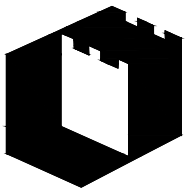
FG-5100 IMPACT RESISTANT STOREFRONT SYSTEM INSTALLATION AND GLAZING MANUAL



Oldcastle BuildingEnvelope™

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GENERAL INFORMATION

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Oldcastle BuildingEnvelope FG-5100 (2-1/2" x 5") impact resistant storefront system represents the latest in product development technology. This system was especially designed to meet the stringent requirements of the International Building Code for glass and glazing systems. FG-5100 successfully passed a series of large missile impact and cyclic wind test with a variety of impact-resistant glass.

BUILDING CODES:

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

STRUCTURAL SEALANTS:

Dow Corning 995 structural sealants were used on the FG-5100 test specimen for glass to metal adhesion. Dow Corning 995 sealant must be used for glass to metal adhesion with FG-5100.

PERIMETER SEALANTS:

Due to varying job conditions, all perimeter sealants used should be approved by the sealant manufacturer to ensure the sealant will function for the conditions shown on these instructions and shop drawings. Sealants must be compatible with all surfaces in which adhesion is required, including other sealants surfaces. Use primers where directed by sealant manufacturer. Be sure to properly store sealants at recommended temperature and check container for remainder of shelf life before using. Dow Corning 795 or 995 silicone sealant was the perimeter sealant used on the FG-5100 test specimens.

MATERIAL HANDLING:

SHOP

1. Cardboard wrapped or paper interleaved material must be kept dry.
2. Check arriving materials for quantity and keep record of where various materials are stored.

JOB SITE

1. Material at job site must be stored in a safe place well removed from possible damage by other trades.
2. Cardboard wrapped or paper interleaved materials must be kept dry.
3. Keep record of where various materials are stored.
4. Protect materials after erection. Cement, plaster, and other alkaline solutions are very harmful to the finish.

GENERAL INFORMATION

CLEANING

Aluminum shall be cleaned with plain water containing a mild detergent, or a petroleum product such as white gasoline, kerosene, or distillate. No abrasive agent shall be used.

GENERAL CONSTRUCTION NOTES

A. Study these instructions, shop drawings, erection drawings and architectural drawings before starting any work.

B. All materials are to be installed plumb and level.

C. All work should start from an established benchmark and column centerlines established by the architect and the general contractor.

D. Completely check construction which will receive your materials against contract documents. Notify the general contractor by letter of any discrepancies before proceeding with your work since this constitutes acceptance of work by other trades.

E. Protect all aluminum to be placed directly in contact with uncured masonry or incompatible materials with a heavy coat of zinc chromate or bituminous paint.

F. Follow installation and glazing instructions.

G. After sealant is set and a representative amount of the wall has been glazed (500 square feet or more), run a water hose test to check installation. On large jobs, hose test should be repeated during glazing operation. Test should be conducted in accordance with AAMA 501.2 specifications.

FRAME FABRICATION

1.1 Establish Frame Size & Cut Metal to Length

Measure width of rough opening.

A. Measure opening at bottom.

B. Measure opening at center.

C. Measure opening at top.

The frame width will be the smallest dimension less 1/2" allowing for a 1/4" caulk joint at each jamb.

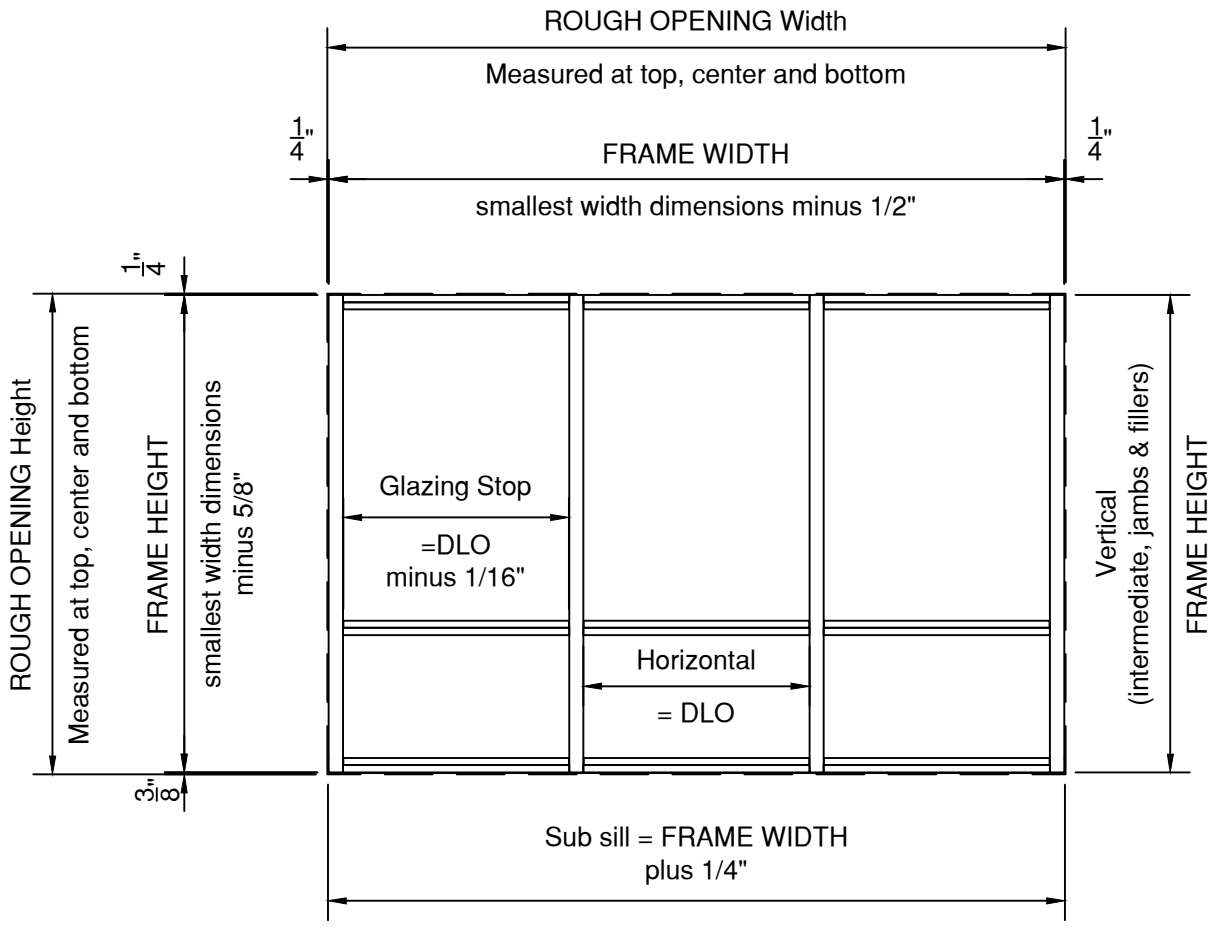
Repeat process to determine frame height.

A. Beginning on left side of opening, measure dimension from top to bottom.

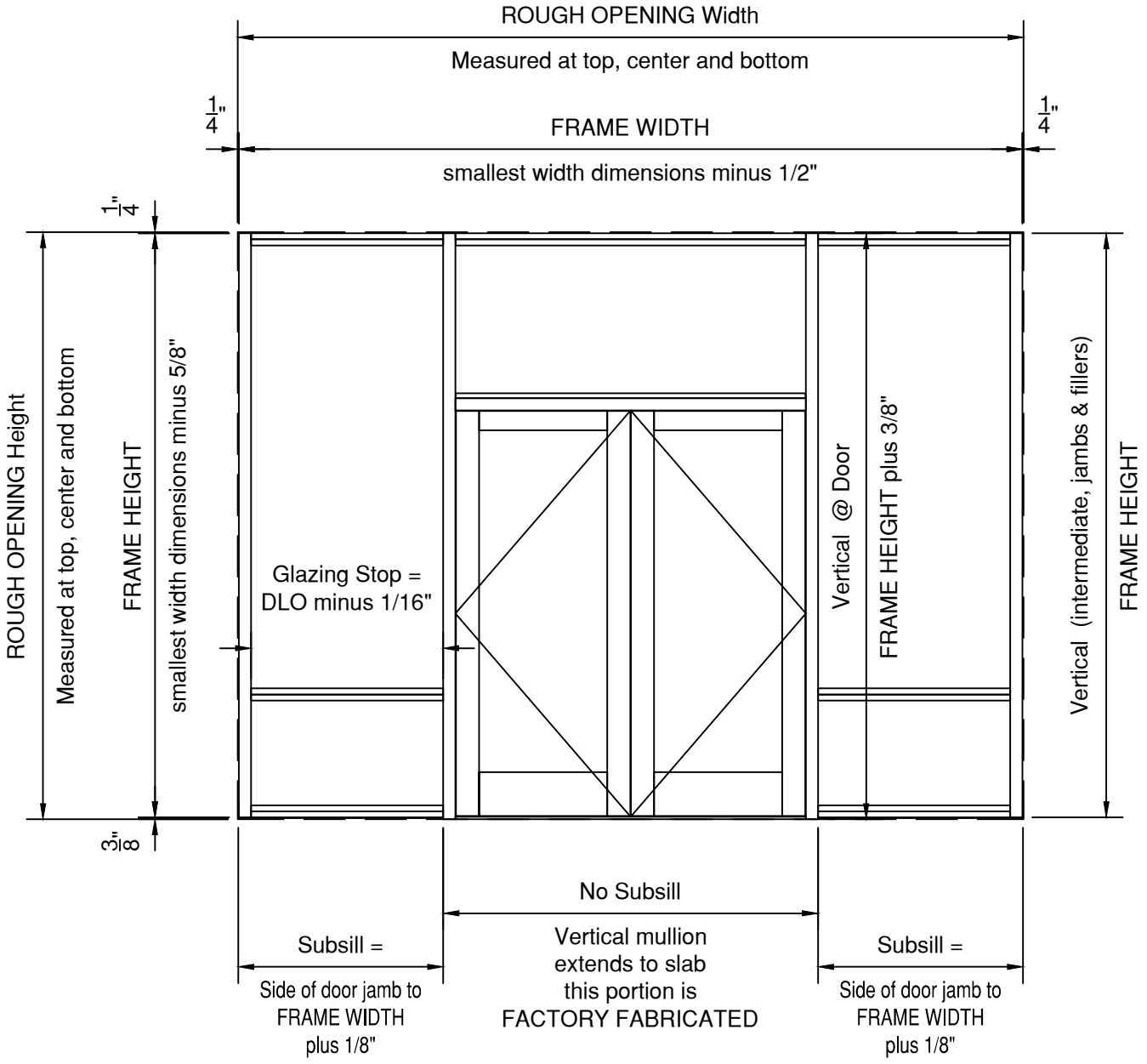
B. Repeat at center.

C. Repeat at right side of opening.

The frame height will be the smallest dimension less 5/8" to allow for subsill and a 1/4" caulk joint at the head and sill.



FRAME FABRICATION



FRAME FABRICATION

1.2 Cut material to size.

Framing Members

FG-5180 Subsill flashing at frames without doors	Frame Width plus (+) 1/4".
FG-5180 Subsill at entrance locations	Door jamb to Frame Width plus (+)1/8". (Subsill is to butt tight against door jamb(s) and is cut 1/8" longer than width of side light(s) on either side of door frame.)

Verticals

FG-5173 FG-5174 Jambs and FG-5167 filler	Cut to Frame Height.
FG-5173 FG-5175 Vertical Mullions and FG-5179 filler	Cut to Frame Height.
FG-5200 Corner Mullion	Cut to Frame Height.

Horizontals

FG-5176 Horizontal and FG-5178 Head/Sill	Cut to D.L.O.
FG-5177 Glass Stops	Cut D.L.O. minus(-) 1/16"

1.3 Drill or punch holes in verticals for attaching horizontals.

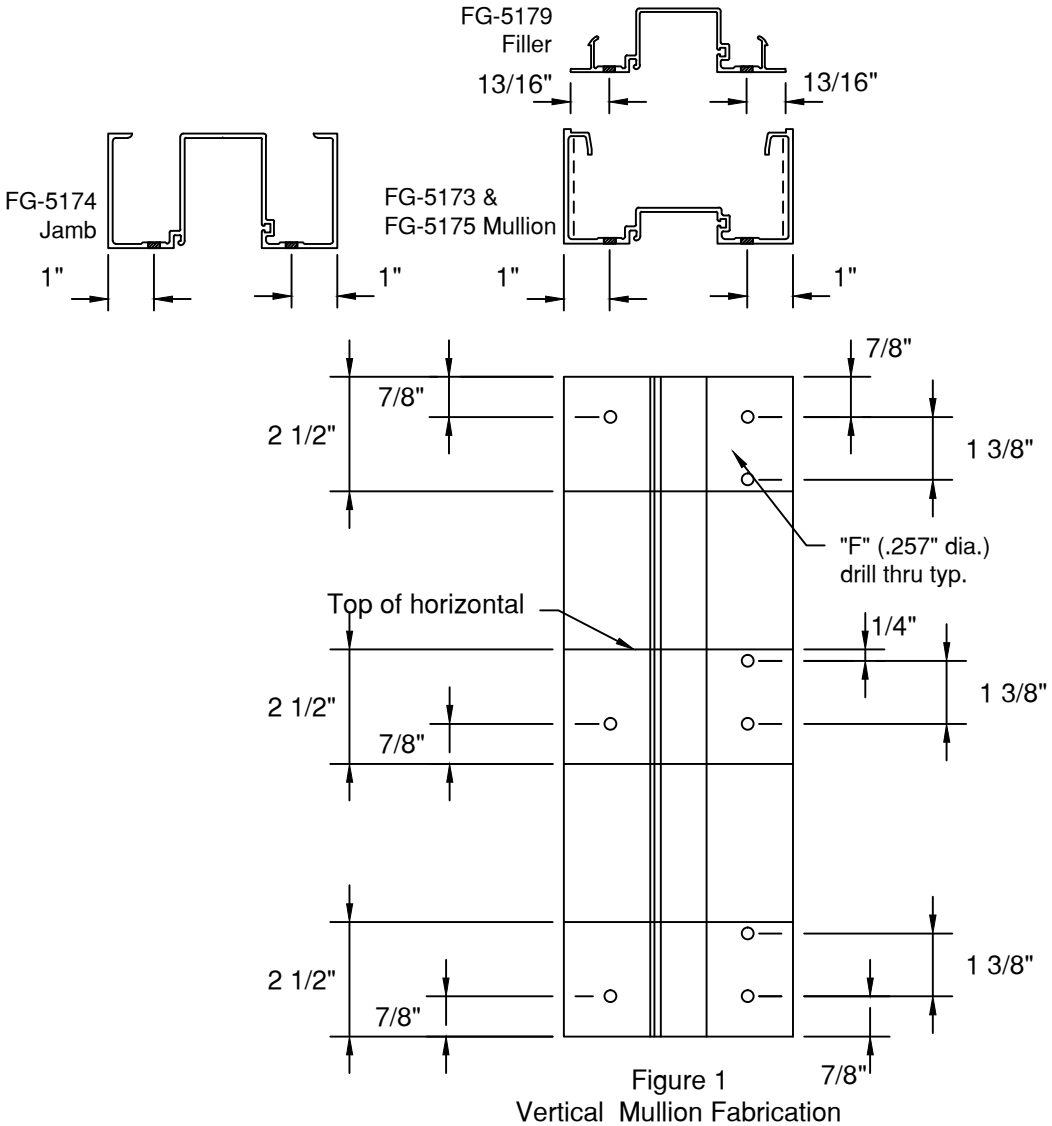


Figure 1
Vertical Mullion Fabrication

1.4 Fabricate steel reinforcement where required.

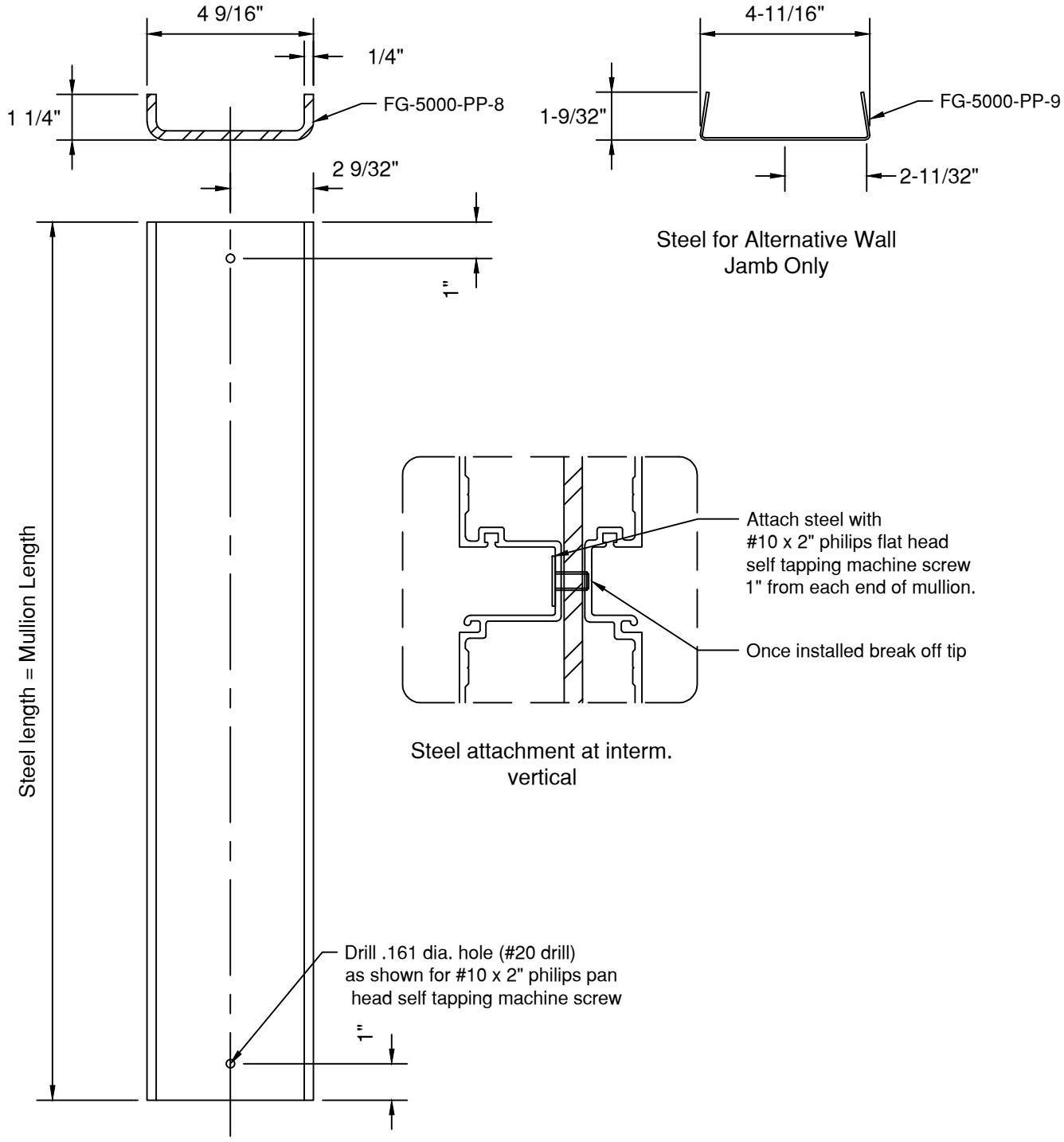


Figure 2
Steel Reinforcing

FRAME FABRICATION

DRY & WET GLAZED FRAMING

1.5 Fabricate head and sill for anchor holes, the number of anchors vary based on substrate material. Reference anchor charts for number of anchor holes and locations for each substrate. First hole is always 2" from end, each additional fastener hole are at required minimum spacing.

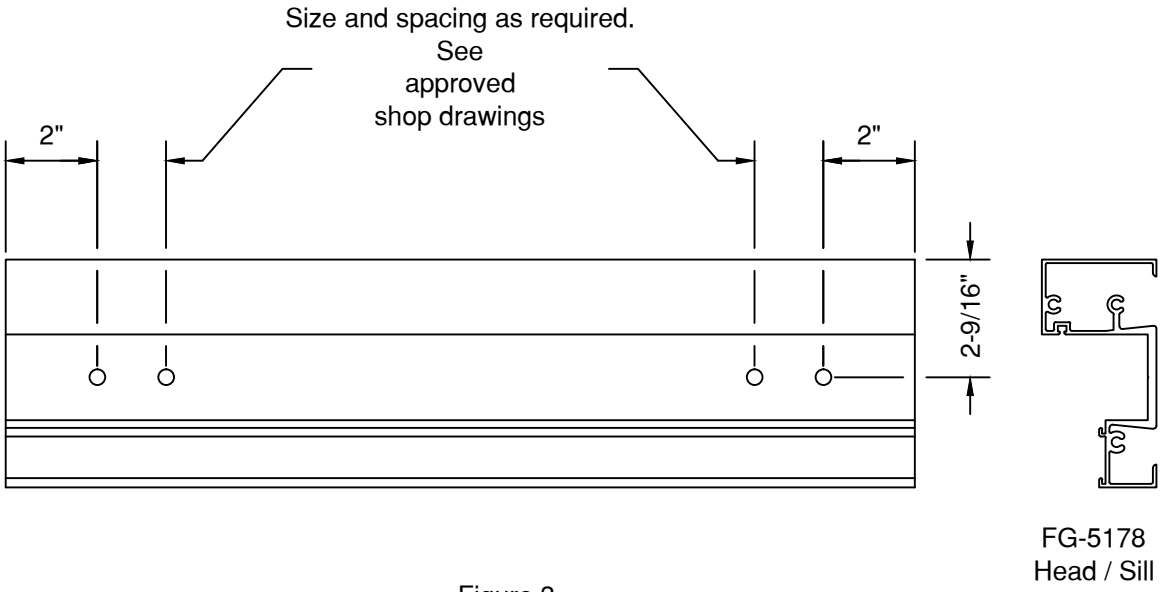


Figure 3
Head and Sill Fabrication

FRAME FABRICATION

DRY & WET GLAZED FRAMING

1.6 Fabricate wall jamb for anchor holes. number of anchors vary based on substrate material. Reference anchor charts on approved shop drawings, for locations for each substrate.
NOTE : refer to 1.3 and Figure 1 for hole pattern at head,sill and horizontals.

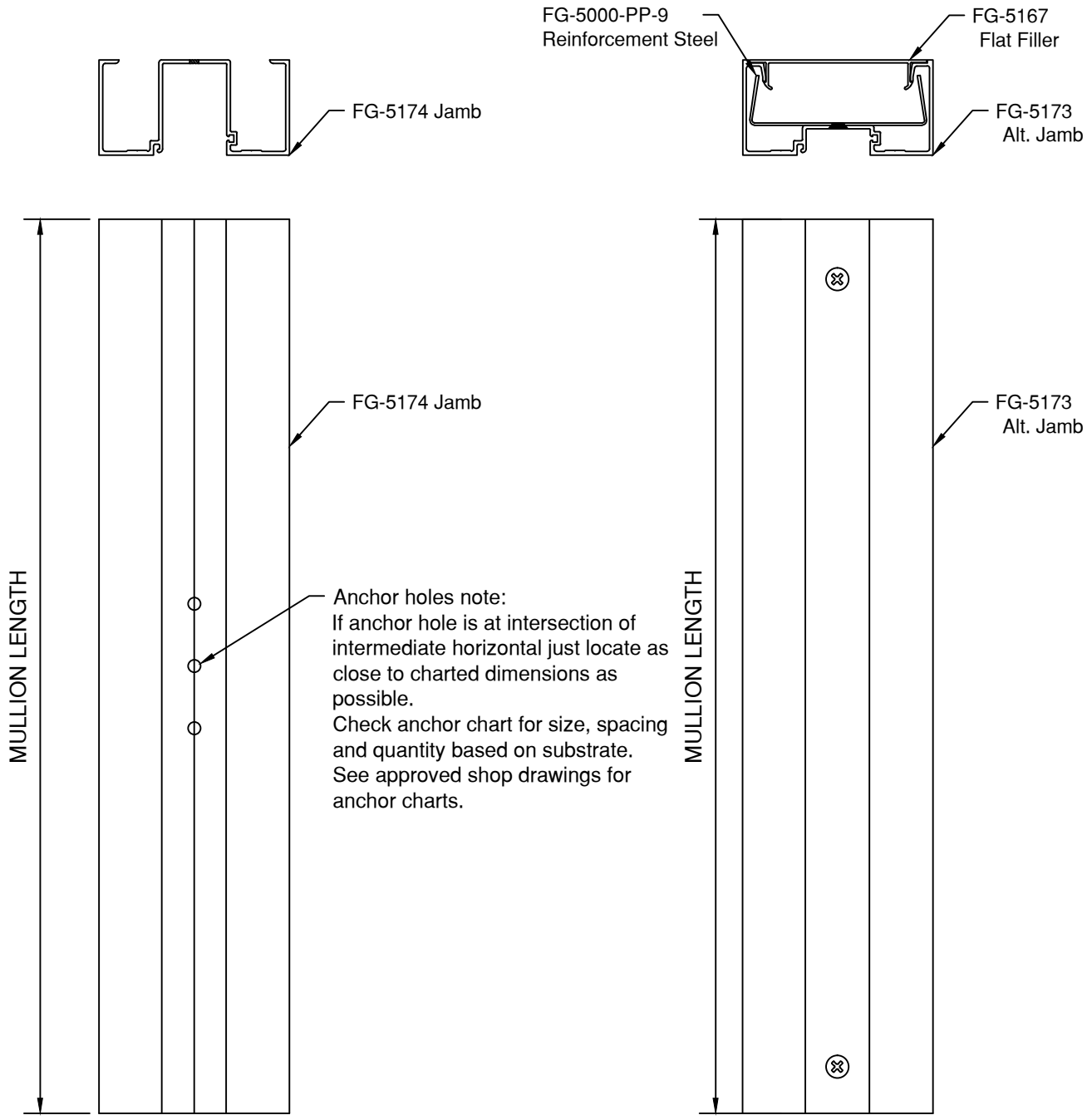


Figure 4
Jamb Fabrication

DRY & WET GLAZED FRAMING

1.7 Fabricate FG-5180 subsill flashing for end dams and non-structural fastener holes. Hole location dimensions for fasteners in subsill are approximate.

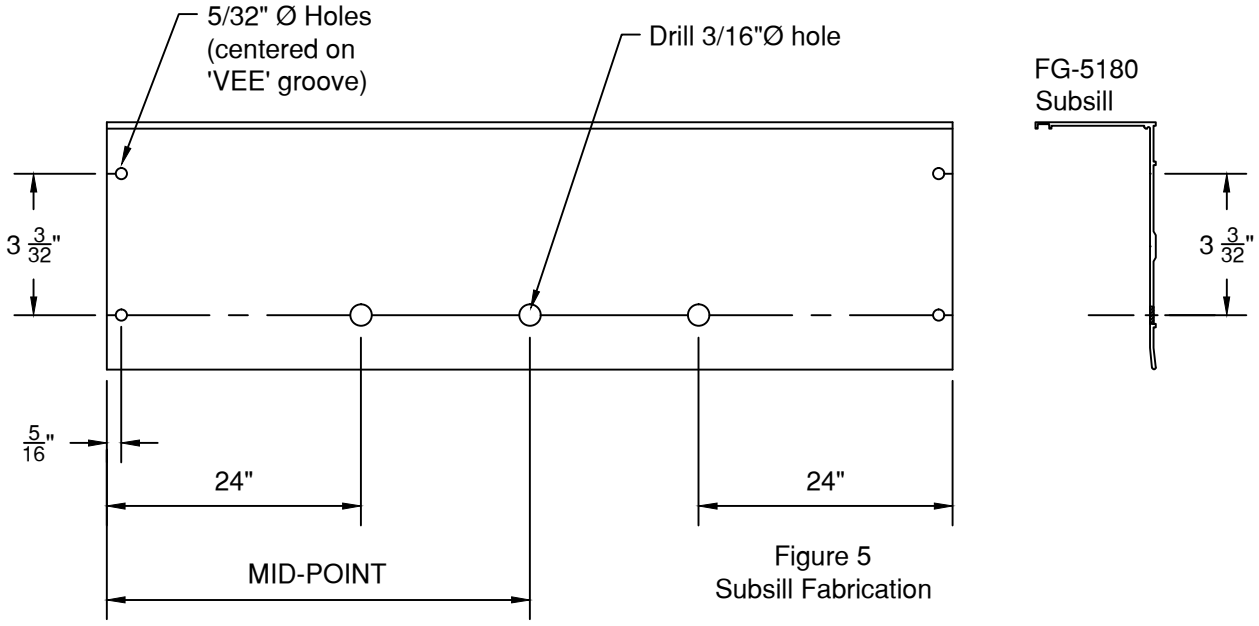


Figure 5
Subsill Fabrication

1.7.1 Drill 3/16 dia. hole for non-structural fasteners used for attaching subsill to substrate as shown. Repeat this hole pattern for each additional 12'-0" of length or as required to temporarily hold subsill in place until structural fasteners are installed.

1.7.2 Drill two each 5/32 dia. holes at each end (except end abutting a door jamb, at splice locations and mitered sections at corners) for attaching FG-5000-FP-10 end dams. Countersink for #10-24 x 3/8 UCPFH screw.

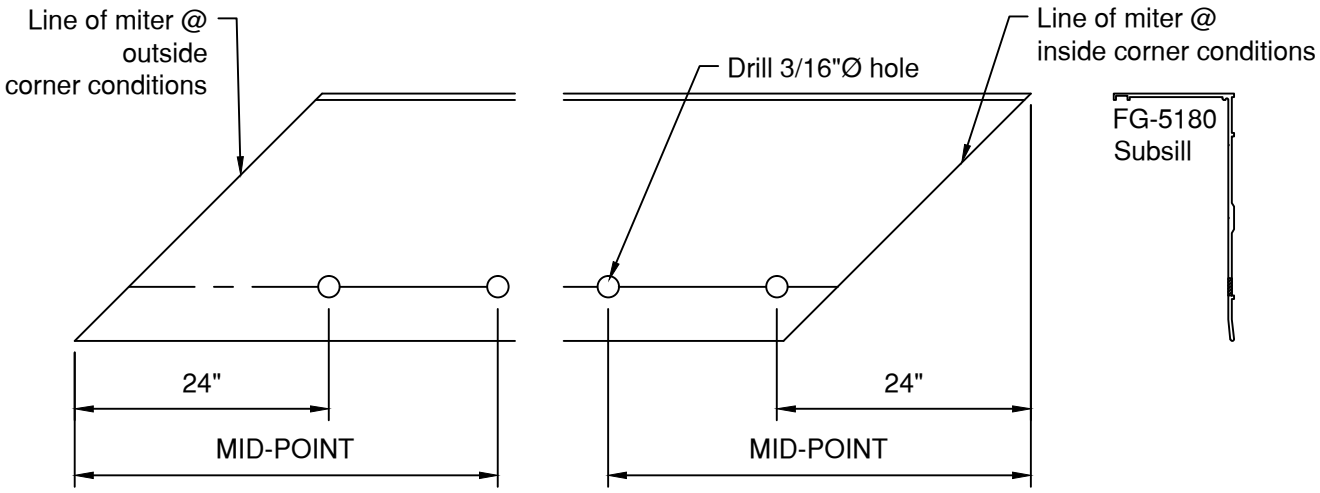


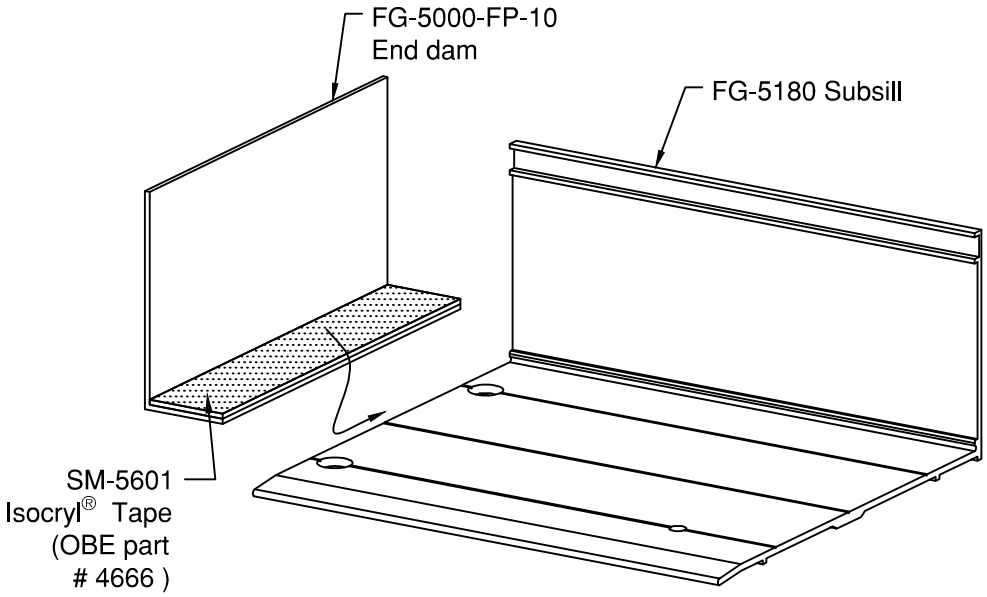
Figure 5A
Subsill Fabrication
at inside and outside corners

FRAME ASSEMBLY

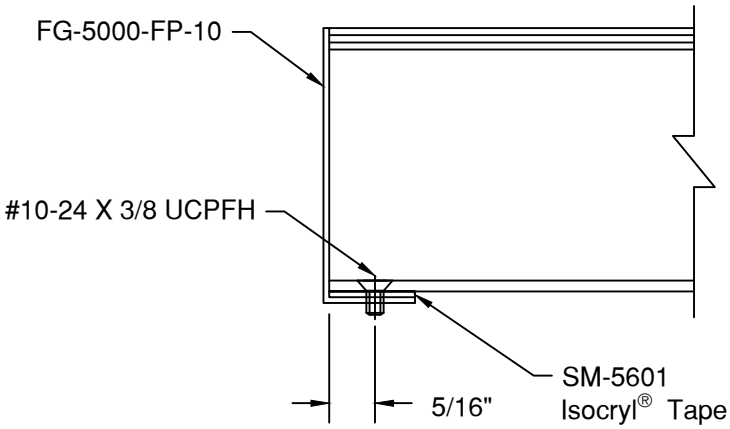
DRY & WET GLAZED FRAMING

2.1 Apply Isocryl tape to end dam and assemble to subsill.

See Figures 8 and 9 on Page 13 for sealant to be applied during installation.



Apply SM-5601 Isocryl tape to end dams as shown and stick to the ends of subsill



Match drill holes in subsill end dam with 5/32"Ø drill. Attach with two each #10-24 x 3/8" screws as shown.

Figure 6
Subsill End Dam Attachment

FRAME ASSEMBLY

DRY & WET GLAZED FRAMING

2.2 Frame Panel assembly.

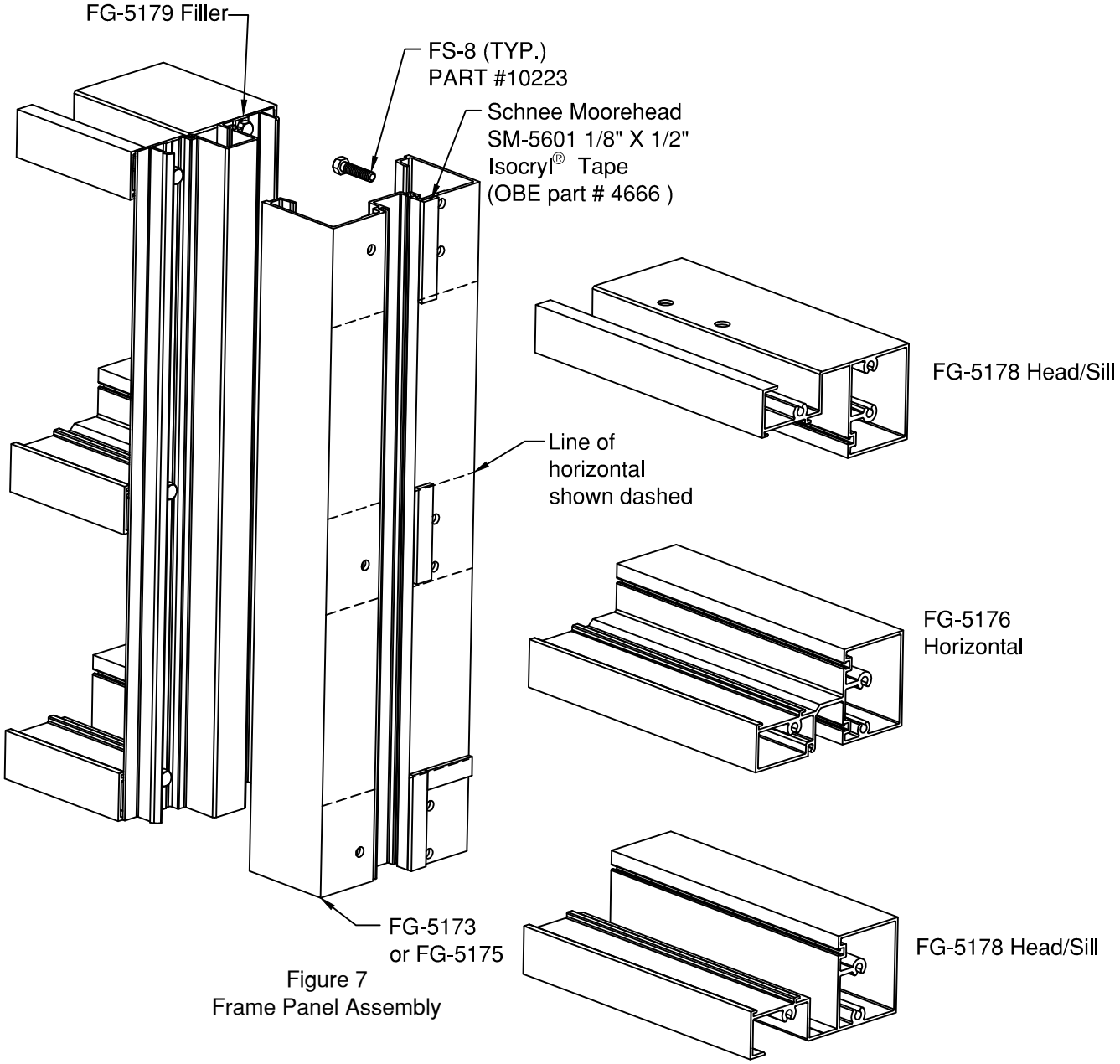


Figure 7
Frame Panel Assembly

2.2.1 Clean framing members at locations where Isocryl® Tape is noted to be attached. See Figure 7, at tape intersection there should be no gaps.

2.2.2 Install FG-5185 Wet Glaze spacer gasket on vertical members, prior to assembling horizontals, sill and head members. Spacer gasket runs through entire length of vertical members. FG-5948 Dry Glaze interior gaskets are installed after assembly **See Figure 17 on Page 20**.

2.2.3 Attach horizontals to verticals using (3)FS-8 (#14 x 1" sts spline screws) Trim excess sealant tape at joints with razor knife. DO NOT PULL TAPE TO TRIM. **See Figure 1 Page 6** for hole prep locations.

DRY & WET GLAZED FRAMING

3.1 Subsill installation

3.1.1 Position fabricated subsill with end dams into opening. Center into opening allowing shim space at jambs. Shim to level with 1/4" of shim @ highpoint of opening, adding shims at each fastener.

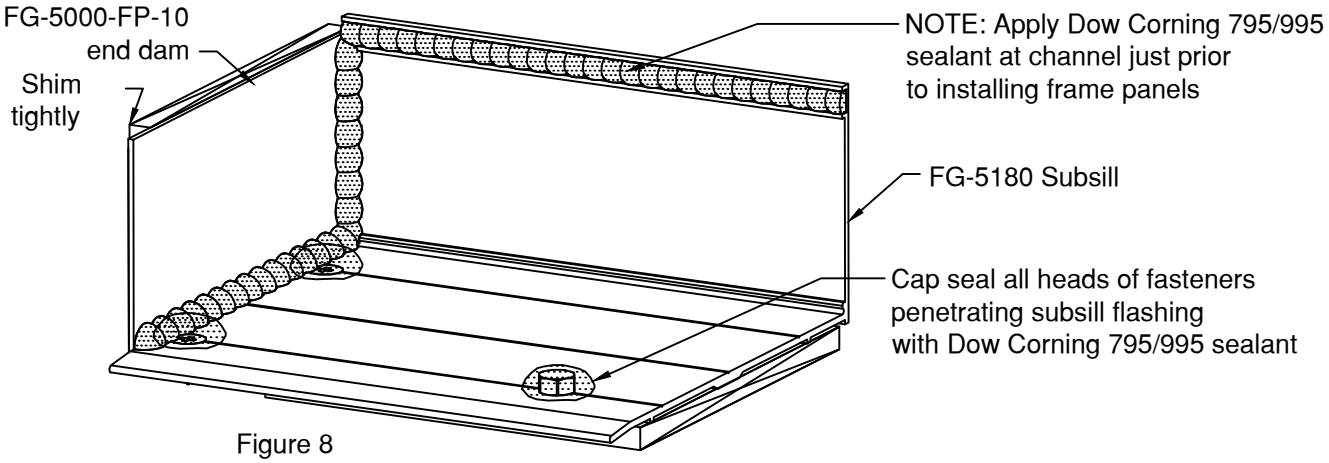


Figure 8
Subsill Installation and sealing of end dam

3.1.2 Wedge shims tightly between end dams and jamb substrate at each end prior to installing frame panels. These shims prevent the end dams from being dislodged while frame panels are being installed. Completely seal end dams as shown See Figure 8.

3.1.3 Apply sealant to 0.040" alum splice plates as shown at all subsill splices. See Figure 9.

3.1.4 Run a continuous bead of Dow Corning 795 or 995 sealant along the full length of the sub sill channel as shown above just prior to installing frame panels. Do not allow sealant to harden prior to installing frame panels. Remove excess sealant after panels are installed.

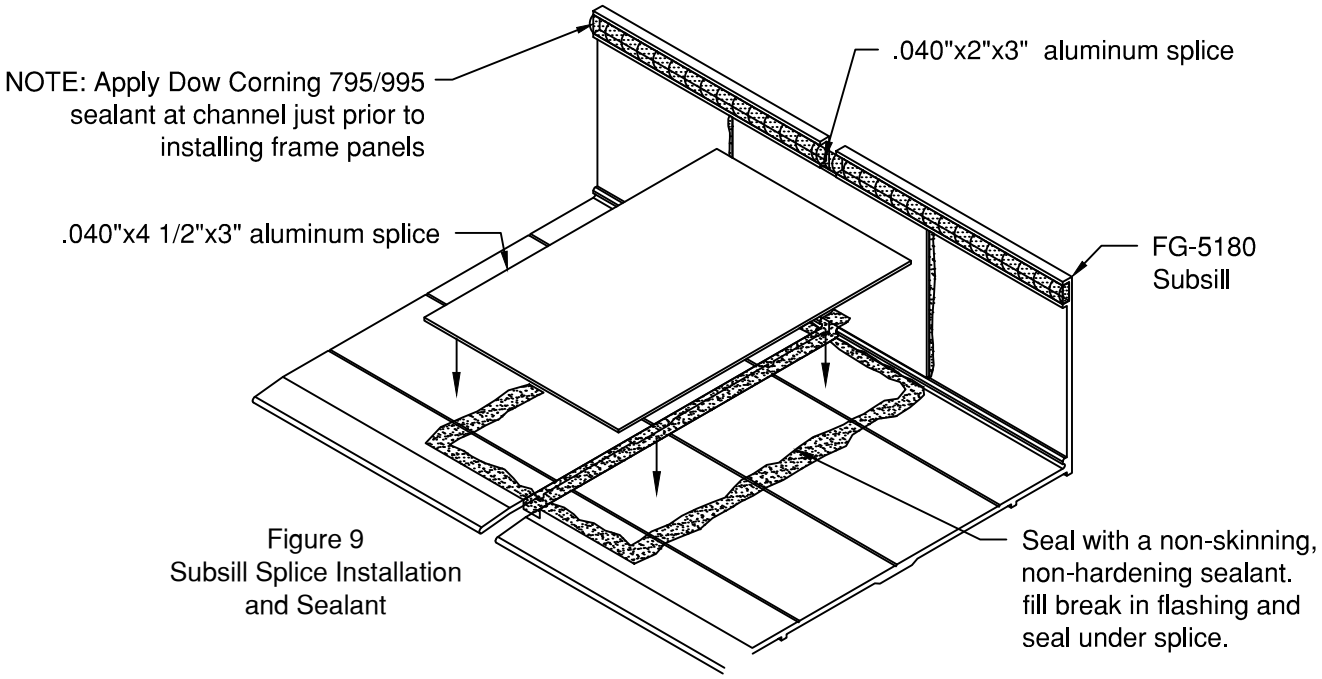


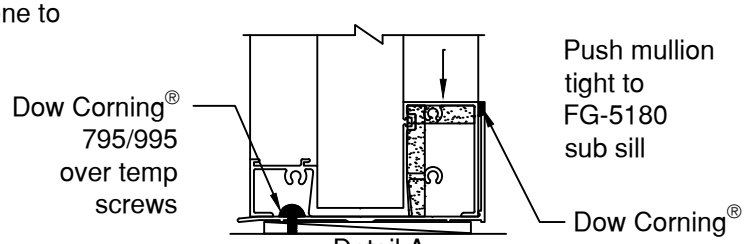
Figure 9
Subsill Splice Installation
and Sealant

FRAME INSTALLATION

3.2 Installation of framing panels.

3.2.1 Install assembled frame panels into opening starting at either jamb and continue working toward the other jamb until the last frame panel is installed. Ensure that the frame panels are pushed tight against the upright leg of the subsill. Remove excess sealant after panels are installed and anchored.

3.2.2 Prior to assembeling each additional panel frame, apply 12" of Dow Corning 795/995 silicone to bottom of interior snap engagement. See **Figures 10 below**.



Frame Panel Installation to Subsill

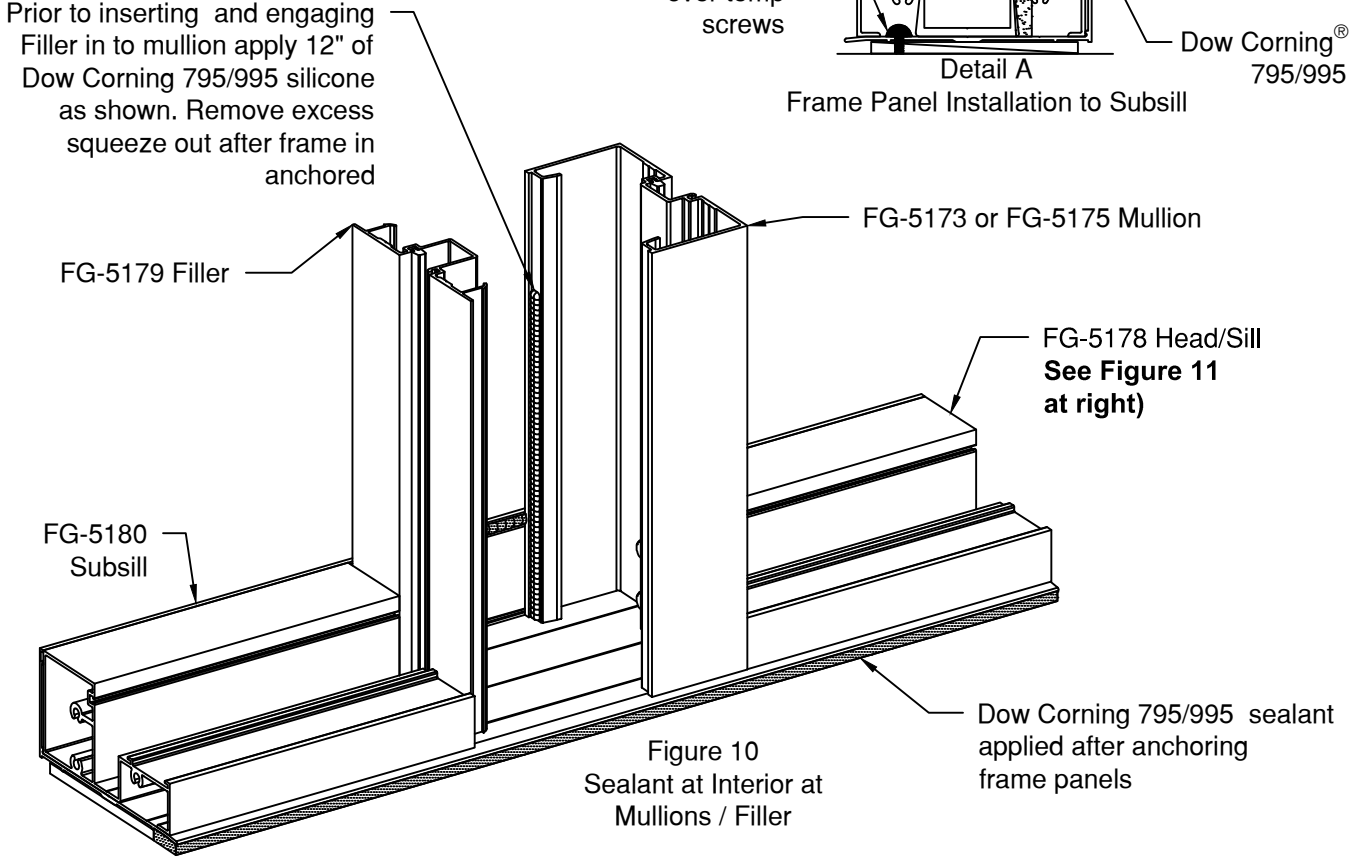


Figure 10
Sealant at Interior at Mullions / Filler

3.2.3 After all panels are installed, shim beneath subsill as required at fasteners. Match drill holes through sill into substrate. Remove dust from holes. Apply sealant into anchor holes prior to anchoring. Cap seal with Dow Corning 795 or 995 fastener heads.

3.2.4 Plumb vertical mullions, and match drill holes into substrate at head. Anchor and shim as shown. It is not necessary to cap seal fasteners at head. Check D.L.O. and diagonal dimensions every 4 bays to ensure correct spacing and frame squarness to prevent dimensional buildup.

3.2.4 Match drill holes in jamb to substrate. Anchor and shim as required. Cap seal fastener heads.

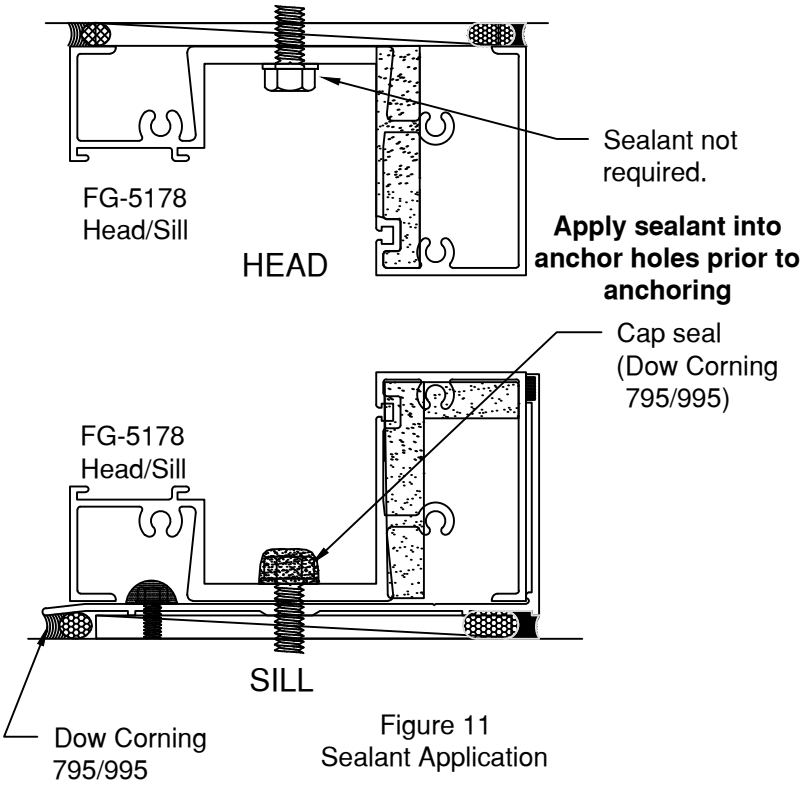


Figure 11
Sealant Application

3.2.5 Once all individual frames are secured to the opening, then completely seal with a continuous bead of DowCorning 795 or 995 silicone sealant or equal, across head and at each jamb. At the sill run a bead across the subsill.

3.3 Interior sealant @ jambs and along subsill
Starting from the bottom, seal up the jamb to a height of 24". It is not necessary to seal the balance of the jamb on the interior or beneath the interior side of the sub sill flashing other than for cosmetic reasons.

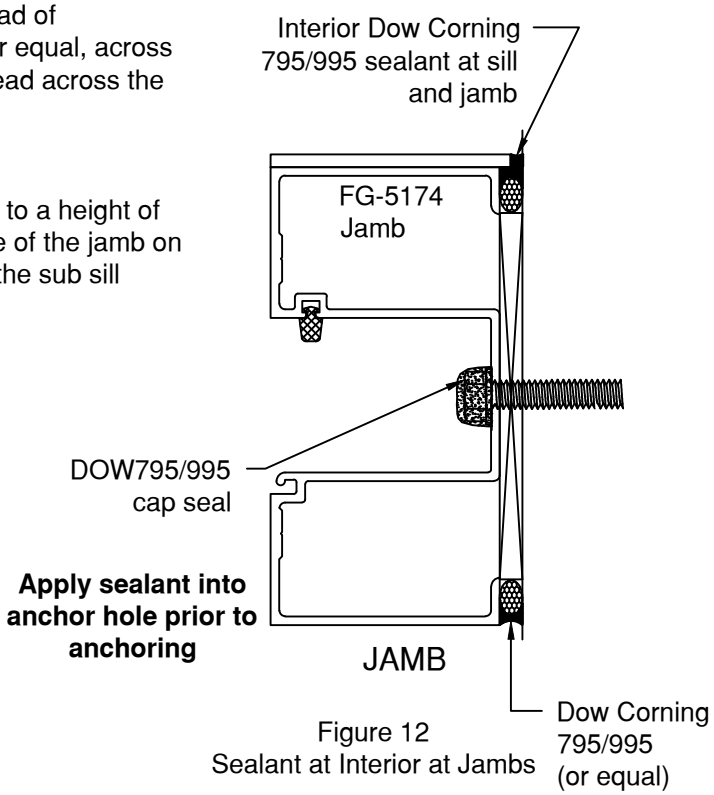


Figure 12
Sealant at Interior at Jambs

GLAZING - WET GLAZED OPTION

4W.1 GLAZING PREPARATION -Wet Glazing option

4W.1.1 Remove all debris from glazing pockets to prevent blockage of weeps/drains.

4W.1.2 Install water diverters see **Figure 13** after lower lite is in position.

4W.1.3 Install FG-5185 spacer gasket in horizontal members
Note: also install FG-5185 at vertical , if it was not installed prior to attaching horizontals **see Figure 7 on Page 12** .

4W.1.4 At sill, install FG-5184 setting chair (2 per lite at 1/4 points)

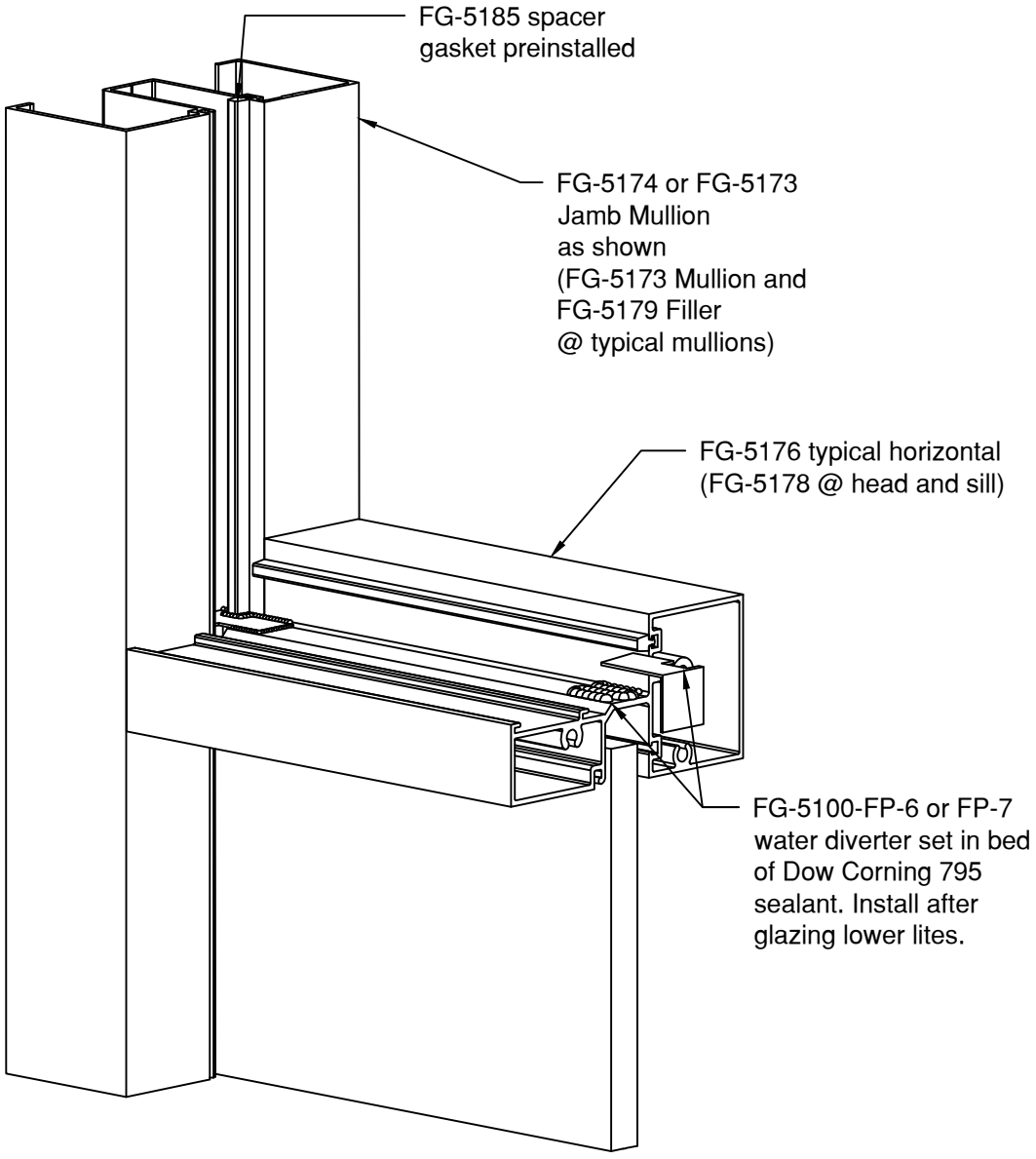


Figure 13
Water Diverter and Gasket Assembly

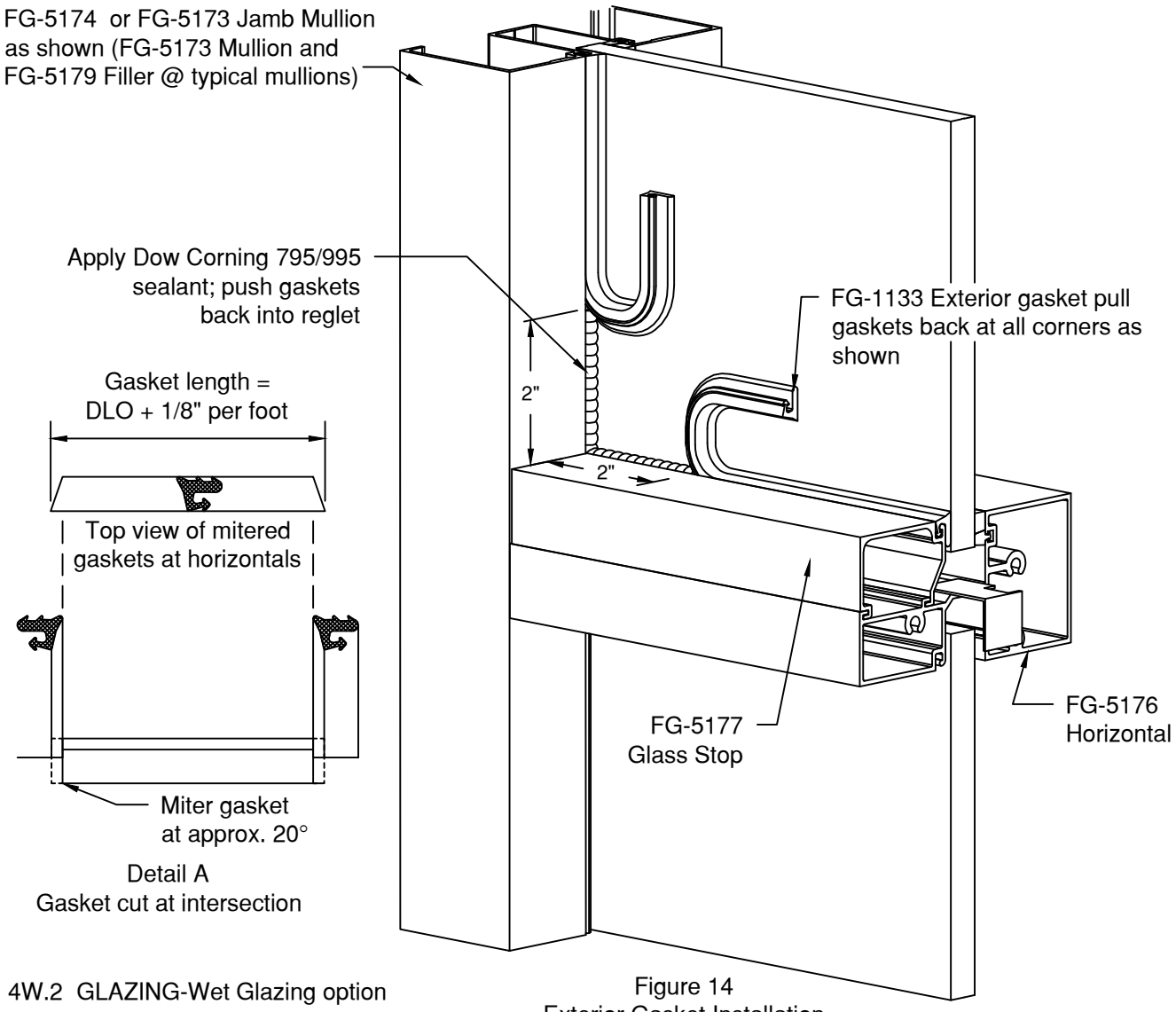


Figure 14
Exterior Gasket Installation

4W.2 GLAZING-Wet Glazing option

Glaze from bottom to top.

4W.2.1 Set glass into opening, push in to deep pocket first,at sill place glass on FG-5184 setting chair, then after centering in DLO , pull glass up and position FG-5186 setting block on setting chair (at 1/4 points) **See Figure 16 on Page 19.** At horizontal same procedure is used, except no setting chair is used.

4W.2.2 Install exterior FG-5177 glass stops.

4W.2.3 Install exterior FG-1133 glazing gaskets starting at the middle of the glass

4W.2.4 Cut gaskets a minimum of 1/8" per foot longer than daylight opening to provide for adequate compression. as shown at **Figure 14 detail A**.

4W.2.5 After gaskets are pressed in place. Pull gasket from pocket as shown in Figure 13 Page 16. Clean class and gaskets a minimum of 2" from each end with isopropyl alcohol. Apply Dow Corning 795/995 sealant see Figure14. Push gaskets into reglet, **See Figure 15 on Page 18**.

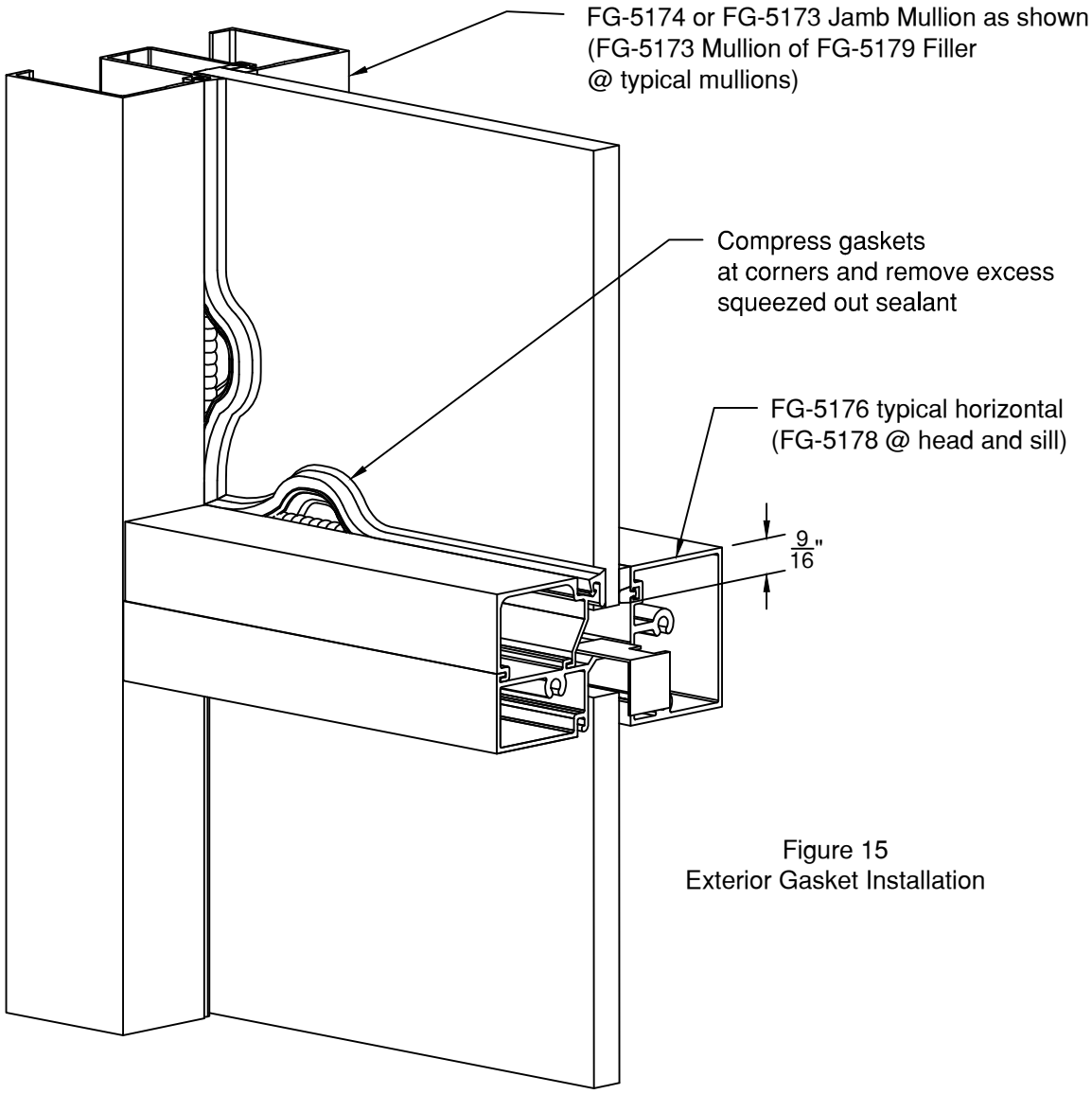


Figure 15
Exterior Gasket Installation

4W.2 GLAZING-Wet Glazing option (Continued)

4W.2.6 Mask off glass and aluminum with 1" wide (minimum) low adhesion masking tape. **See Figure 16**. Working a single DLO at a time,Fill cavity around full perimeter of DLO with Dow Corning 995 sealant as shown, care should be taken not to leave any voids and eliminate air bubbles in sealant **(See Detail. A)**. Immediately tool , creating a finished joint with a beveled/curved joint surface **See Detail B on page 19**.

4W.2.7 Remove masking tape 10 minutes after tooling; taking care not to damage tooled sealant.

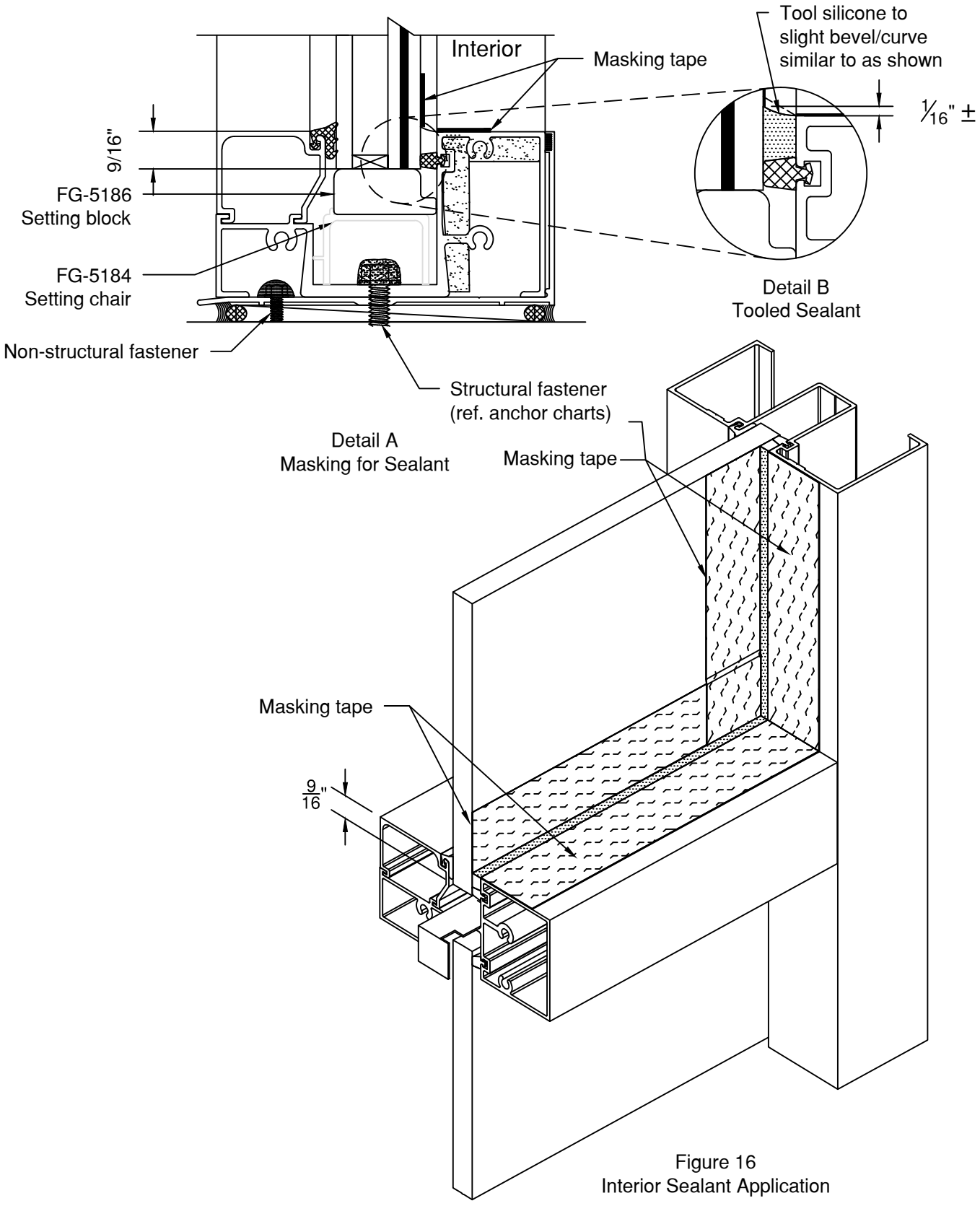


Figure 16
Interior Sealant Application

4D.1 GLAZING PREPARATION -Dry Glazing option

4D.1.1 Remove all debris from glazing pockets to prevent blockage of weeps/drains.

4D.1.2 Install water diverters as shown on at **Figure 17** after lower lite is in position.

4D.1.3 Install FG-5948 interior gaskets

- @ vertical mullions gasket is cut to DLO plus 1 1/2" (see detail "B" for notch)
- @ horizontals gasket is cut to DLO plus ¼" per foot of length,
- Start installation @ middle of DLO's.

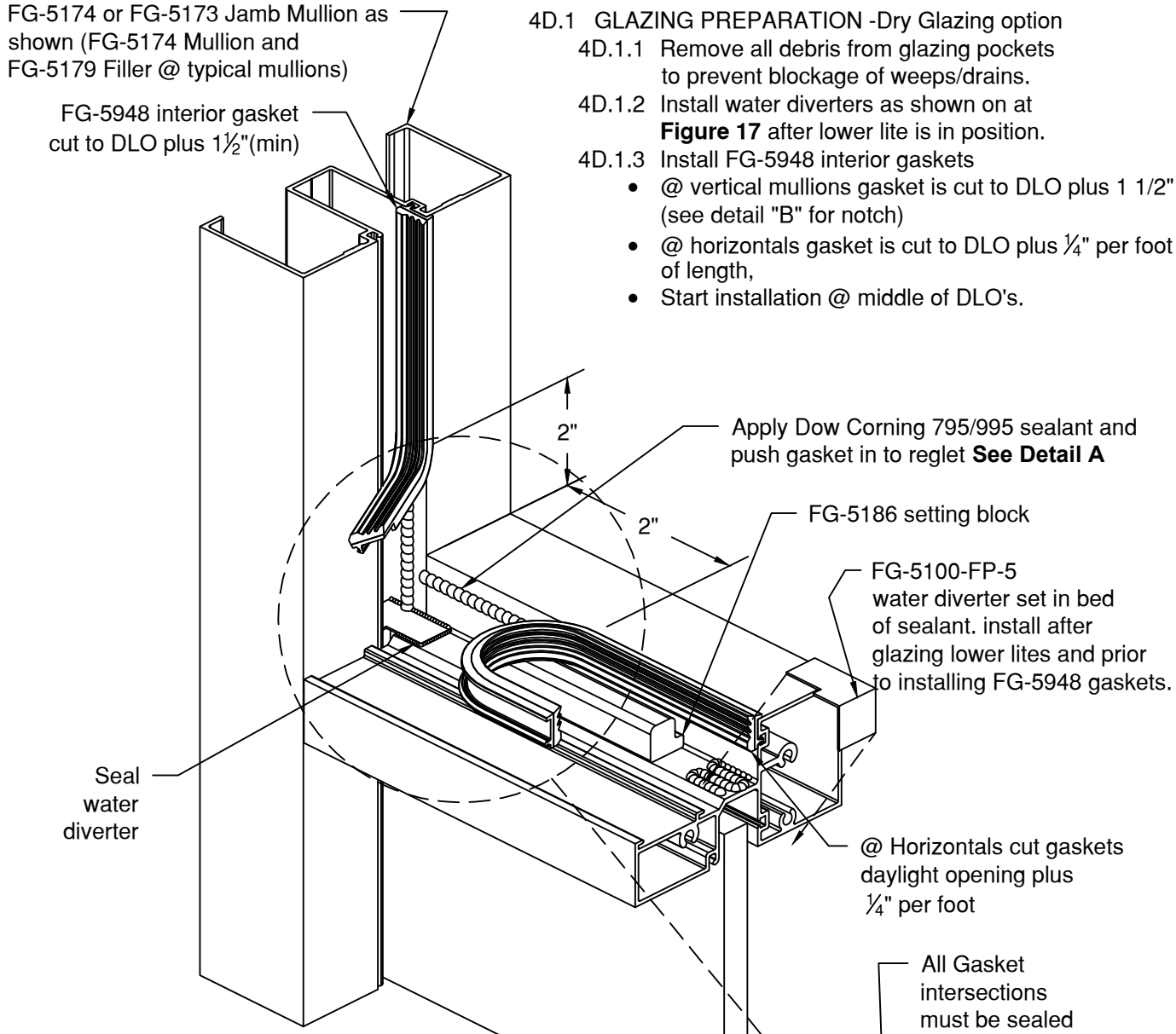
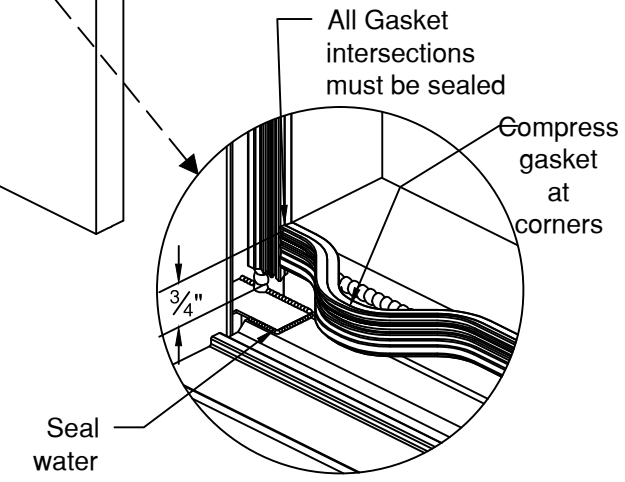


Figure 17
Water Diverter and Interior Gasket Installation

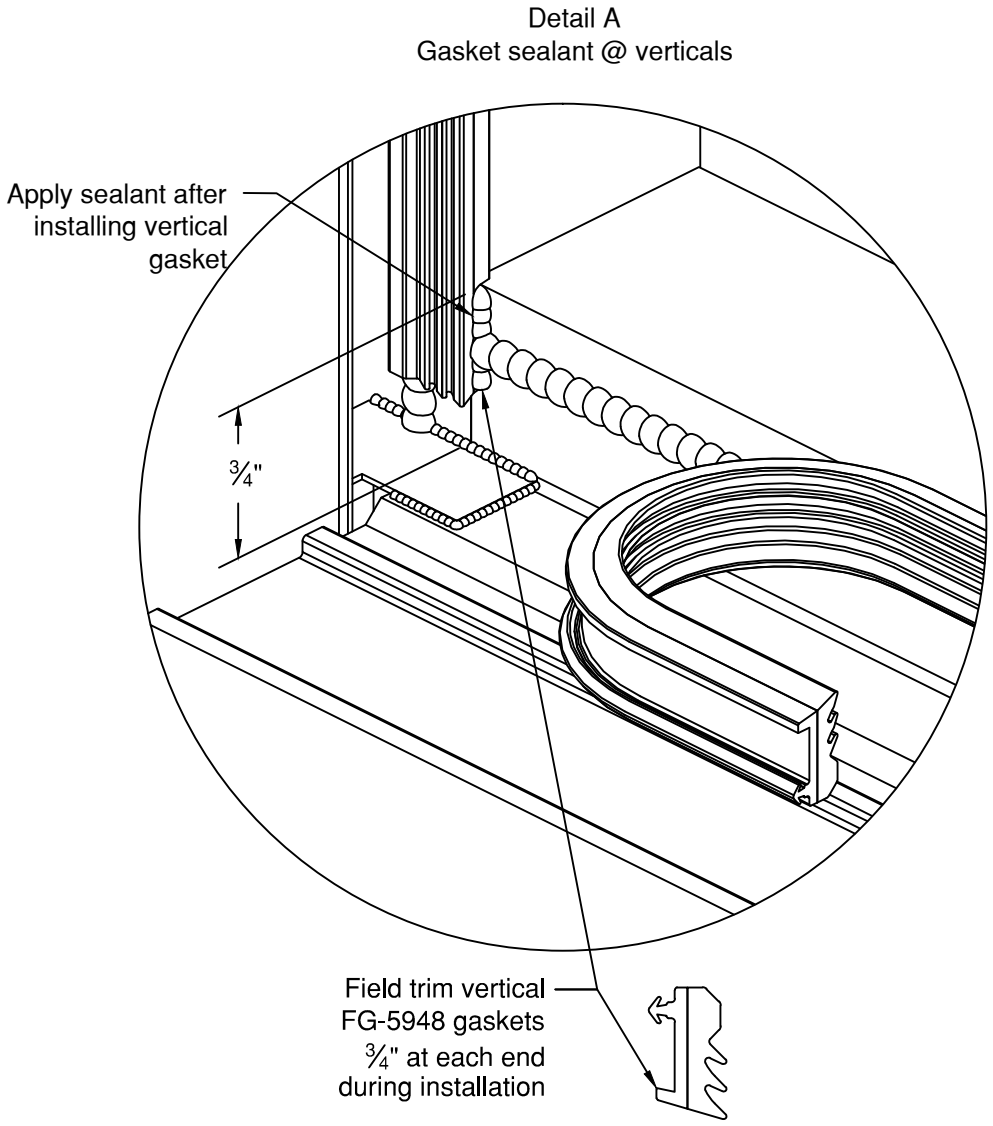
4D.1.4 After gaskets are pressed in place, pull gasket from pocket as shown in **Figure 17** above. Clean glass and framing a minimum of 2" from each end. Apply Dow Corning 795/995 sealant to gasket raceway, **see Figure 17**. Push gaskets into reglet, See **Details A & B**.

4D.1.5 At sill, install FG-5184 setting chair (2 per lite at at 1/4 points)



Detail B
Compression of Gasket at Intersections

GLAZING - DRY GLAZED OPTION



GLAZING - DRY GLAZED OPTION

4D.2 GLAZING-Dry Glazing option, Glaze from bottom to top.

4D.2.1 Set glass into opening, at sill place glass on FG-5184 setting chair, then after centering in DLO , pull glass up and position FG-5186 setting block on setting chair (at 1/4 points). At horizontal same procedure is used, except no setting chair is used.

4D.2.2 Install exterior glass stops FG-5177.

4D.2.3 Install exterior FG-1133 glazing gaskets starting at the middle of the glass

4D.2.4 Cut gaskets a minimum of 1/4" per foot longer than daylight opening to provide for adequate compression. as shown at D**etail C** above.

4D.2.5 After gaskets are pressed in to place, pull gasket from pocket as shown in Figure 18 above. Clean class and gaskets a minimum of 2" from each end with isopropyl alcohol. Apply Dow Corning 795/995 sealant see Figure18. Push gaskets into reglet, **See Figure 19 on Page 23**.

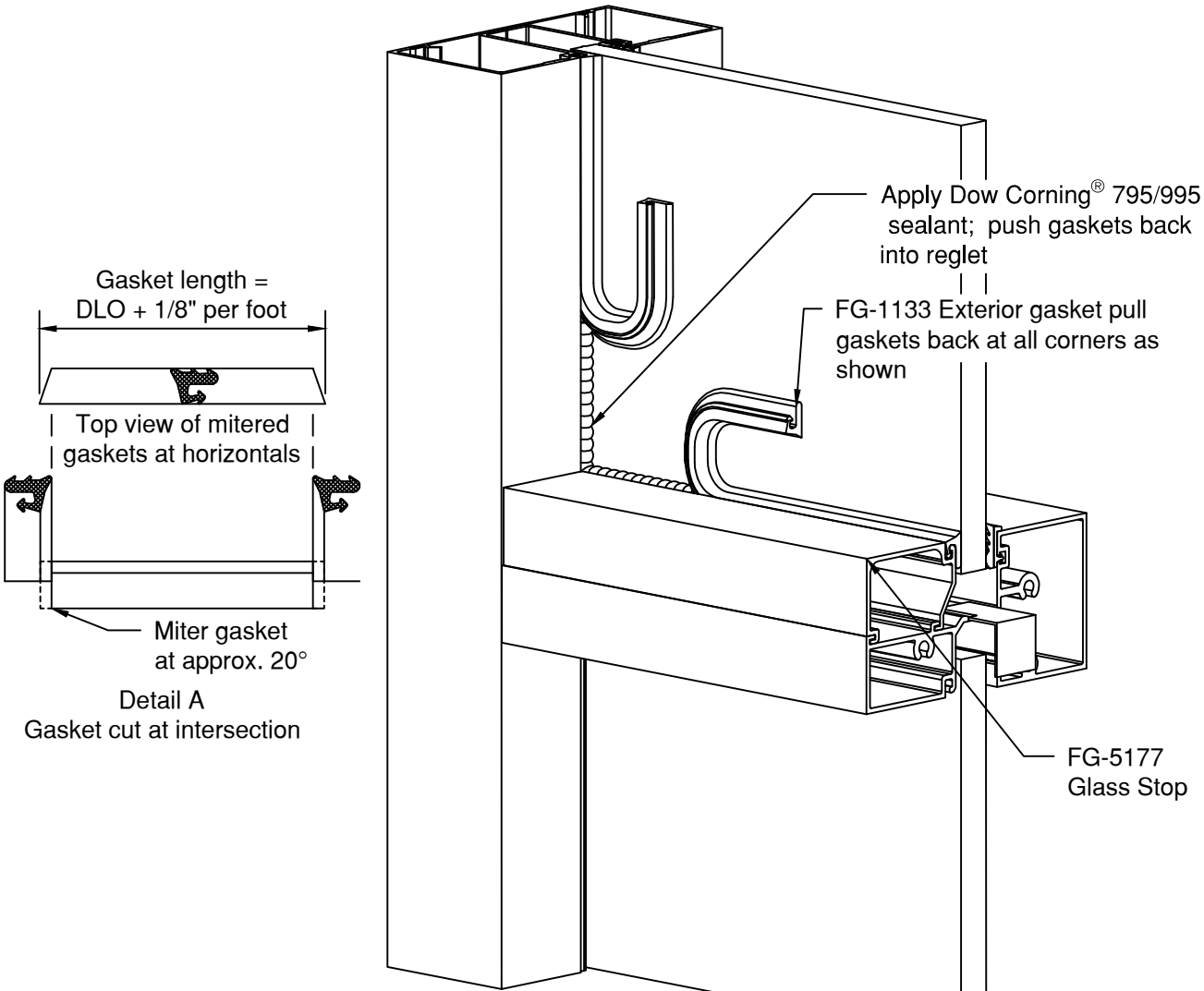


Figure 18
Exterior Gasket Installation

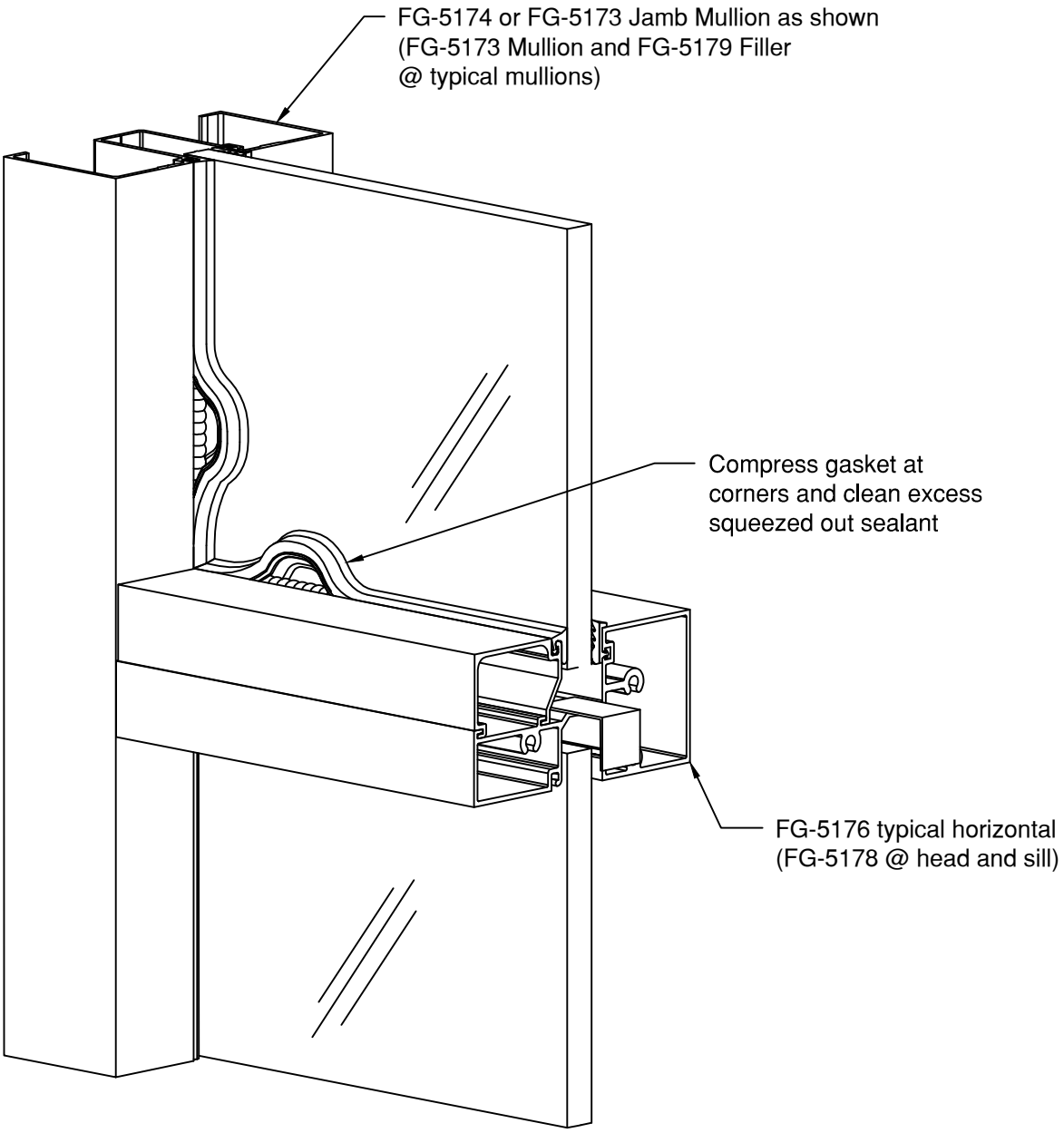


Figure 19
Compress Exterior Gasket at Corners

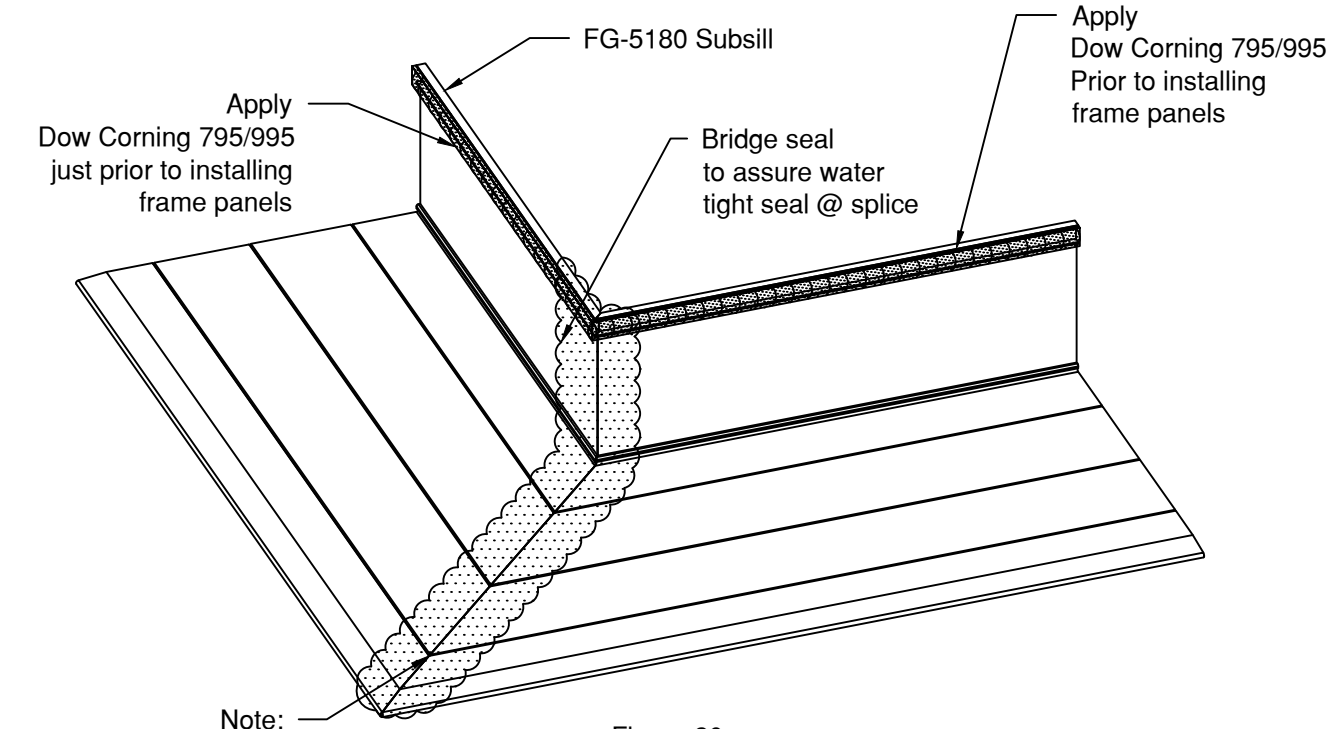


Figure 20
Subsill Splice at Outside Corner

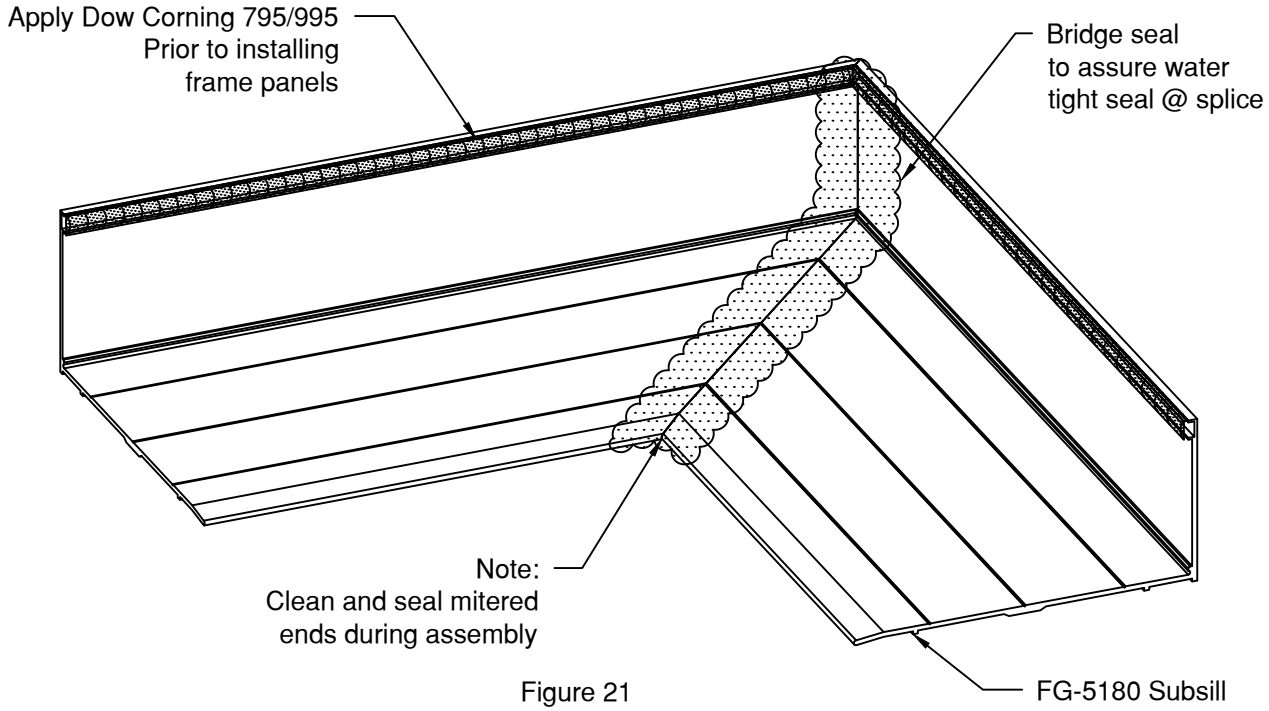


Figure 21
Subsill Splice at Inside Corner

CORNER INSTALLATION

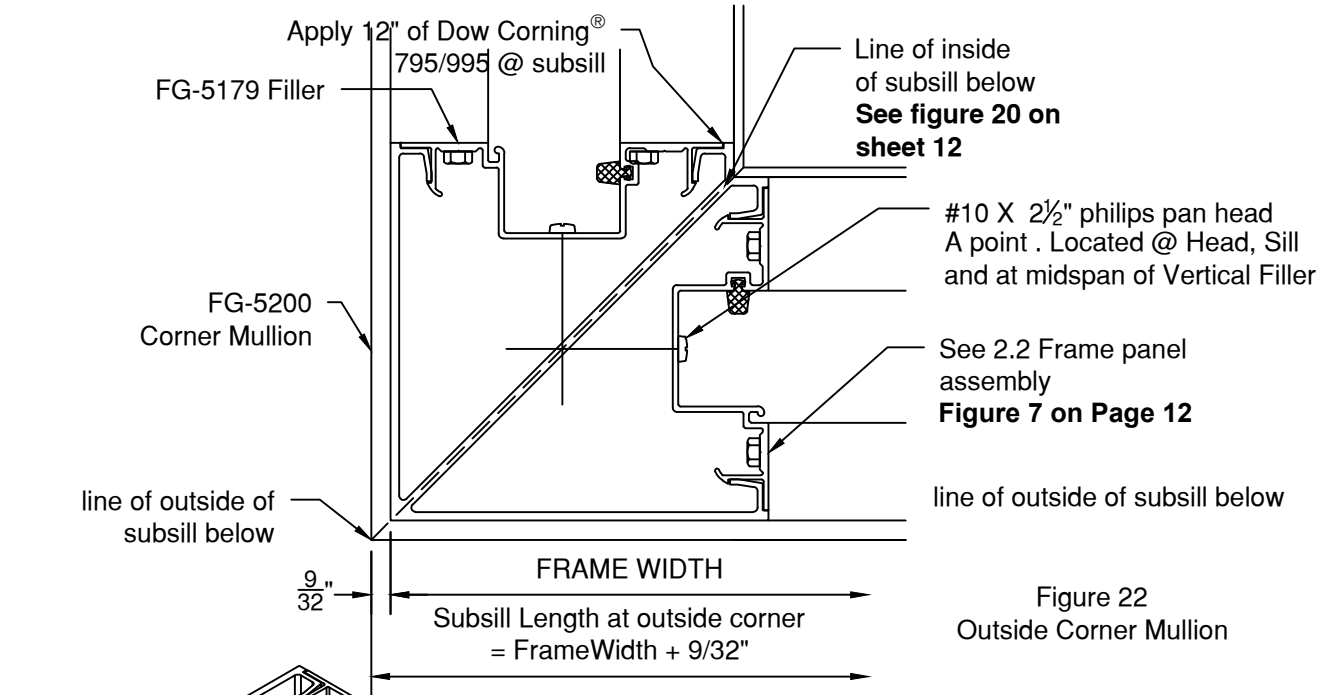


Figure 22
Outside Corner Mullion

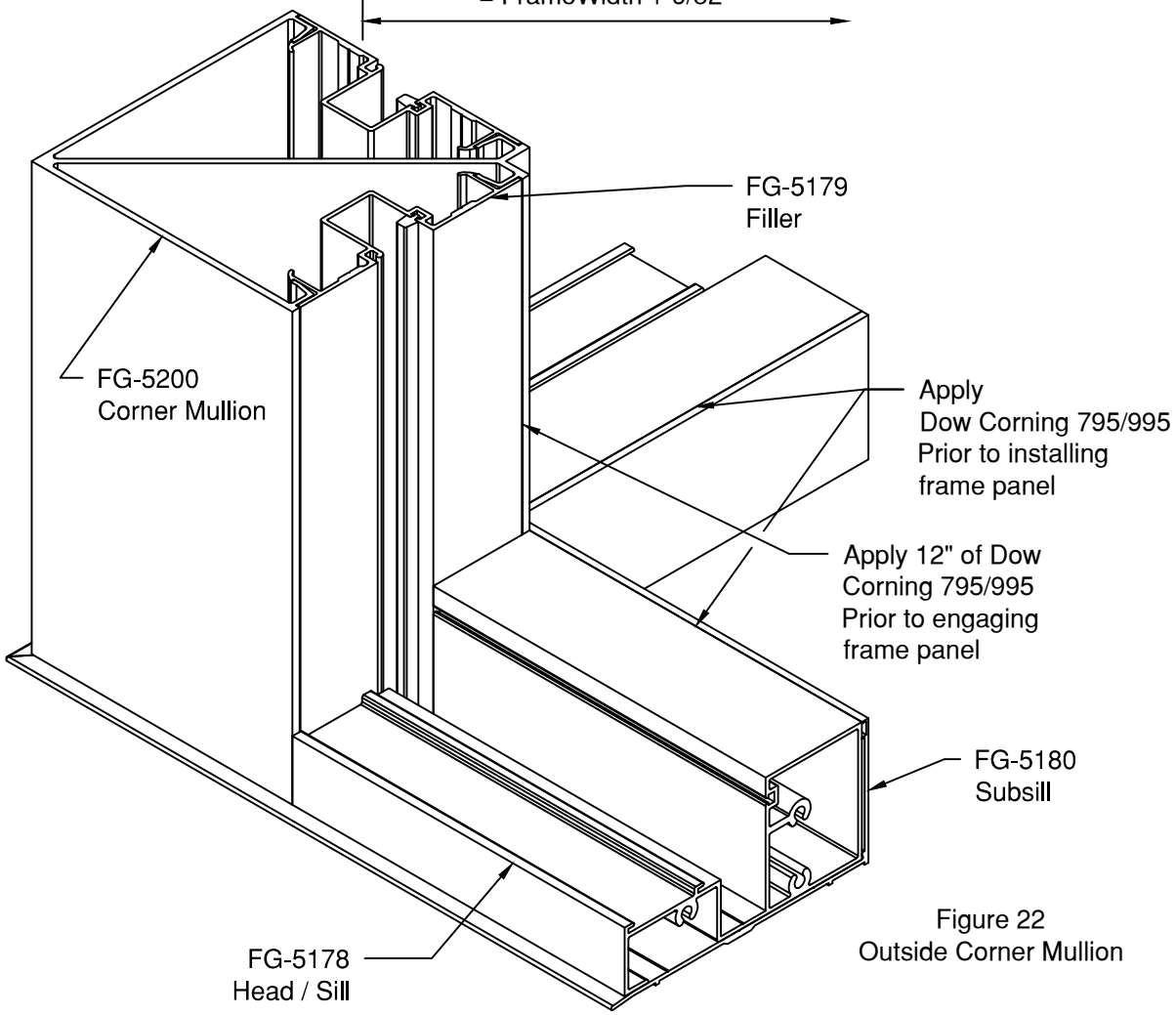


Figure 22
Outside Corner Mullion

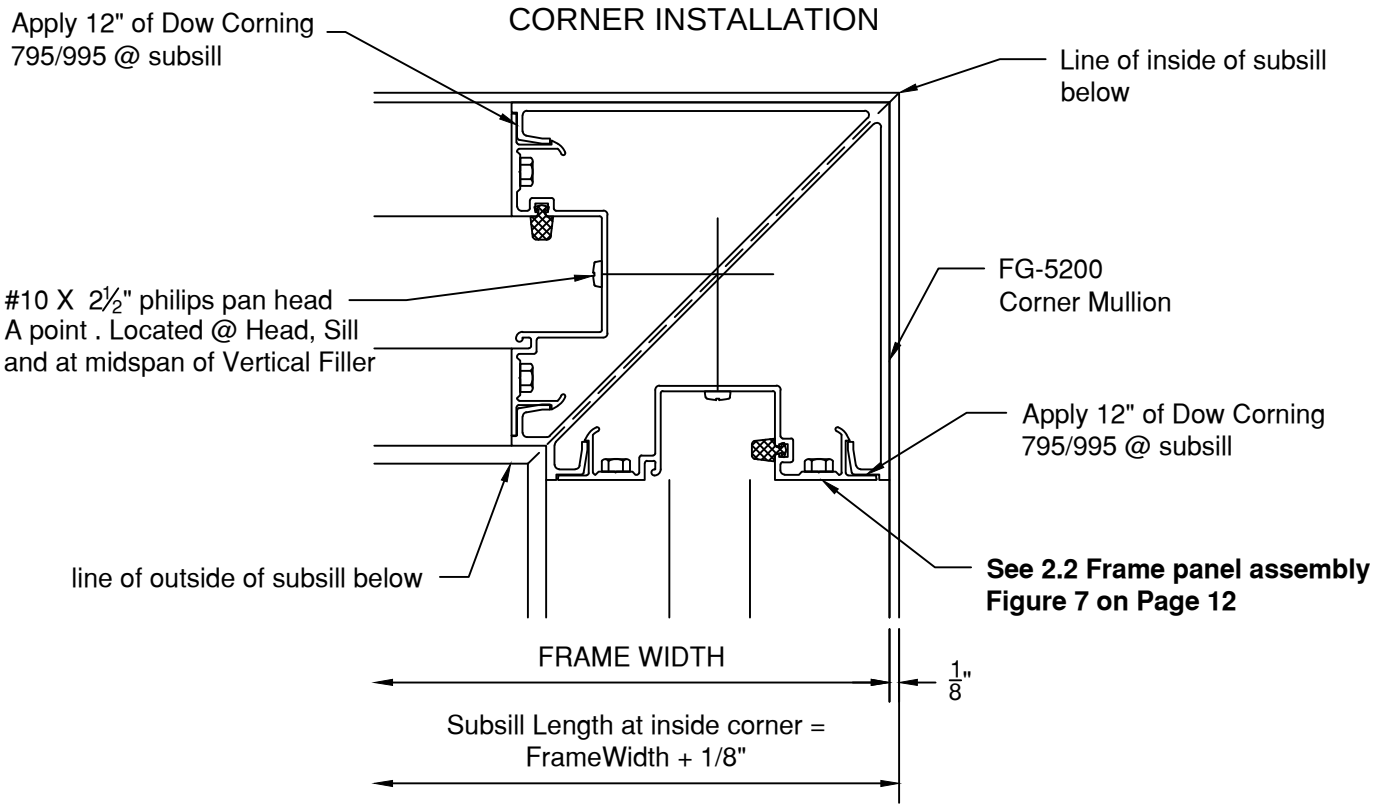


Figure 23
Inside Corner Mullion

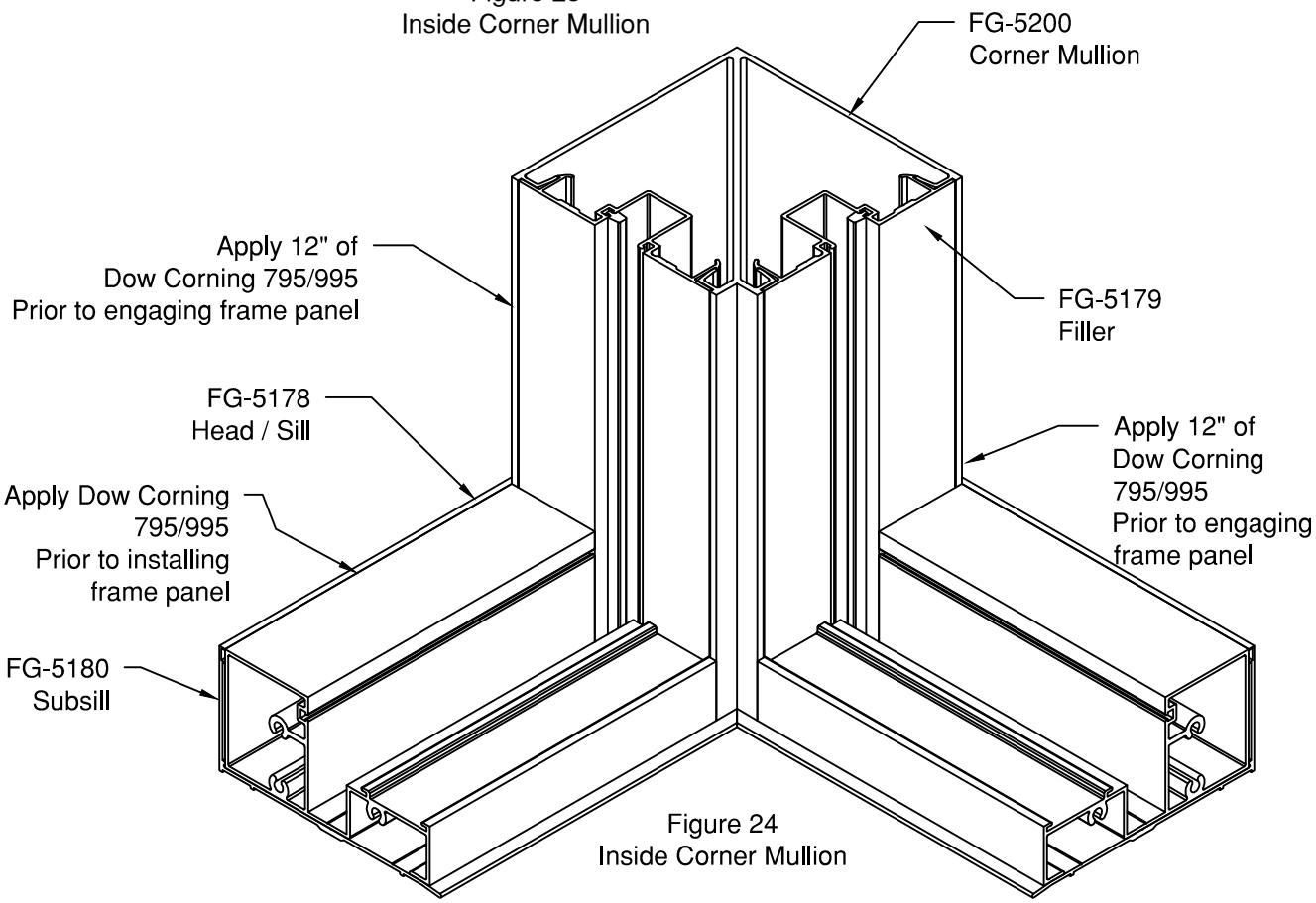


Figure 24
Inside Corner Mullion

DOOR INSTALLATION

6.1 PREPARATION OF DOOR FRAME

- All hardware back-up plates are installed in the frame at the factory. Door stops and transom sash will have been cut to length and prepped in the factory.
- Stock transom frames are fabricated for a vertical frame size of 120". If your opening is smaller, cut the verticals and the sash down to the appropriate length; leaving a maximum 1/4" caulk joint at the head. The prep for the transom head horizontal should be made using either a drill fixture or EZ-punch die sets for the series FG-5000 framing.
- Review frame anchor charts in approved shop drawings, for configuration and substrate for which the frame will be attached. Drill anchor holes into FG-5168 door jamb, FG-5167 flat filler and TH-57 threshold as shown in charts. (Note: CW-998 bulb gasket is not required in the FG-5168 jamb at wall).

6.1.1 Attach frame portion of offset pivots to frame if applicable.

6.1.2 Apply Schnee-Morehead SM-5601 1/8" x 1/2" Isocryl tape (OBE part # 4666) to joint intersections at door header or transom bar and transom head horizontal.

Note: Keep tape away from screw splines.

6.1.3 Assemble frame and threshold with FS-8 spline screws or use alternate threshold clips and fabricate two holes in each end of threshold as shown below. Snap-in transom sash if applicable. The frame is now ready for installation.

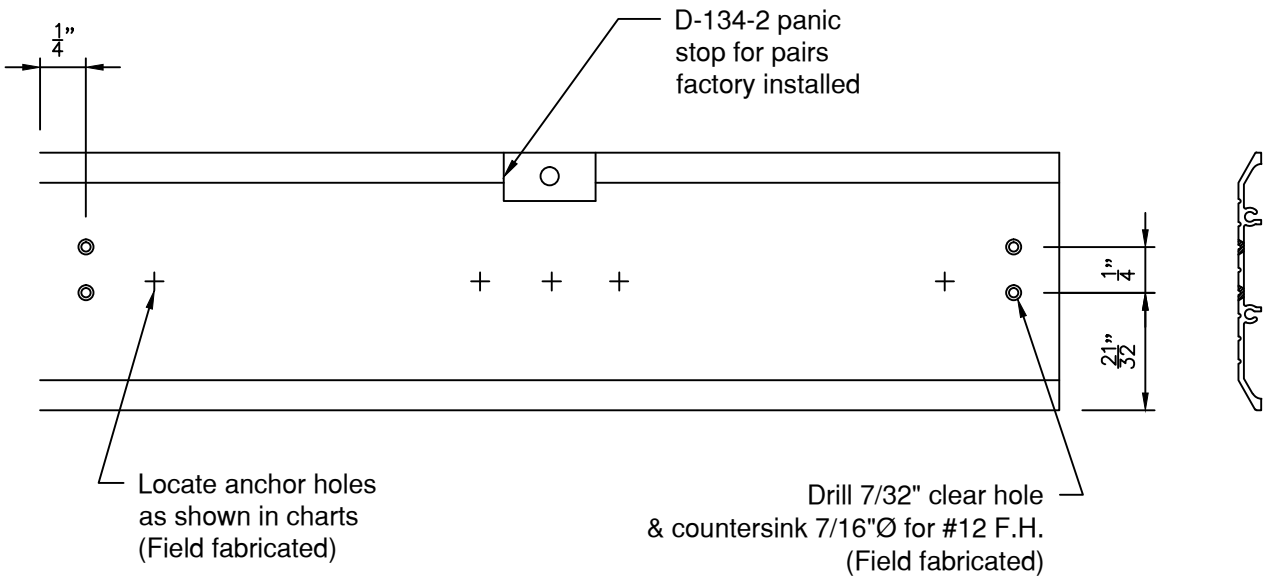


Figure 25
Threshold Fabrication

6.2 INSTALLATION OF DOOR FRAME

Door frame and threshold shall be completely assembled with joints neatly aligned and tight.
Door frame shall be installed square and plumb. Measure frame diagonally from corner to corner and shim until the measurements are equal.

6.2.1 Level door frame threshold at the high point in the slab. It is preferable to not have a high point in the slab. The door frame is designed to have the jambs run down to the slab.
Install fasteners through frame and threshold anchor holes and securely anchor to the substrate.
Position shims between framing and substrate to prevent members from bowing.

6.2.2 Install door stops.

You are now ready to install the door.

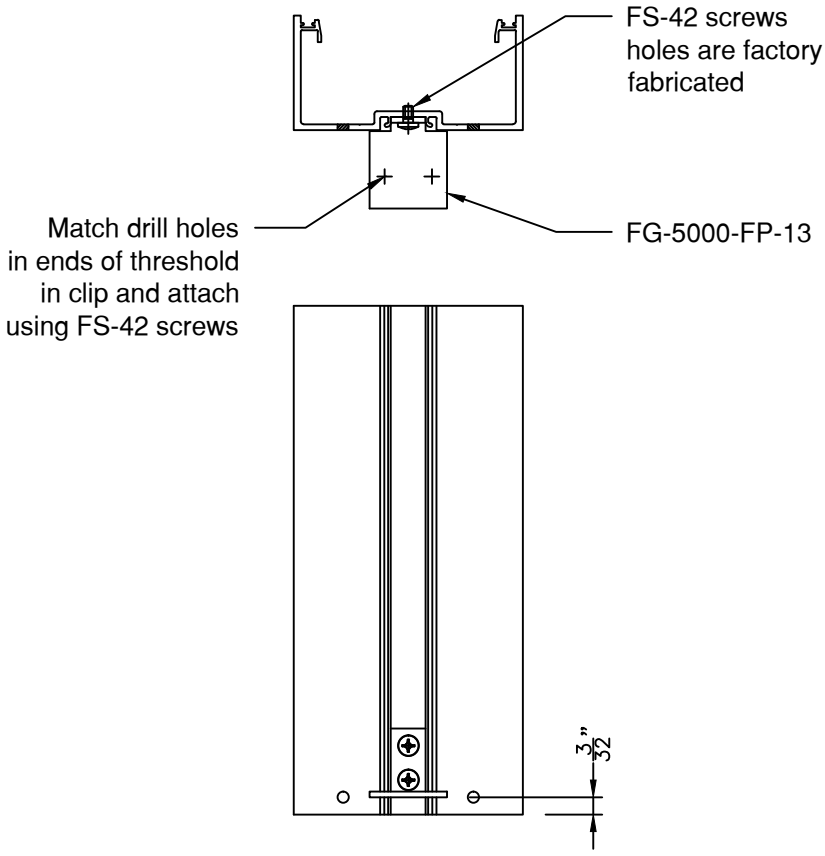


Figure 26
Alternate Threshold Attachment to Jamb

DOOR INSTALLATION

6.3 DOOR PREPARATION AND GLAZING

FP-5000-PP1 setting block/side block, V-2108 (1/4" x 1/4") spacer gasket, FS-114 (#8 x 3/8" PPHSMS) fasteners for attaching D-152 glass stop and FG-1133 gasket are shipped loose.

6.3.1 Install D-152 glass stop, this may be installed on either interior or exterior side of the door. It is recommended that D-152 be installed on the interior side of the doors receiving panic hardware to allow for reglazing without removing the panic bars.

6.3.2 Pilot holes are predrilled in D-152 glass stop. Determine side of door you desire to place the glass stop and match drill holes into the horizontal rails, vertical door stiles and attach with FS-114 screws.

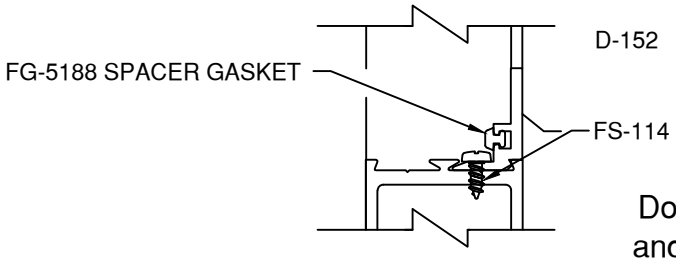


Figure 27
Door Glazing Stop
and Spacer Gasket

6.3.3 Install FP-5000-PP1 adhesive back setting block/side block as shown below. Blocks may be doubled as required due to glass tolerances.

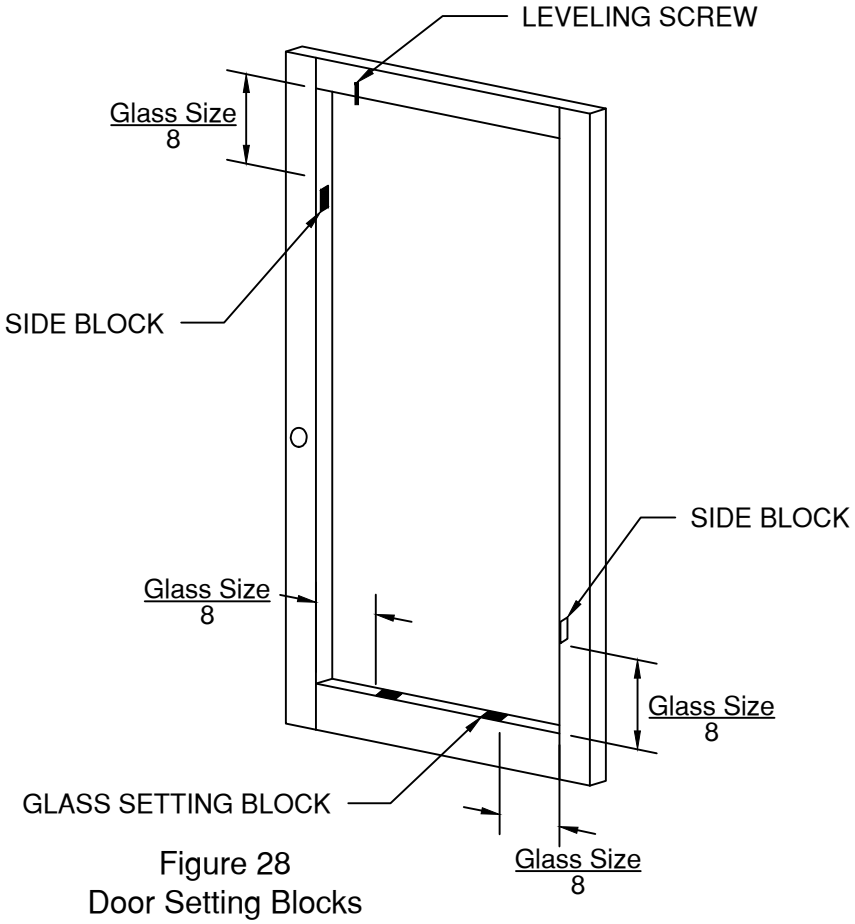


Figure 28
Door Setting Blocks

6.3(continued) DOOR PREPARATION AND GLAZING

6.3.4 Center glass in opening on setting blocks and aligned with side blocks.
6.3.5 Once the glass is in the correct position, screw the glass jack down to the top of the glass.
6.3.6 Install S-83 horizontals glass stop first.

Note: Top stops are notched to clear glass jack. Be sure to hook the stop into the dovetails on the rails and stiles; then snap into place. A mallet may be used to drive stops into place.

6.3.7 Roll FG-1133 gasket into S-83. See detail 'A' for cutting intersections and cutting.

6.3.8 Mask off glass with low adhesive masking tape and install Dow Corning 995 into the cavity between the glass and D-152 glass stop. Remove masking tape immediately after installation of silicone taking care not to damage or pull silicone from the cavity.

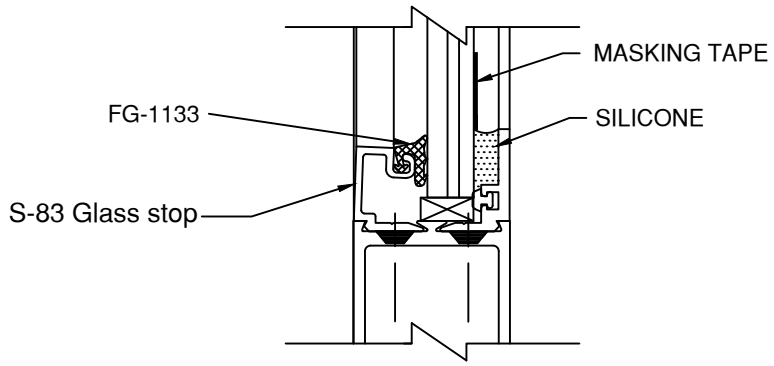
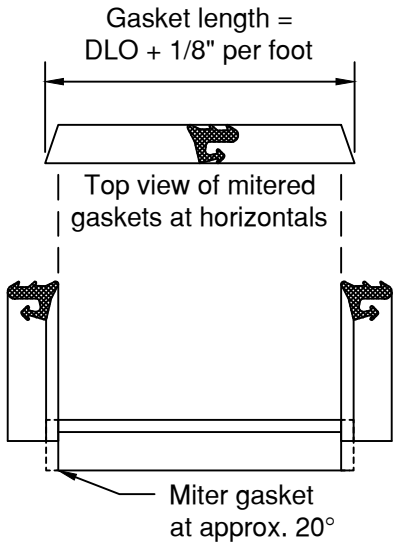


Figure 29
Door Glazing
Roll in Gasket and Sealant Application



Detail A
Gasket cut at intersection

6.4 ENTRANCE DOOR FRAME INSTALLATION WITH SUBSILL FOR SIDELIGHTS

When entrance occur, install entrance frames first. Subsill butts against door jamb(s). The subsill abutting the door jamb does not require an end dam.
Field Note : The bottom of the inside of the Door Jamb mullion must be sealed to the substrate and the end of the subsill must also be sealed see **Figure 30 below**.

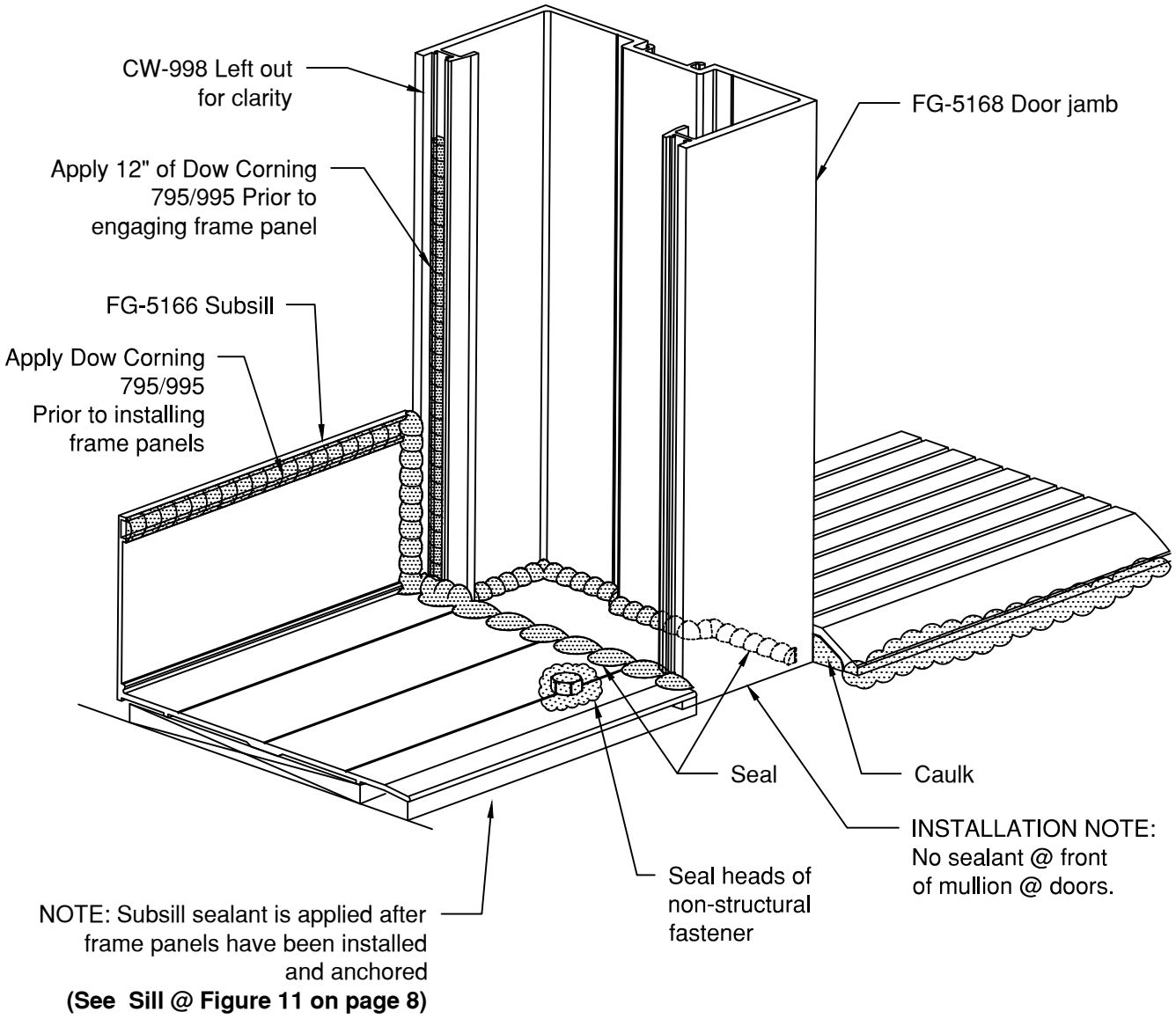
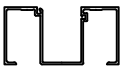
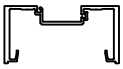
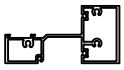
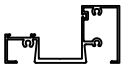
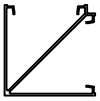


Figure 30
Door Jamb and Subsill Sealant Application

PARTS LIST

STANDARD FRAMING

ITEM	DESCRIPTION
 FG-5167	Flat Filler
 FG-5173	Vertical Mullion
 FG-5174	Wall Jamb
 FG-5175	Heavy Vertical Mullion
 FG-5176	Intermediate Horizontal
 FG-5177	Glass Stop
 FG-5178	Head/Sill
 FG-5179	Pocket Filler
 FG-5180	Subsill Flashing
 FG-5183	Glazing Adaptor
 FG-5200	Corner Mullion (Fits with FG-5179)

STANDARD ACCESSORIES

ITEM	DESCRIPTION
SM-5601	Joint Sealant Tape 1/8" x 1/2" x 30' roll (OBE # 4666)
 FG-5948	Interior Glazing Gasket Dry Glazed option (OBE # 15206)
 FG-1133	Exterior Glazing Gasket (OBE # 14938)
 FG-5185	Interior Spacer Gasket Wet Glazed option (OBE # 12825)
 FG-5000-FP-10	Sill Flashing End Dam (Attach with 2 ea. FS-54 screws) (OBE # 9957)
 FG-5100-FP-6  FG-5100-FP-7	Wet Glazed Water Diverter (OBE # 34001 (FP-6)) (OBE # 34008 (FP-7))
 FG-5100-FP-5	Dry Glazed Water Diverter (OBE # 12833 (FP-5))
 FG-5000-PP-8	Steel Reinforcing 10'-0" Use with FG-5173
 FG-5000-PP-9	Steel Reinforcing 10'-0" Use with FG-5173
 FG-5184	Setting Chair (OBE # 12831)
 FS-54	#10-24 x 3/8" UCPFH Screws (OBE # 12834)
 FS-8	#14 x 1" HHSTS B point (OBE # 10223) Assembly Screw
 FS-42	#12 x 1/2" PFH UC B point (OBE # 12362) Assembly Screw