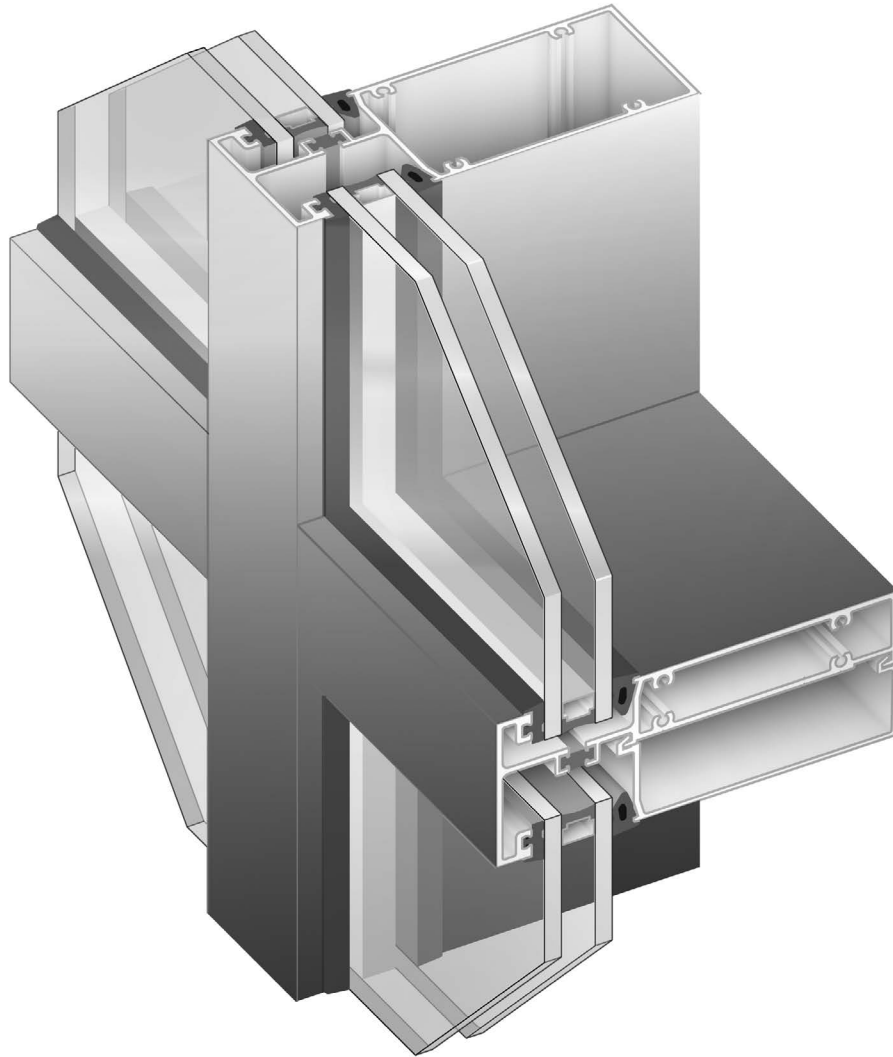


# INSTALLATION INSTRUCTIONS

## SERIES TN451, TT451, TN601, AND TT601 TOP NOTCH SYSTEMS



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# 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.

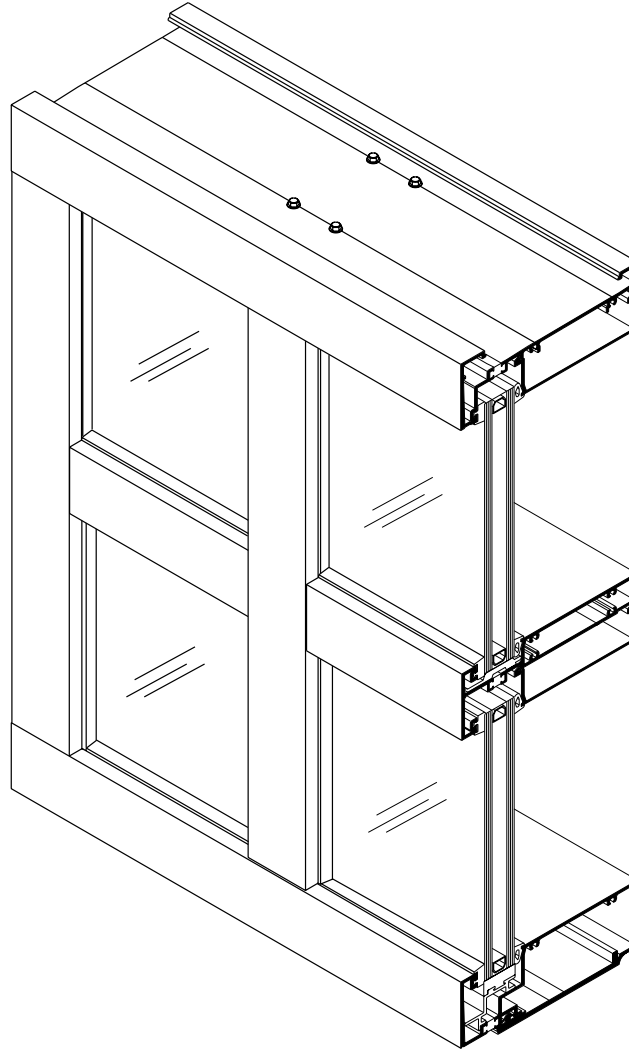
# GENERAL INSTALLATION NOTES

## 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<sup>2</sup>) 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<sup>2</sup>) 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.
- 14. JOB SITE ESSENTIALS.** See pages 23 and 24.

# TECHNICAL DATA

The Top Notch Systems offer a shallow face reveal that creates a flush exterior appearance. These systems are designed for labor saving stacking type installations that requires glazing from the interior. Series **TN451** and **TT451** utilize Top Load Gaskets. Series **TN601** and **TT601** utilize wedge-type molded corner exterior sponge gaskets for superior air and water performance. Internal water deflectors at intermediate horizontal to vertical intersections allow infiltrated water to be drained into a continuous sill gutter and weened to the exterior. Vertical mullions for structural silicone glazing are also available. The Top Notch Systems are designed for fixed horizontal window wall or punched opening applications.



SERIES	WIDTH	HEAD/SILL DEPTH	GLAZING INFILL	APPLICATION
<b>TN451/TT451</b>	2-1/4" (57.2)	4-1/2" (114.3)	1" (25)	Horizontal Interior Glazed Window Walls for Low to mid-rise buildings.
<b>TN601/TT601</b>	2-1/4" (57.2)	6" (152.4)	1" (25)	

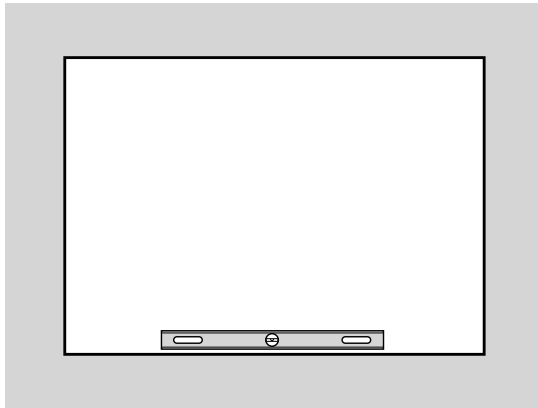
GLASS SIZES*	
GLASS WIDTH AND GLASS HEIGHT	= DAYLIGHT OPENING + 7/8" (22.2)

\* These formulae do not take into account glass tolerances. Consult glass manufacturer before ordering glass.

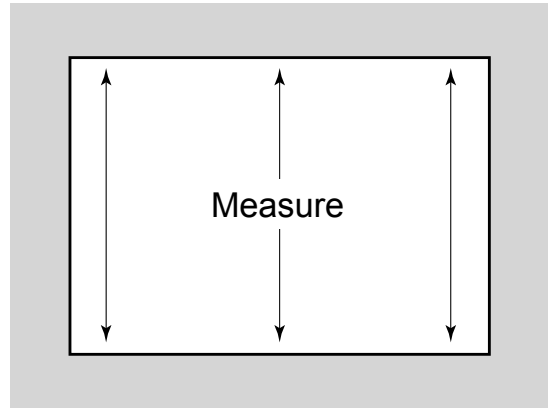
# SITE PREPARATION

## BEFORE INSTALLATION

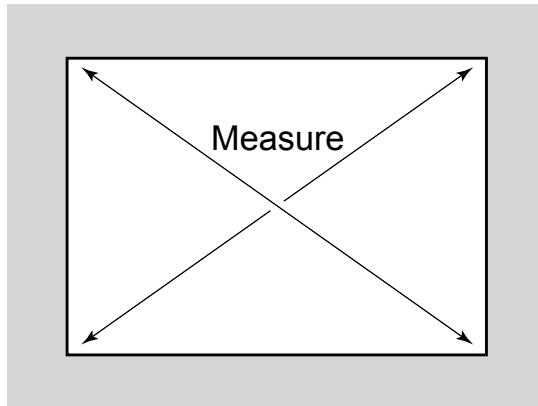
1. Review and measure the opening.
2. Verify rough window opening size 1/2" (12.7) clearance in both width and height to the window. Verify framing is plumb, straight, and true around window opening. Measure opening at each end and at center vertically and horizontally. Make corrections to openings as required. Measure opening diagonally to check squareness. Chip concrete high points to flush and rounded corners to square.



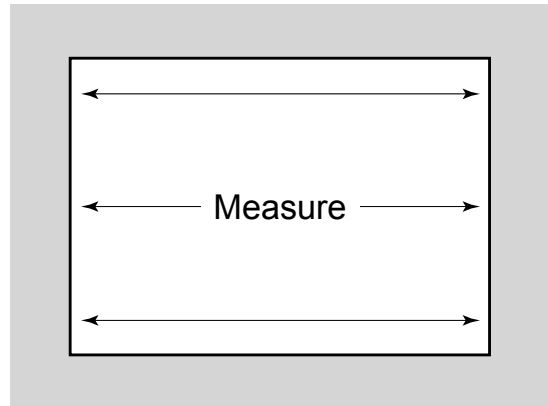
LEVEL



VERTICAL DIMENSION



SQUARE



HORIZONTAL DIMENSION

# TOP NOTCH SYSTEM INSTALLATION INSTRUCTIONS

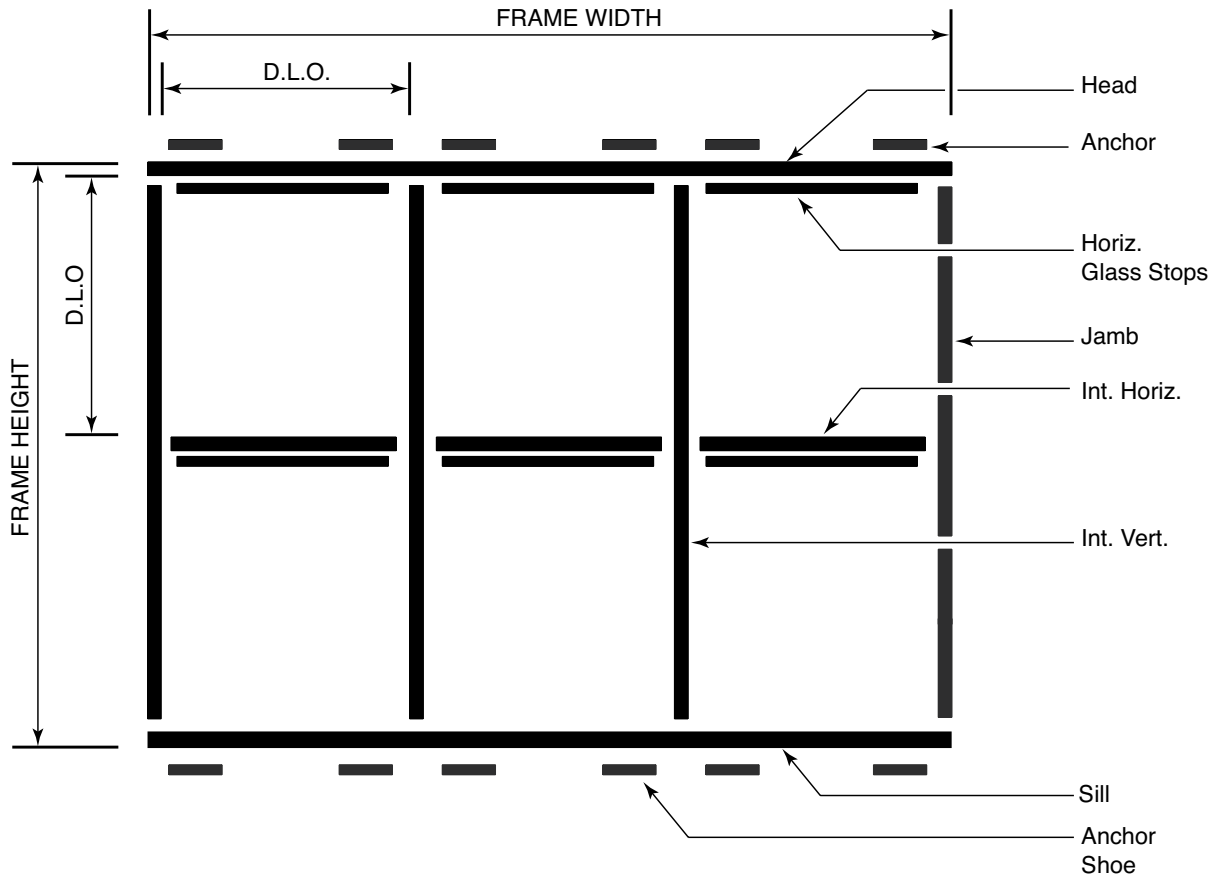
Frames may be shop fabricated, assembled and shipped to job site in units. System features continuous head and sill members with vertical to head and sill screw race joinery and is interior glazed.

## FRAME FABRICATION AND ASSEMBLY

Allow 3/8" (9.5) minimum clearance for shimming and caulking around perimeter. Extra clearance may be necessary to accommodate building tolerances. Expansion mullions must be used in long run elevations to allow for thermal movement.

1. Measure rough opening to determine frame height and width dimensions.
2. Cut members to size. **See DETAIL A.**

<b>Head and Sills:</b>	Frame Width = Rough opening minus 3/4" (19.1)
<b>Intermediate Horizontals:</b>	D.L.O.
<b>Jams and Verticals:</b>	Frame Height minus 1-1/8" (28.5)
<b>Horizontal Glass Stops:</b>	D.L.O. minus 1/32" (0.8)
<b>Head and Sill Anchors:</b>	Refer to shop drawings for size and placement.

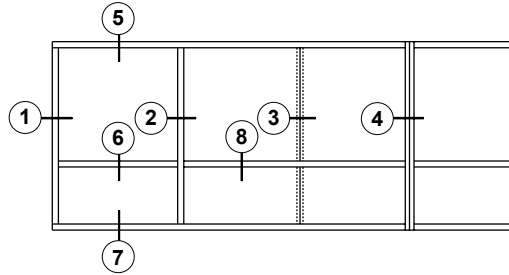


DETAIL A

# TYPICAL DETAILS FOR 1" (25) GLAZING

**NOTE:** Part numbers shown are available in 24' (7.3 m) stock lengths. Visit: [usalum.com](http://usalum.com) for more information.

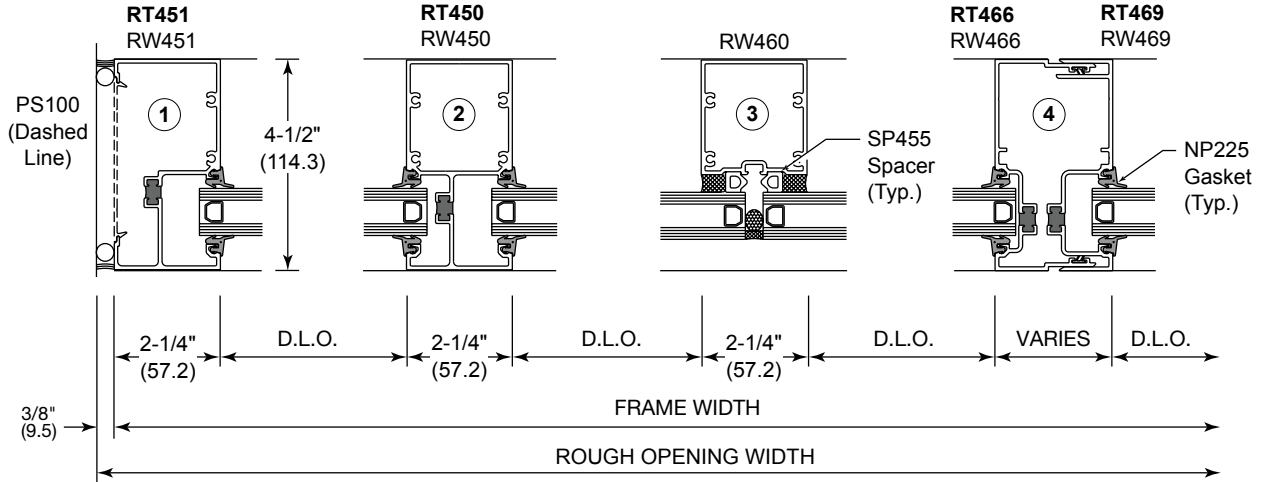
**Never allow two shallow pockets to face each other.**  
Plan units accordingly. **See DETAIL B.**



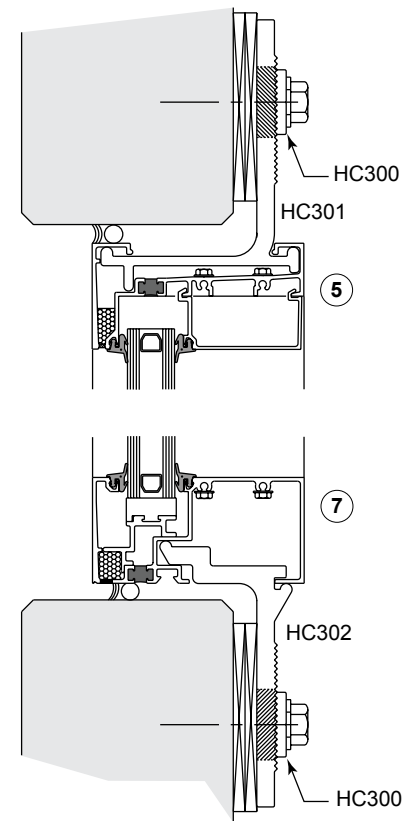
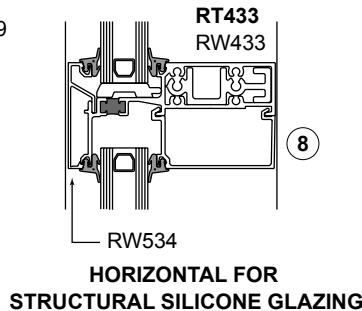
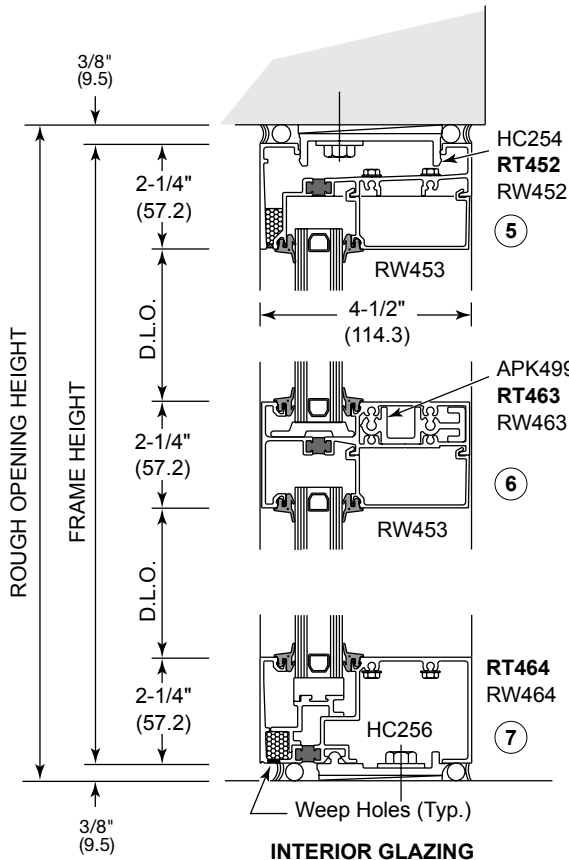
TYPICAL ELEVATION

Series TN451, TT451  
Series TT451 shown

Part numbers ending in "T" are **Thermally Broken**. These part numbers are in bold.



DETAIL B



NOT TO SCALE

**SERIES TN451, TT451, TN601, AND TT601 TOP NOTCH**

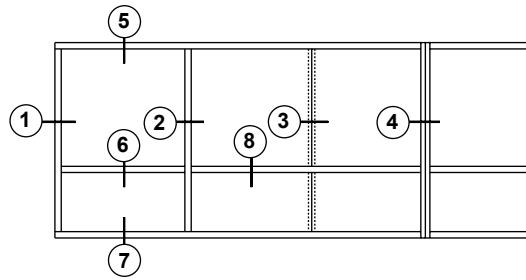
**TYPICAL DETAILS FOR 1" (25) GLAZING**

**NOTE:** Part numbers shown are available in 24' (7.3 m) stock lengths. Visit: [usalum.com](http://usalum.com) for more information.

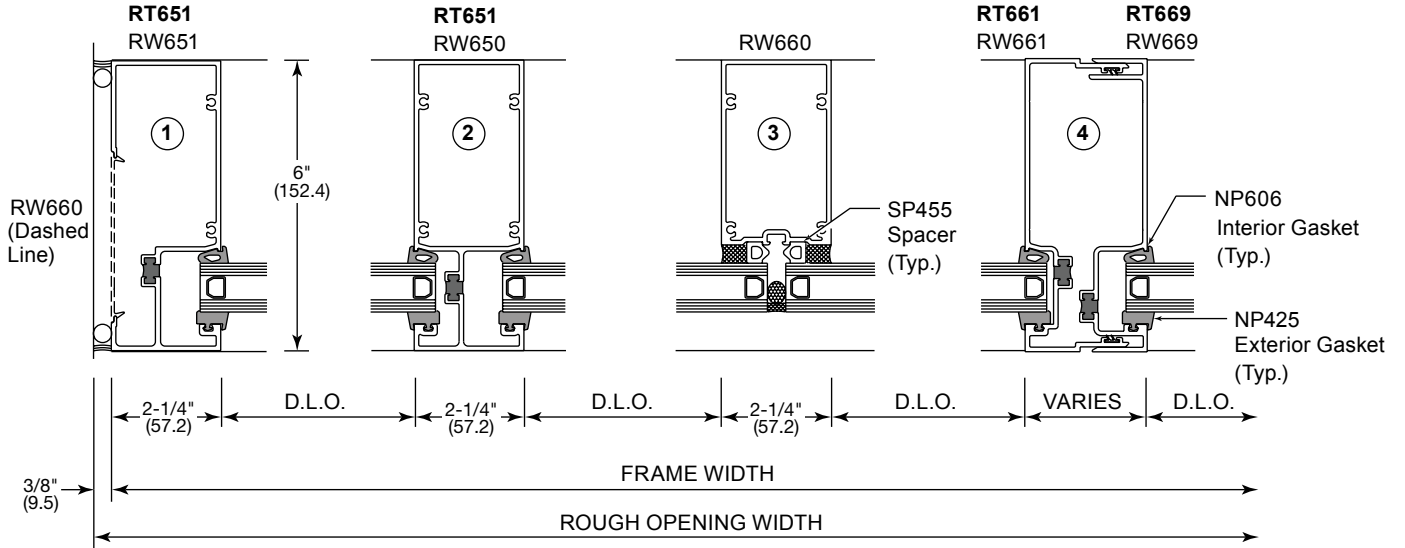
**Never allow two shallow pockets to face each other.**  
Plan units accordingly. **See DETAIL C.**

**Series TN601, TT601 Series TT601 shown**

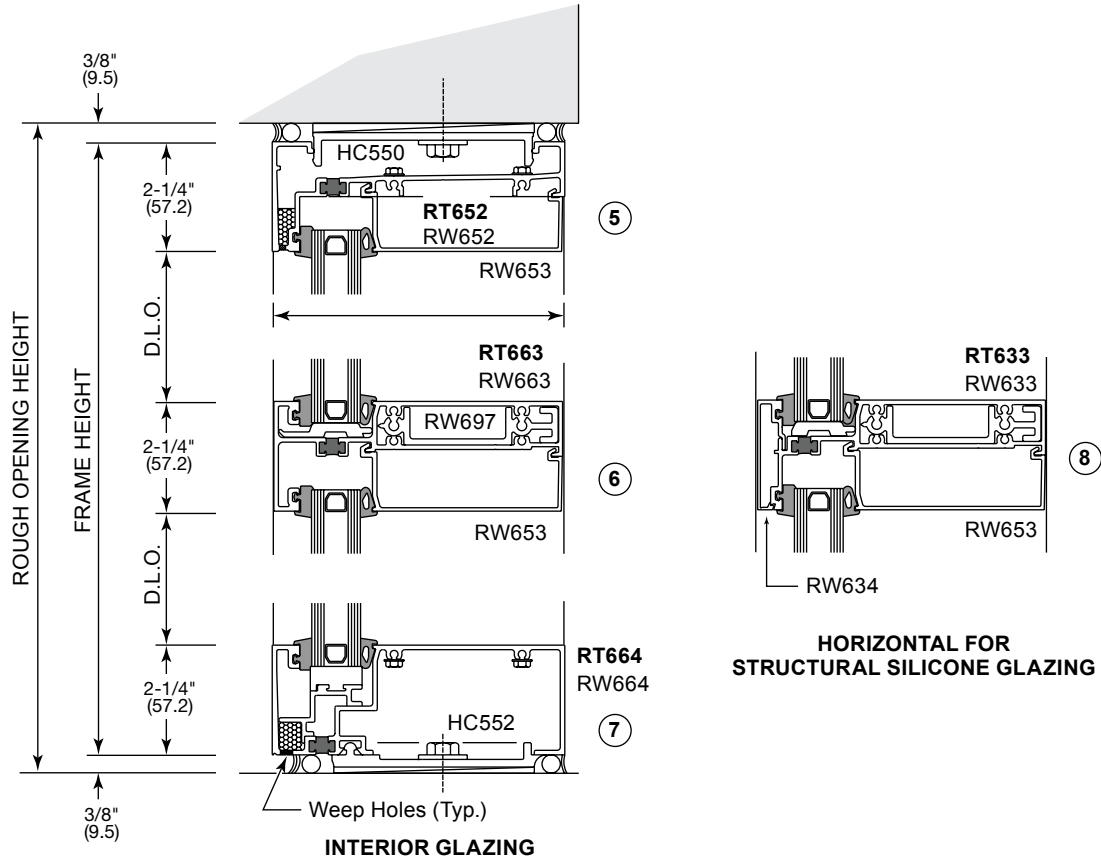
Part numbers ending in "T" are **Thermally Broken**. These part numbers are in bold.



**TYPICAL ELEVATION**



**DETAIL C**



**INTERIOR GLAZING**

**HORIZONTAL FOR STRUCTURAL SILICONE GLAZING**

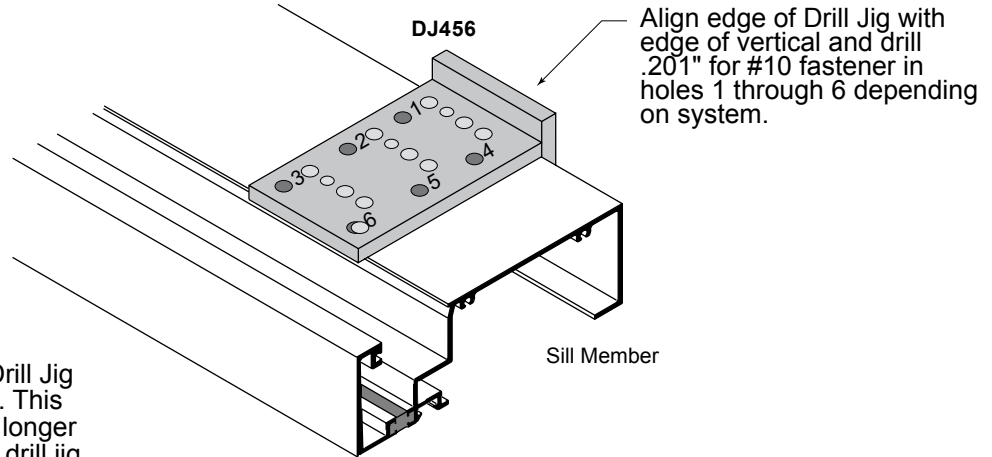
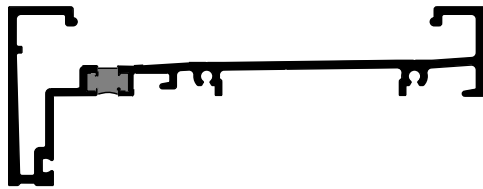
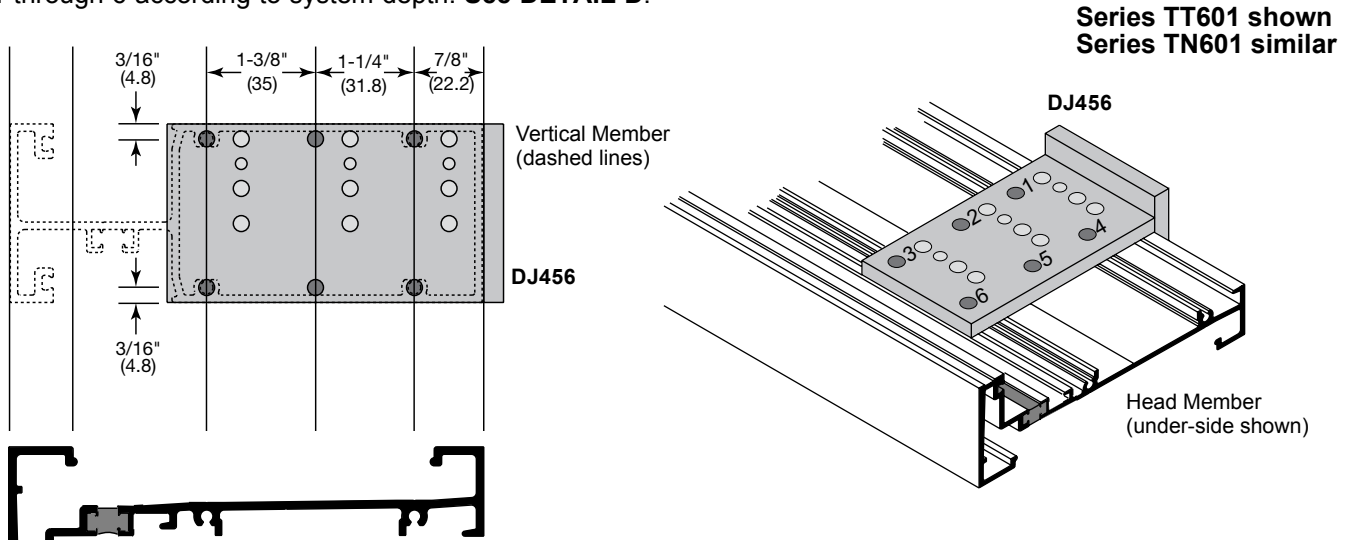
NOT TO SCALE



**SERIES TN451, TT451, TN601, AND TT601 TOP NOTCH**

**FRAME FABRICATION AND THE DRILL JIG**

3. Mark the location of verticals on the head and sill members. Align edge of Drill Jig with marks and drill holes 1 through 6 according to system depth. **See DETAIL D.**

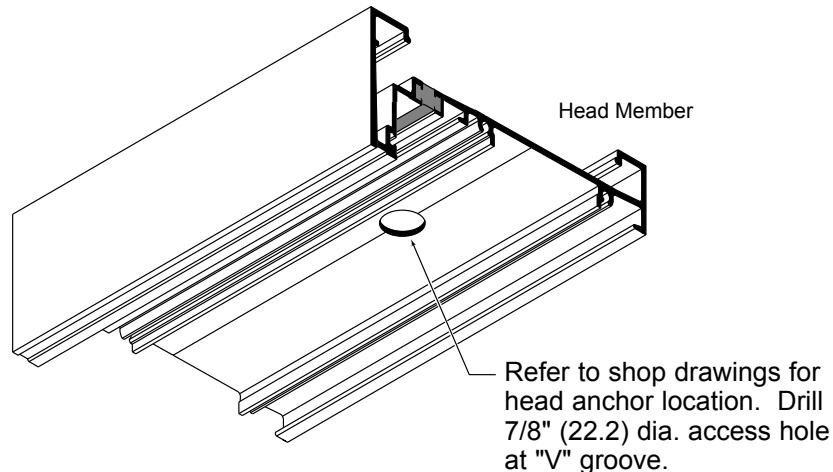


**HELPFUL HINT:**

Spot drill, then remove Drill Jig to complete hole pattern. This will help keep bits sharp longer and reduce possibility of drill jig moving during drilling.

**DETAIL D**

4. See shop drawings for exact anchor locations. Drill 7/8" (22.2) dia. access hole at "V" groove of head member. **See DETAIL E.**



**DETAIL E**

# SERIES TN451, TT451, TN601, AND TT601 TOP NOTCH

5. Mark the location at the top of each intermediate horizontal on the vertical members and drill holes for screw spline or shear block attachment. The use of drill jigs is recommended. See **DETAIL F**.

### HELPFUL HINT:

Spot drill, then remove Drill Jig to complete hole pattern. This will help keep bits sharp longer and reduce possibility of drill jig moving during drilling.

### Head

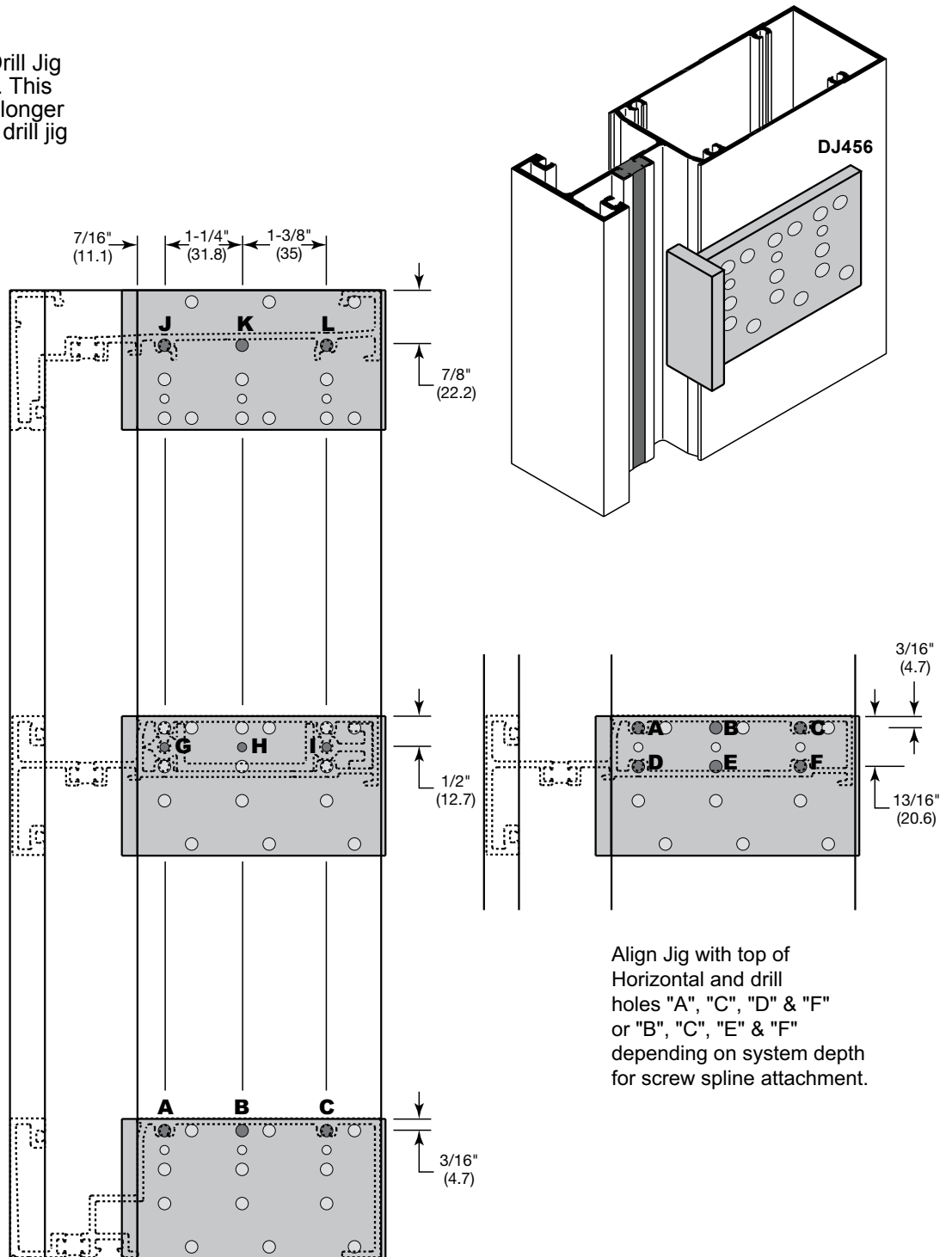
Align Jig with top of Vertical and drill holes "J" - "L" or holes "K" - "L" depending on system depth.

### Horizontal Mullions

Align Jig with top of Horizontal Mullions and drill holes "I", "H", and "G" depending on system depth for shear block attachment.

### Sill

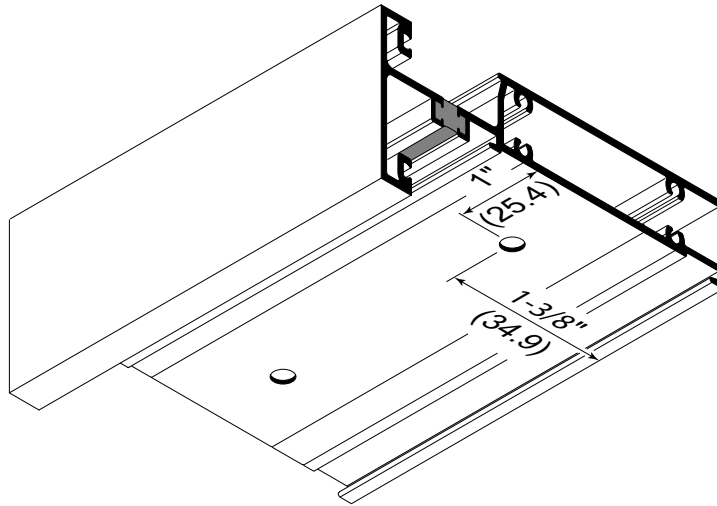
Align Jig with bottom of Vertical and drill holes "A", "B" and "C" depending on system depth.



DETAIL F

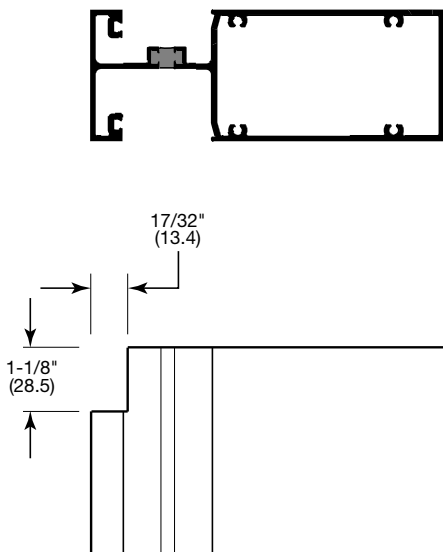
## SERIES TN451, TT451, TN601, AND TT601 TOP NOTCH

6. Measure 1" (25.4) from each end of horizontal member for shear block attachment hole. When using the 4-1/2" (114.3) system, line drill through "V" groove. For 6" (152.4) system, measure 1-3/8" (34.9) from back of horizontal and drill .201" dia. hole. See **DETAIL G**.

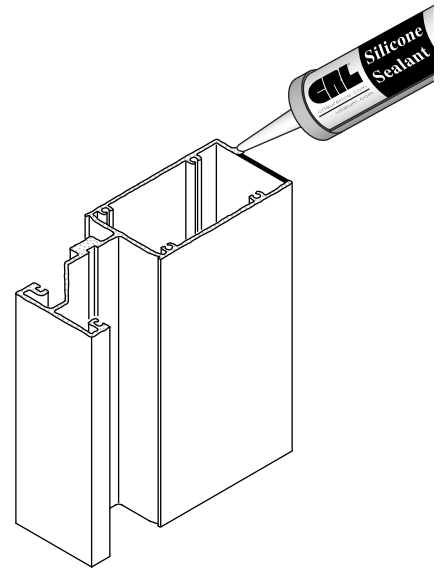
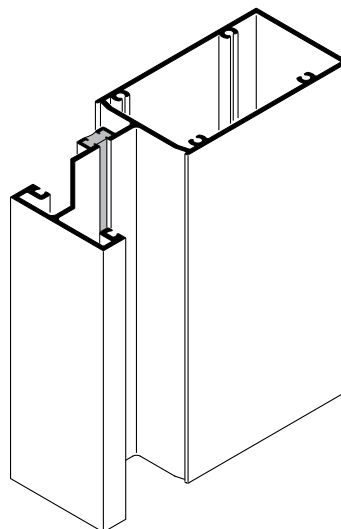


**DETAIL G**

7. Notch the top of all vertical members as shown below. See **DETAIL H**.  
**NOTE: Expansion mullions do not require notching at the top.**



Notch top of Vertical member to clear Head Horizontal.

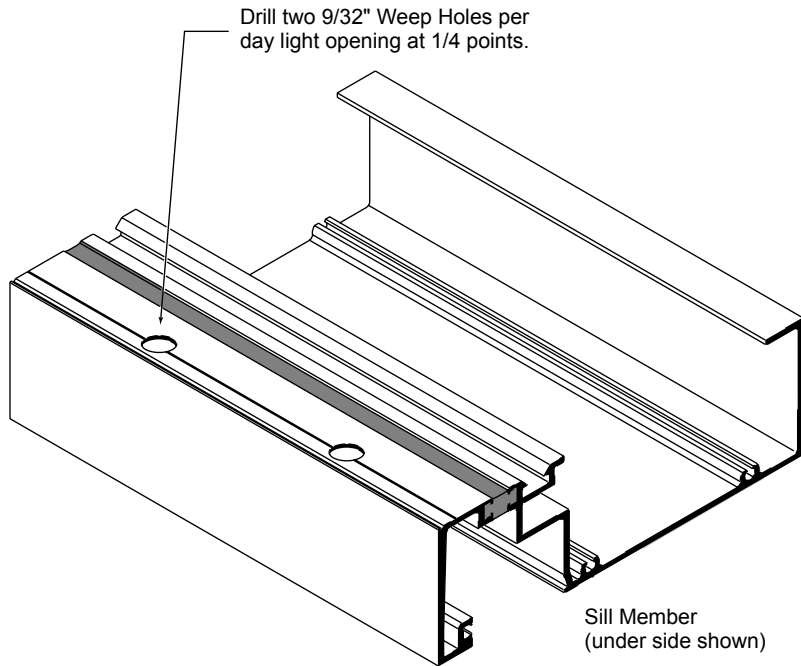


After notching top of Vertical, seal end completely with **CRL RTV408 Silicone Sealant**.

**DETAIL H**

## SERIES TN451, TT451, TN601, AND TT601 TOP NOTCH

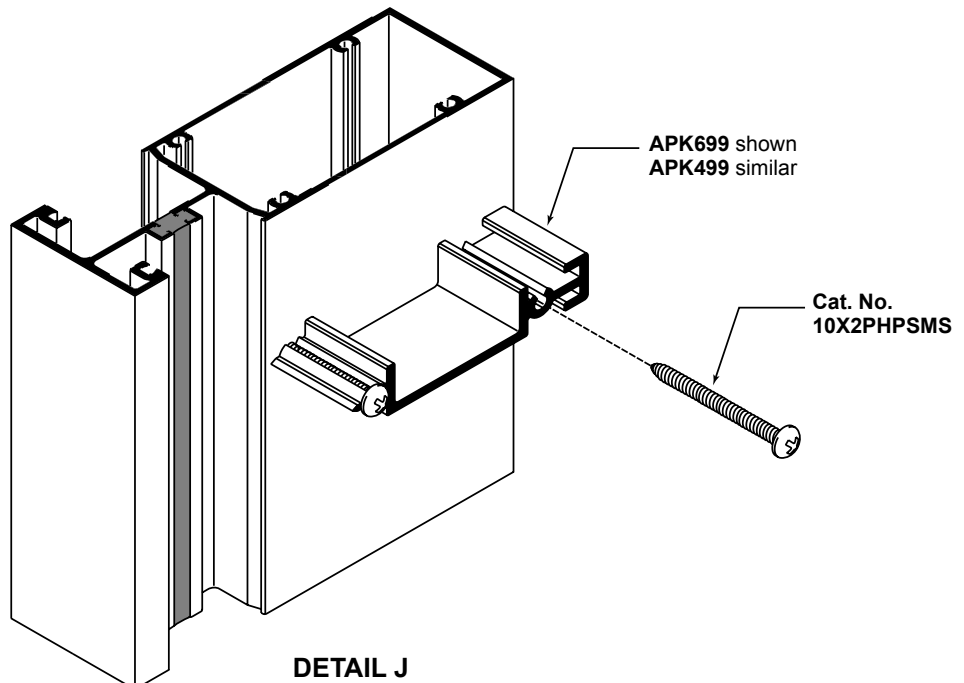
8. Drill weep holes in sill members as shown. See DETAIL I.



DETAIL I

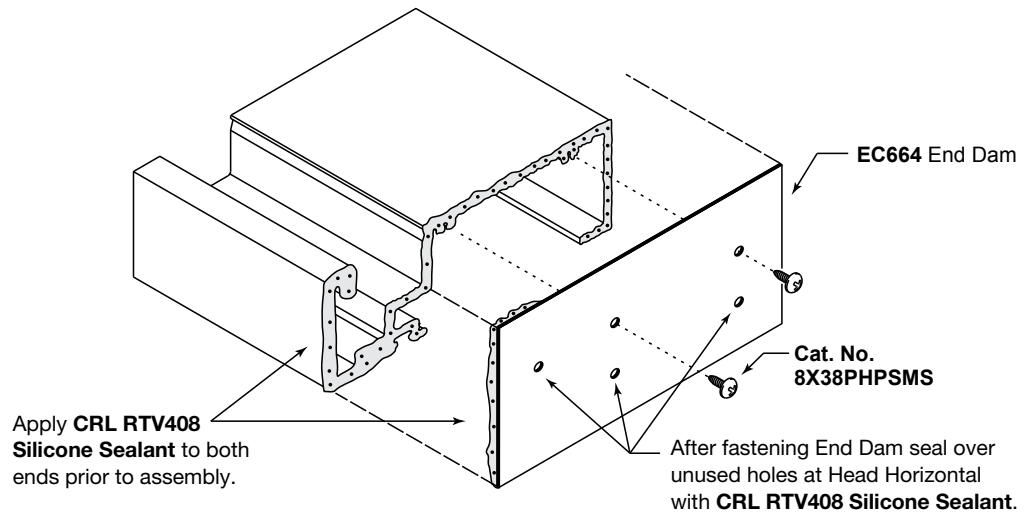
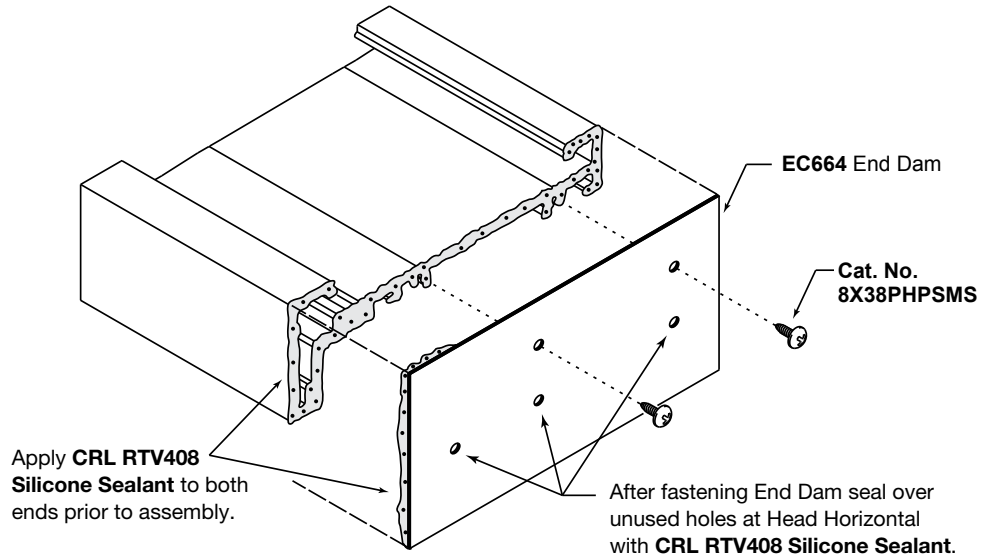
## FRAME ASSEMBLY

1. Attach shear blocks to verticals as shown with two #10 x 2" Phillips Head Sheet Metal Screws (CAT. NO. 10X2PHPSMS). See DETAIL J.



## SERIES TN451, TT451, TN601, AND TT601 TOP NOTCH

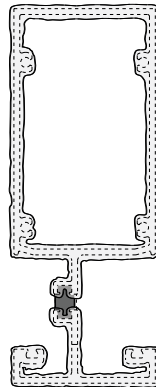
- Install End Dams to ends of head and sill members. Apply **CRL RTV408 Silicone Sealant** to both edges of head and sill members. Seal front portion of end dams and fasten with #8 x 3/8" Phillips Head Sheet Metal Screws (Cat. No. 8X38PHPSMS). Afterwards, seal over both sets of holes at head End Dam only. See **DETAIL K**.



### DETAIL K

- Apply **CRL RTV408 Silicone Sealant** as shown to all Vertical members. See **DETAIL L**.

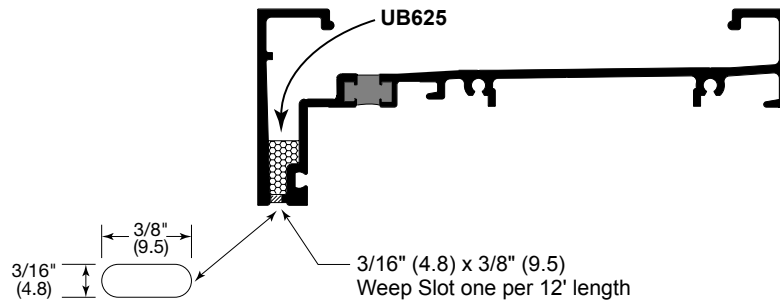
After notching top of Vertical, seal end completely with **CRL RTV408 Silicone Sealant**.



### DETAIL L

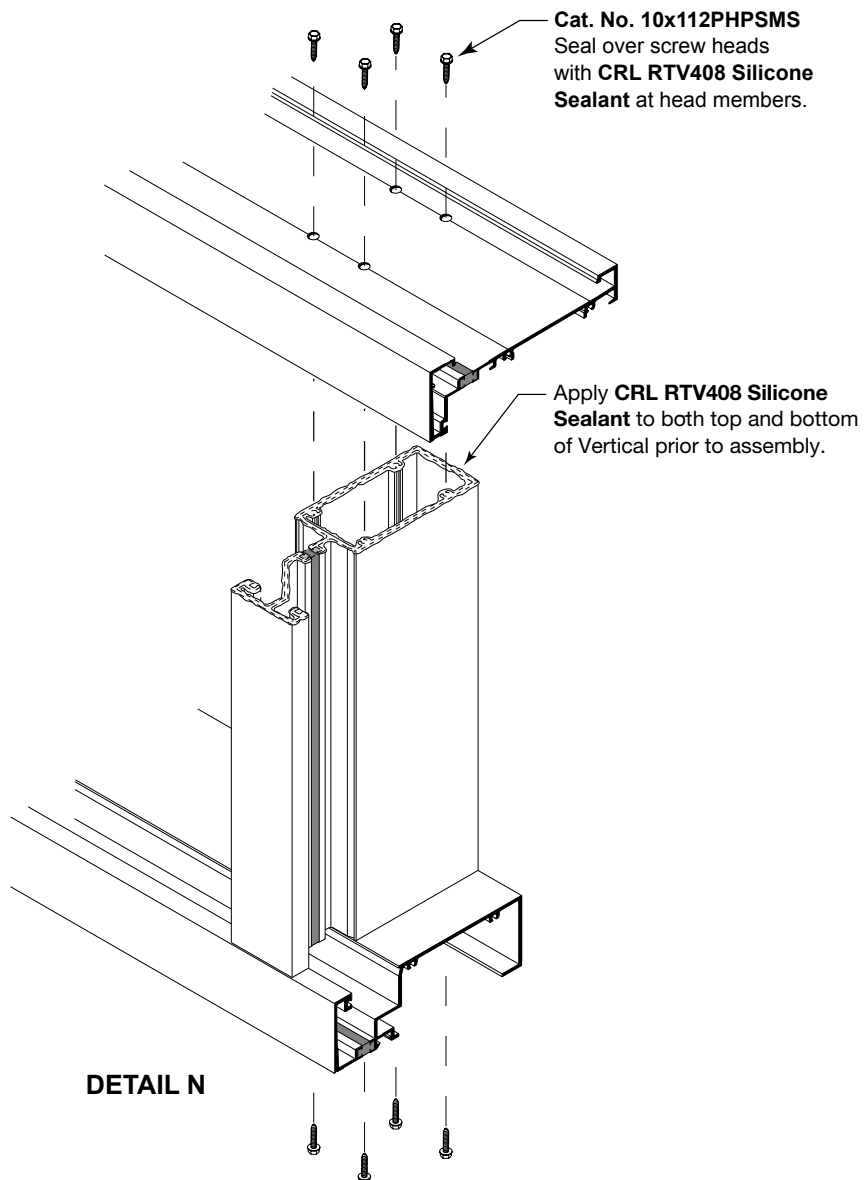
## SERIES TN451, TT451, TN601, AND TT601 TOP NOTCH

- Punch 3/16" (4.8) x 3/8" (9.5) Weep Slot in head member at one per 12' stock length. Insert **UB625** Weep Baffle at all Weep Hole locations. See **DETAIL M**.



**DETAIL M**

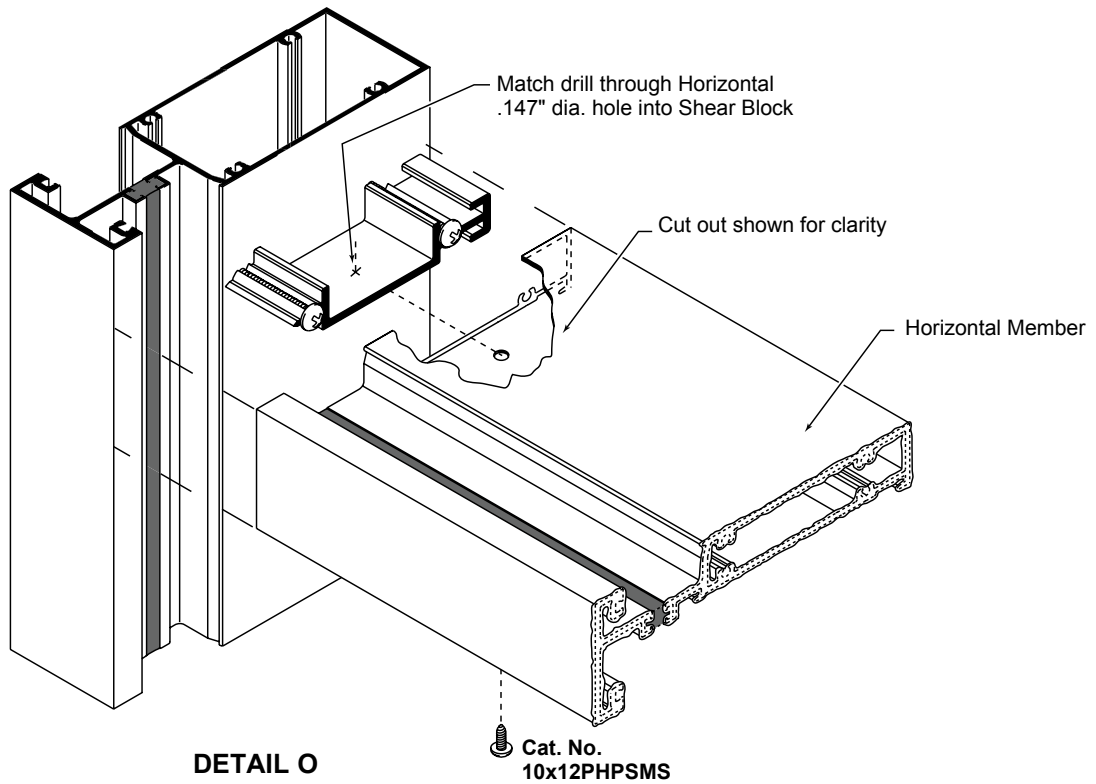
- Align verticals with pre-fabricated holes in head and sill members. Fasten at each end with four #10 x 1-1/2" Phillips Head Sheet Metal Screws (**Cat. No. 10x112PHPSMS**). See **DETAIL N**. Seal over screw heads with **CRL RTV408 Silicone Sealant** at head members.



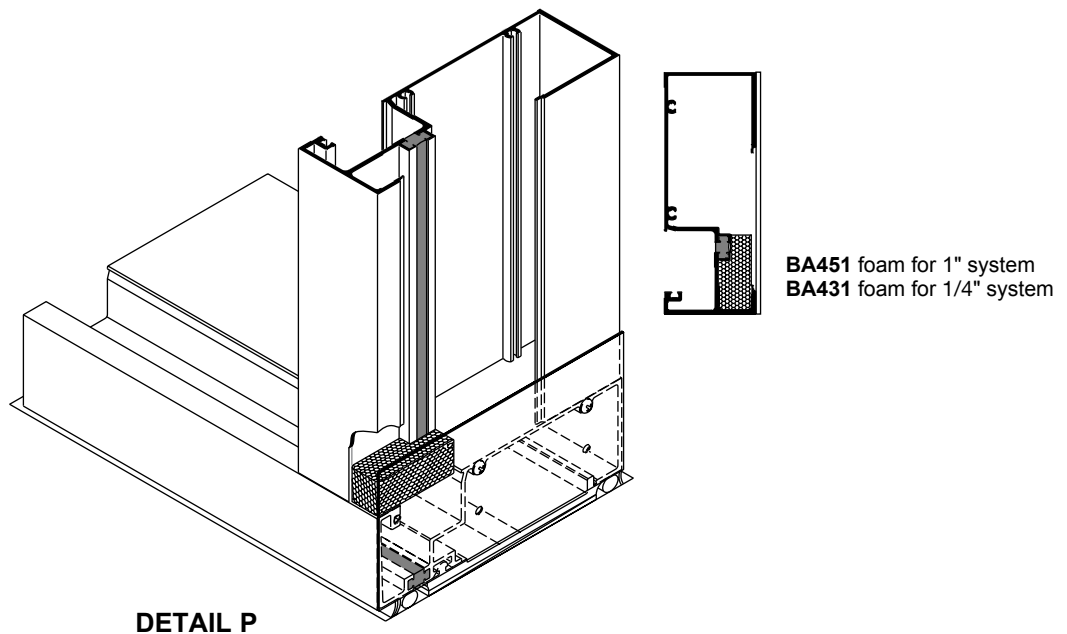
**DETAIL N**

## SERIES TN451, TT451, TN601, AND TT601 TOP NOTCH

6. Seal both ends of intermediate horizontal members and fasten to verticals with #10 x 1/2" Phillips Head Sheet Metal Screw (Cat. No. 10X12PHPSMS). See **DETAIL O**.

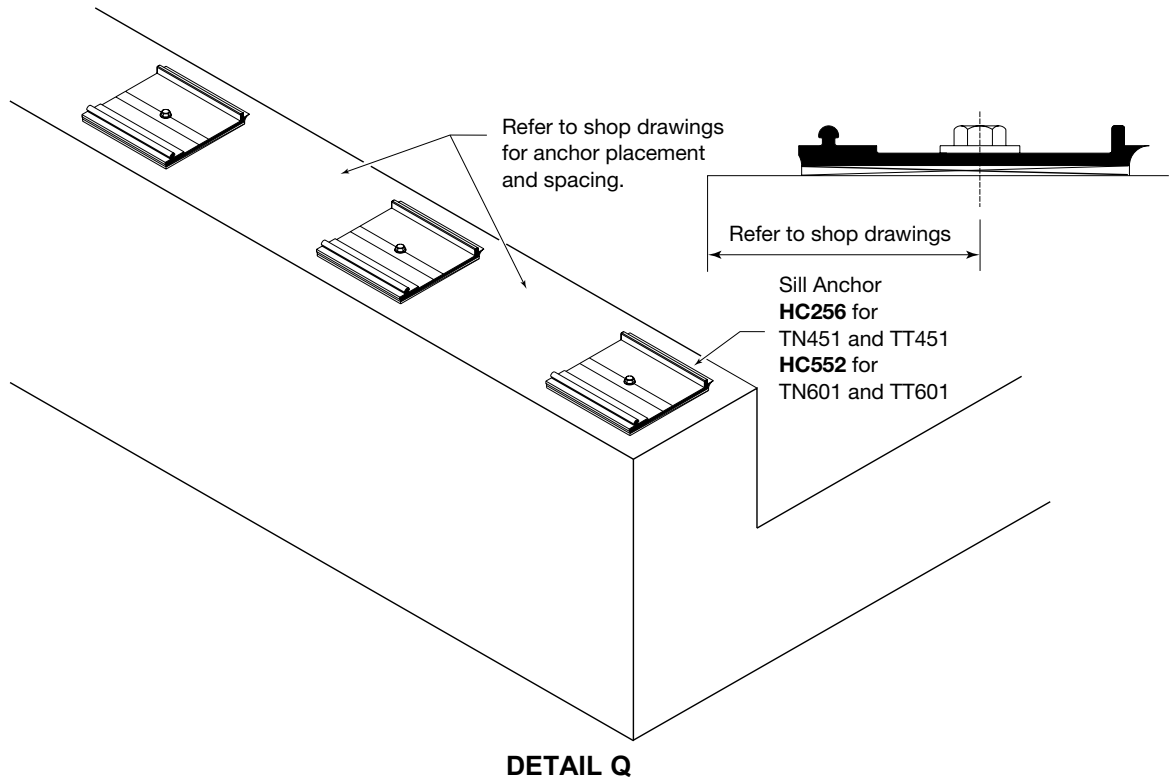


7. Install EVA foam to base of vertical as shown. Seal foam into place from inside of pocket to eliminate air infiltration. See **DETAIL P**.

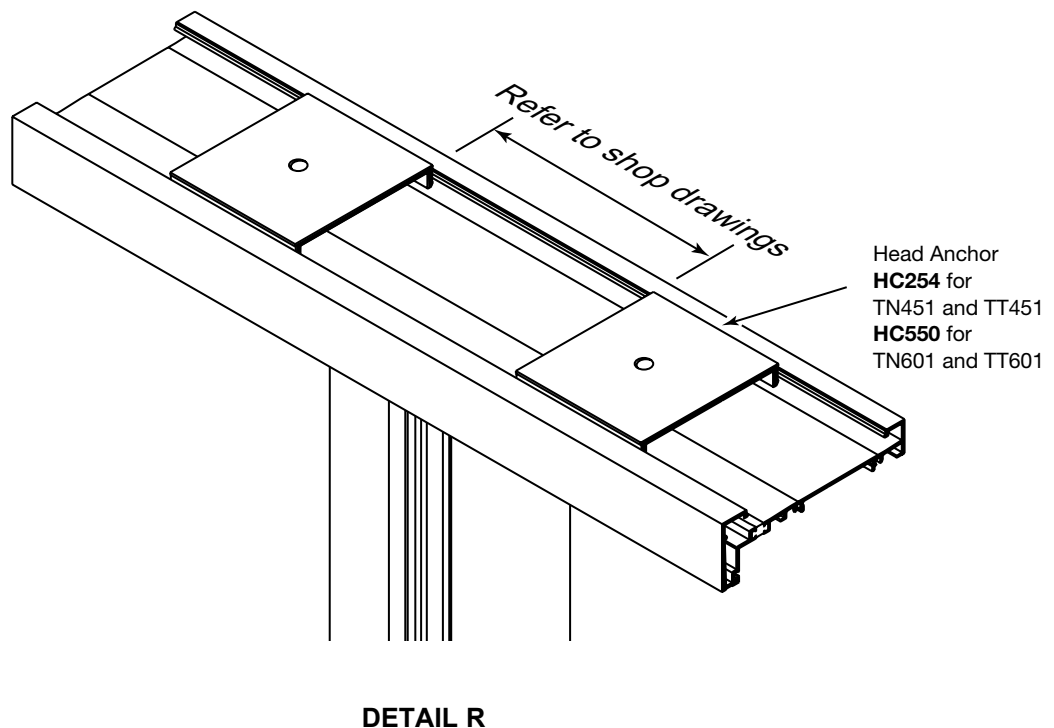


## SERIES TN451, TT451, TN601, AND TT601 TOP NOTCH

8. Snap a chalk line in the location where the sill anchors will be installed. Refer to shop drawings for sill anchor size and location, along with bolt size and quantity. See **DETAIL Q**.



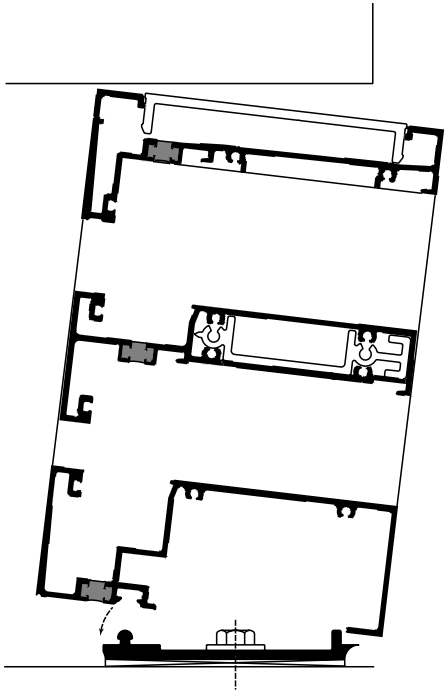
9. Install head anchor into head members at proper locations. Refer to shop drawings for anchors size and location and also bolt size and quantity. See **DETAIL R**.



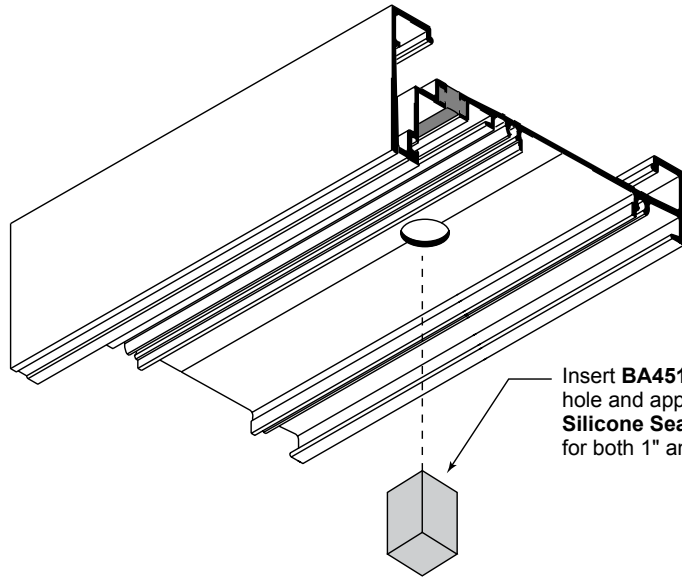


## FRAME INSTALLATION

1. Install frame into opening. Place frame on sill anchor and lean forward, center in opening, plumb, level and true. **See DETAIL S.**
2. Fasten head anchors through access holes in head members.
3. Insert **BA451** foam into access holes and apply sealant around entire edge of plug. **See DETAIL T.**  
**NOTE: BA451** is to be used for both 1" and 1/4" system.



DETAIL S

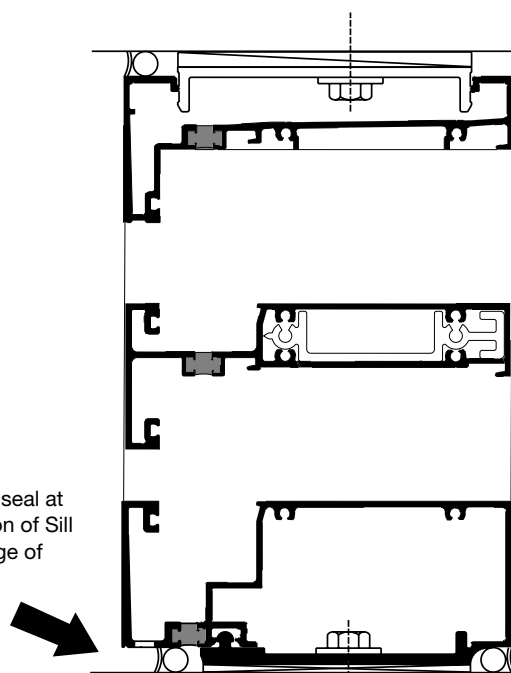


Insert **BA451** foam into access hole and apply **CRL RTV408 Silicone Sealant**. Use **BA431** for both 1" and 1/4" system.

DETAIL T

4. Apply **Cat. No. 95C/M64/M66 Sealant** for perimeter seal around entire frame taking caution not to seal over weep holes at the sill. **See DETAIL U.**

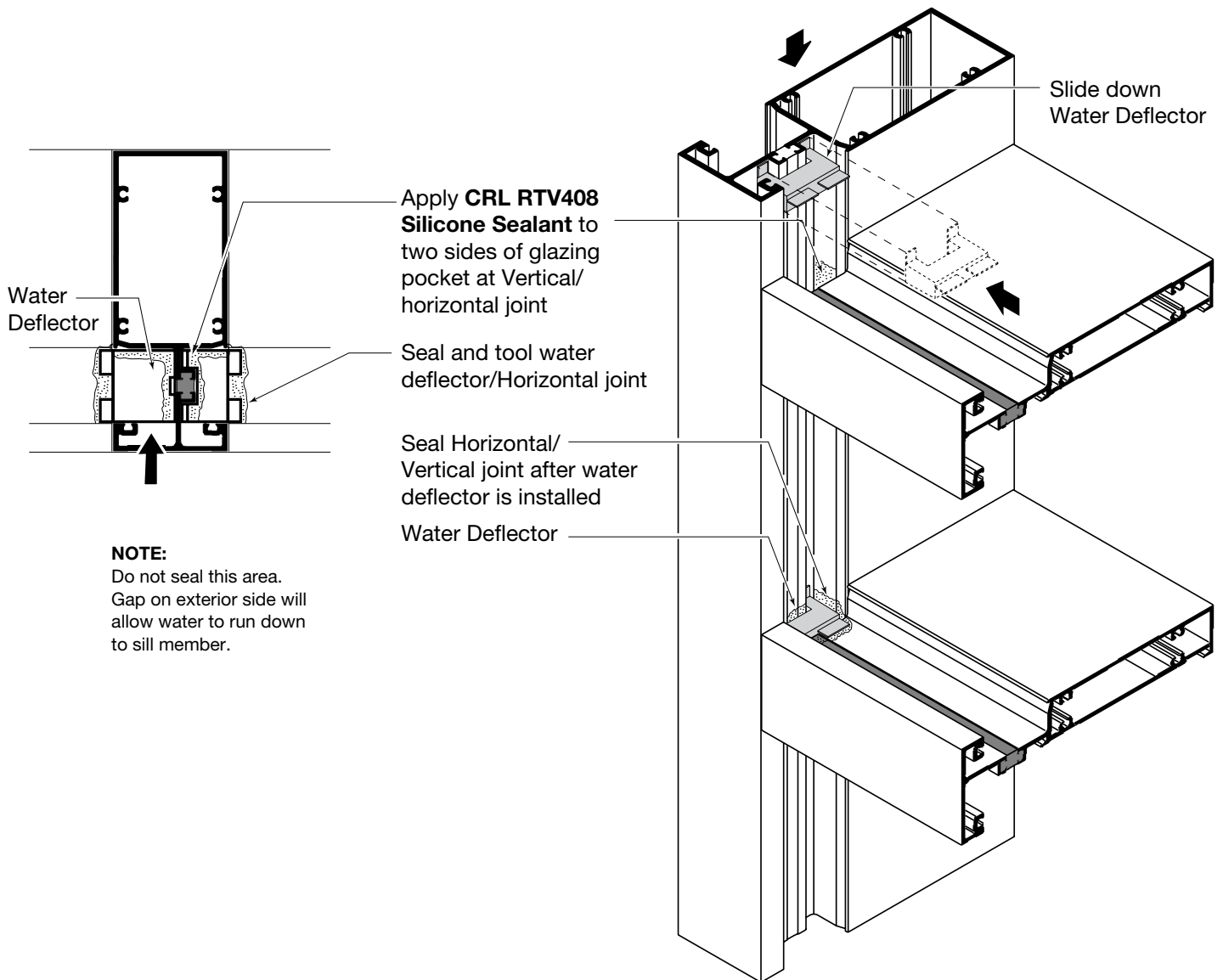
**NOTE:**  
Recess perimeter seal at Weep Hole location of Sill to prevent blockage of Weep Holes.



DETAIL U

## GLAZING

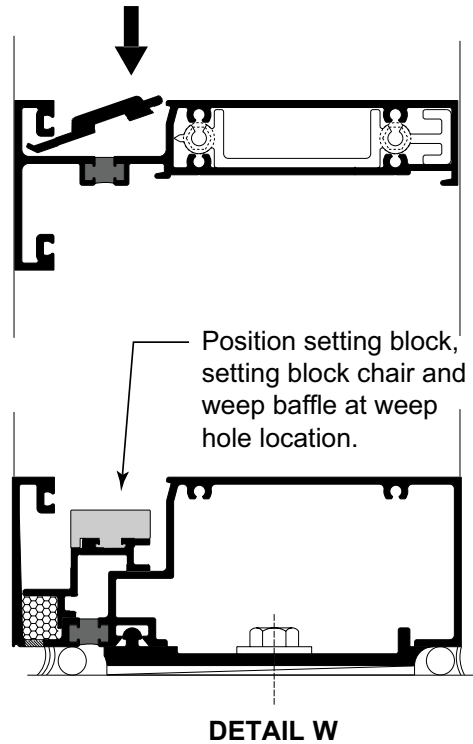
1. Apply **CRL RTV408 Silicone Sealant** to vertical glazing pocket at vertical/horizontal intersections. Sealant must be applied to two sides of pocket only. Clearance at outside will allow water to run down to sill member. See **DETAIL V**.
2. Insert water deflector into glazing pocket and slide it down into position. Top of deflector must be flush with horizontal glazing pocket. Apply **CRL RTV408 Silicone Sealant** to three sides of water deflector.



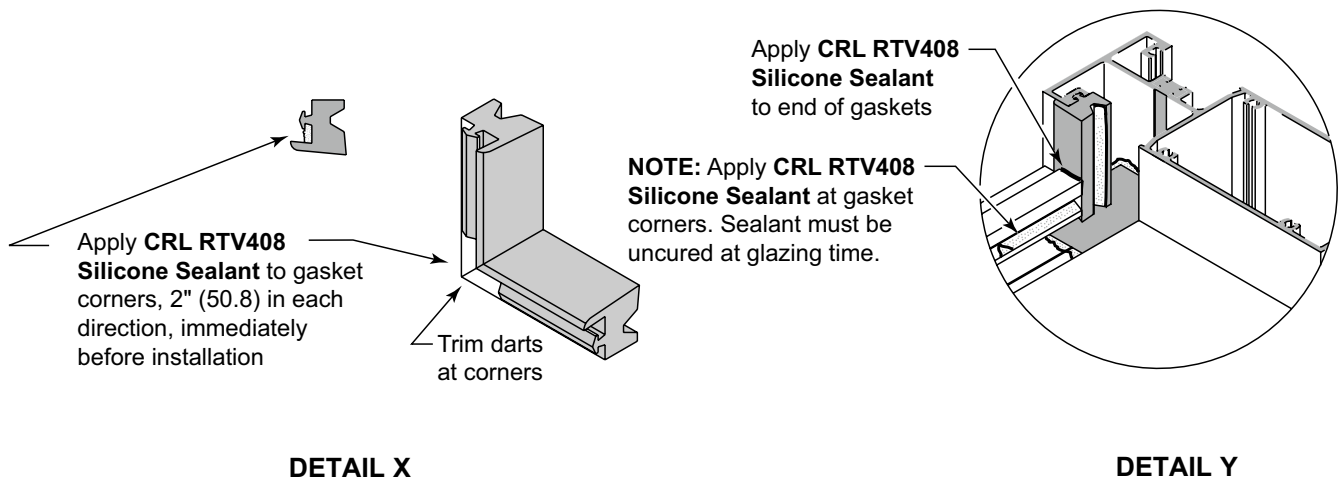
DETAIL V

## SERIES TN451, TT451, TN601, AND TT601 TOP NOTCH

- Place setting blocks at 1/4 or 1/8 points into intermediate horizontal members. Install weep baffles, setting chairs and setting blocks into sill member, centered at Weep Hole locations. **See DETAIL W.**



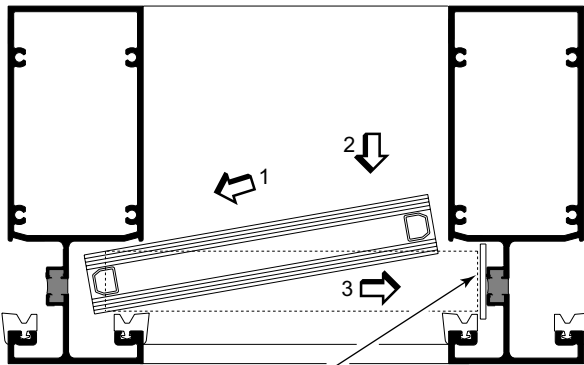
- Apply **CRL RTV408 Silicone Sealant** into exterior gasket reglets at corners, 2" (50.8) in each direction.
- Trim corners of exterior glazing gaskets and darts. Apply sealant to gasket corners also, 2" (50.8) in each direction, immediately before installation. **See DETAIL X.**



- Install exterior gaskets. Do not cut or splice gaskets. Allow 1/8" per foot additional length of gasket to allow for shrinkage, they should never be stretched to fit. Horizontal gaskets butt against verticals. **See DETAIL Y.** Start installation from corners and work toward center, making sure that corners are true and square and gasket darts are fully engaged.
- Apply bead of **CRL RTV408 Silicone Sealant** at gasket corners, 2" (50.8) in each direction before installing glass. **See DETAIL Y.**

## SERIES TN451, TT451, TN601, AND TT601 TOP NOTCH

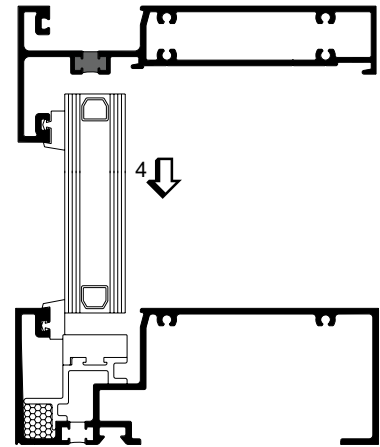
8. To prevent glass from shifting in the opening, edge blocks should be installed, one on each side of glass at center point. Peel off adhesive and install **WB601** edge block into vertical shallow pocket. **See DETAIL Z.** Install **WB600** into vertical deep pocket after glass is set.
9. Install glass and center in opening. **See DETAIL Z** for installation sequence. Do not disturb exterior gaskets during glass installation.
10. After glass is set in place, lift slightly and press it firmly against exterior gaskets, to prevent dragging or biting on setting block. Short pieces of interior wedges may be used at setting block locations, as well as at jambs, to maintain the proper pressure.



Install **WB600** edge block into vertical shallow pocket before setting glass

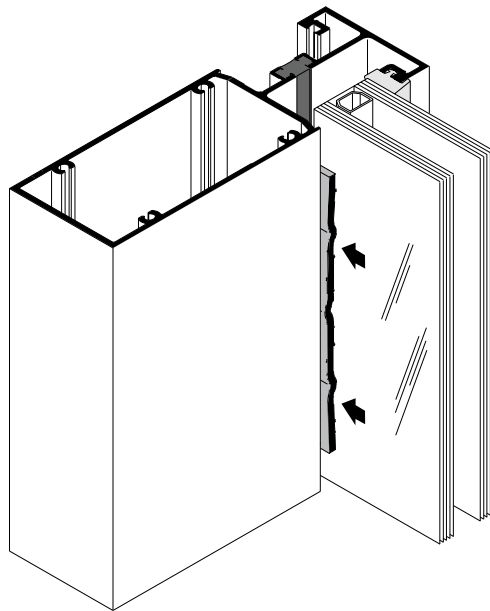
### GLAZING SEQUENCE

1. Into deep pocket
2. Swing to plane
3. Slide to shallow pocket
4. Down onto setting blocks

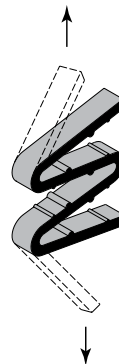


### DETAIL Z

11. Install "W" edge block into vertical deep pocket. Stretch block and slide it between glass and aluminum member into glazing pocket. Push it all the way until it clears glass and locks itself in. **See DETAIL AA.**



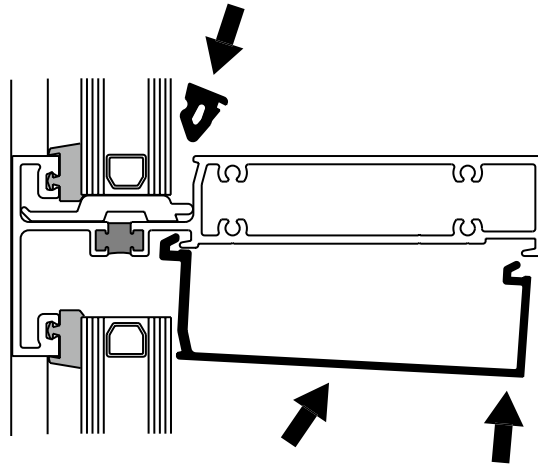
Stretch "W" block and slide it between glass and mullion into glazing pocket. Push it all the way until it clears glass and locks itself in place.



### DETAIL AA

## SERIES TN451, TT451, TN601, AND TT601 TOP NOTCH

12. Hook into place horizontal glass stop. See **DETAIL BB**.
13. Roll in interior wedges. Butt horizontal and vertical wedges at corners, bevel as required and trim edges to correct angle. Seal corners.

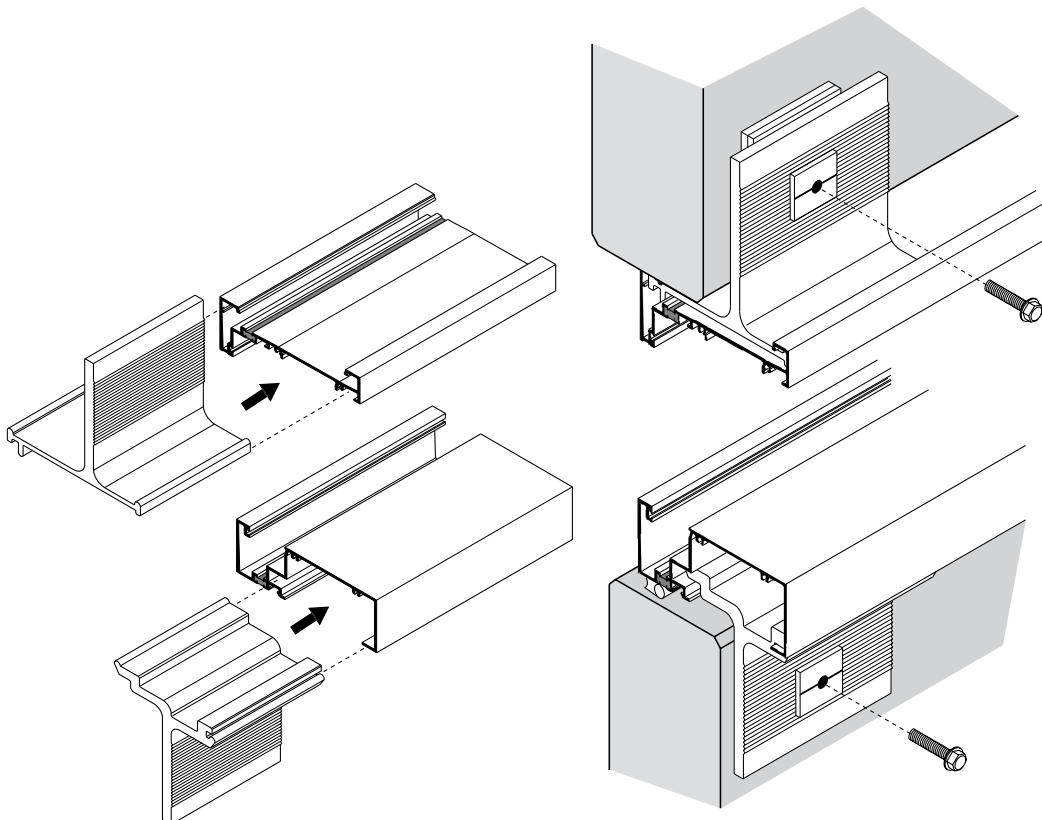


**DETAIL BB**

## OPTIONAL SYSTEM ANCHORING

When installing the system in a precast punched opening, optional anchoring is available.

1. Slide anchor into end of head and sill horizontal. Refer to shop drawings for quantity and location. See **DETAIL CC**.
2. Set system into opening and secure with fasteners determined by shop drawings.



**DETAIL CC**



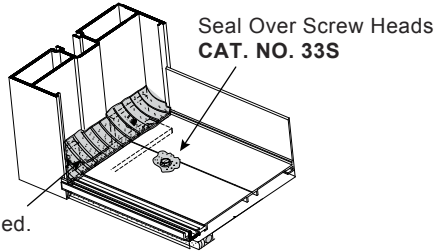
# GUIDE TO SEALANTS

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.



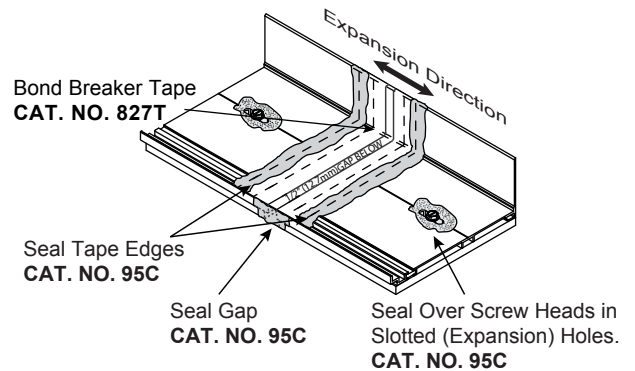
Fill with Sealant to Create a Water Shed.  
CAT. NO. 33S

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

## EXPANSION

- **95C SILICONE BUILDING SEALANT**

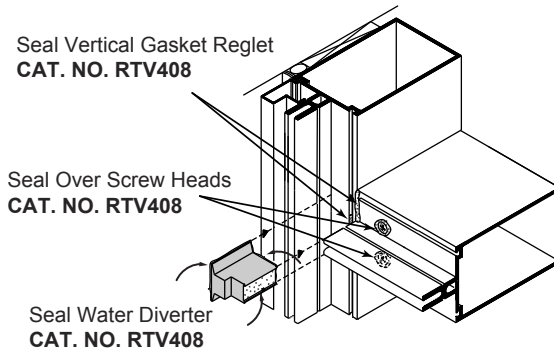
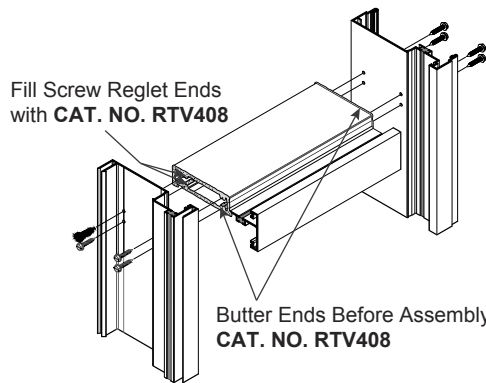
Expansion Joints.



## JOINT ADHESIVE

- **RTV408 NEUTRAL CURE SILICONE**

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

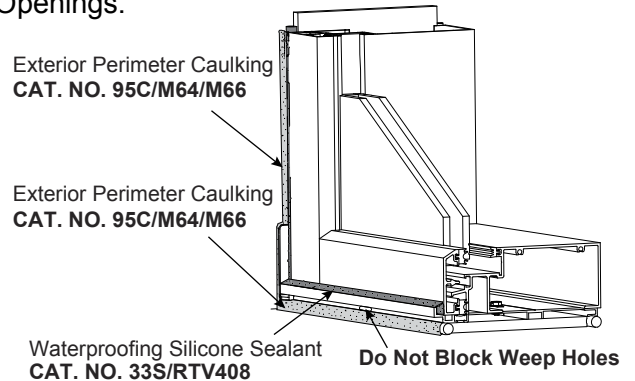


NOTE: I.G. butyl contact OK.

## 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 Sealant**



**CRL M64 Smooth Texture Modified Polyurethane Construction Sealant**



**CRL M66 Grainy Texture Modified Polyurethane Construction Sealant**



**CRL12:1 Ratio Strap Frame Caulking Gun  
CAT. NO. GA1203**



**CRL BOCBR Series Open Cell Backer Rod**



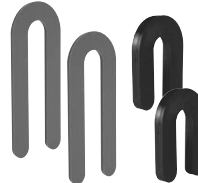
**CRL Backer Rod Roller Tool  
CAT. NO. SBRR**



**CRL Vacuum Cup  
CAT. NO. S7950**



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



**CRL PHS Series Plastic Horseshoe Shims**



**CRL Digital Laser Level Tool  
CAT. NO. 406065**



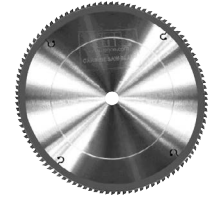
**CRL Cordless Screwdriver  
CAT. NO. LD823**



**CRL Portable Miter Saw  
10" CAT. NO. LS1040**



**CRL Nordic Carbide Saw Blade  
CAT. NO. CSB10X100AX**



**CRL Cougar Carbide Saw Blade  
CAT. NO. CT10X100**



**CRL Door Jack  
CAT. NO. DJ1**



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



**CRL Portable Ladder  
CAT. NO. 6206**



**CRL Hard Hat  
CAT. NO. ES3452**



**CRL Soft-Face Power Hitter  
CAT. NO. ST57532**

**SERIES TN451, TT451, TN601, AND TT601 TOP NOTCH**



**CRL Bond Breaker Tape**



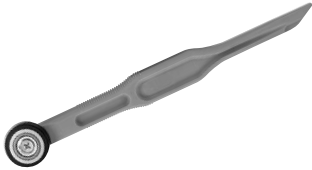
**CRL Glass Cutters  
CAT. NO. TC17B**



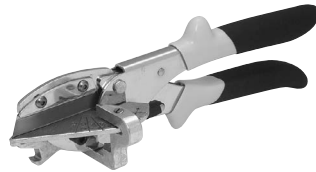
**CRL Running Pliers  
CAT. NO. PPG1**



**CRL Utility Knife  
CAT. NO. K82**



**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 96" Phenolic Straight Edge  
CAT. NO. SEP96**



**CRL Glazier's Rule Holder  
CAT. NO. RH670**



**CRL Phenolic L Square  
CAT. NO. L48**



**CRL Spring Clamp  
CAT. NO. JC3202HT**



**CRL Tape Measure  
CAT. NO. 54125**



**CRL Glass Marking Pencil  
CAT. NO. GM44**



**CRL Belt Sander  
CAT. NO. LD321**



**CRL Glass Grinding Belts**



**CRL Gloves  
CAT. NO. KF1TL**



**CRL Utility Knife Blades  
CAT. NO. 1992C**



**CRL Cordless Driver/Drill  
CAT. NO. LD147**



**CRL All Terrain Dolly  
CAT. NO. ATD1**