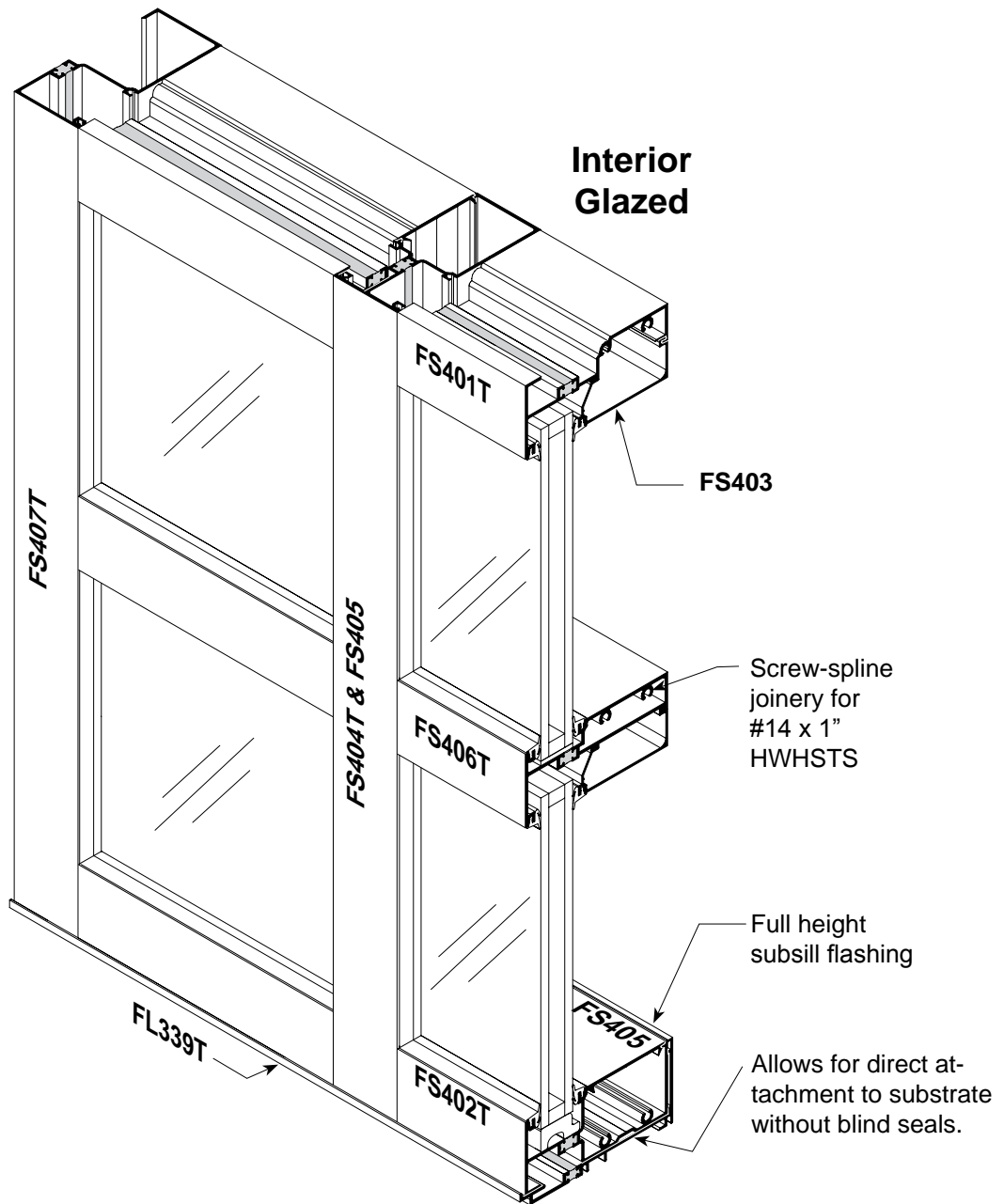


FS400T

THERMAL WINDOW WALL SYSTEM

INSTALLATION INSTRUCTIONS

2" x 4-1/2" Offset Glazed for 1" Insulated Glass



WINDOW WALL

These instructions are for typical installations. Reference shop drawings for special notations on installations and glazing.

TABLE OF CONTENTS

	<i>Page</i>
General Notes	3-4
Frame Fabrication	5-10
Frame Assembly	11-13
Frame Installation	14-17
Glazing	18-21
Special Conditions	22
Expansion Mullions	23
Anchor Charts	24-29

INSTALLATION INSTRUCTIONS - General 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. Field verified notations shown within shop drawings must be resolved prior to installation. The installation instructions are of general nature and cover most conditions.
- 2. INSTALLATION.** All materials shall be installed plumb, level and true.
- 3. BENCHMARKS.** All work should start from established benchmarks and column center lines established by the architect and general contractor.
- 4. FIELD WELDING.** All field welding must be adequately shielded to avoid any splatter on glass or aluminum. 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.
- 8. FASTENING.** Only those fasteners used within the system are specified in these instructions. Due to the varying perimeter conditions and performance requirements perimeter fasteners are not specified in these instructions. Reference the shop drawings or anchor charts for perimeter fasteners.
- 9. BUILDING CODES.** Due to the diversity in state, local and national codes that govern the design and application of architectural products, it is the responsibility of the architect, owner and installer to assure that products selected for use on each project comply with all the applicable building codes and laws. CORAL ARCHITECTURAL PRODUCTS 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 shop drawings are shown at normal size. Expansion mullion gaps should be based on temperature at time of installation.

INSTALLATION INSTRUCTIONS

- General Notes -

- 11. WATER HOSE TEST.** After a representative amount of the storefront system has been glazed (500 square feet) and the sealant has cured, a water hose test should be conducted in accordance with AAMA 501.2 specifications to check the installation. This test should be repeated every 500 square feet during the glazing operation. Note: This test procedure should not be used for entrance doors.
- 12. COORDINATION WITH OTHER TRADES.** Coordinate with the general contractor and sequence with other trades items which offset the storefront installation such as back-up walls, partitions, ceilings and mechanical ducts.
- 13. MATERIAL HANDLING:**
- A. SHOP
 - 1. Cardboard wrapped or paper interleaved material must be kept dry.
 - 2. Immediately remove aluminum from cardboard wrapped or paper interleaved materials should it get wet to prevent staining or etching aluminum finish.
 - 3. Check arriving materials for quantity and keep record of where various materials are stored.
 - B. JOB SITE
 - 1. Material at job site must be stored in a safe place well removed from possible damage by other trades.
 - 2. Cardboard wrapped or paper interleaved material must be keep dry. (See 13.A.2)
 - 3. Keep record of where various materials are stored.
 - 4. Protect materials after erection. Cement, plaster, mortar and other alkaline solutions are very harmful to the finish.
- 14. 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.
- 15. CORAL ARCHITECTURAL PRODUCTS.** It is the responsibility of CORAL ARCHITECTURAL PRODUCTS to supply a system to meet the architect's specifications.

FRAME FABRICATION

Establish frame size and cut metal to length.

STEP 1.

Measure width of rough opening.

- A. Measure opening at bottom.
- B. Measure opening at center.
- C. Measure opening at top.

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

Repeat process to determine frame height.

- A. Beginning on left side of opening, measure dimension from top to bottom.
- B. Repeat at center.
- C. Repeat at right side of opening.

The frame height will be the smallest dimension less 13/16" allowing 5/16" for subsill and a 1/4" minimum caulk joint at the head and sill.

STEP 2.

Cut members to size.

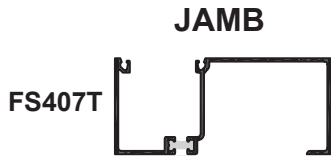
- A. Cut subsill to frame dimension plus 1/4".
- B. Wall jambs and intermediate vertical mullions are cut to frame height.
- C. Horizontal members are cut to D.L.O.
- D. Snap-on glass stops are cut D.L.O. minus (-) 1/16".

FRAME FABRICATION

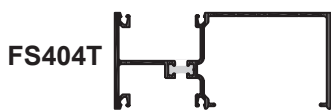
STEP 3.

Drill or punch holes in verticals for attaching horizontals.

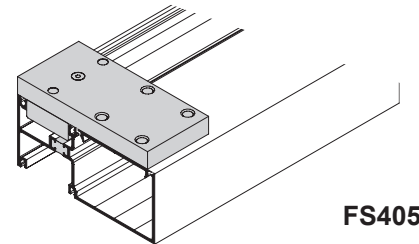
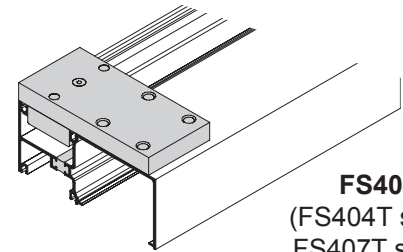
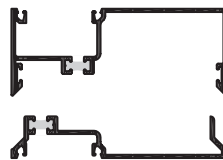
Use Letter "F" (.257 Ø) drill.



VERTICAL MULLIONS

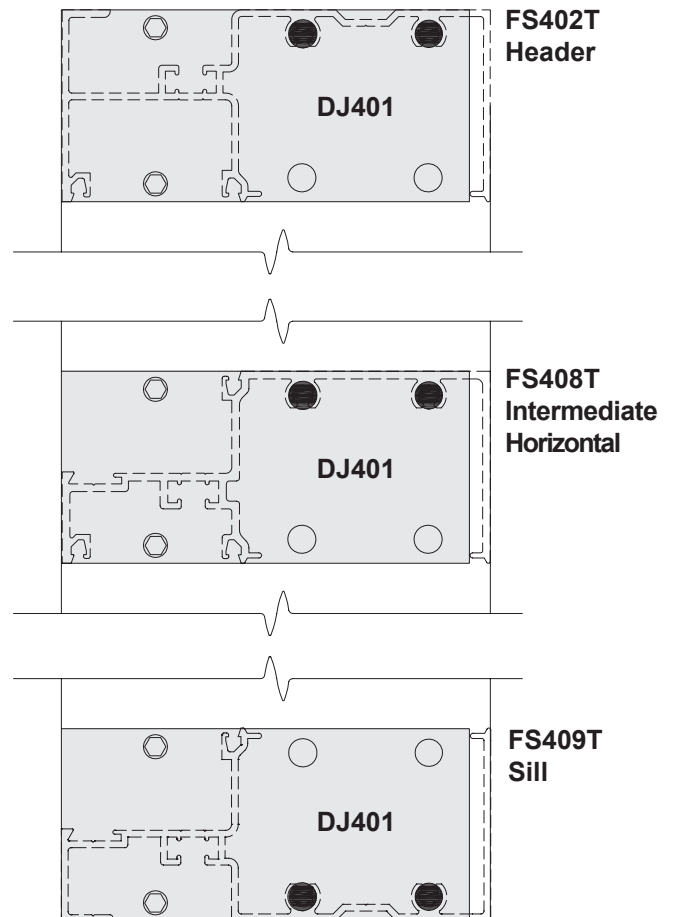
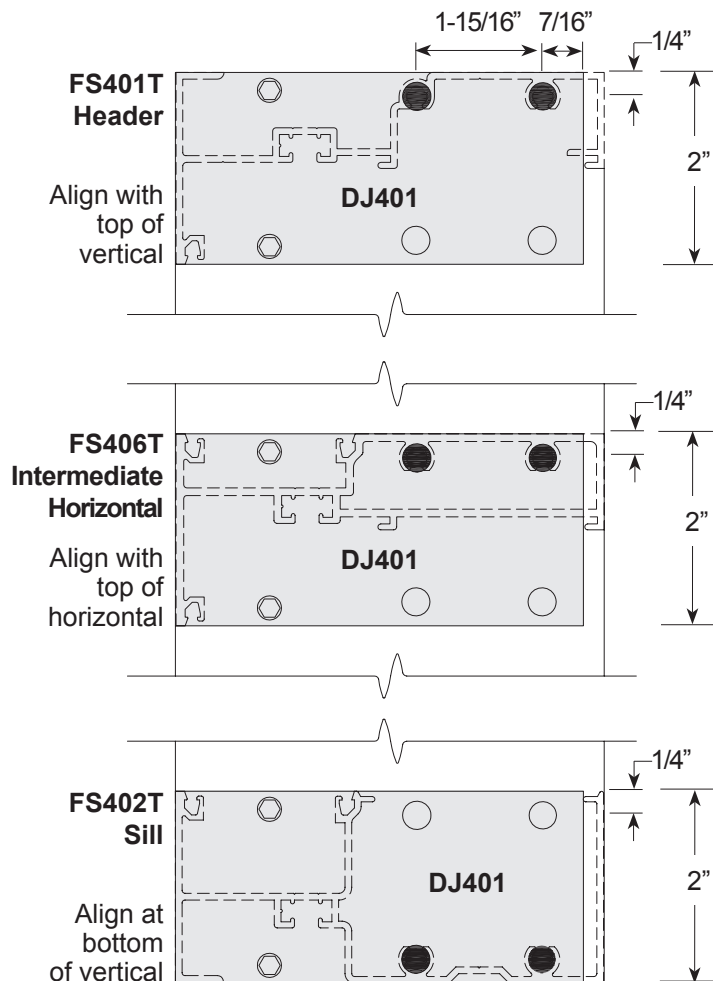


FS410T/
FS411T



INTERIOR GLAZING

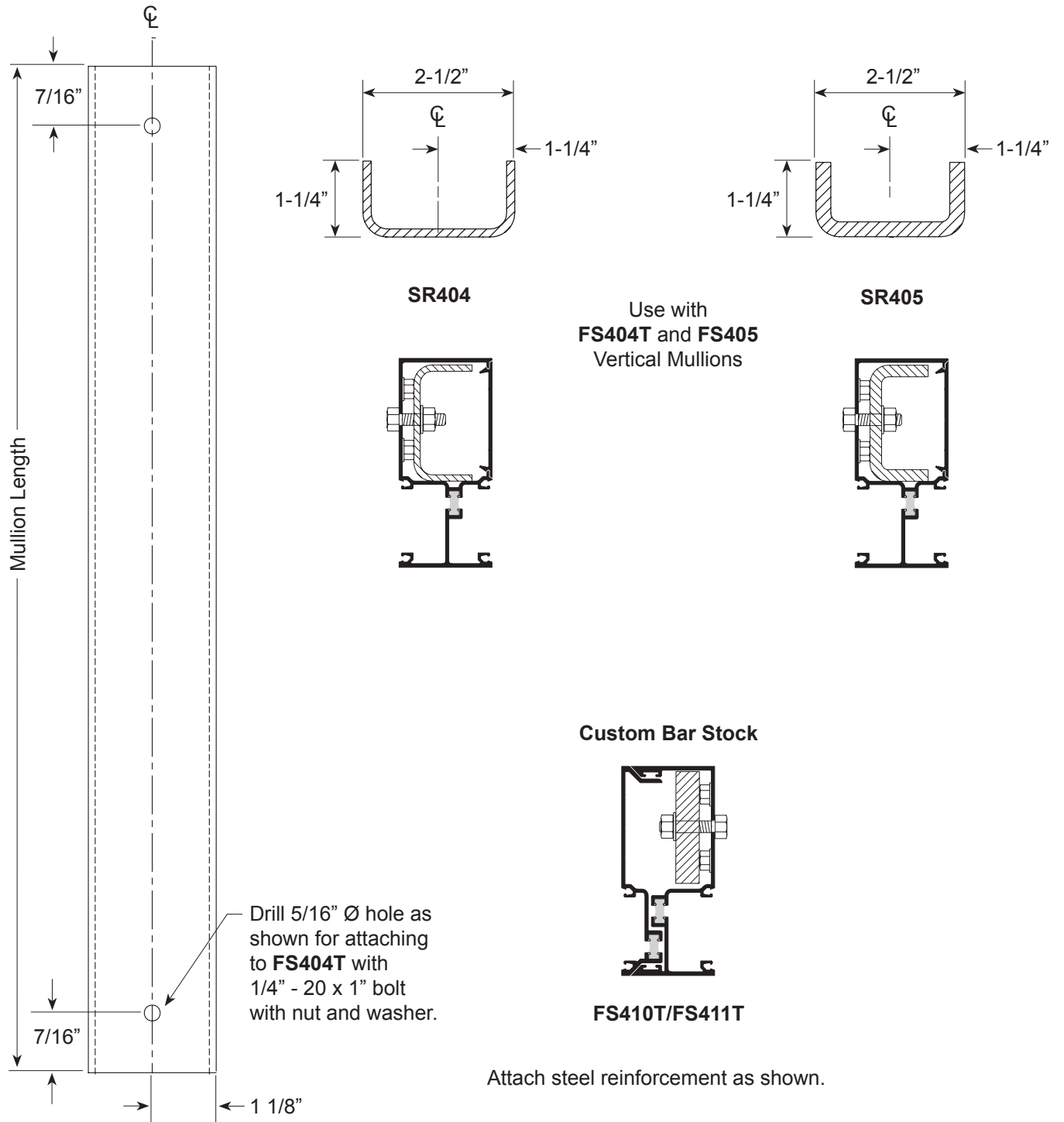
EXTERIOR GLAZING



FRAME FABRICATION

STEP 4.

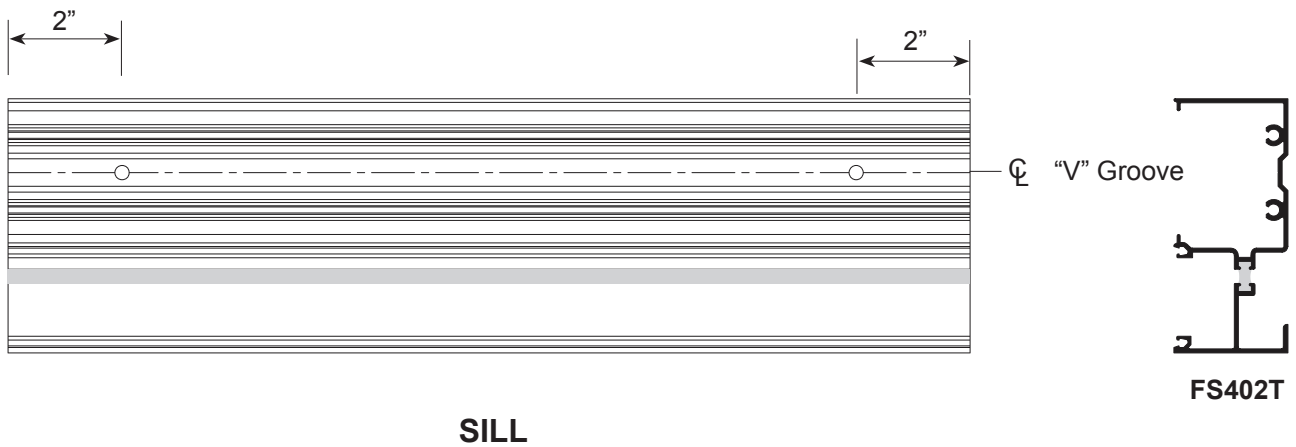
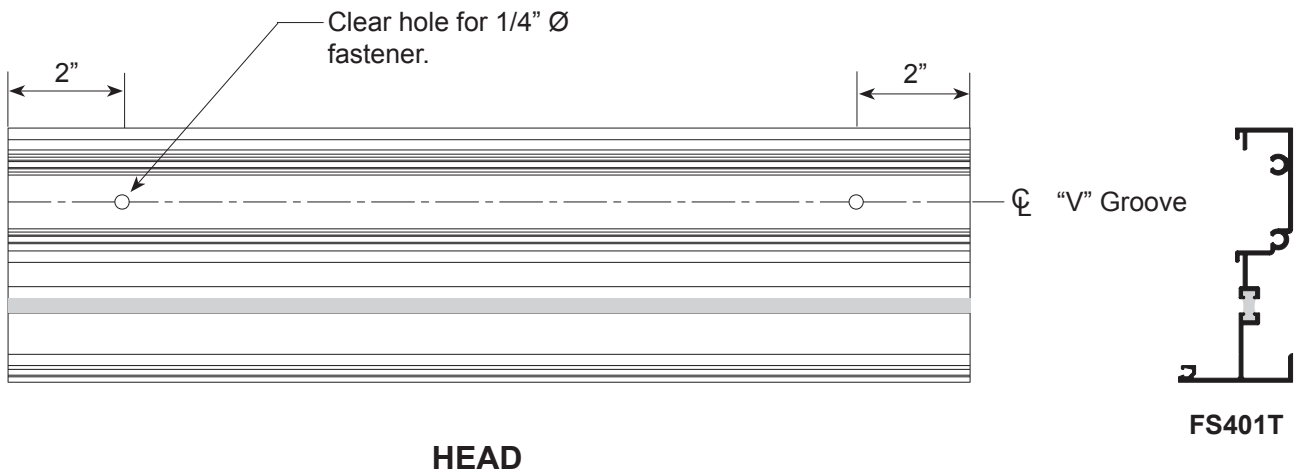
Fabricate steel reinforcement where required.



FRAME FABRICATION

STEP 5.

Fabricate head and sill anchor holes. Reference anchor charts for number of anchor holes and locations for each substrate. First hole is always 2" from end.



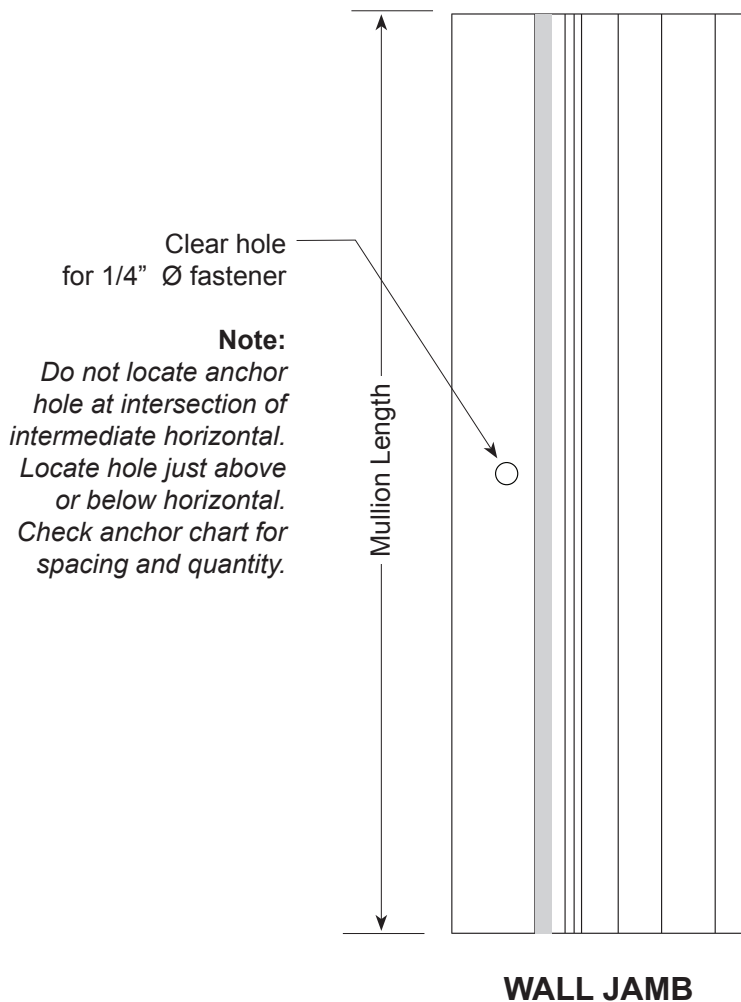
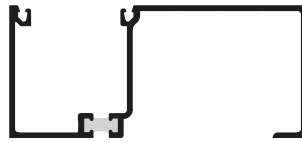
Note: Anchor points required at quarter points (under setting blocks).

FRAME FABRICATION

STEP 6.

Fabricate wall jamb for anchor holes when required. (Reference anchor charts.)

FS407T

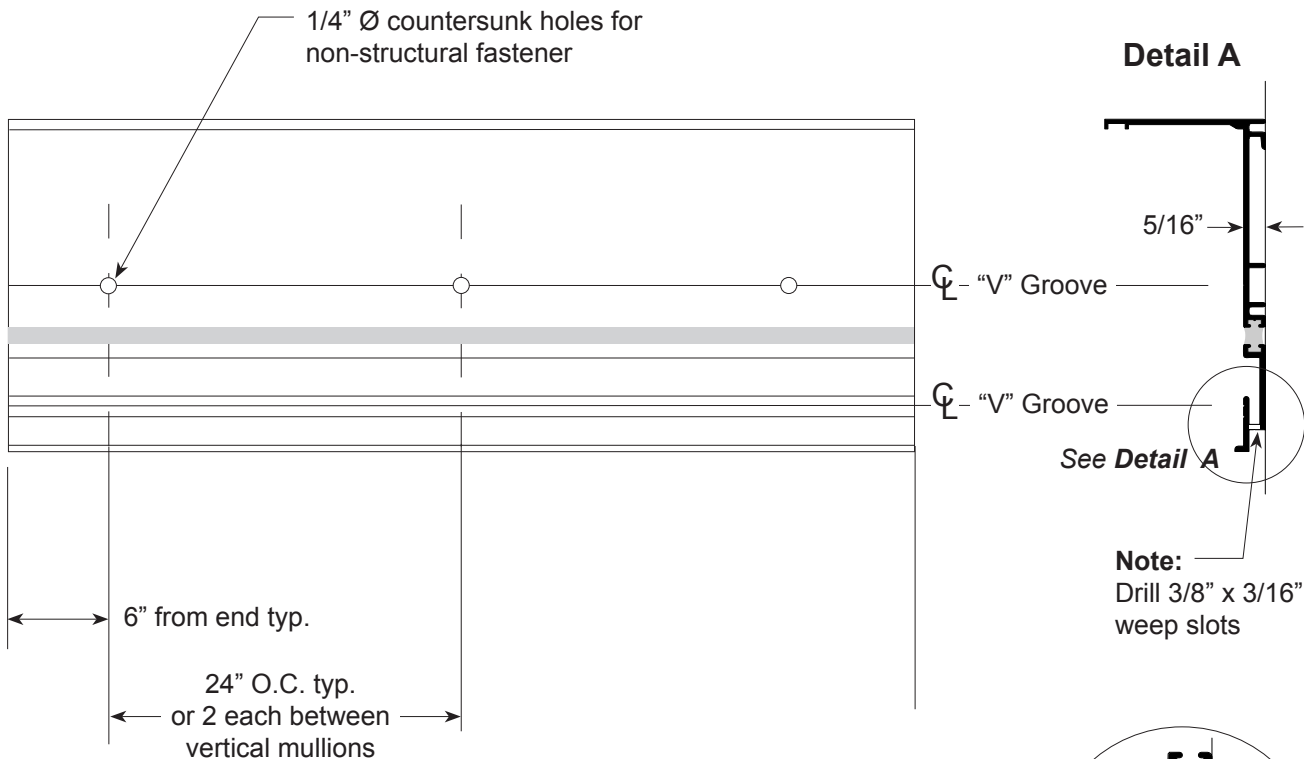


FRAME FABRICATION

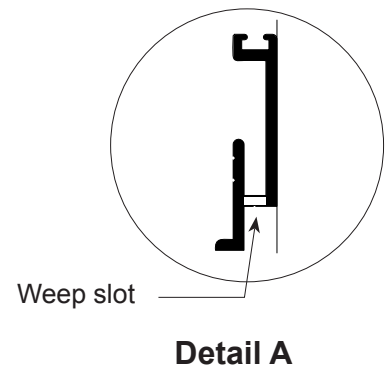
STEP 7.

Fabricate **FL339T** subsill flashing for 1/4" Ø countersunk non-structural fastener and weep slots. Hole location dimensions for fasteners in subsill are approximate. Drill 3/8" x 3/16" weep slots as shown in **Detail "A"**.

SUBSILL FLASHING



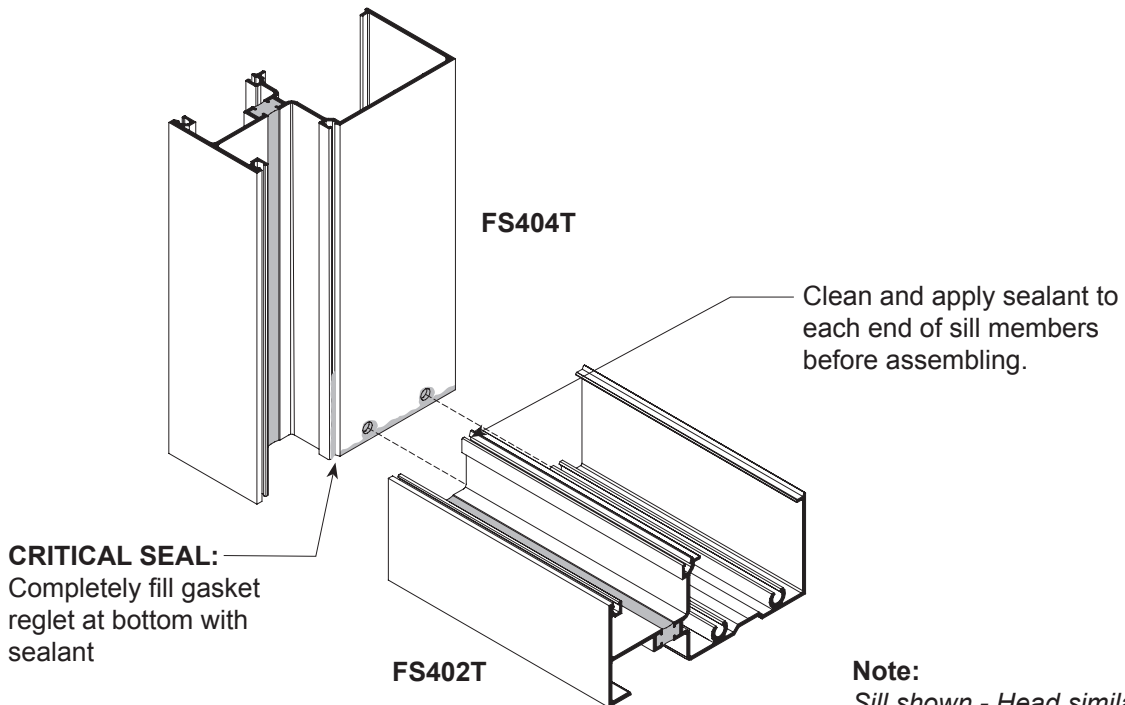
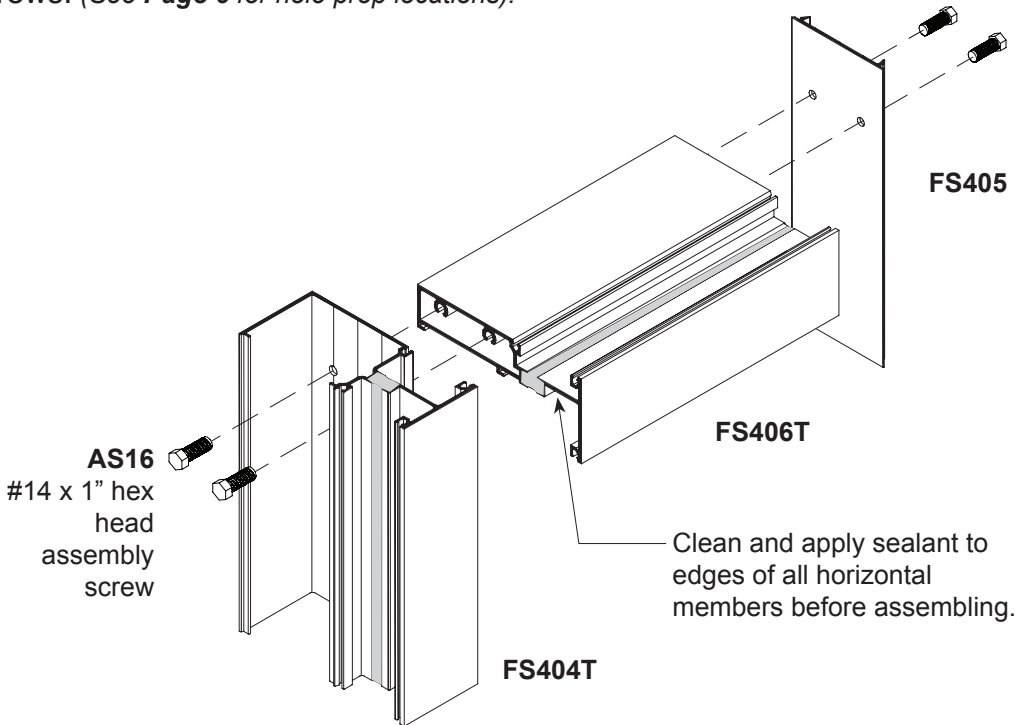
1. Drill / countersink 1/4" Ø holes for non-structural fasteners used for attaching subsill to substrate as shown.
2. Drill 3/8" x 3/16" weep slots in locations as shown. Locate one weep slot 6" from each end and additional slots approximately 48" on center. Total weep slots should average 2 each between each vertical mullion.



FRAME ASSEMBLY STANDARD MULLION

STEP 1.

Attach head, intermediate horizontal and sill to verticals using **AS16 (#14x1" HHSTS)** spline screws. (See **Page 6** for hole prep locations).



Note:
Sill shown - Head similar

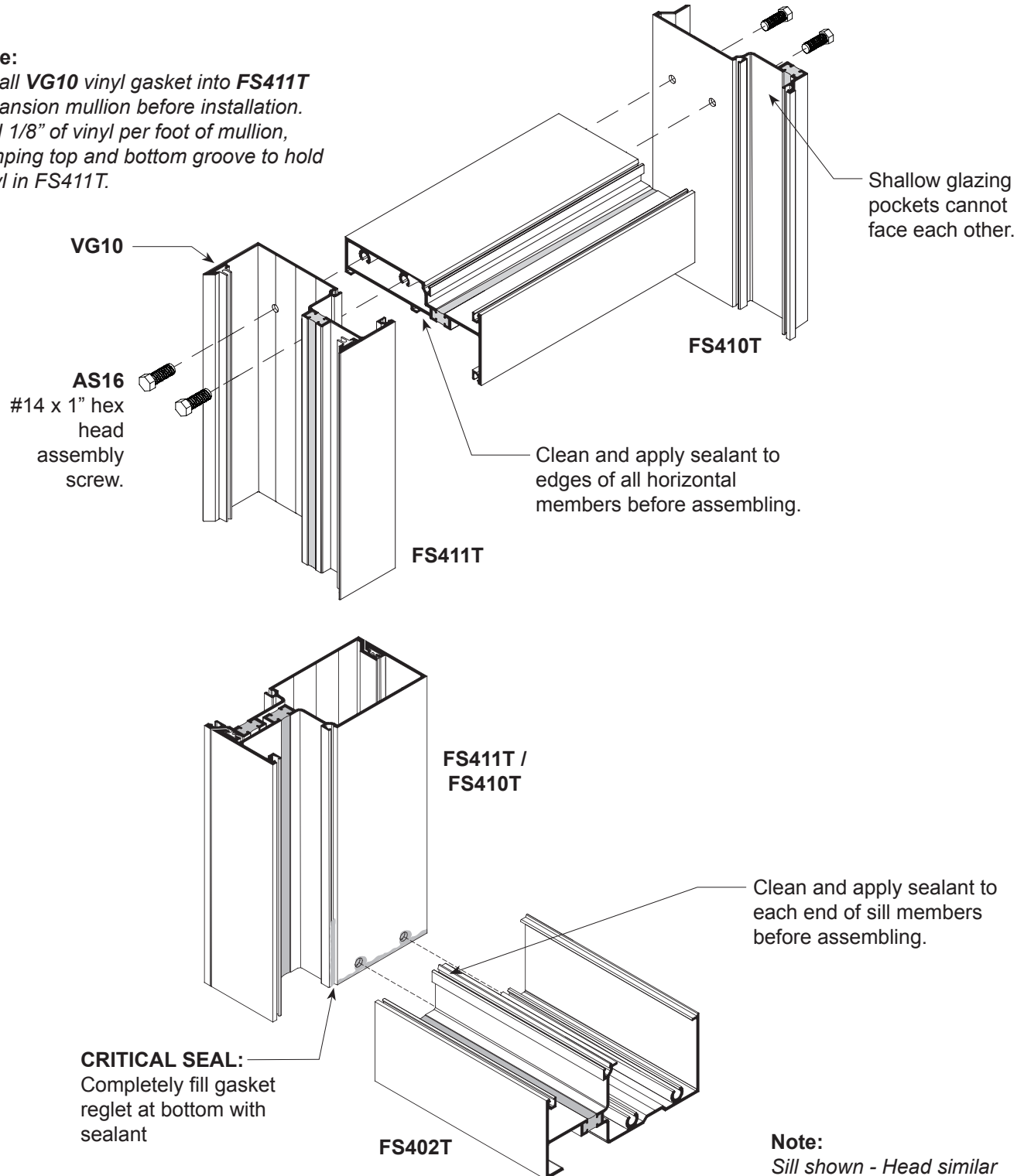
FRAME ASSEMBLY EXPANSION MULLIONS

STEP 1.

Attach head, intermediate horizontal and sill to verticals using **AS16** (#14x1" HHSTS) spline screws. (See **Page 6** for hole prep locations).

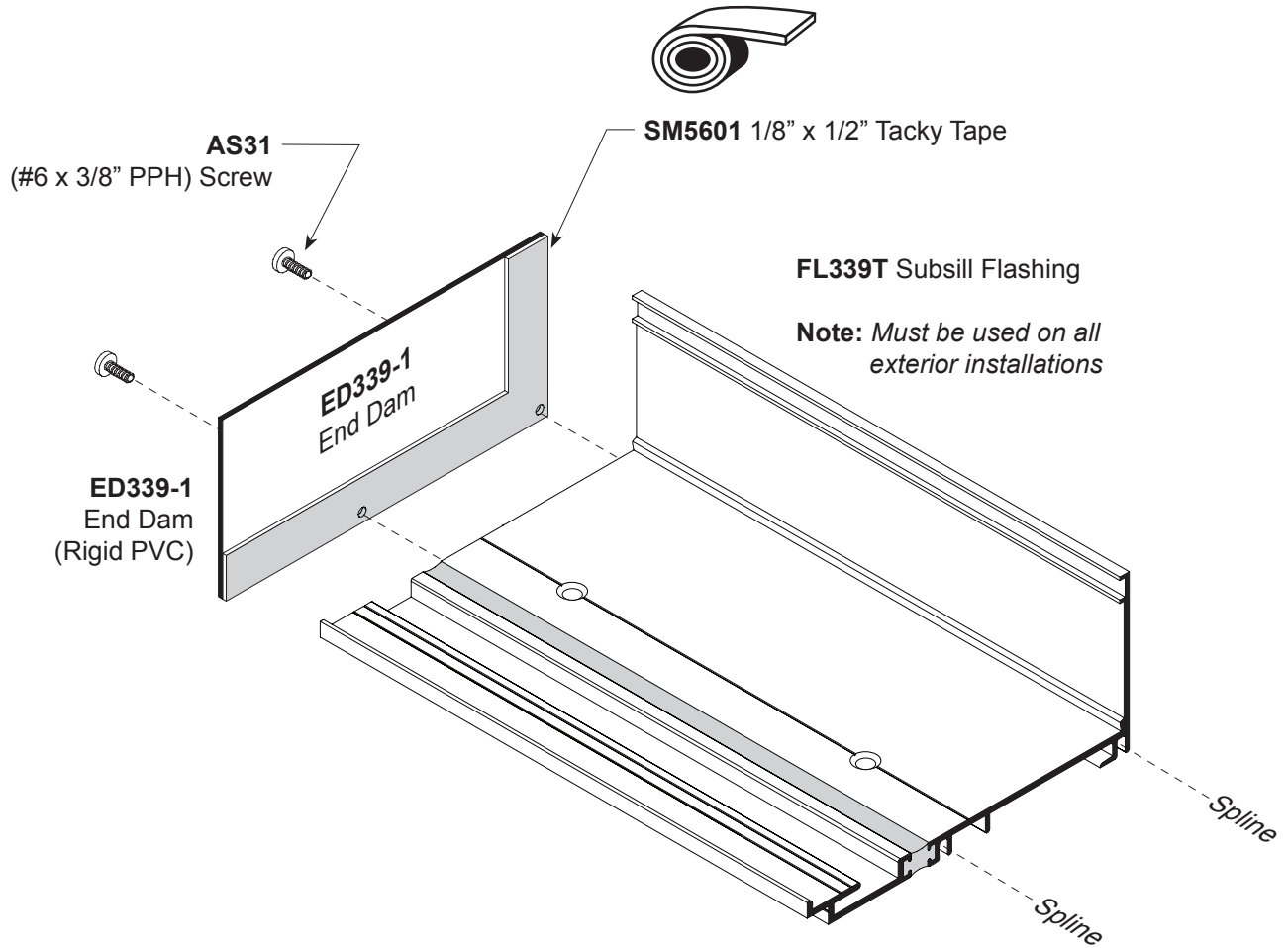
Note:

Install **VG10** vinyl gasket into **FS411T** expansion mullion before installation. Add 1/8" of vinyl per foot of mullion, crimping top and bottom groove to hold vinyl in **FS411T**.



FRAME ASSEMBLY

STEP 2.

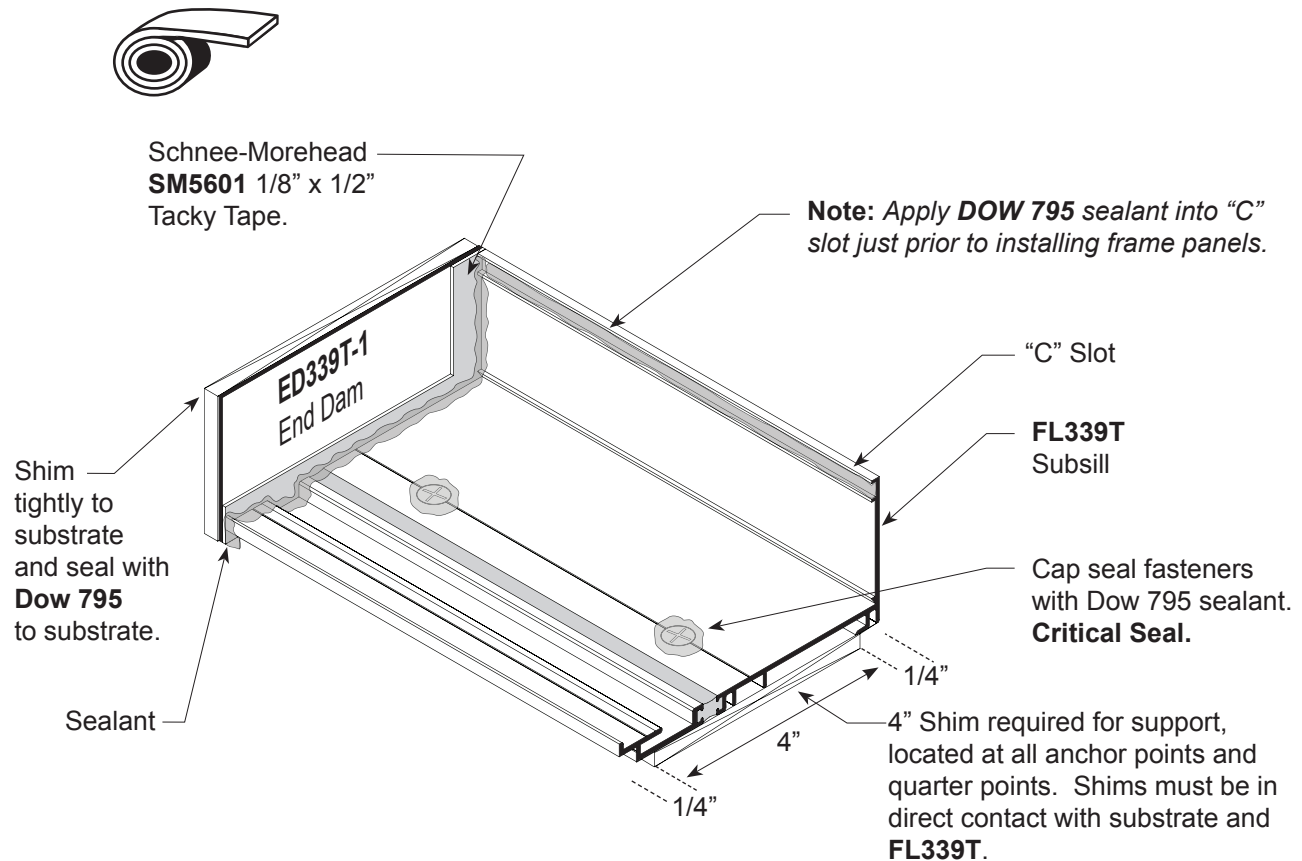


Apply **SM5601** Tacky sealant tape to **ED339-1** end dams and attach to each end of subsill with **AS31** fasteners at spline locations as shown above.

FRAME INSTALLATION

STEP 1.

Center subsill into opening allowing for a 1/4" minimum shim space at each end to ensure a good caulk joint.



Shim beneath subsill to be a minimum of 1/4". Attach subsill flashing to structure with non-structural fasteners using attachment holes shown on **Page 10**. Cap seal fastener heads as shown.

Wedge shims tightly between end dams and jamb substrate on each end prior to installing frame panels. These shims prevent the end dam from dislodging while frame panels are being installed. Completely seal end dams as shown.

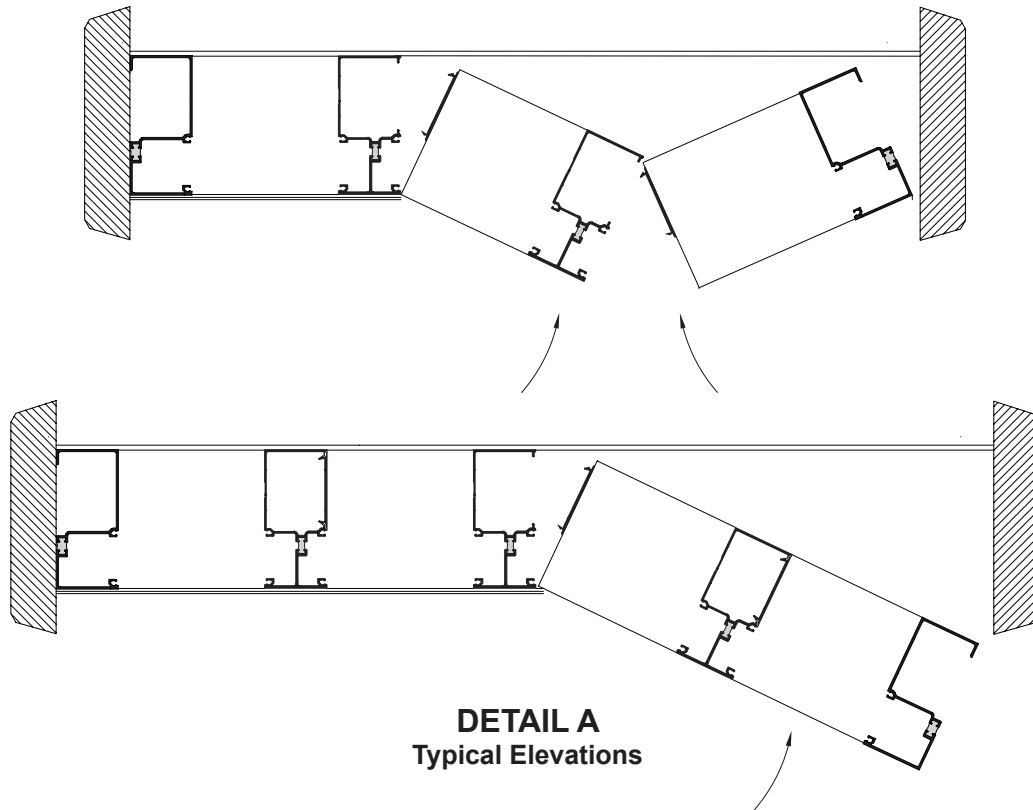
Run a continuous bead of **DOW 795** sealant along the full length of the subsill "C" slot as shown above just prior to installing frame panels. Do not allow sealant to harden prior to installing frame panels. Remove excess sealant after panels are installed.

Note: Remove all debris from subsill to prevent clogging weep holes prior to installing panels.

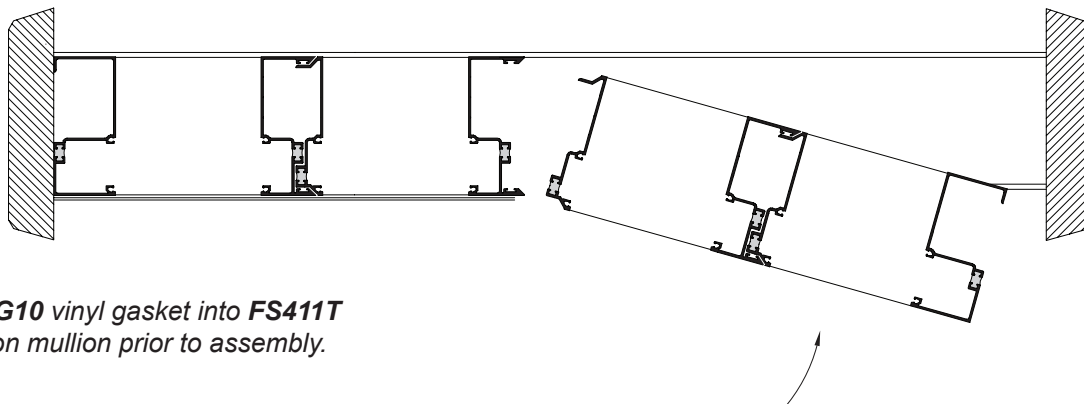
FRAME INSTALLATION

STEP 2.

Screw spline joinery allows for frames to be shop fabricated into panels and shipped to job site assembled. Each panel must have at least one vertical deep pocket for glazing. Arrange panels so that two shallow pockets never face each other. (Reference Page 12 of Frame Assembly.)



Expansion mullions should be used in elevations exceeding 24'-0" in width to allow for thermal movement. (See Page 23 for formula.)



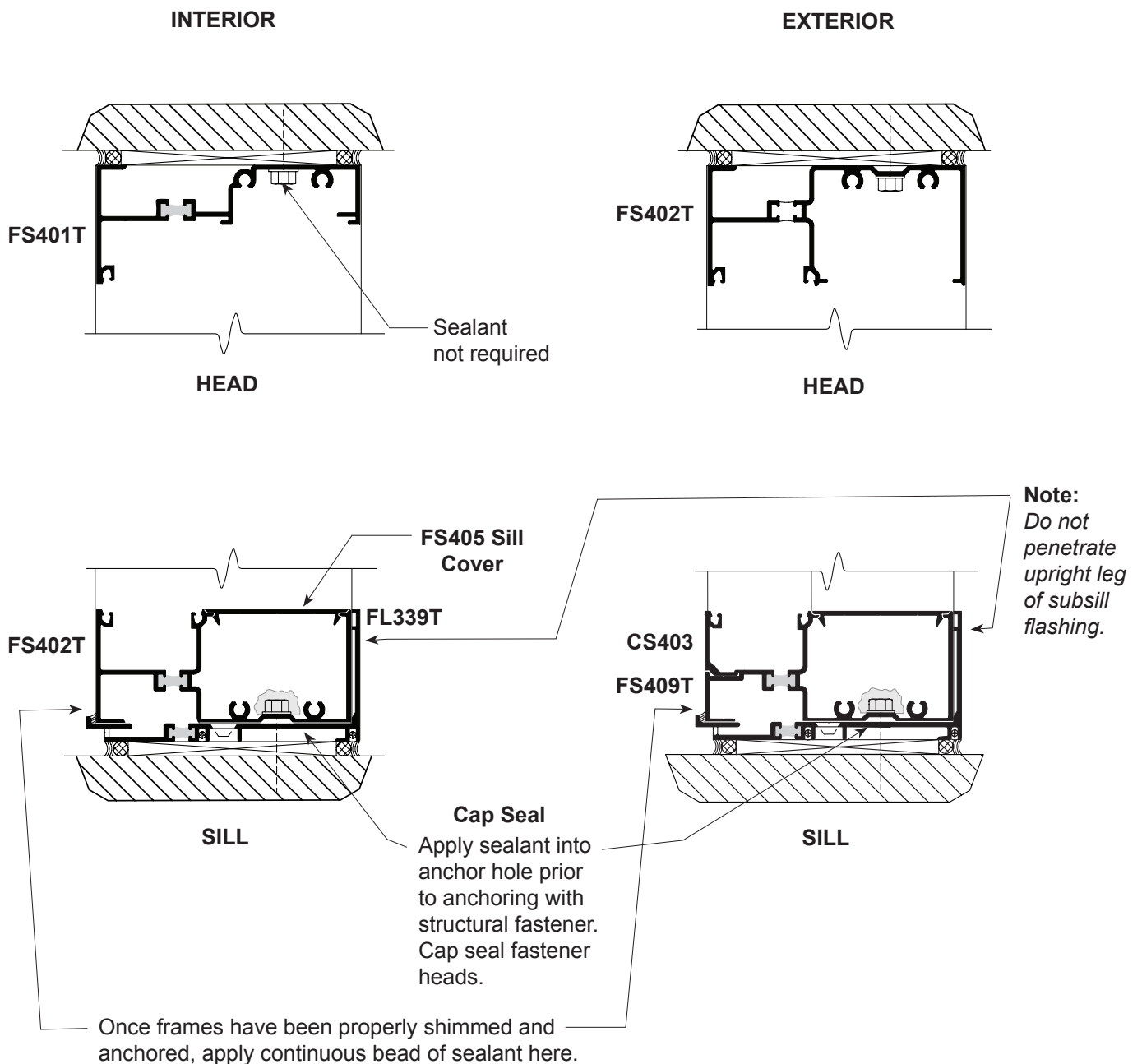
NOTE:

Install **VG10** vinyl gasket into **FS411T** expansion mullion prior to assembly.

FRAME INSTALLATION

STEP 3.

After all panels are installed, shim beneath subsill at fastener location. Match drill holes through sill into substrate. Remove dust from hole and apply **DOW 795** sealant as shown below into anchor holes prior to anchoring with structural fasteners. Cap seal fastener heads with **DOW 795**. Match drill holes through head into substrate, anchor and shim as shown. Install **FS405** sill cover after sealing fastener heads.

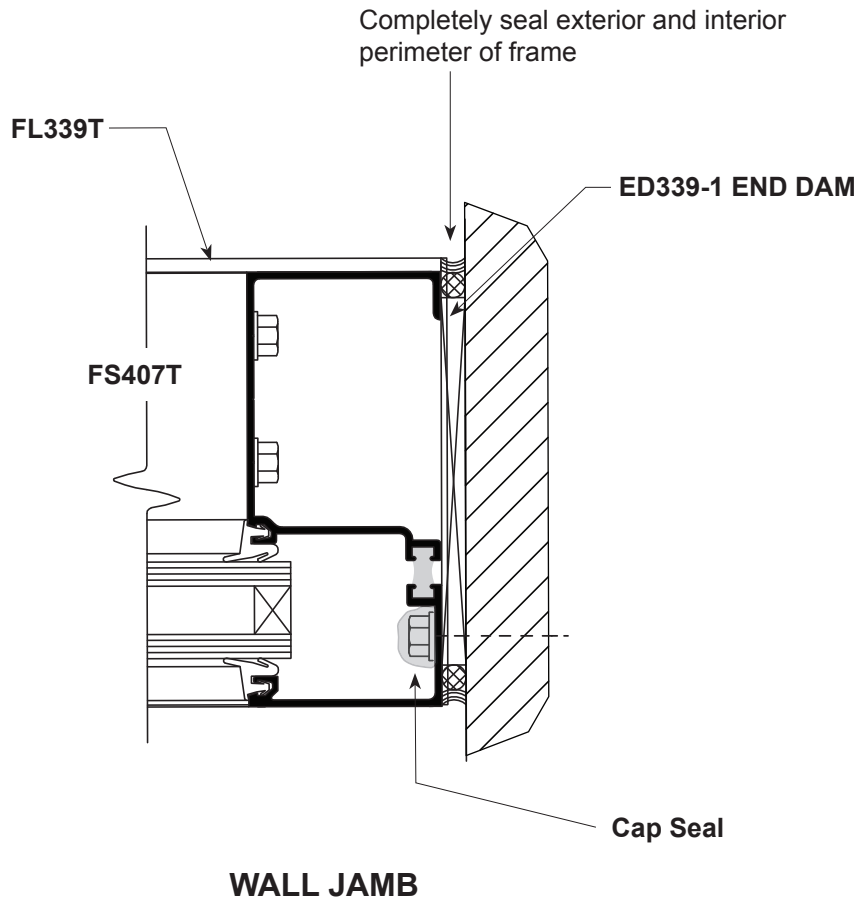


FRAME INSTALLATION

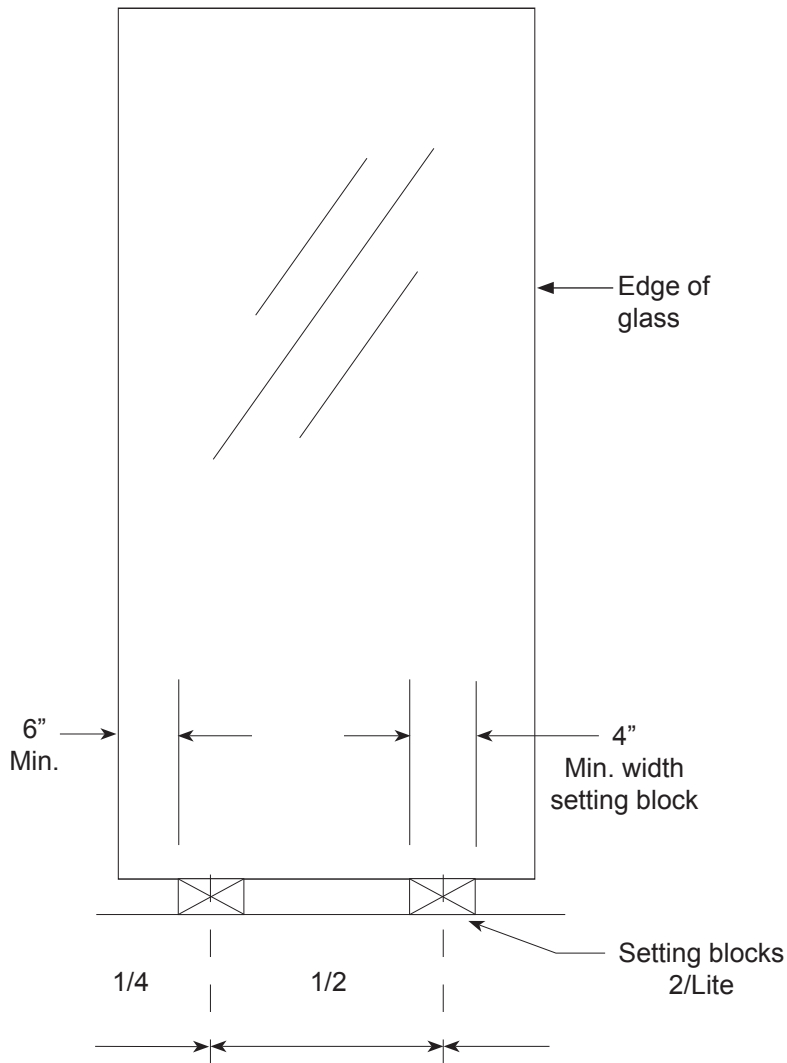
STEP 4.

In high wind load areas, it may be necessary to attach jamb to substrate as shown. When required, match drill holes in jamb to substrate. Anchor and shim as required. Cap seal fastener heads with **DOW 795**.

When all frames are secured to the opening, then completely seal exterior and interior perimeter with a continuous bead of **DOW 795** sealant.



PREPARATION OF FRAME OPENING FOR GLASS



STEP 1.

Prepare the frame opening by removing all dirt and debris from the glazing pockets and gasket reglets.

STEP 2 - SETTING BLOCKS.

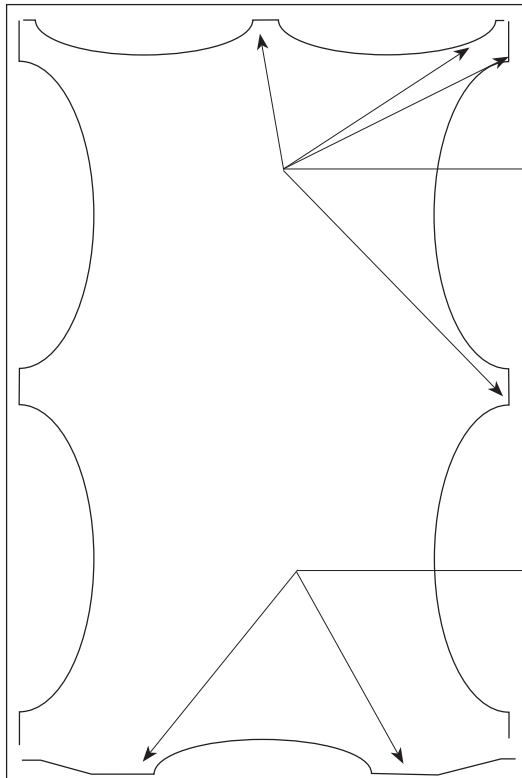
Glass should be set on two identical setting blocks having a Shore A Durometer of 85+ or -5. The preferred location is at the 1/4 points.

If the 1/4 point location causes excessive deflection of the intermediate horizontal, move the setting blocks equally towards the corners of the lite as far as the 1/8 points. The outer end of the block **CANNOT** be closer than 6" to the corner of the glass.

STEP 3 - DEFLECTION.

The intermediate horizontal must not exceed 1/8" and a door header is limited to 1/16". Check dead load charts (*Reference Page C1-3 of Architectural Manual*) for proper setting block locations.

INSTALLATION OF TOP LOAD GLAZING GASKETS



Start jamb and head gaskets at corners and center.

Start gaskets at setting blocks

Detail A



NG1 glazing gasket shown actual size.

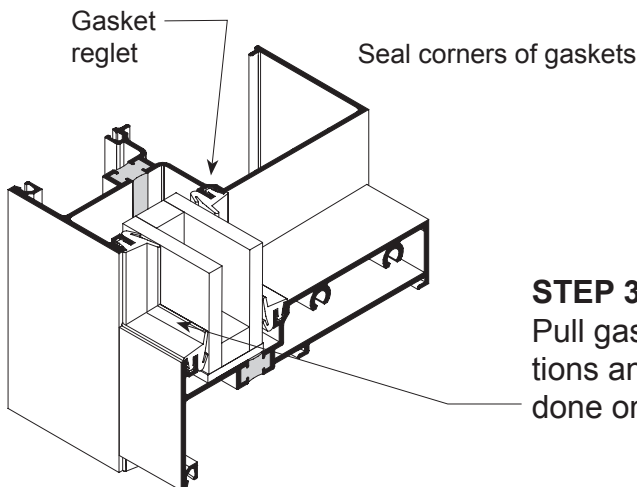
STEP 1.

Cut gaskets a minimum of 3/16" longer per foot than aluminum extrusion.

STEP 2.

Do not stretch gasket to make them fit.

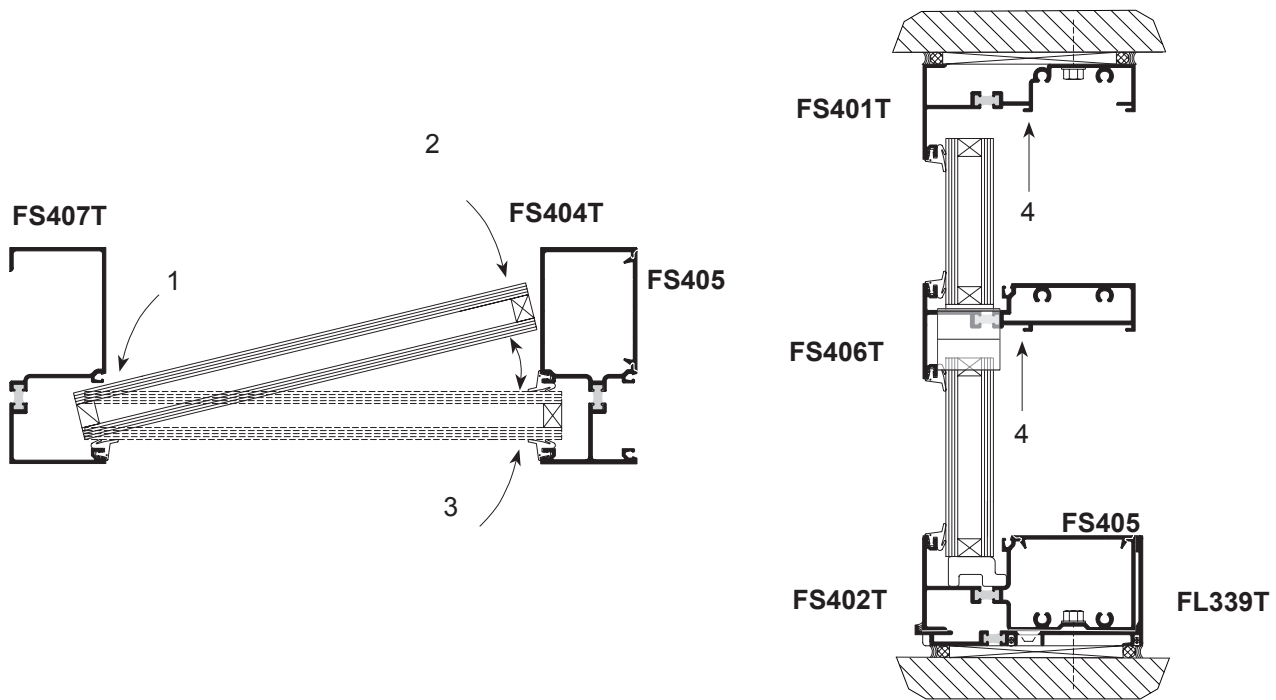
It is very important that gaskets are installed correctly as shown in **Detail "A"**, to prevent shrinkage at corners.



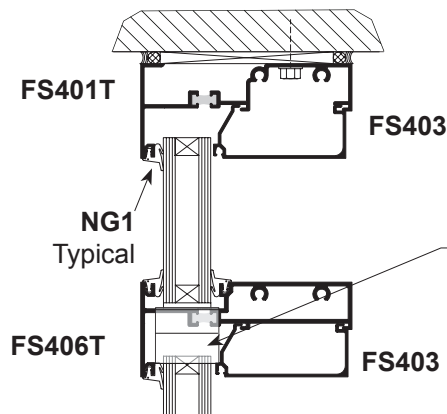
STEP 3.

Pull gaskets back 2" in both directions at corner intersections and seal with **DOW 995** silicone. This should be done on interior and exterior for best performance.

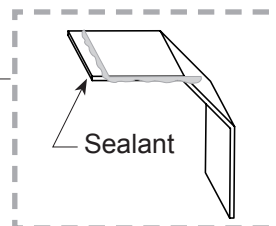
INTERIOR GLAZING



- STEP 1.** Install exterior gaskets. Vertical gasket runs through. *Reference Page 19.*
- STEP 2.** Check dead load charts and shop drawings for correct setting block locations for intermediate horizontals. Position **SB12** setting blocks in horizontal and **SB3** in sill members. Rest glass on setting blocks and press glass against installed gaskets.
- STEP 3.** Center glass into opening following the four step procedure and press glass against installed gaskets. *See below.*
- STEP 4.** Install **FS403** glass stop as shown below.
- STEP 5.** Install **NG1** interior gaskets as shown on **Page 19.**

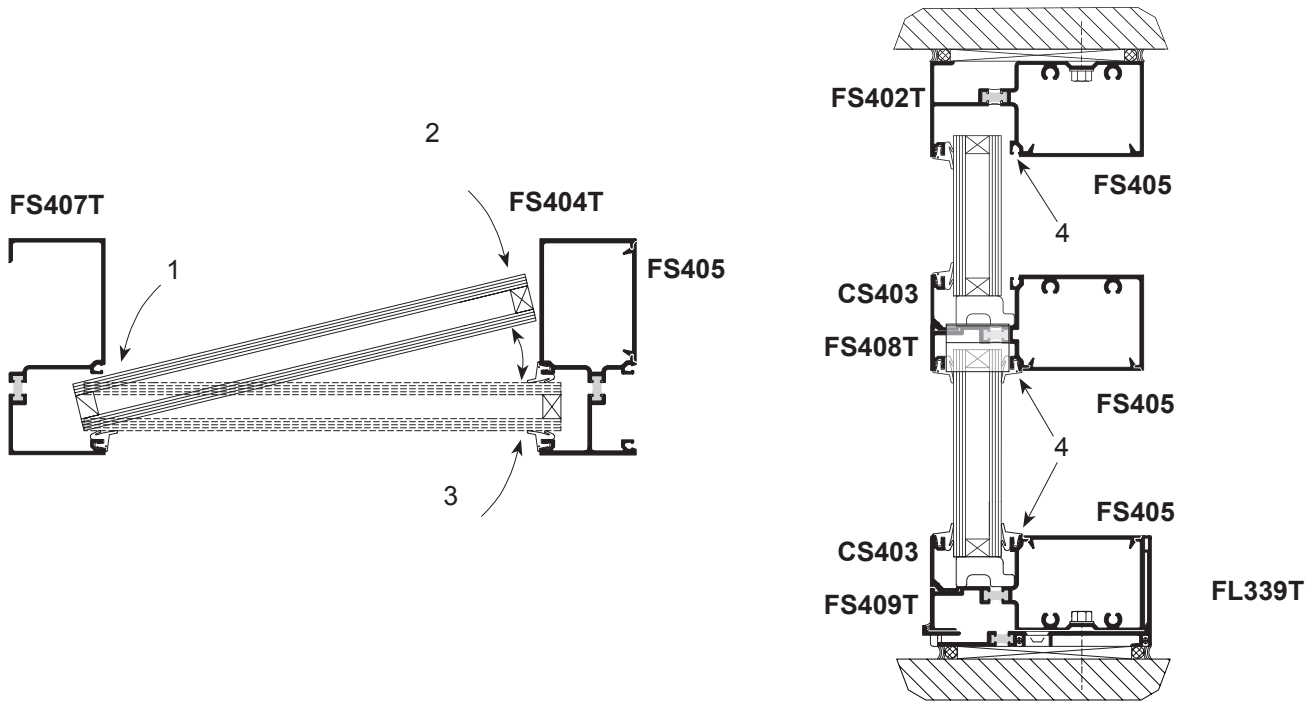


Glaze from bottom to top. Install **WD300-1** Water Diverter as shown before setting upper lite.

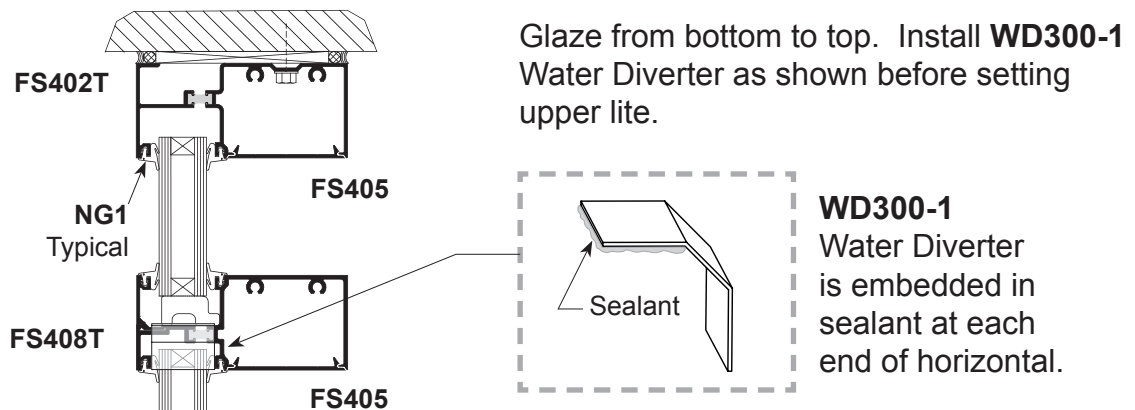


WD300-1 Water Diverter is embedded in sealant at each end of horizontal.

EXTERIOR GLAZING

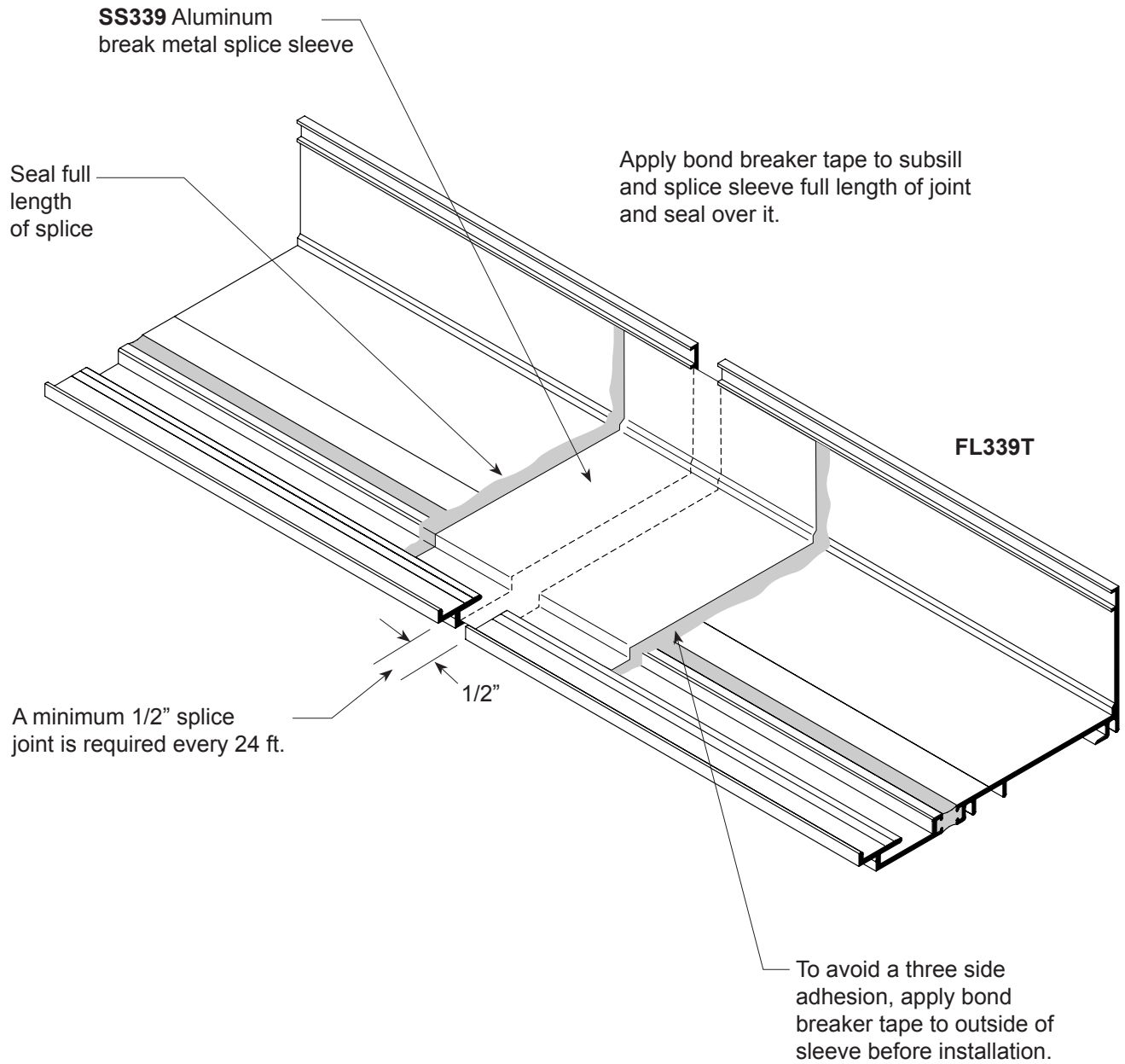


- STEP 1.** Install exterior gaskets. Vertical gasket runs through. *Reference Page 19.*
- STEP 2.** Check dead load charts and shop drawings for correct setting block locations for intermediate horizontals. Position **SB3** setting blocks in horizontal and sill members. Rest glass on setting blocks and press glass against installed gaskets.
- STEP 3.** Center glass into opening following the four step procedure and press glass against installed gaskets. *See below.*
- STEP 4.** Install **NG1** interior gaskets as shown on **Page 19.**

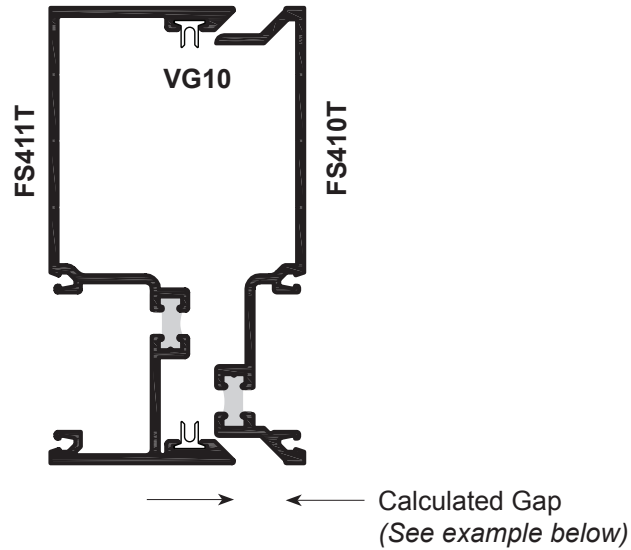


SPECIAL CONDITIONS SPLICE SLEEVE AT SUBSILL

STEP 1. Locate splice sleeves near center of D.L.O. at panel positioned over splice.



SPECIAL CONDITIONS EXPANSION MULLIONS



Calculated gap is determined by job conditions, project specifications, and temperature at the time of installation. Expansion mullions allow for 3/8" maximum movement.

EXPANSION GAP SIZE FORMULA = Length (") x F⁰ difference x .0000129

L = Length in inches, between center line of expansion mullion in elevation.

F⁰ = Specified Temperature Variation

.0000129 = Thermal Coefficient for Aluminum

EXAMPLE

Assume 100⁰ temperature variation specified and temperature at job site on day of installation is 60⁰.

1. 100⁰ - 60⁰ = 40⁰ temperature difference
2. Length of elevation between expansion mullions equals 20'-0" or 240"
3. 240" x 40⁰ x .0000129 = .124".
Therefore, set expansion mullion gap at .124" or 1/8".

PERIMETER FASTENER LOCATIONS



Light Mullion with Steel in Steel Substrate

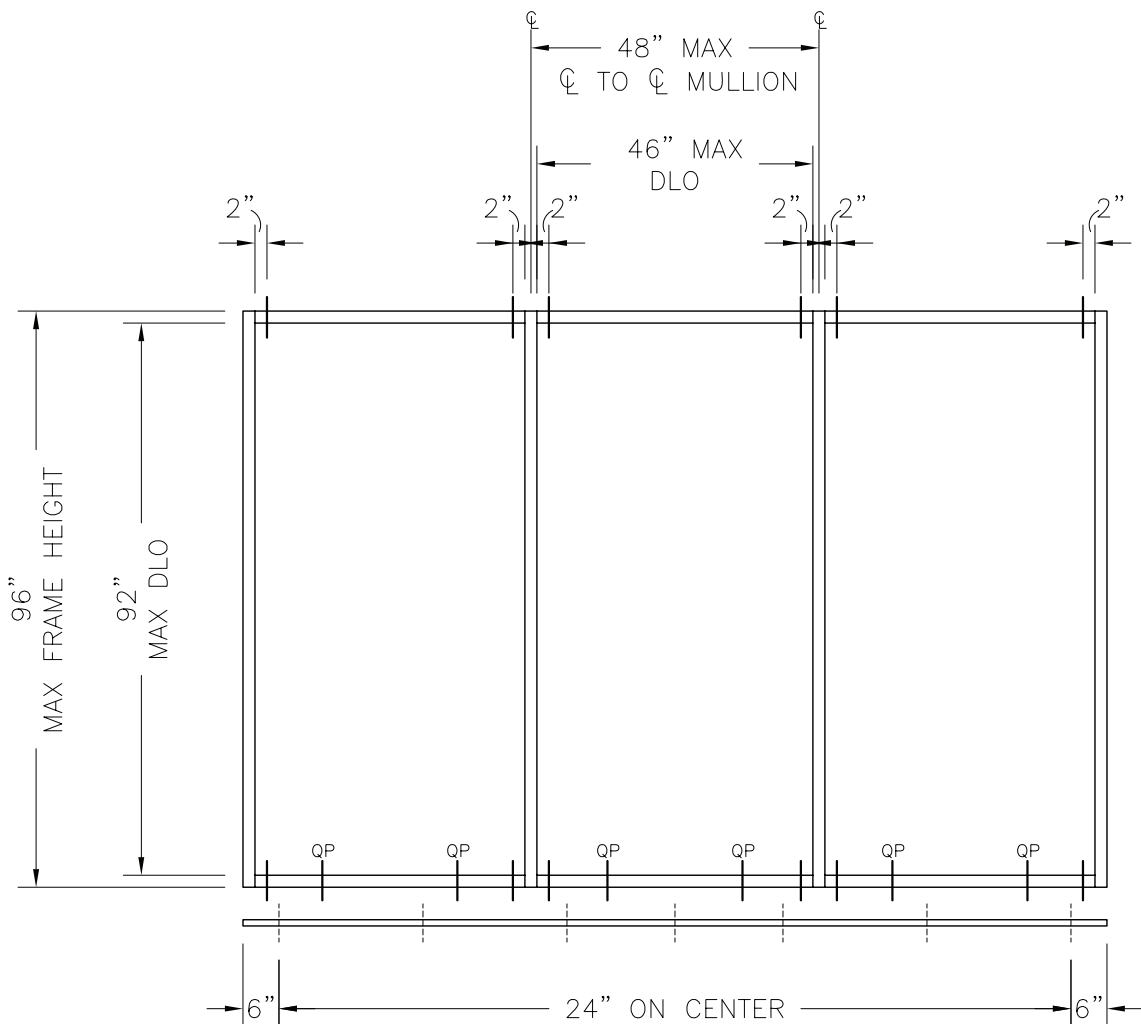
- SUB SILL FS339T**
 - 3/16" FHP TEK SCREW
 - 6" FROM EACH END AND 24" ON CENTER
- SILL FS402T INSIDE SET AND FS409T OUTSIDE SET**
 - 1/4" HEX HEAD TEK SCREW
 - (1) EACH 2" FROM MULLION EDGE AND (1) EACH AT QUARTER POINTS (EXAMPLE 46" DLO DIVIDED BY 4 = 11.50") ADDITIONAL ANCHOR MUST BE PLACED 11-1/2" FROM MULLION EDGE
- HEAD FS401T**
 - 1/4" HEX HEAD TEK SCREW
 - (1) EACH 2" FROM MULLION EDGE

MAXIMUM HEIGHT = 96"
MAXIMUM DLO = 46"
MAXIMUM PSF = +35/-35

Consult factory for locations if parameters above are exceeded in any direction. (Height, DLO, or PSF)

LEGEND

-  HEAD AND SILL FASTENERS
-  NONE STRUCTURAL SUBSILL FASTENERS



SCALE: 3/8"=1'-0"

PERIMETER FASTENER LOCATIONS

Split Mullion in Steel Substrate

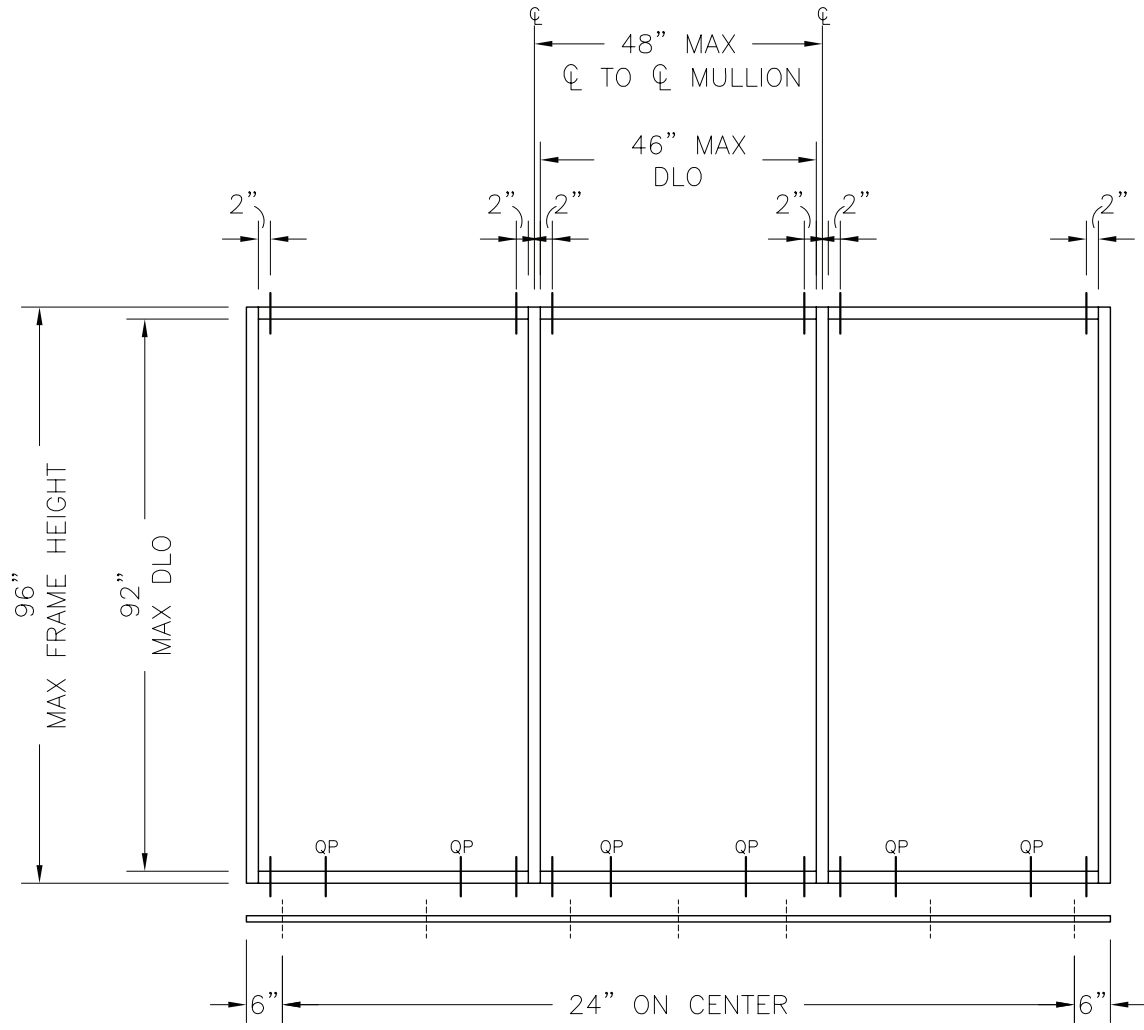
- SUB SILL FS339T**
 - 3/16" FHP TEK SCREW
 - 6" FROM EACH END AND 24" ON CENTER
- SILL FS402T INSIDE SET AND FS409T OUTSIDE SET**
 - 1/4" HEX HEAD TEK SCREW
 - (1) EACH 2" FROM MULLION EDGE AND (1) EACH AT QUARTER POINTS (EXAMPLE 46" DLO DIVIDED BY 4 = 11.50") ADDITIONAL ANCHOR MUST BE PLACED 11-1/2" FROM MULLION EDGE
- HEAD FS401T**
 - 1/4" HEX HEAD TEK SCREW
 - (1) EACH 2" FROM MULLION EDGE

MAXIMUM HEIGHT = 96"
MAXIMUM DLO = 46"
MAXIMUM PSF = +55/-55

Consult factory for locations if parameters above are exceeded in any direction. (Height, DLO, or PSF)

LEGEND

	HEAD AND SILL FASTENERS
	NONE STRUCTURAL SUBSILL FASTENERS



SCALE: 3/8"=1'-0"

PERIMETER FASTENER LOCATIONS

Light Mullion with Steel in Concrete (2500 PSI)

- SUB SILL FS339T**

 - 3/16" FHP TAPCON 1" EMBEDMENT
 - 6" FROM EACH END AND 24" ON CENTER
- SILL FS402T INSIDE SET AND FS409T OUTSIDE SET**

 - 1/4" TAPCON WITH 1-3/4" MINIMUM EMBEDMENT
 - (1) EACH 2" FROM MULLION EDGE AND (1) EACH AT QUARTER POINTS (EXAMPLE 46" DLO DIVIDED BY 4 = 11.50") ADDITIONAL ANCHOR MUST BE PLACED 11-1/2" FROM MULLION EDGE
- HEAD FS401T**

 - 1/4" HEX HEAD TAPCON WITH 1-3/4" MINIMUM EMBEDMENT
 - (1) EACH 2" FROM MULLION EDGE

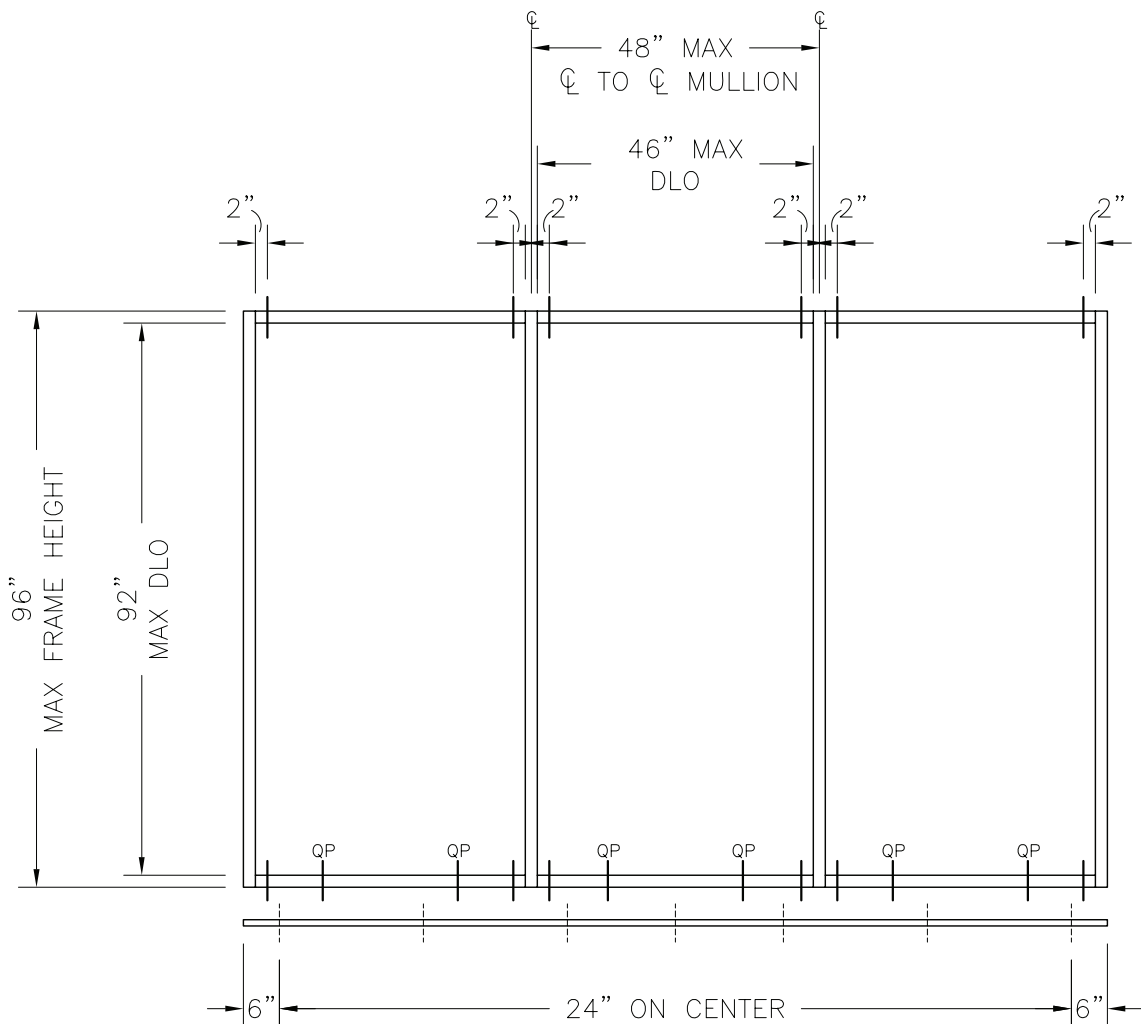
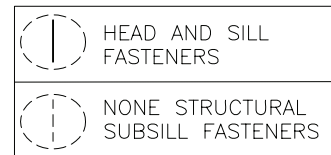
MAXIMUM HEIGHT = 96"

MAXIMUM DLO = 46"

MAXIMUM PSF = +35/-35

Consult factory for locations if parameters above are exceeded in any direction. (Height, DLO, or PSF)

LEGEND



SCALE: 3/8"=1'-0"

PERIMETER FASTENER LOCATIONS

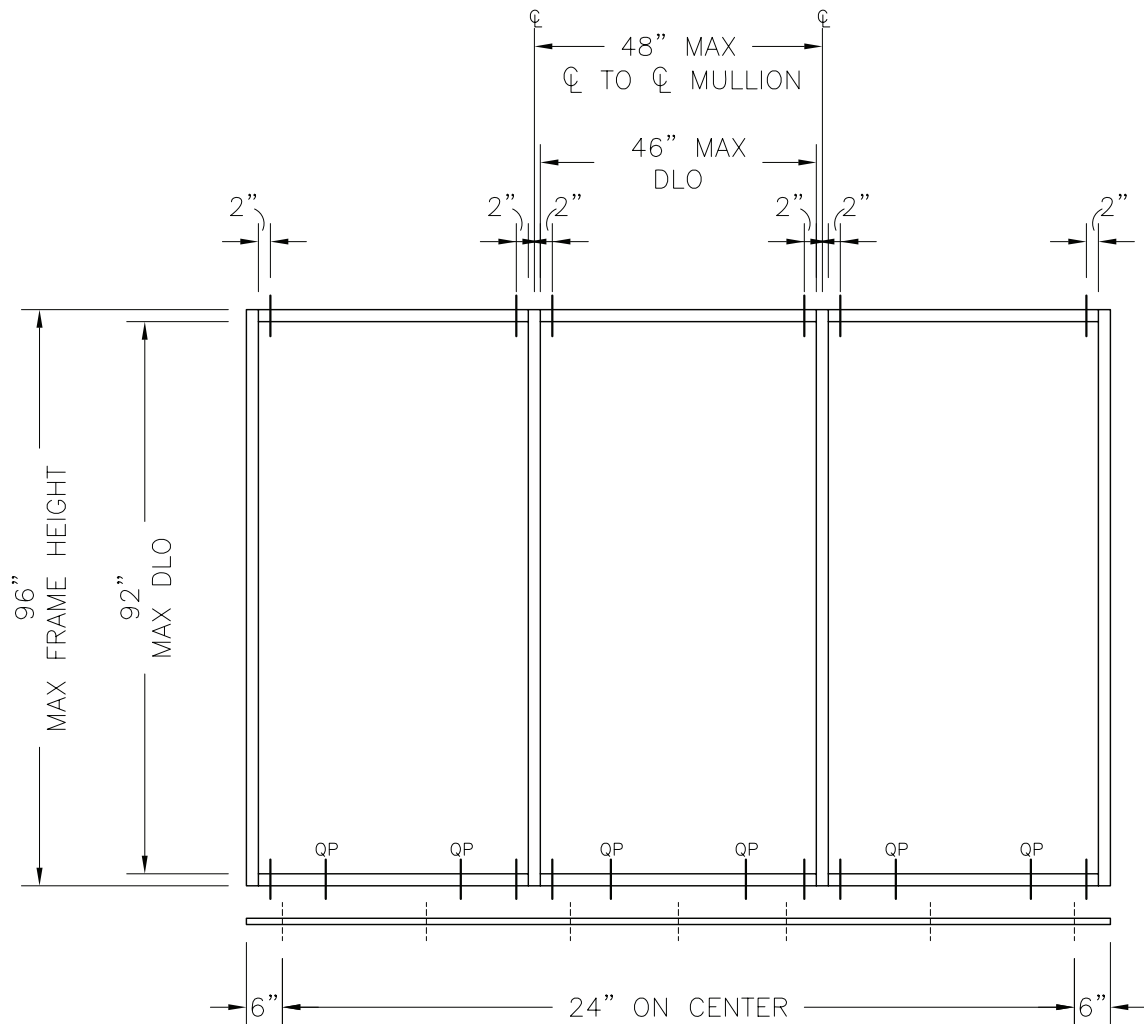
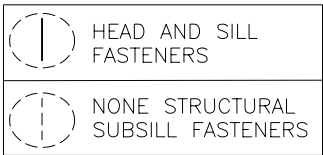
Split Mullion in Concrete (2500 PSI)

- SUB SILL FS339T**
 - 3/16" FHP TAPCON 1" EMBEDMENT
 - 6" FROM EACH END AND 24" ON CENTER
- SILL FS402T INSIDE SET AND FS409T OUTSIDE SET**
 - 1/4" TAPCON WITH 1-3/4" MINIMUM EMBEDMENT
 (1) EACH 2" FROM MULLION EDGE AND (1) EACH AT QUARTER POINTS (EXAMPLE 46" DLO DIVIDED BY 4 = 11.50") ADDITIONAL ANCHOR MUST BE PLACED 11-1/2" FROM MULLION EDGE
- HEAD FS401T**
 - 1/4" HEX HEAD TAPCON WITH 1-3/4" MINIMUM EMBEDMENT
 (1) EACH 2" FROM MULLION EDGE

MAXIMUM HEIGHT = 96"
MAXIMUM DLO = 46"
MAXIMUM PSF = +55/-55

Consult factory for locations if parameters above are exceeded in any direction. (Height, DLO, or PSF)

LEGEND



SCALE: 3/8"=1'-0"

PERIMETER FASTENER LOCATIONS

Light Mullion with Steel in Wood Substrate

- SUB SILL FS339T**

 - 3/16" FHP WOOD SCREW
 - 6" FROM EACH END AND 24" ON CENTER
- SILL FS402T INSIDE SET AND FS409T OUTSIDE SET**

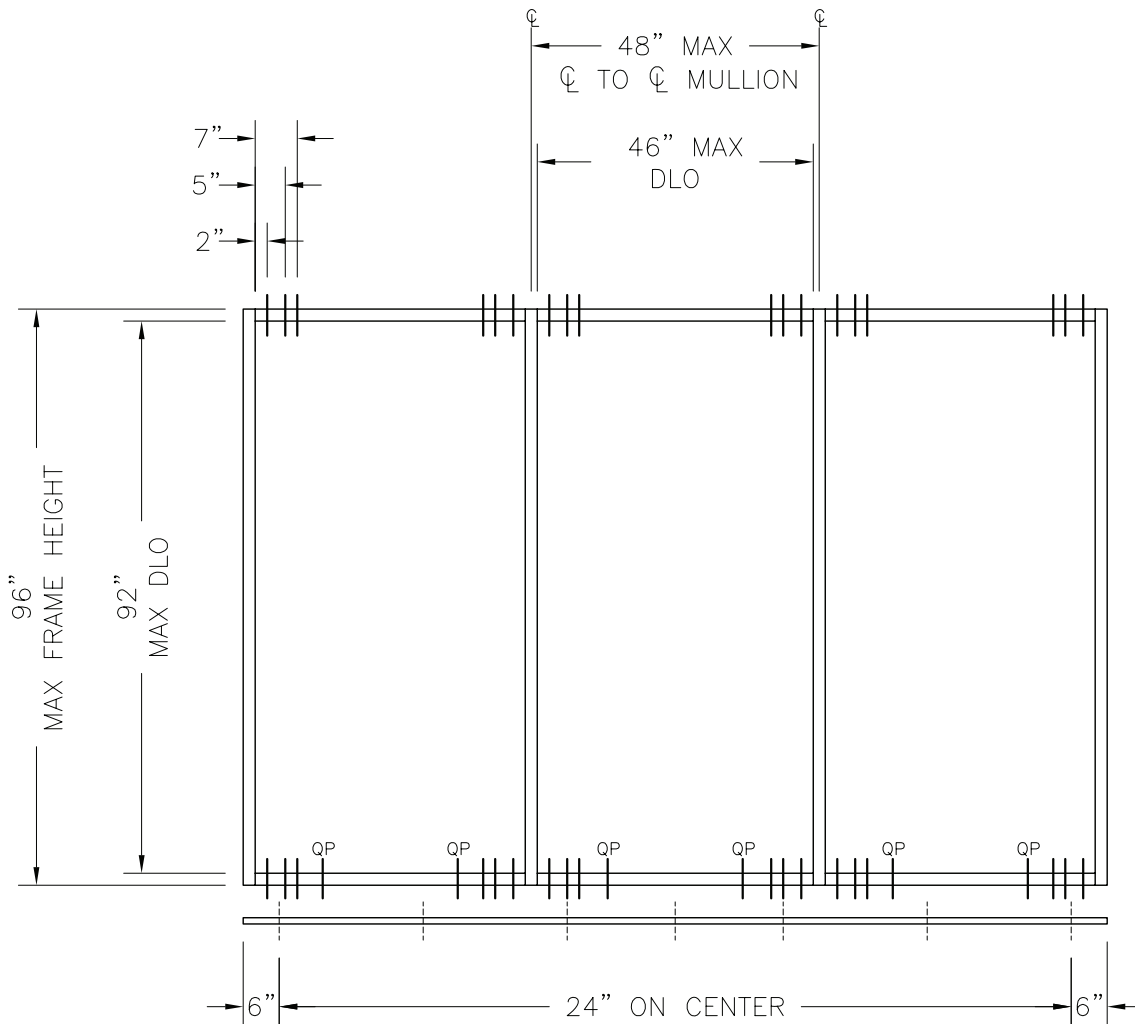
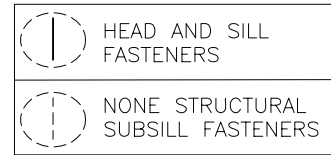
 - 1/4" HEX HEAD LAG BOLT WITH 2" MINIMUM EMBEDMENT
 - (3) EACH 2"-5"-7" FROM MULLION EDGE AND (1) EACH AT QUARTER POINTS (EXAMPLE 46" DLO DIVIDED BY 4 = 11.50") ADDITIONAL ANCHOR MUST BE PLACED 11-1/2" FROM MULLION EDGE
- HEAD FS401T**

 - 1/4" HEX HEAD LAG BOLT WITH 2" MINIMUM EMBEDMENT
 - (3) EACH 2"-5"-7" FROM MULLION EDGE

MAXIMUM HEIGHT = 96"
MAXIMUM DLO = 46"
MAXIMUM PSF = +35/-35

Consult factory for locations if parameters above are exceeded in any direction. (Height, DLO, or PSF)

LEGEND



SCALE: 3/8"=1'-0"

PERIMETER FASTENER LOCATIONS

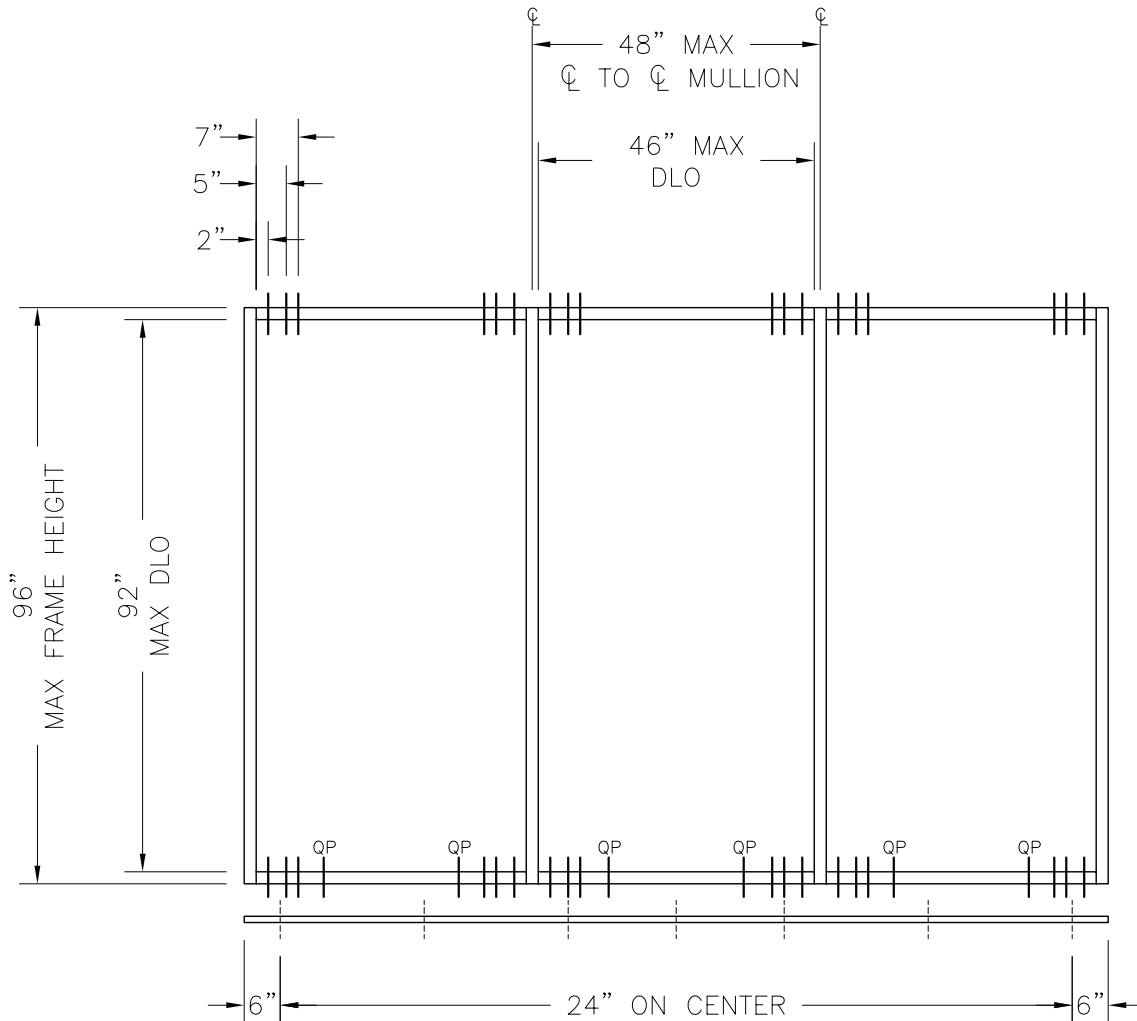
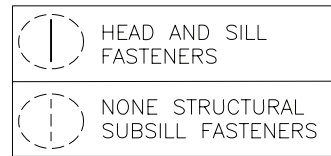
Split Mullion in Wood Substrate

- SUB SILL FS339T**
 - 3/16" FHP WOOD SCREW
 - 6" FROM EACH END AND 24" ON CENTER
- SILL FS402T INSIDE SET AND FS409T OUTSIDE SET**
 - 1/4" HEX HEAD LAG BOLT WITH 2" MINIMUM EMBEDMENT
 - (3) EACH 2"-5"-7" FROM MULLION EDGE AND (1) EACH AT QUARTER POINTS (EXAMPLE 46" DLO DIVIDED BY 4 = 11.50") ADDITIONAL ANCHOR MUST BE PLACED 11-1/2" FROM MULLION EDGE
- HEAD FS401T**
 - 1/4" HEX HEAD LAG BOLT WITH 2" MINIMUM EMBEDMENT
 - (3) EACH 2"-5"-7" FROM MULLION EDGE

MAXIMUM HEIGHT = 96"
MAXIMUM DLO = 46"
MAXIMUM PSF = +55/-55

Consult factory for locations if parameters above are exceeded in any direction. (Height, DLO, or PSF)

LEGEND



SCALE: 3/8"=1'-0"