7 FOR SPECIFIC HOLE LOCATIONS ON THE DRILL JIG.

LEFT JAMB SHOWN, RIGHT JAMB AND INTERMEDIATE VERTICALS ARE PREPPED SIMILAR.

Detail #4

= B = #21 (.159 dia.) drill shear block to vertical mullion.
SECTION IV - FABRICATION

HEAD AND SILL FABRICATION AND PREPARATION

STEP #1
The series 955 Tech Set system is designed to be fabricated with the head and sill running through. The jambs and vertical mullions will meet at the top of the sill and at the snap location of the removable stop at the head.

Cut the head and sill members to the rough opening measurement minus (-) the vertical caulk joints. This dimension could be 1/4" through 3/4" depending upon the condition. See Elevation #1 below.

STEP #2
Establish and mark the mullion center lines and jamb locations on the head and sill. Mullion widths are 2 3/8" as shown below.

STEP #3
Position the drill guides over the mullion and jamb locations and drill as required. See pages #6 thru #11 for the drill jigs and drill jig guides required for assembling this system.

STEP #4
Drill the sill member for two 1/4" weep holes per daylight opening, at 6" from each mullion. See Elevation #1 above and Detail #5 & #6 on page #13.

JDA 9/2000
**SECTION IV - FABRICATION**

**STEP #5**
Cut the HCW3 weep baffles in half. One (1) HCW3 will make two (2) weep baffles to be used at the sill member. See detail #6 below.

**Detail #5**

**Step #6**
Install one (1) #FS96 end dam to each end of the head and sill as shown in details #7 and #8 below.
Whether installed now or just prior to frame installation, let the silicone at the end caps setup to minimize knocking them loose.

If a splice joint is being incorporated into the elevation it will have to be slid into the glazing pockets before the system is set in place.

Center the splice sleeve on the 1/2" joint gap and seal the perimeter of the sleeve with sealant. Set extra anchors within 6" from each side of the splice joint.

**Detail #6**

**Detail #7**

**Detail #8**

SEAL ALL INTERIOR CORNERS WITH SEALANT
INTERMEDIATE HORIZONTAL FABRICATION AND PREPARATION

STEP #7

Cut the intermediate horizontals to D.L.O. width. Cut the glass stops for the intermediate horizontals and head member to D.L.O. minus (-) 1/32" for ease of installation.

STEP #8

Prep the ends of the intermediate horizontals for the horizontal to shear block prep. See detail #9 below. See page #6 for the drill guide required to correctly identify the holes required for the shear block attachment.
SECTION IV - FABRICATION

INTERMEDIATE HORIZONTAL FACE

STEP #9
Cut horizontal face member (#8553) to span 3 lites (or a maximum of 15'-0"). Allow 1/4" at splice joints for expansion. Splice ONLY at center lines of vertical mullions. See Detail #10 below.

NOTE: Due to the expansion characteristics of the aluminum face member and also to maintain the 1/4" splice joint, 15 feet is the recommended cut length for the face member. Use #WM96 bond breaker tape, 3" long and trimmed to fit, for the face splice caulking backer.

STEP #10
Weep baffles are cut from (1) HCW3, halved and then quartered. This provides 8) weep baffles per HCW3 to be used at the horizontal face. See Detail #11 below.

Detail #10

Detail #11
SECTION IV - FABRICATION

INTERMEDIATE HORIZONTAL FACE

STEP #11
Drill 1/4" diameter weep holes in the horizontal face member at 48" on center or 2 per D.L.O. at quarter points. Install weep baffles over the holes with silicone. Do not plug the weep holes with silicone. See Detail #12 below.

STEP #12
Install the exterior glazing gasket into the face member at this time, (WNB9). Be sure to add 2% to the cut length to prevent gaps at gasket intersections. See Detail #12 above.
SECTION IV - FABRICATION

INTERMEDIATE HORIZONTAL FACE

JAMB AND VERTICAL MULLION FABRICATION AND PREPARATION

STEP #13
If the project is being built as head and sill thru, the vertical members will be cut to D.L.O. plus (+) 1 3/16".

STEP #14
The vertical members must also be coped to fit into the head. See details #13 and #14 below.

STEP #15
If there are NO horizontal members being used, the vertical members are now ready to be screw spline attached to the head and sill members. Refer to page 22 for assembly procedures.
STEP #16

If horizontal intermediates are being incorporated, the verticals must be prepped for the horizontal shear block attachment. See detail #15 below to determine the horizontal location.

Refer to pages #6 through #11 for the drill jigs and the drill jig guides to correctly identify the required holes to drill for the particular horizontal / shear block being used.
SECTION IV - FABRICATION
CONT.

HORIZONTAL INTERMEDIATE SHEAR BLOCK FABRICATION {K368 FABRICATED PACKAGE}

STEP #17
The intermediate horizontal shear blocks are to be prepped from #EX43. One (1) #EX43 is required at each end of the intermediate horizontal. See detail #16 below for preparation.

SILL ANCHOR FABRICATION {FS99 & FT01 ARE FABRICATED PARTS}
There are two (2) types of sill anchors used for the 955 system. Cut and fabricate #8694 or #8635 as shown in detail #17 below.
SECTION IV - FABRICATION

HEAD ANCHOR FABRICATION

STEP #19
Cut and fabricate the head anchors from #8695 as shown in detail #18 below.

DETAIL #18

SETTING BLOCK FABRICATION

K196 FOR 1G73
FABRICATED PACKAGE IS AVAILABLE.

STEP #20
Cut and fabricate the setting blocks from #1918 extrusions. Two (2) setting blocks are required per daylight opening. See detail #19 below for fabrication.

STEP #21
Install one (1) #HN13 to the top of #1918 for use with 1G73 intermediate horizontal.

DETAIL #19
SECTION V - ASSEMBLY

FRAME ASSEMBLY - HORIZONTAL PREPS

STEP #24 - Standard Horizontal
Butter the ends of the captured intermediate horizontals with silicone sealant.
See detail #22 below.

Apply a continuous bead of silicone and tool into the thermal strut race.

STEP #25 - Butt Glazed Horizontal
Butter the ends of the butt glaze intermediate horizontals with silicone sealant.
See detail #23 below.

Apply a continuous bead of silicone and tool into the thermal strut race.
SECTION V - ASSEMBLY

FRAME PREASSEMBLY
with standard verticals and horizontals.

STEP #26
Attach the intermediate horizontal shear blocks to the vertical mullions and jambs. See detail #24 below.

STEP #27
Attach the intermediate horizontals to the vertical mullions and jambs. See detail #24 below.

Detail #24
SECTION V - ASSEMBLY

STEP #28
Butter the top ends of the jambs and vertical mullions. Then attach the head to the verticals with STV6 screws. It will be necessary to coat the screws with wax before installation to prevent stripping. See details #25 and #26 below.

STEP #29
Butter the bottom ends of the jambs and vertical mullions. Then attach the sill to the verticals with STV6 screws. It will be necessary to coat the screws with wax before installation to prevent stripping. See details #27 and #26 below.

STEP #30
Depending on the height of the assembled frame, it may be easier to install the exterior glazing gasket (WMB9) with the frame laying flat. This is at the discretion of the installer.

Be sure to add approximately 2% of the cut length to prevent gaps at the gasket intersections.
SECTION V - ASSEMBLY

FRAME PREASSEMBLY

with butt glazed vertical intermediates and roll on face horizontals.

STEP #31
Attach the intermediate horizontal shear blocks to the vertical mullions and jambs. See detail #28 below.

STEP #32
Attach the intermediate horizontals to the vertical mullions and jambs. See detail #28 below.

Detail #28
SECTION V - ASSEMBLY

CONT.

STEP #33
Butter the top ends of the jambs and vertical butt glaze Mullions. Then attach the head to the verticals with #STV3 screws. It will be necessary to coat the screws with wax before installation to prevent stripping. See details #29 and #30 below.

STEP #34
Butter the bottom ends of the jambs and vertical butt glaze Mullions. Then attach the sill to the verticals with #STV3 screws. It will be necessary to coat the screws with wax before installation to prevent stripping. See details #31 and #30 below.

NOTE THE GAP BETWEEN THE HORIZONTALS. THIS WILL BE FILLED WITH THE K461 BRIDGE ASSEMBLY. REFERENCE SECTION VII

STEP #35
Depending on the height of the assembled frame, it may be easier to install the exterior glazing gasket (WMB9) with the frame laying flat. This is at the discretion of the installer. Be sure to add approximately 2% of the cut length to prevent gaps at the gasket intersections. Seal all gasket intersections with sealant.
SECTION VI - FRAME INSTALLATION

HORIZONTAL SILL ANCHOR INSTALLATION

STEP #36
At both ends of the rough opening, mark where the face of the frame is intended to be located. Snap a chalk line from both marks. From this dimension, snap another line 3 1/8" back toward the interior of the opening. This will be the center line of the sill anchor prep. See detail #32 below.

STEP #37
Mark the center lines of the frame mullions on the rough opening. Measure over from the mullion and jamb centers 6" and 16" O.C. and mark the interior line. This will be the center line of the anchor fastener. Drill the holes for 1/4" diameter fasteners. Shim and install the anchor. See detail #33 below.
SECTION VI - FRAME INSTALLATION

HEAD ANCHOR AND VERTICAL SILL ANCHOR INSTALLATION
{FS97 & FT01 - FABRICATED PARTS}

STEP #38
Mark the center lines of the frame mullions on the rough opening. Measure over from the mullion and jamb centers 6" and 16" O.C.
The vertical sill anchors, FT01, will be installed prior to setting the assembled frame, as shown in Detail #35 below.
The slide in head anchors, FS97, are installed into the assembled frame head, 2 per D.L.O. and maintain the anchor dimensions as above.
Refer to Detail #34 below and page #29.
SECTION VI - FRAME INSTALLATION

FRAME INSTALLATION INTO THE OPENING
{FS97, FT01 & FS99 - FABRICATED PARTS}

STEP #39
Slide the FS97 head anchor into the head as shown in Detail #36 below.

STEP #40
The 955 system is designed to rotate into the opening from the interior of the building. Align the sill over the sill anchors and rotate the frame into the opening and fasten as required. See details #37 and #38 above.

Detail #36

Detail #37

Detail #38
SECTION VI - FRAME INSTALLATION

BACKER ROD / EXTERIOR SEAL AND EXTERIOR GASKET

STEP #41
Install a continuous row of backer rod at the exterior side of the frame and seal with silicone sealant. See the various details below.

STEP #42
If the exterior glazing preset gasket (WNB9) has not been installed at this time, do so now. Be sure to add 2% of the cut length to the gasket to prevent gaps at the gasket ends due to gasket shrinkage.
SECTION VII - GLASS INSTALLATION

SETTING BLOCK INSTALLATION

{HN35 SETTING CHAIR PACKAGE}

STEP #43
Install (2) HN35 setting blocks into each sill opening at 1/4 points. See details #40 and #41 below.

STEP #44
Install (2) HN07 setting blocks into the intermediate horizontals at 1/4 points. See details #42 and #40 below.

STEP #45
Install (1) HN92 setting block (side block) into the shallow pocket of the intermediate verticals at the midpoint of the light. See details #43 and #40 below.
This end extends into the vertical glazing pocket and over the lower glass unit’s corner.

STEP #46

HWD1 WATER DEFLECTOR
AT VERTICAL INTERMEDIATE,
LEFT JAMB, AND RIGHT JAMB

Remove the paper backing and position the water deflector as shown in this figure. It will be necessary to set the water deflector in a small amount of sealant, to ensure that it stays in place when setting the lower glass unit.

Detail # 44
1G67 STD.
1G72, 1G73, & 2G23 OPT.

Detail # 45
TYP. VERTICAL
HWD1 WATER DEFLECTOR
SET IN SEALANT

TYP. HORIZONTAL
GLASS UNIT BELOW
SECTION VII - GLASS INSTALLATION
USING BUTT GLAZED MULLIONS

STEP #47
The horizontal bridge is intended to prevent any water in the glazing pocket from running down the butt glazed vertical intermediate at the horizontal connection. Correct sealing is important in this step.

Apply a bead of sealant around the opening of the left and right horizontals and across the vertical butt glaze mullion. This is to set the bridge assembly into. See detail #47 below.

See detail #47 below.
SECTION VII - GLASS INSTALLATION

USING BUTT GLAZED MULLIONS

CONT.

STEP #48

AFTER THE BRIDGE IS SET IN PLACE, SEAL AROUND BRIDGE PERIMETER WITH A NONHARDENING BUTYL TYPE SEALANT.
SECTION VII - GLASS INSTALLATION
USING BUTT GLAZED MULLIONS

CONT.

STEP #49
Follow the glass setting procedure as shown in Detail #50 below and Detail #51 on page #36.

Detail #49

STEP #50
Position the glass units as shown in Detail #50 below maintain the appropriate glass bite per mullion.

Detail #50
SECTION VII - GLASS INSTALLATION

USING BUTT GLAZED MULLIONS

STEP #51
Install the butt glazing spacer (WSA1) between the butt glaze mullion and the glass unit. This gap should be small enough to provide tension on the spacer to hold it in place. The space will bottom out against the locator on the mullion.

NOTE:
Any type of temporary glazing retainer will have to be field fabricated and installed by the contractor.

STEP #52
Be sure the glass units are set correctly and the butt glaze spacer is bottomed out, before proceeding with the application of the structural silicone.

Fill the cavity created by the spacer with structural silicone, tying the glass unit, the spacer, and the butt glaze mullion together.

A clean professional application of the structural silicone is required here. This structural silicone joint will require an overnight cure.
SECTION VII - GLASS INSTALLATION

USING BUTT GLAZED MULLIONS

STEP #53
After the interior structural joint has cured overnight the exterior joint seal can then be applied. Use backer rod to fill the cavity to 2/3 full leaving enough void to seal the exterior glass panes together. See Detail # 53 below.

A clean professional application of the structural silicone is required here.

Detail #53
STEP #54

The glass size formulas for the 955 system are based on D.L.O. plus 1", horizontally and D.L.O. plus 1" or 7/8", vertically. This applies to both 1" and 1/4" glazed systems. If only a head and sill are used, use D.L.O. + 1". If any intermediate horizontals are used, the formula should be D.L.O. + 7/8". See detail #54 below.

Detail #54

GLASS INSTALLATION
SECTION VII - GLASS INSTALLATION

ANTIWALK BLOCK INSTALLATION

STEP #56
Choose the appropriate antiwalk block for the required glass type. Use block #HN50 at 1/4" glass and #HN53 at 1" glass. Compress the antiwalk and insert into the deep pocket at midpoint. See the details below.

INTERIOR GASKET INSTALLATION

STEP #57
Install the horizontal removable glass stops to the openings at the head and intermediate horizontals. See detail #57 above.

STEP #58
Cut the drive-in wedge gasket (W105) to the height and width D.L.O (+) 2%. Install the vertical gasket first, then follow with the horizontal gasket. Insert the ends of the gasket first, then set the middle and proceed to set the middle of the loops until the gasket is installed.
SECTION VIII - DOOR FRAME INSTALLATION

NOTE: If an entrance frame is required, it must be installed first.

See the parts description pages for the appropriate door jamb and transom bar for the system being used.

STEP 1) Correctly locate the entrance frame in the opening.

STEP 2) Apply a bead of sealant around the interior portion of the jamb to set the member into, and tie the side lite sealant or condition sealant into the bead of sealant to be applied under the threshold. The concept is to have a continuous bead of sealant at the interior and connected from the sill flashing condition through the door jamb and continuing under the threshold to the opposite door jamb.

STEP 3) Set assembled door frame in opening, plumb, and level.

STEP 4) Anchor the door frame as indicated below in Detail #59 and also in Detail #60, #62, and #64 through Detail #66 on page # 41.

NOTE: The door jamb runs to the floor and is cut longer than any other vertical member.

K-124/K-125 Threshold Clip & Screws @ Offset Pivots & Butt Hinges
K-153/K-154 Threshold Clip & Screws @ Concealed Rod Panic

Detail # 59

SIDE LITE SILL MEMBER

Continuous bead of sealant

THRESHOLD (9950)

JDA 9/2000
SECTION VIII - DOOR FRAME INSTALLATION

C.O.C. APPLICATION

At condition attach through the header with flat head screws, located 6" from the ends and 24" on center, maximum spacing.

SURFACE CLOSER APPLICATION

Attach through the threshold with flat head screws. #9950 Shown.

Continuous bead of sealant at the back of the threshold and sides of the jambs and tied into the mullion sealant at the condition.

Door jamb set in sealant.

Anchor through the jamb at the door location.

SEE THE DOOR INSTALLATION INSTRUCTIONS # Y015
SECTION VIII - DOOR FRAME INSTALLATION

TRANSOM JAMB APPLIED GLAZING

Detail # 67

VERTICAL CUT LENGTH FORMULA
for 8579 / 8578 APPLIED GLAZING

= D.L.O. minus 1/16"

Detail # 68
Locate the header clip onto the end of the header, fasten the clip to the header with the screws provided in the clip package.
Apply sealant to the ends of the header and install with the screws provided.
Attach the header to the condition with 1/4" dia. fasteners (min.), 6" from the jambs and 16" on center maximum.
Apply a thin bead of sealant vertically to set the screw applied glazing stop into. Then fasten into place with #STU8 screws, 4" from ends and 12" on center.
Apply sealant to the ends of the header and vertical glazing adaptor as shown in Detail #69 above.