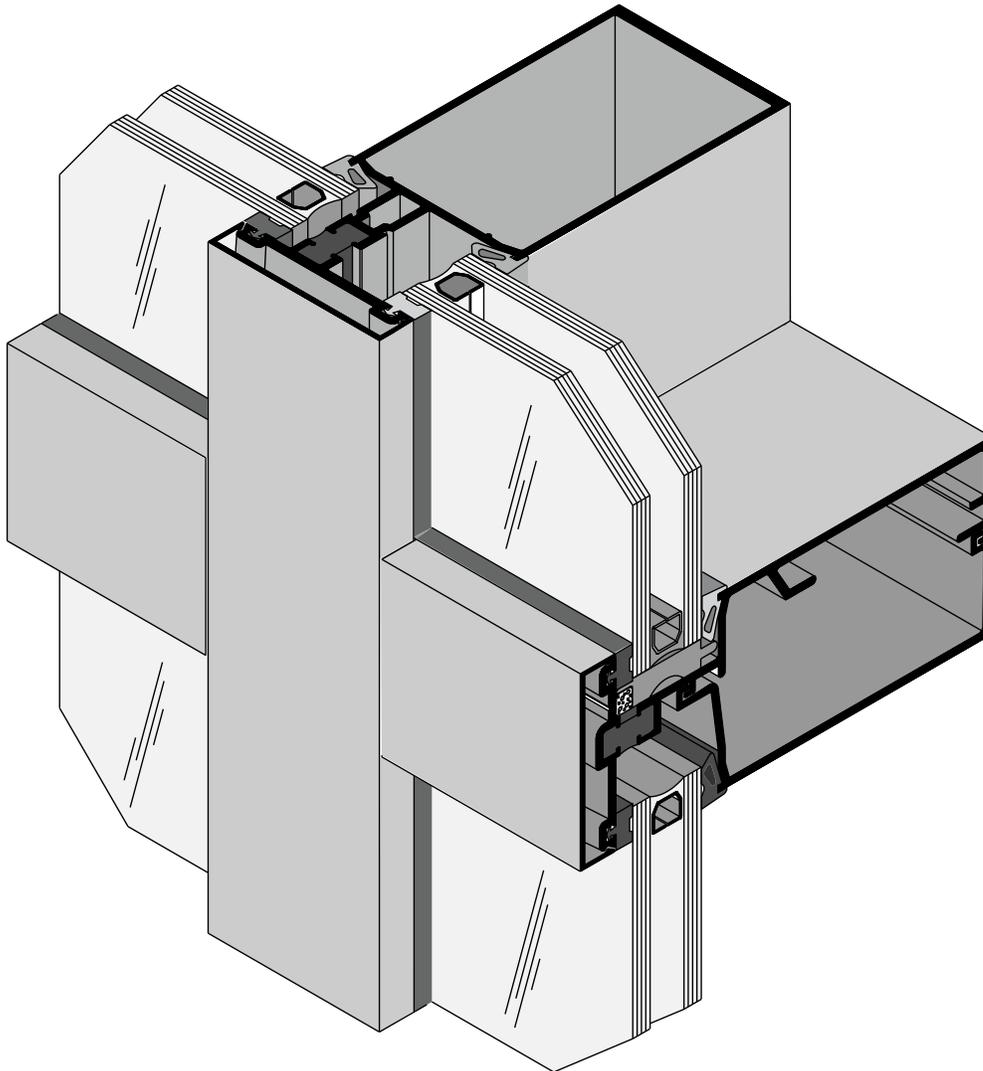


INSTALLATION INSTRUCTIONS

SERIES 4250/4250T CURTAIN WALL



Phone: (800) 262-5151 • Fax: (866) 262-3299
crlaurence.com • usalum.com • crl-arch.com

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 quantities 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 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

RECOMMENDED GUIDELINES FOR ALL INSTALLATIONS:

- 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.
- INSTALLATION.** All materials are to be installed plumb, level, square, and true.
- 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:
 - The plane of the wall in reference to offset lines provided on each floor.
 - The finish floor lines in reference to bench marks on the outer building columns.
 - Mullion spacing from both ends of masonry opening to prevent dimensional build-up of daylight opening.
- STEEL ANCHORS.** Steel anchors that weld to steel structure are normally line set before mullions are hung. Outstanding leg of anchors must be at 90° to offset lines. Mullion space should be held to $\pm 1/32"$ (0.8). Anchor clips vary per job conditions. Follow approved shop drawings for size and location of clips.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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. Gap between expansion members should be based on temperature at time of installation.
- WATER HOSE TEST.** As soon as a representative amount of the wall has been glazed (500 square feet or 46.5m²) 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 (46.5m²) during the glazing operation.
- 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.).
- 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.
- JOB SITE ESSENTIALS.** See Pages 24, and 25 .

STRUCTURAL SILICONE GLAZING

1. **SEALANTS.** All sealants referenced in these instructions must be a one part elastomeric silicone and must be applied according to the silicone manufacturer's recommendations.
2. **APPLICATION.** Structural silicone must be applied from the interior and weatherseal from the exterior after the interior structural silicone has fully cured.
3. **MAXIMUM ALLOWABLE STRESS ON SILICONE.** The maximum allowable size of the glass lite is controlled by the width and depth of the silicone joint combined with the specified design windload (PSF or Pa). The stress on the structural silicone must not exceed 20 PSI (137 KPa) for a 6:1 safety factor. Check Structural Silicone Chart in the Architectural Design Manual for this product series.
4. **ARCHITECT.** It is the responsibility of the architect to secure approval of the system and request from the Glazing Contractor the compatibility and adhesion test reports described below.
5. **GLAZING CONTRACTOR.** 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.
6. **U.S. ALUMINUM.** It is the responsibility of U.S. Aluminum to supply a system to meet the architect's specifications.

SERIES 4250 and 4250T

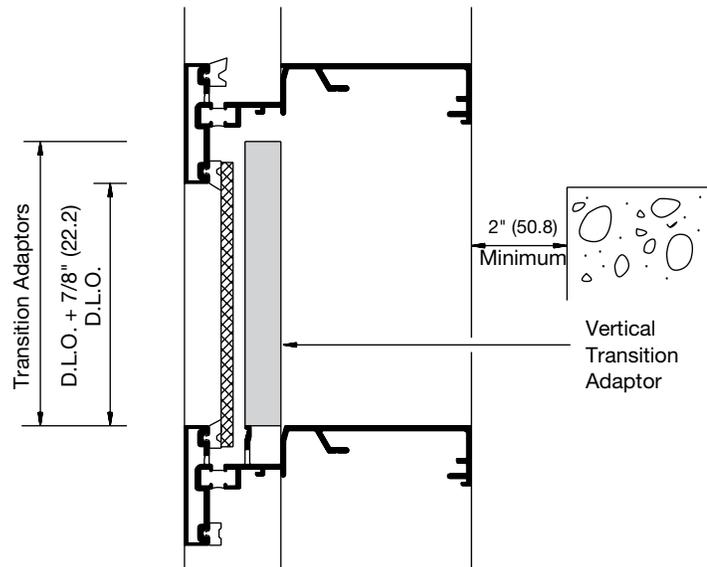
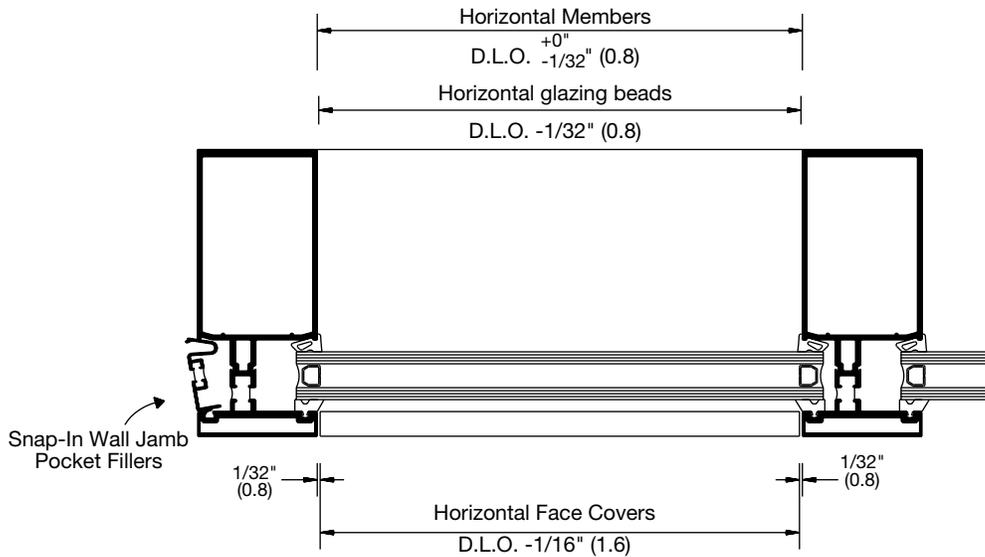
Details in these instructions show Series 4250T. Series 4250 Non-Thermal is similar.

NOTE: All verticals will be "poured". "Debridging" is only required for "thermally broken" jobs.

FRAME FABRICATION

1. Cut members to size:

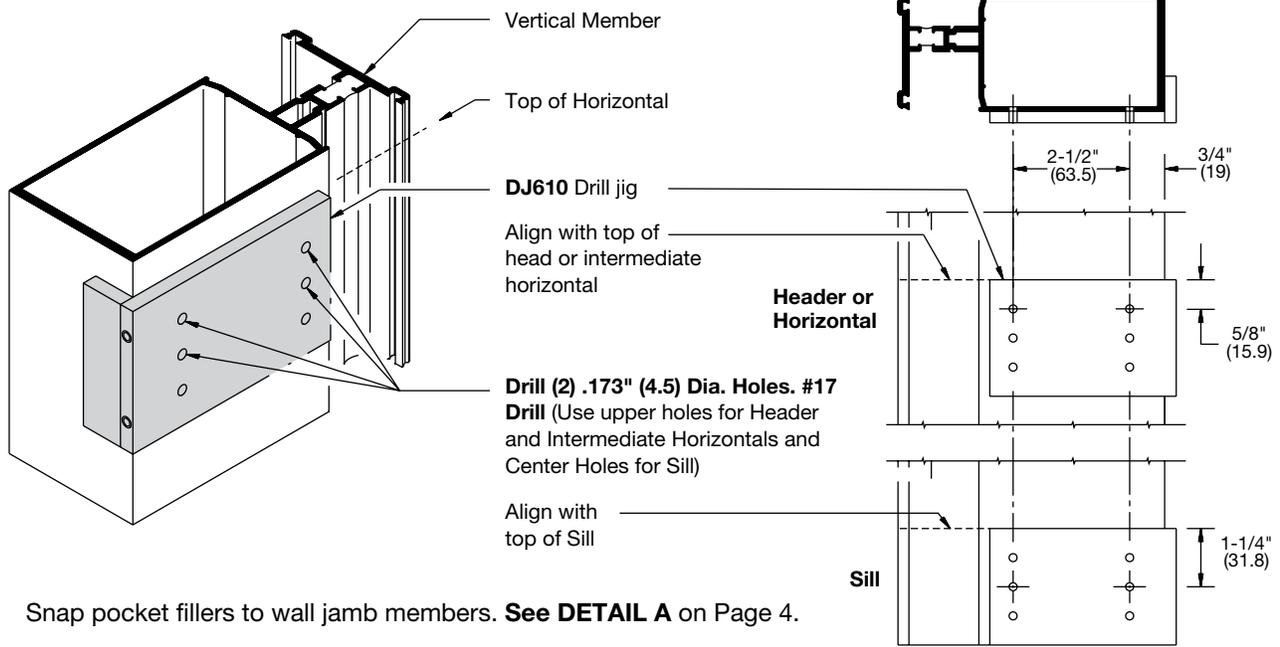
- Vertical Members and Face Covers:** R.O. minus top and bottom clearances.
(Verticals Run Through) (See Pages 19-21 for Vertical Splices)
- Vertical Perimeter Fillers:** R.O. minus top and bottom clearance
- Horizontal Members:** D.L.O. $+0''$
(Horizontal Run Between Verticals) $-1/32''$ (0.8).
- Horizontal Glazing Beads:** D.L.O. minus $1/32''$ (0.8)
- Horizontal Face Covers:** D.L.O. minus $1/16''$ (1.6)
- Vertical Transition Adaptors:** D.L.O. plus $7/8''$ (22.2)



DETAIL A

SERIES 4250 and 4250T

2. Mark on verticals the location of horizontal members and drill holes for shear blocks. Drill jigs are available. See **DETAIL B** for drill usage.



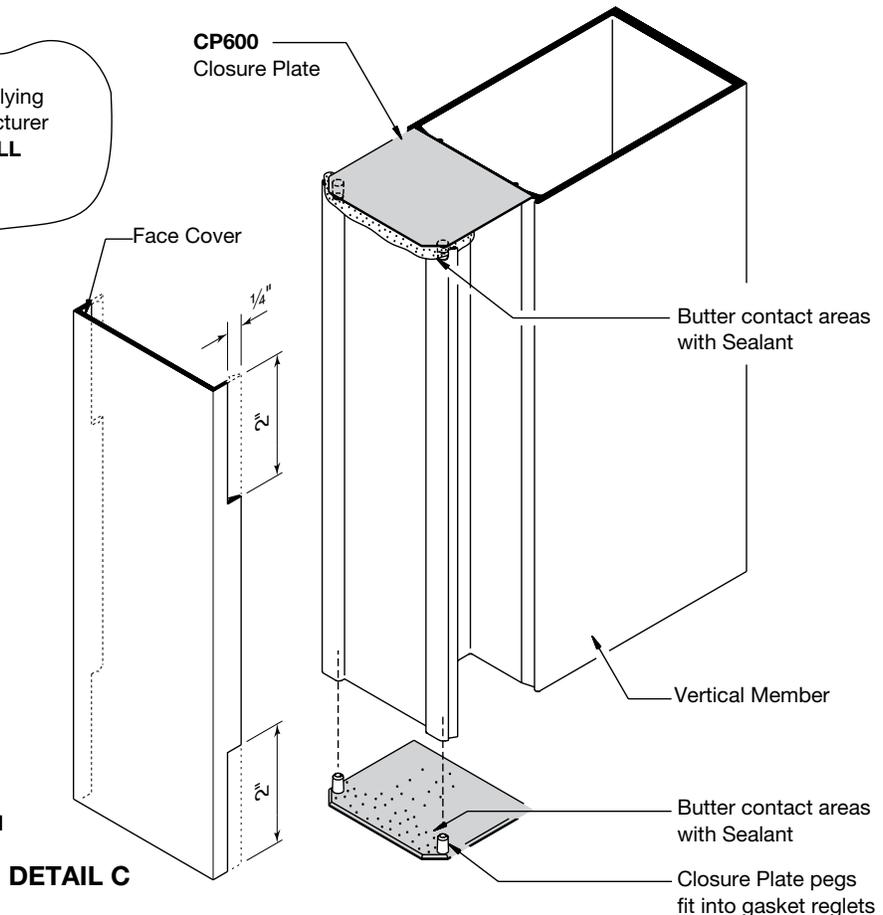
DETAIL B

3. Snap pocket fillers to wall jamb members. See **DETAIL A** on Page 4.
4. Install closure plates at top and bottom of all vertical members to ensure continuous perimeter seal. See **DETAIL C**.
5. Notch ends of vertical face covers to clear end caps seal. See **DETAIL C**.

NOTE:
Clean all surfaces prior to applying sealants. See sealant manufacturer requirements. **TYPICAL AT ALL CONDITIONS**



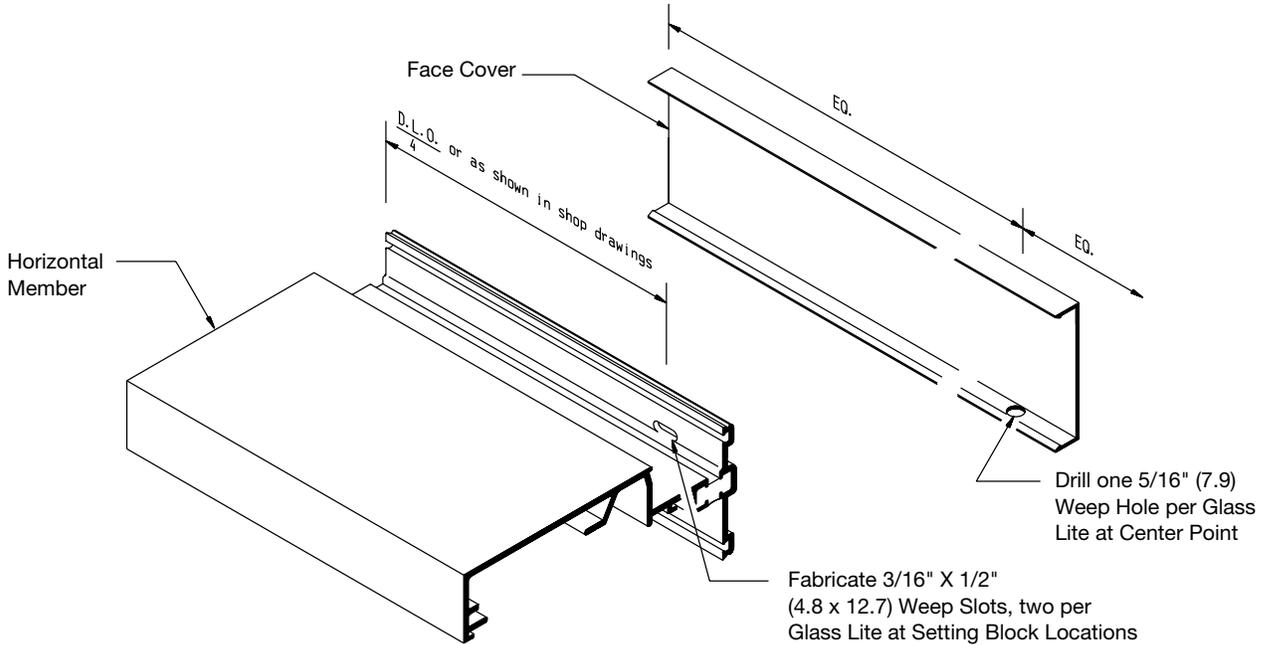
NOTE:
Mitering of Vertical Face Covers at top and bottom is recommended to avoid penetrating End Caps/Vertical Member Seal



DETAIL C

SERIES 4250 and 4250T

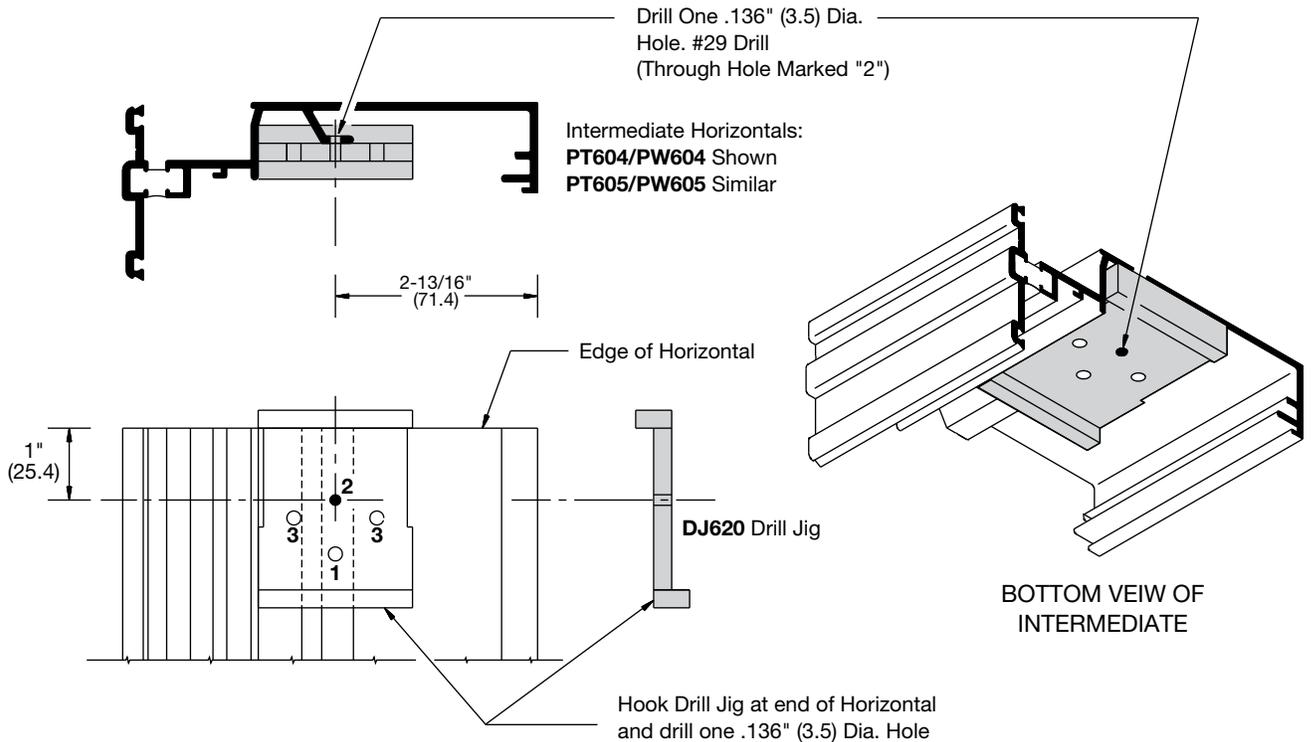
- Fabricate 3/16" x 1/2" (4.8 x 12.7) weep slots in horizontal members, two per glass lite at setting block locations. **See DETAIL D.** When using horizontal members for spandrel glazing drill two 5/16" (7.9) weep holes in the condensation leg at same location as the weep slots. **See DETAIL CC** on Page 18.
- Drill 5/16" (7.9) Dia. weep hole in bottom of face cover, one per glass lite at center point. **See DETAIL D.**



DETAIL D

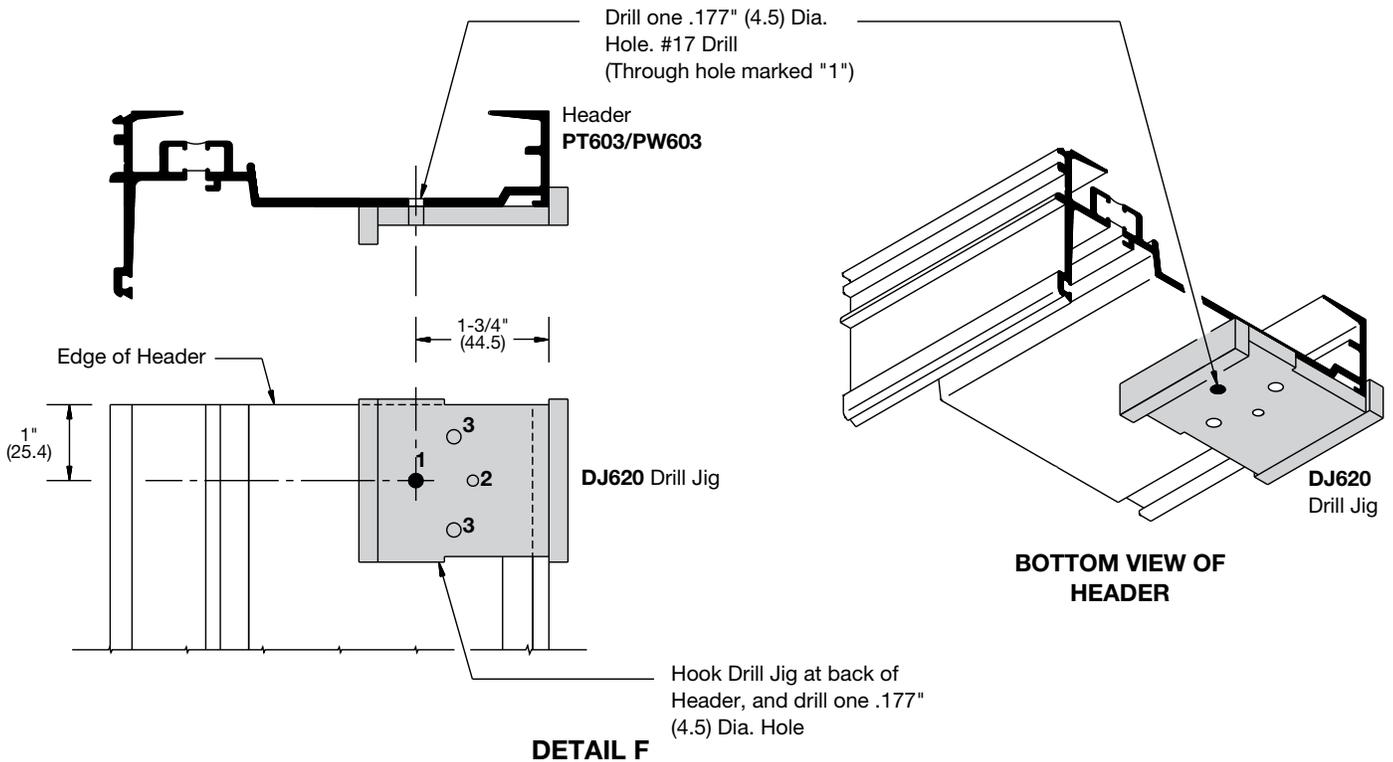
- Fabricate ends of horizontal members for #8 x 1/2" pick-up screws. Drill jigs are available. **See DETAILS E, F and G.**

INTERMEDIATE HORIZONTAL

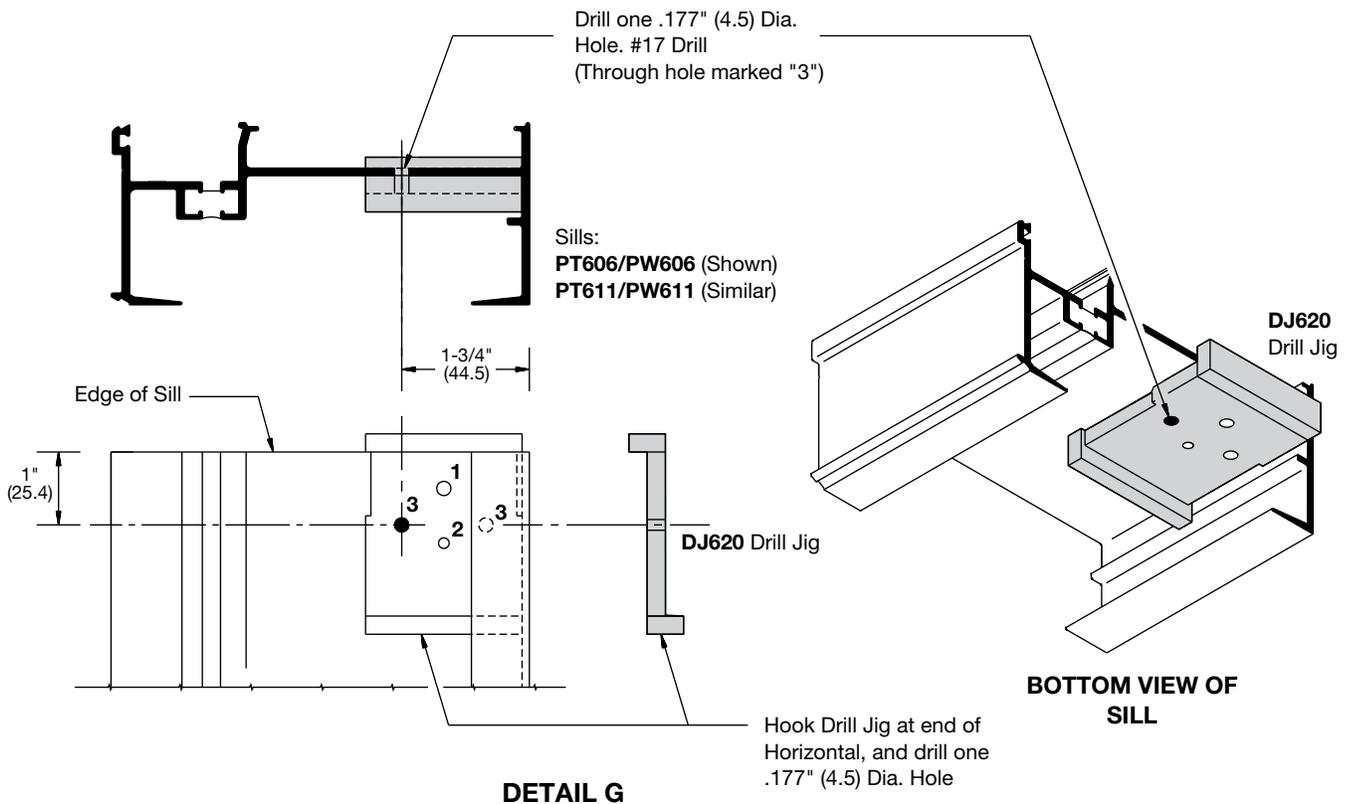


DETAIL E

HEADER



SILL



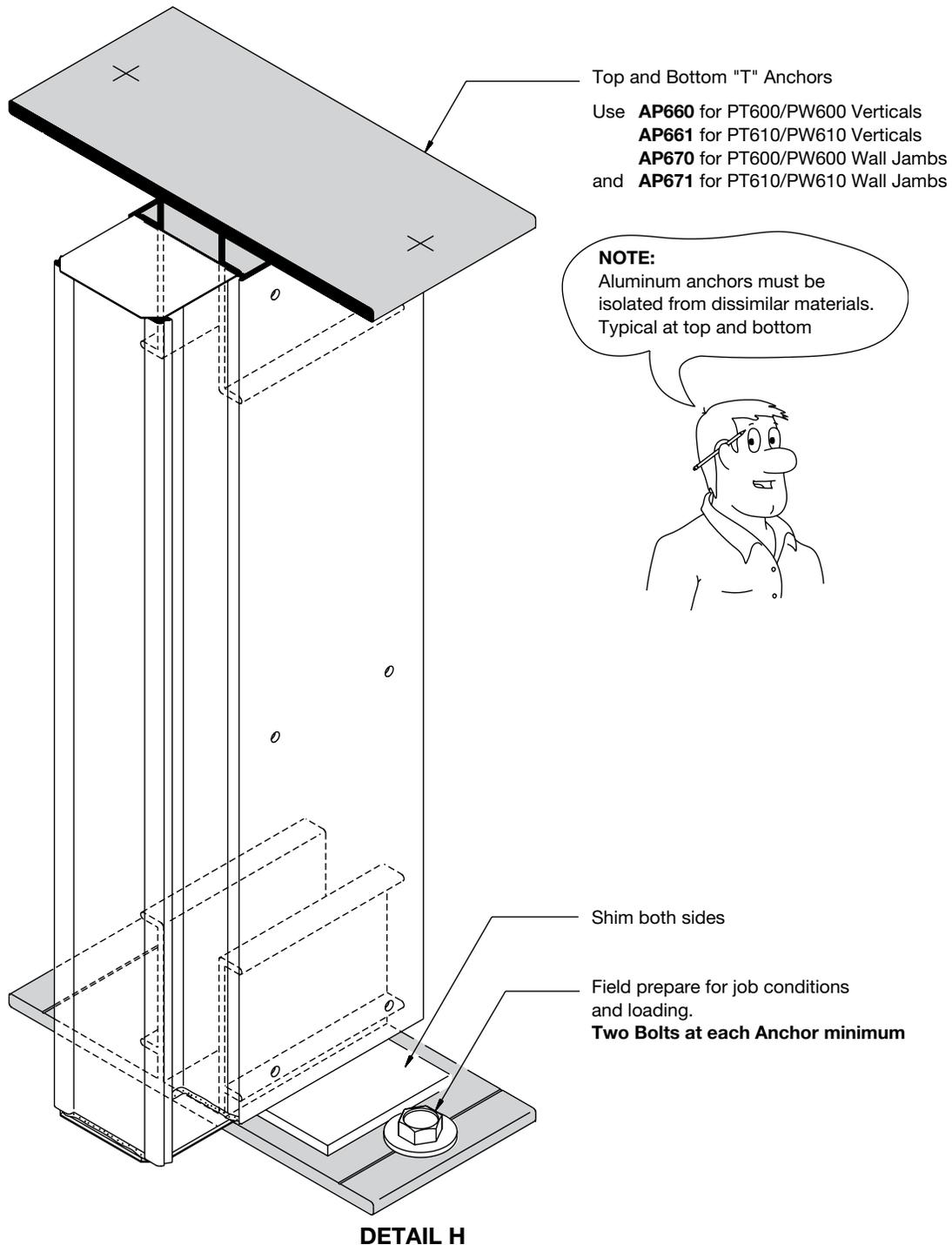
FRAME INSTALLATION

NOTE: Anchor type and sizes vary per job requirements. Details shown are to be used as a guide only. See approved shop drawings for actual conditions.

1. Slide top and bottom "T" anchors into vertical members. See **DETAIL H**.

SINGLE SPAN CONDITION

2. Install verticals plumb and level. Place shims directly under each vertical for proper load distribution. Secure top and bottom anchors to structure.

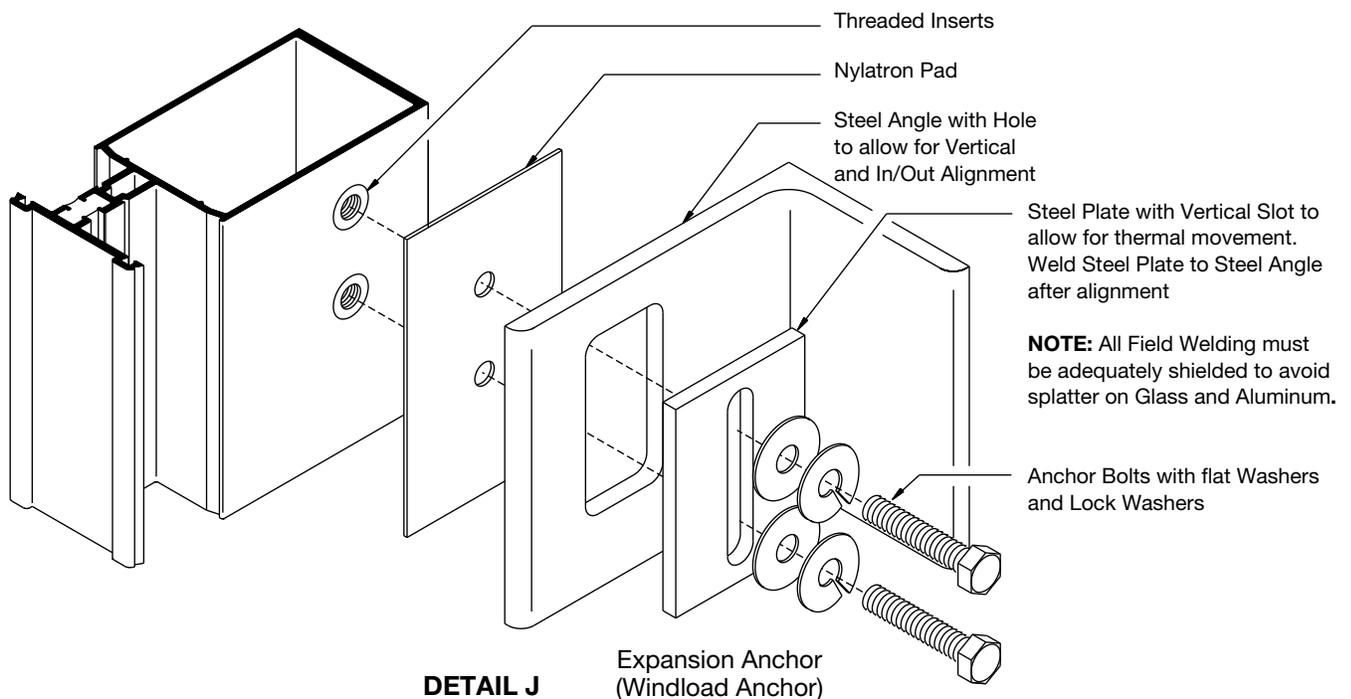
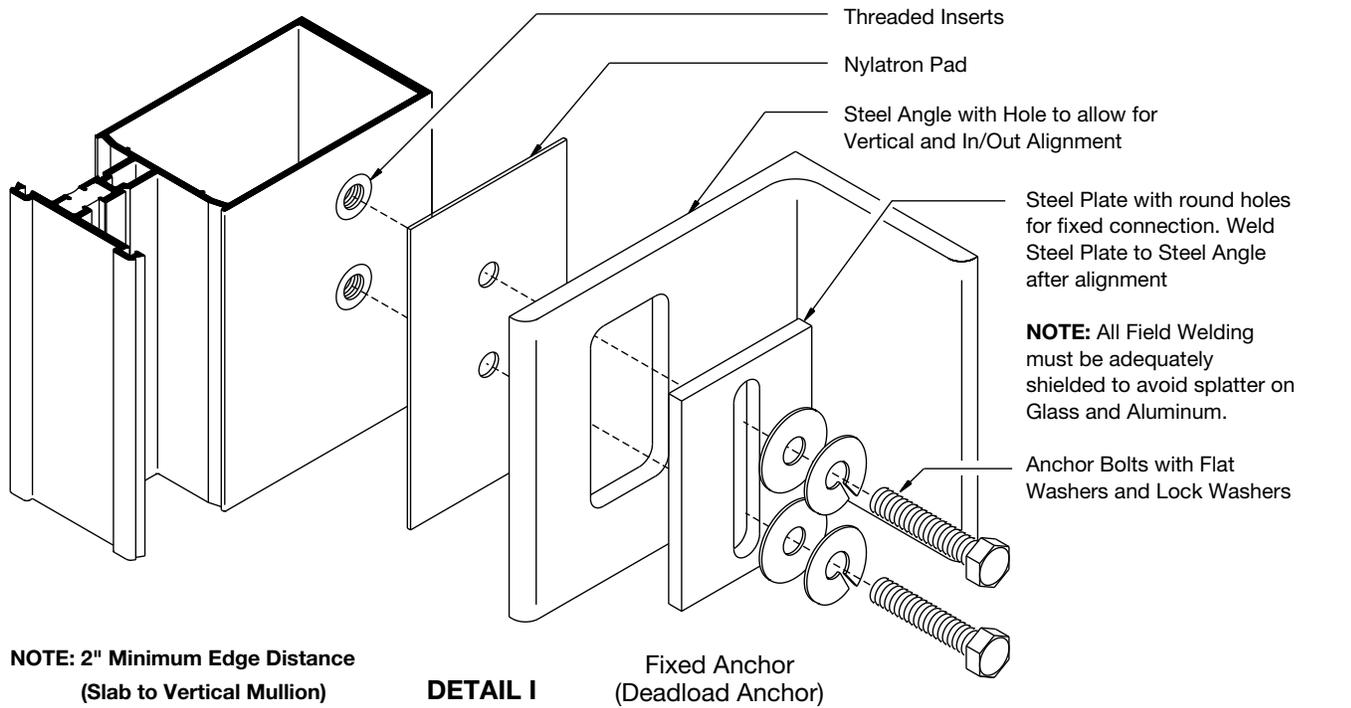


MULTI-SPAN CONDITIONS - USING THREADED INSERTS

Details I and J show fixed (deadload) and expansion (windload) anchors. **Anchor type and size vary per job requirement. Details shown are to be used as a guide only.** See approved shop drawings for actual conditions.

NOTE: Always attach anchors to deep pocket side of vertical members.

2. Install, plumb and align verticals. Threaded inserts are used to allow for interior glazing of spandrel panels. Field prepared through bolted connections require the use of horizontals for exterior glazing. **See NOTE: on page 16, step 8.**

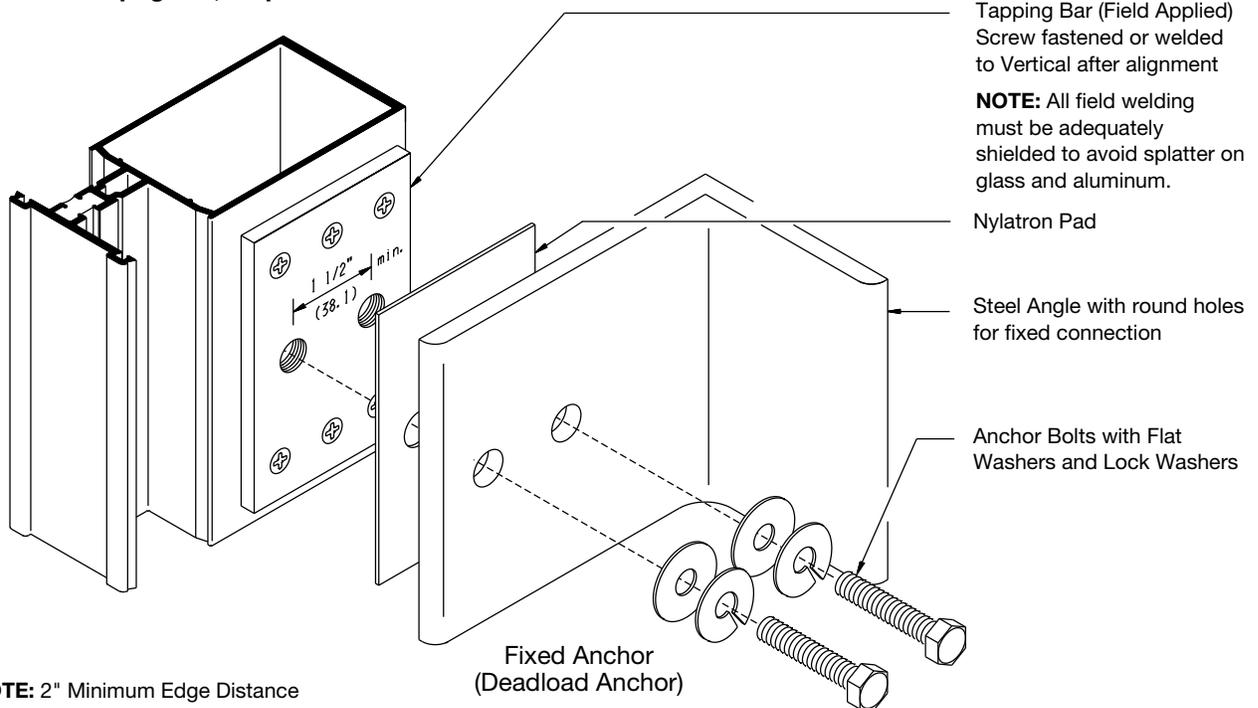


MULTI-SPAN CONDITIONS - USING TAPPING BAR

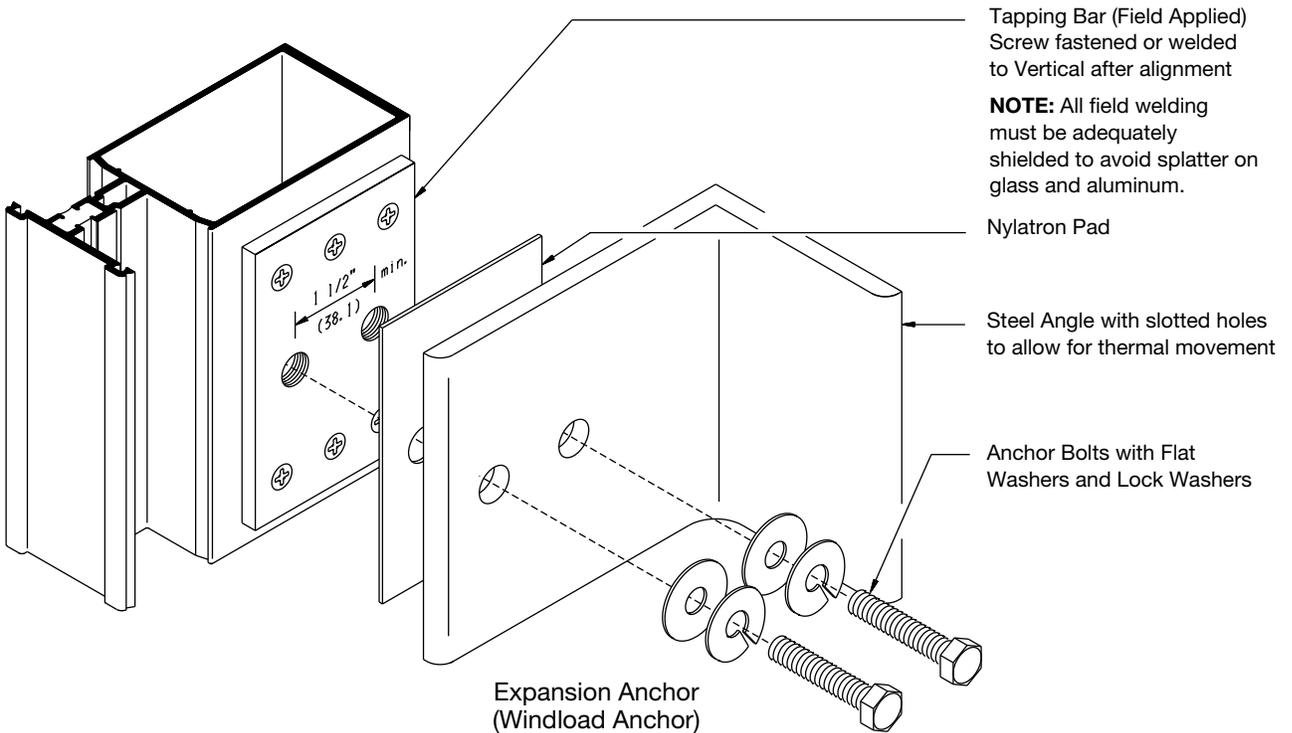
DETAILS K and L show fixed (Deadload) and expansion (Windload) anchors. Anchor, type, and size vary per job requirement. Details shown are to be used as a guide only. See approved shop drawings for actual conditions.

NOTE: Always attach anchors to deep pocket side of vertical members.

- 2a. Install, plumb and align verticals. A tapping bar attached to vertical member is used to allow for interior glazing of spandrel panels. Fields prepared through bolted connections require the use of horizontals for exterior glazing. See **NOTE** on page 16, step 8.



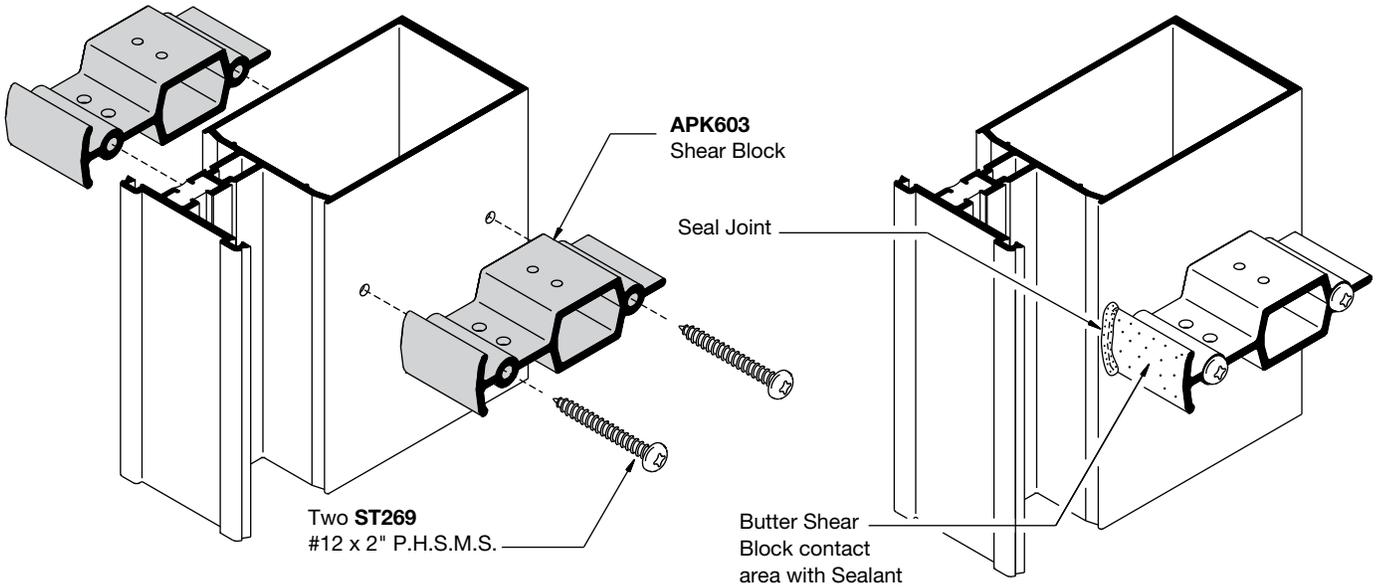
DETAIL K



DETAIL L

SERIES 4250 and 4250T

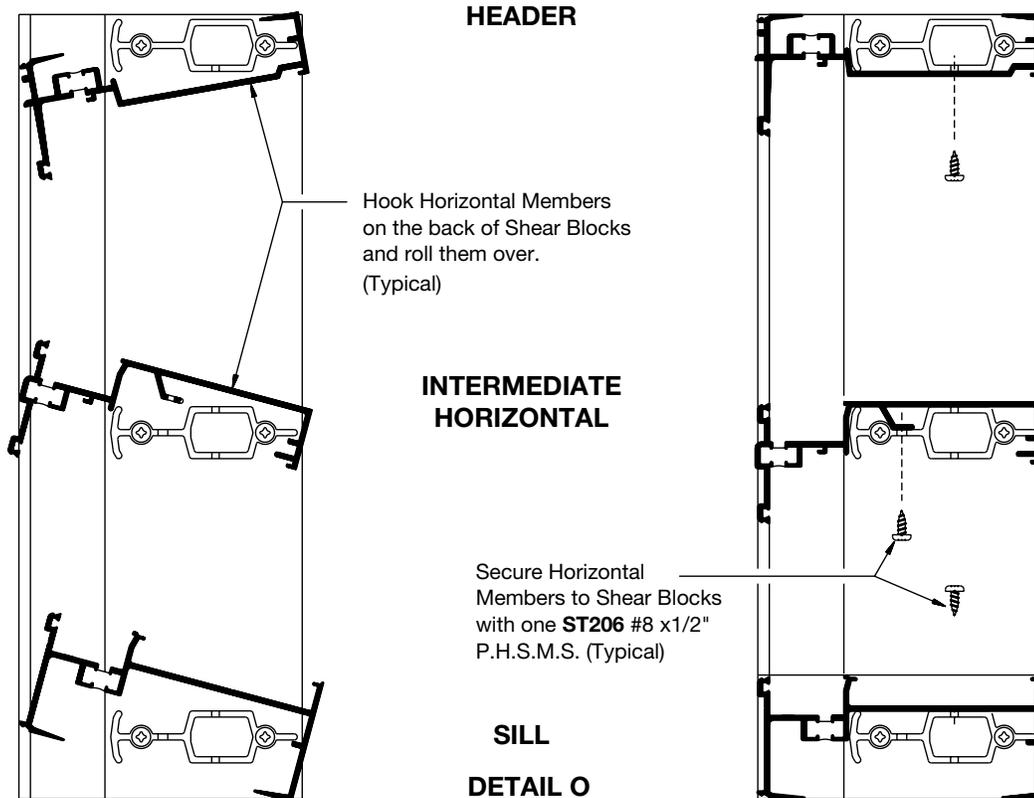
3. Attach shear blocks to verticals with screws provided. **See DETAIL M.**



DETAIL M

DETAIL N

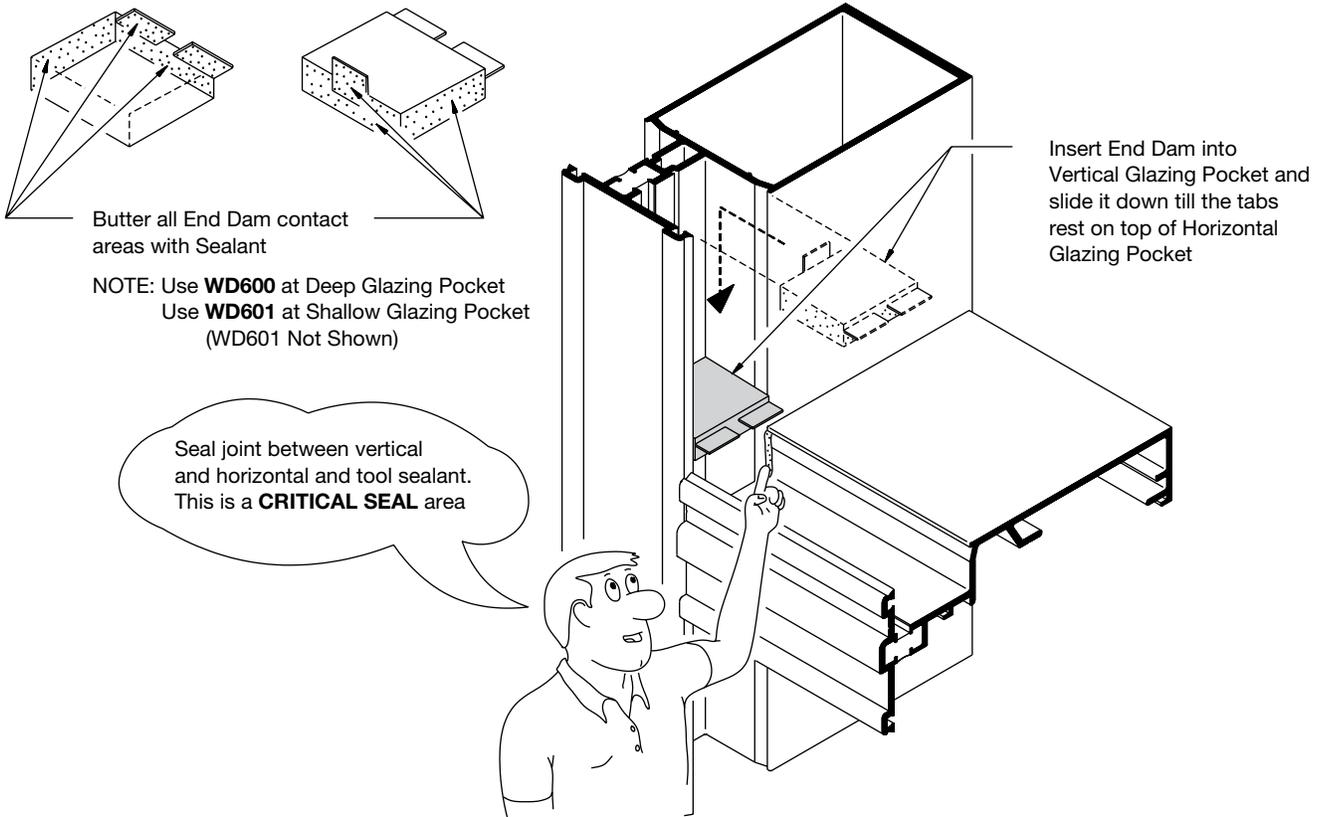
4. Butter shear block contact areas with sealant. **See DETAIL N.**
5. Install horizontal members as shown and secure them to shear blocks with screws provided. **See DETAIL O.**



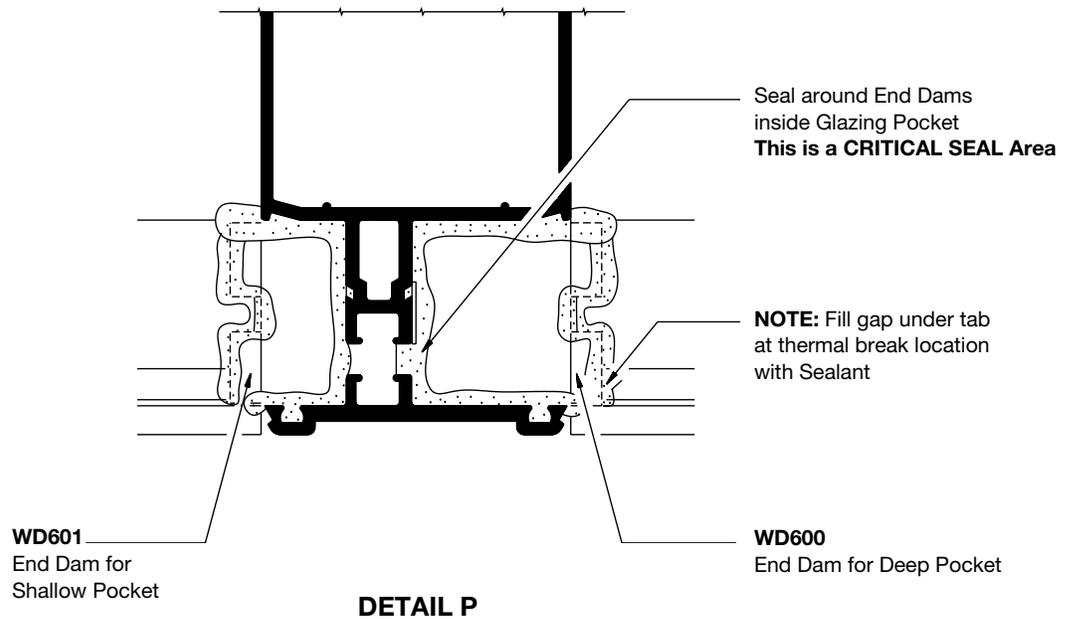
6. Seal joints between vertical and horizontal and tool sealant. **See DETAIL P** on Page 13.
7. Apply silicone to all end dam contact areas. Insert them into glazing pockets and slide them down to position. **See DETAIL P** on Page 13.

SERIES 4250 and 4250T

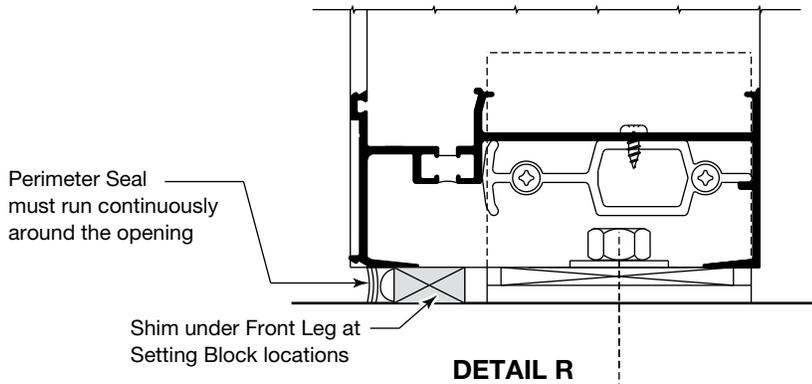
NOTE: End Dams should be installed in verticals at intermediate horizontal and sill member intersections.



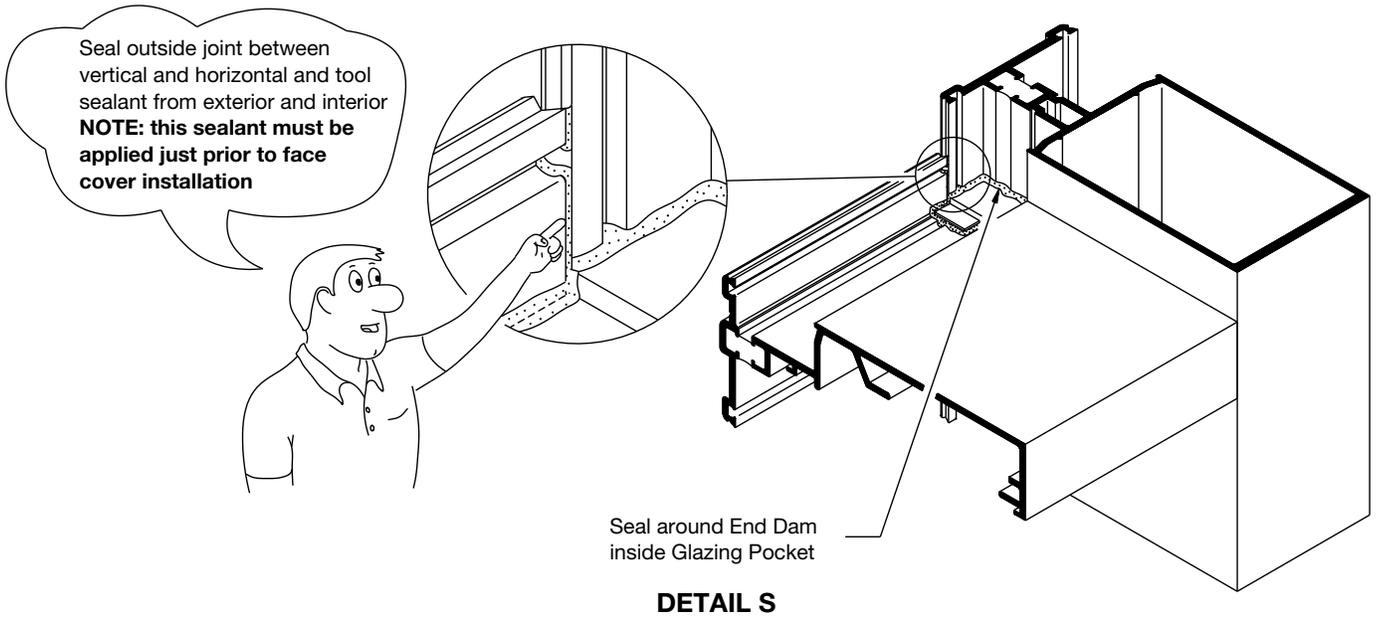
8. Seal around End Dams inside vertical glazing pockets. See **DETAIL Q**.



9. Once all vertical and horizontal members are installed seal outside perimeter. Perimeter seal must be completed before face covers are applied. **NOTE:** Perimeter seal must be continuous around the opening. **DETAIL R** on Page14 shows sealing line at sill; head and jambs are similar.

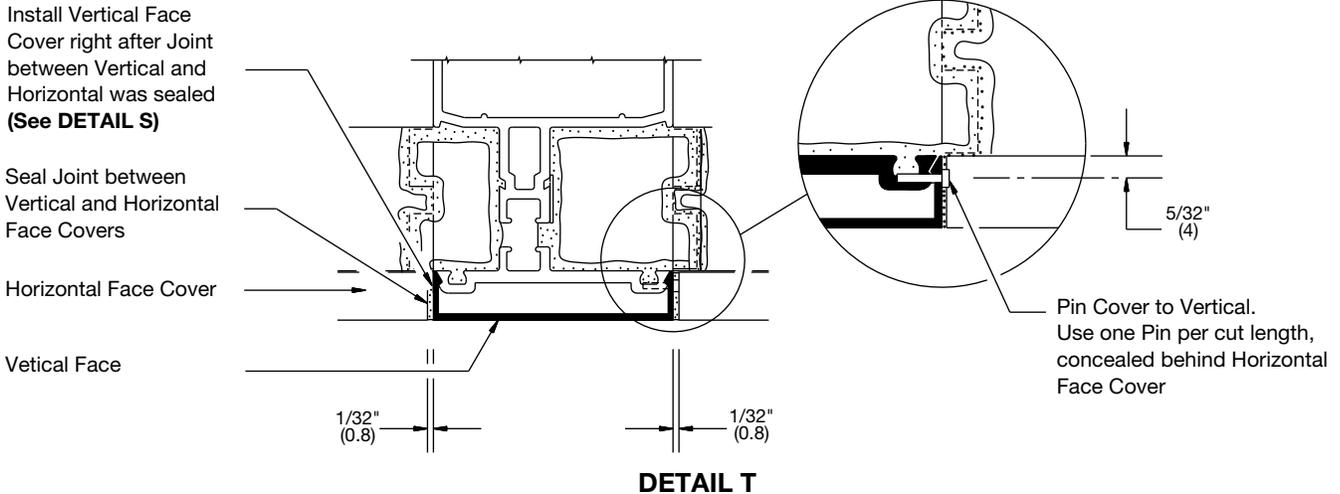


10. Seal outside vertical/horizontal joint and tool sealant from exterior and interior. See **DETAIL S**.



11. Snap-on vertical face covers while sealant applied in step 10 is still wet. Care must be taken to prevent damage of face covers during installation. Use a piece of wood such as a 2" x 4" x 12" (51 x 102 x 305) and a Cat. No. 2M CRL 2 lb. Rubber Mallet. Pinning of vertical face covers to mullion is required to prevent slippage. Use one pin per cut length, concealed behind horizontal face cover closer to center line. See **DETAIL T**.

12. Snap-on horizontal face covers centered in opening. See **DETAIL T**.



GLAZING

GLASS SIZES

GLASS WIDTH AND HEIGHT = DAYLITE OPENING + 15/16" (23.8)

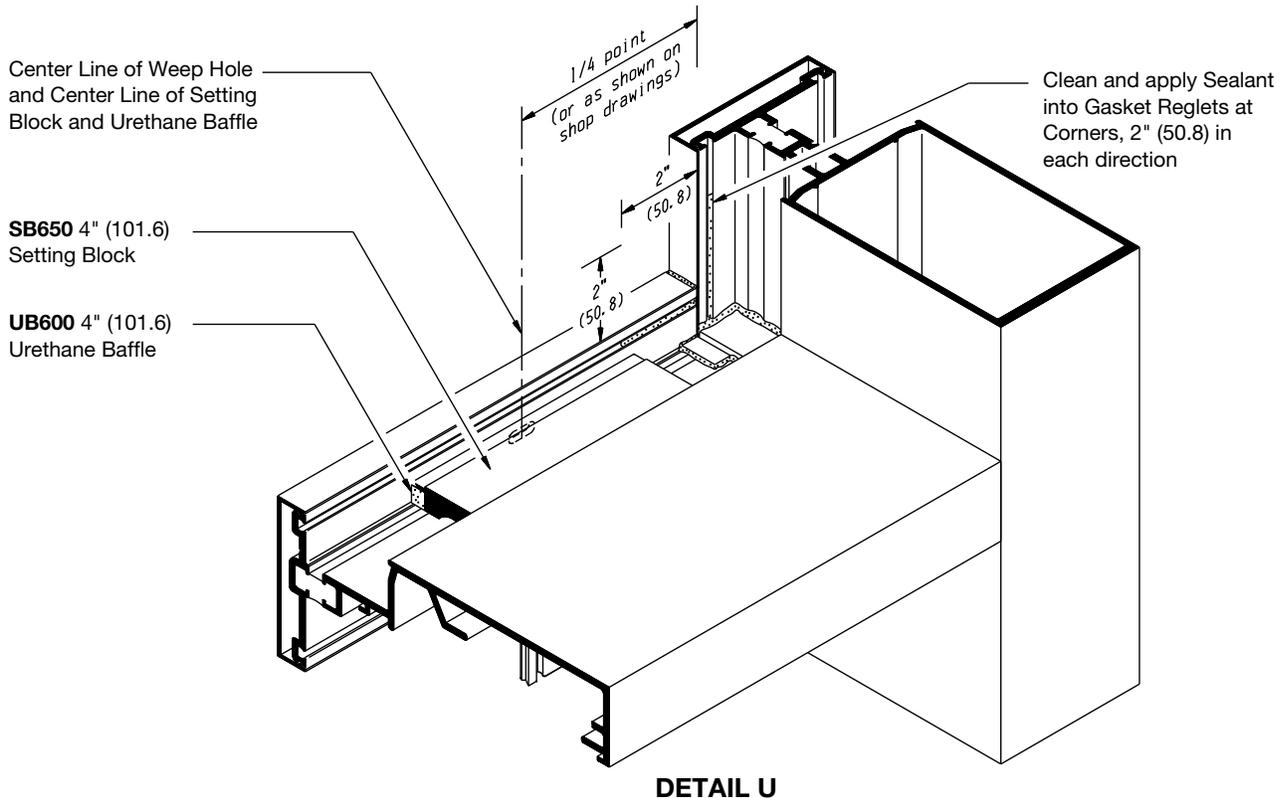
NOTE: This formula does not take into account glass tolerances. Consult glass manufacturer before ordering glass.

Remove gaskets from carton and lay flat in a clean, dry area in order to recover shape. Allow gaskets to relax at least two hours at temperatures above 50°F (10°C). Glaze with gaskets above 40°F (4.44°C). If necessary warm gaskets in a hot box before installing.

Use NP420 at exterior and NP600 at interior.

NOTE: Since all in fill panels will be set from the interior, sequence of any back-up walls, ducts, pipes, etc. at spandrel locations should be coordinated with general contractor and other trades.

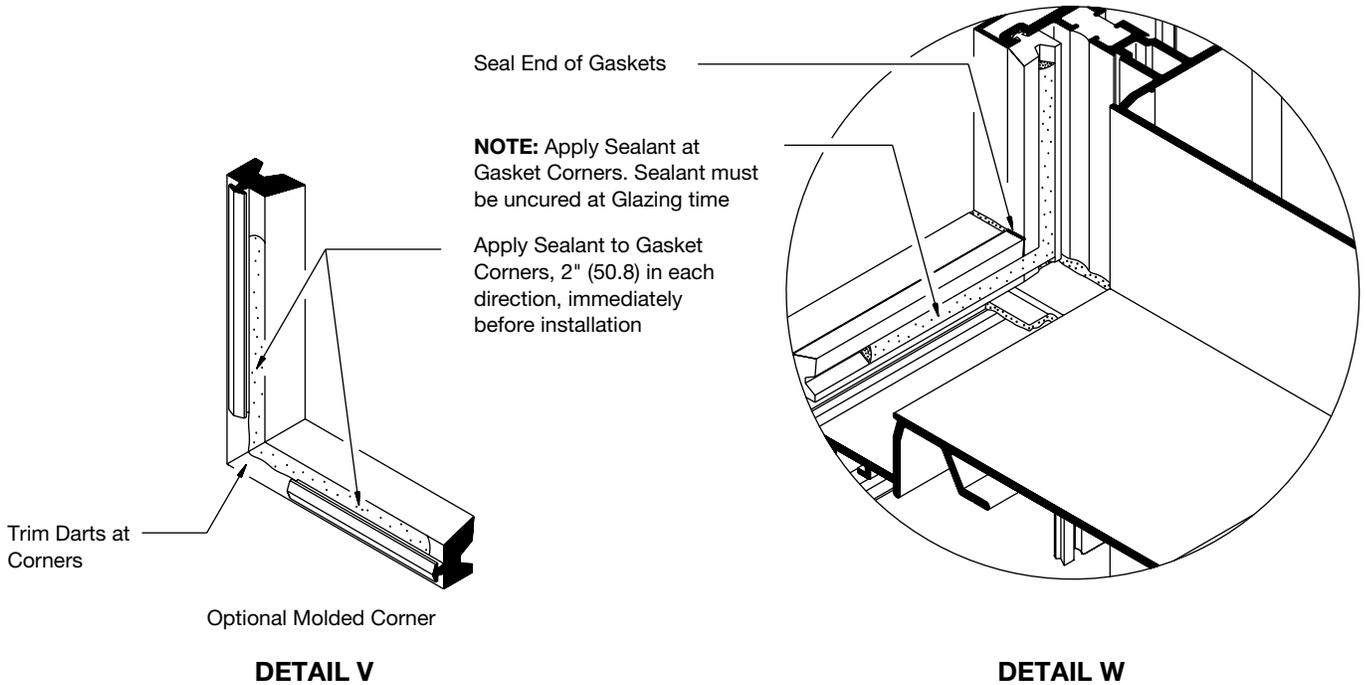
1. Cut glazing gaskets 1/8" (3.2) longer per foot of extrusion to allow for shrinkage. Vertical gaskets run through. See **DETAIL W** on Page 16.
2. Clean gutters in horizontal members. It is extremely important that glazing pockets are clean of debris to prevent blockage of weep holes.
3. Install urethane baffles and setting blocks in horizontal and sill members at quarter points or as directed by dead load charts and shop drawings. See **DETAIL U**.
4. Apply sealant into exterior gasket reglets at corners, 2" (50.8) in each direction. See **DETAIL U**.



5. Install exterior gaskets. Do not cut or splice gaskets. Gaskets should require some crowding; they should never be stretched to fit. Horizontal gaskets butt against verticals. See **DETAIL W** on Page 16.
MOLDED CORNERS (Optional)

Start installation from corners and work toward center, making sure that corners are true and square, and gasket darts are fully engaged. Dart needs to be trimmed at corners. See **DETAIL V** on Page 16.

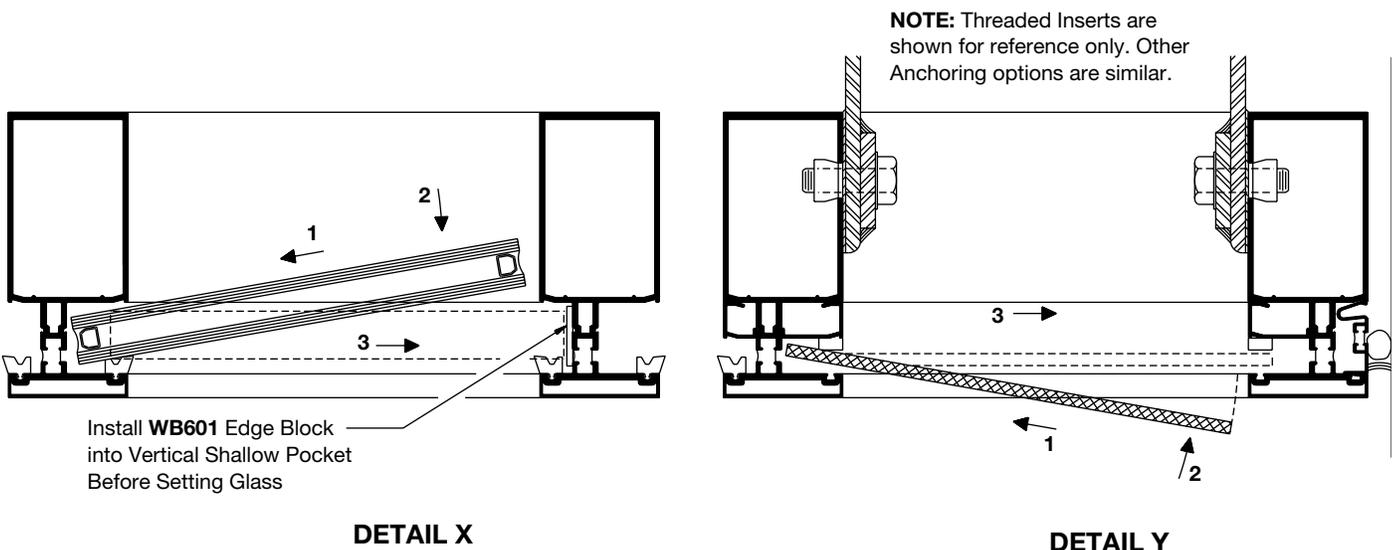
6. Apply bead of sealant at gasket corners, 2" (50.8) in each direction before installing glass. **See DETAIL W.**



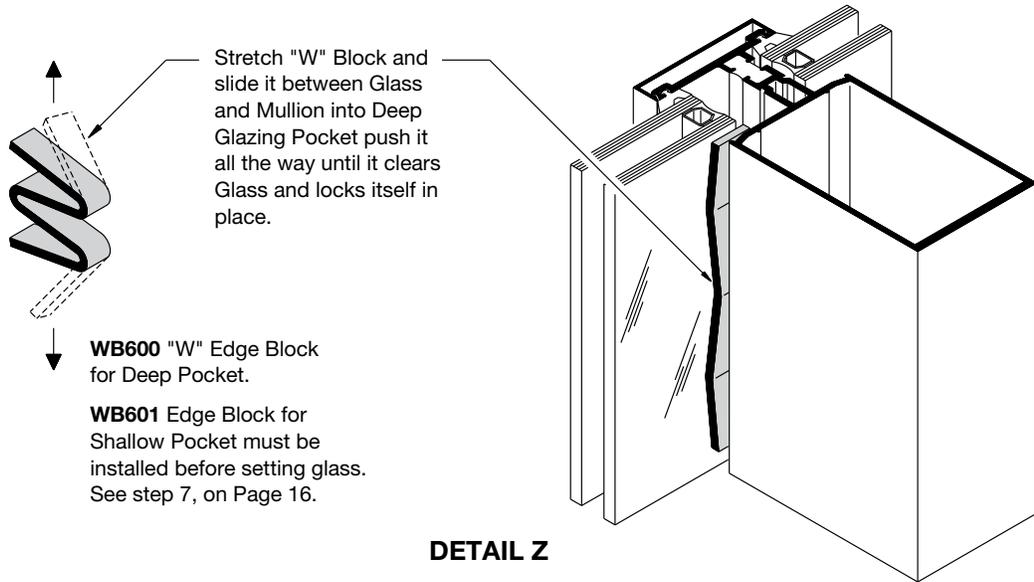
7. To prevent glass from shifting in the opening edge blocks should be installed, one on each side of glass at center point. Peel off adhesive and install WB601 edge block into vertical shallow pocket. **See DETAIL X.** Edge block for vertical deep pocket will be installed after glass is set. **See step 10.**
8. Install glass and center in opening. **See DETAIL X** for installing sequence. Do not disturb exterior gaskets during glass installation. Glaze spandrel areas first to allow visual inspection of exterior gaskets through glass opening.

NOTE: At spandrel areas where anchor clips face each other, such as wall jamb conditions (see DETAIL Y) horizontal framing must allow for "drop glazing" or exterior glazing. See Page 16.

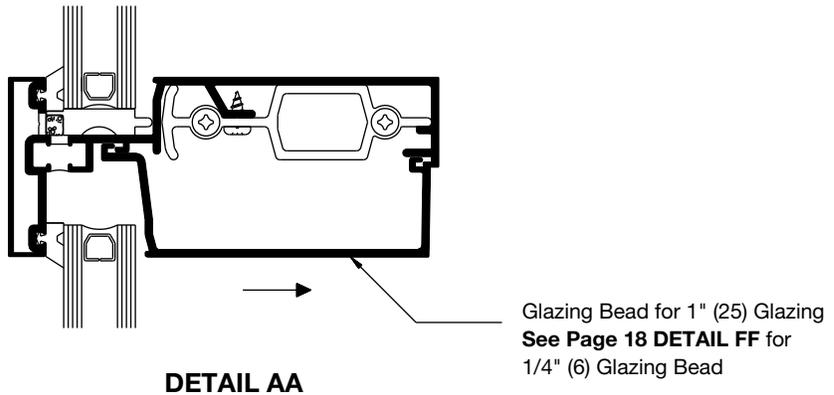
9. After glass is set in place lift slightly and press it firmly against exterior gaskets, to prevent dragging or biting on setting block. Short pieces of interior wedges may be used at setting block locations, as well as at jambs, to maintain the proper pressure.



10. 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 Z** on Page 17.



11. Hook in horizontal glazing beads. See **DETAIL AA**.

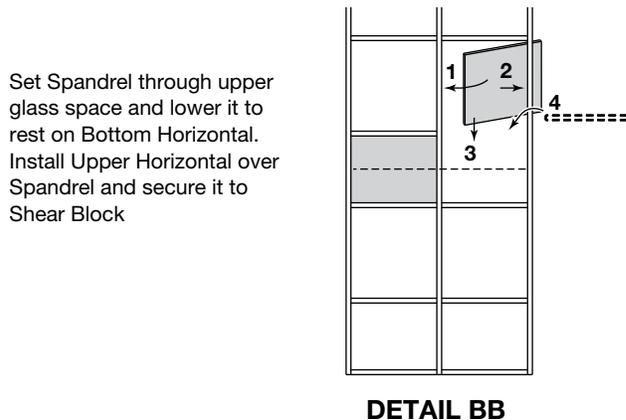


12. Roll in interior wedges. Butt horizontal and vertical wedges at corners, bevel as required and trim edges to correct angle. Seal corners.

HORIZONTAL MEMBER FOR EXTERIOR GLAZING

At spandrel areas where steel anchor clips face each other, such as wall jamb conditions (see **DETAIL Y** on **Page 16**) intermediate and bottom spandrel lites should be "drop glazed". See **DETAIL BB**.

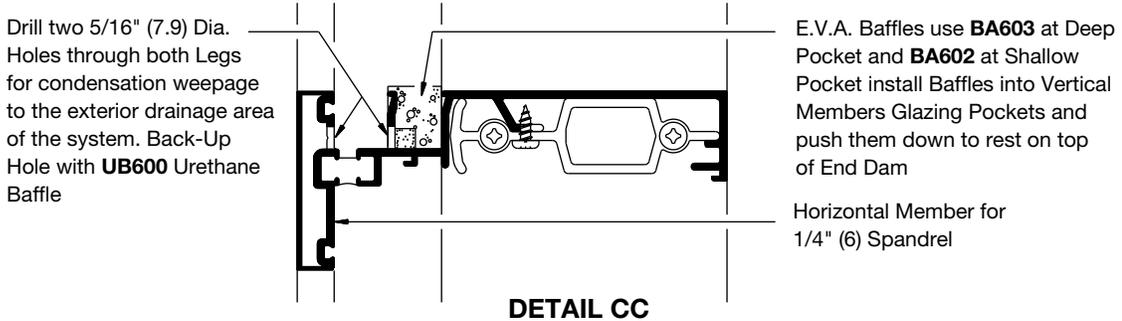
NOTE: Top spandrel lite must be exterior glazed. (Use similar procedure as shown on Page 21).



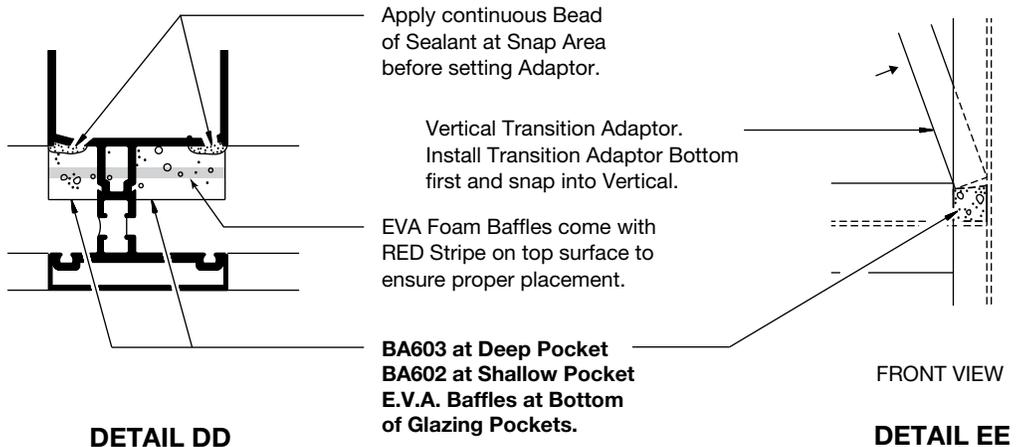
TRANSITION GLAZING

Vertical spandrel adaptors are required at spandrel conditions. Adaptors run D.L.O. +7/8" (22.2)

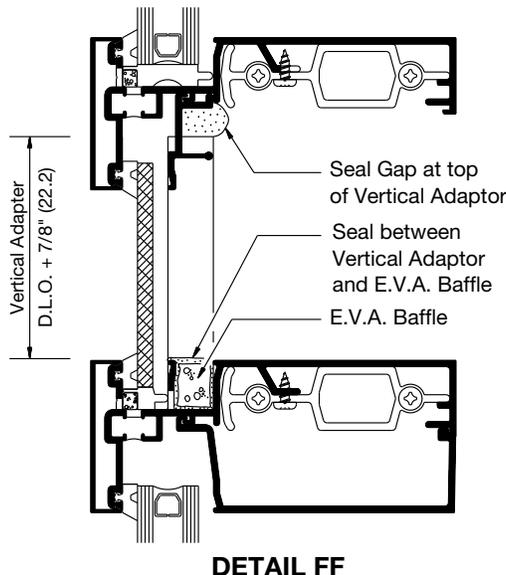
1. Drill two 5/16" (7.9) Dia. holes through both legs and back-up holes with urethane baffles. **See DETAIL CC.**
2. Insert E.V.A. baffles into vertical glazing pockets at lower corners. **See DETAIL CC and DD.** Baffles rest on top of end dams. Seal E.V.A. baffle all around.



3. Apply continuous bead of sealant to vertical at adaptor snap area. **See DETAIL DD.**
4. Install vertical adaptor bottom first and snap into vertical. **See DETAIL EE.**



5. Seal bottom joint between vertical adaptor and E.V.A. baffles and gap at top between adaptor and horizontal member. **See DETAIL FF.**



VERTICAL EXPANSION JOINTS

Splice joint width should be calculated according to job conditions and architectural specifications and based on sealant capability and the following formula:

Linear expansion for aluminum, in inches	=	Length (")	x	F° difference in temperature	x	.0000129
Linear expansion for aluminum, in millimeters	=	Length (m)	x	C° difference in temperature	x	.02322

A 1/2" (12.7) minimum joint is recommended. Use a 1/2" (12.7) spacer shim to set and hold the mullion joint constant during erection. Remove the shim after attaching the verticals to the anchors.

Splice joints must occur at spandrel areas.

NOTE: Splice joints are designed to accommodate thermal movement only. They do not compensate for variations in floor levels.

Three splice sleeves are used at each joint:

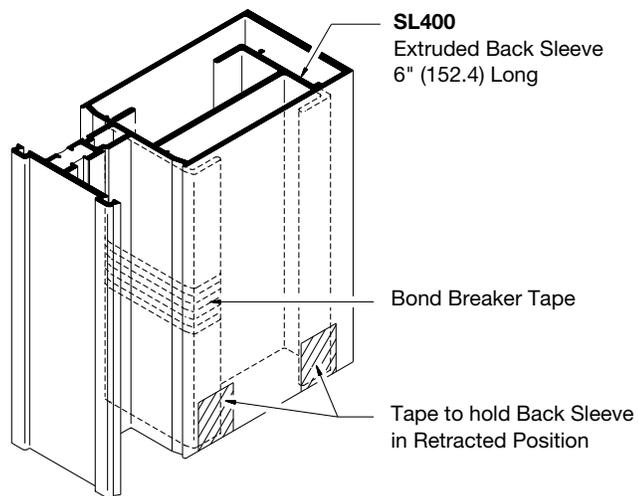
SL400 (SL430) Extruded Back Sleeve for Vertical Member.

SL404 Aluminum Brake Front Sleeve for Vertical Member.

SL403 Aluminum Brake Sleeve for Face Cover.

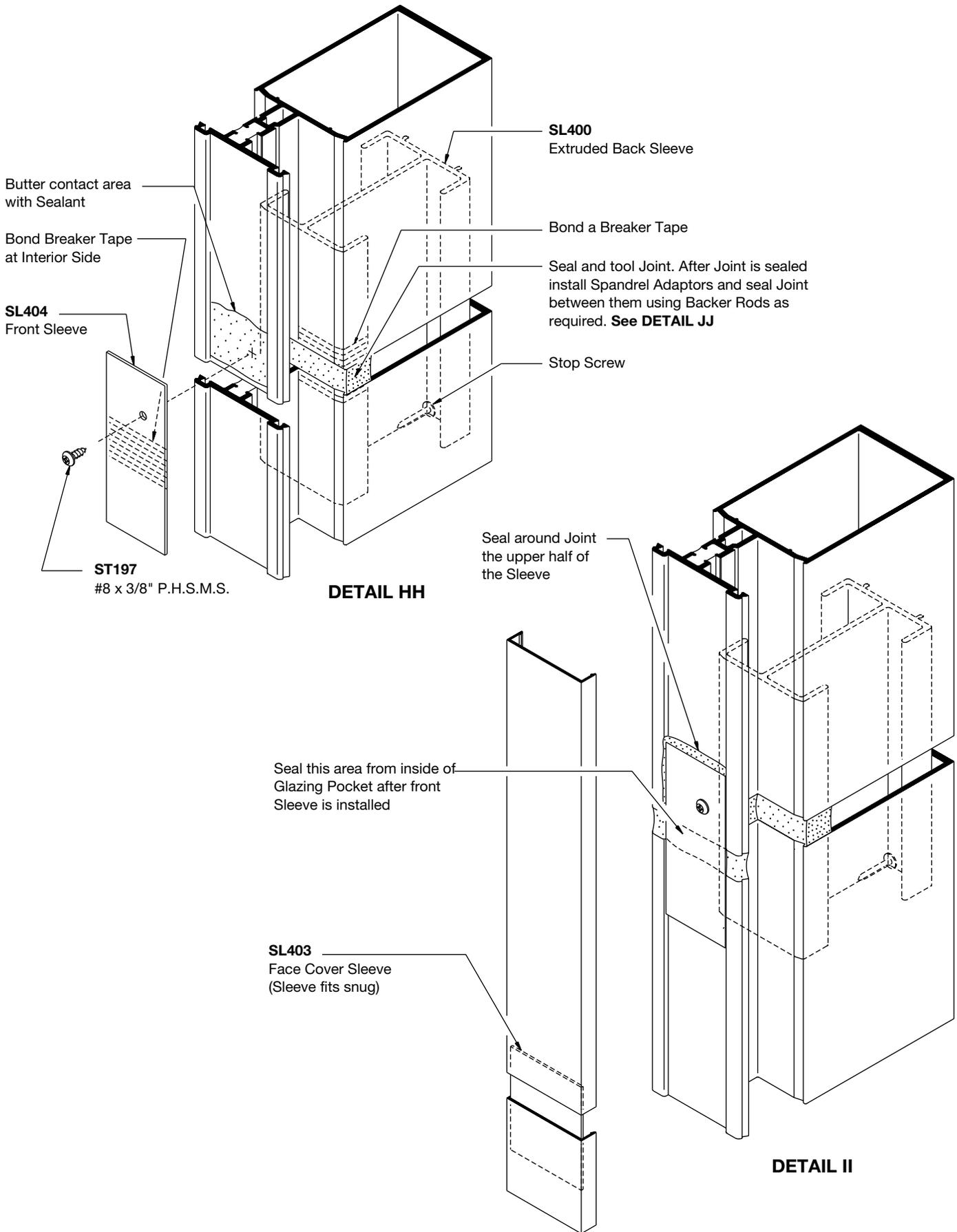
1. Clean splice sleeves and all joint surfaces. Apply bond breaker tape at areas where sleeve will be sealed to avoid three side adhesion. **See DETAILS GG and HH** on Page 19 and 20.
2. Slide extruded sleeve into the upper member before it is installed and tape to hold it in retracted position. **See DETAIL GG.**
3. Install stop screw, 2-3/4" (69.9) down from top of extrusion at inside of lower member. **See DETAIL GG.**
4. Install upper member and let extruded sleeve slide down until it sits on top of stop screw.
5. Seal joint over sleeve as shown. **See DETAIL HH** on Page 20. Transition adaptors for 1/4" (6) spandrel should be discontinued at splice joint and installed after splice joint is sealed. Seal joint between adaptors using backer rods as required. **See DETAIL JJ.**
6. Butter face of upper aluminum member with sealant and install front sleeve. **See DETAILS HH and II** on Page 20.
7. Face cover joint should occur 4" (101.6) below mullion joint. Face cover splice sleeve fits snug. Sleeve finish to match face cover. Seal face cover joints at sides between sleeve and continuous gaskets. **See DETAIL JJ** on Page 21.

NOTE: Clean all surfaces prior to applying sealants. See sealant manufacturer requirements. TYPICAL AT ALL CONDITIONS

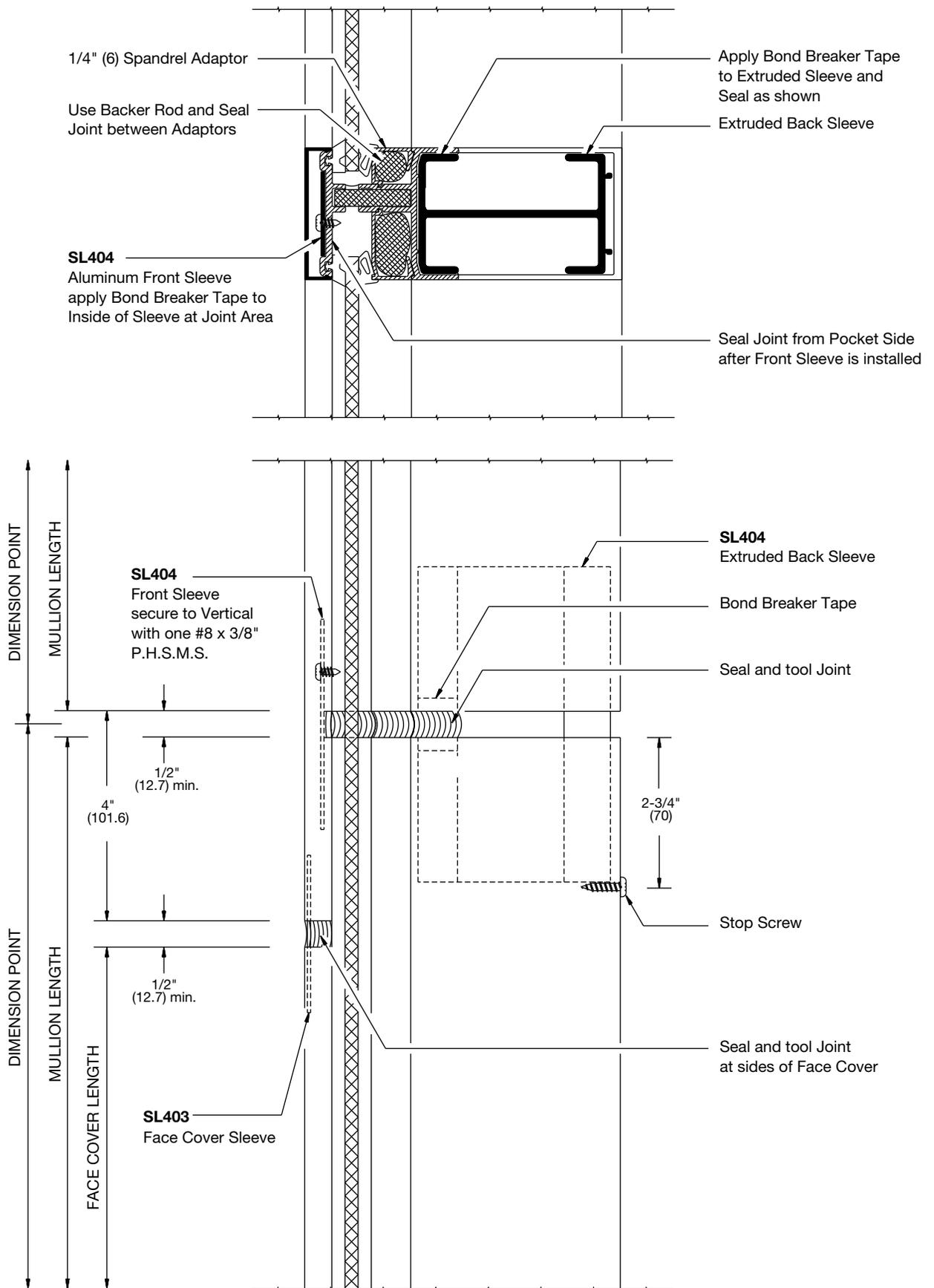


UPPER MEMBER

DETAIL GG



SERIES 4250 and 4250T



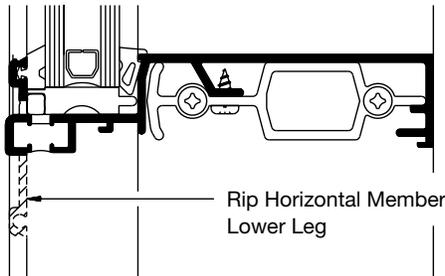
DETAIL JJ

NOT TO SCALE

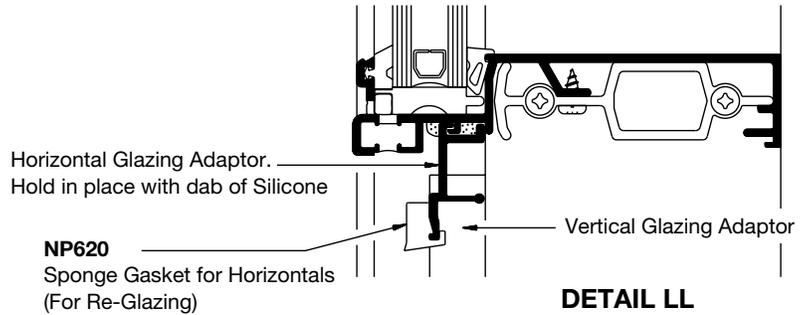
REGLAZING SPANDREL FROM THE EXTERIOR

EXTERIOR GLAZING IS SIMILAR

1. Remove broken spandrel, gaskets, "W" side block, baffles, setting blocks, and upper horizontal face cover. Rip lower leg of the horizontal at top of spandrel lite. **See DETAIL KK.**
2. Prior to glazing, install vertical and horizontal glazing adaptors. **See DETAIL LL.**

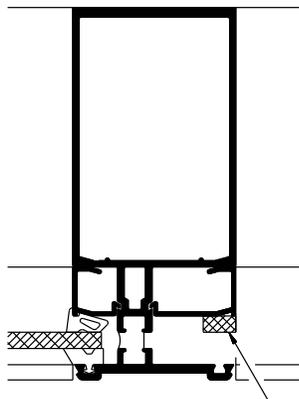


DETAIL KK



DETAIL LL

3. Install **NP620** sponge gasket (for re-glazing) on the horizontal adaptors. **See DETAIL LL.**
4. Install 1/4" (6) glazing tape on the vertical adaptors. **See DETAIL MM.**
5. Clean gutter thoroughly, reset baffles and setting blocks in proper location and install new spandrel.
6. Drill weep slots in exterior glazing adaptor, the size and location to match horizontal member slots.
7. Butter horizontal member contact area with sealant and install glazing adaptor. **NOTE: Make sure weep slots are not clogged.** **See DETAIL NN.** Special care should be taken to seal joints between ends of glazing adaptors and vertical members. Seal over head of installation screws.



DETAIL MM

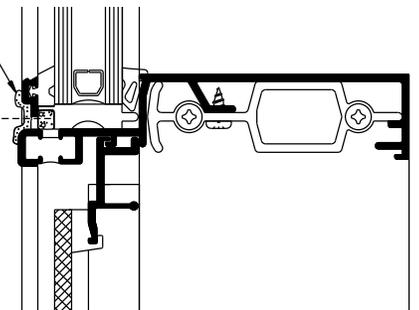
1/4"(6.4) Glazing Tape
for Vertical Adaptors

Clean thoroughly contact area and butter with Sealant.
Note: Do not clog Weep Slots with Sealant.

ST035
10 x 5/8" F.H.S.M.S.
2" (50.8) from ends
and 18" (457.2) O.C.

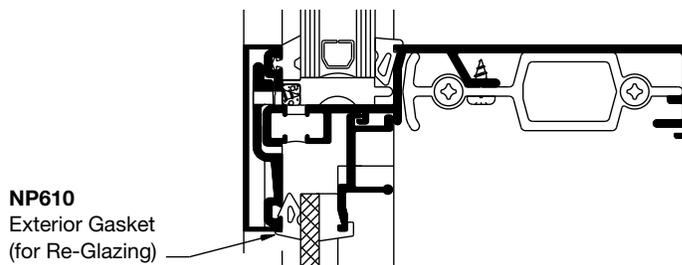
Drill Weep Slots.
Size and location to match
Main Member

Exterior Glazing Adaptor



DETAIL NN

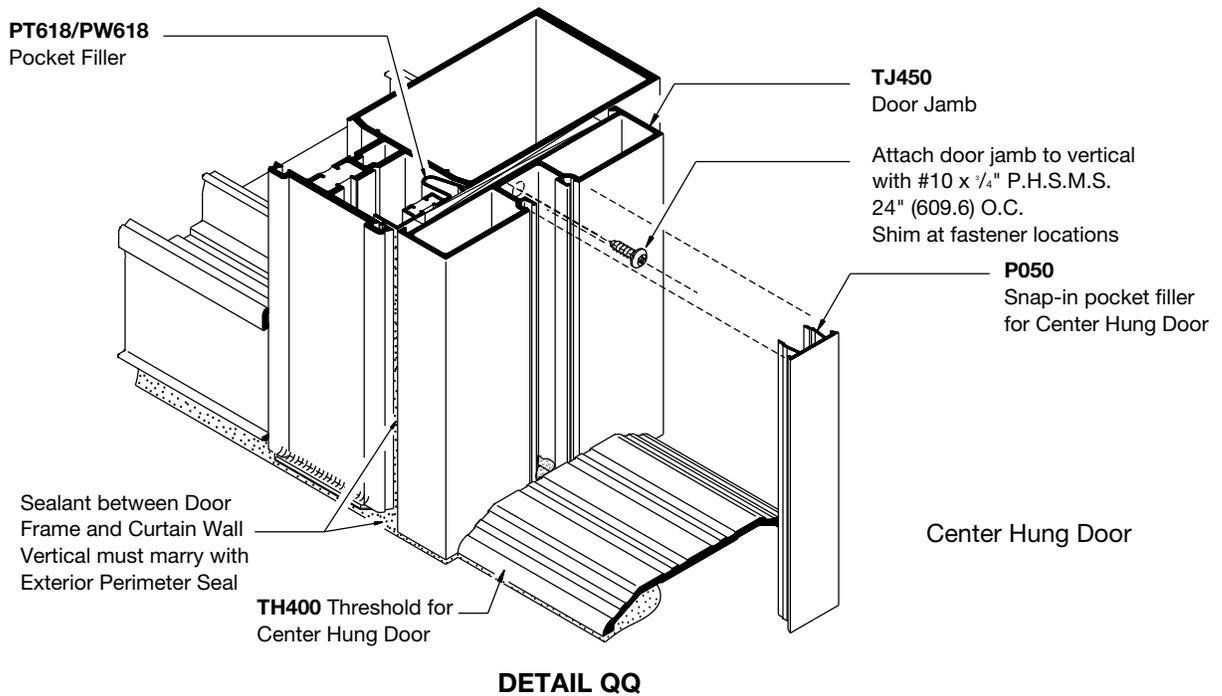
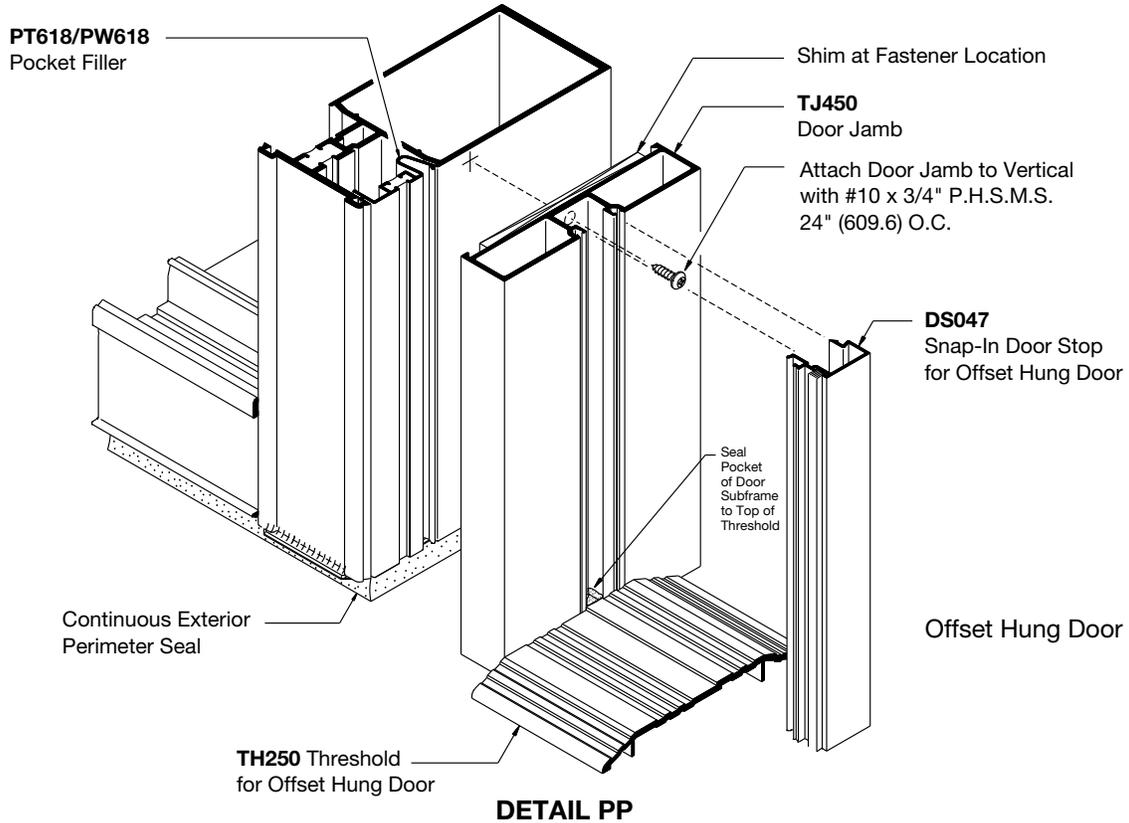
8. Snap-in horizontal face cover. **See DETAIL OO.**
Install **NP610** exterior gasket (for re-glazing). **See DETAIL OO.** Seal gasket corners.



DETAIL OO

ENTRANCE FRAMES

Entrance Frames may be installed simultaneously with Curtain Wall or after Curtain Wall installation has been completed. Use **PW618** pocket filler to close glazing pocket at door side.





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
CAT. NO. 95C



CRL RTV408 Neutral Cure Silicone
CAT. NO. RTV408



CRL33S Silicone Sealant
CAT. NO. 33S



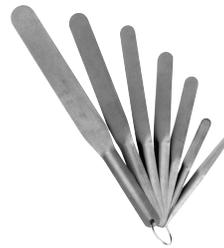
CRL M64 Modified Smooth Polyurethane Construction Sealant
CAT. NO. M64GRY



CRL M66 Modified Grainy Polyurethane Construction Sealant
CAT. NO. M66



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



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



CRL Utility Knives
CAT. NO. K82



CRL Backer Rod Roller Tool
CAT. NO. SBRR



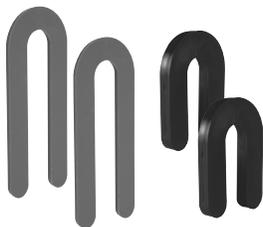
CRL Soft-Face Power Hitter
CAT. NO. ST57532



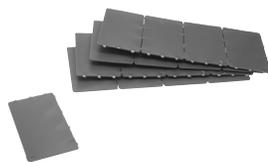
CRL Saint-Gobain/Norton V2100 Thermalbond® Structural Glazing Spacer Tape
CAT. NO. V2100



CRL Spring Clamps
CAT. NO. JC3202HT



CRL Plastic Horseshoe Shims
CAT. NO. PHS18



CRL Plastic Bearing Shimstrips
CAT. NO. PBS06



CRL Gloves
CAT. NO. KF1TL



CRL Blades
CAT. NO. 1992C

SERIES 4250 and 4250T



**CRL Bond Breaker Tape
CAT. NO. 827T2**



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



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



**CRL Vacuum Cups
CAT. NO. W4950**



**CRL Gasket Roller
CAT. NO. VR10**



**CRL Gasket Cutter
CAT. NO. MC80N**



**CRL Glass Cleaner
CAT. NO. 1973**



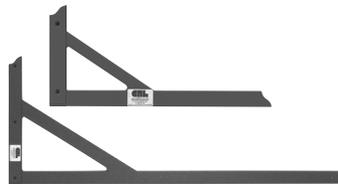
**CRL Paper Towels
CAT. NO. 1550**



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



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



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



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



**CRL Glass Marking Pencils
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 Drill
CAT. NO. 6281DWPE**