



B

STOREFRONTS

- Series 400/450
Center Glaze
 - Series 451/IT451
Center Glaze
 - Flush Front™
 - Accessory Hardware
-

Toll Free Phone Service
(800) 262-5151

Toll Free Fax Service
(866) 262-3299

U.S. and Canada

GRL[®]
U.S. ALUMINUM

usalum.com



Round Rock Premium Outlets
Round Rock, TX

U.S. Aluminum knows that fabrication and installation labor costs have always been a decisive factor in selecting framing systems for storefront projects. We offer cost efficient and versatile systems with clean lines and superb performance characteristics. All series may be glazed from the interior or exterior using a top load E.P.D.M. glazing gasket, and all series are compatible with most U.S. Aluminum Entrance Doors.

U.S. Aluminum Storefront Systems can be custom modified to the specific requirements of your project. Our product specialists will work with you to ensure the storefront system you order from us will meet your needs and the approval of your clients.

SYSTEM

PAGES

- **Series 400/450 Center Glaze**01-B1 thru 29-B1
- **Series 451/IT451 Center Glaze**30-B1 thru 56-B1
- **Flush Front™**01-B2 thru 44-B2
- **Accessory Hardware**01-B3 thru 04-B3

For information or other assistance, use our toll free phone
or fax service numbers from anywhere in the U.S. or Canada

Toll Free Phone (800) 262-5151

Toll Free Fax (866) 262-3299

Contact us through our web site at usalum.com

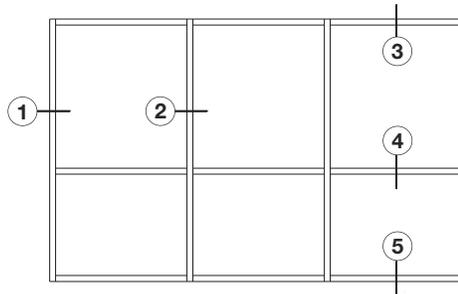
STOREFRONTS

Typical Details

Center Glazed • Series 451

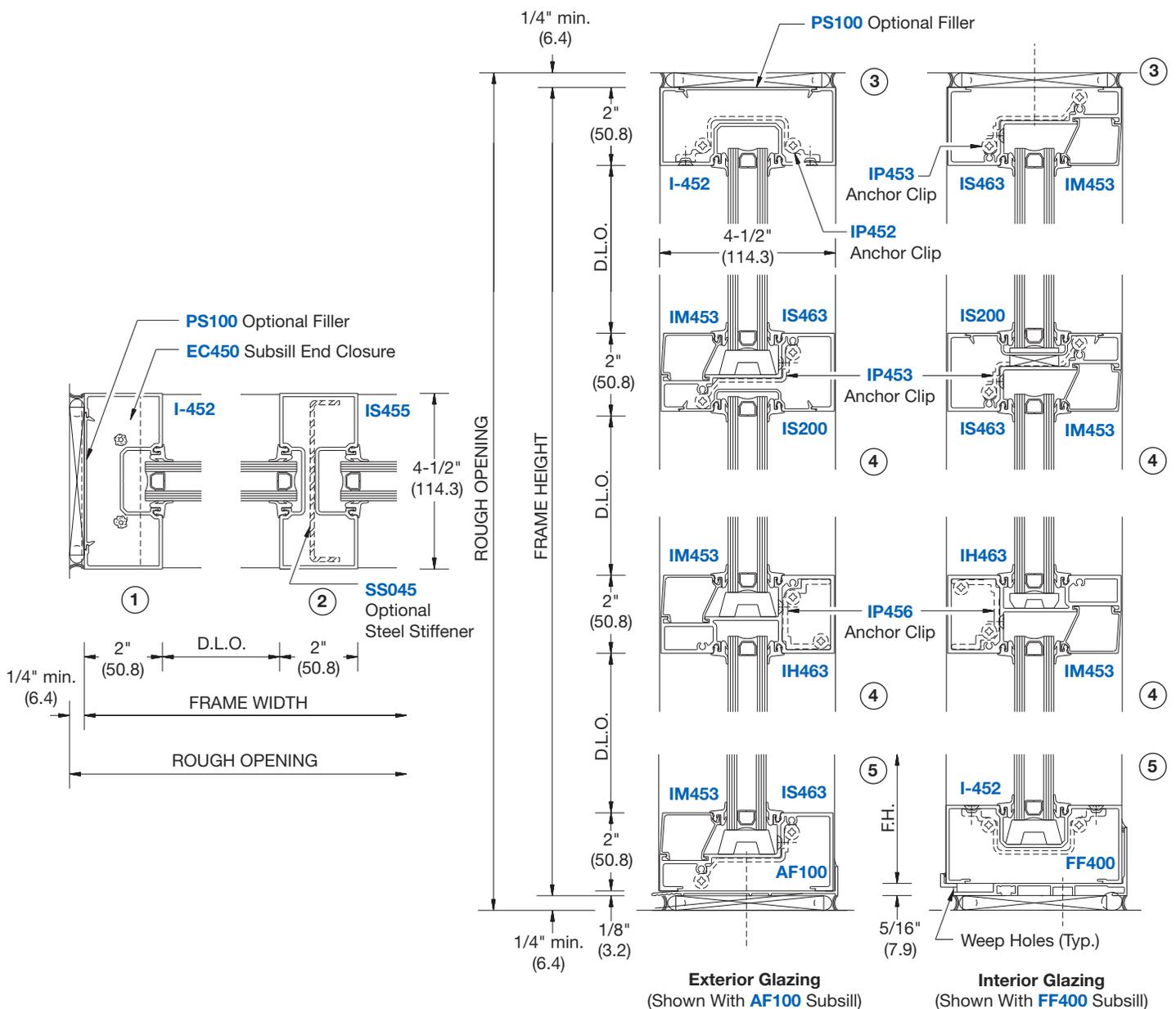
ANCHOR CLIP JOINERY FOR 1" (25) GLAZING

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



TYPICAL ELEVATION

NOTE: NP225 Glazing Gaskets are used on both sides of 1" (25) glazing. (Typical)



STOREFRONTS

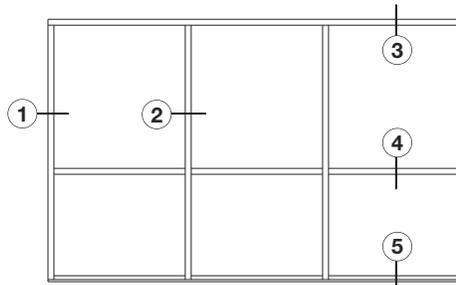
Typical Details

Center Glazed • Series 451-S

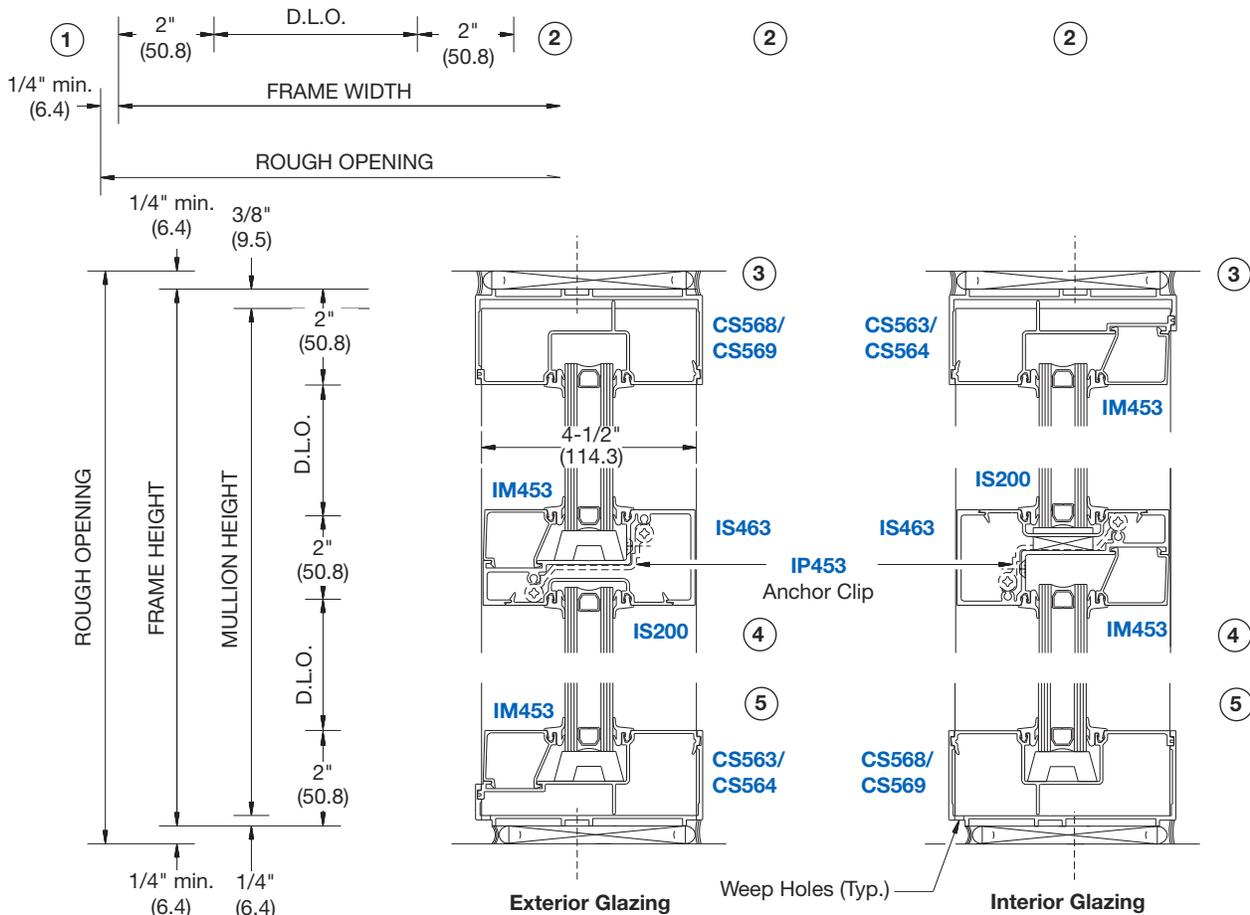
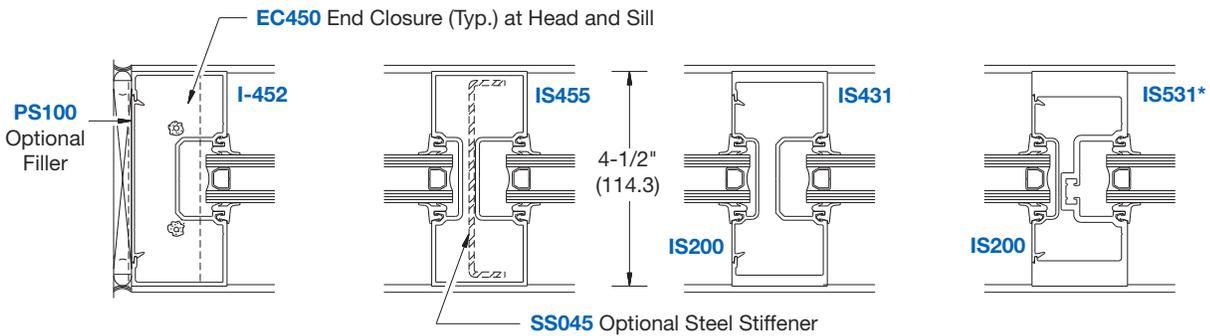
STACKING INSTALLATION FOR 1" (25) GLAZING

NOTE: Part numbers shown are available in 24' (7.3 m) stock lengths.
*IS531 Available in 12' (3.6 m) only.
Visit usalum.com for more information.

NOTE: NP225 Glazing Gaskets are used on both sides of 1" (25) glazing. (Typical)



TYPICAL ELEVATION



NOT TO SCALE

Online usalum.com By Phone (800) 262-5151
Online crlaurence.com By Phone (800) 421-6144

STOREFRONTS

Typical Details

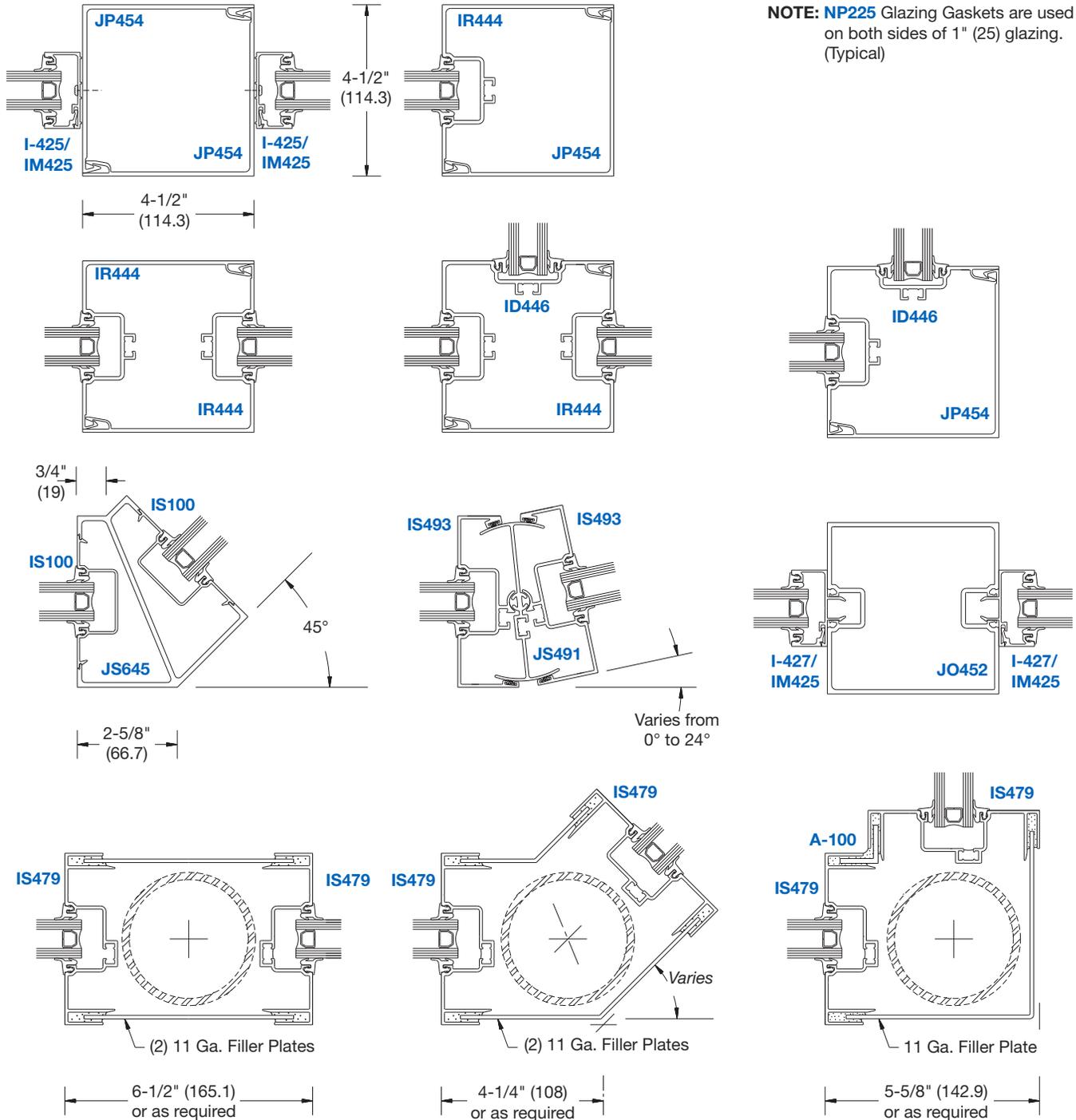
Center Glazed

- Series 451
- Series 451-S

VERTICAL CORNER CONDITIONS AND POST COVERS FOR 1" (25) GLAZING

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

NOTE: NP225 Glazing Gaskets are used on both sides of 1" (25) glazing. (Typical)



NOT TO SCALE

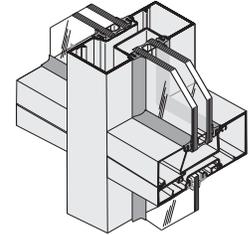
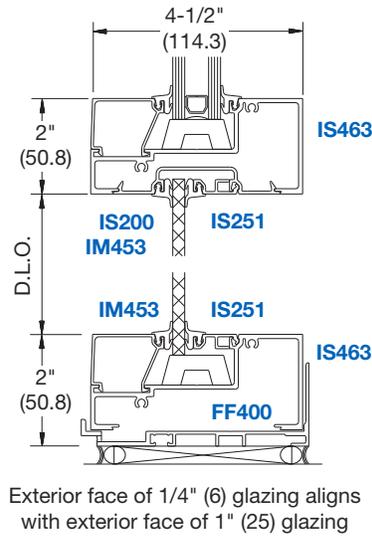
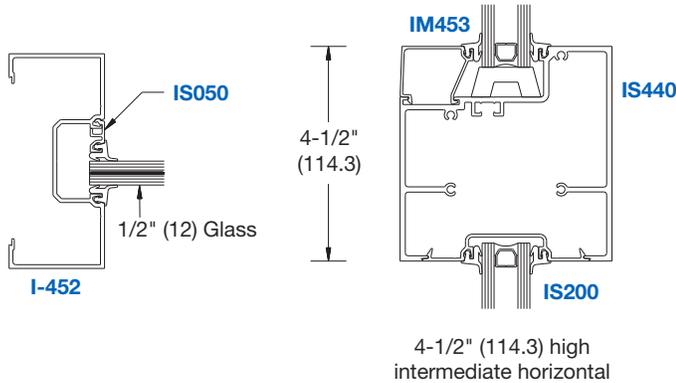
STOREFRONTS

Typical Details

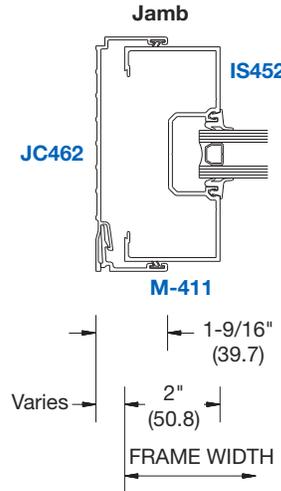
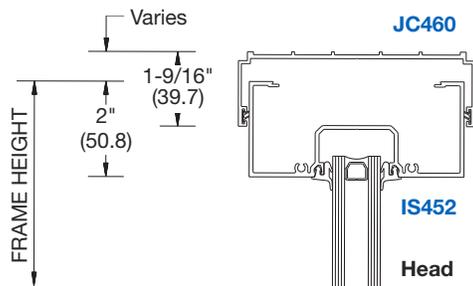
SPECIAL GLASS ADAPTORS AND TRANSITION GLAZING USING 1/4" (6), 1/2" (12), AND 1" (25) GLAZING

Center Glazed
 • Series 451
 • Series 451-S

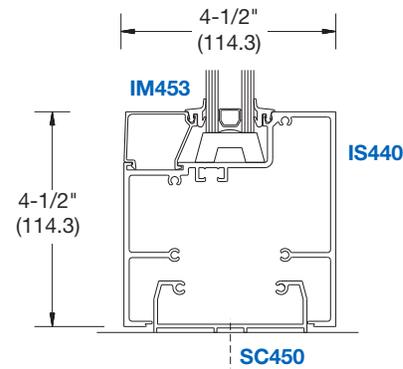
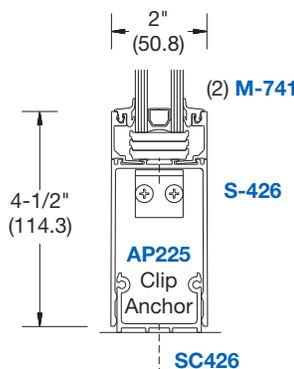
NOTE: Part numbers shown are available in 24' (7.3 m) stock lengths. Visit usalum.com for more information.



COMPENSATING CHANNELS (FOR HEAD AND JAMBS)



BULKHEADS (IN LIEU OF STANDARD SILLS)



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 Online crlaurence.com By Phone (800) 421-6144

STOREFRONTS

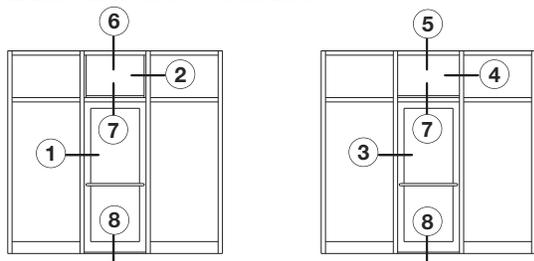
Typical Details

DOOR FRAMING

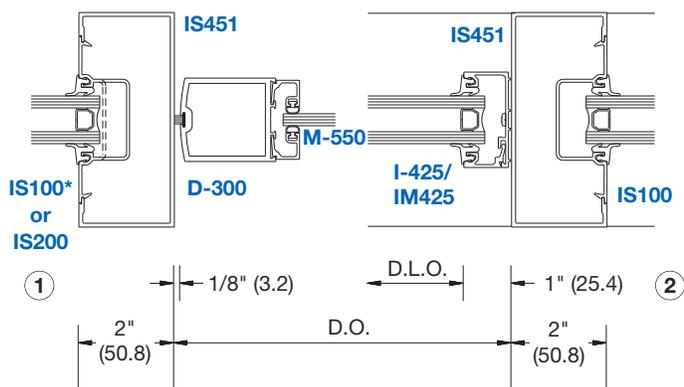
NOTE: Door Frames are available in stock to accommodate 36" x 84" (914 x 2134) and 72" x 84" (1829 x 2134) door openings. Visit usalum.com for more information.

Center Glazed

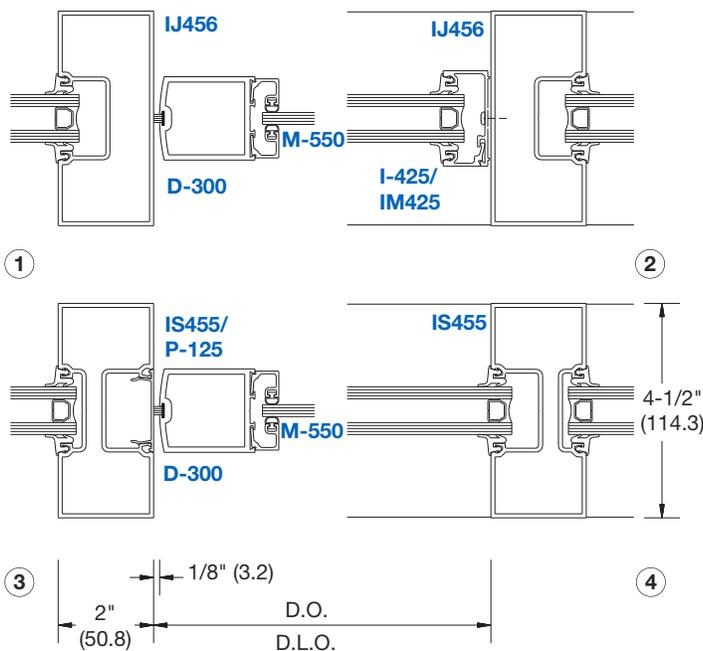
- Series 451
- Series 451-S



CENTER HUNG DOOR

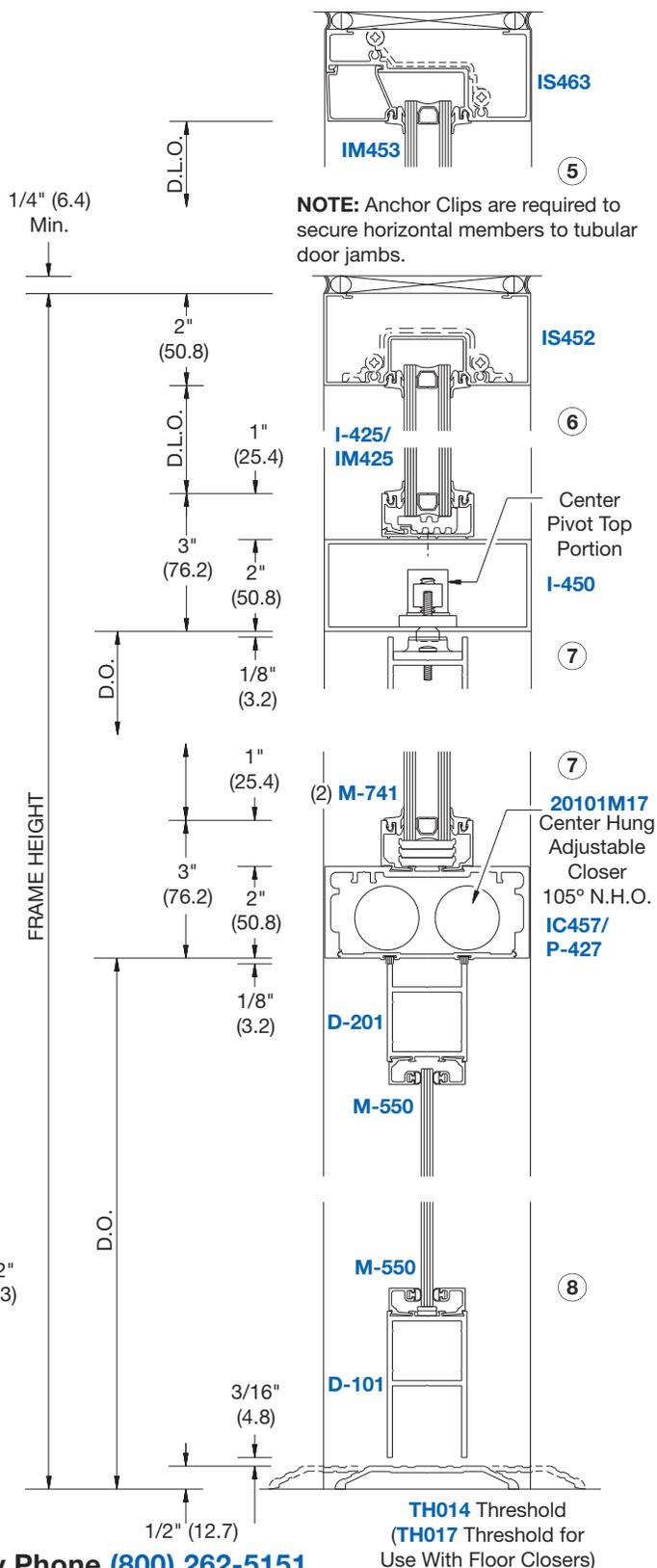


***NOTE:** IS100 Insert is required to install glass between doors



NOT TO SCALE

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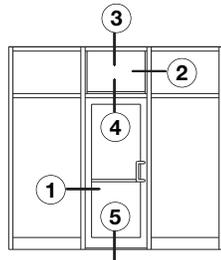
NOTE: Anchor Clips are required to secure horizontal members to tubular door jambs.

STOREFRONTS

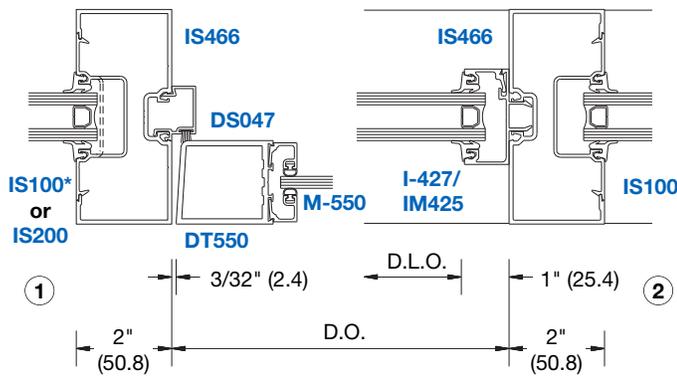
Typical Details

DOOR FRAMING

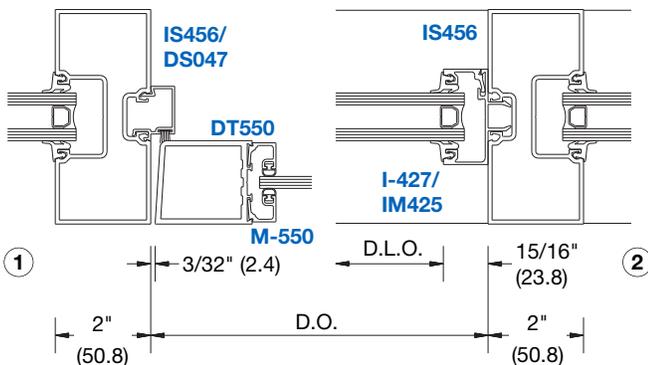
NOTE: Door Frames are available in stock to accommodate 36" x 84" (914 x 2134) and 72" x 84" (1829 x 2134) door openings. Visit usalum.com for more information.



OFFSET HUNG DOORS



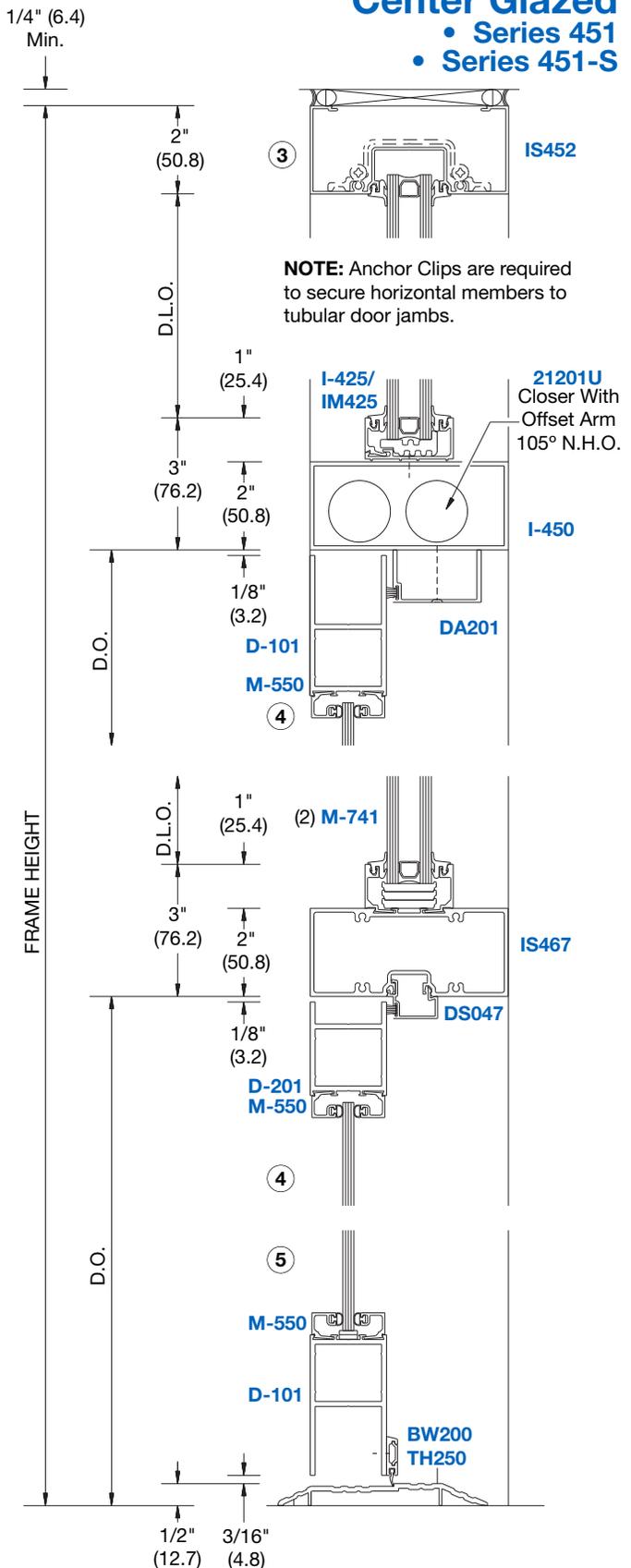
*NOTE: IS100 Insert is required to install glass between doors



NOT TO SCALE

Center Glazed

- Series 451
- Series 451-S



NOTE: Anchor Clips are required to secure horizontal members to tubular door jambs.

STOREFRONTS

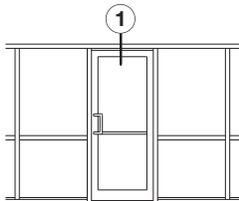
Typical Details

DOOR FRAMING SPECIAL CONDITIONS

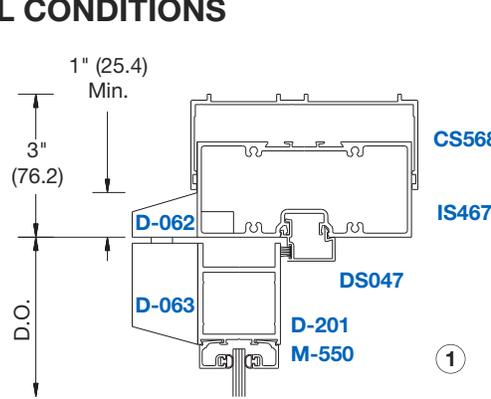
NOTE: Door Frames are available in stock to accommodate 36" x 84" (914 x 2134) and 72" x 84" (1829 x 2134) door openings. Visit usalum.com for more information.

Center Glazed

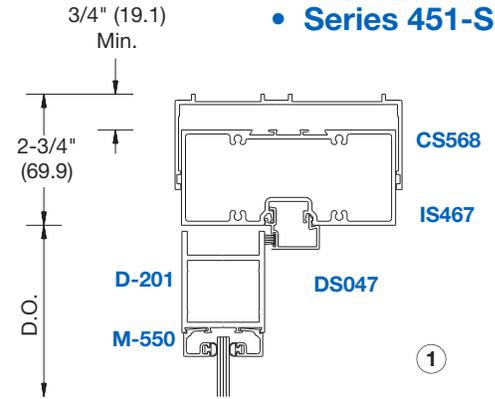
- Series 451
- Series 451-S



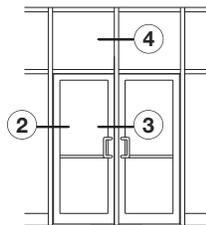
Series 451-S Door Header



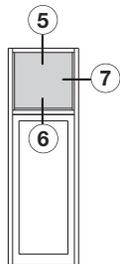
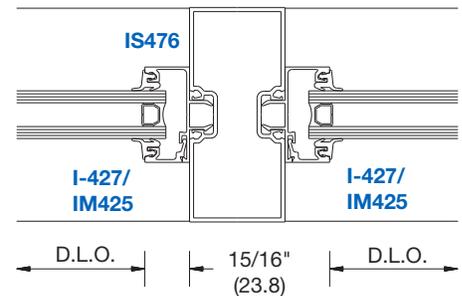
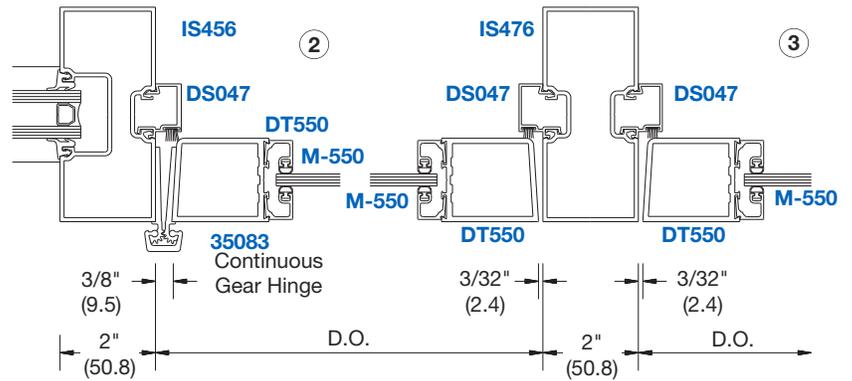
Offset Pivoted Door



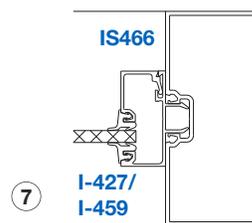
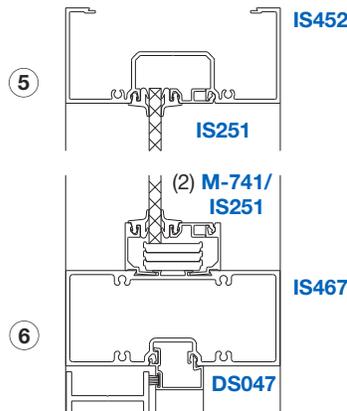
Butt Hung Door



Optional Hinge and Intermediate Door Jamb



Spandrel Transom



NOT TO SCALE

STOREFRONTS

Windload Charts

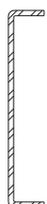
Center Glazed

- Series 451
- Series 451-S

STANDARD WALL VERTICAL MULLIONS FOR 1" (25) GLAZING

Deflection criteria to be in accordance with AAMA TIR-A11 - L/175 or L/240 + 1/4" (6.4 mm) for spans greater than 13'-6" (4.1 m) but less than 40'-0" (12.2 m). Codes and specifications may vary. No single lite of glass shall deflect more than 3/4" (19 mm). Glass is not considered as contributing to resistance of deflection. Aluminum alloy 6063-T6 allowable stress for windload is 15,200 psi. (89 MPa), and steel reinforcing allowable stress for windload is 21,600 psi. (183 MPa).

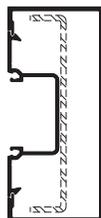
These charts include unbraced length analysis and are based on at least one horizontal being placed at the midpoint of the span. For other applications, please contact U.S. Aluminum Technical Sales at (800) 262-5151, or visit our web site at usalum.com.



SS045

Steel Stiffener
 $I = 1.122 (46.70 \times 10^4)$
 $S = .544 (8.92 \times 10^3)$

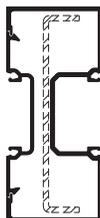
SS045 Fits all Verticals except IS431, IS531, and IS470/IS479



IS451/IS100

$I = 2.861 (119.08 \times 10^4)$
 $S = 1.271 (20.84 \times 10^3)$

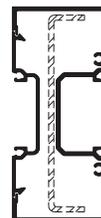
IAL+STL = 6.115 (254.52 x 10⁴) with SS045 Steel



I-452/IS200

$I = 2.886 (120.12 \times 10^4)$
 $S = 1.298 (21.67 \times 10^3)$

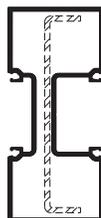
IAL+STL = 6.140 (255.56 x 10⁴) with SS045 Steel



IS452/IS200

$I = 3.000 (124.87 \times 10^4)$
 $S = 1.333 (21.85 \times 10^3)$

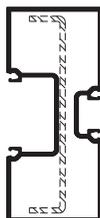
IAL+STL = 6.254 (260.30 x 10⁴) with SS045 Steel



IS455

$I = 3.005 (125.08 \times 10^4)$
 $S = 1.336 (21.89 \times 10^3)$

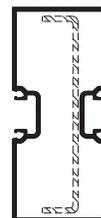
IAL+STL = 6.259 (260.51 x 10⁴) with SS045 Steel



IS456

$I = 2.951 (122.83 \times 10^4)$
 $S = 1.312 (21.50 \times 10^3)$

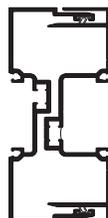
IAL+STL = 6.205 (258.26 x 10⁴) with SS045 Steel



IS476

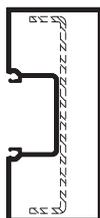
$I = 2.848 (118.54 \times 10^4)$
 $S = 1.266 (20.75 \times 10^3)$

IAL+STL = 6.102 (253.98 x 10⁴) with SS045 Steel



IS479/IS470

$I = 4.274 (177.90 \times 10^4)$
 $S = 1.877 (30.76 \times 10^3)$



IJ456

$I = 2.930 (121.96 \times 10^4)$
 $S = 1.302 (21.34 \times 10^3)$

IAL+STL = 6.184 (257.39 x 10⁴) with SS045 Steel



IS466/IS200

$I = 2.914 (121.29 \times 10^4)$
 $S = 1.295 (21.22 \times 10^3)$

IAL+STL = 6.168 (256.72 x 10⁴) with SS045 Steel

Windload Charts

Center Glazed

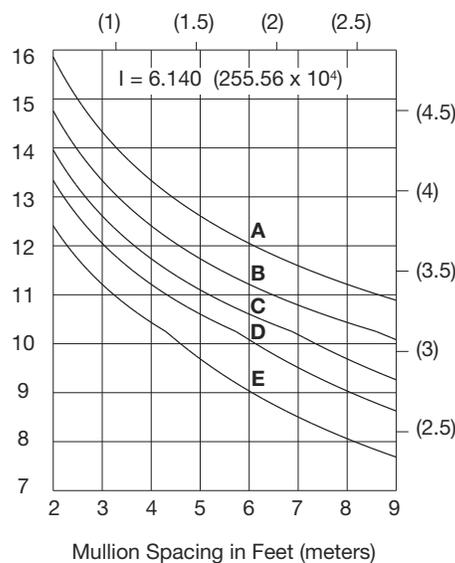
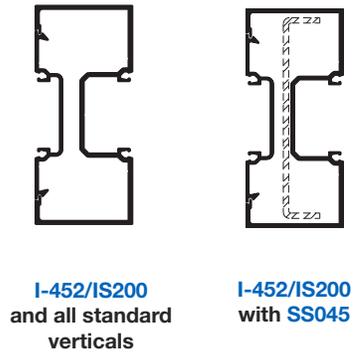
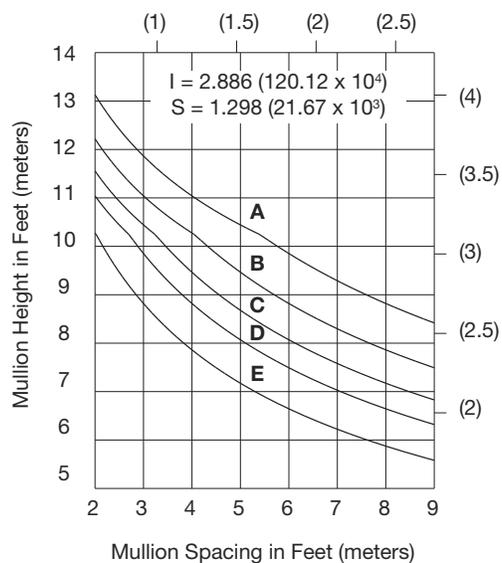
- Series 451
- Series 451-S

STANDARD WALL VERTICAL MULLIONS FOR 1" (25) GLAZING

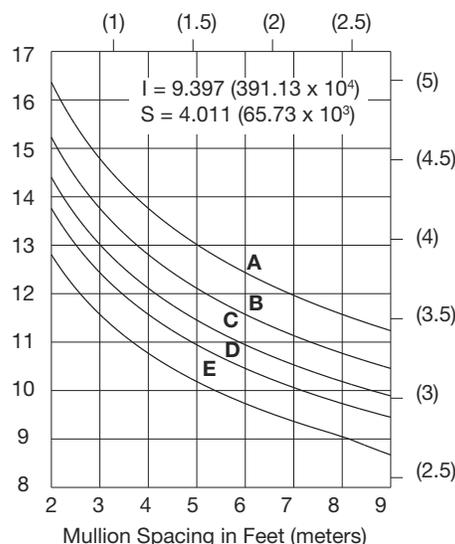
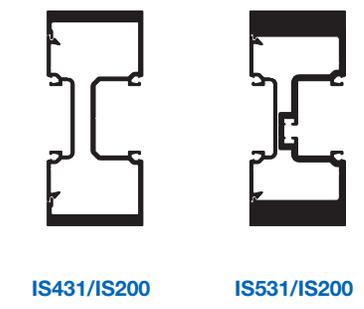
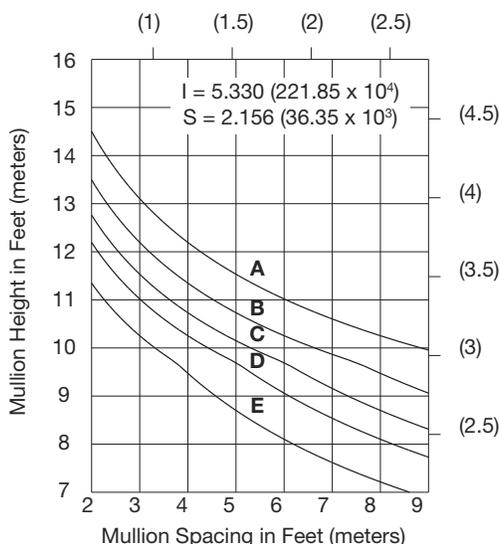
Deflection criteria to be in accordance with AAMA TIR-A11 - L/175 or L/240 + 1/4" (6.4 mm) for spans greater than 13'-6" (4.1 m) but less than 40'-0" (12.2 m). Codes and specifications may vary. No single lite of glass shall deflect more than 3/4" (19 mm). Glass is not considered as contributing to resistance of deflection. Aluminum alloy 6063-T6 allowable stress for windload is 15,200 psi. (89 MPa), and steel reinforcing allowable stress for windload is 21,600 psi. (183 MPa).

These charts include unbraced length analysis and are based on at least one horizontal being placed at the midpoint of the span. For other applications, please contact U.S. Aluminum Technical Sales at (800) 262-5151, or visit our web site at usalum.com.

Limitation of vertical mullions for:
 CURVES A = 15 PSF (718 Pa)
 CURVES B = 20 PSF (957 Pa)
 CURVES C = 25 PSF (1197 Pa)
 CURVES D = 30 PSF (1436 Pa)
 CURVES E = 40 PSF (1915 Pa)



HEAVY WALL VERTICAL MULLIONS FOR 1" (25) GLAZING



STOREFRONTS

Deadload Charts

Center Glazed
 • Series 451
 • Series 451-S

INTERMEDIATE HORIZONTAL MULLIONS FOR 1" (25) GLAZING

Deadload charts are based on 1/8" (3.2) maximum allowable deflection at the center point of the horizontal mullion and on a glass weight of 6.5 p.s.f. (31.74 Kg/m²)
 Glass shall rest on two setting blocks located at:

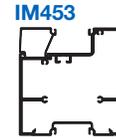
- CURVES **A** = 1/4 points
- CURVES **B** = 1/8 points or 8" (203.2) from corners, whichever is larger



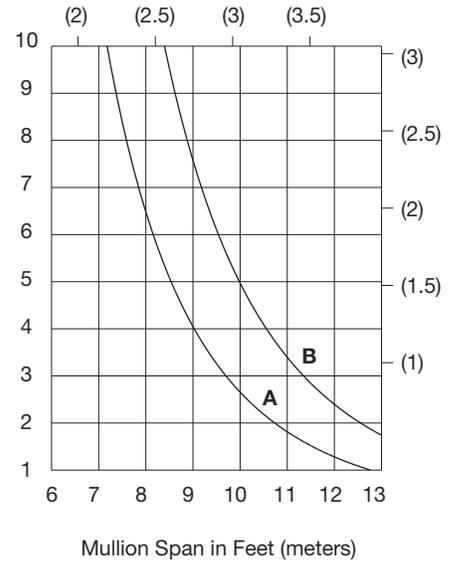
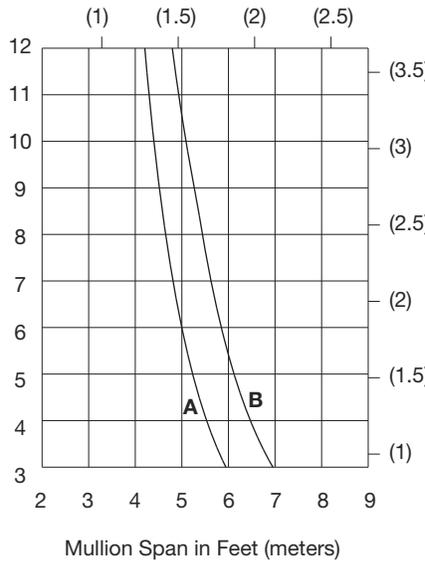
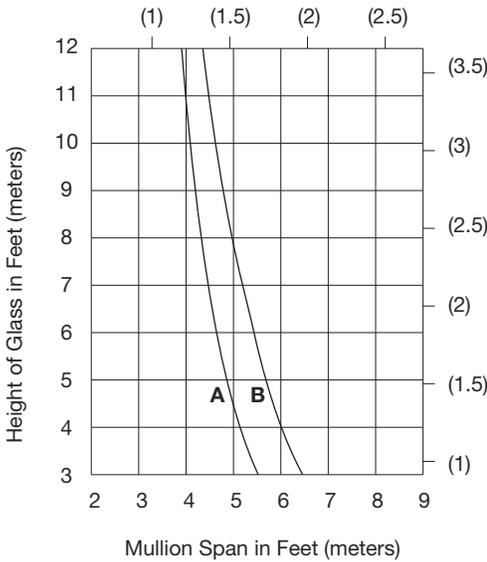
IS463/IS200
 $I_{yy} = .359 (14.94 \times 10^4)$



IH463
 $I_{yy} = .482 (16.07 \times 10^4)$



IS440/IS200
 $I_{yy} = 3.416 (142.81 \times 10^4)$



DOOR HEADERS

Deadload charts for door headers are based on 1/16" (1.6) maximum allowable deflection at the center point of the header and on a glass weight of 6.5 p.s.f. (31.74 Kg/m²)
 Glass shall rest on two setting blocks located at:

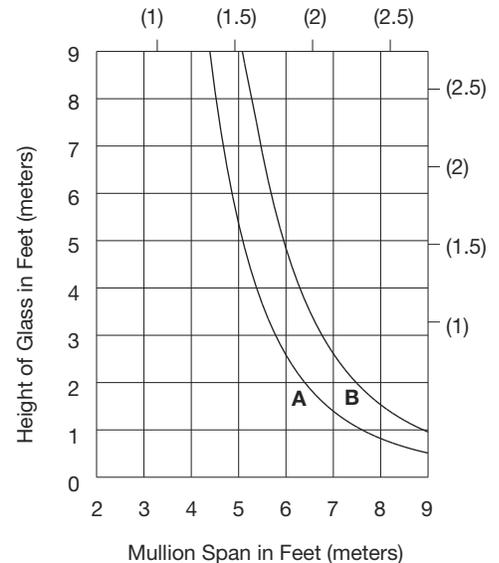
- CURVES **A** = 1/4 points
- CURVES **B** = 1/8 points or 8" (203.2) from corners, whichever is larger



IS467
 $I_{yy} = .899 (37.42 \times 10^4)$



I-450
 $I_{yy} = .862 (35.88 \times 10^4)$



Specifications

Thermal Center Glazed • Series IT451

SECTION 08 41 13 ALUMINUM STOREFRONTS

SERIES	FACE WIDTH	DEPTH	GLAZING INFILLS	GLAZING METHOD
IT451	2" (50.8)	4-1/2" (114.3)	1" (25)	Exterior/Interior

I. GENERAL DESCRIPTION

Work Included: Furnish all necessary materials, labor, and equipment for the complete installation of aluminum framing as shown on the drawings and specified herein. *(Specifier Note: It is suggested that related items such as aluminum entrance doors, glass, and sealants be included whenever possible).*

Work Not Included: Structural support of the framing system, interior closures, trim. *(Specifier list other exclusions).*

Related Work Specified Elsewhere: *(Specifier list).*

QUALITY ASSURANCE

Drawings and specifications are based on the Series IT451 Thermal Center Glazed System as manufactured by U.S. Aluminum. Whenever substitute products are to be considered, supporting technical literature, samples, drawings, and performance data must be submitted 10 days prior to bid in order to make a valid comparison of the products involved. Test reports certified by an independent test laboratory must be made available upon request.

PERFORMANCE REQUIREMENTS

Air Infiltration: shall be tested in accordance with ASTM E 283. Infiltration shall not exceed .06 cmf per square foot (.0003m³/sm²) of fixed area when tested at 6.24 psf (300 Pa).

Water Infiltration: shall be tested in accordance with ASTM E 331. No water penetration at test pressure of 8 psf (384 Pa). When tested with the high performance subsill.

Structural Performance: shall be tested in accordance with ASTM E 330 and based on:

- Maximum deflection of L/175 of the span
- Allowable stress with a safety factor of 1.65

The system shall perform to this criteria under a windload of *(Specify)* psf.

Structural Integrity - Manufacturer shall provide a Two Year Warranty on thermal framing against failure.

Thermal Performance - Series IT451 shall be tested in accordance with NFRC 100, 200, and AAMA 1503-09. Testing Procedures- ASTM 283, E 331, and E 330 - Laboratory performance testing. AAMA 503-08 - Newly installed storefronts. AAMA 511-08 - Installed storefronts after six months.

II. PRODUCTS MATERIALS

Extrusions shall be 6063-T5 alloy and temper (ASTM B221 alloy T5 temper), thermally broken by a two part chemically cured high density polyurethane.

To ensure that composite strength remains unaltered during thermal cycling, a mechanical bond between the aluminum and the thermal filling shall be created by mechanically abrading the extrusion thermal cavity prior to filling with the polyurethane polymer.

Fasteners, where exposed, shall be aluminum, stainless steel or zinc plated steel in accordance with ASTM A 164. Perimeter anchors shall be aluminum or steel, providing the steel is properly isolated from the aluminum. Glazing gaskets shall be E.P.D.M. elastomeric extrusions.

FINISH

All exposed framing surfaces shall be free of scratches and other serious blemishes. Aluminum extrusions shall be given a caustic etch followed by an anodic oxide treatment to obtain...

(Specify one of the following):

- ____ #11 Clear anodic coating
- ____ #22 Dark Bronze anodic coating
- ____ #33 Black anodic coating

A Fluoropolymer paint coating conforming with the requirements of AAMA 2605. Color shall be *(Specify a U.S. Aluminum standard color).*

FABRICATION

The framing system shall provide for flush glazing on all sides with no projecting stops. Vertical and horizontal framing members shall have a nominal face dimension of 2" (50.8). Overall depth shall be 4-1/2" (114.3). Entrance framing members shall be compatible with glass framing in appearance.

Provide for internal drainage of infiltrated water into an extruded aluminum subsill channel where it is drained to the exterior weep slots.

III. EXECUTION INSTALLATION

All glass framing shall be set in correct locations as shown in the details and shall be level, square, plumb, and in alignment with other work in accordance with the manufacturer's installation instructions and approved shop drawings. All joints between framing and the building structure shall be sealed in order to secure a watertight installation.

PROTECTION AND CLEANING

After installation the General Contractor shall adequately protect exposed portions of aluminum surfaces from damage by grinding and polishing compounds, plaster, lime, acid, cement or other contaminants. The General Contractor shall be responsible for final cleaning.

STOREFRONTS

Specifications

Thermal Center Glazed Stacking

• Series IT451-S

SECTION 08 41 13 ALUMINUM STOREFRONTS

SERIES	FACE WIDTH	HEAD/SILL DEPTH	GLAZING INFILLS	GLAZING METHOD
IT451-S	2" (50.8)	4-3/4" (120.7)	1" (25)	Exterior/Interior

I. GENERAL DESCRIPTION

Work Included: Furnish all necessary materials, labor, and equipment for the complete installation of aluminum framing as shown on the drawings and specified herein. (*Specifier Note: It is suggested that related items such as aluminum entrance doors, glass, and sealants be included whenever possible*).

Work Not Included: Structural support of the framing system, interior closures, trim. (*Specifier list other exclusions*).

Related Work Specified Elsewhere: (*Specifier list*).

QUALITY ASSURANCE

Drawings and specifications are based on the Series IT451-S Thermal Center Glazed Stacking System as manufactured by U.S. Aluminum. Whenever substitute products are to be considered, supporting technical literature, samples, drawings, and performance data must be submitted 10 days prior to bid in order to make a valid comparison of the products involved. Test reports certified by an independent test laboratory must be made available upon request.

PERFORMANCE REQUIREMENTS

Air Infiltration: shall be tested in accordance with ASTM E 283. Infiltration shall not exceed .06 cfm per square foot (.0003m³/sm²) of fixed area when tested at 6.24 psf (300 Pa).

Water Infiltration: shall be tested in accordance with ASTM E 331. No water penetration at test pressure of 8 psf (384 Pa). When tested with the high performance subsill.

Structural Performance: shall be tested in accordance with ASTM E 330 and based on:

- Maximum deflection of L/175 of the span
- Allowable stress with a safety factor of 1.65

The system shall perform to this criteria under a windload of (*Specify*) psf.

Structural Integrity - Manufacturer shall provide a Two Year Warranty on thermal framing against failure.

Thermal Performance - Series IT451-S shall be tested in accordance with NFRC 100, 200, and AAMA 1503-09. Testing Procedures - ASTM 283, E 331, and E 330 - Laboratory performance testing. AAMA 503-08 - Newly installed storefronts. AAMA 511-08 - Installed storefronts after six months.

II. PRODUCTS MATERIALS

Extrusions shall be 6063-T5 alloy and temper (ASTM B221 alloy T5 temper), thermally broken by a two part chemically cured high density polyurethane.

To ensure that composite strength remains unaltered during thermal cycling, a mechanical bond between the aluminum and the thermal filling shall be created by mechanically abrading the extrusion thermal cavity prior to filling with the polyurethane polymer.

Fasteners, where exposed, shall be aluminum, stainless steel or zinc plated steel in accordance with ASTM A 164. Perimeter anchors shall be aluminum or steel, providing the steel is properly isolated from the aluminum. Glazing gaskets shall be E.P.D.M. elastomeric extrusions.

FINISH

All exposed framing surfaces shall be free of scratches and other serious blemishes. Aluminum extrusions shall be given a caustic etch followed by an anodic oxide treatment to obtain...

(*Specify one of the following*):

- ____ #11 Clear anodic coating
- ____ #22 Dark Bronze anodic coating
- ____ #33 Black anodic coating

A Fluoropolymer paint coating conforming with the requirements of AAMA 2605. Color shall be (*Specify a U.S. Aluminum standard color*).

FABRICATION

The framing system shall provide for flush glazing on all sides with no projecting stops. Vertical and horizontal framing members shall have a nominal face dimension of 2" (50.8). Overall depth shall be 4-3/4" (120.7). Entrance framing members shall be compatible with glass framing in appearance.

Provide for internal drainage of infiltrated water into an extruded aluminum subsill channel where it is drained to the exterior weep slots.

III. EXECUTION INSTALLATION

All glass framing shall be set in correct locations as shown in the details and shall be level, square, plumb, and in alignment with other work in accordance with the manufacturer's installation instructions and approved shop drawings. All joints between framing and the building structure shall be sealed in order to secure a watertight installation.

PROTECTION AND CLEANING

After installation the General Contractor shall adequately protect exposed portions of aluminum surfaces from damage by grinding and polishing compounds, plaster, lime, acid, cement or other contaminants. The General Contractor shall be responsible for final cleaning.

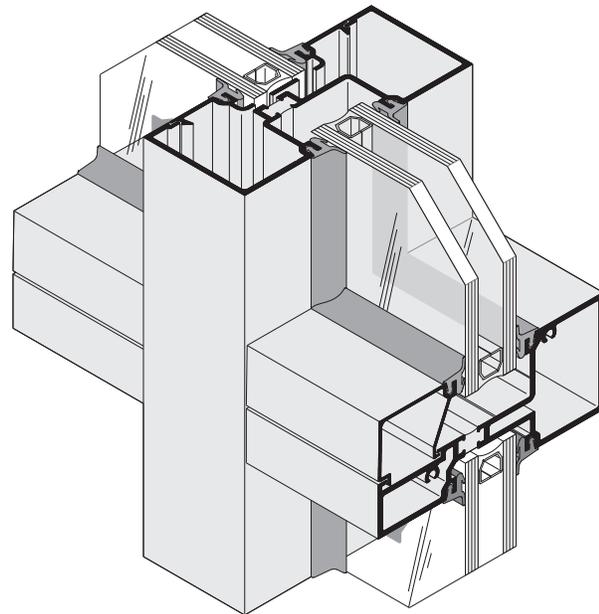
STOREFRONTS

Technical Data

Thermal Center Glazed

- Series IT451
- Series IT451-S

Series IT451 and IT451-S Thermal Center Glazed Systems offer an outstanding value by combining increased thermal performance with low-cost conventional flush glazing. These systems feature the Poly-Aluminizer™ and Lancer™ Thermal Break Technologies with a Two Year Warranty as described in the Warranty for Thermally Broken Framing Systems. They were especially engineered to satisfy the increasing demands for energy conservation. Both series may be glazed from the interior or exterior, and are well suited for storefront applications requiring increased thermal performance. See page 01-B3 for E.P.D.M. gasket options.



SERIES	WIDTH	DEPTH	GLAZING INFILLS	APPLICATION
IT451 IT451-S	2" (50.8)	4-1/2" (114.3)	1" (25)	Storefronts in Geographic Areas Requiring Thermal Performance

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.

STOREFRONTS

Technical Data

THERMAL BREAK TECHNOLOGY FEATURING THE POLY-ALUMINIZER™ AND LANCER™ METHODS

U.S. Aluminum engineers thermally broken framing systems to satisfy the increasing demands for energy conservation. This one small, but very important component in our thermally broken framing products addresses several important concerns expressed by various architects, structural engineers, and glazing contractors in our industry.

What About Dry Shrinkage?

Our response is the Poly-Aluminizer™ and Lancer™ methods which mechanically modifies the aluminum extrusion and effectively improves the adhesive bond between the polyurethane polymer and the surface finish of the aluminum cavity. The Poly-Aluminizer™ accomplishes this through a unique method of abrading the thermal pocket in such a way as to produce a mechanical bond. The Lancer™ process provides mechanical surface conditioning of the extrusion cavity to insure proper adhesion to difficult finishes. Test results indicate 100% adhesion even on mill finish after 90 cycles in an environmental chamber.

What About Structural Integrity?

To meet the need to maintain structural integrity, designers should specify U.S. Aluminum framing for a structurally superior thermally broken product. After the aluminum channel has been modified, it is filled with a polyurethane polymer that cures to a rigidity that is equal to or better than that of the aluminum channel. Then we debride the aluminum channel along its entire length. The structural integrity is maintained while adding the benefits of thermally broken framing.

What About CRF Values?

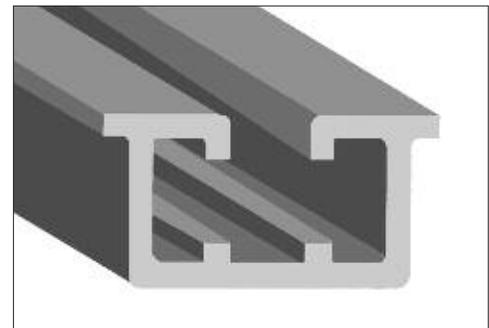
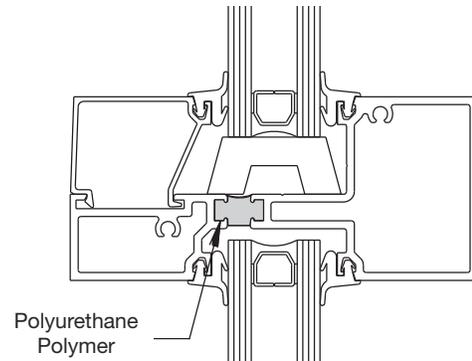
Certified thermal test reports for all U.S. Aluminum products tested in accordance with AAMA 1503.1-88 are available upon request from any of our service centers, or by calling our national toll free number at (800) 262-5151.

Why Take a Chance?

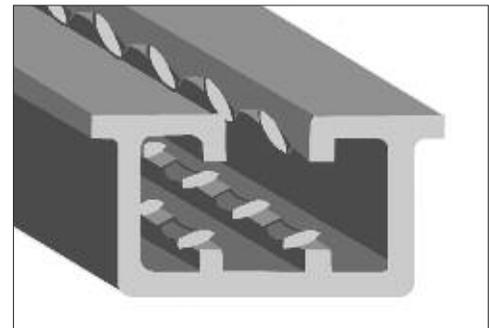
U.S. Aluminum uses the latest thermal break technology and equipment for producing polyurethane thermally broken aluminum framing systems. All thermally broken framing products are manufactured in-house by U.S. Aluminum technicians and tested in accordance with AAMA-A8-1990. Our products are backed by the people and technology of an organization where innovation and reliability create a proven standard of excellence.

Thermal Center Glazed

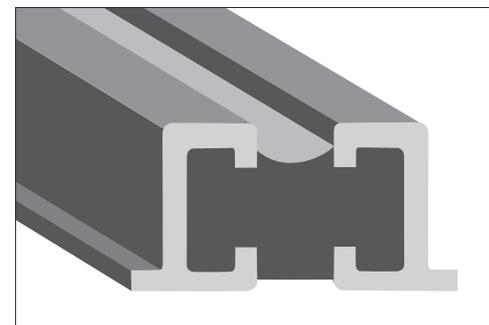
- Series IT451
- Series IT451-S



Channel before the process



Channel after being mechanically modified

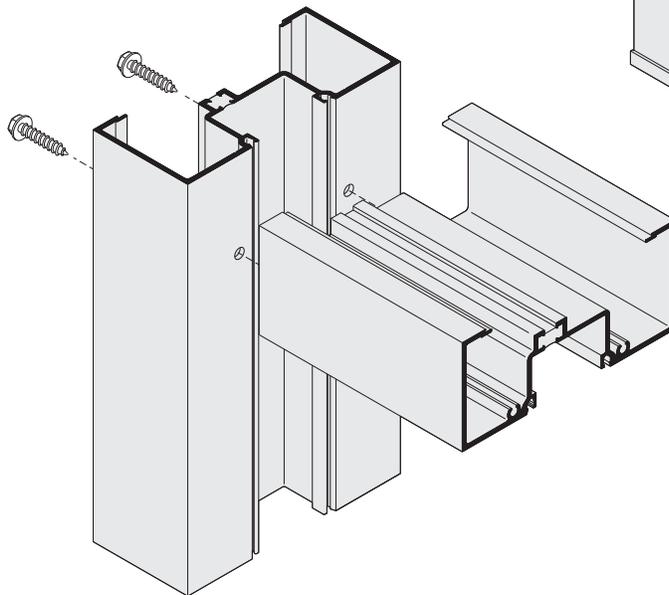


Channel with polyurethane thermal break

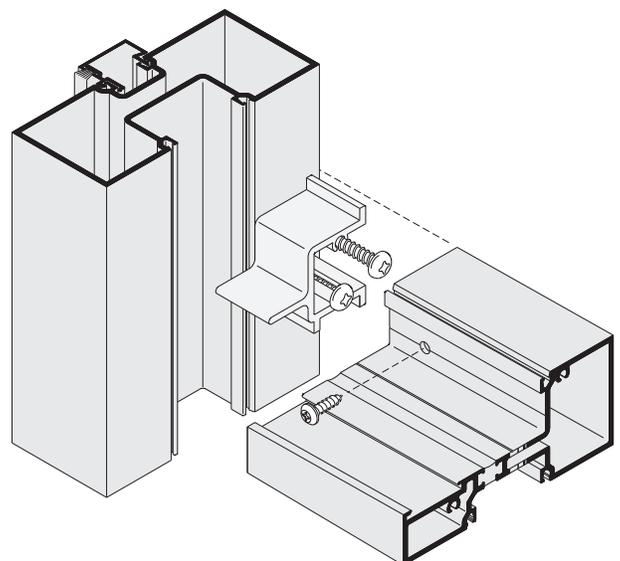
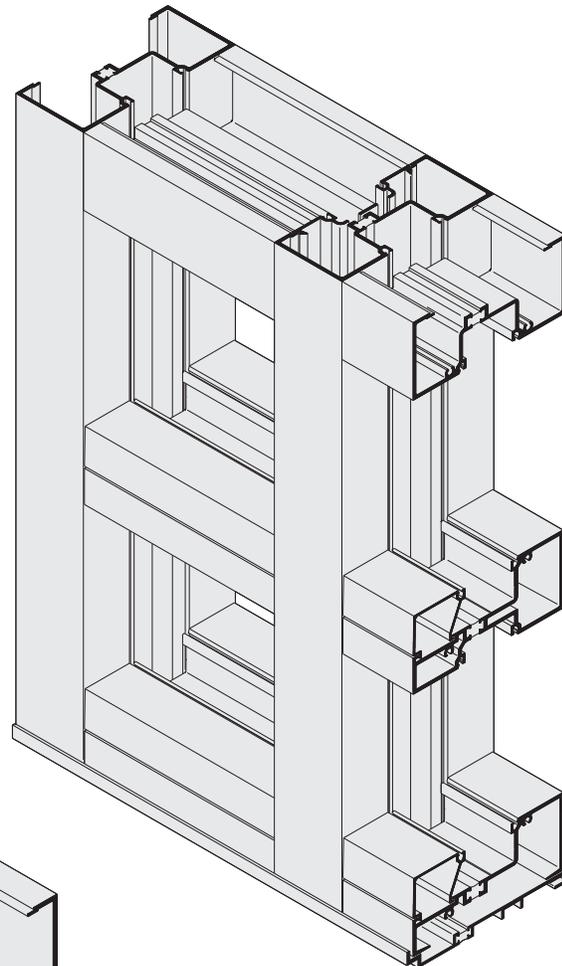
Special Features

Thermal Center Glazed
 • Series IT451

Two Piece (split) Vertical Mullions and Horizontals are joined together with screws driven through back of vertical members into the extruded screw splines in the horizontals as shown below. The panels are then snapped together in the field to create long runs. Extruded subsill flashing must be used with this type of installation. **NOTE:** For Stacking System features see page 06-B1.



Anchor Clips are available for attaching horizontal members to tubular vertical members when required or selected.



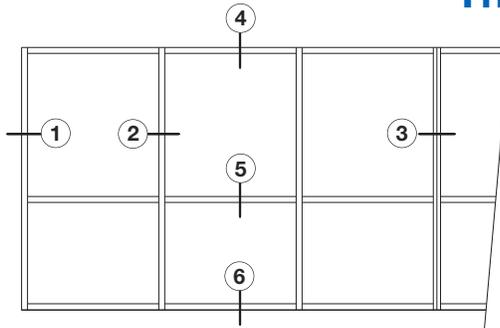
STOREFRONTS

Typical Details

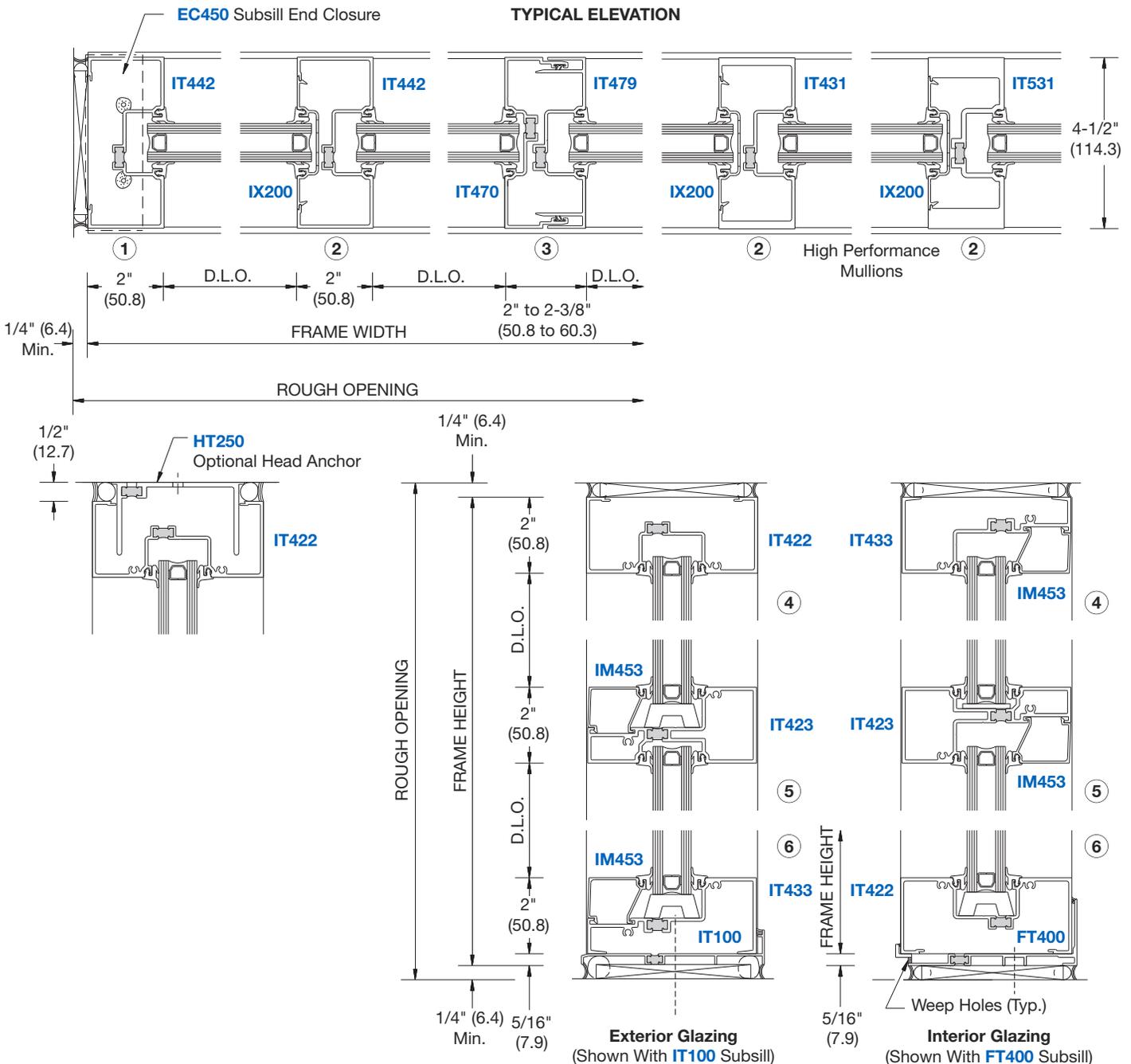
Thermal Center Glazed • Series IT451

SCREW RACE JOINERY FOR 1" (25) GLAZING

NOTE: NP225 Glazing Gaskets are used on both sides of 1" (25) glazing. (Typical)



TYPICAL ELEVATION



NOT TO SCALE

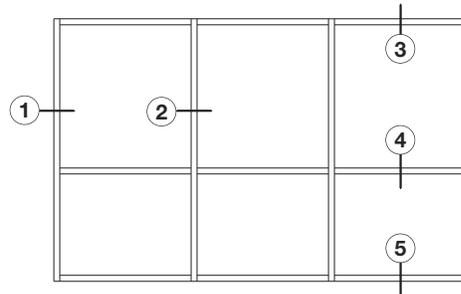
Online usalum.com By Phone (800) 262-5151
 Online crlaurence.com By Phone (800) 421-6144

STOREFRONTS

Typical Details

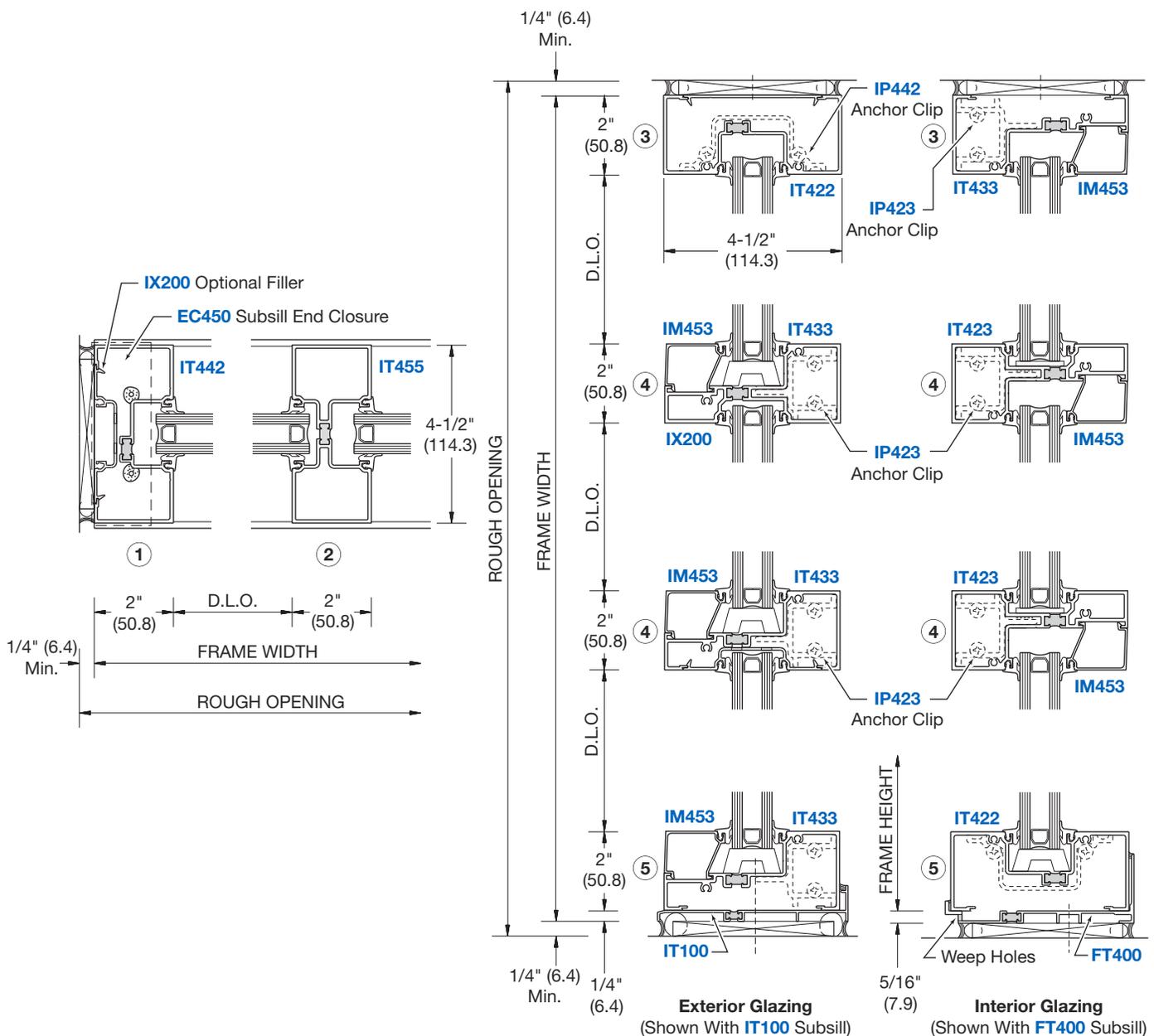
Thermal Center Glazed • Series IT451

ANCHOR CLIP JOINERY FOR 1" (25) GLAZING



TYPICAL ELEVATION

NOTE: NP225 Glazing Gaskets are used on both sides of 1" (25) glazing. (Typical)



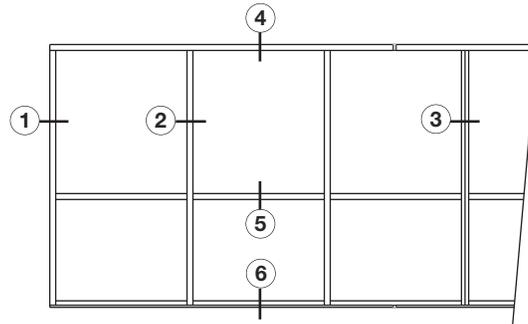
NOT TO SCALE

STOREFRONTS

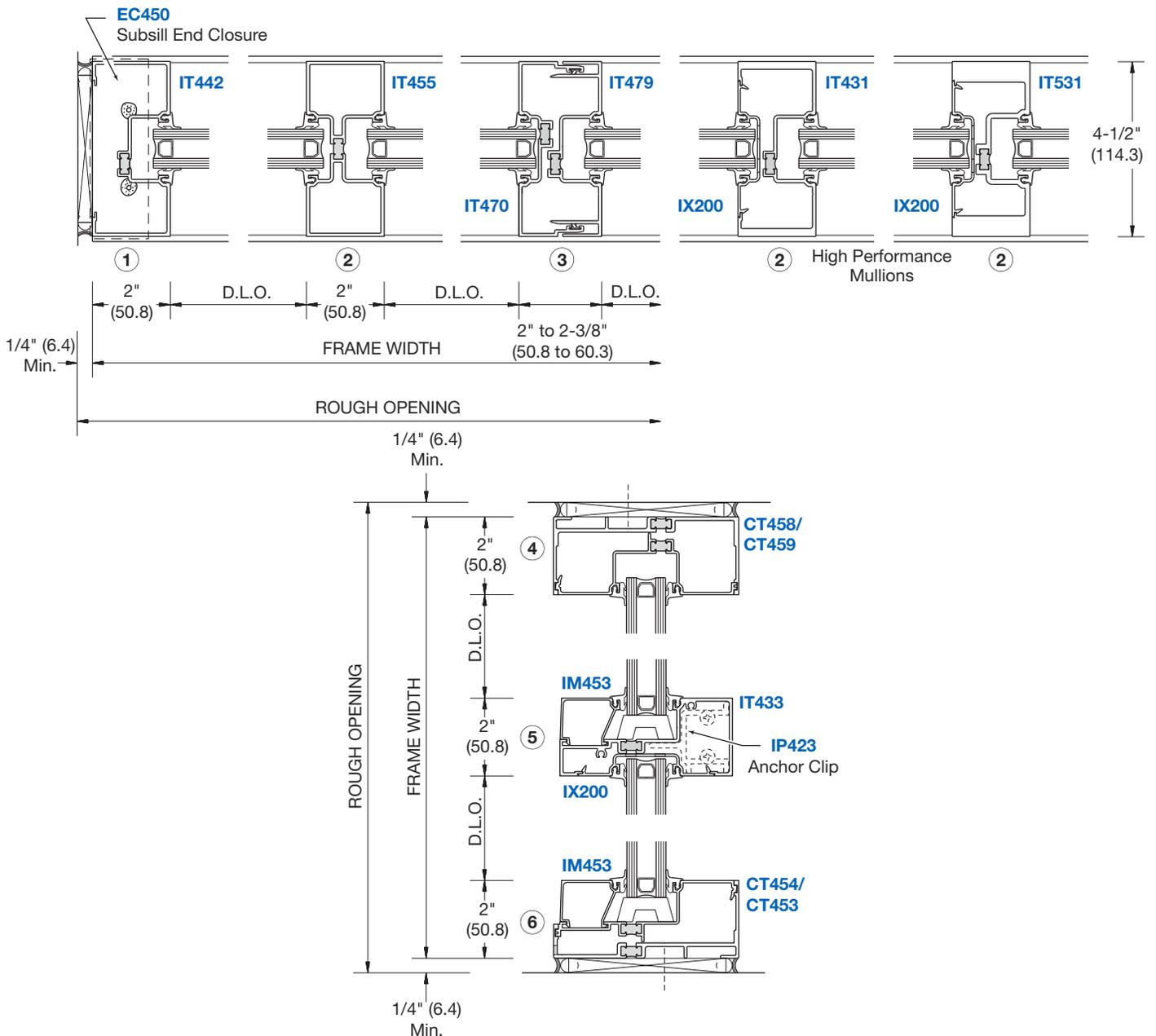
Typical Details FOR 1" (25) GLAZING

Thermal Center Glazed • Series IT451-S

NOTE: NP225 Glazing Gaskets are used on both sides of 1" (25) glazing. (Typical)



TYPICAL ELEVATION



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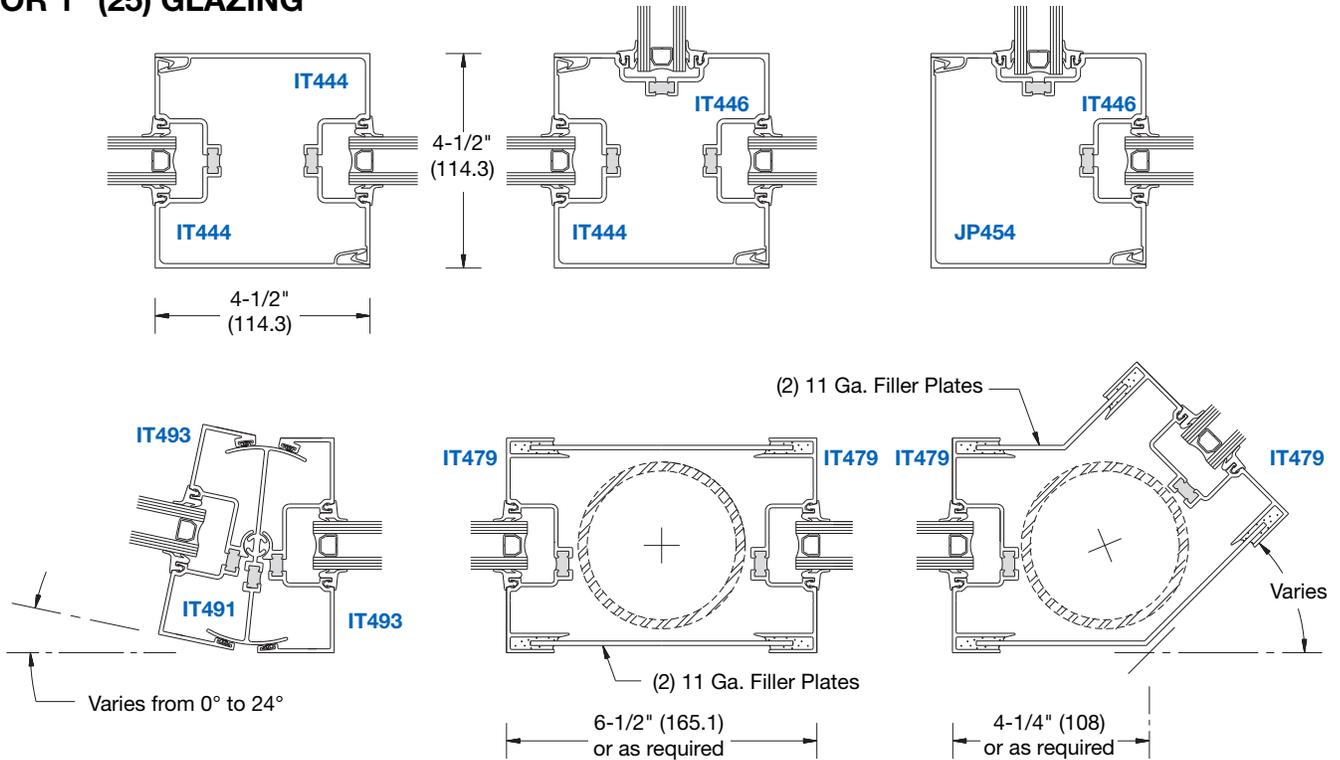
STOREFRONTS

Typical Details

VERTICAL CORNER CONDITIONS AND POST COVERS FOR 1" (25) GLAZING

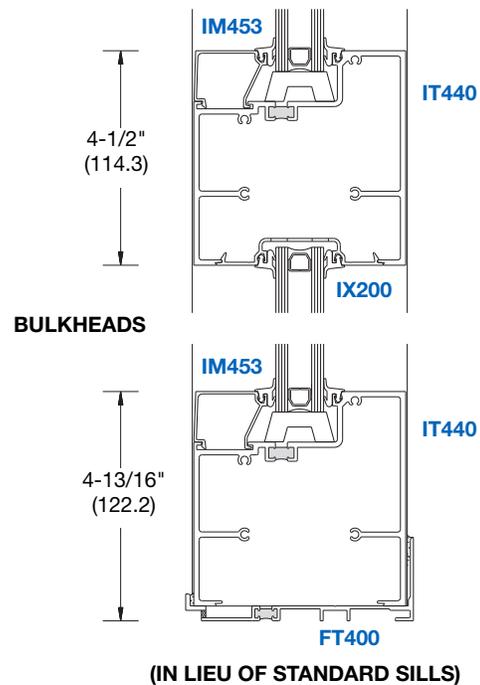
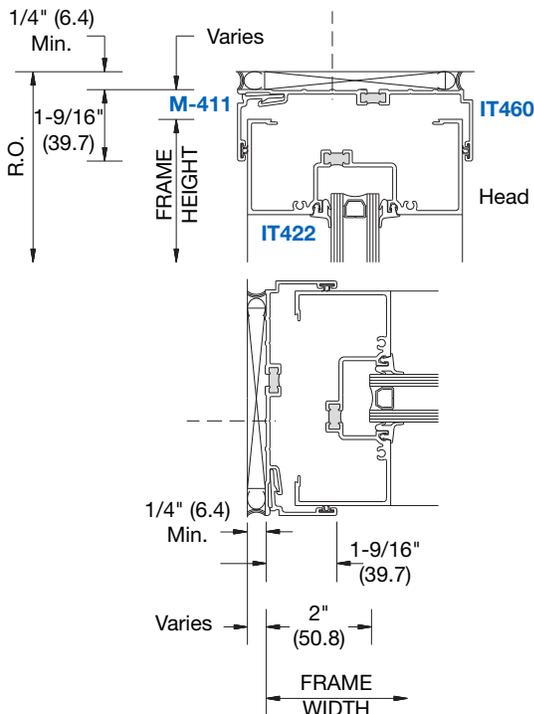
Thermal Center Glazed

- Series IT451
- Series IT451-S



COMPENSATING CHANNEL FOR HEAD AND JAMBS

4-1/2" (114.3) HIGH INTERMEDIATE HORIZONTAL



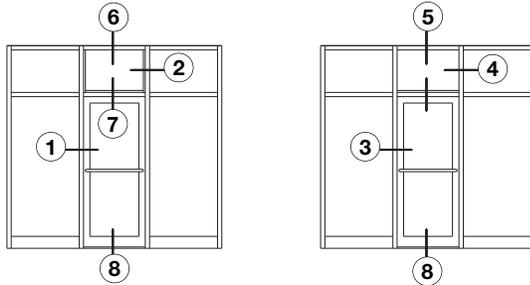
NOT TO SCALE

STOREFRONTS

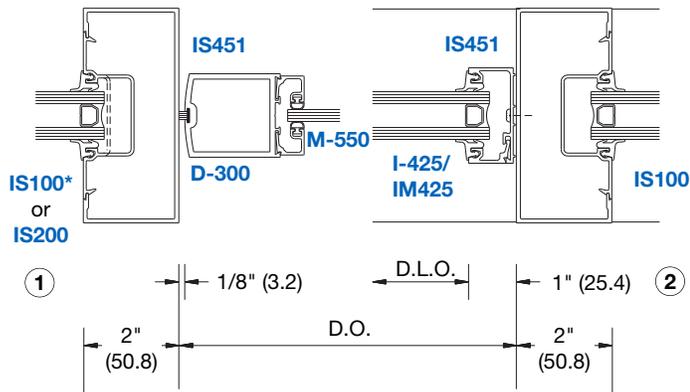
Typical Details

DOOR FRAMING

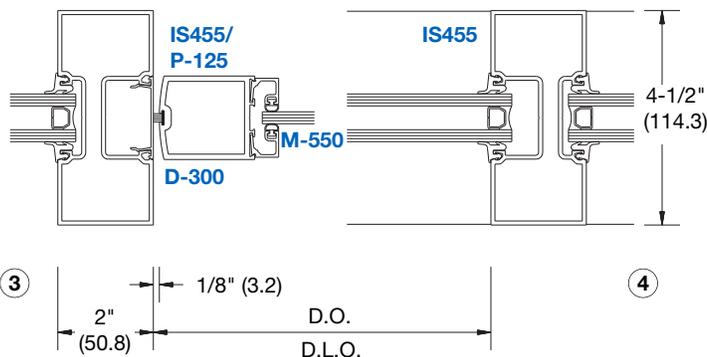
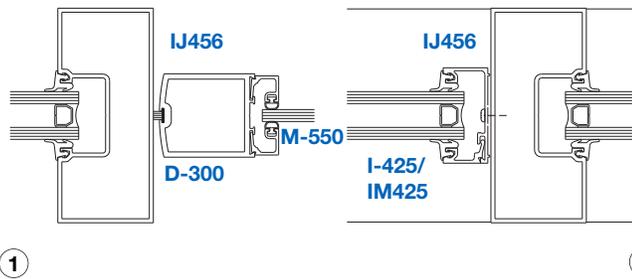
NOTE: Door Frames are available in stock to accommodate 36" x 84" (914 x 2134) and 72" x 84" (1829 x 2134) door openings. Visit usalum.com for more information.



CENTER HUNG DOORS



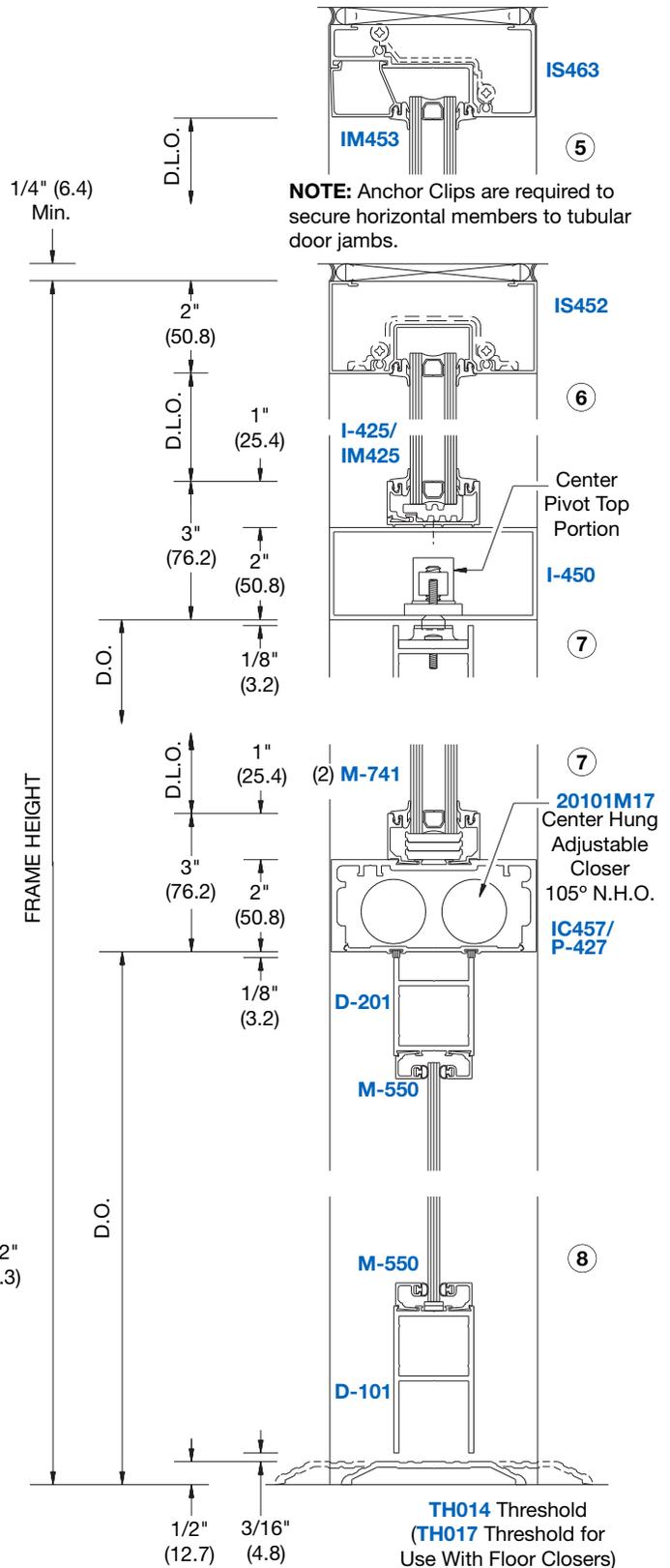
***NOTE:** IS100 Insert is required to install glass between doors



NOT TO SCALE

Thermal Center Glazed

- Series IT451
- Series IT451-S



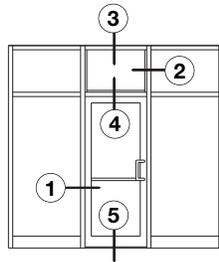
TH014 Threshold
(TH017 Threshold for
 Use With Floor Closers)

STOREFRONTS

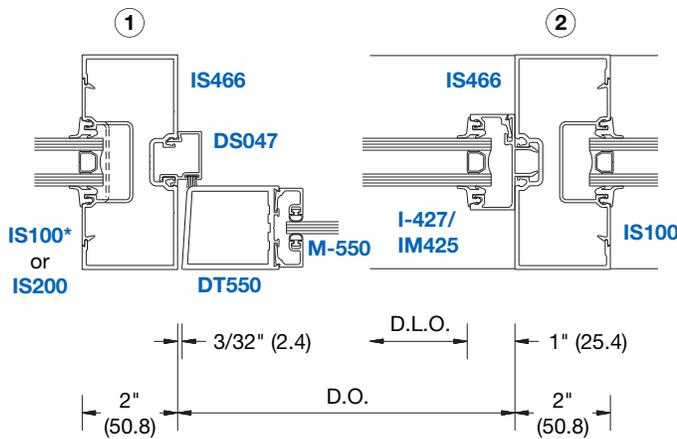
Typical Details

DOOR FRAMING

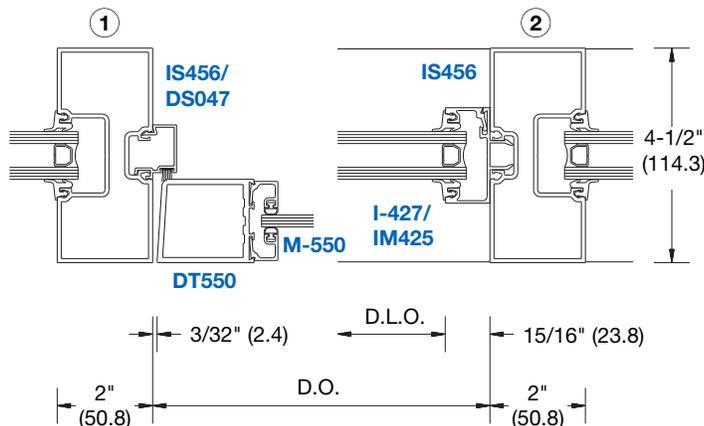
NOTE: Door Frames are available in stock to accommodate 36" x 84" (914 x 2134) and 72" x 84" (1829 x 2134) door openings. Visit usalum.com for more information.



OFFSET HUNG DOORS

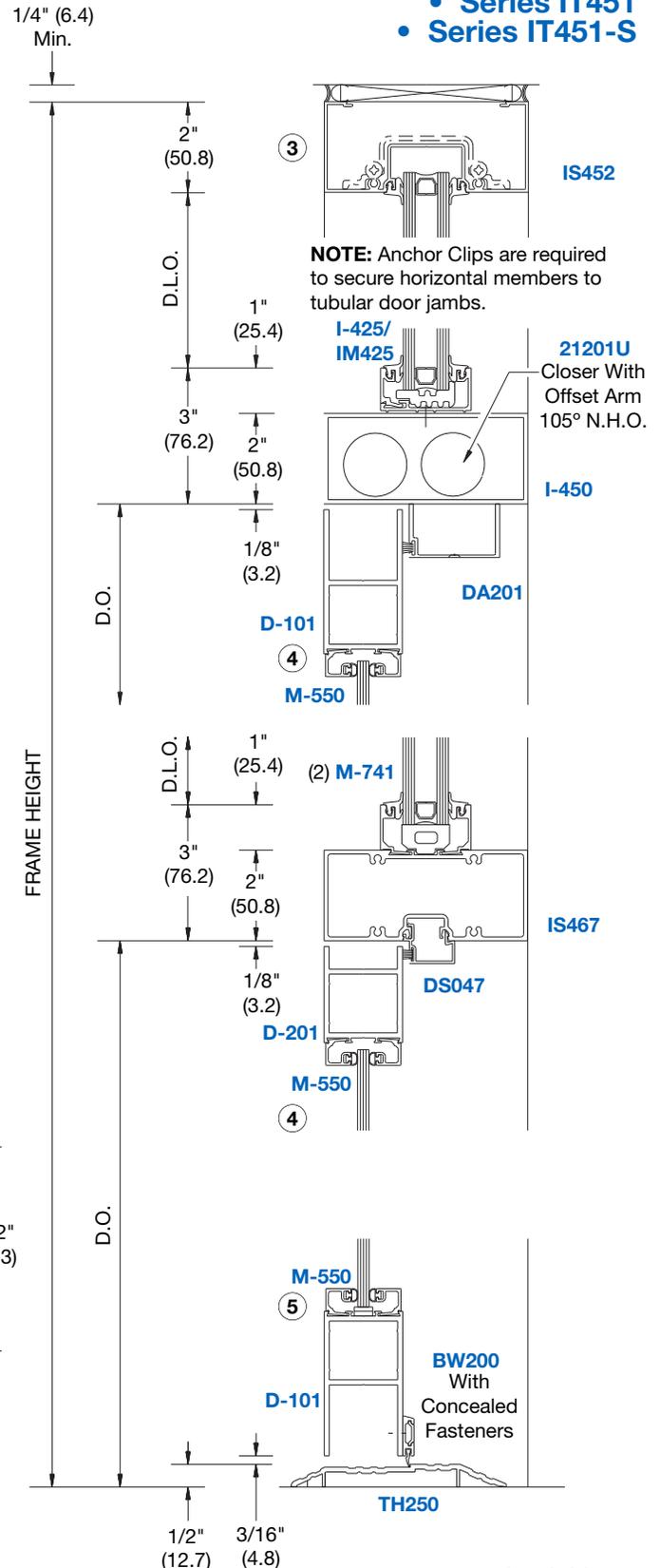


***NOTE:** IS100 Insert is required to install glass between doors



Thermal Center Glazed

- Series IT451
- Series IT451-S



NOTE: Anchor Clips are required to secure horizontal members to tubular door jambs.

21201U Closer With Offset Arm 105° N.H.O.

NOT TO SCALE

STOREFRONTS

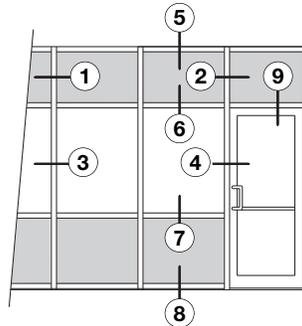
Typical Details

Thermal Center Glazed

- Series IT451
- Series IT451-S

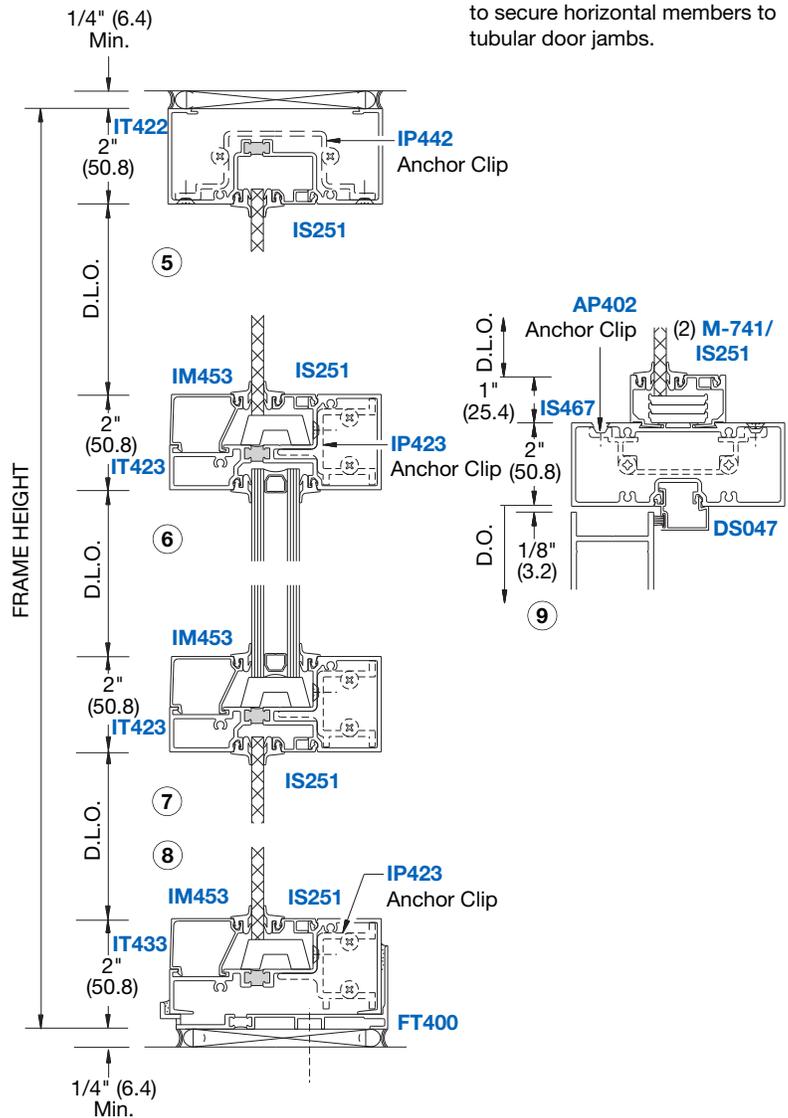
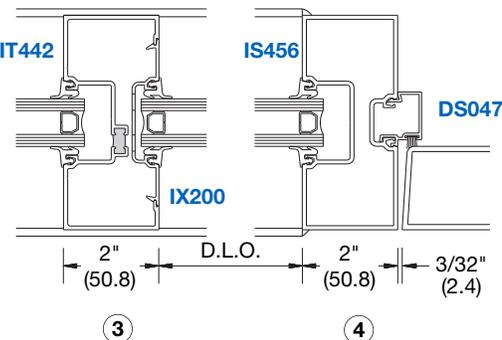
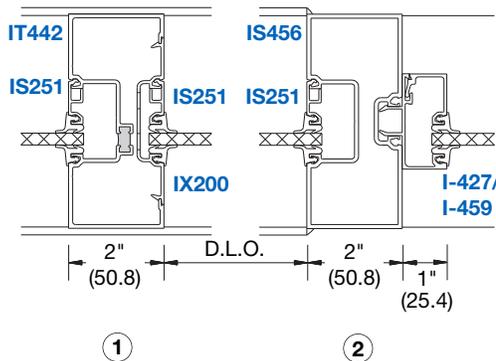
TRANSITION GLAZING FOR 1" (25) OR 1/4" (6) GLAZING

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



TYPICAL ELEVATION

NOTE: Anchor Clips are required to secure horizontal members to tubular door jambs.



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STOREFRONTS

Windload Charts

Thermal Center Glazed

- Series IT451
- Series IT451-S

VERTICAL MULLIONS FOR 1" (25) GLAZING

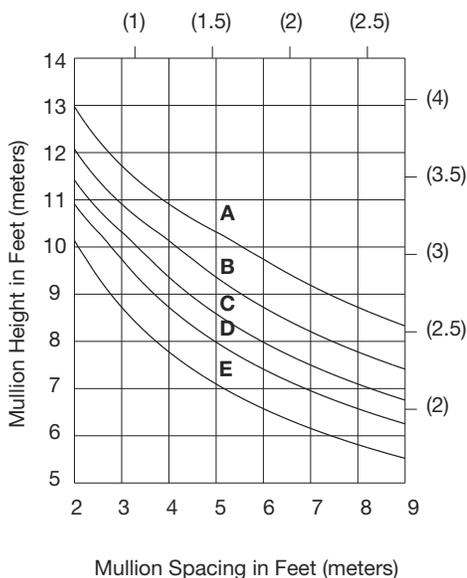
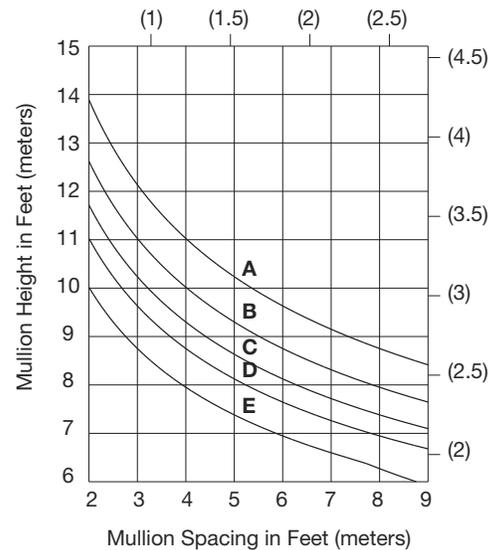
Deflection criteria to be in accordance with AAMA TIR-A11 - L/175 or L/240 + 1/4" (6.4 mm) for spans greater than 13'-6" (4.1 m) but less than 40'-0" (12.2 m). Codes and specifications may vary. No single lite of glass shall deflect more than 3/4" (19 mm). Glass is not considered as contributing to resistance of deflection. Aluminum alloy 6063-T6 allowable stress for windload is 15,200 psi. (89 MPa), and steel reinforcing allowable stress for windload is 21,600 psi. (183 MPa).

These charts include unbraced length analysis and are based on at least one horizontal being placed at the midpoint of the span. For other applications, please contact U.S. Aluminum Technical Sales at (800) 262-5151, or visit our web site at usalum.com.

Limitation of vertical mullions for:
 CURVES **A** = 15 PSF (718 Pa)
 CURVES **B** = 20 PSF (957 Pa)
 CURVES **C** = 25 PSF (1197 Pa)
 CURVES **D** = 30 PSF (1436 Pa)
 CURVES **E** = 40 PSF (1915 Pa)



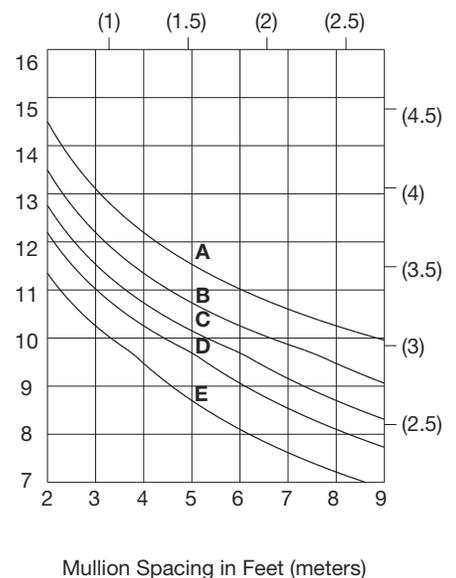
IT455
 $I = 2.639 (112.09 \times 10^4)$
 $S = 1.259 (20.63 \times 10^3)$



IT442/IX200
 $I = 2.733 (113.76 \times 10^4)$
 $S = 1.272 (20.85 \times 10^3)$



IT431/IX200
 $I = 4.575 (190.43 \times 10^4)$
 $S = 2.156 (35.34 \times 10^3)$



STOREFRONTS

Windload Charts

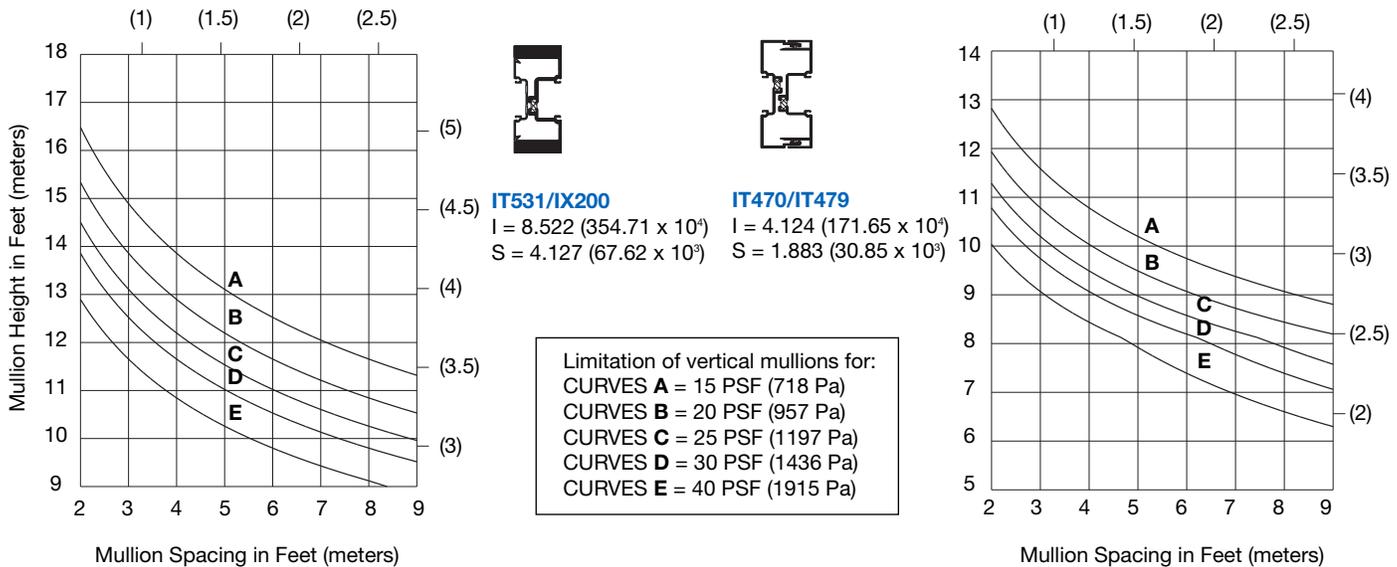
Thermal Center Glazed

VERTICAL MULLIONS FOR 1" (25) GLAZING

- Series IT451
- Series IT451-S

Deflection criteria to be in accordance with AAMA TIR-A11 - L/175 or L/240 + 1/4" (6.4 mm) for spans greater than 13'-6" (4.1 m) but less than 40'-0" (12.2 m). Codes and specifications may vary. No single lite of glass shall deflect more than 3/4" (19 mm). Glass is not considered as contributing to resistance of deflection. Aluminum alloy 6063-T6 allowable stress for windload is 15,200 psi. (89 MPa), and steel reinforcing allowable stress for windload is 21,600 psi. (183 MPa).

These charts include unbraced length analysis and are based on at least one horizontal being placed at the midpoint of the span. For other applications, please contact U.S. Aluminum Technical Sales at (800) 262-5151, or visit our web site at usalum.com.



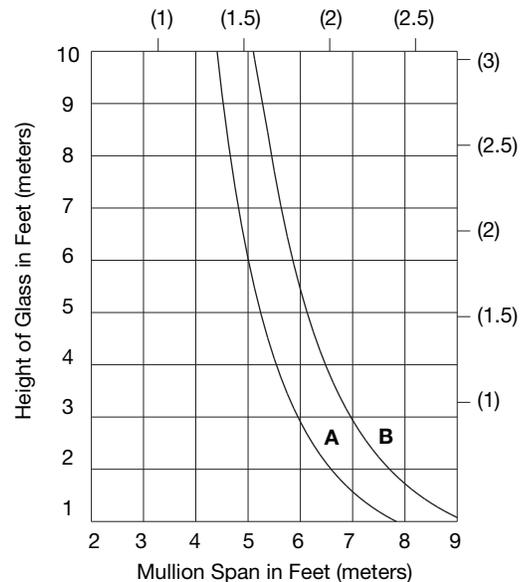
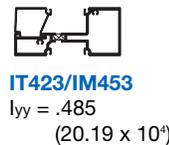
Deadload Chart

INTERMEDIATE HORIZONTAL MULLIONS FOR 1" (25) GLAZING

Deadload charts are based on 1/8" (3.2) maximum allowable deflection at the center point of the horizontal mullion and on a glass weight of 6.5 p.s.f. (31.74 Kg/m²)

Glass shall rest on two setting blocks located at:

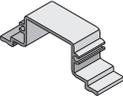
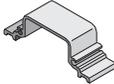
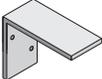
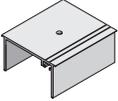
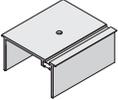
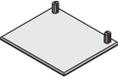
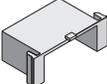
- CURVES A: 1/4 points
- CURVES B: 1/8 points or 8" (203.2) from corners, whichever is larger



STOREFRONTS

Accessories

- Center Glazed**
- Series 451 & 451-S
 - Series IT451 & IT451-S

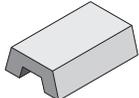
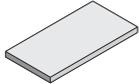
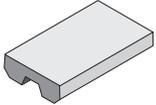
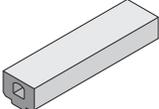
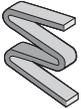
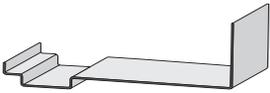
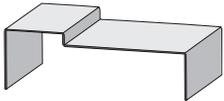
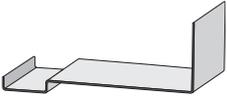
PART NO.	DETAIL	DESCRIPTION	PKG. QTY.	WHERE USED			
				451	451-S	IT451	IT451-S
ST251		Assembly Screws #10 x 1" (25) HH SMS	200	●	●	●	●
IP452		Head Anchor Clip with Screws	20	●		●	
IP453		Horizontal / Sill Anchor Clip with Screws	20	●	●		
IP456		Tubular Intermediate Horizontal Anchor Clip with Screws	20	●			
IP442		Series IT451 and Series IT451-S Head/Sill Anchor Clip with Screws	20			●	●
IP423		Series IT451 and Series IT451-S Int. Horizontal Anchor Clip with Screws	20			●	●
AP225		Sill Anchor Clip for S-426	10	●			
HC250		Optional Head Anchor	30	●		●	
HT250		Optional Head Anchor (Thermally Broken)	30			●	
CP145		Closure Plate	20	●	●	●	●
WD210		Water Deflector for Shallow Pocket	50	●	●	●	●
WD200		Water Deflector for Deep Pocket	50	●	●	●	●

STOREFRONTS



Accessories

- Center Glazed**
- Series 451 & 451-S
 - Series IT451 & IT451-S

PART NO.	DETAIL	DESCRIPTION	PKG. QTY.	WHERE USED			
				451	451-S	IT451	IT451-S
SB200		Setting Block	100	●	●	●	●
SB240		Setting Block for IS463/IS200 Inside Glaze Horizontal	100	●	●		
SB110		Setting Block for IH463 Inside Glaze Horizontal	100	●	●		
SB510		Setting Block for IS467, WS100 and S-426	20	●			
WB452		Edge Blocking	50	●	●	●	●
EC450		End Dam for Head and Sill	20	●	●	●	●
SV400		Splice Sleeve for FF400 and FT400	10	●		●	●
SV568		Splice Sleeve for CS568	10		●		
SV563		Splice Sleeve for CS563	10		●		
SV458		Splice Sleeve for CT458	10		●	●	
SV453		Splice Sleeve for CT453	10		●	●	

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Accessories

Glazing Gaskets

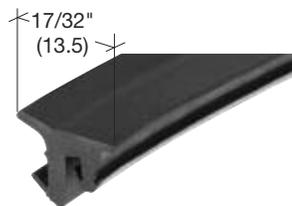
GLAZING GASKET CHART FOR STOREFRONT PRODUCTS

SYSTEM SERIES	GLASS THICKNESS	OUTSIDE GLAZING		INSIDE GLAZING		POCKET WIDTH	ADAPTOR
		EXTERIOR	INTERIOR	EXTERIOR	INTERIOR		
400/400-S 450/450-S FF450 FF600	3/16" (5)	NP218	NP225	NP225	NP218	5/8" (15.9)	
	1/4" (6)	NP225	NP225	NP225	NP225		
	5/16" (8)	NP225	NP238	NP238	NP225		
	3/8" (10)	NP238	NP238	NP238	NP238		
451/451-S IT451 FF451 FT451 FF601 FT601	1/4" (6)	NP225	NP225	NP225	NP225	5/8" (15.9)	IS251
	5/16" (8)	NP225	NP238	NP238	NP225		
	7/16" (11)	NP218	NP225	NP225	NP218	7/8" (22.2)	IS050
	1/2" (12)	NP225	NP225	NP225	NP225		
	9/16" (14)	NP225	NP238	NP238	NP225		
	5/8" (16)	NP238	NP238	NP238	NP238		
	7/8" (22)	NP218	NP218	NP218	NP218		
	15/16" (24)	NP218	NP225	NP225	NP218	1-3/8" (34.9)	
	1" (25)	NP225	NP225	NP225	NP225		
	1-1/16" (27)	NP225	NP238	NP238	NP225		
	1-1/8" (29)	NP238	NP238	NP238	NP238		



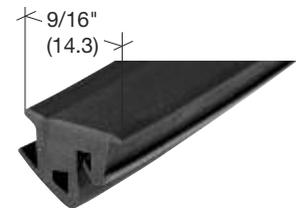
PART NO.	COLOR	TYPE	ROLL LENGTH
NP225	Black	Interior/ Exterior	500' (152.4 m)

Minimum order: 1 roll.



PART NO.	COLOR	TYPE	ROLL LENGTH
NP238	Black	Interior/ Exterior	500' (152.4 m)

Minimum order: 1 roll.

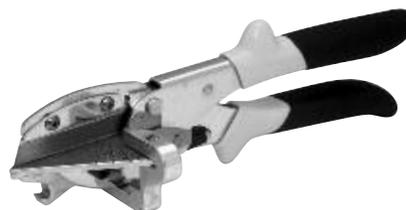


PART NO.	COLOR	TYPE	ROLL LENGTH
NP218	Black	Exterior Heavy Gasket	250' (76.2 m)

Minimum order: 1 roll.

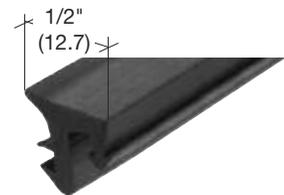
Adjustable Multi-Cutter Tool

- Makes Precise Straight or Miter Cuts in Gaskets
- Adjustable Guide Block



PART NO.	DESCRIPTION
MC80N	Multi-Cutter
MC80RB	Pack of 5 Blades

Minimum order: 1 each or 1 pack.



PART NO.	COLOR	TYPE	ROLL LENGTH
NP299	Black	Universal Storefront Gasket	500' (152.4 m)

Minimum order: 1 roll.

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 Online crlaurence.com By Phone (800) 421-6144

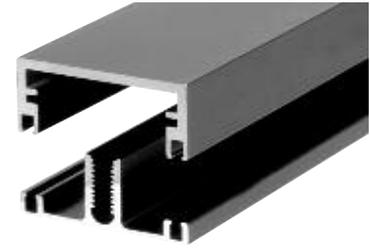
STOREFRONTS

Typical Details

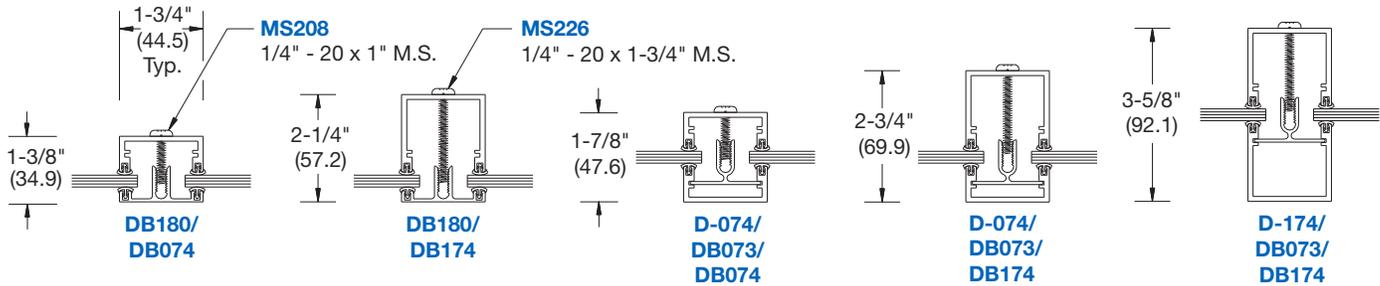
Miscellaneous Framing

DIVISION BARS

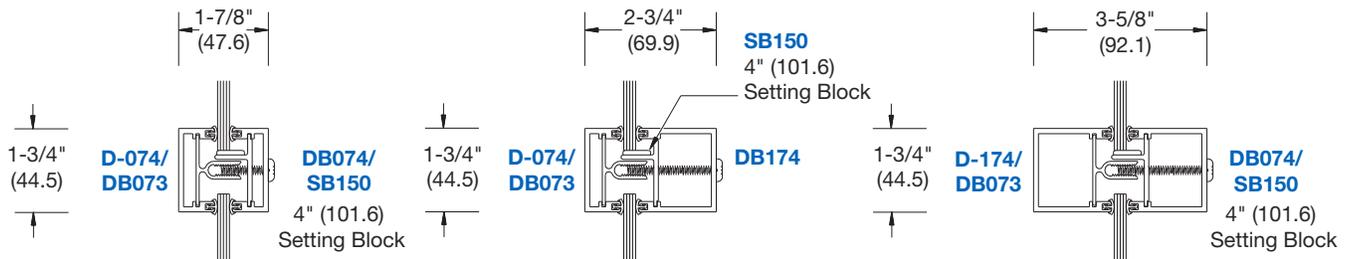
SHOWN WITH 1/4" (6) GLAZING TYPICAL



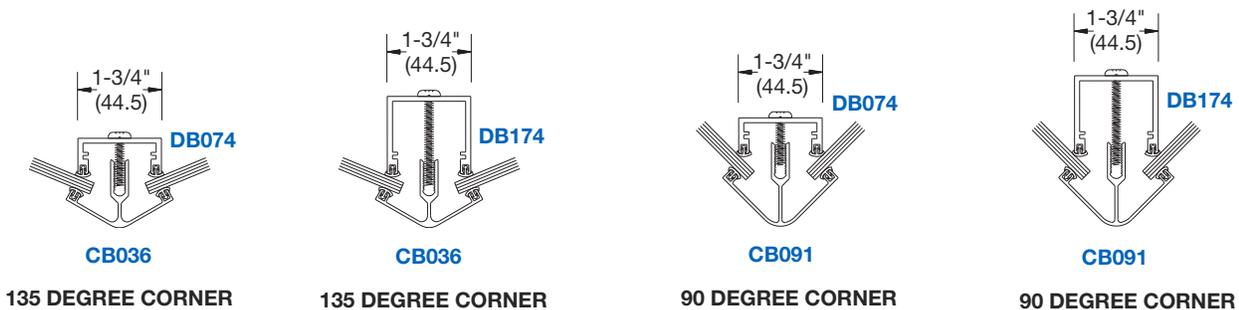
VERTICAL MEMBERS



HORIZONTAL MEMBERS



CORNER MEMBERS



NOTE: All stocks lengths on this page are available in clear anodized or bronze anodized finishes, and are 24' (7.3 m) in length unless noted otherwise. Visit usalum.com for more information.

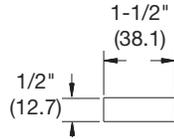
NOT TO SCALE

STOREFRONTS

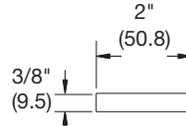
Typical Details

Miscellaneous Framing

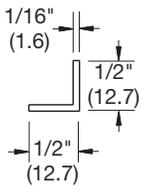
BARS AND ANGLES



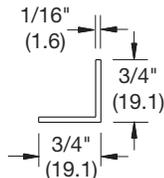
B-150



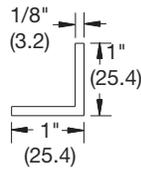
B-237



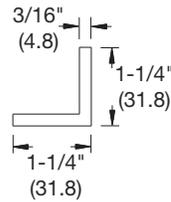
A-050



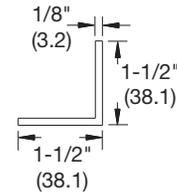
AL075



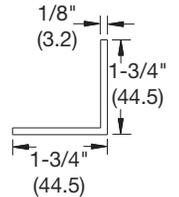
A-100



A-125

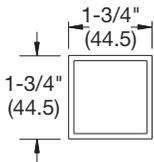


A-150

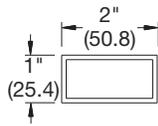


A-175

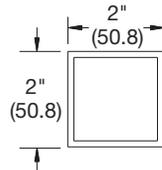
TUBES



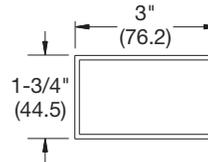
J-175



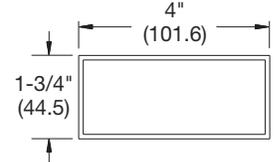
J-200



J-220

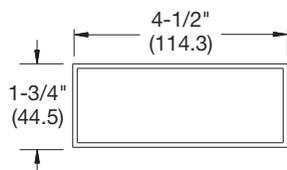


J-300



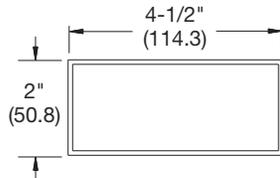
J-400

24' (7.3 m)



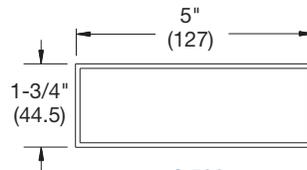
J-450

24' (7.3 m)



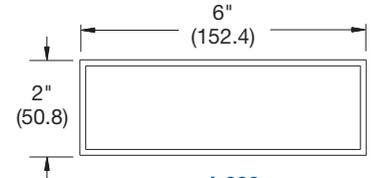
I-450

24' (7.3 m)



J-500

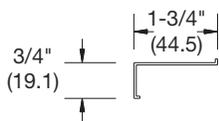
24' (7.3 m)



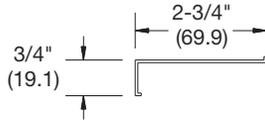
J-600

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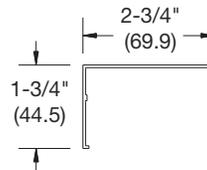
SILL COVERS AND JAMB MOLDINGS



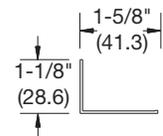
SC100



SC200



SC400



SJ300

NOTE: All stock lengths on this page are available in clear anodized or bronze anodized finishes, and are 21' (6.4 m) in length unless noted otherwise. Visit usalum.com for more information.

NOT TO SCALE

STOREFRONTS



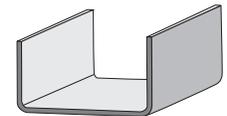
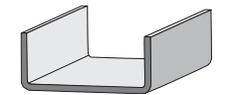
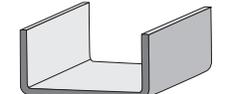
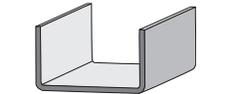
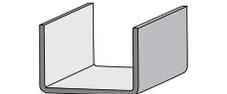
Accessories

Steel Stiffeners and Drill Jigs

STEEL STIFFENERS*

PRIMED HOT ROLLED COMMERCIAL QUALITY, ASTM A-559

DRILL JIGS

PART NO.	DETAIL	DESCRIPTION	STOCK LENGTH	PART NO.	TO PREPARE	FOR	SYSTEM	PKG. QTY.
SS040		3-5/8" (92) x 3/4" (19) x 12 GA. Use with Series 400 and 400-S	16' (4.8 m)	DJ050	Verticals	Screw Spline	Center Glaze Series 400 and Series 450	1
SS964		3-1/2" (88.9) x 1-11/16" (42.8) x 7 GA. Use with Series 400 and 400-S	16' (4.8 m)	DJ025	Verticals	Shear Block	Center Glaze Series 400-S and Series 450-S	1
SS045		4-1/8" (104.7) x 3/4" (19) x 12 GA. Use with Series 450 and 451	16' (4.8 m)	DJ125	Verticals	Screw Spline and Shear Block	Center Glaze Series 451 and Series 451-S	1
SS452		2-15/16" (74.6) x 1-1/4" (31.7) x 10 GA. Use with Flush Front FF452	16' (4.8 m)	DJ125	Verticals	Screw Spline	Center Glaze Series IT451	1
				DJ150	Verticals	Shear Block		1
DJ452	Verticals	Screw Spline	Flush Front Series FF450	1				
SS469		2-11/32" (59.5) x 1-1/32" (26.2) x 10 GA. Use with Flush Front FF460/FF469	16' (4.8 m)	DJ552	Verticals	Screw Spline	Flush Front Series FF451 Series FT451	1
DJ652	Verticals	Horiz.	Flush Front Series FF600	1				
SS552		2-1/4" (57) x 1-3/16" (30.2) x 10 GA. Use with Flush Front FF552/FT552	16' (4.8 m)	DJ752	Verticals	Horiz.	Flush Front Series FF601 Series FT601	1
SS569		2" (50.8) x 1-7/16" (36.5) x 10 GA. Use with Flush Front FF560/FF569/FT560/FT569	16' (4.8 m)	DJ210	Verticals	AP463 and AP563	OS-2 Series OS450/450-SG and Series OS451/451-SG	1
SS652		4-1/2" (114.3) x 1-1/4" (31.7) x 10 GA. Fits FF652	16' (4.8 m)	DJ650	Verticals	AP664 and AP764	OS-2 Series OS600/600-SG and Series OS601/601-SG	1
SS769		3-1/2" (88.9) x 1-7/16" (36.5) x 10 GA. Fits FF769 and FT769	16' (4.8 m)	DJ525	Verticals	AP555	BG Systems Series BG450 Series BG525 Series BT525	1

*Steel Stiffeners shown are the more popular models. For additional information on Stiffeners, contact U.S. Aluminum Technical Sales at (800) 262-5151.

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