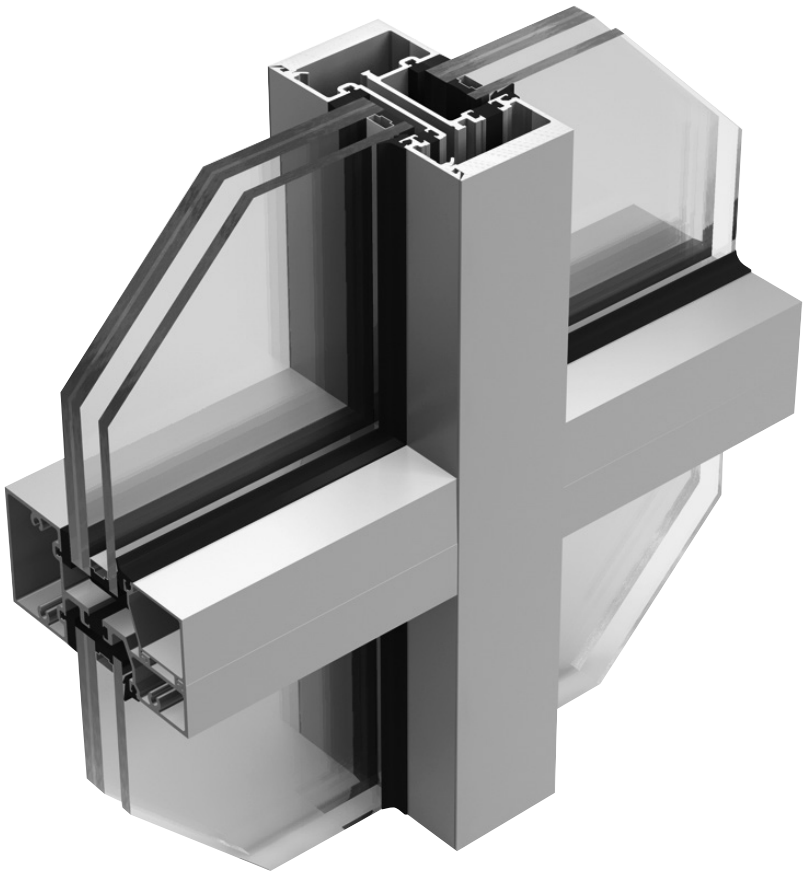
INSTALLATION INSTRUCTIONS

SERIES IG500 AND IG600
HURRICANE RESISTANT STOREFRONTS

Storm Front™



CRL® US ALUMINUM

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11M0183

HANDLING, STORAGE, AND PROTECTION OF ALUMINUM

The following precautions are recommended to protect the material against damage. Following these precautions will help ensure early acceptance of your products and workmanship.

A. HANDLE CAREFULLY.
All aluminum materials at job site must be stored in a safe place, well removed from possible damage by other trades. Cardboard wrapped or paper interleaved materials must be kept dry.

B. CHECK ARRIVING MATERIALS.
Check for quantity counts and keep records of where various materials are stored.

C. KEEP MATERIALS AWAY FROM WATER, MUD, AND SPRAY.
Prevent cement, plaster, or other materials from damaging the finish.

D. PROTECT THE MATERIALS AFTER ERECTION.
Protect erected frame with polyethylene or canvas splatter screen. Cement, plaster, terrazzo, other alkaline solutions, and acid based materials used to clean masonry are harmful to the finish. ***If any of these materials come in contact with the aluminum, immediately remove with water and mild soap.***

The rapidly changing technology within the architectural aluminum products industry demands that C.R. Laurence/U.S. Aluminum reserve the right to revise, discontinue, or change any product line, specification, or electronic media without prior written notice.

NOTE: Dimensions in parentheses ( ) are millimeters unless otherwise noted.

GENERAL INSTALLATION NOTES

RECOMMENDED GUIDELINES FOR ALL INSTALLATIONS:

1. **REVIEW CONTRACT DOCUMENTS.** Check shop drawings, installation instructions, architectural drawings, and shipping lists to become thoroughly familiar with the project. The shop drawings take precedence and include specific details for the project. Note any field ***verified notes*** on the shop drawings prior to installing. The installation instructions are of a general nature and cover most conditions.

2. **INSTALLATION.** All materials are to be installed plumb, level, and true.

3. **BENCH MARKS.** All work should start from bench marks and/or column lines as established by the architectural drawings and the general contractor with guaranteed accuracy. Working from these datum points and lines determine:
   a) The plane of the wall in reference to offset lines provided on each floor.
   b) The finish floor lines in reference to bench marks on the outer building columns.
   c) Mullion spacing from both ends of masonry opening to prevent dimensional build-up of daylight opening.

4. **FIELD WELDING.** All field welding must be adequately shielded to avoid any splatter on glass or aluminum. Results will be unsightly and/or structurally unsound. Advise general contractor and other trades accordingly. All field welds of steel anchors must receive touch-up paint (zinc chromate) to avoid rust.

5. **SURROUNDING CONDITIONS.** Make certain that construction which will receive your materials is in accordance with the contract documents. If not, notify the general contractor in writing and resolve differences before proceeding with work.

6. **ISOLATION OF ALUMINUM.** Aluminum to be placed in direct contact with uncured masonry or incompatible materials should be isolated with a heavy coat of zinc chromate or bituminous paint.

7. **SEALANTS.** Sealants must be compatible with all materials with which they have contact with (full or incidental), including other sealant surfaces. It is the sole responsibility of the glass company to consult the sealant manufacturer for recommendations regarding joint size, shelf life, compatibility, cleaning, priming, tooling, adhesion, etc. It is the responsibility of the ***Glazing Contractor*** to submit a statement from the sealant manufacturer indicating that glass and glazing materials have been tested for compatibility and adhesion with glazing sealants, and interpreting test results relative to material performance, including recommendations for primers and substrate preparation required to obtain adhesion. The chemical compatibility of all glazing materials and framing sealants with each other and with like materials used in glass fabrication must be established. ***This is required on every project.***

8. **FASTENING.** Within the body of these instructions "fastening" means any method of securing one part to another or to adjacent materials. Only those fasteners used within the system are specified in these instructions. Due to the varying perimeter conditions and performance requirements, perimeter and anchor fasteners are not specified in these instructions. For perimeter and anchor fasteners refer to the shop drawings or consult the fastener supplier.

9. **BUILDING CODES.** Due to the diversity in state/provincial, local, and federal laws and codes that govern the design and application of architectural products, it is the responsibility of the individual architect, owner, and installer to assure that products selected for use on projects comply with all the applicable building codes and laws. U. S. Aluminum exercises no control over the use or application of its products, glazing materials, and operating hardware, and assumes no responsibility thereof.

10. **EXPANSION JOINTS.** Expansion joints and perimeter seals shown in these instructions and in the shop drawings are shown at normal size. Actual dimensions may vary due to perimeter conditions and/or difference in metal temperature between the time of fabrication and the time of installation. Gaps between expansion members should be based on temperature at time of installation.

11. **WATER HOSE TEST.** As soon as a representative amount of the wall has been glazed (500 square feet or 46.5 m^2) a water hose test should be conducted in accordance with AAMA 502-08 specifications to check the installation. On all jobs the hose test should be repeated every 500 square feet (46.5 m^2) during the glazing operation.

12. **COORDINATION WITH OTHER TRADES.** Coordinate with the general contractor any sequence with other trades which offset curtain wall installation (i.e. fire proofing, back-up walls, partitions, ceilings, mechanical ducts, converters, etc.).

13. **CARE AND MAINTENANCE.** Final cleaning of exposed aluminum surfaces should be done in accordance with AAMA 609.1 for anodized aluminum and 610.1 for painted aluminum.

13. **JOB SITE ESSENTIALS.** See pages 26 and 27.

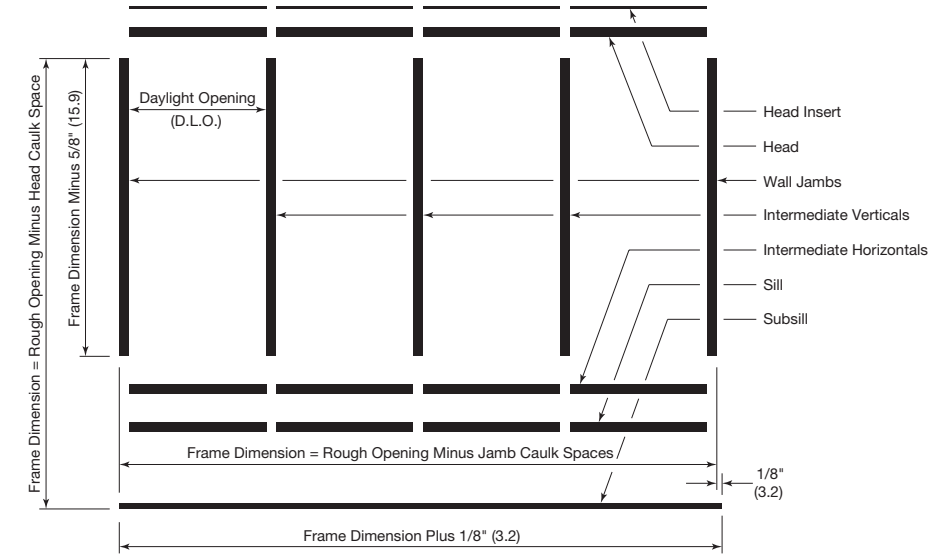
FABRICATION

CUT LENGTHS FOR FRAME FABRICATION

1. Measure rough opening to determine frame width and height dimension. Measure rough opening vertically in multiple places to determine shortest dimension. Allow a maximum of 3/8" (9.5) caulk space at head and jambs for Dade County Installations. See approved shop drawings for all other caulk space allowances. Subsill sits on the substrate.

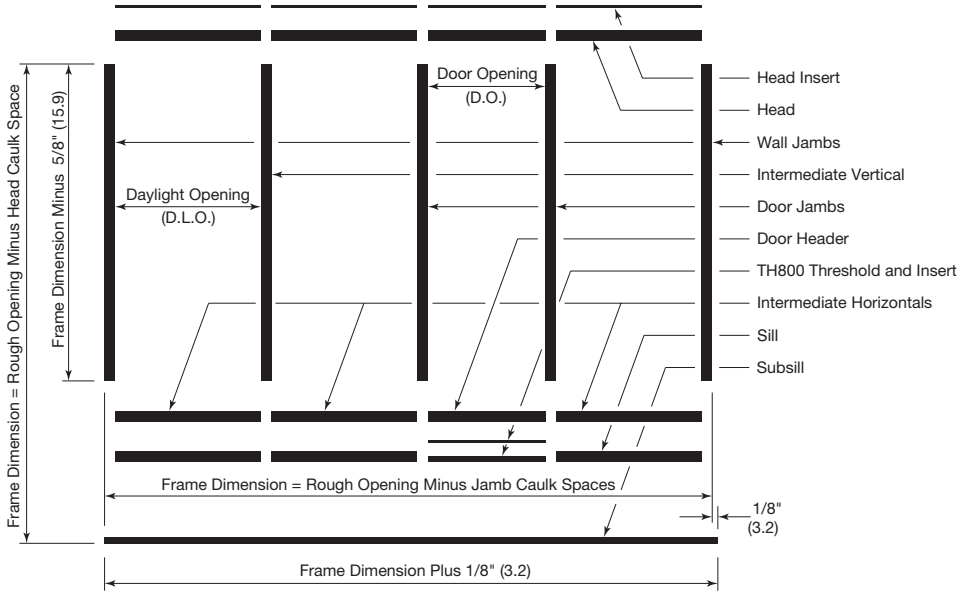
2. Cut members to Length:

Subsill Length	= Frame Dimension plus 1/8" (3.2). Subsill must extend 1/8" (3.2) outside last wall jamb to allow last bay installation. Subsill runs through.
Vertical Length	= Frame Dimension Minus 5/8" (15.9).
Horizontal Length	= Daylight Opening.
Head Insert	= Daylight Opening Minus 1/32" (0.8).
Glass stop Length	= Daylight Opening Minus 1/32" (0.8).
Jamb Inserts	= 4" (101.6) - One for each jamb anchor screw. (Not shown below)



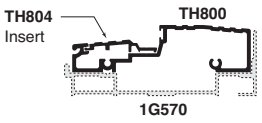
DETAIL A

Frames without Entrances



DETAIL B

Frames with **TH800** Threshold



Air and Water Resistant Threshold

NOT TO SCALE

FABRICATION (continued)

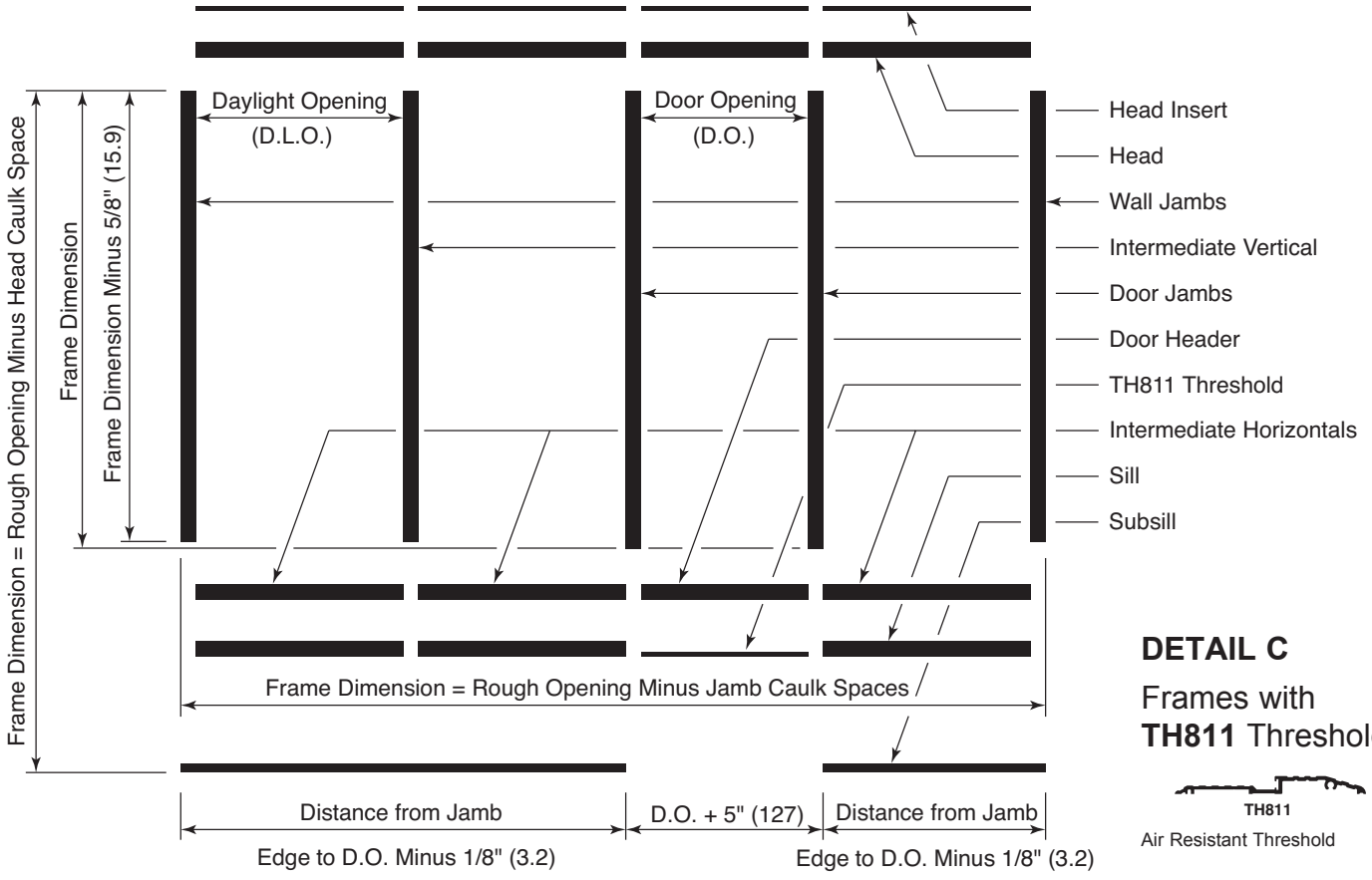
CUT LENGTHS FOR WINDOW FRAMES WITH TH811 THRESHOLD

1. Measure rough openings to determine frame width and height dimensions. Measure rough opening vertically in multiple places to determine shortest dimension. Allow a maximum of 3/8" (9.5) caulk space at head and jambs for Dade County Installations, see approved shop drawings for all other caulk space allowances. Subsill sits on substrate.

2. Cut members to length:

   Subsill length is determined by entrance locations. Subsill butts to door jambs. Determine last bay installation and allow 1/8" (3.2) additional length to Subsill.

Vertical Length	= Frame Dimension Minus 5/8" (15.9)
Horizontal Length	= Daylight Opening.
Head Insert	= Daylight Opening Minus 1/32" (0.8)
Glass Stop Length	= Daylight Opening Minus 1/32" (0.8)
Jamb Inserts	= 4" (101.6) - One for each jamb anchor screw. (Not shown below)



DETAIL C

Frames with **TH811** Threshold

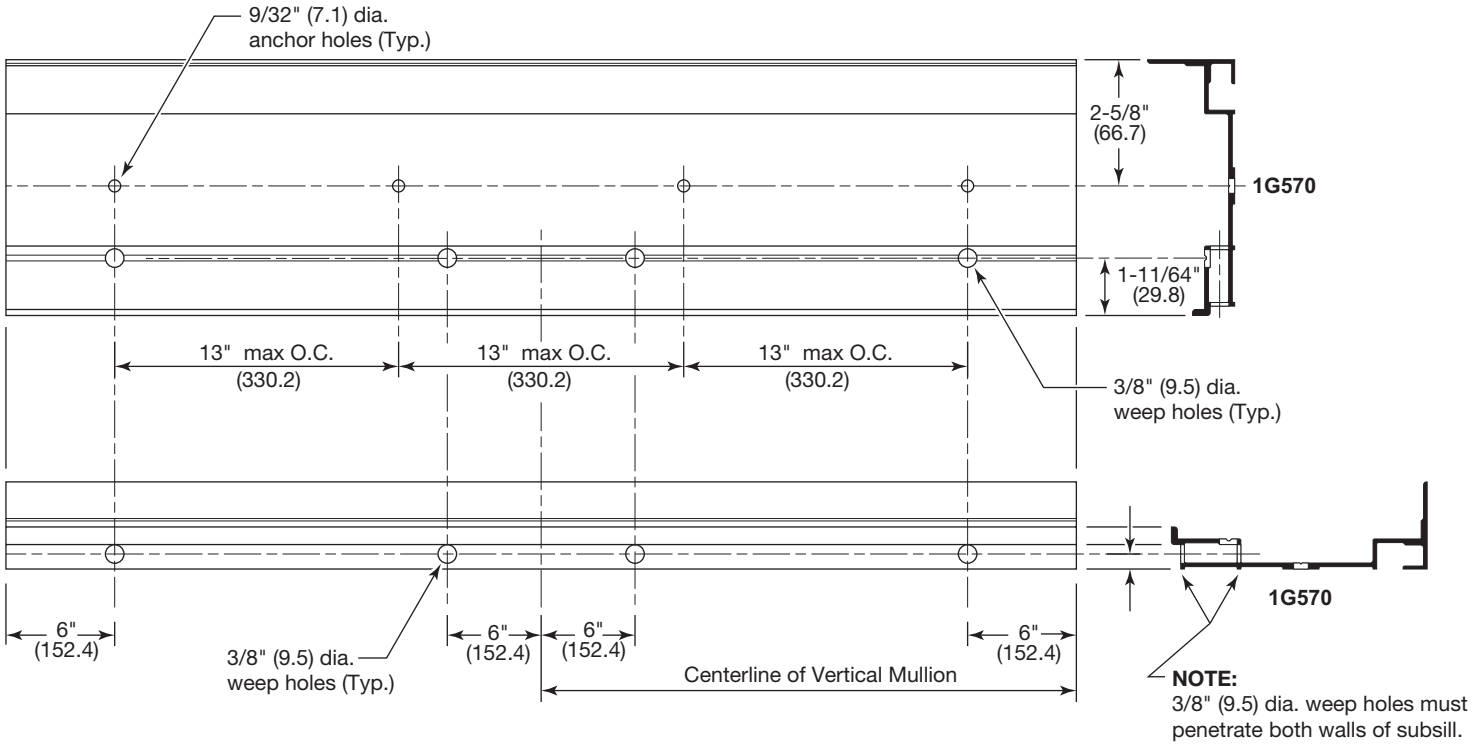
Air Resistant Threshold

The deep glass pocket intermediate vertical is standard except for entrance packages within a frame unit are separated by a sidelite(s).

NOT TO SCALE

FABRICATION (continued)

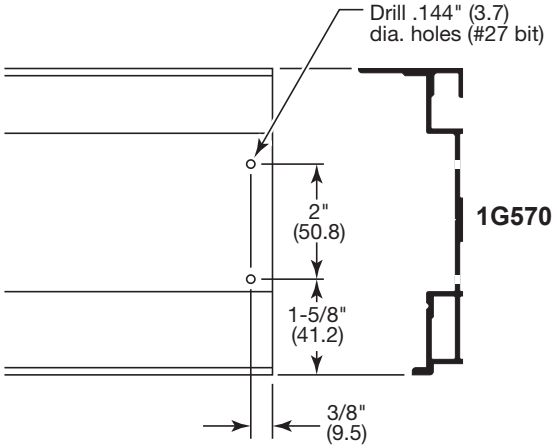
3. Fabricate Subsills for anchor and weep holes as shown in **DETAIL D**.



DETAIL D

4. Fabricate Subsills for End Dams as shown in **DETAIL E**.

NOTE:
All perimeter anchor fabrication shown in these instructions are the minimum required and are to be superseded by individual project certified calculation requirements based on each project's design specifications. Final anchoring methods and fastener types are to be described in approved shop drawings.



DETAIL E

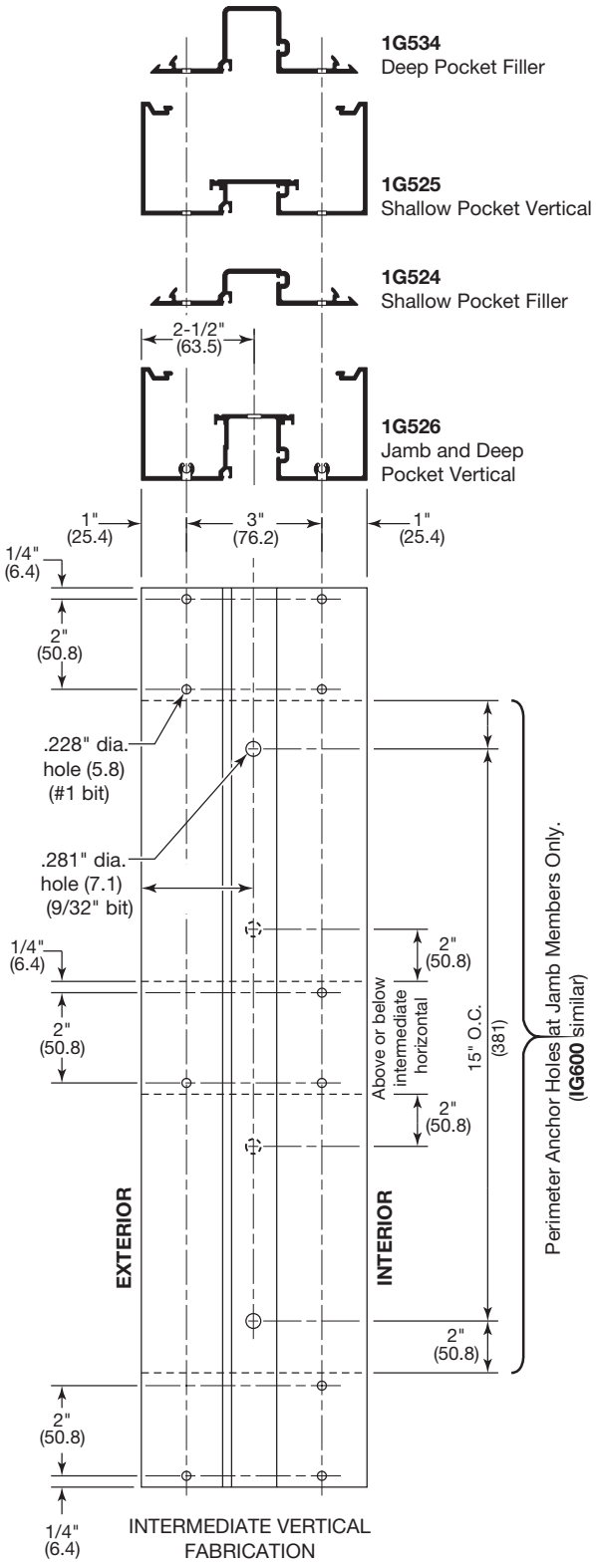
NOT TO SCALE

FABRICATION (continued)

5. Fabricate vertical members for horizontal attachment. Drill attachment and access holes as shown in **DETAIL F**.

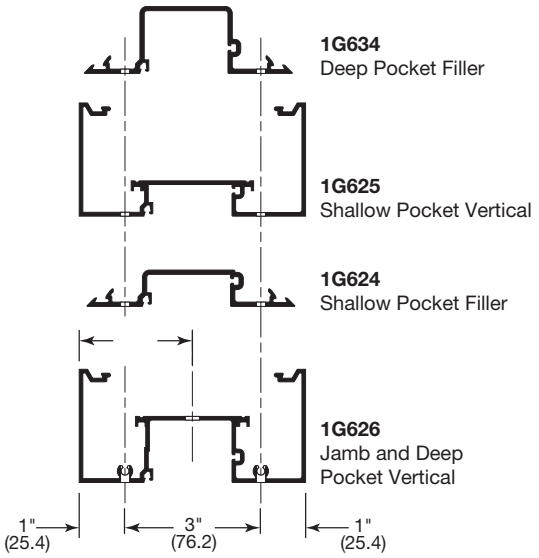
6. Jamb members require anchor holes 2" (50.8) from horizontal members and 15" (381) O.C. as shown in **DETAIL F**.

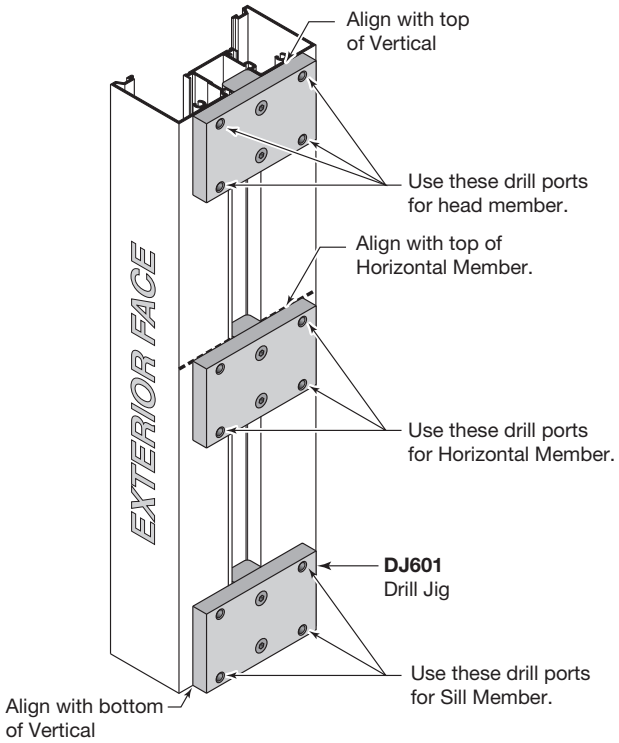
SERIES IG500



INTERMEDIATE VERTICAL FABRICATION

SERIES IG600





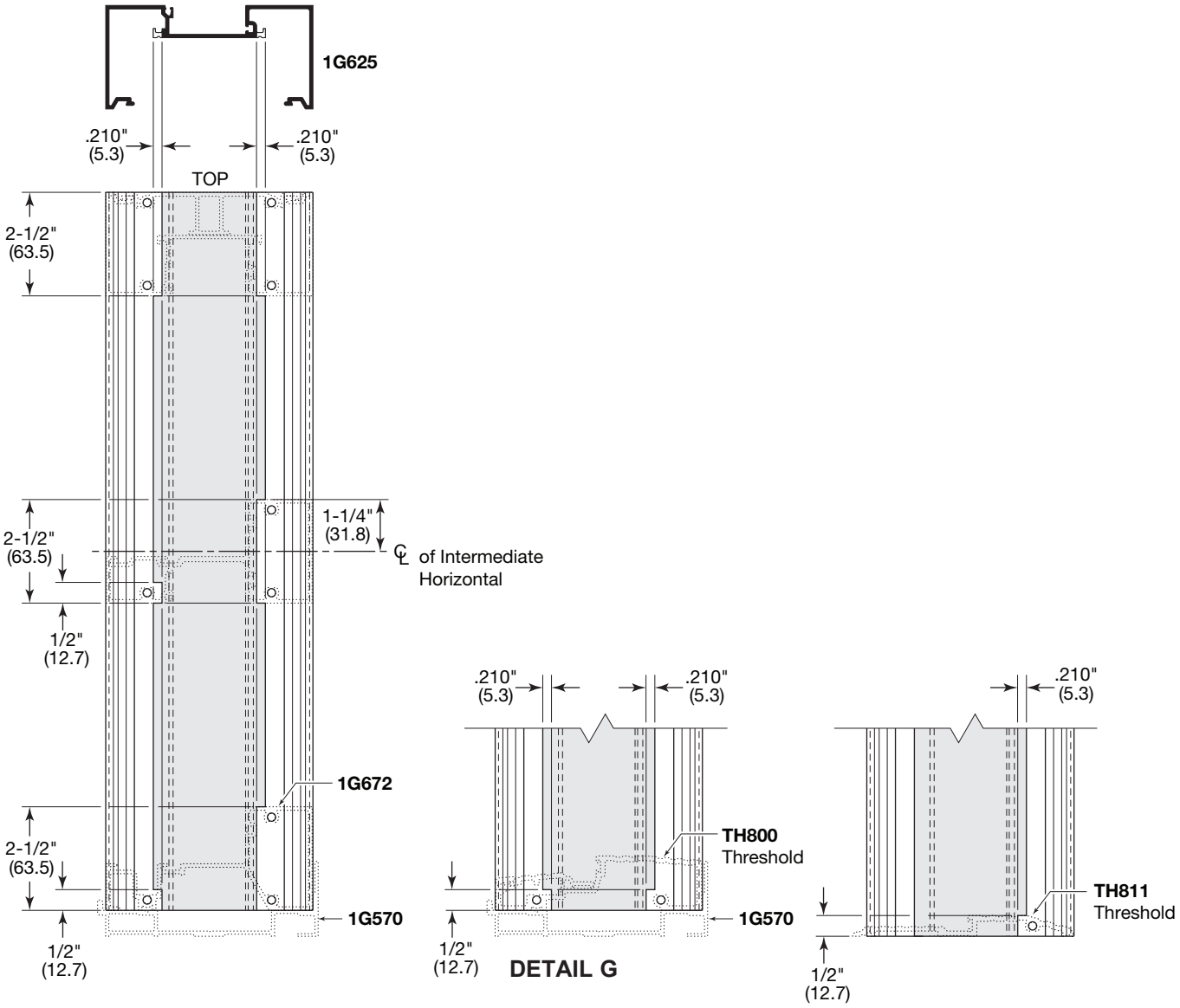
DETAIL F

NOTE:
All perimeter anchor fabrication shown in these instructions are the minimum required and are to be superseded by individual project certified calculation requirements based on each project's design specifications. Final anchoring methods and fastener types are to be described in approved shop drawings.

NOT TO SCALE

FABRICATION (continued)

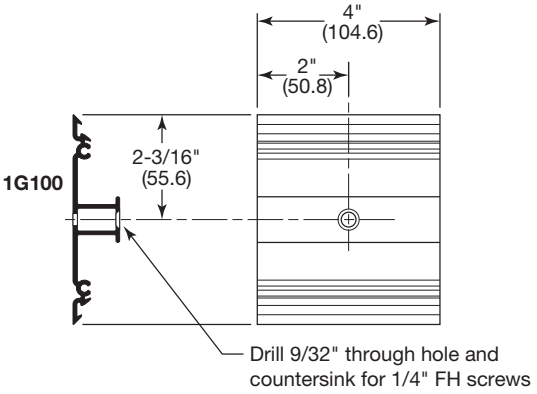
7. When **IG600** for 1-5/16" (33.3) glazing conditions require a shallow pocket vertical at door jamb, the steel anchoring tabs must be notched at horizontal locations for screw spline access. **See DETAIL G.**



DETAIL G

8. Fabricate jamb insert plates as shown in **DETAIL H**. One plate required for each jamb anchor screw.

NOTE:
All perimeter anchor fabrication shown in these instructions are the minimum required and are to be superseded by individual project certified calculation requirements based on each project's design specifications. Final anchoring methods and fastener types are to be described in approved shop drawings.

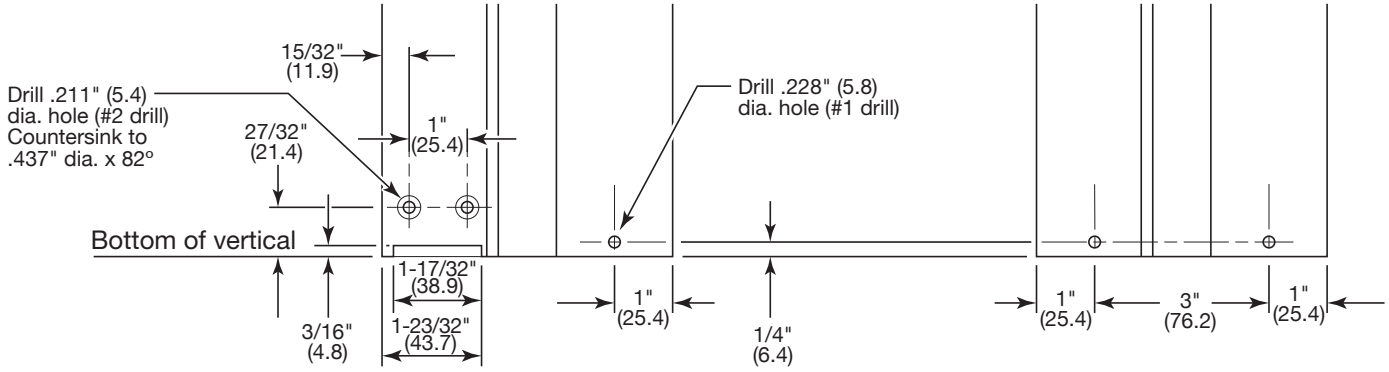


DETAIL H

NOT TO SCALE

FABRICATION (continued)

9. Fabricate **IG500** door jamb for **TH800** or **TH811** Threshold as shown in **DETAIL I**.

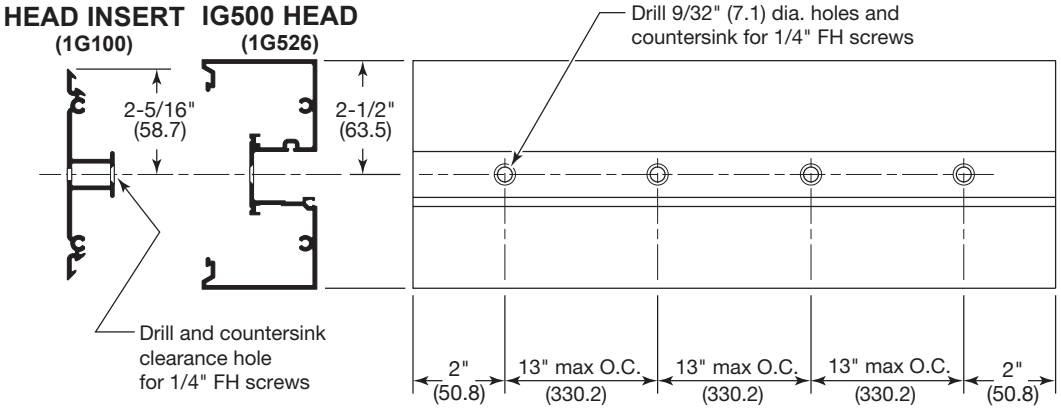


DOOR JAMB at TH811
AIR THRESHOLD

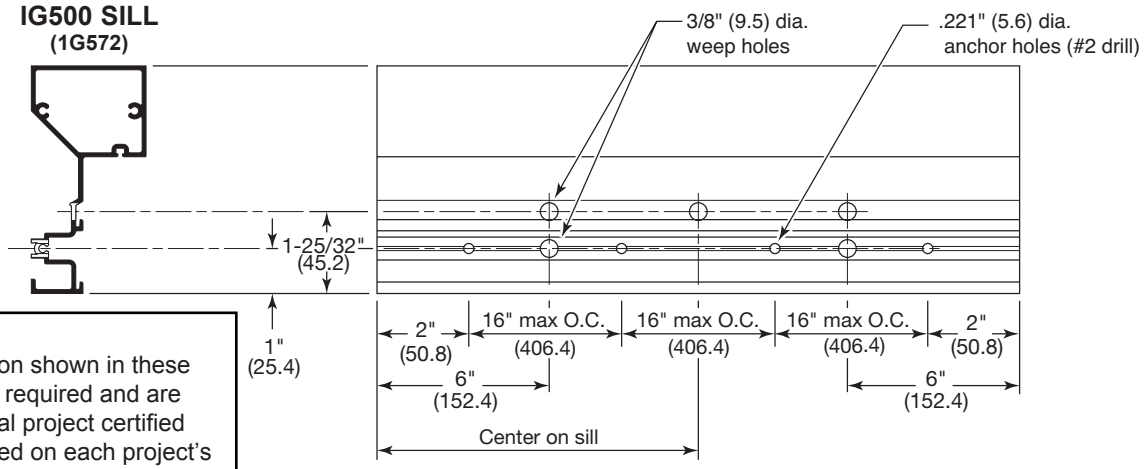
DETAIL I (IG500)

DOOR JAMB at TH800
H.P. THRESHOLD

10. Fabricate **IG500** head members, perimeter fillers and sill members for anchor and weep holes as **shown in DETAIL J. NOTE: Head insert ends must not extend beyond ends of head member.**



NOTE: Hole alignment between head and insert CRITICAL.



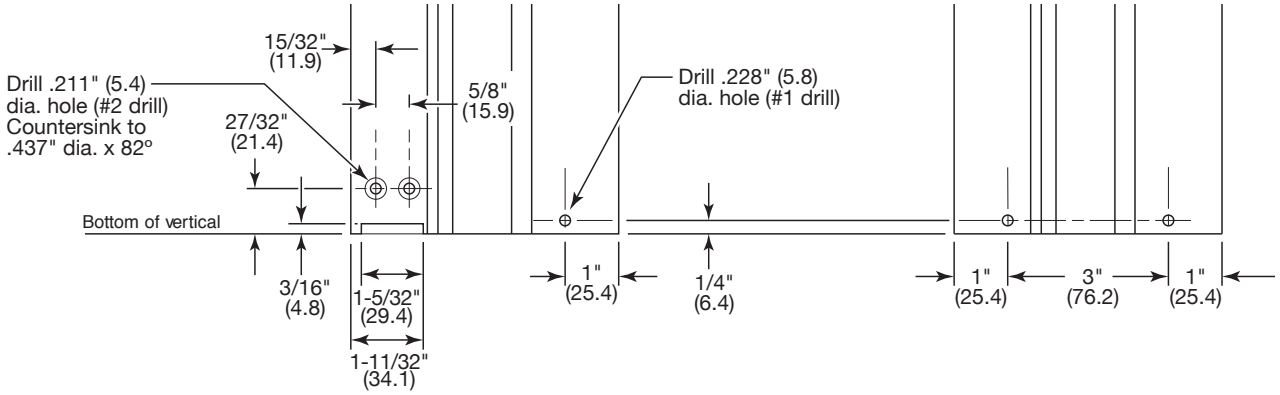
NOTE:
All perimeter anchor fabrication shown in these instructions are the minimum required and are to be superseded by individual project certified calculation requirements based on each project's design specifications. Final anchoring methods and fastener types are to be described in approved shop drawings.

DETAIL J (IG500)

NOT TO SCALE

FABRICATION (continued)

9a. Fabricate **IG600** door jamb for **TH800** or **TH811** Threshold as shown in **DETAIL I**.



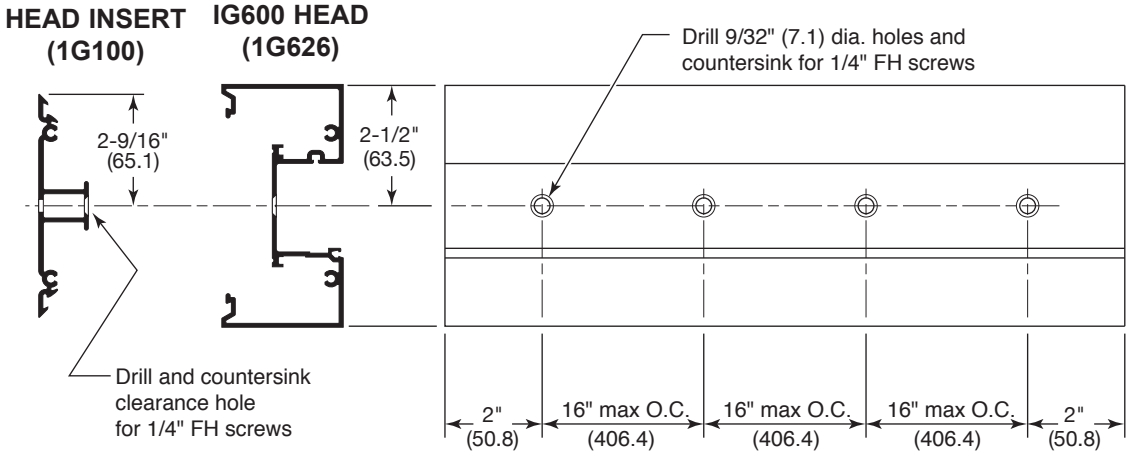
DOOR JAMB at **TH811** THRESHOLD

DETAIL I (IG600)

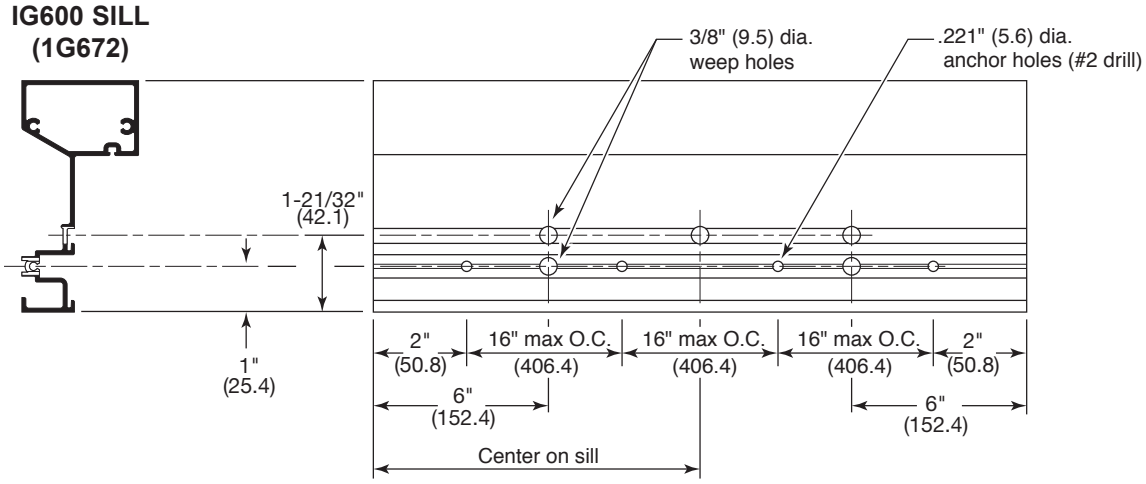
DOOR JAMB at **TH800** H.P. THRESHOLD

10a. Fabricate **IG600** head members, perimeter fillers, and sill members for anchor and weep holes as **shown in DETAIL J**.

NOTE: Head insert ends must not extend beyond ends of head member.



NOTE: Hole alignment between head and insert CRITICAL.



DETAIL J (IG600)

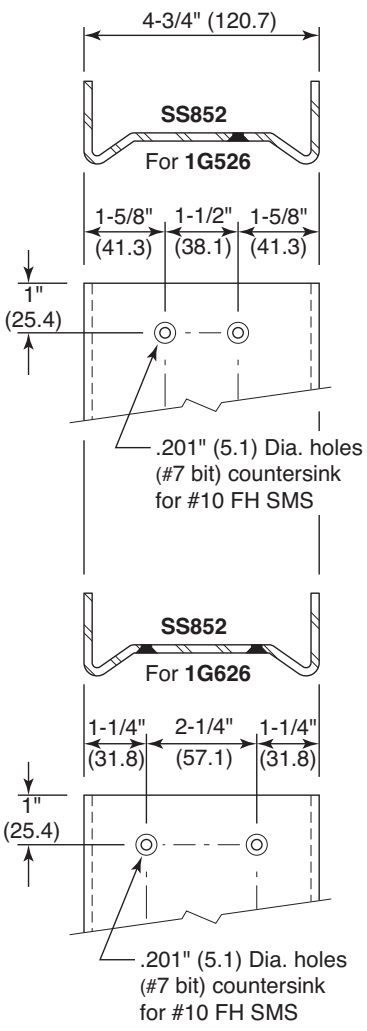
NOT TO SCALE

ASSEMBLY

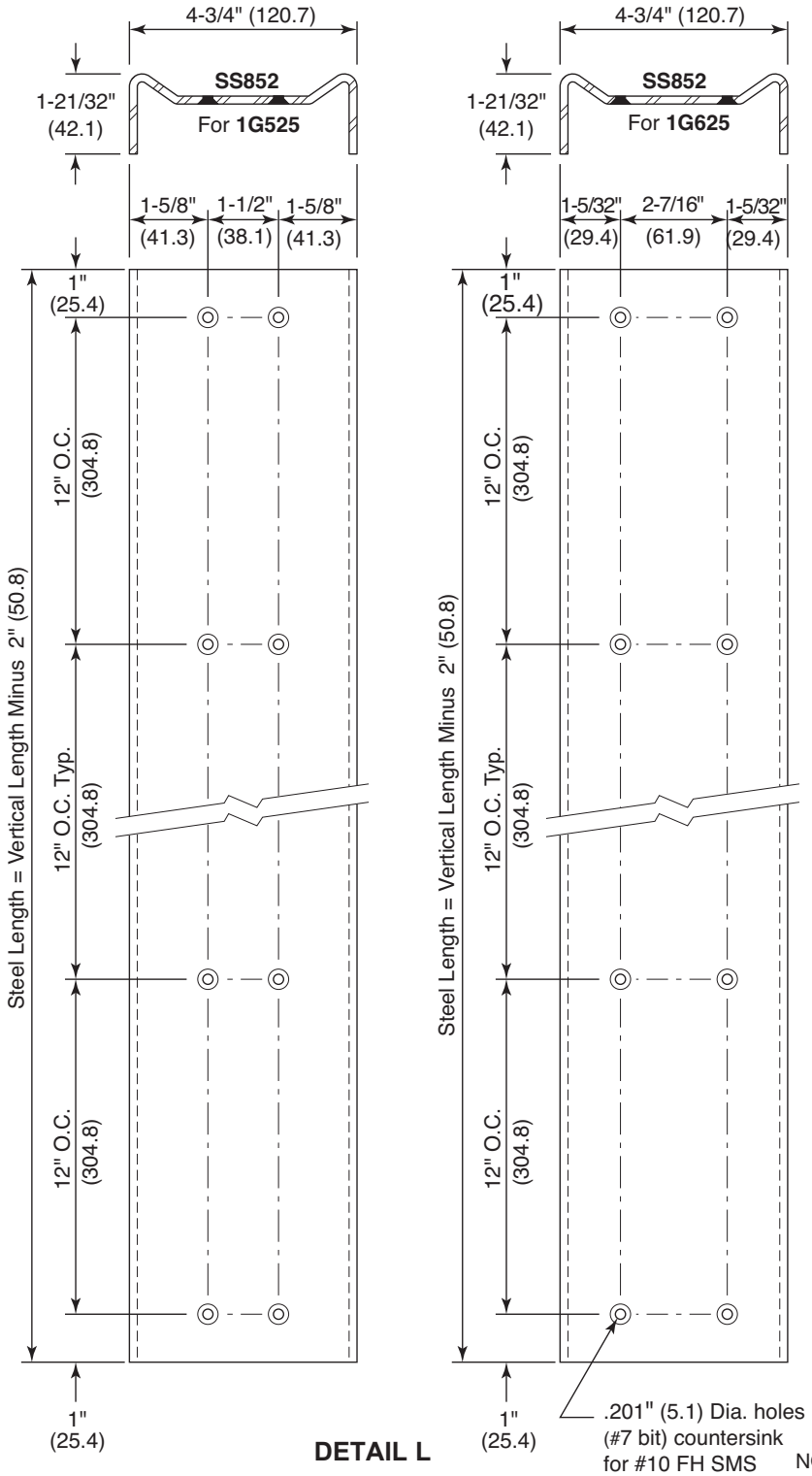
SS852 Steel Reinforcement is predrilled for attachment to 1G526 and 1G626 (deep pocket) verticals. If an entrance frame uses an 1G525 or 1G625 (shallow pocket) vertical, steel reinforcement modifications are required.

1. If steel reinforcement is required, cut to length and drill attachment holes 1" (25.4) from cut end. **See DETAIL K.**

2. For **1G525** and **1G625** shallow pocket door jamb, drill and countersink attachment holes as shown in **DETAIL L**. Adjust vertical hole locations to avoid interference with existing attachment holes as needed.



DETAIL K



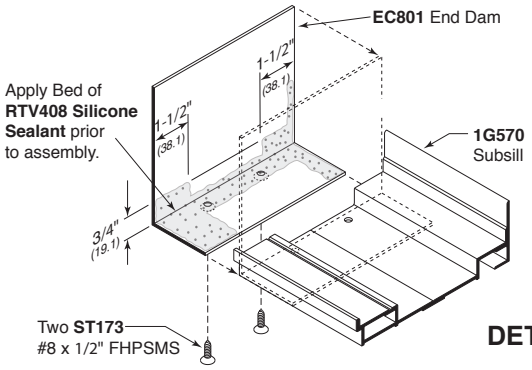
DETAIL L

NOT TO SCALE

ASSEMBLY (continued)

3. Clean ends of Subsills that are to receive End Dams. Clean End Dams, apply **RTV408 Silicone Sealant** and install to ends of Subsill as **shown in DETAIL M**.

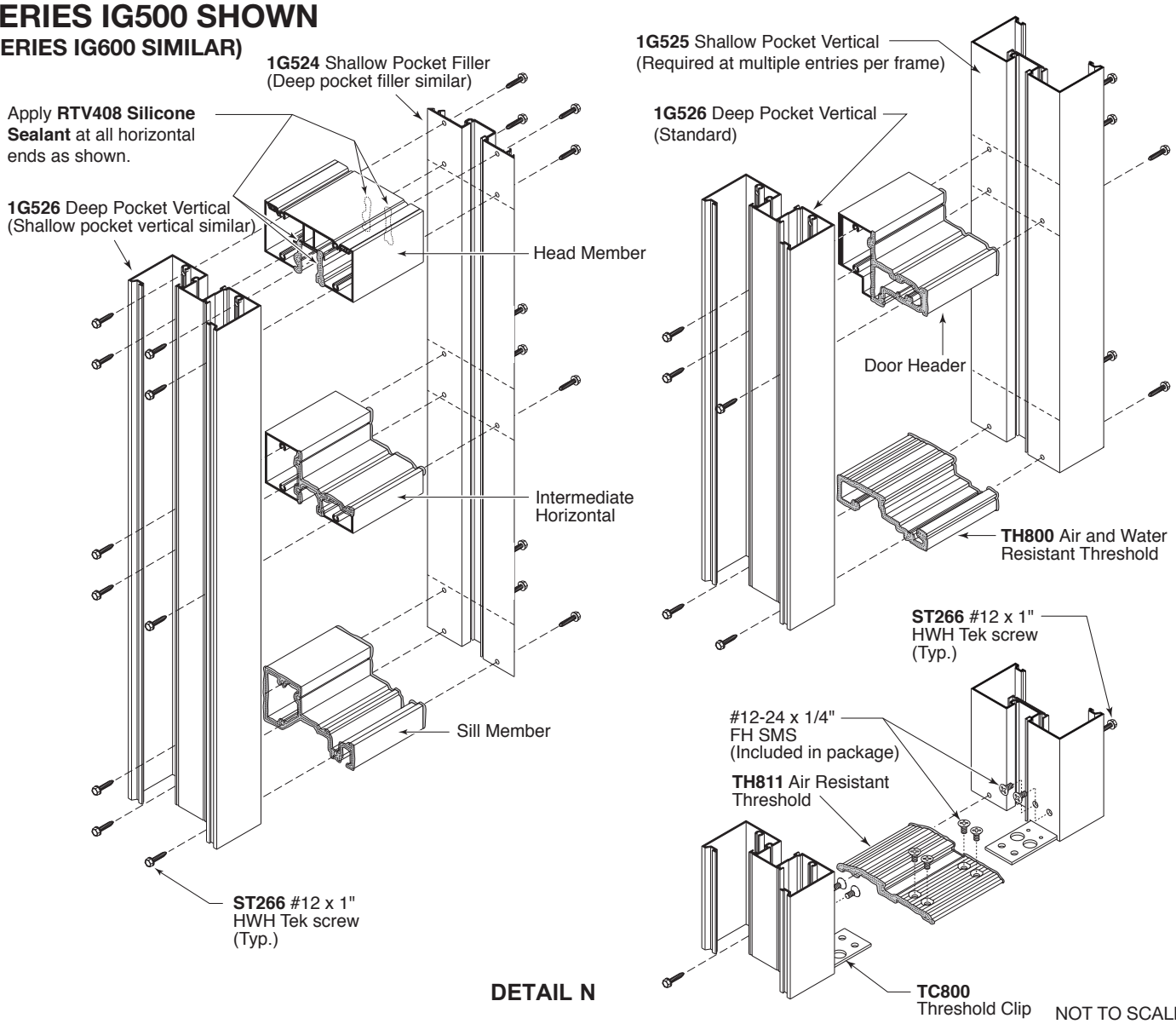
CRITICAL NOTE:
Clean all contact surfaces with CRL2032 solvent cleaner and wipe with a lint free cloth using the two-cloth cleaning method.



DETAIL M

4. Clean and apply **RTV408 Silicone Sealant** to ends of horizontals and thresholds. Attach horizontals to verticals using **ST266** #12 x 1" HWH Tek screws. **See DETAIL N**. Clean excess sealant from exposed joints.

SERIES IG500 SHOWN
(SERIES IG600 SIMILAR)



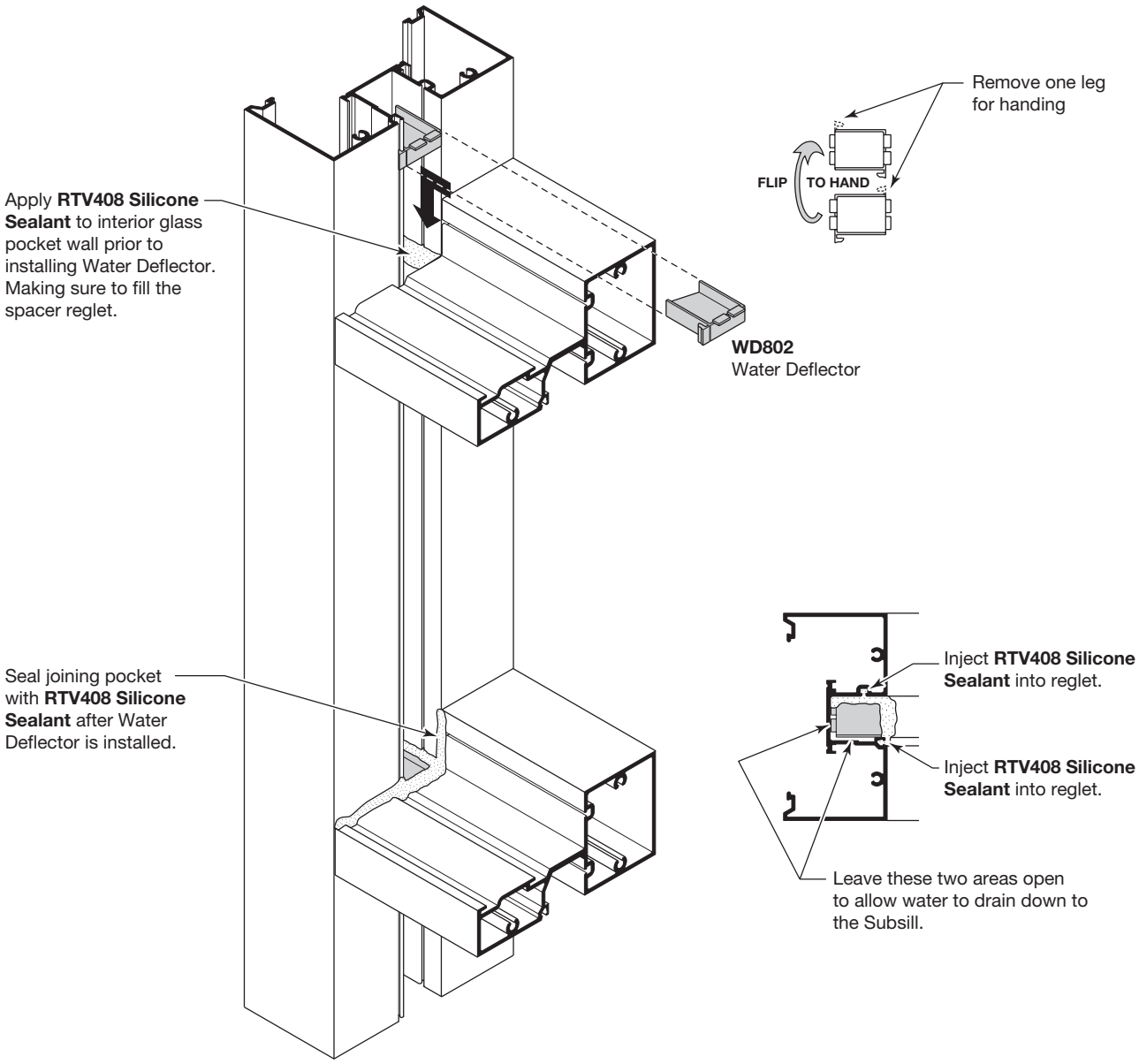
DETAIL N

NOT TO SCALE

ASSEMBLY (continued)

5. Install Water Deflectors into vertical glass pockets at vertical/horizontal intersections as shown in **DETAIL O**. Water deflectors are not required at head/vertical intersection.

   NOTE: Water deflectors require handing modifications prior to installation.



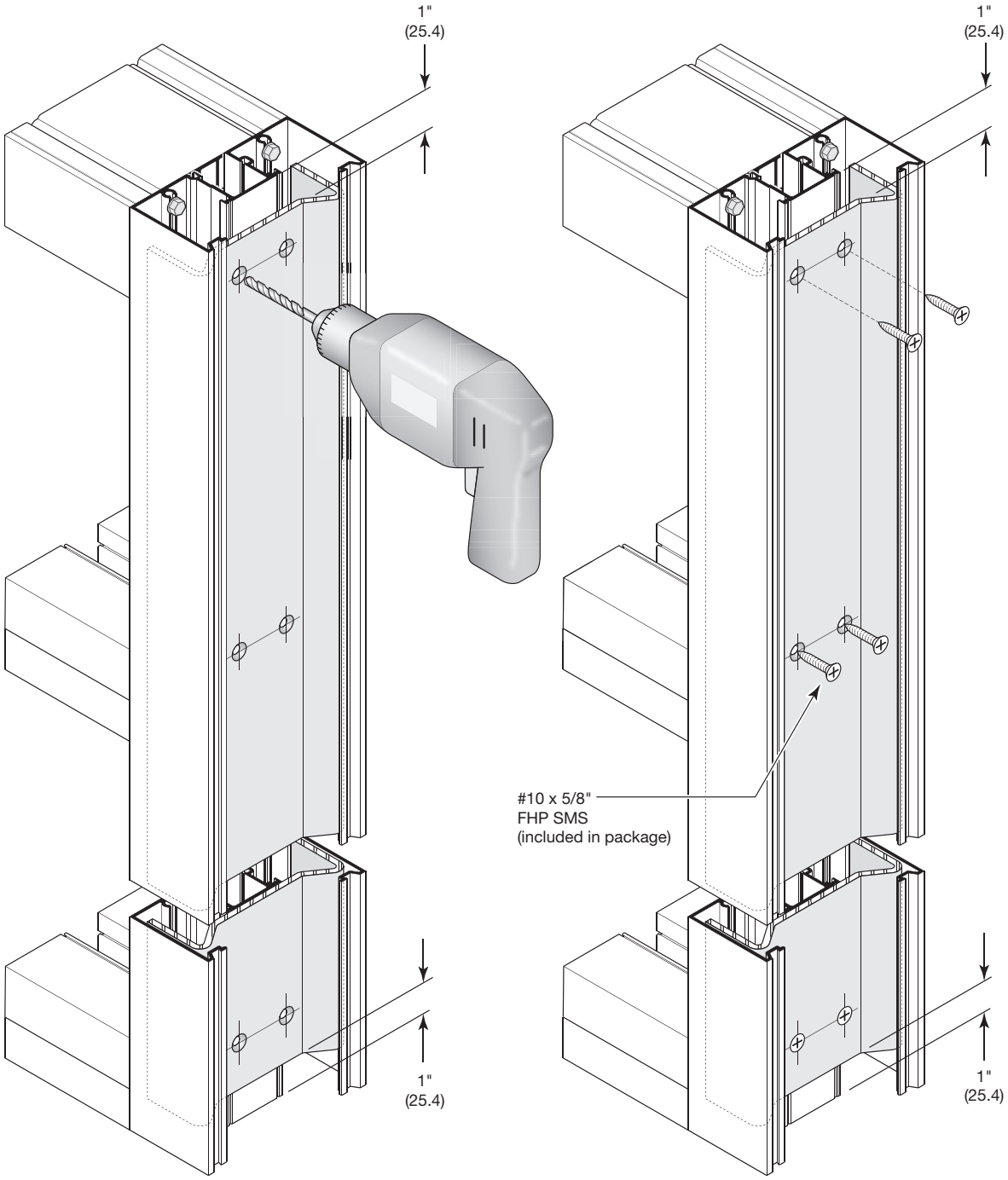
DETAIL O

NOT TO SCALE

ASSEMBLY (continued)

6. Install steel reinforcement. Slide steel into vertical member. Align 1" from each end of vertical and match drill through holes with #26 drill bit (.147"). Standard deep pocket verticals shown, shallow pocket similar.

7. Attach steel to vertical mullion with #10 X 5/8" FHP SMS (included in package) as shown in **DETAIL P**. (**IG500** verticals for 9/16" (14) glazing are shown, **IG600** verticals for 1-5/16" (33) glazing are similar)



DETAIL P

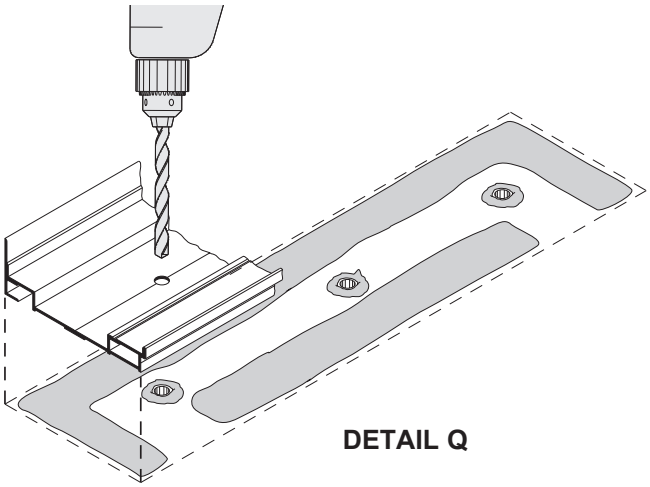
NOT TO SCALE

INSTALLATION

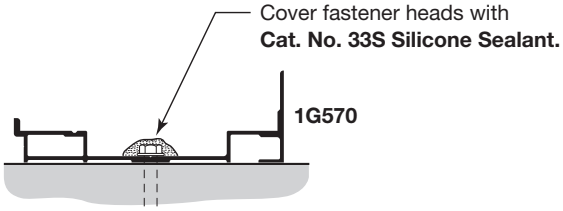
NOTE: Door frames utilizing the TH800 H.P. Threshold are to be installed in sequence with frame panels. Door frames utilizing the TH811 Air Threshold must be installed prior to sidelite panel installations. Leave space between Subsills for door frame. Space for door frame = D.O. plus 5". See DETAIL Z on page 18 for example of installation sequence.

PERIMETER ANCHOR GUIDELINE CHART			
ANCHOR LOCATION	ANCHOR TYPE		
	CONCRETE AND CMU	WOOD	STEEL STUD
HEAD	1/4" x 3" FH Tapcon 1-1/4" (31.8) min. Embedment	1/4" x 3-1/2" FH Tapcon 1-1/2" (31.8) min. Embedment	1/4" x 2-1/2" FH Tech
SILL (SUBSILL)	1/4" x 1-3/4" FH Tapcon 1-3/4" (44.9) min. Embedment		
JAMB	1/4" x 3" FH Tapcon 1-1/4" (31.8) min. Embedment	1/4" x 3-1/2" FH Tapcon 1-1/2" (31.8) min. Embedment	1/4" x 2-1/2" FH Tech
TH800 THRESHOLD (SUBSILL)	1/4" x 1-3/4" FH Tapcon 1-3/4" (44.9) min. Embedment		
TH811 THRESHOLD	1/4" x 2" Gr.5 FH Tapcon 1-3/4" (44.9) min. Embedment		

1. Place fabricated Subsill into opening allowing for jamb shim space. Match drill anchor holes using Subsill as template.
2. Remove Subsill, clean substrate. Apply full bed of **Cat. No. 95C Sealant** across both ends and full length of interior Subsill line. Run full bed of sealant across front area leaving a 3" (76.2) gap at each end as **shown in DETAIL Q**.



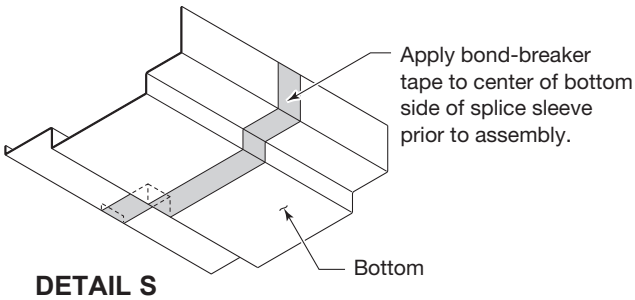
DETAIL Q



DETAIL R

3. Replace Subsill into opening and anchor to substrate. Refer to Guideline Chart above for anchor guidelines. Seal over all fastener heads as shown in **DETAIL R**.

4. Subsill must be spliced for runs longer than 24' (7.3 m). Apply 3/4" (19.1) wide bond breaker tape across center of bottom side of splice sleeve as shown in **DETAIL S**.

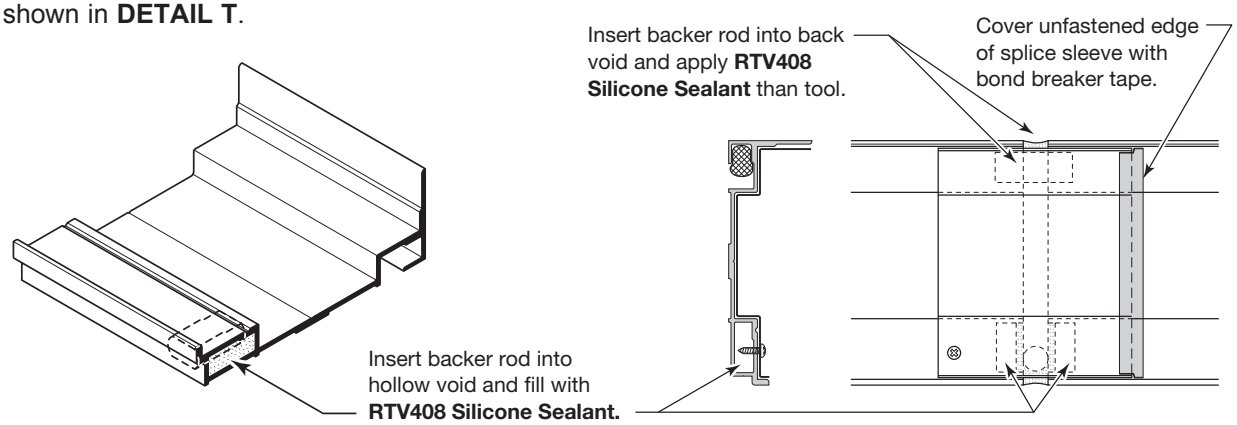


DETAIL S

NOT TO SCALE

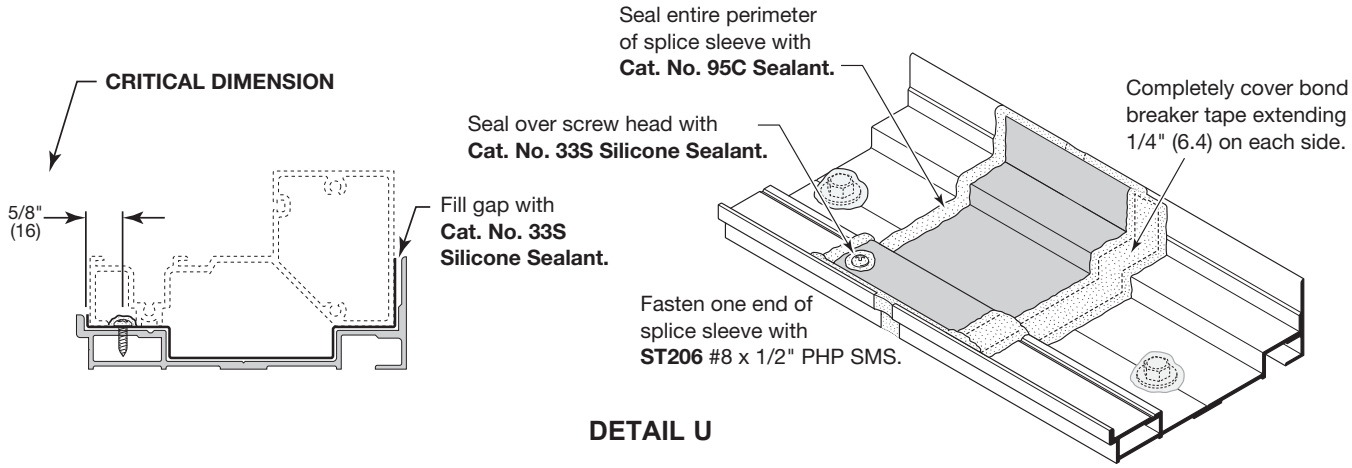
INSTALLATION (continued)

5. Insert backer rod into rectangular voids of Subsill ends and seal with **RTV408 Silicone Sealant** as shown in **DETAIL T**.



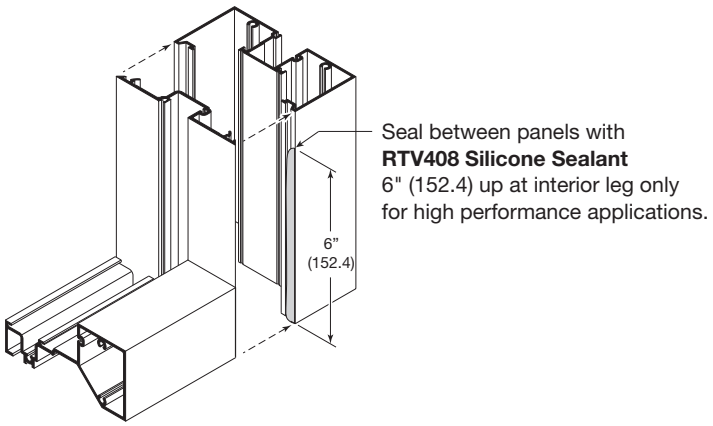
DETAIL T

6. Attach one side of splice sleeve to Subsill with **ST206** #8 X 1/2" PH SMS. Apply bond breaker tape to unfastened end of splice sleeve as shown. Seal over tape with **Cat. No. 95C Silicone Sealant** extending sealant 1/4" (6.4) each side of tape edges as shown in **DETAIL U**. Seal all remaining sleeve edges as shown.



DETAIL U

7. For high performance applications (water pressures above 10 psf) apply a 6" (152.4) bead of **RTV408 Silicone Sealant** to bottom of interior leg of vertical prior to assembly as shown in **DETAIL V.**

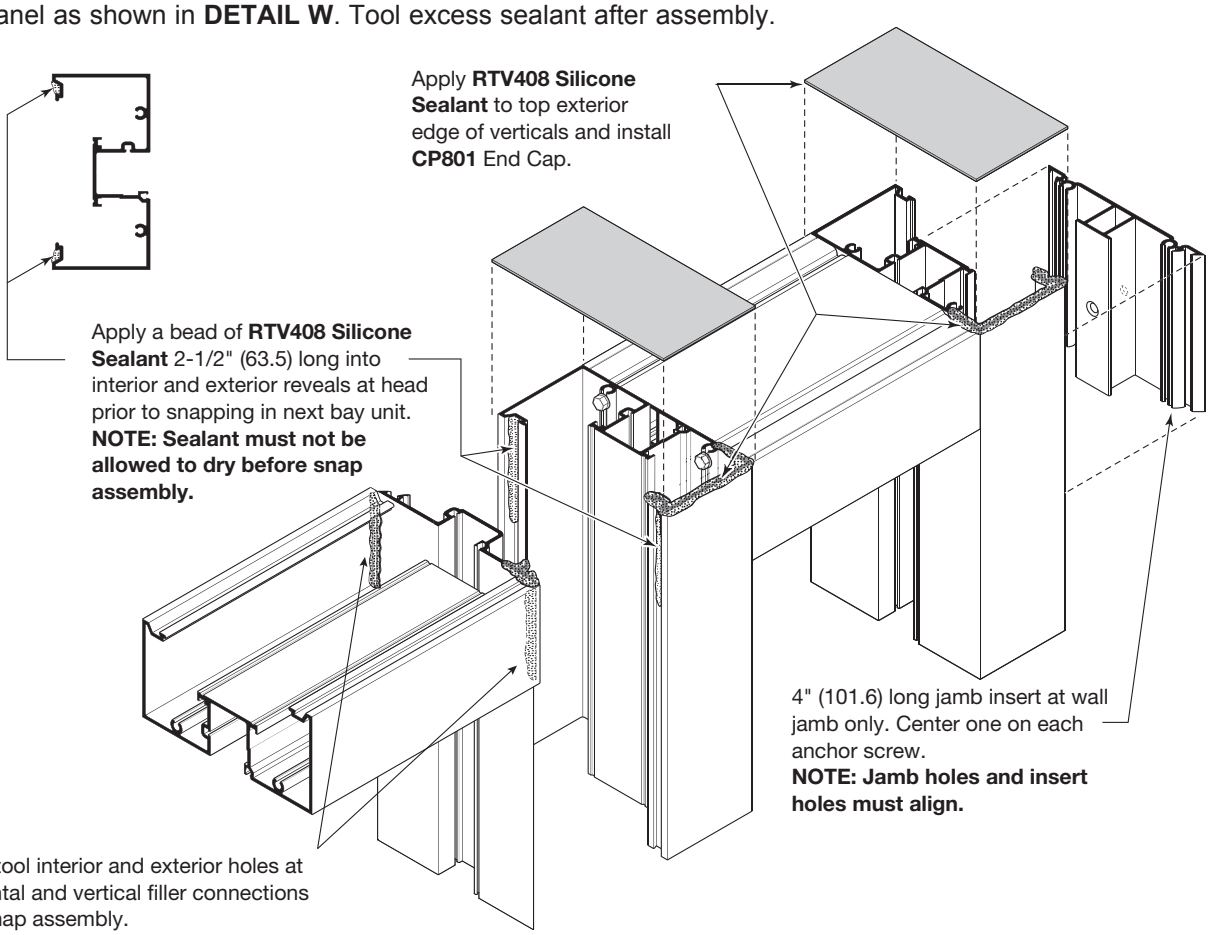


DETAIL V

NOT TO SCALE

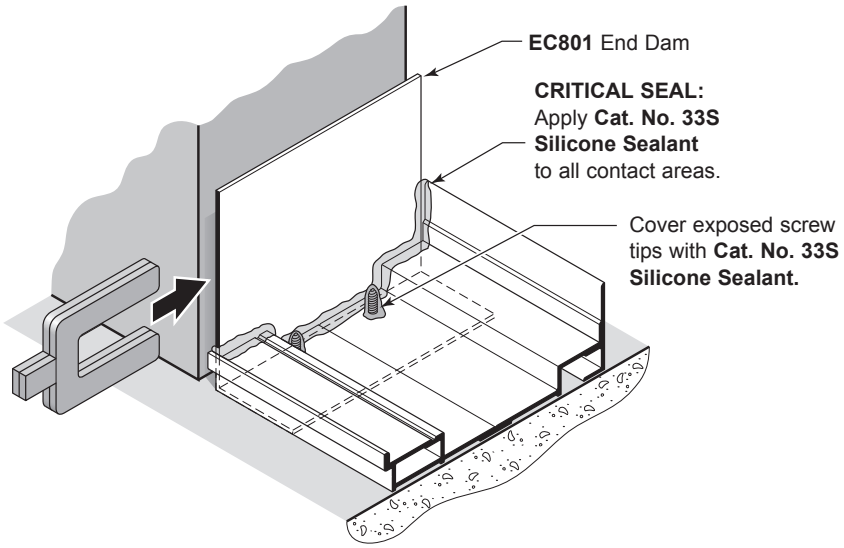
INSTALLATION (continued)

8. Apply **RTV408 Silicone Sealant** and install Closure Plates in top of main vertical members of each assembled frame panel as shown in **DETAIL W**. Tool excess sealant after assembly.



DETAIL W

9. Prior to installing first and last frame panels apply **Cat. No. 33S Silicone Sealant** to Subsill, End Dam, joints, and screw tips. Tool sealant. Shim between End Dam and building. **See DETAIL X**.



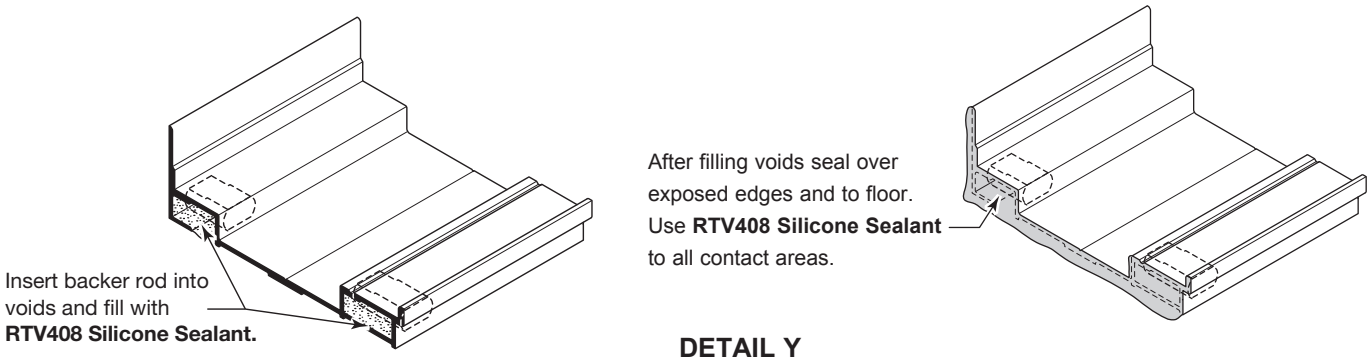
DETAIL X

NOT TO SCALE

INSTALLATION (continued)

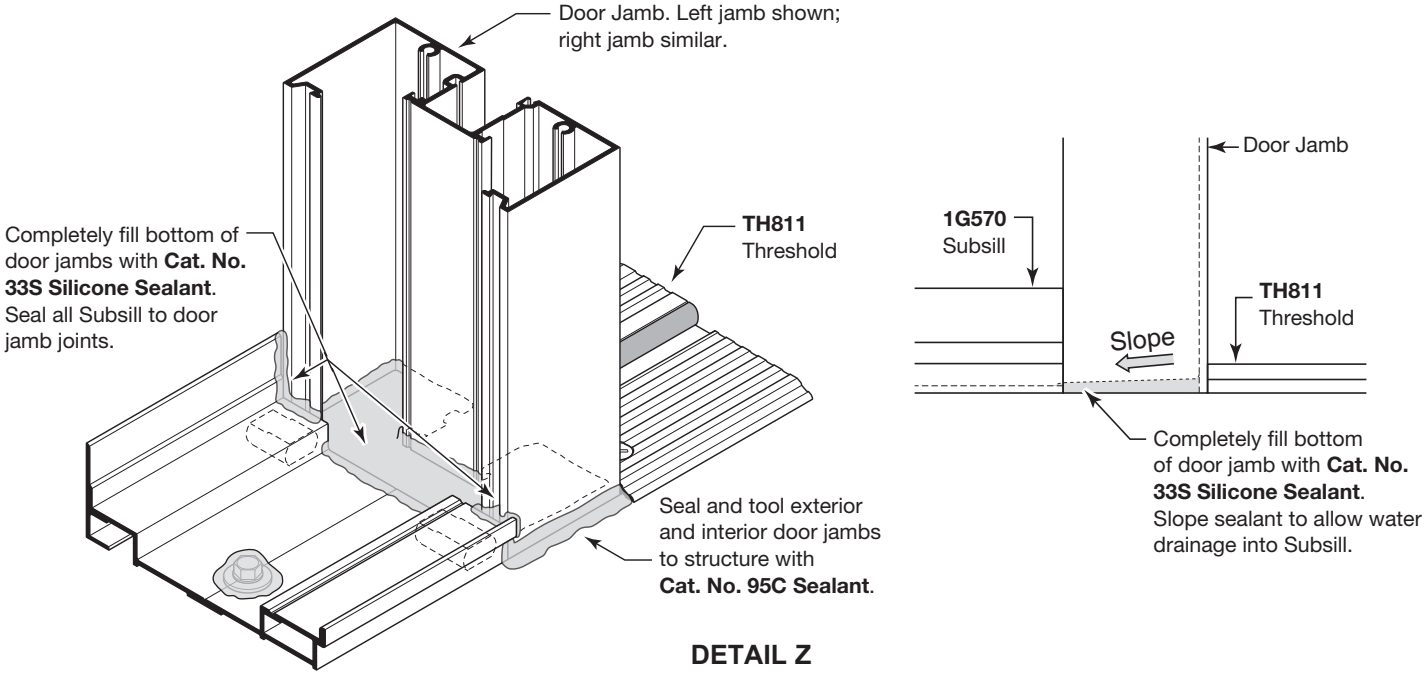
NOTE: Frames with doors utilizing the TH811 Threshold within an opening must be installed prior to adjacent window bays.

10. Seal ends of Subsill that abut door jambs as shown in **DETAIL Y**.



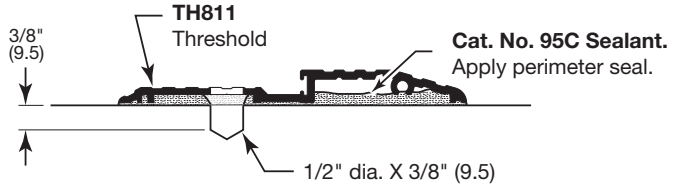
DETAIL Y

11. Install the door frame into opening. Refer to Anchor Guideline Chart on page 15. Seal base of door jambs to Subsill. Slope sealant to allow water to drain to Subsill. **See DETAIL Z**.
NOTE: Air resistant threshold to be set in full bed of Cat. No. 95C Sealant.



DETAIL Z

TH811 AIR RESISTANT THRESHOLD NOTE:
Substrate must be drilled out at lock bolt locations. After door frame has been installed, drill through provided threshold bolt holes at 1/2" diameter X 3/8" (9.5) minimum depth. See DETAIL AA.

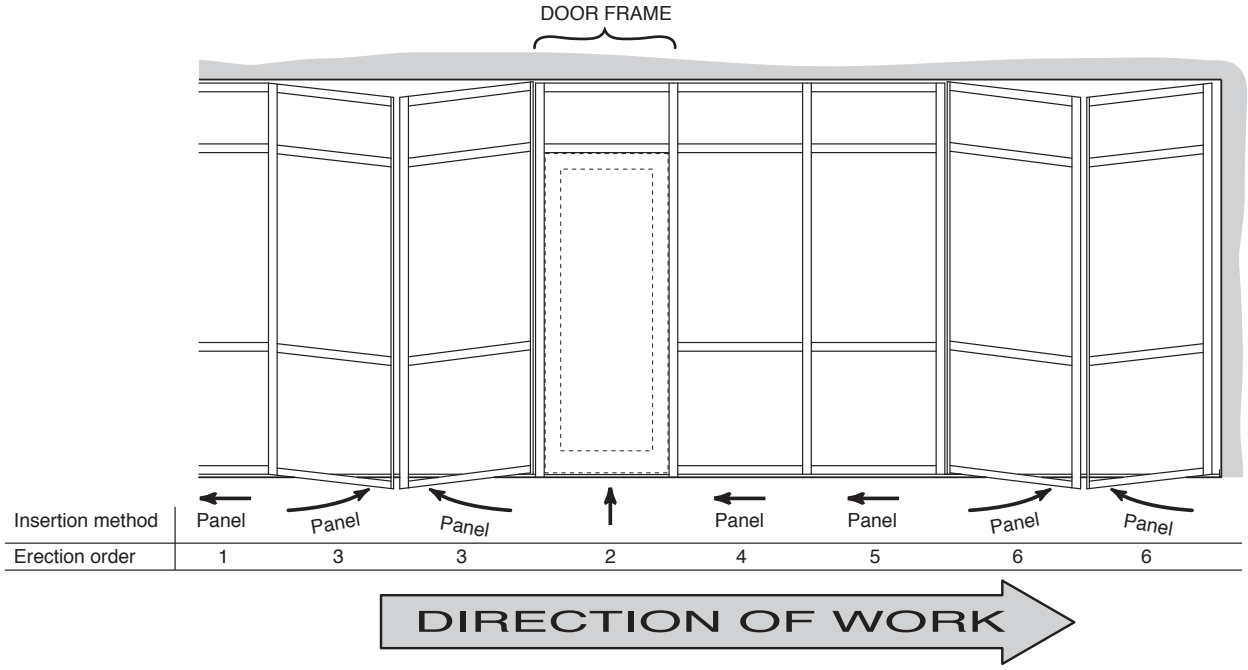


DETAIL AA

NOT TO SCALE

INSTALLATION (continued)

Example: **DETAIL BB** below is an example of the erection order for door frames using **TH811** Thresholds.

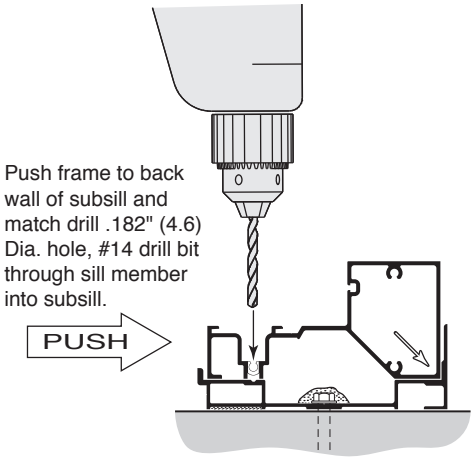


DETAIL BB

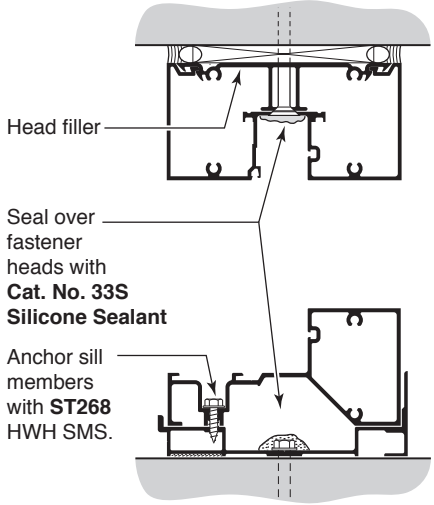
NOTE: Prior to installing jamb panel, snap 4" (101.6) long jamb inserts into jamb member, align with anchor holes.

12. Install assembled frame panels into opening starting at left jamb shimming for proper caulk spaces. Match drill through anchor holes in Sill into Subsill as shown in **DETAIL CC**. Attach Sill to Subsill with **ST268** #12 x 3/4" HWH SMS. Shim, plum, level, and then anchor jamb **DETAIL EE** and head member **DETAIL DD** to building. Refer to Anchor Guideline Chart on Page 15 for anchor guidelines. Install remaining panels in left-to-right sequence, anchoring each panel in place. Last bays and panels adjacent to installed door jamb may require “accordion" method to clear End Dams and snap legs.

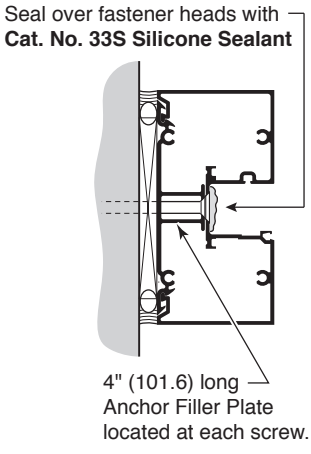
13. Apply **Cat. No. 33S Silicone Sealant** and seal over fastener heads at head and sill members as shown in **DETAIL DD** and **DETAIL EE**.



DETAIL CC



DETAIL DD

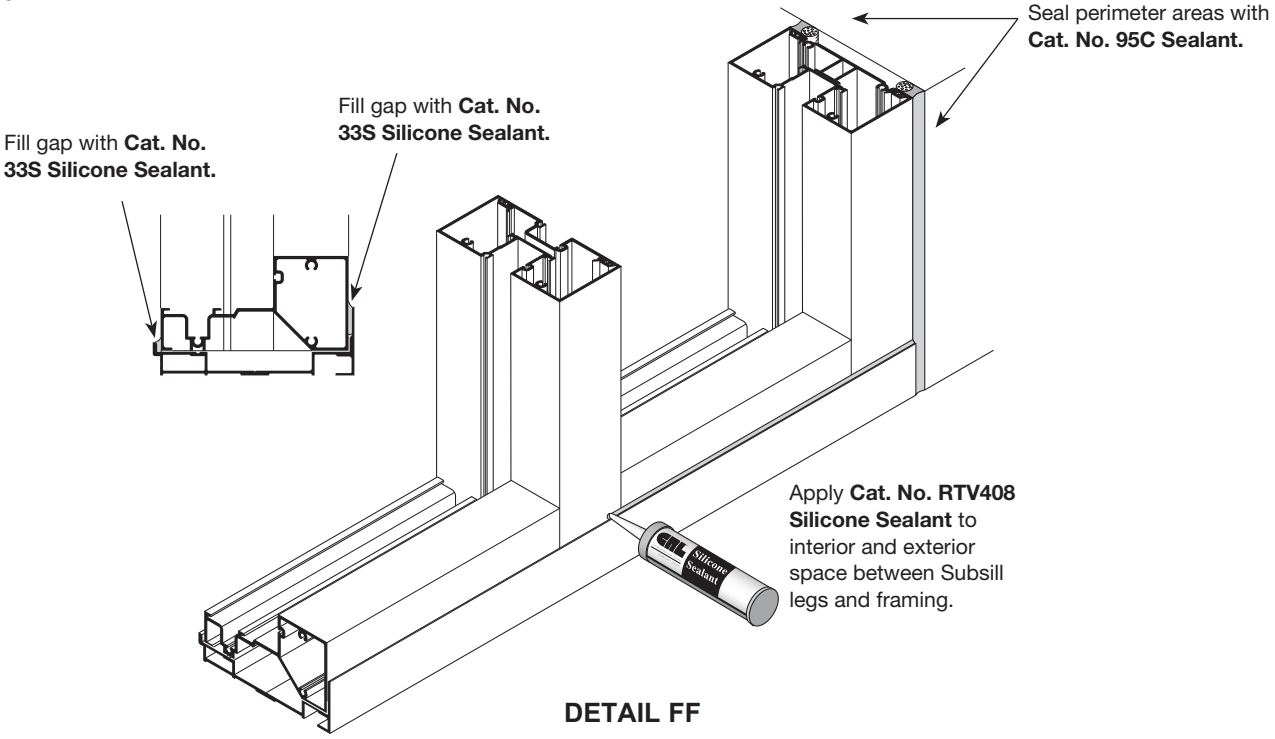


DETAIL EE

NOT TO SCALE

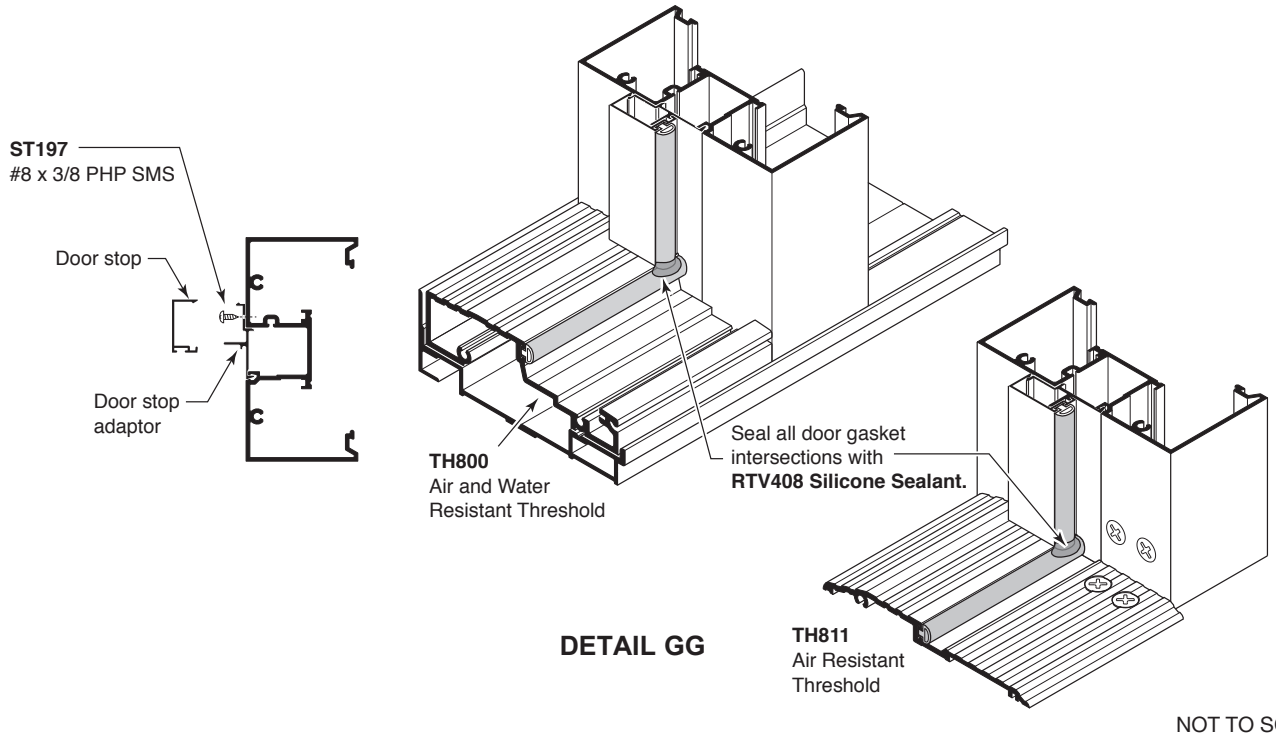
INSTALLATION (continued)

14. Inject a bead of **Cat. No. 33S Silicone Sealant** into exterior and interior reveals of Subsill and sill members as shown in **DETAIL FF**.



DETAIL FF

15. Lace gaskets into door stops leaving 1/8" (3.2) extension past each end to ensure a tight joint with connecting gaskets. Attach door stop adaptors to door jambs and header where transom occurs above door opening with **ST197** #8 x 3/8" PHP SMS 1" from each end and 12" O.C. and snap on door stops. Seal gasket intersections at head and threshold with **RTV408 Silicone Sealant**. See **DETAIL GG**.



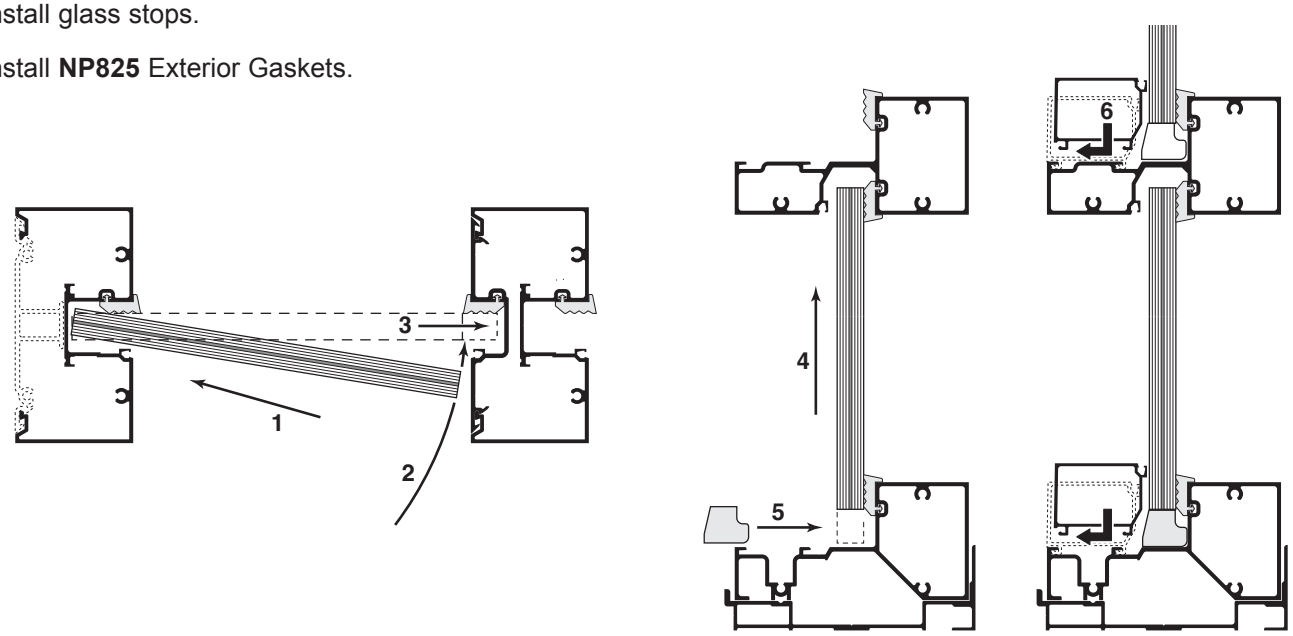
DETAIL GG

NOT TO SCALE

GLAZING

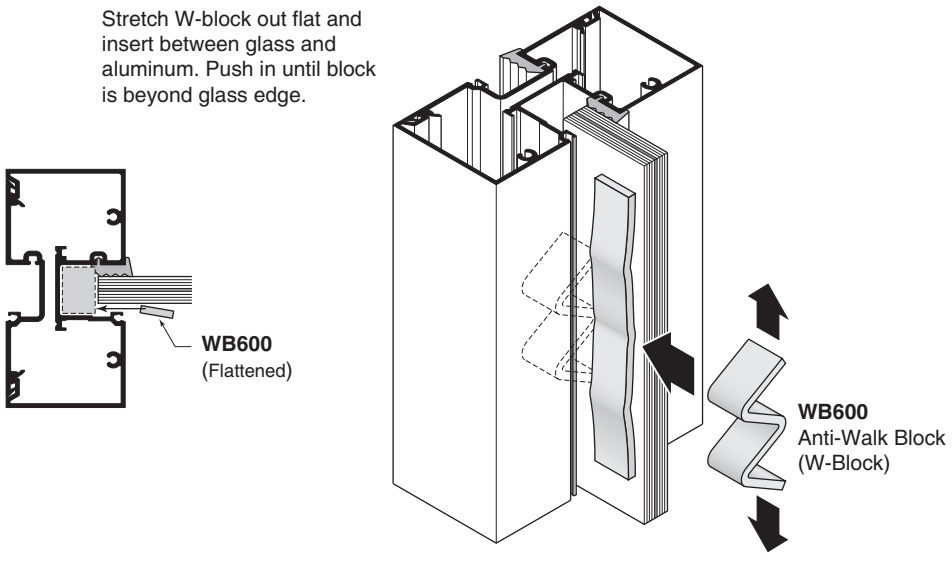
Glass size formula: D.L.O. + 1-1/8"

1. Cut interior and exterior gaskets to size. Gasket should be cut 1/8" (3.2) longer per foot of aluminum member to allow for shrinkage.
2. Install **NP826** Interior Gaskets.
3. Locate setting blocks at quarter points or as directed by approved shop drawings.
4. Install glass as shown in **DETAIL HH**. Center glass in opening.
5. Insert anti-walk block (W-block) into deep pocket. See **DETAIL II.**
6. Install glass stops.
7. Install **NP825** Exterior Gaskets.



DETAIL HH

Stretch W-block out flat and insert between glass and aluminum. Push in until block is beyond glass edge.



DETAIL II

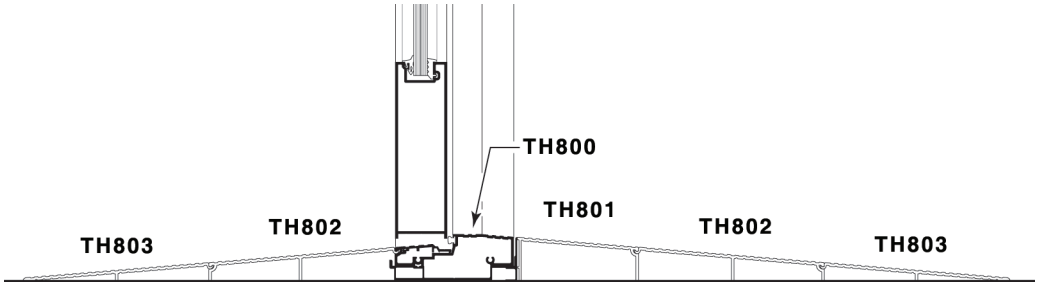
NOT TO SCALE

FABRICATION/INSTALLATION

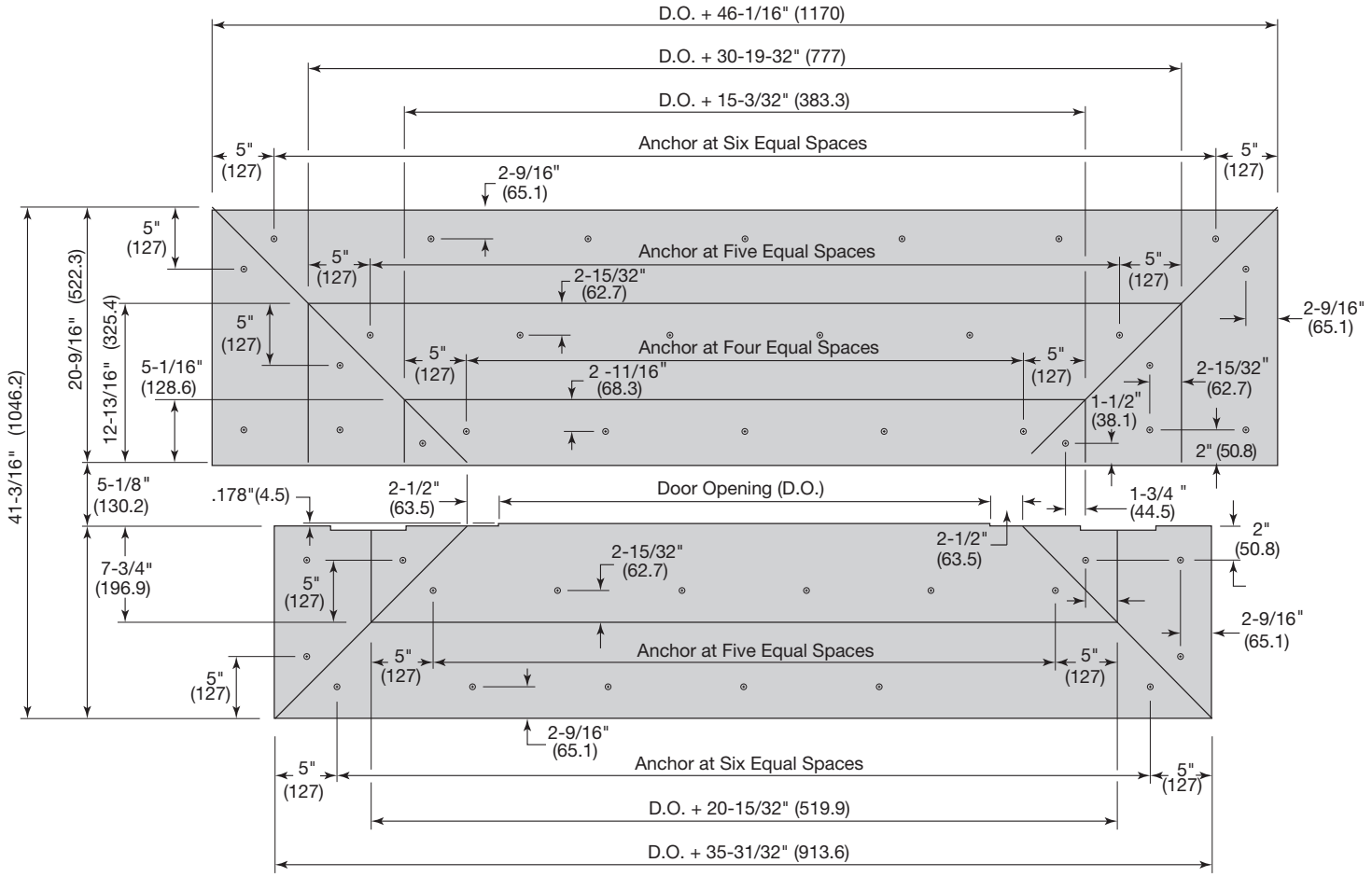
THRESHOLD RAMP FABRICATION LAYOUT

The dimensions given are for reference only. Field measuring may be required to achieve proper miter joint alignment. Special consideration will be required for unlevel concrete conditions at entrance locations. Shimming under the small return end pieces may be required for proper leveling.

1. Cut pieces to length. See **DETAIL JJ** for double doors and **DETAIL KK** and **DETAIL LL** on page 23 for single doors.
2. Drill .221" (5.6) Dia. holes and countersink at .437" (11.1) Dia. X 82 Degrees for anchoring as shown. Anchor holes are shown with equal spacing and should not exceed 18" O.C.



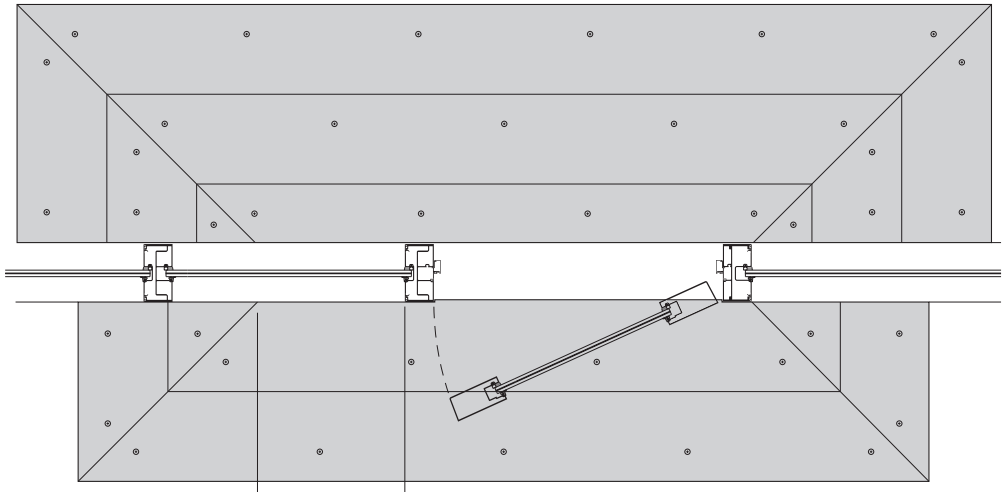
DOUBLE DOOR LAYOUT



DETAIL JJ

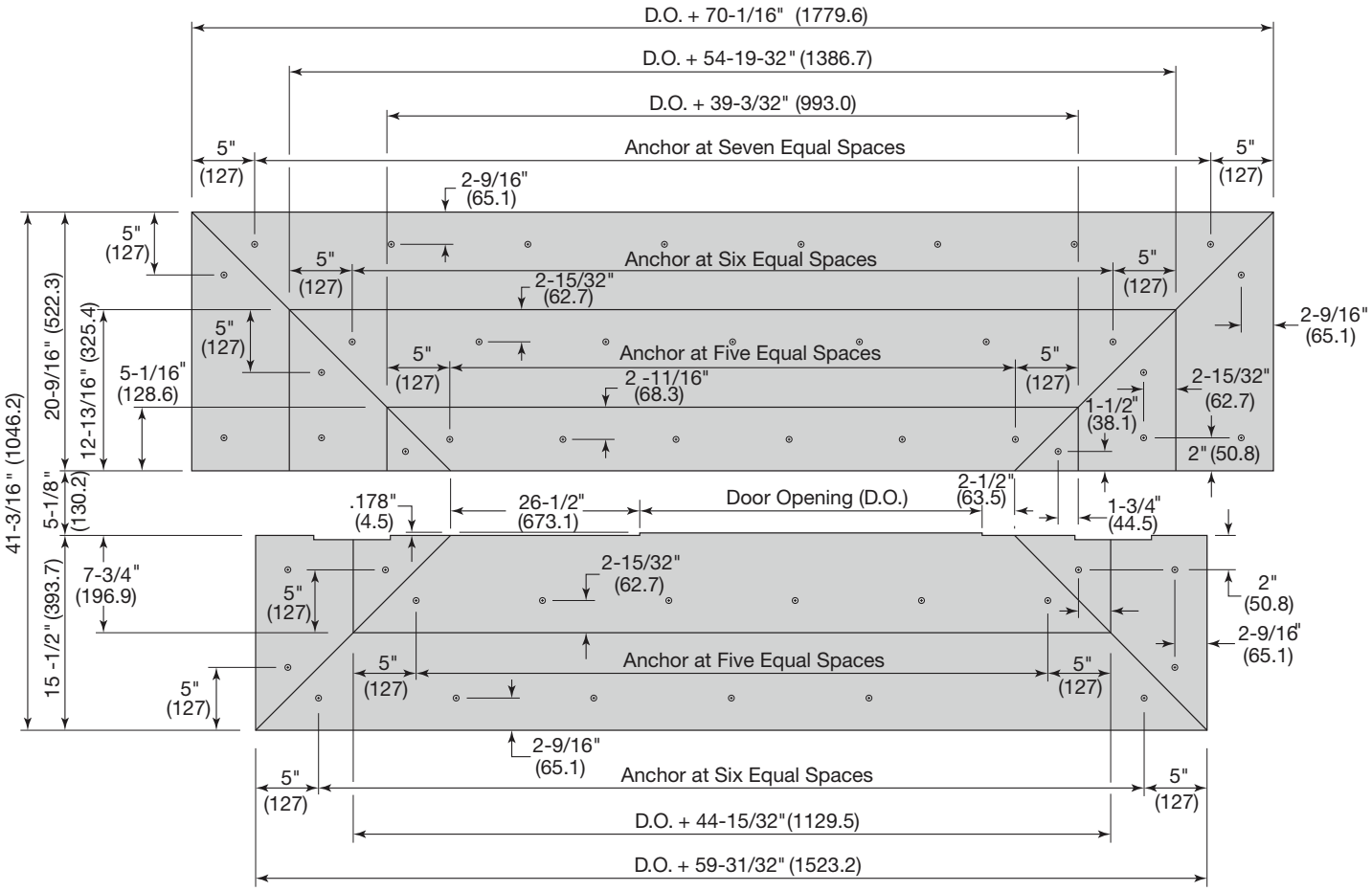
FABRICATION/INSTALLATION (continued)

NOTE: Ramps for single doors must extend 24" (609.6) beyond outside edge of lock jamb for approach access. **DETAIL KK** below shows hinge right layout with lock jamb to left.



DETAIL KK

SINGLE DOOR LAYOUT

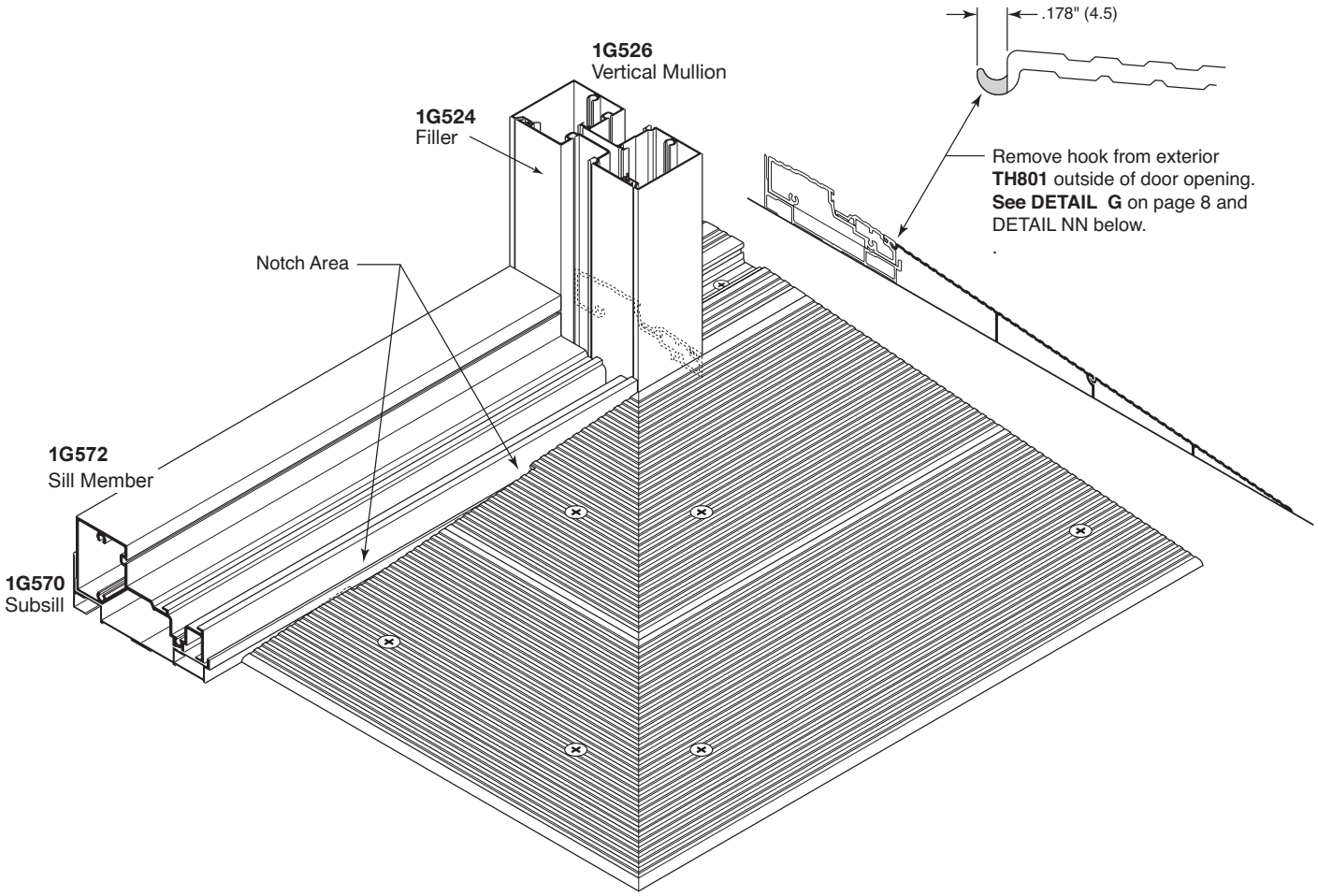


DETAIL LL

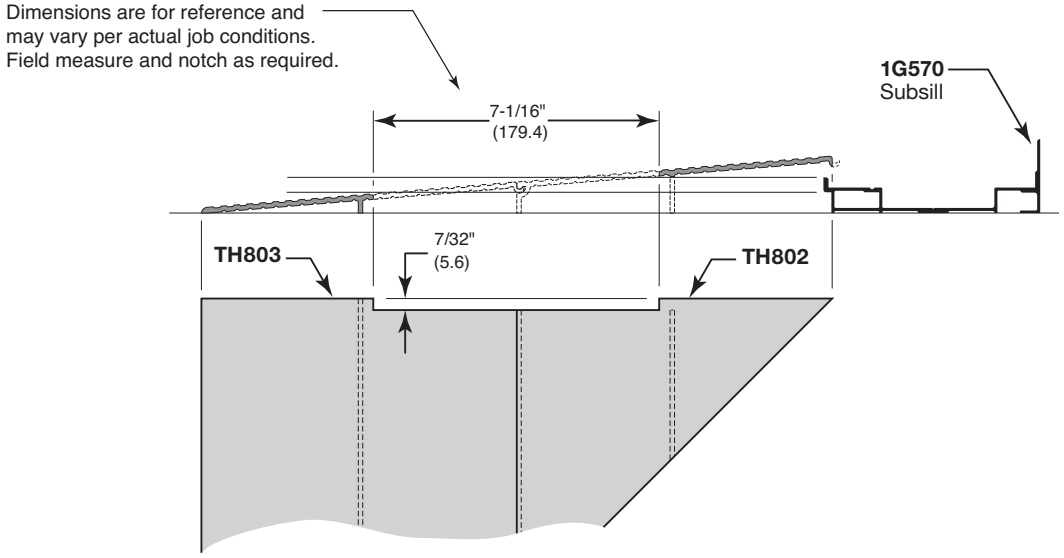
NOT TO SCALE

FABRICATION/INSTALLATION (continued)

3. Notch hook and exterior end pieces to clear frame components as shown in **DETAILS MM** and **NN**.



DETAIL MM



DETAIL NN

NOT TO SCALE

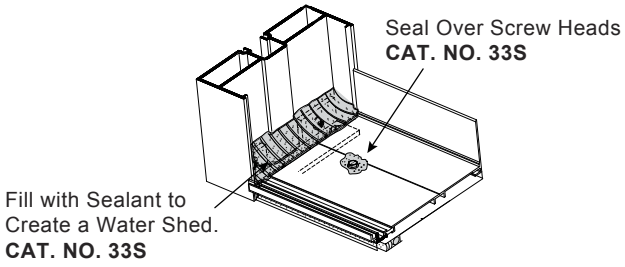
GUIDE TO SEALANTS

NOTE: All sealants must be tooled to ensure proper adhesion.

WATERPROOFING

- **33S ACETIC CURE SILICONE**

Sill to Subsill, End Dams, Screw Heads, and Threshold to Door Frame Sealing.

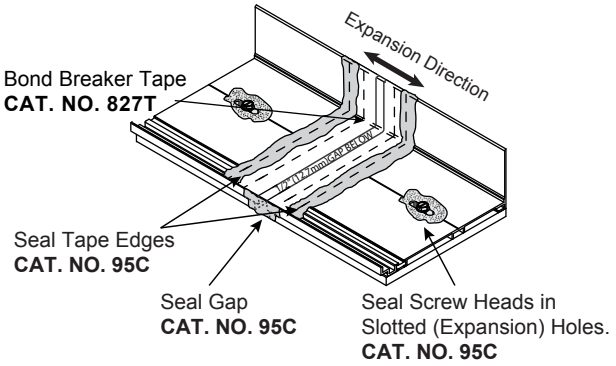


NOTE: Not for use near insulating glass units with butyl sealant.

EXPANSION

- **95C SILICONE BUILDING SEALANT**

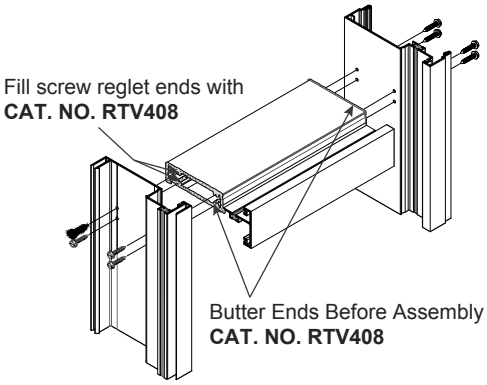
Expansion Joints.

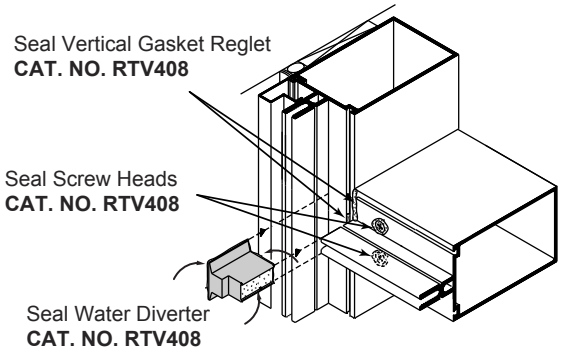


JOINT ADHESIVE

- **RTV408 NEUTRAL CURE SILICONE**

Small Joints, End Joints and Buttered Surfaces, Water Diverters, End Dams, and Reglet Fills.



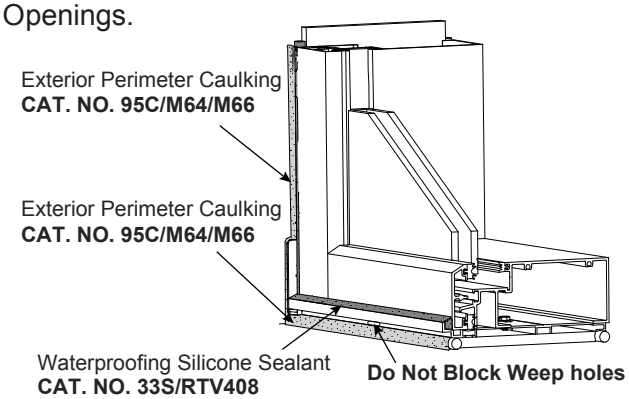


NOTE: I.G. butyl contact OK.

PERIMETER

- **95C SILICONE BUILDING SEALANT (Preferred)**
- **M64 (SMOOTH) MODIFIED POLYURETHANE**
- **M66 (TEXTURED) MODIFIED POLYURETHANE**

Perimeter Seals, Expansion Joints, Sill and Threshold Beds, Concrete, Wood, and Steel Openings.



STRUCTURAL

- **ALL STRUCTURAL SEALANTS REQUIRE TESTING AND APPROVAL.**

Glass-to-Glass or Glass-to-Metal

JOB SITE ESSENTIALS

Helpful Tools and Supplies for Installing CRL-U.S. Aluminum Entrances, Storefronts, Windows, and Curtain Wall Systems

CRL 95C Silicone Building Sealant

CRL RTV408 Neutral Cure Silicone

CRL 33S Acetic Cure Silicone

CRL M64 Modified Smooth Polyurethane Construction Sealant

CRL M66 Modified Grainy Polyurethane Construction Sealant

CRL 12:1 Ratio Strap Frame Caulking Gun CAT. NO. GA1203

CRL Complete Set of Seven All Stainless Steel Spatulas CAT. NO. AB958G

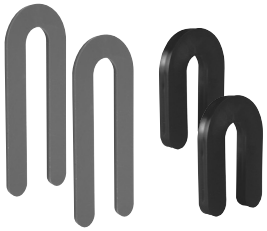
CRL Utility Knife CAT. NO. K82

CRL Backer Rod Roller Tool CAT. NO. SBRR

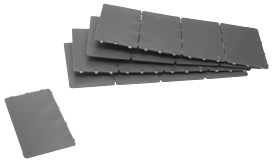
CRL Soft-Face Power Hitter CAT. NO. ST57532

CRL Saint-Gobain/Norton V2100 Thermalbond® Structural Glazing Spacer Tape

CRL Utility Knife Blades CAT. NO. 1992C



CRL PHS Series Plastic Horseshoe Shims



CRL PBS Series Plastic Bearing Shimstrips

CRL Gloves CAT. NO. KF1TL

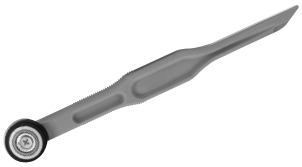
CRL Spring Clamp CAT. NO. JC3202HT

CRL Bond Breaker Tape
CAT. NO. 827T34

CRL Glass Cutter
CAT. NO. TC17B

CRL Running Pliers
CAT. NO. PPG1

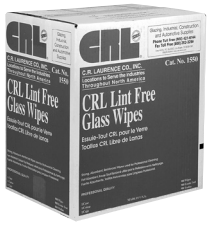
CRL Vacuum Cup
CAT. NO. S7950



CRL Gasket Roller
CAT. NO. VR10

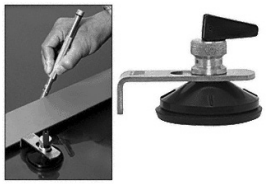
CRL Gasket Cutter
CAT. NO. MC80N

CRL Glass Cleaner
CAT. NO. 1973



CRL Glass Wipes
CAT. NO. 1550

CRL 25' Tape Measure
CAT. NO. 54225



CRL Glazier's Rule Holder
CAT. NO. RH670

CRL Phenolic L Square
CAT. NO. L48

CRL Digital Laser Level Tool
CAT. NO. 406065

CRL Glass Marking Pencil
CAT. NO. GM44

CRL Belt Sander
CAT. NO. LD321

CRL Glass Grinding Belts
CAT. NO. CRL3X21120X

CRL All Terrain Dolly
CAT. NO. ATD1

CRL Hard Hat
CAT. NO. ES3452

CRL Portable Ladder
CAT. NO. 6206

CRL Cordless Screwdriver
CAT. NO. LD823

CRL Cordless Driver/Drill
CAT. NO. LD147