INSTALLATION INSTRUCTIONS

UNIT GLAZE SYSTEMS
SERIES TT451 UNIT GLAZE WINDOW WALL

CRL® US ALUMINUM

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11M0257

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.***

ORDER OF ASSEMBLY AND INSTALLATION

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. Install operable windows pre glazed only.

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, including other sealant surfaces. Consult with sealant manufacturer for recommendations relative to 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.

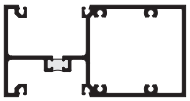
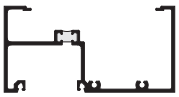
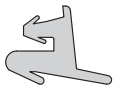
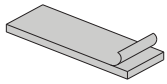
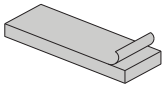
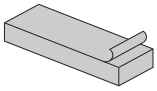
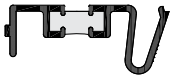
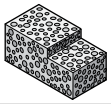
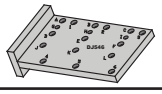
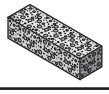
11. **WATER HOSE TEST.** As soon as a representative amount of the wall has been glazed (500 square feet or 46.5 m^2) a water hose test should be conducted in accordance with AAMA 501.2 specifications to check the installation. On all jobs the hose test should be repeated every 500 square feet (46.5 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.

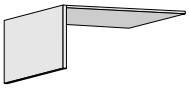
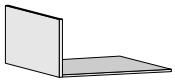
IMPORTANT: READ THIS MANUAL THOROUGHLY BEFORE BEGINNING INSTALLATION.

PARTS LIST - MAIN ASSEMBLIES

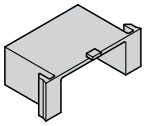
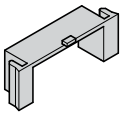
CAT. NO.	Description	Shape	CAT. NO.	Description	Shape
RT452	Head		RT450	Vertical Mullion	
RT451	Jamb		RW400	Stiffener Anti Buckling Clip for RT489	
RT463	Horizontal Mullion		RW465	Setting Chair used with RT464	
RT464	Sill		NP225	Push-In Gasket	
RW453	Horizontal Stop for RT452/433/463		VS200	Two-Finger Vinyl Isolator	
RT489	Female Expansion Mullion		NP825	Head Gasket Wedge	
RT480	Male Expansion Mullion		HC254	Head Anchor	
TT400	Subsill for Slab Cover		HC256	Sill Anchor	
TT471	Head for Slab Cover		AP499	Shear Block	
RW622	Compensation Channel Stop used with TT471 or TT462		WB810	Edge Block 1/16" x 1-1/8" x 6" for Shallow Pocket	
TT461	Compensating Head Channel		WB815	Edge Block 7/16" x 1-1/8" x 6" for Deep Pocket	
TT402	Subsill		WB820	Head Block 9/16" x 1-1/8" x 6" for Top of Glass	
PV100	Snap-in Filler		P125	Shallow Pocket Filler	
PT618	Thermal Shallow Pocket Filler		BA451	EVA Foam Baffle	
DJ456	Drill Jig		UB625	Weep Hole Baffle	

IMPORTANT: READ THIS MANUAL THOROUGHLY BEFORE BEGINNING INSTALLATION.

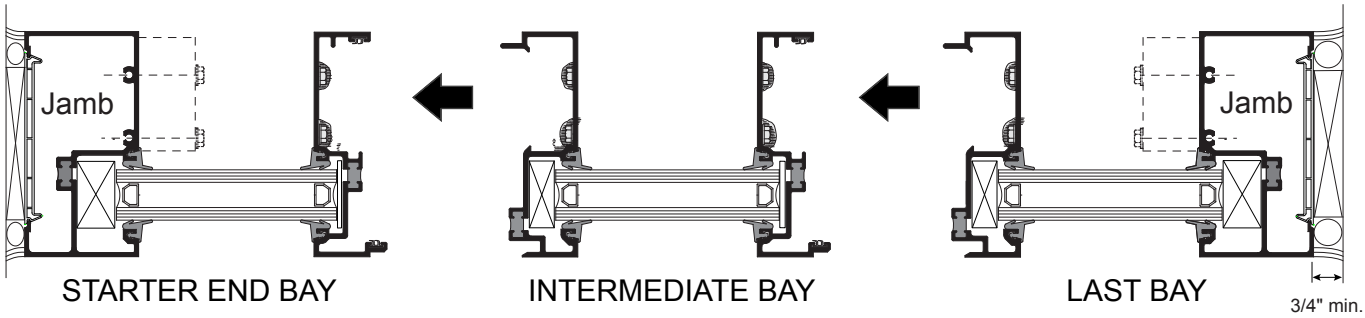
PARTS LIST - MAIN ASSEMBLIES

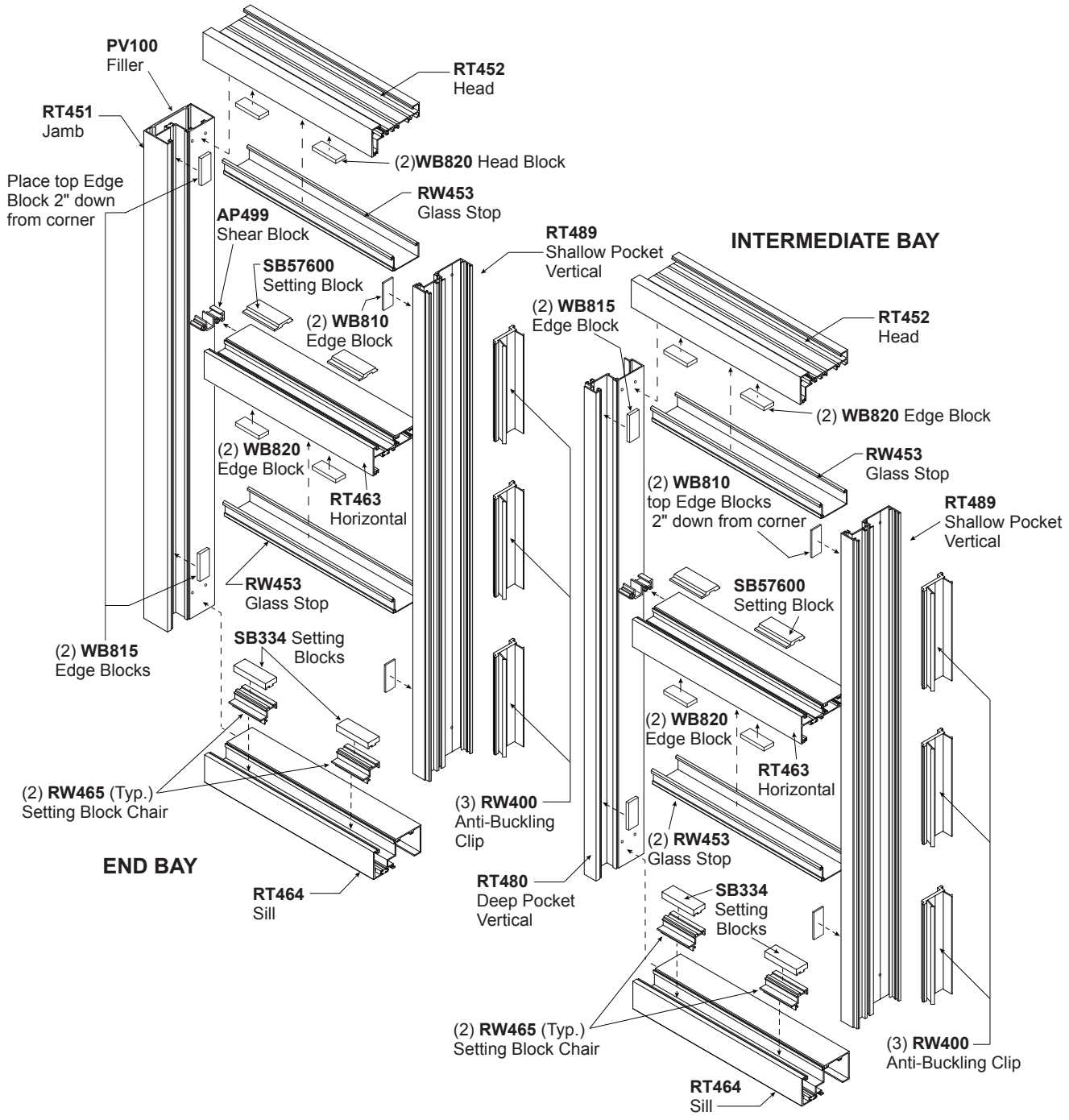
CAT. NO.	Description	Shape	CAT. NO.	Description	Shape
SB57600	4" EPDM Setting Block		WD718	Head End Dam	
SB63300	Setting Block Horizontal		EC801	End Dam (Sill)	
SB334	Setting Block (Sill)		ZX771	Slab Cover	

WATER DIVERTER TABLE

	CAT. NO.	Use with Vertical Members
	WD200 For Deep Pocket	RT451, RT480, and RT450
	WD210 For Shallow Pocket	RT489 and RT450

PARTS OVERVIEW - MAIN ASSEMBLIES

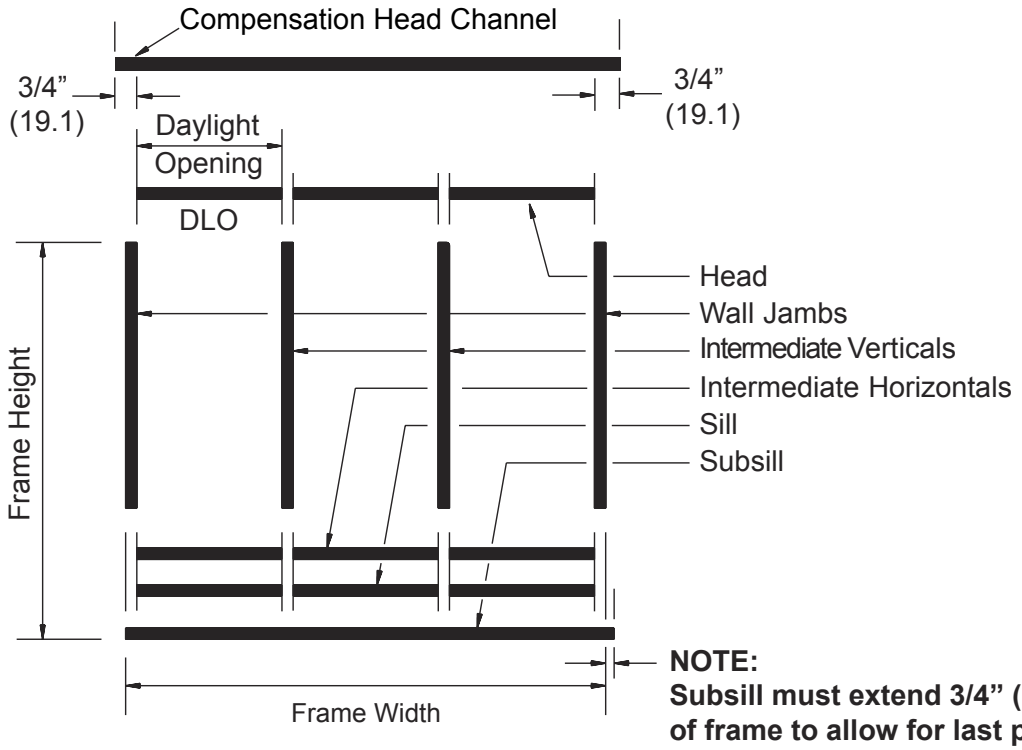




FRAME FABRICATION

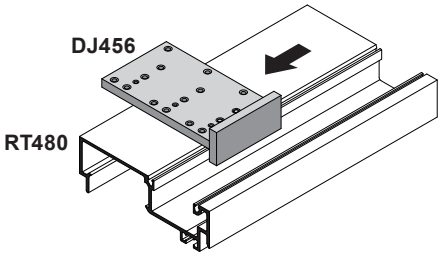
1. Measure rough opening to determine frame width and height dimension. Allow a minimum clearance of 3/4" (19.1 mm) at header and 3/4" (19.1 mm) at wall jambs and subsill. Extra clearances may be necessary to accommodate building tolerances.
2. Cut members to length:

Head Comp. Channel and Subsill length =	Overall Frame Width plus 3/4" (19.1 mm). Subsill runs through. Use splice sleeves at splice joints if opening exceeds 24' (7.32 m) in width. If entrances occur subsill butts against door jambs.
Vertical length =	Frame Height minus 5/16" (7.9 mm). Verticals run through.
Horizontal length =	Daylight Opening. Horizontals run between verticals. Cut horizontal glazing beads 1/32" (.8 mm) under size for easier installation.

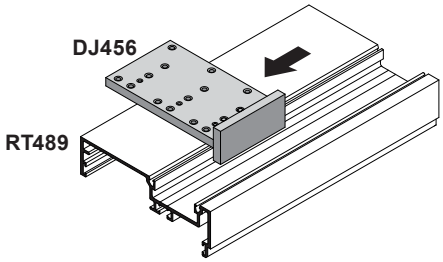


NOTE:
Subsill must extend 3/4” (19.1 mm) outside of frame to allow for last panel installation.

3. Position **DJ456** Drill Jig on end of each member and drill holes for assembly screws. Use #7 bit to drill .201" (5.1 mm) holes. Refer to shop drawings for hole locations



Deep Pocket Vertical shown.



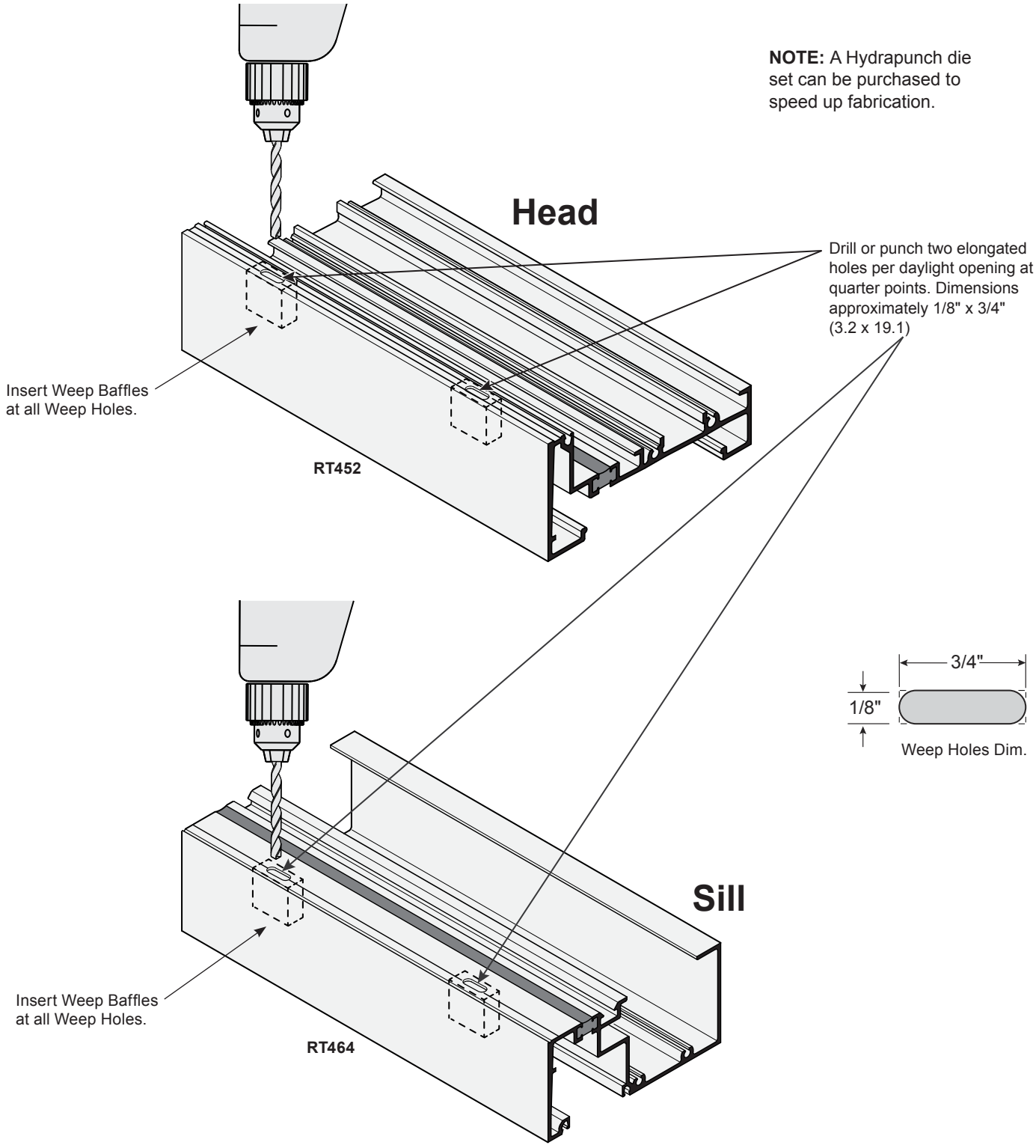
Shallow Pocket Vertical shown.

NOTE: A Hydrapunch die set or Acufab can be purchased to speed up fabrication.

FRAME FABRICATION (CONTINUED)

PREPARE HEAD AND SILL

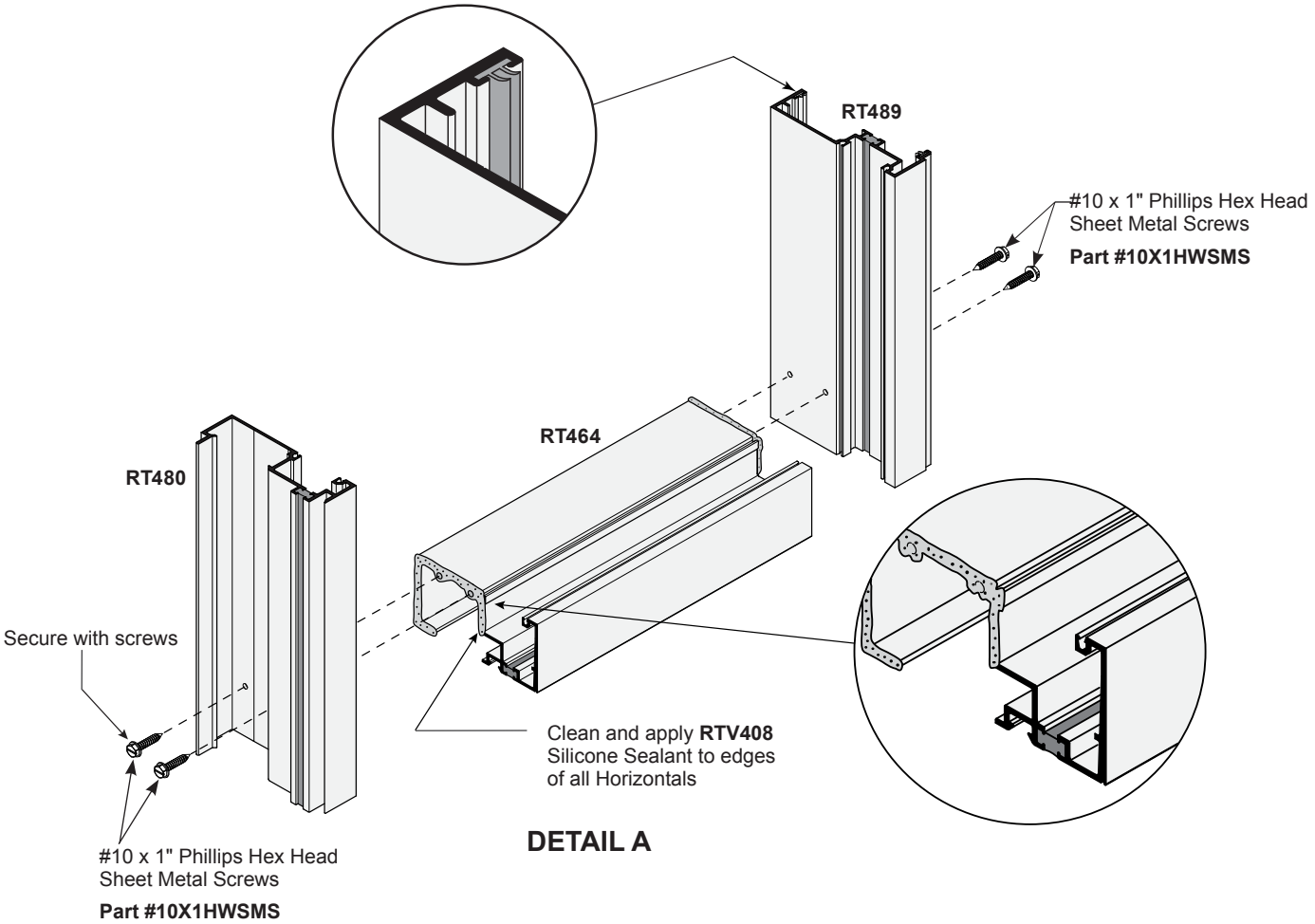
NOTE: Install weep baffles in Head and Sill using a dab of sealant to hold in place.



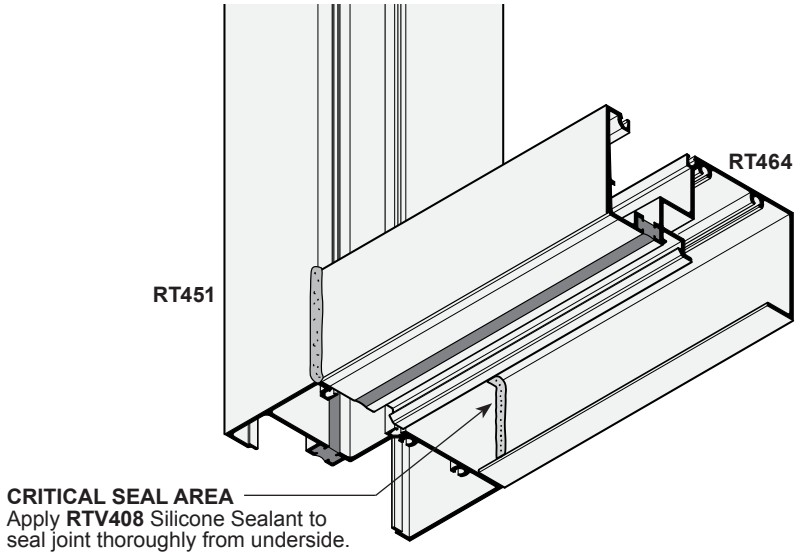
FRAME ASSEMBLY

The TT451 Unit Glaze System requires that each bay be assembled and glazed in order to insert the setting and edge walk blocks properly.

1. Attach the Sill member to Verticals using screw race joinery and seal as shown below. **(DETAIL A**)



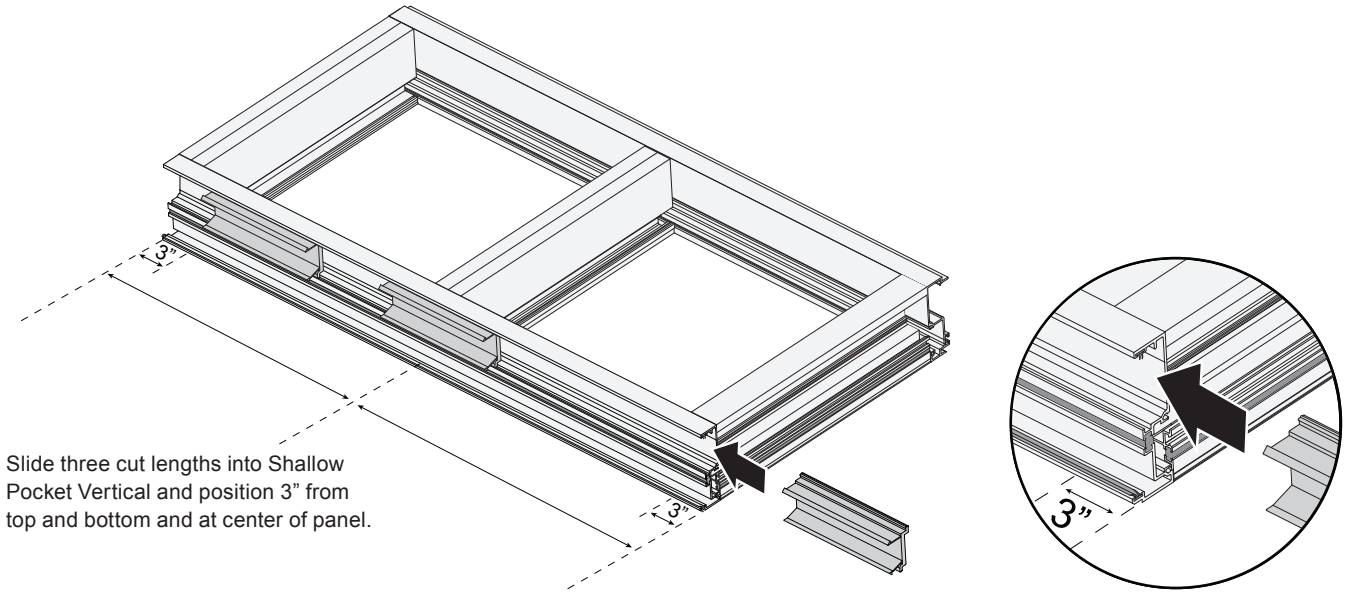
DETAIL A



FRAME ASSEMBLY (CONTINUED)

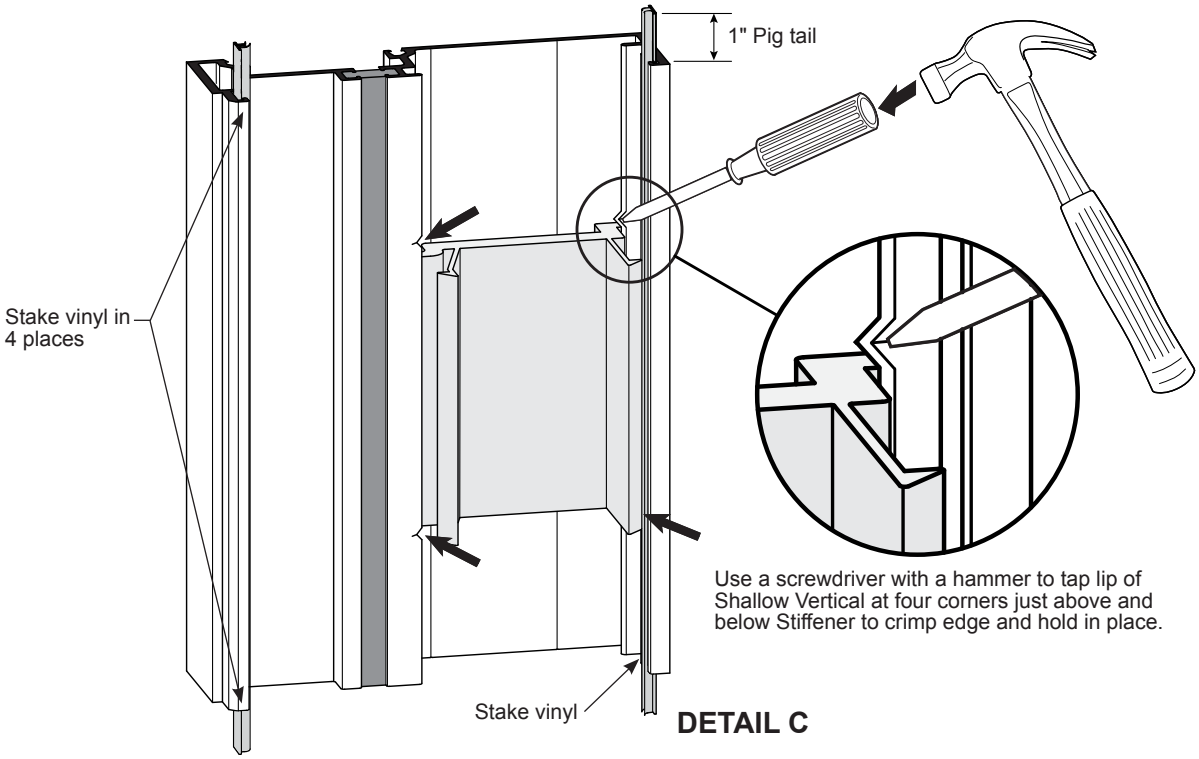
INSTALL SIDE STIFFENERS

2. Refer to engineering specifications for quantity, location, and length of side stiffeners.
3. Slide in to install. Position 3 inches from top and bottom and at center of panel. **(DETAIL B)**



DETAIL B

4. Crimp above and below to hold in place. **(DETAIL C)**



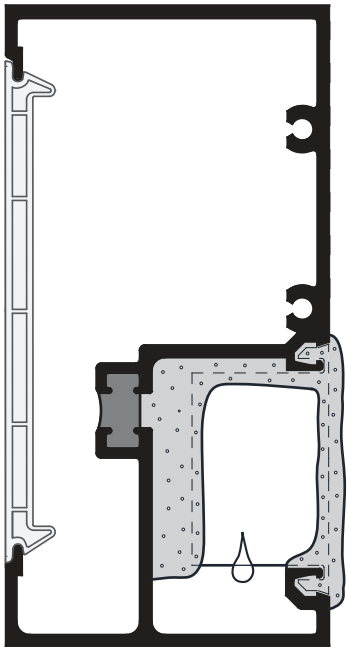
DETAIL C

5. Insert the **VS200** vinyl into the **RT489** mullion and leave a 1" pig tail at each end and stake in place.

FRAME ASSEMBLY (CONTINUED)

INSTALL WATER DEFLECTOR

6. Apply **Cat. No. RTV408** Silicone Sealant to vertical glazing pocket at vertical and horizontal intersections, **See DETAIL D**. Sealant must be applied to three sides of pocket only. Clearance at outside will allow water to run down to the **FT400** Subsill.
7. Insert water deflector into glazing pocket and slide it down into position. Top of deflector must be flush with horizontal glazing pocket. Apply **Cat. No. RTV408** Silicone Sealant to three sides of Water Deflector.

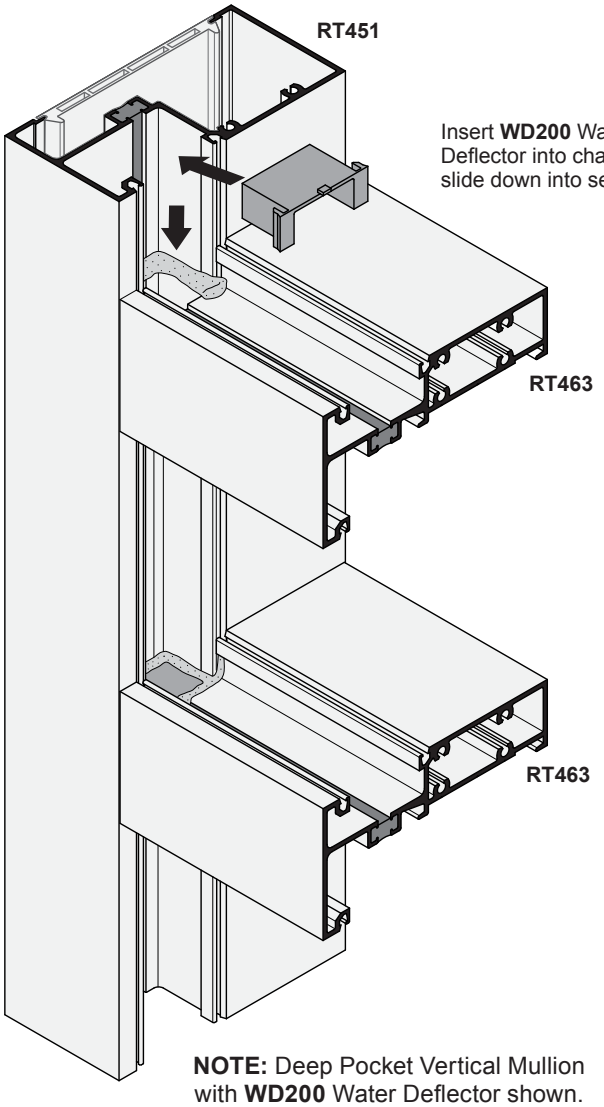


Apply **Cat. No. RTV408** Silicone Sealant to two sides of Glazing Pocket at Vertical and Horizontal Joint before inserting Water Deflector.

Use **Cat. No. RTV408** Silicone Sealant to seal Horizontal and Vertical Joint after Water Deflector is installed.

WD200 Water Deflector (deep pocket shown)

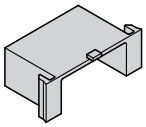
IMPORTANT:
DO NOT SEAL THIS AREA.
Gap on exterior side will allow water to run down to Sill Member.



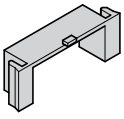
DETAIL D

NOTE: Deep Pocket Vertical Mullion with **WD200** Water Deflector shown.

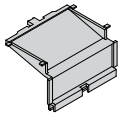
NOTE: Use **WD200** Deep Pocket Water Deflector with deep pocket mullion and **WD210** Shallow Pocket Water Deflector with shallow pocket mullion.



Deep Pocket Water Deflector
WD200



Shallow Pocket Water Deflector
WD210

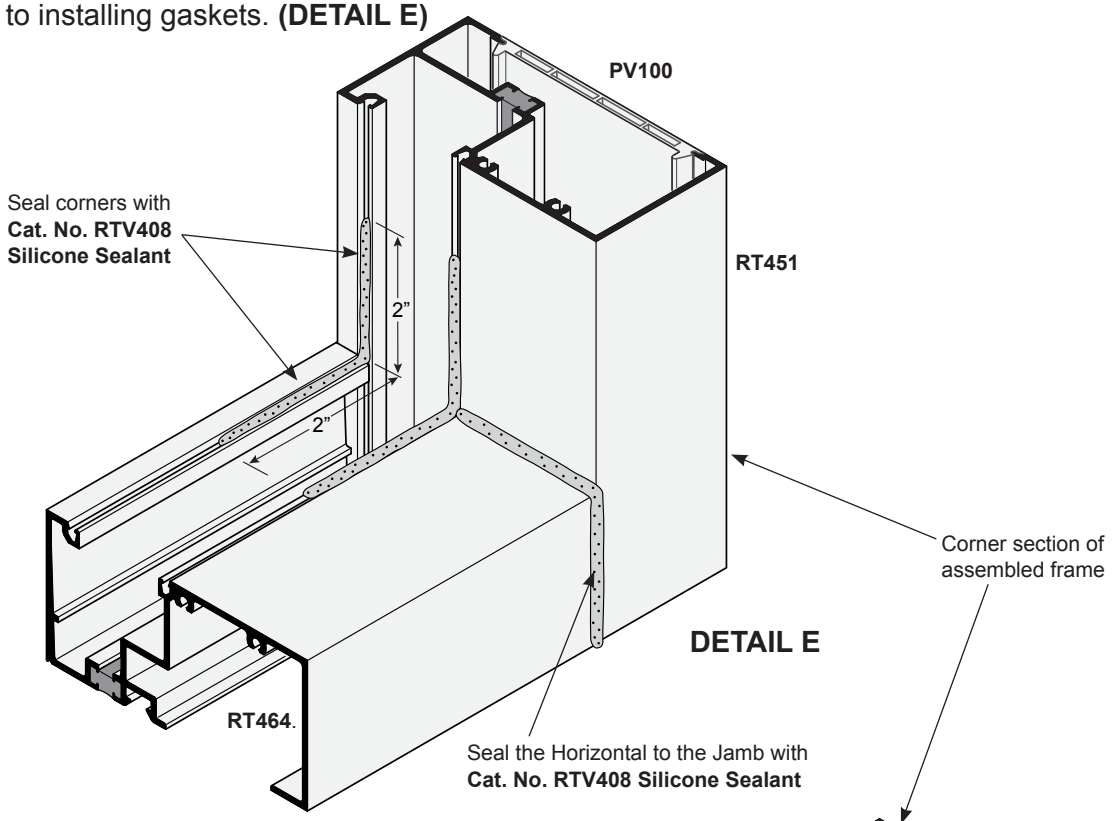


BG Mullion Water Deflector
WD525

FRAME ASSEMBLY (CONTINUED)

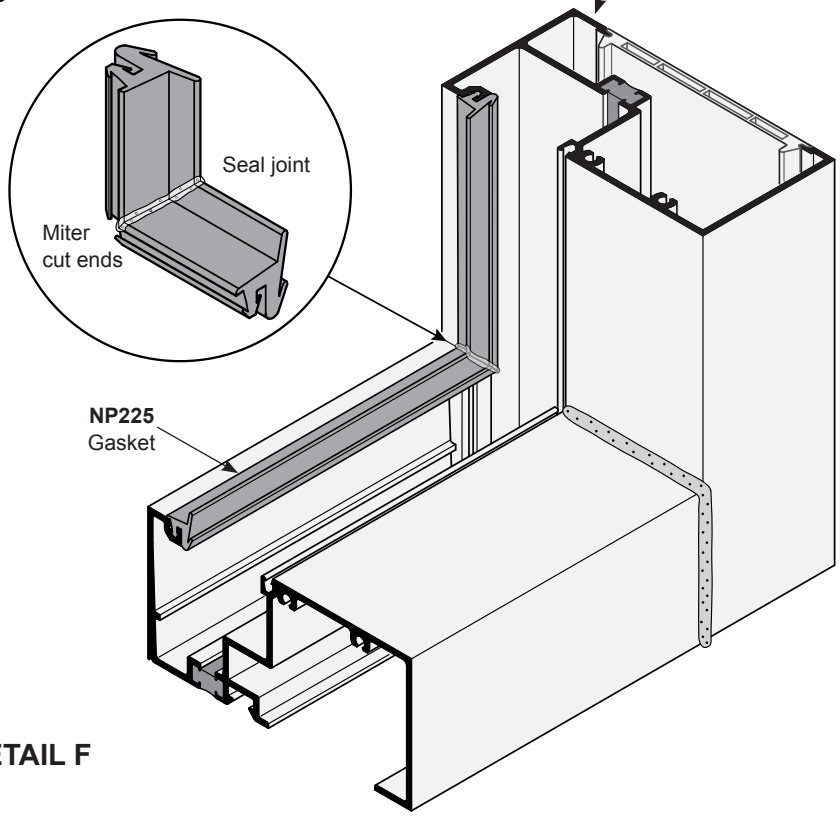
INSTALLING EXTERIOR GASKETS

8. Apply **Cat. No. RTV408** Silicone Sealant into exterior gasket reglets at corners, 2" (50.8 mm) in each direction prior to installing gaskets. **(DETAIL E)**



DETAIL E

9. Insert Vertical and Horizontal Gaskets as shown. Add 1/8" per foot of additional length of gasket to allow for shrinkage. Gaskets should never be stretched to fit. Miter cut the ends of the gaskets to make a clean corner. Start installation from corners and work toward center, making sure that corners are true and square and gasket darts are fully engaged. Bond the ends of the gasket to each other by applying **Cat. No. RTV408** Silicone Sealant. **(DETAIL F)**

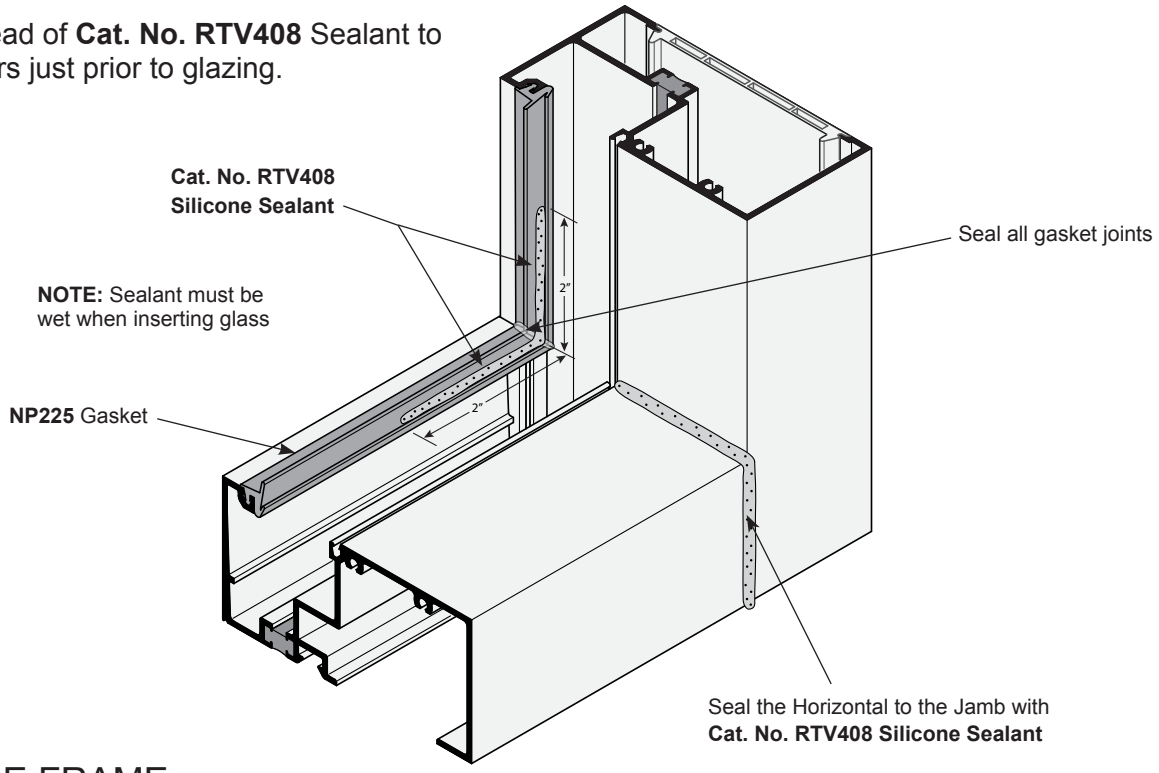


DETAIL F

FRAME ASSEMBLY (CONTINUED)

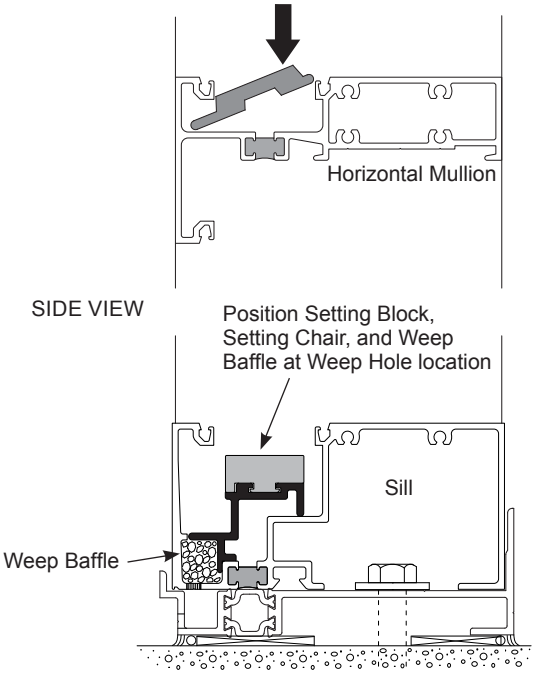
INSTALLING EXTERIOR GASKETS

10. Apply a 2" bead of **Cat. No. RTV408** Sealant to gasket corners just prior to glazing.

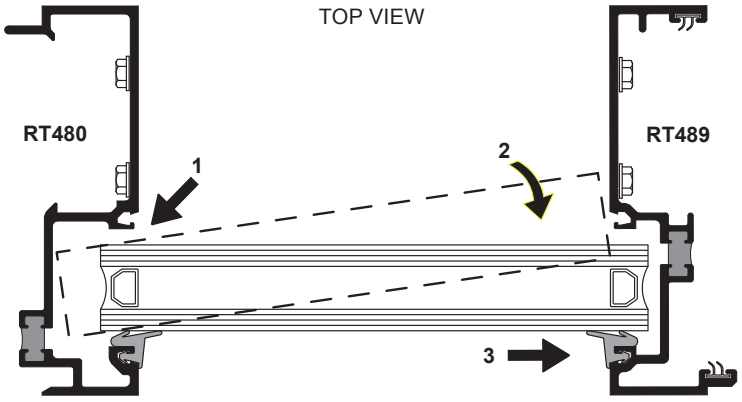


GLAZING THE FRAME

11. Place **SB66300** setting blocks, at 1/4 or 1/8 points on intermediate horizontal members as per approved shop drawings. Place weep baffles into the sill at weep locations, followed by **RW465** setting chair. Attach **SB334** setting block to the setting chair. **(DETAIL G)**



DETAIL G

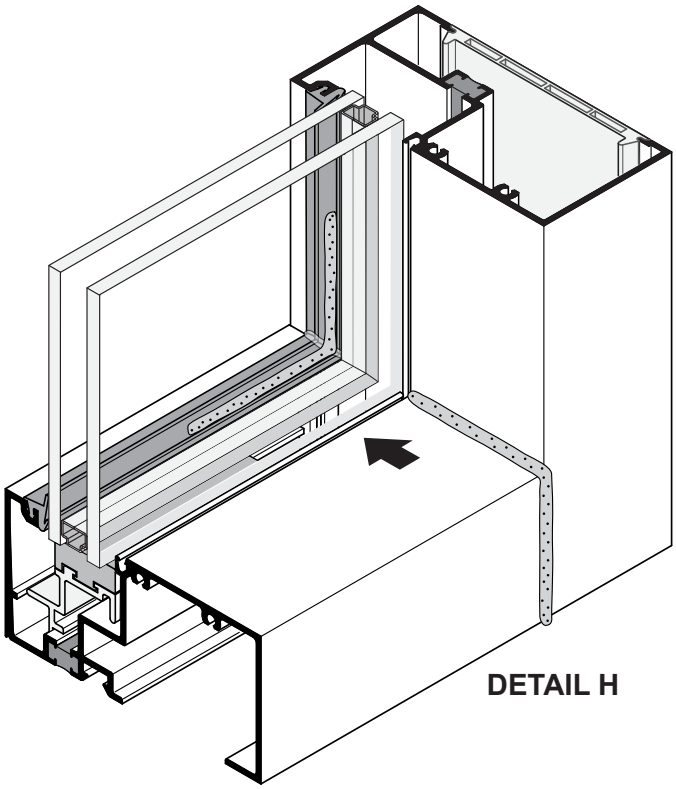


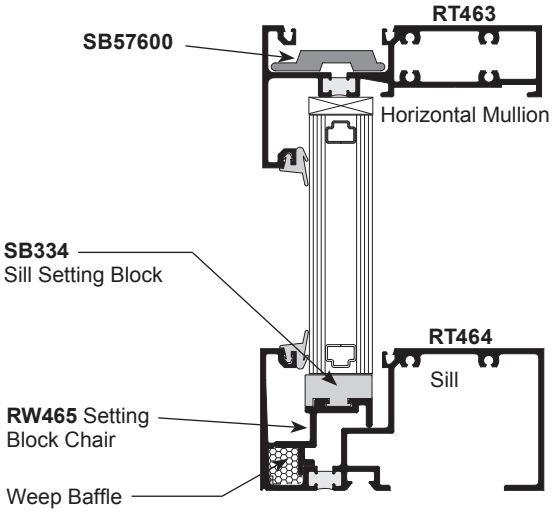
Install glass panel into frame by first angling the panel into the deep pocket. Swing the other end around and into the shallow pocket. Lower the panel down onto the setting blocks.

FRAME ASSEMBLY (CONTINUED)

GLAZING THE FRAME

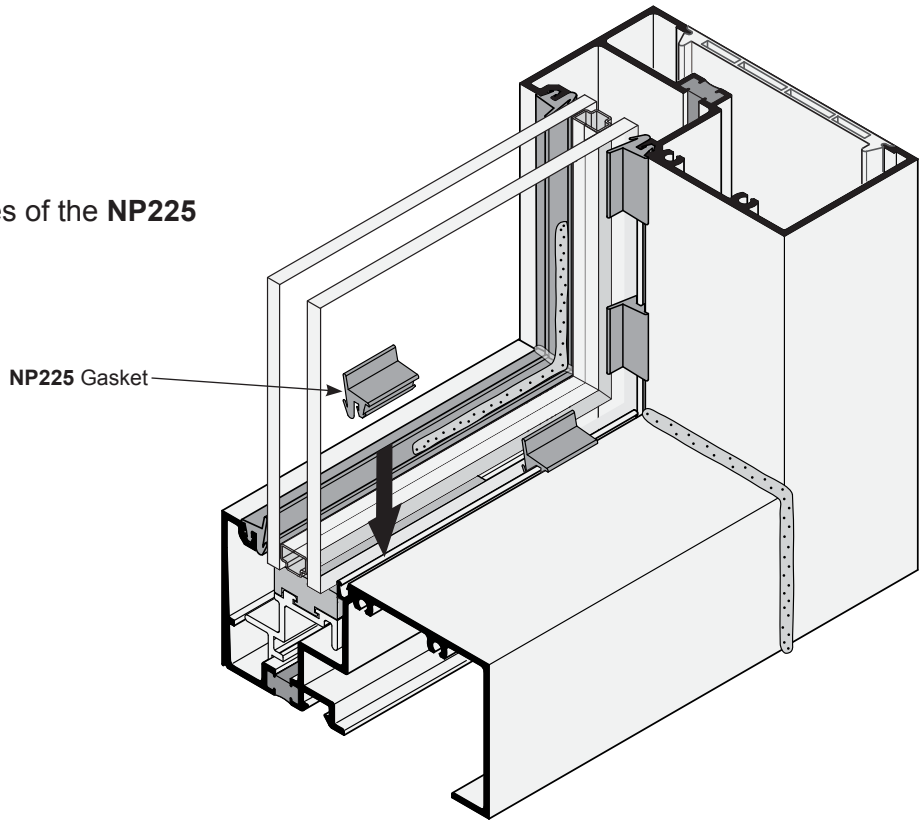
12. Apply pressure to glass to make contact with the gasket and wet silicone. **(DETAIL H)**





DETAIL H

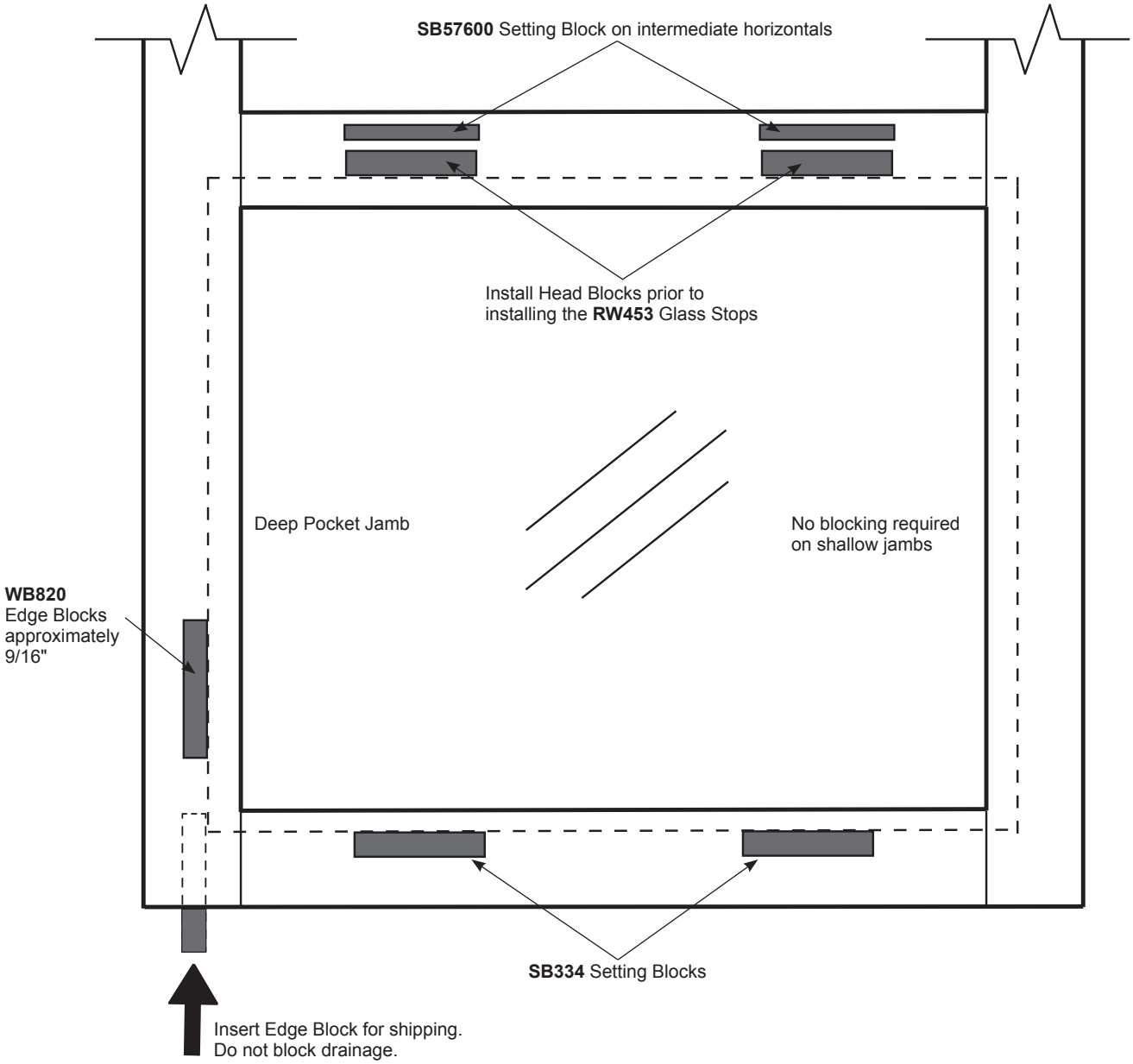
13. Push in temporary short wedges of the **NP225** Gasket to hold glass in place.



FRAME ASSEMBLY (CONTINUED)

GLAZING THE FRAME

14. Secure the glass panel(s) in the frame for transportation or installation by using edge blocks at the head and deep pocket jamb. The added blocking material will prevent horizontal and vertical glass movement.



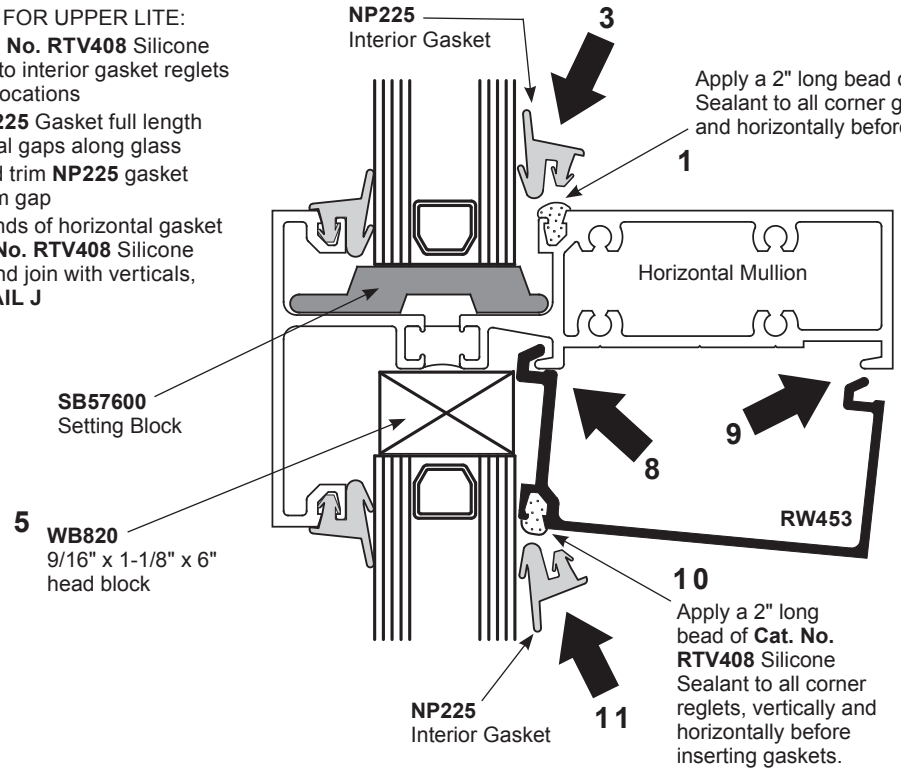
FRAME ASSEMBLY (CONTINUED)

INTERIOR GLAZING

15. Secure glass panel with **NP225** Interior Gasket and **RW453** Glass Stop. **See DETAIL I.**

SEQUENCE FOR UPPER LITE:

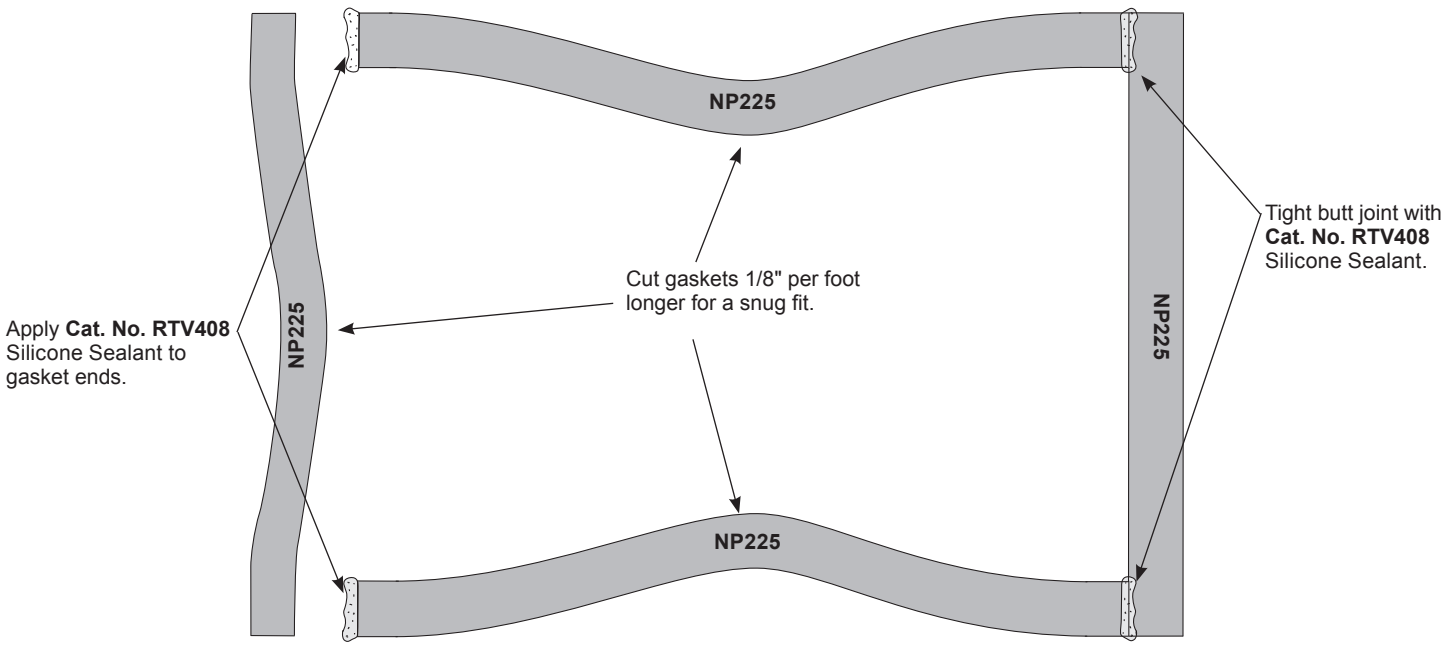
1. Apply **Cat. No. RTV408** Silicone Sealant into interior gasket reglets at corner locations
2. Install **NP225** Gasket full length into vertical gaps along glass
3. Roll-in and trim **NP225** gasket into bottom gap
4. Silicone ends of horizontal gasket with **Cat. No. RTV408** Silicone Sealant and join with verticals, **See DETAIL J**



SEQUENCE FOR LOWER LITE:

5. Apply **WB820** Head Blocks to horizontal mullion
6. Apply **Cat. No. RTV408** Silicone Sealant into vertical reglets at top and bottom corners
7. Roll-in vertical gaskets
8. Hook **RW453** Glass Stop with horizontal mullion
9. Snap Glass Stop into place
10. Apply **Cat. No. RTV408** Silicone Sealant into corner reglet of Glass Stop
11. Roll-in **NP225** Gasket

DETAIL I



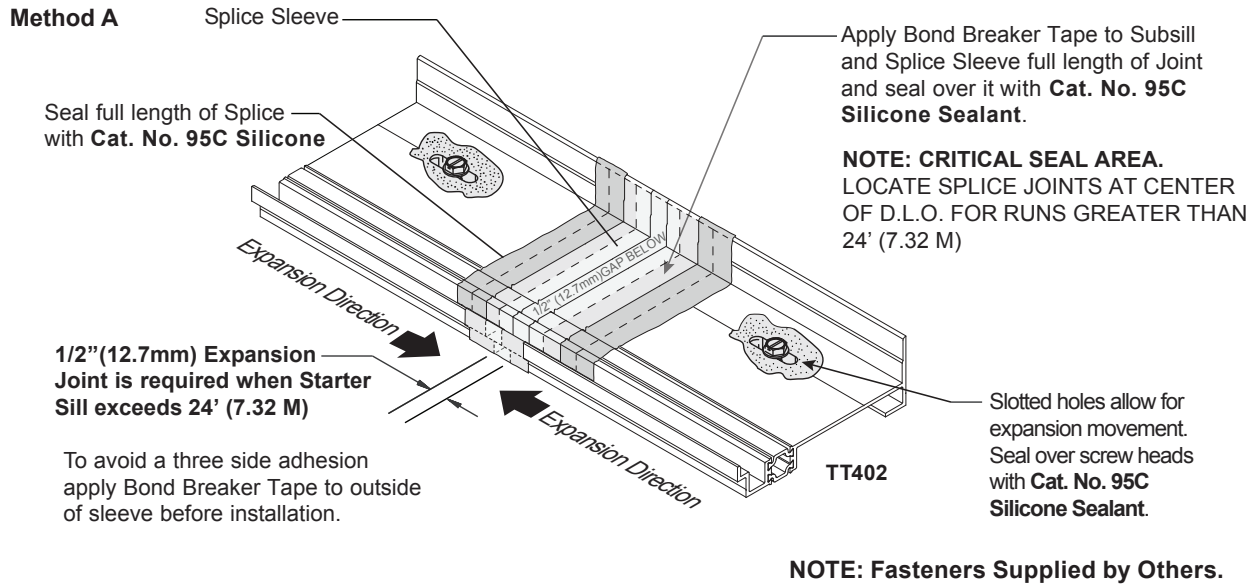
DETAIL J

INSTALL SUBSILL - FIELD PREPARATION

1. Splice subsill (required every 24 feet). See **DETAIL K**.

Expansion of Aluminum Extrusions:

Inches of Expansion = Extrusion Length (inches) X Temperature Variation (F°) X .0000129
Millimeters of Expansion = Extrusion Length (m) X Temperature Variation (C°) X .02322

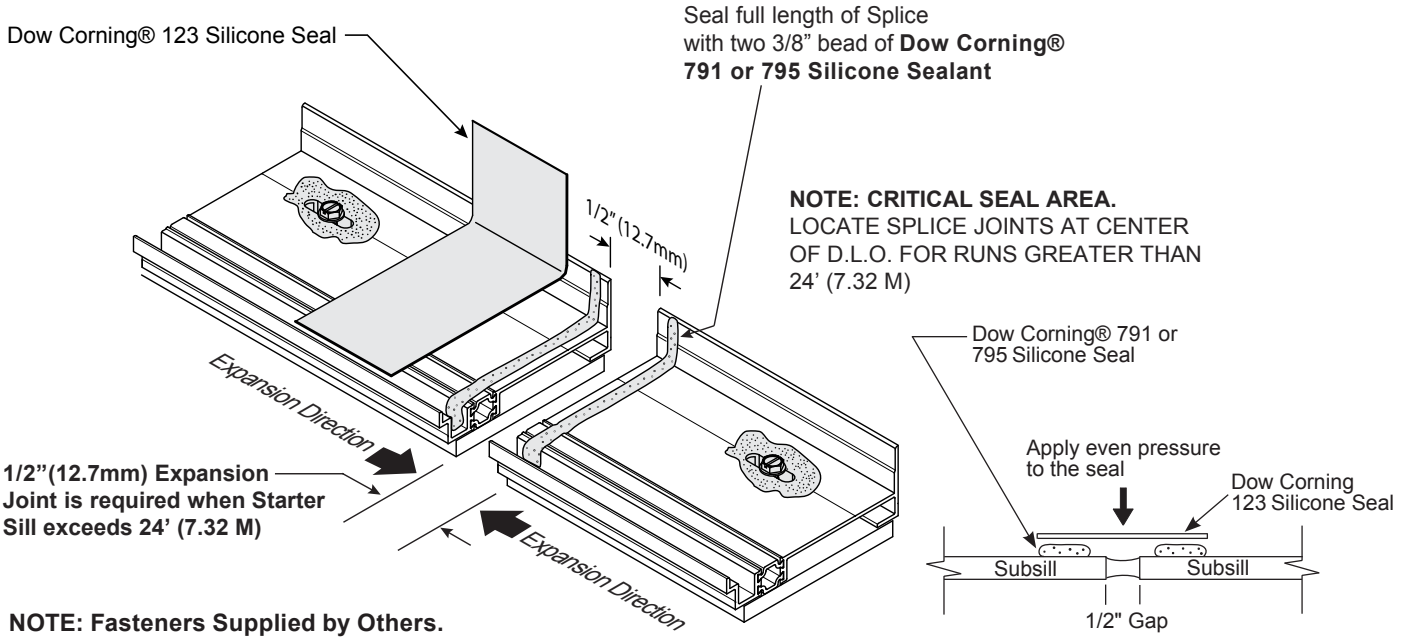


NOTE: Fasteners Supplied by Others.

DETAIL K

Method B

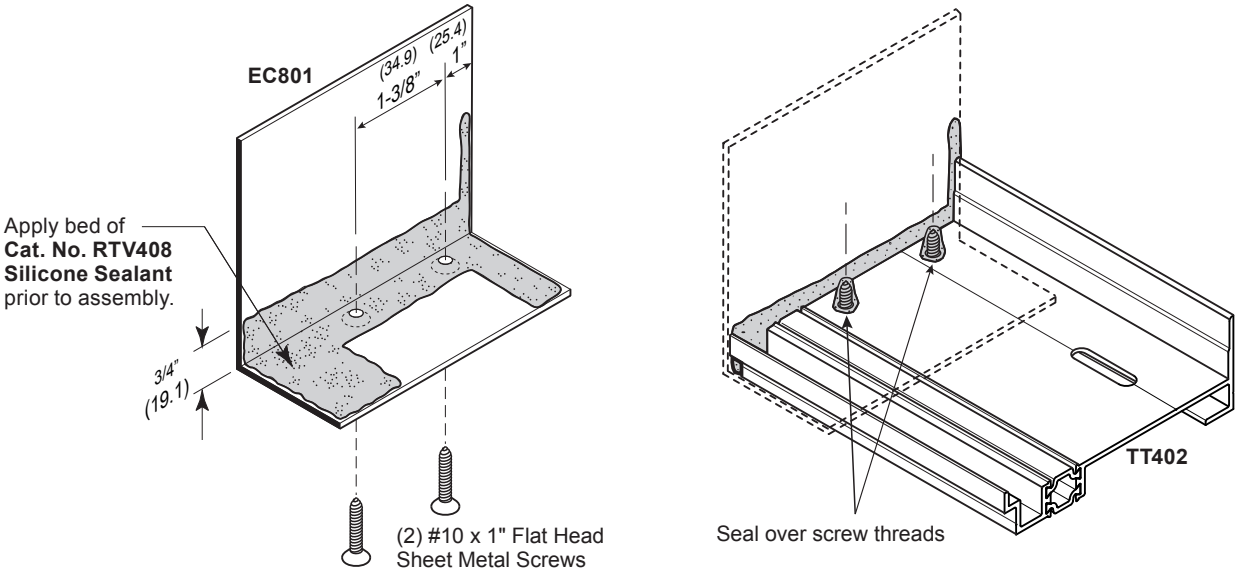
Splicing the subsill using Dow Corning products.



NOTE: Fasteners Supplied by Others.

INSTALL SUBSILL (CONTINUED)-FIELD INSTALL

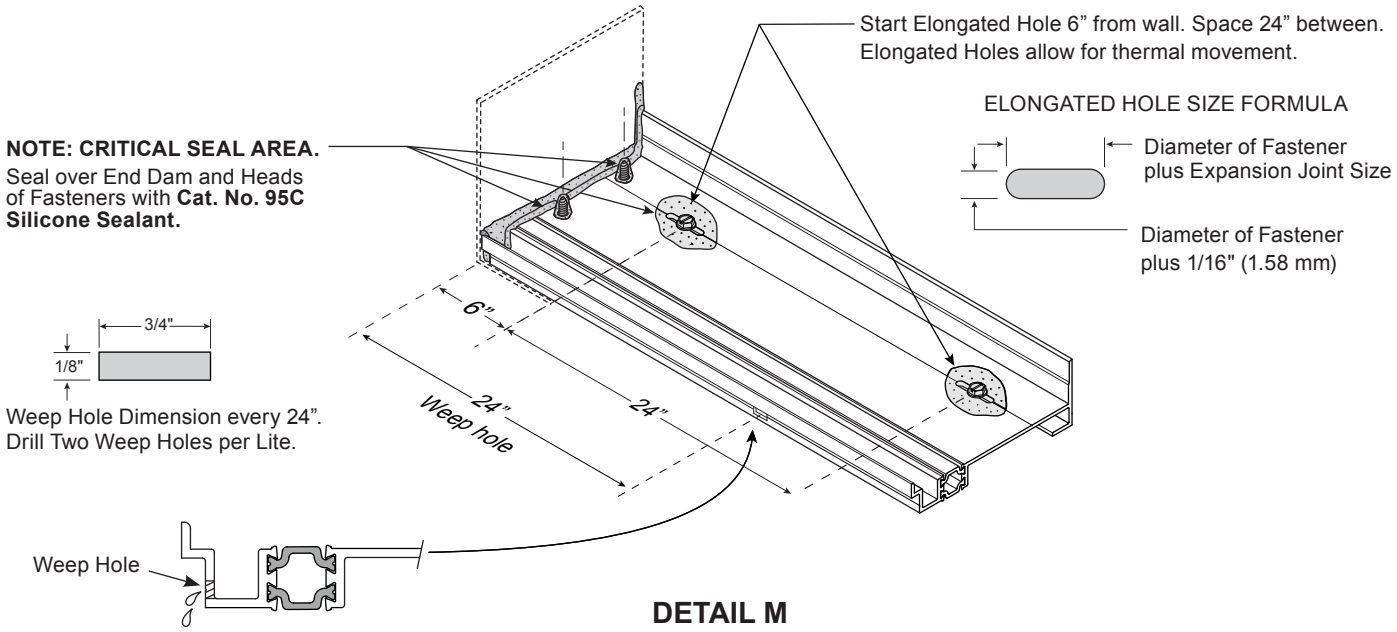
2. Attach **EC801** End Dams to ends of subsill. Apply **Cat. No. RTV408 Silicone Sealant** to both edges and secure with screws. See **DETAIL L**.



DETAIL L

NOTE: Fasteners Supplied by Others.

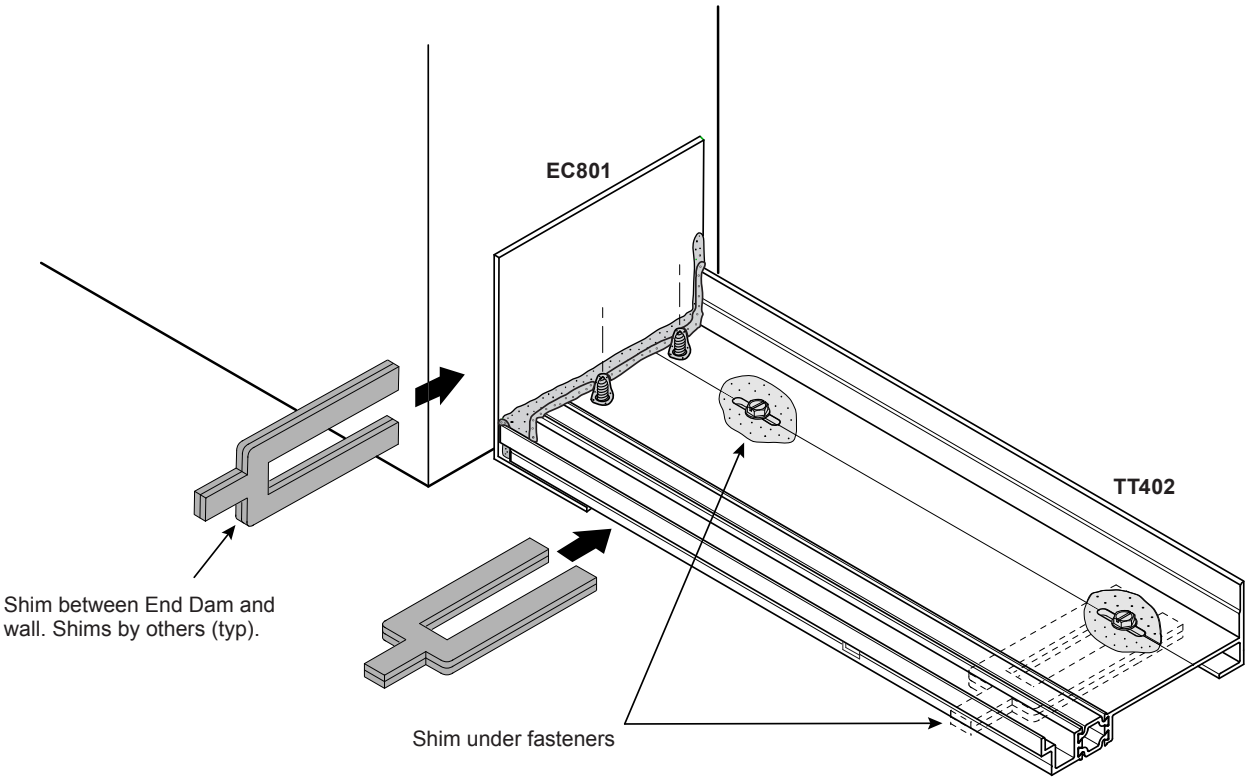
3. Set subsill in place. Create weep holes every 24". See **DETAIL M**. All weep holes should be oval shaped. Round weep holes can create tension, blocking the passage of water.



DETAIL M

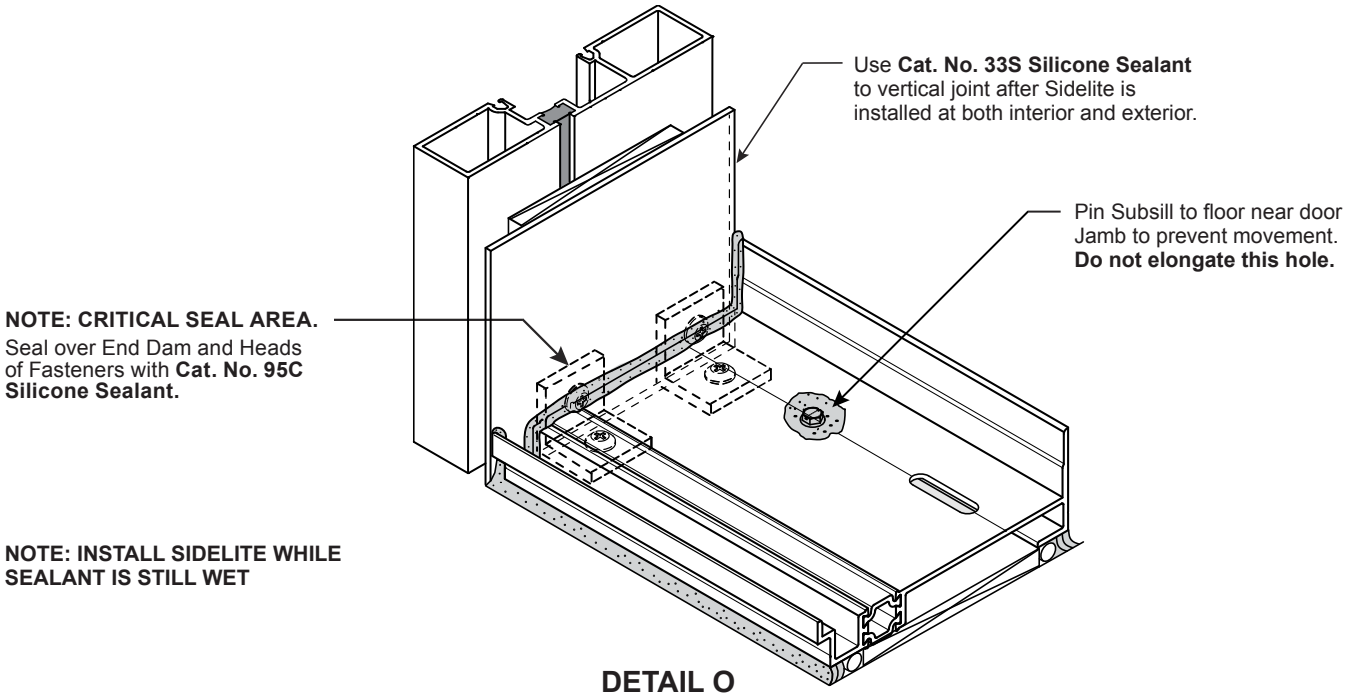
INSTALL SUBSILL (CONTINUED)-FIELD INSTALL

4. Shim as required. See **DETAIL N**.



DETAIL N

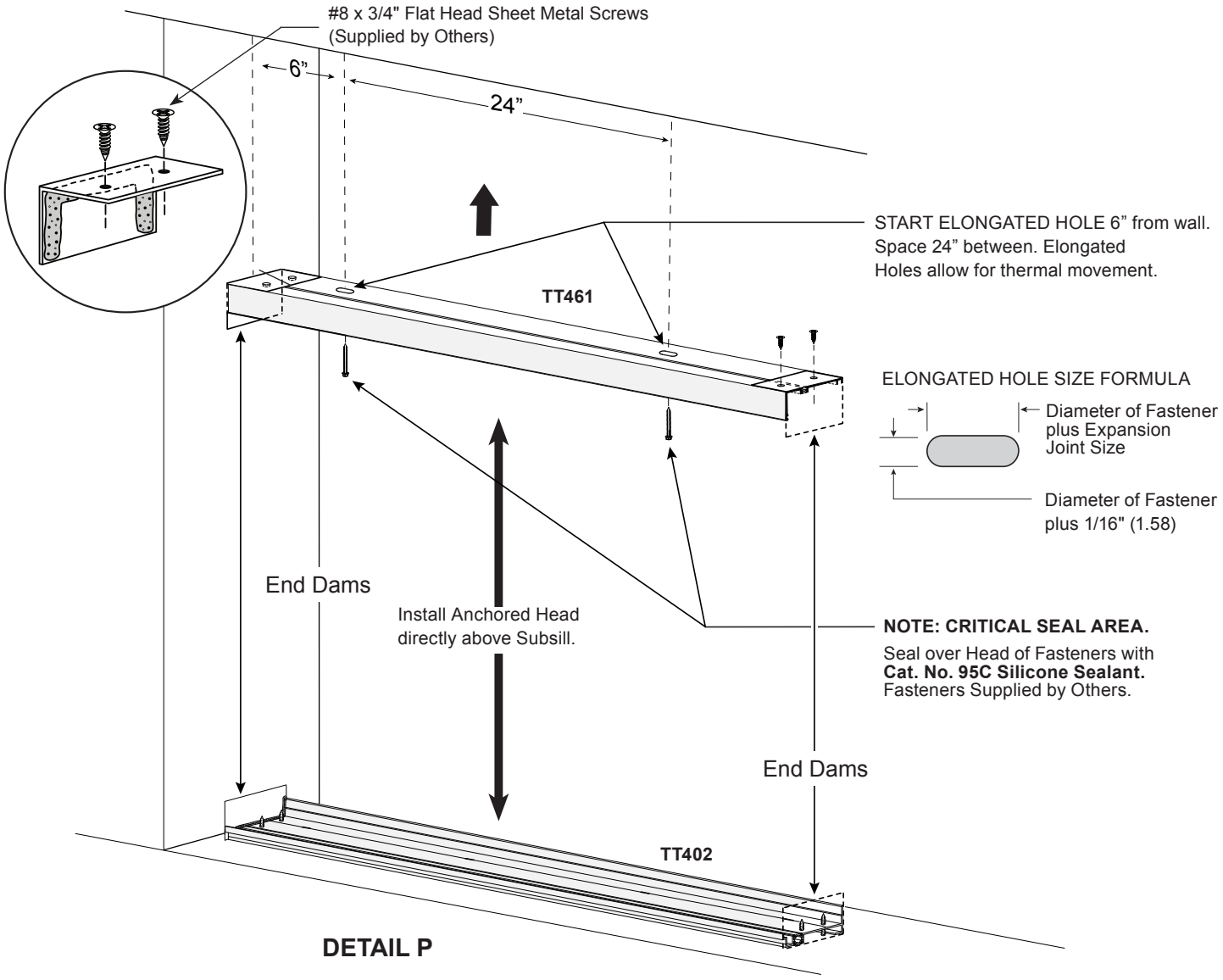
5. Install Subsill against door jamb. See **DETAIL O**.



DETAIL O

INSTALL COMPENSATING HEAD CHANNEL - (PUNCHED OPENING)

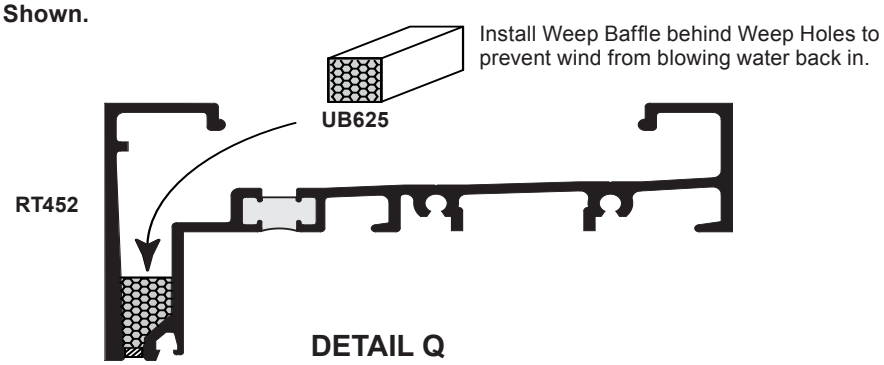
1. Install directly above Subsill. Ensure plumb and level. See **DETAIL P**.



DETAIL P

2. Cover weep holes in head and sill with **UB625** Weep Baffle. See **DETAIL Q**.

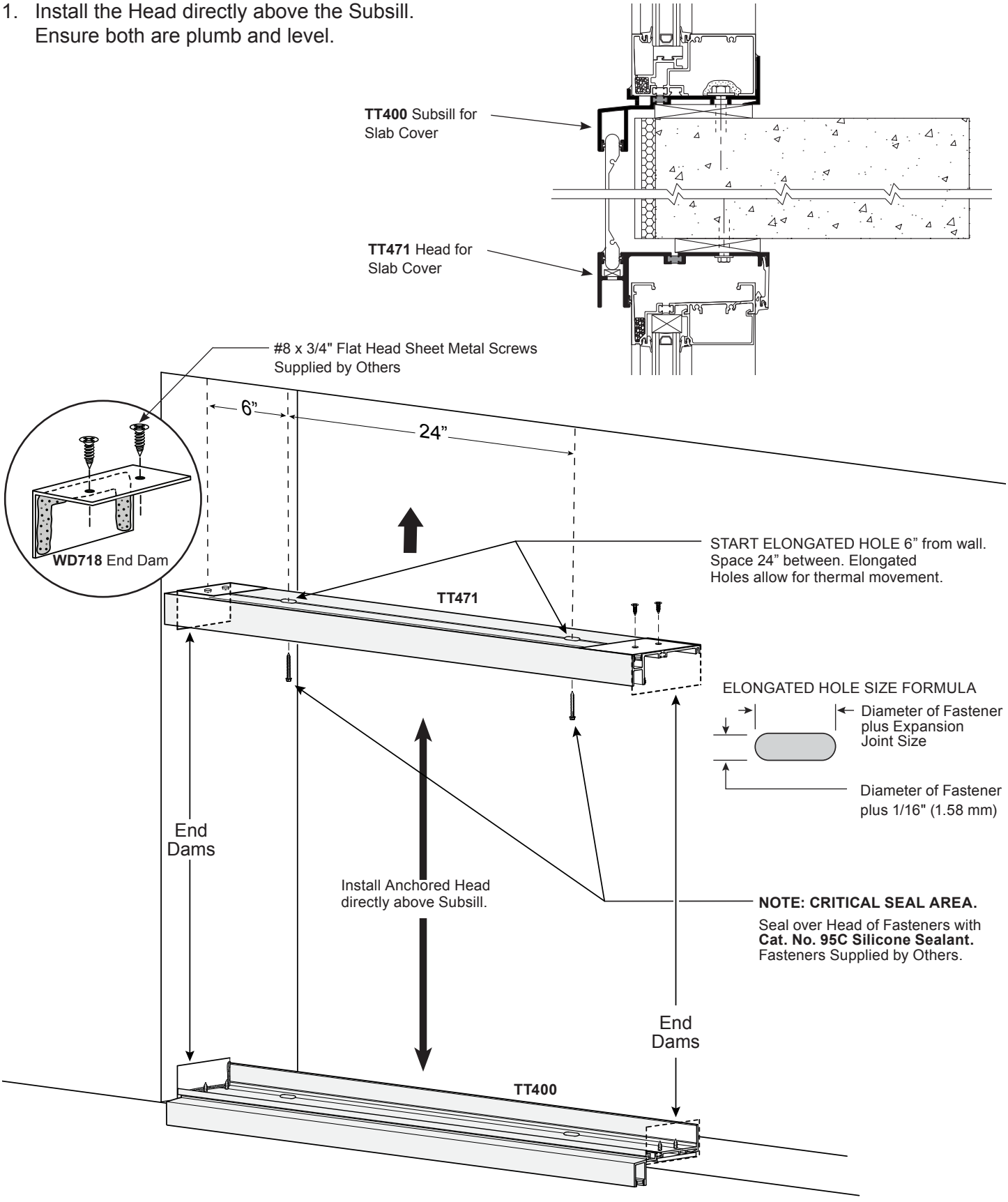
NOTE: Head Member Shown.



DETAIL Q

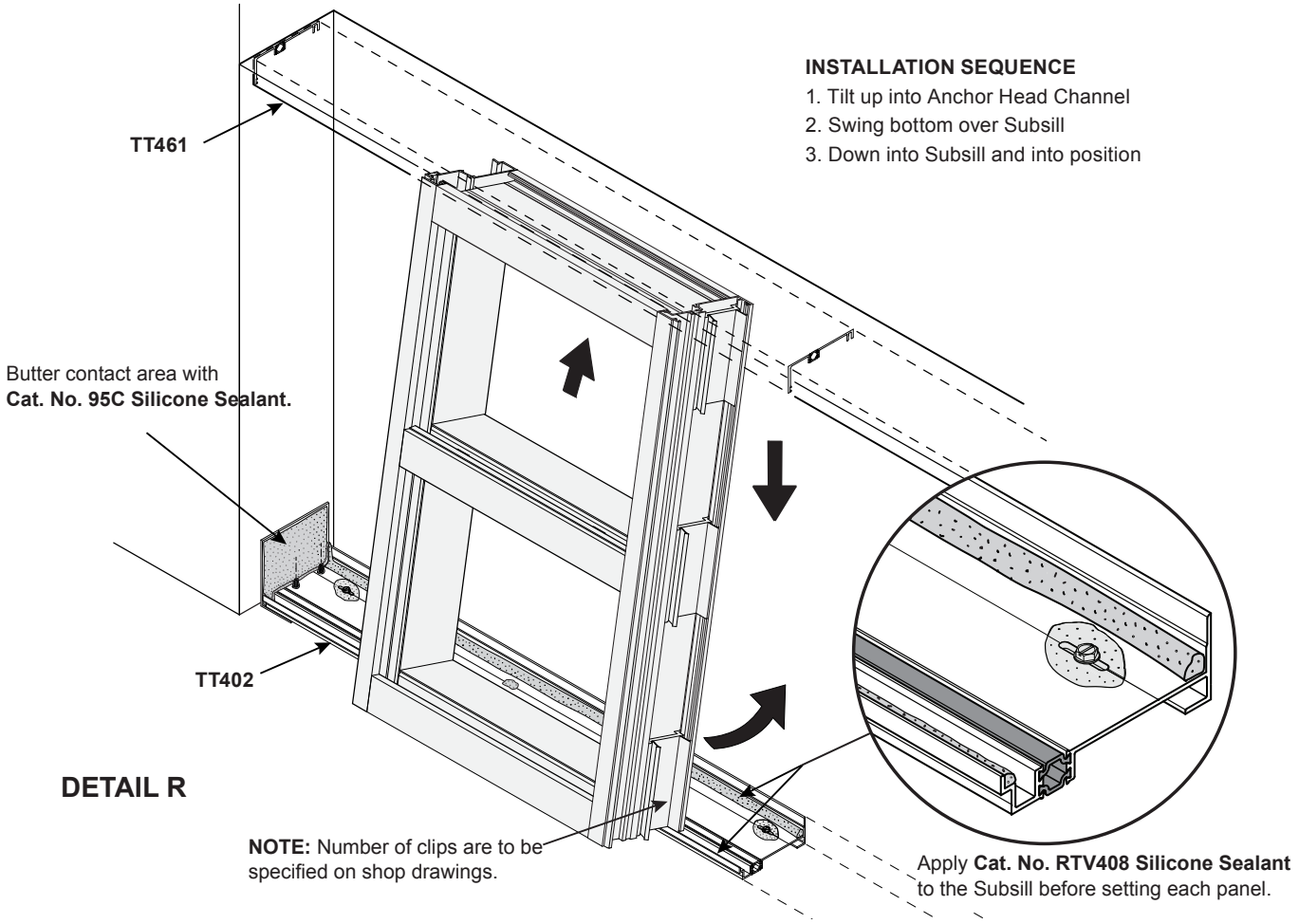
INSTALL SLAB OVERHEAD CONDITION

1. Install the Head directly above the Subsill. Ensure both are plumb and level.



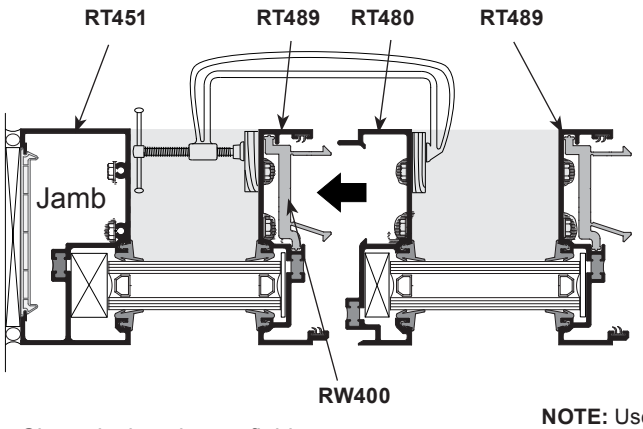
INSTALL PANELS WITH HEAD CHANNEL - (FIELD OPTIONAL)

1. Lift window over Subsill and up behind the Head Comp Channel. Push back to drop into Subsill. See **DETAIL R**.

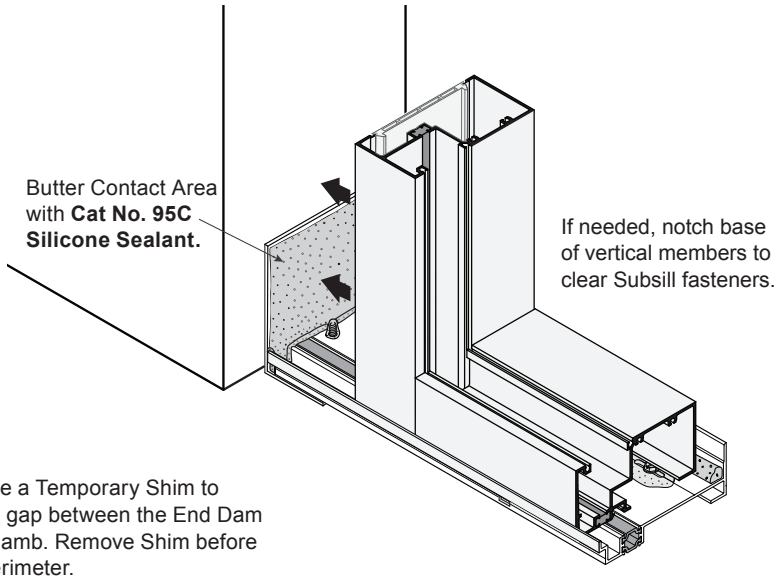


2. Slide Jamb against wall. Install next window and slide to snap into place.

Tip: Use "C" clamps and wood blocks to help snap mullion stiffeners together.



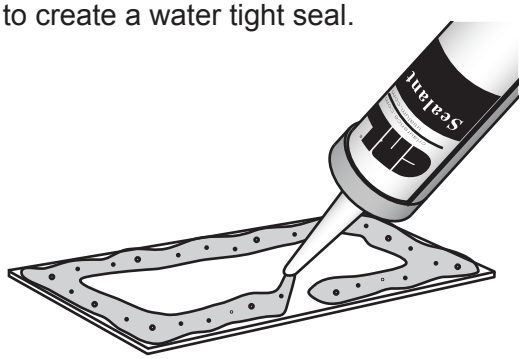
Shop glazing shown, field glazing similar.

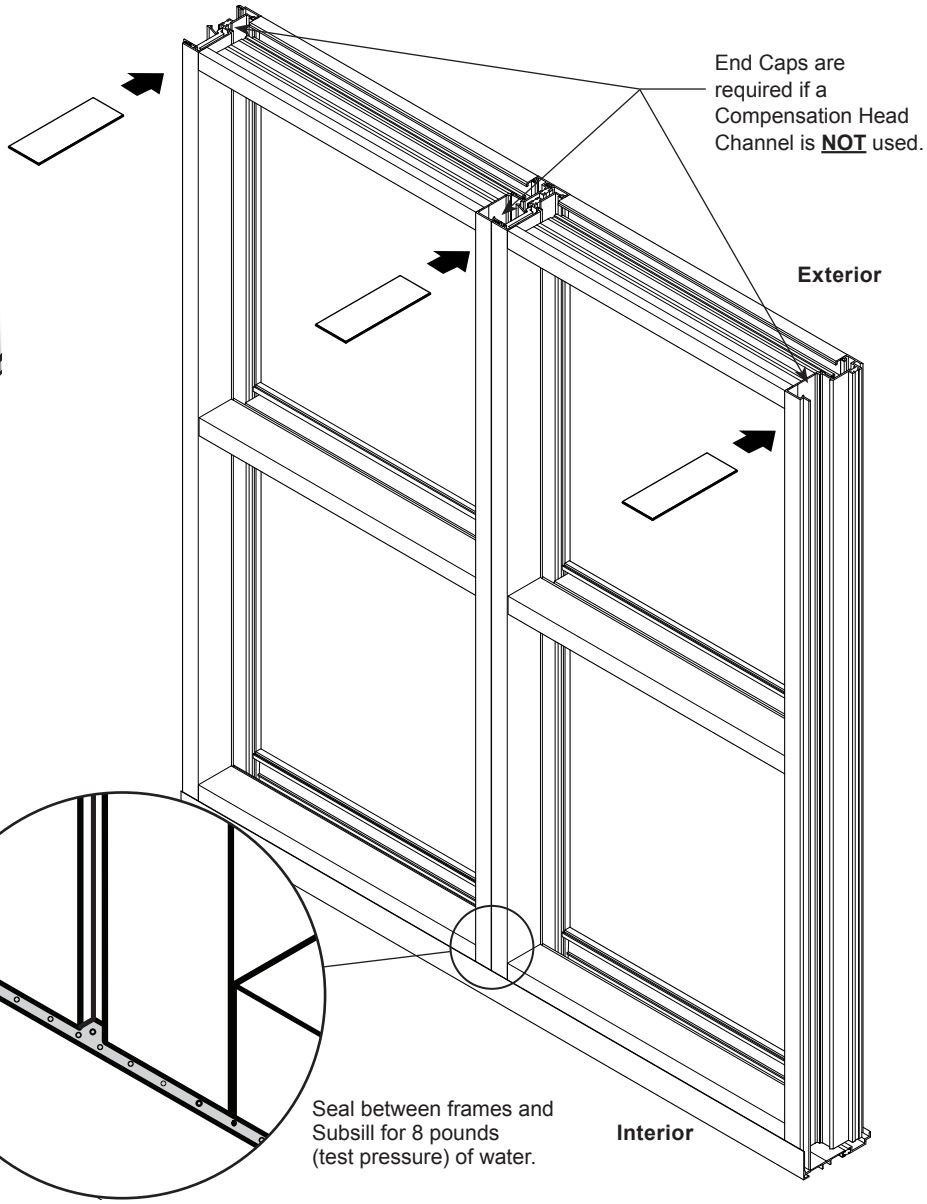


NOTE: Use a Temporary Shim to maintain a gap between the End Dam and Wall Jamb. Remove Shim before sealing Perimeter.

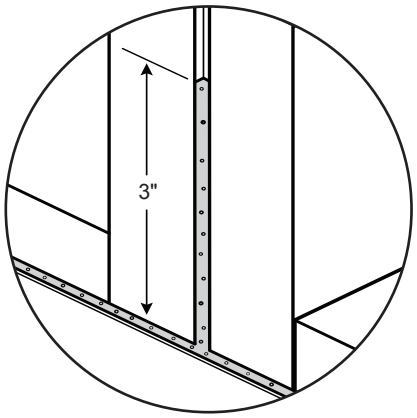
INSTALL HEAD END CAPS (OPTIONAL)

Install End Caps to all vertical members. Apply **Cat. No. RTV408 Silicone Sealant** to the bottom side of the End Cap. Slide the End Cap into position above the jambs to create a water tight seal.



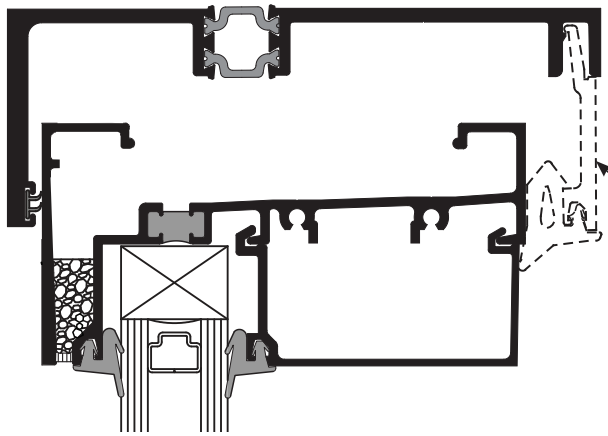


Run a 3" tall bead of silicone above the Subsill for 12 pounds (test pressure) of water.



Seal between frames and Subsill for 8 pounds (test pressure) of water.

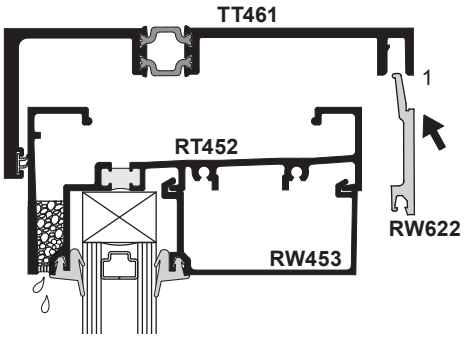
Compensating Head Channel shown

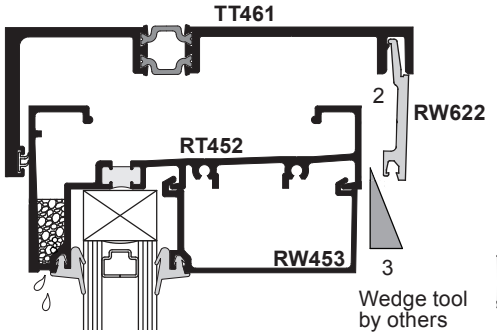


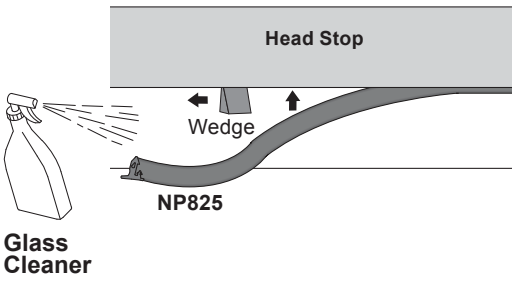
8" long temporary clip, **RW622** and **NP825**, at the center of each bay.

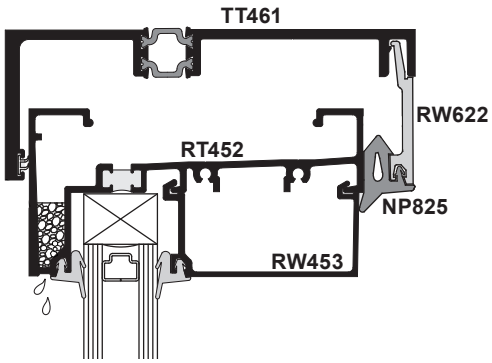
INSERTING THE UNITS - HEAD CHANNEL (FIELD OPTIONAL)

1. Install Head Stop









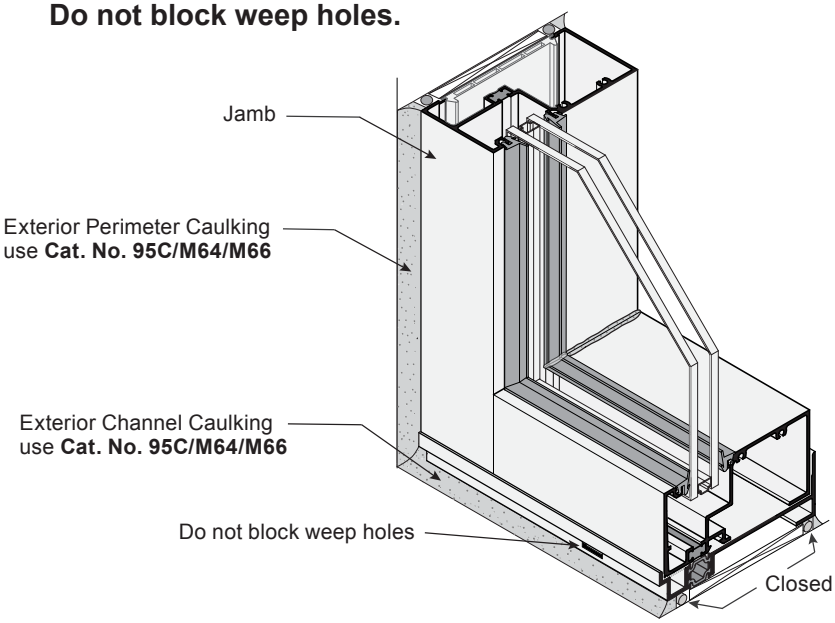
INSTALLATION SEQUENCE

1. Remove temporary clips. Apply forward pressure on head while inserting **RW622** Head Stop.
2. Snap into position.
3. Insert a wedge to create space to install **NP825** Gasket.
4. Work **NP825** Gasket into **RW622** reglet while moving wedge across as needed. Use liquid glass cleaner to lubricate gasket.

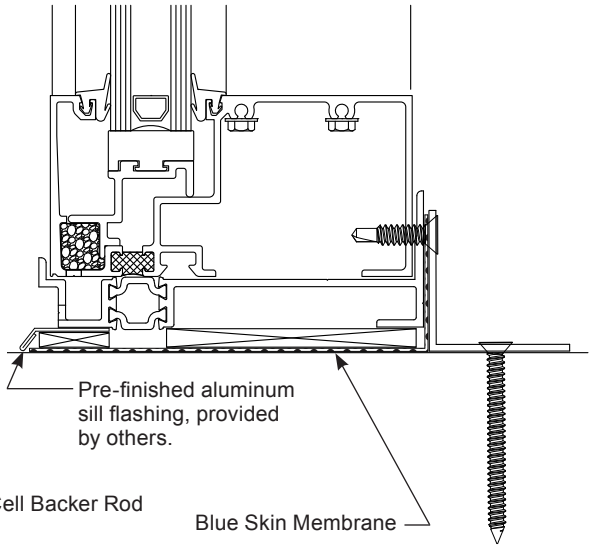
NOTE: Shop glazed version shown. Field glazed units use same procedures.

2. Seal Perimeter (Suggested Method)
   Install backer rod and caulk thoroughly with **Cat. No. 95C/M64/M66** to seal exterior.

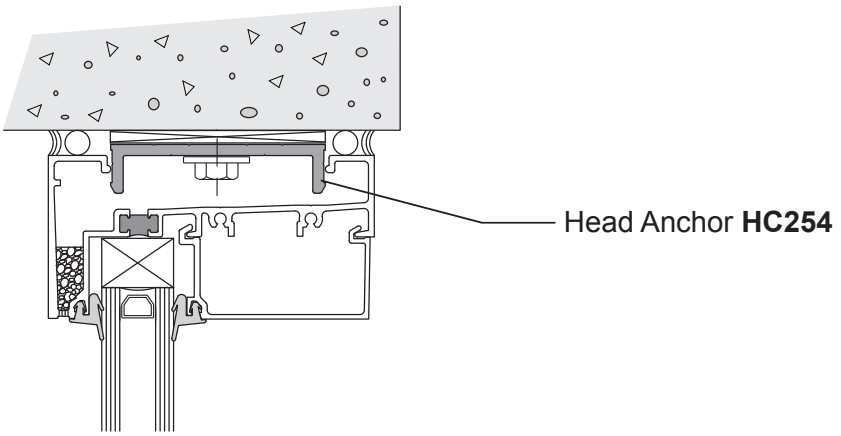
   Do not block weep holes.

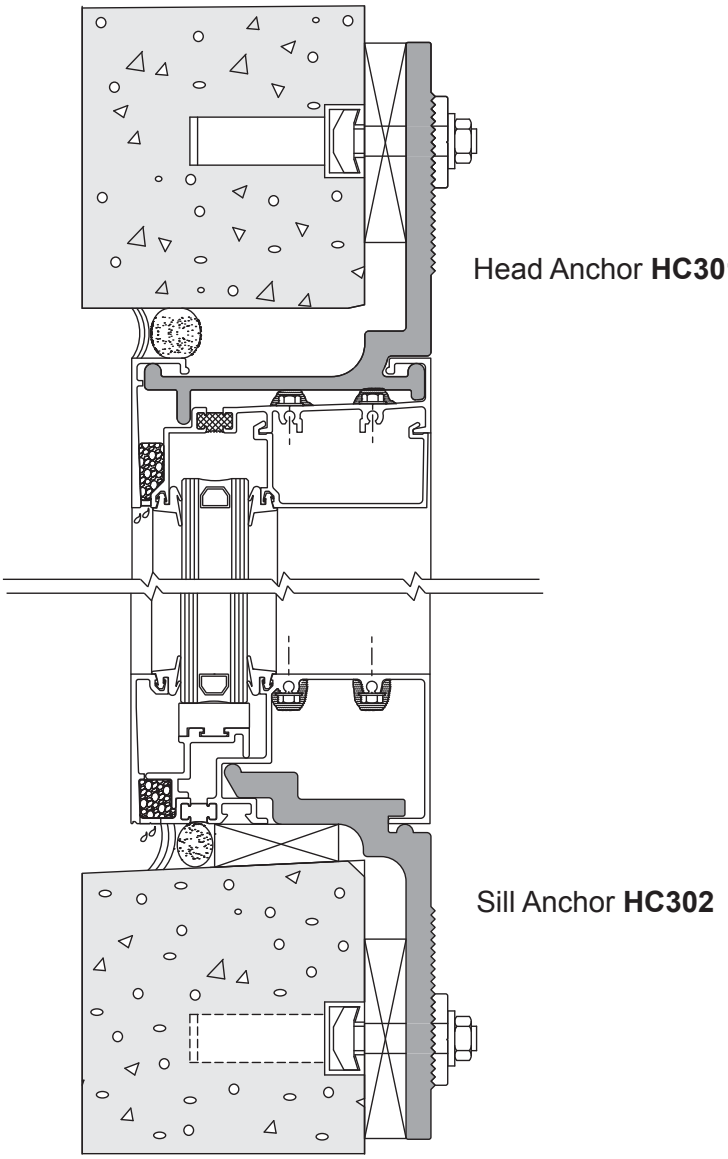


An alternate method for sealing the perimeter is to use a peel and stick water proof membrane type material between the frame and substrate.



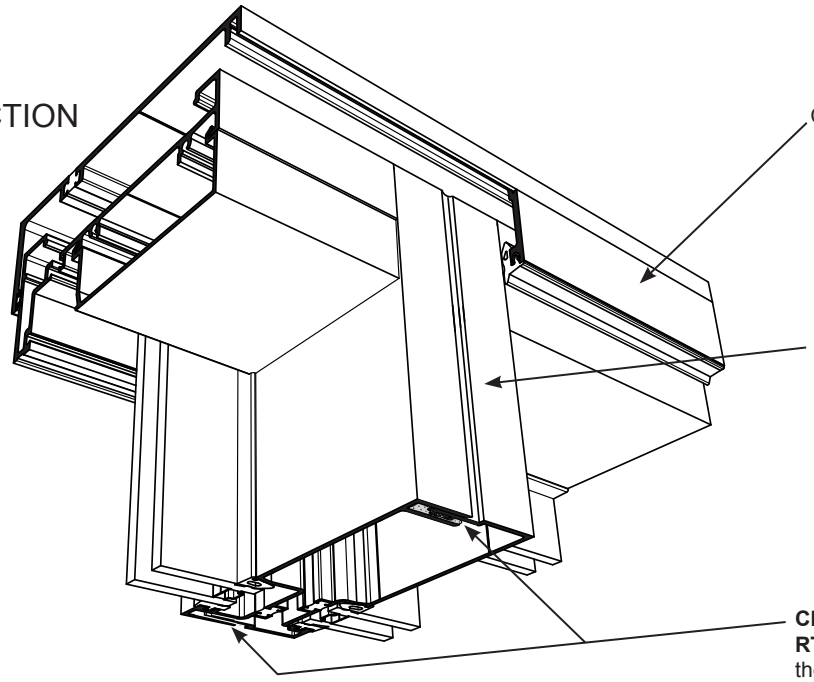
ALTERNATE HEAD MOUNTING OPTIONS





CRITICAL SEALS

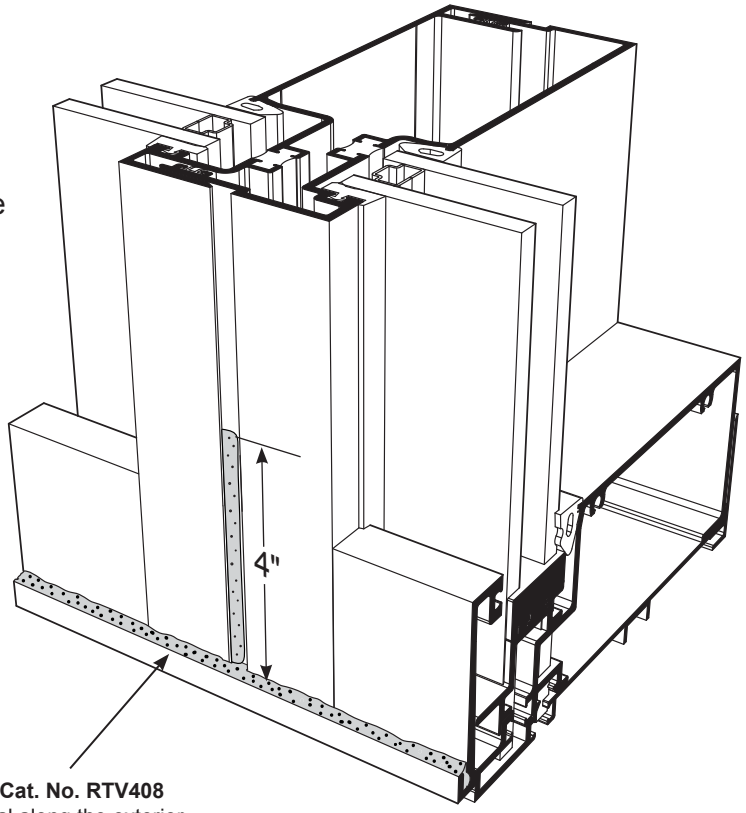
INTERIOR
HEAD SECTION



Apply **Cat. No. RTV408 Silicone Sealant** between all vertical expansion joints **BEFORE** attaching the Compensation Channel Stop. Additionally, all connection joints of vertical members that will be covered by the Compensation Channel Stop should be filled with sealant. This includes jambs, mullions, splayed verticals and SG joints.

Apply a continuous bead of **Cat. No. RTV408 Silicone Sealant** to the exterior sill where it joins the Subsill. A vertical bead up to 4" may be required to meet testing specifications (Refer to testing report for more information).

EXTERIOR
SUBSILL



TT601 Shown here, sealing procedure for TT451 similar

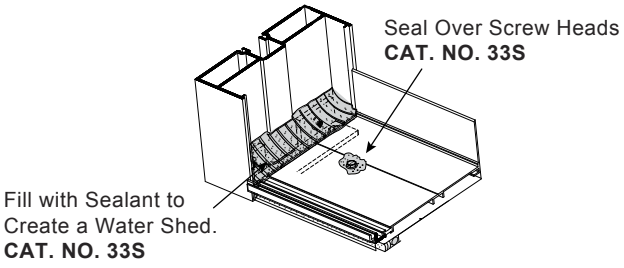
GUIDE TO SEALANTS

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.

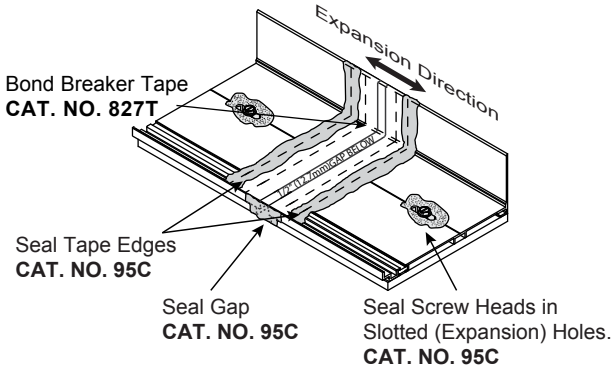


NOTE: Not for use near insulating glass units with butyl sealant.

EXPANSION

- **95C SILICONE BUILDING SEALANT**

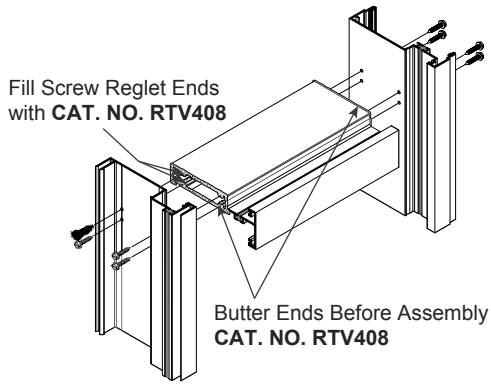
Expansion Joints.

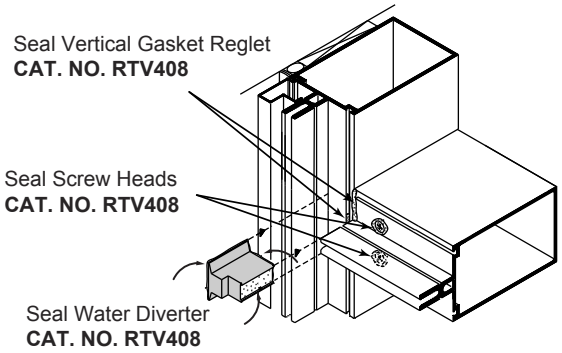


JOINT ADHESIVE

- **RTV408 NEUTRAL CURE SILICONE**

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



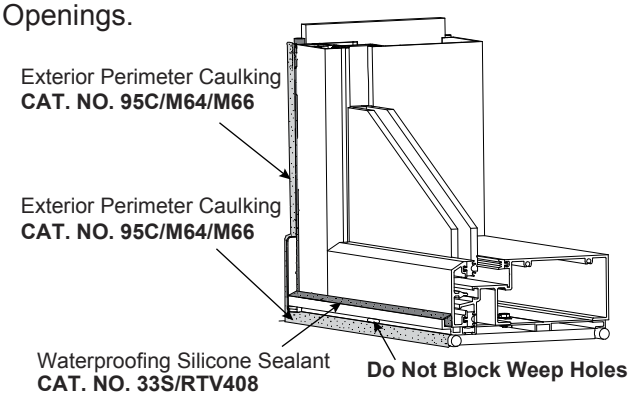


NOTE: I.G. butyl contact OK.

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