

# Kawneer Architectural

Detail Manual Master Index

**Features**

- 190 narrow stile has 2-1/8" (54) vertical stile, 2-1/4" (57.2) top and 3-7/8" (98.4) bottom rail
- 350 medium stile has 3-1/2" (88.9) vertical stile, 3-1/2" (88.9) top and 6-1/2" (165.1) bottom rail
- 500 wide stile has 5" (127) vertical stile, 5" (127) top and 6-1/2" (165.1) bottom rail
- Door is 1-3/4" (44.5) deep
- Dual moment welded corner construction
- Single or double acting
- Infills range from 1/4" (6.4) to 1" (25.4)
- Offset pivots, butt hinges, continuous geared hinge or center pivots
- MS locks or panic hardware
- Surface mounted or concealed closers
- Architects Classic push/pulls
- Adjustable astragal utilizing pile weathering with polymeric fin at meeting stiles
- Polymeric bulb weatherstripping in door frames
- Permanodic™ anodized finishes in seven choices
- Painted finishes in standard and custom choices

**Optional Features**

- Paneline™ exit device or Paneline™ EL exit device
- Wide variety of bottom rail and cross rail

**Product Applications**

- 190 narrow stile - engineered for moderate traffic in applications such as offices and stores
- 350 medium stile - provides extra strength for schools, institutions and other high traffic applications
- 500 wide stile - creates a monumental visual statement for banks, libraries or buildings that experience heavy traffic conditions

For specific product applications,  
Consult your Kawneer representative.

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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LAWS AND BUILDING AND SAFETY CODES GOVERNING THE DESIGN AND USE OF GLAZED ENTRANCE, WINDOW, AND CURTAIN WALL PRODUCTS VARY WIDELY. KAWNEER DOES NOT CONTROL THE SELECTION OF PRODUCT CONFIGURATIONS, OPERATING HARDWARE, OR GLAZING MATERIALS, AND ASSUMES NO RESPONSIBILITY THEREFOR.

Metric (SI) conversion figures are included throughout these details for reference. Numbers in parentheses ( ) are millimeters unless otherwise noted.

The following metric (SI ) units are found in these details:

- m – meter
- cm – centimeter
- mm – millimeter
- s – second
- Pa – pascal
- MPa – megapascal

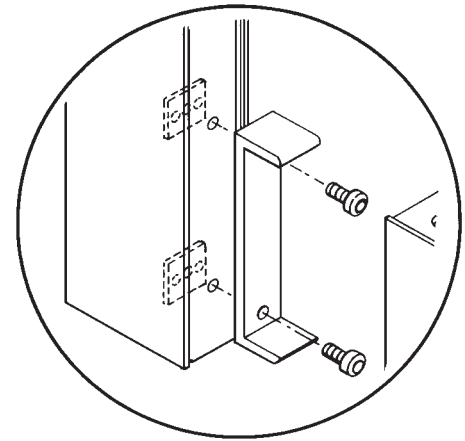
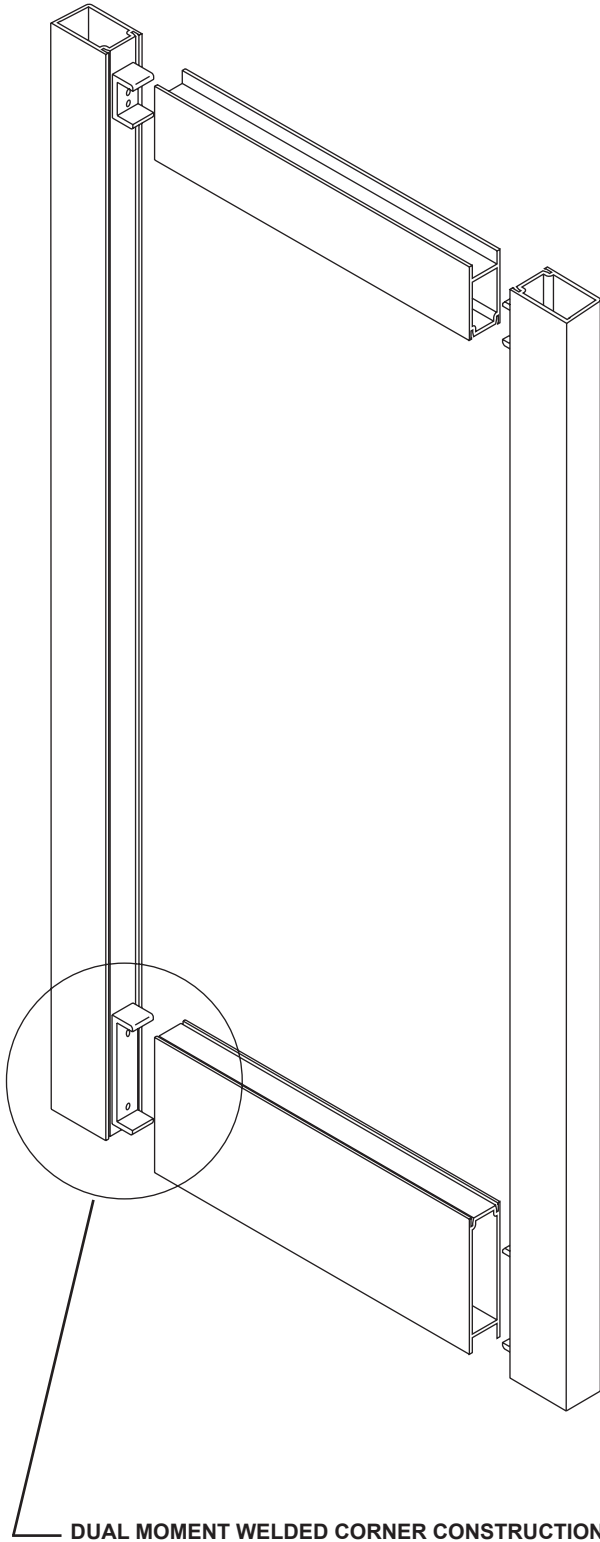
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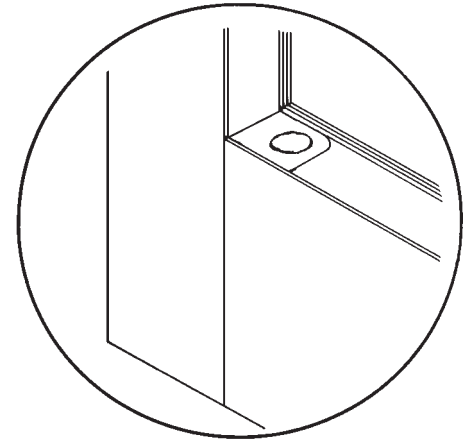
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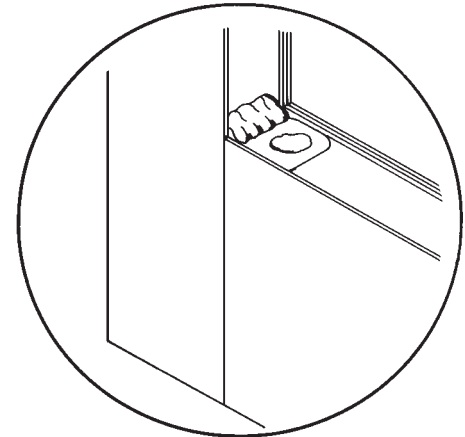
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**#1 MECHANICAL FASTENING** is accomplished by attaching a 5/16" (7.9) thick extruded aluminum channel clip to the vertical stile with 1/4"-20 heat strengthened bolts and 3/16" thick steel nut plates for a high strength welding base for attachment horizontal member.



**#2 SIGMA\* DEEP PENETRATION PLUG WELDS** are made top and bottom after the horizontal is properly positioned over the channel clip to help provide the strongest door corner joint currently available.



**#3 SIGMA\* FILLET WELDS** along both top and bottom webs of the rail extrusion complete the welded corner construction.

\* An arc welding process known as Shielded Inert Gas Metal Arc (SIGMA) or also known as Metal Inert Gas (MIG).

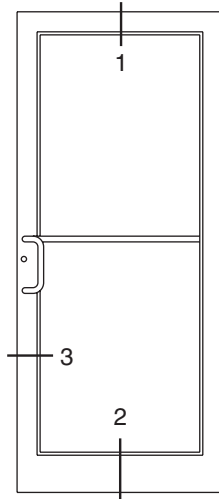
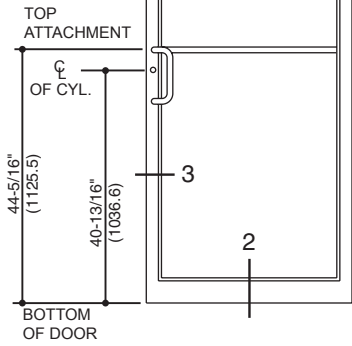
SCALE 3" = 1' 0"

### 190 NARROW STILE

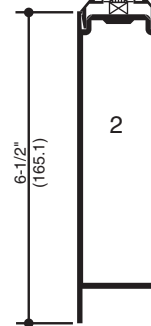
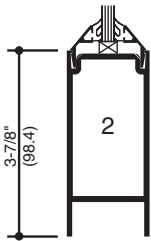
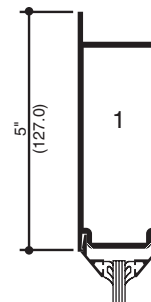
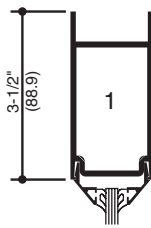
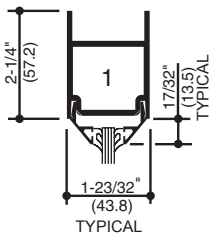
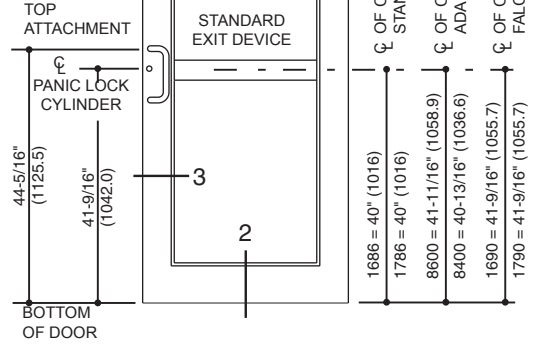
### 350 MEDIUM STILE

### 500 WIDE STILE

STANDARD LOCATIONS



STANDARD LOCATIONS



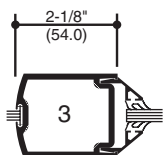
SINGLE ACTING



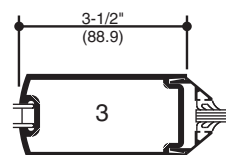
SINGLE ACTING



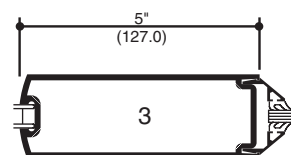
SINGLE ACTING



DOUBLE ACTING



DOUBLE ACTING



DOUBLE ACTING

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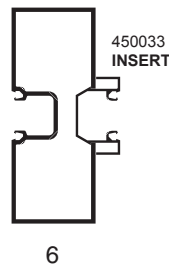
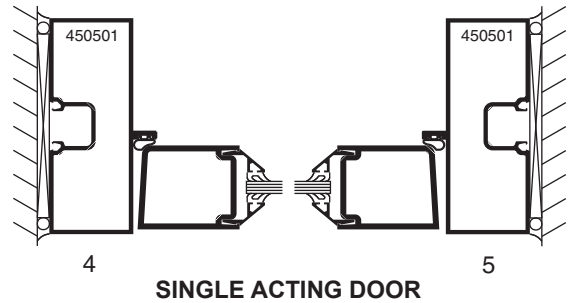
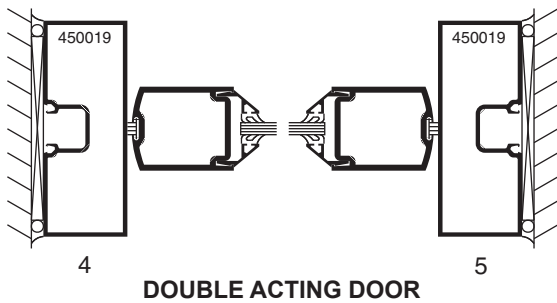
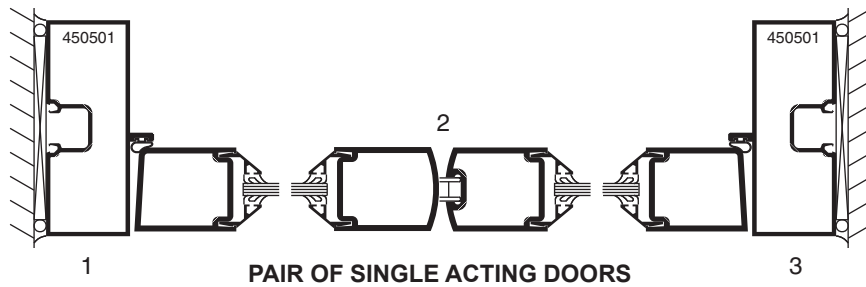
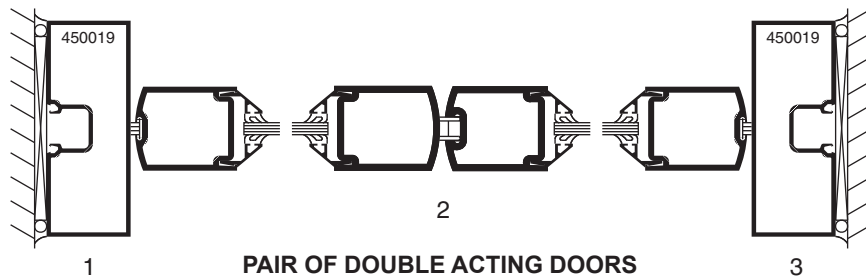
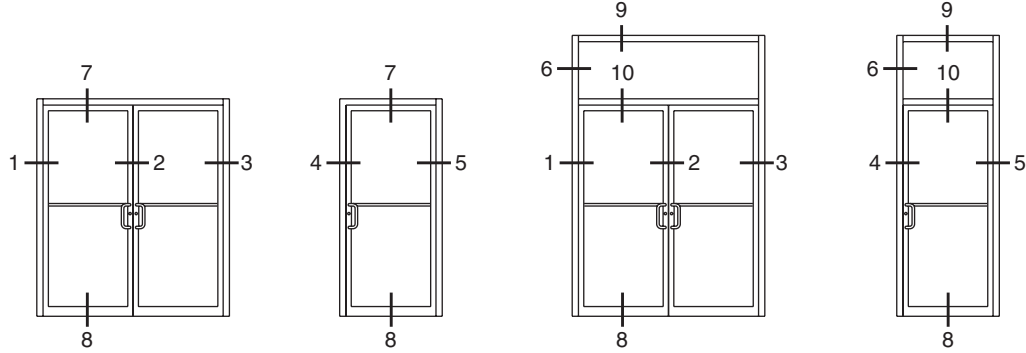
**SCALE 3" = 1' 0"**

**NOTE:**

- 1. SERIES 190 NARROW STILE DOORS ARE DETAILED, MEDIUM STILE 350 DOORS AND WIDE STILE 500 DOORS ALSO MAY BE USED.
- 2. TRIFAB™ VG 450 CENTER, 1-3/4" X 4-1/2" (44.5 X 114.3) FRAMING IS DETAILED WITH THE DOORS FOR REFERENCE. OTHER KAWNEER FRAMING SERIES OR CURTAIN WALL SYSTEMS MAY BE USED. REFER TO THE CATALOG INDEX FOR THE APPROPRIATE DETAIL SECTION.

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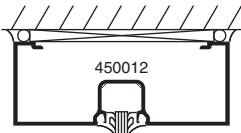
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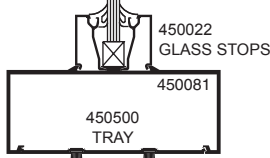


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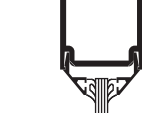
## DOUBLE ACTING DOORS



9



10

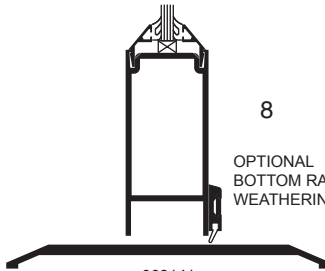


8

OPTIONAL  
BOTTOM RAIL  
WEATHERING

069143

OVERHEAD CLOSER

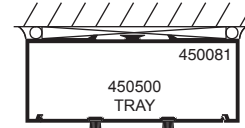


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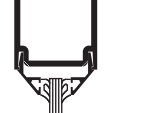
OPTIONAL  
BOTTOM RAIL  
WEATHERING

069141

FLOOR CLOSER



7



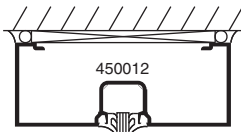
8

OPTIONAL  
BOTTOM RAIL  
WEATHERING

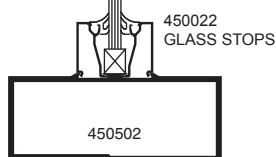
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OVERHEAD CLOSER

## SINGLE ACTING DOORS



9



10

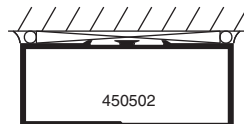


8

OPTIONAL  
BOTTOM RAIL  
WEATHERING

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OVERHEAD CLOSER



7



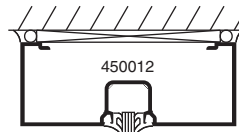
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OPTIONAL  
BOTTOM RAIL  
WEATHERING

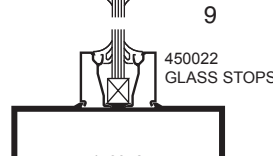
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OVERHEAD CLOSER

## COC WITH SINGLE ACTING OFFSET ARM



9



10

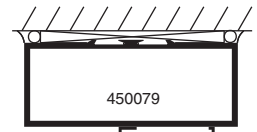


8

OPTIONAL  
BOTTOM RAIL  
WEATHERING

069139

OVERHEAD CLOSER



7



8

OPTIONAL  
BOTTOM RAIL  
WEATHERING

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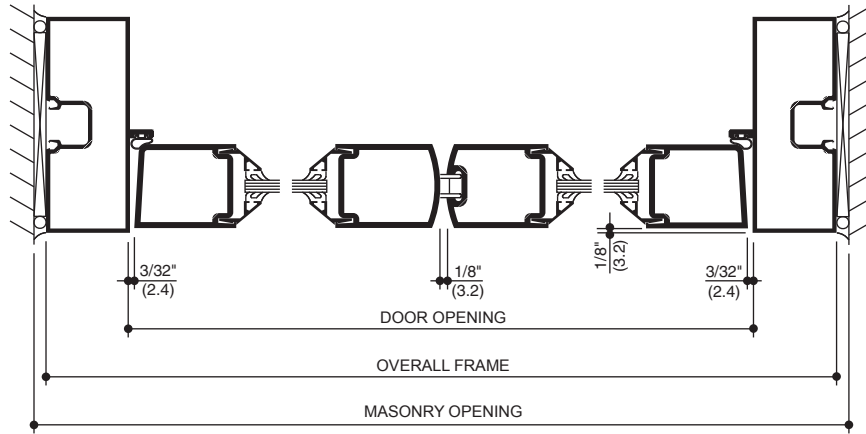
OVERHEAD CLOSER

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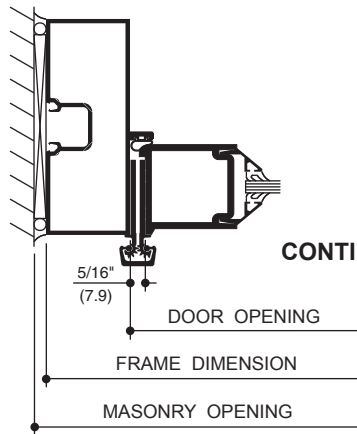
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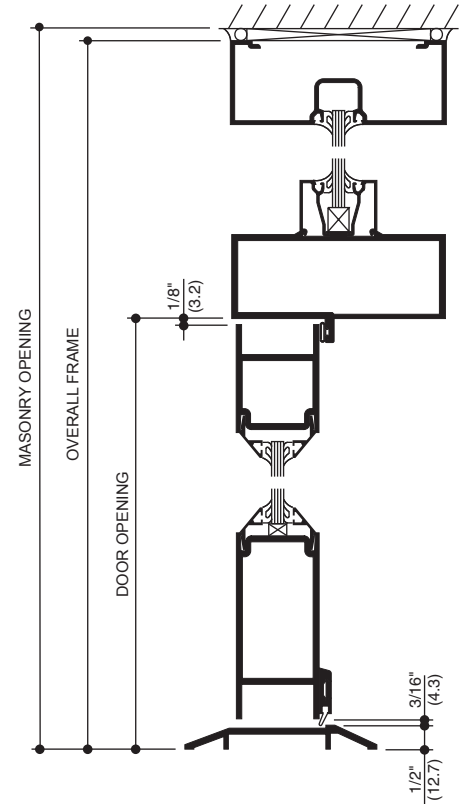
DIMENSIONS ARE NOMINAL



SINGLE ACTING DOORS



CONTINUOUS HINGE JAMB



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**STANDARD SIZES (TRIFAB™ 400 & TRIFAB™ VG 450 CENTER FRAMES)**

**WITHOUT TRANSOM**

**Door Opening Dimension**  
 3' 0" x 7' 0" ( 914 x 2134)  
 3' 6" x 7' 0" (1067 x 2134)  
 6' 0" x 7' 0" (1829 x 2134)

**Overall Frame Dimension**  
 3' 3-1/2" x 7' 1-3/4" (1003 x 2178)  
 3' 9-1/2" x 7' 1-3/4" (1156 x 2178)  
 6' 3-1/2" x 7' 1-3/4" (1918 x 2178)

**Masonry Opening Dimension**  
 3' 4" x 7' 2" (1016 x 2185)  
 3' 10" x 7' 2" (1168 x 2185)  
 6' 4" x 7' 2" (1930 x 2185)

**WITH TRANSOM**

**Door Opening Dimension**  
 Unchanged from above.

**Overall Frame Dimension**  
 Add 3' 1-3/4" (959) to above heights.

**Masonry Opening Dimension**  
 Add 3' 1-3/4" (959) to above heights.

**STANDARD SIZES (TRIFAB™ VG 451 CENTER FRAMES)**

**WITHOUT TRANSOM**

**Door Opening Dimension**  
 3' 0" x 7' 0" ( 914 x 2134)  
 3' 6" x 7' 0" (1067 x 2134)  
 6' 0" x 7' 0" (1829 x 2134)

**Overall Frame Dimension**  
 3' 4" x 7' 2" (1016 x 2185)  
 3' 10" x 7' 2" (1168 x 2185)  
 6' 4" x 7' 2" (1930 x 2185)

**Masonry Opening Dimension**  
 3' 4-1/2" x 7' 2-1/4" (1029 x 2191)  
 3' 10-1/2" x 7' 2-1/4" (1181 x 2191)  
 6' 4-1/2" x 7' 2-1/4" (1943 x 2191)

**WITH TRANSOM**

**Door Opening Dimension**  
 Unchanged from above.

**Overall Frame Dimension**  
 Add 3' 1-1/2" (953) to above heights.

**Masonry Opening Dimension**  
 Add 3' 1-1/2" (953) to above heights.

	STANDARD	OPTIONAL
<b>Doors</b>	Narrow stile 190 doors prepared for attachment hardware.	Medium stile 350 or wide stile 500.
<b>Door Sizes Std.</b>	Standard sizes shown on page 9.	Any size up to 4'-0" x 8'-0" (1219 x 2438).
<b>Glass Stops</b>	Beveled glass stops for 1/4" (6.4) or 3/16" (4.0) infill.	Square glass stops for 3/16" (4.0) or 1/4" (6.4) infill. Also 1" (25.4) stops.
<b>Door Frames</b>	<b>Trifab™ 400</b> - 1-3/4" x 4" (44.5 x 101.6) for single glazing. <b>Trifab™ VG 450</b> Center - 1-3/4" x 4-1/2" (44.5 x 114.3) for single glazing or <b>Trifab™ VG 451</b> Center - 2" x 4-1/2" (50.8 x 114.3) for double glazing.	Any Kawneer framing system suitable for door frames may be selected, but manufactured per order.
<b>Push-Pulls</b>	<b>Single Acting:</b> Architects Classic Hardware "CO-9" Pull and "CP-II" Push Bar.  Architects Classic Hardware "CO-9" Pull and "CP" Push Bar.  <b>Double Acting:</b> Architects Classic Hardware "CP" Push Bars.	<b>Single Acting:</b> Architects Classic Hardware "CO-12" and "CP-II" push bar.  Architects Classic Hardware "CO-12" and "CP" push bar.  Architects Classic Hardware "CO-9"/"CO-9" Pulls.  Architects Classic Hardware "CO-12"/"CO-12" Pulls.  <b>Double Acting:</b> Architects Classic Hardware "CO-9"/"CO-9" Pulls.  Architects Classic Hardware "CO-12"/"CO-12" Pulls.
<b>Door Closers</b>	<b>Single Acting:</b> Norton 1601 adjustable or 1601 BF adjustable surface closer with back-check and with or without adjustable hold-open.  Standard concealed overhead closer with single acting offset arm.  <b>Double Acting:</b> Standard concealed overhead closer with 90 degree or 105 degree hold-open or without hold open. For heavy traffic & high wind applications, a supplemental door stop is recommended.	<b>Single Acting:</b> LCN 4040 surface closer with or without adjustable hold-open.  LCN 2010, 2030 or 5010 concealed overhead closers with or without hold-open.  LCN 1260 adjustable surface closer.  Norton 8100 surface closer with a 50% spring power adjustment (for opening forces of less than 8 pounds). Closer is available with standard back-checks and with or without the hold-open feature.  International single acting concealed overhead closer.  Falcon SC 60 Surface closer.  <b>Double Acting:</b> International overhead concealed closer.
<b>Hinging</b>	<b>Single Acting:</b> Kawneer top and bottom offset pivots (or) Kawneer top and bottom 4 1/2" x 4" (114.3 x 101.6) ball bearing butt hinge with non-removable pin (NRP) (or) Kawneer continuous gear hinge.  <b>Double Acting:</b> Kawneer bottom center pivots for use with concealed overhead closer.	<b>Double Acting:</b> Kawneer top center (walking beam) pivot for use with floor closers.
<b>Intermediate Pivots/Butts</b>	<b>Single Acting:</b> Kawneer intermediate offset pivot (or) Kawneer 4-1/2" x 4" (114.3 x 101.6) ball bearing butt hinge with non-removable pin (NRP).	<b>Single Acting:</b> Rixson M-19 or IVES #7215-INT intermediate offset pivot.
<b>Power Transfers</b>	<b>Single Acting:</b> Kawneer EL intermediate offset pivot (or) Kawneer EL 4 1/2" x 4" (114.3 x 101.6) ball bearing butt hinge with wire transfer (or) EPT (Electric Power Transfer).	
<b>Power Supply</b>	<b>SP-1000X Power Supply:</b> For use with Paneline™ EL exit devices.	<b>PS1, PS5-4, and PS5-6 Power Supplies:</b> For use with Kawneer 1686 EL and 1786 EL exit devices only.
<b>Locks - Active Leaf</b>	Adams-Rite MS 1850A deadlock with two 1-5/32" (29.4) diameter 5 pin cylinders.	Adams-Rite #4510 latch lock. Adams-Rite #1850A-500 short throw deadlock. Adams-Rite #1850A-505 hookbolt lock. Adams-Rite #4015 two-point Lock. Adams-Rite #4085 three-point Lock. Adams-Rite #4089 exit indicator. Kawneer cylinder guard. Kawneer thumbturn (in lieu of cylinder).

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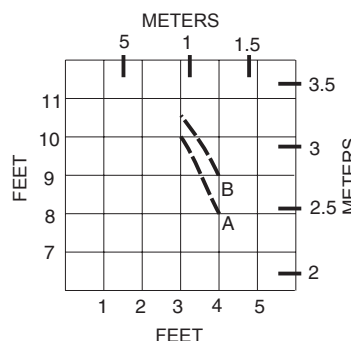
	STANDARD	OPTIONAL
<b>Locks - Inactive Leaf</b>	One pair of Kawneer flush bolts in the inactive leaf of a pair of doors.	<b>Controller™</b> is a 3-point locking system consisting of a two point locking device in the inactive leaf in lieu of flush bolts, working in conjunction with the MS 1850A deadlock in the active leaf. This combination provides for greater security than possible with flush bolts and complies with the life safety considerations of building codes which prohibit the use of flush bolts.
<b>Thresholds</b>	A 1/2" x 4" (12.7 x 101.6) aluminum mill finish threshold.	A 1/2" x 6-3/4" (12.7 x 171.5) aluminum mill finish threshold.
<b>Weathering</b>	<p><b>Single Acting:</b> Weathering system in the door and frame consisting of a dense, bulb polymeric material, which remains resilient and retains its weathering ability under temperature extremes. (The system is complete with an optional EPDM blade gasket sweep strip applied to the bottom door rail with concealed fasteners).</p> <p><b>Double Acting:</b> Pile cloth weathering in the door and frame.</p>	Bottom Door Sweep
<b>Exit Device</b>	<p><b>Kawneer 1686 Concealed Rod Exit Device</b> with or without a mortised type cylinder.</p> <p><b>Kawneer 1786 Rim Exit Device</b> is a rim type exit device with or without a rim type cylinder. Pairs of doors require a Kawneer RM-86 removable mullion.</p> <p><b>Paneline™</b> exit device is a concealed rod exit device applicable to single or pairs of doors. It features an activating panel contained within the door cross rail.</p>	<p><b>Kawneer 1686 EL Concealed Rod Exit Device</b> electric modification is available.</p> <p><b>Kawneer 1786 EL Rim Exit Device</b> electric modification is available.</p> <p><b>Kawneer 1686 CD Concealed Rod Exit Device</b> available with cylinder dogging.</p> <p><b>Kawneer 1786 CD Rim Exit Device</b> available with cylinder dogging.</p> <p><b>Kawneer 1686 Lever Handle</b> is available for the Kawneer 1686 concealed rod exit device.</p> <p><b>Kawneer 1786 Lever Handle</b> is available for the Kawneer 1786 rim type exit device.</p> <p><b>Falcon 1690 Concealed Rod Exit Device</b> with or without a mortised type cylinder.</p> <p><b>Falcon 1790 Rim Exit Device</b> is a rim type exit device with or without a rim type cylinder.</p> <p><b>Falcon EL 1690</b> electric modification is also available.</p> <p><b>Falcon EL 1790</b> electric modification is also available.</p> <p><b>Paneline™ EL</b> electric modification is also available.</p> <p><b>Falcon 1990</b> is a concealed rod exit device with or without a rim type cylinder.</p> <p><b>Falcon 2090</b> is a rim type exit device with or without a rim type cylinder. Pairs of doors require a removable aluminum mullion. RM-70 with the Falcon 2090 exit device.</p>
	<p><b>Exit Device Pulls:</b> Architects Classic style "CO-9" Pull with Kawneer 1686 and 1786 exit devices. Architects Classic style "CPN" Pull for Paneline™ and Paneline™ EL exit devices.</p>	<p><b>Optional Exit Device Pulls:</b> Architects Classic style "CO-12" Pull with Kawneer 1686 and 1786 exit devices.</p>

## APPLICATION CRITERIA

As indicated on Page 9, the standard sizes of swing doors are 3'-0" x 7'-0" (914.4 x 2133.6) or 3'-6" x 7'-0" (1067 x 2134) for single doors and 6'-0" x 7'-0" (1828.8 x 2133.6) for pairs of doors. When these sizes are exceeded the following criteria should be administered.

1. Larger doors should not be subject to heavy traffic or strong prevailing wind conditions.
2. Larger doors should use a door closer with a good back check action.
3. When a door exceeds 9'-0" (2743.2) in height, a cross rail or push bar is recommended to reinforce the vertical stiles.
4. When an offset hung door exceeds 7'-6" (2286.0) in height, an intermediate butt or offset pivot should be used.
5. Tall doors should be prevented from racking by proper utilization of hardware, including door closers, door holders and door stops.

**NOTE:**  
SOME OF THESE CRITERIA ARE OF A SUBJECTIVE NATURE, CONTACT YOUR FACTORY REPRESENTATIVE FOR APPLICATION ASSISTANCE.



**A = NARROW STILE 190**  
**B = MEDIUM STILE 350**  
**OR**  
**WIDE STILE 500**

**MAXIMUM DOOR HEIGHT FOR PANELINE™ EL = 8'-0"**

**MAXIMUM SIZE DOOR LEAFS GLAZED WITH 1/4" (6.4) GLASS**

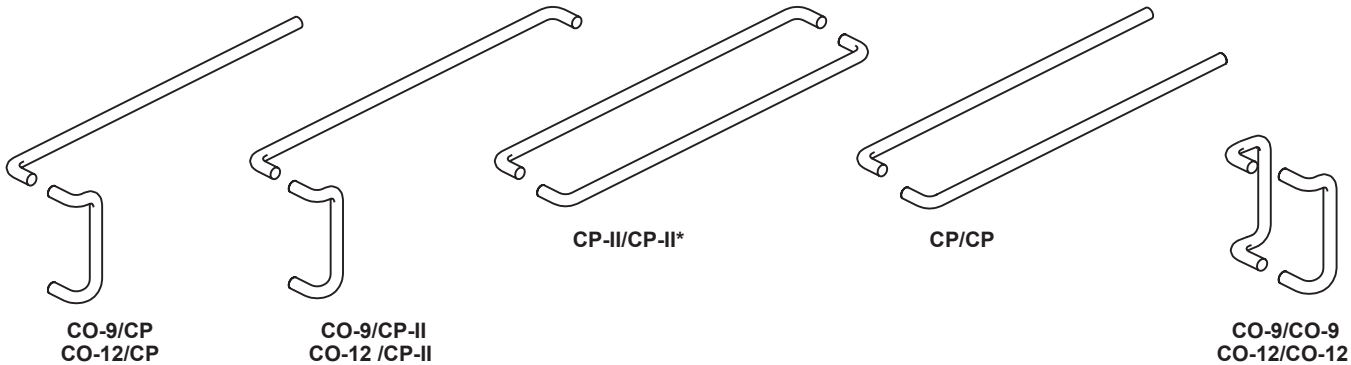
Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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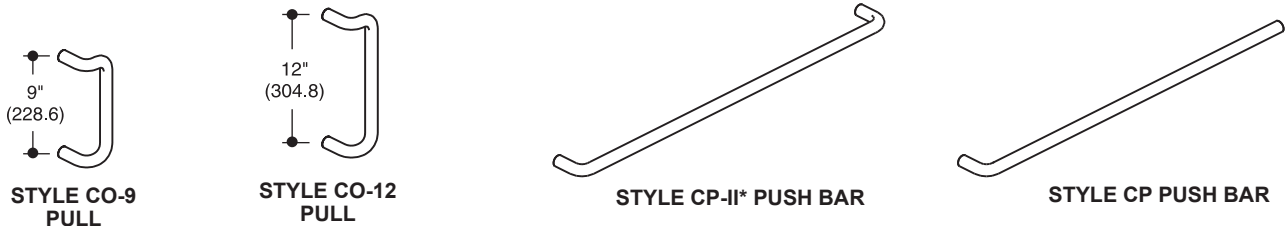
REFER TO HARDWARE SECTION FOR COMPLETE HARDWARE INFORMATION.

**ARCHITECTS CLASSIC (PUSH PULL SETS)**

SINGLE ACTING DOORS USE A PULL HANDLE AND PUSH BAR AS STANDARD  
 DOUBLE ACTING DOORS USE CP PUSH BARS BACK TO BACK AS STANDARD.



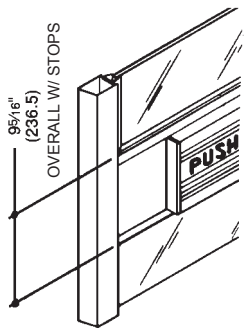
**ARCHITECTS CLASSIC (COMPONENTS)**



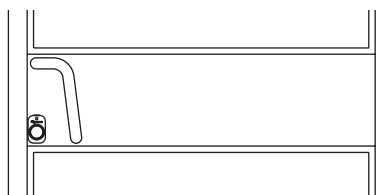
\* CP-II PUSH BAR IS NOT TO BE USED FOR BACK TO BACK MOUNTING ON D/A DOORS.

**EXIT DEVICES**

KAWNEER PANELINE™ / PANELINE™ EL



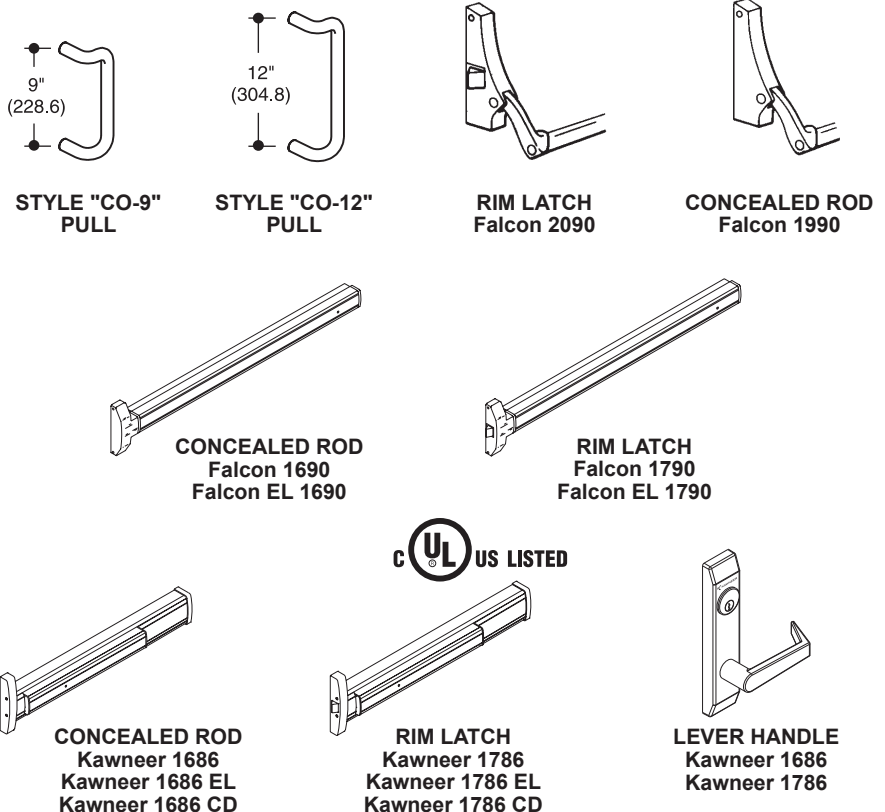
STYLE "CPN" PULL ON  
EXTERIOR OF DOOR



EXTERIOR VIEW OF 190 DOOR (350/500 SIMILAR)  
 "CPN" PULL AND OPTIONAL CYLINDER GUARD SHOWN.

SEE PAGE 13 AND 14 FOR COMPLETE  
 PANELINE™ INFORMATION

**EXIT DEVICES AND PULLS**



The Paneline™ concealed rod exit device for 190, 350 and 500 doors will accommodate variations in stile width and door width as shown in the following illustrations. Sidelites adjacent to Paneline™ equipped doors not requiring exit devices may be fitted with fixed panels as detailed below to match the general appearance of the Paneline™ cross rail.



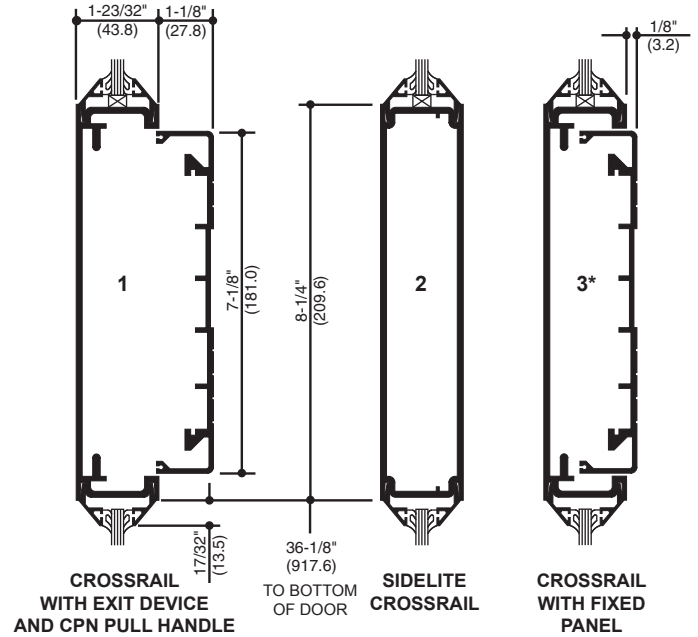
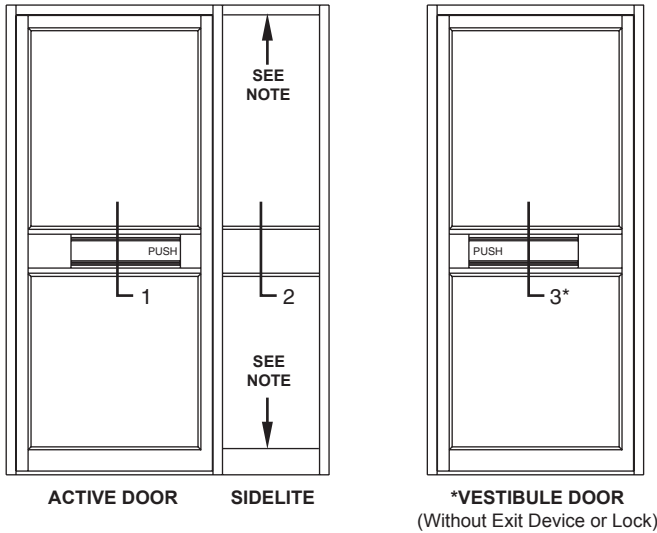
The Optional Paneline™ EL device is designed for electrified access control and is compatible with most key pad and card reader systems.

See **Hardware Section** for complete description of Paneline™ hardware, including finish of units.

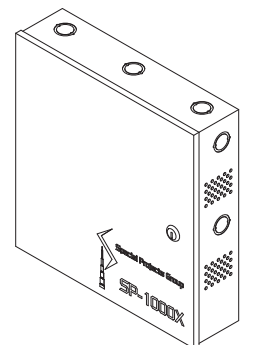
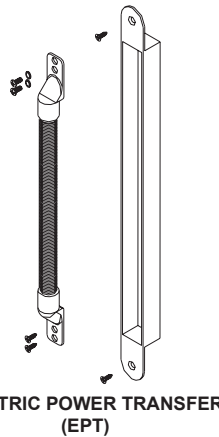
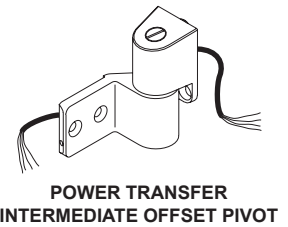
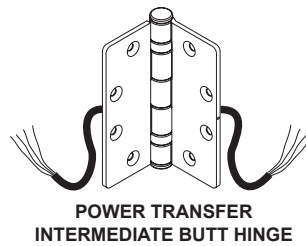
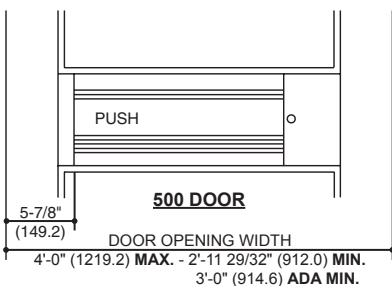
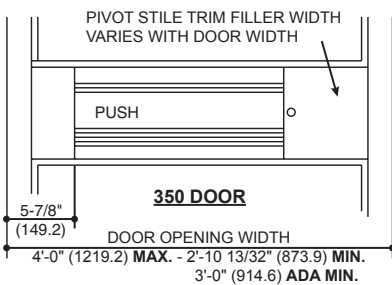
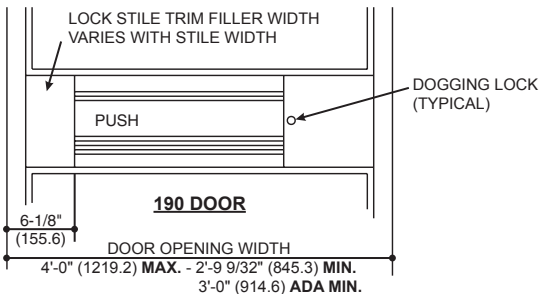
**Paneline™ uses mortise cylinder in lieu of the normal rim-type. Dummy Paneline™ units are not for use with any type of lock.**

**INTERIOR ELEVATIONS**

**NOTE:** Sidelites must be stop glazed above and below rail.



**PANELINE™ EL COMPONENTS**



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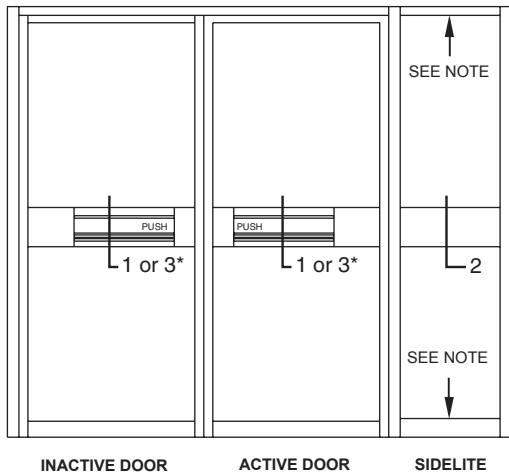
Sidelites adjacent to Paneline™ equipped doors not requiring exit devices may be fitted with fixed panels as detailed below to match the general appearance of the Paneline™ cross rail.

See **Hardware Section** for complete description of Paneline™ hardware, including finish of units.

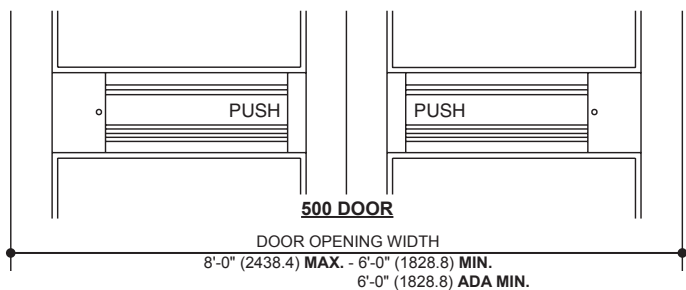
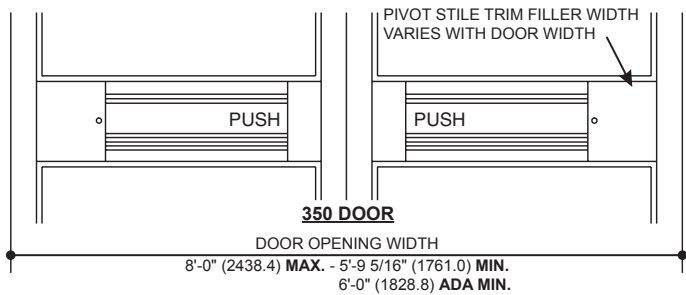
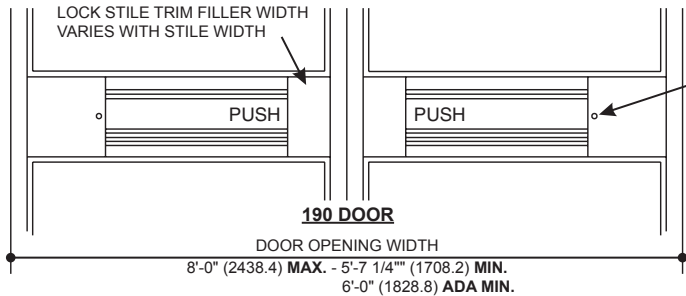
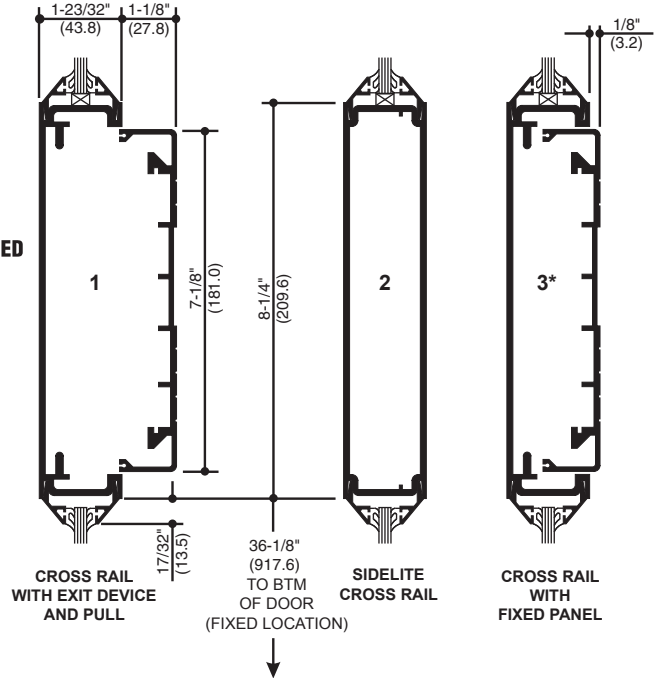
**Paneline™ uses mortise cylinder in lieu of the normal rim-type. Dummy Paneline™ units should not use any type of lock.**

**INTERIOR ELEVATION**

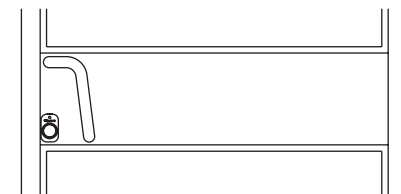
**NOTE:** Sidelites must be stop glazed above and below rail.



**\* ALTERNATE CROSSRAIL FOR VESTIBULE DOORS (Without Exit Device or Lock)**



**STYLE "CPN" PULL ON EXTERIOR OF DOOR**



**EXTERIOR VIEW OF 190 DOOR (350-500 SIMILAR) WITH "CPN" PULL AND STANDARD CYLINDER GUARD SHOWN**

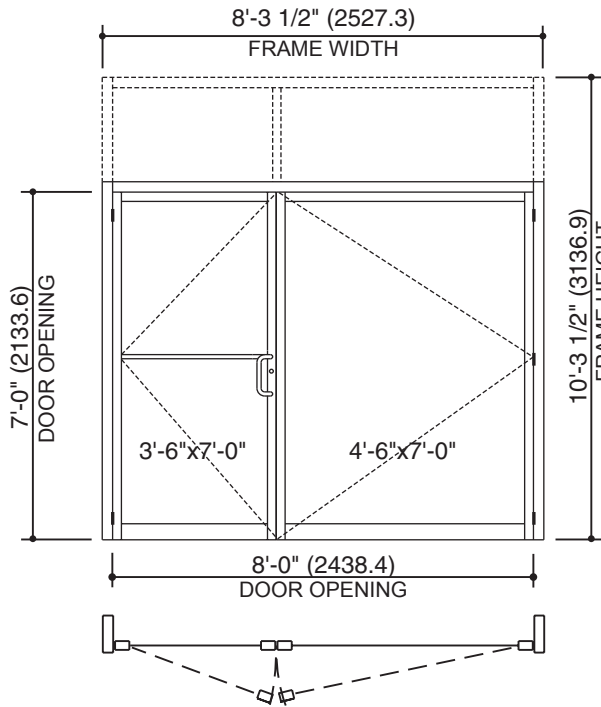
Law and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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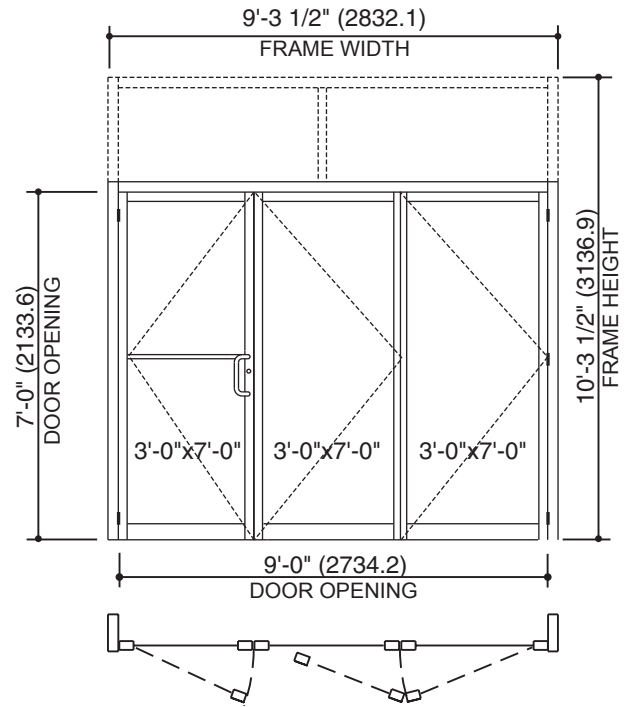
SCALE 3" = 1'-0"

NOTE: 1/4" GLAZING INFILL ONLY

**SWING TYPE**



**BIFOLD TYPE**



**MAXIMUM ALLOWABLE SIZES**

- DOOR OPENING WIDTH TO 9'-0" (2743.2)
- DOOR OPENING HEIGHT TO 8'-0" (2438.4)
- OVERALL FRAME HEIGHT TO 8'-1 3/4" (2482.9) W/O TRANSOM
- OVERALL FRAME HEIGHT TO 12'-0" (3657.6) WITH TRANSOM

**AUTO SHOWROOM PACKAGE**

**DOORS** ..... 190 NARROW STILE, 350 MEDIUM STILE AND 500 WIDE STILE DOORS.

**FRAME** ..... TRIFAB™ VG 450 CENTER.

**CLOSER** ..... NORTON 1601 ADJUSTABLE OR 1601 BF ADJUSTABLE SURFACE CLOSER (ACTIVE LEAF ONLY).

**BUTT HINGES** ..... ONE PAIR 4-1/2" x 4" (114.3 x 101.6) BALL BEARING BUTTS ON ACTIVE LEAF, ONE AND ONE HALF PAIR ON INACTIVE LEAVES AT HINGE JAMB. CONTINUOUS HINGE ON INACTIVE LEAVES.

**LOCKS** ..... ADAMS-RITE MS1850A WITH (2) CYLINDERS ON ACTIVE LEAF.

**FLUSHBOLTS** ..... ONE PAIR EDGE MOUNTED FOR INACTIVE LEAVES (FACE MOUNTED ON #2 INACTIVE LEAF OF BIFOLD TYPE).

**THRESHOLD** ..... 1/2" x 4" (12.7 x 101.6) ALUMINUM.

**RISER BLOCK** ..... EXTRUDED ALUMINUM BLOCK APPLIED TO BOTTOM RAIL OF EACH INACTIVE LEAF.

**OPTIONAL CASTER** ..... IN LIEU OF RISER BLOCK, FACE APPLIED CASTER TO LEADING STILE OF INACTIVE LEAF.

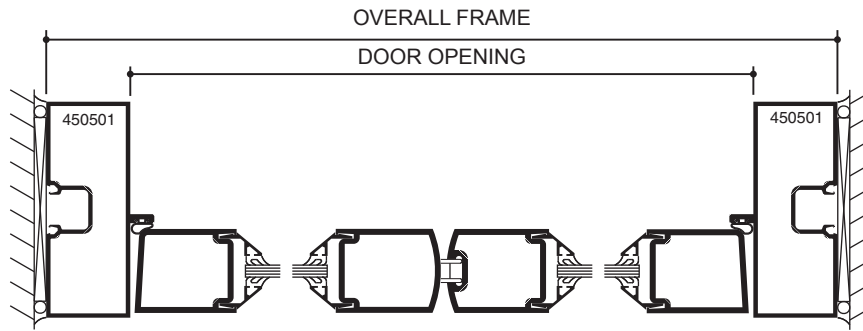
Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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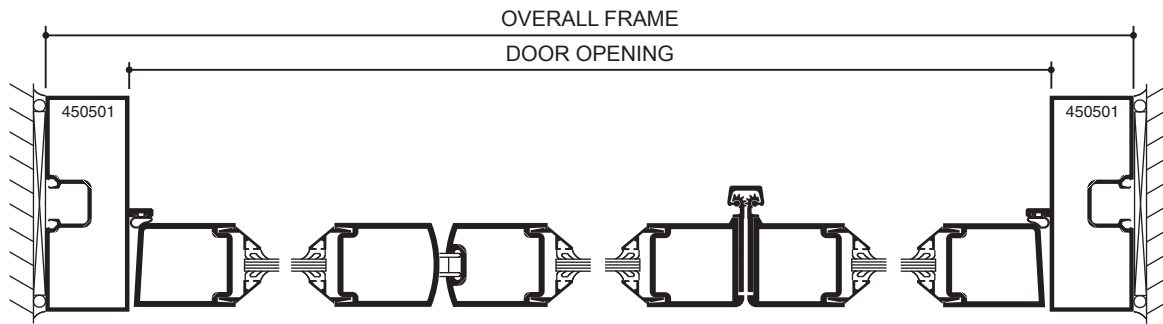
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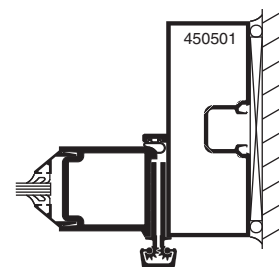
SCALE 3" = 1' 0"



**SWING TYPE**



**BIFOLD TYPE**



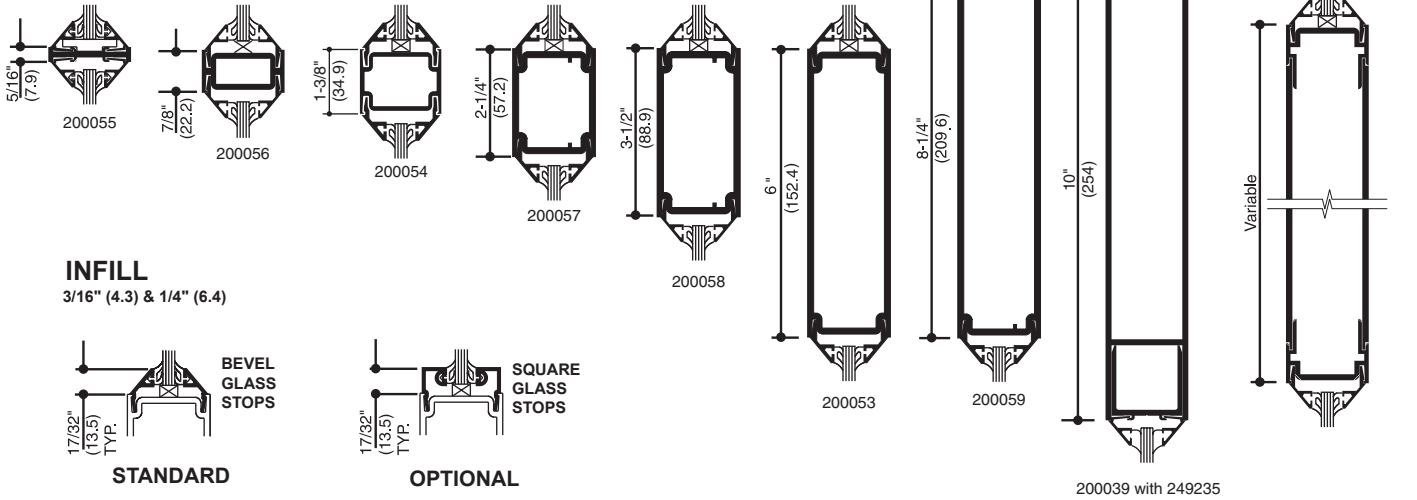
**OPTIONAL  
CONTINUOUS HINGE  
JAMB**

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## SCALE 3" = 1' 0"

### HORIZONTAL / VERTICAL CROSS RAILS



### INFILL OPTIONS

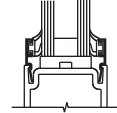
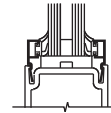
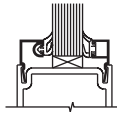
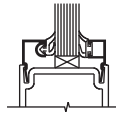
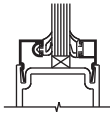
5/16" (7.9) & 3/8" (9.5)

7/16" (11.1) & 1/2" (12.7)

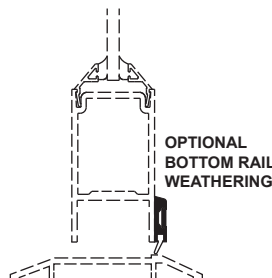
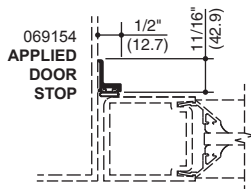
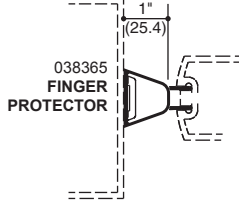
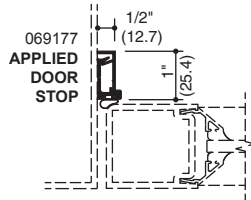
9/16" (14.3) & 5/8" (15.9)

11/16" (17.5) & 3/4" (19.0)

15/16" (23.8) & 1" (25.4)



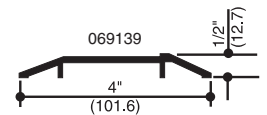
### ACCESSORY ITEMS



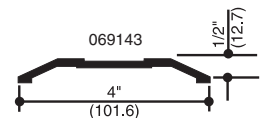
### THRESHOLDS

#### APPLICATION

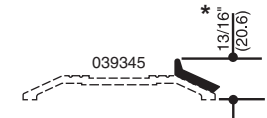
FOR SINGLE ACTING DOOR



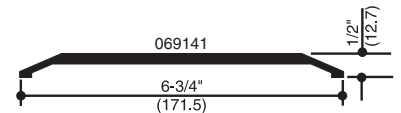
FOR CENTER HUNG CONCEALED CLOSER



APPLIED STOP FOR SINGLE ACTING DOOR



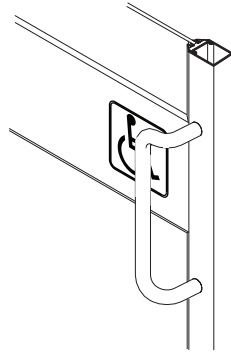
FOR CENTER HUNG FLOOR CLOSERS



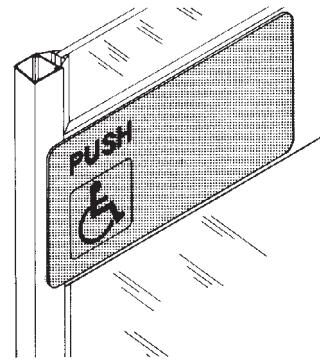
\*SOME BUILDING CODES LIMIT THRESHOLD HEIGHT TO 1/2" (12.7) MAX.

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**PUSH-PULLS  
STYLE**

Architects Classic CO-12 Pull



BF3 Push Shield with symbol

Description	Architects Classic CO-12 Pull	BF3 Push Shield with symbol
Application	Door with or without exit device	Door cross rail (omit w/exit device)
Length/Size	12" OC Pull attachment	15-7/8" x 7-7/8" (403.2 x 200.0) 1/8" (3.2) Thick
Height Location	44-5/16" from Top Mounting Hole to Btm. of Door	
Total Projection	3-1/4" (82.6)	1/8" (3.2)
Material / Finish	See Hardware Section	Black Plastic Pebble Finish

**Note:** The symbol of access is an adhesive backed decal applied to the surface of the optional cross rail. Letters and symbols on plastic push shield are engraved and filled with white epoxy enamel.

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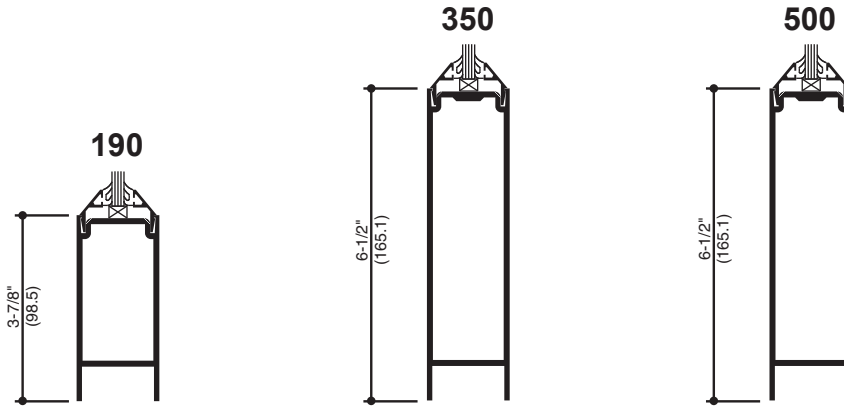
## SCALE 3" = 1' 0"

### STANDARD BOTTOM RAILS

Rail heights shown may be used on 190, 350, and 500 doors.

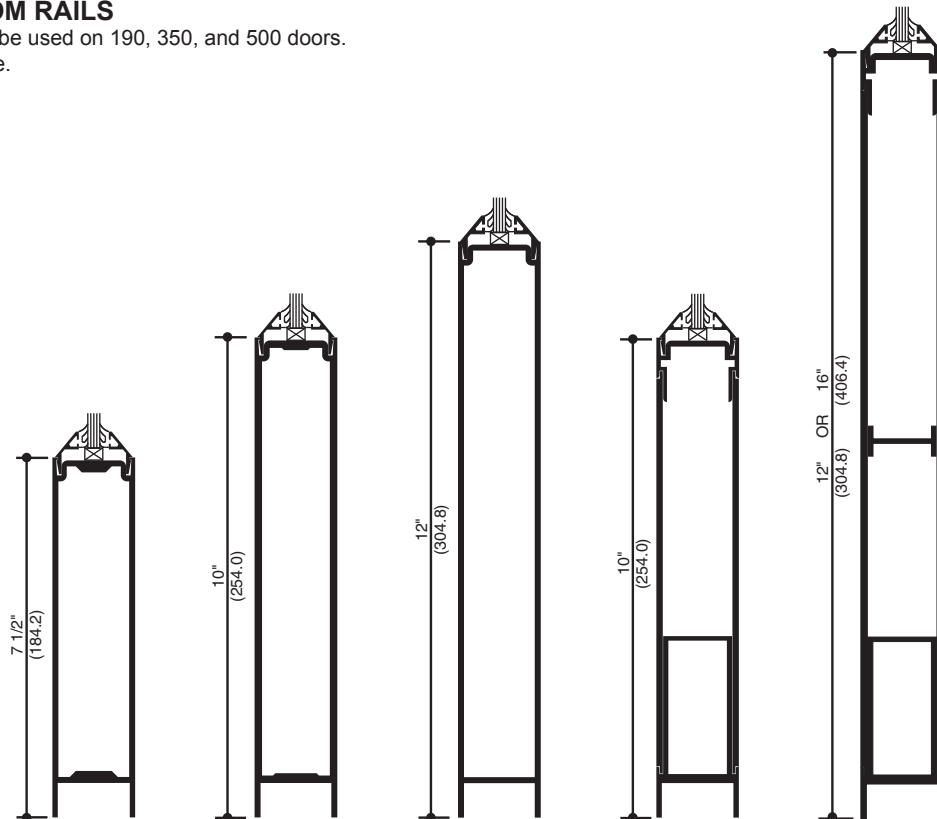
#### NOTE:

See Page 17 for available Horizontal Intermediate Members.



### OPTIONAL BOTTOM RAILS

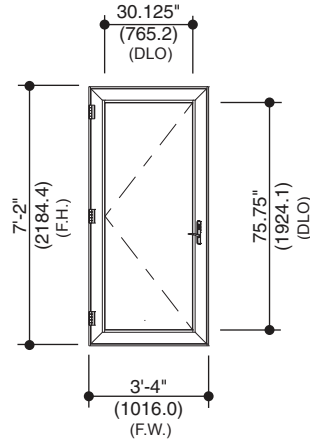
Rail heights shown may be used on 190, 350, and 500 doors. Custom heights available.



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**Generic Project Specific U-factor Example Calculation**  
 (Percent of Glass will vary on specific products depending on sitelines)



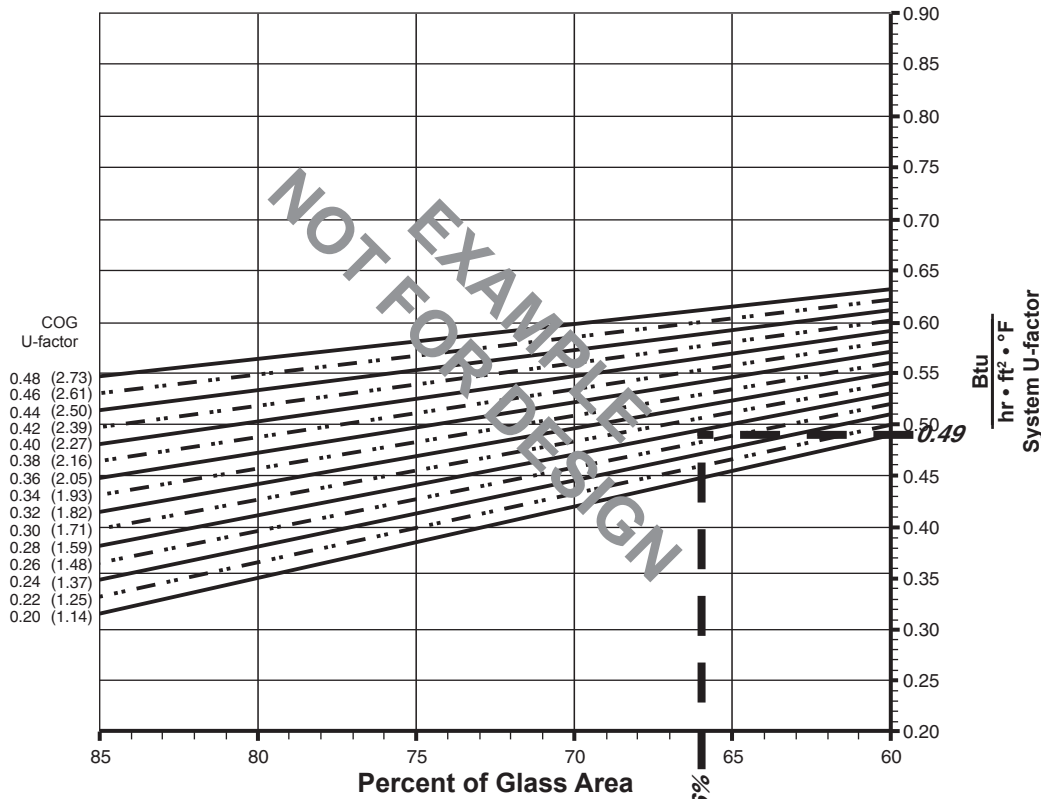
Example Glass U-Factor = 0.28 Btu/hr • ft<sup>2</sup> • °F

Total Daylight Opening = 30.125" x 75.75" = 15.85 ft<sup>2</sup>

Total Projected Area = 3'-4" x 7'-2" = 23.9 ft<sup>2</sup>

Percent of Glass = (Total Daylight Opening ÷ Total Projected Area)100  
 = (15.85 ÷ 23.9)100 = 66%

**System U-factor vs Percent of Glass Area**



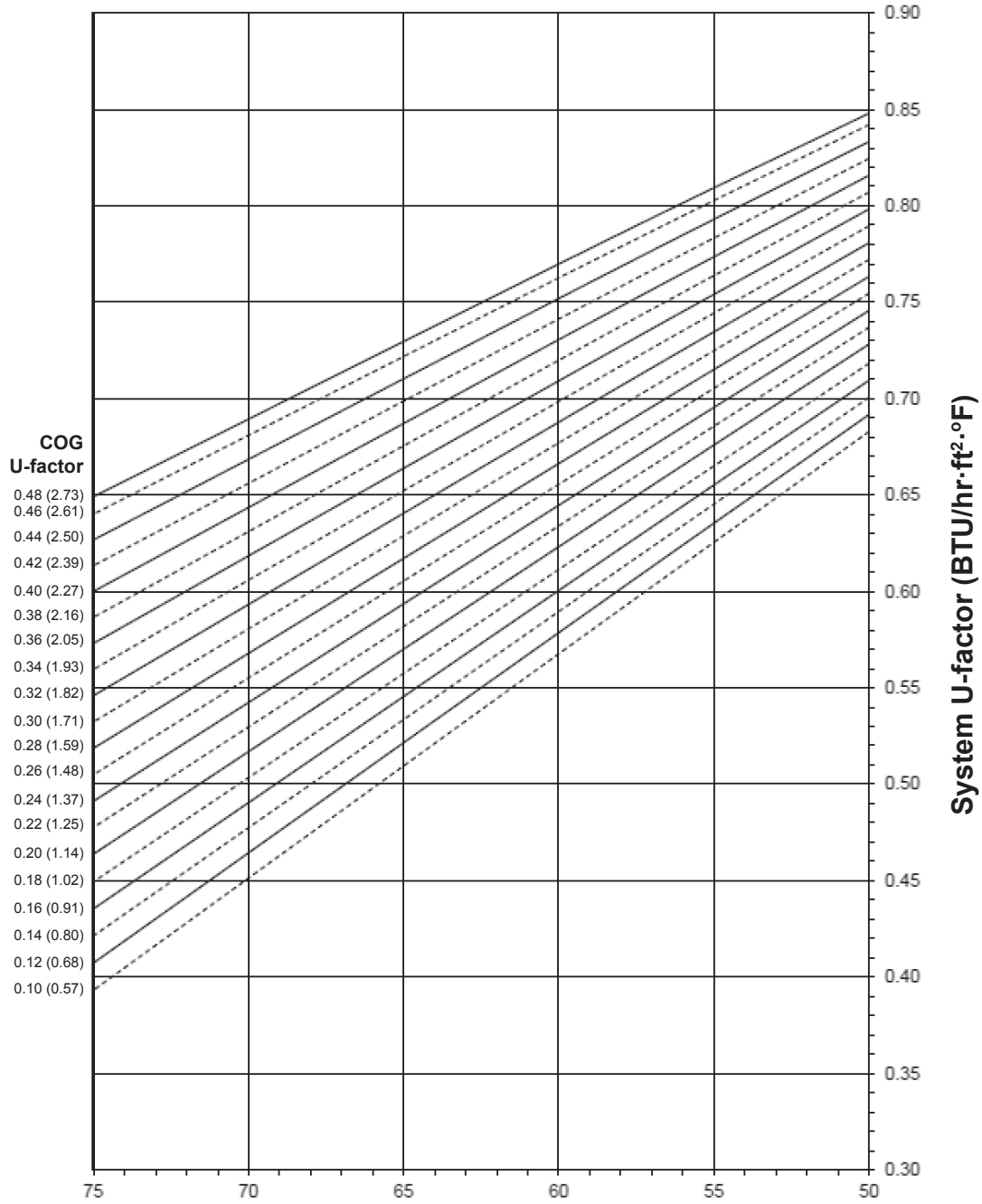
Based on 66% glass and center of glass (COG) U-factor of 0.28  
 System U-factor is equal to 0.49 Btu/hr • ft<sup>2</sup> • °F

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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190 (SINGLE DOOR)

System U-factor vs Percent of Glass Area



Percent of Glass = Vision Area/Total Area  
(Total Daylight Opening / Projected Area)

Notes for System U-Factor, SHGC and VT charts:

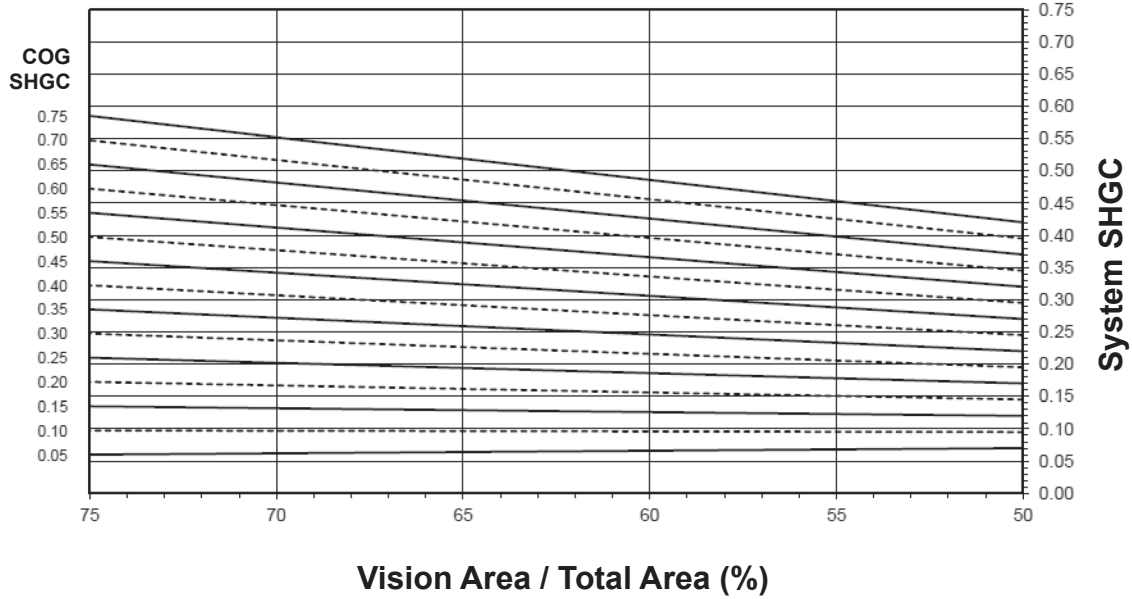
For glass values that are not listed, linear interpolation is permitted.  
Glass properties are based on center of glass values (winter conditions) and are obtained from your glass supplier.

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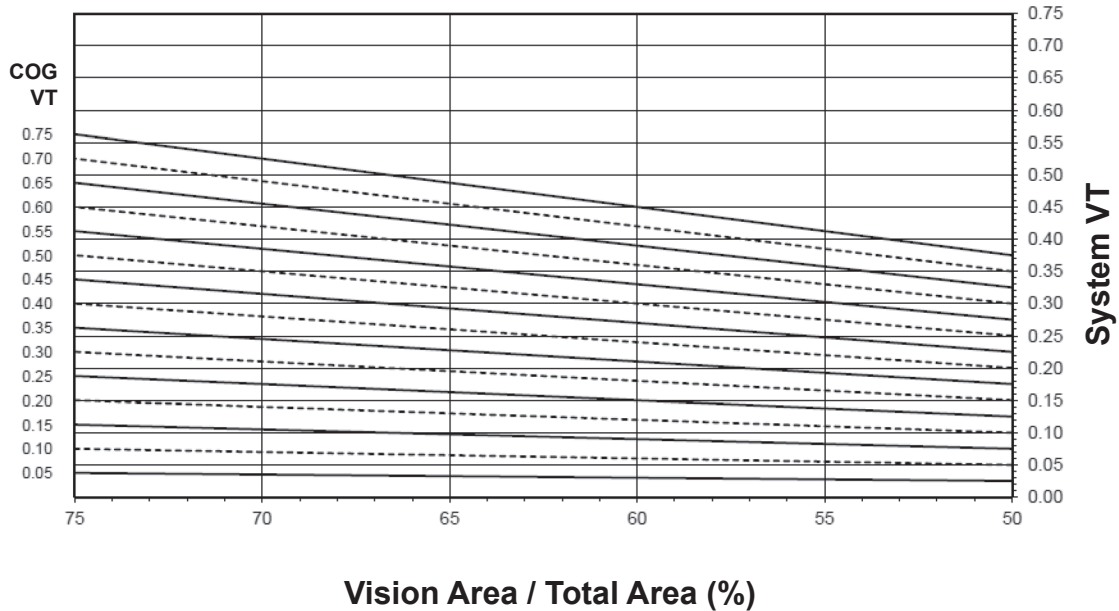
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190 (SINGLE DOOR)

**System Solar Heat Gain Coefficient (SHGC) vs Percent of Vision Area**



**System Visible Transmittance (VT) vs Percent of Vision Area**



Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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## Thermal Transmittance <sup>1</sup> (BTU/hr • ft<sup>2</sup> • °F)

## 190 (SINGLE DOOR)

Glass U-Factor <sup>3</sup>	Overall U-Factor <sup>4</sup>
0.48	0.78
0.46	0.77
0.44	0.76
0.42	0.75
0.40	0.74
0.38	0.73
0.36	0.72
0.34	0.71
0.32	0.70
0.30	0.69
0.28	0.68
0.26	0.67
0.24	0.66
0.22	0.65
0.20	0.65
0.18	0.63
0.16	0.61
0.14	0.60
0.12	0.59
0.10	0.58

**NOTE:** For glass values that are not listed, linear interpolation is permitted.

1. U-Factors are determined in accordance with NFRC 100.
2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values and are obtained from your glass supplier.
4. Overall U-Factor, SHGC, and VT Matricies are based on the standard NFRC specimen size of 960mm wide by 2090mm high (37-3/4" by 82-3/8").

## SHGC Matrix <sup>2</sup>

Glass SHGC <sup>3</sup>	Overall SHGC <sup>4</sup>
0.75	0.48
0.70	0.45
0.65	0.42
0.60	0.39
0.55	0.36
0.50	0.33
0.45	0.30
0.40	0.27
0.35	0.24
0.30	0.21
0.25	0.18
0.20	0.15
0.15	0.13
0.10	0.10
0.05	0.07

## Visible Transmittance <sup>2</sup>

Glass VT <sup>3</sup>	Overall VT <sup>4</sup>
0.75	0.44
0.70	0.41
0.65	0.38
0.60	0.35
0.55	0.32
0.50	0.29
0.45	0.26
0.40	0.23
0.35	0.21
0.30	0.18
0.25	0.15
0.20	0.12
0.15	0.09
0.10	0.06
0.05	0.03

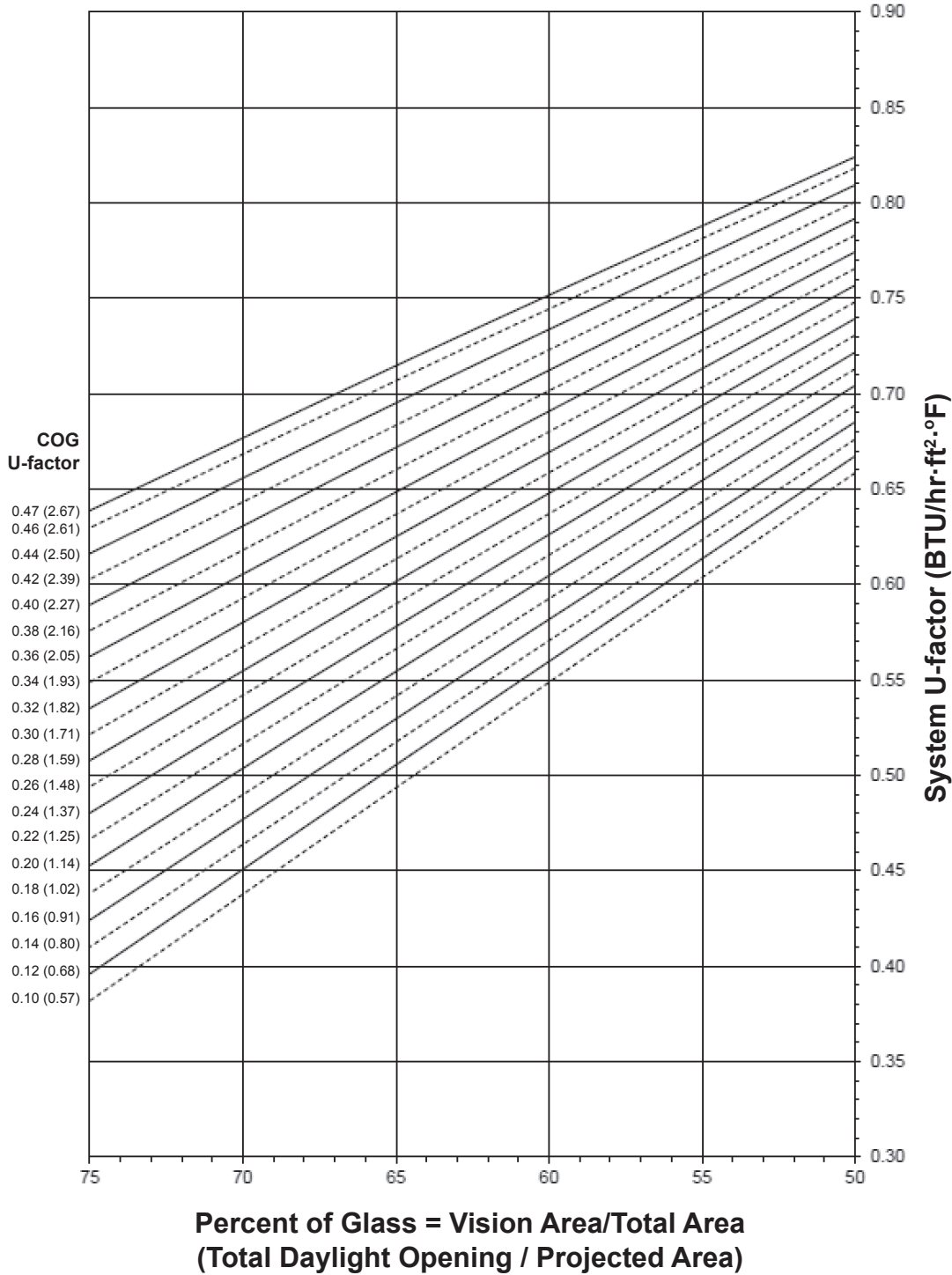
Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

Kawneer reserves the right to change configuration without prior notice when deemed necessary for product improvement.  
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190 (PAIR OF DOORS)

**System U-factor vs Percent of Glass Area**



**Notes for System U-Factor, SHGC and VT charts:**

For glass values that are not listed, linear interpolation is permitted.

Glass properties are based on center of glass values (winter conditions) and are obtained from your glass supplier.

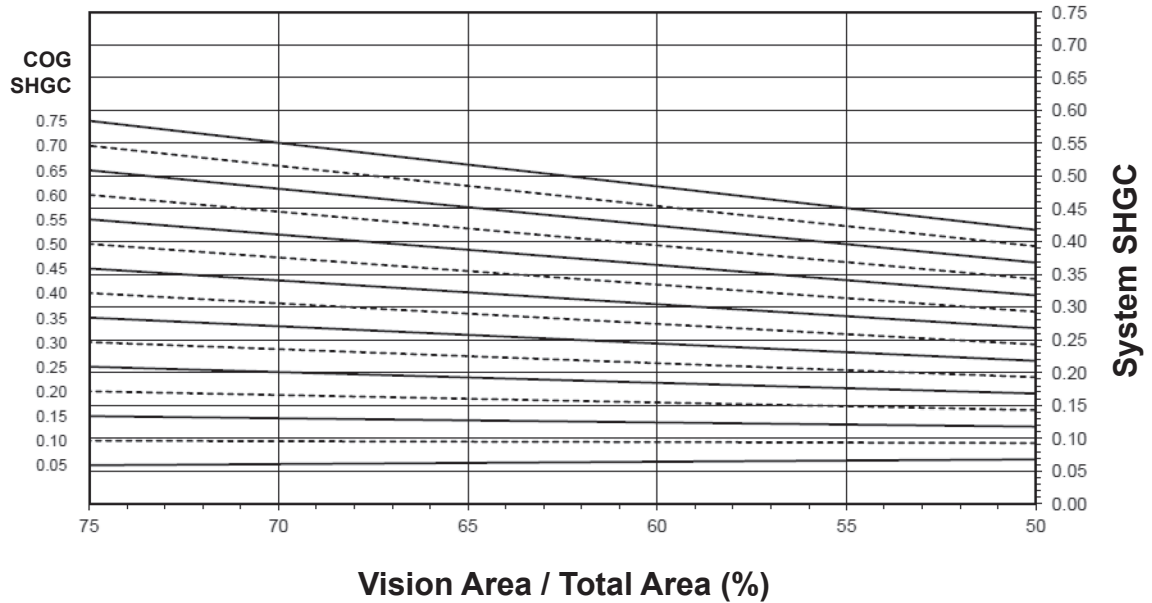
Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

Kawneer reserves the right to change configuration without prior notice when deemed necessary for product improvement.

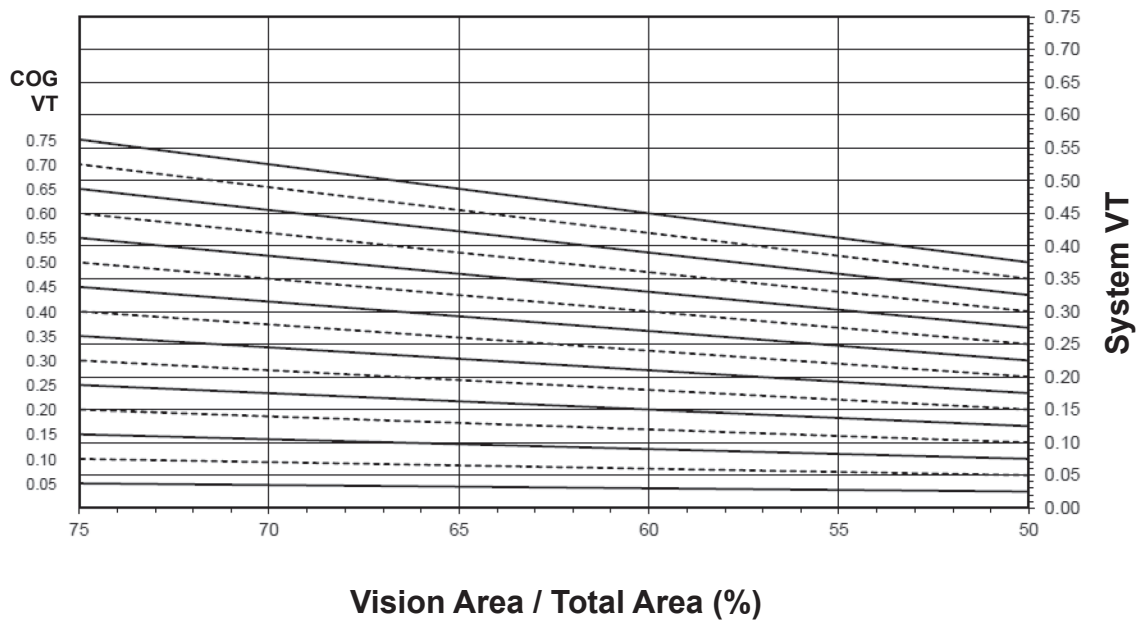
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190 (PAIR OF DOORS)

**System Solar Heat Gain Coefficient (SHGC) vs Percent of Vision Area**



**System Visible Transmittance (VT) vs Percent of Vision Area**



Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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Thermal Transmittance <sup>1</sup> (BTU/hr • ft<sup>2</sup> • °F)

Glass U-Factor <sup>3</sup>	Overall U-Factor <sup>4</sup>
0.47	0.73
0.46	0.72
0.44	0.71
0.42	0.70
0.40	0.69
0.38	0.68
0.36	0.67
0.34	0.66
0.32	0.64
0.30	0.63
0.28	0.62
0.26	0.61
0.24	0.60
0.22	0.59
0.20	0.58
0.18	0.56
0.16	0.55
0.14	0.54
0.12	0.53
0.10	0.52

## 190 (PAIR OF DOORS)

**NOTE:** For glass values that are not listed, linear interpolation is permitted.

1. U-Factors are determined in accordance with NFRC 100.
2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values and are obtained from your glass supplier.
4. Overall U-Factor, SHGC, and VT Matricies are based on the standard NFRC specimen size of 1920mm wide by 2090mm high (75-1/2" by 82-3/8").

SHGC Matrix <sup>2</sup>

Glass SHGC <sup>3</sup>	Overall SHGC <sup>4</sup>
0.75	0.50
0.70	0.47
0.65	0.44
0.60	0.41
0.55	0.38
0.50	0.35
0.45	0.31
0.40	0.28
0.35	0.25
0.30	0.22
0.25	0.19
0.20	0.16
0.15	0.13
0.10	0.09
0.05	0.06

Visible Transmittance <sup>2</sup>

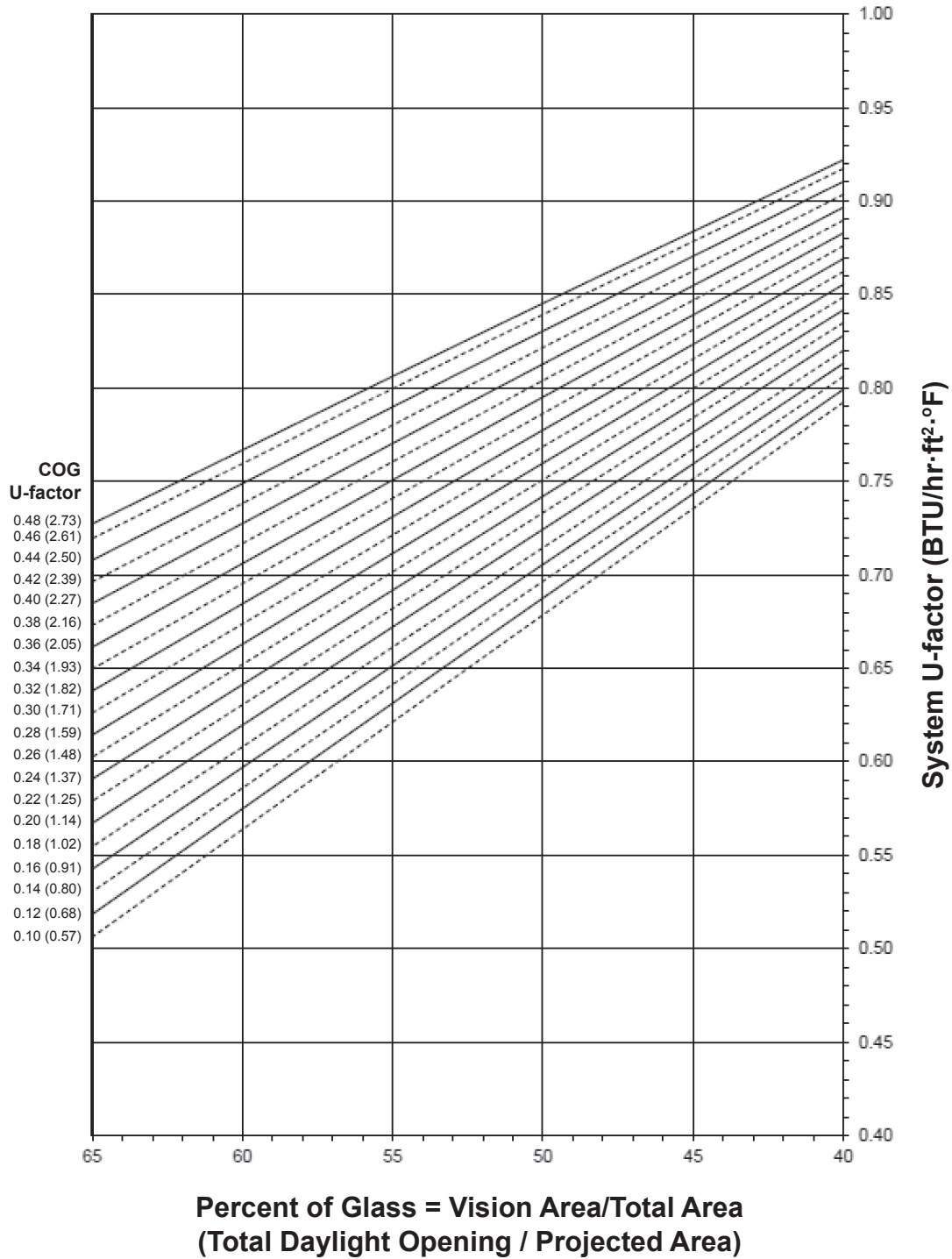
Glass VT <sup>3</sup>	Overall VT <sup>4</sup>
0.75	0.47
0.70	0.44
0.65	0.41
0.60	0.38
0.55	0.35
0.50	0.31
0.45	0.28
0.40	0.25
0.35	0.22
0.30	0.19
0.25	0.16
0.20	0.13
0.15	0.09
0.10	0.06
0.05	0.03

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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350 (SINGLE DOOR)

**System U-factor vs Percent of Glass Area**



**Notes for System U-Factor, SHGC and VT charts:**

For glass values that are not listed, linear interpolation is permitted.

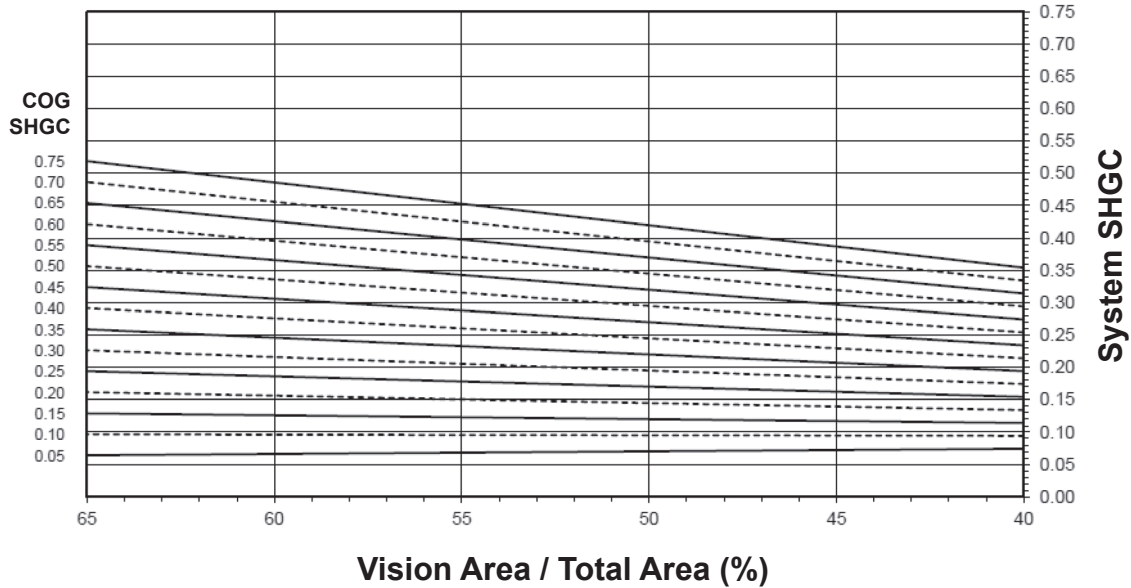
Glass properties are based on center of glass values (winter conditions) and are obtained from your glass supplier.

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

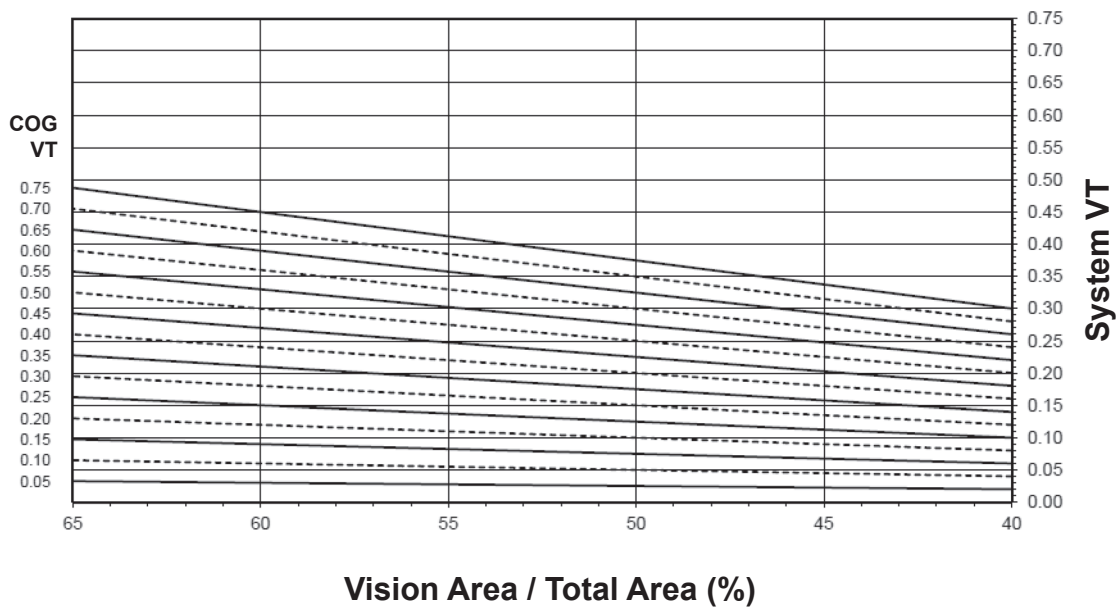
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350 (SINGLE DOOR)

**System Solar Heat Gain Coefficient (SHGC) vs Percent of Vision Area**



**System Visible Transmittance (VT) vs Percent of Vision Area**



Law and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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**Thermal Transmittance <sup>1</sup> (BTU/hr • ft<sup>2</sup> • °F)**

**350 (SINGLE DOOR)**

Glass U-Factor <sup>3</sup>	Overall U-Factor <sup>4</sup>
0.48	0.83
0.46	0.82
0.44	0.81
0.42	0.81
0.40	0.80
0.38	0.79
0.36	0.78
0.34	0.77
0.32	0.76
0.30	0.75
0.28	0.74
0.26	0.73
0.24	0.72
0.22	0.71
0.20	0.70
0.18	0.69
0.16	0.68
0.14	0.68
0.12	0.67
0.10	0.66

**NOTE:** For glass values that are not listed, linear interpolation is permitted.

1. U-Factors are determined in accordance with NFRC 100.
2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values and are obtained from your glass supplier.
4. Overall U-Factor, SHGC, and VT Matricies are based on the standard NFRC specimen size of 960mm wide by 2090mm high (37-3/4" by 82-3/8").

**SHGC Matrix <sup>2</sup>**

Glass SHGC <sup>3</sup>	Overall SHGC <sup>4</sup>
0.75	0.43
0.70	0.41
0.65	0.38
0.60	0.36
0.55	0.33
0.50	0.30
0.45	0.28
0.40	0.25
0.35	0.23
0.30	0.20
0.25	0.17
0.20	0.15
0.15	0.12
0.10	0.10
0.05	0.07

**Visible Transmittance <sup>2</sup>**

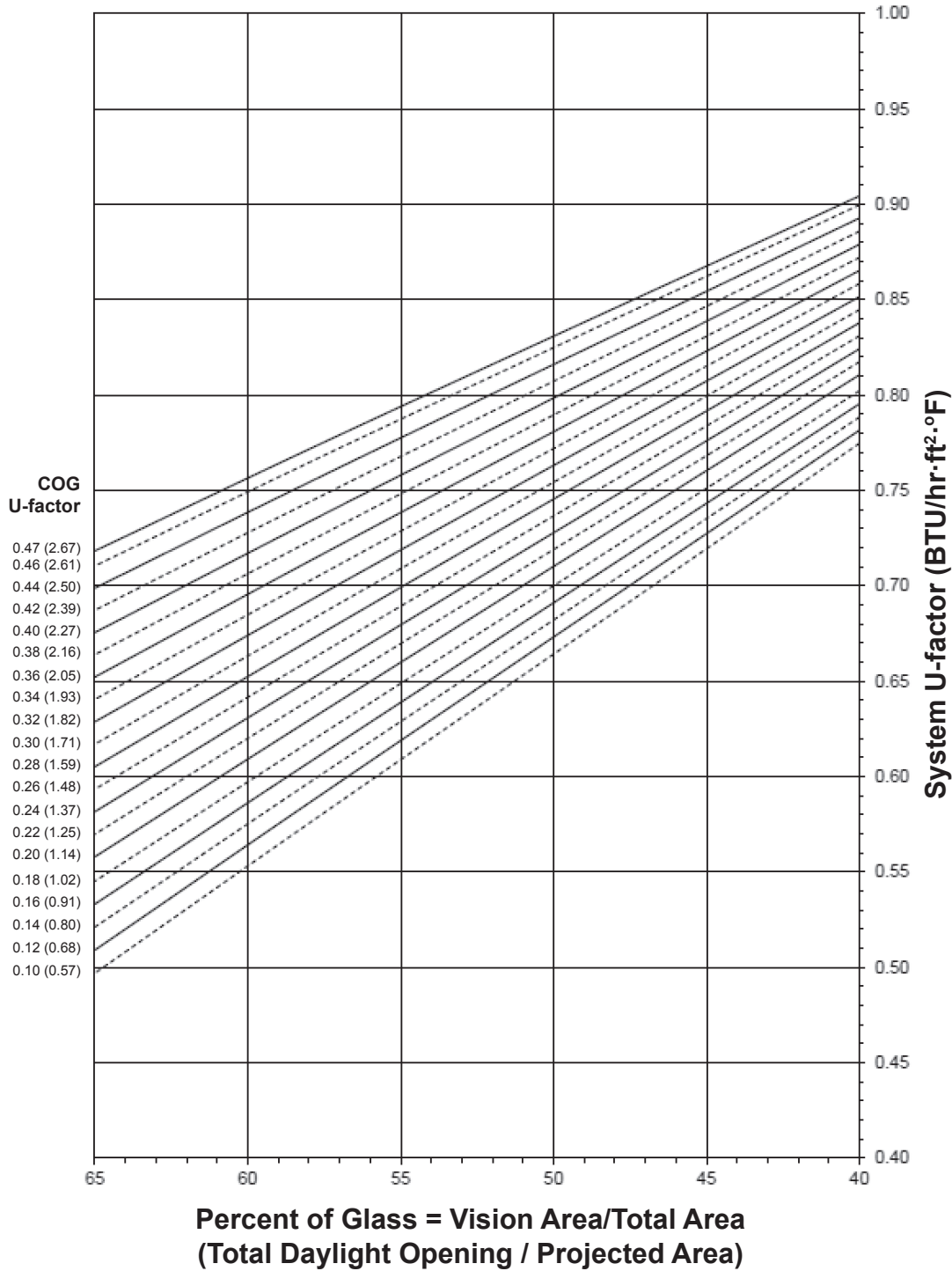
Glass VT <sup>3</sup>	Overall VT <sup>4</sup>
0.75	0.39
0.70	0.36
0.65	0.34
0.60	0.31
0.55	0.29
0.50	0.26
0.45	0.23
0.40	0.21
0.35	0.18
0.30	0.16
0.25	0.13
0.20	0.10
0.15	0.08
0.10	0.05
0.05	0.03

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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350 (PAIR OF DOORS)

**System U-factor vs Percent of Glass Area**



**Notes for System U-Factor, SHGC and VT charts:**

For glass values that are not listed, linear interpolation is permitted.

Glass properties are based on center of glass values (winter conditions) and are obtained from your glass supplier.

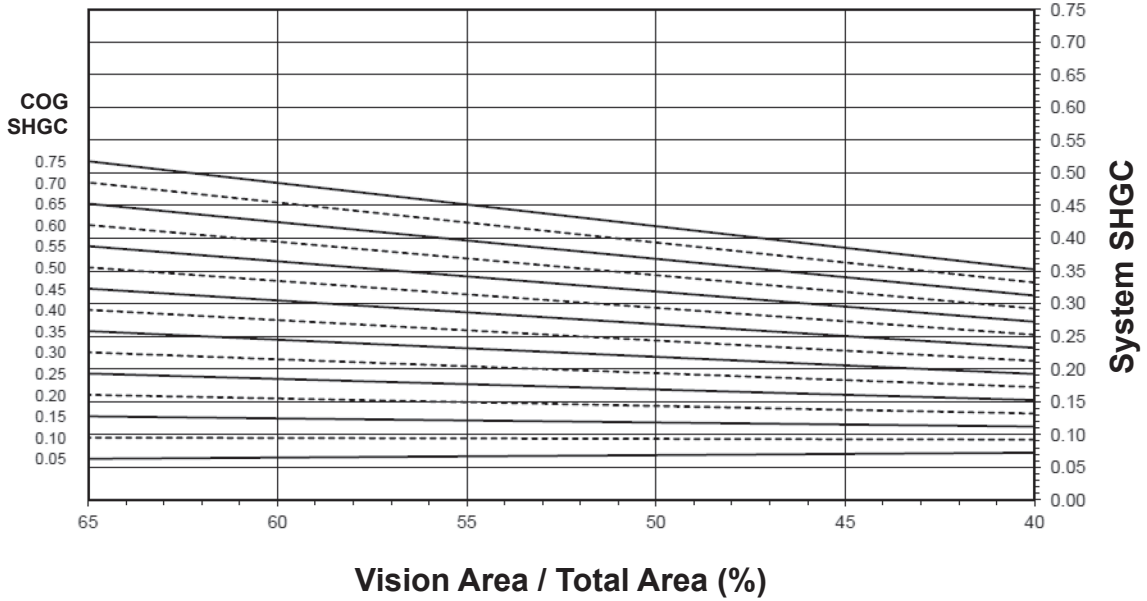
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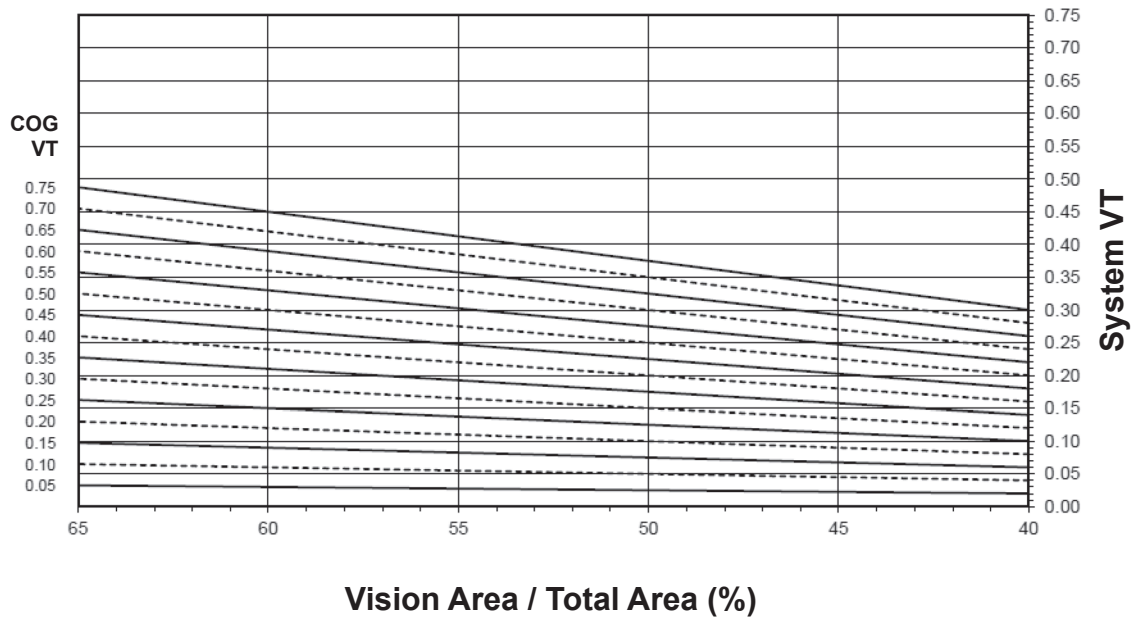
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350 (PAIR OF DOORS)

System Solar Heat Gain Coefficient (SHGC) vs Percent of Vision Area



System Visible Transmittance (VT) vs Percent of Vision Area



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Thermal Transmittance <sup>1</sup> (BTU/hr • ft<sup>2</sup> • °F)

Glass U-Factor <sup>3</sup>	Overall U-Factor <sup>4</sup>
0.47	0.79
0.46	0.78
0.44	0.77
0.42	0.76
0.40	0.75
0.38	0.74
0.36	0.73
0.34	0.72
0.32	0.71
0.30	0.70
0.28	0.69
0.26	0.68
0.24	0.67
0.22	0.66
0.20	0.65
0.18	0.64
0.16	0.63
0.14	0.62
0.12	0.61
0.10	0.60

## 350 (PAIR OF DOORS)

**NOTE:** For glass values that are not listed, linear interpolation is permitted.

1. U-Factors are determined in accordance with NFRC 100.
2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values and are obtained from your glass supplier.
4. Overall U-Factor, SHGC, and VT Matricies are based on the standard NFRC specimen size of 1920mm wide by 2090mm high (75-1/2" by 82-3/8").

SHGC Matrix <sup>2</sup>

Glass SHGC <sup>3</sup>	Overall SHGC <sup>4</sup>
0.75	0.46
0.70	0.43
0.65	0.40
0.60	0.37
0.55	0.35
0.50	0.32
0.45	0.29
0.40	0.26
0.35	0.23
0.30	0.21
0.25	0.18
0.20	0.15
0.15	0.12
0.10	0.09
0.05	0.07

Visible Transmittance <sup>2</sup>

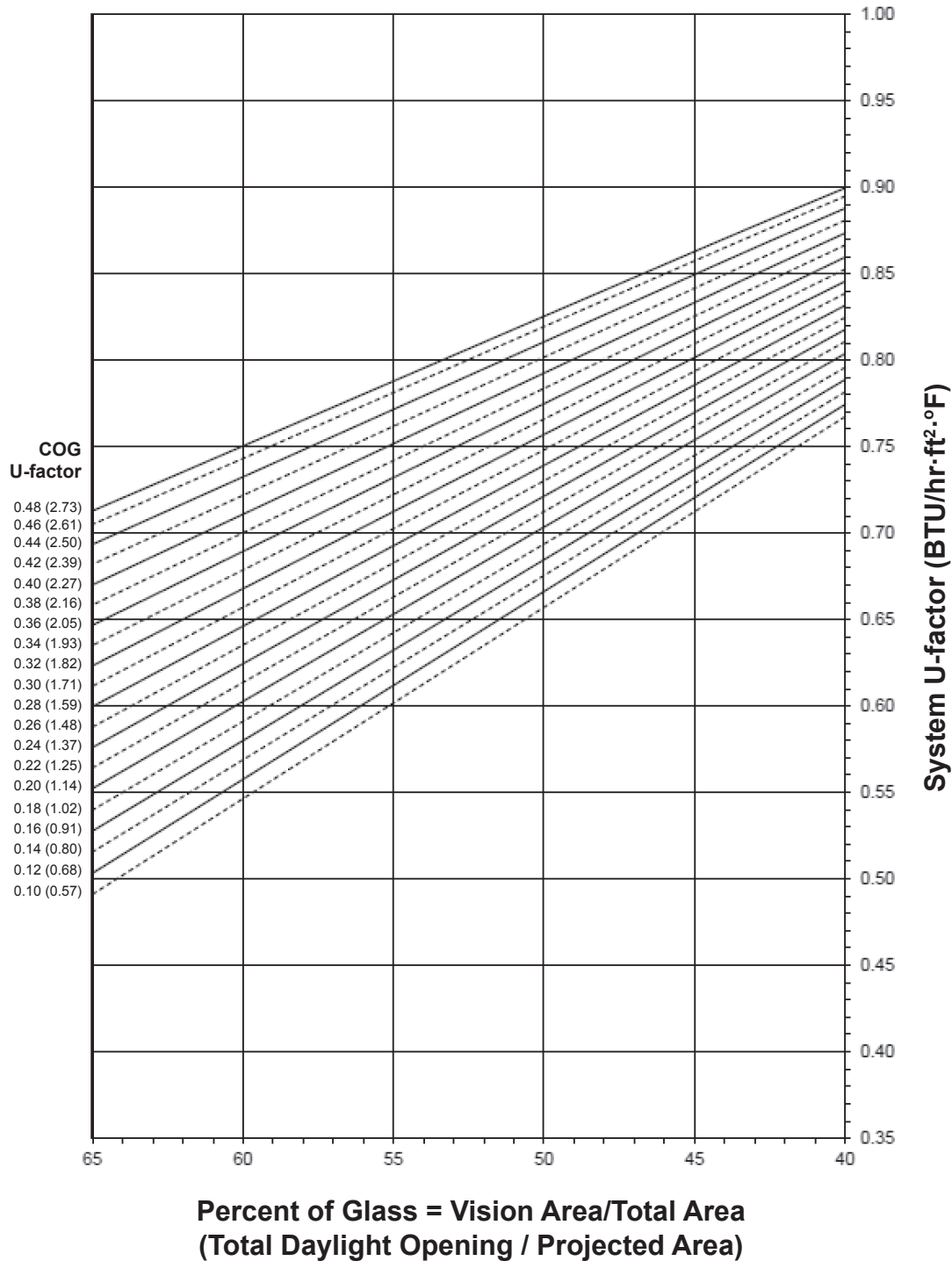
Glass VT <sup>3</sup>	Overall VT <sup>4</sup>
0.75	0.42
0.70	0.39
0.65	0.36
0.60	0.34
0.55	0.31
0.50	0.28
0.45	0.25
0.40	0.22
0.35	0.20
0.30	0.17
0.25	0.14
0.20	0.11
0.15	0.08
0.10	0.06
0.05	0.03

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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500 (SINGLE DOOR)

**System U-factor vs Percent of Glass Area**



**Notes for System U-Factor, SHGC and VT charts:**

For glass values that are not listed, linear interpolation is permitted.

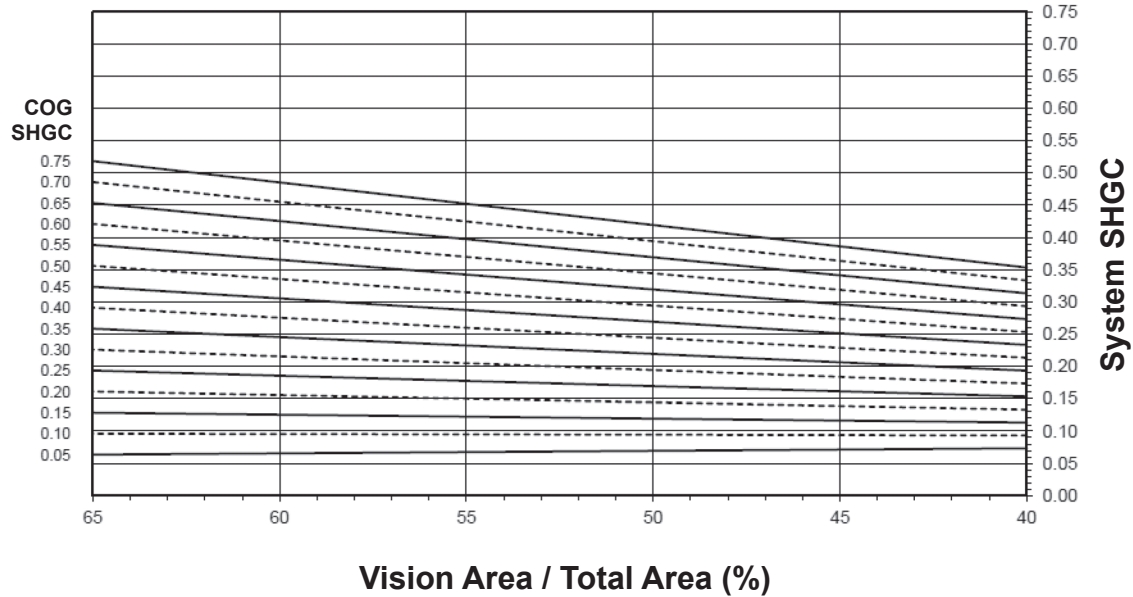
Glass properties are based on center of glass values (winter conditions) and are obtained from your glass supplier.

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

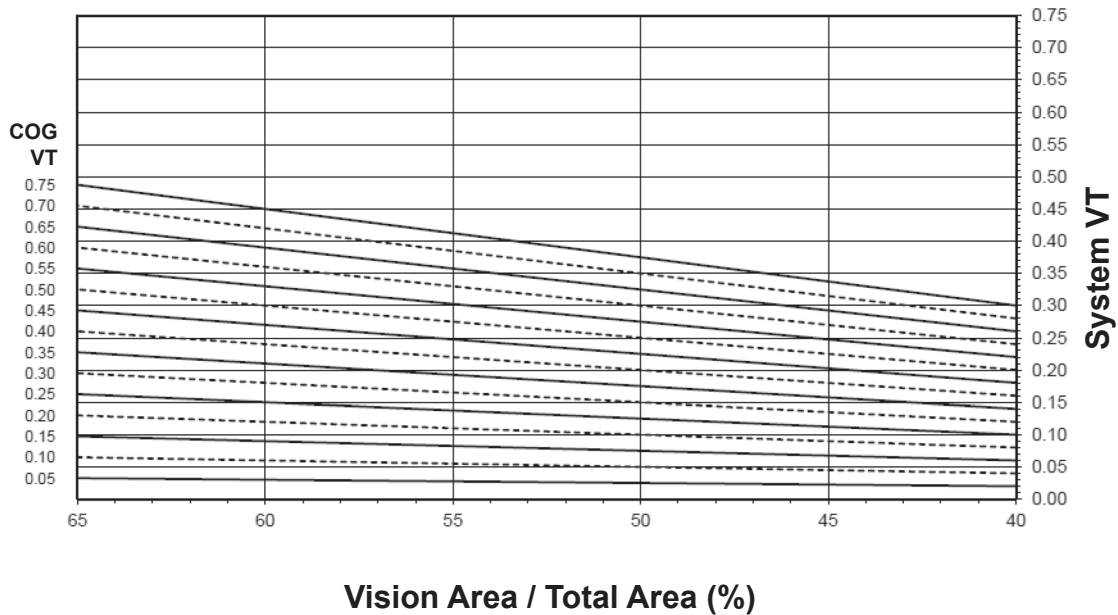
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500 (SINGLE DOOR)

**System Solar Heat Gain Coefficient (SHGC) vs Percent of Vision Area**



**System Visible Transmittance (VT) vs Percent of Vision Area**



Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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**Thermal Transmittance <sup>1</sup> (BTU/hr • ft<sup>2</sup> • °F)**

**500 (SINGLE DOOR)**

Glass U-Factor <sup>3</sup>	Overall U-Factor <sup>4</sup>
0.48	0.87
0.46	0.86
0.44	0.85
0.42	0.84
0.40	0.84
0.38	0.83
0.36	0.82
0.34	0.81
0.32	0.81
0.30	0.80
0.28	0.79
0.26	0.78
0.24	0.77
0.22	0.77
0.20	0.76
0.18	0.75
0.16	0.74
0.14	0.73
0.12	0.73
0.10	0.72

**NOTE:** For glass values that are not listed, linear interpolation is permitted.

1. U-Factors are determined in accordance with NFRC 100.
2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values and are obtained from your glass supplier.
4. Overall U-Factor, SHGC, and VT Matricies are based on the standard NFRC specimen size of 960mm wide by 2090mm high (37-3/4" by 82-3/8").

**SHGC Matrix <sup>2</sup>**

Glass SHGC <sup>3</sup>	Overall SHGC <sup>4</sup>
0.75	0.38
0.70	0.36
0.65	0.34
0.60	0.32
0.55	0.29
0.50	0.27
0.45	0.25
0.40	0.23
0.35	0.21
0.30	0.18
0.25	0.16
0.20	0.14
0.15	0.12
0.10	0.09
0.05	0.07

**Visible Transmittance <sup>2</sup>**

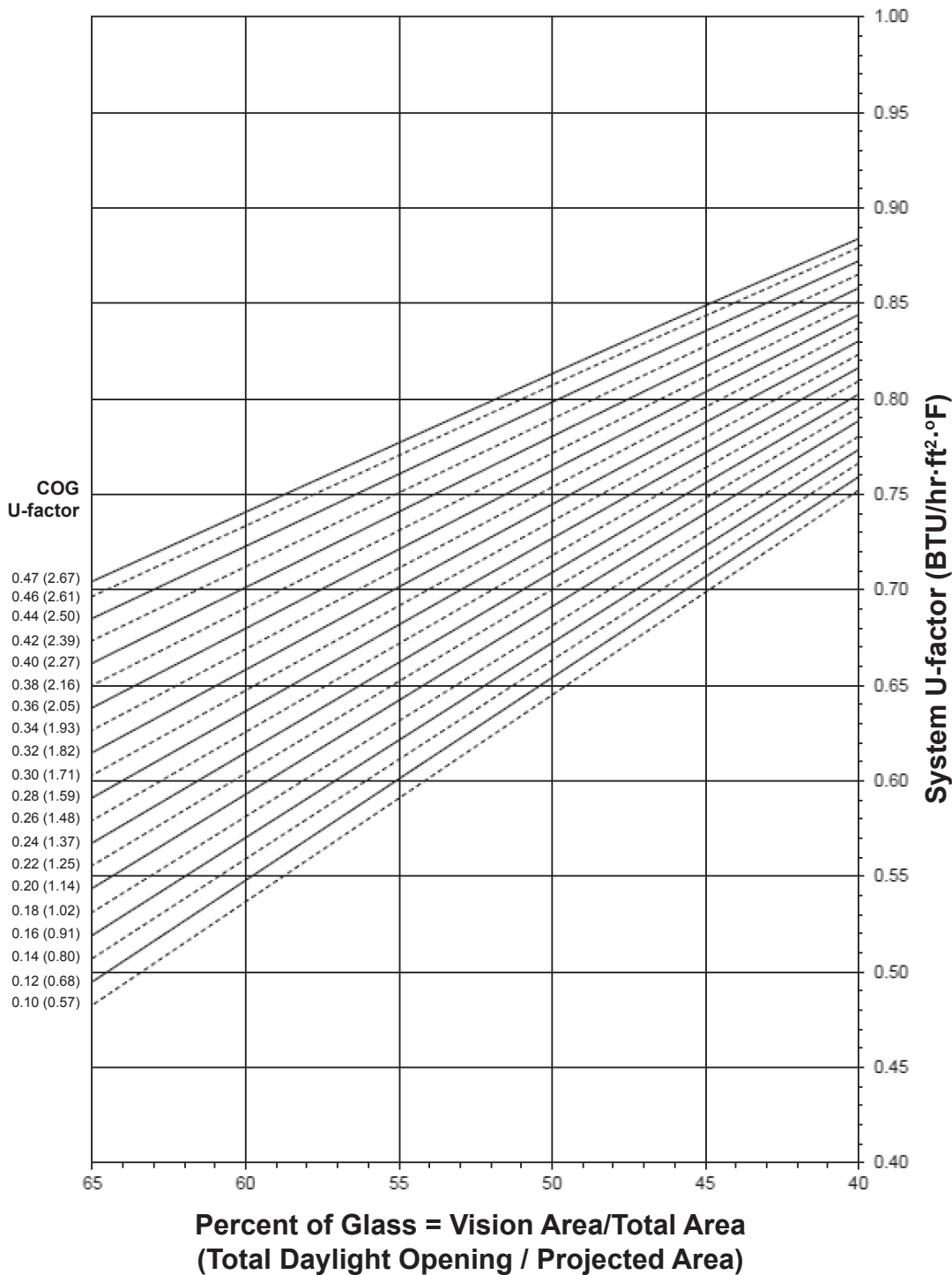
Glass VT <sup>3</sup>	Overall VT <sup>4</sup>
0.75	0.33
0.70	0.31
0.65	0.29
0.60	0.27
0.55	0.25
0.50	0.22
0.45	0.20
0.40	0.18
0.35	0.16
0.30	0.13
0.25	0.11
0.20	0.09
0.15	0.07
0.10	0.04
0.05	0.02

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500 (PAIR OF DOORS)

**System U-factor vs Percent of Glass Area**



**Notes for System U-Factor, SHGC and VT charts:**

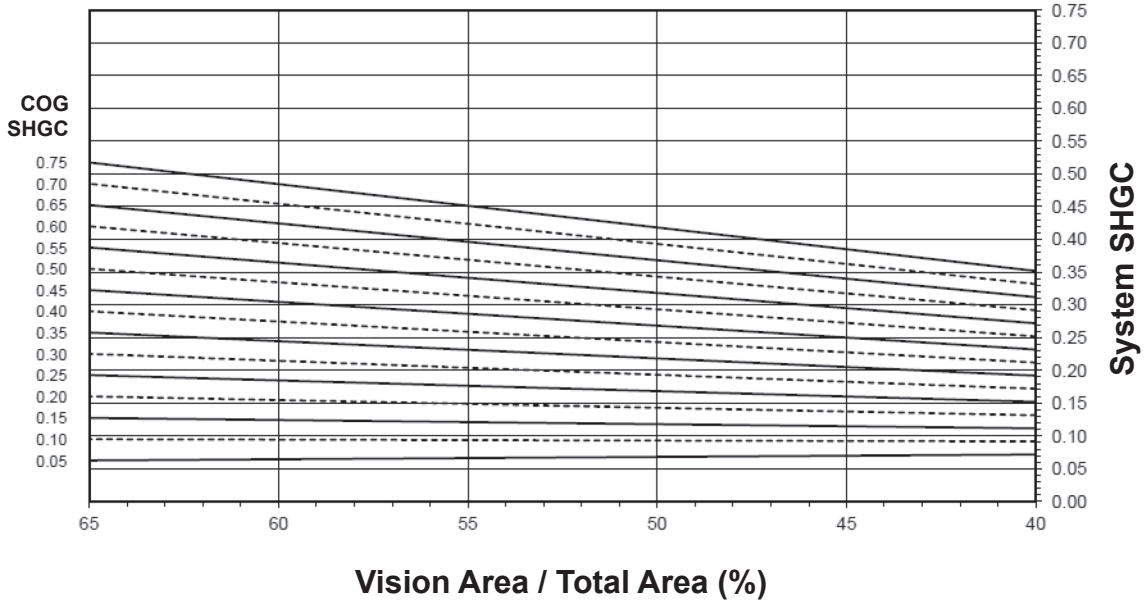
For glass values that are not listed, linear interpolation is permitted.  
 Glass properties are based on center of glass values (winter conditions) and are obtained from your glass supplier.

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

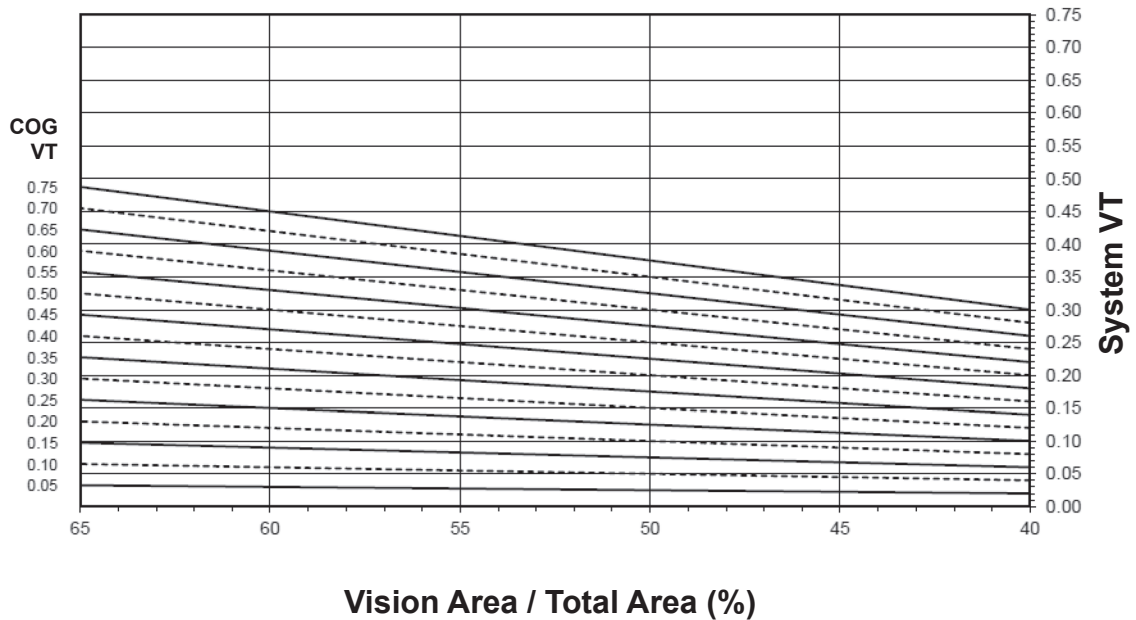
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500 (PAIR OF DOORS)

**System Solar Heat Gain Coefficient (SHGC) vs Percent of Vision Area**



**System Visible Transmittance (VT) vs Percent of Vision Area**



Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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Thermal Transmittance <sup>1</sup> (BTU/hr • ft<sup>2</sup> • °F)

Glass U-Factor <sup>3</sup>	Overall U-Factor <sup>4</sup>
0.47	0.82
0.46	0.82
0.44	0.81
0.42	0.80
0.40	0.79
0.38	0.78
0.36	0.77
0.34	0.77
0.32	0.76
0.30	0.75
0.28	0.74
0.26	0.73
0.24	0.72
0.22	0.71
0.20	0.70
0.18	0.70
0.16	0.69
0.14	0.68
0.12	0.67
0.10	0.66

## 500 (PAIR OF DOORS)

**NOTE:** For glass values that are not listed, linear interpolation is permitted.

1. U-Factors are determined in accordance with NFRC 100.
2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values and are obtained from your glass supplier.
4. Overall U-Factor, SHGC, and VT Matricies are based on the standard NFRC specimen size of 1920mm wide by 2090mm high (75-1/2" by 82-3/8").

SHGC Matrix <sup>2</sup>

Glass SHGC <sup>3</sup>	Overall SHGC <sup>4</sup>
0.75	0.41
0.70	0.38
0.65	0.36
0.60	0.34
0.55	0.31
0.50	0.29
0.45	0.26
0.40	0.24
0.35	0.21
0.30	0.19
0.25	0.17
0.20	0.14
0.15	0.12
0.10	0.09
0.05	0.07

Visible Transmittance <sup>2</sup>

Glass VT <sup>3</sup>	Overall VT <sup>4</sup>
0.75	0.36
0.70	0.34
0.65	0.32
0.60	0.29
0.55	0.27
0.50	0.24
0.45	0.22
0.40	0.19
0.35	0.17
0.30	0.15
0.25	0.12
0.20	0.10
0.15	0.07
0.10	0.05
0.05	0.02

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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### **Features**

- Trifab® VG 450 is 4-1/2" deep with a 1-3/4" sight line
- Front, Center, Back or Multi-Plane glass applications
- Flush glazed from either the inside or outside
- Screw Spline, Shear Block, Stick or Type-B fabrication
- SSG / Weatherseal option
- 1/8", 1/4" or 3/8" infill options
- Permanodic® anodized finishes in 7 choices
- Painted finishes in standard and custom choices

### **Optional Features**

- High performance interlocking flashing

### **Product Applications**

- Storefront, Ribbon Window or Punched Openings
- Single-span
- Integrated entrance framing allowing Kawneer standard entrances or other specialty entrances to be incorporated
- Kawneer Sealair® windows or GLASSvent™ are easily incorporated

For specific product applications,  
Consult your Kawneer representative.



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**PICTORIAL VIEWS ..... 5-9**

**CENTER ..... 11**

**FRONT ..... 23**

**BACK ..... 39**

**MULTI-PLANE ..... 47**

**CHARTS (WINDLOAD, DEADLOAD, END REACTION & THERMAL) ..... 55-73**

LAWS AND BUILDING AND SAFETY CODES GOVERNING THE DESIGN AND USE OF GLAZED ENTRANCE, WINDOW, AND CURTAIN WALL PRODUCTS VARY WIDELY. KAWNEER DOES NOT CONTROL THE SELECTION OF PRODUCT CONFIGURATIONS, OPERATING HARDWARE, OR GLAZING MATERIALS, AND ASSUMES NO RESPONSIBILITY THEREFOR.

Metric (SI) conversion figures are included throughout these details for reference. Numbers in parentheses ( ) are millimeters unless otherwise noted.

The following metric (SI) units are found in these details:

- m – meter
- cm – centimeter
- mm – millimeter
- s – second
- Pa – pascal
- MPa – megapascal

Kawneer reserves the right to change configurations without prior notice when deemed necessary for product improvement.

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

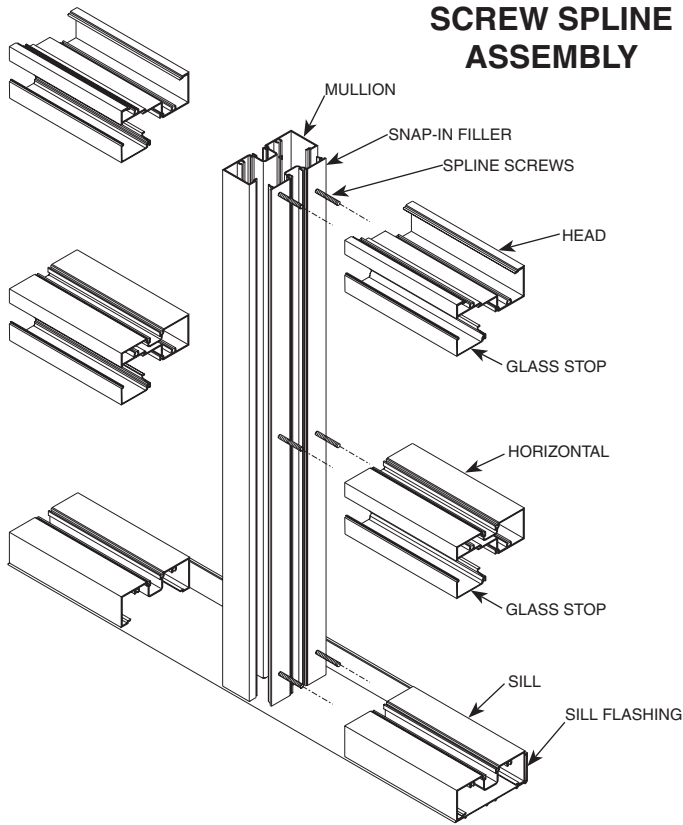
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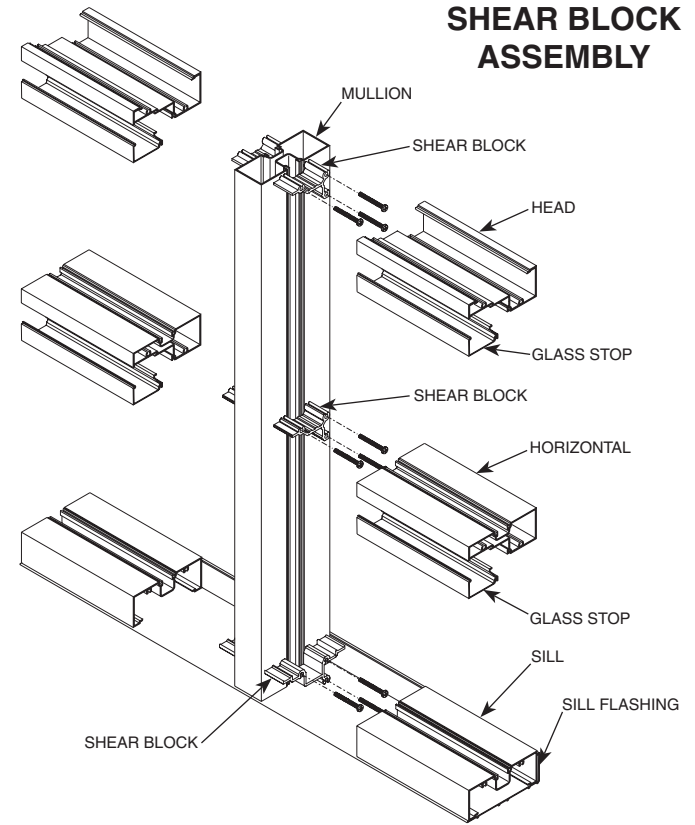
THE SPLIT VERTICAL IN THE SCREW SPLINE SYSTEM ALLOWS A FRAME TO BE INSTALLED FROM UNITIZED ASSEMBLIES. SCREWS ARE DRIVEN THROUGH THE BACK OF THE VERTICALS INTO SPLINES EXTRUDED IN THE HORIZONTAL FRAMING MEMBERS. THE INDIVIDUAL UNITS ARE THEN SNAPPED TOGETHER TO FORM A COMPLETED FRAME.

**SCREW SPLINE ASSEMBLY**



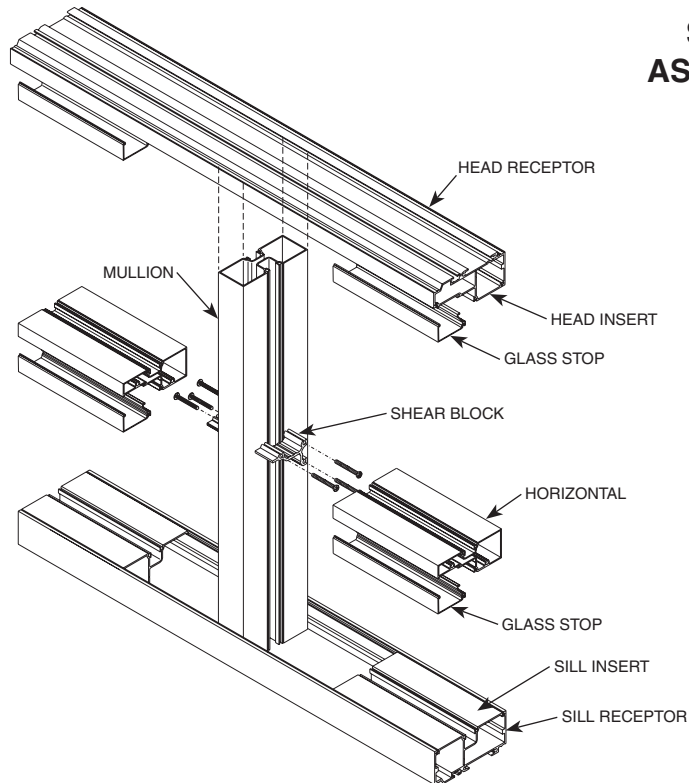
THE SHEAR BLOCK SYSTEM OF FABRICATION ALLOWS A FRAME TO BE PRE-ASSEMBLED AND INSTALLED AS A SINGLE UNIT. HORIZONTALS ARE ATTACHED TO THE VERTICALS WITH SHEAR BLOCKS.

**SHEAR BLOCK ASSEMBLY**



THE STICK SYSTEM ALLOWS ON-SITE ASSEMBLY. HEAD AND SILL RECEPTORS ARE FASTENED TO THE SURROUND. VERTICAL MULLIONS ARE THEN INSTALLED IN THESE RECEPTORS AND ARE HELD IN PLACE BY SNAP-IN INSERTS. INTERMEDIATE HORIZONTAL MEMBERS ARE ATTACHED TO THE VERTICALS WITH SHEAR BLOCKS. FLASHING IS NOT REQUIRED.

**STICK ASSEMBLY**



**NOTE:**

If the end reaction of the mullion (mullion spacing (ft.) times height (ft.) times specified windload (psf) divided by two) is more than 500 lbs., the optional mullion anchors must be used. (See page 14)

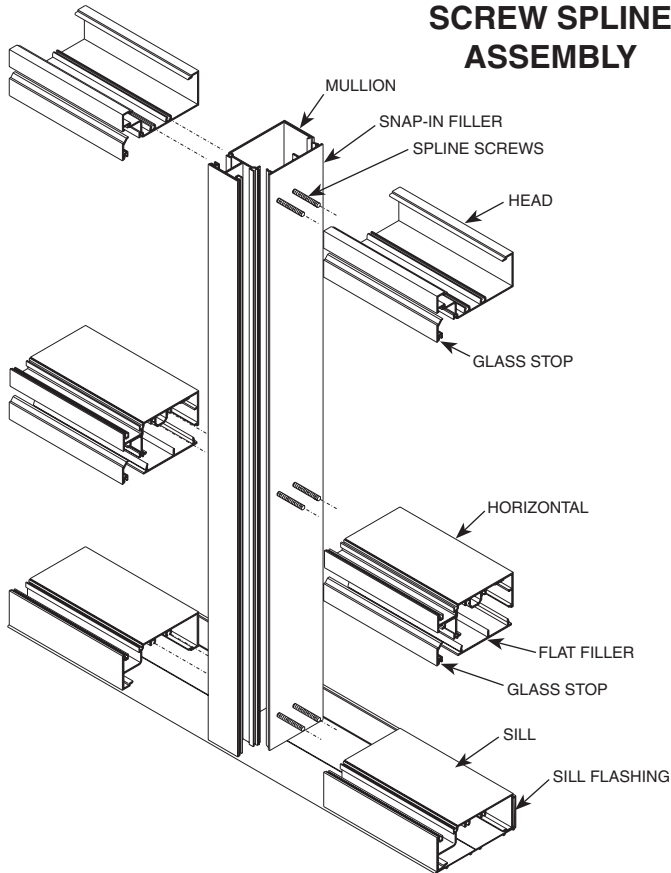
Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

Kawneer reserves the right to change configuration without prior notice when deemed necessary for product improvement.

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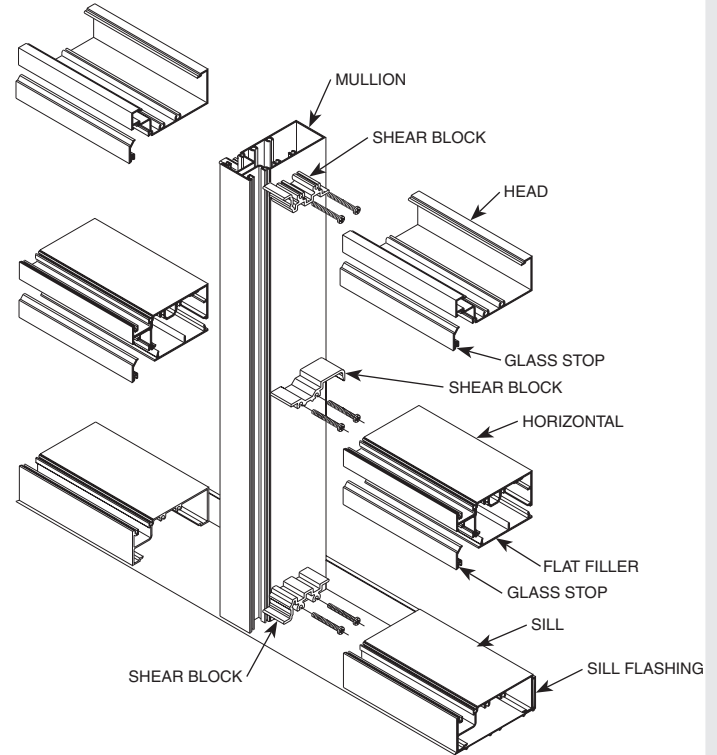
THE SPLIT VERTICAL IN THE SCREW SPLINE SYSTEM ALLOWS A FRAME TO BE INSTALLED FROM UNITIZED ASSEMBLIES. SCREWS ARE DRIVEN THROUGH THE BACK OF THE VERTICALS INTO SPLINES EXTRUDED IN THE HORIZONTAL FRAMING MEMBERS. THE INDIVIDUAL UNITS ARE THEN SNAPPED TOGETHER TO FORM A COMPLETED FRAME.

### SCREW SPLINE ASSEMBLY



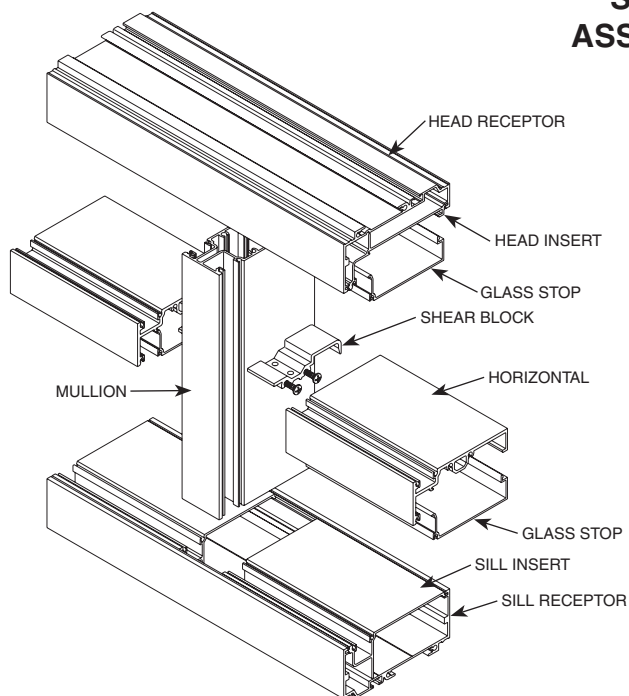
THE SHEAR BLOCK SYSTEM OF FABRICATION ALLOWS A FRAME TO BE PRE-ASSEMBLED AND INSTALLED AS A SINGLE UNIT. HORIZONTALS ARE ATTACHED TO THE VERTICALS WITH SHEAR BLOCKS.

### SHEAR BLOCK ASSEMBLY



THE STICK SYSTEM ALLOWS ON-SITE ASSEMBLY. HEAD AND SILL RECEPTORS ARE FASTENED TO THE SURROUND. VERTICAL MULLIONS ARE THEN INSTALLED IN THESE RECEPTORS AND ARE HELD IN PLACE BY SNAP-IN INSERTS. INTERMEDIATE HORIZONTAL MEMBERS ARE ATTACHED TO THE VERTICALS WITH SHEAR BLOCKS. FLASHING IS NOT REQUIRED.

### STICK ASSEMBLY



#### NOTE:

If the end reaction of the mullion (mullion spacing (ft.) times height (ft.) times specified windload (psf) divided by two) is more than 500 lbs., the optional mullion anchors must be used. (See page 32)

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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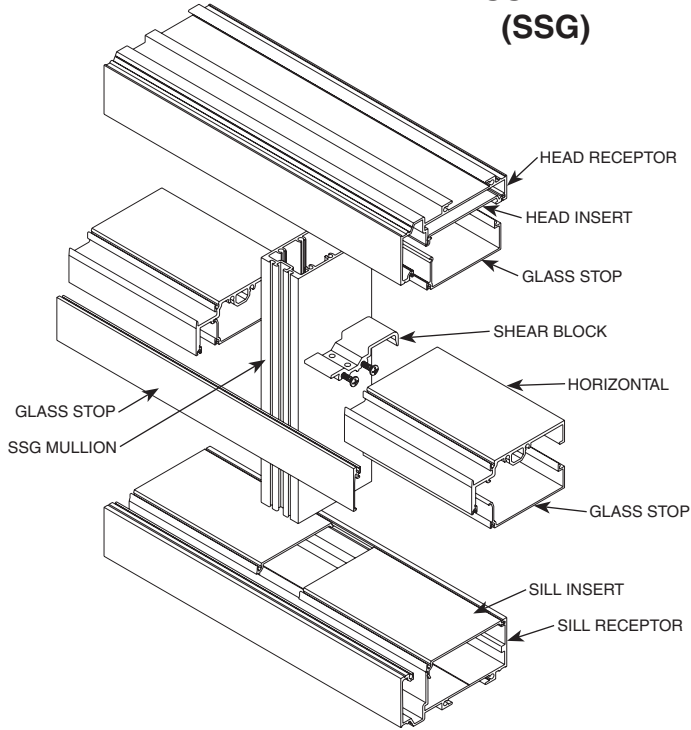
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THE STICK SYSTEM ALLOWS ON-SITE ASSEMBLY. HEAD AND SILL RECEPTORS ARE FASTENED TO THE SURROUND. VERTICAL MULLIONS ARE THEN INSTALLED IN THESE RECEPTORS AND ARE HELD IN PLACE BY SNAP-IN INSERTS. INTERMEDIATE HORIZONTAL MEMBERS ARE ATTACHED TO THE VERTICALS WITH SHEAR BLOCKS. FLASHING IS NOT REQUIRED.

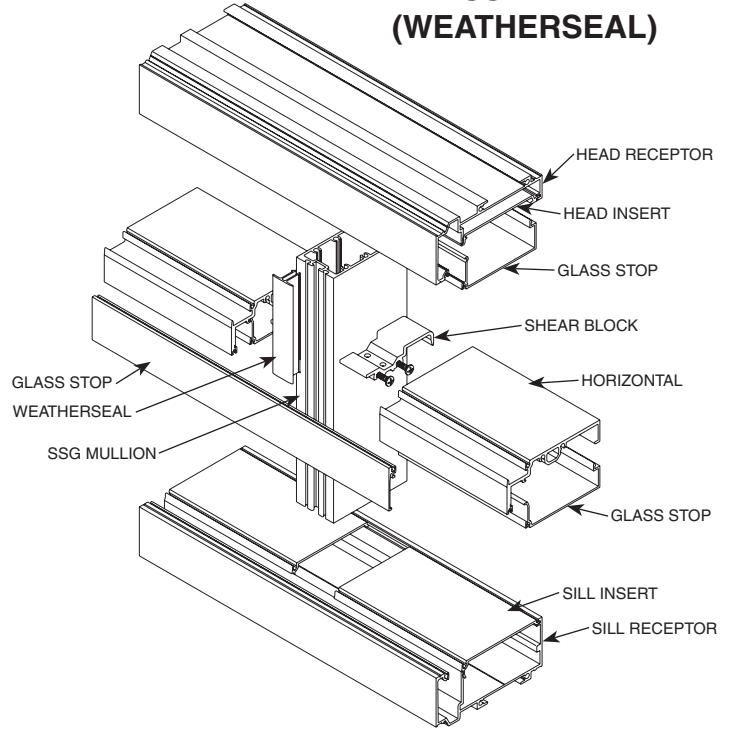
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**STICK ASSEMBLY (SSG)**



**STICK ASSEMBLY (WEATHERSEAL)**

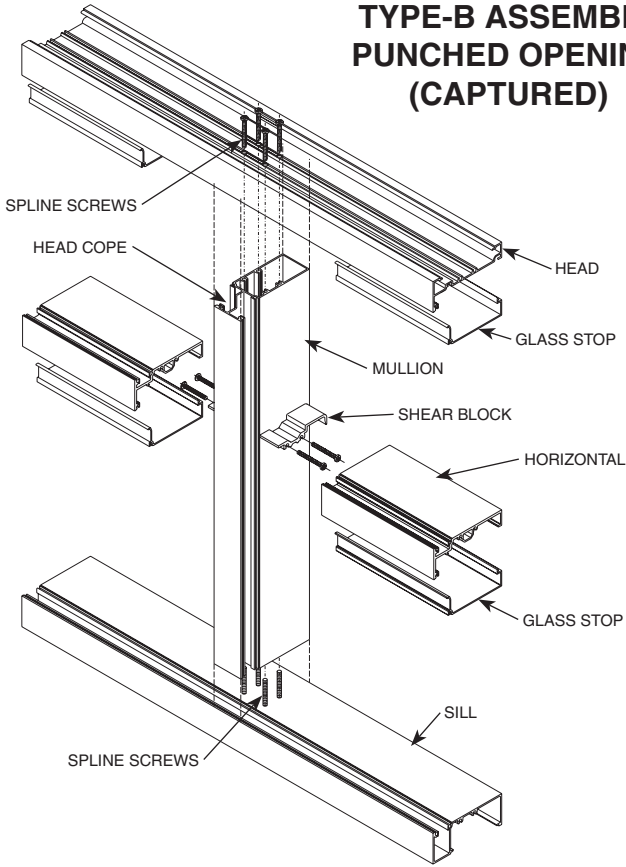


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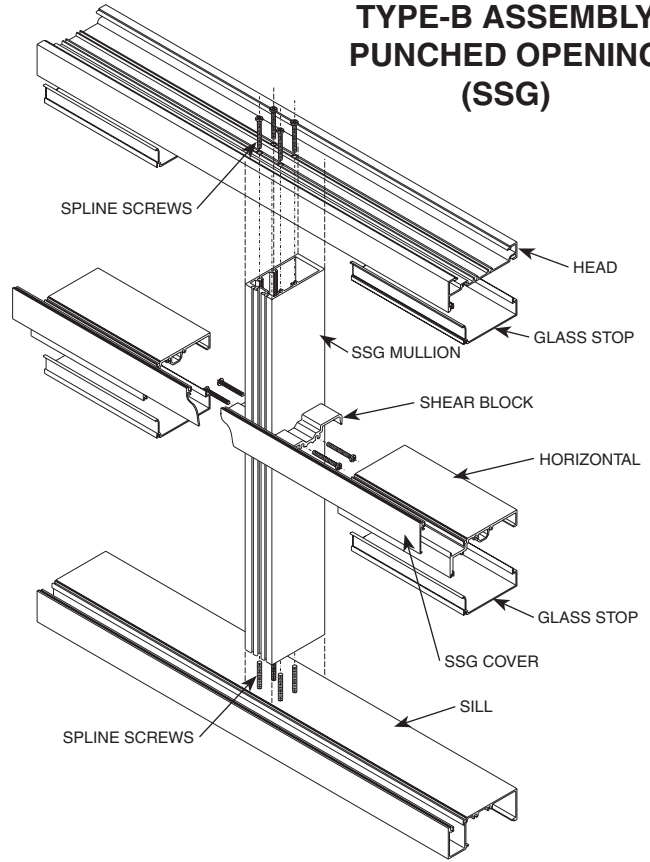
If the end reaction of the mullion (mullion spacing (ft.) times height (ft.) times specified windload (psf) divided by two) is more than 500 lbs., the optional mullion anchors must be used. (See page 32)

THE PUNCHED OPENING FABRICATION ALLOWS A FRAME TO BE PRE-ASSEMBLED AND INSTALLED AS A SINGLE UNIT. SCREWS ARE DRIVEN THROUGH THE BACK OF THE HEAD AND SILL MEMBERS INTO SPLINES EXTRUDED IN THE VERTICAL FRAMING MEMBERS. INTERMEDIATE HORIZONTALS ARE ATTACHED TO THE VERTICALS WITH SHEAR BLOCKS.

**TYPE-B ASSEMBLY  
PUNCHED OPENING  
(CAPTURED)**

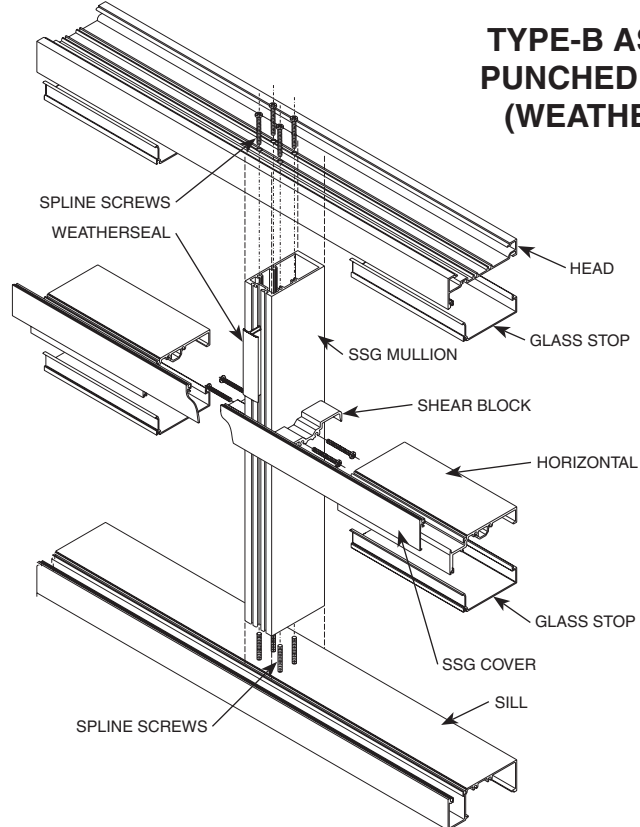


**TYPE-B ASSEMBLY  
PUNCHED OPENING  
(SSG)**



THE PUNCHED OPENING FABRICATION ALLOWS A FRAME TO BE PRE-ASSEMBLED AND INSTALLED AS A SINGLE UNIT. SCREWS ARE DRIVEN THROUGH THE BACK OF THE HEAD AND SILL MEMBERS INTO SPLINES EXTRUDED IN THE VERTICAL FRAMING MEMBERS. INTERMEDIATE HORIZONTALS ARE ATTACHED TO THE VERTICALS WITH SHEAR BLOCKS.

**TYPE-B ASSEMBLY  
PUNCHED OPENING  
(WEATHERSEAL)**

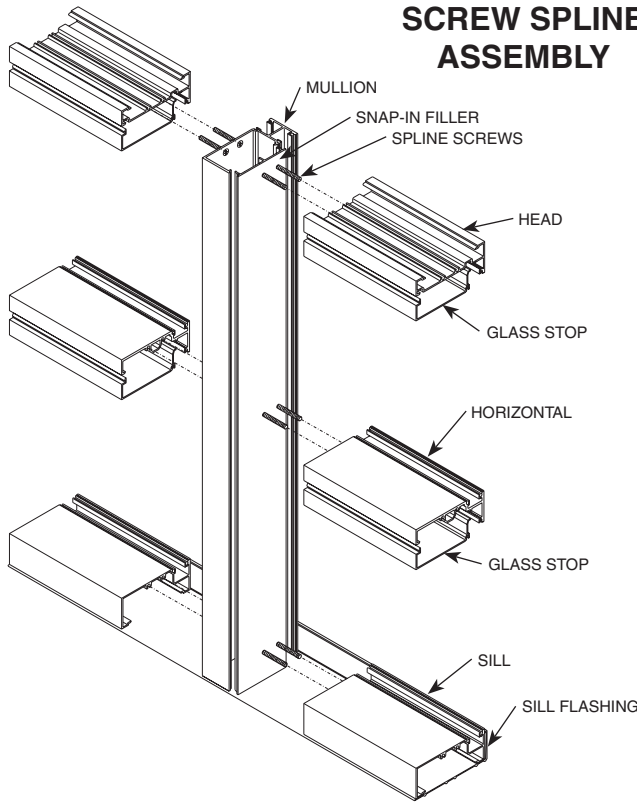


Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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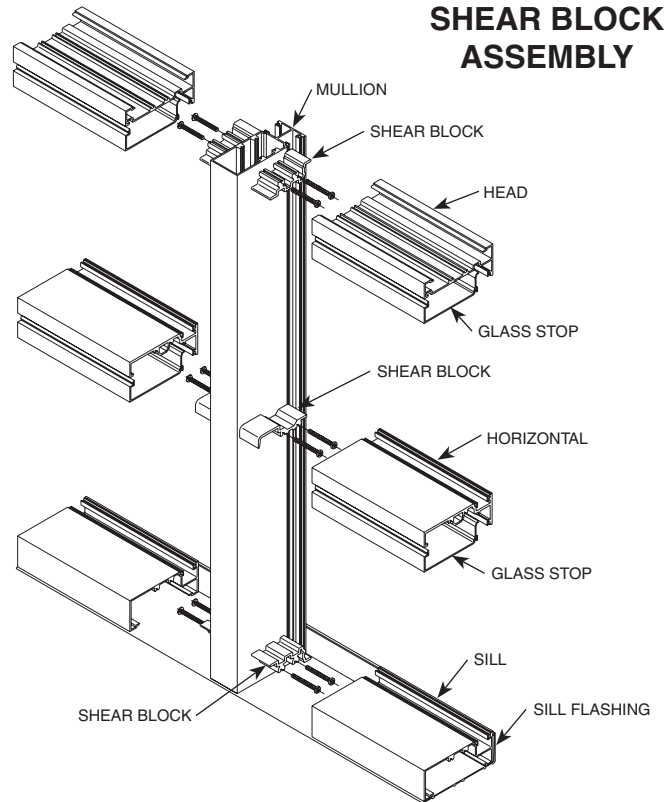
THE SPLIT VERTICAL IN THE SCREW SPLINE SYSTEM ALLOWS A FRAME TO BE INSTALLED FROM UNITIZED ASSEMBLIES. SCREWS ARE DRIVEN THROUGH THE BACK OF THE VERTICALS INTO SPLINES EXTRUDED IN THE HORIZONTAL FRAMING MEMBERS. THE INDIVIDUAL UNITS ARE THEN SNAPPED TOGETHER TO FORM A COMPLETED FRAME.

**SCREW SPLINE ASSEMBLY**



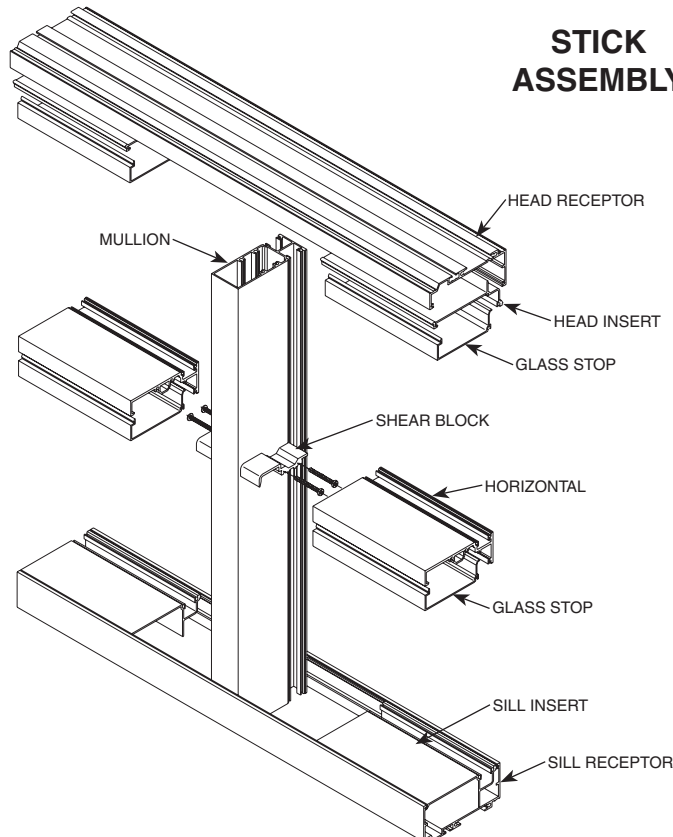
THE SHEAR BLOCK SYSTEM OF FABRICATION ALLOWS A FRAME TO BE PRE-ASSEMBLED AND INSTALLED AS A SINGLE UNIT. HORIZONTALS ARE ATTACHED TO THE VERTICALS WITH SHEAR BLOCKS.

**SHEAR BLOCK ASSEMBLY**



THE STICK SYSTEM ALLOWS ON-SITE ASSEMBLY. HEAD AND SILL RECEPTORS ARE FASTENED TO THE SURROUND. VERTICAL MULLIONS ARE THEN INSTALLED IN THESE RECEPTORS AND ARE HELD IN PLACE BY SNAP-IN INSERTS. INTERMEDIATE HORIZONTAL MEMBERS ARE ATTACHED TO THE VERTICALS WITH SHEAR BLOCKS. FLASHING IS NOT REQUIRED.

**STICK ASSEMBLY**



**NOTE:**

If the end reaction of the mullion (mullion spacing (ft.) times height (ft.) times specified windload (psf) divided by two) is more than 500 lbs., the optional mullion anchors must be used. (See page 43)

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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**BASIC FRAMING DETAILS..... 12,13**

**MISCELLANEOUS FRAMING..... 14,15**

**CORNERS..... 16**

**CURVING & TRIM DETAILS ..... 17**

**ENTRANCE FRAMING ..... 18**

**ENTRANCE FRAMING (OPEN BACK) ..... 19**

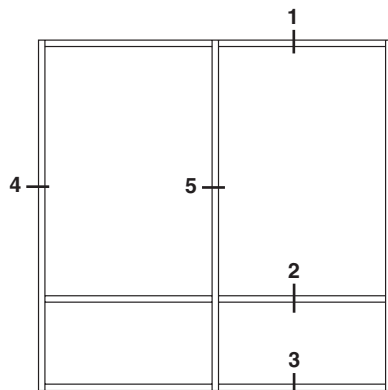
**GLASSvent™ ..... 20,21**

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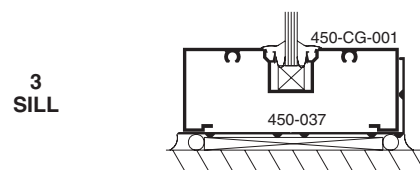
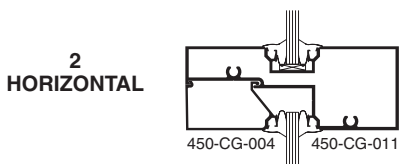
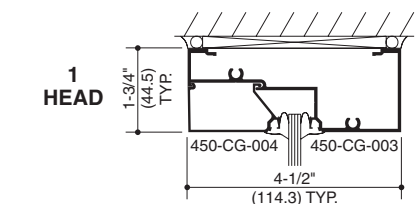
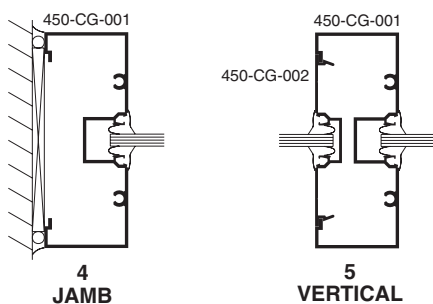
SCALE 3" = 1'-0"



ELEVATION IS NUMBER KEYED TO DETAILS

**SCREW SPLINE**

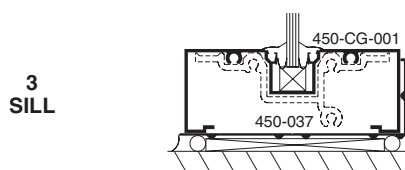
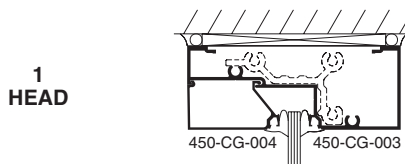
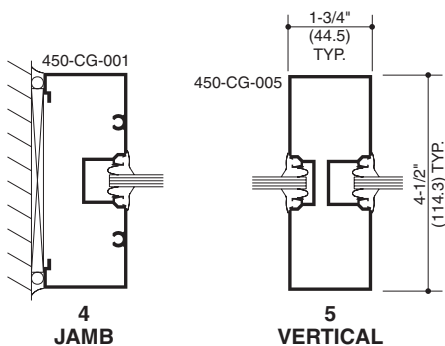
CAD Details = TF\_VG\_450-SS-Center--CAD.zip



\*See page 14 for Optional High Performance Flashing.

**SHEAR BLOCK**

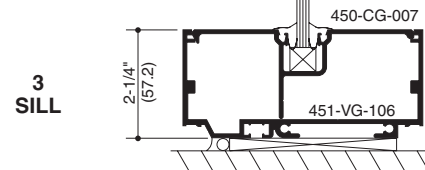
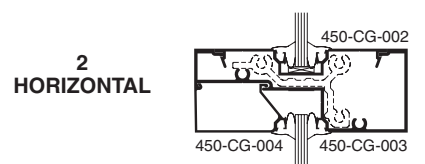
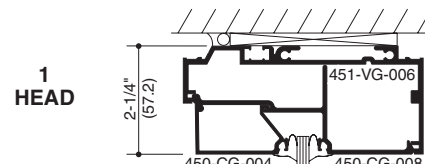
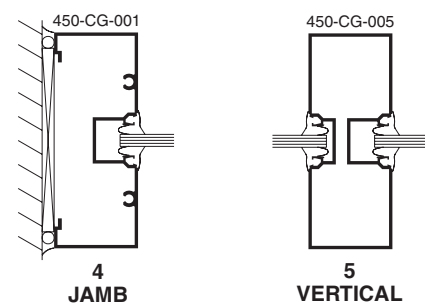
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\*See page 14 for Optional High Performance Flashing.

**STICK**

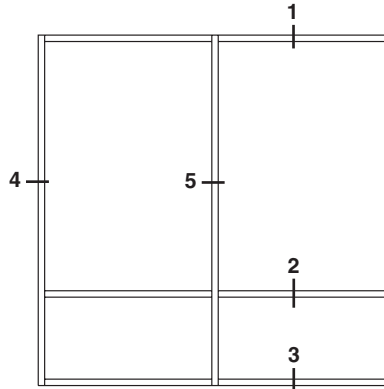
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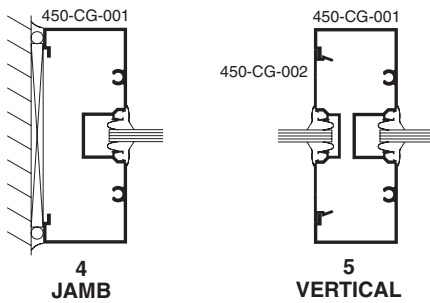
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ELEVATION IS NUMBER KEYED TO DETAILS

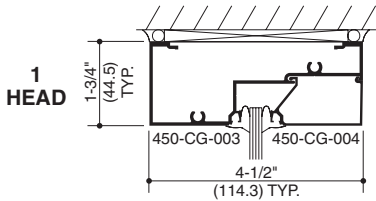
**SCREW SPLINE**

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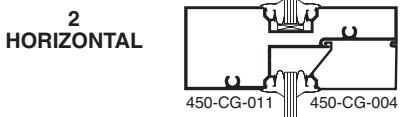


4 JAMB

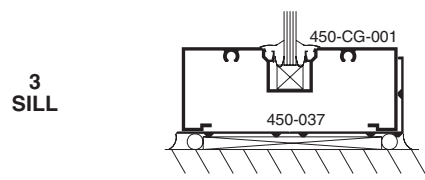
5 VERTICAL



1 HEAD



2 HORIZONTAL

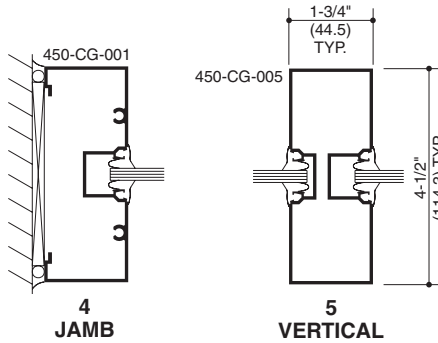


3 SILL

\*See page 14 for Optional High Performance Flashing.

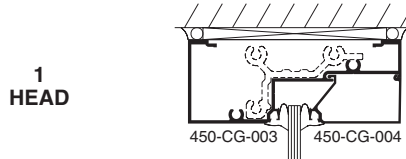
**SHEAR BLOCK**

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4 JAMB

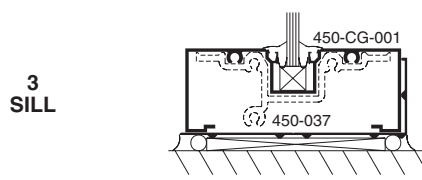
5 VERTICAL



1 HEAD



2 HORIZONTAL

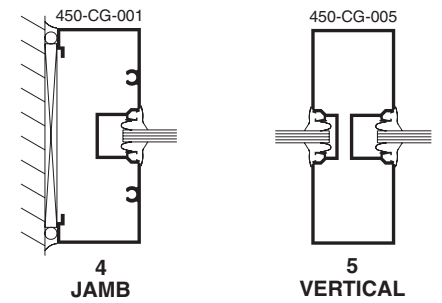


3 SILL

\*See page 14 for Optional High Performance Flashing.

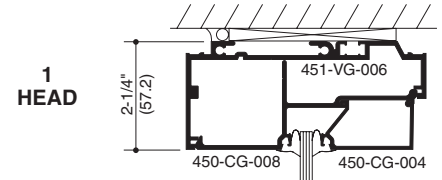
**STICK**

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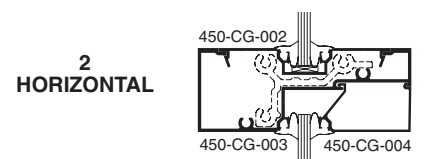


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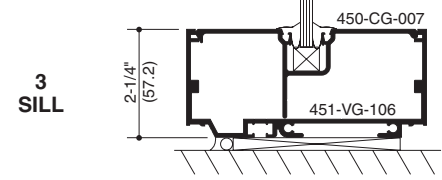
5 VERTICAL



1 HEAD



2 HORIZONTAL



3 SILL

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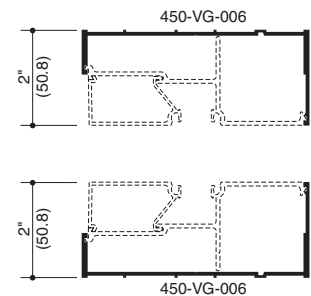
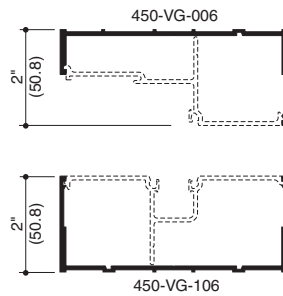
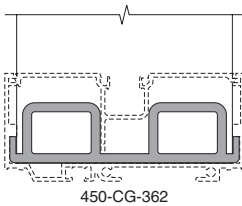
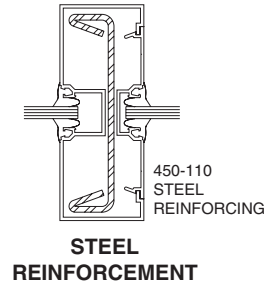
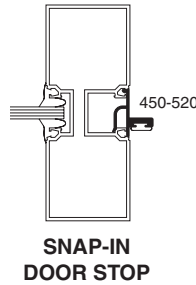
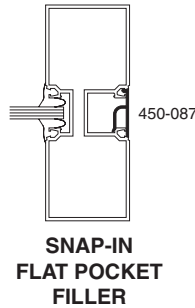
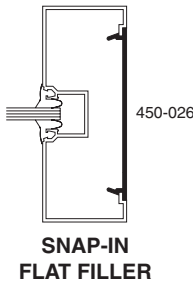
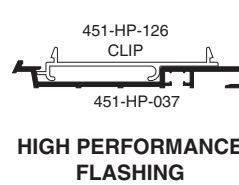
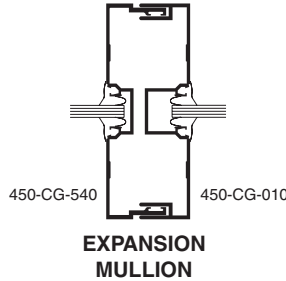
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SCALE 3" = 1'-0"

CAD Details **SCREW SPLINE**  
= TF\_VG\_450-SS-Center--CAD.zip

CAD Details **SHEAR BLOCK**  
= TF\_VG\_450-SB-Center--CAD.zip

CAD Details **STICK**  
= TF\_VG\_450-Stick-Center--CAD.zip



**NOTE:**  
If the end reaction of the mullion (mullion spacing (ft.) times height (ft.) times specified windload (psf) divided by two) is more than 500 lbs., the optional Mullion Anchors must be used.

**NOTE:**  
Mullion Anchor not used with Lightweight Receptor.

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**SCALE 3" = 1'-0"**

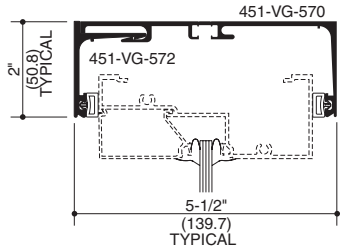
CAD Details **SCREW SPLINE**  
= TF\_VG\_450-SS-Center--CAD.zip

CAD Details **SHEAR BLOCK**  
= TF\_VG\_450-SB-Center--CAD.zip

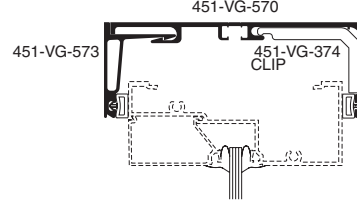
CAD Details **STICK**  
= TF\_VG\_450-Stick-Center--CAD.zip

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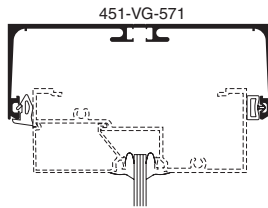
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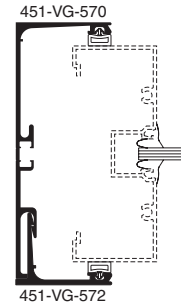
**STANDARD HEAD  
COMPENSATING RECEPTOR**



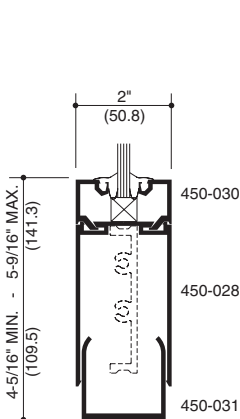
**HEAVY WEIGHT  
HEAD  
COMPENSATING RECEPTOR**



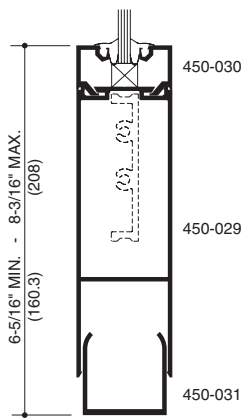
**ONE PIECE  
HEAD  
COMPENSATING RECEPTOR**



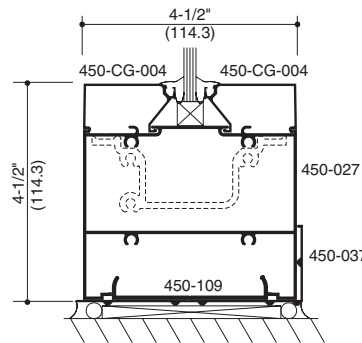
**JAMB  
COMPENSATING RECEPTOR**



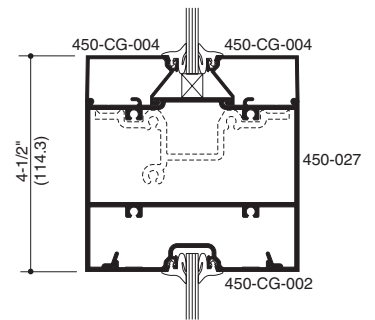
**NARROW  
SIDELITE BASE**



**NARROW  
SIDELITE BASE**



**SIDELITE BASE**

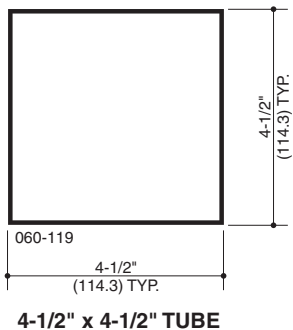


**4-1/2" X 4-1/2"  
HORIZONTAL**

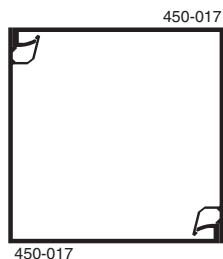
**NOTE:** SIDELITE BASES SHOWN ARE FOR USE WITH SCREW SPLINE AND SHEAR BLOCK SYSTEMS ONLY.

SCALE 3" = 1'-0"

CAD Details **SCREW SPLINE**  
= TF\_VG\_450-SS-Center--CAD.zip

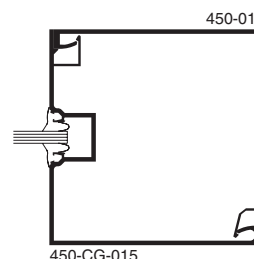


CAD Details **SHEAR BLOCK**  
= TF\_VG\_450-SB-Center--CAD.zip

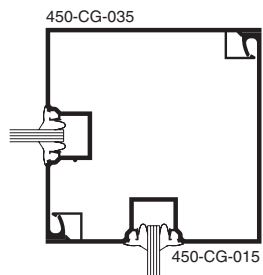


**TWO PIECE NO POCKET CORNER**

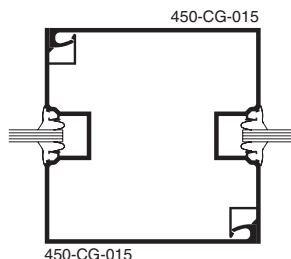
CAD Details **STICK**  
= TF\_VG\_450-Stick-Center--CAD.zip



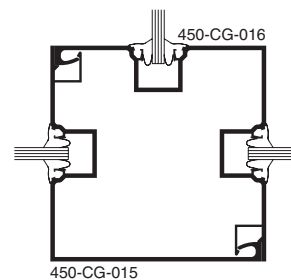
**ONE POCKET CORNER**



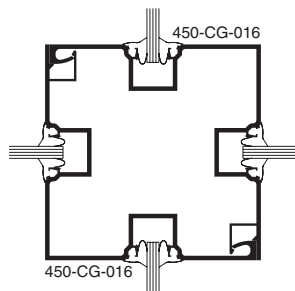
**TWO POCKET 90° CORNER**



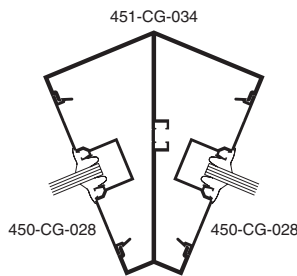
**TWO POCKET VERTICAL POST**



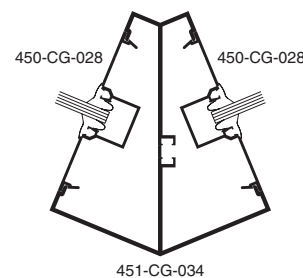
**THREE POCKET 90° CORNER**



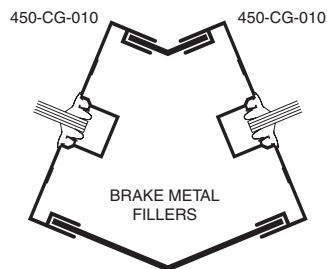
**FOUR POCKET 90° CORNER**



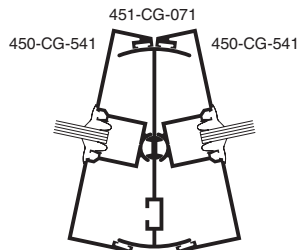
**135° INSIDE CORNER**



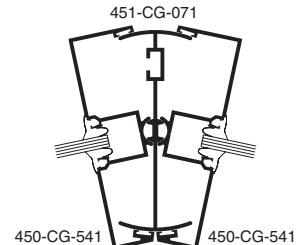
**135° OUTSIDE CORNER**



**VARIABLE DEGREE BRAKE METAL CORNER**



**155° TO 180° PIVOT MULLION (OUTSIDE CORNER)**



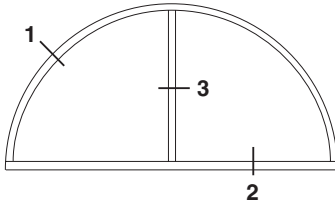
**155° TO 180° PIVOT MULLION (INSIDE CORNER)**

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

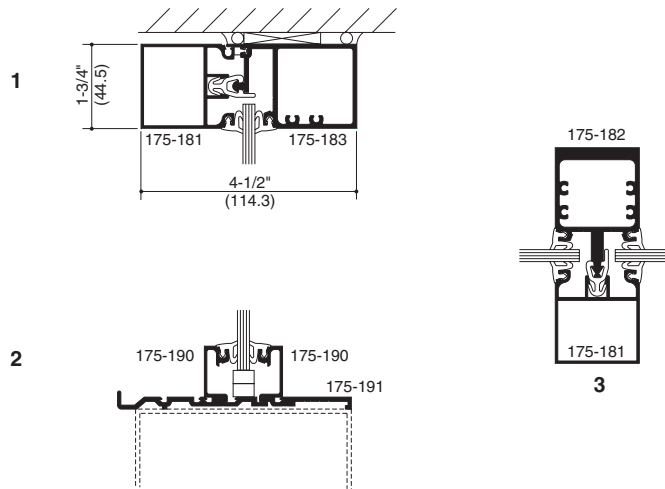
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SCALE 3" = 1'-0"

CAD Details **SCREW SPLINE**  
= TF\_VG\_450-SS-Center--CAD.zip



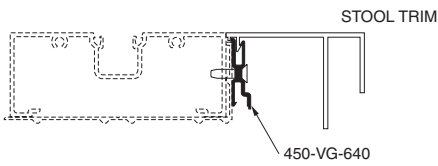
**CURVING DETAILS**  
(Center Plane Only)



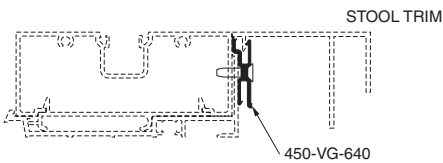
CAD Details **SCREW SPLINE**  
= TF\_VG\_450-SS-Center--CAD.zip

CAD Details **SHEAR BLOCK**  
= TF\_VG\_450-SB-Center--CAD.zip

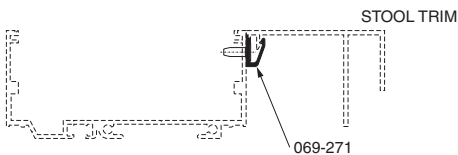
CAD Details **STICK**  
= TF\_VG\_450-Stick-Center--CAD.zip



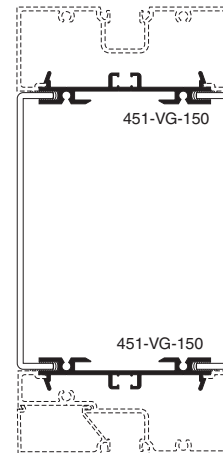
**STOOL TRIM CLIP WITH STANDARD FLASHING**



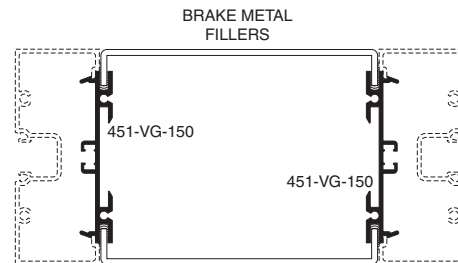
**STOOL TRIM CLIP WITH HIGH PERFORMANCE FLASHING**



**STOOL TRIM CLIP FOR STICK/TYPER-B ASSEMBLY**



**BRAKE METAL ADAPTOR AT HORIZONTAL**



**BRAKE METAL ADAPTOR AT VERTICAL**

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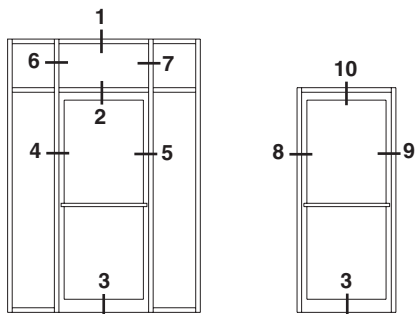


SCALE 3" = 1'-0"

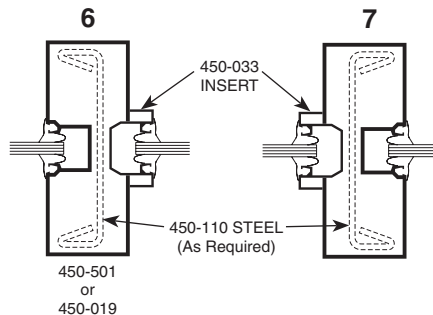
CAD Details ENTRANCE  
= TF\_VG\_450\_Ent-Center--CAD.zip

TRIFAB® VG 450 FRAMING INCORPORATING KAWNEER® "190" DOORS.

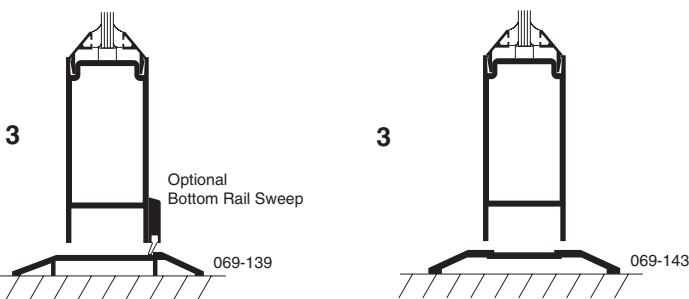
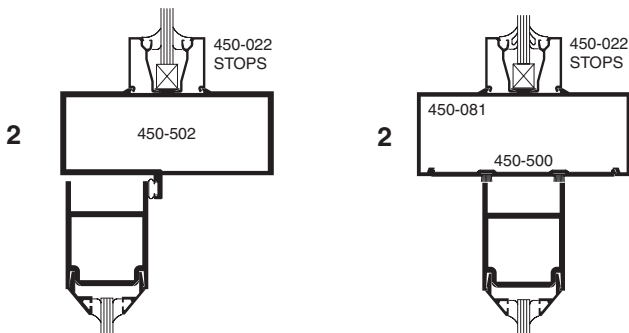
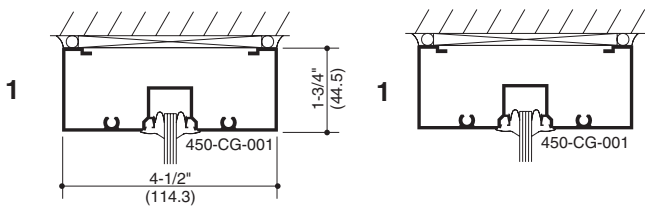
NOTE: OTHER TYPES OF KAWNEER DOORS MAY BE USED WITH THIS FRAMING SYSTEM. SEE ENTRANCE DETAILS FOR ADDITIONAL INFORMATION.



ELEVATIONS ARE NUMBER KEYED TO DETAILS

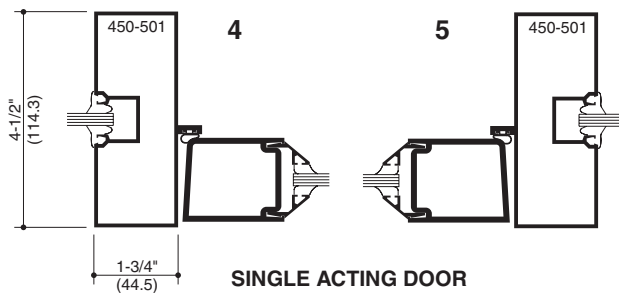
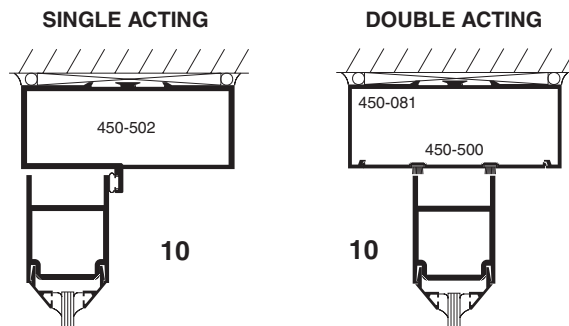


Transom area for both double or single acting doors with glass surround. Jamb above transom bar are routed out to accept glass holding insert with or without steel reinforcing.

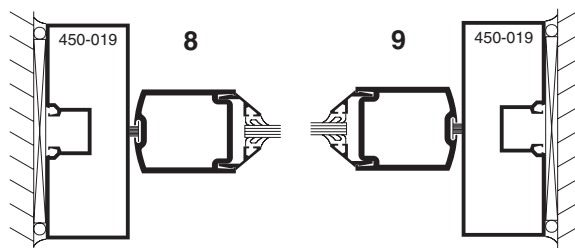


SINGLE ACTING DOOR WITH TRANSOM

DOUBLE ACTING DOOR WITH TRANSOM



SINGLE ACTING DOOR



DOUBLE ACTING DOOR

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

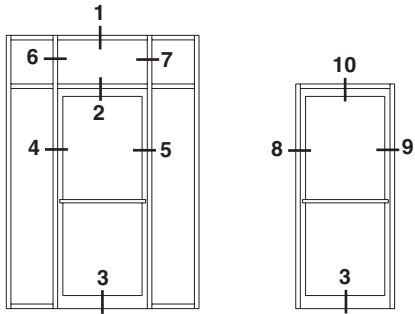
Kawneer reserves the right to change configuration without prior notice when deemed necessary for product improvement.  
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SCALE 3" = 1'-0"

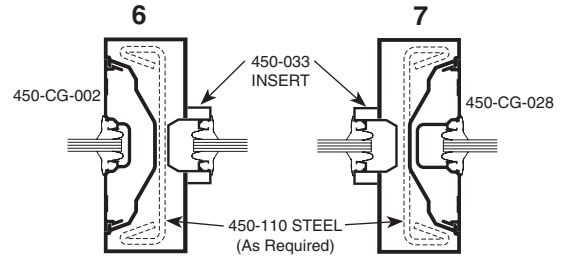
CAD Details ENTRANCE  
= TF\_VG\_450\_Ent-Center--CAD.zip

TRIFAB® VG 450 FRAMING INCORPORATING KAWNEER® "190" DOORS.

NOTE: OTHER TYPES OF KAWNEER DOORS MAY BE USED WITH THIS FRAMING SYSTEM.  
SEE ENTRANCE DETAILS FOR ADDITIONAL INFORMATION.



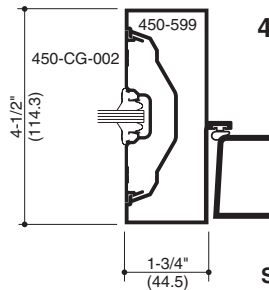
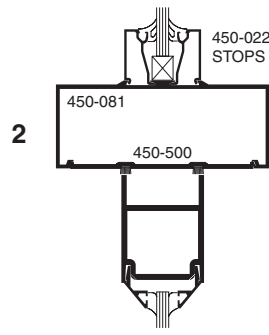
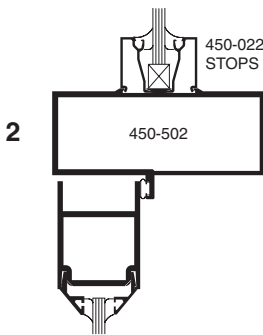
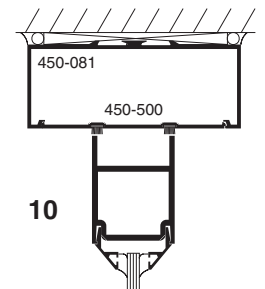
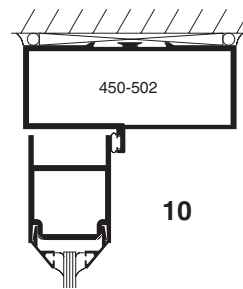
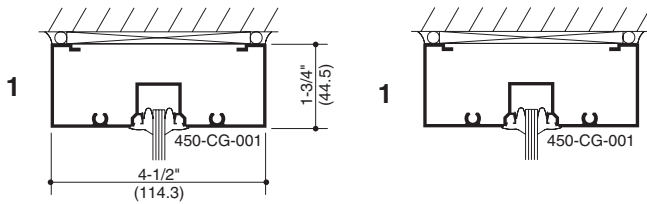
ELEVATIONS ARE NUMBER KEYED TO DETAILS



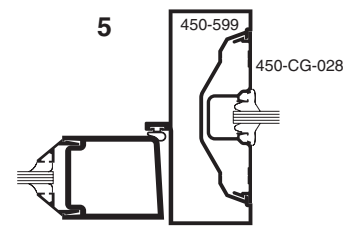
Transom area for both double or single acting doors with glass surround. Jamb above transom bar are routed out to accept glass holding insert with or without steel reinforcing.

SINGLE ACTING

DOUBLE ACTING

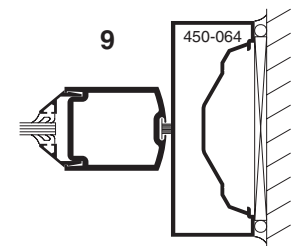
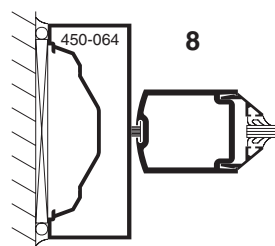
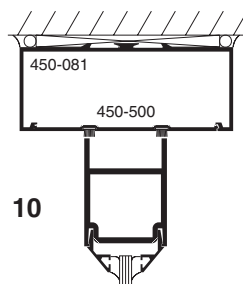
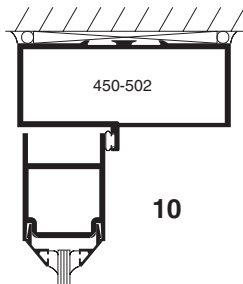


SINGLE ACTING DOOR



SINGLE ACTING

DOUBLE ACTING



DOUBLE ACTING DOOR

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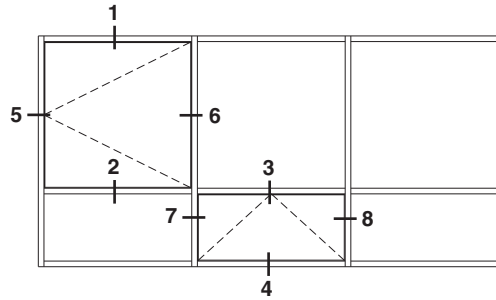
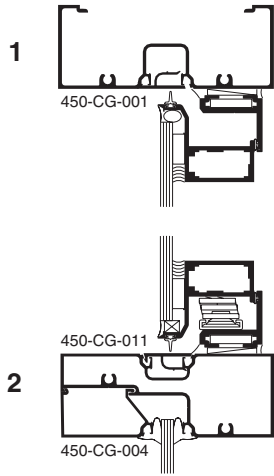
**SCALE 3" = 1'-0"**

CAD Details **SCREW SPLINE**  
= TF\_VG\_450-SS-Center--CAD.zip

CAD Details **SHEAR BLOCK**  
= TF\_VG\_450-SB-Center--CAD.zip

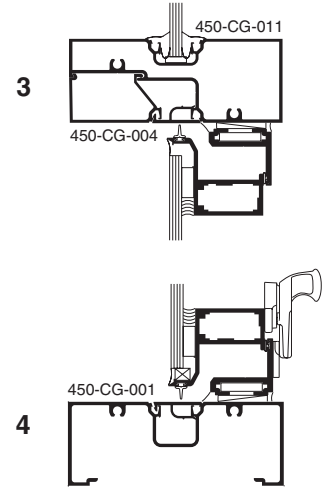
CAD Details **STICK**  
= TF\_VG\_450-Stick-Center--CAD.zip

**OUTSWING CASEMENT  
VERTICAL SECTION SHOWN**

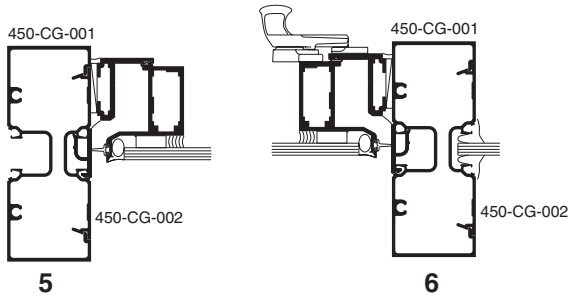


**ELEVATION IS NUMBER KEYED TO DETAILS**

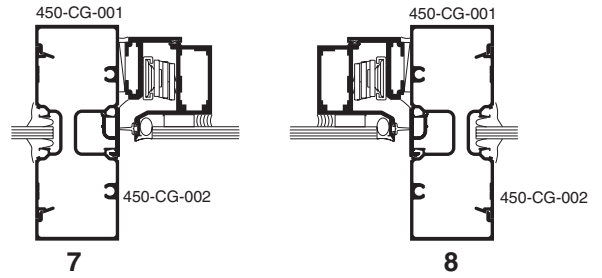
**PROJECT-OUT  
VERTICAL SECTION SHOWN**



**OUTSWING CASEMENT  
HORIZONTAL SECTION SHOWN**



**PROJECT-OUT  
HORIZONTAL SECTION SHOWN**



**MAXIMUM / MINIMUM SIZES (1/4" INFILL)**

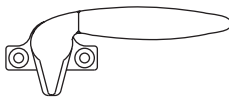
<b>PROJECT-OUT</b>	MAXIMUM 60" x 36" MINIMUM 12" x 12"
<b>OUTSWING CASEMENT</b>	MAXIMUM 36" x 60" MINIMUM 12" x 12"

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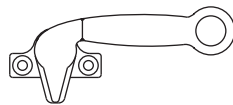
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**STOREFRONT GLASSvent™ HARDWARE SELECTION GUIDE**

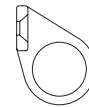
DESCRIPTION	PROJECT - OUT	OUTSWING CASEMENT
Stainless steel 4-bar hinge	STANDARD	STANDARD
Cast white bronze cam lock	STANDARD	STANDARD
Cast white bronze cam lock with pole ring	OPTIONAL	OPTIONAL
Cast white bronze custodial lock with removable handle	OPTIONAL	OPTIONAL
Cast white bronze concealed lock with removable hex key	OPTIONAL	OPTIONAL
Cast white bronze pole/pull ring	OPTIONAL	
Pivot-shoe roto-operator	OPTIONAL	
Multi-point lock with cast white bronze locking handle		OPTIONAL
Insect screen	OPTIONAL	OPTIONAL



**CAM LOCK**



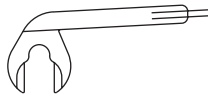
**CAM LOCK WITH POLE RING**



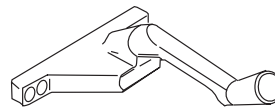
**PULL RING**



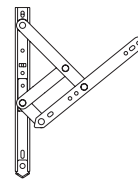
**CUSTODIAL LOCK**



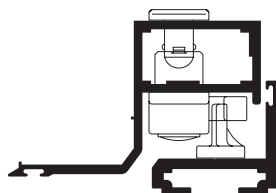
**REMOVABLE HANDLE**



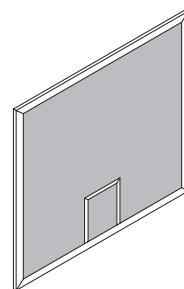
**ROTO-OPERATOR**



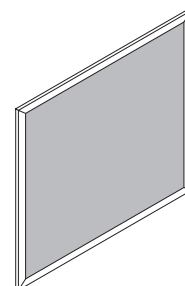
**STAINLESS STEEL 4 BAR HINGES**



**CONCEALED LOCK**



**INSECT SCREEN WITH STANDARD WICKET**



**INSECT SCREEN WITH FULL WICKET**

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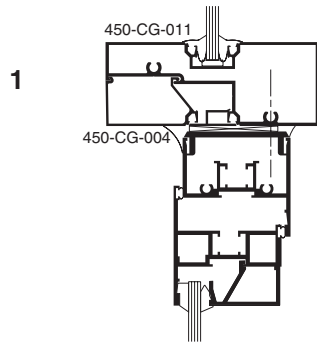
SCALE 3" = 1'-0"

CAD Details **SCREW SPLINE**  
= TF\_VG\_450-SS-Center--CAD.zip

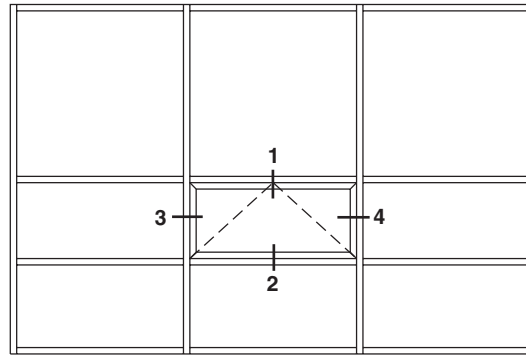
CAD Details **SHEAR BLOCK**  
= TF\_VG\_450-SB-Center--CAD.zip

CAD Details **STICK**  
= TF\_VG\_450-Stick-Center--CAD.zip

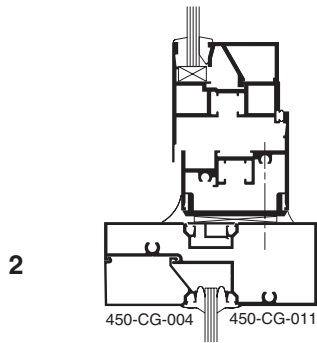
**PROJECT-OUT  
VERTICAL SECTION**



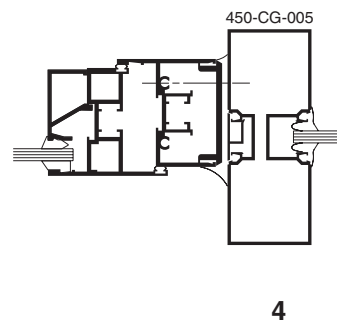
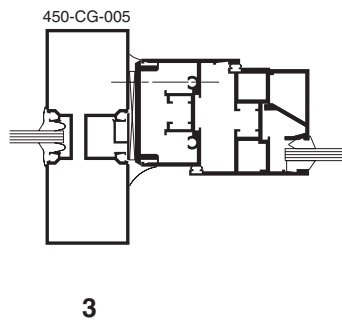
**7225 VENTS SHOWN**  
**NOTE: OTHER VENT TYPES CAN BE  
ACCOMMODATED, CONSULT YOUR KAWNEER  
REPRESENTATIVE FOR OTHER OPTIONS**



ELEVATION IS NUMBER KEYED TO DETAILS



**PROJECT-OUT  
HORIZONTAL SECTION**



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**BASIC FRAMING DETAILS..... 24-30**

**MISCELLANEOUS FRAMING..... 31,32**

**CORNERS..... 33**

**ENTRANCE FRAMING..... 34**

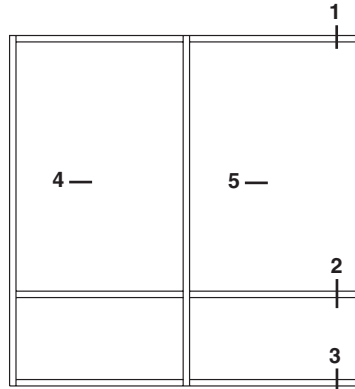
**GLASSvent™ ..... 35-36**

**VENTS..... 37**

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SCALE 3" = 1'-0"



ELEVATION IS NUMBER KEYED TO DETAILS

**SCREW SPLINE**

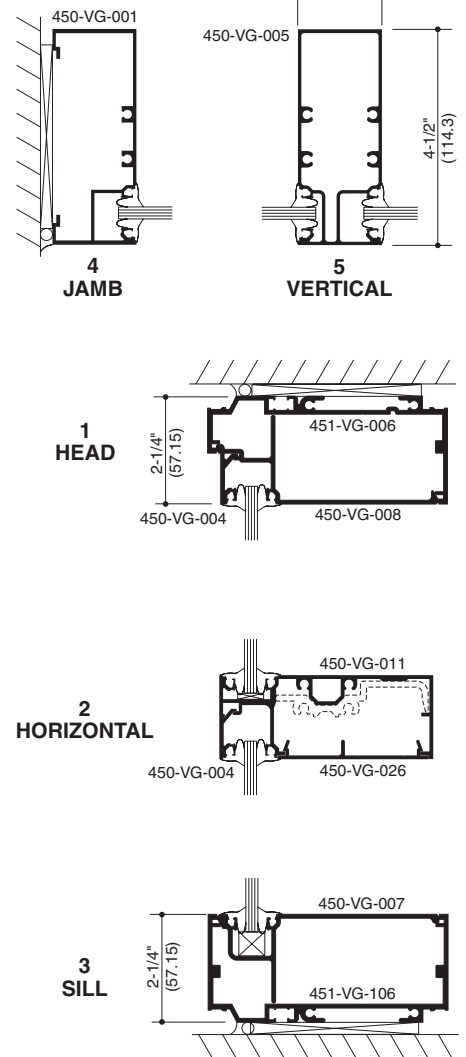
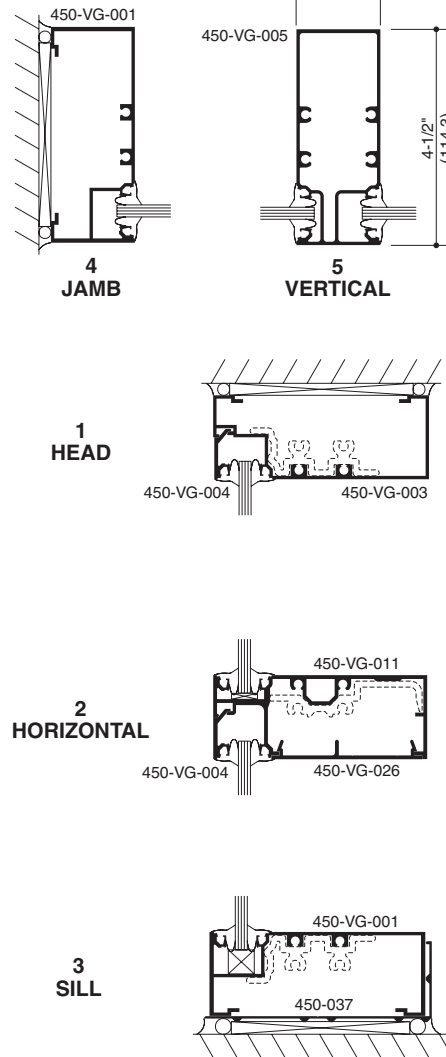
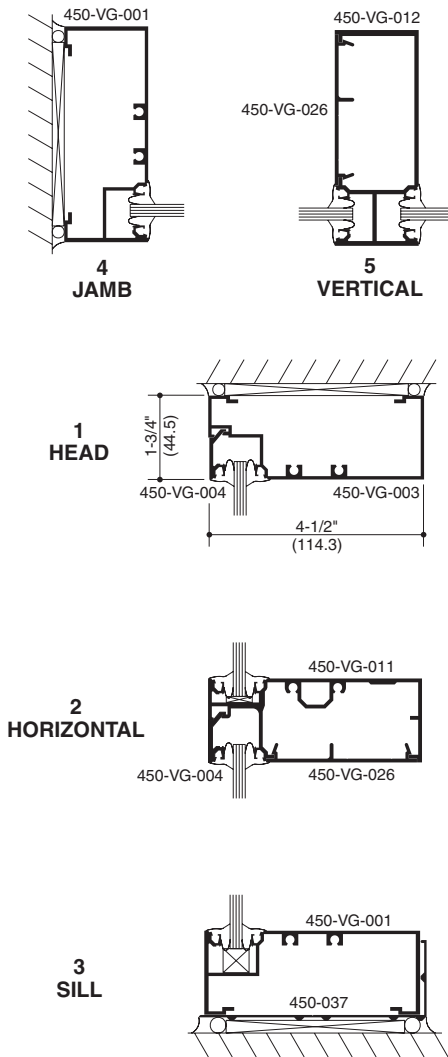
CAD Details = TF\_VG\_450-SS-Front--CAD.zip

**SHEAR BLOCK**

CAD Details = TF\_VG\_450-SB-Front--CAD.zip

**STICK**

CAD Details = TF\_VG\_450-Stick-Front--CAD.zip



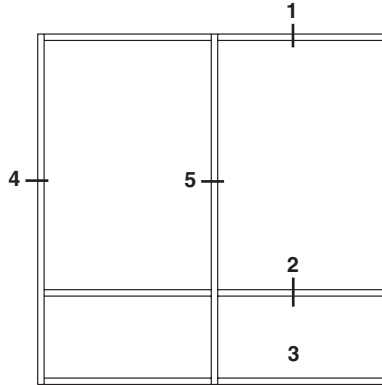
\*See page 31 for Optional High Performance Flashing.

\*See page 31 for Optional High Performance Flashing.

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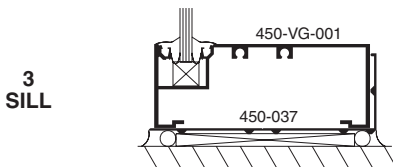
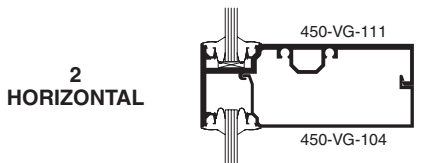
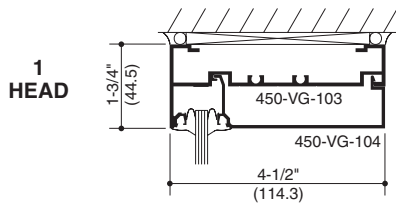
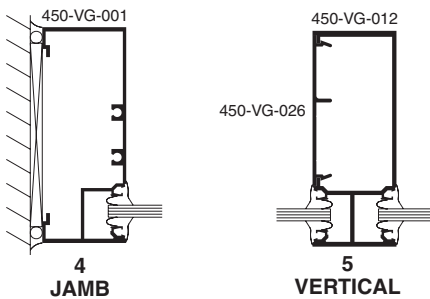
SCALE 3" = 1'-0"



ELEVATION IS NUMBER KEYED TO DETAILS

**SCREW SPLINE**

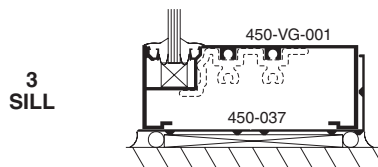
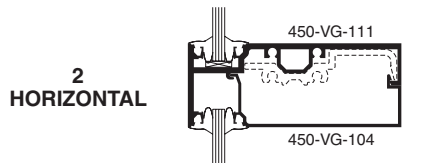
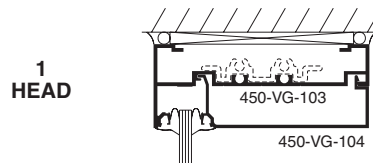
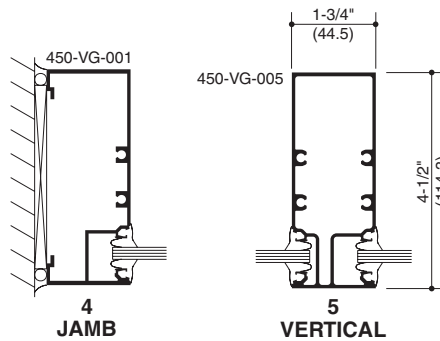
CAD Details = TF\_VG\_450-SS-Front--CAD.zip



\*See page 31 for Optional High Performance Flashing.

**SHEAR BLOCK**

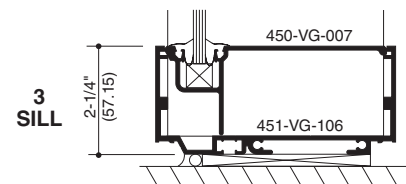
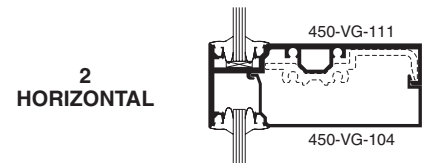
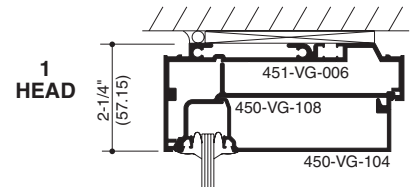
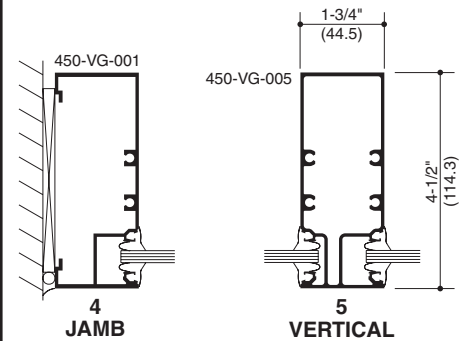
CAD Details = TF\_VG\_450-SB-Front--CAD.zip



\*See page 31 for Optional High Performance Flashing.

**STICK**

CAD Details = TF\_VG\_450-Stick-Front--CAD.zip

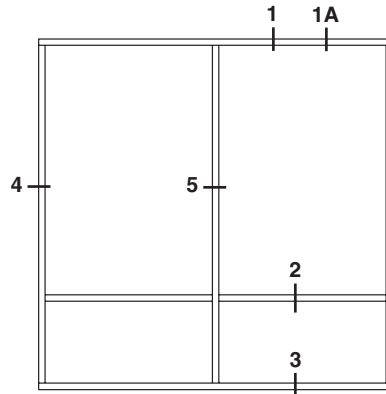


Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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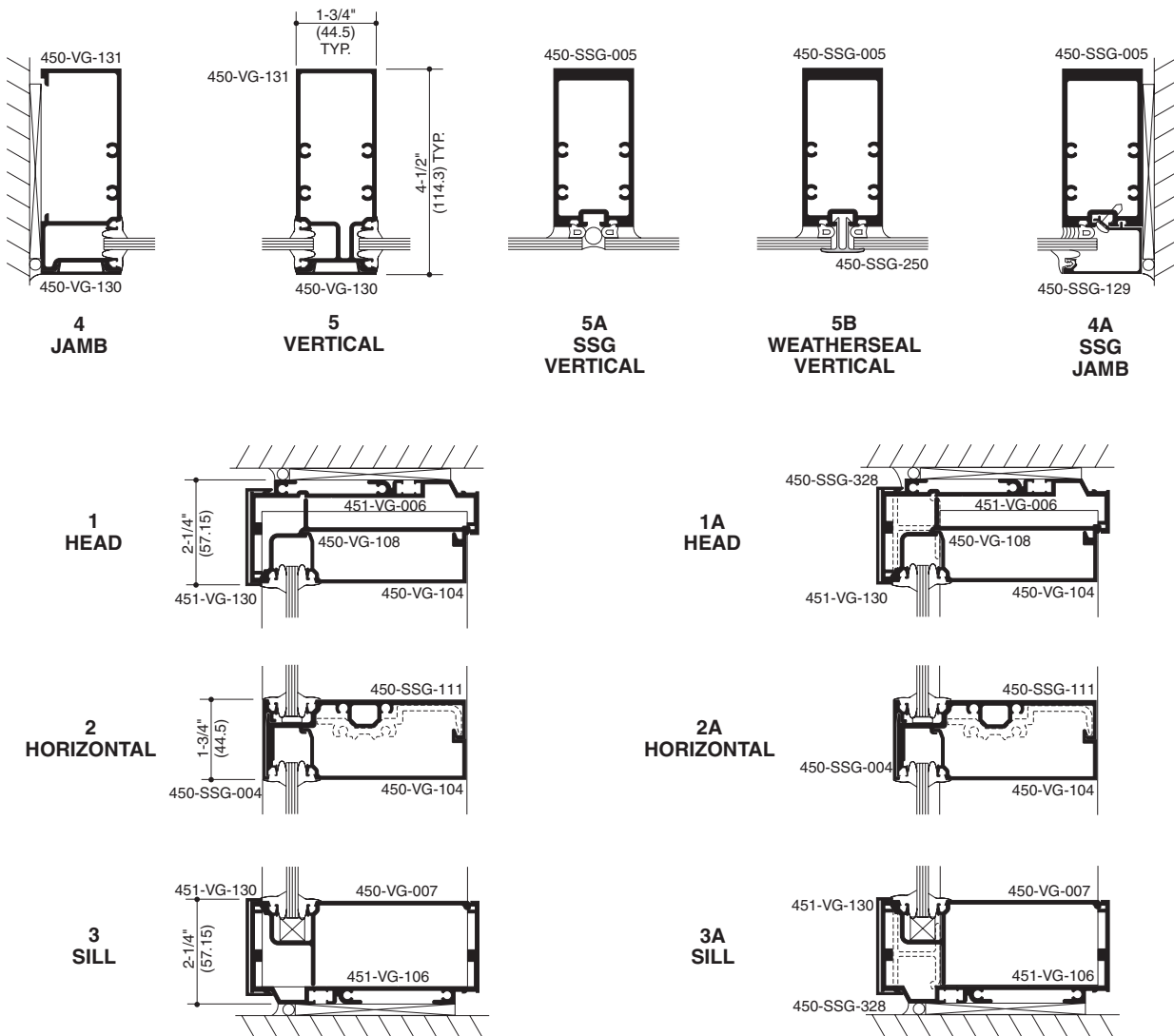
SCALE 3" = 1'-0"



ELEVATION IS NUMBER KEYED TO DETAILS

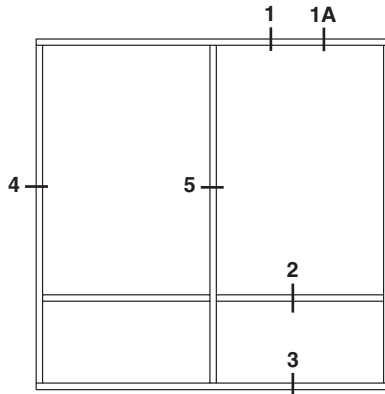
**STICK SYSTEM (INSIDE GLAZED)  
TWO COLOR OPTION  
STANDARD RECEPTOR with SSG ADAPTOR**

CAD Details **STICK** = TF\_VG\_450-Stick-Front--CAD.zip



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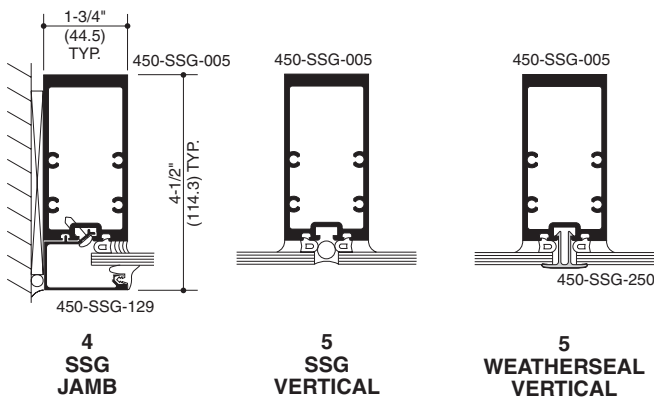
SCALE 3" = 1'-0"



ELEVATION IS NUMBER KEYED TO DETAILS

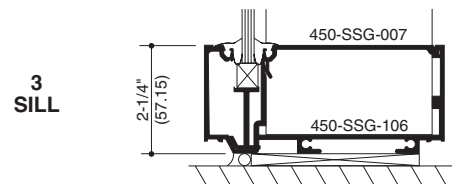
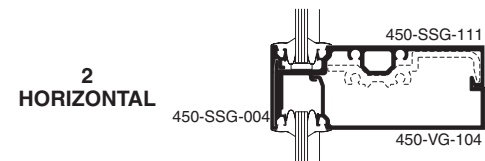
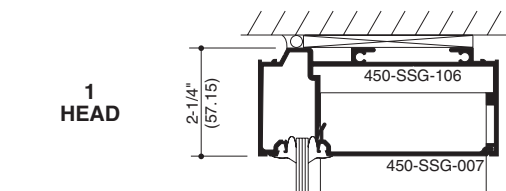
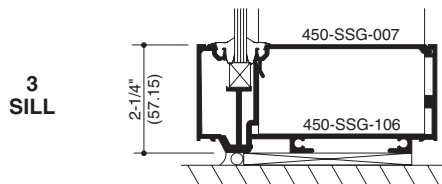
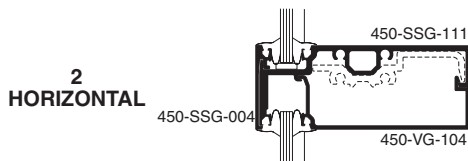
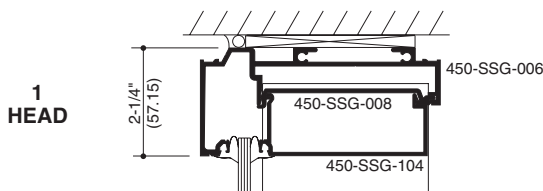
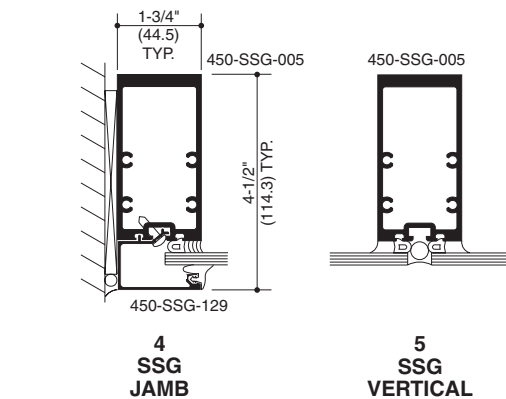
**STICK SYSTEM (INSIDE GLAZED)  
SSG RECEPTOR**

CAD Details **STICK SSG** = TF\_VG\_450-Stick-SSG-Front--CAD.zip



**STICK SYSTEM (OUTSIDE GLAZED)  
SSG RECEPTOR**

CAD Details **STICK SSG** = TF\_VG\_450-Stick-SSG-Front--CAD.zip

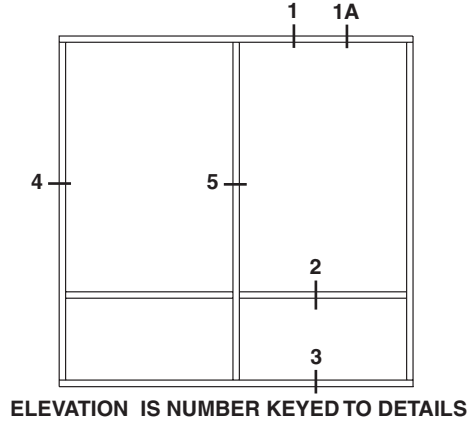


Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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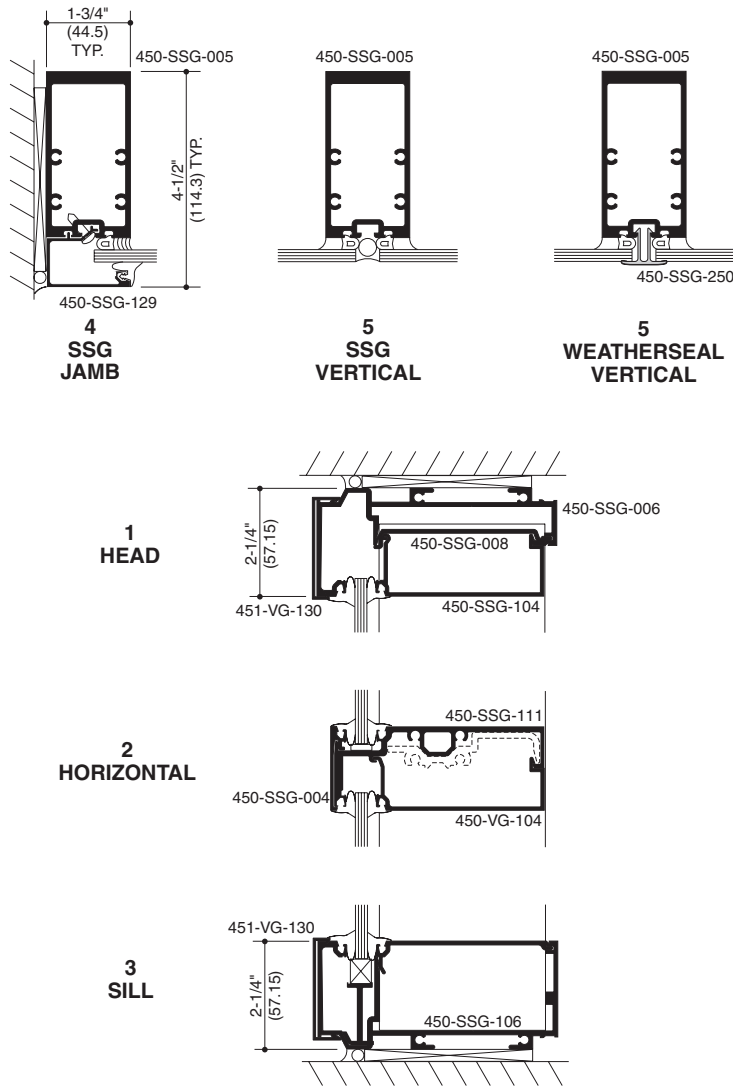
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SCALE 3" = 1'-0"



**STICK SYSTEM (INSIDE GLAZED)  
SSG RECEPTOR  
TWO COLOR OPTION**

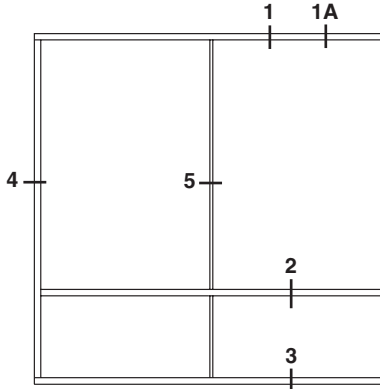
CAD Details STICK SSG = TF\_VG\_450-Stick-SSG-Front--CAD.zip



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SCALE 3" = 1'-0"

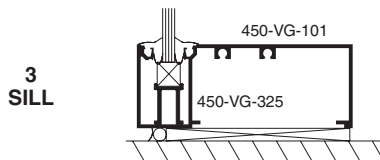
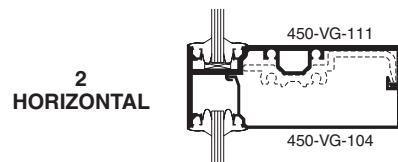
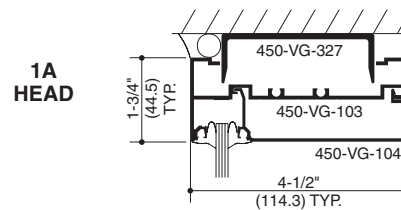
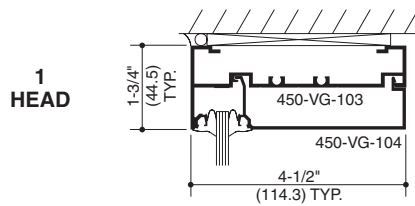
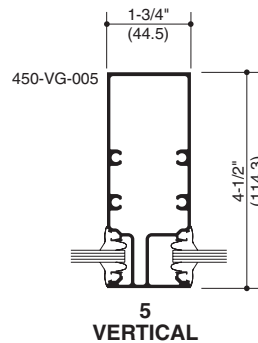
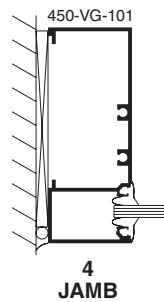


ELEVATION IS NUMBER KEYED TO DETAILS

TYPE-B MULTI-LITE PUNCHED OPENINGS  
(20 FEET MAXIMUM UNIT WIDTH)

TYPE-B (INSIDE GLAZED)  
PUNCHED OPENING

CAD Details TYPE-B = TF\_VG\_450\_Type-B\_Front--CAD.zip

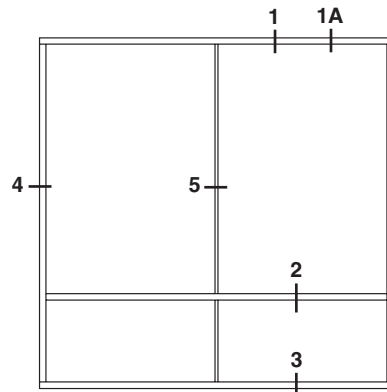


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SCALE 3" = 1'-0"

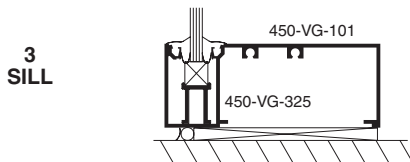
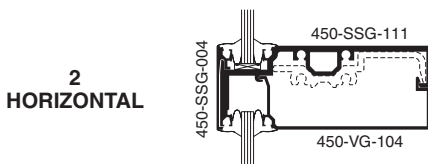
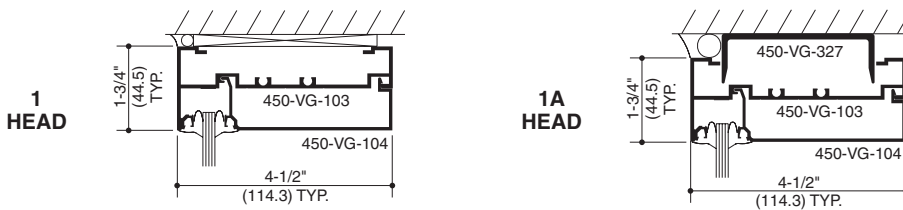
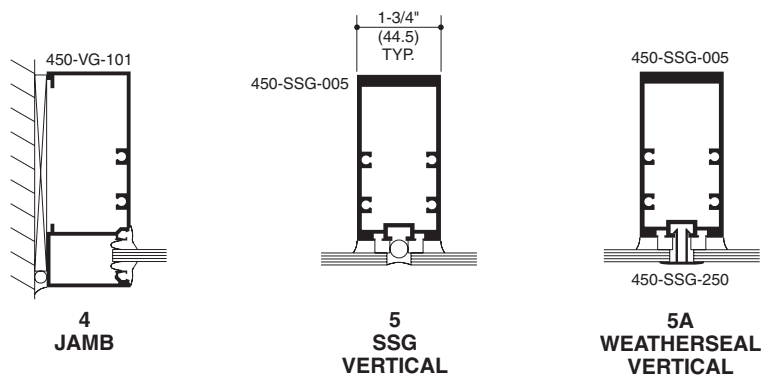


**TYPE B: MULTI-LITE PUNCHED OPENINGS**  
(20 FEET MAXIMUM UNIT WIDTH)

ELEVATION IS NUMBER KEYED TO DETAILS

**TYPE-B (INSIDE GLAZED)  
SSG/WEATHERSEAL  
PUNCHED OPENING**

CAD Details TYPE-B = TF\_VG\_450\_Type-B\_Front-CAD.zip



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SCALE 3" = 1'-0"

CAD Details **SCREW SPLINE**

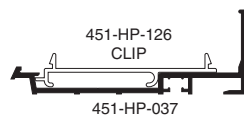
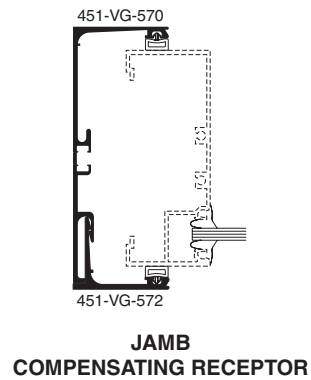
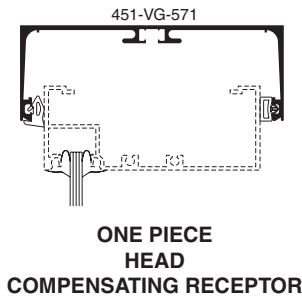
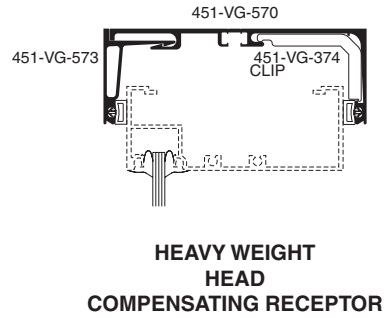
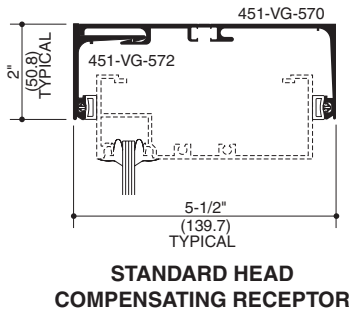
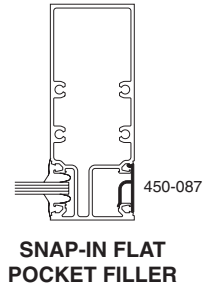
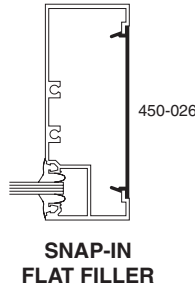
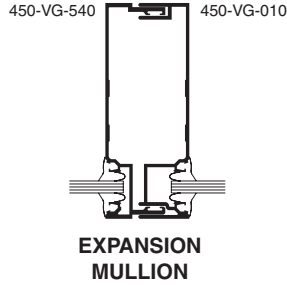
= TF\_VG\_450-SS-Front--CAD.zip

CAD Details **SHEAR BLOCK**

= TF\_VG\_450-SB-Front--CAD.zip

CAD Details **STICK**

= TF\_VG\_450-Stick-Front--CAD.zip

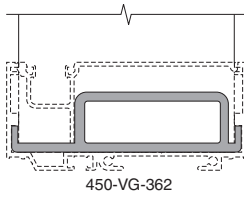


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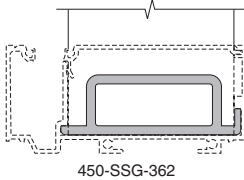
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SCALE 3" = 1'-0"

CAD Details **SCREW SPLINE**  
= TF\_VG\_450-SS-Front-CAD.zip

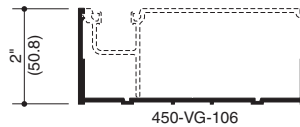
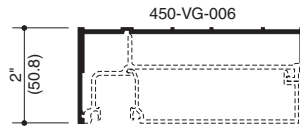


**MULLION ANCHOR**



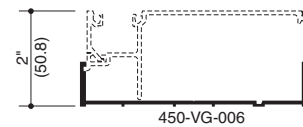
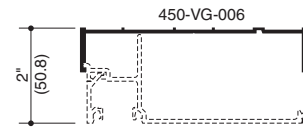
**SSG MULLION ANCHOR**

CAD Details **SHEAR BLOCK**  
= TF\_VG\_450-SB-Front-CAD.zip



**OPTIONAL LIGHTWEIGHT  
CAN RECEPTORS  
(Stick System)**

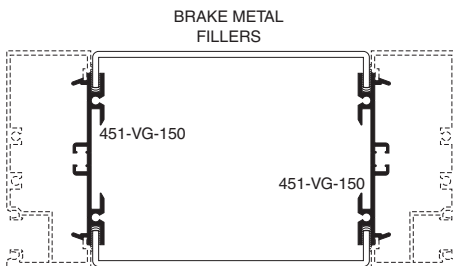
CAD Details **STICK**  
= TF\_VG\_450-Stick-Front-CAD.zip



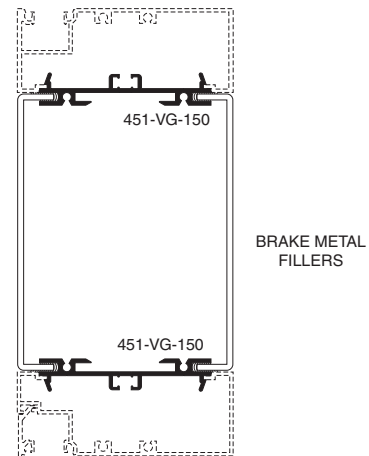
**OPTIONAL UNEQUAL LEG  
CAN RECEPTORS  
(Stick System)**

**NOTE:**  
If the end reaction of the mullion (mullion spacing (ft.) times height (ft.) times specified windload (psf) divided by two) is more than 500 lbs., the optional Mullion Anchors must be used.

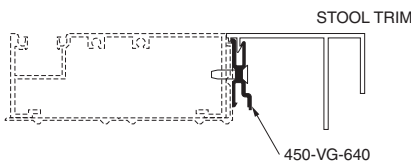
**NOTE:**  
Mullion Anchor not used with Lightweight Receptor.



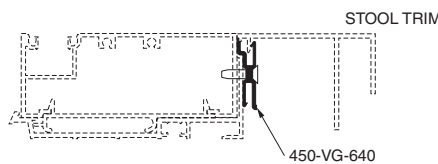
**BRAKE METAL ADAPTOR  
AT VERTICAL**



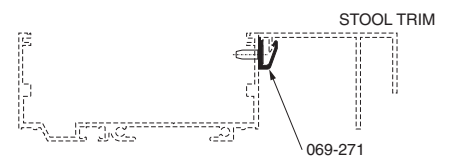
**BRAKE METAL ADAPTOR  
AT HORIZONTAL**



**STOOL TRIM CLIP  
WITH STANDARD FLASHING**



**STOOL TRIM CLIP  
WITH HIGH PERFORMANCE  
FLASHING**



**STOOL TRIM CLIP  
FOR STICK/TYPE-B ASSEMBLY**

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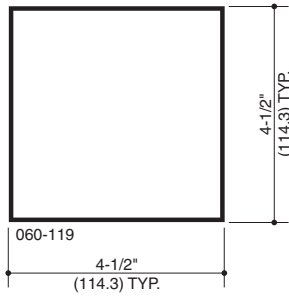
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SCALE 3" = 1'-0"

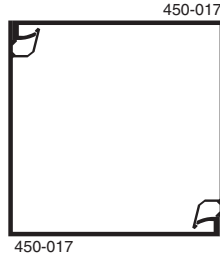
CAD Details **SCREW SPLINE**  
= TF\_VG\_450-SS-Front--CAD.zip

CAD Details **SHEAR BLOCK**  
= TF\_VG\_450-SB-Front--CAD.zip

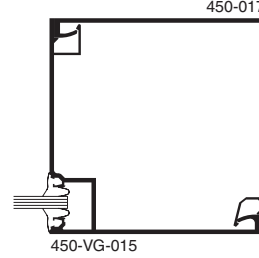
CAD Details **STICK**  
= TF\_VG\_450-Stick-Front--CAD.zip



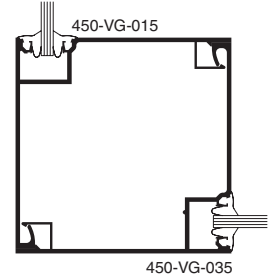
4-1/2" x 4-1/2" TUBE



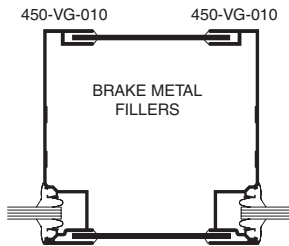
TWO PIECE  
NO POCKET CORNER



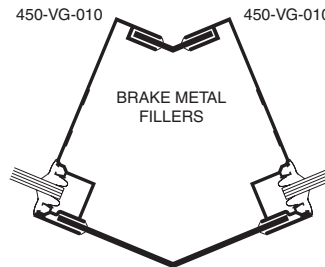
ONE POCKET  
CORNER



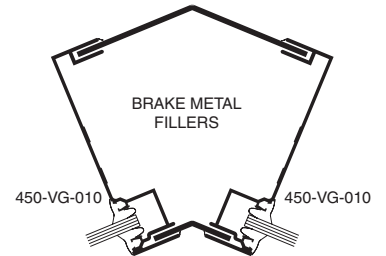
TWO POCKET  
90° CORNER



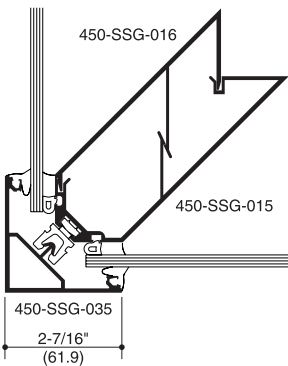
TWO POCKET  
BRAKE METAL POST



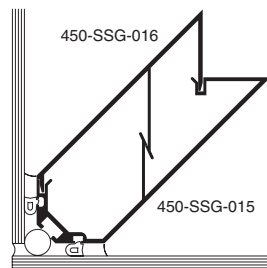
VARIABLE DEGREE  
BRAKE METAL  
OUTSIDE CORNER



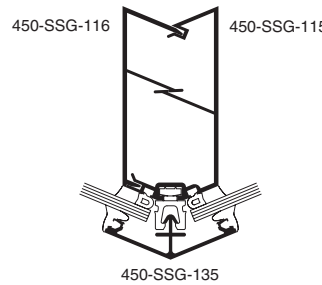
VARIABLE DEGREE  
BRAKE METAL  
INSIDE CORNER



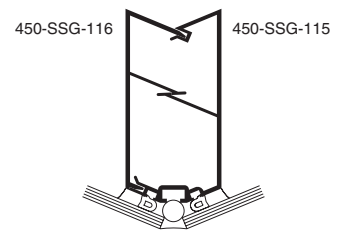
90° CORNER



90° SSG CORNER



135° CORNER



135° SSG CORNER

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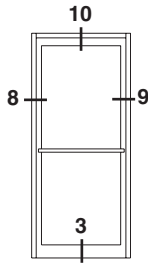
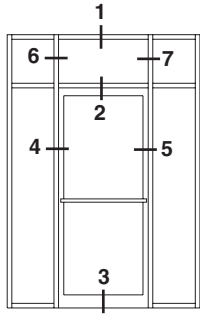


SCALE 3" = 1'-0"

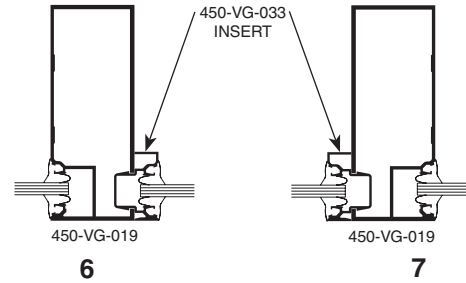
CAD Details ENTRANCE = TF\_VG\_450-Entrance-Front--CAD.zip

TRIFAB® VG 450 FRAMING INCORPORATING KAWNEER® "190" DOORS.

NOTE: OTHER TYPES OF KAWNEER DOORS MAY BE USED WITH THIS FRAMING SYSTEM. SEE ENTRANCE DETAILS FOR ADDITIONAL INFORMATION.



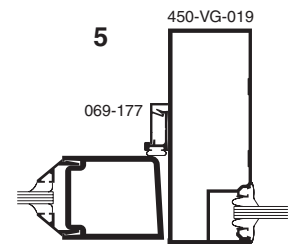
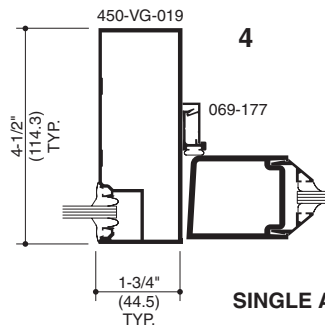
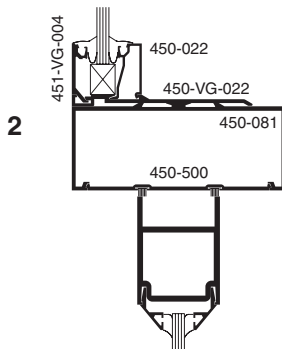
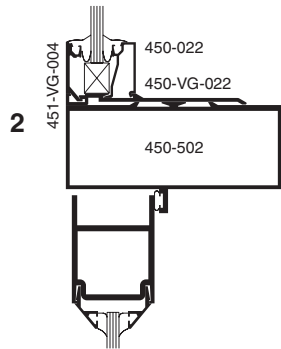
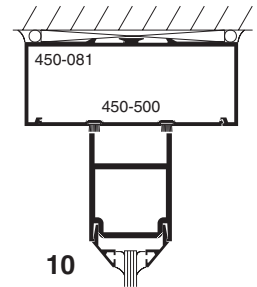
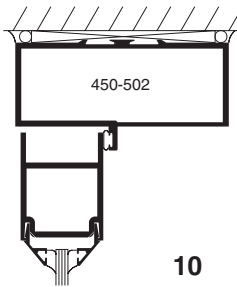
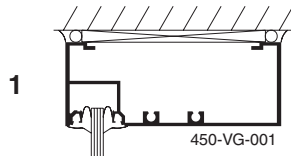
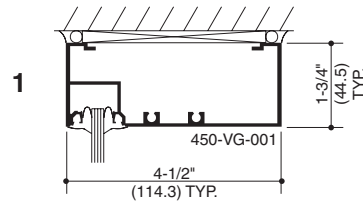
ELEVATIONS ARE NUMBER KEYED TO DETAILS



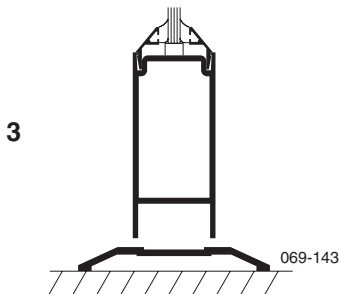
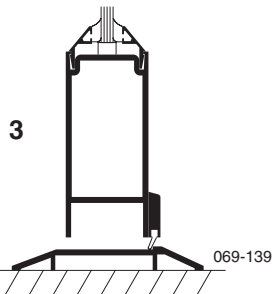
Transom area for both double or single acting doors with glass surround. Jambs above transom bar are routed out to accept glass holding insert.

SINGLE ACTING

DOUBLE ACTING

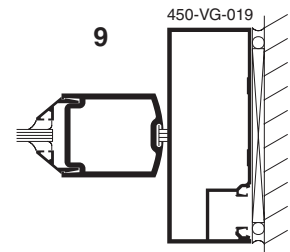
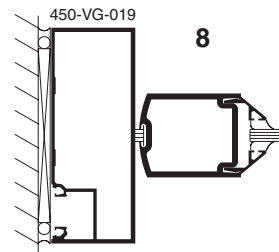


SINGLE ACTING DOOR



SINGLE ACTING DOOR WITH TRANSOM

DOUBLE ACTING DOOR WITH TRANSOM



DOUBLE ACTING DOOR

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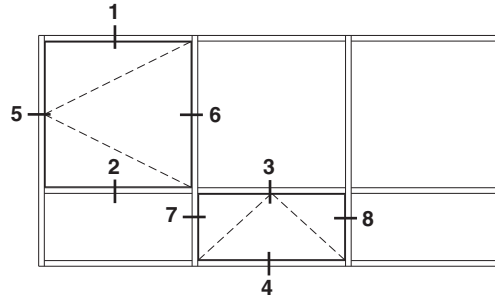
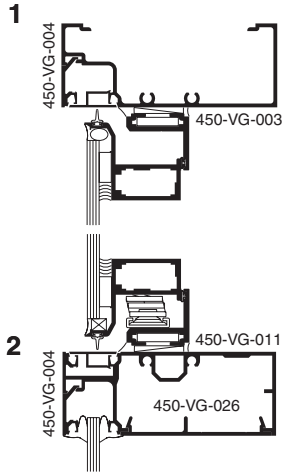
**SCALE 3" = 1'-0"**

CAD Details **SCREW SPLINE**  
= TF\_VG\_450-SS-Front--CAD.zip

CAD Details **SHEAR BLOCK**  
= TF\_VG\_450-SB-Front--CAD.zip

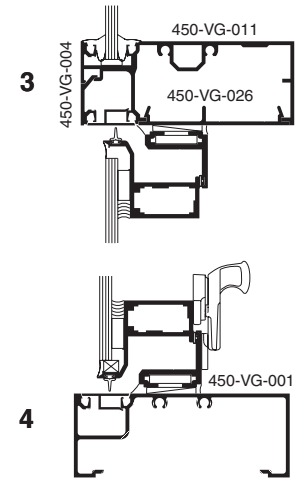
CAD Details **STICK**  
= TF\_VG\_450-Stick-Front--CAD.zip

**OUTSWING CASEMENT  
VERTICAL SECTION SHOWN**

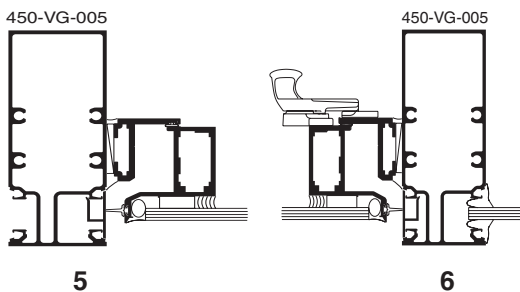


ELEVATION IS NUMBER KEYED TO DETAILS

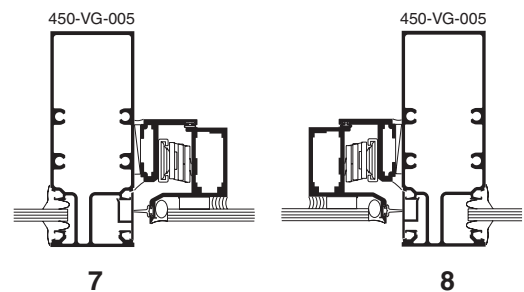
**PROJECT-OUT  
VERTICAL SECTION SHOWN**



**OUTSWING CASEMENT  
HORIZONTAL SECTION SHOWN**



**PROJECT-OUT  
HORIZONTAL SECTION SHOWN**



**MAXIMUM / MINIMUM SIZES (1/4" INFILL)**

**PROJECT-OUT**                      MAXIMUM 60" x 36"  
MINIMUM 12" x 12"

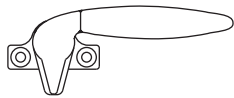
**OUTSWING CASEMENT**            MAXIMUM 36" x 60"  
MINIMUM 12" x 12"

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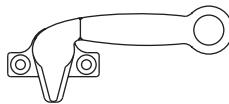
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## STOREFRONT GLASSvent™ HARDWARE SELECTION GUIDE

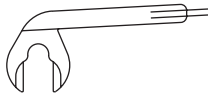
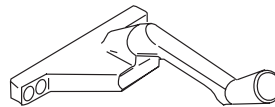
DESCRIPTION	PROJECT - OUT	OUTSWING CASEMENT
Stainless steel 4-bar hinge	STANDARD	STANDARD
Cast white bronze cam lock	STANDARD	STANDARD
Cast white bronze cam lock with pole ring	OPTIONAL	OPTIONAL
Cast white bronze custodial lock with removable handle	OPTIONAL	OPTIONAL
Cast white bronze concealed lock with removable hex key	OPTIONAL	OPTIONAL
Cast white bronze pole/pull ring	OPTIONAL	
Pivot-shoe roto-operator	OPTIONAL	
Multi-point lock with cast white bronze locking handle		OPTIONAL
Insect screen	OPTIONAL	OPTIONAL



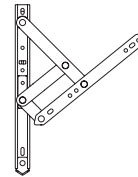
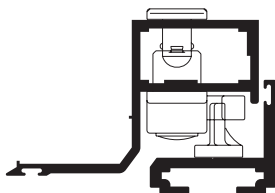
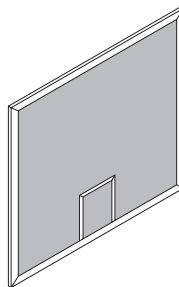
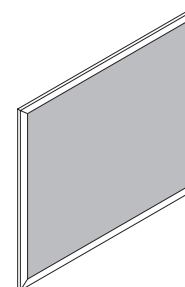
CAM LOCK

CAM LOCK  
WITH POLE RING

PULL RING

CUSTODIAL  
LOCKREMOVABLE  
HANDLE

ROTO-OPERATOR

STAINLESS STEEL  
4 BAR HINGESCONCEALED  
LOCKINSECT SCREEN  
WITH STANDARD WICKETINSECT SCREEN  
WITH FULL WICKET

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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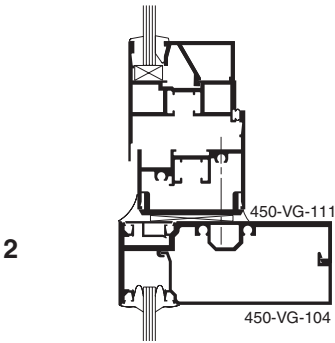
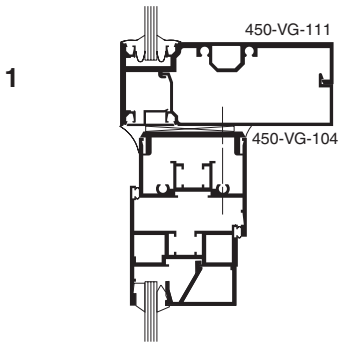
SCALE 3" = 1'-0"

CAD Details **SCREW SPLINE**  
= TF\_VG\_450-SS-Front--CAD.zip

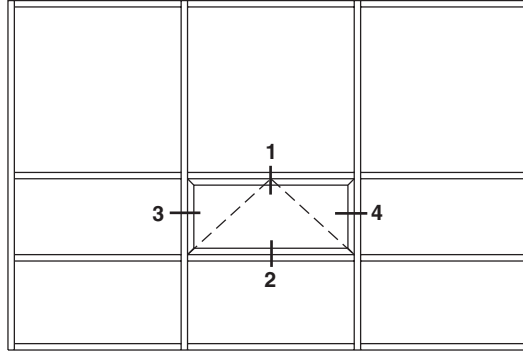
CAD Details **SHEAR BLOCK**  
= TF\_VG\_450-SB-Front--CAD.zip

CAD Details **STICK**  
= TF\_VG\_450-Stick-Front--CAD.zip

**PROJECT-OUT  
VERTICAL SECTION**

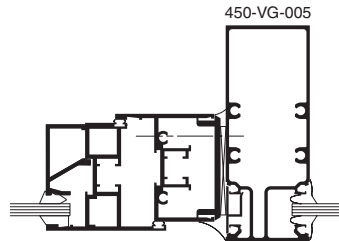
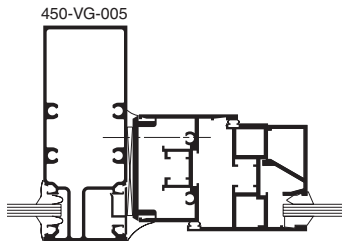


**7225 VENTS SHOWN**  
**NOTE: OTHER VENT TYPES CAN BE  
ACCOMMODATED, CONSULT YOUR KAWNEER  
REPRESENTATIVE FOR OTHER OPTIONS**



**ELEVATION IS NUMBER KEYED TO DETAILS**

**PROJECT-OUT  
HORIZONTAL SECTION**



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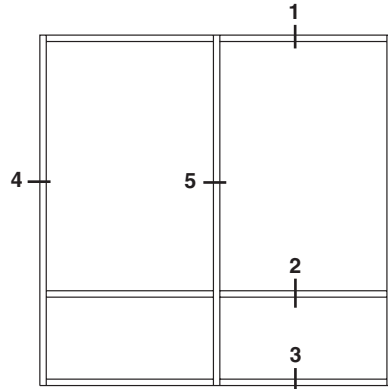
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**BASIC FRAMING DETAILS..... 40,41**  
**MISCELLANEOUS FRAMING..... 42,43**  
**CORNERS..... 44**  
**ENTRANCE FRAMING..... 45**

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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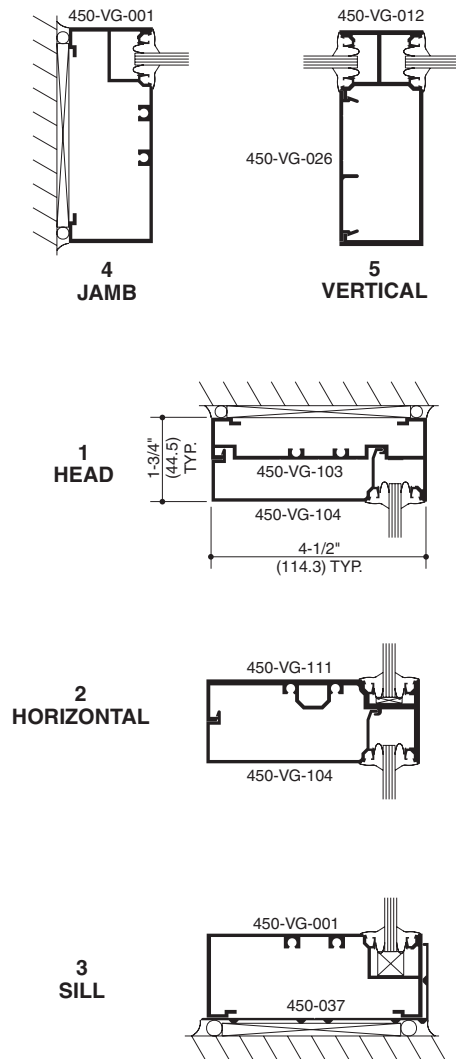
SCALE 3" = 1'-0"



ELEVATION IS NUMBER KEYED TO DETAILS

**SCREW SPLINE**

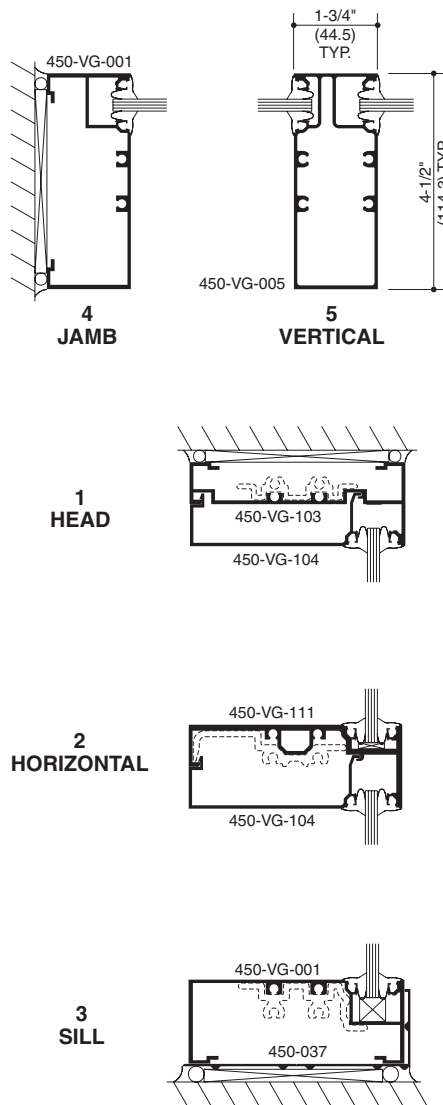
CAD Details = TF\_VG\_450-SS-Back--CAD.zip



\*See page 42 for Optional High Performance Flashing.

**SHEAR BLOCK**

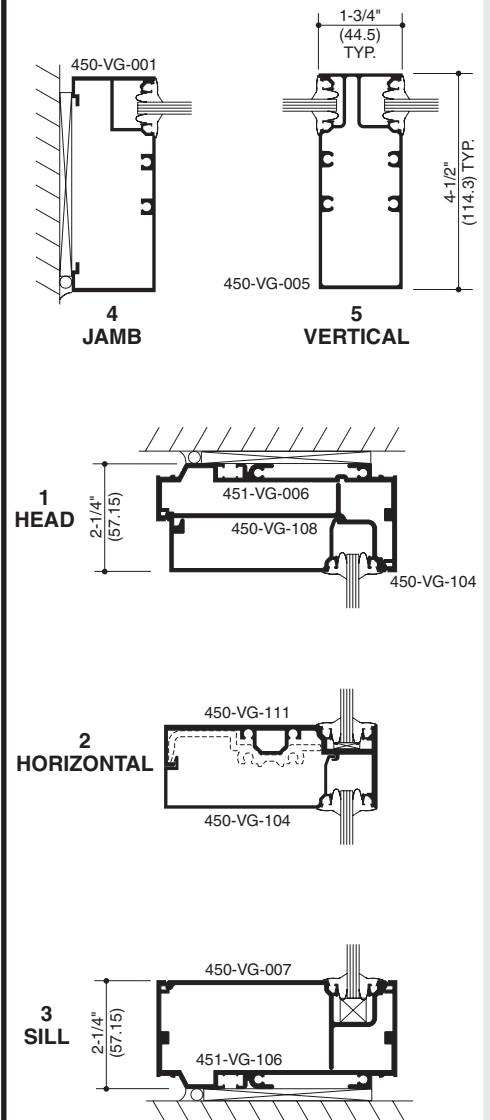
CAD Details = TF\_VG\_450-SB-Back--CAD.zip



\*See page 42 for Optional High Performance Flashing.

**STICK**

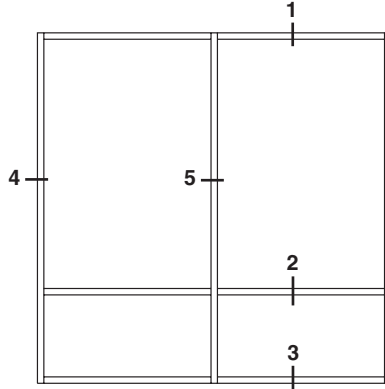
CAD Details = TF\_VG\_450-Stick-Back--CAD.zip



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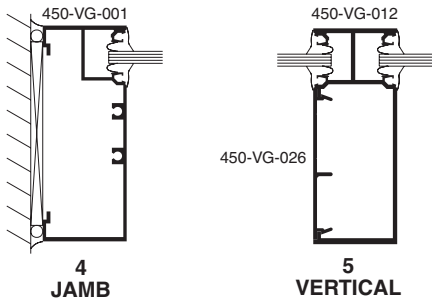
SCALE 3" = 1'-0"



ELEVATION IS NUMBER KEYED TO DETAILS

**SCREW SPLINE**

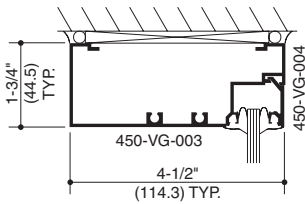
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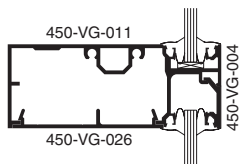
4  
JAMB

5  
VERTICAL

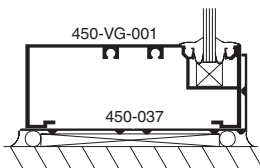
1  
HEAD



2  
HORIZONTAL



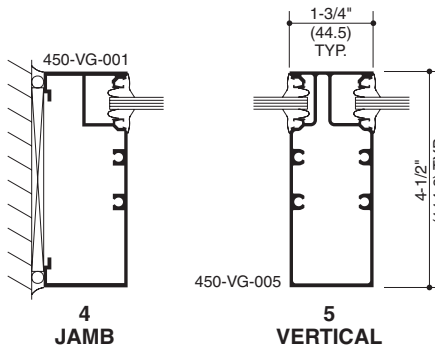
3  
SILL



\*See page 42 for Optional High Performance Flashing.

**SHEAR BLOCK**

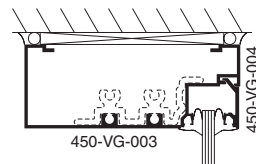
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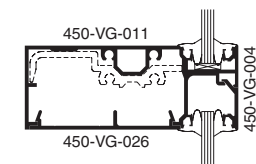
4  
JAMB

5  
VERTICAL

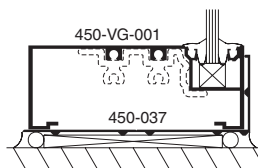
1  
HEAD



2  
HORIZONTAL



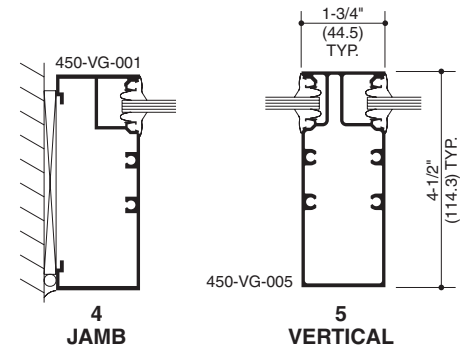
3  
SILL



\*See page 42 for Optional High Performance Flashing.

**STICK**

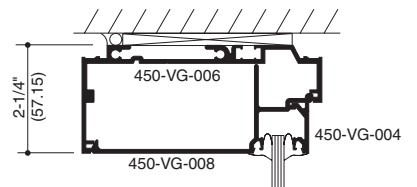
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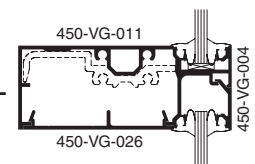
4  
JAMB

5  
VERTICAL

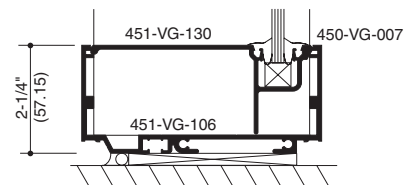
1  
HEAD



2  
HORIZONTAL



3  
SILL



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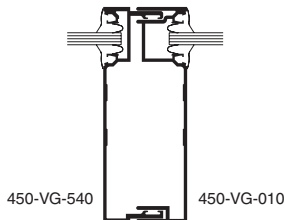


SCALE 3" = 1'-0"

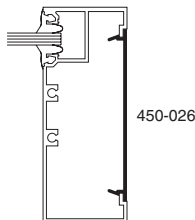
CAD Details **SCREW SPLINE**  
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CAD Details **SHEAR BLOCK**  
= TF\_VG\_450-SB-Back--CAD.zip

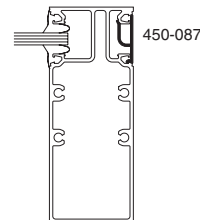
CAD Details **STICK**  
= TF\_VG\_450-Stick-Back--CAD.zip



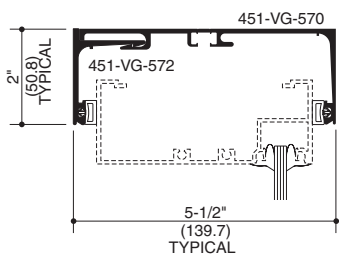
**EXPANSION MULLION**



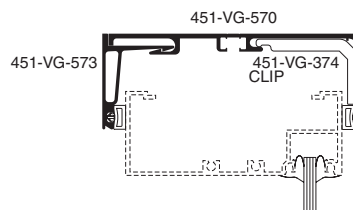
**FLAT FILLER**



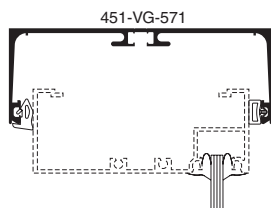
**SNAP-IN  
FLAT FILLER**



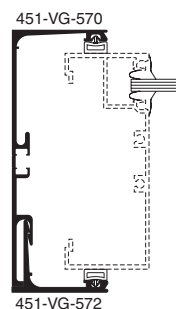
**STANDARD HEAD  
COMPENSATING RECEPTOR**



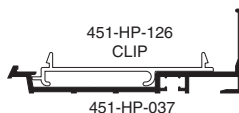
**HEAVY WEIGHT  
HEAD  
COMPENSATING RECEPTOR**



**ONE PIECE  
HEAD  
COMPENSATING RECEPTOR**



**JAMB  
COMPENSATING RECEPTOR**



**HIGH PERFORMANCE FLASHING**

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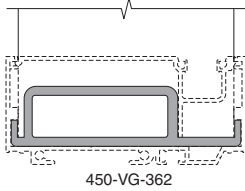
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SCALE 3" = 1'-0"

CAD Details **SCREW SPLINE**  
= TF\_VG\_450-SS-Back--CAD.zip

CAD Details **SHEAR BLOCK**  
= TF\_VG\_450-SB-Back--CAD.zip

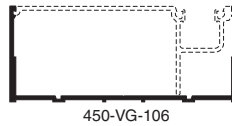
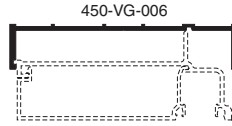
CAD Details **STICK**  
= TF\_VG\_450-Stick-Back--CAD.zip



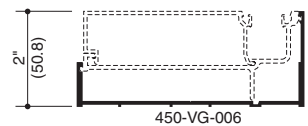
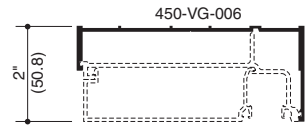
**MULLION ANCHOR**

**NOTE:**  
If the end reaction of the mullion (mullion spacing (ft.) times height (ft.) times specified windload (psf) divided by two) is more than 500 lbs., the optional Mullion Anchors must be used.

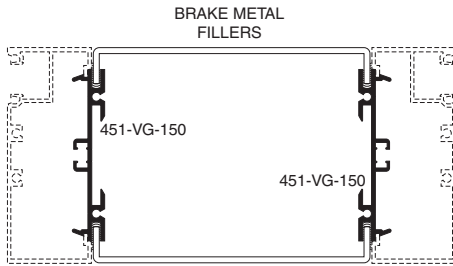
**NOTE:**  
Mullion Anchor not used with Lightweight Receptor.



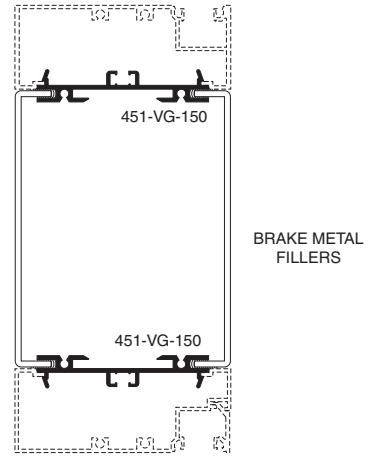
**OPTIONAL LIGHTWEIGHT CAN RECEPTORS**



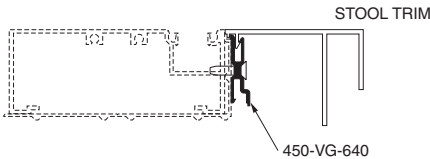
**OPTIONAL UNEQUAL LEG CAN RECEPTORS (Stick System)**



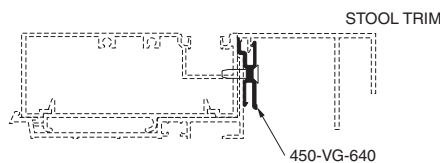
**BRAKE METAL ADAPTOR AT VERTICAL**



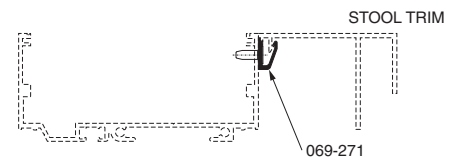
**BRAKE METAL ADAPTOR AT HORIZONTAL**



**STOOL TRIM CLIP WITH STANDARD FLASHING**



**STOOL TRIM CLIP WITH HIGH PERFORMANCE FLASHING**



**STOOL TRIM CLIP FOR STICK ASSEMBLY**

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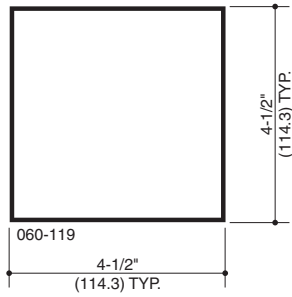
© Kawneer Company, Inc., 2009

SCALE 3" = 1'-0"

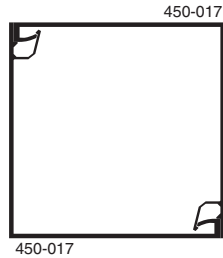
CAD Details **SCREW SPLINE**  
= TF\_VG\_450-SS-Back--CAD.zip

CAD Details **SHEAR BLOCK**  
= TF\_VG\_450-SB-Back--CAD.zip

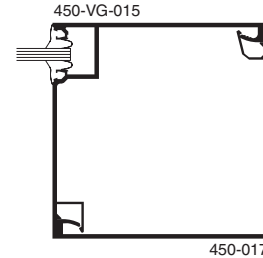
CAD Details **STICK**  
= TF\_VG\_450-Stick-Back--CAD.zip



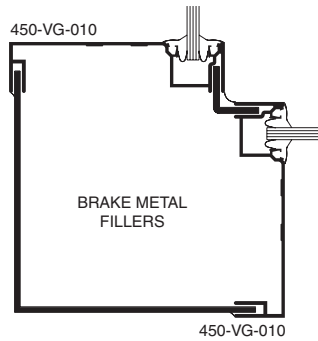
4-1/2" x 4-1/2" TUBE



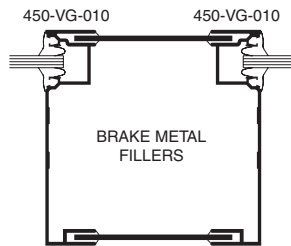
TWO PIECE  
NO POCKET  
CORNER



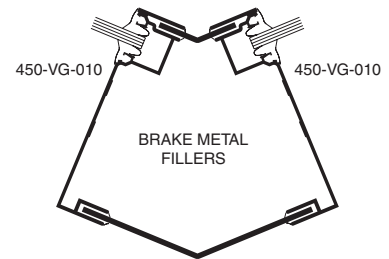
ONE POCKET  
CORNER



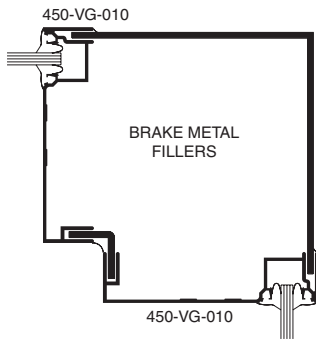
90° OUTSIDE  
BRAKE METAL  
CORNER



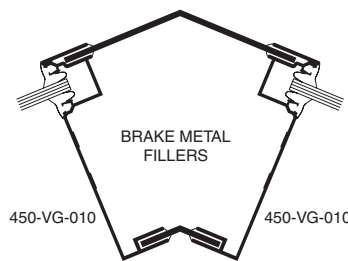
TWO POCKET  
BRAKE METAL  
POST



VARIABLE DEGREE  
BRAKE METAL  
OUTSIDE  
CORNER



90° INSIDE  
BRAKE METAL  
CORNER



VARIABLE DEGREE  
BRAKE METAL  
INSIDE  
CORNER

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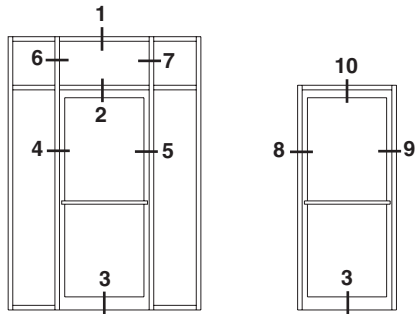
© Kawneer Company, Inc., 2009

SCALE 3" = 1'-0"

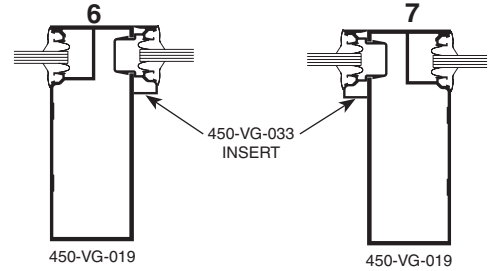
CAD Details ENTRANCE = TF\_VG\_450-Entrance-Back--CAD.zip

TRIFAB® VG 450 FRAMING INCORPORATING KAWNEER® "190" DOORS.

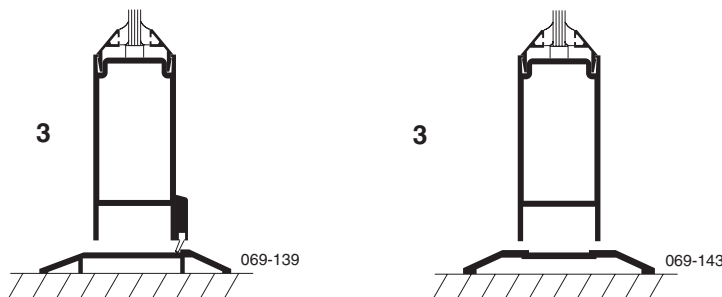
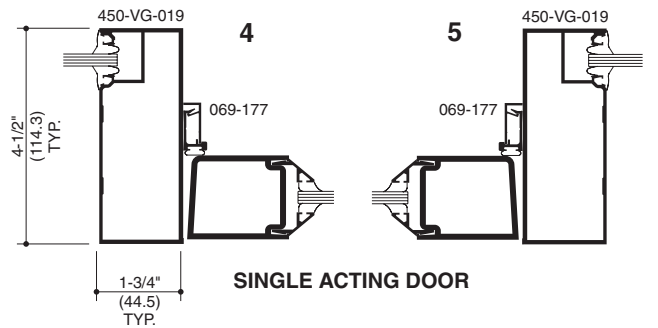
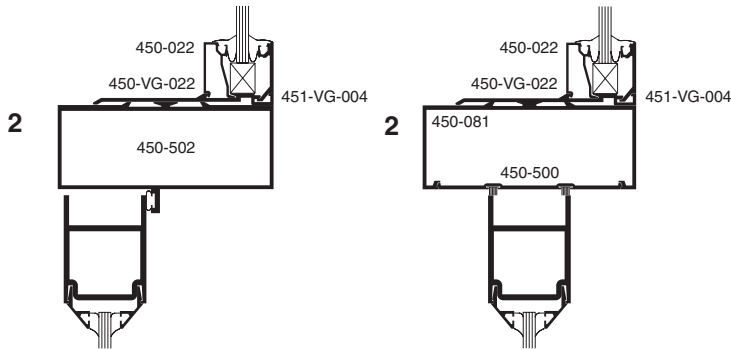
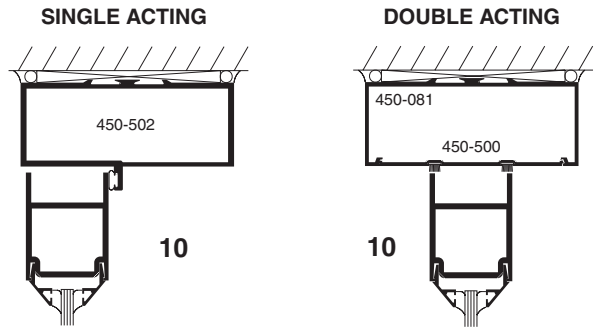
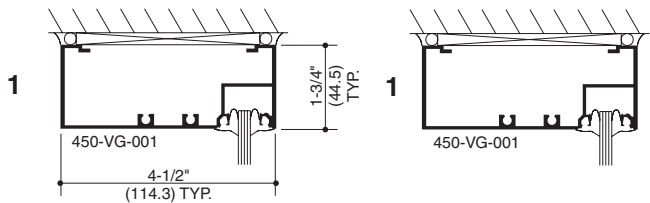
NOTE: OTHER TYPES OF KAWNEER DOORS MAY BE USED WITH THIS FRAMING SYSTEM. SEE ENTRANCE DETAILS FOR ADDITIONAL INFORMATION.



ELEVATIONS ARE NUMBER KEYED TO DETAILS

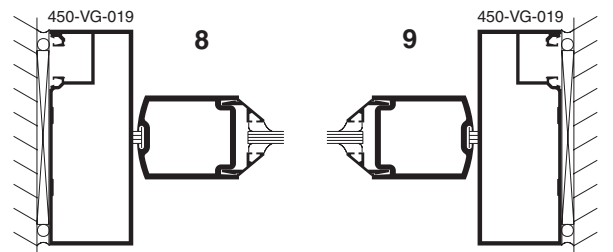


Transom area for both double or single acting doors with glass surround. Jamb above transom bar are routed out to accept glass holding insert.



SINGLE ACTING DOOR WITH TRANSOM

DOUBLE ACTING DOOR WITH TRANSOM



DOUBLE ACTING DOOR

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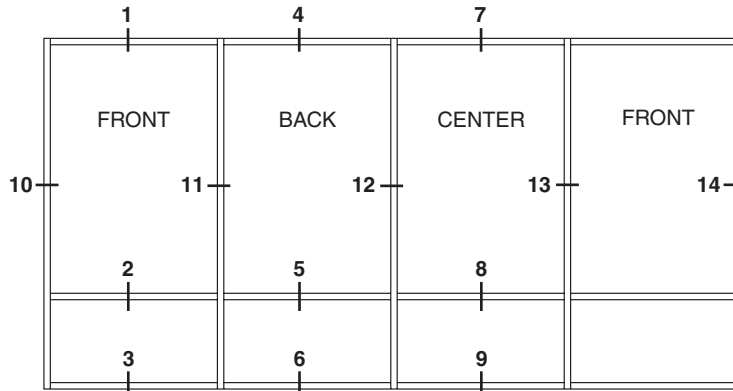
**BASIC FRAMING DETAILS..... 48-53**  
**(See appropriate Center, Front or Back Section**  
**for Miscellaneous Details.)**

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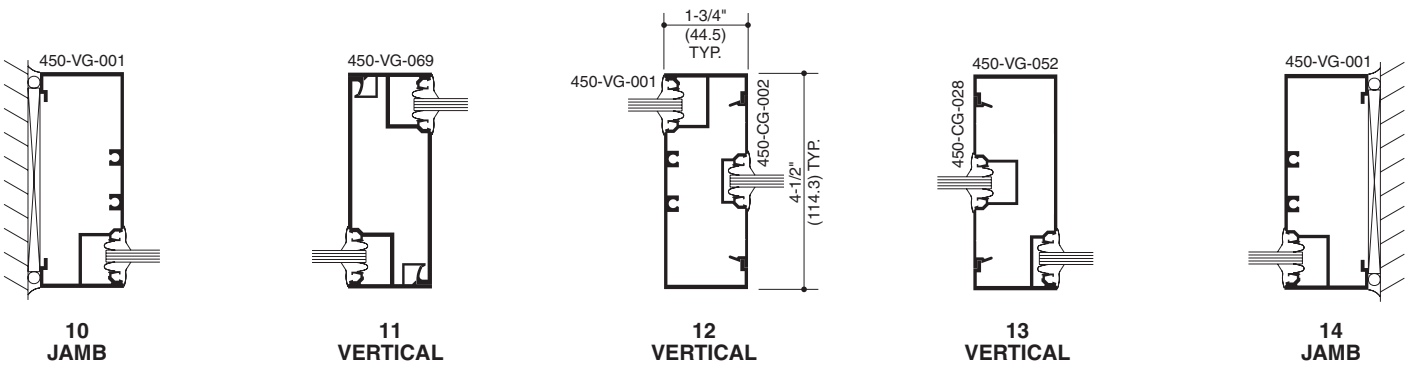
SCREW SPLINE ASSEMBLY

SCALE 3" = 1'-0"



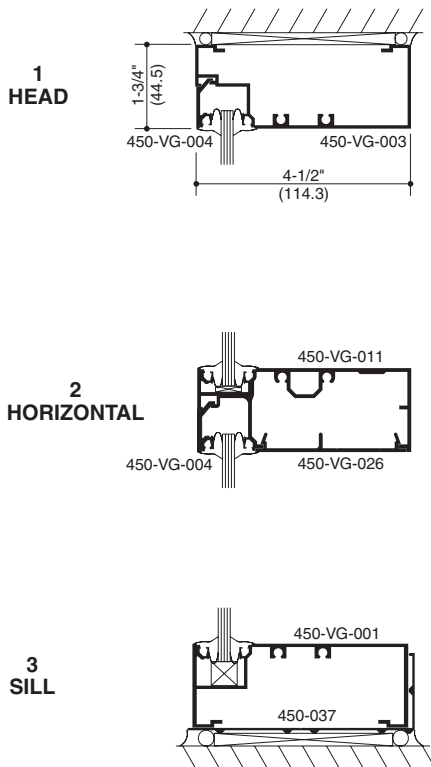
ELEVATION IS NUMBER KEYED TO DETAILS

CAD Details MULTI-PLANE (SCREW SPLINE)  
= TF\_VG\_450-SS+SB-MULTI--CAD.zip



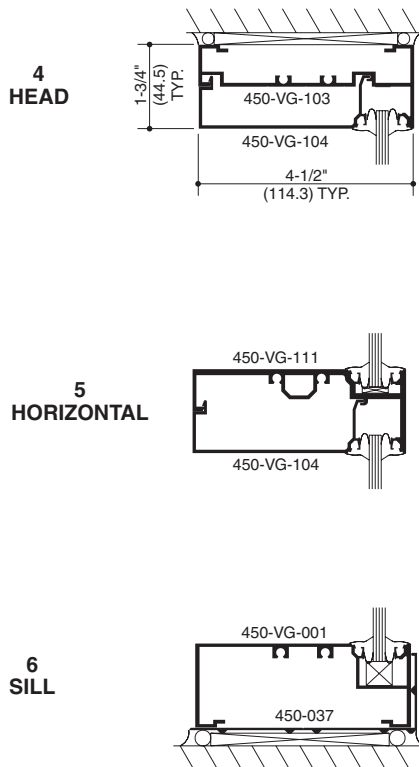
FRONT

See Pages 24 thru 37 for all FRONT details.



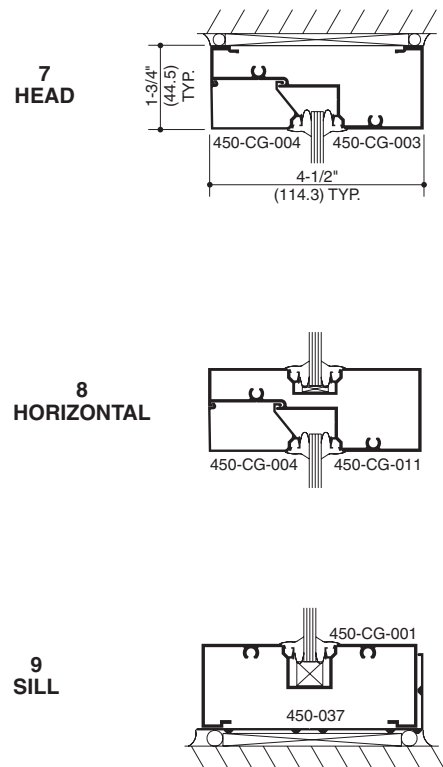
BACK

See Pages 40 thru 45 for all BACK details.



CENTER

See Pages 12 thru 22 for all CENTER details.

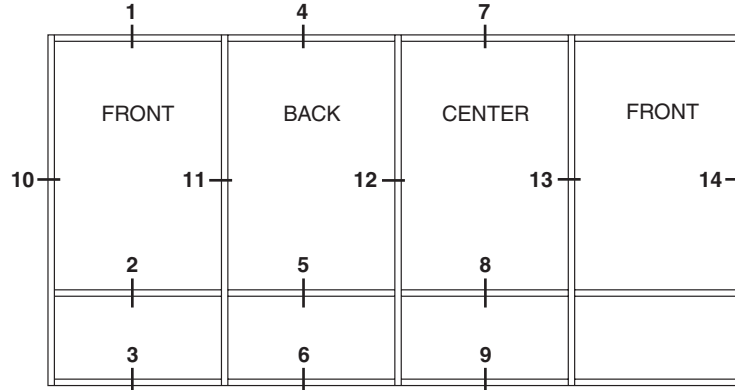


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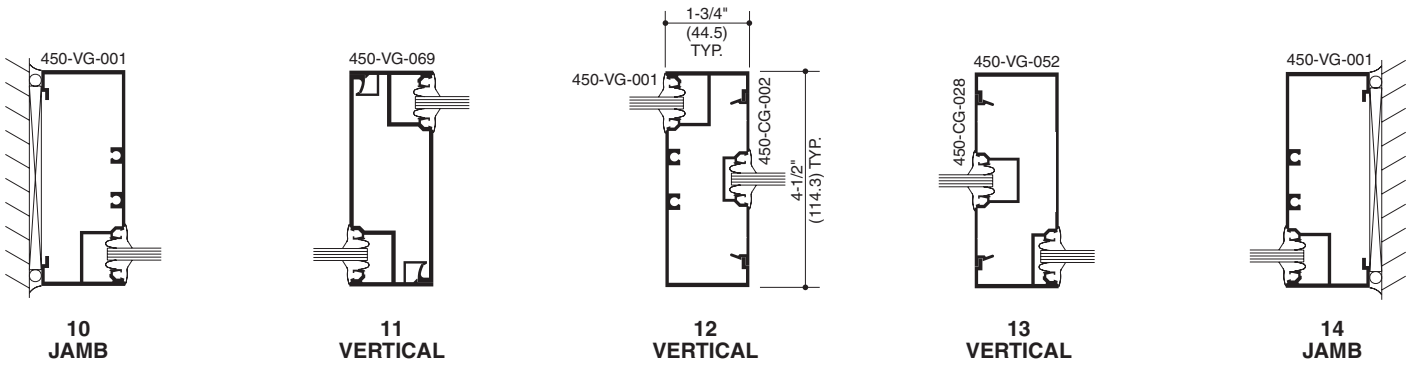
**SCREW SPLINE ASSEMBLY**

**SCALE 3" = 1'-0"**



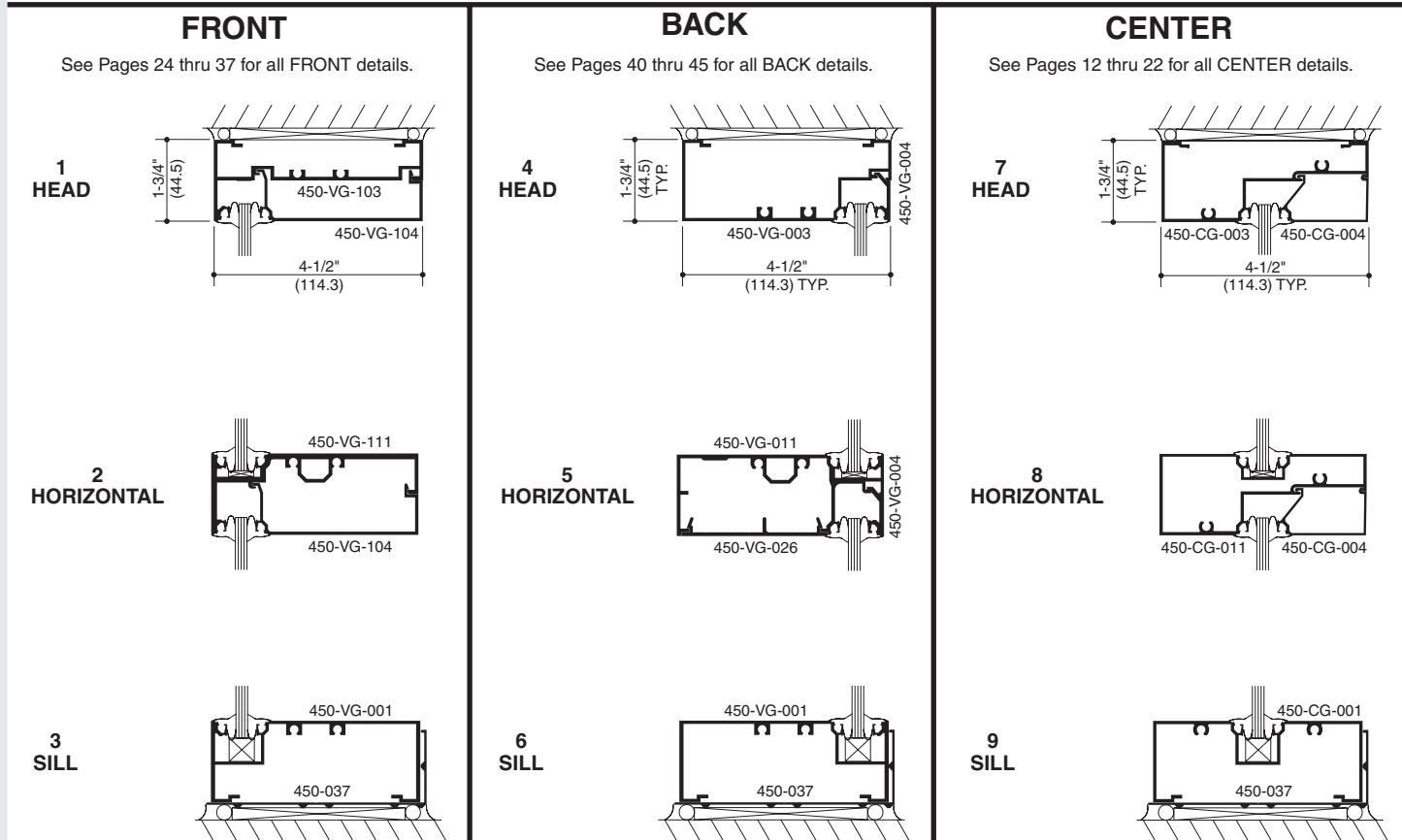
ELEVATION IS NUMBER KEYED TO DETAILS

CAD Details **MULTI-PLANE (SCREW SPLINE)**  
= TF\_VG\_450-SS+SB-MULTI--CAD.zip



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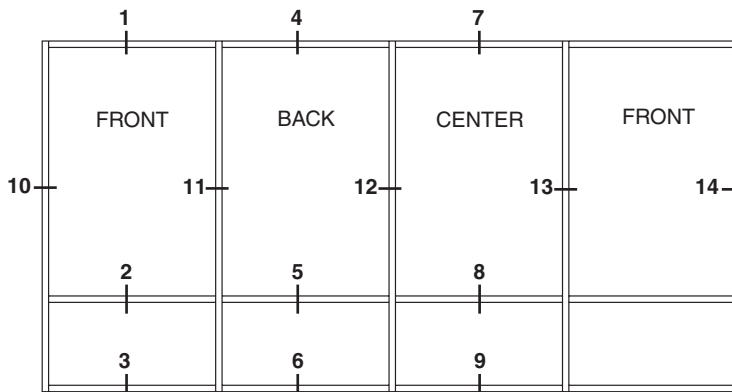
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**SHEAR BLOCK ASSEMBLY**

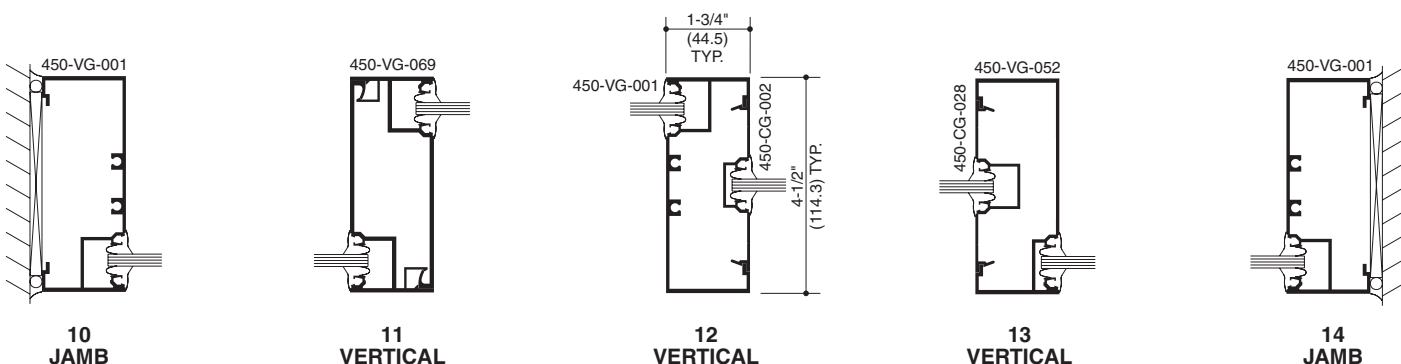
SCALE 3" = 1'-0"



ELEVATION IS NUMBER KEYED TO DETAILS

CAD Details MULTI-PLANE (SHEAR BLOCK)  
= TF\_VG\_450-SS+SB-MULTI--CAD.zip

Note: Transition verticals are required to be two piece.



**FRONT**

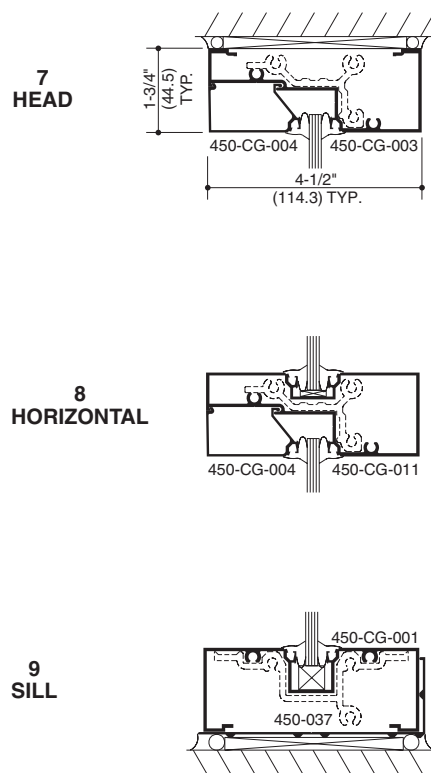
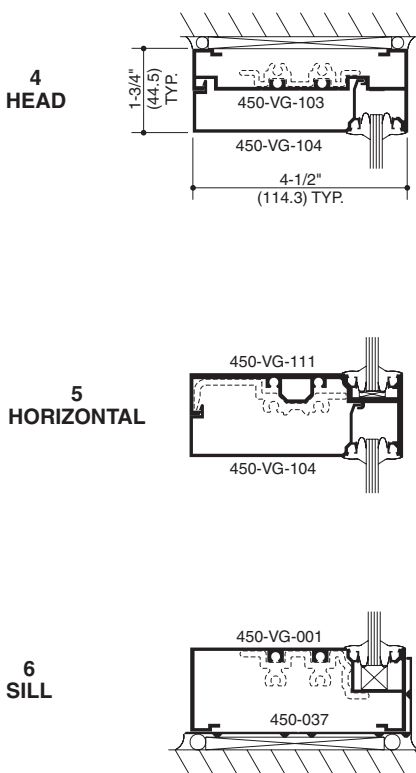
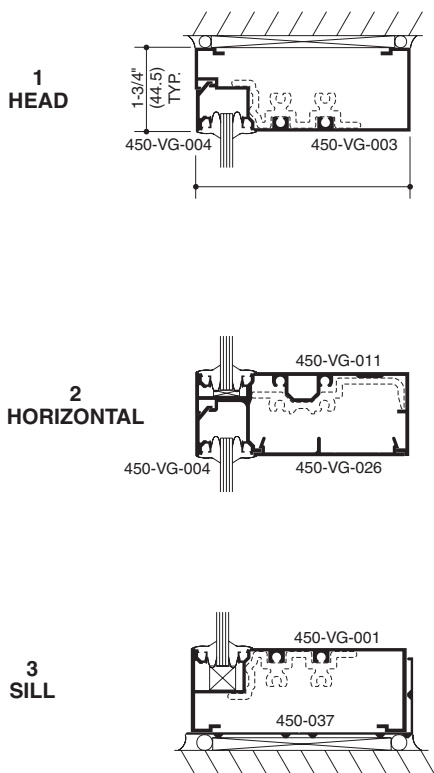
See Pages 24 thru 37 for all FRONT details.

**BACK**

See Pages 40 thru 45 for all BACK details.

**CENTER**

See Pages 12 thru 22 for all CENTER details.

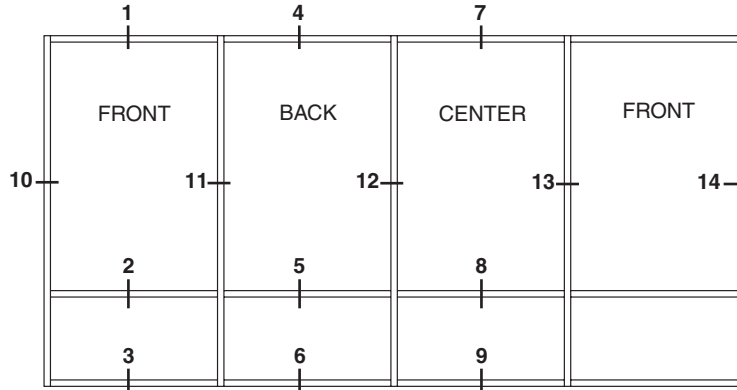


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**SHEAR BLOCK ASSEMBLY**

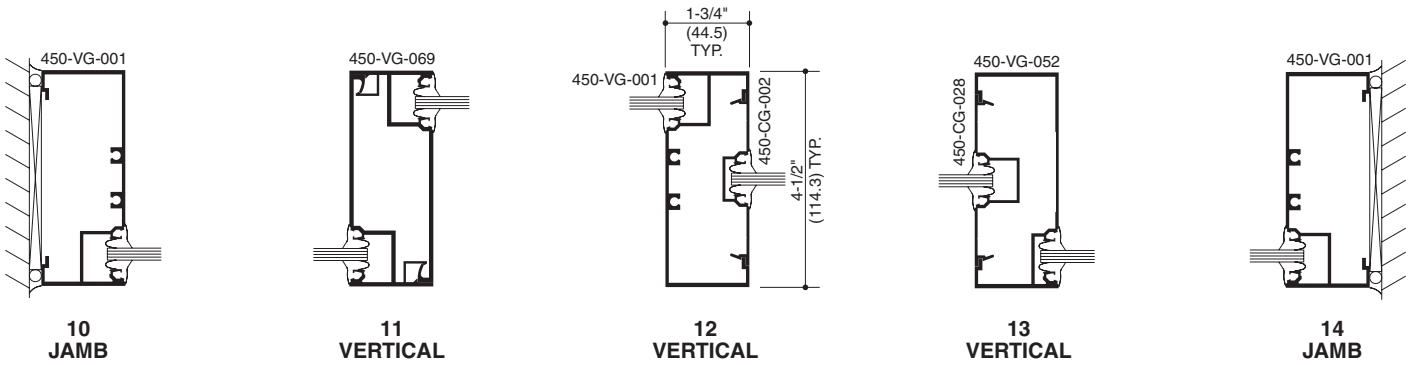
**SCALE 3" = 1'-0"**



**ELEVATION IS NUMBER KEYED TO DETAILS**

CAD Details **MULTI-PLANE (SHEAR BLOCK)**  
= TF\_VG\_450-SS+SB-MULTI--CAD.zip

**Note: Transition verticals are required to be two piece**

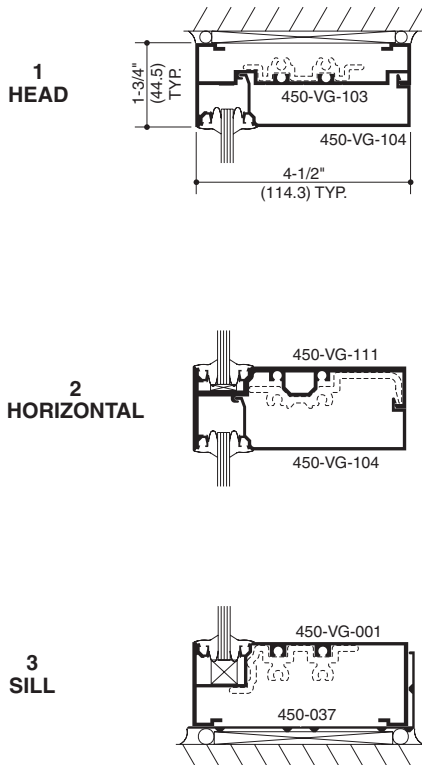


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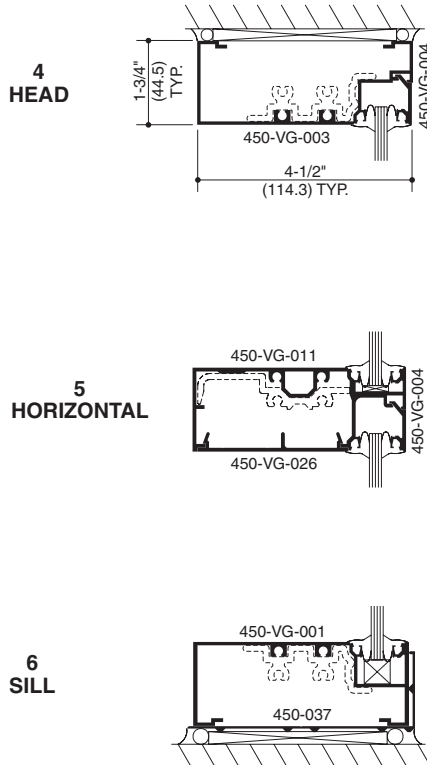
**FRONT**

See Pages 24 thru 37 for all FRONT details.



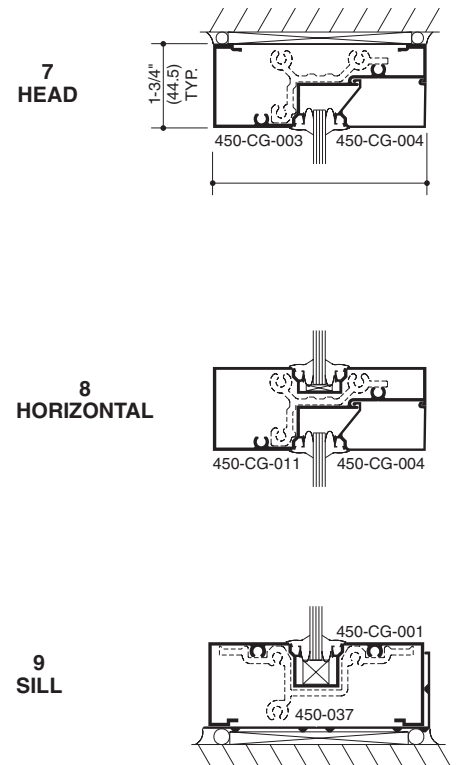
**BACK**

See Pages 40 thru 45 for all BACK details.



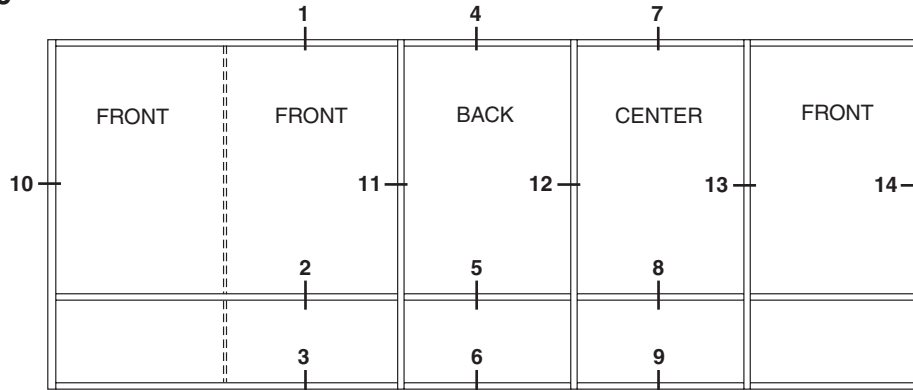
**CENTER**

See Pages 12 thru 22 for all CENTER details.



**STICK ASSEMBLY**

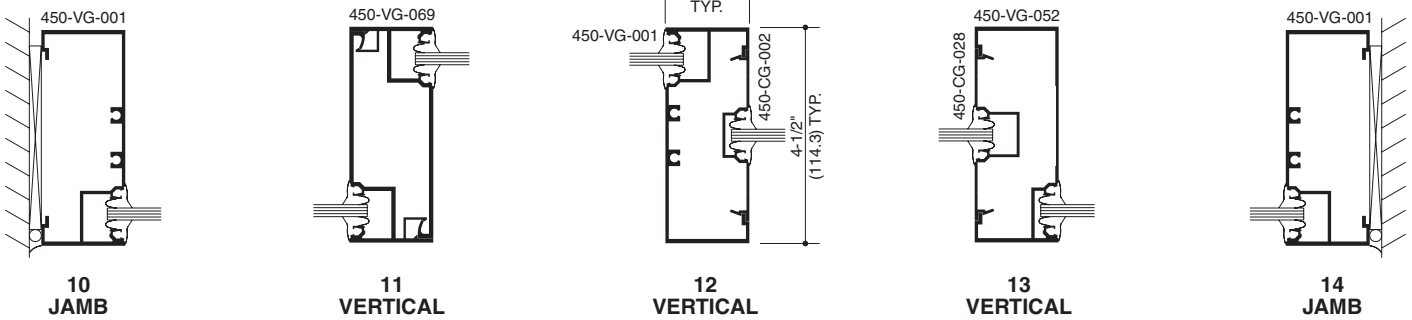
SCALE 3" = 1'-0"



ELEVATION IS NUMBER KEYED TO DETAILS

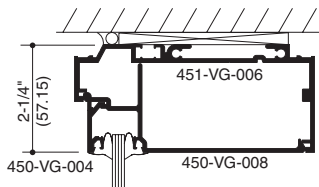
Note: Transition verticals are required to be two piece.

CAD Details MULTI-PLANE (STICK)  
= TF\_VG\_450-Stick-MULTI-CAD.zip

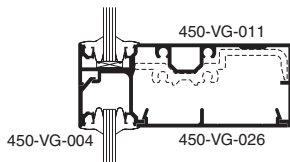


**FRONT**

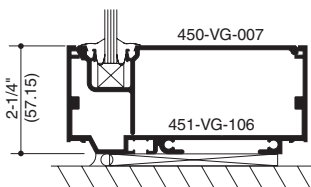
See Pages 24 thru 37 for all FRONT details.



1 HEAD



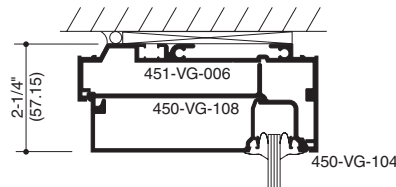
2 HORIZONTAL



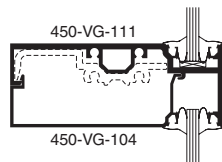
3 SILL

**BACK**

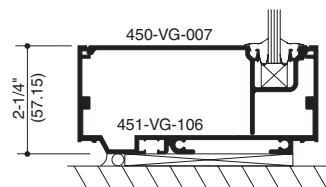
See Pages 40 thru 45 for all BACK details.



4 HEAD



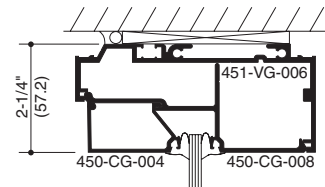
5 HORIZONTAL



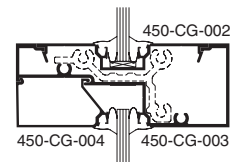
6 SILL

**CENTER**

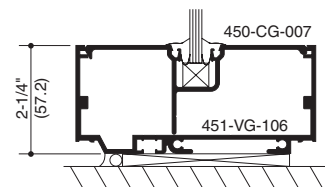
See Pages 12 thru 22 for all CENTER details.



7 HEAD



8 HORIZONTAL



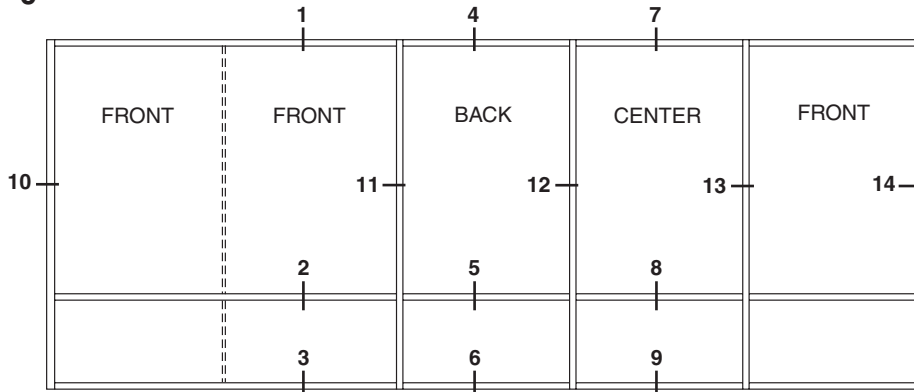
9 SILL

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STICK ASSEMBLY

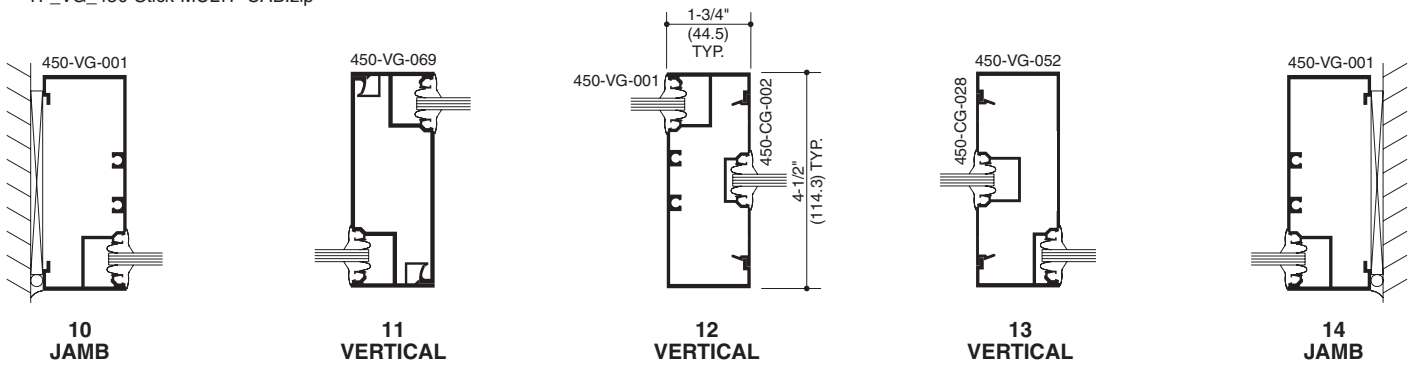
SCALE 3" = 1'-0"



ELEVATION IS NUMBER KEYED TO DETAILS

CAD Details MULTI-PLANE (STICK)  
= TF\_VG\_450-Stick-MULTI-CAD.zip

Note: Transition verticals are required to be two piece

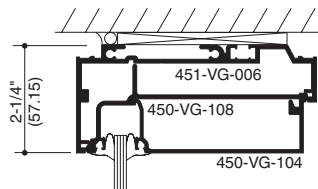


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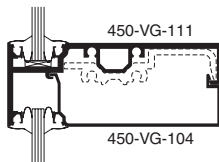
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FRONT

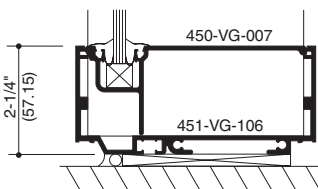
See Pages 24 thru 37 for all FRONT details.



1 HEAD



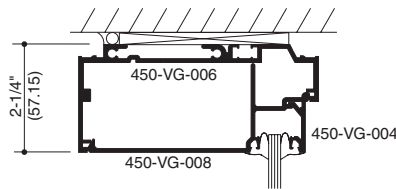
2 HORIZONTAL



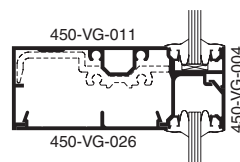
3 SILL

BACK

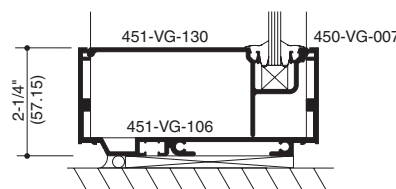
See Pages 40 thru 45 for all BACK details.



4 HEAD



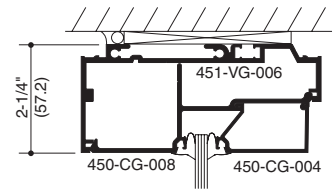
5 HORIZONTAL



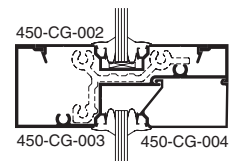
6 SILL

CENTER

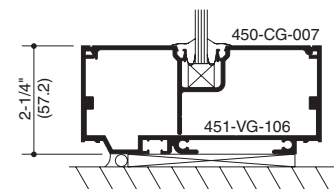
See Pages 12 thru 22 for all CENTER details.



7 HEAD



8 HORIZONTAL



9 SILL

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**WINDLOAD CHARTS**

**CENTER ..... 56-58**

**FRONT or BACK..... 59,60**

**FRONT (SSG/WEATHERSEAL) ..... 61**

**MULTI-PLANE..... 62**

**EXPANSION MULLIONS ..... 63**

**ENTRANCE FRAMING ..... 64-66**

**DEADLOAD CHARTS ..... 67,68**

**END REACTION CHARTS ..... 69**

**THERMAL CHARTS ..... 70,73**

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

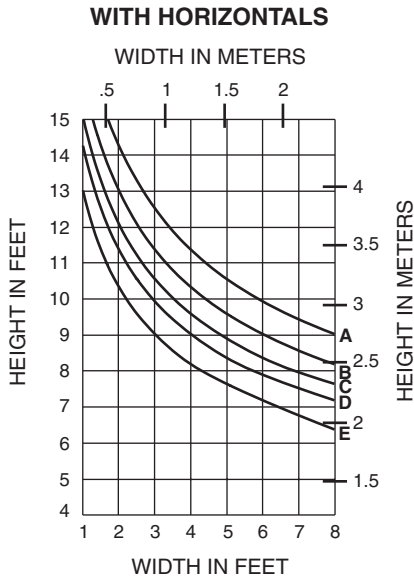
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Mullions are designed for deflection limitations in accordance with AAMA TIR-A11 of L\175 up to 13'-6" and L\240 + 1/4" above 13'-6". These curves are for mullions WITH and WITHOUT HORIZONTALS and are based on precise engineering calculations for stress and deflection. Allowable windload stress for ALUMINUM 15,152 P.S.I. (104 MPa), FORMED STEEL 30,000 P.S.I. (207 MPa), STEEL BAR 20,000 P.S.I. (138 MPa). Charted curves, in all cases, are for the limiting value. For special situations not covered by these curves, contact your Kawneer representative for additional information.

**NOTE:**

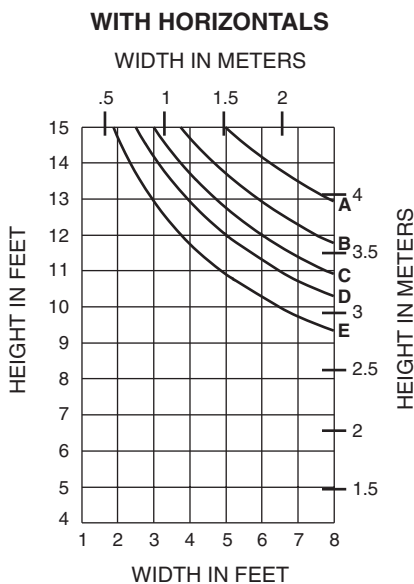
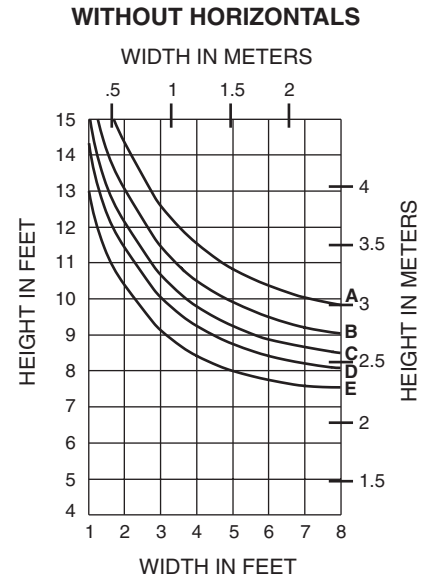
If the end reaction of the mullion (mullion spacing (ft.) times height (ft.) times specified windload (psf) divided by two) is more than 500 lbs., the optional Mullion Anchors must be used. Consult Application Engineering. (*Mullion Anchor not used with Lightweight Receptor.*)

- A = 15 PSF (720 Pa)
- B = 20 PSF (960 Pa)
- C = 25 PSF (1200 Pa)
- D = 30 PSF (1440 Pa)
- E = 40 PSF (1920 Pa)



450-CG-001  
450-CG-002

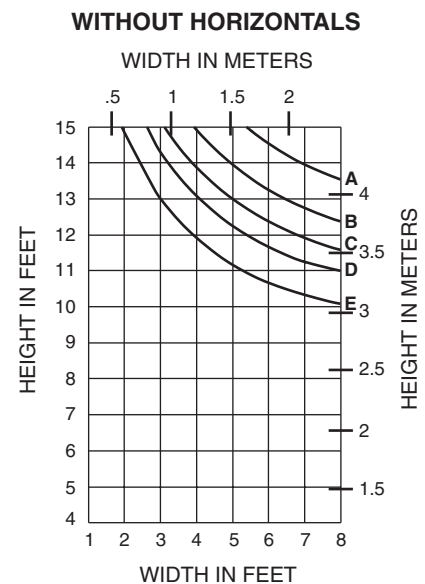
$I = 2.899 (120.67 \times 10^4)$   
 $S = 1.288 (21.11 \times 10^3)$



450-CG-001  
450-CG-002  
**WITH 450-110 STEEL**

$I_A = 2.899 (120.67 \times 10^4)$   
 $S_A = 1.288 (21.11 \times 10^3)$

$I_S = 1.935 (80.54 \times 10^4)$   
 $S_S = 0.938 (15.37 \times 10^3)$



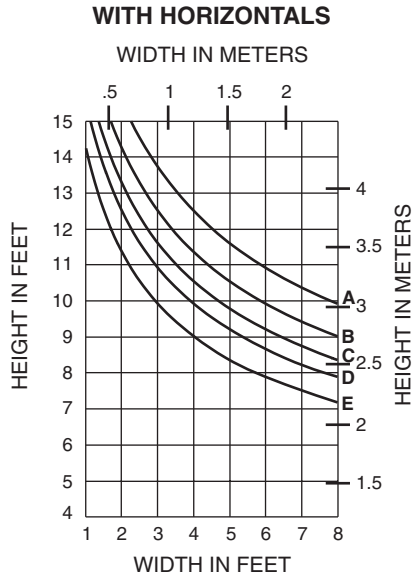
Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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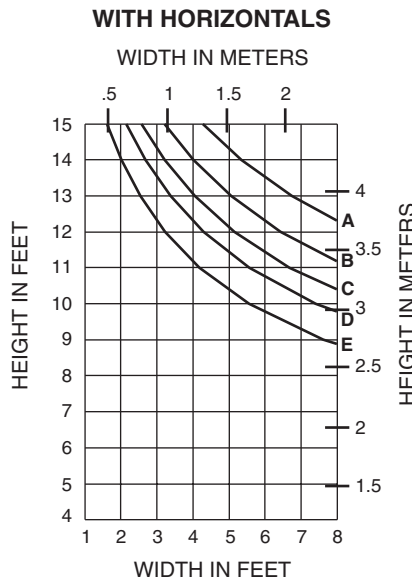
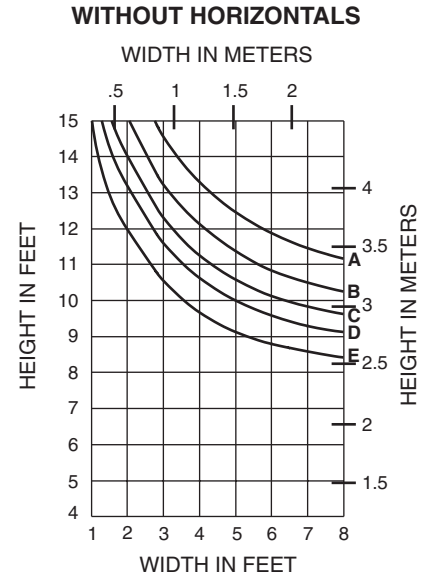
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- A = 15 PSF (720 Pa)
- B = 20 PSF (960 Pa)
- C = 25 PSF (1200 Pa)
- D = 30 PSF (1440 Pa)
- E = 40 PSF (1920 Pa)



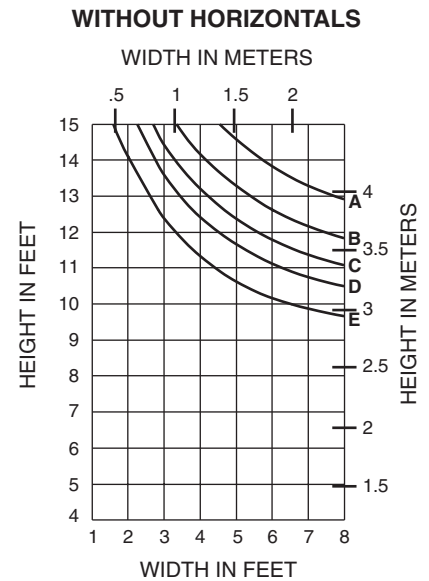
450-CG-013  
450-CG-002

$I = 4.481 (186.51 \times 10^4)$   
 $S = 1.991 (32.63 \times 10^3)$



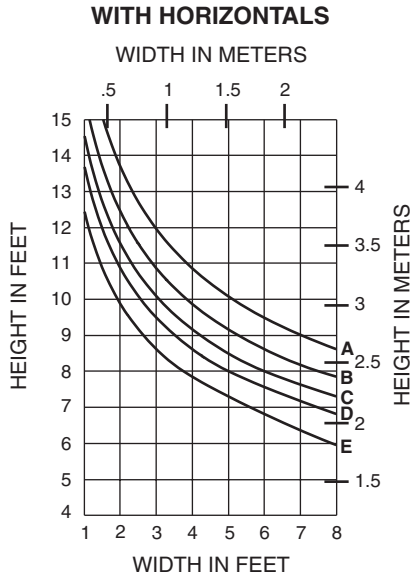
450-CG-013  
450-CG-002  
with 400-110 STEEL

$I_A = 4.481 (186.51 \times 10^4)$   
 $S_A = 1.991 (32.63 \times 10^3)$   
 $I_S = 0.970 (40.37 \times 10^4)$   
 $S_S = 0.535 (8.76 \times 10^3)$



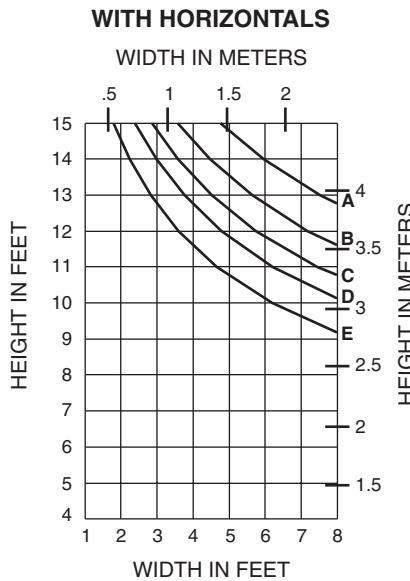
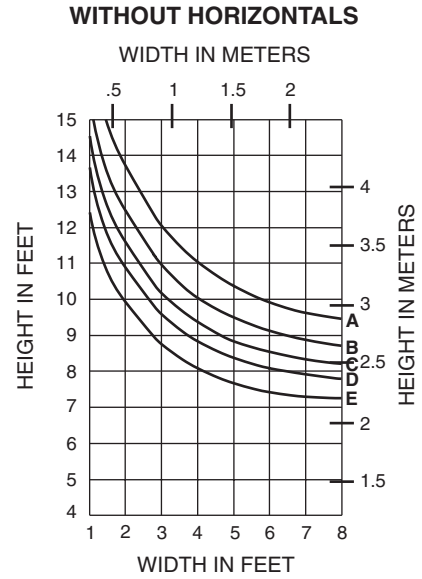


- A = 15 PSF (720 Pa)
- B = 20 PSF (960 Pa)
- C = 25 PSF (1200 Pa)
- D = 30 PSF (1440 Pa)
- E = 40 PSF (1920 Pa)



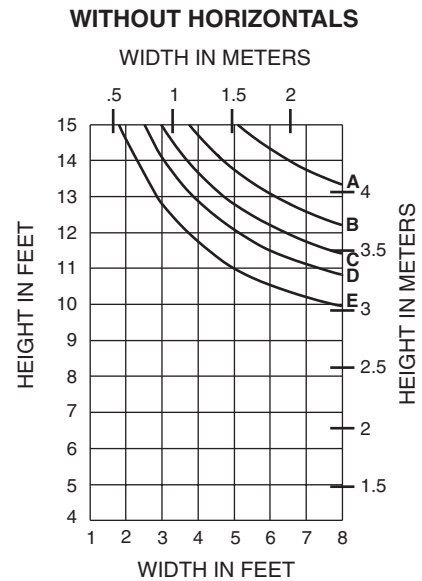
450-CG-005

$I = 2.523 (105.01 \times 10^4)$   
 $S = 1.121 (18.37 \times 10^3)$



450-CG-005  
with 450-110 STEEL

$I_A = 2.523 (105.01 \times 10^4)$   
 $S_A = 1.121 (18.37 \times 10^3)$   
 $I_S = 1.935 (80.54 \times 10^4)$   
 $S_S = 0.938 (15.37 \times 10^3)$



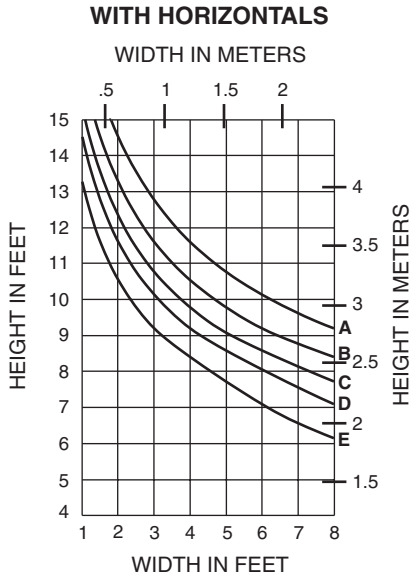
Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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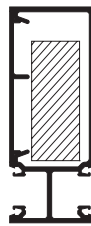
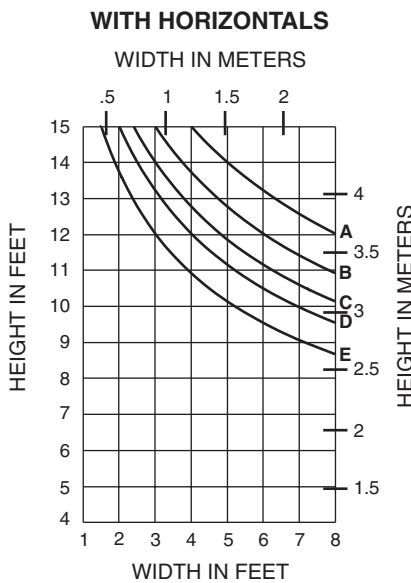
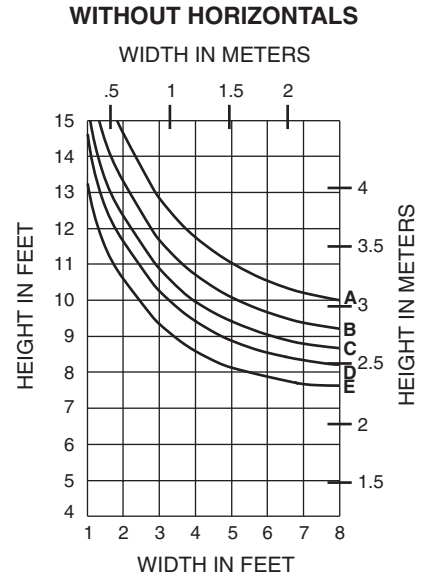
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- A = 15 PSF (720 Pa)
- B = 20 PSF (960 Pa)
- C = 25 PSF (1200 Pa)
- D = 30 PSF (1440 Pa)
- E = 40 PSF (1920 Pa)



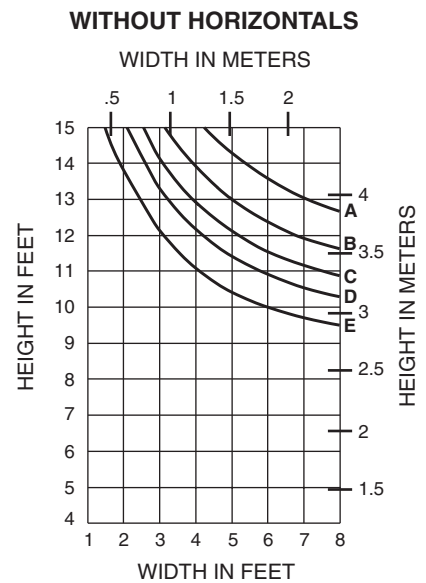
450-VG-012  
 450-VG-026

$I = 3.074 (127.95 \times 10^4)$   
 $S = 1.192 (19.53 \times 10^3)$



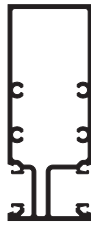
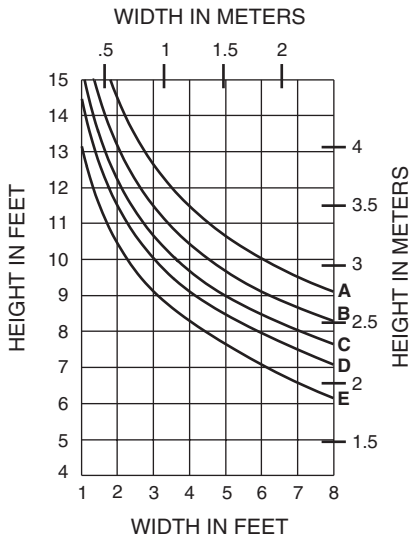
450-VG-012  
 450-VG-026  
 with 1" x 2-1/2" STEEL BAR

$I_A = 3.074 (127.95 \times 10^4)$   
 $S_A = 1.192 (19.53 \times 10^3)$   
 $I_S = 1.302 (54.19 \times 10^4)$   
 $S_S = 1.042 (17.08 \times 10^3)$



- A = 15 PSF (720 Pa)
- B = 20 PSF (960 Pa)
- C = 25 PSF (1200 Pa)
- D = 30 PSF (1440 Pa)
- E = 40 PSF (1920 Pa)

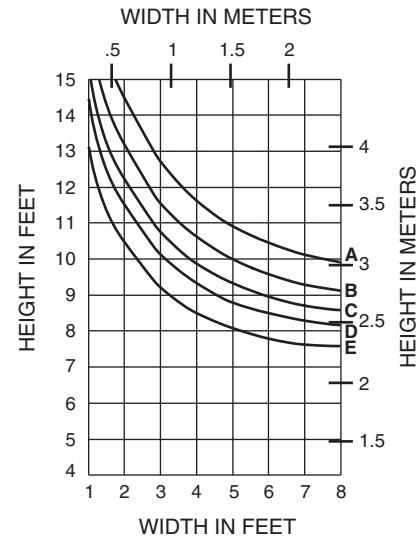
**WITH HORIZONTALS**



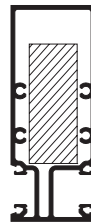
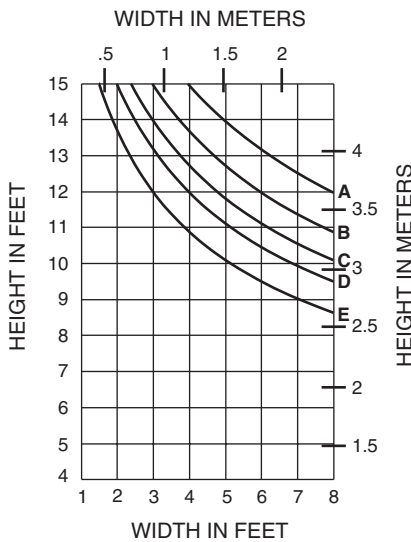
**450-VG-005**

$I = 2.978 (123.95 \times 10^4)$   
 $S = 1.192 (19.53 \times 10^3)$

**WITHOUT HORIZONTALS**



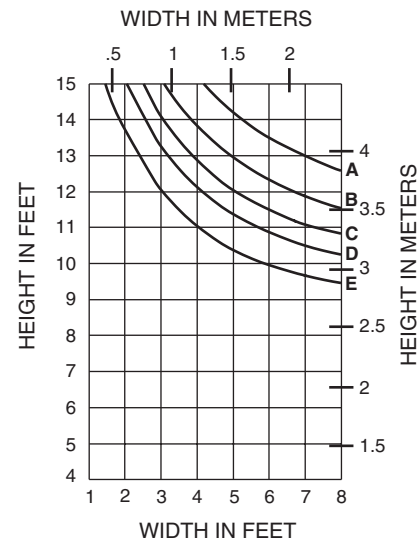
**WITH HORIZONTALS**



**450-VG-005**  
with 1" x 2-1/2" STEEL BAR

$I_A = 2.978 (123.95 \times 10^4)$   
 $S_A = 1.192 (19.53 \times 10^3)$   
 $I_S = 1.302 (54.19 \times 10^4)$   
 $S_S = 1.042 (17.08 \times 10^3)$

**WITHOUT HORIZONTALS**



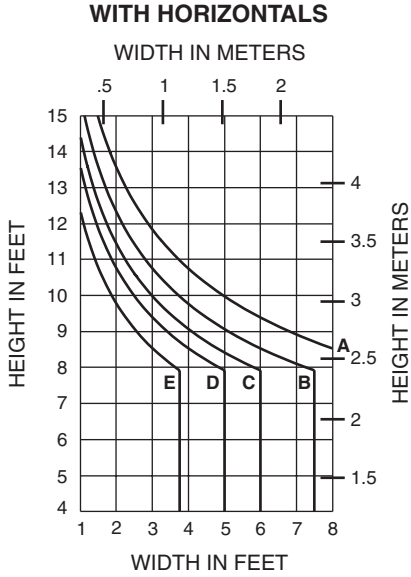
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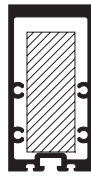
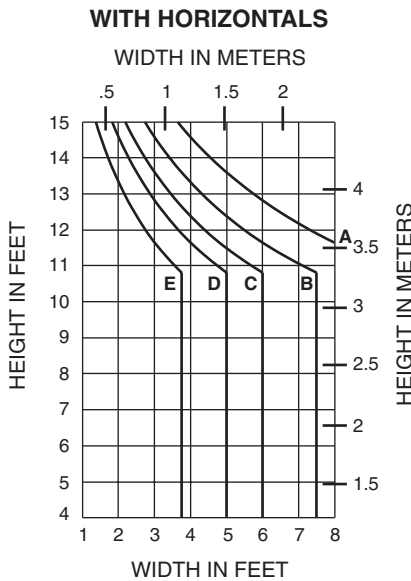
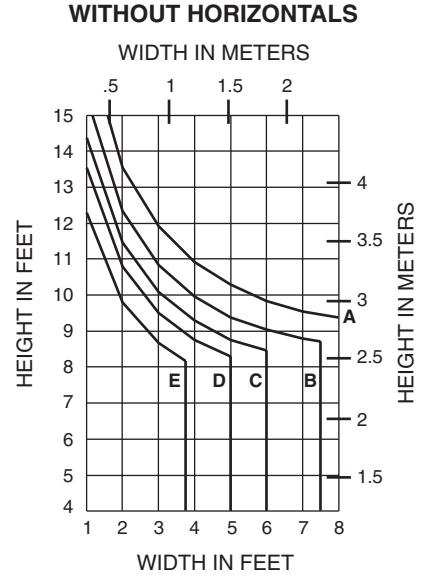
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- A = 15 PSF (720 Pa)
- B = 20 PSF (960 Pa)
- C = 25 PSF (1200 Pa)
- D = 30 PSF (1440 Pa)
- E = 40 PSF (1920 Pa)



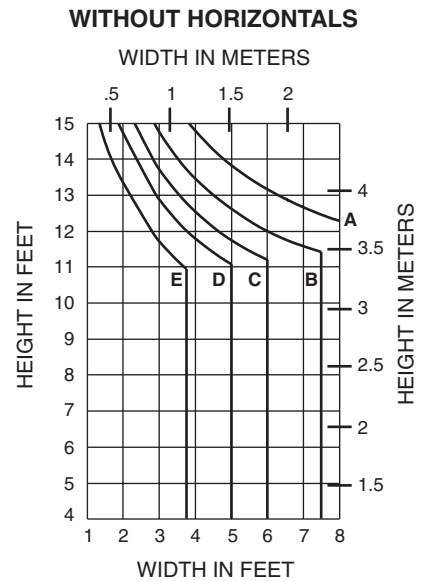
450-SSG-005

$I = 2.445 (101.76 \times 10^4)$   
 $S = 1.352 (22.15 \times 10^3)$

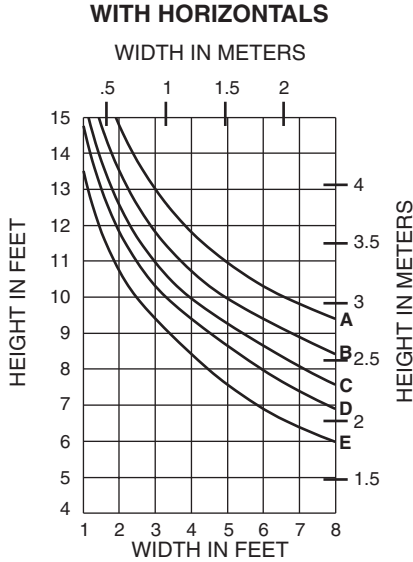


450-SSG-005  
 with 1" x 2-1/2" STEEL BAR

$I_A = 2.445 (101.76 \times 10^4)$   
 $S_A = 1.352 (22.15 \times 10^3)$   
 $I_S = 1.302 (54.19 \times 10^4)$   
 $S_S = 1.042 (17.08 \times 10^3)$

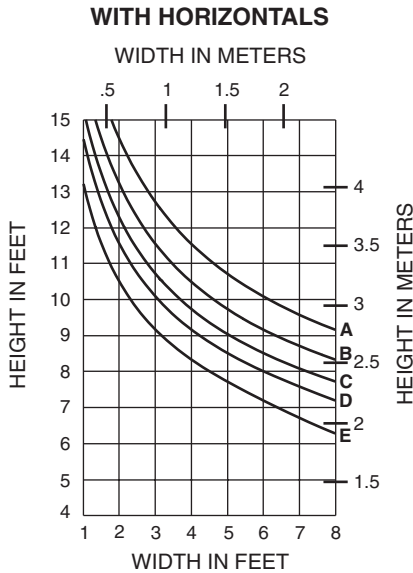
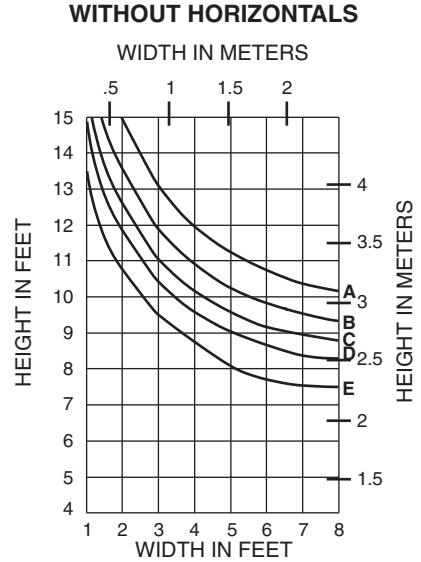


- A = 15 PSF (720 Pa)
- B = 20 PSF (960 Pa)
- C = 25 PSF (1200 Pa)
- D = 30 PSF (1440 Pa)
- E = 40 PSF (1920 Pa)



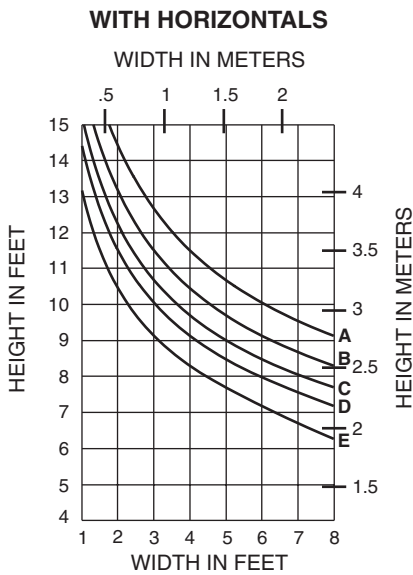
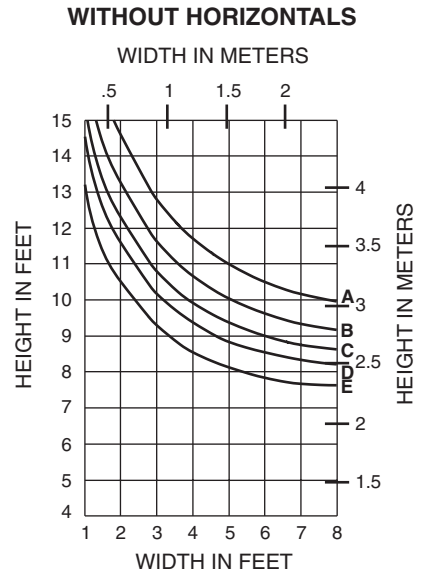
**450-VG-069**  
**450-VG-069**

I = 3.246 (135.10 x 10<sup>4</sup>)  
S = 1.132 (18.55 x 10<sup>3</sup>)



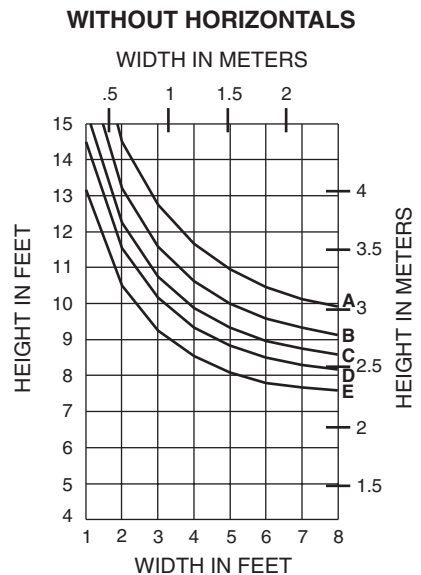
**450-VG-001**  
**450-CG-002**

I = 3.031 (126.15 x 10<sup>4</sup>)  
S = 1.239 (23.30 x 10<sup>3</sup>)



**450-VG-052**  
**450-CG-028**

I = 2.998 (124.79 x 10<sup>4</sup>)  
S = 1.235 (20.24 x 10<sup>3</sup>)



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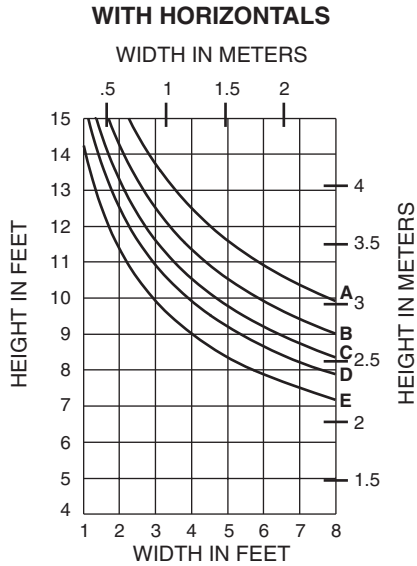
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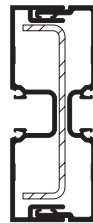
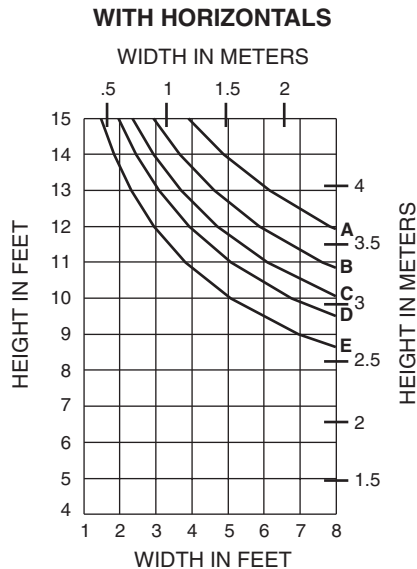
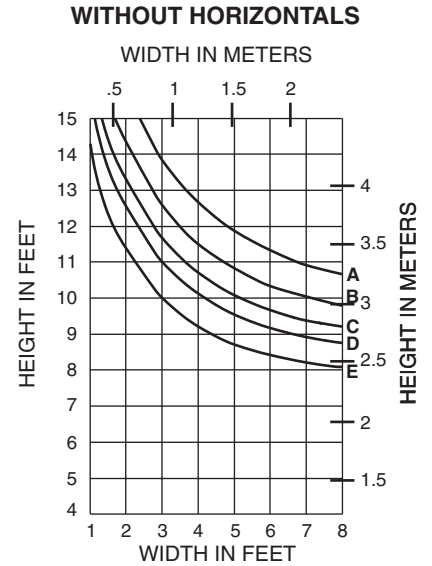
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- A = 15 PSF (720 Pa)
- B = 20 PSF (960 Pa)
- C = 25 PSF (1200 Pa)
- D = 30 PSF (1440 Pa)
- E = 40 PSF (1920 Pa)



**450-CG-540  
450-CG-010**

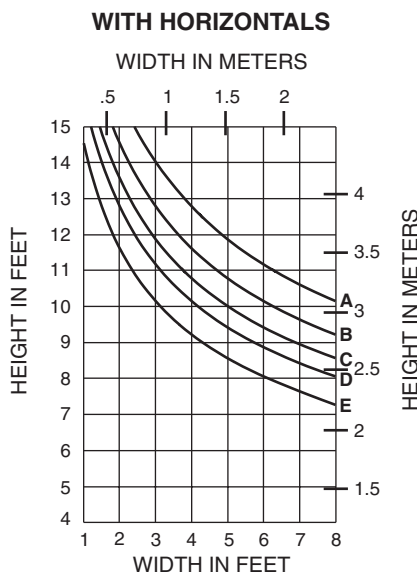
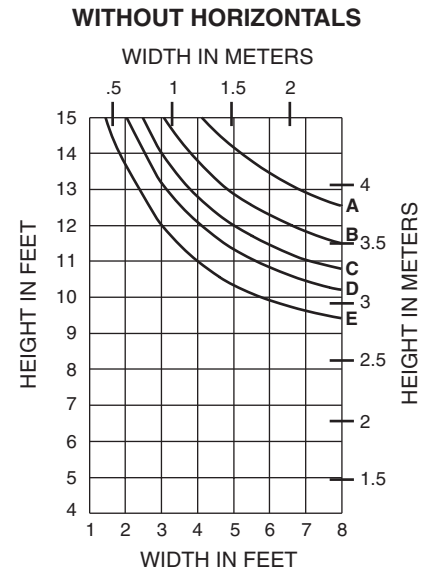
I = 3.846 (160.08 x 10<sup>4</sup>)  
S = 1.710 (28.02 x 10<sup>3</sup>)



**450-CG-540  
450-CG-010  
WITH 400-110 STEEL**

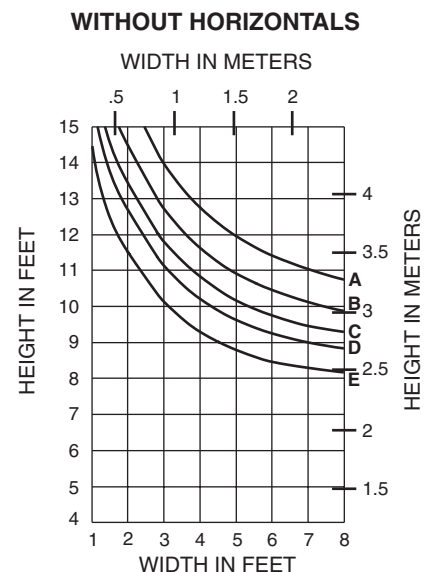
I = 3.846 (160.08 x 10<sup>4</sup>)  
S = 1.710 (28.02 x 10<sup>3</sup>)

I<sub>s</sub> = 0.970 (40.37 x 10<sup>4</sup>)  
S<sub>s</sub> = 0.535 (8.76 x 10<sup>3</sup>)



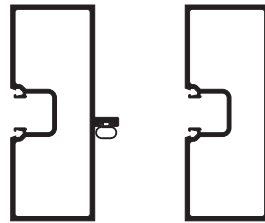
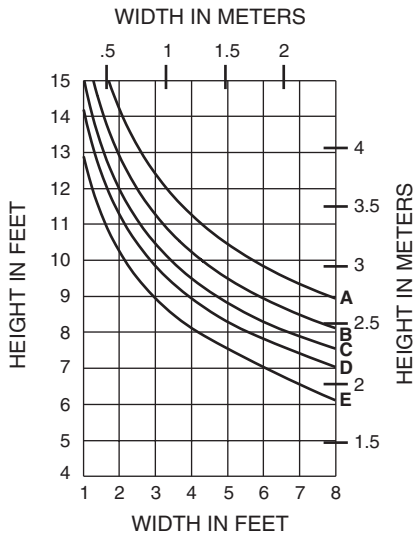
**450-VG-540  
450-VG-010**

I = 4.117 (171.36 x 10<sup>4</sup>)  
S = 1.704 (27.92 x 10<sup>3</sup>)



- A = 15 PSF (720 Pa)
- B = 20 PSF (960 Pa)
- C = 25 PSF (1200 Pa)
- D = 30 PSF (1440 Pa)
- E = 40 PSF (1920 Pa)

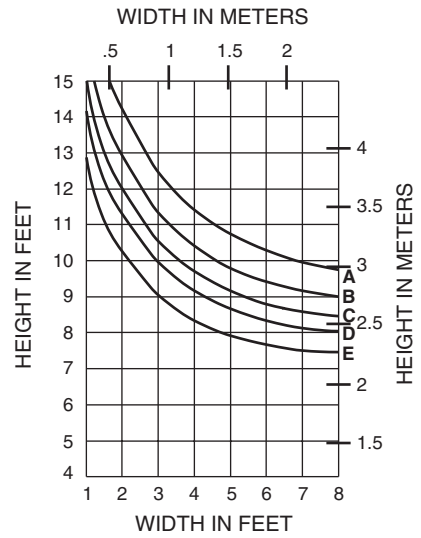
**WITH HORIZONTALS**



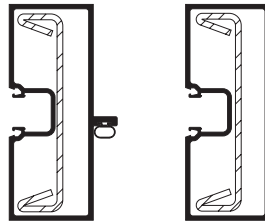
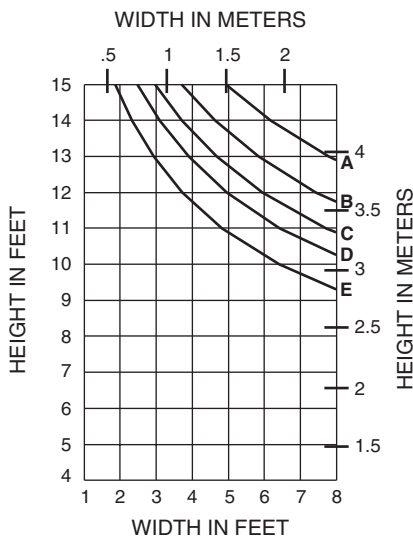
**450-501**      **450-019**

$I = 2.813 (117.08 \times 10^4)$   
 $S = 1.250 (20.48 \times 10^3)$

**WITHOUT HORIZONTALS**



**WITH HORIZONTALS**



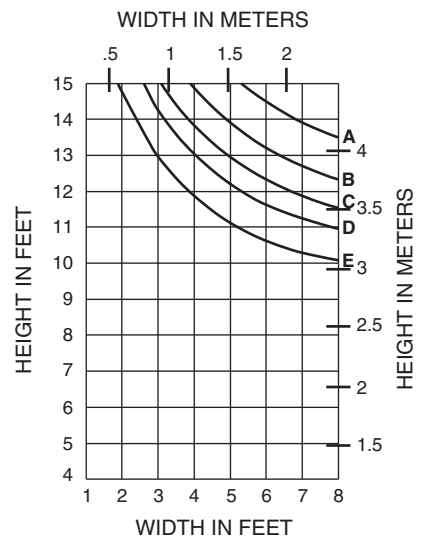
**450-501**      **450-019**

**WITH 450-110 STEEL**

$I_A = 2.813 (117.08 \times 10^4)$   
 $S_A = 1.250 (20.48 \times 10^3)$

$I_S = 1.935 (80.57 \times 10^4)$   
 $S_S = 0.938 (15.37 \times 10^3)$

**WITHOUT HORIZONTALS**



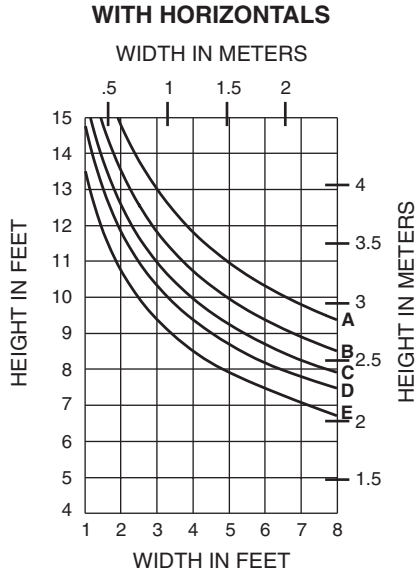
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- A = 15 PSF (720 Pa)
- B = 20 PSF (960 Pa)
- C = 25 PSF (1200 Pa)
- D = 30 PSF (1440 Pa)
- E = 40 PSF (1920 Pa)

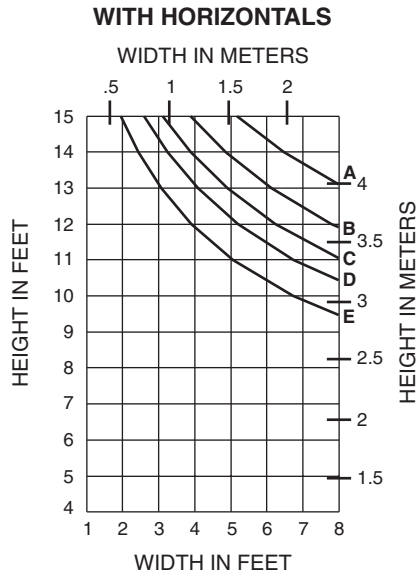
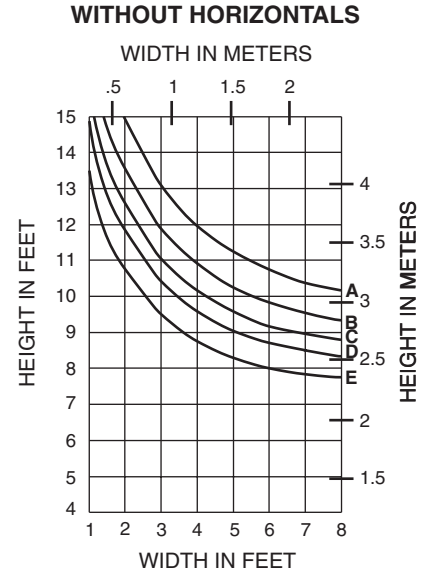


450-599  
 450-CG-002

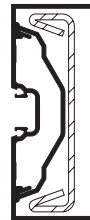


450-064  
 450-CG-002

$I = 3.226 (134.28 \times 10^4)$   
 $S = 1.467 (24.04 \times 10^3)$



450-599  
 450-CG-002

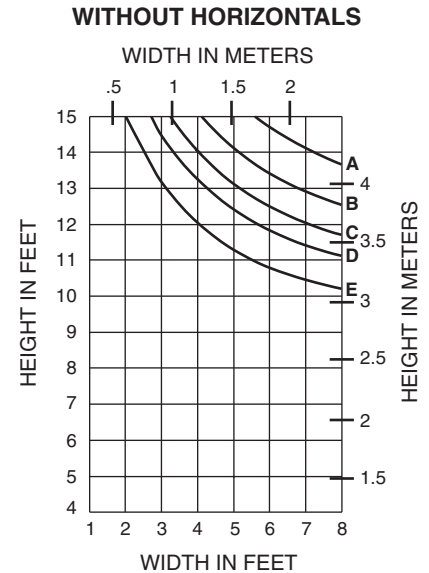


450-064  
 450-CG-002

**WITH 450-110 STEEL**

$I_A = 3.226 (134.28 \times 10^4)$   
 $S_A = 1.467 (24.04 \times 10^3)$

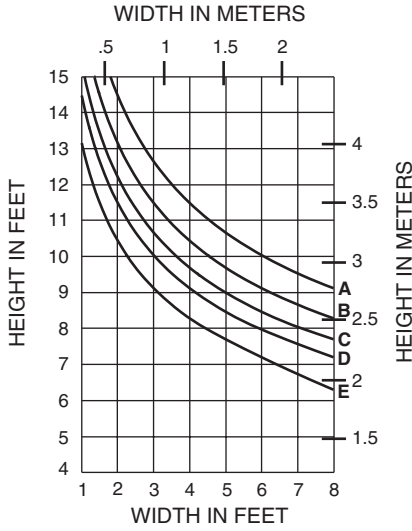
$I_S = 1.935 (80.57 \times 10^4)$   
 $S_S = 0.938 (15.37 \times 10^3)$





- A = 15 PSF (720 Pa)
- B = 20 PSF (960 Pa)
- C = 25 PSF (1200 Pa)
- D = 30 PSF (1440 Pa)
- E = 40 PSF (1920 Pa)

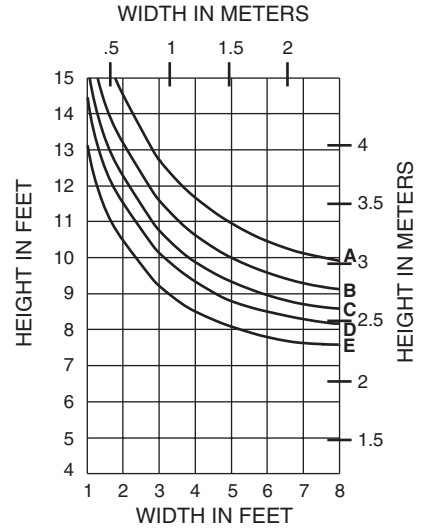
**WITH HORIZONTALS**



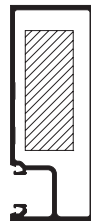
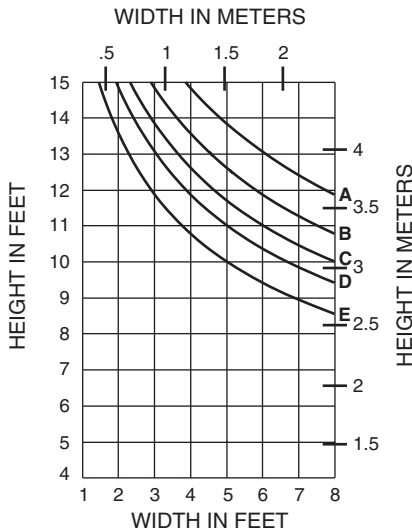
**450-VG-019**

$I_A = 2.985 (124.24 \times 10^4)$   
 $S_A = 1.244 (20.38 \times 10^3)$

**WITHOUT HORIZONTALS**



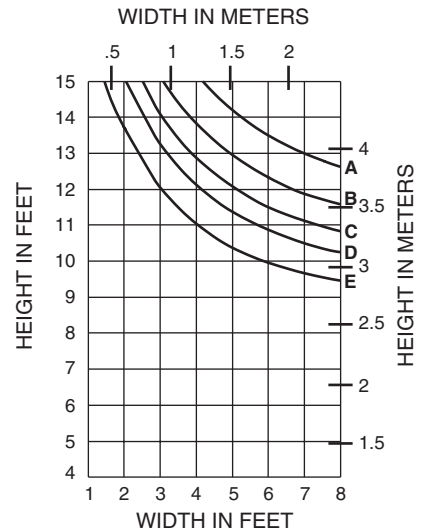
**WITH HORIZONTALS**



**450-VG-019**  
**WITH 1" x 2-1/2" STEEL BAR**

$I_A = 2.985 (124.24 \times 10^4)$   
 $S_A = 1.244 (20.38 \times 10^3)$   
 $I_S = 1.302 (54.19 \times 10^4)$   
 $S_S = 1.042 (17.08 \times 10^3)$

**WITHOUT HORIZONTALS**

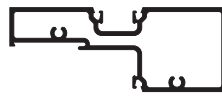
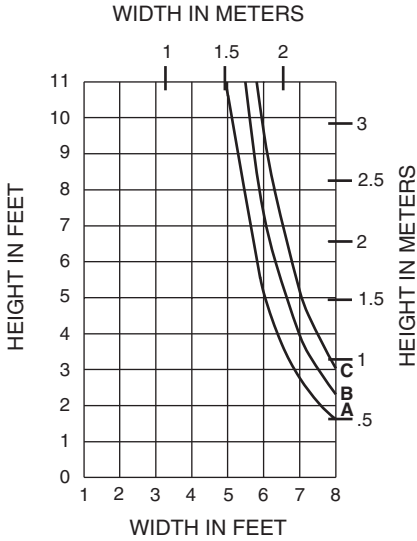


Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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Horizontal or deadload limitations are based upon 1/8" (3.2) maximum allowable deflection at the center of an intermediate horizontal member. The accompanying charts are calculated for 1/4" (6.4) thick glass supported on two setting blocks at the loading points shown.

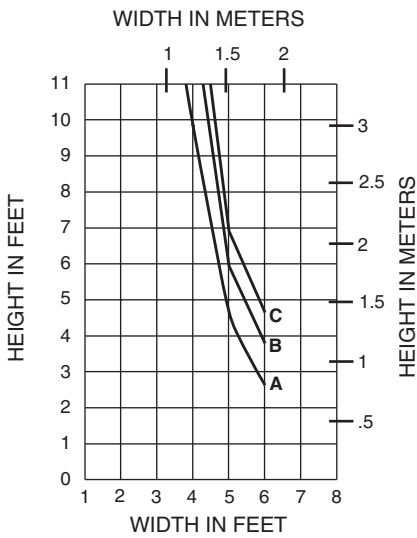
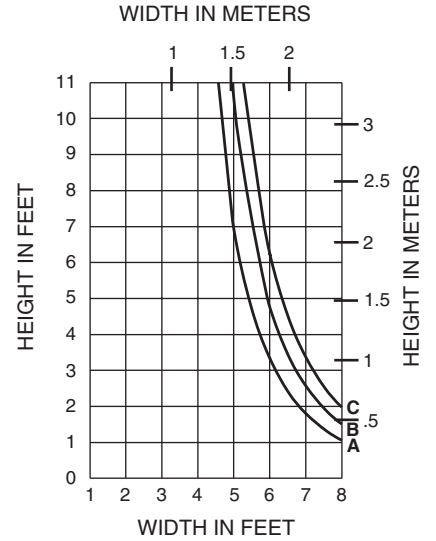
- A = (1/4 POINT LOADING)
- B = (1/6 POINT LOADING)
- C = (1/8 POINT LOADING)



450-CG-011



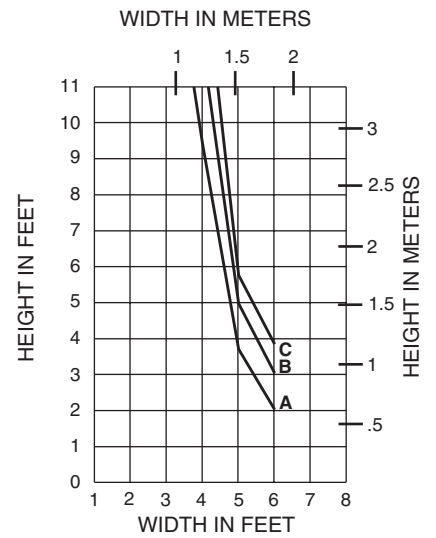
450-CG-003



450-VG-011



450-VG-111

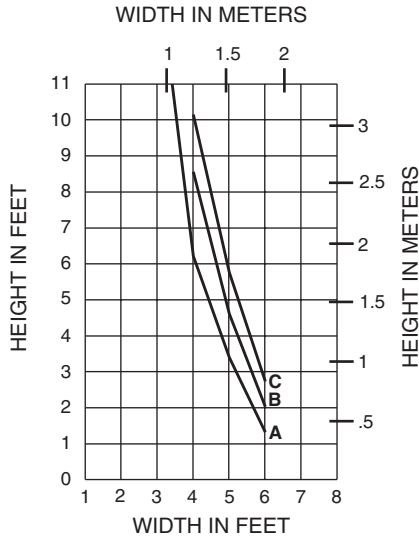


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- A = (1/4 POINT LOADING)
- B = (1/6 POINT LOADING)
- C = (1/8 POINT LOADING)

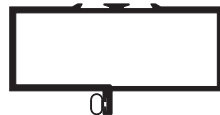
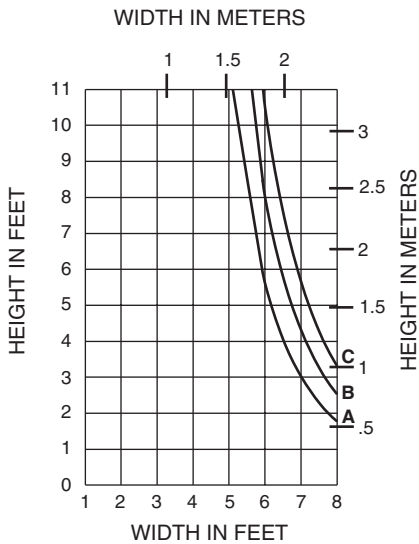


450-SSG-011

### DEADLOADS ON ENTRANCE TRANSOM BARS

Height limitations for transom glass over a doorway are based upon a 1/16" (1.6) maximum allowable deflection at the center of a transom bar. The accompanying charts are calculated for 1/4" (6.4) thick glass supported on two setting blocks placed at the loading points shown.

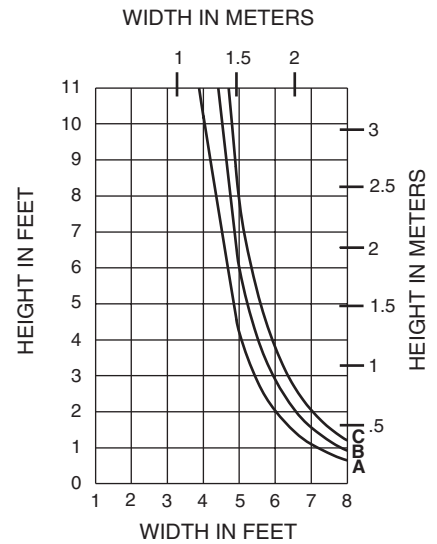
- A = (1/4 POINT LOADING)
- B = (1/6 POINT LOADING)
- C = (1/8 POINT LOADING)



450-502  
SINGLE ACTING  
T-BAR



450-081  
DOUBLE ACTING  
T-BAR



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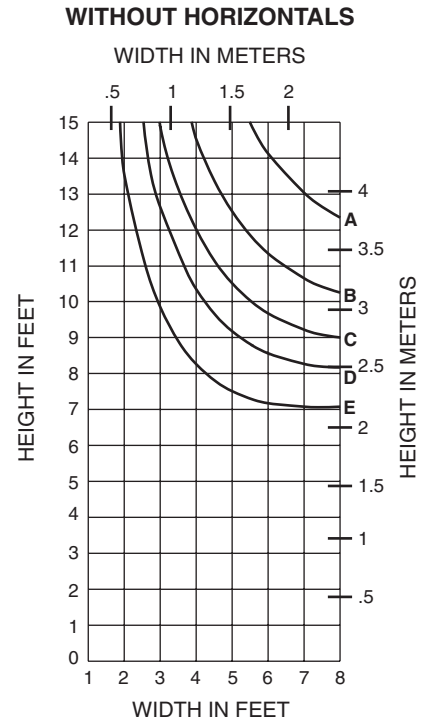
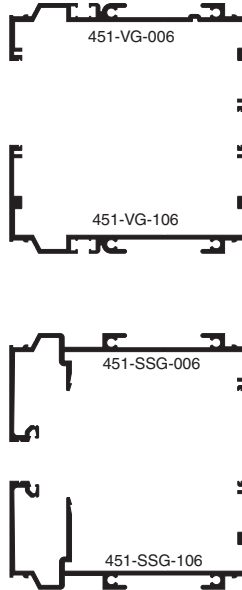
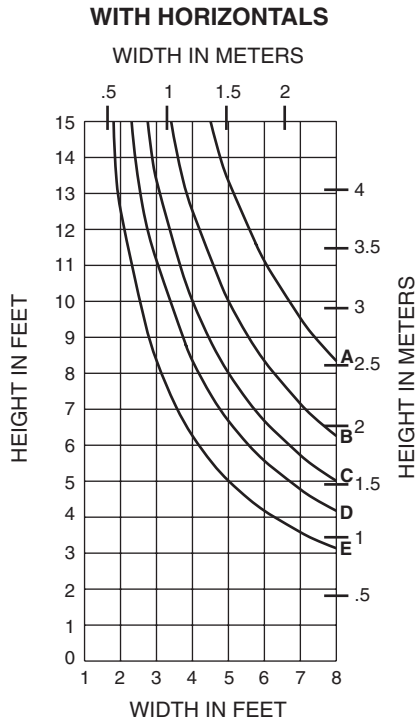
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For each application, end reactions MUST be checked. These charts are used to verify that the end reactions at the head and sill receptors are 500 lbs. (2224N) or less and will meet the specified windload.

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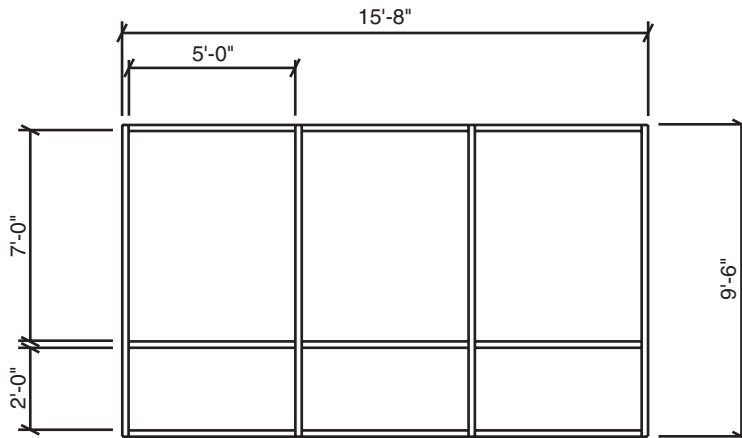
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- A = 15 PSF (720 Pa)
- B = 20 PSF (960 Pa)
- C = 25 PSF (1200 Pa)
- D = 30 PSF (1440 Pa)
- E = 40 PSF (1920 Pa)



500lbs. Max. End Reaction

**Project Specific U-factor Example Calculation**



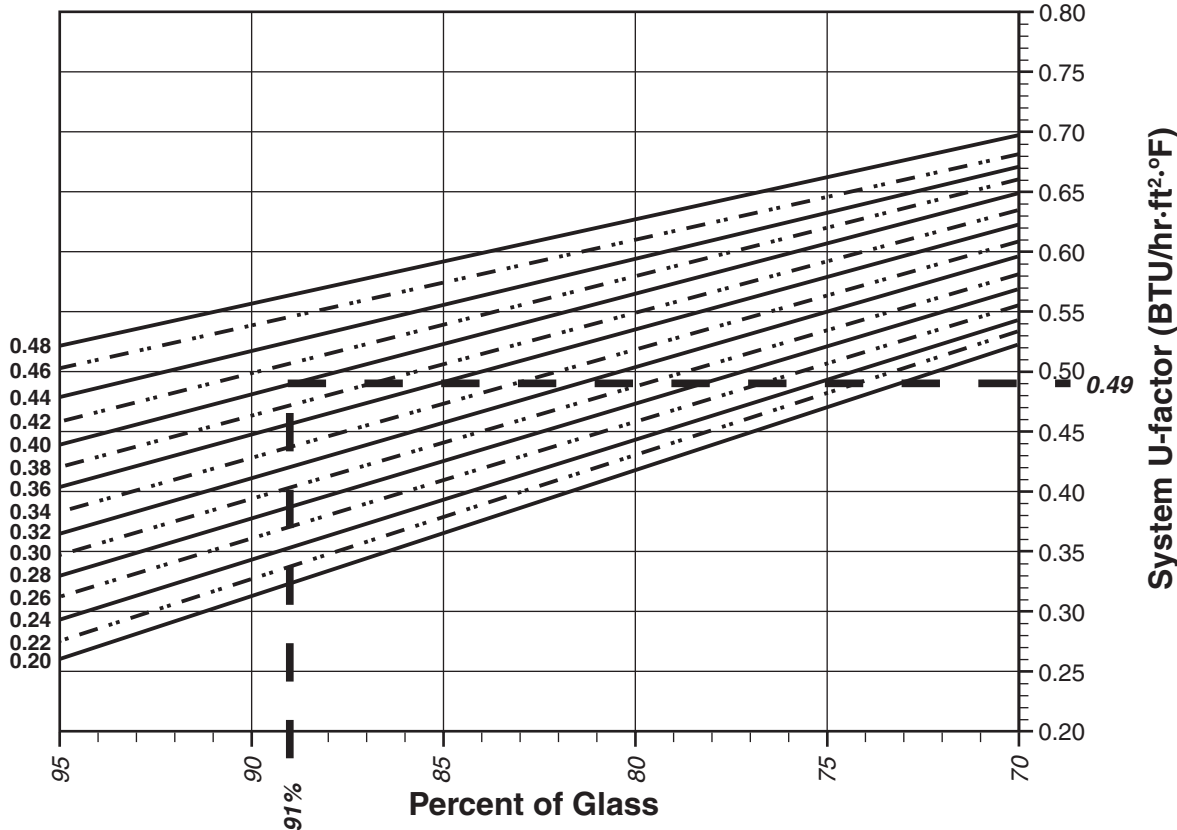
Example Glass U-factor = 0.42 Btu/hr·ft<sup>2</sup>·°F

Total Daylight Opening = 3(5' x 7') + 3(5' x 2') = 135ft<sup>2</sup>

Total Projected Area = (Total Daylight Opening + Total Area of Framing System)  
= 15'-8" x 9'-6" = 148.83ft<sup>2</sup>

Percent of Glass = (Total Daylight Opening ÷ Total Projected Area)  
= (135 ÷ 148.83)100 = 91%

**System U-factor vs Percent of Glass Area**



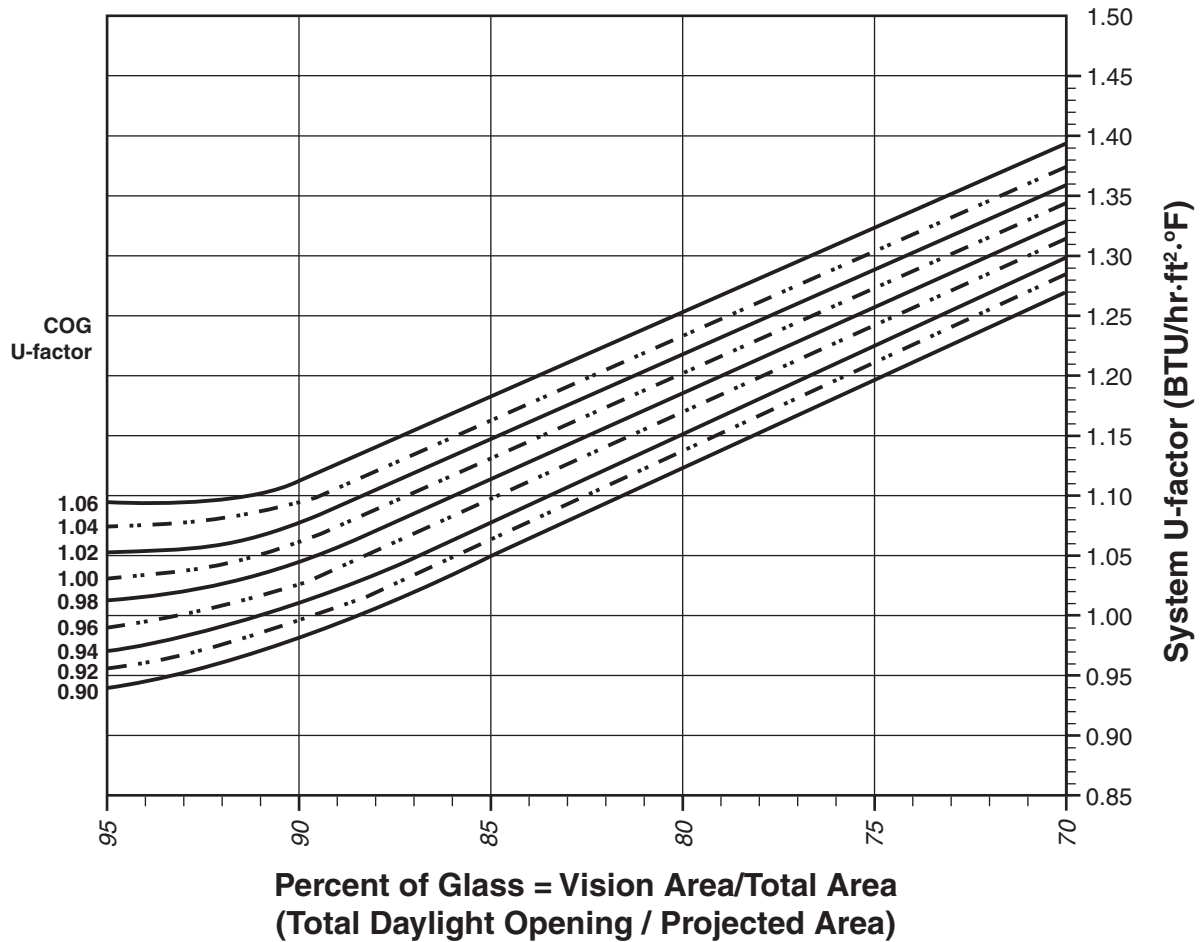
**Based on 91% glass and Center of Glass (COG) U-factor of 0.42  
System U-factor is equal to 0.49 Btu/hr·ft<sup>2</sup>·°F**

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# TRIFAB® VG 450 (CENTER)

## System U-factor vs Percent of Glass Area



**Notes for System U-Factor, SHGC and VT charts:**

For glass values that are not listed, linear interpolation is permitted.

Glass properties are based on center of glass values and are obtained from your glass supplier.

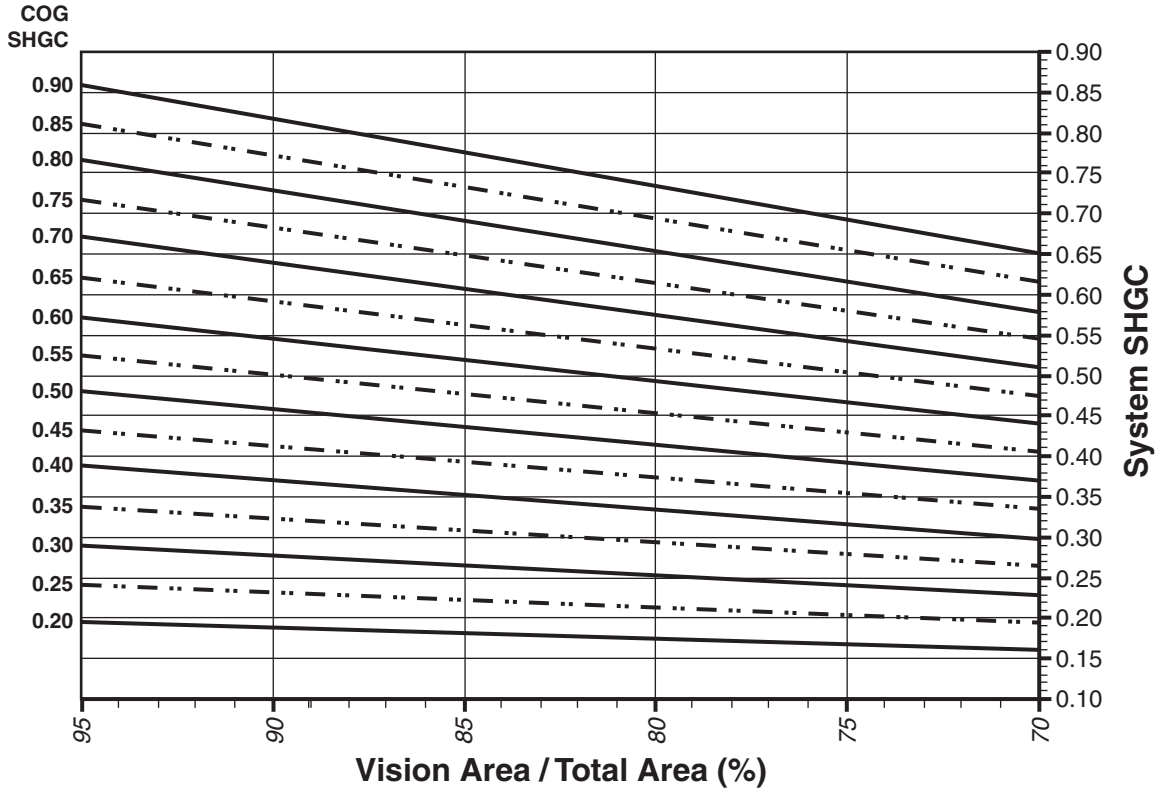
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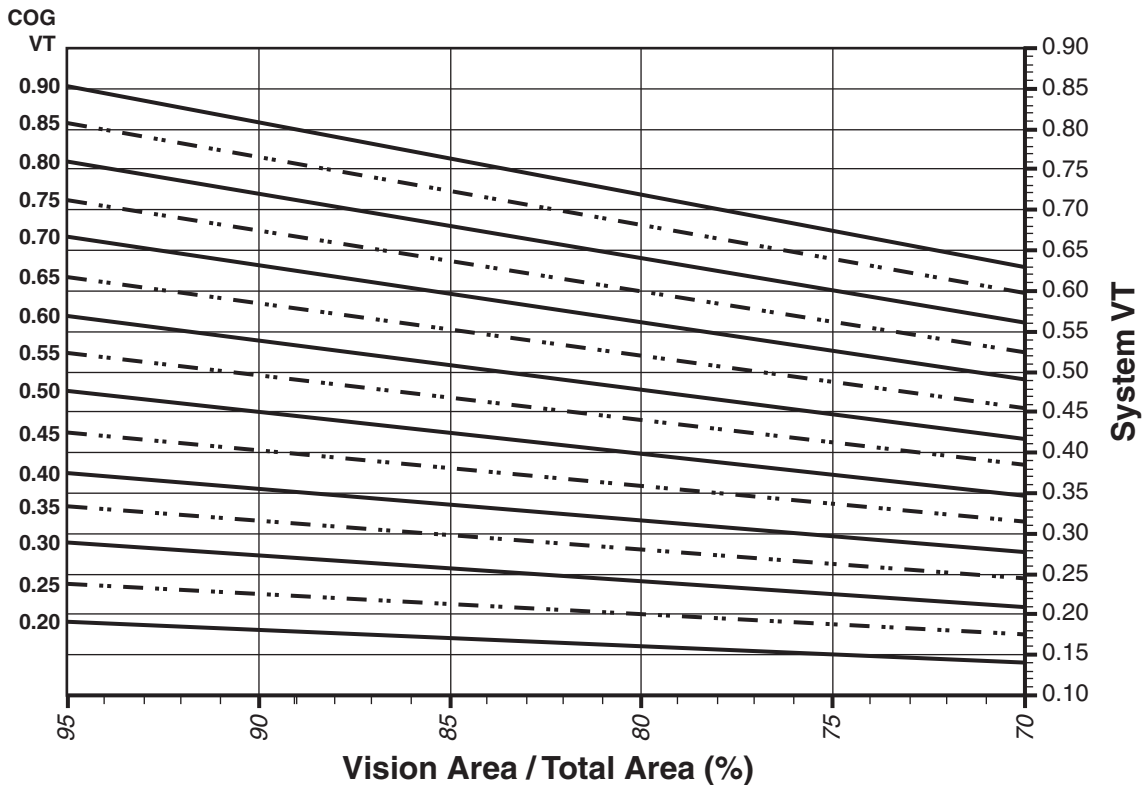
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### TRIFAB® VG 450 (CENTER)

**System Solar Heat Gain Coefficient (SHGC) vs Percent of Vision Area**



**System Visible Transmittance (VT) vs Percent of Vision Area**



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## TRIFAB® VG 450 (CENTER)

### Thermal Transmittance <sup>1</sup>

Glass U-Factor <sup>3</sup>	Overall U-Factor <sup>4</sup>
0.90	0.99
0.92	1.00
0.94	1.02
0.96	1.03
0.98	1.05
1.00	1.07
1.02	1.08
1.04	1.10
1.06	1.11

### SHGC Matrix <sup>2</sup>

Glass SHGC <sup>3</sup>	Overall Glass U-Factor <sup>4</sup>
0.90	0.81
0.85	0.77
0.80	0.72
0.75	0.68
0.70	0.63
0.65	0.59
0.60	0.54
0.55	0.50
0.50	0.45
0.45	0.41
0.40	0.37
0.35	0.32
0.30	0.28
0.25	0.23
0.20	0.19

### Visible Transmittance <sup>2</sup>

Glass VT <sup>3</sup>	Overall VT <sup>4</sup>
0.90	0.81
0.85	0.76
0.80	0.72
0.75	0.67
0.70	0.63
0.65	0.58
0.60	0.54
0.55	0.49
0.50	0.45
0.45	0.40
0.40	0.36
0.35	0.31
0.30	0.27
0.25	0.22
0.20	0.18

**NOTE:** For glass values that are not listed, linear interpolation is permitted.

1. U-Factors are determined in accordance with NFRC 100.
2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values and are obtained from your glass supplier.
4. Overall U-Factor, SHGC, and VT Matrices are based on the standard NFRC specimen size of 2000mm wide by 2000mm high (78-3/4" by 78-3/4").

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**Features**

- Trifab™ VG 451/451T is 4-1/2" (114.3) deep with a 2" (50.8) sightline
- Front, Center, Back or Multi-Plane glass applications
- Flush glazed from either the inside or outside
- Screw Spline, Shear Block, Stick or Type-B fabrication
- SSG / Weatherseal option
- IsoLock™ lanced and debridged thermal break option with Trifab™ VG 451T
- Infill options up to 1-1/8" (28.6) thickness
- Permanodic™ anodized finishes in seven choices
- Painted finishes in standard and custom choices

**Optional Features**

- High performance interlocking flashing
- Acoustical rating per AAMA 1801 and ASTM E 1425
- Project specific U-factors (See Thermal Charts)
- Integrates with Versoleil™ SunShade Outrigger System and Horizontal Single Blade System
- Profit\$Maker™ plus die sets available

**Product Applications**

- Storefront, Ribbon Window or Punched Openings
- Single-span
- Integrated entrance framing allowing Kawneer standard entrances or other specialty entrances to be incorporated
- Kawneer windows or GLASSvent™ Windows for Storefront Framing are easily incorporated

For specific product applications,  
Consult your Kawneer representative.

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LAWS AND BUILDING AND SAFETY CODES GOVERNING THE DESIGN AND USE OF GLAZED ENTRANCE, WINDOW, AND CURTAIN WALL PRODUCTS VARY WIDELY. KAWNEER DOES NOT CONTROL THE SELECTION OF PRODUCT CONFIGURATIONS, OPERATING HARDWARE, OR GLAZING MATERIALS, AND ASSUMES NO RESPONSIBILITY THEREFOR.

Metric (SI) conversion figures are included throughout these details for reference. Numbers in parentheses ( ) are millimeters unless otherwise noted.

The following metric (SI ) units are found in these details:

- m – meter
- cm – centimeter
- mm – millimeter
- s – second
- Pa – pascal
- MPa – megapascal

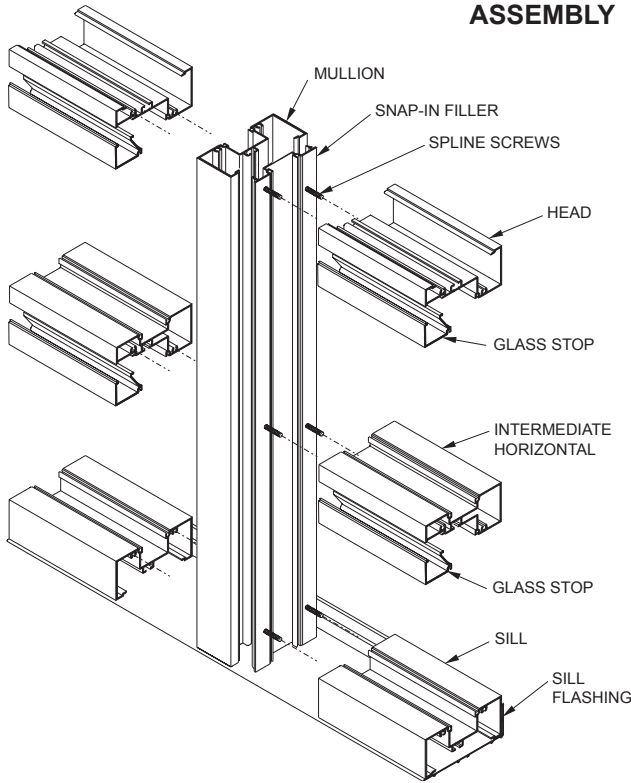
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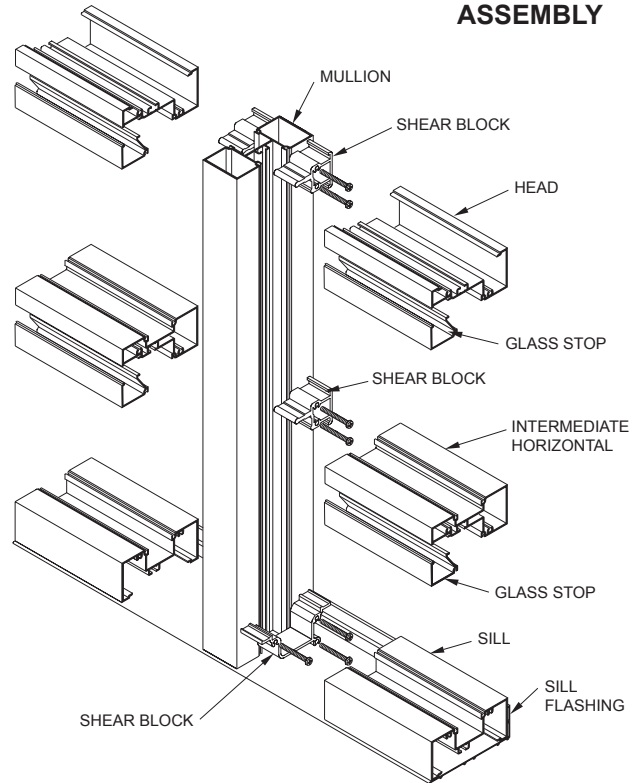
The split vertical in the **Screw Spine** system allows a frame to be installed from unitized assemblies. Screws are driven through the back of the verticals into splines extruded in the horizontal framing members. The individual units are then snapped together to form a complete frame.

**SCREW SPLINE ASSEMBLY**

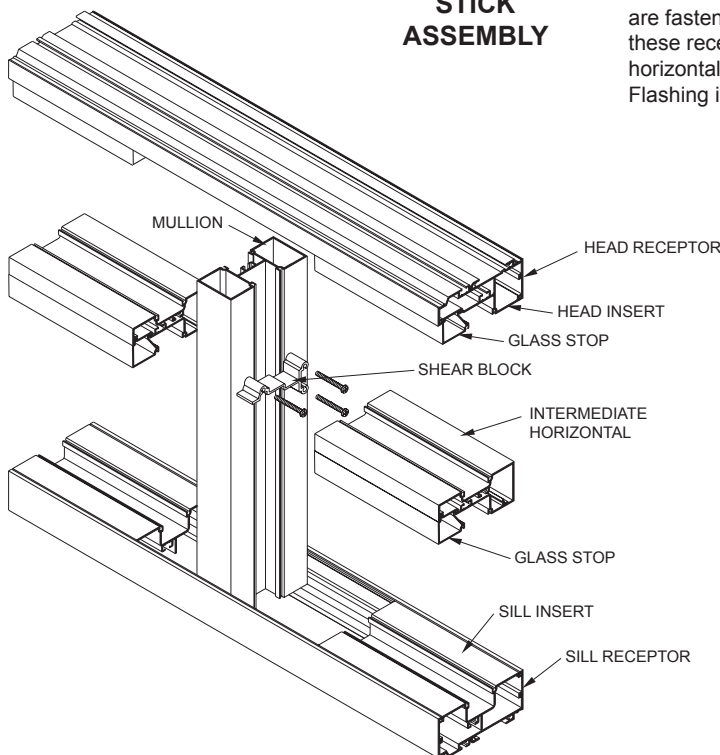


The **Shear Block** system of fabrication allows a frame to be pre-assembled as a single unit. Horizontals are attached to the verticals with shear blocks.

**SHEAR BLOCK ASSEMBLY**



**STICK ASSEMBLY**



The **Stick** system allows on-site construction. Head and sill receptors are fastened to the surround. Vertical mullions are then installed in these receptors and are held in place by snap-in inserts. Intermediate horizontal members are attached to the verticals with shear blocks. Flashing is not required.

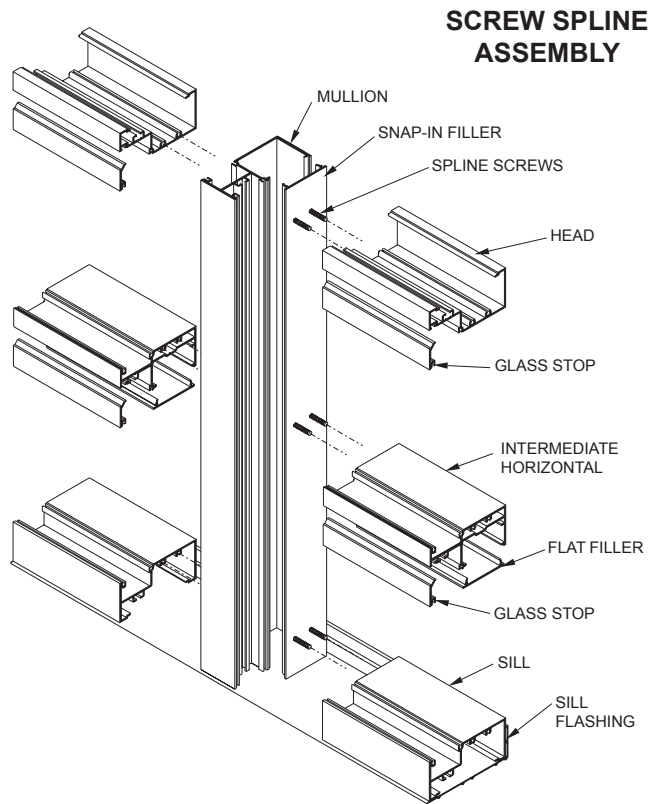
**NOTE:**

If the end reaction of the mullion (mullion spacing (ft.) times height (ft.) times specified windload (psf) divided by two) is more than 500 lbs., the optional mullion anchors must be used. (See page 14)

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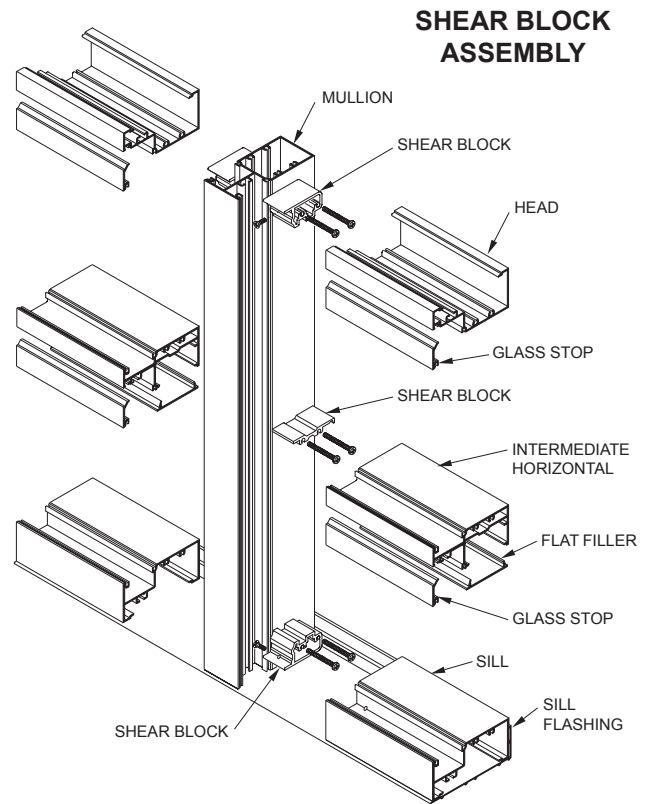
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The split vertical in the **Screw Spine** system allows a frame to be installed from unitized assemblies. Screws are driven through the back of the verticals into splines extruded in the horizontal framing members. The Individual units are then snapped together to form a complete frame.

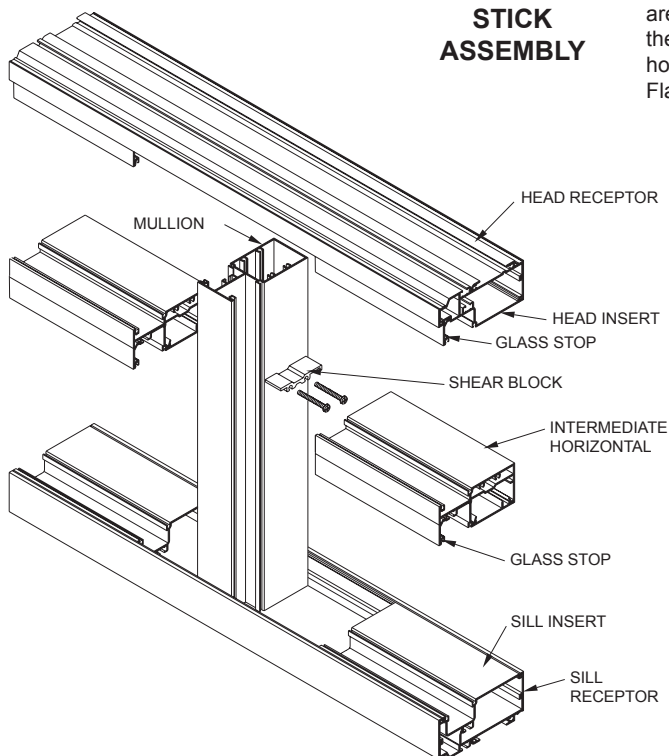


### SCREW SPLINE ASSEMBLY

The **Shear Block** system of fabrication allows a frame to be pre-assembled as a single unit. Horizontals are attached to the verticals with shear blocks.



### SHEAR BLOCK ASSEMBLY



### STICK ASSEMBLY

The **Stick** system allows on-site construction. Head and sill receptors are fastened to the surround. Vertical mullions are then installed in these receptors and are held in place by snap-in inserts. Intermediate horizontal members are attached to the verticals with shear blocks. Flashing is not required.

#### NOTE:

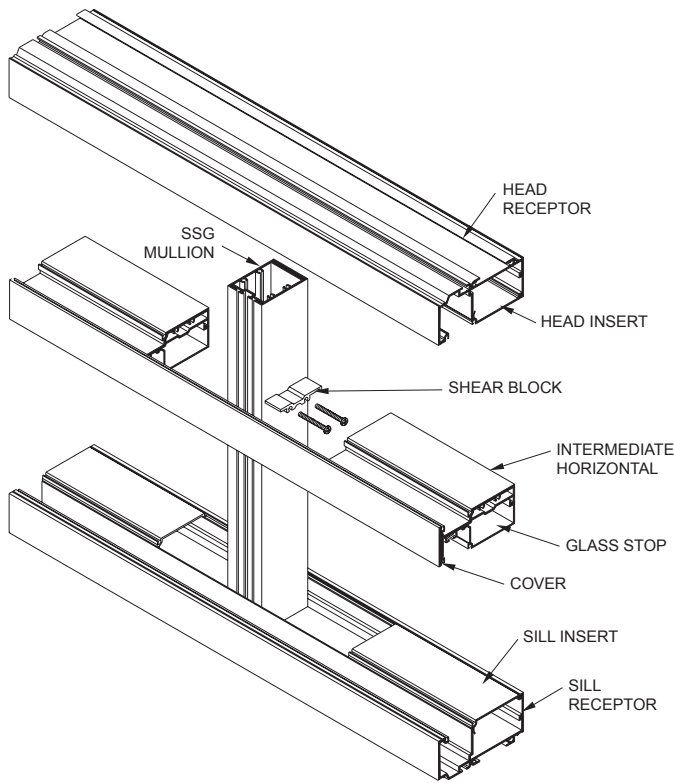
If the end reaction of the mullion (mullion spacing (ft.) times height (ft.) times specified windload (psf) divided by two) is more than 500 lbs., the optional mullion anchors must be used. (See page 34)

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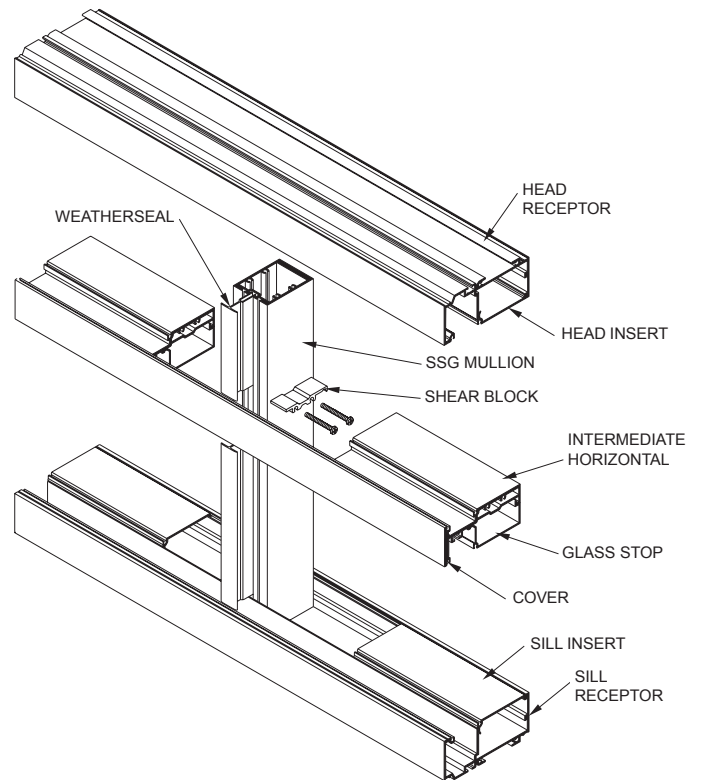
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The **Stick** system allows on-site construction. Head and sill receptors are fastened to the surround. Vertical mullions are then installed in these receptors and are held in place by snap-in inserts. Intermediate horizontal members are attached to the verticals with shear blocks. Flashing is not required.

**STICK ASSEMBLY (SSG)**



**STICK ASSEMBLY (WEATHERSEAL)**



**NOTE:**

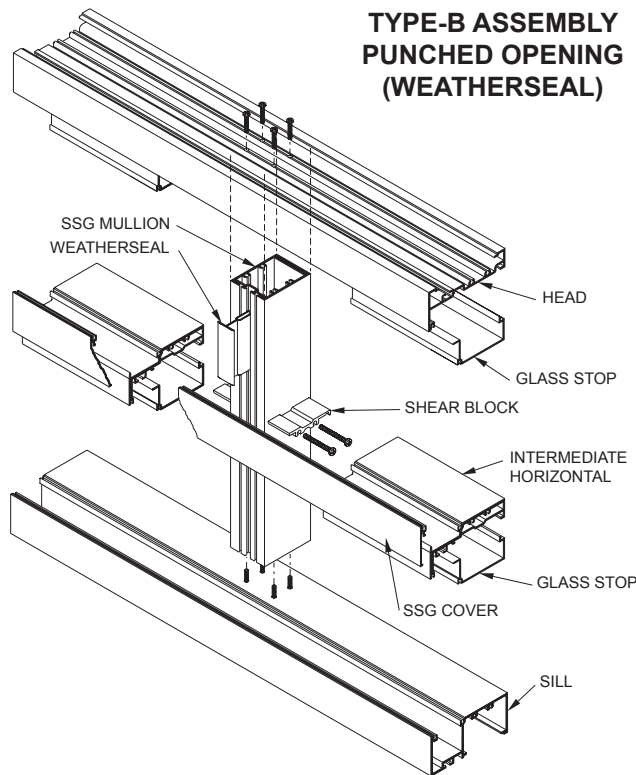
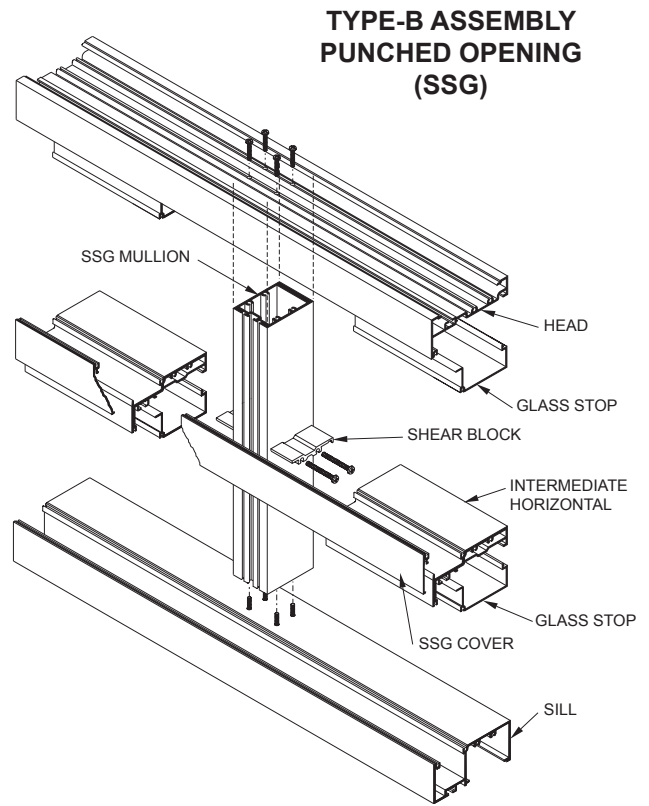
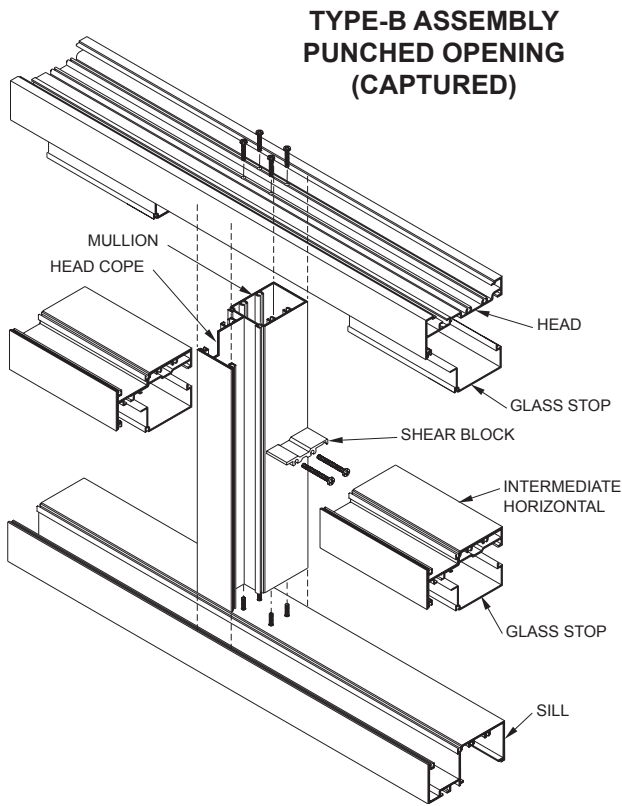
If the end reaction of the mullion (mullion spacing (ft.) times height (ft.) times specified windload (psf) divided by two) is more than 500 lbs., the optional mullion anchors must be used. (See page 34)

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The **TYPE-B** punched opening fabrication allows a frame to be pre-assembled and installed as a single unit. Screws are driven through the back of the head and sill members into splines extruded in the vertical framing members. Intermediate horizontals are attached to the verticals with shear blocks.



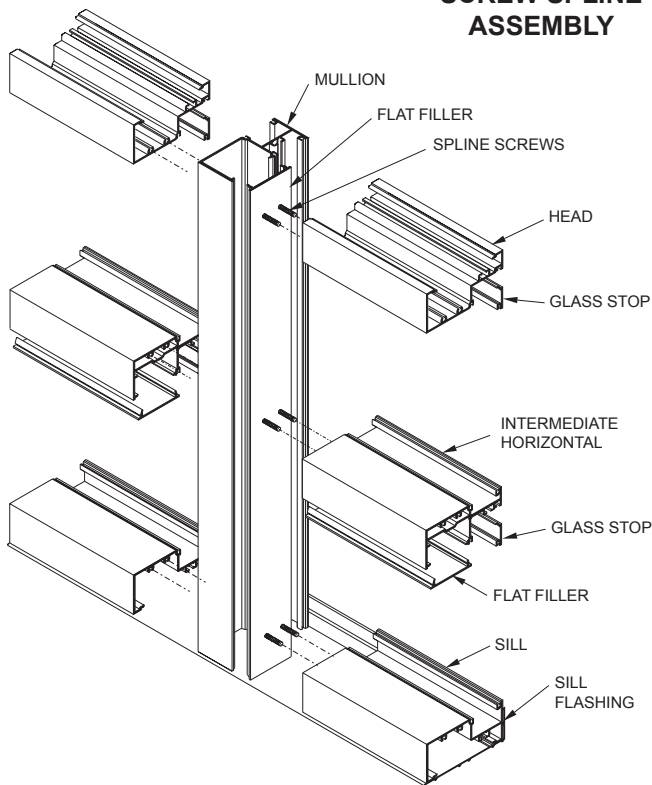
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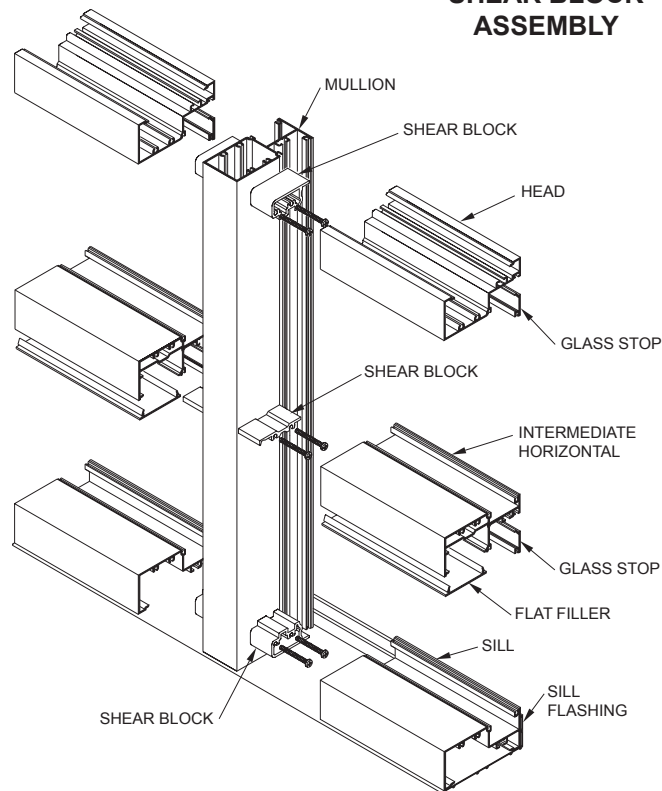
The split vertical in the **Screw Spine** system allows a frame to be installed from unitized assemblies. Screws are driven through the back of the verticals into splines extruded in the horizontal framing members. The Individual units are then snapped together to form a complete frame.

The **Shear Block** system of fabrication allows a frame to be pre-assembled as a single unit. Horizontals are attached to the verticals with shear blocks.

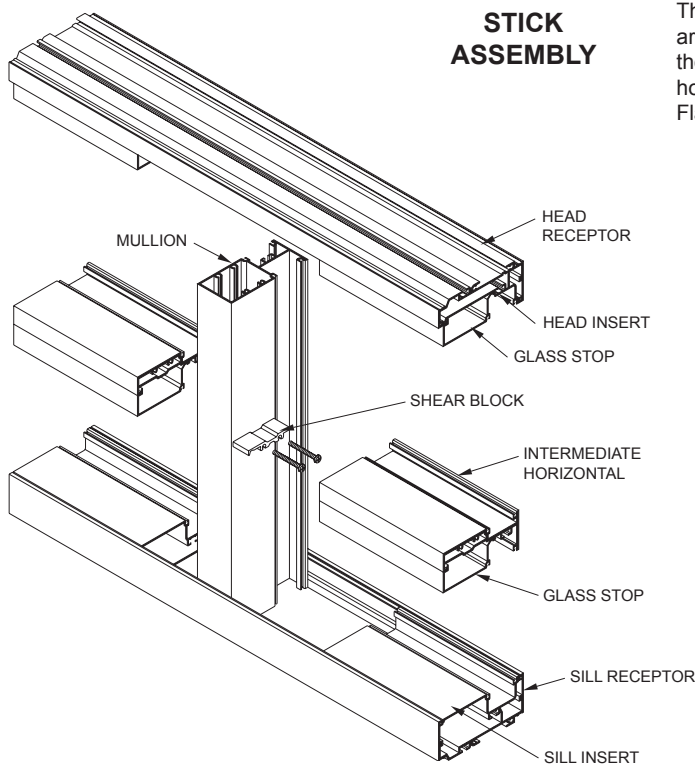
## SCREW SPLINE ASSEMBLY



## SHEAR BLOCK ASSEMBLY



## STICK ASSEMBLY



The **Stick** system allows on-site construction. Head and sill receptors are fastened to the surround. Vertical mullions are then installed in these receptors and are held in place by snap-in inserts. Intermediate horizontal members are attached to the verticals with shear blocks. Flashing is not required.

**NOTE:**

If the end reaction of the mullion (mullion spacing (ft.) times height (ft.) times specified windload (psf) divided by two) is more than 500 lbs., the optional mullion anchors must be used.

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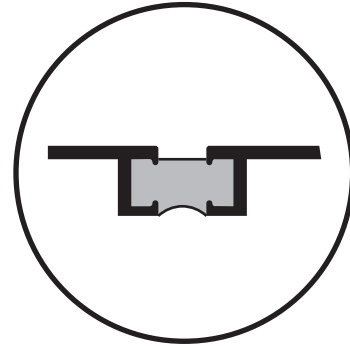
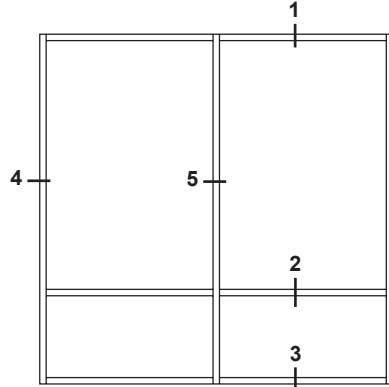
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SCALE 3" = 1'-0"

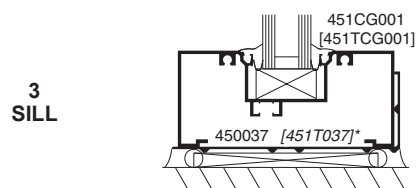
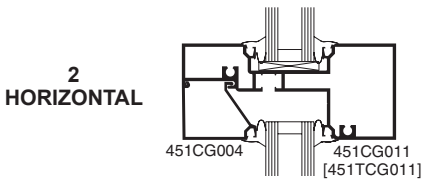
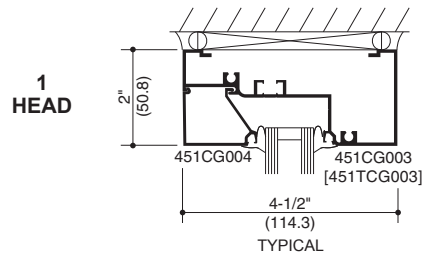
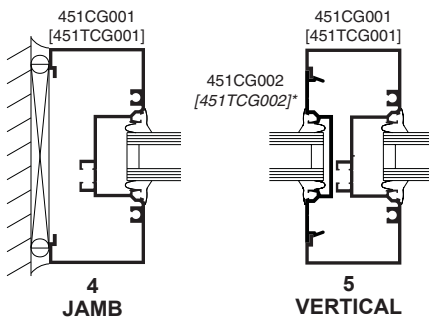


\*Note: See Misc. Details for Thermal Pocket Filler and Thermal Flashing.

ELEVATION IS NUMBER KEYED TO DETAILS

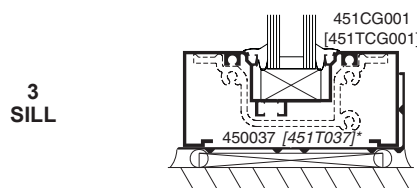
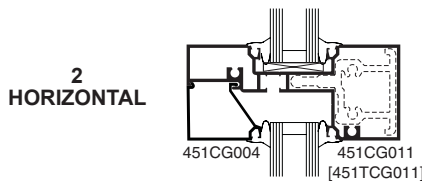
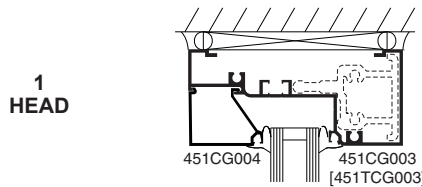
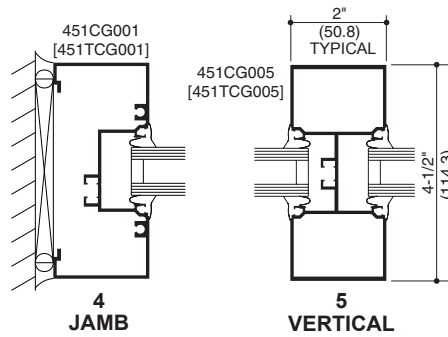
NUMBERS IN BRACKETS ARE THERMALLY BROKEN MEMBERS

SCREW SPLINE



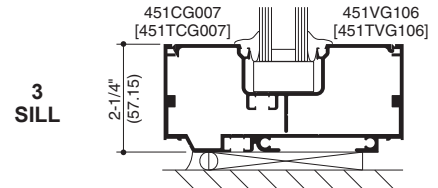
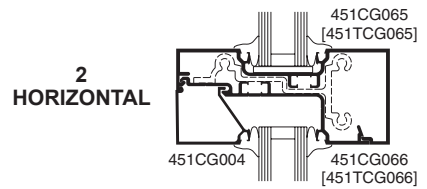
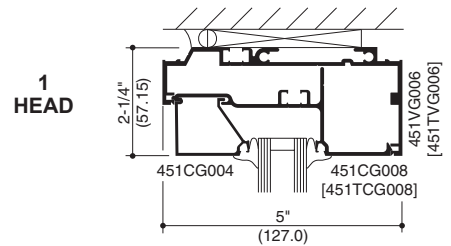
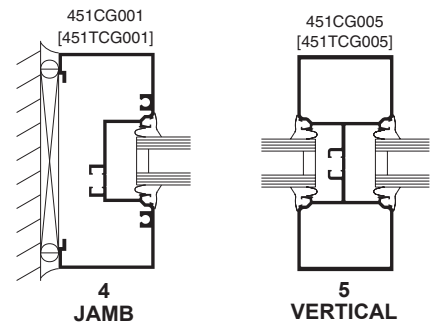
\*See Page 14 for Thermal Flashing and Optional High Performance Flashing

SHEAR BLOCK



\*See Page 14 for Thermal Flashing and Optional High Performance Flashing

STICK

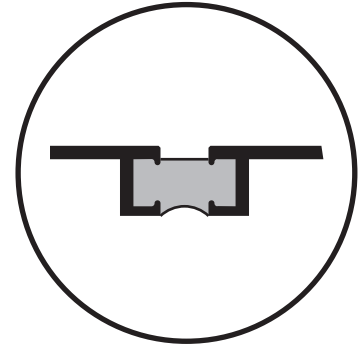
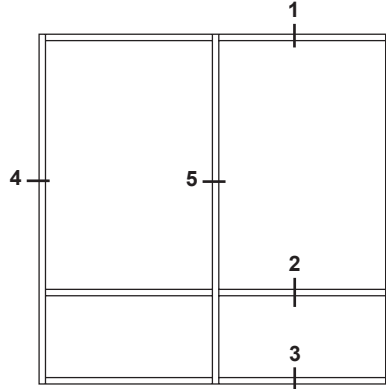


Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

Kawneer reserves the right to change configuration without prior notice when deemed necessary for product improvement.

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SCALE 3" = 1'-0"

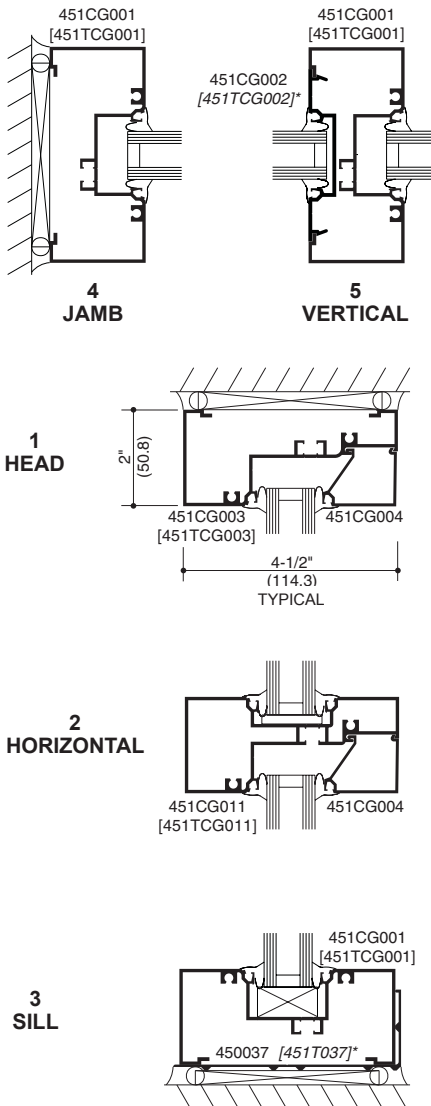


\*Note: See Misc. Details for Thermal Pocket Filler and Thermal Flashing.

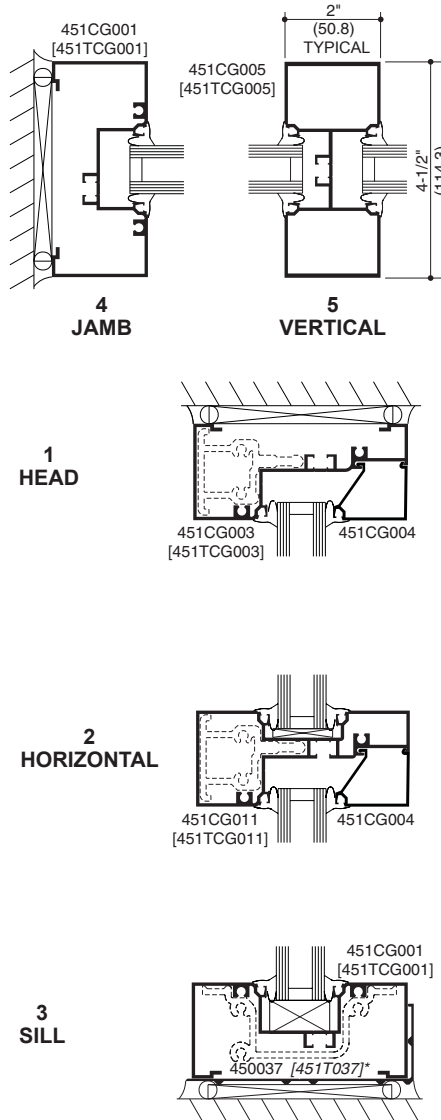
ELEVATION IS NUMBER KEYED TO DETAILS

NUMBERS IN BRACKETS ARE THERMALLY BROKEN MEMBERS

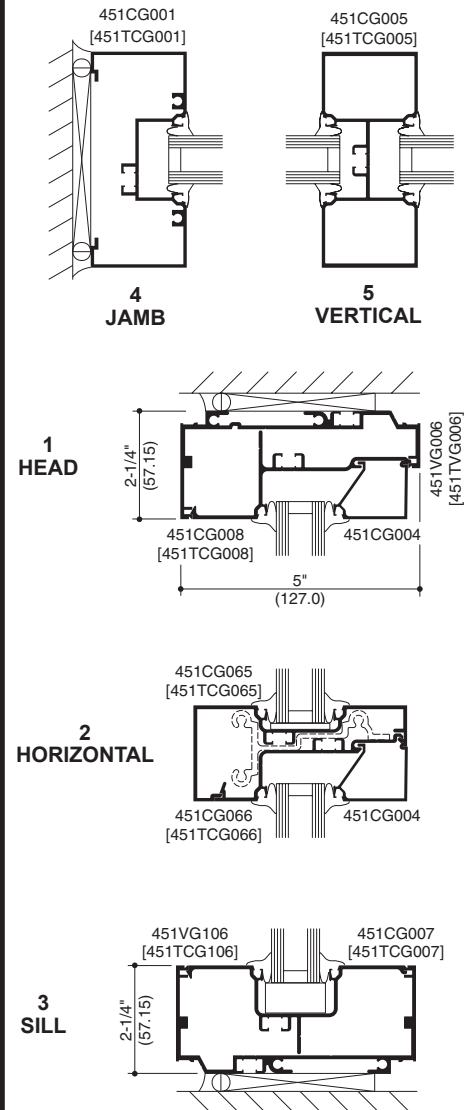
## SCREW SPLINE



## SHEAR BLOCK



## STICK



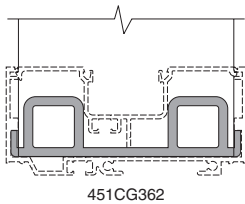
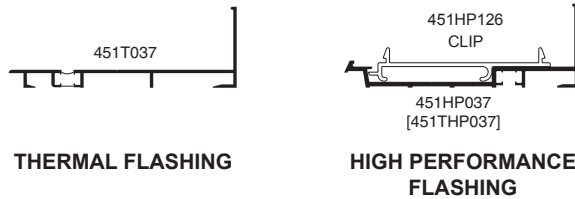
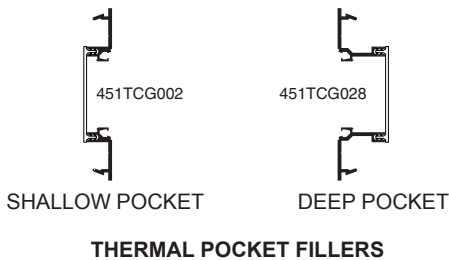
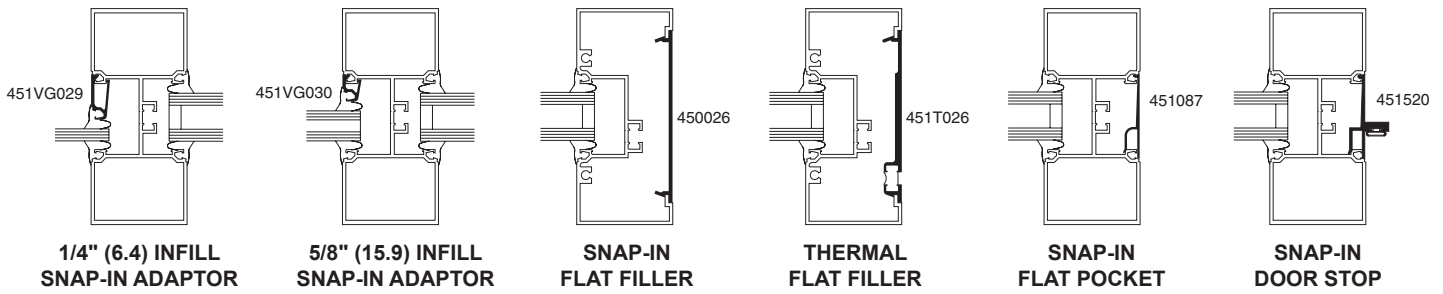
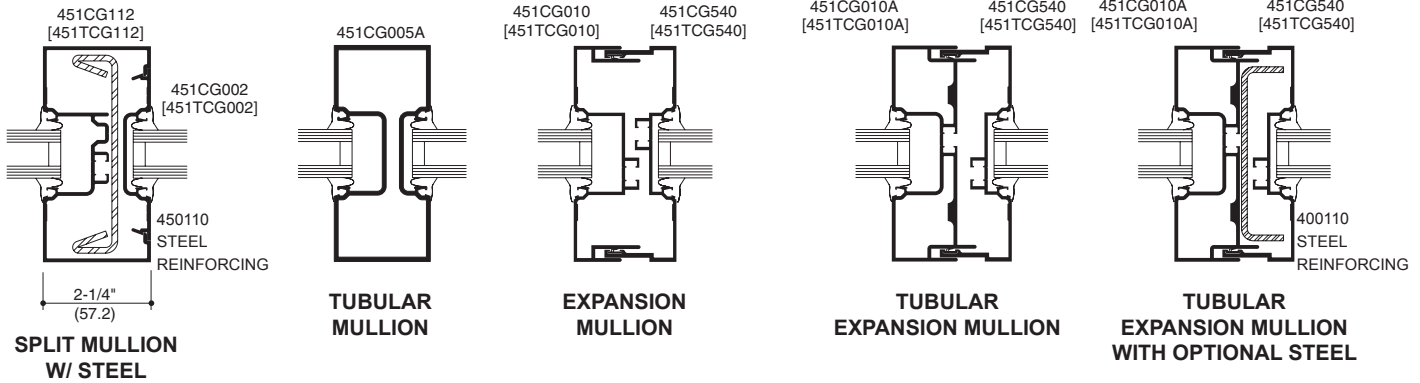
\*See Page 14 for Thermal Flashing and Optional High Performance Flashing

\*See Page 14 for Thermal Flashing and Optional High Performance Flashing

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

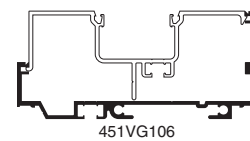
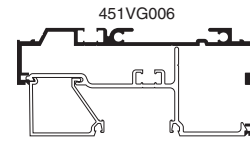
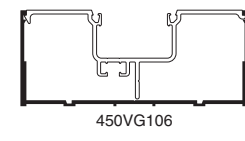
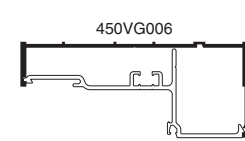
Kawneer reserves the right to change configuration without prior notice when deemed necessary for product improvement.  
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SCALE 3" = 1'-0"



**NOTE:**  
If the end reaction of the mullion (mullion spacing (ft.) times height (ft) times specified windload (psf), divided by two) is more than 500 LBS., the optional mullion anchor must be used. Consult Application Engineering.

**NOTE:**  
Mullion Anchor not used with Lightweight Receptor.



Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

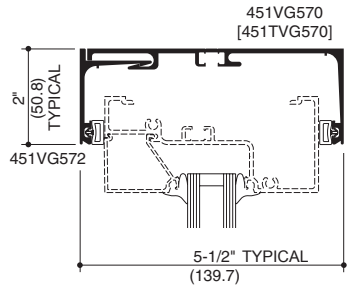
Kawneer reserves the right to change configuration without prior notice when deemed necessary for product improvement.

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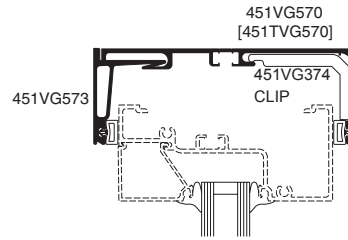
**SCALE 3" = 1'-0"**

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

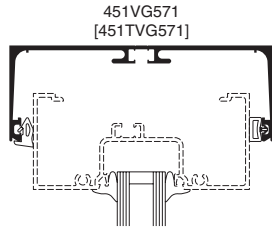
Kawneer reserves the right to change configuration without prior notice when deemed necessary for product improvement.  
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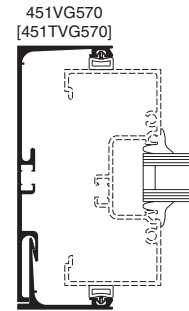
**STANDARD HEAD COMPENSATING RECEPTOR**



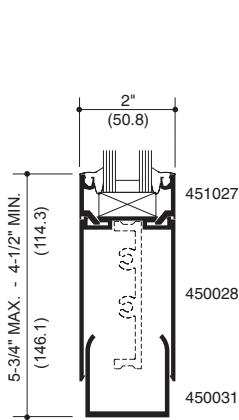
**HEAVY WEIGHT HEAD COMPENSATING RECEPTOR**



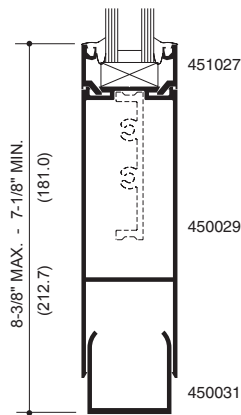
**ONE PIECE HEAD COMPENSATING RECEPTOR**



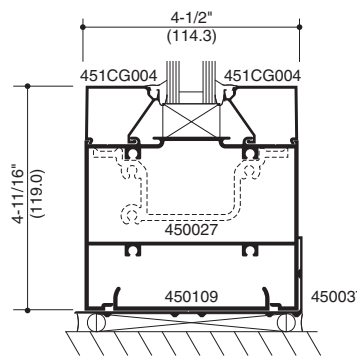
**JAMB COMPENSATING RECEPTOR**



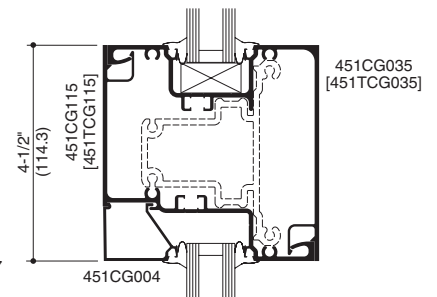
**\*NARROW SIDELITE BASE**



**\*NARROW SIDELITE BASE**



**SIDELITE BASE**



**4-1/2" (114.3) x 4-1/2" (114.3) HORIZONTAL**

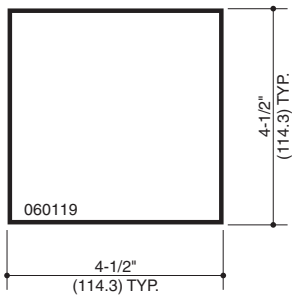
**SIDELITE BASES ARE NON-THERMAL APPLICATIONS**

\*NARROW SIDELITE BASES REQUIRE THE USE OF NON-THERMAL 2-PIECE VERTICALS ONLY.

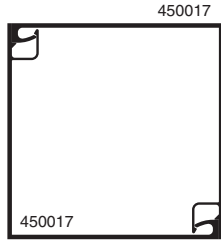
**NOTE:** SIDELITE BASES SHOWN ARE FOR USE WITH SCREW SPLINE AND SHEAR BLOCK SYSTEMS ONLY.



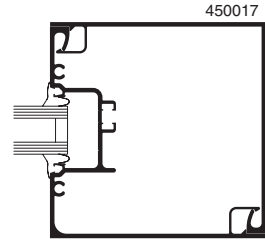
SCALE 3" = 1'-0"



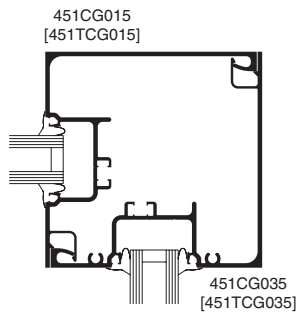
4-1/2" X 4-1/2" TUBE



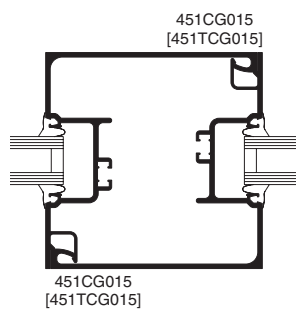
TWO PIECE NO POCKET CORNER



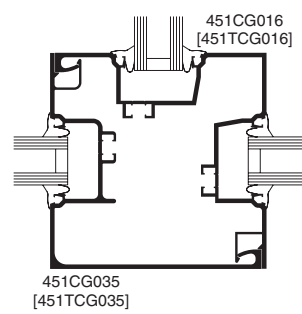
ONE POCKET CORNER



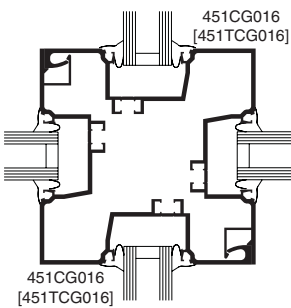
TWO POCKET 90° CORNER



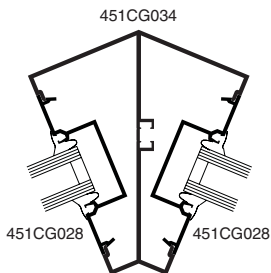
TWO POCKET CORNER POST



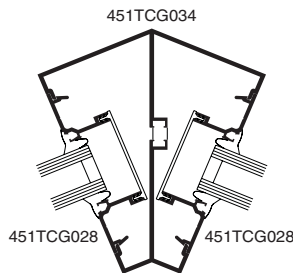
THREE POCKET 90° CORNER



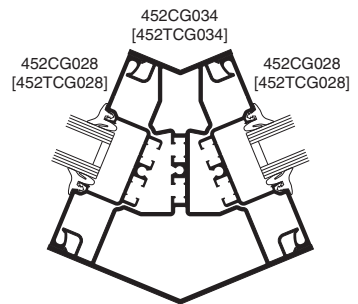
FOUR POCKET 90° CORNER



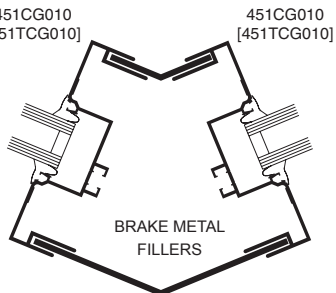
135° CORNER (NON-THERMAL)



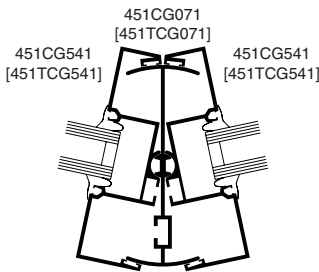
135° CORNER (THERMAL)



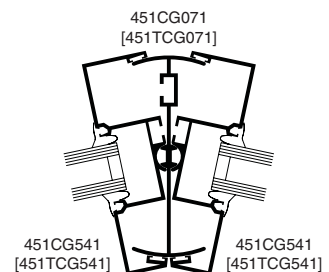
135° CORNER



VARIABLE DEGREE BRAKE METAL CORNER



155° TO 180° PIVOT MULLION (OUTSIDE CORNER)

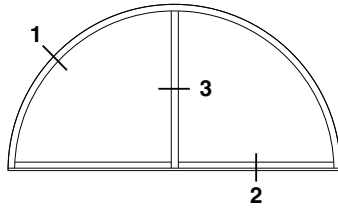


155° TO 180° PIVOT MULLION (INSIDE CORNER)

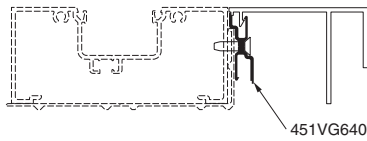
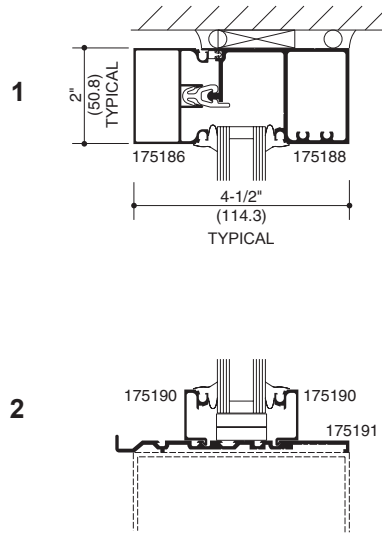
Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

Kawneer reserves the right to change configuration without prior notice when deemed necessary for product improvement.  
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**SCALE 3" = 1'-0"**

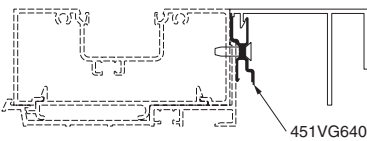


**CURVING DETAILS**  
(Center Plane Only)



STOOL TRIM

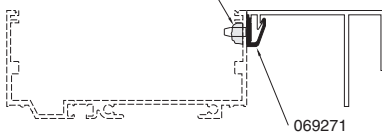
**STOOL TRIM CLIP WITH STANDARD FLASHING**



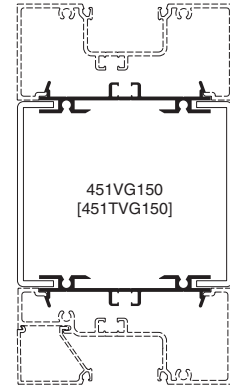
STOOL TRIM

**STOOL TRIM CLIP WITH HIGH PERFORMANCE FLASHING**

Seal over Stool Trim fasteners to prevent water infiltration.



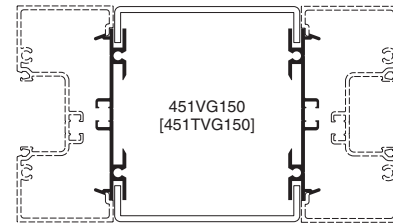
**STOOL TRIM CLIP FOR STICK ASSEMBLY**



BRAKE METAL FILLERS

**BRAKE METAL ADAPTOR AT HORIZONTAL**

BRAKE METAL FILLERS



**BRAKE METAL ADAPTOR AT VERTICAL**

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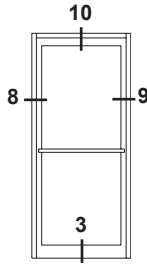
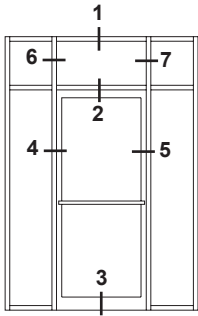
© Kawneer Company, Inc., 2013

SCALE 3" = 1'-0"

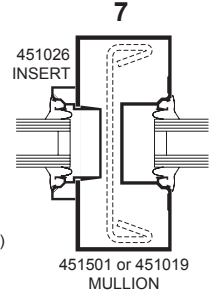
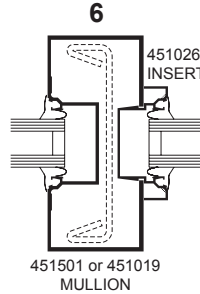
Trifab™ VG 451 FRAMING INCORPORATING KAWNEER™ "190" DOORS.

DOOR FRAMING NON-THERMAL ONLY

NOTE: OTHER TYPES OF KAWNEER DOORS MAY BE USED WITH THIS FRAMING SYSTEM. SEE ENTRANCE DETAILS FOR ADDITIONAL INFORMATION.



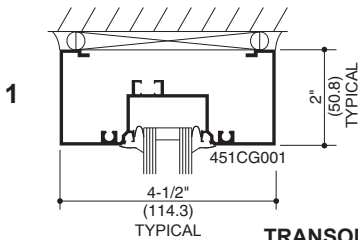
ELEVATIONS ARE NUMBER KEYED TO DETAILS



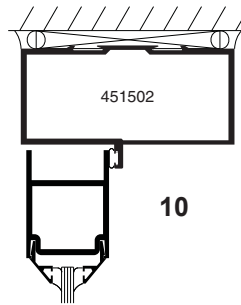
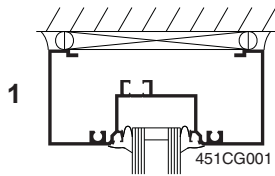
450110 STEEL (AS REQUIRED)

TRANSOM JAMBS

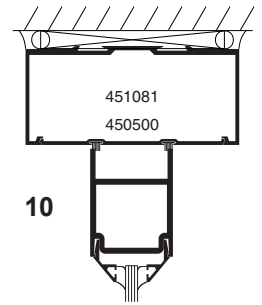
Transom area for both double or single acting doors with glass surround. Jambs above transom bar are routed out to accept glass holding insert with or without steel reinforcing.



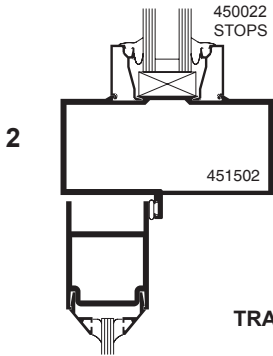
TRANSOM HEAD



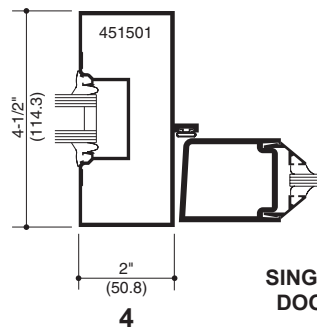
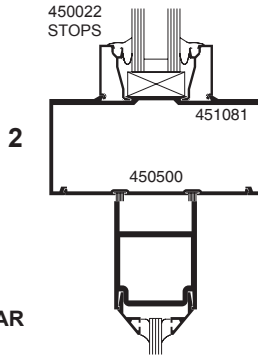
SINGLE ACTING HEADER



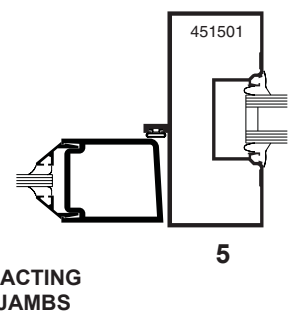
DOUBLE ACTING HEADER



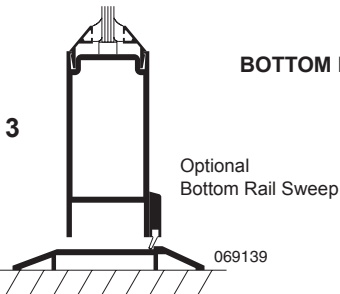
TRANSOM BAR



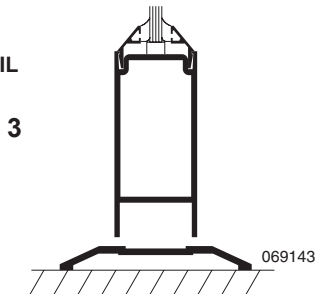
SINGLE ACTING DOOR JAMBS



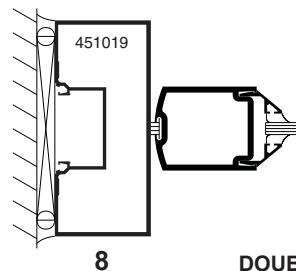
5



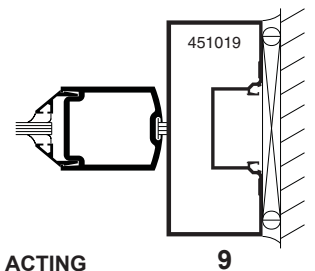
SINGLE ACTING



DOUBLE ACTING



DOUBLE ACTING DOOR JAMBS



9

Local laws and building codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

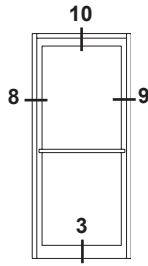
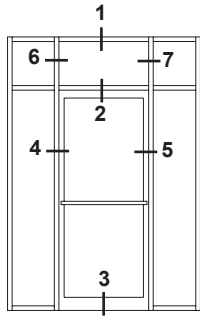
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**SCALE 3" = 1'-0"**

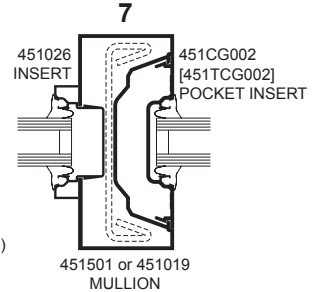
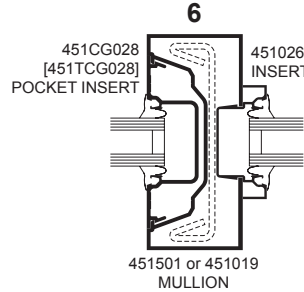
## Trifab™ VG 451 FRAMING INCORPORATING KAWNEER™ "190" DOORS.

### DOOR FRAMING NON-THERMAL ONLY

**NOTE:** OTHER TYPES OF KAWNEER DOORS MAY BE USED WITH THIS FRAMING SYSTEM. SEE ENTRANCE DETAILS FOR ADDITIONAL INFORMATION.

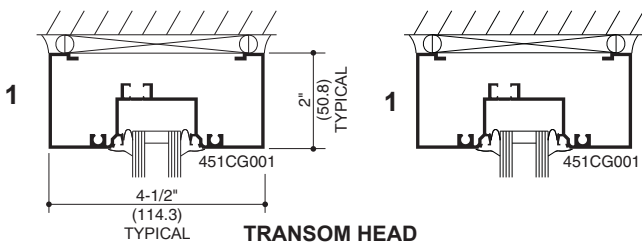


ELEVATIONS ARE NUMBER KEYED TO DETAILS

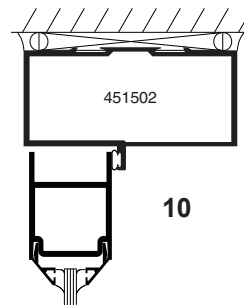


### TRANSOM JAMBS

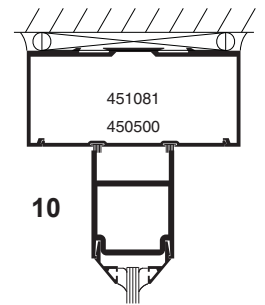
Transom area for both double or single acting doors with glass surround. Jamb above transom bar are routed out to accept glass holding insert with or without steel reinforcing.



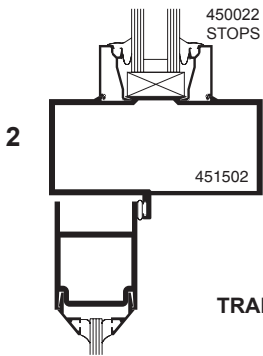
TRANSOM HEAD



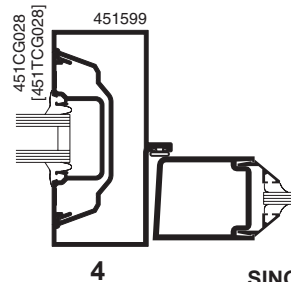
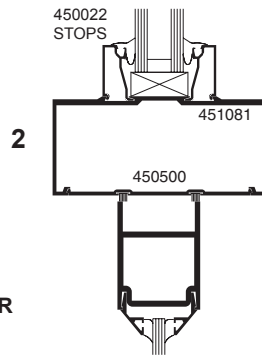
SINGLE ACTING HEADER



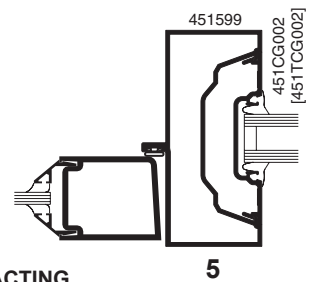
DOUBLE ACTING HEADER



TRANSOM BAR

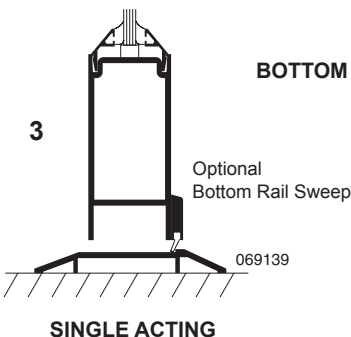


SINGLE ACTING DOOR JAMBS

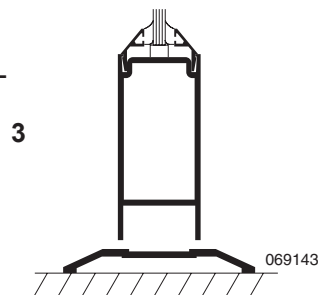


DOUBLE ACTING DOOR JAMBS

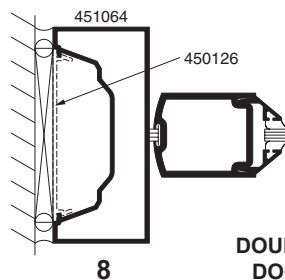
**NOTE:** Sidelite mullions must be oriented to provide at least one (1) deep vertical pocket per lite to facilitate glazing.



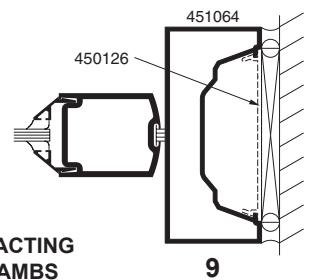
SINGLE ACTING



DOUBLE ACTING



DOUBLE ACTING DOOR JAMBS



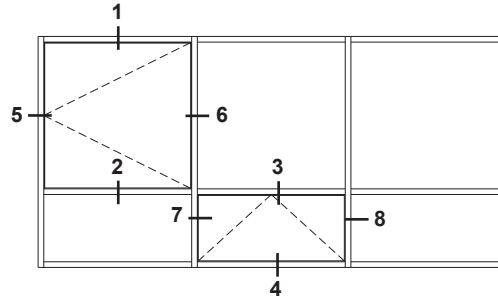
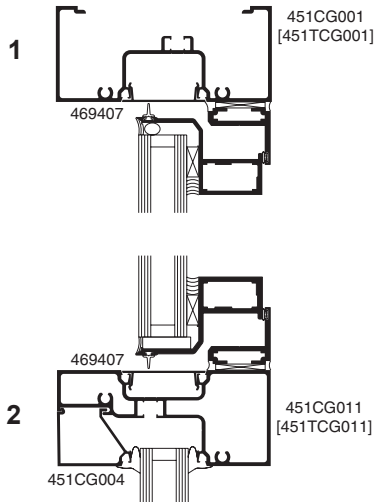
DOUBLE ACTING DOOR JAMBS

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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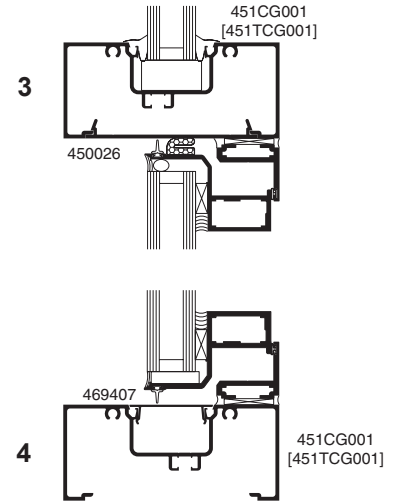
SCALE 3" = 1'-0"

### OUTSWING CASEMENT VERTICAL SECTION

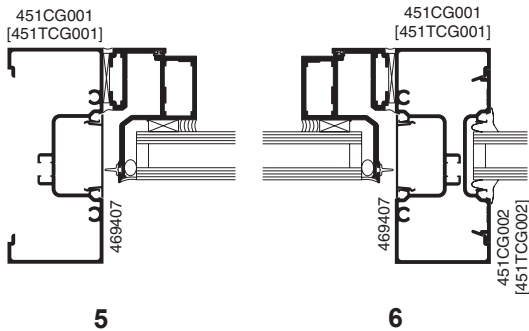


ELEVATION IS NUMBER KEYED TO DETAILS

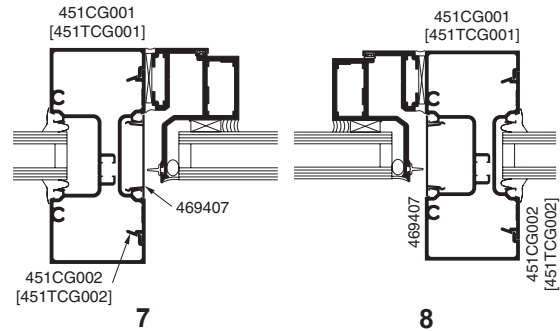
### PROJECT-OUT VERTICAL SECTION



### OUTSWING CASEMENT HORIZONTAL SECTION



### PROJECT-OUT HORIZONTAL SECTION



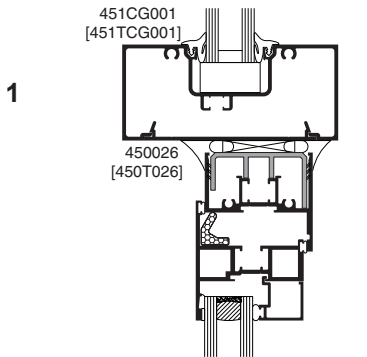
NOTE: Black spacer is recommended when 1" (25.4) insulating glass is used.

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

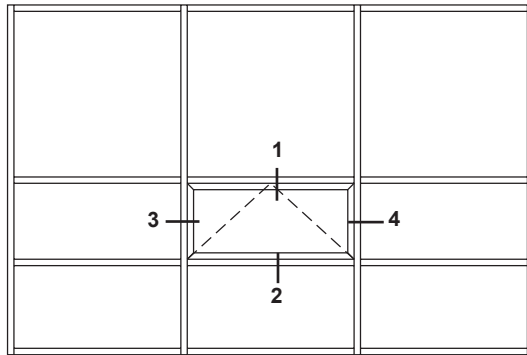
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SCALE 3" = 1'-0"

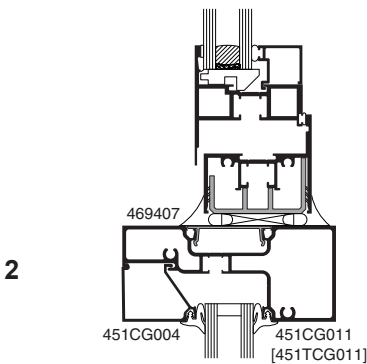
### PROJECT-OUT VERTICAL SECTION



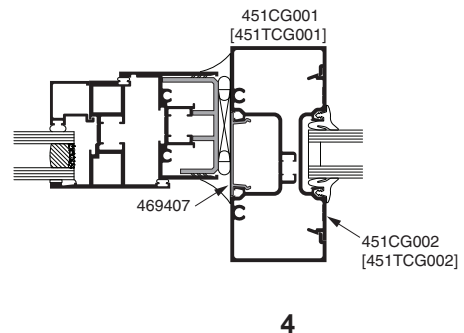
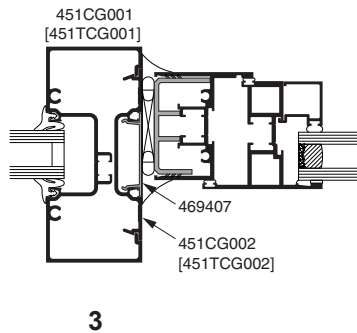
**7225 NON-THERMAL WINDOW SHOWN**  
**NOTE: OTHER VENT TYPES CAN BE**  
**ACCOMMODATED, CONSULT YOUR KAWNEER**  
**REPRESENTATIVE FOR OTHER OPTIONS**



ELEVATION IS NUMBER KEYED TO DETAILS



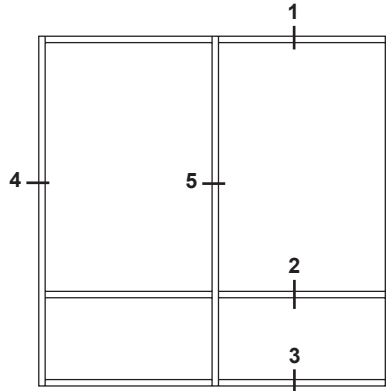
### PROJECT-OUT HORIZONTAL SECTION



Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

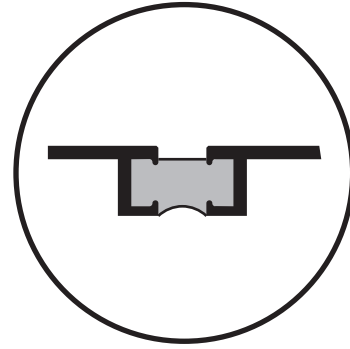
Kawneer reserves the right to change configuration without prior notice when deemed necessary for product improvement.  
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SCALE 3" = 1'-0"



ELEVATION IS NUMBER KEYED TO DETAILS

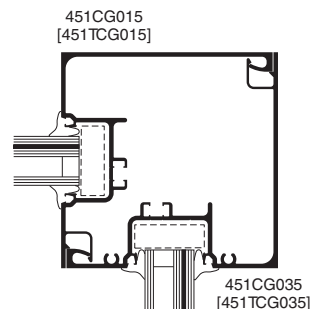
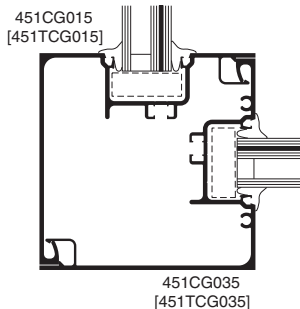
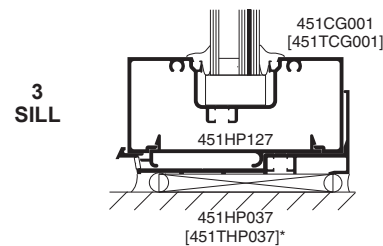
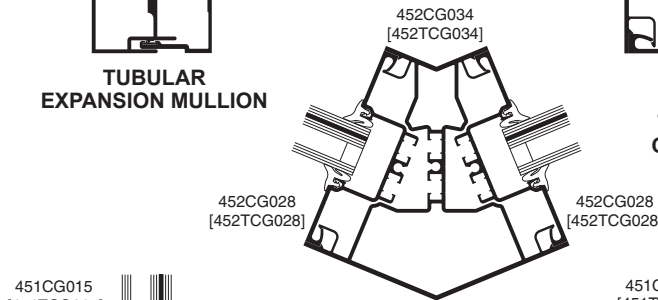
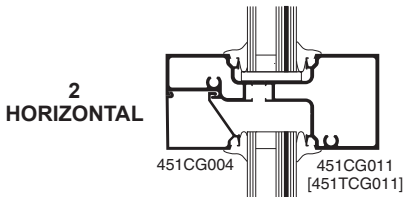
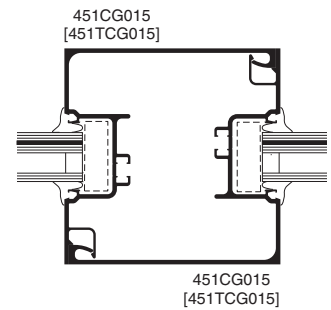
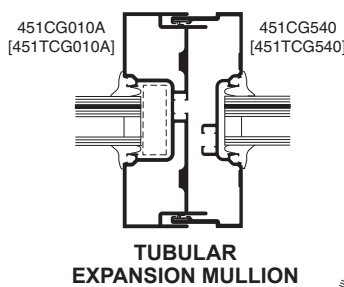
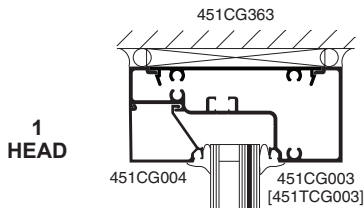
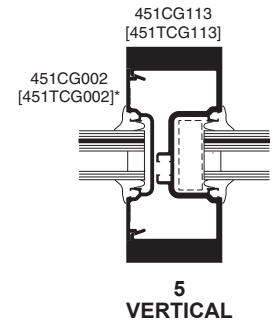
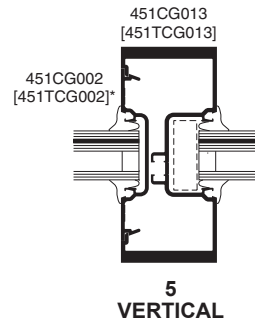
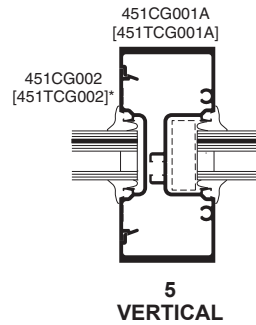
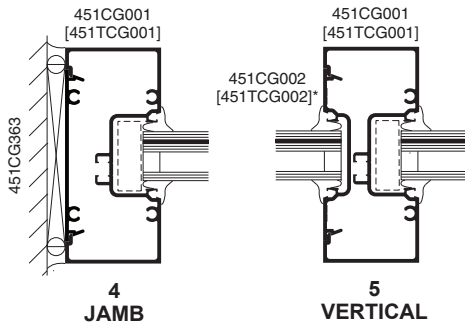
Hurricane Resistant Product



NUMBERS IN BRACKETS ARE THERMALLY BROKEN MEMBERS

SCREW SPLINE

OPTIONAL FRAMING (CENTER)



Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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ENTRANCE FRAMING (CENTER)  
LEVEL D - LARGE MISSILE IMPACT

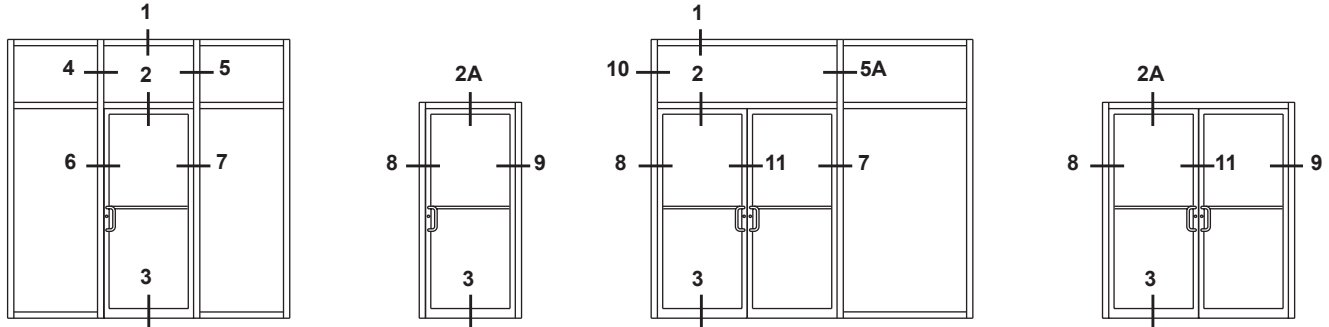
 Hurricane Resistant Product

SCALE 3" = 1'-0"

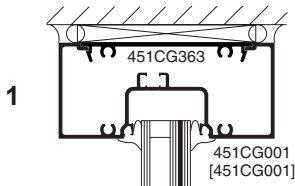
## Trifab™ VG 451 FRAMING INCORPORATING KAWNEER™ “350/500 IR” DOORS (DRY GLAZED).

### DOOR FRAMING NON-THERMAL ONLY

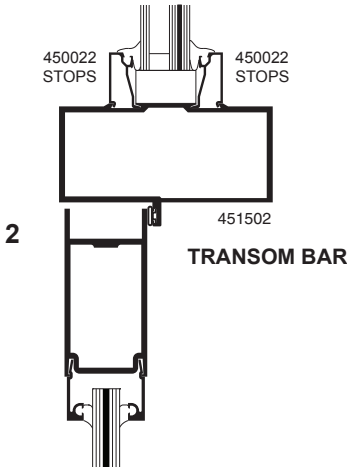
**NOTE:** OTHER TYPES OF KAWNEER DOORS MAY BE USED WITH THIS FRAMING SYSTEM.  
SEE ENTRANCE DETAILS FOR ADDITIONAL INFORMATION.



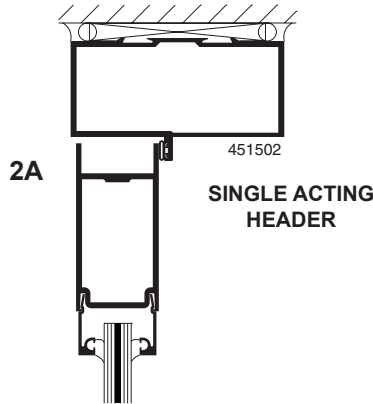
ELEVATIONS ARE NUMBER KEYED TO DETAILS



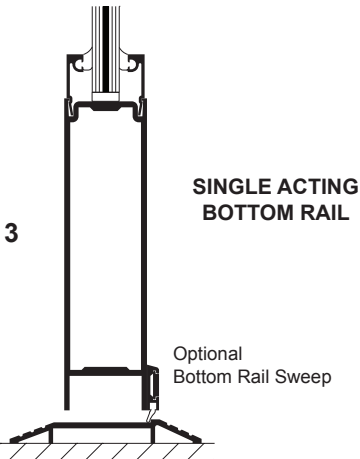
TRANSOM HEAD



TRANSOM BAR

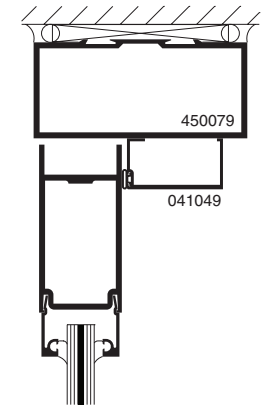
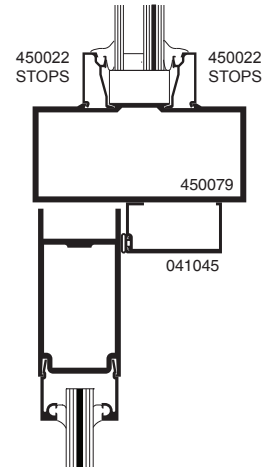


SINGLE ACTING HEADER



SINGLE ACTING BOTTOM RAIL

### CONCEALED OVERHEAD CLOSERS



Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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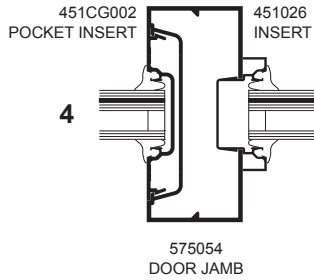
**SCALE 3" = 1'-0"**

 **Hurricane Resistant Product**

## Trifab™ VG 451 FRAMING INCORPORATING KAWNEER™ “350/500 IR” DOORS (DRY GLAZED).

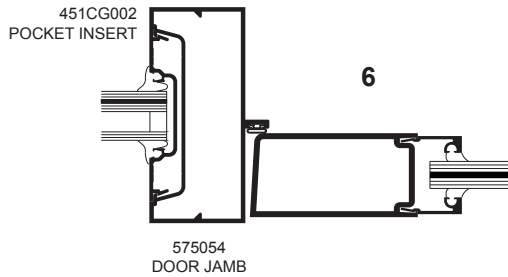
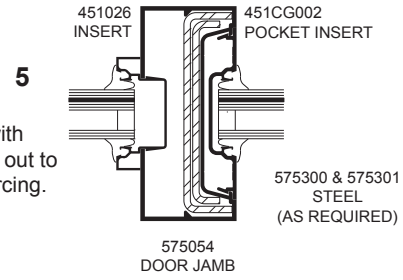
### DOOR FRAMING NON-THERMAL ONLY

**NOTE:** OTHER TYPES OF KAWNEER DOORS MAY BE USED WITH THIS FRAMING SYSTEM.  
SEE ENTRANCE DETAILS FOR ADDITIONAL INFORMATION.

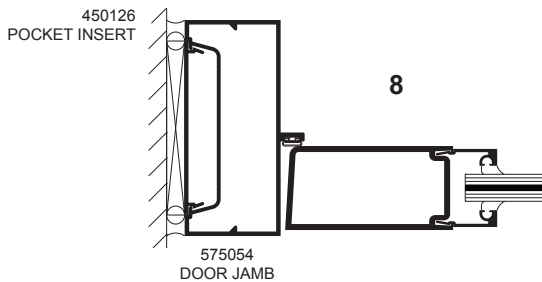
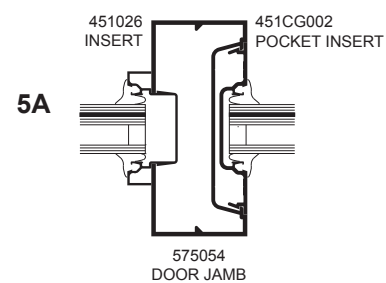
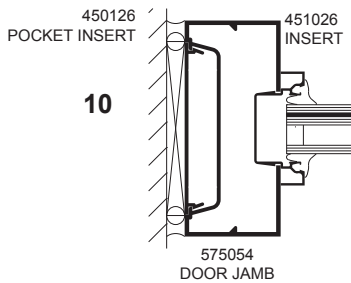
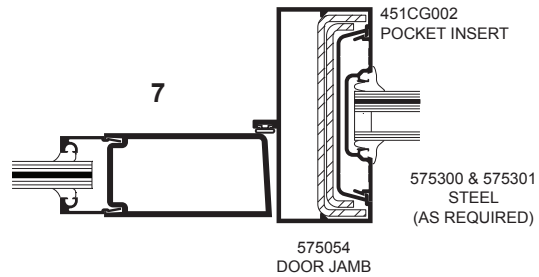


### TRANSOM JAMBS

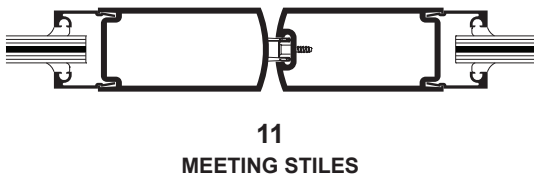
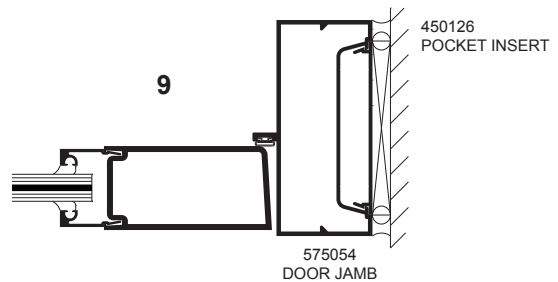
Transom area for both double or single acting doors with glass surround. Jamb above transom bar are routed out to accept glass holding insert with or without steel reinforcing.



### SINGLE ACTING DOOR JAMBS



### SINGLE ACTING DOOR JAMBS



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**BASIC FRAMING DETAILS ..... 26-32**

**MISCELLANEOUS FRAMING..... 33-34**

**CORNERS..... 35-36**

**ENTRANCE FRAMING.....37**

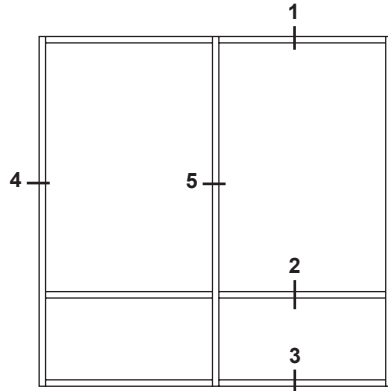
**GLASSvent™ WINDOW for STOREFRONT FRAMING.....38**

**7225 NON-THERMAL WINDOWS.....39**

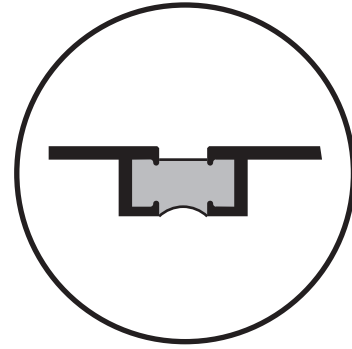
Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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SCALE 3" = 1'-0"



ELEVATION IS NUMBER KEYED TO DETAILS

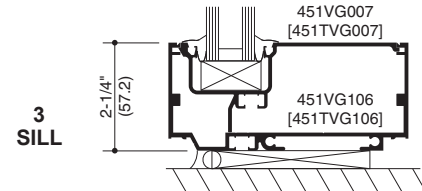
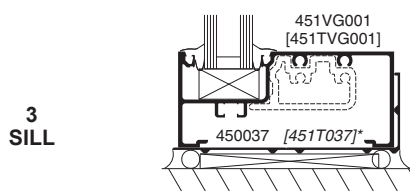
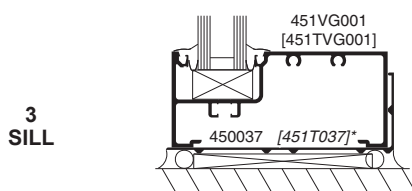
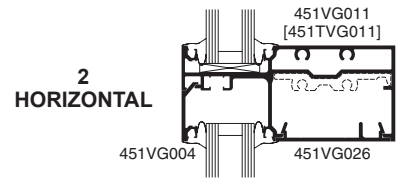
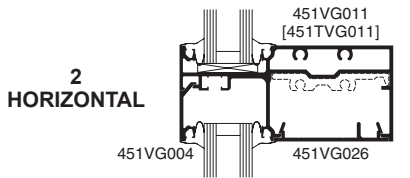
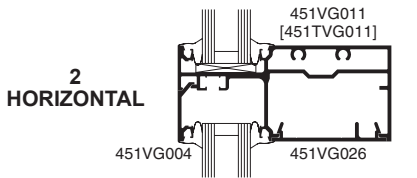
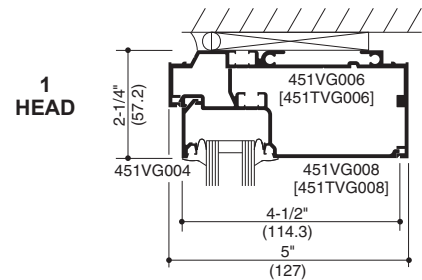
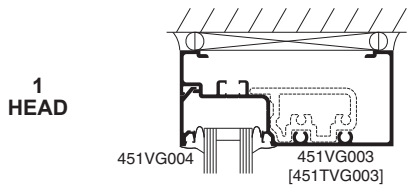
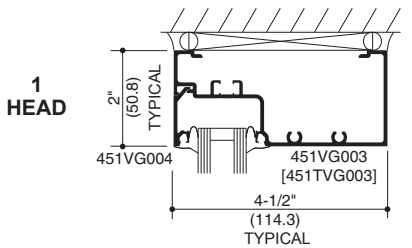
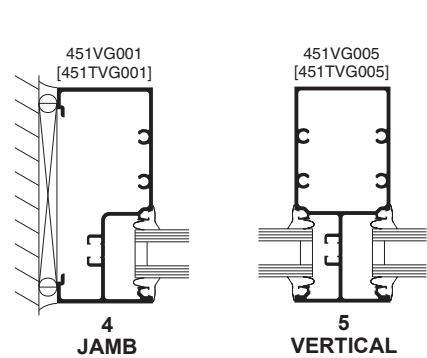
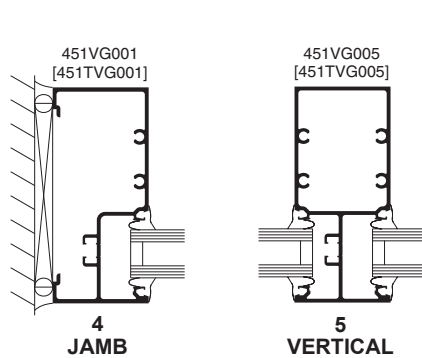
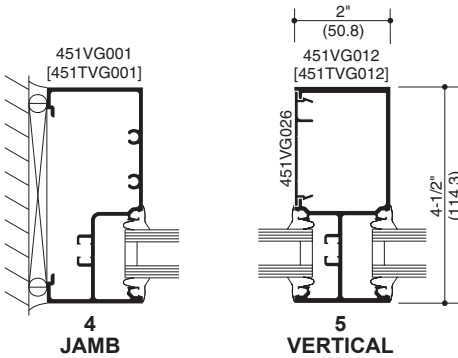


NUMBERS IN BRACKETS ARE THERMALLY BROKEN MEMBERS

SCREW SPLINE

SHEAR BLOCK

STICK



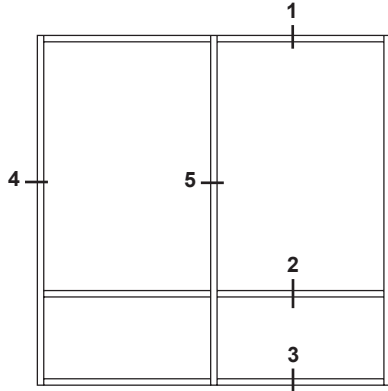
\*See Page 33 for Thermal Flashing and Optional High Performance Flashing

\*See Page 33 for Thermal Flashing and Optional High Performance Flashing

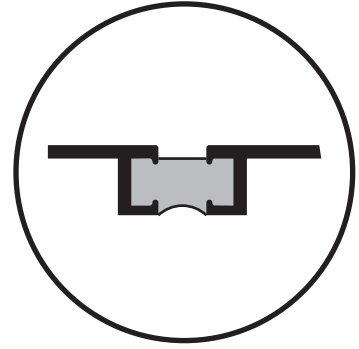
Local building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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SCALE 3" = 1'-0"

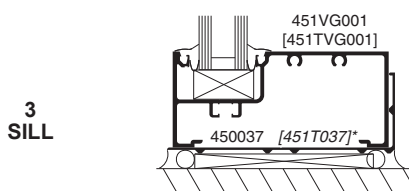
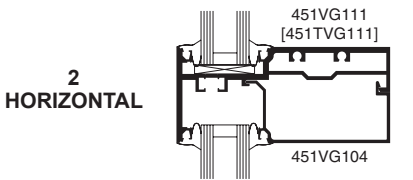
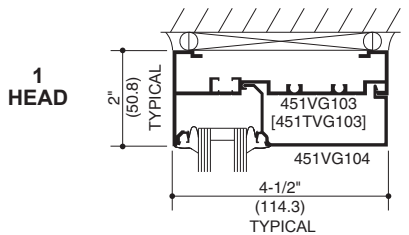
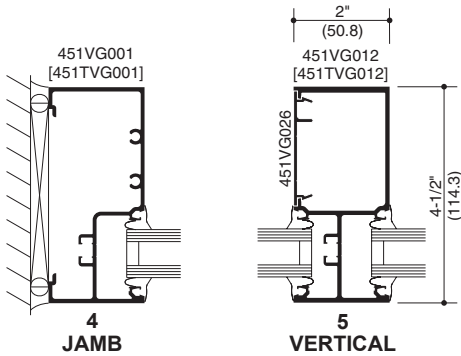


ELEVATION IS NUMBER KEYED TO DETAILS



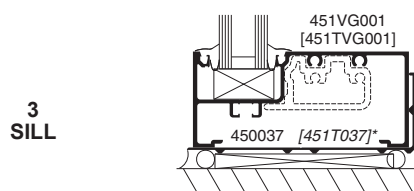
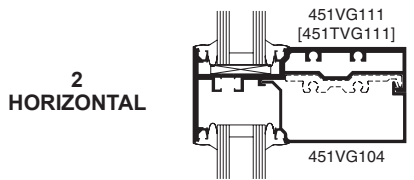
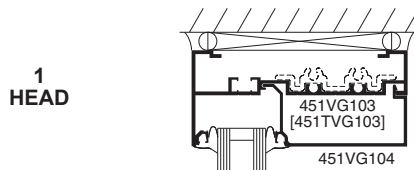
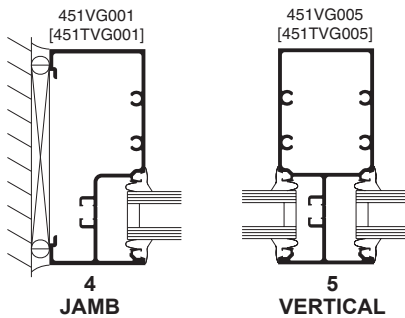
NUMBERS IN BRACKETS ARE THERMALLY BROKEN MEMBERS

## SCREW SPLINE



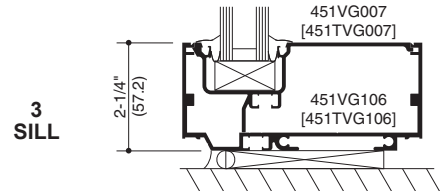
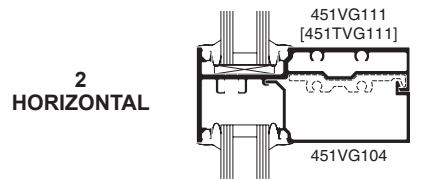
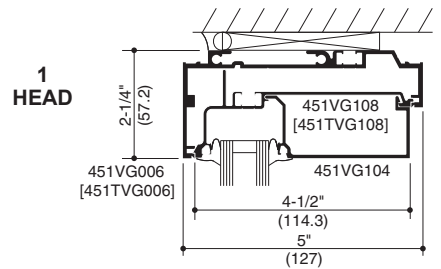
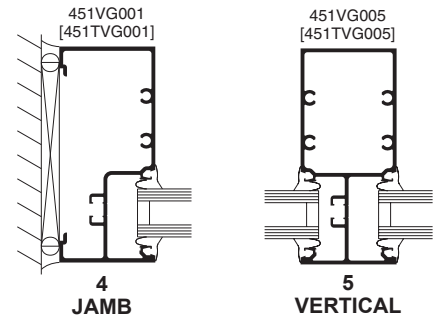
\*See Page 33 for Thermal Flashing and Optional High Performance Flashing

## SHEAR BLOCK



\*See Page 33 for Thermal Flashing and Optional High Performance Flashing

## STICK

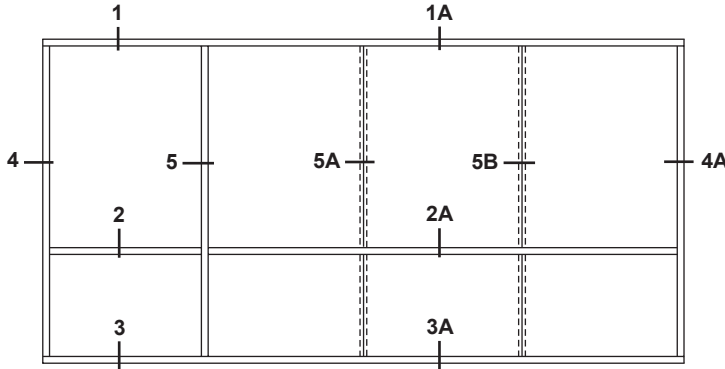


\*See Page 33 for Thermal Flashing and Optional High Performance Flashing

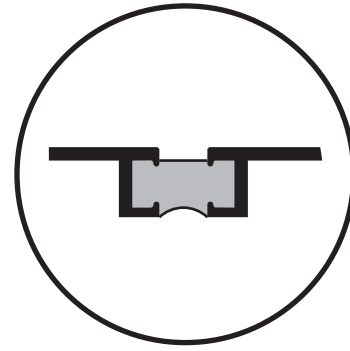
Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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SCALE 3" = 1'-0"



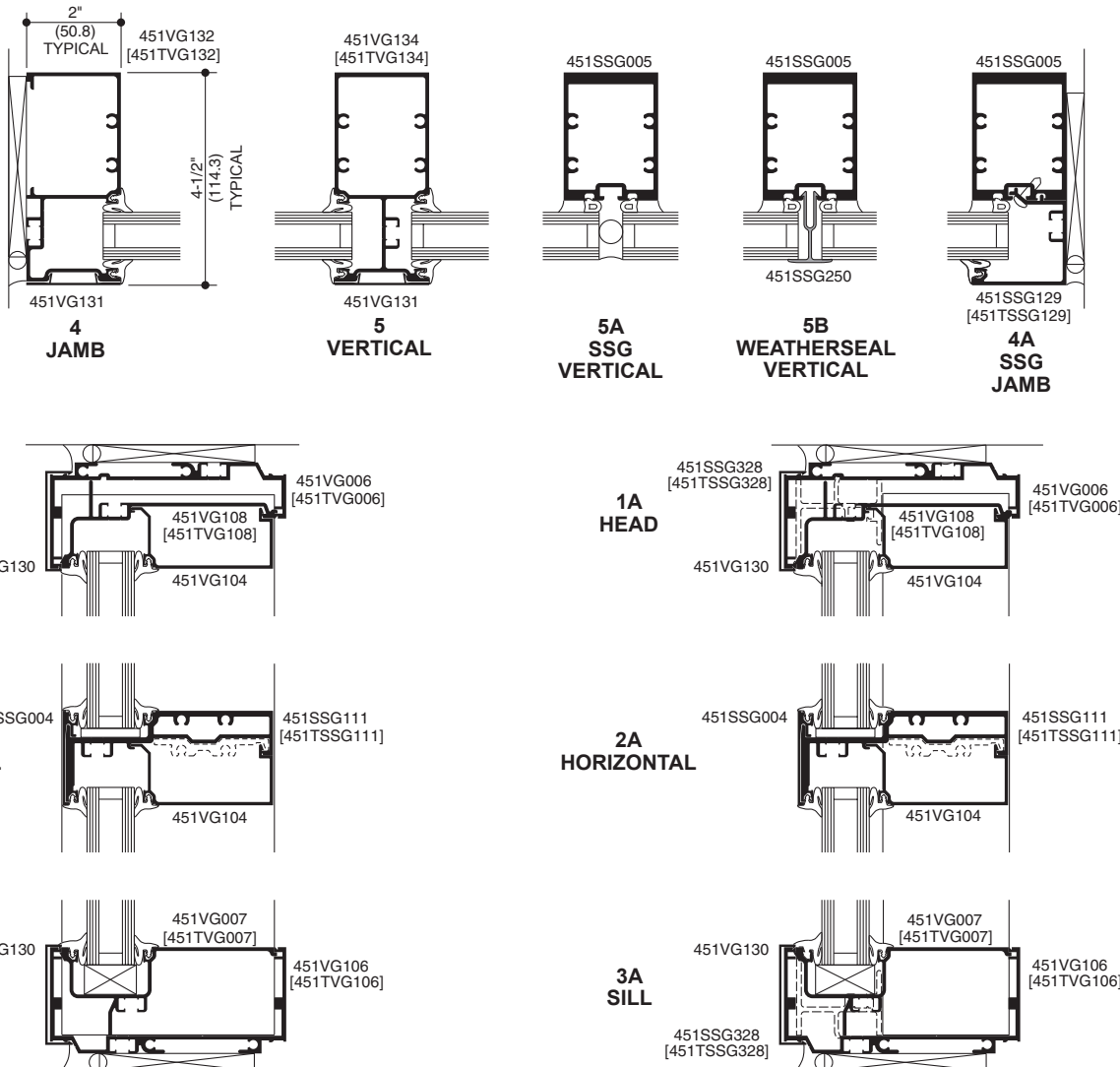
ELEVATION IS NUMBER KEYED TO DETAILS



NUMBERS IN BRACKETS ARE THERMALLY BROKEN MEMBERS

STICK (INSIDE GLAZED)  
TWO COLOR OPTION

STANDARD RECEPTOR with SSG ADAPTOR

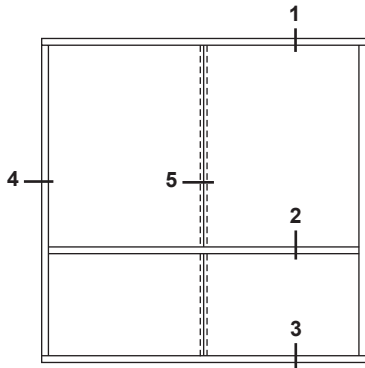


Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

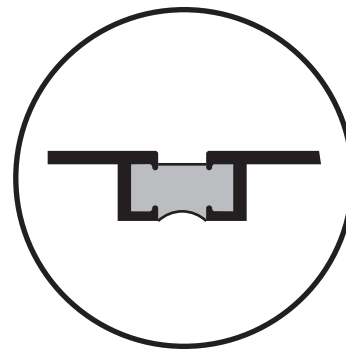
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SCALE 3" = 1'-0"

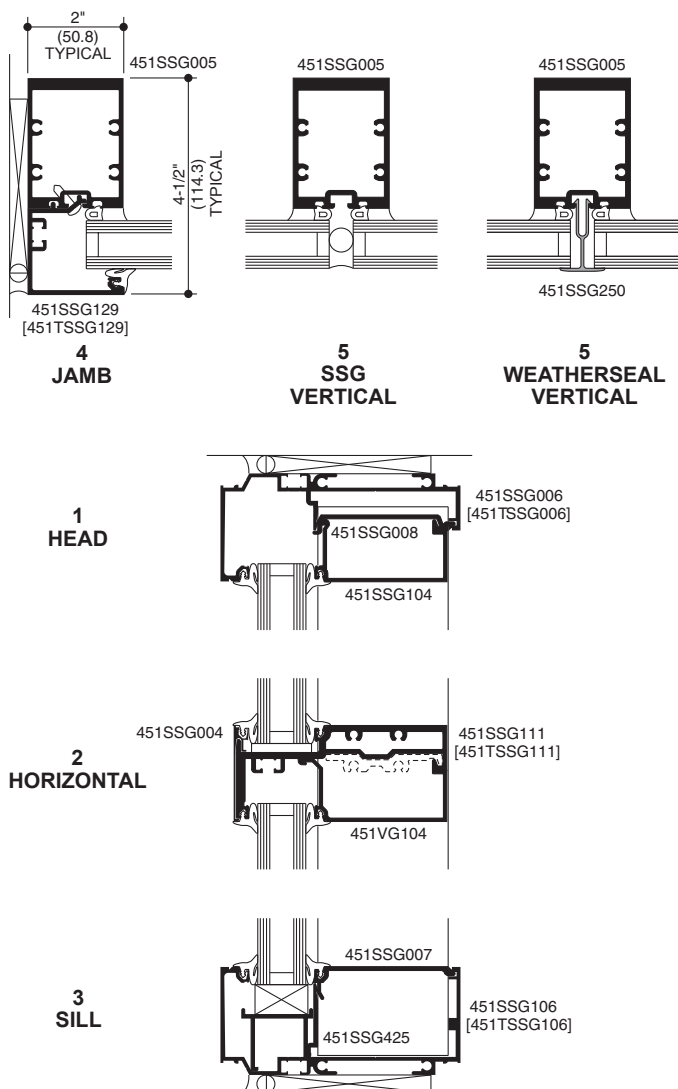


ELEVATION IS NUMBER KEYED TO DETAILS

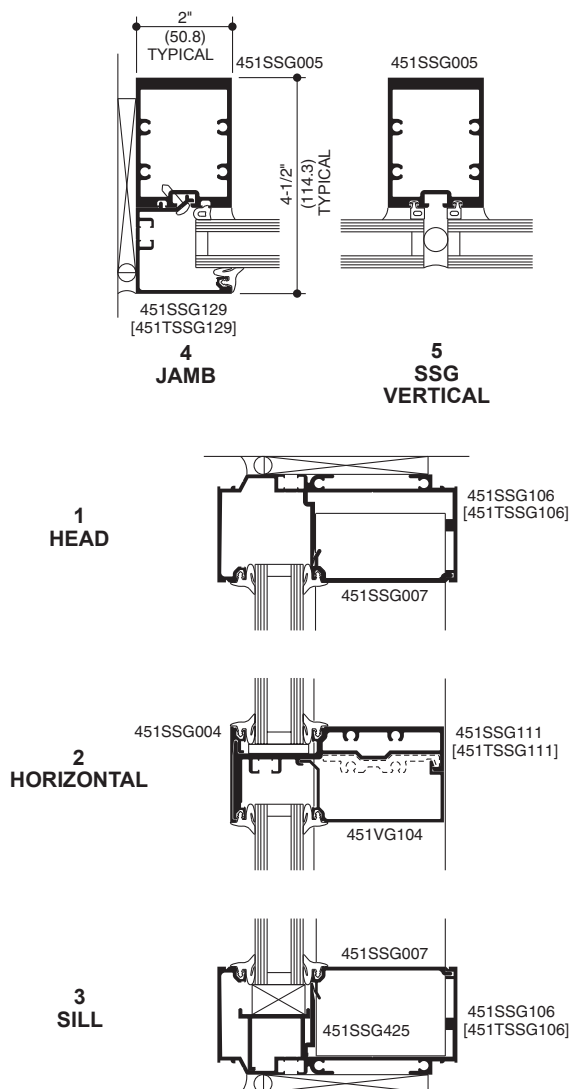


NUMBERS IN BRACKETS ARE THERMALLY BROKEN MEMBERS

## STICK (INSIDE GLAZED) SSG RECEPTOR



## STICK (OUTSIDE GLAZED) SSG RECEPTOR

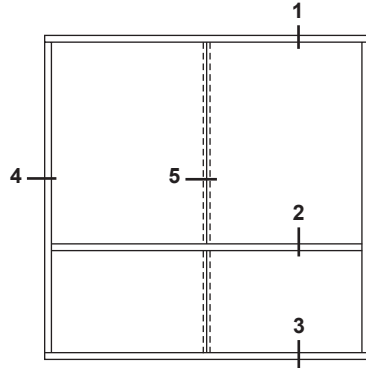


Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

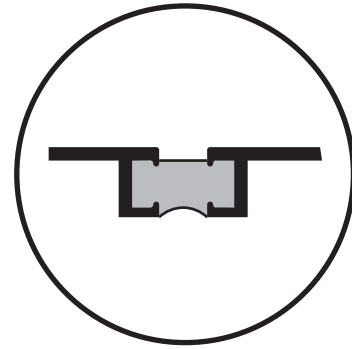
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SCALE 3" = 1'-0"



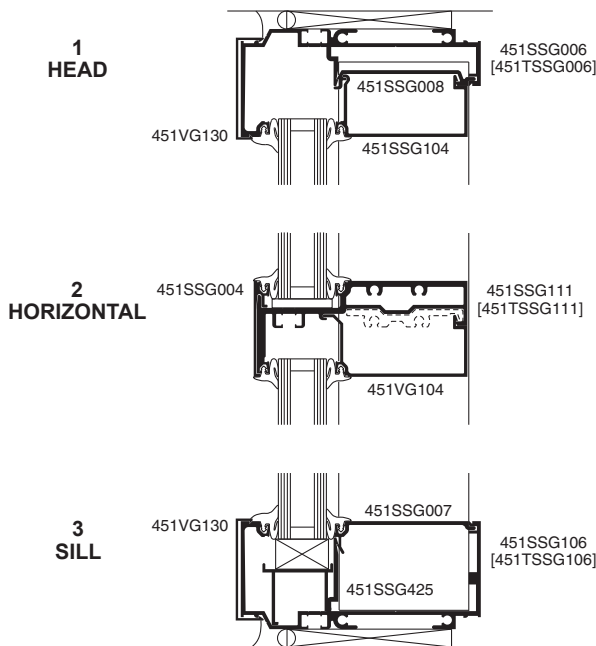
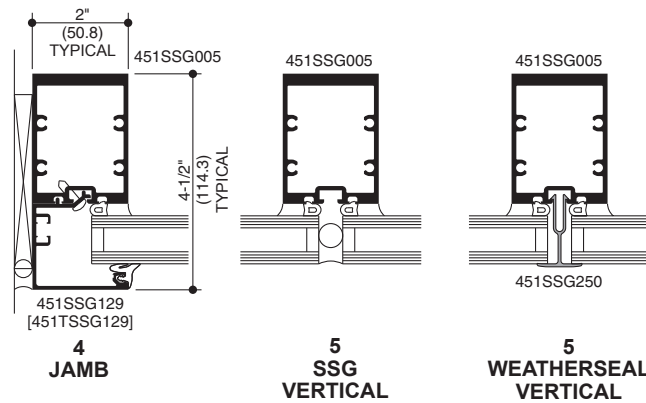
ELEVATION IS NUMBER KEYED TO DETAILS



NUMBERS IN BRACKETS ARE THERMALLY BROKEN MEMBERS

STICK (INSIDE GLAZED)  
TWO COLOR OPTION

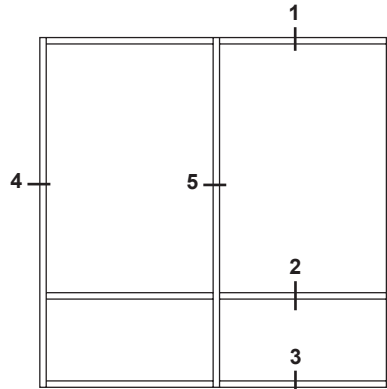
SSG RECEPTOR



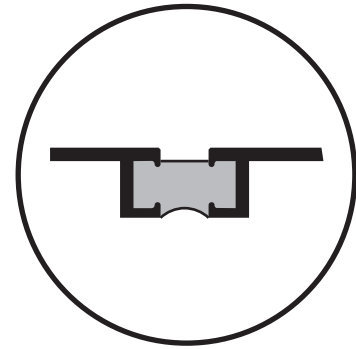
Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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**SCALE 3" = 1'-0"**



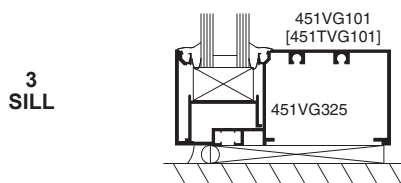
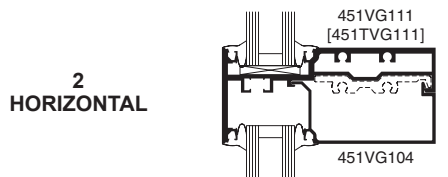
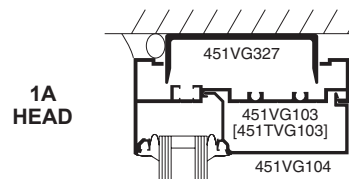
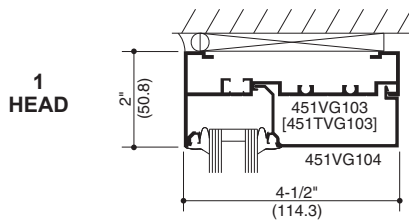
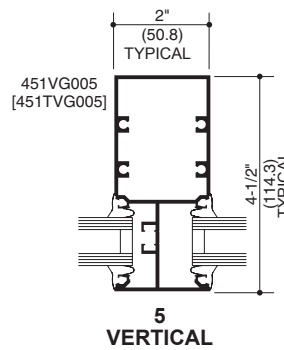
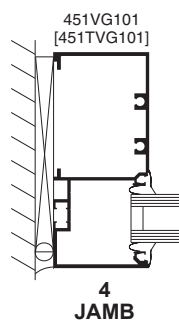
ELEVATION IS NUMBER KEYED TO DETAILS



NUMBERS IN BRACKETS ARE THERMALLY BROKEN MEMBERS

### TYPE-B (INSIDE GLAZED)

### PUNCHED OPENING

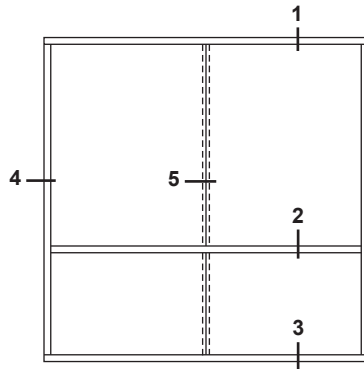


Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

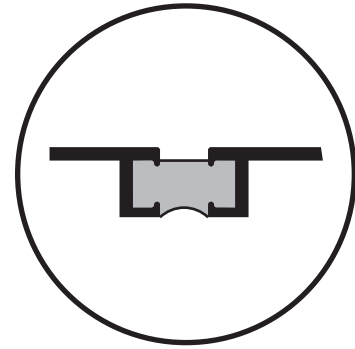
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SCALE 3" = 1'-0"

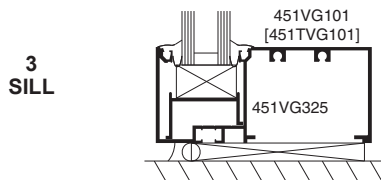
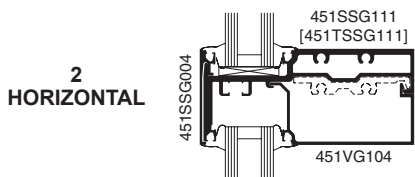
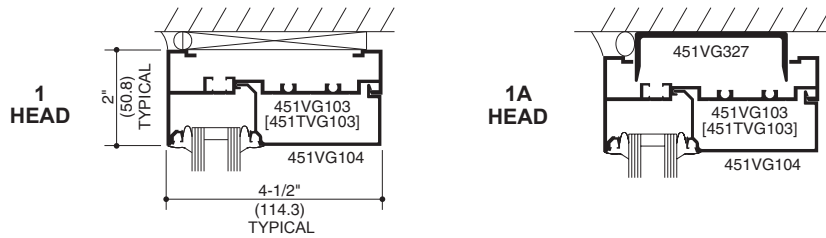
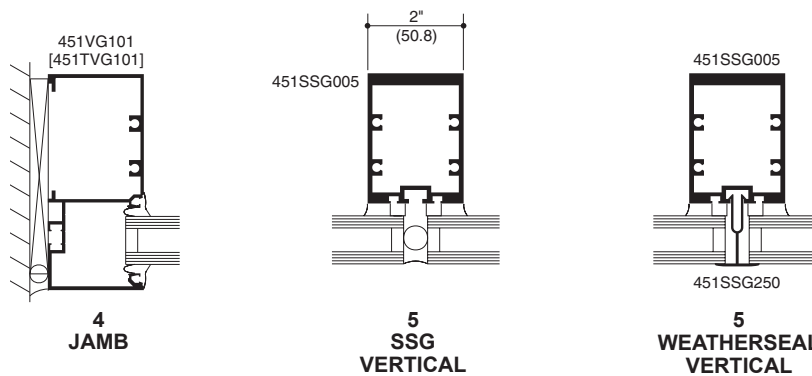


ELEVATION IS NUMBER KEYED TO DETAILS



NUMBERS IN BRACKETS ARE THERMALLY BROKEN MEMBERS

**TYPE-B (INSIDE GLAZED)  
SSG \ WEATHERSEAL  
PUNCHED OPENING**

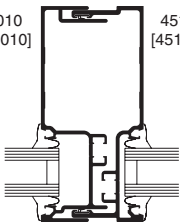


Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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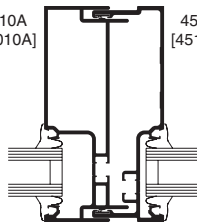
**SCALE 3" = 1'-0"**

451VG010  
[451TVG010]      451VG540  
[451TVG540]



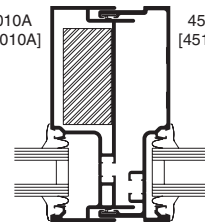
**EXPANSION MULLION**

451VG010A  
[451TVG010A]      451VG540  
[451TVG540]

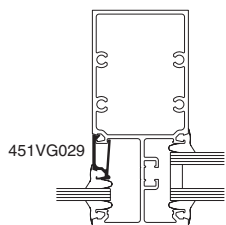


**TUBULAR  
EXPANSION MULLION**

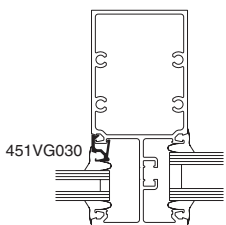
451VG010A  
[451TVG010A]      451VG540  
[451TVG540]



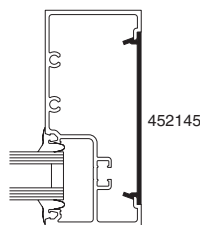
**TUBULAR  
EXPANSION MULLION  
WITH STEEL**



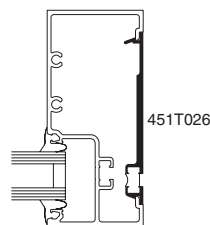
**1/4" (6.4) INFILL  
SNAP-IN ADAPTOR**



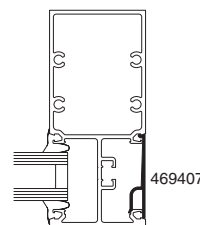
**5/8" (15.9) INFILL  
SNAP-IN ADAPTOR**



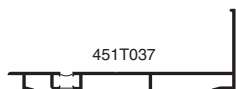
**PVC FLAT FILLER  
(NON STRUCTURAL)**



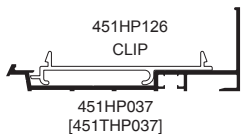
**THERMAL  
FLAT FILLER**



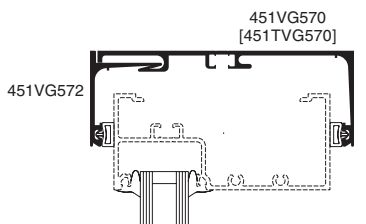
**SNAP-IN  
FLAT FILLER**



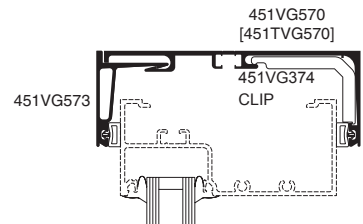
**THERMAL FLASHING**



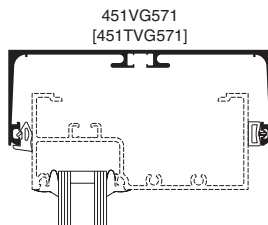
**HIGH PERFORMANCE  
FLASHING**



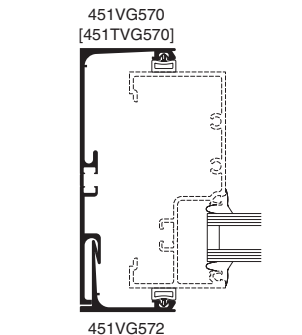
**STANDARD - HEAD  
COMPENSATING RECEPTOR**



**HEAVY WEIGHT - HEAD  
COMPENSATING RECEPTOR**



**ONE PIECE - HEAD  
COMPENSATING RECEPTOR**

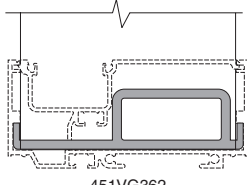


**JAMB  
COMPENSATING RECEPTOR**

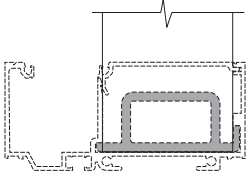
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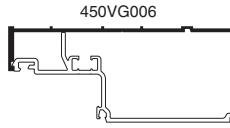
SCALE 3" = 1'-0"



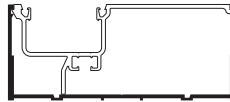
451VG362  
MULLION ANCHOR



451SSG362  
SSG MULLION ANCHOR

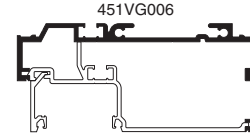


450VG006

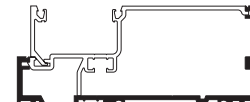


451VG106

OPTIONAL LIGHTWEIGHT  
CAN RECEPTORS



451VG006



451VG106

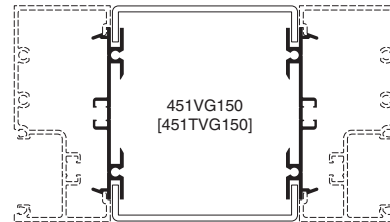
OPTIONAL UNEQUAL LEG  
CAN RECEPTORS

**NOTE:**

If the end reaction of the mullion (mullion spacing (ft.) times height (ft) times specified windload (psf), divided by two) is more than 500 LBS., the optional Mullion Anchor must be used. Consult Application Engineering.

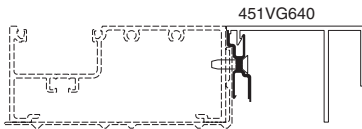
**NOTE:**

Mullion Anchor not used with Lightweight Receptor.



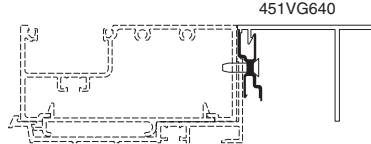
451VG150  
[451TVG150]

BRAKE METAL  
ADAPTOR



451VG640

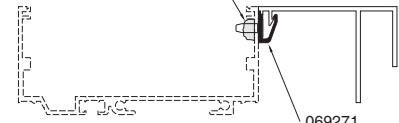
STOOL TRIM CLIP  
with STANDARD FLASHING



451VG640

STOOL TRIM CLIP  
with HP FLASHING

Seal over Stool Trim fasteners to prevent water infiltration.



069271

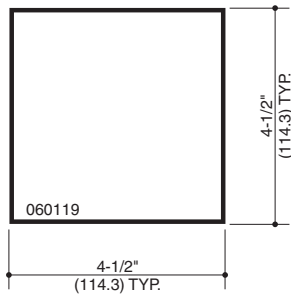
STOOL TRIM CLIP  
FOR STICK ASSEMBLY

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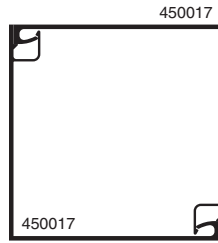
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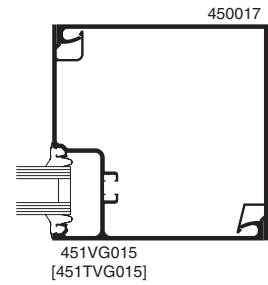
**SCALE 3" = 1'-0"**



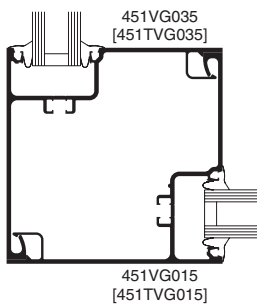
**4-1/2" X 4-1/2" TUBE**



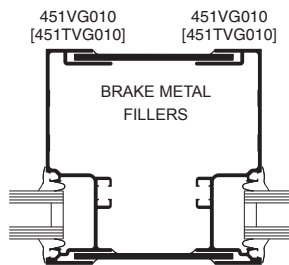
**TWO PIECE NO POCKET CORNER**



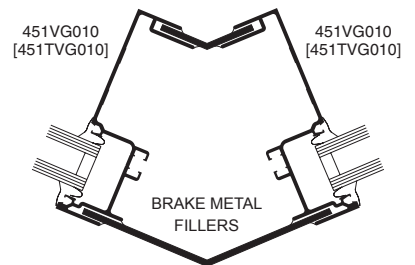
**ONE POCKET CORNER**



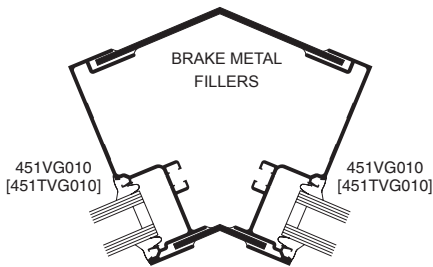
**TWO POCKET 90° CORNER**



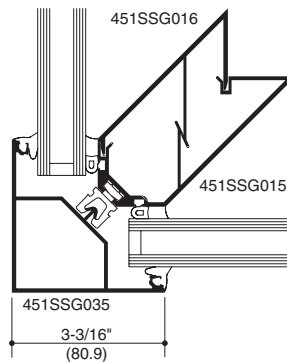
**TWO POCKET CORNER POST**



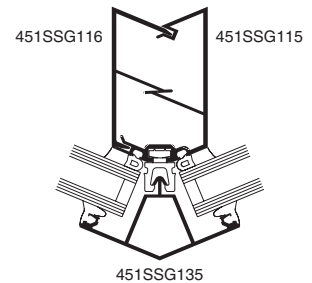
**VARIABLE DEGREE BRAKE METAL OUTSIDE CORNER**



**VARIABLE DEGREE BRAKE METAL INSIDE CORNER**



**90° CORNER**

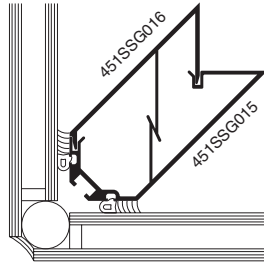


**135° CORNER**

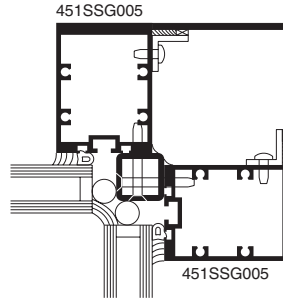
Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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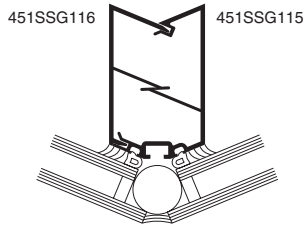
**SCALE 3" = 1'-0"**



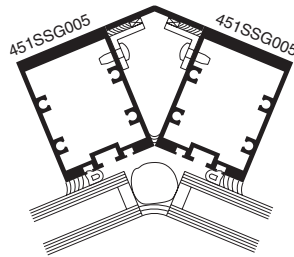
**90° OUTSIDE CORNER**



**90° INSIDE CORNER**



**135° OUTSIDE CORNER**



**135° INSIDE CORNER**

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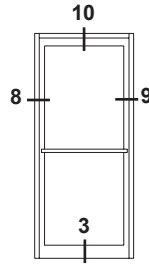
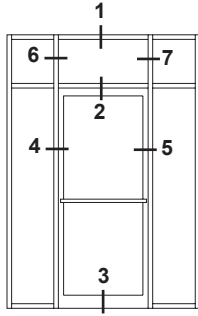
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**SCALE 3" = 1'-0"**

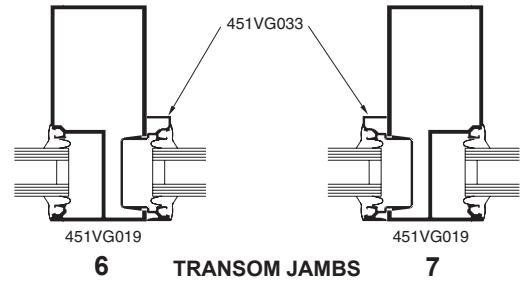
## Trifab™ VG 451 FRAMING INCORPORATING KAWNEER™ "190" DOORS.

### DOOR FRAMING NON-THERMAL ONLY

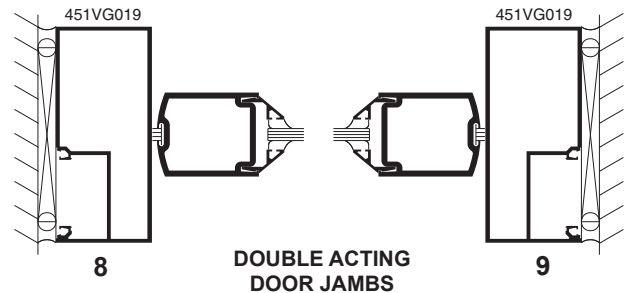
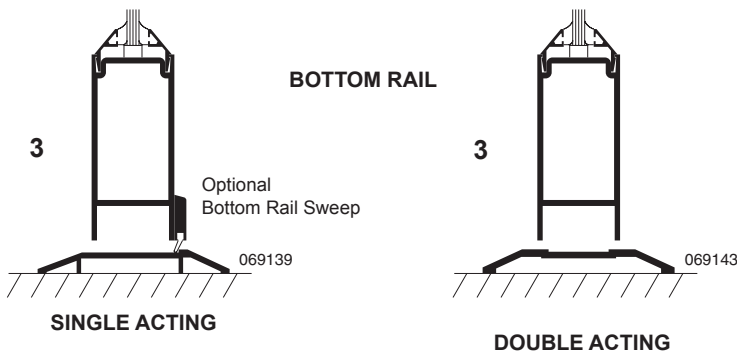
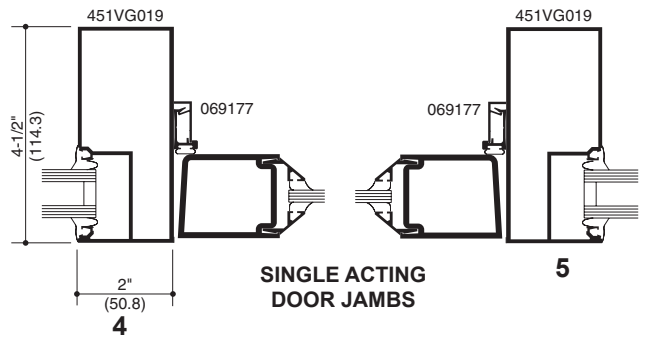
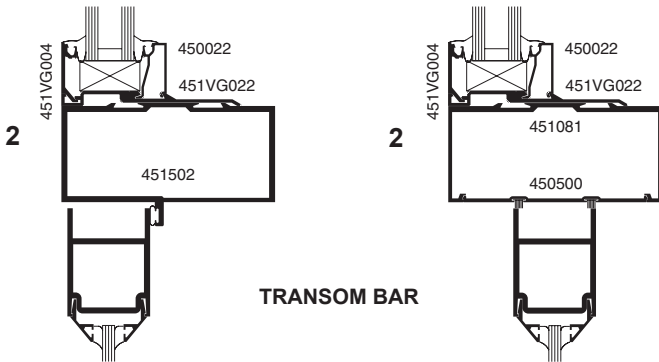
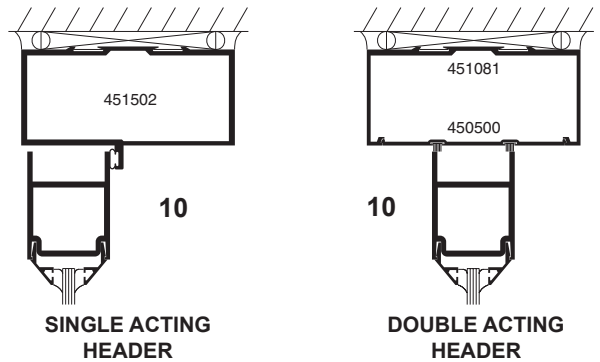
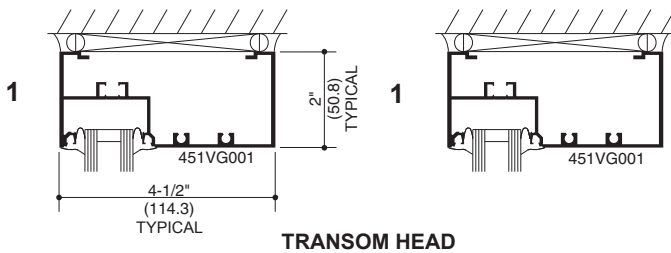
**NOTE:** OTHER TYPES OF KAWNEER DOORS MAY BE USED WITH THIS FRAMING SYSTEM. SEE ENTRANCE DETAILS FOR ADDITIONAL INFORMATION.



ELEVATIONS ARE NUMBER KEYED TO DETAILS



Transom area for both double or single acting doors with glass surround. Jambs above transom bar are routed out to accept glass holding insert.

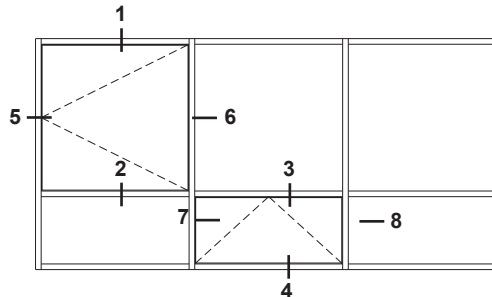
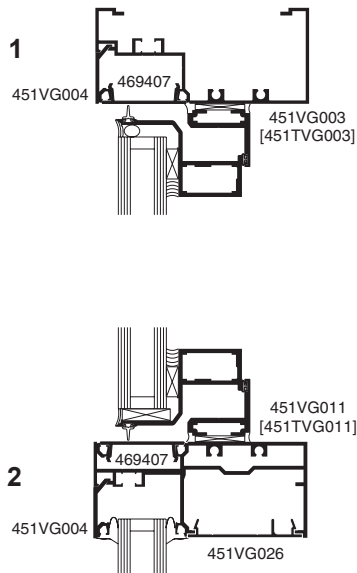


Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

Kawneer reserves the right to change configuration without prior notice when deemed necessary for product improvement.  
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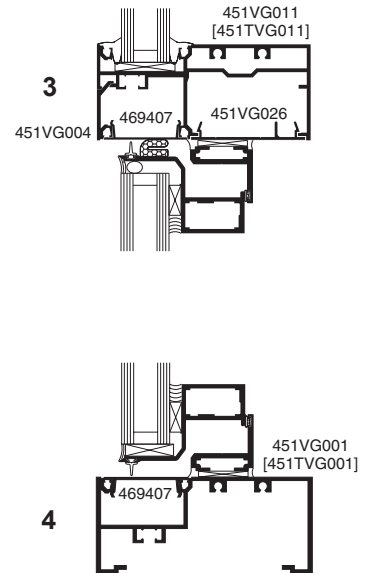
SCALE 3" = 1'-0"

### OUTSWING CASEMENT VERTICAL SECTION

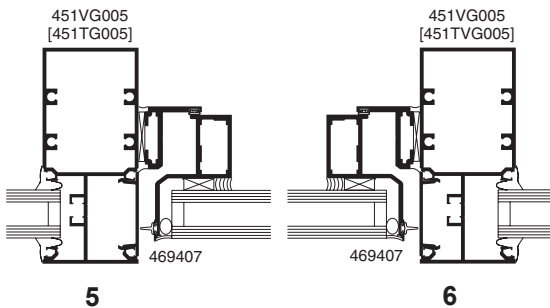


ELEVATION IS NUMBER KEYED TO DETAILS

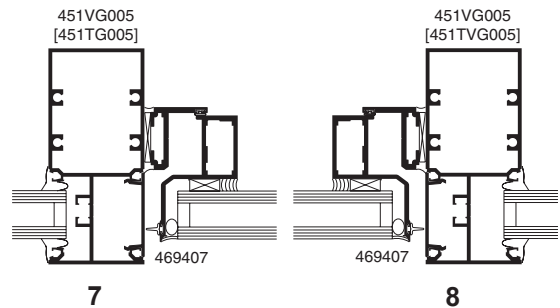
### PROJECT-OUT VERTICAL SECTION



### OUTSWING CASEMENT HORIZONTAL SECTION



### PROJECT-OUT HORIZONTAL SECTION



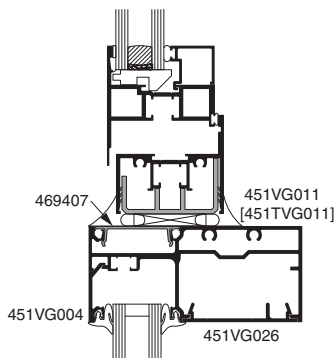
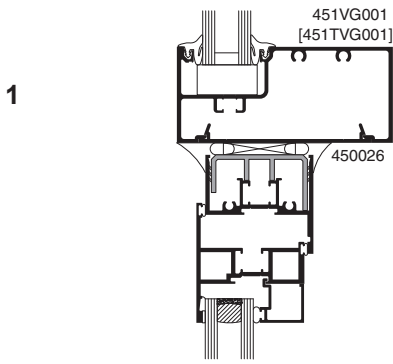
NOTE: Black spacer is recommended when 1" insulating glass is used.

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

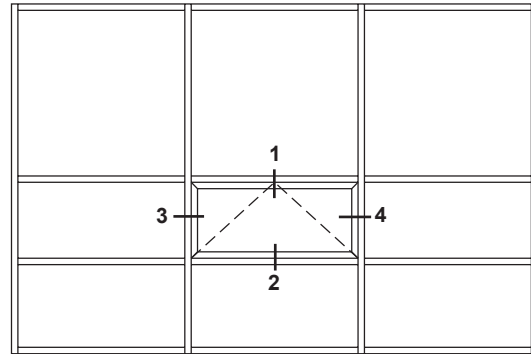
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**SCALE 3" = 1'-0"**

### PROJECT-OUT VERTICAL SECTION

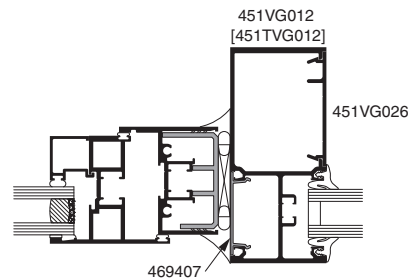
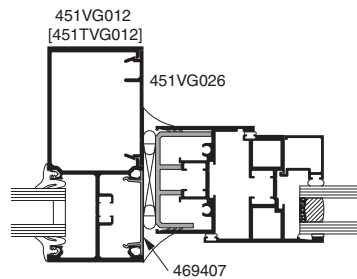


**7225 NON-THERMAL WINDOW SHOWN**  
**NOTE: OTHER VENT TYPES CAN BE ACCOMMODATED, CONSULT YOUR KAWNEER REPRESENTATIVE FOR OTHER OPTIONS**



ELEVATION IS NUMBER KEYED TO DETAILS

### PROJECT-OUT HORIZONTAL SECTION



Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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**BASIC FRAMING DETAILS ..... 42-43**

**MISCELLANEOUS FRAMING..... 44-45**

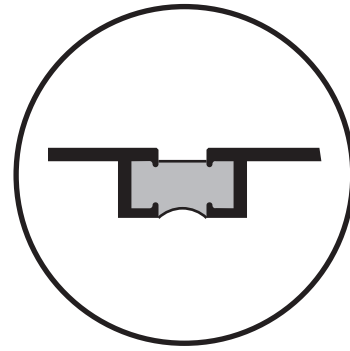
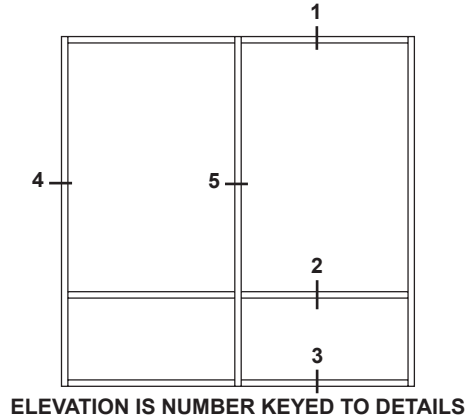
**CORNERS.....46**

**ENTRANCE FRAMING.....47**

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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SCALE 3" = 1'-0"

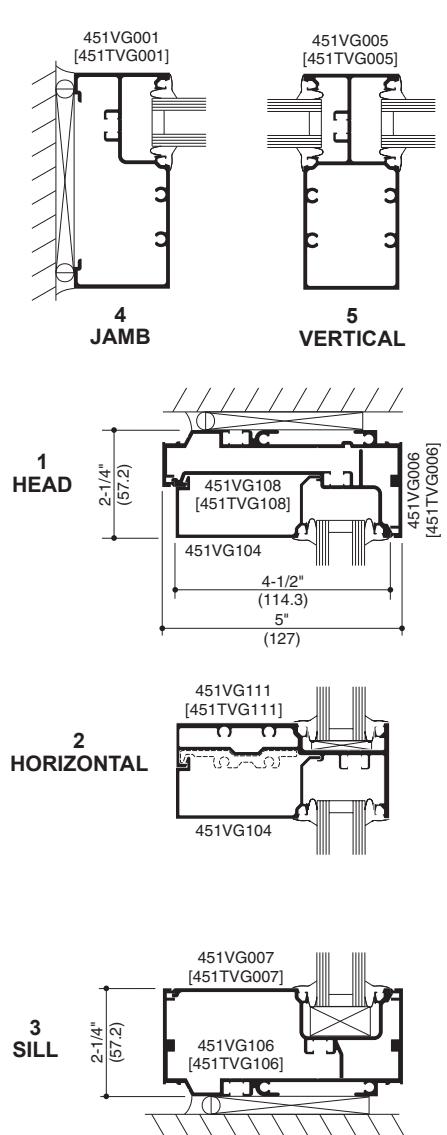
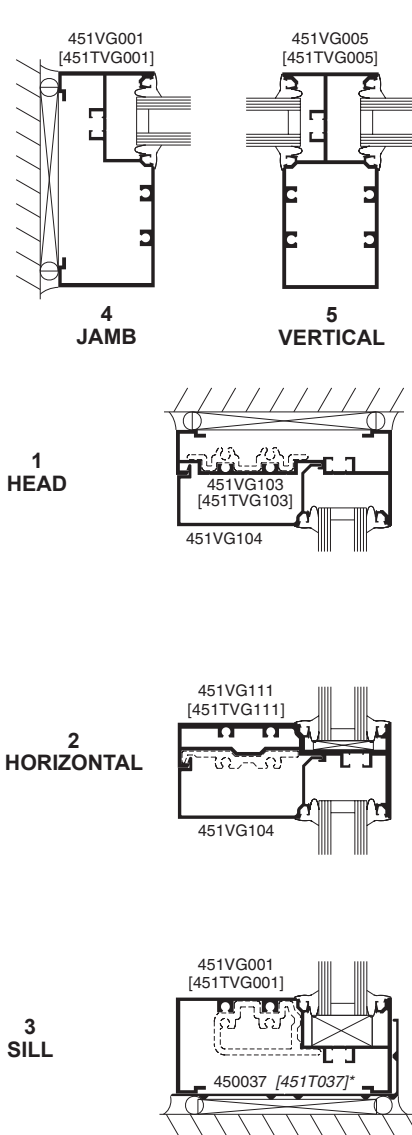
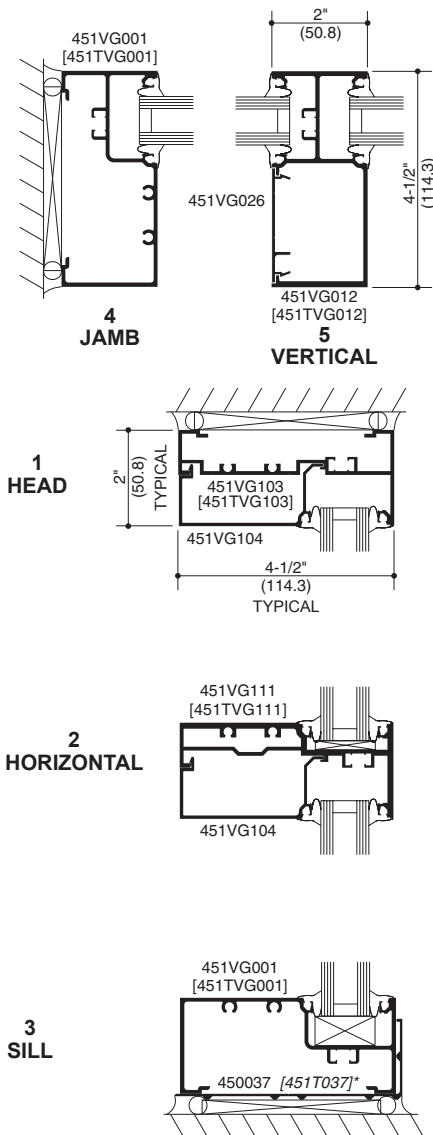


NUMBERS IN BRACKETS ARE THERMALLY BROKEN MEMBERS

SCREW SPLINE

SHEAR BLOCK

STICK



\*See Page 44 for Thermal Flashing and Optional High Performance Flashing

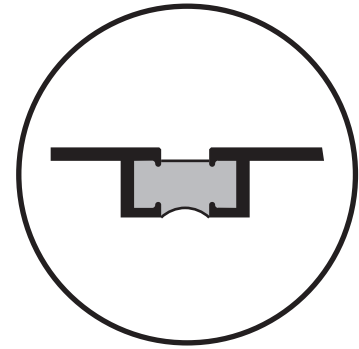
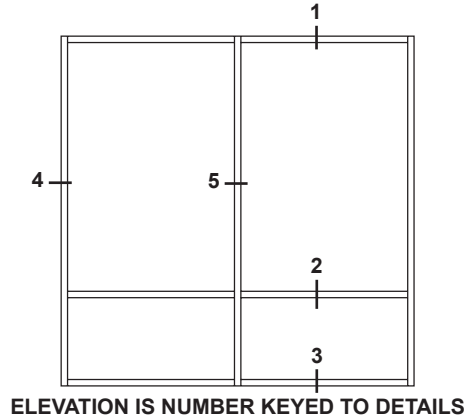
\*See Page 44 for Thermal Flashing and Optional High Performance Flashing

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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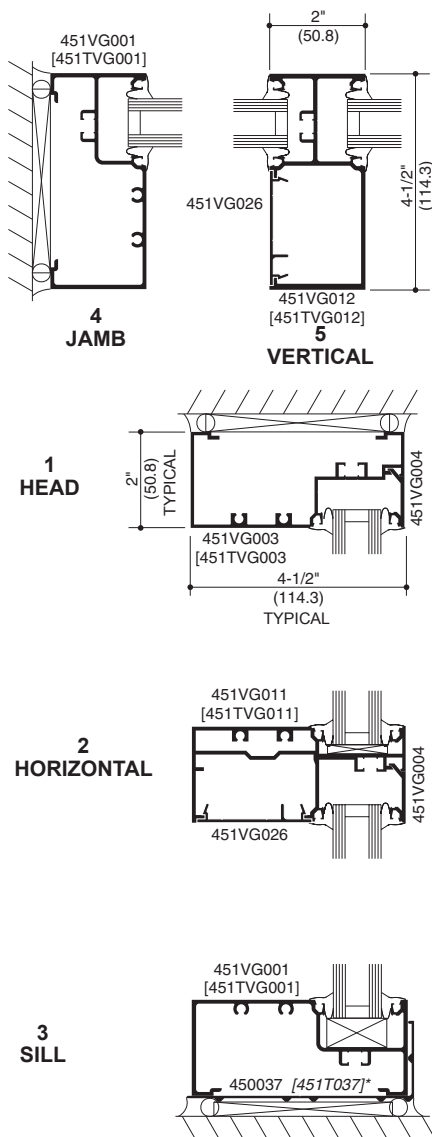
© Kawneer Company, Inc., 2013

SCALE 3" = 1'-0"

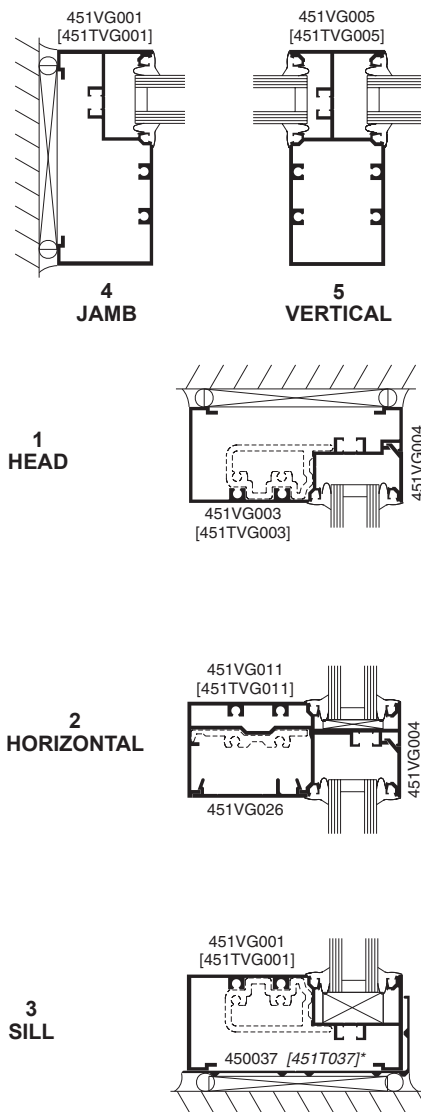


NUMBERS IN BRACKETS ARE THERMALLY BROKEN MEMBERS

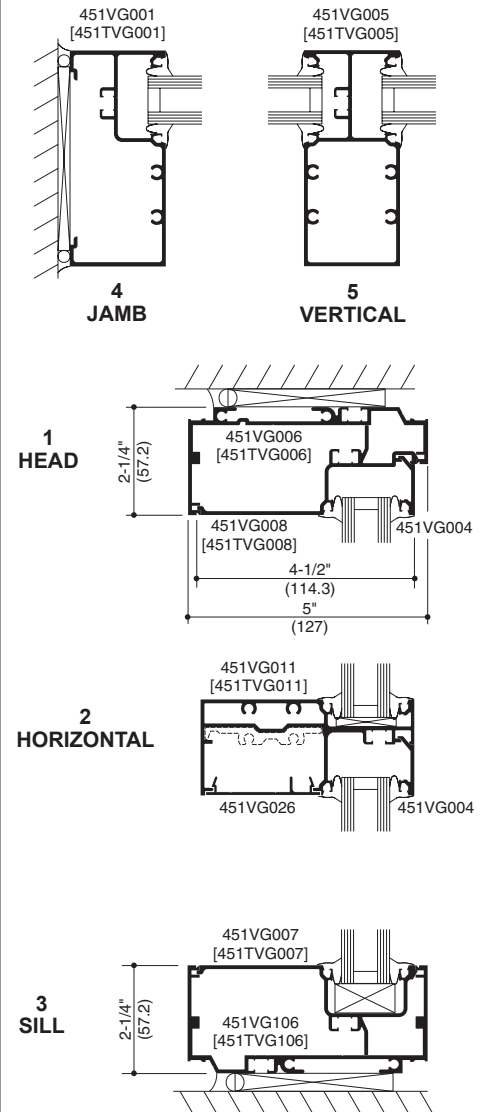
## SCREW SPLINE



## SHEAR BLOCK



## STICK



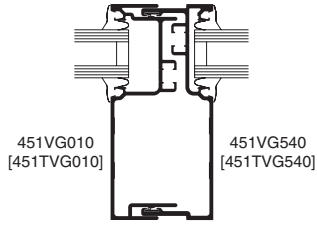
\*See Page 44 for Thermal Flashing and Optional High Performance Flashing

\*See Page 44 for Thermal Flashing and Optional High Performance Flashing

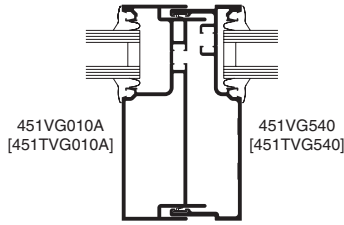
Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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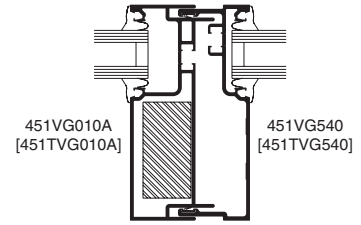
SCALE 3" = 1'-0"



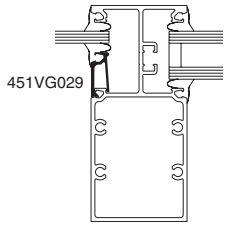
EXPANSION MULLION



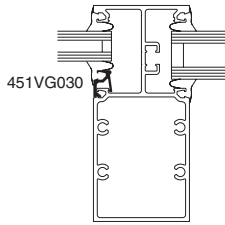
TUBULAR EXPANSION MULLION



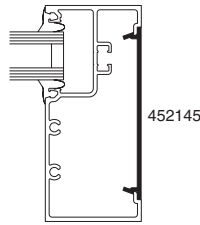
TUBULAR EXPANSION MULLION WITH STEEL



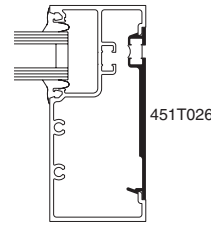
1/4" (6.4) INFILL SNAP-IN ADAPTOR



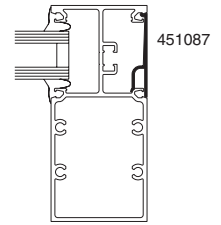
5/8" (15.9) INFILL SNAP-IN ADAPTOR



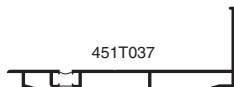
PVC FLAT FILLER (NON STRUCTURAL)



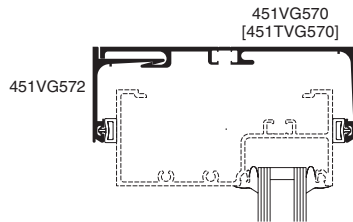
THERMAL FLAT FILLER



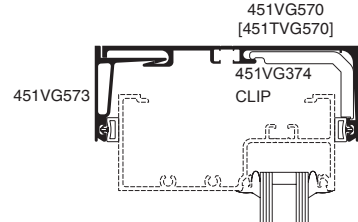
SNAP-IN FLAT FILLER



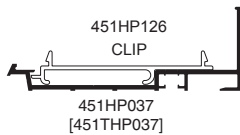
THERMAL FLASHING



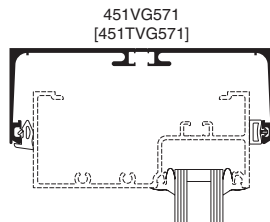
STANDARD - HEAD COMPENSATING RECEPTOR



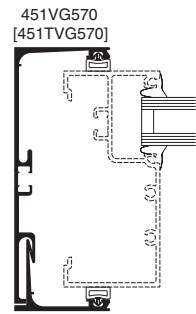
HEAVY WEIGHT - HEAD COMPENSATING RECEPTOR



HIGH PERFORMANCE FLASHING



STANDARD - HEAD COMPENSATING RECEPTOR

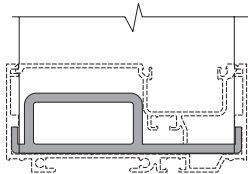


JAMB COMPENSATING RECEPTOR

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**SCALE 3" = 1'-0"**



451VG326

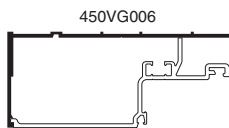
### MULLION ANCHOR

**NOTE:**

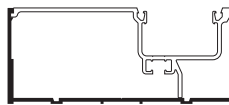
If the end reaction of the mullion (mullion spacing (ft.) times height (ft) times specified windload (psf), divided by two) is more than 500 LBS., the optional Mullion Anchor must be used. Consult Application Engineering.

**NOTE:**

Mullion Anchor not used with Lightweight Receptor.

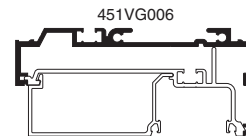


450VG006

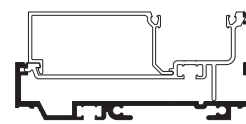


450VG106

### OPTIONAL LIGHTWEIGHT CAN RECEPTORS

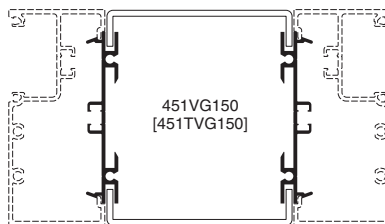


451VG006



451VG106

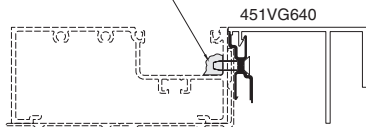
### OPTIONAL UNEQUAL LEG CAN RECEPTORS



451VG150  
[451TVG150]

### BRAKE METAL ADAPTOR

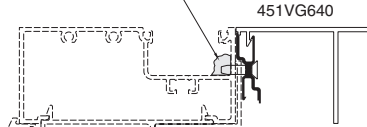
Seal over Stool Trim fasteners to prevent water infiltration.



451VG640

### STOOL TRIM CLIP with STANDARD FLASHING

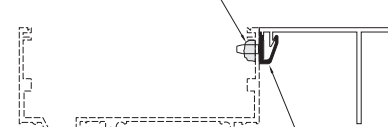
Seal over Stool Trim fasteners to prevent water infiltration.



451VG640

### STOOL TRIM CLIP with HP FLASHING

Seal over Stool Trim fasteners to prevent water infiltration.



069271

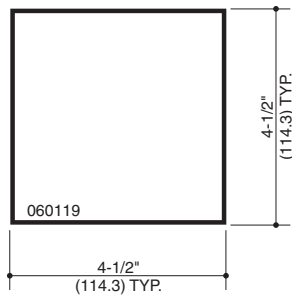
### STOOL TRIM CLIP FOR STICK ASSEMBLY

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

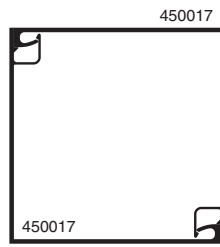
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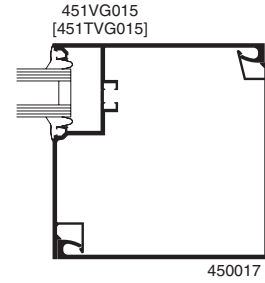
SCALE 3" = 1'-0"



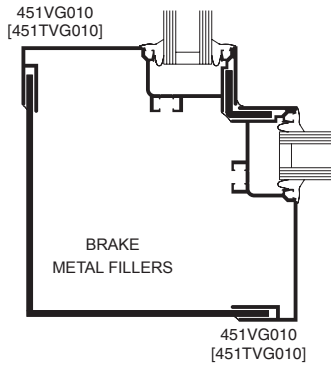
4-1/2" X 4-1/2" TUBE



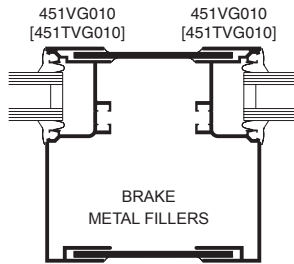
TWO PIECE NO POCKET CORNER



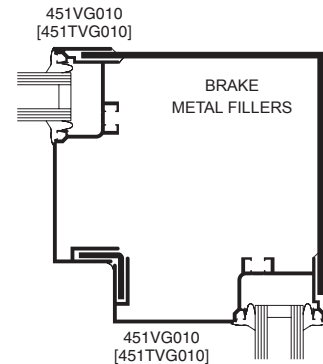
ONE POCKET CORNER



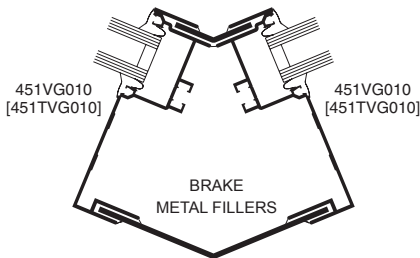
OUTSIDE 90° CORNER



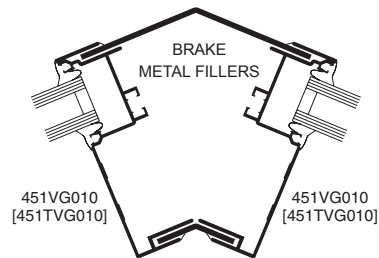
TWO POCKET CORNER POST



INSIDE 90° CORNER



135° OUTSIDE CORNER



135° INSIDE CORNER

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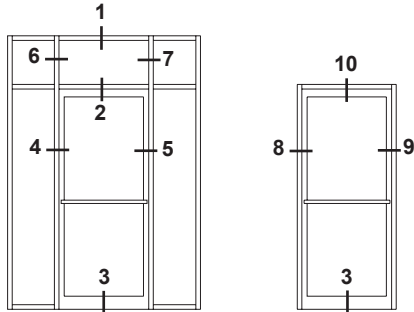
SCALE 3" = 1'-0"

## Trifab™ VG 451 FRAMING INCORPORATING KAWNEER™ "190" DOORS.

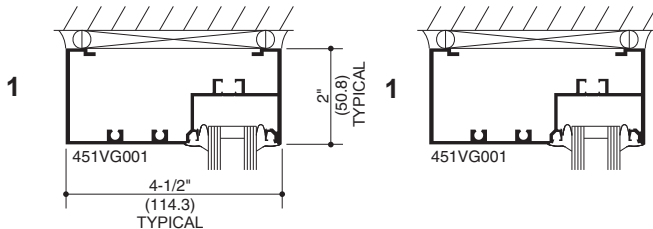
### DOOR FRAMING NON-THERMAL ONLY

**NOTE:** OTHER TYPES OF KAWNEER DOORS MAY BE USED WITH THIS FRAMING SYSTEM.

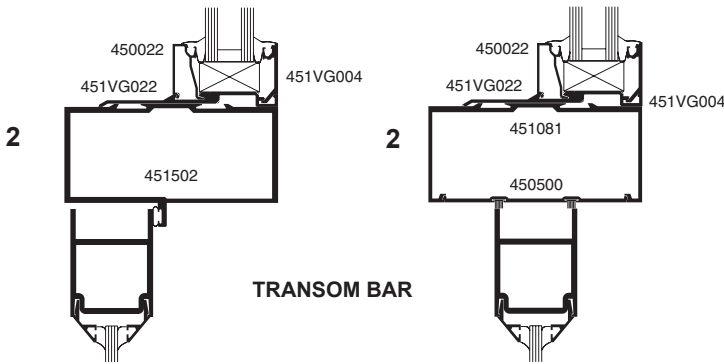
SEE ENTRANCE DETAILS FOR ADDITIONAL INFORMATION.



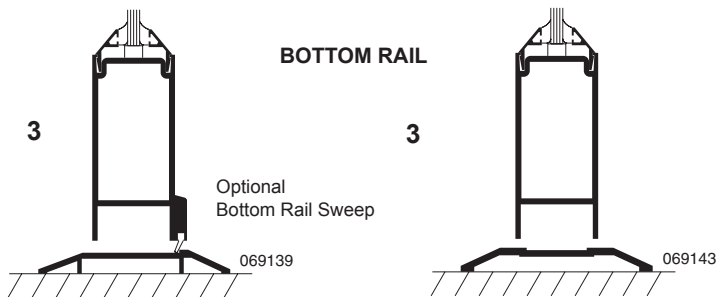
ELEVATIONS ARE NUMBER KEYED TO DETAILS



TRANSOM HEAD

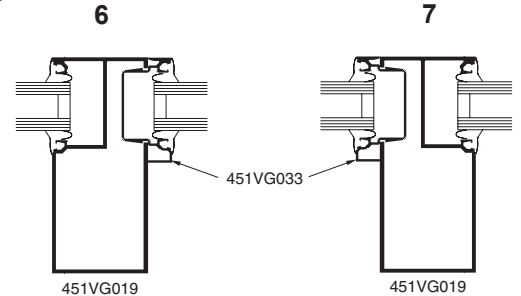


TRANSOM BAR



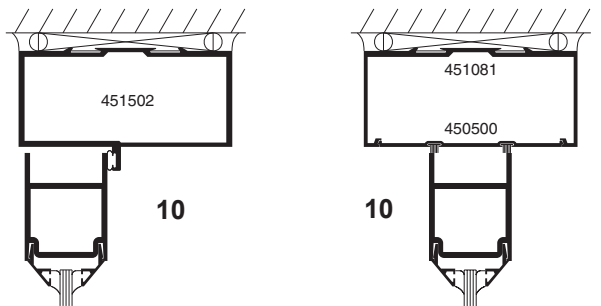
SINGLE ACTING

DOUBLE ACTING



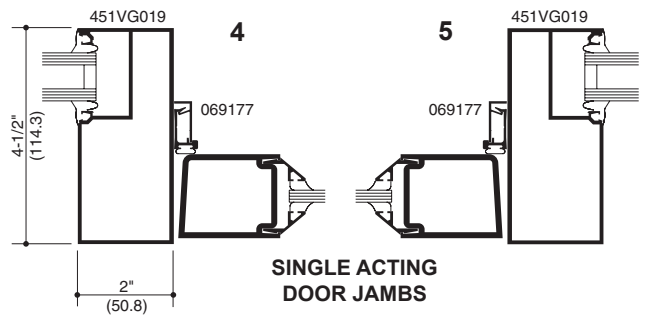
TRANSOM JAMBS

Transom area for both double or single acting doors with glass surround. Jambs above transom bar are routed out to accept glass holding insert.

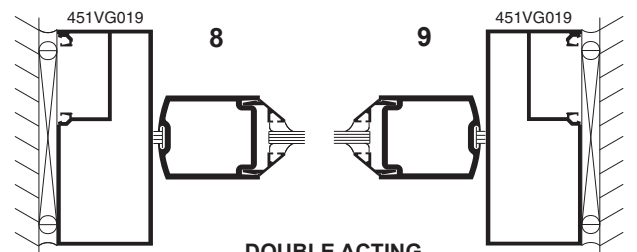


SINGLE ACTING HEADER

DOUBLE ACTING HEADER



SINGLE ACTING DOOR JAMBS



DOUBLE ACTING DOOR JAMBS

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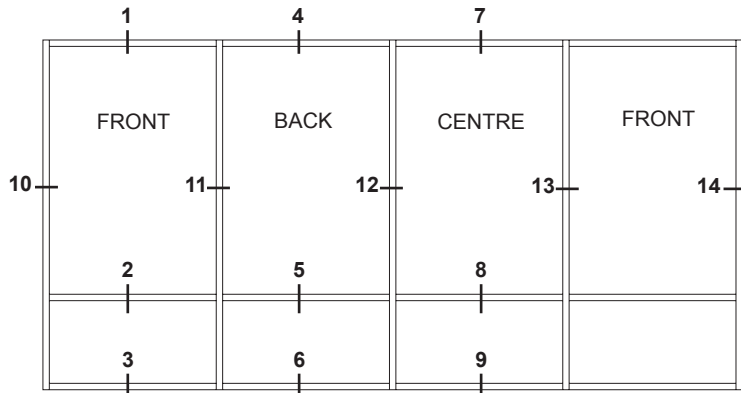
**BASIC FRAMING DETAILS ..... 50-55**  
**(See appropriate Center, Front or Back Section**  
**for Miscellaneous Details.)**

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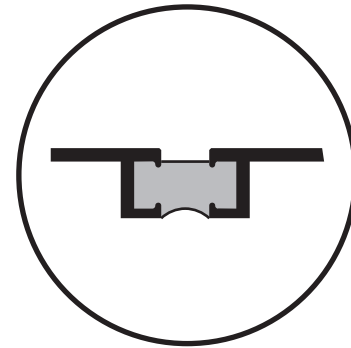
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SCALE 3" = 1'-0"

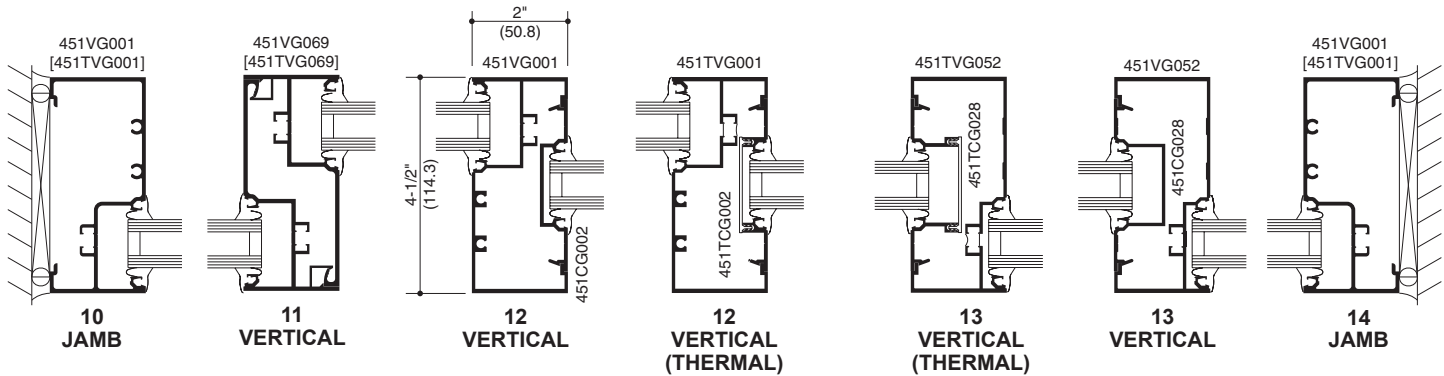
SCREW SPLINE ASSEMBLY



ELEVATION IS NUMBER KEYED TO DETAILS

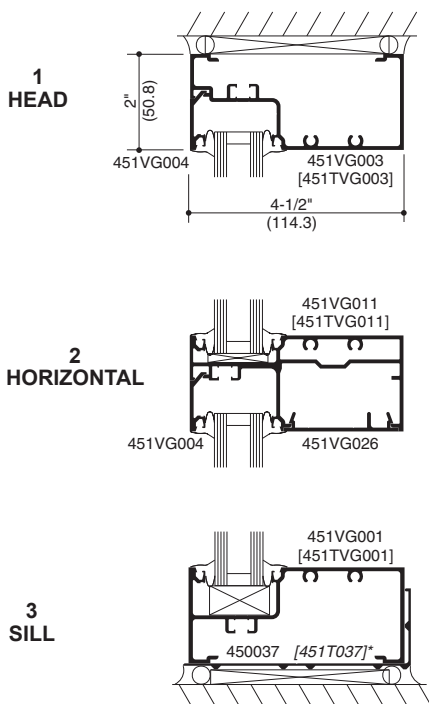


NUMBERS IN BRACKETS ARE THERMALLY BROKEN MEMBERS



FRONT

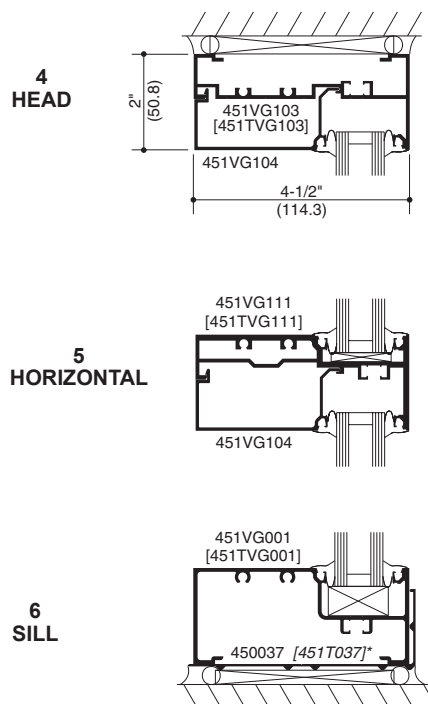
See Pages 26 thru 39 for all FRONT details.



\*See Page 33 for Thermal Flashing and Optional High Performance Flashing

BACK

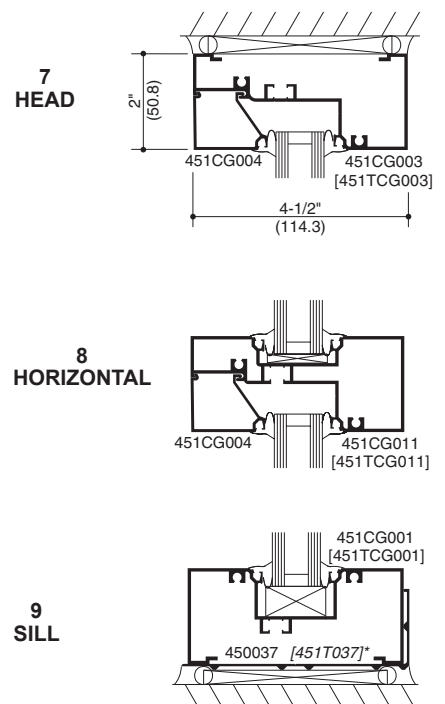
See Pages 42 thru 47 for all BACK details.



\*See Page 44 for Thermal Flashing and Optional High Performance Flashing

CENTER

See Pages 12 thru 21 for all CENTER details.



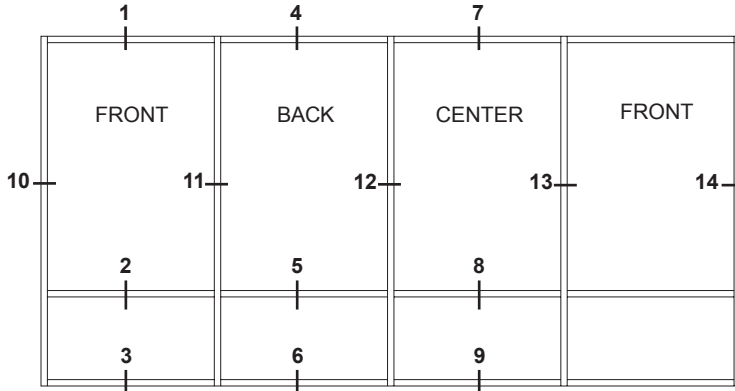
\*See Page 14 for Thermal Flashing and Optional High Performance Flashing

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

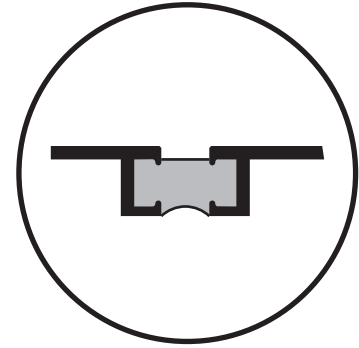
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SCALE 3" = 1'-0"

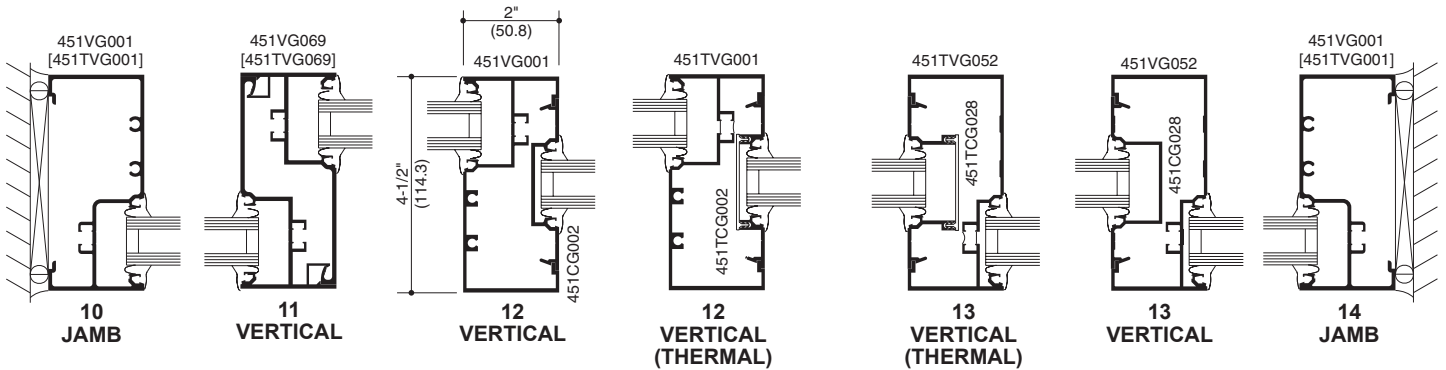
## SCREW SPLINE ASSEMBLY



ELEVATION IS NUMBER KEYED TO DETAILS



NUMBERS IN BRACKETS ARE THERMALLY BROKEN MEMBERS

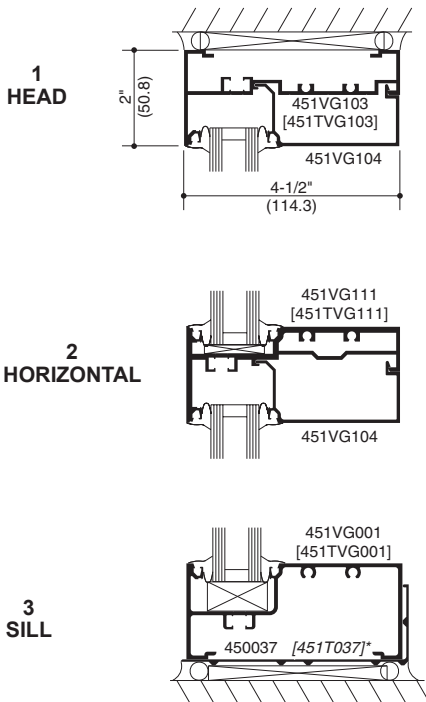


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### FRONT

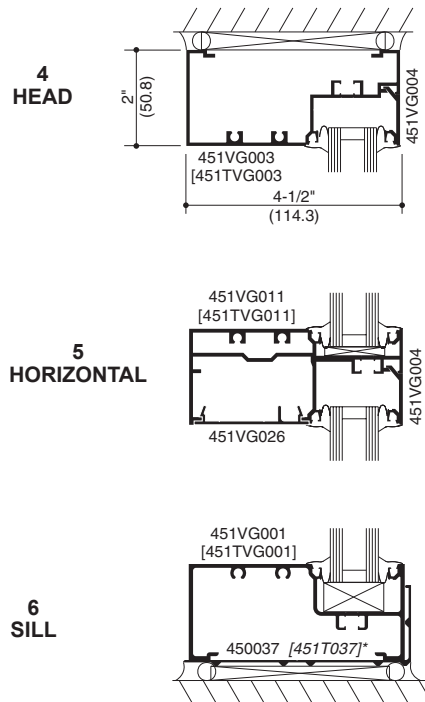
See Pages 26 thru 39 for all FRONT details.



\*See Page 33 for Thermal Flashing and Optional High Performance Flashing

### BACK

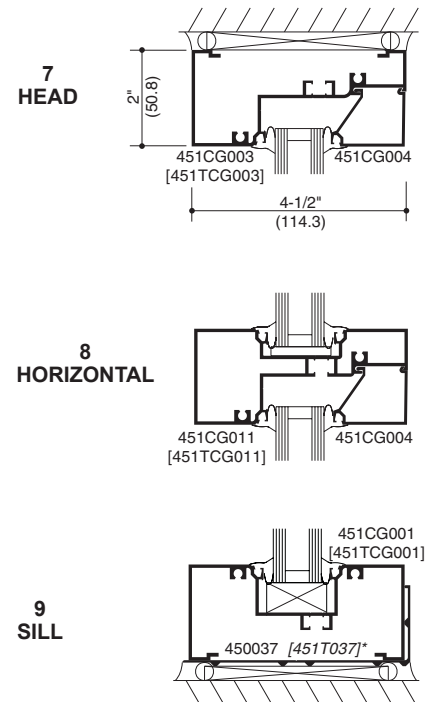
See Pages 42 thru 47 for all BACK details.



\*See Page 44 for Thermal Flashing and Optional High Performance Flashing

### CENTER

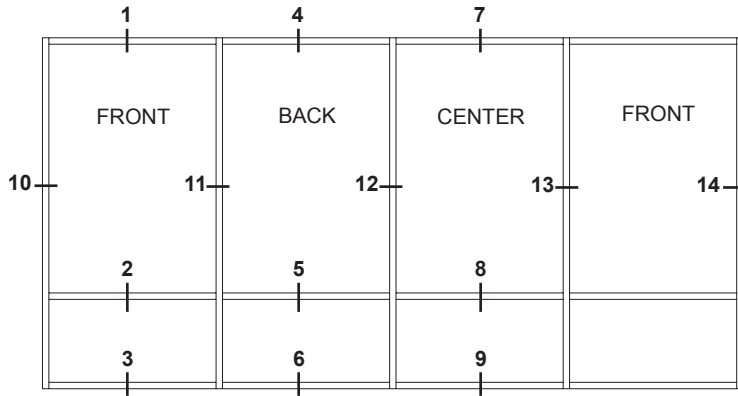
See Pages 12 thru 21 for all CENTER details.



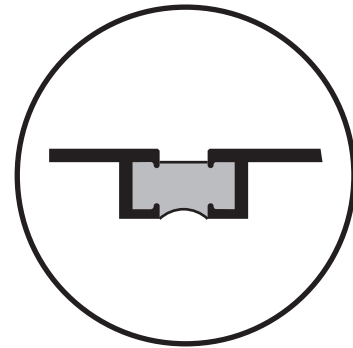
\*See Page 14 for Thermal Flashing and Optional High Performance Flashing

SCALE 3" = 1'-0"

SHEAR BLOCK ASSEMBLY

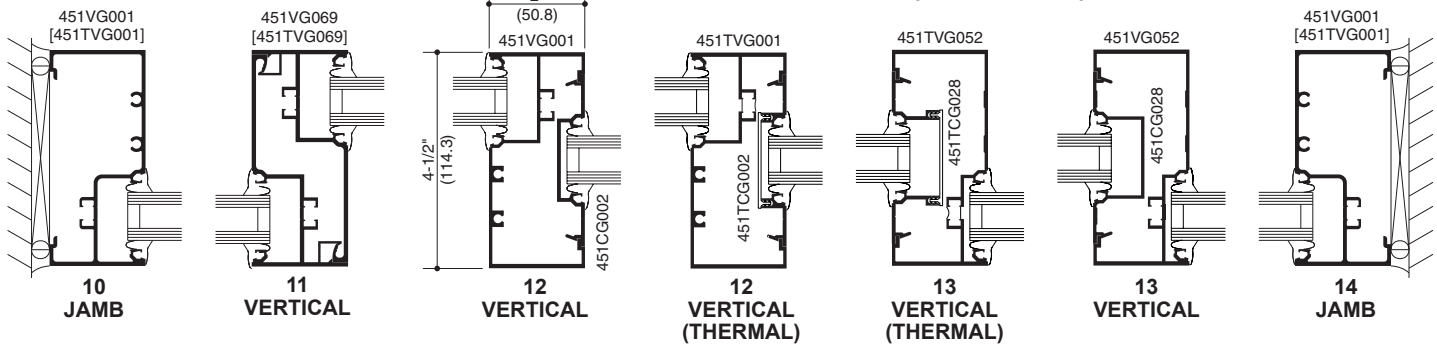


ELEVATION IS NUMBER KEYED TO DETAILS



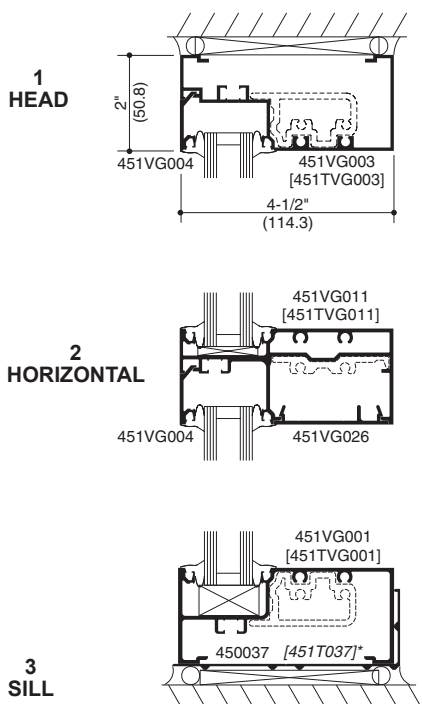
NUMBERS IN BRACKETS ARE THERMALLY BROKEN MEMBERS

Note: Transition verticals are required to be two piece.



FRONT

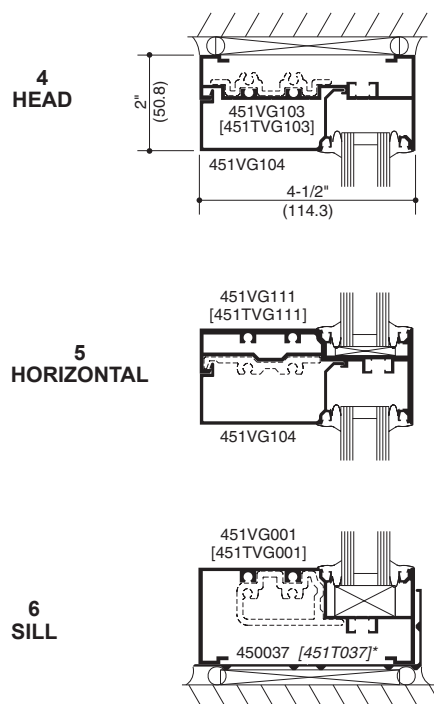
See Pages 26 thru 39 for all FRONT details.



\*See Page 33 for Thermal Flashing and Optional High Performance Flashing

BACK

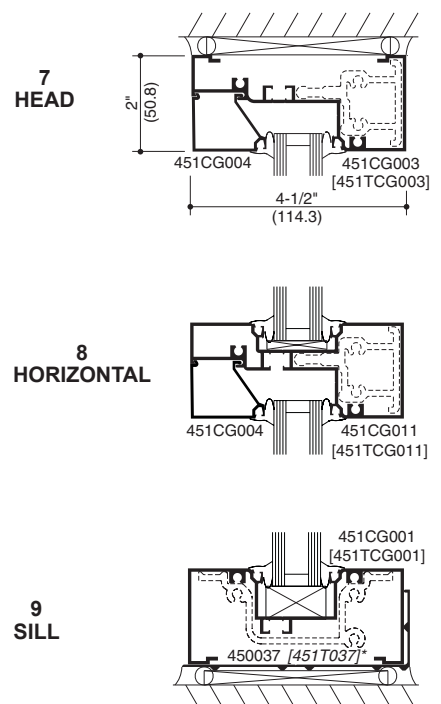
See Pages 42 thru 47 for all BACK details.



\*See Page 44 for Thermal Flashing and Optional High Performance Flashing

CENTER

See Pages 12 thru 21 for all CENTER details.



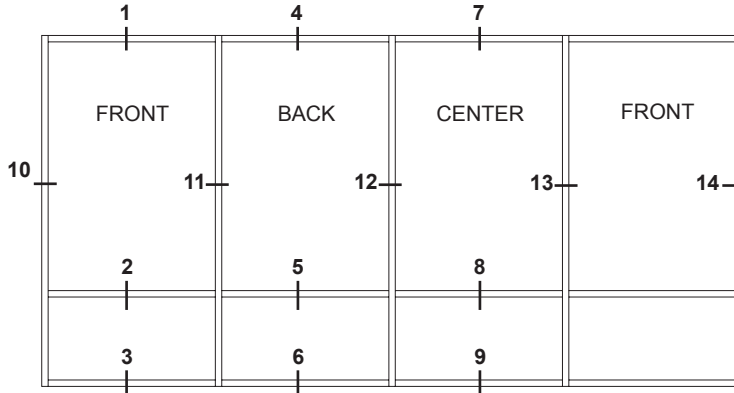
\*See Page 14 for Thermal Flashing and Optional High Performance Flashing

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

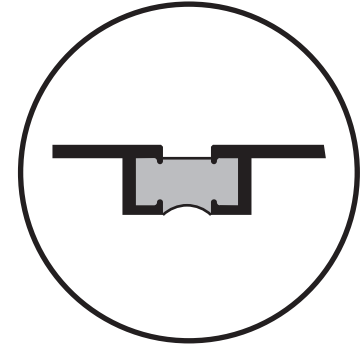
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SCALE 3" = 1'-0"

## SHEAR BLOCK ASSEMBLY

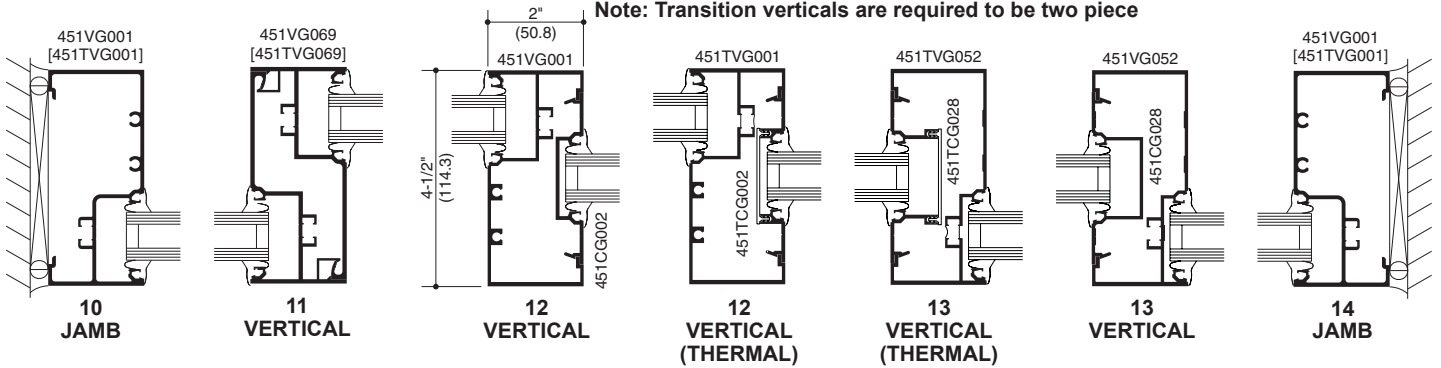


ELEVATION IS NUMBER KEYED TO DETAILS



NUMBERS IN BRACKETS ARE THERMALLY BROKEN MEMBERS

Note: Transition verticals are required to be two piece

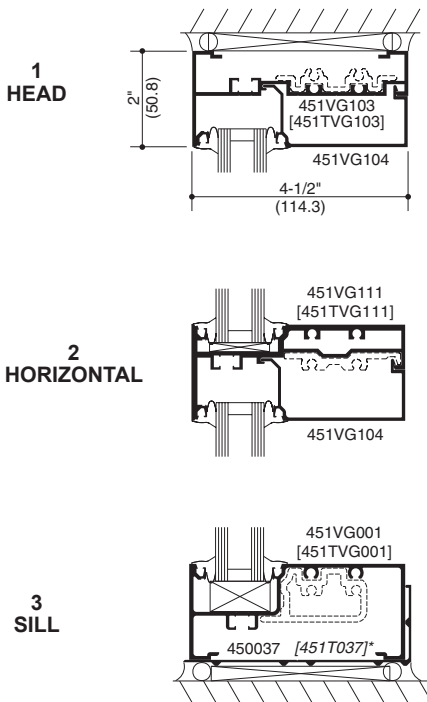


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### FRONT

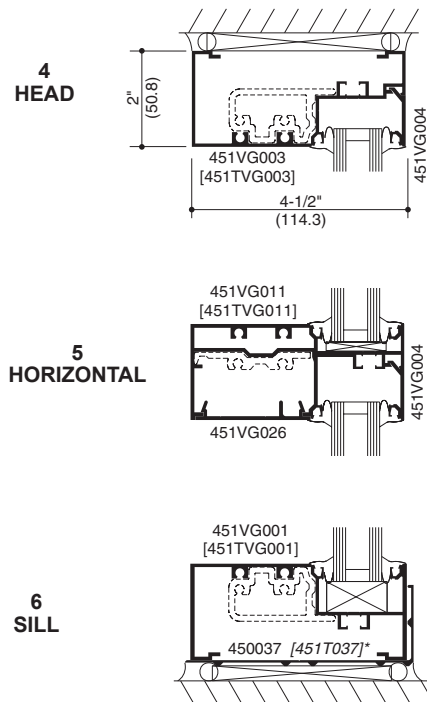
See Pages 26 thru 39 for all FRONT details.



\*See Page 33 for Thermal Flashing and Optional High Performance Flashing

### BACK

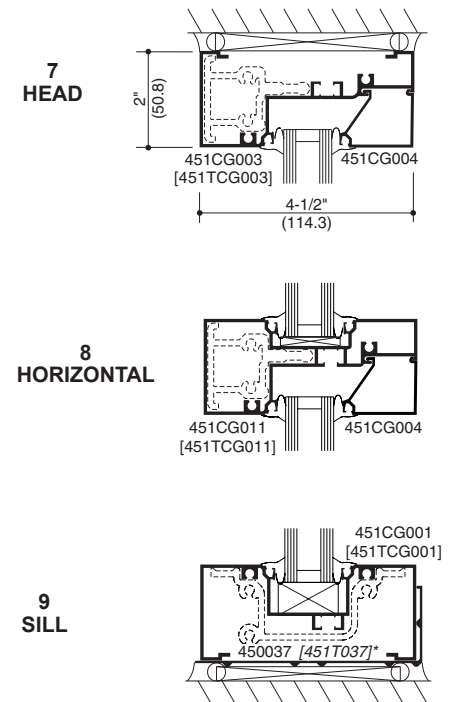
See Pages 42 thru 47 for all BACK details.



\*See Page 44 for Thermal Flashing and Optional High Performance Flashing

### CENTER

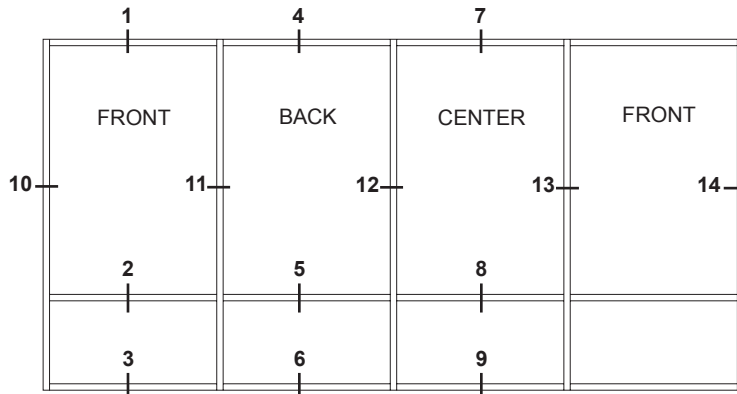
See Pages 12 thru 21 for all CENTER details.



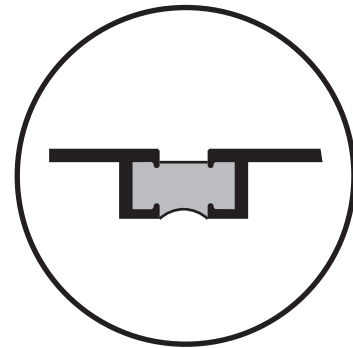
\*See Page 14 for Thermal Flashing and Optional High Performance Flashing

SCALE 3" = 1'-0"

STICK ASSEMBLY

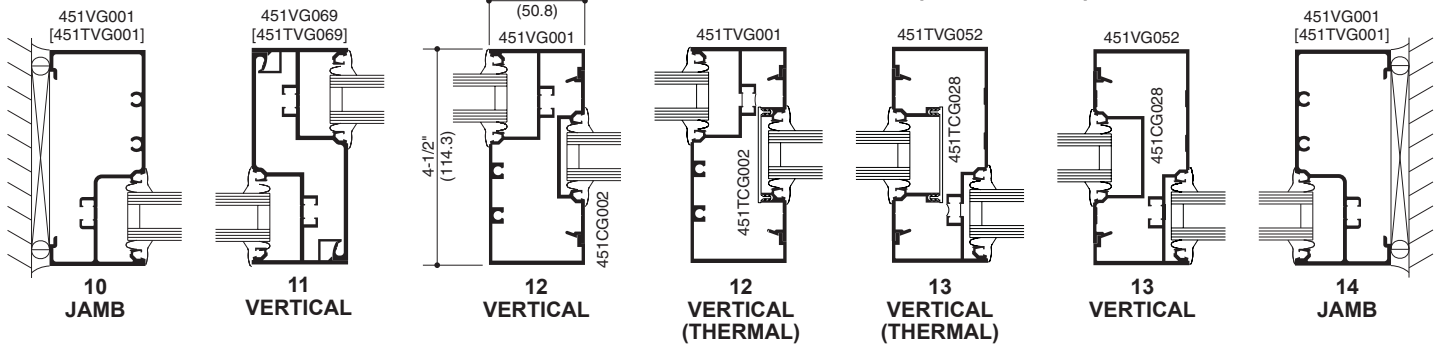


ELEVATION IS NUMBER KEYED TO DETAILS



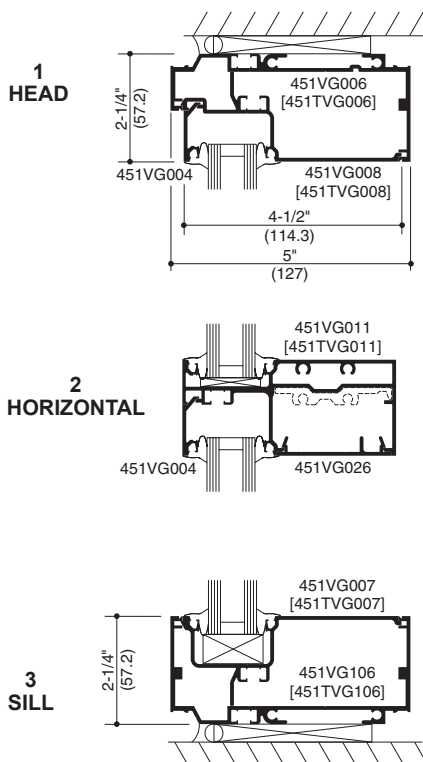
NUMBERS IN BRACKETS ARE THERMALLY BROKEN MEMBERS

Note: Transition verticals are required to be two piece.



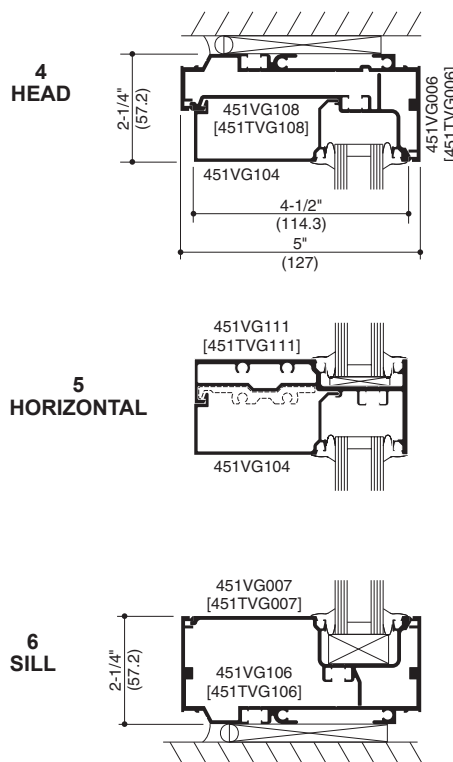
FRONT

See Pages 26 thru 39 for all FRONT details.



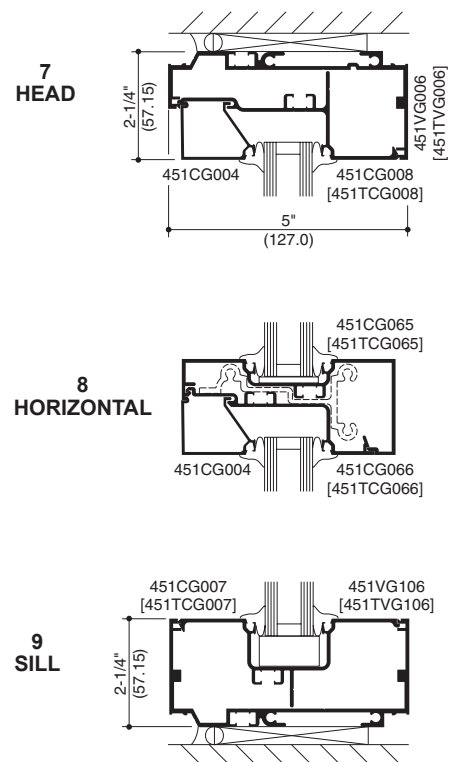
BACK

See Pages 42 thru 47 for all BACK details.



CENTER

See Pages 12 thru 21 for all CENTER details.

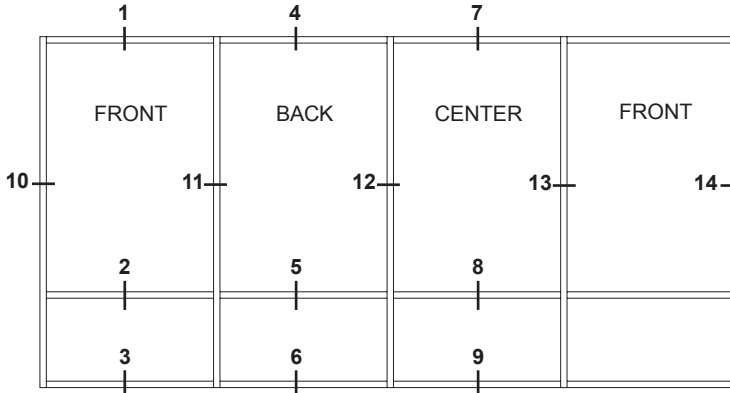


Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

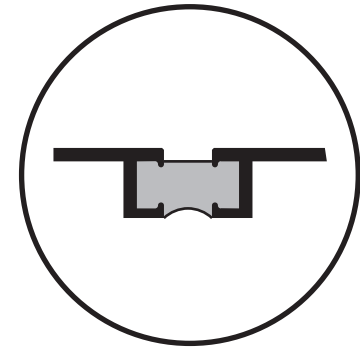
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SCALE 3" = 1'-0"

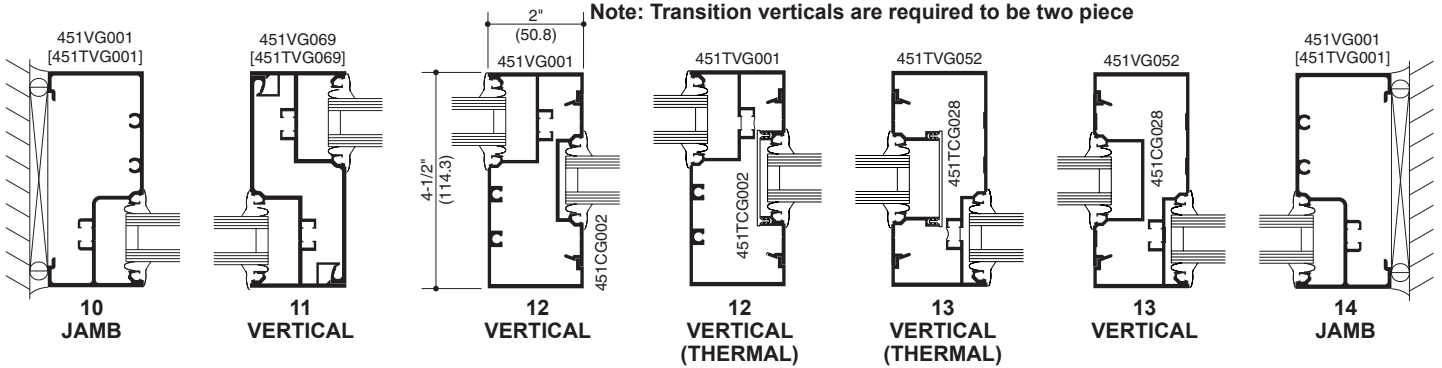
## STICK ASSEMBLY



ELEVATION IS NUMBER KEYED TO DETAILS

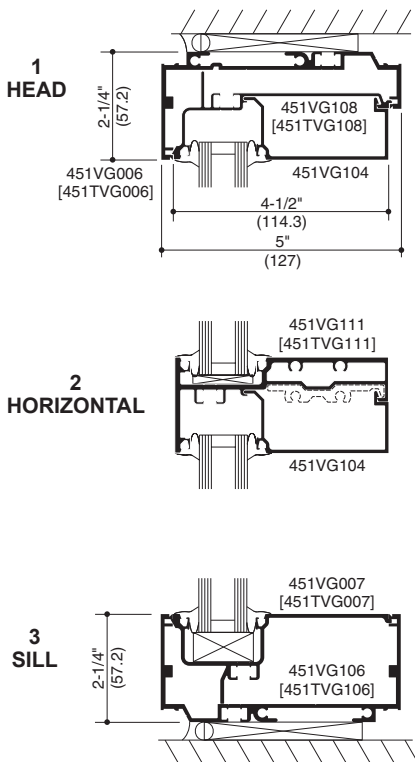


NUMBERS IN BRACKETS ARE THERMALLY BROKEN MEMBERS



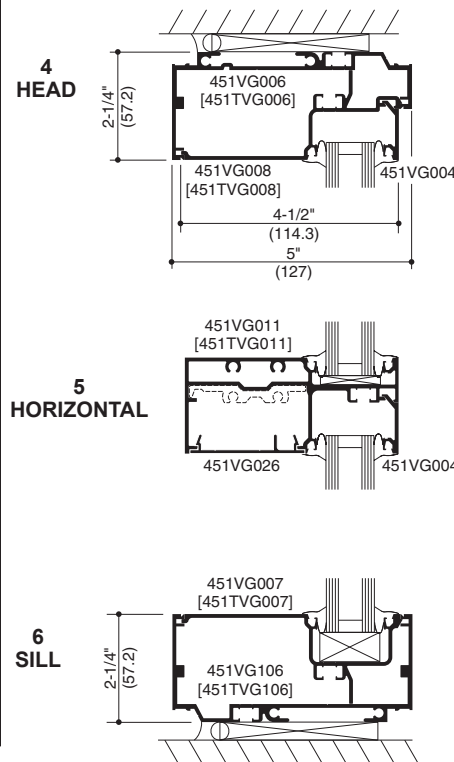
## FRONT

See Pages 26 thru 39 for all FRONT details.



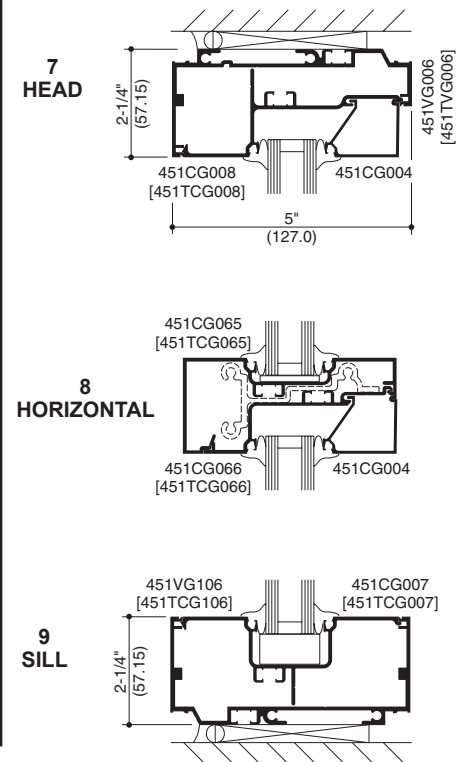
## BACK

See Pages 42 thru 47 for all BACK details.



## CENTER

See Pages 12 thru 21 for all CENTER details.



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**WINDLOAD CHARTS (CENTER)**  
 TF VG 451 (Non-Thermal)..... 58-62  
 TF VG 451T (Thermal)..... 63-66

**WINDLOAD CHARTS (FRONT or BACK)**  
 TF VG 451 (Non-Thermal)..... 67-70  
 TF VG 451T (Thermal)..... 71-73

**WINDLOAD CHARTS (FRONT or BACK)**  
 TF VG 451/451T (SSG Mullions) .....74

**WINDLOAD CHARTS (MULTI PLANE)**  
 TF VG 451 (Non-Thermal).....75  
 TF VG 451T (Thermal).....76

**WINDLOAD CHARTS (ENTRANCE FRAMING)**  
 TF VG 451/451T ..... 77-78

**DEADLOAD CHARTS**  
 TF VG 451/451T ..... 79-80

**END REACTION CHARTS .....81**

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 EXAMPLE CALCULATION.....82  
 TF VG 451 (CENTER – Non-Thermal)..... 83-85  
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 TF VG 451T with Steel (CENTER)..... 95-97

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## WIND LOAD CHARTS

Mullions are designed for deflection limitations in accordance with AAMA TIR-A11 of L/175 up to 13'-6" and L/240 +1/4" above 13'-6". These curves are for mullions WITH HORIZONTALS and are based on engineering calculations for stress and deflection. Allowable wind load stress for ALUMINUM 15,152 psi (104MPa), STEEL 30,000 psi (207MPa). Charted curves, in all cases are for the limiting value. Wind load charts contained herein are based upon nominal wind load utilized in allowable stress design. A conversion from Load Resistance Factor Design (LRFD) is provided. To convert ultimate wind loads to nominal loads, multiply ultimate wind loads by a factor of 0.6 per ASCE/SEI 7. A 4/3 increase in allowable stress has not been used to develop these curves. For special situations not covered by these curves, contact your Kawneer representative for additional information.

If the end reaction of the mullion [mullion spacing (ft.) times height (ft.) times specified wind load (psf) divided by two] is more than 500 lbs., the optional Mullion Anchors must be used. Consult Application Engineering. (*Mullion Anchor not used with Lightweight Receptor.*)

## DEADLOAD CHARTS

Horizontal or deadload limitations are based upon 1/8" (3.2), maximum allowable deflection at the center of an intermediate horizontal member. The accompanying charts are calculated for 1" (25.4) thick insulating glass or 1/4" (6.4) thick glass supported on two setting blocks placed at the loading points shown.

**NOTE:** Charts are for THERMAL and NON-THERMAL members.

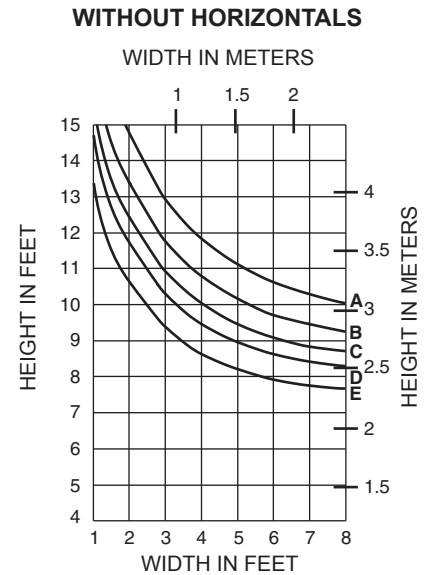
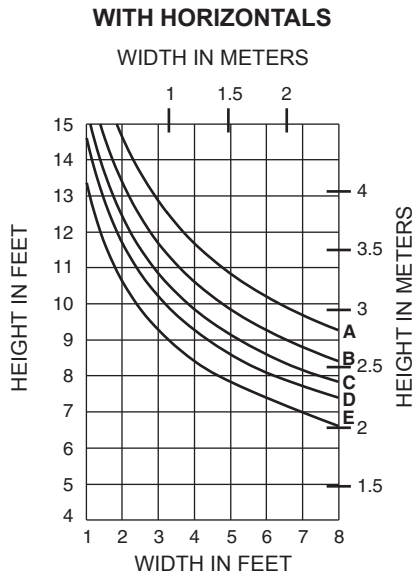
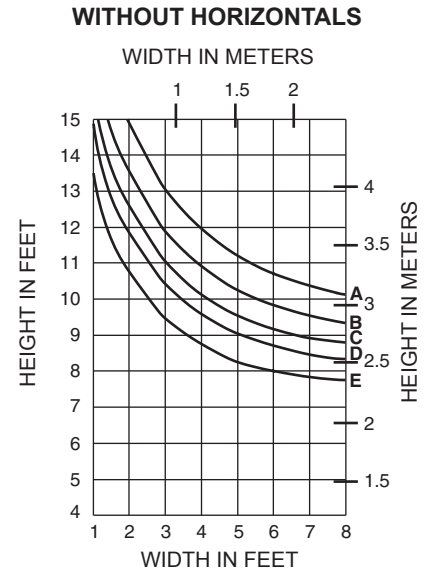
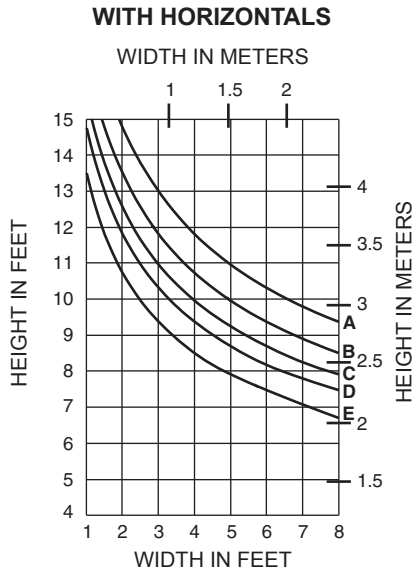
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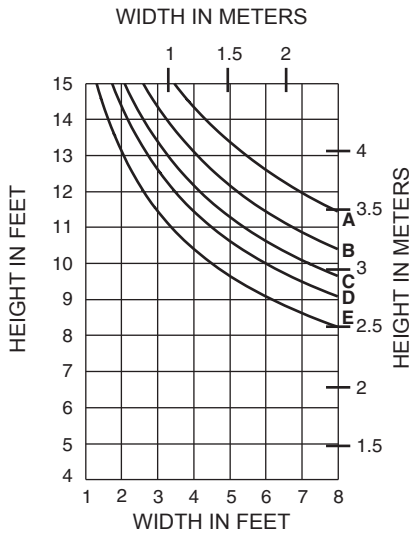
Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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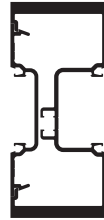
	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	15 PSF (720)	25 PSF (1200)
B =	20 PSF (960)	33 PSF (1580)
C =	25 PSF (1200)	42 PSF (2000)
D =	30 PSF (1440)	50 PSF (2400)
E =	40 PSF (1920)	67 PSF (3200)



**WITH HORIZONTALS**



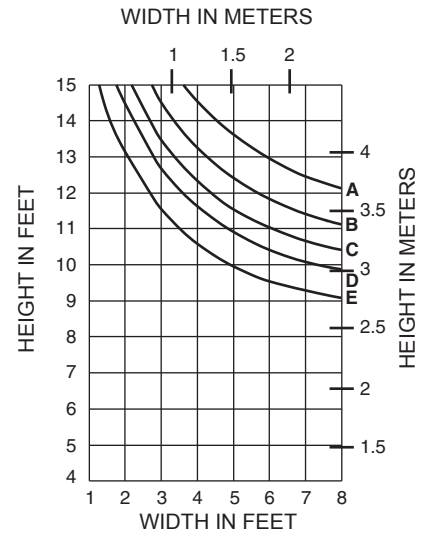
	Allowable Stress Design Load	LFRD Ultimate Design Load
<b>A =</b>	<b>15 PSF (720)</b>	<b>25 PSF (1200)</b>
<b>B =</b>	<b>20 PSF (960)</b>	<b>33 PSF (1580)</b>
<b>C =</b>	<b>25 PSF (1200)</b>	<b>42 PSF (2000)</b>
<b>D =</b>	<b>30 PSF (1440)</b>	<b>50 PSF (2400)</b>
<b>E =</b>	<b>40 PSF (1920)</b>	<b>67 PSF (3200)</b>



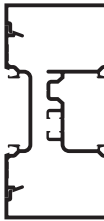
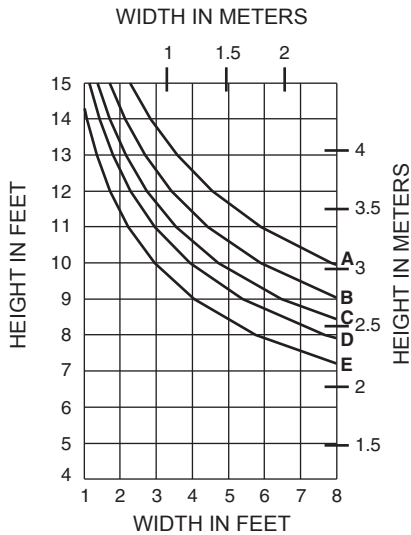
**451CG013**  
**451CG002**

$I = 5.907 (245.86 \times 10^4)$   
 $S = 2.615 (42.85 \times 10^3)$

**WITHOUT HORIZONTALS**



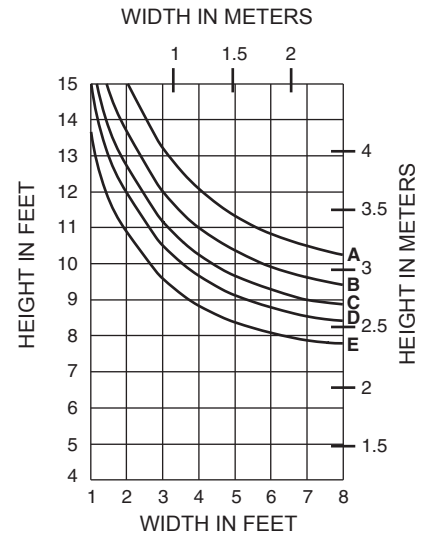
**WITH HORIZONTALS**



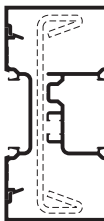
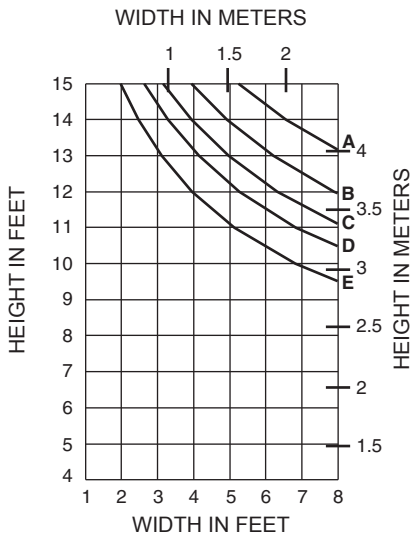
**451CG112**  
**451CG002**

$I = 3.346 (139.27 \times 10^4)$   
 $S = 1.474 (24.15 \times 10^3)$

**WITHOUT HORIZONTALS**



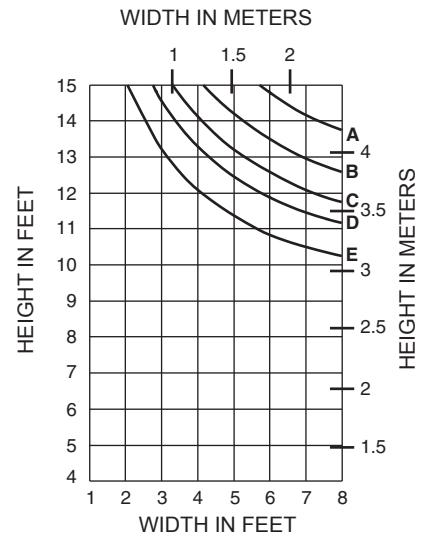
**WITH HORIZONTALS**



**451CG112**  
**451CG002**  
**with 450110 STEEL**

$I_A = 3.346 (139.27 \times 10^4)$   
 $S_A = 1.474 (24.15 \times 10^3)$   
 $I_S = 1.935 (80.54 \times 10^4)$   
 $S_S = 0.938 (15.37 \times 10^3)$

**WITHOUT HORIZONTALS**

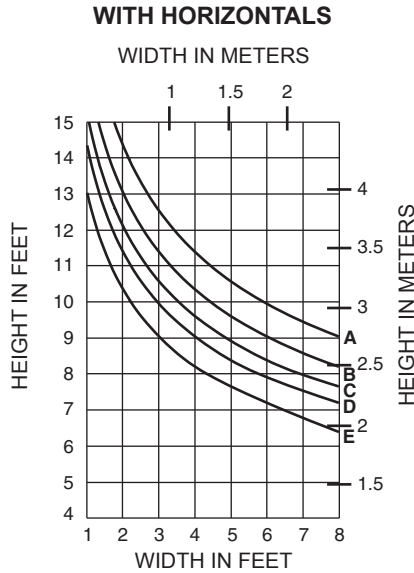


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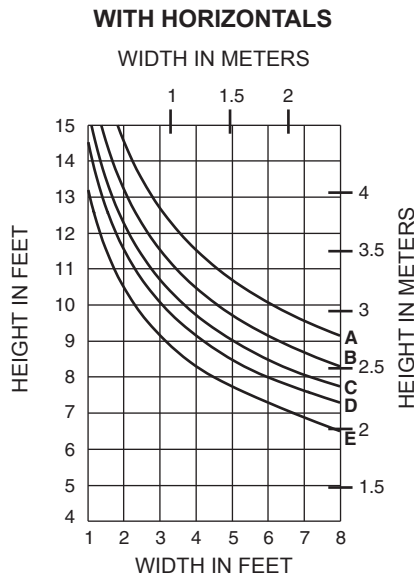
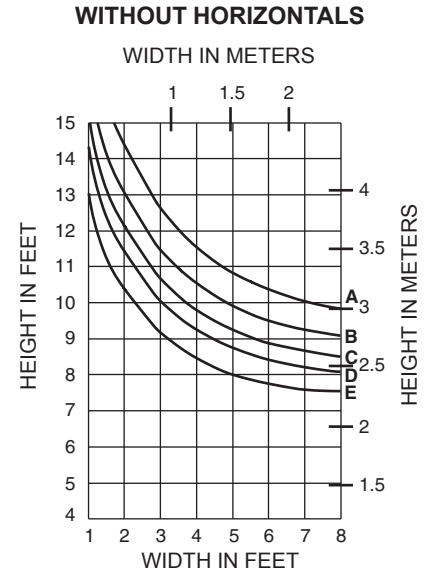


	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	15 PSF (720)	25 PSF (1200)
B =	20 PSF (960)	33 PSF (1580)
C =	25 PSF (1200)	42 PSF (2000)
D =	30 PSF (1440)	50 PSF (2400)
E =	40 PSF (1920)	67 PSF (3200)



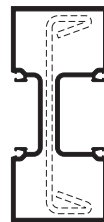
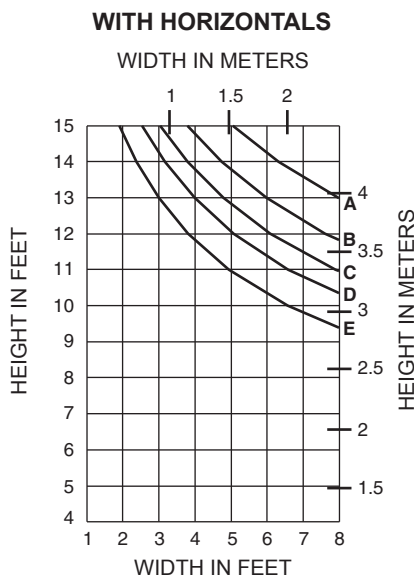
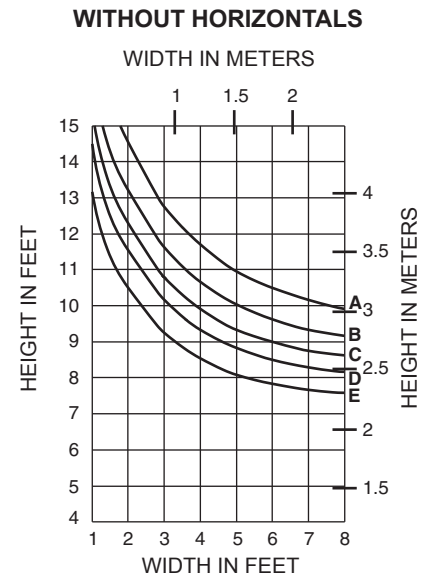
**451CG005**

$I = 2.907 (120.99 \times 10^4)$   
 $S = 1.292 (21.17 \times 10^3)$



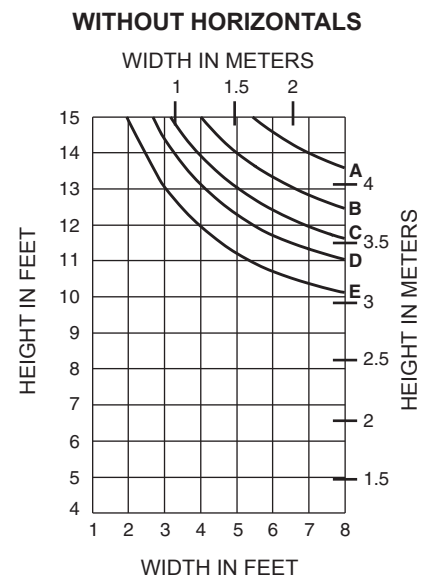
**451CG005A**

$I = 3.016 (125.53 \times 10^4)$   
 $S = 1.340 (21.96 \times 10^3)$

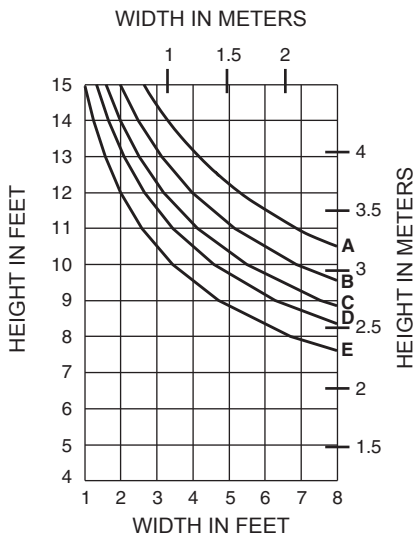


**451CG005A with 450110 STEEL**

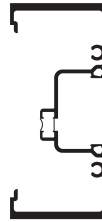
$I_A = 3.016 (125.53 \times 10^4)$   
 $S_A = 1.340 (21.96 \times 10^3)$   
 $I_S = 1.935 (80.54 \times 10^4)$   
 $S_S = 0.938 (15.37 \times 10^3)$



**WITH HORIZONTALS**



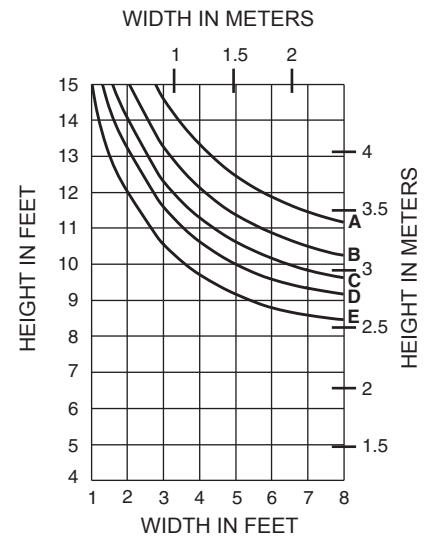
	Allowable Stress Design Load	LFRD Ultimate Design Load
<b>A =</b>	<b>15 PSF (720)</b>	<b>25 PSF (1200)</b>
<b>B =</b>	<b>20 PSF (960)</b>	<b>33 PSF (1580)</b>
<b>C =</b>	<b>25 PSF (1200)</b>	<b>42 PSF (2000)</b>
<b>D =</b>	<b>30 PSF (1440)</b>	<b>50 PSF (2400)</b>
<b>E =</b>	<b>40 PSF (1920)</b>	<b>67 PSF (3200)</b>



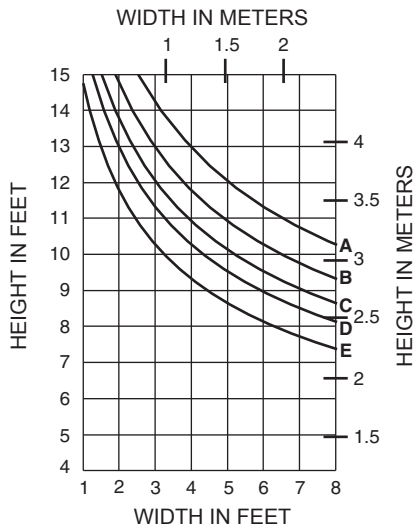
**451CG001A  
451CG002**

I = 4.507 (187.59 x 10<sup>4</sup>)  
S = 1.993 (32.66 x 10<sup>3</sup>)

**WITHOUT HORIZONTALS**



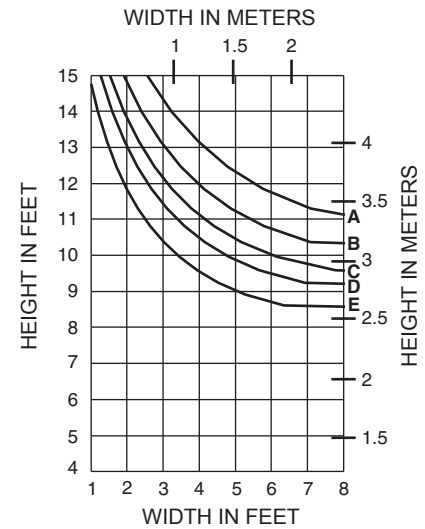
**WITH HORIZONTALS**



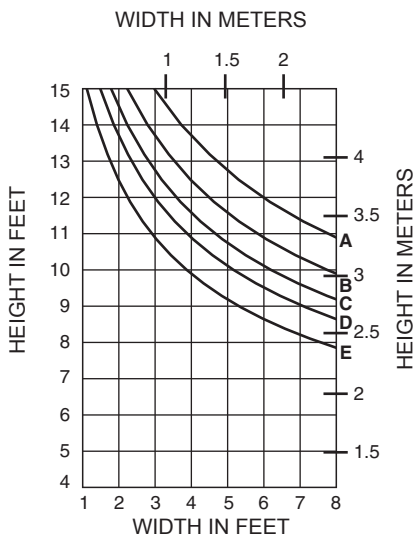
**451CG010  
451CG540**

I = 4.301 (179.02 x 10<sup>4</sup>)  
S = 1.887 (30.92 x 10<sup>3</sup>)

**WITHOUT HORIZONTALS**



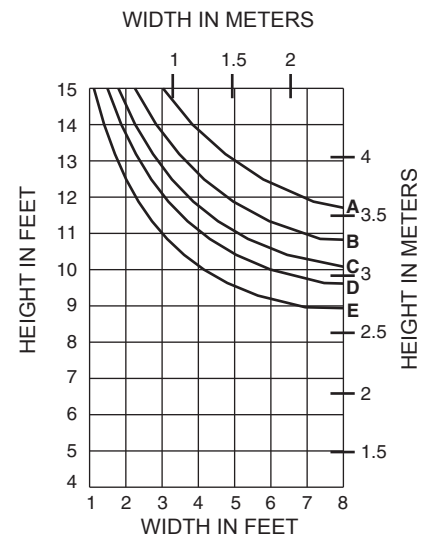
**WITH HORIZONTALS**



**451CG010A  
451CG540**

I = 5.083 (211.57 x 10<sup>4</sup>)  
S = 2.230 (36.54 x 10<sup>3</sup>)

**WITHOUT HORIZONTALS**

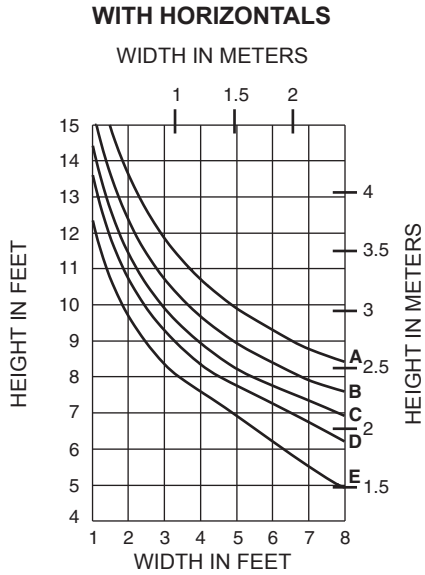


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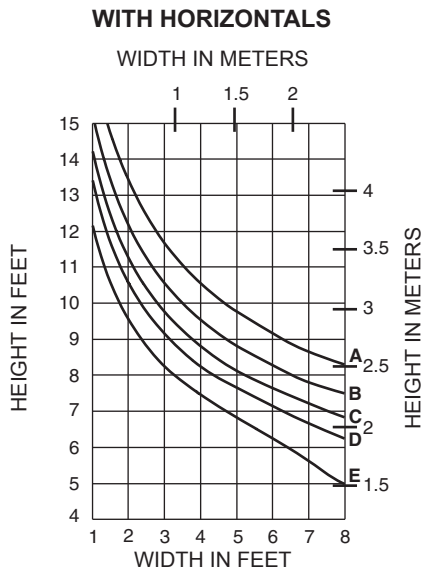
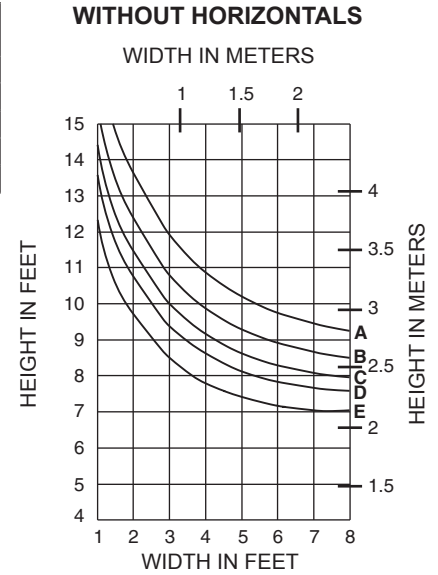


	Allowable Stress Design Load	LRFD Ultimate Design Load
<b>A =</b>	<b>15 PSF (720)</b>	<b>25 PSF (1200)</b>
<b>B =</b>	<b>20 PSF (960)</b>	<b>33 PSF (1580)</b>
<b>C =</b>	<b>25 PSF (1200)</b>	<b>42 PSF (2000)</b>
<b>D =</b>	<b>30 PSF (1440)</b>	<b>50 PSF (2400)</b>
<b>E =</b>	<b>40 PSF (1920)</b>	<b>67 PSF (3200)</b>



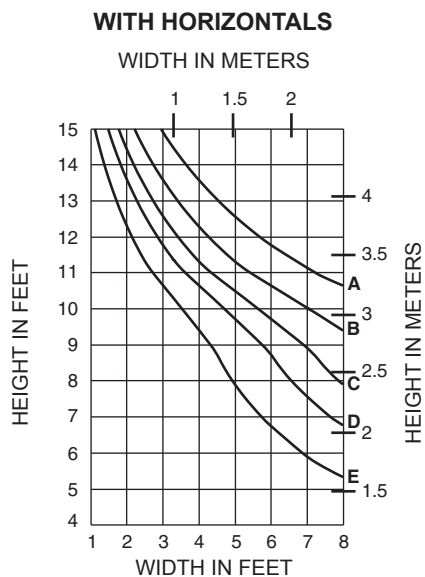
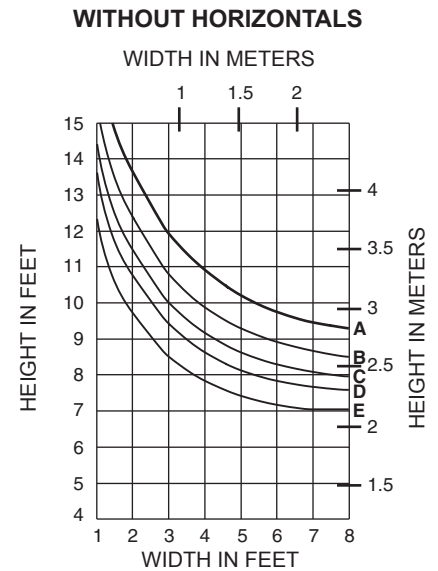
**451TCG001**

WINDLOAD CHARTS ARE BASED ON COMPOSITE PROPERTIES WHICH ARE CALCULATED IN ACCORDANCE WITH AAMA TIR-A8 AND AAMA 505



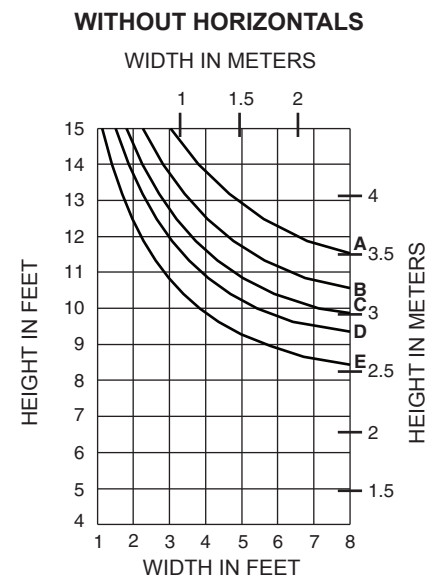
**451TCG012**

WINDLOAD CHARTS ARE BASED ON COMPOSITE PROPERTIES WHICH ARE CALCULATED IN ACCORDANCE WITH AAMA TIR-A8 AND AAMA 505



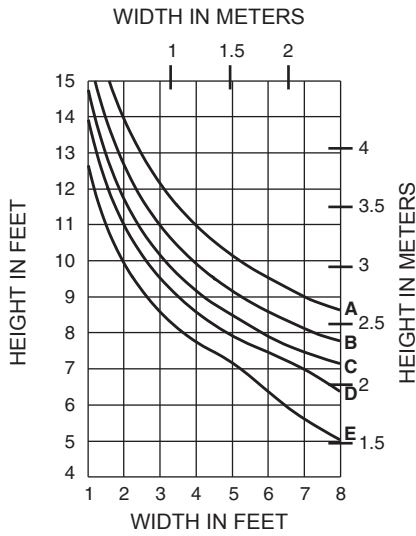
**451TCG013**

WINDLOAD CHARTS ARE BASED ON COMPOSITE PROPERTIES WHICH ARE CALCULATED IN ACCORDANCE WITH AAMA TIR-A8 AND AAMA 505

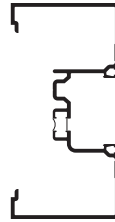




**WITH HORIZONTALS**



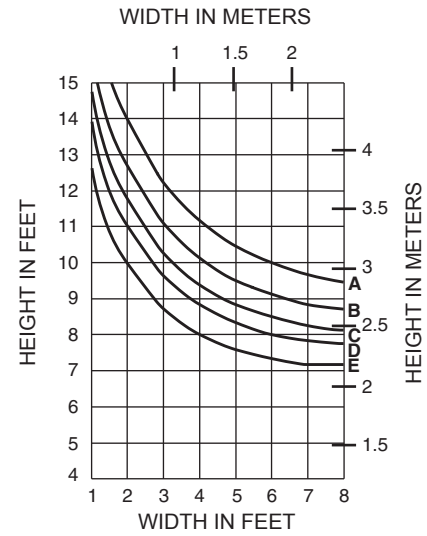
	Allowable Stress Design Load	LRFD Ultimate Design Load
<b>A =</b>	<b>15 PSF (720)</b>	<b>25 PSF (1200)</b>
<b>B =</b>	<b>20 PSF (960)</b>	<b>33 PSF (1580)</b>
<b>C =</b>	<b>25 PSF (1200)</b>	<b>42 PSF (2000)</b>
<b>D =</b>	<b>30 PSF (1440)</b>	<b>50 PSF (2400)</b>
<b>E =</b>	<b>40 PSF (1920)</b>	<b>67 PSF (3200)</b>



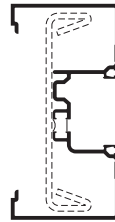
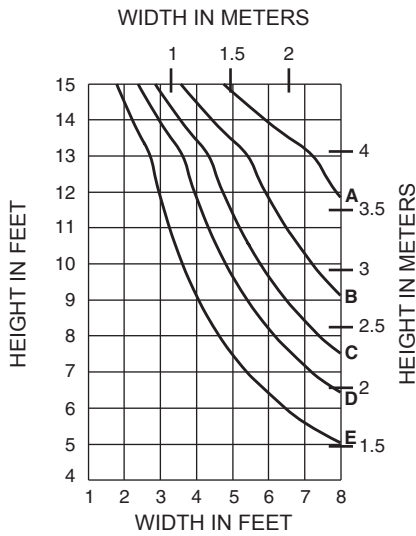
**451TCG112**

WINDLOAD CHARTS ARE BASED ON COMPOSITE PROPERTIES WHICH ARE CALCULATED IN ACCORDANCE WITH AAMA TIR-A8 AND AAMA 505

**WITHOUT HORIZONTALS**



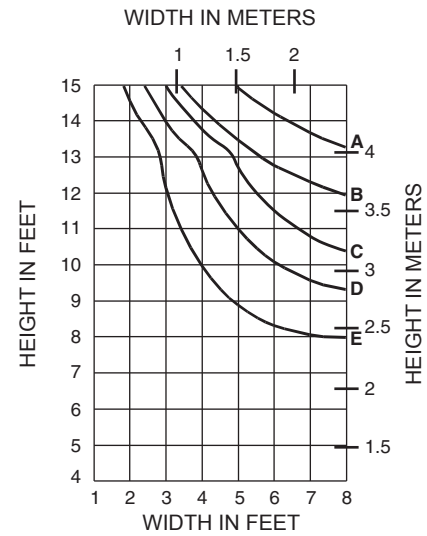
**WITH HORIZONTALS**



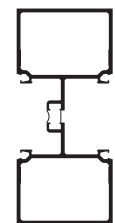
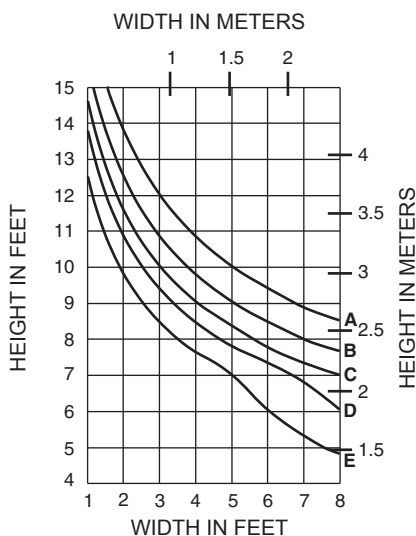
**451TCG112 with 450110 STEEL**

WINDLOAD CHARTS ARE BASED ON COMPOSITE PROPERTIES WHICH ARE CALCULATED IN ACCORDANCE WITH AAMA TIR-A8 AND AAMA 505

**WITHOUT HORIZONTALS**



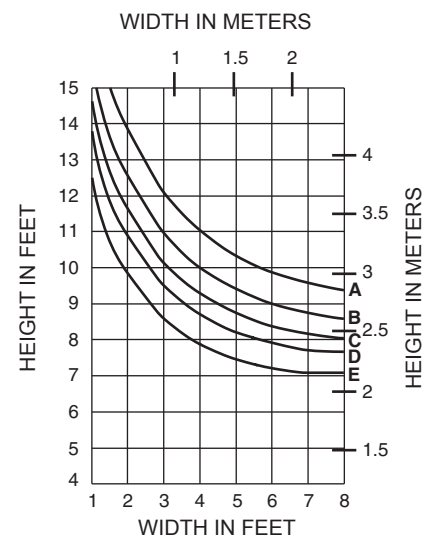
**WITH HORIZONTALS**



**451TCG005**

WINDLOAD CHARTS ARE BASED ON COMPOSITE PROPERTIES WHICH ARE CALCULATED IN ACCORDANCE WITH AAMA TIR-A8 AND AAMA 505

**WITHOUT HORIZONTALS**

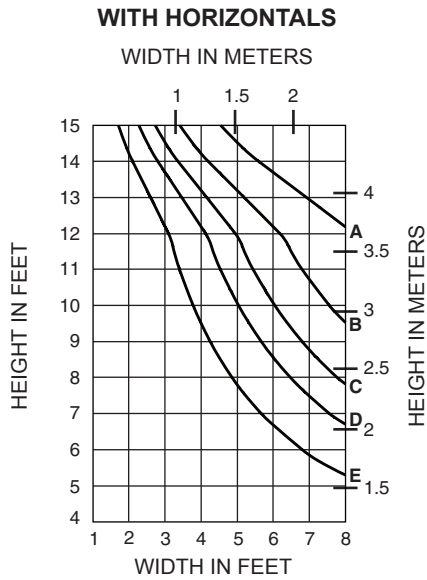


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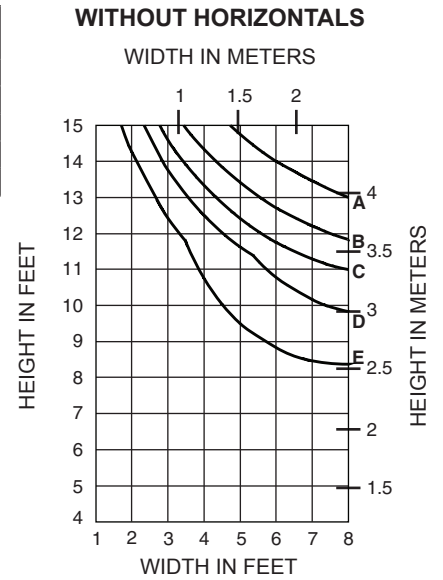


	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	15 PSF (720)	25 PSF (1200)
B =	20 PSF (960)	33 PSF (1580)
C =	25 PSF (1200)	42 PSF (2000)
D =	30 PSF (1440)	50 PSF (2400)
E =	40 PSF (1920)	67 PSF (3200)

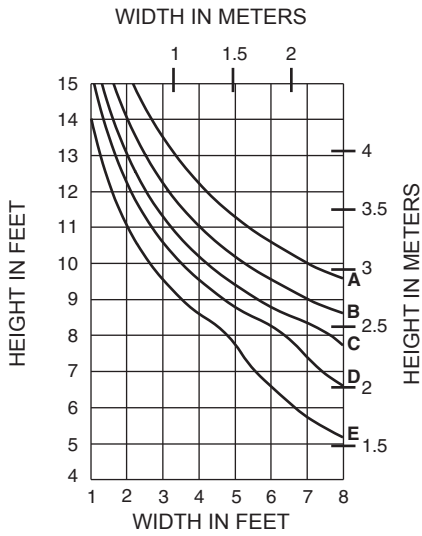


451TCG113

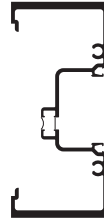
WINDLOAD CHARTS ARE BASED ON COMPOSITE PROPERTIES WHICH ARE CALCULATED IN ACCORDANCE WITH AAMA TIR-A8 AND AAMA 505



**WITH HORIZONTALS**



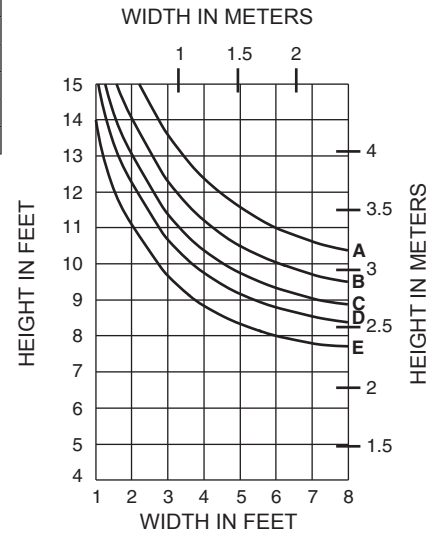
	Allowable Stress Design Load	LRFD Ultimate Design Load
<b>A =</b>	<b>15 PSF (720)</b>	<b>25 PSF (1200)</b>
<b>B =</b>	<b>20 PSF (960)</b>	<b>33 PSF (1580)</b>
<b>C =</b>	<b>25 PSF (1200)</b>	<b>42 PSF (2000)</b>
<b>D =</b>	<b>30 PSF (1440)</b>	<b>50 PSF (2400)</b>
<b>E =</b>	<b>40 PSF (1920)</b>	<b>67 PSF (3200)</b>



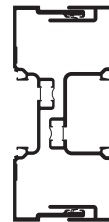
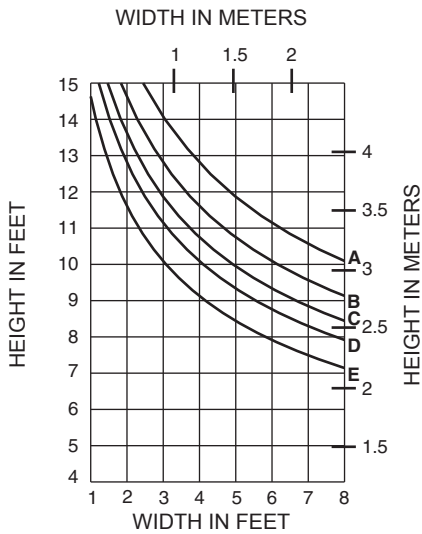
**451TCG001A**

WINDLOAD CHARTS ARE BASED ON COMPOSITE PROPERTIES WHICH ARE CALCULATED IN ACCORDANCE WITH AAMA TIR-A8 AND AAMA 505

**WITHOUT HORIZONTALS**



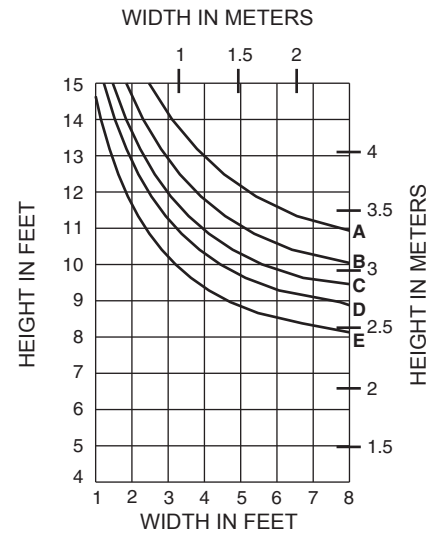
**WITH HORIZONTALS**



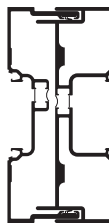
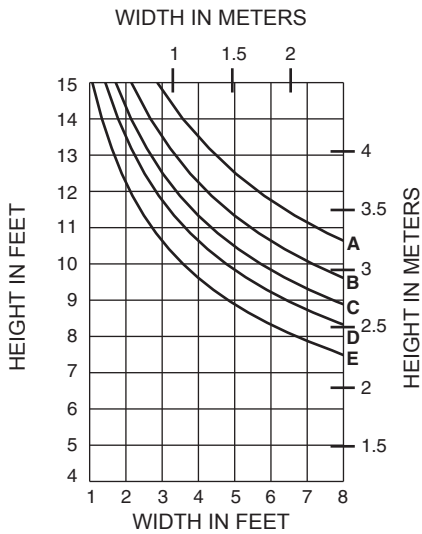
**451TCG540**  
**451TCG010**

WINDLOAD CHARTS ARE BASED ON COMPOSITE PROPERTIES WHICH ARE CALCULATED IN ACCORDANCE WITH AAMA TIR-A8 AND AAMA 505

**WITHOUT HORIZONTALS**



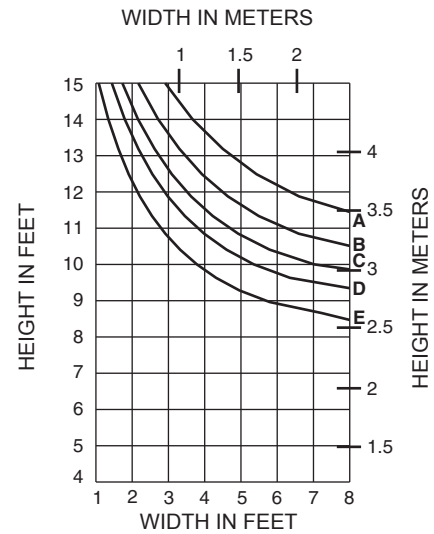
**WITH HORIZONTALS**



**451TCG540**  
**451TCG010A**

WINDLOAD CHARTS ARE BASED ON COMPOSITE PROPERTIES WHICH ARE CALCULATED IN ACCORDANCE WITH AAMA TIR-A8 AND AAMA 505

**WITHOUT HORIZONTALS**

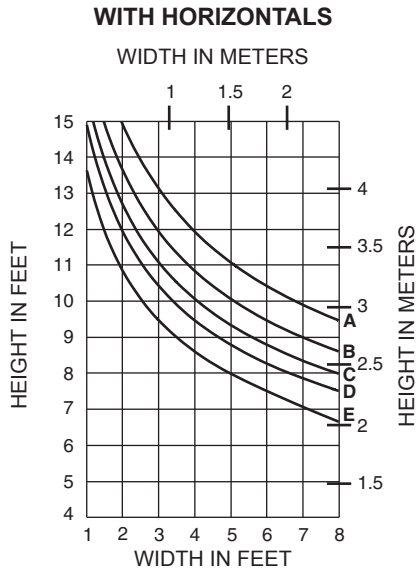


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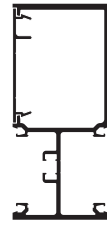
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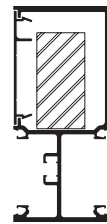
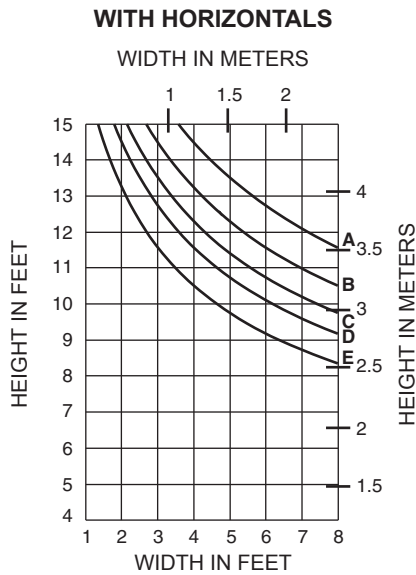
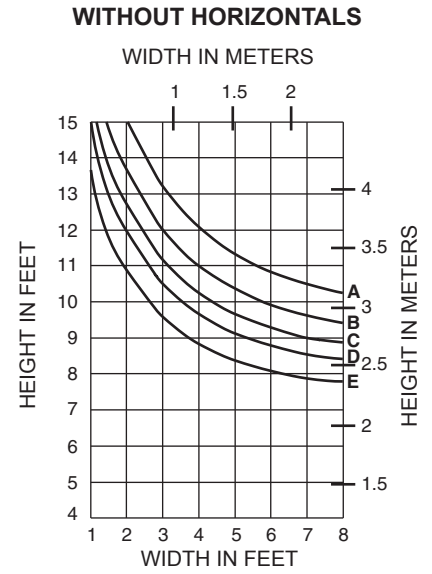


	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	15 PSF (720)	25 PSF (1200)
B =	20 PSF (960)	33 PSF (1580)
C =	25 PSF (1200)	42 PSF (2000)
D =	30 PSF (1440)	50 PSF (2400)
E =	40 PSF (1920)	67 PSF (3200)



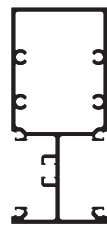
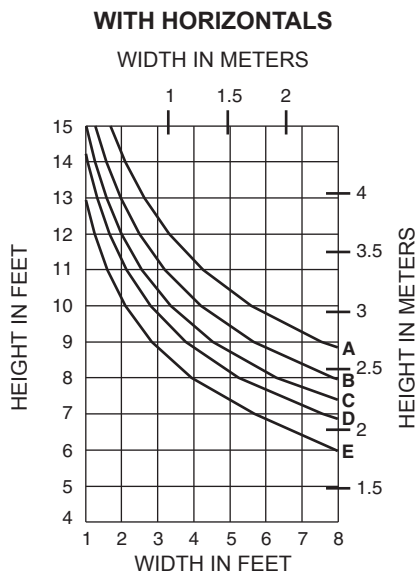
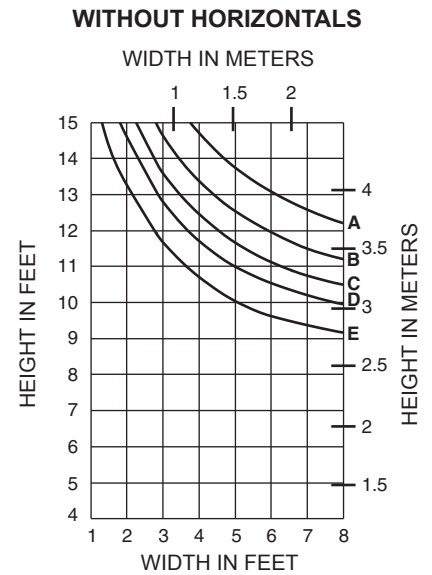
**451VG012**  
**451VG026**

$I = 3.346 (139.27 \times 10^4)$   
 $S = 1.447 (23.71 \times 10^3)$



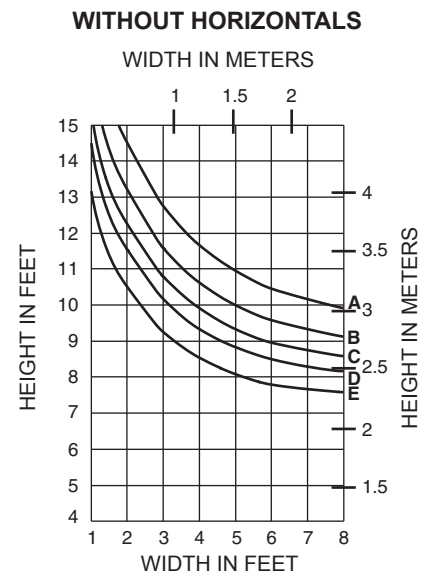
**451VG012**  
**451VG026**  
with 1" x 2-1/4" STEEL BAR

$I_A = 3.346 (139.27 \times 10^4)$   
 $S_A = 1.447 (23.71 \times 10^3)$   
 $I_S = 0.949 (39.50 \times 10^4)$   
 $S_S = 0.844 (13.83 \times 10^3)$

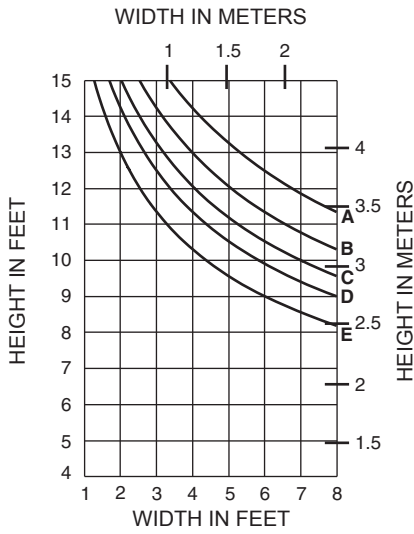


**451VG005**

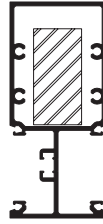
$I = 3.001 (124.91 \times 10^4)$   
 $S = 1.323 (21.68 \times 10^3)$



**WITH HORIZONTALS**



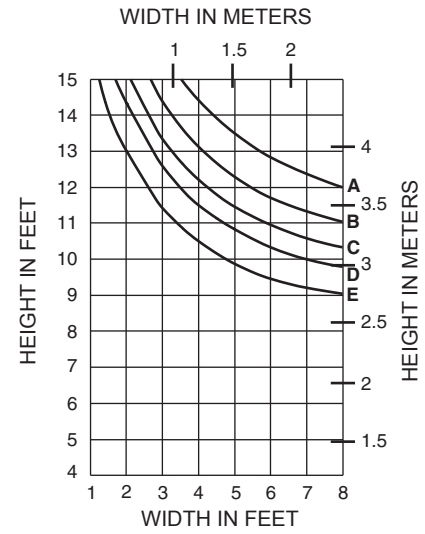
	Allowable Stress Design Load	LRFD Ultimate Design Load
<b>A =</b>	<b>15 PSF (720)</b>	<b>25 PSF (1200)</b>
<b>B =</b>	<b>20 PSF (960)</b>	<b>33 PSF (1580)</b>
<b>C =</b>	<b>25 PSF (1200)</b>	<b>42 PSF (2000)</b>
<b>D =</b>	<b>30 PSF (1440)</b>	<b>50 PSF (2400)</b>
<b>E =</b>	<b>40 PSF (1920)</b>	<b>67 PSF (3200)</b>



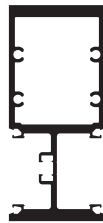
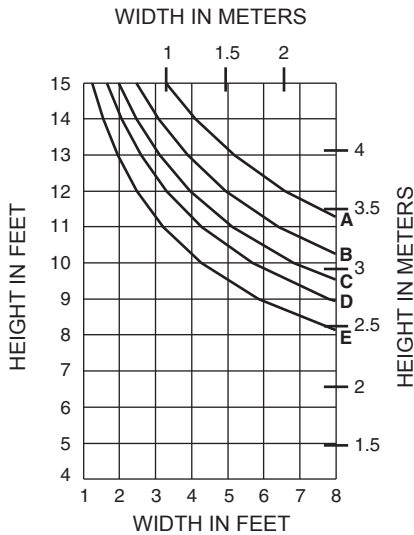
**451VG005**  
with 1" x 2-1/4" STEEL BAR

$I_A = 3.001 (124.91 \times 10^4)$   
 $S_A = 1.323 (21.68 \times 10^3)$   
 $I_S = 0.949 (39.50 \times 10^4)$   
 $S_S = 0.844 (13.83 \times 10^3)$

**WITHOUT HORIZONTALS**



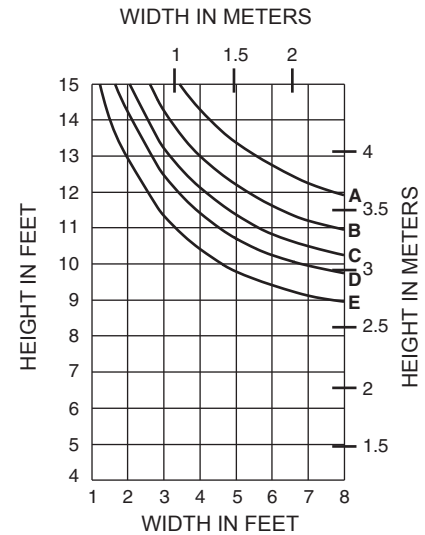
**WITH HORIZONTALS**



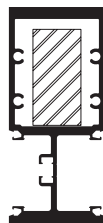
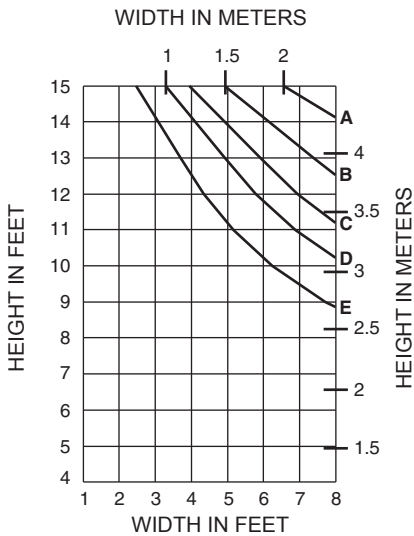
**451VG014**

$I = 5.604 (233.25 \times 10^4)$   
 $S = 2.397 (39.28 \times 10^3)$

**WITHOUT HORIZONTALS**



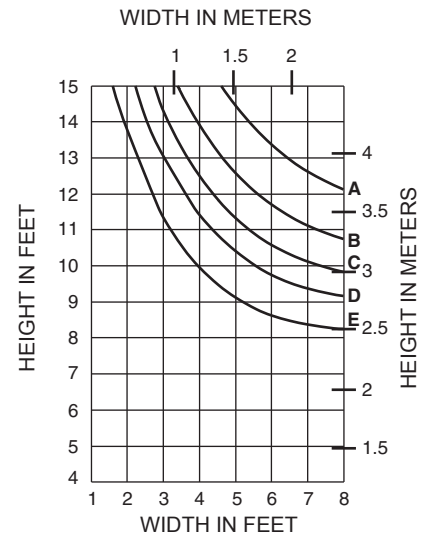
**WITH HORIZONTALS**



**451VG014**  
with 1" x 2" STEEL BAR

$I = 5.604 (233.25 \times 10^4)$   
 $S = 2.397 (39.28 \times 10^3)$   
 $I_S = 0.667 (27.26 \times 10^4)$   
 $S_S = 0.667 (10.93 \times 10^3)$

**WITHOUT HORIZONTALS**



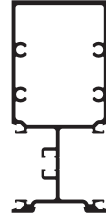
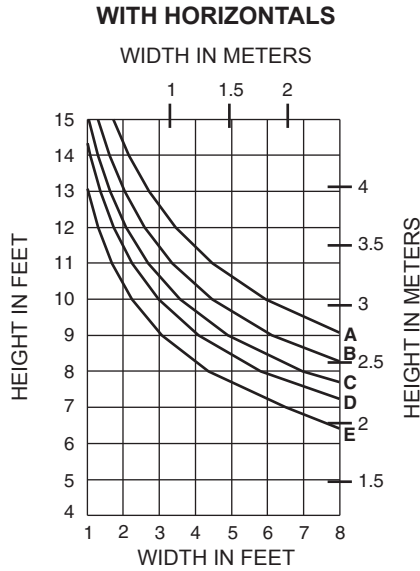
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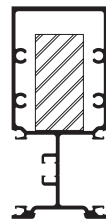
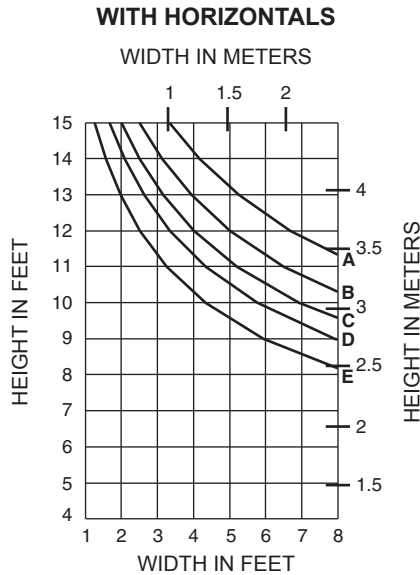
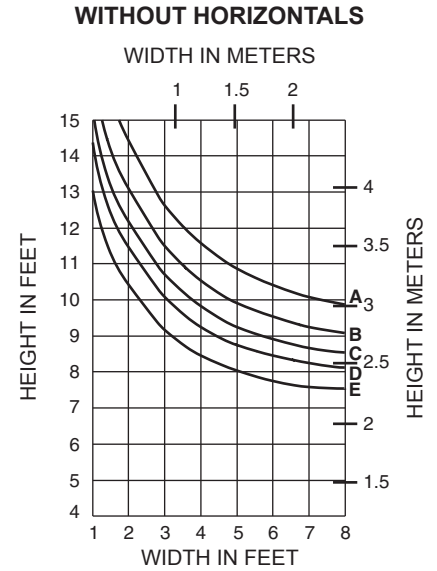
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	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	15 PSF (720)	25 PSF (1200)
B =	20 PSF (960)	33 PSF (1580)
C =	25 PSF (1200)	42 PSF (2000)
D =	30 PSF (1440)	50 PSF (2400)
E =	40 PSF (1920)	67 PSF (3200)



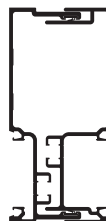
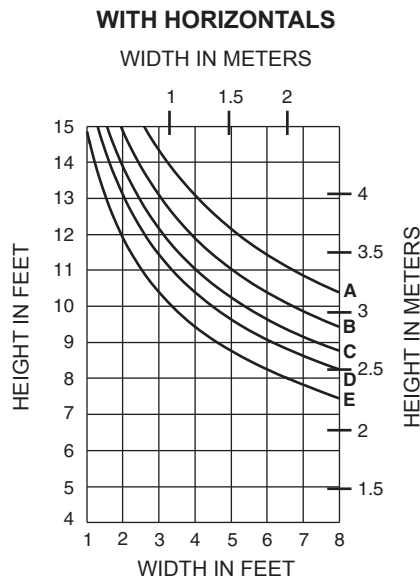
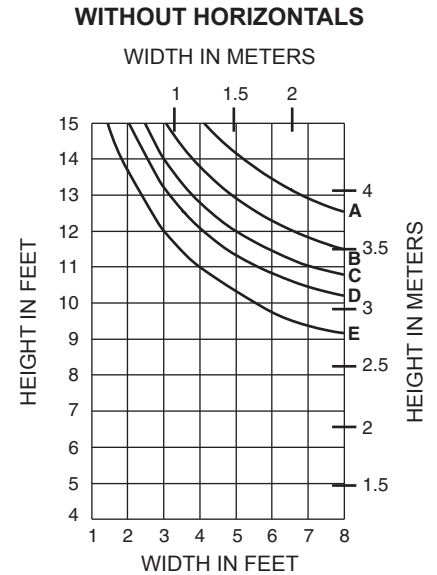
**451VG134**

$I = 2.930 (121.96 \times 10^4)$   
 $S = 1.290 (21.13 \times 10^3)$



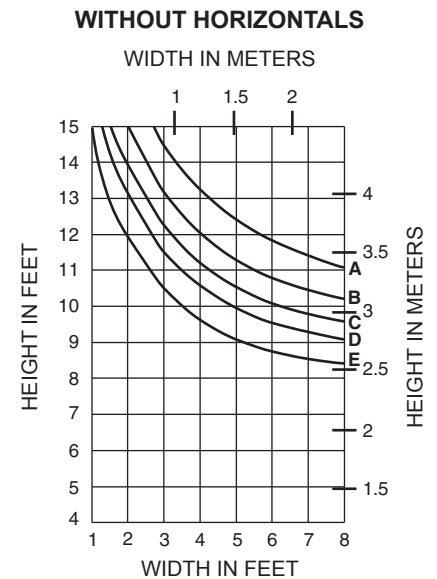
**451VG134**  
with 1" x 2-1/4" STEEL BAR

$I_A = 2.930 (121.96 \times 10^4)$   
 $S_A = 1.290 (21.13 \times 10^3)$   
 $I_S = 0.949 (39.50 \times 10^4)$   
 $S_S = 0.844 (13.83 \times 10^3)$

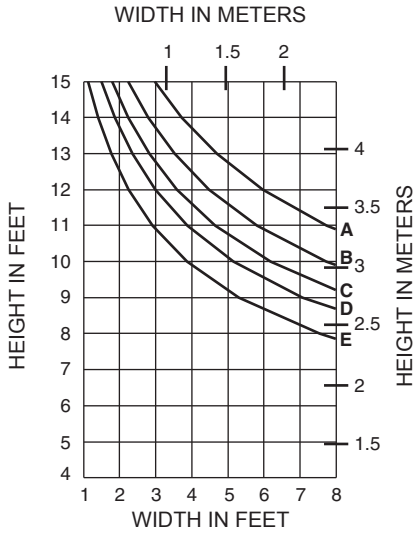


**451VG010**  
**451VG540**

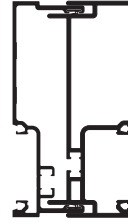
$I = 4.418 (183.89 \times 10^4)$   
 $S = 1.831 (30.00 \times 10^3)$



### WITH HORIZONTALS



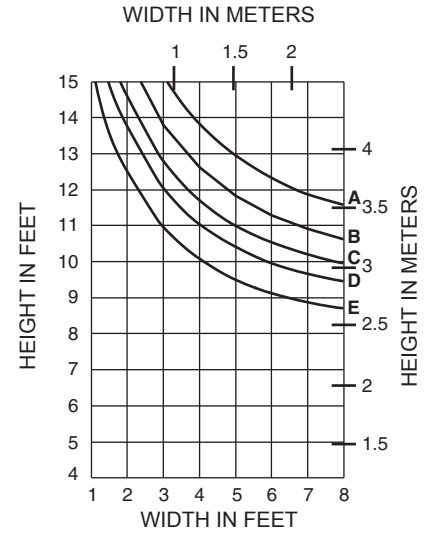
	Allowable Stress Design Load	LRFD Ultimate Design Load
<b>A =</b>	<b>15 PSF (720)</b>	<b>25 PSF (1200)</b>
<b>B =</b>	<b>20 PSF (960)</b>	<b>33 PSF (1580)</b>
<b>C =</b>	<b>25 PSF (1200)</b>	<b>42 PSF (2000)</b>
<b>D =</b>	<b>30 PSF (1440)</b>	<b>50 PSF (2400)</b>
<b>E =</b>	<b>40 PSF (1920)</b>	<b>67 PSF (3200)</b>



**451TVG010A**  
**451TVG540**

I = 5.076 (211.27 x 10<sup>4</sup>)  
S = 2.133 (34.95 x 10<sup>3</sup>)

### WITHOUT HORIZONTALS

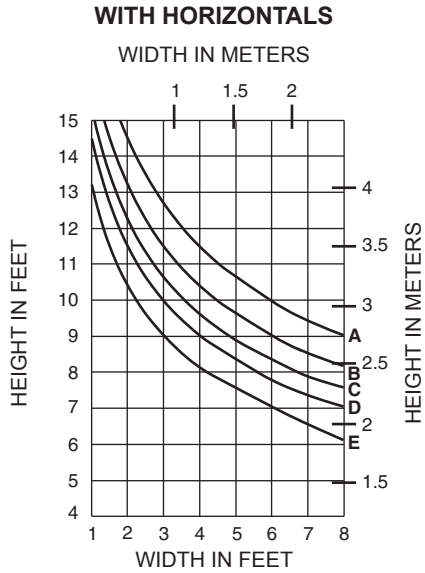


Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

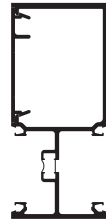
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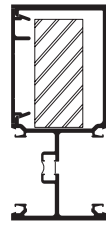
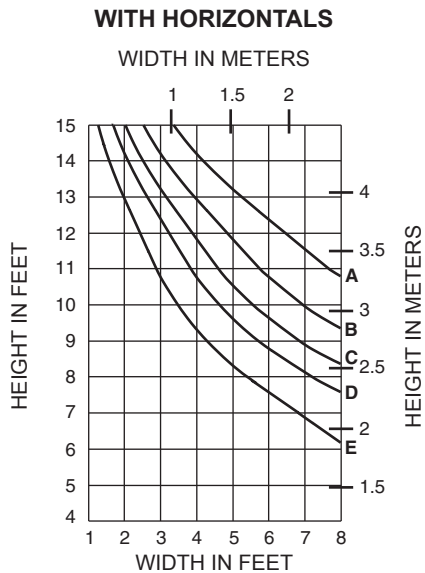
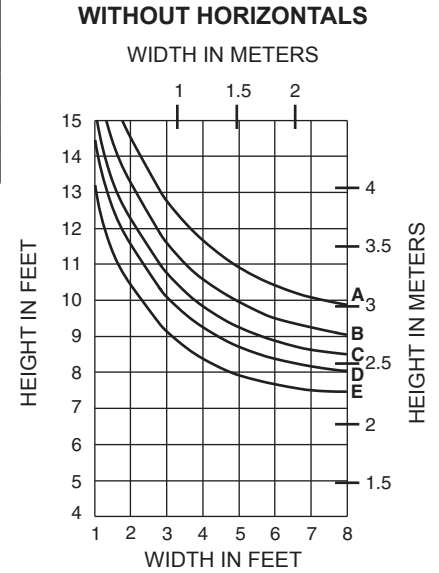


	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	15 PSF (720)	25 PSF (1200)
B =	20 PSF (960)	33 PSF (1580)
C =	25 PSF (1200)	42 PSF (2000)
D =	30 PSF (1440)	50 PSF (2400)
E =	40 PSF (1920)	67 PSF (3200)



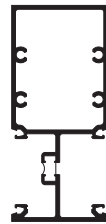
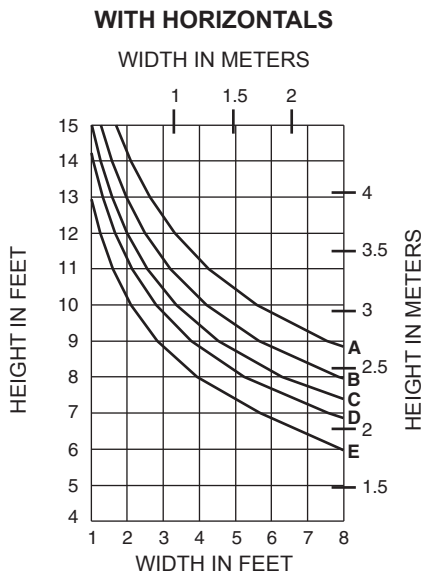
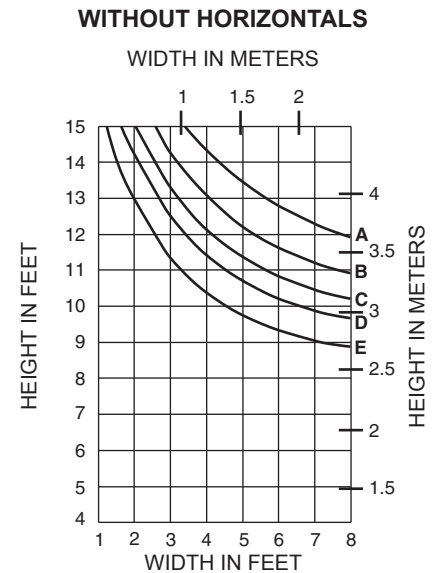
451TVG012  
451VG026

WINDLOAD CHARTS ARE BASED ON COMPOSITE PROPERTIES WHICH ARE CALCULATED IN ACCORDANCE WITH AAMA TIR-A8 AND AAMA 505



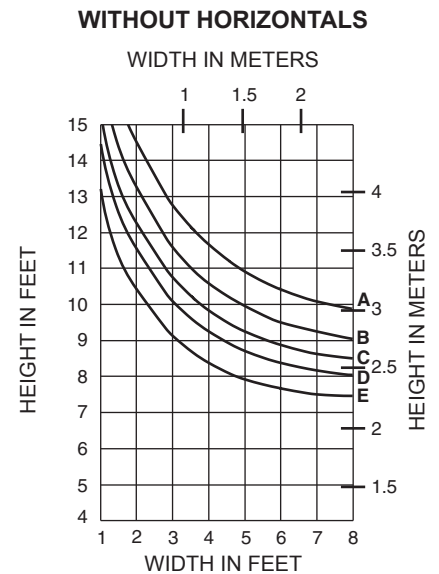
451TVG012  
451VG026  
with 1" x 2-1/4" STEEL BAR

WINDLOAD CHARTS ARE BASED ON COMPOSITE PROPERTIES WHICH ARE CALCULATED IN ACCORDANCE WITH AAMA TIR-A8 AND AAMA 505



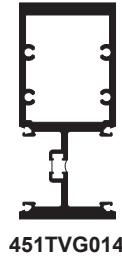
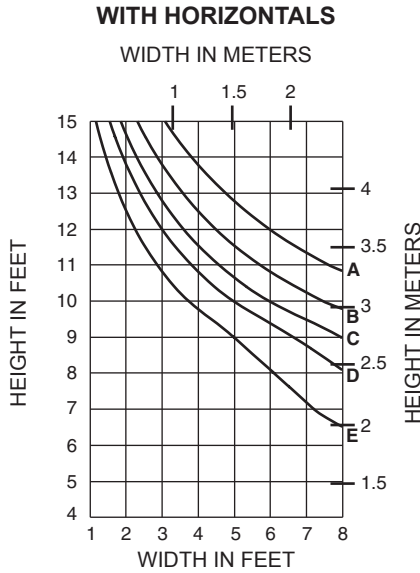
451TVG005

WINDLOAD CHARTS ARE BASED ON COMPOSITE PROPERTIES WHICH ARE CALCULATED IN ACCORDANCE WITH AAMA TIR-A8 AND AAMA 505

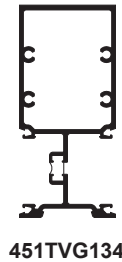
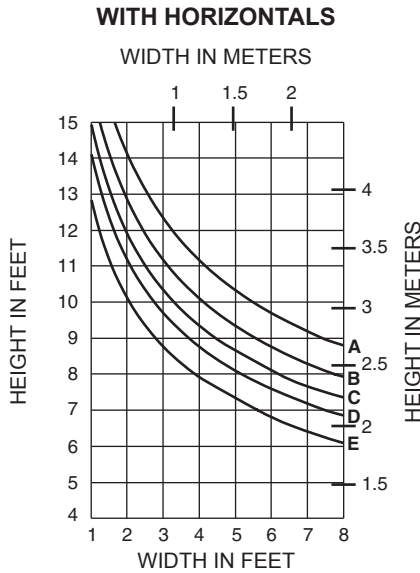
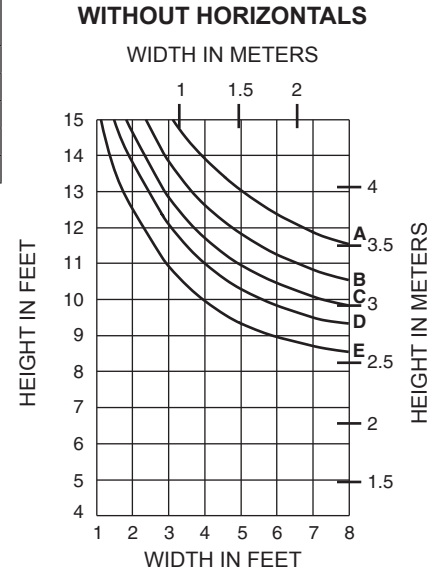




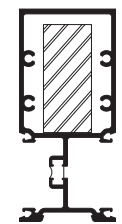
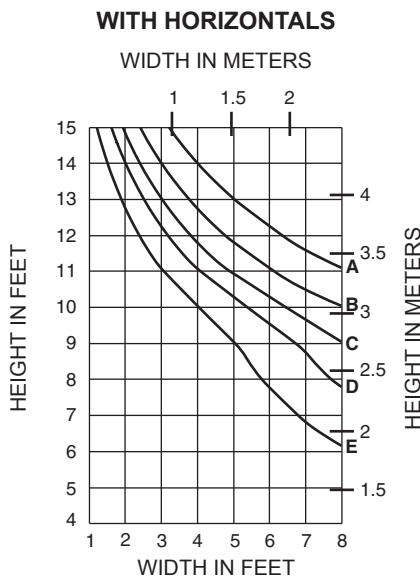
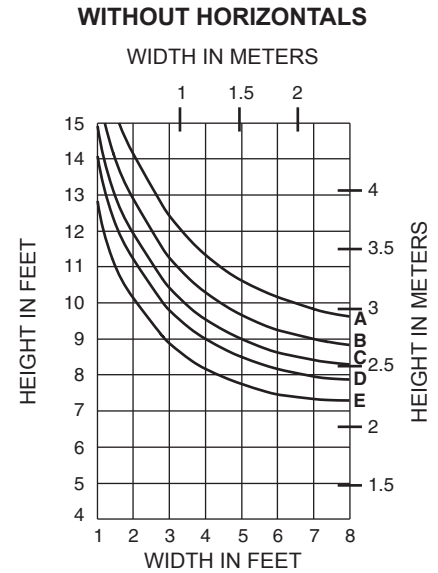
	Allowable Stress Design Load	LRFD Ultimate Design Load
<b>A =</b>	<b>15 PSF (720)</b>	<b>25 PSF (1200)</b>
<b>B =</b>	<b>20 PSF (960)</b>	<b>33 PSF (1580)</b>
<b>C =</b>	<b>25 PSF (1200)</b>	<b>42 PSF (2000)</b>
<b>D =</b>	<b>30 PSF (1440)</b>	<b>50 PSF (2400)</b>
<b>E =</b>	<b>40 PSF (1920)</b>	<b>67 PSF (3200)</b>



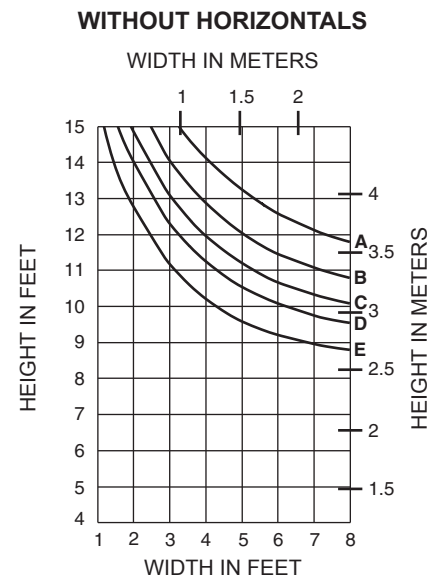
WINDLOAD CHARTS ARE BASED ON COMPOSITE PROPERTIES WHICH ARE CALCULATED IN ACCORDANCE WITH AAMA TIR-A8 AND AAMA 505



WINDLOAD CHARTS ARE BASED ON COMPOSITE PROPERTIES WHICH ARE CALCULATED IN ACCORDANCE WITH AAMA TIR-A8 AND AAMA 505



WINDLOAD CHARTS ARE BASED ON COMPOSITE PROPERTIES WHICH ARE CALCULATED IN ACCORDANCE WITH AAMA TIR-A8 AND AAMA 505

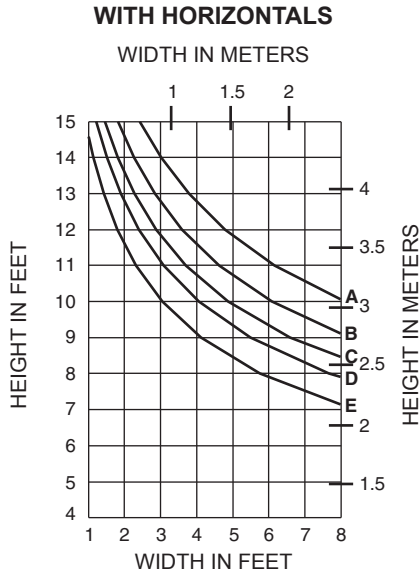


Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

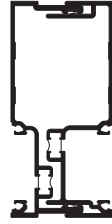
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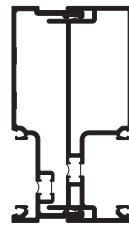
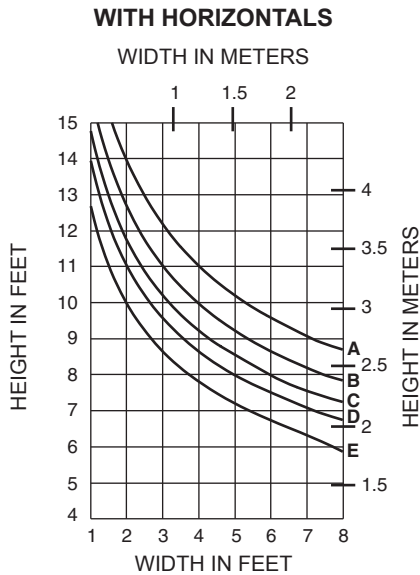


	Allowable Stress Design Load	LRFD Ultimate Design Load
<b>A =</b>	<b>15 PSF (720)</b>	<b>25 PSF (1200)</b>
<b>B =</b>	<b>20 PSF (960)</b>	<b>33 PSF (1580)</b>
<b>C =</b>	<b>25 PSF (1200)</b>	<b>42 PSF (2000)</b>
<b>D =</b>	<b>30 PSF (1440)</b>	<b>50 PSF (2400)</b>
<b>E =</b>	<b>40 PSF (1920)</b>	<b>67 PSF (3200)</b>



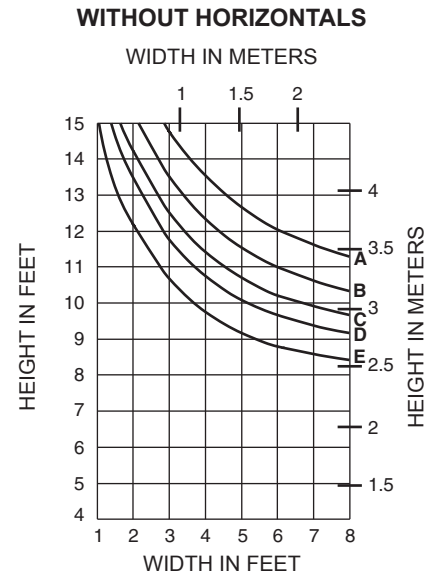
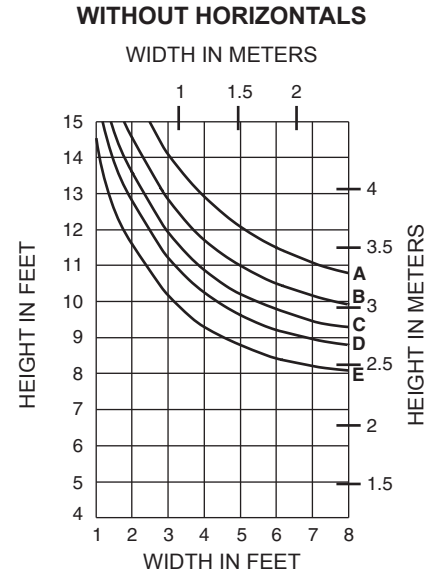
**451TVG540**  
**451TVG010**

WINDLOAD CHARTS ARE BASED ON COMPOSITE PROPERTIES WHICH ARE CALCULATED IN ACCORDANCE WITH AAMA TIR-A8 AND AAMA 505

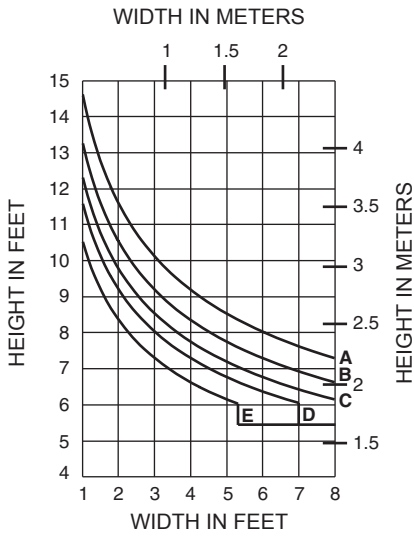


**451TVG540**  
**451TVG010A**

WINDLOAD CHARTS ARE BASED ON COMPOSITE PROPERTIES WHICH ARE CALCULATED IN ACCORDANCE WITH AAMA TIR-A8 AND AAMA 505



**WITH HORIZONTALS**



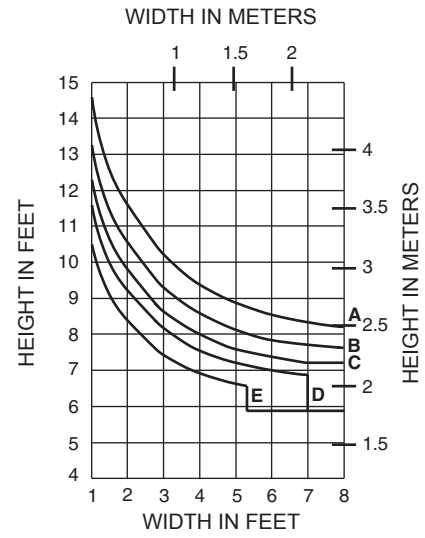
	Allowable Stress Design Load	LRFD Ultimate Design Load
<b>A =</b>	<b>15 PSF (720)</b>	<b>25 PSF (1200)</b>
<b>B =</b>	<b>20 PSF (960)</b>	<b>33 PSF (1580)</b>
<b>C =</b>	<b>25 PSF (1200)</b>	<b>42 PSF (2000)</b>
<b>D =</b>	<b>30 PSF (1440)</b>	<b>50 PSF (2400)</b>
<b>E =</b>	<b>40 PSF (1920)</b>	<b>67 PSF (3200)</b>



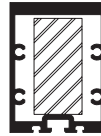
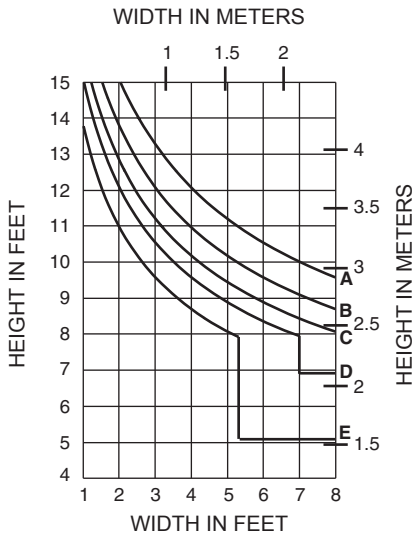
**451SSG005**

$I = 1.527 (63.55 \times 10^4)$   
 $S = 1.057 (17.32 \times 10^3)$

**WITHOUT HORIZONTALS**



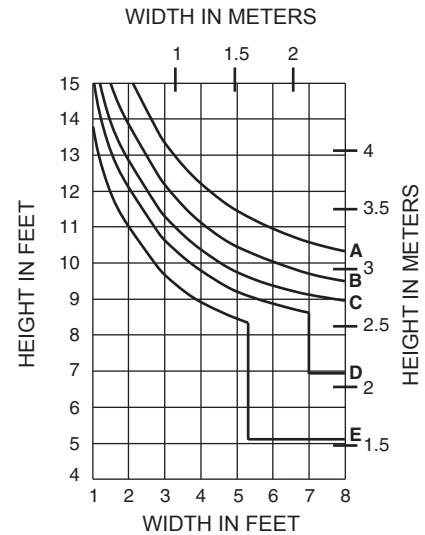
**WITH HORIZONTALS**



**451SSG005**  
**with 1" x 2" STEEL BAR**

$I_A = 1.527 (63.55 \times 10^4)$   
 $S_A = 1.057 (17.32 \times 10^3)$   
 $I_S = 0.667 (27.76 \times 10^4)$   
 $S_S = 0.667 (10.93 \times 10^3)$

**WITHOUT HORIZONTALS**

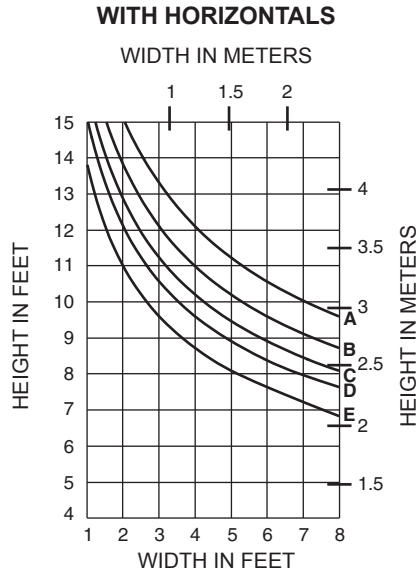


Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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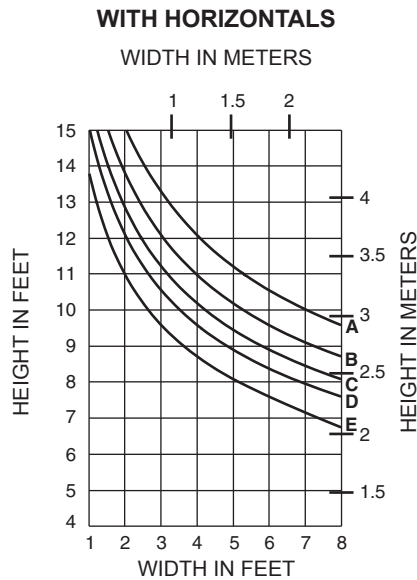
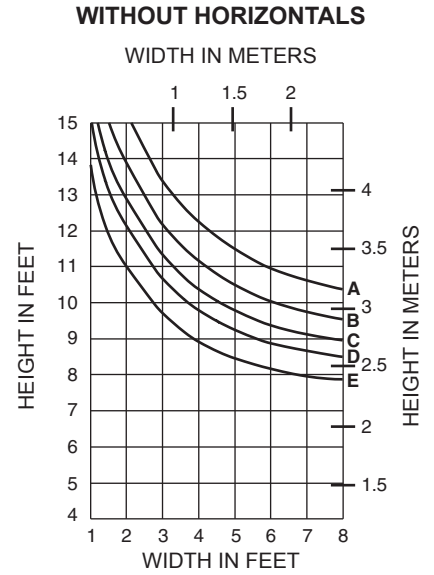


	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	15 PSF (720)	25 PSF (1200)
B =	20 PSF (960)	33 PSF (1580)
C =	25 PSF (1200)	42 PSF (2000)
D =	30 PSF (1440)	50 PSF (2400)
E =	40 PSF (1920)	67 PSF (3200)



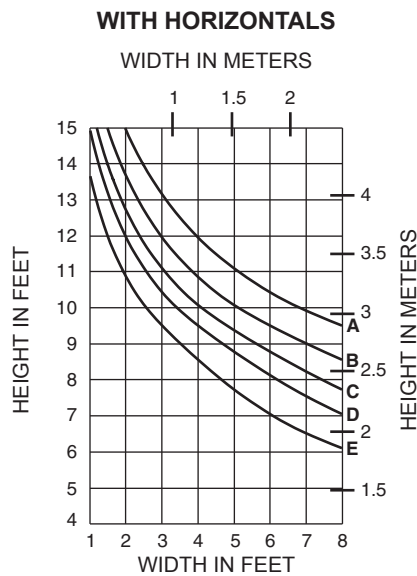
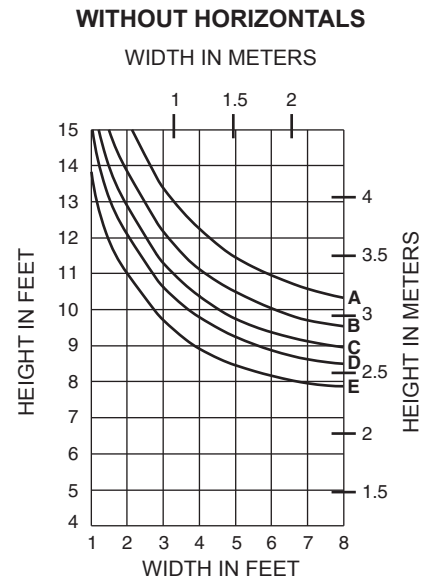
**451VG001**  
**451CG002**

I = 3.485 (145.05 x 10<sup>4</sup>)  
S = 1.468 (24.06 x 10<sup>3</sup>)



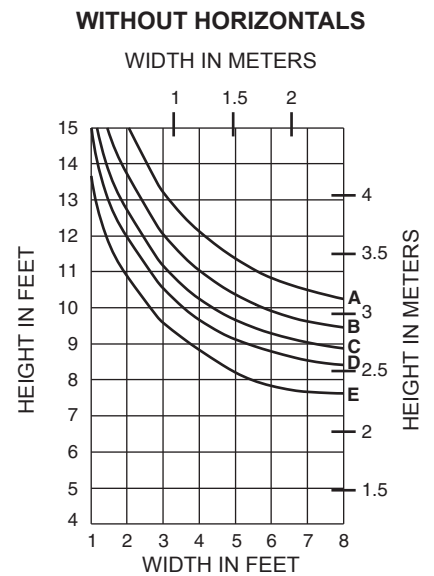
**451VG052**  
**451CG028**

I = 3.470 (144.43 x 10<sup>4</sup>)  
S = 1.431 (23.45 x 10<sup>3</sup>)



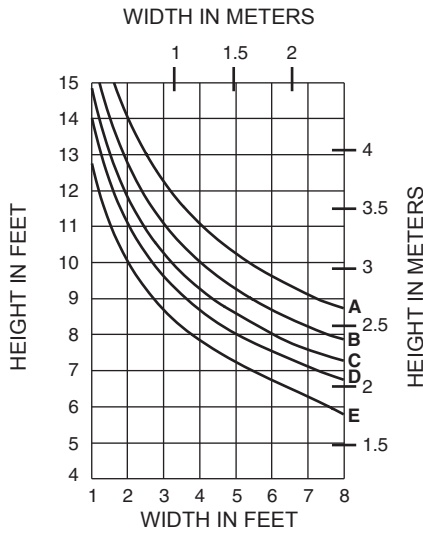
**451VG069**  
**451VG069**

I = 3.362 (139.94 x 10<sup>4</sup>)  
S = 1.180 (19.34 x 10<sup>3</sup>)



	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	15 PSF (720)	25 PSF (1200)
B =	20 PSF (960)	33 PSF (1580)
C =	25 PSF (1200)	42 PSF (2000)
D =	30 PSF (1440)	50 PSF (2400)
E =	40 PSF (1920)	67 PSF (3200)

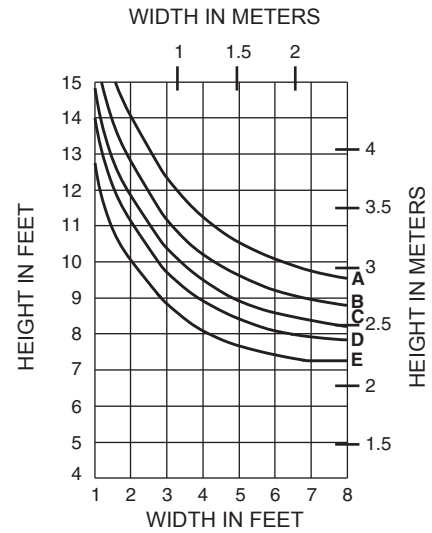
**WITH HORIZONTALS**



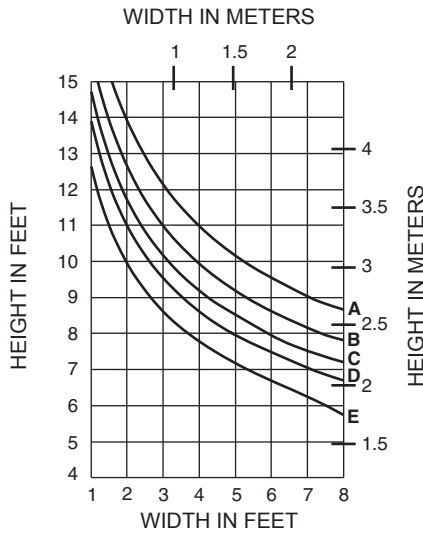
**451TVG001**

WINDLOAD CHARTS ARE BASED ON COMPOSITE PROPERTIES WHICH ARE CALCULATED IN ACCORDANCE WITH AAMA TIR-A8 AND AAMA 505

**WITHOUT HORIZONTALS**



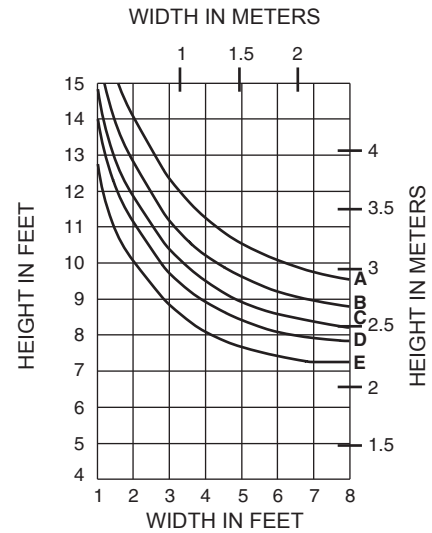
**WITH HORIZONTALS**



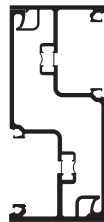
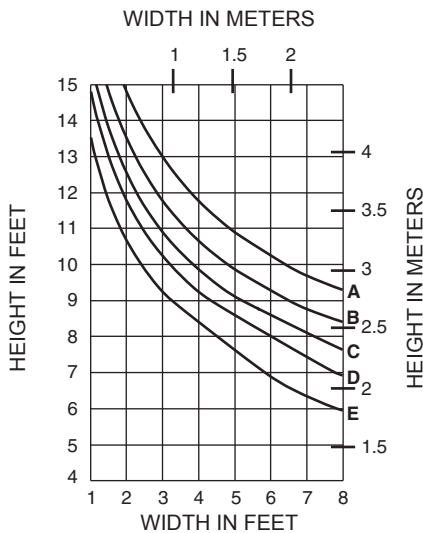
**451TVG052**

WINDLOAD CHARTS ARE BASED ON COMPOSITE PROPERTIES WHICH ARE CALCULATED IN ACCORDANCE WITH AAMA TIR-A8 AND AAMA 505

**WITHOUT HORIZONTALS**



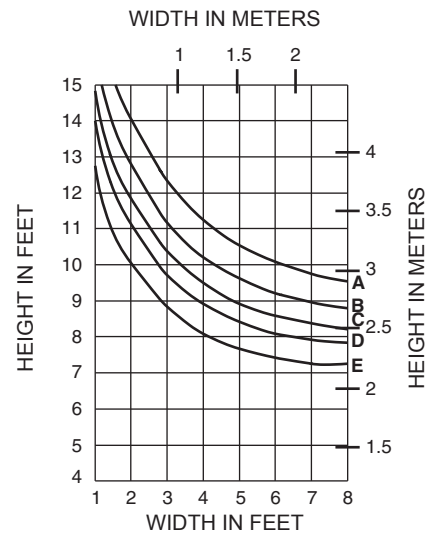
**WITH HORIZONTALS**



**451TVG069**  
**451TVG069**

WINDLOAD CHARTS ARE BASED ON COMPOSITE PROPERTIES WHICH ARE CALCULATED IN ACCORDANCE WITH AAMA TIR-A8 AND AAMA 505

**WITHOUT HORIZONTALS**



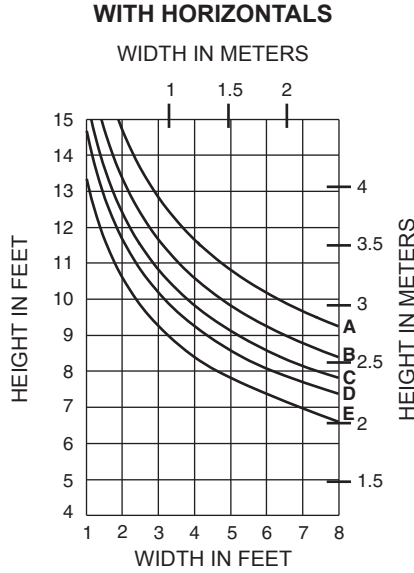
Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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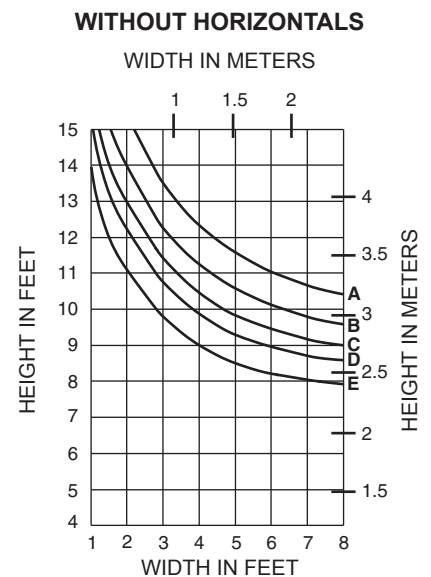
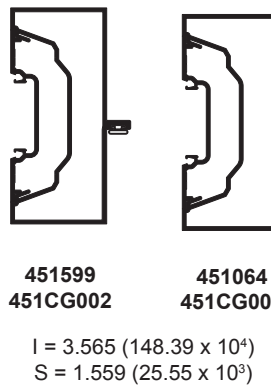
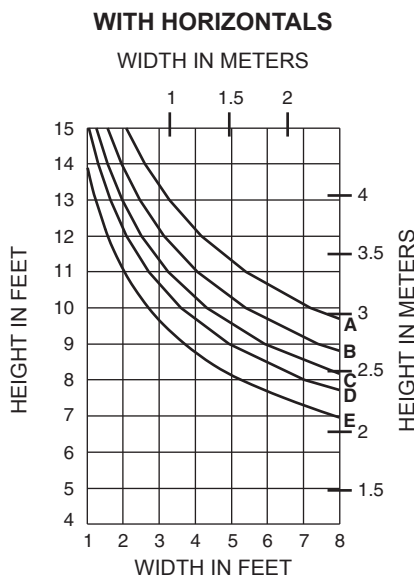
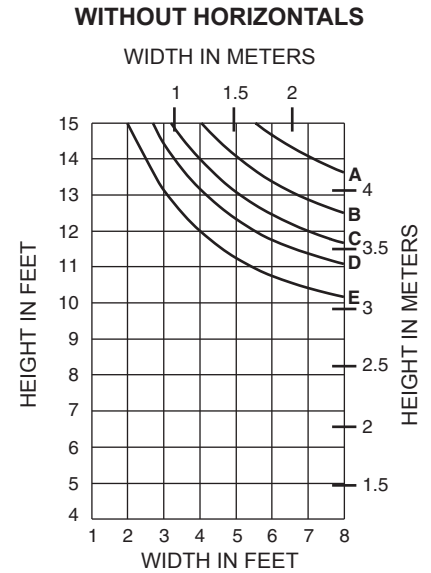
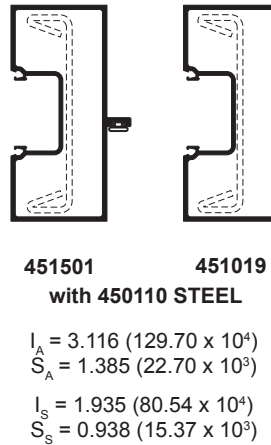
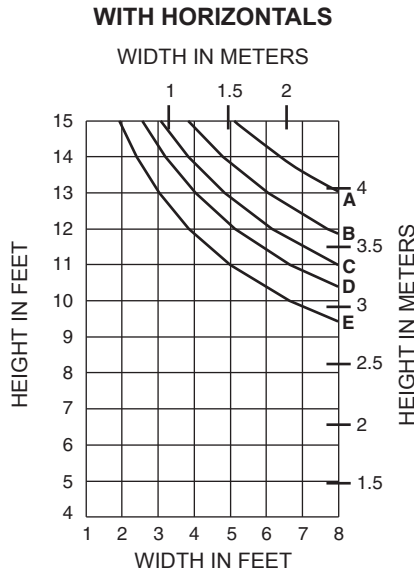
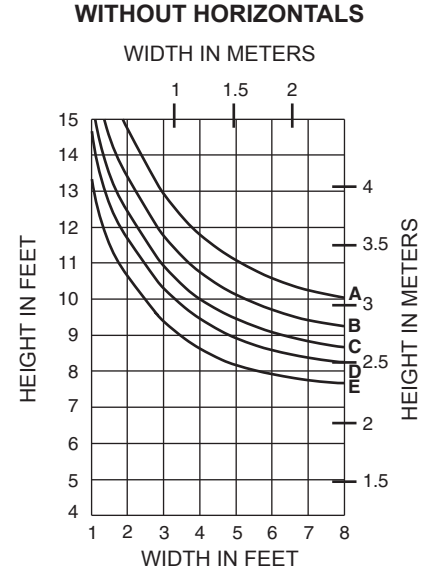
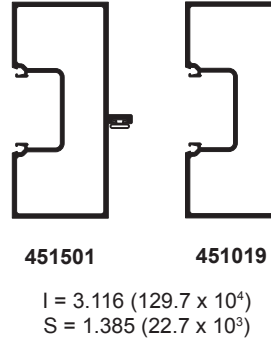
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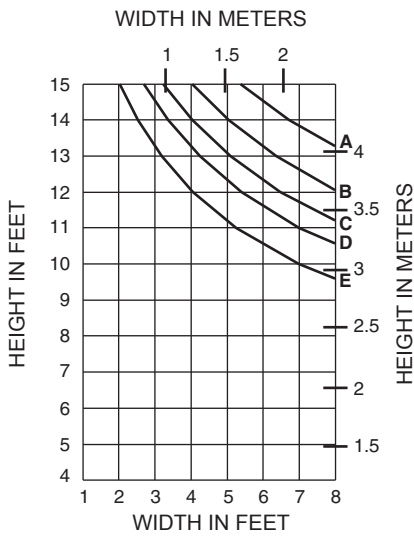
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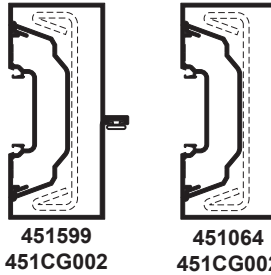
	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	15 PSF (720)	25 PSF (1200)
B =	20 PSF (960)	33 PSF (1580)
C =	25 PSF (1200)	42 PSF (2000)
D =	30 PSF (1440)	50 PSF (2400)
E =	40 PSF (1920)	67 PSF (3200)



**WITH HORIZONTALS**



	Allowable Stress Design Load	LFRD Ultimate Design Load
<b>A =</b>	<b>15 PSF (720)</b>	<b>25 PSF (1200)</b>
<b>B =</b>	<b>20 PSF (960)</b>	<b>33 PSF (1580)</b>
<b>C =</b>	<b>25 PSF (1200)</b>	<b>42 PSF (2000)</b>
<b>D =</b>	<b>30 PSF (1440)</b>	<b>50 PSF (2400)</b>
<b>E =</b>	<b>40 PSF (1920)</b>	<b>67 PSF (3200)</b>

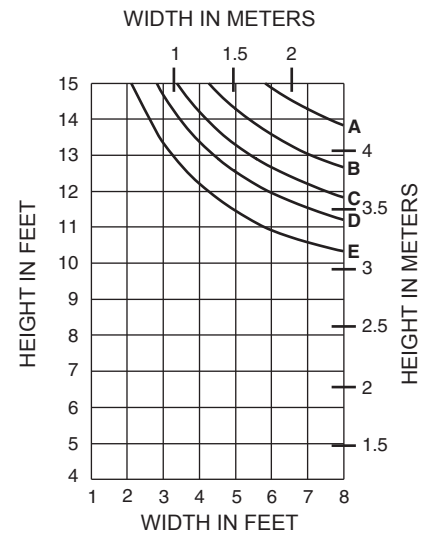


**with 450110 STEEL**

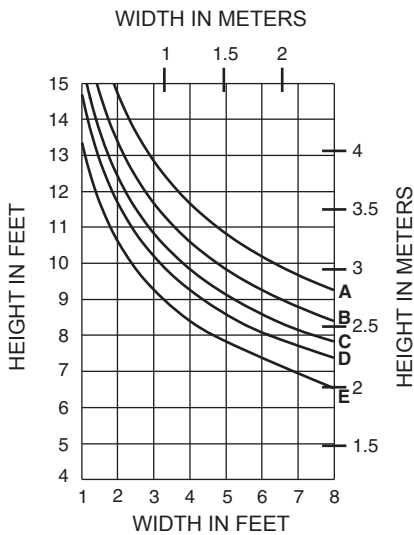
$I = 3.565 (148.39 \times 10^4)$   
 $S = 1.559 (25.55 \times 10^3)$

$I_s = 1.935 (80.54 \times 10^4)$   
 $S_s = 0.938 (15.37 \times 10^3)$

**WITHOUT HORIZONTALS**



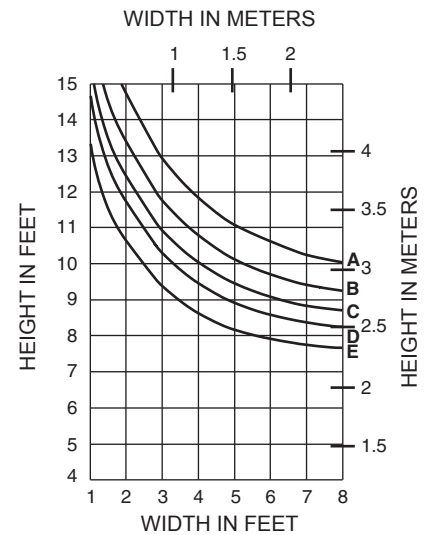
**WITH HORIZONTALS**



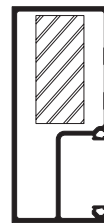
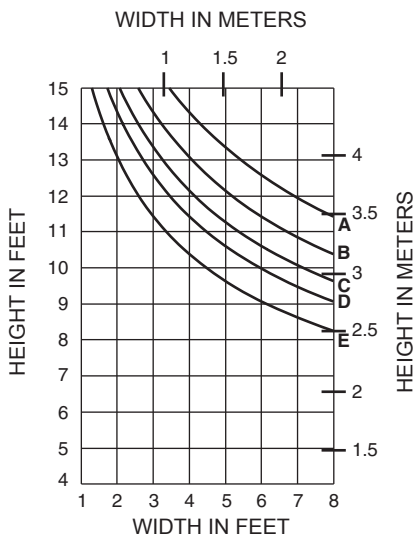
**451VG019**

$I = 3.124 (130.03 \times 10^4)$   
 $S = 1.333 (21.84 \times 10^3)$

**WITHOUT HORIZONTALS**



**WITH HORIZONTALS**



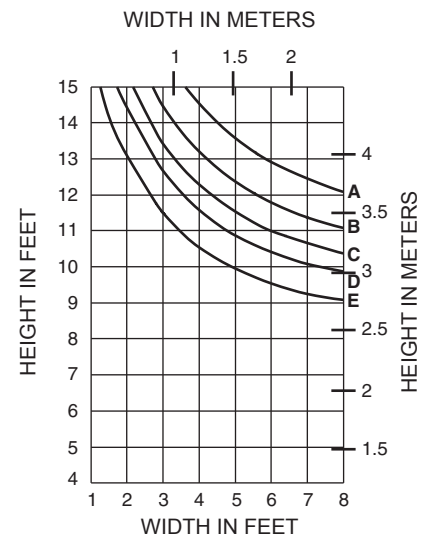
**451VG019**

**with 1" x 2-1/4" STEEL BAR**

$I_A = 3.124 (130.03 \times 10^4)$   
 $S_A = 1.333 (21.84 \times 10^3)$

$I_s = 0.949 (39.50 \times 10^4)$   
 $S_s = 0.844 (13.83 \times 10^3)$

**WITHOUT HORIZONTALS**



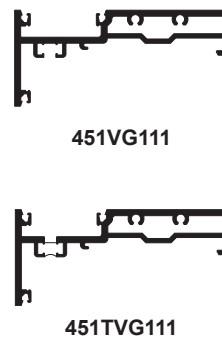
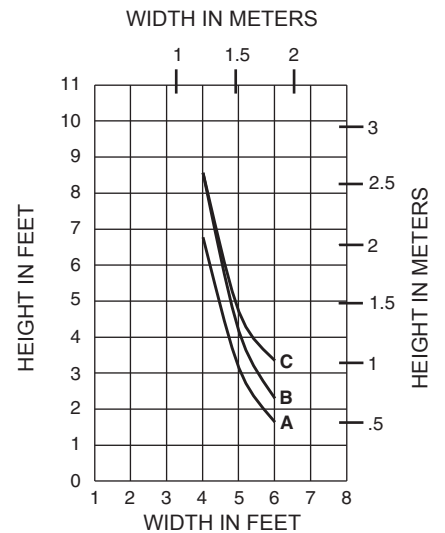
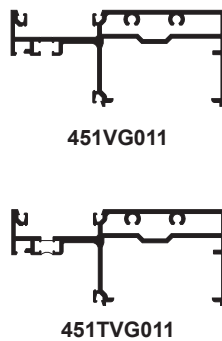
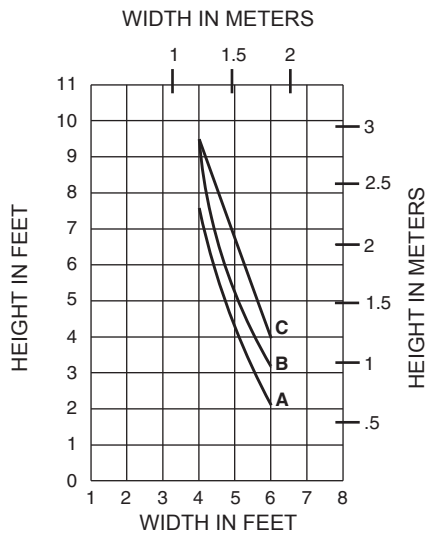
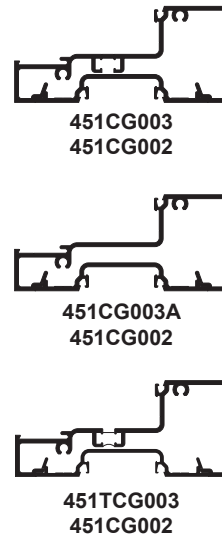
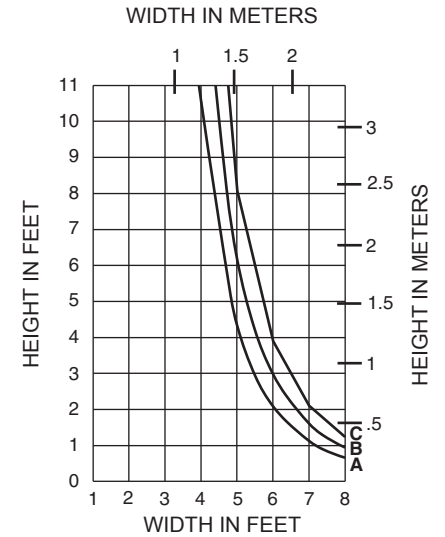
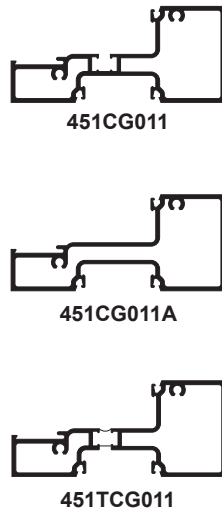
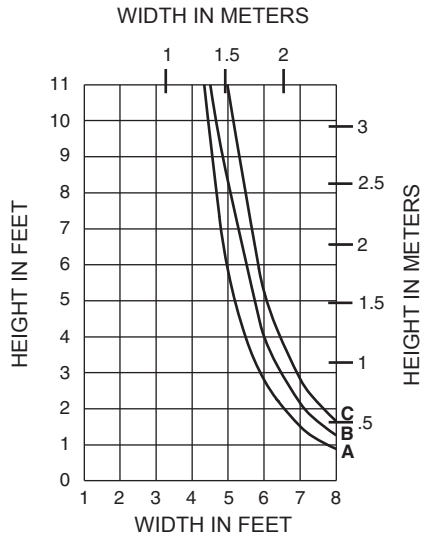
Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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Horizontal or deadload limitations are based upon 1/8" (3.2) maximum allowable deflection at the center of an intermediate horizontal member. The accompanying charts are calculated for 1" (25.4) thick insulating glass supported on two setting blocks at the loading points shown.

**NOTE:** Charts are for THERMAL and NON-THERMAL members.

- A = (1/4 POINT LOADING)
- B = (1/6 POINT LOADING)
- C = (1/8 POINT LOADING)



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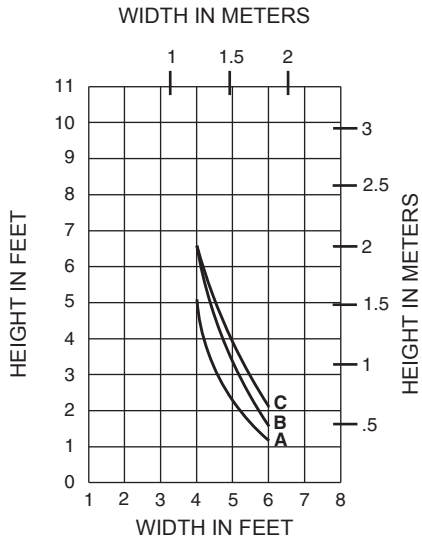
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Horizontal or deadload limitations are based upon 1/8" (3.2) maximum allowable deflection at the center of an intermediate horizontal member. The accompanying charts are calculated for 1" (25.4) thick insulating glass supported on two setting blocks at the loading points shown.

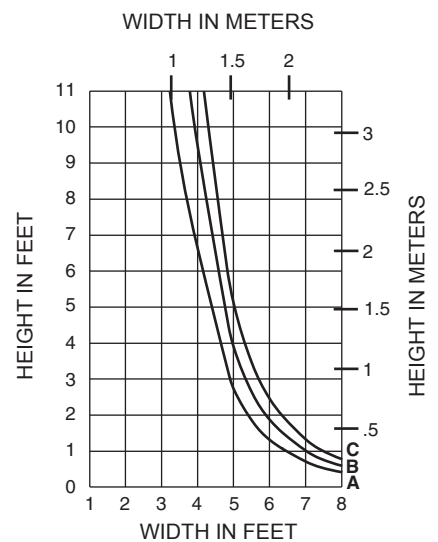
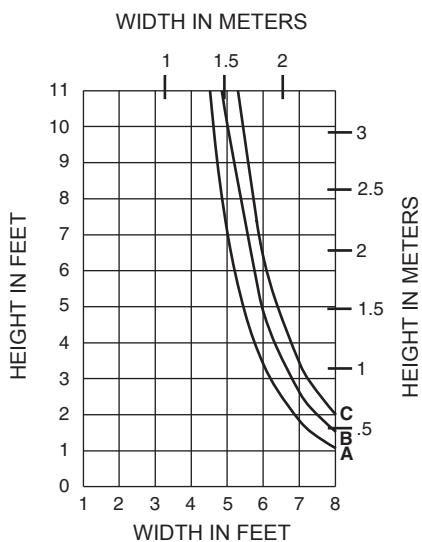
**NOTE:** Charts are for THERMAL and NON-THERMAL members.

- A = (1/4 POINT LOADING)
- B = (1/6 POINT LOADING)
- C = (1/8 POINT LOADING)



Height limitations for transom glass over a doorway are based upon a 1/16" (1.6) maximum allowable deflection at the center of a transom bar. The accompanying charts are calculated for 1" (25.4) thick insulating glass supported on two setting blocks placed at the loading points shown.

- A = (1/4 POINT LOADING)
- B = (1/6 POINT LOADING)
- C = (1/8 POINT LOADING)

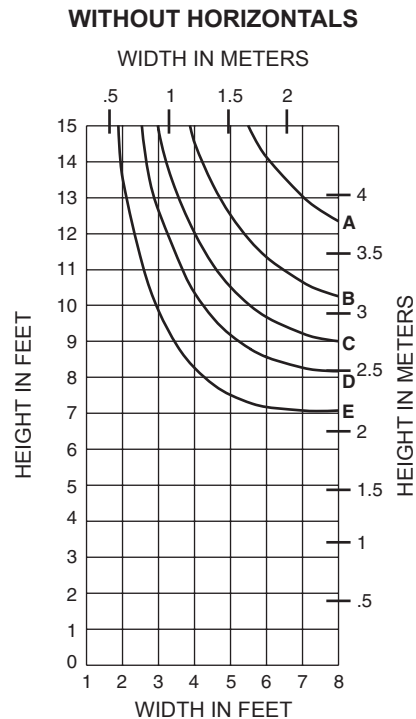
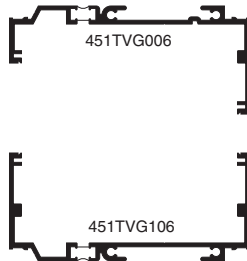
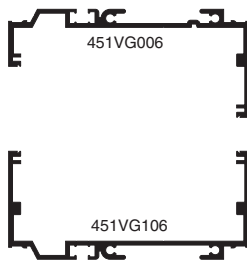
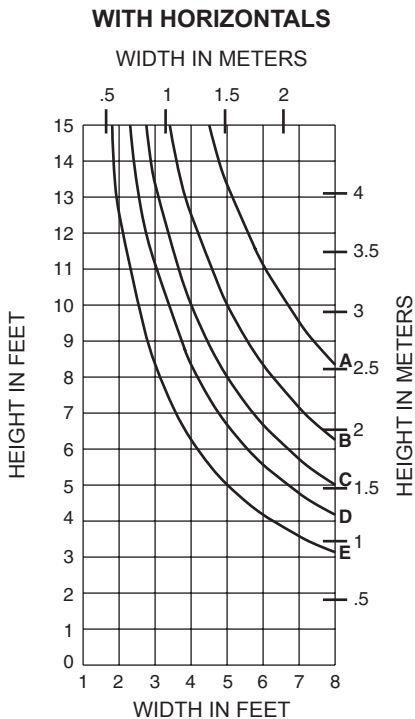


Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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For each application, end reactions MUST be checked. These charts are used to verify that the end reactions at the head and sill receptors are 500 lbs. (2224N) or less and will meet the specified windload.

- A = 15 PSF (720 Pa)
- B = 20 PSF (960 Pa)
- C = 25 PSF (1200 Pa)
- D = 30 PSF (1440 Pa)
- E = 40 PSF (1920 Pa)

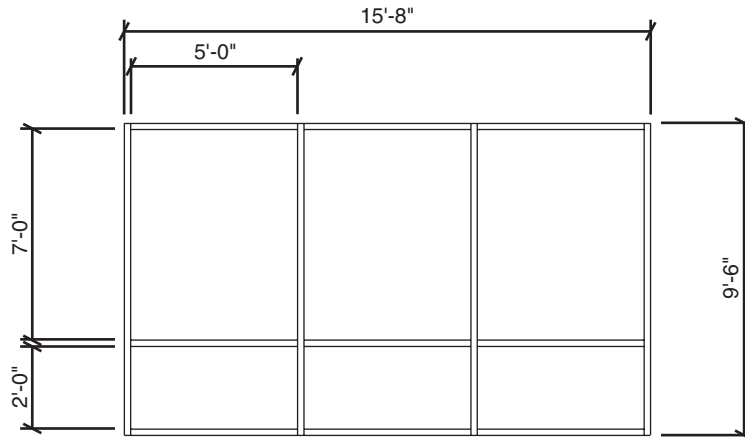


500lbs. Max. End Reaction

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**Generic Project Specific U-factor Example Calculation**  
 (Percent of Glass will vary on specific products depending on sitelines)



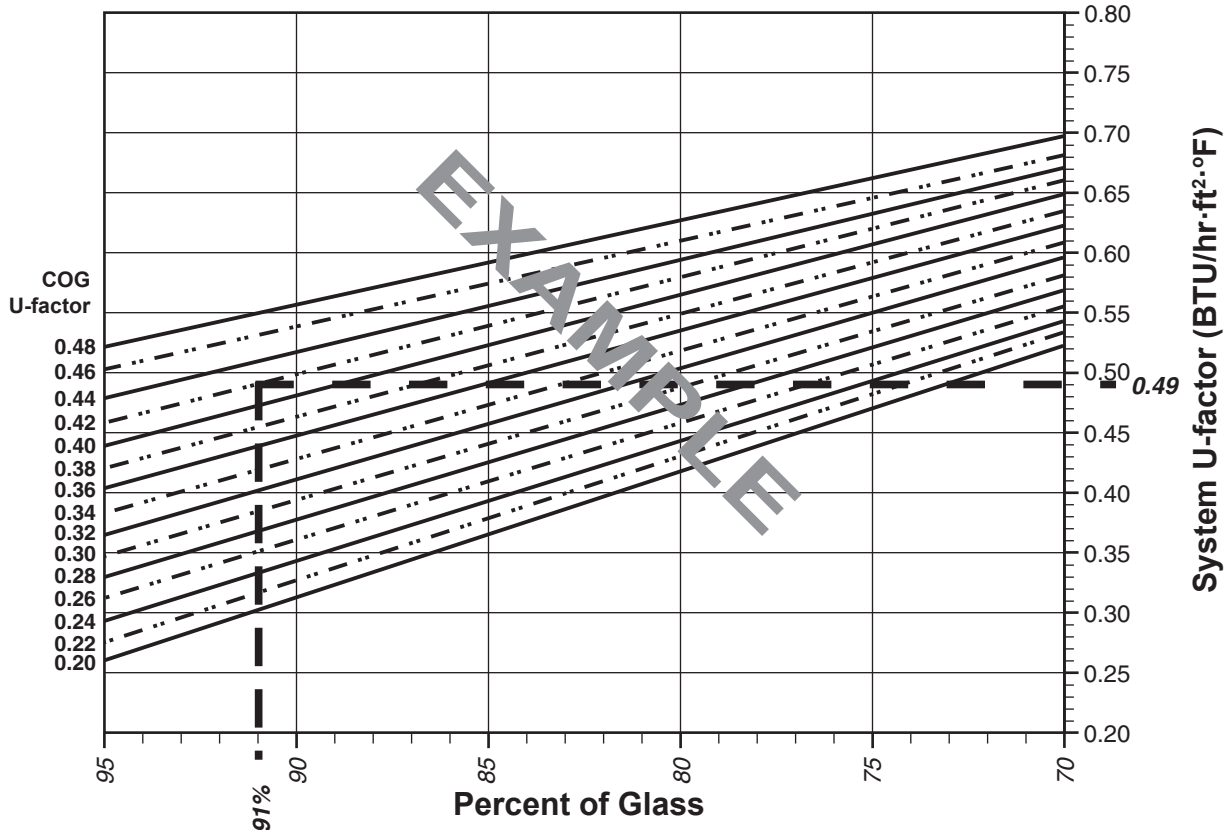
Example Glass U-factor = 0.42 Btu/hr·ft<sup>2</sup>·°F

Total Daylight Opening = 3(5' x 7') + 3(5' x 2') = 135ft<sup>2</sup>

Total Projected Area = (Total Daylight Opening + Total Area of Framing System)  
 = 15'-8" x 9'-6" = 148.83ft<sup>2</sup>

Percent of Glass = (Total Daylight Opening ÷ Total Projected Area)  
 = (135 ÷ 148.83)100 = 91%

**System U-factor vs Percent of Glass Area**



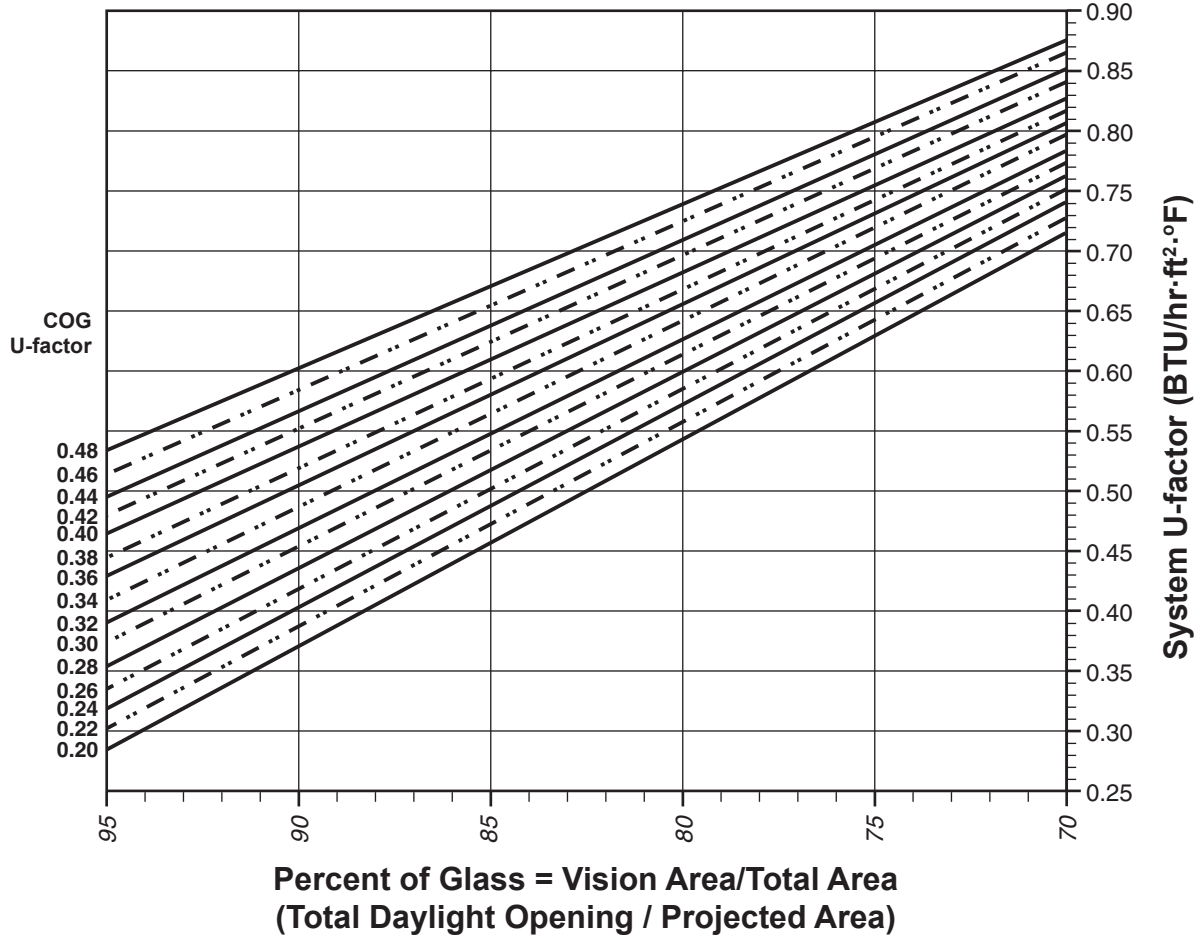
**Based on 91% glass and center of glass (COG) U-factor of 0.42**  
**System U-factor is equal to 0.49 Btu/hr x ft<sup>2</sup> x °F**

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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## Trifab™ VG 451 (CENTER – Non-Thermal)

### System U-factor vs Percent of Glass Area



**Notes for System U-Factor, SHGC and VT charts:**

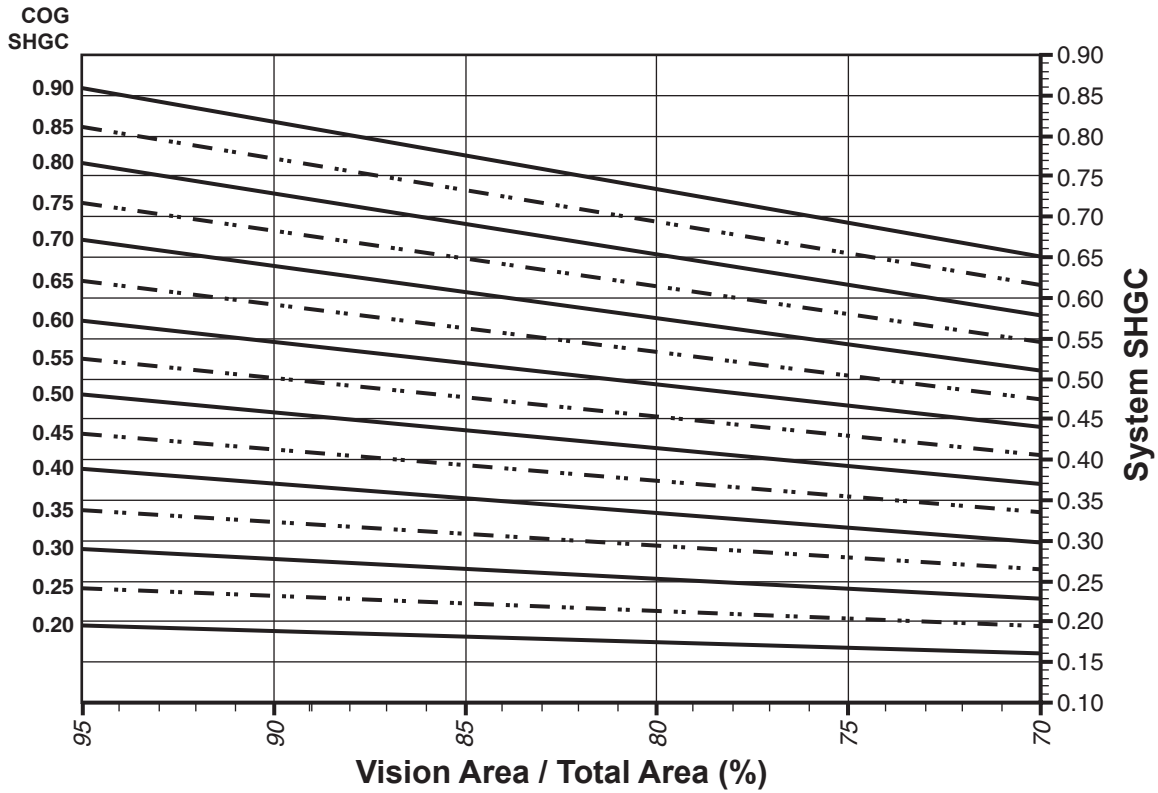
- For glass values that are not listed, linear interpolation is permitted.
- Glass properties are based on center of glass values and are obtained from your glass supplier.

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

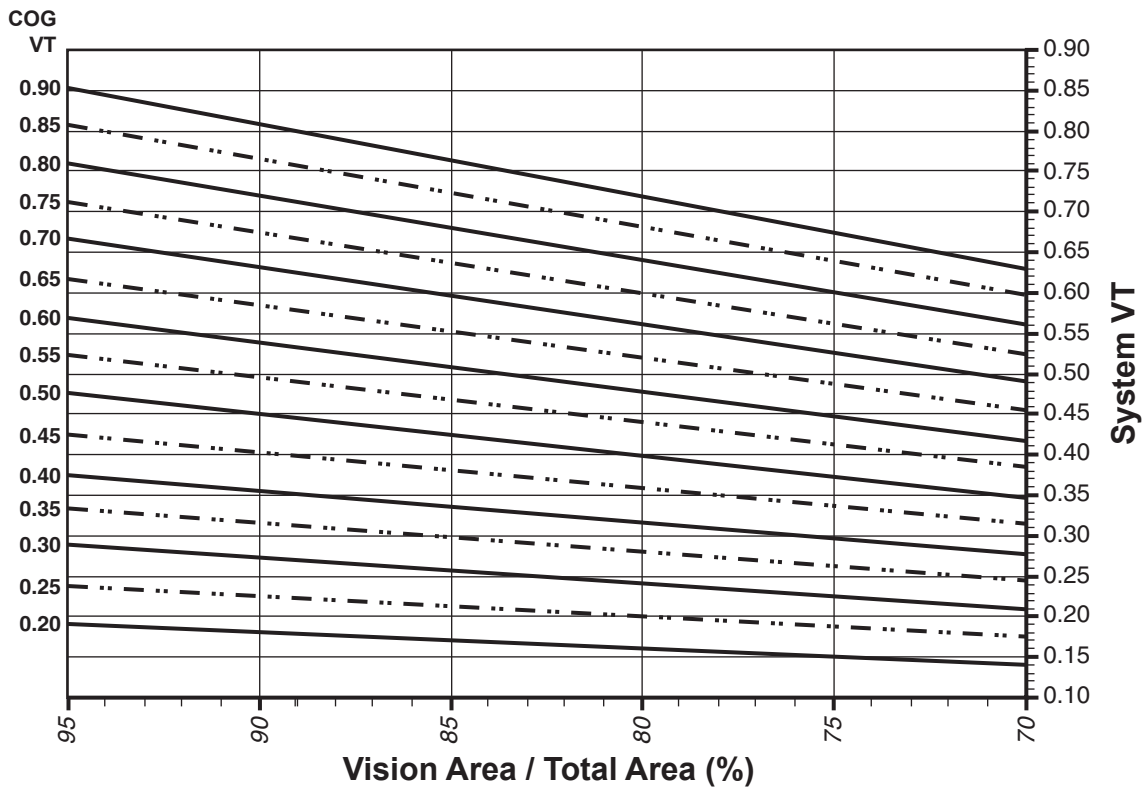
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## Trifab™ VG 451 (CENTER – Non-Thermal)

### System Solar Heat Gain Coefficient (SHGC) vs Percent of Vision Area



### System Visible Transmittance (VT) vs Percent of Vision Area



Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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**Thermal Transmittance <sup>1</sup> (BTU/hr • ft<sup>2</sup> • °F)**

Glass U-Factor <sup>3</sup>	Overall U-Factor <sup>4</sup>
0.48	0.63
0.46	0.61
0.44	0.60
0.42	0.58
0.40	0.57
0.38	0.55
0.36	0.53
0.34	0.52
0.32	0.50
0.30	0.49
0.28	0.47
0.26	0.45
0.24	0.44
0.22	0.42
0.20	0.41

**Trifab™ VG 451  
(CENTER – Non-Thermal)**

**NOTE:** For glass values that are not listed, linear interpolation is permitted.

1. U-Factors are determined in accordance with NFRC 100.
2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values and are obtained from your glass supplier.
4. Overall U-Factor, SHGC, and VT Matricies are based on the standard NFRC specimen size of 2000mm wide by 2000mm high (78-3/4" by 78-3/4").

**SHGC Matrix <sup>2</sup>**

Glass SHGC <sup>3</sup>	Overall SHGC <sup>4</sup>
0.90	0.80
0.85	0.76
0.80	0.71
0.75	0.67
0.70	0.63
0.65	0.58
0.60	0.64
0.55	0.49
0.50	0.45
0.45	0.41
0.40	0.36
0.35	0.32
0.30	0.27
0.25	0.23
0.20	0.18

**Visible Transmittance <sup>2</sup>**

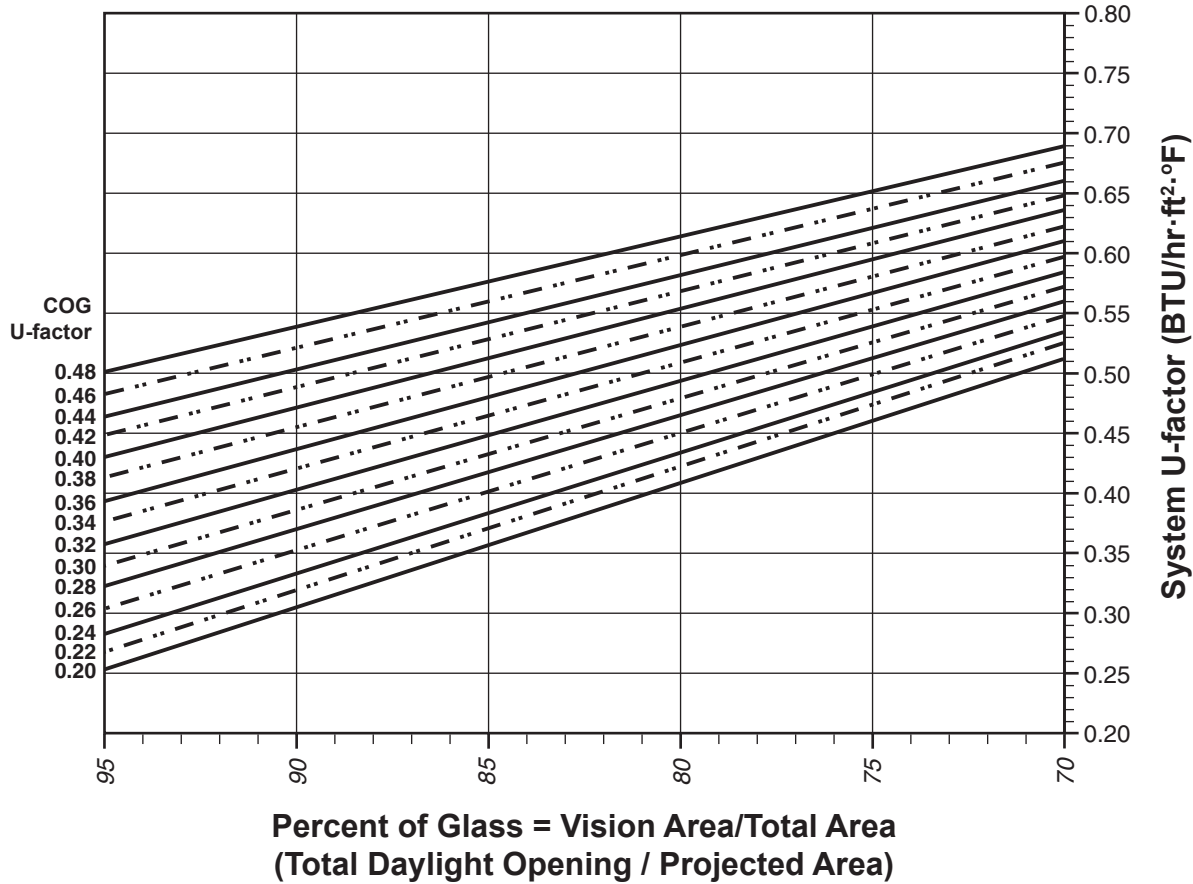
Glass VT <sup>3</sup>	Overall VT <sup>4</sup>
0.90	0.79
0.85	0.75
0.80	0.71
0.75	0.66
0.70	0.62
0.65	0.57
0.60	0.53
0.55	0.49
0.50	0.44
0.45	0.40
0.40	0.35
0.35	0.31
0.30	0.26
0.25	0.22
0.20	0.18

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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## Trifab™ VG 451T (CENTER – Thermal)

### System U-factor vs Percent of Glass Area



**Percent of Glass = Vision Area/Total Area  
(Total Daylight Opening / Projected Area)**

**Notes for System U-Factor, SHGC and VT charts:**

For glass values that are not listed, linear interpolation is permitted.

Glass properties are based on center of glass values and are obtained from your glass supplier.

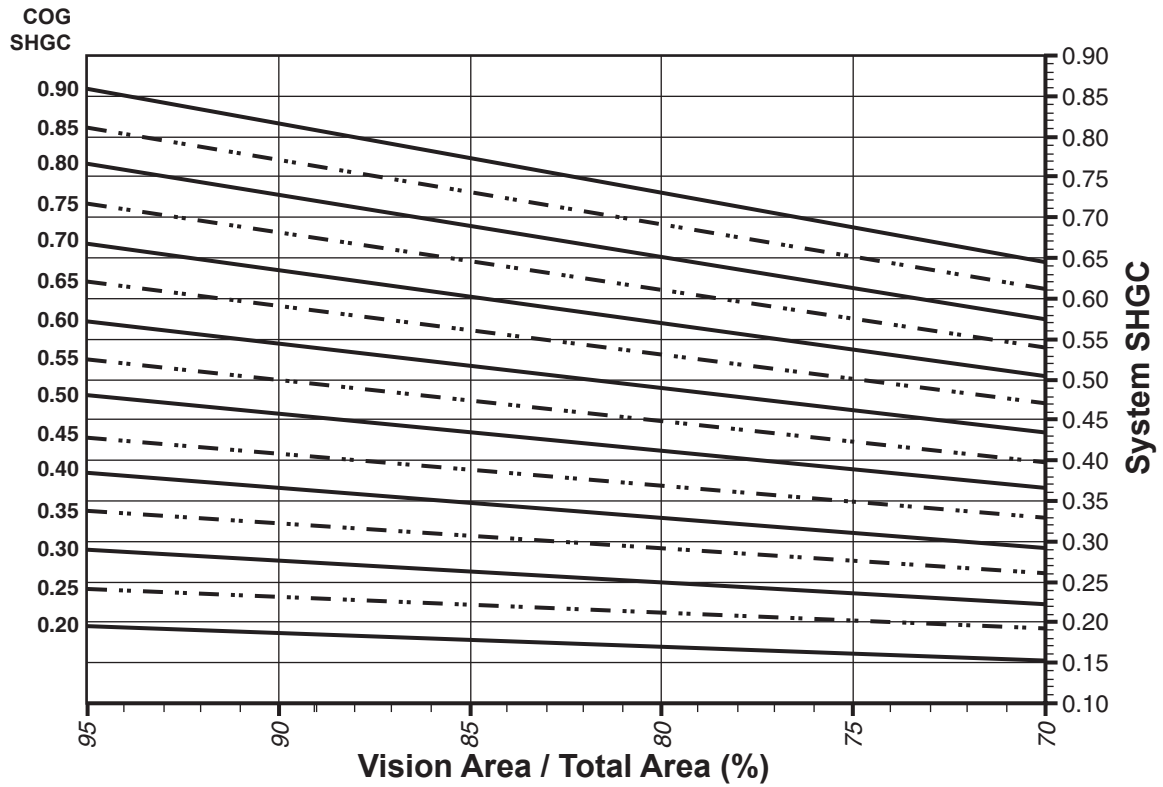
Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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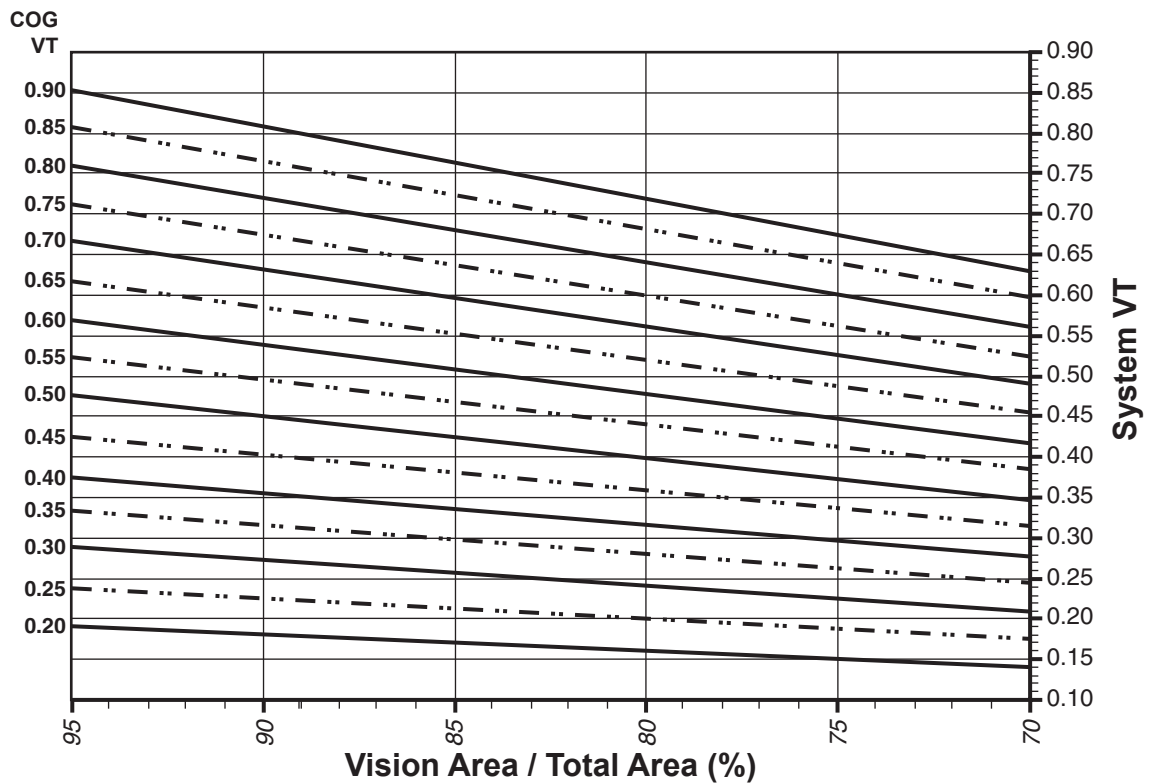
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## Trifab™ VG 451T (CENTER – Thermal)

### System Solar Heat Gain Coefficient (SHGC) vs Percent of Vision Area



### System Visible Transmittance (VT) vs Percent of Vision Area



Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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### Thermal Transmittance <sup>1</sup> (BTU/hr • ft<sup>2</sup> • °F)

Glass U-Factor <sup>3</sup>	Overall U-Factor <sup>4</sup>
0.48	0.55
0.46	0.53
0.44	0.52
0.42	0.50
0.40	0.49
0.38	0.47
0.36	0.45
0.34	0.44
0.32	0.42
0.30	0.41
0.28	0.39
0.26	0.37
0.24	0.36
0.22	0.34
0.20	0.32

## Trifab™ VG 451T (CENTER – Thermal)

**NOTE:** For glass values that are not listed, linear interpolation is permitted.

1. U-Factors are determined in accordance with NFRC 100.
2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values and are obtained from your glass supplier.
4. Overall U-Factor, SHGC, and VT Matricies are based on the standard NFRC specimen size of 2000mm wide by 2000mm high (78-3/4" by 78-3/4").

### SHGC Matrix <sup>2</sup>

Glass SHGC <sup>3</sup>	Overall SHGC <sup>4</sup>
0.75	0.67
0.70	0.62
0.65	0.58
0.60	0.54
0.55	0.49
0.50	0.45
0.45	0.40
0.40	0.36
0.35	0.32
0.30	0.27
0.25	0.23
0.20	0.18
0.15	0.14
0.10	0.10
0.05	0.05

### Visible Transmittance <sup>2</sup>

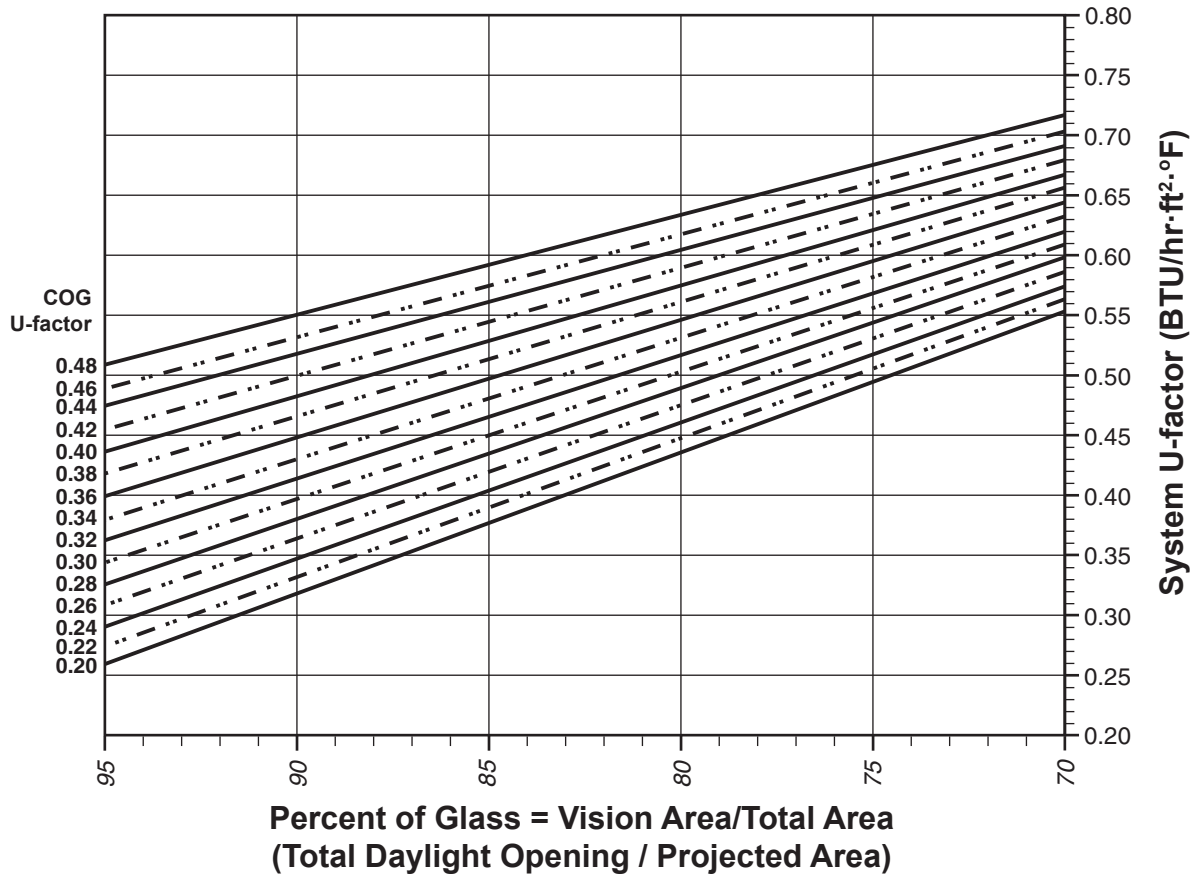
Glass VT <sup>3</sup>	Overall VT <sup>4</sup>
0.75	0.66
0.70	0.61
0.65	0.57
0.60	0.53
0.55	0.48
0.50	0.44
0.45	0.40
0.40	0.35
0.35	0.31
0.30	0.26
0.25	0.22
0.20	0.18
0.15	0.13
0.10	0.09
0.05	0.04

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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## Trifab™ VG 451T (FRONT – Thermal)

### System U-factor vs Percent of Glass Area



**Notes for System U-Factor, SHGC and VT charts:**

For glass values that are not listed, linear interpolation is permitted.

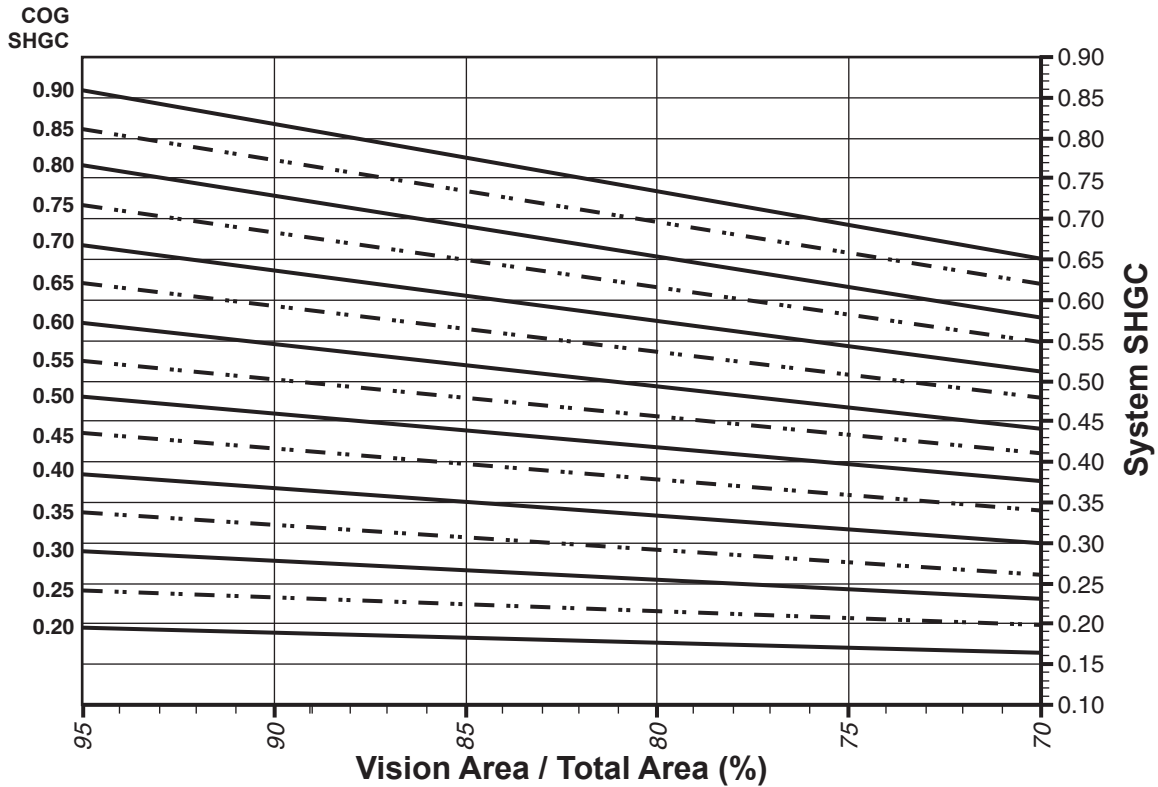
Glass properties are based on center of glass values and are obtained from your glass supplier.

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

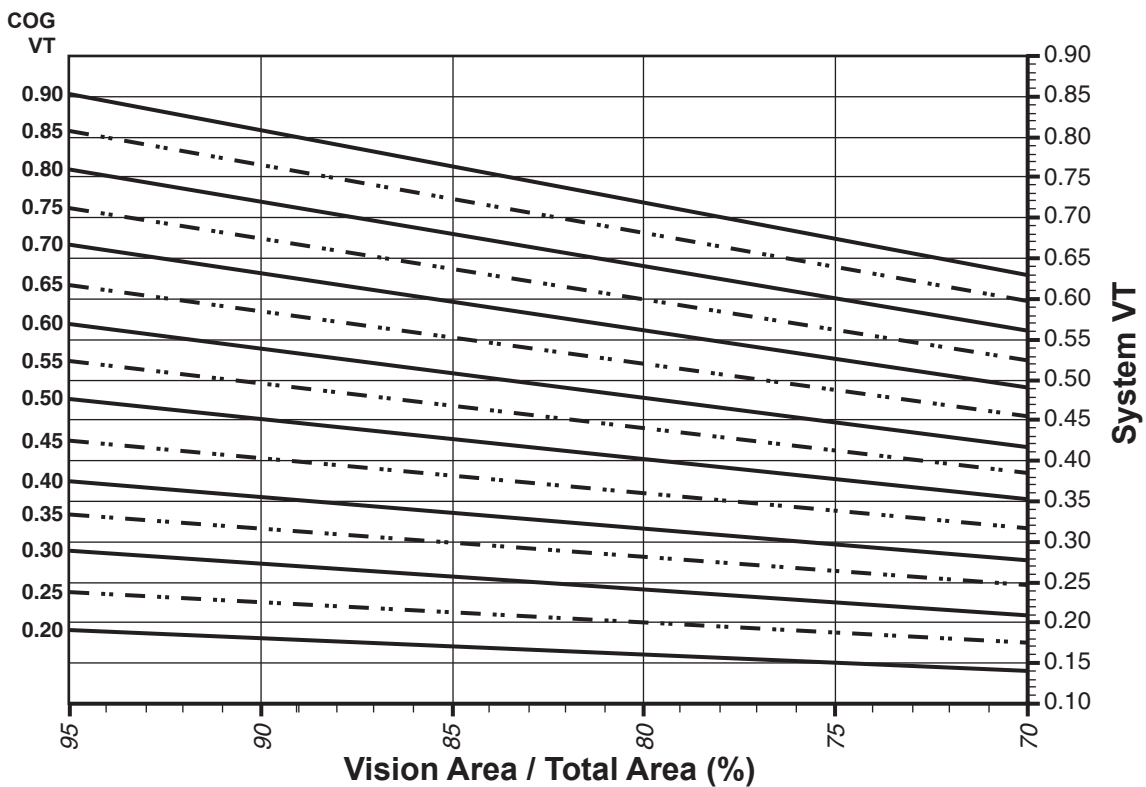
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## Trifab™ VG 451T (FRONT – Thermal)

### System Solar Heat Gain Coefficient (SHGC) vs Percent of Vision Area



### System Visible Transmittance (VT) vs Percent of Vision Area



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**Thermal Transmittance <sup>1</sup> (BTU/hr • ft<sup>2</sup> • °F)**

Glass U-Factor <sup>3</sup>	Overall U-Factor <sup>4</sup>
0.48	0.57
0.46	0.55
0.44	0.54
0.42	0.52
0.40	0.50
0.38	0.49
0.36	0.47
0.34	0.46
0.32	0.44
0.30	0.42
0.28	0.41
0.26	0.39
0.24	0.37
0.22	0.36
0.20	0.34

**Trifab™ VG 451T  
(FRONT – Thermal)**

**NOTE:** For glass values that are not listed, linear interpolation is permitted.

1. U-Factors are determined in accordance with NFRC 100.
2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values and are obtained from your glass supplier.
4. Overall U-Factor, SHGC, and VT Matricies are based on the standard NFRC specimen size of 2000mm wide by 2000mm high (78-3/4" by 78-3/4").

**SHGC Matrix <sup>2</sup>**

Glass SHGC <sup>3</sup>	Overall SHGC <sup>4</sup>
0.75	0.68
0.70	0.63
0.65	0.59
0.60	0.55
0.55	0.50
0.50	0.46
0.45	0.41
0.40	0.37
0.35	0.32
0.30	0.28
0.25	0.24
0.20	0.19
0.15	0.15
0.10	0.10
0.05	0.06

**Visible Transmittance <sup>2</sup>**

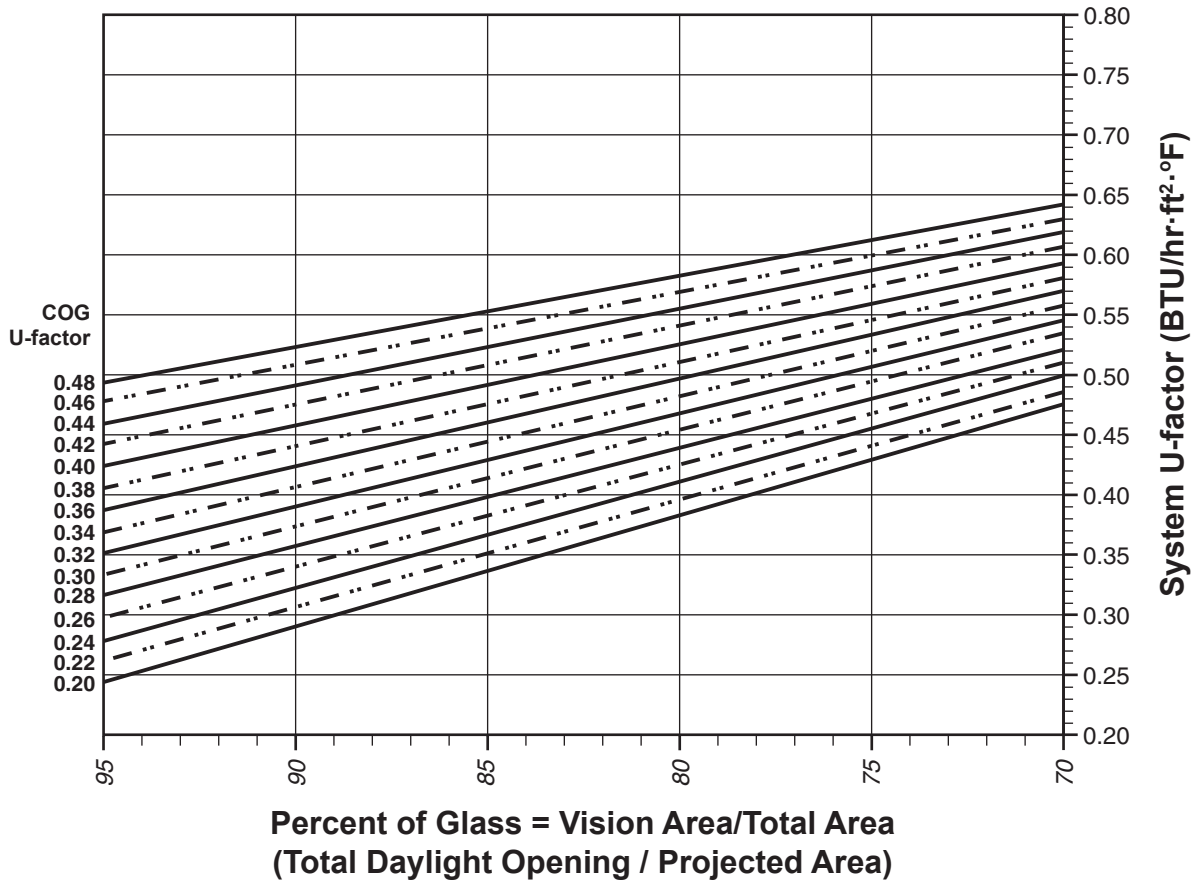
Glass VT <sup>3</sup>	Overall VT <sup>4</sup>
0.75	0.66
0.70	0.62
0.65	0.58
0.60	0.53
0.55	0.49
0.50	0.44
0.45	0.40
0.40	0.35
0.35	0.31
0.30	0.27
0.25	0.22
0.20	0.18
0.15	0.13
0.10	0.09
0.05	0.04

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## Trifab™ VG 451T (BACK – Thermal)

### System U-factor vs Percent of Glass Area



**Notes for System U-Factor, SHGC and VT charts:**

For glass values that are not listed, linear interpolation is permitted.

Glass properties are based on center of glass values and are obtained from your glass supplier.

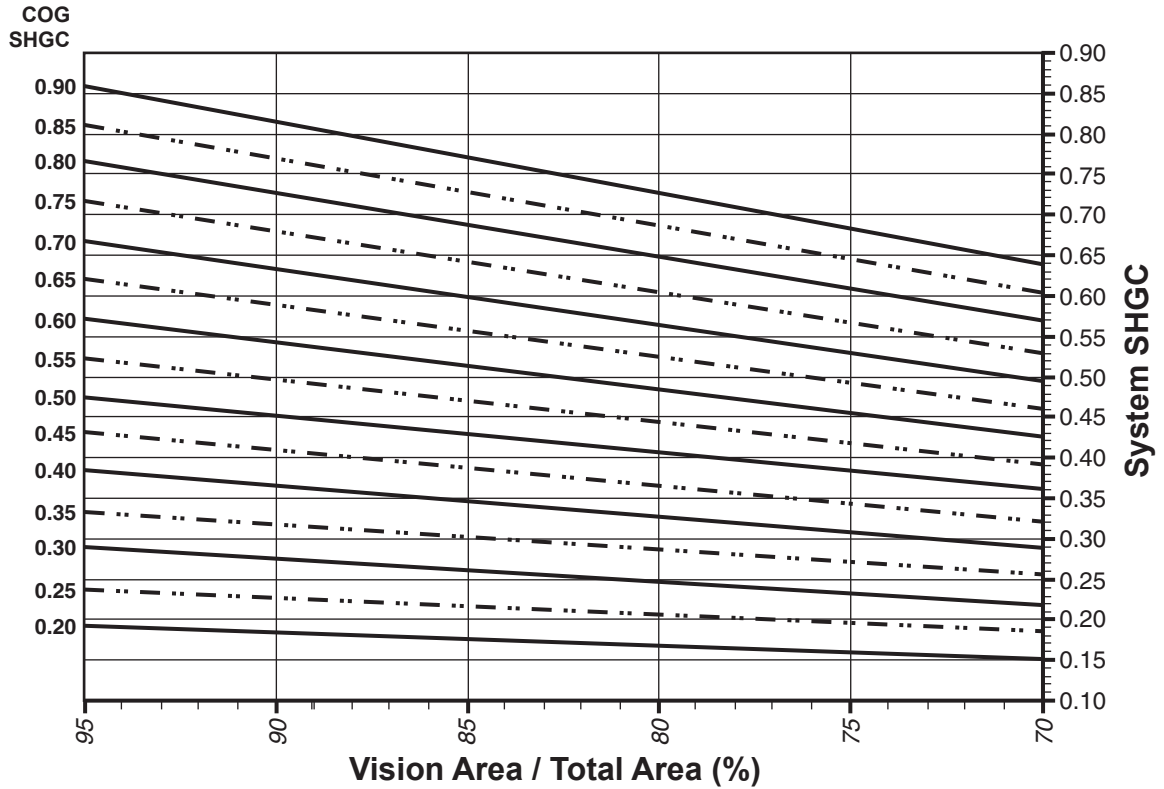
Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

Kawneer reserves the right to change configuration without prior notice when deemed necessary for product improvement.

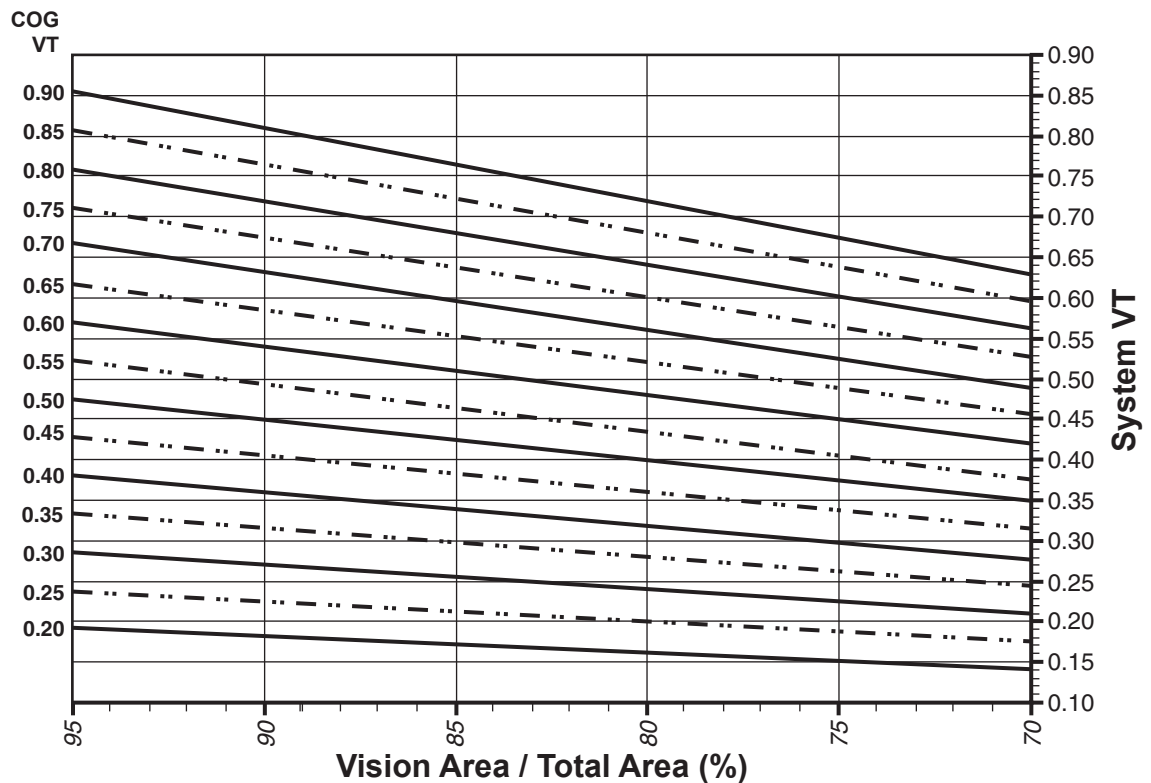
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### Trifab™ VG 451T (BACK – Thermal)

#### System Solar Heat Gain Coefficient (SHGC) vs Percent of Vision Area



#### System Visible Transmittance (VT) vs Percent of Vision Area



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### Thermal Transmittance <sup>1</sup> (BTU/hr • ft<sup>2</sup> • °F)

Glass U-Factor <sup>3</sup>	Overall U-Factor <sup>4</sup>
0.48	0.54
0.46	0.52
0.44	0.50
0.42	0.49
0.40	0.47
0.38	0.46
0.36	0.44
0.34	0.42
0.32	0.41
0.30	0.39
0.28	0.38
0.26	0.36
0.24	0.34
0.22	0.33
0.20	0.31

## Trifab™ VG 451T (BACK – Thermal)

**NOTE:** For glass values that are not listed, linear interpolation is permitted.

1. U-Factors are determined in accordance with NFRC 100.
2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values and are obtained from your glass supplier.
4. Overall U-Factor, SHGC, and VT Matricies are based on the standard NFRC specimen size of 2000mm wide by 2000mm high (78-3/4" by 78-3/4").

### SHGC Matrix <sup>2</sup>

Glass SHGC <sup>3</sup>	Overall SHGC <sup>4</sup>
0.75	0.67
0.70	0.62
0.65	0.58
0.60	0.53
0.55	0.49
0.50	0.45
0.45	0.40
0.40	0.36
0.35	0.31
0.30	0.27
0.25	0.22
0.20	0.18
0.15	0.14
0.10	0.09
0.05	0.05

### Visible Transmittance <sup>2</sup>

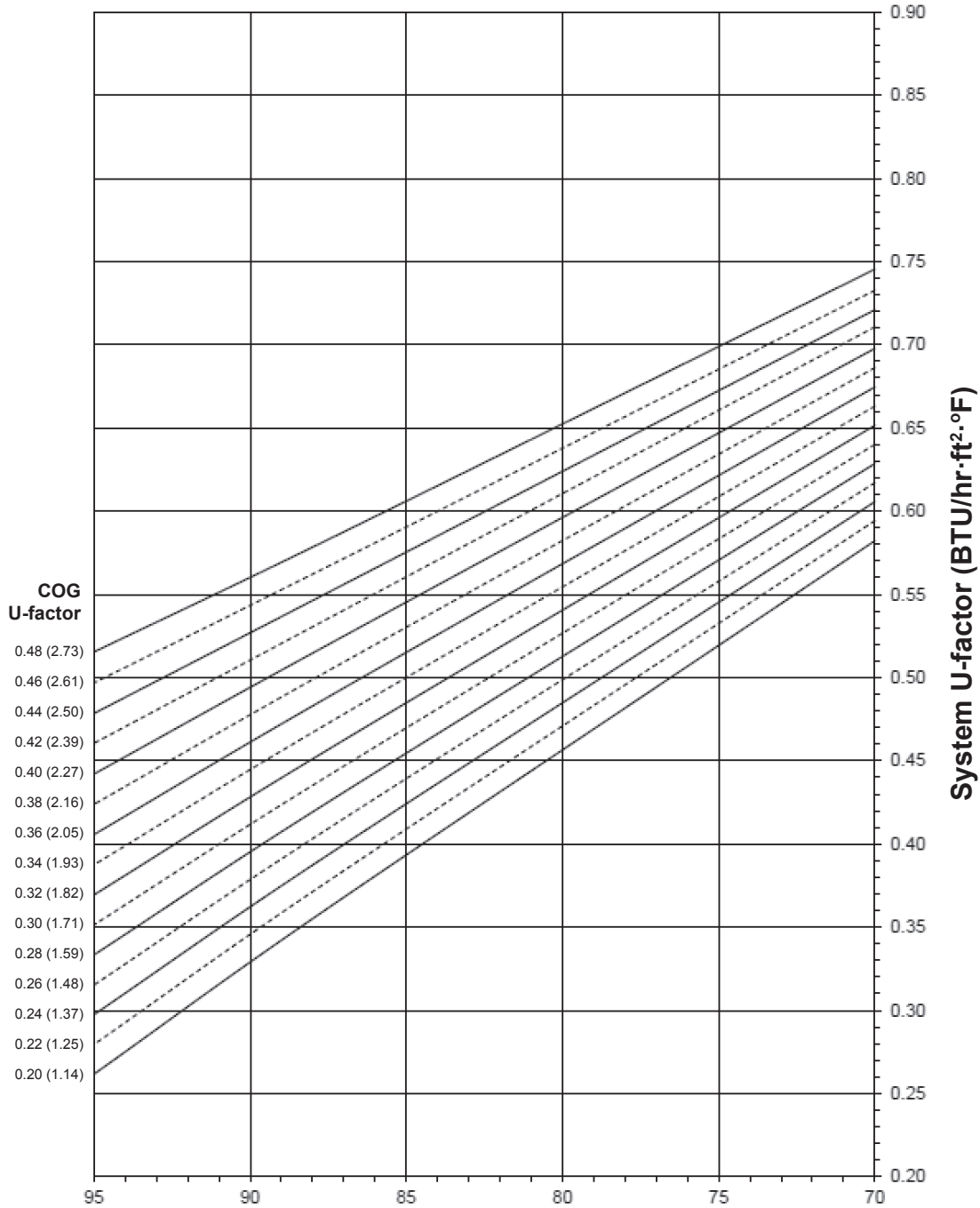
Glass VT <sup>3</sup>	Overall VT <sup>4</sup>
0.75	0.66
0.70	0.62
0.65	0.58
0.60	0.53
0.55	0.49
0.50	0.44
0.45	0.40
0.40	0.35
0.35	0.31
0.30	0.27
0.25	0.22
0.20	0.18
0.15	0.13
0.10	0.09
0.05	0.04

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## Trifab™ VG 451T with Steel (CENTER)

### System U-factor vs Percent of Glass Area



Percent of Glass = Vision Area/Total Area  
(Total Daylight Opening / Projected Area)

**Notes for System U-Factor, SHGC and VT charts:**

For glass values that are not listed, linear interpolation is permitted.

Glass properties are based on center of glass values and are obtained from your glass supplier.

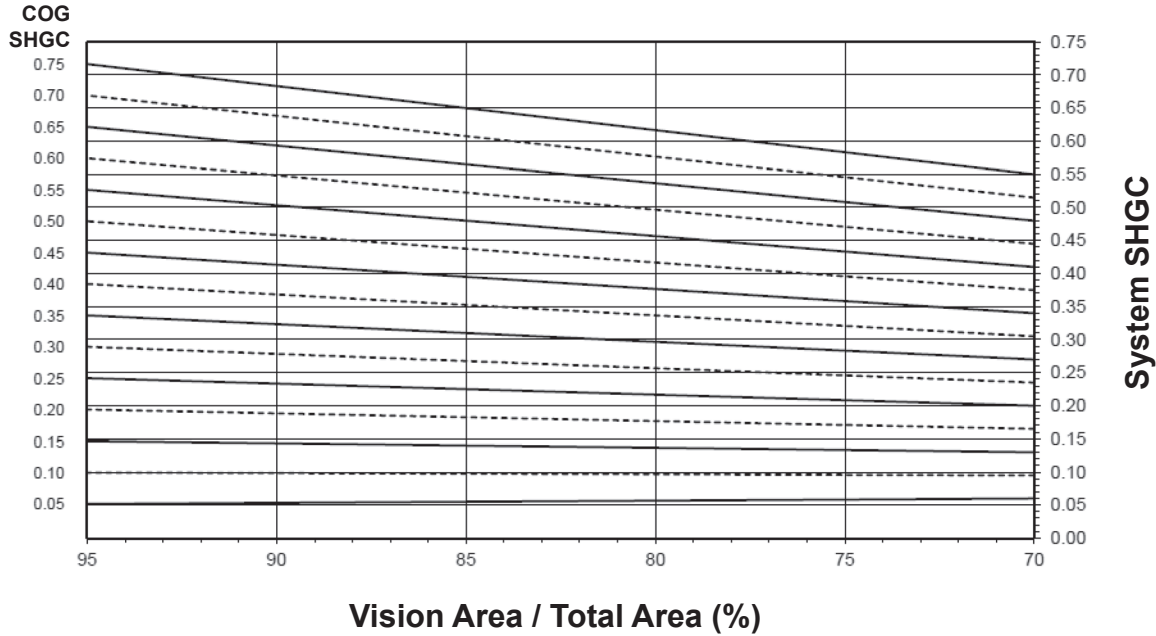
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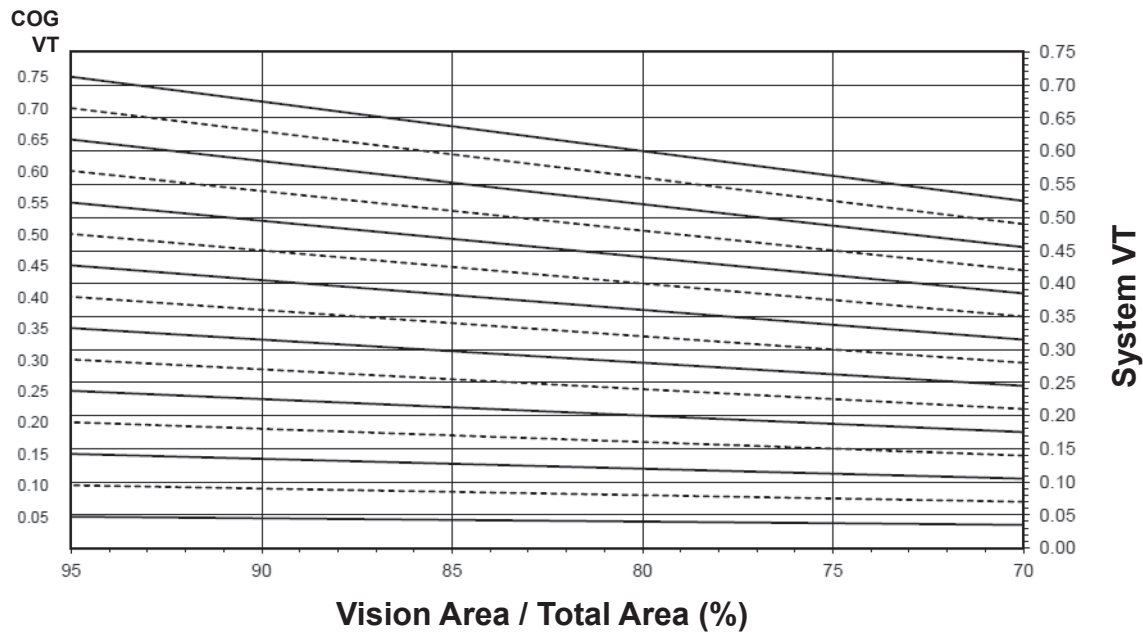


## Trifab™ VG 451T with Steel (CENTER)

### System Solar Heat Gain Coefficient (SHGC) vs Percent of Vision Area



### System Visible Transmittance (VT) vs Percent of Vision Area



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**Thermal Transmittance <sup>1</sup> (BTU/hr • ft<sup>2</sup> • °F)**

Glass U-Factor <sup>3</sup>	Overall U-Factor <sup>4</sup>
0.48	0.59
0.46	0.57
0.44	0.55
0.42	0.54
0.40	0.52
0.38	0.51
0.36	0.49
0.34	0.48
0.32	0.46
0.30	0.44
0.28	0.43
0.26	0.41
0.24	0.40
0.22	0.38
0.20	0.37

**Trifab™ VG 451T  
with Steel (CENTER)**

**NOTE:** For glass values that are not listed, linear interpolation is permitted.

1. U-Factors are determined in accordance with NFRC 100.
2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values and are obtained from your glass supplier.
4. Overall U-Factor, SHGC, and VT Matricies are based on the standard NFRC specimen size of 2000mm wide by 2000mm high (78-3/4" by 78-3/4").

**SHGC Matrix <sup>2</sup>**

Glass SHGC <sup>3</sup>	Overall SHGC <sup>4</sup>
0.75	0.66
0.70	0.62
0.65	0.58
0.60	0.53
0.55	0.49
0.50	0.45
0.45	0.40
0.40	0.36
0.35	0.32
0.30	0.27
0.25	0.23
0.20	0.19
0.15	0.14
0.10	0.10
0.05	0.05

**Visible Transmittance <sup>2</sup>**

Glass VT <sup>3</sup>	Overall VT <sup>4</sup>
0.75	0.65
0.70	0.61
0.65	0.57
0.60	0.52
0.55	0.48
0.50	0.44
0.45	0.39
0.40	0.35
0.35	0.31
0.30	0.26
0.25	0.22
0.20	0.17
0.15	0.13
0.10	0.09
0.05	0.04

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# Trifab® VG (VersaGlaze®)

Trifab® VG 450, 451 & 451T (Thermal) Framing Systems &  
Trifab® 451UT (Ultra Thermal) Framing System

Design + Performance  
Versatility with Unmatched  
Fabrication Flexibility



Preston Pointe, Louisville, KY

Architect: Potter & Associates Architects PLLC, Louisville, KY

Glazing Contractor: Kentucky Mirror & Plate Glass Company, Louisville, KY

Trifab® VG (VersaGlaze®) is built on the proven and successful Trifab® platform – with all the versatility its name implies. There are enough framing system choices, fabrication methods, design options and performance levels to please the most discerning building owner, architect and installer. The Trifab® VG family's newest addition, Trifab® 451UT (Ultra Thermal) framing system, is designed for the most demanding thermal performance and employs a “dual” Isolock® Thermal Break.

## Aesthetics

Trifab® VG framing systems offer designers a choice of front-, center-, back- or multi-plane glass applications. Structural silicone glazing (SSG) and Weatherseal glazing options further expand the designers' choices, allowing for a greater range of design possibilities for specific project requirements and architectural styles. All systems have a 4-1/2" frame depth – Trifab® VG 450 has 1-3/4" sightlines, while Trifab® VG 451/451T and Trifab® 451UT have 2" sightlines.



With seamless incorporation of Kawneer entrances or windows, including GLASSvent® visually frameless ventilators, Trifab® VG can be used on almost any project. These framing systems can also be packaged with Kawneer curtain walls and overhead glazing, thereby providing a full range of proven, and tested, quality products for the owner, architect and installer from a single source supplier.

### Economy

Trifab® VG 450, 451 and 451T framing systems offer four fabrication choices to suit your project (Trifab® 451UT available as screw spline fabrication only):

- **Screw Spline** – for economical continuous runs utilizing two piece vertical members that provide the option to pre-assemble units with controlled shop labor costs and smaller field crews for handling and installation.
- **Shear Block** – for punched openings or continuous runs using tubular moldings with shear block clips that provide tight joints for transporting large pre-assembled multi-lite units.
- **Stick** – for fast, easy field fabrication. Field measurements and material cuts can be done when metal is on the job.
- **Type B** – Same fabrication benefits as shear block except head and sill run through.

All systems can be flush glazed from either the inside or outside. The Weatherseal option provides an alternative to SSG vertical



Brighton Landing, Cambridge, MA  
Architects: ADD Inc., Cambridge, MA  
Glazing Contractors: Ipswich Bay Glass Company, Inc., Rowley, MA

mullions for Trifab® VG 450, 451 and 451T. This ABS/ASA rigid polymer extrusion allows complete inside glazing and creates a flush glass appearance on the building exterior without the added labor of scaffolding or swing stages. Additionally, High-Performance (HP) Flashing options are engineered to eliminate perimeter sill fasteners and associated blind seals.

### Finishes

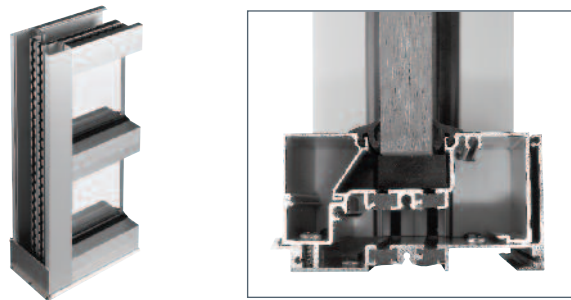
Architectural Class I anodized aluminum finishes are available in clear and Permanodic® color choices.

Painted finishes, including fluoropolymer that meet or exceed AAMA 2605, are offered in many standard choices and an unlimited number of specially-designed colors.

Solvent-free powder coatings add the “green” element with high performance, durability and scratch resistance that meet the standards of AAMA 2604.

### Performance

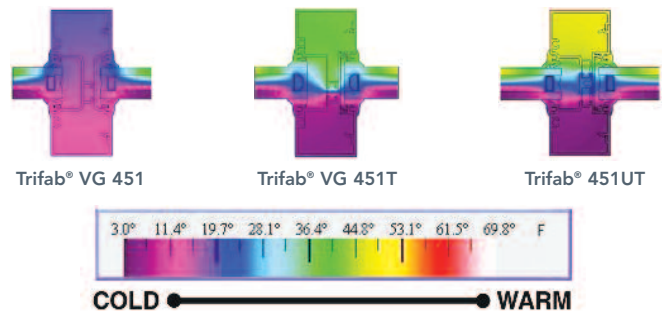
Kawneer’s Isolock® Thermal Break process creates a composite section, prevents dry shrinkage and is available on Trifab® VG 451T. For even greater thermal performance, a “dual” Isolock® Thermal Break is used on Trifab® 451UT.



Trifab® 451UT uses a “dual” Isolock® Thermal Break (right) and features a new HP (High Performance) sill design, which incorporates a screw-applied end dam (left), ensuring positive engagement and tight joints between the sill flashing and end dam.

U-factor, CRF values and STC ratings for Trifab® VG vary depending upon the glass plane application. Project specific U-factors can be determined for each individual project. (See the Kawneer Architectural Manual or Kawneer.com for additional information).

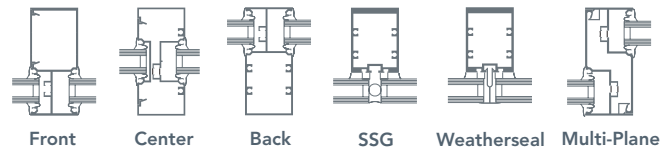
Thermal simulations showing temperature variations from exterior/cold side to interior/warm side.



### Performance Test Standards

Air Performance	ASTM E 283
Water	AAMA 501 and ASTM E 331
Structural	ASTM E 330
Thermal	AAMA 1503
Thermal Break	AAMA 505 and AAMA TIR-A8
Acoustical	AAMA 1801 and ASTM E 1425

Trifab® VG 450, 451 and 451T glazing options  
(note: Trifab® 451UT available as center set glass plane only).



Kawneer Company, Inc.  
Technology Park / Atlanta  
555 Guthridge Court  
Norcross, GA 30092

kawneer.com  
770 . 449 . 5555



**PROJECT-OUT WINDOW ..... 3-8**

**OUTSWING CASEMENT WINDOW ..... 9-14**

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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LAWS AND BUILDING AND SAFETY CODES GOVERNING THE DESIGN AND USE OF GLAZED ENTRANCE, WINDOW, AND CURTAIN WALL PRODUCTS VARY WIDELY. KAWNEER DOES NOT CONTROL THE SELECTION OF PRODUCT CONFIGURATIONS, OPERATING HARDWARE, OR GLAZING MATERIALS, AND ASSUMES NO RESPONSIBILITY THEREFOR.

Metric (SI) conversion figures are included throughout these details for reference. Numbers in parentheses ( ) are millimeters unless otherwise noted.

The following metric (SI) units are found in these details:

- m – meter
- cm – centimeter
- mm – millimeter
- s – second
- Pa – pascal
- MPa – megapascal

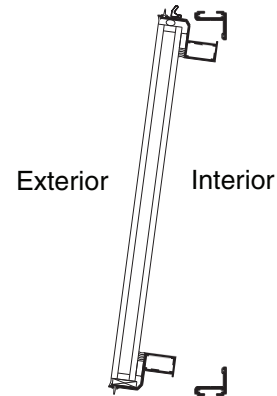
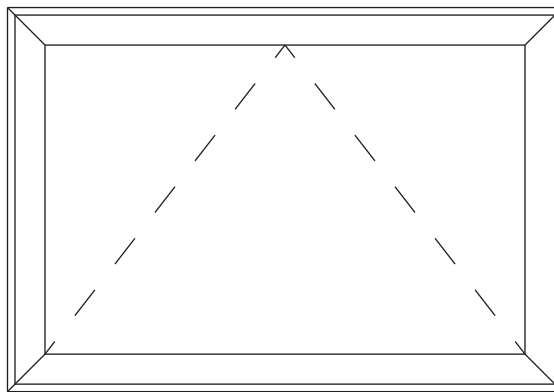
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## Features

- Heavy Commercial Grade Window
- Tested to US Standards
- 45° Mitered Vent and Frame Corners
- Staked Corner Joinery
- Architectural Anodized Finishes and Applied Coatings



For specific product applications,  
Consult your Kawneer representative.

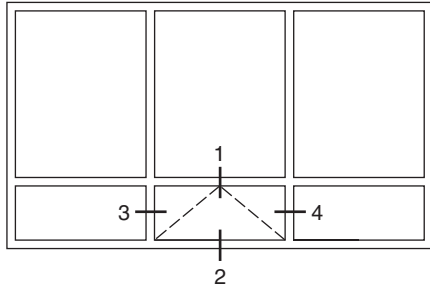


<b>CLASS and GRADE</b>	Heavy Commercial Grade P-HC40 – P-HC70
<b>TESTING STANDARD</b>	AAMA / WDMA / CSA / 101 / I.S.2 / A440 (NAFS)
<b>SYSTEM DEPTH</b>	2-3/4" Overall System Depth (1" Infill) 2-1/8" Overall System Depth (1/4" Infill)
<b>TYPICAL WALL THICKNESS</b>	0.090 Nominal Frame
<b>TYPICAL MAX. VENT SIZE</b>	60" x 36"
<b>TYPICAL MIN. VENT SIZE</b>	14" x 14"
<b>INFILL OPTIONS</b>	1" and 1/4"
<b>STANDARD HARDWARE</b>	Stainless Steel 4-Bar Hinges Cast White Bronze Cam Lock
<b>OPTIONAL HARDWARE</b>	Cam Lock with Pole Ring Sash Pole Pole Ring Access Control Lock Pivot-Shoe Roto-Operator Concealed Lock with removable key Hook Bolt Lock Limit Stop
<b>OTHER OPTIONS</b>	Insect Screens

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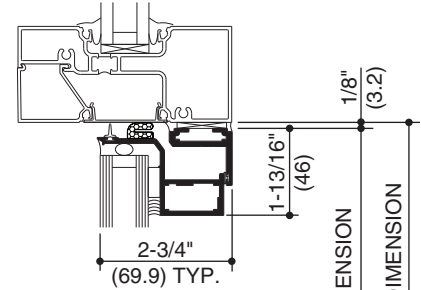
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SCALE 3" = 1'-0"

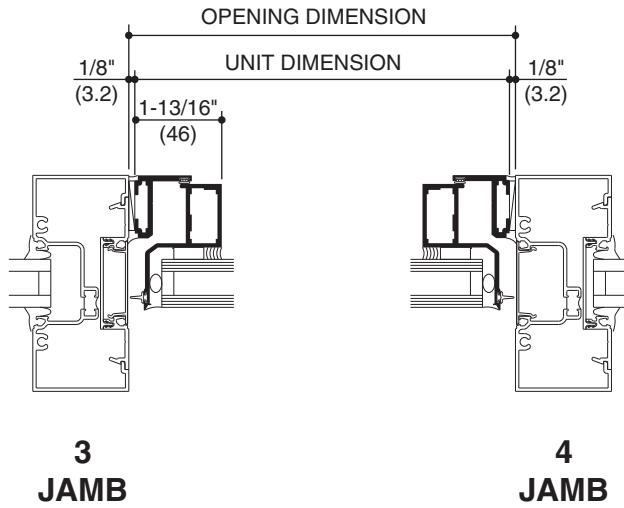
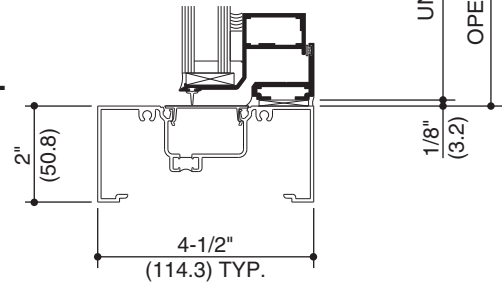


ELEVATION IS NUMBER KEYED TO DETAILS

1  
HEAD



2  
SILL

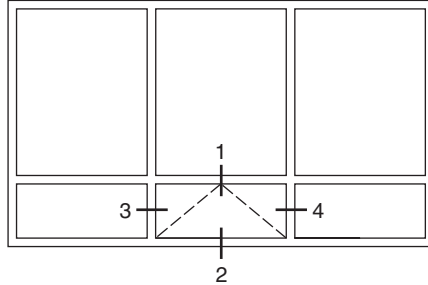


**NOTE:** THE KAWNEER GLASSvent™ WINDOW IS SHOWN IN THESE DETAILS WITH TRIFAB™ VG 451T STOREFRONT FRAMING FOR REFERENCE. OTHER KAWNEER SYSTEMS CAN BE USED. FOR PRODUCT SPECIFIC APPLICATIONS CONSULT YOUR KAWNEER REPRESENTATIVE.

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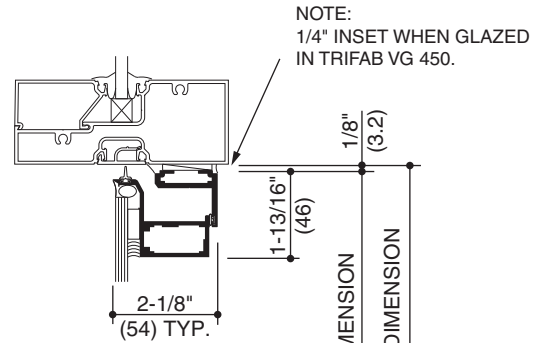
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SCALE 3" = 1'-0"

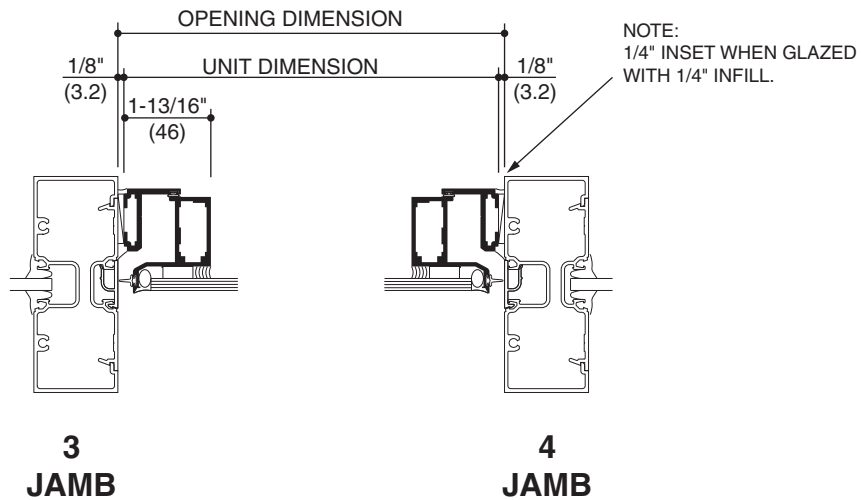
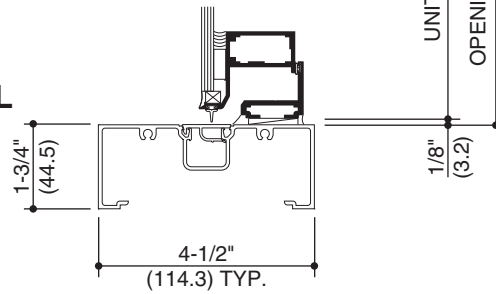


ELEVATION IS NUMBER KEYED TO DETAILS

**1 HEAD**



**2 SILL**



**3 JAMB**

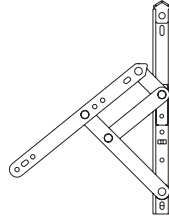
**4 JAMB**

**NOTE:** THE KAWNEER GLASSvent™ WINDOW IS SHOWN IN THESE DETAILS WITH TRIFAB™ VG 451T STOREFRONT FRAMING FOR REFERENCE. OTHER KAWNEER SYSTEMS CAN BE USED. FOR PRODUCT SPECIFIC APPLICATIONS CONSULT YOUR KAWNEER REPRESENTATIVE.

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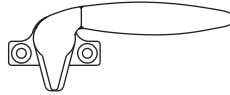
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**STAINLESS STEEL  
4 BAR HINGES**



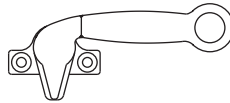
A standard hinge for ventilators providing approximately 45° to 60° openings depending on size. An optional limit stop is available to restrict hinge travel and limit vent opening.

**CAM HANDLE**



Cast white bronze cam handles are standard for the manual operation and locking of ventilators.

**CAM HANDLE  
WITH POLE RING**



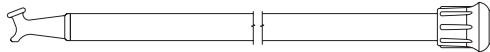
Cast white bronze cam handles with pole ring provide manual operation of ventilators located above reach. These handles are operated with a sash pole.

**POLE RING**



Cast white bronze pole ring is used in conjunction with locking hardware for sash pole operation of ventilators.

**SASH POLE**

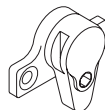
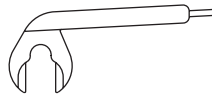


A 3/4" diameter aluminum sash pole with a cast white bronze pull down hook and black rubber tip. Available in 6 ft. and 12 ft. lengths with optional cast white bronze Pole Hanger.

**HANGER  
FOR SASH POLE**

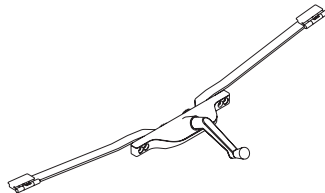


**ACCESS CONTROL  
LOCK**



In lieu of cam handles cast white bronze access control locks are offered for managed control of vent operations. Lock is operated with a manganese bronze removable handle.

**PIVOT-SHOE  
ROTO-OPERATOR**



Optional pivot shoe roto operator is located on the center line of the bottom horizontal frame. Standard finish shall be brushed copper nickel to match US-25-D

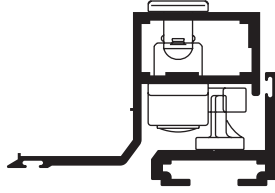
**HOOK BOLT LOCK**



For use with pivot-shoe roto operator in lieu of cam handles. Standard finish shall be US-25-D clear white bronze.

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**CONCEALED  
LOCK**

In lieu of cam handles cast white bronze concealed locks are offered for managed control of vent operations. Lock is operated with a removable key.

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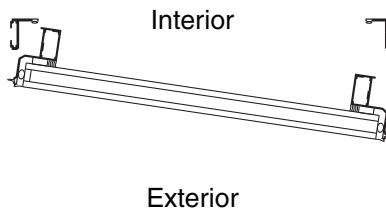
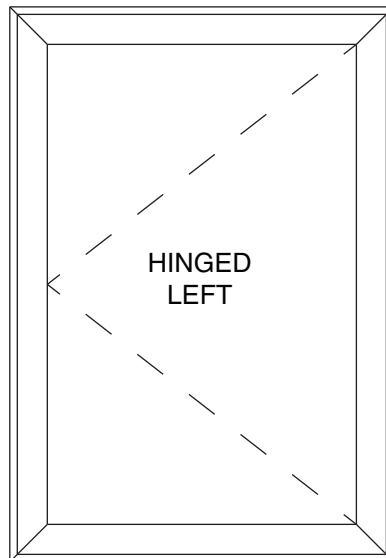
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## Features

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- Staked Corner Joinery
- Architectural Anodized Finishes and Applied Coatings

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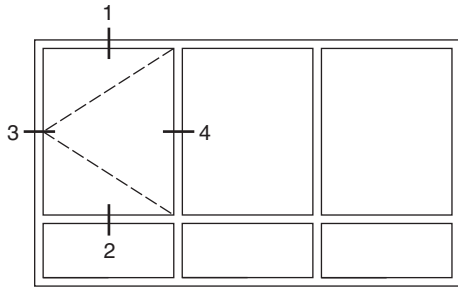
For specific product applications,  
Consult your Kawneer representative.

<b>CLASS and GRADE</b>	Heavy Commercial Grade P-HC40 – P-HC70
<b>TESTING STANDARD</b>	AAMA / WDMA / CSA / 101 / I.S.2 / A440 (NAFS)
<b>SYSTEM DEPTH</b>	2-3/4" Overall System Depth (1" Infill) 2-1/8" Overall System Depth (1/4" Infill)
<b>TYPICAL WALL THICKNESS</b>	0.090 Nominal Frame
<b>TYPICAL MAX. VENT SIZE</b>	36" x 60"
<b>TYPICAL MIN. VENT SIZE</b>	14" x 14"
<b>INFILL OPTIONS</b>	1" and 1/4"
<b>STANDARD HARDWARE</b>	Stainless Steel 4-Bar Hinges Cast White Bronze Cam Handles
<b>OPTIONAL HARDWARE</b>	Cam Lock with Pole Ring SashPole Pole Ring Access Control Locks Multi-Point Lock Hook Bolt Lock Concealed Lock with removable key Limit Stop
<b>OTHER OPTIONS</b>	Insect Screens

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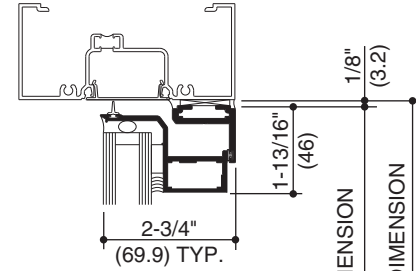
Kawneer reserves the right to change configuration without prior notice when deemed necessary for product improvement.  
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SCALE 3" = 1'-0"

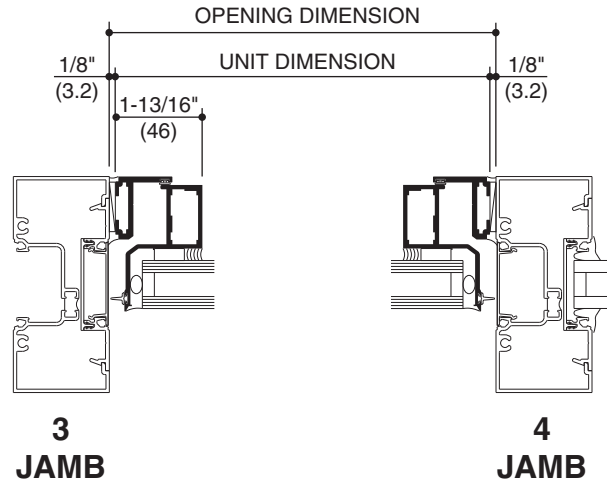
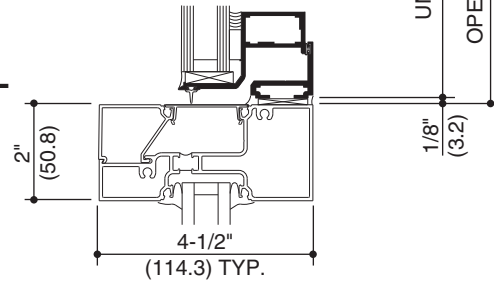


ELEVATION IS NUMBER KEYED TO DETAILS

**1**  
**HEAD**



**2**  
**SILL**



**3**  
**JAMB**

**4**  
**JAMB**

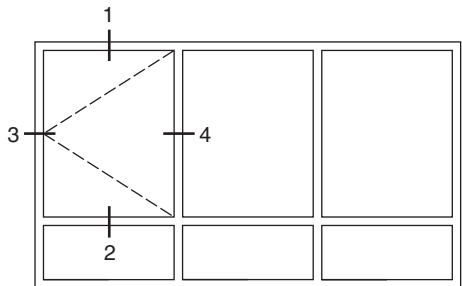
**NOTE:** THE KAWNEER GLASSvent™ WINDOW IS SHOWN IN THESE DETAILS WITH TRIFAB™ VG 451T STOREFRONT FRAMING FOR REFERENCE. OTHER KAWNEER SYSTEMS CAN BE USED. FOR PRODUCT SPECIFIC APPLICATIONS CONSULT YOUR KAWNEER REPRESENTATIVE.

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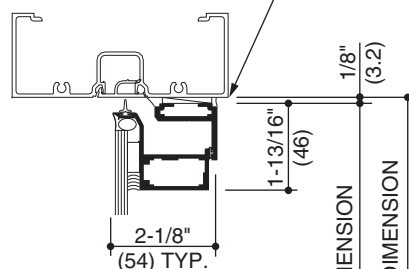
SCALE 6" = 1'-0"



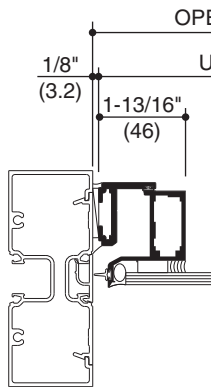
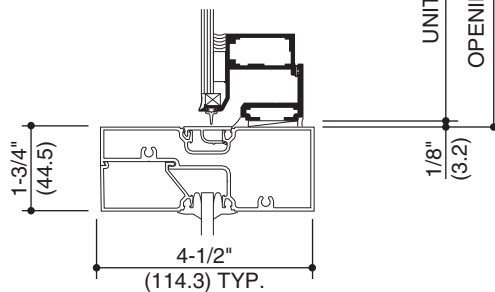
ELEVATION IS NUMBER KEYED TO DETAILS

NOTE:  
1/4" INSET WHEN  
GLAZED  
IN TRIFAB VG 450.

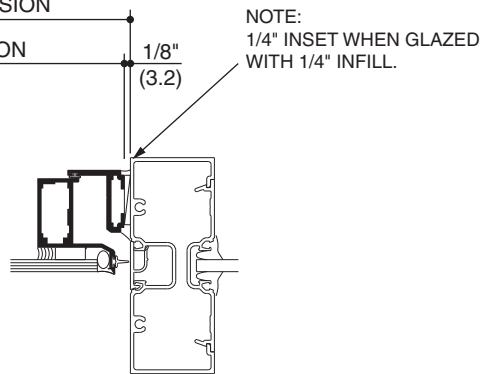
1  
HEAD



2  
SILL



3  
JAMB



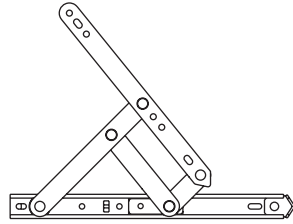
4  
JAMB

NOTE: THE KAWNEER GLASSvent™ WINDOW IS SHOWN IN THESE DETAILS WITH TRIFAB™ VG 451T STOREFRONT FRAMING FOR REFERENCE. OTHER KAWNEER SYSTEMS CAN BE USED. FOR PRODUCT SPECIFIC APPLICATIONS CONSULT YOUR KAWNEER REPRESENTATIVE.

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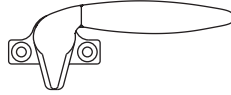
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**STAINLESS STEEL  
4 BAR HINGES**



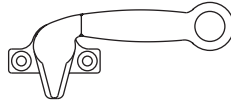
A standard hinge for ventilators providing approximately 45° to 60° openings depending on size. An optional limit stop is available to restrict hinge travel and limit vent opening.

**CAM HANDLE**



Cast white bronze cam handles are standard for the manual operation and locking of ventilators.

**CAM HANDLE  
WITH POLE RING**



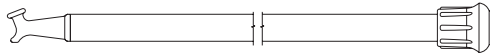
Cast white bronze cam handles with pole ring provide manual operation of ventilators located above reach. These handles are operated with a sash pole.

**POLE RING**



Cast white bronze pole ring is used in conjunction with locking hardware for sash pole operation of ventilators.

**SASH POLE**

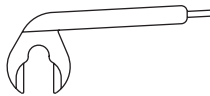


A 3/4" diameter aluminum sash pole with a cast white bronze pull down hook and black rubber tip. Available in 6 ft. and 12 ft. lengths with optional cast white bronze Pole Hanger.

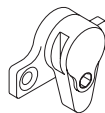
**HANGER  
FOR SASH POLE**



**ACCESS CONTROL  
LOCK**



In lieu of cam handles cast white bronze access control locks are offered for managed control of vent operations. Lock is operated with a manganese bronze removable handle.



**HOOK BOLT LOCK**



For use with pivot-shoe roto operator in lieu of cam handles. Standard finish shall be US-25-D clear white bronze.

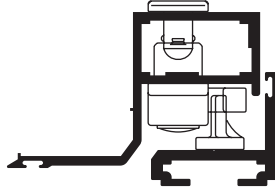
**MULTI-POINT LOCK**



Optional single locking handle for concealed multi-point locks located on the vertical frame. Standard finish shall be US-25-D clear white bronze.

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**CONCEALED  
LOCK**

In lieu of cam handles cast white bronze concealed locks are offered for managed control of vent operations. Lock is operated with a removable key.

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## **Features**

- Trifab™ 601/601T/601UT Framing System is 6" (152.4) deep with a 2" (50.8) sightline
- Center Plane glass applications
- Flush glazed from either the inside or outside
- Screw Spline fabrication
- Dual IsoLock™ lanced and debridged thermal break
- Infill options up to 1-1/8" (28.6) thickness
- High performance sill flashing
- Permanodic™ anodized finishes in seven choices
- Painted finishes in standard and custom choices

## **Optional Features**

- Acoustical rating per AAMA 1801 and ASTM E 1425
- Project specific U-factors (See Thermal Charts)
- Integrates with Versoleil™ SunShade Outrigger System and Horizontal Single Blade System
- Profit\$Maker™ Plus die sets

## **Product Applications**

- Storefront, Ribbon Window or Punched Openings
- Single-span
- Integrated entrance framing allowing Kawneer standard entrances or other specialty entrances to be incorporated
- Kawneer windows, or GLASSvent™ Windows for Storefront Framing, or GLASSvent™ UT Windows are easily incorporated

For specific product applications,  
Consult your Kawneer representative.

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**BASIC FRAMING DETAILS (Outside Glazed).....4**  
**BASIC FRAMING DETAILS (Inside Glazed).....5**  
**MISCELLANEOUS FRAMING (Center).....6**  
**CURVING .....7**  
**CORNERS.....8**  
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**350 STANDARD ENTRANCE DETAILS .....10**  
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**WITH CRIPPLE JAMBS ..... 11**  
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**8225TL THERMAL WINDOW DETAILS .....13**  
**GLASSvent™ UT WINDOW DETAILS ..... 14-15**  
**WIND LOAD / DEADLOAD CHARTS ..... 16-23**  
**THERMAL CHARTS ..... 24-33**

LAWS AND BUILDING AND SAFETY CODES GOVERNING THE DESIGN AND USE OF GLAZED ENTRANCE, WINDOW, AND CURTAIN WALL PRODUCTS VARY WIDELY. KAWNEER DOES NOT CONTROL THE SELECTION OF PRODUCT CONFIGURATIONS, OPERATING HARDWARE, OR GLAZING MATERIALS, AND ASSUMES NO RESPONSIBILITY THEREFOR.

Metric (SI) conversion figures are included throughout these details for reference. Numbers in parentheses ( ) are millimeters unless otherwise noted.

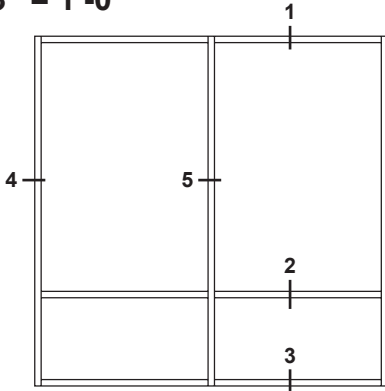
The following metric (SI ) units are found in these details:

- m – meter
- cm – centimeter
- mm – millimeter
- s – second
- Pa – pascal
- MPa – megapascal

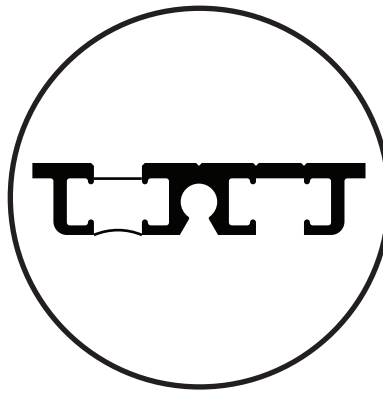
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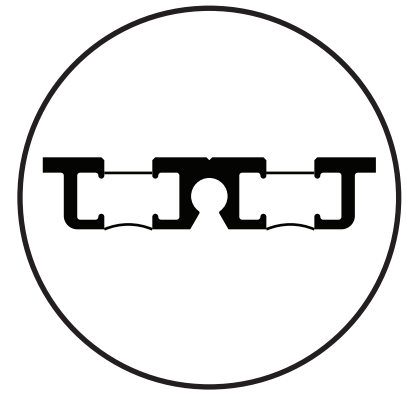
SCALE 3" = 1'-0"



ELEVATION IS NUMBER KEYED TO DETAILS

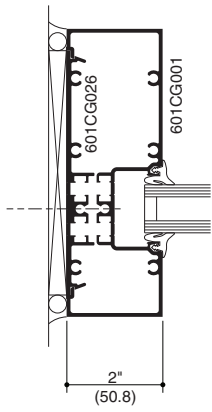


Trifab™ 601T IsoLock™ THERMAL BREAK

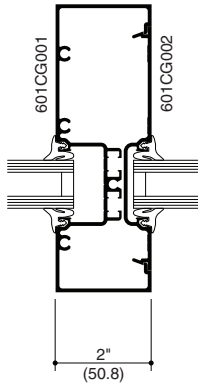


Trifab™ 601UT DUAL IsoLock™ THERMAL BREAK

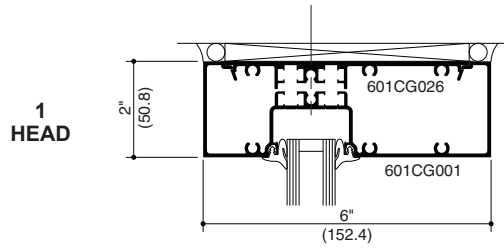
SCREW SPLINE



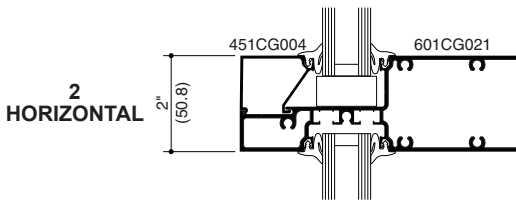
4 JAMB



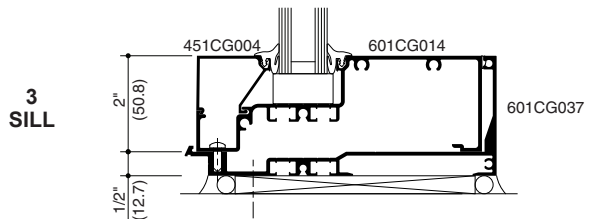
5 VERTICAL



1 HEAD



2 HORIZONTAL

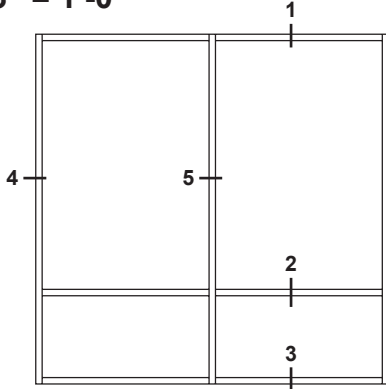


3 SILL

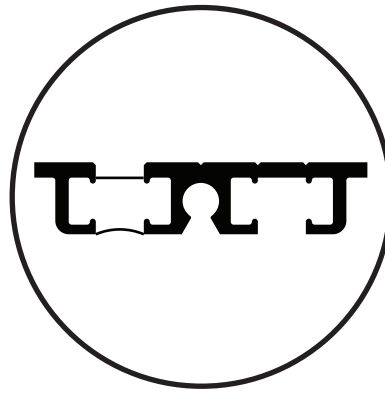
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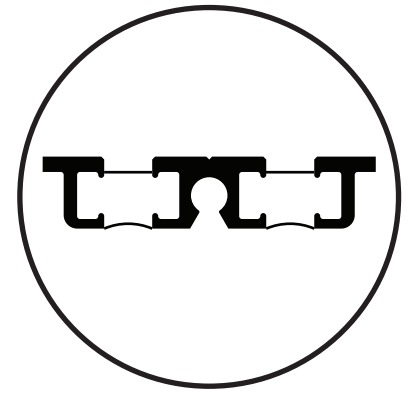
SCALE 3" = 1'-0"



ELEVATION IS NUMBER KEYED TO DETAILS

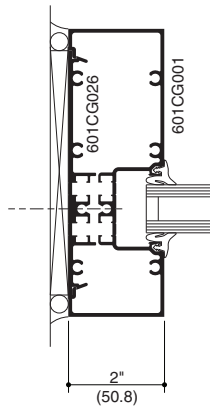


Trifab™ 601T IsoLock™  
THERMAL BREAK

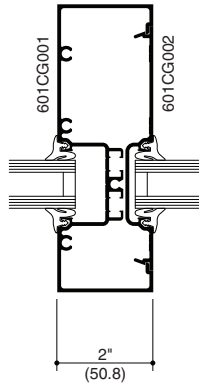


Trifab™ 601UT DUAL IsoLock™  
THERMAL BREAK

### SCREW SPLINE

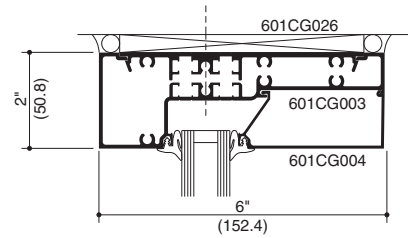


4  
JAMB

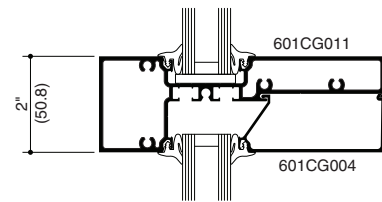


5  
VERTICAL

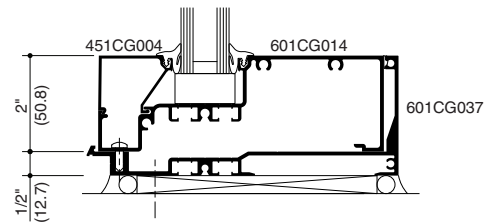
1  
HEAD



2  
HORIZONTAL



3  
SILL

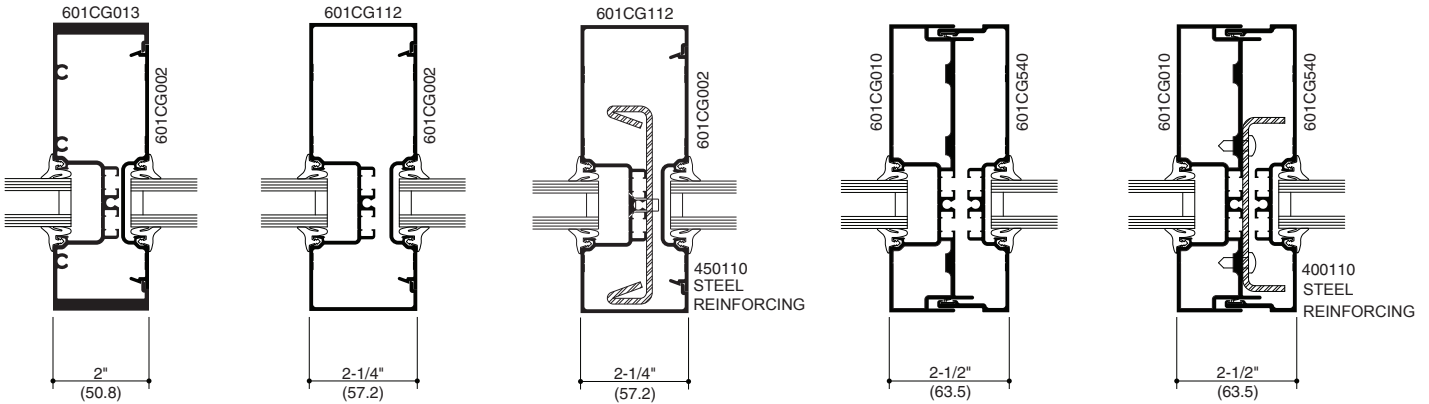


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SCALE 3" = 1'-0"



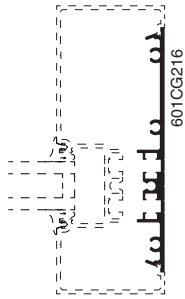
2" (50.8) HEAVY WALL MULLION

2-1/4" (57.2) MULLION

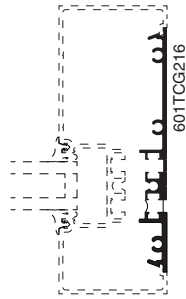
2-1/4" (57.2) MULLION WITH STEEL

TUBULAR EXPANSION MULLION

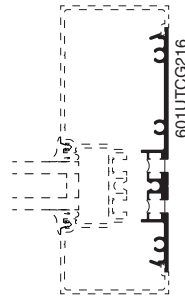
TUBULAR EXPANSION MULLION WITH OPTIONAL STEEL



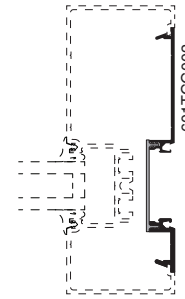
FLAT FILLER



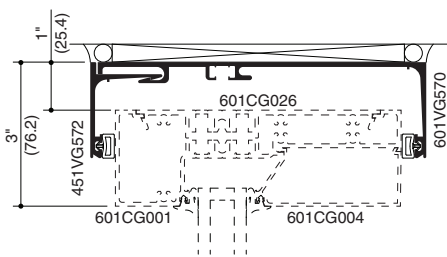
THERMAL FLAT FILLER



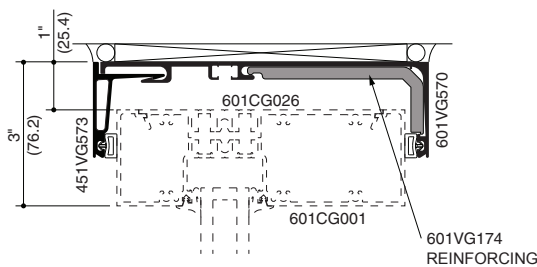
ULTRA THERMAL FLAT FILLER



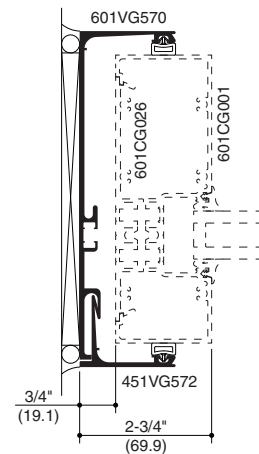
THERMAL POCKET FILLER



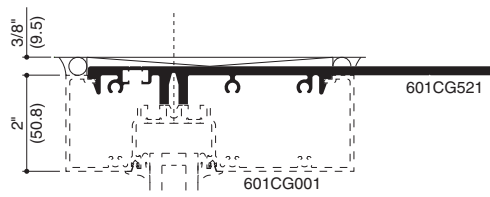
STANDARD HEAD RECEPTOR



HEAVY WEIGHT HEAD RECEPTOR



JAMB RECEPTOR



STRAP ANCHOR

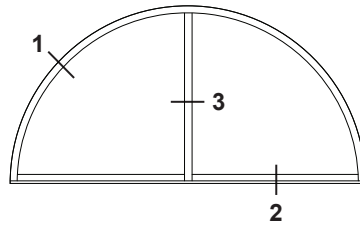
ADMC070EN

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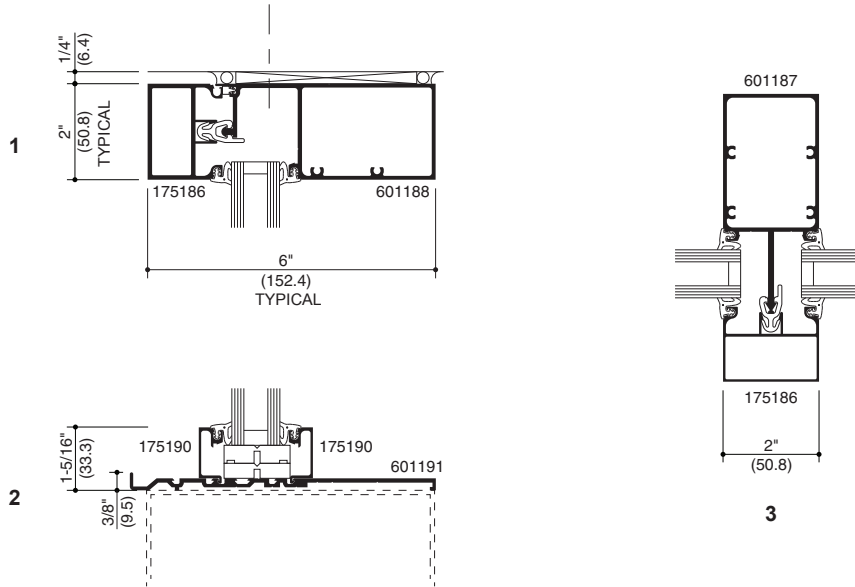
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SCALE 3" = 1'-0"



CURVING DETAILS

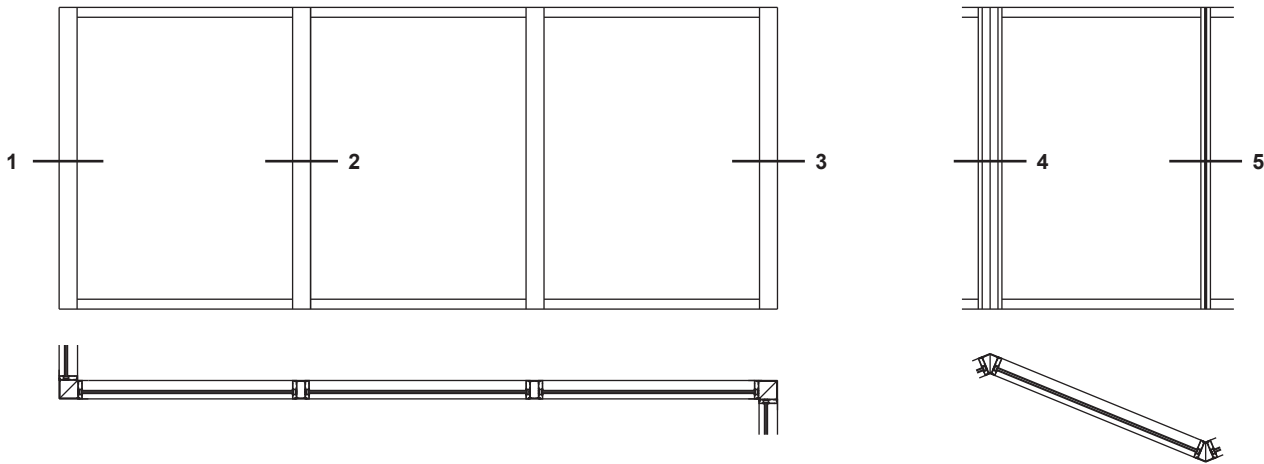


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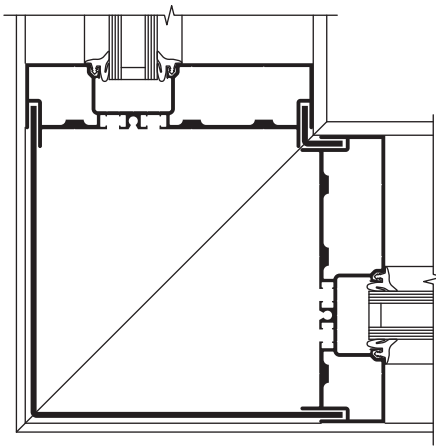
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SCALE 3" = 1'-0"

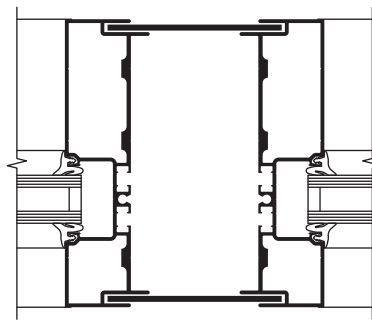
THESE DETAILS ARE TYPICAL FOR ALL 601, 601T, AND 601UT CONDITIONS.



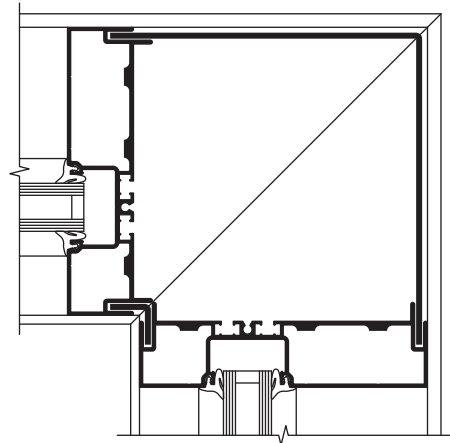
NOTE: 1" (25.4) infill shown.



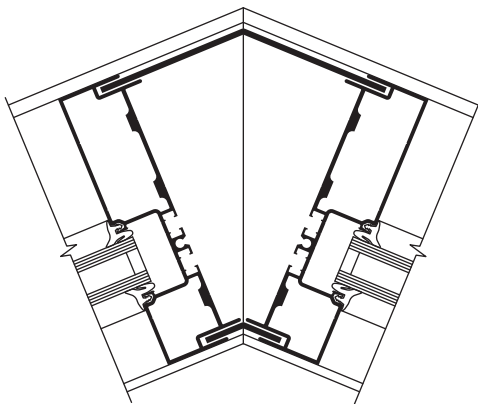
1  
OUTSIDE 90°  
CORNER



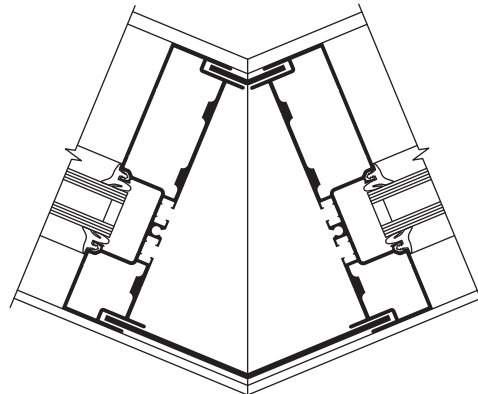
2  
6" (152.4)  
MULLION POST



3  
INSIDE 90°  
CORNER



4  
INSIDE 135°  
CORNER



5  
OUTSIDE 135°  
CORNER

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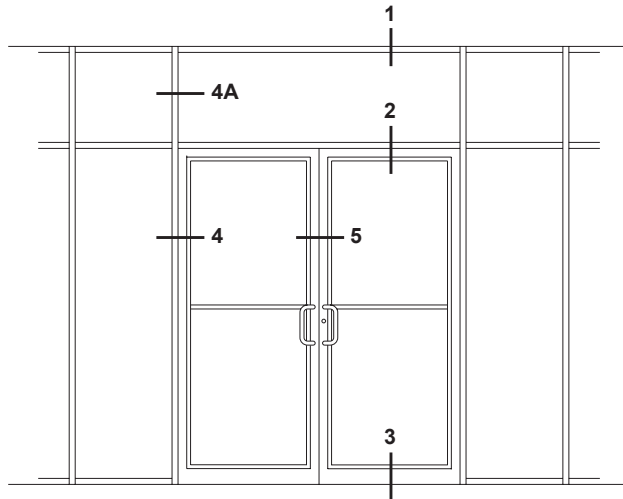
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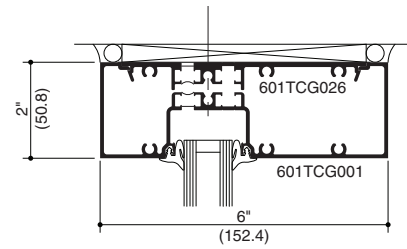
## SCALE 3" = 1'-0"

Trifab™ 601T FRAMING INCORPORATING KAWNEER "AA™250" DOORS.

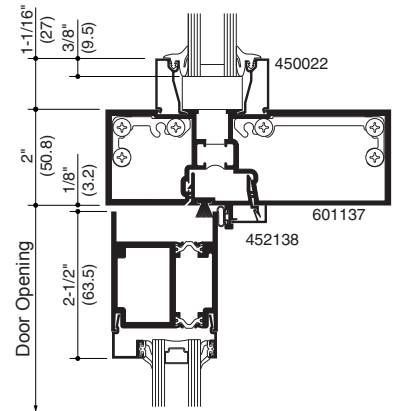
**NOTE:** OTHER TYPES OF KAWNEER DOORS MAY BE USED WITH THIS FRAMING SYSTEM. SEE ENTRANCE DETAILS FOR ADDITIONAL INFORMATION.



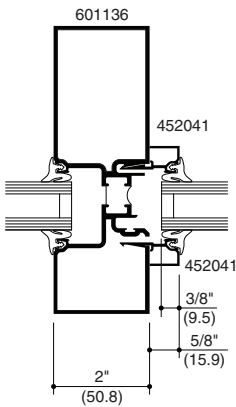
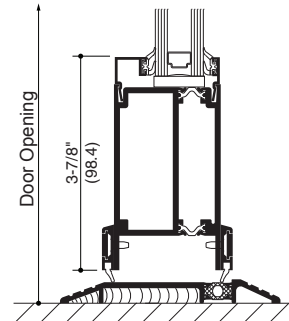
**1**  
HEAD



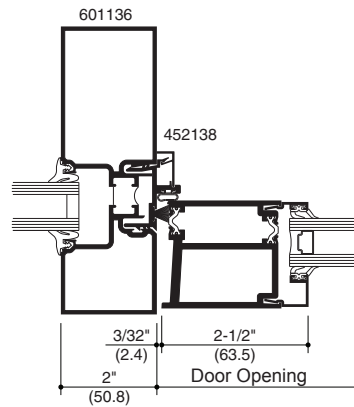
**2**  
TRANSOM  
BAR



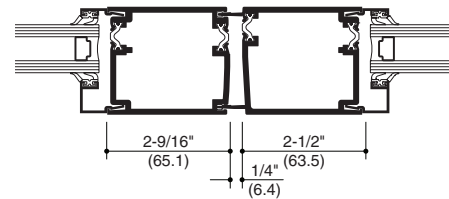
**3**  
BOTTOM  
RAIL



**4A**  
TRANSOM  
JAMB



**4**  
DOOR  
JAMB



**5**  
MEETING  
STILES

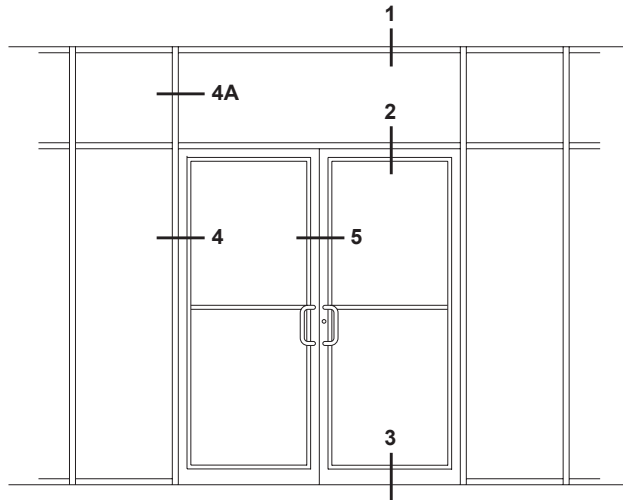
## AA™ 250/425 THERMAL DOOR

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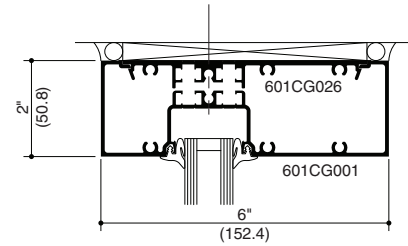
SCALE 3" = 1'-0"

Trifab™ 601 FRAMING INCORPORATING KAWNEER "350" DOORS.  
**NOTE:** OTHER TYPES OF KAWNEER DOORS MAY BE USED WITH THIS FRAMING SYSTEM.  
 SEE ENTRANCE DETAILS FOR ADDITIONAL INFORMATION.

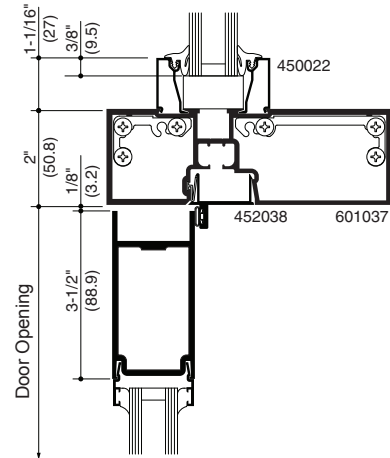


ELEVATION IS NUMBER KEYED TO DETAILS.

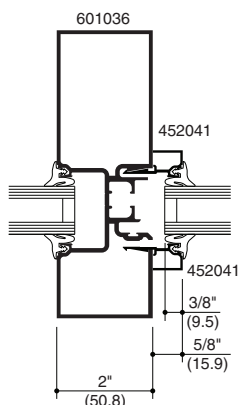
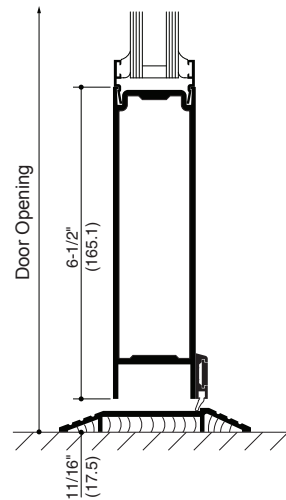
1 HEAD



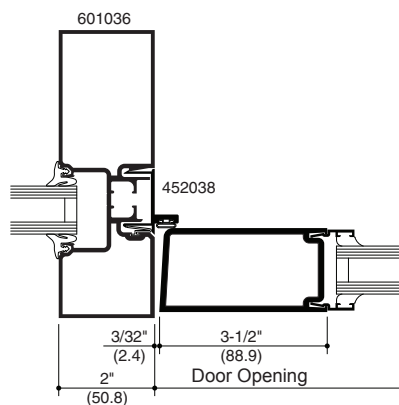
2 TRANSOM BAR



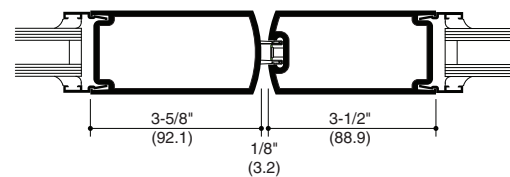
3 BOTTOM RAIL



4A DOOR JAMB



4 DOOR JAMB



5 MEETING STILES

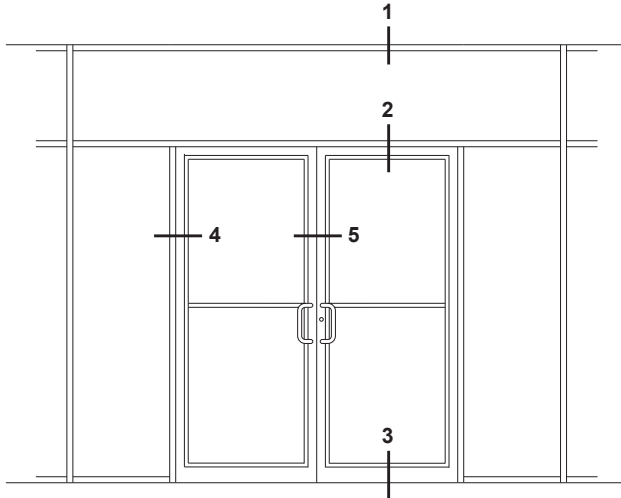
Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

Kawneer reserves the right to change configuration without prior notice when deemed necessary for product improvement.  
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350 MEDIUM STILE DOOR

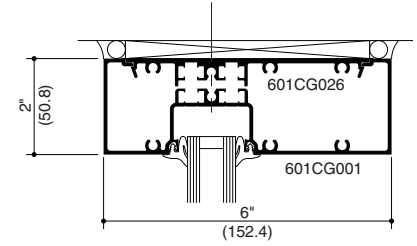
**SCALE 3" = 1'-0"**

**Trifab™ 601 FRAMING INCORPORATING KAWNEER "350" DOORS.**  
**NOTE: OTHER TYPES OF KAWNEER DOORS MAY BE USED WITH THIS FRAMING SYSTEM.**  
**SEE ENTRANCE DETAILS FOR ADDITIONAL INFORMATION.**

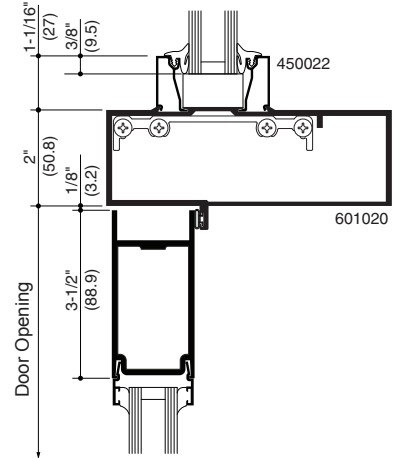


**ELEVATION IS NUMBER KEYED TO DETAILS.**

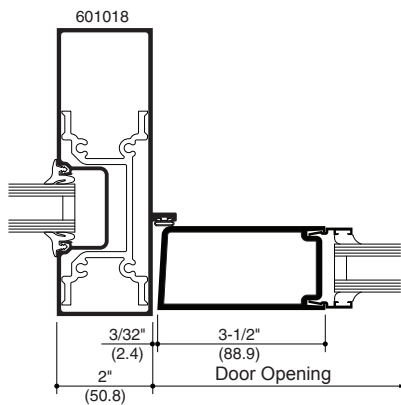
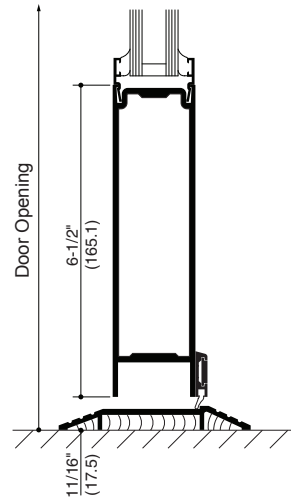
**1 HEAD**



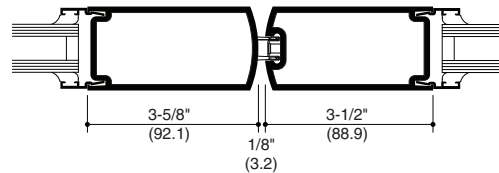
**2 TRANSOM BAR**



**3 BOTTOM RAIL**



**4 DOOR JAMB**



**5 MEETING STILES**

**350 MEDIUM STILE DOOR**

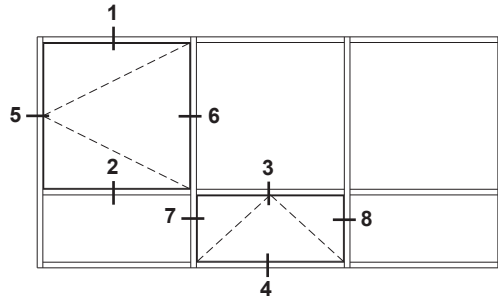
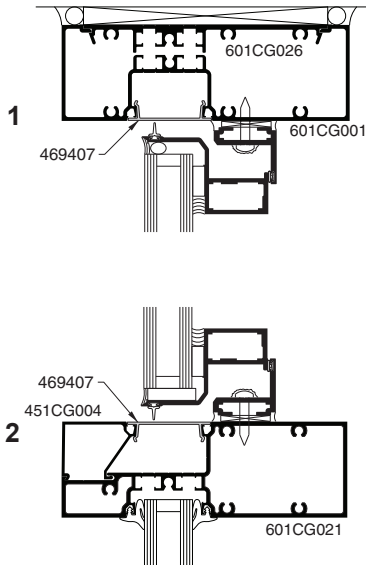
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SCALE 3" = 1'-0"

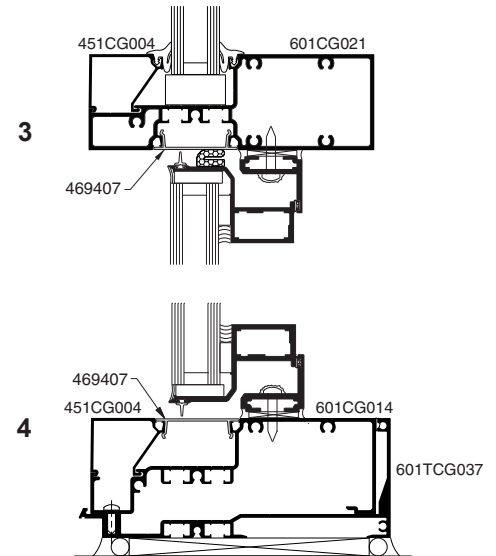
Trifab™ 601 FRAMING SHOWN.  
OTHER FRAMING OPTIONS AVAILABLE.  
CONSULT YOUR KAWNEER REPRESENTATIVE.

**OUTSWING CASEMENT  
VERTICAL SECTION**

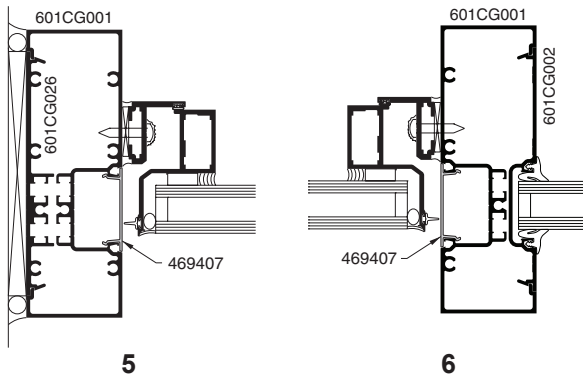


ELEVATION IS NUMBER KEYED TO DETAILS

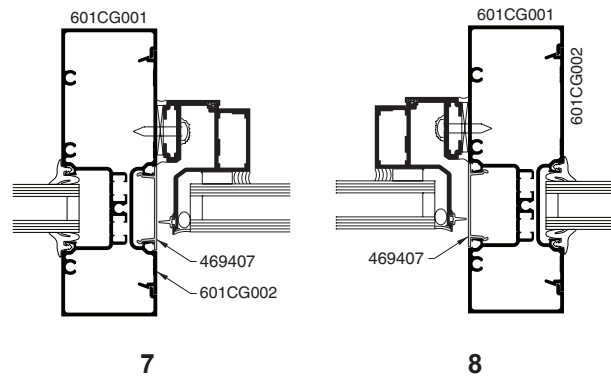
**PROJECT-OUT  
VERTICAL SECTION**



**OUTSWING CASEMENT  
HORIZONTAL SECTION**



**PROJECT-OUT  
HORIZONTAL SECTION**



**NOTE:** Black spacer is recommended when 1" (25.4) insulating glass is used.

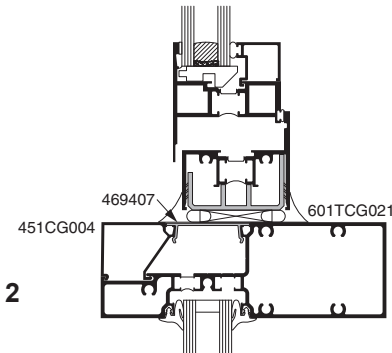
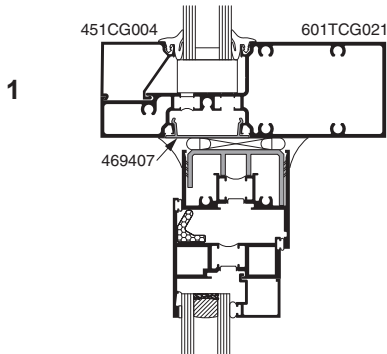
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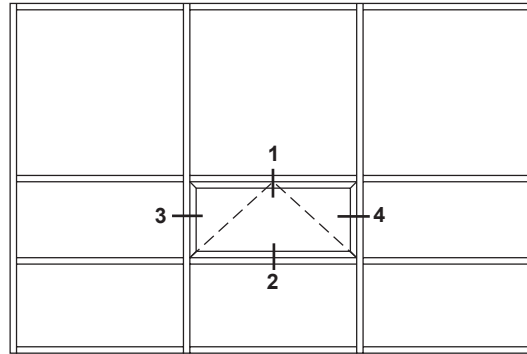
## SCALE 3" = 1'-0"

Trifab™ 601T FRAMING SHOWN.  
OTHER FRAMING OPTIONS AVAILABLE.  
CONSULT YOUR KAWNEER REPRESENTATIVE.

### PROJECT-OUT VERTICAL SECTION

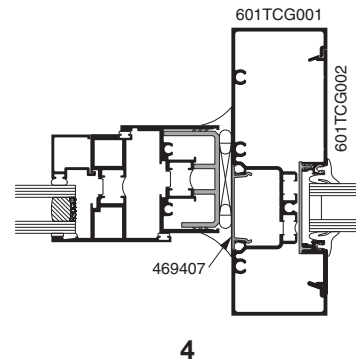
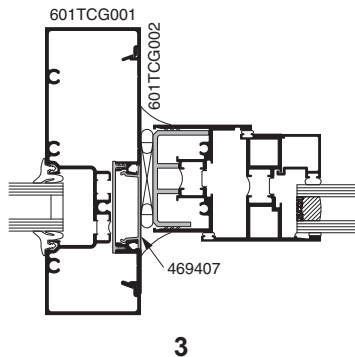


8225TL THERMAL WINDOWS SHOWN  
NOTE: OTHER VENT TYPES CAN BE  
ACCOMMODATED, CONSULT YOUR KAWNEER  
REPRESENTATIVE FOR OTHER OPTIONS



ELEVATION IS NUMBER KEYED TO DETAILS

### PROJECT-OUT HORIZONTAL SECTION



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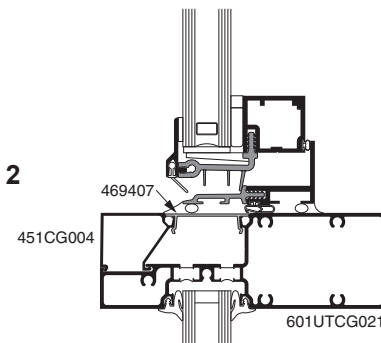
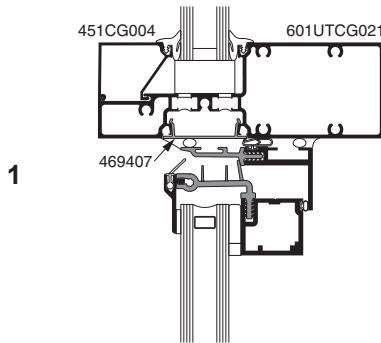
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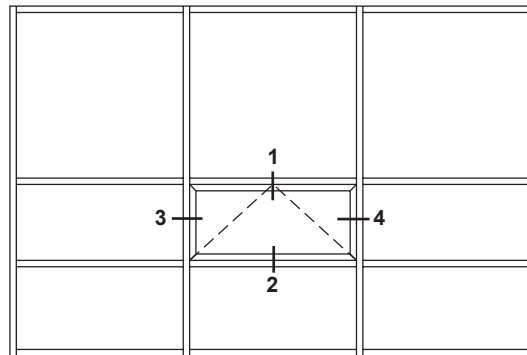
**SCALE 3" = 1'-0"**

Trifab™ 601UT FRAMING SHOWN.  
OTHER FRAMING OPTIONS AVAILABLE.  
CONSULT YOUR KAWNEER REPRESENTATIVE.

**PROJECT-OUT  
VERTICAL SECTION**



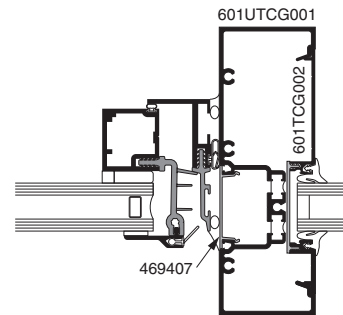
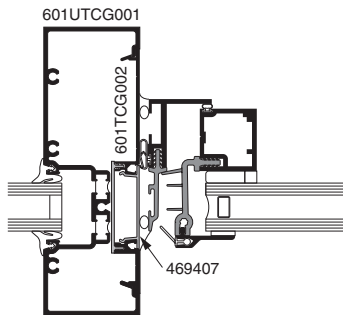
**GLASSvent™ UT WINDOWS SHOWN**  
**NOTE: OTHER VENT TYPES CAN BE ACCOMMODATED, CONSULT YOUR KAWNEER REPRESENTATIVE FOR OTHER OPTIONS**



**ELEVATION IS NUMBER KEYED TO DETAILS**

**NOTE: Black spacer is recommended when 1" (25.4) insulating glass is used.**

**PROJECT-OUT  
HORIZONTAL SECTION**



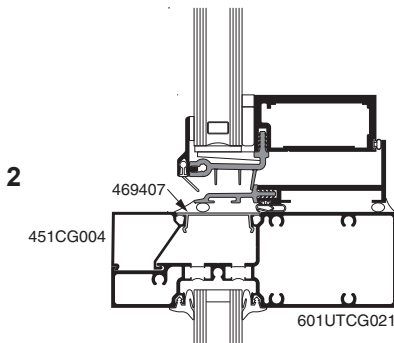
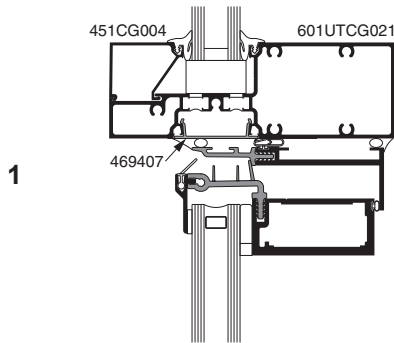
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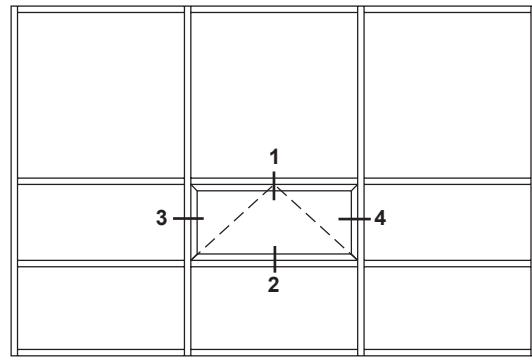
## SCALE 3" = 1'-0"

Trifab™ 601UT FRAMING SHOWN.  
OTHER FRAMING OPTIONS AVAILABLE.  
CONSULT YOUR KAWNEER REPRESENTATIVE.

### PROJECT-OUT VERTICAL SECTION

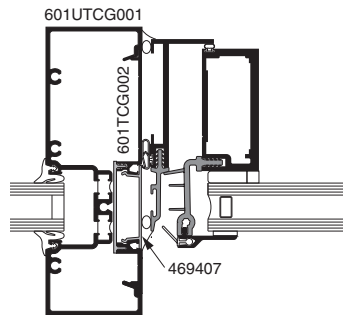


**GLASSvent™ UT WINDOWS SHOWN**  
**NOTE:** OTHER VENT TYPES CAN BE ACCOMMODATED, CONSULT YOUR KAWNEER REPRESENTATIVE FOR OTHER OPTIONS

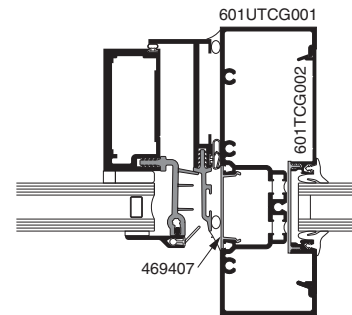


ELEVATION IS NUMBER KEYED TO DETAILS

**NOTE:** Black spacer is recommended when 1" (25.4) insulating glass is used.



### PROJECT-OUT HORIZONTAL SECTION



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## WIND LOAD CHARTS

Mullions are designed for deflection limitations in accordance with AAMA TIR-A11 of L/175 up to 13'-6" and L/240 +1/4" above 13'-6". These curves are for mullions WITH HORIZONTALS and are based on engineering calculations for stress and deflection. Allowable wind load stress for ALUMINUM 15,152 psi (104 MPa), STEEL 30,000 psi (207 MPa). Charted curves, in all cases are for the limiting value. Wind load charts contained herein are based upon nominal wind load utilized in allowable stress design. A conversion from Load Resistance Factor Design (LRFD) is provided. To convert ultimate wind loads to nominal loads, multiply ultimate wind loads by a factor of 0.6 per ASCE/SEI 7. A 4/3 increase in allowable stress has not been used to develop these curves. For special situations not covered by these curves, contact your Kawneer representative for additional information.

If the end reaction of the mullion [mullion spacing (ft.) times height (ft.) times specified wind load (psf) divided by two] is more than 500 lbs., the optional Mullion Anchors must be used. Consult Application Engineering. (*Mullion Anchor not used with Lightweight Receptor.*)

## DEADLOAD CHARTS

Horizontal or deadload limitations are based upon 1/8" (3.2), maximum allowable deflection at the center of an intermediate horizontal member. The accompanying charts are calculated for 1" (25.4) thick insulating glass or 1/4" (6.35) thick glass supported on two setting blocks placed at the loading points shown.

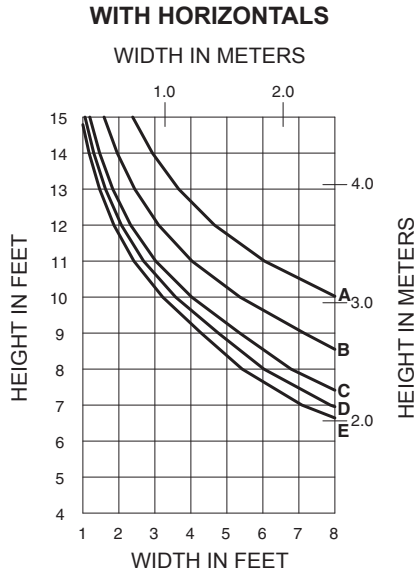
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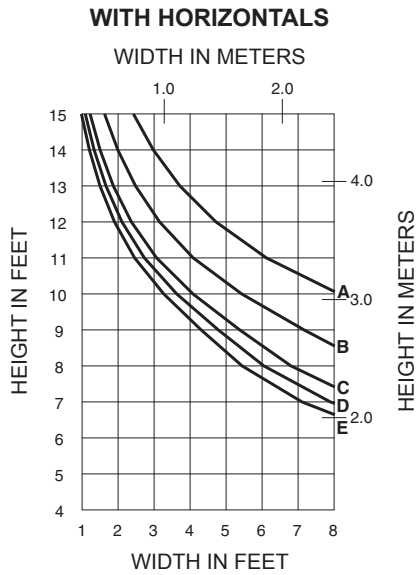
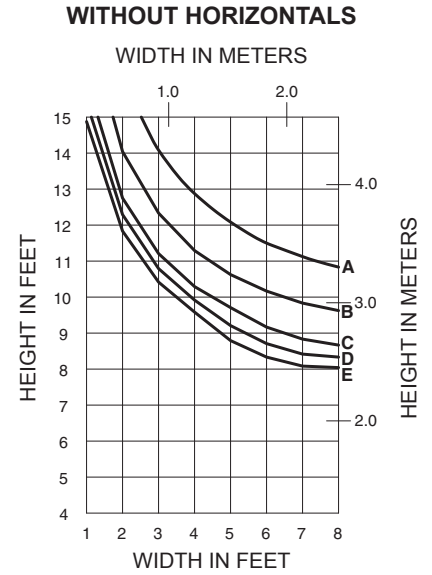
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	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	20 PSF (960)	33 PSF (1580)
B =	30 PSF (1440)	50 PSF (2400)
C =	40 PSF (1920)	67 PSF (3200)
D =	45 PSF (2160)	75 PSF (3600)
E =	50 PSF (2400)	83 PSF (4000)
F =	60 PSF (2880)	100 PSF (4790)



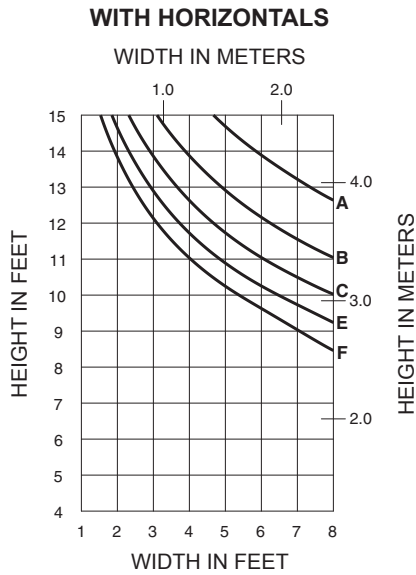
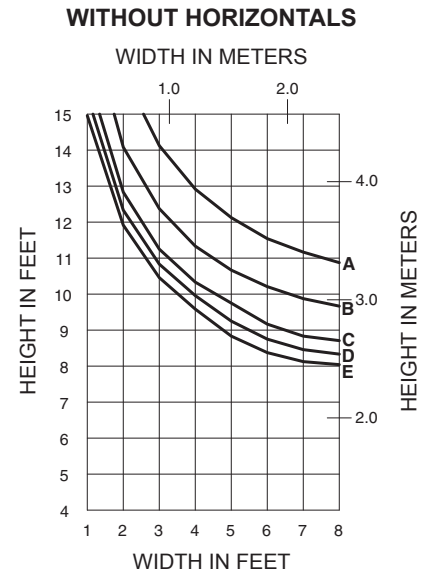
**601CG001**

$I = 5.431 (226.05 \times 10^4)$   
 $S = 1.717 (28.14 \times 10^3)$



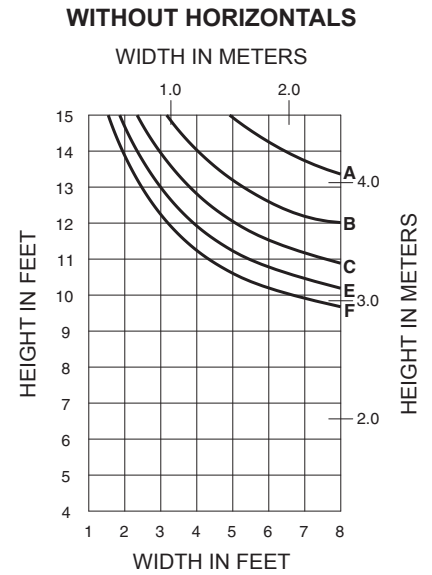
**601CG112**

$I = 5.495 (228.72 \times 10^4)$   
 $S = 1.727 (28.30 \times 10^3)$

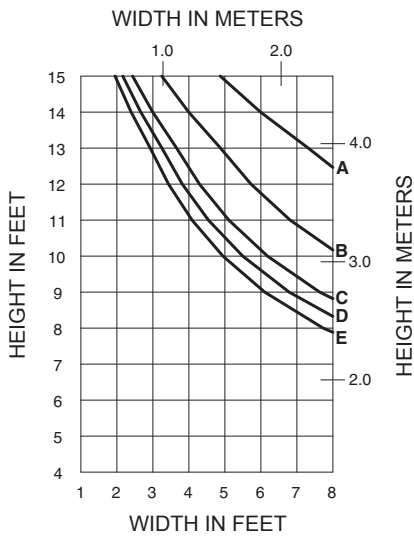


**601CG013**

$I_A = 10.593 (440.91 \times 10^4)$   
 $S_A = 3.411 (55.90 \times 10^3)$



**WITH HORIZONTALS**



	Allowable Stress Design Load	LRFD Ultimate Design Load
<b>A =</b>	<b>20 PSF (960)</b>	<b>33 PSF (1580)</b>
<b>B =</b>	<b>30 PSF (1440)</b>	<b>50 PSF (2400)</b>
<b>C =</b>	<b>40 PSF (1920)</b>	<b>67 PSF (3200)</b>
<b>D =</b>	<b>45 PSF (2160)</b>	<b>75 PSF (3600)</b>
<b>E =</b>	<b>50 PSF (2400)</b>	<b>83 PSF (4000)</b>



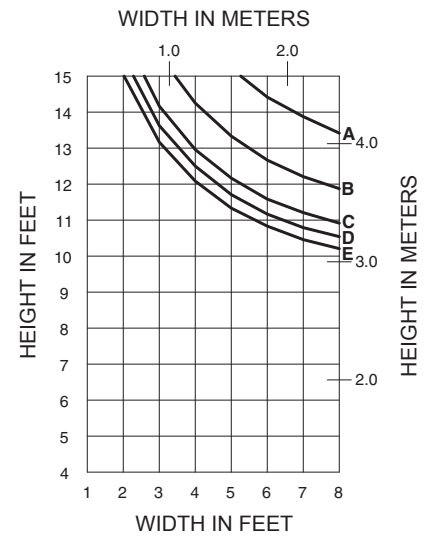
**601CG112**

**WITH 450110 STEEL**

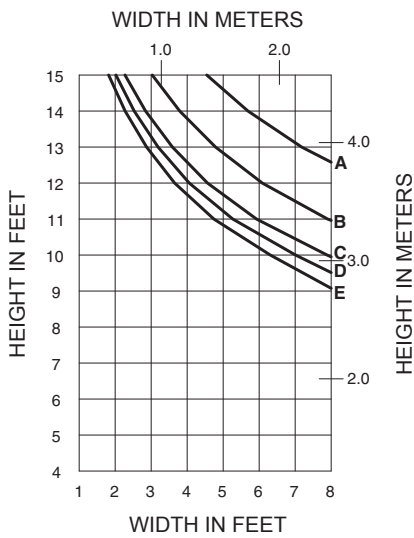
$I_A = 5.495 (228.72 \times 10^4)$   
 $S_A = 1.727 (28.30 \times 10^3)$

$I_S = 1.929 (80.29 \times 10^4)$   
 $S_S = 0.935 (15.32 \times 10^3)$

**WITHOUT HORIZONTALS**



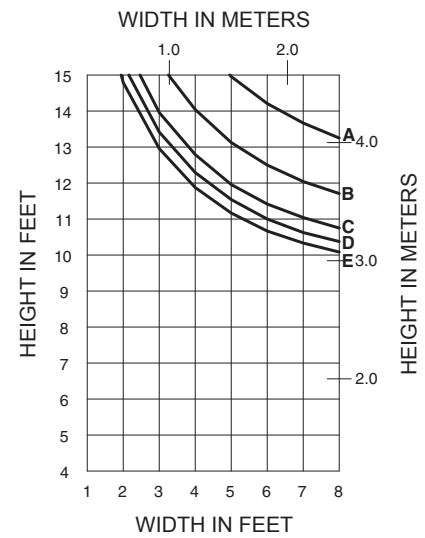
**WITH HORIZONTALS**



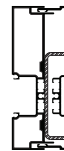
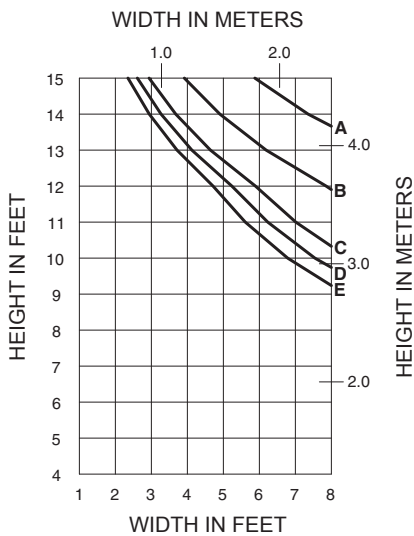
**601CG010**

$I = 10.570 (439.95 \times 10^4)$   
 $S = 3.406 (55.81 \times 10^3)$

**WITHOUT HORIZONTALS**



**WITH HORIZONTALS**

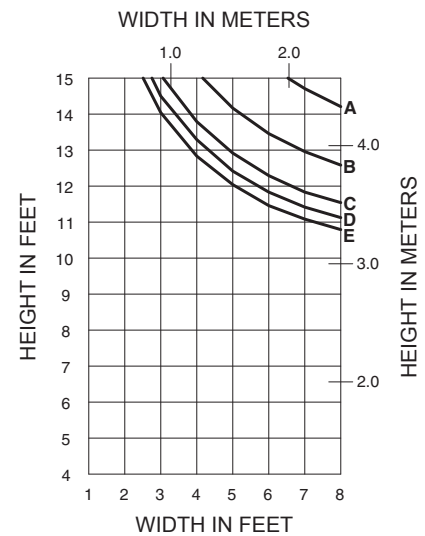


**601CG010 WITH 400110 STEEL**

$I_A = 10.570 (439.95 \times 10^4)$   
 $S_A = 3.406 (55.81 \times 10^3)$

$I_S = 0.970 (40.37 \times 10^4)$   
 $S_S = 0.535 (8.77 \times 10^3)$

**WITHOUT HORIZONTALS**



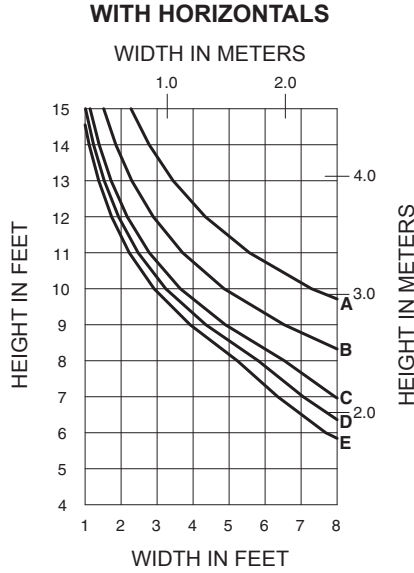
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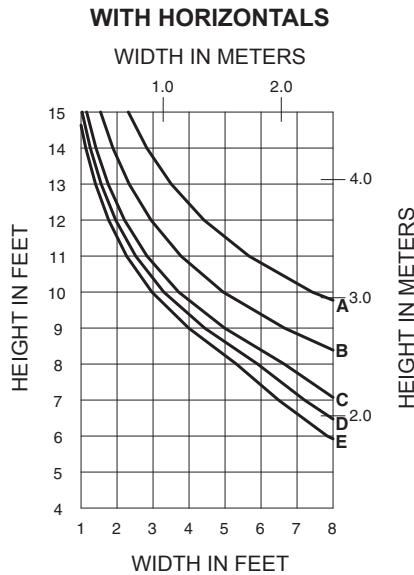
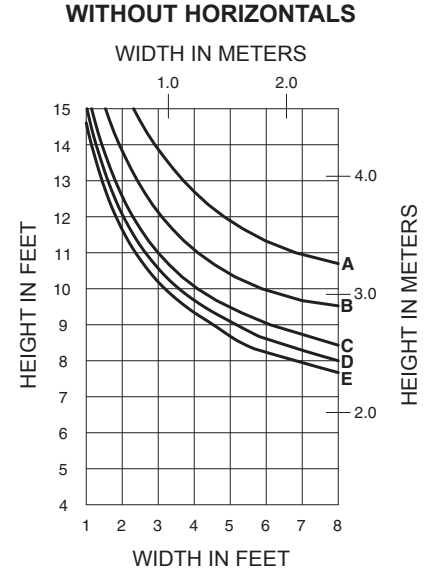


	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	20 PSF (960)	33 PSF (1580)
B =	30 PSF (1440)	50 PSF (2400)
C =	40 PSF (1920)	67 PSF (3200)
D =	45 PSF (2160)	75 PSF (3600)
E =	50 PSF (2400)	83 PSF (4000)
F =	60 PSF (2880)	100 PSF (4790)



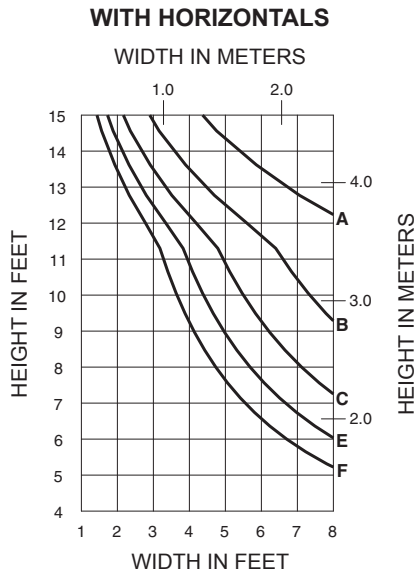
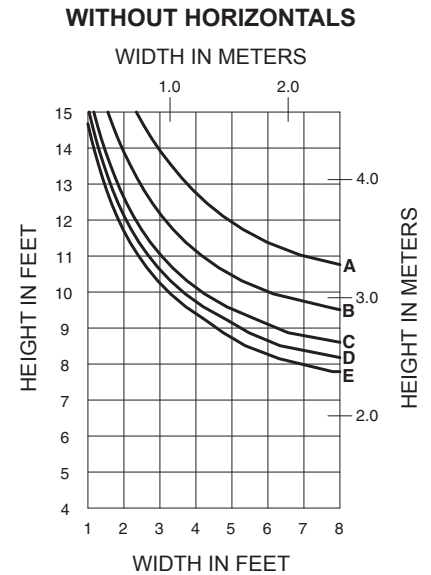
**601TCG001**

WIND LOAD CHARTS ARE BASED ON COMPOSITE PROPERTIES WHICH ARE CALCULATED IN ACCORDANCE WITH AAMA TIR-8 AND AAMA 505



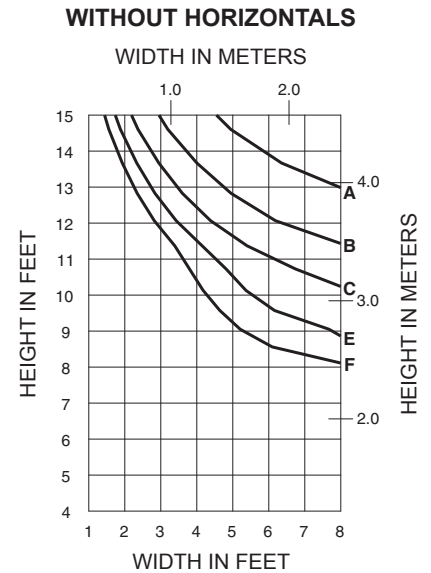
**601TCG112**

WIND LOAD CHARTS ARE BASED ON COMPOSITE PROPERTIES WHICH ARE CALCULATED IN ACCORDANCE WITH AAMA TIR-8 AND AAMA 505

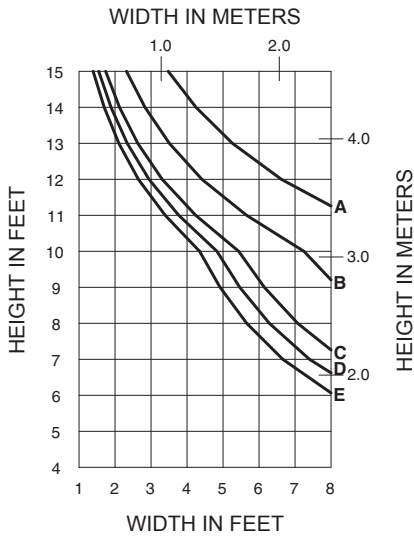


**601TCG013**

WIND LOAD CHARTS ARE BASED ON COMPOSITE PROPERTIES WHICH ARE CALCULATED IN ACCORDANCE WITH AAMA TIR-8 AND AAMA 505



**WITH HORIZONTALS**



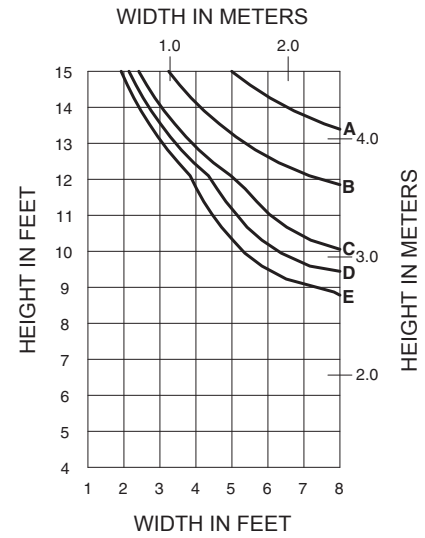
	Allowable Stress Design Load	LRFD Ultimate Design Load
<b>A =</b>	<b>20 PSF (960)</b>	<b>33 PSF (1580)</b>
<b>B =</b>	<b>30 PSF (1440)</b>	<b>50 PSF (2400)</b>
<b>C =</b>	<b>40 PSF (1920)</b>	<b>67 PSF (3200)</b>
<b>D =</b>	<b>45 PSF (2160)</b>	<b>75 PSF (3600)</b>
<b>E =</b>	<b>50 PSF (2400)</b>	<b>83 PSF (4000)</b>



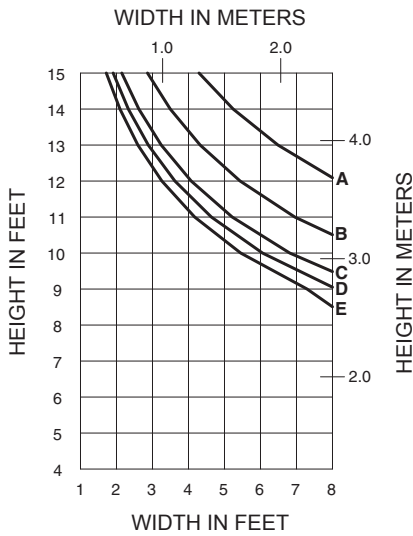
**601TCG112  
WITH 450110 STEEL**

WIND LOAD CHARTS ARE BASED ON COMPOSITE PROPERTIES WHICH ARE CALCULATED IN ACCORDANCE WITH AAMA TIR-8 AND AAMA 505

**WITHOUT HORIZONTALS**



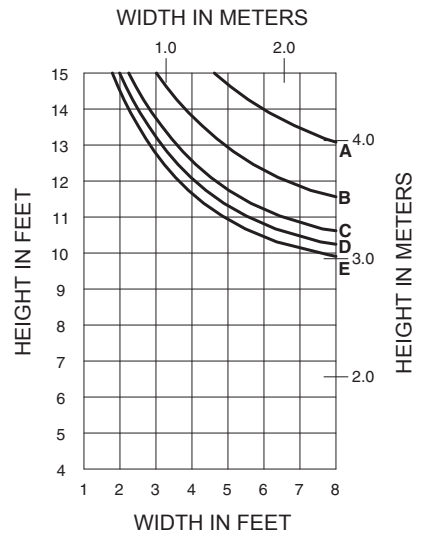
**WITH HORIZONTALS**



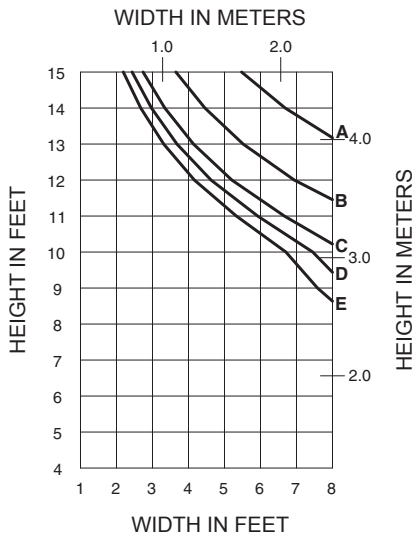
**601TCG010**

WIND LOAD CHARTS ARE BASED ON COMPOSITE PROPERTIES WHICH ARE CALCULATED IN ACCORDANCE WITH AAMA TIR-8 AND AAMA 505

**WITHOUT HORIZONTALS**



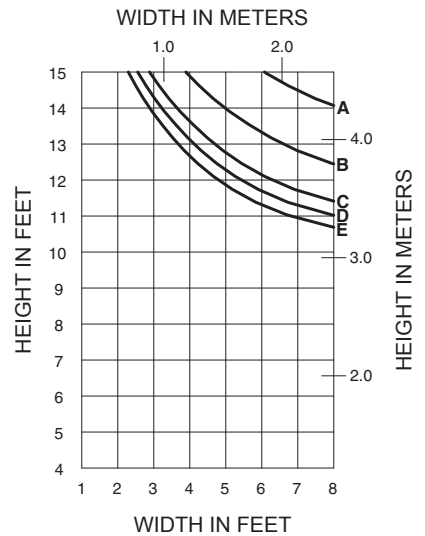
**WITH HORIZONTALS**



**601TCG010  
WITH 400110 STEEL**

WIND LOAD CHARTS ARE BASED ON COMPOSITE PROPERTIES WHICH ARE CALCULATED IN ACCORDANCE WITH AAMA TIR-8 AND AAMA 505

**WITHOUT HORIZONTALS**

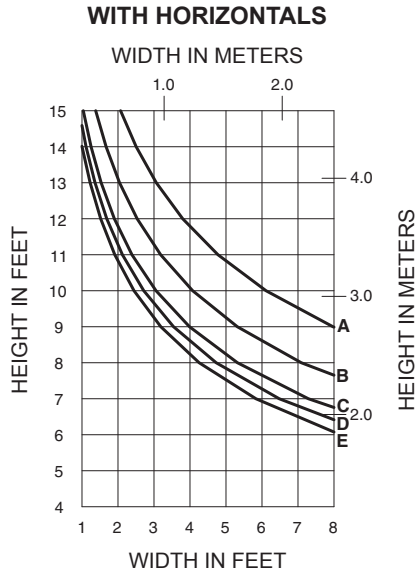


Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

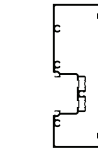
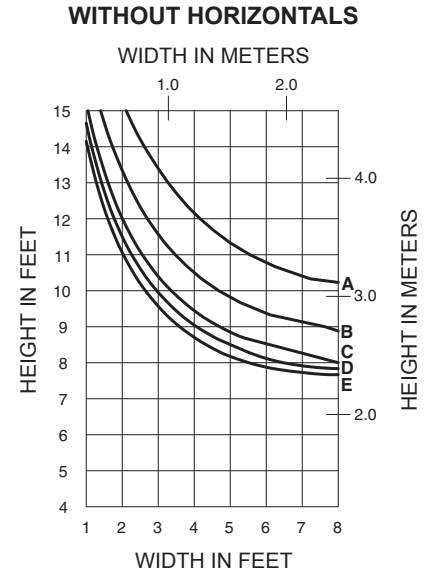
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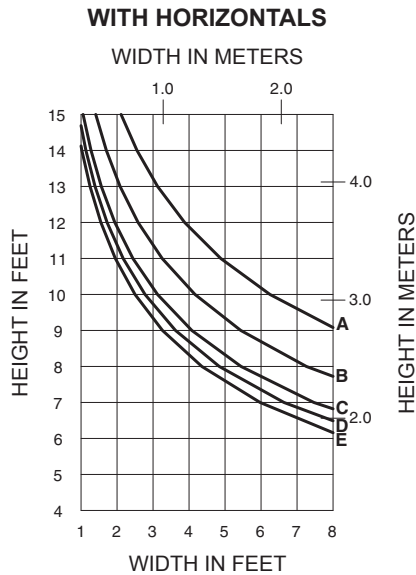


	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	20 PSF (960)	33 PSF (1580)
B =	30 PSF (1440)	50 PSF (2400)
C =	40 PSF (1920)	67 PSF (3200)
D =	45 PSF (2160)	75 PSF (3600)
E =	50 PSF (2400)	83 PSF (4000)
F =	60 PSF (2880)	100 PSF (4790)



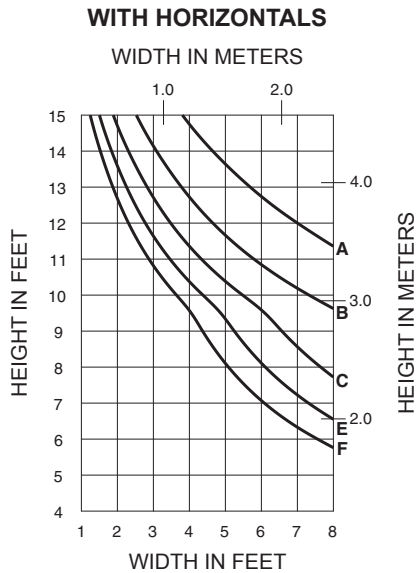
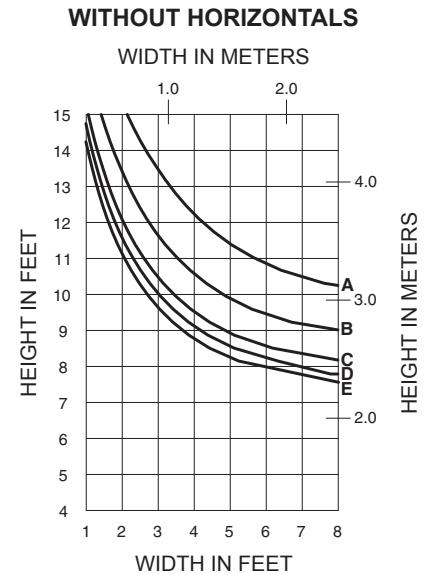
**601UTCG001**

WIND LOAD CHARTS ARE BASED ON COMPOSITE PROPERTIES WHICH ARE CALCULATED IN ACCORDANCE WITH AAMA TIR-8 AND AAMA 505



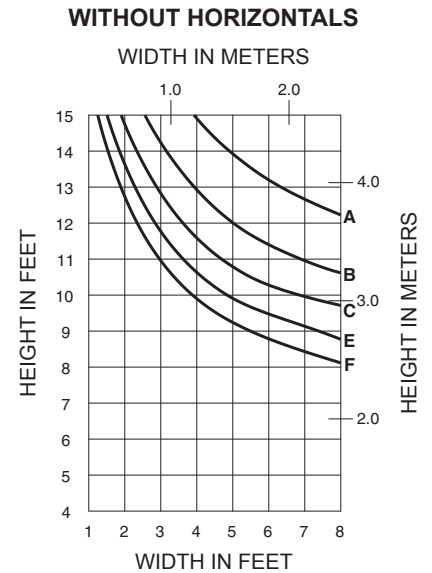
**601UTCG112**

WIND LOAD CHARTS ARE BASED ON COMPOSITE PROPERTIES WHICH ARE CALCULATED IN ACCORDANCE WITH AAMA TIR-8 AND AAMA 505



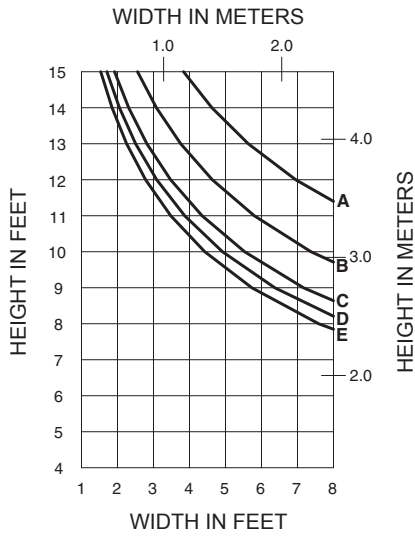
**601UTCG013**

WIND LOAD CHARTS ARE BASED ON COMPOSITE PROPERTIES WHICH ARE CALCULATED IN ACCORDANCE WITH AAMA TIR-8 AND AAMA 505





**WITH HORIZONTALS**



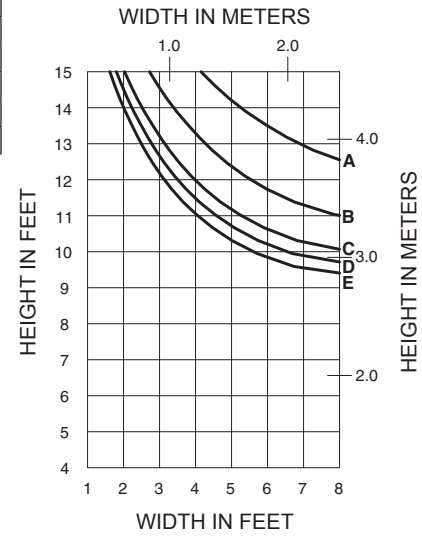
	Allowable Stress Design Load	LRFD Ultimate Design Load
<b>A =</b>	<b>20 PSF (960)</b>	<b>33 PSF (1580)</b>
<b>B =</b>	<b>30 PSF (1440)</b>	<b>50 PSF (2400)</b>
<b>C =</b>	<b>40 PSF (1920)</b>	<b>67 PSF (3200)</b>
<b>D =</b>	<b>45 PSF (2160)</b>	<b>75 PSF (3600)</b>
<b>E =</b>	<b>50 PSF (2400)</b>	<b>83 PSF (4000)</b>



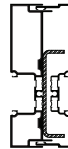
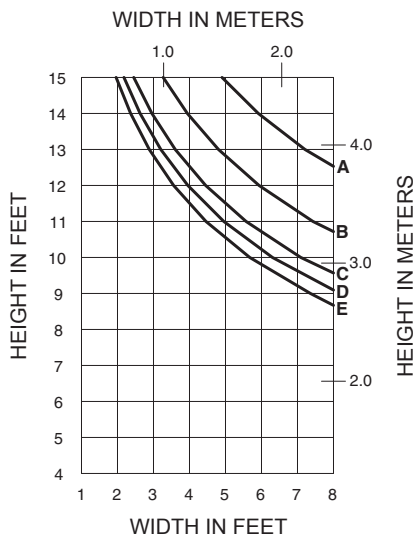
**601UTCG010**

WIND LOAD CHARTS ARE BASED ON COMPOSITE PROPERTIES WHICH ARE CALCULATED IN ACCORDANCE WITH AAMA TIR-8 AND AAMA 505

**WITHOUT HORIZONTALS**



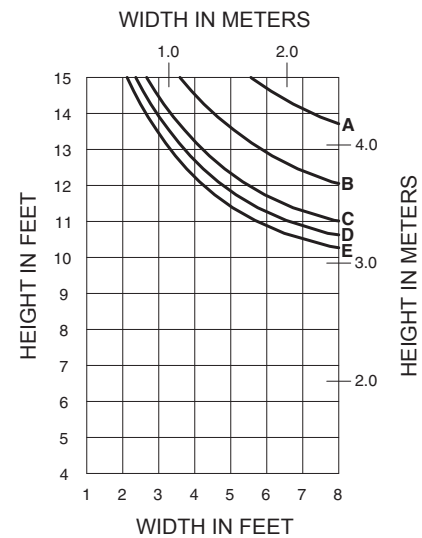
**WITH HORIZONTALS**



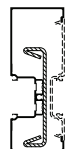
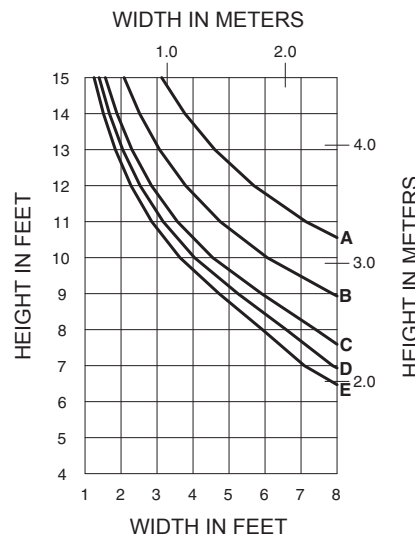
**601UTCG010 WITH 400110 STEEL**

WIND LOAD CHARTS ARE BASED ON COMPOSITE PROPERTIES WHICH ARE CALCULATED IN ACCORDANCE WITH AAMA TIR-8 AND AAMA 505

**WITHOUT HORIZONTALS**



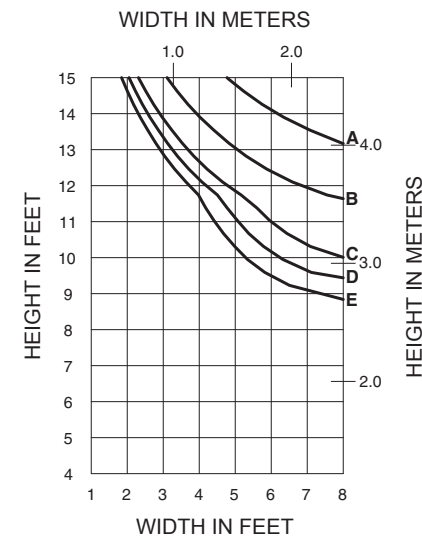
**WITH HORIZONTALS**



**601UTCG112 WITH 450110 STEEL**

WIND LOAD CHARTS ARE BASED ON COMPOSITE PROPERTIES WHICH ARE CALCULATED IN ACCORDANCE WITH AAMA TIR-8 AND AAMA 505

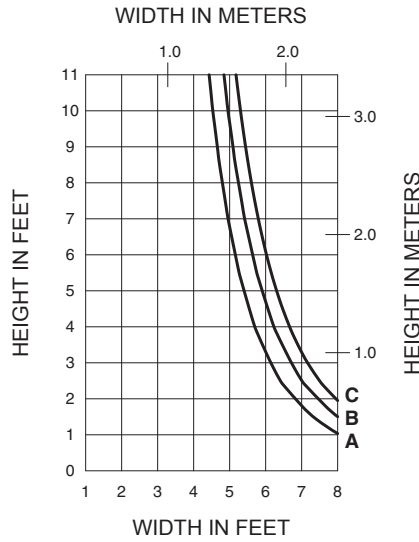
**WITHOUT HORIZONTALS**



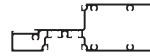
Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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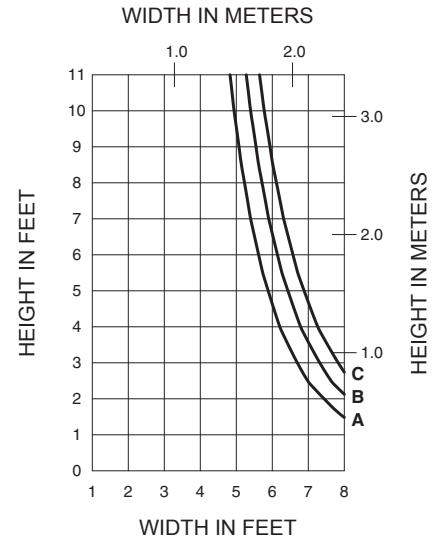
- A = (1/4 POINT LOADING)
- B = (1/6 POINT LOADING)
- C = (1/8 POINT LOADING)



601CG011



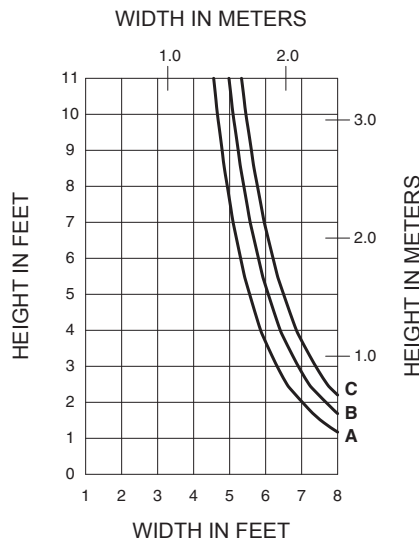
601CG021



**DEADLOAD ON TRANSOM BAR**

Height limitations for transom glass over a doorway are based on a 1/16" (1.6) maximum allowable deflection at the mid-point of a transom bar. The accompanying charts are calculated for 1" (25.4) thick insulating glass supported on two setting blocks placed at the loading points shown.

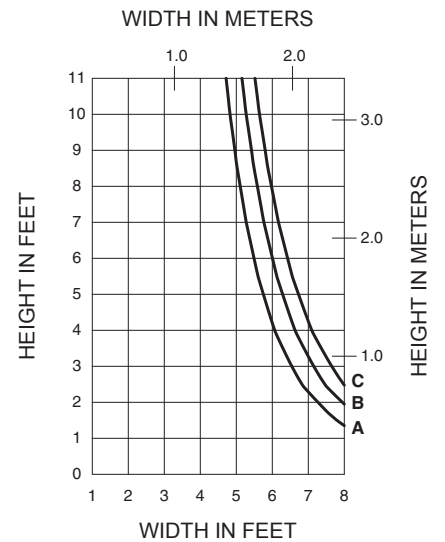
- A = (1/4 POINT LOADING)
- B = (1/6 POINT LOADING)
- C = (1/8 POINT LOADING)



601037  
HEADER / T-BAR



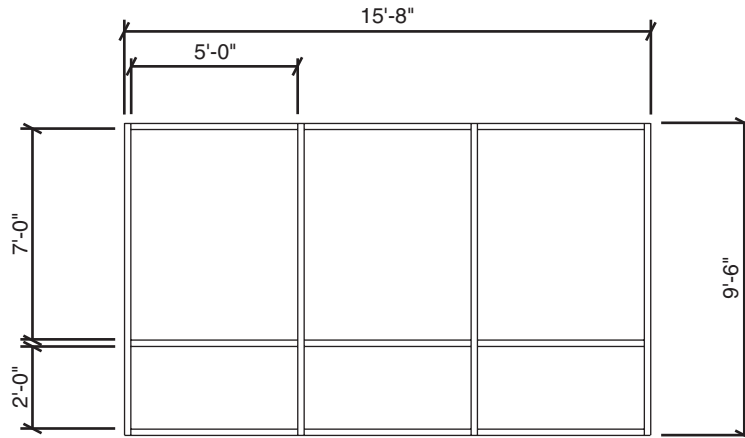
601079  
C.O.C. HEADER /  
T-BAR



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**Generic Project Specific U-factor Example Calculation**  
 (Percent of Glass will vary on specific products depending on sitelines)



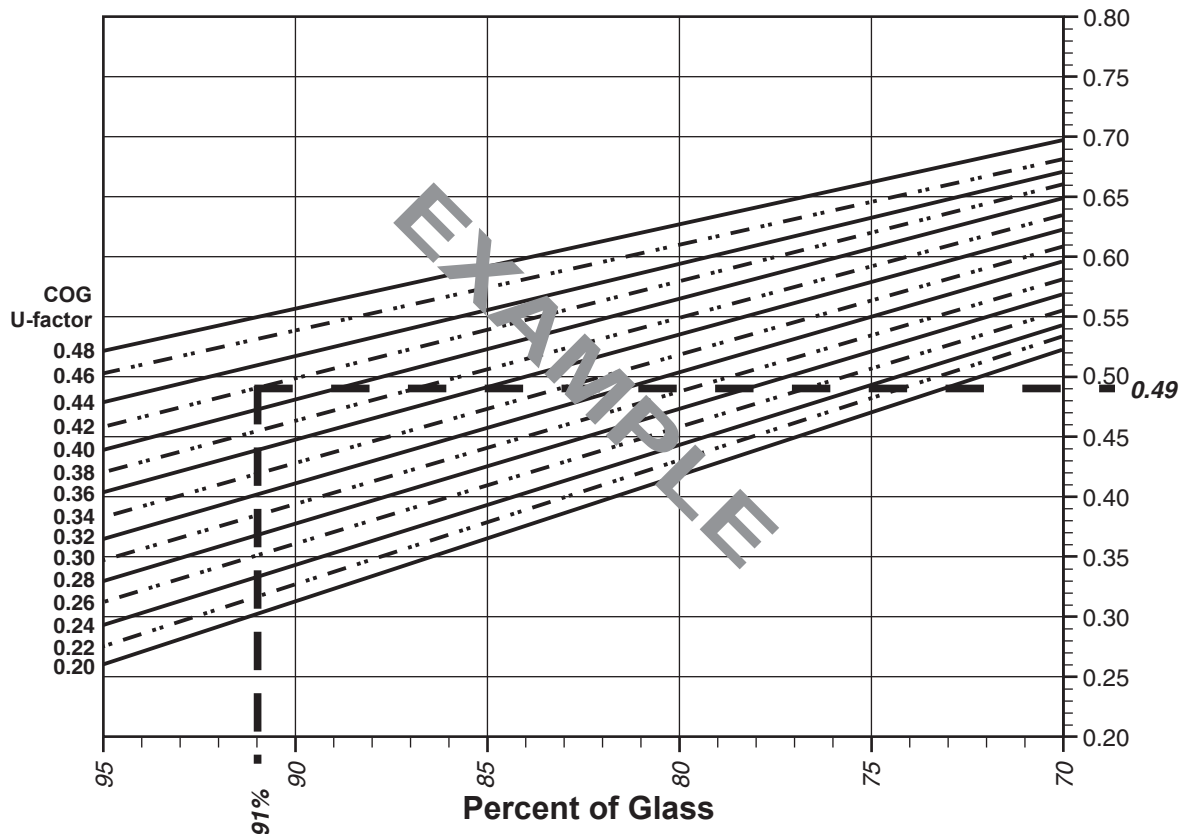
Example Glass U-factor = 0.42 Btu/hr-ft<sup>2</sup>-°F

Total Daylight Opening = 3(5' x 7') + 3(5' x 2') = 135ft<sup>2</sup>

Total Projected Area = (Total Daylight Opening + Total Area of Framing System)  
 = 15'-8" x 9'-6" = 148.83ft<sup>2</sup>

Percent of Glass = (Total Daylight Opening ÷ Total Projected Area)  
 = (135 ÷ 148.83)100 = 91%

**System U-factor vs Percent of Glass Area**



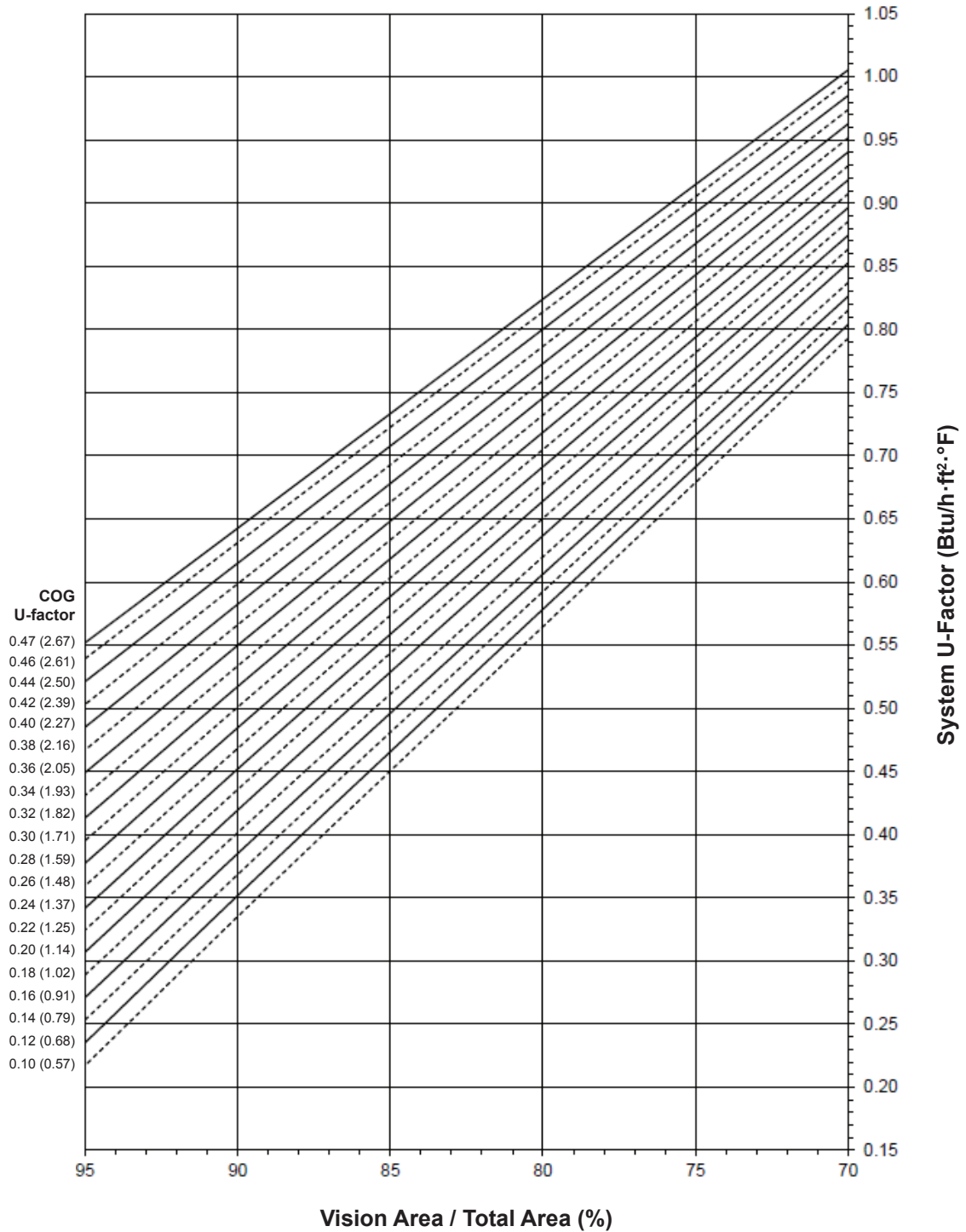
**Based on 91% glass and center of glass (COG) U-factor of 0.42**  
**System U-factor is equal to 0.49 Btu/hr x ft<sup>2</sup> x °F**

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Note:  
 Values in parentheses are metric.  
 COG=Center of Glass.  
 Charts are generated per AAMA 507.

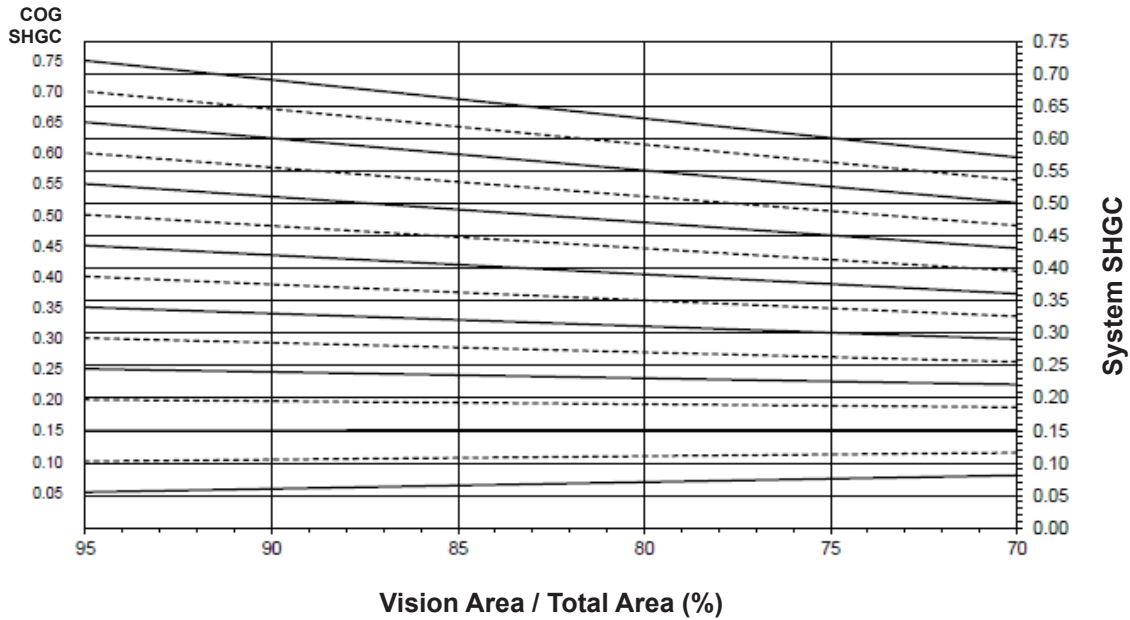
## Trifab™ 601 System U-Factor for Vision Glass



Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

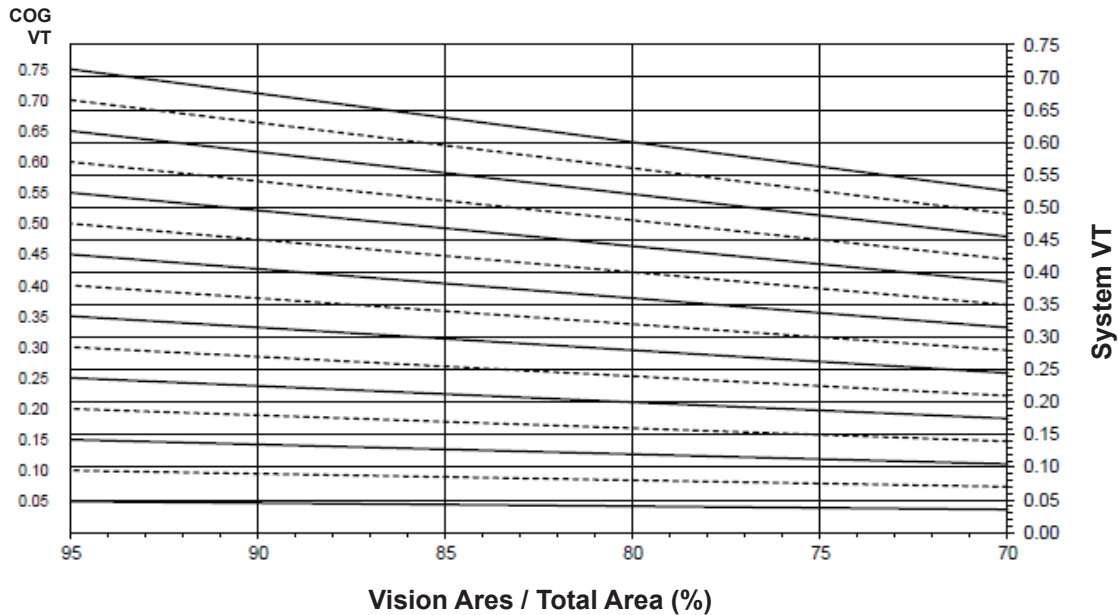
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**Trifab™ 601**  
System Solar Heat Gain Coefficient (SHGC) vs Percent of Vision Area



Charts are generated per AAMA 507.

**Trifab™ 601**  
System Visible Transmittance (VT) vs Percent of Vision Area



Charts are generated per AAMA 507.

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**Thermal Transmittance <sup>1</sup> (BTU/hr • ft<sup>2</sup> • °F)**

**Trifab™ 601**

Glass U-Factor <sup>3</sup>	Overall U-Factor <sup>4</sup>
0.48	0.68
0.46	0.67
0.44	0.66
0.42	0.64
0.40	0.63
0.38	0.61
0.36	0.59
0.34	0.58
0.32	0.56
0.30	0.55
0.28	0.53
0.26	0.52
0.24	0.50
0.22	0.48
0.20	0.47
0.18	0.45
0.16	0.44
0.14	0.42
0.12	0.40
0.10	0.39

**NOTE:** For glass values that are not listed, linear interpolation is permitted.

1. U-Factors are determined in accordance with NFRC 100.
2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values and are obtained from your glass supplier.
4. Overall U-Factor, SHGC, and VT Matrices are based on the standard NFRC specimen size of 2,000 mm wide by 2,000 mm high (78-3/4" by 78-3/4").

**SHGC Matrix <sup>2</sup>**

Glass SHGC <sup>3</sup>	Overall SHGC <sup>4</sup>
0.75	0.68
0.70	0.63
0.65	0.59
0.60	0.55
0.55	0.50
0.50	0.46
0.45	0.41
0.40	0.37
0.35	0.33
0.30	0.28
0.25	0.24
0.20	0.19
0.15	0.15
0.10	0.11
0.05	0.06

**Visible Transmittance <sup>2</sup>**

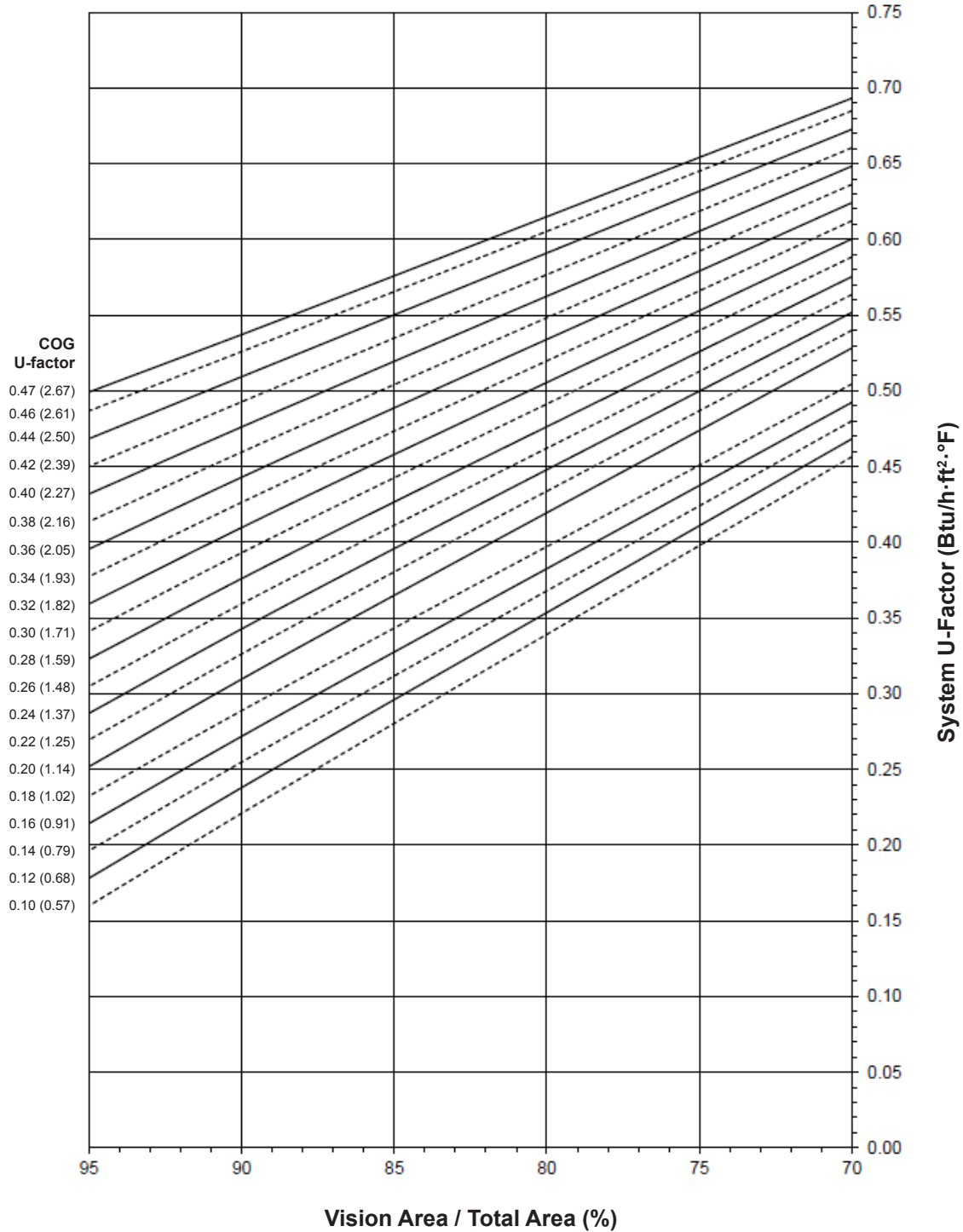
Glass VT <sup>3</sup>	Overall VT <sup>4</sup>
0.75	0.66
0.70	0.61
0.65	0.57
0.60	0.53
0.55	0.48
0.50	0.44
0.45	0.39
0.40	0.35
0.35	0.31
0.30	0.26
0.25	0.22
0.20	0.18
0.15	0.13
0.10	0.09
0.05	0.04

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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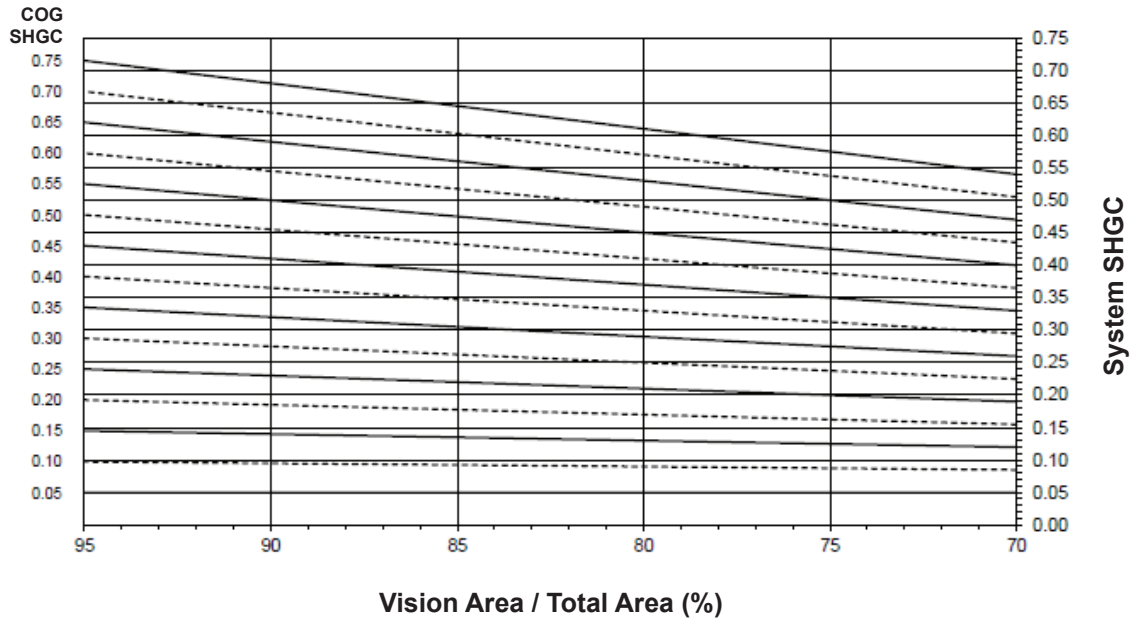
Note:  
 Values in parentheses are metric.  
 COG=Center of Glass.  
 Charts are generated per AAMA 507.

**Trifab™ 601T**  
**System U-Factor for Vision Glass**



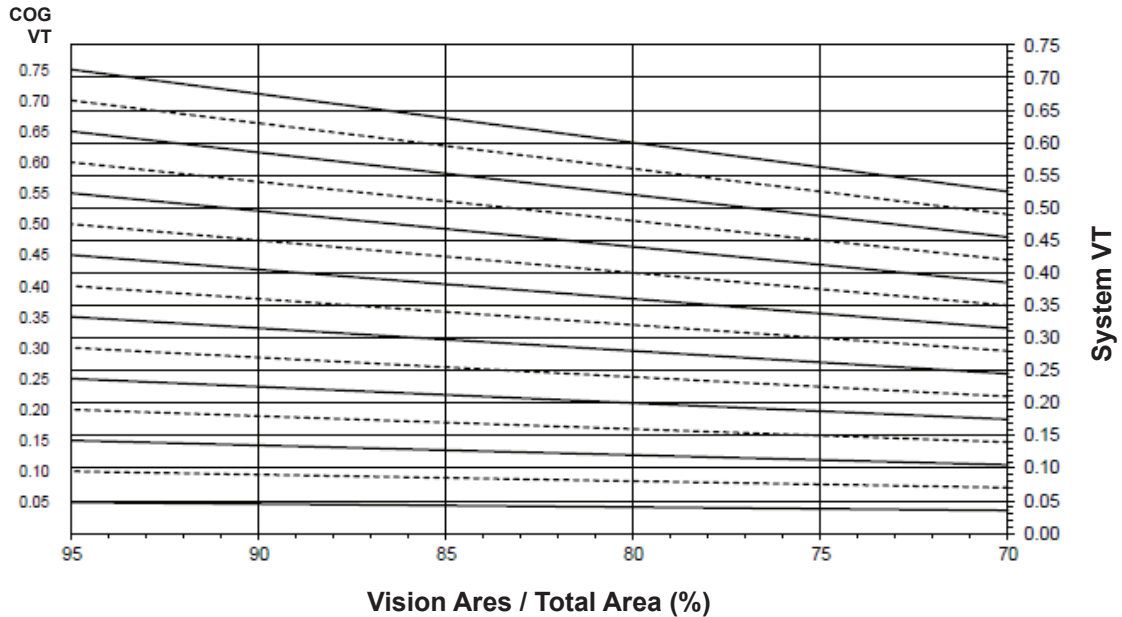
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## Trifab™ 601T System Solar Heat Gain Coefficient (SHGC) vs Percent of Vision Area



Charts are generated per AAMA 507.

## Trifab™ 601T System Visible Transmittance (VT) vs Percent of Vision Area



Charts are generated per AAMA 507.

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Thermal Transmittance <sup>1</sup> (BTU/hr • ft<sup>2</sup> • °F)

## Trifab™ 601T

Glass U-Factor <sup>3</sup>	Overall U-Factor <sup>4</sup>
0.48	0.55
0.46	0.54
0.44	0.53
0.42	0.51
0.40	0.50
0.38	0.48
0.36	0.46
0.34	0.45
0.32	0.43
0.30	0.42
0.28	0.40
0.26	0.38
0.24	0.37
0.22	0.35
0.20	0.34
0.18	0.31
0.16	0.30
0.14	0.28
0.12	0.26
0.10	0.25

**NOTE:** For glass values that are not listed, linear interpolation is permitted.

1. U-Factors are determined in accordance with NFRC 100.
2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values and are obtained from your glass supplier.
4. Overall U-Factor, SHGC, and VT Matricies are based on the standard NFRC specimen size of 2,000 mm wide by 2,000 mm high (78-3/4" by 78-3/4").

SHGC Matrix <sup>2</sup>

Glass SHGC <sup>3</sup>	Overall SHGC <sup>4</sup>
0.75	0.66
0.70	0.62
0.65	0.58
0.60	0.53
0.55	0.49
0.50	0.44
0.45	0.40
0.40	0.36
0.35	0.31
0.30	0.27
0.25	0.23
0.20	0.18
0.15	0.14
0.10	0.09
0.05	0.05

Visible Transmittance <sup>2</sup>

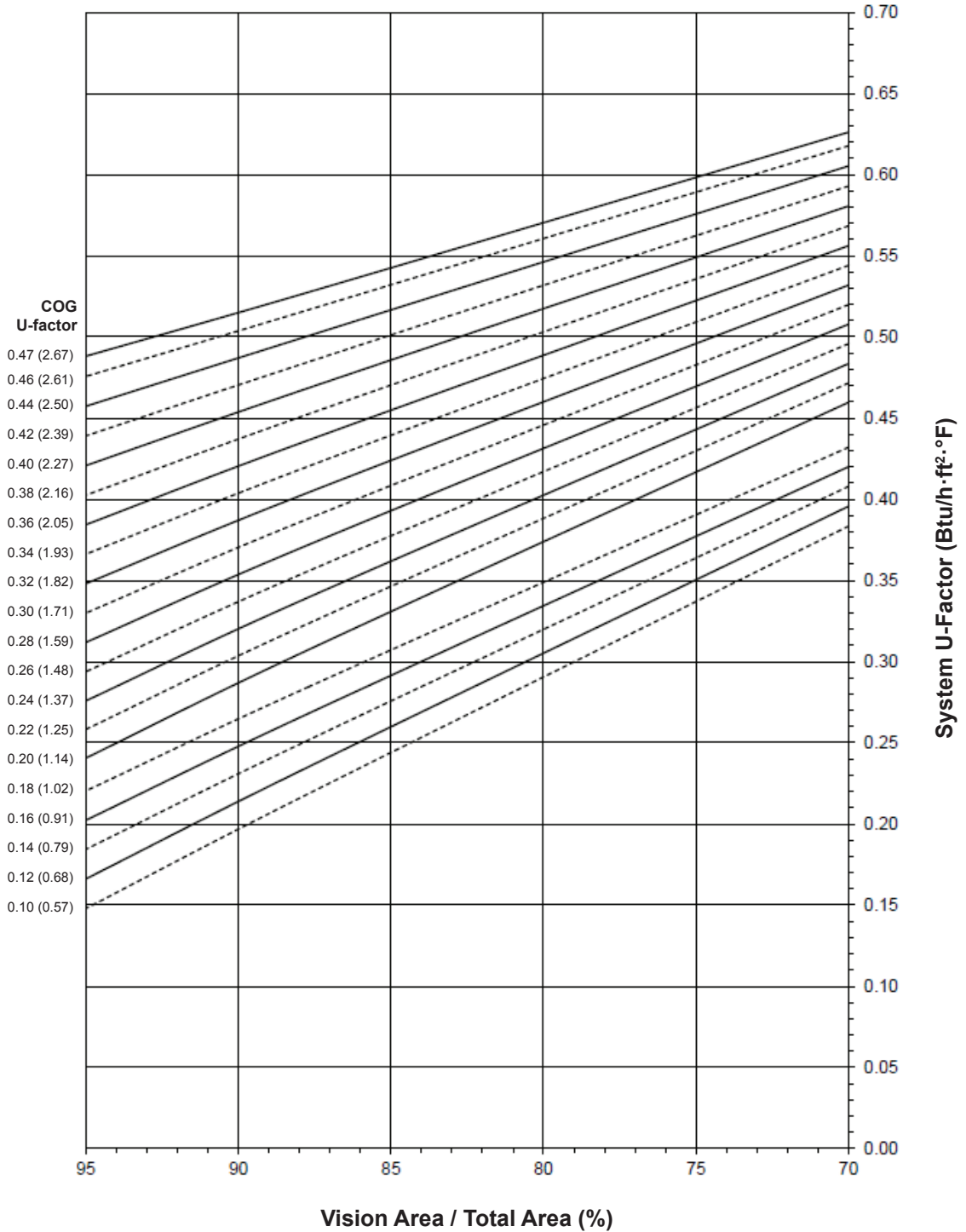
Glass VT <sup>3</sup>	Overall VT <sup>4</sup>
0.75	0.66
0.70	0.61
0.65	0.57
0.60	0.53
0.55	0.48
0.50	0.44
0.45	0.39
0.40	0.35
0.35	0.31
0.30	0.26
0.25	0.22
0.20	0.18
0.15	0.13
0.10	0.09
0.05	0.04

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Note:  
 Values in parentheses are metric.  
 COG=Center of Glass.  
 Charts are generated per AAMA 507.

## Trifab™ 601UT System U-Factor for Vision Glass

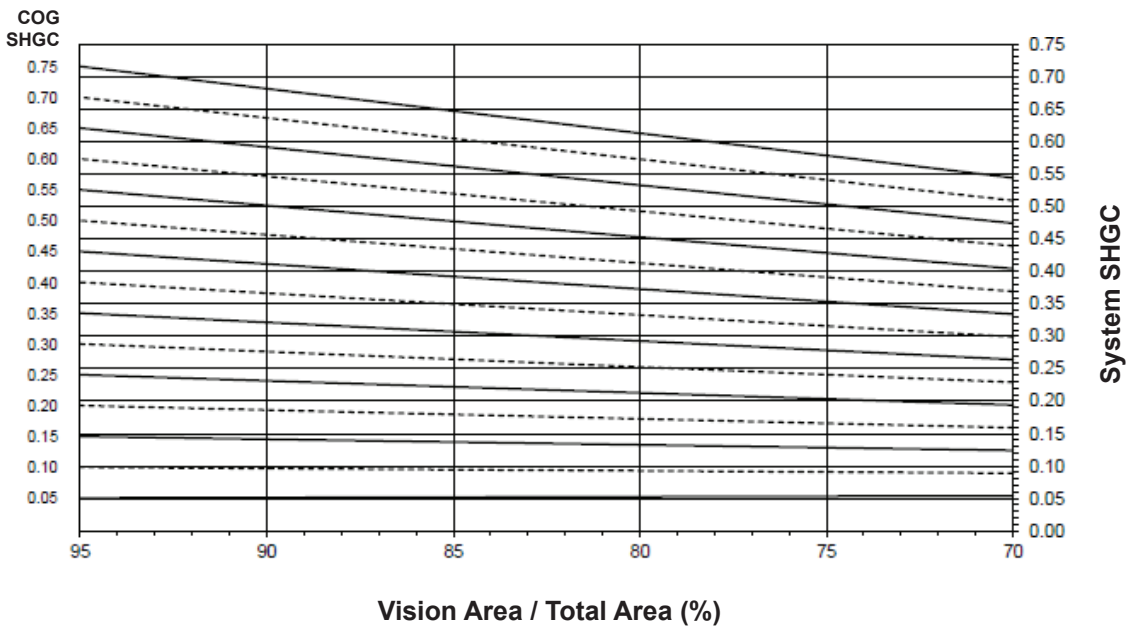


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## Trifab™ 601UT

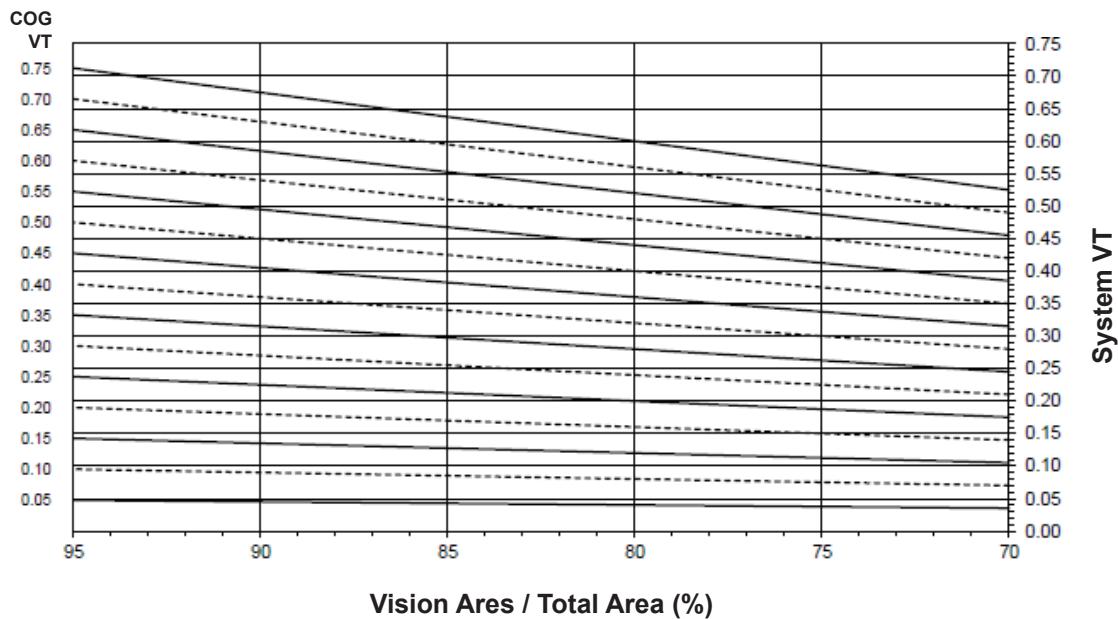
### System Solar Heat Gain Coefficient (SHGC) vs Percent of Vision Area



Charts are generated per AAMA 507.

## Trifab™ 601UT

### System Visible Transmittance (VT) vs Percent of Vision Area



Charts are generated per AAMA 507.

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**Thermal Transmittance <sup>1</sup> (BTU/hr • ft<sup>2</sup> • °F)**

**Trifab™ 601UT**

Glass U-Factor <sup>3</sup>	Overall U-Factor <sup>4</sup>
0.48	0.53
0.46	0.52
0.44	0.50
0.42	0.48
0.40	0.47
0.38	0.45
0.36	0.44
0.34	0.42
0.32	0.40
0.30	0.39
0.28	0.37
0.26	0.36
0.24	0.34
0.22	0.32
0.20	0.31
0.18	0.28
0.16	0.27
0.14	0.25
0.12	0.24
0.10	0.22

**NOTE:** For glass values that are not listed, linear interpolation is permitted.

1. U-Factors are determined in accordance with NFRC 100.
2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values and are obtained from your glass supplier.
4. Overall U-Factor, SHGC, and VT Matricies are based on the standard NFRC specimen size of 2,000 mm wide by 2,000 mm high (78-3/4" by 78-3/4").

**SHGC Matrix <sup>2</sup>**

Glass SHGC <sup>3</sup>	Overall SHGC <sup>4</sup>
0.75	0.67
0.70	0.62
0.65	0.58
0.60	0.53
0.55	0.49
0.50	0.45
0.45	0.40
0.40	0.36
0.35	0.31
0.30	0.27
0.25	0.23
0.20	0.18
0.15	0.14
0.10	0.10
0.05	0.05

**Visible Transmittance <sup>2</sup>**

Glass VT <sup>3</sup>	Overall VT <sup>4</sup>
0.75	0.66
0.70	0.61
0.65	0.57
0.60	0.53
0.55	0.48
0.50	0.44
0.45	0.39
0.40	0.35
0.35	0.31
0.30	0.26
0.25	0.22
0.20	0.18
0.15	0.13
0.10	0.09
0.05	0.04

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## **Features**

- Economical
- 1-3/4" sight line with a 3-9/16", 4-1/2" or 6" depth
- Front or Center (4-1/2") glass applications
- Outside glazed
- Screw Spline, Shear Block or Type-B fabrication
- SSG option
- Infill options up to 1-1/8"
- Thermal break via. Polymer glazing clip
- Permanodic™ anodized finishes in seven standard choices
- Painted finishes in standard and custom choices

## **Optional Features**

- Two color capability
- 1-1/4" perimeter sight line
- Project specific U-factors (See Thermal Charts)

## **Product Applications**

- Storefront, Ribbon Window or Punched Openings
- Low to mid-rise
- Single-span
- Curved frames
- Integrated entrance framing allowing Kawneer entrances or other specialty entrances to be included
- Kawneer windows, or GLASSvent™ Windows for Storefront Framing, or GLASSvent™ UT Windows are easily incorporated

For specific product applications,  
consult your Kawneer Representative

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LAWS AND BUILDING AND SAFETY CODES GOVERNING THE DESIGN AND USE OF GLAZED ENTRANCE, WINDOW, AND CURTAIN WALL PRODUCTS VARY WIDELY. KAWNEER DOES NOT CONTROL THE SELECTION OF PRODUCT CONFIGURATIONS, OPERATING HARDWARE, OR GLAZING MATERIALS, AND ASSUMES NO RESPONSIBILITY THEREFOR.

Metric (SI) conversion figures are included throughout these details for reference. Numbers in parentheses ( ) are millimeters unless otherwise noted.

The following metric (SI ) units are found in these details:

- m – meter
- cm – centimeter
- mm – millimeter
- s – second
- Pa – pascal
- MPa – megapascal

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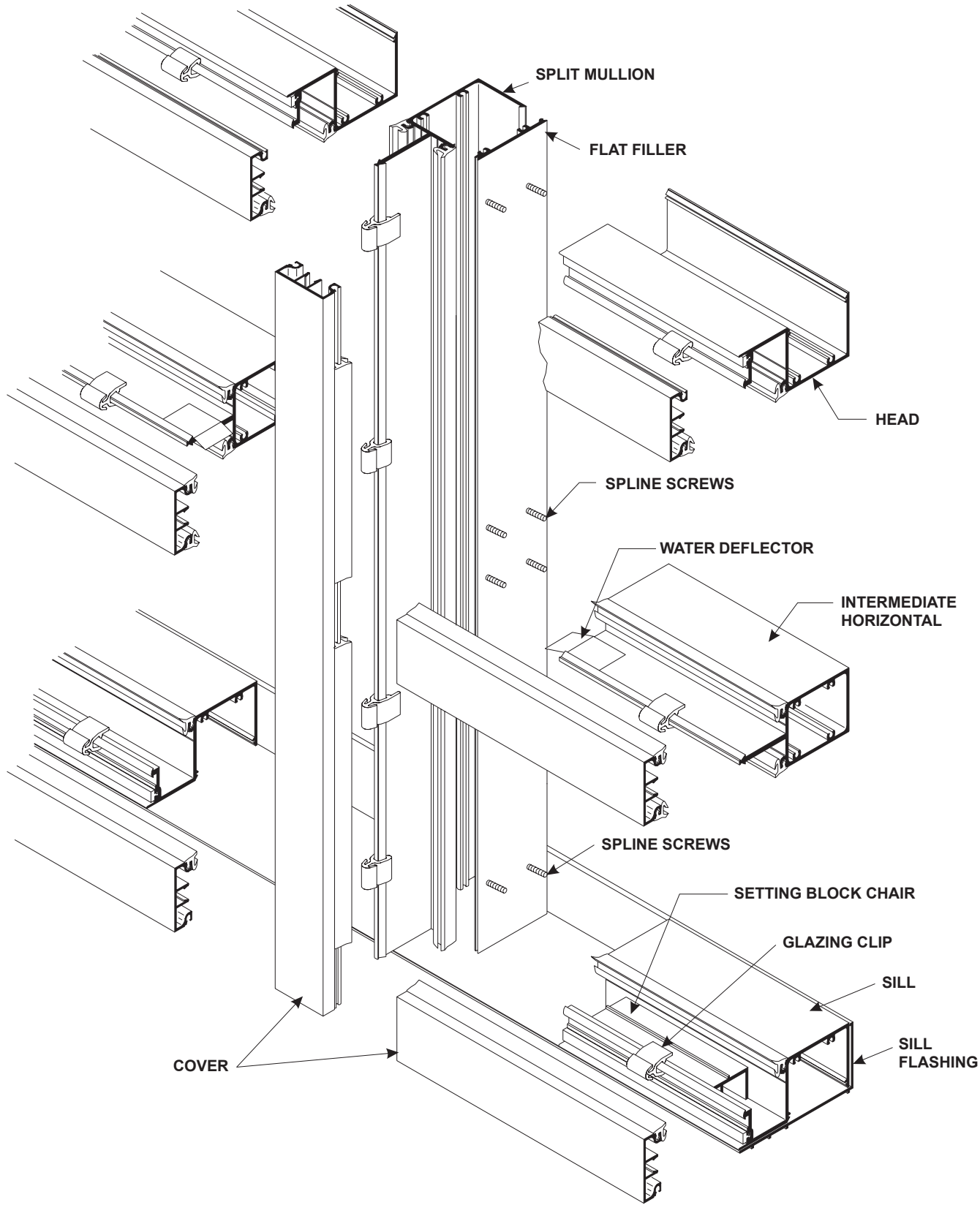


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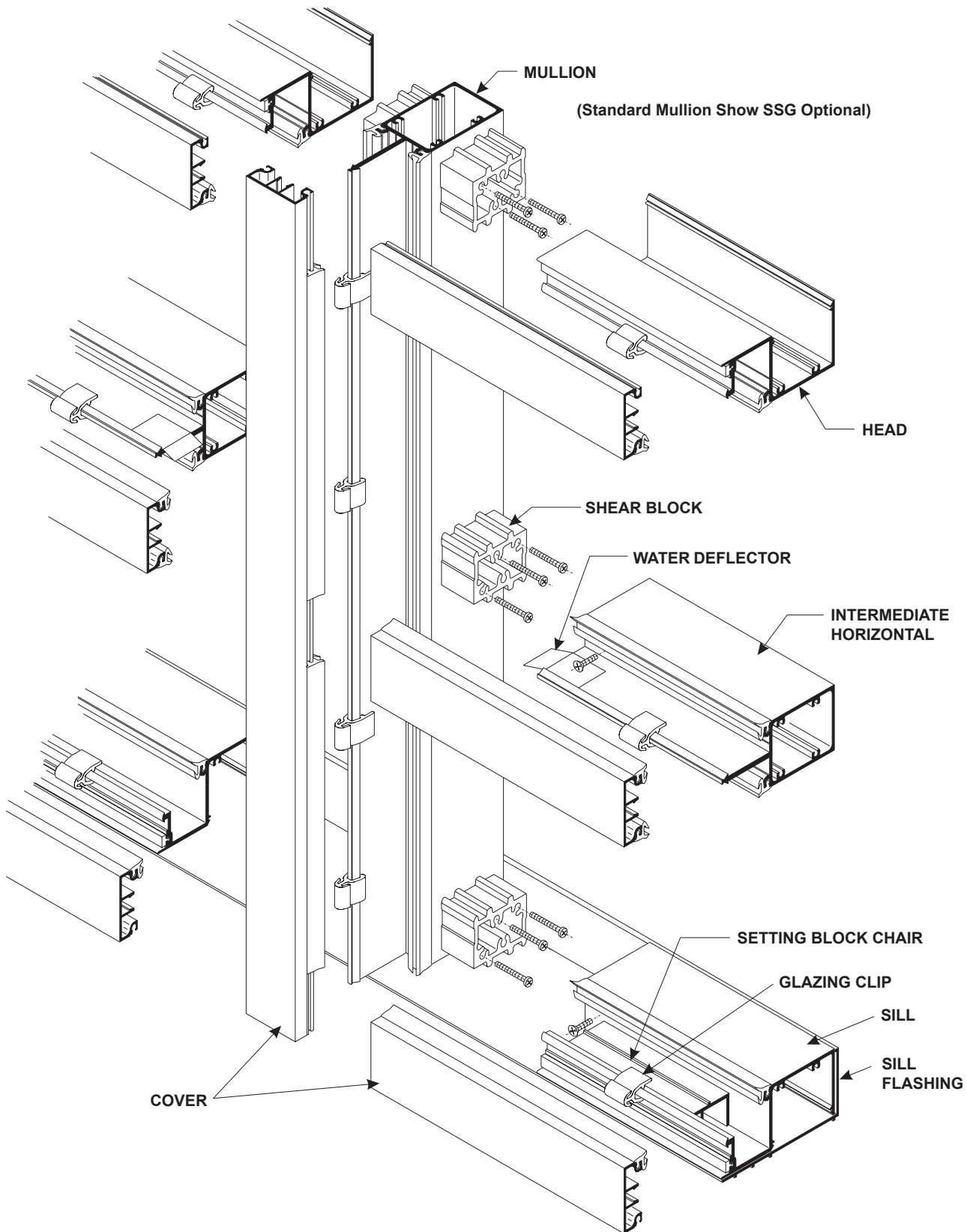
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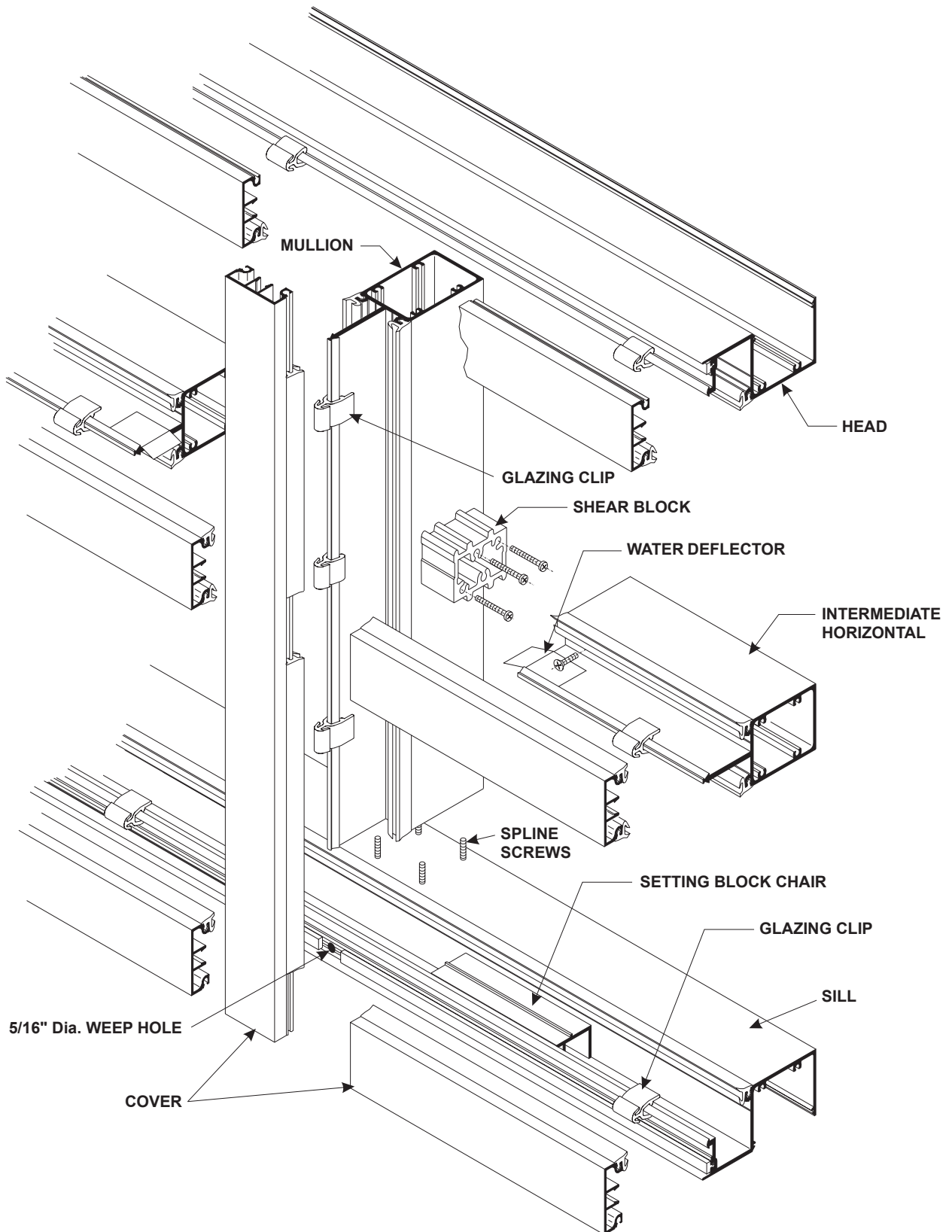


- SPLIT MULLION
- FLAT FILLER
- HEAD
- SPLINE SCREWS
- WATER DEFLECTOR
- INTERMEDIATE HORIZONTAL
- SPLINE SCREWS
- SETTING BLOCK CHAIR
- GLAZING CLIP
- SILL
- SILL FLASHING
- COVER



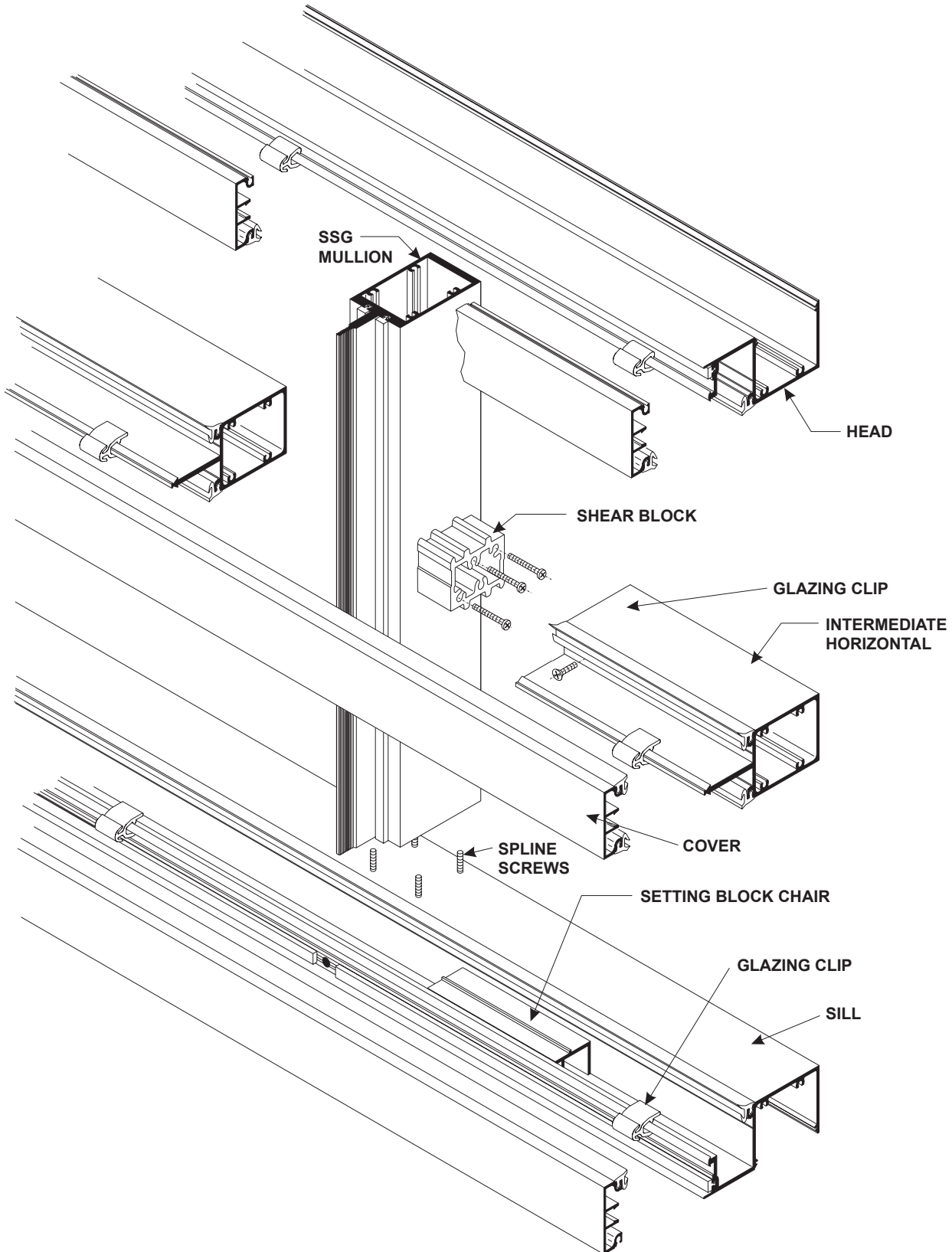
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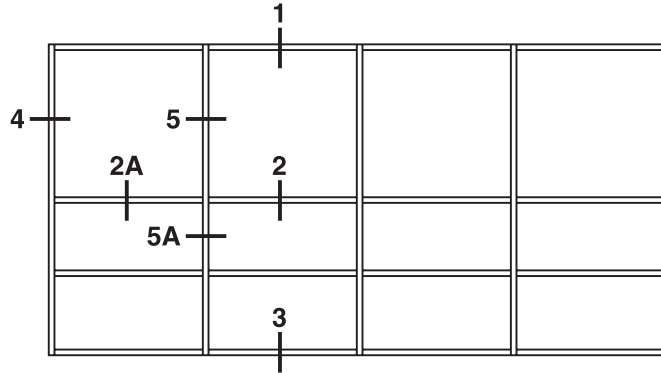
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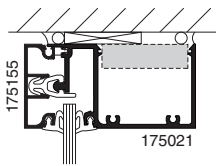
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SCALE 3" = 1'-0"

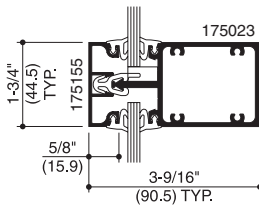


ELEVATION IS NUMBER KEYED TO DETAILS

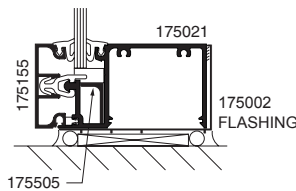
1/4" INFILL



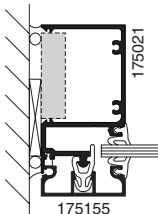
1 HEAD



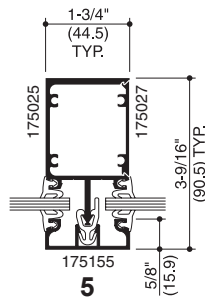
2 HORIZONTAL



3 SILL

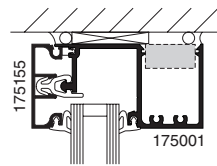


4 JAMB

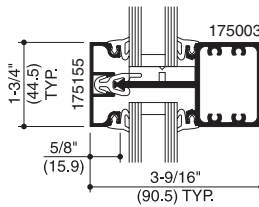


5 MULLION

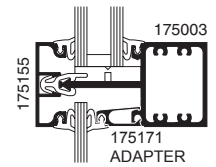
1" INFILL



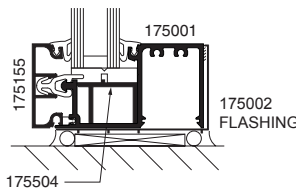
1 HEAD



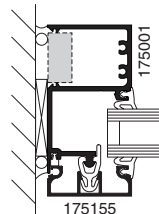
2 HORIZONTAL



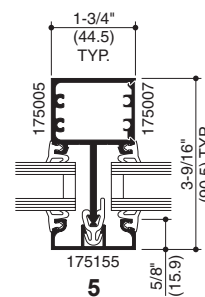
2A HORIZONTAL W/ 1/4" ADAPTER



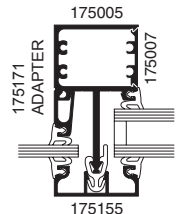
3 SILL



4 JAMB



5 SPLIT MULLION



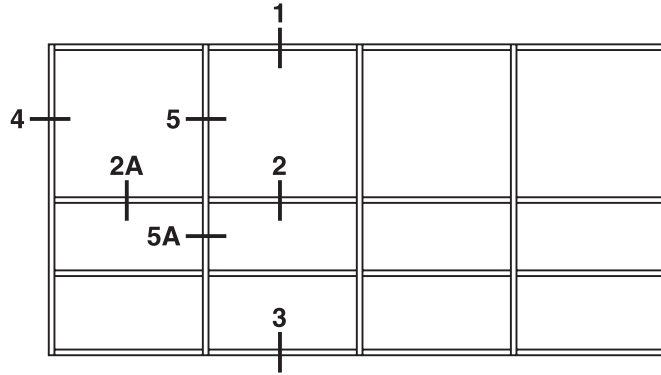
5A SPLIT MULLION W/ 1/4" ADAPTER

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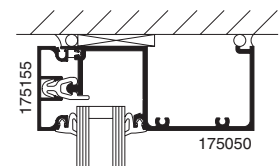
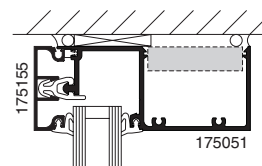
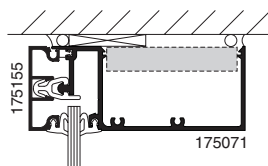
**SCALE 3" = 1'-0"**



**ELEVATION IS NUMBER KEYED TO DETAILS**

**1/4" INFILL**

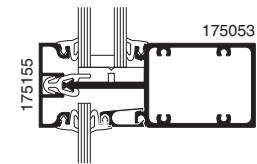
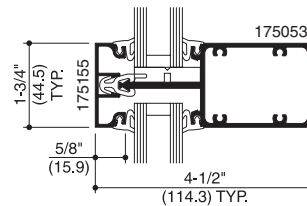
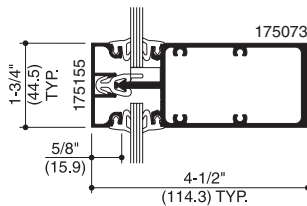
**1" INFILL**



**1  
HEAD**

**1  
HEAD**

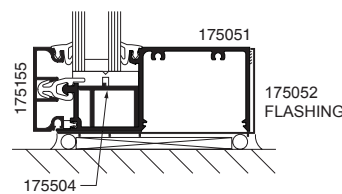
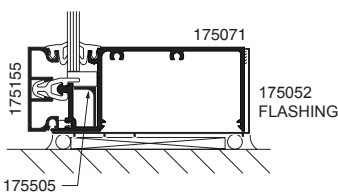
**1  
HEAD W/ CAULK LEG**



**2  
HORIZONTAL**

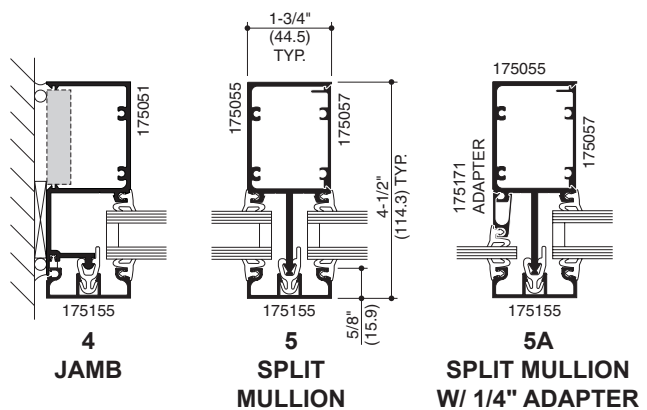
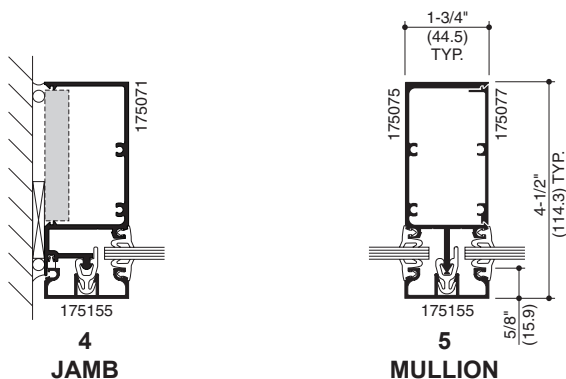
**2  
HORIZONTAL**

**175171  
ADAPTER  
2A  
HORIZONTAL  
W/ 1/4" ADAPTER**



**3  
SILL**

**3  
SILL**



**4  
JAMB**

**5  
MULLION**

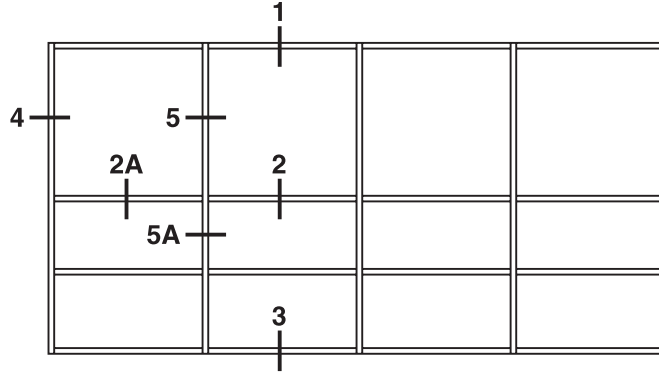
**4  
JAMB**

**5  
SPLIT  
MULLION**

**175171  
ADAPTER  
175055  
175057  
175155  
5A  
SPLIT MULLION  
W/ 1/4" ADAPTER**

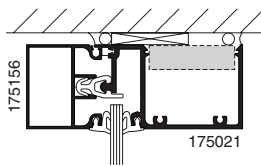
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SCALE 3" = 1'-0"

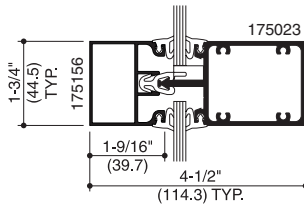


ELEVATION IS NUMBER KEYED TO DETAILS

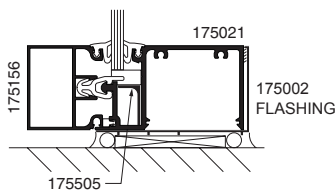
1/4" INFILL



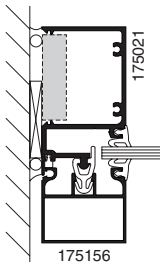
1 HEAD



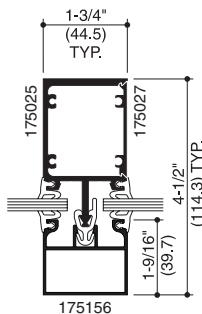
2 HORIZONTAL



3 SILL

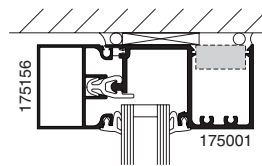


4 JAMB

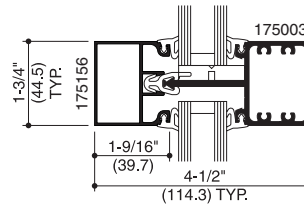


5 MULLION

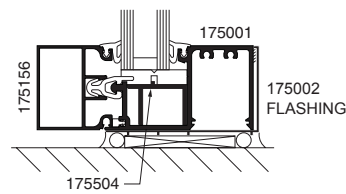
1" INFILL



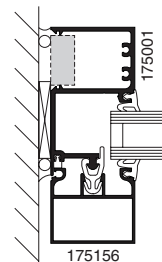
1 HEAD



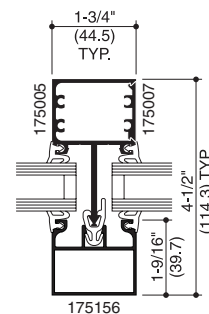
2 HORIZONTAL



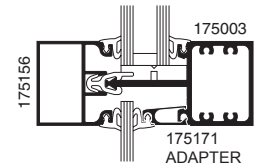
3 SILL



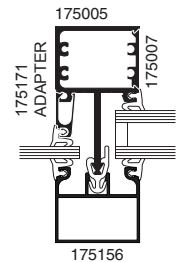
4 JAMB



5 SPLIT MULLION



2A HORIZONTAL W/ 1/4" ADAPTER



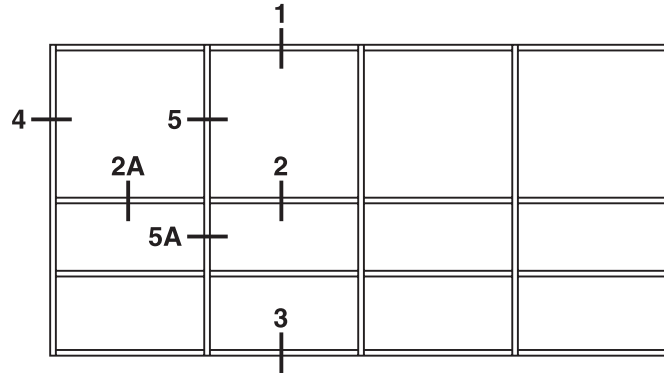
5A SPLIT MULLION W/ 1/4" ADAPTER

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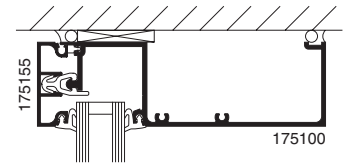
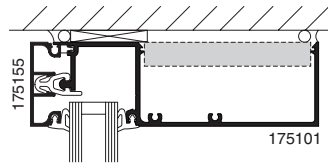
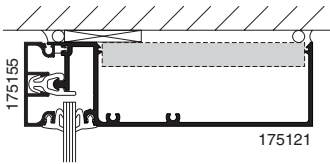
**SCALE 3" = 1'-0"**



**ELEVATION IS NUMBER KEYED TO DETAILS**

**1/4" INFILL**

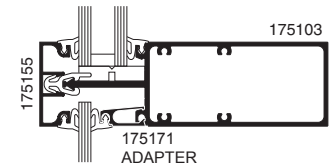
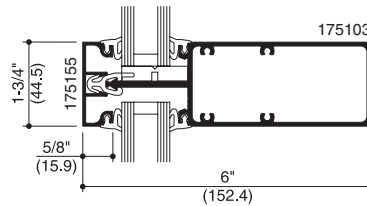
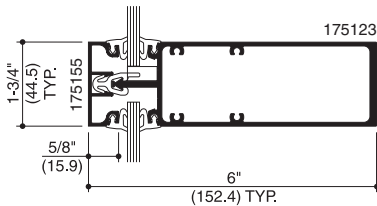
**1" INFILL**



**1 HEAD**

**1 HEAD**

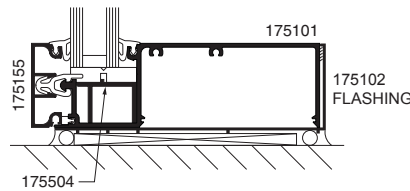
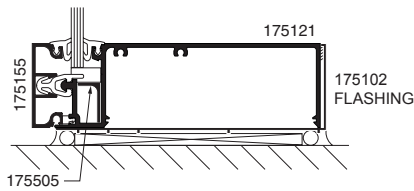
**1 HEAD W/ CAULK LEG**



**2 HORIZONTAL**

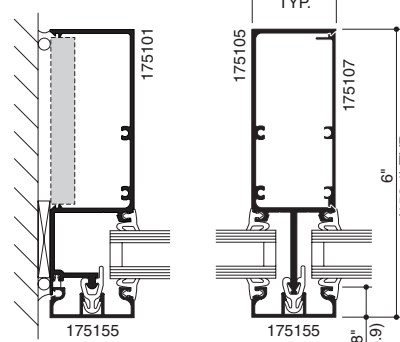
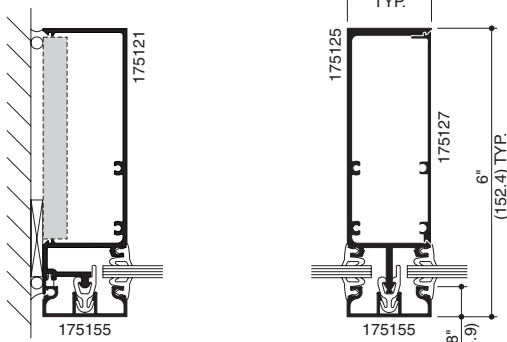
**2 HORIZONTAL**

**2A HORIZONTAL W/ 1/4" ADAPTER**



**3 SILL**

**3 SILL**

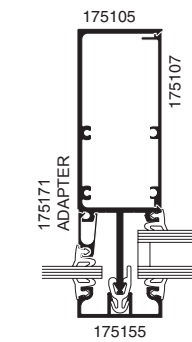


**4 JAMB**

**4 JAMB**

**5 MULLION**

**5 SPLIT MULLION**



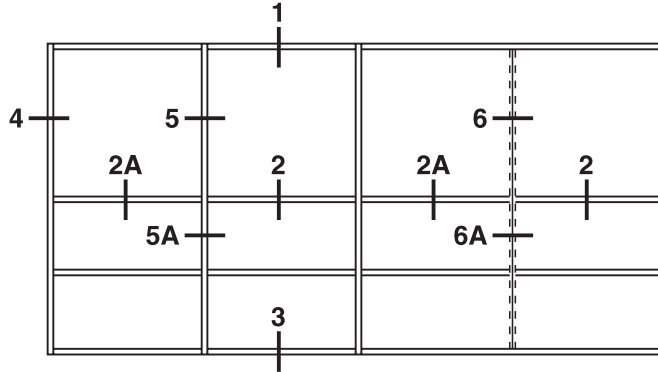
**5A SPLIT MULLION W/ 1/4" ADAPTER**

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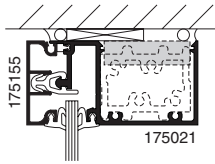
SCALE 3" = 1'-0"

NOTE: TYPE-B SYSTEM SIMILAR EXCEPT HEAD & SILL RUN THROUGH.

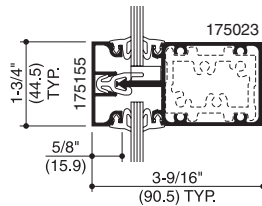


ELEVATION IS NUMBER KEYED TO DETAILS

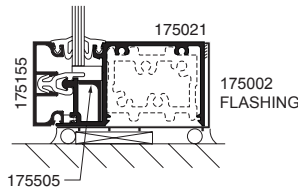
1/4" INFILL



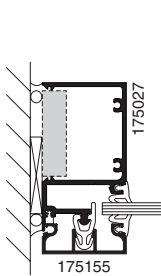
1 HEAD



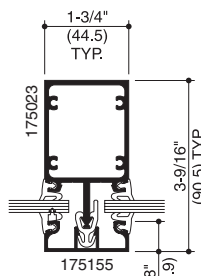
2 HORIZONTAL



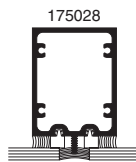
3 SILL



4 JAMB

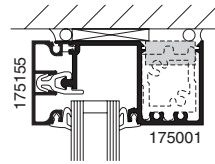


5 MULLION

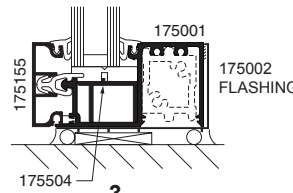


6 SSG MULLION

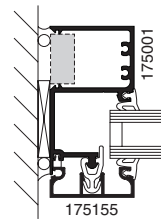
1" INFILL



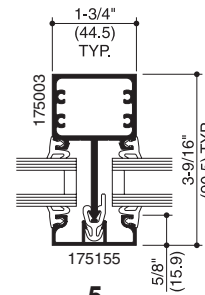
1 HEAD



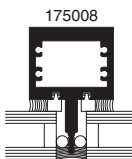
3 SILL



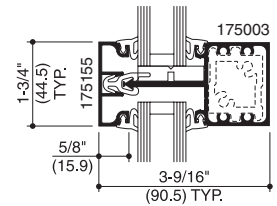
4 JAMB



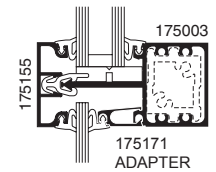
5 MULLION



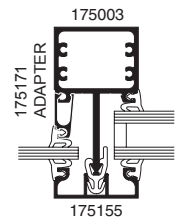
6 SSG MULLION



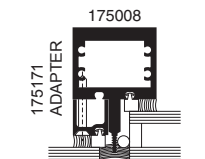
2 HORIZONTAL



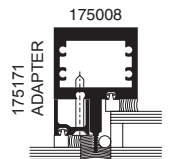
2A HORIZONTAL W/ 1/4" ADAPTER



5A MULLION W/ 1/4" ADAPTER



6A SSG MULLION W/ 1/4" ADAPTER INSIDE SEAL



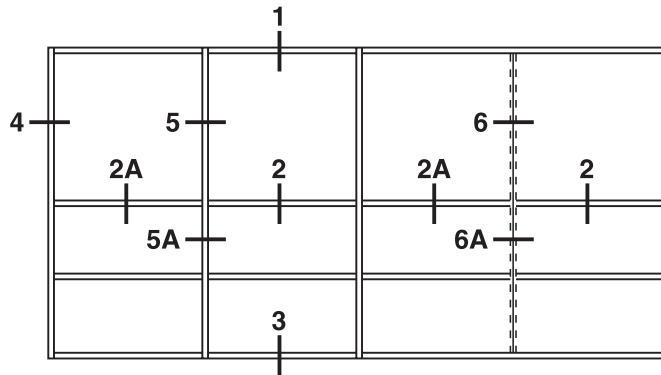
6A SSG MULLION W/ 1/4" ADAPTER OUTSIDE SEAL

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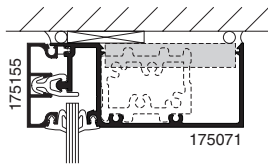
**SCALE 3" = 1'-0"**

**NOTE: TYPE-B SYSTEM SIMILAR EXCEPT HEAD & SILL RUN THROUGH.**

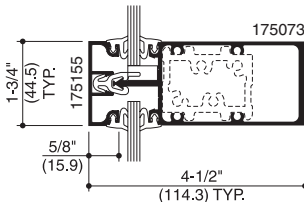


**ELEVATION IS NUMBER KEYED TO DETAILS**

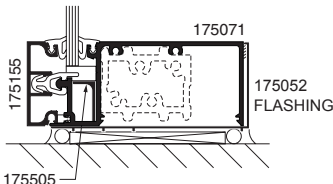
**1/4" INFILL**



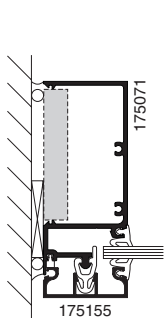
**1  
HEAD**



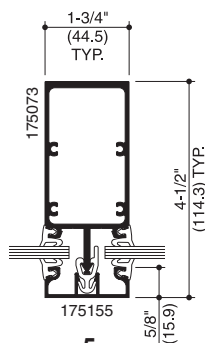
**2  
HORIZONTAL**



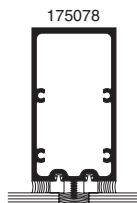
**3  
SILL**



**4  
JAMB**

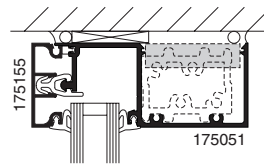


**5  
MULLION**

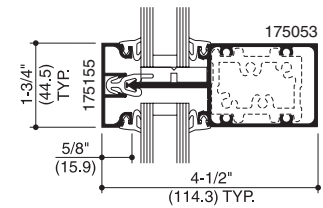


**6  
SSG  
MULLION**

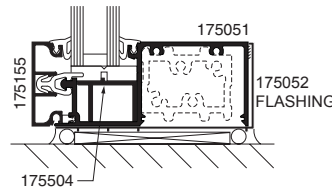
**1" INFILL**



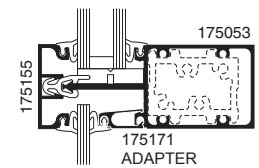
**1  
HEAD**



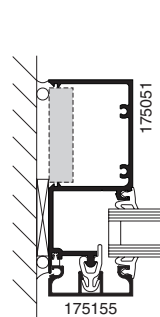
**2  
HORIZONTAL**



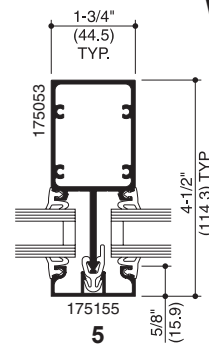
**3  
SILL**



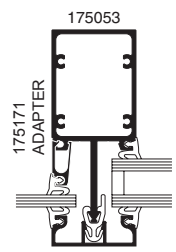
**2A  
HORIZONTAL  
W/ 1/4" ADAPTER**



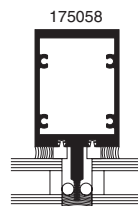
**4  
JAMB**



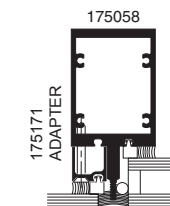
**5  
MULLION**



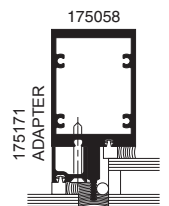
**5A  
MULLION  
W/ 1/4" ADAPTER**



**6  
SSG  
MULLION**



**6A  
W/ 1/4" ADAPTER  
INSIDE SEAL**



**6A  
W/ 1/4" ADAPTER  
OUTSIDE SEAL**

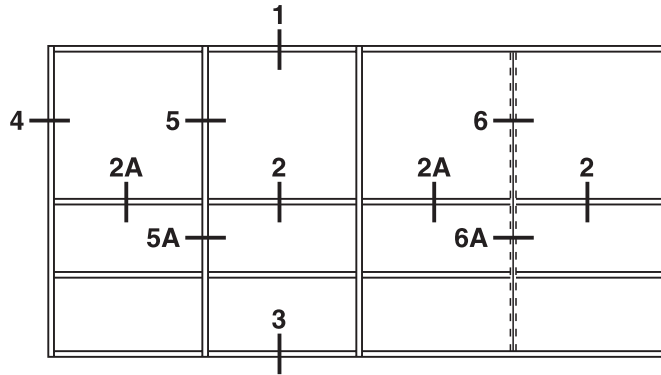
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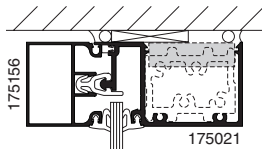
SCALE 3" = 1'-0"

NOTE: TYPE-B SYSTEM SIMILAR EXCEPT HEAD & SILL RUN THROUGH.

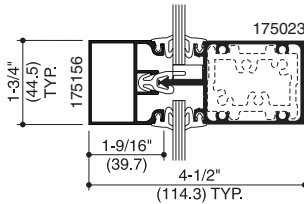


ELEVATION IS NUMBER KEYED TO DETAILS

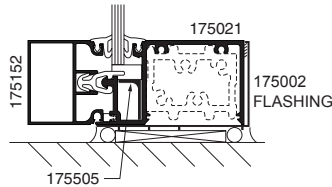
1/4" INFILL



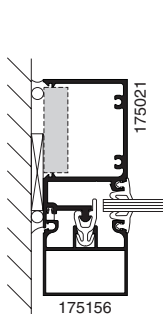
1 HEAD



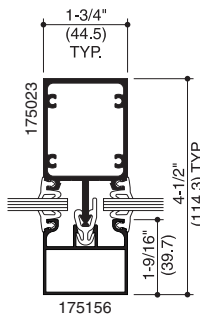
2 HORIZONTAL



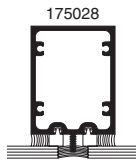
3 SILL



4 JAMB

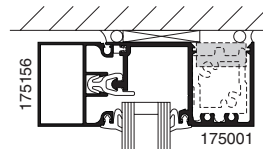


5 MULLION

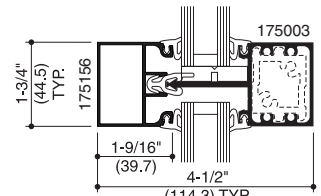


6 SSG MULLION

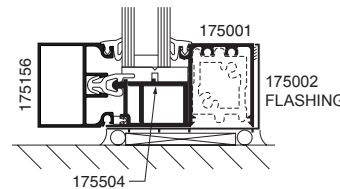
1" INFILL



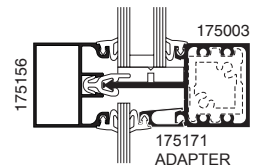
1 HEAD



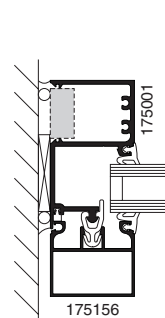
2 HORIZONTAL



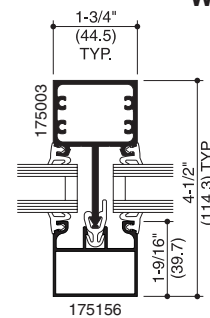
3 SILL



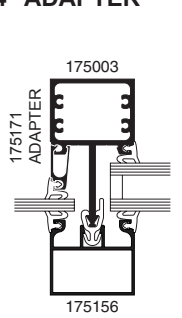
2A HORIZONTAL W/ 1/4" ADAPTER



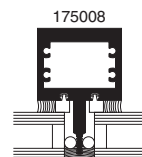
4 JAMB



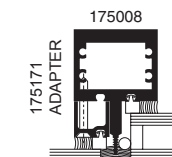
5 MULLION



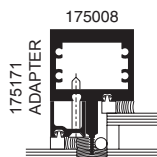
5A MULLION W/ 1/4" ADAPTER



6 SSG MULLION



6A SSG MULLION W/ 1/4" ADAPTER INSIDE SEAL



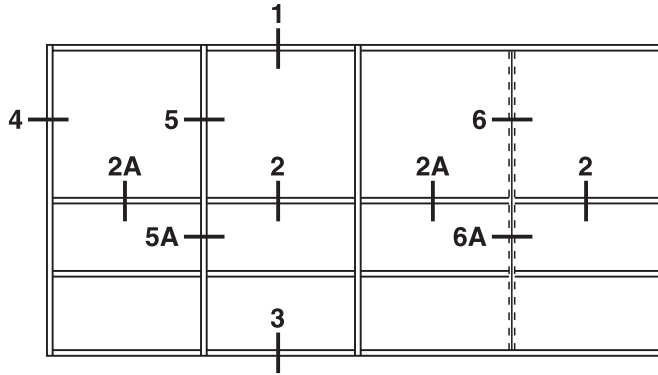
6A SSG MULLION W/ 1/4" ADAPTER OUTSIDE SEAL

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**SCALE 3" = 1'-0"**

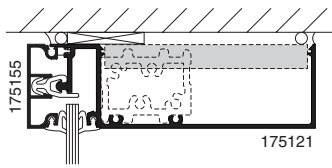
**NOTE: TYPE-B SYSTEM SIMILAR EXCEPT HEAD & SILL RUN THROUGH.**



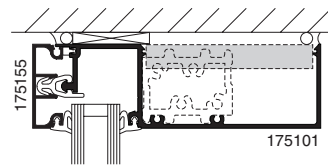
**ELEVATION IS NUMBER KEYED TO DETAILS**

**1/4" INFILL**

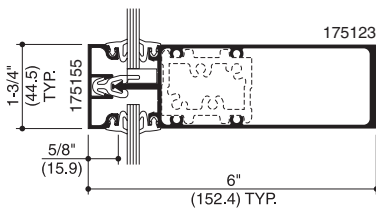
**1" INFILL**



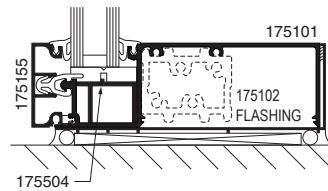
**1 HEAD**



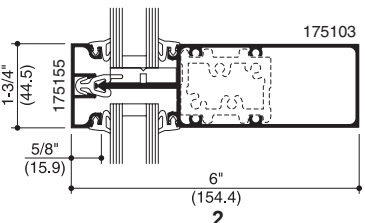
**1 HEAD**



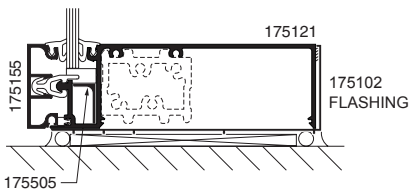
**2 HORIZONTAL**



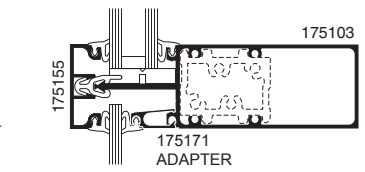
**3 SILL**



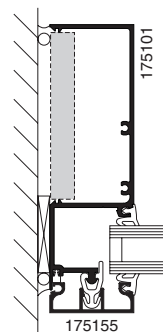
**2 HORIZONTAL**



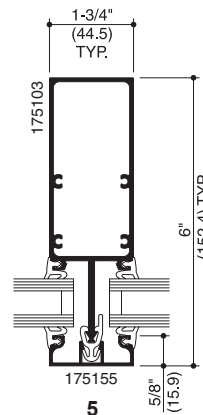
**3 SILL**



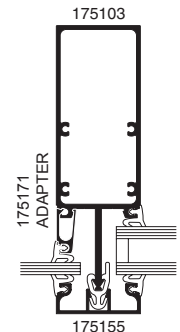
**2A HORIZONTAL W/ 1/4" ADAPTER**



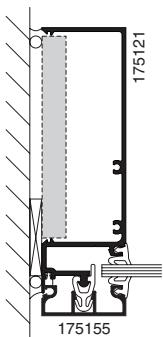
**4 JAMB**



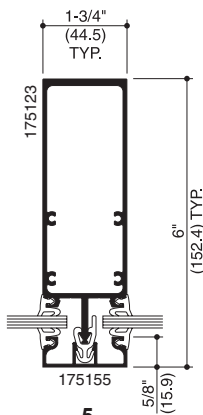
**5 MULLION**



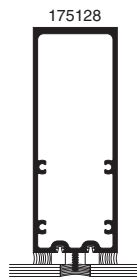
**5A MULLION W/ 1/4" ADAPTER**



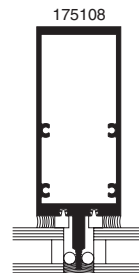
**4 JAMB**



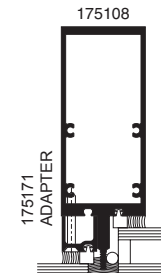
**5 MULLION**



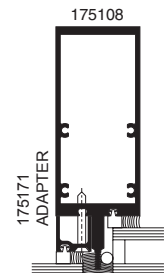
**6 SSG MULLION**



**6 SSG MULLION**



**6A W/ 1/4" ADAPTER INSIDE SEAL**



**6A W/ 1/4" ADAPTER OUTSIDE SEAL**

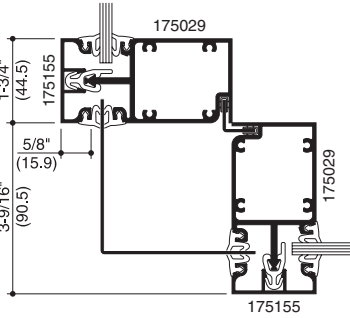
Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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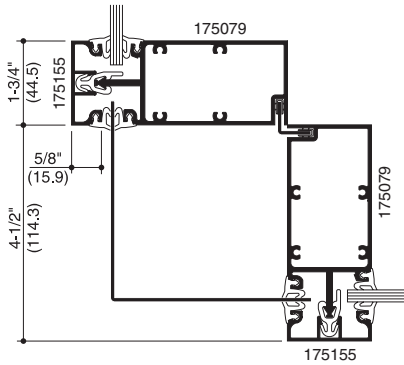
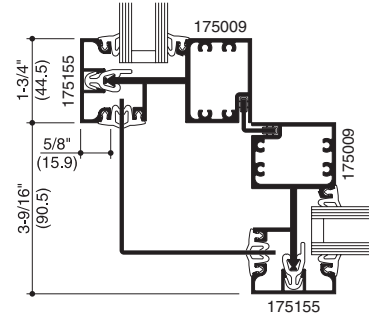
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SCALE 3" = 1'-0"

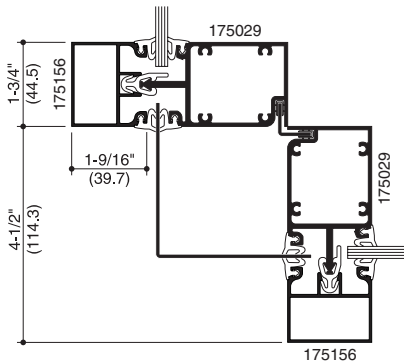
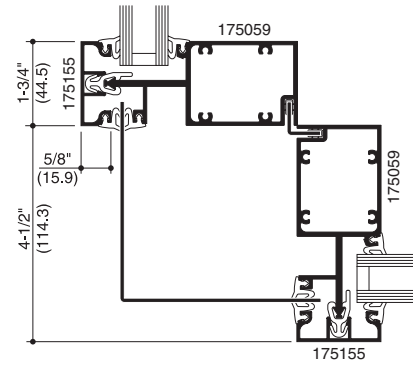
### 1/4" INFILL



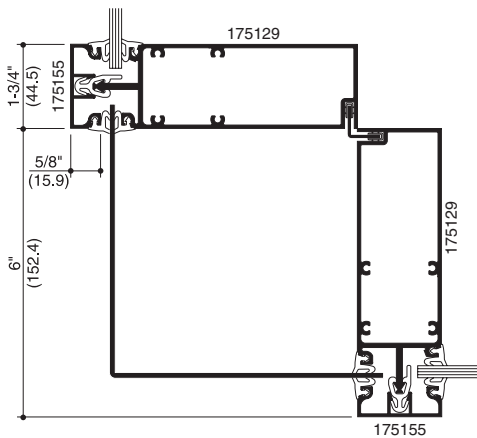
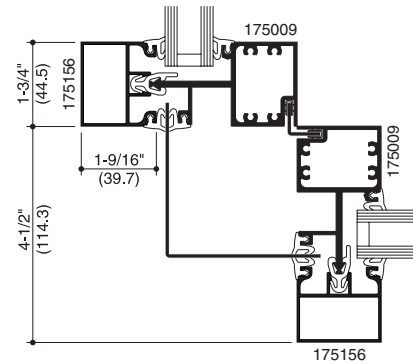
### 3-9/16" SYSTEM



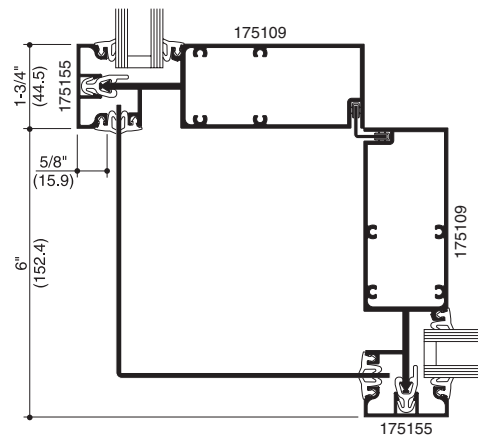
### 4-1/2" SYSTEM



### 4-1/2" SYSTEM CENTER GLAZED



### 6" SYSTEM

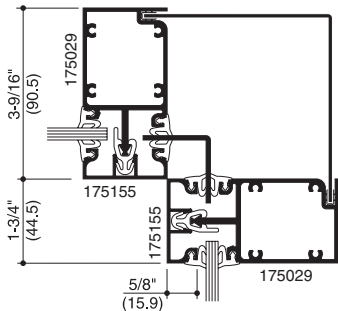


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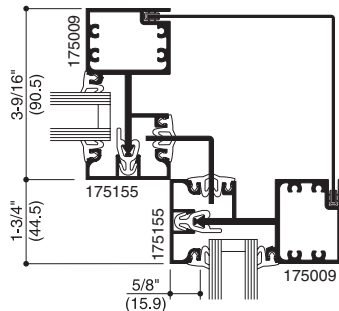
SCALE 3" = 1'-0"

### 1/4" INFILL

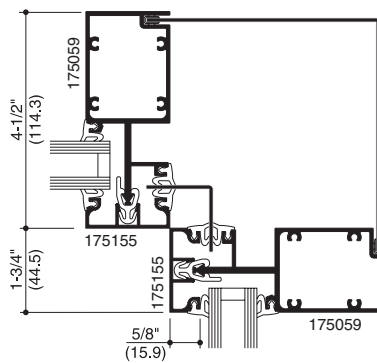
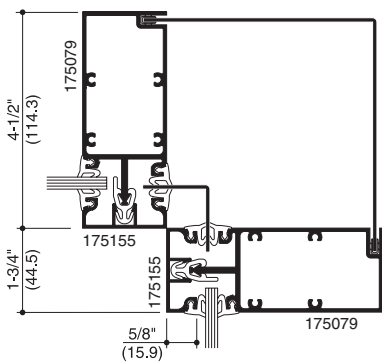


### 3-9/16" SYSTEM

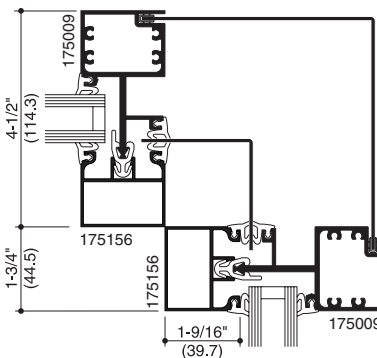
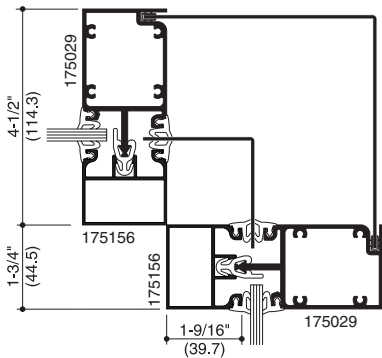
### 1" INFILL



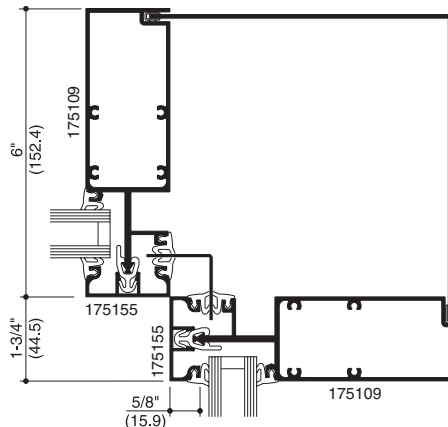
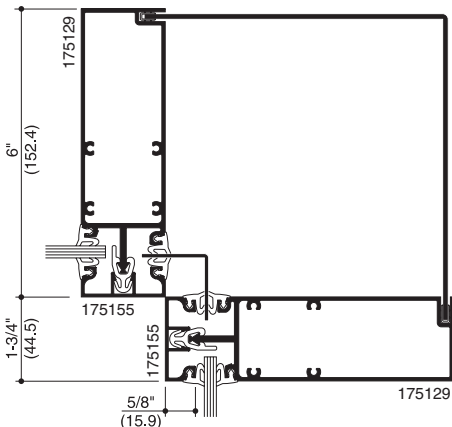
### 4-1/2" SYSTEM



### 4-1/2" SYSTEM CENTER GLAZED



### 6" SYSTEM

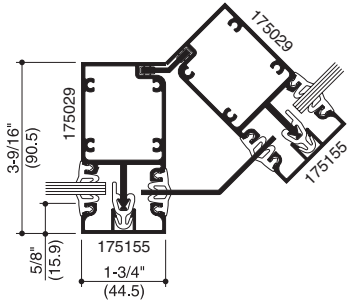


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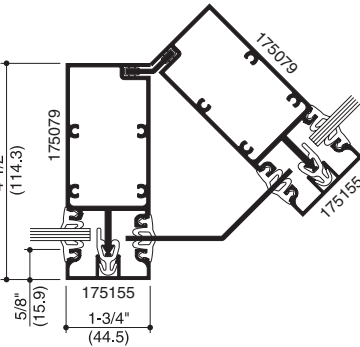
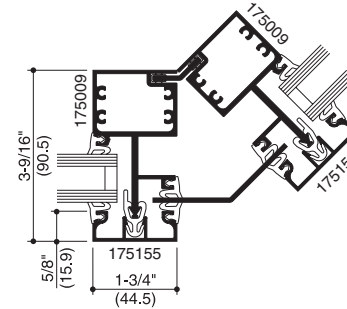
SCALE 3" = 1'-0"

1/4" INFILL

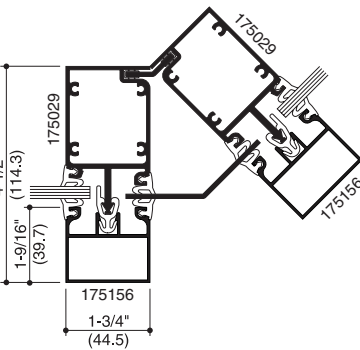
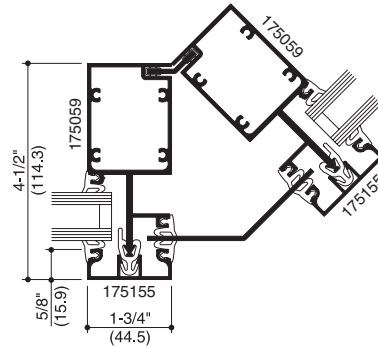


3-9/16" SYSTEM

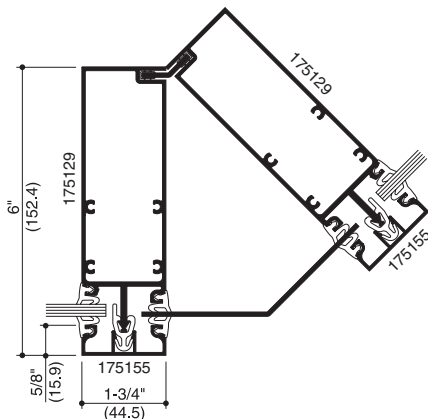
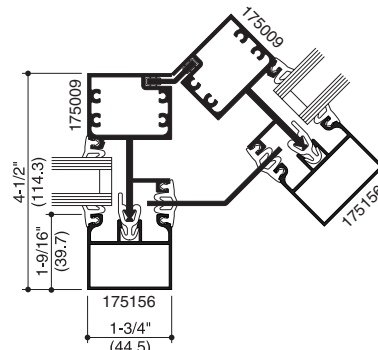
1" INFILL



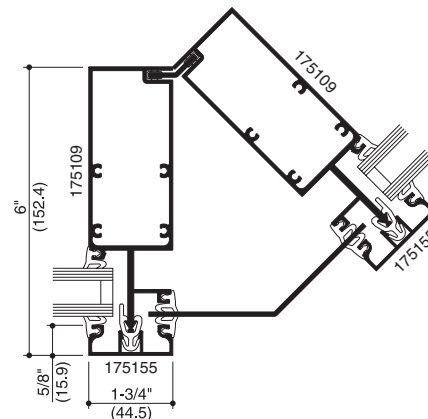
4-1/2" SYSTEM



4-1/2" SYSTEM CENTER GLAZED



6" SYSTEM



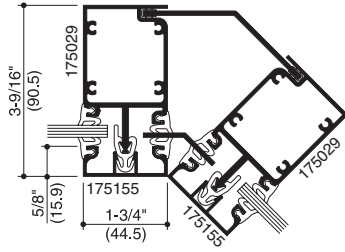
Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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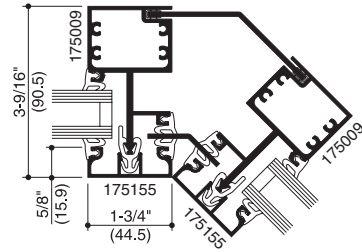
SCALE 3" = 1'-0"

1/4" INFILL

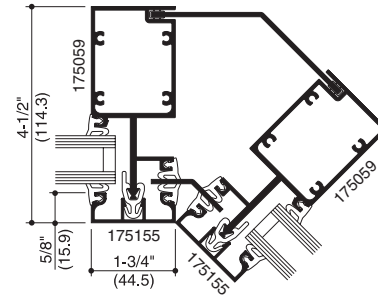
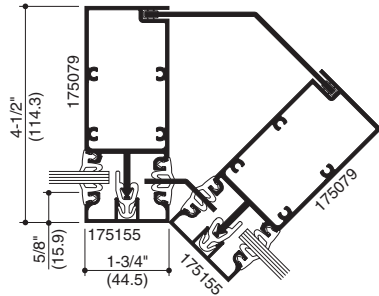


3-9/16" SYSTEM

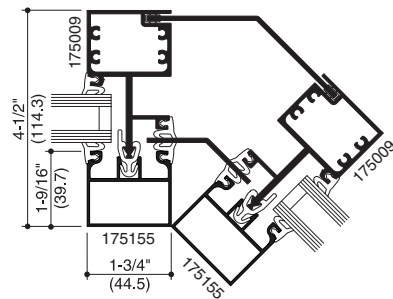
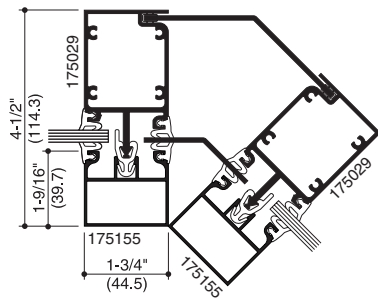
1" INFILL



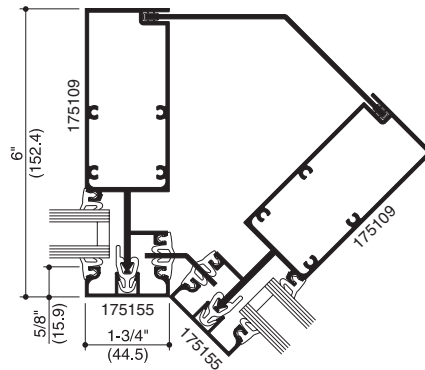
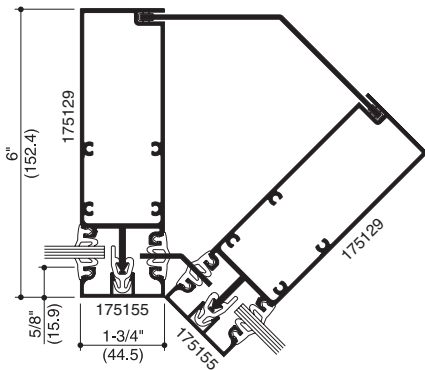
4-1/2" SYSTEM



4-1/2" SYSTEM  
CENTER GLAZED



6" SYSTEM



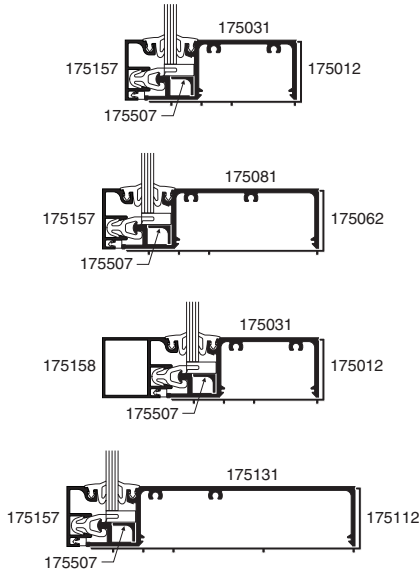
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SCALE 3" = 1'-0"

1-1/4" NARROW PERIMETER SCREW SPLINE SYSTEM WITH 1/4" INFILL



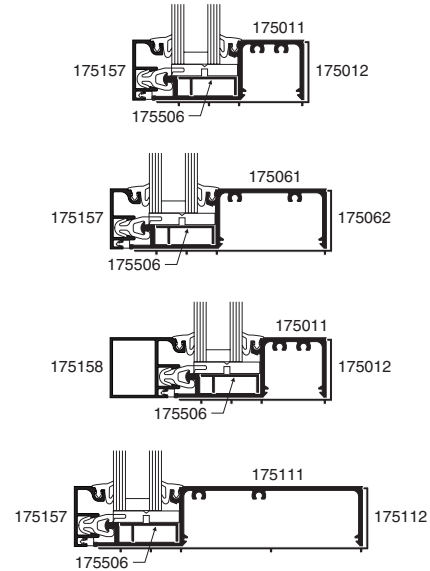
3-9/16" SYSTEM

4-1/2" SYSTEM

4-1/2" SYSTEM CENTER GLAZED

6" SYSTEM

1-1/4" NARROW PERIMETER SCREW SPLINE SYSTEM WITH 1" INFILL



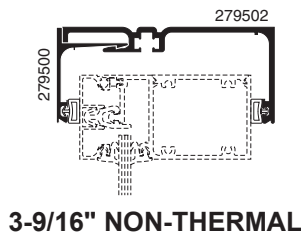
3-9/16" SYSTEM

4-1/2" SYSTEM

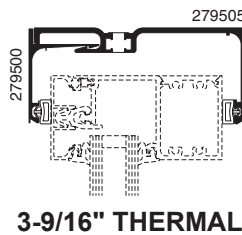
4-1/2" SYSTEM CENTER GLAZED

6" SYSTEM

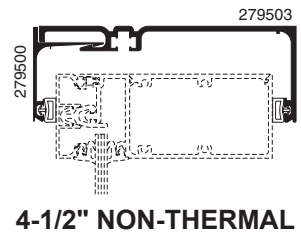
HEAD RECEPTORS



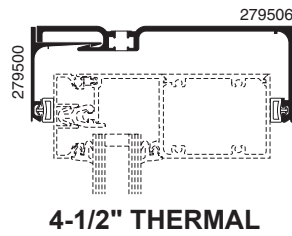
3-9/16" NON-THERMAL



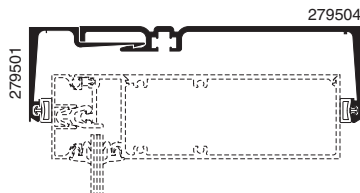
3-9/16" THERMAL



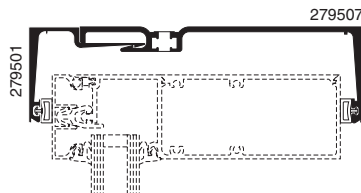
4-1/2" NON-THERMAL



4-1/2" THERMAL

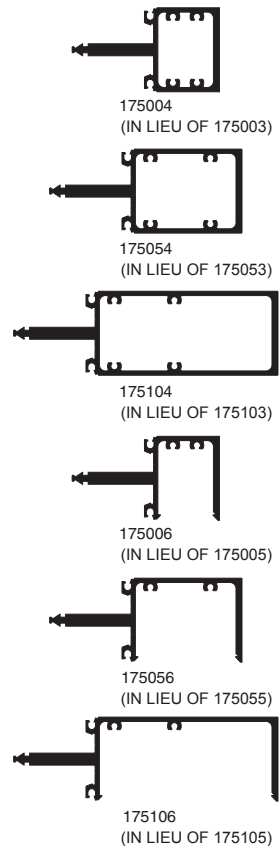


6" NON-THERMAL



6" THERMAL

HEAVY MULLIONS



NOTE: HEAVY MULLIONS CAN BE USED WITH STANDARD FACE COVERS 175155 & 175156

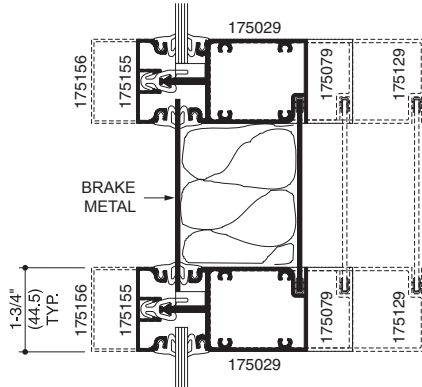
Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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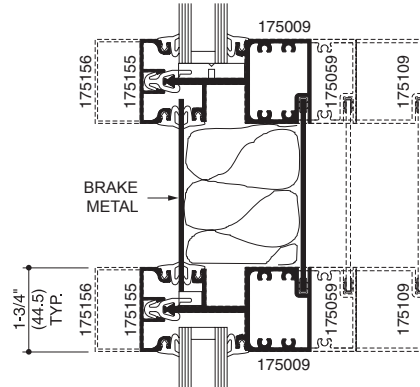
**SCALE 3" = 1'-0"**

**HORIZONTAL / CROSSRAIL ASSEMBLY  
(SCREW SPLINE SYSTEM)**

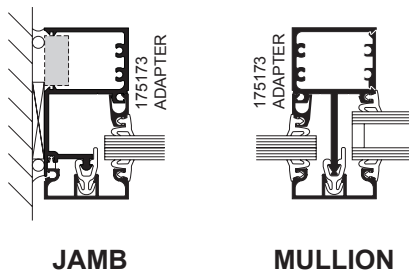
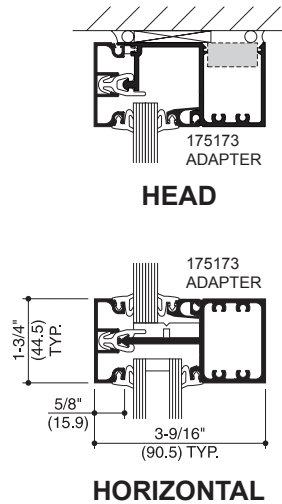
**1/4" INFILL**



**1" INFILL**



**1/2" INFILL ADAPTER  
(SHOWN WITH 3-9/16" DEEP SYSTEM)**



**EnCORE™ GLAZING CHART**

INFILL THICKNESS	ADAPTER for 1" Infill Pocket	WEATHERING (Both Sides)
1/8"	175171	027077 Heavy
1/4"	175171	027074 Standard
3/8"	175171	027076 Light
1/2"	175173	027074 Standard
5/8"	175173	027076 Light
3/4"	175175	027074 Standard
7/8"	-	027077 Heavy
1"	-	027074 Standard
1-1/8"	-	027076 Light

**NOTE:** For infill thicknesses in 1/16" increments or oversize glass, use a combination of the Std. (027074) with either the Light (27076) or the Heavy (027077) gaskets.

**SSG GLAZING CHART**

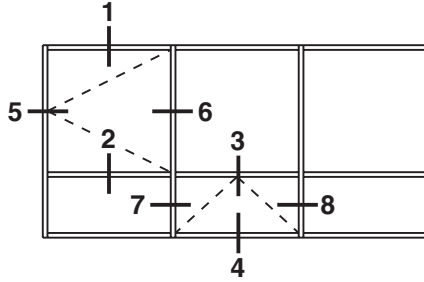
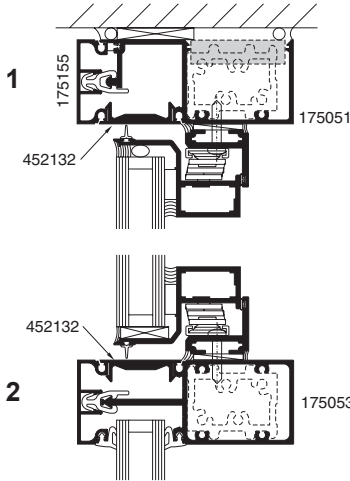
INFILL THICKNESS	SSG ADAPTER	HORIZONTAL WEATHERING	SSG WEATHERING
1/4"	175172	027074 Std.	175302
1/2"	175173	027074 Std.	175302

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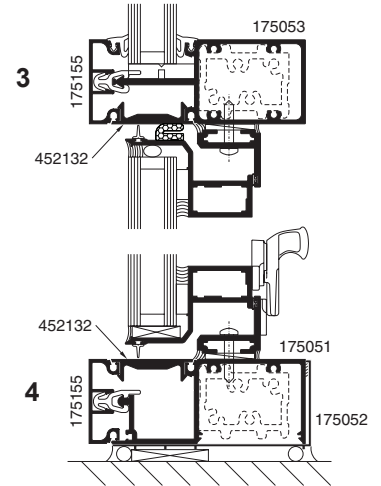
**SCALE 3" = 1'-0"**

### OUTSWING CASEMENT

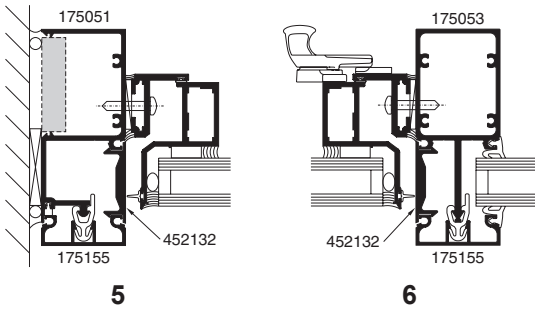


ELEVATION IS NUMBER KEYED TO DETAILS

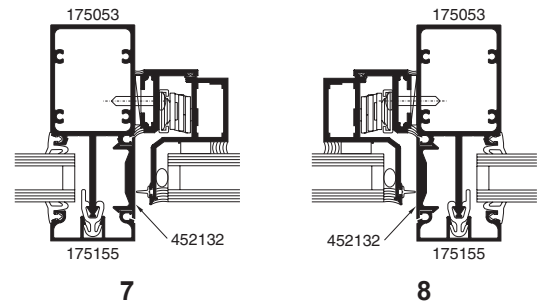
### PROJECT-OUT



### OUTSWING CASEMENT



### PROJECT-OUT



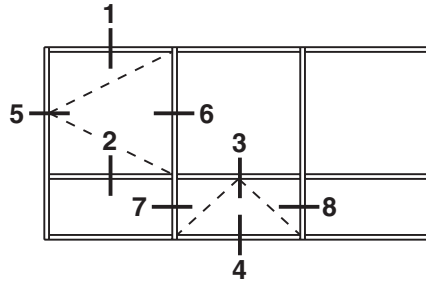
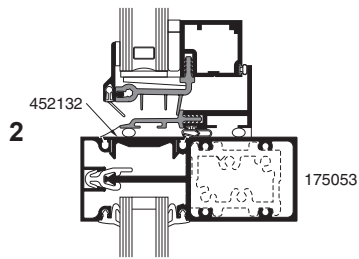
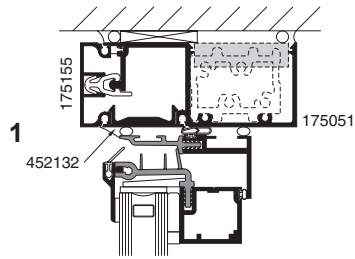
**NOTE:** Black spacer is recommended when 1" (25.4) insulating glass is used.

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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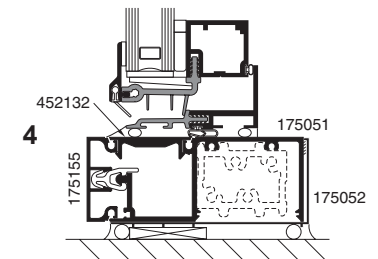
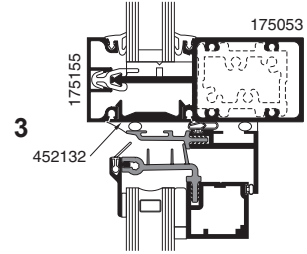
SCALE 3" = 1'-0"

## OUTSWING CASEMENT

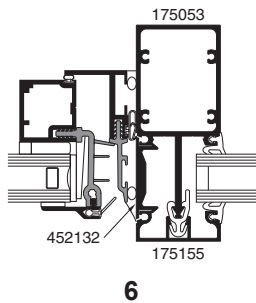
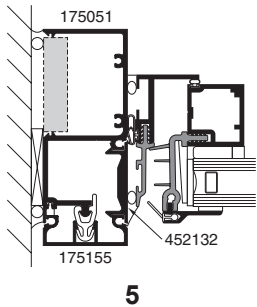


ELEVATION IS NUMBER KEYED TO DETAILS

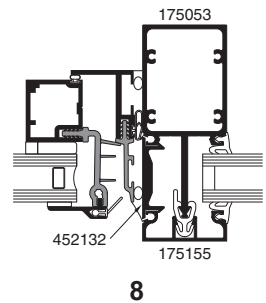
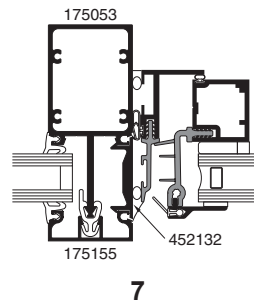
## PROJECT-OUT



## OUTSWING CASEMENT



## PROJECT-OUT

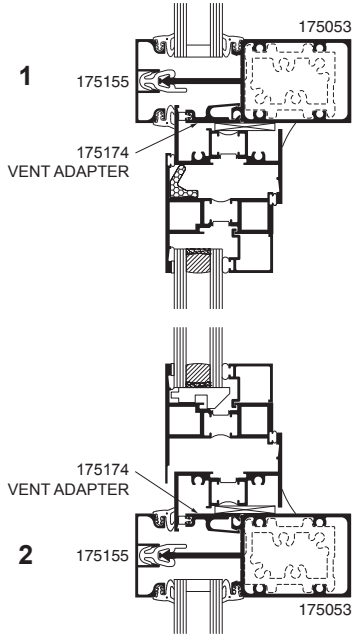


**NOTE:** Black spacer is recommended when 1" (25.4) insulating glass is used.

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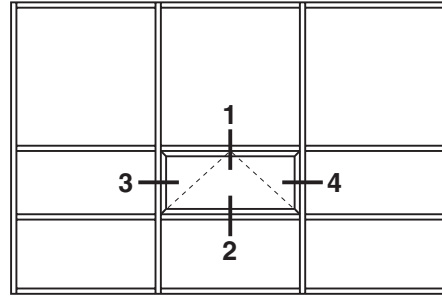
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**SCALE 3" = 1'-0"**

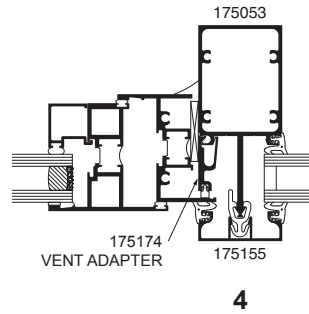
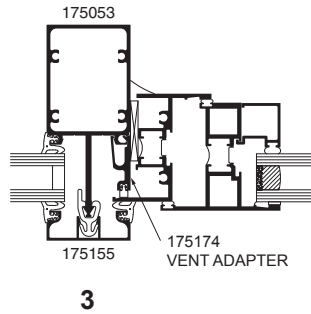


### 8225TL THERMAL WINDOWS SHOWN

**NOTE: Other vent types can be accommodated. Consult your Kawneer Representative for other options.**



**ELEVATION IS NUMBER KEYED TO DETAILS**



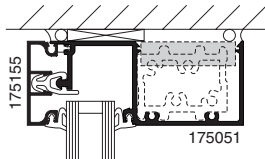
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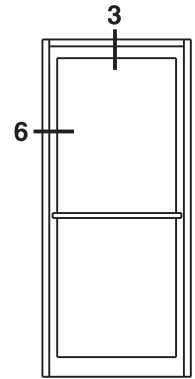
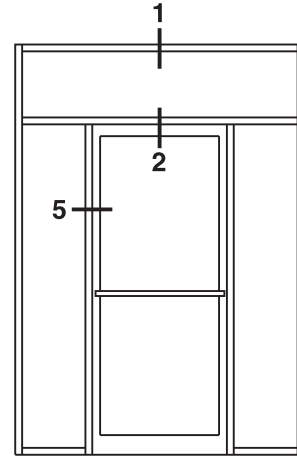
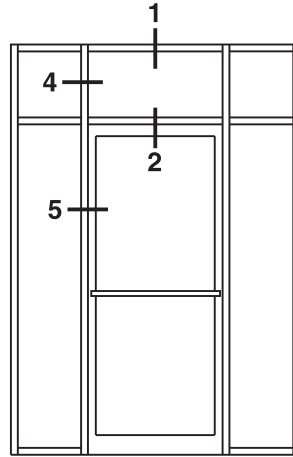
**SCALE 3" = 1'-0"**

**EnCORE™ FRAMING INCORPORATING KAWNEER "190" DOORS.**

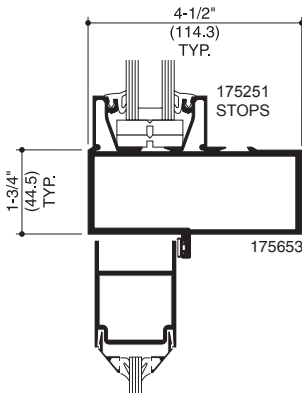
**NOTE:** Other types of Kawneer doors may be used with this framing. See the Entrance Section for additional information.



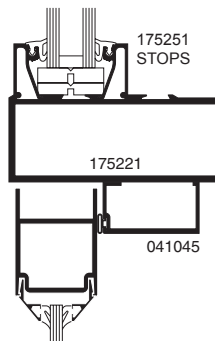
**1  
TRANSOM HEAD**



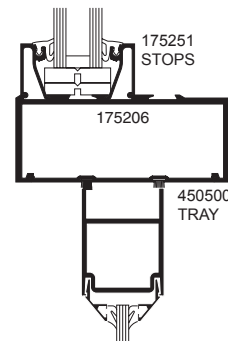
**ELEVATION IS NUMBER KEYED TO DETAILS**



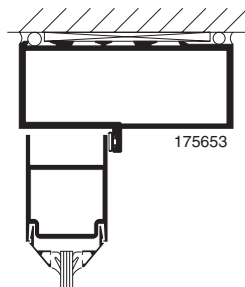
**2  
OFFSET PIVOT/  
BUTT HUNG  
TRANSOM BAR**



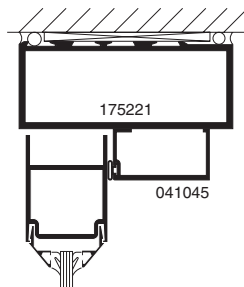
**2  
S/A OFFSET ARM  
OFFSET PIVOT/  
BUTT HUNG  
TRANSOM BAR**



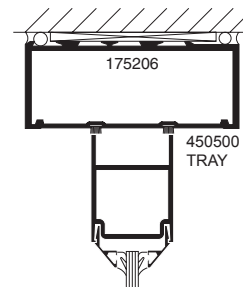
**2  
C.O.C.  
CENTER PIVOT  
TRANSOM BAR**



**3  
OFFSET PIVOT/  
BUTT HUNG  
HEADER**



**3  
S/A OFFSET ARM  
OFFSET PIVOT/  
BUTT HUNG  
HEADER**



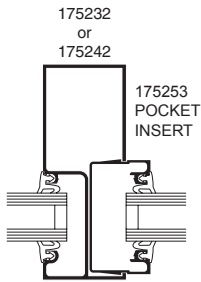
**3  
C.O.C.  
CENTER PIVOT  
HEADER**

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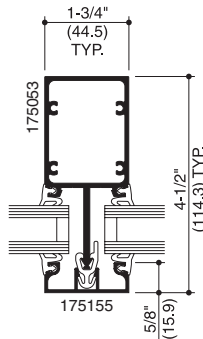
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SCALE 3" = 1'-0"

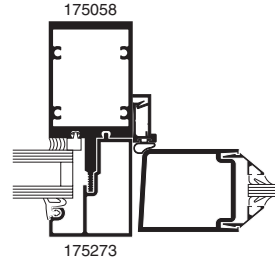
Transom area for both double or single acting doors with glass surround. Jamb above transom area are routed out to accept pocket insert 175253.



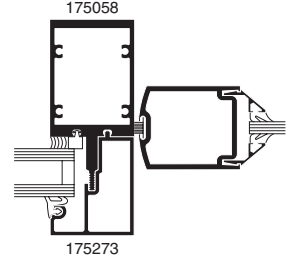
4  
DOOR JAMB  
AT TRANSOM



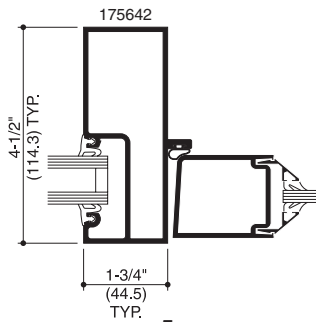
4  
DOOR JAMB  
AT TRANSOM  
(OPTIONAL)



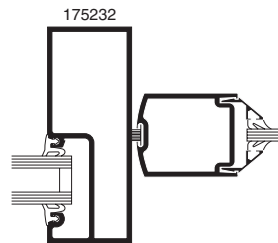
5  
SINGLE ACTING  
SSG DOOR JAMB  
W/ DOOR ADAPTER



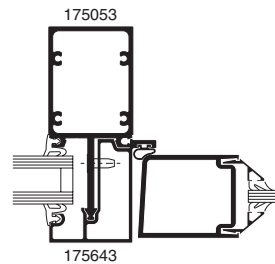
5  
DOUBLE ACTING  
SSG DOOR JAMB  
W/ DOOR ADAPTER



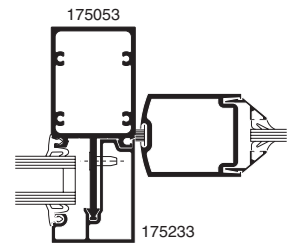
5  
SINGLE ACTING  
DOOR JAMB



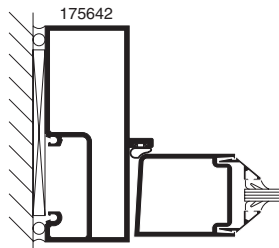
5  
DOUBLE ACTING  
DOOR JAMB



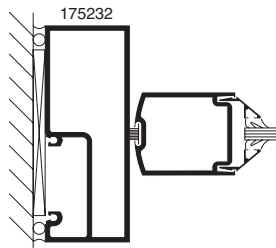
5  
SINGLE ACTING  
DOOR JAMB  
W/ DOOR ADAPTER



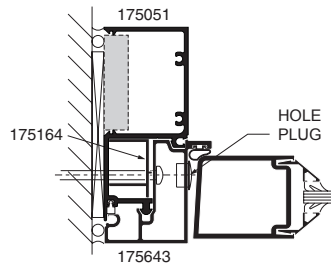
5  
DOUBLE ACTING  
DOOR JAMB  
W/ DOOR ADAPTER



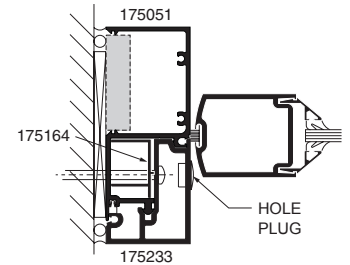
6  
SINGLE ACTING  
DOOR JAMB



6  
DOUBLE ACTING  
DOOR JAMB



6  
SINGLE ACTING  
DOOR JAMB  
W/ DOOR ADAPTER



6  
DOUBLE ACTING  
DOOR JAMB  
W/ DOOR ADAPTER

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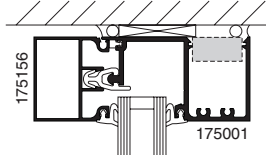
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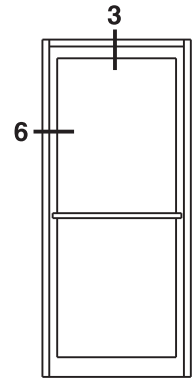
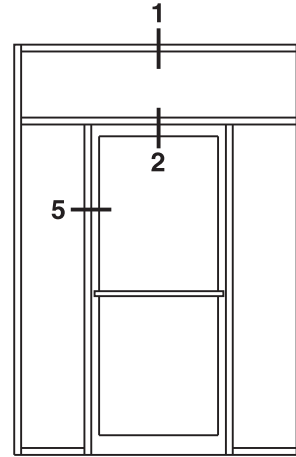
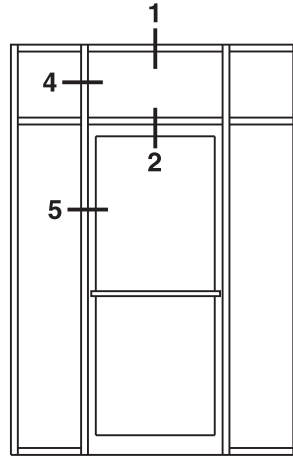
**SCALE 3" = 1'-0"**

**EnCORE™ FRAMING INCORPORATING KAWNEER "190" DOORS.**

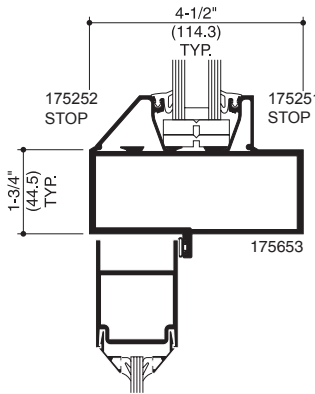
**NOTE:** Other types of Kawneer doors may be used with this framing. See the Entrance Section for additional information.



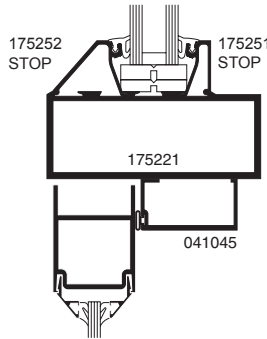
**1  
TRANSOM HEAD**



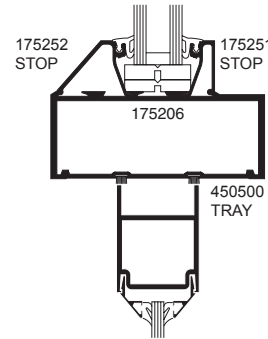
**ELEVATION IS NUMBER KEYED TO DETAILS**



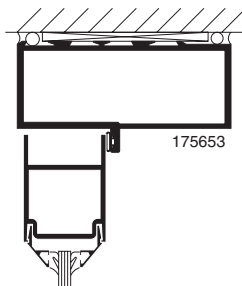
**2  
OFFSET PIVOT/  
BUTT HUNG  
TRANSOM BAR**



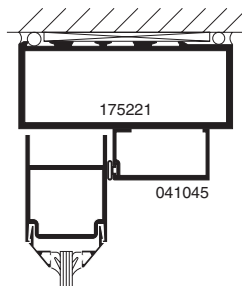
**2  
S/A OFFSET ARM  
OFFSET PIVOT/  
BUTT HUNG  
TRANSOM BAR**



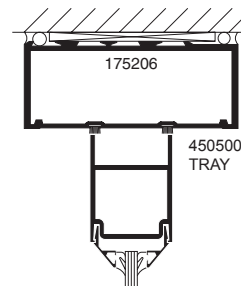
**2  
C.O.C.  
CENTER PIVOT  
TRANSOM BAR**



**3  
OFFSET PIVOT/  
BUTT HUNG  
HEADER**



**3  
S/A OFFSET ARM  
OFFSET PIVOT/  
BUTT HUNG  
HEADER**



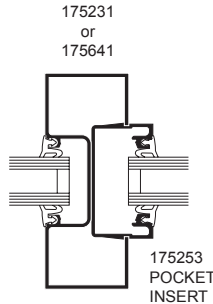
**3  
C.O.C.  
CENTER PIVOT  
HEADER**

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

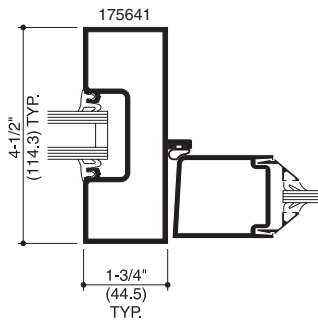
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**SCALE 3" = 1'-0"**

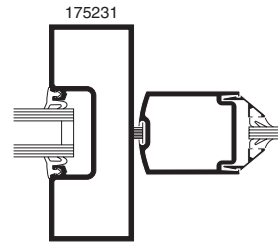
Transom area for both double or single acting doors with glass surround. Jamb above transom area are routed out to accept pocket insert 175253.



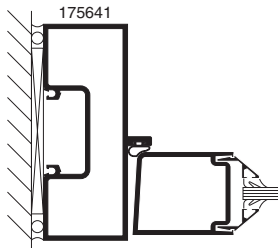
**4  
DOOR JAMB  
AT TRANSOM**



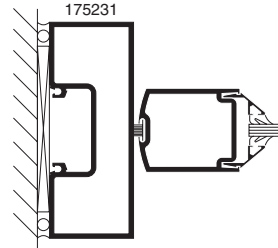
**5  
SINGLE ACTING  
DOOR JAMB**



**5  
DOUBLE ACTING  
DOOR JAMB**



**6  
SINGLE ACTING  
DOOR JAMB**



**6  
DOUBLE ACTING  
DOOR JAMB**

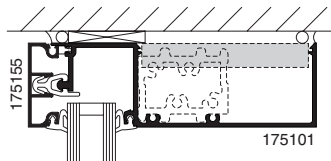
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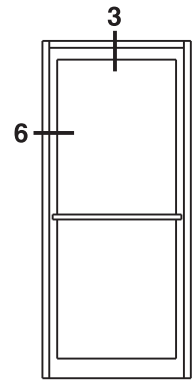
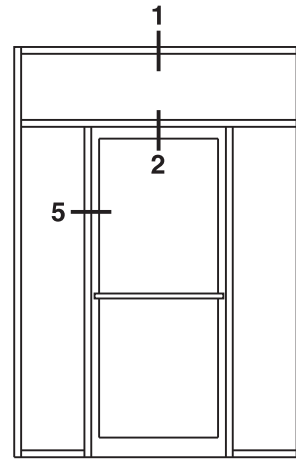
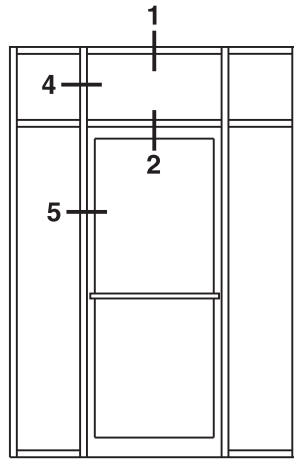
**SCALE 3" = 1'-0"**

**EnCORE™ FRAMING INCORPORATING KAWNEER "190" DOORS.**

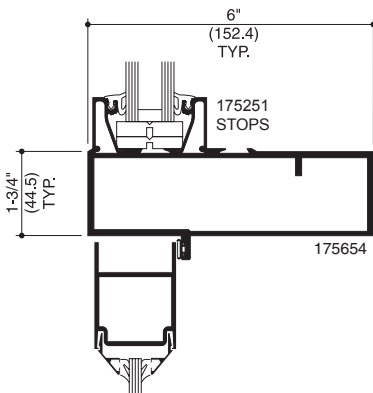
**NOTE:** Other types of Kawneer doors may be used with this framing. See the Entrance Section for additional information.



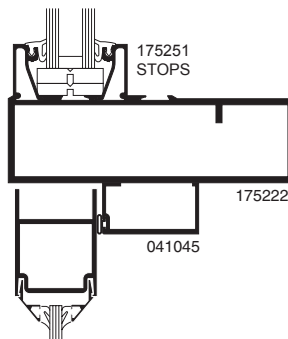
**1  
TRANSOM HEAD**



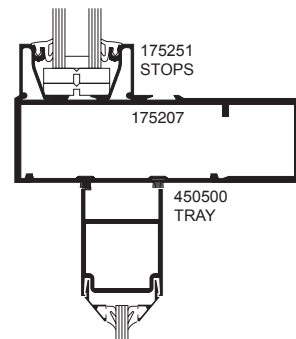
**ELEVATION IS NUMBER KEYED TO DETAILS**



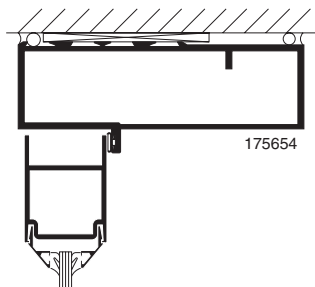
**2  
OFFSET PIVOT/  
BUTT HUNG  
TRANSOM BAR**



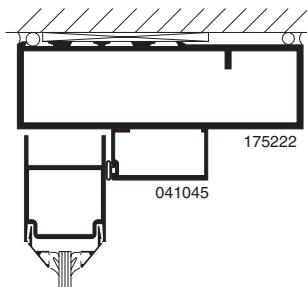
**2  
S/A OFFSET ARM  
OFFSET PIVOT/  
BUTT HUNG  
TRANSOM BAR**



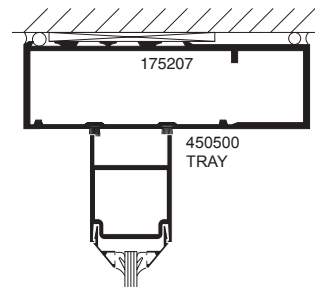
**2  
C.O.C.  
CENTER PIVOT  
TRANSOM BAR**



**3  
OFFSET PIVOT/  
BUTT HUNG  
HEADER**



**3  
S/A OFFSET ARM  
OFFSET PIVOT/  
BUTT HUNG  
HEADER**

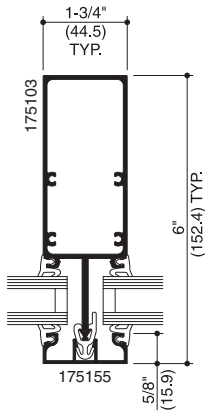


**3  
C.O.C.  
CENTER PIVOT  
HEADER**

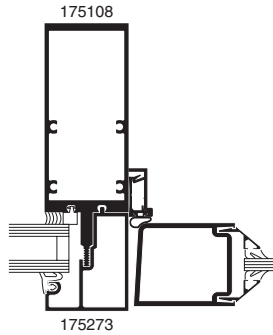
Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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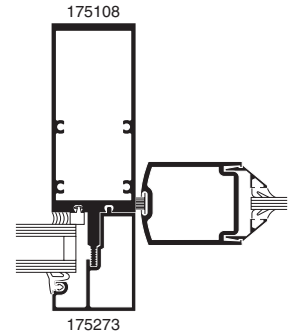
**SCALE 3" = 1'-0"**



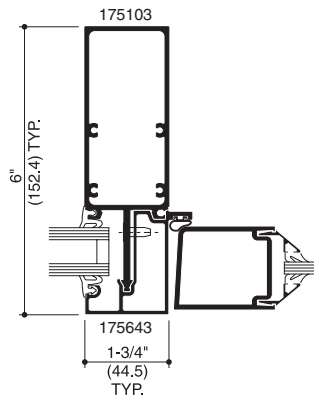
**4**  
**DOOR JAMB**  
**AT TRANSOM**



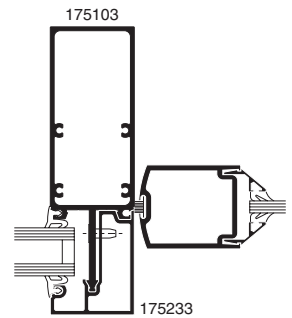
**5**  
**SINGLE ACTING**  
**SSG DOOR JAMB**  
**W/ DOOR ADAPTER**



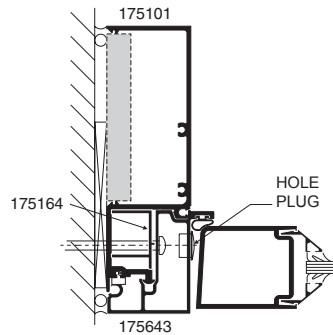
**5**  
**DOUBLE ACTING**  
**SSG DOOR JAMB**  
**W/ DOOR ADAPTER**



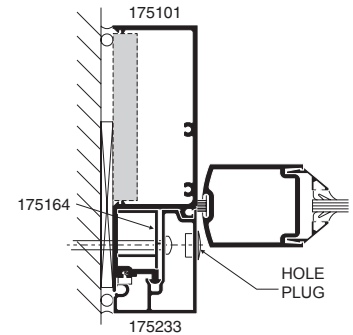
**5**  
**SINGLE ACTING**  
**DOOR JAMB**  
**W/ DOOR ADAPTER**



**5**  
**DOUBLE ACTING**  
**DOOR JAMB**  
**W/ DOOR ADAPTER**



**6**  
**SINGLE ACTING**  
**DOOR JAMB**  
**W/ DOOR ADAPTER**



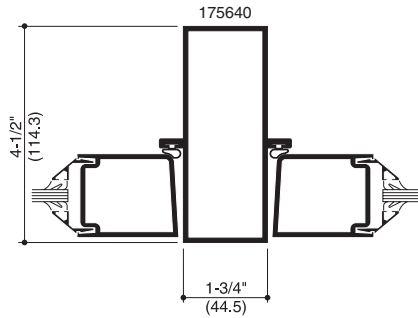
**6**  
**DOUBLE ACTING**  
**DOOR JAMB**  
**W/ DOOR ADAPTER**

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

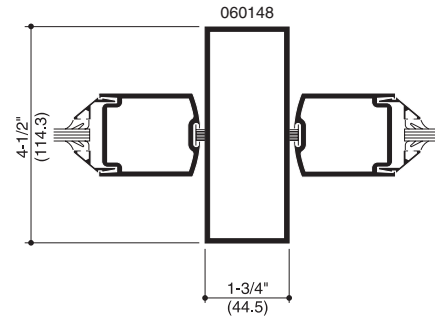
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**SCALE 3" = 1'-0"**

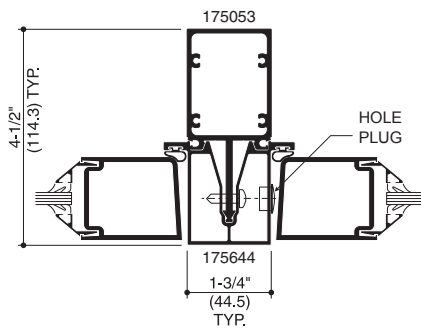
**COMMON DOOR JAMBS**



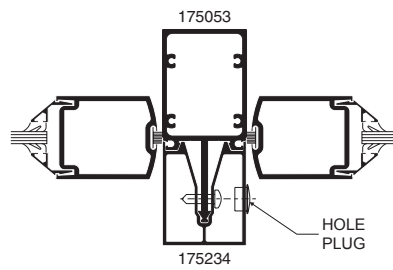
**SINGLE ACTING  
DOOR JAMB**



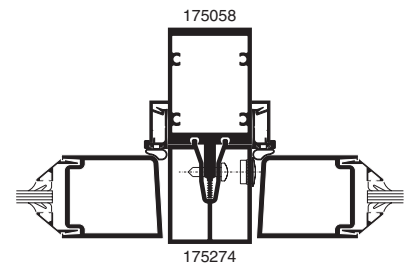
**DOUBLE ACTING  
DOOR JAMB**



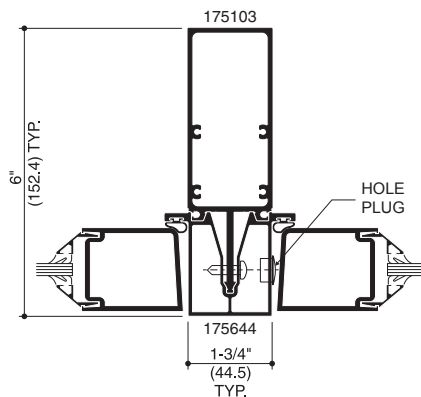
**SINGLE ACTING  
DOOR JAMB  
W/ DOOR ADAPTER**



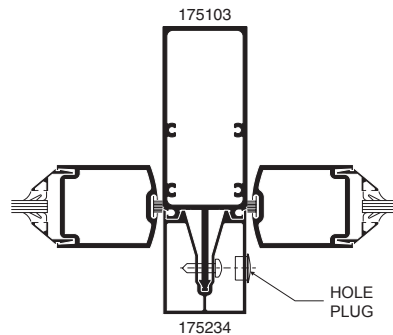
**DOUBLE ACTING  
DOOR JAMB  
W/ DOOR ADAPTER**



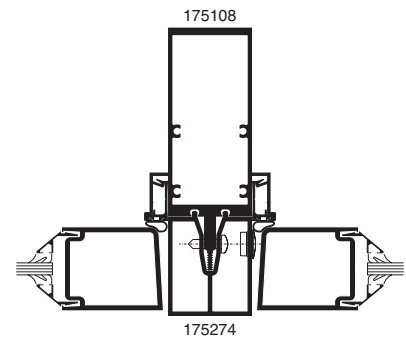
**SINGLE ACTING  
SSG DOOR JAMB  
W/ DOOR ADAPTER**



**SINGLE ACTING  
DOOR JAMB  
W/ DOOR ADAPTER**



**DOUBLE ACTING  
DOOR JAMB  
W/ DOOR ADAPTER**



**SINGLE ACTING  
SSG DOOR JAMB  
W/ DOOR ADAPTER**

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## WIND LOAD CHARTS

Mullions are designed for deflection limitations in accordance with AAMA TIR-A11 of L/175 up to 13'-6" and L/240 +1/4" above 13'-6". These curves are for mullions WITH HORIZONTALS and are based on engineering calculations for stress and deflection. Allowable wind load stress for ALUMINUM 15,152 psi (104MPa), STEEL 30,000 psi (207MPa). Charted curves, in all cases are for the limiting value. Wind load charts contained herein are based upon nominal wind load utilized in allowable stress design. A conversion from Load Resistance Factor Design (LRFD) is provided. To convert ultimate wind loads to nominal loads, multiply ultimate wind loads by a factor of 0.6 per ASCE/SEI 7. A 4/3 increase in allowable stress has not been used to develop these curves. For special situations not covered by these curves, contact your Kawneer representative for additional information.

If the end reaction of the mullion [mullion spacing (ft.) times height (ft.) times specified wind load (psf) divided by two] is more than 500 lbs., the optional Mullion Anchors must be used. Consult Application Engineering. (*Mullion Anchor not used with Lightweight Receptor.*)

## DEADLOAD CHARTS

Horizontal or deadload limitations are based upon 1/8" (3.2), maximum allowable deflection at the center of an intermediate horizontal member. The accompanying charts are calculated for 1" (25.4) thick insulating glass or 1/4" (6.35) thick glass supported on two setting blocks placed at the loading points shown.

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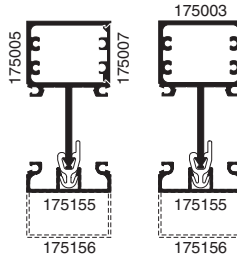
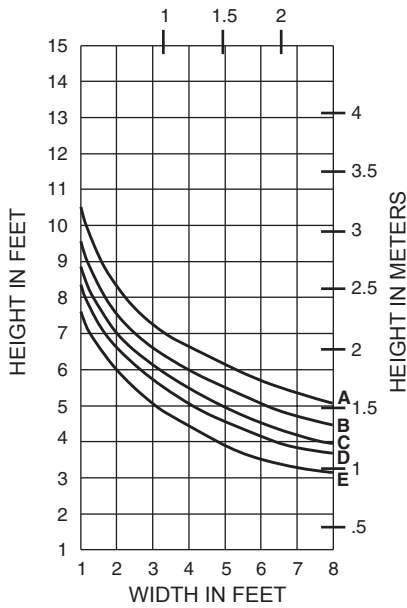
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	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	15 PSF (720)	25 PSF (1200)
B =	20 PSF (960)	33 PSF (1580)
C =	25 PSF (1200)	42 PSF (2000)
D =	30 PSF (1440)	50 PSF (2400)
E =	40 PSF (1920)	67 PSF (3200)

**WITH HORIZONTALS**

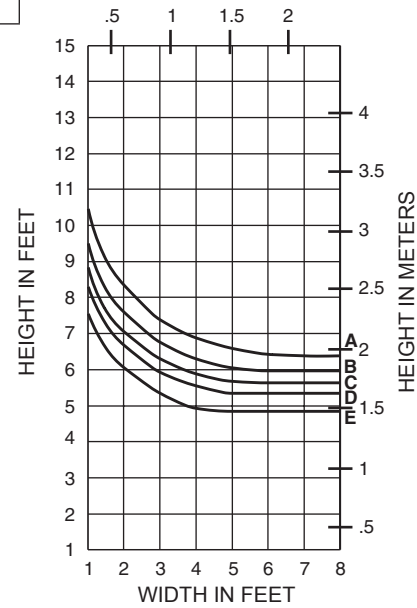
WIDTH IN METERS



$I = 0.564 (23.48 \times 10^4)$   
 $S = 0.326 (5.34 \times 10^3)$

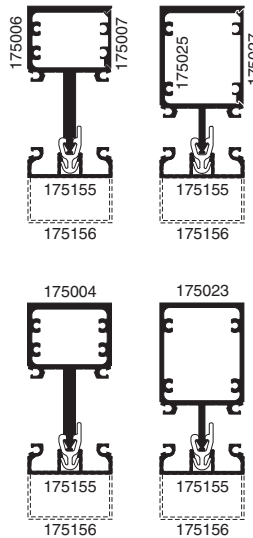
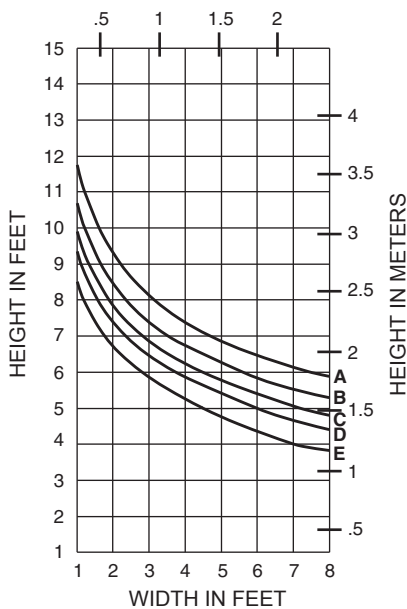
**WITHOUT HORIZONTALS**

WIDTH IN METERS



**WITH HORIZONTALS**

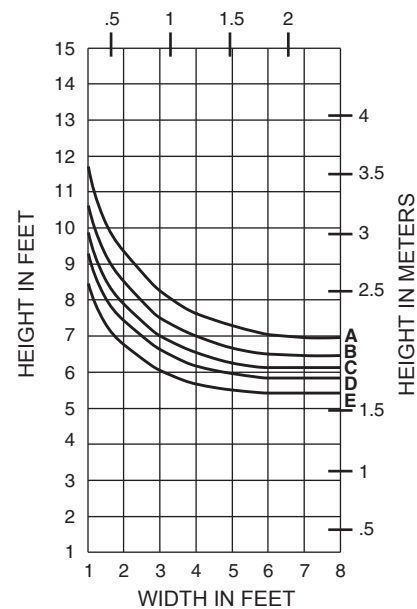
WIDTH IN METERS



$I = 0.792 (32.96 \times 10^4)$   
 $S = 0.465 (7.62 \times 10^3)$

**WITHOUT HORIZONTALS**

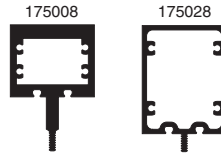
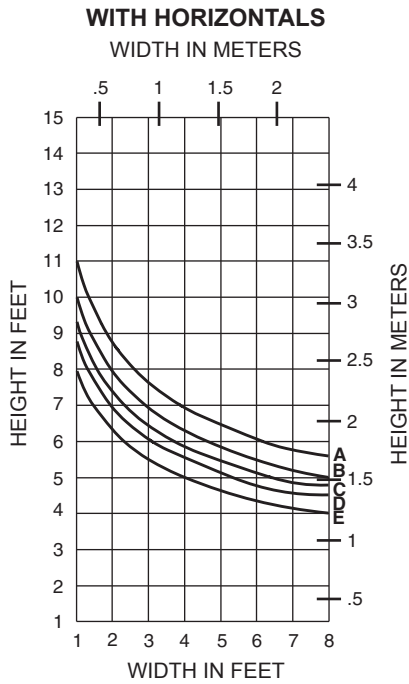
WIDTH IN METERS



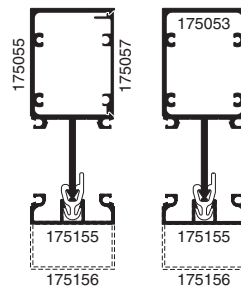
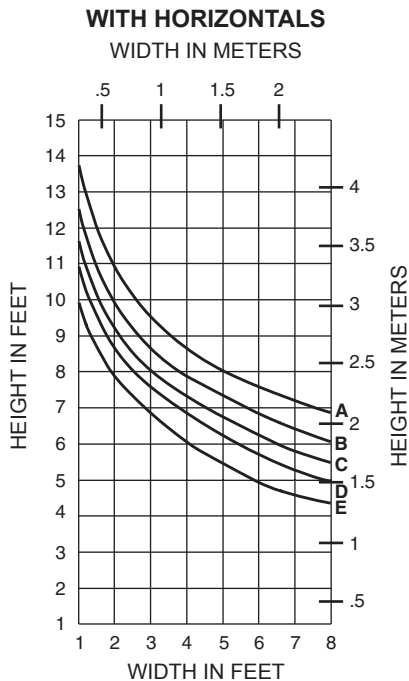
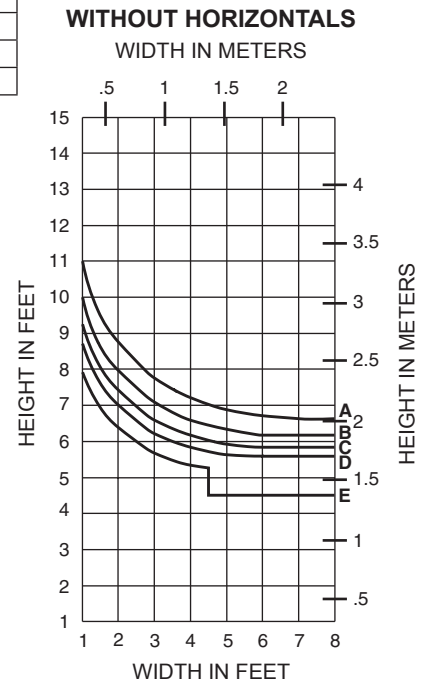
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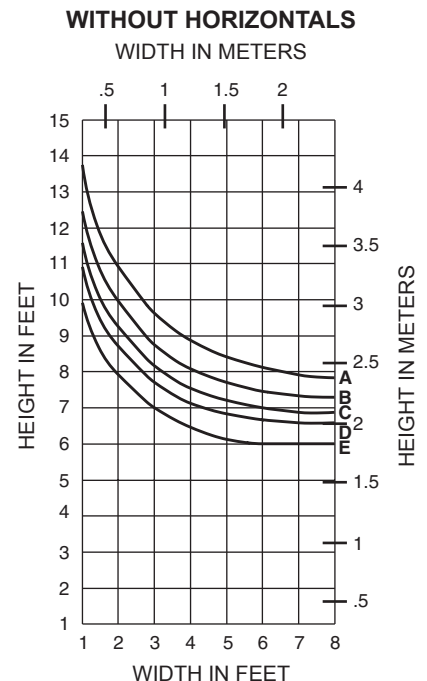
	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	15 PSF (720)	25 PSF (1200)
B =	20 PSF (960)	33 PSF (1580)
C =	25 PSF (1200)	42 PSF (2000)
D =	30 PSF (1440)	50 PSF (2400)
E =	40 PSF (1920)	67 PSF (3200)



$I = 0.654 (27.22 \times 10^4)$   
 $S = 0.466 (7.64 \times 10^3)$



$I = 1.277 (53.15 \times 10^4)$   
 $S = 0.639 (10.47 \times 10^3)$



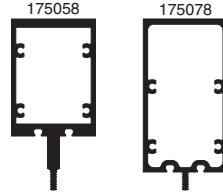
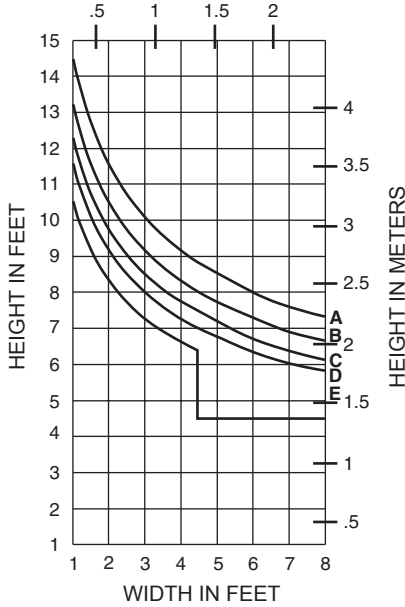
Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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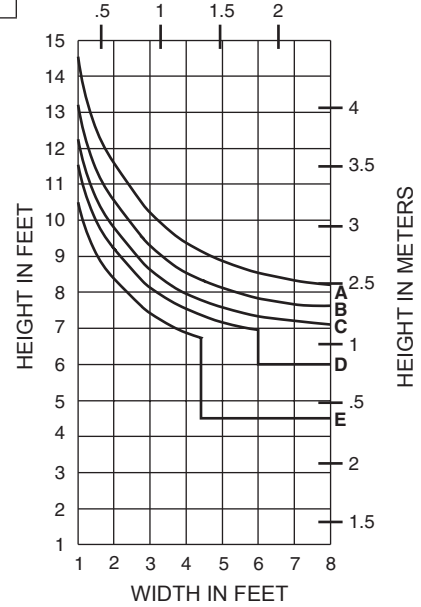
	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	15 PSF (720)	25 PSF (1200)
B =	20 PSF (960)	33 PSF (1580)
C =	25 PSF (1200)	42 PSF (2000)
D =	30 PSF (1440)	50 PSF (2400)
E =	40 PSF (1920)	67 PSF (3200)

**WITH HORIZONTALS**  
WIDTH IN METERS

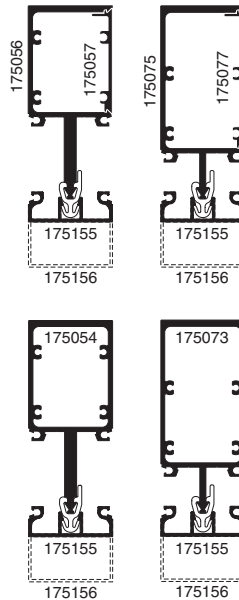
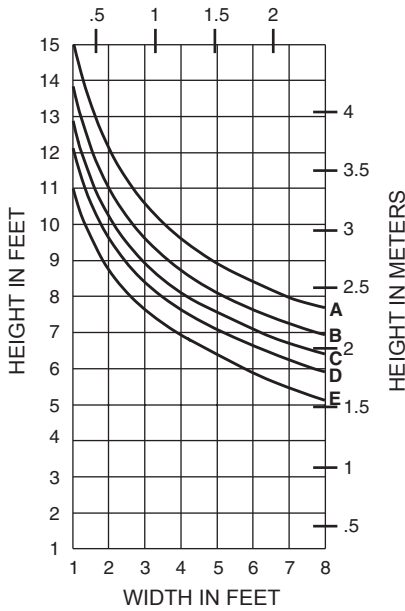


$I = 1.511 (62.89 \times 10^4)$   
 $S = 0.745 (12.21 \times 10^3)$

**WITHOUT HORIZONTALS**  
WIDTH IN METERS

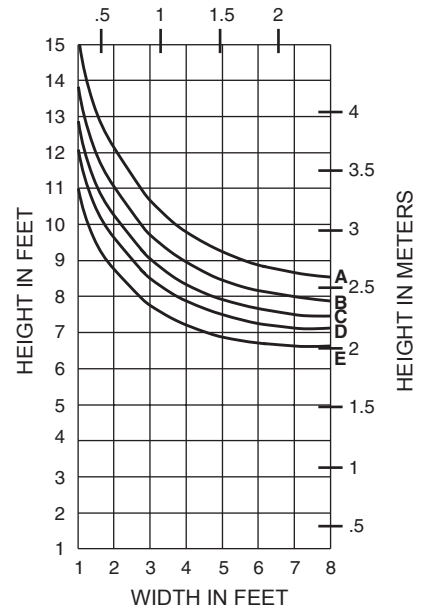


**WITH HORIZONTALS**  
WIDTH IN METERS



$I = 1.747 (72.72 \times 10^4)$   
 $S = 0.877 (14.37 \times 10^3)$

**WITHOUT HORIZONTALS**  
WIDTH IN METERS

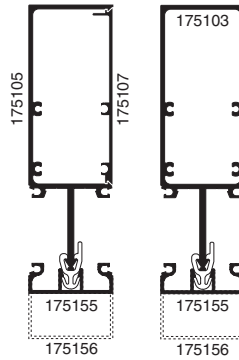
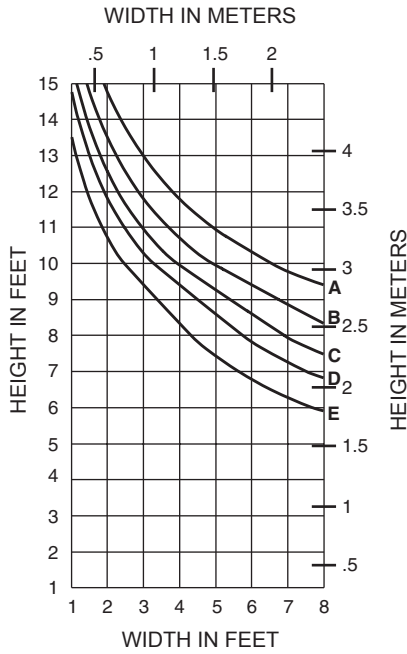


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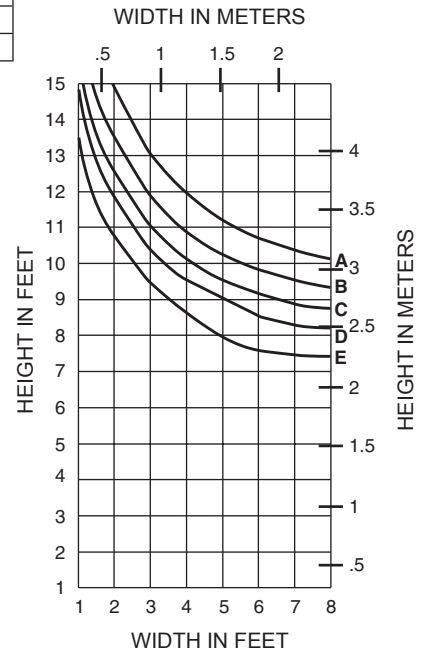
	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	15 PSF (720)	25 PSF (1200)
B =	20 PSF (960)	33 PSF (1580)
C =	25 PSF (1200)	42 PSF (2000)
D =	30 PSF (1440)	50 PSF (2400)
E =	40 PSF (1920)	67 PSF (3200)

**WITH HORIZONTALS**

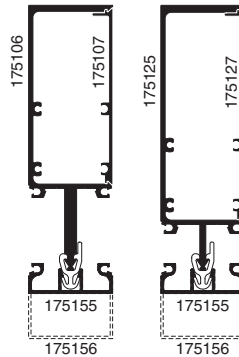
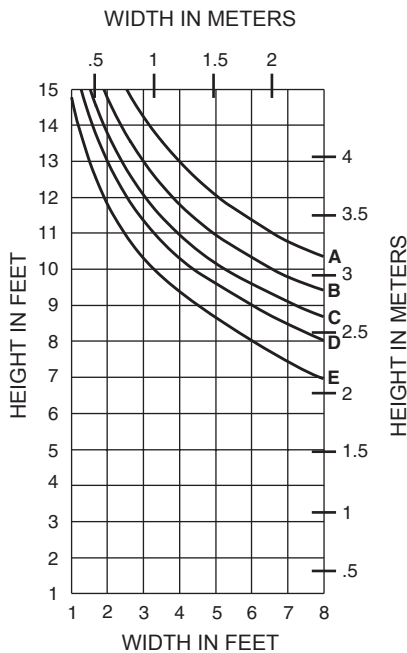


I = 3.229 (134.40 x 10<sup>4</sup>)  
S = 1.094 (17.93 x 10<sup>3</sup>)

**WITHOUT HORIZONTALS**

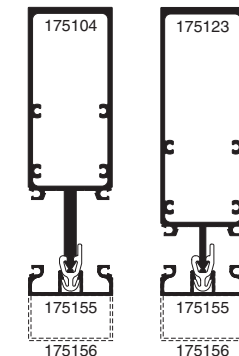
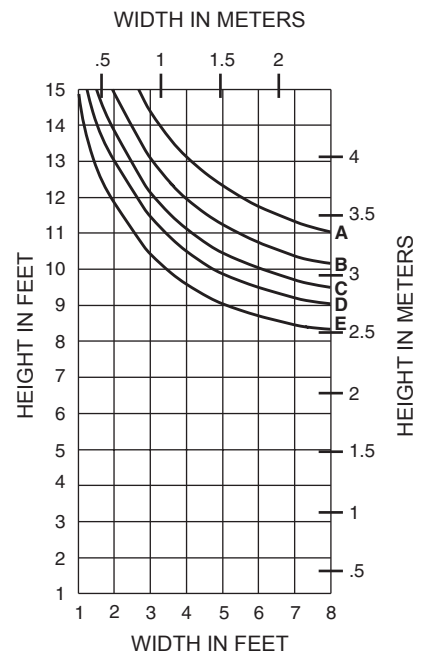


**WITH HORIZONTALS**



I = 4.325 (180.02 x 10<sup>4</sup>)  
S = 1.626 (26.65 x 10<sup>3</sup>)

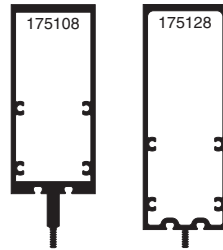
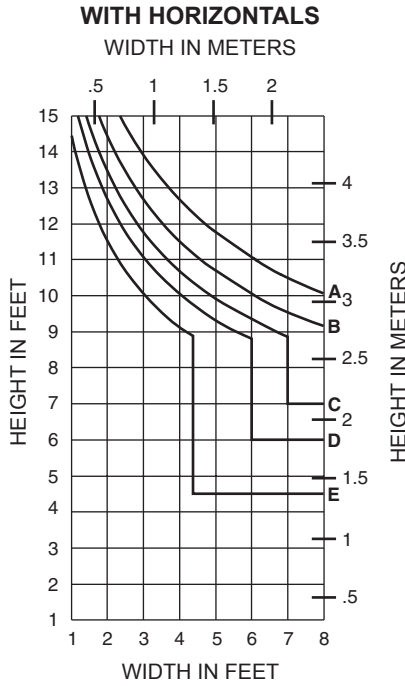
**WITHOUT HORIZONTALS**



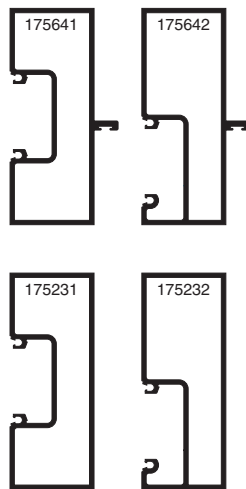
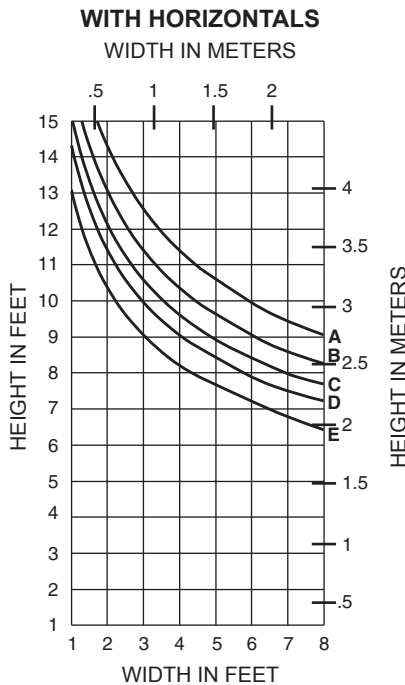
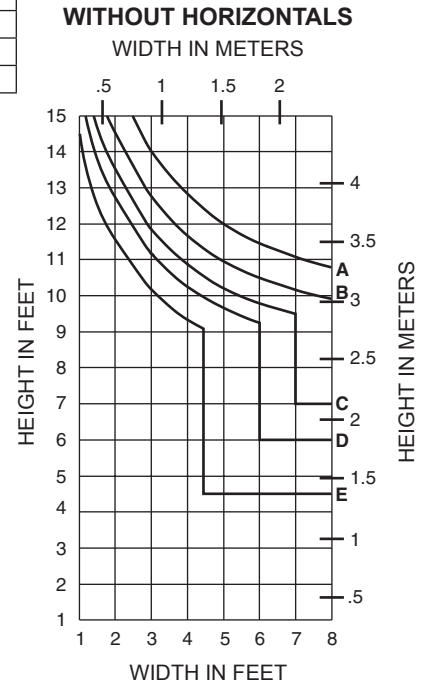
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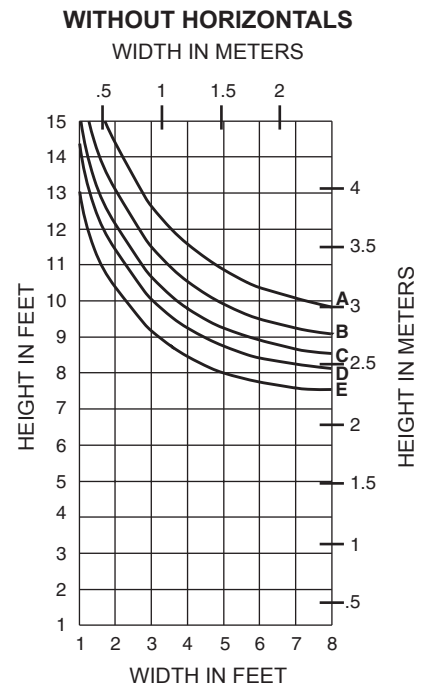
	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	15 PSF (720)	25 PSF (1200)
B =	20 PSF (960)	33 PSF (1580)
C =	25 PSF (1200)	42 PSF (2000)
D =	30 PSF (1440)	50 PSF (2400)
E =	40 PSF (1920)	67 PSF (3200)



I = 4.005 (166.70 x 10<sup>4</sup>)  
S = 1.533 (25.12 x 10<sup>3</sup>)



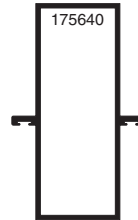
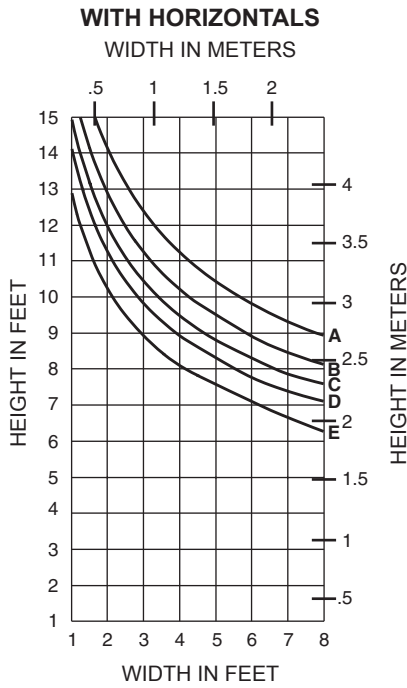
I = 2.919 (121.50 x 10<sup>4</sup>)  
S = 1.297 (21.25 x 10<sup>3</sup>)



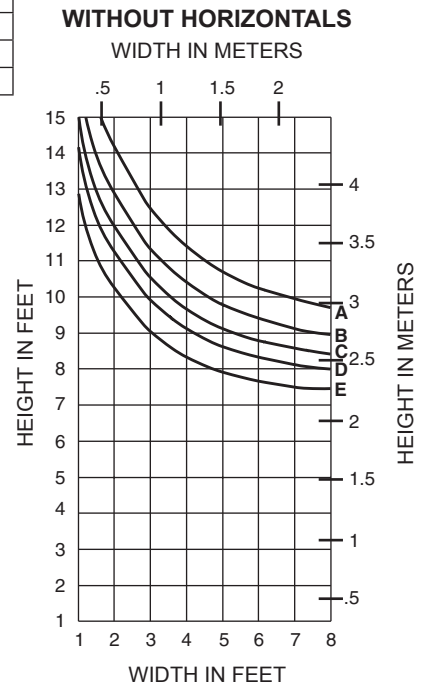
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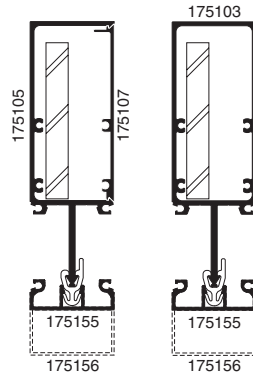
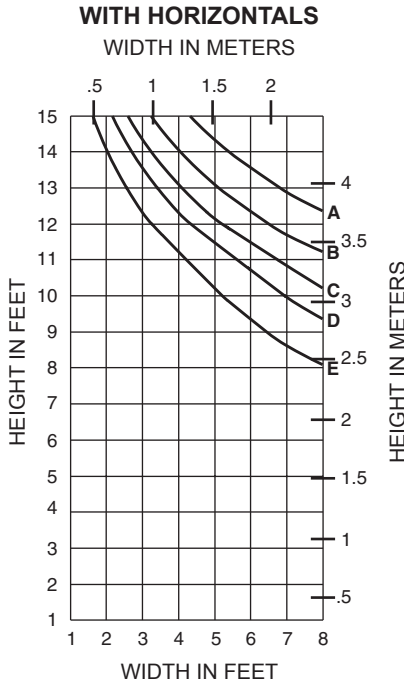
I = 2.799 (116.50 x 10<sup>4</sup>)  
 S = 1.233 (20.21 x 10<sup>3</sup>)



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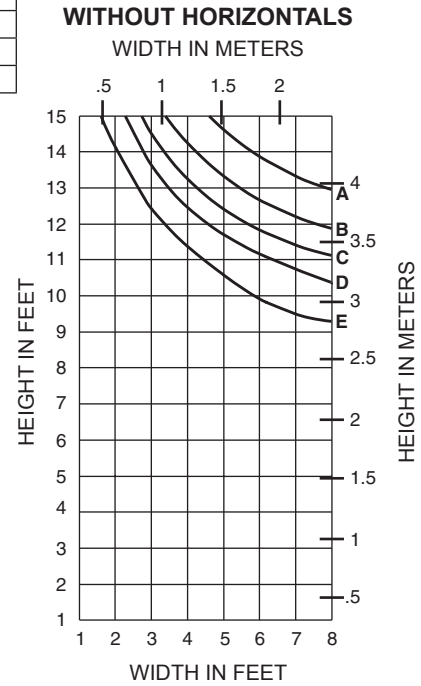
	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	15 PSF (720)	25 PSF (1200)
B =	20 PSF (960)	33 PSF (1580)
C =	25 PSF (1200)	42 PSF (2000)
D =	30 PSF (1440)	50 PSF (2400)
E =	40 PSF (1920)	67 PSF (3200)



$I = 4.005 (166.70 \times 10^4)$   
 $S = 1.533 (25.12 \times 10^3)$

**WITH 1/2" x 3-1/4" STEEL BAR**

$I = 1.430 (59.49 \times 10^4)$   
 $S = 0.880 (14.43 \times 10^3)$

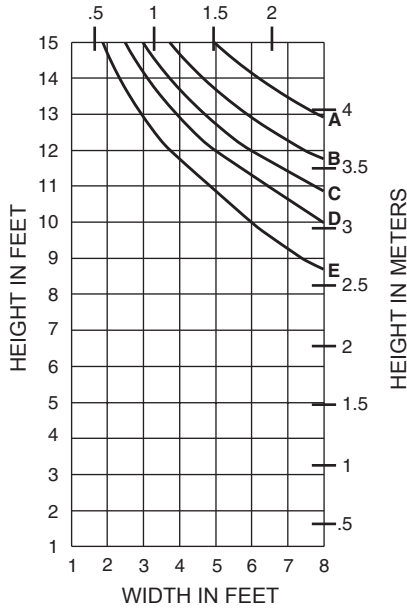


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**WITH HORIZONTALS**

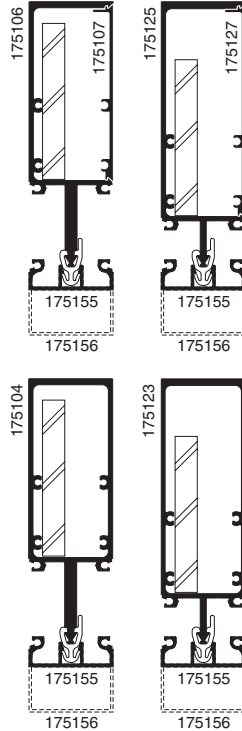
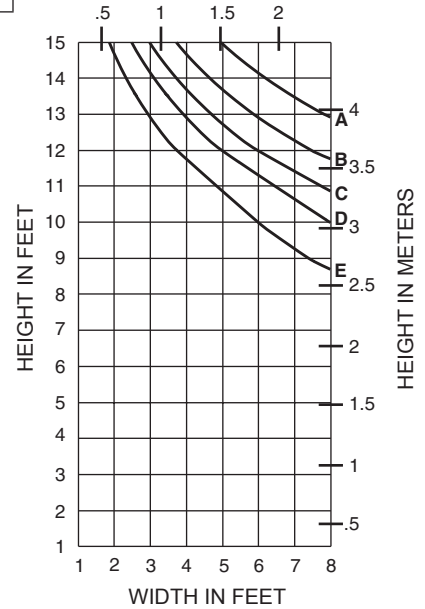
WIDTH IN METERS



	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	15 PSF (720)	25 PSF (1200)
B =	20 PSF (960)	33 PSF (1580)
C =	25 PSF (1200)	42 PSF (2000)
D =	30 PSF (1440)	50 PSF (2400)
E =	40 PSF (1920)	67 PSF (3200)

**WITHOUT HORIZONTALS**

WIDTH IN METERS



I = 4.325 (180.02 x 10<sup>4</sup>)  
 S = 1.626 (26.65 x 10<sup>3</sup>)

**WITH 1/2" x 3-1/4" STEEL BAR**

I = 1.430 (59.49 x 10<sup>4</sup>)  
 S = 0.880 (14.43 x 10<sup>3</sup>)

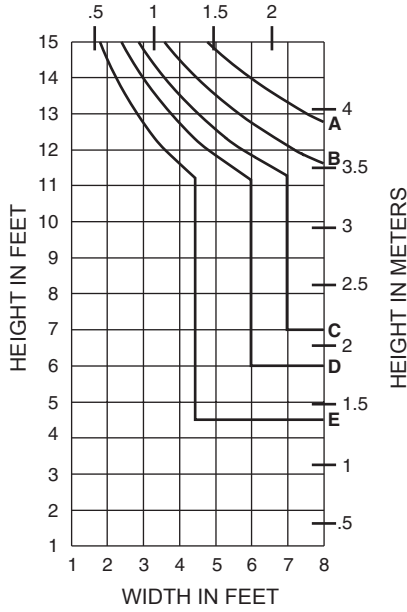
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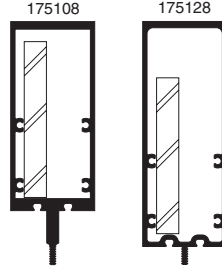
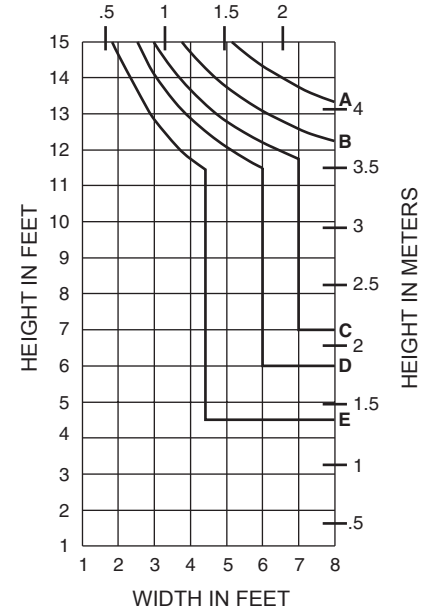
### WITH HORIZONTALS

WIDTH IN METERS



### WITHOUT HORIZONTALS

WIDTH IN METERS



$I = 4.005 (166.70 \times 10^4)$   
 $S = 1.533 (25.12 \times 10^3)$

### WITH 1/2" x 3-1/4" STEEL BAR

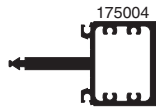
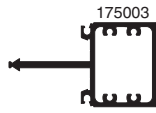
$I = 1.430 (59.49 \times 10^4)$   
 $S = 0.880 (14.43 \times 10^3)$

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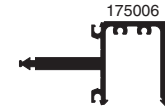
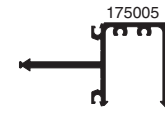
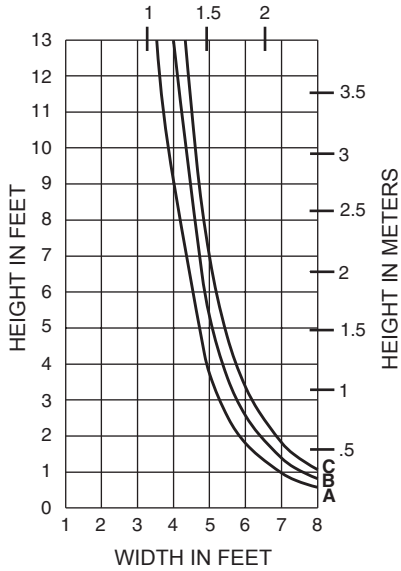
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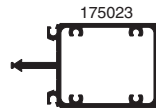
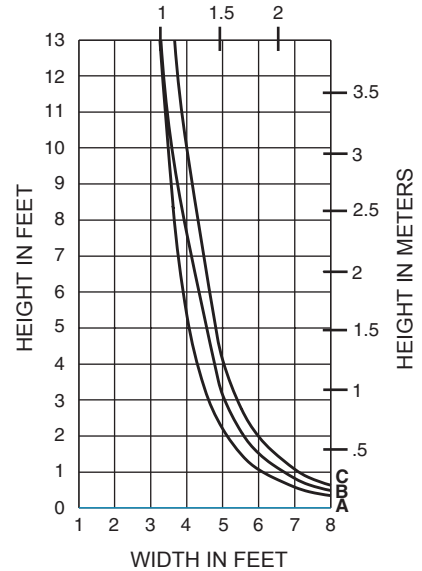
- A = 1/4 POINT LOADING
- B = 1/6 POINT LOADING
- C = 1/8 POINT LOADING



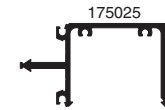
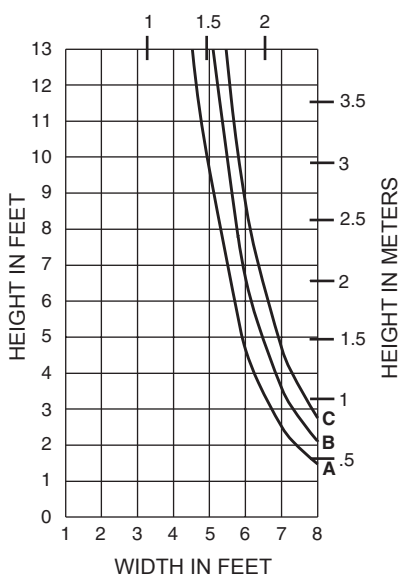
WIDTH IN METERS



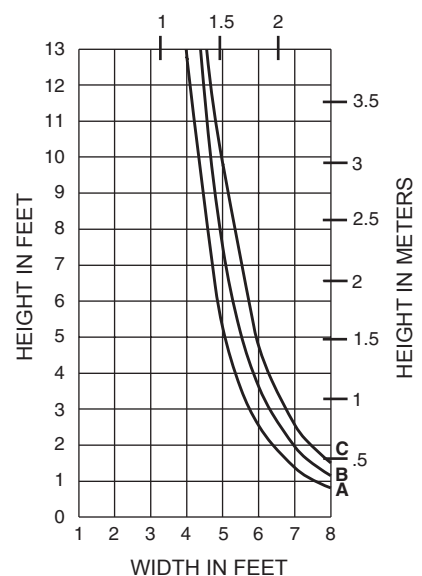
WIDTH IN METERS



WIDTH IN METERS



WIDTH IN METERS



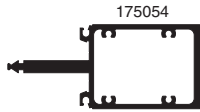
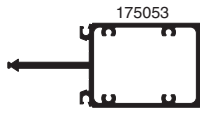
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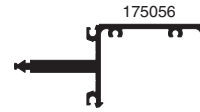
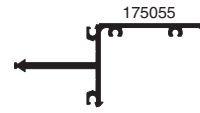
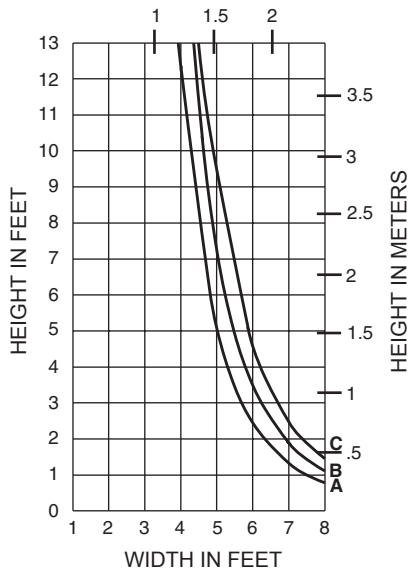


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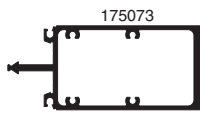
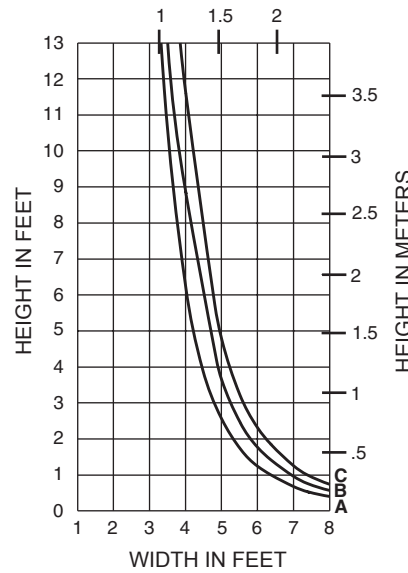
- A = 1/4 POINT LOADING
- B = 1/6 POINT LOADING
- C = 1/8 POINT LOADING



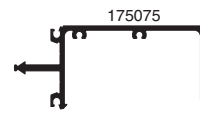
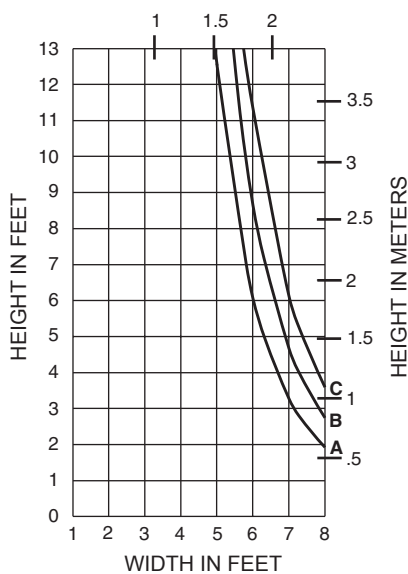
WIDTH IN METERS



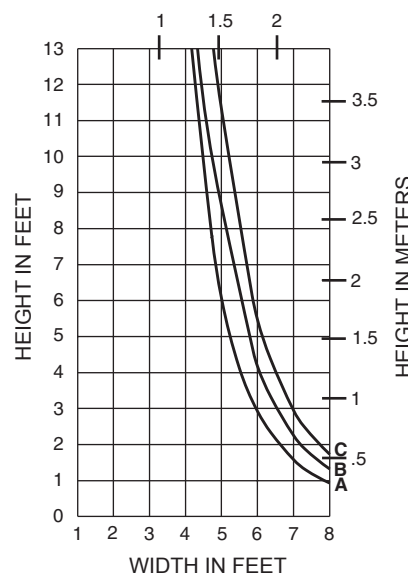
WIDTH IN METERS



WIDTH IN METERS



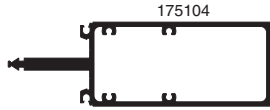
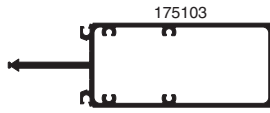
WIDTH IN METERS



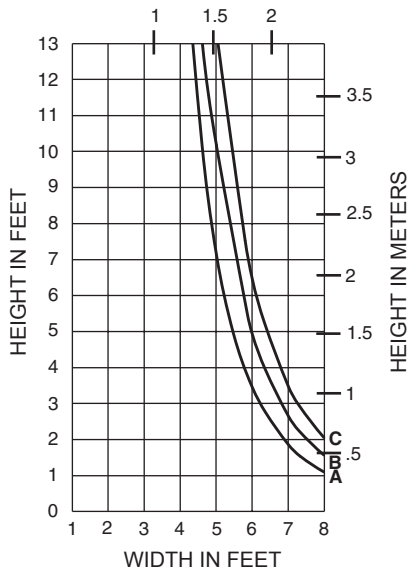
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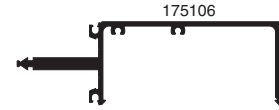
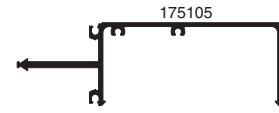
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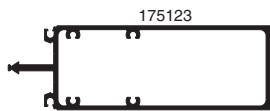
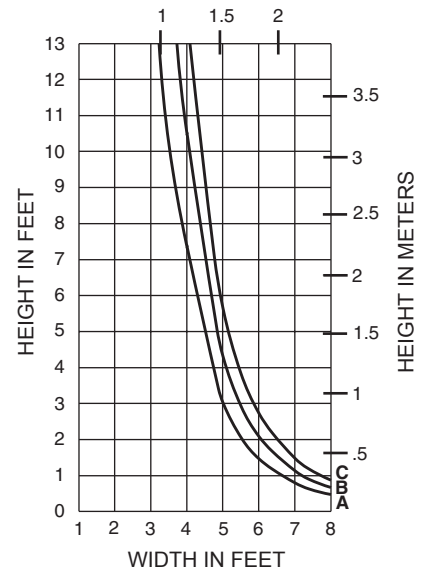
WIDTH IN METERS



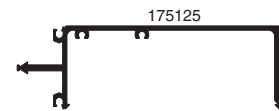
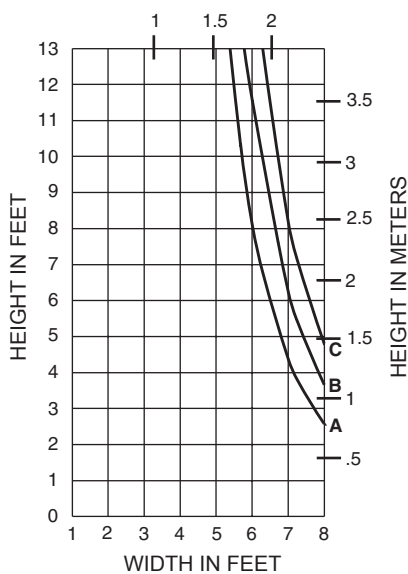
- A = 1/4 POINT LOADING
- B = 1/6 POINT LOADING
- C = 1/8 POINT LOADING



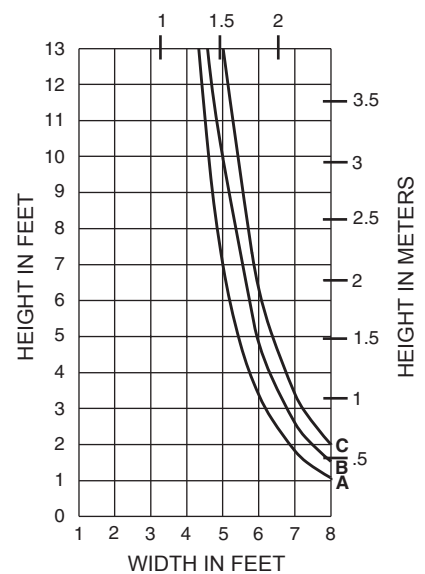
WIDTH IN METERS



WIDTH IN METERS



WIDTH IN METERS



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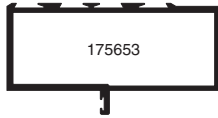
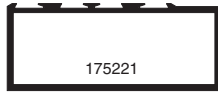
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**DEADLOADS ON ENTRANCE TRANSOM BARS**

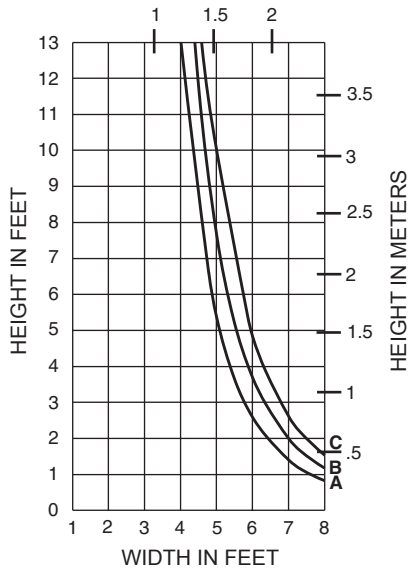
Height limitations for transom glass over a doorway are based on a maximum 1/16" (1.6) mid-point deflection of a transom bar supporting glass bearing on two setting blocks placed at the loading points shown.

- A = 1/4 POINT LOADING
- B = 1/6 POINT LOADING
- C = 1/8 POINT LOADING

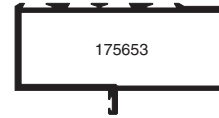
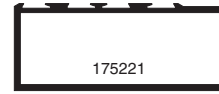
**WITH 1" GLASS**



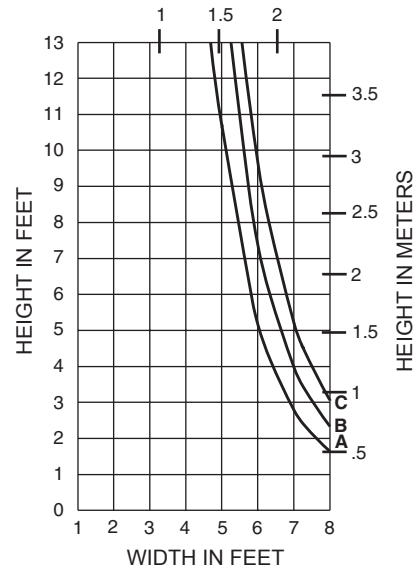
WIDTH IN METERS



**WITH 1/4" GLASS**



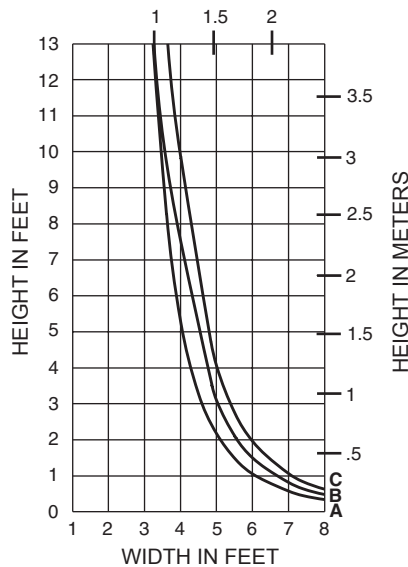
WIDTH IN METERS



**WITH 1" GLASS**



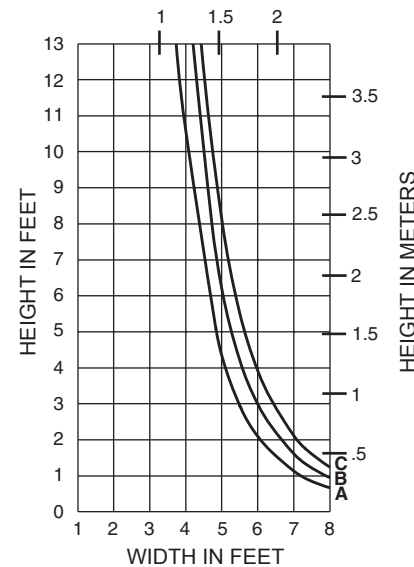
WIDTH IN METERS



**WITH 1/4" GLASS**



WIDTH IN METERS



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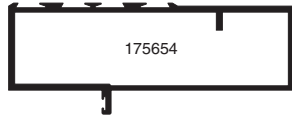
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DEADLOADS ON ENTRANCE TRANSOM BARS

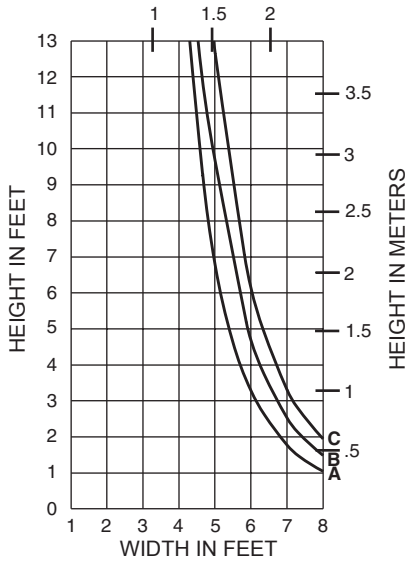
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- A = 1/4 POINT LOADING
- B = 1/6 POINT LOADING
- C = 1/8 POINT LOADING

WITH 1" GLASS



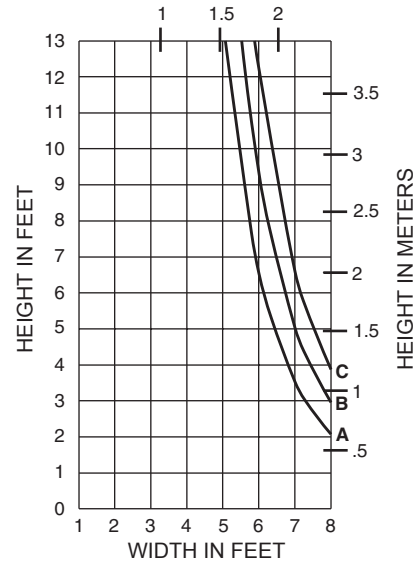
WIDTH IN METERS



WITH 1/4" GLASS



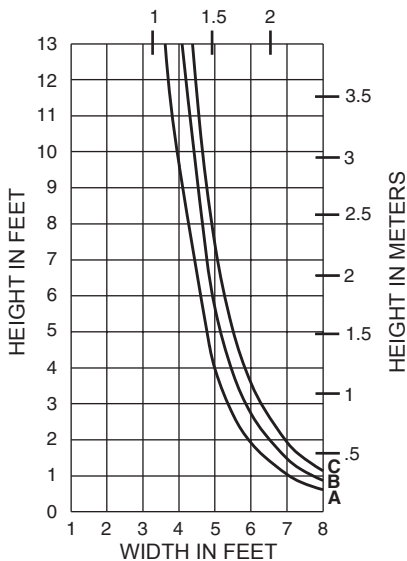
WIDTH IN METERS



WITH 1" GLASS



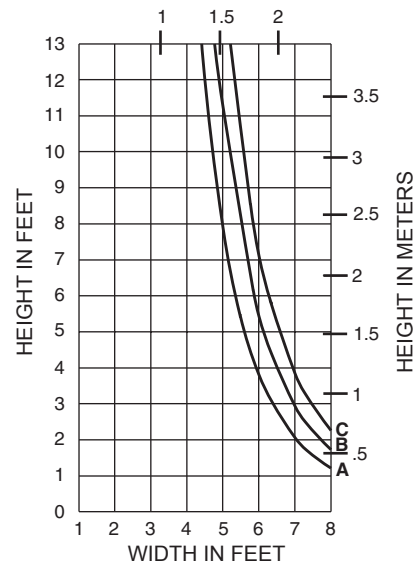
WIDTH IN METERS



WITH 1/4" GLASS



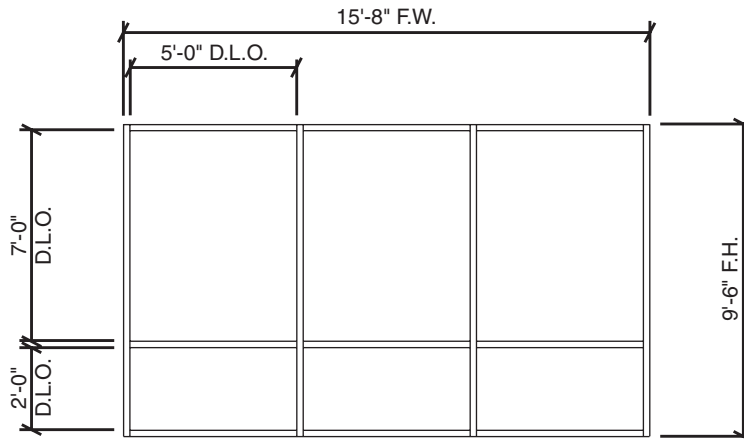
WIDTH IN METERS



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**Generic Project Specific U-factor Example Calculation**  
**(Percent of Glass will vary on specific products depending on sitelines)**



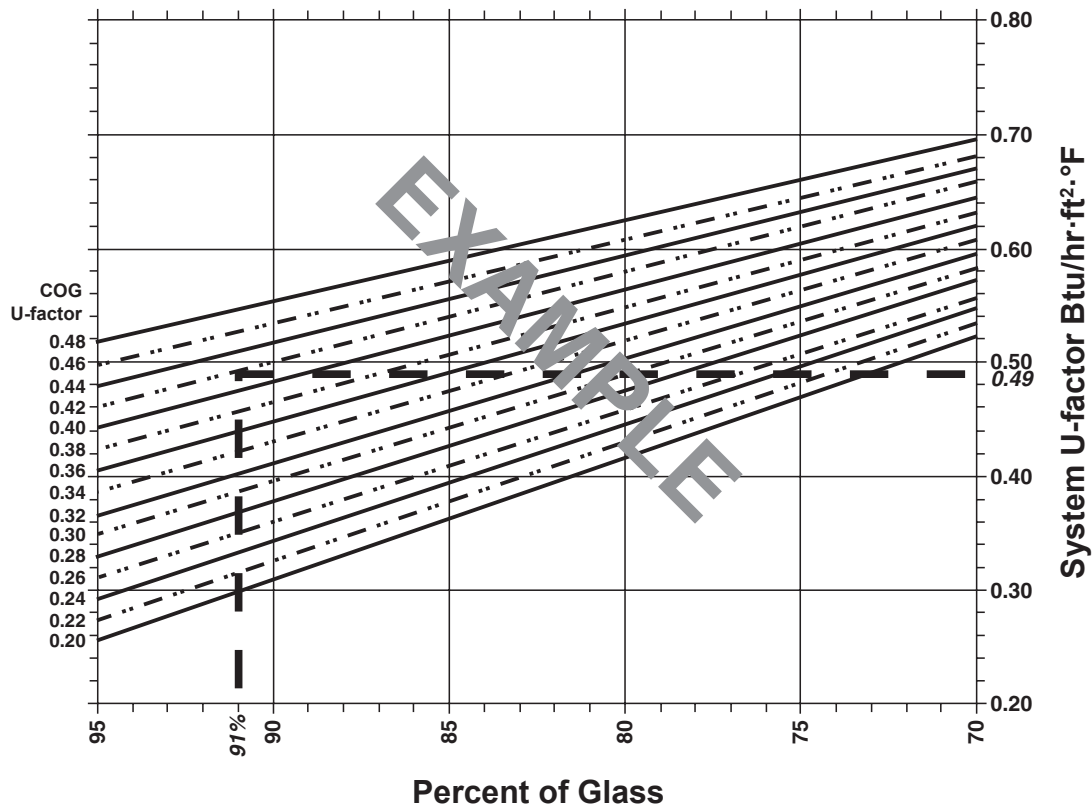
Example Glass U-value = 0.42 Btu/hr·ft<sup>2</sup>·°F

Total Daylight Opening = 3(5' x 7') + 3(5'x2') = 135 ft<sup>2</sup>

Total Projected Area = (Total Daylight Opening + Total Area of Framing System)  
 = 15'-8" x 9'-6" = 148.83 ft<sup>2</sup>

Percent of Glass = (Total Daylight Opening ÷ Total Projected Area)  
 = (135 ÷ 148.83)100 = 91%

**System U-factor vs Percent of Glass Area**



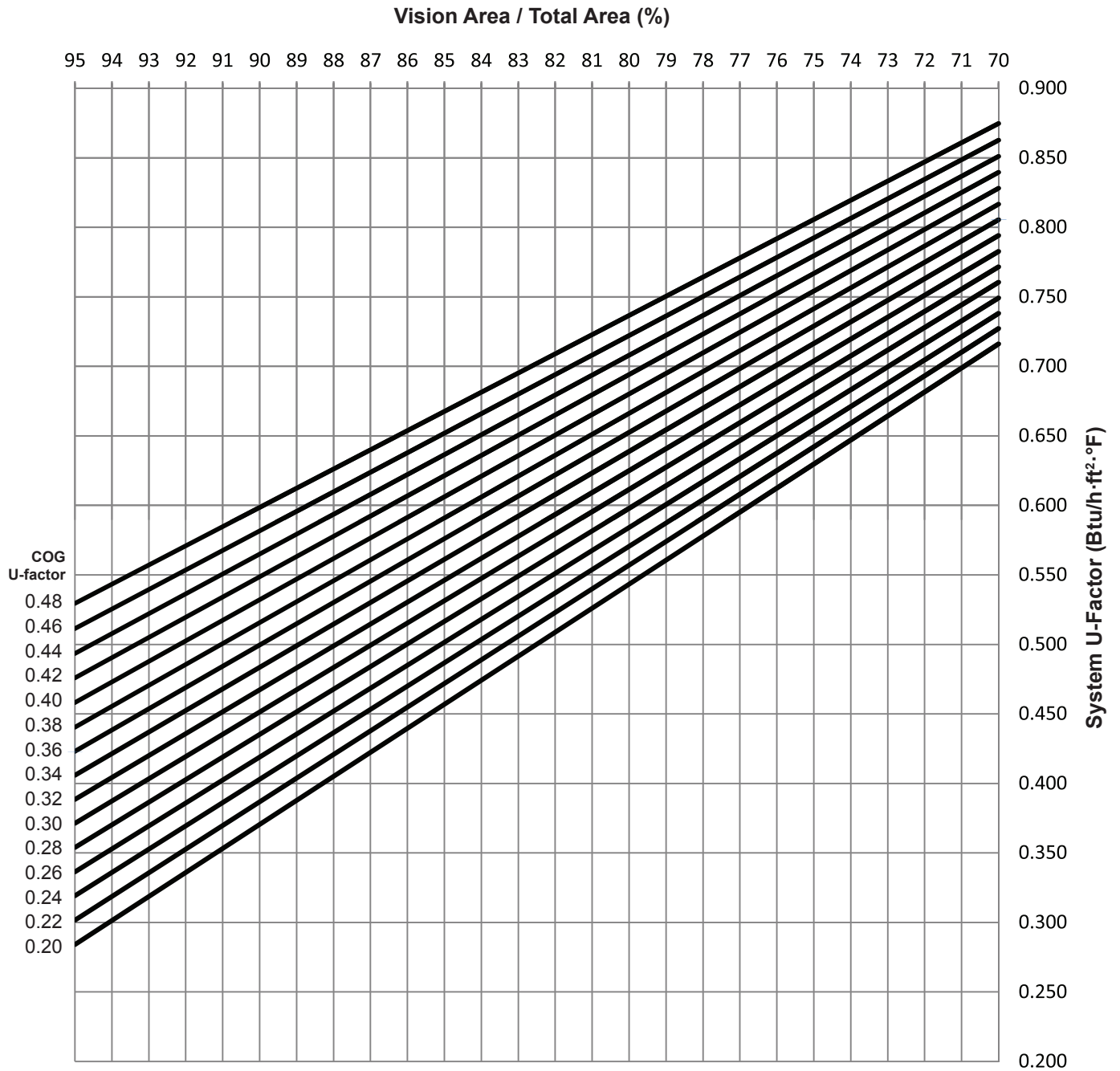
Based on 91% glass and center of glass U-factor of 0.42,  
 System U-factor is equal to 0.49 Btu/hr·ft<sup>2</sup>·°F

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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Note:  
Values in parentheses are metric.  
COG=Center of Glass.  
Charts are generated per AAMA 507.

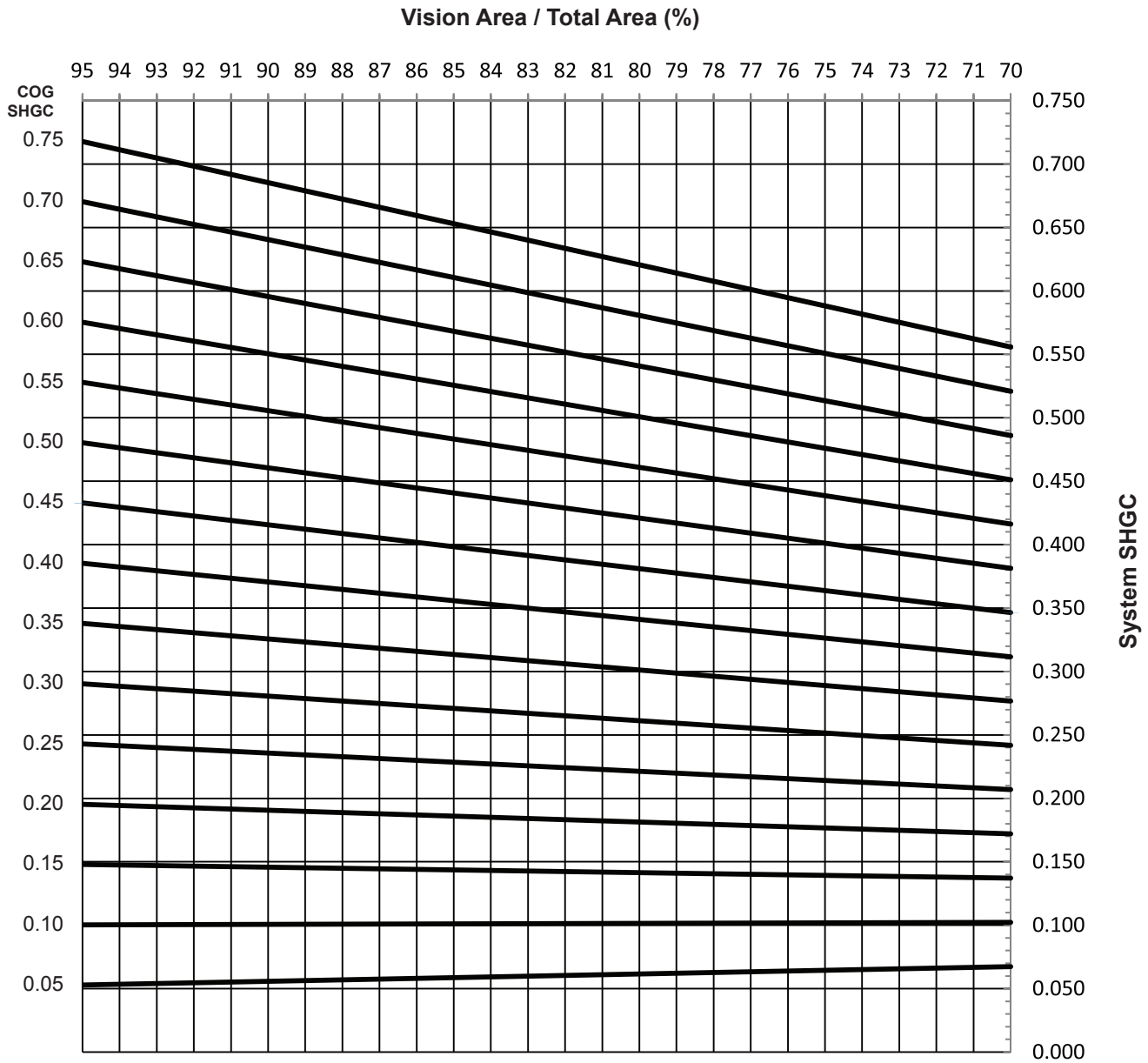
### System U-factor vs Percent of Glass Area



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System Solar Heat Gain Coefficient (SHGC) vs Percent of Vision Area

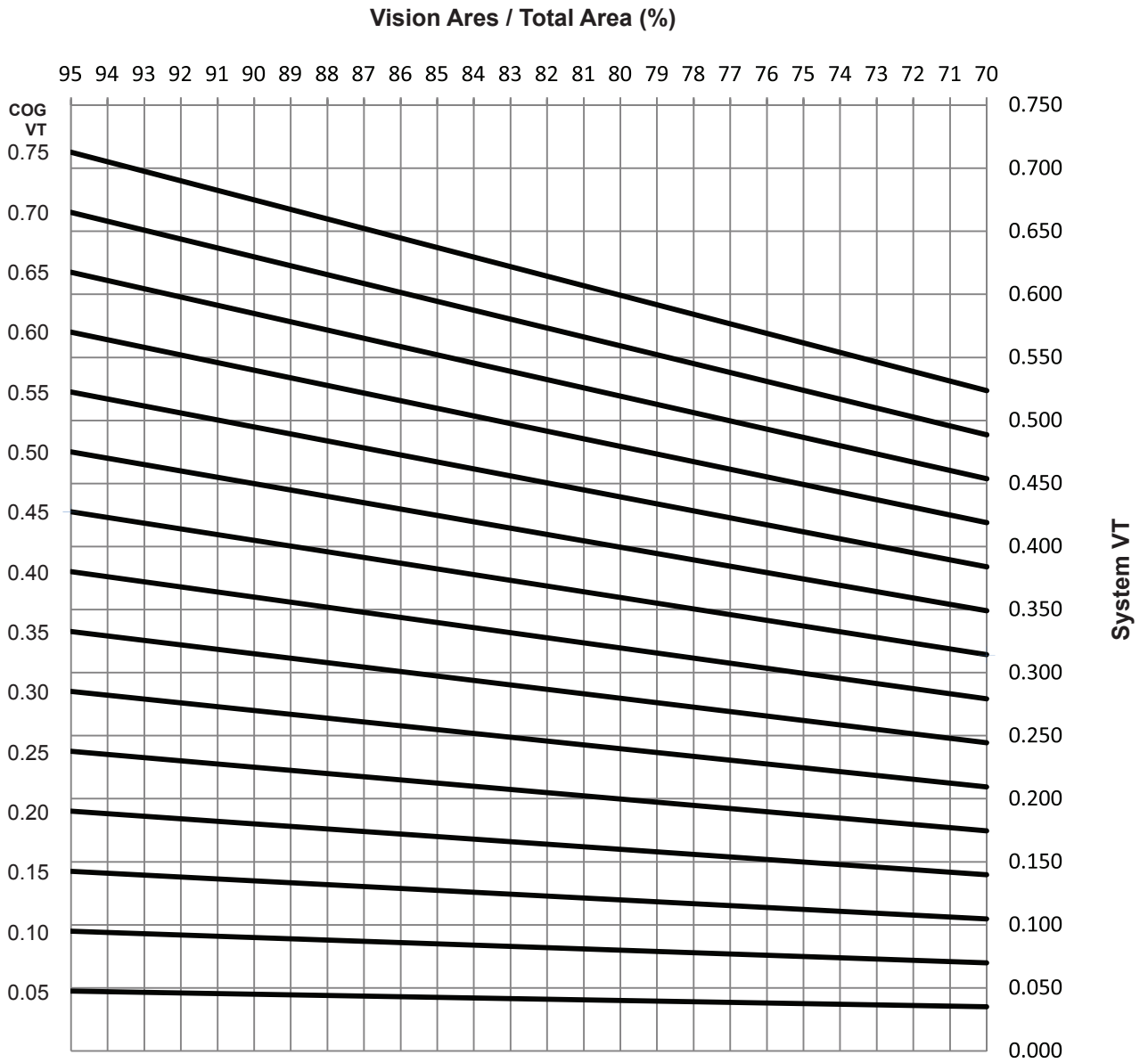


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Charts are generated per AAMA 507.

System Visible Transmittance (VT) vs Percent of Vision Area



Charts are generated per AAMA 507.

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### Thermal Transmittance <sup>1</sup> (BTU/hr • ft<sup>2</sup> • °F)

Glass U-Factor <sup>3</sup>	Overall U-Factor <sup>4</sup>
0.48	0.61
0.46	0.59
0.44	0.58
0.42	0.56
0.40	0.55
0.38	0.53
0.36	0.51
0.34	0.50
0.32	0.48
0.30	0.46
0.28	0.45
0.26	0.43
0.24	0.42
0.22	0.40
0.20	0.38

**NOTE:** For glass values that are not listed, linear interpolation is permitted.

1. U-Factors are determined in accordance with NFRC 100.
2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values and are obtained from your glass supplier.
4. Overall U-Factor, SHGC, and VT Matricies are based on the standard NFRC specimen size of 2000mm wide by 2000mm high (78-3/4" by 78-3/4").

### SHGC Matrix <sup>2</sup>

Glass SHGC <sup>3</sup>	Overall SHGC <sup>4</sup>
0.75	0.68
0.70	0.64
0.65	0.59
0.60	0.55
0.55	0.50
0.50	0.46
0.45	0.41
0.40	0.37
0.35	0.33
0.30	0.28
0.25	0.24
0.20	0.19
0.15	0.15
0.10	0.10
0.05	0.06

### Visible Transmittance <sup>2</sup>

Glass VT <sup>3</sup>	Overall VT <sup>4</sup>
0.75	0.67
0.70	0.63
0.65	0.58
0.60	0.54
0.55	0.49
0.50	0.45
0.45	0.40
0.40	0.36
0.35	0.31
0.30	0.27
0.25	0.22
0.20	0.18
0.15	0.13
0.10	0.09
0.05	0.04

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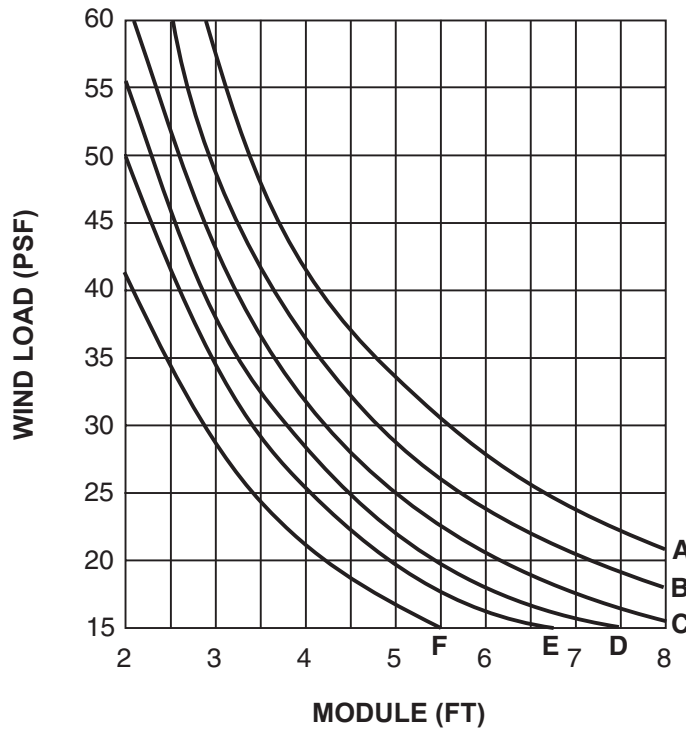
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Clip spacing of each elevation must be checked to meet wind load requirements.

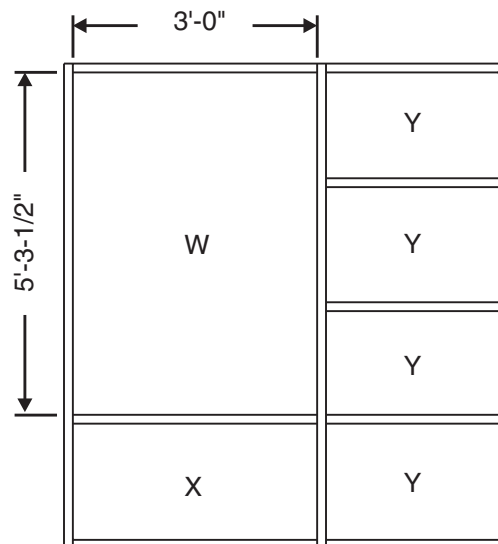
Glazing clips should be located 3" from each end of member and subsequently spaced per formula below:

- STEP 1:** Locate the largest lite of glass on each ELEVATION.
- STEP 2:** Determine the width and height for the largest glass lite.
- STEP 3:** Use the smallest of the two dimensions for the **MODULE (FT)** spacing.
- STEP 4:** Match that Module (ft) spacing with the required wind load on the chart below.

SAMPLE CALCULATION	
Lite "W"	
3'-0" x 5'-3-1/2"	
3'-0"	
12" O.C. for 30 PSF	
10" O.C. for 35 PSF	



- A = 6" O.C.
- B = 7" O.C.
- C = 8" O.C.
- D = 9" O.C.
- E = 10" O.C.
- F = 12" O.C.



SAMPLE ELEVATION

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Hurricane Resistant Product

Blast Mitigation Product

## **Features**

- 350 IR medium stile has 3-1/2" (88.9) vertical stiles, 3-1/2" (88.9) top and 6-1/2" (165.1) bottom rails
- 500 IR wide stile has 5" (127) vertical stile, 5" (127) top and 6-1/2" (165.1) bottom rail.
- Door is 1-3/4" (44.5) deep
- Dual moment welded corner construction
- Single acting
- Square stops for 9/16" (14.3) or 1" (25.4) glazing infill for use with Kuraray SentryGlas® dry glazing
- Offset pivots, butt hinges or continuous geared hinge
- MS locks and 3-point locks or exit device hardware
- Surface mounted or concealed closers
- Architects Classic push/pulls
- Adjustable astragal utilizing pile weathering with polymeric fin at meeting stiles
- Polymeric bulb weatherstripping in door frames
- Permanodic™ anodized finishes in seven choices
- Painted finishes in standard and custom choices

## **Optional Features**

- Paneline™ / Paneline™ EL exit device (Hurricane Resistant applications only)
- Square stops with interior silicone seal for 9/16" (14.3) glazing infill
- Square stops with 3M® VHB interior tape for 9/16" (14.3) or 1" (25.4) glazing infill
- Variety of bottom rails and horizontal cross rails

## **Product Applications**

- 350 IR medium stile and 500 IR wide stile provides extra strength for schools, institutions and other high traffic applications where codes require wind borne debris protection or blast mitigation protection

For specific product applications,  
Consult your Kawneer representative.

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**PICTORIAL VIEW ..... 5**

**DOOR TYPE/SECTION DIMENSIONS ..... 6**

**HURRICANE RESISTANT FRAMING DETAILS**

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**IR 501 ENTRANCE..... 8**

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**TRIFAB™ VG 450/451/ TRIFAB™ 601/1600 WALL ..... 9**

**FRAMING OPTIONS ..... 10**

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**BLAST MITIGATION FRAMING DETAILS**

**IR 501 ENTRANCE..... 17**

**ENTRANCE HARDWARE OFFERINGS ..... 18-20**

LAWS AND BUILDING AND SAFETY CODES GOVERNING THE DESIGN AND USE OF GLAZED ENTRANCE, WINDOW, AND CURTAIN WALL PRODUCTS VARY WIDELY. KAWNEER DOES NOT CONTROL THE SELECTION OF PRODUCT CONFIGURATIONS, OPERATING HARDWARE, OR GLAZING MATERIALS, AND ASSUMES NO RESPONSIBILITY THEREFOR.

Metric (SI) conversion figures are included throughout these details for reference. Numbers in parentheses ( ) are millimeters unless otherwise noted.

The following metric (SI ) units are found in these details:

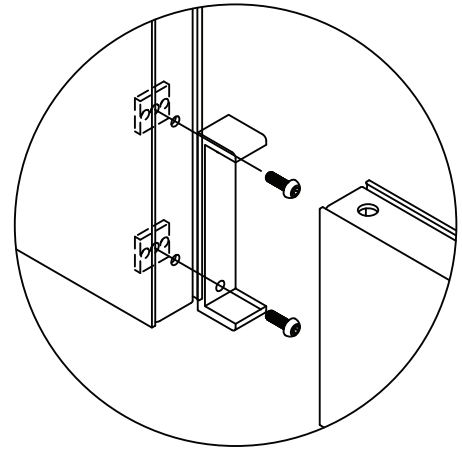
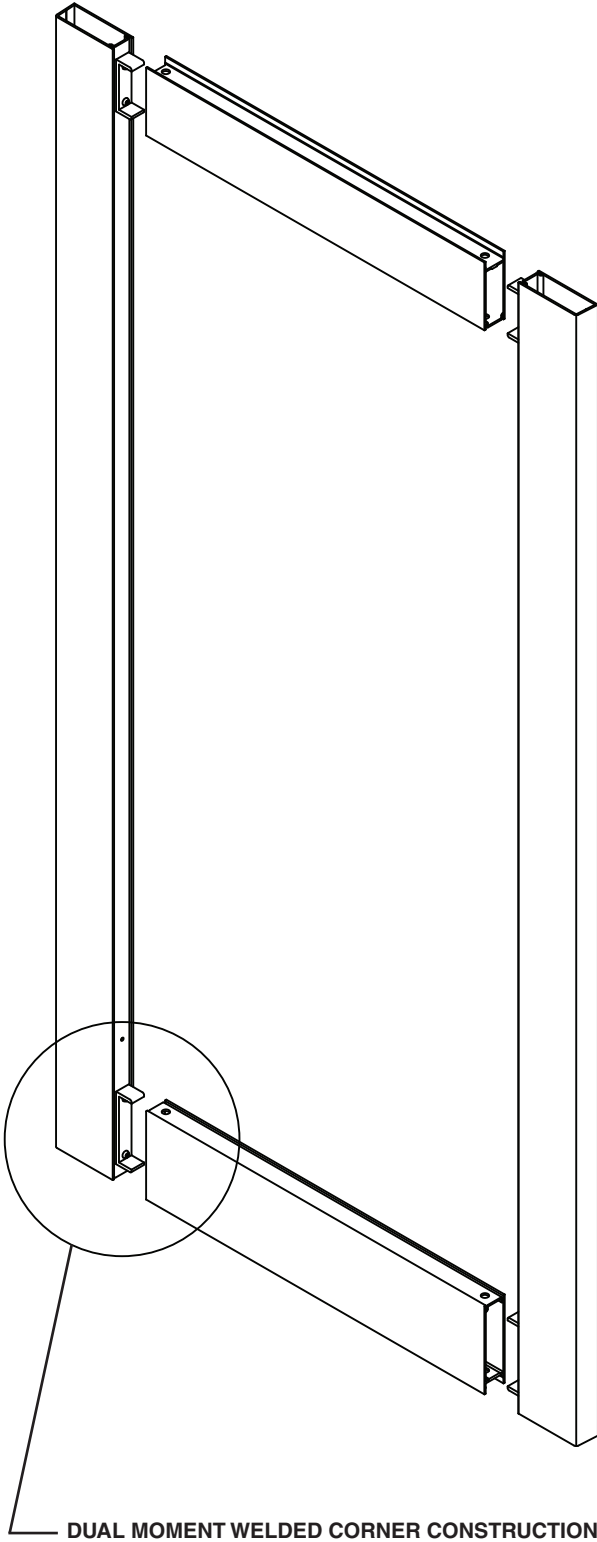
- m – meter
- cm – centimeter
- mm – millimeter
- s – second
- Pa – pascal
- MPa – megapascal

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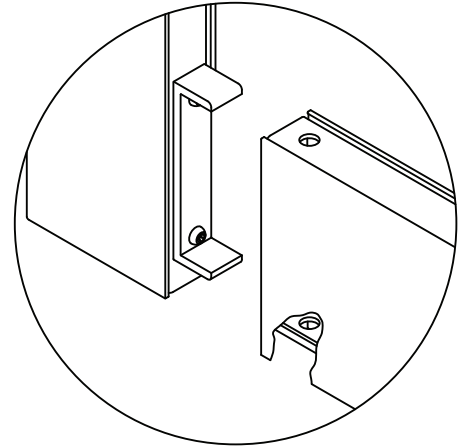
Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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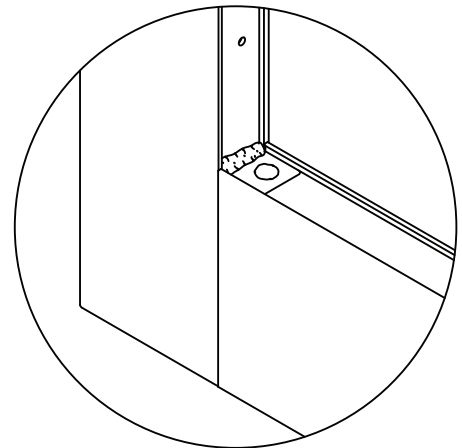
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**#1 MECHANICAL FASTENING** is accomplished by attaching a 5/16" (7.9) thick extruded aluminum channel clip to the vertical stile with 1/4"-20 heat strengthened bolts and 3/16" thick steel nut plates for a high strength welding base for attachment horizontal member.



**#2 SIGMA\* DEEP PENETRATION PLUG WELDS** are made top and bottom after the horizontal is properly positioned over the channel clip to help provide the strongest door corner joint currently available.



**#3 SIGMA\* FILLET WELDS** along both top and bottom webs of the rail extrusion complete the welded corner construction.

\* An arc welding process known as Shielded Inert Gas Metal Arc (SIGMA) or also known as Metal Inert Gas (MIG).

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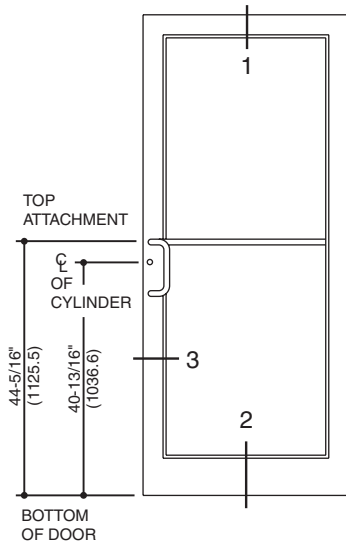
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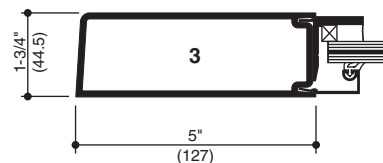
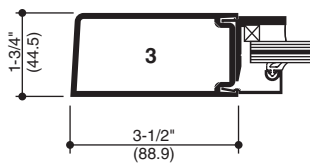
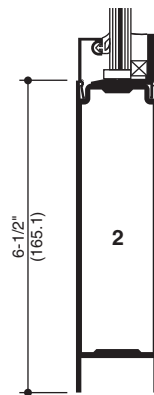
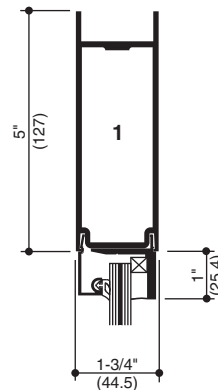
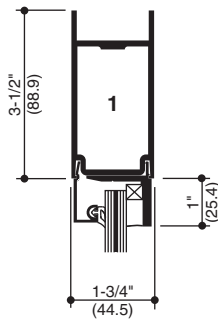
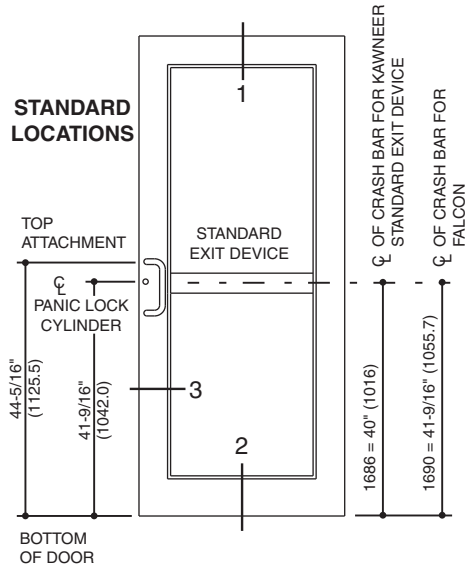
 Hurricane Resistant Product

SCALE 3" = 1' 0"

350 IR MEDIUM STILE



500 IR WIDE STILE



SINGLE ACTING

SINGLE ACTING

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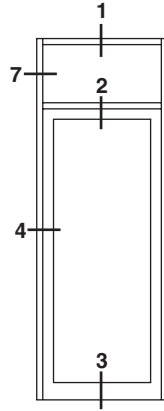
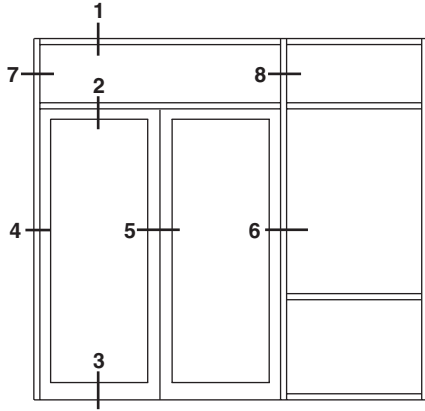
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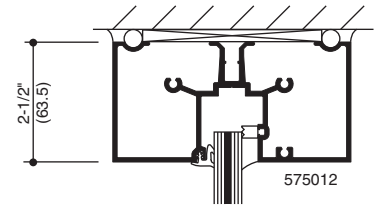
### SCALE 3" = 1'-0"

#### NOTE:

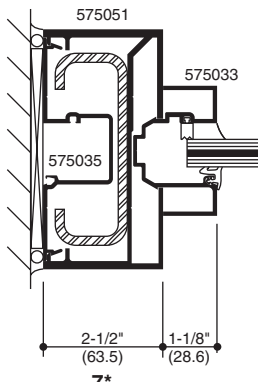
1. 350 IR MEDIUM STILE DOORS ARE DETAILED. 500 IR WIDE STILE DOORS MAY ALSO BE USED.
2. IR 500 FRAMING WITH 9/16" (14.3) GLAZING IS DETAILED WITH THESE DOORS FOR REFERENCE. OTHER GLAZING INFILLS MAY BE USED WITH THE IR 500 SERIES FRAMING. SEE CATALOG SECTION IR 500/501 FRAMING FOR APPROPRIATE DETAILS.



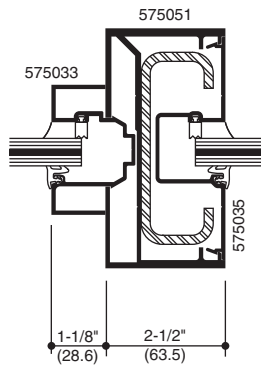
ELEVATION IS NUMBER KEYED TO DETAILS



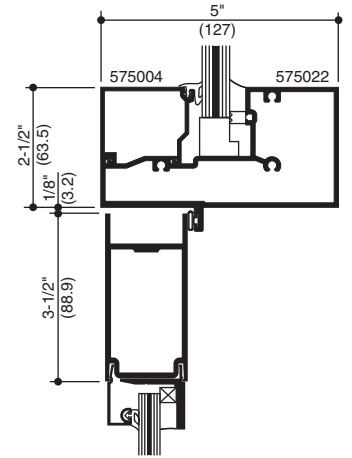
**1**  
TRANSOM HEAD



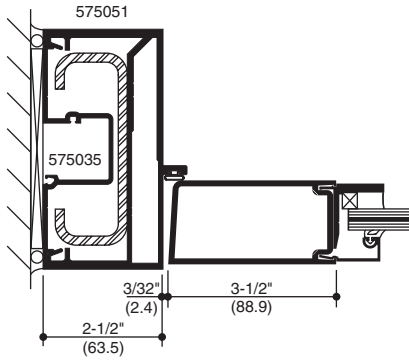
**7\***  
DOOR JAMB  
AT TRANSOM



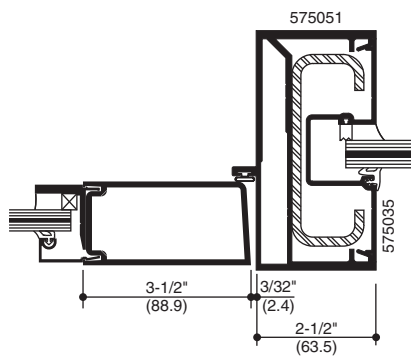
**8\***  
DOOR JAMB  
AT TRANSOM



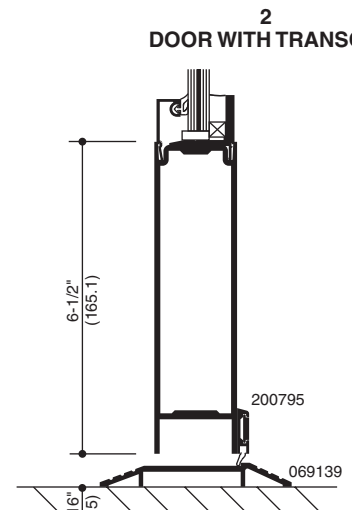
**2**  
DOOR WITH TRANSOM



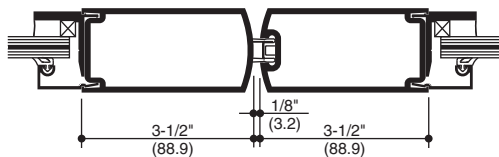
**4**  
DOOR JAMB



**6**  
DOOR JAMB



**3**  
THRESHOLD



**5**  
PAIR OF DOORS

\* STEEL REINFORCING AS REQUIRED.

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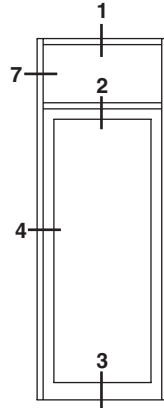
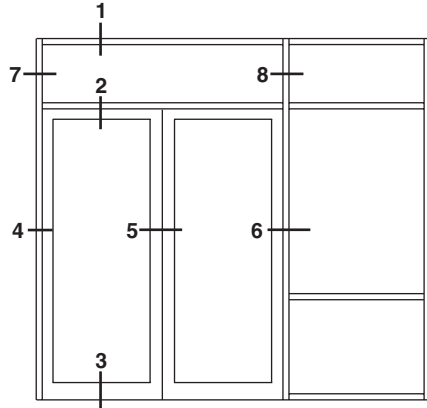
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 Hurricane Resistant Product

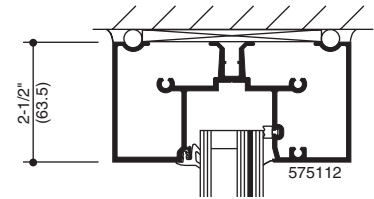
SCALE 3" = 1'-0"

**NOTE:**

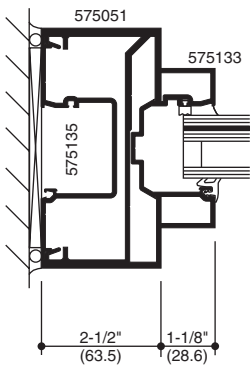
- 350 IR MEDIUM STILE DOORS ARE DETAILED. 500 IR WIDE STILE DOORS MAY ALSO BE USED.
- IR 501 FRAMING WITH 1-5/16" (33.3) GLAZING IS DETAILED WITH THESE DOORS FOR REFERENCE. OTHER GLAZING INFILLS MAY BE USED WITH THE IR 501 SERIES FRAMING. SEE CATALOG SECTION IR 500/501 FRAMING FOR APPROPRIATE DETAILS.



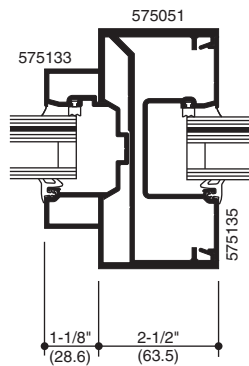
ELEVATION IS NUMBER KEYED TO DETAILS



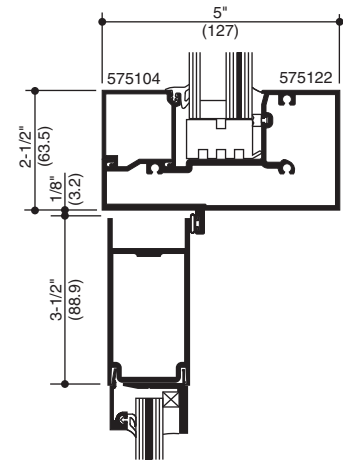
**1**  
TRANSOM HEAD



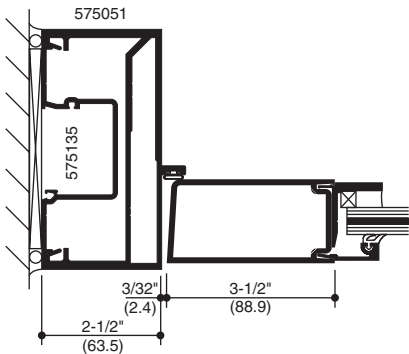
**7**  
DOOR JAMB  
AT TRANSOM



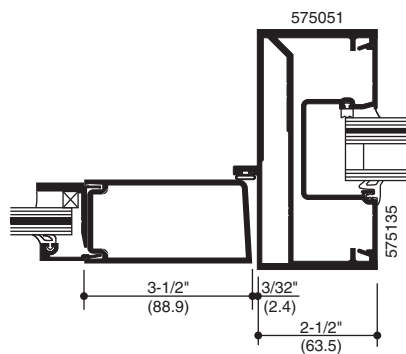
**8**  
DOOR JAMB  
AT TRANSOM



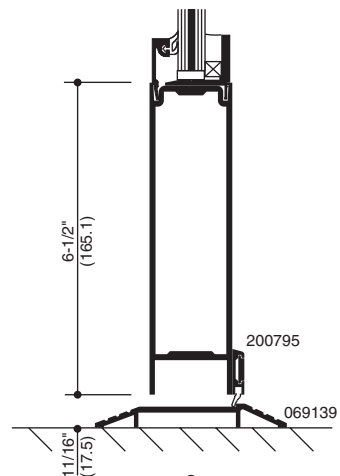
**2**  
DOOR WITH  
TRANSOM



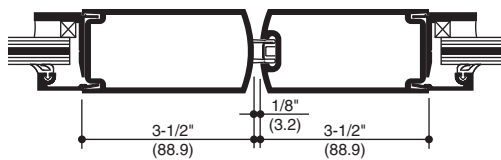
**4**  
DOOR JAMB



**6**  
DOOR JAMB



**3**  
THRESHOLD



**5**  
PAIR OF DOORS

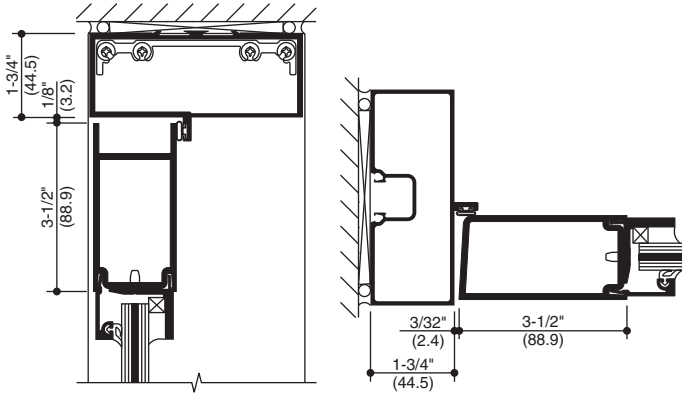
Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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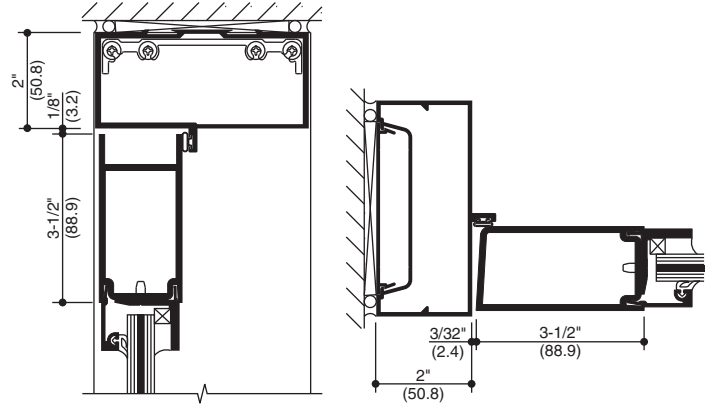
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SCALE 3" = 1'-0"

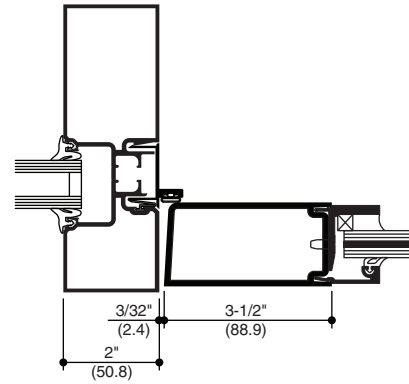
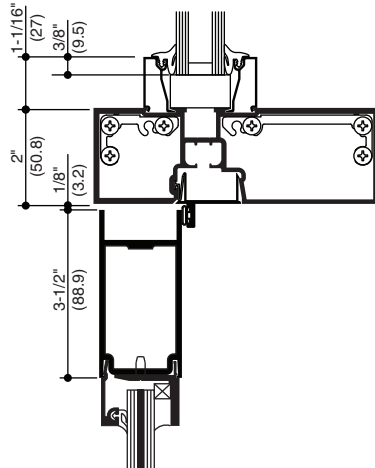
TRIFAB™ VG 450 FRAMING



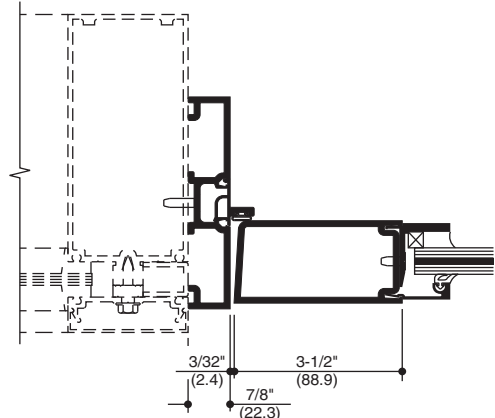
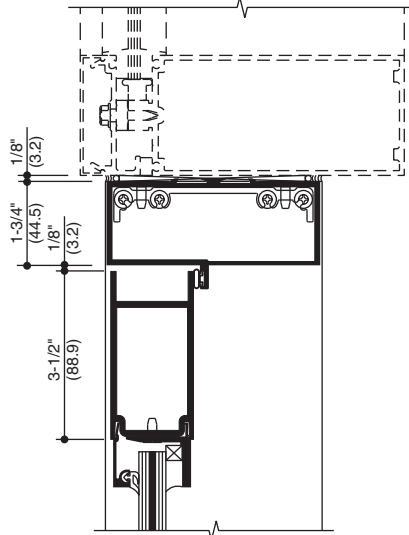
TRIFAB™ VG 451 FRAMING



TRIFAB™ 601 FRAMING



1600 WALL SUB FRAMING



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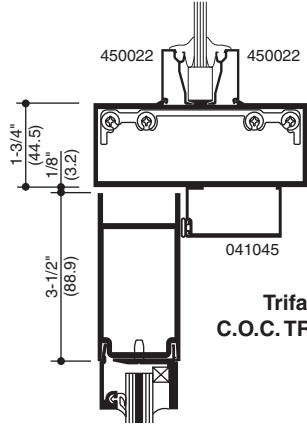
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FRAMING OPTIONS

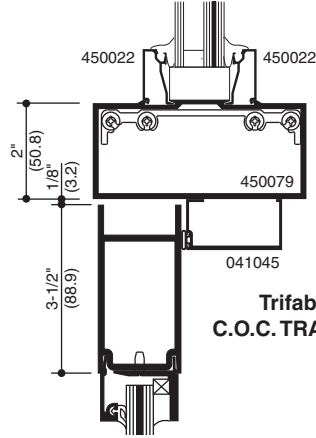
EC 97911-083

 Hurricane Resistant Product

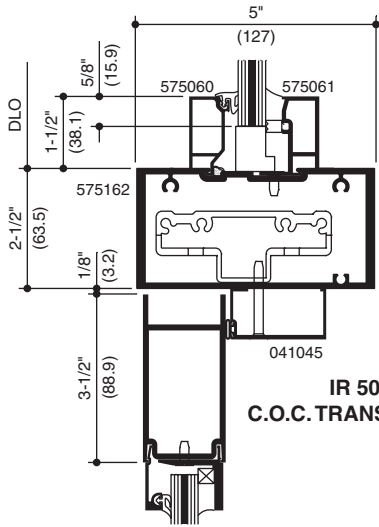
SCALE 3" = 1' - 0"



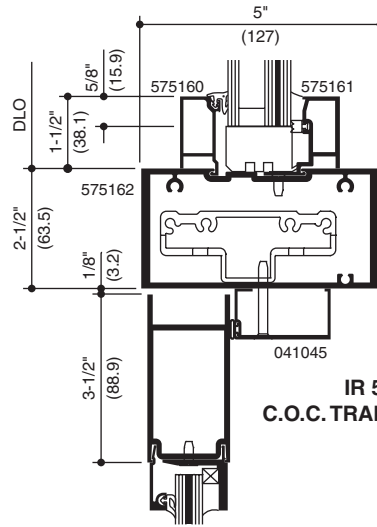
**Trifab VG 450  
C.O.C. TRANSOM BAR**



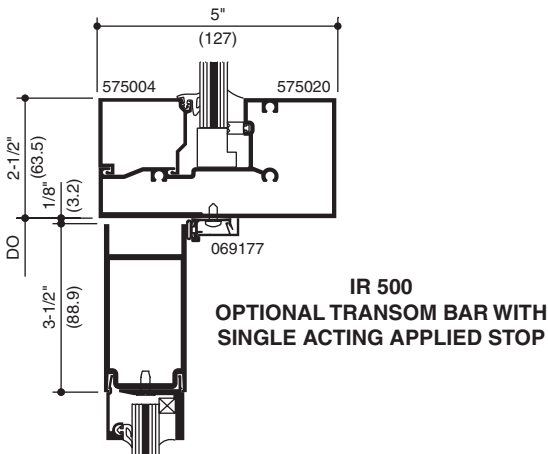
**Trifab VG 451  
C.O.C. TRANSOM BAR**



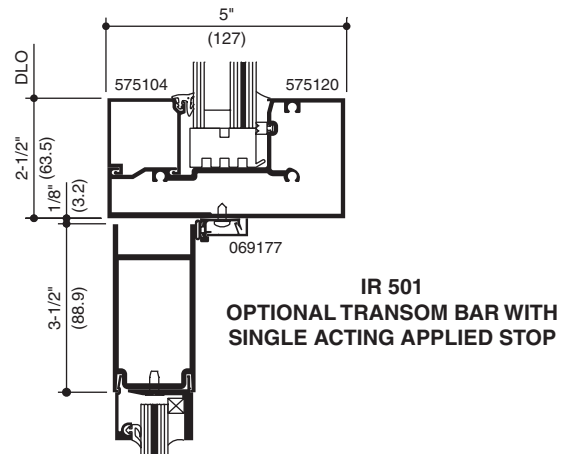
**IR 500  
C.O.C. TRANSOM BAR**



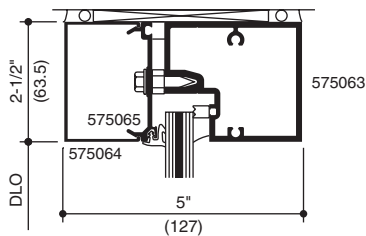
**IR 501  
C.O.C. TRANSOM BAR**



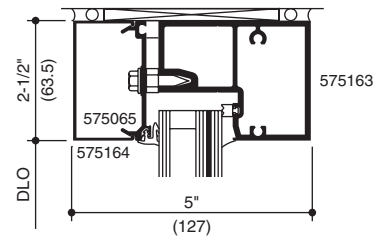
**IR 500  
OPTIONAL TRANSOM BAR WITH  
SINGLE ACTING APPLIED STOP**



**IR 501  
OPTIONAL TRANSOM BAR WITH  
SINGLE ACTING APPLIED STOP**



**IR 500 RADIUS HEAD**



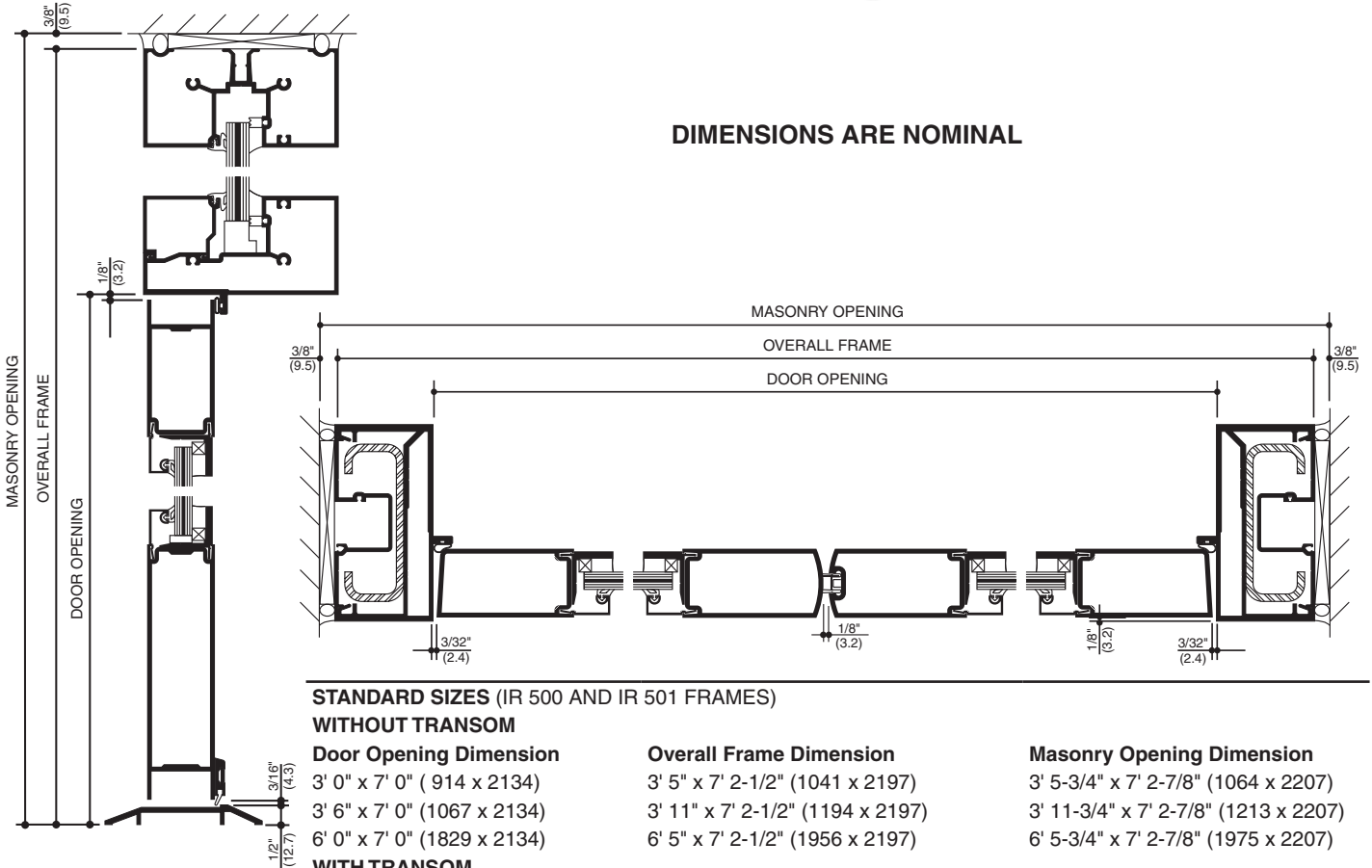
**IR 501 RADIUS HEAD**

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SCALE 3" = 1' 0"



DIMENSIONS ARE NOMINAL

**STANDARD SIZES (IR 500 AND IR 501 FRAMES)**

**WITHOUT TRANSOM**

**Door Opening Dimension**

3' 0" x 7' 0" ( 914 x 2134)  
 3' 6" x 7' 0" (1067 x 2134)  
 6' 0" x 7' 0" (1829 x 2134)

**Overall Frame Dimension**

3' 5" x 7' 2-1/2" (1041 x 2197)  
 3' 11" x 7' 2-1/2" (1194 x 2197)  
 6' 5" x 7' 2-1/2" (1956 x 2197)

**Masonry Opening Dimension**

3' 5-3/4" x 7' 2-7/8" (1064 x 2207)  
 3' 11-3/4" x 7' 2-7/8" (1213 x 2207)  
 6' 5-3/4" x 7' 2-7/8" (1975 x 2207)

**WITH TRANSOM**

**Door Opening Dimension**

Unchanged from above.

**Masonry Opening Dimension**

Add 3' 2-1/2" (978) to above heights.

**Masonry Opening Dimension**

Add 3' 2-1/2" (978) to above heights.

**STANDARD SIZES (TRIFAB™ VG 450 CENTER FRAMES)**

**WITHOUT TRANSOM**

**Door Opening Dimension**

3' 0" x 7' 0" ( 914 x 2134)  
 3' 6" x 7' 0" (1067 x 2134)  
 6' 0" x 7' 0" (1829 x 2134)

**Overall Frame Dimension**

3' 3-1/2" x 7' 1-3/4" (1003 x 2178)  
 3' 9-1/2" x 7' 1-3/4" (1156 x 2178)  
 6' 3-1/2" x 7' 1-3/4" (1918 x 2178)

**Masonry Opening Dimension**

3' 4-1/4" x 7' 2-1/8" (1022 x 2188)  
 3' 10-1/4" x 7' 2-1/8" (1175 x 2188)  
 6' 4-1/4" x 7' 2-1/8" (1937 x 2188)

**WITH TRANSOM**

**Door Opening Dimension**

Unchanged from above.

**Masonry Opening Dimension**

Add 3' 1-3/4" (959) to above heights.

**Masonry Opening Dimension**

Add 3' 1-3/4" (959) to above heights.

**STANDARD SIZES (TRIFAB™ VG 451, AND TRIFAB™ 601 CENTER FRAMES)**

**WITHOUT TRANSOM**

**Door Opening Dimension**

3' 0" x 7' 0" ( 914 x 2134)  
 3' 6" x 7' 0" (1067 x 2134)  
 6' 0" x 7' 0" (1829 x 2134)

**Overall Frame Dimension**

3' 4" x 7' 2" (1016 x 2184)  
 3' 10" x 7' 2" (1168 x 2184)  
 6' 4" x 7' 2" (1930 x 2184)

**Masonry Opening Dimension**

3' 4-3/4" x 7' 2-3/8" (1035 x 2194)  
 3' 10-3/4" x 7' 2-3/8" (1187 x 2194)  
 6' 4-3/4" x 7' 2-3/8" (1949 x 2194)

**WITH TRANSOM**

**Door Opening Dimension**

Unchanged from above.

**Masonry Opening Dimension**

Add 3' 2" (965) to above heights.

**Masonry Opening Dimension**

Add 3' 2" (965) to above heights.

**STANDARD SIZES (1600 WALL SUB FRAMES)**

**WITHOUT TRANSOM**

**Door Opening Dimension**

3' 0" x 7' 0" ( 914 x 2134)  
 3' 6" x 7' 0" (1067 x 2134)  
 6' 0" x 7' 0" (1829 x 2134)

**Overall Frame Dimension**

3' 6-3/4" x 7' 4-3/8" (1086 x 2245)  
 4' 3/4" x 7' 4-3/8" (1238 x 2245)  
 6' 6-3/4" x 7' 4-3/8" (2000 x 2245)

**Masonry Opening Dimension**

3' 7-3/4" x 7' 4-7/8" (1111 x 2257)  
 4' 1-3/4" x 7' 4-7/8" (1264 x 2257)  
 6' 7-3/4" x 7' 4-7/8" (2026 x 2257)

**WITH TRANSOM**

**Door Opening Dimension**

Unchanged from above.

**Masonry Opening Dimension**

Add 3' 2-1/2" (978) to above heights.

**Masonry Opening Dimension**

Add 3' 2-1/2" (978) to above heights.

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LOCKING OPTIONS	MAXIMUM DOOR SIZE	MAXIMUM DESIGN PRESSURE	HINGING OPTIONS	GLAZING STOP OPTIONS	GLASS THICKNESS
4 MS 1850 3-Point Lock (Active leaf)  Flushbolts (Inactive leaf)	Single 4'-0" x 8'-0" (1219.2 x 2438.4) Pair 8'-0" x 8'-0" (2438.4 x 2438.4)	± 70 PSF	Offset Pivots Butt Hinges Continuous Hinge	1, 2, 3	9/16" (14.3)
	Single 3'-6" x 7'-0" (1066.8 x 2133.6)	± 90 PSF		2, 3	1" (25.4)
MS 1850 3-Point Lock (Active leaf) Adams Rite 2180 2 Point Dead Lock (Inactive leaf)	Single 4'-0" x 8'-0" (1219.2 x 2438.4) Pair 8'-0" x 8'-0" (2438.4 x 2438.4)	± 90 PSF	Offset Pivots Butt Hinges Continuous Hinge	1, 2, 3	9/16" (14.3)
				2, 3	1" (25.4)
4 Kawneer 1686 Concealed Rod Exit Device (EL option)	Single 4'-0" x 8'-0" (1219.2 x 2438.4) Pair 8'-0" x 8'-0" (2438.4 x 2438.4)	± 90 PSF	Offset Pivots Butt Hinges Continuous Hinge	1, 2, 3	9/16" (14.3)
				2, 3	1" (25.4)
Paneline™ Concealed Rod Exit Device (EL option)	Single 4'-0" x 8'-0" (1219.2 x 2438.4) Pair 8'-0" x 8'-0" (2438.4 x 2438.4)	± 70 PSF	Offset Pivots Butt Hinges Continuous Hinge	1, 2, 3	9/16" (14.3)
				2, 3	1" (25.4)
Adams Rite G86 Concealed Rod Exit Device	Single 4'-0" x 8'-0" (1219.2 x 2438.4) Pair 8'-0" x 8'-0" (2438.4 x 2438.4)	± 70 PSF	Offset Pivots Butt Hinges Continuous Hinge	1, 2, 3	9/16" (14.3)
				2, 3	1" (25.4)
Calibre 9100 Concealed Rod Exit Device	Single 4'-0" x 8'-0" (1219.2 x 2438.4) Pair 8'-0" x 8'-0" (2438.4 x 2438.4)	± 70 PSF	Offset Pivots Butt Hinges Continuous Hinge	1, 2, 3	9/16" (14.3)
				2, 3	1" (25.4)
4 Falcon HH1690 Concealed Rod Exit Device (EL option)	Single 4'-0" x 8'-0" (1219.2 x 2438.4) Pair 8'-0" x 8'-0" (2438.4 x 2438.4)	± 65 PSF	Offset Pivots Butt Hinges Continuous Hinge	1, 2, 3	9/16" (14.3)
				2, 3	1" (25.4)
Jackson 2086 Concealed Rod Exit Device	Single 4'-0" x 8'-0" (1219.2 x 2438.4) Pair 8'-0" x 8'-0" (2438.4 x 2438.4)	± 90 PSF	Offset Pivots Butt Hinges Continuous Hinge	1, 2, 3	9/16" (14.3)
				2, 3	1" (25.4)
Sargent AD8400 Concealed Rod Exit Device	Single 4'-0" x 8'-0" (1219.2 x 2438.4) Pair 8'-0" x 8'-0" (2438.4 x 2438.4)	± 65 PSF	Offset Pivots Butt Hinges Continuous Hinge	1, 2, 3	9/16" (14.3)
				2, 3	1" (25.4)
4 Von Duprin HH9947 Concealed Rod Exit Device	Single 4'-0" x 8'-0" (1219.2 x 2438.4) Pair 8'-0" x 8'-0" (2438.4 x 2438.4)	± 65 PSF	Offset Pivots Butt Hinges Continuous Hinge	1, 2, 3	9/16" (14.3)
				2, 3	1" (25.4)
Von Duprin 98/99 XP Concealed Rod Exit Device	Single 3'-6" x 7'-6" (1066.8 x 2286) Pair 7'-0" x 7'-6" (2133.6 x 2286)	± 50 PSF (Zone 3 only)	Offset Pivots Butt Hinges Continuous Hinge	1, 2, 3	9/16" (14.3)
				2, 3	1" (25.4)
Corbin Russwin ED5200SA Rim Device	Single 4'-0" x 8'-0" (1219.2 x 2438.4) Pair 8'-0" x 8'-0" (2438.4 x 2438.4)	± 50 PSF	Offset Pivots Butt Hinges Continuous Hinge	1, 2, 3	9/16" (14.3)
				2, 3	1" (25.4)

#### Glazing Stop Options:

- 1 - Structural silicone with 0.090 Kuraray or Eastman PVB inter layer or 0.090 Kuraray Sentry Glas® inter layer.
- 2 - 3M VHB structural tape with 0.090 Kuraray or Eastman PVB inter layer or 0.090 Kuraray Sentry Glas® inter layer.
- 3 - Dry glazing gasket with 0.090 Kuraray Sentry Glas® inter layer, only for 9/16" (14.3) infill with design pressure < or = 90 PSF.
- 4 - Available in 6'-0" x 9'-0" pairs.

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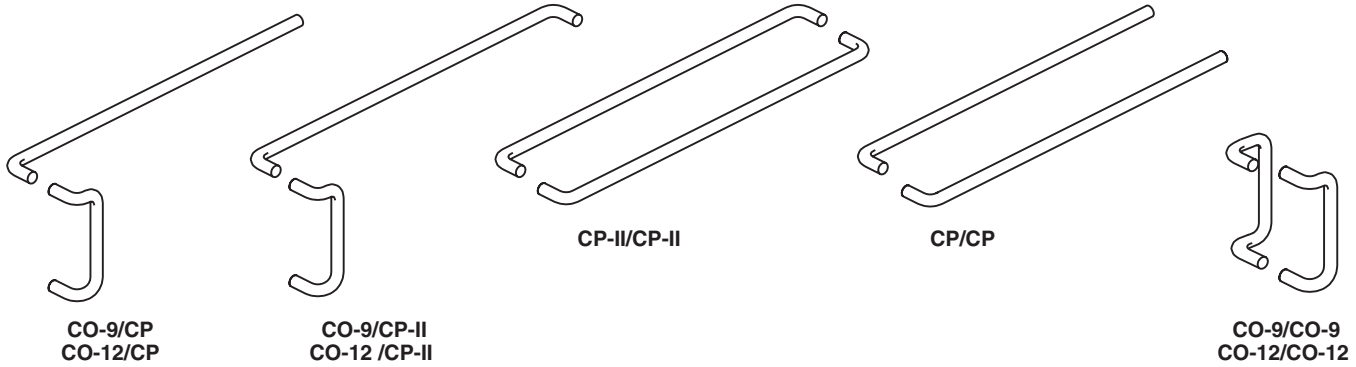
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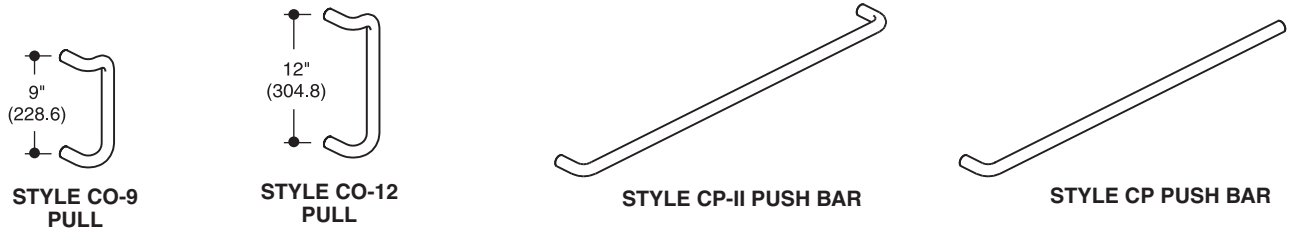
REFER TO **HARDWARE SECTION** FOR COMPLETE HARDWARE INFORMATION.

**ARCHITECTS CLASSIC (PUSH PULL SETS)**

SINGLE ACTING DOORS USE A PULL HANDLE AND PUSH BAR AS STANDARD

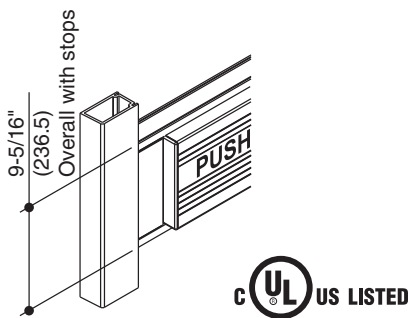


**ARCHITECTS CLASSIC (COMPONENTS)**

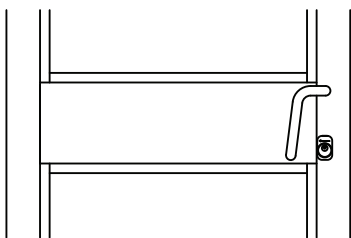


**EXIT DEVICES**

**KAWNEER PANELINE™ / PANELINE™ EL**



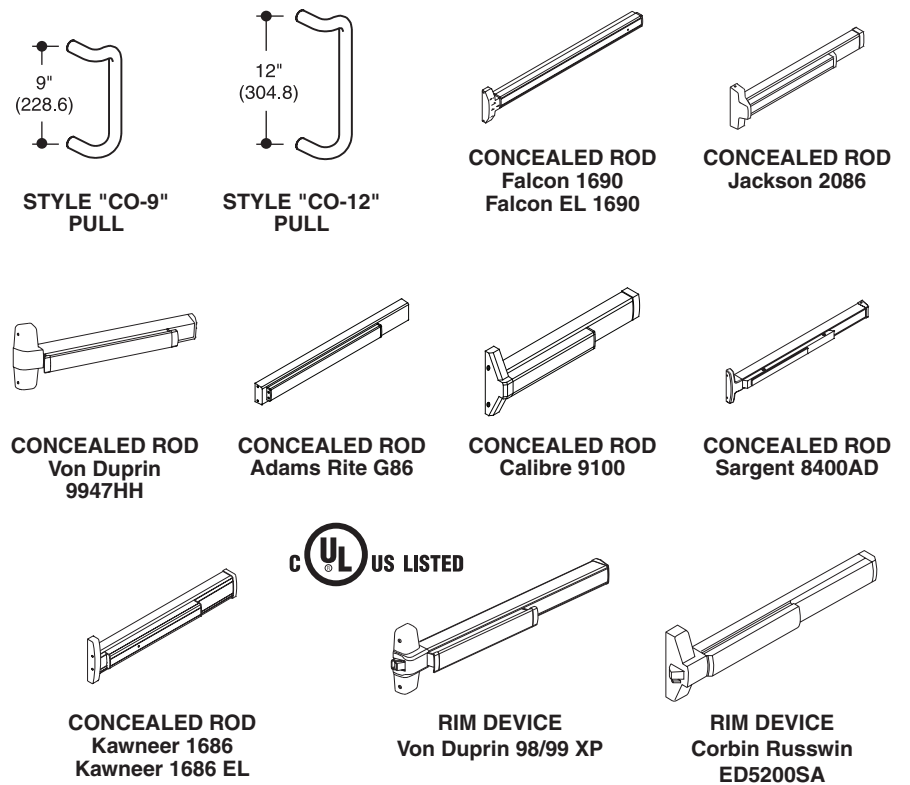
**STYLE "CPN" PULL ON EXTERIOR OF DOOR**



EXTERIOR VIEW OF 350 IR DOOR (500 IR SIMILAR)  
"CPN" PULL AND OPTIONAL CYLINDER GUARD SHOWN.

SEE PAGE 14 AND 15 FOR COMPLETE  
PANELINE™ INFORMATION

**EXIT DEVICES AND PULLS**



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 Hurricane Resistant Product

SCALE 3" = 1' - 0"

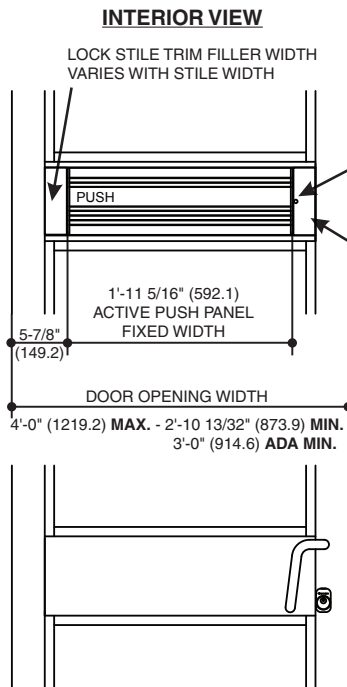
## PANELINE™ EXIT DEVICE

The Paneline™ concealed rod exit device will accommodate variations in door width as shown in the following illustrations.

The Optional Paneline™ EL device is designed for electrified access control and is compatible with most key pad and card reader systems.

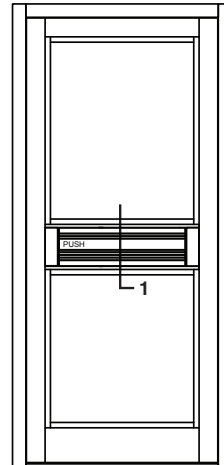
See **Hardware Section** for complete description of Paneline hardware, including finish of units.

Paneline™ uses mortise cylinder in lieu of the normal rim-type.

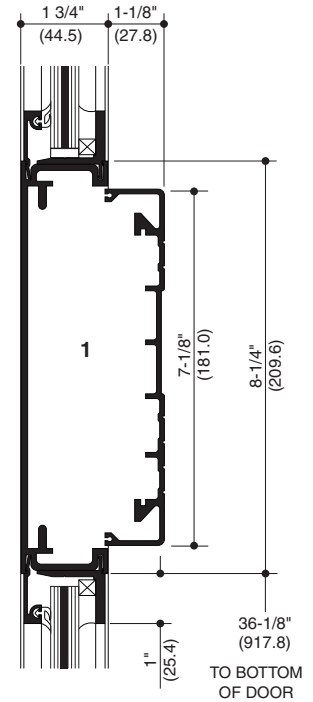


**EXTERIOR VIEW**

EXTERIOR VIEW OF 350 IR DOOR (500 IR SIMILAR) WITH "CPN" PULL AND OPTIONAL CYLINDER GUARD SHOWN

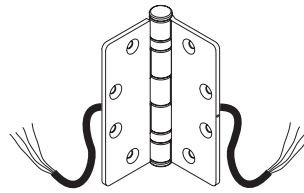


**INTERIOR ELEVATION**

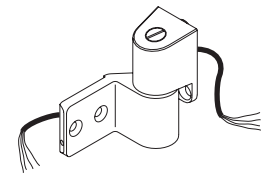


**CROSS RAIL WITH EXIT DEVICE AND CPN PULL HANDLE**

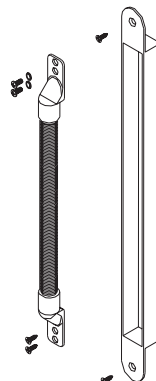
## PANELINE™ EL COMPONENTS



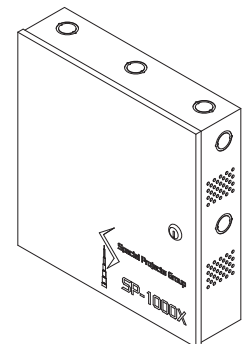
**POWER TRANSFER INTERMEDIATE BUTT HINGE**



**POWER TRANSFER INTERMEDIATE OFFSET PIVOT**



**ELECTRIC POWER TRANSFER (EPT)**



**SP-1000X POWER SUPPLY**

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**PANELINE™ EXIT DEVICE**

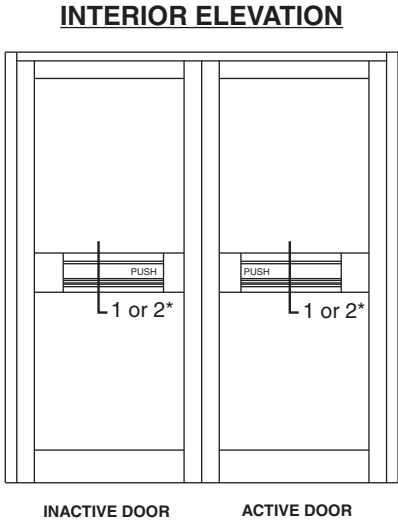
See **Hardware Section** for complete description of Paneline™ hardware, including finish of units.

Paneline™ uses mortise cylinder in lieu of the normal rim-type.

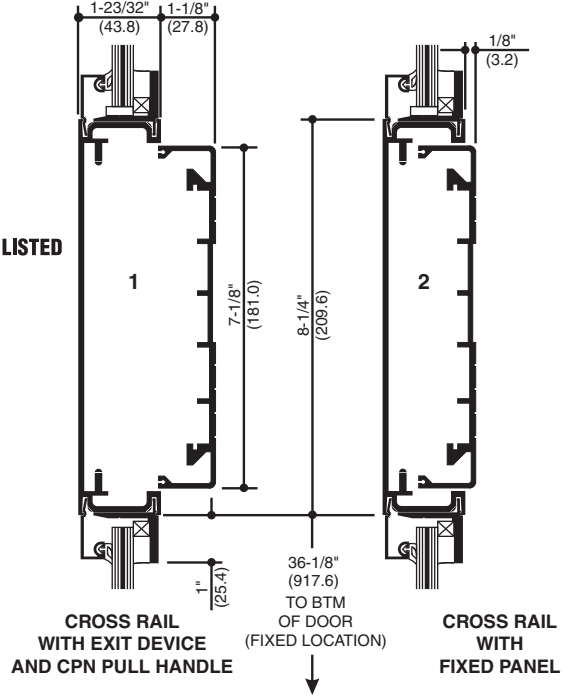
Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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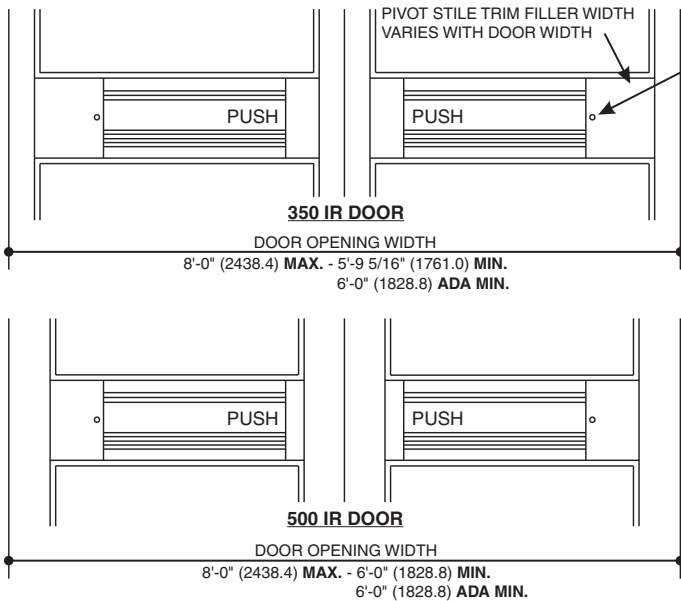
© Kawneer Company, Inc., 2014



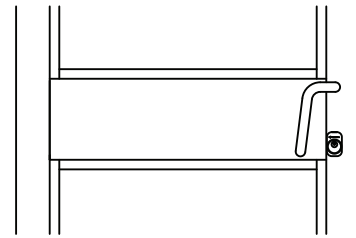
\* ALTERNATE CROSSRAIL FOR VESTIBULE DOORS (Without Exit Device or Lock)



**INTERIOR VIEW**



STYLE "CPN" PULL ON EXTERIOR OF DOOR



**EXTERIOR VIEW**

EXTERIOR VIEW OF 350 IR DOOR (500 IR SIMILAR) WITH "CPN" PULL AND STANDARD CYLINDER GUARD SHOWN

CROSS RAIL OPTIONS

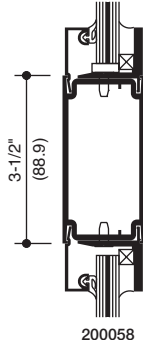
EC 97911-083

 Hurricane Resistant Product

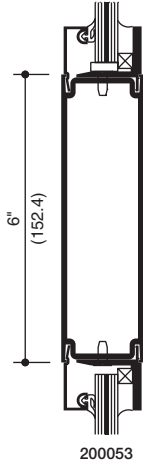
SCALE 3" = 1' 0"

HORIZONTAL CROSS RAILS

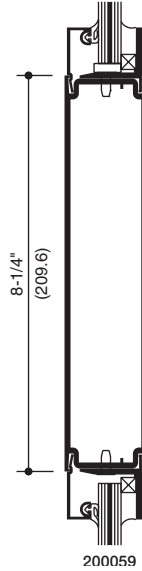
3-1/2" CROSS RAIL



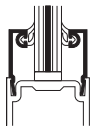
6" CROSS RAIL



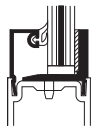
8-1/4" CROSS RAIL



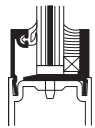
INFILL OPTIONS



9/16" IMPACT GLASS STOP  
(Dry Glaze)  
(STANDARD)



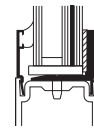
9/16" IMPACT GLASS STOP  
(3M Tape Glaze)



9/16" IMPACT GLASS STOP  
(Structural Silicone Glaze)



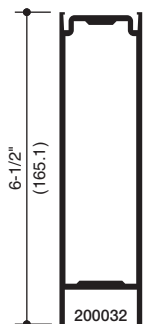
1" IMPACT GLASS STOP  
(Dry Glaze)



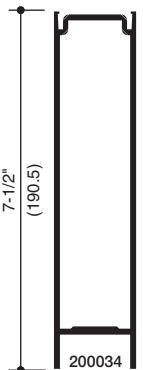
1" IMPACT GLASS STOP  
(3M Tape Glaze)

BOTTOM RAILS

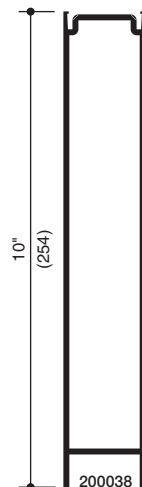
Rail height shown may be used on 350 IR and 500 IR doors.



6-1/2" BOTTOM RAIL  
(STANDARD)



7-1/2" BOTTOM RAIL



10" BOTTOM RAIL

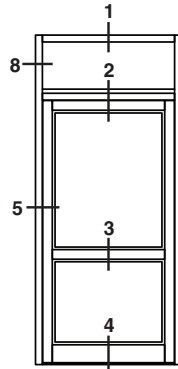
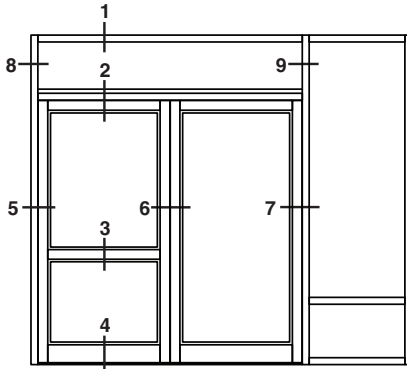
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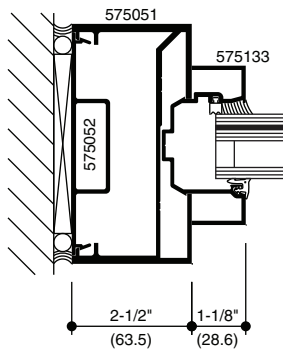
### SCALE 3" = 1'-0"

#### NOTE:

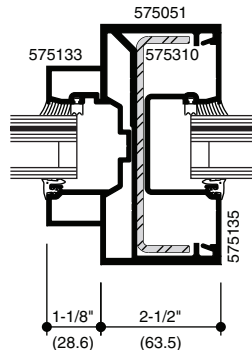
- 350 IR MEDIUM STILE DOORS ARE DETAILED. 500 IR WIDE STILE DOORS MAY ALSO BE USED.
- IR 501 FRAMING WITH 1-5/16" (33.3) GLAZING IS DETAILED WITH THESE DOORS.



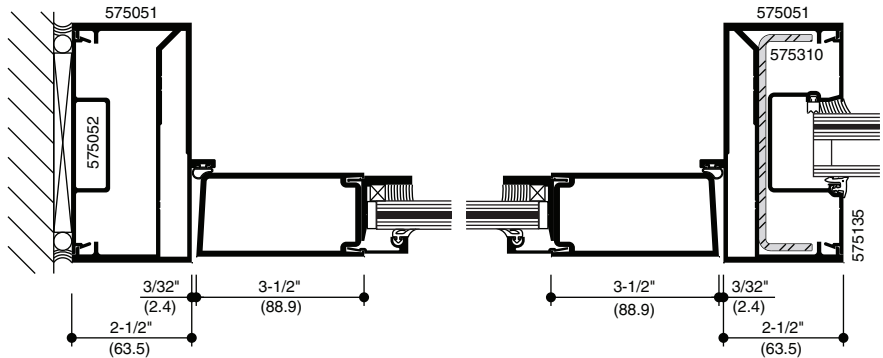
ELEVATION IS NUMBER KEYED TO DETAILS



**8**  
DOOR JAMB  
AT TRANSOM

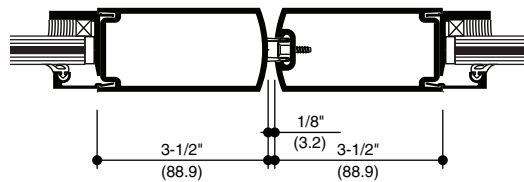


**9**  
DOOR JAMB  
AT TRANSOM

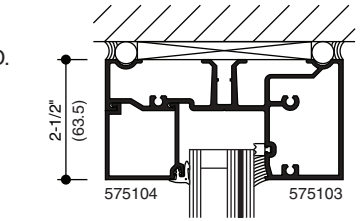


**5**  
DOOR JAMB

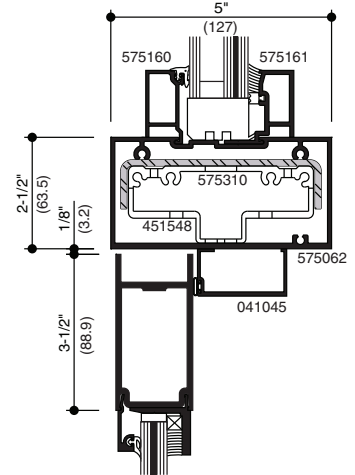
**7**  
DOOR JAMB



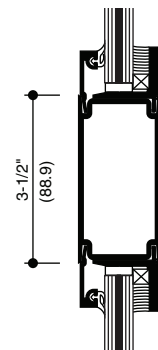
**6**  
PAIR OF DOORS



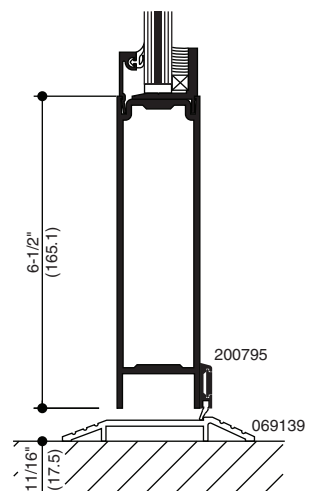
**1**  
TRANSOM HEAD



**2**  
DOOR WITH TRANSOM



**3**  
CROSS RAIL



**4**  
THRESHOLD

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**Blast Mitigation Product**

LOCKING OPTIONS	MAXIMUM DOOR SIZE	MAXIMUM BLAST LOADING	HINGING OPTIONS	GLAZING STOP OPTIONS	GLASS THICKNESS
Kawneer 1686 Concealed Rod Exit Device	Single 4'-0" x 8'-0" (1219.2 x 2438.4) Pair 8'-0" x 8'-0" (2438.4 x 2438.4)	Peak Pressure: 5.8 PSF  Impulse: 41 PSI/M-SEC	Offset Pivots	1	9/16" (14.3)

**Test conditions shown. Other conditions may be supported through calculation.**

**Glazing Stop Options:**

- 1 - Structural silicone with 0.060 Kuraray or Eastman PVB inter layer.

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STANDARD

OPTIONAL

Doors	Medium stile 350 IR	Wide stile 500 IR
<b>Door Sizes</b>	Maximum size shown on page 11.	Maximum door sizes are determined by hardware type, refer to specific hardware for size limitations.
<b>Glass Stops</b>	Square stops for 9/16" (14.3) infill, interior and exterior snap in glass stop.	Square stops for 9/16" (14.3) or 1" (25.4) infill, interior screw applied glass stop with 3M VHB structural tape. Square stops for 9/16" (14.3) infill, interior screw applied glass stop with silicone seal. Square stops for 1" (25.4) infill, interior and exterior snap in glass stop.
<b>Door Frames</b>	IR 500 2-1/2" x 5" (63.5 x 127)	*IR 501 2-1/2" x 5" (63.5 x 127) *IR 501T/UT 2-3/4" x 5" (69.9 x 127) Trifab™ VG 450 1-3/4" x 4-1/2" (44.5 x 114.3) Trifab™ VG 451 2" x 4-1/2" (50.8 x 114.3) Trifab™ VG 451T 2" x 4-1/2" (50.8 x 114.3) Trifab™ 601/601T 2" x 6" (50.8 x 152.4) 1600 sub-frame with door jamb adaptors and sub-head
<b>Push-Pulls</b>	<b>Single Acting:</b> Architects Classic Hardware "CO-9" Pull and "CP-II" Push Bar.  Architects Classic Hardware "CO-9" Pull and "CP" Push Bar.	<b>Single Acting:</b> Architects Classic Hardware "CO-12" and "CP-II" push bar.  Architects Classic Hardware "CO-12" and "CP" push bar.  Architects Classic Hardware "CO-9"/"CO-9" Pulls.  Architects Classic Hardware "CO-12"/"CO-12" Pulls.
<b>Door Closers</b>	<b>Single Acting:</b> Norton 1601 Adjustable or 1601 BF Adjustable Surface Closer with back-check, with or without adjustable hold open.  Standard concealed overhead closer with single acting offset arm.	<b>Single Acting:</b> LCN 4040 surface closer with or without adjustable hold-open.  LCN 2010, 2030 or 5010 concealed overhead closers with or without hold-open.  LCN 1260 adjustable surface closer.  Norton 8100 surface closer with a 50% spring power adjustment (for opening forces of less than 8 pounds). Closer is available with standard back-checks and with or without the hold-open feature.  International single acting concealed overhead closer.  Falcon SC 60 Surface closer.
<b>Hinging</b>	<b>Single Acting:</b> Kawneer top and bottom offset pivots (or) Kawneer top and bottom 4 1/2" x 4" (114.3 x 101.6) ball bearing butt hinge with non-removable pin (NRP) (or) Kawneer continuous gear hinge.	---
<b>Intermediate Pivots/Butts</b>	<b>Single Acting:</b> Kawneer intermediate offset pivot (or) Kawneer 4-1/2" x 4" (114.3 x 101.6) ball bearing butt hinge with non-removable pin (NRP).	---
<b>Locking</b>	MS 1850 Deadbolt 3-Point Lock with 4016 Top Bolt and 4056 Bottom Bolt. Hurricane Resistant Flush Bolts required on pairs.	Adams Rite 2180 Dead Lock Flush Bolt for pair only.

**NOTE:**

\*IR 501 door frame uses IR 500 door jamb with IR 501 filler.

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	STANDARD	OPTIONAL
<b>Doors</b>	Medium stile 350 IR	Wide stile 500 IR
<b>Thresholds</b>	A 1/2" x 4" (12.7 x 101.6) aluminum mill finish threshold.	---
<b>Weathering</b>	<b>Single Acting:</b> Weathering system in the door and frame consisting of a dense, bulb polymeric material, which remains resilient and retains its weathering ability under temperature extremes. (The system is complete with an optional EPDM blade gasket sweep strip applied to the bottom door rail with concealed fasteners).	Bottom Door Sweep
<b>Exit Device</b>	<b>Kawneer 1686 Concealed Rod Exit Device</b> with or without a mortised type cylinder.	<b>Kawneer Paneline™ Conc. Rod Exit Device</b> <b>Kawneer Paneline™ EL Conc. Rod Exit Device</b> <b>Jackson 2086 Concealed Rod Exit Device</b> <b>Adams Rite G86 Conc. Rod Exit Device</b> <b>Calibre 9100 Conc. Rod Exit Device</b> <b>Falcon HH1690 Conc. Rod Exit Device</b> <b>Sargent 8400AD Concealed Rod Exit Device</b> <b>Von Duprin HH9947 Conc. Rod Exit Device</b> <b>Von Duprin 98/99 XP Rim Device</b> <b>Corbin Russwin ED5200SA Rim Device</b>
	<b>Exit Device Pulls:</b> Architects Classic style "CO-9" Pull with Kawneer 1686 exit device. Architects Classic style "CPN" Pull for Paneline™ and Paneline™ EL exit devices.	<b>Optional Exit Device Pulls:</b> Architects Classic style "CO-12" Pull with Kawneer 1686 exit device.

**NOTE:**

\*IR 501 door frame uses IR 500 door jamb with IR 501 filler.

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## **Features**

- IR 500/501 is 5" (127) deep and has a 2-1/2" (63.5) sightline {Expansion mullions have a 2-3/4" (69.9) sightline}
- Screw Spline fabrication
- Center glazed
- Outside glazed with internal silicone seal
- IR 500 glazing options are 9/16", (14.3) 5/8" (15.9) and 1/4" (6.4) (non-impact)
- IR 501 glazing options are 1-5/16" (33.3) and 1" (25.4) (non-impact)
- Permanodic® anodized finishes in 7 choices
- Painted finishes in standard and custom choices

## **Optional Features**

- Integrated entrance framing
- 350 IR Medium Stile - single or pairs of entrances

## **Product Applications**

- Impact resistant
- Storefront, ribbom window or punched opening
- Low to mid-rise
- Single span

For specific product applications,  
Consult your Kawneer representative.



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**IR 500 BASIC FRAMING DETAILS ..... 4**

**IR 500 ENTRANCE FRAMING DETAILS ..... 5**

**IR 501 BASIC FRAMING DETAILS ..... 6**

**IR 501 ENTRANCE FRAMING DETAILS ..... 7**

**IR 500 MISCELLANEOUS FRAMING ..... 8**

**IR 501 MISCELLANEOUS FRAMING ..... 9**

**IR 500 WINDLOAD CHARTS ..... 10-13**

**IR 501 WINDLOAD CHARTS ..... 14, 15**

**IR 500 / 501 DEADLOAD CHARTS..... 16-18**

**IR 501 THERMAL CHARTS..... 19-22**

LAWS AND BUILDING AND SAFETY CODES GOVERNING THE DESIGN AND USE OF GLAZED ENTRANCE, WINDOW, AND CURTAIN WALL PRODUCTS VARY WIDELY. KAWNEER DOES NOT CONTROL THE SELECTION OF PRODUCT CONFIGURATIONS, OPERATING HARDWARE, OR GLAZING MATERIALS, AND ASSUMES NO RESPONSIBILITY THEREFOR.

Metric (SI) conversion figures are included throughout these details for reference. Numbers in parentheses ( ) are millimeters unless otherwise noted.

The following metric (SI) units are found in these details:

- m – meter
- cm – centimeter
- mm – millimeter
- s – second
- Pa – pascal
- MPa – megapascal

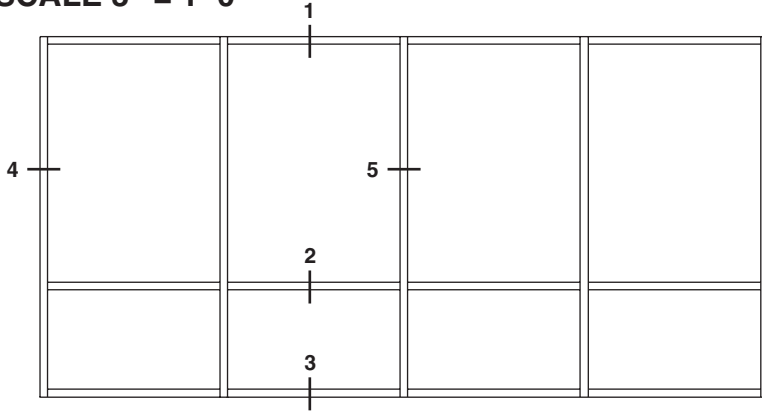
Kawneer reserves the right to change configurations without prior notice when deemed necessary for product improvement.

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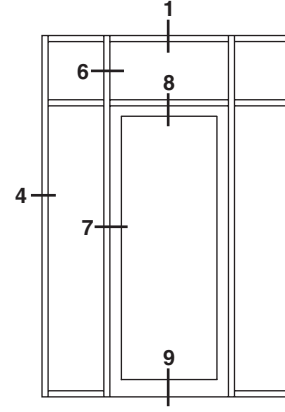
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 HURRICANE RESISTANT PRODUCT

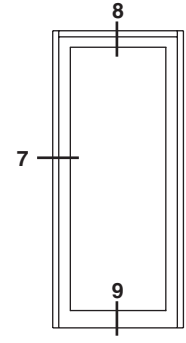
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9/16" INFILL

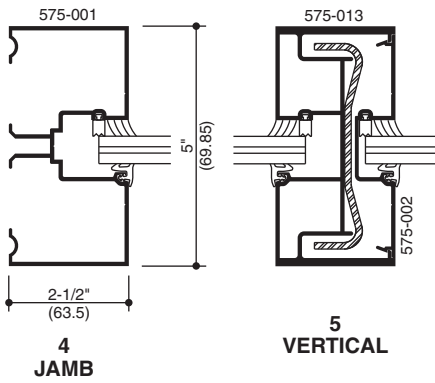


5/8" INFILL

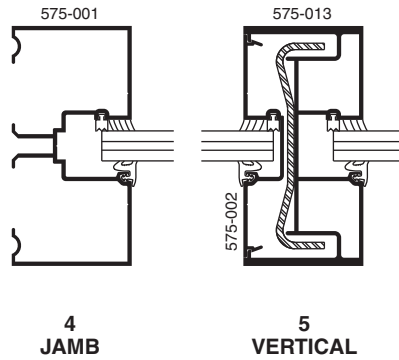


9/16" INFILL (DRY-GLAZED)

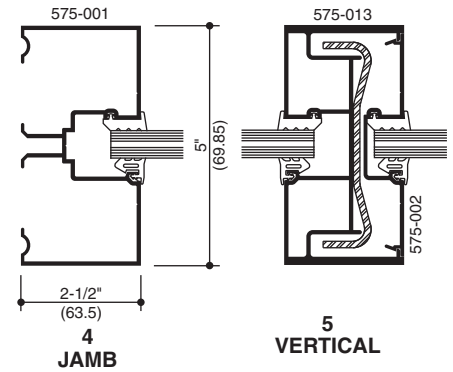
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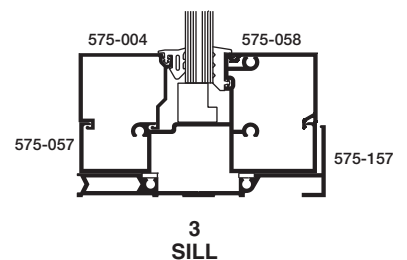
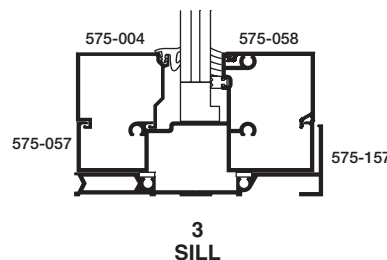
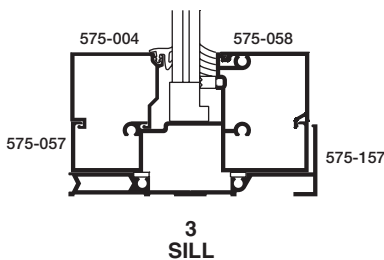
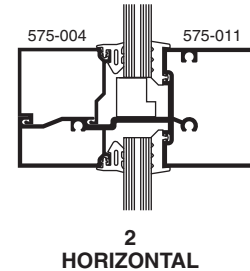
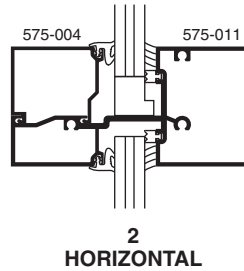
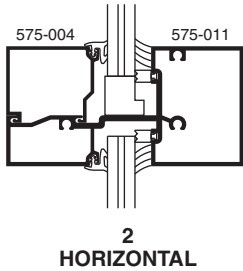
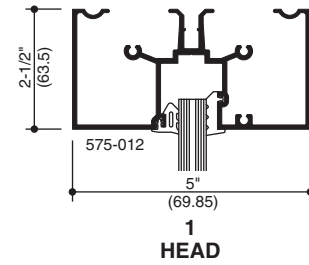
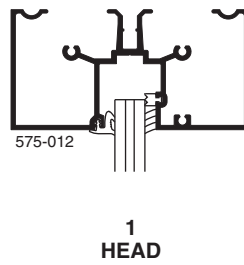
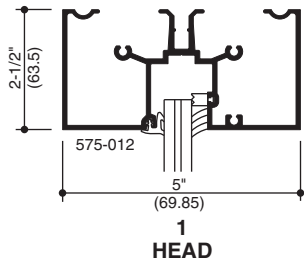
5 VERTICAL



5 VERTICAL



5 VERTICAL



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SCALE 3" = 1'-0"

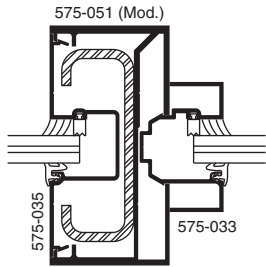
9/16" INFILL

5/8" INFILL

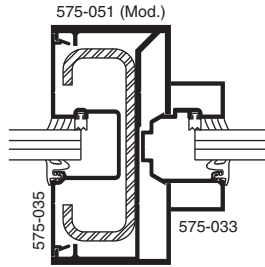
9/16" INFILL (DRY-GLAZED)

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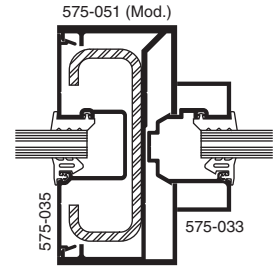
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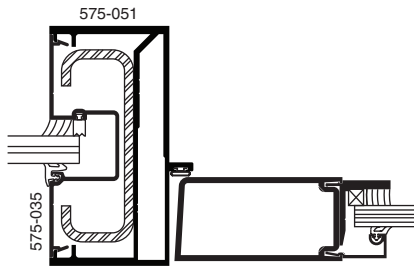
6 DOOR JAMB AT TRANSOM



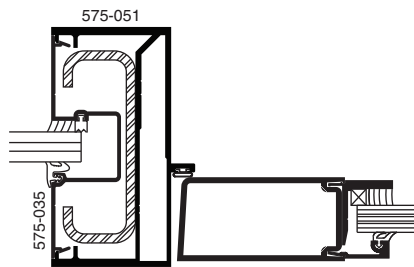
6 DOOR JAMB AT TRANSOM



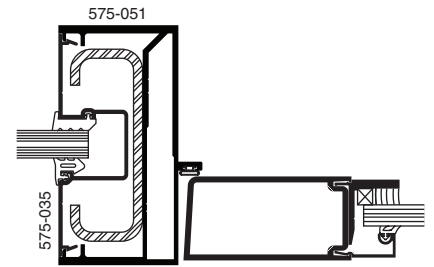
6 DOOR JAMB AT TRANSOM



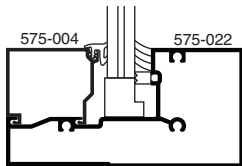
7 DOOR JAMB



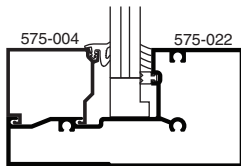
7 DOOR JAMB



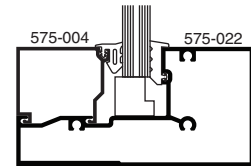
7 DOOR JAMB



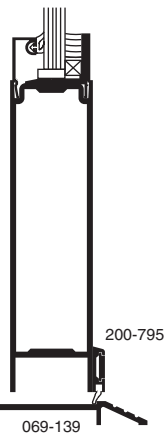
8 DOOR WITH TRANSOM



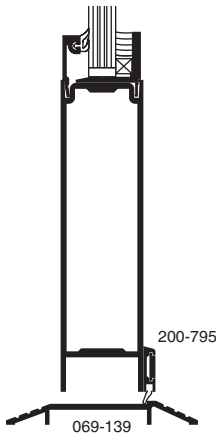
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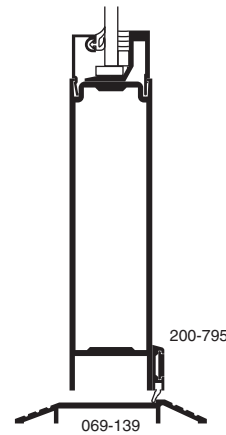
8 DOOR WITH TRANSOM



9 BOTTOM RAIL



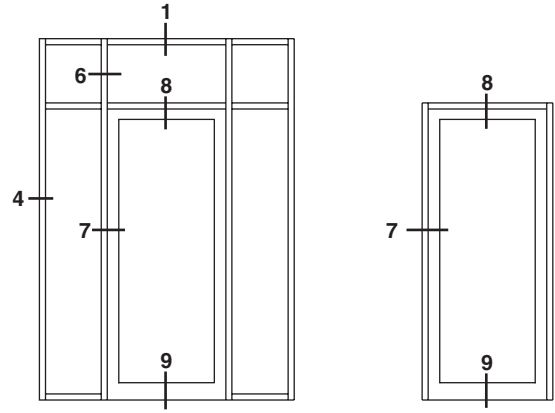
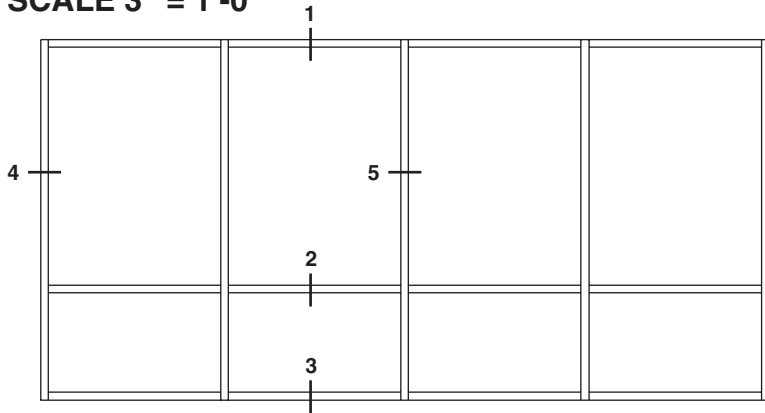
9 BOTTOM RAIL



9 BOTTOM RAIL

 HURRICANE RESISTANT PRODUCT

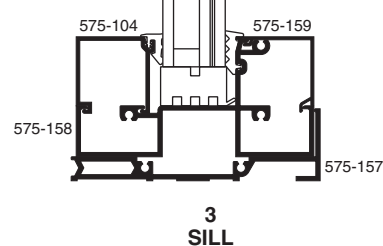
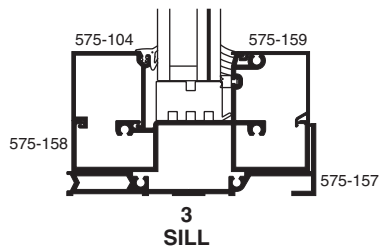
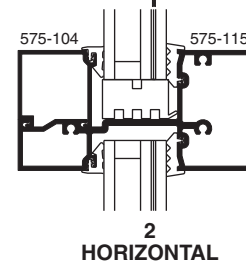
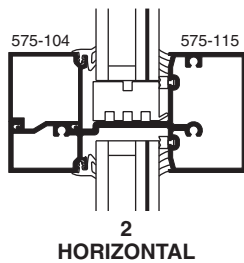
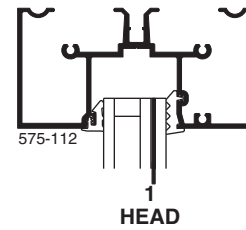
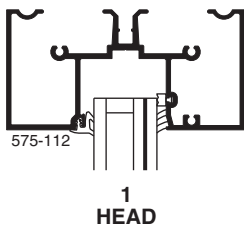
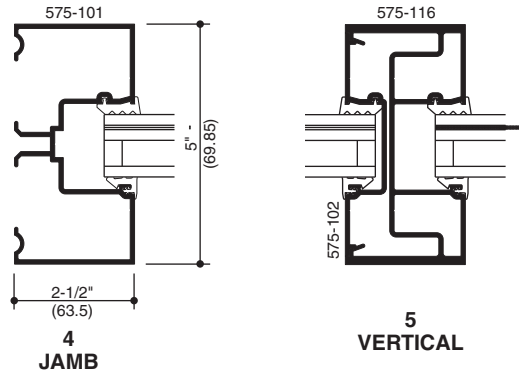
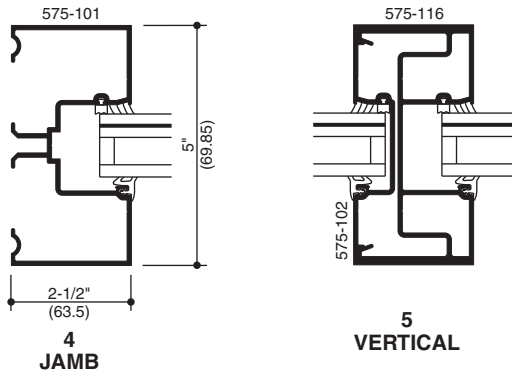
SCALE 3" = 1'-0"



ELEVATIONS ARE NUMBER KEYED TO DETAILS

1-5/16" INFILL

1-5/16" INFILL (DRY GLAZED)



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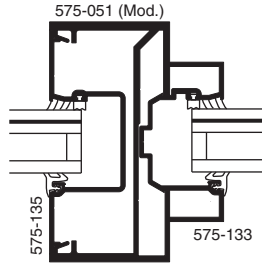
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1-5/16" INFILL

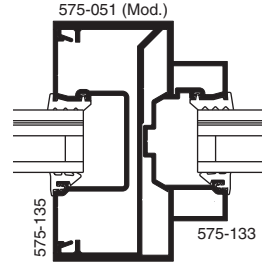
1-5/16" INFILL (DRY GLAZED)

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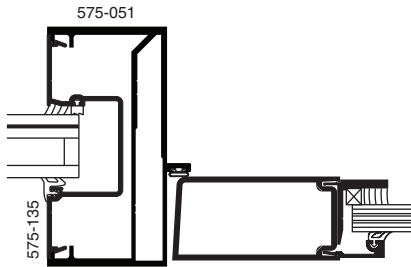
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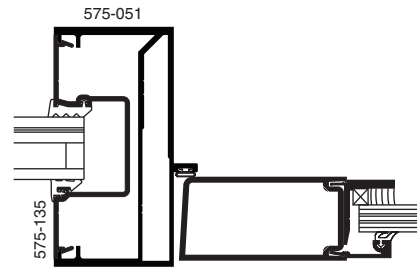
6 DOOR JAMB AT TRANSOM



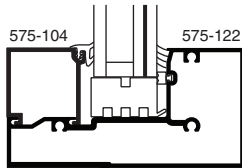
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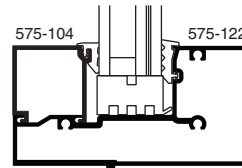
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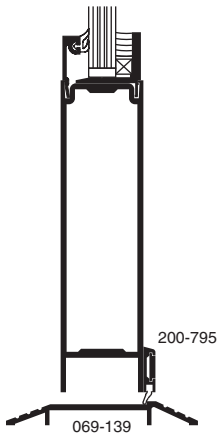
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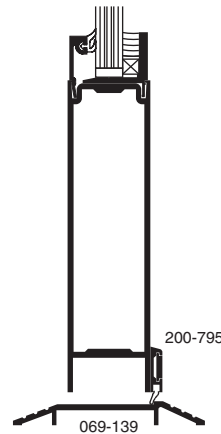
8 DOOR WITH TRANSOM



8 DOOR WITH TRANSOM



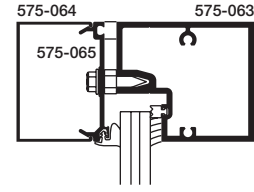
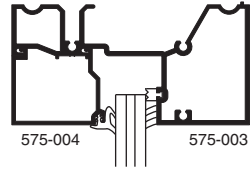
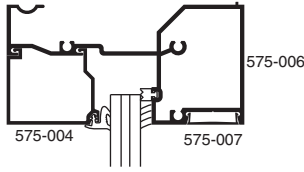
9 BOTTOM RAIL



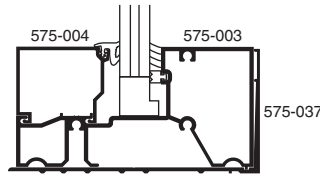
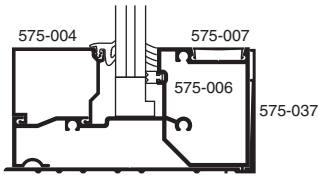
9 BOTTOM RAIL

 HURRICANE RESISTANT PRODUCT

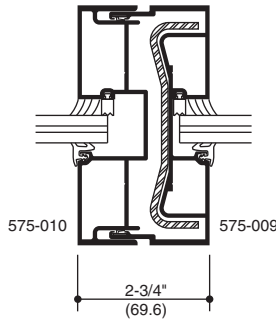
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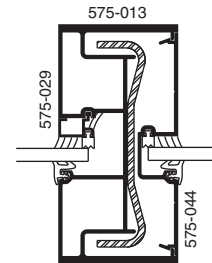
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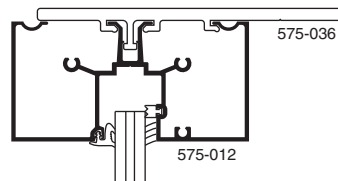
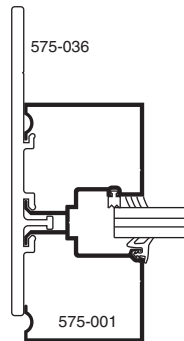
OPTIONAL HEAD & SILL (FOR CONCEALED PERIMETER FASTENERS)



EXPANSION MULLION



1/4" INFILL (NON-IMPACT) GLAZING ADAPTOR



STRAP ANCHORS

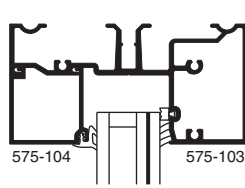
Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

Kawneer reserves the right to change configuration without prior notice when deemed necessary for product improvement.  
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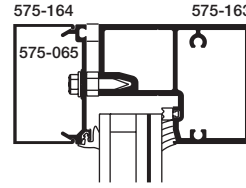
SCALE 3" = 1'-0"

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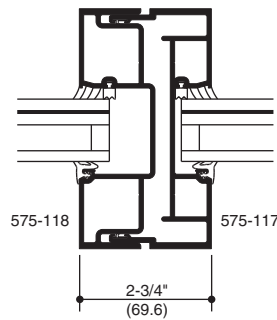
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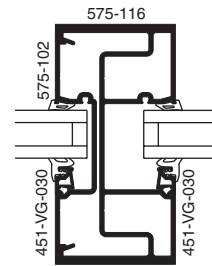
OPTIONAL HEAD WITH STOP



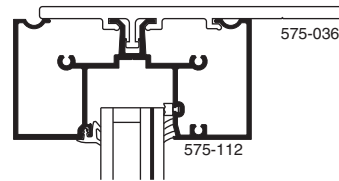
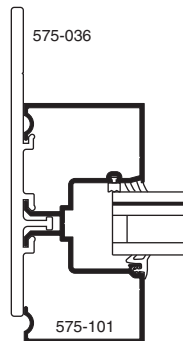
OPTIONAL RADIUS HEAD



EXPANSION MULLION



1" INFILL (NON-IMPACT) GLAZING ADAPTOR



STRAP ANCHORS

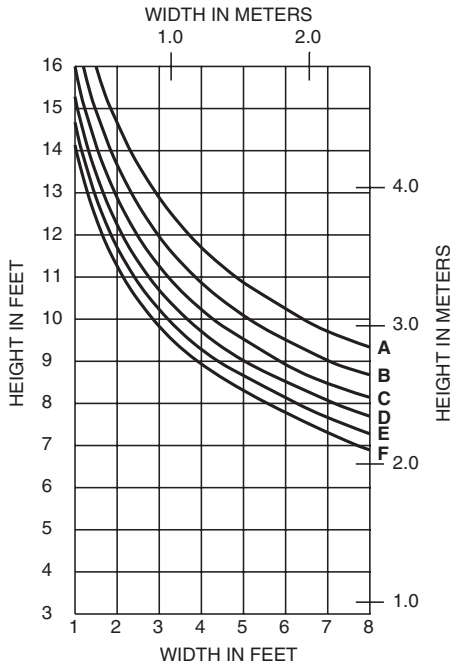


**HURRICANE RESISTANT PRODUCT**

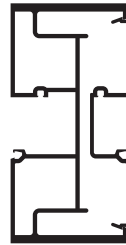
Mullions are designed for deflection limitations in accordance with AAMA TIR-A11 of L/175 up to 13'-6" and L/240 +1/4" above 13'-6". These curves are for mullions WITH and WITHOUT HORIZONTALS and are based on engineering calculations for stress and deflection. Allowable windload stress for ALUMINUM 15,152 p.s.i. (104MPa). STEEL 20,000 p.s.i. (138MPa.) Charted curves, in all cases are for the limiting value. A 4/3 increase in allowable stress has not been used to develop these curves.

For special situations not covered by these curves, contact your Kawneer representative for additional information.

**575-013 & 575-002 WITH HORIZONTALS**



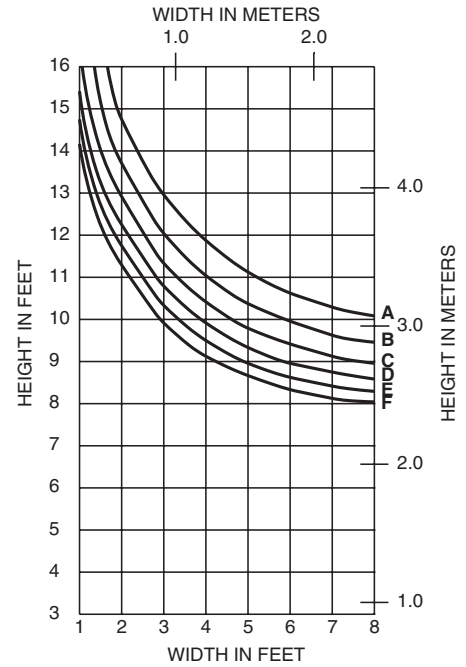
- A = 40 PSF (1920)
- B = 50 PSF (2400)
- C = 60 PSF (2880)
- D = 70 PSF (3360)
- E = 80 PSF (3840)
- F = 90 PSF (4320)



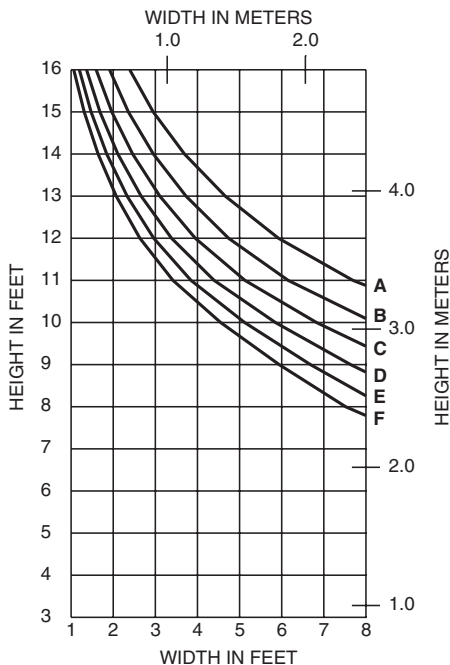
**575-013/575-002**

$I_A = 8.422 \text{ in}^4 (350.55 \times 10^4 \text{ mm}^4)$   
 $S_A = 3.363 \text{ in}^3 (55.11 \times 10^3 \text{ mm}^3)$

**575-013 & 575-002 WITHOUT HORIZONTALS**



**575-013 & 575-002 AND 575-110 STEEL WITH HORIZONTALS**

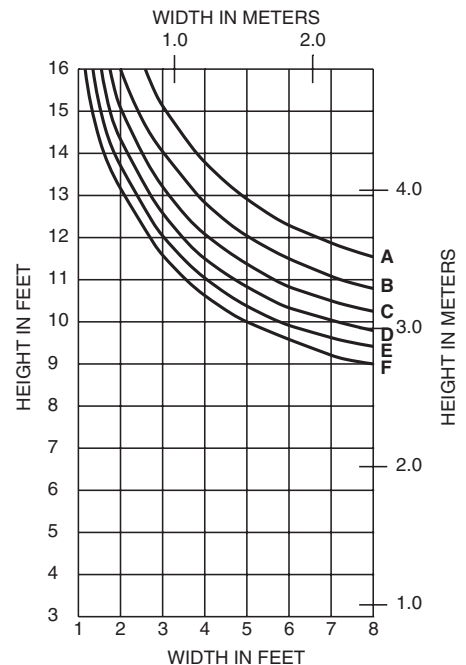


**575-013/575-002 AND 575-110 STEEL**

$I_A = 8.422 \text{ in}^4 (350.55 \times 10^4 \text{ mm}^4)$   
 $S_A = 3.363 \text{ in}^3 (55.11 \times 10^3 \text{ mm}^3)$   
 $I_S = 1.729 \text{ in}^4 (71.97 \times 10^4 \text{ mm}^4)$   
 $S_S = 0.808 \text{ in}^3 (13.24 \times 10^3 \text{ mm}^3)$



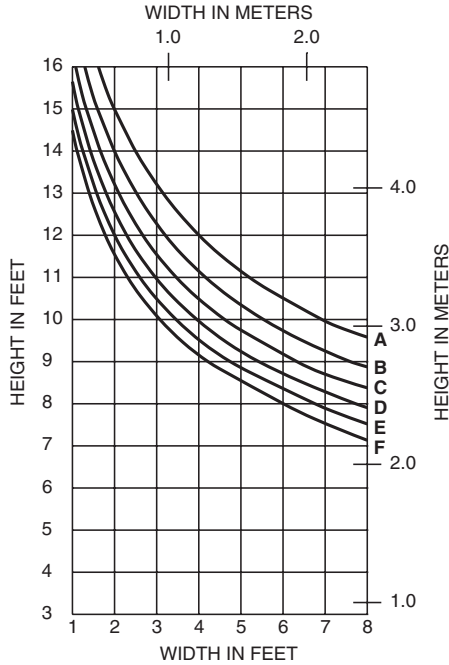
**575-013 & 575-002 AND 575-110 STEEL WITHOUT HORIZONTALS**



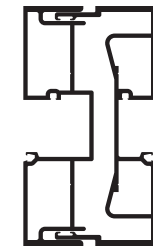
Vertical text on the right edge: Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

Vertical text on the right edge: Kawneer reserves the right to change configuration without prior notice when deemed necessary for product improvement. © Kawneer Company, Inc., 2010

**575-009 & 575-010 WITH HORIZONTALS**



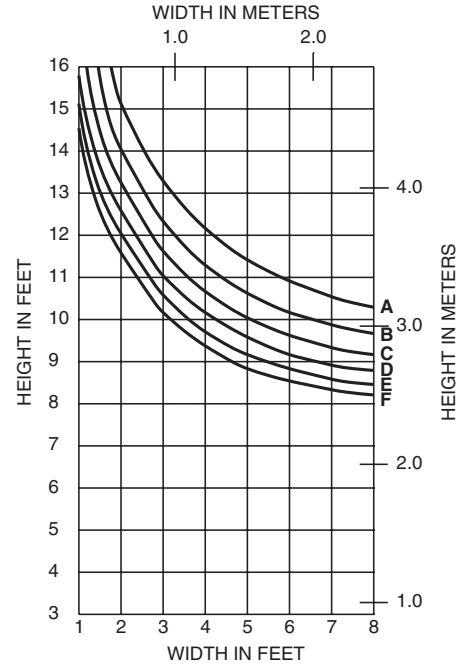
- A = 40 PSF (1920)
- B = 50 PSF (2400)
- C = 60 PSF (2880)
- D = 70 PSF (3360)
- E = 80 PSF (3840)
- F = 90 PSF (4320)



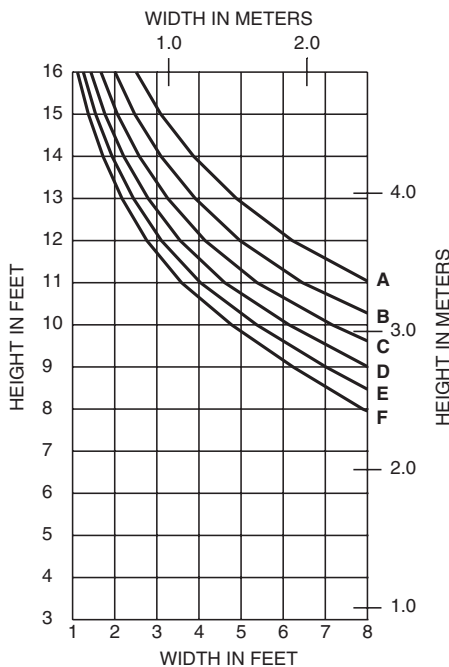
**575-009/575-010**

$I_A = 9.086 \text{ in}^4 (378.19 \times 10^4 \text{ mm}^4)$   
 $S_A = 3.627 \text{ in}^3 (59.44 \times 10^3 \text{ mm}^3)$

**575-009 & 575-010 WITHOUT HORIZONTALS**



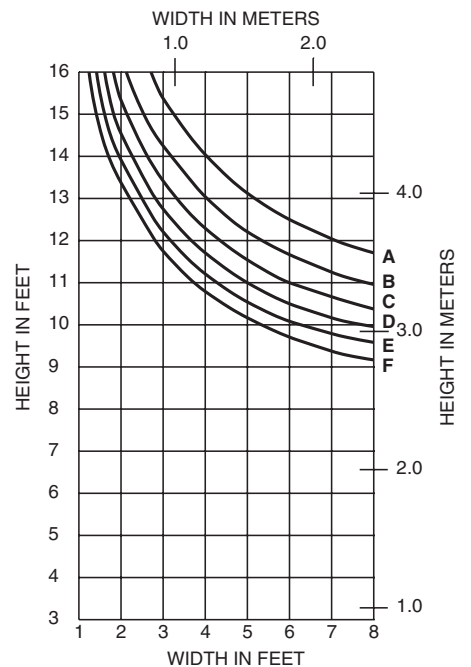
**575-009 & 575-010 AND 575-110 STEEL WITH HORIZONTALS**



**575-009/575-010 AND 575-110 STEEL**

$I_A = 9.086 \text{ in}^4 (378.19 \times 10^4 \text{ mm}^4)$   
 $S_A = 3.627 \text{ in}^3 (59.44 \times 10^3 \text{ mm}^3)$   
 $I_S = 1.729 \text{ in}^4 (71.97 \times 10^4 \text{ mm}^4)$   
 $S_S = 0.808 \text{ in}^3 (13.24 \times 10^3 \text{ mm}^3)$

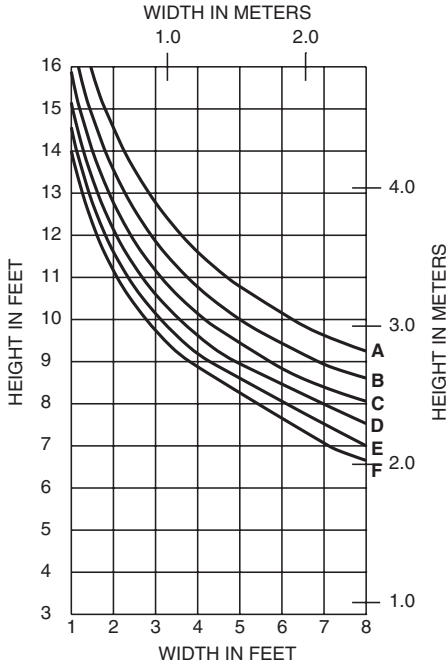
**575-009 & 575-010 AND 575-110 STEEL WITHOUT HORIZONTALS**



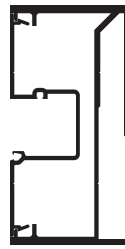
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**575-050 & 575-035 WITH HORIZONTALS**



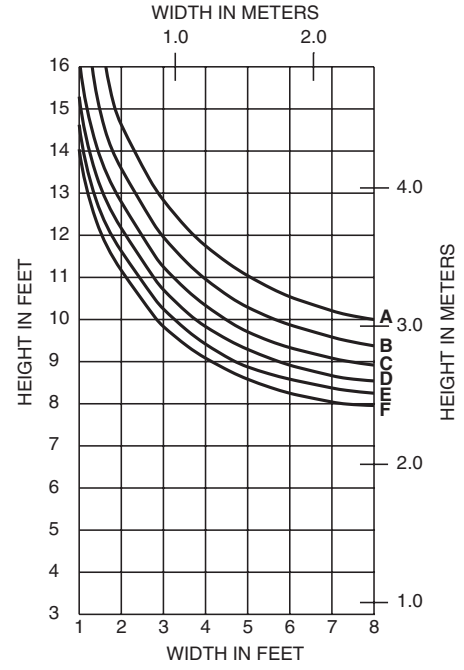
- A = 40 PSF (1920)
- B = 50 PSF (2400)
- C = 60 PSF (2880)
- D = 70 PSF (3360)
- E = 80 PSF (3840)
- F = 90 PSF (4320)



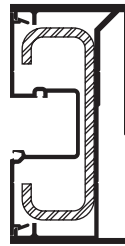
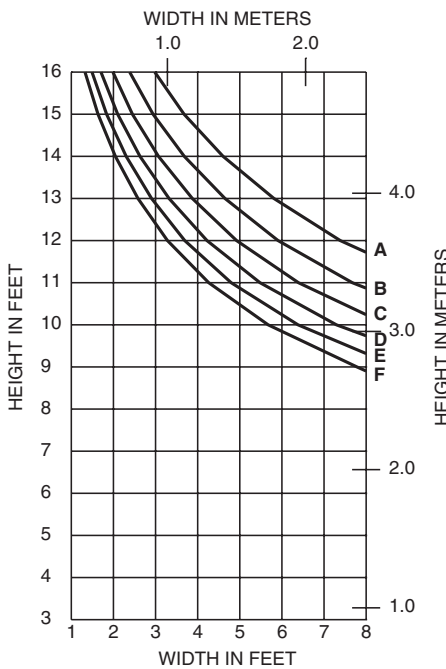
**575-050/575-035**

$I_A = 8.209 \text{ in}^4 (341.68 \times 10^4 \text{ mm}^4)$   
 $S_A = 3.049 \text{ in}^3 (49.96 \times 10^3 \text{ mm}^3)$

**575-050 & 575-035 WITHOUT HORIZONTALS**



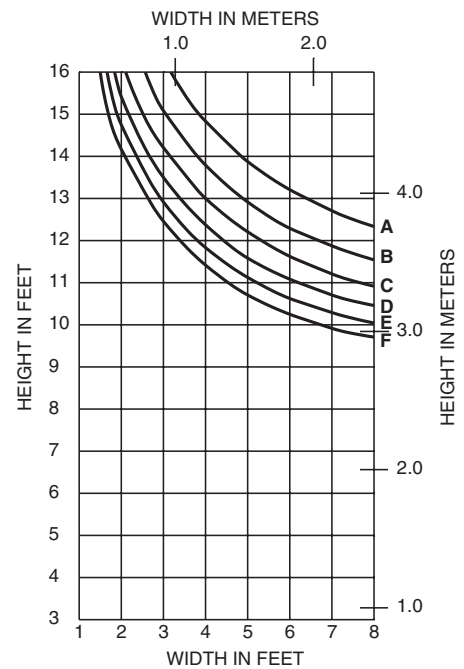
**575-050 & 575-035 AND 575-111 STEEL WITH HORIZONTALS**



**575-050/575-035 AND 575-111 STEEL**

$I_A = 8.209 \text{ in}^4 (341.68 \times 10^4 \text{ mm}^4)$   
 $S_A = 3.049 \text{ in}^3 (49.96 \times 10^3 \text{ mm}^3)$   
 $I_S = 1.729 \text{ in}^4 (71.97 \times 10^4 \text{ mm}^4)$   
 $S_S = 0.808 \text{ in}^3 (13.24 \times 10^3 \text{ mm}^3)$

**575-050 & 575-035 AND 575-111 STEEL WITHOUT HORIZONTALS**



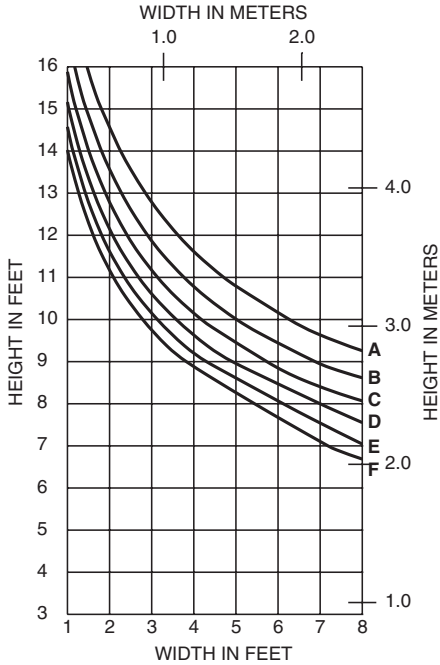
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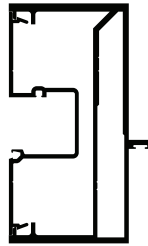
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**575-051 & 575-035 WITH HORIZONTALS**



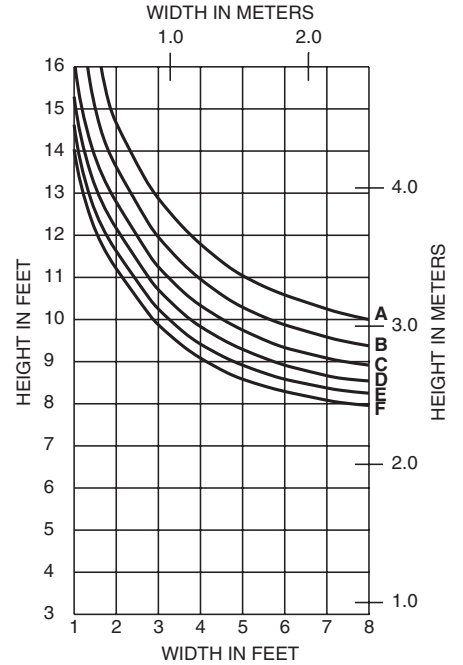
- A = 40 PSF (1920)
- B = 50 PSF (2400)
- C = 60 PSF (2880)
- D = 70 PSF (3360)
- E = 80 PSF (3840)
- F = 90 PSF (4320)



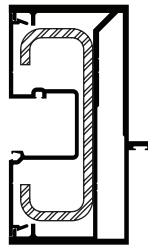
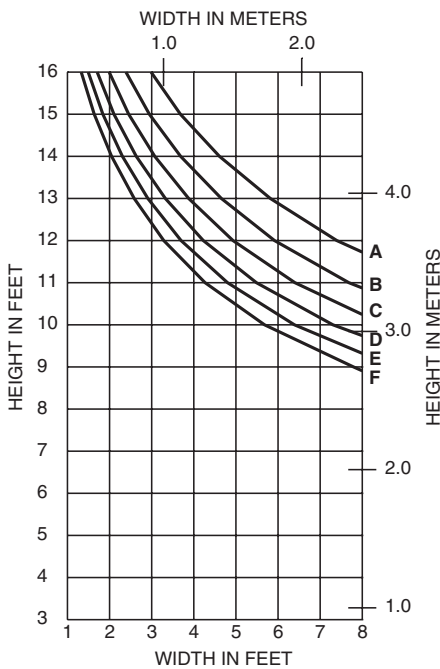
**575-051/575-035**

$I_A = 8.233 \text{ in}^4 (342.68 \times 10^4 \text{ mm}^4)$   
 $S_A = 3.177 \text{ in}^3 (52.06 \times 10^3 \text{ mm}^3)$

**575-051 & 575-035 WITHOUT HORIZONTALS**



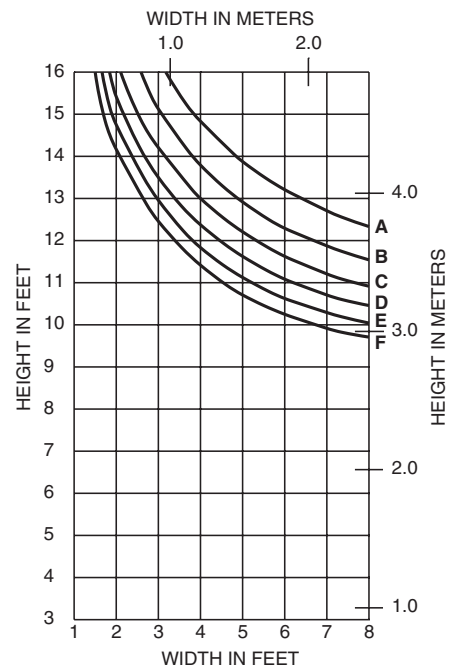
**575-051 & 575-035 AND 575-111 STEEL WITH HORIZONTALS**



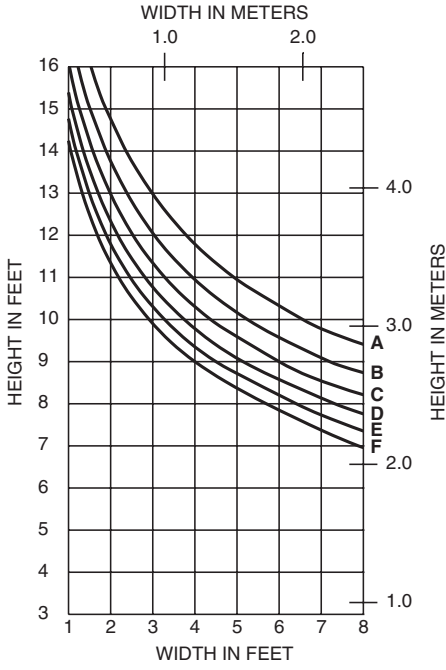
**575-051/575-035 AND 575-111 STEEL**

$I_A = 8.233 \text{ in}^4 (342.68 \times 10^4 \text{ mm}^4)$   
 $S_A = 3.177 \text{ in}^3 (52.06 \times 10^3 \text{ mm}^3)$   
 $I_S = 2.946 \text{ in}^4 (122.62 \times 10^4 \text{ mm}^4)$   
 $S_S = 1.473 \text{ in}^3 (24.14 \times 10^3 \text{ mm}^3)$

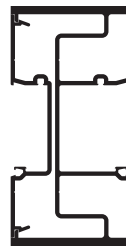
**575-051 & 575-035 AND 575-111 STEEL WITHOUT HORIZONTALS**



**575-116 & 575-102  
WITH HORIZONTALS**



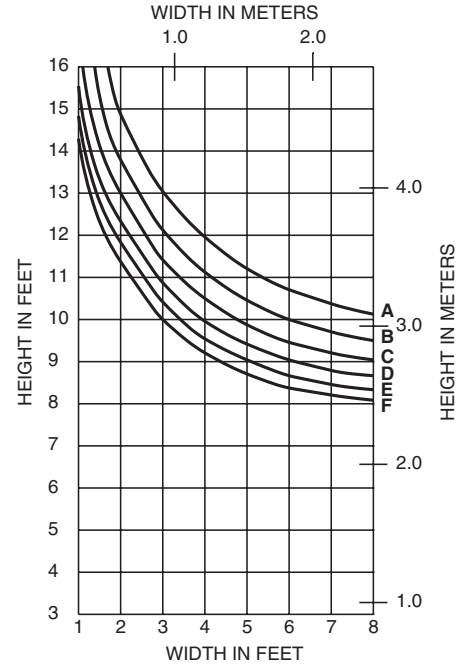
- A = 40 PSF (1920)
- B = 50 PSF (2400)
- C = 60 PSF (2880)
- D = 70 PSF (3360)
- E = 80 PSF (3840)
- F = 90 PSF (4320)



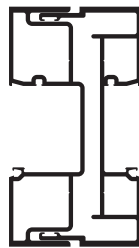
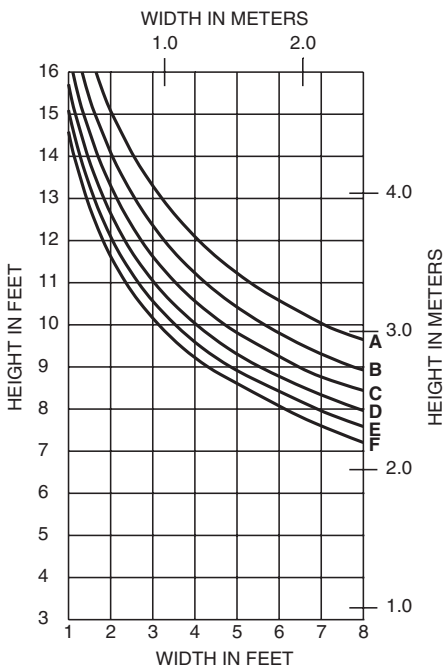
**575-116/575-102**

$I_A = 8.612 \text{ in}^4 (358.46 \times 10^4 \text{ mm}^4)$   
 $S_A = 3.472 \text{ in}^3 (56.90 \times 10^3 \text{ mm}^3)$

**575-116 & 575-102  
WITHOUT HORIZONTALS**



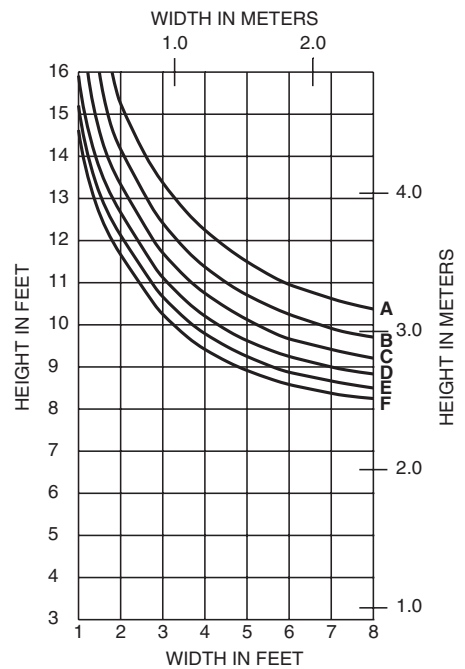
**575-117 & 575-118  
WITH HORIZONTALS**



**575-117/575-118**

$I_A = 9.285 \text{ in}^4 (386.47 \times 10^4 \text{ mm}^4)$   
 $S_A = 3.704 \text{ in}^3 (60.70 \times 10^3 \text{ mm}^3)$

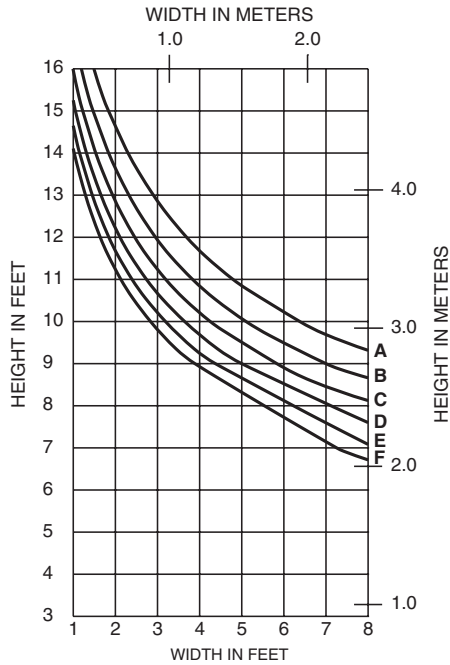
**575-117 & 575-118  
WITHOUT HORIZONTALS**



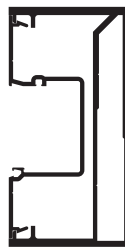
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**575-050 & 575-135  
WITH HORIZONTALS**



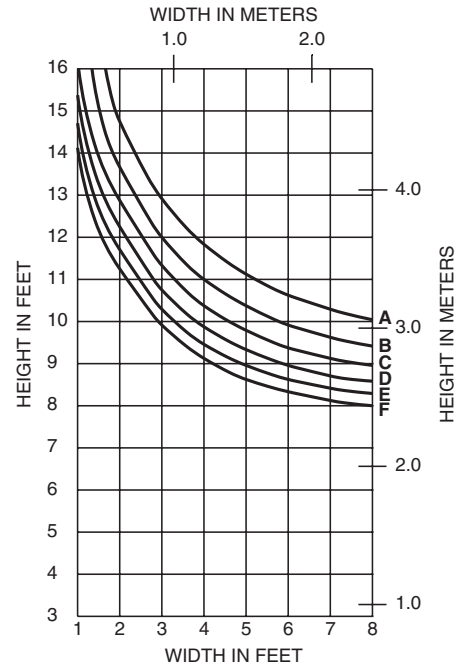
- A = 40 PSF (1920)
- B = 50 PSF (2400)
- C = 60 PSF (2880)
- D = 70 PSF (3360)
- E = 80 PSF (3840)
- F = 90 PSF (4320)



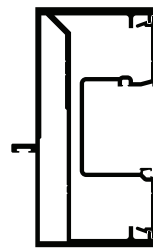
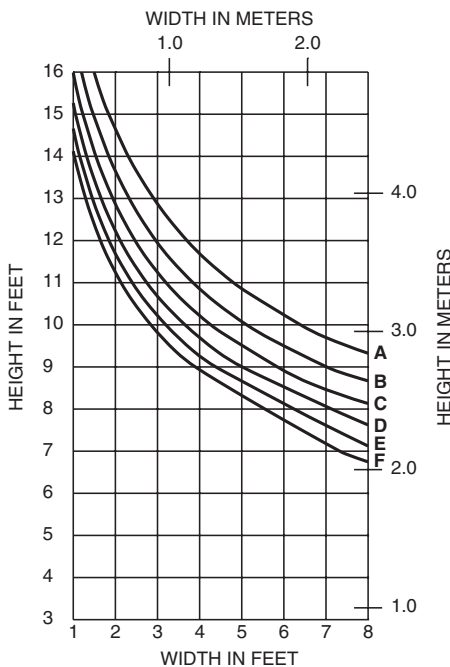
**575-050/575-135**

$I_A = 8.371 \text{ in}^4 (348.43 \times 10^4 \text{ mm}^4)$   
 $S_A = 3.226 \text{ in}^3 (52.86 \times 10^3 \text{ mm}^3)$

**575-050 & 575-135  
WITHOUT HORIZONTALS**



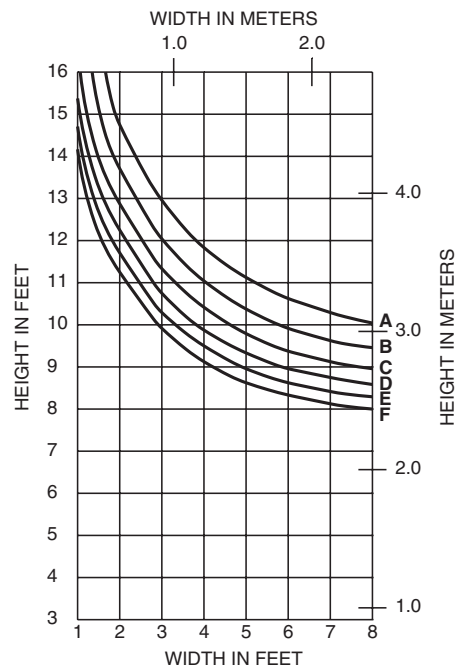
**575-051 & 575-135  
WITH HORIZONTALS**



**575-051/575-135**

$I_A = 8.393 \text{ in}^4 (349.34 \times 10^4 \text{ mm}^4)$   
 $S_A = 3.255 \text{ in}^3 (53.34 \times 10^3 \text{ mm}^3)$

**575-051 & 575-135  
WITHOUT HORIZONTALS**



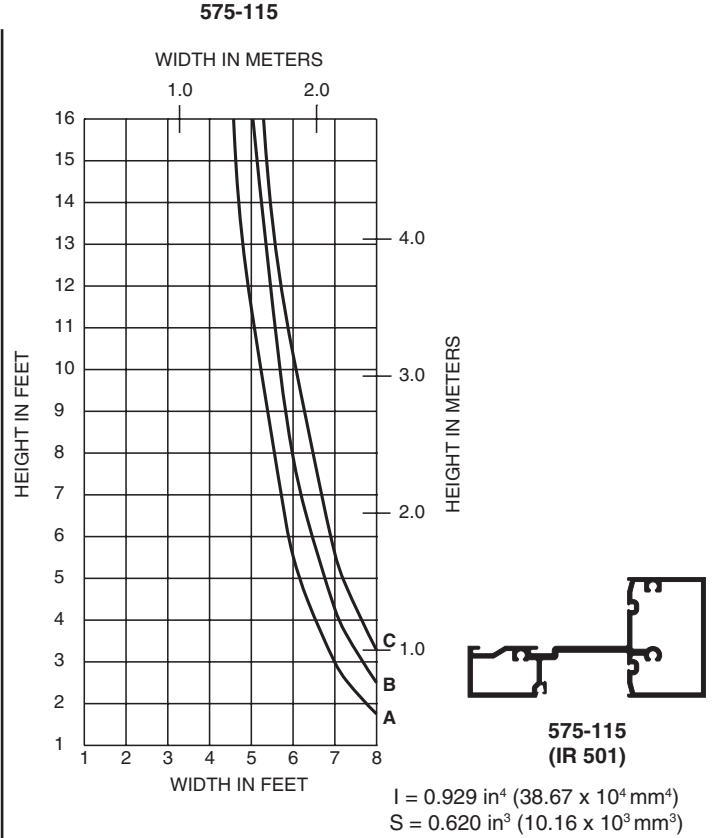
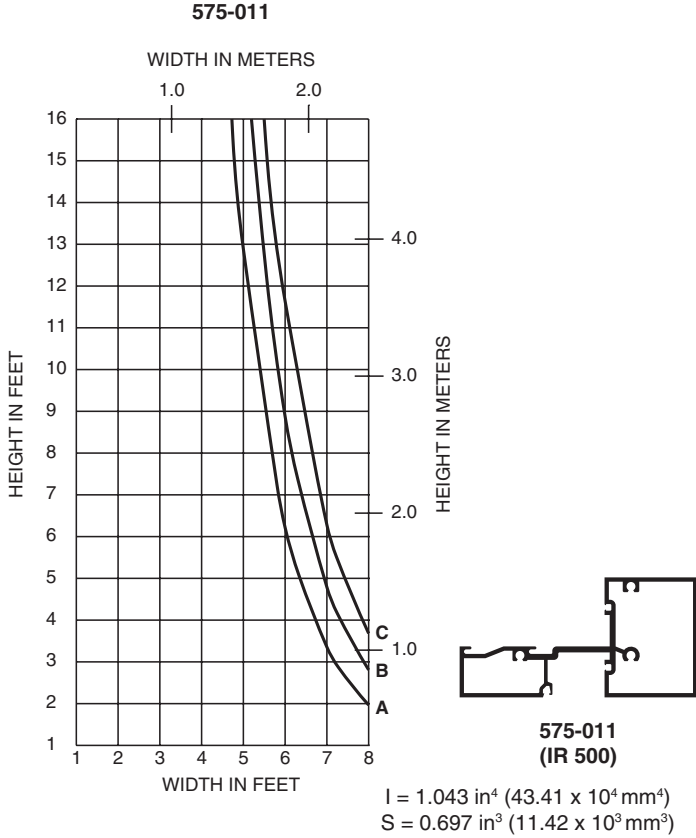
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**HURRICANE RESISTANT PRODUCT**

Horizontal or deadload limitations are based upon 1/8" (3.2), maximum allowable deflection at the center of an intermediate horizontal member. The accompanying charts are calculated for 9/16" or 5/8" thick impact resistant glass or 1-5/16" thick insulated impact resistant glass supported on two setting blocks placed at the loading points shown.

- A = (1/4 POINT LOADING)
- B = (1/6 POINT LOADING)
- C = (1/8 POINT LOADING)



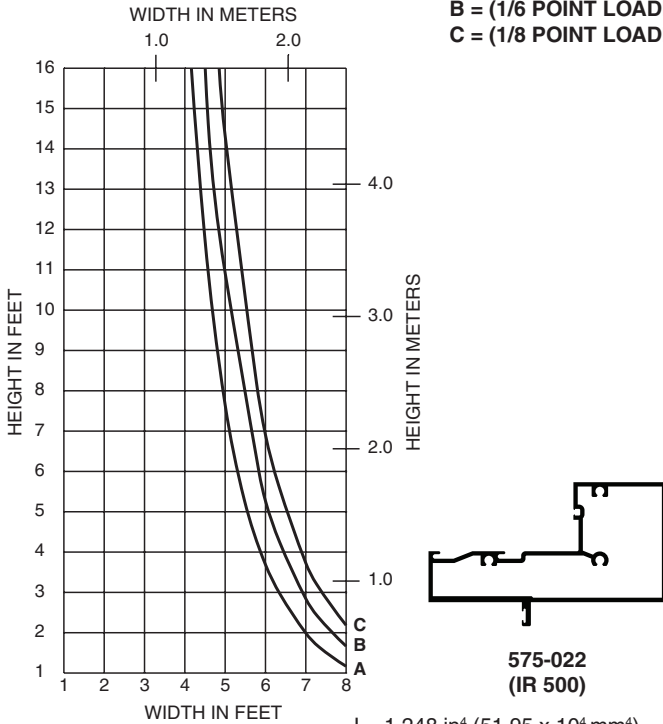
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**DEADLOADS ON ENTRANCE TRANSOM BARS**

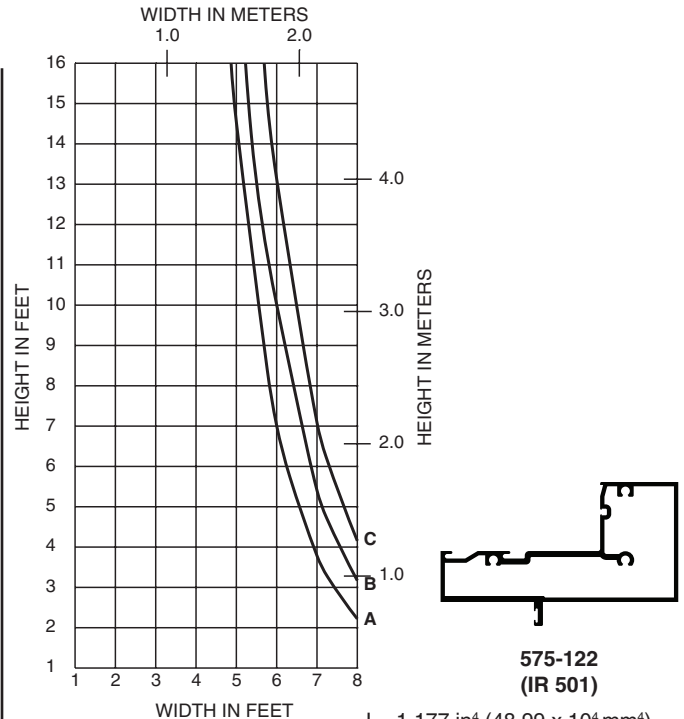
Height limitations for transom glass over a doorway are based on a 1/16" (1.6) maximum allowable deflection at the center of a transom bar. The accompanying chart is calculated for 9/16" or 5/8" thick impact resistant glass or 1-5/16" thick insulated impact resistant glass supported on two setting blocks placed at the loading points shown.

**575-022 HORIZONTAL**



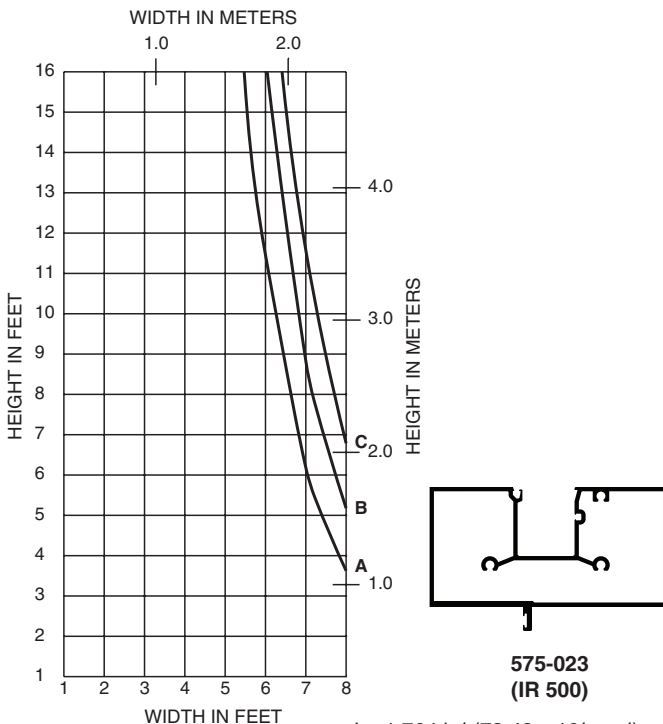
$I = 1.248 \text{ in}^4 (51.95 \times 10^4 \text{ mm}^4)$   
 $S = 0.777 \text{ in}^3 (12.73 \times 10^3 \text{ mm}^3)$

**575-122 HORIZONTAL**



$I = 1.177 \text{ in}^4 (48.99 \times 10^4 \text{ mm}^4)$   
 $S = 0.722 \text{ in}^3 (11.83 \times 10^3 \text{ mm}^3)$

**575-023 HORIZONTAL**



$I = 1.764 \text{ in}^4 (73.42 \times 10^4 \text{ mm}^4)$   
 $S = 1.081 \text{ in}^3 (17.71 \times 10^3 \text{ mm}^3)$

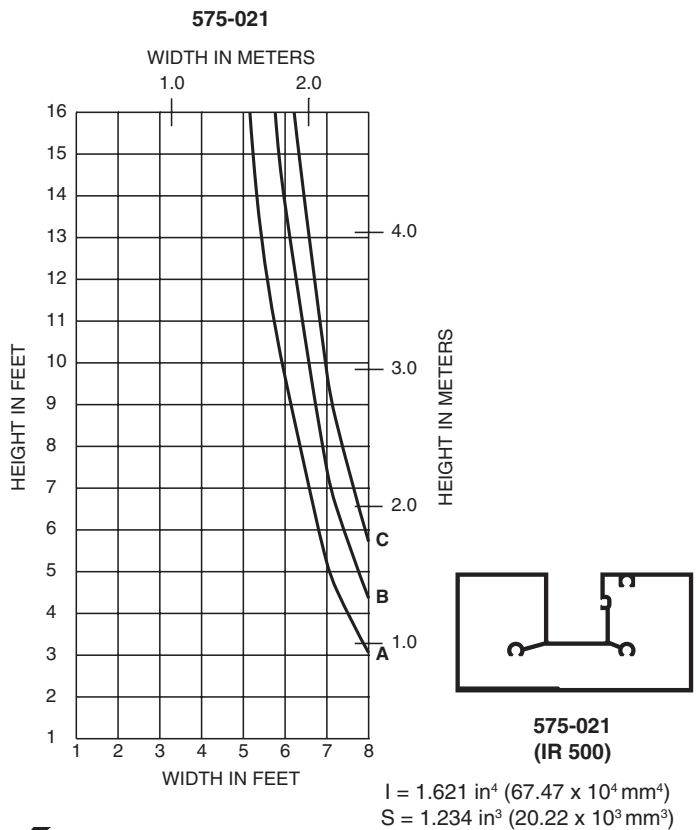
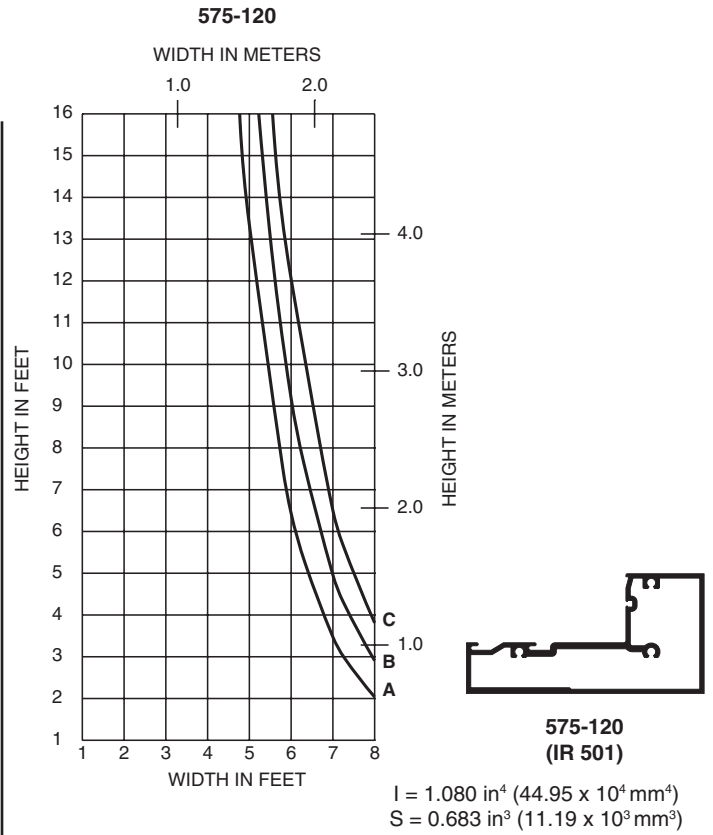
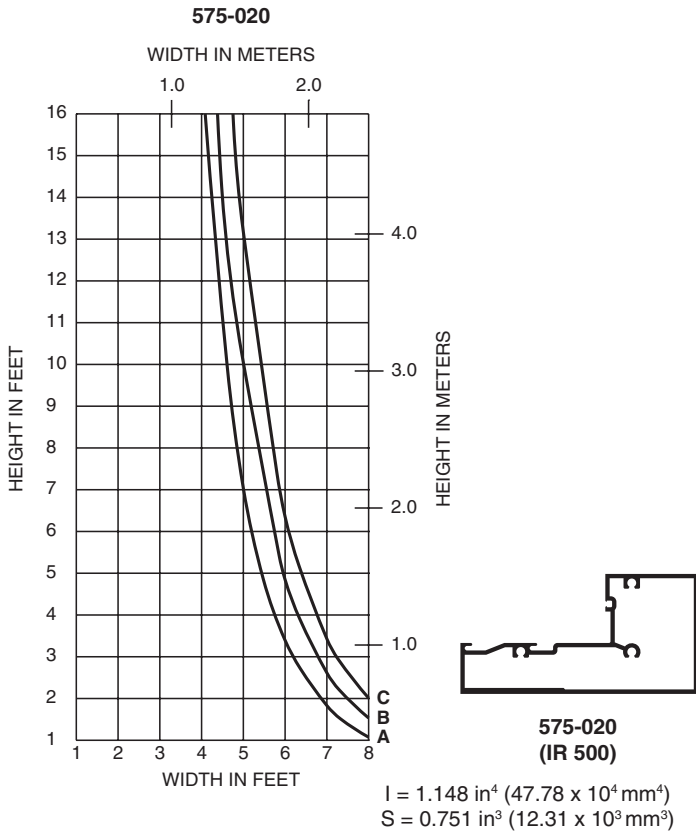
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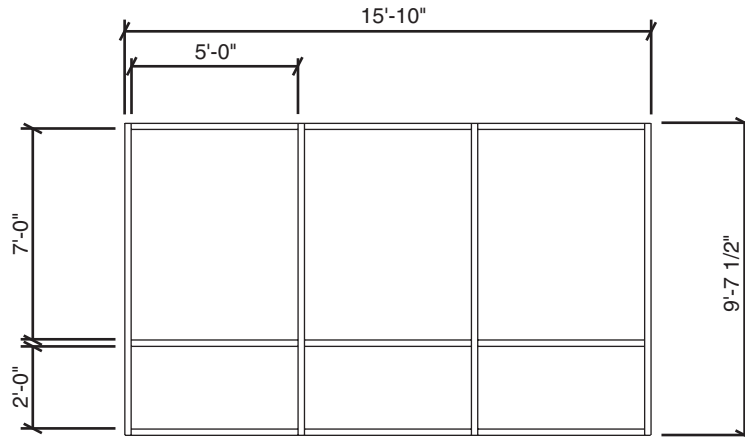
A = (1/4 POINT LOADING)  
 B = (1/6 POINT LOADING)  
 C = (1/8 POINT LOADING)



Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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**Project Specific U-factor Example Calculation**



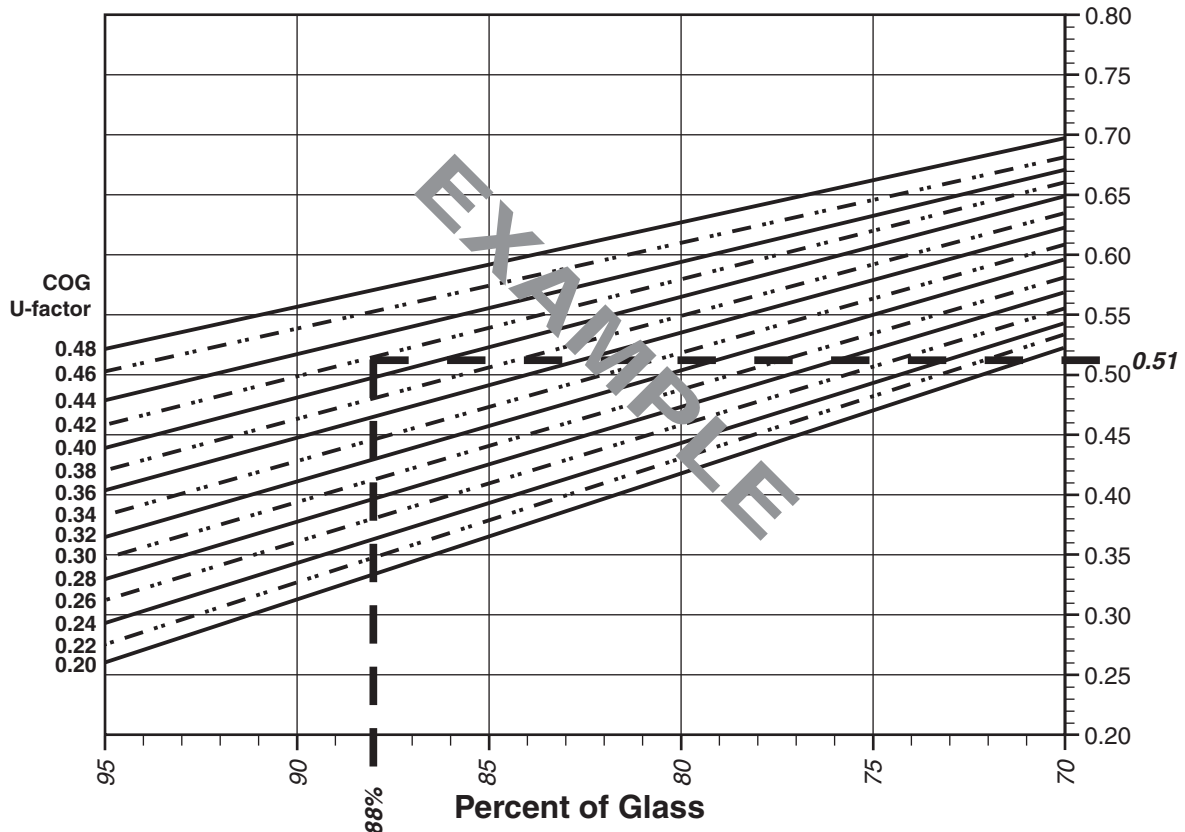
Example Glass U-factor = 0.42 Btu/hr.ft<sup>2</sup>.°F

Total Daylight Opening = 3(5' x 7') + 3(5' x 2') = 135ft<sup>2</sup>

Total Projected Area = (Total Daylight Opening + Total Area of Framing System)  
 = 15'-10" x 9'-7 1/2" = 152.39ft<sup>2</sup>

Percent of Glass = (Total Daylight Opening ÷ Total Projected Area)  
 = (135 ÷ 152.39)100 = 88%

**System U-factor vs Percent of Glass Area**



**Based on 88% glass and center of glass (COG) U-factor of 0.42  
 System U-factor is equal to 0.51 Btu/hr x ft<sup>2</sup> x °F**

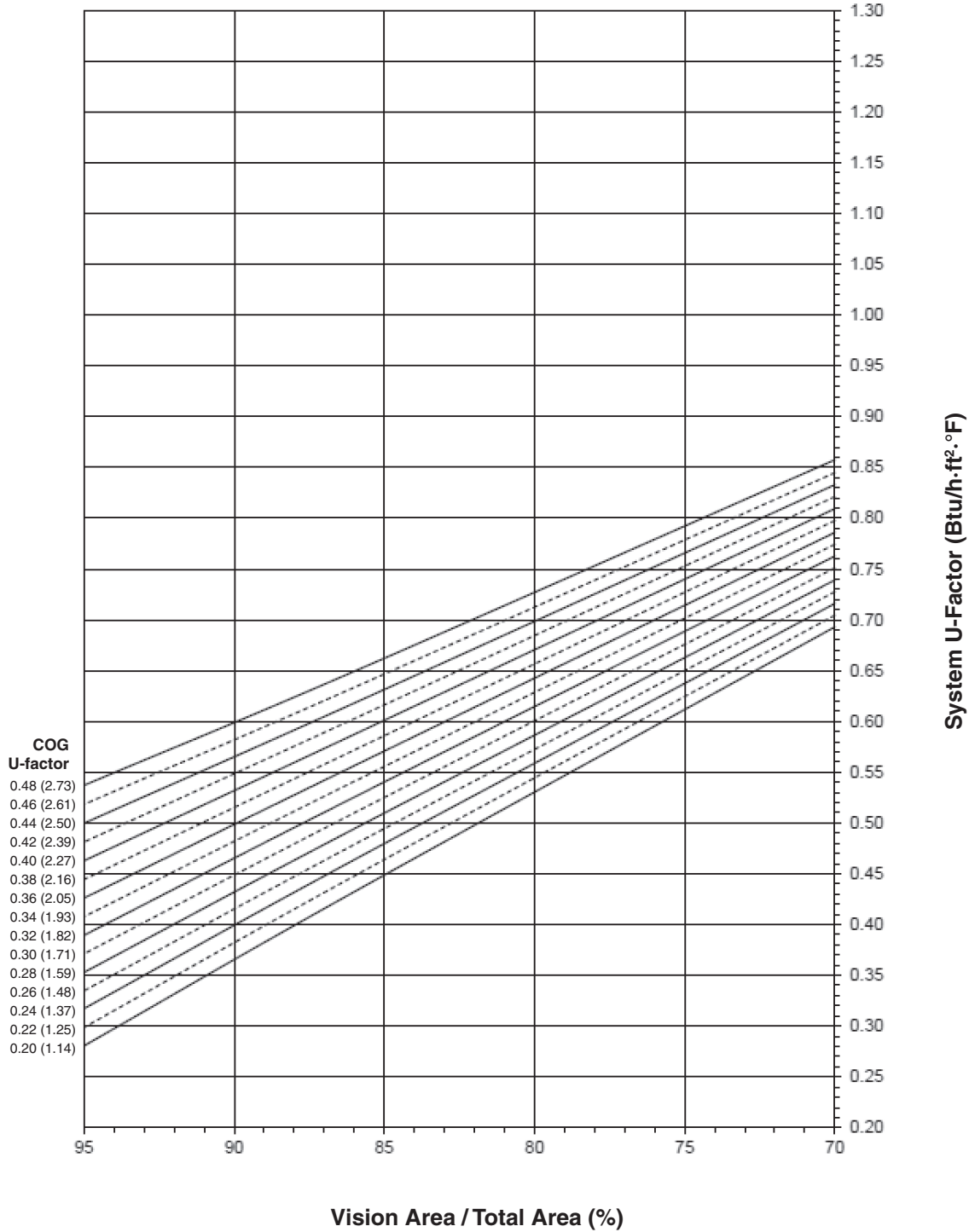
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Note:  
 Values in parentheses are metric.  
 COG=Center of Glass.  
 Charts are generated per AAMA 507.

**System U-Factor for Vision Glass**

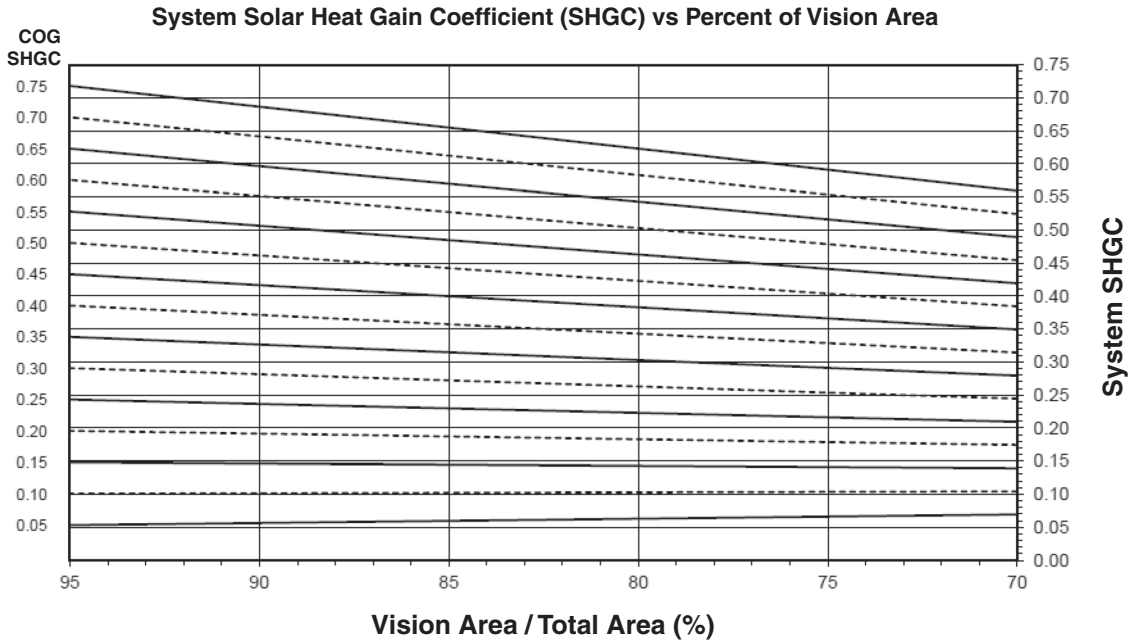


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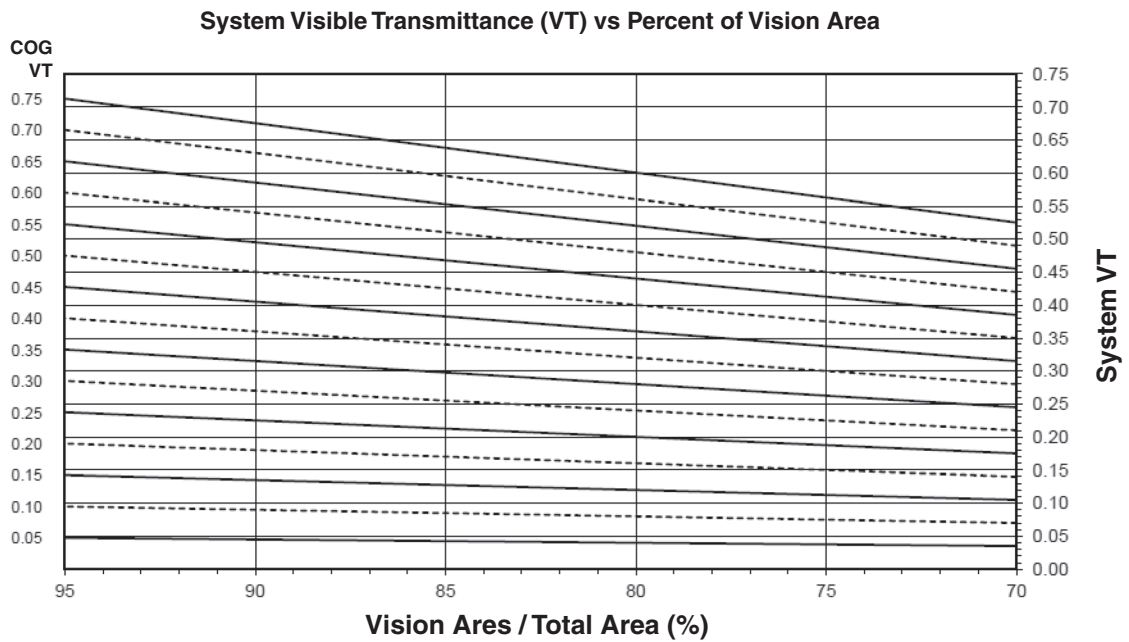
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Charts are generated per AAMA 507.



Charts are generated per AAMA 507.

 HURRICANE RESISTANT PRODUCT

**Thermal Transmittance**<sup>1</sup> (BTU/hr • ft<sup>2</sup> • °F)

Glass U-Factor <sup>3</sup>	Overall U-Factor <sup>4</sup>
0.48	0.65
0.46	0.63
0.44	0.62
0.42	0.60
0.40	0.59
0.38	0.57
0.36	0.56
0.34	0.54
0.32	0.52
0.30	0.51
0.28	0.49
0.26	0.48
0.24	0.46
0.22	0.45
0.20	0.43

**SHGC Matrix**<sup>2</sup>

Glass SHGC <sup>3</sup>	Overall SHGC <sup>4</sup>
0.75	0.66
0.70	0.62
0.65	0.58
0.60	0.53
0.55	0.49
0.50	0.45
0.45	0.40
0.40	0.36
0.35	0.32
0.30	0.27
0.25	0.23
0.20	0.19
0.15	0.15
0.10	0.10
0.05	0.06

**Visible Transmittance**<sup>2</sup>



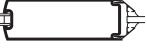

Glass VT <sup>3</sup>	Overall VT <sup>4</sup>
0.75	0.65
0.70	0.60
0.65	0.56
0.60	0.52
0.55	0.47
0.50	0.43
0.45	0.39
0.40	0.34
0.35	0.30
0.30	0.26
0.25	0.22
0.20	0.17
0.15	0.13
0.10	0.09
0.05	0.04

**NOTE:** For glass values that are not listed, linear interpolation is permitted.

1. U-Factors are determined in accordance with NFRC 100.
2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values and are obtained from your glass supplier.
4. Overall U-Factor, SHGC, and VT Matricies are based on the standard NFRC specimen size of 2000mm wide by 2000mm high (78-3/4" by 78-3/4").




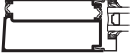
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Product	190 Standard Entrances Narrow Stile	350 Standard Entrances Medium Stile	500 Standard Entrances Wide Stile	350/500 Heavy Wall™ Entrances
Catalog Section	Entrances	Entrances	Entrances	Entrances
Typical Detail				
Sightline	2-1/8"	3-1/2"	5"	3-1/2", 5"
Depth	1-3/4"	1-3/4"	1-3/4"	2"
Applications	Moderate Traffic	Moderate to High Traffic	High Traffic	High Traffic
Infill Options	Up to 1"	Up to 1"	Up to 1"	Up to 1"
Cross Rails/Muntins	Yes	Yes	Yes	Yes
Thermal	No	No	No	No
2 Color Option	No	No	No	No
Product Description	The "190" narrow stile entrance door offers a slim appearance, features dual-moment corner construction and is designed for applications such as offices, stores and apartment buildings.	The "350" medium stile entrance door offers a rugged appearance, features dual-moment corner construction and is designed for schools, institutions, and other high traffic conditions.	The "500" wide stile entrance door features dual-moment corner construction, and it creates a monumental visual appearance for banks, libraries or buildings experiencing the heaviest traffic conditions.	A medium stile heavy duty door and door frame with increased wall thickness to provide greater durability in heavy traffic areas. The 500 Heavy Wall™ offers the same performance features as the 350 except in a wide stile design.
Testing for Protective Glazing	—	—	—	—
Performance Class/Rating	—	—	—	—
Performance Test Standards	ASTM E283 Dual Moment Corner	ASTM E283 Dual Moment Corner	ASTM E283 Dual Moment Corner	ASTM E283 Dual Moment Corner

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.



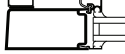
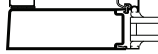
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Product	350 Tuffline™ Entrances	500 Tuffline™ Entrances	AA™250 Thermal Entrances	AA™425 Thermal Entrances
Catalog Section	Entrances	Entrances	Entrances	Entrances
Typical Detail				
Sightline	3-1/2"	5"	2-1/2"	4-1/4"
Depth	2"	2"	2-1/4"	2-1/4"
Applications	High Traffic High Abuse	High Traffic High Abuse	Moderate Traffic	Moderate Traffic
Infill Options	Up to 1"	Up to 1"	1"	1"
Cross Rails/Muntins	Yes	Yes	Yes	Yes
Thermal	No	No	Yes	Yes
2 Color Option	No	No	Yes	Yes
Product Description	A medium stile heavy duty door and door frame with hardware package for high abuse applications. Ideal for schools, universities, sports stadiums and other high traffic, high abuse areas.	500 Tuffline™ offers the same performance features as the 350 Tuffline™ except in a wide stile design.	AA™250 is a thermally broken entrance system, both door and door frame are thermally broken. The door features the dual-moment corner construction and is engineered for use with Kawneer's Trifab™ VG 451T framing system.	AA™425 offers the same performance features as the AA™250 except in a wide stile design.
Testing for Protective Glazing	—	—	Large Missile	Large Missile Blast Mitigation
Performance Class/Rating	—	—	+/- 45 PSF	+/- 50 PSF
Performance Test Standards	ASTM E283 Dual Moment Corner	Dual Moment Corner	AAMA 925 AAMA 1304 ASTM E283 ASTM E330 ASTM E331 ASTM E1886 ASTM E1996	AAMA 925 AAMA 1304 ASTM E283 ASTM E330 ASTM E331 ASTM E1886 ASTM E1996

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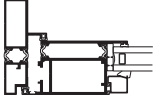
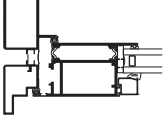


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Product	Flushline™ Entrances	260 Insulclad™ Thermal Entrances	360 Insulclad™ Thermal Entrances	560 Insulclad™ Thermal Entrances
Catalog Section	Entrances	Entrances	Entrances	Entrances
Typical Detail				
Sightline	N/A	2-11/16"	4-1/16"	5-9/16"
Depth	1-3/4"	2-1/4"	2-1/4"	2-1/4"
Applications	Moderate to High Traffic, Impact Areas	Moderate Traffic Thermal	Moderate Traffic	Moderate Traffic
Infill Options	1/4" or 1"	1"	1"	1"
Cross Rails/Muntins	No	Yes	Yes	Yes
Thermal	No	Extruded PVC / VHB Acrylic Foam Tape	Extruded PVC / VHB Acrylic Foam Tape	Extruded PVC / VHB Acrylic Foam Tape
2 Color Option	Yes	Yes	Yes	Yes
Product Description	A urethane foam-filled door with aluminum or FRP face sheet designs in various interior and exterior applications such as schools and manufacturing facilities.	260 Insulclad™ is a complete package of thermally broken door and door frame. Features dual-moment corner construction and is engineered for use with Kawneer's Trifab™ VG 451T Framing System and 1600 Wall Systems.	360 Insulclad™ offers the same performance features as the 260 Insulclad™ except in a medium stile design.	560 Insulclad™ offers the same performance features as the 260 Insulclad™ except in a wide stile design.
Testing for Protective Glazing	Small Missile Large Missile Blast Mitigation	—	—	—
Performance Class/Rating	+/- 75 PSF Max.	—	—	—
Performance Test Standards	AAMA 507 AAMA 1503 ASTM E90 ASTM E283 ASTM E330 ASTM E331 ASTM E1886 ASTM E1996 ASTM F2927 GSA T501-2003 NFRC 100/200/500 UFC 4-010-01	AAMA 507 ASTM E283 Dual Moment Corner NFRC 100/200/500	AAMA 507 ASTM E283 Dual Moment Corner NFRC 100/200/500	AAMA 507 ASTM E283 Dual Moment Corner NFRC 100/200/500

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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Product	2000T Terrace Doors 4" Frame	2000T Terrace Doors 5" Frame	350/500 IR Entrances	350/500 Heavy Wall™ IR Entrances
Catalog Section	Entrances	Entrances	Entrances	Entrances
Typical Detail				
Sightline	3-3/4"	3-3/4"	3-1/2", 5"	3-1/2", 5"
Depth	2-1/4"	2-1/4"	1-3/4"	2"
Applications	Exterior Balconies	Exterior Balconies	Moderate to High Traffic	Moderate to High Traffic
Infill Options	Up to 1-1/16"	Up to 1-1/16"	9/16"	9/16", 1"
Cross Rails/Muntins	No	No	Yes	Yes
Thermal	IsoWeb™	IsoWeb™ Door Panel IsoLock™ Pour & Debridge Frame	No	No
2 Color Option	Yes	No	No	No
Product Description	A thermally broken high performance French door for use in condominiums, lofts, hotels, and apartments. Mitered corner construction with heavy duty corner clips, stainless steel locking hardware, designed to meet the code requirements of wind-borne debris protection.	A thermally broken high performance French door for use in condominiums, lofts, hotels, and apartments. Mitered corner construction with heavy duty corner clips, stainless steel locking hardware, designed to meet the code requirements of wind-borne debris protection. Integrates with MetroView™ FG 501T and MetroView™ FG 601T PG Window Walls.	The "350/500 IR" medium stile entrance offers a rugged appearance, features dual-moment corner construction, silicone sealed interior glass stop, and hardware designed to meet the code requirements of windborne debris protection.	The 350 Heavy Wall™-IR offers the same features as the 350IR, increased wall thickness provides for greater durability and strength. The 500 Heavy Wall™-IR offers the same performance features as the 350 except in a wide stile.
Testing for Protective Glazing	Small Missile Large Missile	—	Small Missile Large Missile	Small Missile Large Missile
Performance Class/Rating	Single: AW-PG90-ATD Pairs: AW-PG45/65-ATD	Single: AW-PG90-ATD Pairs: AW-PG45/65-ATD	+/- 65 PSF +/- 85 PSF	+/- 110 PSF
Performance Test Standards	AAMA 507 ASTM E90 ASTM E283 ASTM E330 ASTM E331 ASTM E547 ASTM E1886 ASTM E1996 NAFS-08 NFRC 100/200/500 TAS 201, 202, 203	AAMA 507 ASTM E90 ASTM E283 ASTM E330 ASTM E331 ASTM E547 ASTM E1886 ASTM E1996 NAFS-11 NFRC 100/200/500 TAS 201, 202, 203	ASTM E330 ASTM E1886 ASTM E1996 Dual - Moment Corner TAS 201, 202, 203	ASTM E330 ASTM E1886 ASTM E1996 Dual - Moment Corner TAS 201, 202, 203

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## **Features**

- Flush appearance with face sheet of aluminum or fiberglass reinforced polyester (FRP) that is captured on four sides by integral extruded reglets
- Door is 1-3/4" (44.5 mm) Deep
- Dual moment welded corner construction
- Internal 500 wide stile frame has 5" (127 mm) vertical stiles, 5" (127 mm) top rail and 5" (127 mm) bottom rail
- Urethane foam core
- Single acting
- Vision lite infills of 1/4" (6.4 mm), 1" (25.4 mm) or 1" (25.4 mm) impact infill
- Offset pivots, butt hinges or continuous geared hinge
- MS locks or exit device hardware
- Surface mounted or concealed closers
- Architects Classic push/pulls
- Adjustable astragal utilizing pile weathering with polymeric fin at meeting stiles
- Polymeric bulb weatherstripping in door frames
- Aluminum panels with two texture choices, smooth and embossed
- FRP Pebble texture panel finishes in four standard choices
- Permanodic™ anodized finishes in seven choices
- Painted finishes in standard and custom choices

## **Optional Features**

- Paneline™ exit device or Paneline™ EL exit device
- Large Missile, Small Missile and Hurricane Impact tested
- Blast Mitigation tested

## **Product Applications**

- Flushline™ is designed for high traffic applications such as schools, universities as well as highly corrosive environments such as coastal applications, manufacturing facilities and waste water treatment plants

For specific product applications,  
Consult your Kawneer representative.

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**FINISH CHART ..... 4**

**PICTORIAL VIEW ..... 5**

**SECTION DIMENSIONS..... 6**

**CONSTRUCTION DETAILS ..... 7, 8**

**FACE SHEET OPTIONS..... 9**

**VISION LITE OPTIONS ..... 10**

**FRAME ADAPTER .....11**

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**APPLICATION CRITERIA..... 16**

**PUSH/PULL HARDWARE ..... 17**

**PANELINE™ EXIT DEVICE..... 18, 19**

**THERMAL CHARTS ..... 20-28**

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Metric (SI) conversion figures are included throughout these details for reference. Numbers in parentheses ( ) are millimeters unless otherwise noted.

The following metric (SI ) units are found in these details:

- m – meter
- cm – centimeter
- mm – millimeter
- s – second
- Pa – pascal
- MPa – megapascal

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FACE SHEET TYPE AND FINISH	FINISH OF DOOR SUB-FRAME		
	#17 CLEAR ANODIZED	#40 BRONZE ANODIZED	PAINTED TO MATCH
ALUMINUM	SELECT ANODIZED OR PAINTED FINISH AS REQUIRED		
FRP - PEBBLE			
Beige			•
Dark Bronze		•	
Light Gray	•		
White			•

**NOTE:**

The finish chart depicts recommended color combinations of face sheet and door sub-frame. Other combinations are available.

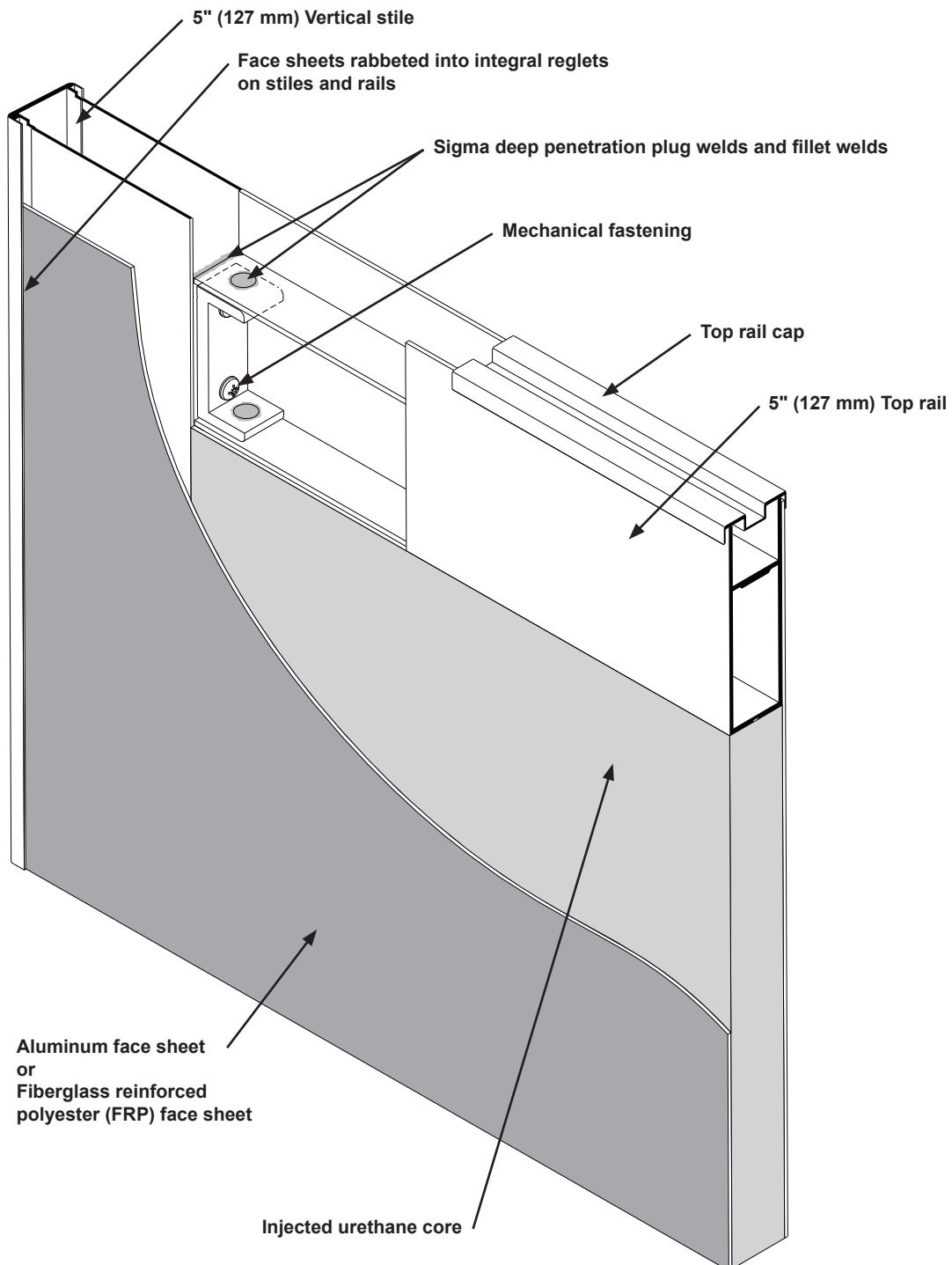
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**DOOR CONSTRUCTION**

The chassis for Kawneer's Flushline™ Series door utilizes Kawneer's dual moment welded corner construction. Face sheets interlock with the aluminum stiles and rails to create a hollow cavity which is then injected with urethane foam. The exceptional characteristics of urethane foam assures a strong chemical bond with all internal aluminum surfaces and a tough, dimensionally stable core. Doors are constructed with 5" (127 mm) wide stiles and rails internally to support surface applied and mortised hardware. The pebble texture F.R.P. (Fiberglass Reinforced Polyester) face sheet provides high impact resistance and architectural aesthetic qualities.



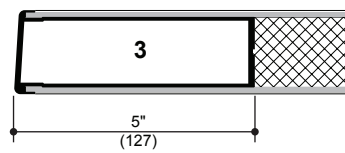
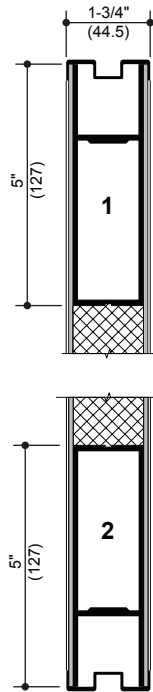
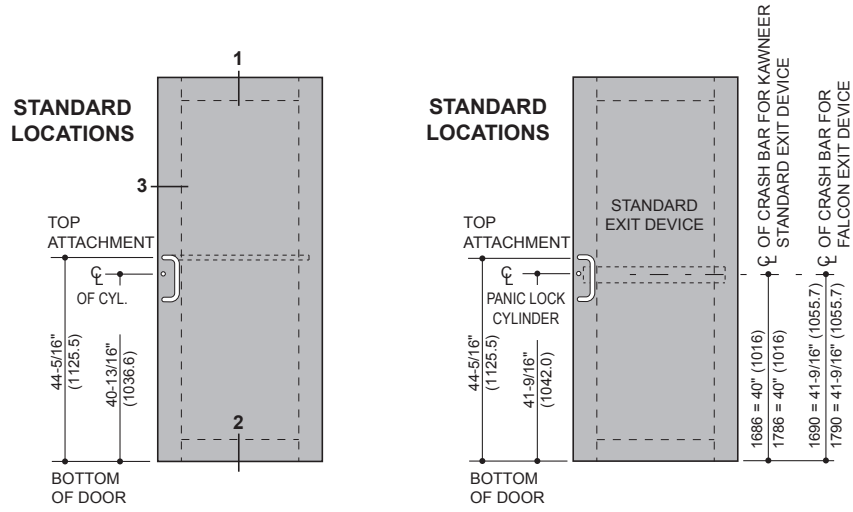
Aluminum face sheet  
or  
Fiberglass reinforced  
polyester (FRP) face sheet

Injected urethane core

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SCALE 3" = 1'-0"



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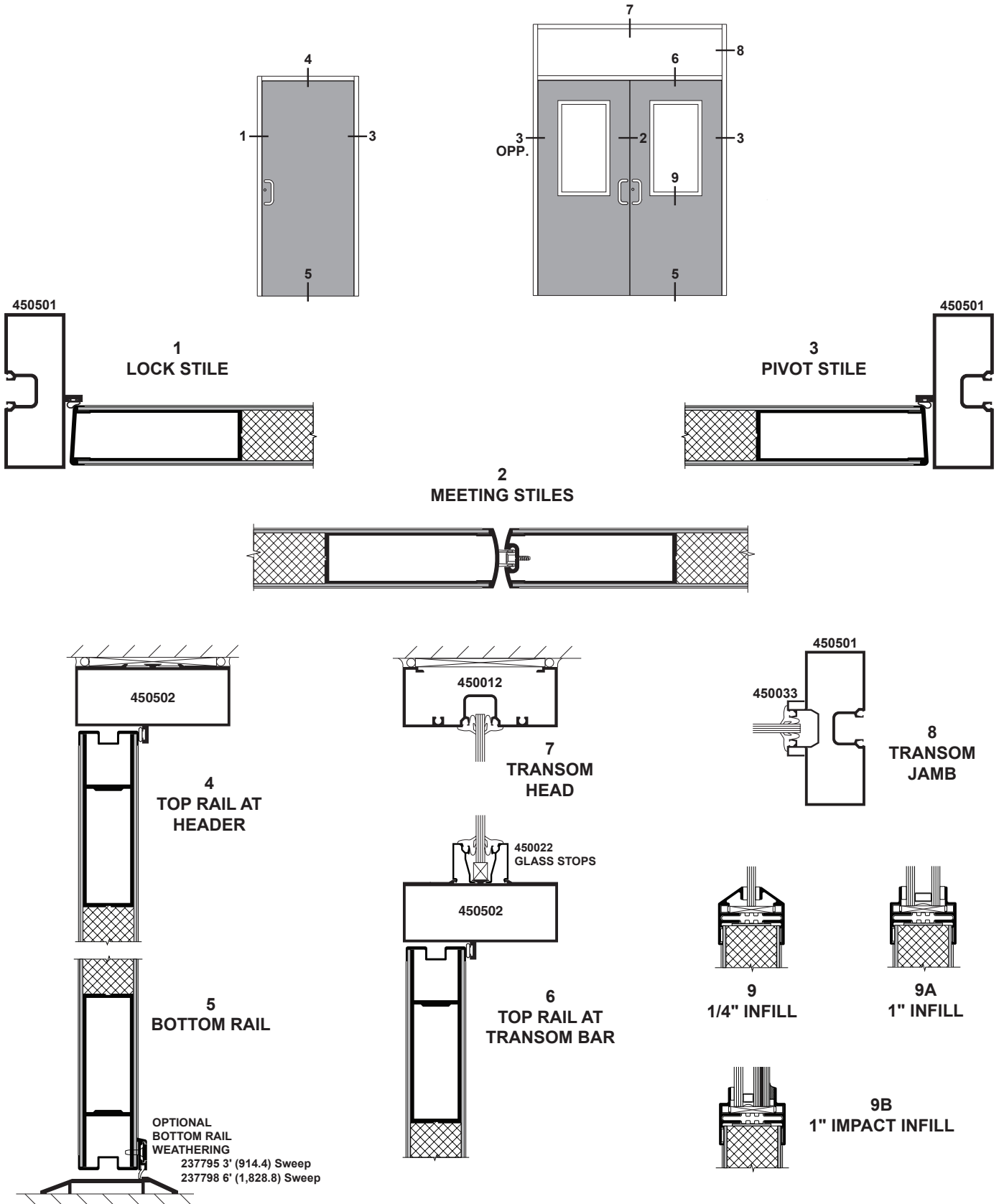
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## SCALE 3" = 1'-0"

**NOTE:** Details show Trifab™ VG 450 (Center) framing. Flushline™ doors may be used with other Kawneer framing. Refer to other framing sections for specific details.

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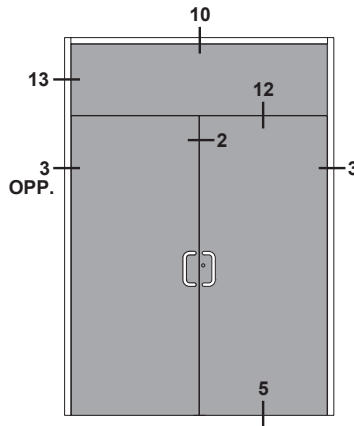
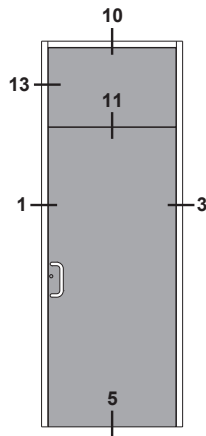
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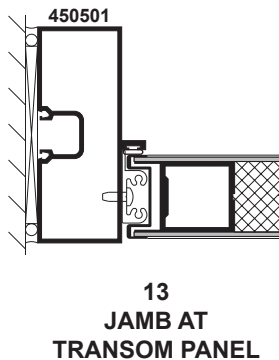
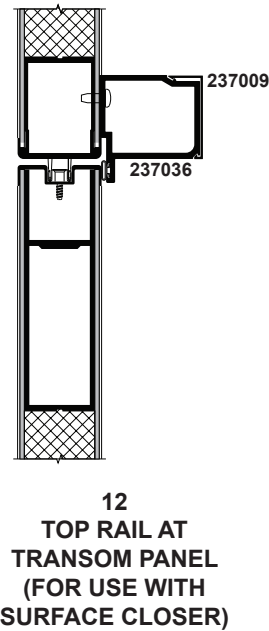
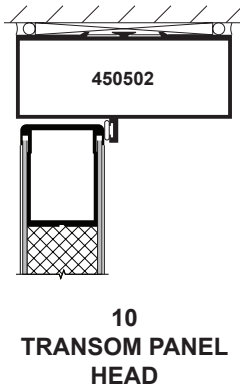


SCALE 3" = 1'-0"

**NOTE:** Details show Trifab™ VG 450 (Center) framing. Flushline™ doors may be used with other Kawneer framing. Consult individual framing sections for details.



**NOTE: Transom Panel**  
**Maximum Size:**  
 Single Door - 4'-0" x 3'-0"  
 Pairs of Doors - 8'-0" x 3'-0"



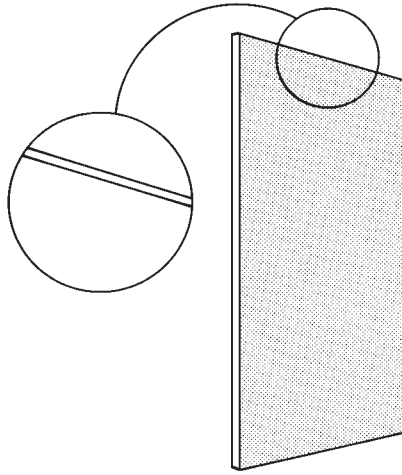
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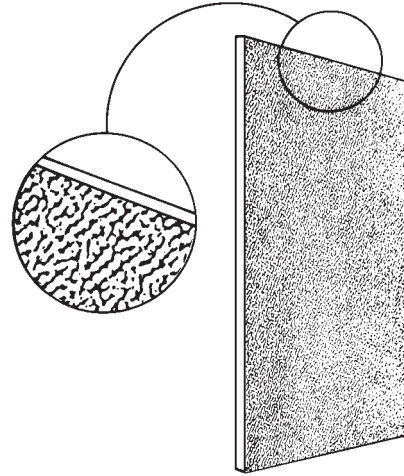
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### ALUMINUM DOOR FACE SHEETS

FOR EXTERIOR AND INTERIOR SURFACES



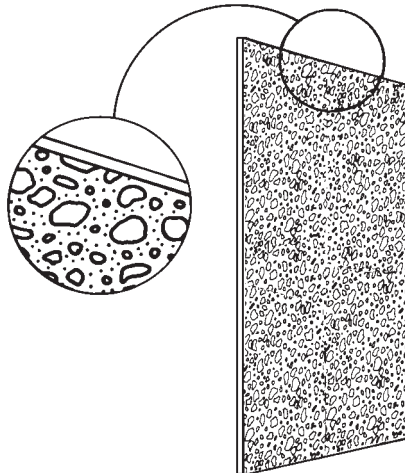
**Smooth (Unpatterned)  
Aluminum Sheet**  
0.090 (2.3) Thick



**Embossed Aluminum Sheet**  
0.090 (2.3) Thick

### FRP DOOR FACE SHEETS

FOR EXTERIOR AND INTERIOR SURFACES



**F.R.P. (Fiberglass Reinforced Polyester)**  
0.090 (2.3) Thick  
**Pebble Texture**  
**Available Finishes:**  
Beige, Dark Bronze, Light Gray and White

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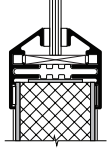
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**STANDARD CONFIGURATIONS SHOWN**

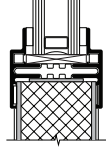
Consult your Kawneer representative for vision lites other than configurations shown.

**ALUMINUM FRAMED VISION LITES**

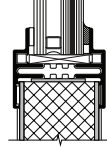
1/4" GLASS, 1" INSULATING GLASS or 1" IMPACT GLASS



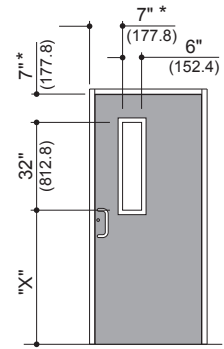
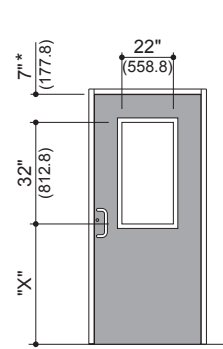
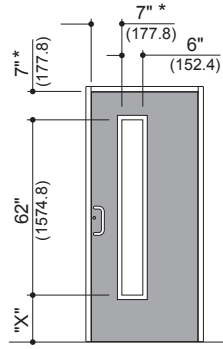
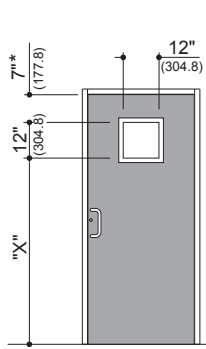
1/4" INFILL



1" INFILL



1" IMPACT INFILL



<b>Vision Lite Size</b>	Width	12" (304.8)	6" (152.4)	22" (558.8)	6" (152.4)
	Height	12" (304.8)	62" (1574.8)	32" (812.8)	32" (812.8)
<b>Placement in Door</b>		Centered	Lock Side	Centered	Lock Side
<b>Minimum Edge Dimension</b>		7" (177.8) Top and Sides of Door			
		12" (304.8) Bottom of Door			
* Edge dimensions shown are minimum allowed due to manufacturing constraints. Please specify dimension "X" [Bottom of Door to Bottom of Vision Lite. Minimum dimension 12" (304.8)].					

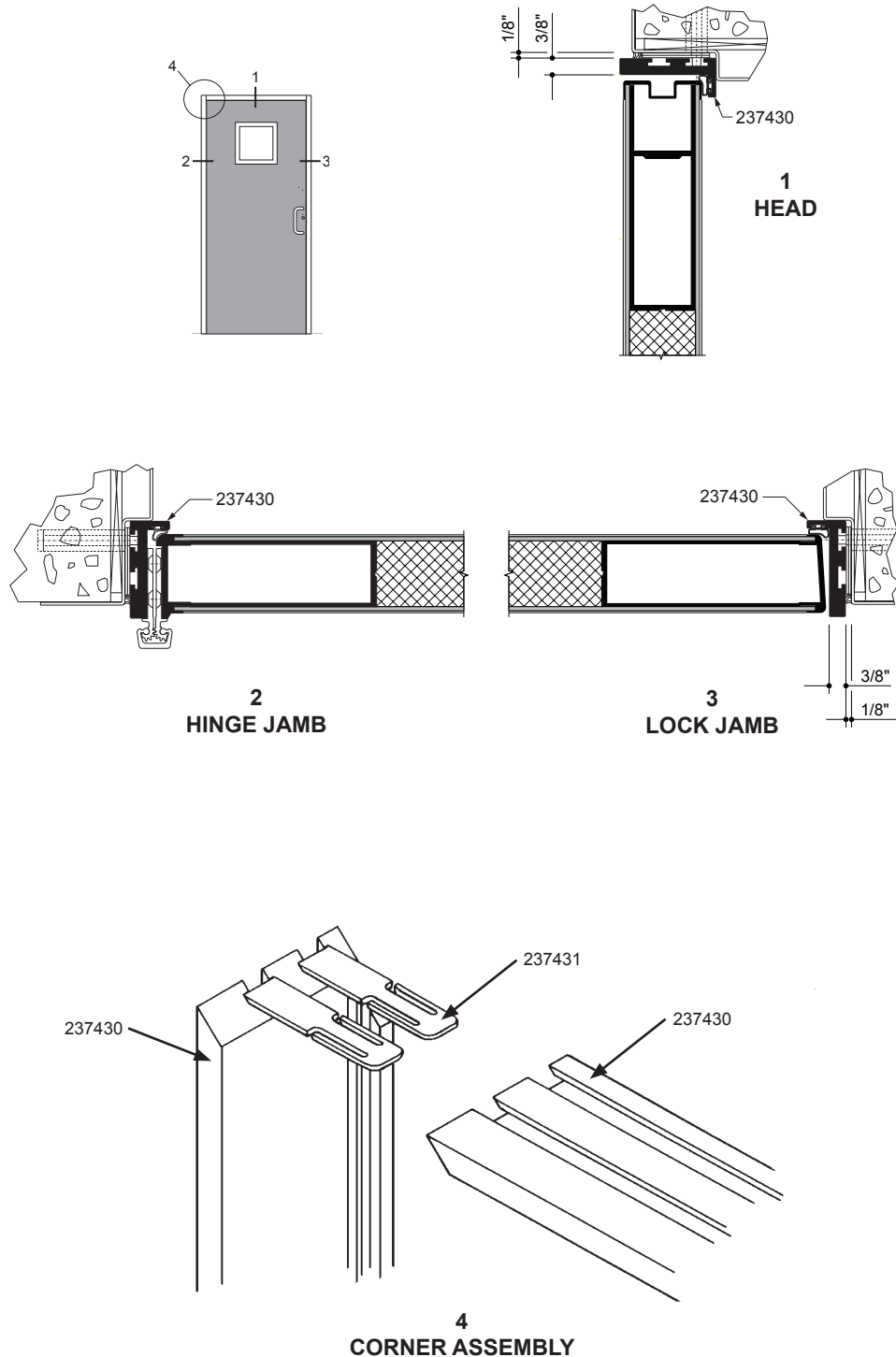
Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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The Flushline™ Frame Adapter is an economical answer for remodel/retrofit projects where new entrance doors are being installed into existing frames. The Flushline™ Frame Adapter utilizes polymeric bulb weathering for a resistive weatherseal on three sides of the door. When the frame adapter is used in conjunction with a continuous hinge the need for existing frame tear-out and attempting to align hardware on a new door with an existing frame is eliminated.

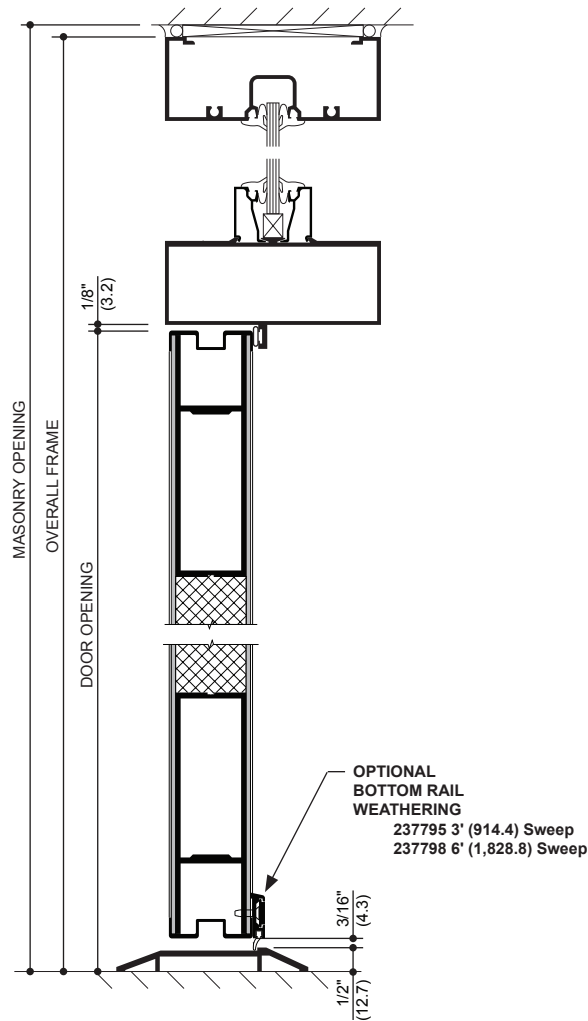
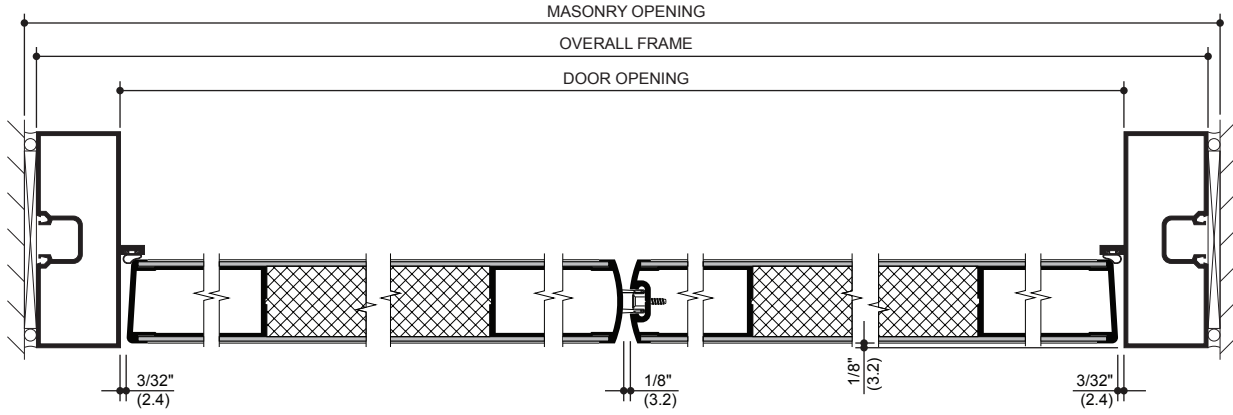
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SCALE 3" = 1' 0"

DIMENSIONS ARE NOMINAL



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**STANDARD SIZES (TRIFAB™ 400 & TRIFAB™ VG 450 CENTER FRAMES)****WITHOUT TRANSOM****Door Opening Dimension**

3' 0" x 7' 0" (914 x 2134)  
 3' 6" x 7' 0" (1067 x 2134)  
 6' 0" x 7' 0" (1829 x 2134)

**Overall Frame Dimension**

3' 3-1/2" x 7' 1-3/4" (1003 x 2178)  
 3' 9-1/2" x 7' 1-3/4" (1156 x 2178)  
 6' 3-1/2" x 7' 1-3/4" (1918 x 2178)

**Masonry Opening Dimension**

3' 4-1/4" x 7' 2-1/8" (1022 x 2188)  
 3' 10-1/4" x 7' 2-1/8" (1175 x 2188)  
 6' 4-1/4" x 7' 2-1/8" (1937 x 2188)

**WITH TRANSOM****Door Opening Dimension**

Unchanged from above.

**Overall Frame Dimension**

Add 3' 1-3/4" (959) to above heights.

**Masonry Opening Dimension**

Add 3' 2-1/8" (968) to above heights.

**WITH TRANSOM PANEL****Door Opening Dimension**

Unchanged from above.

**Overall Frame Dimension**

Add 3' 1-3/4" (959) to above heights.

**Masonry Opening Dimension**

Add 3' 2-1/8" (968) to above heights.

**STANDARD SIZES (TRIFAB™ VG 451 CENTER FRAMES)****WITHOUT TRANSOM****Door Opening Dimension**

3' 0" x 7' 0" (914 x 2134)  
 3' 6" x 7' 0" (1067 x 2134)  
 6' 0" x 7' 0" (1829 x 2134)

**Overall Frame Dimension**

3' 4" x 7' 2" (1016 x 2185)  
 3' 10" x 7' 2" (1168 x 2185)  
 6' 4" x 7' 2" (1930 x 2185)

**Masonry Opening Dimension**

3' 4-3/4" x 7' 2-3/8" (1035 x 2194)  
 3' 10-3/4" x 7' 2-3/8" (1187 x 2194)  
 6' 4-3/4" x 7' 2-3/8" (1949 x 2194)

**WITH TRANSOM****Door Opening Dimension**

Unchanged from above.

**Overall Frame Dimension**

Add 3' 2" (965) to above heights.

**Masonry Opening Dimension**

Add 3' 2-3/8" (975) to above heights.

**WITH TRANSOM PANEL****Door Opening Dimension**

Unchanged from above.

**Overall Frame Dimension**

Add 3' 2" (965) to above heights.

**Masonry Opening Dimension**

Add 3' 2-3/8" (975) to above heights.

**STANDARD SIZES (FLUSHLINE™ FRAME ADAPTER)****WITHOUT TRANSOM****Door Opening Dimension**

3' 0" x 7' 0" (914 x 2134)  
 3' 6" x 7' 0" (1067 x 2134)  
 6' 0" x 7' 0" (1829 x 2134)

**Overall Frame Dimension**

3' 0-3/4" x 7' 0-3/8" (933 x 2143)  
 3' 6-3/4" x 7' 0-3/8" (1086 x 2143)  
 6' 0-3/4" x 7' 0-3/8" (1848 x 2143)

**Note:** For hurricane impact framing refer to test reports and product approvals for available frame options.



LOCKING OPTIONS	MAXIMUM DOOR SIZE	MAXIMUM DESIGN PRESSURE	HINGING OPTIONS	GLAZING STOP OPTIONS	GLASS THICKNESS
MS 1850 3-Point Lock (Active leaf)  Flushbolts (Inactive leaf)	Single 3'-6" x 7'-6" (1066.8 x 2286) Pair 7'-0" x 7'-6" (2133.6 x 2286)	± 70 PSF	Offset Pivots Butt Hinges Continuous Hinge	1	1" (25.4)
Kawneer 1686 Concealed Rod Exit Device (EL option)	Single 3'-6" x 7'-6" (1066.8 x 2286) Pair 7'-0" x 7'-6" (2133.6 x 2286)	± 70 PSF	Offset Pivots Butt Hinges Continuous Hinge	1	1" (25.4)
Corbin Russwin ED5200S Rim Device	Single 3'-6" x 7'-6" (1066.8 x 2286) Pair 7'-0" x 7'-6" (2133.6 x 2286)	± 50 PSF (Zone 3 only)	Offset Pivots Butt Hinges Continuous Hinge	1	1" (25.4)
Schage L9453P Mortise Lock	Single 3'-6" x 7'-6" (1066.8 x 2286) Pair 8'-0" x 8'-0" (2438.4 x 2438.4)	± 75 PSF	Offset Pivots Butt Hinges Continuous Hinge	1	1" (25.4)

**Glazing Stop Options:**

1 - Structural silicone with 0.090 Kuraray or Eastman PVB inter layer.

## ENTRANCE HARDWARE OFFERINGS



LOCKING OPTIONS	MAXIMUM DOOR SIZE	MAXIMUM BLAST LOADING	HINGING OPTIONS	GLAZING STOP OPTIONS	GLASS THICKNESS
MS 1850 3-Point Lock (Active leaf)  Flushbolts (Inactive leaf)	Single 3'-6" x 6'-6" (1066.8 x 1981.2) Pair 7'-0" x 6'-6" (2133.6 x 1981.2)	Peak Pressure: 4 PSI  Impulse: 28 PSI•MSEC	Offset Pivots Butt Hinges	1	1" (25.4)
Schage L9453P Mortise Lock	Single 3'-6" x 6'-6" (1066.8 x 1981.2)	Peak Pressure: 4 PSI  Impulse: 28 PSI•MSEC	Offset Pivots Butt Hinges	1	1" (25.4)

Test conditions shown. Other conditions may be supported through calculation.

**Glazing Stop Options:**

1 - Structural silicone with 0.060 Kuraray or Eastman PVB inter layer.

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	STANDARD	OPTIONAL
<b>Doors</b>	Flushline™ doors prepared for attachment hardware.	
<b>Door Sizes Std.</b>	Standard sizes shown on page 12.	Any size up to 4'-0" x 8'-0" (1219 x 2438).
<b>Glass Stops</b>	Vision Lite for 1/4" (6.4) or 3/16" (4.0) infill.	Vision Lite for 1" (25.4) infill. Vision Lite for 1" (25.4) impact infill.
<b>Door Frames</b>	<b>Trifab™ 400</b> - 1-3/4" x 4" (44.5 x 101.6) for single glazing. <b>Trifab™ VG 450</b> Center - 1-3/4" x 4-1/2" (44.5 x 114.3) for single glazing. <b>Trifab™ VG 451</b> Center - 2" x 4-1/2" (50.8 x 114.3) for double glazing.	Any Kawneer framing system suitable for door frames may be selected, but manufactured per order.  For hurricane impact framing refer to test reports and product approvals for available frame options.
<b>Push-Pulls</b>	<b>Single Acting:</b> Architects Classic Hardware "CO-9" Pull and "CP-II" Push Bar.  Architects Classic Hardware "CO-9" Pull and "CP" Push Bar.	<b>Single Acting:</b> Architects Classic Hardware "CO-12" and "CP-II" push bar.  Architects Classic Hardware "CO-12" and "CP" push bar.  Architects Classic Hardware "CO-9"/"CO-9" Pulls.  Architects Classic Hardware "CO-12"/"CO-12" Pulls  Recessed Pull
<b>Door Closers</b>	<b>Single Acting:</b> Norton 1601 adjustable or 1601 BF adjustable surface closer with back-check and with or without adjustable hold-open.  Standard concealed overhead closer with single acting offset arm.	<b>Single Acting:</b> LCN 4040 surface closer with or without adjustable hold-open.  LCN 2010, 2030 or 5010 concealed overhead closers with or without hold-open.  LCN 1260 adjustable surface closer.  Norton 8100 surface closer with a 50% spring power adjustment (for opening forces of less than 8 pounds). Closer is available with standard back-checks and with or without the hold-open feature.  International single acting concealed overhead closer.  Falcon SC 60 surface closer.
<b>Hinging</b>	<b>Single Acting:</b> Kawneer top and bottom offset pivots (or) Kawneer top and bottom 4 1/2" x 4" (114.3 x 101.6) ball bearing butt hinge with non-removable pin (NRP) (or) Kawneer continuous gear hinge.	
<b>Intermediate Pivots/Butts</b>	<b>Single Acting:</b> Rixson M-19 or IVES #7215-INT intermediate offset pivot (or) Kawneer 4-1/2" x 4" (114.3 x 101.6) ball bearing butt hinge with non-removable pin (NRP).	
<b>Power Transfers</b>	<b>Single Acting:</b> Rixson M-19 EL or IVES #7215-INT intermediate offset pivot (or) Kawneer EL 4 1/2" x 4" (114.3 x 101.6) ball bearing butt hinge with wire transfer (or) EPT (Electric Power Transfer).	
<b>Power Supply</b>	<b>SP-1000X Power Supply:</b> For use with Paneline™ EL exit devices.	<b>PS1, PS5-4, and PS5-6 Power Supplies:</b> For use with Kawneer 1686 EL and 1786 EL exit devices only.
<b>Locks - Active Leaf</b>	Adams-Rite MS 1850A deadlock with two 1-5/32" (29.4) diameter 5 pin cylinders.	Adams-Rite #4510 latch lock. Adams-Rite #1850A-020 short throw deadlock. Adams-Rite #1850A-050 hookbolt lock. Adams-Rite #4015 two-point Lock. Adams-Rite #4085 three-point Lock. Adams-Rite #4089 exit indicator. Kawneer cylinder guard. Kawneer thumbturn (in lieu of cylinder). Schlage L9453P mortise lock. Yale 8860 mortise lock. Yale 5407 knob lock. Corbin Russwin CK4451 knob lock.

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	STANDARD	OPTIONAL
<b>Locks - Inactive Leaf</b>	One pair of Kawneer flush bolts in the inactive leaf of a pair of doors.	
<b>Thresholds</b>	A 1/2" x 4" (12.7 x 101.6) aluminum mill finish threshold.	A 1/2" x 6-3/4" (12.7 x 171.5) aluminum mill finish threshold.
<b>Weathering</b>	<b>Single Acting:</b> Weathering system in the door and frame consisting of a dense, bulb polymeric material, which remains resilient and retains its weathering ability under temperature extremes. (The system is complete with an optional EPDM blade gasket sweep strip applied to the bottom door rail with concealed fasteners).	Bottom Door Sweep
<b>Exit Device</b>	<p><b>Kawneer 1686 Concealed Rod Exit Device</b> with or without a mortised type cylinder.</p> <p><b>Kawneer 1786 Rim Exit Device</b> is a rim type exit device with or without a rim type cylinder. Pairs of doors require a Kawneer RM-86 removable mullion.</p> <p><b>Paneline™</b> exit device is a concealed rod exit device applicable to single or pairs of doors. It features an activating panel contained within the door cross rail.</p>	<p><b>Kawneer 1686 EL Concealed Rod Exit Device</b> electric modification is available.</p> <p><b>Kawneer 1786 EL Rim Exit Device</b> electric modification is available.</p> <p><b>Kawneer 1686 CD Concealed Rod Exit Device</b> available with cylinder dogging.</p> <p><b>Kawneer 1786 CD Rim Exit Device</b> available with cylinder dogging.</p> <p><b>Kawneer 1686 Lever Handle</b> is available for the Kawneer 1686 concealed rod exit device.</p> <p><b>Kawneer 1786 Lever Handle</b> is available for the Kawneer 1786 rim type exit device.</p> <p><b>Falcon 1690 Concealed Rod Exit Device</b> with or without a mortised type cylinder.</p> <p><b>Falcon 1790 Rim Exit Device</b> is a rim type exit device with or without a rim type cylinder.</p> <p><b>Falcon EL 1690</b> electric modification is also available.</p> <p><b>Falcon EL 1790</b> electric modification is also available.</p> <p><b>Paneline™ EL</b> electric modification is also available.</p> <p><b>Corbin Russwin ED5200S Rim Exit Device</b> is a rim type exit device. Pairs of doors require a removable mullion, WS707/708AKM.</p> <p><b>Falcon 1990</b> is a concealed rod exit device with or without a rim type cylinder.</p> <p><b>Falcon 2090</b> is a rim type exit device with or without a rim type cylinder. Pairs of doors require a removable aluminum mullion. RM-70 with the Falcon 2090 exit device.</p>
	<p><b>Exit Device Pulls:</b> Architects Classic style "CO-9" Pull with Kawneer 1686 and 1786 exit devices. Architects Classic style "CO9" Pull for Paneline™ and Paneline™ EL exit devices.</p>	<p><b>Optional Exit Device Pulls:</b> Architects Classic style "CO-12" Pull with Kawneer 1686 and 1786 exit devices.</p>

## APPLICATION CRITERIA

As indicated on page 13, the standard sizes of swing doors are 3'-0" x 7'-0" (914.4 x 2133.6) or 3'-6" x 7'-0" (1067 x 2134) for single doors and 6'-0" x 7'-0" (1828.8 x 2133.6) for pairs of doors. When these sizes are exceeded the following criteria should be administered.

1. Larger doors should not be subject to heavy traffic or strong prevailing wind conditions.
2. Larger doors should use a door closer with a good back check action.
3. When a door exceeds 9'-0" (2743.2) in height, a crossrail or push bar is recommended to reinforce the internal vertical stiles.
4. When an offset hung door exceeds 7'-6" (2286.0) in height, an intermediate butt or offset pivot should be used.
5. Tall doors should be prevented from racking by proper utilization of hardware, including door closers, door holders and door stops.

### NOTE:

SOME OF THESE CRITERIA ARE OF A SUBJECTIVE NATURE, CONTACT YOUR FACTORY REPRESENTATIVE FOR APPLICATION ASSISTANCE.

**MAXIMUM DOOR HEIGHT  
FOR PANELINE™ EL = 8'-0"**

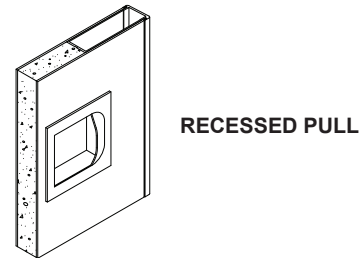
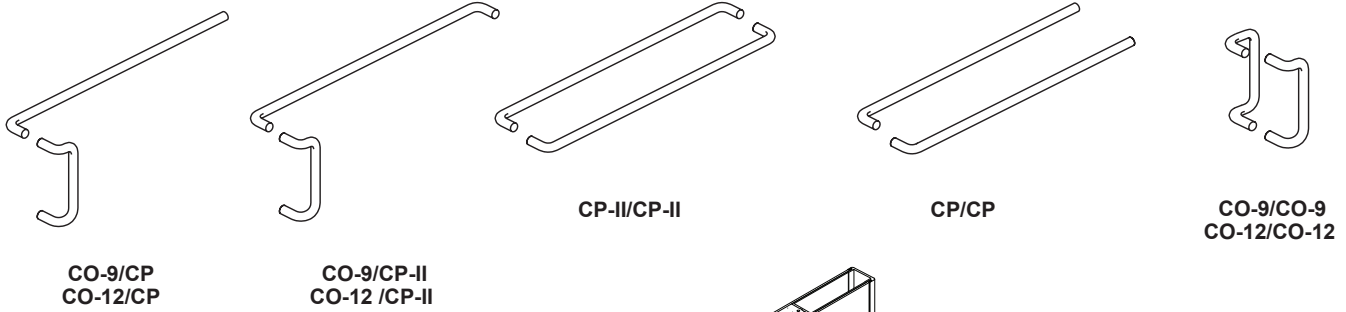
Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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REFER TO **HARDWARE SECTION** FOR COMPLETE HARDWARE INFORMATION.

**ARCHITECTS CLASSIC (PUSH PULL SETS)**

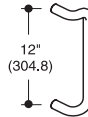
SINGLE ACTING DOORS USE A PULL HANDLE AND PUSH BAR AS STANDARD



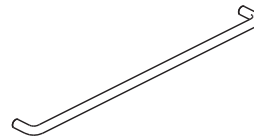
**ARCHITECTS CLASSIC (COMPONENTS)**



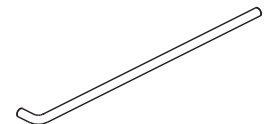
STYLE CO-9  
PULL



STYLE CO-12  
PULL



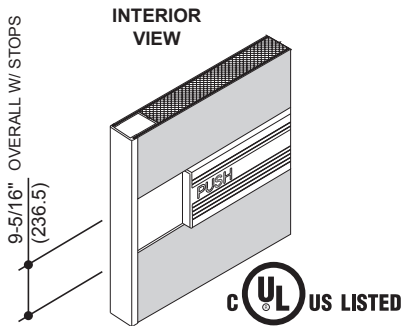
STYLE CP-II PUSH BAR



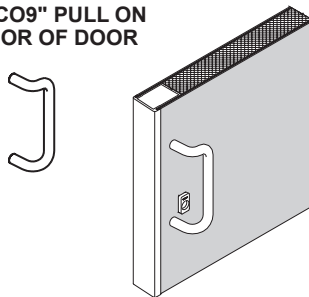
STYLE CP PUSH BAR

**EXIT DEVICES**

**KAWNEER PANELINE™ / PANELINE™ EL**



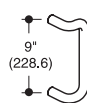
STYLE "CO9" PULL ON EXTERIOR OF DOOR



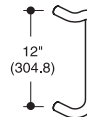
EXTERIOR VIEW OF FLUSHLINE™ DOOR "CO9" PULL AND OPTIONAL CYLINDER GUARD SHOWN.

SEE PAGE 17 AND 18 FOR COMPLETE PANELINE™ INFORMATION

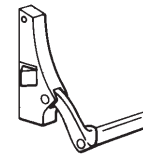
**EXIT DEVICES AND PULLS**



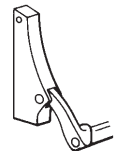
STYLE "CO-9"  
PULL



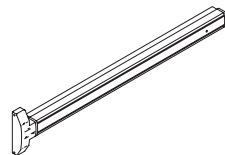
STYLE "CO-12"  
PULL



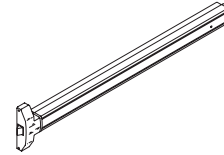
RIM LATCH  
Falcon 2090



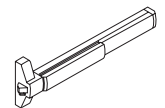
CONCEALED ROD  
Falcon 1990



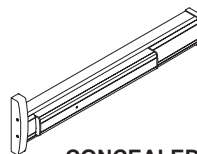
CONCEALED ROD  
Falcon 1690  
Falcon EL 1690



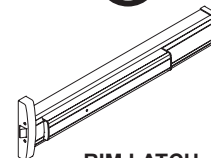
RIM LATCH  
Falcon 1790  
Falcon EL 1790



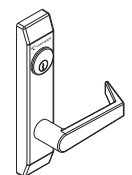
RIM LATCH  
Corbin Russwin  
ED5200S



CONCEALED ROD  
Kawneer 1686  
Kawneer 1686 EL  
Kawneer 1686 CD



RIM LATCH  
Kawneer 1786  
Kawneer 1786 EL  
Kawneer 1786 CD



LEVER HANDLE  
Kawneer 1686  
Kawneer 1786

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The Paneline™ concealed rod exit device for Flushline™ doors will accommodate variations in stile width and door width as shown in the following illustrations. Sidelites adjacent to Paneline™ equipped doors not requiring exit devices may be fitted with fixed panels as detailed below to match the general appearance of the Paneline™ cross rail.

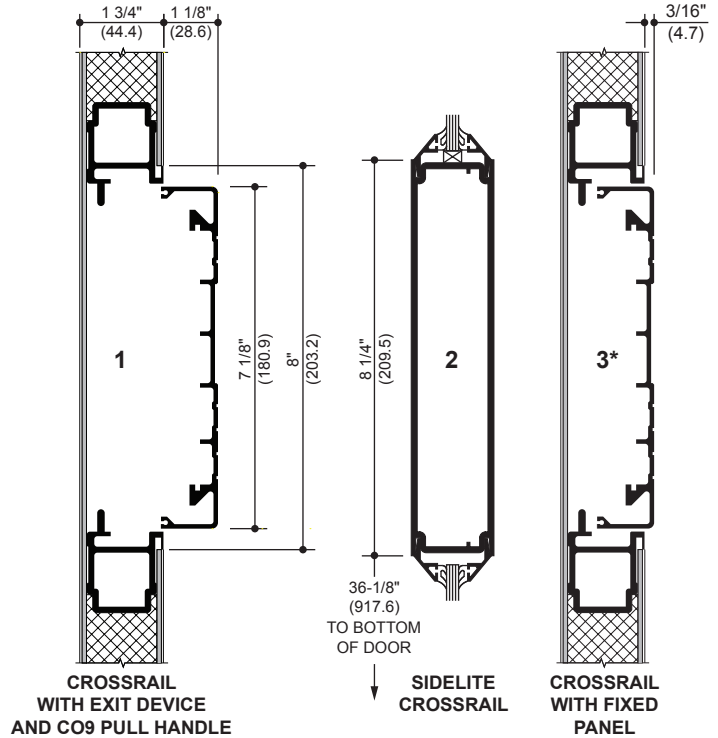
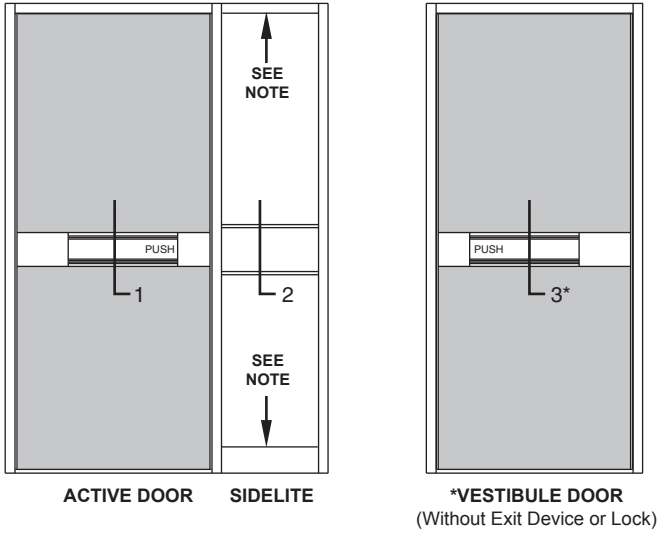
The Optional Paneline™ EL device is designed for electrified access control and is compatible with most key pad and card reader systems.

See **Hardware Section** for complete description of Paneline™ hardware, including finish of units.

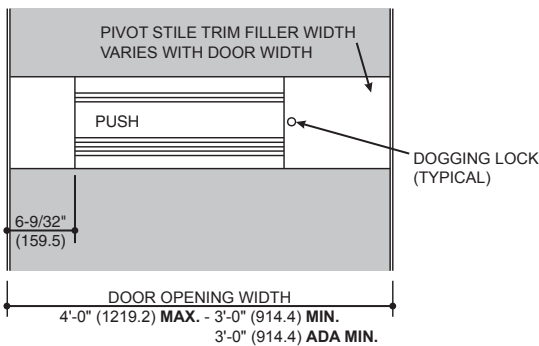
**Paneline™ uses mortise cylinder in lieu of the normal rim-type. Dummy Paneline™ units are not for use with any type of lock.**

### INTERIOR ELEVATIONS

**NOTE:** Sidelites must be stop glazed above and below rail.



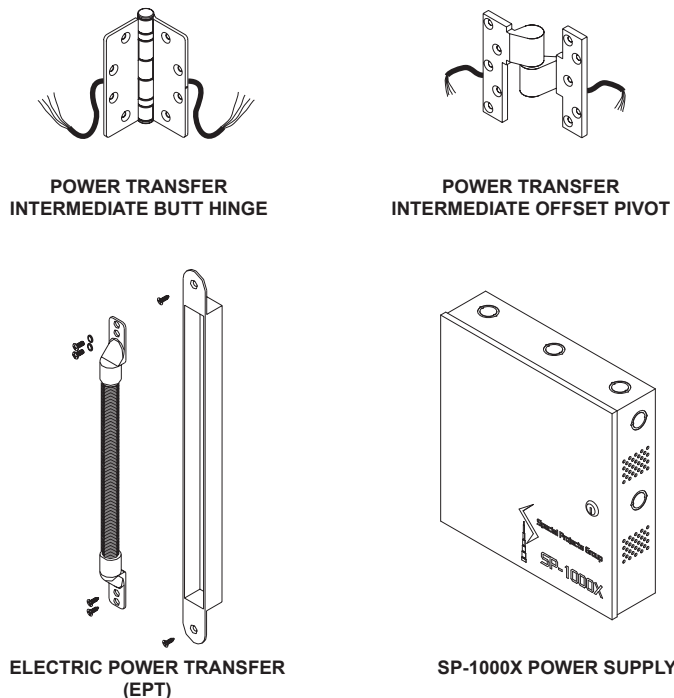
### INTERIOR VIEW



### EXTERIOR VIEW



### PANELINE™ EL COMPONENTS



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Sidelites adjacent to Paneline™ equipped doors not requiring exit devices may be fitted with fixed panels as detailed below to match the general appearance of the Paneline™ cross rail.

See **Hardware Section** for complete description of Paneline™ hardware, including finish of units.

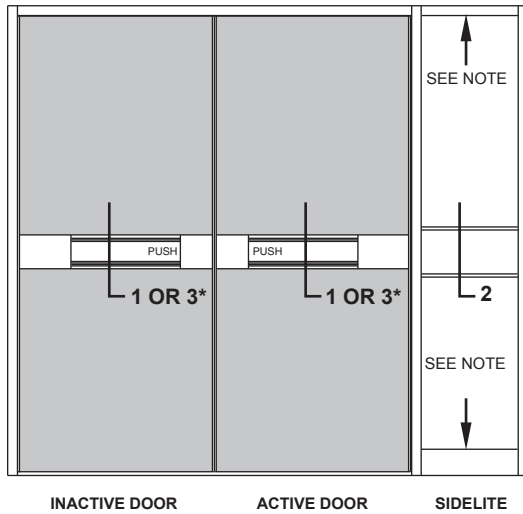
**Paneline™ uses mortise cylinder in lieu of the normal rim-type. Dummy Paneline™ units should not use any type of lock.**

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

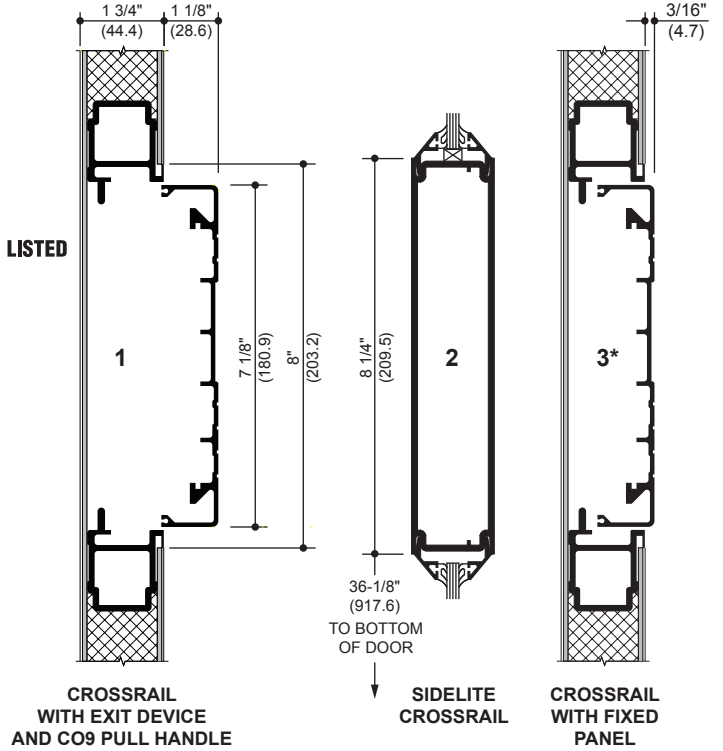
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**INTERIOR ELEVATION**

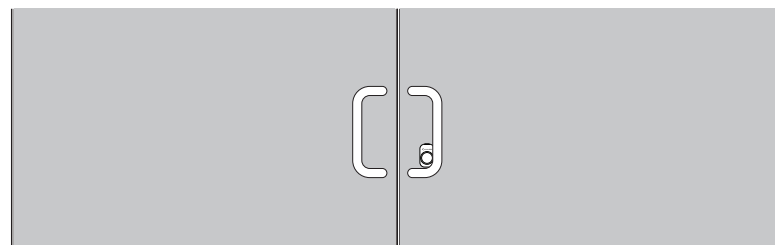
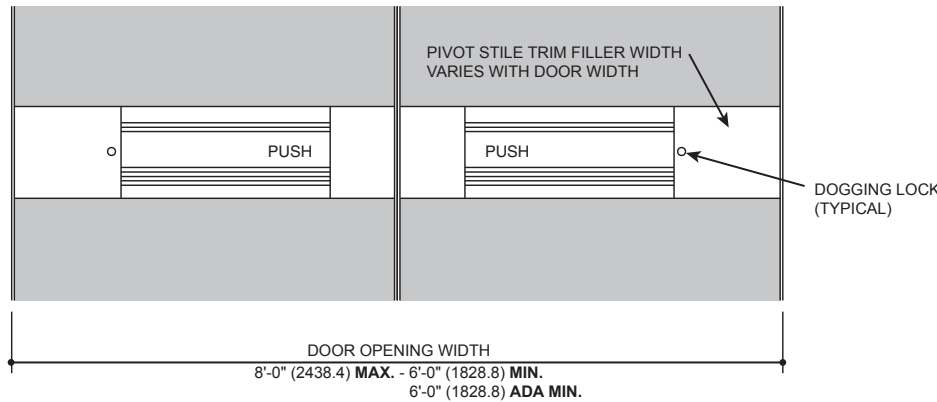
**NOTE:** Sidelites must be stop glazed above and below rail.



**\* ALTERNATE CROSSRAIL FOR VESTIBULE DOORS (Without Exit Device or Lock)**



**INTERIOR VIEW**

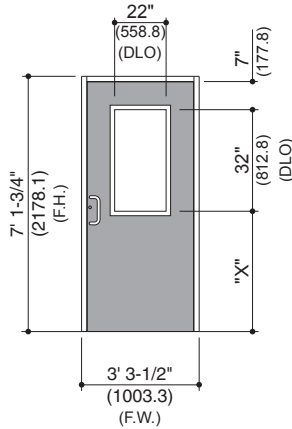


**EXTERIOR VIEW WITH "CO9" PULL AND STANDARD CYLINDER GUARD SHOWN**



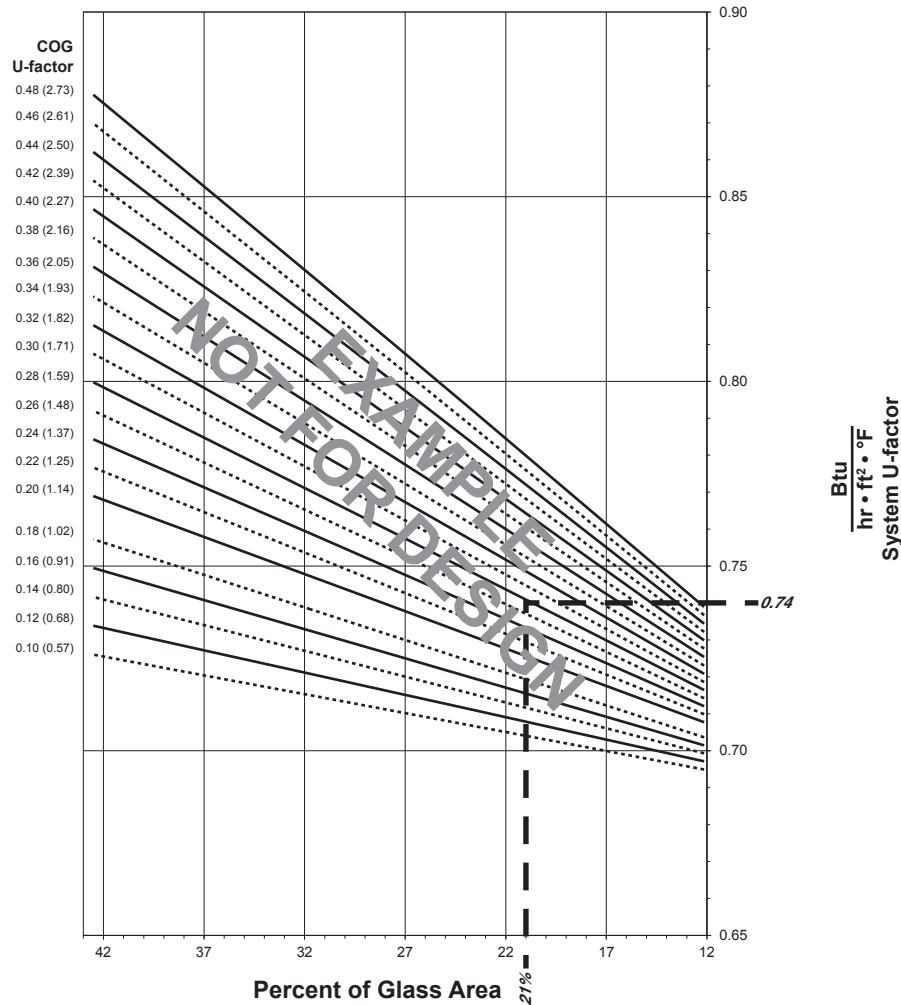
**STYLE "CO9" PULL ON EXTERIOR OF DOOR**

**Generic Project Specific U-factor Example Calculation**  
 (Percent of Glass will vary on specific products depending on sitelines)



Example Glass U-Factor = 0.28 Btu/hr • ft<sup>2</sup> • °F  
 Total Daylight Opening = 22" x 32" = 4.89 ft<sup>2</sup>  
 Total Projected Area = 3' 3-1/2" x 7' 1-3/4" = 23.52 ft<sup>2</sup>  
 Percent of Glass = (Total Daylight Opening ÷ Total Projected Area)100  
 = (4.89 ÷ 23.52)100 = 21%

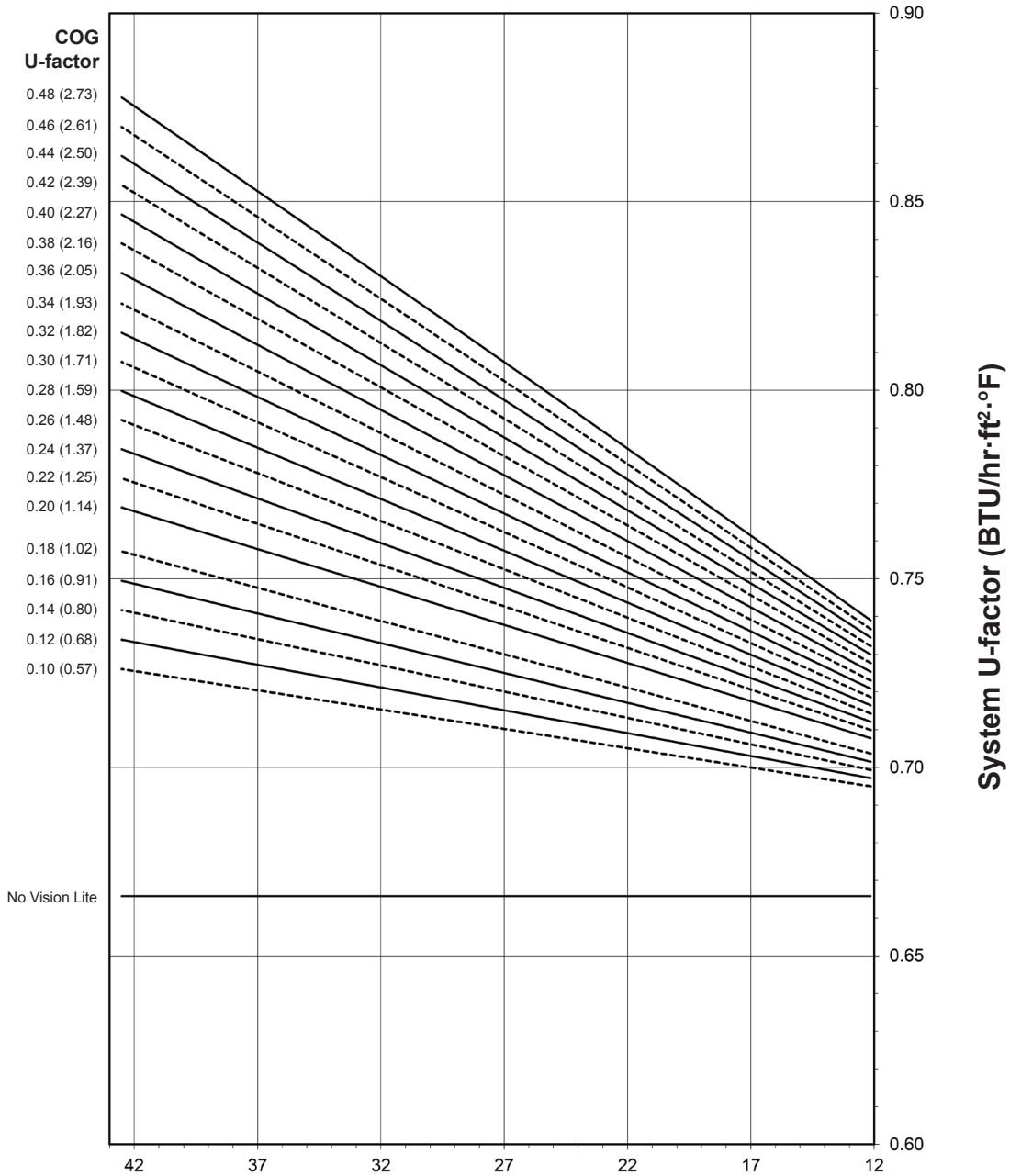
**System U-factor vs Percent of Glass Area**



Based on 21% glass and center of glass (COG) U-factor of 0.28  
 System U-factor is equal to 0.74 Btu/hr • ft<sup>2</sup> • °F

**FLUSHLINE™ DOOR WITH ALUMINUM SKIN**

**System U-factor vs Percent of Glass Area**



**Percent of Glass = Vision Area/Total Area  
 (Total Daylight Opening / Projected Area)**

**Notes for System U-Factor, SHGC and VT charts:**

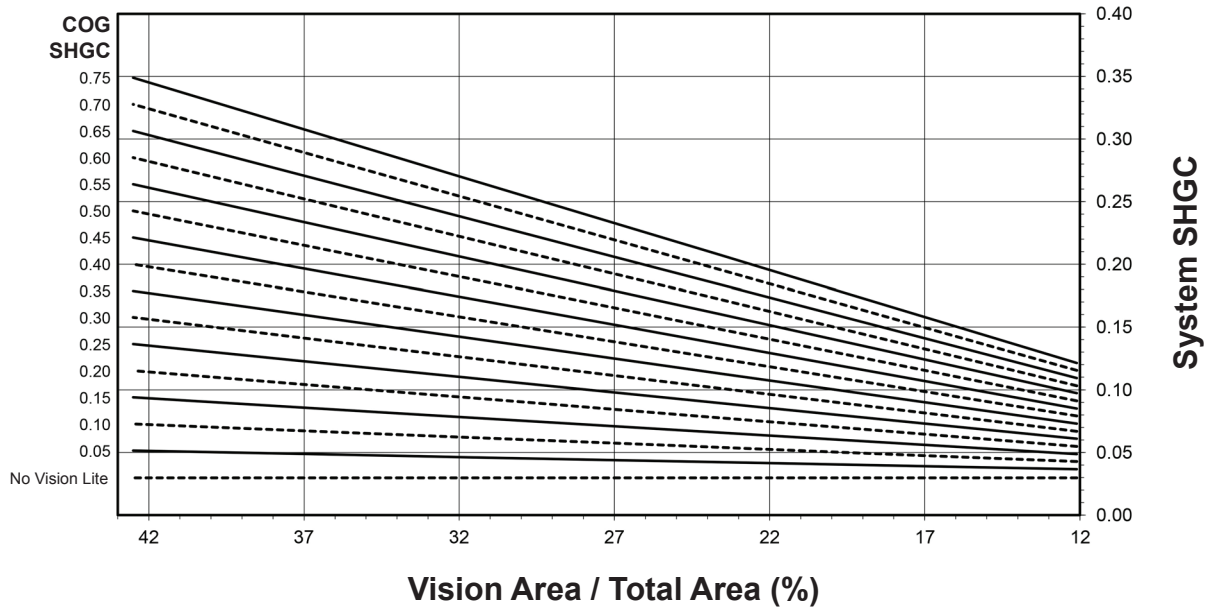
For glass values that are not listed, linear interpolation is permitted.  
 Glass properties are based on center of glass values (winter conditions) and are obtained from your glass supplier.

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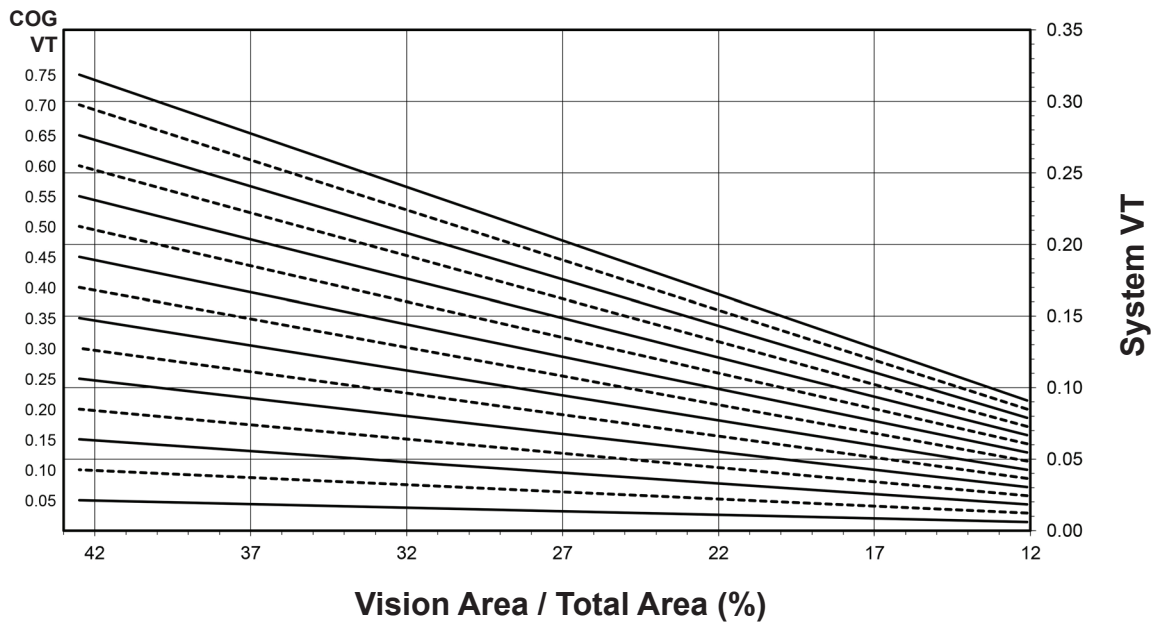
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FLUSHLINE™ DOOR WITH ALUMINUM SKIN

**System Solar Heat Gain Coefficient (SHGC) vs Percent of Vision Area**



**System Visible Transmittance (VT) vs Percent of Vision Area**



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**Thermal Transmittance <sup>1</sup> (BTU/hr • ft<sup>2</sup> • °F)**

Glass U-Factor <sup>3</sup>	Overall U-Factor <sup>4</sup>
0.48	0.74
0.46	0.74
0.44	0.73
0.42	0.73
0.40	0.73
0.38	0.73
0.36	0.73
0.34	0.72
0.32	0.72
0.30	0.72
0.28	0.72
0.26	0.71
0.24	0.71
0.22	0.71
0.20	0.71
0.18	0.70
0.16	0.70
0.14	0.70
0.12	0.70
0.10	0.69
No Vision Lite	0.67

**Single Door with Aluminum Panel and 1/4 Vision Lite**

**NOTE:** For glass values that are not listed, linear interpolation is permitted.

1. U-Factors are determined in accordance with NFRC 100.
2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values (winter conditions) and are obtained from your glass supplier.
4. Overall U-Factor, SHGC, and VT Matricies are based on the standard NFRC specimen size of 1920mm wide by 2090mm high (75-1/2" by 82-3/8").

**SHGC Matrix <sup>2</sup>**

Glass SHGC <sup>3</sup>	Overall SHGC <sup>4</sup>
0.75	0.12
0.70	0.12
0.65	0.11
0.60	0.10
0.55	0.10
0.50	0.09
0.45	0.09
0.40	0.08
0.35	0.07
0.30	0.07
0.25	0.06
0.20	0.05
0.15	0.05
0.10	0.04
0.05	0.04
No Vision Lite	0.03

**Visible Transmittance <sup>2</sup>**

Glass VT <sup>3</sup>	Overall VT <sup>4</sup>
0.75	0.09
0.70	0.08
0.65	0.08
0.60	0.07
0.55	0.07
0.50	0.06
0.45	0.05
0.40	0.05
0.35	0.04
0.30	0.04
0.25	0.03
0.20	0.02
0.15	0.02
0.10	0.01
0.05	0.01
No Vision Lite	0.00

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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### Thermal Transmittance <sup>1</sup> (BTU/hr • ft<sup>2</sup> • °F)

Glass U-Factor <sup>3</sup>	Overall U-Factor <sup>4</sup>
0.48	0.79
0.46	0.79
0.44	0.78
0.42	0.78
0.40	0.77
0.38	0.77
0.36	0.77
0.34	0.76
0.32	0.76
0.30	0.75
0.28	0.75
0.26	0.74
0.24	0.74
0.22	0.74
0.20	0.73
0.18	0.72
0.16	0.72
0.14	0.72
0.12	0.71
0.10	0.71
No Vision Lite	0.67

### Single Door with Aluminum Panel and 1/2 Vision Lite

**NOTE:** For glass values that are not listed, linear interpolation is permitted.

1. U-Factors are determined in accordance with NFRC 100.
2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values (winter conditions) and are obtained from your glass supplier.
4. Overall U-Factor, SHGC, and VT Matricies are based on the standard NFRC specimen size of 960mm wide by 2090mm high (37-3/4" by 82-3/8").

### SHGC Matrix <sup>2</sup>

Glass SHGC <sup>3</sup>	Overall SHGC <sup>4</sup>
0.75	0.21
0.70	0.20
0.65	0.18
0.60	0.17
0.55	0.16
0.50	0.15
0.45	0.14
0.40	0.12
0.35	0.11
0.30	0.10
0.25	0.09
0.20	0.08
0.15	0.07
0.10	0.05
0.05	0.04
No Vision Lite	0.03

### Visible Transmittance <sup>2</sup>

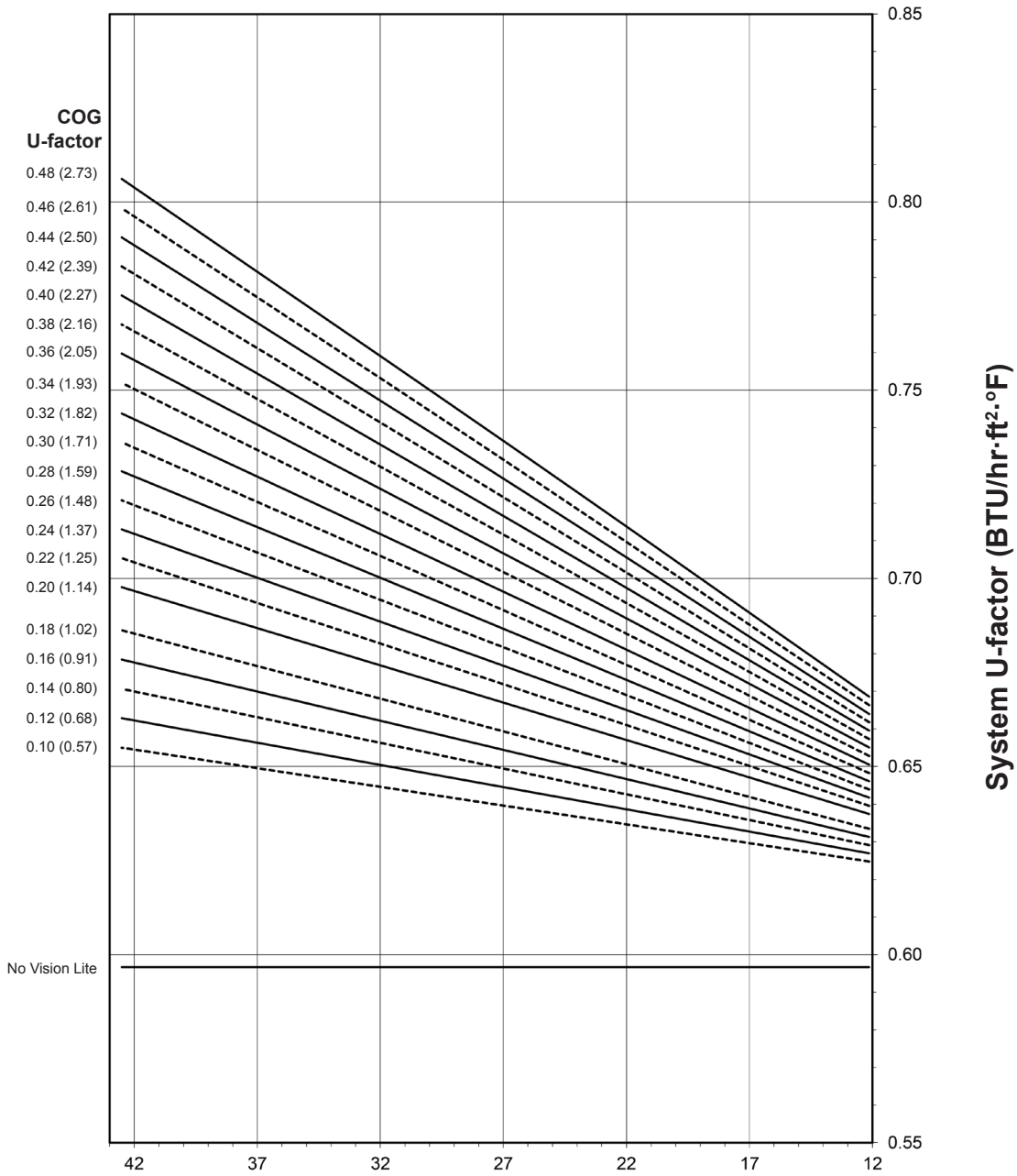
Glass VT <sup>3</sup>	Overall VT <sup>4</sup>
0.75	0.18
0.70	0.17
0.65	0.15
0.60	0.14
0.55	0.13
0.50	0.12
0.45	0.11
0.40	0.09
0.35	0.08
0.30	0.07
0.25	0.06
0.20	0.05
0.15	0.04
0.10	0.02
0.05	0.01
No Vision Lite	0.00

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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**FLUSHLINE™ DOOR WITH FRP SKIN**

**System U-factor vs Percent of Glass Area**



**Percent of Glass = Vision Area/Total Area  
(Total Daylight Opening / Projected Area)**

**Notes for System U-Factor, SHGC and VT charts:**

For glass values that are not listed, linear interpolation is permitted.

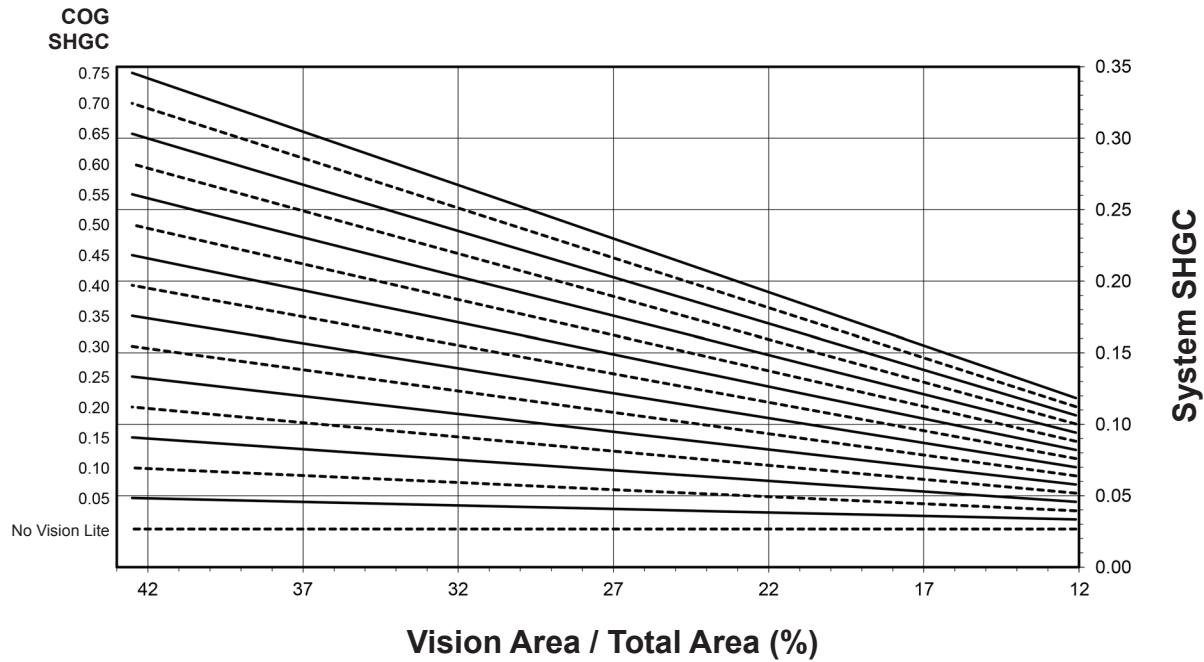
Glass properties are based on center of glass values (winter conditions) and are obtained from your glass supplier.

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

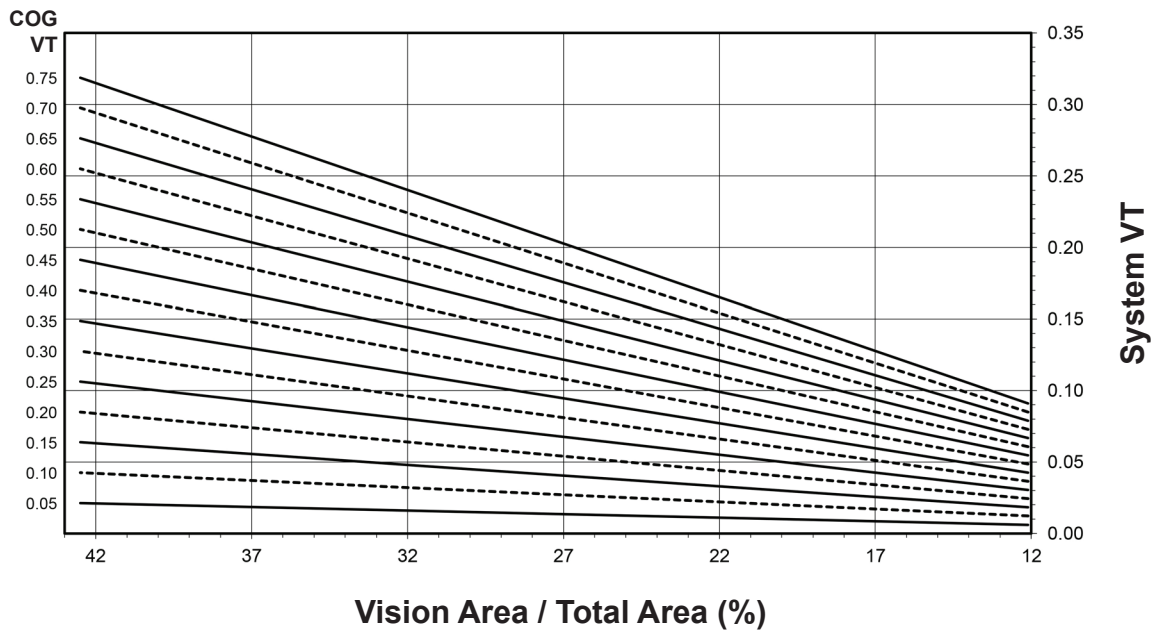
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FLUSHLINE™ DOOR WITH FRP SKIN

**System Solar Heat Gain Coefficient (SHGC) vs Percent of Vision Area**



**System Visible Transmittance (VT) vs Percent of Vision Area**



Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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**Thermal Transmittance <sup>1</sup> (BTU/hr • ft<sup>2</sup> • °F)**

Glass U-Factor <sup>3</sup>	Overall U-Factor <sup>4</sup>
0.48	0.67
0.46	0.67
0.44	0.66
0.42	0.66
0.40	0.66
0.38	0.66
0.36	0.66
0.34	0.65
0.32	0.65
0.30	0.65
0.28	0.65
0.26	0.64
0.24	0.64
0.22	0.64
0.20	0.64
0.18	0.63
0.16	0.63
0.14	0.63
0.12	0.63
0.10	0.62
No Vision Lite	0.60

**Single Door with FRP Panel and 1/4 Vision Lite**

**NOTE:** For glass values that are not listed, linear interpolation is permitted.

1. U-Factors are determined in accordance with NFRC 100.
2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values (winter conditions) and are obtained from your glass supplier.
4. Overall U-Factor, SHGC, and VT Matricies are based on the standard NFRC specimen size of 960mm wide by 2090mm high (37-3/4" by 82-3/8").

**SHGC Matrix <sup>2</sup>**

Glass SHGC <sup>3</sup>	Overall SHGC <sup>4</sup>
0.75	0.12
0.70	0.11
0.65	0.11
0.60	0.10
0.55	0.09
0.50	0.09
0.45	0.08
0.40	0.08
0.35	0.07
0.30	0.06
0.25	0.06
0.20	0.05
0.15	0.05
0.10	0.04
0.05	0.03
No Vision Lite	0.03

**Visible Transmittance <sup>2</sup>**

Glass VT <sup>3</sup>	Overall VT <sup>4</sup>
0.75	0.09
0.70	0.08
0.65	0.08
0.60	0.07
0.55	0.07
0.50	0.06
0.45	0.05
0.40	0.05
0.35	0.04
0.30	0.04
0.25	0.03
0.20	0.02
0.15	0.02
0.10	0.01
0.05	0.01
No Vision Lite	0.00

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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### Thermal Transmittance <sup>1</sup> (BTU/hr • ft<sup>2</sup> • °F)

Glass U-Factor <sup>3</sup>	Overall U-Factor <sup>4</sup>
0.48	0.72
0.46	0.72
0.44	0.71
0.42	0.71
0.40	0.70
0.38	0.70
0.36	0.69
0.34	0.69
0.32	0.69
0.30	0.68
0.28	0.68
0.26	0.67
0.24	0.67
0.22	0.66
0.20	0.66
0.18	0.65
0.16	0.65
0.14	0.64
0.12	0.64
0.10	0.64
No Vision Lite	0.60

### Single Door with FRP Panel and 1/2 Vision Lite

**NOTE:** For glass values that are not listed, linear interpolation is permitted.

1. U-Factors are determined in accordance with NFRC 100.
2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values (winter conditions) and are obtained from your glass supplier.
4. Overall U-Factor, SHGC, and VT Matricies are based on the standard NFRC specimen size of 960mm wide by 2090mm high (37-3/4" by 82-3/8").

### SHGC Matrix <sup>2</sup>

Glass SHGC <sup>3</sup>	Overall SHGC <sup>4</sup>
0.75	0.20
0.70	0.19
0.65	0.18
0.60	0.17
0.55	0.16
0.50	0.15
0.45	0.13
0.40	0.12
0.35	0.11
0.30	0.10
0.25	0.09
0.20	0.07
0.15	0.06
0.10	0.05
0.05	0.04
No Vision Lite	0.03

### Visible Transmittance <sup>2</sup>

Glass VT <sup>3</sup>	Overall VT <sup>4</sup>
0.75	0.18
0.70	0.17
0.65	0.15
0.60	0.14
0.55	0.13
0.50	0.12
0.45	0.11
0.40	0.09
0.35	0.08
0.30	0.07
0.25	0.06
0.20	0.05
0.15	0.04
0.10	0.02
0.05	0.01
No Vision Lite	0.00

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## **Features**

- AA™250 narrow stile has 2-1/2" (62.5) vertical stiles, 2-1/2" (62.5) top rail, and 3-7/8" (98.4) bottom rail
- AA™425 wide stile has 4-1/4" (108) vertical stiles, 4-1/4" (108) top rail, and 6-1/2" (165.1) bottom rail
- Door is 2-1/4" (57.2) deep
- Door has 1/8" (3.2) typical wall thickness
- Dual welded corner construction
- Polyamide thermal break
- Single acting
- 1" (25.4) insulated glass infill
- Offset pivots, butt hinges or continuous geared hinge
- MS locks or exit device hardware
- Surface mounted or concealed closers
- Architects Classic push/pulls
- Meeting stile astragal has dual pile weathering with polymeric fin
- Polymeric bulb weatherstripping and pile weathering with polymeric fin in door frame
- Permanodic™ anodized finishes in seven choices
- Painted finishes in standard and custom choices

## **Optional Features**

- Variety of top, bottom, and cross rails
- Two color finish capability

## **Product Applications**

- AA™250 - engineered for thermal efficiency in moderate traffic applications such as offices, stores, and apartment buildings
- AA™425 - engineered for thermal efficiency and added strength for schools, institutions and other increased traffic applications

For specific product applications,  
Consult your Kawneer representative.

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**PICTORIAL VIEW .....5**

**DOOR TYPES/SECTION DIMENSIONS .....6**

**AA™250 THERMAL ENTRANCE CONSTRUCTION DETAILS .....7**

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**ENTRANCE OFFERING .....10-11**

**PUSH PULL HARDWARE .....12**

**EXIT DEVICES .....13**

**OPTIONS AND ACCESSORIES .....14**

**THERMAL CHARTS ..... 15-27**

LAWS AND BUILDING AND SAFETY CODES GOVERNING THE DESIGN AND USE OF GLAZED ENTRANCE, WINDOW, AND CURTAIN WALL PRODUCTS VARY WIDELY. KAWNEER DOES NOT CONTROL THE SELECTION OF PRODUCT CONFIGURATIONS, OPERATING HARDWARE, OR GLAZING MATERIALS, AND ASSUMES NO RESPONSIBILITY THEREFOR.

Metric (SI) conversion figures are included throughout these details for reference. Numbers in parentheses ( ) are millimeters unless otherwise noted.

The following metric (SI ) units are found in these details:

- m – meter
- cm – centimeter
- mm – millimeter
- s – second
- Pa – pascal
- MPa – megapascal

Kawneer reserves the right to change configurations without prior notice when deemed necessary for product improvement.

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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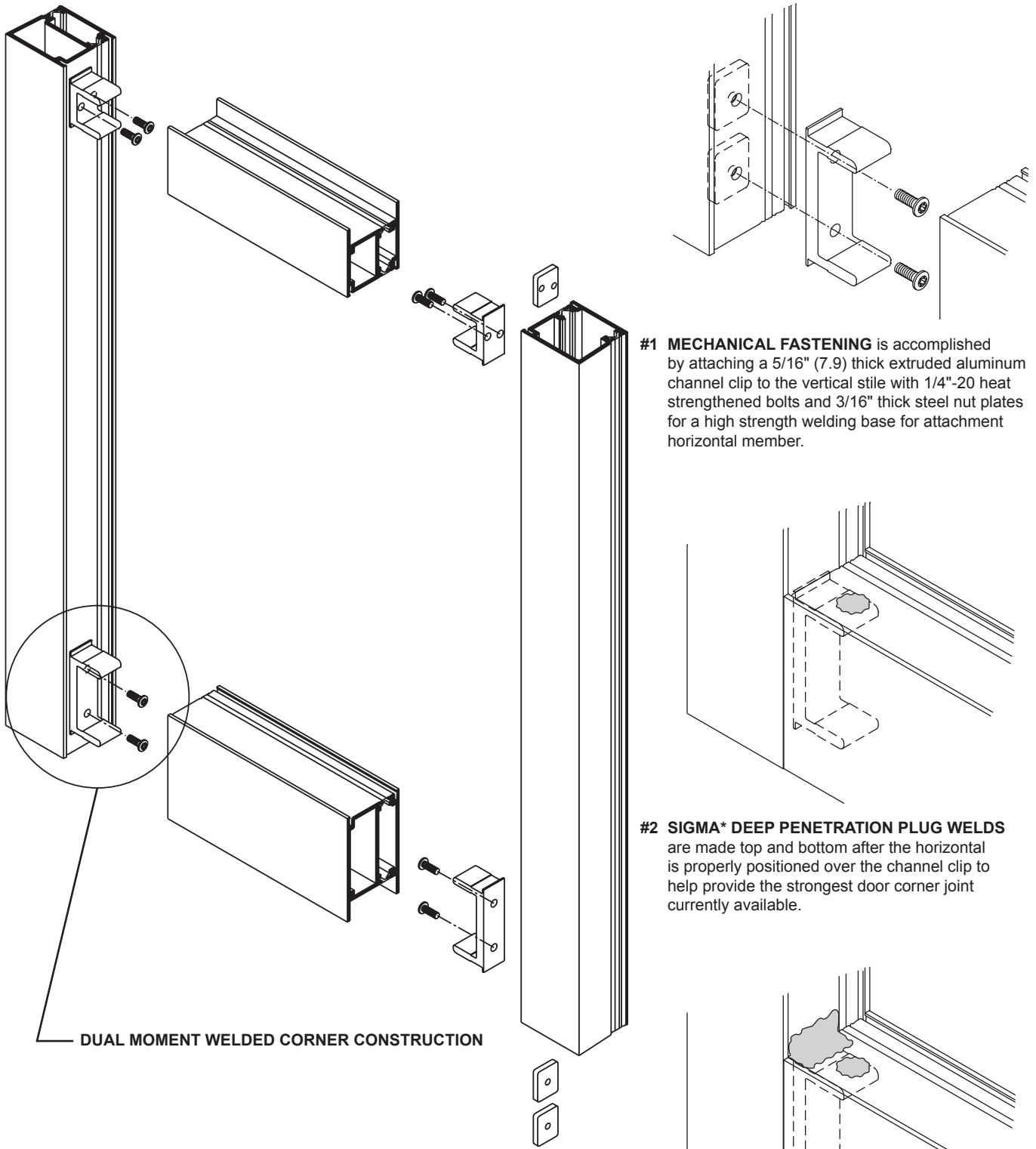


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DUAL MOMENT WELDED CORNER CONSTRUCTION

**#1 MECHANICAL FASTENING** is accomplished by attaching a 5/16" (7.9) thick extruded aluminum channel clip to the vertical stile with 1/4"-20 heat strengthened bolts and 3/16" thick steel nut plates for a high strength welding base for attachment horizontal member.

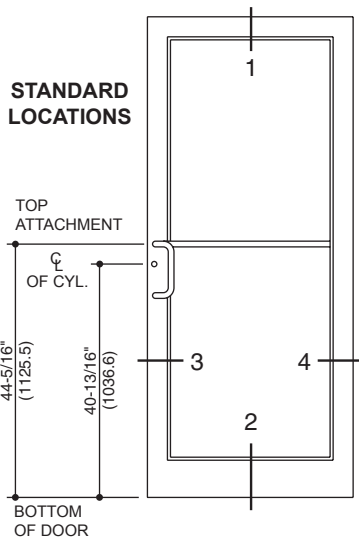
**#2 SIGMA\* DEEP PENETRATION PLUG WELDS** are made top and bottom after the horizontal is properly positioned over the channel clip to help provide the strongest door corner joint currently available.

**#3 SIGMA\* FILLET WELDS** along both top and bottom webs of the rail extrusion complete the Dual Welded corner construction.

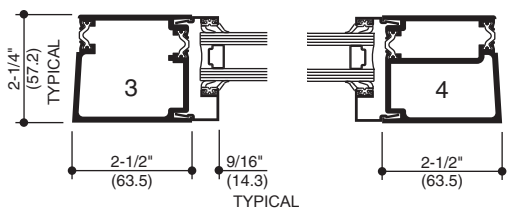
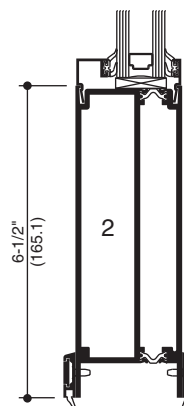
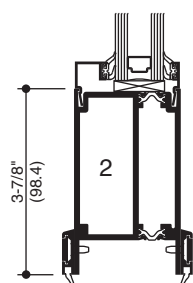
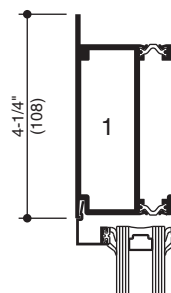
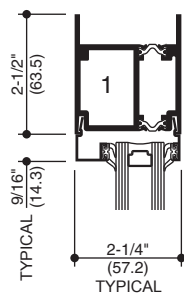
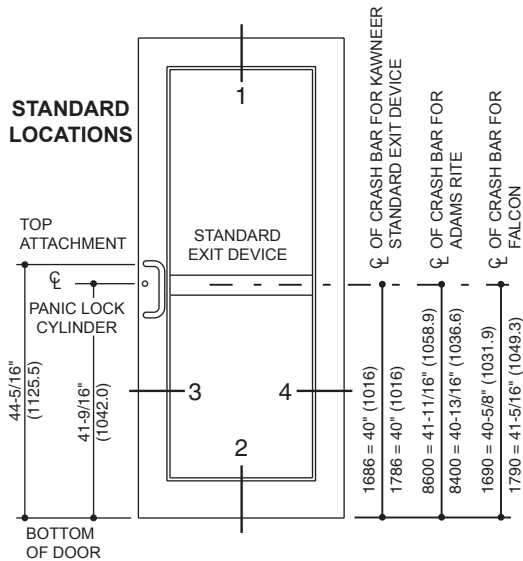
\* An arc welding process known as Shielded Inert Gas Metal Arc (SIGMA) or also known as Metal Inert Gas (MIG).

SCALE 3" = 1' 0"

### 250 MEDIUM STILE

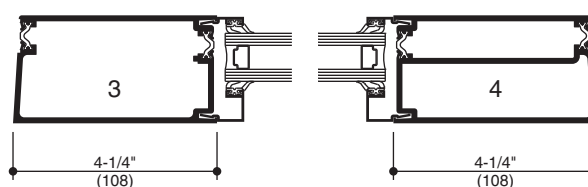


### 425 WIDE STILE



LOCK STILE

PIVOT STILE



LOCK STILE

PIVOT STILE

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

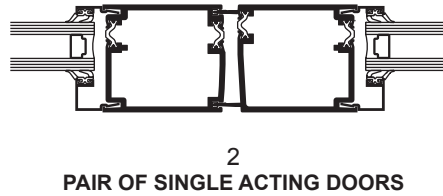
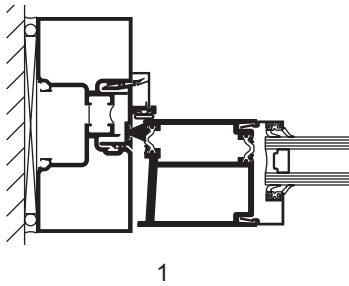
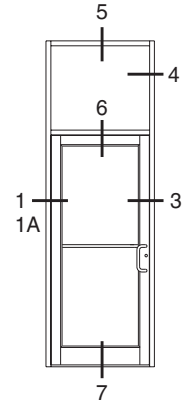
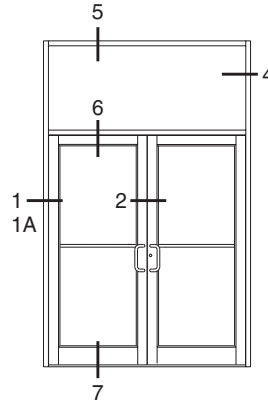
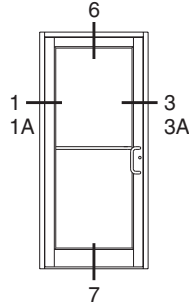
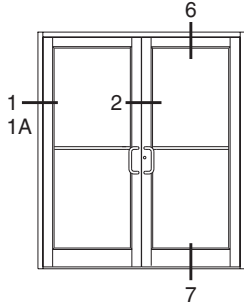
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SCALE 3" = 1'-0"

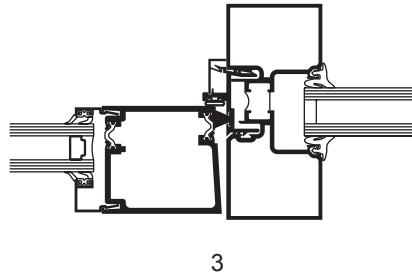
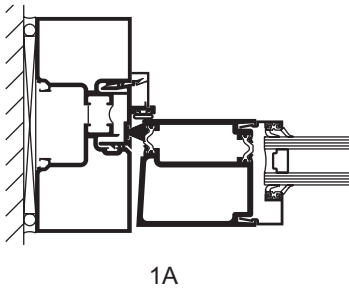
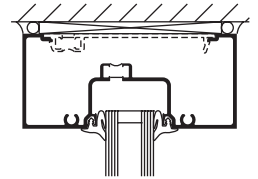
### AA™250 THERMAL ENTRANCE DOORS SINGLE ACTING TRIFAB™ VG 451T CENTER DOOR FRAMES SHOWN

**NOTE:**

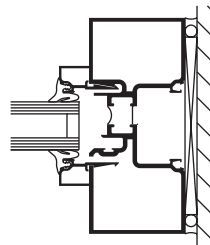
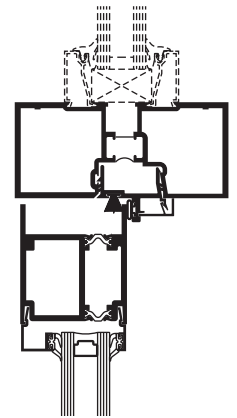
1. MEDIEM STILE AA™250 THERMAL ENTRANCES ARE DETAILED, WIDE STILE AA™425 THERMAL ENTRANCES ALSO MAY BE USED.
2. TRIFAB™ VG 451T CENTER, 2" X 4-1/2" (50.8 X 114.3) FRAMING IS DETAILED WITH THE DOORS FOR REFERENCE. OTHER KAWNEER FRAMING SERIES OR CURTAIN WALL SYSTEMS MAY BE USED. REFER TO THE CATALOG INDEX FOR THE APPROPRIATE DETAIL SECTION.



5  
TRANSOM HEAD

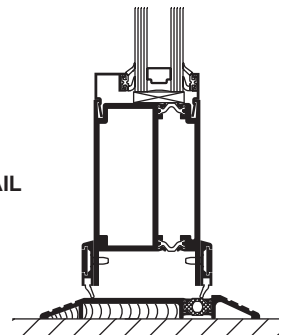


6  
DOOR HEADER/  
TRANSOM BAR



4  
TRANSOM  
INSERT

7\*  
BOTTOM RAIL



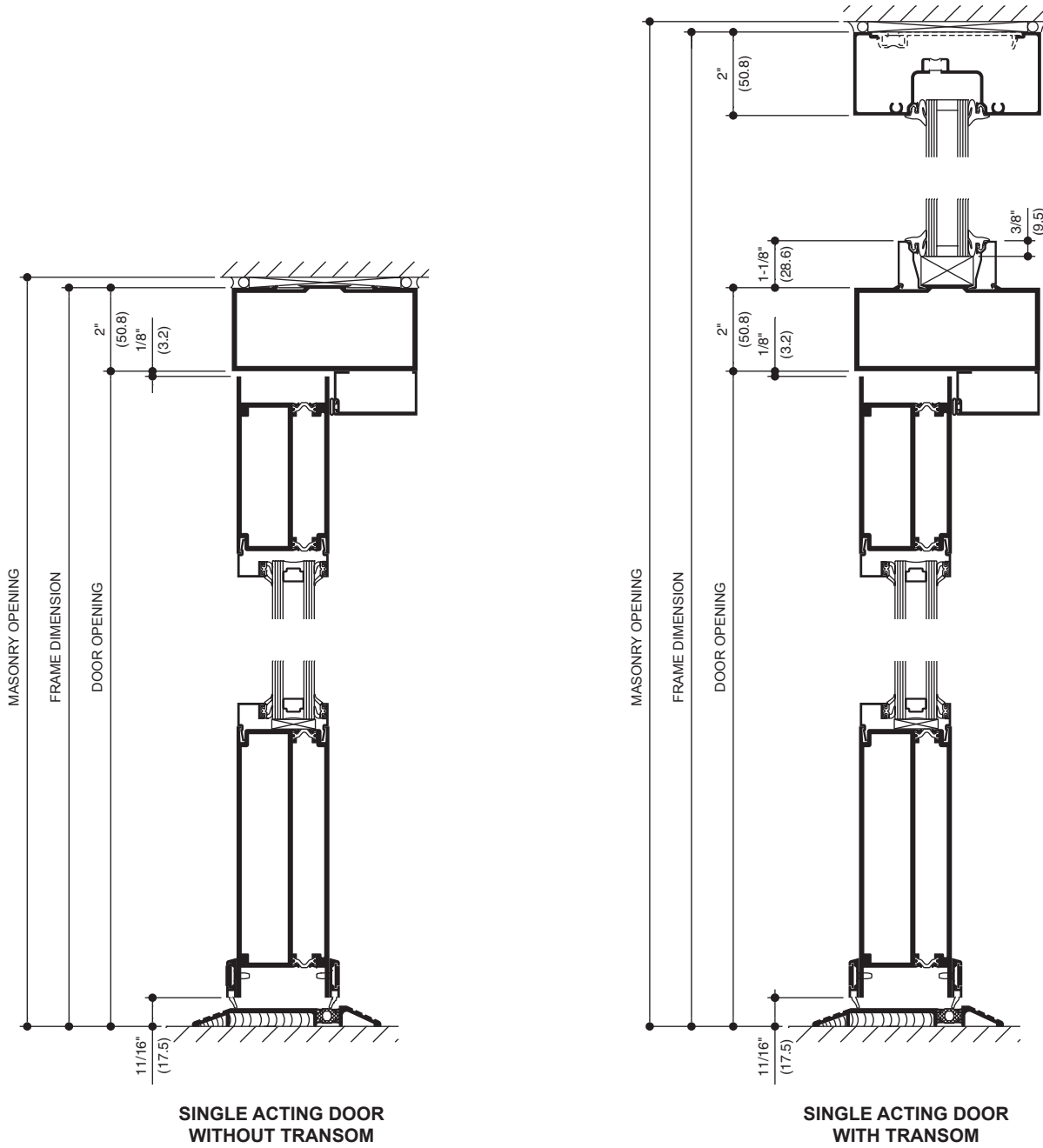
\*NOTE: Some building codes limit threshold height to 1/2" (12.7) max.

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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SCALE 3" = 1'-0"

### TRIFAB™ VG 451T CENTER DOOR FRAMES



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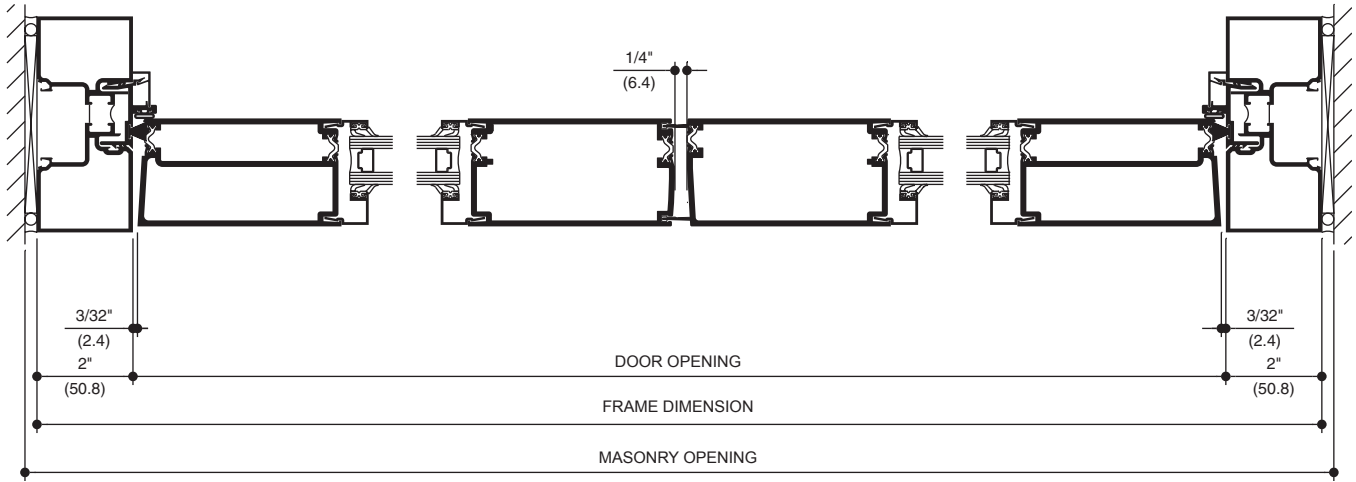
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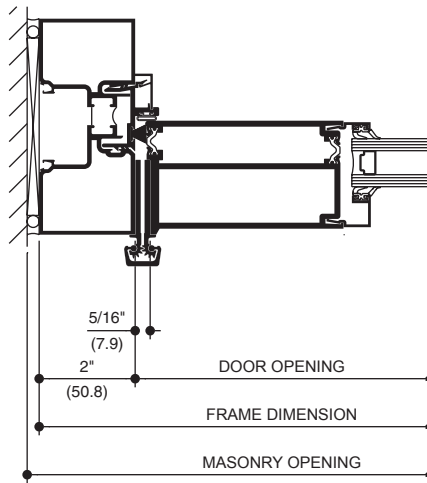
SCALE 3" = 1'-0"

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SINGLE ACTING DOOR



CONTINUOUS HINGE JAMB

**STANDARD SIZES** (TRIFAB™ VG 451T CENTER FRAMES)

**WITHOUT TRANSOM**

**Door Opening Dimension**

- 3' 0" x 7' 0" ( 914 x 2134)
- 3' 6" x 7' 0" (1067 x 2134)
- 6' 0" x 7' 0" (1829 x 2134)

**Overall Frame Dimension**

- 3' 3-1/2" x 7' 1-3/4" (1003 x 2178)
- 3' 9-1/2" x 7' 1-3/4" (1156 x 2178)
- 6' 3-1/2" x 7' 1-3/4" (1918 x 2178)

**Masonry Opening Dimension**

- 3' 4" x 7' 2" (1016 x 2185)
- 3' 10" x 7' 2" (1168 x 2185)
- 6' 4" x 7' 2" (1930 x 2185)

**WITH TRANSOM**

**Door Opening Dimension**

Unchanged from above.

**Overall Frame Dimension**

Add 3' 1-3/4" (959) to above heights.

**Masonry Opening Dimension**

Add 3' 1-3/4" (959) to above heights.

	STANDARD	OPTIONAL
<b>Doors</b>	Narrow stile 250 doors prepared for attachment hardware.	Wide stile 425.
<b>Door Sizes Std.</b>	Standard sizes shown on page 9.	Any size up to 3'-6" x 8'-0" (1067 x 2438).
<b>Glass Stops</b>	Square glass stops for 1" (25.4) infill.	
<b>Door Frames</b>	<b>Trifab™ VG 451T</b> Center - 2" x 4-1/2" (50.8 x 114.3) for double glazing.	Other Kawneer framing system suitable for door frames may be selected, but manufactured per order.
<b>Push-Pulls</b>	<b>Single Acting:</b> Architects Classic Hardware "CO-9" Pull and "CP-II" Push Bar.  Architects Classic Hardware "CO-9" Pull and "CP" Push Bar.	<b>Single Acting:</b> Architects Classic Hardware "CO-12" and "CP-II" push bar.  Architects Classic Hardware "CO-12" and "CP" push bar.  Architects Classic Hardware "CO-9"/"CO-9" Pulls.  Architects Classic Hardware "CO-12"/"CO-12" Pulls.
<b>Door Closers</b>	<b>Single Acting:</b> Norton 1601 adjustable or 1601 BF adjustable surface closer with back-check and with or without adjustable hold-open.	<b>Single Acting:</b> LCN 1260 adjustable surface closer.  LCN 4040 surface closer with or without adjustable hold-open.  Standard COC with single acting offset arm.  Norton 8100 surface closer with a 50% spring power adjustment (for opening forces of less than 8 pounds). Closer is available with standard back-checks and with or without the hold-open feature.  Falcon SC 60 Surface closer.
<b>Hinging</b>	<b>Single Acting:</b> Kawneer top and bottom offset pivots (or) Kawneer top and bottom 4 1/2" x 4" (114.3 x 101.6) ball bearing butt hinge with non-removable pin (NRP) (or) Kawneer continuous gear hinge.	
<b>Intermediate Pivots/Butts</b>	<b>Single Acting:</b> Kawneer intermediate offset pivot (or) Kawneer 4-1/2" x 4" (114.3 x 101.6) ball bearing butt hinge with non-removable pin (NRP).	<b>Single Acting:</b> Rixson M-19 or IVES #7215-INT intermediate offset pivot.
<b>Power Transfers</b>	<b>Single Acting:</b> Kawneer EL intermediate offset pivot (or) Kawneer EL 4 1/2" x 4" (114.3 x 101.6) ball bearing butt hinge with wire transfer (or) EPT (Electric Power Transfer).	<b>SP-1000X Power Supply:</b> For use with EL exit devices.
<b>Power Supply</b>	<b>PS1, PS5-4, and PS5-6 Power Supplies:</b> For use with Kawneer 1686 EL and 1786 EL exit devices only.	<b>SP-1000X Power Supply.</b>
<b>Locks - Active Leaf</b>	Adams-Rite MS 1850A deadlock with two 1-5/32" (29.4) diameter 5 pin cylinders.	Adams-Rite #4510 Latch Lock. Adams-Rite #1850A-500 Short Throw Deadlock. Adams-Rite #1850A-505 Hookbolt Lock. Adams-Rite #4015 Two-point Lock. Adams-Rite #4015 & 4016 three-point lock. Adams-Rite #7130 Electric Strike. Kawneer Cylinder Guard. Kawneer Thumbturn (in lieu of cylinder).

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	STANDARD	OPTIONAL
<b>Locks - Inactive Leaf</b>	One pair of Kawneer flush bolts in the inactive leaf of a pair of doors.	
<b>Thresholds</b>	A 1/2" x 4-1/2" (12.7 x 114.3) aluminum mill finish threshold.	
<b>Weathering</b>	<b>Single Acting:</b> Weathering system in the door and frame consisting of a dense, bulb polymeric material, which remains resilient and retains its weathering ability under temperature extremes. Complete with an optional EPDM blade gasket sweep strip applied to both the interior and exterior of the bottom rail with concealed fasteners.	
<b>Exit Device</b>	<p><b>Kawneer 1686 Concealed Rod Exit Device</b> with or without a mortised type cylinder.</p> <p><b>Kawneer 1786 Rim Exit Device</b> is a rim type exit device with or without a rim type cylinder.</p>	<p><b>Kawneer 1686 CD</b> concealed rod exit device available with cylinder dogging.</p> <p><b>Kawneer 1786 CD</b> rim exit device available with cylinder dogging.</p> <p><b>Kawneer 1686 EL Concealed Rod Exit Device</b> electric modification is available.</p> <p><b>Kawneer 1786 EL Rim Exit Device</b> electric modification is available.</p> <p><b>Adams-Rite 8600</b> concealed rod exit device.</p> <p><b>Adams-Rite 8400</b> rim exit device.</p> <p><b>Falcon 1690 Concealed Rod Exit Device</b> with or without rim type cylinder.</p> <p><b>Falcon 1790 Rim Exit Device</b> rim type exit device with or without a rim type cylinder.</p> <p><b>Falcon EL 1690</b> concealed rod exit device with or without a rim type cylinder. The device is designed for electrified access control and is compatible with most key pad and card reader systems.</p> <p><b>Falcon EL 1790</b> rim type exit device with or without a rim type cylinder. The device is designed for electrified access control and is compatible with most key pad and card reader systems.</p> <p><b>Falcon 1990</b> is a concealed rod exit device with or without a rim type cylinder.</p> <p><b>Falcon 2090</b> is a rim type exit device with or without a rim type cylinder.</p> <p><b>Von Duprin 33</b> concealed rod exit device with or without night latch assembly.</p> <p><b>Von Duprin 99</b> concealed rod exit device with or without night latch assembly.</p>
	<b>Exit Device Pulls:</b> Architects Classic style "CO-9" Pull.	<b>Optional Exit Device Pulls:</b> Architects Classic style "CO-12" Pull.

**Reference Hardware section for additional information**

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

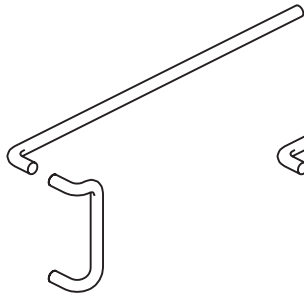
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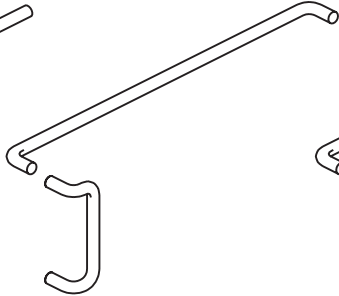
**ARCHITECTS CLASSIC (PUSH PULL SETS)**

SINGLE ACTING DOORS USE A PULL HANDLE AND PUSH BAR.

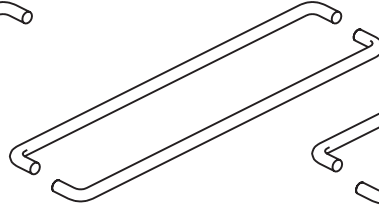
Refer to **HARDWARE SECTION** for complete hardware information.



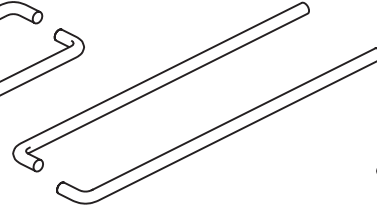
CO-9 / CP  
CO-12 / CP



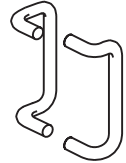
CO-9 / CP-II  
CO-12 / CP-II



CP-II / CP-II

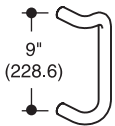


CP / CP



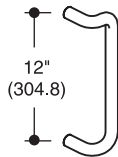
CO-9 / CO-9  
CO-12 / CO-12

**ARCHITECTS CLASSIC (COMPONENTS)**



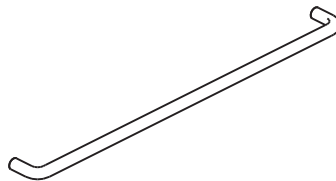
9"  
(228.6)

"CO-9"  
PULL

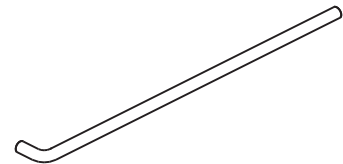


12"  
(304.8)

"CO-12"  
PULL



"CP-II" PUSH BAR

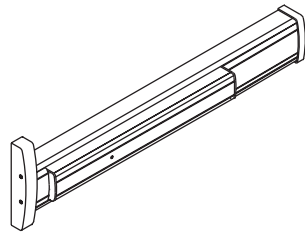


"CP" PUSH BAR

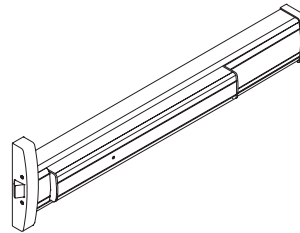
Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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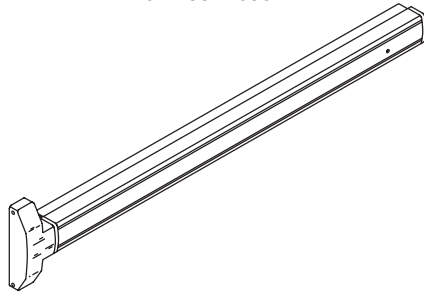
EXIT DEVICES and EXIT DEVICE PULLS



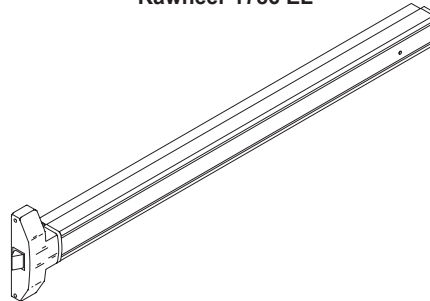
CONCEALED ROD EXIT DEVICE  
Kawneer 1686  
Kawneer 1686 CD  
Kawneer 1686 EL



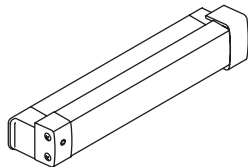
RIM LATCH EXIT DEVICE  
Kawneer 1786  
Kawneer 1786 CD  
Kawneer 1786 EL



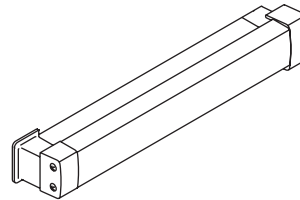
CONCEALED ROD EXIT DEVICE  
Falcon 1690  
Falcon EL 1690



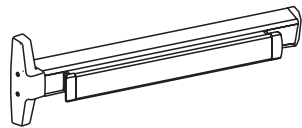
RIM LATCH EXIT DEVICE  
Falcon 1790  
Falcon EL 1790



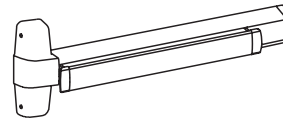
MORTISE EXIT DEVICE  
Adams-Rite 8400



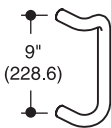
CONCEALED EXIT DEVICE  
Adams-Rite 8600



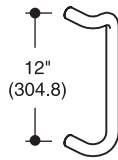
CONCEALED EXIT DEVICE  
Von Duprin 3347A



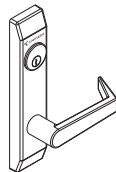
CONCEALED EXIT DEVICE  
Von Duprin 9947



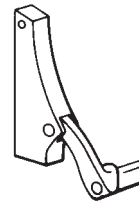
"CO-9"  
PULL



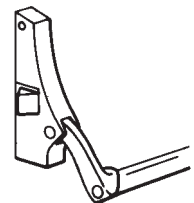
"CO-12"  
PULL



LEVER HANDLE  
Kawneer 1686  
Kawneer 1786



CONCEALED ROD EXIT DEVICE  
Falcon 1990



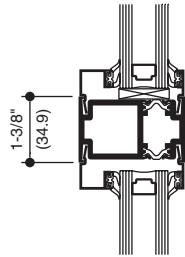
RIM LATCH EXIT DEVICE  
Falcon 2090

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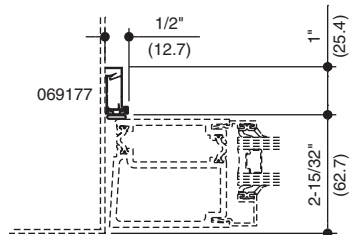
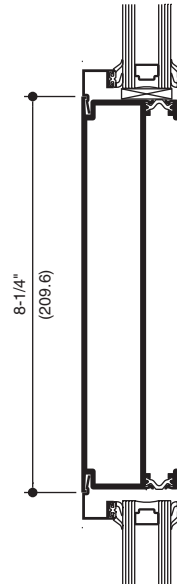
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SCALE 3" = 1'-0"

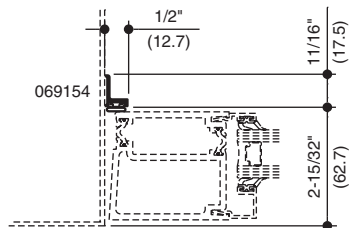
1-3/8" CROSSRAIL



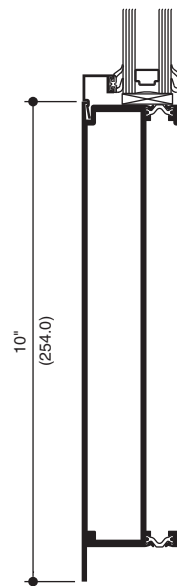
8-1/4" CROSSRAIL



APPLIED DOOR STOP



APPLIED DOOR STOP

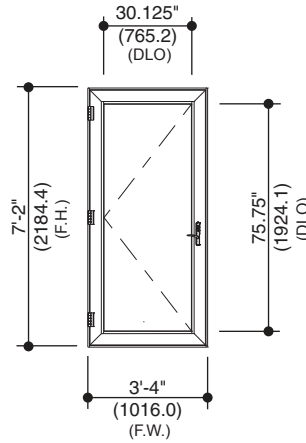


10" BOTTOM RAIL

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**Generic Project Specific U-factor Example Calculation**  
 (Percent of Glass will vary on specific products depending on sitelines)



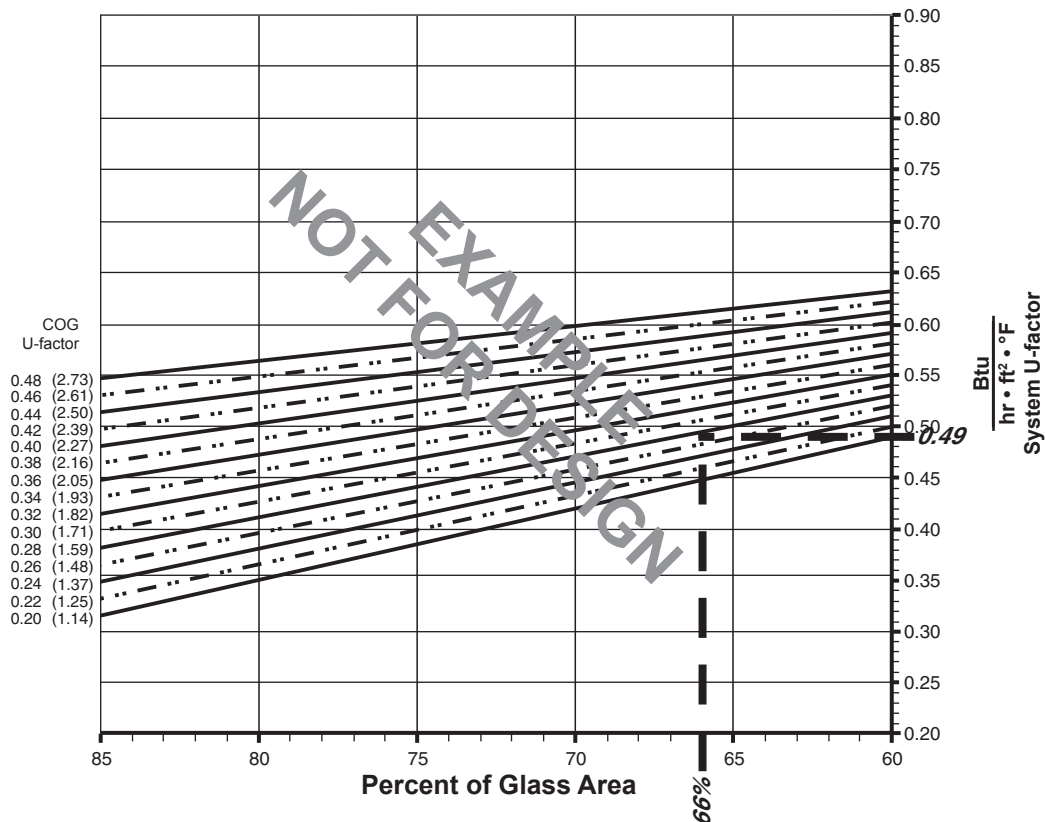
Example Glass U-Factor = 0.28 Btu/hr • ft<sup>2</sup> • °F

Total Daylight Opening = 30.125" x 75.75" = 15.85 ft<sup>2</sup>

Total Projected Area = 3'-4" x 7'-2" = 23.9 ft<sup>2</sup>

Percent of Glass = (Total Daylight Opening ÷ Total Projected Area)100  
 = (15.85 ÷ 23.9)100 = 66%

**System U-factor vs Percent of Glass Area**



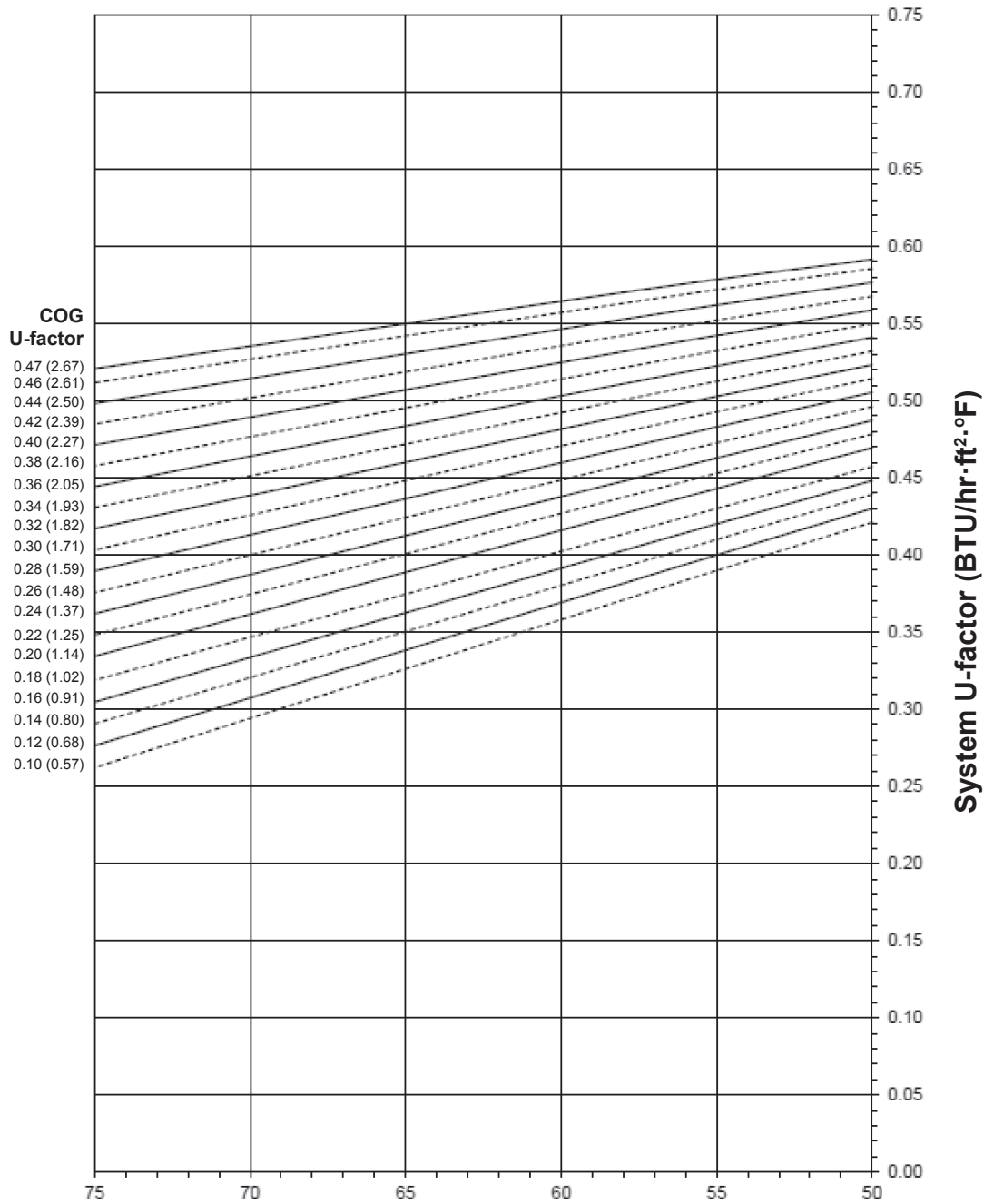
Based on 66% glass and center of glass (COG) U-factor of 0.28  
 System U-factor is equal to 0.49 Btu/hr • ft<sup>2</sup> • °F

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AA™250 (SINGLE DOOR)

**System U-factor vs Percent of Glass Area**



**Percent of Glass = Vision Area/Total Area  
(Total Daylight Opening / Projected Area)**

**Notes for System U-Factor, SHGC and VT charts:**

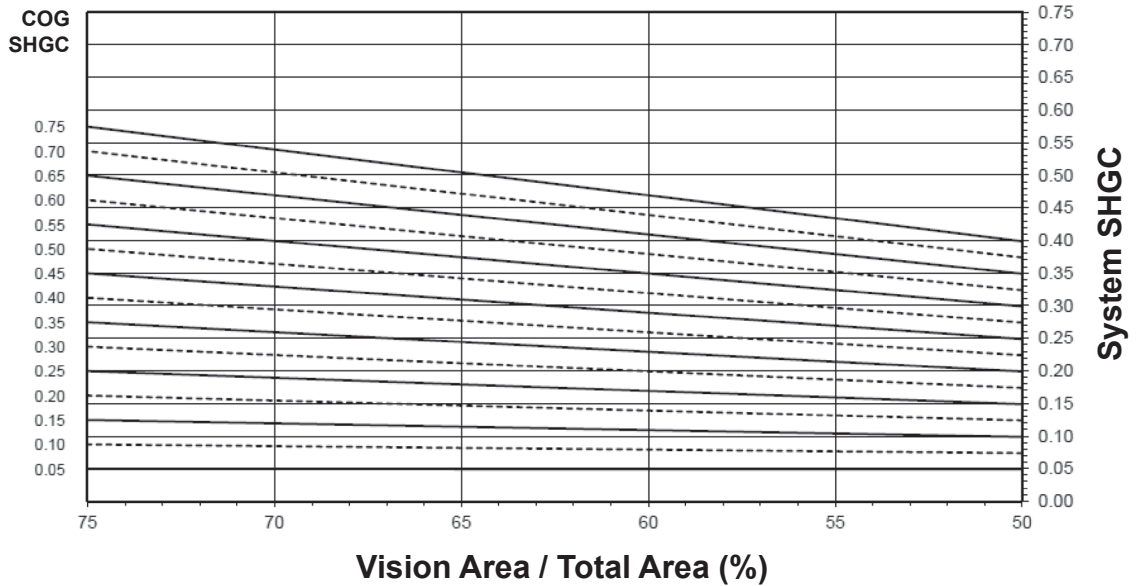
For glass values that are not listed, linear interpolation is permitted.  
Glass properties are based on center of glass values (winter conditions) and are obtained from your glass supplier.

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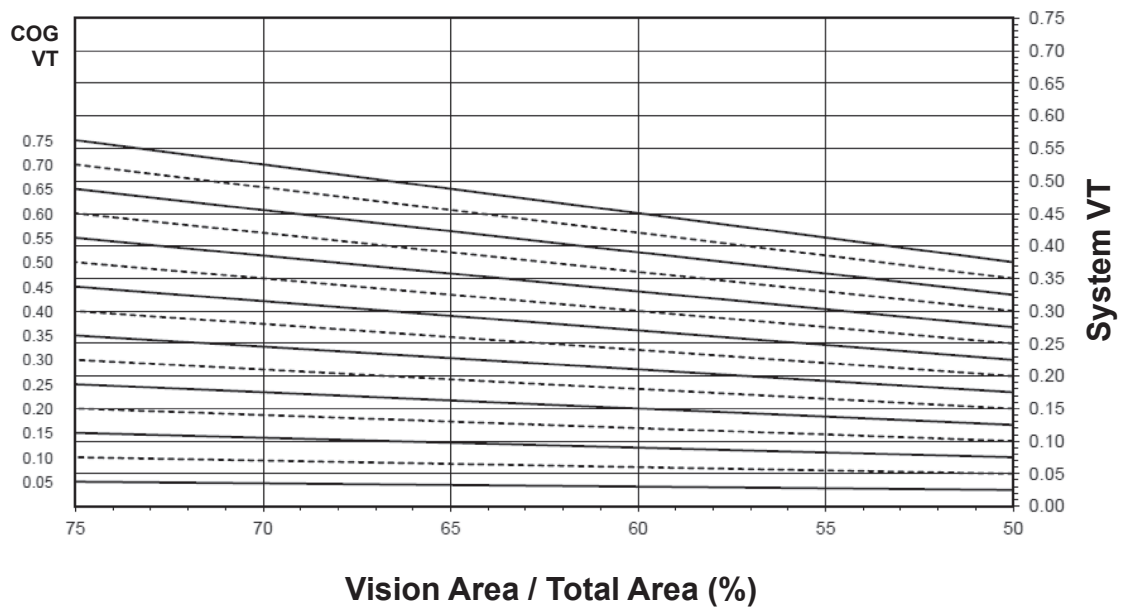
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AA™250 (SINGLE DOOR)

**System Solar Heat Gain Coefficient (SHGC) vs Percent of Vision Area**



**System Visible Transmittance (VT) vs Percent of Vision Area**



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Thermal Transmittance <sup>1</sup> (BTU/hr • ft<sup>2</sup> • °F)

Glass U-Factor <sup>3</sup>	Overall U-Factor <sup>4</sup>
0.48	0.57
0.46	0.57
0.44	0.55
0.42	0.54
0.40	0.53
0.38	0.52
0.36	0.51
0.34	0.50
0.32	0.49
0.30	0.48
0.28	0.47
0.26	0.46
0.24	0.46
0.22	0.44
0.20	0.43
0.18	0.42
0.16	0.41
0.14	0.40
0.12	0.39
0.10	0.38

## AA™250 (SINGLE DOOR)

**NOTE:** For glass values that are not listed, linear interpolation is permitted.

1. U-Factors are determined in accordance with NFRC 100.
2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values and are obtained from your glass supplier.
4. Overall U-Factor, SHGC, and VT Matricies are based on the standard NFRC specimen size of 960mm wide by 2090mm high (37-3/4" by 82-3/8").

SHGC Matrix <sup>2</sup>

Glass SHGC <sup>3</sup>	Overall SHGC <sup>4</sup>
0.75	0.45
0.70	0.42
0.65	0.39
0.60	0.36
0.55	0.34
0.50	0.31
0.45	0.28
0.40	0.25
0.35	0.22
0.30	0.19
0.25	0.16
0.20	0.13
0.15	0.11
0.10	0.08
0.05	0.05

Visible Transmittance <sup>2</sup>

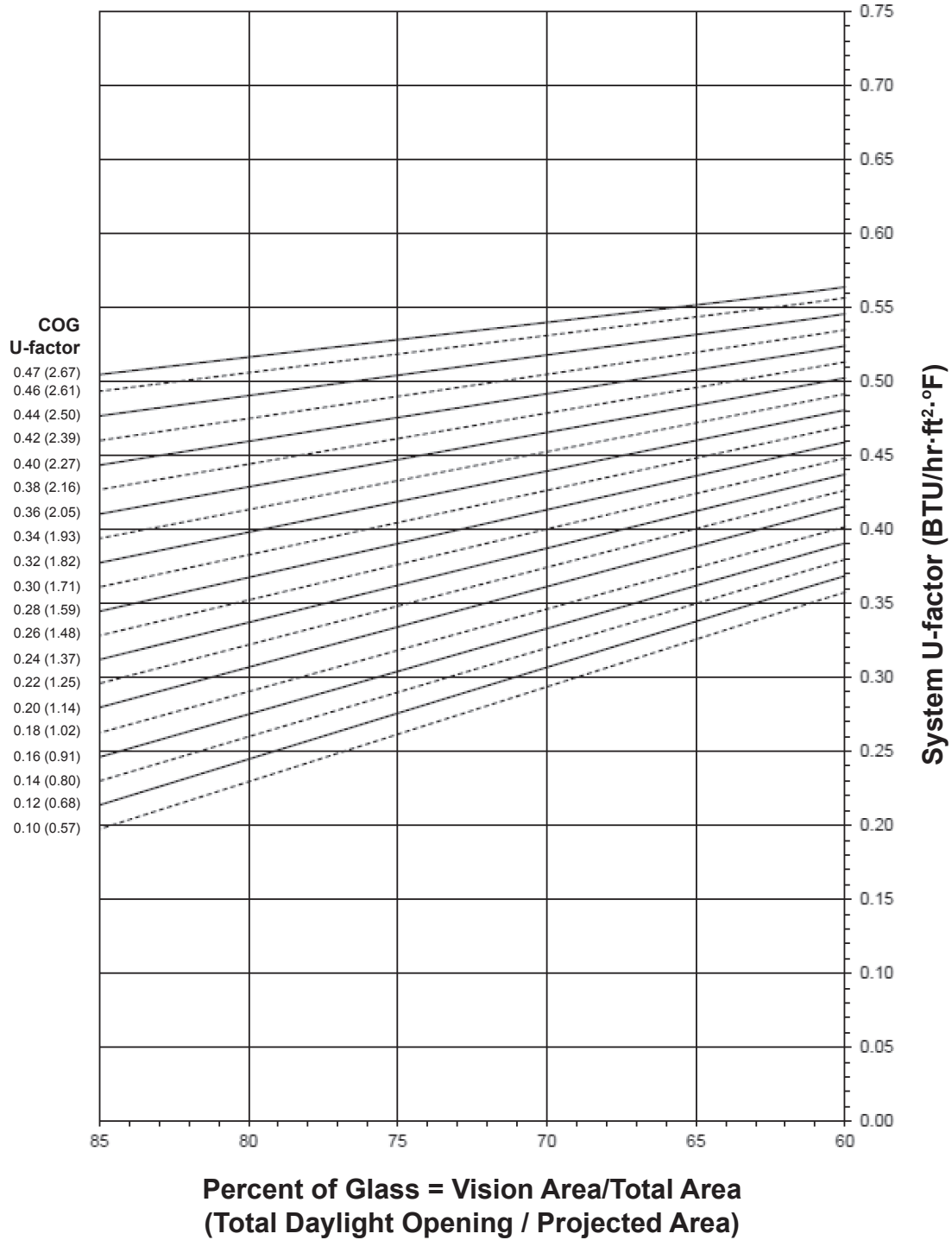
Glass VT <sup>3</sup>	Overall VT <sup>4</sup>
0.75	0.43
0.70	0.40
0.65	0.37
0.60	0.34
0.55	0.31
0.50	0.29
0.45	0.26
0.40	0.23
0.35	0.20
0.30	0.17
0.25	0.14
0.20	0.11
0.15	0.09
0.10	0.06
0.05	0.03

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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AA™250 (PAIR OF DOORS)

**System U-factor vs Percent of Glass Area**



**Notes for System U-Factor, SHGC and VT charts:**

For glass values that are not listed, linear interpolation is permitted.

Glass properties are based on center of glass values (winter conditions) and are obtained from your glass supplier.

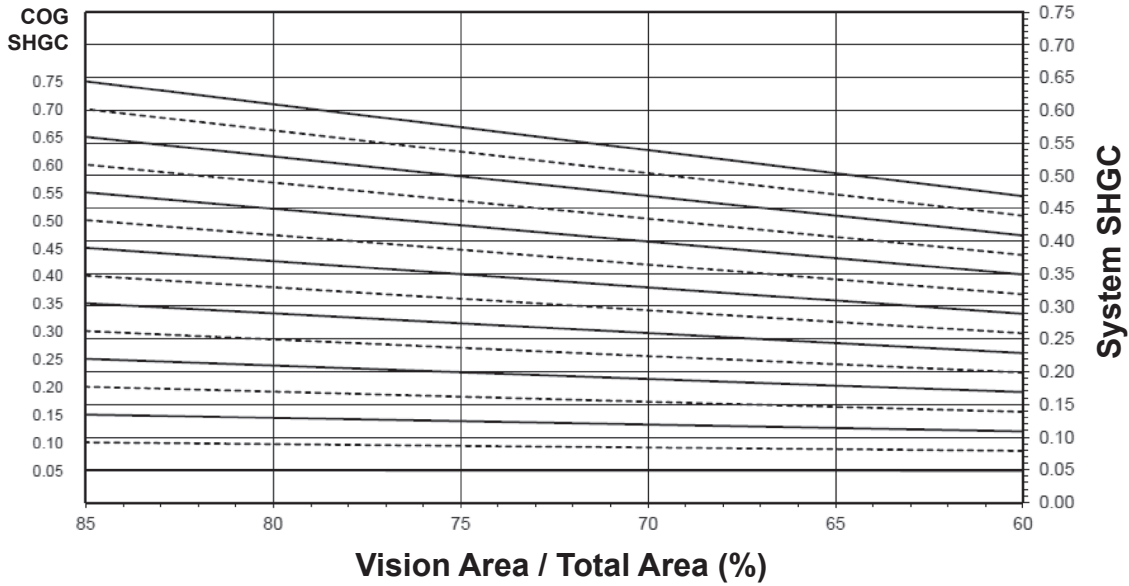
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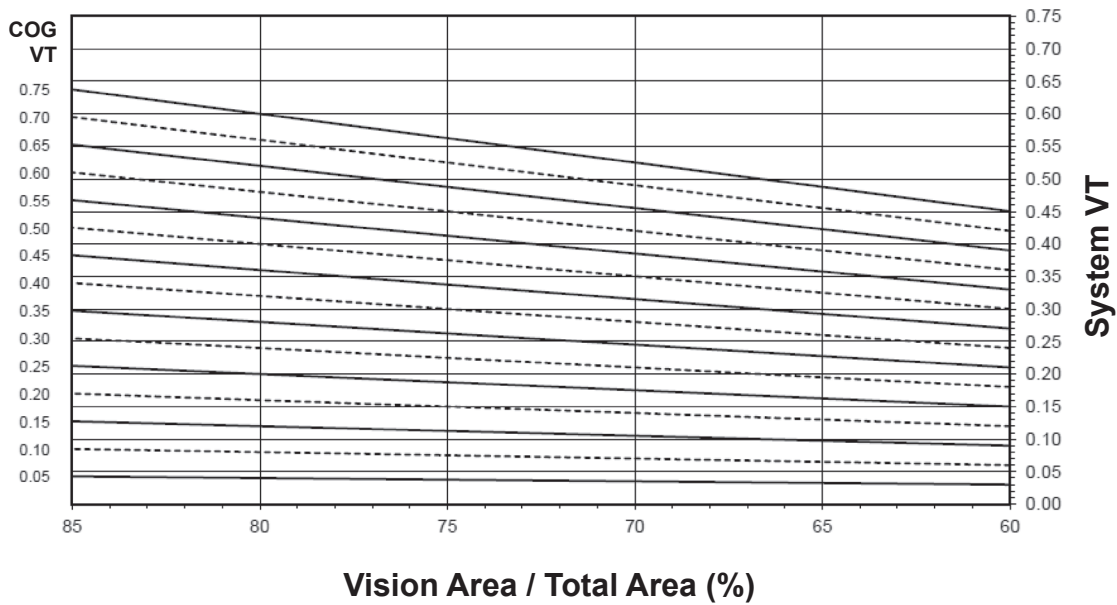


AA™250 (PAIR OF DOORS)

**System Solar Heat Gain Coefficient (SHGC) vs Percent of Vision Area**



**System Visible Transmittance (VT) vs Percent of Vision Area**



Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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**Thermal Transmittance <sup>1</sup> (BTU/hr • ft<sup>2</sup> • °F)**

Glass U-Factor <sup>3</sup>	Overall U-Factor <sup>4</sup>
0.48	0.56
0.46	0.55
0.44	0.54
0.42	0.53
0.40	0.52
0.38	0.51
0.36	0.50
0.34	0.49
0.32	0.48
0.30	0.46
0.28	0.45
0.26	0.44
0.24	0.43
0.22	0.42
0.20	0.41
0.18	0.39
0.16	0.38
0.14	0.37
0.12	0.36
0.10	0.35

**AA™250 (PAIR OF DOORS)**

**NOTE:** For glass values that are not listed, linear interpolation is permitted.

1. U-Factors are determined in accordance with NFRC 100.
2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values and are obtained from your glass supplier.
4. Overall U-Factor, SHGC, and VT Matricies are based on the standard NFRC specimen size of 1920mm wide by 2090mm high (75-1/2" by 82-3/8").

**SHGC Matrix <sup>2</sup>**

Glass SHGC <sup>3</sup>	Overall SHGC <sup>4</sup>
0.75	0.48
0.70	0.45
0.65	0.42
0.60	0.39
0.55	0.36
0.50	0.32
0.45	0.29
0.40	0.26
0.35	0.23
0.30	0.20
0.25	0.17
0.20	0.14
0.15	0.11
0.10	0.08
0.05	0.05

**Visible Transmittance <sup>2</sup>**

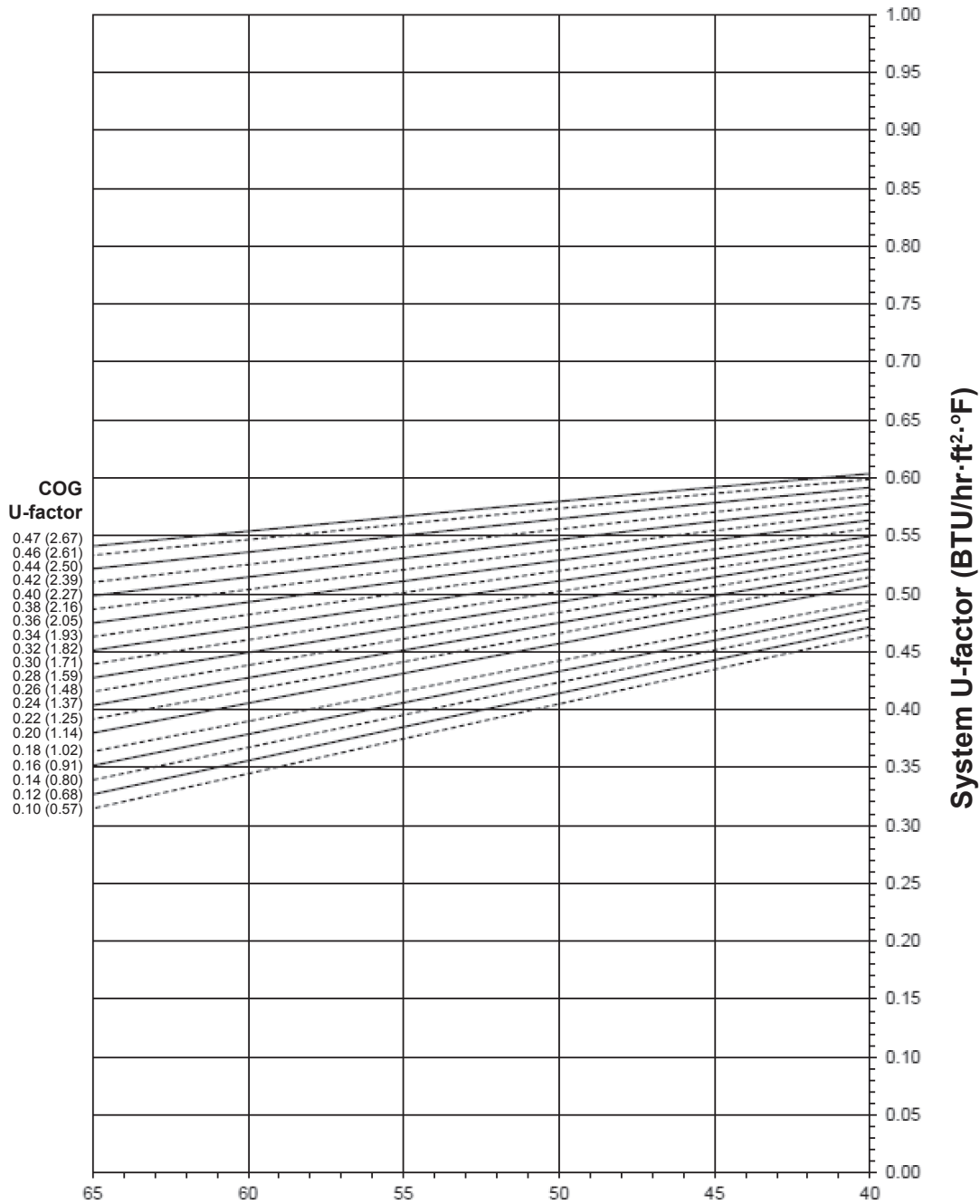
Glass VT <sup>3</sup>	Overall VT <sup>4</sup>
0.75	0.46
0.70	0.43
0.65	0.40
0.60	0.37
0.55	0.34
0.50	0.31
0.45	0.28
0.40	0.25
0.35	0.21
0.30	0.18
0.25	0.15
0.20	0.12
0.15	0.09
0.10	0.06
0.05	0.03

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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AA™425 (SINGLE DOOR)

**System U-factor vs Percent of Glass Area**



**Percent of Glass = Vision Area/Total Area  
(Total Daylight Opening / Projected Area)**

**Notes for System U-Factor, SHGC and VT charts:**

For glass values that are not listed, linear interpolation is permitted.

Glass properties are based on center of glass values (winter conditions) and are obtained from your glass supplier.

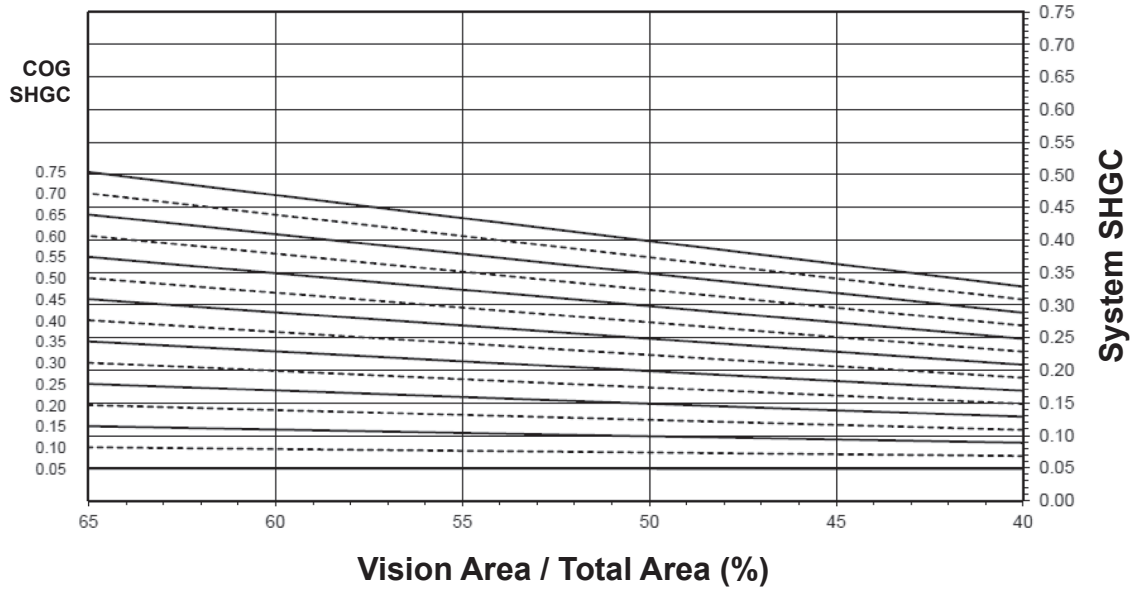
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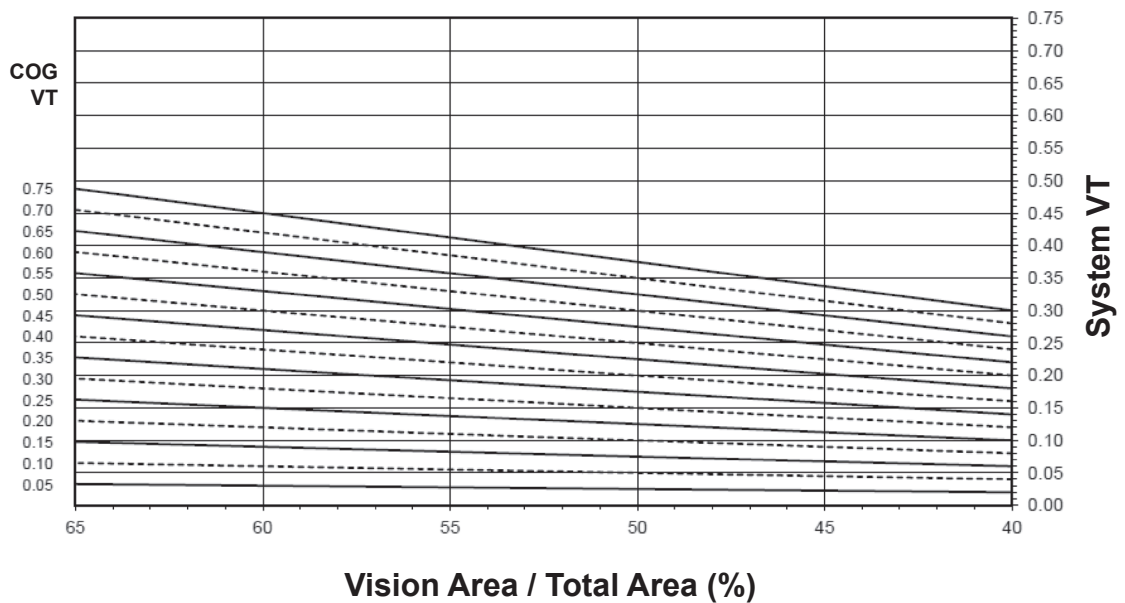
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AA™425 (SINGLE DOOR)

**System Solar Heat Gain Coefficient (SHGC) vs Percent of Vision Area**



**System Visible Transmittance (VT) vs Percent of Vision Area**



Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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Thermal Transmittance <sup>1</sup> (BTU/hr • ft<sup>2</sup> • °F)

Glass U-Factor <sup>3</sup>	Overall U-Factor <sup>4</sup>
0.48	0.58
0.46	0.58
0.44	0.57
0.42	0.56
0.40	0.55
0.38	0.54
0.36	0.53
0.34	0.52
0.32	0.51
0.30	0.51
0.28	0.50
0.26	0.49
0.24	0.48
0.22	0.47
0.20	0.46
0.18	0.44
0.16	0.43
0.14	0.43
0.12	0.42
0.10	0.41

## AA™425 (SINGLE DOOR)

**NOTE:** For glass values that are not listed, linear interpolation is permitted.

1. U-Factors are determined in accordance with NFRC 100.
2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values and are obtained from your glass supplier.
4. Overall U-Factor, SHGC, and VT Matricies are based on the standard NFRC specimen size of 960mm wide by 2090mm high (37-3/4" by 82-3/8").

SHGC Matrix <sup>2</sup>

Glass SHGC <sup>3</sup>	Overall SHGC <sup>4</sup>
0.75	0.39
0.70	0.36
0.65	0.34
0.60	0.32
0.55	0.29
0.50	0.27
0.45	0.24
0.40	0.22
0.35	0.19
0.30	0.17
0.25	0.15
0.20	0.12
0.15	0.10
0.10	0.07
0.05	0.05

Visible Transmittance <sup>2</sup>

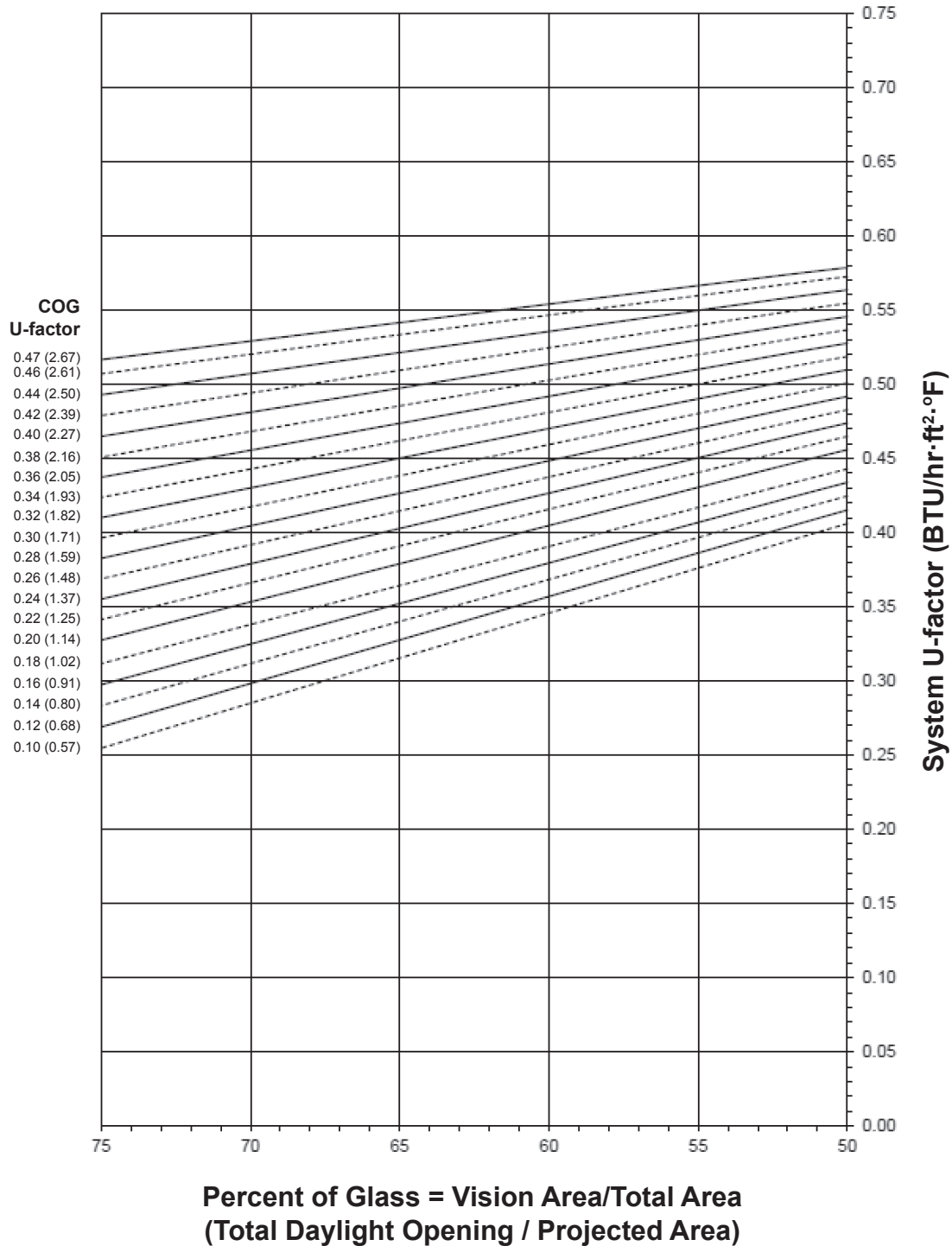
Glass VT <sup>3</sup>	Overall VT <sup>4</sup>
0.75	0.36
0.70	0.34
0.65	0.32
0.60	0.29
0.55	0.27
0.50	0.24
0.45	0.22
0.40	0.19
0.35	0.17
0.30	0.15
0.25	0.12
0.20	0.10
0.15	0.07
0.10	0.05
0.05	0.02

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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AA™425 (PAIR OF DOORS)

**System U-factor vs Percent of Glass Area**



**Notes for System U-Factor, SHGC and VT charts:**

For glass values that are not listed, linear interpolation is permitted.

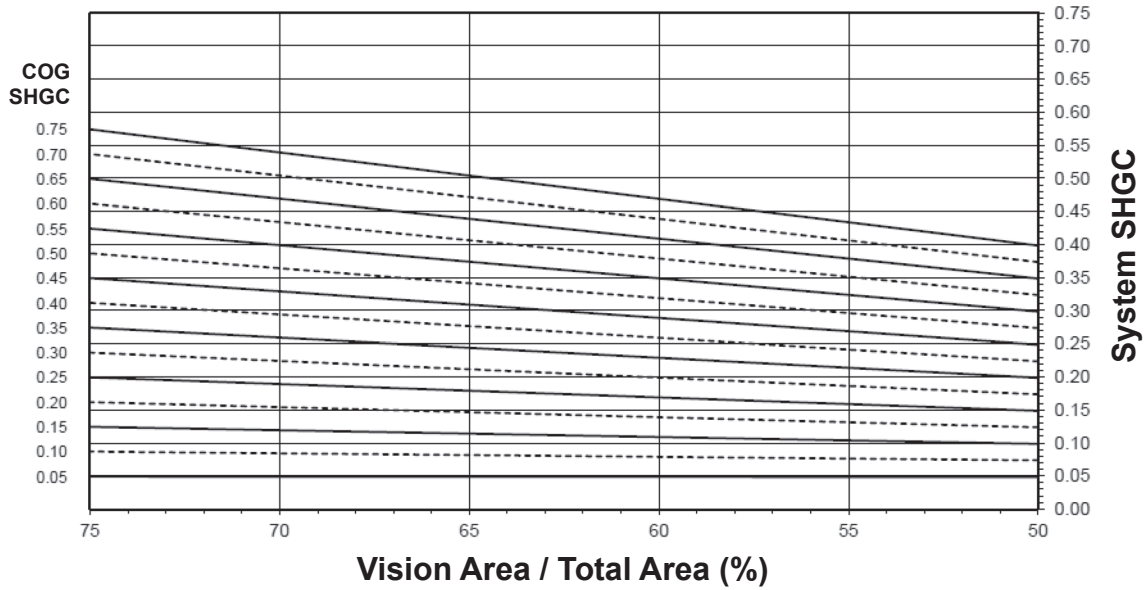
Glass properties are based on center of glass values (winter conditions) and are obtained from your glass supplier.

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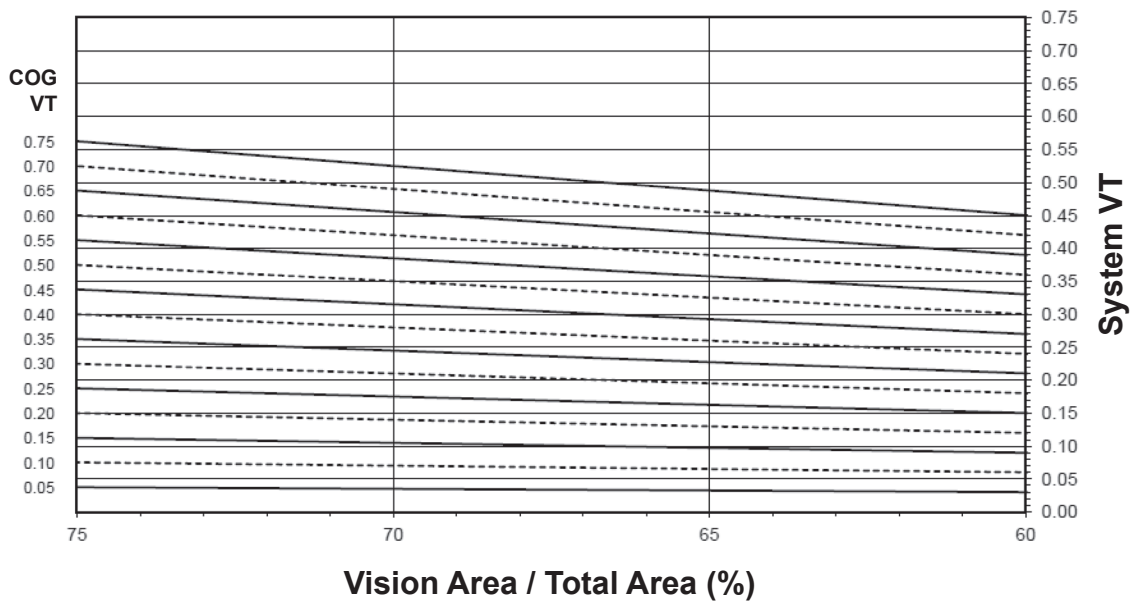
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AA™425 (PAIR OF DOORS)

**System Solar Heat Gain Coefficient (SHGC) vs Percent of Vision Area**



**System Visible Transmittance (VT) vs Percent of Vision Area**



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Thermal Transmittance <sup>1</sup> (BTU/hr • ft<sup>2</sup> • °F)

Glass U-Factor <sup>3</sup>	Overall U-Factor <sup>4</sup>
0.48	0.57
0.46	0.57
0.44	0.56
0.42	0.55
0.40	0.54
0.38	0.53
0.36	0.52
0.34	0.51
0.32	0.50
0.30	0.49
0.28	0.48
0.26	0.47
0.24	0.46
0.22	0.45
0.20	0.44
0.18	0.43
0.16	0.42
0.14	0.41
0.12	0.40
0.10	0.39

## AA™425 (PAIR OF DOORS)

**NOTE:** For glass values that are not listed, linear interpolation is permitted.

1. U-Factors are determined in accordance with NFRC 100.
2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values and are obtained from your glass supplier.
4. Overall U-Factor, SHGC, and VT Matricies are based on the standard NFRC specimen size of 1920mm wide by 2090mm high (75-1/2" by 82-3/8").

SHGC Matrix <sup>2</sup>

Glass SHGC <sup>3</sup>	Overall SHGC <sup>4</sup>
0.75	0.42
0.70	0.39
0.65	0.36
0.60	0.34
0.55	0.31
0.50	0.28
0.45	0.26
0.40	0.23
0.35	0.21
0.30	0.18
0.25	0.15
0.20	0.13
0.15	0.10
0.10	0.07
0.05	0.05

Visible Transmittance <sup>2</sup>

Glass VT <sup>3</sup>	Overall VT <sup>4</sup>
0.75	0.39
0.70	0.37
0.65	0.34
0.60	0.32
0.55	0.29
0.50	0.26
0.45	0.24
0.40	0.21
0.35	0.18
0.30	0.16
0.25	0.13
0.20	0.11
0.15	0.08
0.10	0.05
0.05	0.03

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## **Features**

- 260 Insulclad™ has 2-11/16" (68.3) vertical stile, 2-13/16" (71.4) top and 4-7/16" (112.7) bottom rail
- 360 Insulclad™ has 4-1/16" (103.2) vertical stile, 4-1/16" (103.2) top and 7-1/16" (179.4) bottom rail
- 560 Insulclad™ has 5-9/16" (141.3) vertical stile, 5-9/16" (141.3) top and 7-1/16" (179.4) bottom rail
- Door is 2-1/4" (57.2) deep
- Dual moment welded corner construction
- Door incorporates an extruded PVC thermal break
- Single acting
- 1" (25.4) infill
- Offset pivots, butt hinges or continuous geared hinge
- MS locks or Exit Device hardware
- Surface mounted or concealed closers
- Architects Classic push/pulls
- Adjustable astragal utilizing pile weathering with polymeric fin at meeting stiles
- Polymeric bulb weatherstripping in door frames
- Permanodic™ anodized finishes in seven choices
- Painted finishes in standard and custom choices

## **Optional Features**

- Variety of bottom rail and cross rails
- Two-color finish capability

## **Product Applications**

- 260 Insulclad™ – engineered for thermal efficiency in moderate traffic applications such as offices, stores and apartment buildings
- 360 Insulclad™ – provides thermal efficiency and extra strength for schools, institutions and other high traffic applications.
- 560 Insulclad™ – designed for thermal efficiency with a monumental visual statement for banks, libraries or buildings that experience heavy traffic conditions

For specific product applications,  
Consult your Kawneer representative.

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**PICTORIAL VIEW ..... 5**

**DOOR TYPES/SECT. DIMENSIONS ..... 6**

**CONSTRUCTION DETAILS..... 7**

**ENTRANCE DIMENSIONS..... 8**

**HARDWARE STANDARDS .....9, 10**

**PUSH PULL HARDWARE ..... 11**

**EXIT DEVICE ..... 12**

**OPTIONAL DOOR DETAILS ..... 13**

**WINDLOAD/DEADLOAD CHARTS..... 14**

**THERMAL CHARTS ..... 15-24**

LAWS AND BUILDING AND SAFETY CODES GOVERNING THE DESIGN AND USE OF GLAZED ENTRANCE, WINDOW, AND CURTAIN WALL PRODUCTS VARY WIDELY. KAWNEER DOES NOT CONTROL THE SELECTION OF PRODUCT CONFIGURATIONS, OPERATING HARDWARE, OR GLAZING MATERIALS, AND ASSUMES NO RESPONSIBILITY THEREFOR.

Metric (SI) conversion figures are included throughout these details for reference. Numbers in parentheses ( ) are millimeters unless otherwise noted.

The following metric (SI ) units are found in these details:

- m – meter
- cm – centimeter
- mm – millimeter
- s – second
- Pa – pascal
- MPa – megapascal

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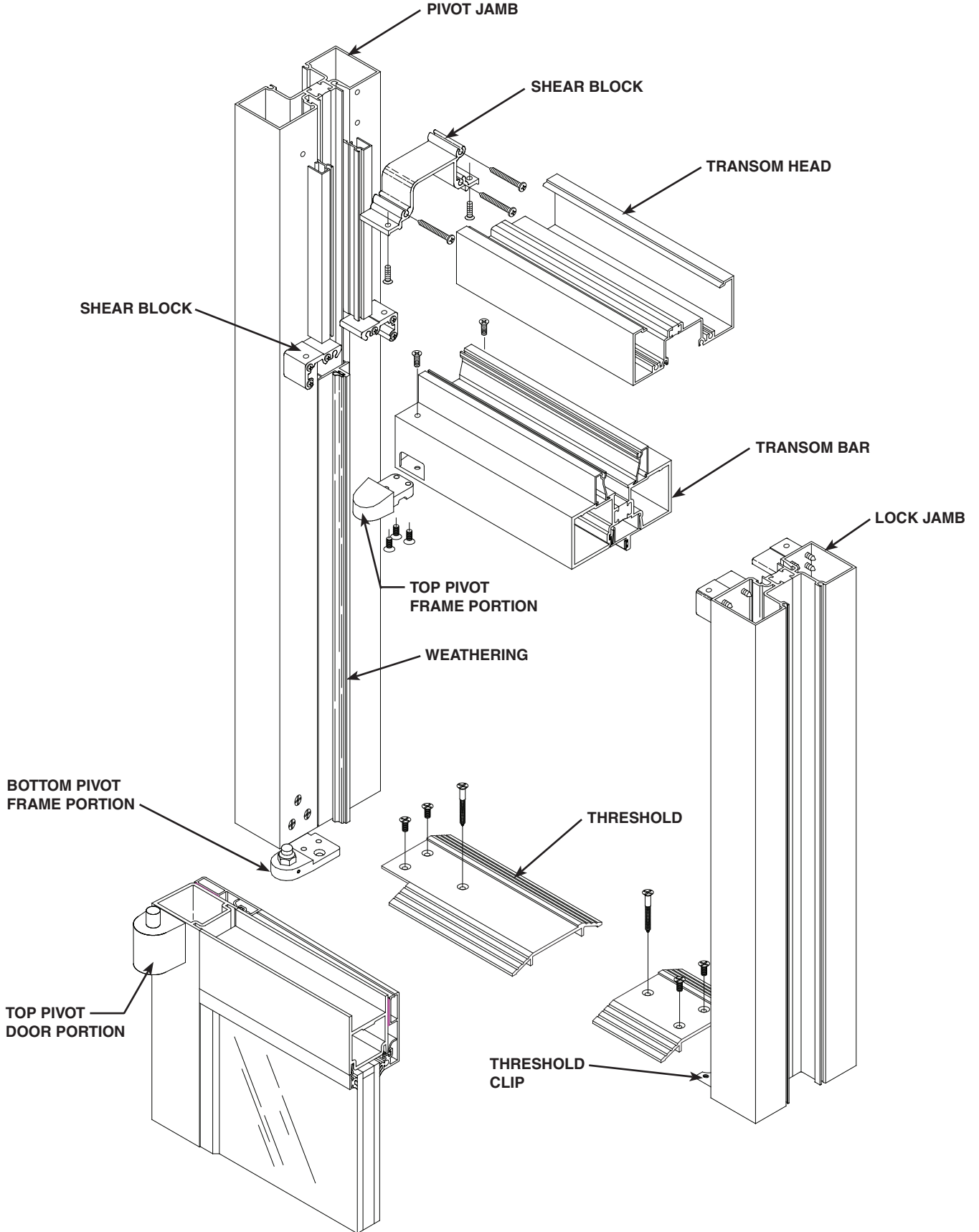
Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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INSULCLAD™ 260 DOOR

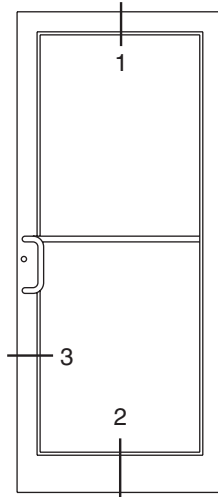
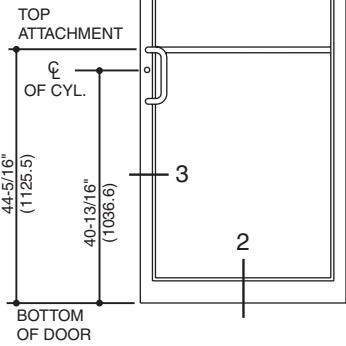
SCALE 3" = 1' 0"

260 NARROW STILE

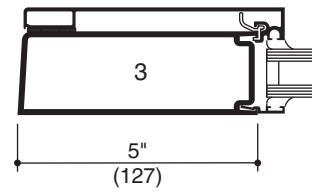
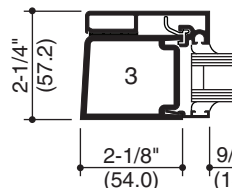
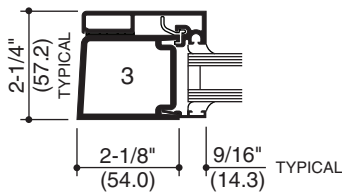
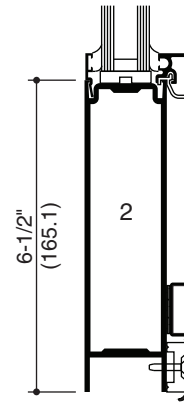
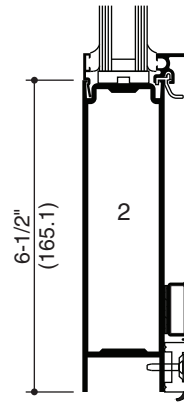
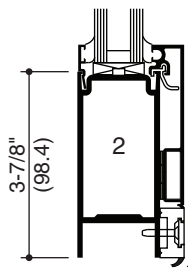
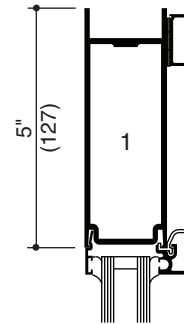
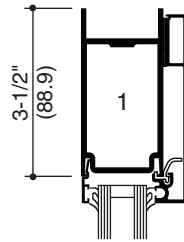
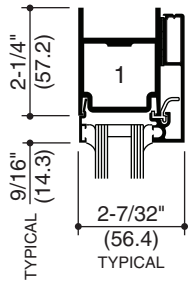
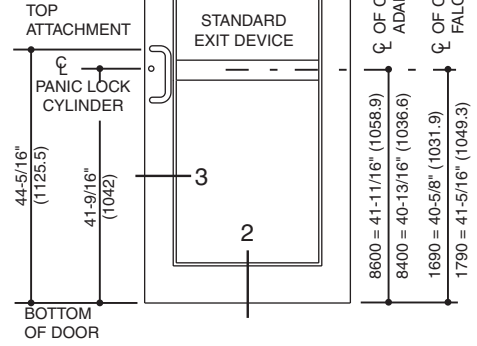
360 MEDIUM STILE

560 WIDE STILE

STANDARD LOCATIONS



STANDARD LOCATIONS



SINGLE ACTING

SINGLE ACTING

SINGLE ACTING

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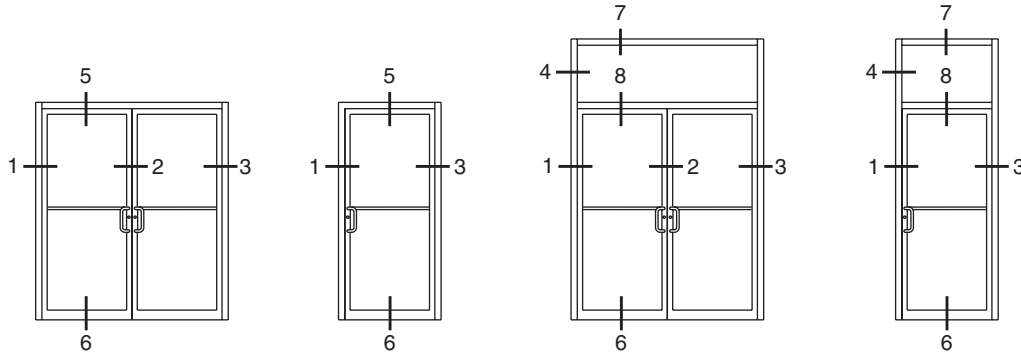
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**SCALE 3" = 1'-0"**

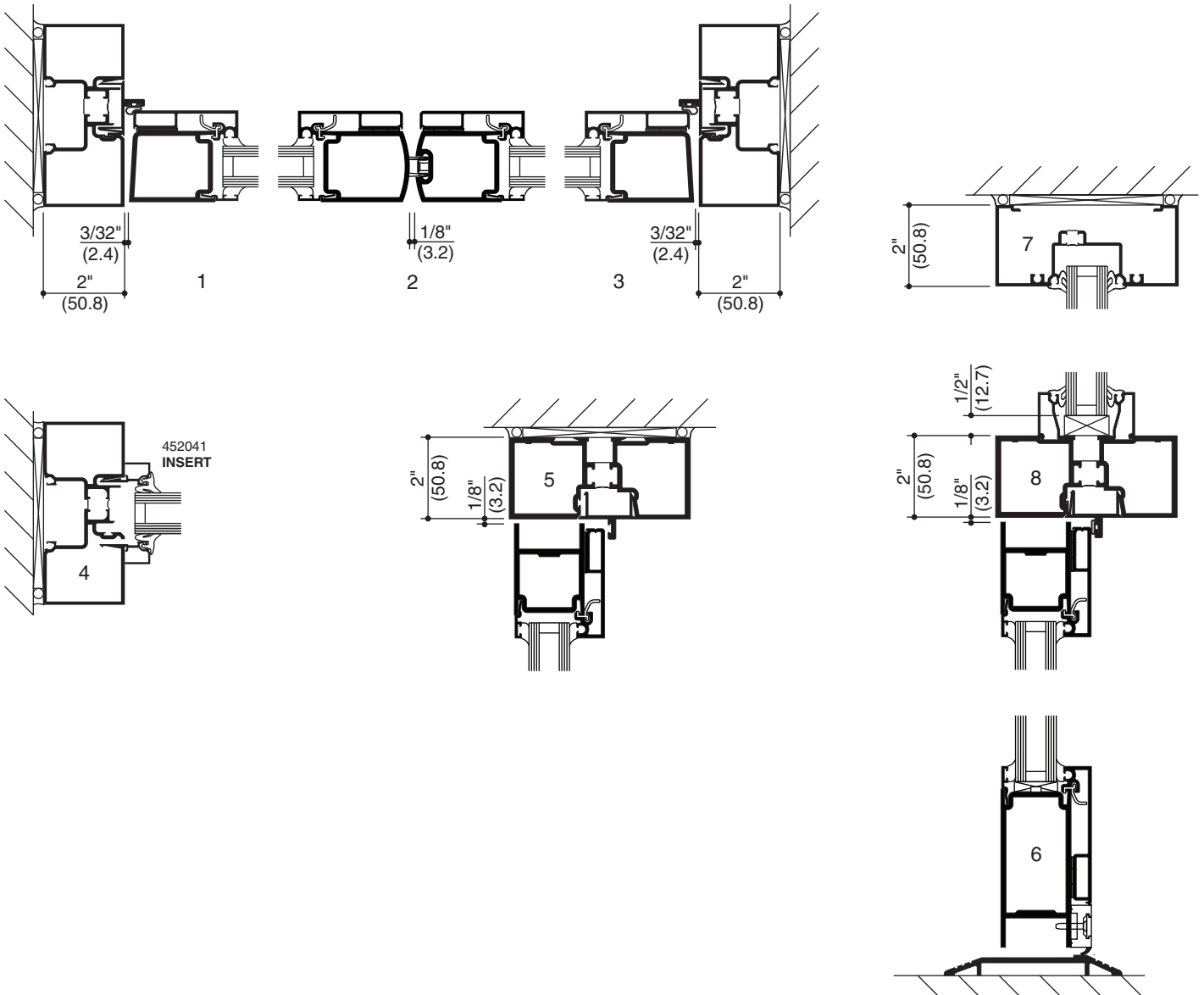
**TRIFAB™ VG 451T CENTER FRAMING SHOWN. 260 INSULCLAD SHOWN, 360 AND 560 INSULCLAD SIMILAR. OTHER FRAMING OPTIONS AVAILABLE. CONSULT YOUR KAWNEER REPRESENTATIVE.**

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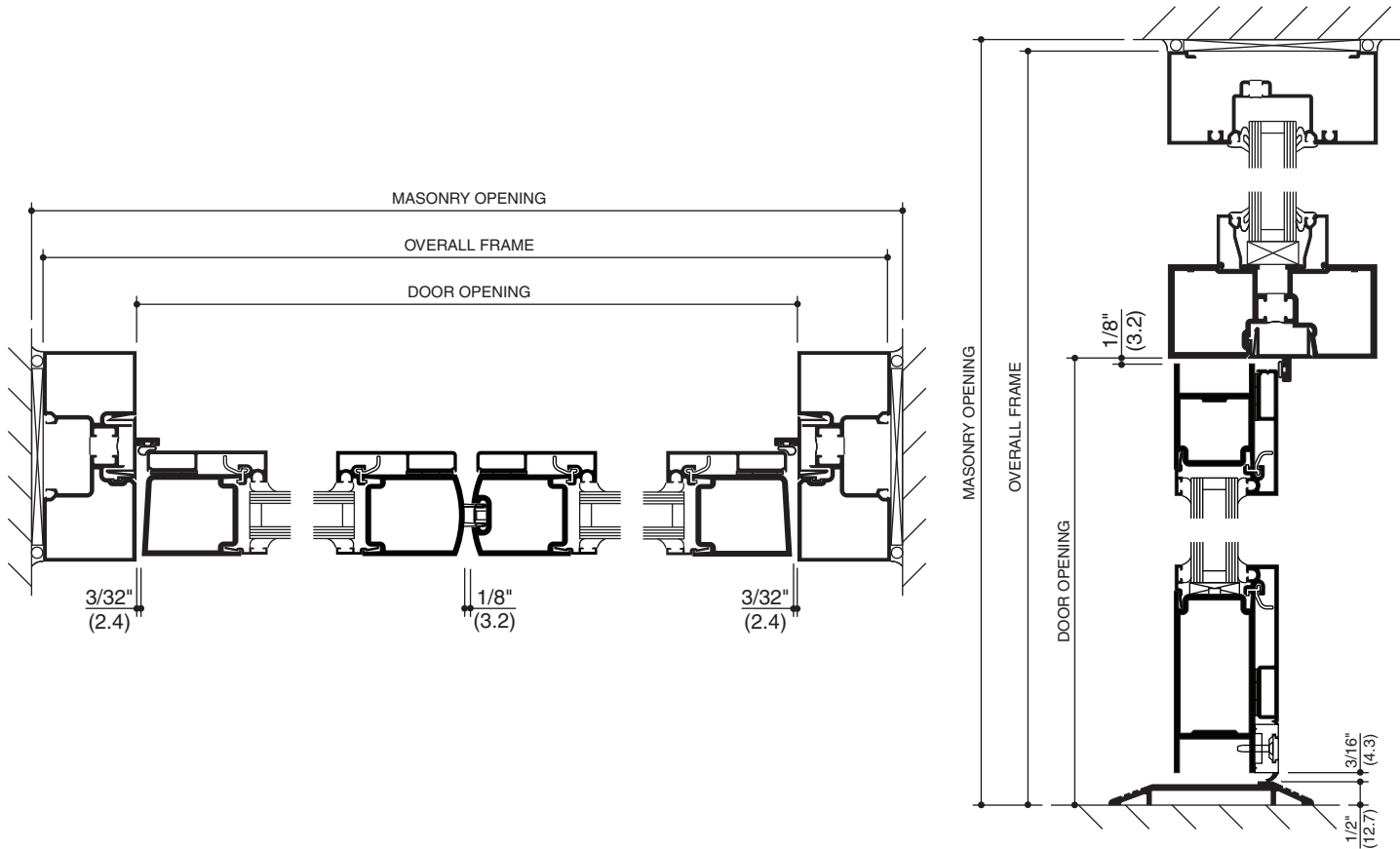
**ELEVATION IS NUMBER KEYED TO DETAILS.**





SCALE 3" = 1' 0"

DIMENSIONS ARE NOMINAL

**STANDARD SIZES** (TRIFAB™ VG 451T CENTER FRAMES)**WITHOUT TRANSOM****Door Opening Dimension**

3' 0" x 7' 0" ( 914 x 2134)

3' 6" x 7' 0" (1067 x 2134)

6' 0" x 7' 0" (1829 x 2134)

**Overall Frame Dimension**

3' 4" x 7' 2" (1016 x 2184)

3' 10" x 7' 2" (1168 x 2184)

6' 4" x 7' 2" (1930 x 2184)

**Masonry Opening Dimension**

3' 4-1/2" x 7' 2-1/4" (1029 x 2191)

3' 10-1/2" x 7' 2-1/4" (1181 x 2191)

6' 4-1/2" x 7' 2-1/4" (1943 x 2191)

**WITH TRANSOM****Door Opening Dimension**

Unchanged from above.

**Overall Frame Dimension**

Add 3' 2" (965) to above heights.

**Masonry Opening Dimension**

Add 3' 2-1/2" (978) to above heights.

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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	STANDARD	OPTIONAL
<b>Doors</b>	Narrow stile 260 doors prepared for attachment hardware.	Medium stile 360 or wide stile 560.
<b>Door Sizes</b>	Standard sizes shown on page 8.	Any size up to 3' 6" x 8' (1067 x 2438)
<b>Glass Stops</b>	Square glass stops for 1" (25.4) infill.	
<b>Door Frames</b>	Trifab™ VG 451T Center - 2" x 4-1/2" (50.8 x 114.3) for double glazing.	Other Kawneer framing systems suitable for door frames may be used.
<b>Push-Pulls</b>	<p><b>Single Acting:</b> Architects Classic Hardware "CO-9" Pull and "CP-II" Push Bar.</p> <p>Architects Classic Hardware "CO-9" Pull and "CP" Push Bar.</p>	<p><b>Single Acting:</b> Architects Classic Hardware "CO-12" and "CP-II" push bar.</p> <p>Architects Classic Hardware "CO-12" and "CP" push bar.</p> <p>Architects Classic Hardware "CO-9"/"CO-9" Pulls.</p> <p>Architects Classic Hardware "CO-12"/"CO-12" Pulls.</p>
<b>Door Closers</b>	<p><b>Single Acting:</b> Norton 1601 adjustable or 1601 BF adjustable surface closer with back-check and with or without adjustable hold-open.</p>	<p><b>Single Acting:</b> LCN 1260 adjustable</p> <p>LCN 4040 surface closer with or without adjustable hold-open.</p> <p>Standard COC with single acting offset arm.</p> <p>Norton 8100 surface closer with 50% spring power adjustment (for opening forces of less than 8 pounds.) Closer is available with standard back-checks and with or without the hold-open feature.</p> <p>Falcon SC 60 surface closer.</p>
<b>Hinging</b>	<p><b>Single Acting:</b> Kawneer top and bottom offset pivots (or) Kawneer top and bottom 4 1/2" x 4" (114.3 x 101.6) ball bearing butt hinge with non-removable pin (NRP) (or) Continuous Hinge.</p>	
<b>Intermediate Pivots/Butts</b>	<p><b>Single Acting:</b> Kawneer intermediate offset pivot (or) Kawneer 4-1/2" x 4" (114.3 x 101.6) ball bearing butt hinge with non-removable pin (NRP).</p>	<p><b>Single Acting:</b> Rixson M-19 or IVES #7215-INT intermediate offset pivot.</p>
<b>Power Transfers</b>	<p><b>Single Acting:</b> Kawneer EL intermediate offset pivot (or) Kawneer EL 4-1/2" x 4" (114.3 x 101.6) ball bearing butt hinge with wire transfer (or) EPT (Electric Power Transfer).</p>	
<b>Power Supply</b>	<b>SP-1000X Power Supply:</b> For use with EL exit devices.	
<b>Locks - Active Leaf</b>	Adams-Rite MS 1850A deadlock with two 1-5/32" (29.4) diameter 5 pin cylinders.	<p>Adams-Rite #4510 latch lock.</p> <p>Adams-Rite #1850A-500 short throw deadlock.</p> <p>Adams-Rite #1850A-505 hookbolt lock.</p> <p>Adams-Rite #4015 two-point Lock.</p> <p>Adams-Rite #4085 three-point Lock.</p> <p>Kawneer cylinder guard.</p> <p>Kawneer thumbturn (in lieu of cylinder).</p>

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	STANDARD	OPTIONAL
<b>Locks - Inactive Leaf</b>	One pair of Kawneer flush bolts in the inactive leaf of a pair of doors.	<b>Controller™</b> is a 3-point locking system consisting of a two point locking device in the inactive leaf in lieu of flush bolts, working in conjunction with the MS 1850A deadlock in the active leaf. This combination provides for greater security than possible with flush bolts and complies with the life safety considerations of building codes which prohibit the use of flush bolts.
<b>Thresholds</b>	A 1/2" x 4" (12.7 x 101.6) aluminum mill finish threshold.	
<b>Weathering</b>	<b>Single Acting:</b> Weathering system in the door and frame consisting of a dense, bulb polymeric material, which remains resilient and retains its weathering ability under temperature extremes. (Complete with an EPDM blade gasket sweep strip applied to the bottom door rail with concealed fasteners).	
<b>Exit Device</b>	<p><b>Falcon 1690 Concealed Rod Exit Device</b> with or without a rim type cylinder.</p> <p><b>Falcon 1790 Rim Exit Device</b> is a rim type exit device with or without a rim type cylinder.</p>	<p><b>Falcon EL 1690</b> concealed rod exit device with or without a rim type cylinder. The device is designed for electrified access control and is compatible with most key pad and card reader systems.</p> <p><b>Falcon EL 1790</b> rim type exit device with or without a rim type cylinder. The device is designed for electrified access control and is compatible with most key pad and card reader systems.</p> <p><b>Falcon 1990</b> is a concealed rod exit device with or without a rim type cylinder.</p> <p><b>Falcon 2090</b> is a rim type exit device with or without a rim type cylinder.</p> <p><b>Adams Rite 8600</b> is a concealed rod exit device with or without a rim type cylinder.</p> <p><b>Adams Rite 8400</b> is a rim type exit device with or without a rim type cylinder.</p>
	<p><b>Exit Device Pulls:</b></p> <p>Architects Classic style "CO-9" Pull.</p>	<p><b>Optional Exit Device Pulls:</b></p> <p>Architects Classic style "CO-12" Pull.</p>

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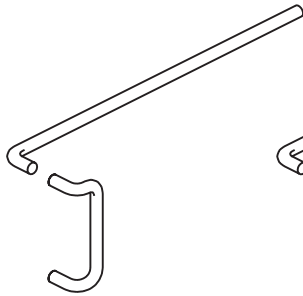
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Reference Hardware section for additional information

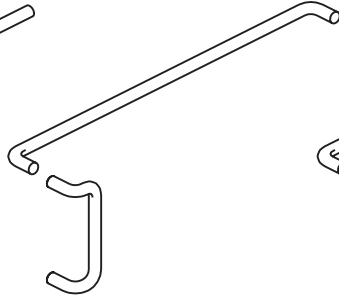
**ARCHITECTS CLASSIC (PUSH PULL SETS)**

SINGLE ACTING DOORS USE A PULL HANDLE AND PUSH BAR.

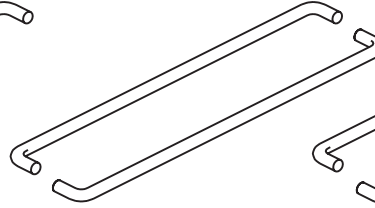
Refer to **HARDWARE SECTION** for complete hardware information.



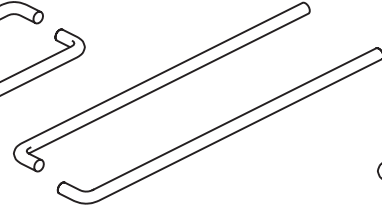
CO-9 / CP  
CO-12 / CP



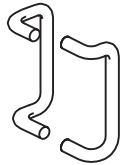
CO-9 / CP-II  
CO-12 / CP-II



CP-II / CP-II

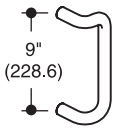


CP / CP



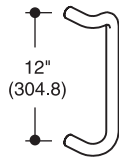
CO-9 / CO-9  
CO-12 / CO-12

**ARCHITECTS CLASSIC (COMPONENTS)**



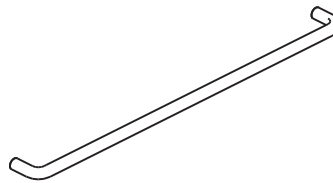
9"  
(228.6)

"CO-9"  
PULL

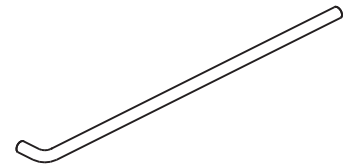


12"  
(304.8)

"CO-12"  
PULL



"CP-II" PUSH BAR

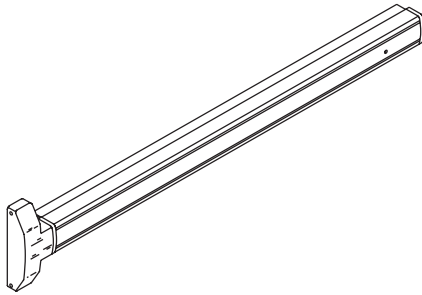


"CP" PUSH BAR

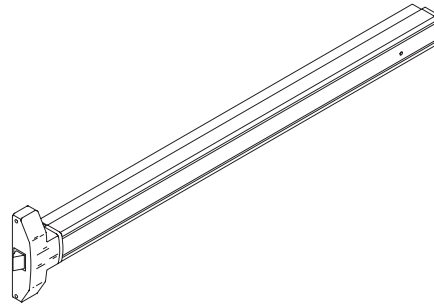
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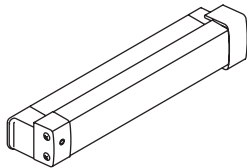
EXIT DEVICES and EXIT DEVICE PULLS



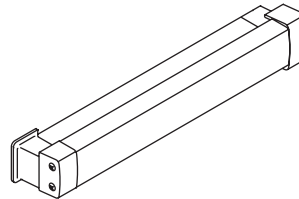
CONCEALED ROD EXIT DEVICE  
Falcon 1690  
Falcon EL 1690



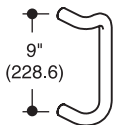
RIM LATCH EXIT DEVICE  
Falcon 1790  
Falcon EL 1790



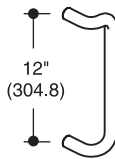
MORTISE EXIT DEVICE  
Adams-Rite 8400



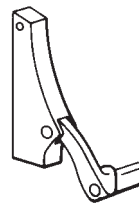
CONCEALED EXIT DEVICE  
Adams-Rite 8600



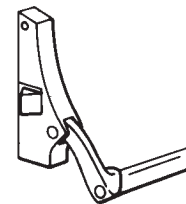
"CO-9"  
PULL



"CO-12"  
PULL



CONCEALED ROD EXIT DEVICE  
Falcon 1990



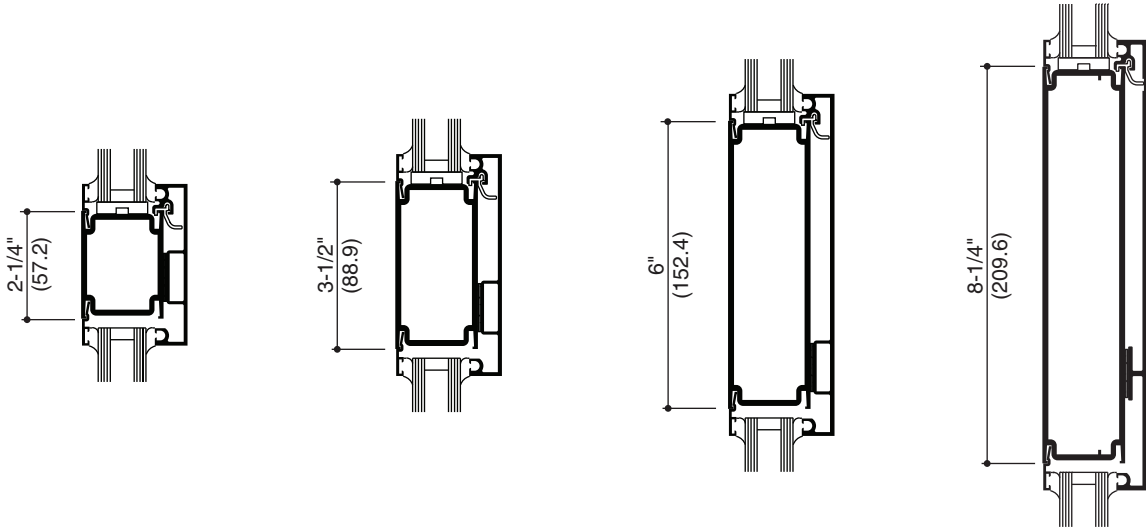
RIM LATCH EXIT DEVICE  
Falcon 2090

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SCALE 3" = 1'-0"

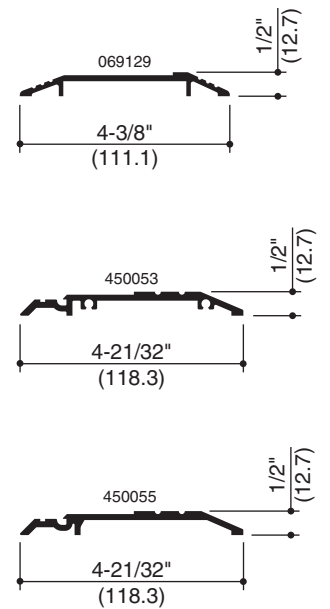
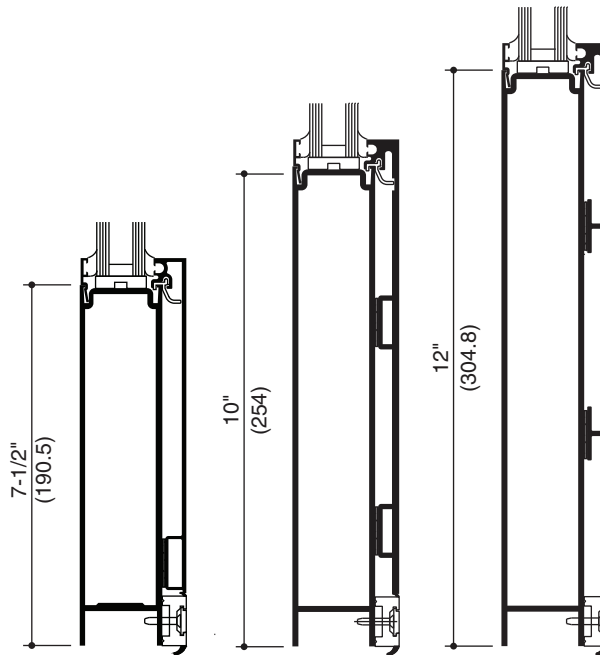
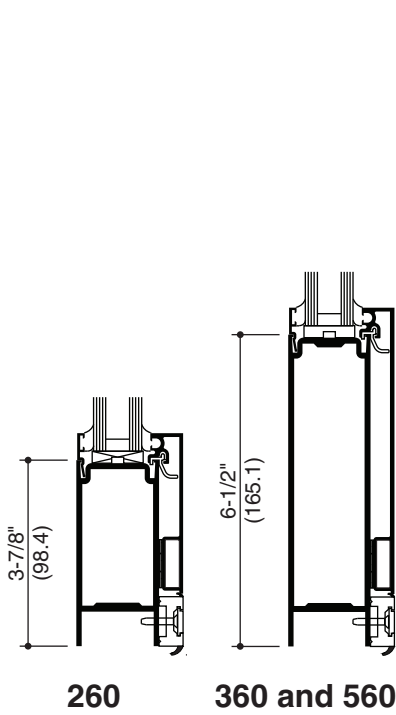
OPTIONAL CROSS RAILS



STANDARD BOTTOM RAIL

OPTIONAL BOTTOM RAIL

THRESHOLDS

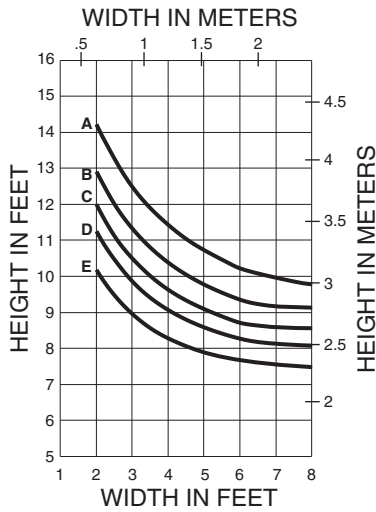


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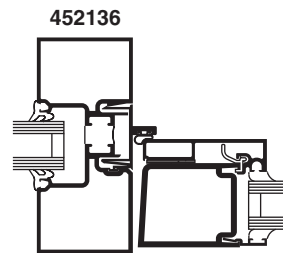
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### WINDLOAD ON ENTRANCE FRAMING

Charted windload curves are based on allowable stress for aluminum of 15,152 PSI and a L/175 deflection ratio and, in all cases represent the limiting values. Dimensional limits at the stated windloads are for door frame members anchored only at the ends.

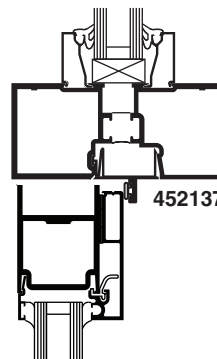
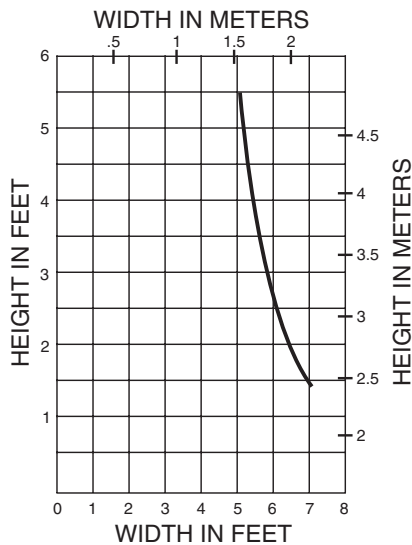


- A = 15 PSF (720 Pa)
- B = 20 PSF (960 Pa)
- C = 25 PSF (1200 Pa)
- D = 30 PSF (1440 Pa)



### DEADLOAD ON TRANSOM BAR

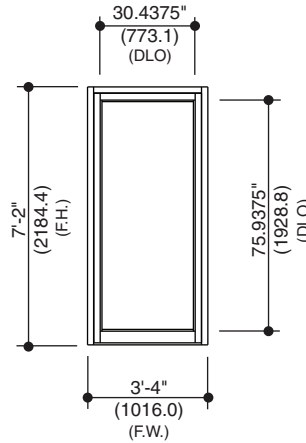
Height limitations for transom glass over a doorway are based on a maximum 1/16" (1.6) mid-point deflection of a transom bar supporting 1" (25.4) thick double 1/4" (6.4) pane insulating glass bearing on two setting blocks placed at the 1/4-points (i.e. one fourth of the span as measured from each end). To determine height limitations for other types of insulating glass multiply the allowable glass height from the chart times 1.33 for units made with two panes of 3/16" (4.8) thick glass or times 2.0 for units made with two 1/8" (3.2) panes.



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**Generic Project Specific U-factor Example Calculation**  
 (Percent of Glass will vary on specific products depending on sitelines)



Note: 260 Door shown for example

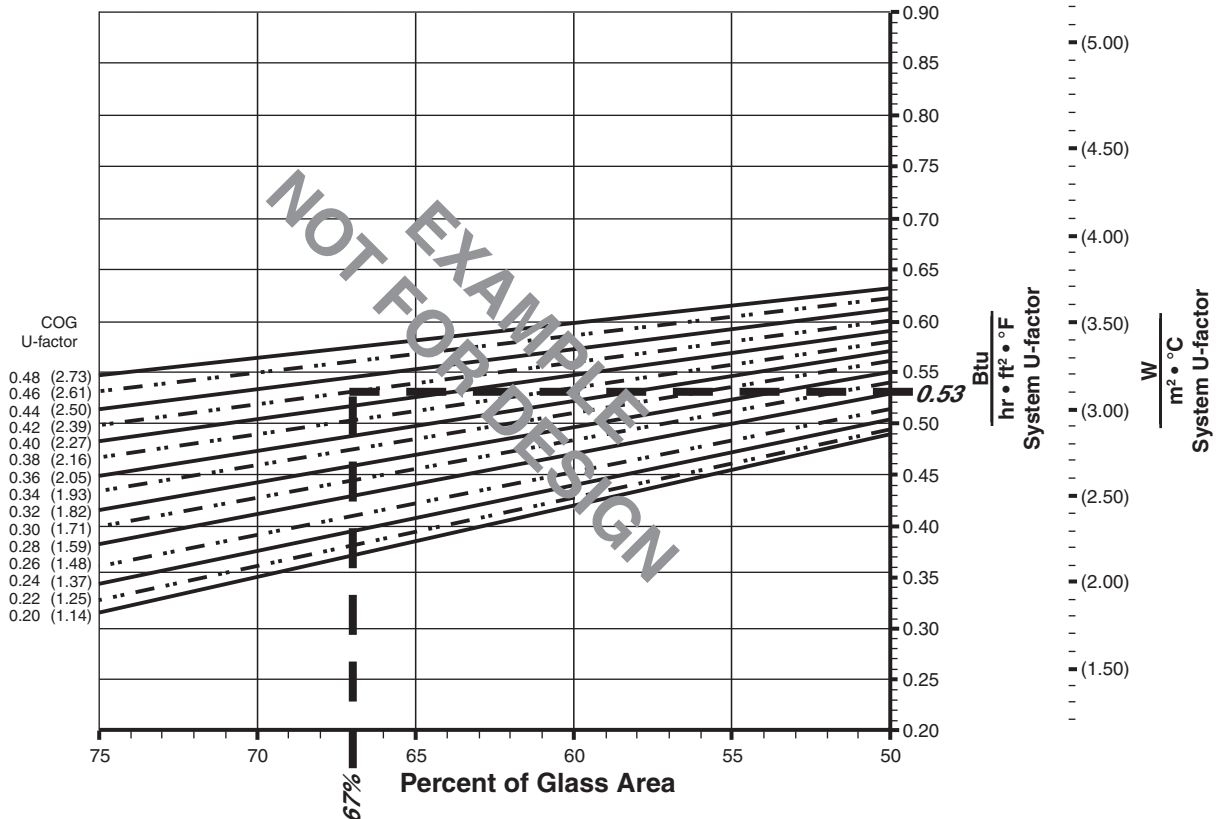
Example Glass U-Factor = 0.42 Btu/hr • ft<sup>2</sup> • °F

Total Daylight Opening = 30.4375" x 75.9375" = 16.05 ft<sup>2</sup>

Total Projected Area = 3'-4" x 7'-2" = 23.9 ft<sup>2</sup>

Percent of Glass = (Total Daylight Opening ÷ Total Projected Area)100  
 = (16.05 ÷ 23.9)100 = 67%

**System U-factor vs Percent of Glass Area**



Based on 67% glass and center of glass (COG) U-factor of 0.42  
 System U-factor is equal to 0.53 Btu/hr • ft<sup>2</sup> • °F

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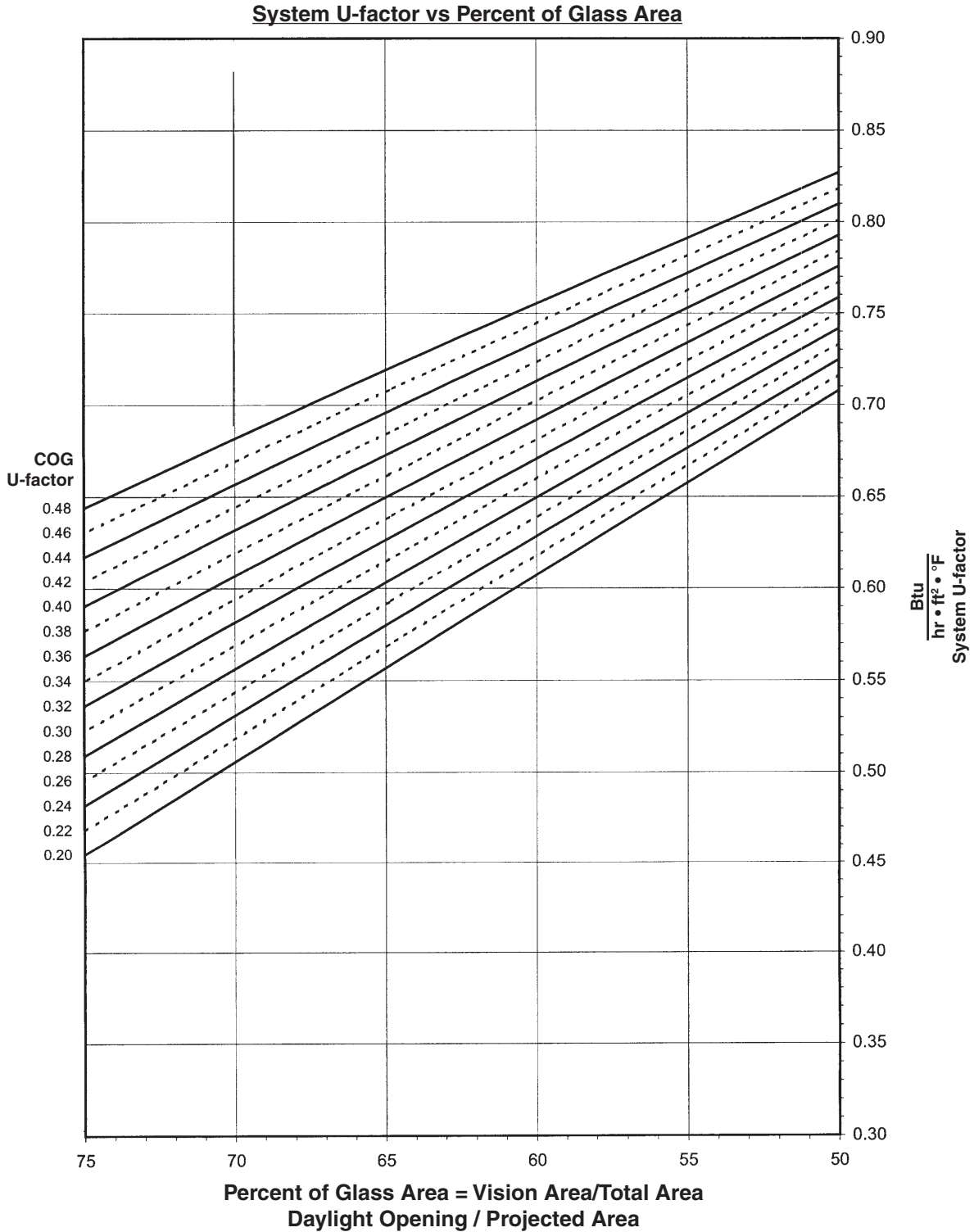
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260 INSULCLAD™ DOOR - SINGLE LEAF

**Note:**

Values in parentheses are metric.  
 COG = Center of Glass.  
 Charts are generated per AMMA 507



**Notes for System U-factor, SHGC and VT charts:**

For glass values that are not listed, linear interpolation is permitted.  
 Glass properties are based on center of glass values and are obtained from your glass supplier.

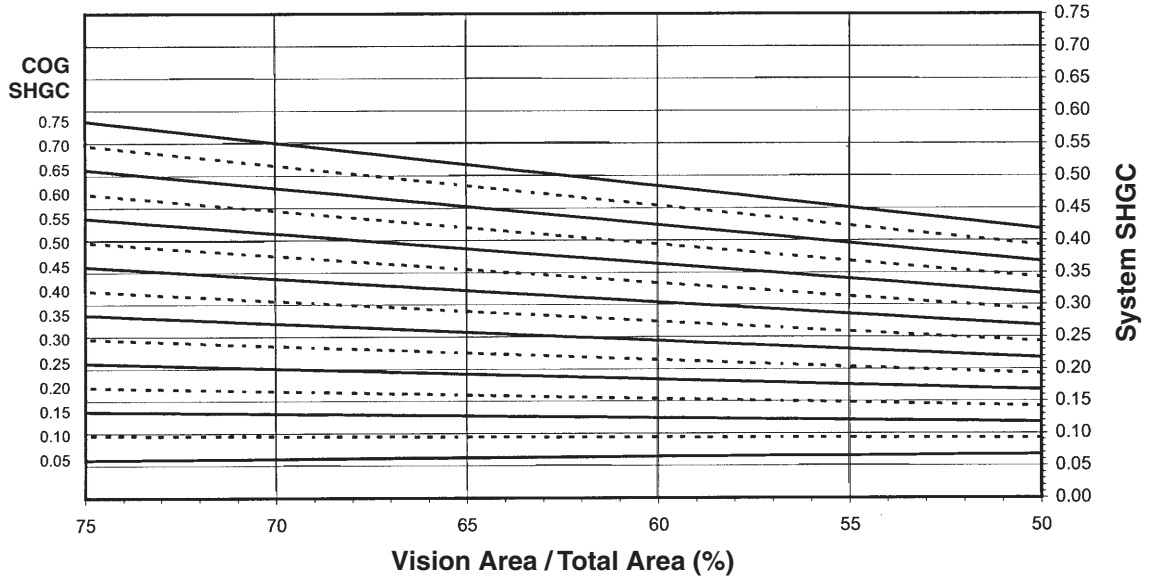
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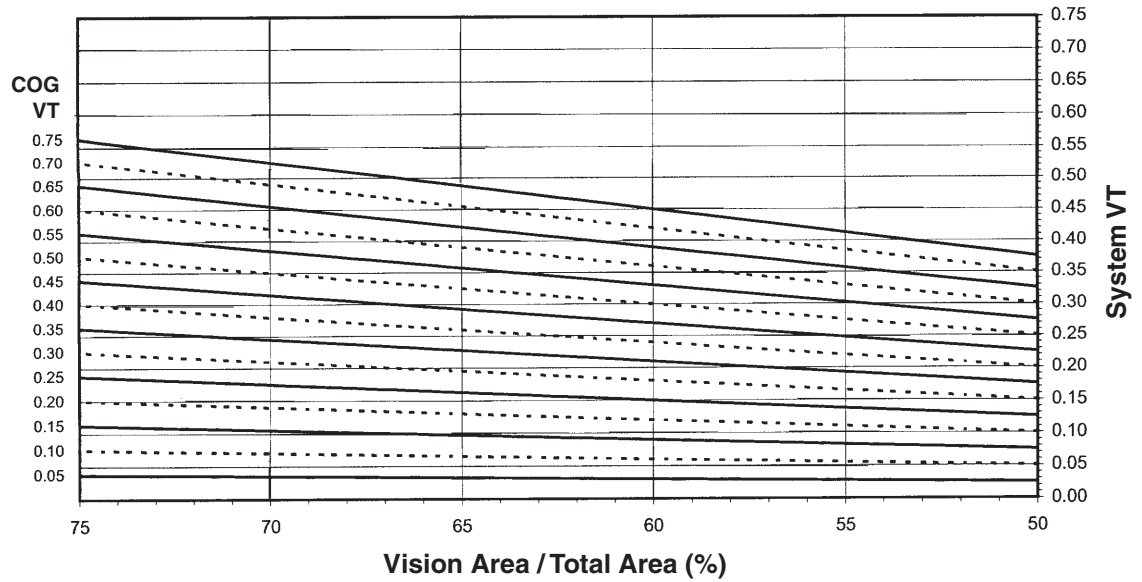
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260 INSULCLAD™ DOOR - SINGLE LEAF

System Solar Heat Gain Coefficient (SHGC) vs Percent of Vision Area



System Visible Transmittance (VT) vs Percent of Vision Area



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**Thermal Transmittance**<sup>1</sup> (BTU/hr • ft<sup>2</sup> • °F)

Glass U-Factor <sup>3</sup>	Overall U-Factor <sup>4</sup>
0.48	0.72
0.46	0.71
0.44	0.70
0.42	0.69
0.40	0.67
0.38	0.66
0.36	0.65
0.34	0.64
0.32	0.63
0.30	0.62
0.28	0.60
0.26	0.59
0.24	0.58
0.22	0.57
0.20	0.56

**260 INSULCLAD™ DOOR  
SINGLE LEAF**

**NOTE:** For glass values that are not listed, linear interpolation is permitted.

1. U-Factors are determined in accordance with NFRC 100.
2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values and are obtained from your glass supplier.
4. Overall U-Factor, SHGC, and VT Matricies are based on the standard NFRC specimen size of 1000mm wide by 2000mm high (39-3/8" by 78-3/4").

**SHGC Matrix**<sup>2</sup>

Glass SHGC <sup>3</sup>	Overall SHGC <sup>4</sup>
0.75	0.52
0.70	0.48
0.65	0.45
0.60	0.42
0.55	0.39
0.50	0.35
0.45	0.32
0.40	0.29
0.35	0.26
0.30	0.22
0.25	0.19
0.20	0.16
0.15	0.13
0.10	0.09
0.05	0.06

**Visible Transmittance**<sup>2</sup>

Glass VT <sup>3</sup>	Overall VT <sup>4</sup>
0.75	0.49
0.70	0.45
0.65	0.42
0.60	0.39
0.55	0.36
0.50	0.32
0.45	0.29
0.40	0.26
0.35	0.23
0.30	0.19
0.25	0.16
0.20	0.13
0.15	0.10
0.10	0.06
0.05	0.03

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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360 INSULCLAD™ DOOR - SINGLE LEAF

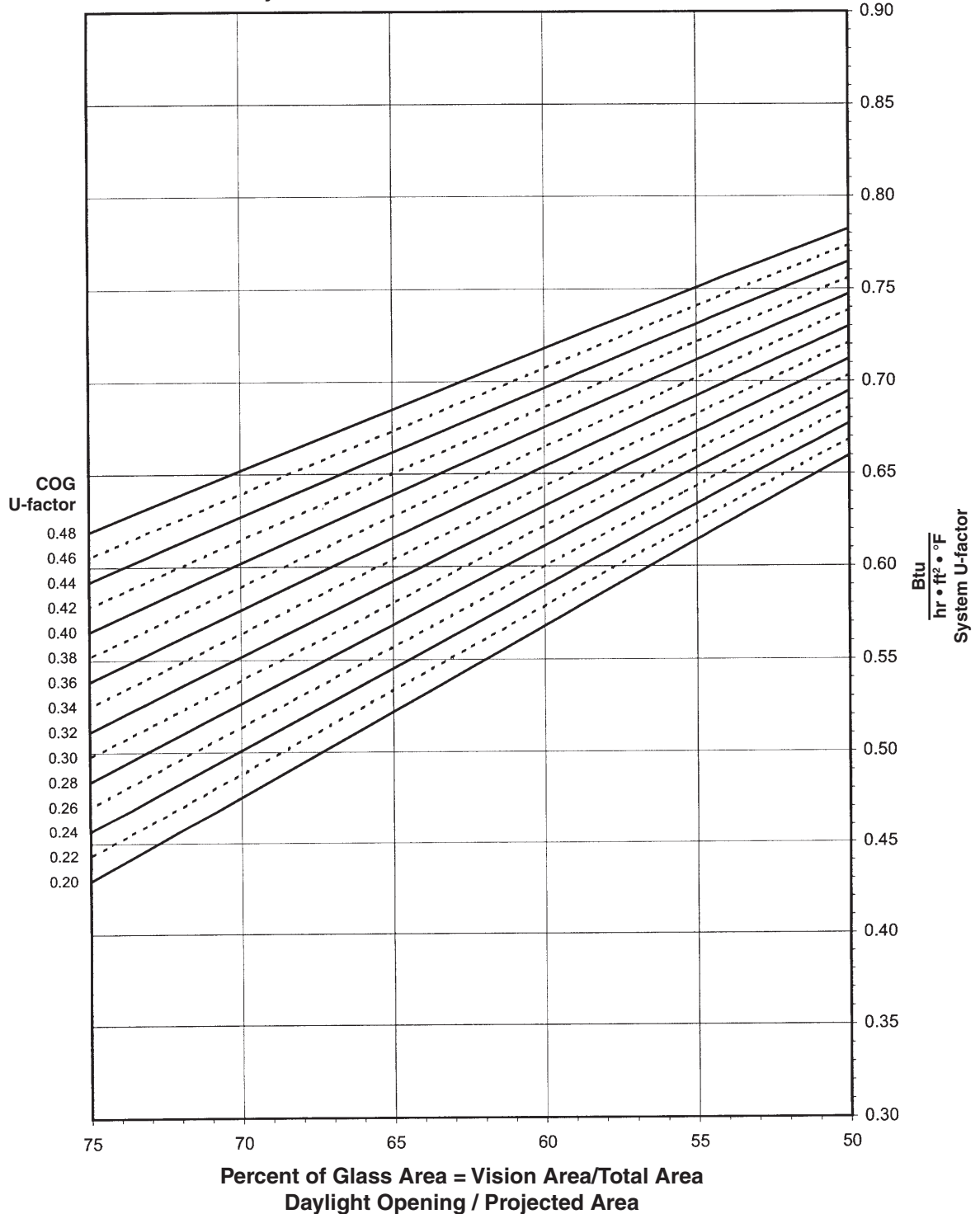
**Note:**

Values in parentheses are metric.

COG = Center of Glass.

Charts are generated per AMMA 507

**System U-factor vs Percent of Glass Area**



**Notes for System U-factor, SHGC and VT charts:**

For glass values that are not listed, linear interpolation is permitted.

Glass properties are based on center of glass values and are obtained from your glass supplier.

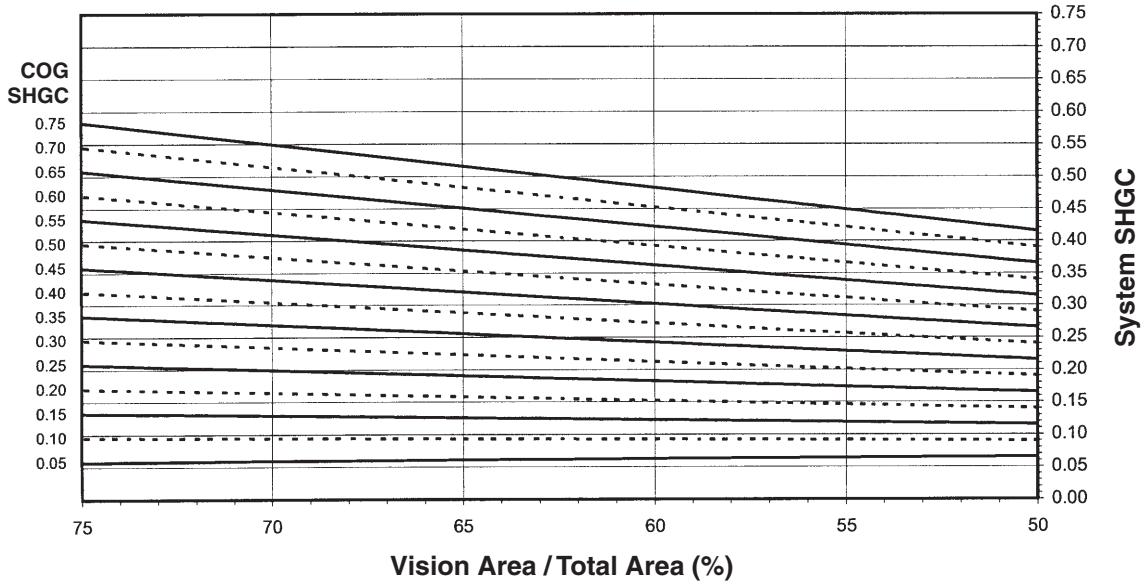
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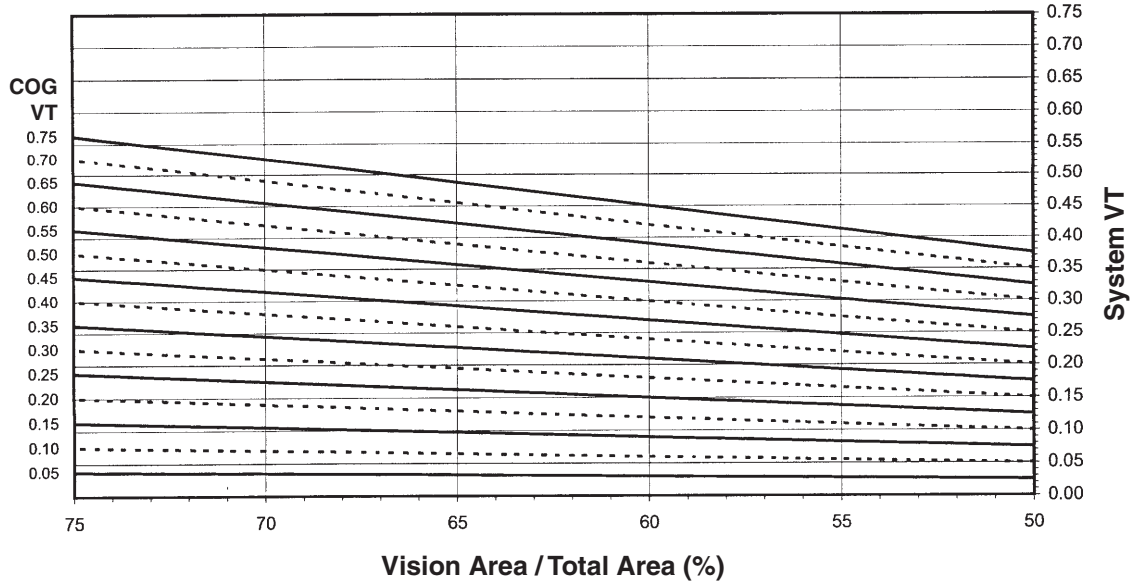
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360 INSULCLAD™ DOOR - SINGLE LEAF

System Solar Heat Gain Coefficient (SHGC) vs Percent of Vision Area



System Visible Transmittance (VT) vs Percent of Vision Area



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**0Thermal Transmittance <sup>1</sup> (BTU/hr • ft <sup>2</sup> • °F)**

Glass U-Factor <sup>3</sup>	Overall U-Factor <sup>4</sup>
0.48	0.75
0.46	0.74
0.44	0.73
0.42	0.72
0.40	0.71
0.38	0.70
0.36	0.69
0.34	0.68
0.32	0.67
0.30	0.66
0.28	0.65
0.26	0.64
0.24	0.63
0.22	0.62
0.20	0.61

**360 INSULCLAD™ DOOR SINGLE LEAF**

**NOTE:** For glass values that are not listed, linear interpolation is permitted.

1. U-Factors are determined in accordance with NFRC 100.
2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values and are obtained from your glass supplier.
4. Overall U-Factor, SHGC, and VT Matricies are based on the standard NFRC specimen size of 1000mm wide by 2000mm high (39-3/8" by 78-3/4").

**SHGC Matrix <sup>2</sup>**

Glass SHGC <sup>3</sup>	Overall SHGC <sup>4</sup>
0.75	0.45
0.70	0.42
0.65	0.40
0.60	0.37
0.55	0.34
0.50	0.31
0.45	0.29
0.40	0.26
0.35	0.23
0.30	0.20
0.25	0.17
0.20	0.15
0.15	0.12
0.10	0.09
0.05	0.06

**Visible Transmittance <sup>2</sup>**

Glass VT <sup>3</sup>	Overall VT <sup>4</sup>
0.75	0.42
0.70	0.39
0.65	0.36
0.60	0.33
0.55	0.31
0.50	0.28
0.45	0.25
0.40	0.22
0.35	0.19
0.30	0.17
0.25	0.14
0.20	0.11
0.15	0.08
0.10	0.06
0.05	0.03

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560 INSULCLAD™ DOOR - SINGLE LEAF

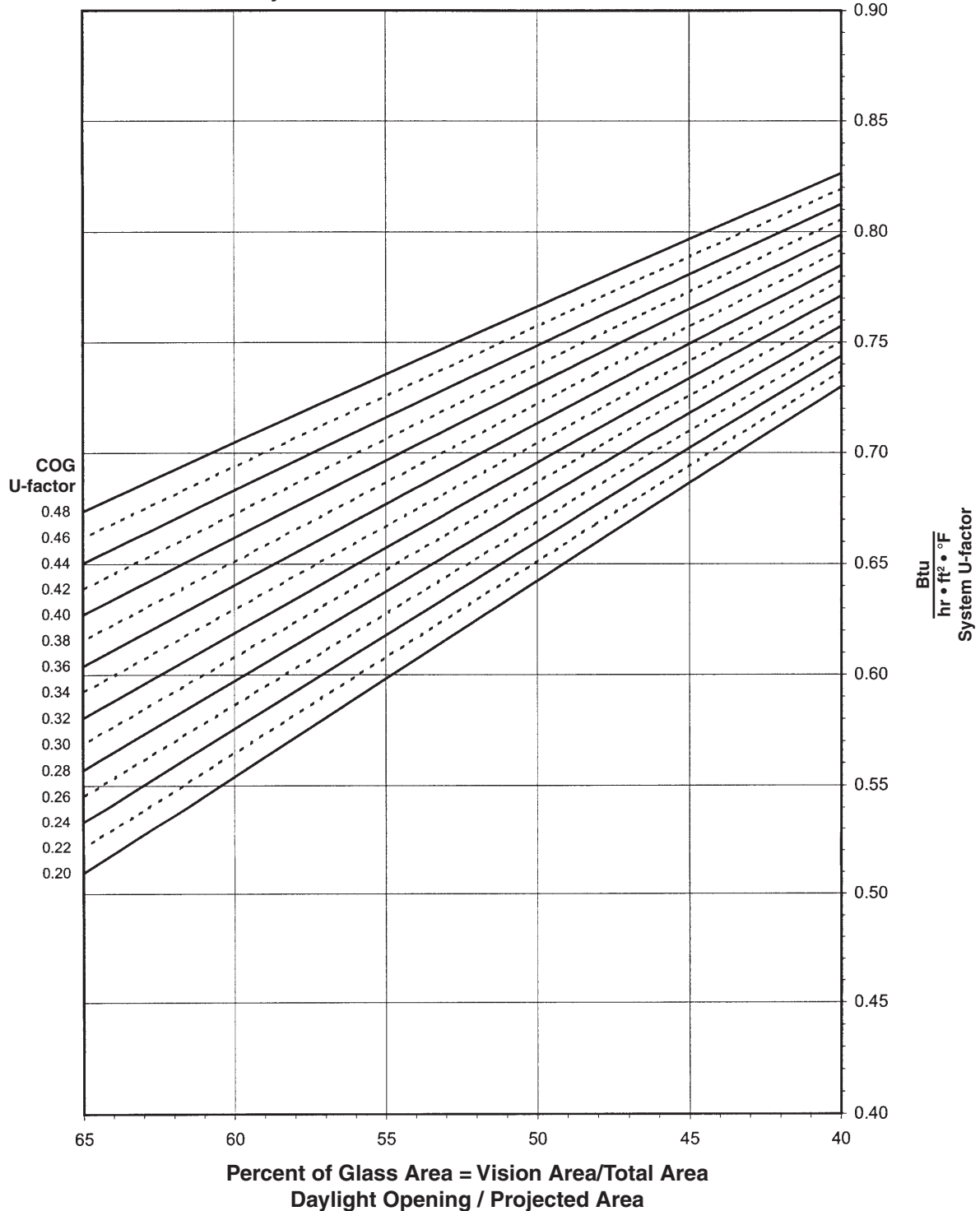
**Note:**

Values in parentheses are metric.

COG = Center of Glass.

Charts are generated per AMMA 507

**System U-factor vs Percent of Glass Area**



**Notes for System U-factor, SHGC and VT charts:**

For glass values that are not listed, linear interpolation is permitted.

Glass properties are based on center of glass values and are obtained from your glass supplier.

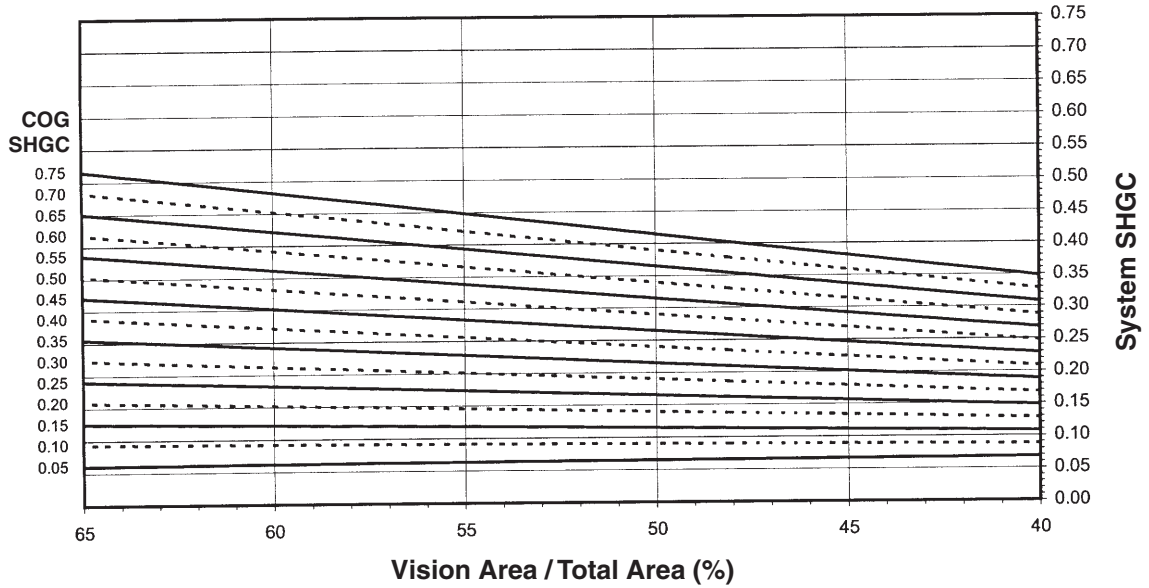
Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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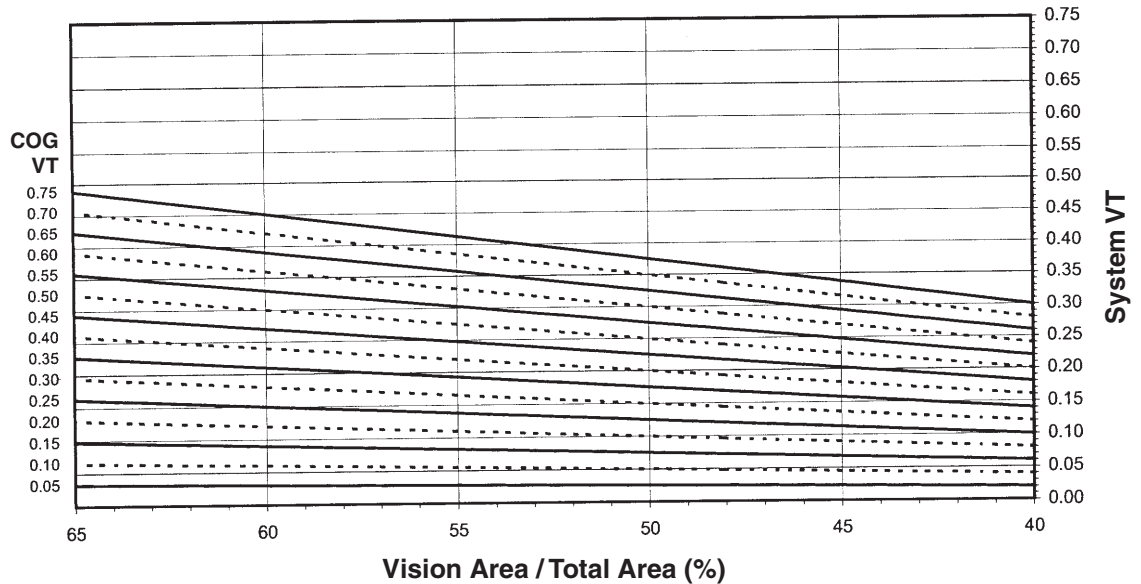
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560 INSULCLAD™ DOOR - SINGLE LEAF

System Solar Heat Gain Coefficient (SHGC) vs Percent of Vision Area



System Visible Transmittance (VT) vs Percent of Vision Area



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**Thermal Transmittance**<sup>1</sup> (BTU/hr • ft<sup>2</sup> • °F)

Glass U-Factor <sup>3</sup>	Overall U-Factor <sup>4</sup>
0.48	0.78
0.46	0.77
0.44	0.76
0.42	0.75
0.40	0.74
0.38	0.74
0.36	0.73
0.34	0.72
0.32	0.71
0.30	0.70
0.28	0.69
0.26	0.68
0.24	0.68
0.22	0.67
0.20	0.66

**560 INSULCLAD™ DOOR  
SINGLE LEAF**

**NOTE:** For glass values that are not listed, linear interpolation is permitted.

1. U-Factors are determined in accordance with NFRC 100.
2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values and are obtained from your glass supplier.
4. Overall U-Factor, SHGC, and VT Matricies are based on the standard NFRC specimen size of 1000mm wide by 2000mm high (39-3/8" by 78-3/4").

**SHGC Matrix**<sup>2</sup>

Glass SHGC <sup>3</sup>	Overall SHGC <sup>4</sup>
0.75	0.40
0.70	0.38
0.65	0.35
0.60	0.33
0.55	0.31
0.50	0.28
0.45	0.26
0.40	0.23
0.35	0.21
0.30	0.19
0.25	0.16
0.20	0.14
0.15	0.11
0.10	0.09
0.05	0.07

**Visible Transmittance**<sup>2</sup>

Glass VT <sup>3</sup>	Overall VT <sup>4</sup>
0.75	0.36
0.70	0.34
0.65	0.31
0.60	0.29
0.55	0.26
0.50	0.24
0.45	0.22
0.40	0.19
0.35	0.17
0.30	0.14
0.25	0.12
0.20	0.10
0.15	0.07
0.10	0.05
0.05	0.02

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# 350/500 Heavy Wall™ Entrances

Managing Heavy Traffic with  
Reliability, Strength and  
Protection that Lasts



Kohl Center, University of Wisconsin, Madison, WI  
Architects: Hok Sport Facilities Group, Kansas City, MO; Venture Architects, Milwaukee, WI; Heinlein & Schrock, Kansas City, MO  
Glazing Contractor: Lurie Glass Company, Milwaukee, WI

**HIGH DURABILITY – 350/500 Heavy Wall™**  
**HURRICANE RESISTANT – 350/500 Heavy Wall™ IR**

Kawneer's Medium Stile 350 and Wide Stile 500 Heavy Wall™ Entrance lines provide quality, durability and protection that lasts. The entrances were designed for heavy-traffic areas such as schools, universities and office buildings where traffic and motion create rigorous usage. 350/500 Heavy Wall™ Entrances have 3/16" (4.8 mm) walls throughout for additional strength and durability, and two framing options to provide a choice for designers. Additionally, the 350/500 Heavy Wall™ IR Entrances provide a solution for blast mitigation as well as offer hurricane resistance where they have been tested to meet the highest level of impact protection for entrances in the industry.

## Performance

To resist both lever arm and torsion forces that constantly act upon any door, all 350/500 Heavy Wall™ Entrances feature four Sigma deep penetration and fillet welds plus mechanical fastening at each corner. In addition to the standard two-year warranty covering every Kawneer door, each door corner for the 350/500 Heavy Wall™ Entrances comes with a limited lifetime warranty, good for the life of the door under normal-use operation.



## Aesthetics

Like all Kawneer entrances, 350/500 Heavy Wall™ Entrances offer classic lines and clean aesthetics and can blend into any type of architecture, whether traditional or modern, remodel or new construction. The door is 2" (50.8 mm) deep with 3-1/2" (88.9 mm) vertical stiles for the 350 Heavy Wall™ and 5" (127 mm) vertical stiles for the 500 Heavy Wall™ with a 6-1/2" (165.1 mm) bottom rail. A deeper 10-1/4" (260.4 mm) bottom rail is also available. Glazing infills range from 1/4" to 1" (6.4 mm to 25.4 mm). Muntins are optional and can be added to complement any design.

350/500 Heavy Wall™ Entrances provide a choice of framing: Trifab® VG (VersaGlaze®) 450 or 451 with 3/32" (2.4 mm) thickness for economical applications that do not require additional strength throughout the entire entrance. Alternatively, the Heavy Wall™ Trifab® VG framing with 3/16" (4.8 mm) wall thickness provides a solution for applications facing heavier traffic and substantial, or possibly abusive, usage.

Heavy Wall™ is a single-acting entrance with offset pivots, butt hinges or continuous geared hinges. The classic lines of 350/500 Heavy Wall™ Entrances push-pull hardware blend into any design.

## Protective Glazing 350/500 Heavy Wall™ IR Entrances

Wind-borne debris, persistent rain and internal/external pressure changes are major causes of property damage and injury stemming from violent weather, and building codes in coastal areas often require enhanced safety for occupants. To meet these needs, 350/500 Heavy Wall™ IR Entrances have been rigorously tested to meet the forces of nature as well as human directed attacks.

These impact resistant entrances have been tested to meet TAS 201, 202 and 203 requirements of the Florida Building Code (FBC) as well as Level D requirements of ASTM E 1996. The entrances have also been tested to meet the even more stringent Level E (Enhanced Facilities) requirements of ASTM E 1996. For comprehensive safety assurance, 350/500 Heavy Wall™ IR Entrances have also been tested for blast mitigation per the requirements of ASTM F 1642.



Montana State Fund Office Building, Helena, MT  
Architect: Mosaic Architecture, Helena, MT  
Glazing Contractor: Frontline Glass Inc., Helena, MT

## For the Finishing Touch

Permanodic® anodized finishes are available in Class I and Class II in seven different color choices.

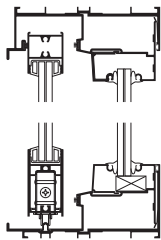
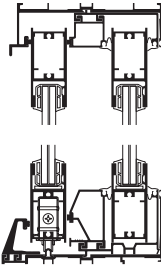
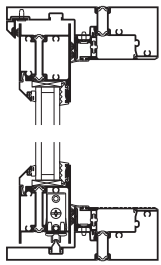
Painted finishes, including fluoropolymer, that meet or exceed AAMA 2605 are offered in many standard choices and an unlimited number of specially designed colors.

Solvent-free powder coatings add the green element with high performance, durability and scratch resistance that meet the standards of AAMA 2604.

Kawneer Company, Inc.  
Technology Park / Atlanta  
555 Guthridge Court  
Norcross, GA 30092

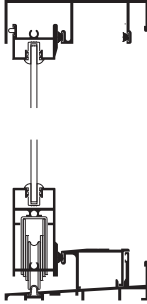
[kawneer.com](http://kawneer.com)  
770 . 449 . 5555



Product	HPS™ Monumental Sliding Doors	HPX Monumental Sliding Doors	AA™ 3200 Thermal Sliding Doors
Catalog Section	Sliding Doors	Sliding Doors	Sliding Doors
Typical Detail			
Sightline	1-1/4", 2-1/2", 4-1/4", 5-7/8"	1-1/4", 2-15/16", 4-3/16", 6-5/8"	4-1/4"
Depth	6-13/32"	6-3/4"	6-3/4"
Applications	Exterior	Exterior	Exterior
Infill Options	Up to 1"	1/4", 3/8", 9/16", 5/8", 7/8"	1" and 1-5/16"
Cross Rails/Muntins	No	No	No
Product Description	Monumental high performance sliding door for low, medium or high rise applications offering performance class and grades of HC-60, HC-80, HC-100 and HC-120. HPS is impact and cycle tested to meet the Southern Building Code Congress and the requirements of the Florida Building Code for small missiles. Standard configurations are OX, XO, OXO AND OXXO.	Monumental high performance sliding door for low, medium or high rise applications that are required to meet extreme conditions such as high rise coastal buildings up to 40 stories that require superior windload and water performance as well as the ability to retain structural integrity during the toughest kind of hurricane. HPX is impact and cycle tested to meet the Southern Building Code Congress and the requirements of the Florida Building Code for small and large missiles. Standard configurations are OX, XO, OXO and OXXO.	A monumental, high performance, sliding door for use in low, medium and high rise applications, where improved thermal performance is required. Adapted from proven European designs, the AA™3200 features mitered, clipped and mechanically attached frame and operating panel corners for contemporary aesthetics and strength. Tested to the most current North American industry standards, the AA™3200 meets performance designation of AW-135 (deflection limited to L/175) at the required gateway test unit sizes. Water penetration resistance is tested up to 15 PSF (718 Pa).
Thermal	No	No	Yes
Two Color Option	No	No	Yes
Testing for Protective Glazing	Small Missile	Small Missile Large Missile	Small Missile Large Missile
Performance	SGD-HC60, SGD-HC80, SGD-HC100, SGD-HC120	SGD-HC60 - LMI SGD-HC115 - SMI	AW-PG135-SD
Performance Test Standards	ANSI/AAMA 101 ASTM E283 ASTM E330 ASTM E331 ASTM E547 ASTM E987 ASTM F842 DCBCCO PA 201,202, 203 SBCCI SSTD-12	AAMA/NWDA 101/I.S.2 ASTM E283 ASTM E330 ASTM E331 ASTM E547 ASTM E987 ASTM F842 ASTM E1886 ASTM E1996 TAS 201, 202, 203	AAMA 507, AAMA/WDMA/CSA 101/I.S.2/A440-08, ASTM E90, ASTM E283, ASTM E330, ASTM E331, ASTM E547, ASTM F842, ASTM E987, ASTM E1886, ASTM E1996, NFRC 100/200/500, TAS 201, 203

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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<b>Product</b>	<b>990 Sliding Doors</b>		
<b>Catalog Section</b>	Sliding Doors		
<b>Typical Detail</b>			
<b>Sightline</b>	1-1/8", 1-3/4", 3-1/8", 5-1/8"		
<b>Depth</b>	4-1/2"		
<b>Applications</b>	Exterior		
<b>Infill Options</b>	Up to 1"		
<b>Cross Rails/Muntins</b>	Yes		
<b>Product Description</b>	A superior operating sliding door for low, medium or high rise applications offering performance class and grades of C30, HC40 and HC60. Standard configurations are OX, XO, OXO and OXXO.		
<b>Thermal</b>	No		
<b>Two Color Option</b>	No		
<b>Testing for Protective Glazing</b>	No		
<b>Performance</b>	SGD-C30, SGD-HC40, SGD-HC60		
<b>Performance Test Standards</b>	AAMA 1303.5 AAMA/WDMA/CSA 101/I.S.2/AA440 ASTM E283 ASTM E330 ASTM E331 ASTM E547 ASTM E987		

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## **Features**

- System depth of 4-1/2" (114.3)
- Available as OX, XO, OXO and OXXO configurations, common mullion allows for additional fixed lites to be stacked (OOX and XOO)
- Infill range from 1/4" (6.4) to 1" (25.4)
- Heavy duty steel ball-bearing, tandem roller assembly
- Stainless steel track insert for sliding panels
- Corrosion-resistant stainless steel locks and fasteners
- Permanodic™ anodized finishes in seven choices
- Painted finishes in standard and custom choices

## **Optional Features**

- Expansion mullion allows for multiple units to be stacked
- Horizontal cross rails available
- Optional interior insect screens available

## **Product Applications**

- The 990 Sliding Door is designed for low to high rise applications for use in condominiums, hotel and apartments

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**TYPICAL DETAILS ..... 4, 5**  
**SCREEN DETAILS ..... 6**  
**GLAZING OPTIONS ..... 6**  
**HARDWARE OPTIONS ..... 7, 8**  
**WIND LOAD CHARTS..... 9**

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LAWS AND BUILDING AND SAFETY CODES GOVERNING THE DESIGN AND USE OF GLAZED ENTRANCE, WINDOW, AND CURTAIN WALL PRODUCTS VARY WIDELY. KAWNEER DOES NOT CONTROL THE SELECTION OF PRODUCT CONFIGURATIONS, OPERATING HARDWARE, OR GLAZING MATERIALS, AND ASSUMES NO RESPONSIBILITY THEREFOR.

Metric (SI) conversion figures are included throughout these details for reference. Numbers in parentheses ( ) are millimeters unless otherwise noted.

The following metric (SI ) units are found in these details:

- m – meter
- cm – centimeter
- mm – millimeter
- s – second
- Pa – pascal
- MPa – megapascal

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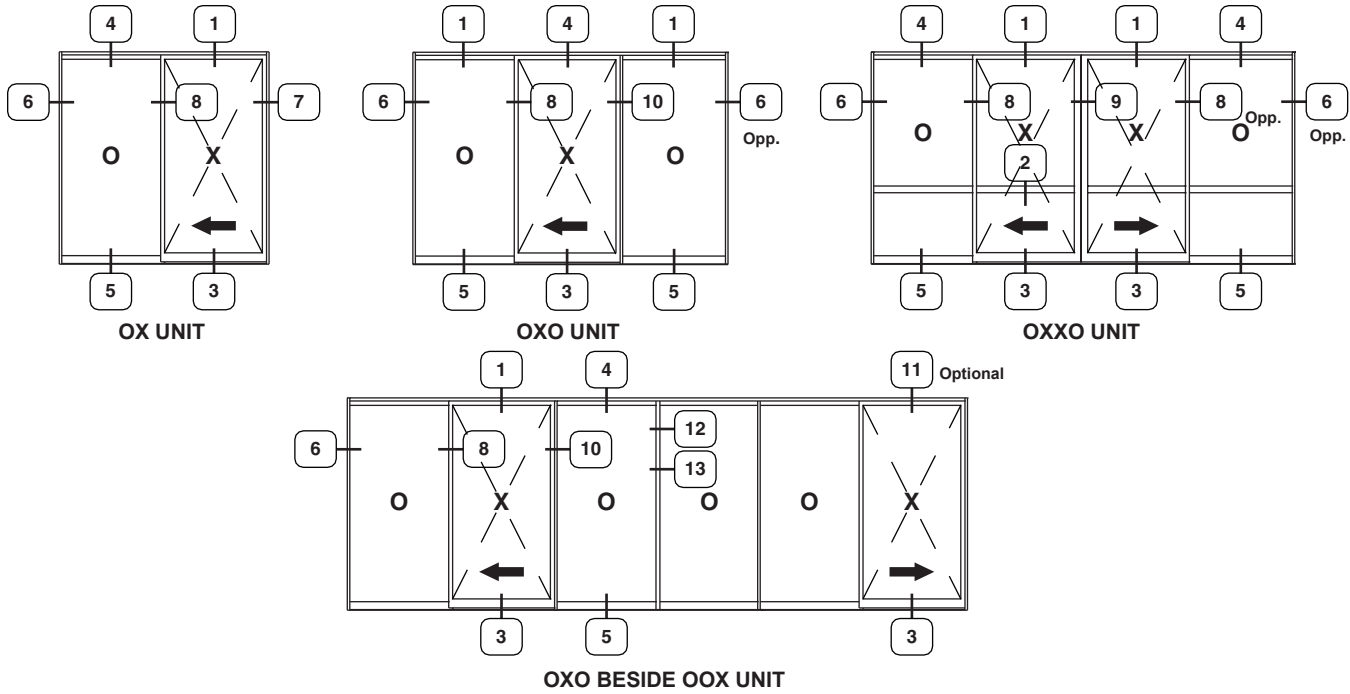


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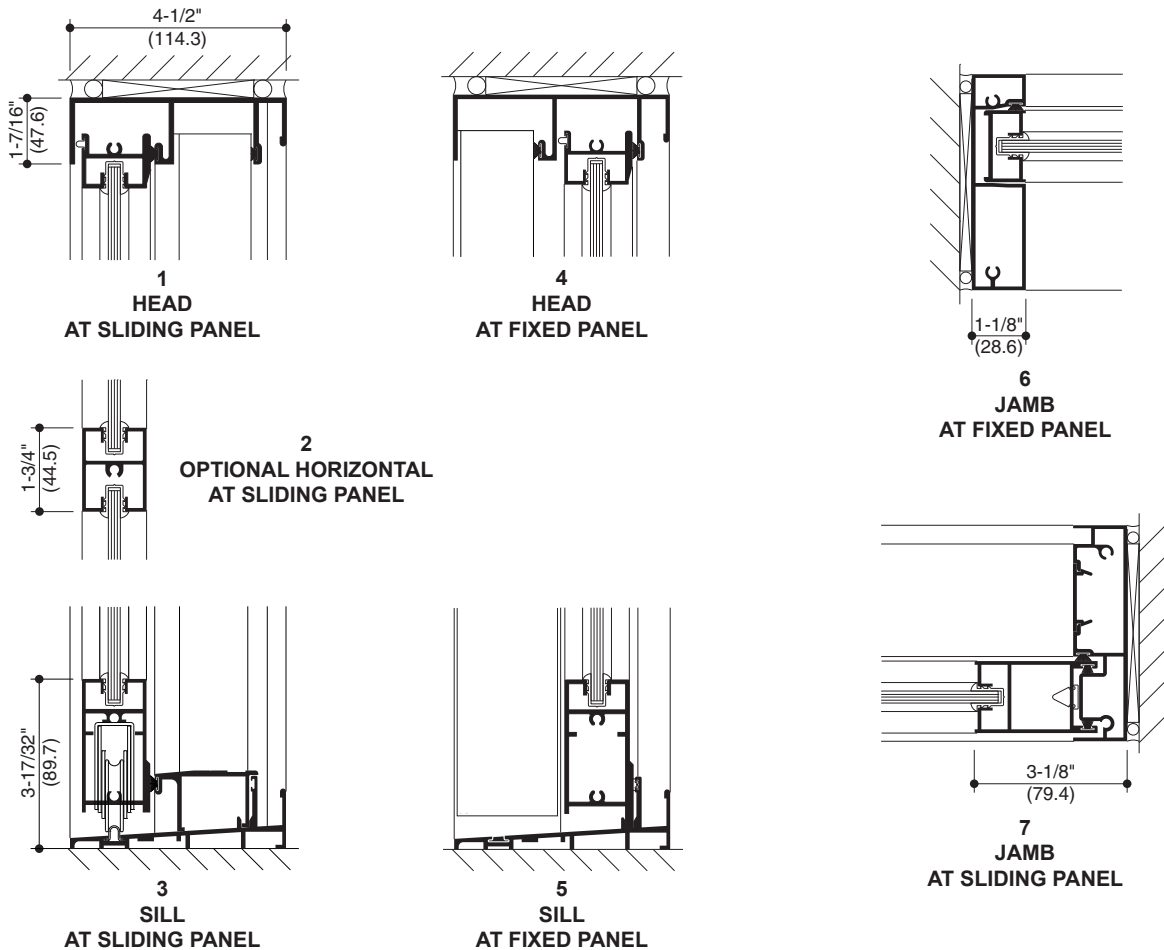
**TYPICAL ELEVATIONS**

ELEVATIONS ARE NUMBER KEYED TO DETAILS ON THE FOLLOWING PAGES

Note: Elevations shown with "Sub-Sash" framing in the fixed lite.



Note: 1/4" infill shown. See Glazing Options for other infills.



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SCALE 3" = 1'-0"

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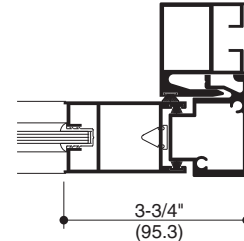
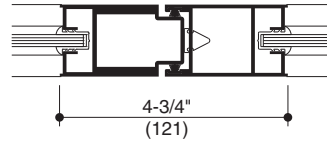
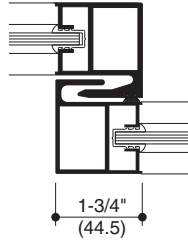
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**8**  
**INTERLOCK STILE**

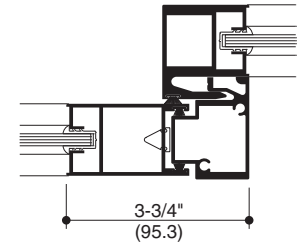
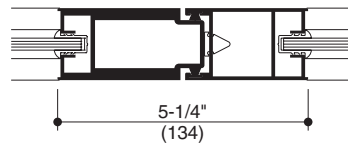
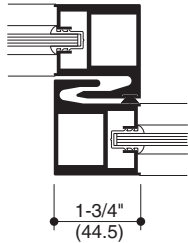
**9**  
**OXXO**  
**MEETING STILES**

**10**  
**LOCK STILE MULLION**  
**WITH 1848 LOCK**

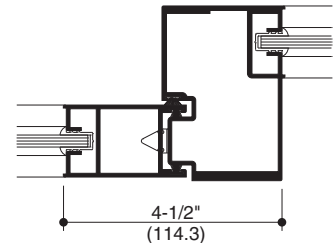
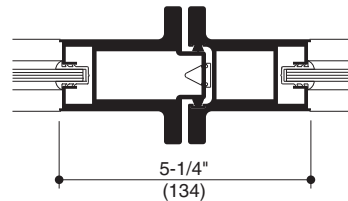
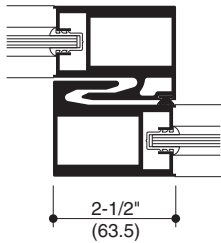
**STANDARD RANGE**



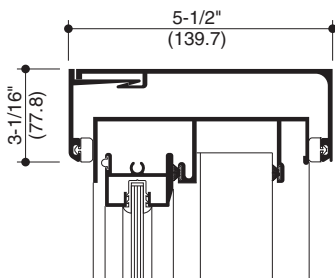
**MID-RANGE**



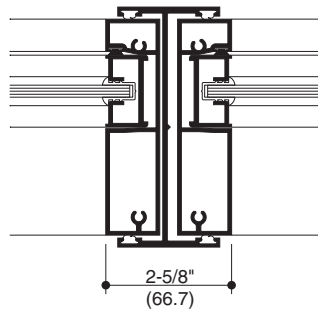
**MAXIMUM RANGE**



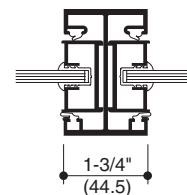
**OPTIONAL MEMBERS**



**11**  
**HEAD RECEPTOR**



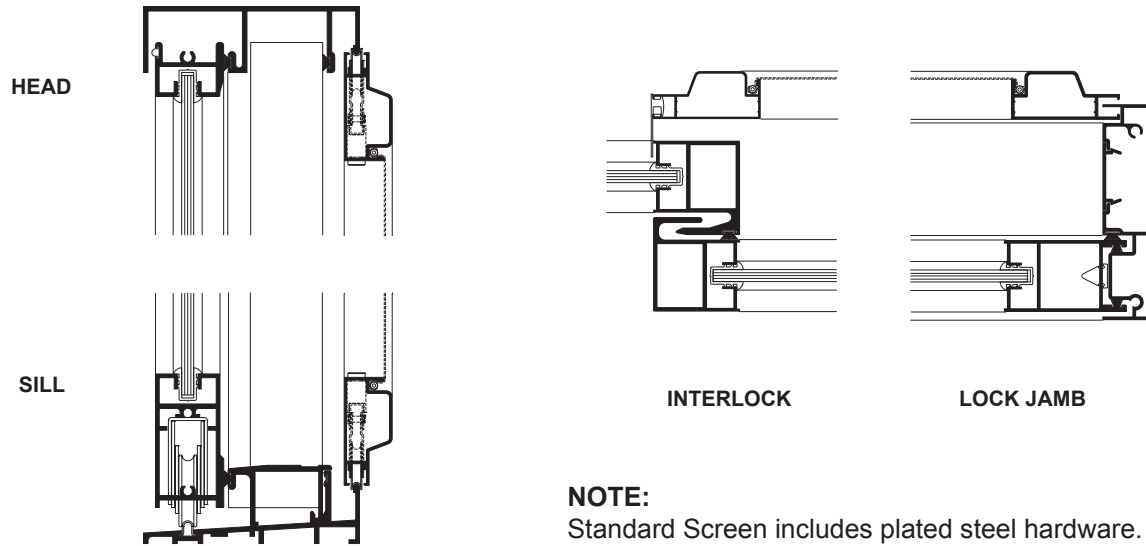
**12**  
**EXPANSION**  
**MULLION**



**13**  
**FIXED STILE**  
**MULLION**

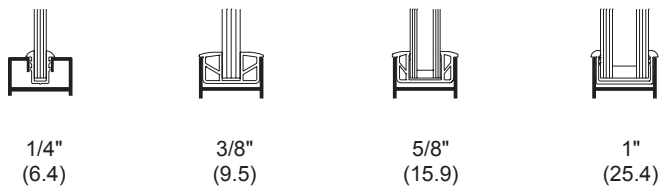
SCALE 3" = 1'-0"

TYPICAL SCREEN DETAILS

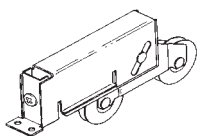


**NOTE:**  
Standard Screen includes plated steel hardware.  
Optional Screen available with stainless steel hardware.

INFILL OPTIONS



STANDARD CASTER




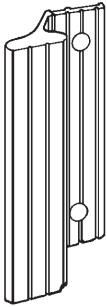
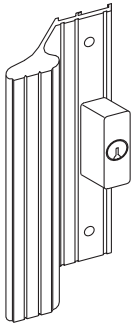
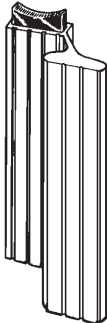
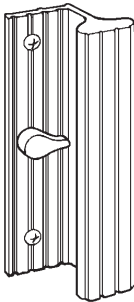



BUMPER



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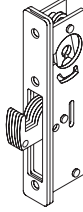
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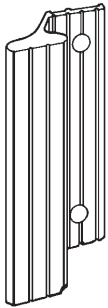
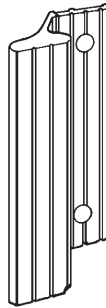


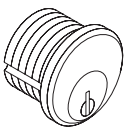
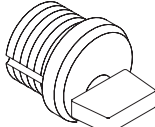
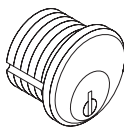
1-Point Lock	Handles	Exterior	Option	Interior	Option
	Extruded Pulls	Blank (Std)	1	Slide Operator (Std)	3
		Blank	1	Thumbturn	4
		Basic Cylinder (5/8")	2	Thumbturn	4
	Flush Pulls	Blank	5	Slide Operator	7
		Basic Cylinder (5/8")	6	Slide Operator	7

EXTERIOR HANDLES		INTERIOR HANDLES	
<b>Extruded Pulls</b>			
 <p><b>Option 1</b></p> <p>Blank Pull (Standard)</p>	 <p><b>Option 2</b></p> <p>Basic Cylinder (5/8") Pull</p>	 <p><b>Option 3</b></p> <p>Slide Operator Pull (Standard)</p>	 <p><b>Option 4</b></p> <p>Thumb Pull</p>
<b>Flush Pulls</b>			
 <p><b>Option 5</b></p> <p>Blank Pull</p>	 <p><b>Option 6</b></p> <p>Basic Cylinder (5/8") Pull</p>	 <p><b>Option 7</b></p> <p>Slide Operator Pull</p>	

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MS Hook Bolt Lock	Handles	Exterior	Option	Interior	Option
	Extruded Pulls	Blank	1	Blank	1
		Mortise Cylinder	9	Mortise Cylinder	9
		Blank	1	Blank	1
		Mortise Cylinder	9	Thumbturn	10
		Blank	1	Blank	1
		---	---	Thumbturn	10
	Flush Pulls	Blank	5	Blank	8
		Mortise Cylinder	9	Mortise Cylinder	9
		Blank	5	Blank	5
		Mortise Cylinder	9	Thumbturn	10
		Blank	5	Blank	5
		---	---	Thumbturn	10
		Blank	5	Blank	5
		---	---	Mortise Cylinder	9

EXTERIOR HANDLES		INTERIOR HANDLES	
<b>Extruded Pulls</b>  Option 1 Blank Pull		 Option 1 Blank Pull	
<b>Flush Pulls</b>  Option 5 Blank Pull		 Option 8 Blank Pull	
EXTERIOR		INTERIOR	
 Option 9 Mortise Cylinder	 Option 10 Thumbturn	 Option 9 Mortise Cylinder	

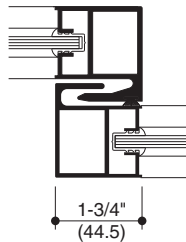
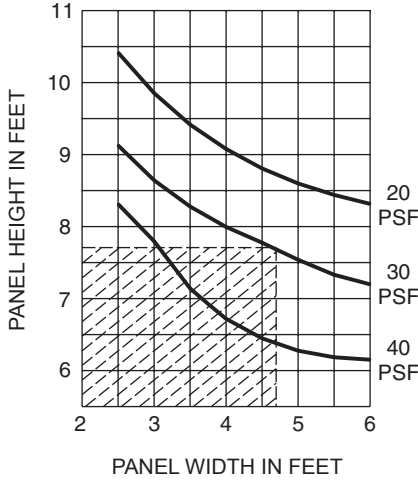
Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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WIND LOAD CHARTS ARE BASED ON CRITERIA SET FORTH IN AAMA 101-88 VOLUNTARY SPECIFICATION FOR ALUMINUM PRIME WINDOWS AND SLIDING GLASS DOORS. STRUCTURAL CRITERIA IS NO PERMANENT DEFORMATION OF ANY FRAME OR PANEL IN EXCESS OF 0.4% OF ITS SPAN. FOR SPECIAL SITUATIONS NOT COVERED BY THESE CHARTS, CONTACT YOUR KAWNEER REPRESENTATIVE FOR ADDITIONAL INFORMATION.

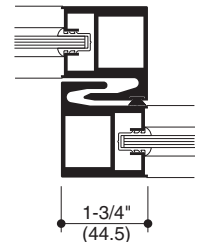
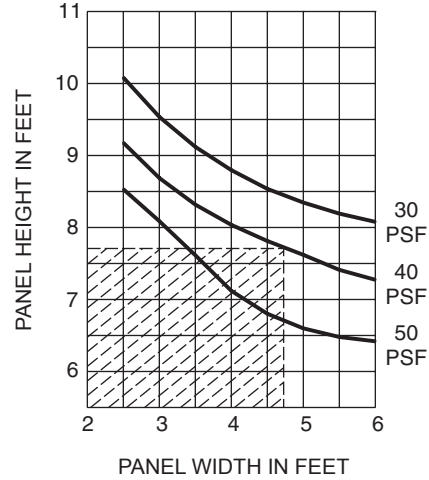
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**590088 / 590015  
STANDARD RANGE  
INTERLOCKS**

**590088**  
I = 0.434 (18.06 x 10<sup>4</sup>)  
S = 0.430 (7.05 x 10<sup>3</sup>)  
**590015**  
I = 0.387 (16.11 x 10<sup>4</sup>)  
S = 0.396 (6.49 x 10<sup>3</sup>)



**590090 / 590017  
MID-RANGE  
INTERLOCKS**

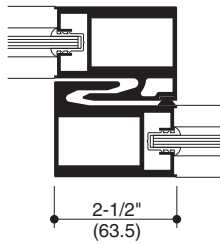
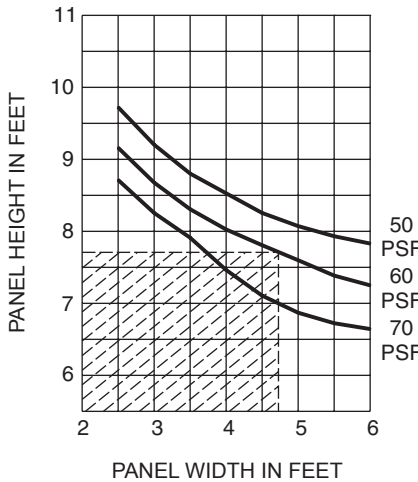
**590090**  
I = 0.572 (23.81 x 10<sup>4</sup>)  
S = 0.565 (9.26 x 10<sup>3</sup>)  
**590017**  
I = 0.552 (22.98 x 10<sup>4</sup>)  
S = 0.527 (8.64 x 10<sup>3</sup>)

**STANDARD RANGE INTERLOCKS**

UNITS WITHIN SHADED AREA WOULD BE CERTIFIED AAMA 101-88 C30 STANDARD COMMERCIAL SLIDER

**MID-RANGE INTERLOCKS**

UNITS WITHIN SHADED AREA WOULD BE CERTIFIED AAMA 101-88 HC40 HEAVY COMMERCIAL SLIDER



**590092 / 590019  
MAXIMUM RANGE  
INTERLOCKS**

**590092**  
I = 0.839 (34.92 x 10<sup>4</sup>)  
S = 0.821 (13.45 x 10<sup>3</sup>)  
**590019**  
I = 0.835 (34.75 x 10<sup>4</sup>)  
S = 0.807 (13.23 x 10<sup>3</sup>)

**NOTE:** UNITS OUTSIDE OF SHADED AREA MEET AAMA 101-88 TEST CRITERIA, BUT WOULD NOT BE AAMA CERTIFIED, AS THEY ARE OF DIFFERENT SIZE THAN THAT OF UNIT TESTED. PANEL SIZE FOR TEST UNIT IS 4'-10" x 7'-8-1/2".

**MAXIMUM RANGE INTERLOCKS**

UNITS WITHIN SHADED AREA WOULD BE CERTIFIED AAMA 101-88 HC60 HEAVY COMMERCIAL SLIDER

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## **Features**

- Screw spline fabrication
- 1/4" and 1" glazing
- Permanodic™ anodized finishes in seven standard choices
- Painted finishes in forty-two standard choices and unlimited custom choices

## **Product Applications**

- The 1010 Sliding Mall Front is a multi-track unit primarily for interior applications. It is ideally suited for the following comercial applications:
  - Enclosed shopping malls
  - Sliding room dividers
  - Institutional sliding doors
  - Interior pocket doors

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For specific product applications,  
Consult your Kawneer representative.



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**Architects** - The extrusions and sliding mall front types illustrated in this catalog are standard products for Kawneer. These concepts have been expanded and modified to afford you design freedom. Please contact your Kawneer representative for further assistance.

**ELEVATIONS/VERTICAL SECTION DETAILS .....5**  
**HORIZONTAL SECTION DETAILS.....6**  
**SIZE LIMITATIONS AND GLAZING OPTIONS .....7**  
**HARDWARE.....8**

LAWS AND BUILDING AND SAFETY CODES GOVERNING THE DESIGN AND USE OF GLAZED ENTRANCE, WINDOW, AND CURTAIN WALL PRODUCTS VARY WIDELY. KAWNEER DOES NOT CONTROL THE SELECTION OF PRODUCT CONFIGURATIONS, OPERATING HARDWARE, OR GLAZING MATERIALS, AND ASSUMES NO RESPONSIBILITY THEREFOR.

Metric (SI) conversion figures are included throughout these details for reference. Numbers in parentheses ( ) are millimeters unless otherwise noted.

The following metric (SI ) units are found in these details:

- m – meter
- cm – centimeter
- mm – millimeter
- s – second
- Pa – pascal
- MPa – megapascal

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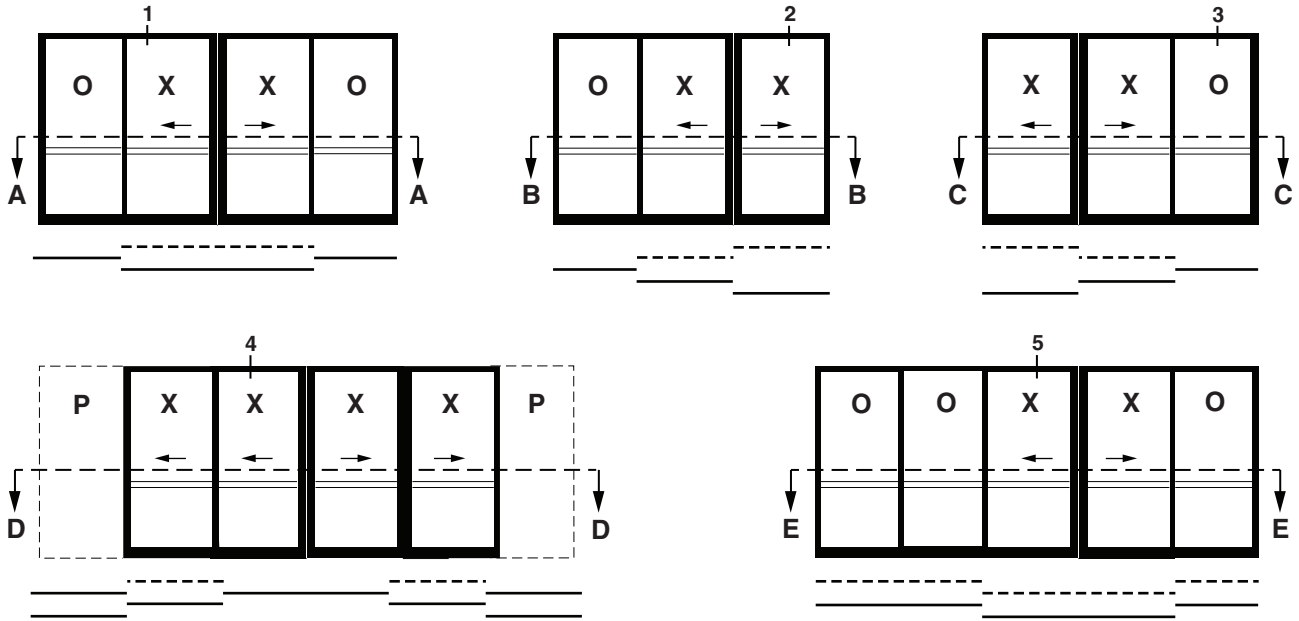
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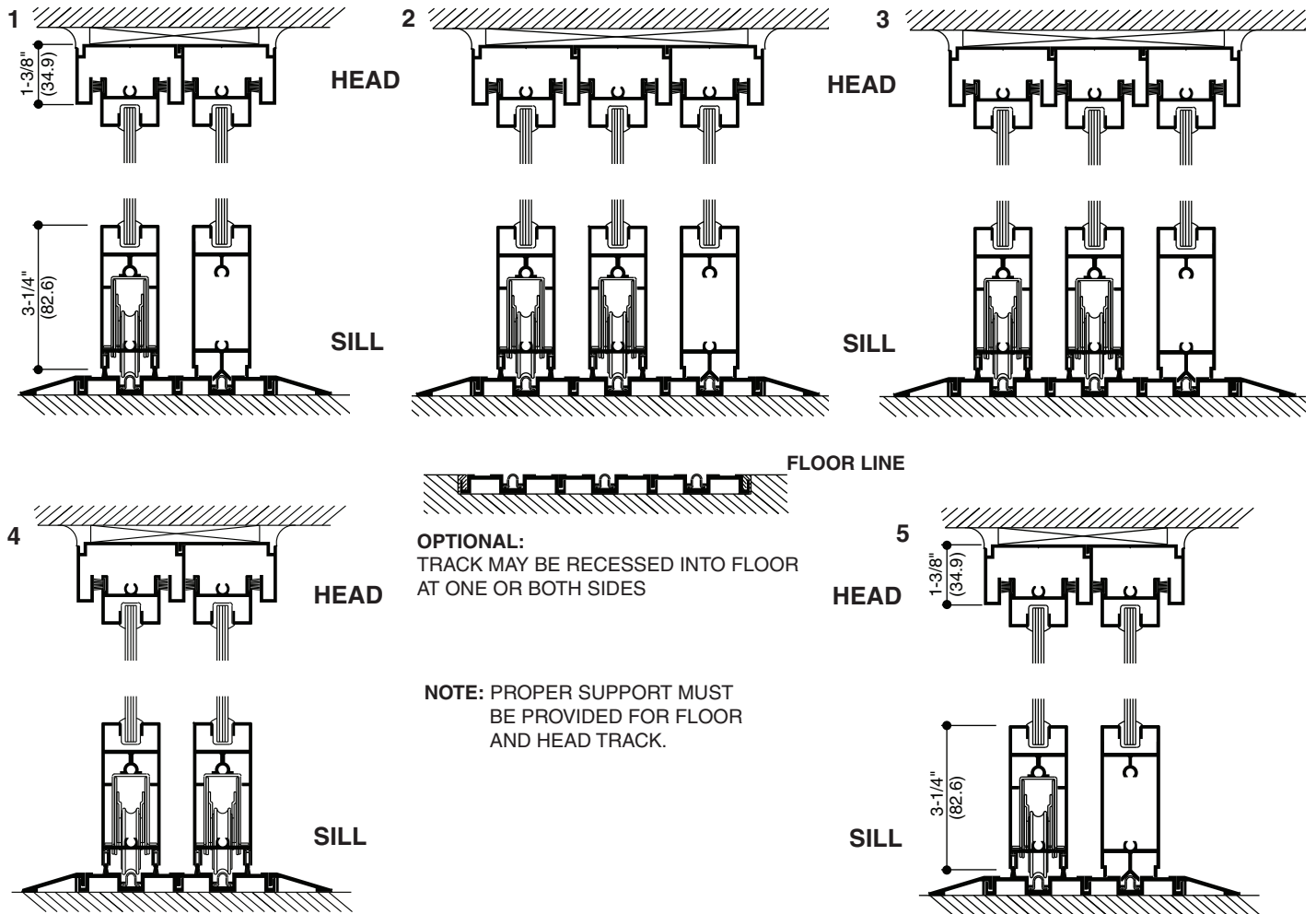
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**SCALE 3"=1'-0"**

**NOTE:** DOTTED LINES ON PLAN INDICATE OPTIONAL TRACK LAYOUT, OTHER CONFIGURATIONS AVAILABLE USING STANDARD COMPONENTS SHOWN.



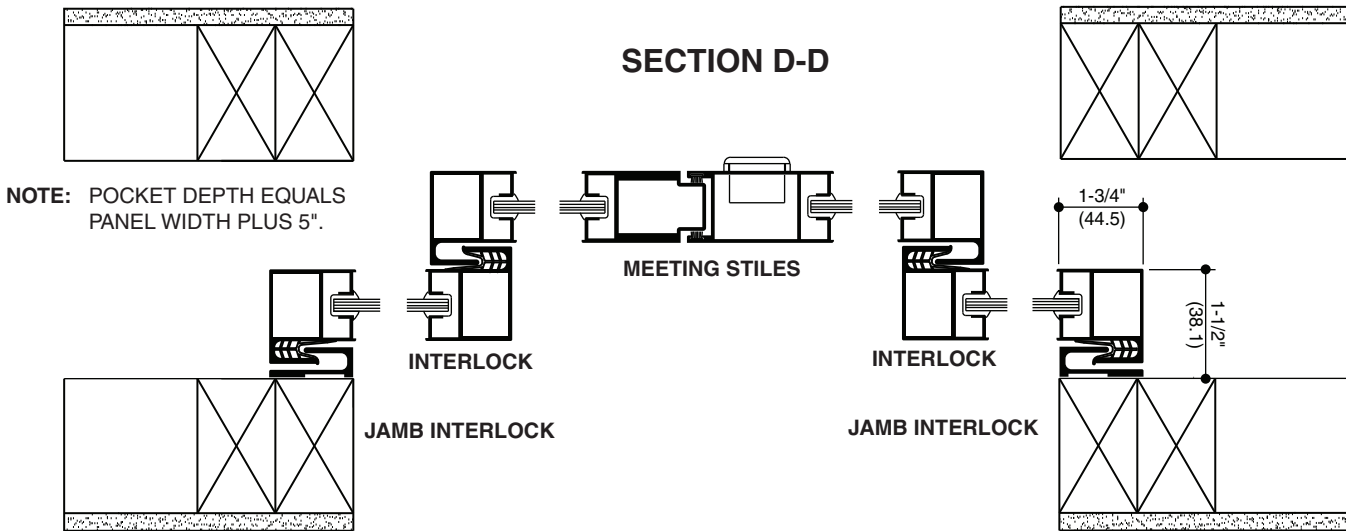
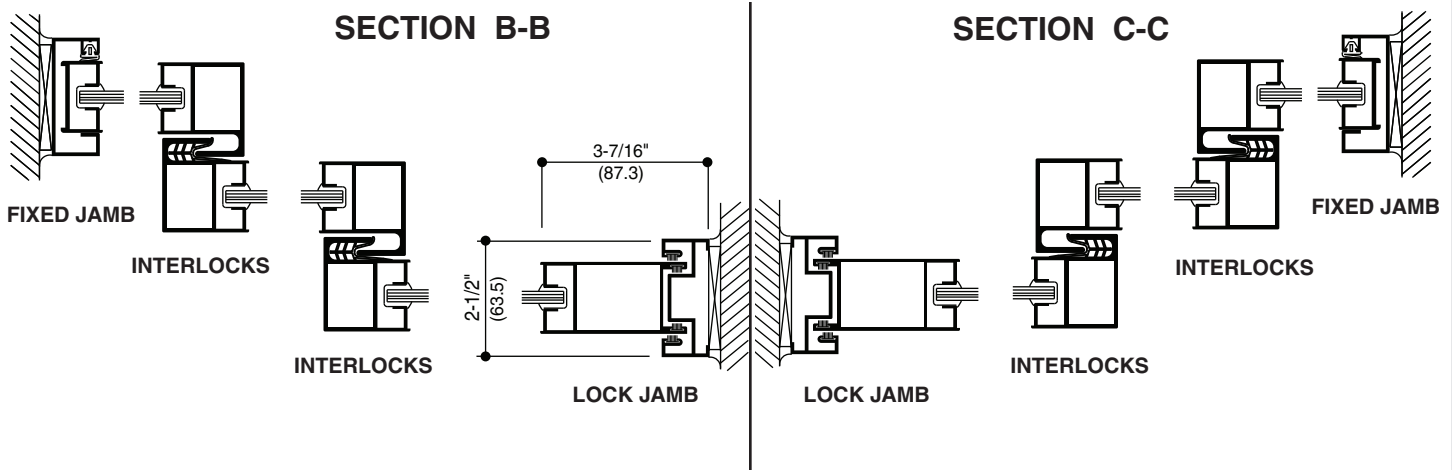
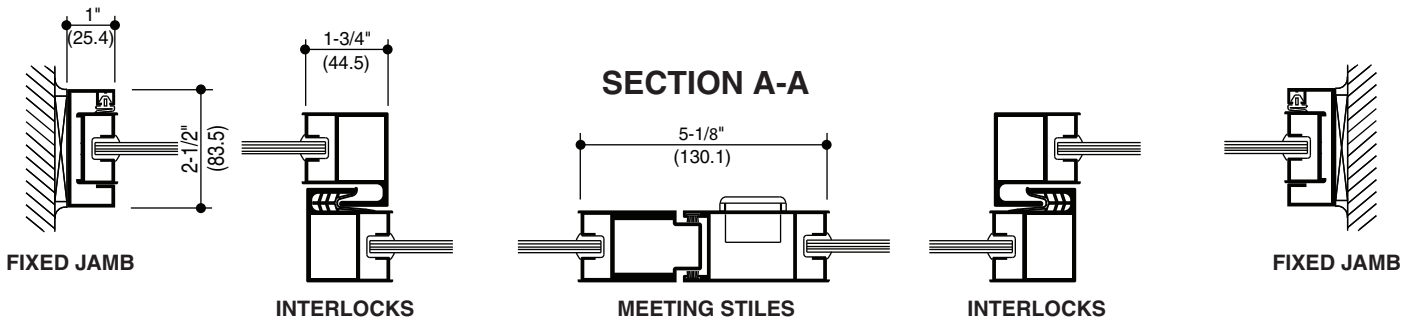
**ELEVATIONS KEYED TO DETAILS BELOW AND ON PAGE 6**



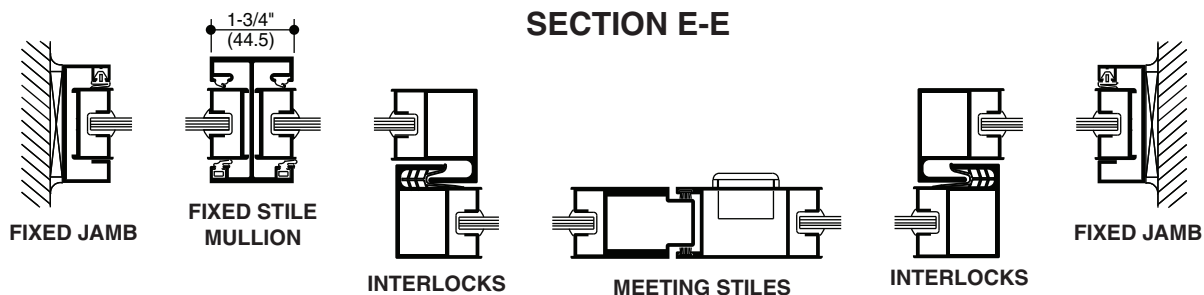
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SCALE 3"=1'-0"



NOTE: POCKET DEPTH EQUALS PANEL WIDTH PLUS 5".

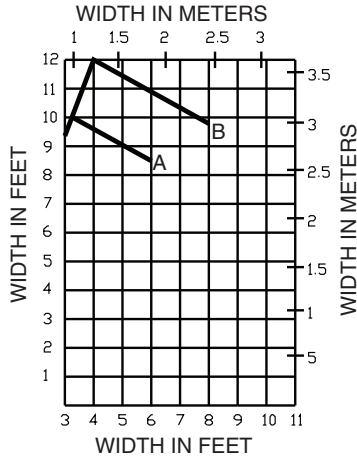


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SCALE 3" = 1'-0"

**MAXIMUM PANEL SIZE CHART**  
INTERIOR APPLICATIONS ONLY



**A:** Maximum panel size with standard interlocks (single glazing).

**-AND-**

Maximum panel size for double glazed units.

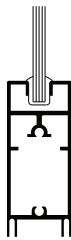
**B:** Maximum panel size with heavy duty interlocks (single glazing).

**C:** Panel width should be at least 1/3 panel height

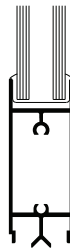
**GENERAL NOTES:**

1. ON PANELS OVER 10' IN HEIGHT AN INTERMEDIATE HORIZONTAL MUNTIN IS RECOMMENDED.
2. THIS IS NOT A WINDLOAD CHART FOR EXTERIOR APPLICATIONS.

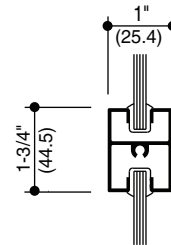
**GLAZING OPTIONS AVAILABLE**



3/16" (4.8)  
7/32" (5.6)  
1/4" (6.4)  
**SINGLE GLAZING**



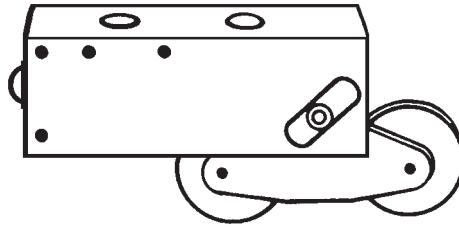
3/8" (9.5)  
**SINGLE GLAZING**  
AND  
5/8" (15.9)  
1" (25.4)  
**DOUBLE GLAZING**



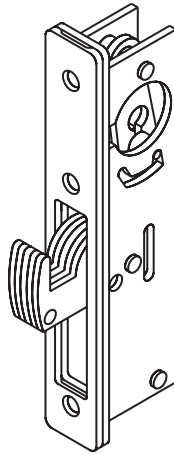
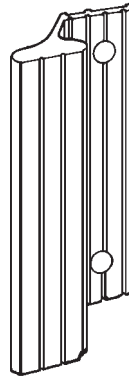
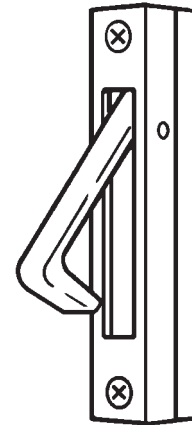
**GLAZING MUNTIN**

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TANDEM CASTER

FLUSH  
FACE PULLADAMS RITE MS 1850A-505  
HOOK BOLT LOCKEXTRUDED PULL  
(OPTIONAL)EDGE PULL  
(OPTIONAL)

### Standard Offering

- Tandem Casters
- Adams Rite Maimum Security 1850A-505 Hookbolt Lock
- 1-5/32" (29.3) cylinders - (1) interior, (1) exterior
- Flush Face Pulls

### Optional Offering

- Extruded pull in lieu of flush face pull
- Thumbturn (in lieu of interior cylinder)
- Adams Rite 1848 Hockbolt Lock with 5 pin cylinder (in lieu of Adams Rite M.S. 1850A-505)
- Stainless steel hookbolt and strike (not compatible with AR.M.S. 1850A-505)
- Bottom rail lock
- Cylinder operated flush bolts
- Manually operated flush bolts

### Limitations

- Interlock stiles require notching if the lock cylinders for the Adams Rite M.S. 1850A-505 are to bypass the stiles.
- Thumbturns will not bypass interlock stiles.

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**ELEVATIONS/VERTICAL SECTION DETAILS ..... 2**  
**HORIZONTAL SECTION DETAILS ..... 3**  
**EGRESS DOOR..... 4-5**  
**STACK AREA LAYOUT ..... 6-8**  
**SIZE LIMITATIONS ..... 9**  
**HARDWARE.....10**

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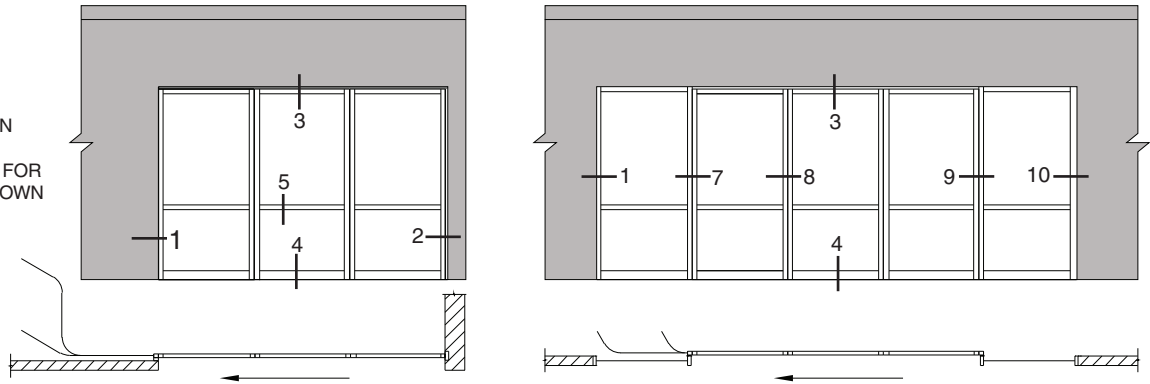
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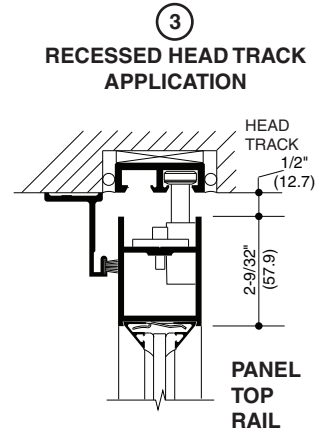
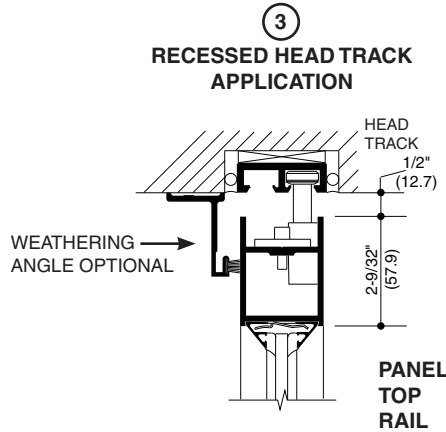
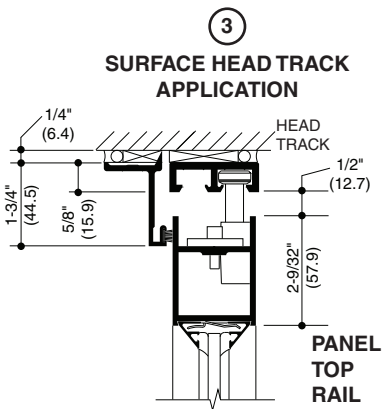


SCALE 3" = 1'-0"

\*POSSIBLE TRACK CONDITION VARY WIDELY. CONSULT THE KAWNEER REPRESENTATIVE FOR TRACK APPLICATION NOT SHOWN IN THESE DETAILS.

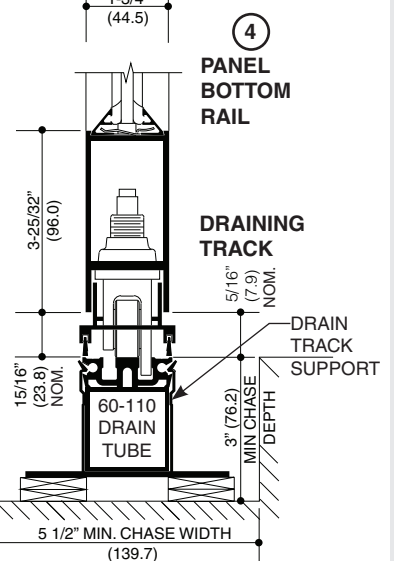
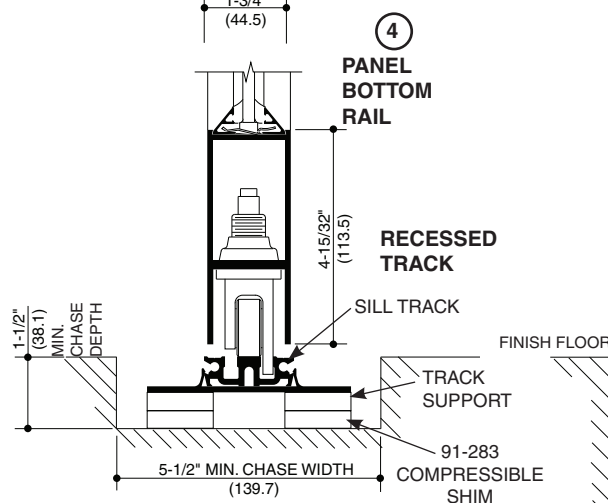
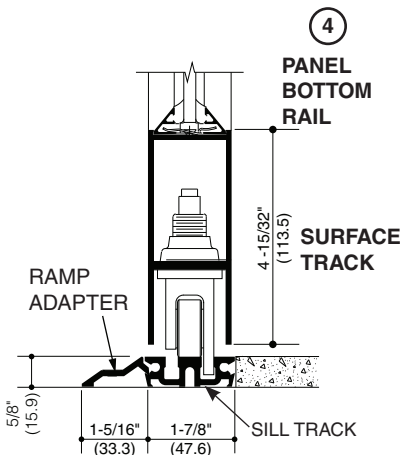
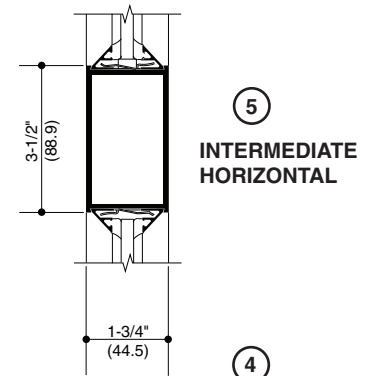
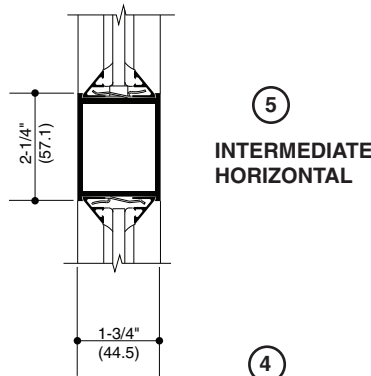


ELEVATIONS ARE NUMBERED KEYED BELOW AND ON PAGE 3.



**NOTE:** FOR PROPER PANEL OPERATION ON SURFACE TRACK APPLICATIONS, THE FINISH FLOOR MUST BE LEVEL WITHIN 1/8" PER EACH PANEL WIDTH AND WITHIN 1/2" OVER THE ENTIRE TRACK AREA.

**NOTE:** PROPER SUPPORT MUST BE PROVIDED FOR FLOOR AND HEAD TRACK INCLUDING THE STACK AREA.

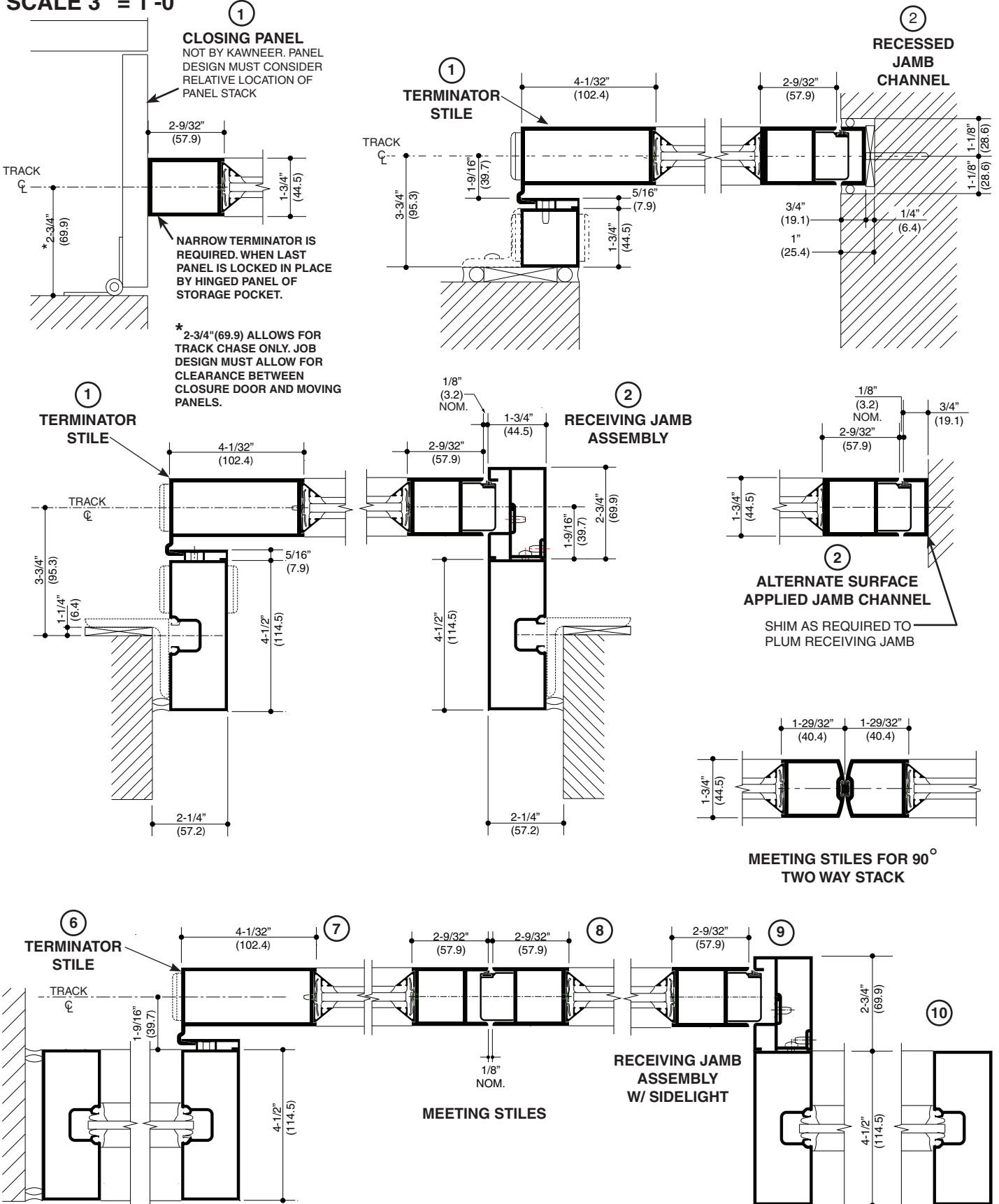


DRAIN CONNECTIONS TO 60-110 TO BE BY OTHERS 1" (25.4) TO 1-1/4" (31.8) O.D. DRAIN TUBING RECOMMENDED EVERY 15' (4.572 METERS) AND AT EACH END.

SCALE 3" = 1'-0"

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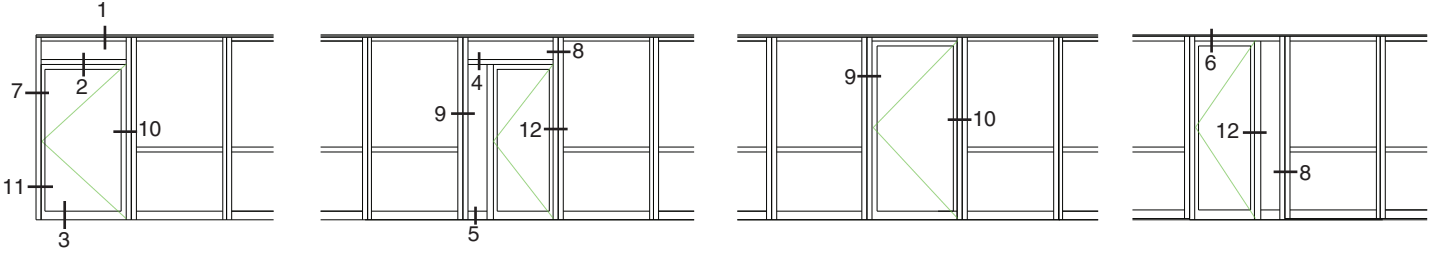
**NARROW TERMINATOR IS REQUIRED. WHEN LAST PANEL IS LOCKED IN PLACE BY HINGED PANEL OF STORAGE POCKET.**

**\* 2-3/4" (69.9) ALLOWS FOR TRACK CHASE ONLY. JOB DESIGN MUST ALLOW FOR CLEARANCE BETWEEN CLOSURE DOOR AND MOVING PANELS.**

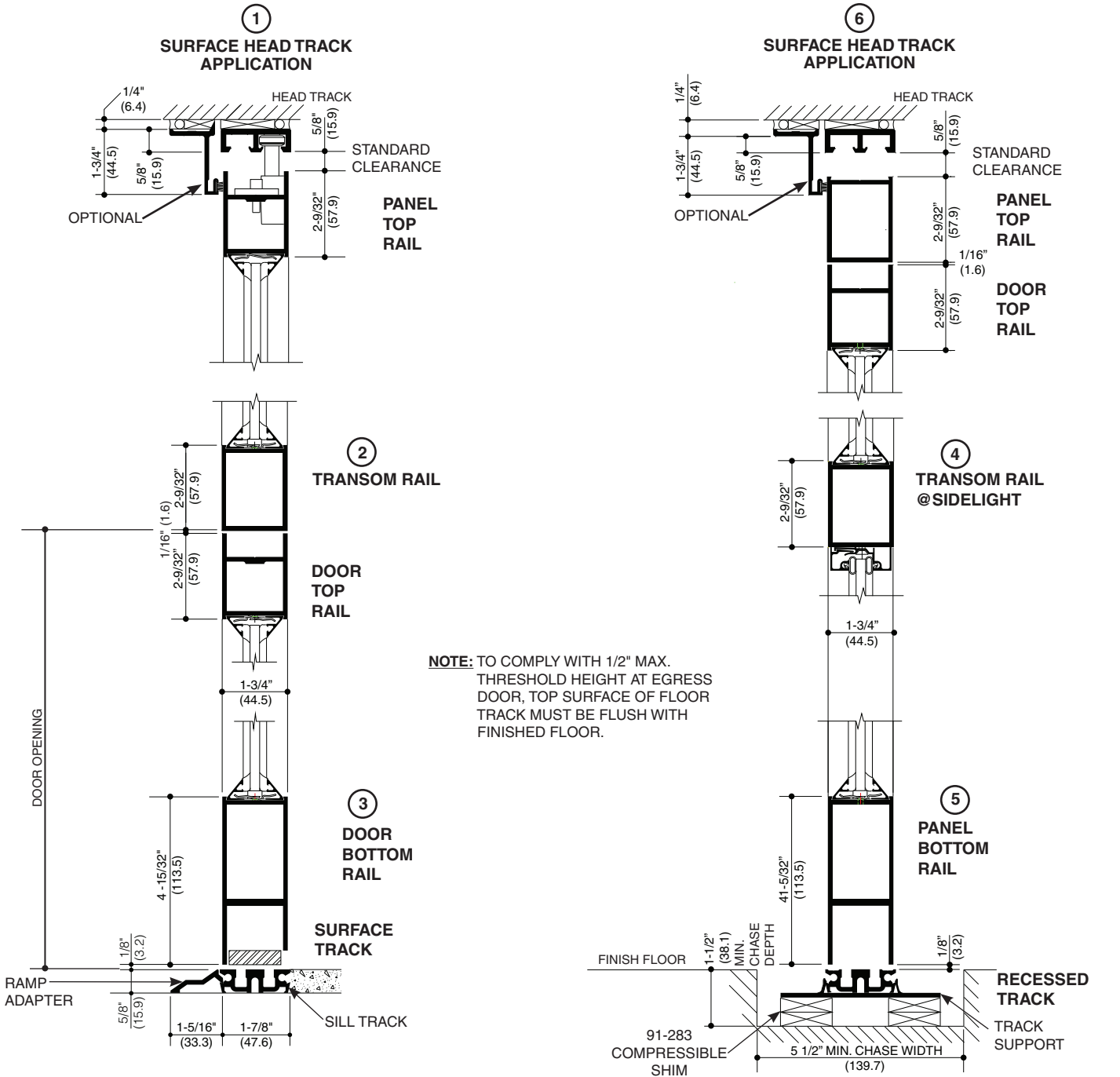
**NOTE: CYLINDER LOCKS SHOWN FOR ILLUSTRATION ON LY (SPECIFY EXACT LOCATION.)**

## SCALE 3" = 1'-0"

NOTE: REFER TO PAGES 10 AND 11 FOR STANDARD 1040 SLIDING MALL FRONT DETAILS.



ELEVATIONS ARE NUMBERED KEYED BELOW AND ON PAGE 5.

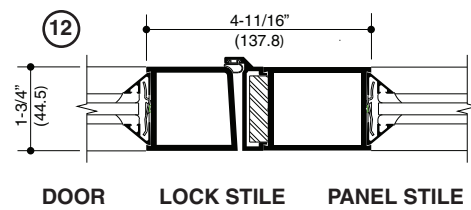
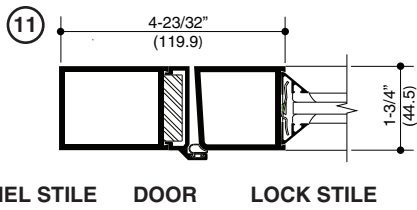
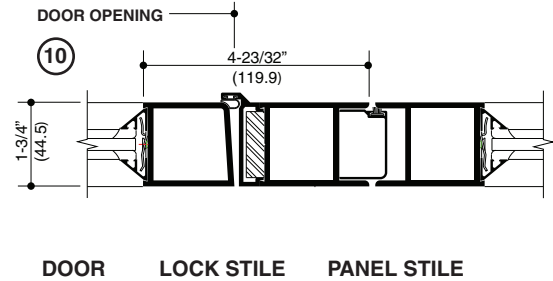
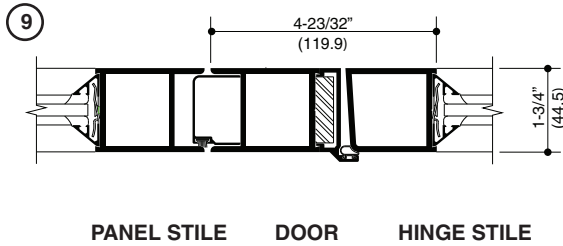
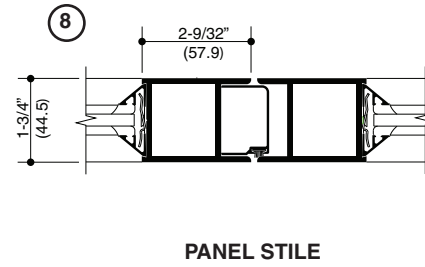
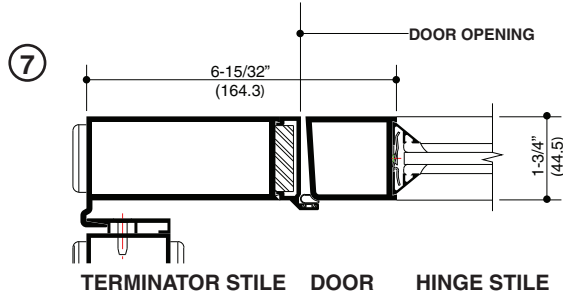


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SCALE 3" = 1'-0"

ELEVATIONS ARE NUMBER KEYED TO DETAILS



EGRESS DOOR LIMITATIONS/ HARDWARE

1. Maximum door opening width: (Per Uniform Building Code) 36" (914.4) - (32" (812.8) clear at 90 degrees).
2. Maximum door opening width: 42" (1066.8) (requires sidelight and/or transom for stability).
3. Minimum door opening height: (Per Uniform Building Code) 80" (2032).
4. Maximum door opening height: 90" (2286)
5. Maximum threshold height: (Per uniform Building Code) 1/2" (12.7).
6. Door cannot be hinged off of sidelight.
7. Minimum light opening width of sidelight: 6 1/4" (158.8).
8. Maximum light opening width of sidelight: 18" (457.2).
9. Standard Hardware: Reference Page 16 for hardware information).
  - A. Walking beam top pivot with modified center bottom pivot.
  - B. Adams Rite M.S. 1850 A lock with two (2) cylinders.
10. Optional Hardware:
  - A. Thumbturn inside in lieu of cylinder.
  - B. Adams Rite 4510 latchlock with 4656 handle in lieu of A.R.M.S.1850 A.
  - C. Adams Rite 4089 exit indicator.
  - D. Cylinder guard.
  - E. Flush pull in door.

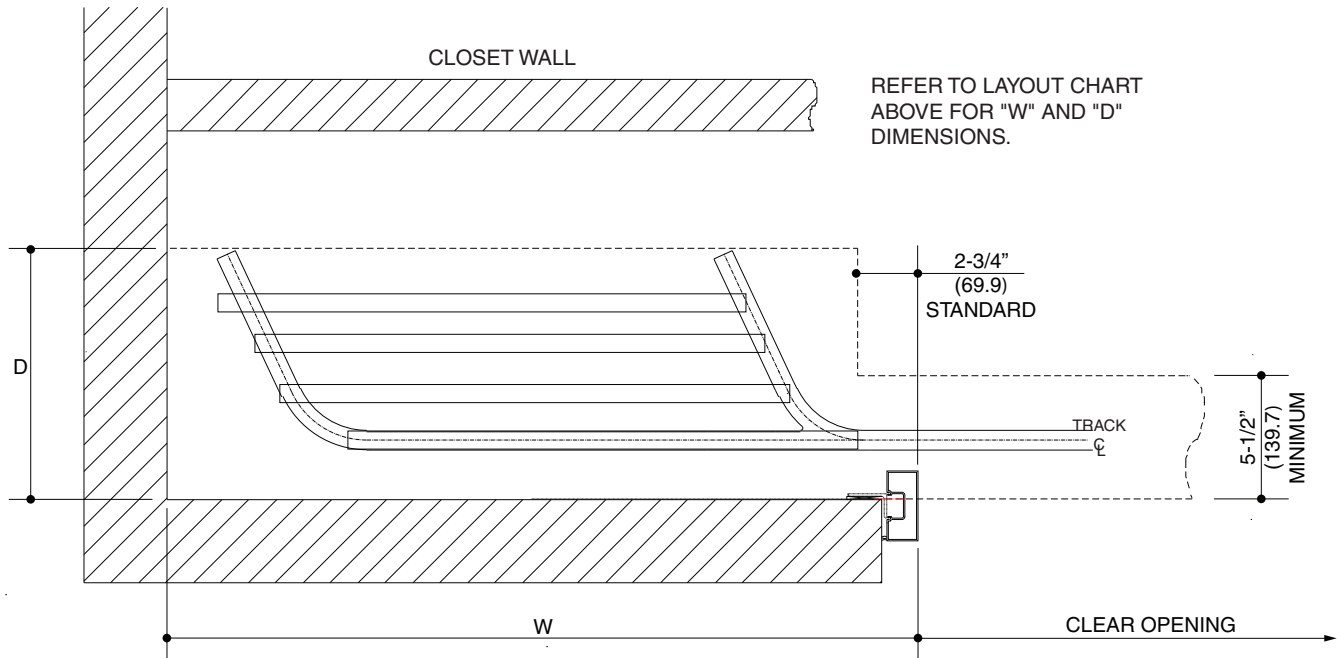
**Note:** When using optional hardware, due to its greater projection, the placement of the exit panel in the stack is critical to prevent interference with adjacent panels.
11. Not available:
  - A. Closers.
  - B. Panic Decives.
  - C. Push-pull Hardware.
  - D. Pairs of doors or double sidelighted units.
12. Door is not intended for use by general public.
13. Door is to be locked closed before moving panel.

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PARALLEL STAGGERED STACK

NO. OF PANELS	PANEL WIDTH								
	2'-6" <sup>3</sup> / <sub>32</sub> "-0" (762/914) W x D	3'-0" <sup>3</sup> / <sub>32</sub> "-6" (914/1067) W x D	3'-6" <sup>3</sup> / <sub>32</sub> "-0" (1067/1219) W x D	4'-0" <sup>3</sup> / <sub>32</sub> "-6" (1219/1372) W x D	4'-6" <sup>3</sup> / <sub>32</sub> "-0" (1372/1524) W x D	5'-0" <sup>3</sup> / <sub>32</sub> "-6" (1524/1676) W x D	5'-6" <sup>3</sup> / <sub>32</sub> "-0" (1676/1829) W x D	6'-0" <sup>3</sup> / <sub>32</sub> "-6" (1829/1981) W x D	6'-6" <sup>3</sup> / <sub>32</sub> "-0" (1981x2134) W x D
3	51-9/16" x 14" (1310 x 356)	57-9/16" x 14" (1462 x 356)	63-9/16" x 14" (1615 x 356)	69-9/16" x 14" (1761 x 356)	75-9/16" x 14" (1919 x 356)	81-9/16" x 14" (2072 x 356)	87-9/16" x 14" (2224 x 356)	93-9/16" x 14" (2377 x 356)	99-9/16" x 14" (2526 x 356)
4	52-1/2" x 16" (1334 x 406)	58-1/2" x 16" (1486 x 406)	64-1/2" x 16" (1638 x 406)	70-1/2" x 16" (1791 x 406)	76-1/2" x 16" (1943 x 406)	82-1/2" x 16" (2096 x 406)	88-1/2" x 16" (2248 x 406)	94-1/2" x 16" (2400 x 406)	100-1/2" x 16" (2553 x 406)
5	53-7/16" x 18" (1357 x 457)	59-7/16" x 18" (1510 x 457)	65-7/16" x 18" (1662 x 457)	71-7/16" x 18" (1815 x 457)	77-7/16" x 18" (1967 x 457)	83-7/16" x 18" (2119 x 457)	89-7/16" x 18" (2272 x 457)	95-7/16" x 18" (2424 x 457)	101-7/16" x 18" (2577 x 457)
6	54-3/8" x 20" (1381 x 508)	60-3/8" x 20" (1534 x 508)	66-3/8" x 20" (1686 x 508)	72-3/8" x 20" (1838 x 508)	78-3/8" x 20" (1991 x 508)	84-3/8" x 20" (2143 x 508)	90-3/8" x 20" (2296 x 508)	96-3/8" x 20" (2448 x 508)	102-3/8" x 20" (2600 x 508)
7	55-5/16" x 22" (1450 x 559)	61-5/16" x 22" (1557 x 559)	67-5/16" x 22" (1710 x 559)	73-5/16" x 22" (1862 x 559)	79-5/16" x 22" (2015 x 559)	85-5/16" x 22" (2167 x 559)	91-5/16" x 22" (2319 x 559)	97-5/16" x 22" (2472 x 559)	103-5/16" x 22" (2624 x 559)
8	56-1/4" x 24" (1429 x 610)	62-1/4" x 24" (1581 x 610)	68-1/4" x 24" (1734 x 610)	74-1/4" x 24" (1886 x 610)	80-1/4" x 24" (2038 x 610)	86-1/4" x 24" (2191 x 610)	92-1/4" x 24" (2343 x 610)	98-1/4" x 24" (2496 x 610)	104-1/4" x 24" (2648 x 610)
9	57-3/16" x 26" (1453 x 660)	63-3/16" x 26" (1605 x 660)	69-3/16" x 26" (1757 x 660)	75-3/16" x 26" (1910 x 660)	81-3/16" x 26" (2062 x 660)	87-3/16" x 26" (2215 x 660)	93-3/16" x 26" (2367 x 660)	99-3/16" x 26" (2519 x 660)	105-3/16" x 26" (2672 x 660)
10	58-1/8" x 28" (1476 x 711)	64-1/8" x 28" (1629 x 711)	70-1/8" x 28" (1781 x 711)	76-1/8" x 28" (1934 x 711)	82-1/8" x 28" (2086 x 711)	88-1/8" x 28" (2238 x 711)	94-1/8" x 28" (2391 x 711)	100-1/8" x 28" (2543 x 711)	106-1/8" x 28" (2596 x 711)



NOTE: 1. CHASE AREA MUST BE A MINIMUM OF 1-1/2" (38.1) DEEP.  
 2. STACK AREA MUST BE ACCESSIBLE FOR MAINTENANCE AND CLEANING.

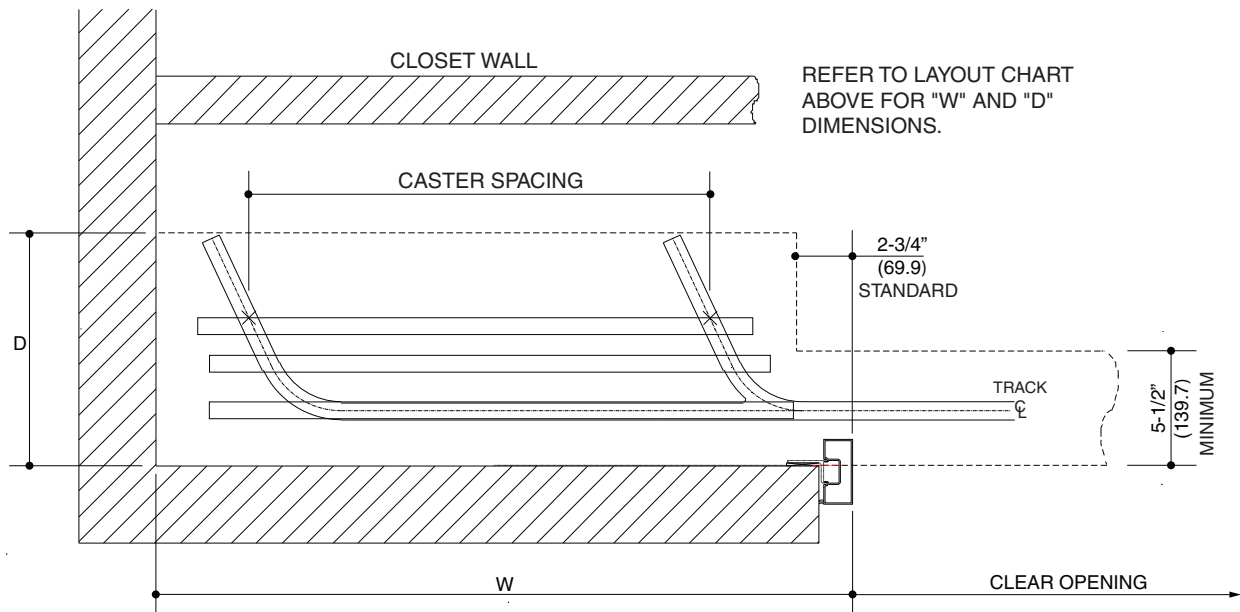
Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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PARALLEL EVEN STACK

NO. OF PANELS	PANEL WIDTH*								
	2'-6" / 3'-0" (762 / 914) W x D	3'-0" / 3'-6" (914 / 1067) W x D	3'-6" / 4'-0" (1067 / 1219) W x D	4'-0" / 4'-6" (1219 / 1372) W x D	4'-6" / 5'-0" (1372 / 1524) W x D	5'-0" / 5'-6" (1524 / 1676) W x D	5'-6" / 6'-0" (1676 / 1829) W x D	6'-0" / 6'-6" (1829 / 1981) W x D	6'-6" / 7'-0" (1981 x 2134) W x D
3	46" x 14" (1186 x 356)	50-11/16" x 14" (1287 x 356)	55-1/4" x 14" (1403 x 356)	61-1/4" x 14" (1556 x 356)	67-1/4" x 14" (1708 x 356)	73-1/4" x 14" (1861 x 356)	79-1/4" x 14" (2013 x 356)	85-1/4" x 14" (2165 x 356)	91-1/4" x 14" (2318 x 356)
4	—	—	55-5/8" x 16" (1413 x 406)	61-1/4" x 16" (1556 x 406)	67-1/4" x 16" (1708 x 406)	73-1/4" x 16" (1861 x 406)	79-1/4" x 16" (2013 x 406)	85-1/4" x 16" (2165 x 406)	91-1/4" x 16" (2318 x 406)
5	—	—	56-9/16" x 18" (1437 x 457)	61-1/4" x 18" (1556 x 457)	67-1/4" x 18" (1708 x 457)	73-1/4" x 18" (1861 x 457)	79-1/4" x 18" (2013 x 508)	85-1/4" x 18" (2165 x 457)	91-1/4" x 18" (2318 x 457)
6	—	—	—	61-1/2" x 20" (1562 x 508)	67-1/4" x 20" (1708 x 508)	73-1/4" x 20" (1861 x 508)	79-1/4" x 20" (2013 x 508)	85-1/4" x 20" (2165 x 508)	91-1/4" x 20" (2318 x 508)
7	—	—	—	62-7/16" x 22" (1586x559)	67-1/4" x 22" (1708 x 559)	73-1/4" x 22" (1861 x 559)	79-1/4" x 22" (2013 x 559)	85-1/4" x 22" (2165 x 559)	91-1/4" x 22" (2318 x 559)
8	—	—	—	—	67-3/8" x 24" (1711 x 610)	73-1/4" x 24" (1861 x 610)	79-1/4" x 24" (2013 x 610)	85-1/4" x 24" (2165 x 610)	91-1/4" x 24" (2318 x 610)
9	—	—	—	—	68-5/16" x 26" (1735 x 660)	73-1/4" x 26" (1861 x 660)	79-1/4" x 26" (2013 x 660)	85-1/4" x 26" (2165 x 660)	91-1/4" x 26" (2318 x 660)
10	—	—	—	—	—	73-1/4" x 28" (1861 x 711)	79-1/4" x 28" (2013 x 711)	85-1/4" x 28" (2165 x 711)	91-1/4" x 28" (2318 x 711)

\*THE CASTER SPACING DIMENSION SHOWN BELOW SHOULD BE AT LEAST 1/3 OF THE PANEL HEIGHT. THE CASTER VARIES FROM A PANEL EDGE BY 8-5/6" FOR 3 PANELS AS SHOWN PLUS ABOUT 1" FOR EACH ADDITIONAL PANEL.



- NOTE:**
1. CHASE AREA MUST BE A MINIMUM OF 1-1/2" (38.1) DEEP.
  2. STACK AREA MUST BE ACCESSIBLE FOR MAINTENANCE AND CLEANING.
  3. MAXIMUM NUMBER OF PANELS FOR THIS STACK AREA DEPENDS UPON PANEL WIDTHS. CONTACT FACTORY REPRESENTATIVE.
  4. EDGE PULLS REQUIRED ON LAST TWO PANELS INTO STACK AREA.

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

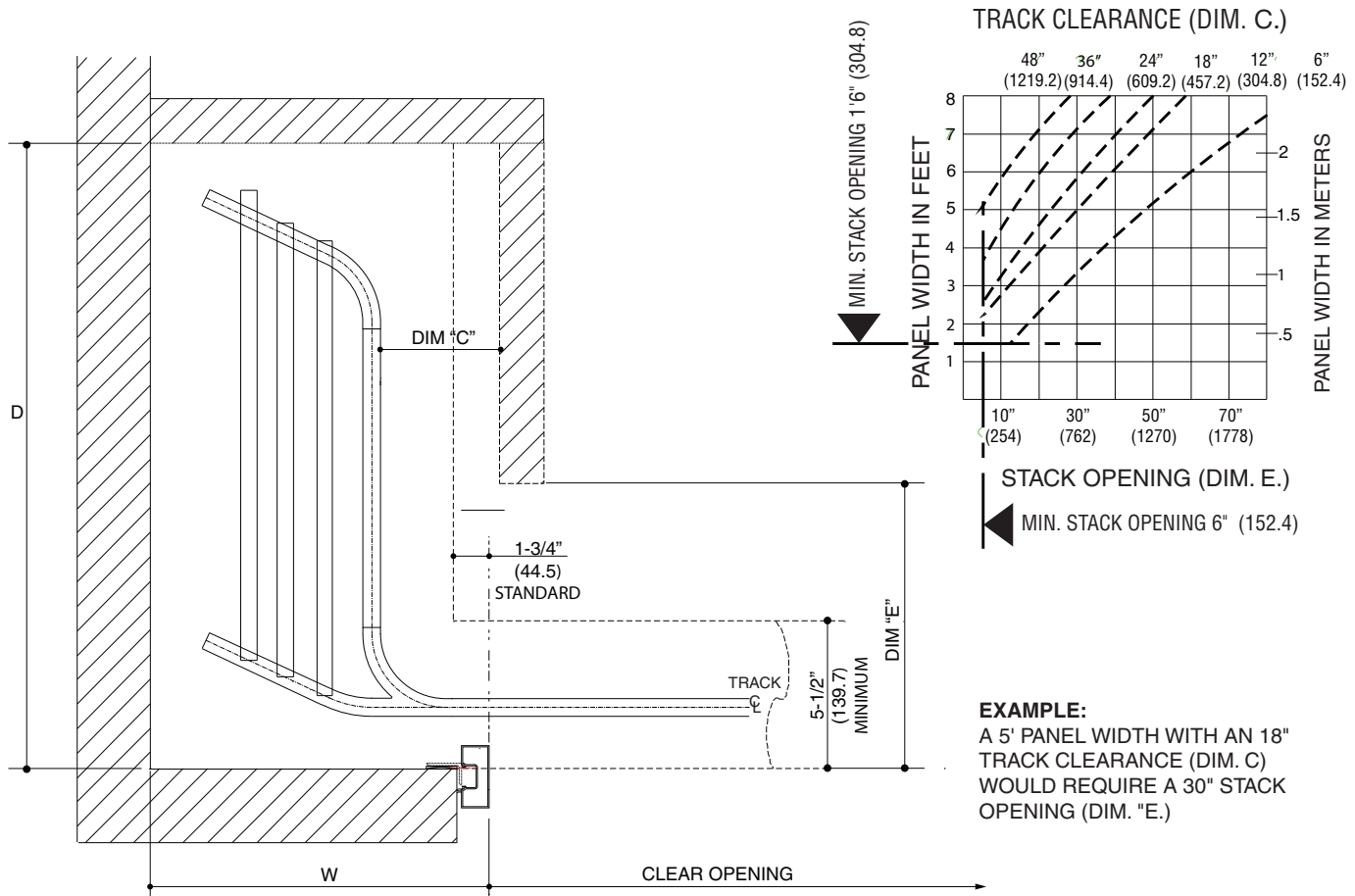
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## 90° STACK

### PANEL WIDTH

NO. OF PANELS	PANEL WIDTH								
	2'-6"/3'-0" (762 / 914) W x D	3'-0"/3'-6" (914 / 1067) W x D	3'-6"/4'-0" (1067 / 1219) W x D	4'-0"/4'-6" (1219 / 1372) W x D	4'-6"/5'-0" (1372 / 1524) W x D	5'-0"/5'-6" (1524 / 1676) W x D	5'-6"/6'-0" (1676 / 1829) W x D	6'-0"/6'-6" (1829 / 1981) W x D	6'-6"/7'-0" (1981 x 2134) W x D
3	23-3/8" x 47-3/4" (594 x 1213)	23-3/8" x 53-3/4" (594 x 1365)	23-3/8" x 59-3/4" (594 x 1518)	23-3/8" x 65-3/4" (594 x 1670)	23-3/8" x 71-3/4" (594 x 1822)	23-3/8" x 77-3/4" (594 x 1975)	23-3/8" x 83-3/4" (594 x 2127)	23-3/8" x 89-3/4" (594 x 2280)	23-3/8" x 95-3/4" (594 x 2432)
4	25-3/8" x 48-11/16" (645 x 1237)	25-3/8" x 54-11/16" (645 x 1389)	25-3/8" x 60-11/16" (645 x 1541)	25-3/8" x 66-11/16" (645 x 1694)	25-3/8" x 72-11/16" (645 x 1846)	25-3/8" x 78-11/16" (645 x 1999)	25-3/8" x 84-11/16" (645 x 2151)	25-3/8" x 90-11/16" (645 x 2304)	25-3/8" x 96-11/16" (645 x 2456)
5	27-3/8" x 49-5/8" (695 x 1260)	27-3/8" x 55-5/8" (695 x 1413)	27-3/8" x 61-5/8" (695 x 1565)	27-3/8" x 67-5/8" (695 x 1718)	27-3/8" x 73-5/8" (695 x 1870)	27-3/8" x 79-5/8" (695 x 2022)	27-3/8" x 85-5/8" (695 x 2175)	27-3/8" x 91-5/8" (695 x 2327)	27-3/8" x 97-5/8" (695 x 2480)
6	29-3/8" x 50-9/16" (746 x 1284)	29-3/8" x 56-9/16" (746 x 1437)	29-3/8" x 62-9/16" (746 x 1589)	29-3/8" x 68-9/16" (746 x 1741)	29-3/8" x 74-9/16" (746 x 1894)	29-3/8" x 80-9/16" (746 x 2046)	29-3/8" x 86-9/16" (746 x 2199)	29-3/8" x 92-9/16" (746 x 2351)	29-3/8" x 98-5/16" (746 x 2503)
7	31-3/8" x 51-1/2" (797 x 1308)	31-3/8" x 57-1/2" (797 x 1461)	31-3/8" x 63-1/2" (797 x 1613)	31-3/8" x 69-1/2" (797 x 1765)	31-3/8" x 75-1/2" (797 x 1918)	31-3/8" x 81-1/2" (797 x 2070)	31-3/8" x 87-1/2" (797 x 2223)	31-3/8" x 93-1/2" (797 x 2375)	31-3/8" x 99-1/2" (797 x 2527)
8	33-3/8" x 52-7/16" (848 x 1332)	33-3/8" x 58-7/16" (848 x 1484)	33-3/8" x 64-7/16" (848 x 1637)	33-3/8" x 70-7/16" (848 x 1789)	33-3/8" x 76-7/16" (848 x 1942)	33-3/8" x 82-7/16" (848 x 2094)	33-3/8" x 88-7/16" (848 x 2246)	33-3/8" x 94-7/16" (848 x 2399)	33-3/8" x 100-7/16" (848 x 2551)
9	35-3/8" x 53-3/8" (899 x 1356)	35-3/8" x 59-3/8" (899 x 1508)	35-3/8" x 65-3/8" (899 x 1661)	35-3/8" x 71-3/8" (899 x 1813)	35-3/8" x 77-3/8" (899 x 1965)	35-3/8" x 83-3/8" (899 x 2118)	35-3/8" x 89-3/8" (899 x 2270)	35-3/8" x 95-3/8" (899 x 2423)	35-3/8" x 101-3/8" (899 x 2575)
10	37-3/8" x 54-3/8" (949 x 1380)	37-3/8" x 60-3/8" (949 x 1532)	37-3/8" x 66-3/8" (949 x 1684)	37-3/8" x 72-3/8" (949 x 1837)	37-3/8" x 78-3/8" (949 x 1989)	37-3/8" x 84-3/8" (949 x 2142)	37-3/8" x 90-3/8" (949 x 2294)	37-3/8" x 96-3/8" (949 x 2446)	37-3/8" x 102-3/8" (949 x 2599)

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

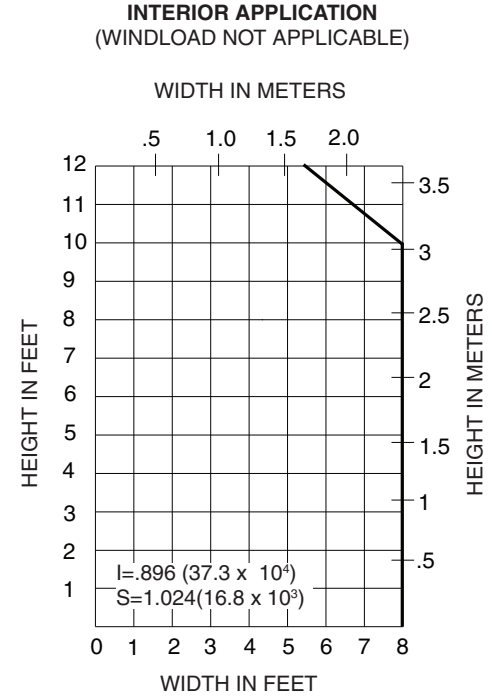
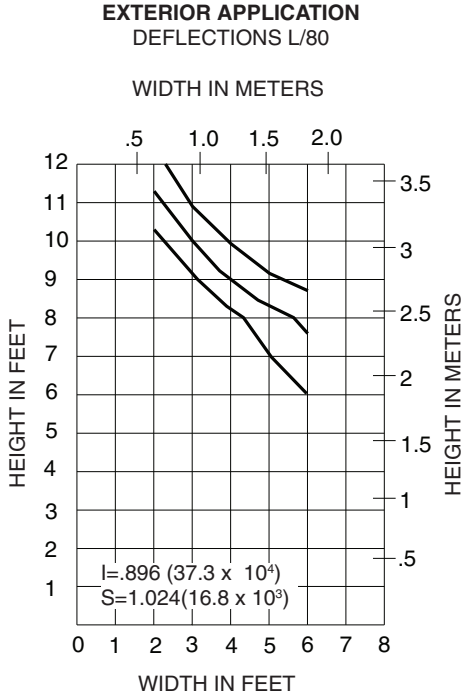


**NOTE:** 1. CHASE AREA MUST BE A MINIMUM OF 1-1/2" (38.1) DEEP.  
2. STACK AREA MUST BE ACCESSIBLE FOR MAINTENANCE AND CLEANING.

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Mullions are designed for 1/80 deflection ratio. These curve are for mullions WITH and WITHOUT HORIZONTALS and are based on precise engineering calculations for stress, deflection and buckling. Allowable windload stress for Aluminum 12,929 P.S.I. (89 MPa) STEEL 26,666 P.S.I. (194 MPa). Charted curves in all cases are for the limiting value. For special situations not covered by the curves, contact your Kawneer representative for additional information.

**MAXIMUM PANEL SIZE LIMITATIONS**



**NOTE:** 1. PANEL WIDTHS (CATER SPACING) SHOULD BE AT LEAST 1/3 OF PANEL HEIGHT FOR ROLLING STABILITY THE MAJOR EXCEPTION TO THIS RULE IS THE PARALLEL EVEN STACK LAYOUT (SEE ASTERISK ON PAGE 13 OF SECTION B1)  
2. ON PANELS OVER 10' IN HEIGHT AN INTERMEDIATE HORIZONTAL MOUNTING IS RECOMMENDED.

**GENERAL INFORMATION**

**GENERAL DESCRIPTION:** THE "1040" SLIDING FRONT CONSISTS OF SINGLE TRACKAGE WITH MULTIPLE STACKING OPTIONS FOR INTERIOR OR EXTERIOR APPLICATIONS. IT IS IDEALLY SUITED FOR THE FOLLOWING COMMERCIAL APPLICATIONS:

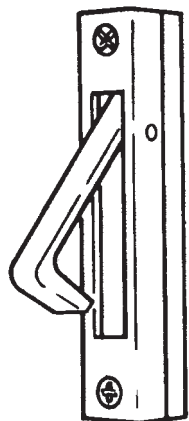
- ENCLOSED SHOPPING MALLS
- EXTERIOR MOVEABLE WALLS
- AUTOMOBILE SHOWROOMS
- SLIDING ROOM DIVIDERS
- EDUCATIONAL MOVEABLE PARTITIONS
- INSTITUTIONAL SLIDING DOORS

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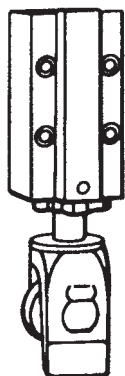
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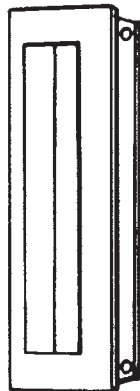
## 1040 HARDWARE



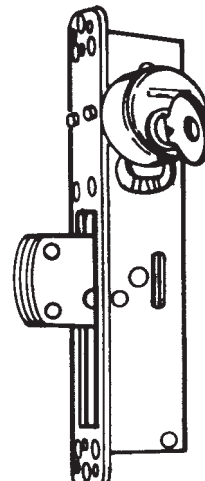
**EDGE PULL**



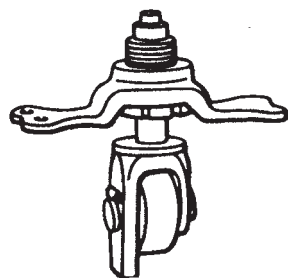
**OUTBOARD  
RECESSED  
CASTER**



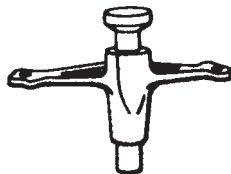
**FACE PULL  
(OPTIONAL)**



**MS 1850A  
LOCK**



**INBOARD  
CASTER**



**INBOARD  
HEAD  
GUIDE**



**OUTBOARD  
RECESSED  
HEAD GUIDE**

**REFER TO HARDWARE SECTION FOR INFORMATION  
ON ADAMS RITE 4510 LATCHLOCK, 4560 LEVER HANDLE AND  
4089 EXIT INDICATOR USED OPTIONALLY ON THE EGRESS DOOR.**

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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## **Features**

- Interior sliding mall front with parallel stacking capability
- Multi-track or single track with flush or surface mounted tracks
- Stainless steel cap on sill track
- Heavy duty tansem roller assembly
- Friction reducing slide buttons at the head of each vertical stile
- Companion fixed lights
- Narrow stile 190 egress doors
- Factory fabricated, shipped knocked-down for local assembly
- Structurally glazed with 1/4" (6.4mm) glass

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For specific product applications,  
Consult your Kawneer representative.

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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**Architects** - The extrusions and sliding mall front types illustrated in this catalog are standard products for Kawneer. These concepts have been expanded and modified to afford you design freedom. Please contact your Kawneer representative for further assistance.

**PICTORIAL VIEW .....4**  
**ELEVATIONS AND HORIZONTAL DETAILS .....5**  
**VERTICAL DETAILS .....6**  
**SIZE LIMITS, TRACK LAYOUTS, HARDWARE...7**

LAWS AND BUILDING AND SAFETY CODES GOVERNING THE DESIGN AND USE OF GLAZED ENTRANCE, WINDOW, AND CURTAIN WALL PRODUCTS VARY WIDELY. KAWNEER DOES NOT CONTROL THE SELECTION OF PRODUCT CONFIGURATIONS, OPERATING HARDWARE, OR GLAZING MATERIALS, AND ASSUMES NO RESPONSIBILITY THEREFOR.

Metric (SI) conversion figures are included throughout these details for reference. Numbers in parentheses ( ) are millimeters unless otherwise noted.

The following metric (SI ) units are found in these details:

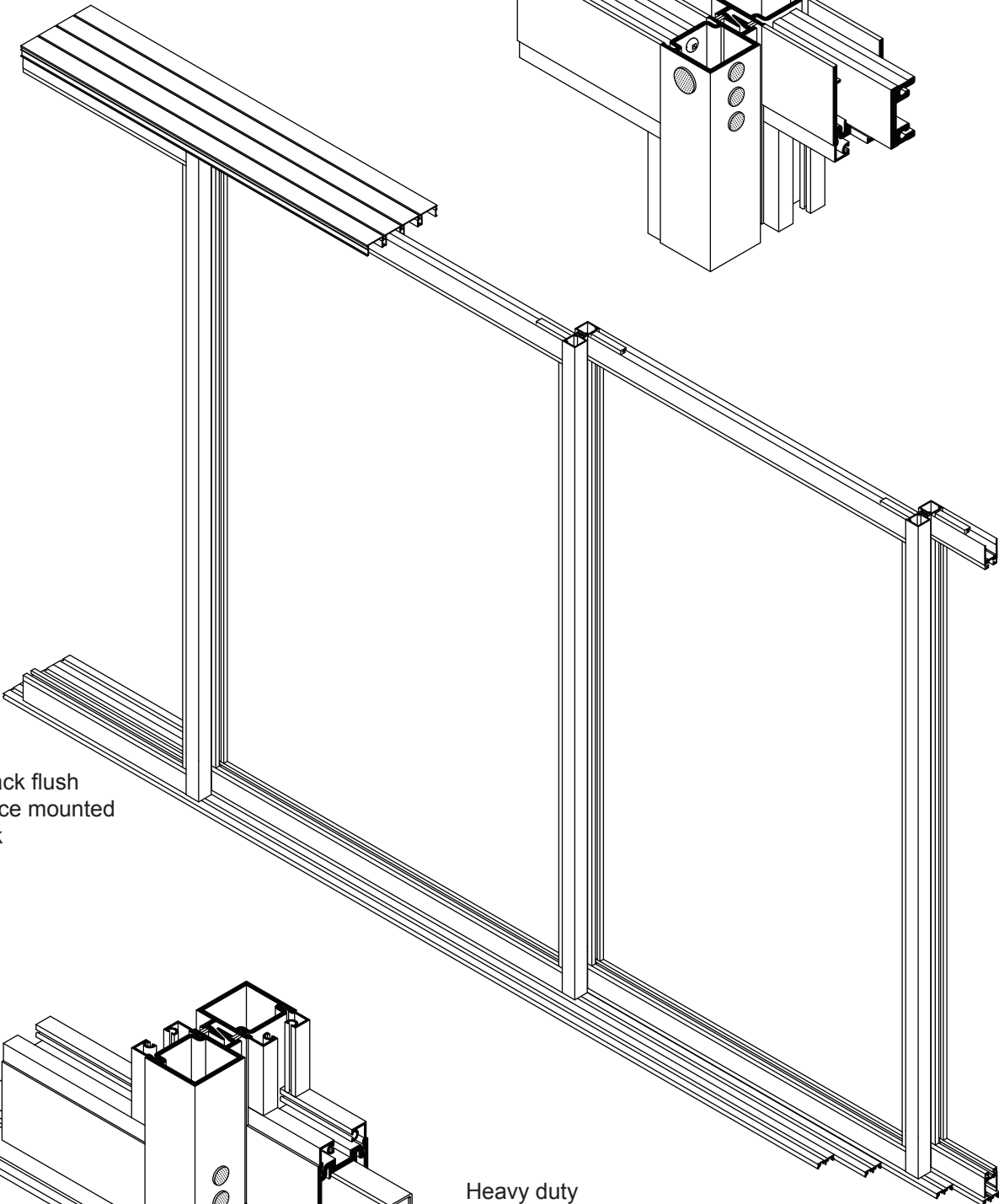
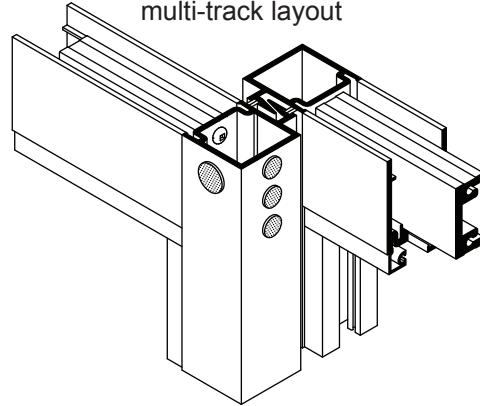
- m – meter
- cm – centimeter
- mm – millimeter
- s – second
- Pa – pascal
- MPa – megapascal

Kawneer reserves the right to change configurations without prior notice when deemed necessary for product improvement.

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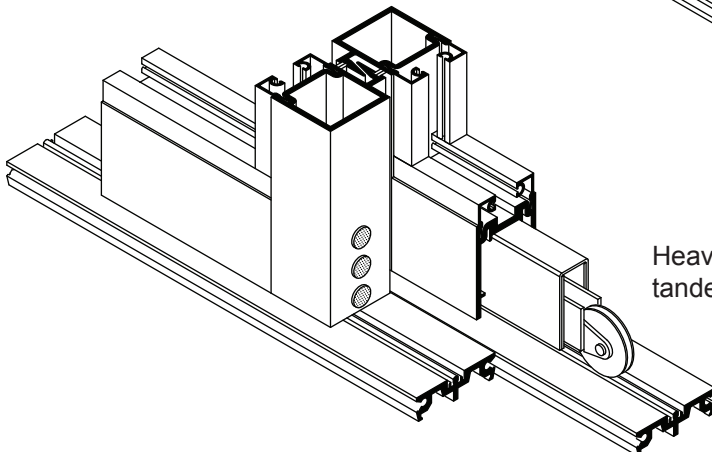
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Interlocking stile on multi-track layout



Multi-track flush or surface mounted sill track

Heavy duty tandem roller



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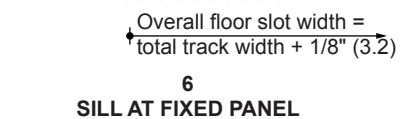
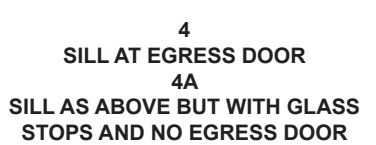
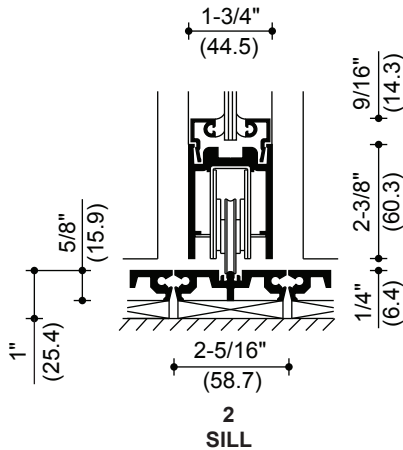
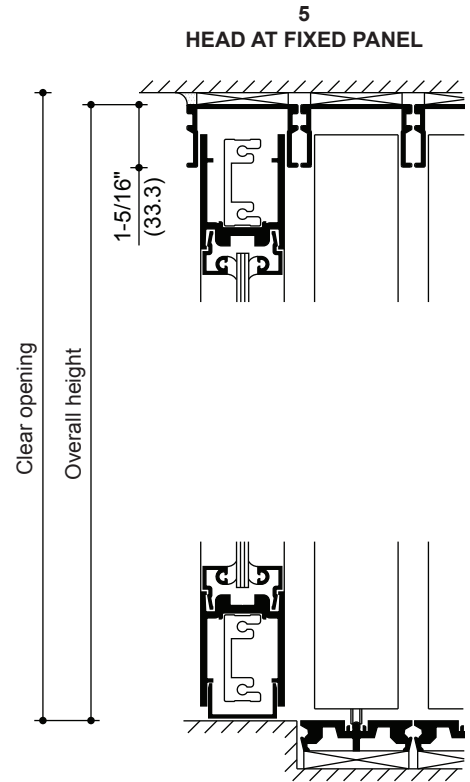
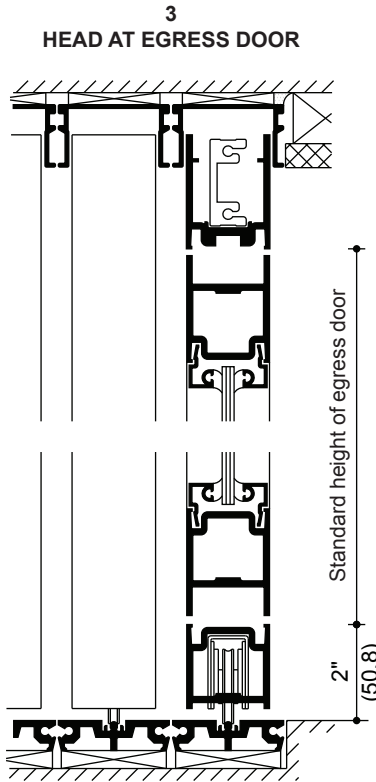
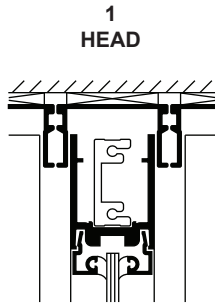
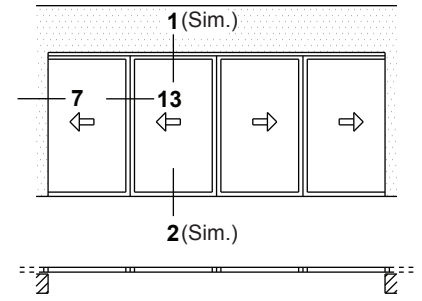
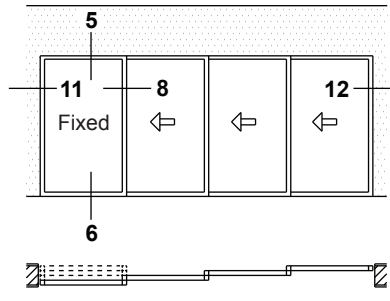
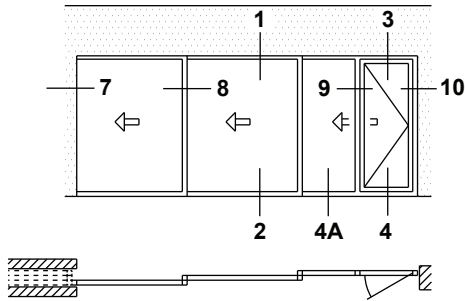
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SCALE 3"=1'-0"

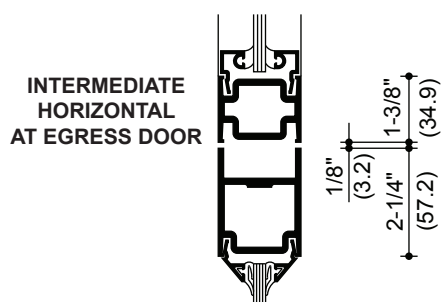
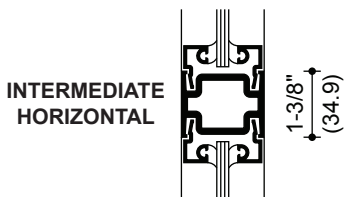
### MULTI TRACK - STACK IN POCKET

### MULTI TRACK - STACK ONE END

### SINGLE TRACK - STACK BOTH ENDS



NOTE: EGRESS DOOR MUST BE MOUNTED IN INNERMOST PANEL.

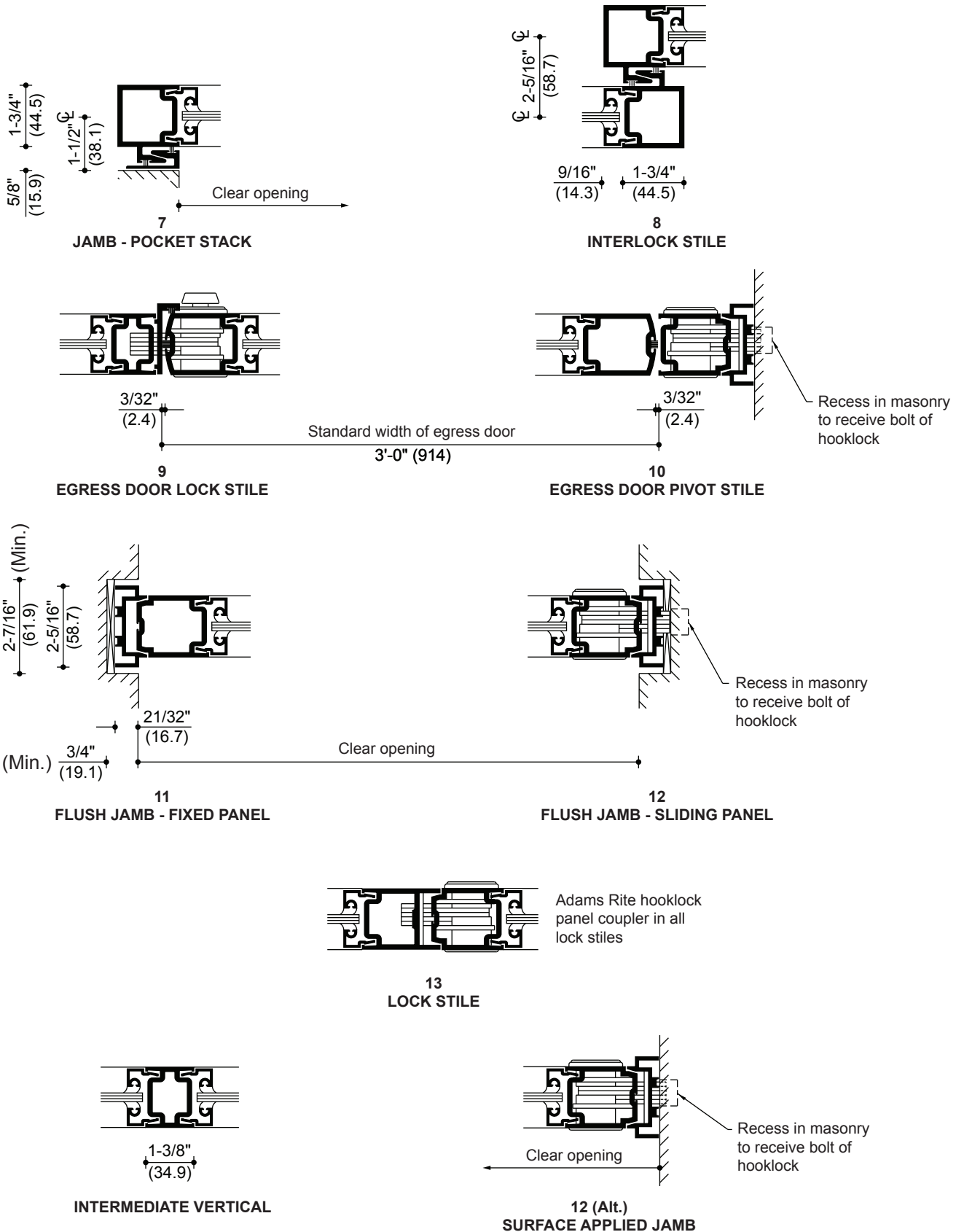


NOTE: MAXIMUM ALLOWABLE DEFLECTION OF STRUCTURE WITH STANDARD HEAD TRACK IS 1/4" (6.4). FOR DEFLECTIONS GREATER THAN 1/4" (6.4) CONTACT FACTORY.

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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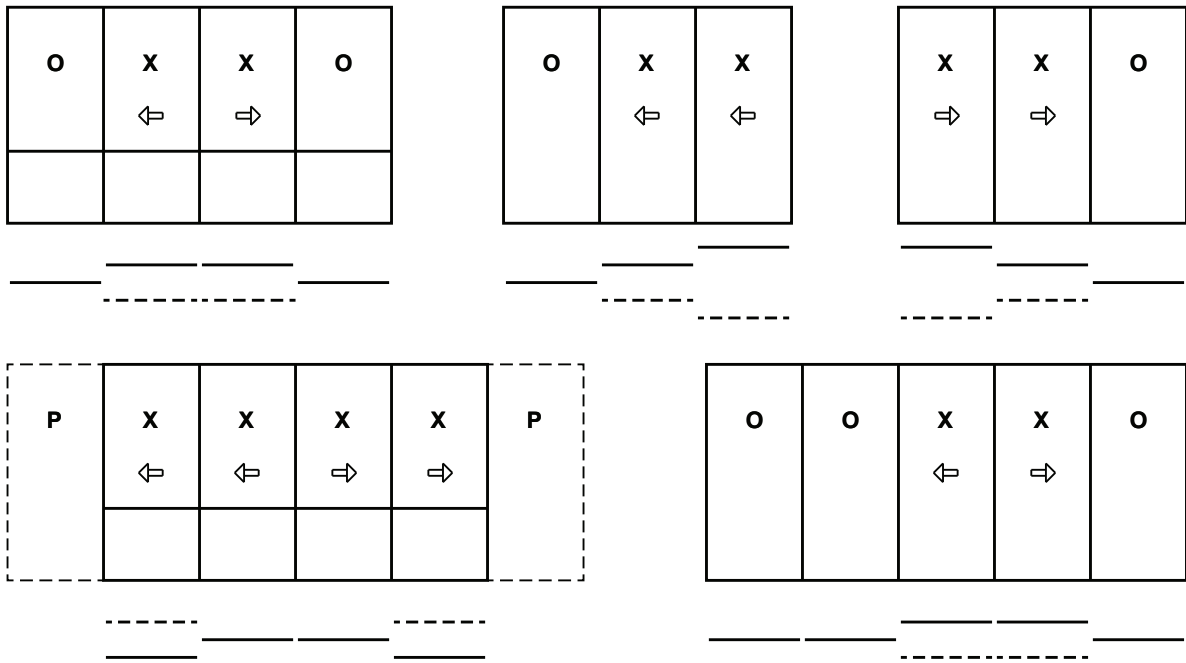
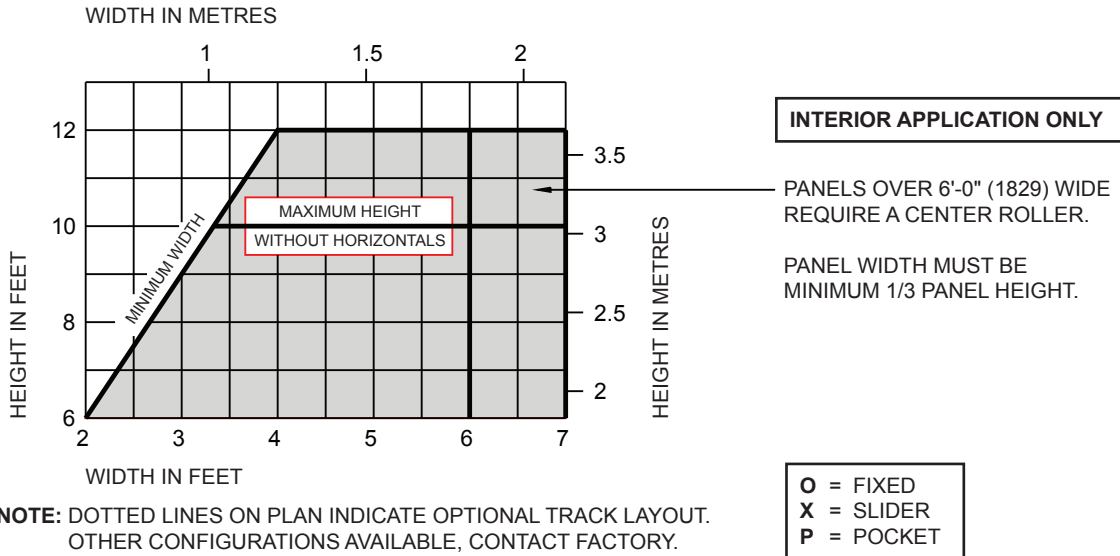
SCALE 3"=1'-0"



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## PANEL SIZE LIMITATION CHART



**NOTE:** STANDARD SIZE FOR THE OPTIONAL EGRESS DOOR IS 3'-0" (914) WIDE BY 7'-0" (2134) HIGH. MAXIMUM SIZE FOR THE EGRESS DOOR IS 4'-0" (1219) WIDE BY 8'-0" (2438) HIGH. HORIZONTAL AND/OR VERTICAL MEMBERS MAY BE REQUIRED IN PANELS DEPENDING ON PANEL AND EGRESS DOOR SIZE, CONTACT FACTORY.

### HARDWARE

**PANELS:**

ADAMS RITE MS\_1850A-505 hook bolt with cylinder to the exterior and to the interior.  
 Exterior flush pulls. (Lead panel only.)

**OPTIONAL:**

Cylinder to the exterior and interior.  
 Interior flush pulls.  
 Flush pulls to the exterior and interior.  
 Edge pulls.

**EGRESS DOOR:**

Center pivots.  
 M.S. lock with cylinder to exterior and thumbturn to interior.

**NOTE:**

EGRESS DOOR MUST BE MOUNTED IN INNERMOST PANEL.

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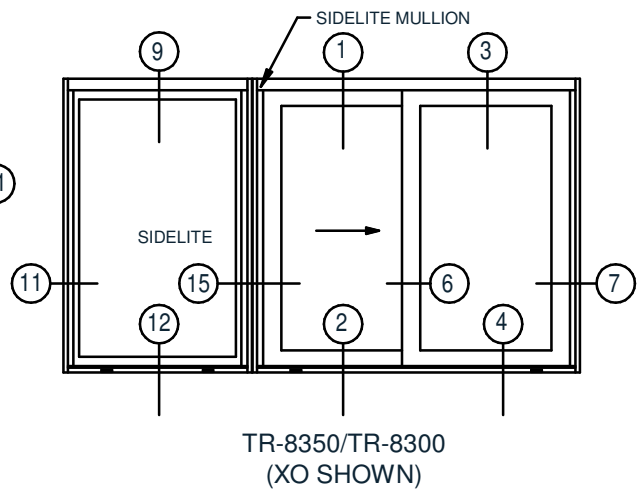
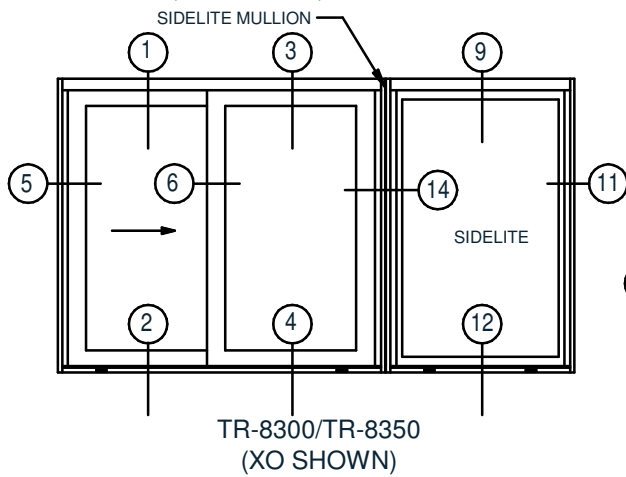
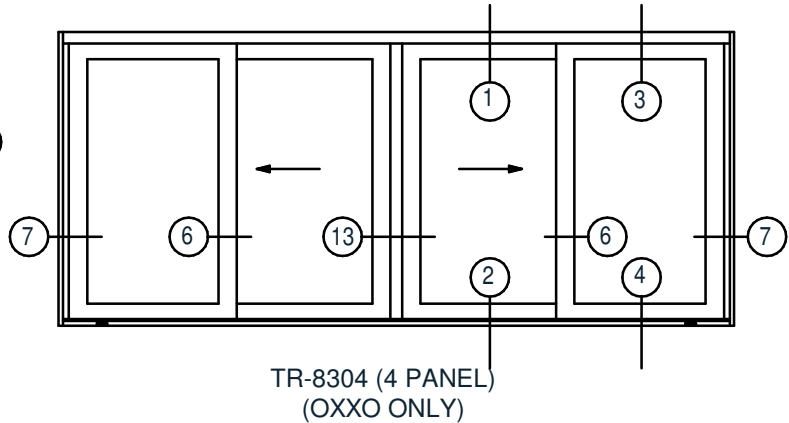
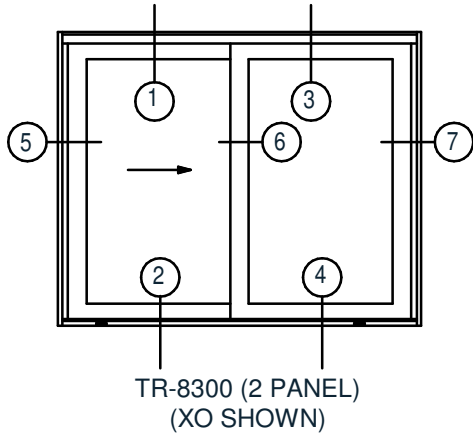
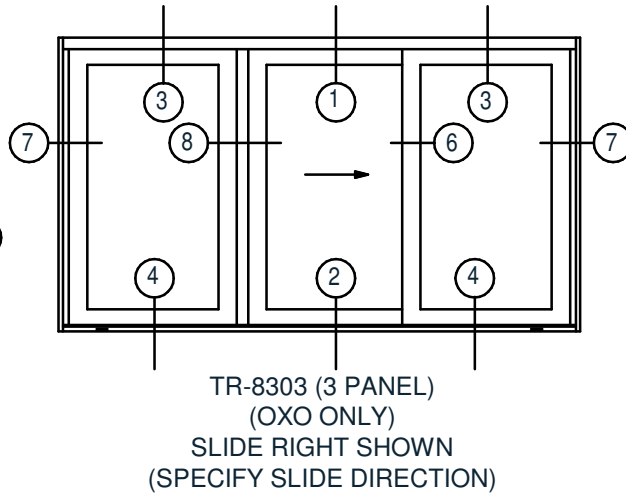
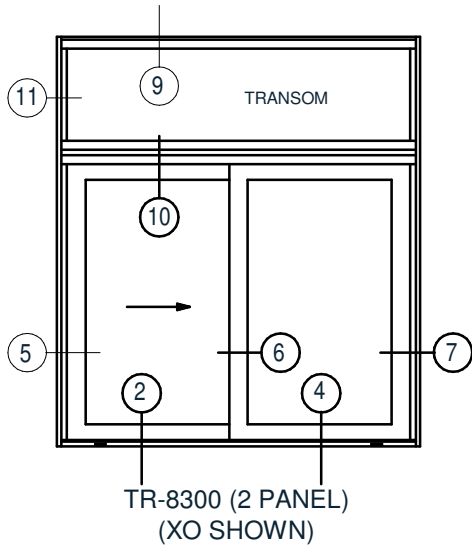


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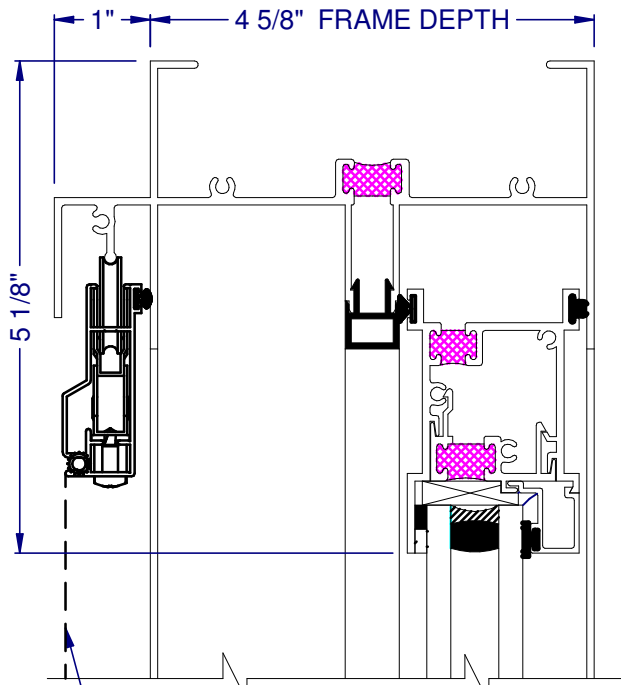
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ELEVATIONS

SERIES TR-8300  
SLIDING GLASS DOOR

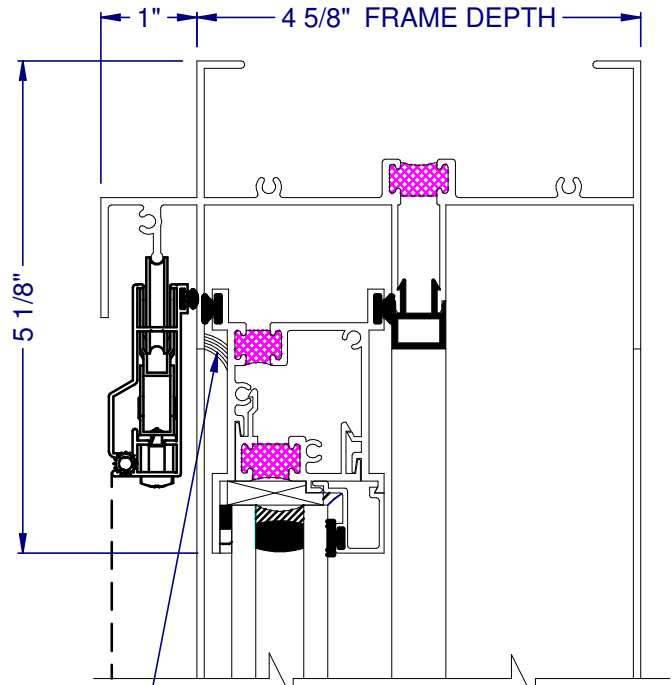


Half Scale Sections



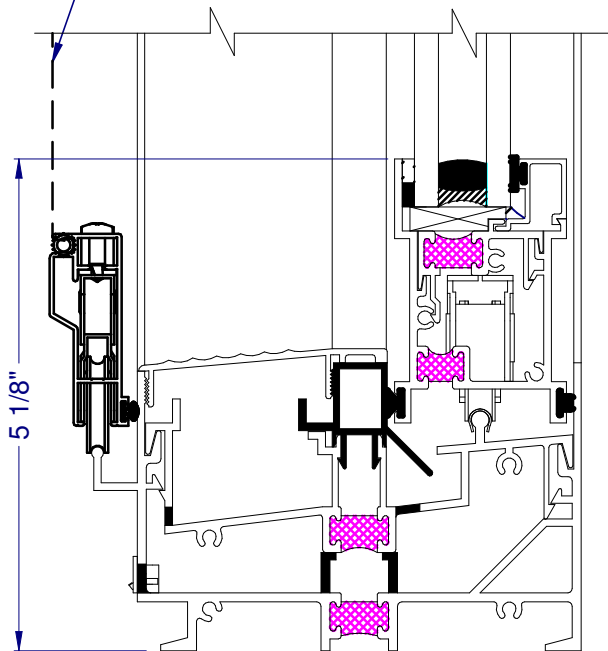
① OPERATING HEAD

OPTIONAL SCREEN

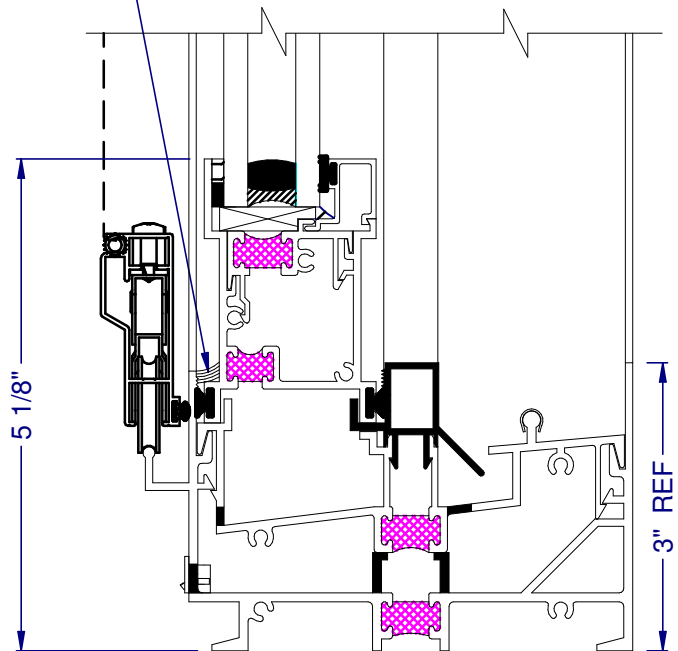


③ FIXED HEAD

FIELD SEAL  
NOT BY TRACO



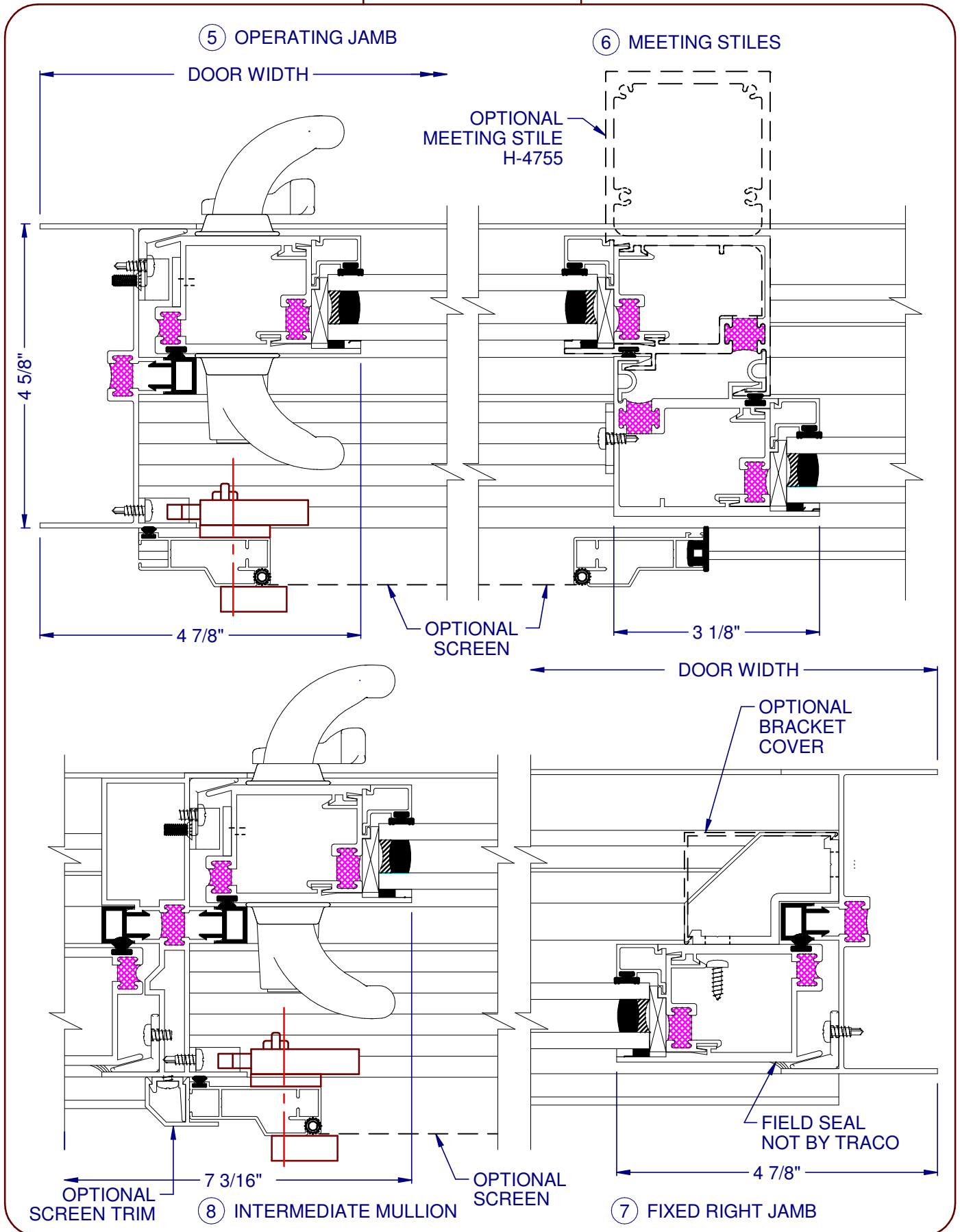
② OPERATING SILL



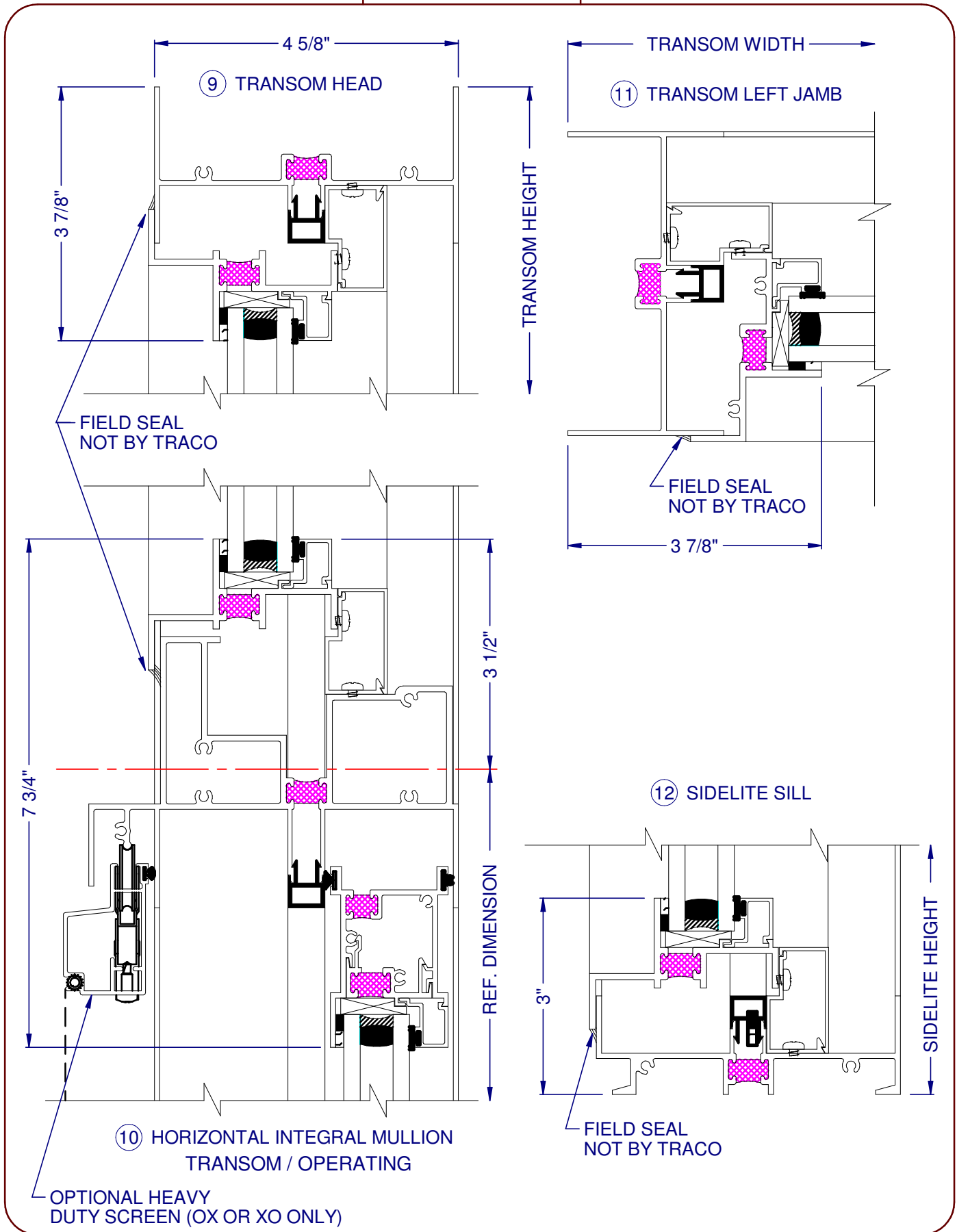
④ FIXED SILL

STANDARD 10 PSF SILL SHOWN  
REFER TO PAGE 5 OF 8 FOR OPTIONAL SILLS

Half Scale Sections

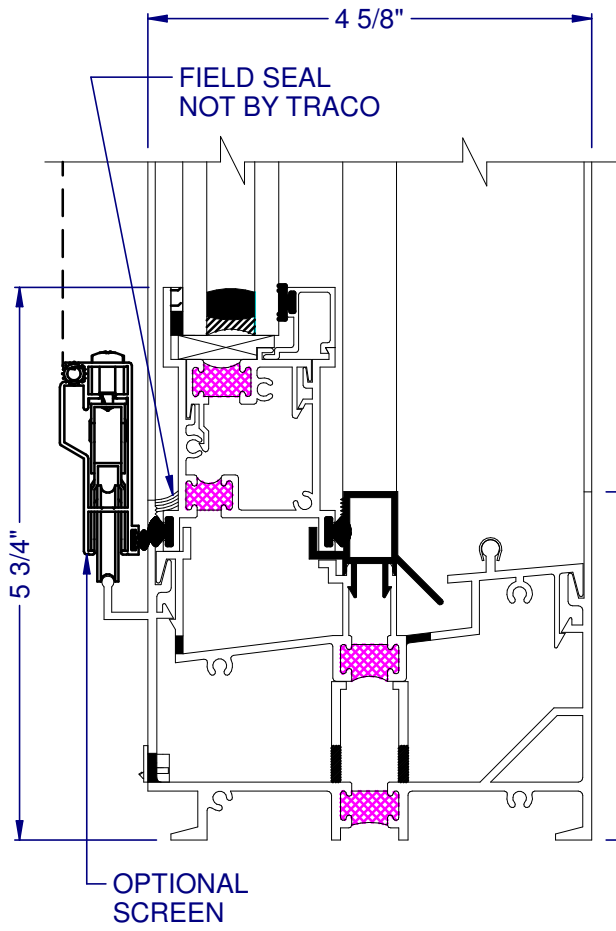
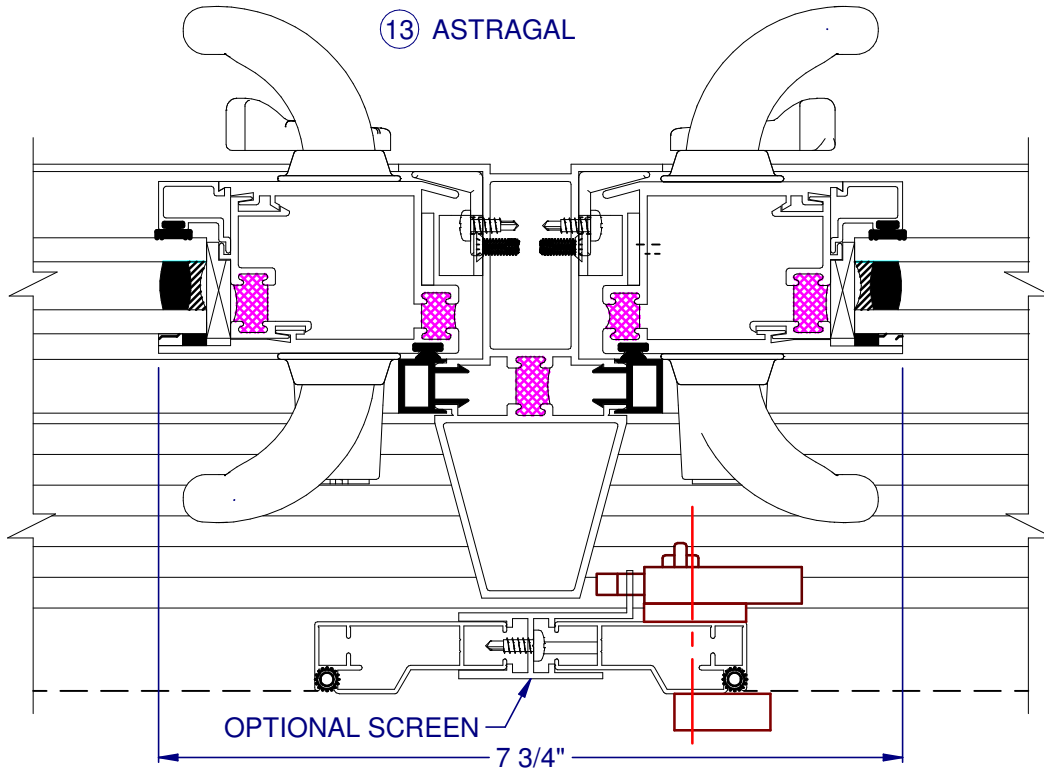


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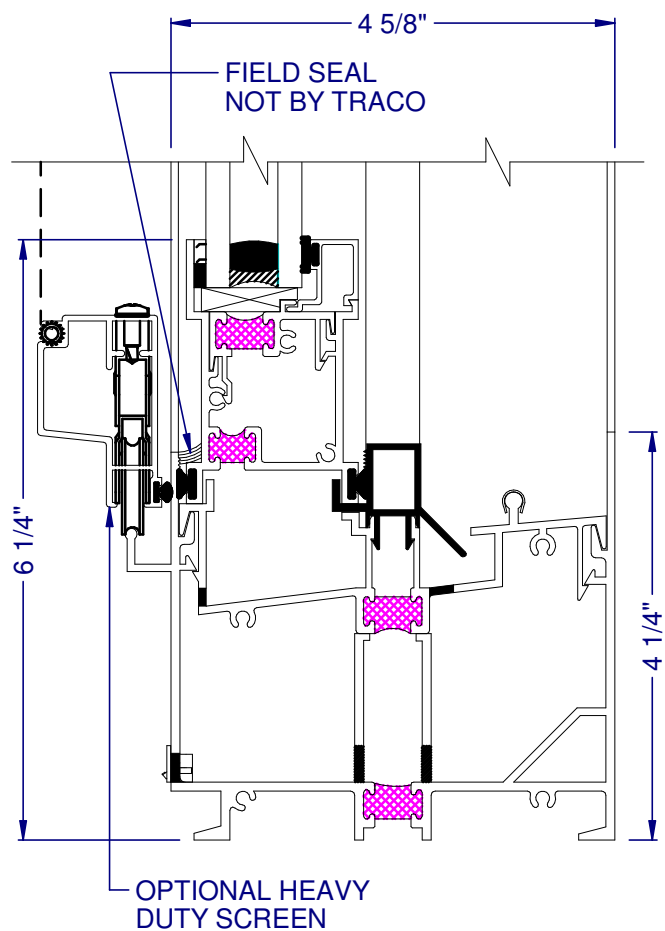


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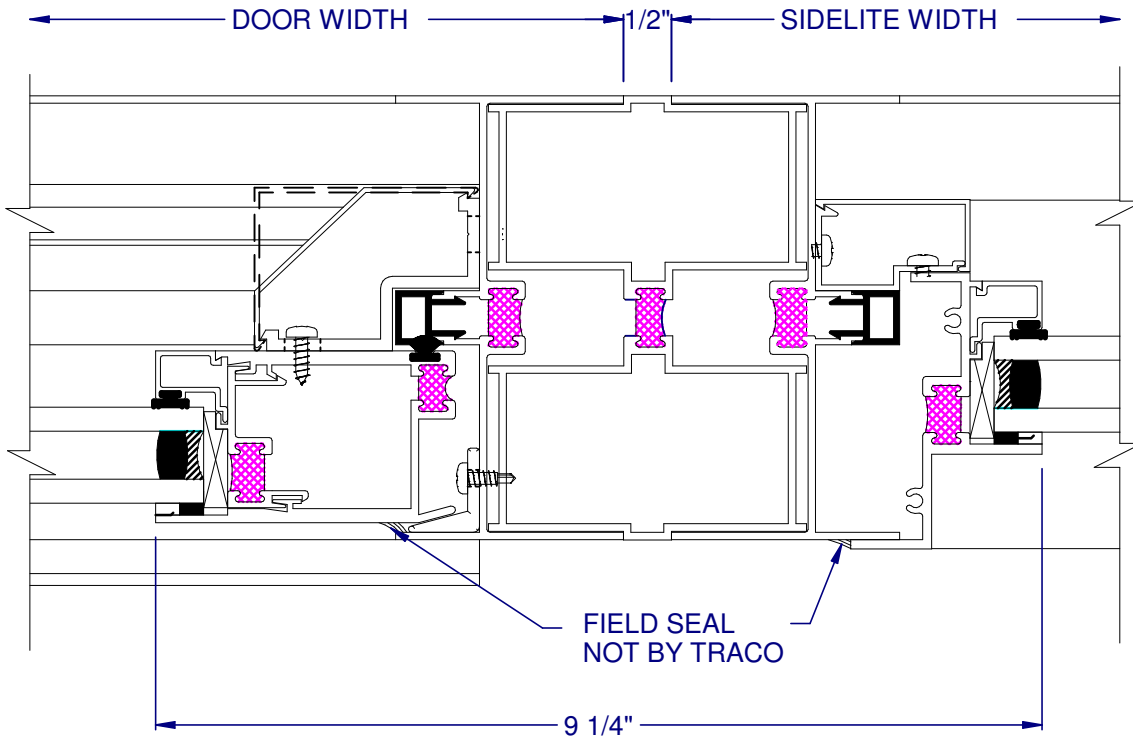
13 ASTRAGAL



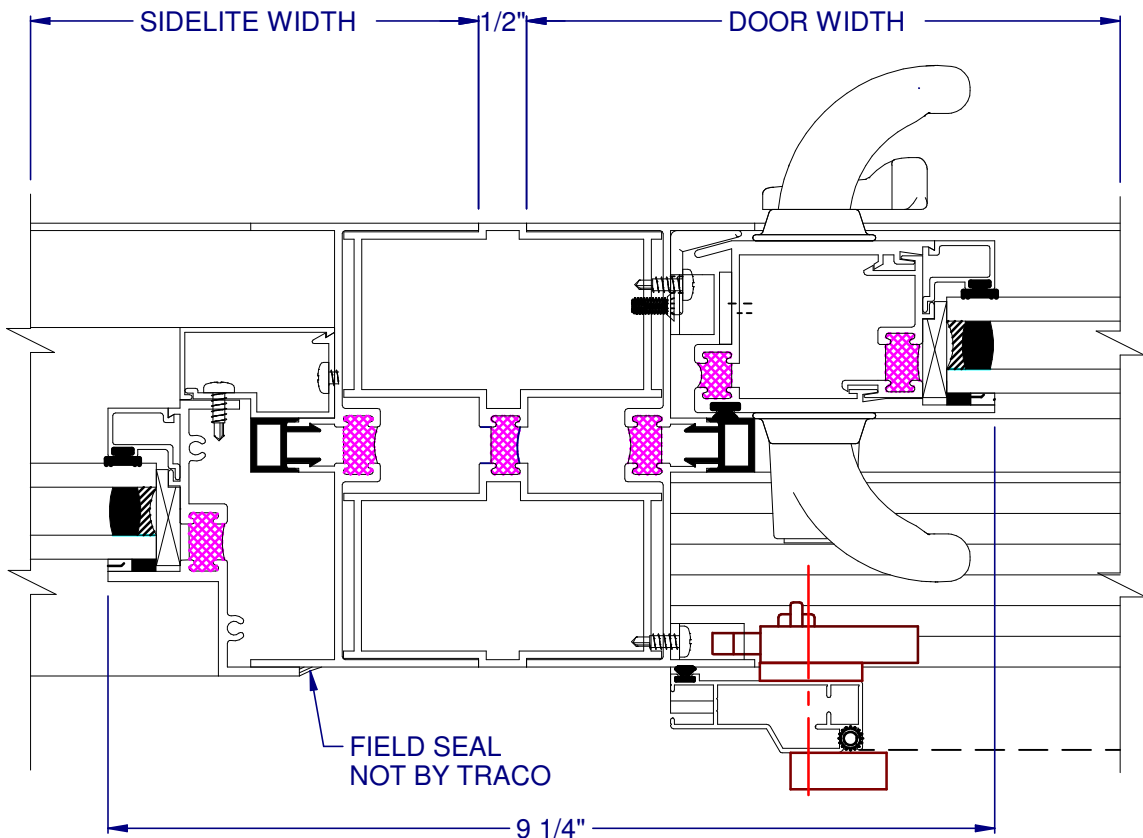
OPTIONAL 12 PSF SILL



OPTIONAL 15 PSF SILL



⑭ VERTICAL MULLION (FIXED/SIDELITE)



**Handling Guidelines**

**Door Installation**

1. Refer to the TRACO TR-8300 Assembly and Installation Instructions in each frame package.
  - Door frames are supplied “KD” (*knocked down*) for field assembly and field sealing
  - Operating (“X”) and fixed (“O”) panels, and optional screens are factory-glazed.
  - Door locking hardware is supplied in a kit to be field assembly onto door panels and frame.
  - Doors shall be installed square, plumb, and level without binding.
  - Insulation should be inserted between the door frame and the opening.
  - Refer to the approved shop drawings for blocking, anchor, and sealant details.
  - Refer to the sealant manufacturer’s guidelines for sealant selection and application.
  - Adjust hardware, if required, after operating panels are in frame and wheels are adjusted.
  - Verify that the weep hole covers are working properly and not covered with sealant.

**Operation/Reglazing**

- **To Unlock Panel:** Unlatch the jamb plunger to unlock the panel and while holding handle, slide the panel to the open position desired. To close panel, slide to closed position and re-engage plunger.
- **To Remove Panel:** Open operating panel, withdraw wheels into panel sill rail, raise panel into head pocket, and remove operating panel to interior. Remove threshold, remove screws from exterior angles holding fixed panel, remove cover and screws from interior jamb brackets, raise fixed panel into head pocket, and remove fixed panel to exterior. Store panels upside down to avoid wheel or wheel housing damage.
- **To Reglaze Panel:** Remove the four interior aluminum glazing beads. Carefully remove the glass from the exterior glazing tape. Replace glazing tape and reverse procedure to reglaze glass.
- **To Adjust Panel Rolling:** Locate screws in concealed holes on the interior face of the operating panel and raise/lower wheels by turning screw.

**Maintenance**

Your new TRACO door will last for many years with a minimum of maintenance and routine care when this schedule is followed:

- **Every Three Months:** Vacuum the door frame sill to remove debris, dirt or foreign matter which may have accumulated and clogged the weep (water drainage) slots. Inspect for broken or missing parts and weatherstripping.
- **Every Six Months:** Clean the door frame, sill and jambs to remove any buildup, dirt sludge or grime which may interfere with the roller system.
- **Once Per Year:** Lubricate the rollers and locking mechanisms with silicone spray or lubricant to ease operation and reduce excessive friction. Inspect all working components for excessive wear or breakage.

Contact your nearest TRACO dealer for replacement parts as required.



Hardware

The TRACO Warranty Label, found on every TRACO product, provides important information:

Order #	712070	04/11/05	Order Date
Model #	TR9000 B3 B3	OBDS A ,CLDS A	Glass Type
Window Size	SIZE 48 X 95	60.1006, 60.0001	
Glass Size	GLASS 42 5/8 X 44 3/8		
<b>** WARRANTY *** DO NOT REMOVE **</b>			

The Warranty Label is located on the outside top of the door rail.

When ordering parts, please provide Order # from Warranty Label (above), Part #, and Part Name.



**Black Lock Handle (Standard)**  
#30-3490.16

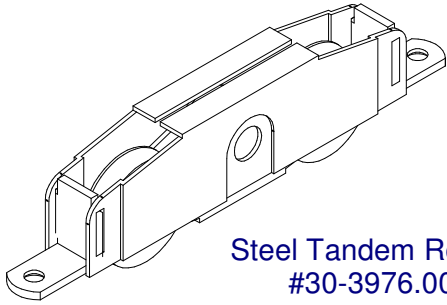
Lock #30-3306

Lock Screws #15-0192

Keeper #30-2525

Keeper Screws #15-0129

Optional Handles Available  
Contact Your Traco Representative




**Steel Tandem Roller**  
#30-3976.00

Screws  
#15-0192

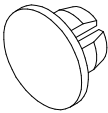
Optional Stainless Steel Tandem Roller  
#30-3976.02



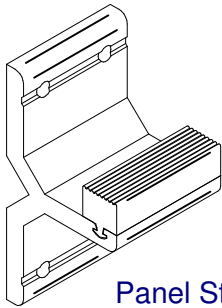
**Weep Cover**  
Black #30-3886.16  
White #30-3886.10



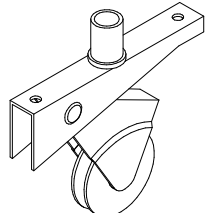
**SS Roller Track**  
8 Feet #30-0338  
10 Feet #30-0339



**Roller Hole Plug**  
Black #30-0341  
White #30-0340

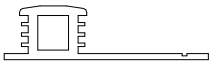


**Panel Stop**  
#50-0321



**Steel Screen Roller**  
#30-0782

Optional SS Screen Roller  
#30-3081



**Screen Bug Flap**  
#20-0276  
-specify length

## **Features**

- AA™3200HP (High Performance) meets:  
AAMA / WDMA / CSA 101 / I.S.2 / A440-08 AW-PG135-SD
- AA™3200IR (Hurricane Resistant) meets:
  - ASTM E 1886/E 1996, FLORIDA BUILDING CODE (FBC) TAS 201/203
  - Small and Large Missile impact & cycle tested to  $\pm 135$  psf ( $\pm 6464$  Pa)
  - Tested on panel sizes 5' x 8' (1524 x 2438) up to 4' x 10' (1219 x 3048)
- Water resistance up to 15 psf (718 Pa)
- System depth of 6-3/4" (171.5)
- Available as OX, XO, OXO and OXXO configurations, common mullion allows for additional fixed lites to be stacked (OOXO)
- Infills include 1" (25.4) and 1-5/16" (33.4)
- Polyamide thermal break
- Heavy duty stainless steel casters
- Stainless steel track inset for sliding panels
- Corrosion-resistant stainless steel locks and fasteners
- Permanodic™ anodized finishes in seven choices
- Painted finishes in standard and custom choices

## **Optional Features**

- Dual color finish capabilities
- Factory glazed sliding panels and sub sash fixed lites
- Low profile threshold

## **Product Applications**

- The AA™3200HP and AA™3200IR are high performance, hurricane resistant thermal sliding doors for use in condominiums, hotels and apartments.

For specific product applications,  
Consult your Kawneer representative.

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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**TYPICAL ELEVATIONS.....4**  
**AA™3200HP (High Performance) TYPICAL DETAILS..... 5-7**  
**GLAZING OPTIONS .....8**  
**HARDWARE OPTIONS .....9**  
**WIND LOAD CHARTS..... 10-17**  
**THERMAL CHARTS ..... 18-25**

LAWS AND BUILDING AND SAFETY CODES GOVERNING THE DESIGN AND USE OF GLAZED ENTRANCE, WINDOW, AND CURTAIN WALL PRODUCTS VARY WIDELY. KAWNEER DOES NOT CONTROL THE SELECTION OF PRODUCT CONFIGURATIONS, OPERATING HARDWARE, OR GLAZING MATERIALS, AND ASSUMES NO RESPONSIBILITY THEREFOR.

Metric (SI) conversion figures are included throughout these details for reference. Numbers in parentheses ( ) are millimeters unless otherwise noted.

The following metric (SI ) units are found in these details:

- m – meter
- cm – centimeter
- mm – millimeter
- s – second
- Pa – pascal
- MPa – megapascal

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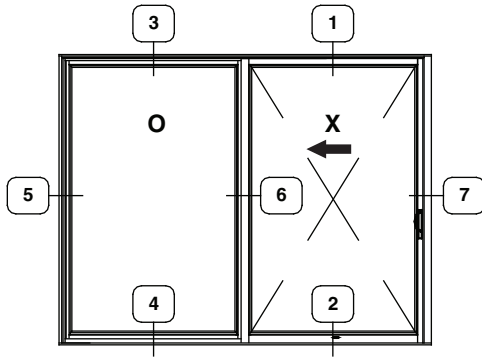
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## TYPICAL ELEVATIONS

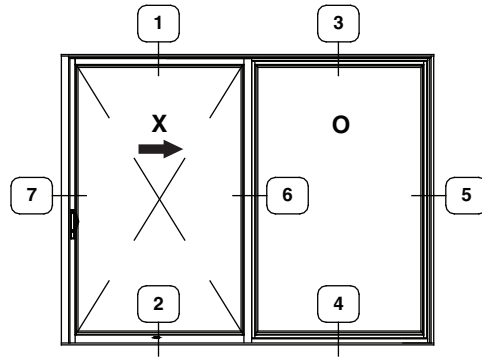
ELEVATIONS ARE NUMBER KEYED TO DETAILS ON THE FOLLOWING PAGES

**Note:** Elevations shown with "Sub-Sash" framing in the fixed lite.

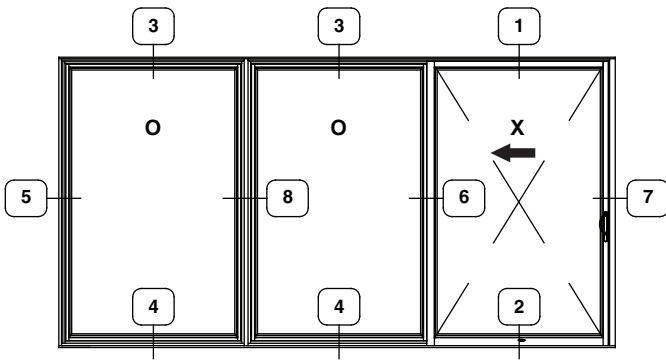
"Field Glazed" option creates a thinner sightline in the fixed lite, shown on page 8.



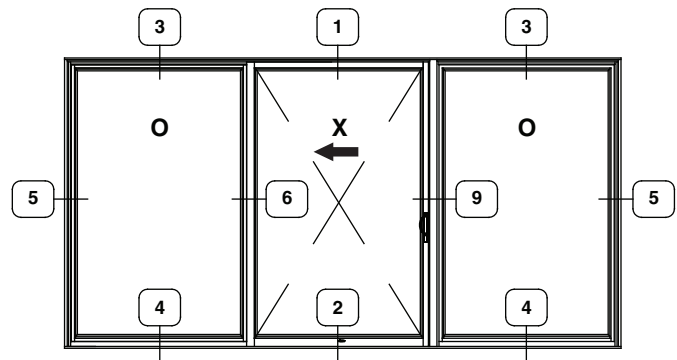
**OX UNIT**



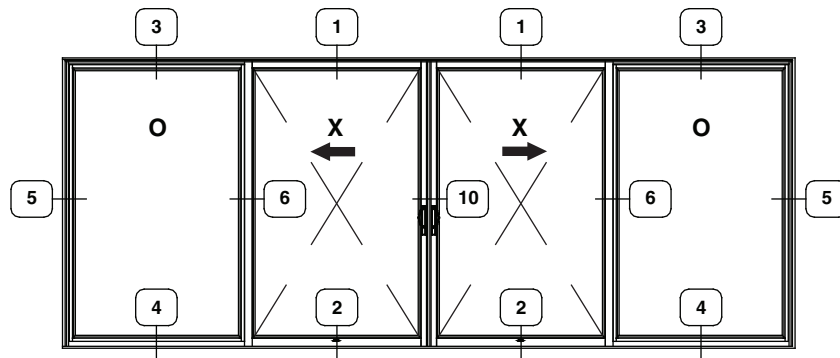
**XO UNIT**



**OOX UNIT**



**OXO UNIT**



**OXXO UNIT**

Local, state, and federal building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

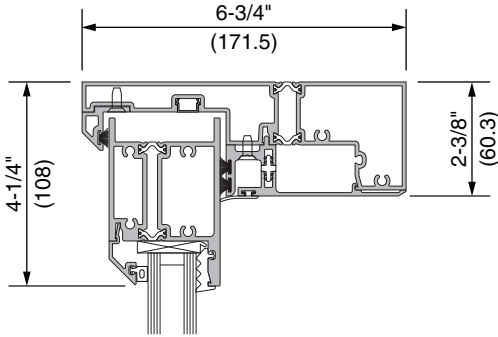
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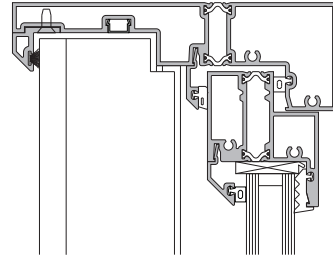
SCALE 3" = 1'-0"

### AA™3200HP HIGH PERFORMANCE GLAZING

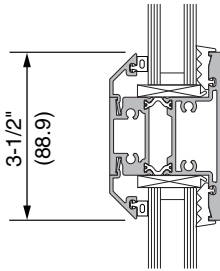
DRY GLAZED - 1" INFILL  
(NON-IMPACT) WITH "SUB SASH"



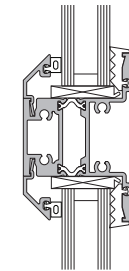
**1**  
HEAD  
AT SLIDING PANEL



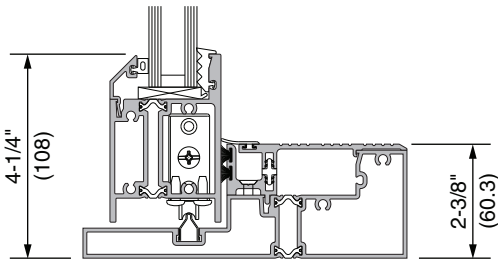
**3**  
HEAD  
AT FIXED LITE



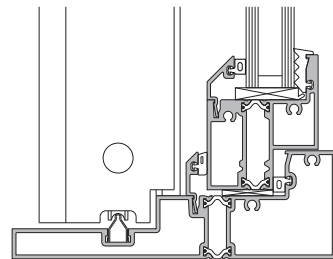
OPTIONAL HORIZONTAL  
AT SLIDING PANEL



OPTIONAL HORIZONTAL  
AT FIXED LITE



**2**  
SILL  
AT SLIDING PANEL



**4**  
SILL  
AT FIXED LITE

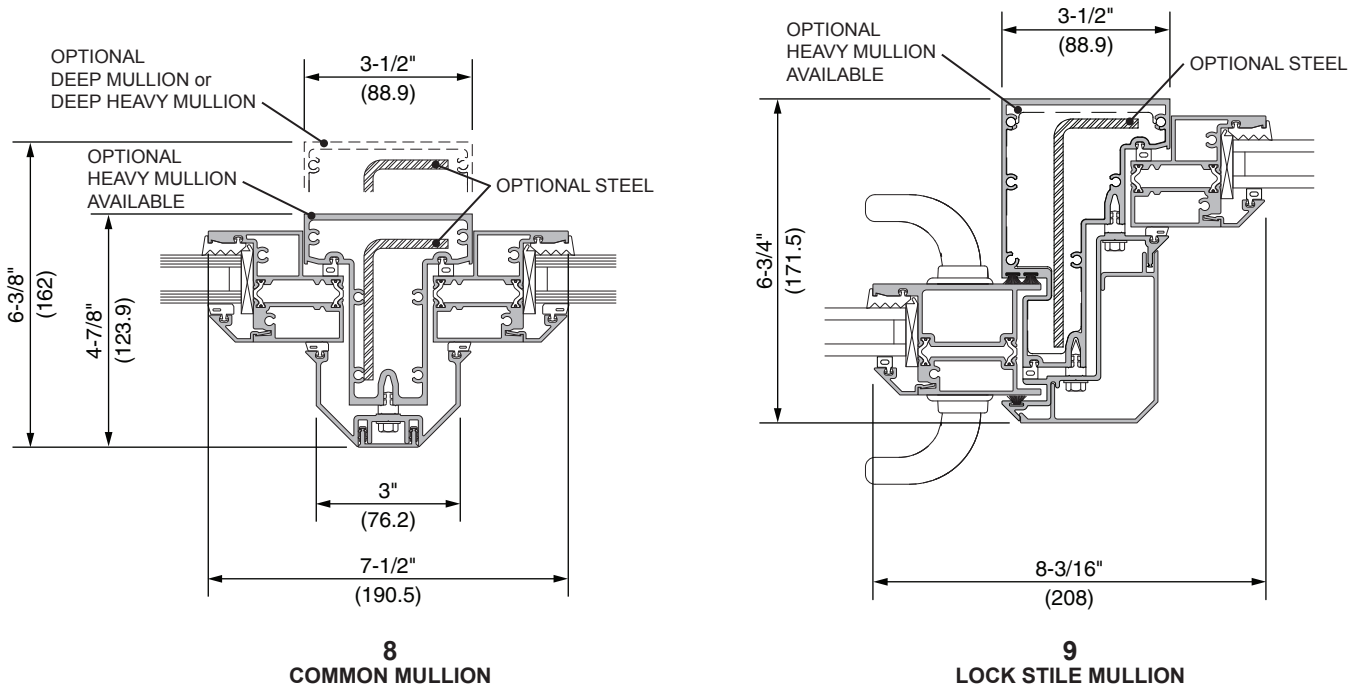
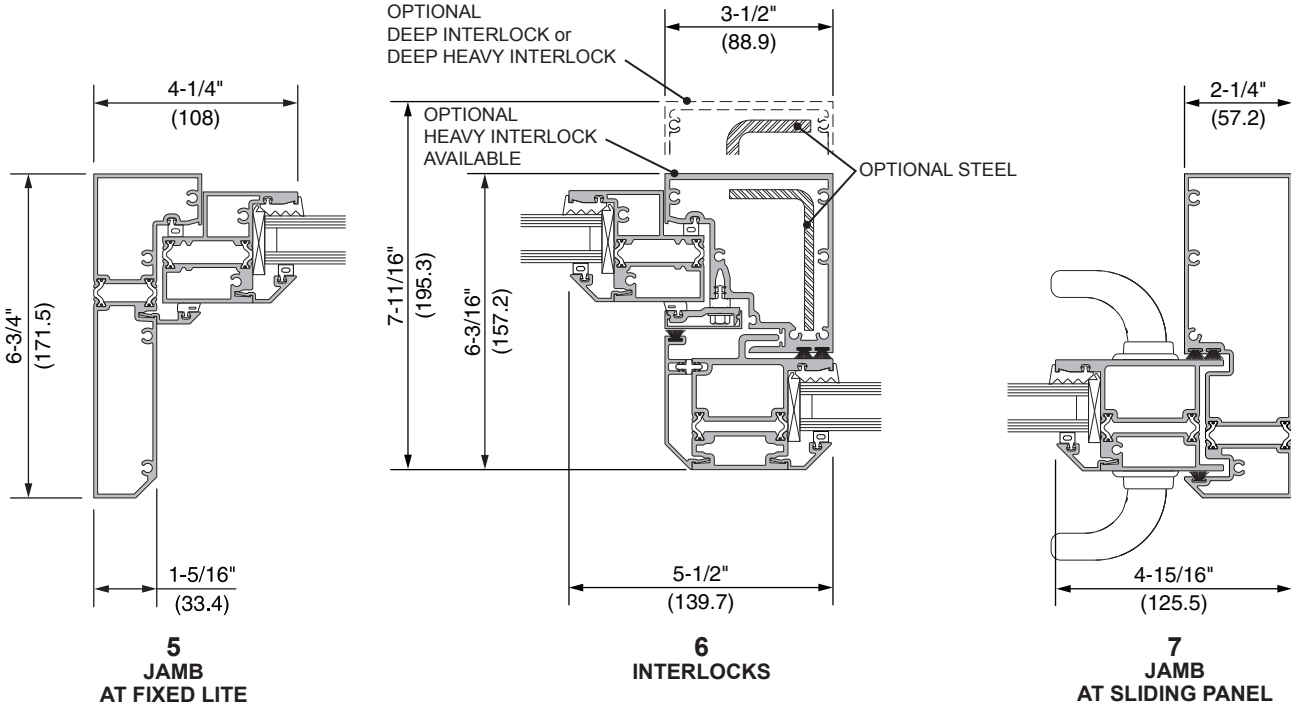
Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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SCALE 3" = 1'-0"

**AA™3200HP  
HIGH PERFORMANCE GLAZING**

**DRY GLAZED - 1" INFILL  
(NON-IMPACT) WITH "SUB SASH"**

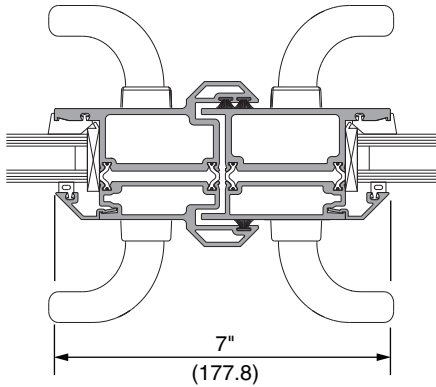


Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

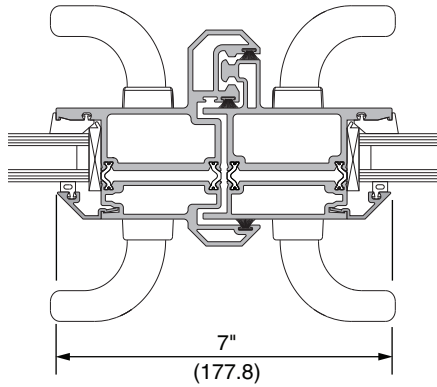
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## AA™3200HP HIGH PERFORMANCE GLAZING

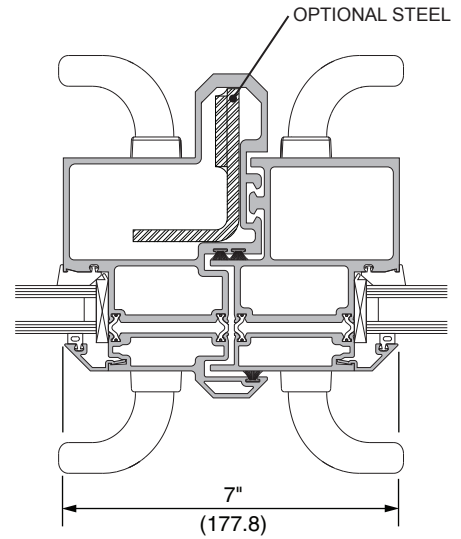
DRY GLAZED - 1" INFILL  
 (NON-IMPACT) WITH "SUB SASH"



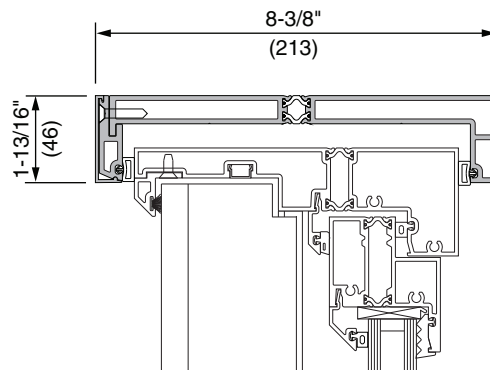
**10**  
 STANDARD  
 MEETING STILES



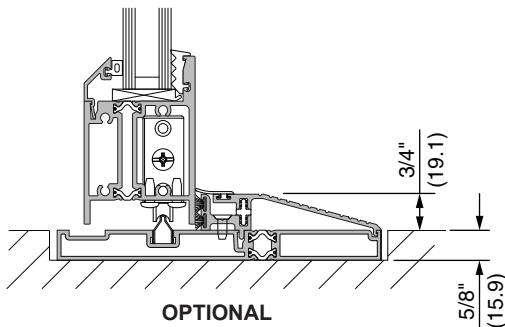
**10A**  
 MID-RANGE  
 MEETING STILES



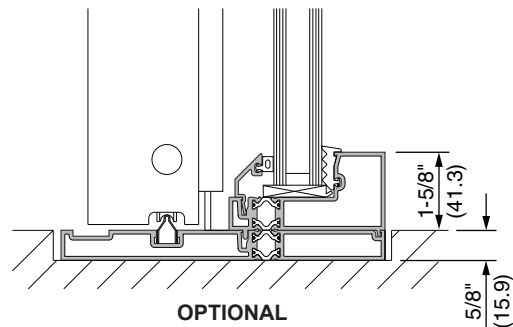
**10B**  
 MAXIMUM RANGE  
 MEETING STILES



**OPTIONAL  
 HEAD RECEPTOR**



**OPTIONAL  
 LOW PROFILE SILL  
 (SLIDING PANEL)**



**OPTIONAL  
 LOW PROFILE SILL  
 (FIXED PANEL)**

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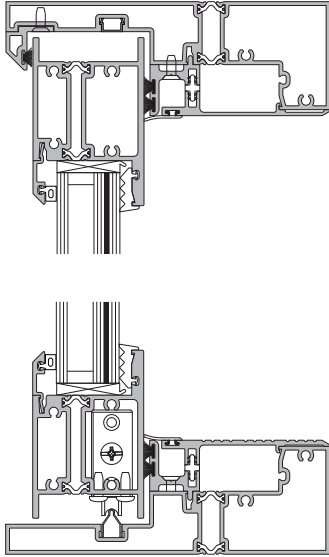
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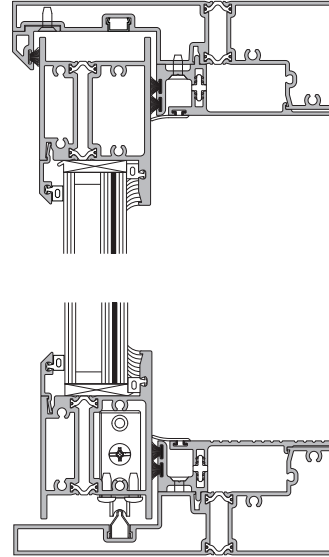
SCALE 3" = 1'-0"

## AA™3200IR HURRICANE RESISTANT GLAZING

DRY GLAZED - 1-5/16" INFILL

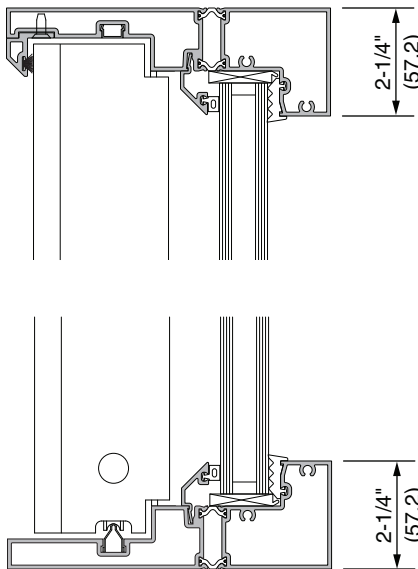


WET GLAZED - 1-5/16" INFILL

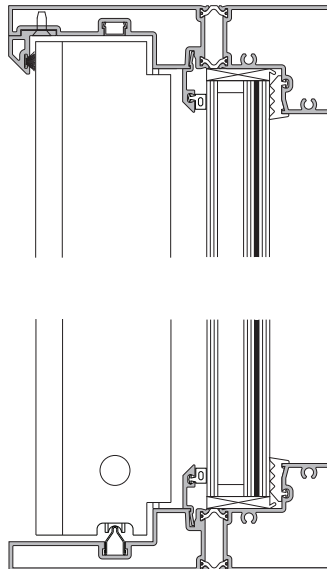


## AA™3200HP and AA™3200IR OPTIONAL "FIELD GLAZED" FIXED LITE

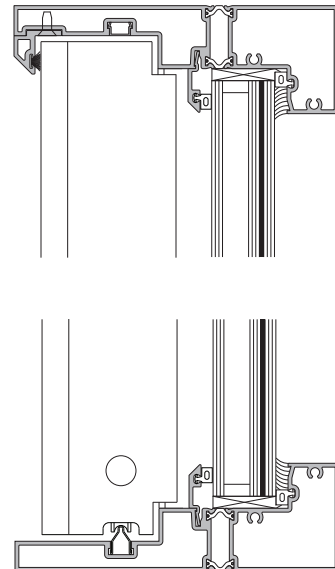
AA™3200HP  
DRY GLAZED - 1" INFILL



AA™3200IR  
DRY GLAZED - 1-5/16" INFILL



AA™3200IR  
WET GLAZED - 1-5/16" INFILL


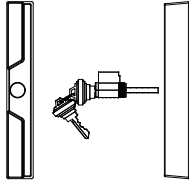
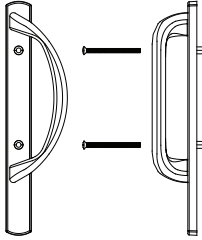
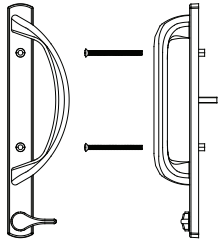

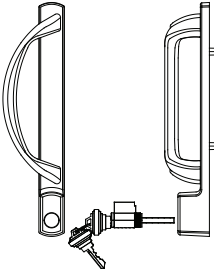
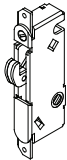
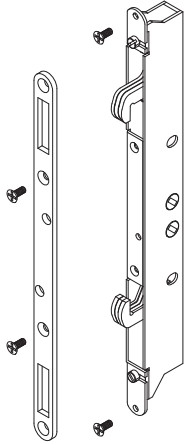
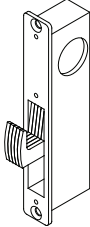
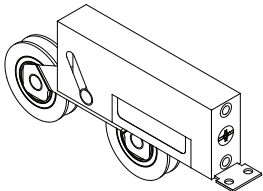



Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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STANDARD EXTERIOR PULLS	STANDARD INTERIOR PULLS
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>Finger Pull - Blank</p> </div> <div style="text-align: center;">  <p>Finger Pull with Cylinder</p> </div> </div>	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>"D" Pull - Blank</p> </div> <div style="text-align: center;">  <p>"D" Pull with Lever</p> </div> </div>
OPTIONAL EXTERIOR PULLS	LOCKING OPTIONS
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>"D" Pull - Blank</p> </div> <div style="text-align: center;">  <p>"D" Pull with Cylinder</p> </div> </div>	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>1 Point Lock</p> </div> <div style="text-align: center;">  <p>2 Point Lock</p> </div> </div>
STANDARD CASTER	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;">  <p>MS Hookbolt Lock</p> </div> <div> <p><b>Note:</b>                      Hookbolt lock standard with OXXO units. Optional for other configurations.</p> </div> </div>
 <p>Stainless Steel Caster</p>	
HARDWARE FINISHES	BUMPER
<p><b>SATIN BLACK</b> - Powder Coat Paint</p> <p><b>BONE WHITE</b> - Powder Coat Paint</p> <p><b>SILVER GRAY</b> - Powder Coat Paint</p> <p><b>SATIN NICKEL</b> - Plated</p>	 <p>Stainless Steel Bumper</p>

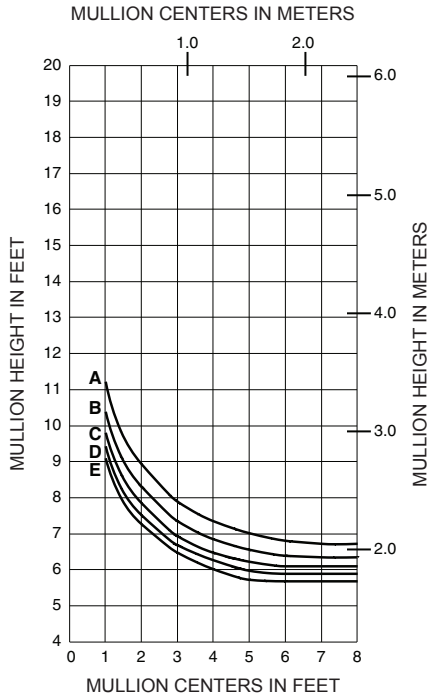
## WIND LOAD CHARTS

Mullions are designed for deflection limitations in accordance with AAMA TIR-A11 of L/175 up to 13'-6" and L/240 +1/4" above 13'-6". These curves are for mullions WITH HORIZONTALS and are based on engineering calculations for stress and deflection. Allowable wind load stress for ALUMINUM 15,152 psi (104MPa), STEEL 30,000 psi (207MPa). Charted curves, in all cases are for the limiting value. Wind load charts contained herein are based upon nominal wind load utilized in allowable stress design. A conversion from Load Resistance Factor Design (LRFD) is provided. To convert ultimate wind loads to nominal loads, multiply ultimate wind loads by a factor of 0.6 per ASCE/SEI 7. A 4/3 increase in allowable stress has not been used to develop these curves. For special situations not covered by these curves, contact your Kawneer representative for additional information.

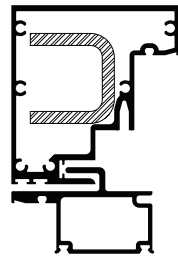
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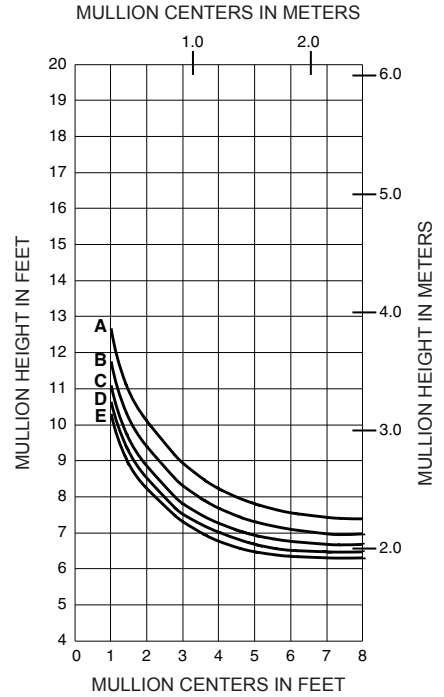
	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	80 PSF (3830)	133 PSF (6380)
B =	100 PSF (4790)	167 PSF (7980)
C =	120 PSF (5750)	200 PSF (9580)
D =	135 PSF (6460)	225 PSF (10770)
E =	150 PSF (7180)	250 PSF (11970)



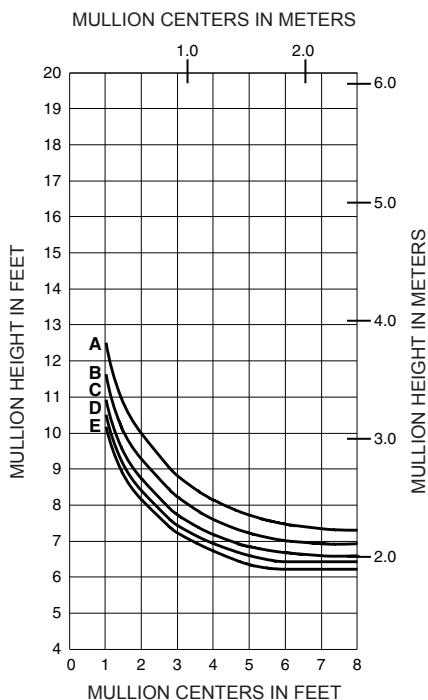
**WITHOUT HORIZONTALS**



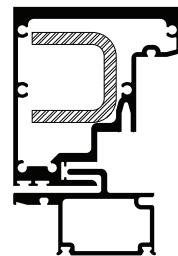
**594010 STANDARD INTERLOCK MULLION**  
 $I_A = 3.689$   
 $S_A = 1.822$   
**594485 STEEL**  
 $I_S = 0.573$   
 $S_S = 0.611$



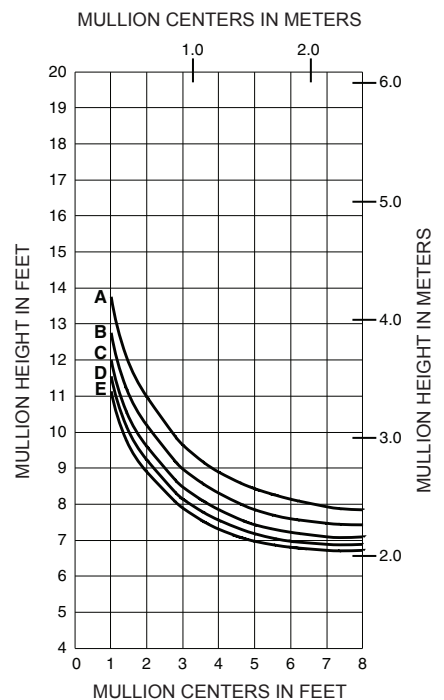
**WITH STEEL REINFORCING WITHOUT HORIZONTALS**



**WITHOUT HORIZONTALS**



**594011 HEAVY WEIGHT INTERLOCK MULLION**  
 $I_A = 5.164$   
 $S_A = 2.375$   
**594485 STEEL**  
 $I_S = 0.573$   
 $S_S = 0.611$

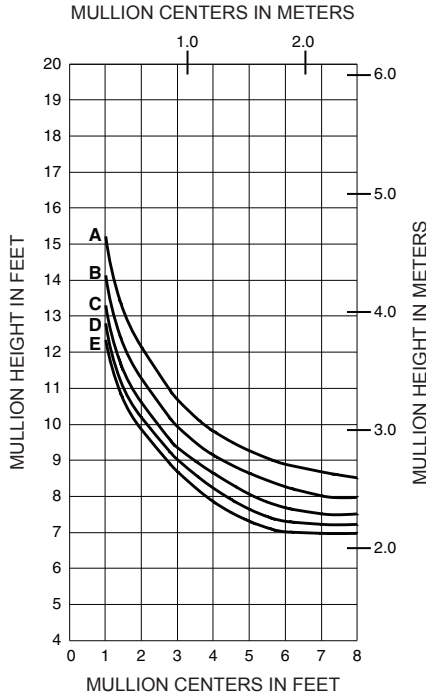


**WITH STEEL REINFORCING WITHOUT HORIZONTALS**

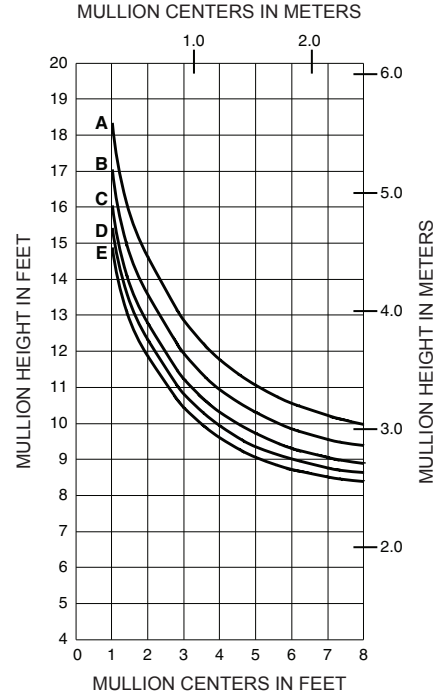
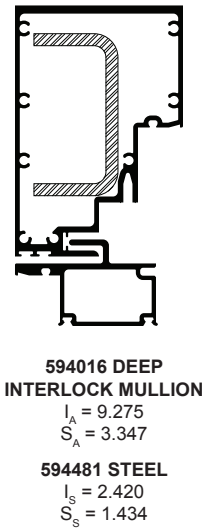
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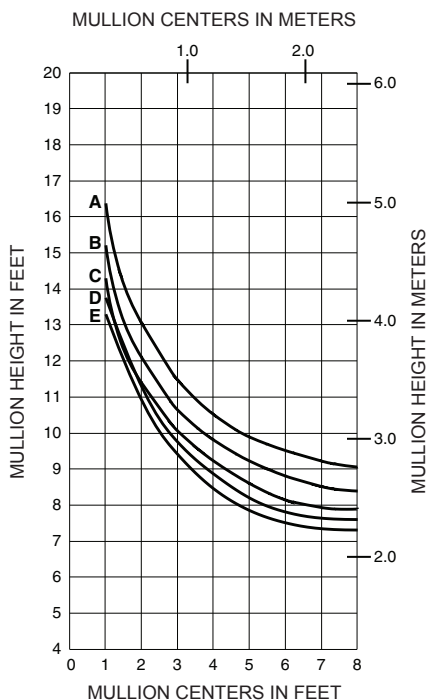
	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	80 PSF (3830)	133 PSF (6380)
B =	100 PSF (4790)	167 PSF (7980)
C =	120 PSF (5750)	200 PSF (9580)
D =	135 PSF (6460)	225 PSF (10770)
E =	150 PSF (7180)	250 PSF (11970)



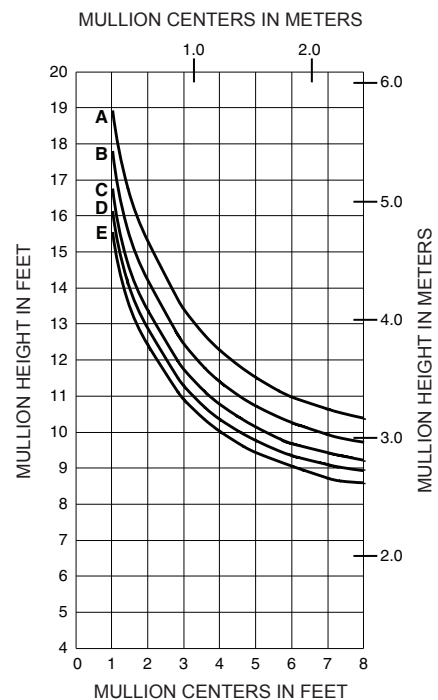
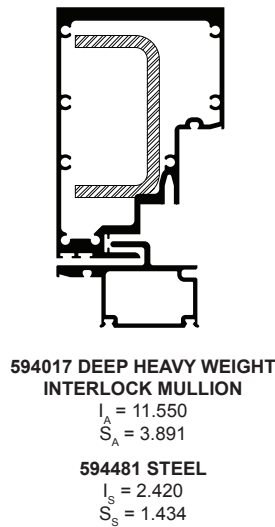
**WITHOUT HORIZONTALS**



**WITH STEEL REINFORCING WITHOUT HORIZONTALS**



**WITHOUT HORIZONTALS**



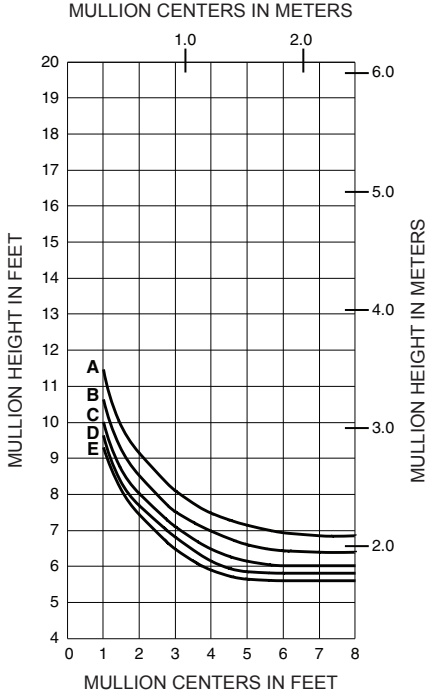
**WITH STEEL REINFORCING WITHOUT HORIZONTALS**

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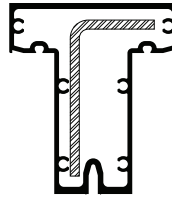
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## WIND LOAD CHARTS

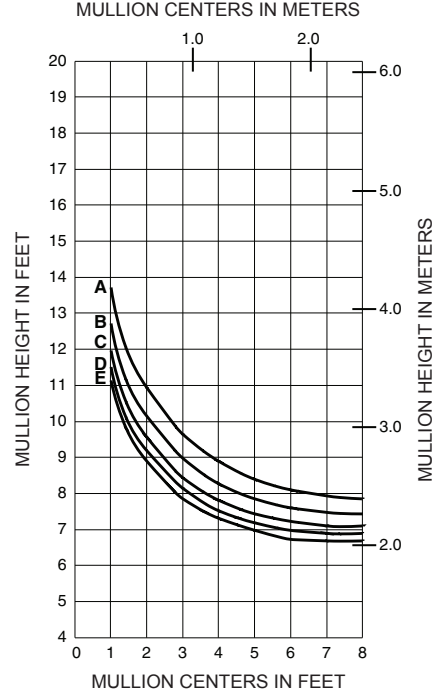
	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	80 PSF (3830)	133 PSF (6380)
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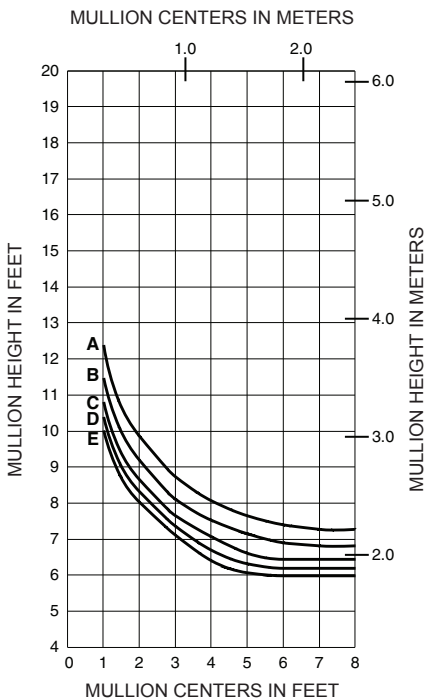
**WITHOUT HORIZONTALS**



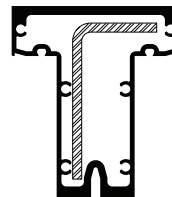
**594012 STANDARD COMMON MULLION**  
 $I_A = 3.945$   
 $S_A = 1.738$   
**594486 STEEL**  
 $I_S = 0.976$   
 $S_S = 0.486$



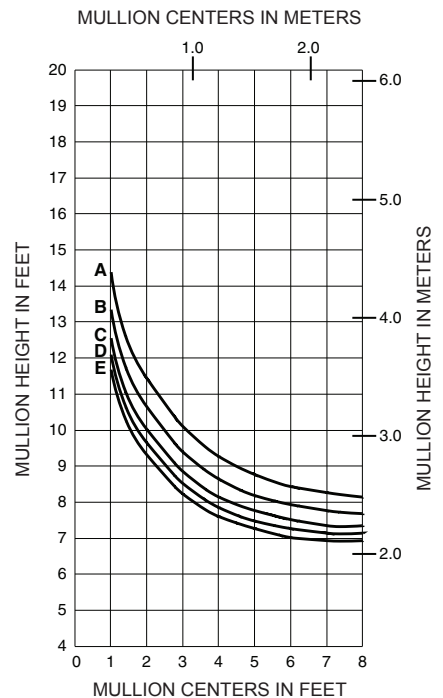
**WITH STEEL REINFORCING WITHOUT HORIZONTALS**



**WITHOUT HORIZONTALS**



**594013 HEAVY WEIGHT COMMON MULLION**  
 $I_A = 4.964$   
 $S_A = 2.105$   
**594486 STEEL**  
 $I_S = 0.976$   
 $S_S = 0.486$

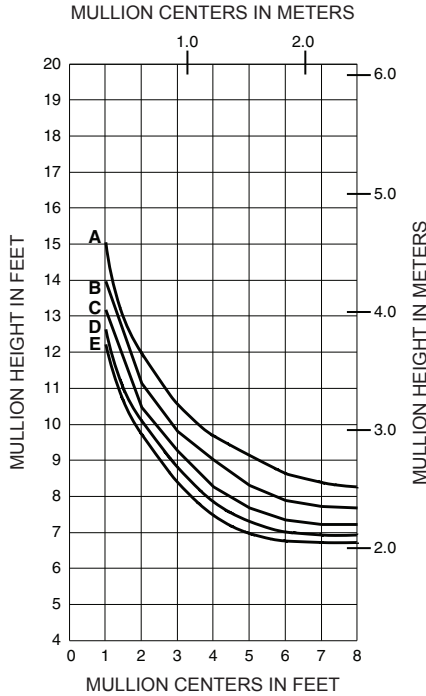


**WITH STEEL REINFORCING WITHOUT HORIZONTALS**

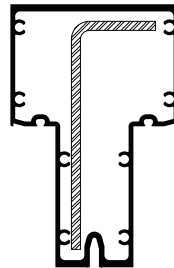
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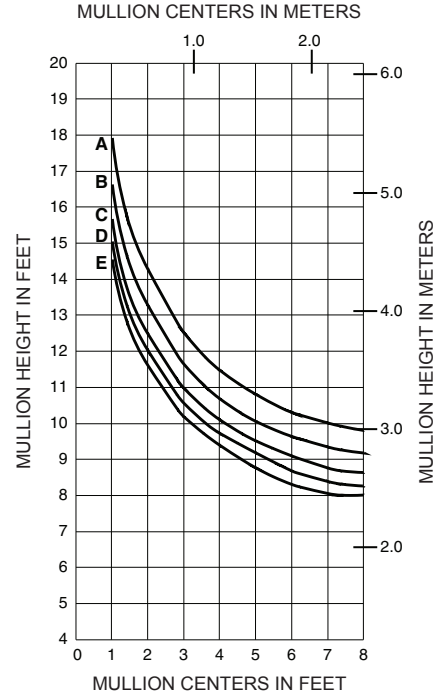
	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	80 PSF (3830)	133 PSF (6380)
B =	100 PSF (4790)	167 PSF (7980)
C =	120 PSF (5750)	200 PSF (9580)
D =	135 PSF (6460)	225 PSF (10770)
E =	150 PSF (7180)	250 PSF (11970)



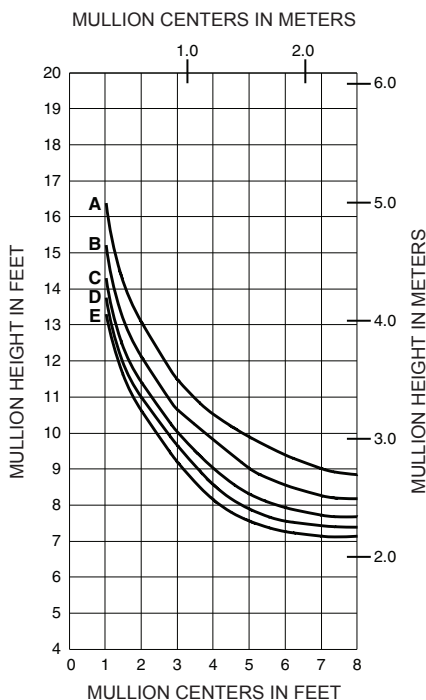
**WITHOUT HORIZONTALS**



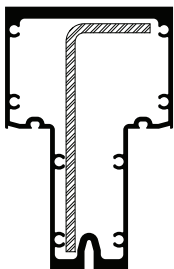
**594018 DEEP COMMON MULLION**  
 $I_A = 8.969$   
 $S_A = 2.997$   
**594482 STEEL**  
 $I_S = 2.138$   
 $S_S = 0.821$



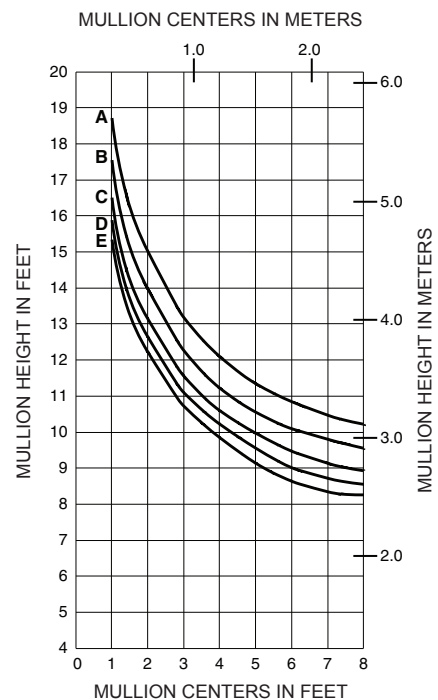
**WITH STEEL REINFORCING WITHOUT HORIZONTALS**



**WITHOUT HORIZONTALS**



**594019 DEEP HEAVY WEIGHT COMMON MULLION**  
 $I_A = 11.537$   
 $S_A = 3.625$   
**594482 STEEL**  
 $I_S = 2.138$   
 $S_S = 0.821$

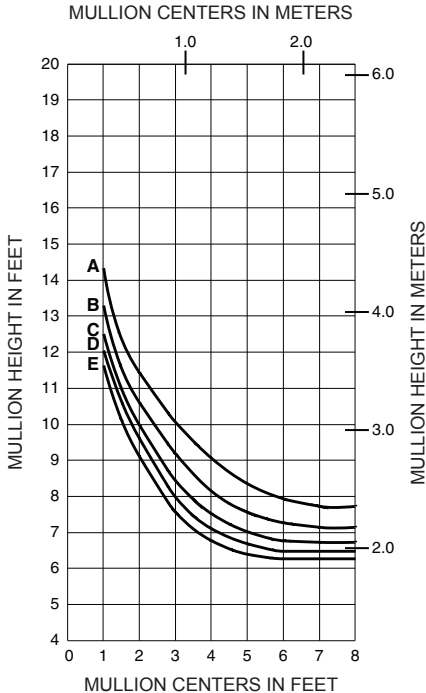


**WITH STEEL REINFORCING WITHOUT HORIZONTALS**

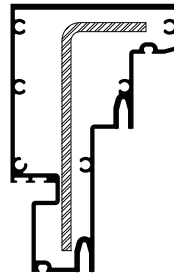
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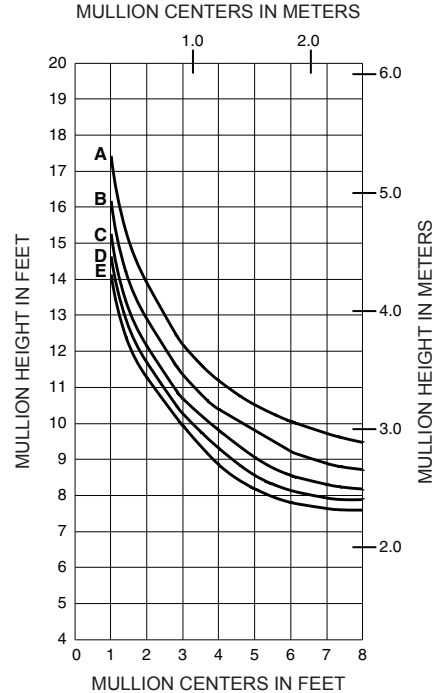
	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	80 PSF (3830)	133 PSF (6380)
B =	100 PSF (4790)	167 PSF (7980)
C =	120 PSF (5750)	200 PSF (9580)
D =	135 PSF (6460)	225 PSF (10770)
E =	150 PSF (7180)	250 PSF (11970)



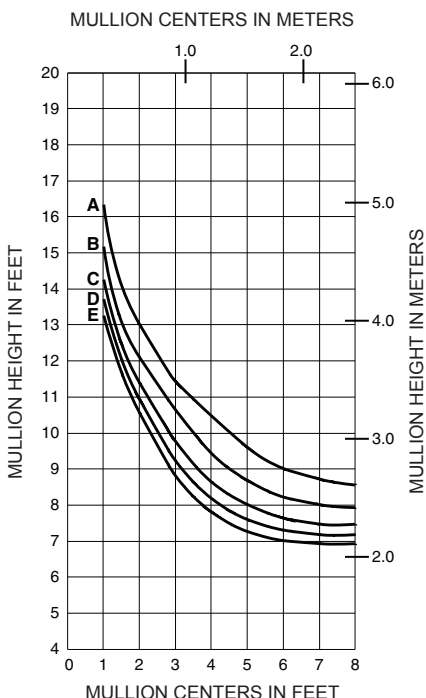
**WITHOUT HORIZONTALS**



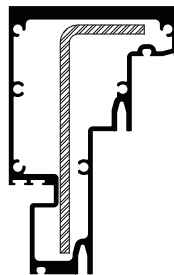
**594014 STANDARD LOCK MULLION**  
 $I_A = 7.743$   
 $S_A = 2.422$   
**594482 STEEL**  
 $I_S = 2.138$   
 $S_S = 0.821$



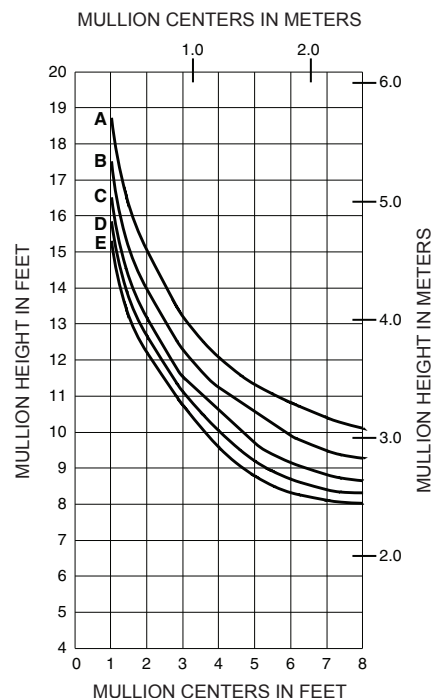
**WITH STEEL REINFORCING WITHOUT HORIZONTALS**



**WITHOUT HORIZONTALS**



**594015 HEAVY WEIGHT LOCK MULLION**  
 $I_A = 11.469$   
 $S_A = 3.310$   
**594482 STEEL**  
 $I_S = 2.138$   
 $S_S = 0.821$



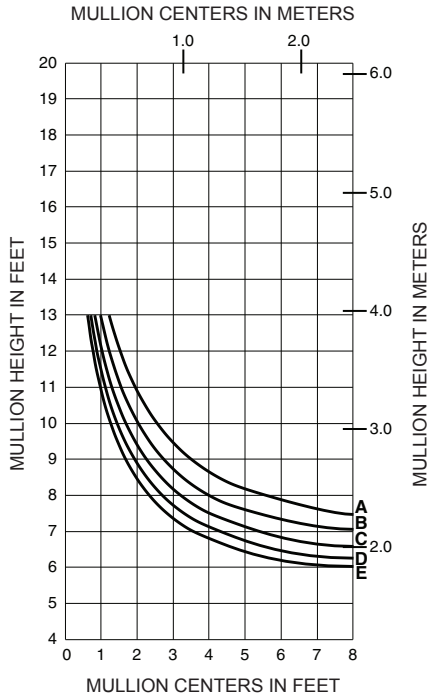
**WITH STEEL REINFORCING WITHOUT HORIZONTALS**

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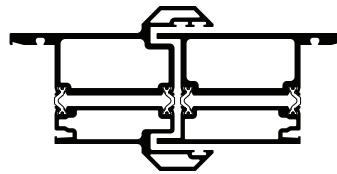
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	Allowable Stress Design Load	LRFD Ultimate Design Load
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C =	120 PSF (5750)	200 PSF (9580)
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E =	150 PSF (7180)	250 PSF (11970)

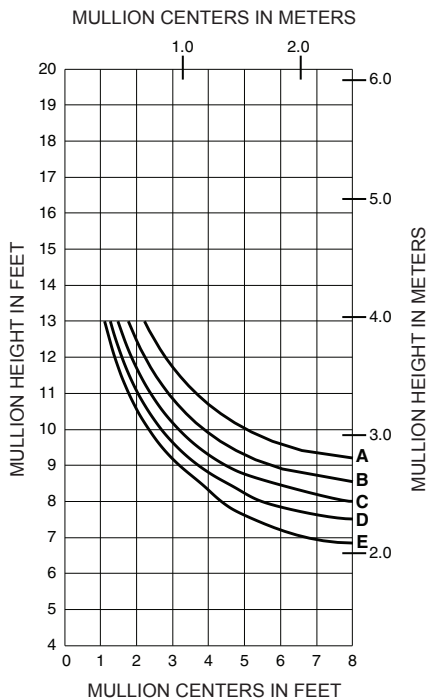


**WITHOUT HORIZONTALS**

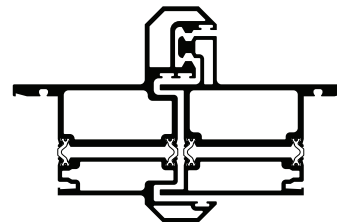


**594128/594129 LIGHT WEIGHT MEETING STILES**

NOTE:  
WIND LOAD CHARTS ARE BASED ON COMPOSITE PROPERTIES WHICH ARE CALCULATED IN ACCORDANCE WITH AAMA TIR-8 AND AAMA 505



**WITHOUT HORIZONTALS**



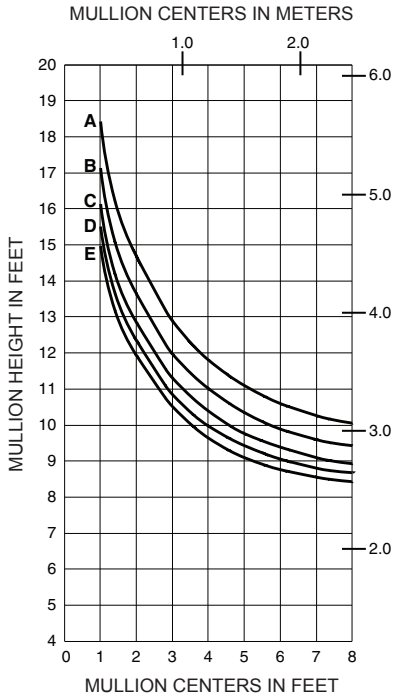
**594124/594125 MID WEIGHT MEETING STILES**

NOTE:  
WIND LOAD CHARTS ARE BASED ON COMPOSITE PROPERTIES WHICH ARE CALCULATED IN ACCORDANCE WITH AAMA TIR-8 AND AAMA 505

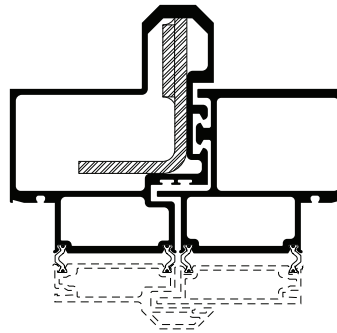
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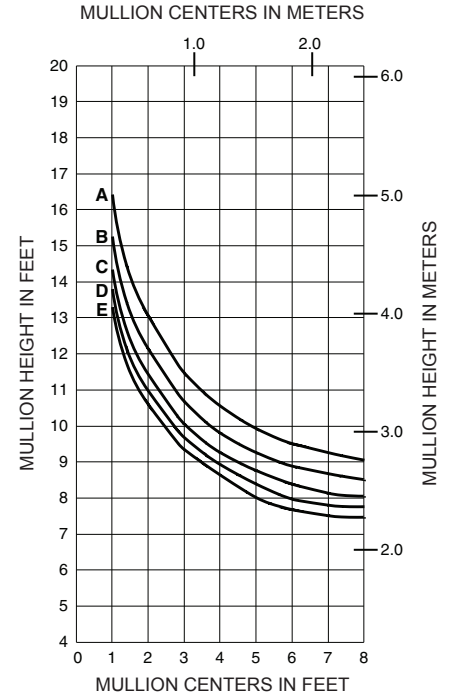
	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	80 PSF (3830)	133 PSF (6380)
B =	100 PSF (4790)	167 PSF (7980)
C =	120 PSF (5750)	200 PSF (9580)
D =	135 PSF (6460)	225 PSF (10770)
E =	150 PSF (7180)	250 PSF (11970)



**WITH STEEL REINFORCING  
WITHOUT HORIZONTALS**



**594126/594127 DEEP HEAVY WEIGHT  
MEETING STILES**  
 $I_A = 11.626$   
 $S_A = 4.169$   
**STEEL REINFORCING**  
 $I_S = 1.707$   
 $S_S = 0.939$

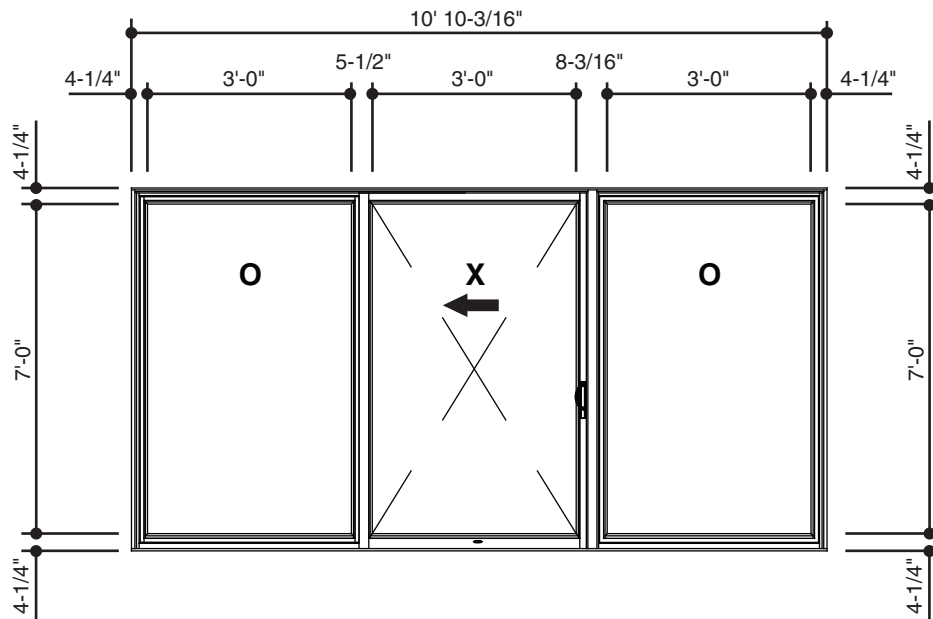


**WITH STEEL REINFORCING  
WITH HORIZONTALS**

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**Project Specific U-Factor  
Example Calculation**  
(Based on OXO Sliding Door Unit)



### Vision Area

Example Glass U-Factor	= 0.42 Btu/(ft <sup>2</sup> ·h·°F)
Total Daylight (Vision) Area	= 3(3' x 7') = 63 ft <sup>2</sup>
Projected Total Area	= 7.71' x 10.85' = 83.65 ft <sup>2</sup>
Percent of Vision Glass	= (Total Daylight Area ÷ Projected Total Area)100 = (63 ÷ 83.65)100 = 75%

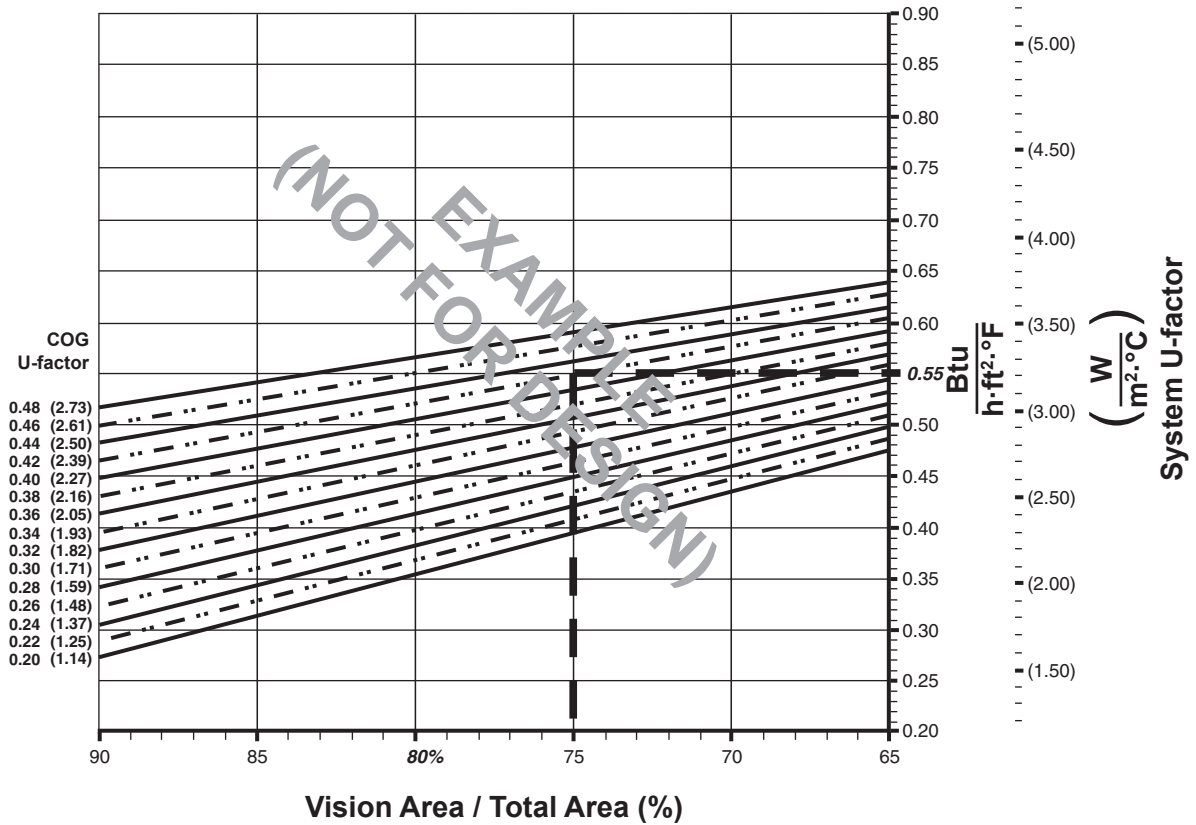
Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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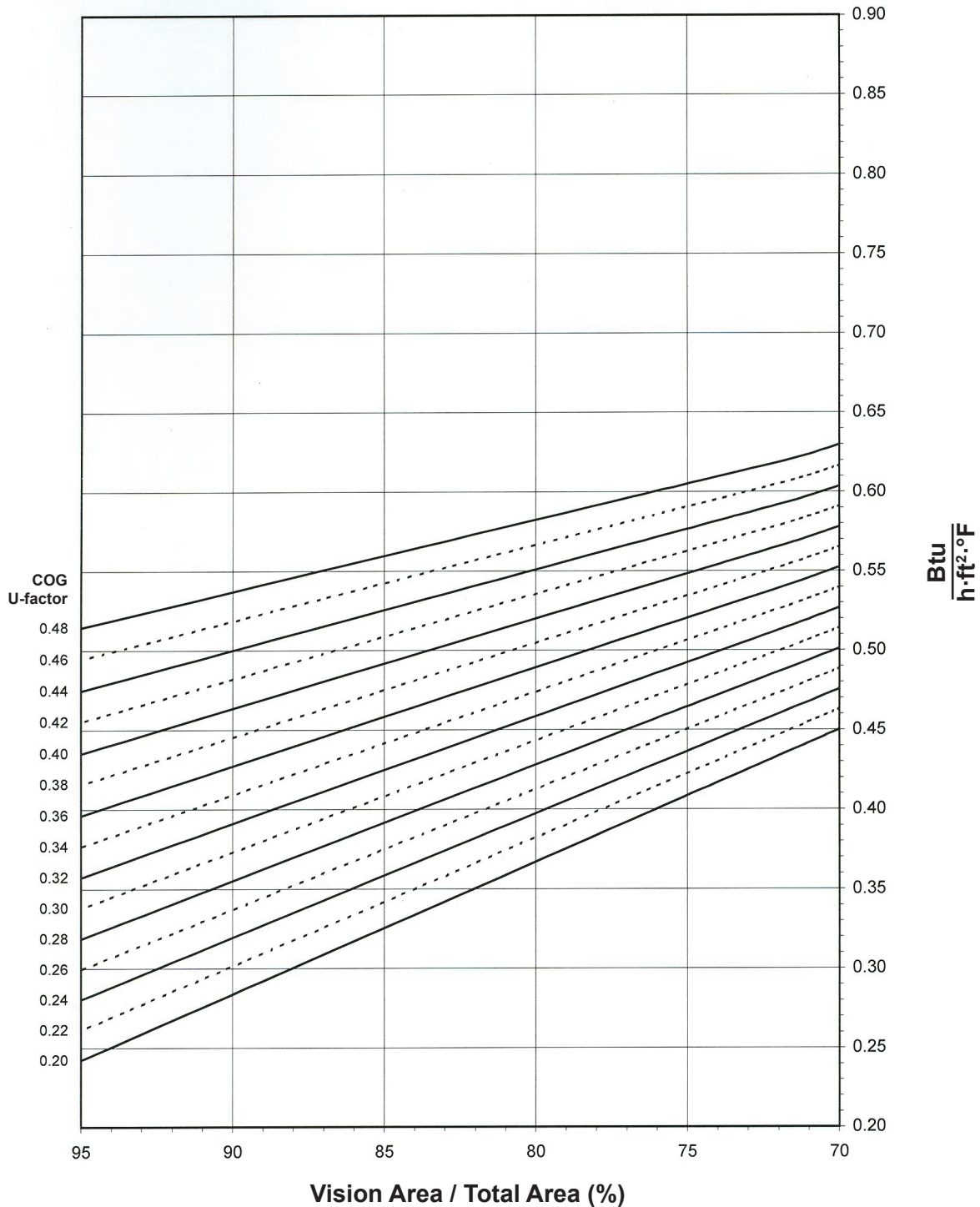
**System U-Factor vs Percent of Vision Area**



**Based on a OXO Unit of 75% vision glass and center of glass U-Factor of 0.42, system U-Factor is equal to 0.55 Btu/(h·ft²·°F)**

OX UNIT "SUB SASH"

System U-Factor vs Percent of Vision Area



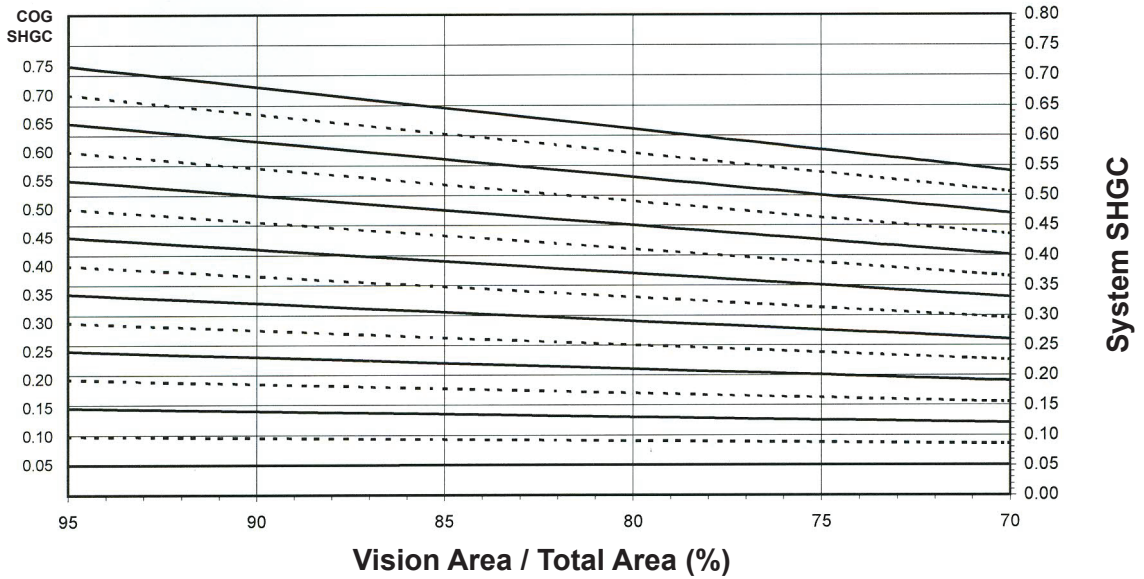
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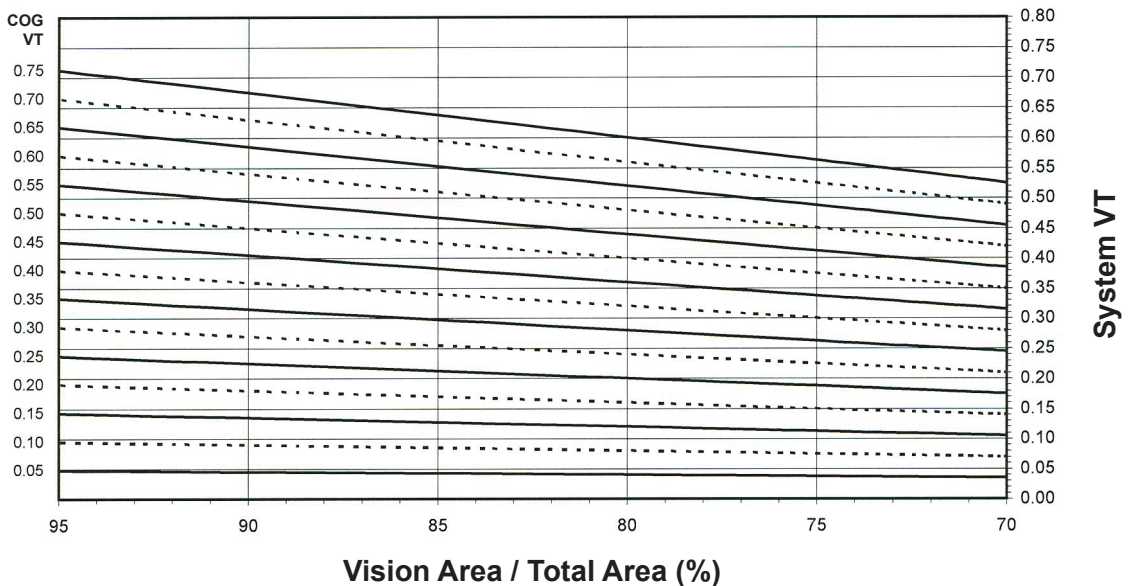
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OX UNIT "SUB SASH"

System Solar Heat Gain Coefficient (SHGC) vs Percent of Vision Area



System Visible Transmittance (VT) vs Percent of Vision Area



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Thermal Transmittance <sup>1</sup> (BTU/hr • ft<sup>2</sup> • °F)

Glass U-Factor <sup>3</sup>	Overall U-Factor <sup>4</sup>
0.48	0.62
0.46	0.61
0.44	0.59
0.42	0.58
0.40	0.57
0.38	0.55
0.36	0.54
0.34	0.53
0.32	0.51
0.30	0.50
0.28	0.49
0.26	0.47
0.24	0.46
0.22	0.45
0.20	0.43

## OX UNIT "SUB SASH"

**NOTE:** For glass values that are not listed, linear interpolation is permitted.

1. U-Factors are determined in accordance with NFRC 100.
2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values and are obtained from your glass supplier.
4. Overall U-Factor, SHGC, and VT Matricies are based on the standard NFRC specimen size of 2000mm wide by 2000mm high (78-3/4" by 78-3/4").

SHGC Matrix <sup>2</sup>

Glass SHGC <sup>3</sup>	Overall SHGC <sup>4</sup>
0.75	0.55
0.70	0.52
0.65	0.48
0.60	0.45
0.55	0.41
0.50	0.37
0.45	0.34
0.40	0.30
0.35	0.27
0.30	0.23
0.25	0.19
0.20	0.16
0.15	0.12
0.10	0.09
0.05	0.05

Visible Transmittance <sup>2</sup>

Glass VT <sup>3</sup>	Overall VT <sup>4</sup>
0.75	0.54
0.70	0.50
0.65	0.47
0.60	0.43
0.55	0.40
0.50	0.36
0.45	0.32
0.40	0.29
0.35	0.25
0.30	0.22
0.25	0.18
0.20	0.14
0.15	0.11
0.10	0.07
0.05	0.04

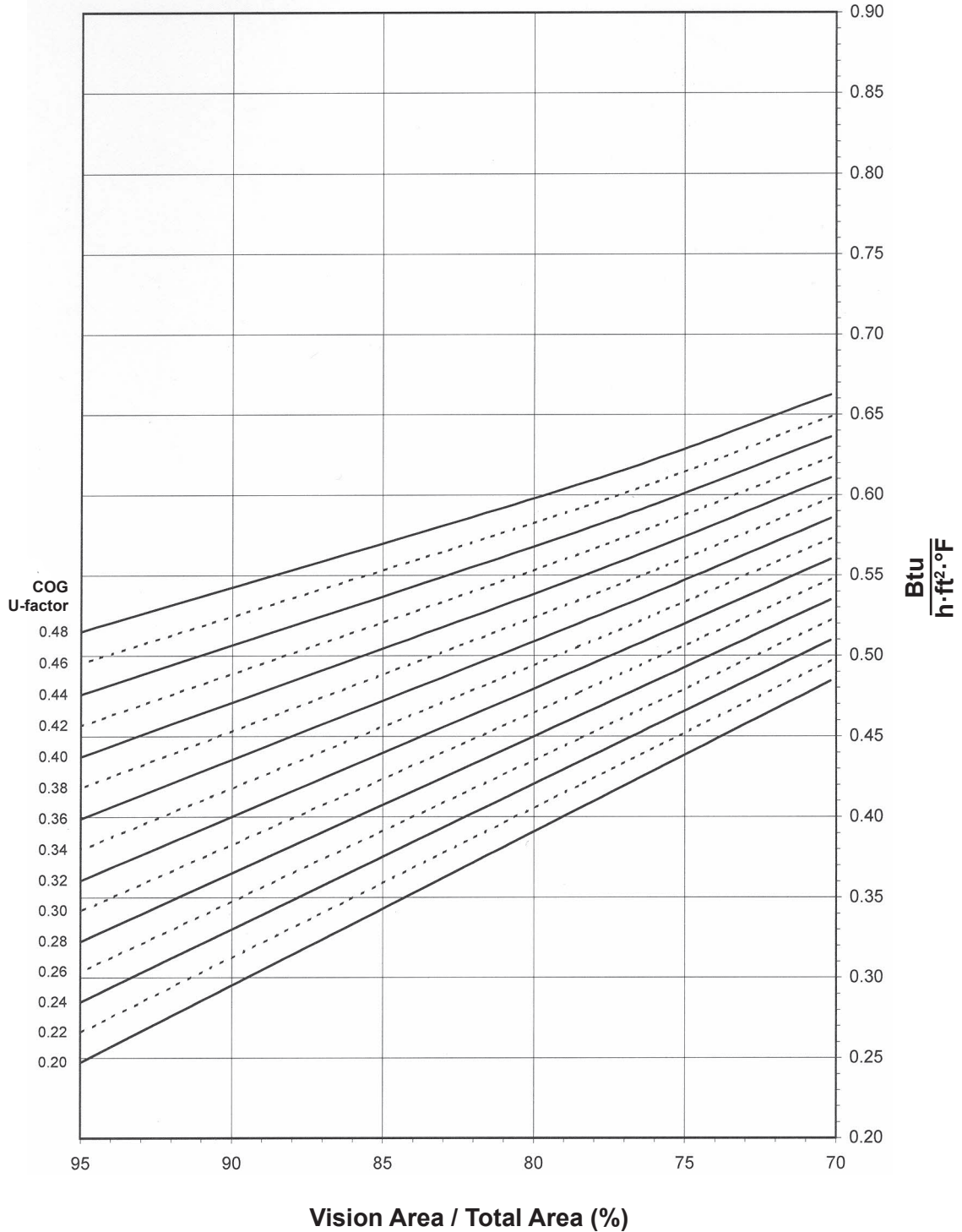
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OX UNIT "FIELD GLAZED"

System U-Factor vs Percent of Vision Area



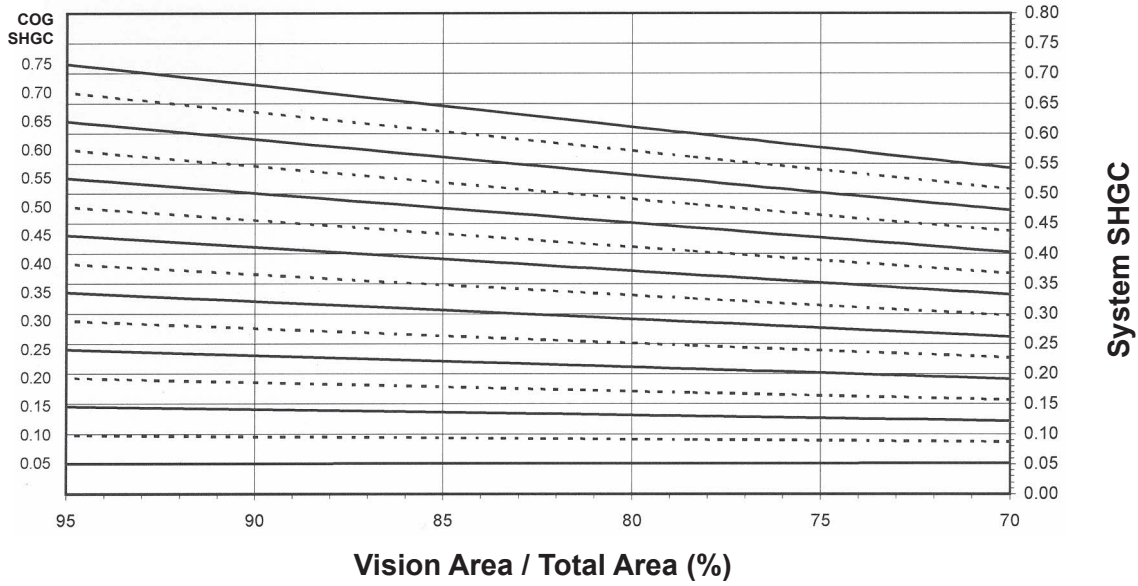
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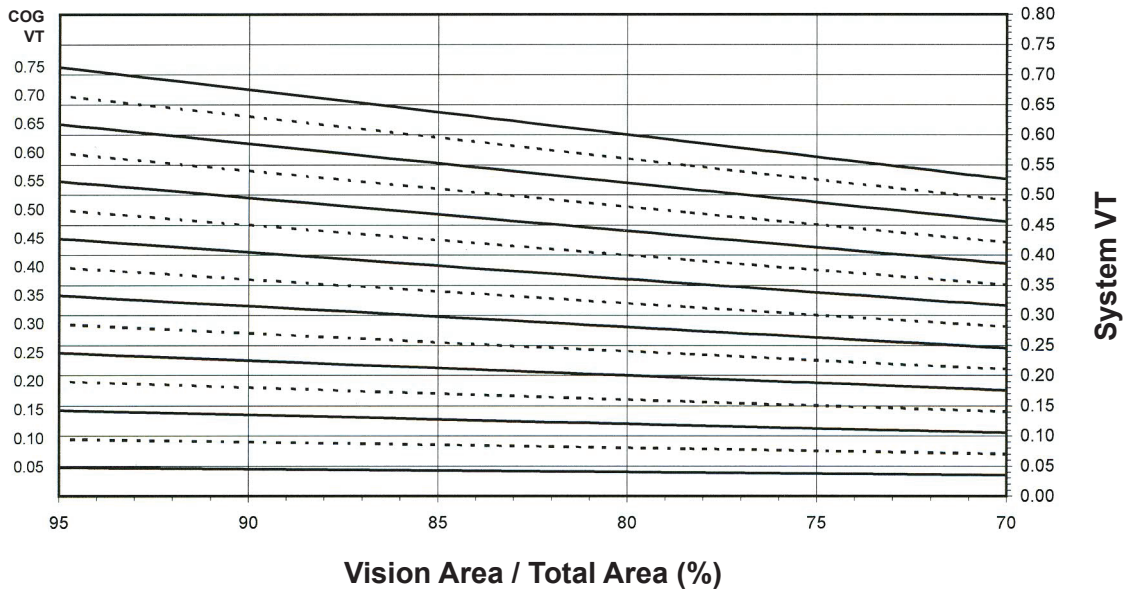
OX UNIT "FIELD GLAZED"

System Solar Heat Gain Coefficient (SHGC) vs Percent of Vision Area



System SHGC

System Visible Transmittance (VT) vs Percent of Vision Area



System VT

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**Thermal Transmittance <sup>1</sup> (BTU/hr • ft<sup>2</sup> • °F)**

Glass U-Factor <sup>3</sup>	Overall U-Factor <sup>4</sup>
0.48	0.61
0.46	0.59
0.44	0.58
0.42	0.56
0.40	0.55
0.38	0.53
0.36	0.52
0.34	0.51
0.32	0.49
0.30	0.48
0.28	0.46
0.26	0.45
0.24	0.43
0.22	0.42
0.20	0.40

**OX UNIT "FIELD GLAZED"**

**NOTE:** For glass values that are not listed, linear interpolation is permitted.

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0.75	0.60
0.70	0.56
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0.50	0.40
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0.40	0.33
0.35	0.29
0.30	0.25
0.25	0.21
0.20	0.17
0.15	0.13
0.10	0.09
0.05	0.05

**Visible Transmittance <sup>2</sup>**


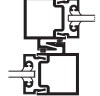

Glass VT <sup>3</sup>	Overall VT <sup>4</sup>
0.75	0.59
0.70	0.55
0.65	0.51
0.60	0.47
0.55	0.43
0.50	0.39
0.45	0.35
0.40	0.31
0.35	0.27
0.30	0.24
0.25	0.20
0.20	0.16
0.15	0.12
0.10	0.08
0.05	0.04

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Product	1010 Sliding Mall Front	1010C Sliding Mall Front	1040 Sliding Mall Front	
Catalog Section	Sliding Doors	Sliding Doors	Sliding Doors	
Typical Detail				
Sightline	1", 1-3/4", 3-7/16", 5-1/8"	1-3/4", 2-5/16", 2-15/16"	2-1/8", 4"	
Depth	Varies by # of panels	Varies by # of panels	1-3/4"	
Applications	Interior	Interior	Interior or Exterior	
Infill Options	Up to 1"	3/16" & 1/4"	1/4" & 1"	
Cross Rails/Muntins	Yes	Yes	Yes	
Product Description	The 1010 sliding mall front is a floor supported, multi-track (surface or recessed), sliding door offering parallel in-line stacking. The 1010 sliding mall front is intended to be used primarily as an interior unit. It may be used as an exterior unit when optimum weathering performance is not required.	The 1010C sliding mall front is a floor supported, multi-track (surface or recessed), sliding door offering parallel in-line stacking. The 1010C sliding mall front is intended to be used primarily as an interior unit. It may be used as an exterior unit when optimum weathering performance is not required. It accepts a swinging entrance door within the sliding panels.	The 1040 sliding mall front is a floor supported, single track (surface or recessed), sliding door offering three separate stacking options (Parallel staggered, parallel even and 90° stacking). The 1040 sliding mall front is intended to be used primarily as an interior unit. It may be used as an exterior unit when optimum weathering performance is not required.	
Testing for Protective Glazing	—	—	—	
Performance Class/Rating	—	—	—	
Performance Test Standards	—	—	—	

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## **Features**

- 1600 SS is an outside glazed captured or SSG curtain wall system
- 1600 SS has 2-1/2" (63.5) sight lines
- Standard 6" (152.4) or 7-1/2" (190.5) depth systems
- Infill options up to 1-1/8" (28.6)
- A pre-glazed option, 1600 SS (Preglazed), is also available
- Perimeter seal can be installed at the pressure plate or mullion shoulder
- 1600 SS can be supplied fabricated and KD or in stock lengths
- Interlocking mullion design eliminates need for anti-buckling clips
- Concealed fastener joinery creates smooth, monolithic appearance
- EPDM gaskets and thermal break
- Screw spline joinery method allows shop assembly of ladder sections, reducing field labor
- Corners available with shear block fabrication method
- Offers integrated entrance framing systems
- Silicone compatible glazing materials for long-lasting seals
- Two color option
- Permanodic™ anodized finishes in seven choices
- Painted finishes in standard and custom choices

## **Optional Features**

- Captured system thermal separator can be pre-installed into pressure plate
- Captured and SSG systems integrate with concealed GLASSvent™ for curtain wall
- Captured system Integrates with standard Kawneer windows
- Deep and bullnose covers available
- Integrates with Versoleil™ Sunshade Outrigger System and Horizontal or Vertical Single Blade System
- Profit\$Maker™ plus die sets available

## **Product Applications**

- Ideal for low to mid-rise applications where high performance is desired
- Most of the product assembly can be done in the shop rather than the field.  
This allows for better quality control and reduces expensive field labor.

For specific product applications,  
Consult your Kawneer representative.

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**Architects** - Most extrusion and window types illustrated in this catalog are standard products for Kawneer. These concepts have been expanded and modified to afford you design freedom. Some miscellaneous details are non-standard and are intended to demonstrate how the system can be modified to expand design flexibility. Please contact your Kawneer representative for further assistance.

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LAWS AND BUILDING AND SAFETY CODES GOVERNING THE DESIGN AND USE OF GLAZED ENTRANCE, WINDOW, AND CURTAIN WALL PRODUCTS VARY WIDELY. KAWNEER DOES NOT CONTROL THE SELECTION OF PRODUCT CONFIGURATIONS, OPERATING HARDWARE, OR GLAZING MATERIALS, AND ASSUMES NO RESPONSIBILITY THEREFOR.

Metric (SI) conversion figures are included throughout these details for reference. Numbers in parentheses ( ) are millimeters unless otherwise noted.

The following metric (SI ) units are found in these details:

- m – meter
- cm – centimeter
- mm – millimeter
- s – second
- Pa – pascal
- MPa – megapascal

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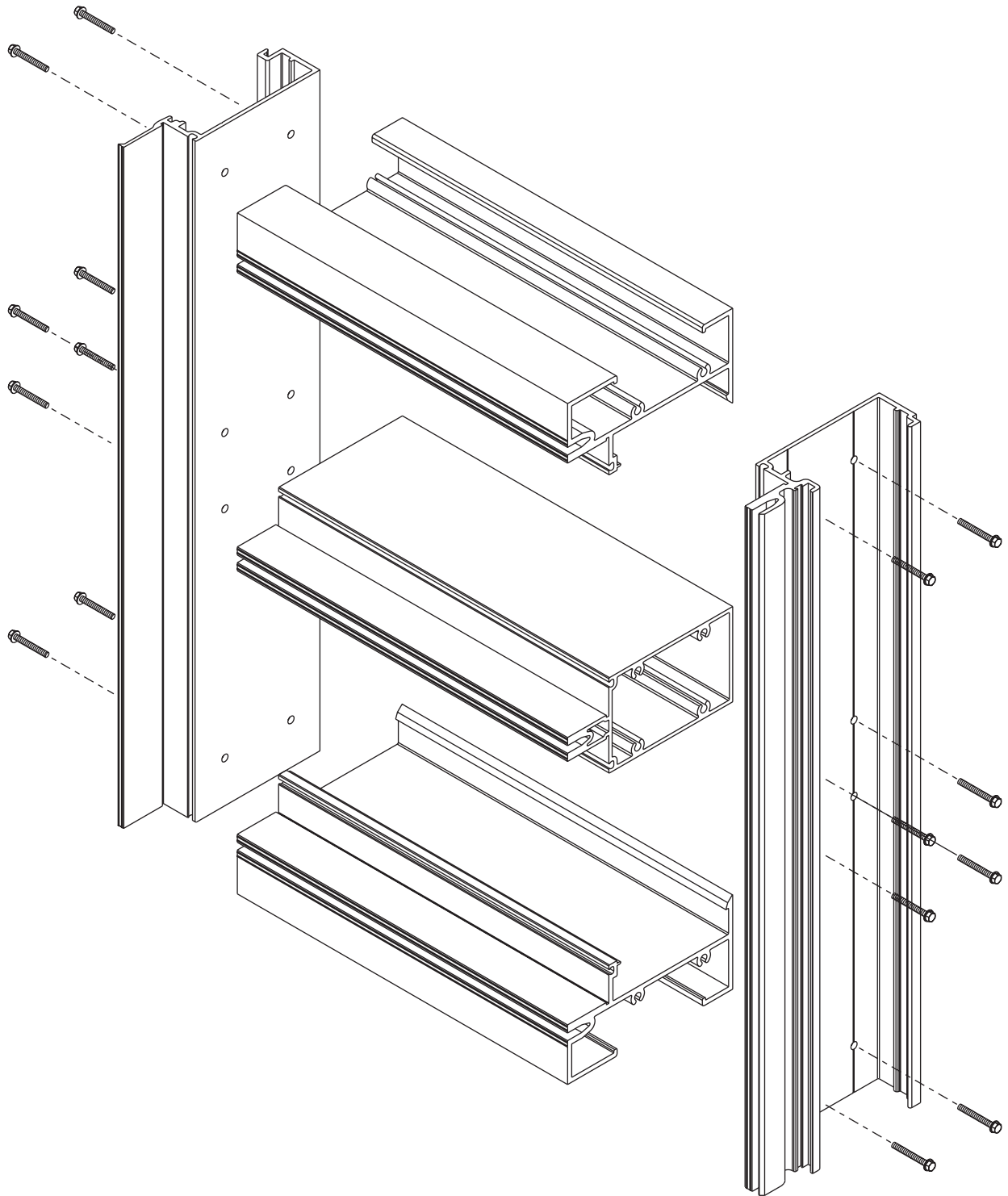
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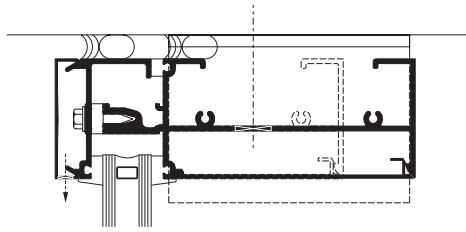
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SCALE 3" = 1'-0"

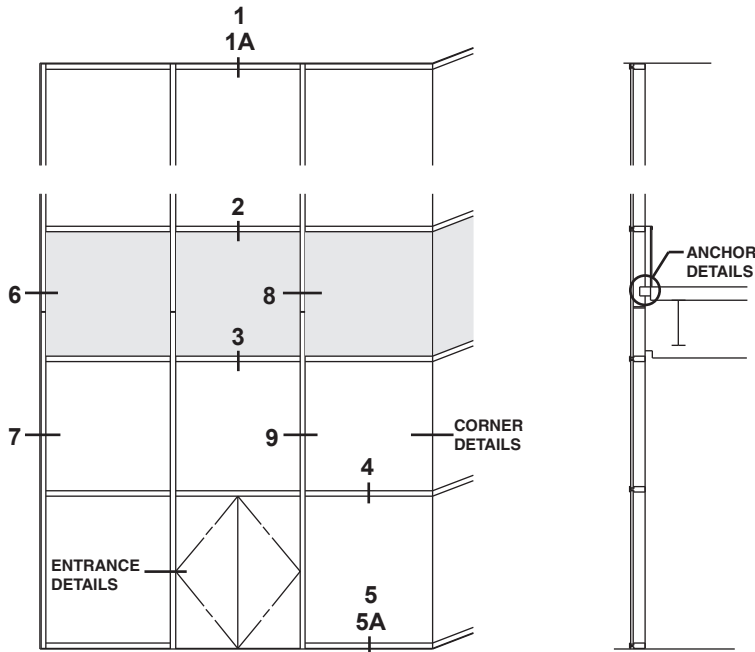
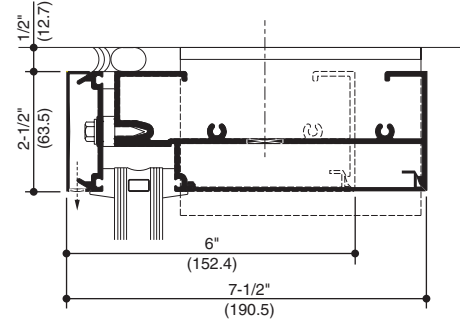
PERIMETER PRESSURE PLATE

1A HEAD



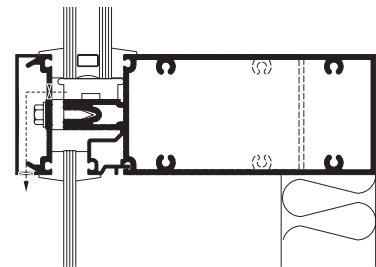
PERIMETER MULLION

1 HEAD

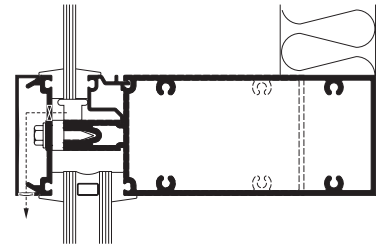


CAPTURED MULLION ELEVATION  
ELEVATION IS NUMBER KEYED TO DETAILS

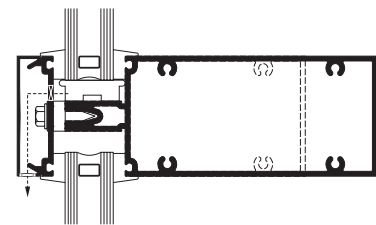
2 HORIZONTAL



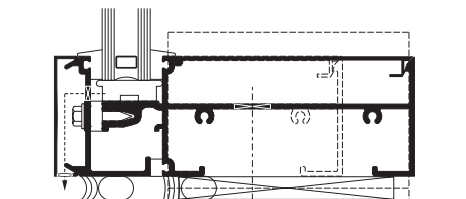
3 HORIZONTAL



4 HORIZONTAL

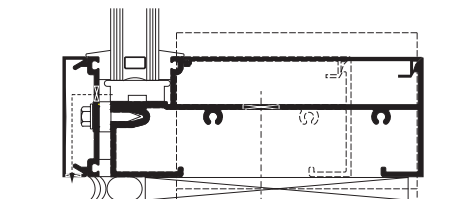


5A SILL



PERIMETER PRESSURE PLATE

5 SILL



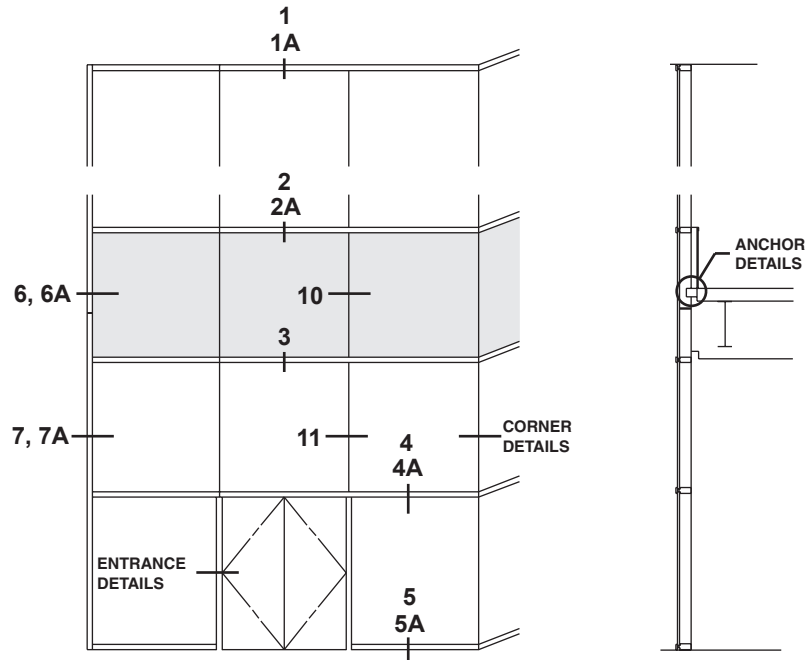
PERIMETER MULLION

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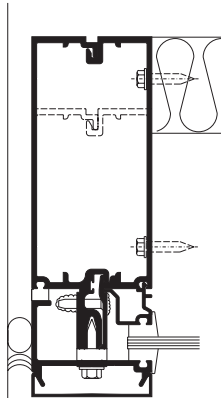
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SCALE 3" = 1'-0"

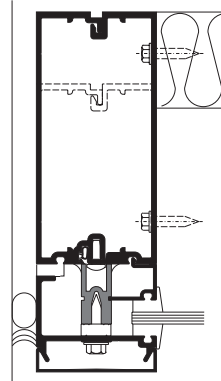


**SSG MULLION ELEVATION**

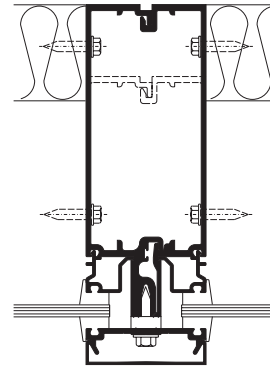
ELEVATION IS NUMBER KEYED TO DETAILS



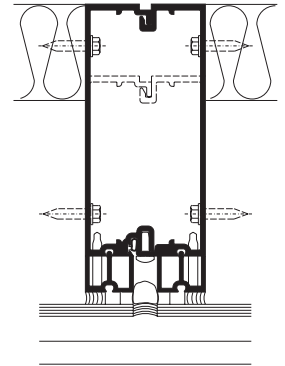
**6**  
**JAMB**  
**(1/4" INFILL)**



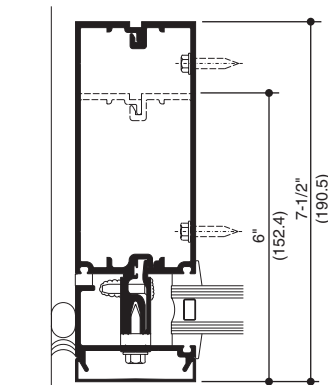
**6A**  
**SSG MULLION**  
**AT JAMB (1/4")**



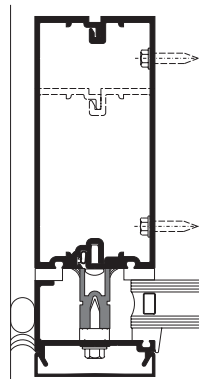
**8**  
**CAPTURED**  
**MULLION (1/4")**



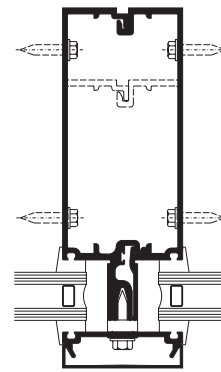
**10**  
**SSG MULLION**  
**(1/4" INFILL)**



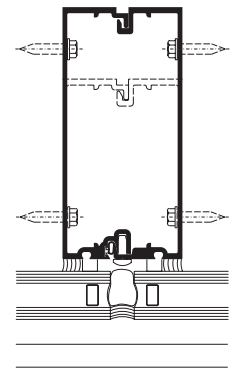
**7**  
**JAMB**  
**(1" INFILL)**



**7A**  
**SSG MULLION**  
**AT JAMB (1")**



**9**  
**CAPTURED**  
**MULLION (1")**



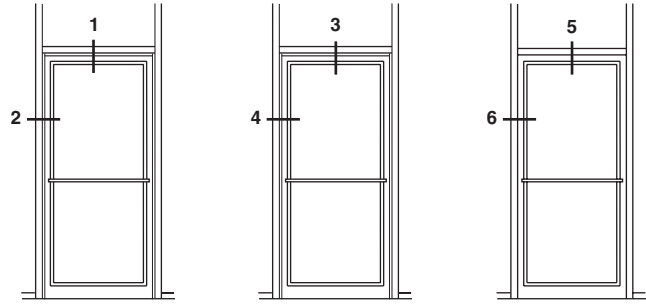
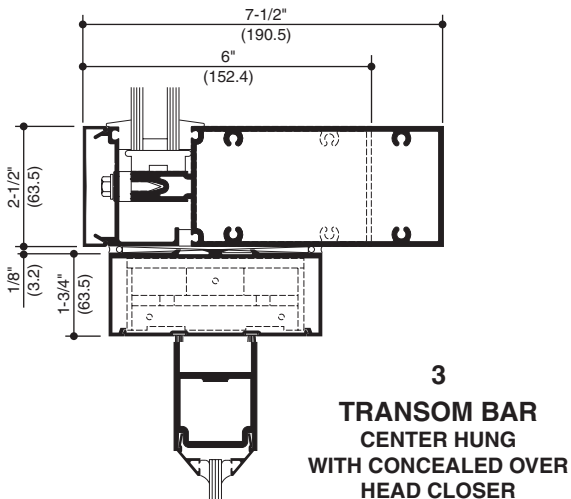
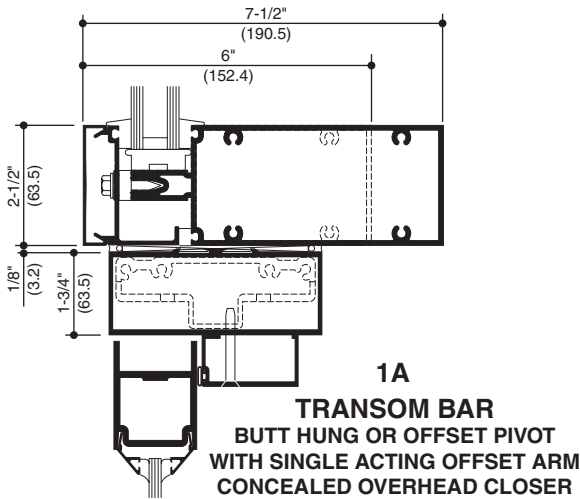
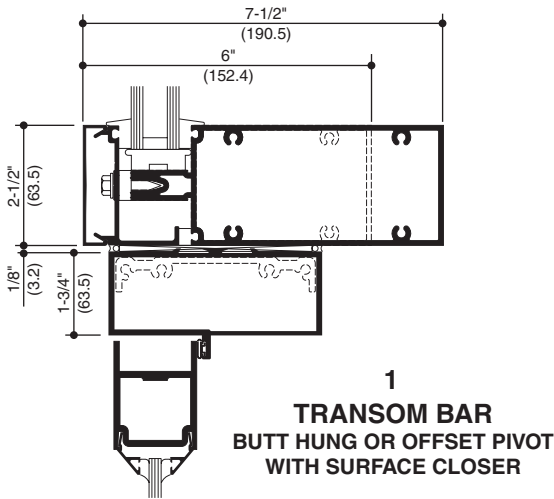
**11**  
**SSG MULLION**  
**(1" INFILL)**

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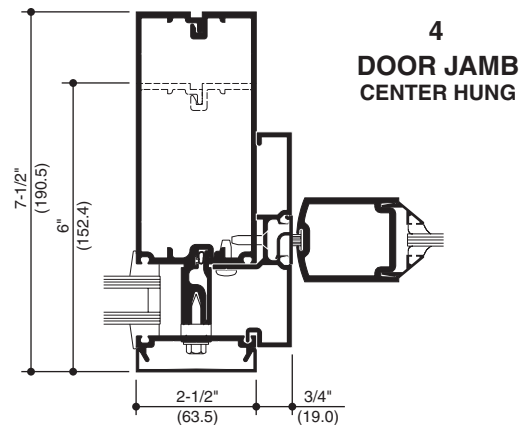
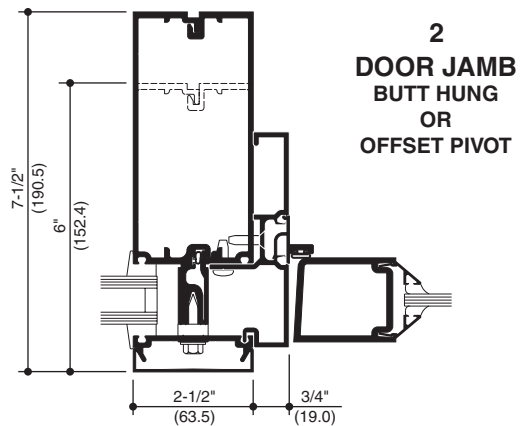


B/H or O/P

C/H

B/H or O/P

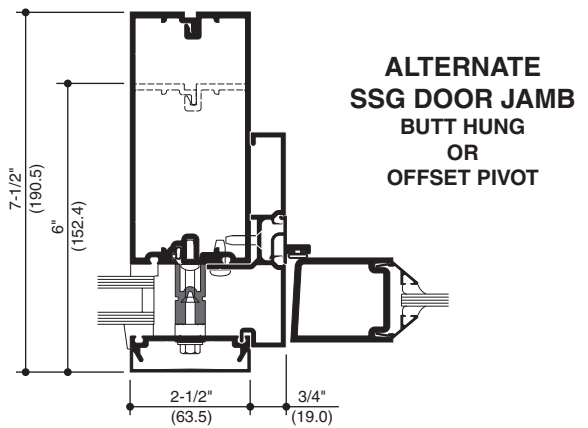
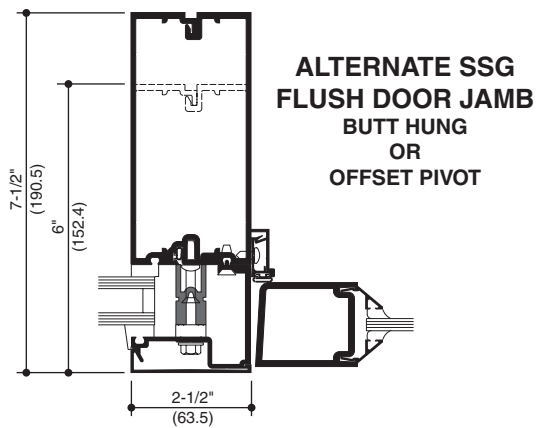
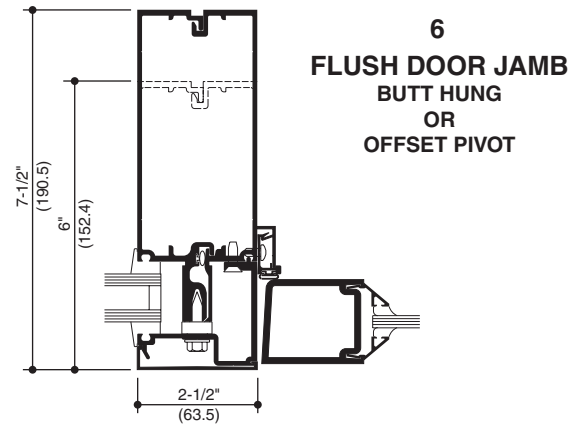
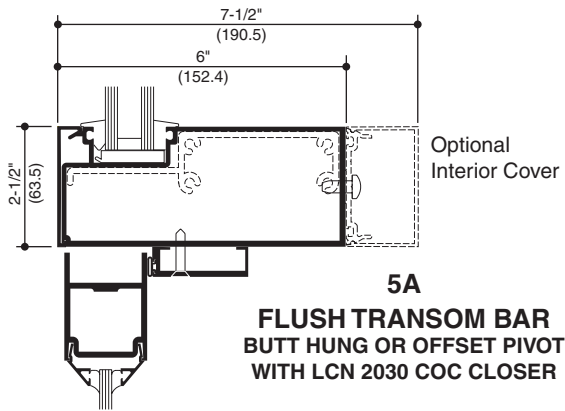
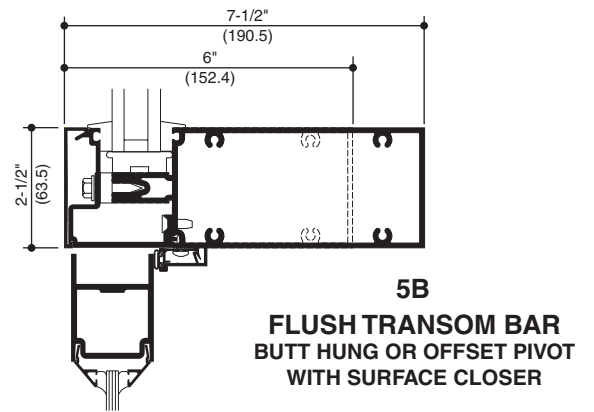
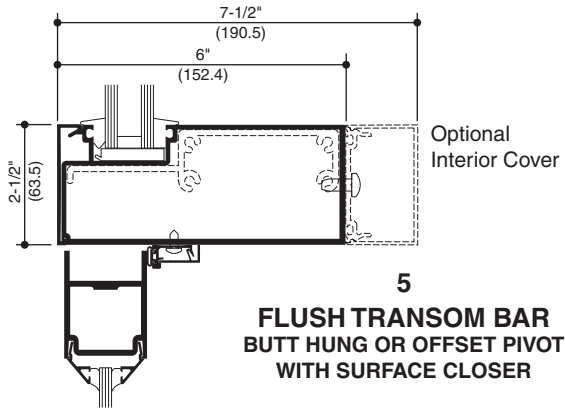
**ENTRANCE ELEVATION**  
 ELEVATION IS NUMBER KEYED TO DETAILS



Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

Kawneer reserves the right to change configuration without prior notice when deemed necessary for product improvement.  
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SCALE 3" = 1'-0"

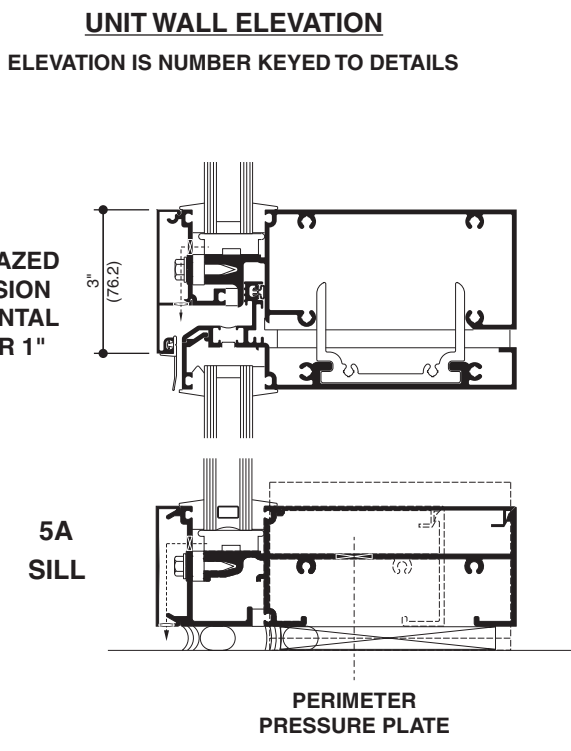
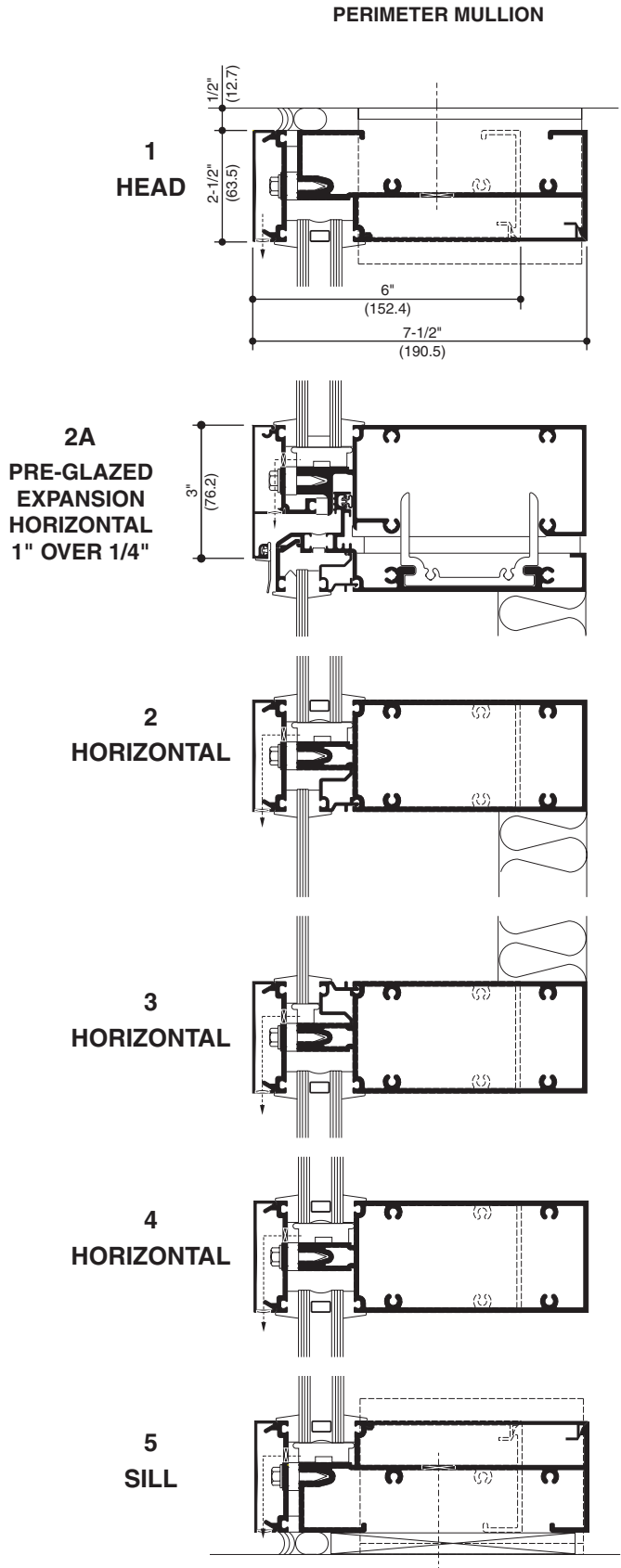
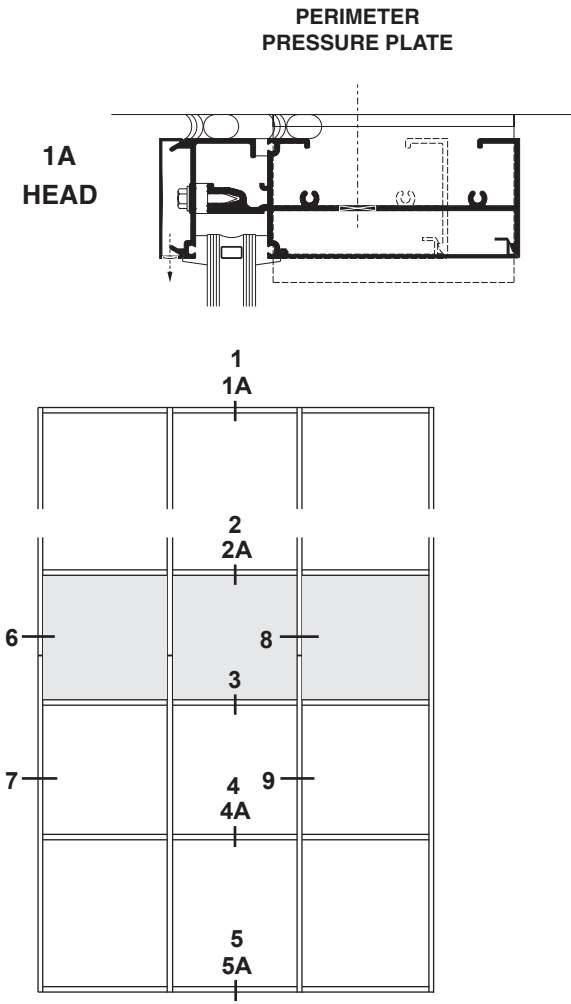


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SCALE 3" = 1'-0"

NOTE: SEE PAGE 7 FOR VERTICAL MULLION DETAILS



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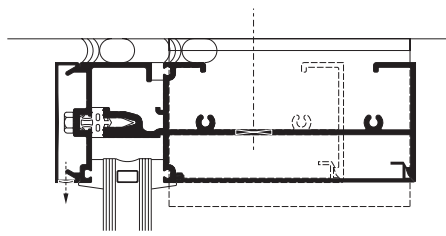
SCALE 3" = 1'-0"

(RTS) - Reversed Thermal Separator

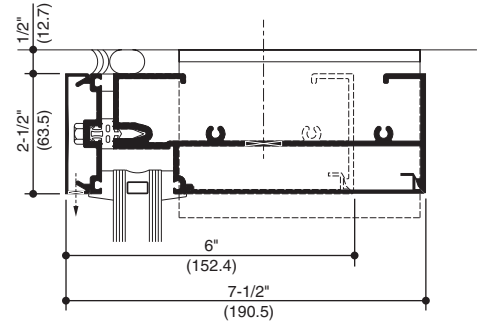
PERIMETER PRESSURE PLATE

PERIMETER MULLION

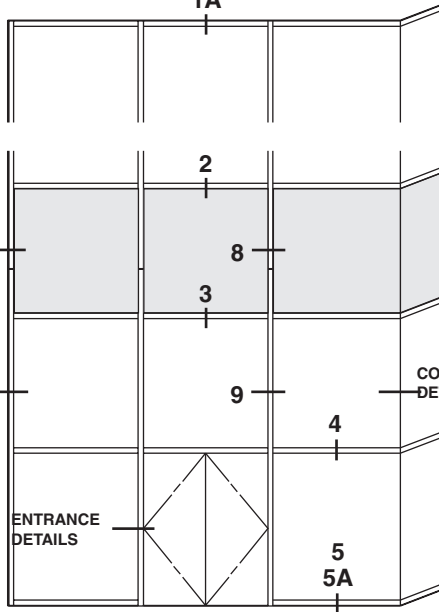
1A HEAD



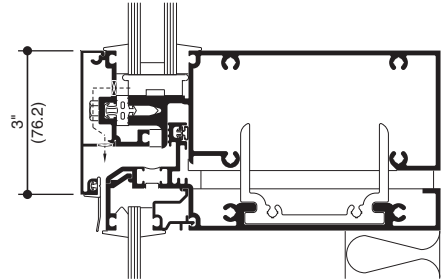
1 HEAD



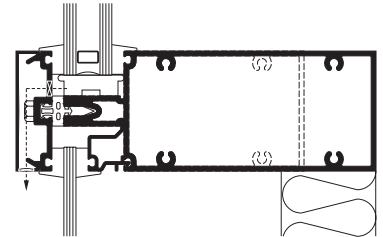
1  
1A



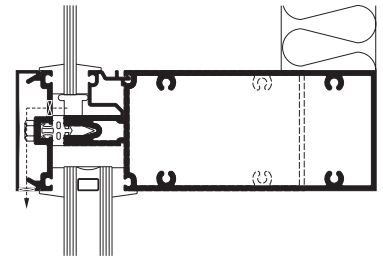
2A  
PRE-GLAZED  
EXPANSION  
HORIZONTAL  
1" OVER 1/4"



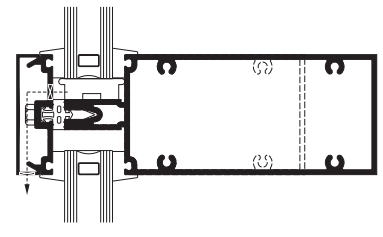
2  
HORIZONTAL



3  
HORIZONTAL

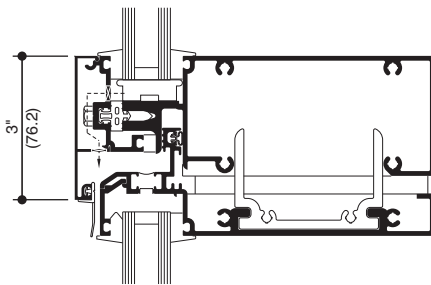


4  
HORIZONTAL

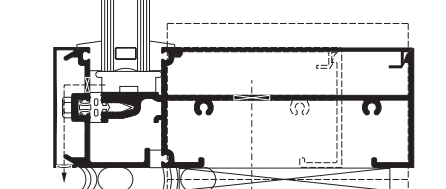


(RTS) CAPTURED MULLION ELEVATION  
ELEVATION IS NUMBER KEYED TO DETAILS

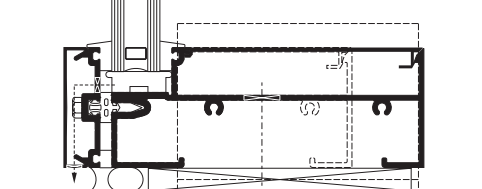
4A  
PRE-GLAZED  
EXPANSION  
HORIZONTAL  
1" OVER 1"



5A  
SILL



5  
SILL



PERIMETER PRESSURE PLATE

PERIMETER MULLION

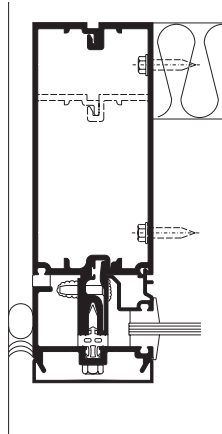
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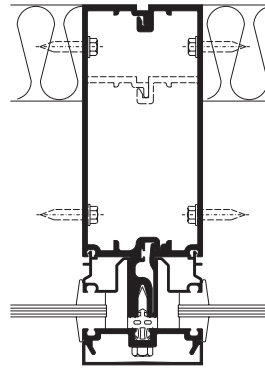
© Kawneer Company, Inc., 2013

SCALE 3" = 1'-0"

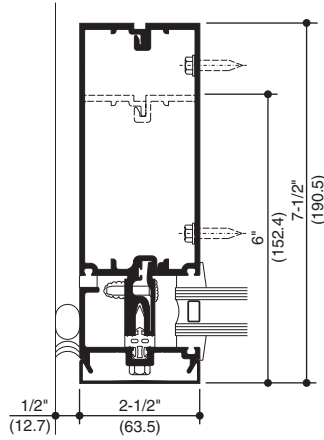
(RTS) - Reversed Thermal Separator



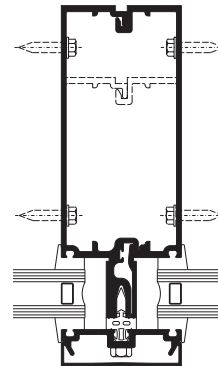
**6**  
**JAMB**  
**(1/4" INFILL)**



**8**  
**MULLION**



**7**  
**JAMB**  
**(1" INFILL)**



**9**  
**MULLION**

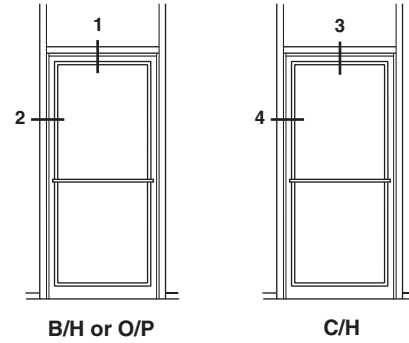
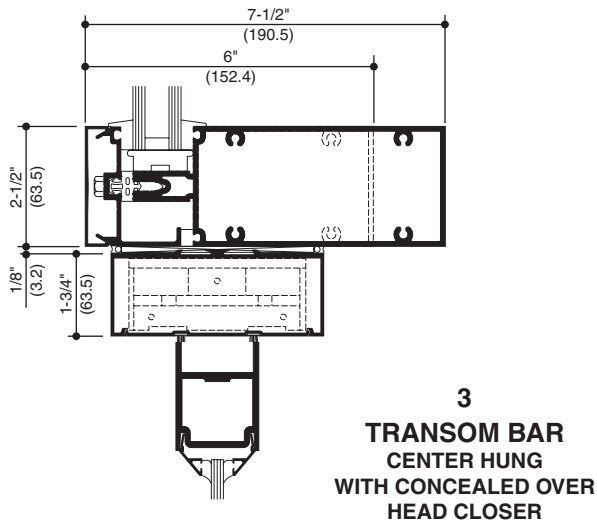
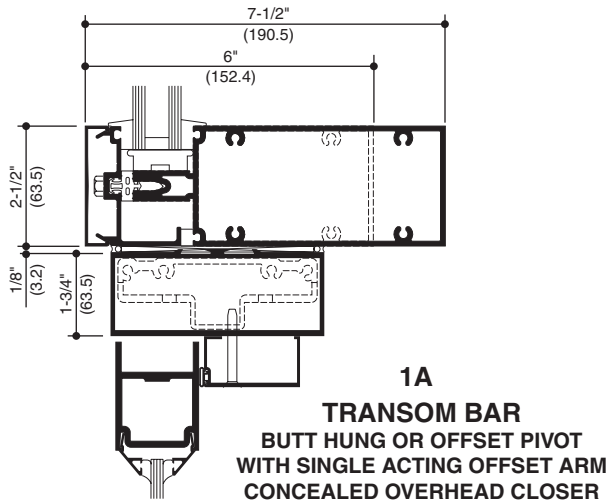
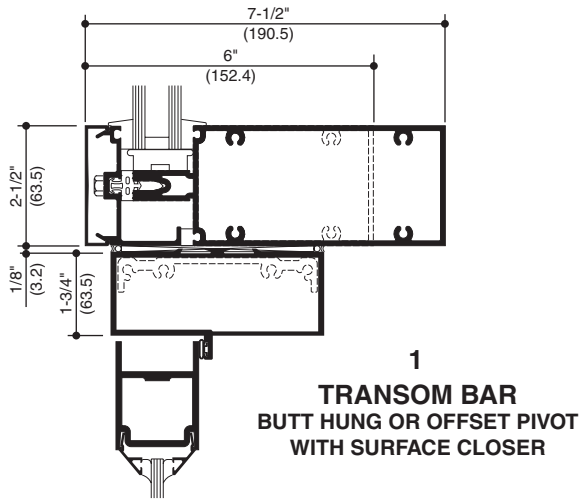
Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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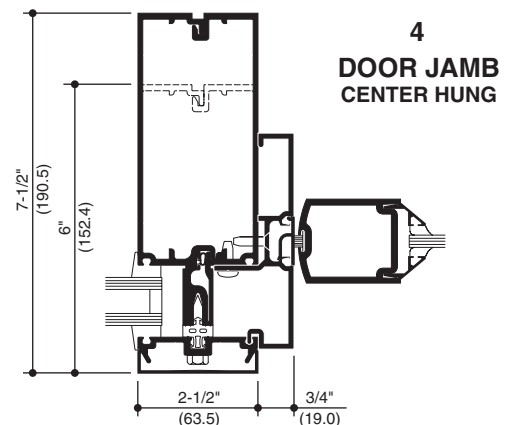
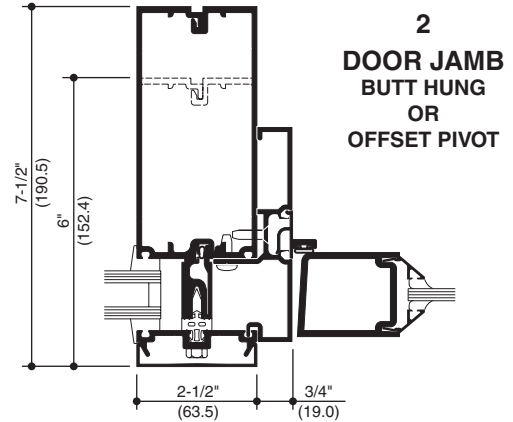


SCALE 3" = 1'-0"

(RTS) - Reversed Thermal Separator



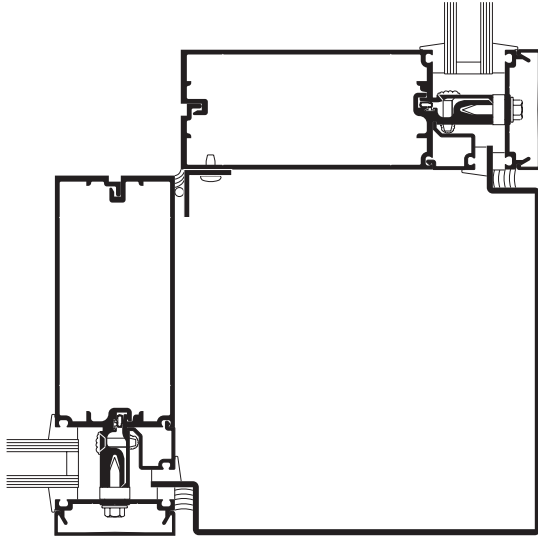
(RTS) ENTRANCE ELEVATION  
ELEVATION IS NUMBER KEYED TO DETAILS



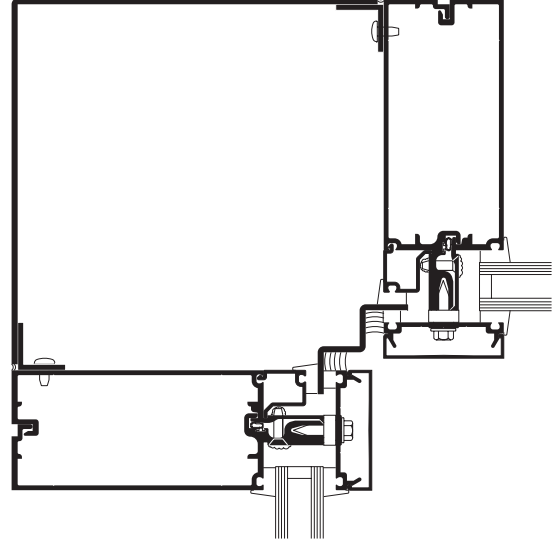
Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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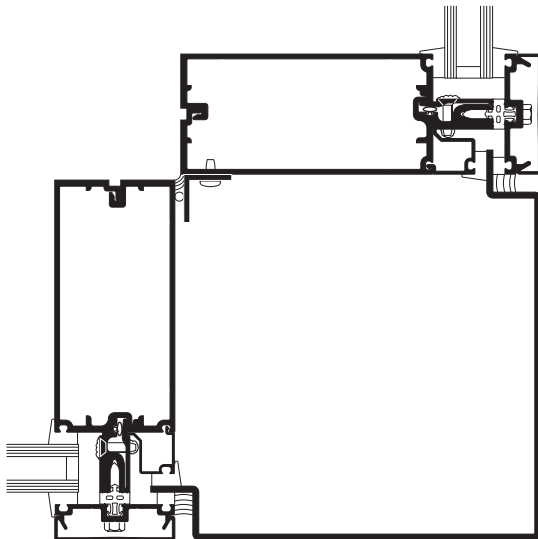
SCALE 3" = 1'-0"



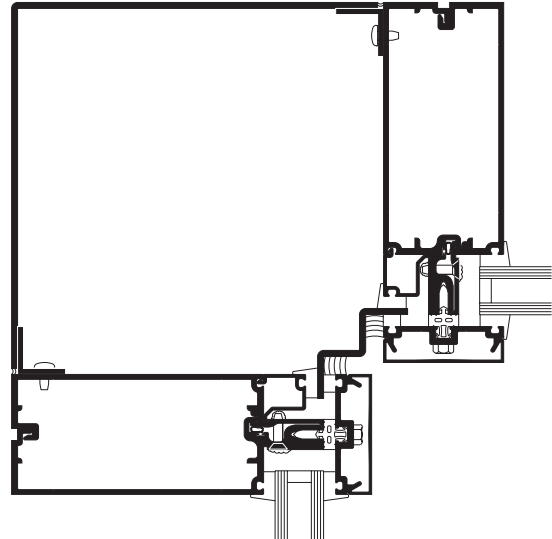
90° OUTSIDE CORNER



90° INSIDE CORNER



90° OUTSIDE CORNER (RTS)

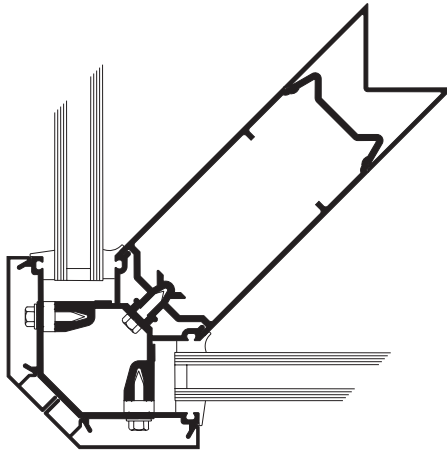


90° INSIDE CORNER (RTS)

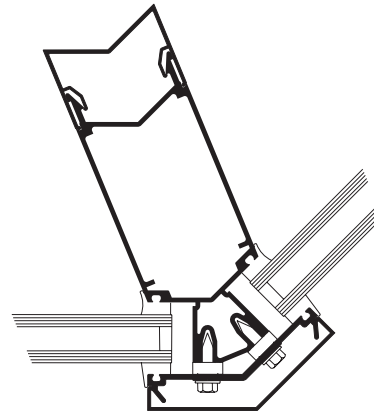
Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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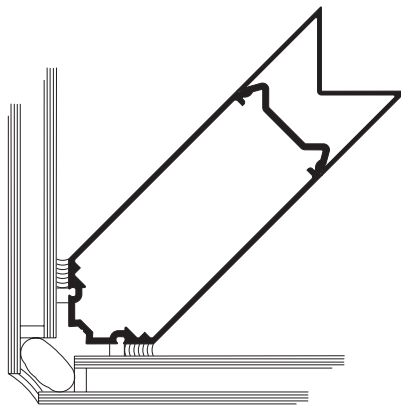
SCALE 3" = 1'-0"



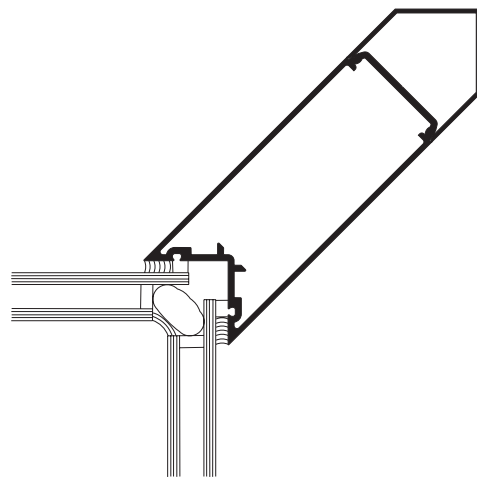
90° OUTSIDE CORNER



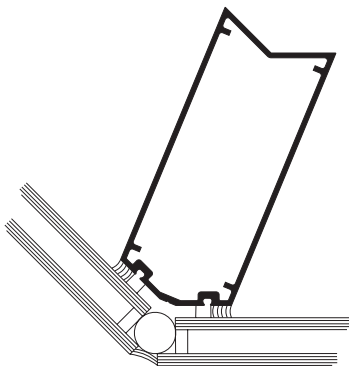
135° OUTSIDE CORNER



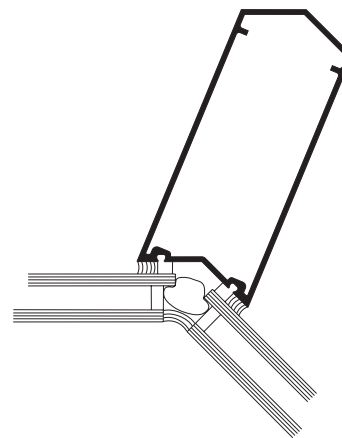
90° OUTSIDE SSG CORNER



90° INSIDE SSG CORNER



135° OUTSIDE SSG CORNER



135° INSIDE SSG CORNER

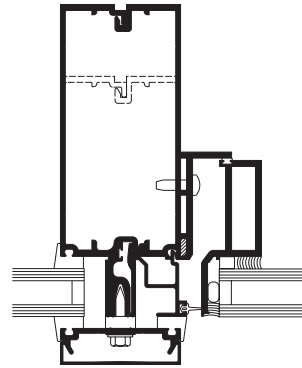
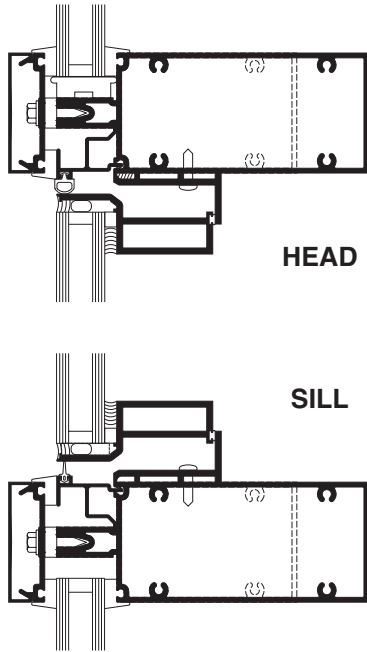
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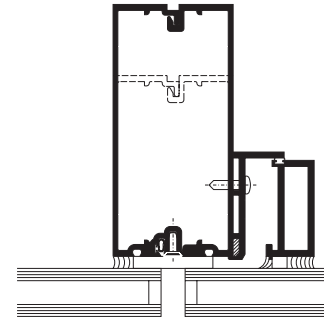
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SCALE 3" = 1'-0"

### GLASSvent™ FOR CURTAIN WALL



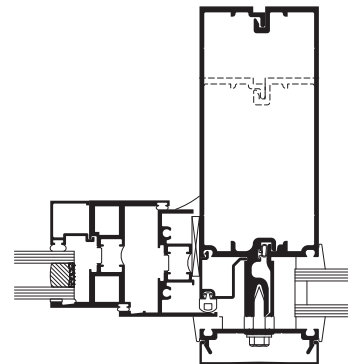
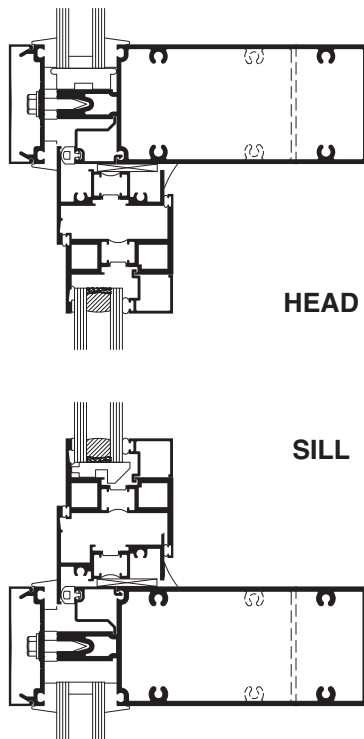
JAMB  
AT CAPTURED MULLION



JAMB  
AT SSG MULLION

### 8225TL IsoLock™ WINDOWS

NOTE: Other vent types can be accommodated. Contact your Kawneer representative for other options.

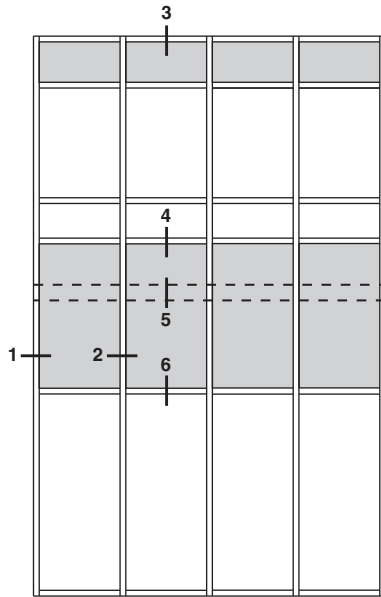


JAMB

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

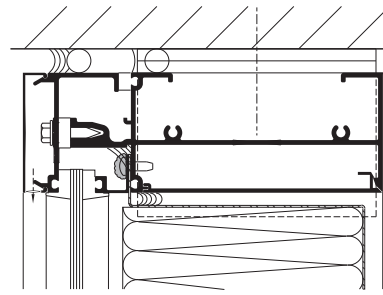
Kawneer reserves the right to change configuration without prior notice when deemed necessary for product improvement.  
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SCALE 3" = 1'-0"

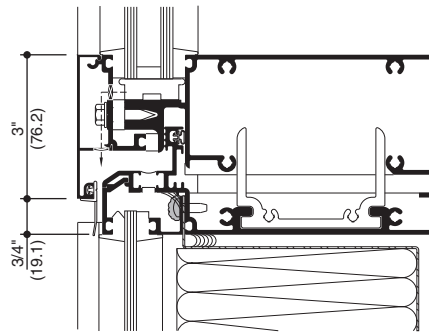


ELEVATION IS NUMBER KEYED TO DETAILS

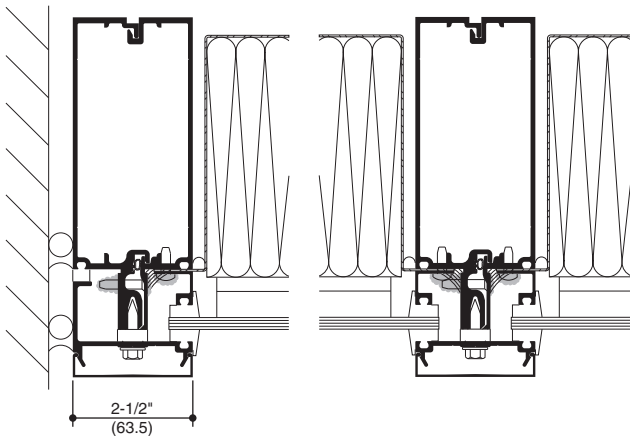
NOTE: 7-1/2" SYSTEM SHOWN, 6" SYSTEM SIMILAR



3  
HEAD

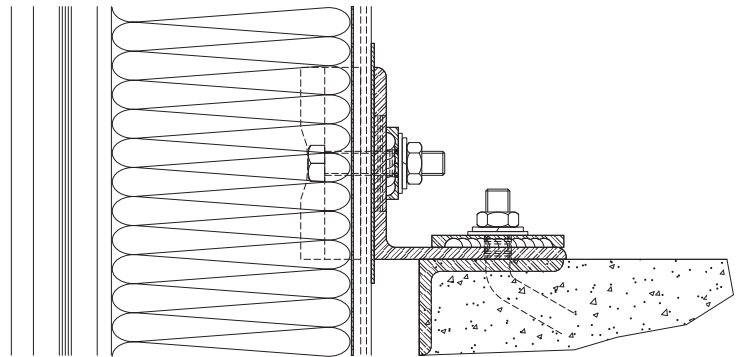


4  
EXPANSION JOINT

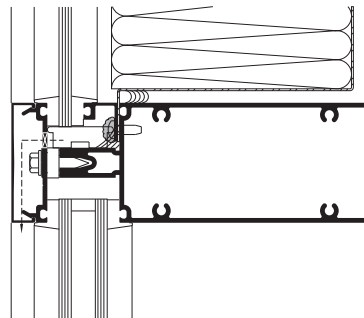


1  
JAMB MULLION  
AT SPANDREL

2  
MULLION AT SPANDREL



5  
TYPICAL DEADLOAD ANCHOR



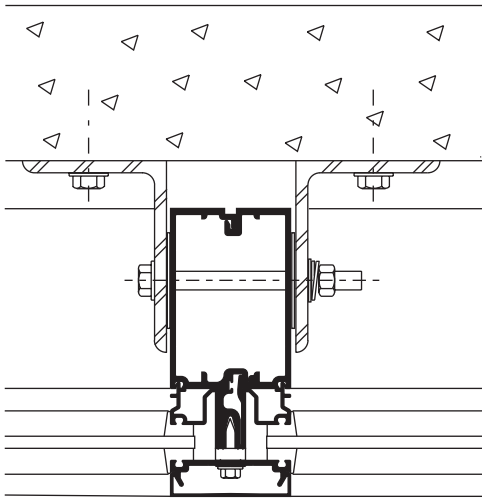
6  
TRANSOM - SPANDREL OVER VISION

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

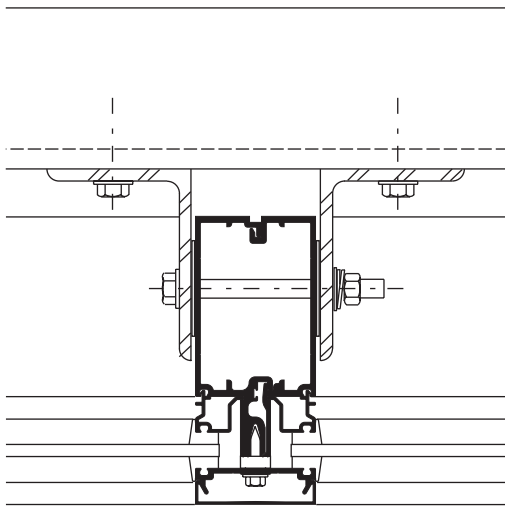
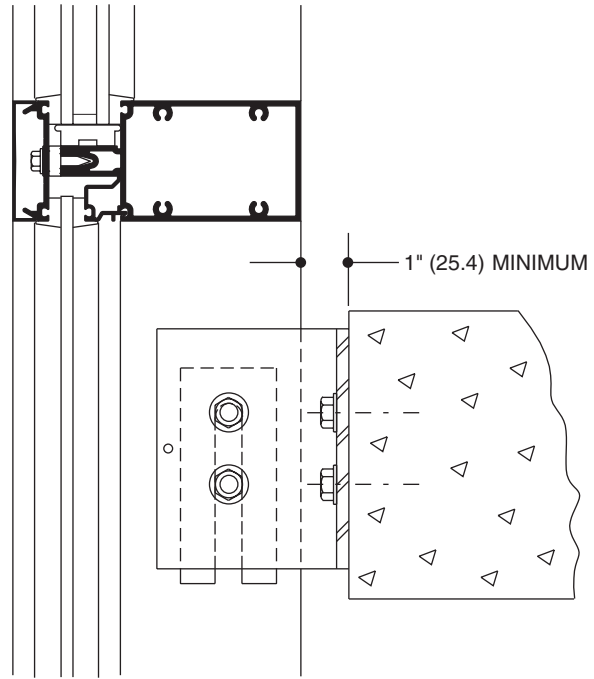
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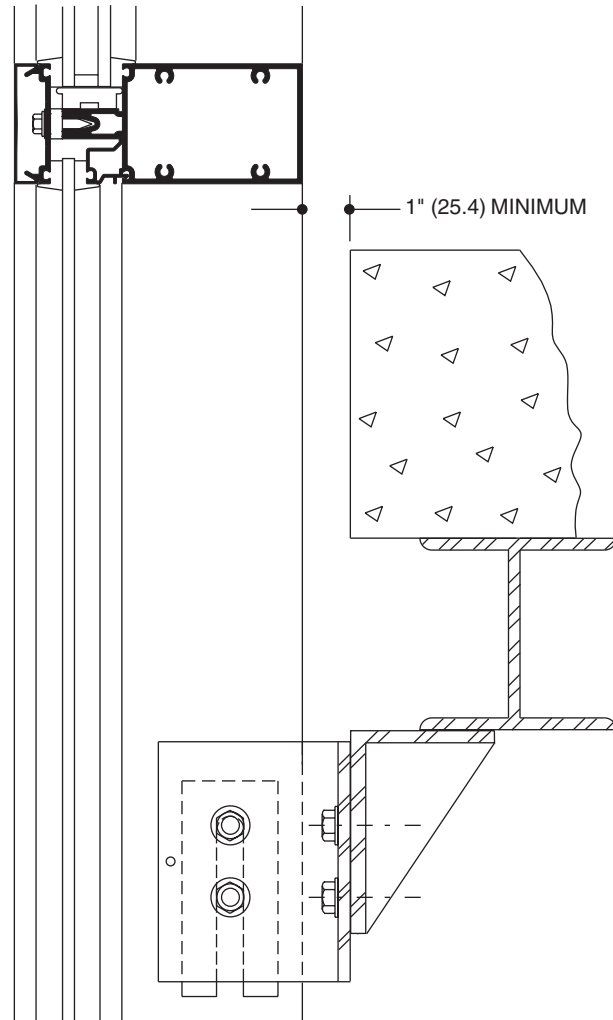
Actual project conditions will determine specific anchor design. Details on this page are for reference only.



ANCHORING TO FLOOR SLAB



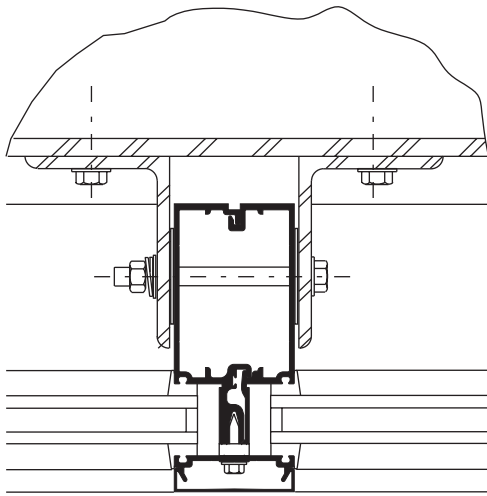
ANCHORING TO SUPPORT STEEL



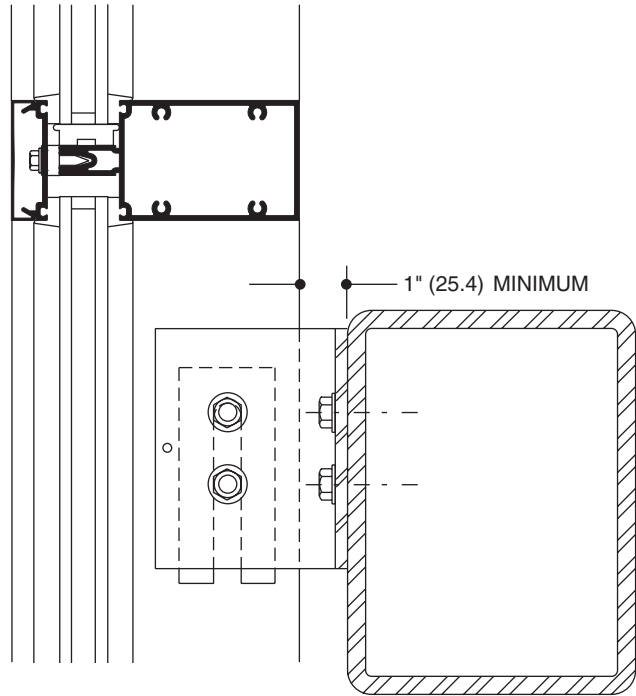
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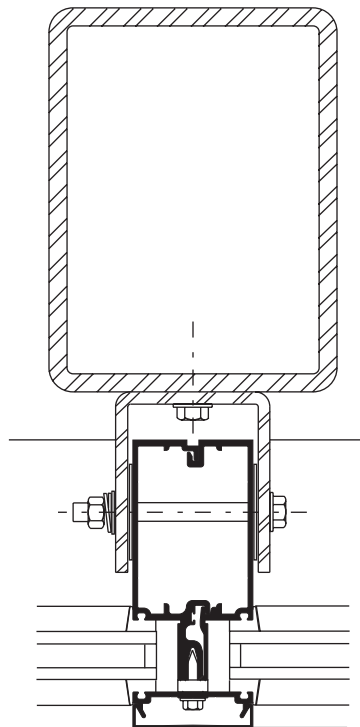
Actual project conditions will determine specific anchor design. Details on this page are for reference only.



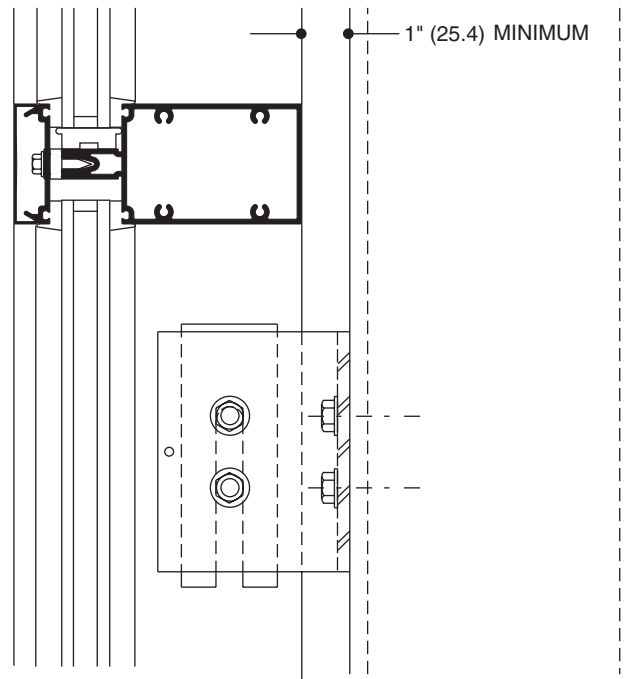
**ANCHORING TO HORIZONTAL STRUCTURAL STEEL**



Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.



**ANCHORING TO VERTICAL STRUCTURAL STEEL**



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## WIND LOAD CHARTS

Mullions are designed for deflection limitations in accordance with AAMA TIR-A11 of L/175 up to 13'-6" and L/240 +1/4" above 13'-6". These curves are for mullions WITH HORIZONTALS and are based on engineering calculations for stress and deflection. Allowable wind load stress for ALUMINUM 15,152 psi (104MPa), STEEL 30,000 psi (207MPa.). Charted curves, in all cases are for the limiting value. If the design wind load is determined through the analytical procedures of ASCE/SEI 7-10 or earlier editions, the load shall be based on the nominal loads used in allowable stress design. A 4/3 increase in allowable stress has not been used to develop these curves. For special situations not covered by these curves, contact your Kawneer representative for additional information.

## DEAD LOAD CHARTS

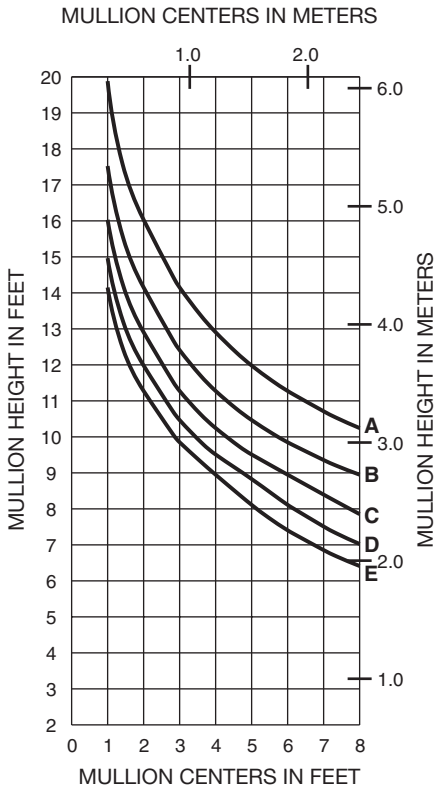
Horizontal or deadload limitations are based upon 1/8" (3.2), maximum allowable deflection at the center of an intermediate horizontal member. The accompanying charts are calculated for 1" (25) thick insulating glass or 1/4" (6) thick glass supported on two setting blocks placed at the loading points shown.

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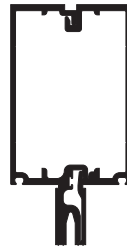
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**SINGLE SPAN**

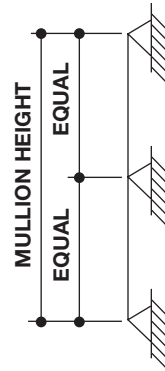
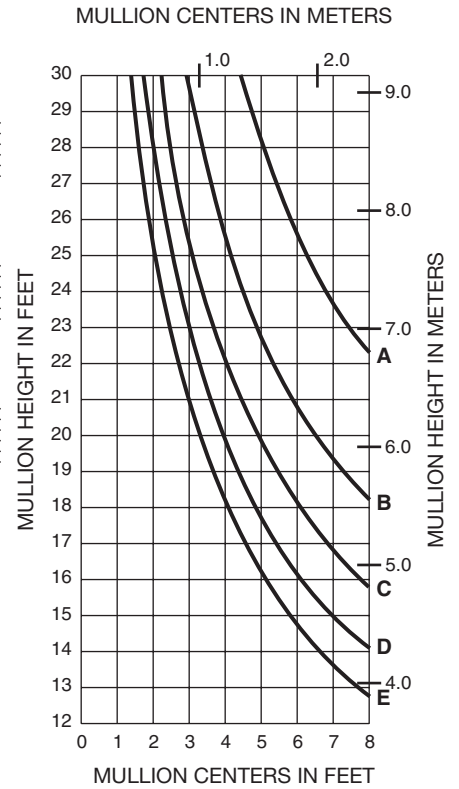


- A = 20 PSF (960)
- B = 30 PSF (1440)
- C = 40 PSF (1920)
- D = 50 PSF (2400)
- E = 60 PSF (2880)

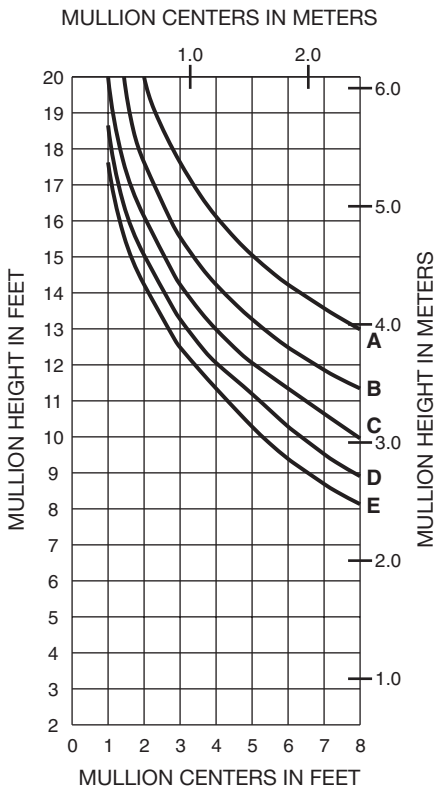


**169001 169002**  
 $I = 5.652 (235.25 \times 10^4)$   
 $S = 1.954 (32.02 \times 10^3)$

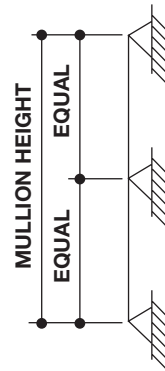
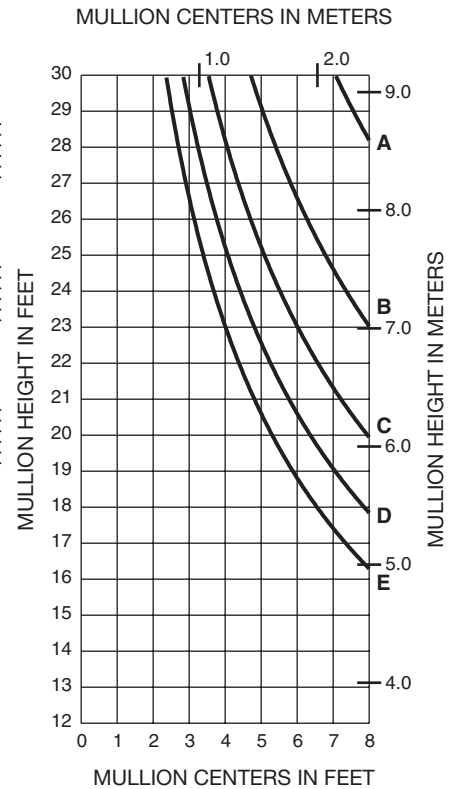
**TWIN SPAN**



**TWIN SPAN**



**169003 169004**  
 $I = 11.512 (479.16 \times 10^4)$   
 $S = 3.141 (51.47 \times 10^3)$

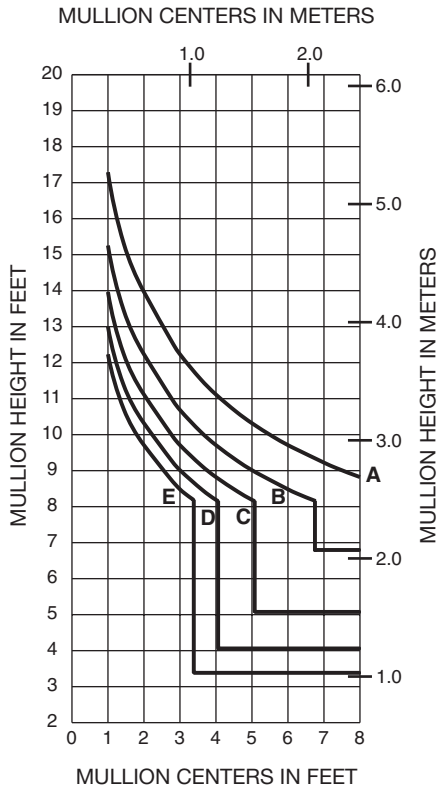


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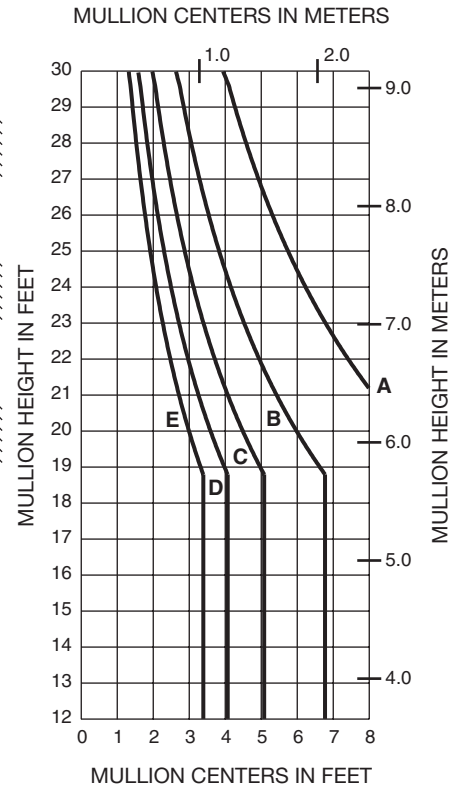
- A = 20 PSF (960)
- B = 30 PSF (1440)
- C = 40 PSF (1920)
- D = 50 PSF (2400)
- E = 60 PSF (2880)

**SINGLE SPAN**

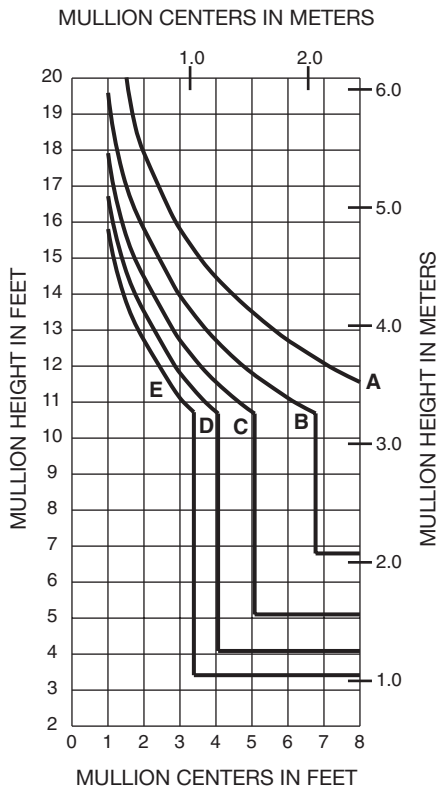


**169005 169006**  
 $I = 3.609 (150.22 \times 10^4)$   
 $S = 1.773 (29.05 \times 10^3)$

**TWIN SPAN**

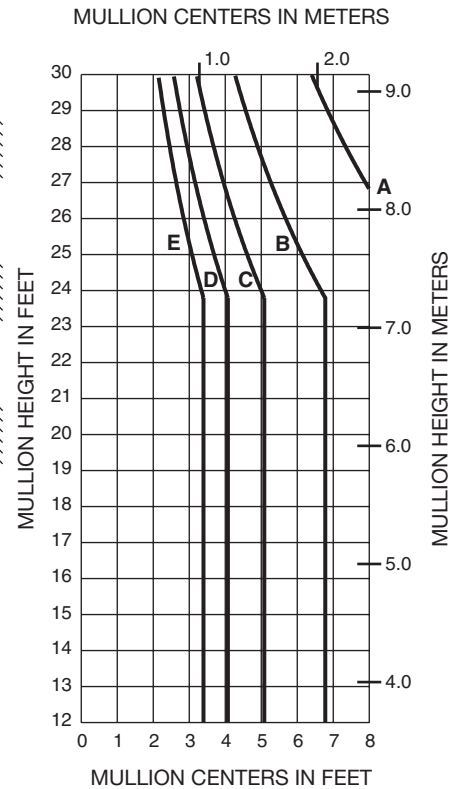


**SINGLE SPAN**



**169007 169008**  
 $I = 8.065 (335.69 \times 10^4)$   
 $S = 2.842 (46.57 \times 10^3)$

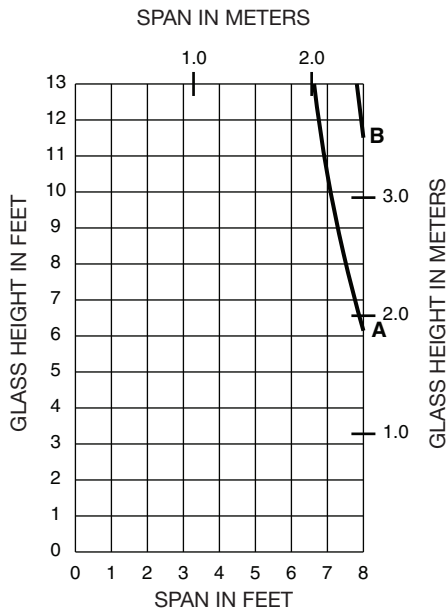
**TWIN SPAN**



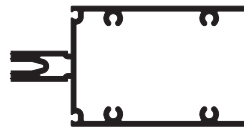
Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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**(1/4" INFILL)**



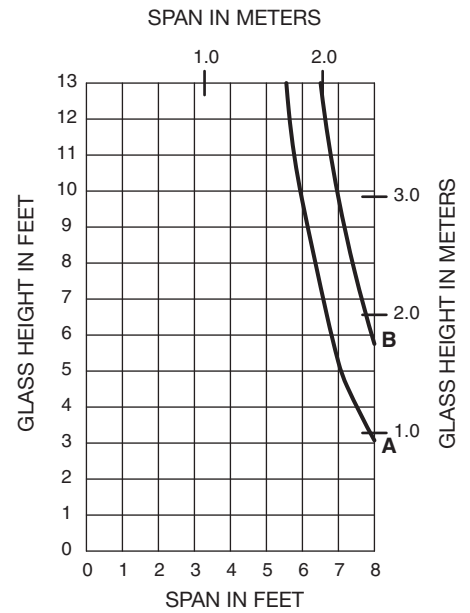
A = 1/4 POINT LOADING  
B = 1/8 POINT LOADING



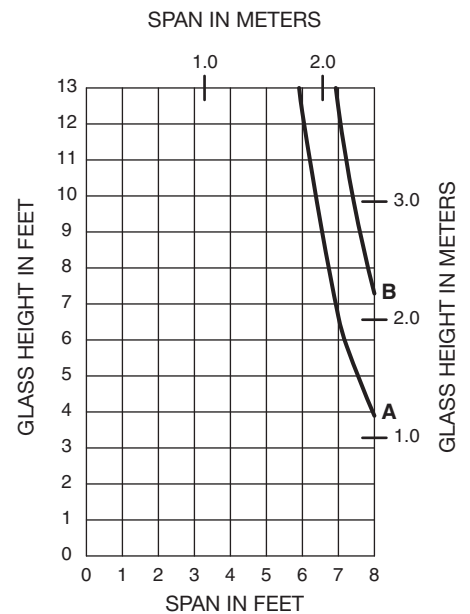
**169014**

I = 1.620 (67.43 x 10<sup>4</sup>)  
S = 1.296 (21.24 x 10<sup>3</sup>)

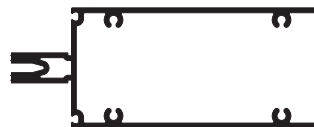
**(1" INFILL)**



**(1" INFILL)**



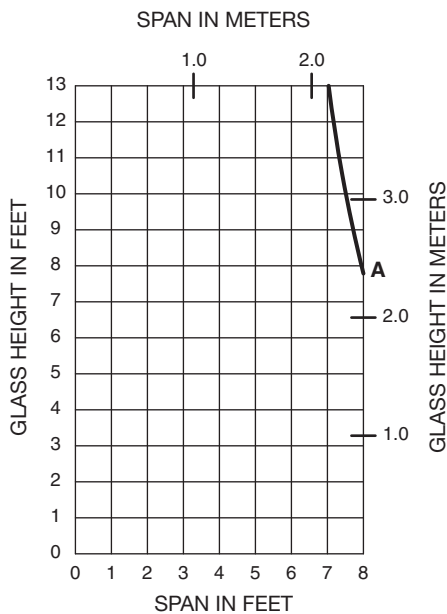
A = 1/4 POINT LOADING  
B = 1/8 POINT LOADING



**169017**

I = 2.052 (85.41 x 10<sup>4</sup>)  
S = 1.642 (26.91 x 10<sup>3</sup>)

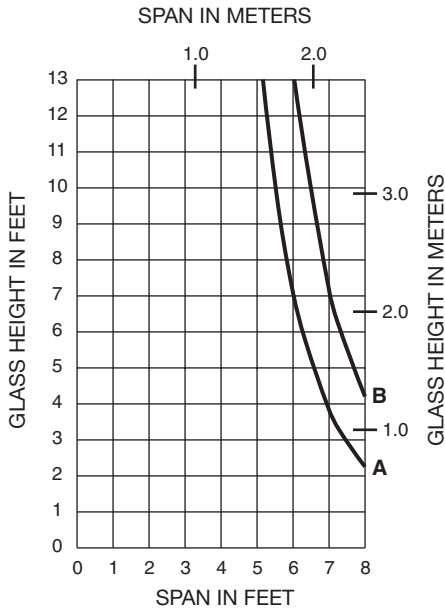
**(1/4" INFILL)**



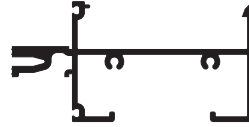
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**(1/4" INFILL)**



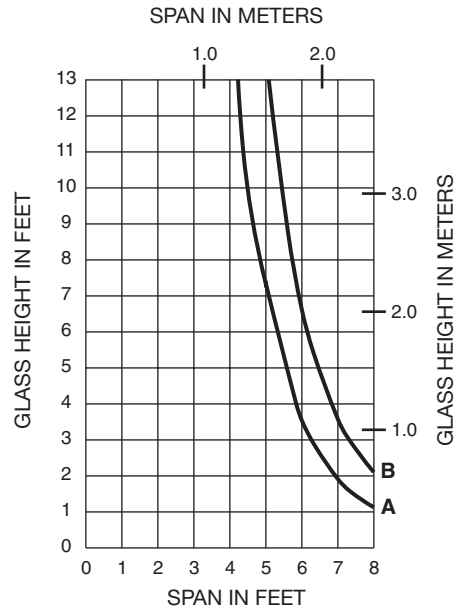
A = 1/4 POINT LOADING  
B = 1/8 POINT LOADING



**169016**

I = 0.589 (24.52 x 10<sup>4</sup>)  
S = 0.456 (7.47 x 10<sup>3</sup>)

**(1" INFILL)**



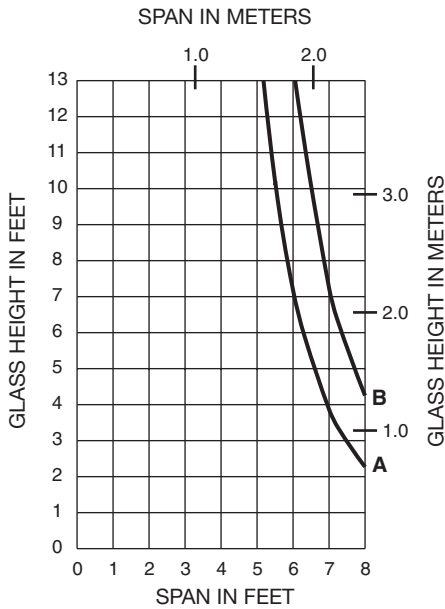
A = 1/4 POINT LOADING  
B = 1/8 POINT LOADING



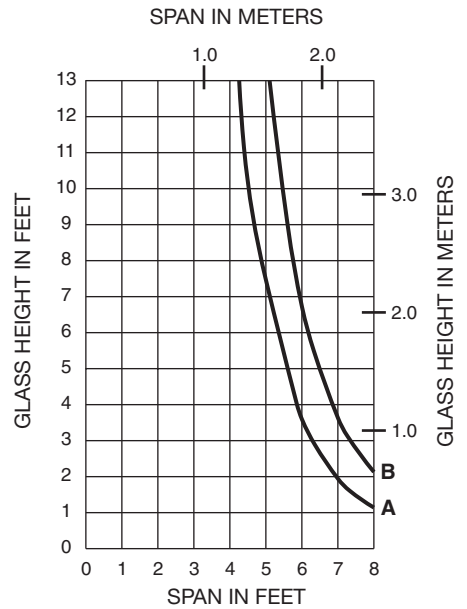
**169019**

I = 0.598 (24.89 x 10<sup>4</sup>)  
S = 0.470 (7.70 x 10<sup>3</sup>)

**(1/4" INFILL)**



**(1" INFILL)**

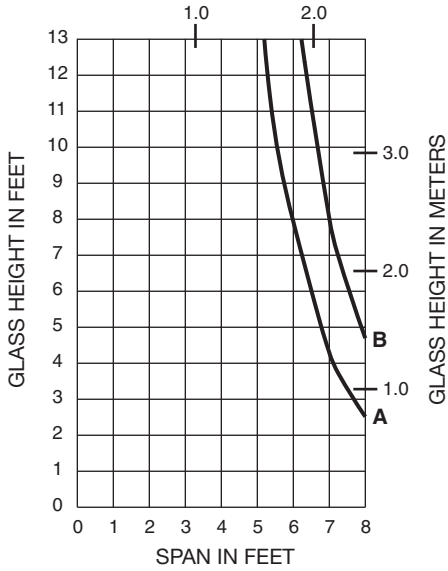


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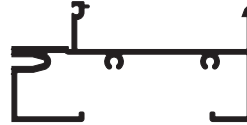
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(1/4" INFILL)

SPAN IN METERS



A = 1/4 POINT LOADING  
B = 1/8 POINT LOADING

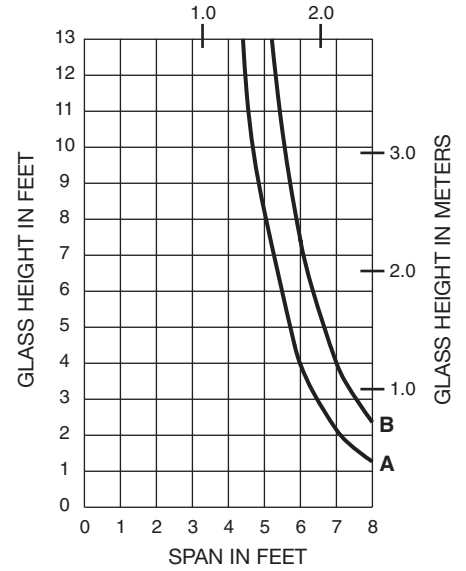


169015

I = 0.659 (27.43 x 10<sup>4</sup>)  
S = 0.496 (8.13 x 10<sup>3</sup>)

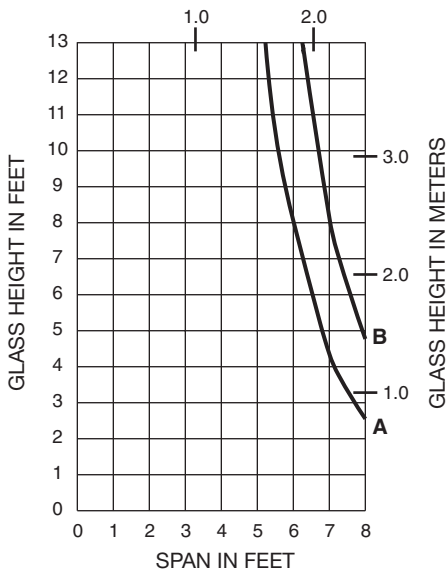
(1" INFILL)

SPAN IN METERS



(1/4" INFILL)

SPAN IN METERS



A = 1/4 POINT LOADING  
B = 1/8 POINT LOADING

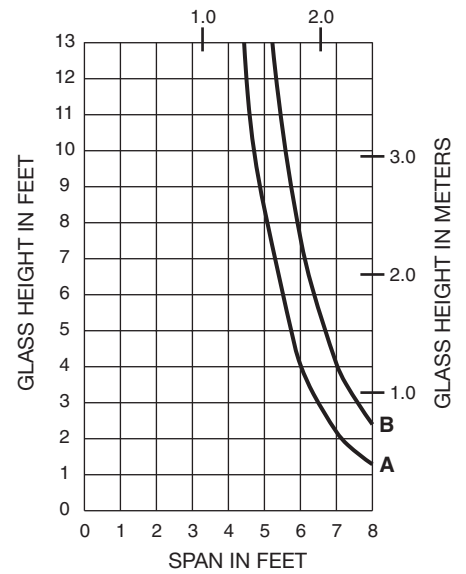


169018

I = 0.671 (27.93 x 10<sup>4</sup>)  
S = 0.514 (8.42 x 10<sup>3</sup>)

(1" INFILL)

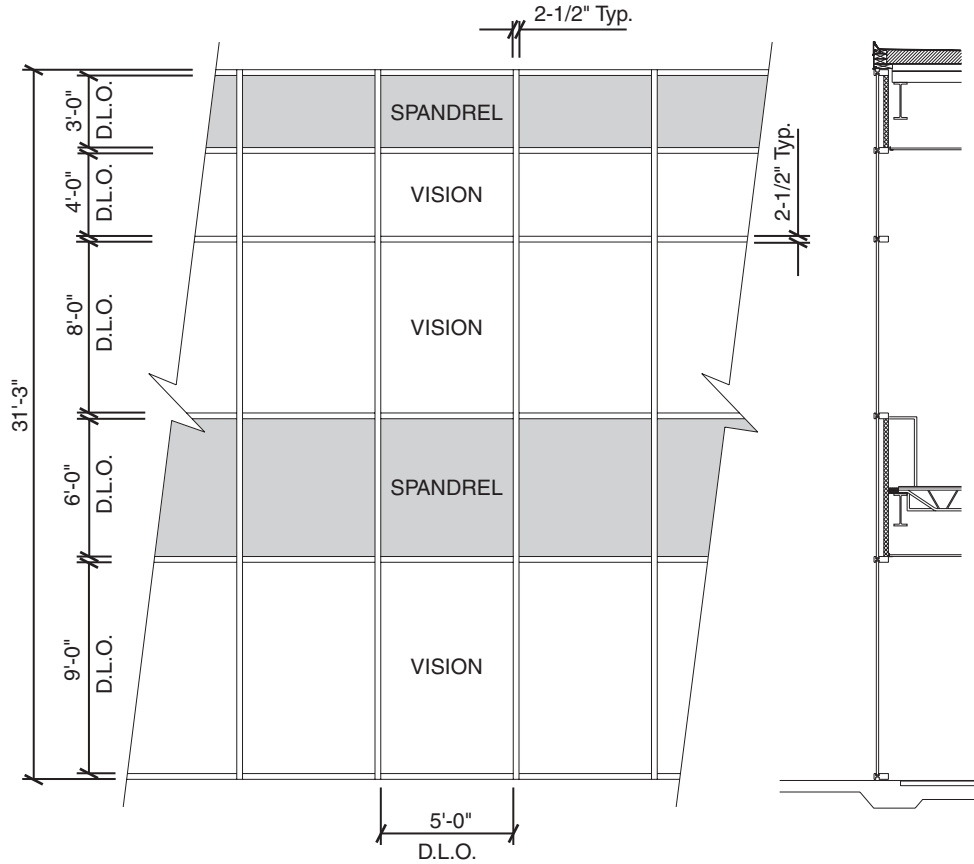
SPAN IN METERS



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**Project Specific U-factor  
Example Calculation**  
(Based on single bay of Curtain Wall/Window Wall)



### Vision Area

Example Glass U-factor	= 0.48 Btu/(ft <sup>2</sup> · h · °F)
Vision Area	= 5(9 + 8 + 4) = 105.0 ft <sup>2</sup>
Total Area (Vision)	= 5' 2-1/2" (9' 3-3/4" + 8' 2-1/2" + 4' 2-1/2") = 113.2 ft <sup>2</sup>
Percentage of Vision Glass	= (Vision Area ÷ Total Area)100 = (105.0 ÷ 113.2)100 = 93%

### Spandrel Area

Example Spandrel R-value	= 15 (ft <sup>2</sup> · h · °F)/Btu
Spandrel Area	= 5(6 + 3) = 45.0 ft <sup>2</sup>
Total Area (Spandrel)	= 5' 2-1/2" (6' 2-1/2" + 3' 3-3/4") = 49.6 ft <sup>2</sup>
Percent of Spandrel	= (Spandrel Area ÷ Total Area)100 = (49.0 ÷ 49.6)100 = 91%

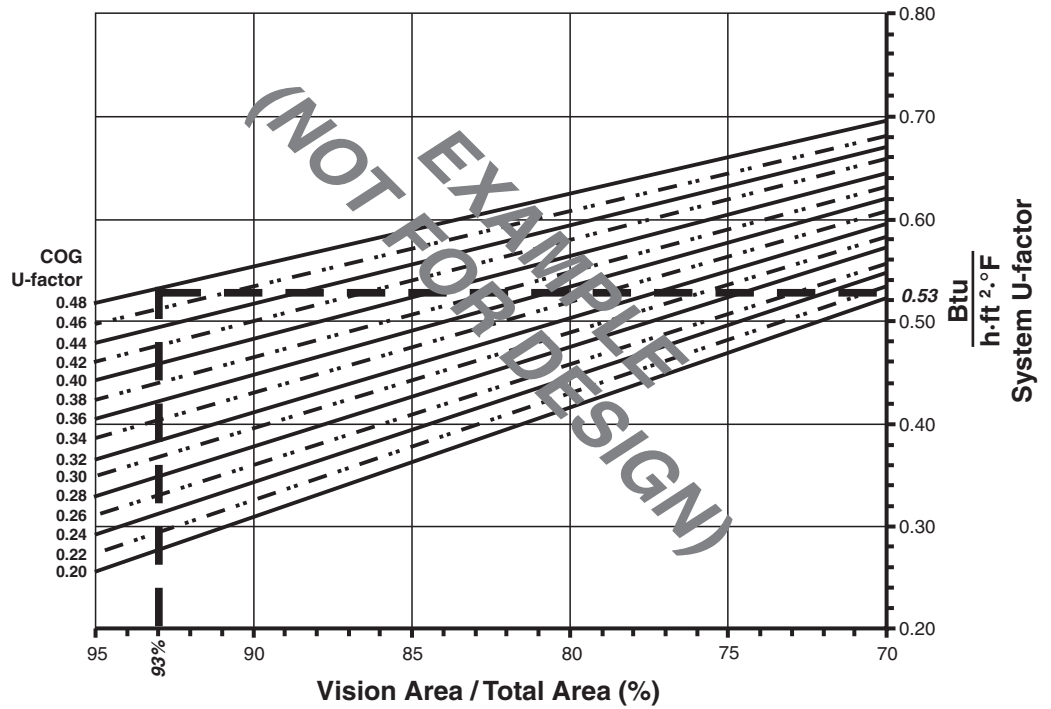
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Vision Area Chart

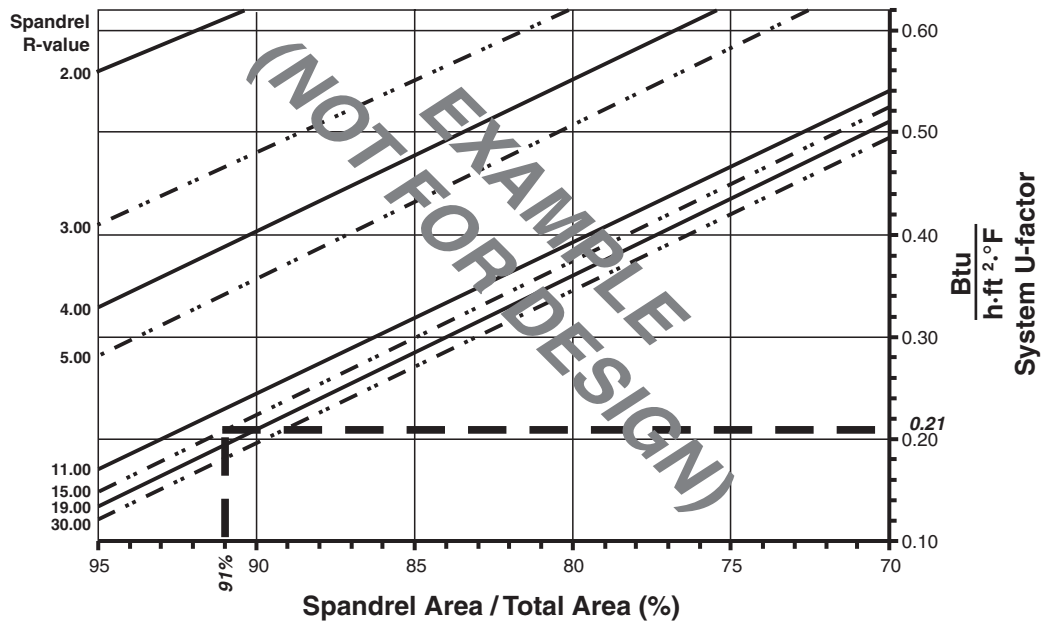
System U-factor vs Percent of Vision Area



Based on a single curtain wall bay of 93% vision glass and center of glass U-factor of 0.48, System U-factor is equal to 0.53 Btu/(h·ft<sup>2</sup>·°F)

Spandrel Area Chart

System U-factor vs Percent of Spandrel Area



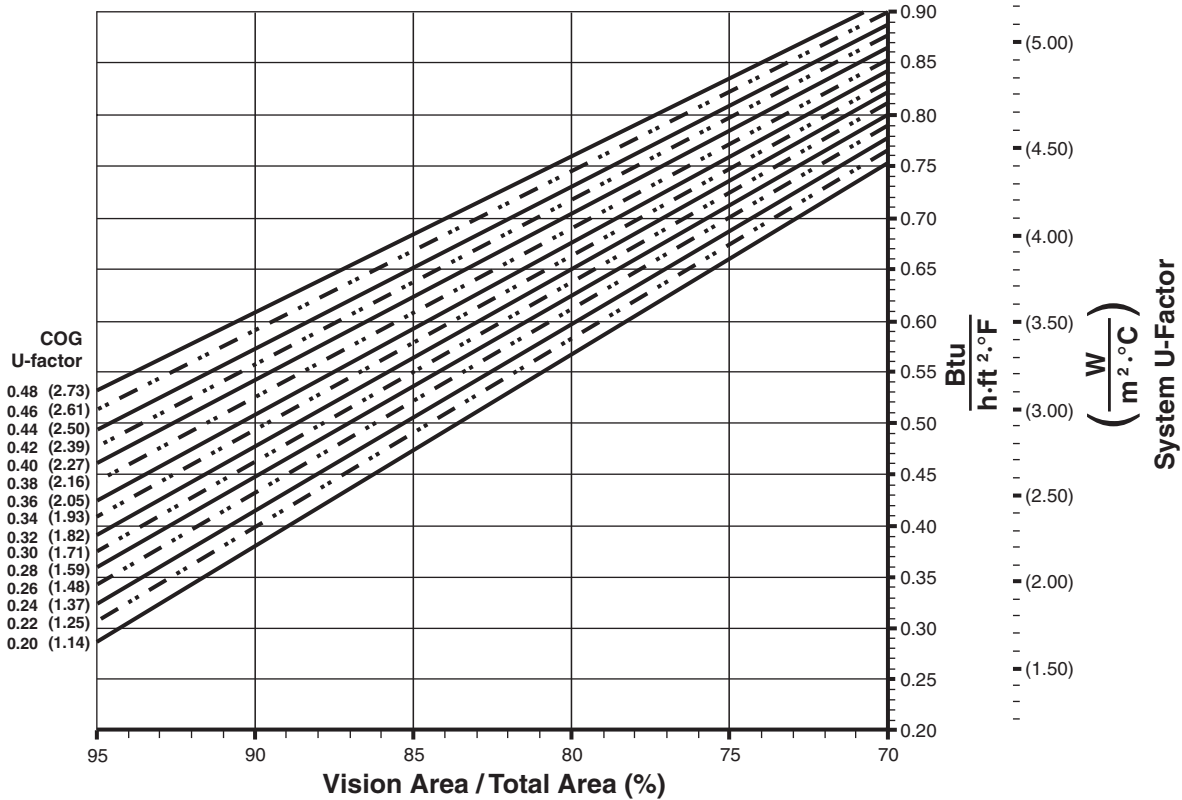
Based on a single curtain wall bay of 91% spandrel and center of spandrel R-value of 15, system U-factor is equal to 0.21 Btu/(h·ft<sup>2</sup>·°F)

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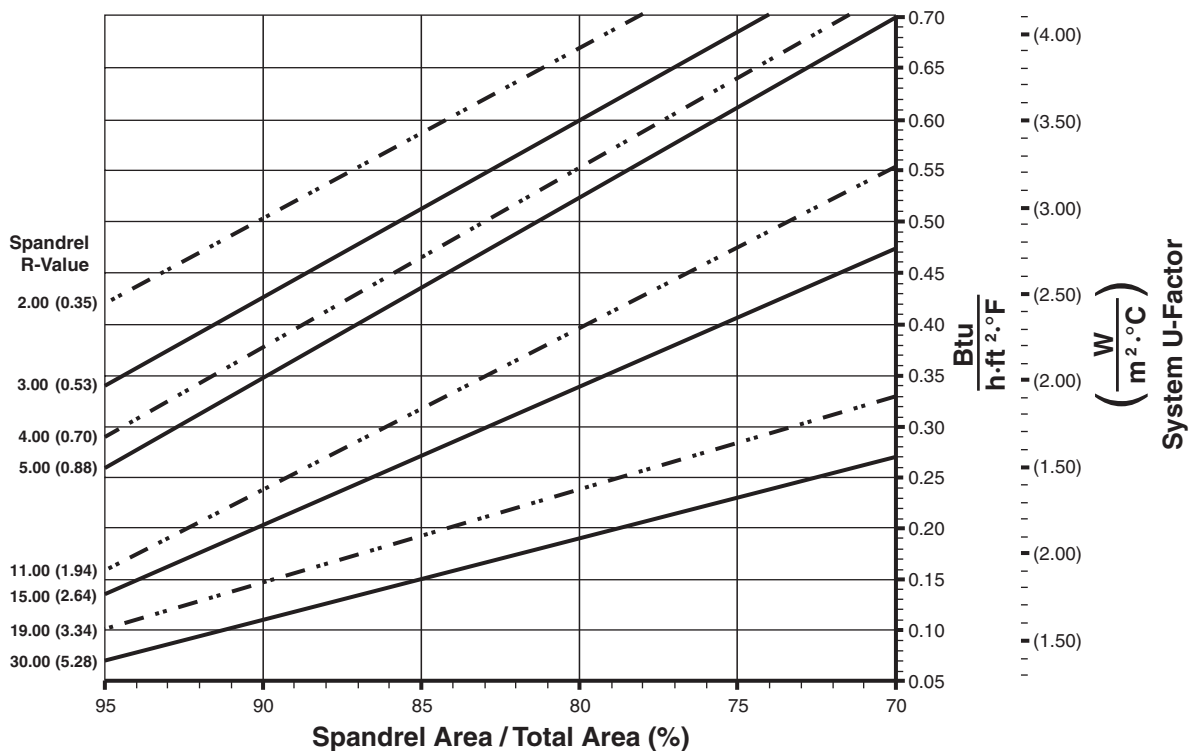
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Note:  
 Values in parentheses are metric.  
 COG=Center of Glass.  
 Charts are generated per AAMA 507.

**System U-Factor for Vision Glass**



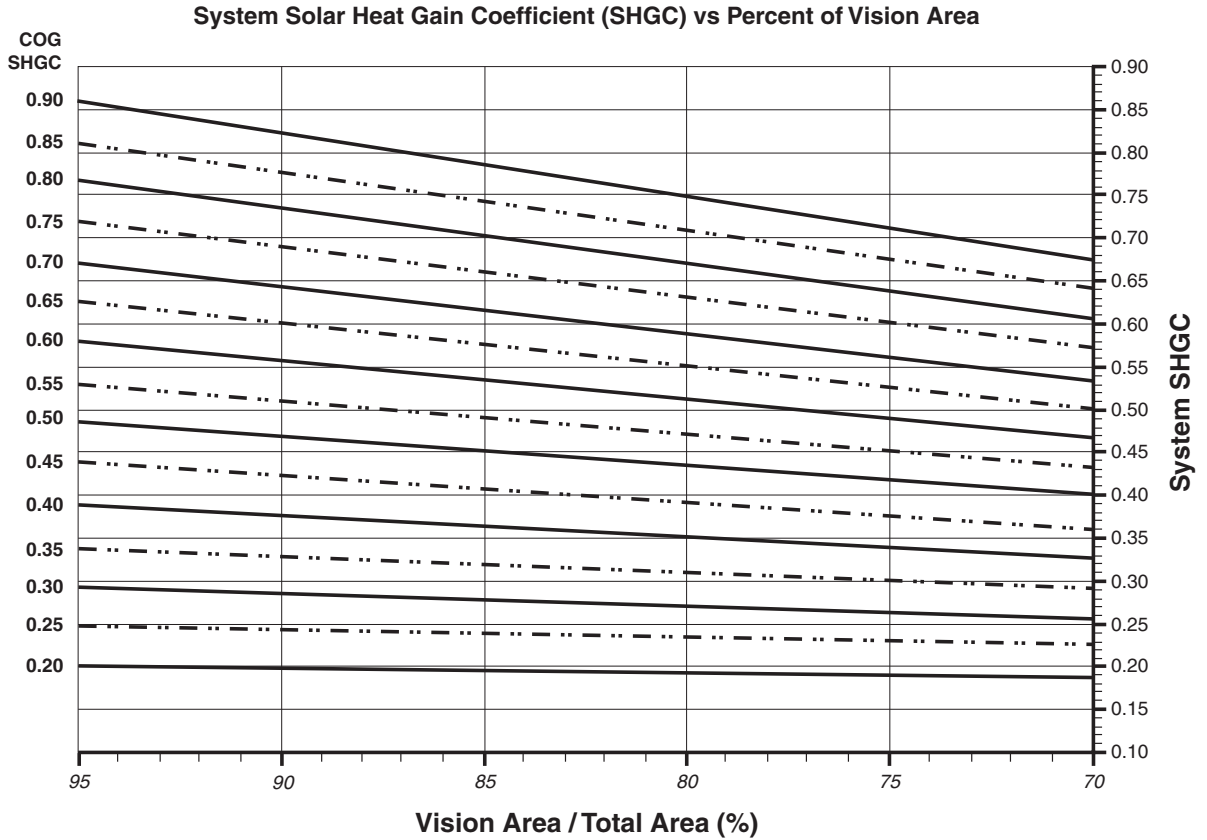
**System U-Factors for Spandrel Glass**



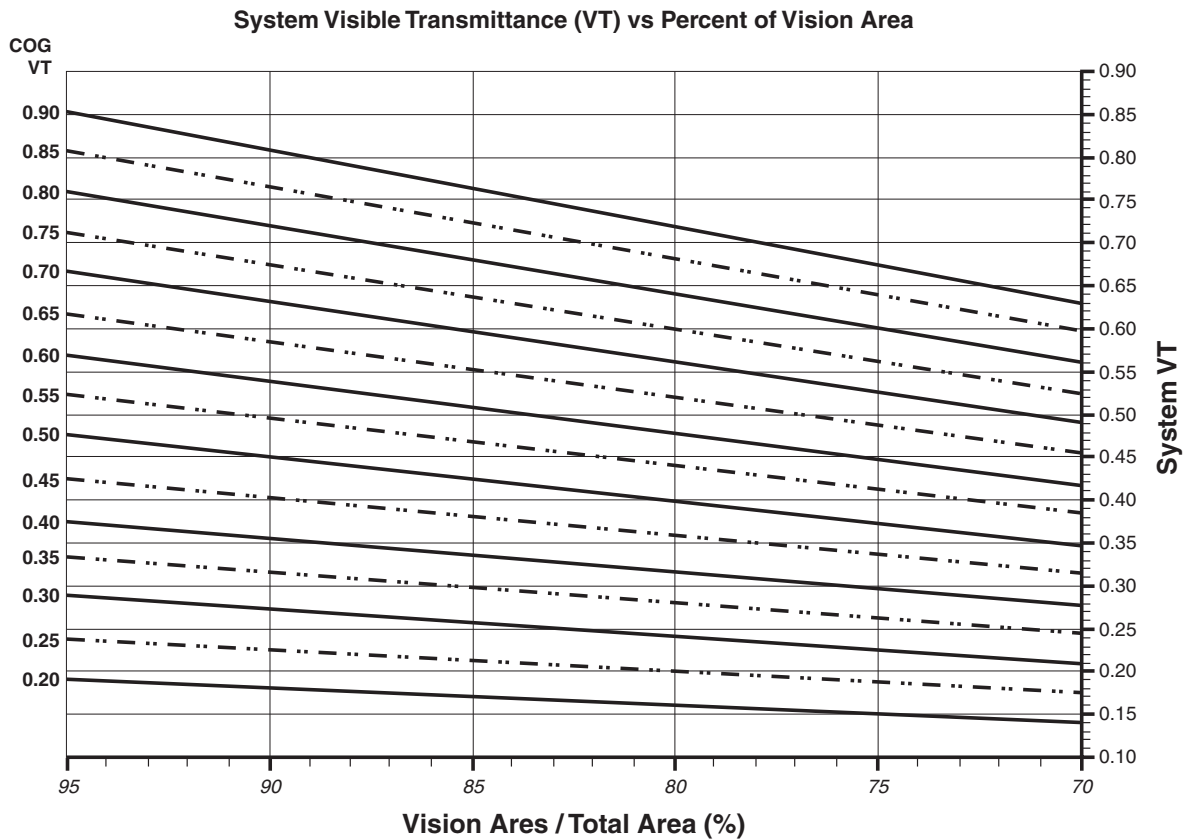
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Charts are generated per AAMA 507.



Charts are generated per AAMA 507.

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**Thermal Transmittance**<sup>1</sup> (BTU/hr • ft<sup>2</sup> • °F)

Glass U-Factor <sup>3</sup>	Overall U-Factor <sup>4</sup>
0.48	0.62
0.46	0.60
0.44	0.59
0.42	0.57
0.40	0.55
0.38	0.54
0.36	0.52
0.34	0.50
0.32	0.49
0.30	0.47
0.28	0.46
0.26	0.44
0.24	0.42
0.22	0.41
0.20	0.39

**SHGC Matrix**<sup>2</sup>

Glass SHGC <sup>3</sup>	Overall SHGC <sup>4</sup>
0.90	0.82
0.85	0.78
0.80	0.73
0.75	0.69
0.70	0.64
0.65	0.60
0.60	0.55
0.55	0.51
0.50	0.46
0.45	0.42
0.40	0.37
0.35	0.33
0.30	0.29
0.25	0.24
0.20	0.20

**Visible Transmittance**<sup>2</sup>

Glass VT <sup>3</sup>	Overall VT <sup>4</sup>
0.90	0.81
0.85	0.76
0.80	0.72
0.75	0.67
0.70	0.63
0.65	0.58
0.60	0.54
0.55	0.49
0.50	0.45
0.45	0.40
0.40	0.36
0.35	0.31
0.30	0.27
0.25	0.22
0.20	0.18

**NOTE:** For glass values that are not listed, linear interpolation is permitted.

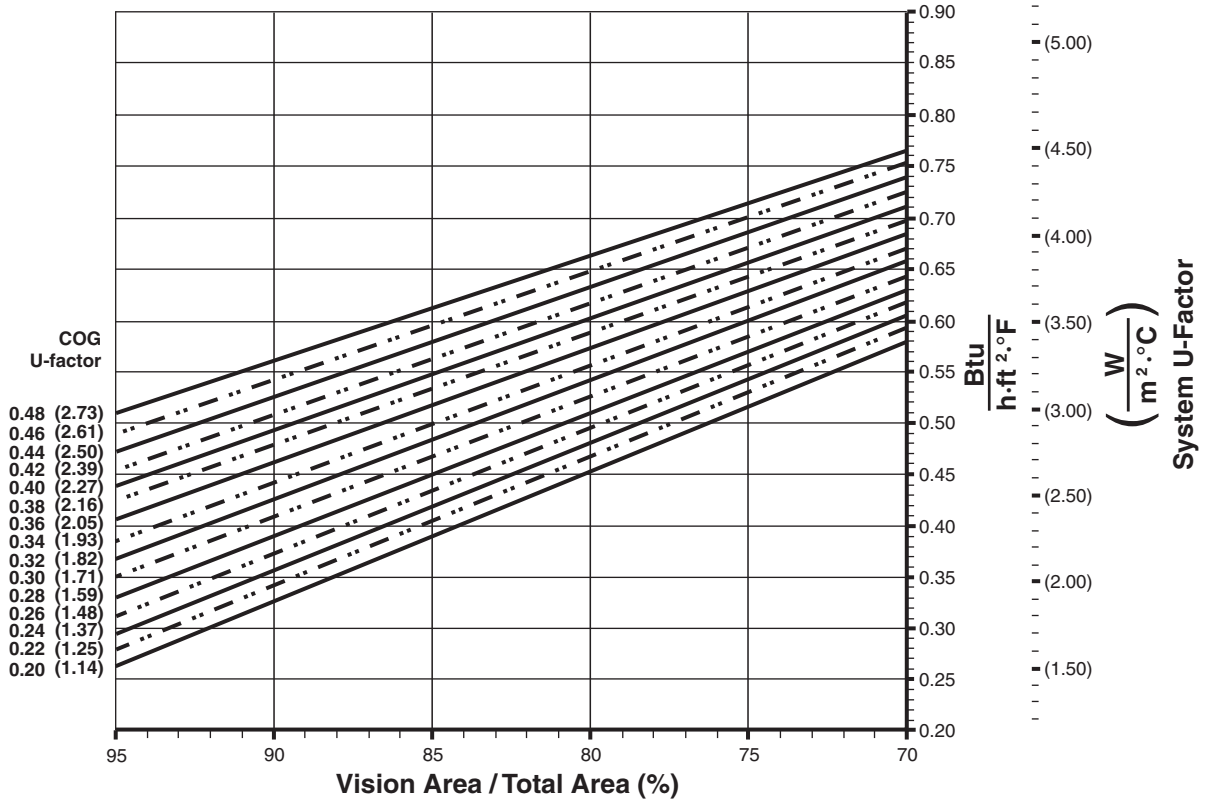
1. U-Factors are determined in accordance with NFRC 100.
2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values and are obtained from your glass supplier.
4. Overall U-Factor, SHGC, and VT Matrices are based on the standard NFRC specimen size of 2000mm wide by 2000mm high (78-3/4" by 78-3/4").

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

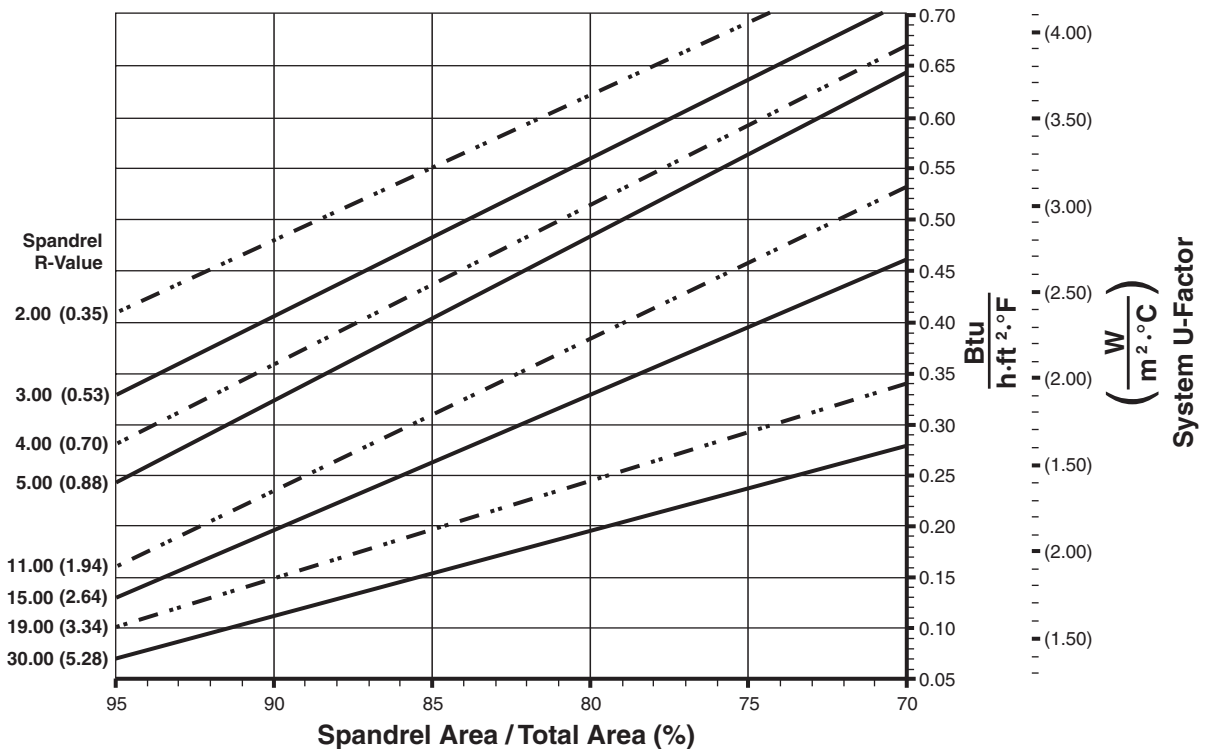
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Note:  
 Values in parentheses are metric.  
 COG=Center of Glass.  
 Charts are generated per AAMA 507.

**System U-Factor for Vision Glass**

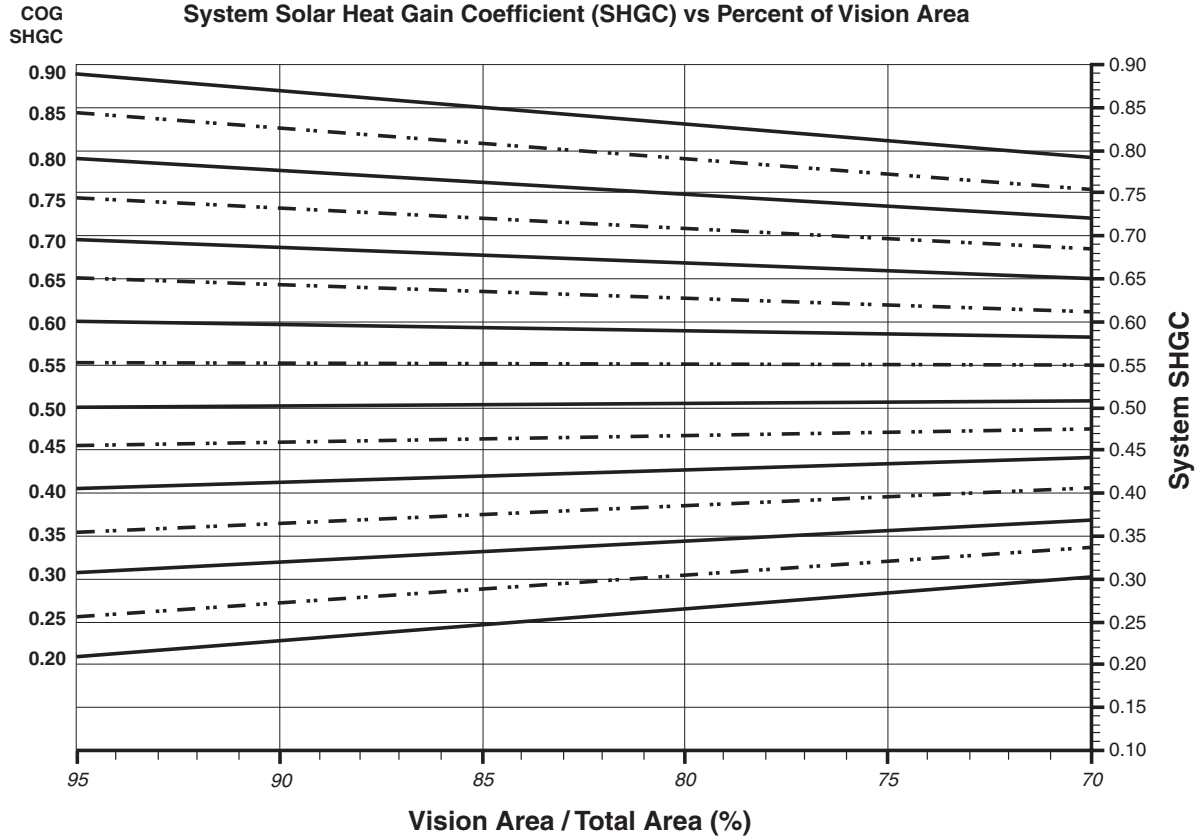


**System U-Factors for Spandrel Glass**

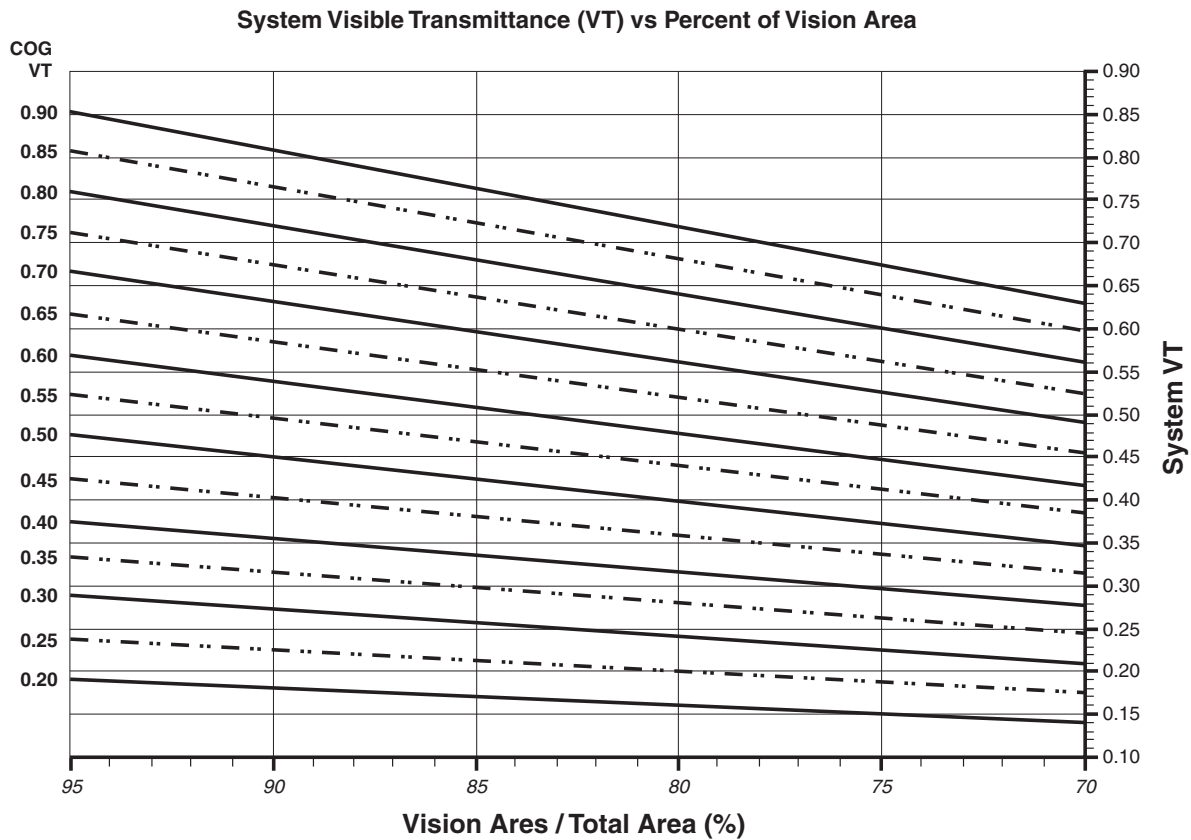


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**Thermal Transmittance** <sup>1</sup> (BTU/hr • ft <sup>2</sup> • °F)

Glass U-Factor <sup>3</sup>	Overall U-Factor <sup>4</sup>
0.48	0.56
0.46	0.54
0.44	0.53
0.42	0.51
0.40	0.49
0.38	0.48
0.36	0.46
0.34	0.44
0.32	0.42
0.30	0.41
0.28	0.39
0.26	0.37
0.24	0.36
0.22	0.34
0.20	0.32

**SHGC Matrix** <sup>2</sup>

Glass SHGC <sup>3</sup>	Overall SHGC <sup>4</sup>
0.90	0.87
0.85	0.82
0.80	0.77
0.75	0.73
0.70	0.68
0.65	0.64
0.60	0.59
0.55	0.55
0.50	0.50
0.45	0.46
0.40	0.41
0.35	0.37
0.30	0.32
0.25	0.28
0.20	0.23

**Visible Transmittance** <sup>2</sup>

Glass VT <sup>3</sup>	Overall VT <sup>4</sup>
0.90	0.81
0.85	0.77
0.80	0.72
0.75	0.68
0.70	0.63
0.65	0.59
0.60	0.54
0.55	0.50
0.50	0.45
0.45	0.41
0.40	0.36
0.35	0.32
0.30	0.27
0.25	0.23
0.20	0.18

**NOTE:** For glass values that are not listed, linear interpolation is permitted.

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2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values and are obtained from your glass supplier.
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**Features**

- 2500 PG Wall™ is a pre-glazed unitized curtain wall
- 2-1/2" (63.5) sight lines and 7-1/2" (190.5) system depth
- Prefabricated and shipped knocked-down
- Screw spline shop assembly
- Shop glazed infill options:
  - 1" (25.4) insulating vision
  - 1/4" (6.3) or 1" (25.4) insulating spandrel
  - Spandrel back panning
- Four system types available:
  - 4-side captured
  - 4-side SSG
  - Vertical SSG
  - Horizontal SSG
- Adjustable slab edge, drop-on anchors
- No exterior applied joint seals
- Exterior re-glazing capability
- 90° inside and outside corners
- ±1/2" total allowable vertical movement per floor
- Fully tested including thermal and acoustical
- Two color option
- Permanodic™ anodized finishes in seven choices
- Painted finishes in standard and custom choices

**Optional Features**

- Interior trim options
- Steel reinforcing
- Accepts GLASSvent™ windows for curtain wall with 4-side captured system type
- Available pressure equalization enhancement option
- Profit\$Maker™ Plus die sets available
- Hurricane impact resistant framing options: 7-1/2" (190.5)

**Product Applications**

- Suitable for new construction or remodel
- Ideal for mid-rise and high-rise applications

For specific product applications,  
Consult your Kawneer representative.

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**Architects** – Most extrusions illustrated in this catalog are standard products for Kawneer. These concepts have been expanded and modified to afford you design freedom. Some miscellaneous details are non-standard and are intended to demonstrate how the system can be modified to expand design flexibility. Please contact your Kawneer representative for further assistance.

**PICTORIAL VIEWS.....4, 5**  
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**TYPICAL DETAILS (4 SIDE SSG SYSTEM)..... 7**  
**TYPICAL DETAILS (VERTICAL SSG SYSTEM) ..... 8**  
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**GLASSvent™ WINDOWS for CURTAIN WALL ..... 13**  
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**THERMAL CHARTS .....21-30**

LAWS AND BUILDING AND SAFETY CODES GOVERNING THE DESIGN AND USE OF GLAZED ENTRANCE, WINDOW, AND CURTAIN WALL PRODUCTS VARY WIDELY. KAWNEER DOES NOT CONTROL THE SELECTION OF PRODUCT CONFIGURATIONS, OPERATING HARDWARE, OR GLAZING MATERIALS, AND ASSUMES NO RESPONSIBILITY THEREFOR.

Metric (SI) conversion figures are included throughout these details for reference. Numbers in parentheses ( ) are millimeters unless otherwise noted.

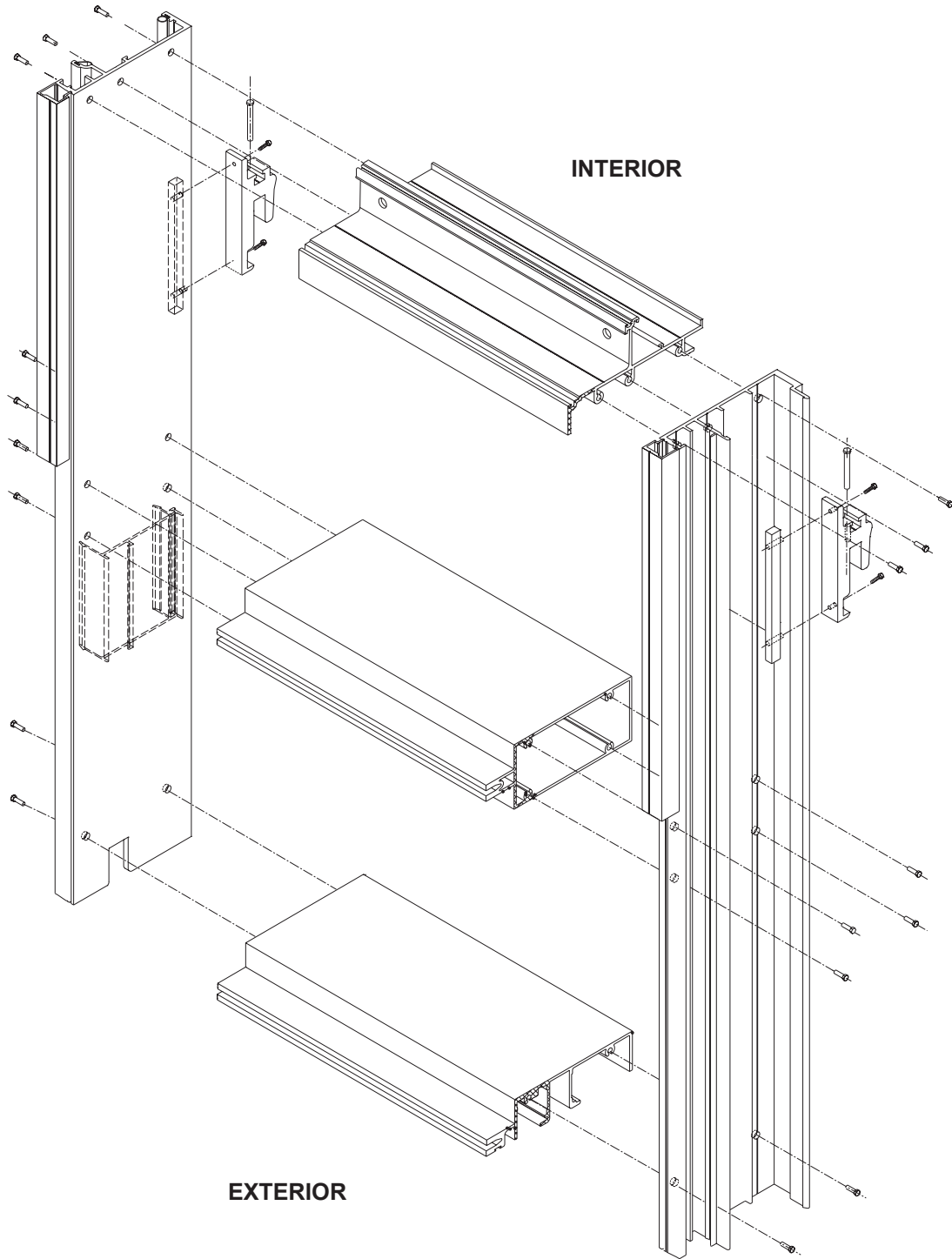
The following metric (SI ) units are found in these details:

- m – meter
- cm – centimeter
- mm – millimeter
- s – second
- Pa – pascal
- MPa – megapascal

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**EXTERIOR**

**INTERIOR**

**TYPICAL UNIT  
(4-SIDE CAPTURED SYSTEM)**

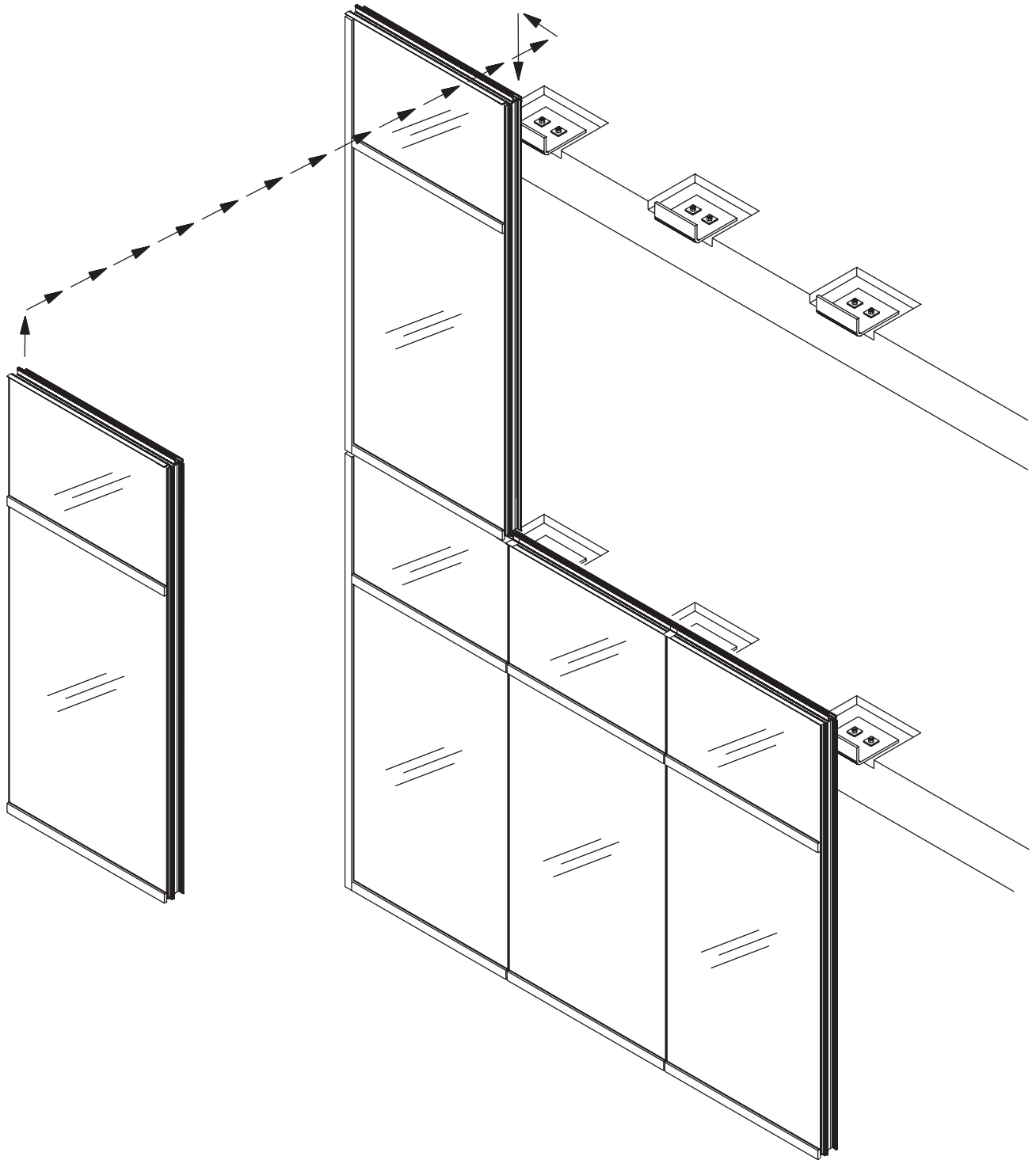
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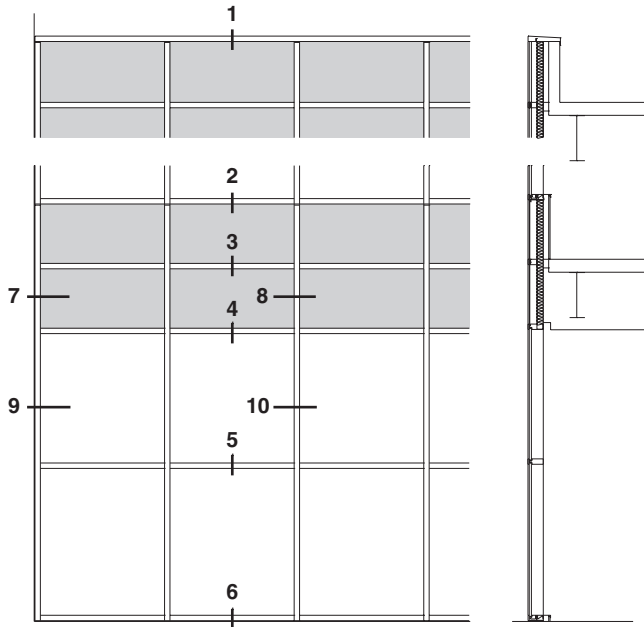
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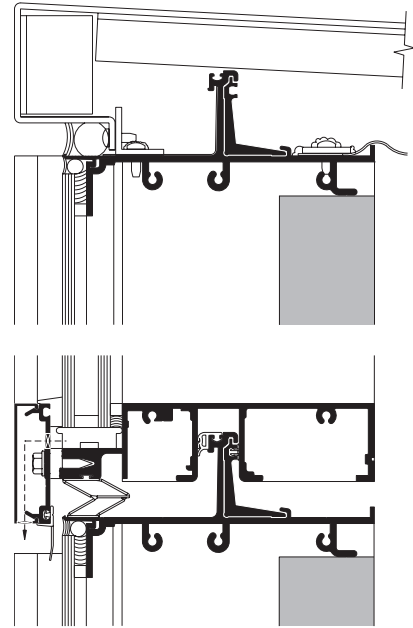


**VERTICAL SSG SYSTEM SHOWN**

SCALE: 3" = 1'-0"

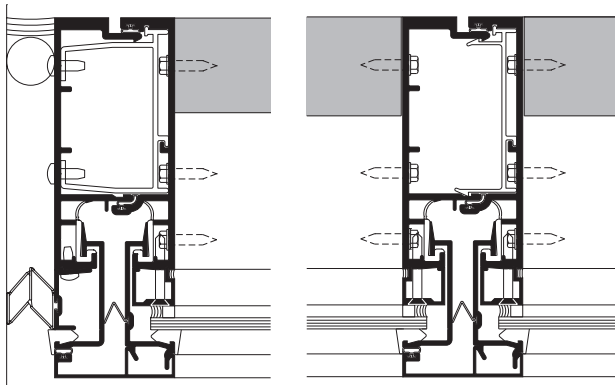
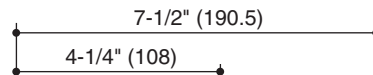


TYPICAL ELEVATION  
(4-SIDE CAPTURED SYSTEM)



1  
HEAD

2  
EXPANSION  
HORIZONTAL

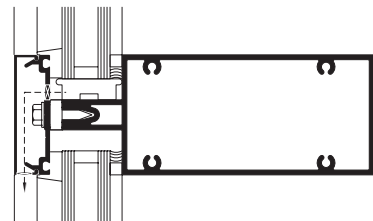
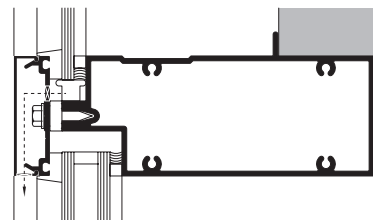
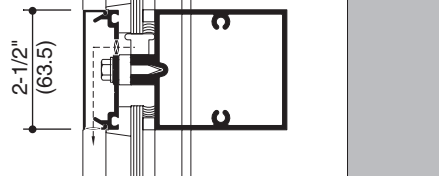


3  
SHALLOW  
HORIZONTAL

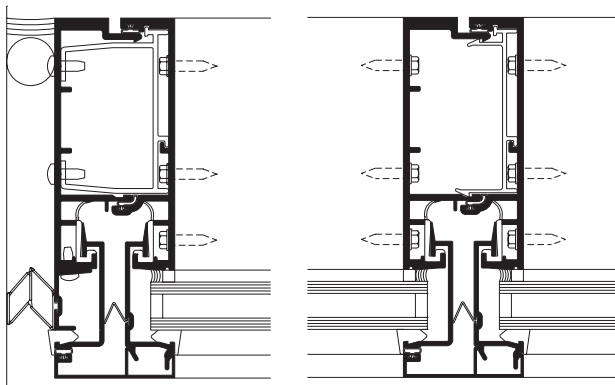
4  
1/4" OVER 1"  
HORIZONTAL

7  
JAMB  
1/4" INFILL

8  
MULLION  
1/4" INFILL

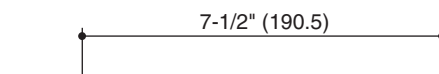


5  
1" OVER 1"  
HORIZONTAL

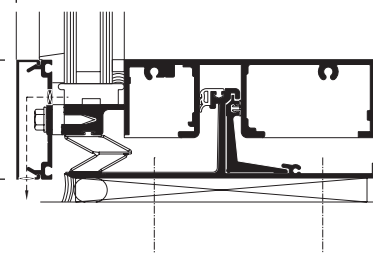


9  
JAMB

10  
MULLION



6  
SILL

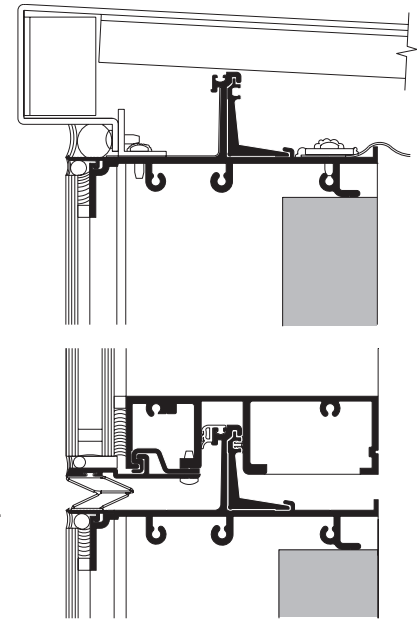
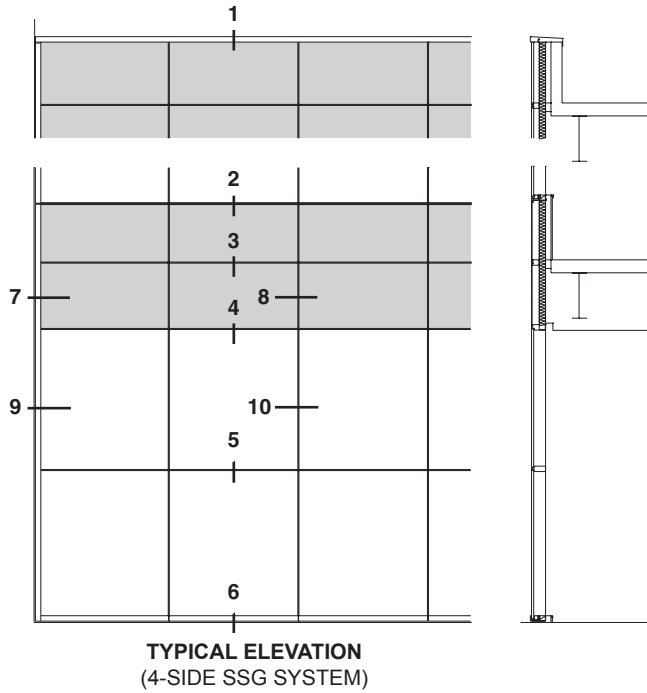


Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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SCALE: 3" = 1'-0"



**1  
HEAD  
(1/4" INFILL)**

**2  
EXPANSION  
SSG HORIZONTAL  
(1" OVER 1/4")**

7-1/2" (190.5)  
3-1/2" (88.9)

**3  
SHALLOW  
SSG  
HORIZONTAL  
(1/4" OVER 1/4")**

2-1/2"  
(63.5)

**4  
1/4" OVER 1"  
SSG HORIZONTAL**

**7  
JAMB  
1/4" INFILL**

**8  
SSG MULLION  
1/4" INFILL**

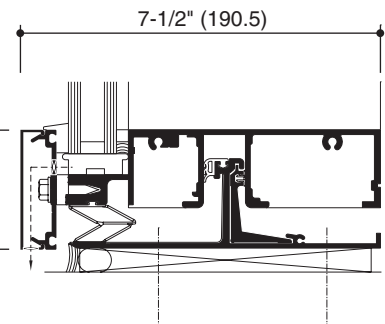
**5  
1" OVER 1"  
SSG HORIZONTAL**

**9  
JAMB  
(1" INFILL)**

**10  
SSG MULLION  
(1" INFILL)**

**6  
SILL  
(1" INFILL)**

2-1/2"  
(63.5)

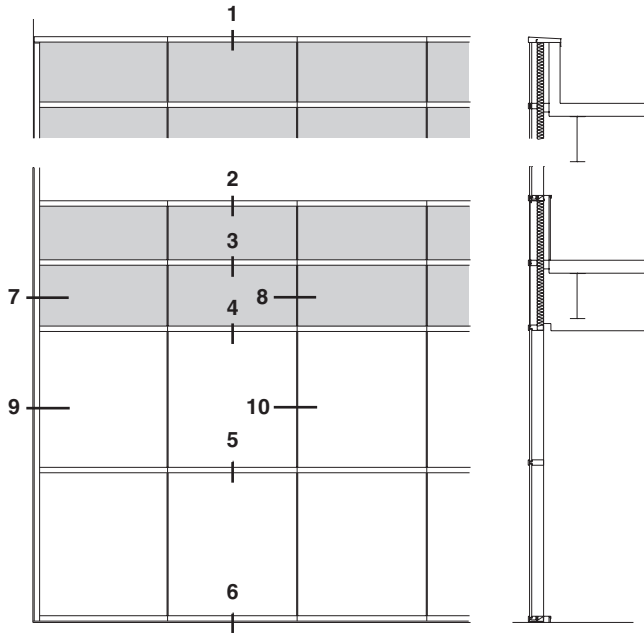


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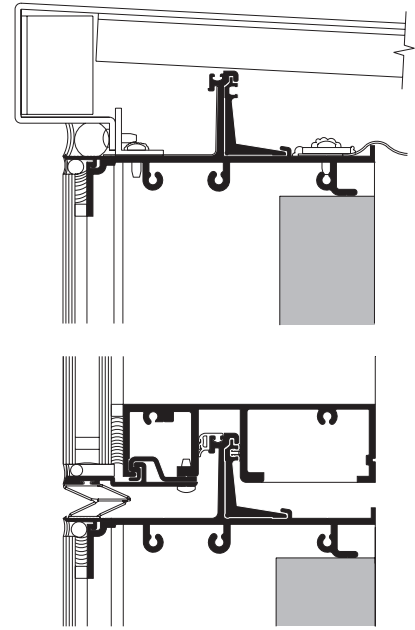
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SCALE: 3" = 1'-0"

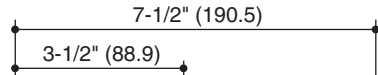


TYPICAL ELEVATION  
(VERTICAL SSG SYSTEM)

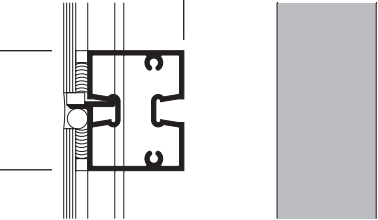


1  
HEAD  
(1/4" INFILL)

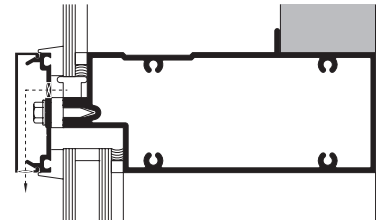
2  
EXPANSION  
HORIZONTAL  
(1" OVER 1/4")



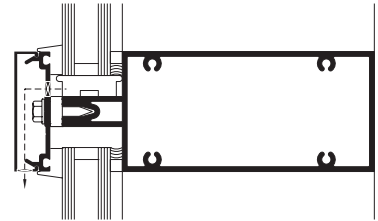
3  
SHALLOW  
HORIZONTAL  
(1/4" OVER 1/4")



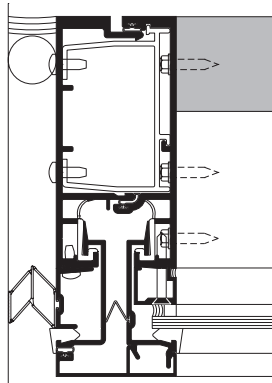
4  
1/4" OVER 1"  
HORIZONTAL



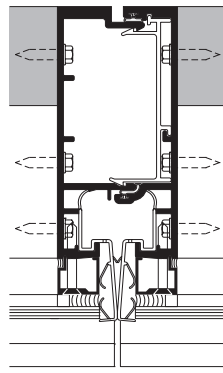
5  
1" OVER 1"  
HORIZONTAL



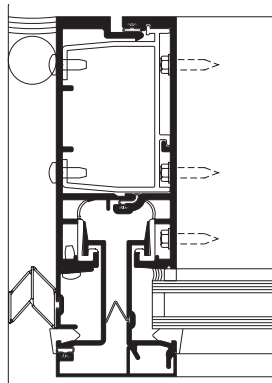
6  
SILL  
(1" INFILL)



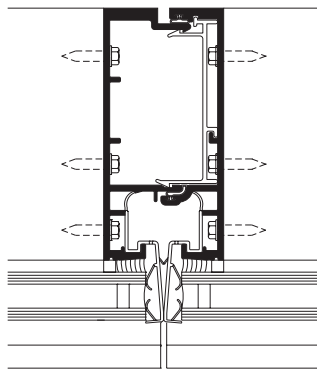
7  
JAMB  
1/4" INFILL



8  
SSG MULLION  
1/4" INFILL



9  
JAMB  
(1" INFILL)

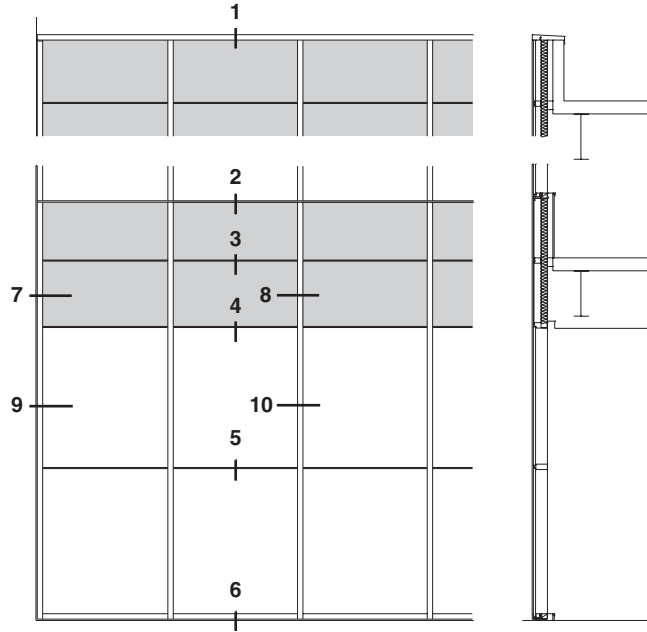


10  
SSG MULLION  
(1" INFILL)

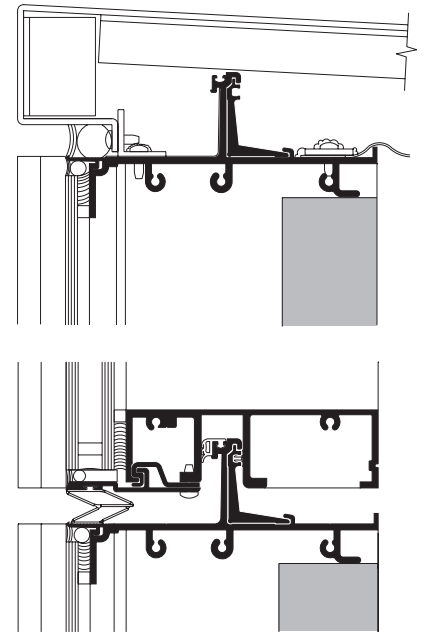
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SCALE: 3" = 1'-0"

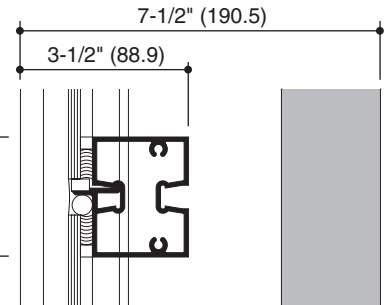


**TYPICAL ELEVATION**  
(HORIZONTAL SSG SYSTEM)

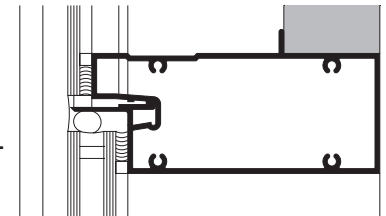


**1**  
HEAD  
(1/4" INFILL)

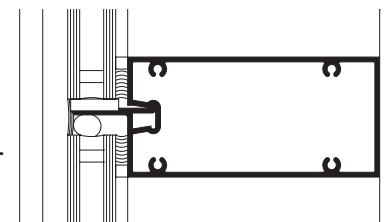
**2**  
EXPANSION  
SSG HORIZONTAL  
(1" OVER 1/4")



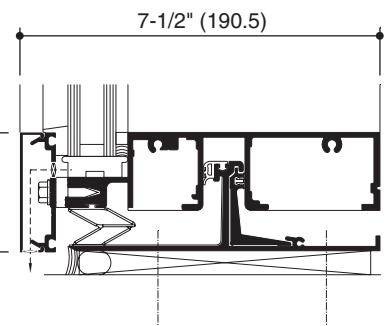
**3**  
SHALLOW  
SSG  
HORIZONTAL  
(1/4" OVER 1/4")



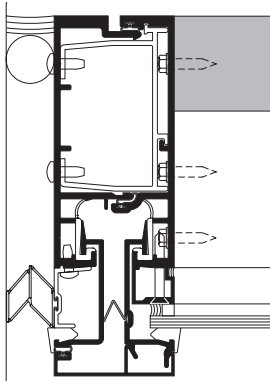
**4**  
1/4" OVER 1"  
SSG HORIZONTAL



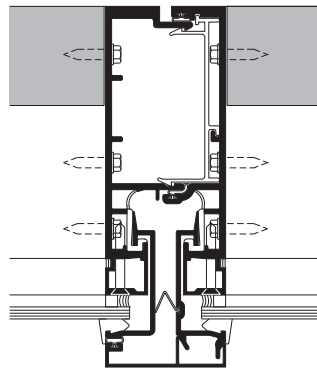
**5**  
1" OVER 1"  
SSG HORIZONTAL



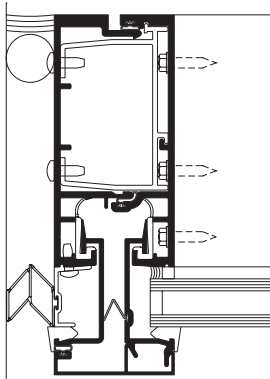
**6**  
SILL  
(1" INFILL)



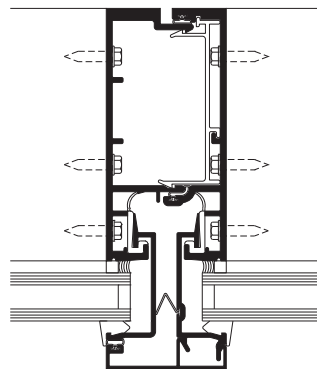
**7**  
JAMB  
1/4" INFILL



**8**  
MULLION  
1/4" INFILL



**9**  
JAMB  
(1" INFILL)



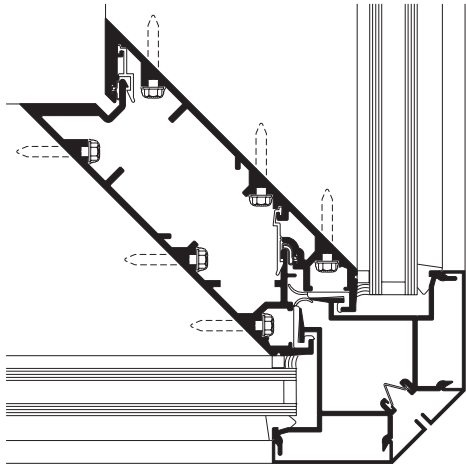
**10**  
MULLION  
(1" INFILL)

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

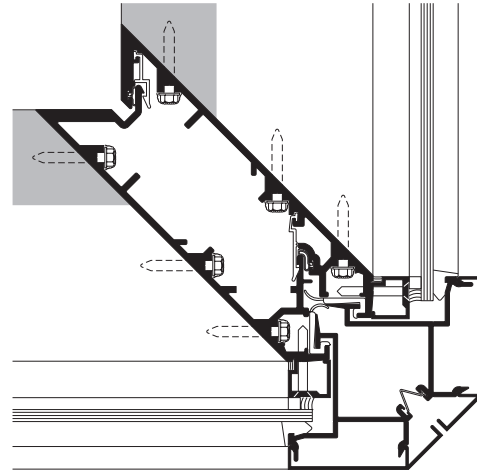
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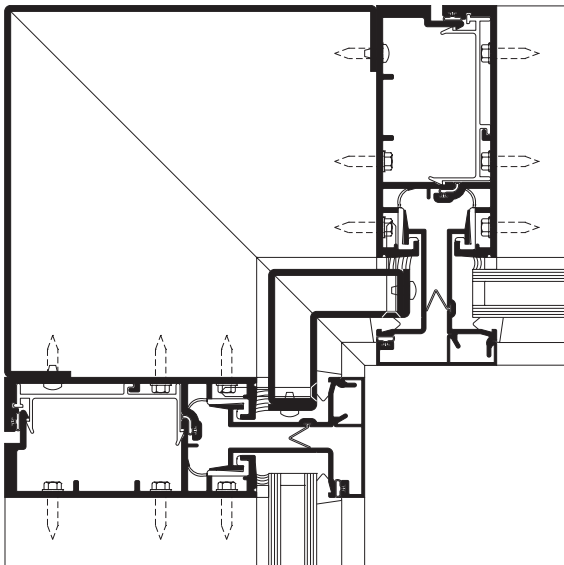
SCALE: 3" = 1'-0"



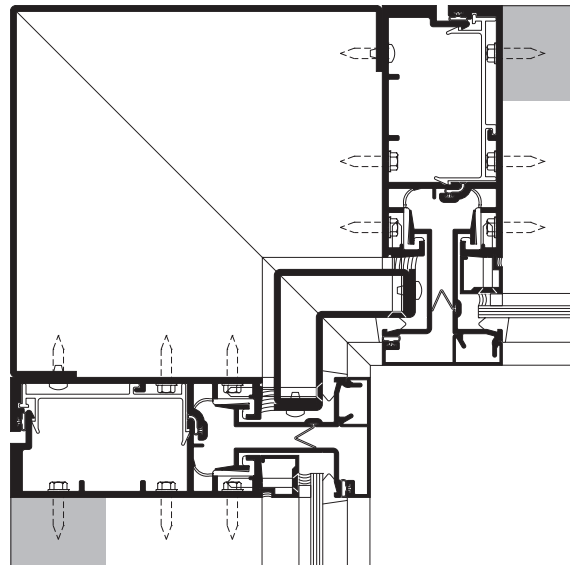
**OUTSIDE CORNER**  
(1" Infill)



**OUTSIDE CORNER**  
(1/4" Infill)



**INSIDE CORNER**  
(1" Infill)



**INSIDE CORNER**  
(1/4" Infill)

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

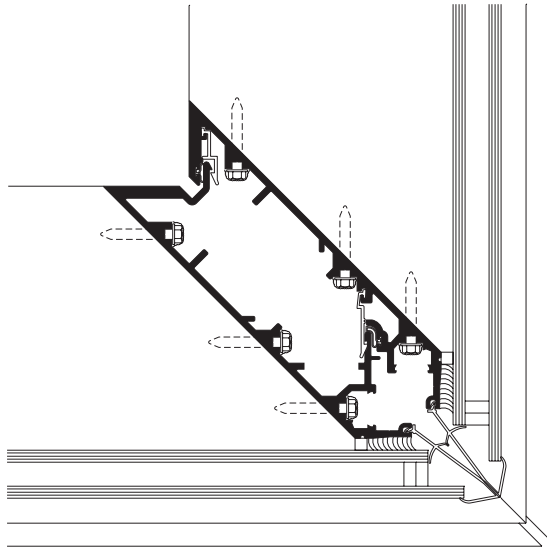
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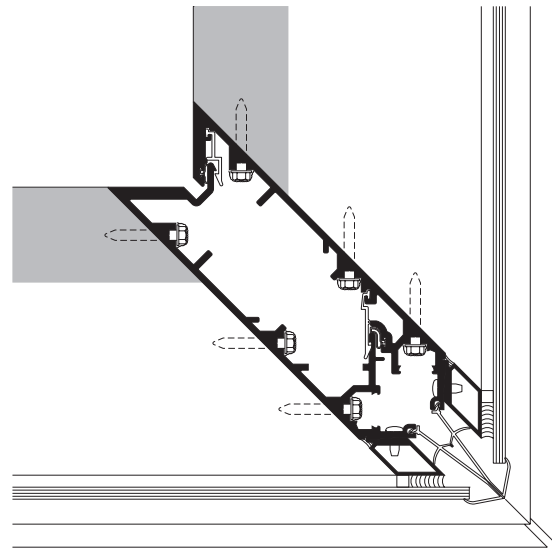
SCALE: 3" = 1'-0"

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

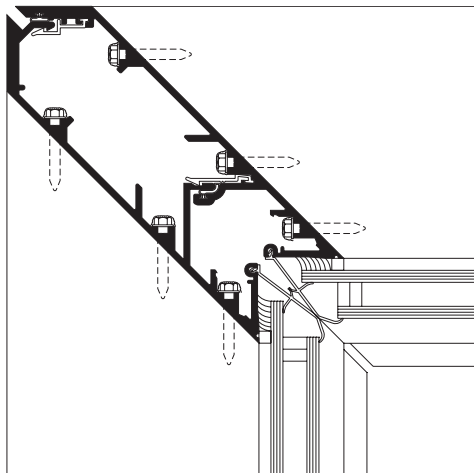
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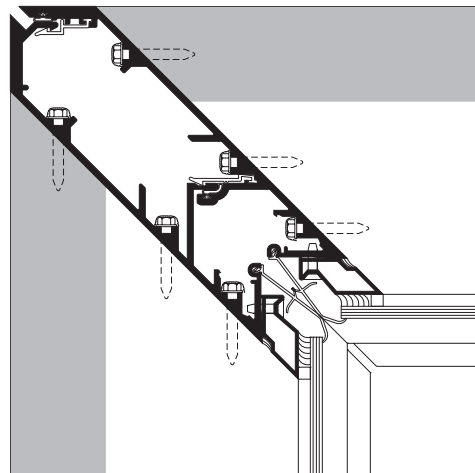
**OUTSIDE CORNER  
(1" Infill)**



**OUTSIDE CORNER  
(1/4" Infill)**



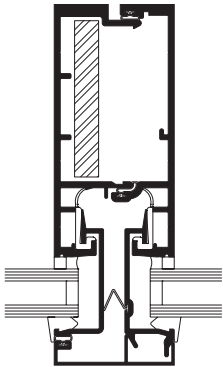
**INSIDE CORNER  
(1" Infill)**



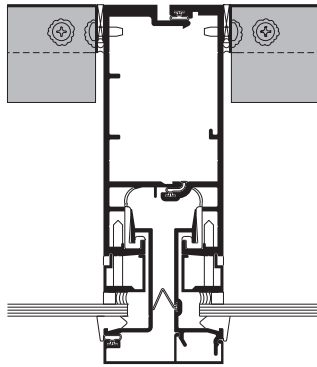
**INSIDE CORNER  
(1/4" Infill)**

SCALE: 3" = 1'-0"

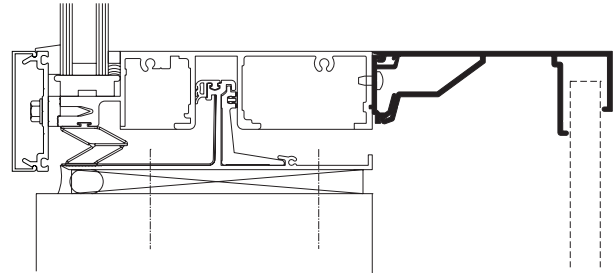
**STEEL REINFORCING**



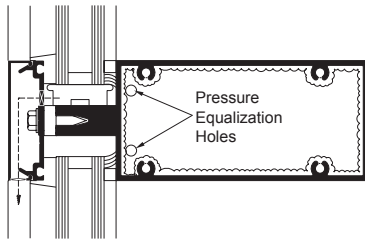
**BACK PAN OPTION**



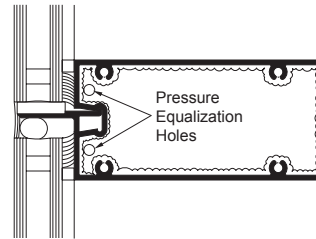
**INTERIOR TRIM AT SILL (Head and Jamb similar)**



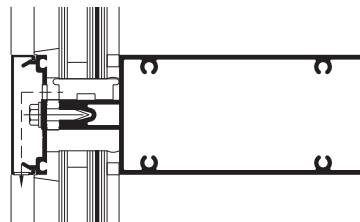
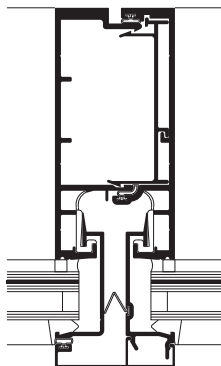
**PRESSURE EQUALIZATION ENHANCEMENT OPTION (Captured System)**



**PRESSURE EQUALIZATION ENHANCEMENT OPTION (SSG System)**



**LARGE MISSILE IMPACT**

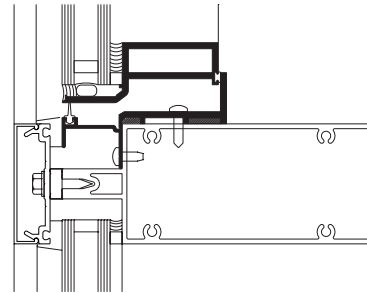
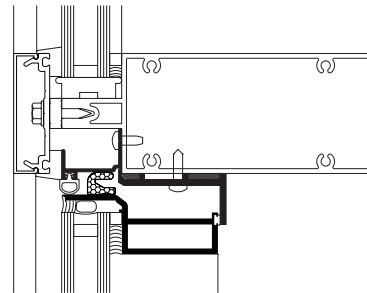
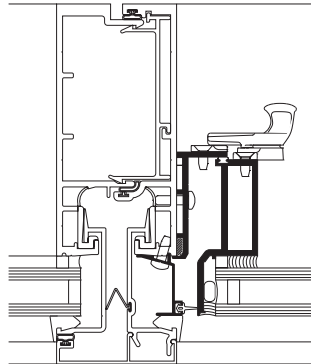
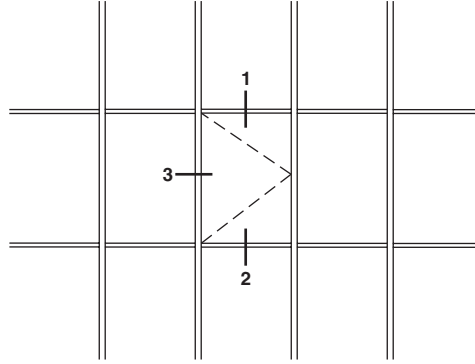


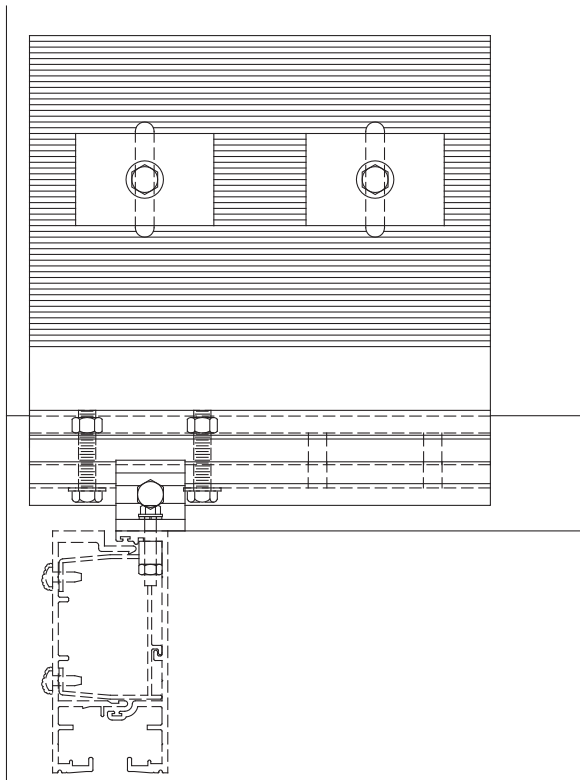
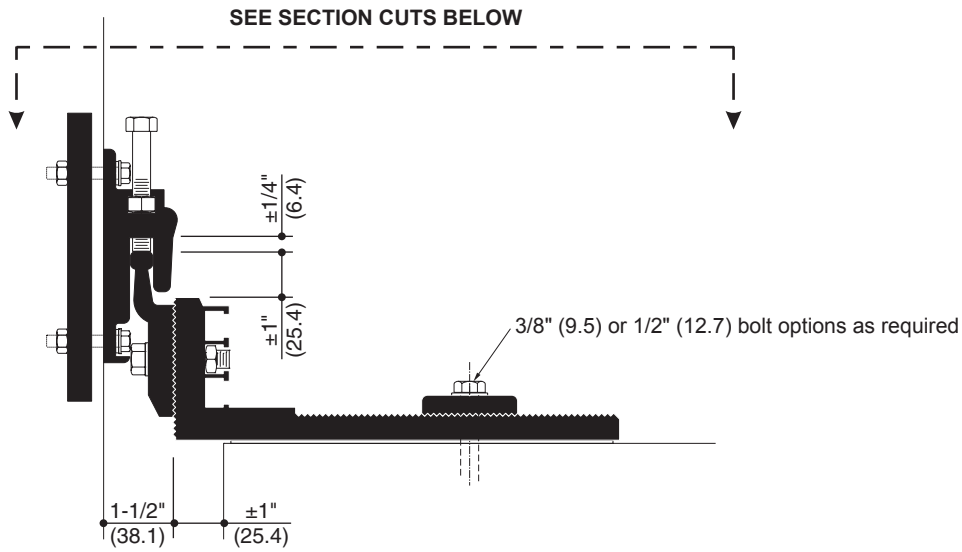
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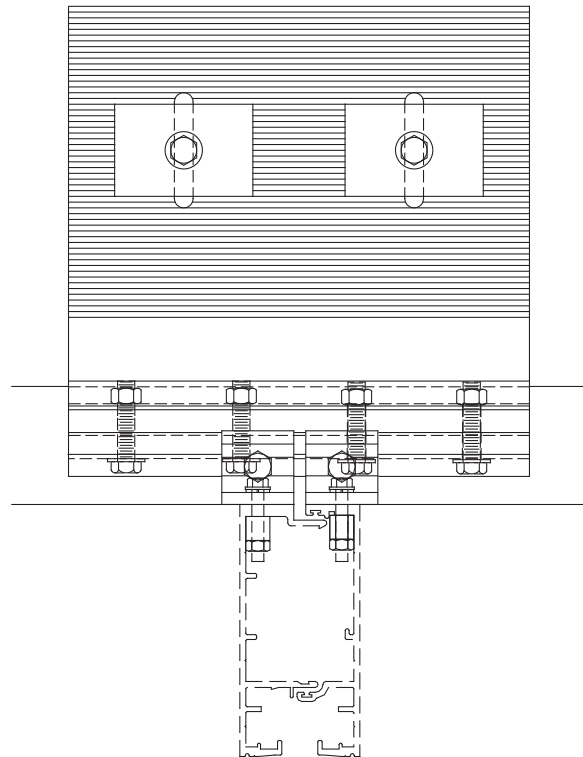
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ANCHOR AT JAMB



ANCHOR AT MULLION

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## WIND LOAD CHARTS

Mullions are designed for deflection limitations in accordance with AAMA TIR-A11 of L/175 up to 13'-6" and L/240 +1/4" above 13'-6". These curves are for mullions WITH HORIZONTALS and are based on engineering calculations for stress and deflection. Allowable wind load stress for ALUMINUM 15,152 psi (104MPa), STEEL 30,000 psi (207MPa). Charted curves, in all cases are for the limiting value. Wind load charts contained herein are based upon nominal wind load utilized in allowable stress design. A conversion from Load Resistance Factor Design (LRFD) is provided. To convert ultimate wind loads to nominal loads, multiply ultimate wind loads by a factor of 0.6 per ASCE/SEI 7. A 4/3 increase in allowable stress has not been used to develop these curves. For special situations not covered by these curves, contact your Kawneer representative for additional information.

## DEADLOAD CHARTS

Horizontal or deadload limitations are based upon 1/8" (3.2), maximum allowable deflection at the center of an intermediate horizontal member. The accompanying charts are calculated for 1" (25.4) thick insulating glass or 1/4" (6.35) thick glass supported on two setting blocks placed at the loading points shown. Maximum allowable stress for aluminum is 15,152 PSI (104MPa).

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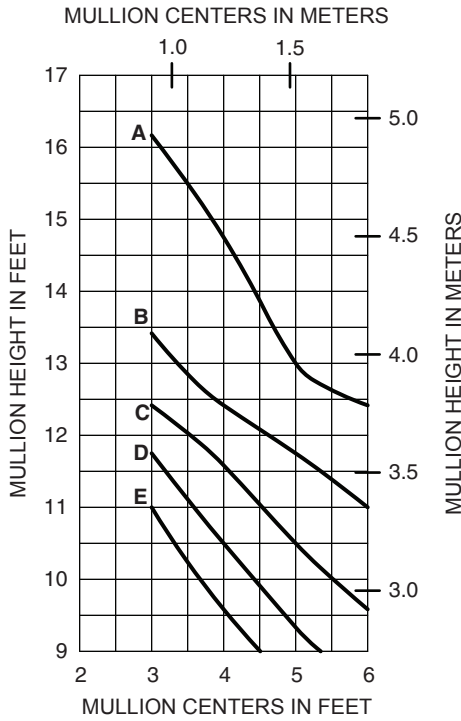
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When mullion is used in a SSG application, curves become straight due to structural silicone limits, represented by dashed lines on chart. \*Charts are for typical spans, not beginning or ending spans. C/L of stack horizontal to be at noted stool height above C/L of anchor.

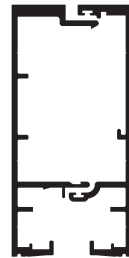
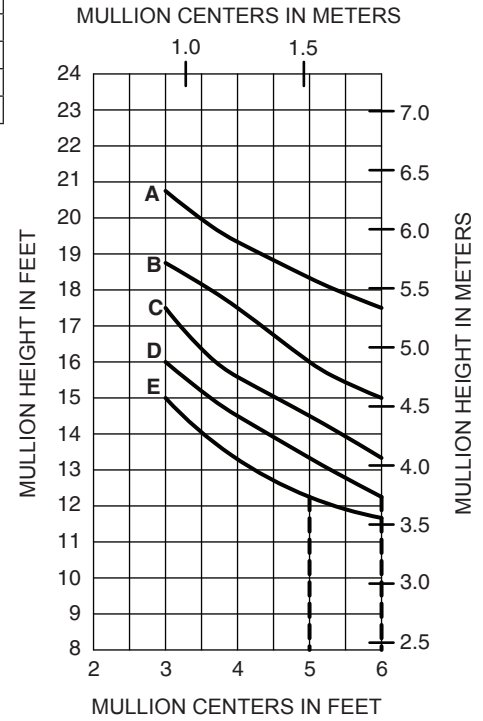
----- SSG Structural Silicone Limit - Silicone joint contact is .625".

	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	20 PSF (960)	33 PSF (1580)
B =	30 PSF (1440)	50 PSF (2400)
C =	40 PSF (1920)	67 PSF (3200)
D =	50 PSF (2400)	83 PSF (4000)
E =	60 PSF (2880)	100 PSF (4790)

### SINGLE SPAN



### \*MULTI-SPAN 24" STOOL HEIGHT

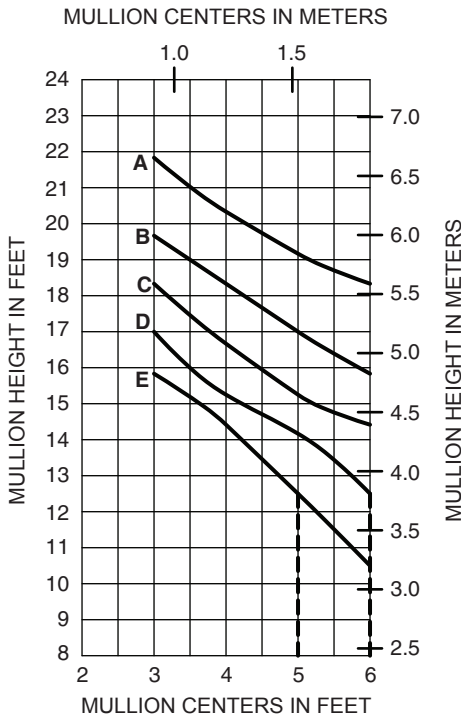


425001

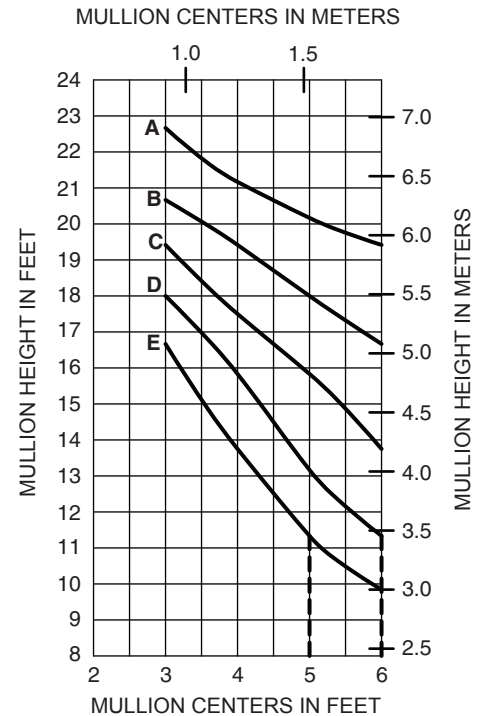
425002

$I = 8.797 (366.16 \times 10^4)$   
 $S = 3.120 (51.13 \times 10^3)$

### \*MULTI-SPAN 30" STOOL HEIGHT



### \*MULTI-SPAN 36" STOOL HEIGHT



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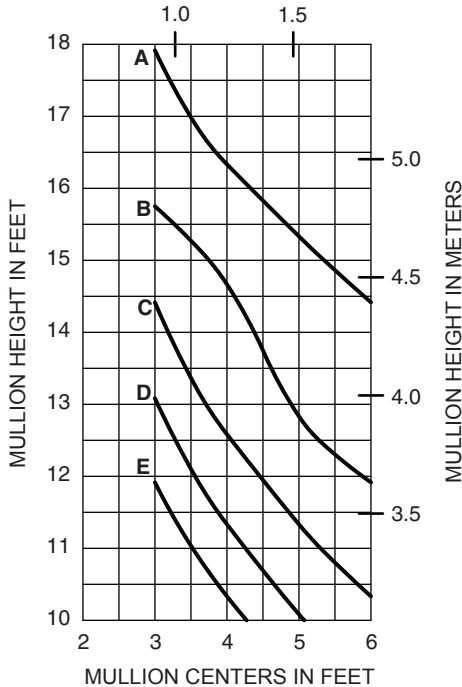
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When mullion is used in a SSG application, curves become straight due to structural silicone limits, represented by dashed lines on chart. \*Charts are for typical spans, not beginning or ending spans. C/L of stack horizontal to be at noted stool height above C/L of anchor.

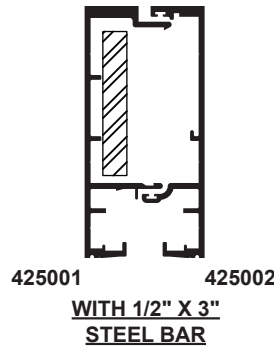
- Steel bar running from 6" above sill stack to 6" below anchor.
- - - - - 1/2" steel bar as shown running from 6" above stack to 6" below stack above (Unit height - 12").
- - - - - SSG Structural Silicone Limit - Silicone joint contact is .625".

### SINGLE SPAN with 1/2" x 3" Steel Bar

MULLION CENTERS IN METERS



	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	20 PSF (960)	33 PSF (1580)
B =	30 PSF (1440)	50 PSF (2400)
C =	40 PSF (1920)	67 PSF (3200)
D =	50 PSF (2400)	83 PSF (4000)
E =	60 PSF (2880)	100 PSF (4790)

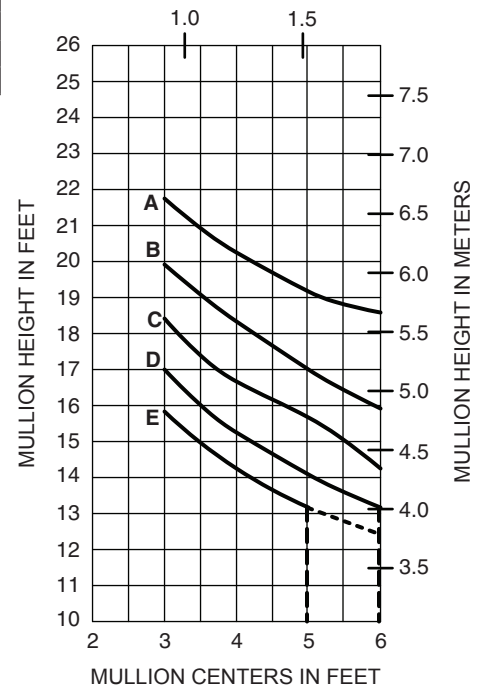


(Aluminum)  
I = 8.797 (366.16 x 10<sup>4</sup>)  
S = 3.120 (51.13 x 10<sup>3</sup>)

(Steel)  
I = 3.263 (135.82 x 10<sup>4</sup>)  
S = 0.750 (12.29 x 10<sup>3</sup>)

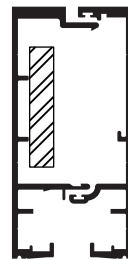
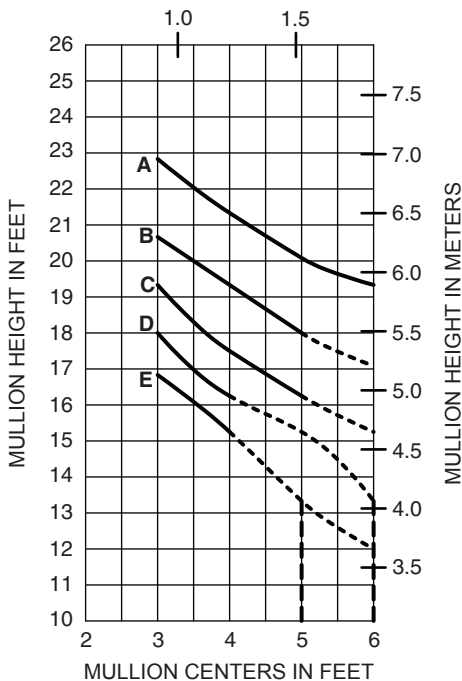
### \*MULTI-SPAN 24" STOOL HEIGHT with 1/2" x 2-1/2" Steel Bar

MULLION CENTERS IN METERS



### \*MULTI-SPAN 30" STOOL HEIGHT with 1/2" x 2-1/2" Steel Bar

MULLION CENTERS IN METERS

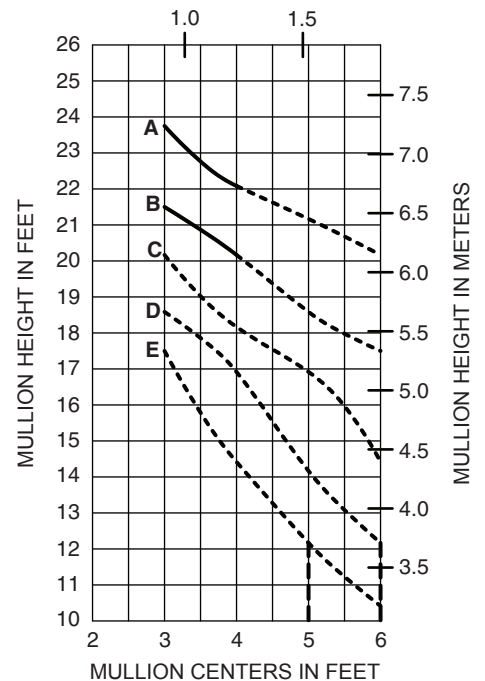


(Aluminum)  
I = 8.797 (366.16 x 10<sup>4</sup>)  
S = 3.120 (51.13 x 10<sup>3</sup>)

(Steel)  
I = 1.888 (78.58 x 10<sup>4</sup>)  
S = 0.521 (8.54 x 10<sup>3</sup>)

### \*MULTI-SPAN 36" STOOL HEIGHT with 1/2" x 2-1/2" Steel Bar

MULLION CENTERS IN METERS



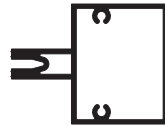
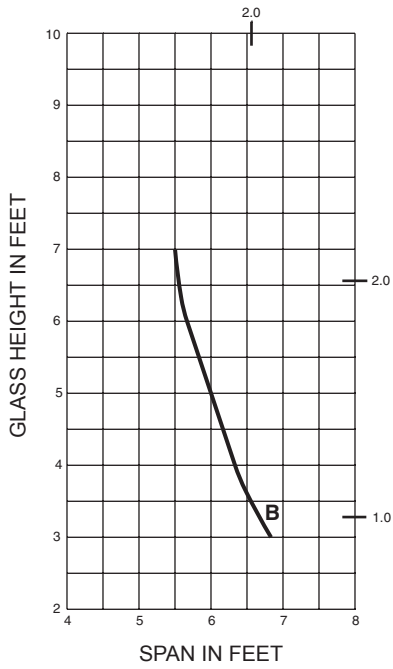
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A = 1/4" GLASS (1/4 POINT LOADING)  
 B = 1" GLASS (1/4 POINT LOADING)

### 425005

SPAN IN METERS



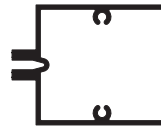
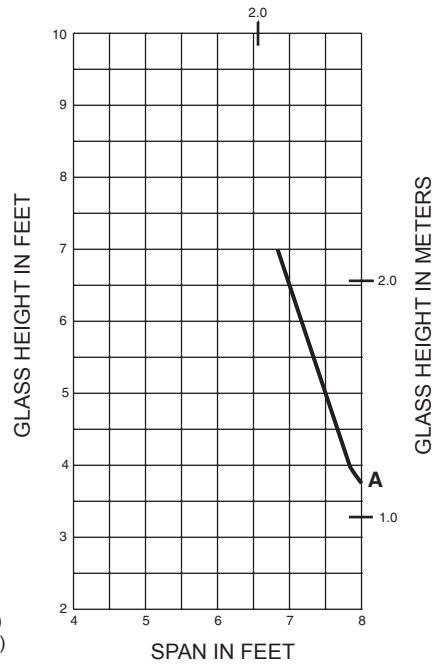
### 425005

I = 0.885 (36.84 x 10<sup>4</sup>)  
 S = 0.708 (11.60 x 10<sup>3</sup>)

GLASS HEIGHT IN METERS

### 425006

SPAN IN METERS



### 425006

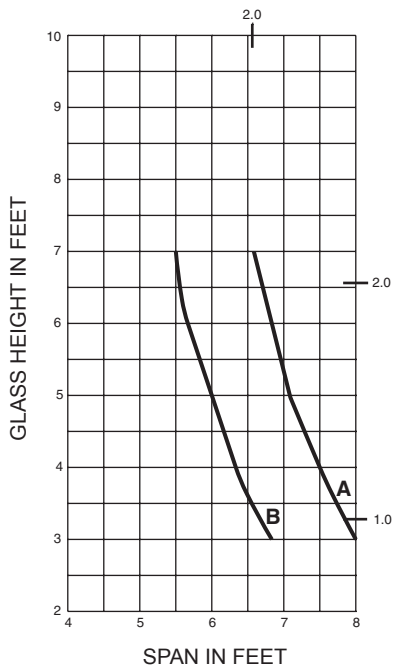
I = 1.059 (44.08 x 10<sup>4</sup>)  
 S = 0.847 (13.88 x 10<sup>3</sup>)

GLASS HEIGHT IN FEET

GLASS HEIGHT IN METERS

### 425007

SPAN IN METERS



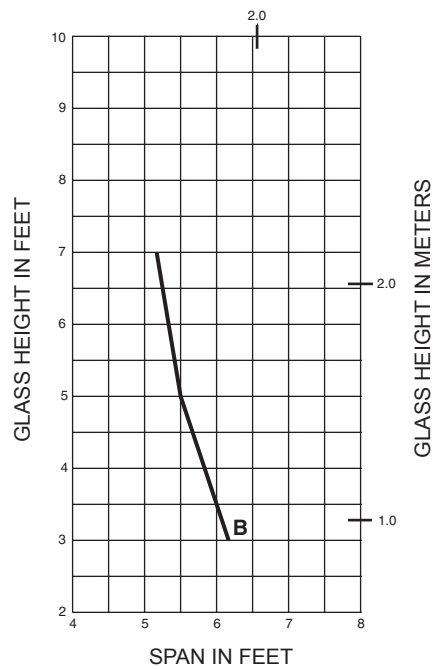
### 425007

I = 0.868 (36.13 x 10<sup>4</sup>)  
 S = 0.695 (11.39 x 10<sup>3</sup>)

GLASS HEIGHT IN METERS

### 425008

SPAN IN METERS



### 425008

I = 0.656 (27.30 x 10<sup>4</sup>)  
 S = 0.702 (11.50 x 10<sup>3</sup>)

GLASS HEIGHT IN FEET

GLASS HEIGHT IN METERS

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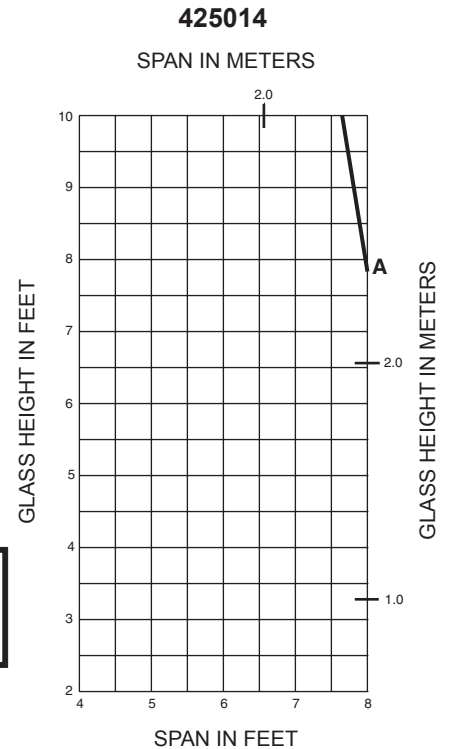
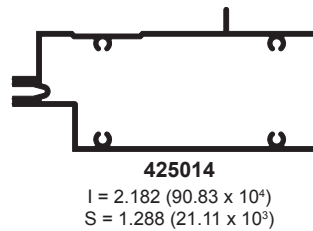
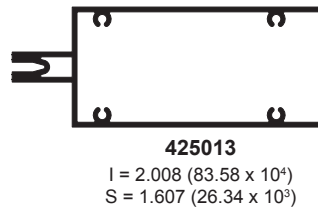
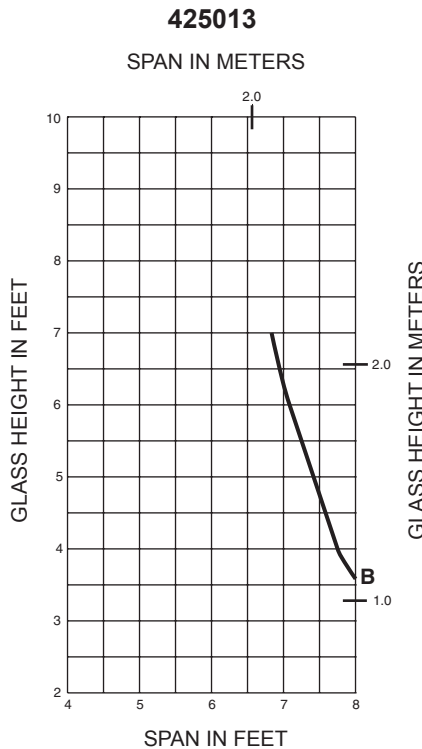
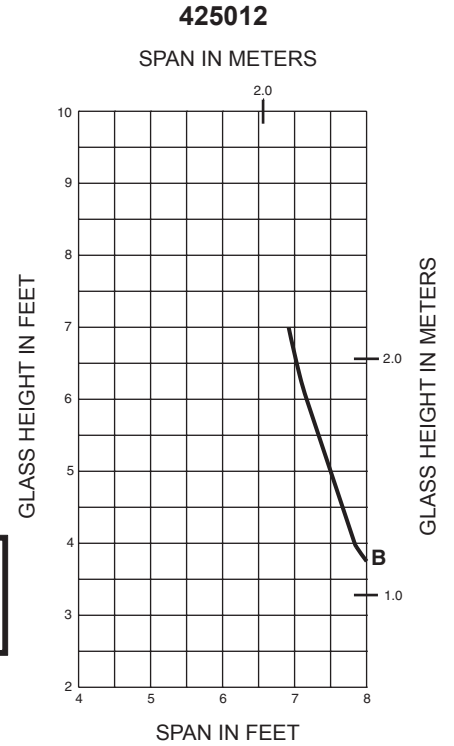
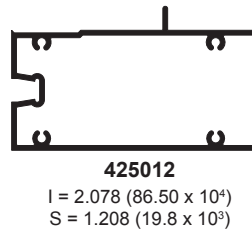
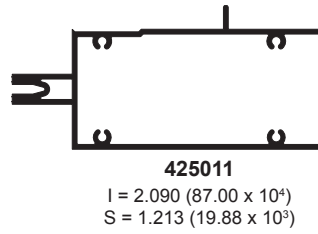
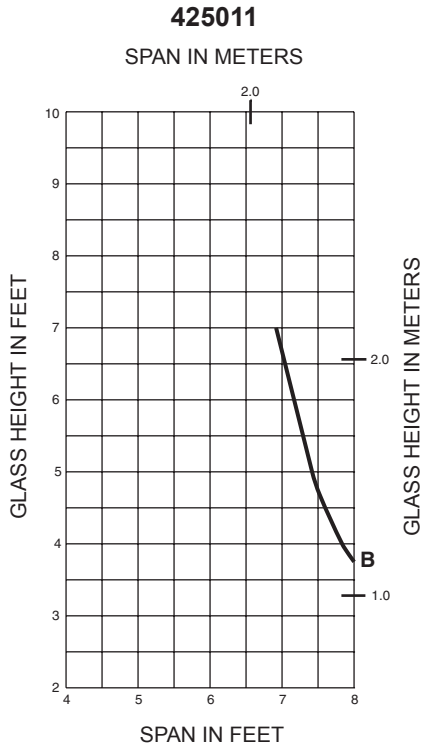
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A = 1/4" GLASS (1/4 POINT LOADING)  
 B = 1" GLASS (1/4 POINT LOADING)

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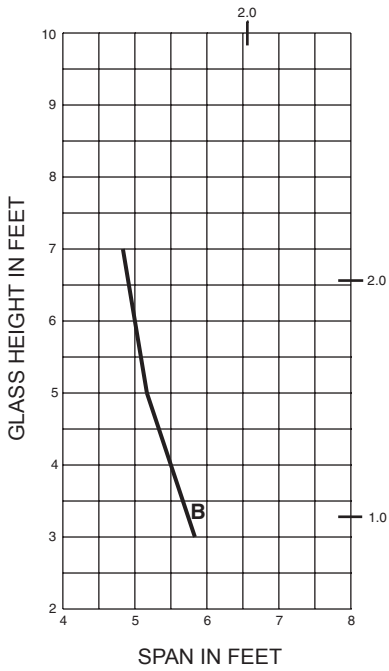
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A = 1/4" GLASS (1/4 POINT LOADING)  
 B = 1" GLASS (1/4 POINT LOADING)

### 425024

SPAN IN METERS



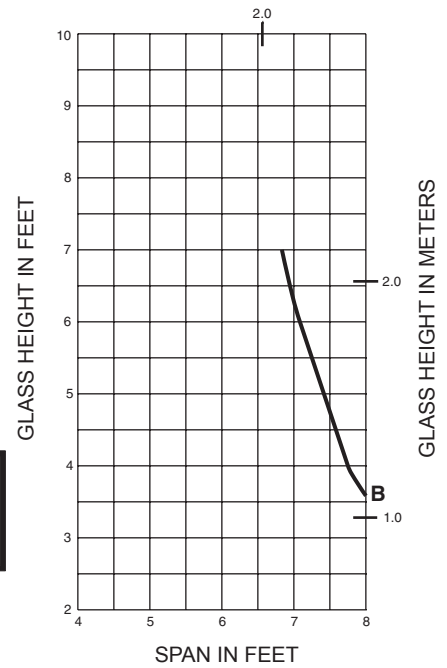
**425024**  
 $I = 0.508 (21.15 \times 10^4)$   
 $S = 0.480 (7.87 \times 10^3)$



**425027**  
 $I = 1.977 (83.08 \times 10^4)$   
 $S = 1.597 (26.17 \times 10^3)$

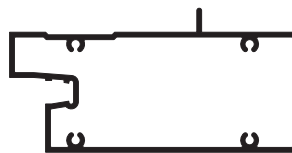
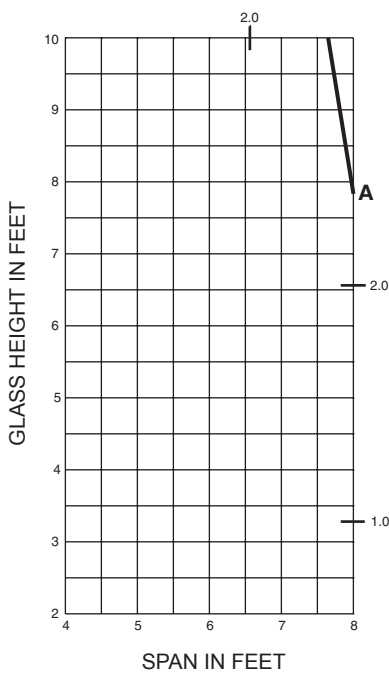
### 425027

SPAN IN METERS



### 425030

SPAN IN METERS

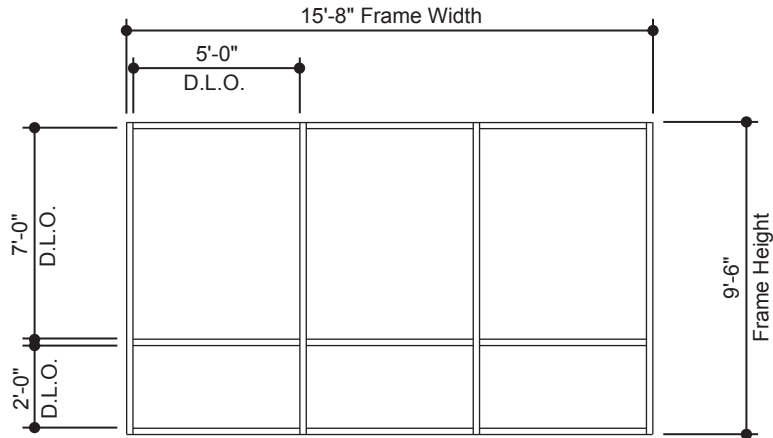


**425030**  
 $I = 2.179 (90.70 \times 10^4)$   
 $S = 1.307 (21.42 \times 10^3)$

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**Generic Project Specific U-factor Example Calculation**  
 (Percent of Glass will vary on specific products depending on sitelines)



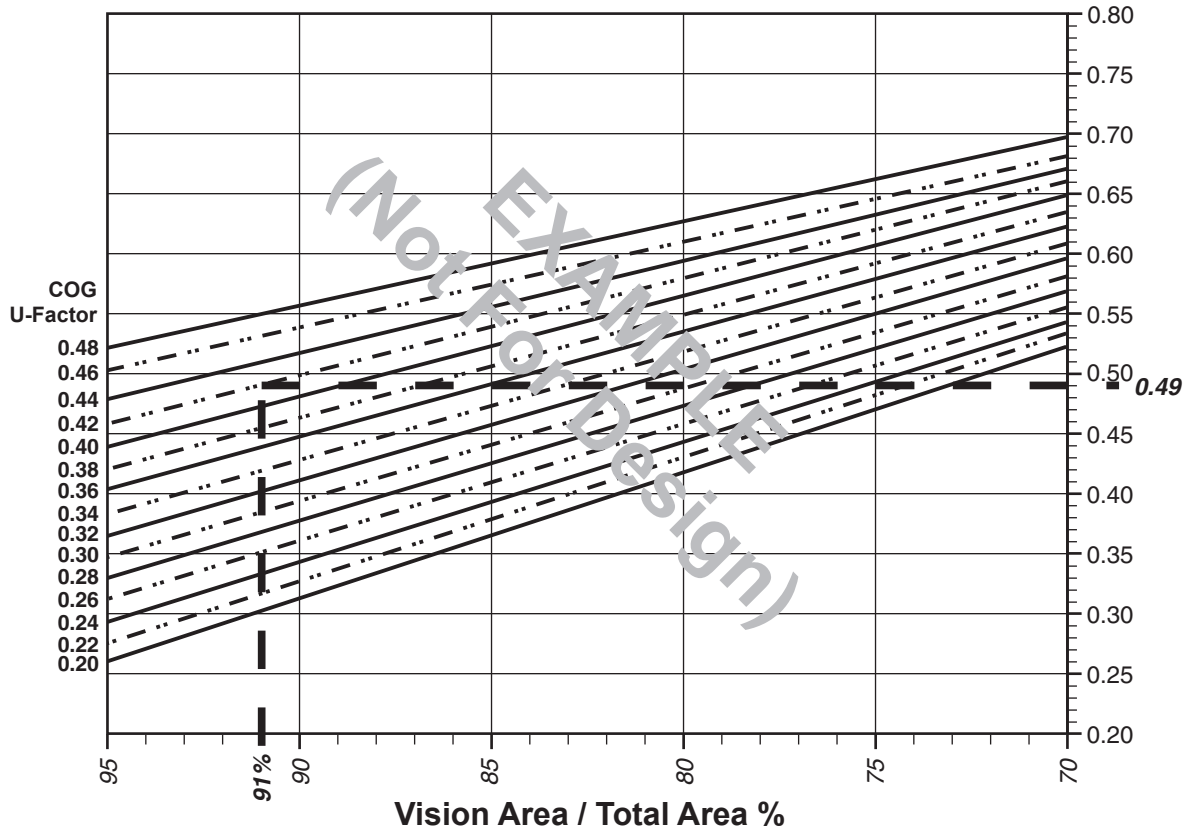
Example Glass U-Factor = 0.42 Btu/hr • ft<sup>2</sup> • °F

Total Daylight Opening = 3(5' x 7') + 3(5' x 2') = 135 ft<sup>2</sup>

Total Projected Area = 15'-8" x 9'-6" = 148.83 ft<sup>2</sup>

Percent of Glass = (Total Daylight Opening ÷ Total Projected Area)100  
 = (135 ÷ 148.83)100 = 91%

**System U-Factor vs Percent of Glass Area**



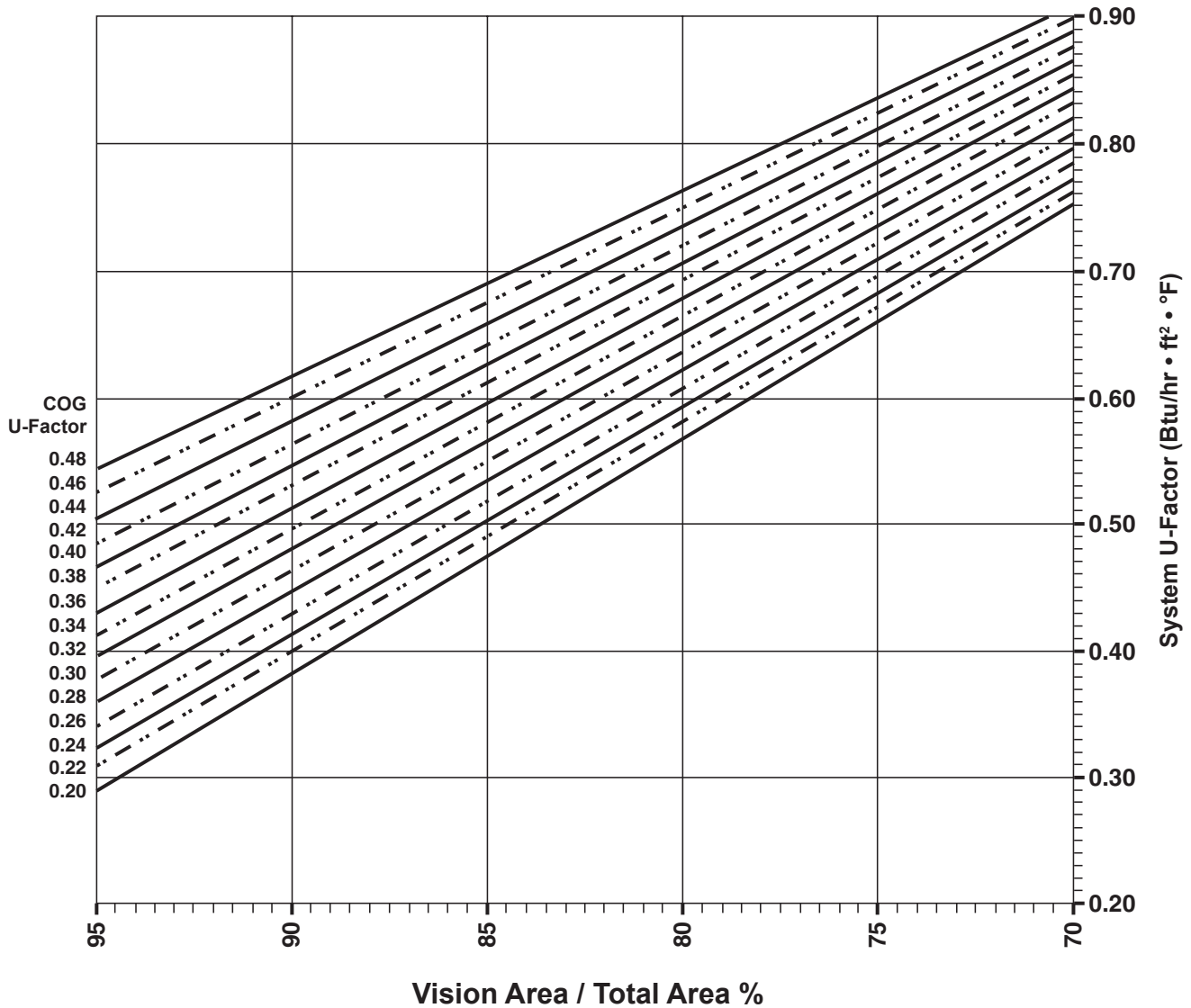
Based on 91% glass and center of glass U-Factor of 0.42  
 System U-Factor is equal to 0.49 Btu/hr • ft<sup>2</sup> • °F

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**4 Side Captured**

**System U-Factor vs Percent of Glass Area**



**Notes for System U-Factor, SHGC and VT charts:**

For glass values that are not listed, linear interpolation is permitted.

Glass properties are based on center of glass values and are obtained from your glass supplier.

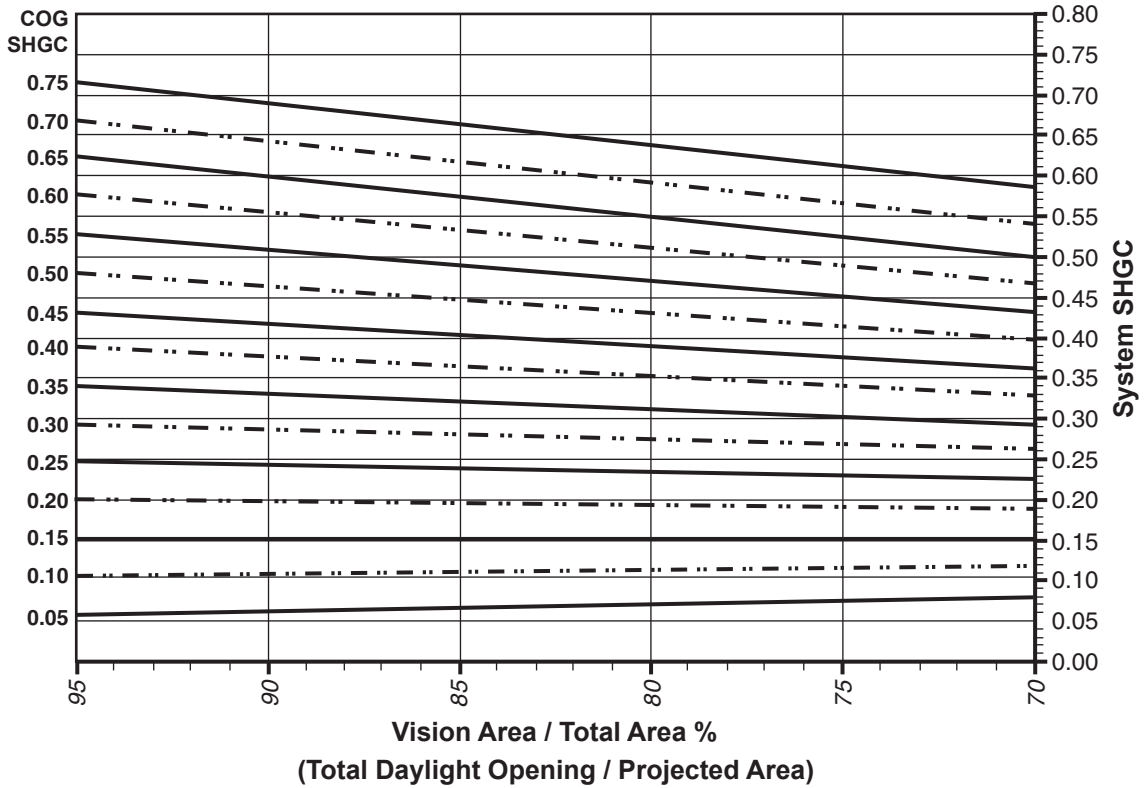
Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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## 4 Side Captured

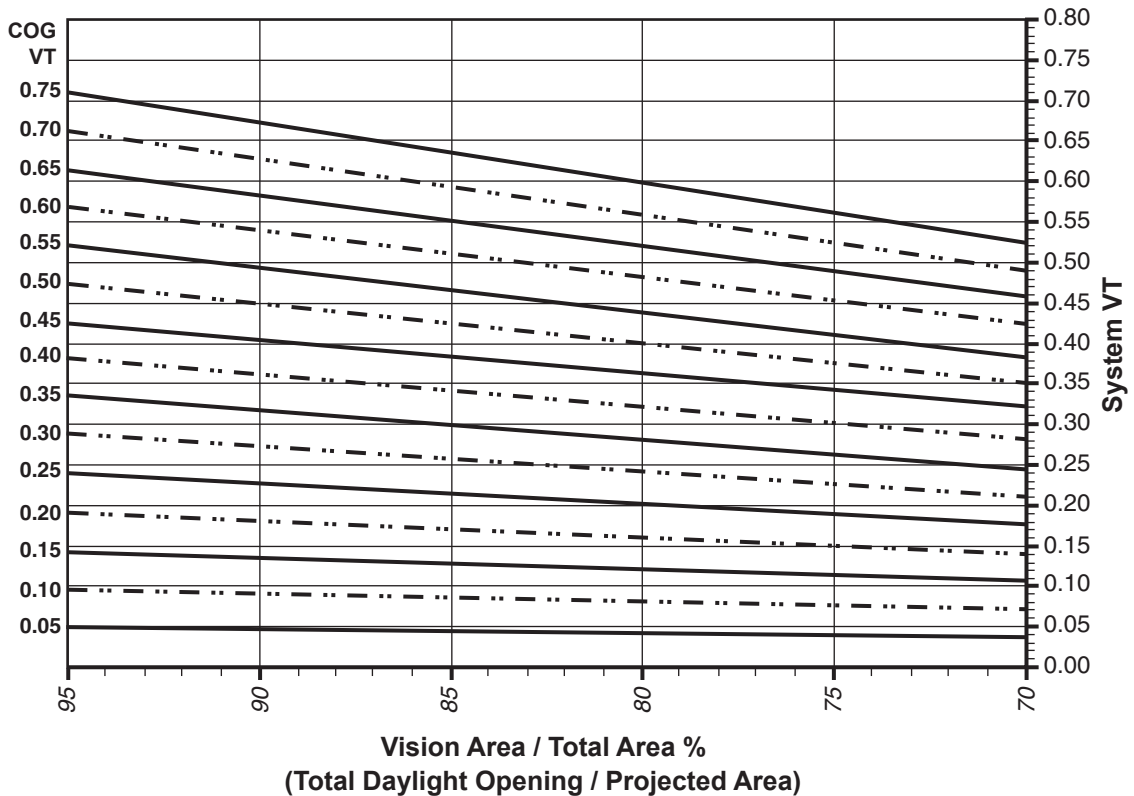
### System Solar Heat Gain Coefficient (SHGC) vs Percent of Vision Area



Charts are generated per AAMA 507

## 4 Side Captured

### Visible Transmittance (VT) vs Percent of Vision Area



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**Thermal Transmittance<sup>1</sup> (BTU/hr • ft<sup>2</sup> • °F)**

Glass U-Factor <sup>3</sup>	Overall U-Factor <sup>4</sup>
0.48	0.65
0.46	0.63
0.44	0.62
0.42	0.60
0.40	0.59
0.38	0.57
0.36	0.55
0.34	0.54
0.32	0.52
0.30	0.51
0.28	0.49
0.26	0.48
0.24	0.46
0.22	0.44
0.20	0.43

**4 Side Captured**

**NOTE:** For glass values that are not listed, linear interpolation is permitted.

1. U-Factors are determined in accordance with NFRC 100.
2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values and are obtained from your glass supplier.
4. Overall U-Factor, SHGC, and VT Matrices are based on the standard NFRC specimen size of 2000mm wide by 2000mm high (78-3/4" by 78-3/4").

**SHGC Matrix<sup>2</sup>**

Glass SHGC <sup>3</sup>	Overall SHGC <sup>4</sup>
0.75	0.68
0.70	0.63
0.65	0.59
0.60	0.55
0.55	0.50
0.50	0.46
0.45	0.41
0.40	0.37
0.35	0.33
0.30	0.28
0.25	0.24
0.20	0.19
0.15	0.15
0.10	0.11
0.05	0.06

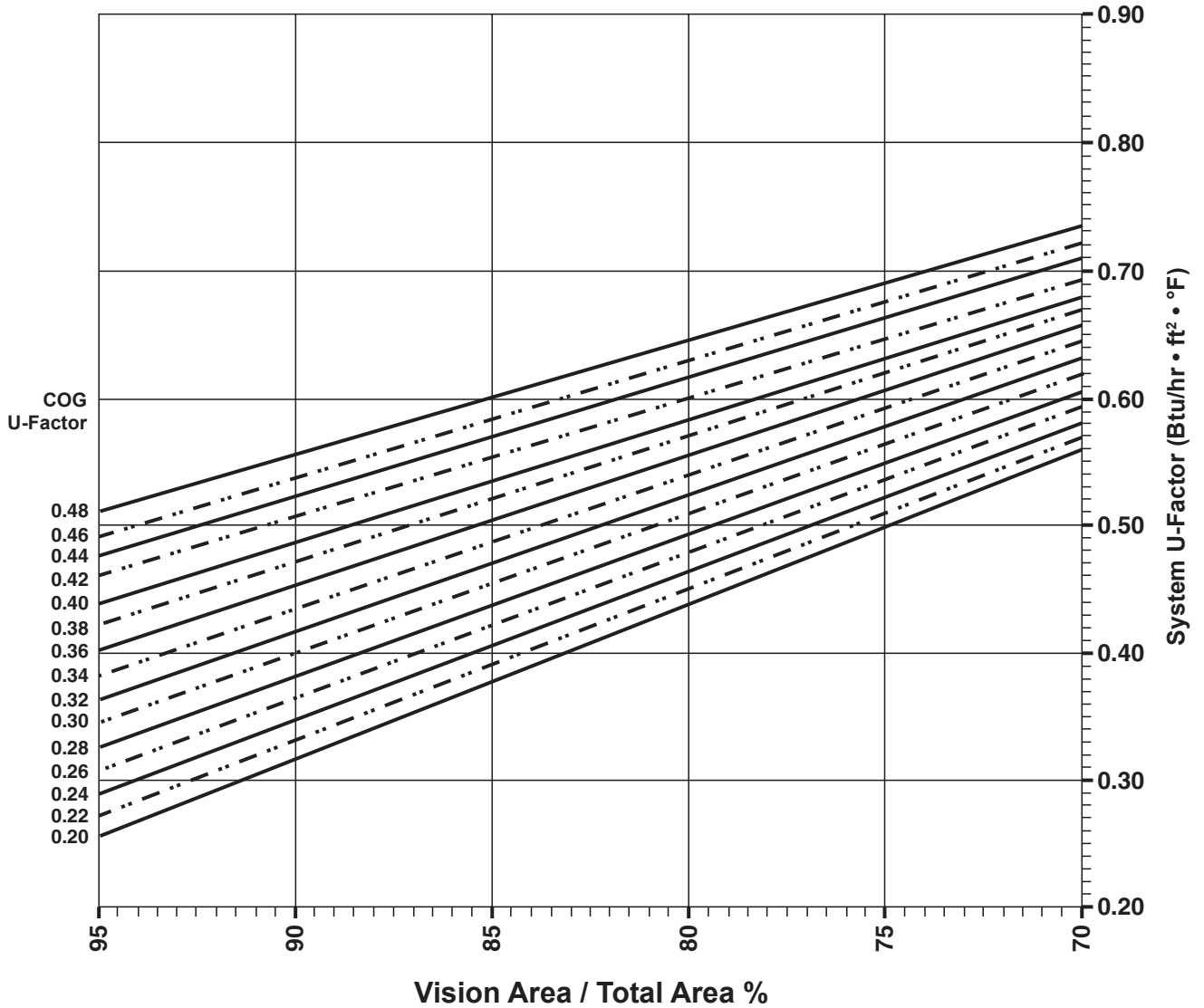
**Visible Transmittance<sup>2</sup>**

Glass VT <sup>3</sup>	Overall VT <sup>4</sup>
0.75	0.66
0.70	0.61
0.65	0.57
0.60	0.53
0.55	0.48
0.50	0.44
0.45	0.39
0.40	0.35
0.35	0.31
0.30	0.26
0.25	0.22
0.20	0.18
0.15	0.13
0.10	0.09
0.05	0.04

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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**Vertical SSG**  
**System U-Factor vs Percent of Glass Area**



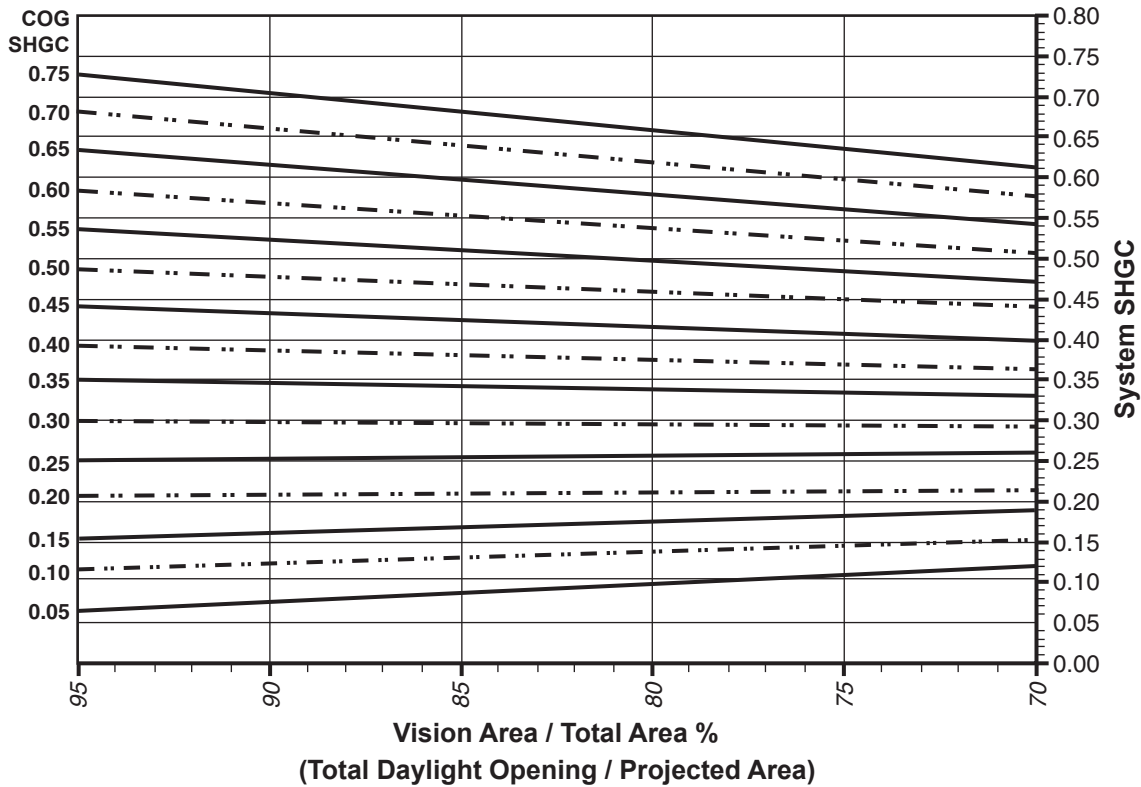
**Notes for System U-Factor, SHGC and VT charts:**  
 For glass values that are not listed, linear interpolation is permitted.  
 Glass properties are based on center of glass values and are obtained from your glass supplier.

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**Vertical SSG**

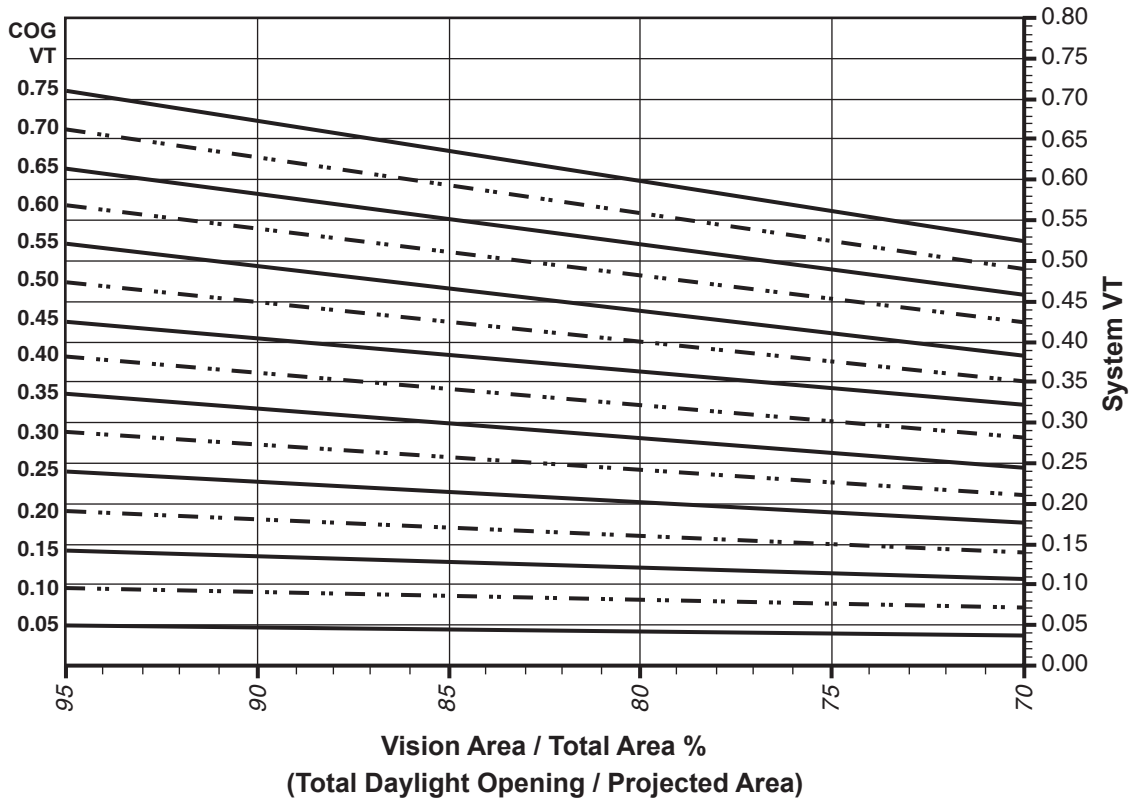
System Solar Heat Gain Coefficient (SHGC) vs Percent of Vision Area



Charts are generated per AAMA 507

**Vertical SSG**

Visible Transmittance (VT) vs Percent of Vision Area



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**Thermal Transmittance<sup>1</sup>** (BTU/hr • ft<sup>2</sup> • °F)

**Vertical SSG**

Glass U-Factor <sup>3</sup>	Overall U-Factor <sup>4</sup>
0.48	0.57
0.46	0.56
0.44	0.54
0.42	0.53
0.40	0.51
0.38	0.49
0.36	0.48
0.34	0.46
0.32	0.44
0.30	0.43
0.28	0.41
0.26	0.40
0.24	0.38
0.22	0.36
0.20	0.35

**NOTE:** For glass values that are not listed, linear interpolation is permitted.

1. U-Factors are determined in accordance with NFRC 100.
2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values and are obtained from your glass supplier.
4. Overall U-Factor, SHGC, and VT Matrices are based on the standard NFRC specimen size of 2000mm wide by 2000mm high (78-3/4" by 78-3/4").

**SHGC Matrix<sup>2</sup>**

Glass SHGC <sup>3</sup>	Overall SHGC <sup>4</sup>
0.75	0.69
0.70	0.65
0.65	0.61
0.60	0.56
0.55	0.52
0.50	0.47
0.45	0.43
0.40	0.39
0.35	0.34
0.30	0.30
0.25	0.25
0.20	0.21
0.15	0.17
0.10	0.12
0.05	0.08

**Visible Transmittance<sup>2</sup>**

Glass VT <sup>3</sup>	Overall VT <sup>4</sup>
0.75	0.66
0.70	0.61
0.65	0.57
0.60	0.53
0.55	0.48
0.50	0.44
0.45	0.39
0.40	0.35
0.35	0.31
0.30	0.26
0.25	0.22
0.20	0.18
0.15	0.13
0.10	0.09
0.05	0.04

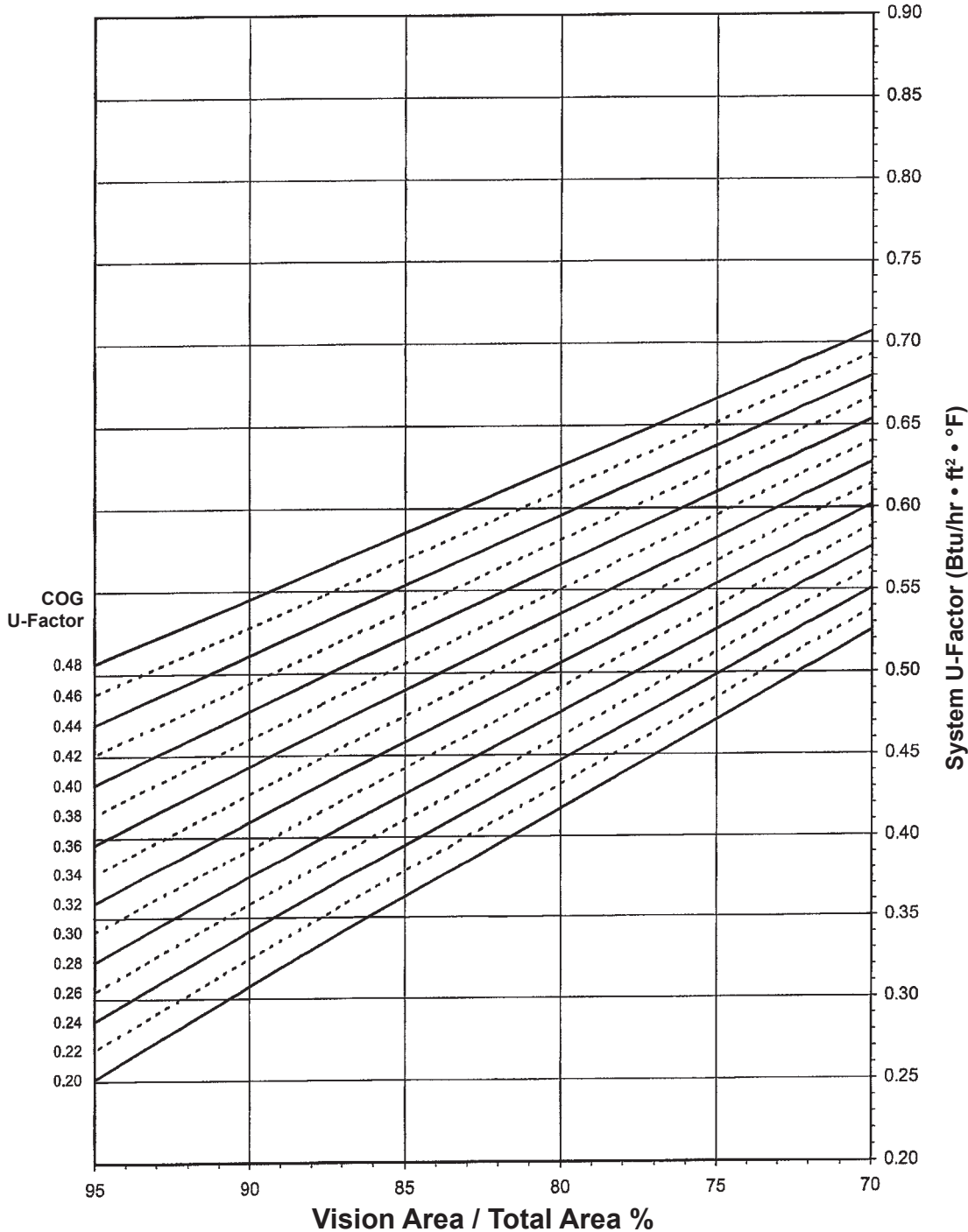
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**Note:**  
 Values in parentheses are metric.  
 COG = Center of Glass.  
 Charts are generated per AMMA 507

**4 Side SSG**

**System U-Factor vs Percent of Glass Area**



**Notes for System U-Factor, SHGC and VT charts:**

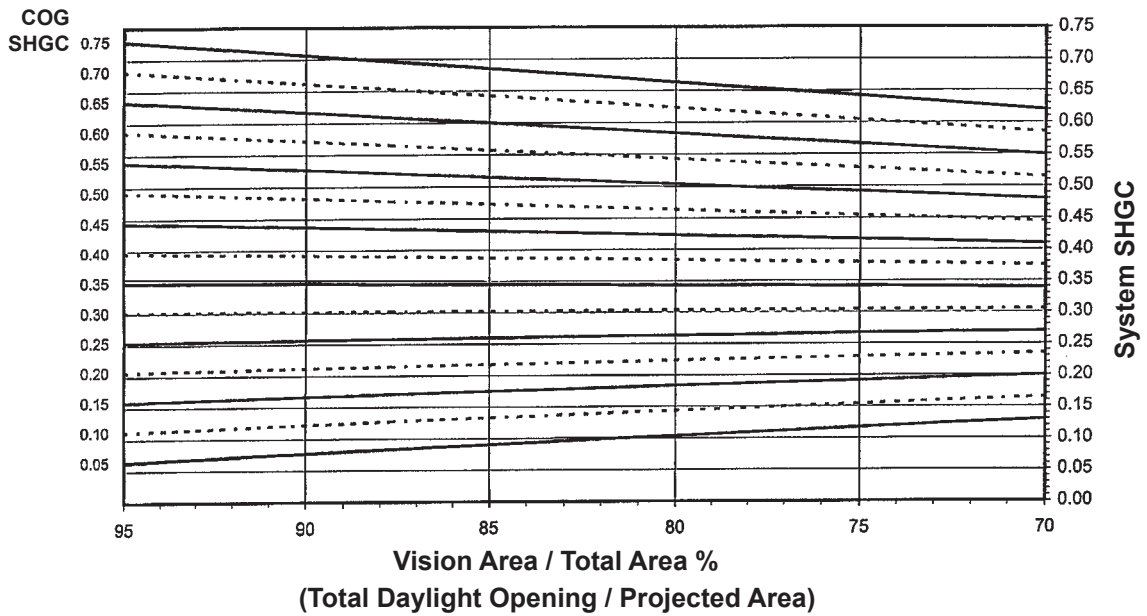
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**4 Side SSG**

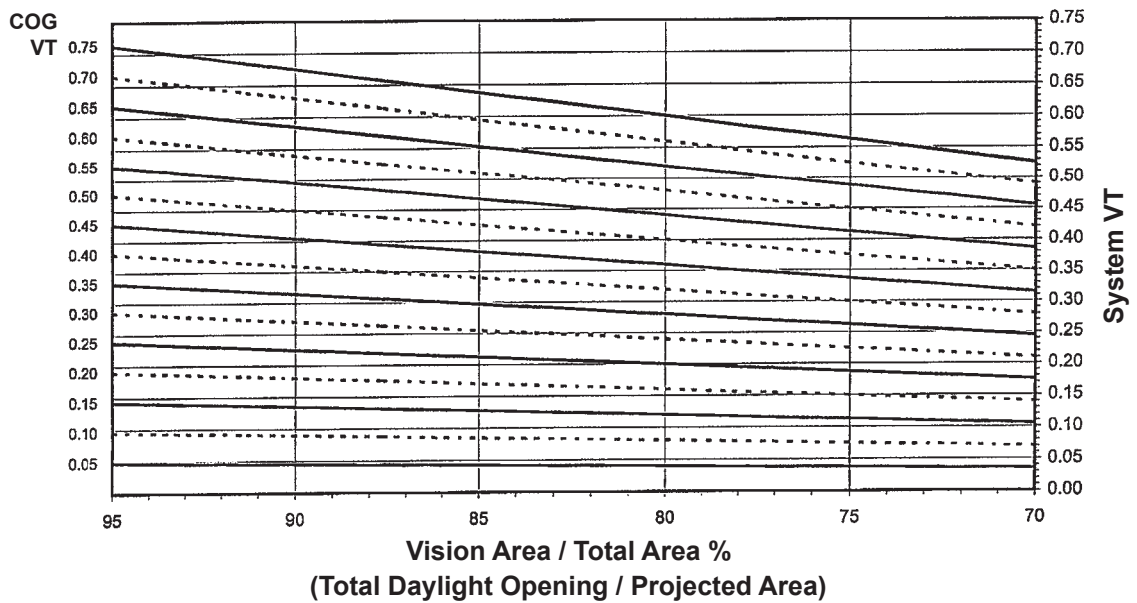
System Solar Heat Gain Coefficient (SHGC) vs Percent of Vision Area



Charts are generated per AAMA 507

**4 Side SSG**

Visible Transmittance (VT) vs Percent of Vision Area



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Thermal Transmittance<sup>1</sup> (BTU/hr • ft<sup>2</sup> • °F)**4 Side SSG**

Glass U-Factor <sup>3</sup>	Overall U-Factor <sup>4</sup>
0.48	0.56
0.46	0.55
0.44	0.53
0.42	0.51
0.40	0.50
0.38	0.48
0.36	0.46
0.34	0.45
0.32	0.43
0.30	0.42
0.28	0.40
0.26	0.38
0.24	0.37
0.22	0.35
0.20	0.33

**NOTE:** For glass values that are not listed, linear interpolation is permitted.

1. U-Factors are determined in accordance with NFRC 100.
2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values and are obtained from your glass supplier.
4. Overall U-Factor, SHGC, and VT Matrices are based on the standard NFRC specimen size of 2000mm wide by 2000mm high (78-3/4" by 78-3/4").

SHGC Matrix<sup>2</sup>

Glass SHGC <sup>3</sup>	Overall SHGC <sup>4</sup>
0.75	0.70
0.70	0.65
0.65	0.61
0.60	0.57
0.55	0.52
0.50	0.48
0.45	0.43
0.40	0.39
0.35	0.35
0.30	0.30
0.25	0.26
0.20	0.21
0.15	0.17
0.10	0.13
0.05	0.08

Visible Transmittance<sup>2</sup>

Glass VT <sup>3</sup>	Overall VT <sup>4</sup>
0.75	0.66
0.70	0.61
0.65	0.57
0.60	0.53
0.55	0.48
0.50	0.44
0.45	0.39
0.40	0.35
0.35	0.31
0.30	0.26
0.25	0.22
0.20	0.18
0.15	0.13
0.10	0.09
0.05	0.04

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## **Features**

- Structural silicone glazed - captured head and sill cans
- IsoWeb™ thermal barrier (glass reinforced nylon)
- 1" (25.4) infill system
- Dual finish capability
- Rain screen
- Screw Spline joinery
- Square cut corners (no miters, no notching)
- Stock length or factory fabricated
- Pre-glazed / pre-assembled construction
- Installed from the interior
- +/- 1/2" (12.7) live load deflection
- Permanodic™ anodized finishes in seven choices
- Painted finishes in standard and custom choices

## **Optional Features**

- Optional vertical covers
- 1/4" (6.4) infill adaptors

## **Product Applications**

- Ribbon windows
- Multi-lite punched openings

For specific product applications,  
Consult your Kawneer representative.

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**Architects** - Most extrusion and window types illustrated in this catalog are standard products for Kawneer. These concepts have been expanded and modified to afford you design freedom. Some miscellaneous details are non-standard and are intended to demonstrate how the system can be modified to expand design flexibility. Please contact your Kawneer representative for further assistance.

**PICTORIAL VIEW ..... 4**

**BASIC FRAMING DETAILS ..... 5**

**MISCELLANEOUS FRAMING..... 6**

**WIND LOAD CHARTS..... 7, 8**

**DEADLOAD CHARTS ..... 8**

**END REACTION CHARTS ..... 9**

**THERMAL CHARTS ..... 10-13**

LAWS AND BUILDING AND SAFETY CODES GOVERNING THE DESIGN AND USE OF GLAZED ENTRANCE, WINDOW, AND CURTAIN WALL PRODUCTS VARY WIDELY. KAWNEER DOES NOT CONTROL THE SELECTION OF PRODUCT CONFIGURATIONS, OPERATING HARDWARE, OR GLAZING MATERIALS, AND ASSUMES NO RESPONSIBILITY THEREFOR.

Metric (SI) conversion figures are included throughout these details for reference. Numbers in parentheses ( ) are millimeters unless otherwise noted.

The following metric (SI ) units are found in these details:

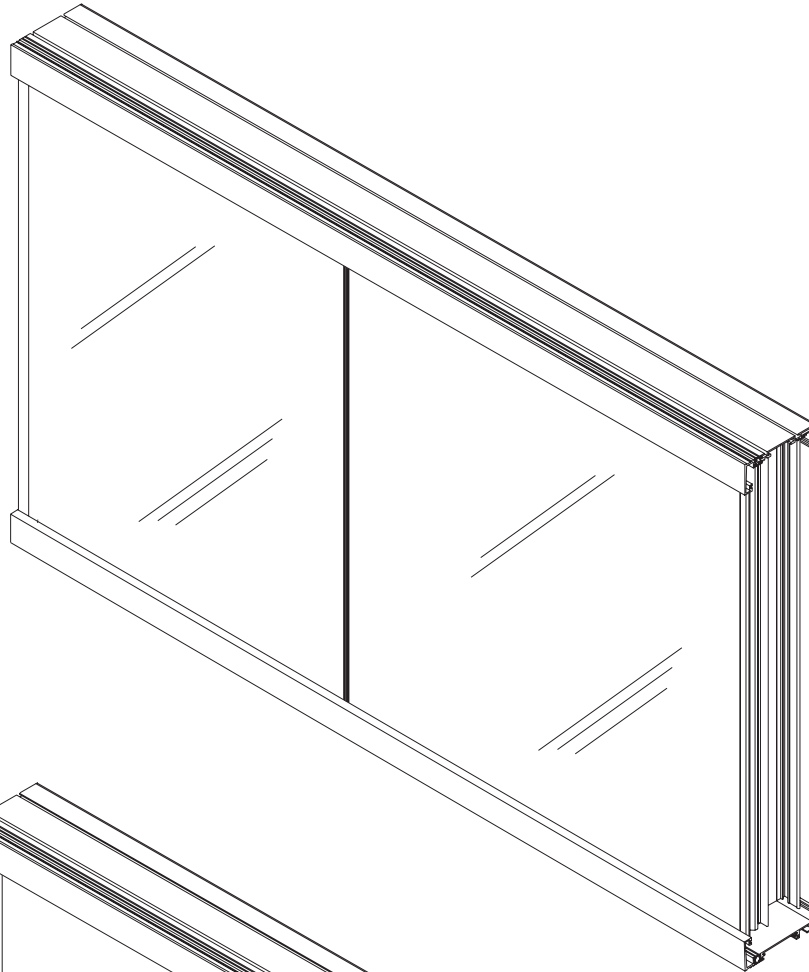
- m – meter
- cm – centimeter
- mm – millimeter
- s – second
- Pa – pascal
- MPa – megapascal

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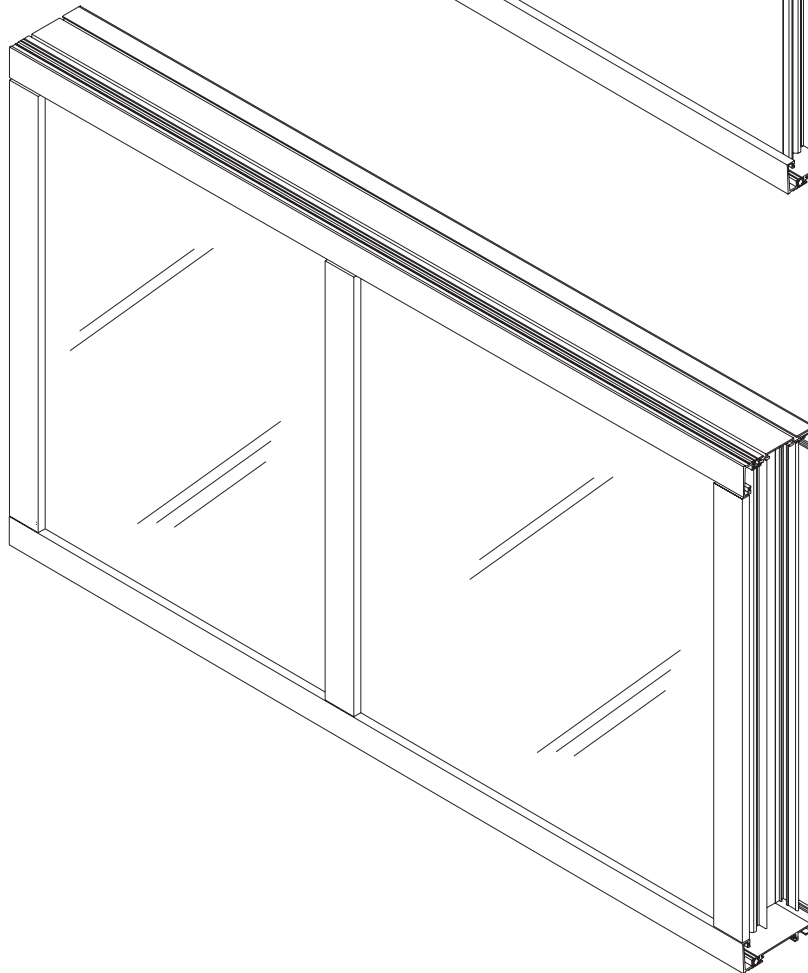
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**SSG**



**OPTIONAL  
APPLIED COVER**



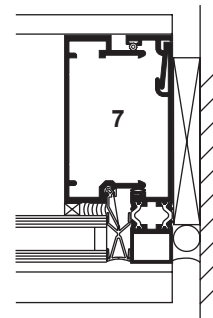
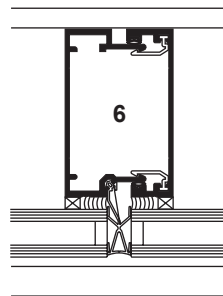
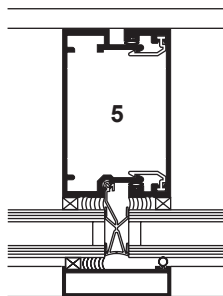
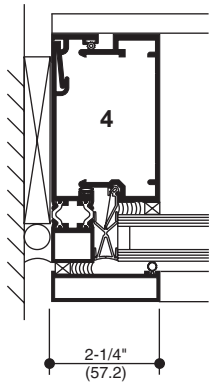
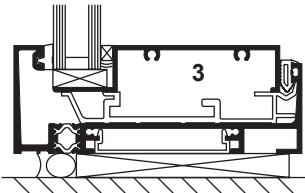
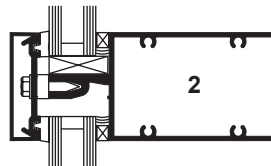
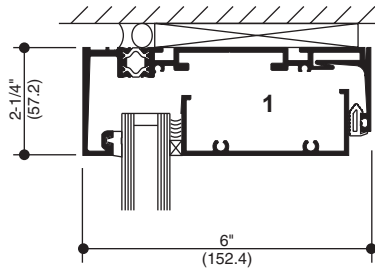
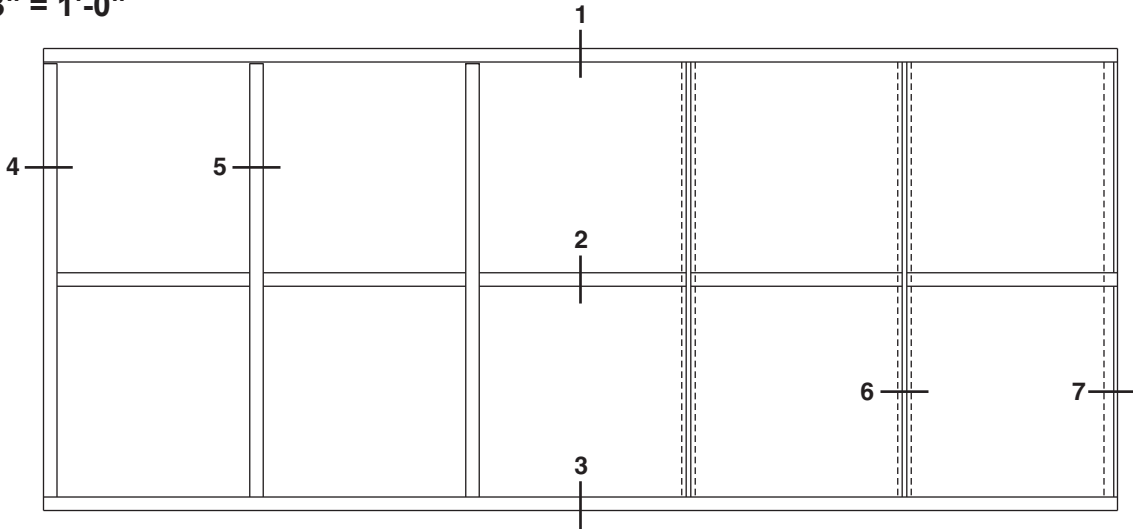
Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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SCALE 3" = 1'-0"

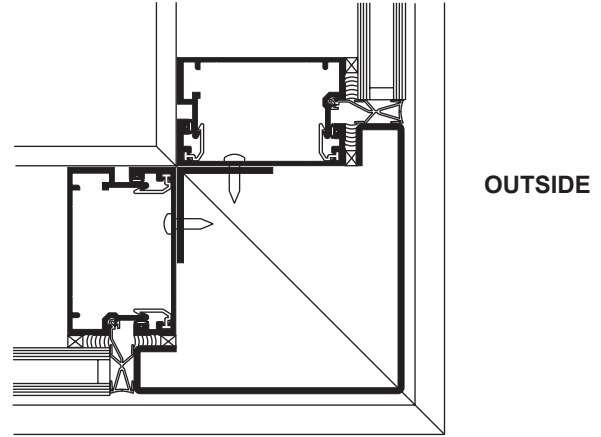
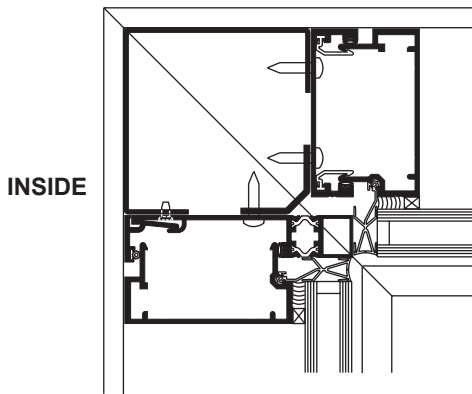


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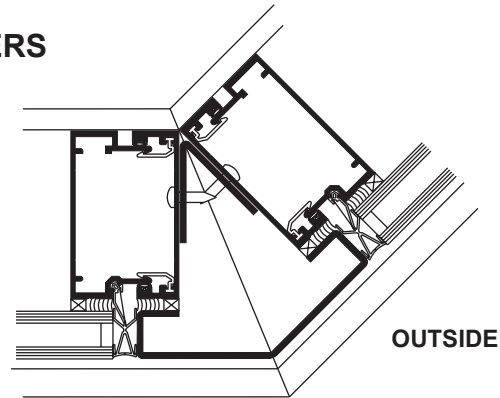
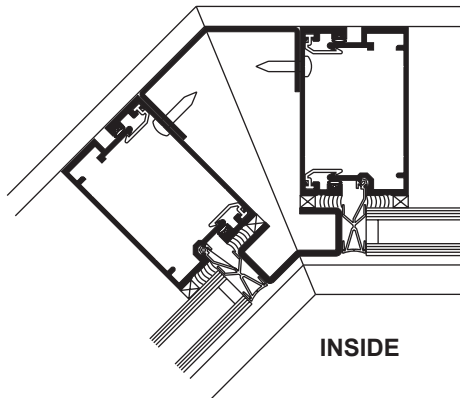
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SCALE 3" = 1'-0"

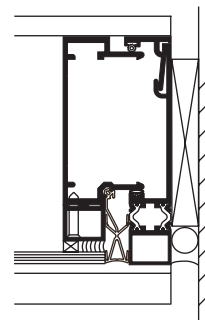
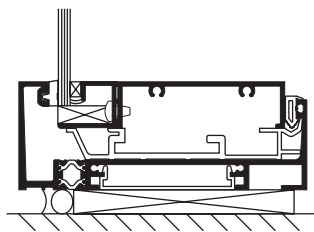
90° CORNERS



135° CORNERS



1/4" ADAPTOR AT SPANDREL AREA



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## WIND LOAD CHARTS

Mullions are designed for deflection limitations in accordance with AAMA TIR-A11 of L/175 up to 13'-6" and L/240 +1/4" above 13'-6". These curves are for mullions WITH HORIZONTALS and are based on engineering calculations for stress and deflection. Allowable wind load stress for ALUMINUM 15,152 psi (104MPa), STEEL 30,000 psi (207MPa). Charted curves, in all cases are for the limiting value. Wind load charts contained herein are based upon nominal wind load utilized in allowable stress design. A conversion from Load Resistance Factor Design (LRFD) is provided. To convert ultimate wind loads to nominal loads, multiply ultimate wind loads by a factor of 0.6 per ASCE/SEI 7. A 4/3 increase in allowable stress has not been used to develop these curves. For special situations not covered by these curves, contact your Kawneer representative for additional information.

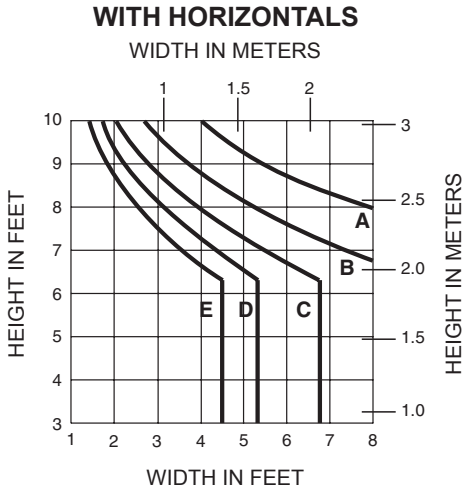
## DEADLOAD CHARTS

Horizontal or deadload limitations are based upon 1/8" (3.2) maximum allowable deflection at the center of an intermediate horizontal member. The accompanying chart is calculated for 1" (25.4) thick glass supported on two setting blocks placed at the loading points shown.

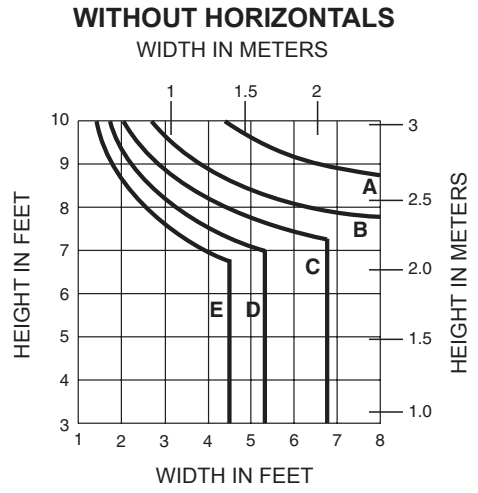
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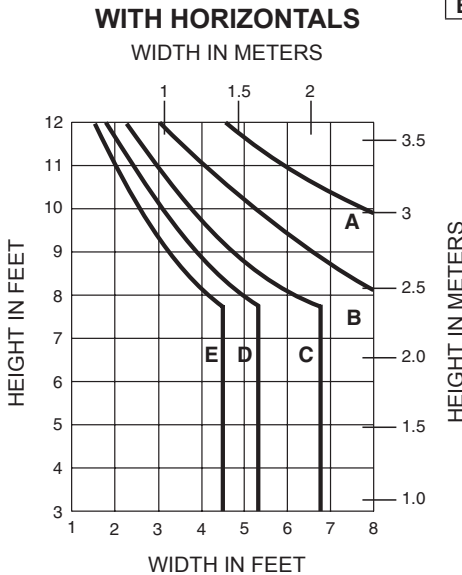
**These charts are based on lateral support no more than 24" apart. Lateral support can be horizontal mullions or lateral buckling clips\*.** Mullions are designed for L/175 deflection limitation. These curves are for mullions WITH or WITHOUT HORIZONTALS and are based on engineering calculations for stress and deflection. Allowable wind load stress for ALUMINUM 15,152 psi (104MPa), STEEL 30,000 psi (207MPa). Charted curves, in all cases are for the limiting value. Wind load charts contained herein are based upon normal wind load utilized in allowable stress design. A conversion from Load Resistance Factor Design (LRFD) is provided. To convert ultimate wind loads to nominal loads, multiply ultimate wind loads by a factor of 0.6 per ASCE/SEI 7. A 4/3 increase in allowable stress has not been used to develop these curves. For special situations not covered by these curves, contact your Kawneer representative for additional information.



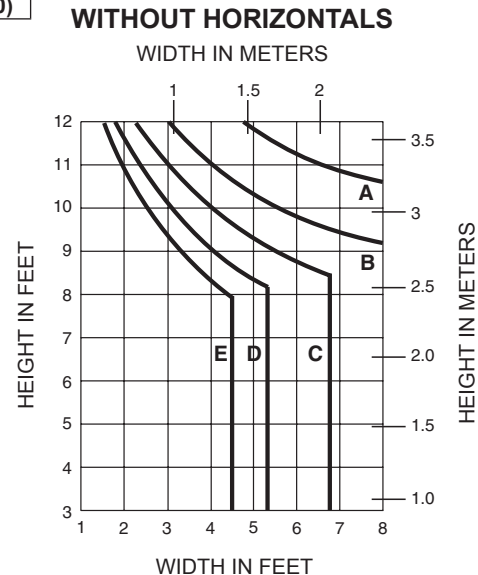
**850001  
850002**  
(with 850302 Mullion Clips)



	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	20 PSF (960)	33 PSF (1580)
B =	30 PSF (1440)	50 PSF (2400)
C =	40 PSF (1920)	67 PSF (3200)
D =	50 PSF (2400)	83 PSF (4000)
E =	60 PSF (2880)	100 PSF (4790)



**850001  
850002**  
(with 3/8" x 3" STEEL BAR and 850302 Mullion Clips)



\*Engineering interpretation of lateral brace points may vary. Verify the acceptance of lateral buckling clips with project specifications, applicable building codes or consulting engineer, if applicable.

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**WIND LOAD CHARTS**

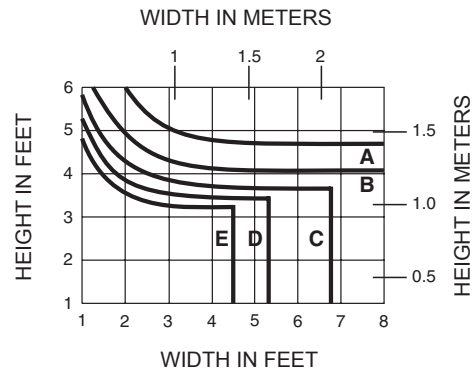
Mullions are designed for L/175 deflection limitations. These curves are for mullions **WITHOUT HORIZONTALS** and **WITHOUT LATERAL BUCKLING CLIPS** and are based on engineering calculations for stress and deflection. Charted curves, in all cases are for the limiting value. Wind load charts contained herein are based upon normal wind load utilized in allowable stress design. A conversion from Load Resistance Factor Design (LRFD) is provided. To convert ultimate wind loads to nominal loads, multiply ultimate wind loads by a factor of 0.6 per ASCE/SEI 7. A 4/3 increase in allowable stress has not been used to develop these curves. For special situations not covered by these curves, contact your Kawneer representative for additional information.

	Allowable Stress Design Load	LRFD Ultimate Design Load
<b>A =</b>	<b>20 PSF (960)</b>	<b>33 PSF (1580)</b>
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<b>D =</b>	<b>50 PSF (2400)</b>	<b>83 PSF (4000)</b>
<b>E =</b>	<b>60 PSF (2880)</b>	<b>100 PSF (4790)</b>



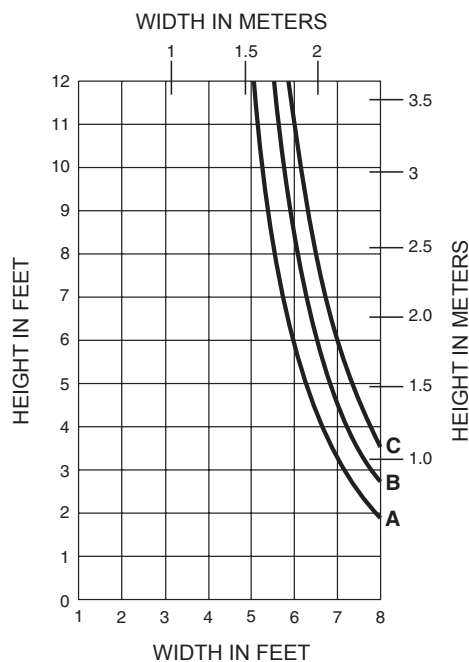
**850001**  
**850002**  
 (With "No" Lateral Buckling Clips)

**WITHOUT HORIZONTALS**

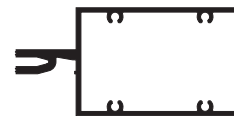


**DEADLOAD CHARTS**

Horizontal or deadload limitations are based upon 1/8" (3.2) maximum allowable deflection at the center of an intermediate horizontal member. The accompanying chart is calculated for 1" (25.4) thick glass supported on two setting blocks placed at the loading points shown.



- A = 1/4 POINT LOADING**
- B = 1/6 POINT LOADING**
- C = 1/8 POINT LOADING**



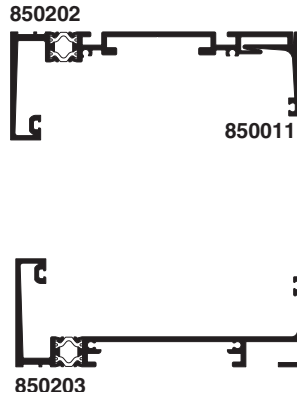
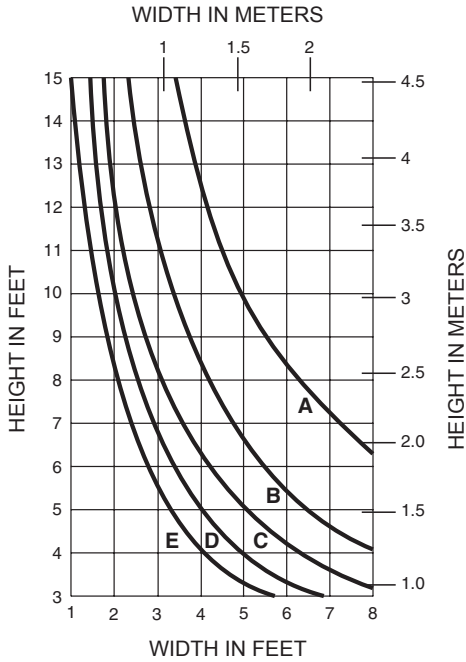
**850003**

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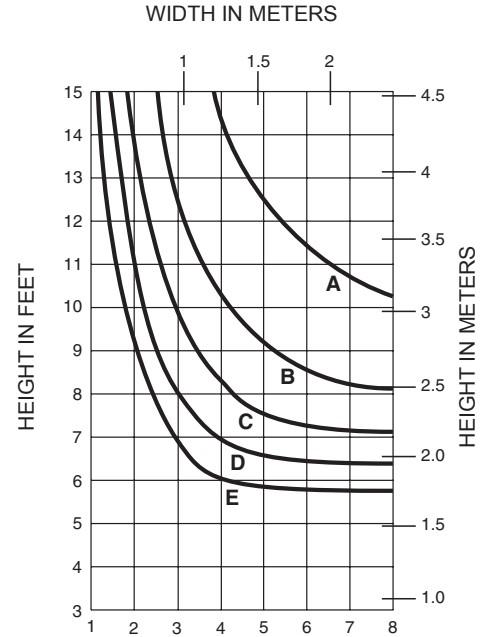
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	Allowable Stress Design Load	LRFD Ultimate Design Load
<b>A =</b>	<b>20 PSF (960)</b>	<b>33 PSF (1580)</b>
<b>B =</b>	<b>30 PSF (1440)</b>	<b>50 PSF (2400)</b>
<b>C =</b>	<b>40 PSF (1920)</b>	<b>67 PSF (3200)</b>
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<b>E =</b>	<b>60 PSF (2880)</b>	<b>100 PSF (4790)</b>

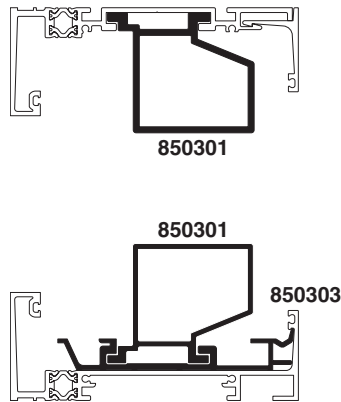
**WITH HORIZONTALS**



**WITHOUT HORIZONTALS**



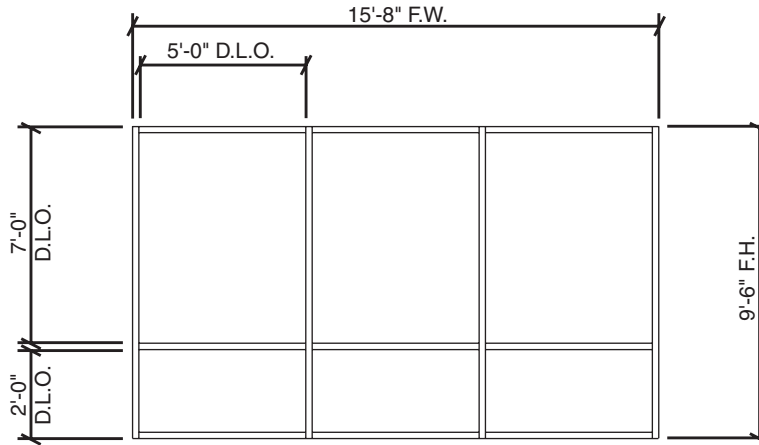
For applications beyond limitations of the above charts, Anchor Clips (850301) are required.



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**Generic Project Specific U-factor Example Calculation**  
 (Percent of Glass will vary on specific products depending on sitelines)  
 (Based on single bay of Window Wall)



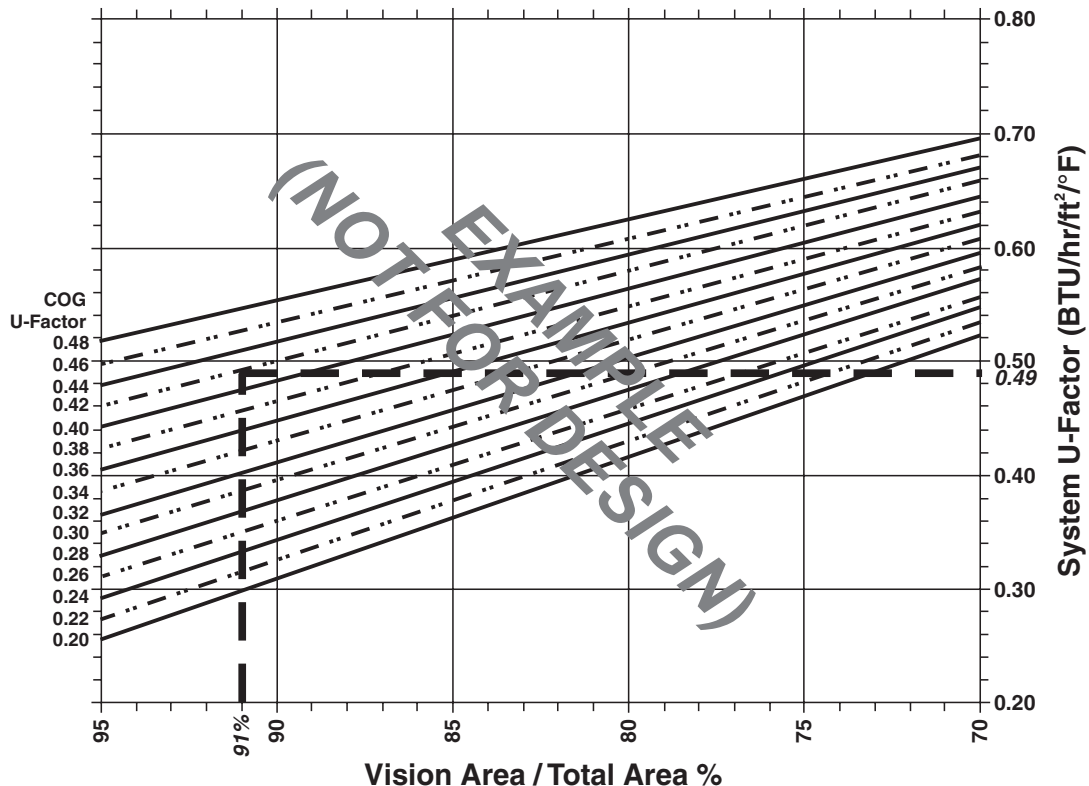
Example Glass U-Factor = 0.42 Btu/hr-ft<sup>2</sup>·°F

Total Daylight Opening = 3(5' x 7') + 3(5' x 2') = 135 ft<sup>2</sup>

Total Projected Area = (Total Daylight Opening + Total Area of Framing System)  
 = 15'-8" x 9'-6" = 148.83 ft<sup>2</sup>

Percent of Glass = (Total Daylight Opening ÷ Total Projected Area)  
 = (135 ÷ 148.83)100 = 91%

**System U-Factor vs Percent of Glass Area**



Based on 91% glass and center of glass U-Factor of 0.42  
 System U-Factor is equal to 0.49 Btu/hr-ft<sup>2</sup>·°F

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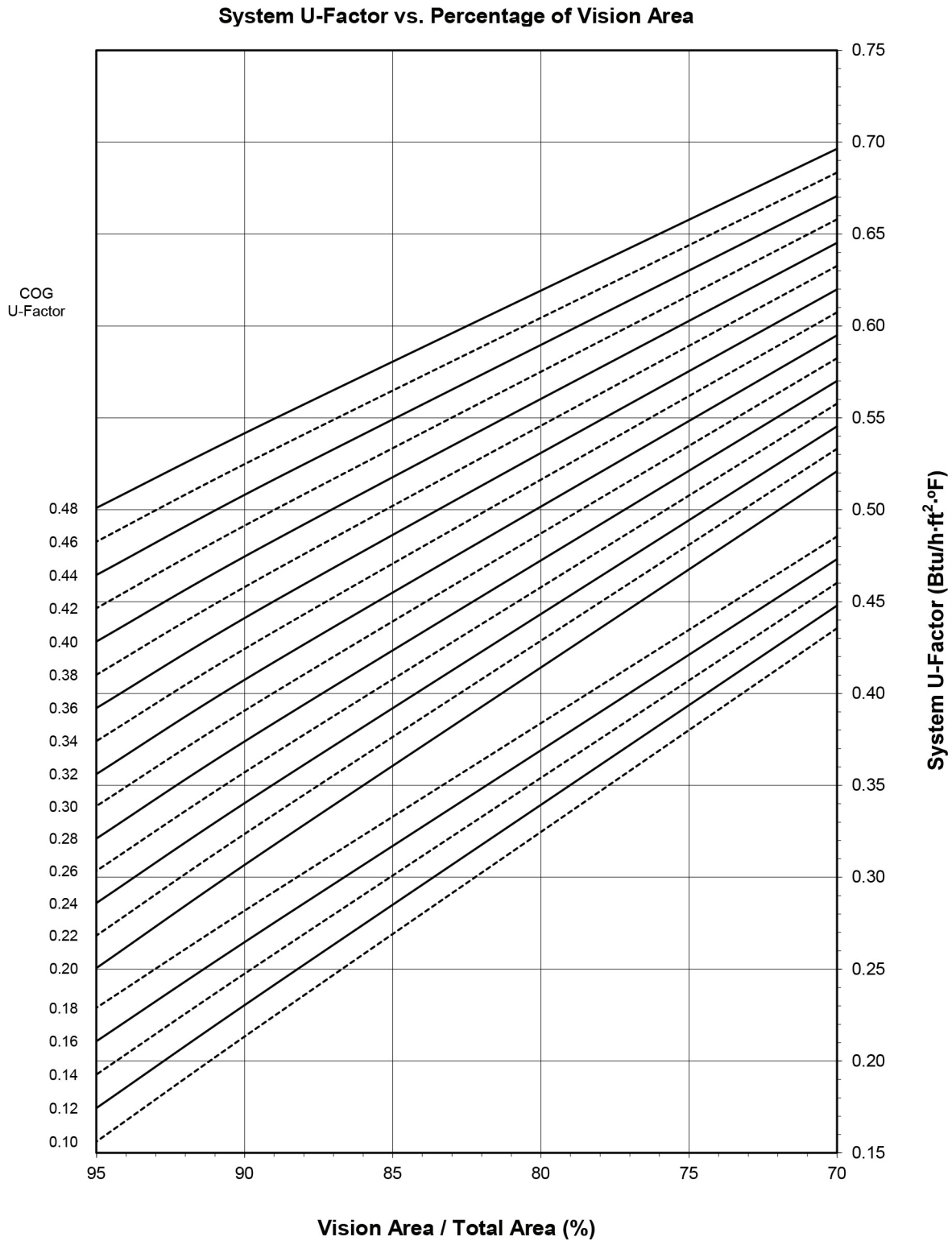
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**Note:**

Values in parentheses are metric.

COG = Center of Glass.

Charts are generated per AMMA 507



Note: 1 inch Overall - Dual Glazed Glass (0.48-0.20 COG) with Aluminum Spacer, Dual Glazed Glass with Heat Mirror (0.18-0.10 COG) with Aluminum Spacer

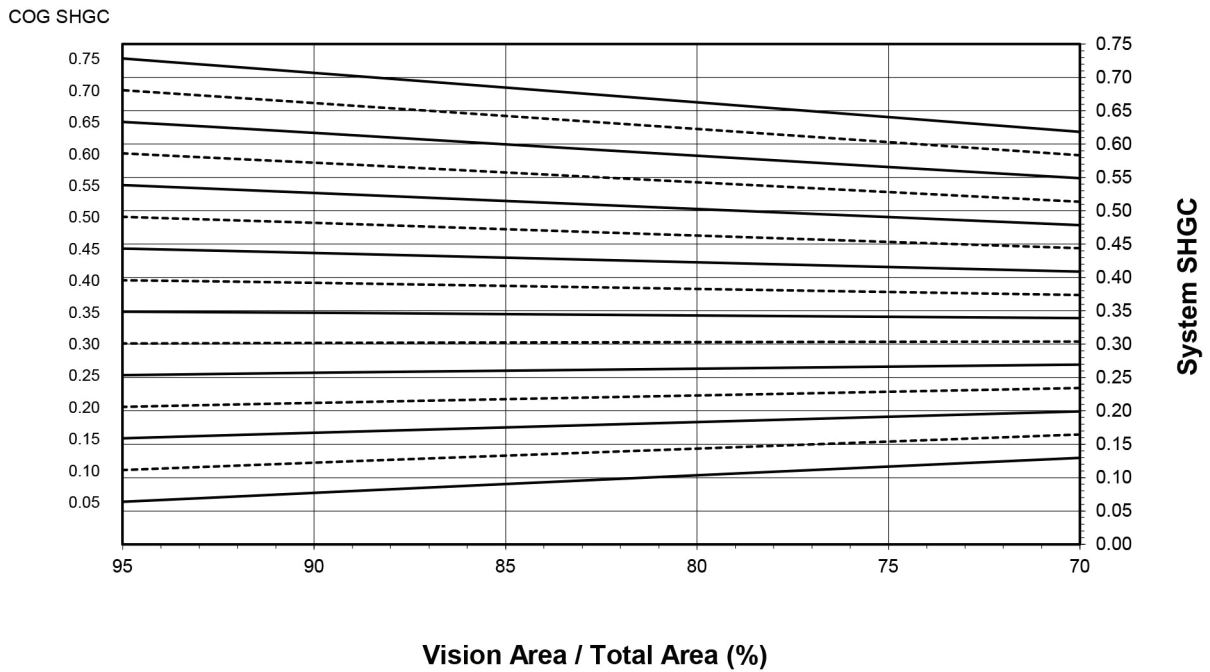
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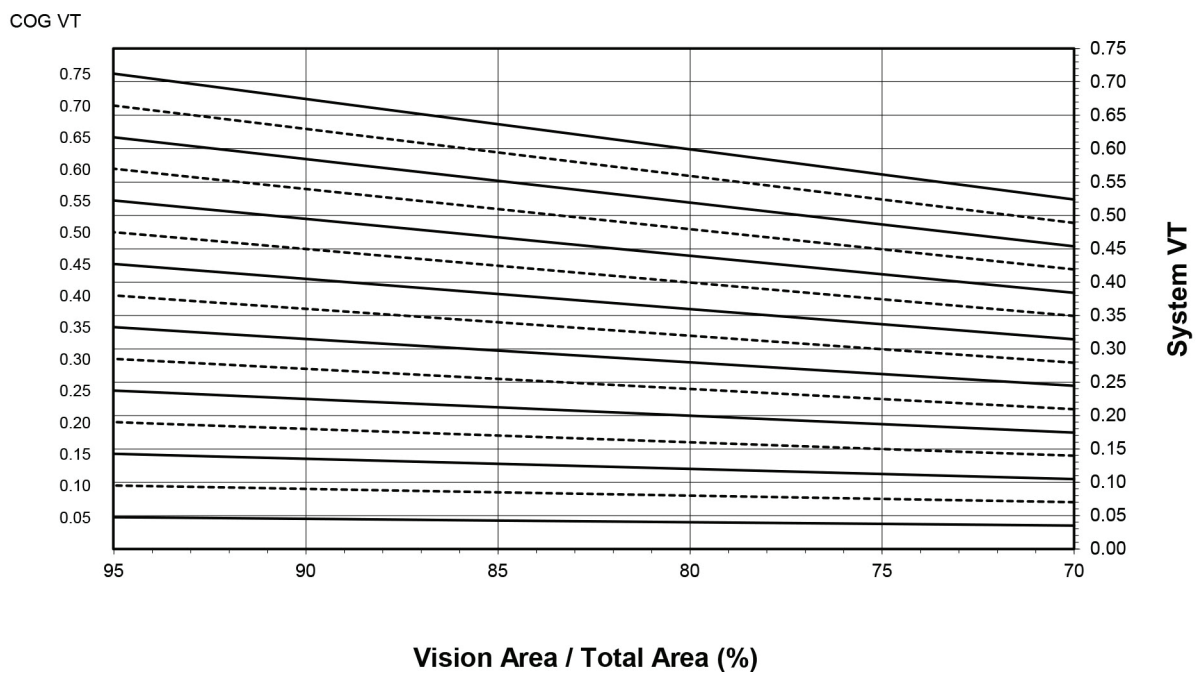
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**System SHGC vs. Percentage of Vision Area**



**System VT vs. Percentage of Vision Area**



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**Thermal Transmittance** <sup>1</sup> (BTU/hr • ft<sup>2</sup> • °F)

Glass U-Factor <sup>3</sup>	Overall U-Factor <sup>4</sup>
0.48	0.55
0.46	0.53
0.44	0.52
0.42	0.50
0.40	0.48
0.38	0.47
0.36	0.45
0.34	0.43
0.32	0.42
0.30	0.40
0.28	0.38
0.26	0.37
0.24	0.35
0.22	0.34
0.20	0.32
0.18	0.29
0.16	0.28
0.14	0.26
0.12	0.24
0.10	0.23

**1" GLAZING WITH  
ALUMINUM PRESSURE PLATE**

**NOTE:** For glass values that are not listed, linear interpolation is permitted.

1. U-Factors are determined in accordance with NFRC 100.
2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values and are obtained from your glass supplier.
4. Overall U-Factor, SHGC, and VT Matricies are based on the standard NFRC specimen size of 2000mm wide by 2000mm high (78-3/4" by 78-3/4").

**SHGC Matrix** <sup>2</sup>

Glass SHGC <sup>3</sup>	Overall SHGC <sup>4</sup>
0.75	0.70
0.70	0.66
0.65	0.61
0.60	0.57
0.55	0.52
0.50	0.48
0.45	0.44
0.40	0.39
0.35	0.35
0.30	0.30
0.25	0.26
0.20	0.21
0.15	0.17
0.10	0.12
0.05	0.08

**Visible Transmittance** <sup>2</sup>

Glass VT <sup>3</sup>	Overall VT <sup>4</sup>
0.75	0.67
0.70	0.62
0.65	0.58
0.60	0.53
0.55	0.49
0.50	0.44
0.45	0.40
0.40	0.36
0.35	0.31
0.30	0.27
0.25	0.22
0.20	0.18
0.15	0.13
0.10	0.09
0.05	0.04

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**Features**

- 350 Tuffline™ has 3-1/2" (88.9) vertical stile, 3-3/8" (85.8) top and 6-3/4" (171.5) bottom rail
- 500 Tuffline™ has 5" (127) vertical stile, 5" (127) top and 6-3/4" (171.5) bottom rail
- Door is 2" (50.8) deep and has 3/16" (4.8) walls
- Dual moment welded corner construction
- Single acting
- Infills range from 1/4" (6.4) to 1" (25.4)
- Heavy duty offset pivots, butt hinges or continuous geared hinge
- MS locks or panic hardware
- Surface mounted or concealed closers
- Architects Classic push/pulls
- Double weatherstripping at meeting stiles; single exterior pile and interior twin-fin polymeric adjustable astragal
- Frame is 2" (50.8) x 4-1/2" (114.3) and includes 3/16" (4.8) wall thickness at all hardware attachment points
- Polymeric bulb weatherstripping in door frames
- Permanodic™ anodized finishes in seven choices
- Painted finishes in standard and custom choices

**Optional Features**

- Paneline™ exit device, Paneline™ EL exit device
- Various bottom and cross rails
- Optional 3/16" (4.8) wall thickness throughout frame

**Product Applications**

- 350 Tuffline™ - constructed for unequalled strength and designed for high traffic and high abuse applications such as schools, universities and sports stadiums
- 500 Tuffline™ - offers the same performance features as the 350 Tuffline™ except in a wide stile design

For specific product applications,  
Consult your Kawneer representative.

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**PICTORIAL VIEW .....5**

**DOOR TYPES/SECT. DIMENSIONS .....6**

**350/500 TUFFLINE™ ENTRANCE DETAILS (Standard Frame).....7**

**350/500 TUFFLINE™ ENTRANCE DETAILS (Heavy Frame).....8**

**350/500 TUFFLINE™ ENTRANCE DETAILS .....9**

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**ENTRANCE OFFERINGS/APPLICATION CRITERIA .....11-12**

**PUSH-PULL HARDWARE .....13**

**PANELINE™/PANELINE™ EL EXIT DEVICE .....14**

**DOOR AND FRAME OPTIONS .....15**

**THERMAL CHARTS ..... 16-28**

LAWS AND BUILDING AND SAFETY CODES GOVERNING THE DESIGN AND USE OF GLAZED ENTRANCE, WINDOW, AND CURTAIN WALL PRODUCTS VARY WIDELY. KAWNEER DOES NOT CONTROL THE SELECTION OF PRODUCT CONFIGURATIONS, OPERATING HARDWARE, OR GLAZING MATERIALS, AND ASSUMES NO RESPONSIBILITY THEREFOR.

Metric (SI) conversion figures are included throughout these details for reference. Numbers in parentheses ( ) are millimeters unless otherwise noted.

The following metric (SI ) units are found in these details:

- m – meter
- cm – centimeter
- mm – millimeter
- s – second
- Pa – pascal
- MPa – megapascal

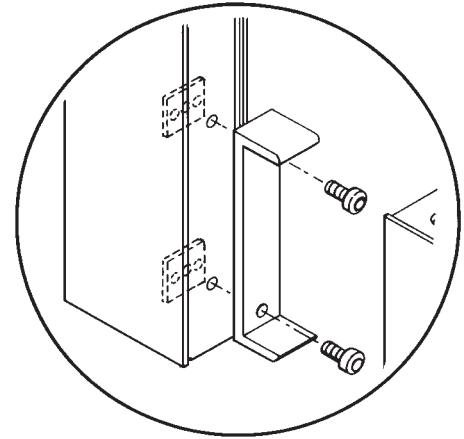
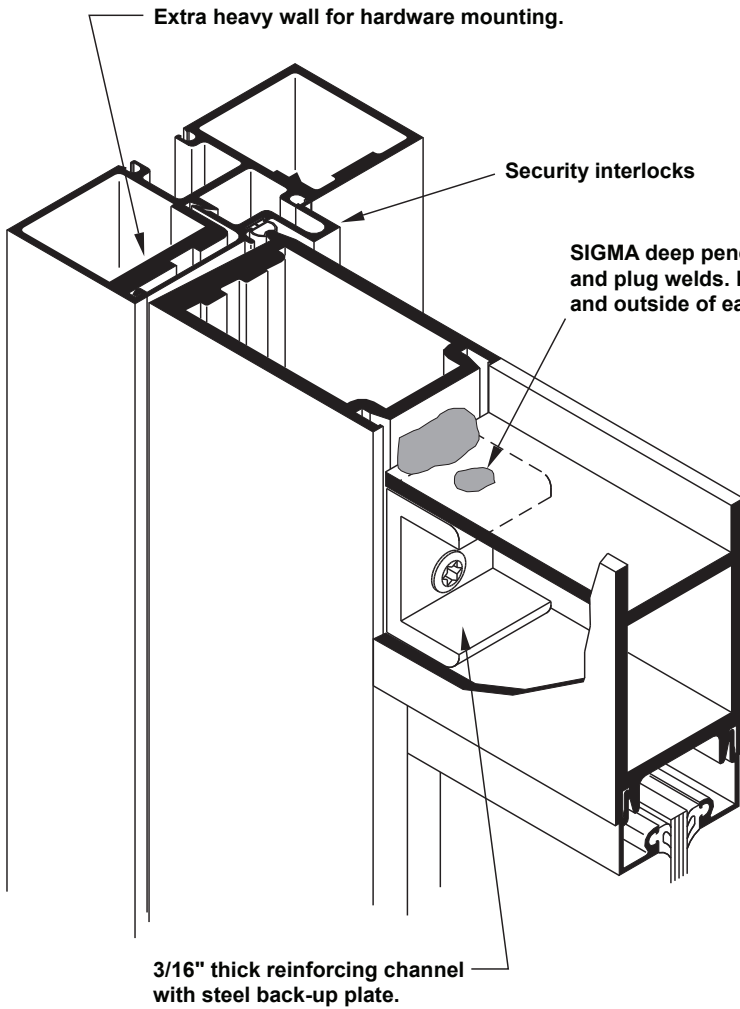
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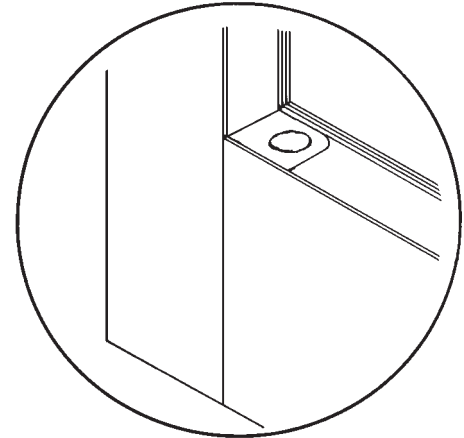
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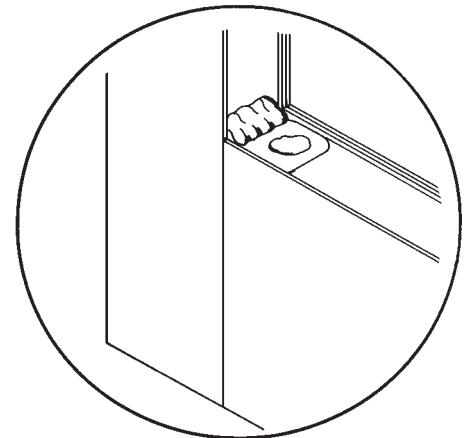
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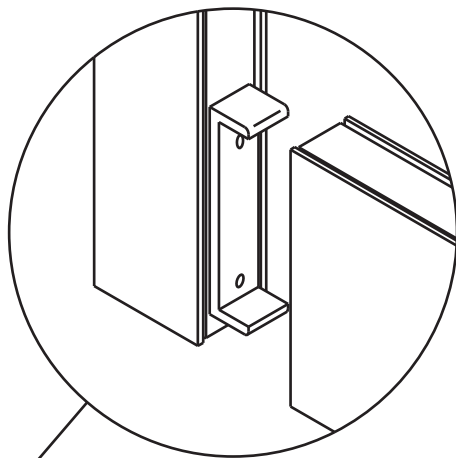
**#1 MECHANICAL FASTENING** is accomplished by attaching a 5/16" (7.9) thick extruded aluminum channel clip to the vertical stile with 1/4"-20 heat strengthened bolts and 3/16" thick steel nut plates for a high strength welding base for attachment horizontal member.



**#2 SIGMA\* DEEP PENETRATION PLUG WELDS** are made top and bottom after the horizontal is properly positioned over the channel clip to help provide the strongest door corner joint currently available.



**#3 SIGMA\* FILLET WELDS** along both top and bottom webs of the rail extrusion complete the welded corner construction.



**DUAL MOMENT WELDED CORNER CONSTRUCTION**

\* An arc welding process known as Shielded Inert Gas Metal Arc (SIGMA) or also known as Metal Inert Gas (MIG).

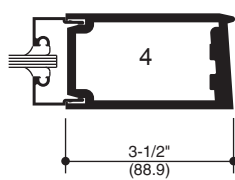
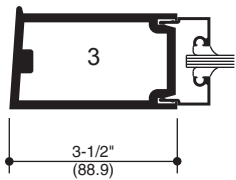
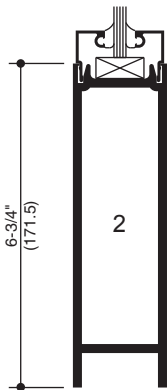
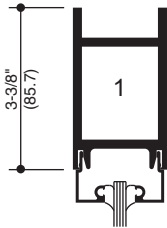
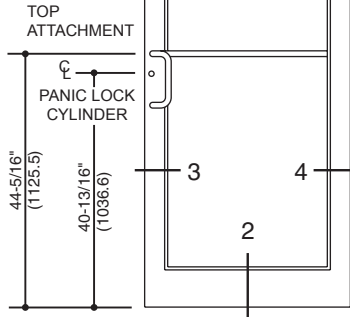
Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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SCALE 3" = 1' 0"

### 350 TUFFLINE™ MEDIUM STILE

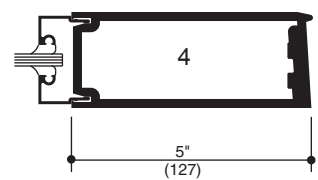
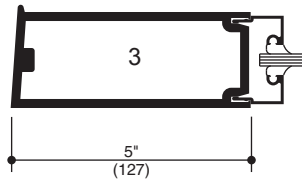
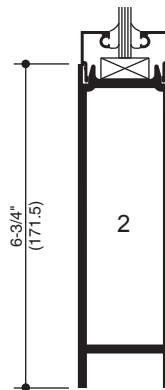
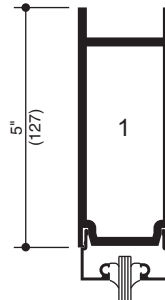
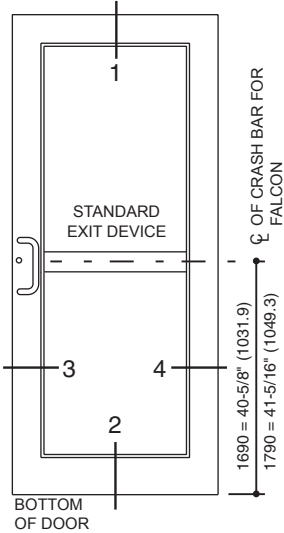
**STANDARD  
LOCATIONS**



LOCK STILE

PIVOT STILE

### 500 TUFFLINE™ WIDE STILE



LOCK STILE

PIVOT STILE

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

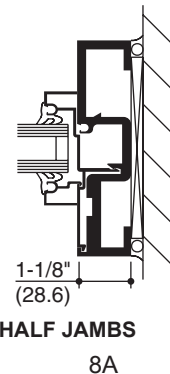
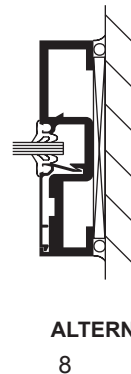
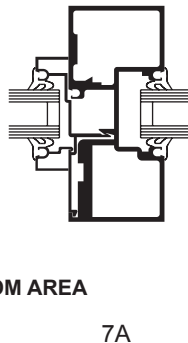
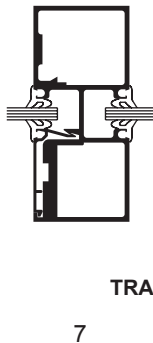
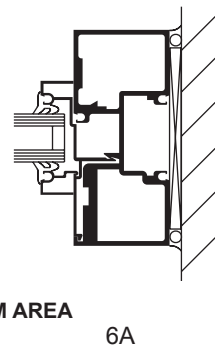
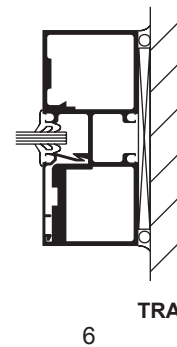
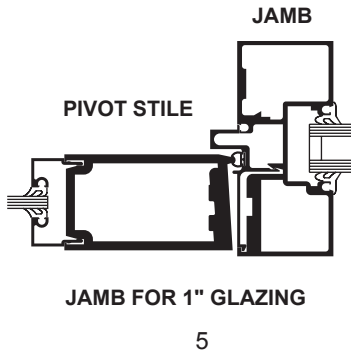
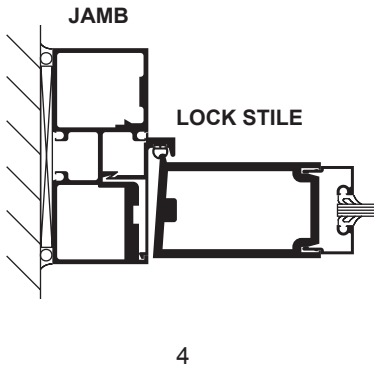
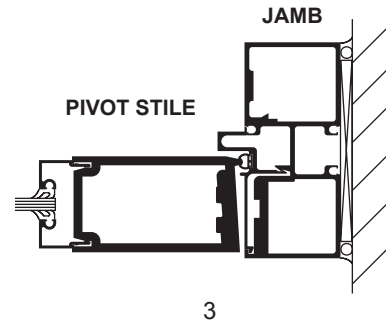
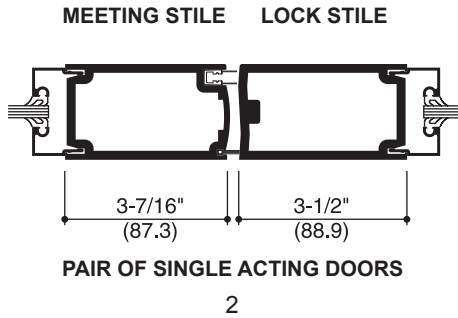
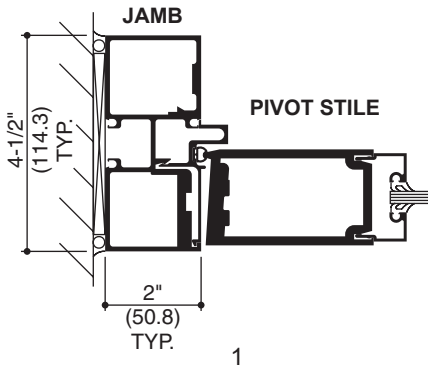
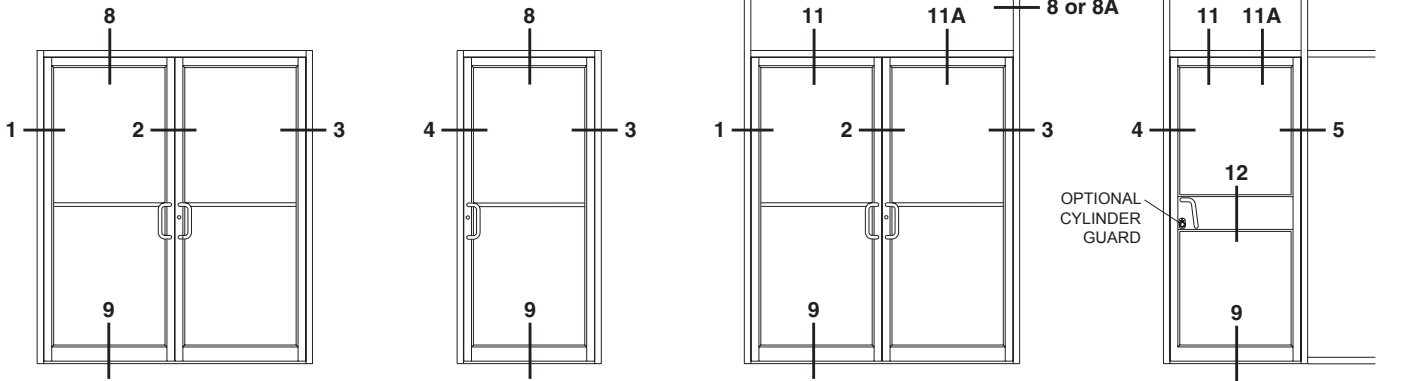
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### SCALE 3" = 1' - 0"

**NOTE:** ALL TUFFLINE ENTRANCES ARE SINGLE ACTING ONLY.  
350 TUFFLINE DOOR SHOWN, 500 TUFFLINE SIMILAR.  
TUFFLINE DOORS USE TUFFLINE DOOR FRAMES ONLY.

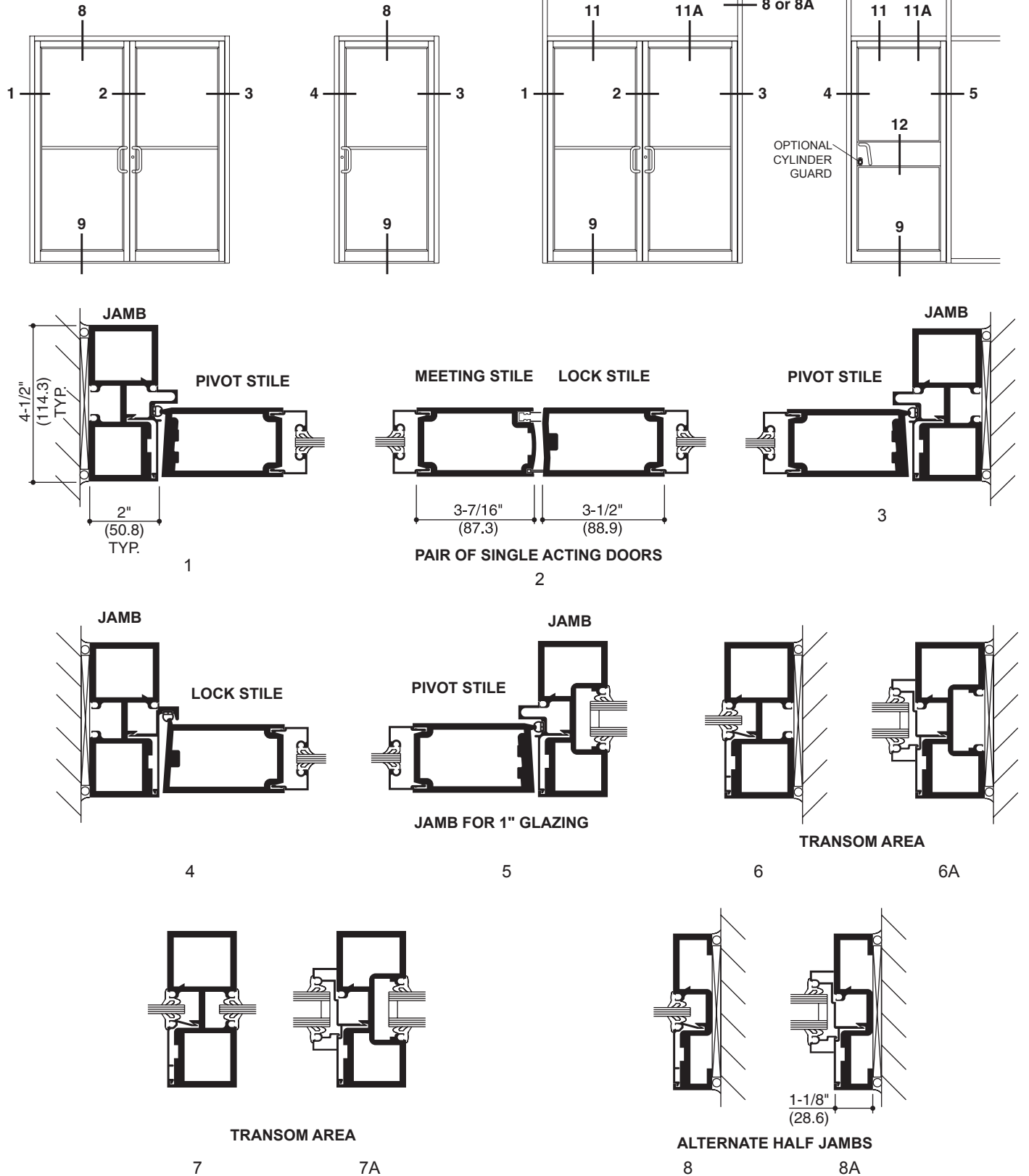


Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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## SCALE 3"=1' - 0"

**NOTE:** ALL TUFFLINE ENTRANCES ARE SINGLE ACTING ONLY.  
 350 TUFFLINE DOOR SHOWN, 500 TUFFLINE SIMILAR.  
 TUFFLINE DOORS USE TUFFLINE DOOR FRAMES ONLY.  
**HEAVY WALL FRAME IS OPTIONAL**



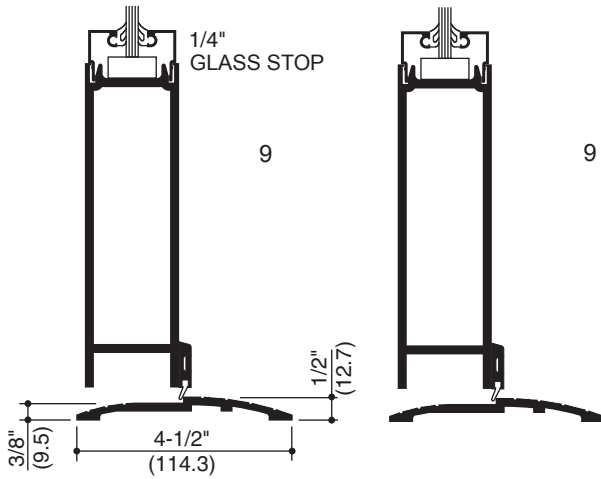
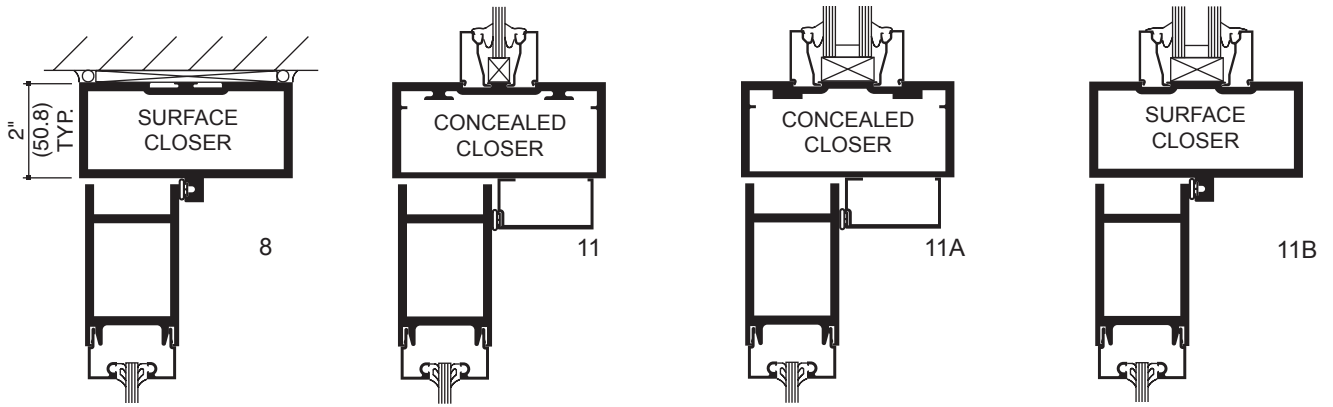
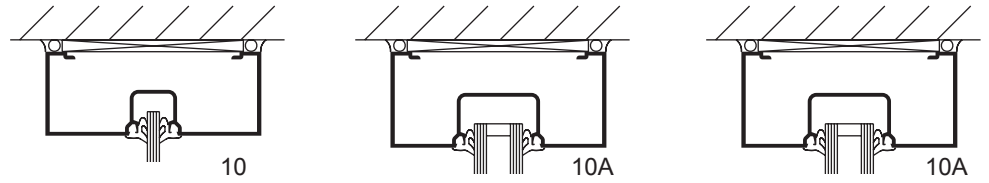
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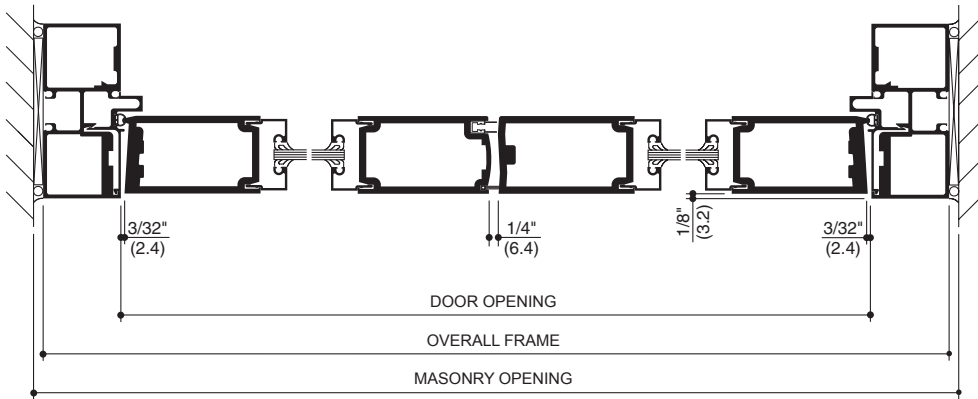
SCALE 3" = 1' - 0"

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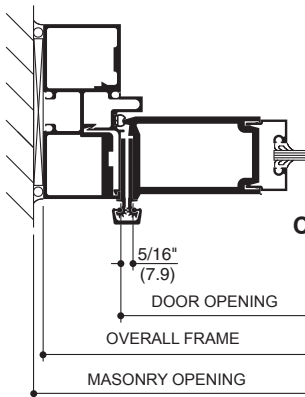
Kawneer reserves the right to change configuration without prior notice when deemed necessary for product improvement.  
© Kawneer Company, Inc., 2014



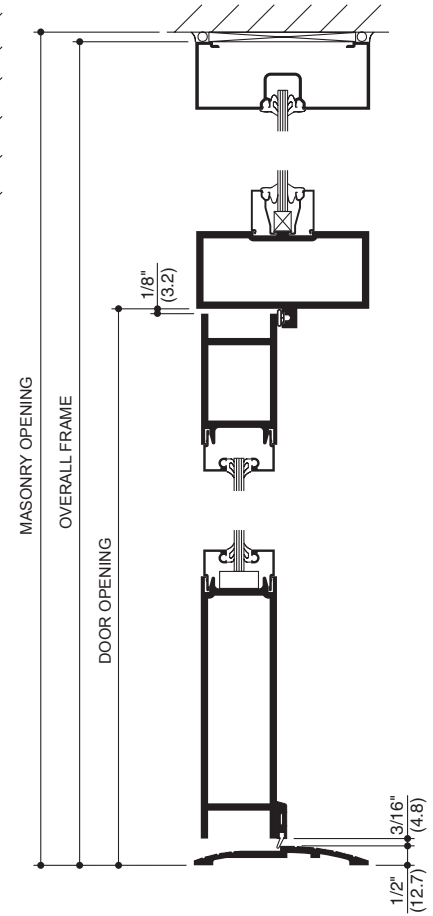
**DIMENSIONS ARE NOMINAL**



**SINGLE ACTING DOORS**



**CONTINUOUS HINGE JAMB**



**STANDARD SIZES (TUFFLINE™ FRAMES)**

**WITHOUT TRANSOM**

**Door Opening Dimension**

3' 0" x 7' 0" ( 914 x 2134)

3' 6" x 7' 0" (1067 x 2134)

6' 0" x 7' 0" (1829 x 2134)

**Overall Frame Dimension**

3' 4" x 7' 2" (1016 x 2184)

3' 10" x 7' 2" (1168 x 2184)

6' 4" x 7' 2" (1930 x 2184)

**Masonry Opening Dimension**

3' 4-3/4" x 7' 2-3/8" (1035 x 2194)

3' 10-3/4" x 7' 2-3/8" (1187 x 2194)

6' 4-3/4" x 7' 2-3/8" (1949 x 2194)

**WITH TRANSOM**

**Door Opening Dimension**

Unchanged from above.

**Overall Frame Dimension**

Add 3' 1-3/4" (959) to above heights.

**Masonry Opening Dimension**

Add 3' 1-3/4" (959) to above heights.

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	STANDARD	OPTIONAL
<b>Doors</b>	Medium stile 350 Tuffline doors prepared for attachment hardware.	Wide stile 500 Tuffline door.
<b>Door Sizes Std.</b>	Standard sizes shown on page 10.	Any size up to 4'-0" x 9'-0" (1219 x 2743).
<b>Glass Stops</b>	Square glass stops for 1/4" infill.	Square glass stops for 5/8" (15.9) or 1" (25.4) infill. Beveled glass stops for 1/4" (6.4) or 5/8" (15.9) infill.
<b>Door Frames</b>	<b>Tuffline</b> - 2" x 4" (50.8 x 101.6) for single glazing.	<b>Tuffline Heavyweight Framing</b> - 2" x 4" (50.8 x 101.6) for single glazing.
<b>Push-Pulls</b>	<p><b>Single Acting:</b> Architects Classic Hardware "CO-9" Pull and "CP-II" Push Bar.</p> <p>Architects Classic Hardware "CO-9" Pull and "CP" Push Bar.</p>	<p><b>Single Acting:</b> Architects Classic Hardware "CO-12" and "CP-II" push bar.</p> <p>Architects Classic Hardware "CO-12" and "CP" push bar.</p> <p>Architects Classic Hardware "CO-9"/"CO-9" Pulls.</p> <p>Architects Classic Hardware "CO-12"/"CO-12" Pulls.</p>
<b>Door Closers</b>	<p><b>Single Acting:</b> Norton 1601 adjustable or 1601 BF adjustable surface closer with back-check and with or without adjustable hold-open.</p> <p>Standard concealed overhead closer with single acting offset arm.</p>	<p><b>Single Acting:</b> LCN 4040 surface closer with or without adjustable hold-open.</p> <p>LCN 2030 or 5030 concealed closers with or without hold-open.</p> <p>LCN 1260 adjustable surface closer.</p> <p>Falcon SC 60 Surface closer.</p>
<b>Hinging</b>	<p><b>Single Acting:</b> Kawneer heavy duty top and bottom offset pivots (or) Kawneer top and bottom 5" x 4-1/2" (127 x 114.3) ball bearing butt hinge.</p>	<p><b>Single Acting:</b> Kawneer continuous gear hinge.</p> <p>No substitution of outside hinge hardware by others.</p>
<b>Intermediate Pivots/Butts</b>	<p><b>Single Acting Required:</b> Kawneer heavy duty intermediate offset pivot (or) Kawneer 5" x 4-1/2" (127 x 114.3) ball bearing butt hinge.</p>	
<b>Power Transfers</b>	<p><b>Single Acting:</b> Kawneer EL intermediate offset pivot (or) Kawneer EL 4 1/2" x 4" (114.3 x 101.6) ball bearing butt hinge with wire transfer (or) EPT (Electric Power Transfer).</p>	
<b>Power Supply</b>	<p><b>SP-1000X Power Supply:</b> For use with Paneline™ EL exit devices.</p>	
<b>Locks - Active Leaf</b>	Adams-Rite MS 1850A deadlock with two 1-5/32" (29.4) diameter 5 pin cylinders.	Adams-Rite #4510 latch lock. Adams-Rite #1850A-500 short throw deadlock. Adams-Rite #1850A-505 hookbolt lock. Kawneer cylinder guard. Kawneer thumbturn (in lieu of cylinder).

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	STANDARD	OPTIONAL
<b>Locks - Inactive Leaf</b>	One pair of Kawneer flush bolts in the inactive leaf of a pair of doors.	<b>Controller™</b> is a 3-point locking system consisting of a two point locking device in the inactive leaf in lieu of flush bolts, working in conjunction with the MS 1850A deadlock in the active leaf. This combination provides for greater security than possible with flush bolts and complies with the life safety considerations of building codes which prohibit the use of flush bolts.
<b>Thresholds</b>	1/2" x 4" (12.7 x 101.6) aluminum mill finish threshold.	
<b>Weathering</b>	<b>Single Acting:</b> Weathering system in the door and frame consisting of a dense, bulb polymeric material, which remains resilient and retains its weathering ability under temperature extremes. (The system is complete with an optional EPDM blade gasket sweep strip applied to the bottom door rail with concealed fasteners).	Bottom Door Sweep
<b>Exit Device</b>	<p><b>Falcon 1690 Concealed Rod Exit Device</b> with or without a rim type cylinder.</p> <p><b>Falcon 1790 Rim Exit Device</b> is a rim type exit device with or without a rim type cylinder. Pairs of doors require a RM-170 removable mullion.</p> <p><b>Paneline™</b> exit device is a concealed rod exit device applicable to single or pairs of doors. It features an activating panel contained within the door cross rail.</p>	<p><b>Falcon EL 1690</b> electric modification is also available.</p> <p><b>Falcon EL 1790</b> electric modification is also available</p> <p><b>Paneline™ EL</b> electric modification is also available.</p> <p><b>Falcon 1990</b> is a concealed rod exit device with or without a rim type cylinder.</p> <p><b>Falcon 2090</b> is a rim type exit device with or without a rim type cylinder. Pairs of doors require a removable aluminum mullion. RM-70 with the Falcon 2090 exit device.</p>
	<p><b>Exit Device Pulls:</b></p> <p>Architects Classic style "CO-9" Pull.</p> <p>Architects Classic style "CPN" Pull for Paneline™ and Paneline™ EL exit devices.</p>	<p><b>Optional Exit Device Pulls:</b></p> <p>Architects Classic style "CO-12" Pull (except for Paneline™ and Paneline™ EL exit devices).</p>

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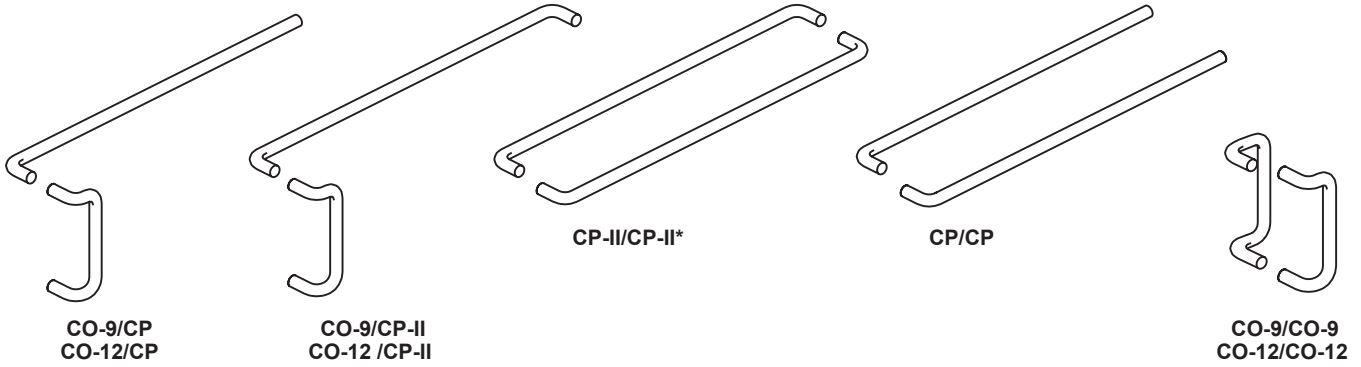
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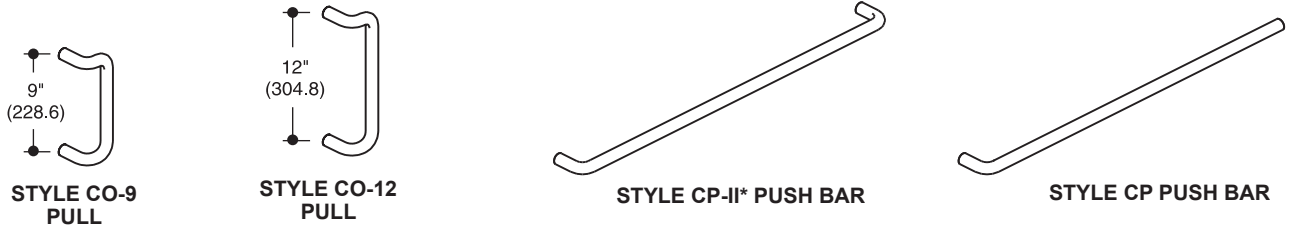
REFER TO **HARDWARE SECTION** FOR COMPLETE HARDWARE INFORMATION.

**ARCHITECTS CLASSIC (PUSH PULL SETS)**

SINGLE ACTING DOORS USE A PULL HANDLE AND PUSH BAR AS STANDARD  
DOUBLE ACTING DOORS USE CP PUSH BARS BACK TO BACK AS STANDARD.



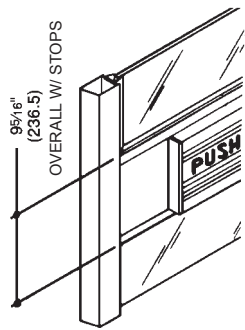
**ARCHITECTS CLASSIC (COMPONENTS)**



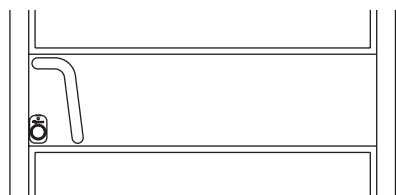
\* CP-II PUSH BAR IS NOT TO BE USED FOR BACK TO BACK MOUNTING ON D/A DOORS.

**EXIT DEVICES**

**KAWNEER PANELINE™ / PANELINE™ EL**



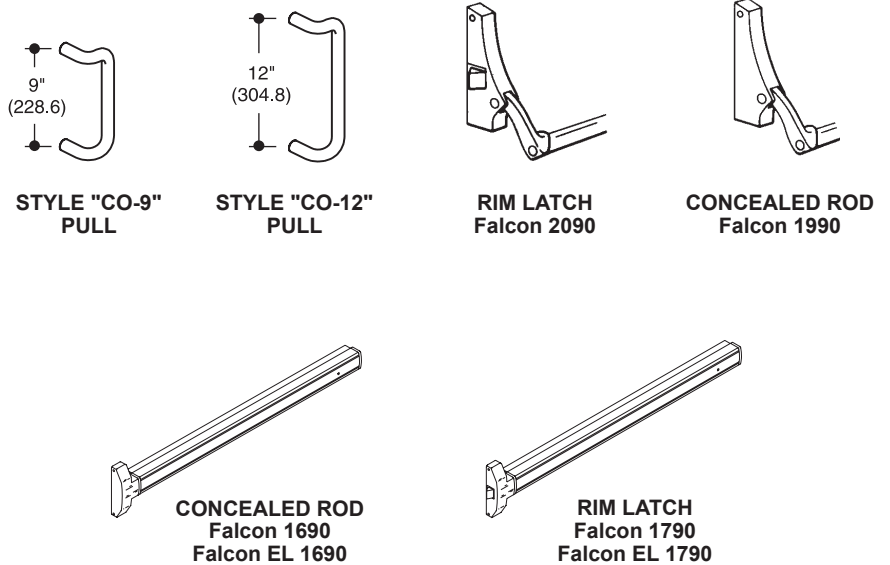
STYLE "CPN" PULL ON  
EXTERIOR OF DOOR



EXTERIOR VIEW OF 350 TUFFLINE DOOR (500 SIMILAR)  
"CPN" PULL AND OPTIONAL CYLINDER GUARD SHOWN.

SEE PAGE 14 FOR COMPLETE  
PANELINE™ INFORMATION

**EXIT DEVICES AND PULLS**



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SCALE 3" = 1' - 0"

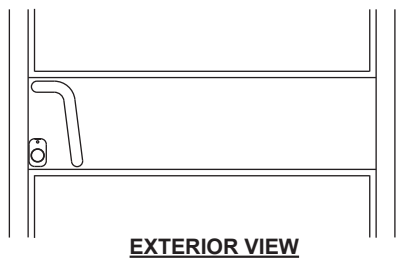
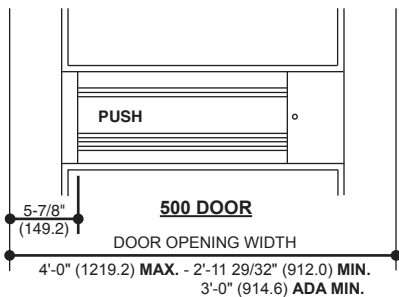
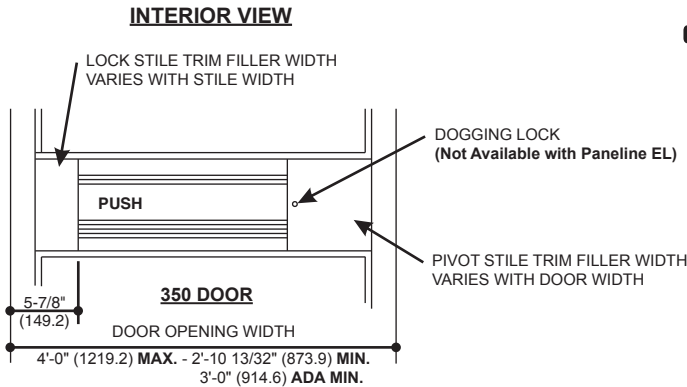
## PANELINE™ EXIT DEVICE

The Paneline™ concealed rod exit device for 350 and 500 Tuffline™ doors will accommodate variations in stile width and door width as shown in the following illustrations.

The Optional Paneline™ EL device is designed for electrified access control and is compatible with most key pad and card reader systems.

See **Hardware Section** for complete description of Paneline hardware, including finish of units.

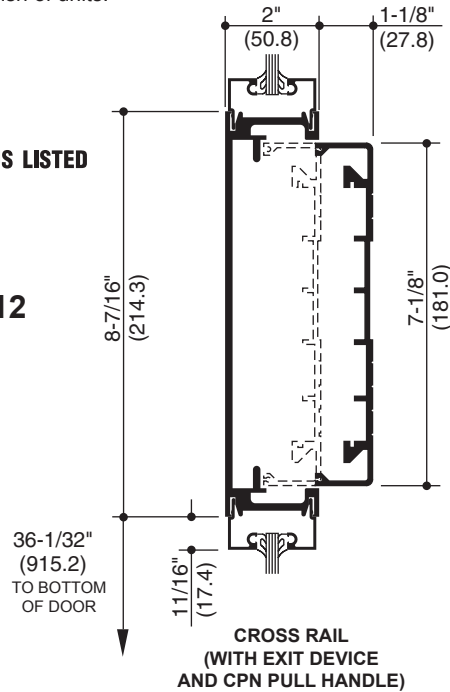
**Paneline™ uses mortise cylinder in lieu of the normal rim-type. Dummy Paneline units are not for use with any type of lock.**



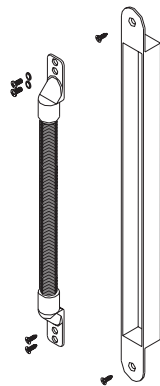
"CPN" PULL AND OPTIONAL CYLINDER GUARD SHOWN



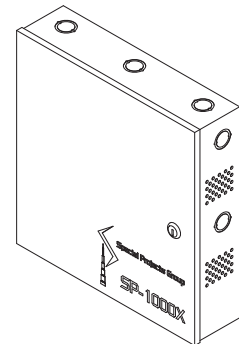
12



## PANELINE™ EL COMPONENTS



ELECTRIC POWER TRANSFER (EPT)



SP-1000X POWER SUPPLY

UL US LISTED

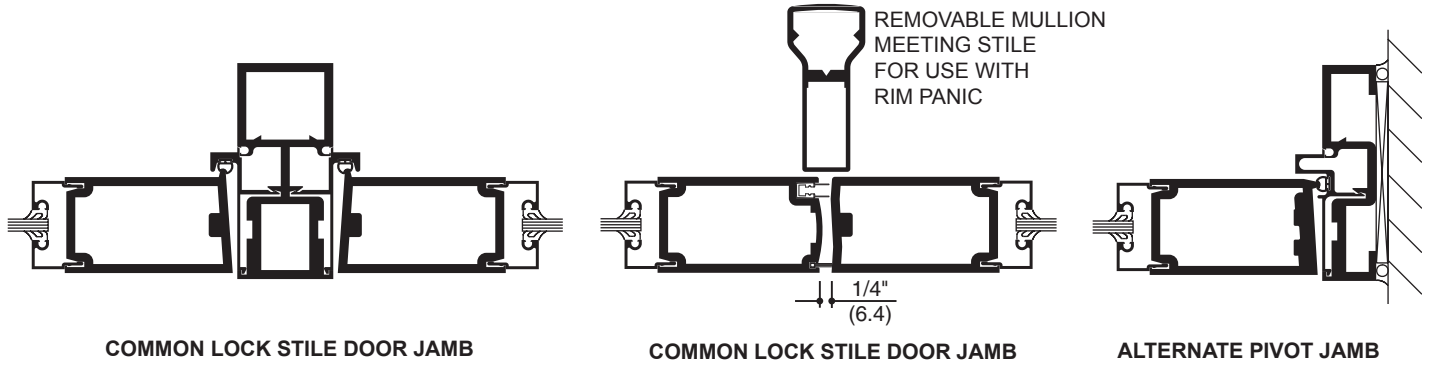
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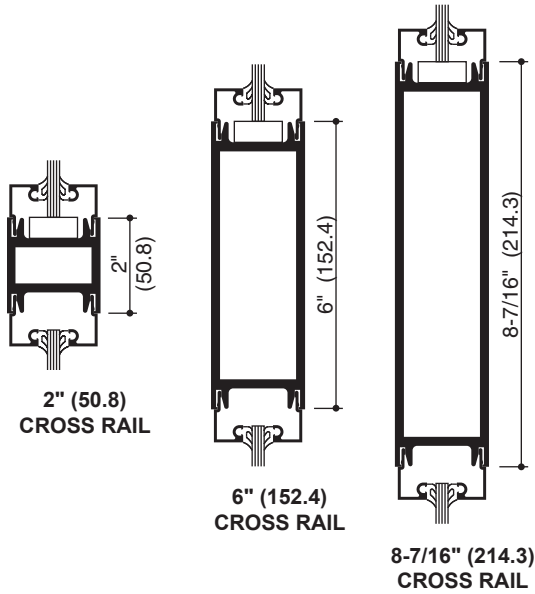
© Kawneer Company, Inc., 2014



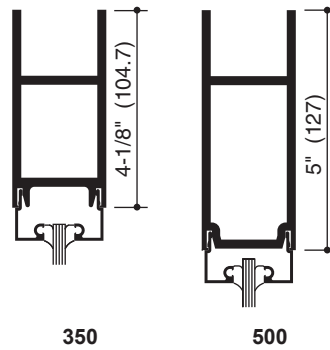
SCALE 3" = 1' - 0"



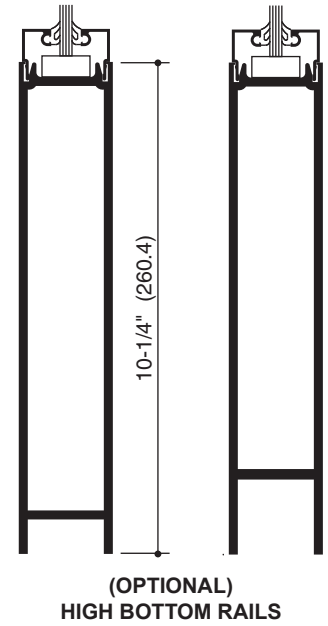
HORIZONTAL/VERTICAL CROSS RAILS



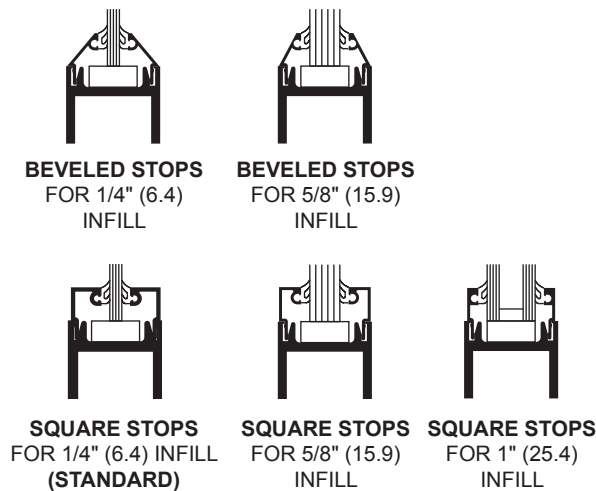
TOP RAIL FOR LCN CONCEALED CLOSER



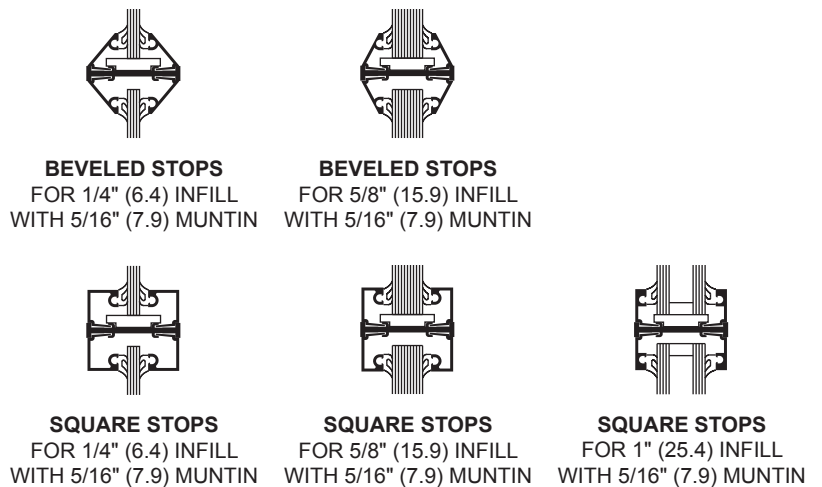
BOTTOM RAILS



INFILL OPTIONS



GLASS STOPS FOR 5/16" (7.9) MUNTINS

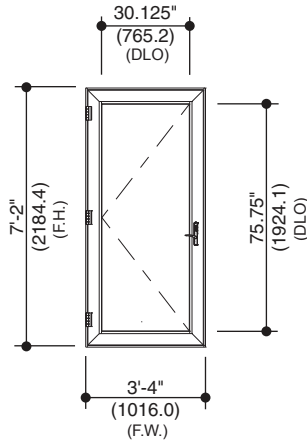


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**Generic Project Specific U-factor Example Calculation**  
 (Percent of Glass will vary on specific products depending on sitelines)



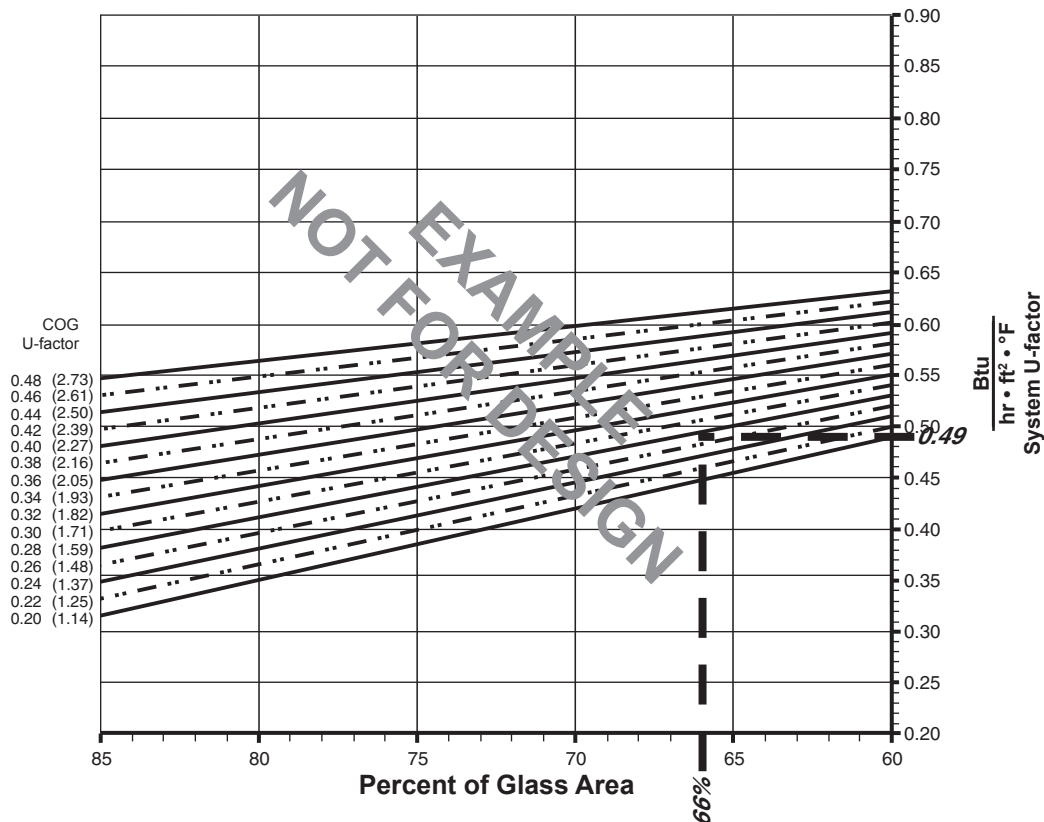
Example Glass U-Factor = 0.28 Btu/hr • ft² • °F

Total Daylight Opening = 30.125" x 75.75" = 15.85 ft²

Total Projected Area = 3'-4" x 7'-2" = 23.9 ft²

Percent of Glass = (Total Daylight Opening ÷ Total Projected Area)100  
 = (15.85 ÷ 23.9)100 = 66%

**System U-factor vs Percent of Glass Area**



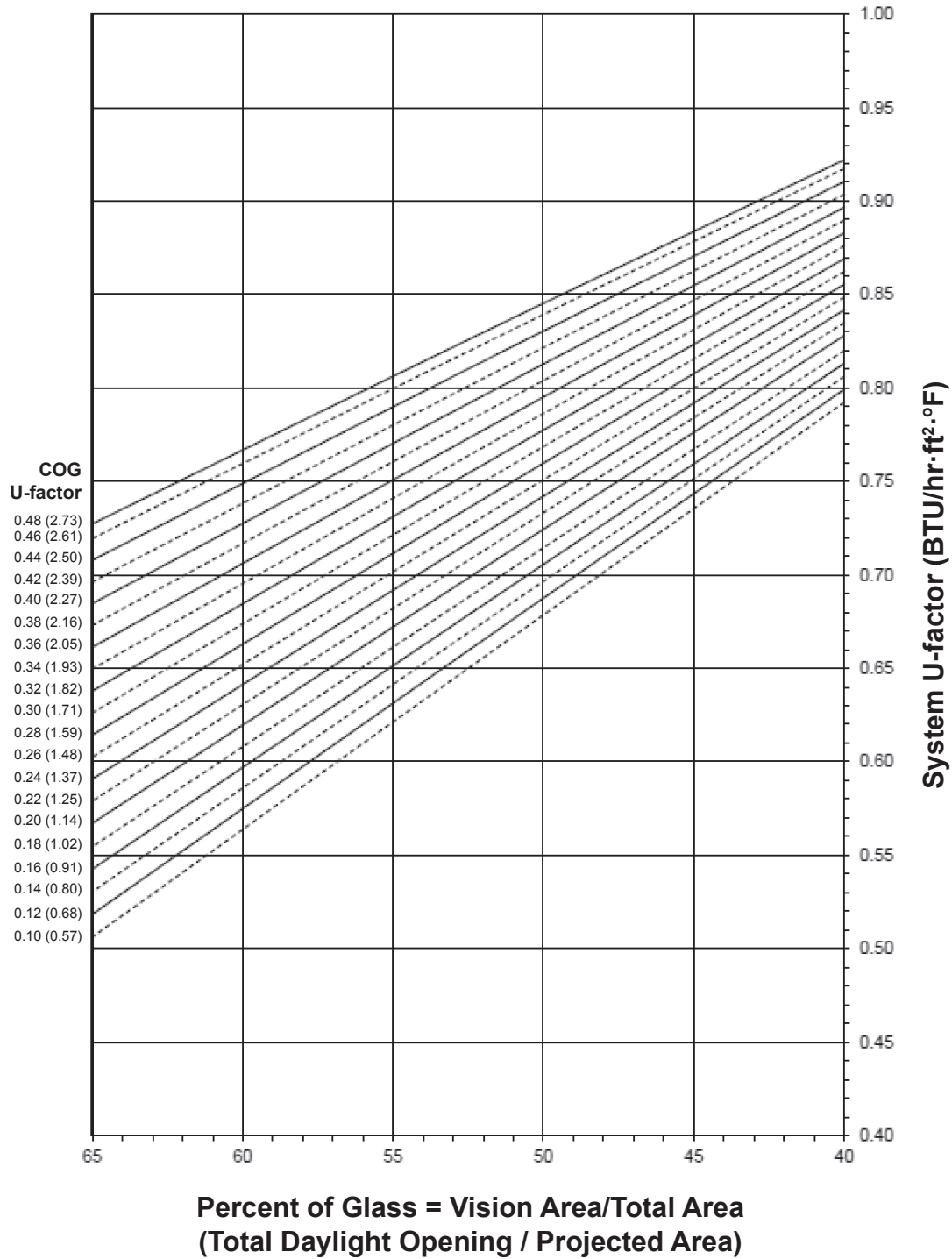
Based on 66% glass and center of glass (COG) U-factor of 0.28  
 System U-factor is equal to 0.49 Btu/hr • ft² • °F

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350 (SINGLE DOOR)

**System U-factor vs Percent of Glass Area**



**Notes for System U-Factor, SHGC and VT charts:**

For glass values that are not listed, linear interpolation is permitted.

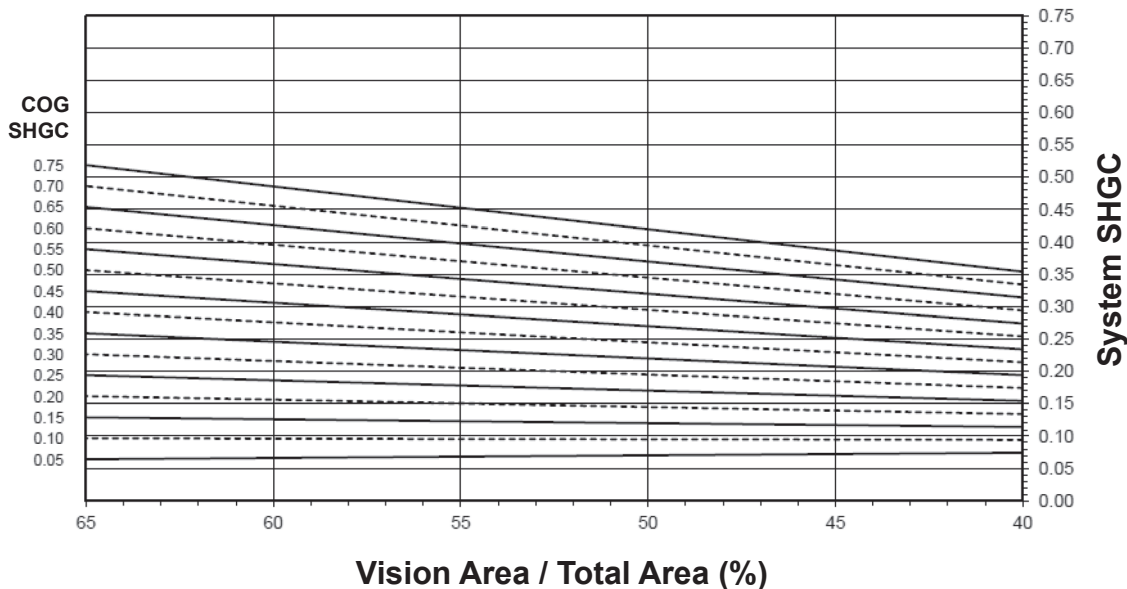
Glass properties are based on center of glass values (winter conditions) and are obtained from your glass supplier.

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

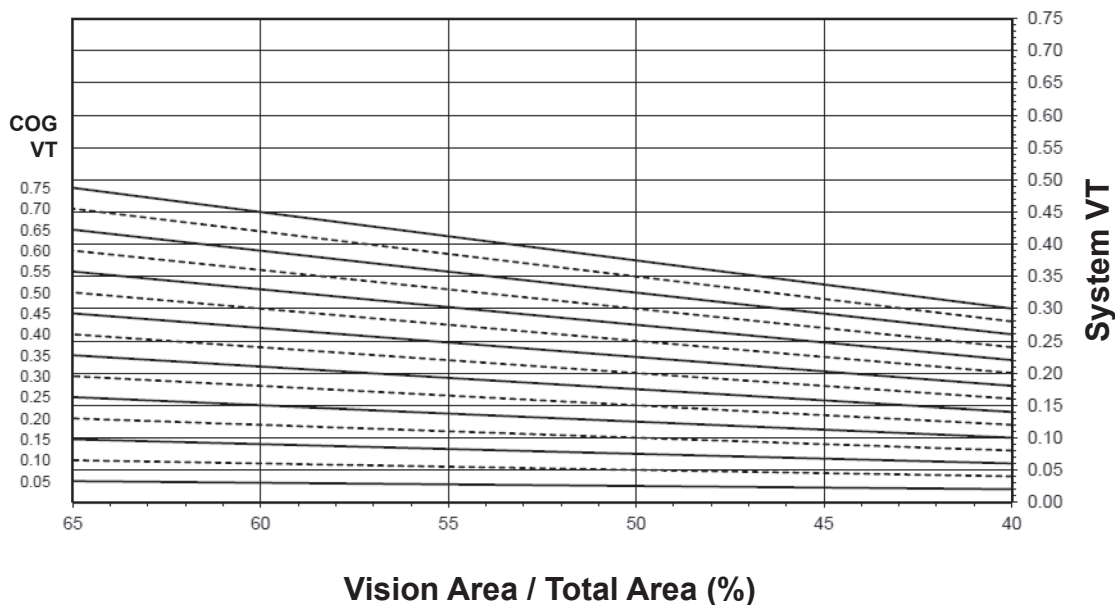
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350 (SINGLE DOOR)

**System Solar Heat Gain Coefficient (SHGC) vs Percent of Vision Area**



**System Visible Transmittance (VT) vs Percent of Vision Area**



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Thermal Transmittance <sup>1</sup> (BTU/hr • ft<sup>2</sup> • °F)

## 350 (SINGLE DOOR)

Glass U-Factor <sup>3</sup>	Overall U-Factor <sup>4</sup>
0.48	0.83
0.46	0.82
0.44	0.81
0.42	0.81
0.40	0.80
0.38	0.79
0.36	0.78
0.34	0.77
0.32	0.76
0.30	0.75
0.28	0.74
0.26	0.73
0.24	0.72
0.22	0.71
0.20	0.70
0.18	0.69
0.16	0.68
0.14	0.68
0.12	0.67
0.10	0.66

**NOTE:** For glass values that are not listed, linear interpolation is permitted.

1. U-Factors are determined in accordance with NFRC 100.
2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values and are obtained from your glass supplier.
4. Overall U-Factor, SHGC, and VT Matricies are based on the standard NFRC specimen size of 960mm wide by 2090mm high (37-3/4" by 82-3/8").

SHGC Matrix <sup>2</sup>

Glass SHGC <sup>3</sup>	Overall SHGC <sup>4</sup>
0.75	0.43
0.70	0.41
0.65	0.38
0.60	0.36
0.55	0.33
0.50	0.30
0.45	0.28
0.40	0.25
0.35	0.23
0.30	0.20
0.25	0.17
0.20	0.15
0.15	0.12
0.10	0.10
0.05	0.07

Visible Transmittance <sup>2</sup>

Glass VT <sup>3</sup>	Overall VT <sup>4</sup>
0.75	0.39
0.70	0.36
0.65	0.34
0.60	0.31
0.55	0.29
0.50	0.26
0.45	0.23
0.40	0.21
0.35	0.18
0.30	0.16
0.25	0.13
0.20	0.10
0.15	0.08
0.10	0.05
0.05	0.03

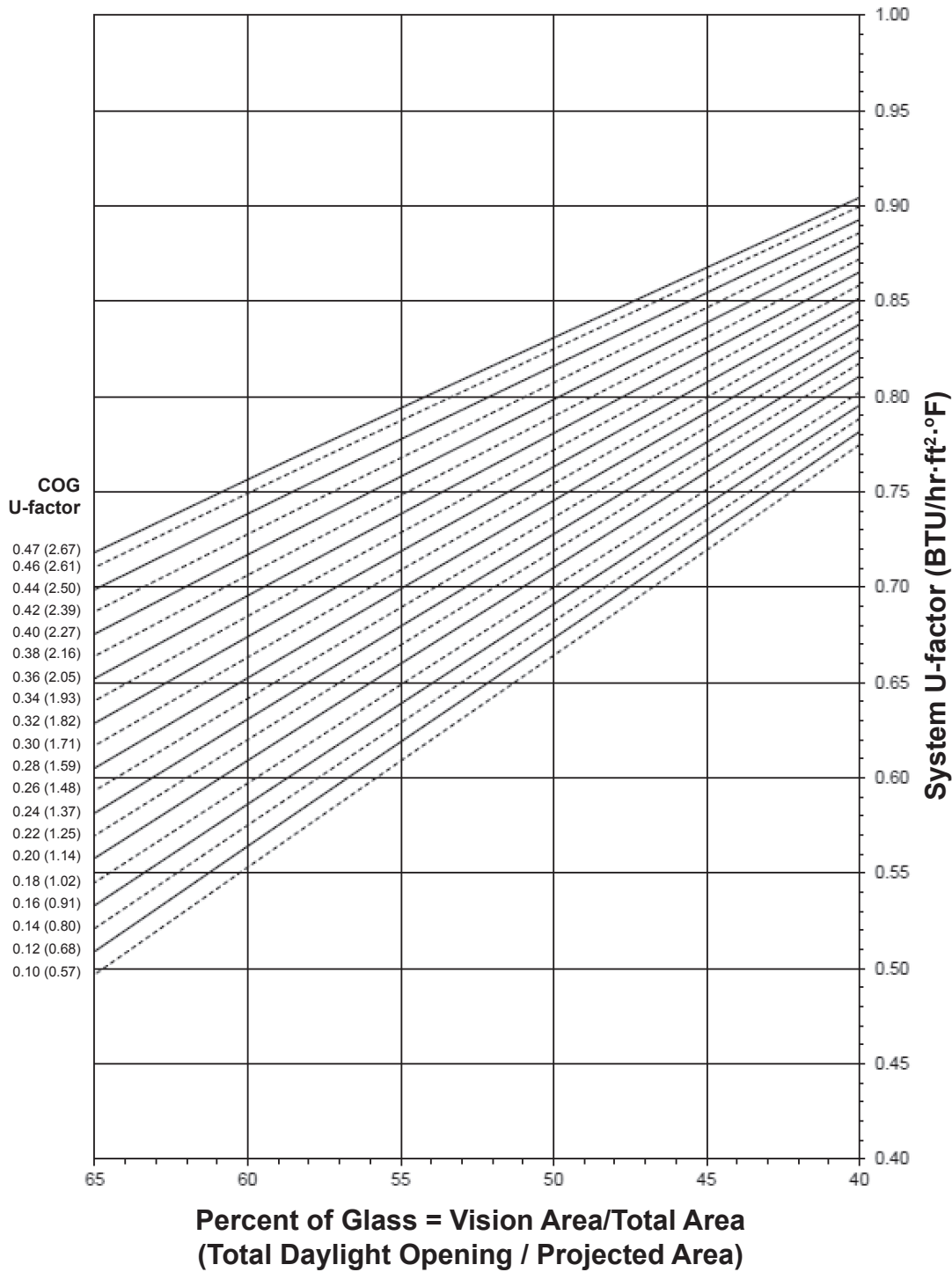
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Kawneer reserves the right to change configuration without prior notice when deemed necessary for product improvement.

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350 (PAIR OF DOORS)

**System U-factor vs Percent of Glass Area**



**Notes for System U-Factor, SHGC and VT charts:**

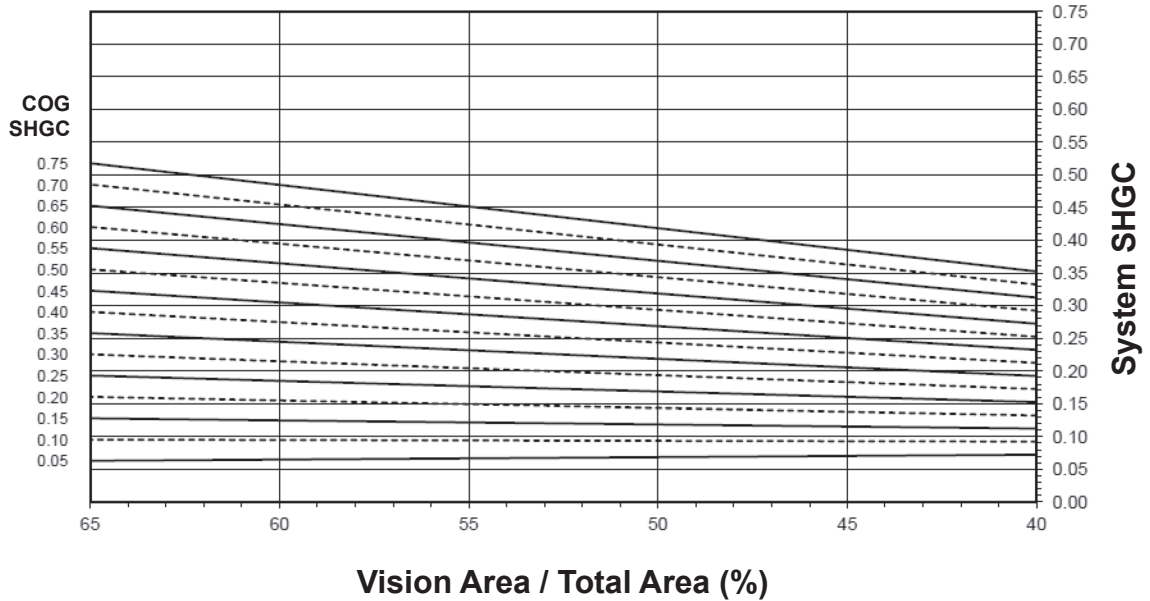
For glass values that are not listed, linear interpolation is permitted.  
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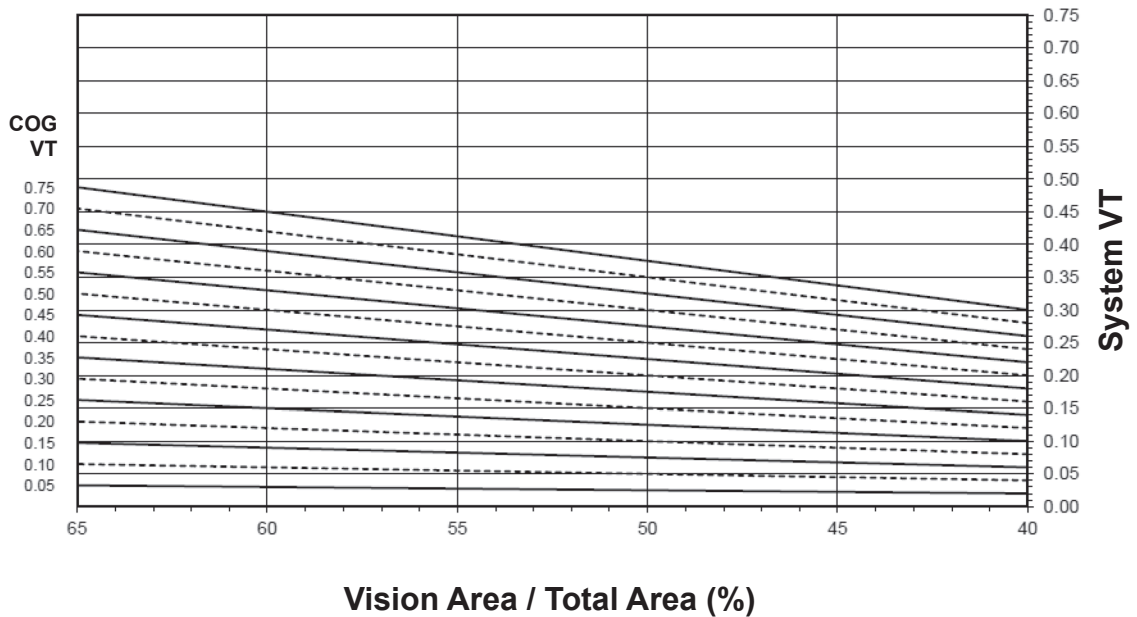
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350 (PAIR OF DOORS)

System Solar Heat Gain Coefficient (SHGC) vs Percent of Vision Area



System Visible Transmittance (VT) vs Percent of Vision Area



Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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Thermal Transmittance <sup>1</sup> (BTU/hr • ft<sup>2</sup> • °F)

Glass U-Factor <sup>3</sup>	Overall U-Factor <sup>4</sup>
0.47	0.79
0.46	0.78
0.44	0.77
0.42	0.76
0.40	0.75
0.38	0.74
0.36	0.73
0.34	0.72
0.32	0.71
0.30	0.70
0.28	0.69
0.26	0.68
0.24	0.67
0.22	0.66
0.20	0.65
0.18	0.64
0.16	0.63
0.14	0.62
0.12	0.61
0.10	0.60

## 350 (PAIR OF DOORS)

**NOTE:** For glass values that are not listed, linear interpolation is permitted.

1. U-Factors are determined in accordance with NFRC 100.
2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values and are obtained from your glass supplier.
4. Overall U-Factor, SHGC, and VT Matricies are based on the standard NFRC specimen size of 1920mm wide by 2090mm high (75-1/2" by 82-3/8").

SHGC Matrix <sup>2</sup>

Glass SHGC <sup>3</sup>	Overall SHGC <sup>4</sup>
0.75	0.46
0.70	0.43
0.65	0.40
0.60	0.37
0.55	0.35
0.50	0.32
0.45	0.29
0.40	0.26
0.35	0.23
0.30	0.21
0.25	0.18
0.20	0.15
0.15	0.12
0.10	0.09
0.05	0.07

Visible Transmittance <sup>2</sup>

Glass VT <sup>3</sup>	Overall VT <sup>4</sup>
0.75	0.42
0.70	0.39
0.65	0.36
0.60	0.34
0.55	0.31
0.50	0.28
0.45	0.25
0.40	0.22
0.35	0.20
0.30	0.17
0.25	0.14
0.20	0.11
0.15	0.08
0.10	0.06
0.05	0.03

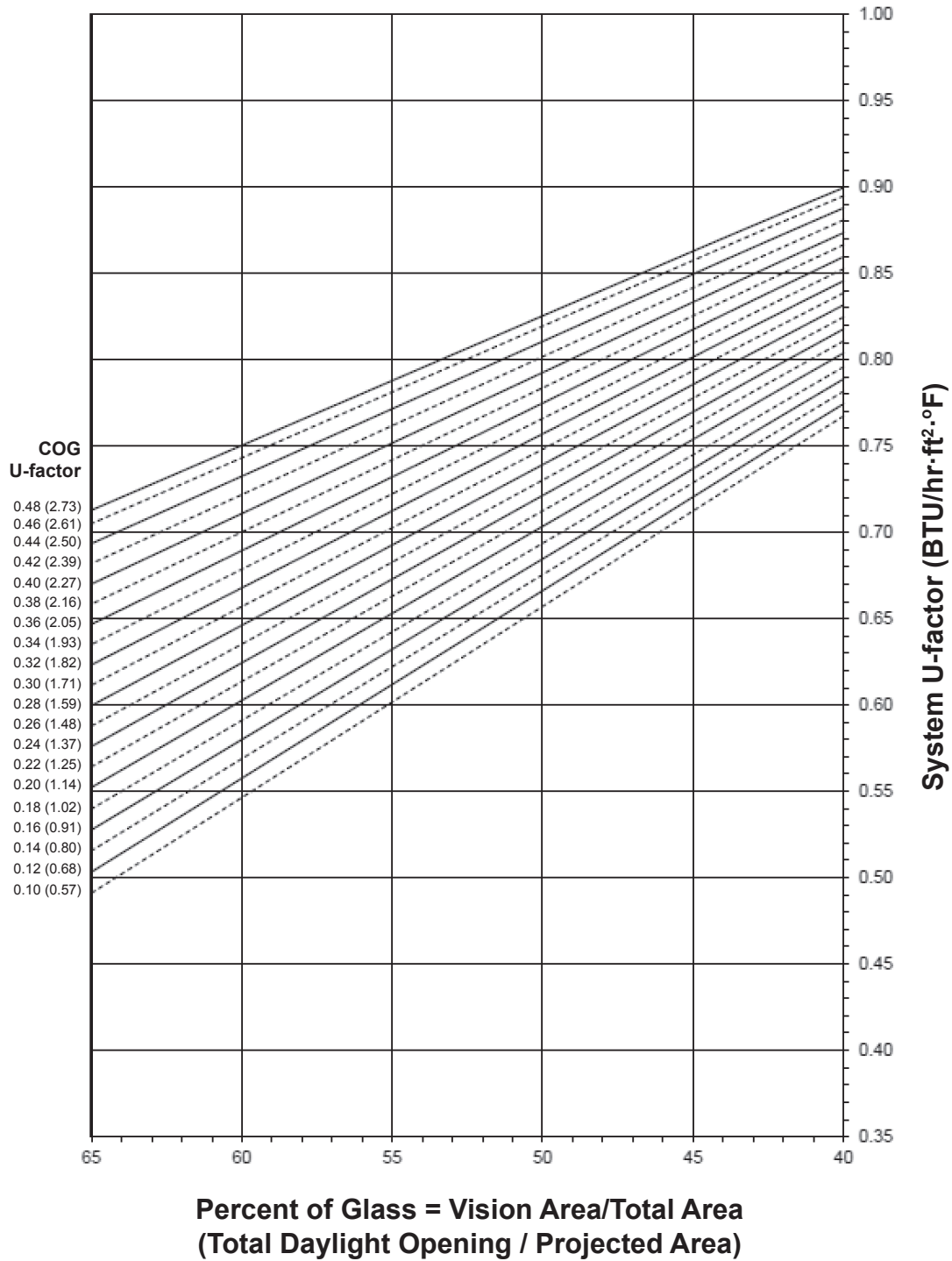
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Kawneer reserves the right to change configuration without prior notice when deemed necessary for product improvement.  
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500 (SINGLE DOOR)

**System U-factor vs Percent of Glass Area**



**Notes for System U-Factor, SHGC and VT charts:**

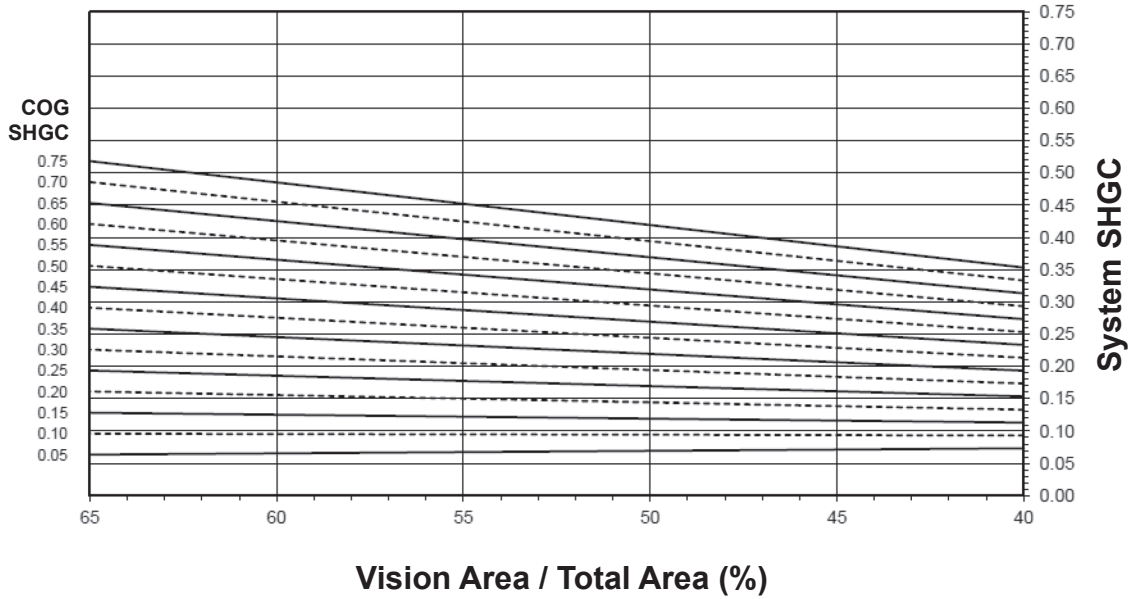
For glass values that are not listed, linear interpolation is permitted.  
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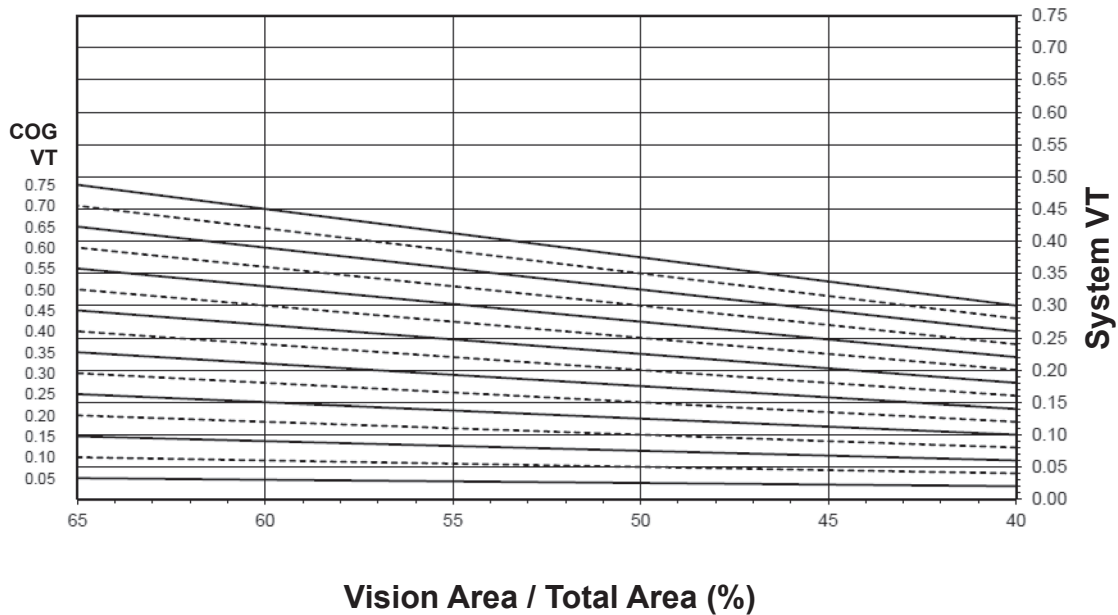
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500 (SINGLE DOOR)

**System Solar Heat Gain Coefficient (SHGC) vs Percent of Vision Area**



**System Visible Transmittance (VT) vs Percent of Vision Area**



Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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**Thermal Transmittance <sup>1</sup> (BTU/hr • ft<sup>2</sup> • °F)**

**500 (SINGLE DOOR)**

Glass U-Factor <sup>3</sup>	Overall U-Factor <sup>4</sup>
0.48	0.87
0.46	0.86
0.44	0.85
0.42	0.84
0.40	0.84
0.38	0.83
0.36	0.82
0.34	0.81
0.32	0.81
0.30	0.80
0.28	0.79
0.26	0.78
0.24	0.77
0.22	0.77
0.20	0.76
0.18	0.75
0.16	0.74
0.14	0.73
0.12	0.73
0.10	0.72

**NOTE:** For glass values that are not listed, linear interpolation is permitted.

1. U-Factors are determined in accordance with NFRC 100.
2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values and are obtained from your glass supplier.
4. Overall U-Factor, SHGC, and VT Matricies are based on the standard NFRC specimen size of 960mm wide by 2090mm high (37-3/4" by 82-3/8").

**SHGC Matrix <sup>2</sup>**

Glass SHGC <sup>3</sup>	Overall SHGC <sup>4</sup>
0.75	0.38
0.70	0.36
0.65	0.34
0.60	0.32
0.55	0.29
0.50	0.27
0.45	0.25
0.40	0.23
0.35	0.21
0.30	0.18
0.25	0.16
0.20	0.14
0.15	0.12
0.10	0.09
0.05	0.07

**Visible Transmittance <sup>2</sup>**

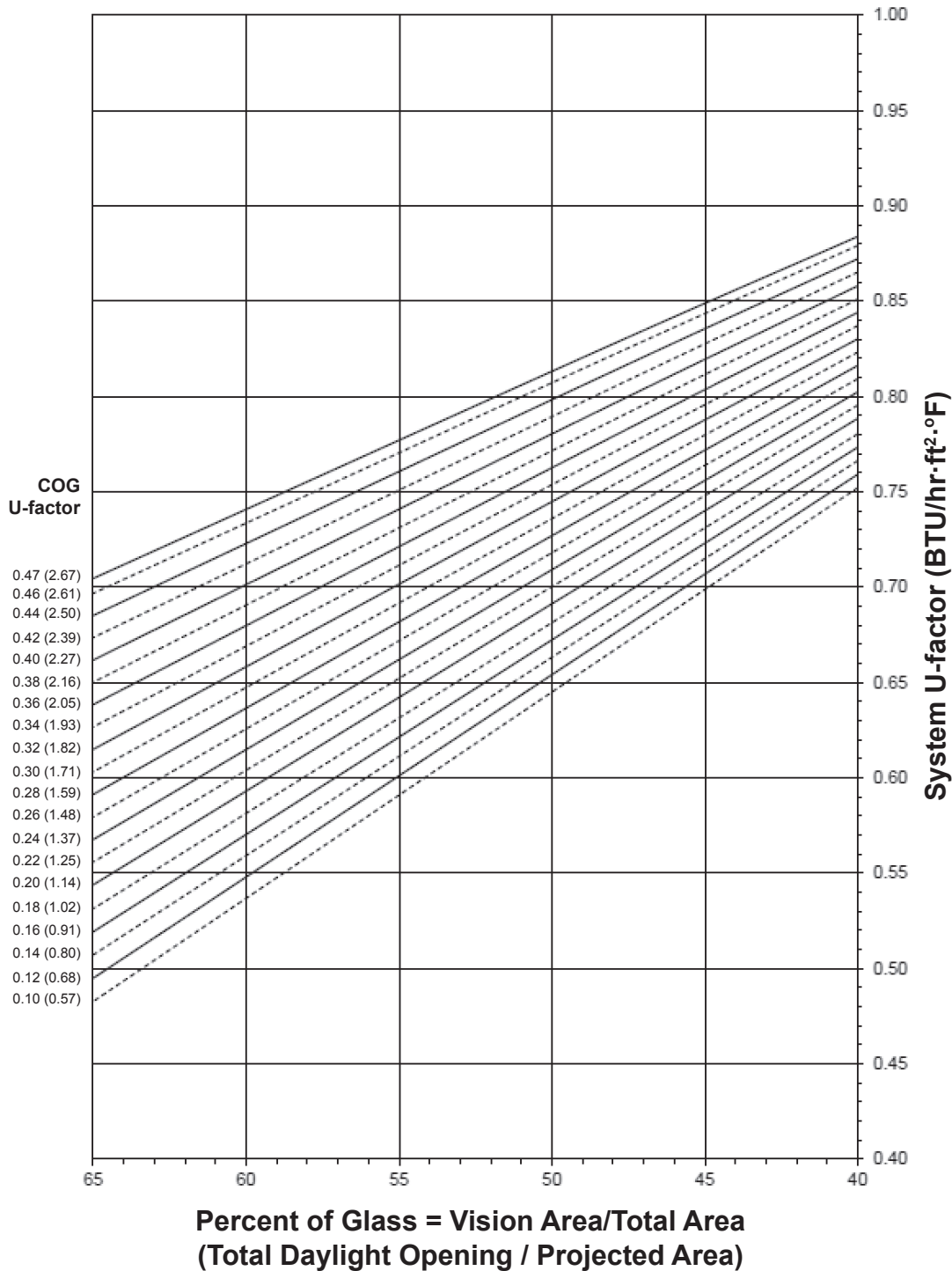
Glass VT <sup>3</sup>	Overall VT <sup>4</sup>
0.75	0,33
0.70	0,31
0.65	0,29
0.60	0,27
0.55	0,25
0.50	0,22
0.45	0,20
0.40	0,18
0.35	0,16
0.30	0,13
0.25	0,11
0.20	0,09
0.15	0,07
0.10	0,04
0.05	0,02

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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500 (PAIR OF DOORS)

**System U-factor vs Percent of Glass Area**



**Notes for System U-Factor, SHGC and VT charts:**

For glass values that are not listed, linear interpolation is permitted.

Glass properties are based on center of glass values (winter conditions) and are obtained from your glass supplier.

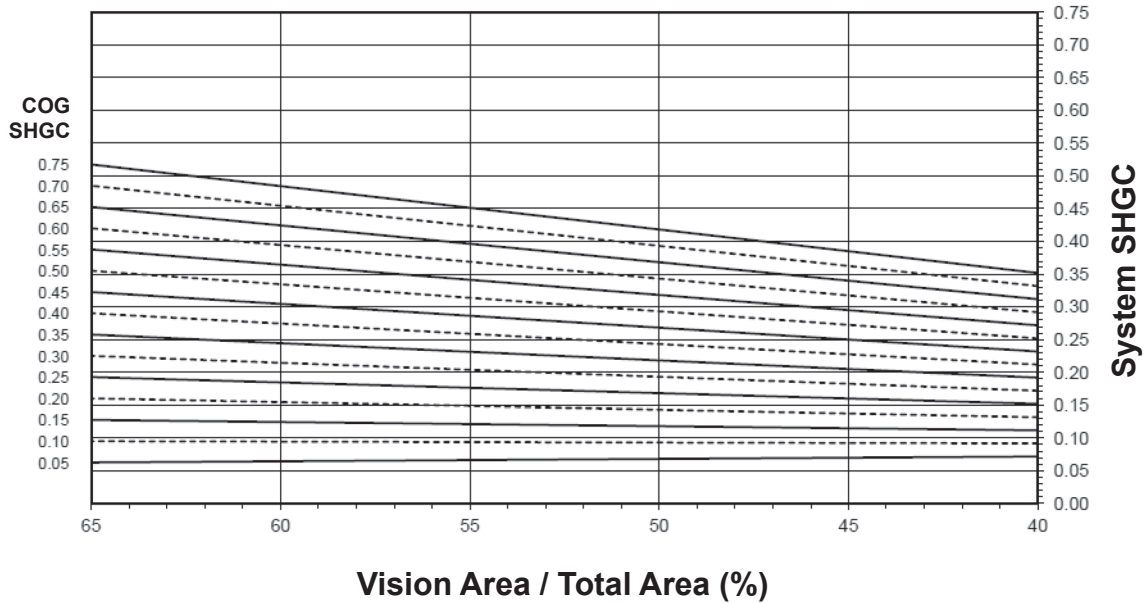
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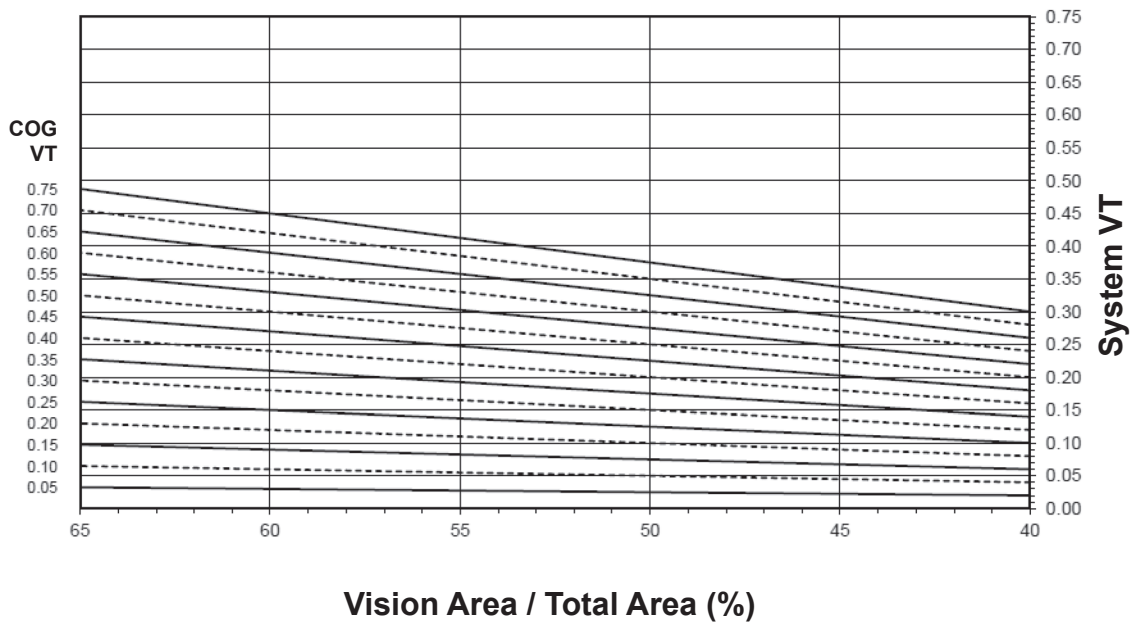
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500 (PAIR OF DOORS)

**System Solar Heat Gain Coefficient (SHGC) vs Percent of Vision Area**



**System Visible Transmittance (VT) vs Percent of Vision Area**



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Thermal Transmittance <sup>1</sup> (BTU/hr • ft<sup>2</sup> • °F)

Glass U-Factor <sup>3</sup>	Overall U-Factor <sup>4</sup>
0.47	0.82
0.46	0.82
0.44	0.81
0.42	0.80
0.40	0.79
0.38	0.78
0.36	0.77
0.34	0.77
0.32	0.76
0.30	0.75
0.28	0.74
0.26	0.73
0.24	0.72
0.22	0.71
0.20	0.70
0.18	0.70
0.16	0.69
0.14	0.68
0.12	0.67
0.10	0.66

## 500 (PAIR OF DOORS)

**NOTE:** For glass values that are not listed, linear interpolation is permitted.

1. U-Factors are determined in accordance with NFRC 100.
2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values and are obtained from your glass supplier.
4. Overall U-Factor, SHGC, and VT Matricies are based on the standard NFRC specimen size of 1920mm wide by 2090mm high (75-1/2" by 82-3/8").

SHGC Matrix <sup>2</sup>

Glass SHGC <sup>3</sup>	Overall SHGC <sup>4</sup>
0.75	0.41
0.70	0.38
0.65	0.36
0.60	0.34
0.55	0.31
0.50	0.29
0.45	0.26
0.40	0.24
0.35	0.21
0.30	0.19
0.25	0.17
0.20	0.14
0.15	0.12
0.10	0.09
0.05	0.07

Visible Transmittance <sup>2</sup>

Glass VT <sup>3</sup>	Overall VT <sup>4</sup>
0.75	0.36
0.70	0.34
0.65	0.32
0.60	0.29
0.55	0.27
0.50	0.24
0.45	0.22
0.40	0.19
0.35	0.17
0.30	0.15
0.25	0.12
0.20	0.10
0.15	0.07
0.10	0.05
0.05	0.02

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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**Features**

- 350 medium stile has 3-1/2" (88.9) vertical stile, 3-1/2" (88.9) top and 6-1/2" (165.1) bottom rail
- 500 wide stile has 5" (127) vertical stile, 5" (127) top and 6-1/2" (165.1) bottom rail
- Door is 2" (50.8) deep
- Door has 3/16" (4.8) wall thickness
- Dual moment welded corner construction
- Single acting
- Infills range from 1/4" (6.4) to 1" (25.4)
- Offset pivot, butt hinges or continuous geared hinge
- MS lock or exit device hardware
- Surface mounted or concealed closers
- Architects Classic push pulls
- Adjustable astragal utilizing pile weathering with polymeric fin at meeting stiles
- Polymeric bulb weatherstripping in door frames
- Permanodic™ anodized finishes in seven standard choices
- Painted finishes in standard and custom choices

**Optional Features**

- Paneline™ exit device or Paneline™ EL exit device
- Wide variety of bottom rail and cross rail
- 3/16" (4.8) heavy wall door frame

**Product Applications**

- Designed for high traffic applications such as schools, universities and office buildings

For specific product applications,  
Consult your Kawneer representative.

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**PICTORIAL VIEW ..... 5**

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**OPTIONS AND ACCESSORIES..... 18**

**THERMAL CHARTS ..... 19-31**

LAWS AND BUILDING AND SAFETY CODES GOVERNING THE DESIGN AND USE OF GLAZED ENTRANCE, WINDOW, AND CURTAIN WALL PRODUCTS VARY WIDELY. KAWNEER DOES NOT CONTROL THE SELECTION OF PRODUCT CONFIGURATIONS, OPERATING HARDWARE, OR GLAZING MATERIALS, AND ASSUMES NO RESPONSIBILITY THEREFOR.

Metric (SI) conversion figures are included throughout these details for reference. Numbers in parentheses ( ) are millimeters unless otherwise noted.

The following metric (SI ) units are found in these details:

- m – meter
- cm – centimeter
- mm – millimeter
- s – second
- Pa – pascal
- MPa – megapascal

Kawneer reserves the right to change configurations without prior notice when deemed necessary for product improvement.

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

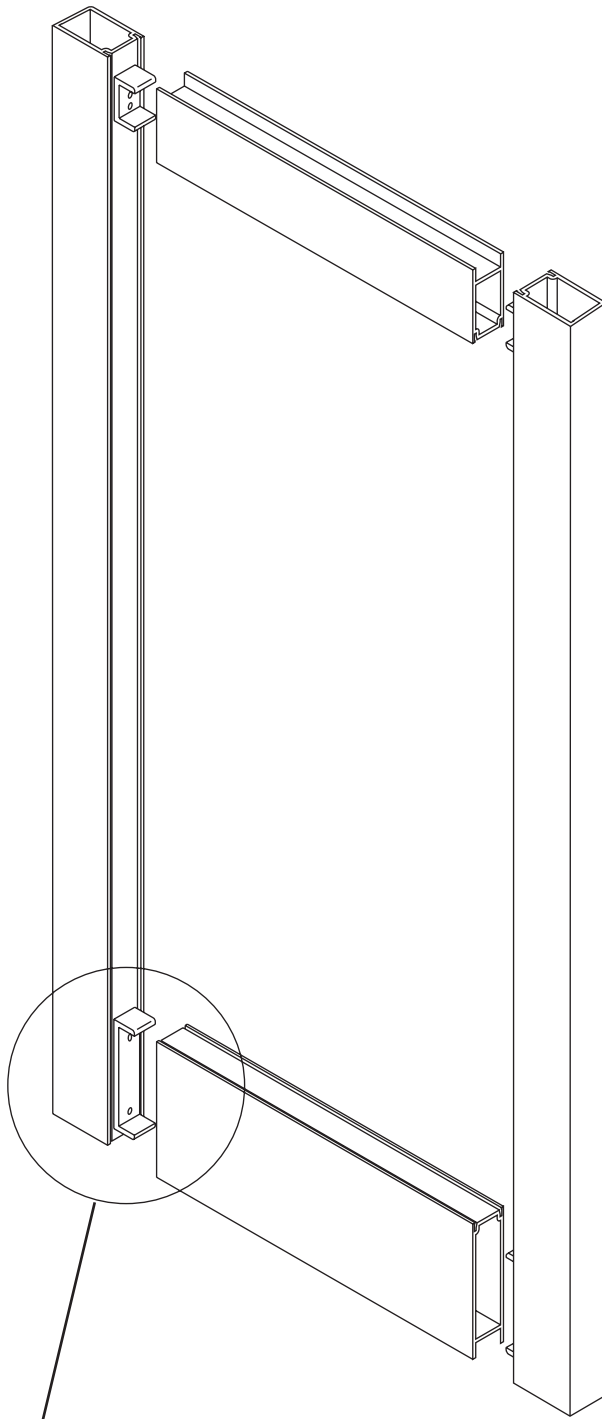
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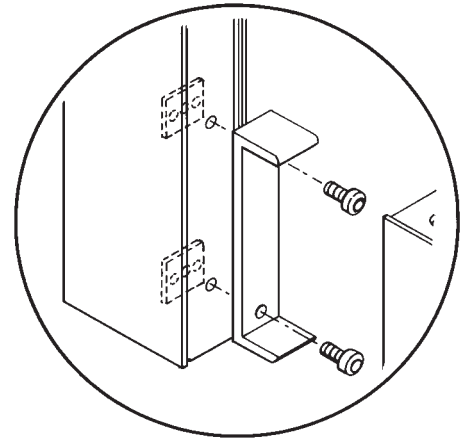
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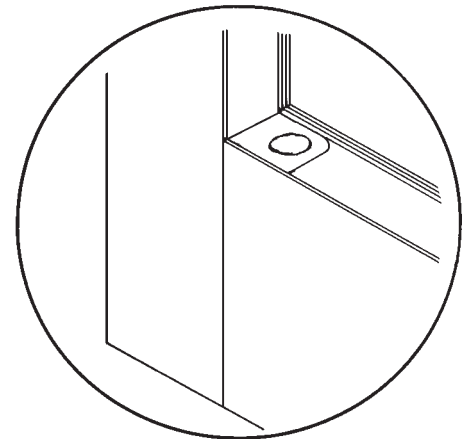
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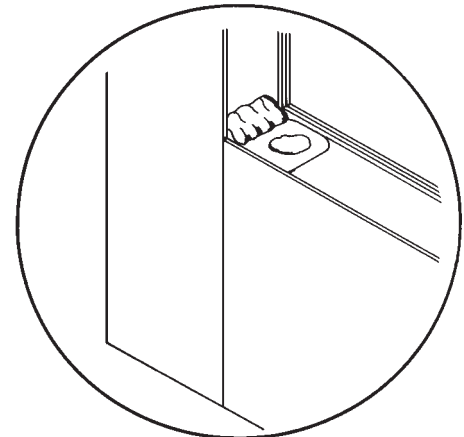
DUAL MOMENT WELDED CORNER CONSTRUCTION



**#1 MECHANICAL FASTENING** is accomplished by attaching a 5/16" (7.9) thick extruded aluminum channel clip to the vertical stile with 1/4"-20 heat strengthened bolts and 3/16" thick steel nut plates for a high strength welding base for attachment horizontal member.



**#2 SIGMA\* DEEP PENETRATION PLUG WELDS** are made top and bottom after the horizontal is properly positioned over the channel clip to help provide the strongest door corner joint currently available.

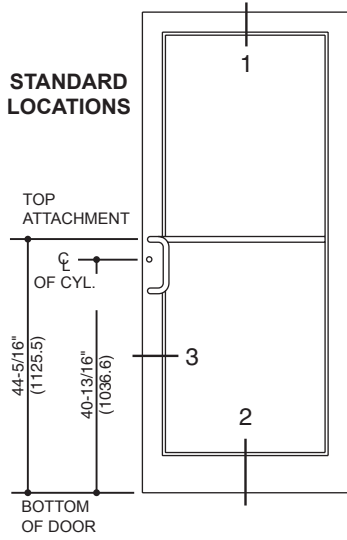


**#3 SIGMA\* FILLET WELDS** along both top and bottom webs of the rail extrusion complete the Dual Moment corner construction.

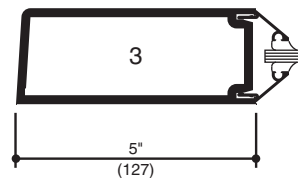
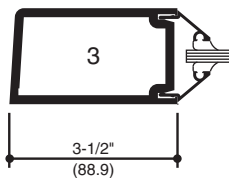
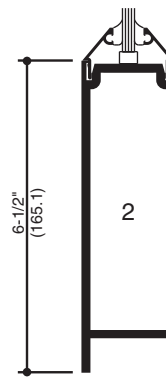
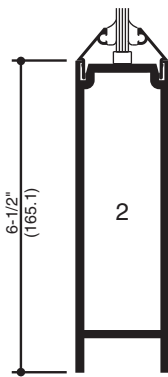
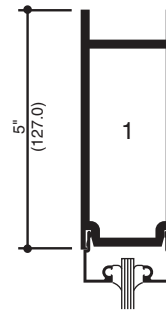
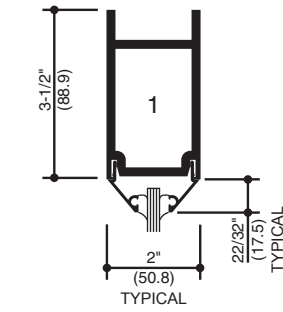
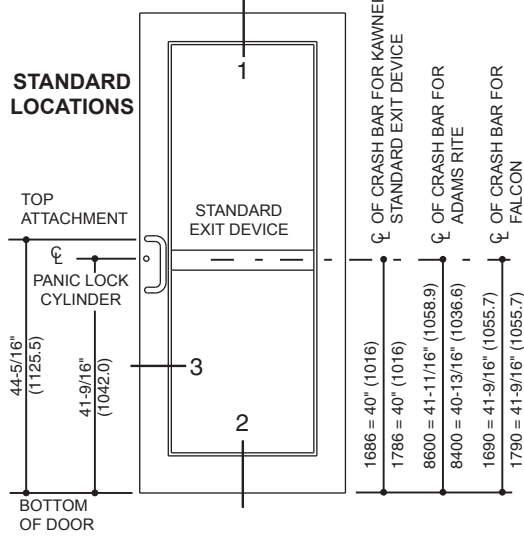
\* An arc welding process known as Shielded Inert Gas Metal Arc (SIGMA) or also known as Metal Inert Gas (MIG).

SCALE 3" = 1' 0"

### 350 MEDIUM STILE



### 500 WIDE STILE



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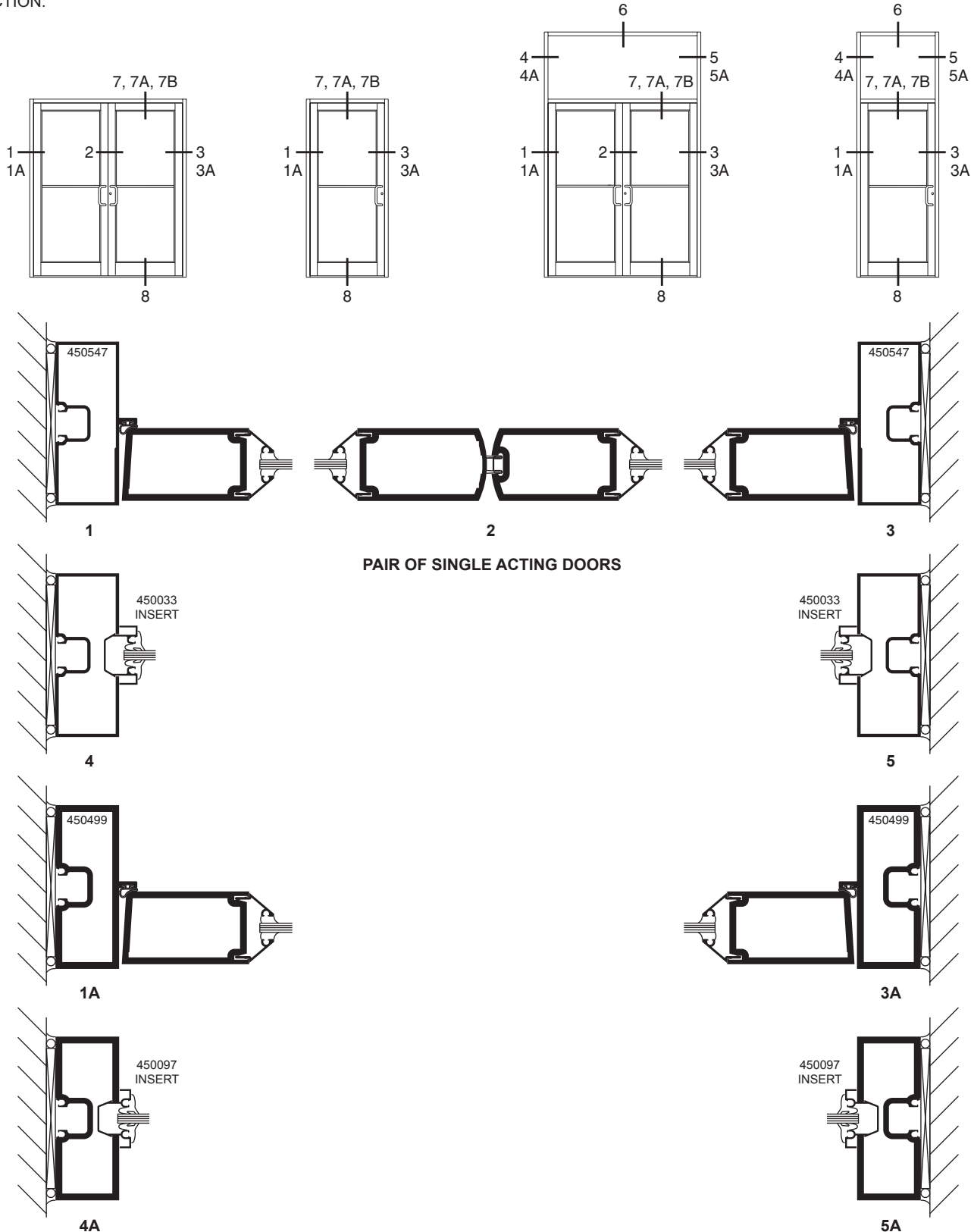
© Kawneer Company, Inc., 2015

SCALE 3" = 1'-0"

## 350 HEAVY WALL DOORS TRIFAB™ VG 450 CENTER DOOR FRAMES SHOWN (HEAVY WALL FRAME OPTIONAL)

**NOTE:**

- 1. SERIES 350 HEAVY WALL DOORS ARE DETAILED, 500 HEAVY WALL DOORS ALSO MAY BE USED.
- 2. TRIFAB™ VG 450 CENTER, 1-3/4" X 4-1/2" (44.5 X 114.3) FRAMING IS DETAILED WITH THE DOORS FOR REFERENCE. OTHER KAWNEER FRAMING SERIES OR CURTAIN WALL SYSTEMS MAY BE USED. REFER TO THE CATALOG INDEX FOR THE APPROPRIATE DETAIL SECTION.



PAIR OF SINGLE ACTING DOORS

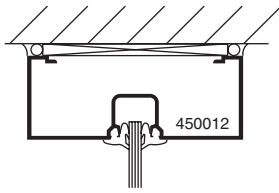
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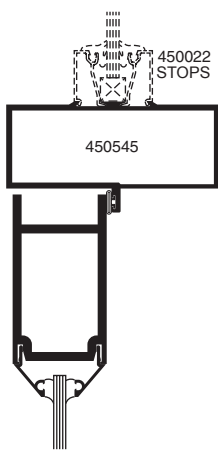
SCALE 3" = 1'-0"

## 350 HEAVY WALL DOORS SHOWN TRIFAB™ VG 450 CENTER DOOR FRAMES SHOWN (HEAVY WALL FRAME OPTIONAL)

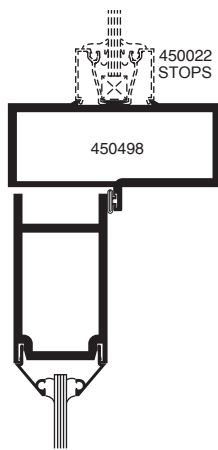
### SINGLE ACTING DOORS



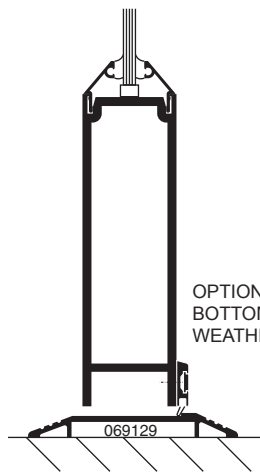
6  
TRANSOM HEAD



7  
DOOR HEADER/  
TRANSOM BAR

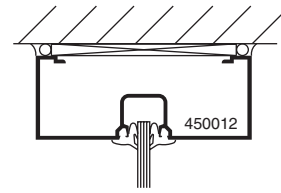


7A  
DOOR HEADER/  
TRANSOM BAR

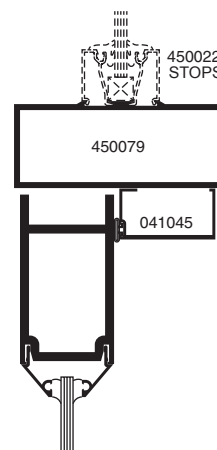


8\*  
BOTTOM RAIL

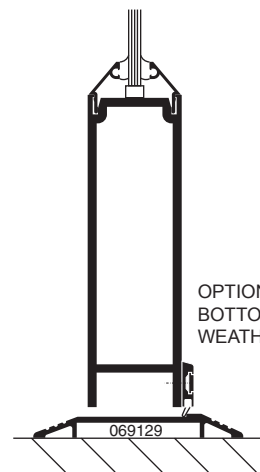
### COC WITH SINGLE ACTING OFFSET ARM



6  
TRANSOM HEAD



7B  
DOOR HEADER/  
TRANSOM BAR



8\*  
BOTTOM RAIL

\*NOTE: Some building codes limit threshold height to 1/2" (12.7) max.

\*NOTE: Some building codes limit threshold height to 1/2" (12.7) max.

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

Kawneer reserves the right to change configuration without prior notice when deemed necessary for product improvement.

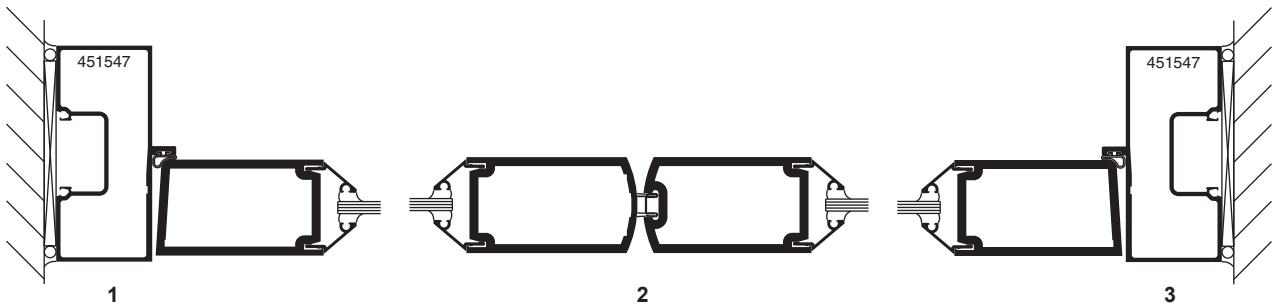
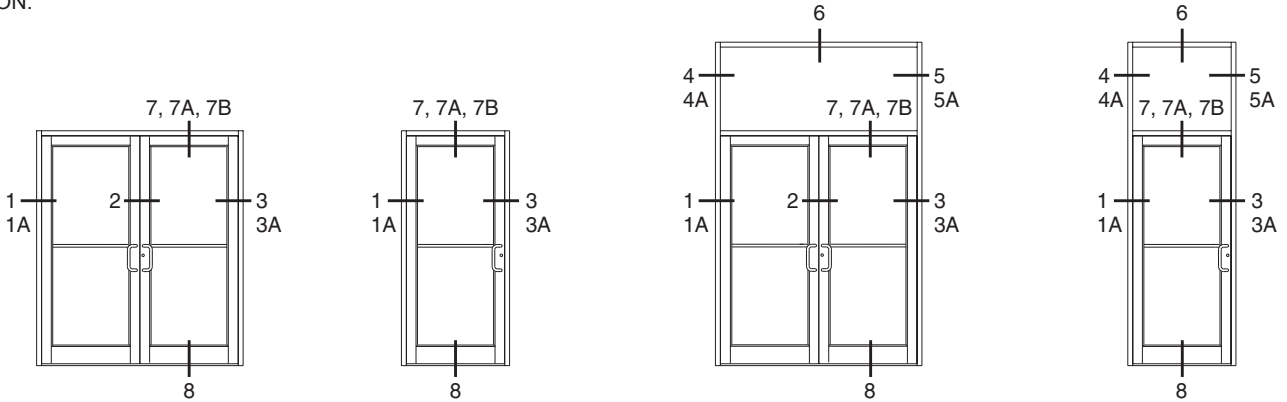
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SCALE 3" = 1'-0"

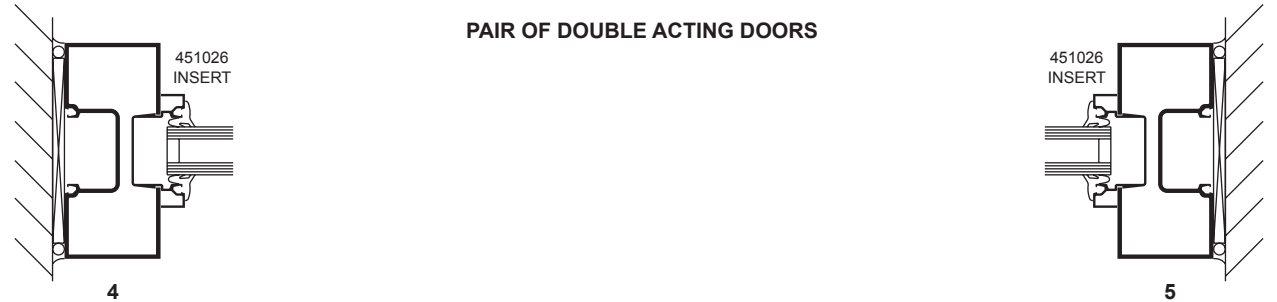
## 350 HEAVY WALL DOORS SHOWN TRIFAB™ VG 451 CENTER DOOR FRAMES SHOWN (HEAVY WALL FRAME OPTIONAL)

**NOTE:**

- 1. SERIES 350 HEAVY WALL DOORS ARE DETAILED, 500 HEAVY WALL DOORS ALSO MAY BE USED.
- 2. TRIFAB™ VG 451 CENTER, 2" X 4-1/2" (50.8 X 114.3) FRAMING IS DETAILED WITH THE DOORS FOR REFERENCE. OTHER KAWNEER FRAMING SERIES OR CURTAIN WALL SYSTEMS MAY BE USED. REFER TO THE CATALOG INDEX FOR THE APPROPRIATE DETAIL SECTION.



PAIR OF DOUBLE ACTING DOORS



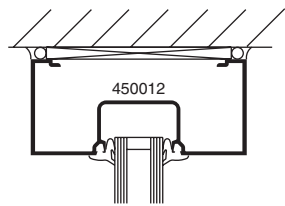
Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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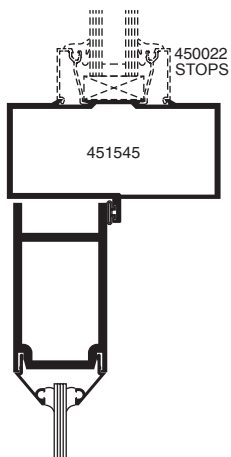
SCALE 3" = 1'-0"

**350 HEAVY WALL DOORS**  
**TRIFAB™ VG 451 CENTER DOOR FRAMES SHOWN**  
 (HEAVY WALL FRAME OPTIONAL)

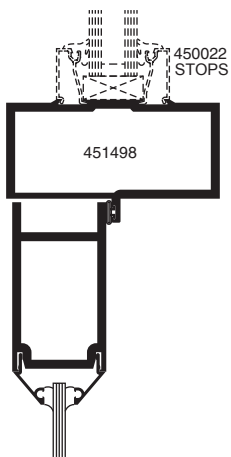
**SINGLE ACTING DOORS**



**6**  
TRANSOM HEAD



**7**  
DOOR HEADER/  
TRANSOM BAR

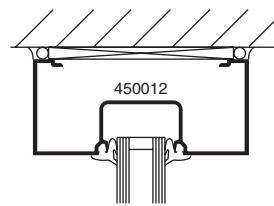


**7A**  
DOOR HEADER/  
TRANSOM BAR

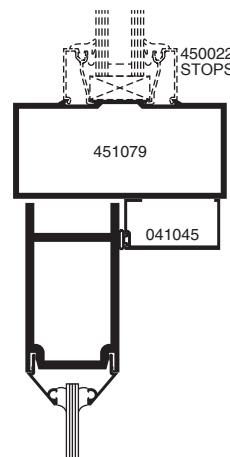


**8\***  
BOTTOM RAIL

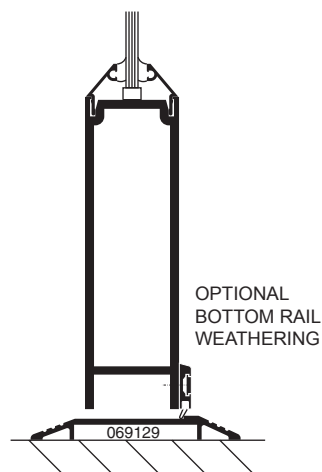
**COC WITH SINGLE ACTING OFFSET ARM**



**6**  
TRANSOM HEAD



**7B**  
DOOR HEADER/  
TRANSOM BAR



**8\***  
BOTTOM RAIL

\*NOTE: Some building codes limit threshold height to 1/2" (12.7) max.

\*NOTE: Some building codes limit threshold height to 1/2" (12.7) max.

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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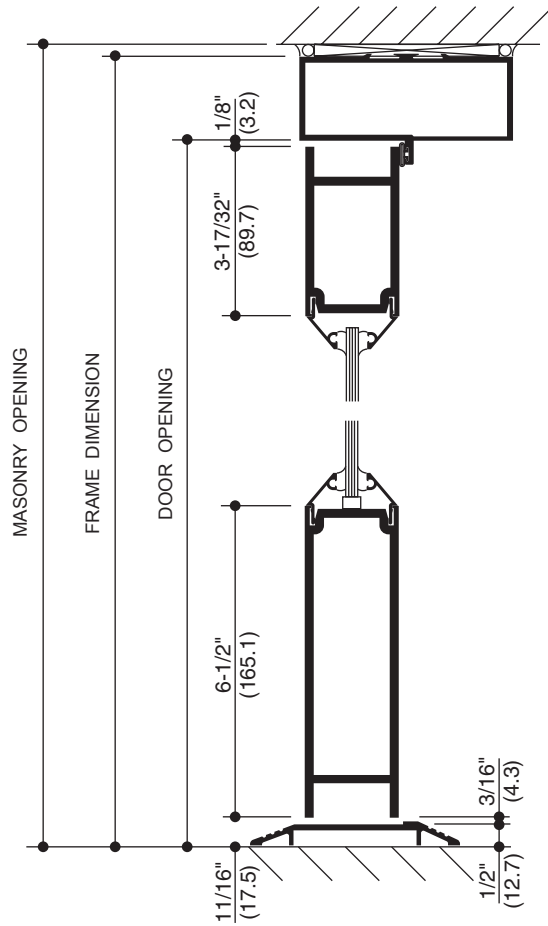


SCALE 3" = 1'-0"

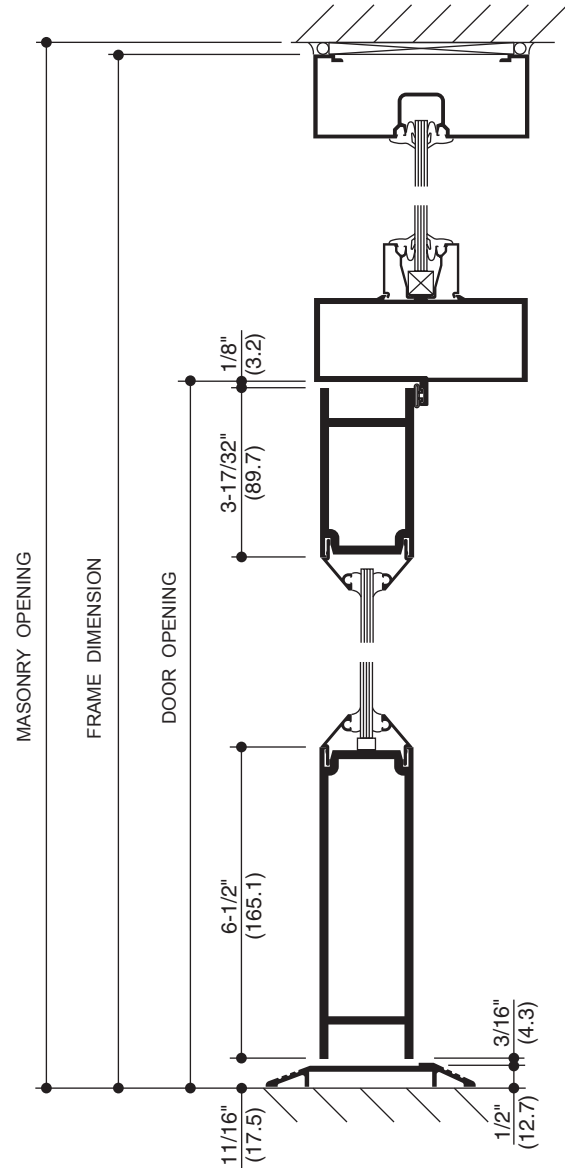
## TRIFAB™ VG 450 CENTER DOOR FRAMES SHOWN (TRIFAB™ VG 451 CENTER DOOR FRAMES SIMILAR)

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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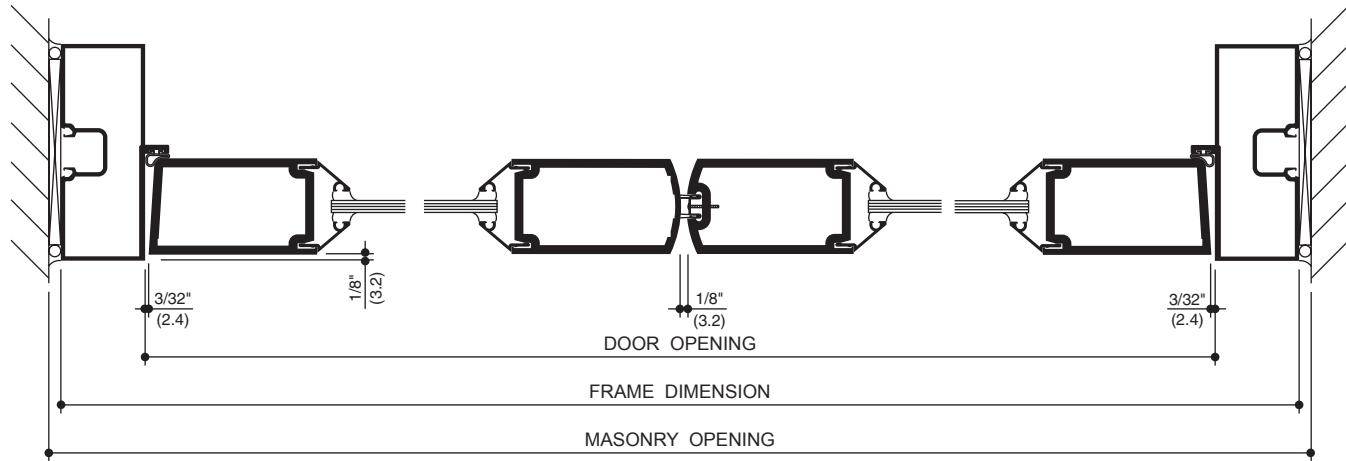


**SINGLE ACTING DOOR  
WITHOUT TRANSOM**

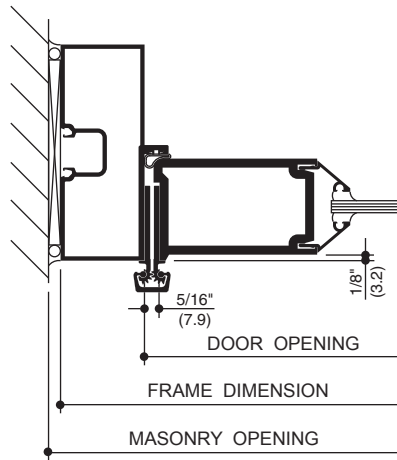


**SINGLE ACTING DOOR  
WITH TRANSOM**

SCALE 3" = 1'-0"



**SINGLE ACTING DOORS**



**CONTINUOUS HINGE JAMB**

**STANDARD SIZES** (TRIFAB™ VG 450 CENTER DOOR FRAMES)

**WITHOUT TRANSOM**

**Door Opening Dimension**

- 3' 0" x 7' 0" ( 914 x 2134)
- 3' 6" x 7' 0" (1067 x 2134)
- 6' 0" x 7' 0" (1829 x 2134)

**Overall Frame Dimension**

- 3' 3-1/2" x 7' 1-3/4" (1003 x 2178)
- 3' 9-1/2" x 7' 1-3/4" (1156 x 2178)
- 6' 3-1/2" x 7' 1-3/4" (1918 x 2178)

**Masonry Opening Dimension**

- 3' 4" x 7' 2" (1016 x 2185)
- 3' 10" x 7' 2" (1168 x 2185)
- 6' 4" x 7' 2" (1930 x 2185)

**WITH TRANSOM**

**Door Opening Dimension**

Unchanged from above.

**Overall Frame Dimension**

Add 3' 1-3/4" (959) to above heights.

**Masonry Opening Dimension**

Add 3' 1-3/4" (959) to above heights.

**STANDARD SIZES** (TRIFAB™ VG 451 CENTER DOOR FRAMES)

**WITHOUT TRANSOM**

**Door Opening Dimension**

- 3' 0" x 7' 0" ( 914 x 2134)
- 3' 6" x 7' 0" (1067 x 2134)
- 6' 0" x 7' 0" (1829 x 2134)

**Overall Frame Dimension**

- 3' 4" x 7' 1-3/4" (1016 x 2178)
- 3' 9-1/2" x 7' 1-3/4" (1156 x 2178)
- 6' 3-1/2" x 7' 1-3/4" (1918 x 2178)

**Masonry Opening Dimension**

- 3' 4-1/2" x 7' 2" (1029 x 2185)
- 3' 10" x 7' 2" (1168 x 2185)
- 6' 4" x 7' 2" (1930 x 2185)

**WITH TRANSOM**

**Door Opening Dimension**

Unchanged from above.

**Overall Frame Dimension**

Add 3' 1-3/4" (959) to above heights

**Masonry Opening Dimension**

Add 3' 1-3/4" (959) to above heights

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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	STANDARD	OPTIONAL
<b>Door Sizes</b>	Standard sizes shown on Page 12.	Any size up to 4' x 8' (1219 x 2438)
<b>Glass Stops</b>	Beveled glass stops for 1/4" (6.4) or 3/16" (4.0) infill.	Square glass stops for 3/16" (4.0) or 1/4" (6.4) infill. Also 1" (25.4) stops.
<b>Door Frames</b>	<b>Trifab™ VG 450</b> Center - 1-3/4" x 4-1/2" (44.5 x 114.3) for single glazing.  <b>Trifab™ VG 451</b> Center - 2" x 4-1/2" (50.8 x 114.3) for double glazing.	Heavy Wall Trifab™ VG 450 Center - (3/16" Wall).  Heavy Wall Trifab™ VG 451 Center - (3/16" Wall).  Any Kawneer framing system suitable for door frames may be selected, but manufactured per order.
<b>Push-Pulls</b>	<b>Single Acting:</b> Architects Classic Hardware "CO-9" Pull and "CP-II" Push Bar.  Architects Classic Hardware "CO-9" Pull and "CP" Push Bar.	<b>Single Acting:</b> Architects Classic Hardware "CO-12" and "CP-II" push bar.  Architects Classic Hardware "CO-12" and "CP" push bar.  Architects Classic Hardware "CO9"/"CO-9" Pulls.  Architects Classic Hardware "CO12"/"CO-12" Pulls.
<b>Door Closers</b>	<b>Single Acting:</b> Norton 1601 adjustable or 1601 BF adjustable surface closer with back-check and with or without adjustable hold-open.  Standard concealed overhead closer with single acting offset arm.	<b>Single Acting:</b> LCN 1260 adjustable surface closer.  LCN 4040 surface closer with or without adjustable hold-open.  Norton 8100 surface closer with 50% spring power adjustment (for opening forces of less than 8 pounds.) Closer is available with standard back-checks and with or without the hold-open feature.  Falcon SC 60 surface closer.  International single acting concealed overhead closer.
<b>Hinging</b>	<b>Single Acting:</b> Kawneer top and bottom offset pivots (or) Kawneer top and bottom 4 1/2" x 4" (114.3 x 101.6) ball bearing butt hinge with non-removable pin (NRP) (or)  Kawneer Continuous Gear Hinge.	
<b>Intermediate Pivots/Butts</b>	<b>Single Acting:</b> Rixson M-19 or IVES #7215-INT offset pivot (or)  Kawneer 4-1/2" x 4" (114.3 x 101.6) ball bearing butt hinge with non-removable pin (NRP).  <b>Note:</b> Offset Pivots are not available for use with Heavy Wall Frames.	
<b>Power Transfers</b>	<b>Single Acting:</b> Rixson M-19 intermediate pivot with wire transfer (or) Kawneer standard (4-1/2" x 4") (114.3 x 101.6) ball bearing (NRP) butt hinge with wire transfer (or) EPT (Electric Power Transfer)	
<b>Power Supply</b>	<b>SP-1000X Power Supply:</b> For use with Paneline™ EL exit devices.	<b>PS1, PS5-4, and PS5-6 Power Supplies:</b> For use with Kawneer 1686 EL and 1786 EL exit devices only.
<b>Locks - Active Leaf</b>	Adams-Rite MS 1850A deadlock with two 1-5/32" (29.4) diameter 5 pin cylinders.	Adams-Rite #4510 latch lock. Adams-Rite #1850A-500 short throw deadlock. Adams-Rite #1850A-505 hookbolt lock. Adams-Rite #4015 two-point Lock. Adams-Rite #4085 three-point Lock. Adams-Rite #4089 exit indicator. Kawneer cylinder guard. Kawneer thumbturn (in lieu of cylinder).

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	STANDARD	OPTIONAL
<b>Locks - Inactive Leaf</b>	One pair of Kawneer flush bolts in the inactive leaf of a pair of doors.	<b>Controller™</b> is a 3-point locking system consisting of a two point locking device in the inactive leaf in lieu of flush bolts, working in conjunction with the MS 1850A deadlock in the active leaf. This combination provides for greater security than possible with flush bolts and complies with the life safety considerations of building codes which prohibit the use of flush bolts.
<b>Thresholds</b>	A 1/2" x 4" (12.7 x 101.6) aluminum mill finish threshold.	A 1/2" x 6-3/4" (12.7 x 171.5) aluminum mill finish threshold.
<b>Weathering</b>	<b>Single Acting:</b> Weathering system in the door and frame consisting of a dense, bulb polymeric material, which remains resilient and retains its weathering ability under temperature extremes. (The system is complete with an optional EPDM blade gasket sweep strip applied to the bottom door rail with concealed fasteners).	Bottom Door Sweep
<b>Exit Device</b>	<p><b>Kawneer 1686 Concealed Rod Exit Device</b> with or without a mortised type cylinder.</p> <p><b>Kawneer 1786 Rim Exit Device</b> is a rim type exit device with or without a rim type cylinder.</p> <p><b>Paneline™ Exit Device</b> is a concealed rod exit device applicable to single or pairs of doors. It features an activating panel contained within the door crossrail.</p>	<p><b>Kawneer 1686 EL Concealed Rod Exit Device</b> electric modification is available.</p> <p><b>Kawneer 1786 EL Rim Exit Device</b> electric modification is available.</p> <p><b>Kawneer 1686 CD Concealed Rod Exit Device</b> available with cylinder dogging.</p> <p><b>Kawneer 1786 CD Concealed Rod Exit Device</b> available with cylinder dogging.</p> <p><b>Falcon 1690 Concealed Rod Exit Device</b> with or without a rim type cylinder.</p> <p><b>Falcon 1790 Rim Exit Device</b> with or without a rim type cylinder.</p> <p><b>Falcon EL 1690 Concealed Rod Exit Device</b> with or without a rim type cylinder.</p> <p><b>Falcon EL 1790 Rim Exit Device</b> with or without a rim type cylinder.</p> <p><b>Falcon 1990 Concealed Rod Exit Device</b> with or without a rim type cylinder.</p> <p><b>Falcon 2090 Rim Exit Device</b> with or without a rim type cylinder.</p> <p><b>Paneline™ EL Exit Device</b> is designed for electrified access control and is compatible with most key pad and card reader systems.</p>
	<p><b>Exit Device Pulls:</b></p> <p>Architects Classic style "CO-9" Pull.</p> <p>Architects Classic style "CPN" Pull for Paneline™ and Paneline™ EL exit devices.</p>	<p><b>Optional Exit Device Pulls:</b></p> <p>Architects Classic style "CO-12" Pull (except for Paneline™ and Paneline™ EL exit devices).</p>

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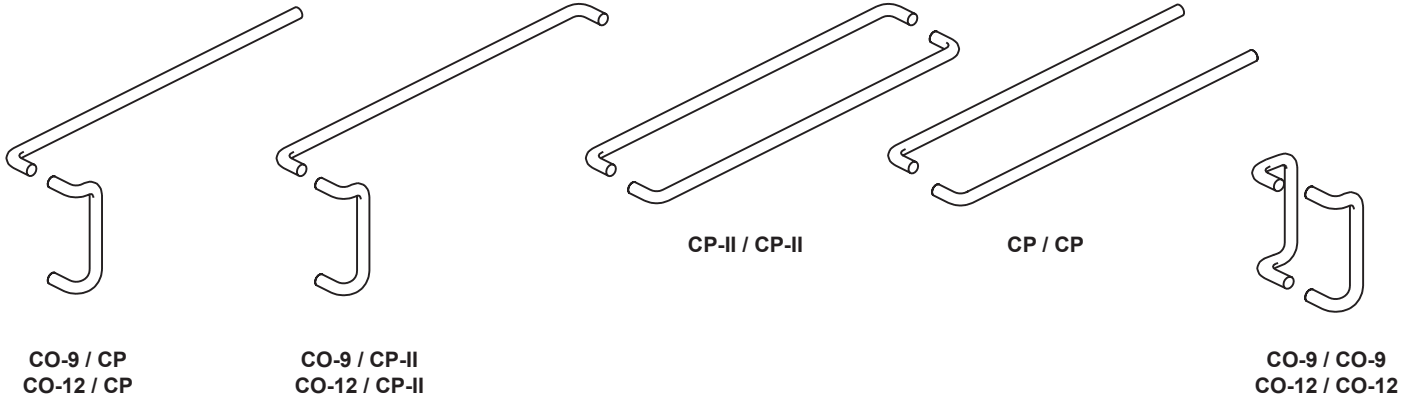
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Reference Hardware section for additional information

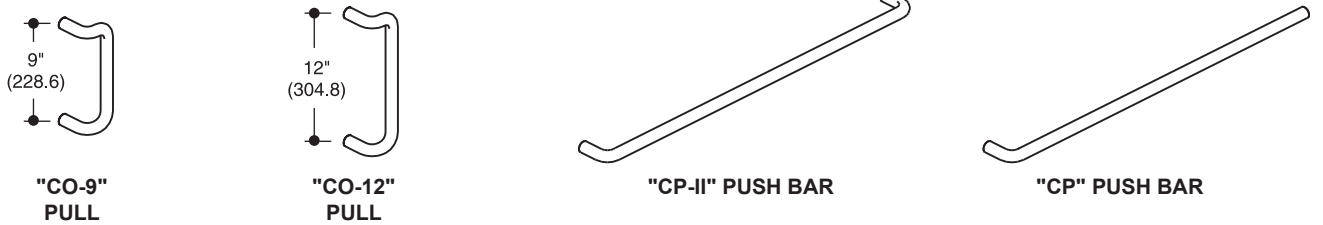
REFER TO **HARDWARE SECTION** FOR COMPLETE HARDWARE INFORMATION.

## ARCHITECTS CLASSIC (PUSH PULL SETS)

SINGLE ACTING DOORS USE A PULL HANDLE AND PUSH BAR AS STANDARD

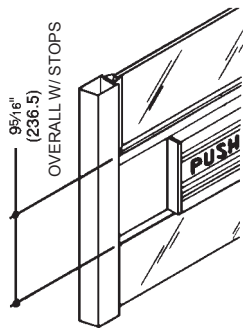


## ARCHITECTS CLASSIC (COMPONENTS)

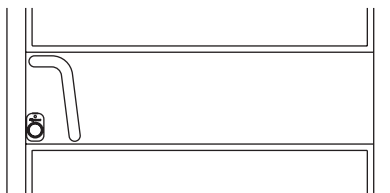


## EXIT DEVICES

### KAWNEER PANELINE™ / PANELINE™ EL



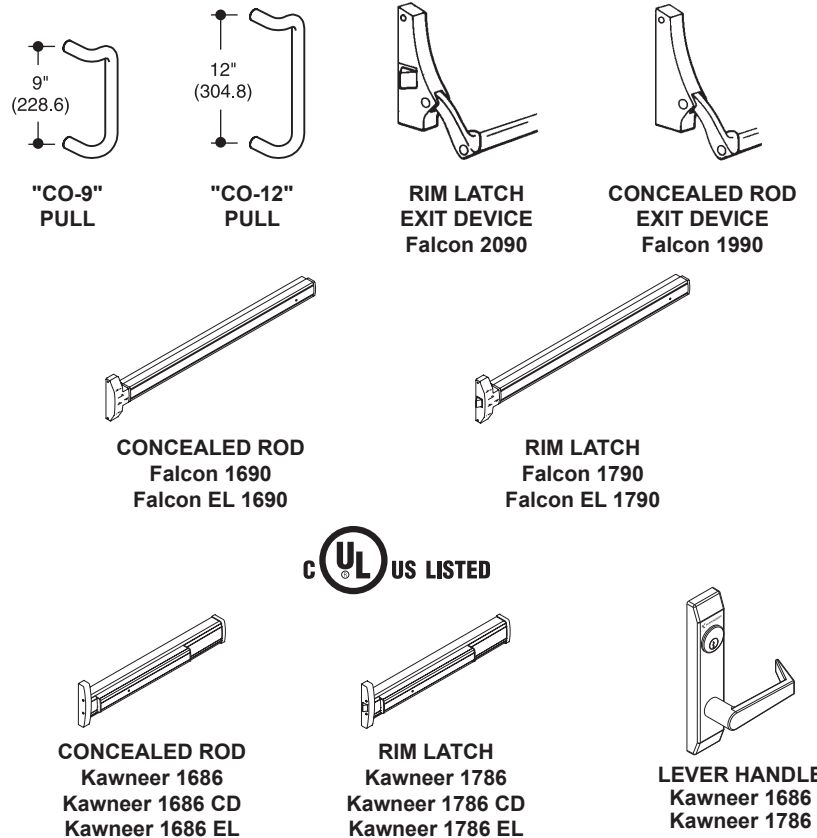
STYLE "CPN" PULL ON EXTERIOR OF DOOR



EXTERIOR VIEW OF 190 DOOR (350/500 SIMILAR) "CPN" PULL AND OPTIONAL CYLINDER GUARD SHOWN.

SEE PAGE 13 FOR COMPLETE PANELINE™ INFORMATION

## EXIT DEVICES AND PULLS



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**SCALE 3" = 1'-0"**

The Paneline™ concealed rod exit device will accommodate variations in door width as shown in the following illustrations. Sidelites adjacent to Paneline™ equipped doors not requiring exit devices may be fitted with fixed panels as detailed below to match the general appearance of the Paneline™ cross rail.

The Optional Paneline™ EL device is designed for electrified access control and is compatible with most key pad and card reader systems.

See **Hardware Section** for complete description of Paneline™ hardware, including finish of units.

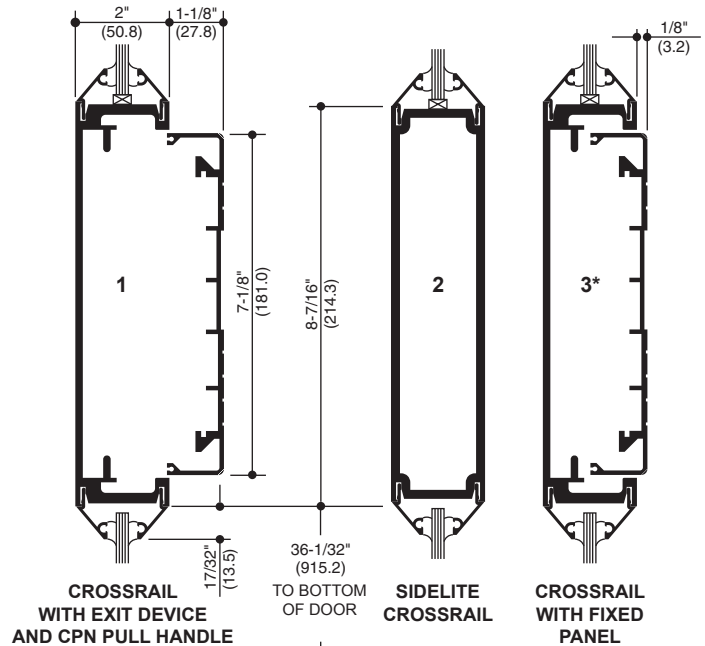
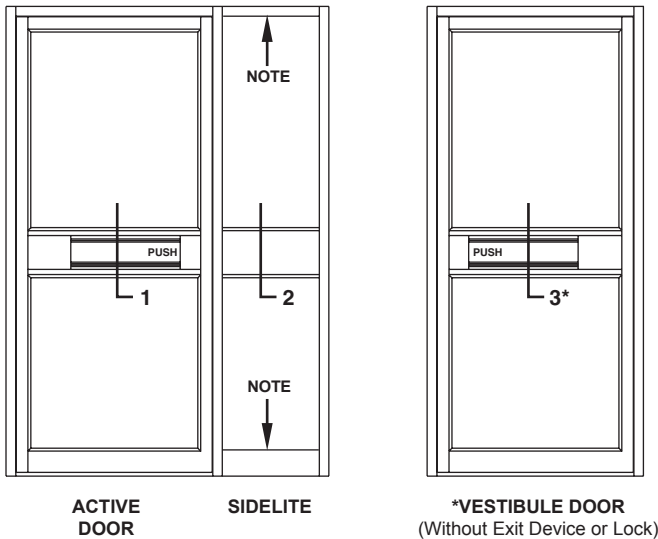
**Paneline™ uses mortise cylinder in lieu of the normal rim-type.**

**Dummy Paneline™ units should not use any type of lock.**

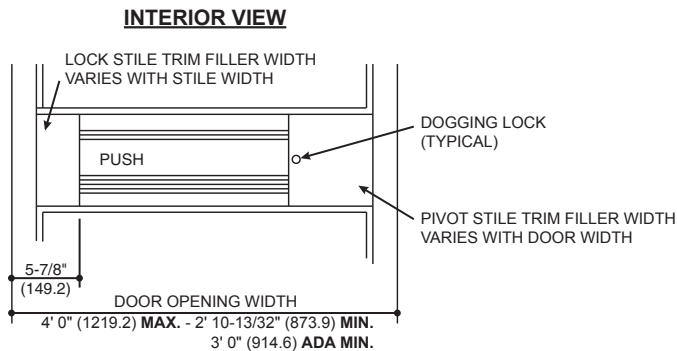


### INTERIOR ELEVATIONS

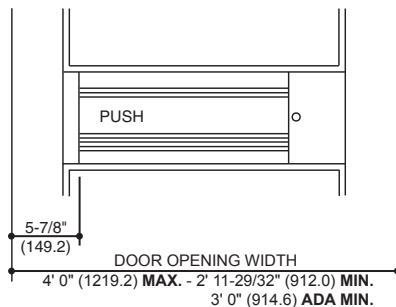
**NOTE:** Sidelites must be stop glazed above and below rail.



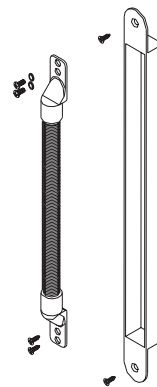
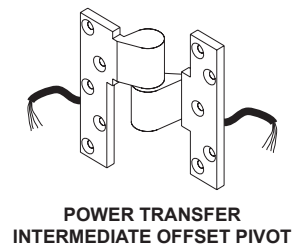
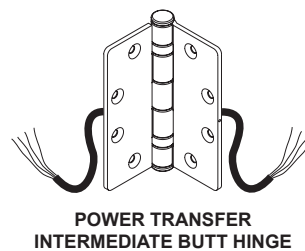
### PANELINE™ EL COMPONENTS



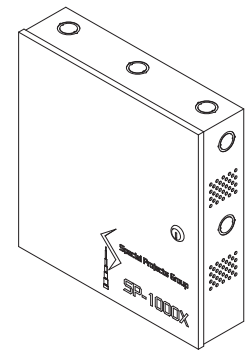
#### 350HW DOOR



#### 500HW DOOR



ELECTRIC POWER TRANSFER (EPT)



SP-1000X POWER SUPPLY

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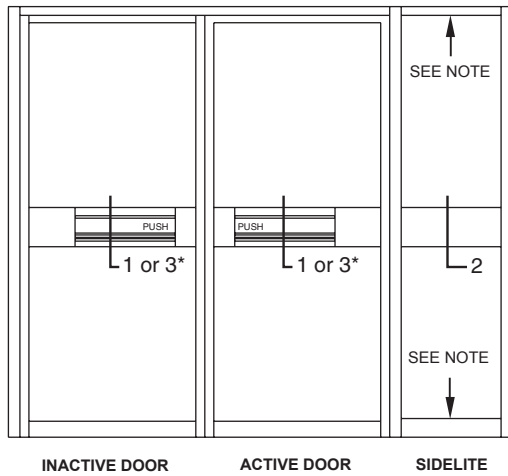
Sidelites adjacent to Paneline™ equipped doors not requiring exit devices may be fitted with fixed panels as detailed below to match the general appearance of the Paneline™ cross rail.

See **Hardware Section** for complete description of Paneline™ hardware, including finish of units.

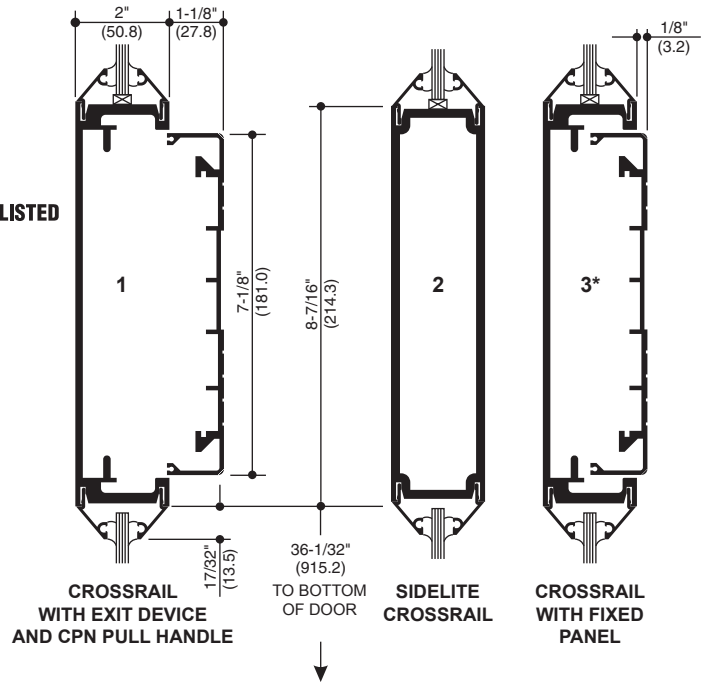
**Paneline™ uses mortise cylinder in lieu of the normal rim-type. Dummy Paneline™ units should not use any type of lock.**

**INTERIOR ELEVATION**

**NOTE:** Sidelites must be stop glazed above and below rail.

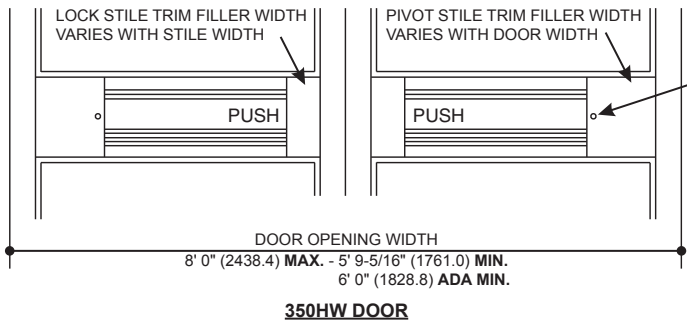


**\* ALTERNATE CROSSRAIL FOR VESTIBULE DOORS (Without Exit Device or Lock)**



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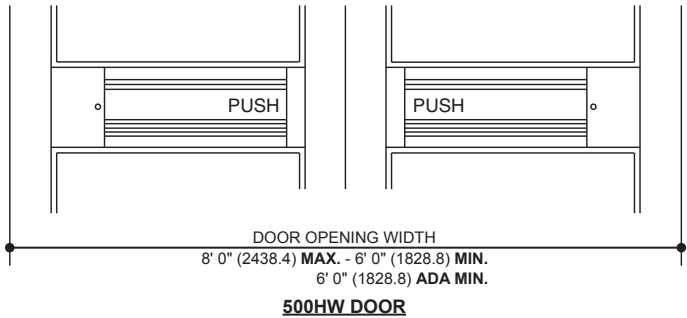
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**STYLE "CPN" PULL ON EXTERIOR OF DOOR**

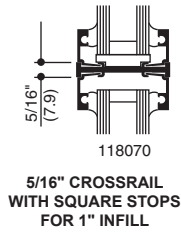
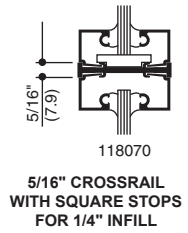
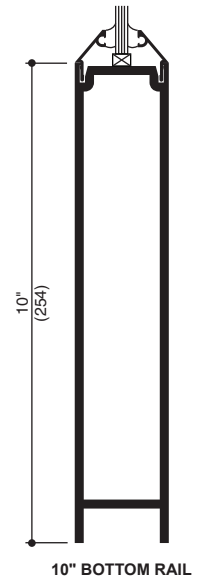
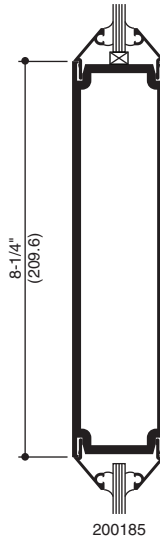
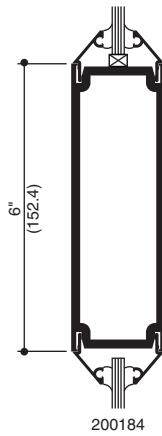
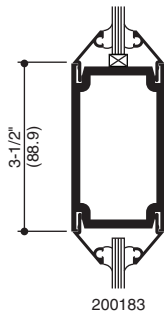
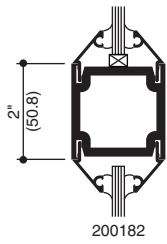
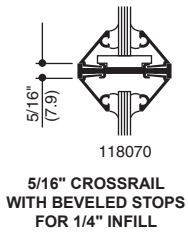


**EXTERIOR VIEW OF 190 DOOR (350-500 SIMILAR) WITH "CPN" PULL AND STANDARD CYLINDER GUARD SHOWN**

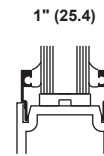
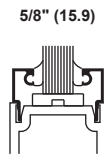
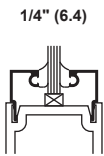
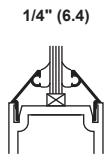


SCALE 3" = 1' 0"

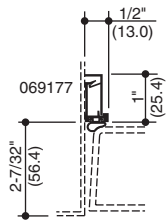
## HORIZONTAL / VERTICAL CROSS RAILS



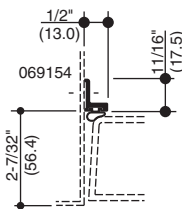
## INFILL OPTIONS



## ACCESSORY ITEMS



APPLIED DOOR STOP



APPLIED DOOR STOP

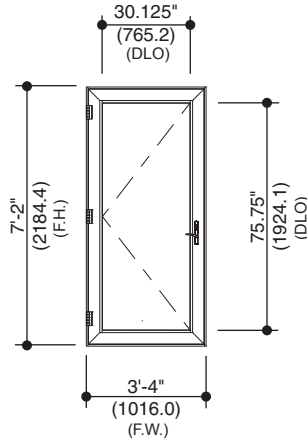


Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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**Generic Project Specific U-factor Example Calculation**  
 (Percent of Glass will vary on specific products depending on sitelines)



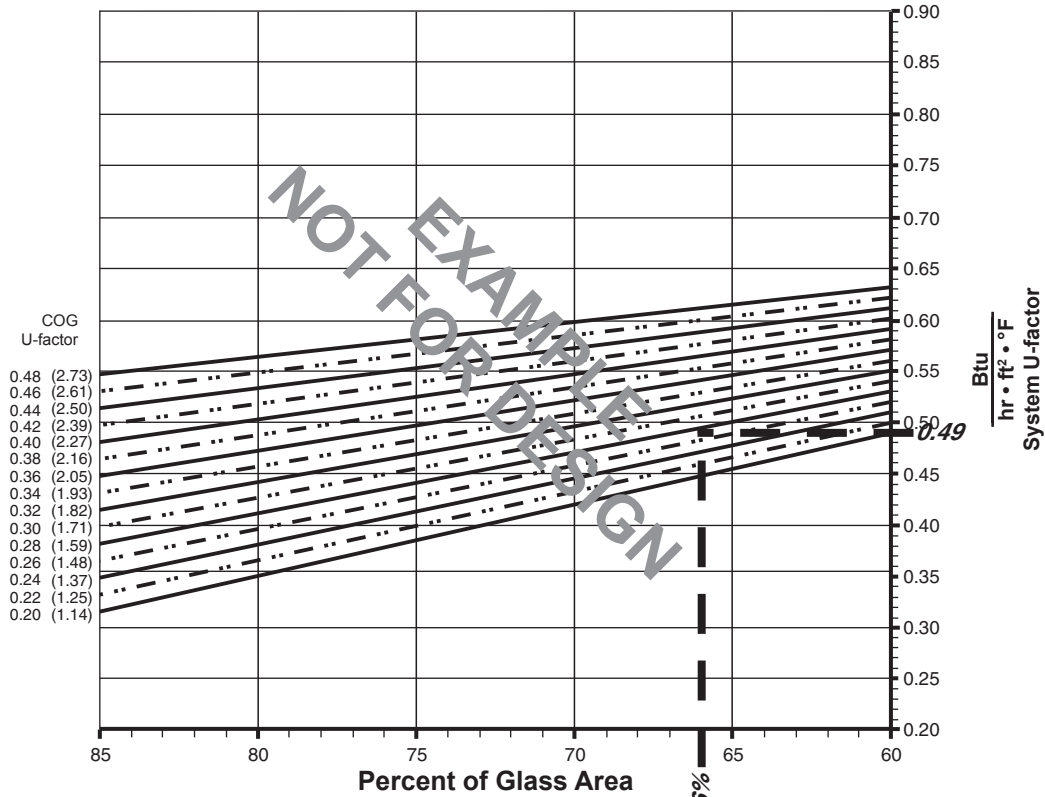
Example Glass U-Factor = 0.28 Btu/hr • ft<sup>2</sup> • °F

Total Daylight Opening = 30.125" x 75.75" = 15.85 ft<sup>2</sup>

Total Projected Area = 3'-4" x 7'-2" = 23.9 ft<sup>2</sup>

Percent of Glass = (Total Daylight Opening ÷ Total Projected Area)100  
 = (15.85 ÷ 23.9)100 = 66%

**System U-factor vs Percent of Glass Area**



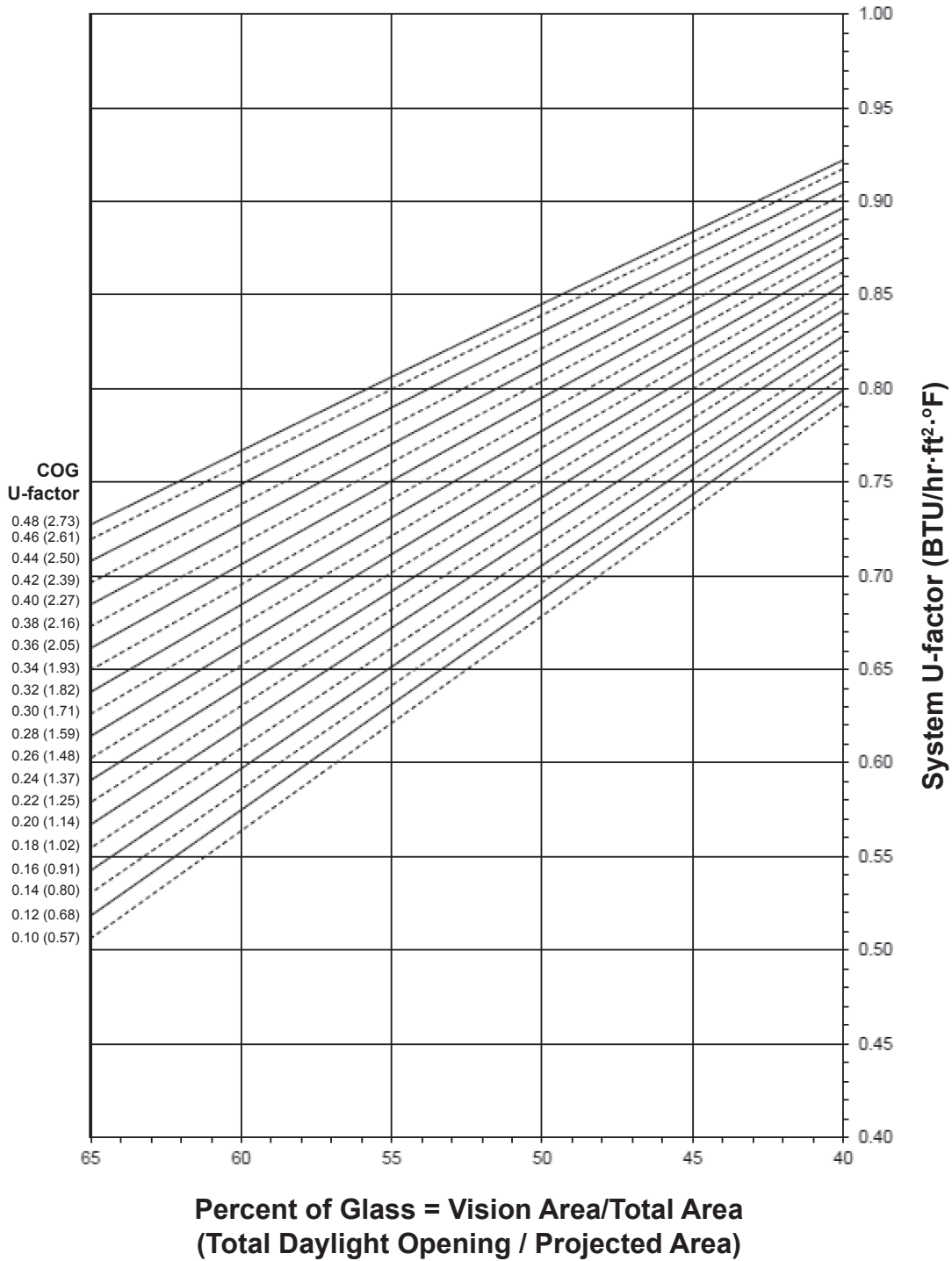
Based on 66% glass and center of glass (COG) U-factor of 0.28  
 System U-factor is equal to 0.49 Btu/hr • ft<sup>2</sup> • °F

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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350 Heavy Wall™ (SINGLE DOOR)

**System U-factor vs Percent of Glass Area**



**Notes for System U-Factor, SHGC and VT charts:**

For glass values that are not listed, linear interpolation is permitted.

Glass properties are based on center of glass values (winter conditions) and are obtained from your glass supplier.

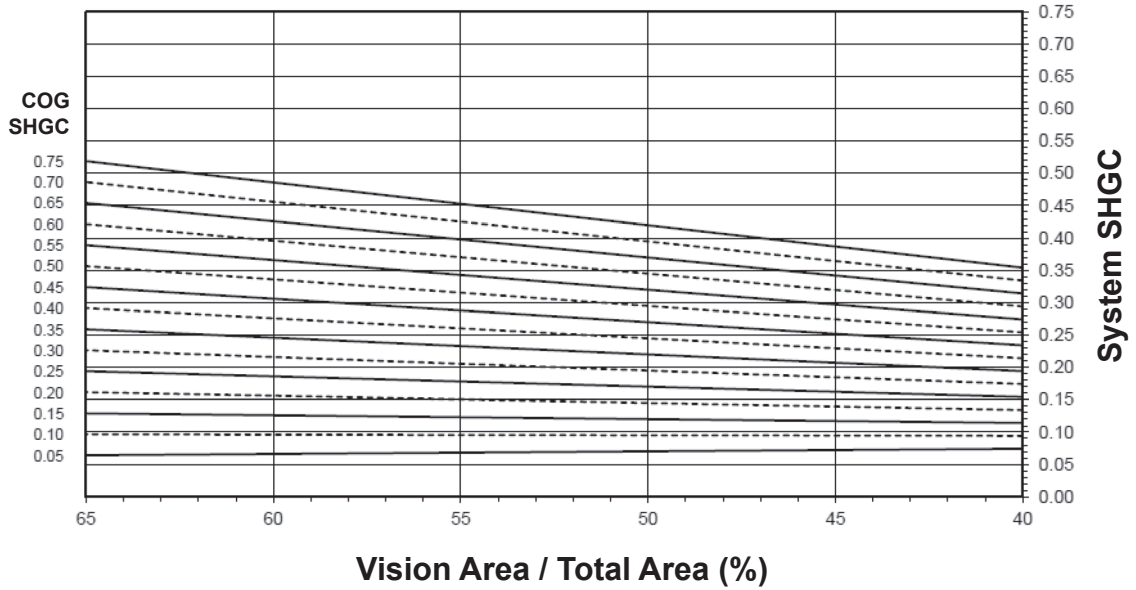
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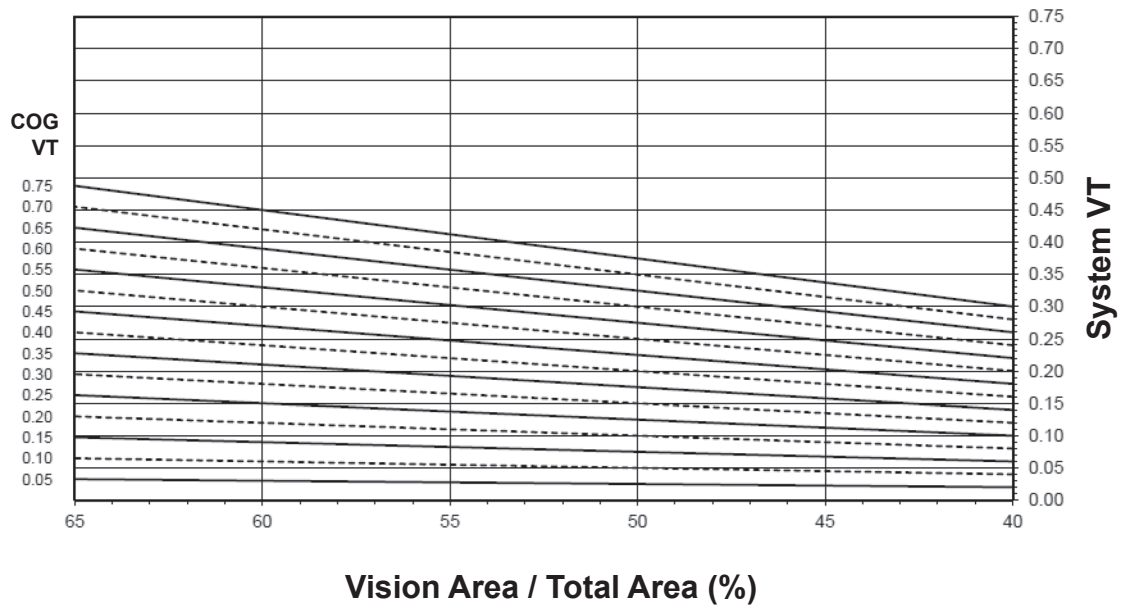
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350 Heavy Wall™ (SINGLE DOOR)

**System Solar Heat Gain Coefficient (SHGC) vs Percent of Vision Area**



**System Visible Transmittance (VT) vs Percent of Vision Area**



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Thermal Transmittance <sup>1</sup> (BTU/hr • ft<sup>2</sup> • °F)

Glass U-Factor <sup>3</sup>	Overall U-Factor <sup>4</sup>
0.48	0.83
0.46	0.82
0.44	0.81
0.42	0.81
0.40	0.80
0.38	0.79
0.36	0.78
0.34	0.77
0.32	0.76
0.30	0.75
0.28	0.74
0.26	0.73
0.24	0.72
0.22	0.71
0.20	0.70
0.18	0.69
0.16	0.68
0.14	0.68
0.12	0.67
0.10	0.66

## 350 Heavy Wall™ (SINGLE DOOR)

**NOTE:** For glass values that are not listed, linear interpolation is permitted.

1. U-Factors are determined in accordance with NFRC 100.
2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values and are obtained from your glass supplier.
4. Overall U-Factor, SHGC, and VT Matricies are based on the standard NFRC specimen size of 960mm wide by 2090mm high (37-3/4" by 82-3/8").

SHGC Matrix <sup>2</sup>

Glass SHGC <sup>3</sup>	Overall SHGC <sup>4</sup>
0.75	0.43
0.70	0.41
0.65	0.38
0.60	0.36
0.55	0.33
0.50	0.30
0.45	0.28
0.40	0.25
0.35	0.23
0.30	0.20
0.25	0.17
0.20	0.15
0.15	0.12
0.10	0.10
0.05	0.07

Visible Transmittance <sup>2</sup>

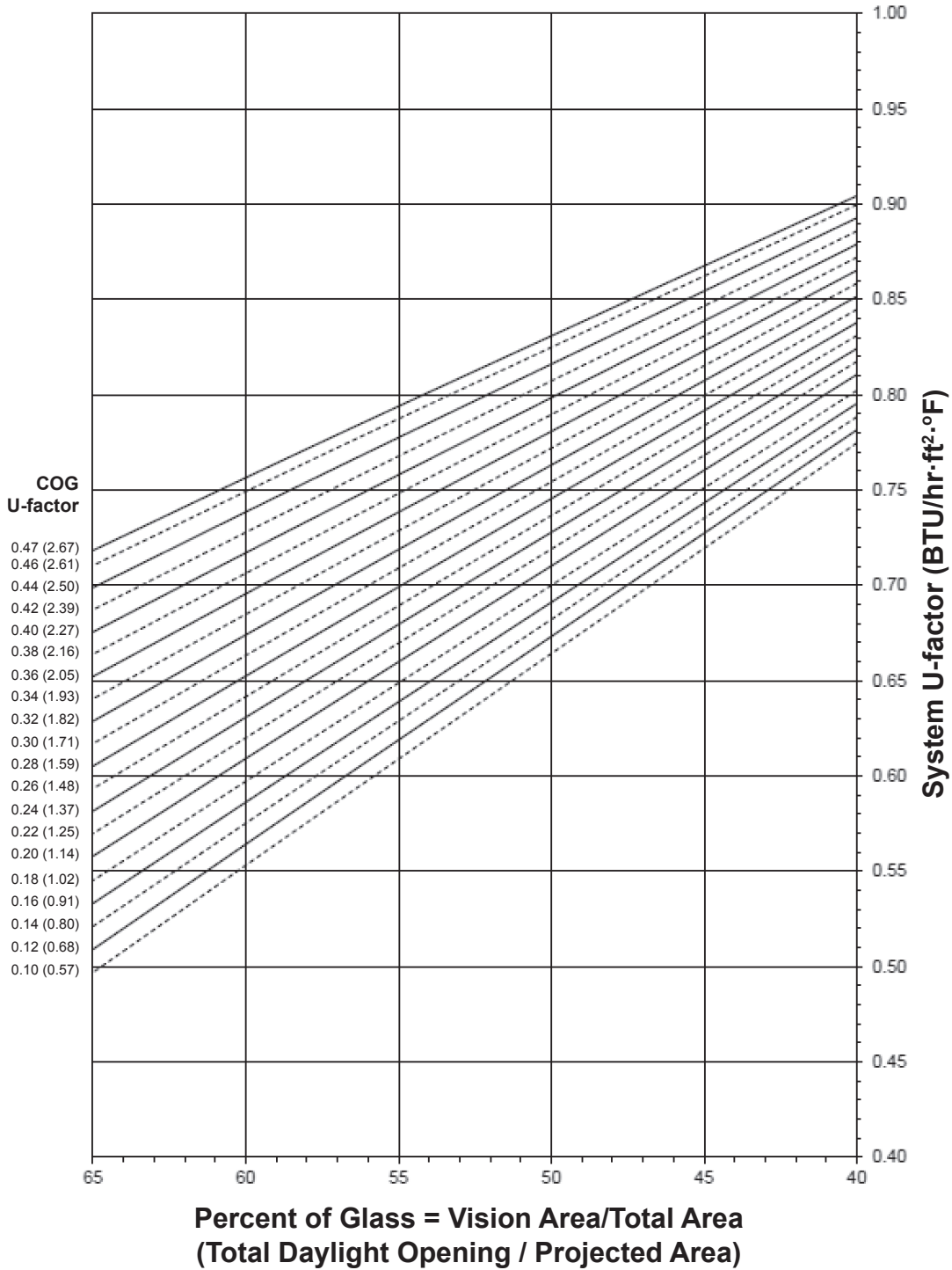
Glass VT <sup>3</sup>	Overall VT <sup>4</sup>
0.75	0.39
0.70	0.36
0.65	0.34
0.60	0.31
0.55	0.29
0.50	0.26
0.45	0.23
0.40	0.21
0.35	0.18
0.30	0.16
0.25	0.13
0.20	0.10
0.15	0.08
0.10	0.05
0.05	0.03

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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350 Heavy Wall™ (PAIR OF DOORS)

**System U-factor vs Percent of Glass Area**



**Notes for System U-Factor, SHGC and VT charts:**

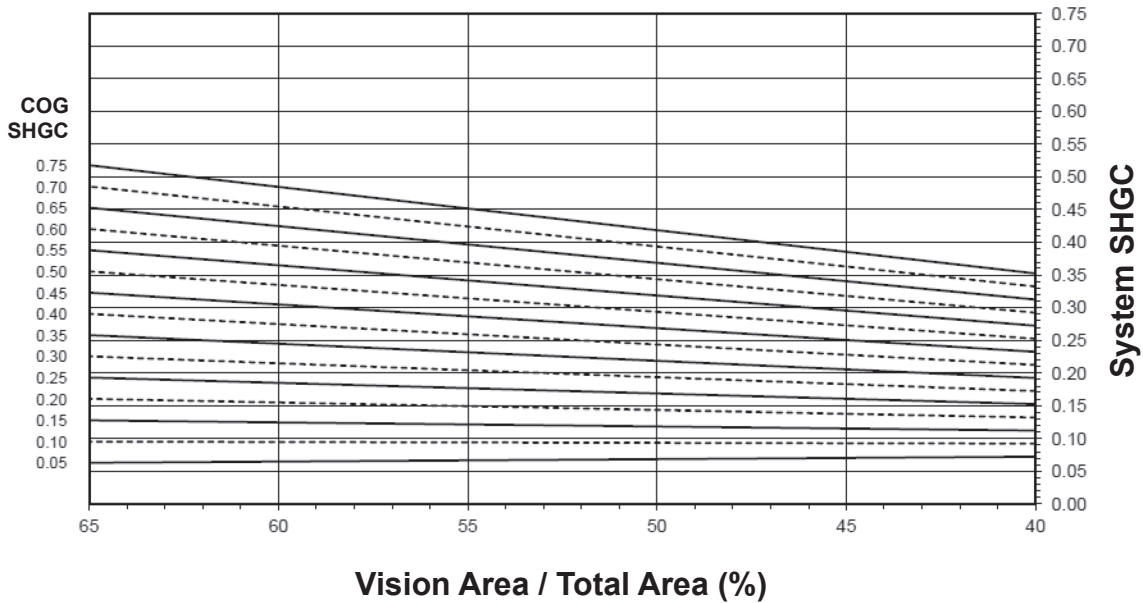
For glass values that are not listed, linear interpolation is permitted.  
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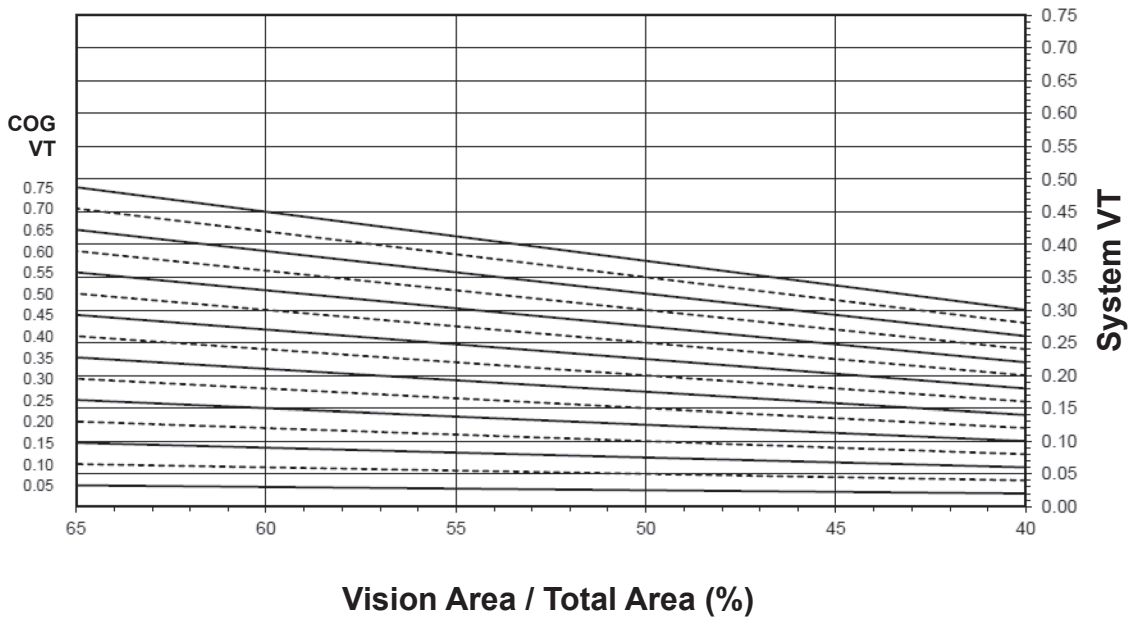
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350 Heavy Wall™ (PAIR OF DOORS)

**System Solar Heat Gain Coefficient (SHGC) vs Percent of Vision Area**



**System Visible Transmittance (VT) vs Percent of Vision Area**



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### Thermal Transmittance <sup>1</sup> (BTU/hr • ft<sup>2</sup> • °F)

Glass U-Factor <sup>3</sup>	Overall U-Factor <sup>4</sup>
0.47	0.79
0.46	0.78
0.44	0.77
0.42	0.76
0.40	0.75
0.38	0.74
0.36	0.73
0.34	0.72
0.32	0.71
0.30	0.70
0.28	0.69
0.26	0.68
0.24	0.67
0.22	0.66
0.20	0.65
0.18	0.64
0.16	0.63
0.14	0.62
0.12	0.61
0.10	0.60

### 350 Heavy Wall™ (PAIR OF DOORS)

**NOTE:** For glass values that are not listed, linear interpolation is permitted.

1. U-Factors are determined in accordance with NFRC 100.
2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values and are obtained from your glass supplier.
4. Overall U-Factor, SHGC, and VT Matricies are based on the standard NFRC specimen size of 1920mm wide by 2090mm high (75-1/2" by 82-3/8").

### SHGC Matrix <sup>2</sup>

Glass SHGC <sup>3</sup>	Overall SHGC <sup>4</sup>
0.75	0.46
0.70	0.43
0.65	0.40
0.60	0.37
0.55	0.35
0.50	0.32
0.45	0.29
0.40	0.26
0.35	0.23
0.30	0.21
0.25	0.18
0.20	0.15
0.15	0.12
0.10	0.09
0.05	0.07

### Visible Transmittance <sup>2</sup>

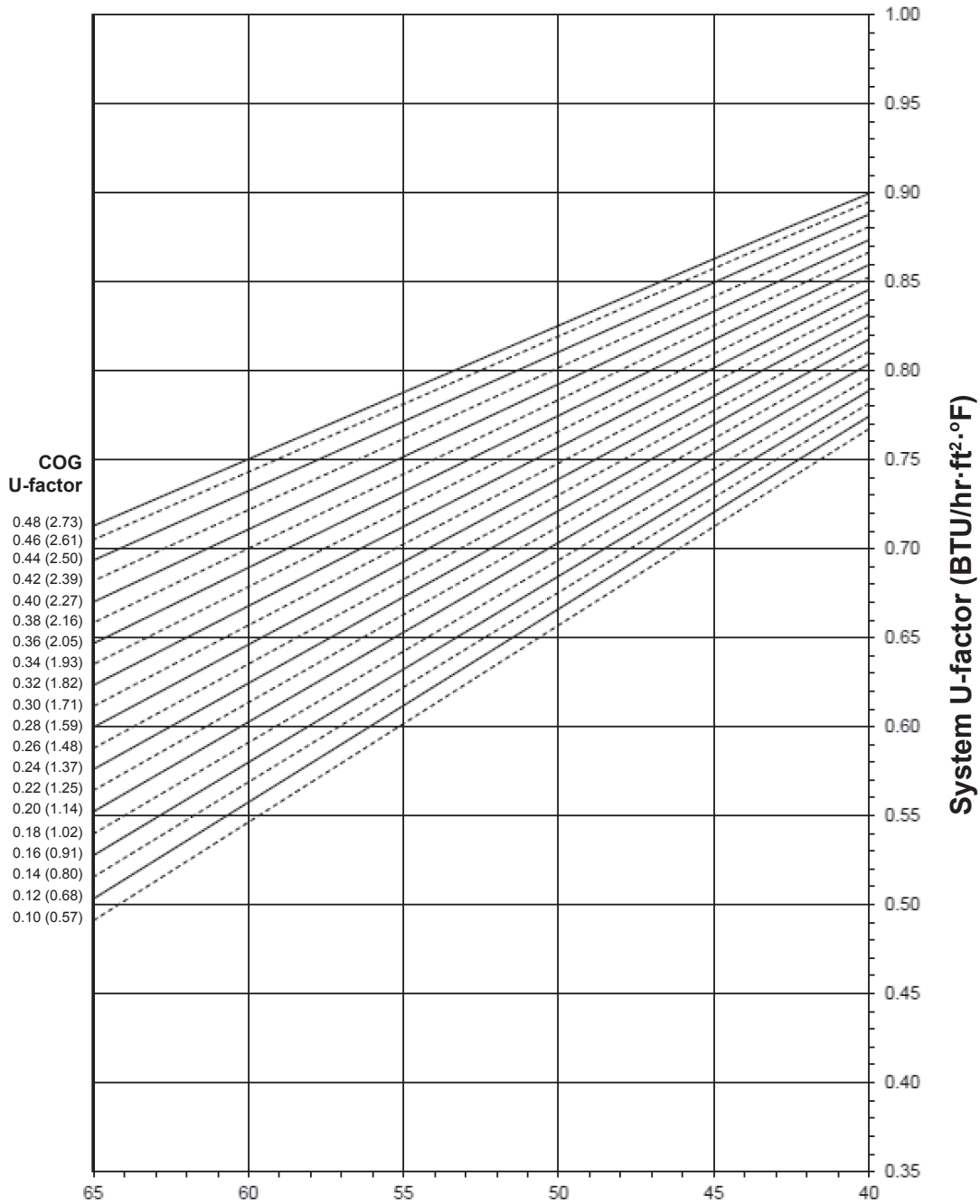
Glass VT <sup>3</sup>	Overall VT <sup>4</sup>
0.75	0.42
0.70	0.39
0.65	0.36
0.60	0.34
0.55	0.31
0.50	0.28
0.45	0.25
0.40	0.22
0.35	0.20
0.30	0.17
0.25	0.14
0.20	0.11
0.15	0.08
0.10	0.06
0.05	0.03

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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500 Heavy Wall™ (SINGLE DOOR)

**System U-factor vs Percent of Glass Area**



**Percent of Glass = Vision Area/Total Area  
(Total Daylight Opening / Projected Area)**

**Notes for System U-Factor, SHGC and VT charts:**

For glass values that are not listed, linear interpolation is permitted.  
Glass properties are based on center of glass values (winter conditions) and are obtained from your glass supplier.

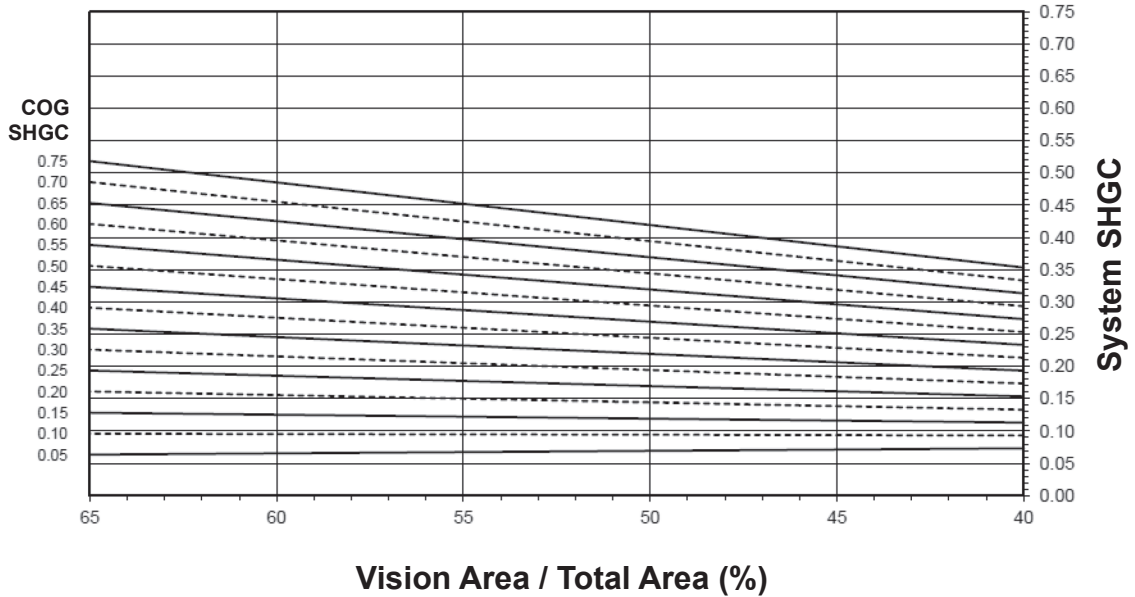
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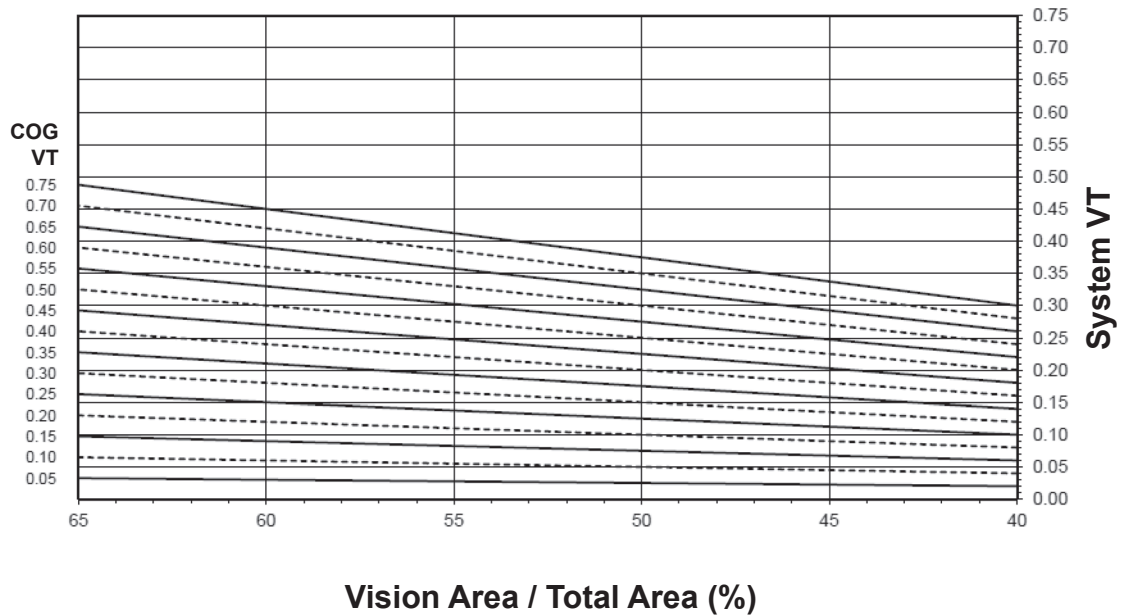


500 Heavy Wall™ (SINGLE DOOR)

**System Solar Heat Gain Coefficient (SHGC) vs Percent of Vision Area**



**System Visible Transmittance (VT) vs Percent of Vision Area**



Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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**0.72 Thermal Transmittance**<sup>1</sup> (BTU/hr • ft<sup>2</sup> • °F)

Glass U-Factor <sup>3</sup>	Overall U-Factor <sup>4</sup>
0.48	0.87
0.46	0.86
0.44	0.85
0.42	0.84
0.40	0.84
0.38	0.83
0.36	0.82
0.34	0.81
0.32	0.81
0.30	0.80
0.28	0.79
0.26	0.78
0.24	0.77
0.22	0.77
0.20	0.76
0.18	0.75
0.16	0.74
0.14	0.73
0.12	0.73
0.10	0.72

**500 Heavy Wall™ (SINGLE DOOR)**

**NOTE:** For glass values that are not listed, linear interpolation is permitted.

1. U-Factors are determined in accordance with NFRC 100.
2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values and are obtained from your glass supplier.
4. Overall U-Factor, SHGC, and VT Matricies are based on the standard NFRC specimen size of 960mm wide by 2090mm high (37-3/4" by 82-3/8").

**SHGC Matrix**<sup>2</sup>

Glass SHGC <sup>3</sup>	Overall SHGC <sup>4</sup>
0.75	0.38
0.70	0.36
0.65	0.34
0.60	0.32
0.55	0.29
0.50	0.27
0.45	0.25
0.40	0.23
0.35	0.21
0.30	0.18
0.25	0.16
0.20	0.14
0.15	0.12
0.10	0.09
0.05	0.07

**Visible Transmittance**<sup>2</sup>

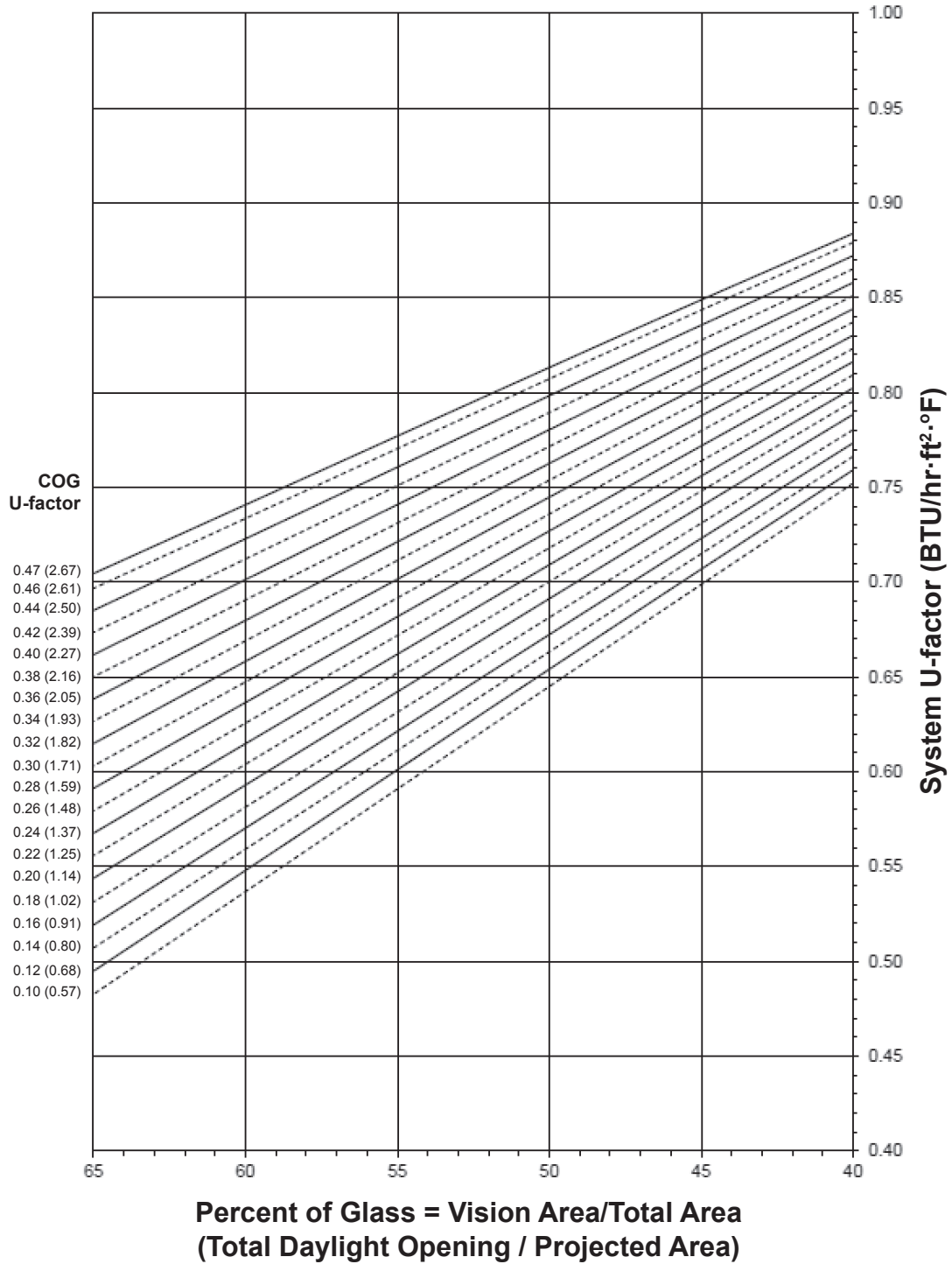
Glass VT <sup>3</sup>	Overall VT <sup>4</sup>
0.75	0.33
0.70	0.31
0.65	0.29
0.60	0.27
0.55	0.25
0.50	0.22
0.45	0.20
0.40	0.18
0.35	0.16
0.30	0.13
0.25	0.11
0.20	0.09
0.15	0.07
0.10	0.04
0.05	0.02

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500 Heavy Wall™ (PAIR OF DOORS)

**System U-factor vs Percent of Glass Area**



**Notes for System U-Factor, SHGC and VT charts:**

For glass values that are not listed, linear interpolation is permitted.

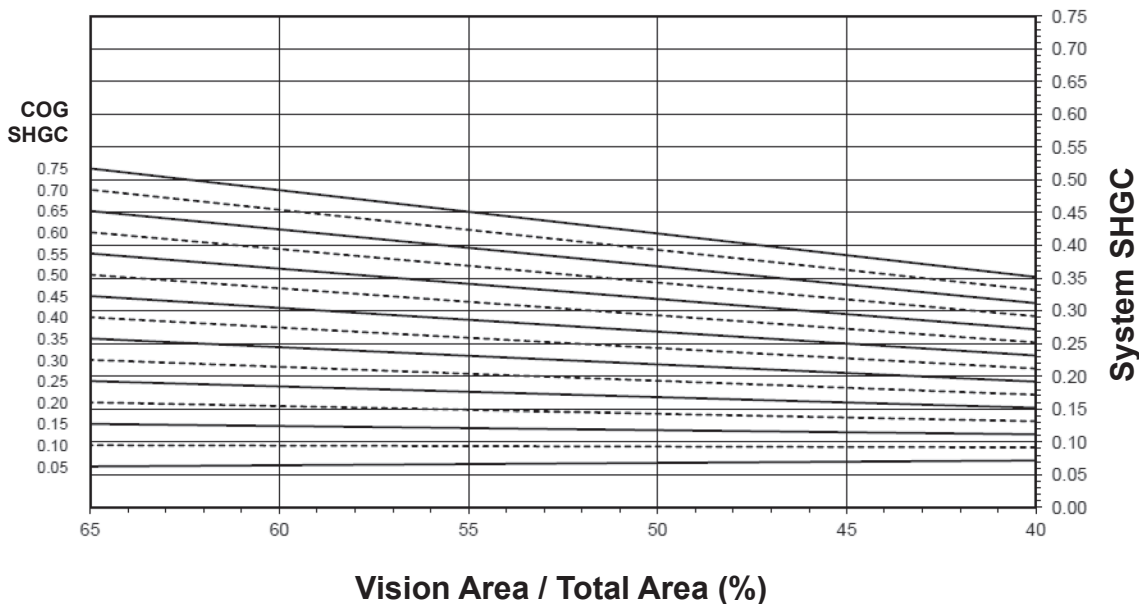
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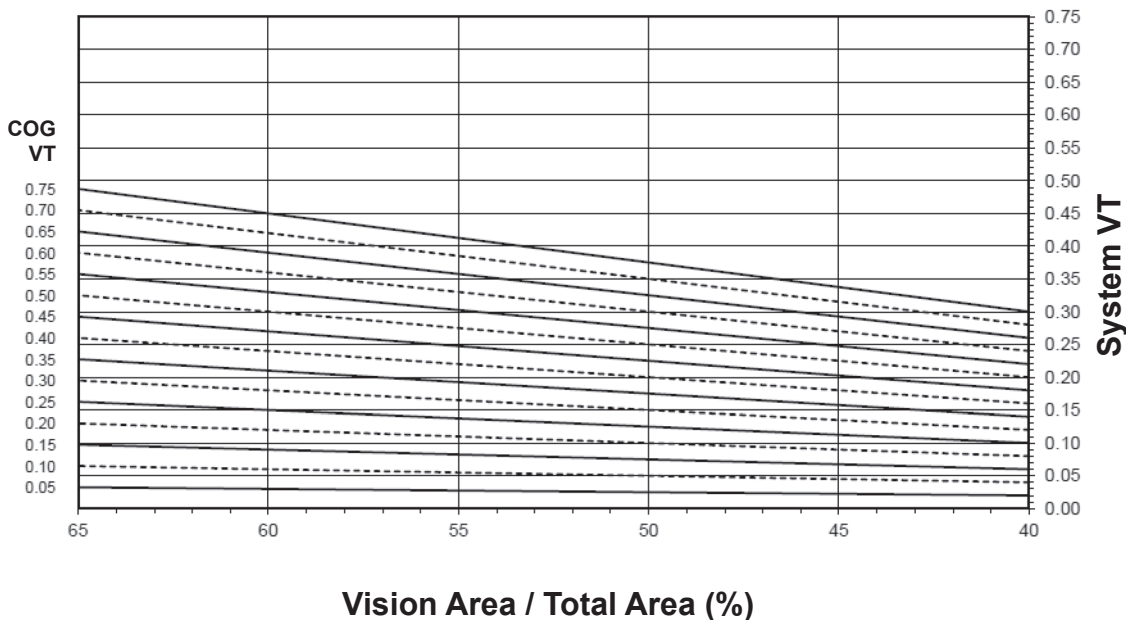
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500 Heavy Wall™ (PAIR OF DOORS)

**System Solar Heat Gain Coefficient (SHGC) vs Percent of Vision Area**



**System Visible Transmittance (VT) vs Percent of Vision Area**



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## Thermal Transmittance <sup>1</sup> (BTU/hr • ft<sup>2</sup> • °F)

Glass U-Factor <sup>3</sup>	Overall U-Factor <sup>4</sup>
0.48	0.82
0.46	0.82
0.44	0.81
0.42	0.80
0.40	0.79
0.38	0.78
0.36	0.77
0.34	0.77
0.32	0.76
0.30	0.75
0.28	0.74
0.26	0.73
0.24	0.72
0.22	0.71
0.20	0.70
0.18	0.70
0.16	0.69
0.14	0.68
0.12	0.67
0.10	0.66

## 500 Heavy Wall™ (PAIR OF DOORS)

**NOTE:** For glass values that are not listed, linear interpolation is permitted.

1. U-Factors are determined in accordance with NFRC 100.
2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values and are obtained from your glass supplier.
4. Overall U-Factor, SHGC, and VT Matricies are based on the standard NFRC specimen size of 1920mm wide by 2090mm high (75-1/2" by 82-3/8").

## SHGC Matrix <sup>2</sup>

Glass SHGC <sup>3</sup>	Overall SHGC <sup>4</sup>
0.75	0.41
0.70	0.38
0.65	0.36
0.60	0.34
0.55	0.31
0.50	0.29
0.45	0.26
0.40	0.24
0.35	0.21
0.30	0.19
0.25	0.17
0.20	0.14
0.15	0.12
0.10	0.09
0.05	0.07

## Visible Transmittance <sup>2</sup>

Glass VT <sup>3</sup>	Overall VT <sup>4</sup>
0.75	0.36
0.70	0.34
0.65	0.32
0.60	0.29
0.55	0.27
0.50	0.24
0.45	0.22
0.40	0.19
0.35	0.17
0.30	0.15
0.25	0.12
0.20	0.10
0.15	0.07
0.10	0.05
0.05	0.02

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## **Features**

- Performance class and grade:  
     Single: AW-PG90-ATD  
     Pairs: AW-PG65-ATD
- Outswing or inswing
- Door is 2-1/4" (57.2) deep
- 1" x 4" (25.4 x 101.6) mitered door frame
- 1-1/2" x 5" (38.1 x 127) door frame integrates into MetroView™ Window Walls
- Mitered door corners
- Polyamide thermal break used in door panel and 4" door frame
- Pour and debridged thermal break used in 5" door frame
- Infill options up to 1-1/16" (27)
- Three way adjustable butt hinges
- Stainless steel multipoint latch lock / deadbolt with swinghooks and shootbolts as required
- Egress type lock for applications where a panic feature is required
- Manual two step unlock function for non-egress type lock applications
- Solid brass lever handle selection in multiple finishes
- Concealed stainless steel door stop
- Assembled and shipped with door hung in frame
- Permanodic™ anodized finishes in seven choices
- Painted finishes in standard and custom choices

## **Optional Features**

- Two-color finish capability
- LCN 1260 surface applied closer
- 10" (254) bottom rail
- Low profile threshold (Outswing Single and Pair)
- 2000T Terrace Door in 4" (101.6) frame has been small and large missile impact and cycle tested

## **Product Applications**

- The 2000T Terrace Door is a high performance balcony door for use in condominiums, lofts, hotels, and apartments
- The 2000T Terrace Door 4" (101.6) Frame is intended to be installed in "punched" openings or as a liner frame within other Kawneer framing or curtain wall systems
- The 2000T Terrace Door 5" (127) Frame is intended to be installed in MetroView FG 501T, FG 601T PG Window Wall or as a liner frame within other Kawneer framing or curtain wall systems
- When sidelites and/or transoms are required the 2000T door frame is installed as a liner frame within other Kawneer framing or curtain wall systems

For specific product applications,  
Consult your Kawneer representative.

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**4" (101.6) FRAME- OUTSWING DOOR DETAILS.....5**

**4" (101.6) FRAME - INSWING DOOR DETAILS.....6**

**5" (127) FRAME - OUTSWING DOOR DETAILS.....7**

**5" (127) FRAME INSWING DOOR DETAILS .....8**

**5" (127) FRAME - OUTSWING DOOR DETAILS**

**- MetroView™ FG 501T Window Wall .....9, 10**

**5" (127) FRAME - INSWING DOOR DETAILS**

**- MetroView™ FG 501T Window Wall ..... 11, 12**

**5" (127) FRAME - OUTSWING DOOR DETAILS**

**- MetroView™ FG 601T PG Window Wall .....13, 14**

**5" (127) FRAME - INSWING DOOR DETAILS**

**- MetroView™ FG 601T PG Window Wall .....15, 16**

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LAWS AND BUILDING AND SAFETY CODES GOVERNING THE DESIGN AND USE OF GLAZED ENTRANCE, WINDOW, AND CURTAIN WALL PRODUCTS VARY WIDELY. KAWNEER DOES NOT CONTROL THE SELECTION OF PRODUCT CONFIGURATIONS, OPERATING HARDWARE, OR GLAZING MATERIALS, AND ASSUMES NO RESPONSIBILITY THEREFOR.

Metric (SI) conversion figures are included throughout these details for reference. Numbers in parentheses ( ) are millimeters unless otherwise noted.

The following metric (SI ) units are found in these details:

- m – meter
- cm – centimeter
- mm – millimeter
- s – second
- Pa – pascal
- MPa – megapascal

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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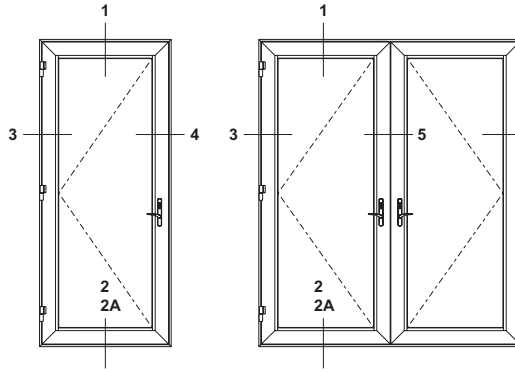
SCALE 3" = 1' 0"

**Single Door**

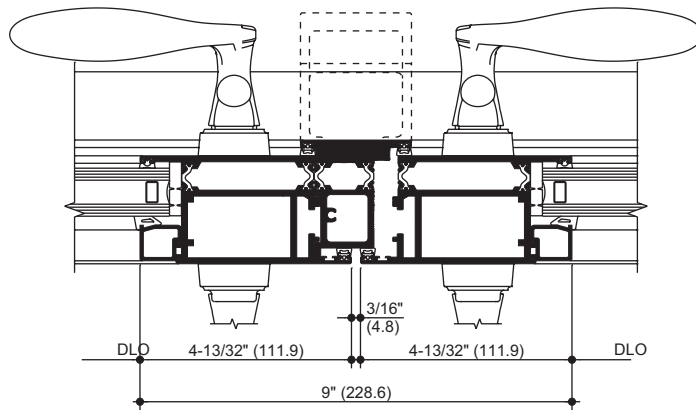
Maximum Frame Size = 48" x 120"  
(1,219.2 x 3,048)  
Minimum Frame Size = 30" x 73"  
(762 x 1,854.2)

**Pair of Doors**

Maximum Frame Size = 96" x 96"  
(2,438.4 x 2,438.4)  
Minimum Frame Size = 60" x 81"  
(1,524 x 2,057.4)

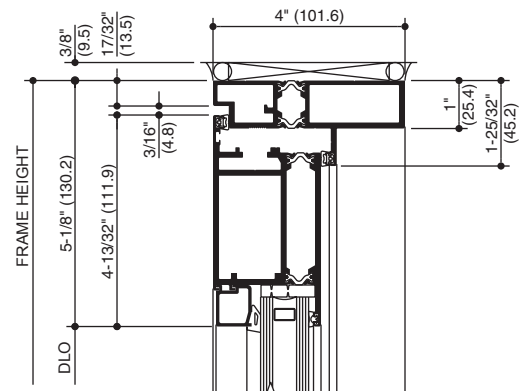


OUTSWING DOORS & FRAME

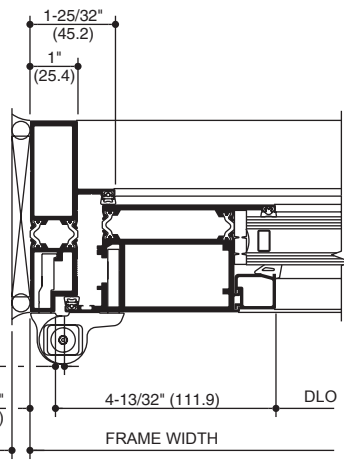
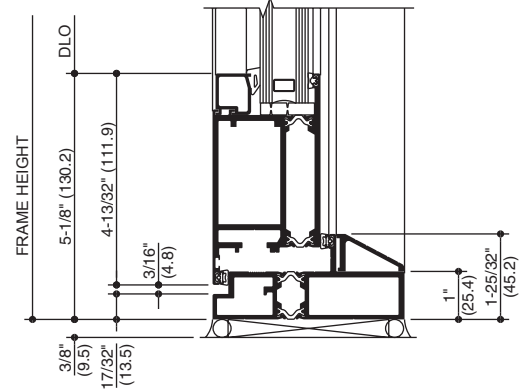


5 MEETING STILE

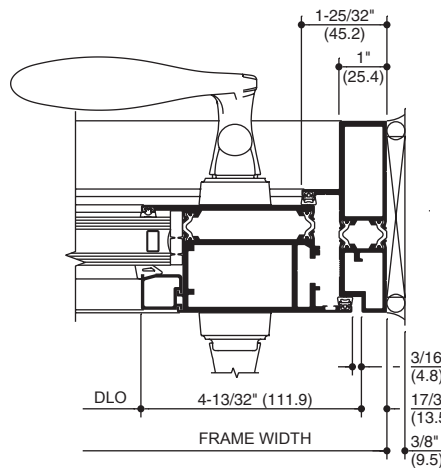
1 HEAD



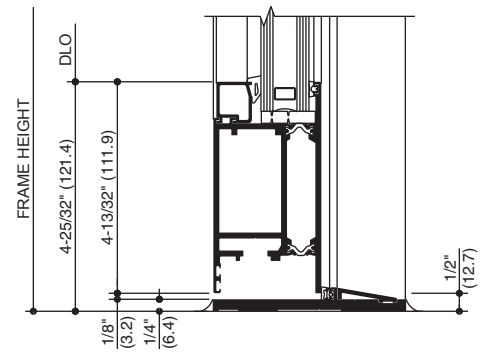
2 THRESHOLD



3 PIVOT JAMB



4 LOCK JAMB AT DEADBOLT/LATCHLOCK



2A OPTIONAL LOW PROFILE THRESHOLD

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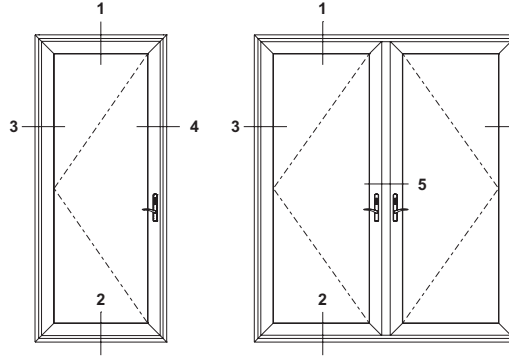
SCALE 3" = 1' 0"

**Single Door**

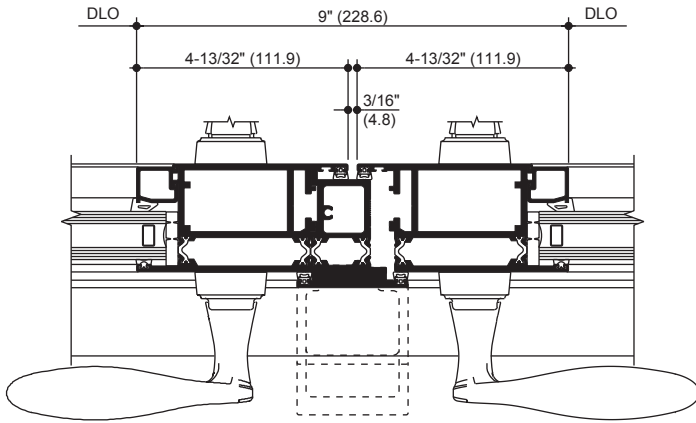
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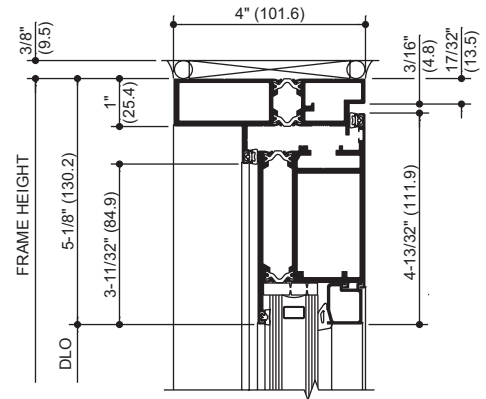


INSWING DOORS & FRAME

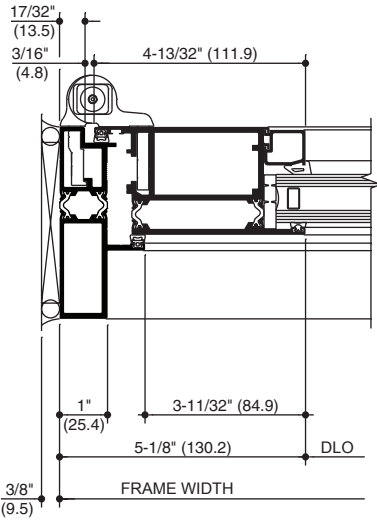
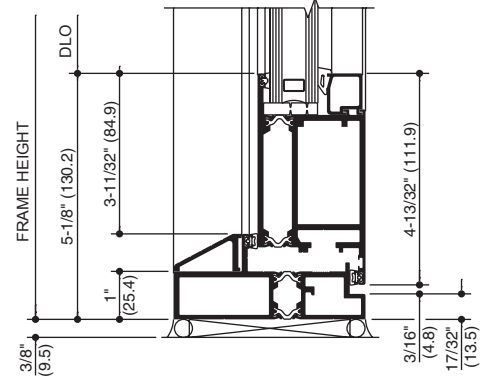


**5 MEETING STILE**

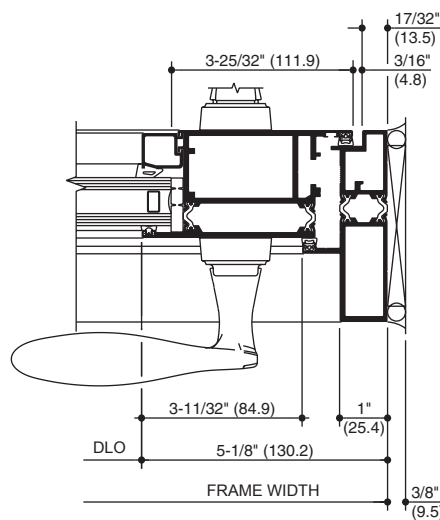
**1 HEAD**



**2 THRESHOLD**



**3 PIVOT JAMB**



**4 LOCK JAMB AT DEADBOLT/LATCHLOCK**

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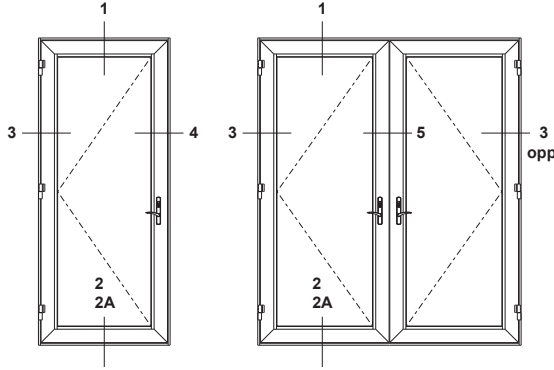
SCALE 3" = 1' 0"

**Single Door**

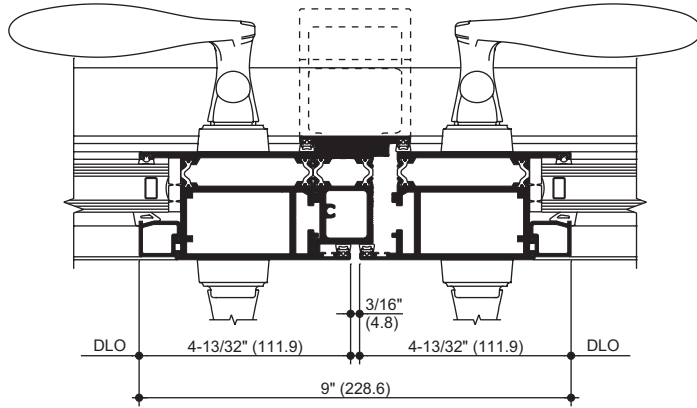
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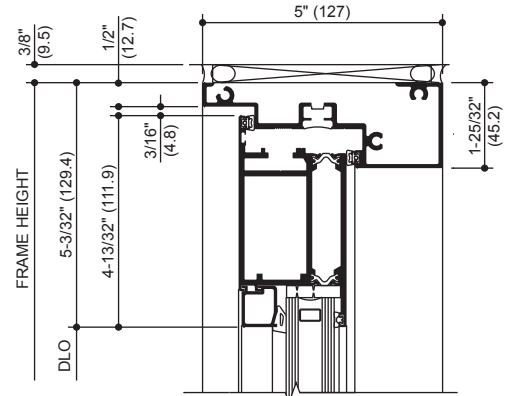


OUTSWING DOORS & FRAME

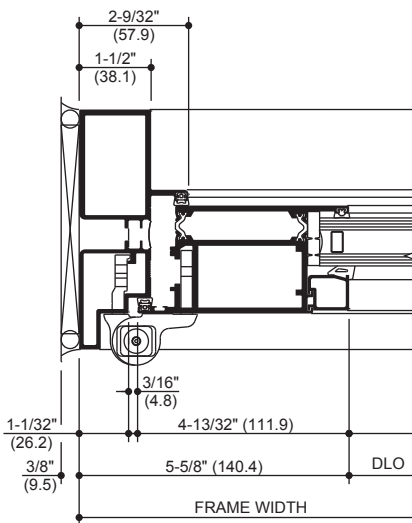
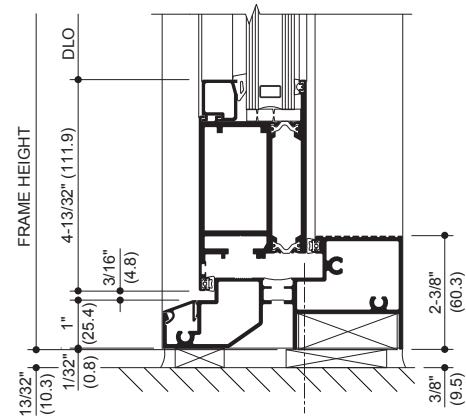


5 MEETING STILE

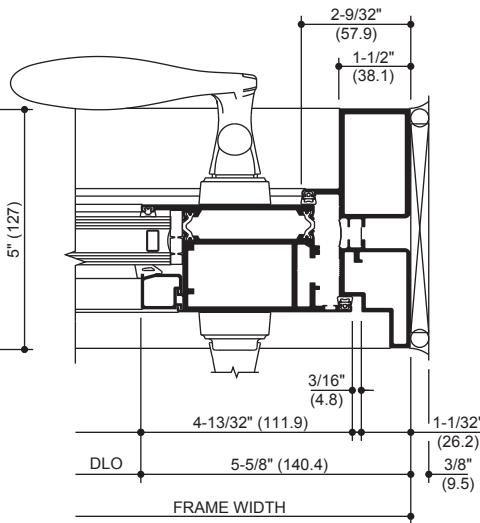
1 HEAD



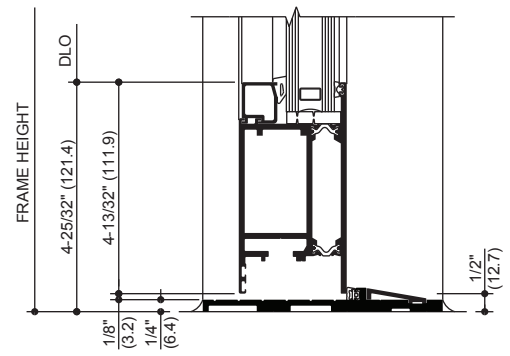
2 THRESHOLD



3 PIVOT JAMB



4 LOCK JAMB AT DEADBOLT/LATCHLOCK



2A OPTIONAL LOW PROFILE THRESHOLD

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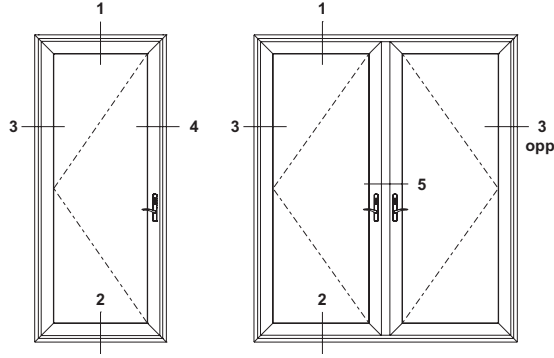
SCALE 3" = 1' 0"

**Single Door**

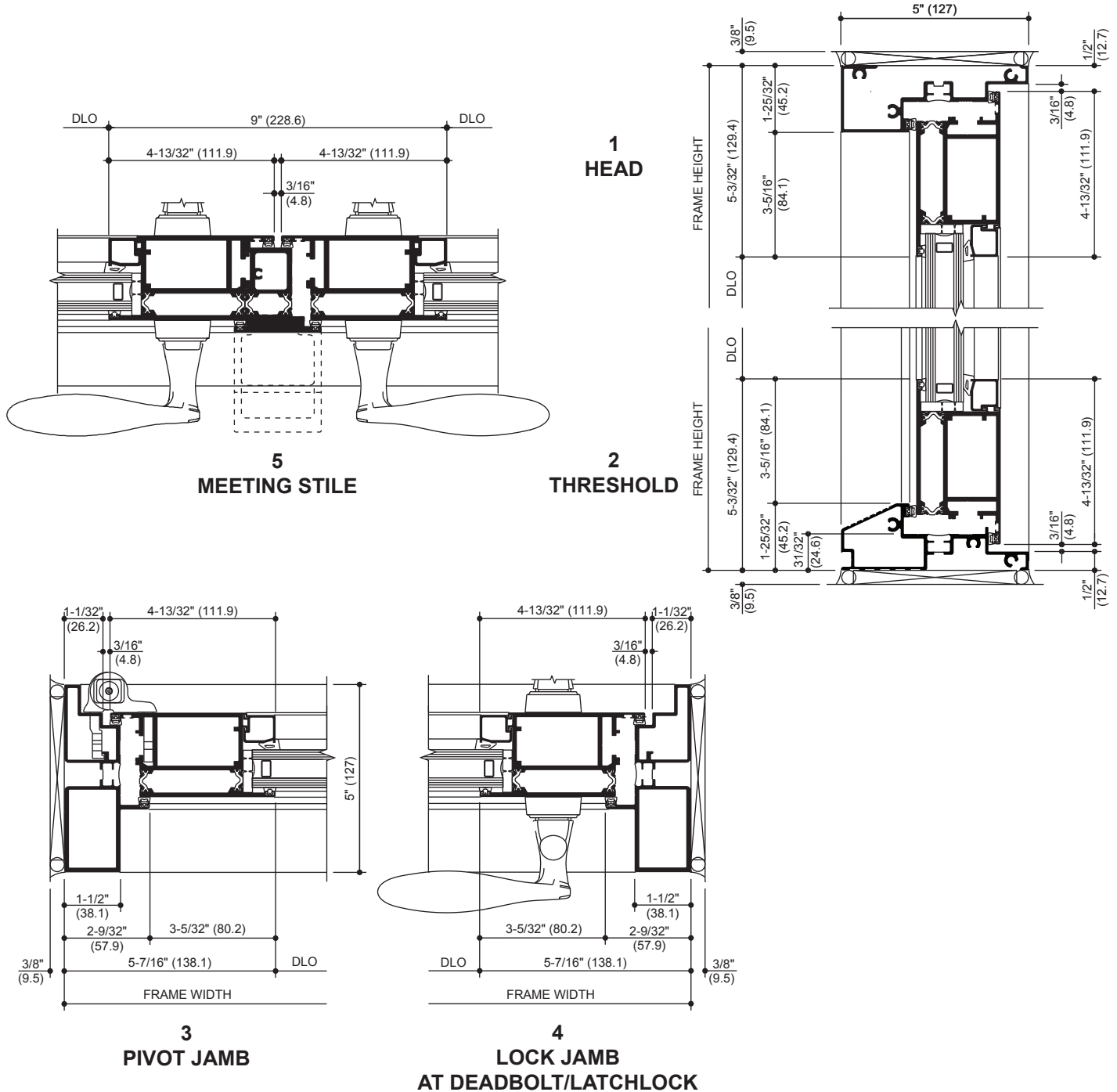
Maximum Frame Size = 48" x 120"  
(1,219.2 x 3,048)  
Minimum Frame Size = 30" x 73"  
(762 x 1,854.2)

**Pair of Doors**

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(2,438.4 x 2,438.4)  
Minimum Frame Size = 60" x 81"  
(1,524 x 2,057.4)



**INSWING DOORS & FRAME**



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SCALE 3" = 1' 0"

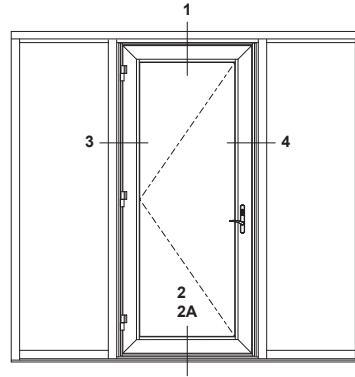
Note: For pairs reference detail 5 Meeting Stile on page 5.

**Single Door**

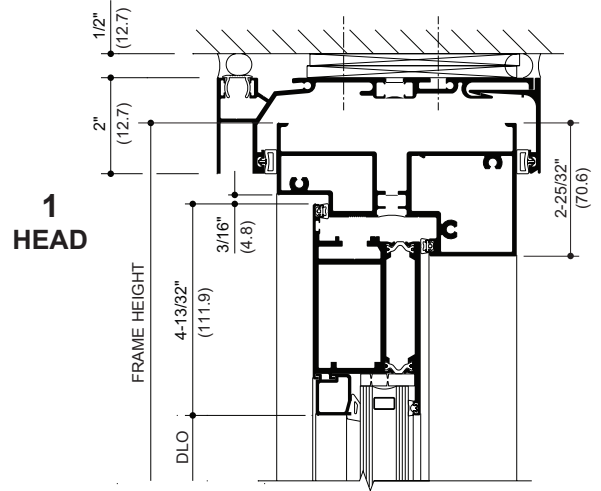
Maximum Frame Size = 48" x 120"  
(1219.2 x 3048)  
Minimum Frame Size = 30" x 73"  
(762 x 1854.2)

**Pair of Doors**

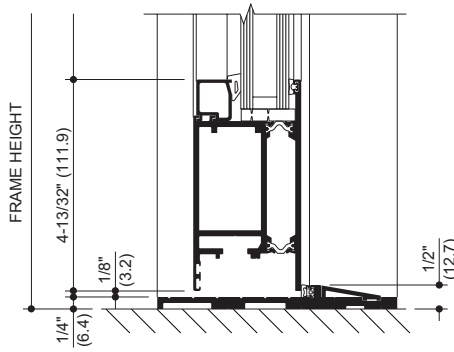
Maximum Frame Size = 96" x 96"  
(2438.4 x 2438.4)  
Minimum Frame Size = 60" x 81"  
(1524 x 2057.4)



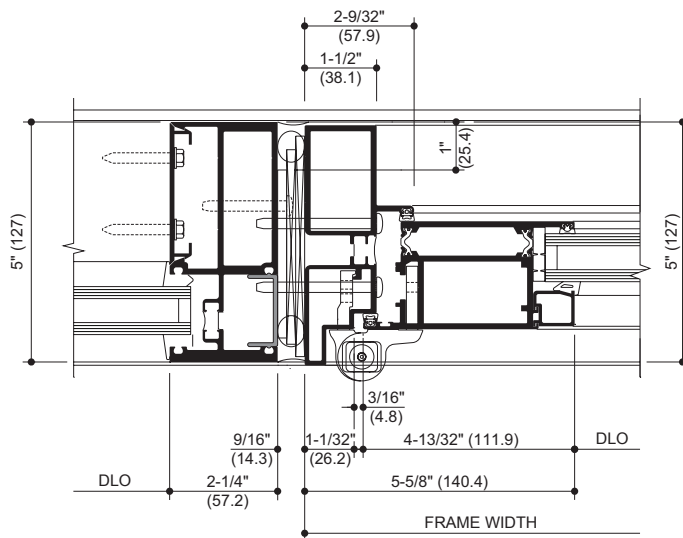
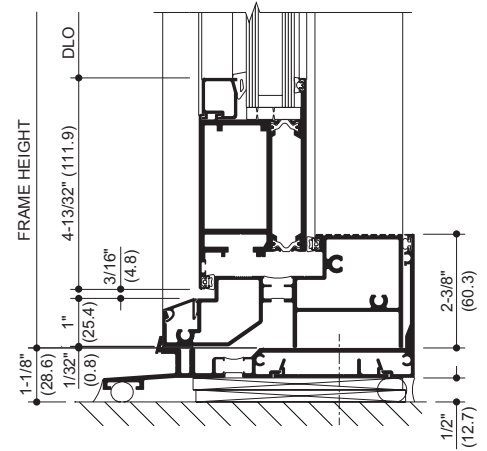
OUTSWING DOORS & FRAME



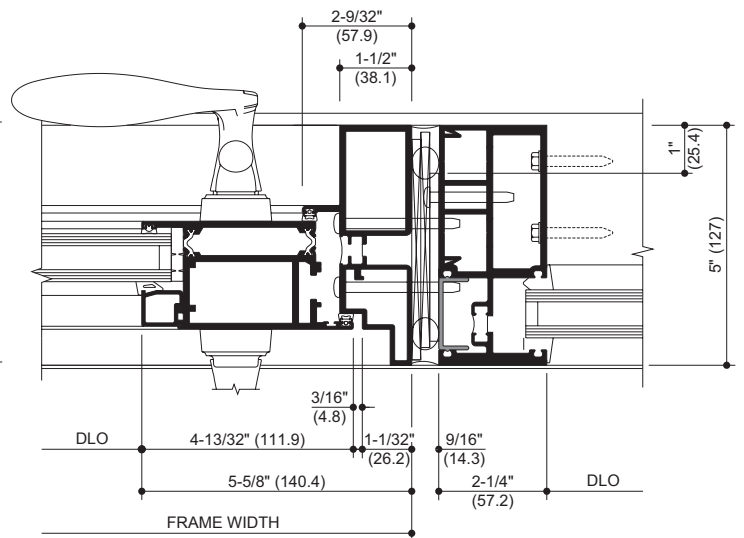
**2A  
OPTIONAL  
LOW PROFILE  
THRESHOLD**



**2  
THRESHOLD**



**3  
PIVOT JAMB**



**4  
LOCK JAMB  
AT DEADBOLT/LATCHLOCK**

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SCALE 3" = 1' 0"

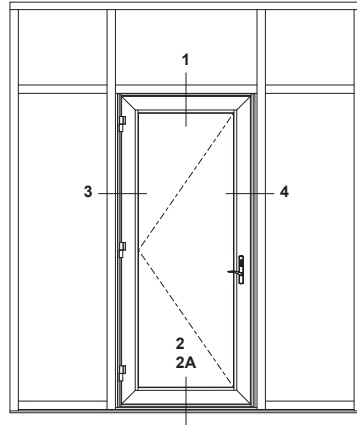
Note: For pairs reference detail 5 Meeting Stile on page 5.

Single Door

Maximum Frame Size = 48" x 120"  
(1219.2 x 3048)  
Minimum Frame Size = 30" x 73"  
(762 x 1854.2)

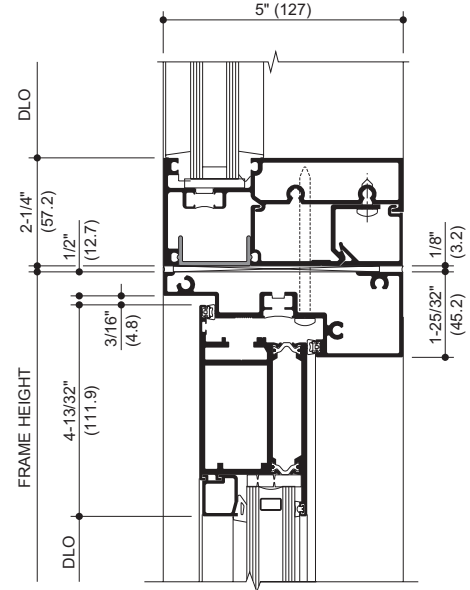
Pair of Doors

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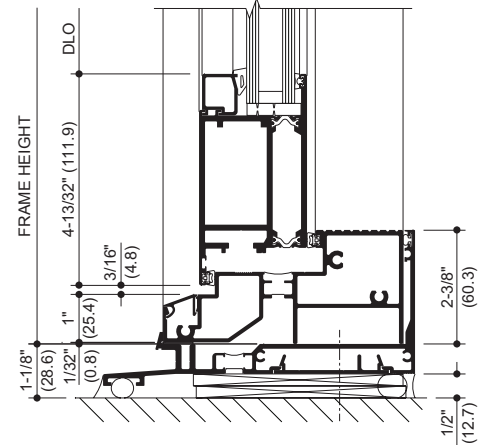


OUTSWING DOORS & FRAME

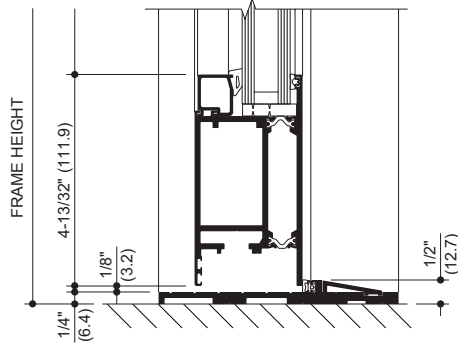
1  
HEAD



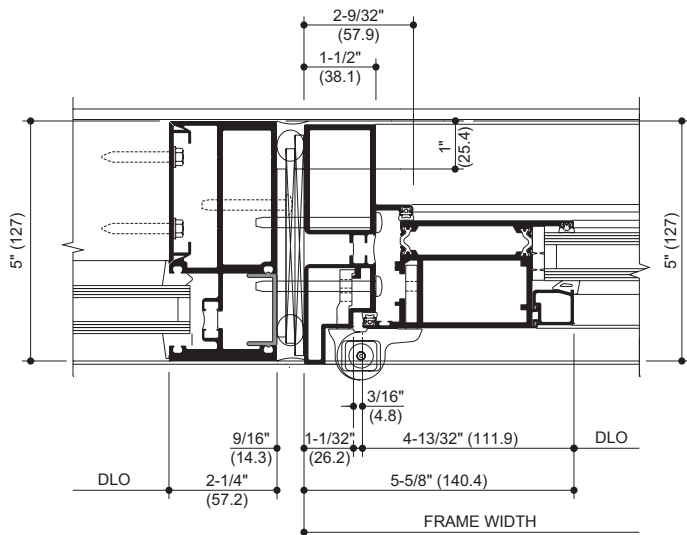
2  
THRESHOLD



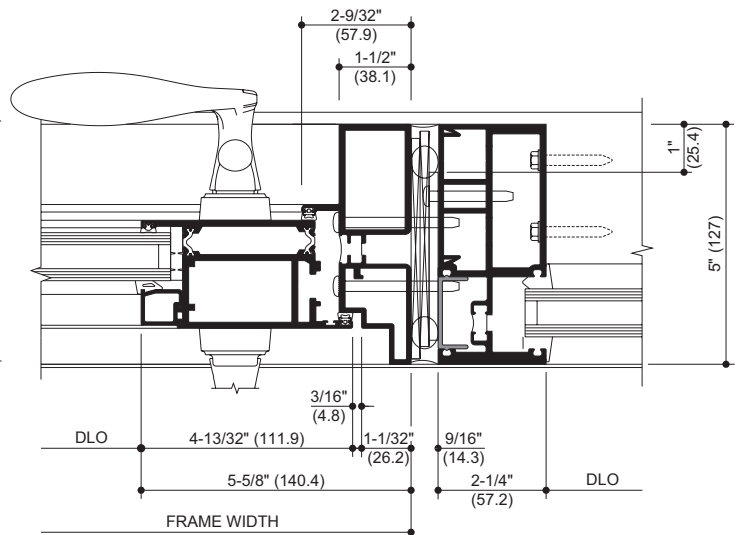
2A  
OPTIONAL  
LOW PROFILE  
THRESHOLD



3  
PIVOT JAMB



4  
LOCK JAMB  
AT DEADBOLT/LATCHLOCK



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**SCALE 3" = 1' 0"**

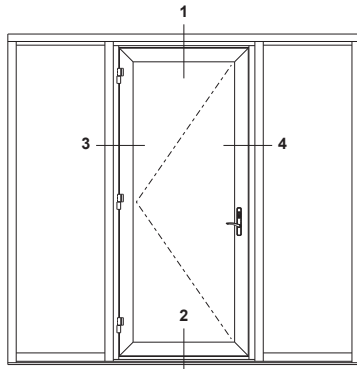
**Note:** For pairs reference detail 5 Meeting Stile on page 6.

**Single Door**

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(1219.2 x 3048)  
Minimum Frame Size = 30" x 73"  
(762 x 1854.2)

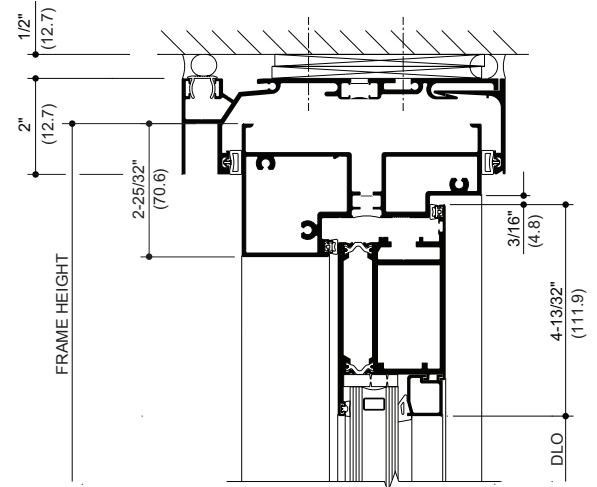
**Pair of Doors**

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Minimum Frame Size = 60" x 81"  
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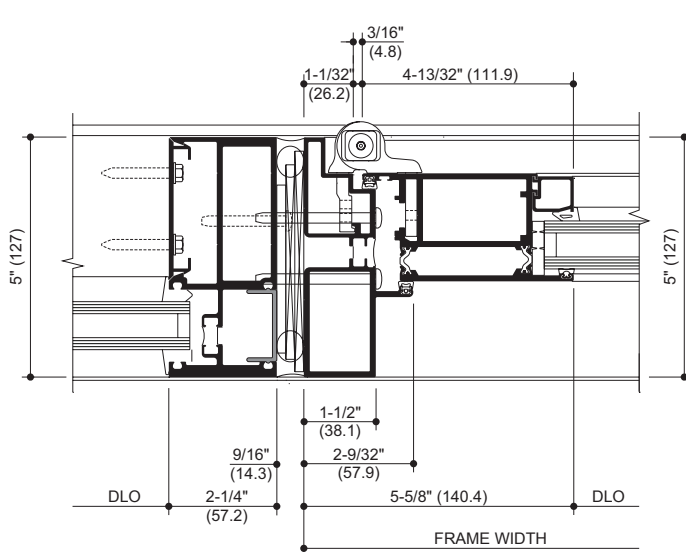
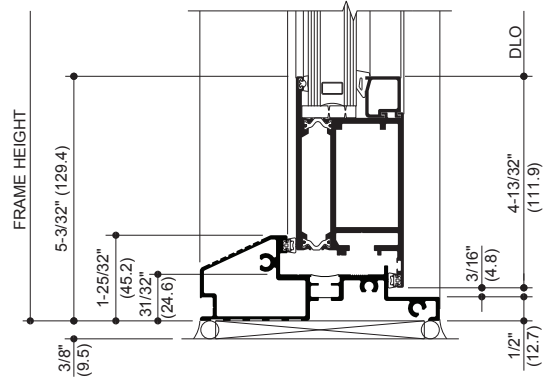


**INSWING DOORS & FRAME**

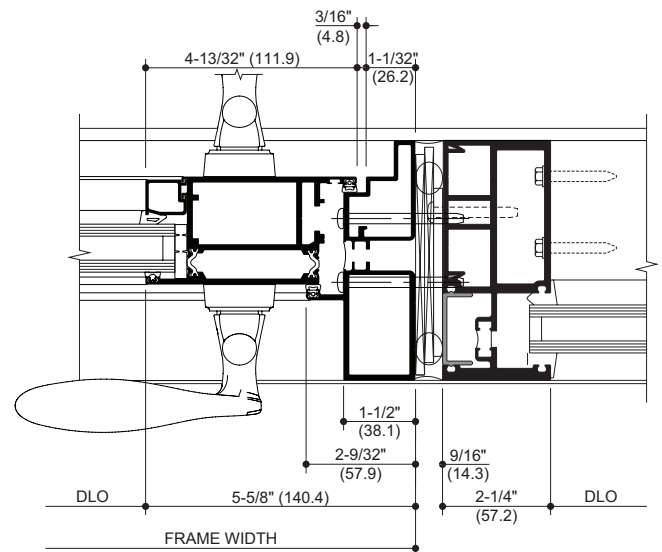
**1 HEAD**



**2 THRESHOLD**



**3 PIVOT JAMB**



**4 LOCK JAMB AT DEADBOLT/LATCHLOCK**

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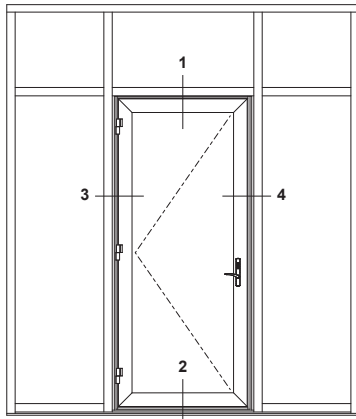
**Note:** For pairs reference detail 5 Meeting Stile on page 6.

**Single Door**

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Minimum Frame Size = 30" x 73"  
(762 x 1854.2)

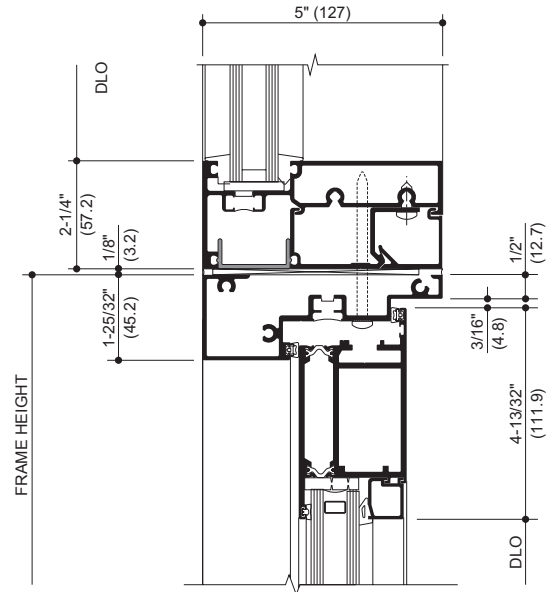
**Pair of Doors**

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Minimum Frame Size = 60" x 81"  
(1524 x 2057.4)

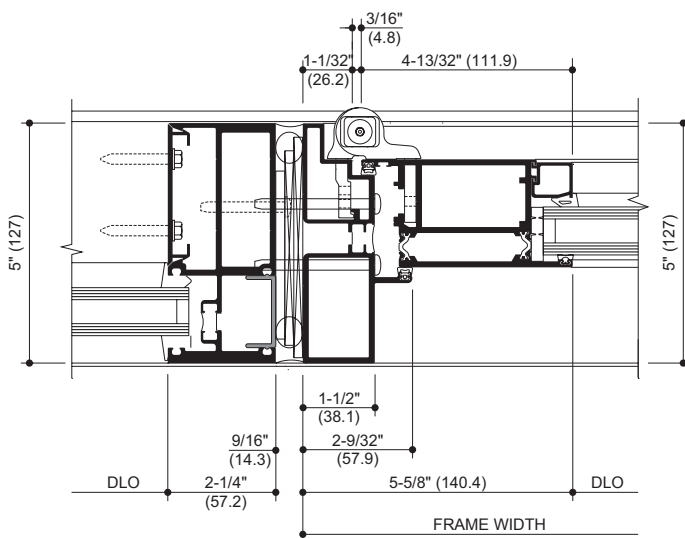
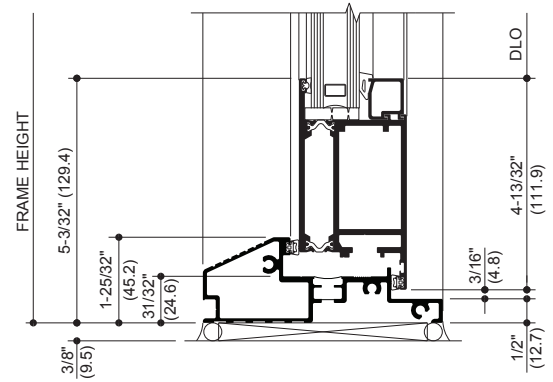


**INSWING DOORS & FRAME**

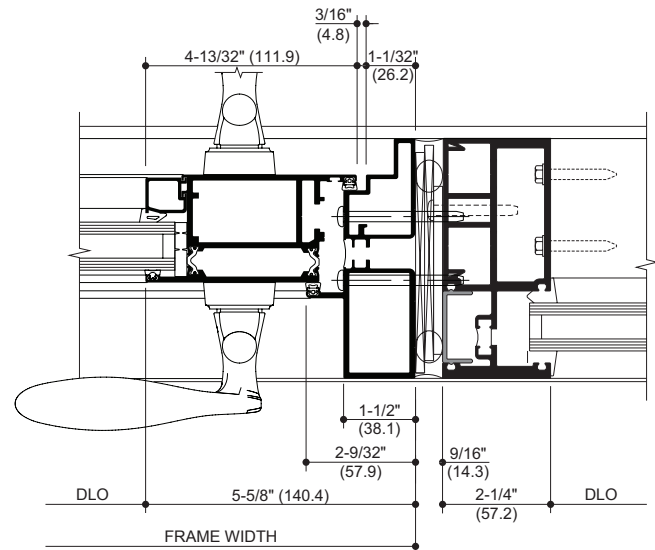
**1 HEAD**



**2 THRESHOLD**



**3 PIVOT JAMB**



**4 LOCK JAMB AT DEADBOLT/LATCHLOCK**

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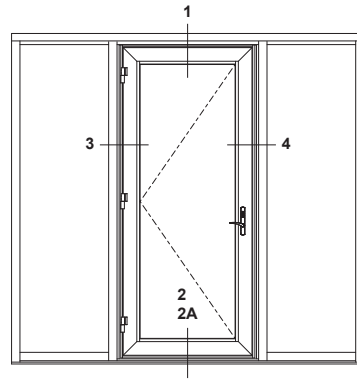
**Note:** For pairs reference detail 5 Meeting Stile on page 5.

**Single Door**

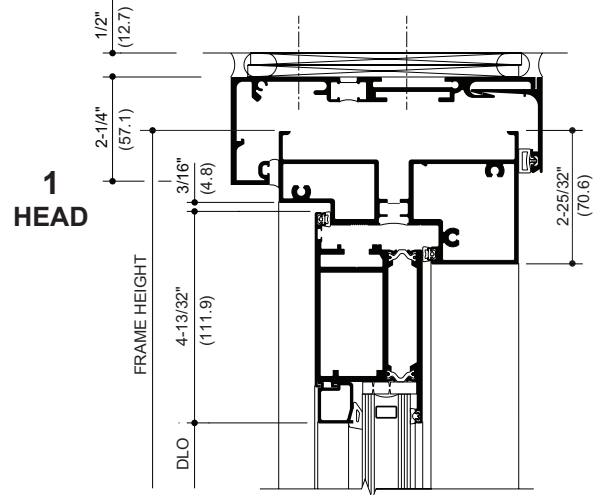
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Minimum Frame Size = 30" x 73"  
(762 x 1854.2)

**Pair of Doors**

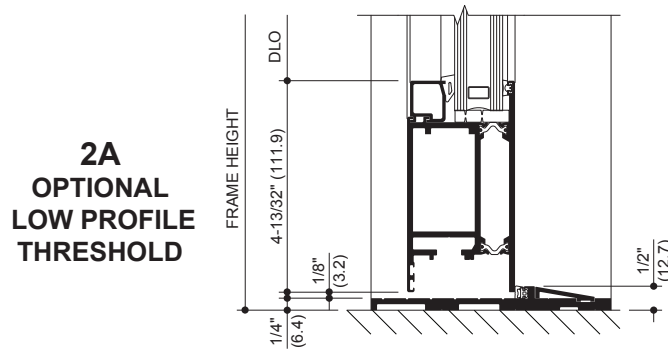
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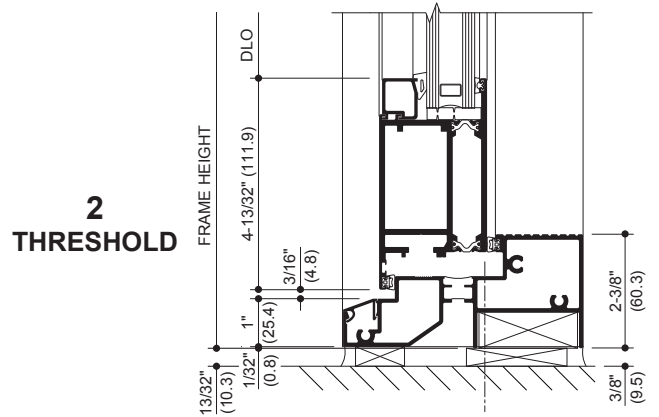
**OUTSWING DOORS & FRAME**



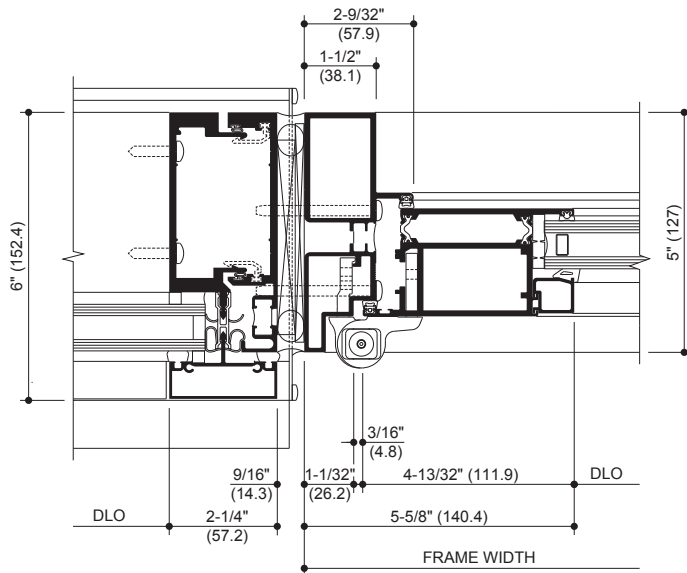
**1 HEAD**



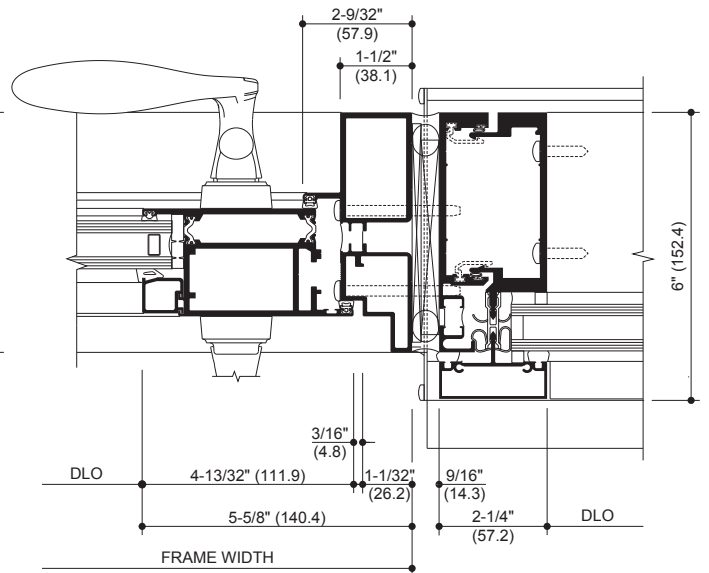
**2A  
OPTIONAL  
LOW PROFILE  
THRESHOLD**



**2 THRESHOLD**



**3  
PIVOT JAMB**



**4  
LOCK JAMB  
AT DEADBOLT/LATCHLOCK**

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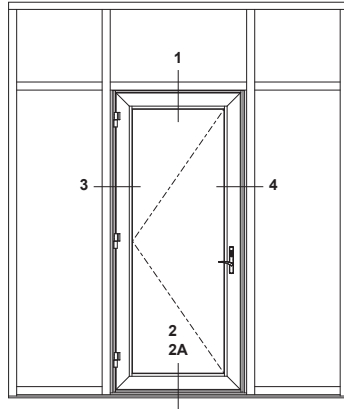
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Single Door

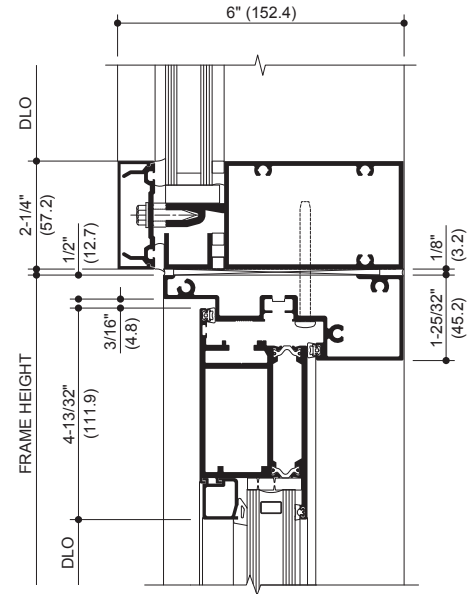
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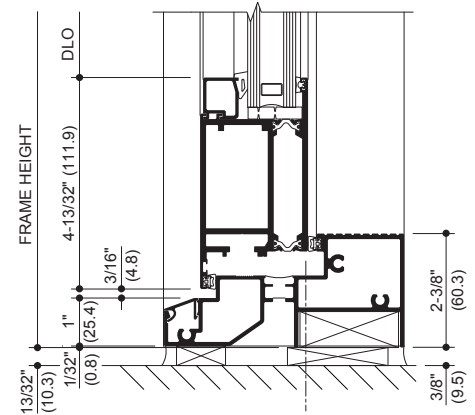
Maximum Frame Size = 96" x 96"  
(2438.4 x 2438.4)  
Minimum Frame Size = 60" x 81"  
(1524 x 2057.4)



OUTSWING DOORS & FRAME

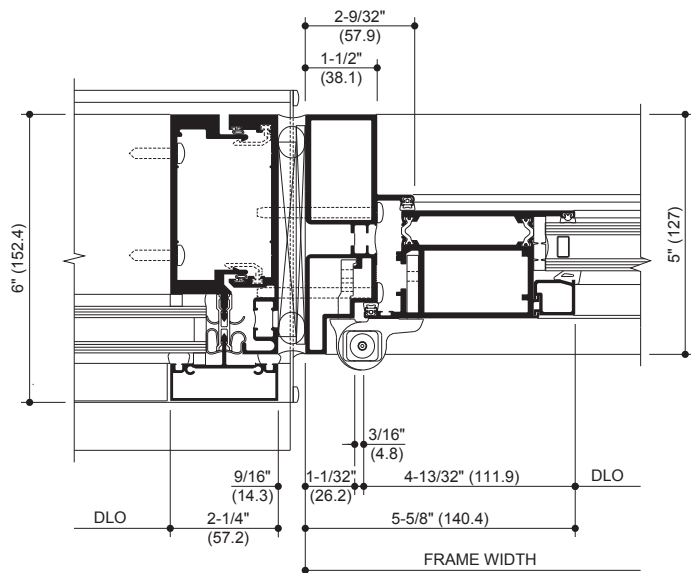
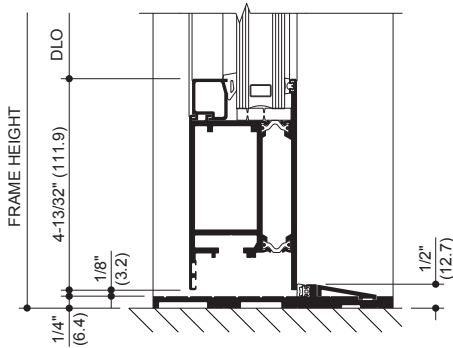


1  
HEAD

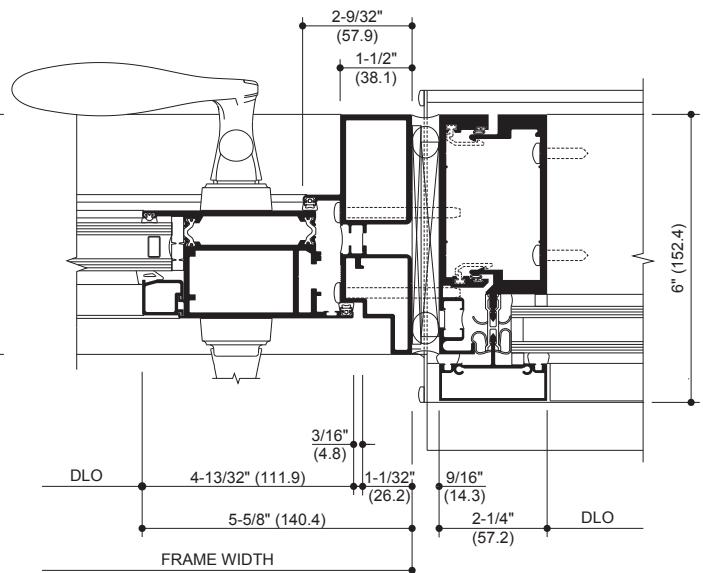


2  
THRESHOLD

2A  
OPTIONAL  
LOW PROFILE  
THRESHOLD



3  
PIVOT JAMB



4  
LOCK JAMB  
AT DEADBOLT/LATCHLOCK

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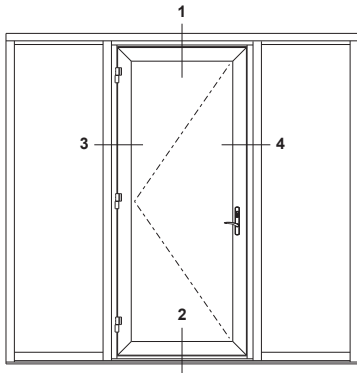
Note: For pairs reference detail 5 Meeting Stile on page 6.

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Minimum Frame Size = 30" x 73"  
(762 x 1854.2)

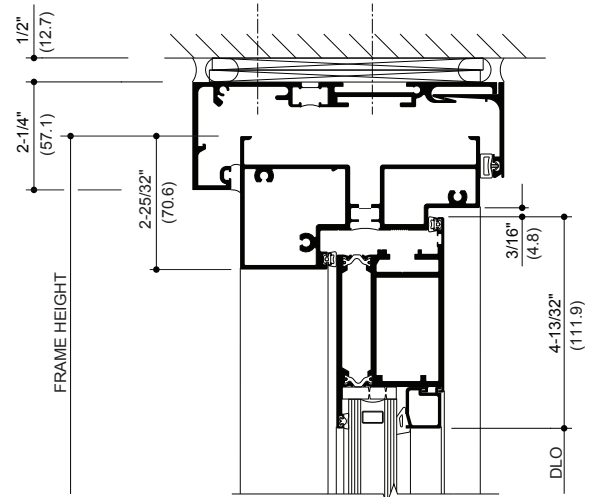
**Pair of Doors**

Maximum Frame Size = 96" x 96"  
(2438.4 x 2438.4)  
Minimum Frame Size = 60" x 81"  
(1524 x 2057.4)

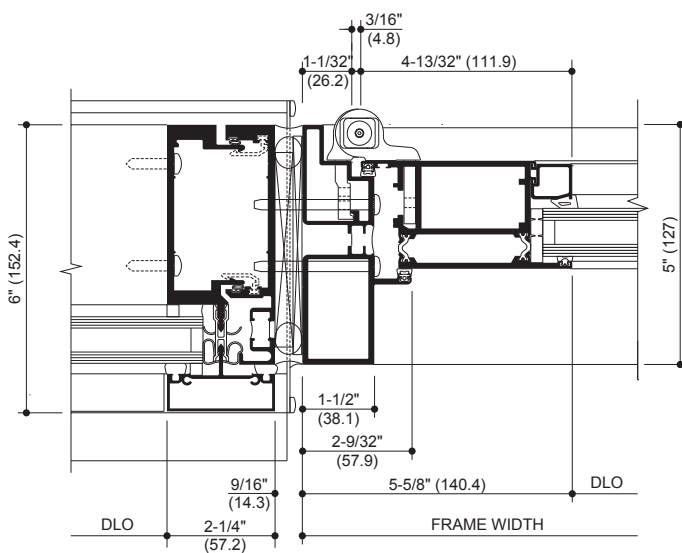
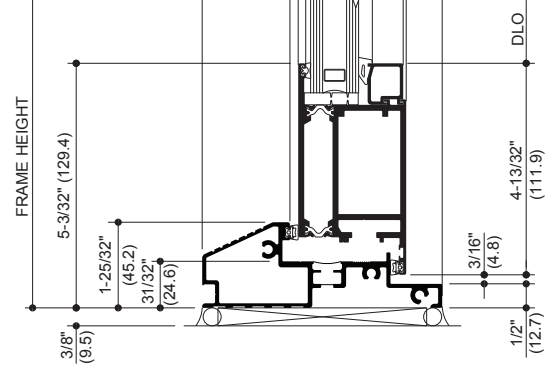


INSWING DOORS & FRAME

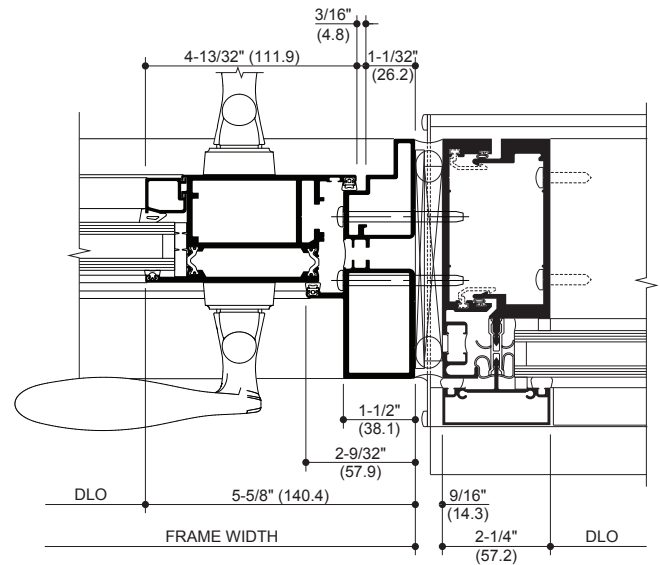
**1 HEAD**



**2 THRESHOLD**



**3 PIVOT JAMB**



**4 LOCK JAMB AT DEADBOLT/LATCHLOCK**

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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**SCALE 3" = 1' 0"**

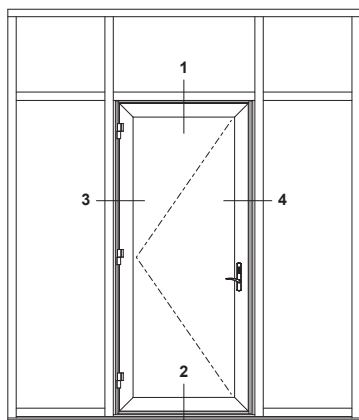
**Note:** For pairs reference detail 5 Meeting Stile on page 6.

**Single Door**

Maximum Frame Size = 48" x 120"  
(1219.2 x 3048)  
Minimum Frame Size = 30" x 73"  
(762 x 1854.2)

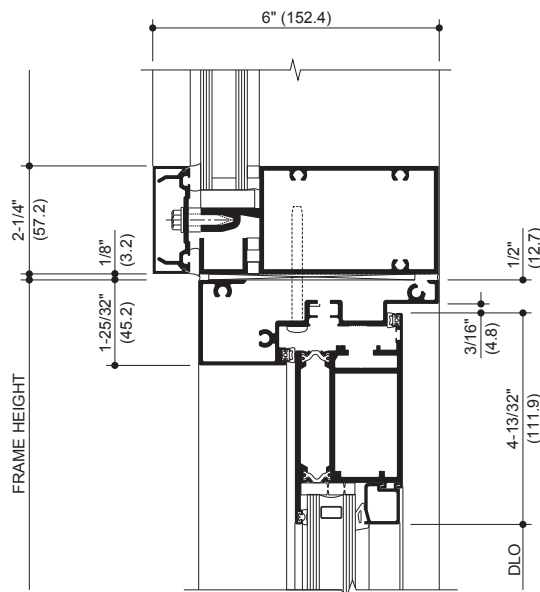
**Pair of Doors**

Maximum Frame Size = 96" x 96"  
(2438.4 x 2438.4)  
Minimum Frame Size = 60" x 81"  
(1524 x 2057.4)

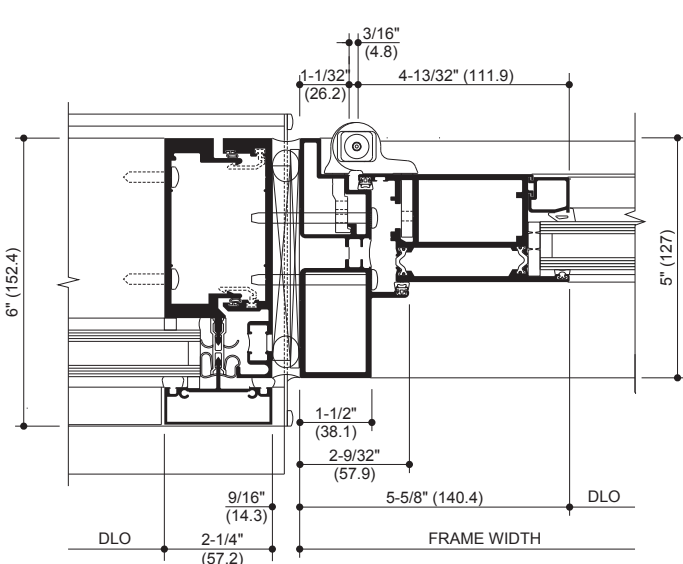
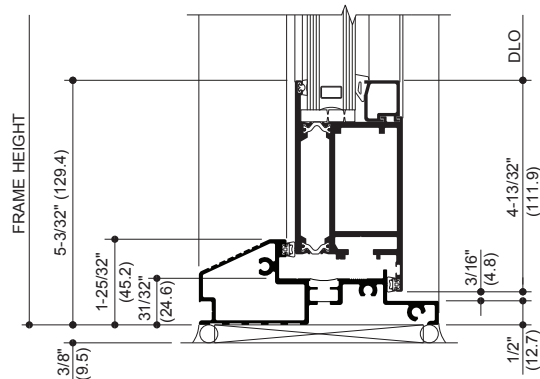


**INSWING DOORS & FRAME**

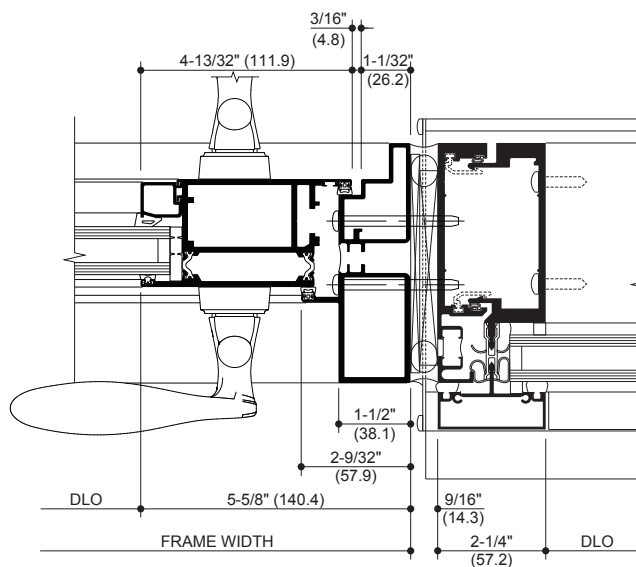
**1 HEAD**



**2 THRESHOLD**



**3 PIVOT JAMB**

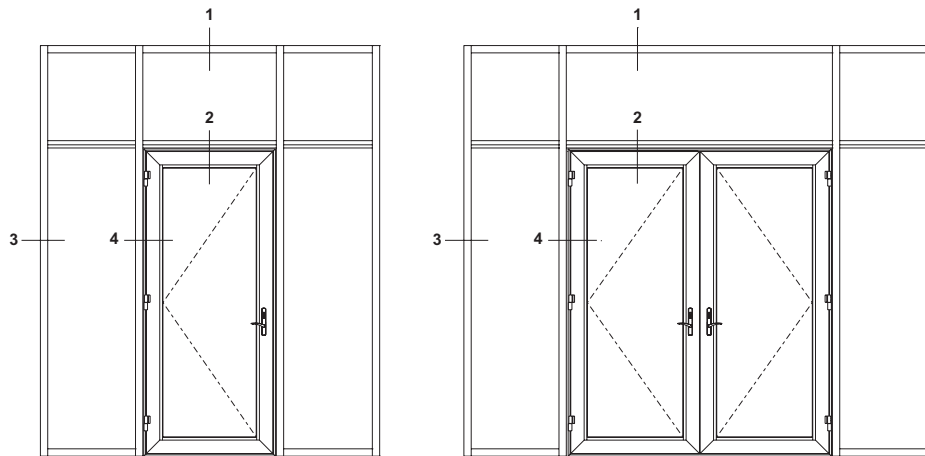


**4 LOCK JAMB AT DEADBOLT/LATCHLOCK**

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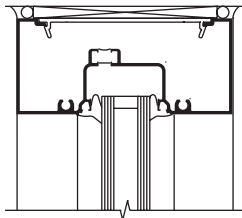
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**SCALE 3" = 1' 0"**

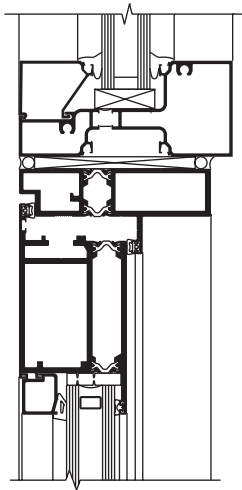


**OUTSWING DOORS & FRAME  
TRIFAB 451T FRAME SHOWN**

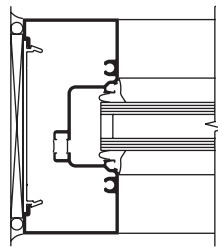
**1  
TRANSOM HEAD**



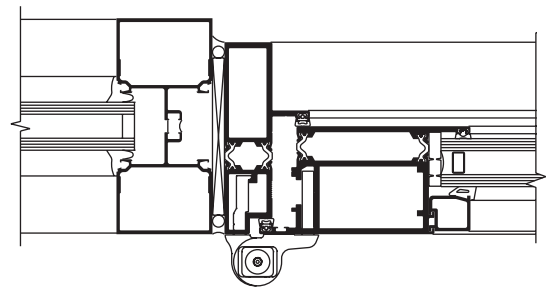
**2  
TRANSOM BAR**



**3  
SIDELITE JAMB**



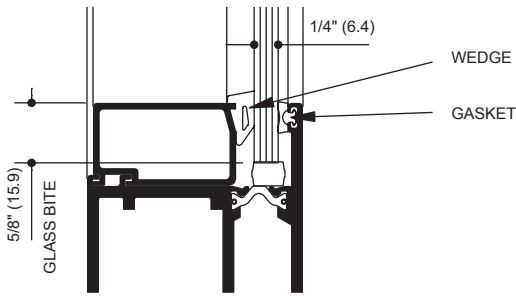
**4  
DOOR JAMB**



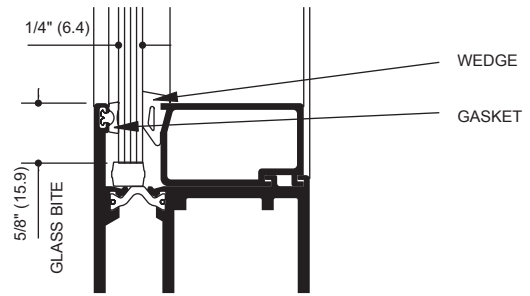
Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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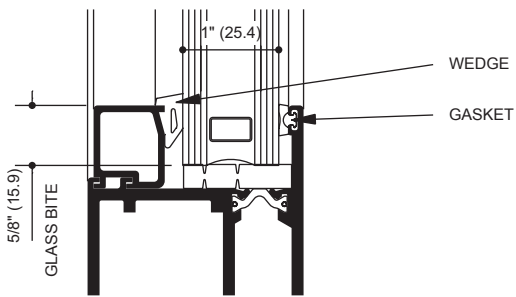
SCALE 3" = 1' 0"



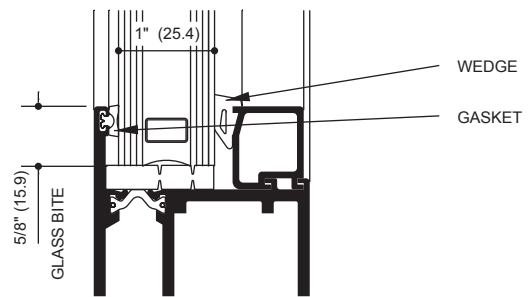
1/4" (6.4) INFILL  
OUTSWING DOOR



1/4" (6.4) INFILL  
INSWING DOOR



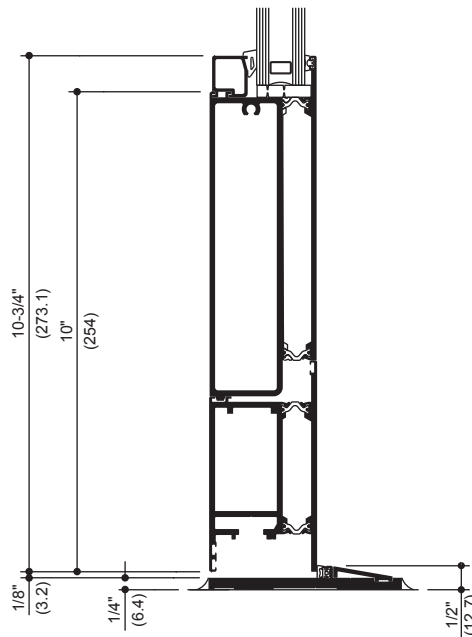
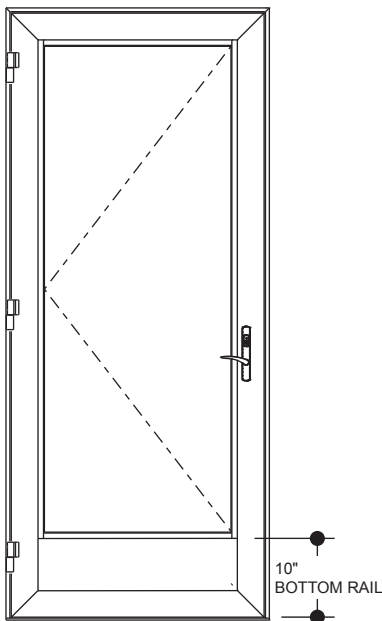
1" (25.4) INFILL  
OUTSWING DOOR



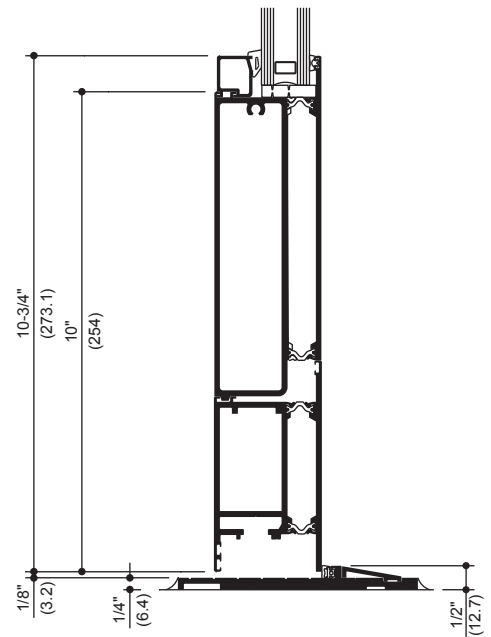
1" (25.4) INFILL  
INSWING DOOR

1/4" (6.4) and 1" (25.4) infills shown, other infills available.

SCALE 3" = 1' 0"



1" (25.4) INFILL  
4" (101.6) FRAME LOW PROFILE  
THRESHOLD WITH  
10" (254) BOTTOM RAIL



1" (25.4) INFILL  
5" (127) FRAME LOW PROFILE  
THRESHOLD WITH  
10" (254) BOTTOM RAIL

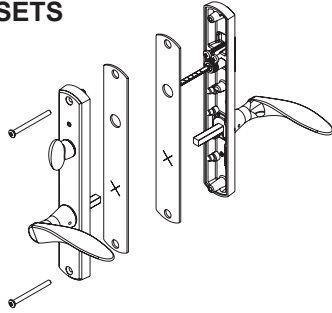
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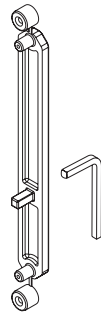
**MULTIPOINT LOCK - HLS® 7 SERIES (Hoppe)**

**7 SERIES TRIM SETS**



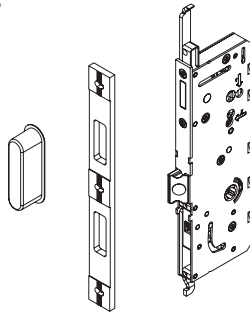
Contemporary Rodos style solid brass lever handle and escutcheon plate. Available in three finishes Polished Brass, Brushed Chrome and Rustic Umber. Includes keyed cylinder and thumbturn.

**CONSTRUCTION HANDLE AND 7 SERIES BACK PLATE**



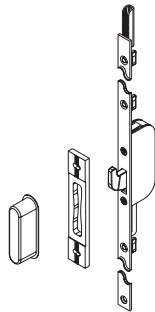
Trim sets are shipped loose to avoid damage during construction. The construction handle and construction plate allow temporary operation of the locking hardware.

**7 SERIES LATCHLOCK/ DEADBOLT GEARBOX**



Egress style of lock function. Stainless steel gearbox provides both a latchlock for normal use and deadbolt for additional security. Lock strike plates are stainless steel and adjustable. Each includes an injection molded plastic dust box. Simultaneous retraction feature enables all locking points to be retracted by pushing down on the handle.

**SWINGHOOK**



Swinghooks provide additional locking points along the vertical edge of the door leaf. Lockstrikes are stainless steel and adjustable. Each includes an injection molded plastic dust box.

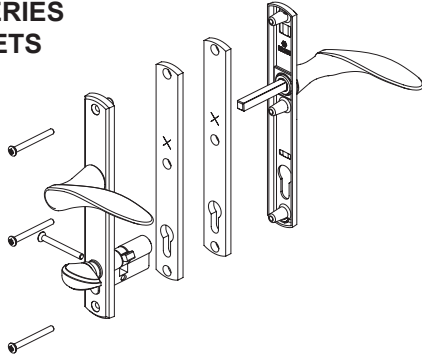
**SHOOT BOLT AND SLEEVE**



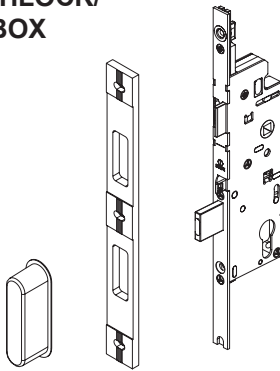
Top and bottom stainless steel shoot bolts secure the active and inactive leaf of pairs to the top frame member and threshold.

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

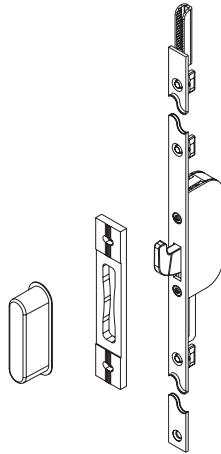
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**MULTIPOINT LOCK - HLS® 9000 SERIES (Hoppe)****9000 SERIES  
TRIM SETS**

Contemporary Rodos style solid brass lever handle and escutcheon plate. Available in three finishes Polished Brass, Brushed Chrome and Rustic Umber. Includes keyed cylinder and thumbturn.

**9000 SERIES LATCHLOCK/  
DEADBOLT GEARBOX**

Two step lock function. Stainless steel gearbox provides both a latchlock for normal use and deadbolt for additional security. Lock strike plates are stainless steel and adjustable. Each includes an injection molded plastic dust box.

**SWINGHOOK**

Swinghooks provide additional locking points along the vertical edge of the door leaf. Lockstrikes are stainless steel and adjustable. Each includes an injection molded plastic dust box.

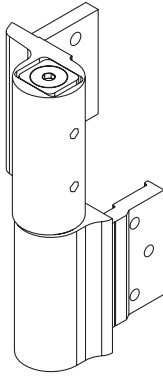
**SHOOT BOLT AND SLEEVE**

Top and bottom stainless steel shoot bolts secure the active and inactive leaf of pairs to the top frame member and threshold.

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

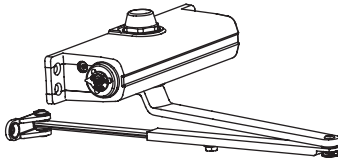
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**ADJUSTABLE BUTT HINGE**



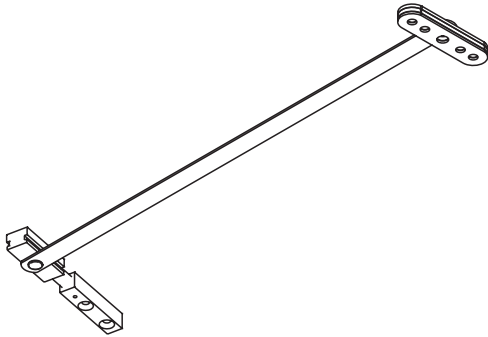
Aluminum 3-way adjustable hinges improve alignment between door leaf and frame. Hinges adjust in and out, up and down and left to right without removing the door leaf. Available in clear and dark bronze anodized finishes or painted to match door leaf.

**SURFACE APPLIED CLOSER**



Door and frame will accommodate LCN 1260 surface mounted closer and drop plate.  
Note: Closer is mounted on exterior side of frame with inswing door.

**DOOR STOP**



Stainless steel door stop assemblies are concealed in the top rail of the door leaf.

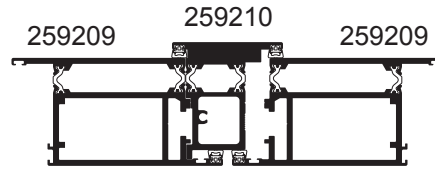
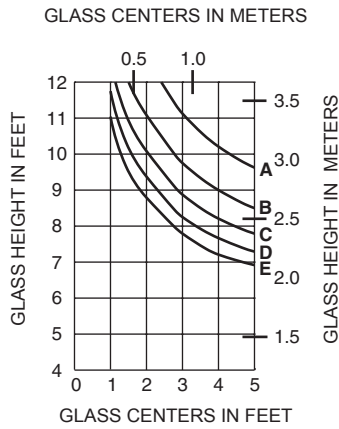
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WIND LOAD LIMITATIONS

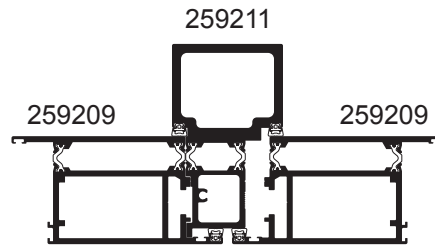
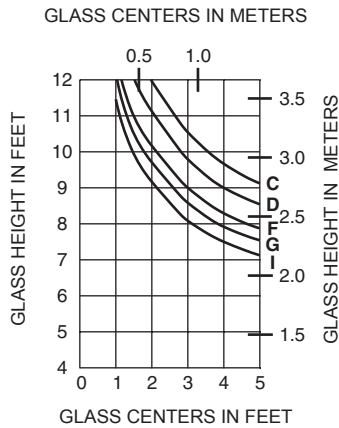
Charted wind load curves are based on allowable stress for aluminum of 15,152 PSI and a L/175 deflection ratio and, in all cases represent the limiting values. Dimensional limits at the stated wind loads are for door frame members anchored at the ends. Wind load charts contained herein are based upon nominal wind load utilized in allowable stress design. To convert ultimate wind loads to nominal loads, multiply ultimate wind loads by a factor of 0.6 per ASCE/SEI 7.

SMALL ASTRAGAL

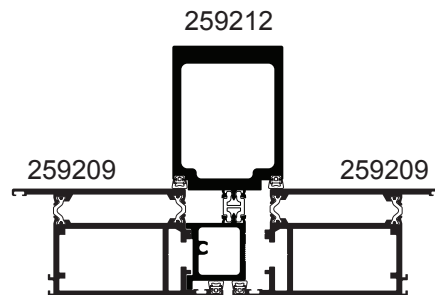
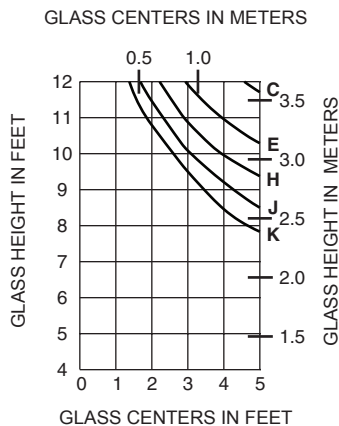


- A = 20 PSF (960)
- B = 30 PSF (1440)
- C = 40 PSF (1920)
- D = 50 PSF (2400)
- E = 60 PSF (2880)
- F = 65 PSF (3120)
- G = 75 PSF (3600)
- H = 80 PSF (3830)
- I = 90 PSF (4310)
- J = 100 PSF (4790)
- K = 120 PSF (5750)

MEDIUM ASTRAGAL



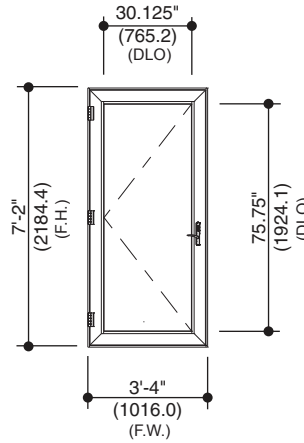
LARGE ASTRAGAL



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**Generic Project Specific U-factor Example Calculation**  
 (Percent of Glass will vary on specific products depending on sitelines)



**Note:** 2000T Terrace Door outswing shown for example.

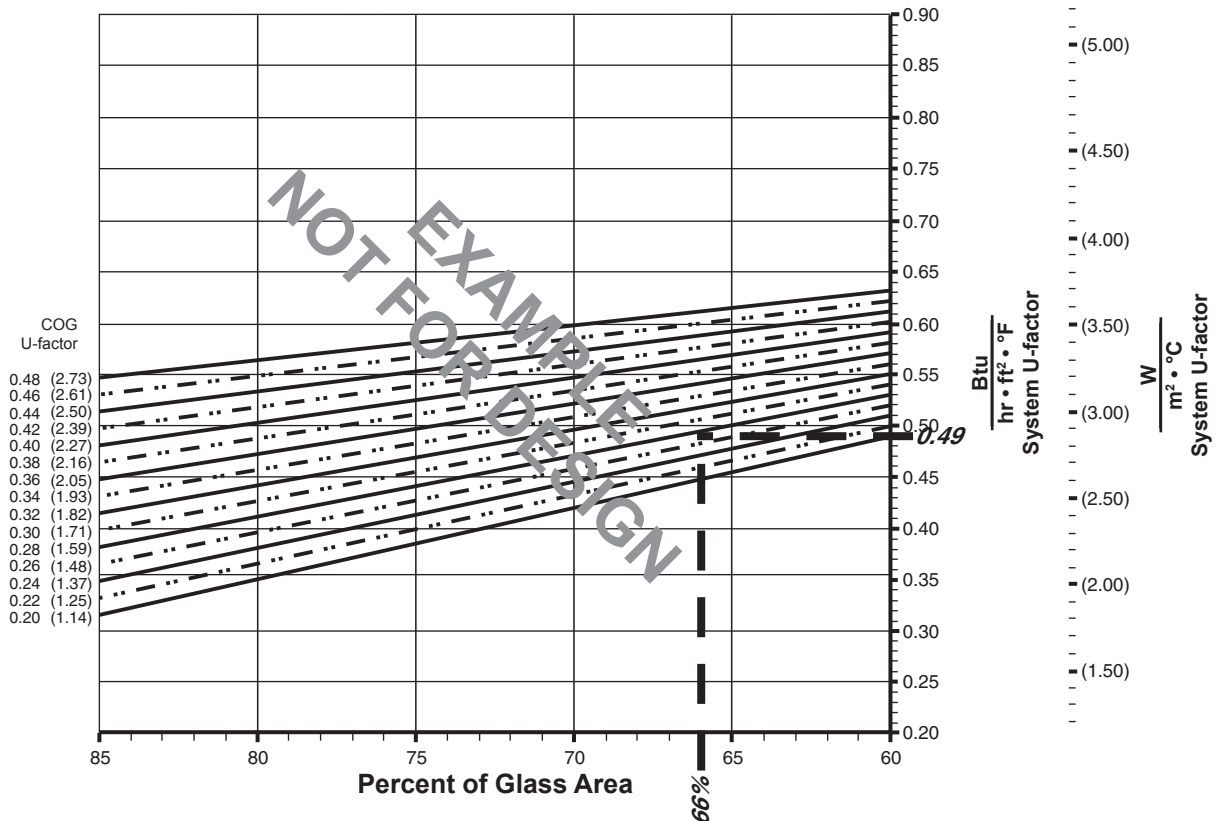
Example Glass U-Factor = 0.28 Btu/hr • ft<sup>2</sup> • °F

Total Daylight Opening = 30.125" x 75.75" = 15.85 ft<sup>2</sup>

Total Projected Area = 3'-4" x 7'-2" = 23.9 ft<sup>2</sup>

Percent of Glass = (Total Daylight Opening ÷ Total Projected Area)100  
 = (15.85 ÷ 23.9)100 = 66%

**System U-factor vs Percent of Glass Area**



Based on 66% glass and center of glass (COG) U-factor of 0.28  
 System U-factor is equal to 0.49 Btu/hr • ft<sup>2</sup> • °F

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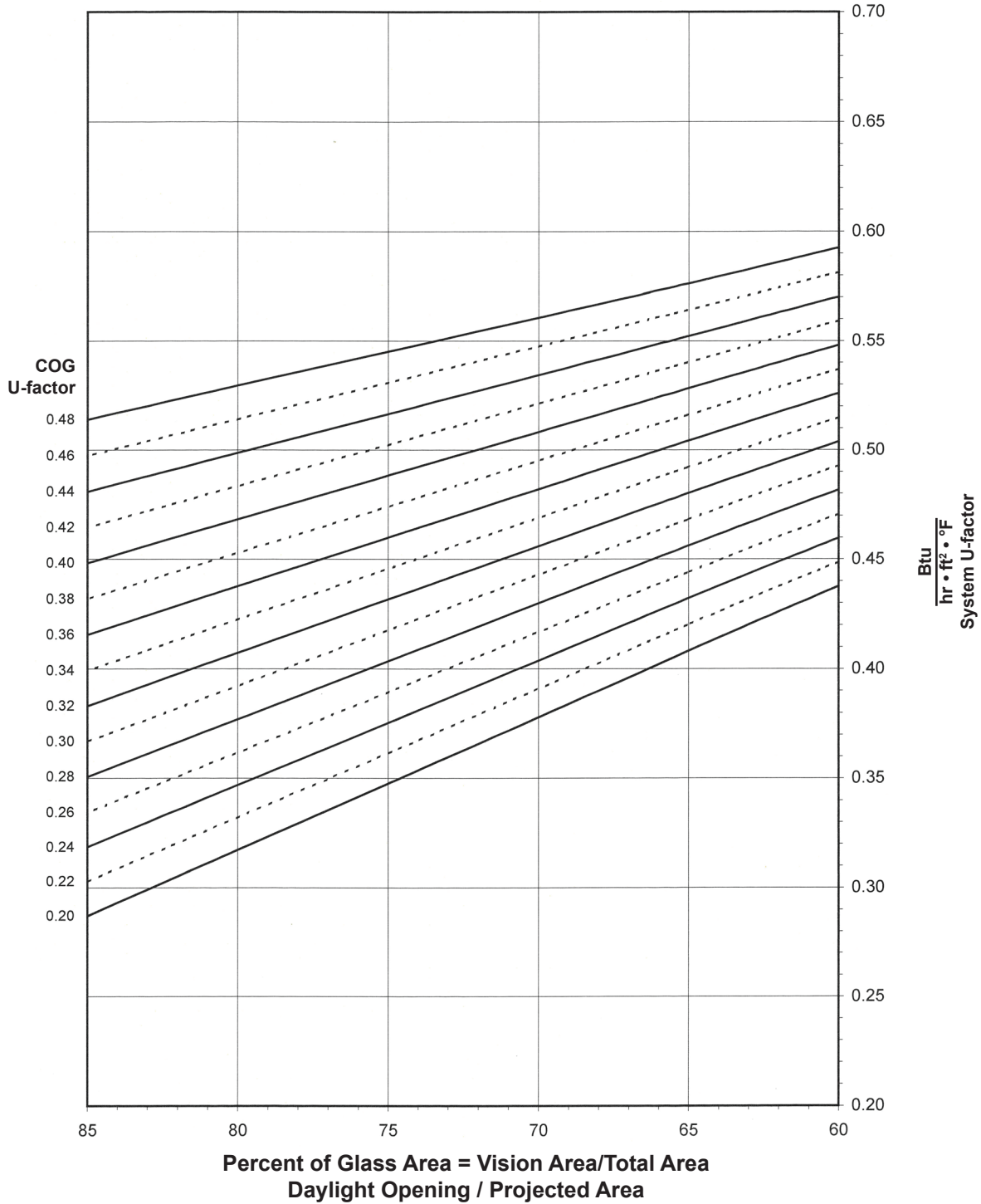
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2000T TERRACE DOOR - SINGLE LEAF

**Note:**

Values in parentheses are metric.  
 COG = Center of Glass.  
 Charts are generated per AMMA 507

**System U-factor vs Percent of Glass Area**



**Notes for System U-factor, SHGC and VT charts:**

For glass values that are not listed, linear interpolation is permitted.  
 Glass properties are based on center of glass values and are obtained from your glass supplier.

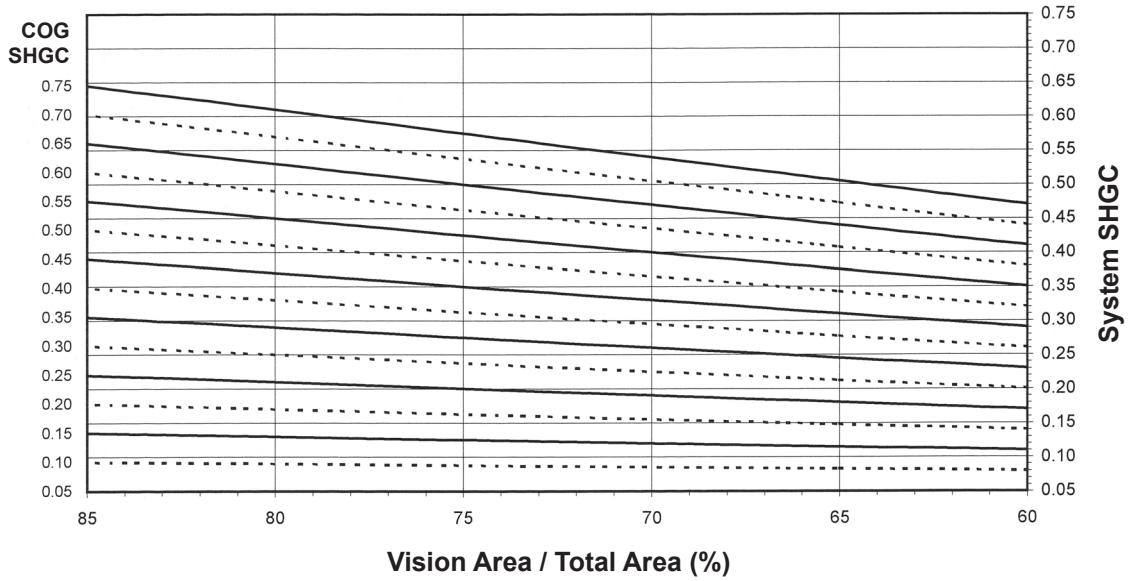
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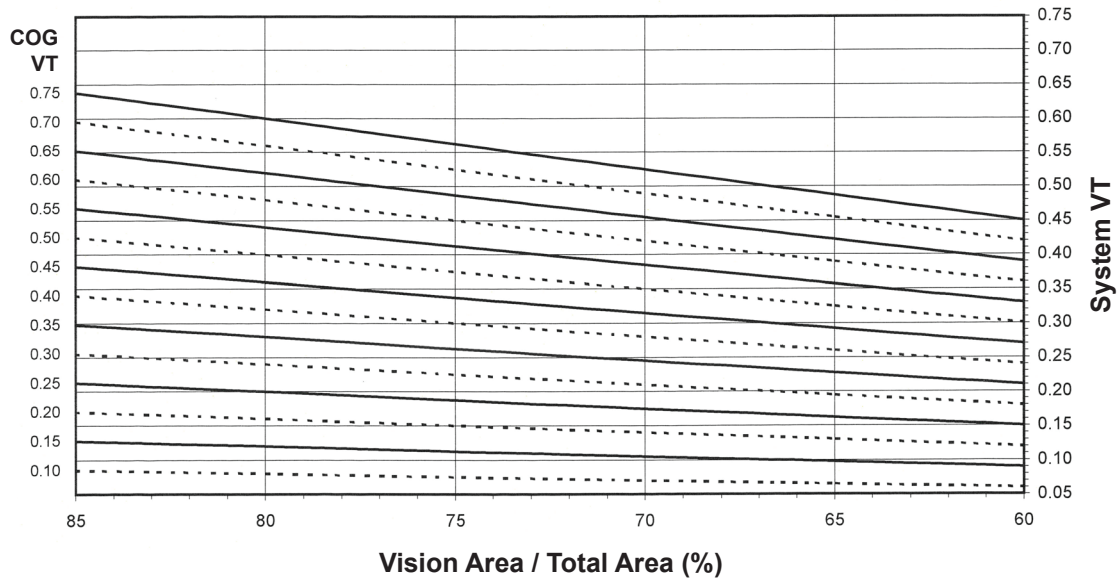
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2000T TERRACE DOOR - SINGLE LEAF

System Solar Heat Gain Coefficient (SHGC) vs Percent of Vision Area



System Visible Transmittance (VT) vs Percent of Vision Area



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Thermal Transmittance <sup>1</sup> (BTU/hr • ft<sup>2</sup> • °F)

Glass U-Factor <sup>3</sup>	Overall U-Factor <sup>4</sup>
0.48	0.58
0.46	0.56
0.44	0.55
0.42	0.54
0.40	0.53
0.38	0.52
0.36	0.50
0.34	0.49
0.32	0.48
0.30	0.47
0.28	0.46
0.26	0.44
0.24	0.43
0.22	0.42
0.20	0.41

2000T TERRACE DOOR  
SINGLE LEAF

**NOTE:** For glass values that are not listed, linear interpolation is permitted.

1. U-Factors are determined in accordance with NFRC 100.
2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values and are obtained from your glass supplier.
4. Overall U-Factor, SHGC, and VT Matricies are based on the standard NFRC specimen size of 1,000 mm wide by 2,000 mm high (39-3/8" by 78-3/4").

SHGC Matrix <sup>2</sup>

Glass SHGC <sup>3</sup>	Overall SHGC <sup>4</sup>
0.75	0.51
0.70	0.47
0.65	0.44
0.60	0.41
0.55	0.38
0.50	0.34
0.45	0.31
0.40	0.28
0.35	0.25
0.30	0.21
0.25	0.18
0.20	0.15
0.15	0.12
0.10	0.08
0.05	0.05

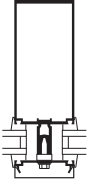

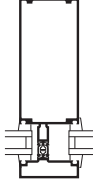
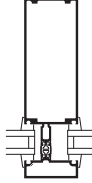
Visible Transmittance <sup>2</sup>

Glass VT <sup>3</sup>	Overall VT <sup>4</sup>
0.75	0.49
0.70	0.46
0.65	0.42
0.60	0.39
0.55	0.36
0.50	0.33
0.45	0.29
0.40	0.26
0.35	0.23
0.30	0.20
0.25	0.16
0.20	0.13
0.15	0.10
0.10	0.07
0.05	0.03

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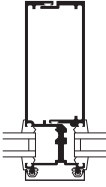
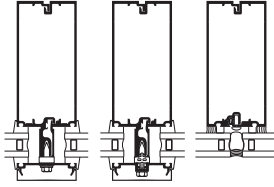
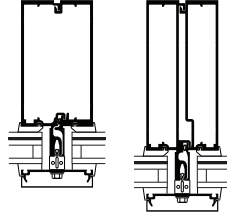
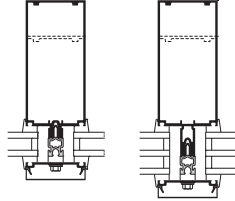


Product	1600 Wall System™1 Curtain Wall	1600 Wall System™2 Curtain Wall	1600 Wall System™3 Curtain Wall	1600 Wall System™4 Curtain Wall
Catalog Section	Curtain Walls	Curtain Walls	Curtain Walls	Curtain Walls
Typical Detail				
Sightline	2-1/2"	2-1/2"	2-1/2"	2-1/4"
Depths	6", 7-1/2"	6", 7-1/2"	6", 7-1/2"	6", 7-1/2"
Applications	Low to Mid-Rise	Low to Mid-Rise	Low to High-Rise	Low to High-Rise
Infill Options	Up to 1-1/8"	Up to 1"	Up to 1"	Up to 1"
Glazing Options	Outside Glazed	Outside Glazed	Inside Glazed Outside Glazed	Inside Glazed Outside Glazed
Thermal	Silicone Compatible Elastomer, Fiberglass Pressure Plate Available	Silicone Compatible Elastomer, Fiberglass Pressure Plate Available	IsoStrut™	IsoStrut™ or Optional IsoLock™ Pour and Debridge
SSG	No	Yes	Optional	No
2 Color Option	Yes	Yes	Yes	Yes
Integrated Entrance Framing	Yes	Yes	No	No
Windows Integration	Yes	Yes	Yes	Yes
GLASSvent™ Integration	Yes	Yes	Yes	Yes
Versoleil™ Sunshade Integration	Yes	Yes	No	No
Fabrication Method	Shear Block	Shear Block	Shear Block	Shear Block Screw Spine
Product Description	An outside glazed pressure wall that is designed to easily integrate with 1600 Wall System™2. It is ideal for low to mid-rise curtain wall applications where high performance is desired. It is also the right choice for high-span applications.	A silicone glazed ribbon window system that eliminates exterior vertical covers and offers fast "stick" erection and inside glazing.	An inside/outside glazed pressure wall that utilizes the IsoStrut™ thermal break on the vertical mullion. This provides superior structural and thermal performance. Spandrel glazing and/or re-glazing is easily handled from the exterior.	A lower profile pressure wall that utilizes the IsoStrut™ thermal break for superior structural and thermal performance. A 6" ribbon window version is available with the IsoLock™ Pour and Debridge Thermal Break.
Testing for Protective Glazing	Small Missile, Large Missile, Blast Mitigation	Small Missile Large Missile	—	—
Performance Test Standards	AAMA 501.1, AAMA 501.4, AAMA 507, AAMA 1503, ASTM E90, ASTM E283, ASTM E330, ASTM E331, ASTM F1642, ASTM E1886, ASTM E1996, CSA-A440-00, NFRC 100/200/500, TAS 201, 202, 203, UFC 4-010-01	AAMA 501.1 AAMA 507 AAMA 1503 ASTM E90 ASTM E283 ASTM E330 ASTM E331 CSA-A440 NFRC 100/200/500	AAMA 501.1 AAMA 507 AAMA 1503 ASTM E283 ASTM E330 ASTM E331 NFRC 100/200/500	AAMA 501.1 AAMA 507 AAMA 1503 ASTM E283 ASTM E330 ASTM E331 NFRC 100/200/500

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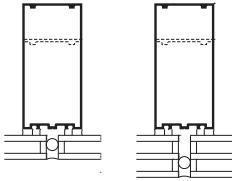
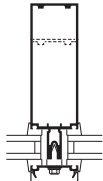
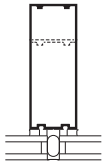
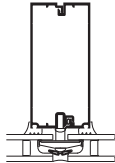
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Product	1600 Wall System™5 Curtain Wall	1600 SS Curtain Wall System	1630 SS IR Curtain Wall System	1600UT System™1 Curtain Wall
Catalog Section	Curtain Walls	Curtain Walls	Curtain Walls	Curtain Walls
Typical Detail				
Sightline	2-1/2"	2-1/2"	3"	2-1/2"
Depths	6", 7-1/2"	6", 7-1/2"	7-13/16", 8-13/16"	6", 7-1/2"
Applications	Low to High-Rise	Low to High-Rise	Low to Mid-Rise	Low to Mid-Rise
Infill Options	Up to 1"	Up to 1-1/8"	1-5/16"	1", 1-1/4", 1-5/16", and 1-3/4"
Glazing Options	Inside Glazed	Outside Glazed	Outside Glazed	Outside Glazed
Thermal	PVC Isolator Clip	Silicone Compatible Elastomer	Silicone Compatible Elastomer	Engineered Polymer Separator
SSG	Optional	Optional	No	No
2 Color Option	Yes	Yes	Yes	Yes
Integrated Entrance Framing	Yes	Yes	Yes	Yes
Windows Integration	Yes	Yes	Yes	Yes
GLASSvent™ Integration	Yes	Yes	No	Yes
Versoleil™ Sunshade Integration	Yes	Yes	Yes	Yes
Fabrication Method	Screw Spline - Type A Screw Spline - Type B Shear Block	Screw Spline	Screw Spline	Shear Block
Product Description	A high performance ribbon window or curtain wall system. Male/Female split vertical mullion option available for easier assembly and installation.	An outside glazed pressure wall that is designed to be fabricated and assembled in the shop. It is ideal for low to mid-rise curtain wall applications where high performance is desired. Also available in a pre-glazed version - 1600 SS Unitwall™.	A high performance outside glazed curtain wall that has been tested at high structural load pressures and meets high velocity impact zone product approval requirements. With screw-spline architecture and both dry and wet glazing options available, 1630 SS IR is easy and fast to install.	High thermal performance curtain wall system with excellent condensation resistance. Accommodates 1", 1-1/4" and 1-5/16" double and 1-3/4" triple glazing. Full integration with Kawneer's high performing entrance and window products. Ideal for low rise, mid rise and high-span applications.
Testing for Protective Glazing	—	Blast Mitigation	Small Missile, Large Missile, Blast Mitigation	Storm Shelter
Performance Test Standards	AAMA 501.1 AAMA 501.4 AAMA 507 AAMA 1503 ASTM E283 ASTM E330 ASTM E331 ASTM E1425 NFRC 100/200/500	AAMA 501.1, AAMA 507, AAMA 1503, AAMA 1801, ASTM E90, ASTM E283, ASTM E330, ASTM E331, ASTM E1425, ASTM F1642, CSA-A440, NFRC 100/200/500, UFC 4-010-01	AAMA 501.1, AAMA 507, AAMA 1503, AAMA 1801, ASTM E90, ASTM E283, ASTM E330, ASTM E331, ASTM E1425, ASTM E1886, ASTM E1996, ASTM F1642, CSA-A440, UFC 4-010-01, NFRC 100/200/500, TAS 201, 202, 203	AAMA 501, AAMA 501.1, AAMA 501.5, AAMA 507, AAMA 520, AAMA 1801, AAMA 1503, ASTM E90, ASTM E283, ASTM E330, ASTM E331, ASTM E1425, CSA-A440, ICC 500, NFRC 100/200/500, TAS 202

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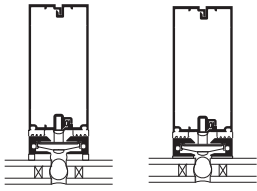

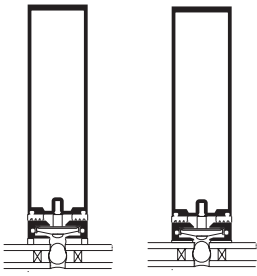
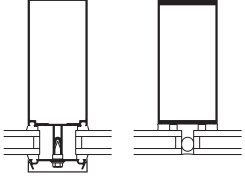
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Product	1600UT System™ <sup>2</sup> Curtain Wall	1620 Curtain Wall System	1620 SSG Curtain Wall System	Clearwall™ SS Curtain Wall System
Catalog Section	Curtain Walls	Curtain Walls	Curtain Walls	Curtain Walls
Typical Detail				
Sightline	2-1/2"	2"	2"	(2-1/2") Flush Glass Exterior
Depths	6-3/4", 8-1/4"	6", 7-1/2"	6", 7-1/2"	5-1/8", 6-5/8"
Applications	Low to Mid-Rise	Low to Mid-Rise	Low to Mid-Rise	Low Rise
Infill Options	1", 1-1/4", 1-5/16", and 1-3/4"	1/4" and 1"	1/4" and 1"	1-1/8"
Glazing Options	Outside Glazed	Outside Glazed	Outside Glazed	Outside Glazed
Thermal	Engineered Polymer Separator	Silicone Compatible Elastomer, Fiberglass Pressure Plate	Silicone Compatible Elastomer, Fiberglass Pressure Plate	ABS Base on Toggles
SSG	Yes	No	Yes	Toggle Glazed (TG) with recessed spacer, insulating glass unit.
2 Color Option	Yes	Yes	Yes	Yes
Integrated Entrance Framing	Yes	Yes	Yes	Yes
Windows Integration	Yes	Yes	Yes	No
GLASSvent™ Integration	Yes (1" Double Glazing Only)	Yes (1" Double Glazing Only)	Yes (1" Double Glazing Only)	No
Versoleil™ Sunshade Integration	No	Yes	No	No
Fabrication Method	Shear Block	Shear Block	Shear Block	Screw Spline
Product Description	Structural silicone glazed (SSG) curtain wall system with high thermal performance and excellent condensation resistance. Accommodates 1", 1-1/4" and 1-5/16" double and 1-3/4" triple glazing. Full integration with Kawneer's high thermal performing entrance and window products. Ideal for low rise, mid rise and high-span applications.	Outside glazed pressure wall that is designed to easily integrate with 1620 SSG. It is ideal for low to mid-rise curtain wall applications where performance is desired.	A silicone glazed ribbon window system that eliminates exterior vertical covers and offers fast "stick" erection and inside glazing.	An outside glazed 4 sided curtain wall system, which uses an innovative toggle assembly to mechanically capture glass with recessed spacer, eliminating the need for any structural silicone. Ideal for low rise curtain wall applications where an uninterrupted all-glass aesthetic is desired.
Testing for Protective Glazing	—	—	—	—
Performance Test Standards	AAMA 501, AAMA 501.1, AAMA 501.5, AAMA 507, AAMA 520, AAMA 1801, ASTM E90, ASTM E330, ASTM E283, ASTM E331, ASTM E1425, CSA-A440, TAS 202, NFRC 100/200/500	AAMA 501, AAMA 501.5, AAMA 507, AAMA 520, AAMA 1503, AAMA 1801, ASTM E90, ASTM E283, ASTM E330, ASTM E331, ASTM E1425, CSA-A440, TAS 202, NFRC 100/200/500	AAMA 501, AAMA 501.5, AAMA 507, AAMA 520, AAMA 1801, ASTM E90, ASTM E330, ASTM E283, ASTM E331, ASTM E1425, CSA-A440, NFRC 100/200/500, TAS 202	AAMA 501, AAMA 501.1, AAMA 501.4, AAMA 501.5, AAMA 507, AAMA 520, AAMA 1503, ASTM E90, ASTM E283, ASTM E330, ASTM E331, ASTM E1425, CSA-A440, NFRC 100/200/500, TAS 202

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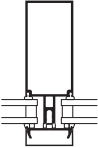
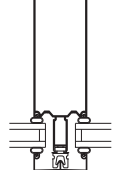
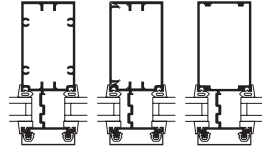
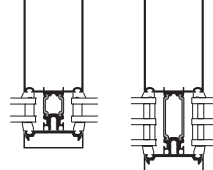
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Product	Clearwall™ SSI Clearwall™ SSIT Curtain Wall Systems	Clearwall™ SB Curtain Wall System	Clearwall™ SBI Clearwall™ SBIT Curtain Wall Systems	1600 LR Wall™ Curtain Wall System
Catalog Section	Curtain Walls			
Typical Detail				
Sightline	(2-1/2") Flush Glass Exterior	(2-1/2") Flush Glass Exterior	(2-1/2") Flush Glass Exterior	2-1/2"
Depths	SSI - 6", 7-1/2" SSIT - 5-7/8", 7-3/8"	SB - 10-1/8"	SBI - 11" SBIT - 10-27/32"	5-3/4", 7-1/4"
Applications	Low Rise	Low Rise	Low Rise	Low Rise
Infill Options	1"	1-1/8"	1"	1/4" and 1"
Glazing Options	Outside Glazed	Outside Glazed	Outside Glazed	Outside Glazed
Thermal	ABS Base on Toggles	ABS Base on Toggles	ABS Base on Toggles	Silicone Compatible Elastomer
Structural Silicone Glazed (SSG) or Toggle Glazed (TG)	Toggle Glazed with metal interface attached to insulating glass unit, using Structural Silicone or 3M™ VHB™ Structural Glazing Tape.	Toggle Glazed (TG) with recessed spacer, insulating glass unit.	Toggle Glazed with metal interface attached to insulating glass unit, using Structural Silicone or 3M™ VHB™ Structural Glazing Tape.	Optional
2 Color Option	Yes	Yes	Yes	Yes
Integrated Entrance Framing	Yes	Yes	Yes	Yes
Windows Integration	No	No	No	Yes
GLASSvent™ Integration	No	No	No	Yes
Versoleil™ Sunshade Integration	No	No	No	No
Fabrication Method	Screw Spline	Shear Block	Shear Block	Shear Block
Product Description	An outside glazed 4 sided curtain wall system, which uses an innovative toggle assembly to mechanically capture metal interface attached to glass. Ideal for low rise curtain wall applications where an uninterrupted all-glass aesthetic is desired.	An outside glazed 4 sided curtain wall system, which uses an innovative toggle assembly to mechanically capture glass with recessed spacer, eliminating the need for any structural silicone. Ideal for low rise curtain wall applications where an uninterrupted all-glass aesthetic when high free spans are desired.	An outside glazed 4 sided curtain wall system, which uses an innovative toggle assembly to mechanically capture metal interface attached to glass. Ideal for low rise curtain wall applications where an uninterrupted all-glass aesthetic when high free spans are desired.	An economical stock length, outside glaze pressure wall system. Shear block construction utilizing concealed fasteners. Ideal for low-rise applications up to 4 stories.
Testing for Protective Glazing	—	—	—	—
Performance Test Standards	AAMA 501, AAMA 501.1, AAMA 501.4, AAMA 501.5, AAMA 507, AAMA 520, AAMA 1503, ASTM E90, ASTM E283, ASTM E330, ASTM E331, ASTM E1425, CSA-A440, NFRC 100/200/500, TAS 202	Refer to Clearwall™ SS performance standards	Refer to Clearwall™ SSI and SSIT performance standards	AAMA 501.1, AAMA 501.4, AAMA 507, AAMA 1503, ASTM E283, ASTM E330, ASTM E331, ASTM E1425, NFRC 100/200/500

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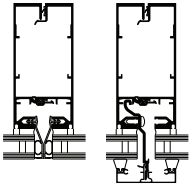
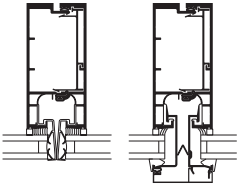
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Product	1602 Wall System	2250 L-R Wall System	2250 IG Curtain Wall System	7500 Wall™ Curtain Wall System
Catalog Section	Curtain Walls	Curtain Walls	Curtain Walls	Curtain Walls
Typical Detail				
Sightline	2"	2-1/4"	2-1/4"	2-1/2"
Depths	5", 6"	4-1/4", 5", 6-1/2", 7-1/4"	4-1/2", 6", 7-1/2"	6-5/16, 7-5/16"
Applications	Low to Mid-Rise	Low Rise	Low to High-Rise	Low to High-Rise
Infill Options	Up to 1"	Up to 1"	Up to 1"	1/8", 1/4", 1" and 2"
Glazing Options	Outside Glazed	Outside Glazed	Inside Glazed	Outside Glazed
Thermal	PVC Isolator	Polymer Glazing Clip	PVC Isolator Clip	IsoWeb™
SSG	No	Optional	Optional	No
2 Color Option	Yes	Yes	Yes	Yes
Integrated Entrance Framing	Yes	Yes	No	Yes
Windows Integration	Yes	Yes	Yes	Yes
GLASSvent™ Integration	Yes	Yes	Yes	No
Versoleil™ Sunshade Integration	No	No	No	No
Fabrication Method	Shear Block	Shear Block	Screw Spline - Type A Screw Spline - Type B Shear Block	Shear Block
Product Description	An outside glazed pressure wall that is designed to be fabricated and assembled in the shop. It is ideal for low to mid-rise curtain wall applications where high performance is desired.	High thermal performance curtain wall system with excellent condensation resistance. Accommodates 1" double and 1-3/4" triple glazing. Full integration with Kawneer's high performing entrance and window products. Ideal for low rise, mid rise and high-span applications.	Structural silicone glazed (SSG) curtain wall system with high thermal performance and excellent condensation resistance. Accommodates 1" double and 1-3/4" triple glazing. Full integration with Kawneer's high thermal performing entrance and window products. Ideal for low rise, mid rise and high-span applications.	A high performance pressure wall system that has exceptional thermal performance and resistance to water condensation. It will accommodate 1" double or 2" triple glazing. 7500 Wall is ideal for low to high-rise applications.
Testing for Protective Glazing	—	—	—	—
Performance Test Standards	ASTM E283 ASTM E331 CAN3-S157 CAN/CSA-A440	AAMA 501.1 AAMA 507 AAMA 1503 ASTM E283 ASTM E330 ASTM E331 NFRC 100/200/500	AAMA 501.1 AAMA 507 AAMA 1503 ASTM E283 ASTM E330 ASTM E331 NFRC 100/200/500	AAMA 507 ASTM E283 ASTM E330 ASTM E331 ASTM E547 CSA-A440 NFRC 100/200/500

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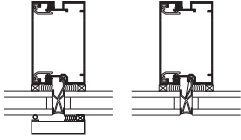
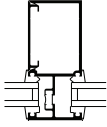
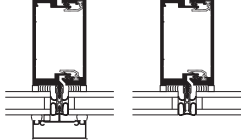
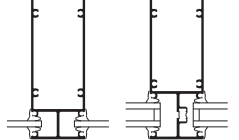
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Product	2500 UT Unitwall™ System	2500 PG Wall™ Curtain Wall System		
Catalog Section	Unitized Curtain Walls	Unitized Curtain Walls		
Typical Detail				
Sightline	2-1/2"	2-1/2"		
Depths	6-1/2 SSG 7-1/2" Captured	7-1/2"		
Applications	Mid-High Rise	Low to High-Rise		
Infill Options	1"	1/4" and 1"		
Glazing Options	Pre-Glazed	Pre-Glazed		
Thermal	Polyamide	Silicone Compatible Elastomer		
SSG	Yes	Optional		
2 Color Option	Yes	Yes		
Integrated Entrance Framing	No	No		
Windows Integration	No	Yes		
GLASSvent™ Integration	Captured Only	Yes (with 4 Side Captured)		
Versoleil™ Sunshade Integration	No	No		
Fabrication Method	Screw Spline	Screw Spline		
Product Description	A high performance unitized curtain wall system. Shipped fabricated for customer unit assembly and installation. The product has (4) types: - 4 Side Captured - 4 Side SSG - Vertical SSG	A high performance unitized curtain wall system. Shipped fabricated for customer unit assembly and installation. The product has (4) types: - 4 Side Captured - 4 Side SSG - Vertical SSG - Horizontal SSG		
Testing for Protective Glazing	—	Large Missile		
Performance Test Standards	AAMA 501, AAMA 501.1, AAMA 501.4, AAMA 501.5, AAMA 501.7, AAMA 507, AAMA 1503, AAMA 1801, ASTM E90, ASTM E283, ASTM E330, ASTM E331, ASTM E1425, CSA-A440, NFRC 100/200/500, TAS 202	AAMA 501.1, AAMA 507, AAMA 1503, AAMA 1801, ASTM E90, ASTM E283, ASTM E330, ASTM E331, ASTM E1425, ASTM E1886, ASTM E1996, CSA-A440, NFRC 100/200/500		

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Product	PG 123™ Framing	MetroView™ FG 501T Window Wall	MetroView™ FG 601T PG Window Wall	FG 623 Window Wall
Catalog Section	Window Walls	Window Walls	Window Walls	Window Walls
Typical Detail				
Sightline	2-1/4"	2-1/4"	2-1/4"	2-1/4"
Depths	6"	5"	6"	6"
Applications	Pre-Glazed Exterior Ribbon Windows & Multi-Lite Punched Openings	Single or Multi-Lite Punched Openings	Single or Multi-Lite Punched Openings	Single or Multi-Lite Punched Openings
Infill Options	1/4" and 1"	1"	1" and 1-3/16"	1/4" and 1"
Glazing Options	Pre-Glazed or Inside Glazed Units	Inside Glazed or Outside Glazed	Pre-Glazed	Inside Glazed
Thermal	IsoWeb™ and silicone compatible elastomer	IsoLock™	IsoLock™	IsoLock™
SSG	Yes	No	Yes	No
2 Color Option	Yes	No	Yes	No
Integrated Entrance Framing	No	Yes	Yes	No
Windows Integration	No	Yes	Yes	Yes
GLASSvent™ Integration	No	Yes	Yes	No
Versoleil™ Sunshade Integration	No	No	No	No
Fabrication Method	Screw Spline	Screw Spline	Screw Spline	Shear Block and Screw Spline
Product Description	A pre-assembled and pre-glazed ribbon window and multi-lite punched opening system. An Alcryn rain screen gasket provides the "silicone glazed" appearance without running the exterior silicone weather seal. Optional vertical covers provide a four-side captured appearance.	A 2-1/4" x 5" punched opening window for single or multi-lite openings. It offers a flush metal to exterior appearance, to complement the "glass to the front" look.	A 2-1/4" x 6" punched opening window for single or multi-lite openings. It offers a flush metal to exterior appearance, to complement the "glass to the front" look.	A 2-1/4" x 6" punched opening window for single or multi-lite openings. It offers a flush metal to exterior appearance, to complement the "glass to the front" look.
Testing for Protective Glazing	—	—	—	Small Missile Large Missile
Performance Test Standards	AAMA 501 AAMA 507 AAMA 1503 AAMA 1801 ASTM E283 ASTM E330 ASTM E331 NFRC 100/200/500	AAMA 507, AAMA 520, AAMA 1503, AAMA 1801, ASTM E90, ASTM E283, ASTM E330, ASTM E331, ASTM E547, ASTM E1425, ASTM E1886, ASTM E1996, NFRC 100/200/400/500, TAS 202	AAMA 507, AAMA 520, AAMA 1503, AAMA 1801, ASTM E90, ASTM E283, ASTM E330, ASTM E331, ASTM E547, ASTM E1425, ASTM E1886, ASTM E1996, NFRC 100/200/400/500, TAS 202	AAMA 507 AAMA 1503 ASTM E283 ASTM E330 ASTM E331 ASTM E1886 ASTM E1996 NFRC 100/200/500

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## **Features**

- 1600 Wall System™1 is an outside glazed captured curtain wall
- 1600 Wall System™1 has a 2-1/2" (63.5) sight line
- Standard 6" (152.4) or 7-1/2" (190.5) depth systems
- Standard infill options 1/4" (6.4) and 1" (25.4), other infills available
- Thermally Broken by means of a continuous 1/4" (6.4) low conductance spacer
- Concealed fastener joinery creates smooth, monolithic appearance
- Open-back horizontals and perimeters are available for cost savings
- Shear block fabrication method
- Corners and splayed mullions available
- Offers integrated entrance framing systems
- Silicone compatible glazing materials for long-lasting seals
- 1600 Wall System™1 has been small and large missile impact and cycle tested
- Two color option
- Permanodic™ anodized finishes in seven choices
- Painted finishes in standard and custom choices

## **Optional Features**

- Steel reinforcing available
- Rain screen and backpans
- Optional deep profile and bull nose covers available
- Deep and heavy-weight mullions available
- Fiberglass pressure plates available
- Veneer system available
- Integrates with standard Kawneer windows and GLASSvent™ windows for curtain wall
- Integrates with Versoleil™ Sunshade Outrigger System and Horizontal or Vertical Single Blade System
- Integrates with 1600 PowerShade™
- Profit\$Maker™ plus die sets available
- Hurricane impact resistant framing options: 7-1/16" (179.4), 7-13/16" (198.4), 10-1/16" (255.6) & 10-13/16" (274.6)

## **Product Applications**

- Ideal for low to mid-rise applications where high performance is desired
- It also is the right choice for high span applications

For specific product applications,  
Consult your Kawneer representative.



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**Architects** - Most extrusion and window types illustrated in this catalog are standard products for Kawneer. These concepts have been expanded and modified to afford you design freedom. Some miscellaneous details are non-standard and are intended to demonstrate how the system can be modified to expand design flexibility. Please contact your Kawneer representative for further assistance.

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LAWS AND BUILDING AND SAFETY CODES GOVERNING THE DESIGN AND USE OF GLAZED ENTRANCE, WINDOW, AND CURTAIN WALL PRODUCTS VARY WIDELY. KAWNEER DOES NOT CONTROL THE SELECTION OF PRODUCT CONFIGURATIONS, OPERATING HARDWARE, OR GLAZING MATERIALS, AND ASSUMES NO RESPONSIBILITY THEREFOR.

Metric (SI) conversion figures are included throughout these details for reference. Numbers in parentheses ( ) are millimeters unless otherwise noted.

The following metric (SI ) units are found in these details:

- m – meter
- cm – centimeter
- mm – millimeter
- s – second
- Pa – pascal
- MPa – megapascal

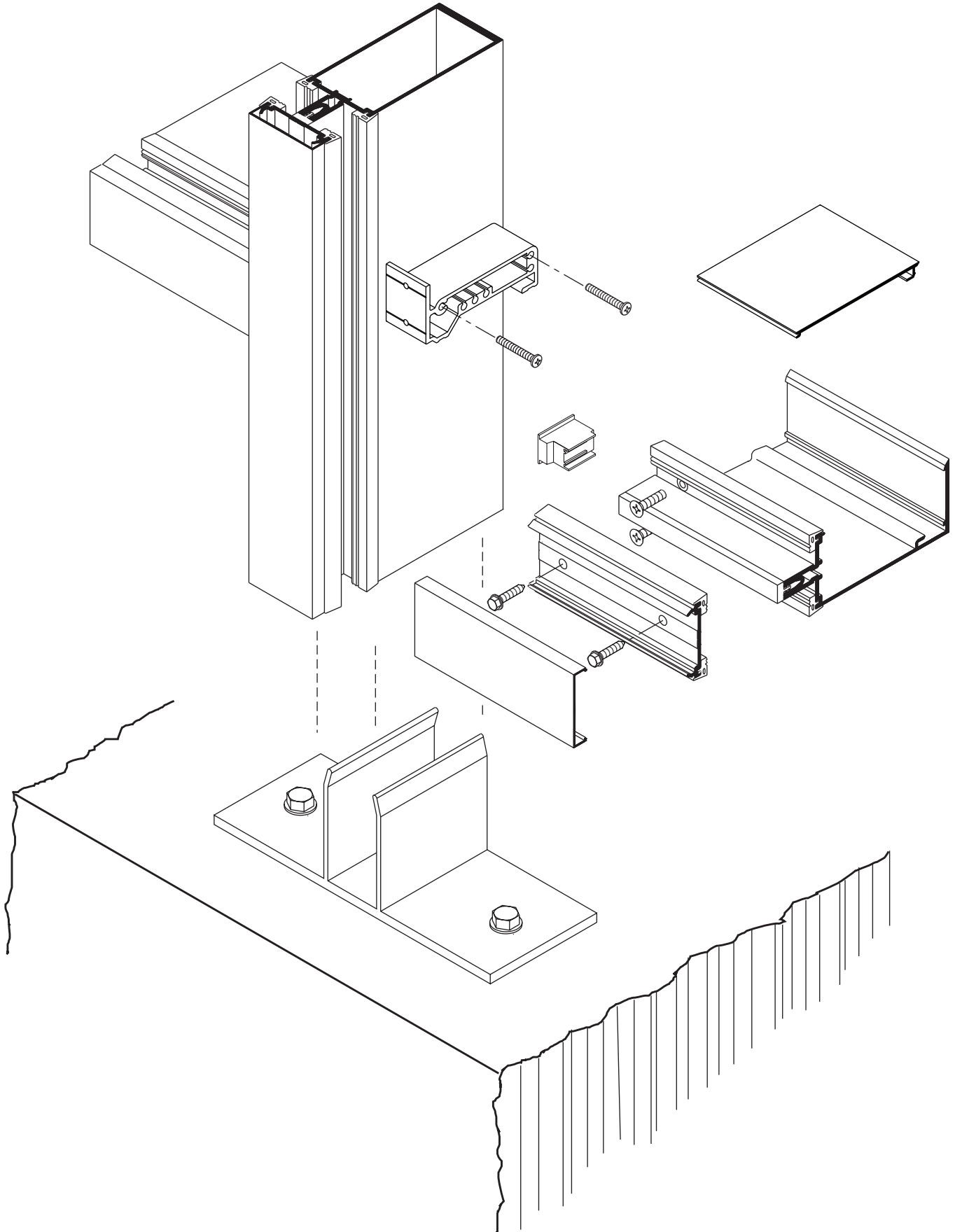
Kawneer reserves the right to change configurations without prior notice when deemed necessary for product improvement.

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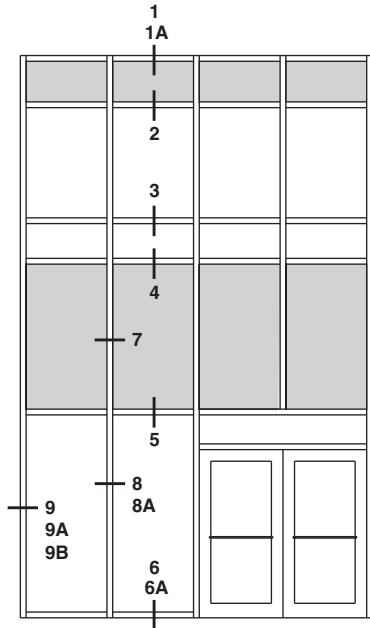
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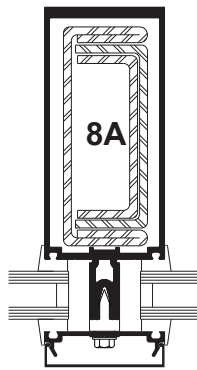
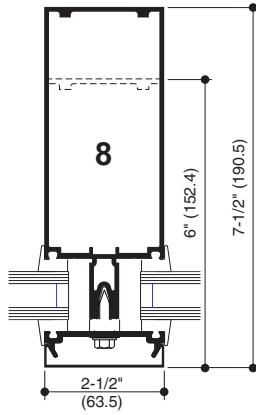
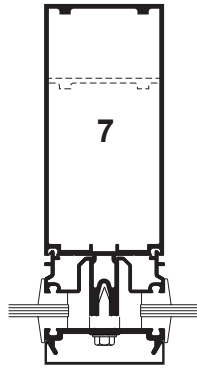
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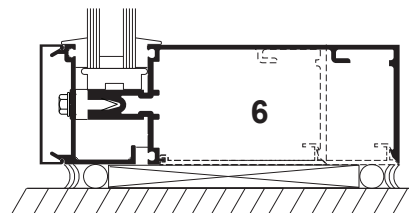
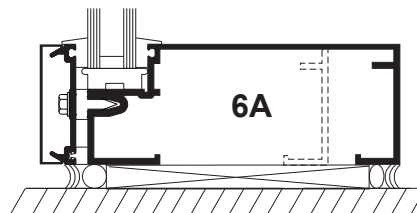
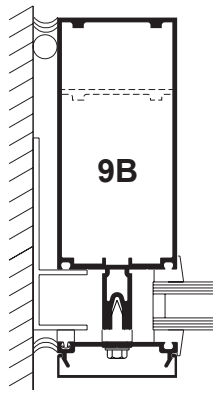
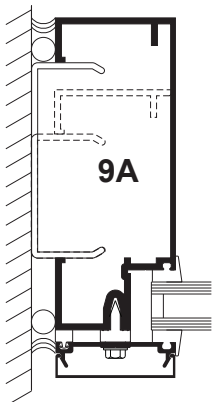
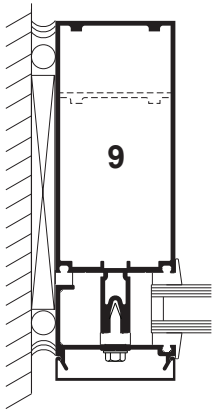
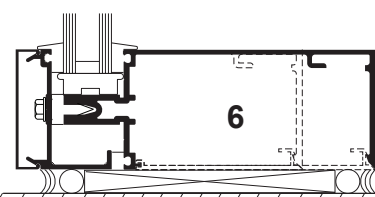
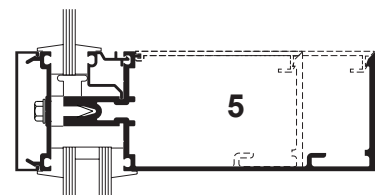
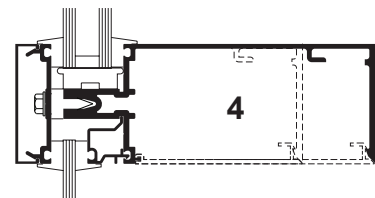
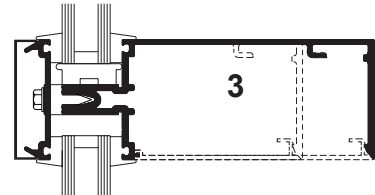
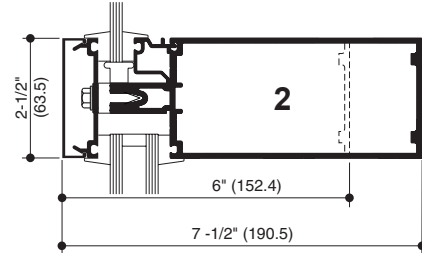
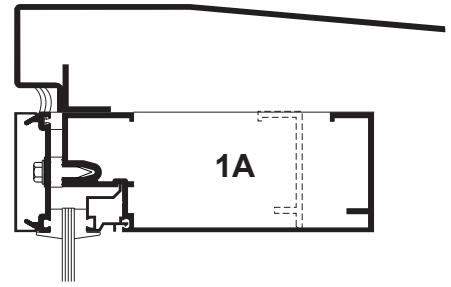
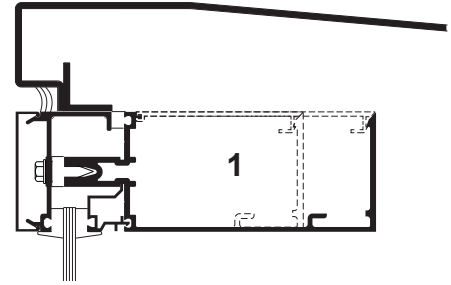
SCALE 3" = 1'-0"



ELEVATION IS NUMBER KEYED TO DETAILS



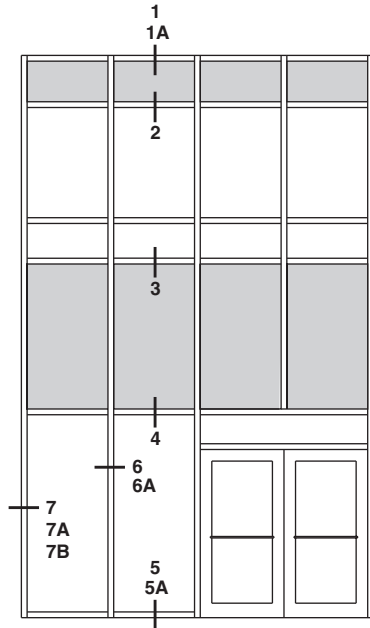
OPTIONAL STEEL REINFORCING AS REQUIRED



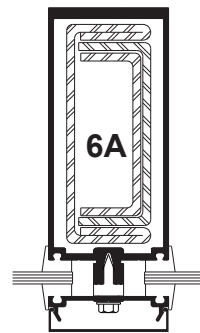
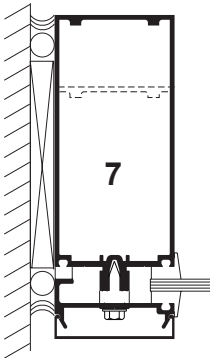
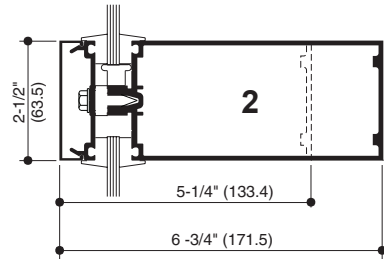
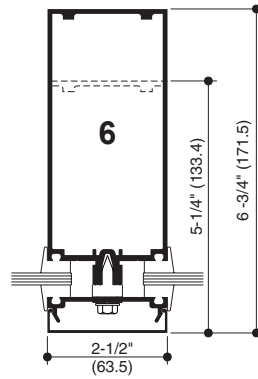
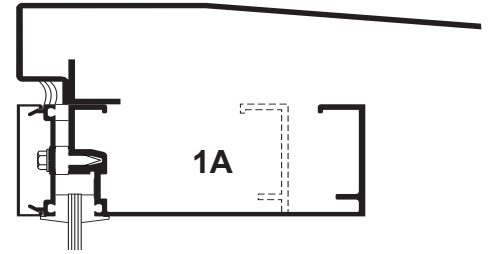
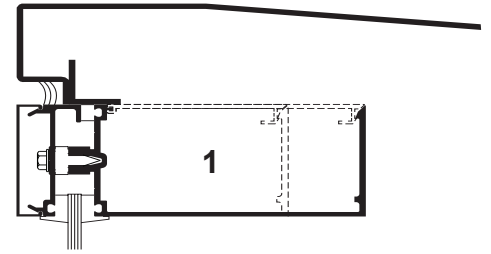
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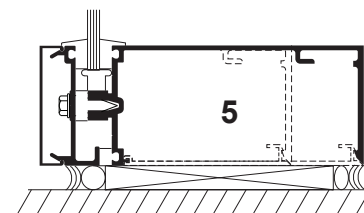
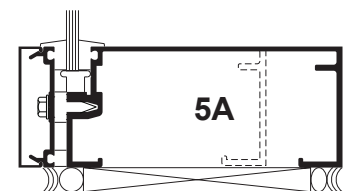
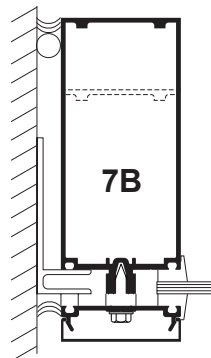
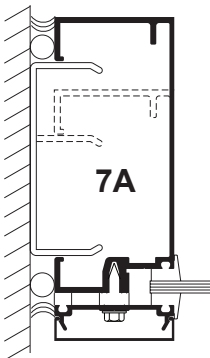
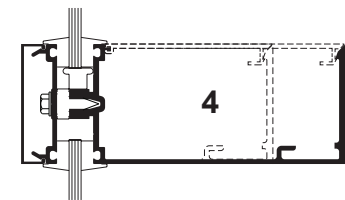
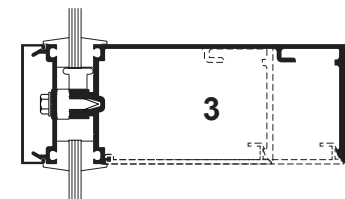
**SCALE 3" = 1'-0"**



**ELEVATION IS NUMBER KEYED TO DETAILS**



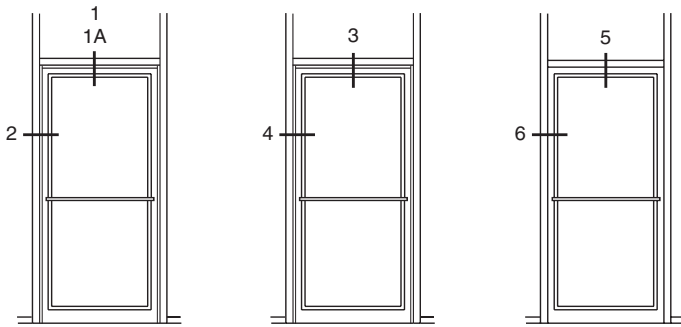
**OPTIONAL STEEL REINFORCING AS REQUIRED**



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SCALE 3" = 1'-0"

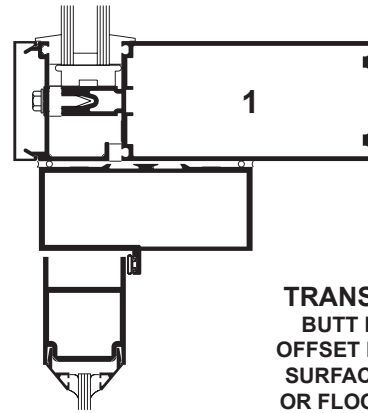


B/H OR O/P

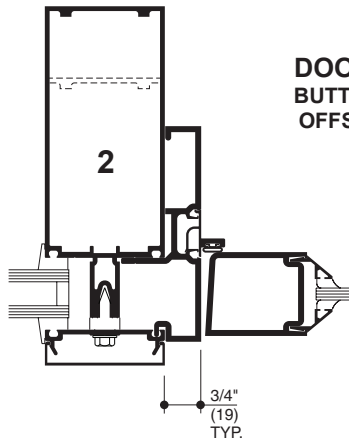
C/H

B/H OR O/P

ELEVATION IS NUMBER KEYED TO DETAILS

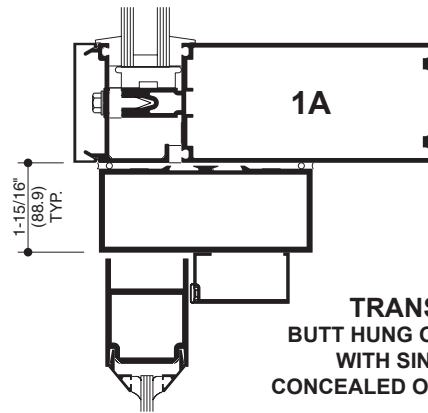


**TRANSOM BAR  
BUTT HUNG OR  
OFFSET PIVOT WITH  
SURFACE CLOSER  
OR FLOOR CLOSER**

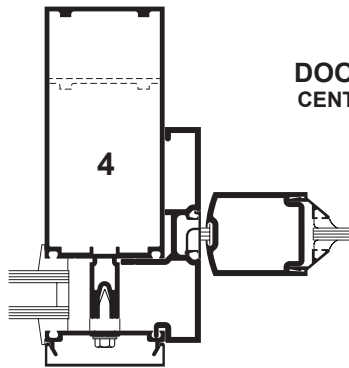


**DOOR JAMB  
BUTT HUNG OR  
OFFSET PIVOT**

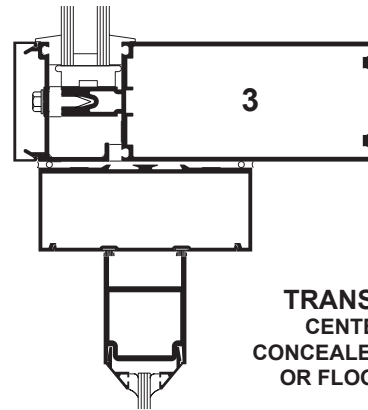
3/4"  
(19)  
TYP.



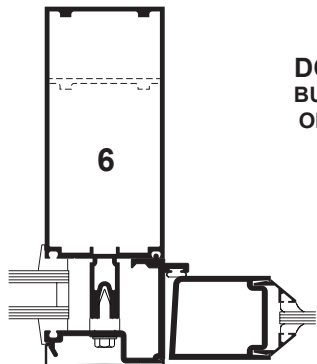
**TRANSOM BAR  
BUTT HUNG OR OFFSET PIVOT  
WITH SINGLE ACTING  
CONCEALED OVERHEAD CLOSER**



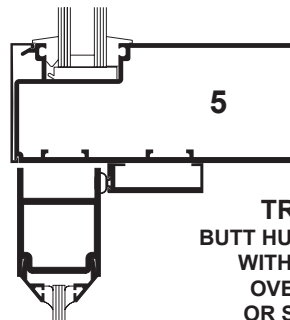
**DOOR JAMB  
CENTER HUNG**



**TRANSOM BAR  
CENTER HUNG  
CONCEALED OVERHEAD  
OR FLOOR CLOSER**



**DOOR JAMB  
BUTT HUNG OR  
OFFSET PIVOT**

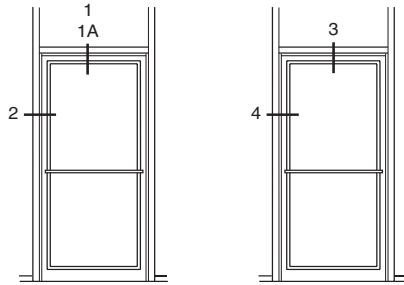


**TRANSOM BAR  
BUTT HUNG OR OFFSET PIVOT  
WITH LCN CONCEALED  
OVER HEAD CLOSER  
OR SURFACE CLOSER**

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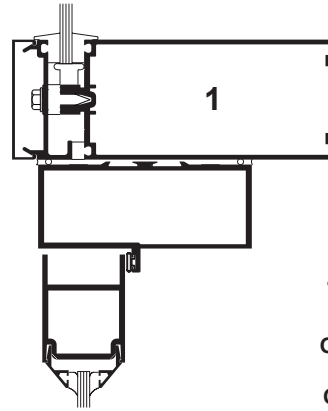
**SCALE 3" = 1'-0"**



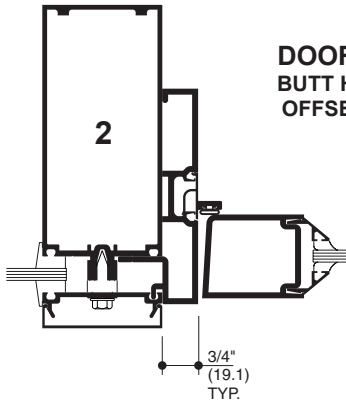
**B/H OR O/P**

**C/H**

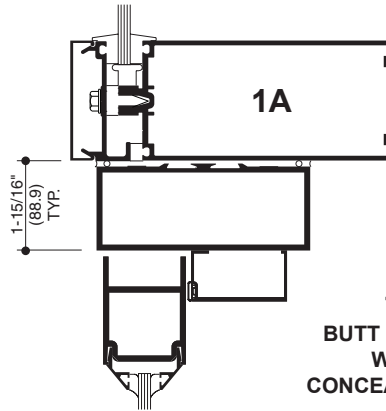
ELEVATION IS NUMBER KEYED TO DETAILS



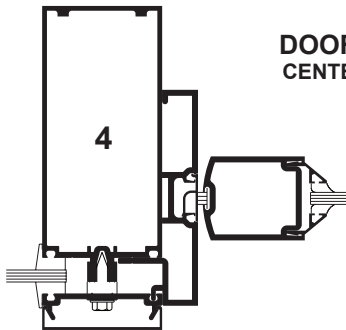
**TRANSOM BAR  
BUTT HUNG OR  
OFFSET PIVOT WITH  
SURFACE CLOSER  
OR FLOOR CLOSER**



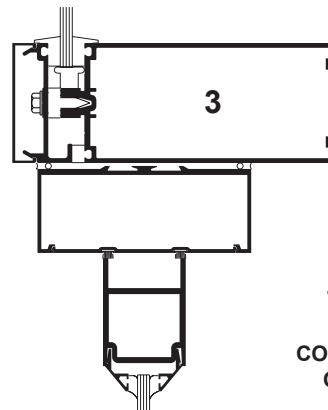
**DOOR JAMB  
BUTT HUNG OR  
OFFSET PIVOT**



**TRANSOM BAR  
BUTT HUNG OR OFFSET PIVOT  
WITH SINGLE ACTING  
CONCEALED OVERHEAD CLOSER**



**DOOR JAMB  
CENTER HUNG**



**TRANSOM BAR  
CENTER HUNG  
CONCEALED OVERHEAD  
OR FLOOR CLOSER**

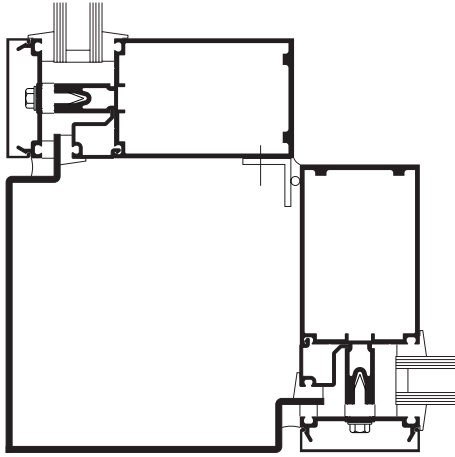
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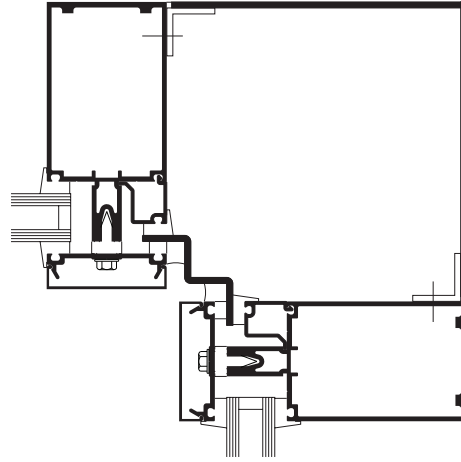


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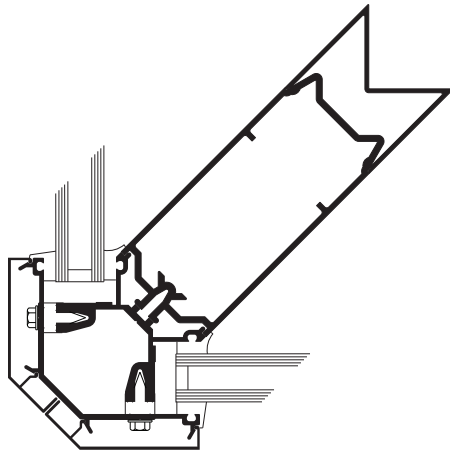
NOTE: 1" SYSTEM SHOWN, 1/4" SYSTEM SIMILAR.



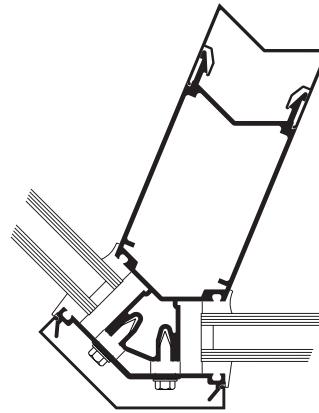
90° OUTSIDE CORNER



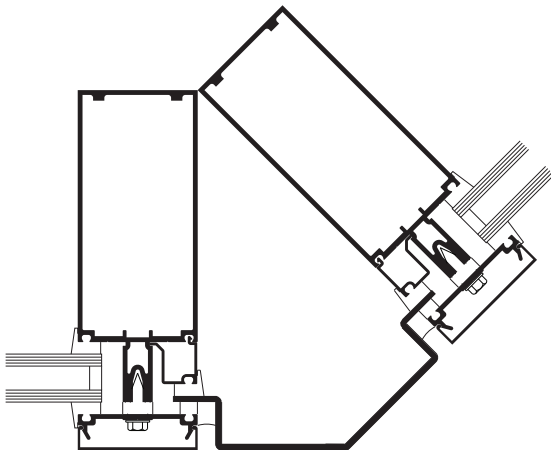
90° INSIDE CORNER



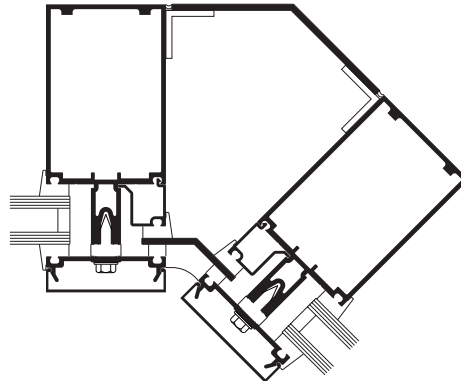
90° OUTSIDE CORNER



135° OUTSIDE CORNER



135° OUTSIDE CORNER



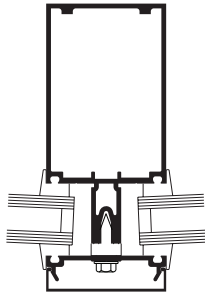
135° INSIDE CORNER

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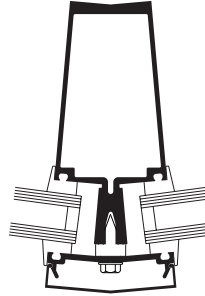
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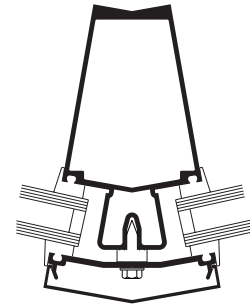
**SCALE 3" = 1'-0"**



0° TO 5°

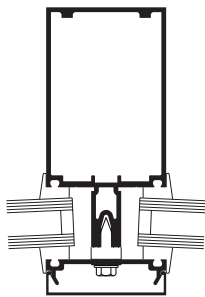


5° TO 15°

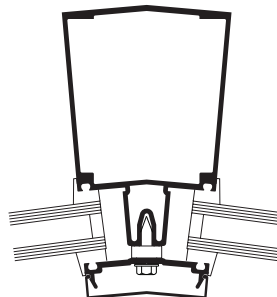


15° TO 25°

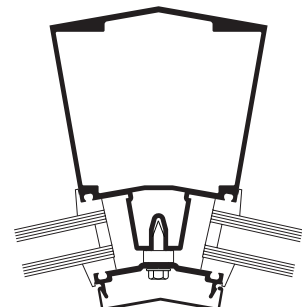
### OUTSIDE SPLAYED MULLIONS



0° TO 5°



5° TO 15°



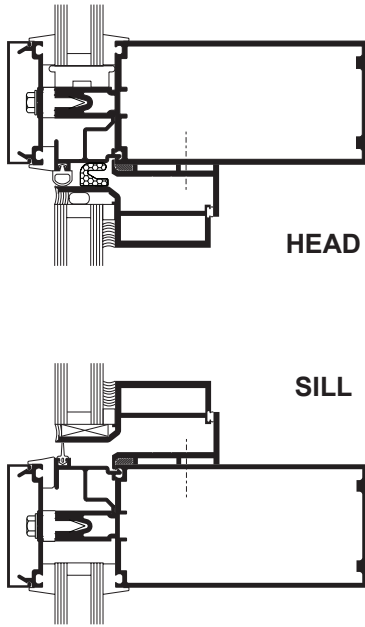
15° TO 25°

### INSIDE SPLAYED MULLIONS

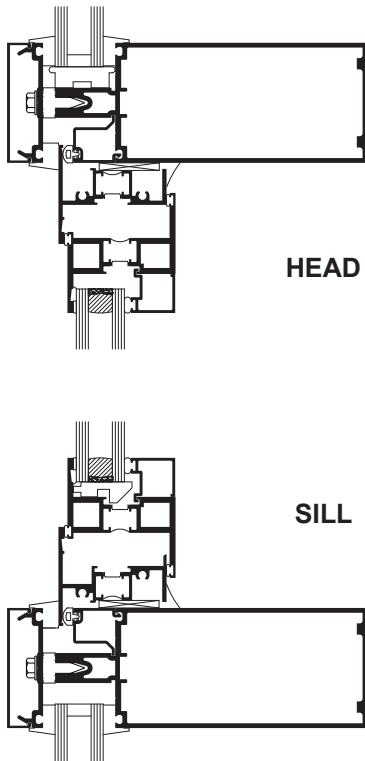
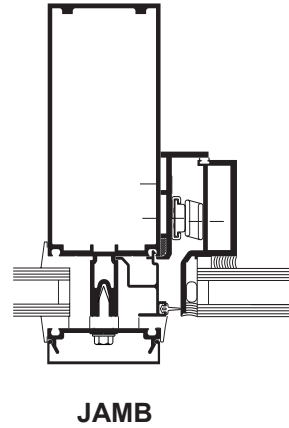
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SCALE 3" = 1'-0"

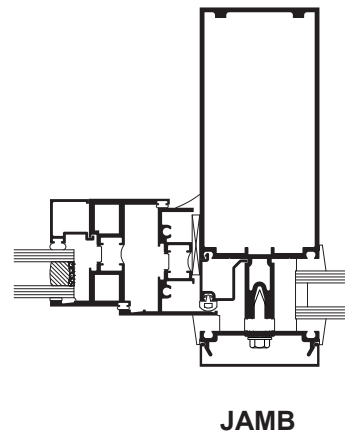


GLASSvent™ WINDOWS FOR CURTAIN WALL



8225TL THERMAL WINDOWS

NOTE: Other vent types can be accommodated. Contact your Kawneer representative for other options.



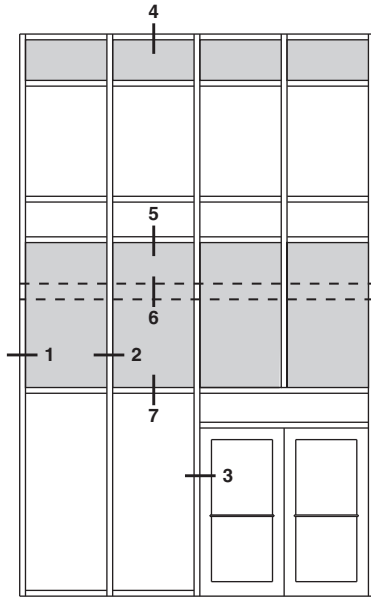
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**SCALE 3" = 1'-0"**

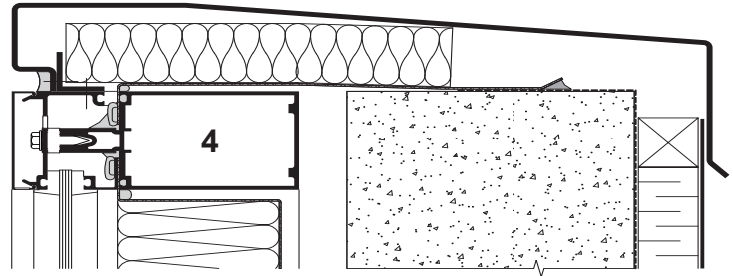
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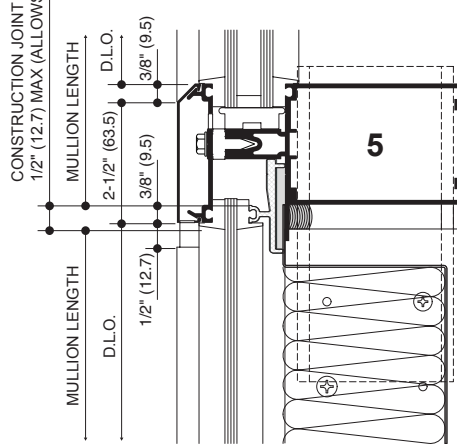


**ELEVATION IS NUMBER KEYED TO DETAILS**

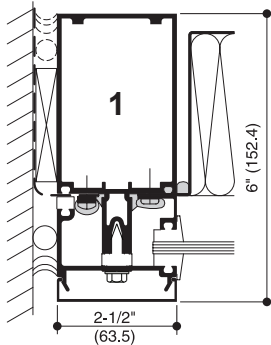
NOTE: 6" SYSTEM SHOWN, 7-1/2" SYSTEM SIMILAR



**HEAD TRANSOM AT PARAPET FLASHING**

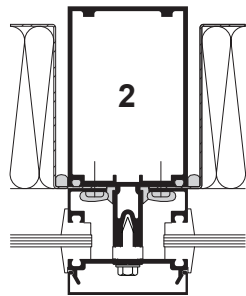


**EXPANSION JOINT**

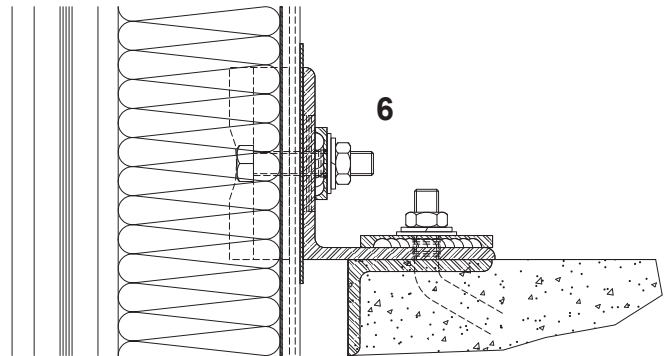


**JAMB MULLION AT SPANDREL**

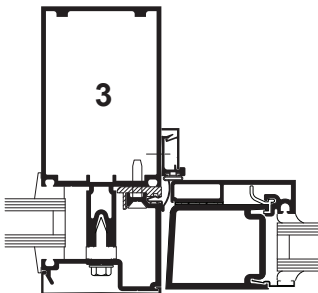
(With vapor barrier tie-in)



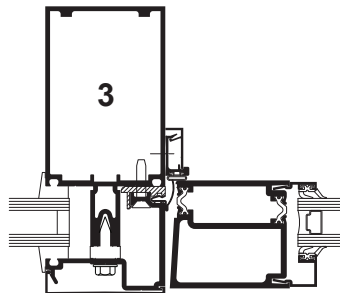
**MULLION AT SPANDREL**



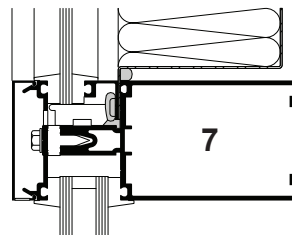
**TYPICAL DEADLOAD ANCHOR**



**THERMALLY BROKEN DOOR ADAPTOR FOR INSULCLAD DOORS**



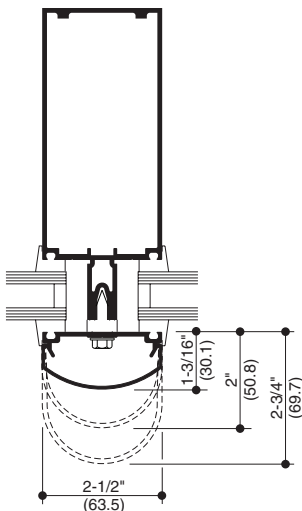
**AA™ 250 THERMAL DOOR**



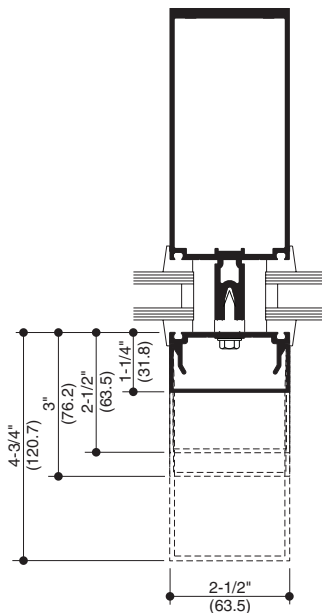
**TRANSOM - SPANDREL OVER VISION**

## SCALE 3" = 1'-0"

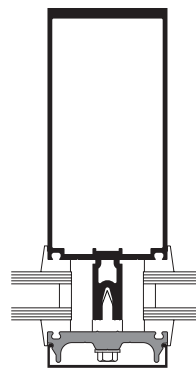
Architects – Most extrusion and window types illustrated in this catalog are standard products for Kawneer. These concepts have been expanded and modified to afford you design freedom. Some miscellaneous details are non-standard and are intended to demonstrate how the system can be modified to expand design flexibility. Please contact your Kawneer representative for further assistance.



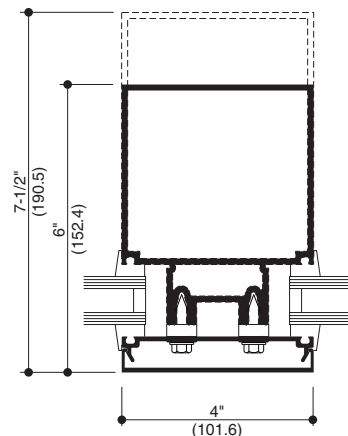
**OPTIONAL COVERS**



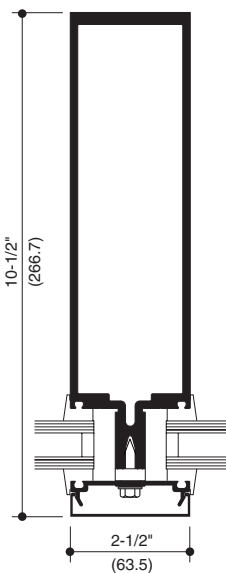
**OPTIONAL COVERS**



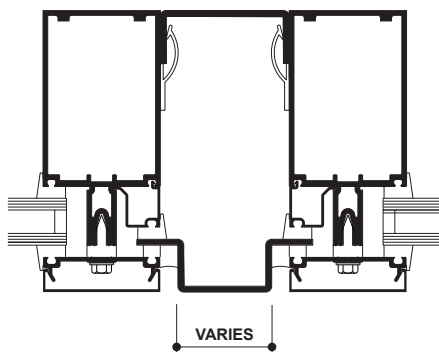
**CAPTURED MULLION (1")  
OPTIONAL FIBERGLASS PRESSURE PLATE**



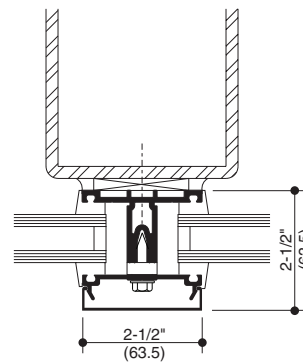
**4" SIGHT LINE**



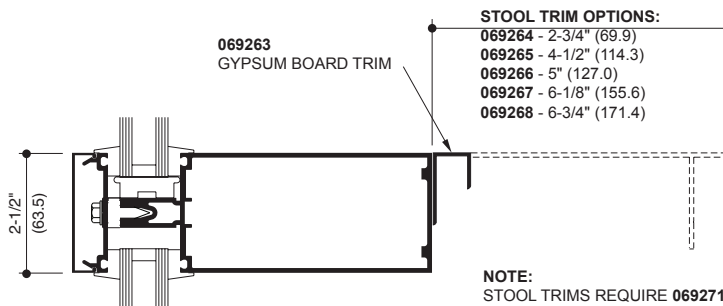
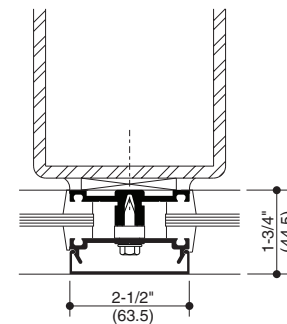
**DEEP MULLION**



**DOUBLE MULLION**



**VENEER SYSTEM**



**069263 GYPSUM BOARD TRIM**

**STOOL TRIM OPTIONS:**

- 069264 - 2-3/4" (69.9)
- 069265 - 4-1/2" (114.3)
- 069266 - 5" (127.0)
- 069267 - 6-1/8" (155.6)
- 069268 - 6-3/4" (171.4)

**NOTE:**  
STOOL TRIMS REQUIRE 069271 TRIM CLIP PACKAGE

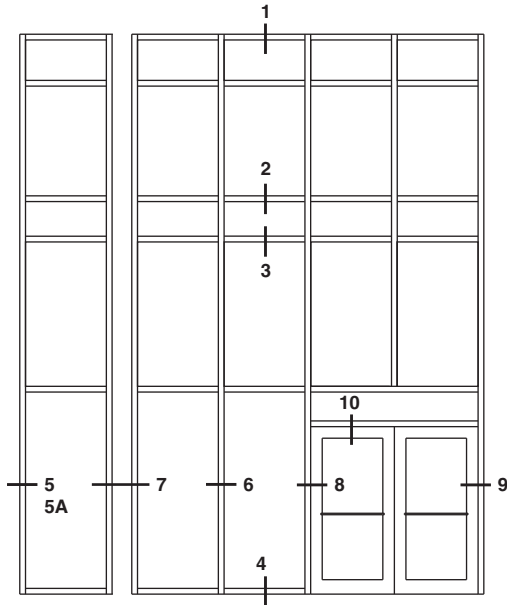
**INTERIOR STOOL TRIM**

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

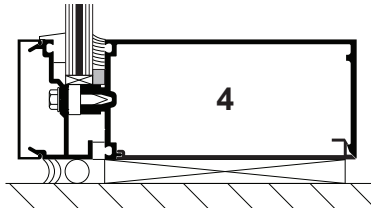
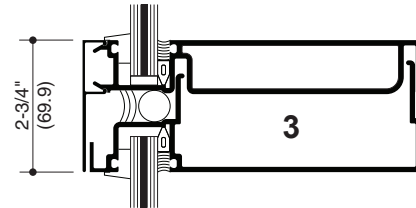
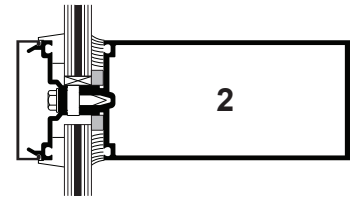
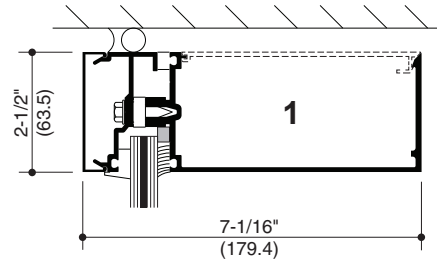
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**SCALE 3" = 1'-0"**

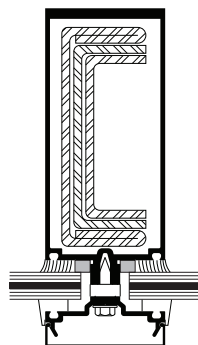
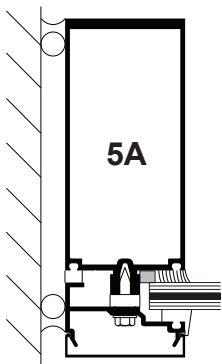
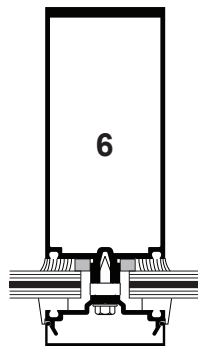
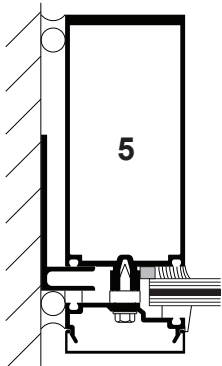
**NOTE:** DETAILS SHOWN WITH 9/16" INFILL AND ARE GLAZED FOR FOR LARGE MISSILE IMPACT (LMI).  
SEE NEXT PAGE FOR OTHER GLAZING OPTIONS.



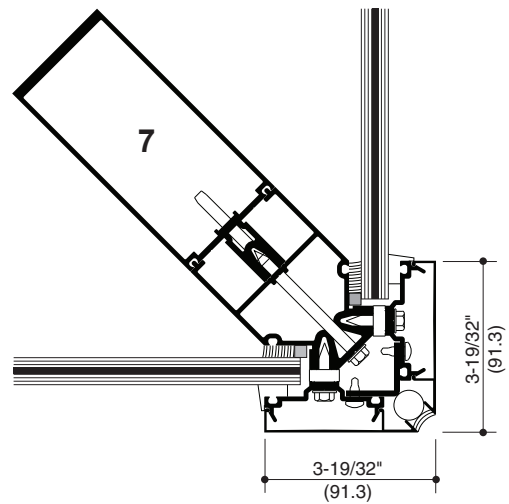
ELEVATION IS NUMBER KEYED TO DETAILS



EXPANSION HORIZONTAL



OPTIONAL STEEL REINFORCING AS REQUIRED

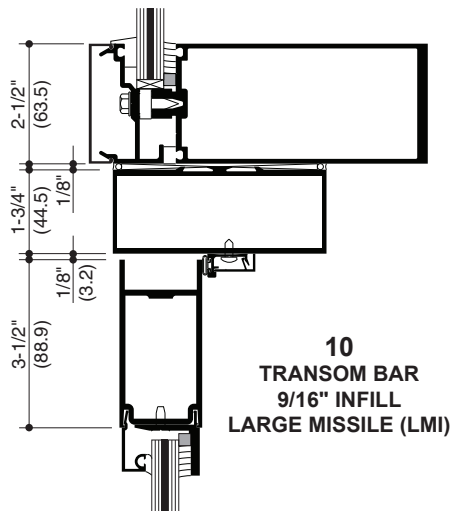
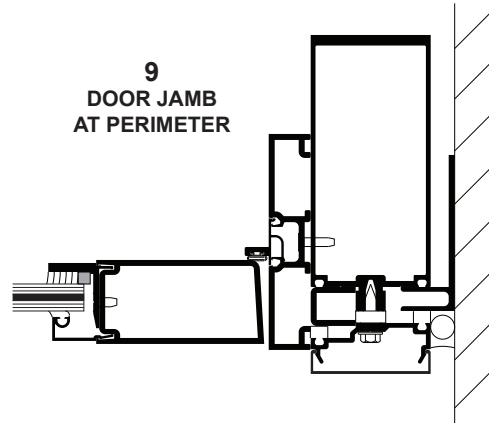
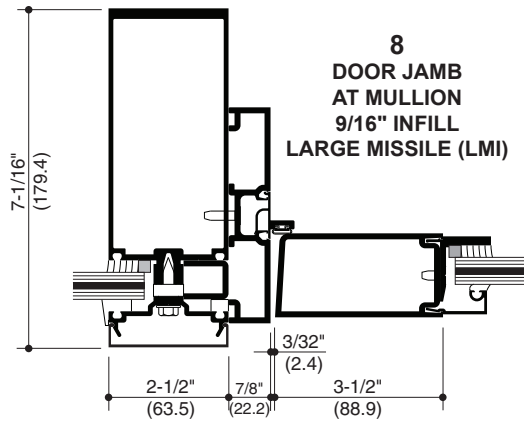


Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

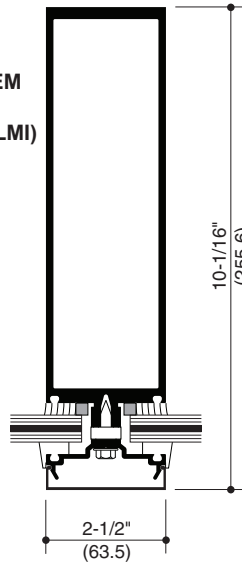
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SCALE 3" = 1'-0"

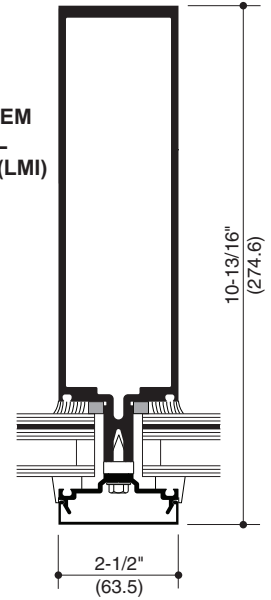
NOTE: 350 IR DOORS ARE USED WITH IMPACT FRAMING.  
DOORS ARE GLAZED WITH 9/16" INFILL.



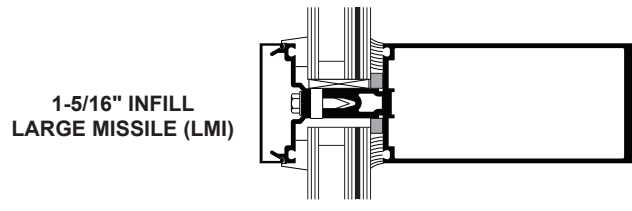
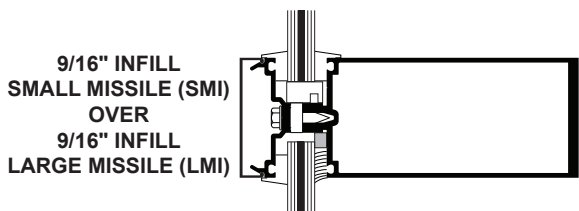
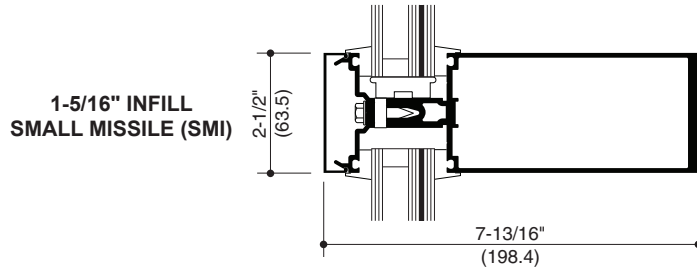
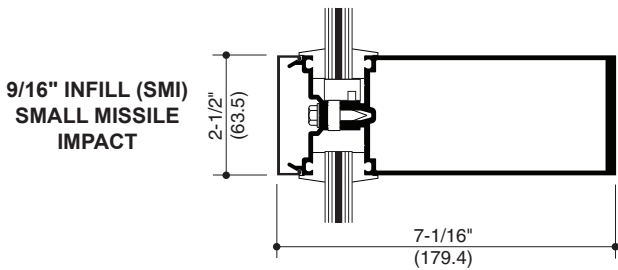
OPTIONAL 10" DEEP SYSTEM 9/16" INFILL LARGE MISSILE (LMI)



OPTIONAL 10" DEEP SYSTEM 1-5/16" INFILL LARGE MISSILE (LMI)



**GLAZING OPTIONS**

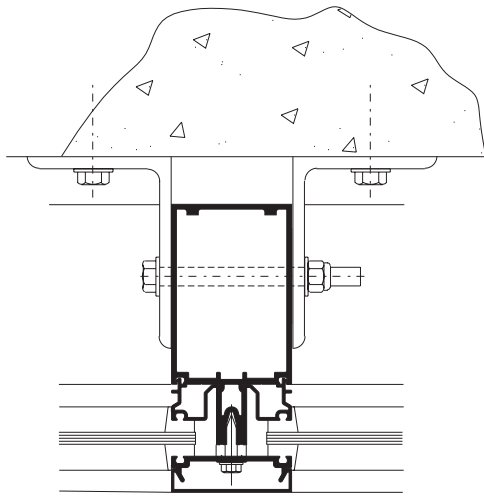


Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

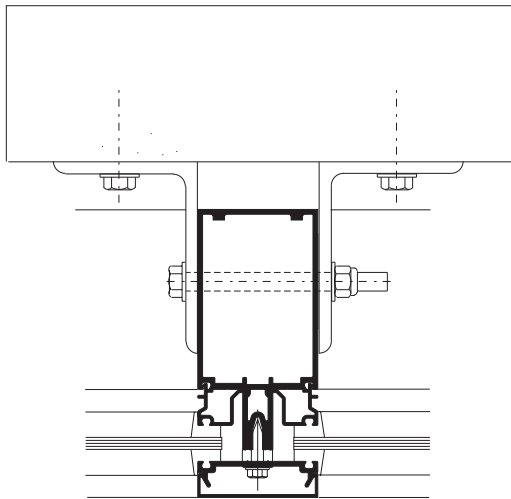
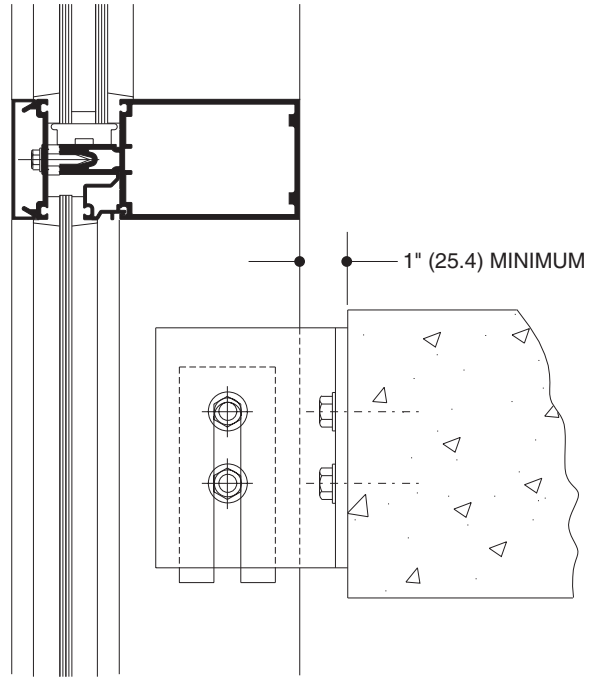
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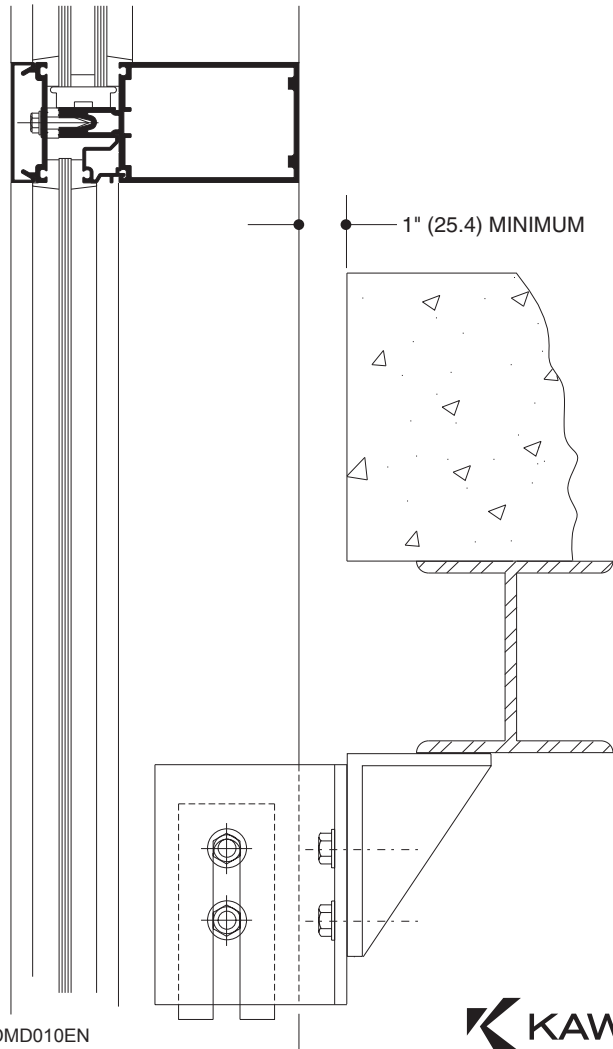
Actual project conditions will determine specific anchor design. Details on this page are for reference only.



**ANCHORING TO FLOOR SLAB**



**ANCHORING TO SUPPORT STEEL**

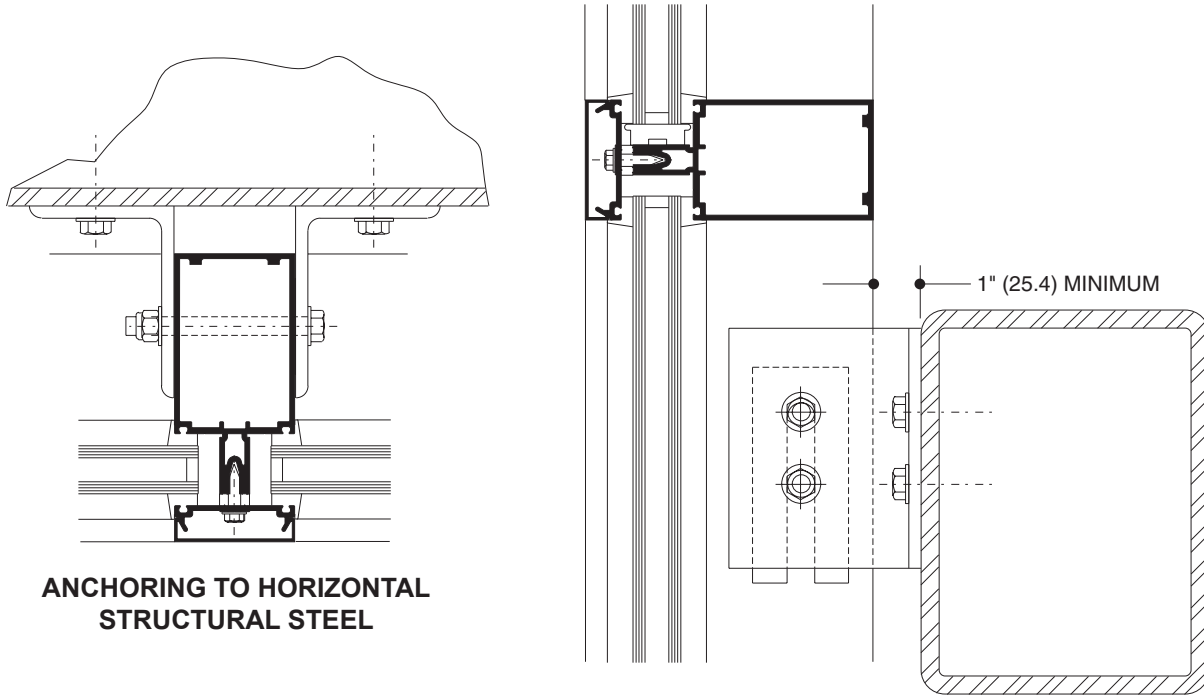


Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

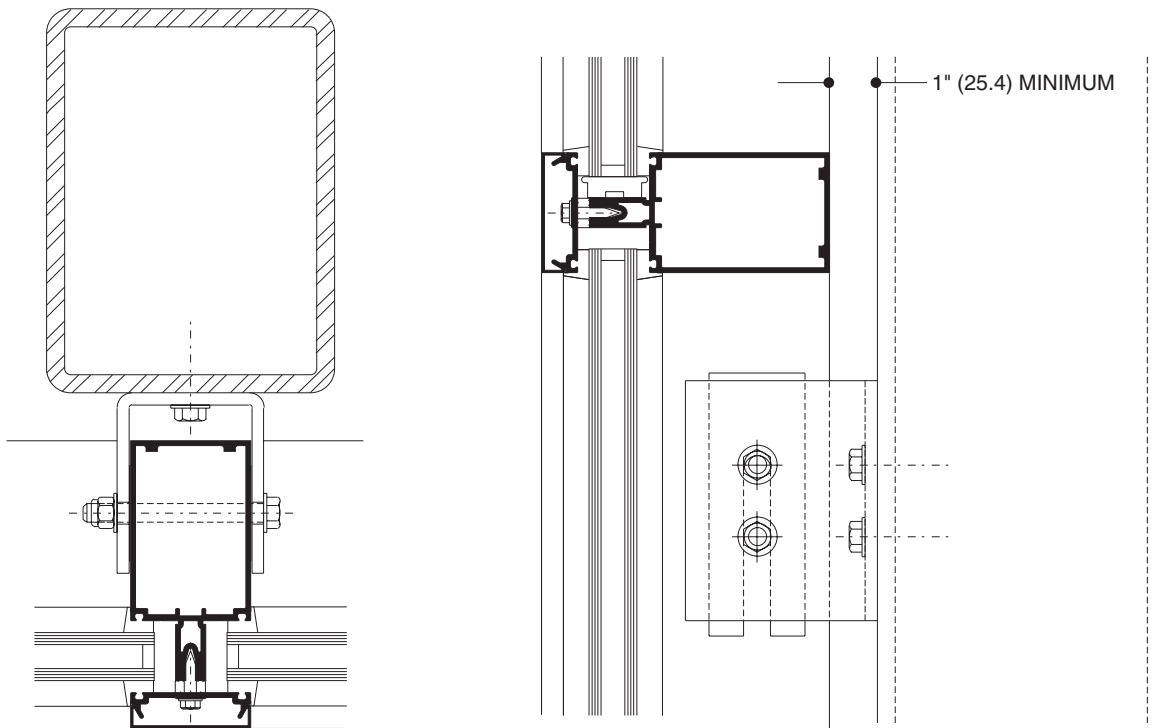
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Actual project conditions will determine specific anchor design. Details on this page are for reference only.



**ANCHORING TO HORIZONTAL  
STRUCTURAL STEEL**



**ANCHORING TO VERTICAL  
STRUCTURAL STEEL**

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## WIND LOAD CHARTS

Mullions are designed for deflection limitations in accordance with AAMA TIR-A11 of L/175 up to 13'-6" and L/240 +1/4" above 13'-6". These curves are for mullions WITH HORIZONTALS and are based on engineering calculations for stress and deflection. Allowable wind load stress for ALUMINUM 15,152 psi (104MPa), STEEL 30,000 psi (207MPa). Charted curves, in all cases are for the limiting value. Wind load charts contained herein are based upon nominal wind load utilized in allowable stress design. A conversion from Load Resistance Factor Design (LRFD) is provided. To convert ultimate wind loads to nominal loads, multiply ultimate wind loads by a factor of 0.6 per ASCE/SEI 7. A 4/3 increase in allowable stress has not been used to develop these curves. For special situations not covered by these curves, contact your Kawneer representative for additional information.

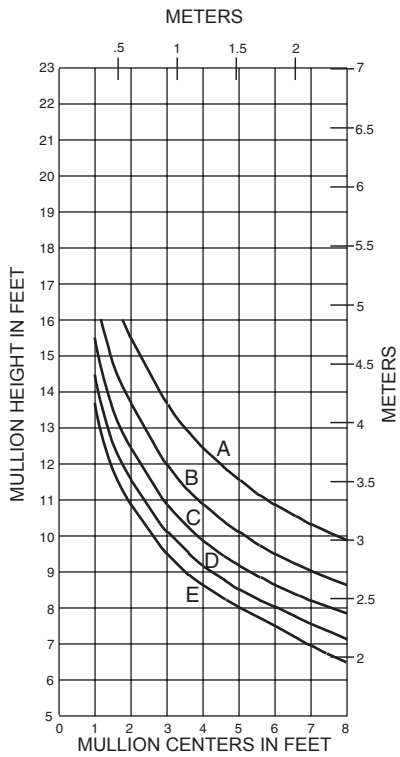
## DEADLOAD CHARTS

Horizontal or deadload limitations are based upon 1/8" (3.2), maximum allowable deflection at the center of an intermediate horizontal member. The accompanying charts are calculated for 1" (25.4) thick insulating glass or 1/4" (6.4) thick glass supported on two setting blocks placed at the loading points shown.

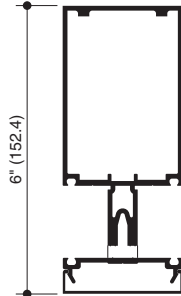
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## SINGLE SPAN



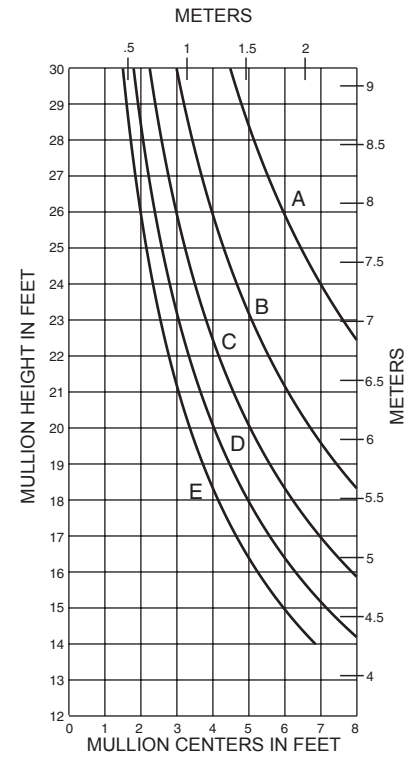
	Allowable Stress Design Load	LRFD Ultimate Design Load
<b>A =</b>	<b>20 PSF (960)</b>	<b>33 PSF (1580)</b>
<b>B =</b>	<b>30 PSF (1440)</b>	<b>50 PSF (2400)</b>
<b>C =</b>	<b>40 PSF (1920)</b>	<b>67 PSF (3200)</b>
<b>D =</b>	<b>50 PSF (2400)</b>	<b>83 PSF (4000)</b>
<b>E =</b>	<b>60 PSF (2880)</b>	<b>100 PSF (4790)</b>



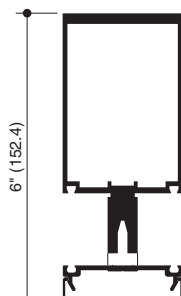
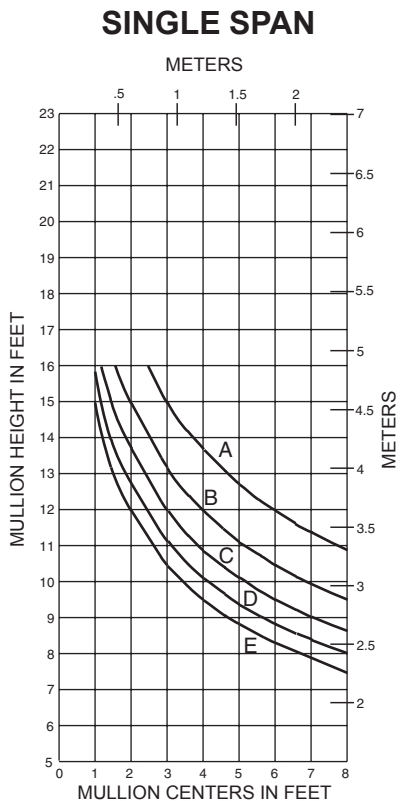
**162001**

I = 5.035(209.57 x 10<sup>4</sup>)  
S = 1.993(32.66 x 10<sup>3</sup>)

## TWIN SPAN

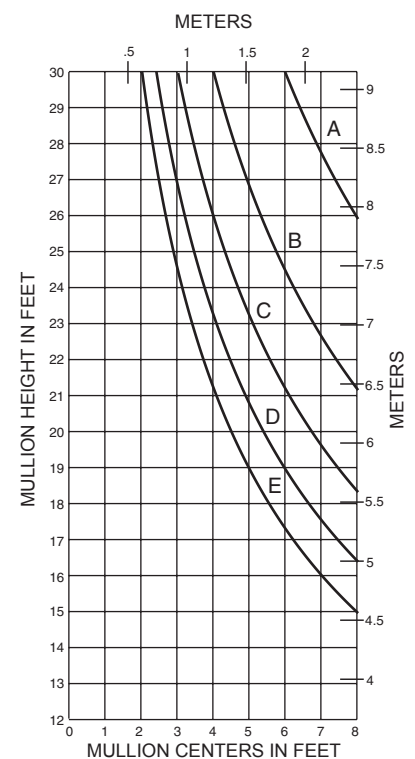


## TWIN SPAN



**162002**

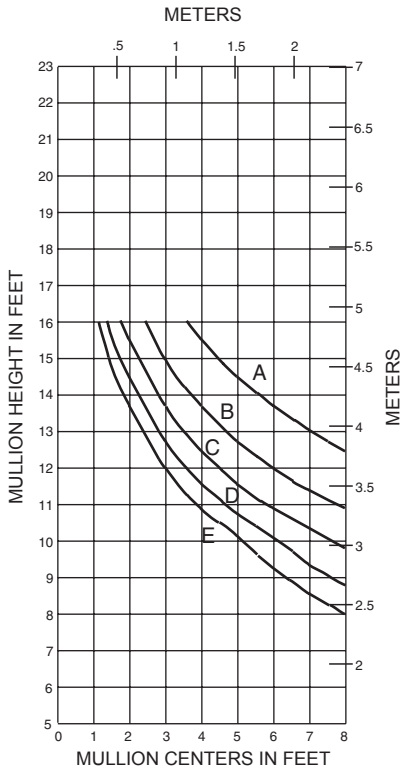
I = 6.779(282.16 x 10<sup>4</sup>)  
S = 2.652(43.46 x 10<sup>3</sup>)



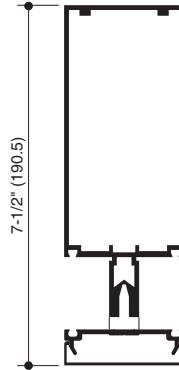
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## SINGLE SPAN



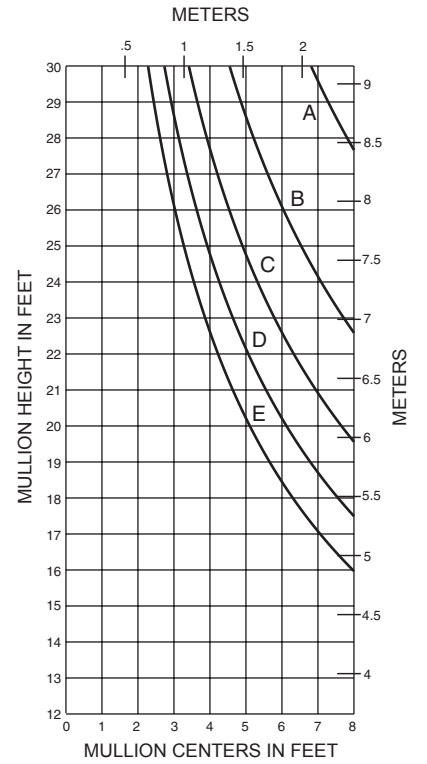
	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	20 PSF (960)	33 PSF (1580)
B =	30 PSF (1440)	50 PSF (2400)
C =	40 PSF (1920)	67 PSF (3200)
D =	50 PSF (2400)	83 PSF (4000)
E =	60 PSF (2880)	100 PSF (4790)



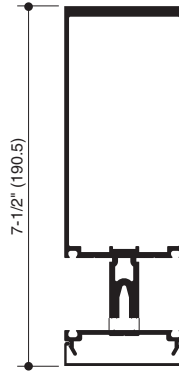
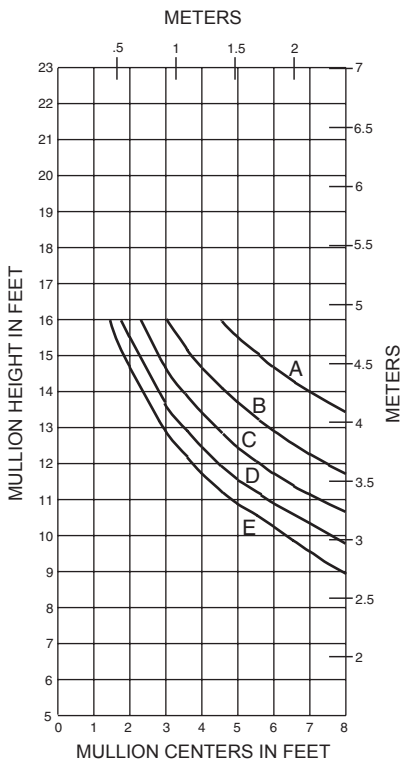
162003

I = 10.135(421.85 x 10<sup>4</sup>)  
S = 3.027(49.60 x 10<sup>3</sup>)

## TWIN SPAN



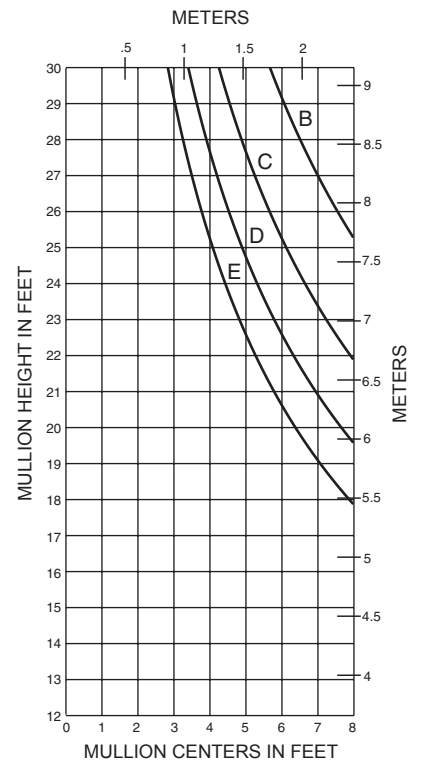
## SINGLE SPAN



162004

I = 12.736(530.11 x 10<sup>4</sup>)  
S = 3.791(62.12 x 10<sup>3</sup>)

## TWIN SPAN



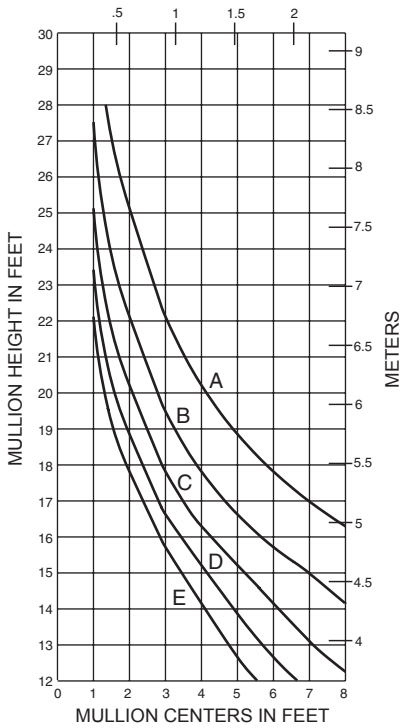
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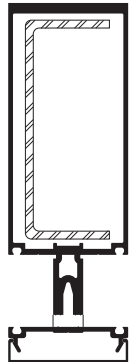
## SINGLE SPAN

162004 W/162300

METERS



	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	20 PSF (960)	33 PSF (1580)
B =	30 PSF (1440)	50 PSF (2400)
C =	40 PSF (1920)	67 PSF (3200)
D =	50 PSF (2400)	83 PSF (4000)
E =	60 PSF (2880)	100 PSF (4790)

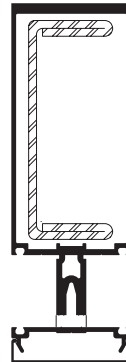


162004 W/162300

la = 12.736(530.11 x 10<sup>4</sup>)  
 Sa = 3.791(62.12 x 10<sup>3</sup>)  
 Is = 3.805(158.37 x 10<sup>4</sup>)  
 Ss = 1.669(27.35 x 10<sup>3</sup>)



MULLION HEIGHT



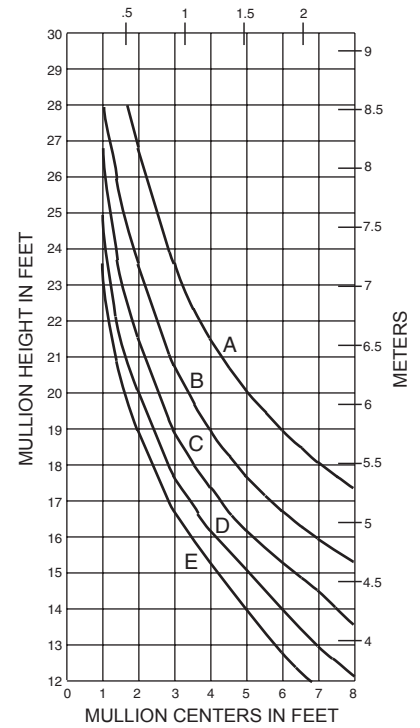
162004 W/162301

la = 12.736(530.11 x 10<sup>4</sup>)  
 Sa = 3.791(62.12 x 10<sup>3</sup>)  
 Is = 5.684(236.59 x 10<sup>4</sup>)  
 Ss = 2.493(40.85 x 10<sup>3</sup>)

## SINGLE SPAN

162004 W/162301

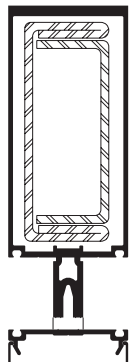
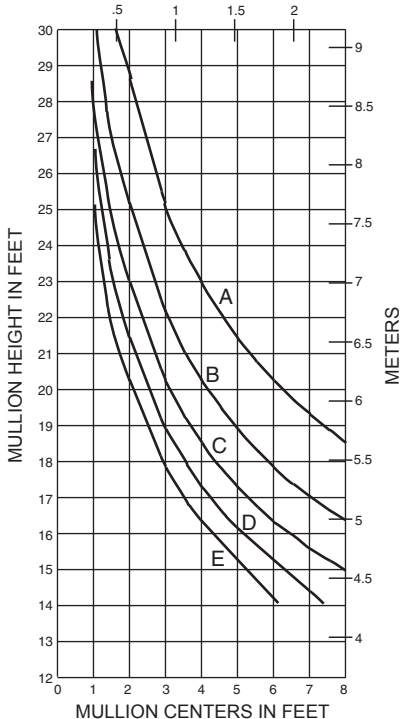
METERS



## SINGLE SPAN

162004 W/162301/302

METERS



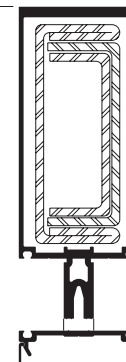
162004 W/162301/302

la = 12.736(530.11 x 10<sup>4</sup>)  
 Sa = 3.791(62.12 x 10<sup>3</sup>)  
 Is = 7.893(328.53 x 10<sup>4</sup>)  
 Ss = 3.462(56.73 x 10<sup>3</sup>)



MULLION HEIGHT

7-1/2" (190.5)



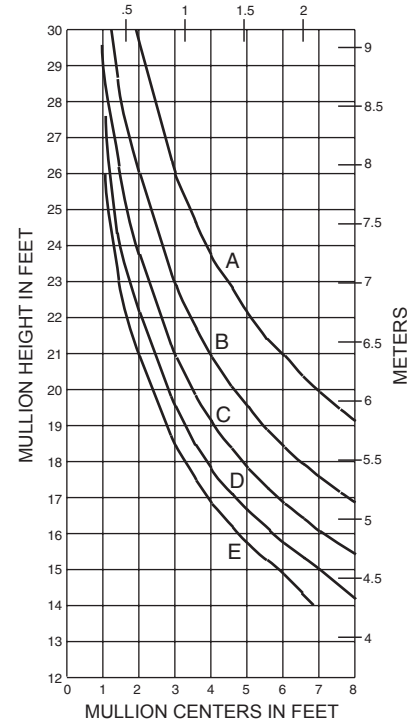
162004 W/162301/302/303

la = 12.736(530.11 x 10<sup>4</sup>)  
 Sa = 3.791(62.12 x 10<sup>3</sup>)  
 Is = 9.347(389.05 x 10<sup>4</sup>)  
 Ss = 4.100(67.19 x 10<sup>3</sup>)

## SINGLE SPAN

162004 W/162301/302/303

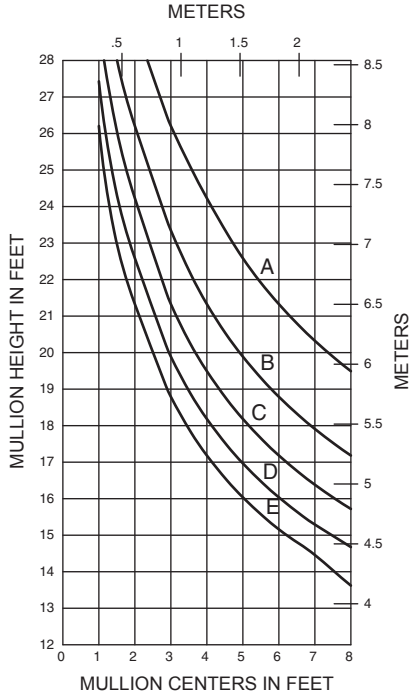
METERS



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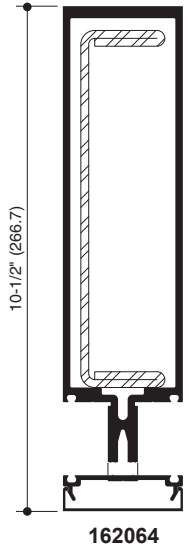
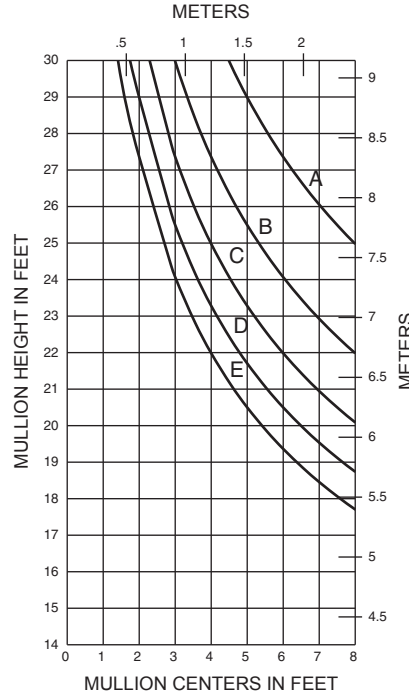
**SINGLE SPAN**



**162064**

I = 42.441(1,766.52 x 10<sup>4</sup>)  
S = 8.816(144.74 x 10<sup>3</sup>)

**SINGLE SPAN**

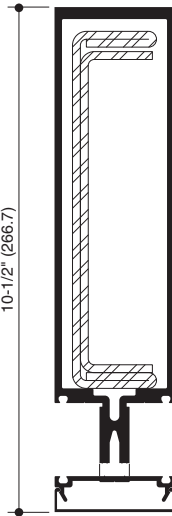
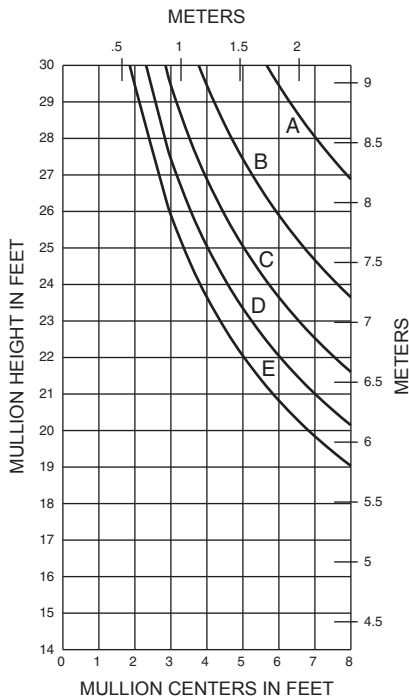


**162064  
W/162363**

Ia = 42.441(1,766.52 x 10<sup>4</sup>)  
Sa = 8.816(144.47 x 10<sup>3</sup>)  
Is = 17.600(732.56 x 10<sup>4</sup>)  
Ss = 4.732(77.54 x 10<sup>3</sup>)

	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	20 PSF (960)	33 PSF (1580)
B =	30 PSF (1440)	50 PSF (2400)
C =	40 PSF (1920)	67 PSF (3200)
D =	50 PSF (2400)	83 PSF (4000)
E =	60 PSF (2880)	100 PSF (4790)

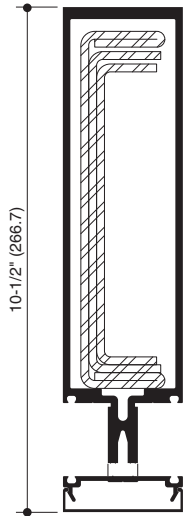
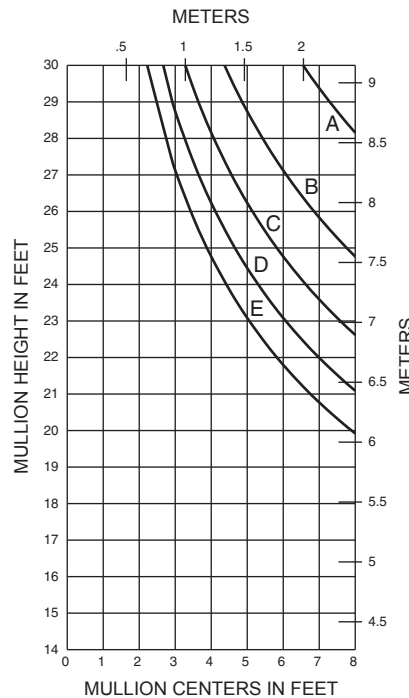
**SINGLE SPAN**



**162064  
W/162363/364**

Ia = 42.441(1,766.52 x 10<sup>4</sup>)  
Sa = 8.816(144.47 x 10<sup>3</sup>)  
Is = 26.033(1,083.57 x 10<sup>4</sup>)  
Ss = 7.000(114.71 x 10<sup>3</sup>)

**SINGLE SPAN**



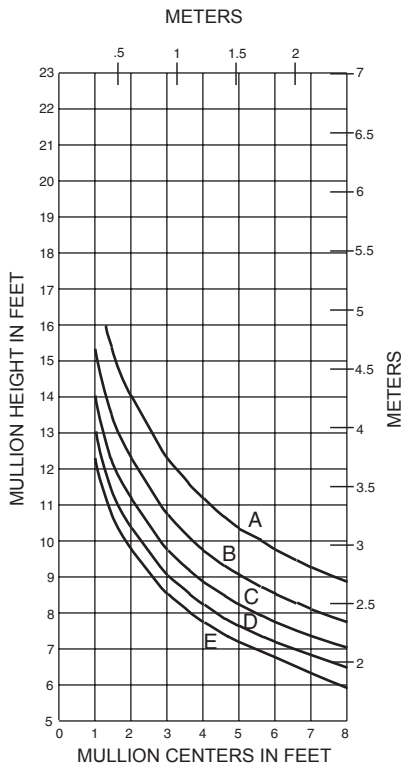
**162064  
W/162363/364/365**

Ia = 42.441(1,766.52 x 10<sup>4</sup>)  
Sa = 8.816(144.47 x 10<sup>3</sup>)  
Is = 32.432(1,349.92 x 10<sup>4</sup>)  
Ss = 8.721(142.91 x 10<sup>3</sup>)

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

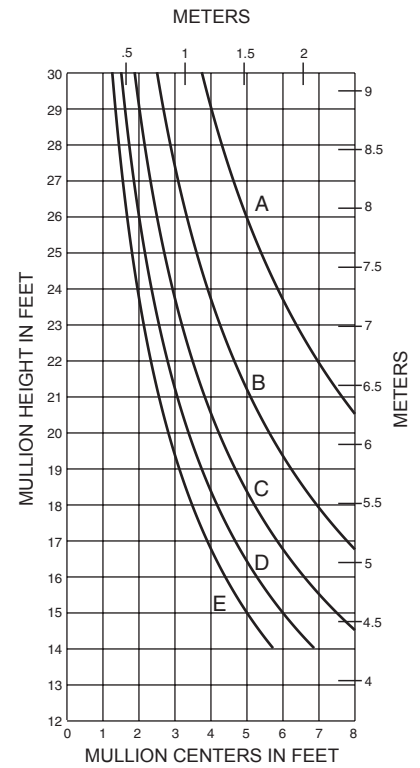
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## SINGLE SPAN

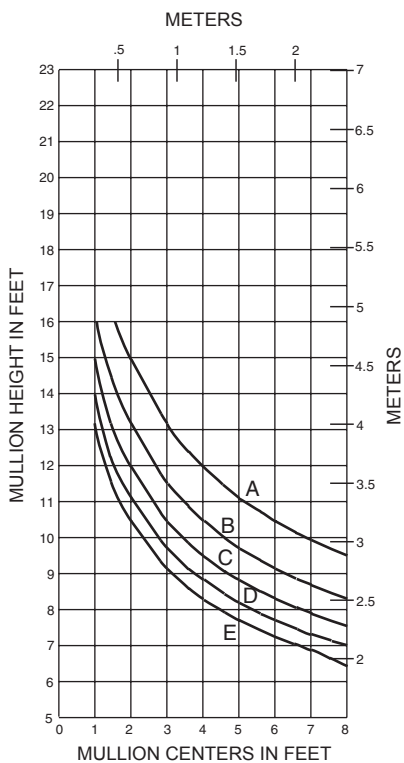


	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	20 PSF (960)	33 PSF (1580)
B =	30 PSF (1440)	50 PSF (2400)
C =	40 PSF (1920)	67 PSF (3200)
D =	50 PSF (2400)	83 PSF (4000)
E =	60 PSF (2880)	100 PSF (4790)

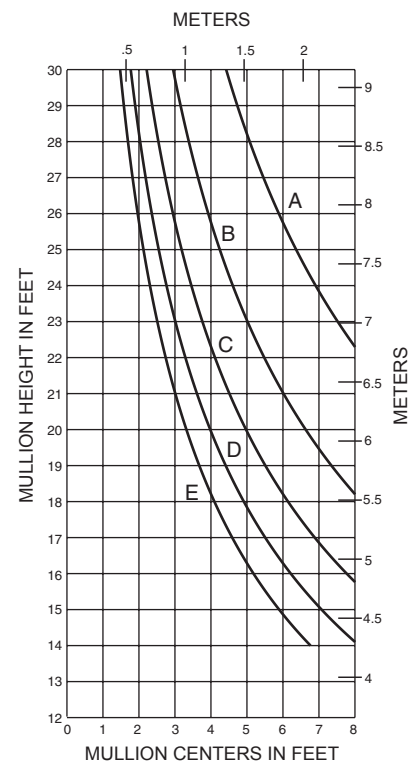
## TWIN SPAN



## SINGLE SPAN



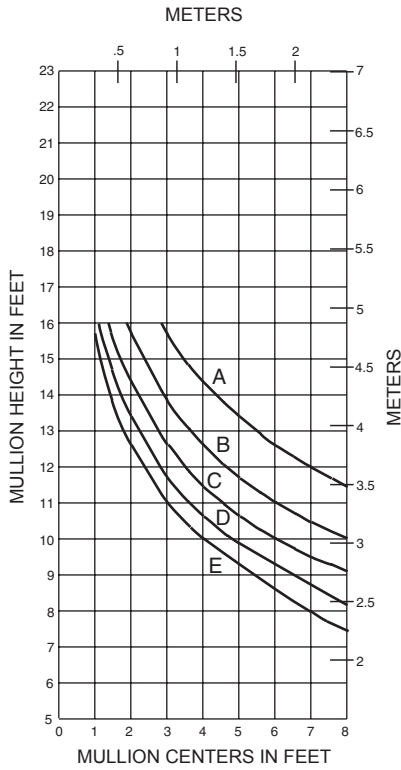
## TWIN SPAN



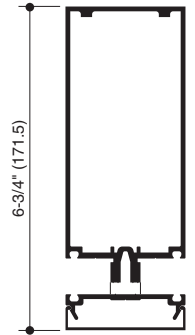
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## SINGLE SPAN

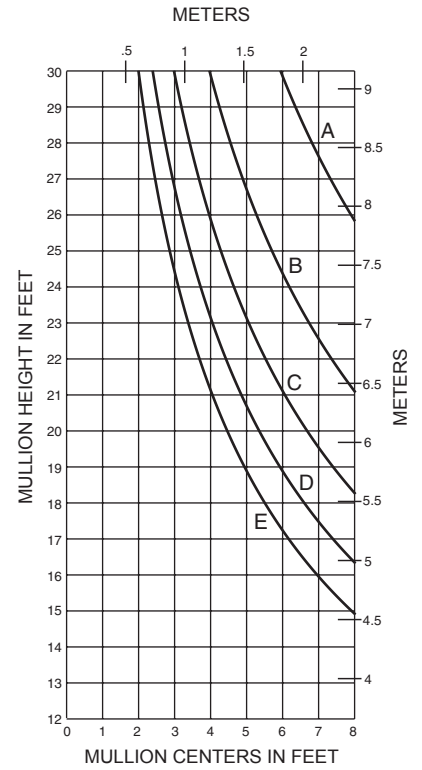


	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	20 PSF (960)	33 PSF (1580)
B =	30 PSF (1440)	50 PSF (2400)
C =	40 PSF (1920)	67 PSF (3200)
D =	50 PSF (2400)	83 PSF (4000)
E =	60 PSF (2880)	100 PSF (4790)

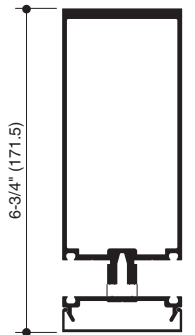
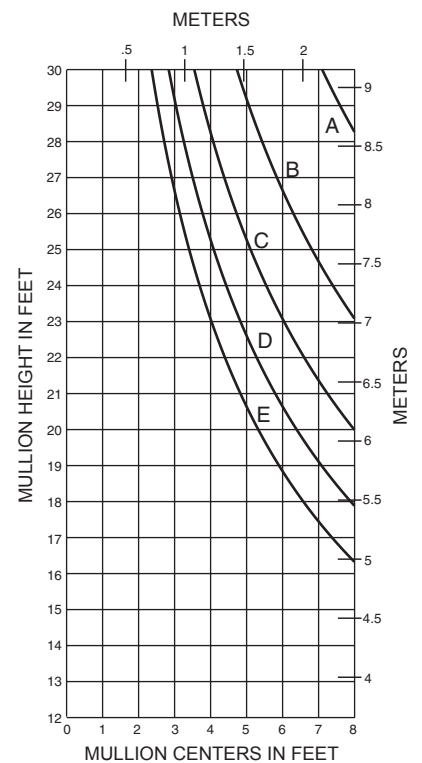


**162015**  
 $I = 7.915(329.45 \times 10^4)$   
 $S = 2.635(43.18 \times 10^3)$

## TWIN SPAN

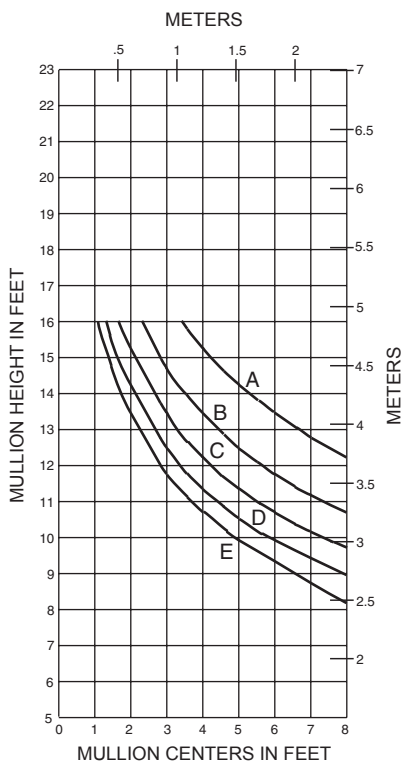


## TWIN SPAN



**162016**  
 $I = 9.594(399.33 \times 10^4)$   
 $S = 3.163(51.83 \times 10^3)$

## SINGLE SPAN



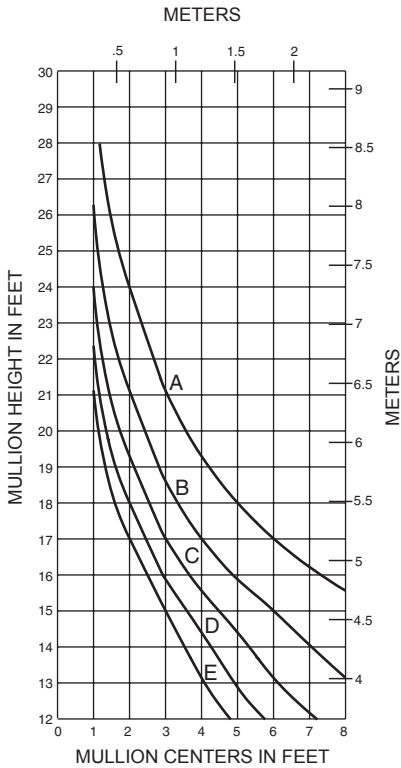
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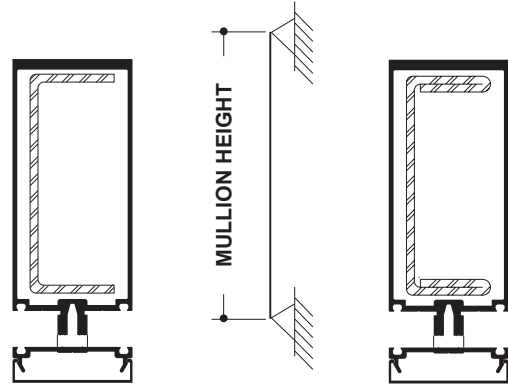


## SINGLE SPAN

162016 W/162300



	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	20 PSF (960)	33 PSF (1580)
B =	30 PSF (1440)	50 PSF (2400)
C =	40 PSF (1920)	67 PSF (3200)
D =	50 PSF (2400)	83 PSF (4000)
E =	60 PSF (2880)	100 PSF (4790)

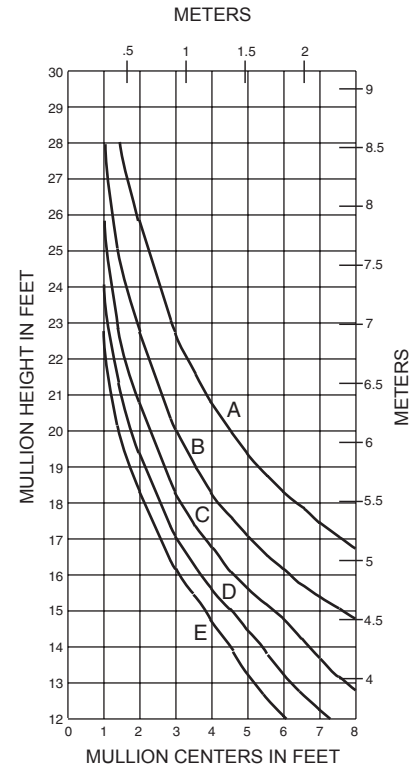


**162016 W/162300**  
 $I_a = 9.594(399.33 \times 10^4)$   
 $S_a = 3.163(51.83 \times 10^3)$   
 $I_s = 3.805(158.37 \times 10^4)$   
 $S_s = 1.669(27.35 \times 10^3)$

**162016 W/162301**  
 $I_a = 9.594(399.33 \times 10^4)$   
 $S_a = 3.163(51.83 \times 10^3)$   
 $I_s = 5.684(236.59 \times 10^4)$   
 $S_s = 2.493(40.85 \times 10^3)$

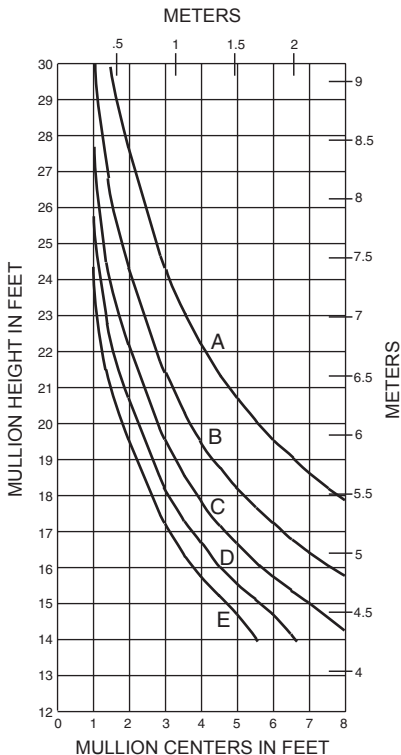
## SINGLE SPAN

162016 W/162301



## SINGLE SPAN

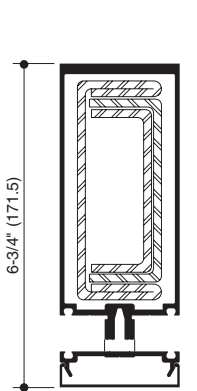
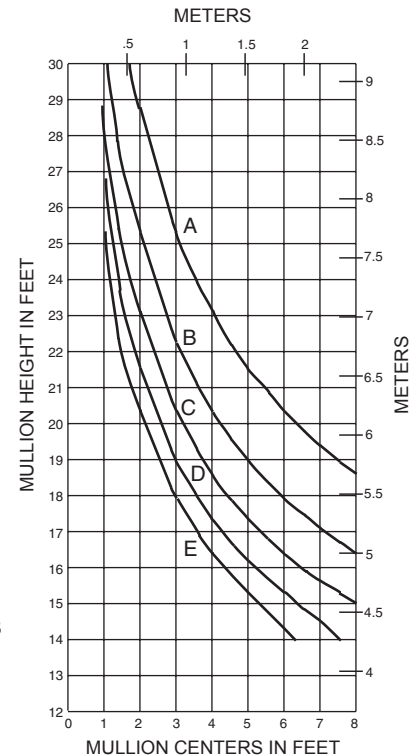
162016 W/162301/302



**162016 W/162301/302**  
 $I_a = 9.594(399.33 \times 10^4)$   
 $S_a = 3.163(51.83 \times 10^3)$   
 $I_s = 7.893(328.53 \times 10^4)$   
 $S_s = 3.462(56.73 \times 10^3)$

## SINGLE SPAN

162016 W/162301/302/303

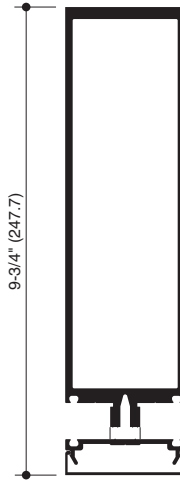
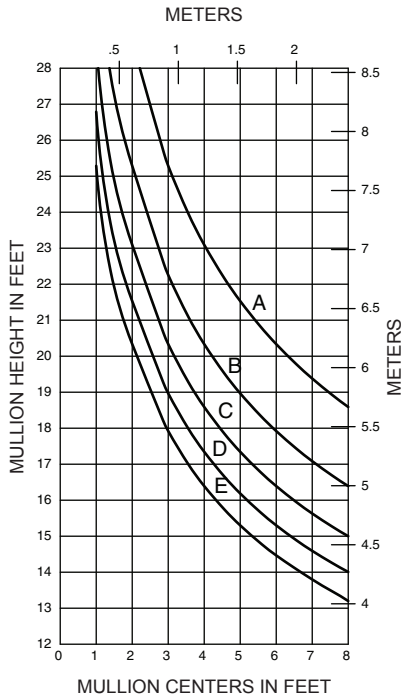


**162016 W/162301/302/303**  
 $I_a = 9.594(399.33 \times 10^4)$   
 $S_a = 3.163(51.83 \times 10^3)$   
 $I_s = 9.347(389.05 \times 10^4)$   
 $S_s = 4.100(67.19 \times 10^3)$

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**SINGLE SPAN**



**162213**

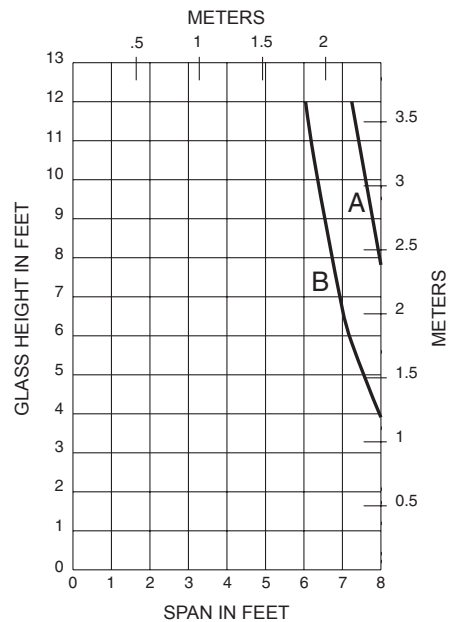
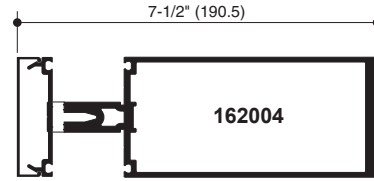
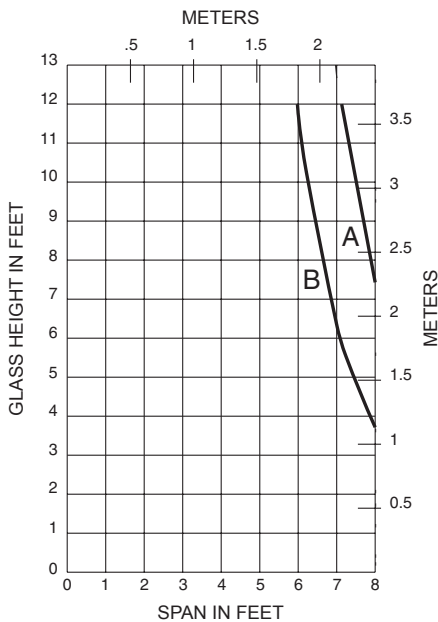
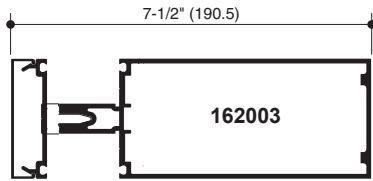
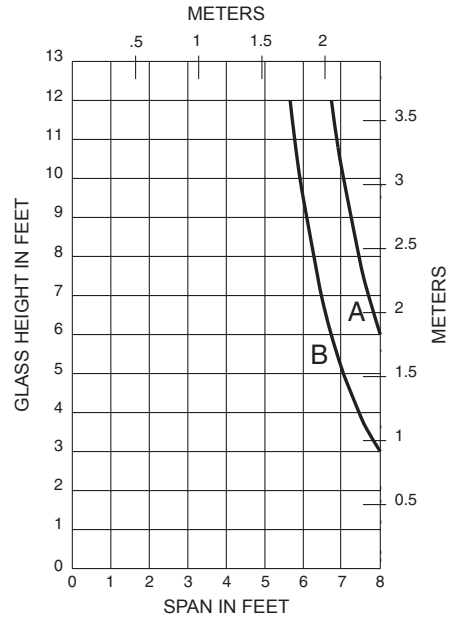
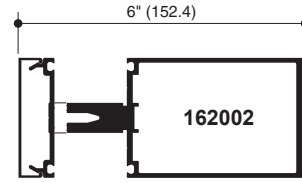
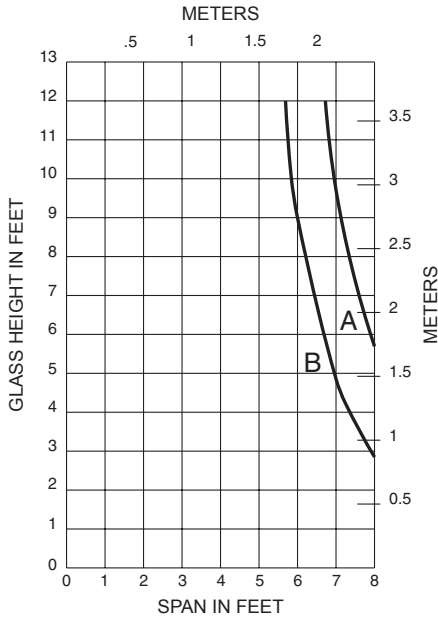
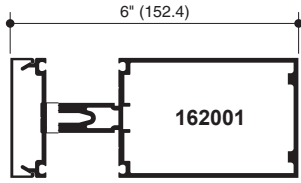
I = 36.451(1517.20 x 10<sup>4</sup>)  
S = 8.279(135.67 x 10<sup>3</sup>)

	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	20 PSF (960)	33 PSF (1580)
B =	30 PSF (1440)	50 PSF (2400)
C =	40 PSF (1920)	67 PSF (3200)
D =	50 PSF (2400)	83 PSF (4000)
E =	60 PSF (2880)	100 PSF (4790)

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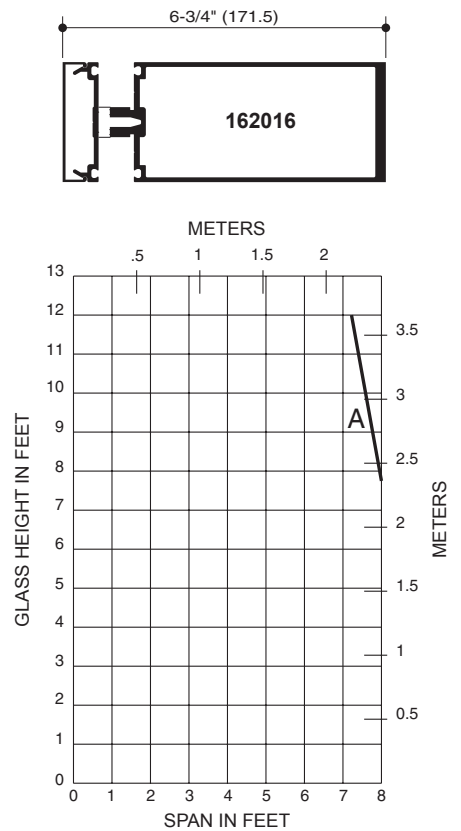
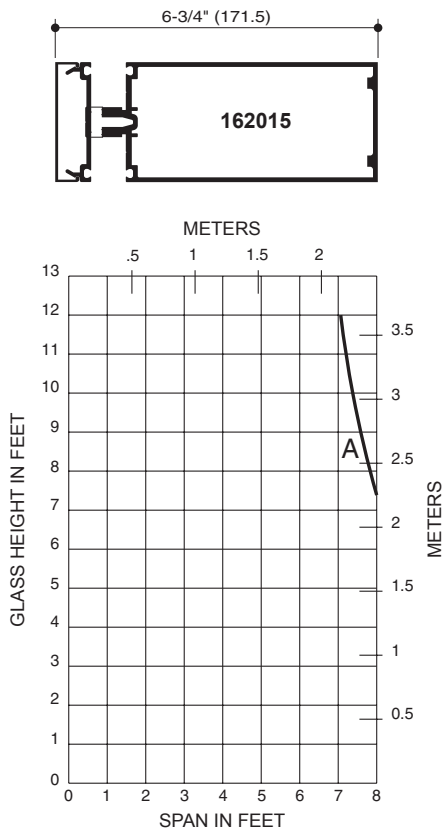
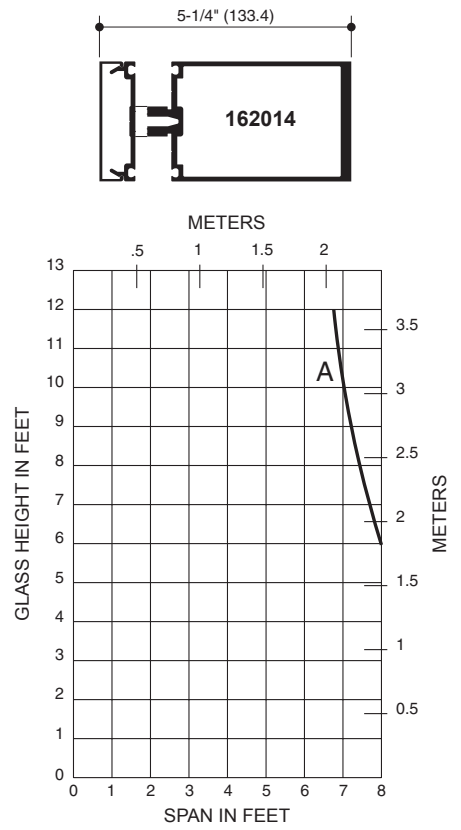
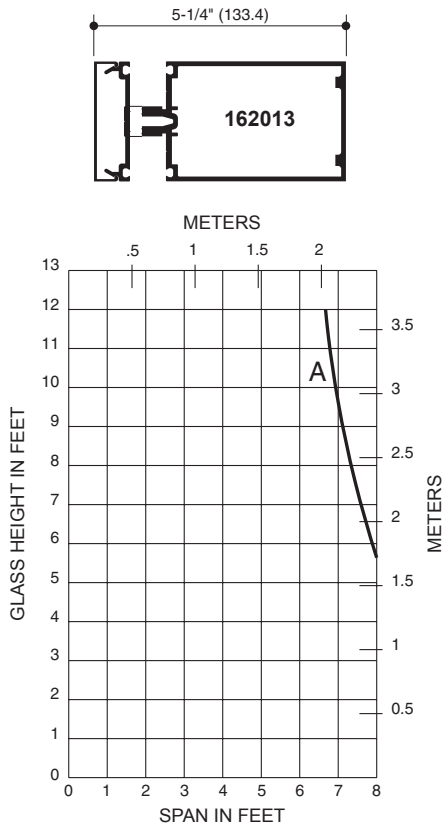
A - 1/4" GLASS (1/4 POINT LOADING)  
 B - 1" GLASS (1/4 POINT LOADING)



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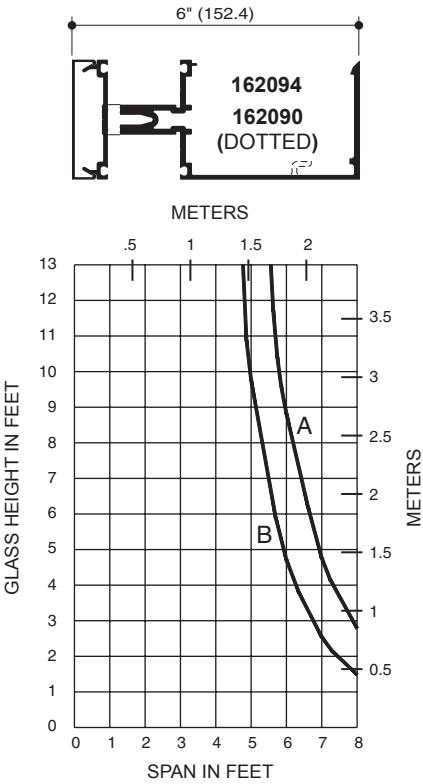
A - 1/4" GLASS (1/4 POINT LOADING)



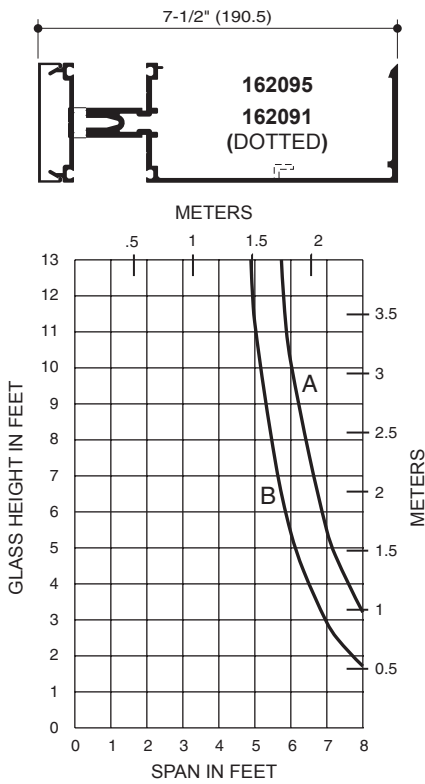
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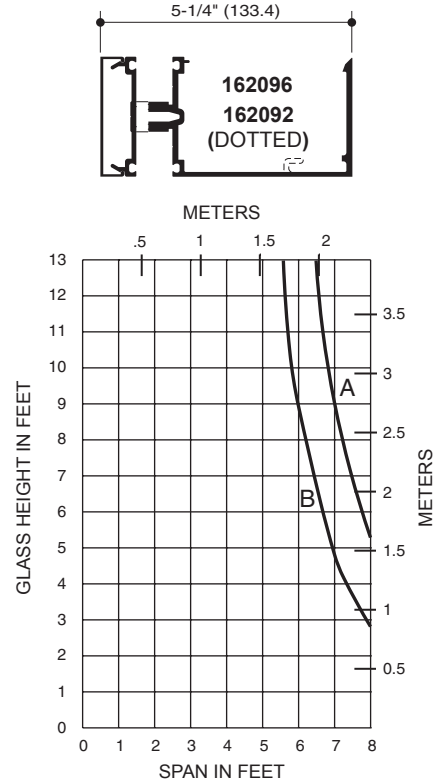
**A** - 1" GLASS (1/8 POINT LOADING)  
**B** - 1" GLASS (1/4 POINT LOADING)



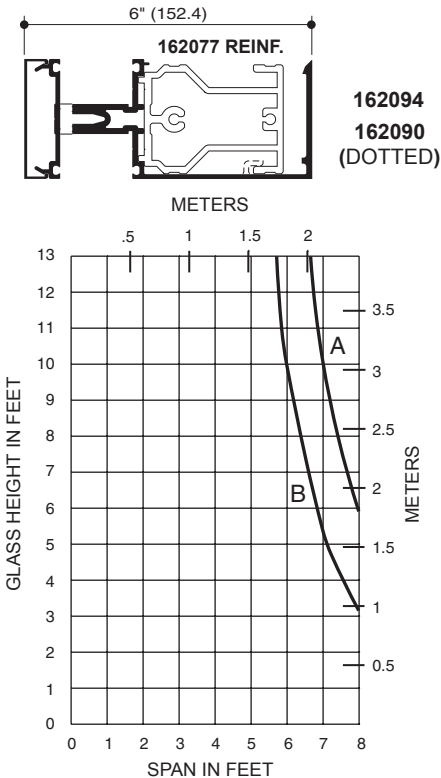
**A** - 1" GLASS (1/8 POINT LOADING)  
**B** - 1" GLASS (1/4 POINT LOADING)



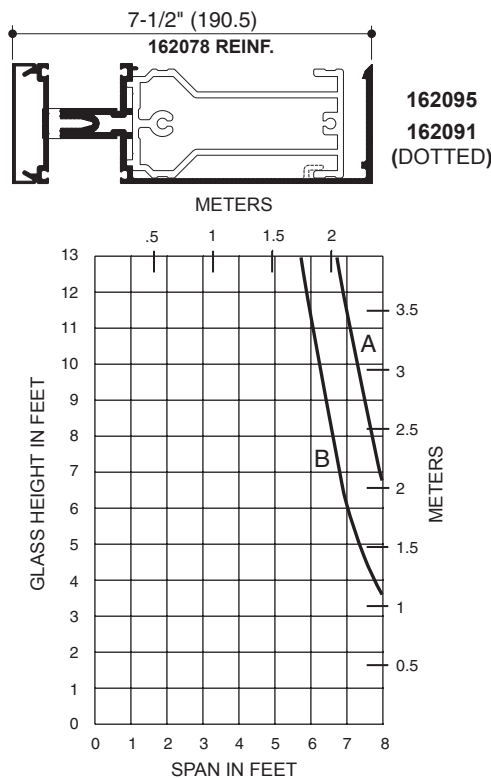
**A** - 1/4" GLASS (1/8 POINT LOADING)  
**B** - 1/4" GLASS (1/4 POINT LOADING)



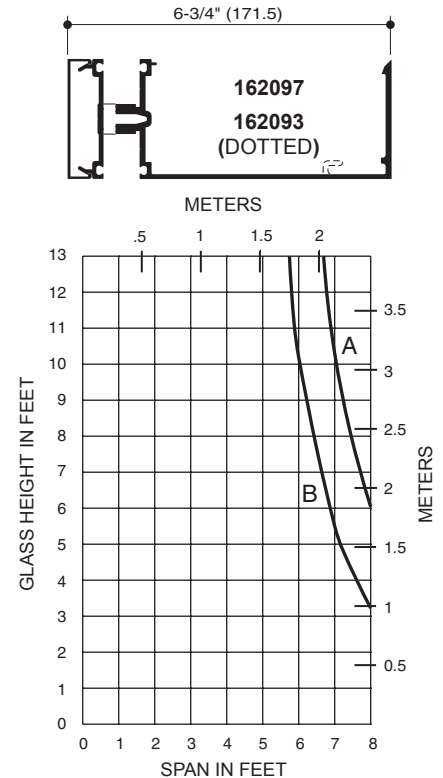
**A** - 1" GLASS (1/8 POINT LOADING)  
**B** - 1" GLASS (1/4 POINT LOADING)



**A** - 1" GLASS (1/8 POINT LOADING)  
**B** - 1" GLASS (1/4 POINT LOADING)



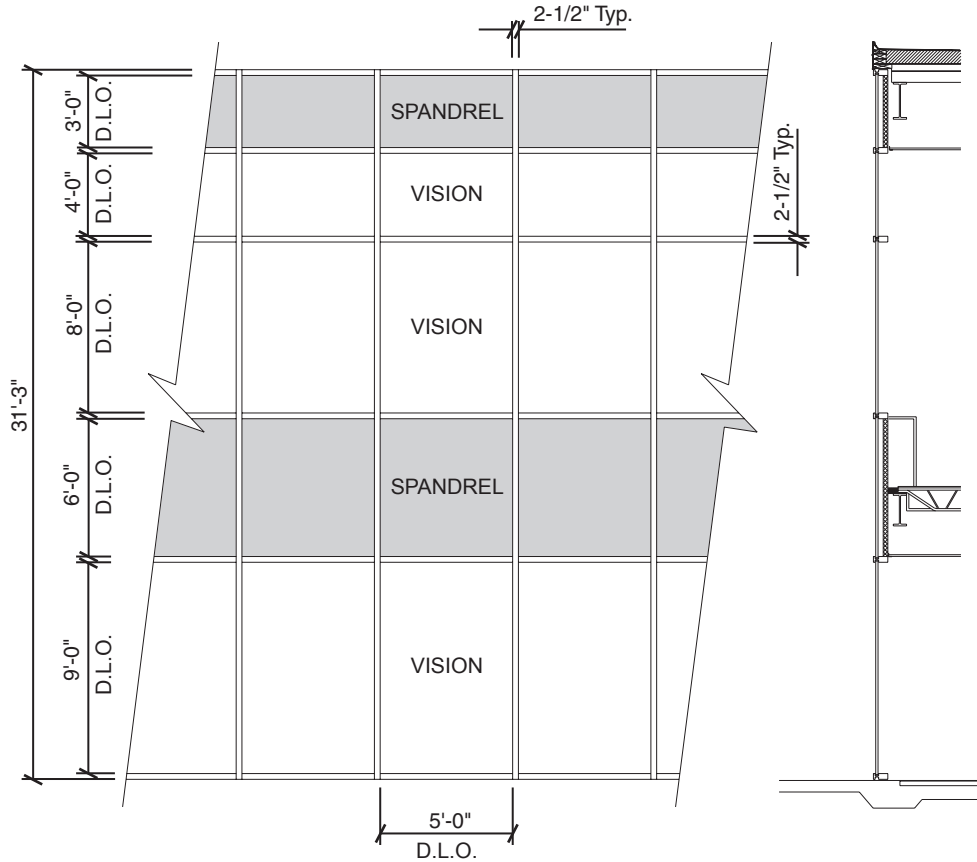
**A** - 1/4" GLASS (1/8 POINT LOADING)  
**B** - 1/4" GLASS (1/4 POINT LOADING)



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**Generic Project Specific U-factor Example Calculation**  
**(Percent of Glass will vary on specific products depending on sitelines)**  
 (Based on single bay of Curtain Wall/Window Wall)



**Vision Area**

Example Glass U-factor = 0.48 Btu/(ft<sup>2</sup> · h · °F)

Vision Area = 5(9 + 8 + 4) = 105.0 ft<sup>2</sup>

Total Area (Vision) = 5' 2-1/2" (9' 3-3/4" + 8' 2-1/2" + 4' 2-1/2") = 113.2 ft<sup>2</sup>

Percentage of Vision Glass = (Vision Area ÷ Total Area)100  
 = (105.0 ÷ 113.2)100 = 93%

**Spandrel Area**

Example Spandrel R-value = 15 (ft<sup>2</sup> · h · °F)/Btu

Spandrel Area = 5(6 + 3) = 45.0 ft<sup>2</sup>

Total Area (Spandrel) = 5' 2-1/2" (6' 2-1/2" + 3' 3-3/4") = 49.6 ft<sup>2</sup>

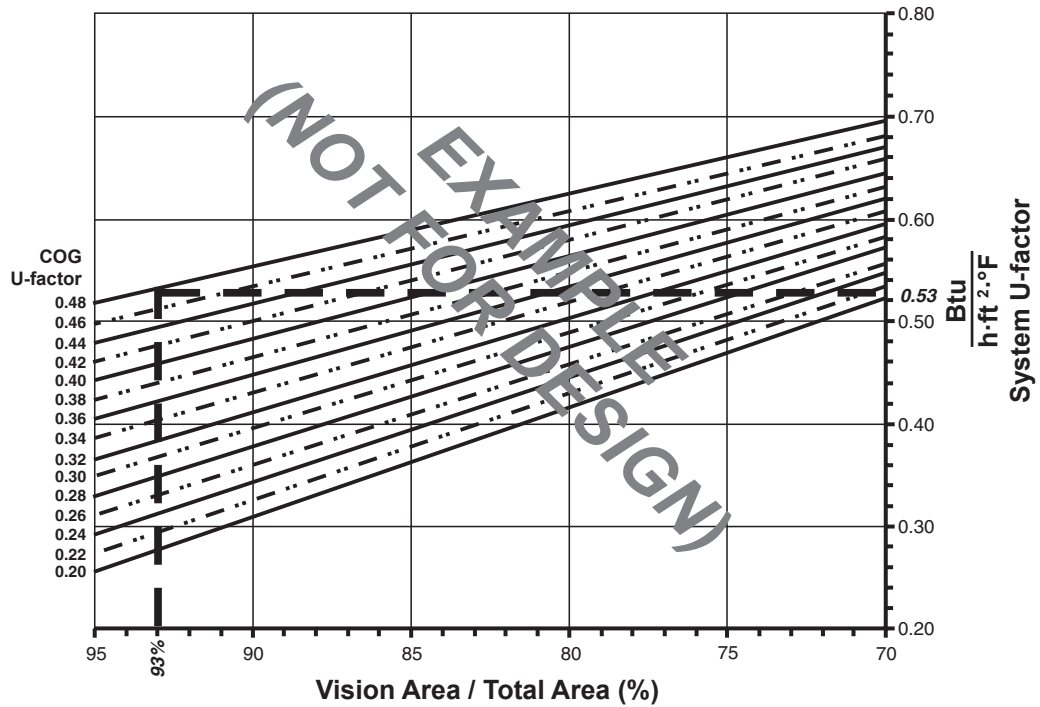
Percent of Spandrel = (Spandrel Area ÷ Total Area)100  
 = (45.0 ÷ 49.6)100 = 91%

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Vision Area Chart

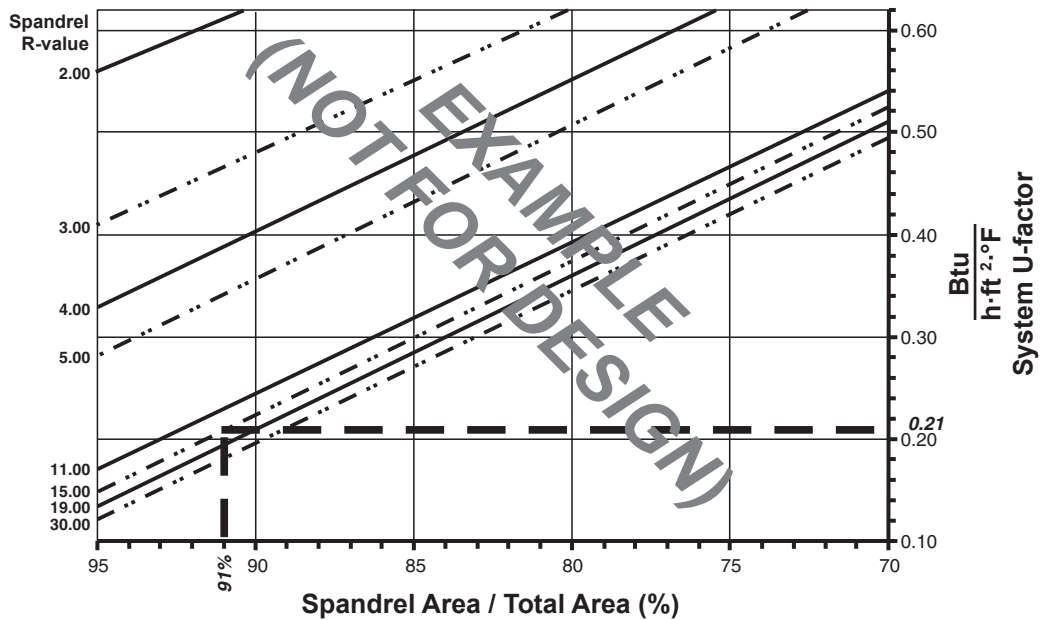
System U-factor vs Percent of Vision Area



Based on a single curtain wall bay of 93% vision glass and center of glass U-factor of 0.48, System U-factor is equal to 0.53 Btu/(h·ft<sup>2</sup>·°F)

Spandrel Area Chart

System U-factor vs Percent of Spandrel Area



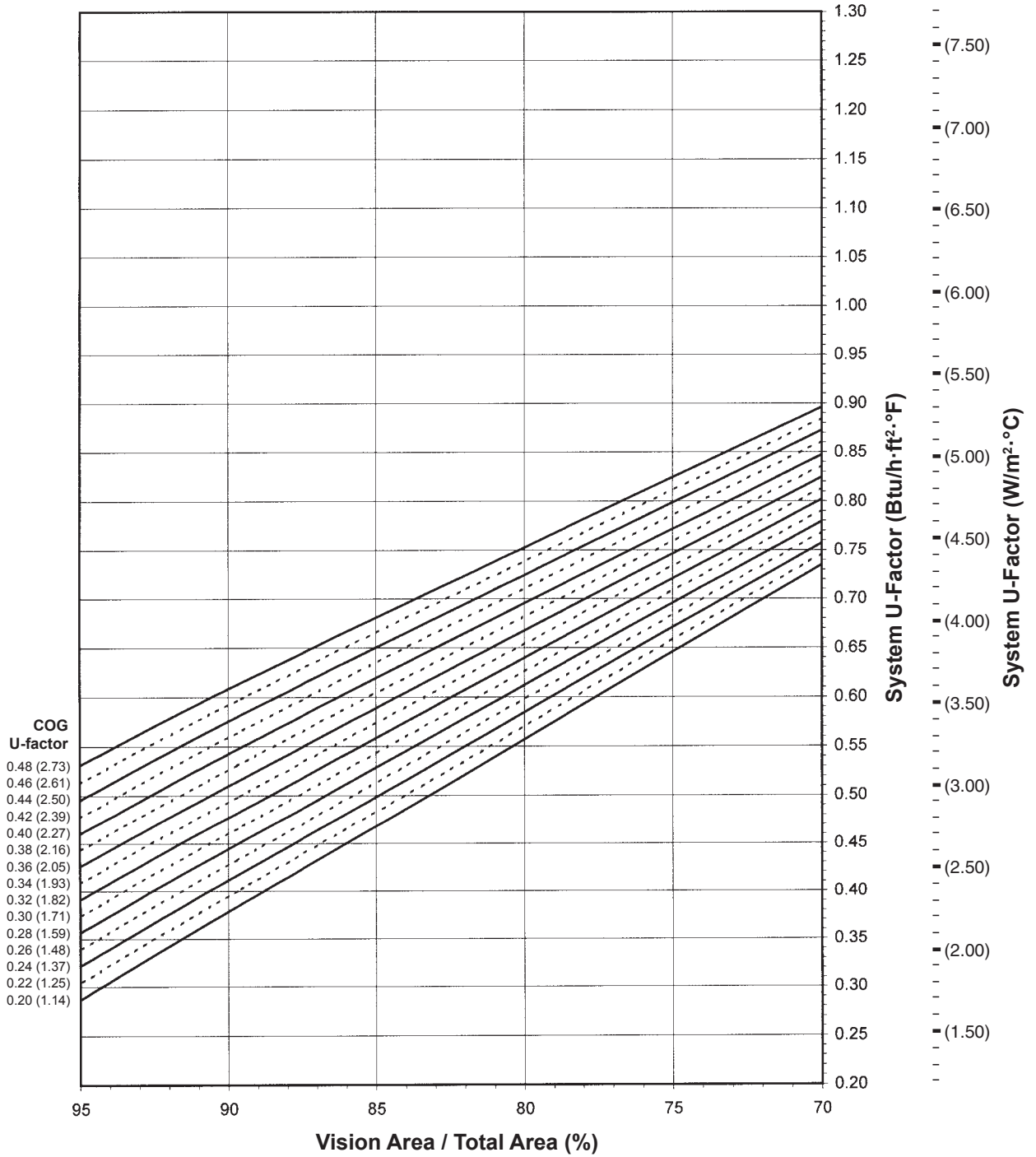
Based on a single curtain wall bay of 91% spandrel and center of spandrel R-value of 15, system U-factor is equal to 0.21 Btu/(h·ft<sup>2</sup>·°F)

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Note:  
 Values in parentheses are metric.  
 COG=Center of Glass.  
 Charts are generated per AAMA 507.

System U-Factor for Vision Glass



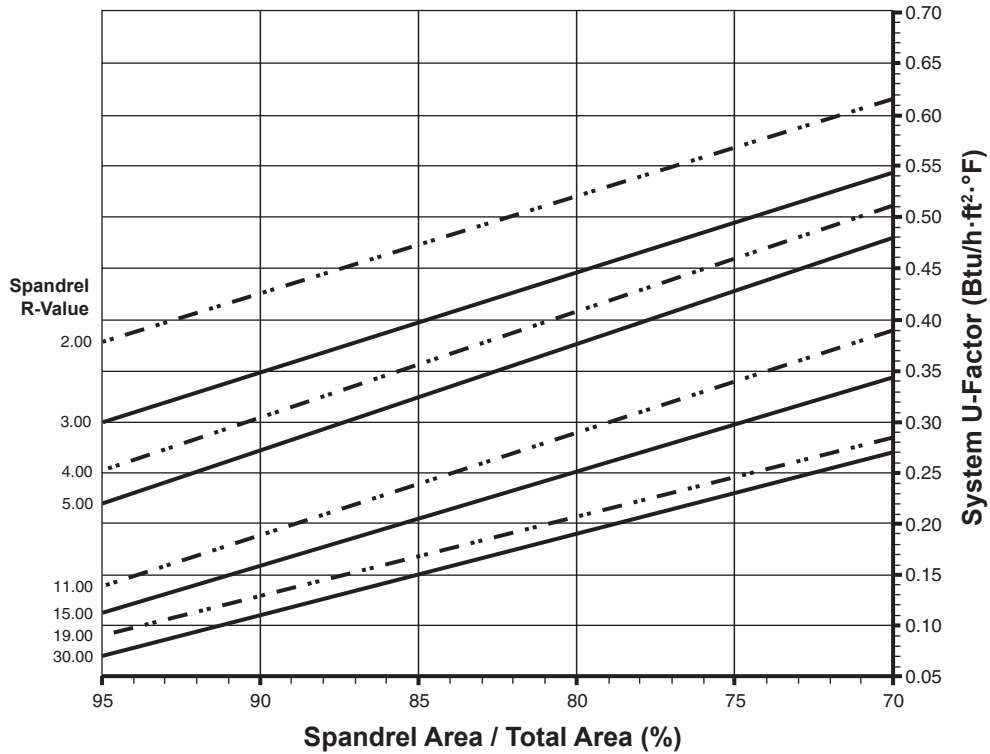
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Note:  
 Values in parentheses are metric.  
 COG=Center of Glass.  
 Charts are generated per AAMA 507.

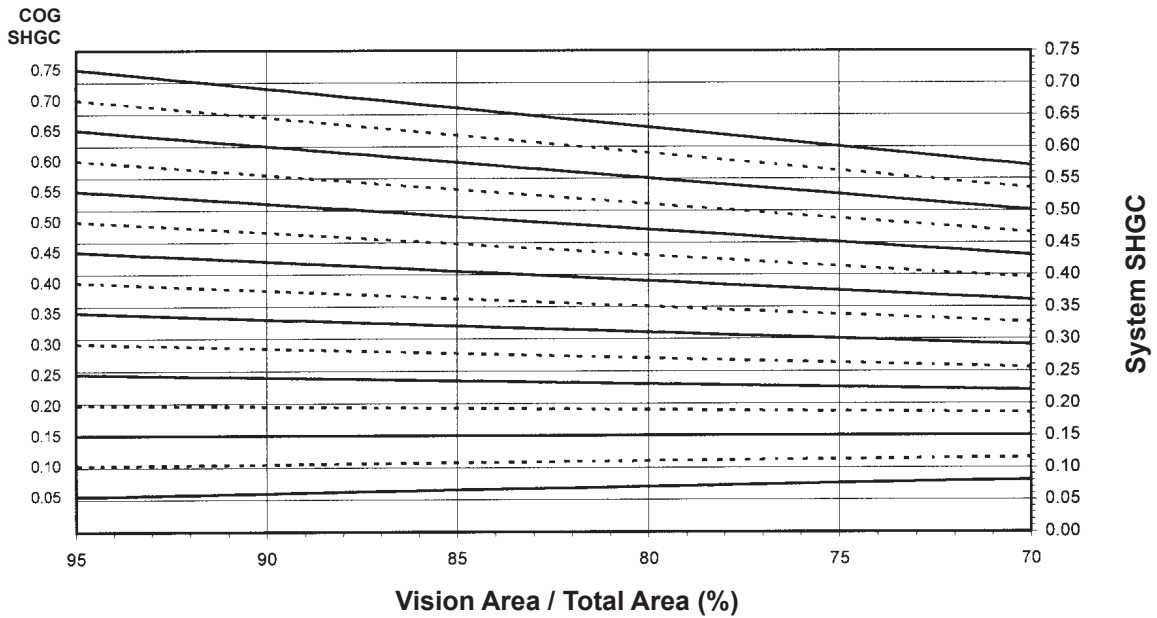
## System U-Factors for Spandrel Glass



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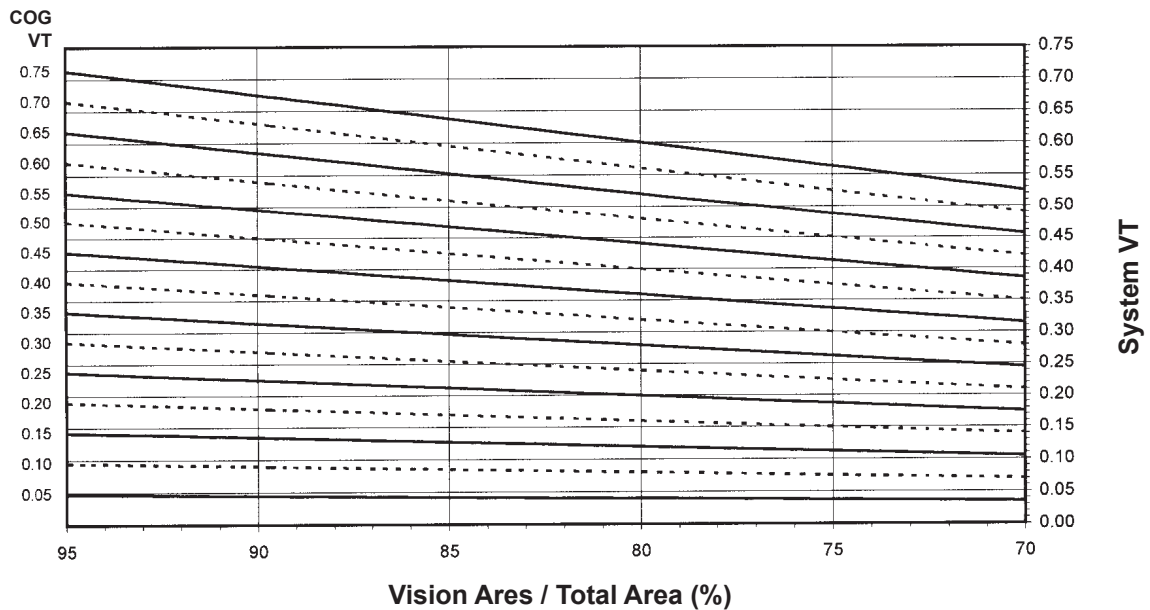
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System Solar Heat Gain Coefficient (SHGC) vs Percent of Vision Area



Charts are generated per AAMA 507.

System Visible Transmittance (VT) vs Percent of Vision Area



Charts are generated per AAMA 507.

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**Thermal Transmittance** <sup>1</sup> (BTU/hr • ft<sup>2</sup> • °F)

Glass U-Factor <sup>3</sup>	Overall U-Factor <sup>4</sup>
0.48	0.61
0.46	0.60
0.44	0.58
0.42	0.56
0.40	0.55
0.38	0.53
0.36	0.51
0.34	0.50
0.32	0.48
0.30	0.47
0.28	0.45
0.26	0.43
0.24	0.42
0.22	0.40
0.20	0.38

**1" GLAZING WITH  
ALUMINUM PRESSURE PLATE**

**NOTE:** For glass values that are not listed, linear interpolation is permitted.

1. U-Factors are determined in accordance with NFRC 100.
2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values and are obtained from your glass supplier.
4. Overall U-Factor, SHGC, and VT Matricies are based on the standard NFRC specimen size of 2000mm wide by 2000mm high (78-3/4" by 78-3/4").

**SHGC Matrix** <sup>2</sup>

Glass SHGC <sup>3</sup>	Overall SHGC <sup>4</sup>
0.75	0.69
0.70	0.64
0.65	0.60
0.60	0.55
0.55	0.51
0.50	0.46
0.45	0.42
0.40	0.37
0.35	0.33
0.30	0.28
0.25	0.24
0.20	0.20
0.15	0.15
0.10	0.11
0.05	0.06

**Visible Transmittance** <sup>2</sup>

Glass VT <sup>3</sup>	Overall VT <sup>4</sup>
0.75	0.67
0.70	0.63
0.65	0.58
0.60	0.54
0.55	0.49
0.50	0.45
0.45	0.40
0.40	0.36
0.35	0.31
0.30	0.27
0.25	0.22
0.20	0.18
0.15	0.13
0.10	0.09
0.05	0.04

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

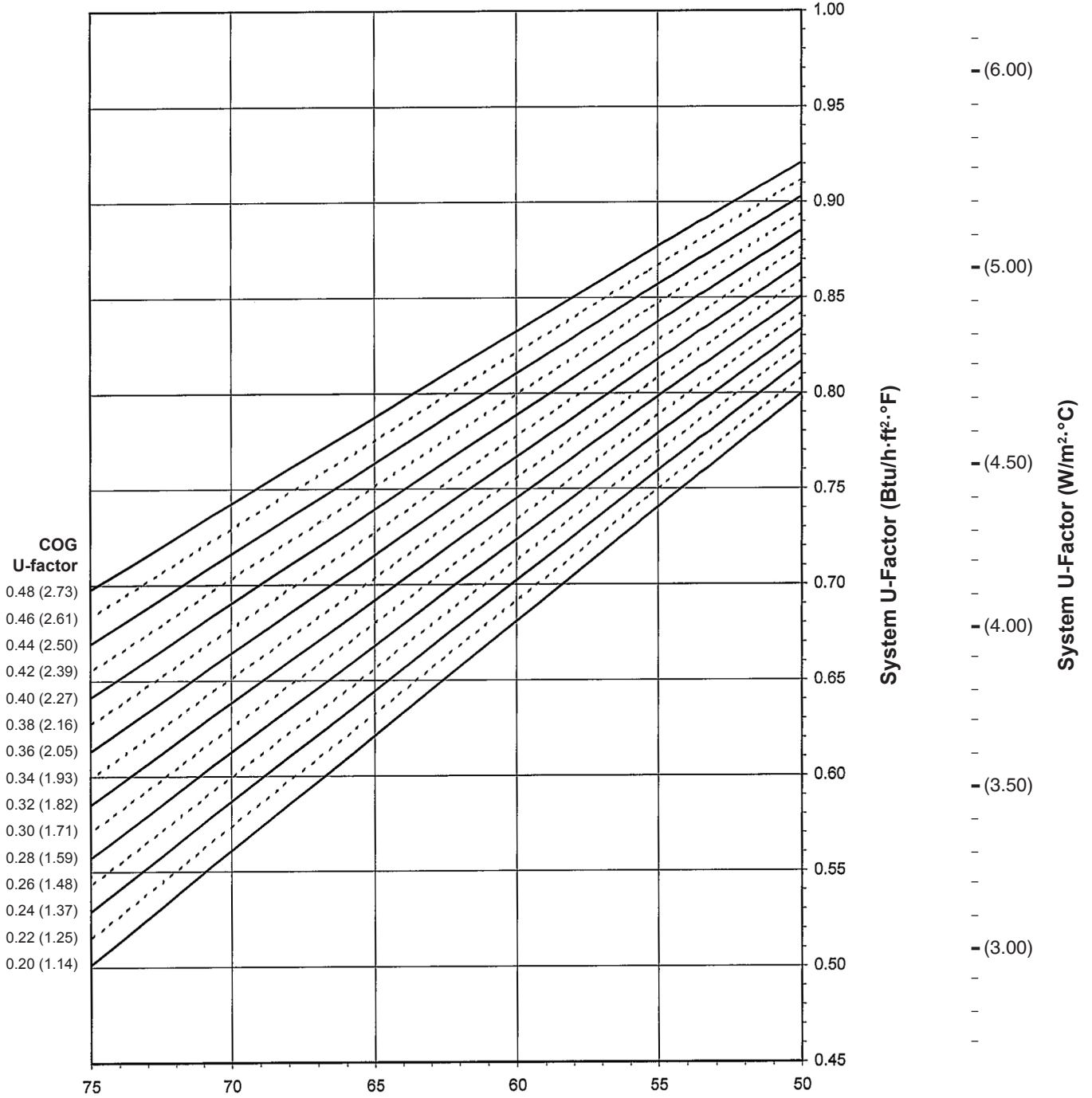
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1600 System™1 with GLASSvent™ - Projecting (Awning - Single)

**Note:**

Values in parentheses are metric.  
 COG = Center of Glass.  
 Charts are generated per AMMA 507

**System U-Factor for Vision Glass**



**Percent of Glass Area = Vision Area/Total Area  
 Daylight Opening / Projected Area**

**Notes for System U-factor, SHGC and VT charts:**

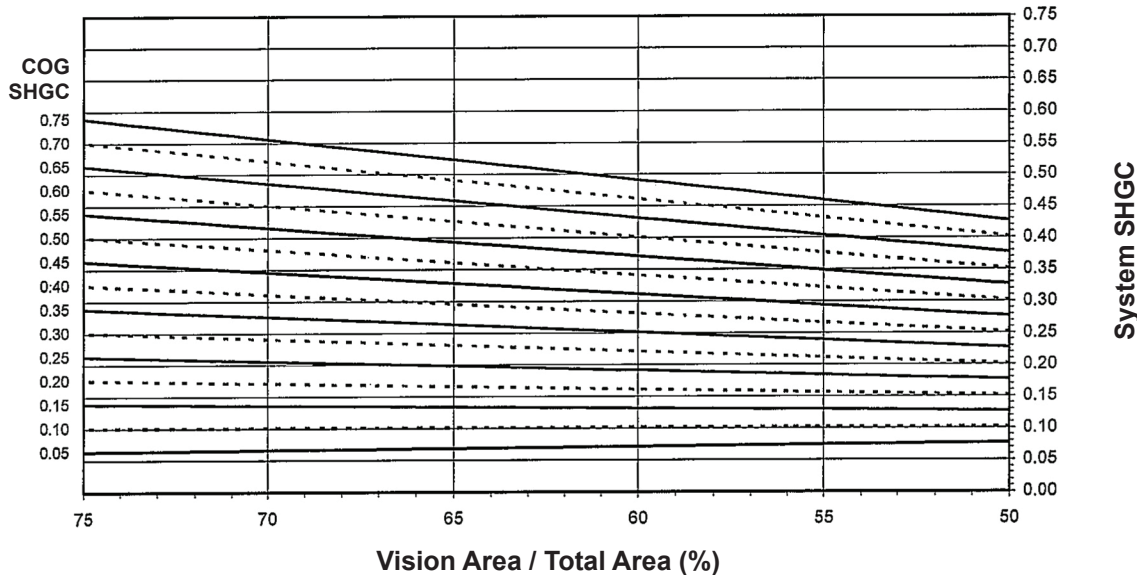
For glass values that are not listed, linear interpolation is permitted.  
 Glass properties are based on center of glass values and are obtained from your glass supplier.

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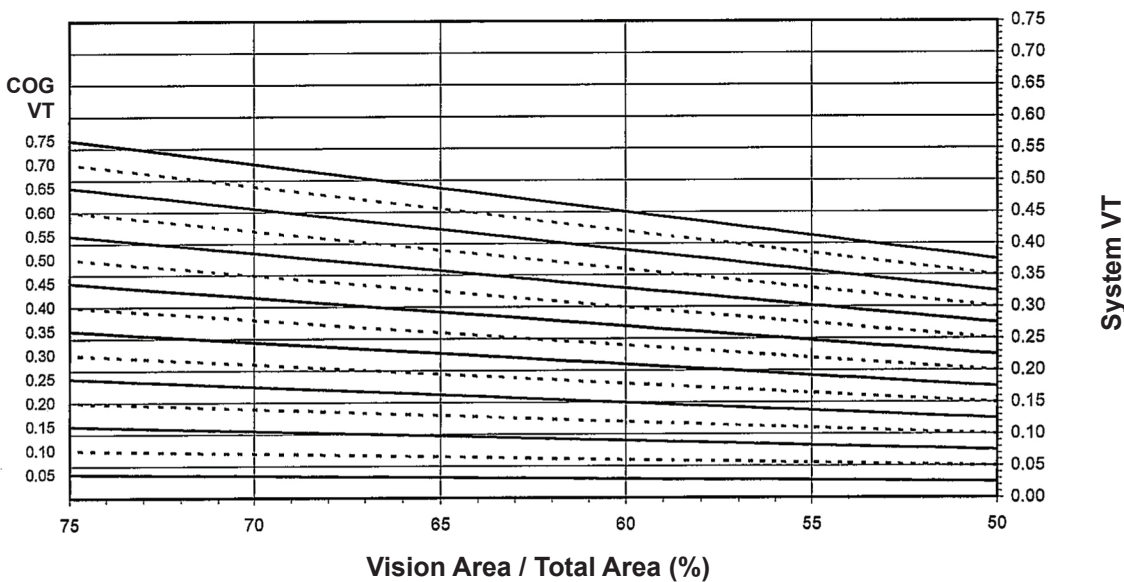
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## 1600 System™1 with GLASSvent™ - Projecting (Awning - Single)

### System Solar Heat Gain Coefficient (SHGC) vs Percent of Vision Area



### System Visible Transmittance (VT) vs Percent of Vision Area



Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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**Thermal Transmittance <sup>1</sup> (BTU/hr • ft<sup>2</sup> • °F)**

Glass U-Factor <sup>3</sup>	Overall U-Factor <sup>4</sup>
0.48	0.87
0.46	0.86
0.44	0.85
0.42	0.84
0.40	0.83
0.38	0.82
0.36	0.81
0.34	0.80
0.32	0.79
0.30	0.78
0.28	0.77
0.26	0.76
0.24	0.76
0.22	0.75
0.20	0.74

**1" GLAZING WITH ALUMINUM PRESSURE PLATE**

**1600 System™1 with GLASSvent™ - Projecting (Awning - Single)**

**NOTE:** For glass values that are not listed, linear interpolation is permitted.

1. U-Factors are determined in accordance with NFRC 100.
2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values and are obtained from your glass supplier.
4. Overall U-Factor, SHGC, and VT Matricies are based on the standard NFRC specimen size of 1500mm wide by 600mm high (59-1/16" by 23-5/8").

**SHGC Matrix <sup>2</sup>**

Glass SHGC <sup>3</sup>	Overall SHGC <sup>4</sup>
0.75	0.46
0.70	0.43
0.65	0.41
0.60	0.38
0.55	0.35
0.50	0.32
0.45	0.30
0.40	0.27
0.35	0.24
0.30	0.21
0.25	0.18
0.20	0.16
0.15	0.13
0.10	0.10
0.05	0.07

**Visible Transmittance <sup>2</sup>**

Glass VT <sup>3</sup>	Overall VT <sup>4</sup>
0.75	0.42
0.70	0.39
0.65	0.36
0.60	0.33
0.55	0.30
0.50	0.28
0.45	0.25
0.40	0.22
0.35	0.19
0.30	0.17
0.25	0.14
0.20	0.11
0.15	0.08
0.10	0.06
0.05	0.03

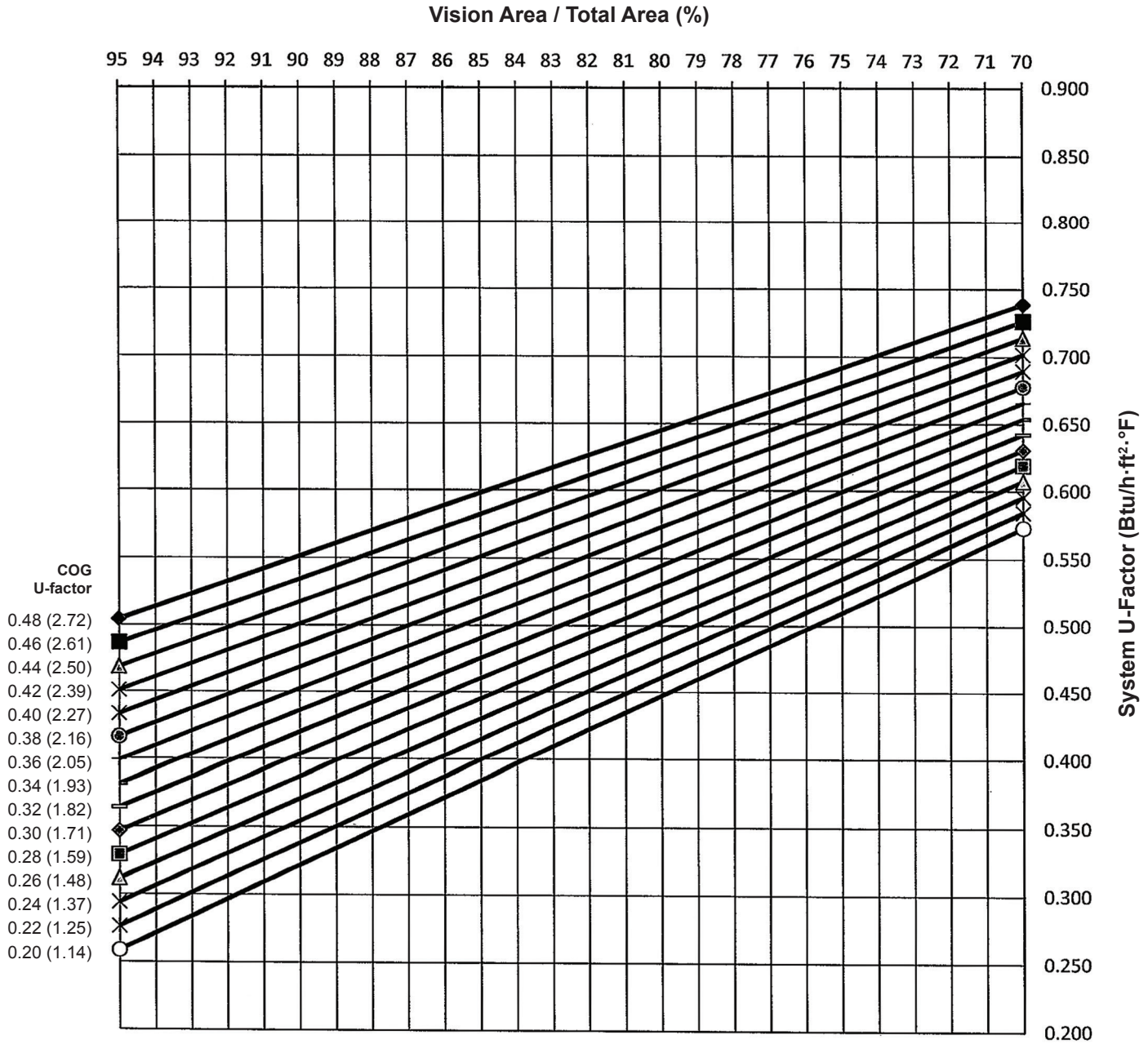
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Note:  
 Values in parentheses are metric.  
 COG=Center of Glass.  
 Charts are generated per AAMA 507.

## 1" GLAZING WITH FIBERGLASS PRESSURE PLATE

### System U-Factor for Vision Glass



**Notes for System U-Factor, SHGC and VT charts:**

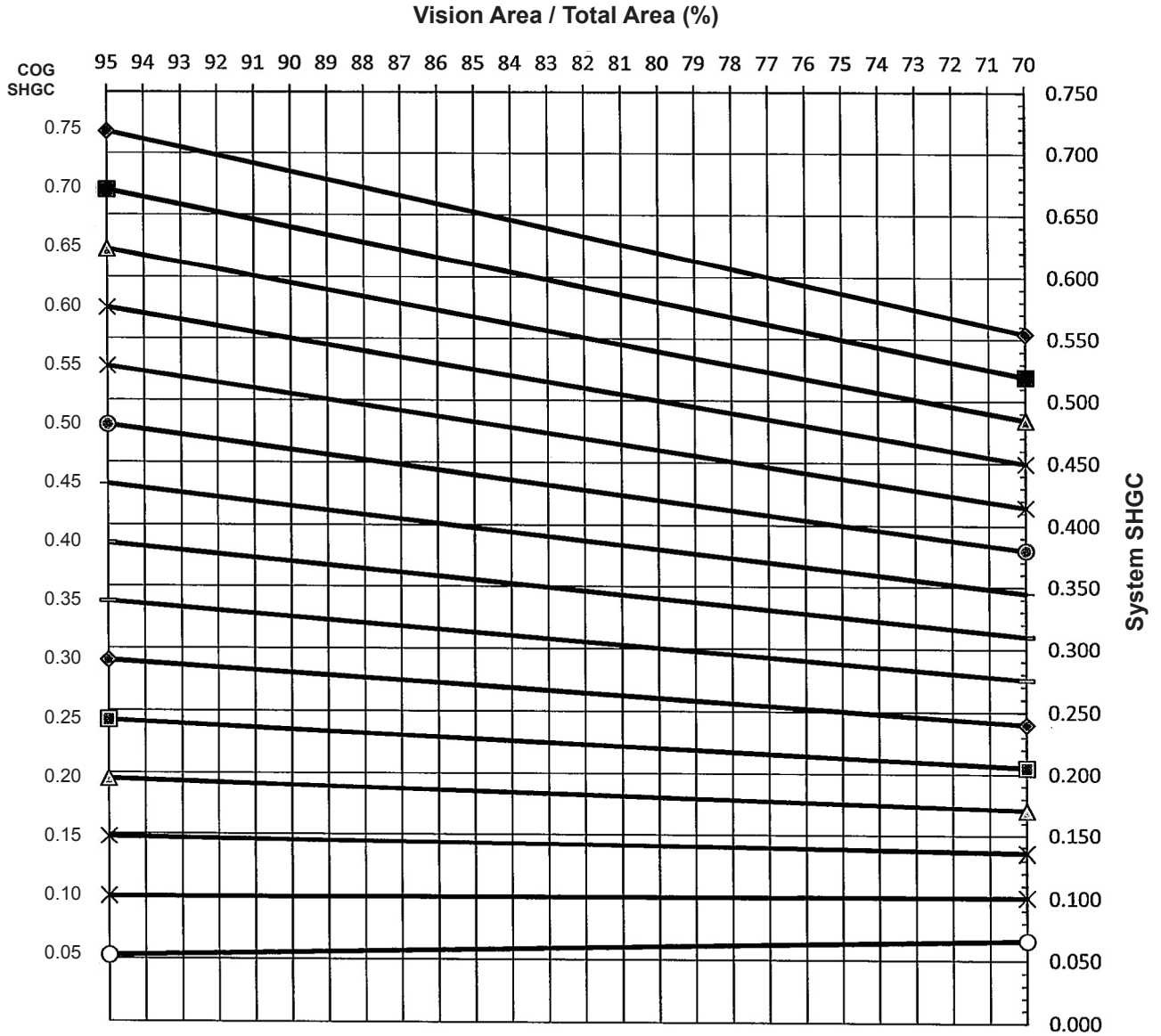
For glass values that are not listed, linear interpolation is permitted.  
 Glass properties are based on center of glass values (winter conditions) and are obtained from your glass supplier.

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**1" GLAZING WITH FIBERGLASS PRESSURE PLATE**

System Solar Heat Gain Coefficient (SHGC) vs Percent of Vision Area



Charts are generated per AAMA 507.

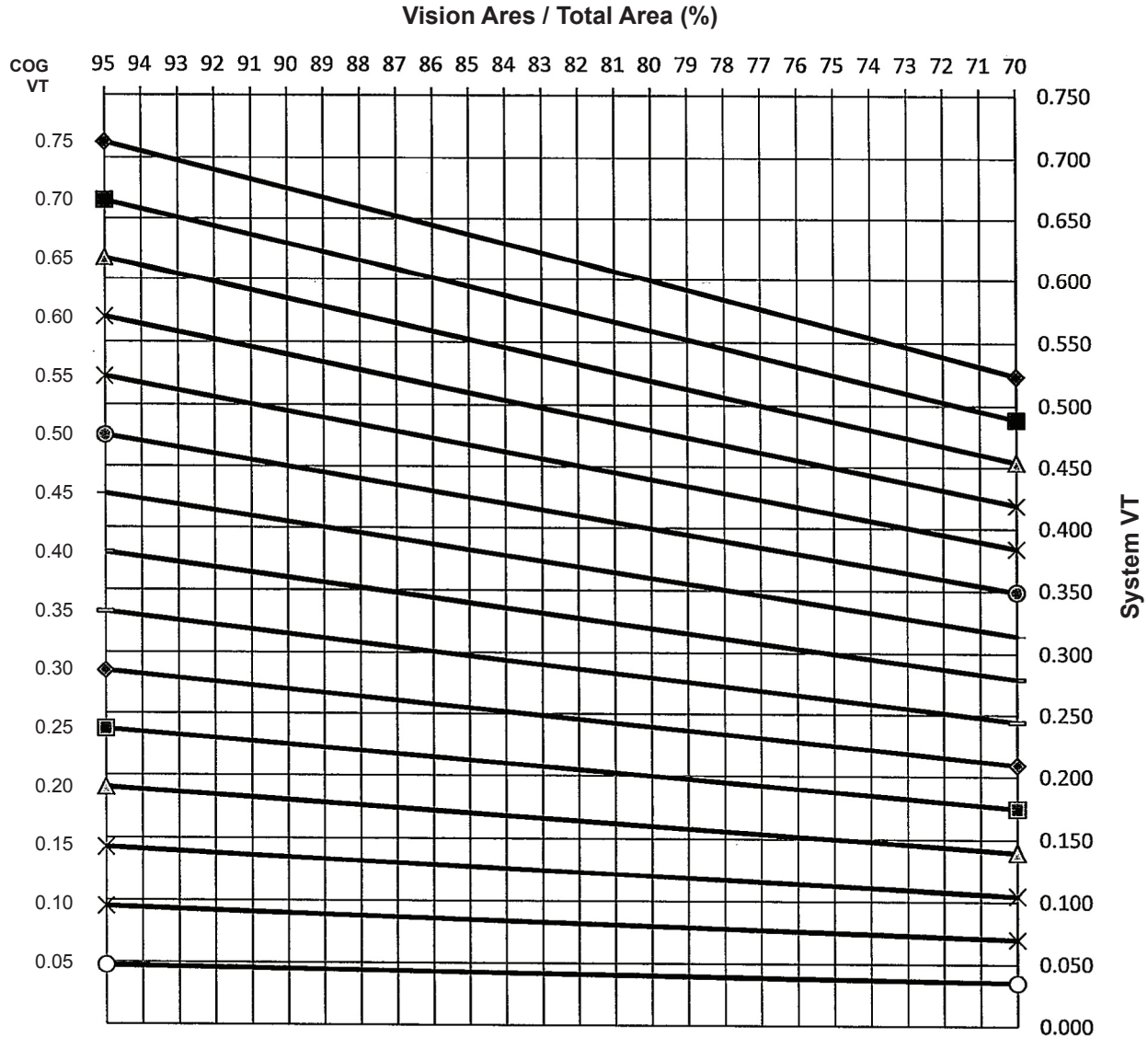
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**1" GLAZING WITH FIBERGLASS PRESSURE PLATE**

System Visible Transmittance (VT) vs Percent of Vision Area



Charts are generated per AAMA 507.

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**Thermal Transmittance <sup>1</sup> (BTU/hr • ft<sup>2</sup> • °F)**

Glass U-Factor <sup>3</sup>	Overall U-Factor <sup>4</sup>
0.48	0.56
0.46	0.54
0.44	0.52
0.42	0.51
0.40	0.49
0.38	0.48
0.36	0.46
0.34	0.44
0.32	0.43
0.30	0.41
0.28	0.39
0.26	0.38
0.24	0.36
0.22	0.34
0.20	0.33

**1" GLAZING WITH FIBERGLASS PRESSURE PLATE**

**NOTE:** For glass values that are not listed, linear interpolation is permitted.

1. U-Factors are determined in accordance with NFRC 100.
2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values and are obtained from your glass supplier.
4. Overall U-Factor, SHGC, and VT Matrices are based on the standard NFRC specimen size of 2000mm wide by 2000mm high (78-3/4" by 78-3/4").

**SHGC Matrix <sup>2</sup>**

Glass SHGC <sup>3</sup>	Overall SHGC <sup>4</sup>
0.75	0.68
0.70	0.64
0.65	0.59
0.60	0.55
0.55	0.50
0.50	0.46
0.45	0.41
0.40	0.37
0.35	0.32
0.30	0.28
0.25	0.23
0.20	0.19
0.15	0.15
0.10	0.10
0.05	0.06

**Visible Transmittance <sup>2</sup>**

Glass VT <sup>3</sup>	Overall VT <sup>4</sup>
0.75	0.67
0.70	0.63
0.65	0.58
0.60	0.54
0.55	0.49
0.50	0.45
0.45	0.40
0.40	0.36
0.35	0.31
0.30	0.27
0.25	0.22
0.20	0.18
0.15	0.13
0.10	0.09
0.05	0.04

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## **Features**

- 1600 Wall System™2 is an outside glazed structurally silicone glazed curtain wall
- 1600 Wall System™2 has a 2-1/2" (63.5) sight line
- Standard 6" (152.4) or 7-1/2" (190.5) depth systems
- Standard infill options 1/4" (6.4) and 1" (25.4), other infills available
- Thermally Broken by means of a continuous 1/4" (6.4) low conductance spacer
- Concealed fastener joinery creates smooth, monolithic appearance
- Open-back horizontals and perimeters are available for cost savings
- Shear block fabrication method
- Corners and splayed mullions available
- Offers integrated entrance framing systems
- Silicon compatible glazing materials for long-lasting seals
- 1600 Wall System™2 has been small and large missile impact and cycle tested
- Two color option
- Permanodic™ anodized finishes in seven choices
- Painted finishes in standard and custom choices

## **Optional Features**

- Steel reinforcing available
- Rain screen and backpans
- Optional deep profile and bull-nose covers available
- Deep and heavy-weight mullions available
- Fiberglass pressure plates available
- Veneer system available
- Integrates with standard Kawneer windows and GLASSvent™ windows for curtain wall
- Integrates with Versoleil™ SunShade Outrigger System and Horizontal Single Blade Systems
- Profit\$Maker™ plus die sets available
- Hurricane impact resistant framing option: 7-13/16" (198.4)

## **Product Applications**

- Ideal for low to mid-rise applications where high performance is desired
- It is also the right choice for high span applications

For specific product applications,  
Consult your Kawneer representative.

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Metric (SI) conversion figures are included throughout these details for reference. Numbers in parentheses ( ) are millimeters unless otherwise noted.

The following metric (SI ) units are found in these details:

- m – meter
- cm – centimeter
- mm – millimeter
- s – second
- Pa – pascal
- MPa – megapascal

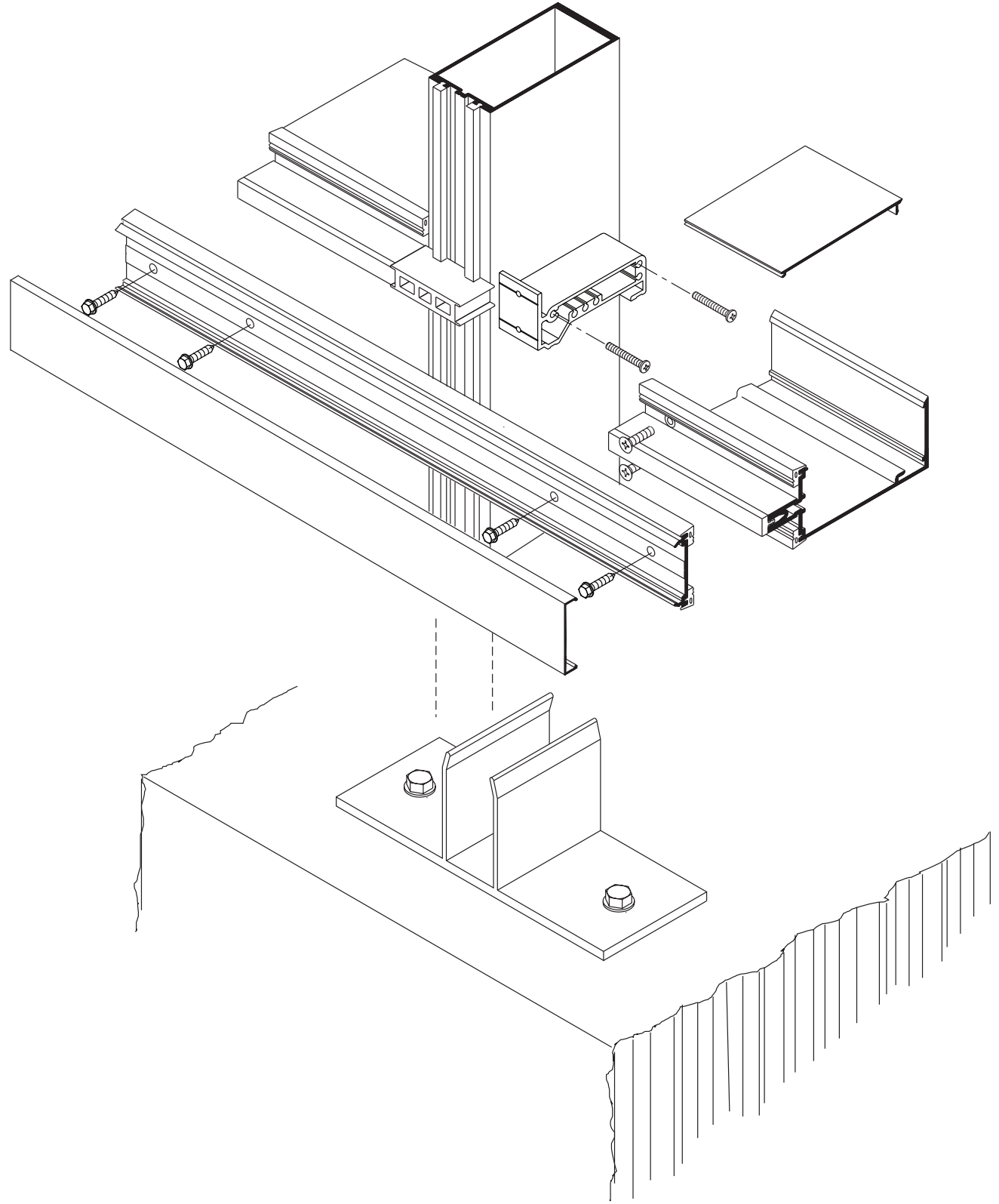
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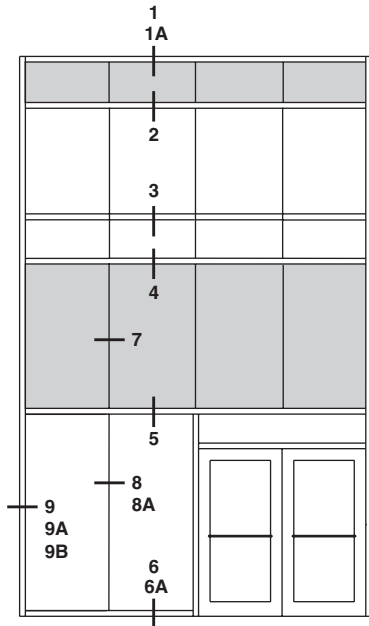


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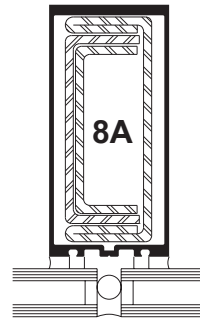
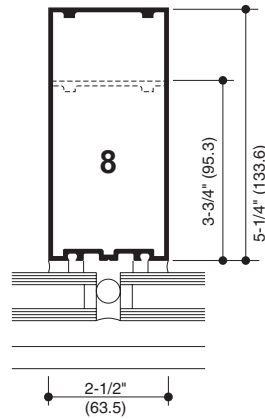
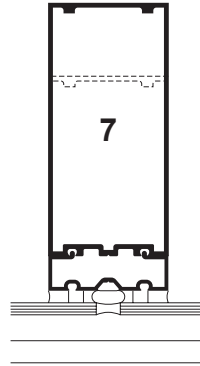
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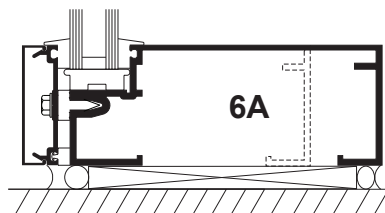
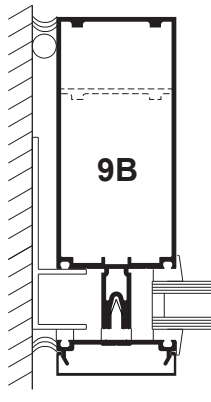
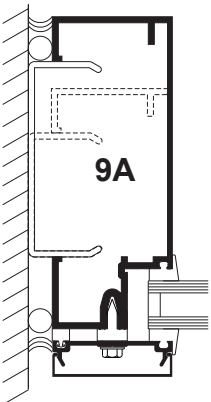
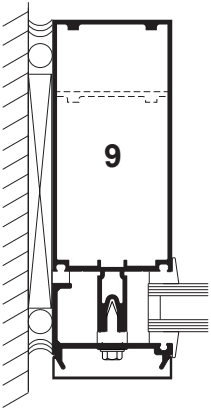
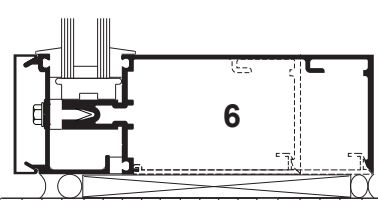
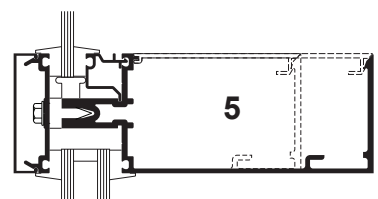
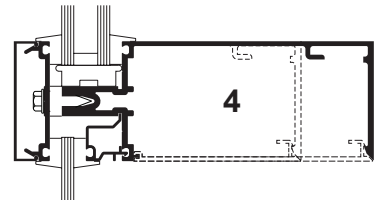
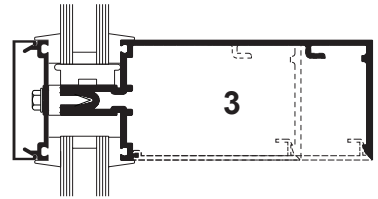
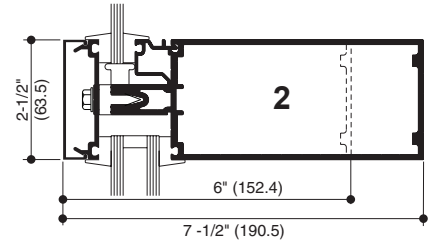
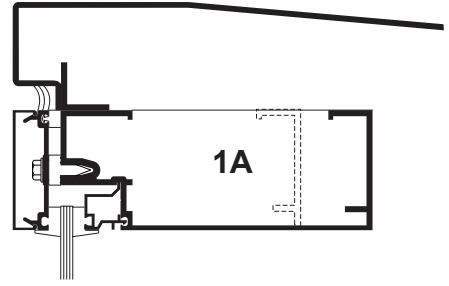
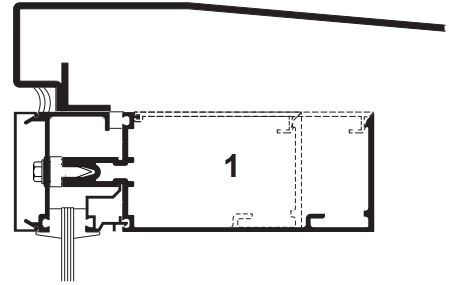
SCALE 3" = 1'-0"



ELEVATION IS NUMBER KEYED TO DETAILS



OPTIONAL STEEL REINFORCING AS REQUIRED

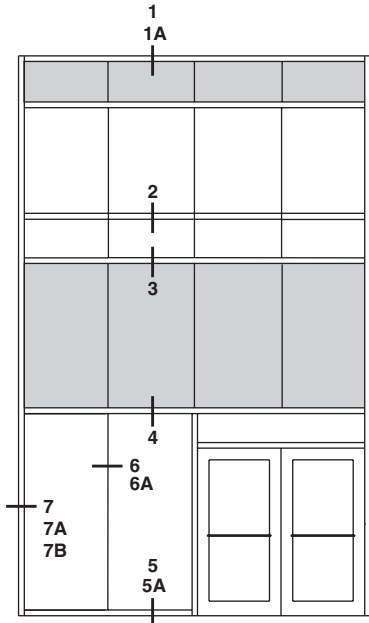


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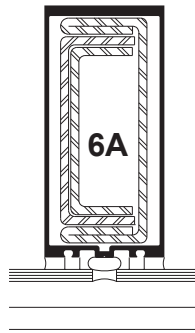
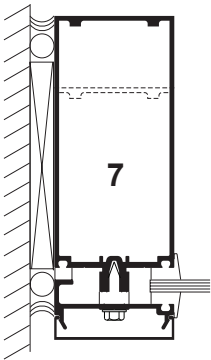
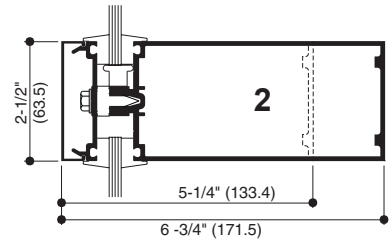
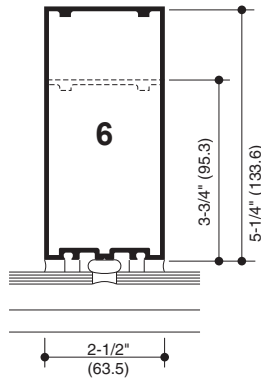
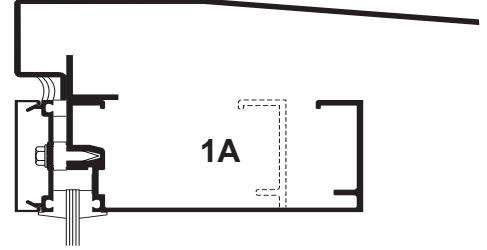
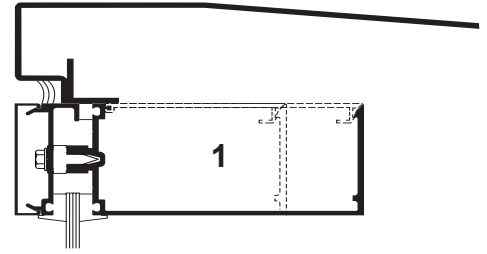
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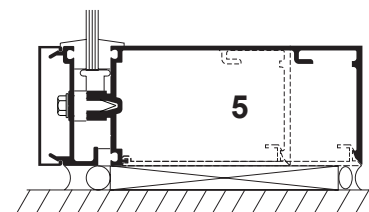
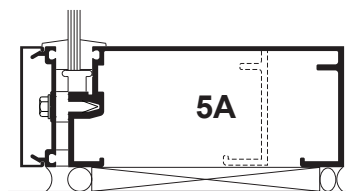
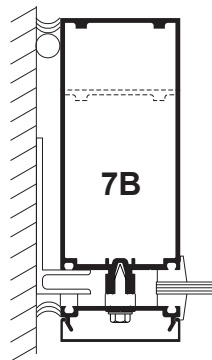
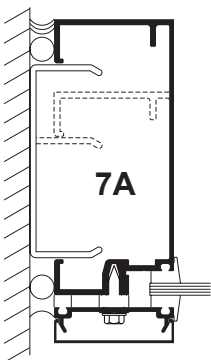
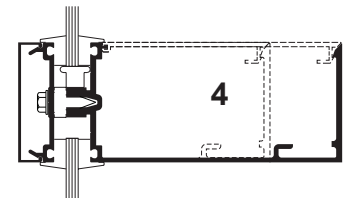
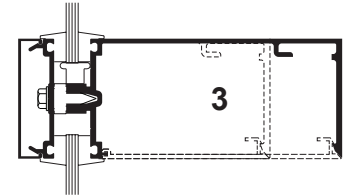
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ELEVATION IS NUMBER KEYED TO DETAILS



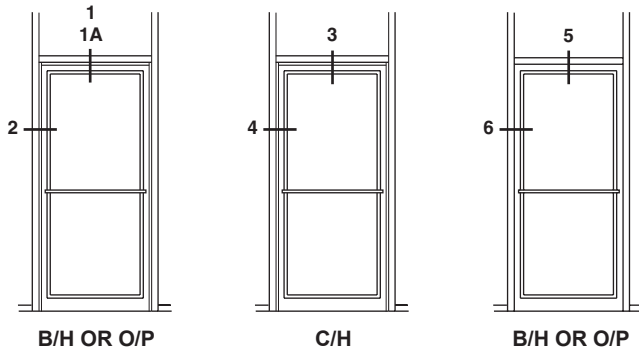
OPTIONAL STEEL REINFORCING AS REQUIRED



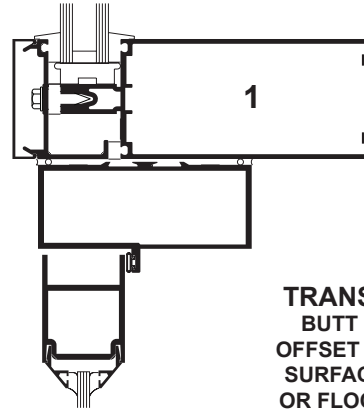
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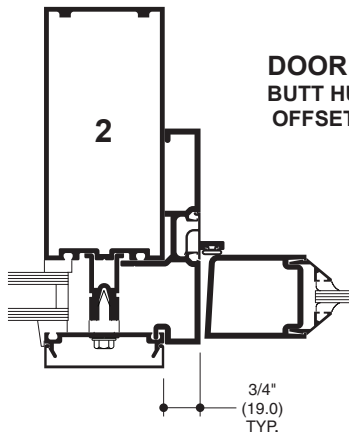
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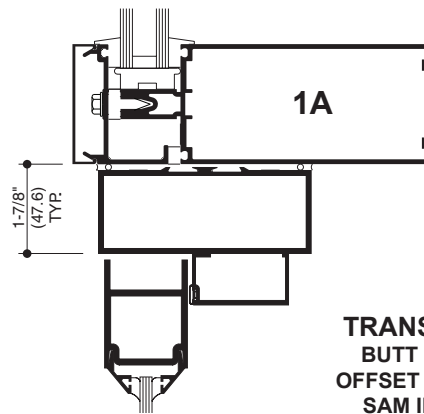
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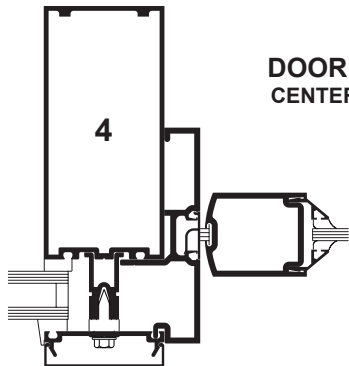
**TRANSOM BAR  
BUTT HUNG OR  
OFFSET PIVOT WITH  
SURFACE CLOSER  
OR FLOOR CLOSER**



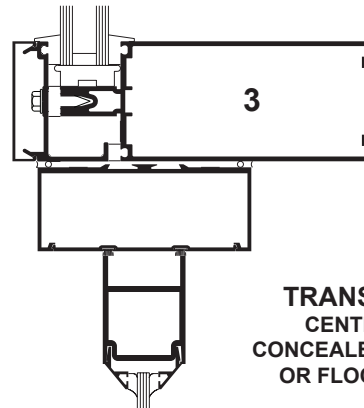
**DOOR JAMB  
BUTT HUNG OR  
OFFSET PIVOT**



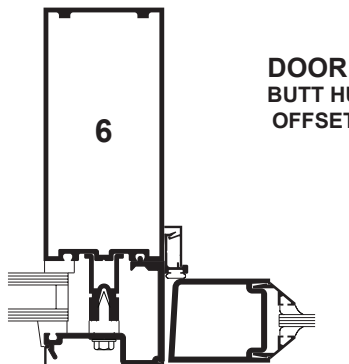
**TRANSOM BAR  
BUTT HUNG OR  
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SAM II CLOSER**



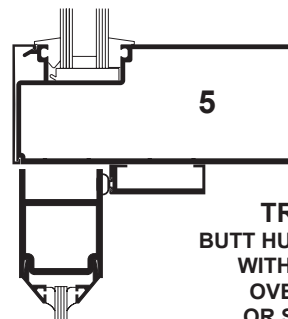
**DOOR JAMB  
CENTER HUNG**



**TRANSOM BAR  
CENTER HUNG  
CONCEALED OVERHEAD  
OR FLOOR CLOSER**



**DOOR JAMB  
BUTT HUNG OR  
OFFSET PIVOT**

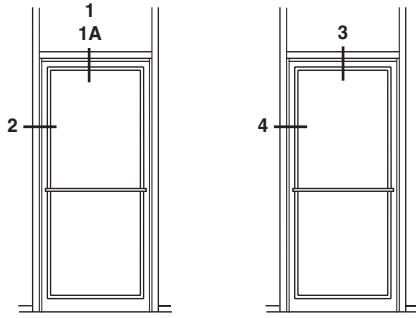


**TRANSOM BAR  
BUTT HUNG OR OFFSET PIVOT  
WITH LCN CONCEALED  
OVER HEAD CLOSER  
OR SURFACE CLOSER**

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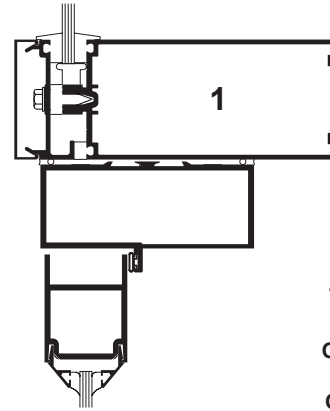
**SCALE 3" = 1'-0"**



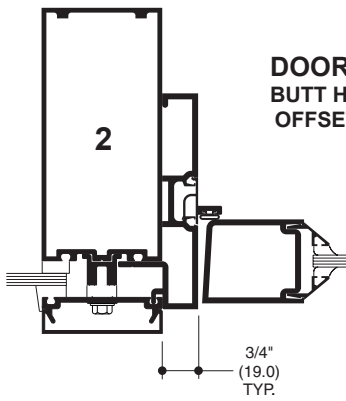
**B/H OR O/P**

**C/H**

**ELEVATION IS NUMBER KEYED TO DETAILS**

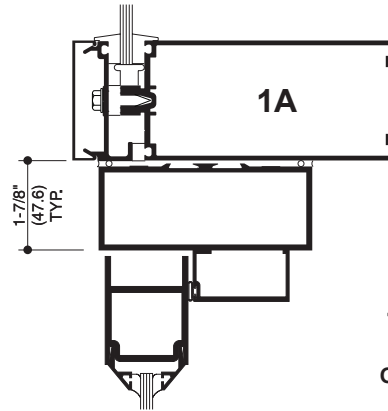


**TRANSOM BAR  
BUTT HUNG OR  
OFFSET PIVOT WITH  
SURFACE CLOSER  
OR FLOOR CLOSER**

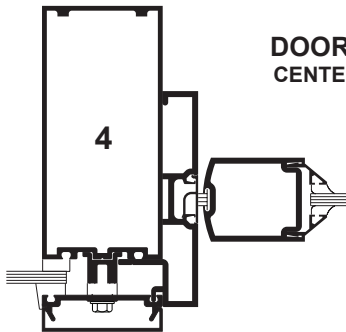


**DOOR JAMB  
BUTT HUNG OR  
OFFSET PIVOT**

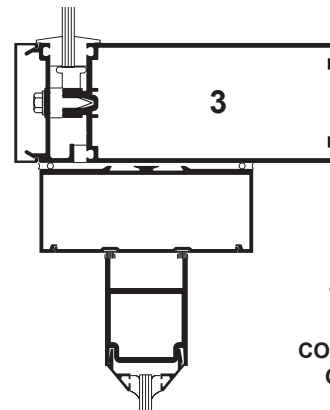
**3/4"  
(19.0)  
TYP.**



**TRANSOM BAR  
BUTT HUNG OR  
OFFSET PIVOT WITH  
SAM II CLOSER**



**DOOR JAMB  
CENTER HUNG**



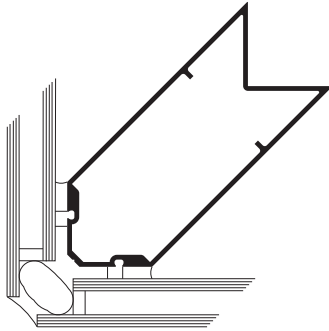
**TRANSOM BAR  
CENTER HUNG  
CONCEALED OVERHEAD  
OR FLOOR CLOSER**

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

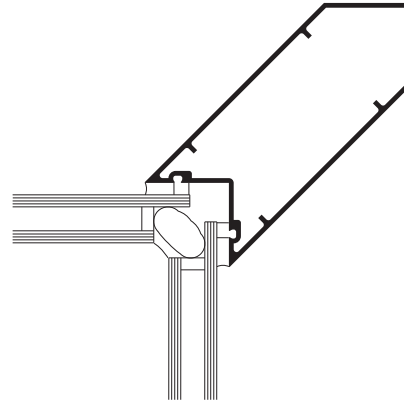
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SCALE 3" = 1'-0"

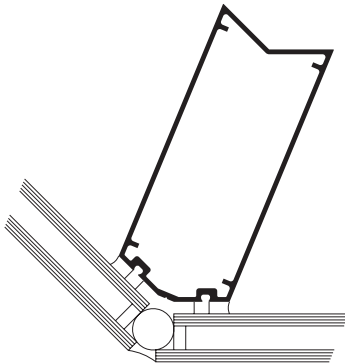
NOTE: 1" SYSTEM SHOWN, 1/4" SYSTEM SIMILAR.



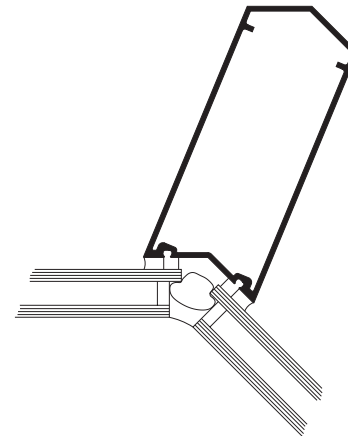
90° OUTSIDE CORNER



90° INSIDE CORNER



135° OUTSIDE CORNER



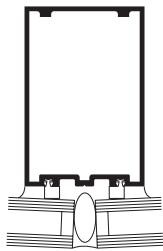
135° INSIDE CORNER

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

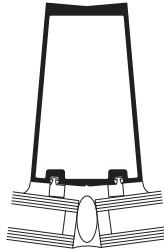
Kawneer reserves the right to change configuration without prior notice when deemed necessary for product improvement.

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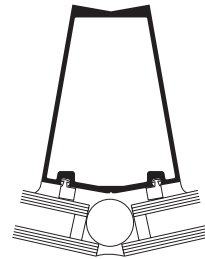
**SCALE 3" = 1'-0"**



0° TO 5°

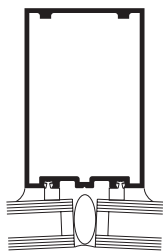


5° TO 15°

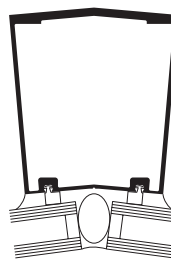


15° TO 25°

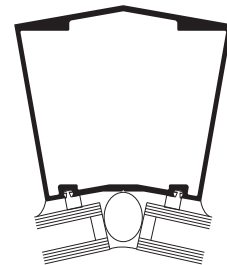
### OUTSIDE SPLAYED MULLIONS



0° TO 5°



5° TO 15°



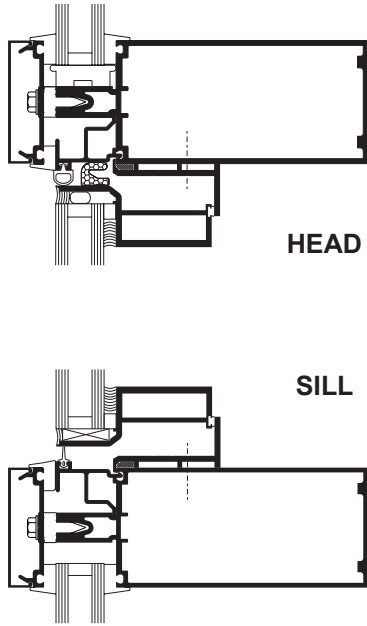
15° TO 25°

### INSIDE SPLAYED MULLIONS

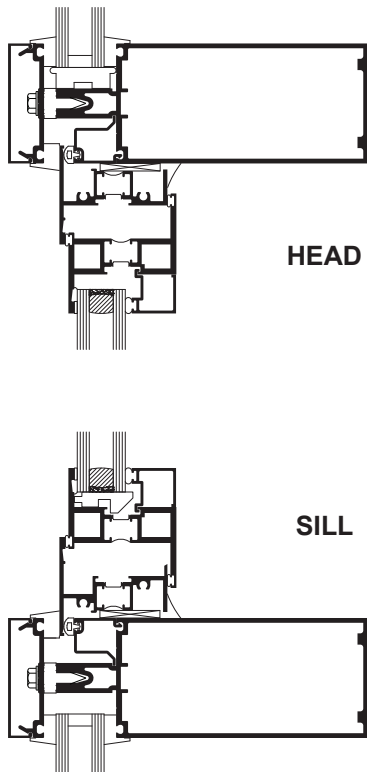
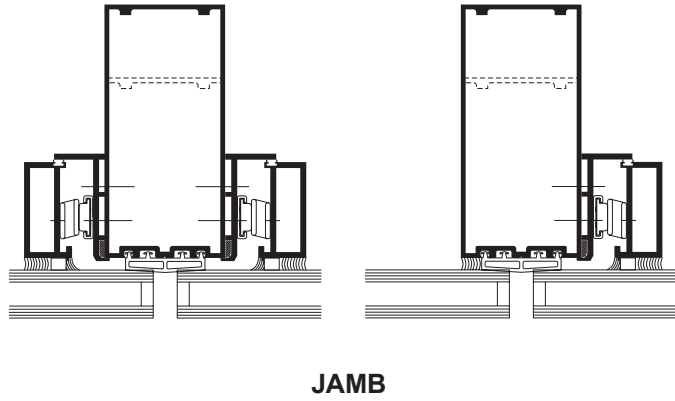
Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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SCALE 3" = 1'-0"

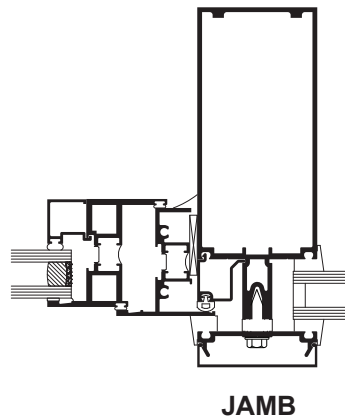


GLASSvent™ WINDOWS FOR CURTAIN WALL



8225TL THERMAL WINDOWS

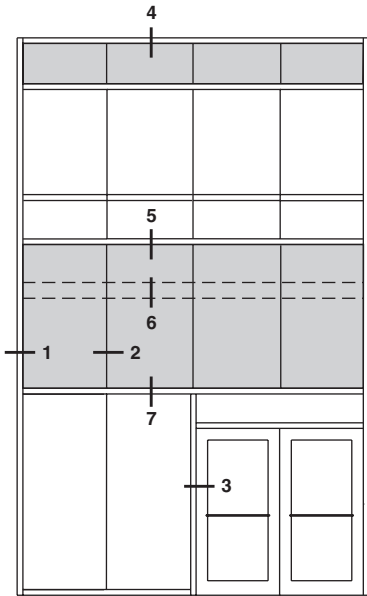
NOTE: Other vent types can be accommodated. Contact your Kawneer representative for other options.



Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

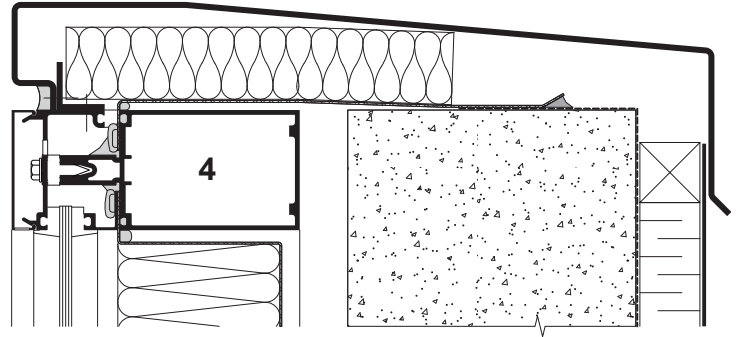
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SCALE 3" = 1'-0"

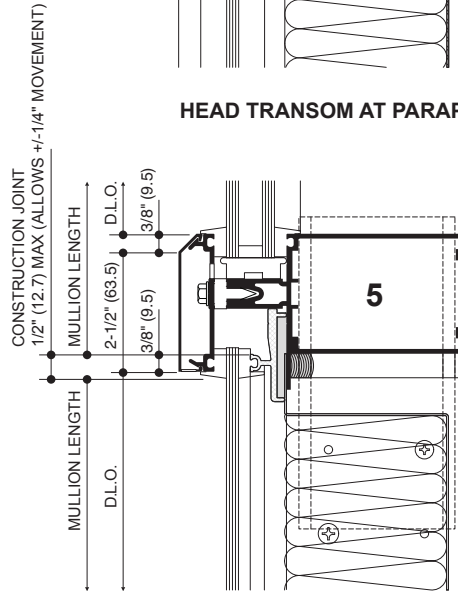


ELEVATION IS NUMBER KEYED TO DETAILS

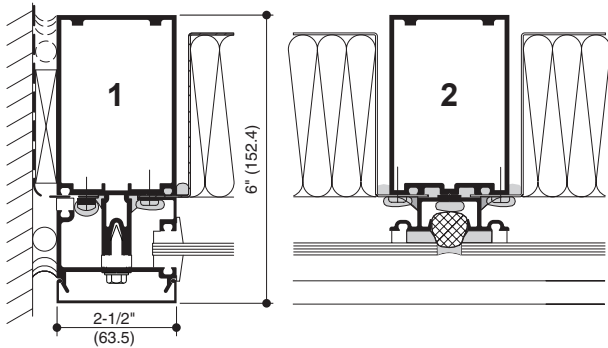
NOTE: 6" SYSTEM SHOWN, 7-1/2" SYSTEM SIMILAR



HEAD TRANSOM AT PARAPET FLASHING



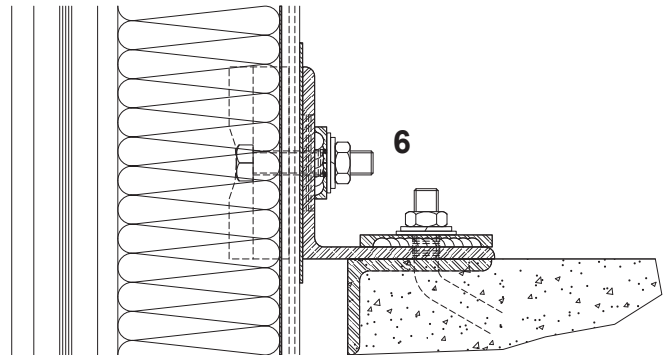
EXPANSION JOINT



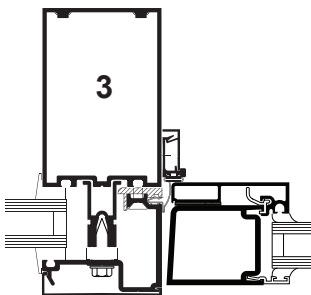
JAMB MULLION AT SPANDREL

(With vapor barrier tie-in)

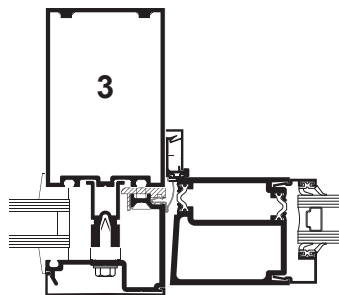
MULLION AT SPANDREL



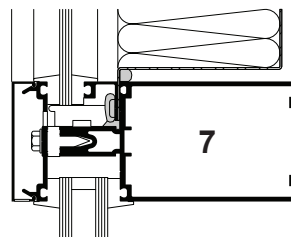
TYPICAL DEADLOAD ANCHOR



THERMALLY BROKEN DOOR ADAPTOR FOR INSULCLAD DOORS



AA™ 250 THERMAL ENTRANCE



TRANSOM - SPANDREL OVER VISION

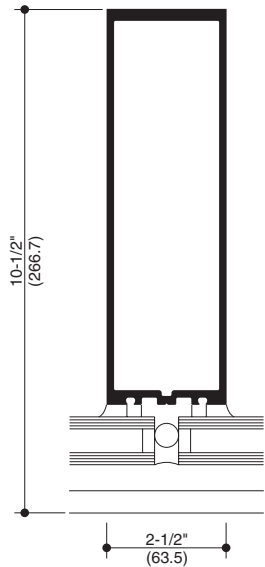
Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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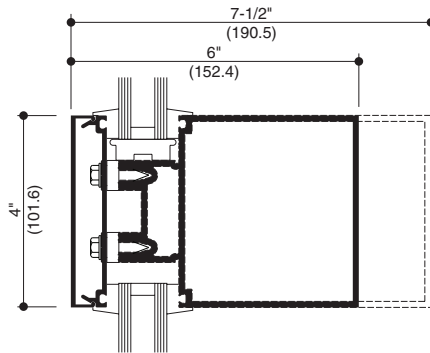


## SCALE 3" = 1'-0"

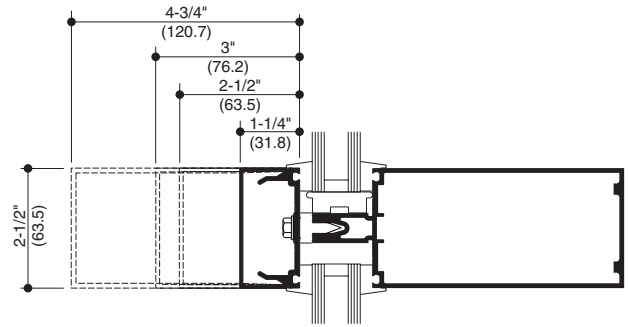
Architects – Most extrusion and window types illustrated in this catalog are standard products for Kawneer. These concepts have been expanded and modified to afford you design freedom. Some miscellaneous details are non-standard and are intended to demonstrate how the system can be modified to expand design flexibility. Please contact your Kawneer representative for further assistance.



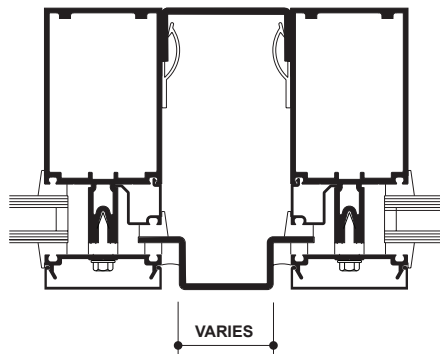
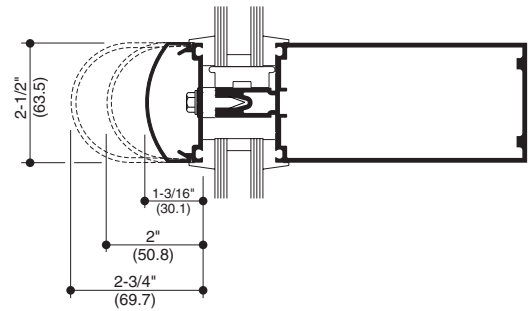
**DEEP MULLION**



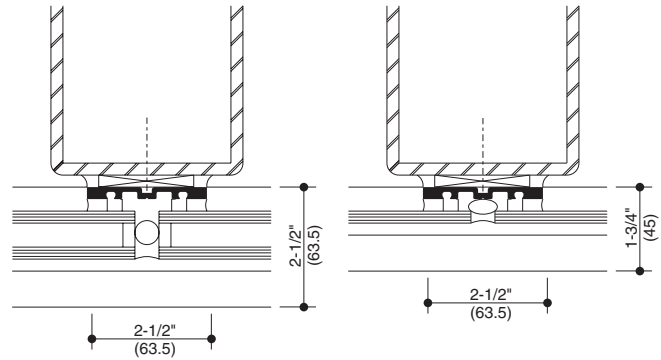
**4" SIGHT LINE**



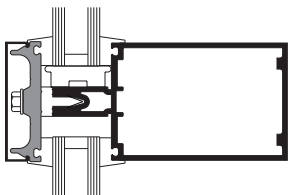
**OPTIONAL COVERS**



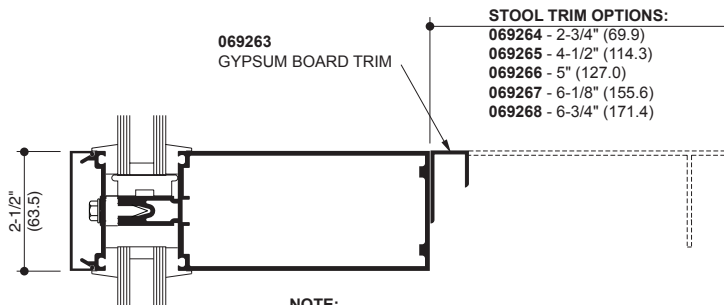
**DOUBLE MULLION**



**VENEER SYSTEM**



**CAPTURED MULLION (1")  
OPTIONAL FIBERGLASS PRESSURE PLATE**



069263  
GYPSUM BOARD TRIM

**STOOL TRIM OPTIONS:**

- 069264 - 2-3/4" (69.9)
- 069265 - 4-1/2" (114.3)
- 069266 - 5" (127.0)
- 069267 - 6-1/8" (155.6)
- 069268 - 6-3/4" (171.4)

**NOTE:**  
STOOL TRIMS REQUIRE 069271 TRIM CLIP PACKAGE

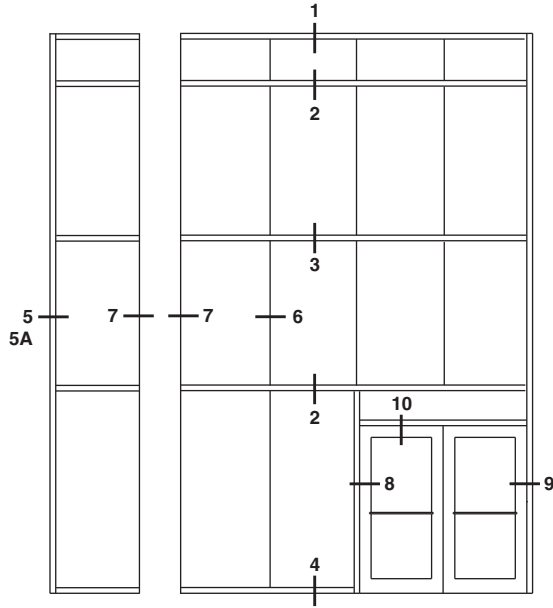
**INTERIOR STOOL TRIM**

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

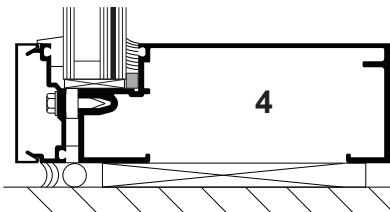
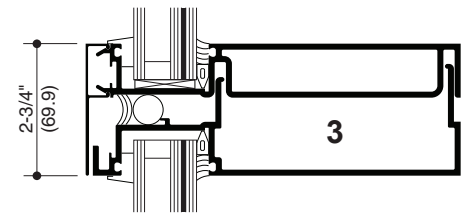
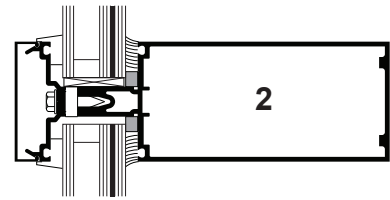
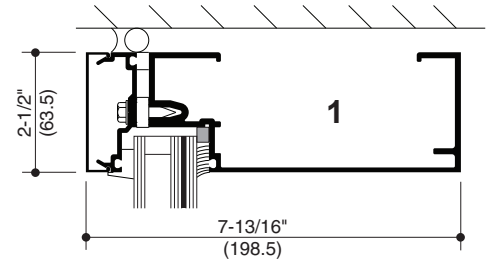
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**SCALE 3" = 1'-0"**

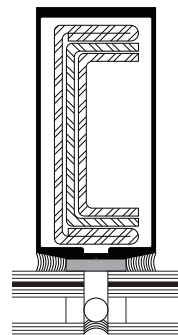
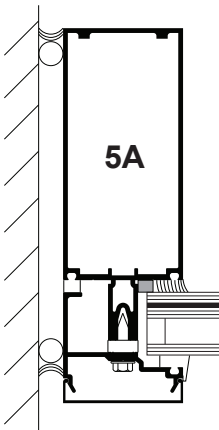
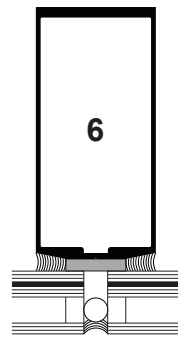
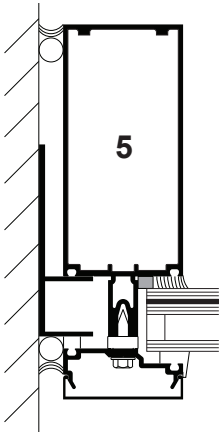
**NOTE:** DETAILS SHOWN WITH 1-5/16" INFILL AND ARE GLAZED FOR LARGE MISSILE IMPACT (LMI).  
SEE NEXT PAGE FOR OTHER GLAZING OPTIONS.



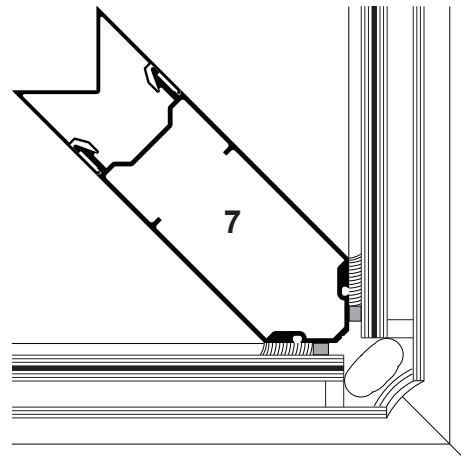
ELEVATION IS NUMBER KEYED TO DETAILS



EXPANSION HORIZONTAL



OPTIONAL STEEL REINFORCING AS REQUIRED

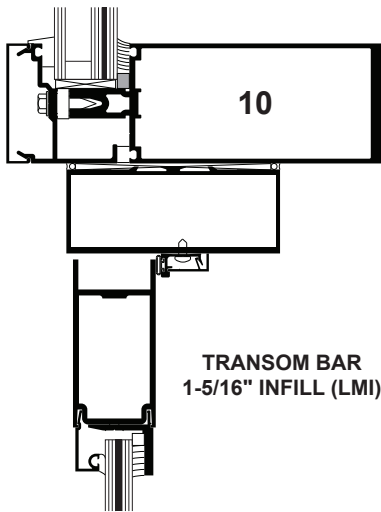
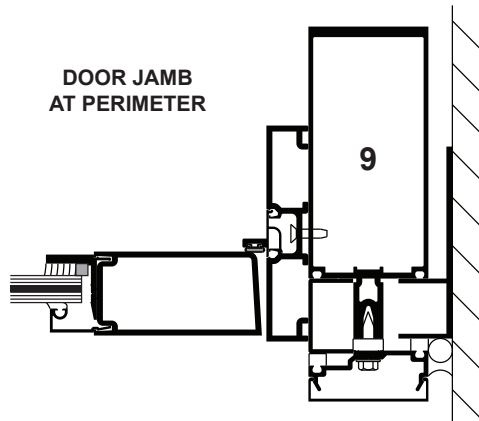
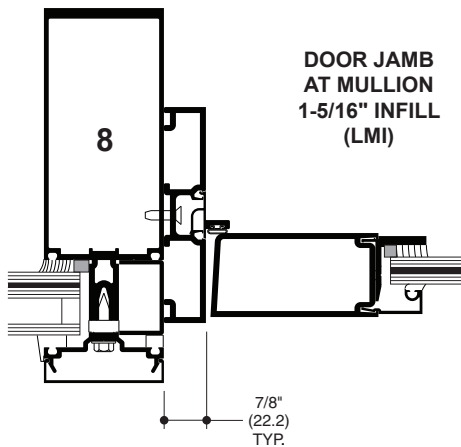


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SCALE 3" = 1'-0"

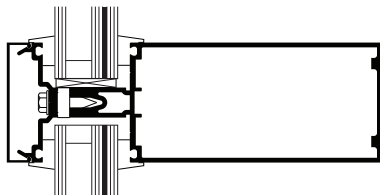
NOTE: 350 IR DOORS ARE USED WITH IMPACT FRAMING.  
DOORS ARE GLAZED WITH 9/16" INFILL.



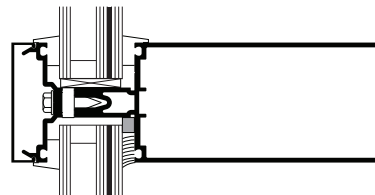
OPTIONAL  
10" DEEP SYSTEM  
1-5/16" INFILL (LMI)



### GLAZING OPTIONS



1-5/16" INFILL (SMI)  
SMALL MISSILE  
IMPACT

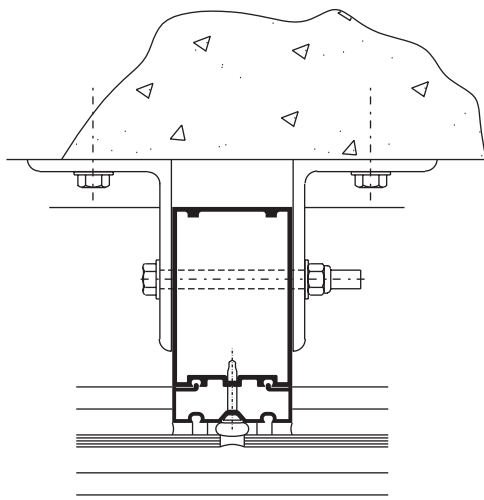


1-5/16" INFILL  
SMALL MISSILE (SMI)  
OVER  
LARGE MISSILE (LMI)

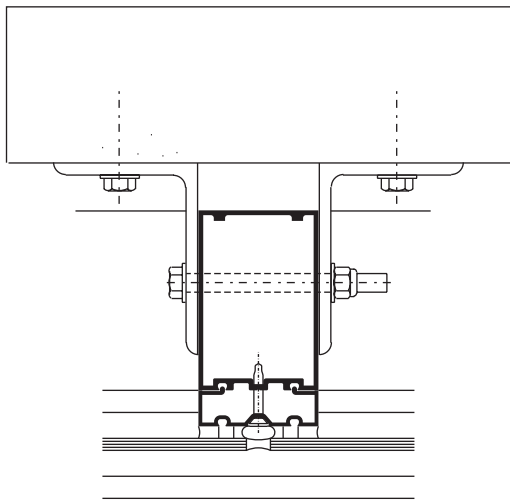
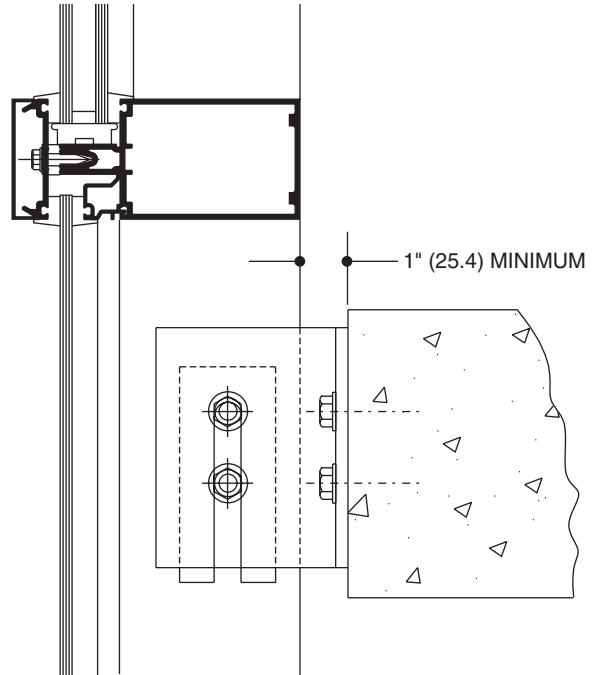
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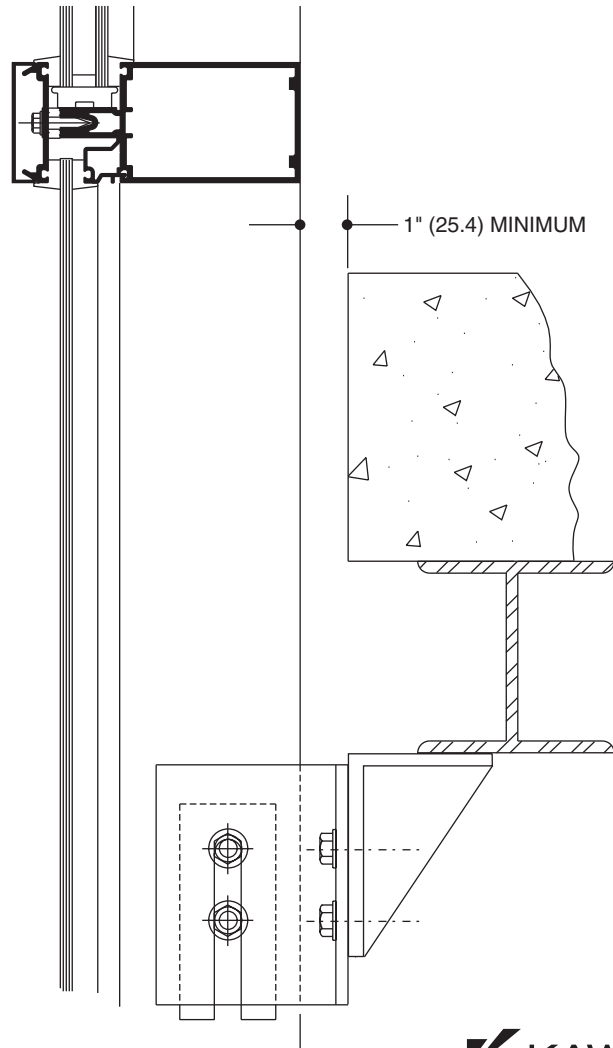
Actual project conditions will determine specific anchor design. Details on this page are for reference only.



**ANCHORING TO FLOOR SLAB**



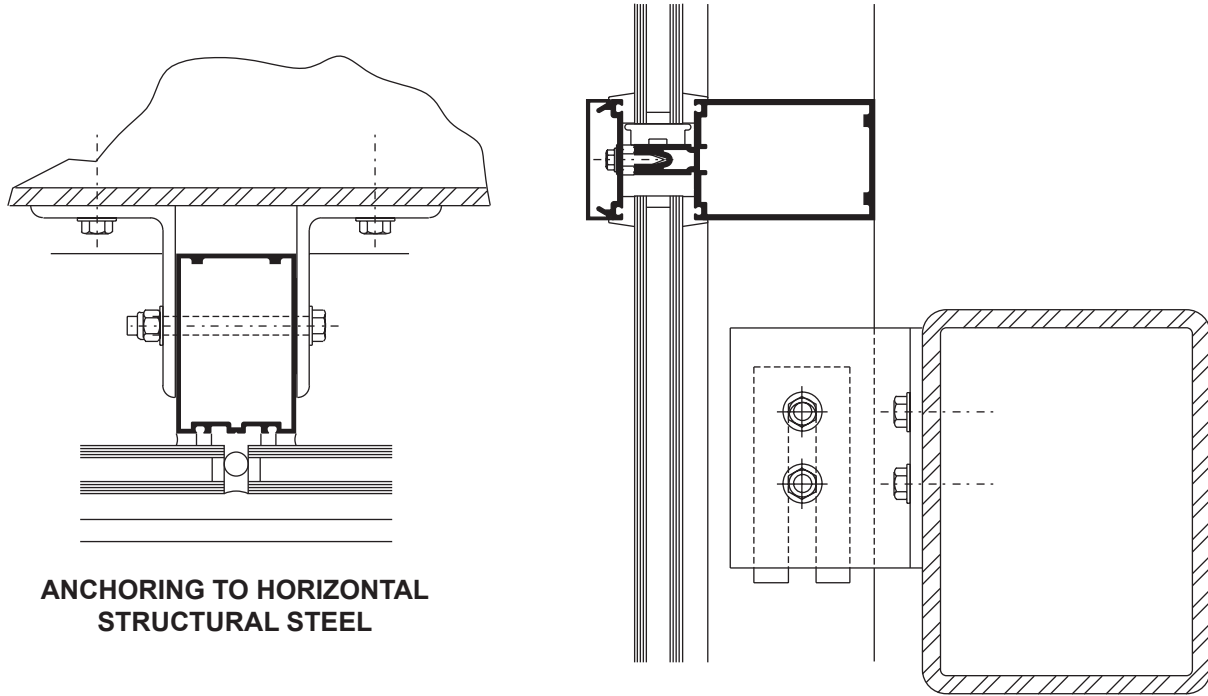
**ANCHORING TO SUPPORT STEEL**



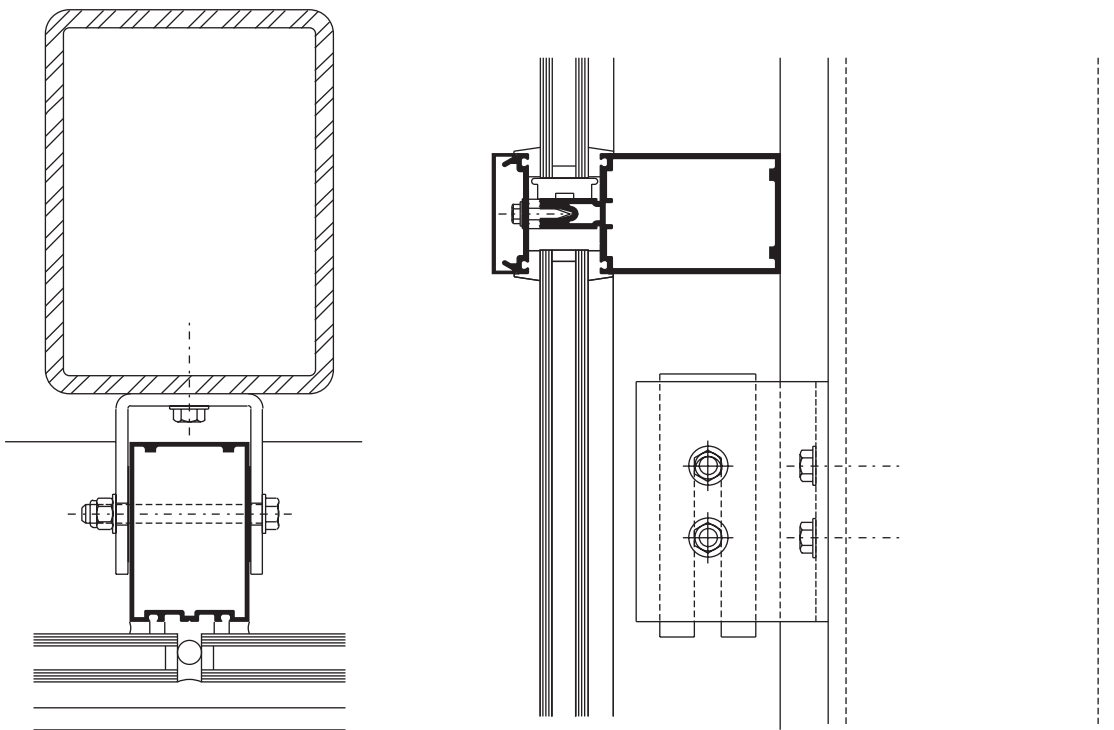
Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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Actual project conditions will determine specific anchor design. Details on this page are for reference only.



**ANCHORING TO HORIZONTAL  
STRUCTURAL STEEL**



**ANCHORING TO VERTICAL  
STRUCTURAL STEEL**

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## WIND LOAD CHARTS

Mullions are designed for deflection limitations in accordance with AAMA TIR-A11 of L/175 up to 13'-6" and L/240 +1/4" above 13'-6". These curves are for mullions WITH HORIZONTALS and are based on engineering calculations for stress and deflection. Allowable wind load stress for ALUMINUM 15,152 psi (104MPa), STEEL 30,000 psi (207MPa). Charted curves, in all cases are for the limiting value. Wind load charts contained herein are based upon nominal wind load utilized in allowable stress design. A conversion from Load Resistance Factor Design (LRFD) is provided. To convert ultimate wind loads to nominal loads, multiply ultimate wind loads by a factor of 0.6 per ASCE/SEI 7. A 4/3 increase in allowable stress has not been used to develop these curves. For special situations not covered by these curves, contact your Kawneer representative for additional information.

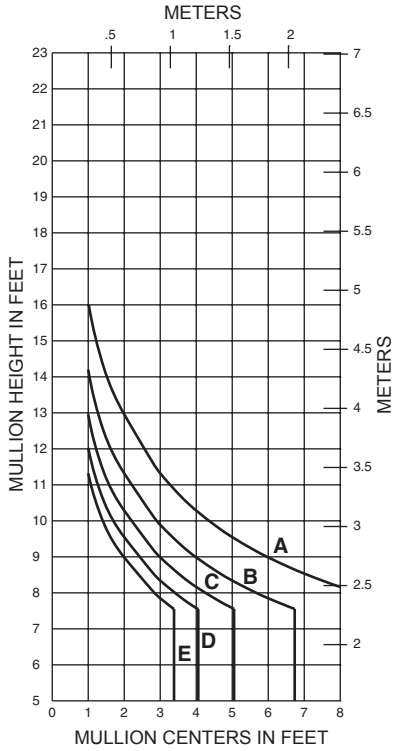
## DEADLOAD CHARTS

Horizontal or deadload limitations are based upon 1/8" (3.2), maximum allowable deflection at the center of an intermediate horizontal member. The accompanying charts are calculated for 1" (25.4) thick insulating glass or 1/4" (6.4) thick glass supported on two setting blocks placed at the loading points shown.

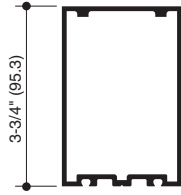
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## SINGLE SPAN



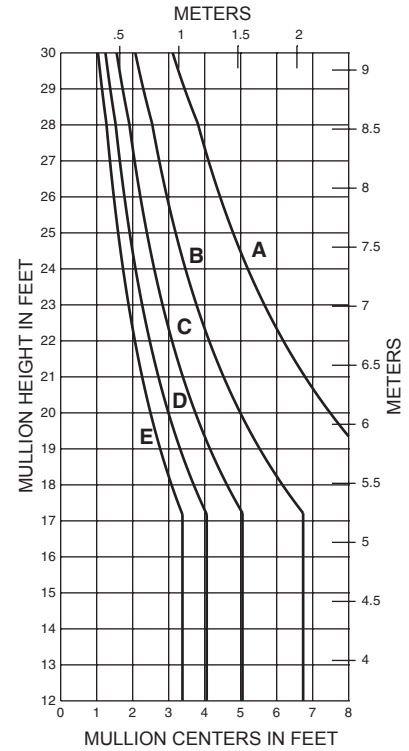
	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	20 PSF (960)	33 PSF (1580)
B =	30 PSF (1440)	50 PSF (2400)
C =	40 PSF (1920)	67 PSF (3200)
D =	50 PSF (2400)	83 PSF (4000)
E =	60 PSF (2880)	100 PSF (4790)



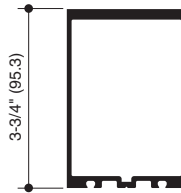
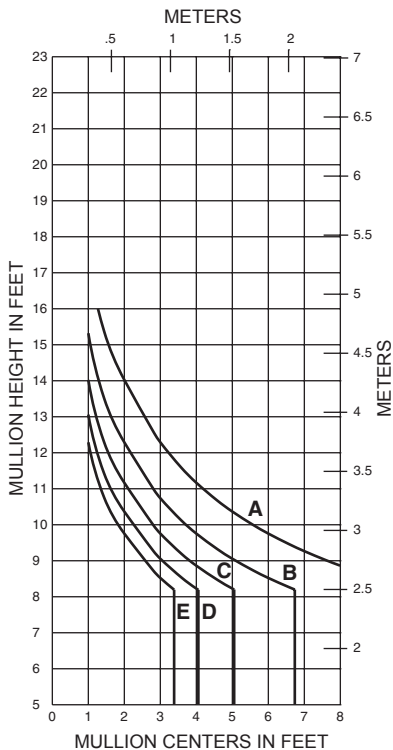
**162025**  
 $I = 2.860(119.04 \times 10^4)$   
 $S = 1.482(24.28 \times 10^3)$



## TWIN SPAN



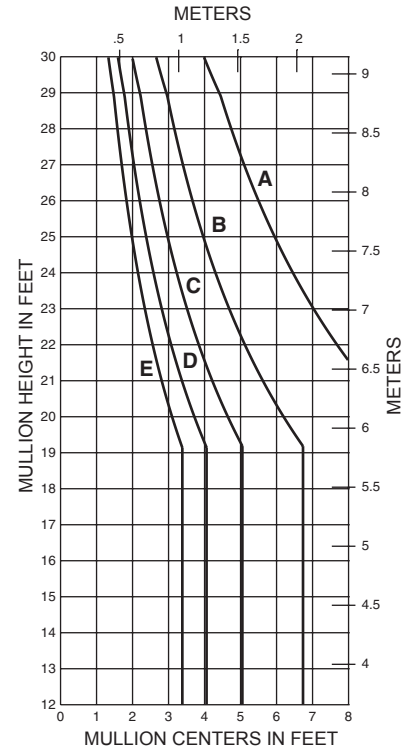
## SINGLE SPAN



**162026**  
 $I = 3.660(152.34 \times 10^4)$   
 $S = 1.840(30.15 \times 10^3)$



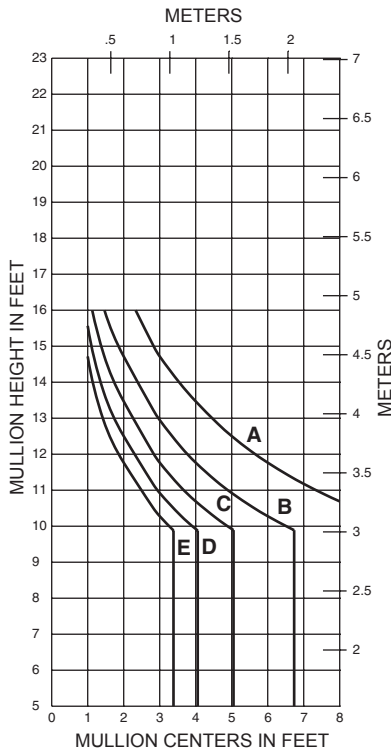
## TWIN SPAN



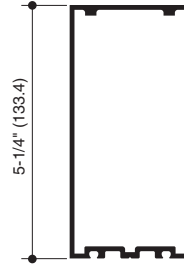
Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

Kawneer reserves the right to change configuration without prior notice when deemed necessary for product improvement.  
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## SINGLE SPAN



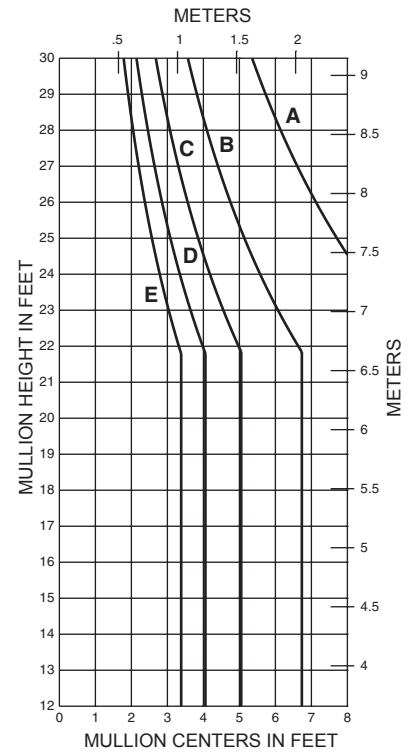
	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	20 PSF (960)	33 PSF (1580)
B =	30 PSF (1440)	50 PSF (2400)
C =	40 PSF (1920)	67 PSF (3200)
D =	50 PSF (2400)	83 PSF (4000)
E =	60 PSF (2880)	100 PSF (4790)



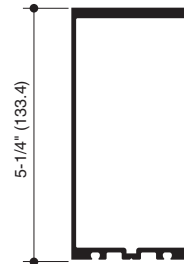
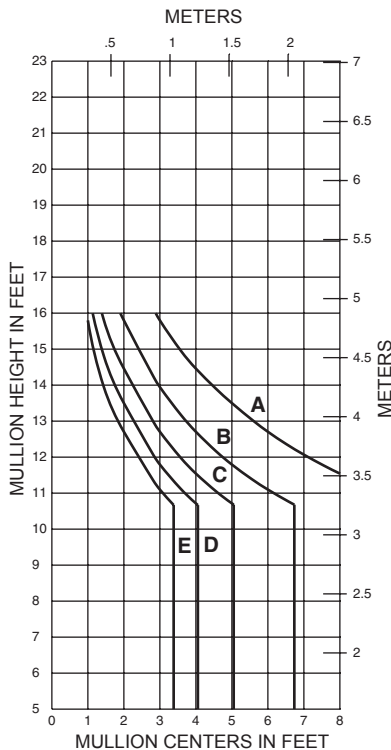
**162027**  
 $I = 6.424(267.38 \times 10^4)$   
 $S = 2.385(39.08 \times 10^3)$



## TWIN SPAN



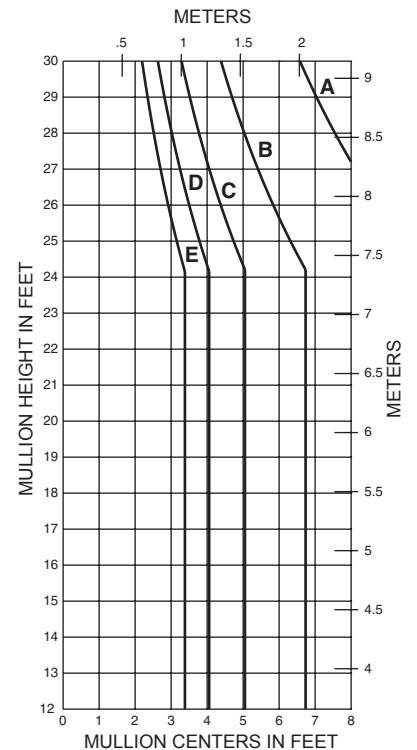
## SINGLE SPAN



**162028**  
 $I = 8.088(336.64 \times 10^4)$   
 $S = 2.930(48.01 \times 10^3)$



## TWIN SPAN

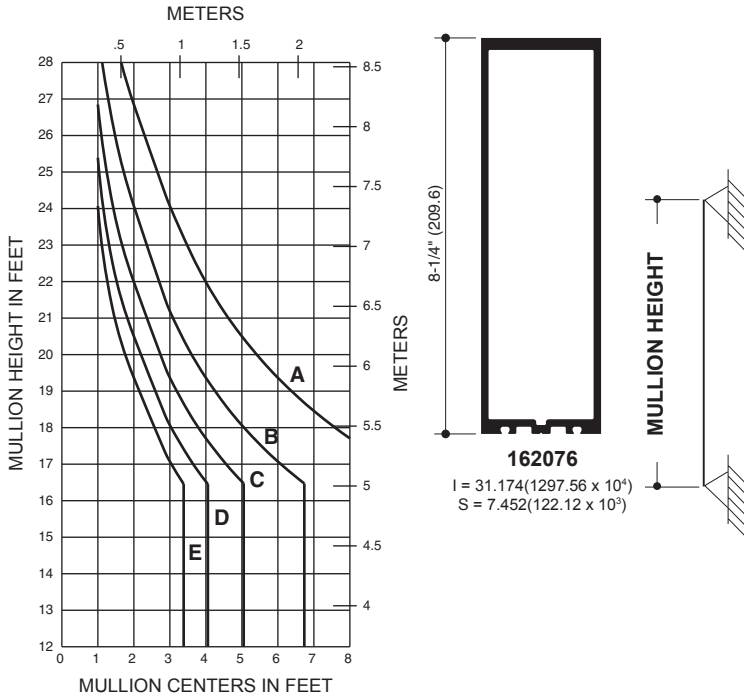


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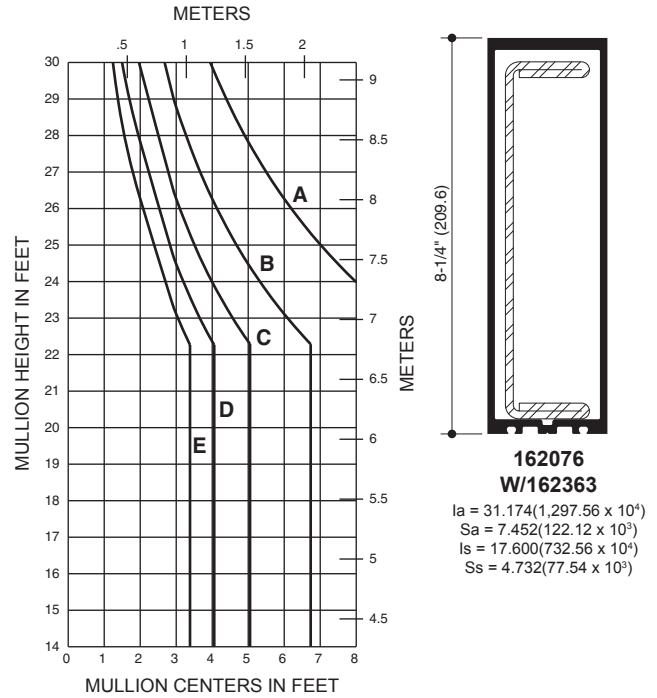
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## SINGLE SPAN

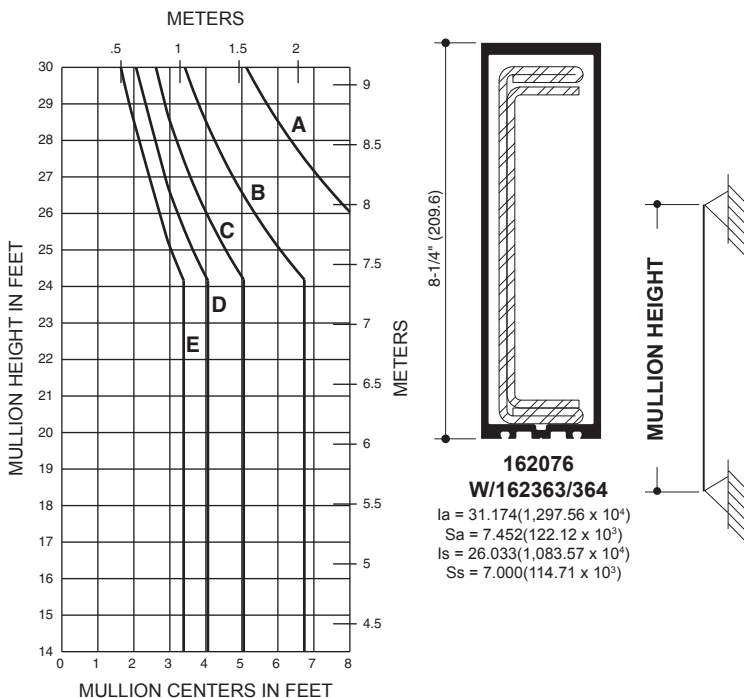


## SINGLE SPAN

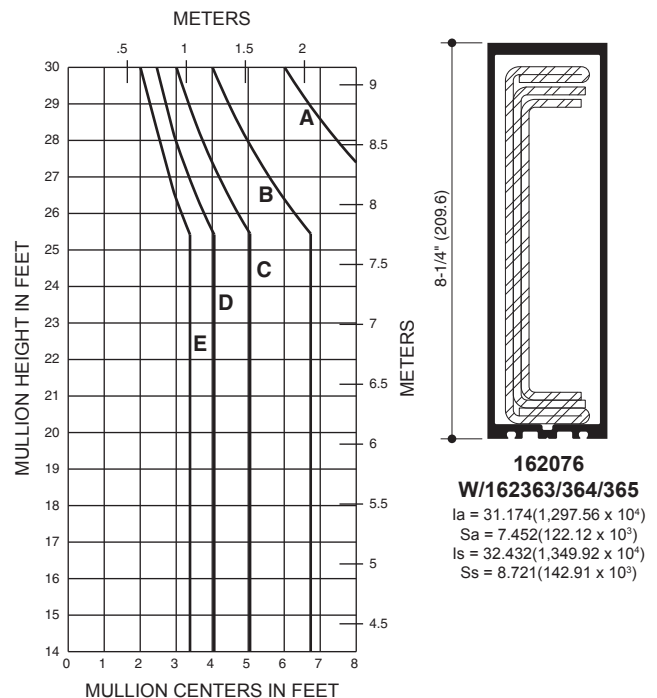


	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	20 PSF (960)	33 PSF (1580)
B =	30 PSF (1440)	50 PSF (2400)
C =	40 PSF (1920)	67 PSF (3200)
D =	50 PSF (2400)	83 PSF (4000)
E =	60 PSF (2880)	100 PSF (4790)

## SINGLE SPAN



## SINGLE SPAN

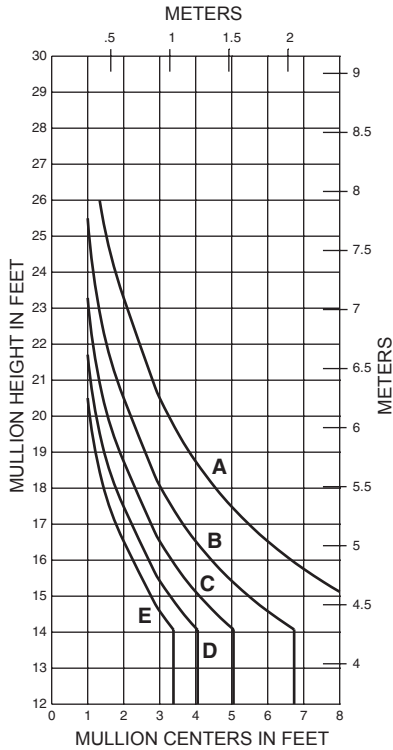


Local and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

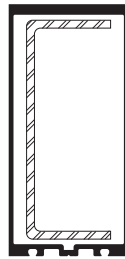
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## SINGLE SPAN

162028 W/162300

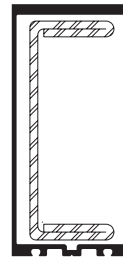


	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	20 PSF (960)	33 PSF (1580)
B =	30 PSF (1440)	50 PSF (2400)
C =	40 PSF (1920)	67 PSF (3200)
D =	50 PSF (2400)	83 PSF (4000)
E =	60 PSF (2880)	100 PSF (4790)



162028 with 162300

$I_a = 8.088(336.64 \times 10^4)$   
 $S_a = 2.930(48.01 \times 10^3)$   
 $I_s = 3.805(158.37 \times 10^4)$   
 $S_s = 1.669(27.35 \times 10^3)$

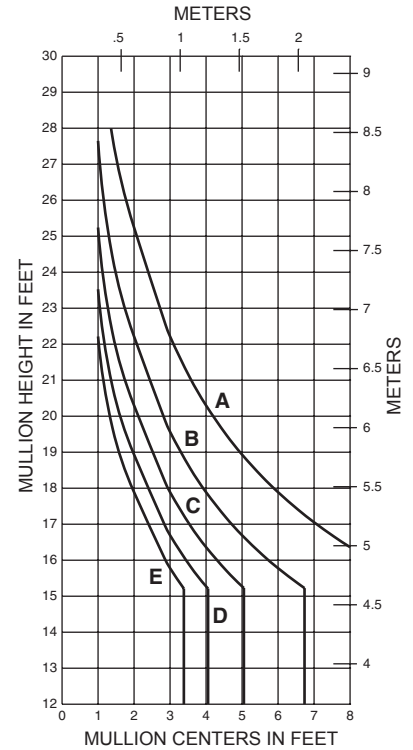


162028 with 162301

$I_a = 8.088(336.64 \times 10^4)$   
 $S_a = 2.930(48.01 \times 10^3)$   
 $I_s = 5.684(236.59 \times 10^4)$   
 $S_s = 2.493(40.85 \times 10^3)$

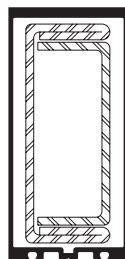
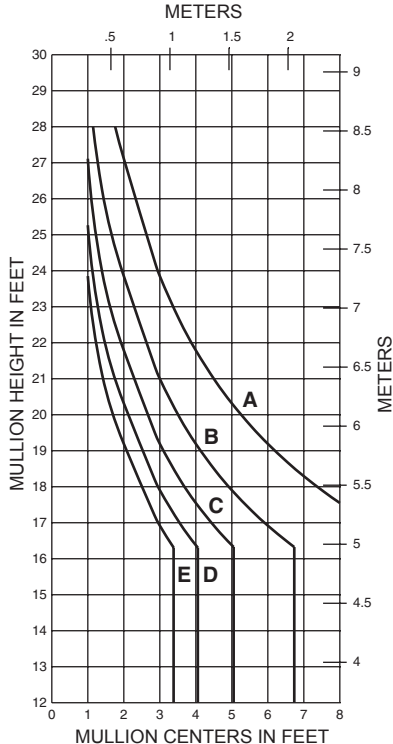
## SINGLE SPAN

162028 W/162301



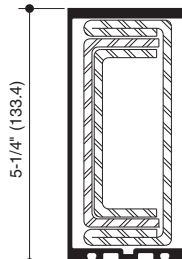
## SINGLE SPAN

162028 W/162301/302



162028 with 162301/302

$I_a = 8.088(336.64 \times 10^4)$   
 $S_a = 2.930(48.01 \times 10^3)$   
 $I_s = 7.893(328.53 \times 10^4)$   
 $S_s = 3.462(56.73 \times 10^3)$

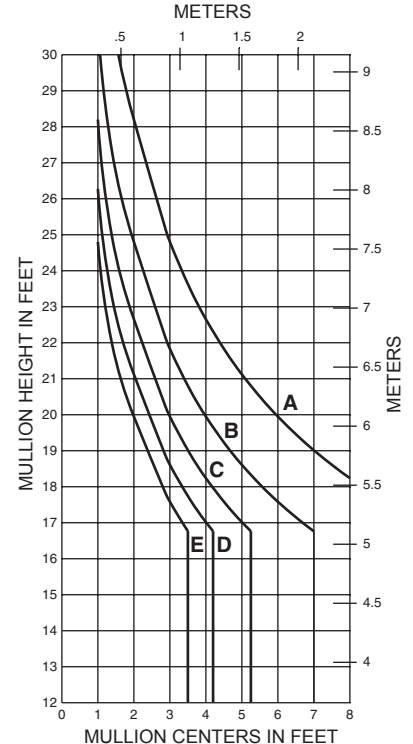


162028 with 162301/302/303

$I_a = 8.088(336.64 \times 10^4)$   
 $S_a = 2.930(48.01 \times 10^3)$   
 $I_s = 9.347(389.05 \times 10^4)$   
 $S_s = 4.100(67.19 \times 10^3)$

## SINGLE SPAN

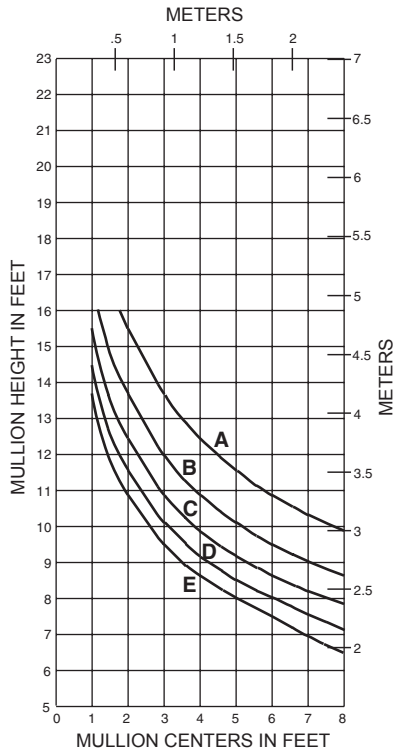
162028 W/162301/302/303



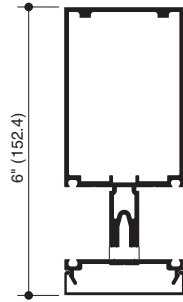
Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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## SINGLE SPAN



	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	20 PSF (960)	33 PSF (1580)
B =	30 PSF (1440)	50 PSF (2400)
C =	40 PSF (1920)	67 PSF (3200)
D =	50 PSF (2400)	83 PSF (4000)
E =	60 PSF (2880)	100 PSF (4790)

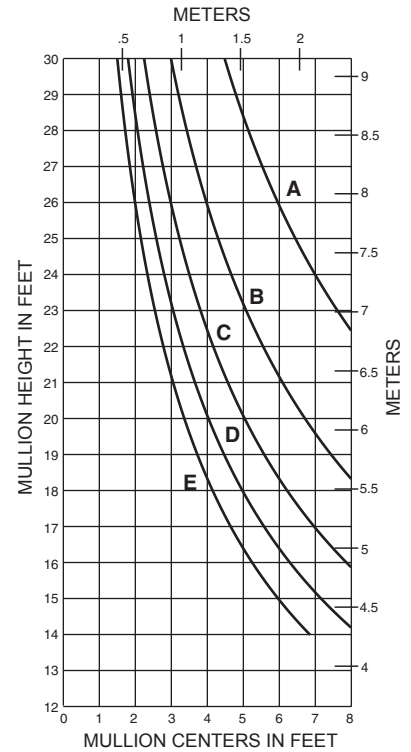


**162001**

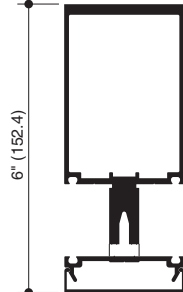
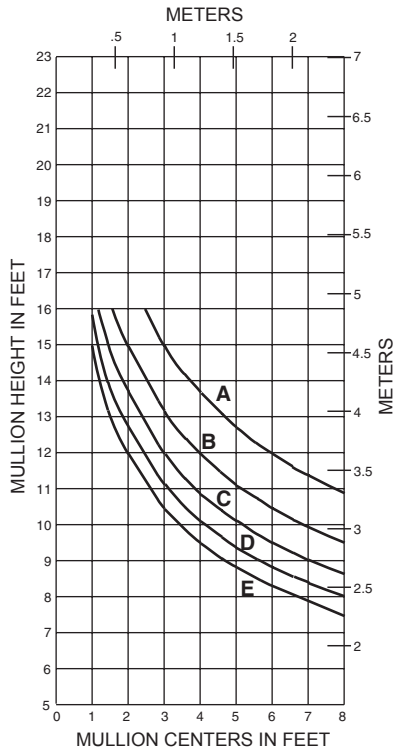
I = 5.035(209.57 x 10<sup>4</sup>)  
S = 1.993(32.66 x 10<sup>3</sup>)



## TWIN SPAN

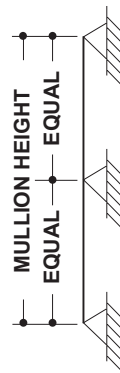


## SINGLE SPAN

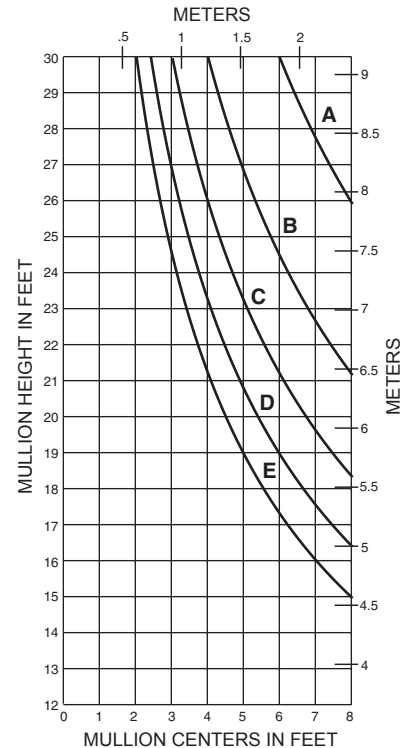


**162002**

I = 6.779(282.16 x 10<sup>4</sup>)  
S = 2.652(43.46 x 10<sup>3</sup>)



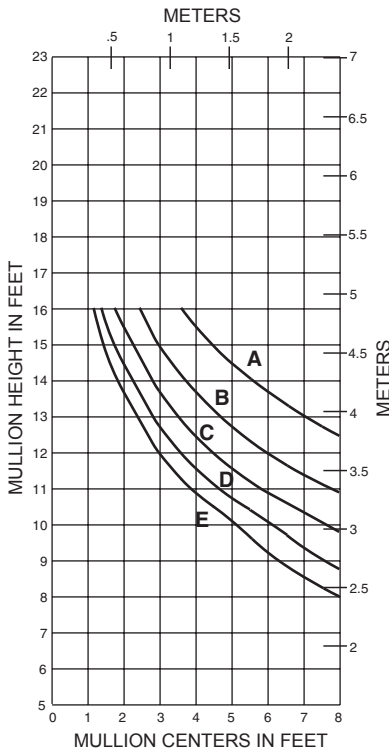
## TWIN SPAN



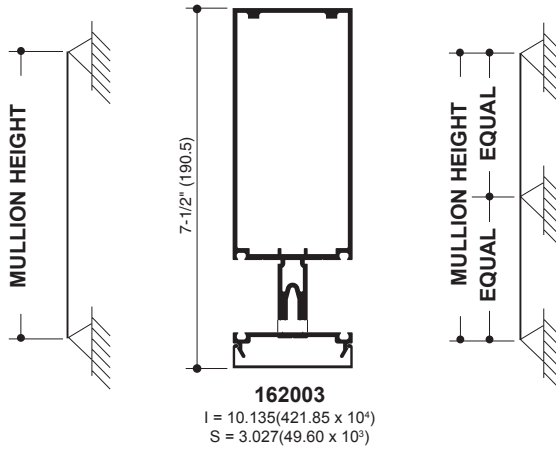
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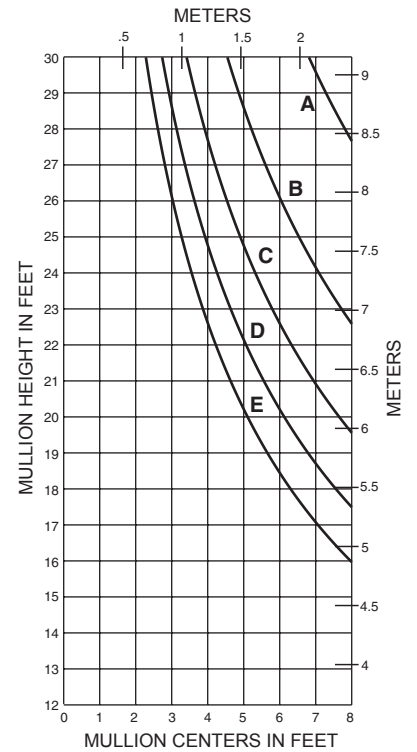
## SINGLE SPAN



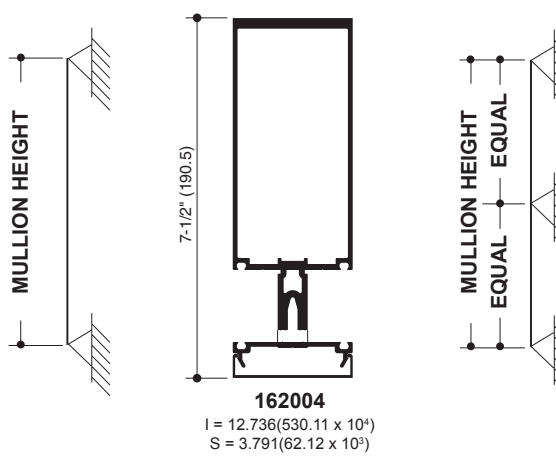
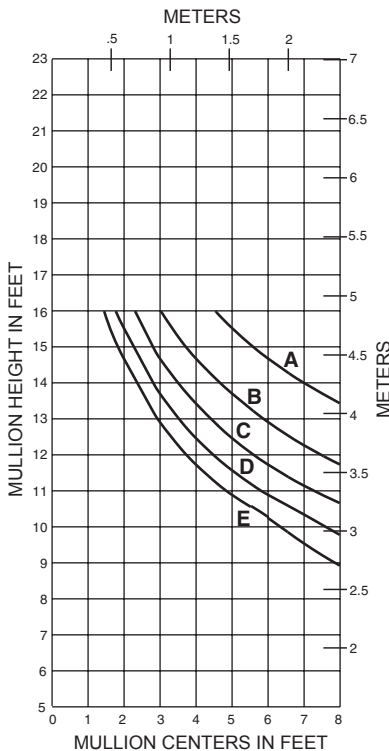
	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	20 PSF (960)	33 PSF (1580)
B =	30 PSF (1440)	50 PSF (2400)
C =	40 PSF (1920)	67 PSF (3200)
D =	50 PSF (2400)	83 PSF (4000)
E =	60 PSF (2880)	100 PSF (4790)



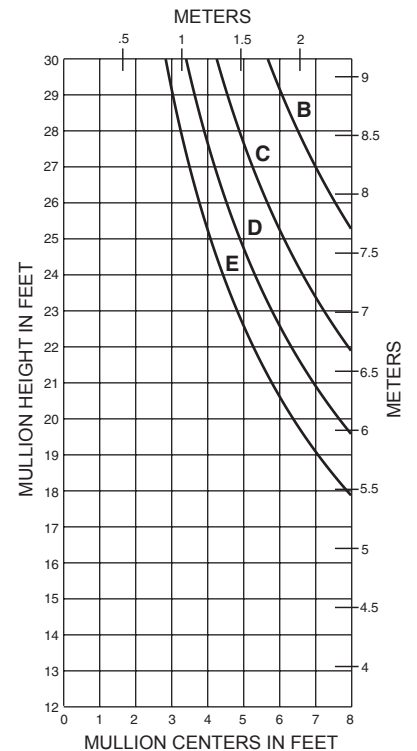
## TWIN SPAN



## SINGLE SPAN



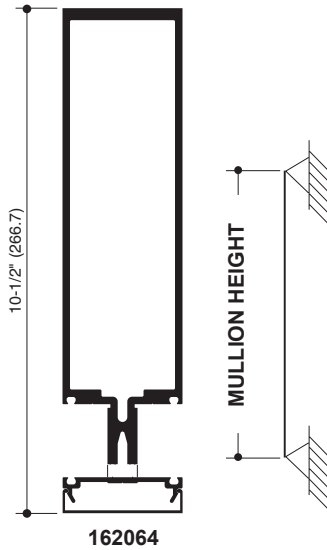
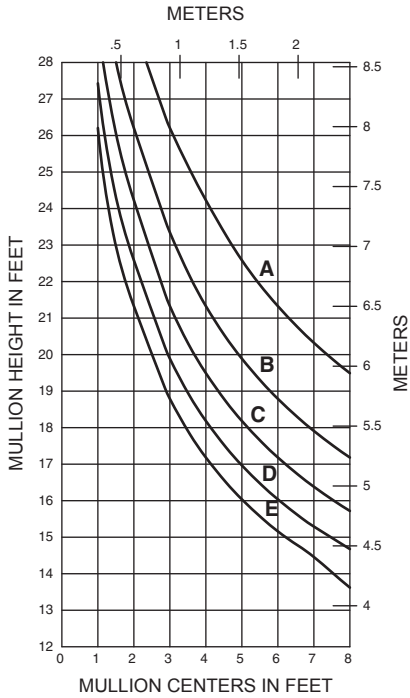
## TWIN SPAN



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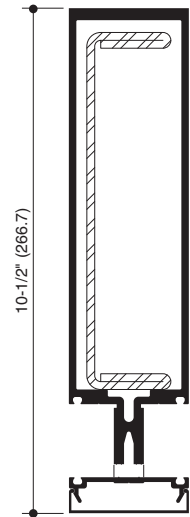
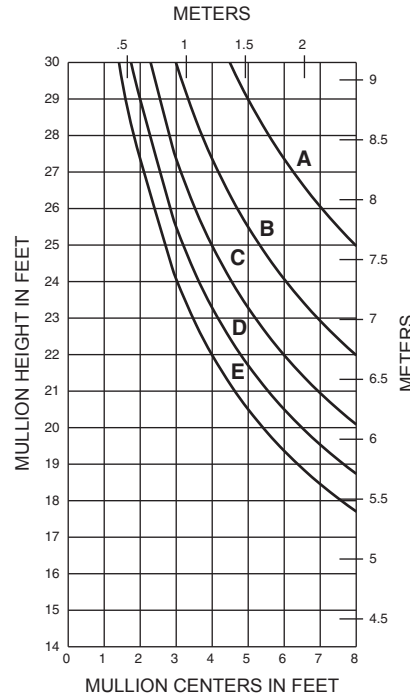
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## SINGLE SPAN



**162064**  
 $I = 42.441(1,766.52 \times 10^4)$   
 $S = 8.816(144.74 \times 10^3)$

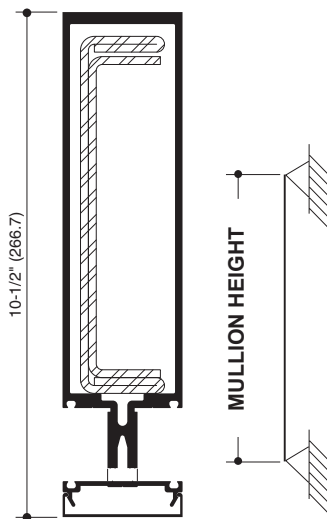
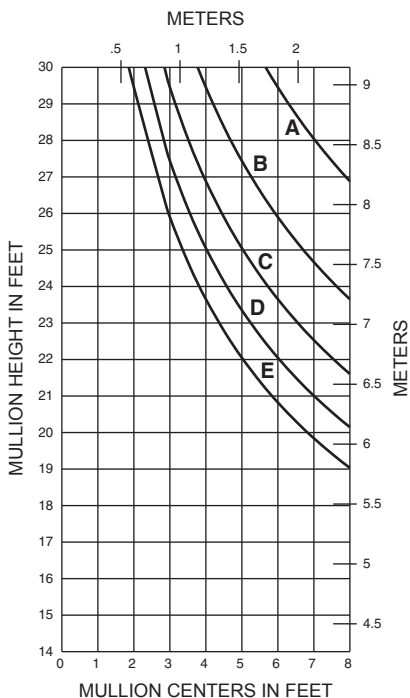
## SINGLE SPAN



**162064  
W/162363**  
 $I_a = 42.441(1,766.52 \times 10^4)$   
 $S_a = 8.816(144.47 \times 10^3)$   
 $I_s = 17.600(732.56 \times 10^4)$   
 $S_s = 4.732(77.54 \times 10^3)$

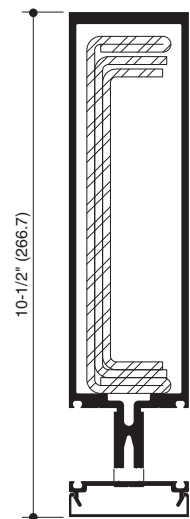
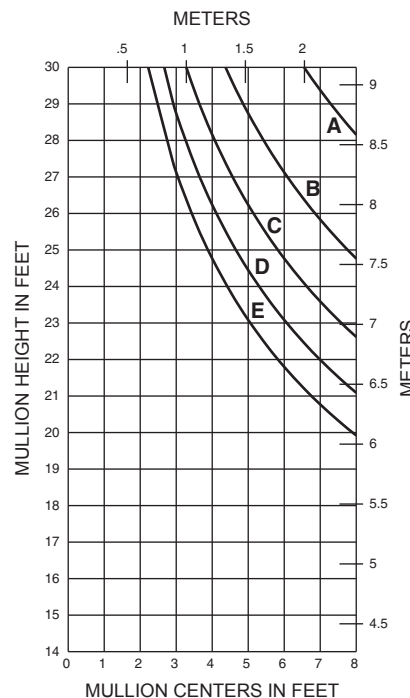
	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	20 PSF (960)	33 PSF (1580)
B =	30 PSF (1440)	50 PSF (2400)
C =	40 PSF (1920)	67 PSF (3200)
D =	50 PSF (2400)	83 PSF (4000)
E =	60 PSF (2880)	100 PSF (4790)

## SINGLE SPAN



**162064  
W/162363/364**  
 $I_a = 42.441(1,766.52 \times 10^4)$   
 $S_a = 8.816(144.47 \times 10^3)$   
 $I_s = 26.033(1,083.57 \times 10^4)$   
 $S_s = 7.000(114.71 \times 10^3)$

## SINGLE SPAN



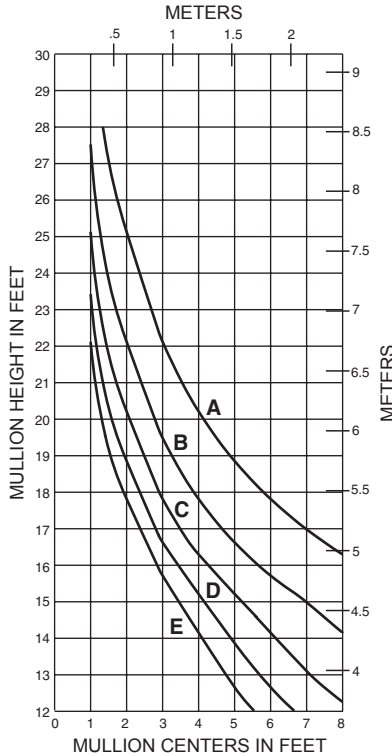
**162064  
W/162363/364/365**  
 $I_a = 42.441(1,766.52 \times 10^4)$   
 $S_a = 8.816(144.47 \times 10^3)$   
 $I_s = 32.432(1,349.92 \times 10^4)$   
 $S_s = 8.721(142.91 \times 10^3)$

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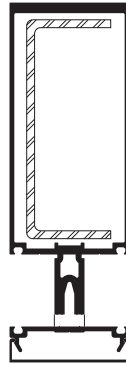
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## SINGLE SPAN

162004 W/162300

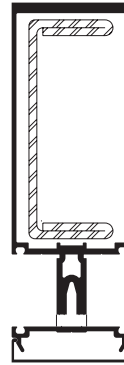


	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	20 PSF (960)	33 PSF (1580)
B =	30 PSF (1440)	50 PSF (2400)
C =	40 PSF (1920)	67 PSF (3200)
D =	50 PSF (2400)	83 PSF (4000)
E =	60 PSF (2880)	100 PSF (4790)



162004 with 162300

$I_a = 12.736(530.11 \times 10^4)$   
 $S_a = 3.791(62.12 \times 10^3)$   
 $I_s = 3.805(158.37 \times 10^4)$   
 $S_s = 1.669(27.35 \times 10^3)$

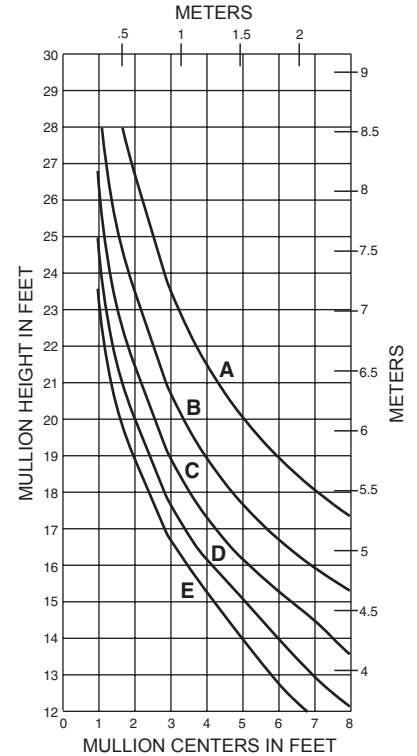


162004 with 162301

$I_a = 12.736(530.11 \times 10^4)$   
 $S_a = 3.791(62.12 \times 10^3)$   
 $I_s = 5.684(236.59 \times 10^4)$   
 $S_s = 2.493(40.85 \times 10^3)$

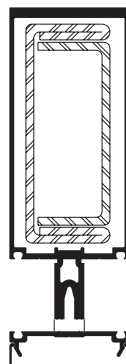
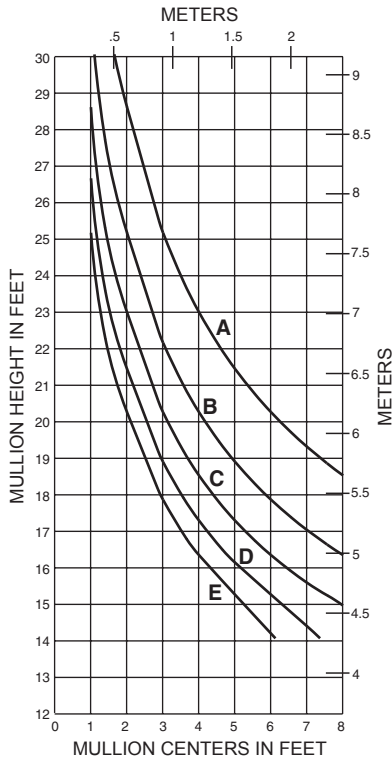
## SINGLE SPAN

162004 W/162301



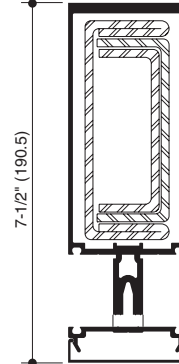
## SINGLE SPAN

162004 W/162301/302



162004 with 162301/302

$I_a = 12.736(530.11 \times 10^4)$   
 $S_a = 3.791(62.12 \times 10^3)$   
 $I_s = 7.893(328.53 \times 10^4)$   
 $S_s = 3.462(56.73 \times 10^3)$

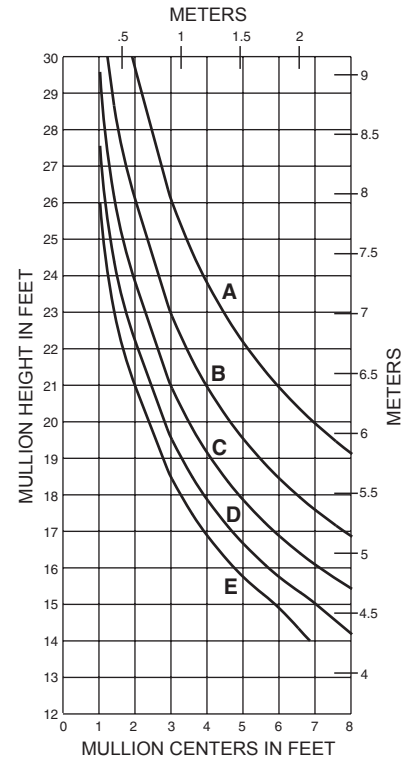


162004 with 162301/302/303

$I_a = 12.736(530.11 \times 10^4)$   
 $S_a = 3.791(62.12 \times 10^3)$   
 $I_s = 9.347(389.05 \times 10^4)$   
 $S_s = 4.100(67.19 \times 10^3)$

## SINGLE SPAN

162004 W/162301/302/303

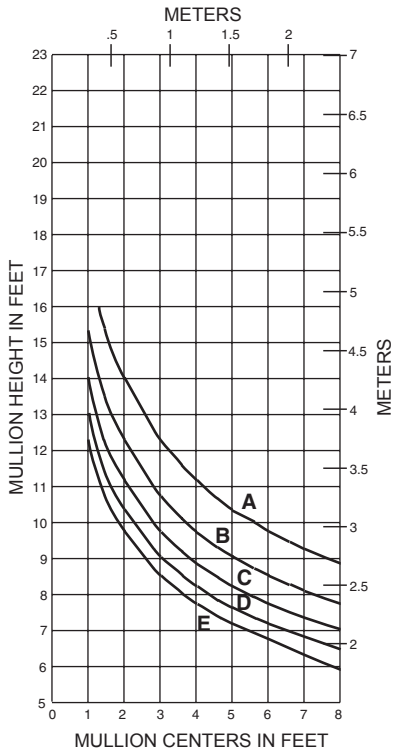


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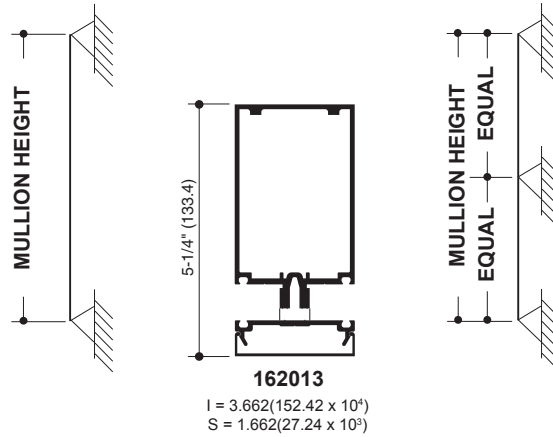
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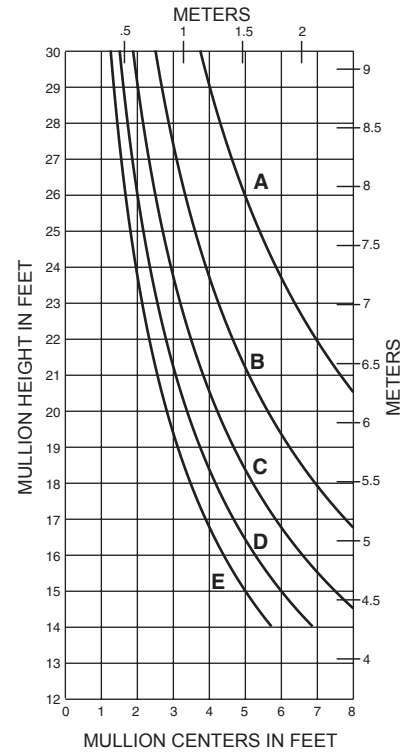
## SINGLE SPAN



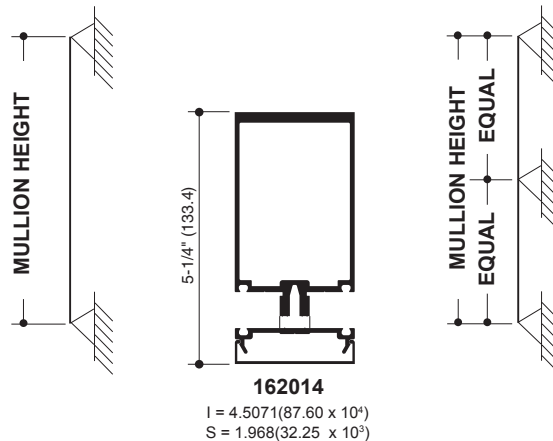
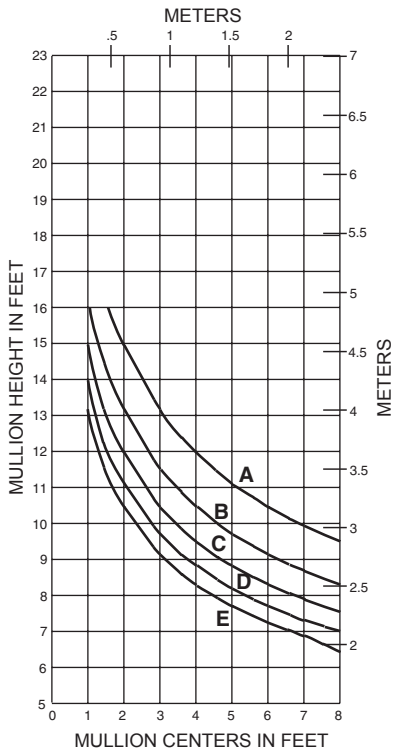
	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	20 PSF (960)	33 PSF (1580)
B =	30 PSF (1440)	50 PSF (2400)
C =	40 PSF (1920)	67 PSF (3200)
D =	50 PSF (2400)	83 PSF (4000)
E =	60 PSF (2880)	100 PSF (4790)



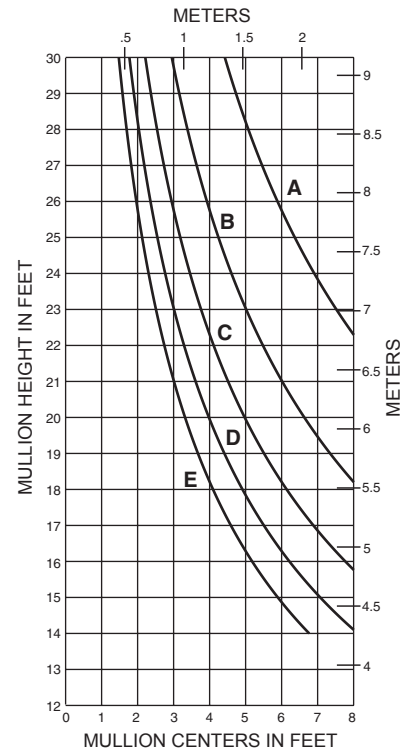
## TWIN SPAN



## SINGLE SPAN



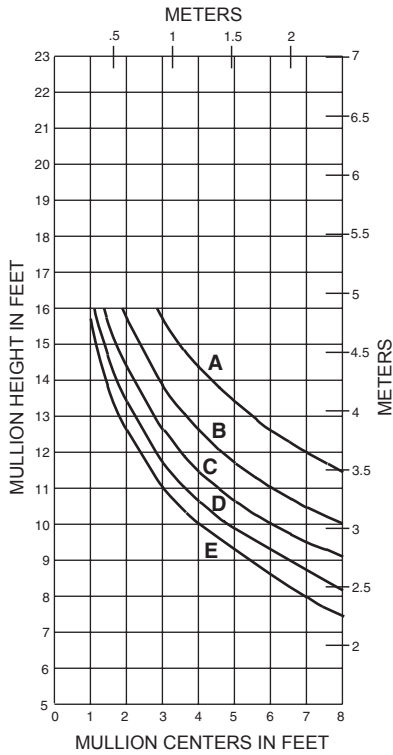
## TWIN SPAN



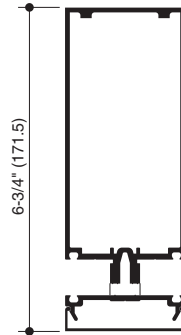
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**SINGLE SPAN**



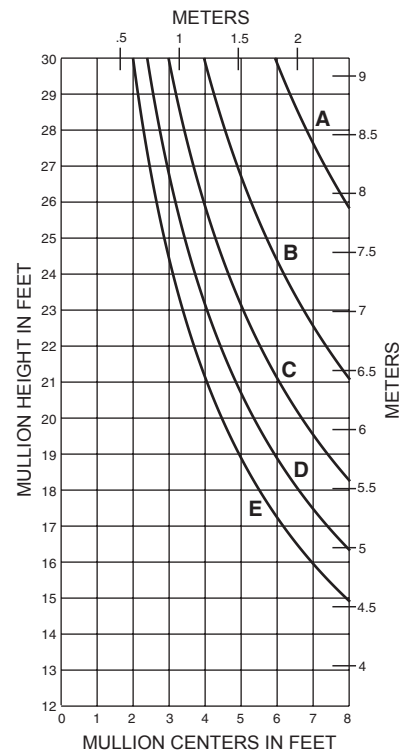
	Allowable Stress Design Load	LRFD Ultimate Design Load
<b>A =</b>	<b>20 PSF (960)</b>	<b>33 PSF (1580)</b>
<b>B =</b>	<b>30 PSF (1440)</b>	<b>50 PSF (2400)</b>
<b>C =</b>	<b>40 PSF (1920)</b>	<b>67 PSF (3200)</b>
<b>D =</b>	<b>50 PSF (2400)</b>	<b>83 PSF (4000)</b>
<b>E =</b>	<b>60 PSF (2880)</b>	<b>100 PSF (4790)</b>



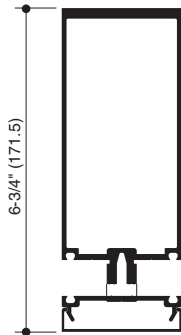
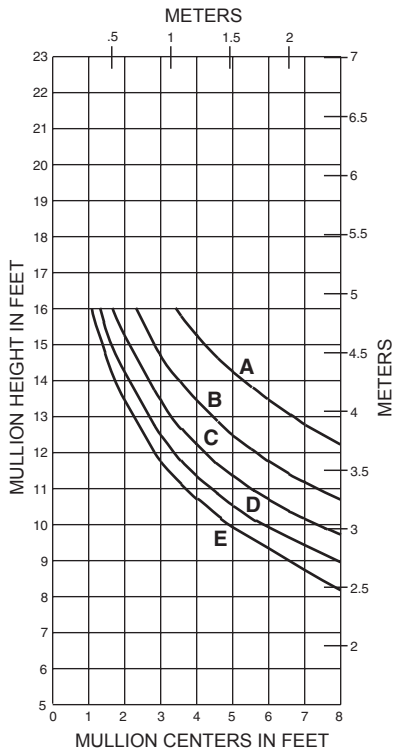
**162015**  
 $I = 7.915(329.45 \times 10^4)$   
 $S = 2.635(43.18 \times 10^3)$



**TWIN SPAN**



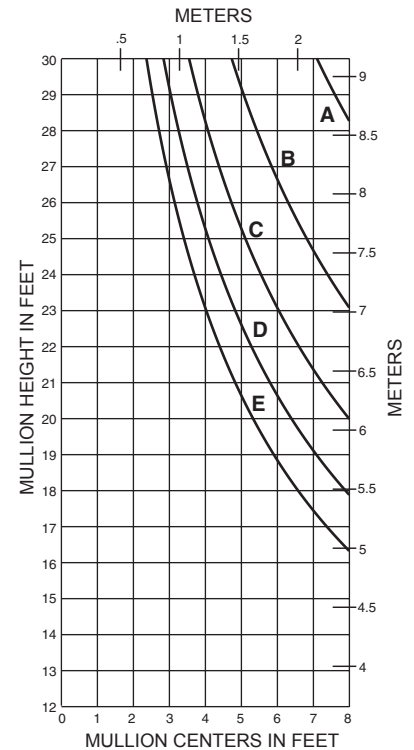
**SINGLE SPAN**



**162016**  
 $I = 9.594(399.33 \times 10^4)$   
 $S = 3.163(51.83 \times 10^3)$



**TWIN SPAN**



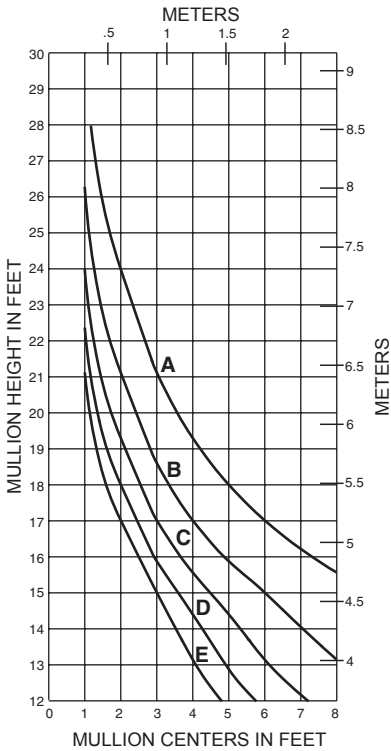
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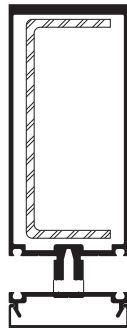


## SINGLE SPAN

162016 W/162300

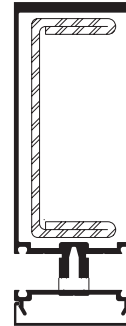


	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	20 PSF (960)	33 PSF (1580)
B =	30 PSF (1440)	50 PSF (2400)
C =	40 PSF (1920)	67 PSF (3200)
D =	50 PSF (2400)	83 PSF (4000)
E =	60 PSF (2880)	100 PSF (4790)



**162016 with 162300**

$I_a = 9.594(399.33 \times 10^4)$   
 $S_a = 3.163(51.83 \times 10^3)$   
 $I_s = 3.805(158.37 \times 10^4)$   
 $S_s = 1.669(27.35 \times 10^3)$

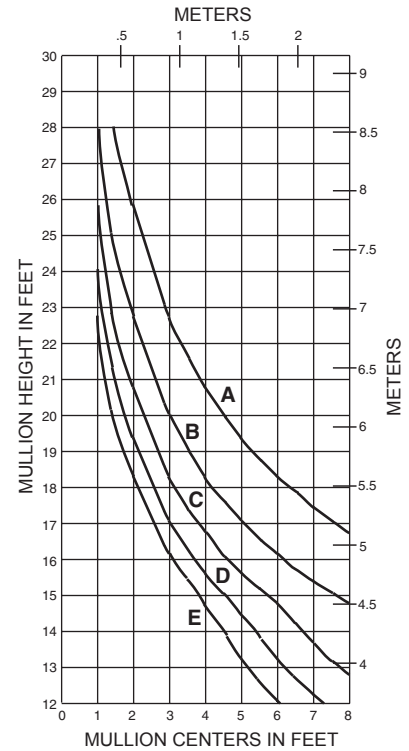


**162016 with 162301**

$I_a = 9.594(399.33 \times 10^4)$   
 $S_a = 3.163(51.83 \times 10^3)$   
 $I_s = 6.684(236.59 \times 10^4)$   
 $S_s = 2.493(40.85 \times 10^3)$

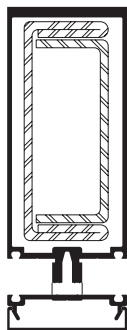
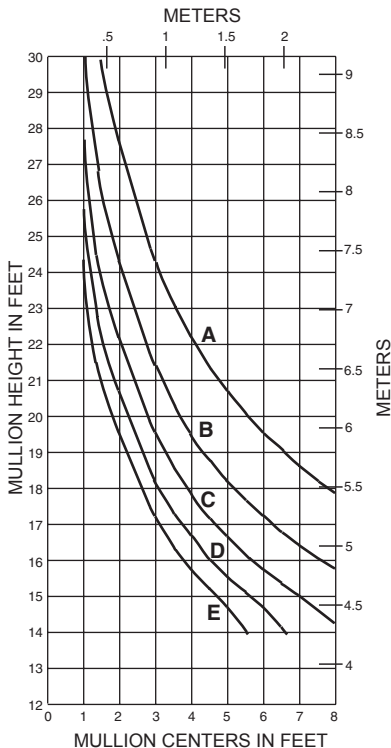
## SINGLE SPAN

162016 W/162301



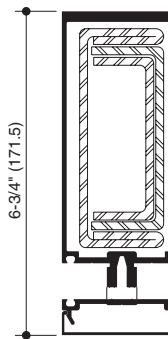
## SINGLE SPAN

162016 W/162301/302



**162016 with 162301/302**

$I_a = 9.594(399.33 \times 10^4)$   
 $S_a = 3.163(51.83 \times 10^3)$   
 $I_s = 7.893(328.53 \times 10^4)$   
 $S_s = 3.462(56.73 \times 10^3)$

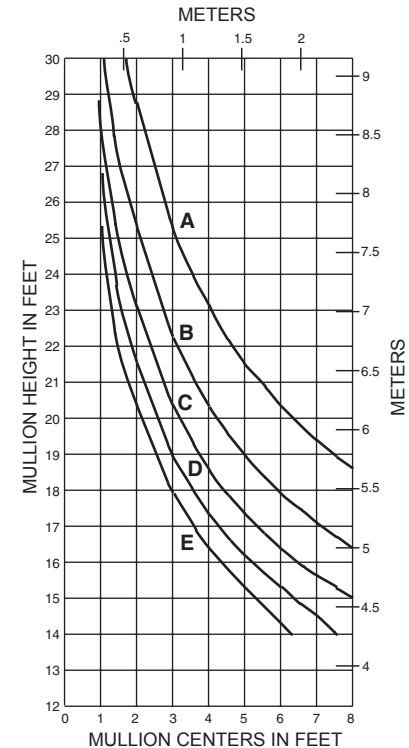


**162016 with 162301/302/303**

$I_a = 9.594(399.33 \times 10^4)$   
 $S_a = 3.163(51.83 \times 10^3)$   
 $I_s = 9.347(389.05 \times 10^4)$   
 $S_s = 4.100(67.19 \times 10^3)$

## SINGLE SPAN

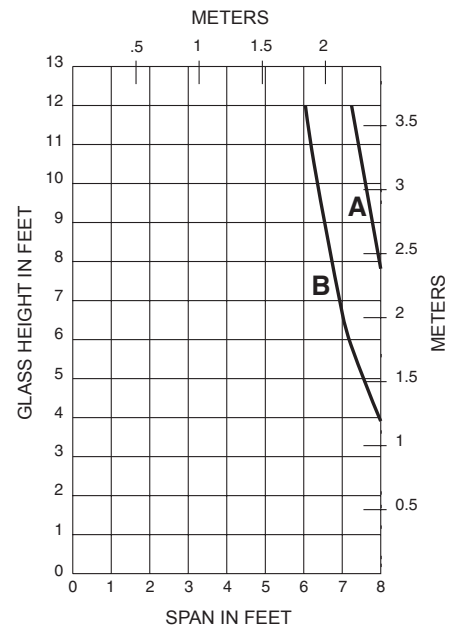
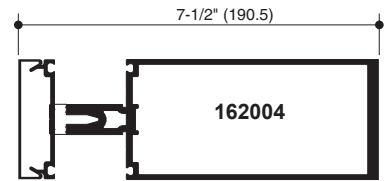
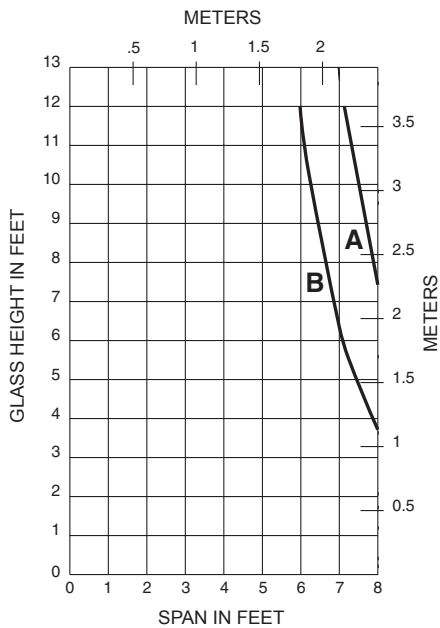
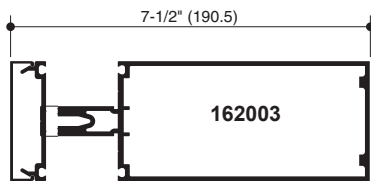
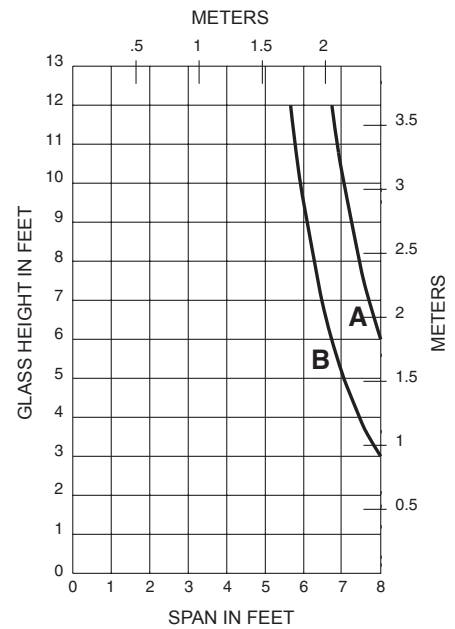
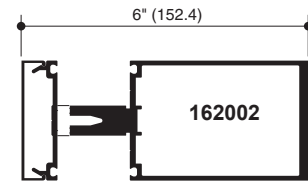
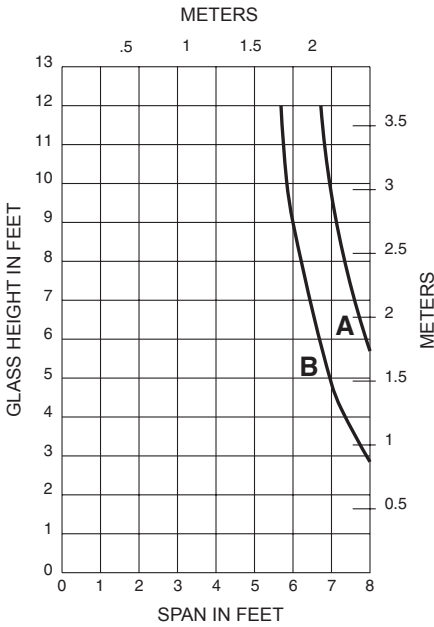
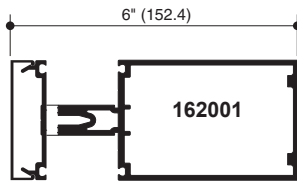
162016 W/162301/302/303



Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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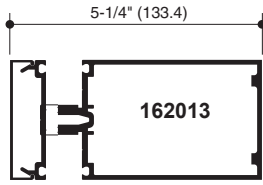
A - 1/4" GLASS (1/4 POINT LOADING)  
 B - 1" GLASS (1/4 POINT LOADING)



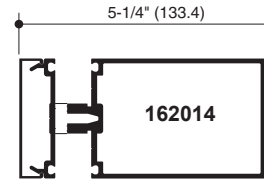
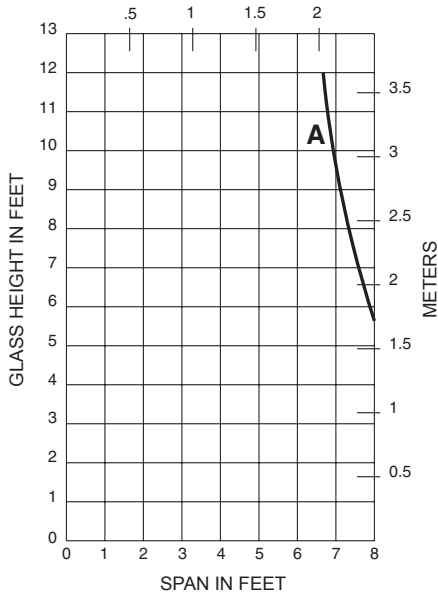
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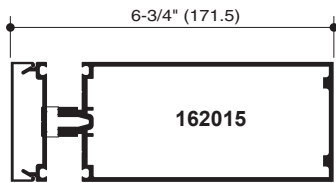
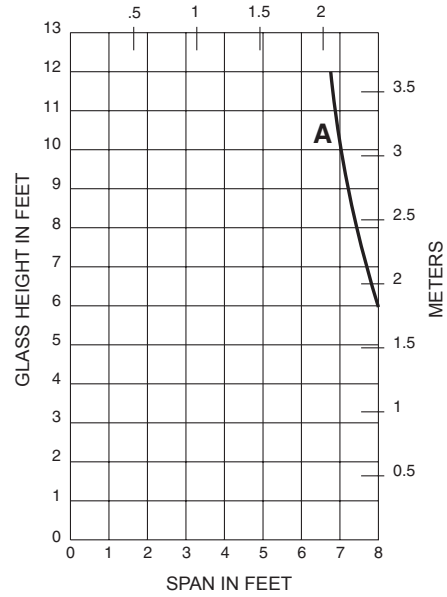
A - 1/4" GLASS (1/4 POINT LOADING)



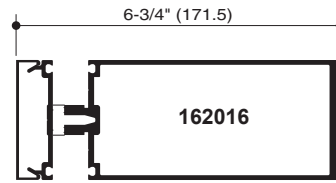
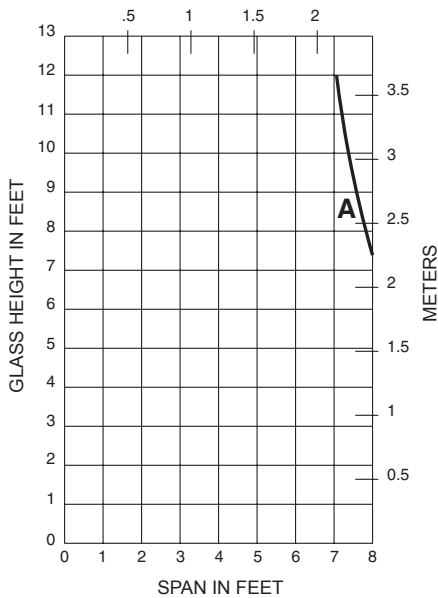
METERS



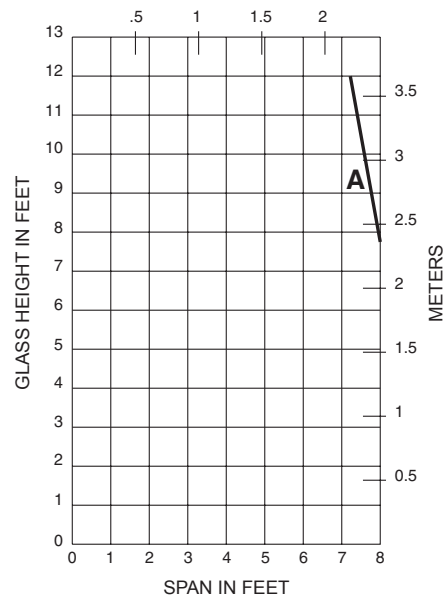
METERS



METERS



METERS



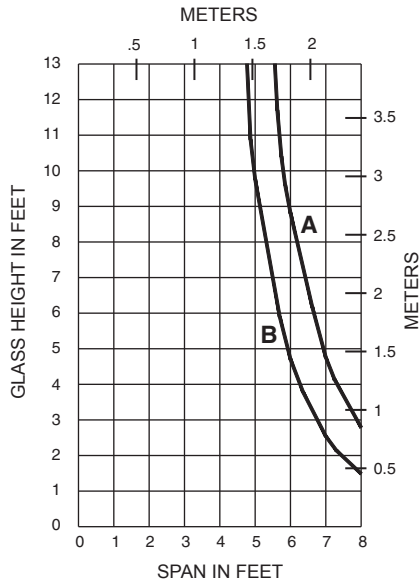
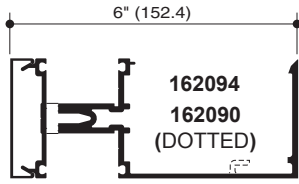
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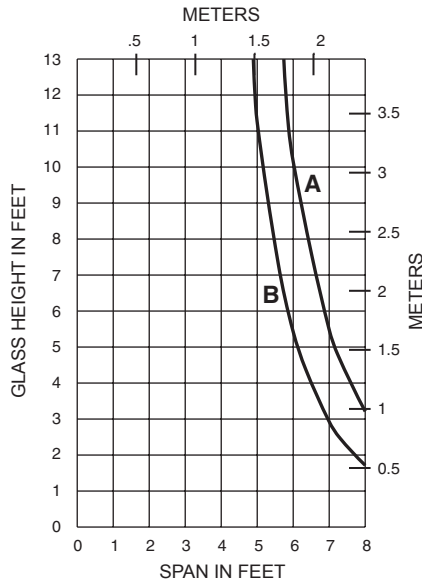
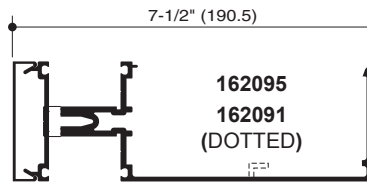
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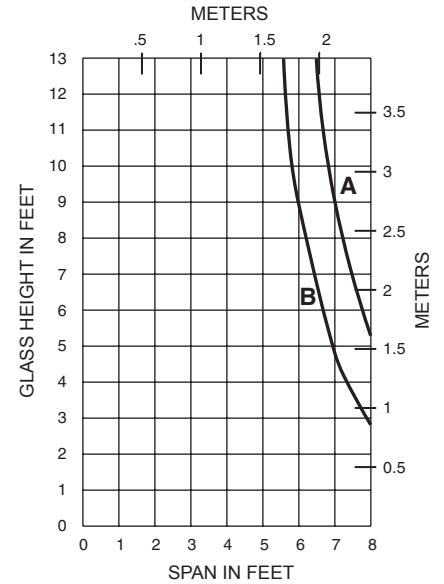
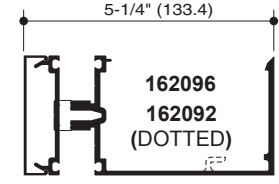
**A - 1" GLASS (1/8 POINT LOADING)**  
**B - 1" GLASS (1/4 POINT LOADING)**



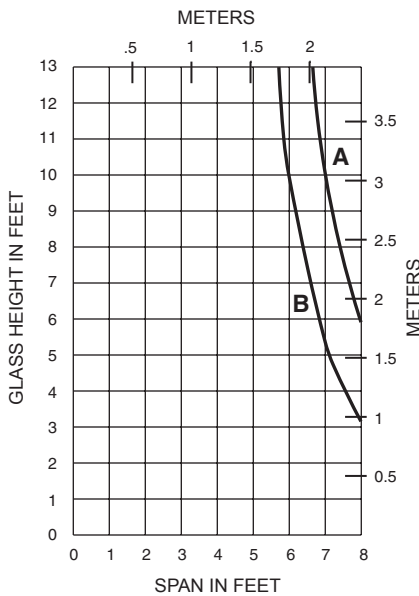
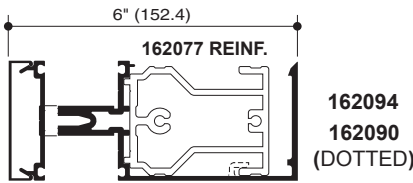
**A - 1" GLASS (1/8 POINT LOADING)**  
**B - 1" GLASS (1/4 POINT LOADING)**



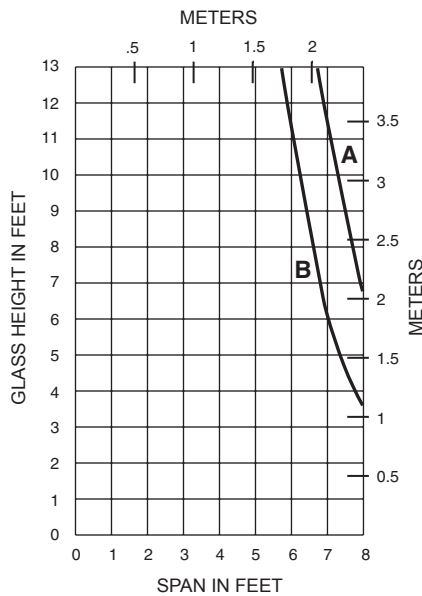
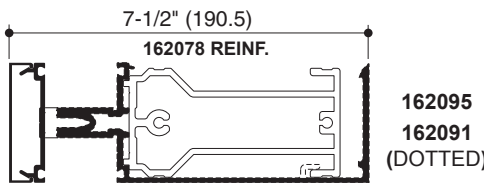
**A - 1/4" GLASS (1/8 POINT LOADING)**  
**B - 1/4" GLASS (1/4 POINT LOADING)**



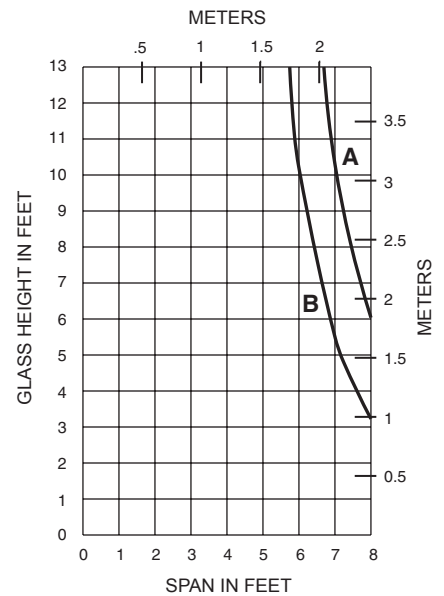
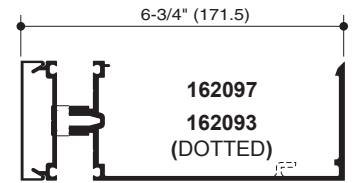
**A - 1" GLASS (1/8 POINT LOADING)**  
**B - 1" GLASS (1/4 POINT LOADING)**



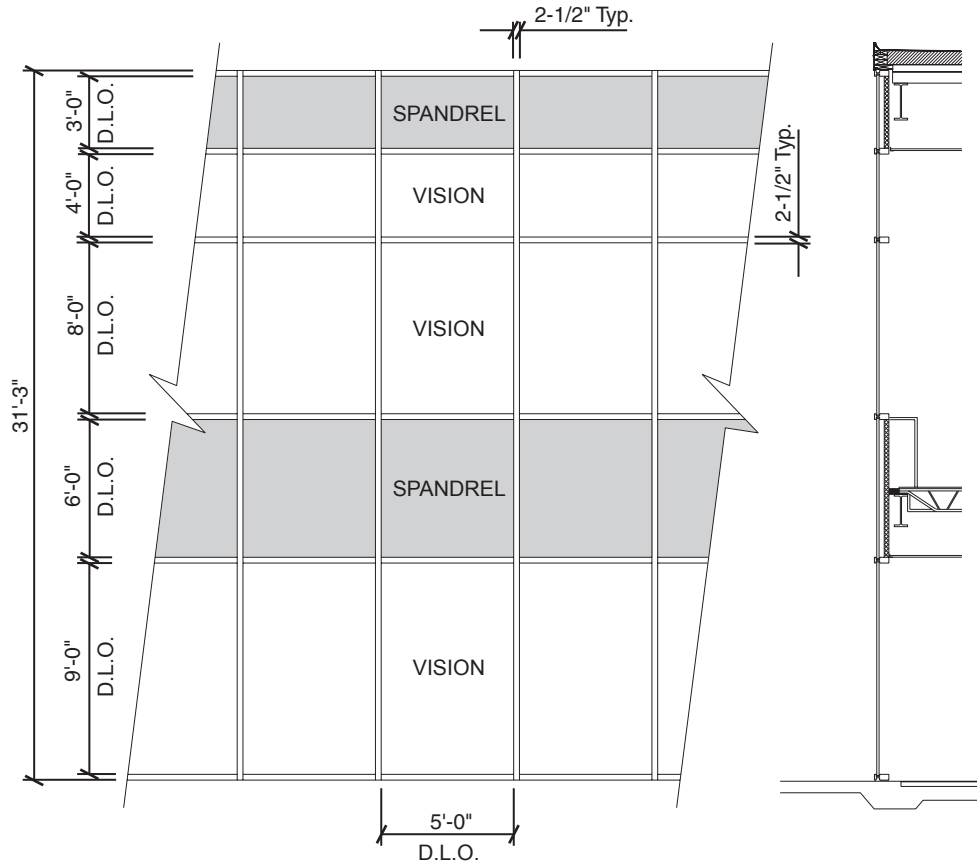
**A - 1" GLASS (1/8 POINT LOADING)**  
**B - 1" GLASS (1/4 POINT LOADING)**



**A - 1/4" GLASS (1/8 POINT LOADING)**  
**B - 1/4" GLASS (1/4 POINT LOADING)**



**Generic Project Specific U-factor Example Calculation**  
**(Percent of Glass will vary on specific products depending on sitelines)**  
 (Based on single bay of Curtain Wall/Window Wall)



### Vision Area

Example Glass U-factor	= 0.48 Btu/(ft <sup>2</sup> · h · °F)
Vision Area	= 5(9 + 8 + 4) = 105.0 ft <sup>2</sup>
Total Area (Vision)	= 5' 2-1/2" (9' 3-3/4" + 8' 2-1/2" + 4' 2-1/2") = 113.2 ft <sup>2</sup>
Percentage of Vision Glass	= (Vision Area ÷ Total Area)100 = (105.0 ÷ 113.2)100 = 93%

### Spandrel Area

Example Spandrel R-value	= 15 (ft <sup>2</sup> · h · °F)/Btu
Spandrel Area	= 5(6 + 3) = 45.0 ft <sup>2</sup>
Total Area (Spandrel)	= 5' 2-1/2" (6' 2-1/2" + 3' 3-3/4") = 49.6 ft <sup>2</sup>
Percent of Spandrel	= (Spandrel Area ÷ Total Area)100 = (49.0 ÷ 49.6)100 = 91%

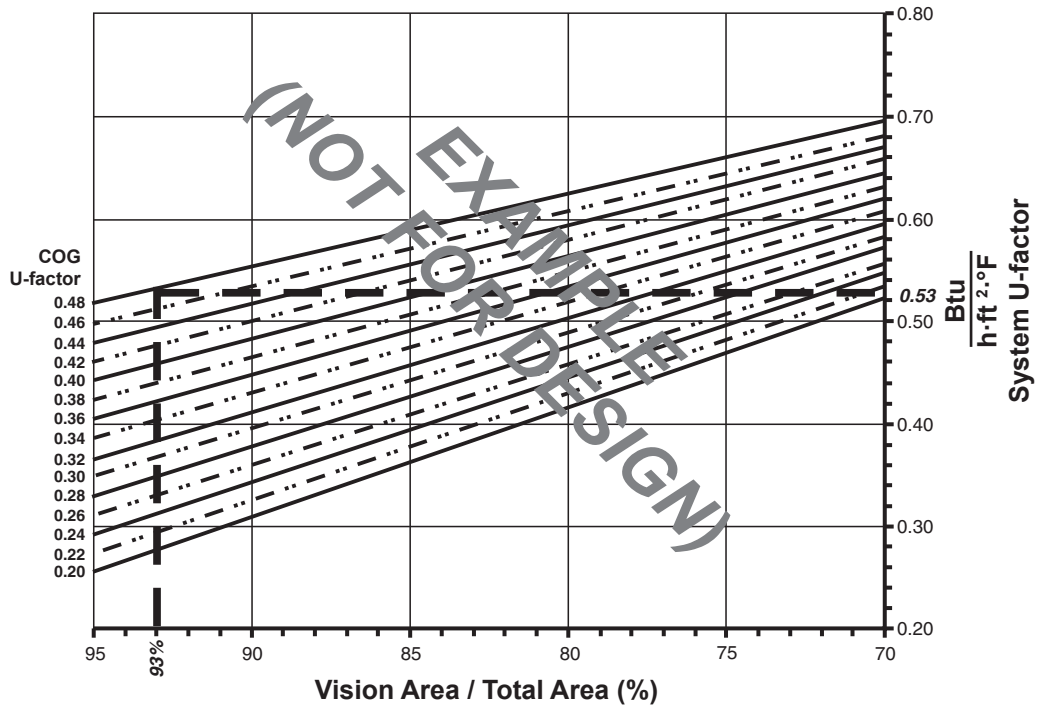
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Vision Area Chart

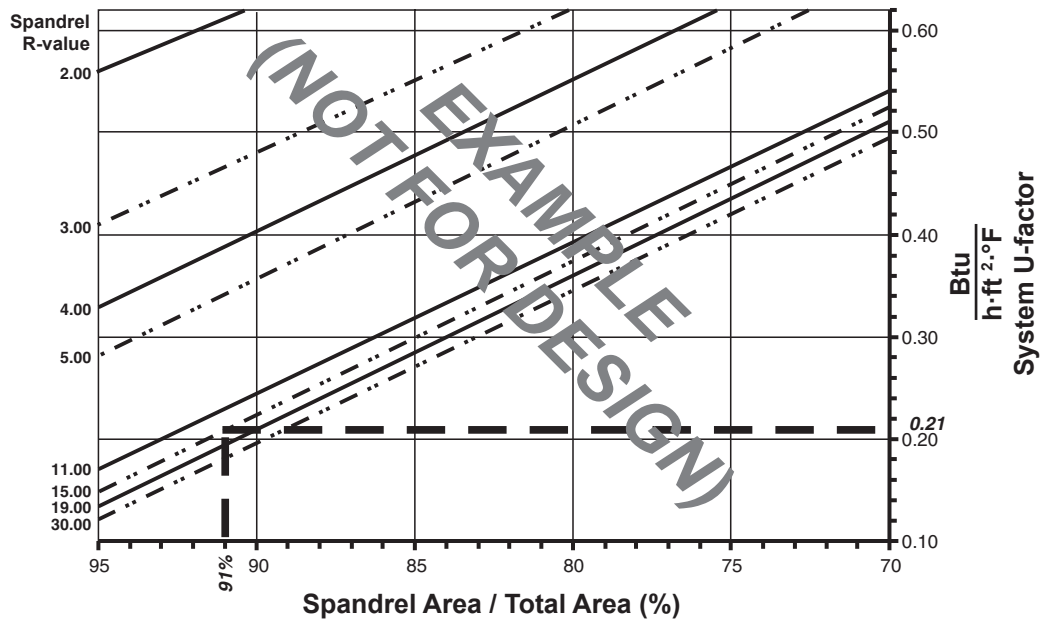
System U-factor vs Percent of Vision Area



Based on a single curtain wall bay of 93% vision glass and center of glass U-factor of 0.48, System U-factor is equal to 0.53 Btu/(h·ft<sup>2</sup>·°F)

Spandrel Area Chart

System U-factor vs Percent of Spandrel Area



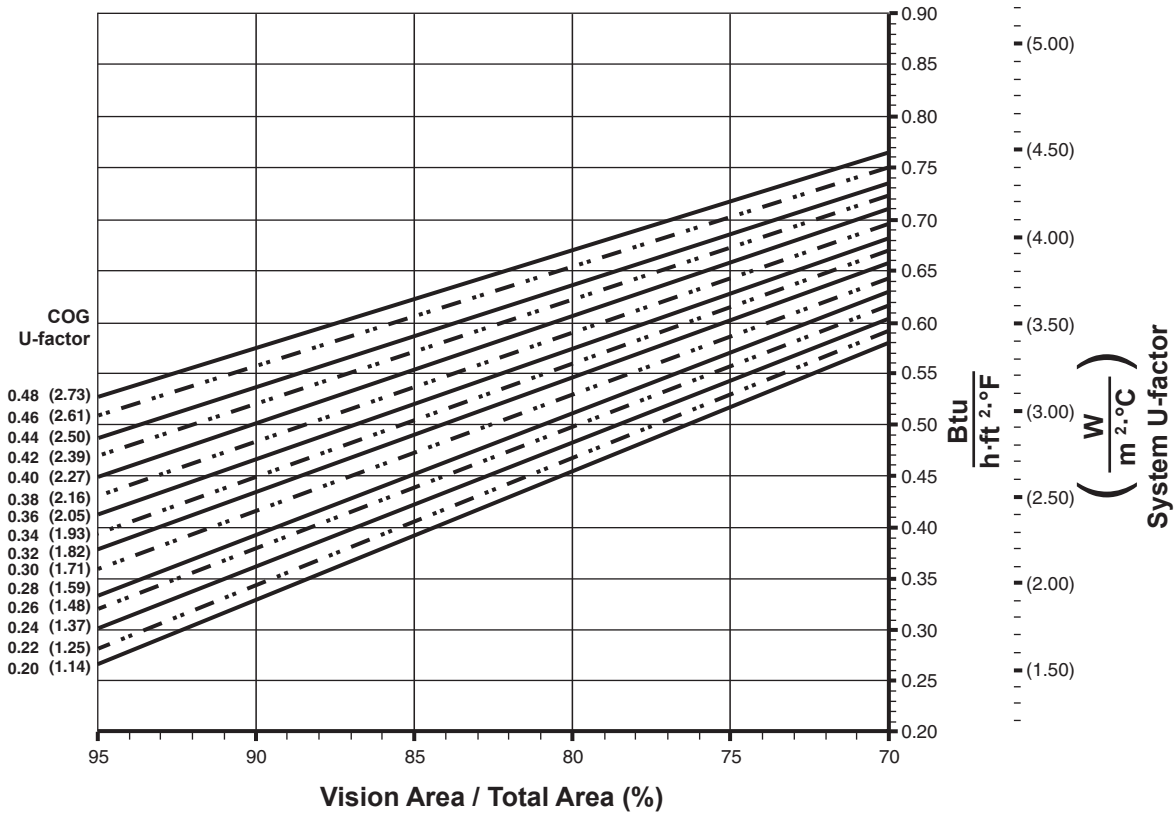
Based on a single curtain wall bay of 91% spandrel and center of spandrel R-value of 15, system U-factor is equal to 0.21 Btu/(h·ft<sup>2</sup>·°F)

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

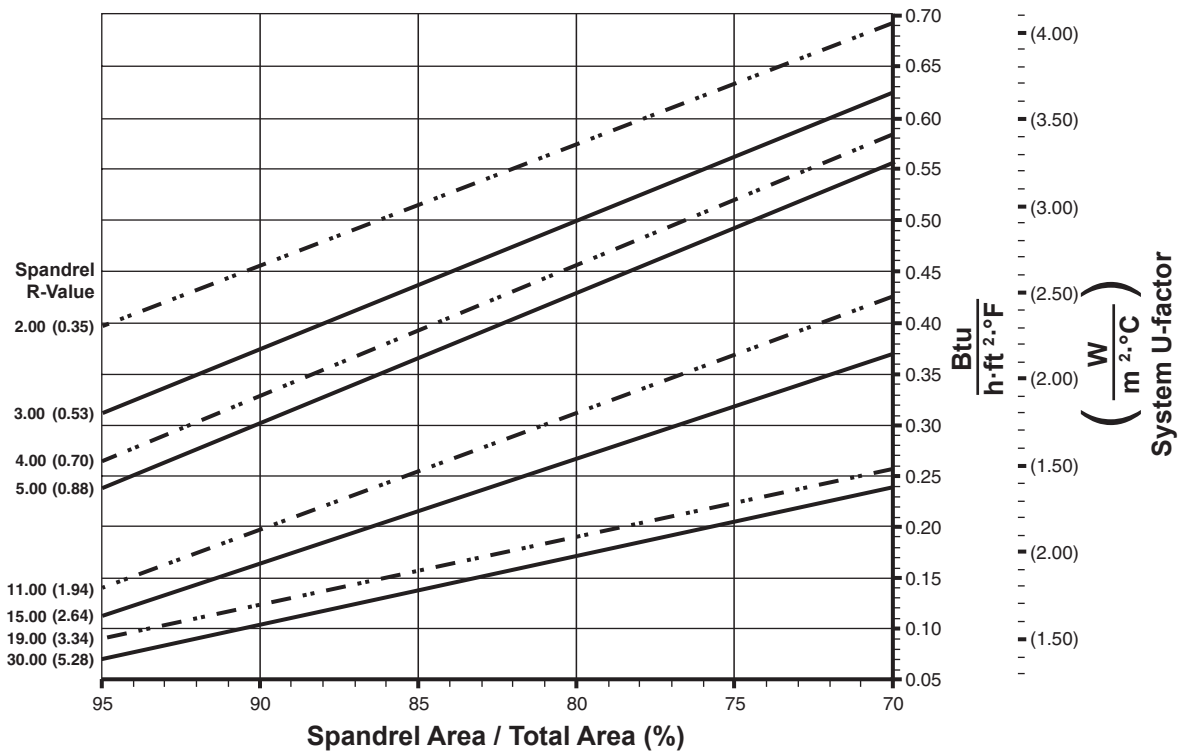
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Note:  
 Values in parentheses are metric.  
 COG=Center of Glass.  
 Charts are generated per AAMA 507.

### System U-Factor for Vision Glass



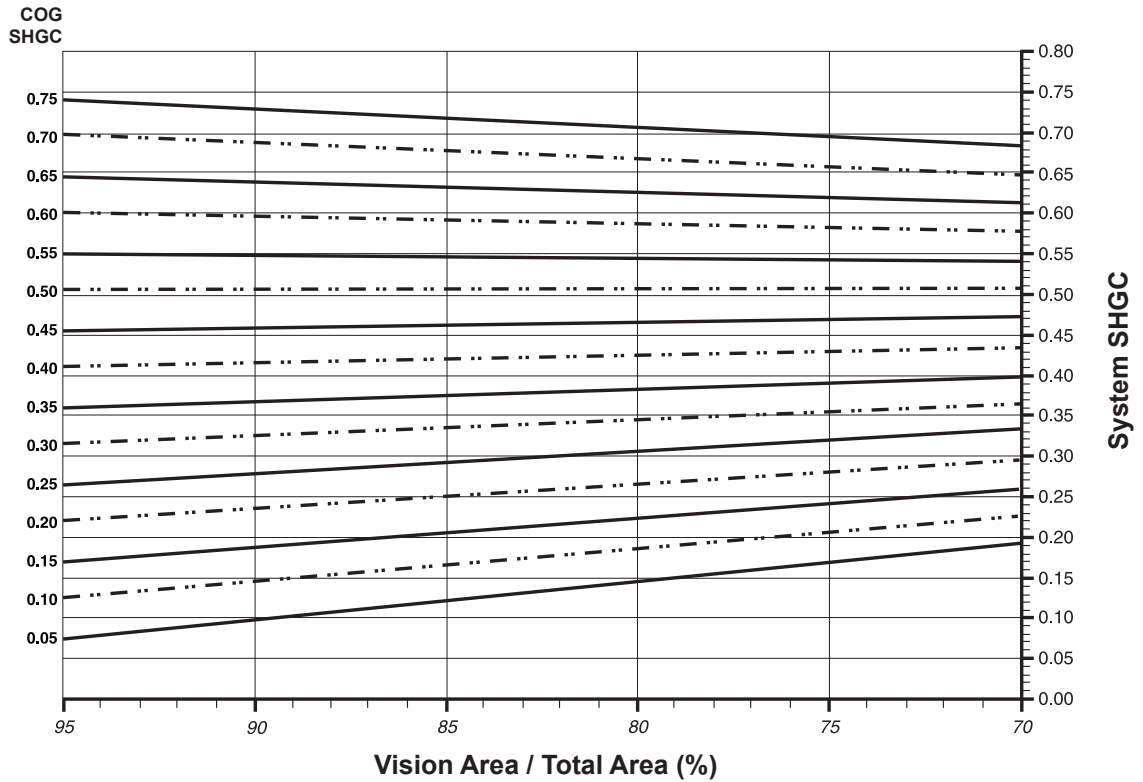
### System U-Factors for Spandrel Glass



Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

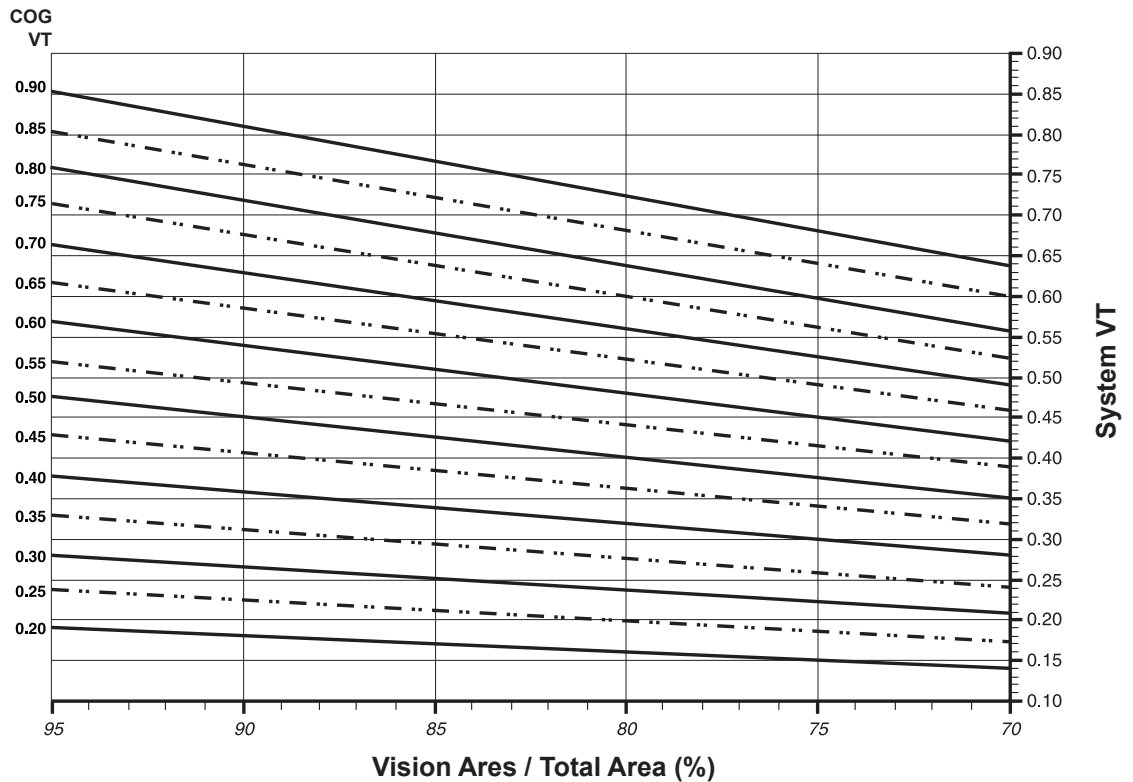
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## System Solar Heat Gain Coefficient (SHGC) vs Percent of Vision Area



Charts are generated per AAMA 507.

## System Visible Transmittance (VT) vs Percent of Vision Area



Charts are generated per AAMA 507.

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**Thermal Transmittance** <sup>1</sup> (BTU/hr • ft<sup>2</sup> • °F)

Glass U-Factor <sup>3</sup>	Overall U-Factor <sup>4</sup>
0.48	0.56
0.46	0.54
0.44	0.53
0.42	0.51
0.40	0.49
0.38	0.48
0.36	0.46
0.34	0.44
0.32	0.42
0.30	0.41
0.28	0.39
0.26	0.37
0.24	0.36
0.22	0.34
0.20	0.32

**1" GLAZING WITH  
ALUMINUM PRESSURE PLATE**

**NOTE:** For glass values that are not listed, linear interpolation is permitted.

1. U-Factors are determined in accordance with NFRC 100.
2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values and are obtained from your glass supplier.
4. Overall U-Factor, SHGC, and VT Matricies are based on the standard NFRC specimen size of 2000mm wide by 2000mm high (78-3/4" by 78-3/4").

**SHGC Matrix** <sup>2</sup>

Glass SHGC <sup>3</sup>	Overall SHGC <sup>4</sup>
0.75	0.73
0.70	0.68
0.65	0.64
0.60	0.59
0.55	0.55
0.50	0.50
0.45	0.46
0.40	0.41
0.35	0.37
0.30	0.32
0.25	0.28
0.20	0.23
0.15	0.19
0.10	0.14
0.05	0.10

**Visible Transmittance** <sup>2</sup>

Glass VT <sup>3</sup>	Overall VT <sup>4</sup>
0.90	0.81
0.85	0.77
0.80	0.72
0.75	0.68
0.70	0.63
0.65	0.59
0.60	0.54
0.55	0.50
0.50	0.45
0.45	0.41
0.40	0.36
0.35	0.32
0.30	0.27
0.25	0.23
0.20	0.18

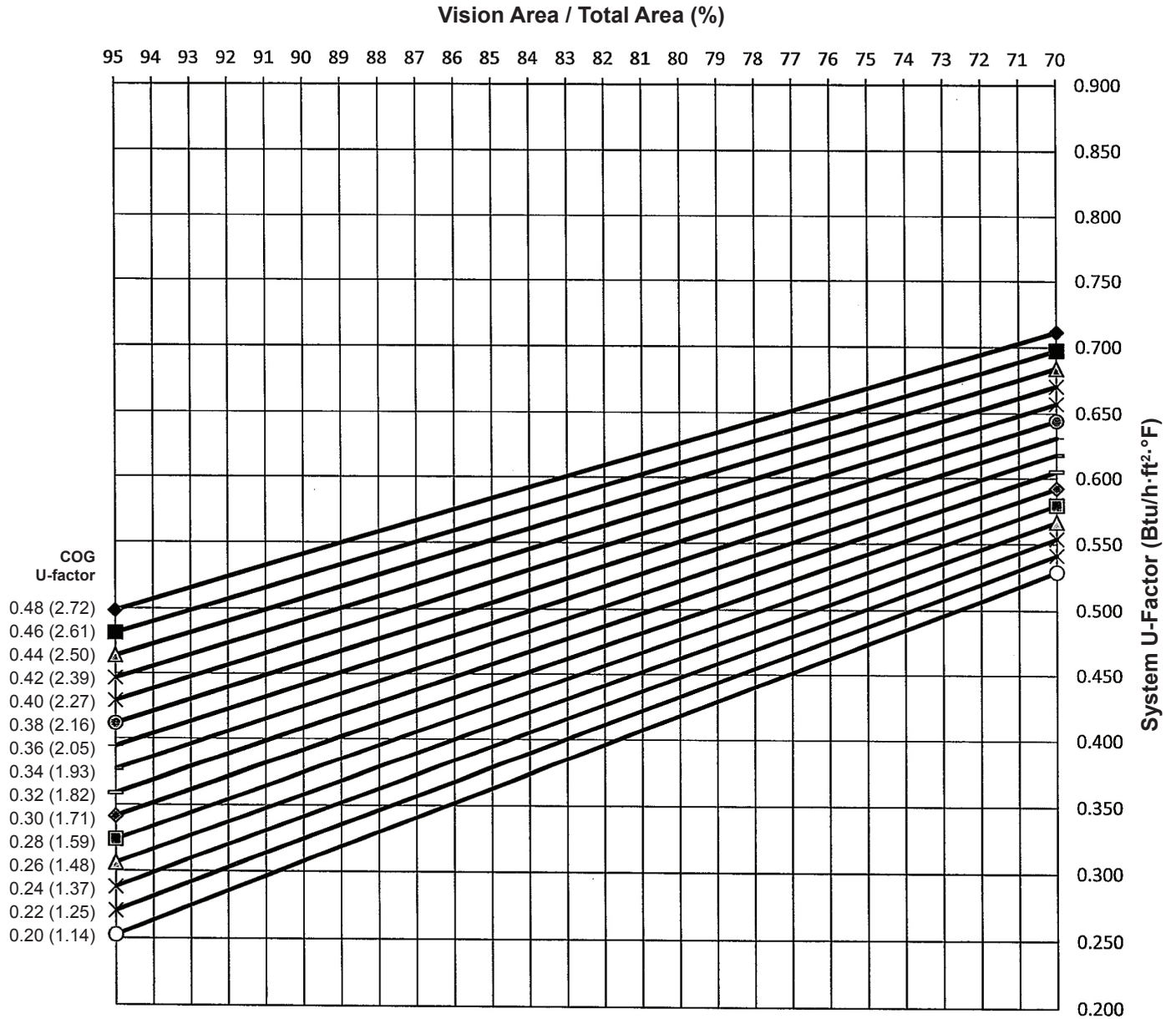
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Note:  
 Values in parentheses are metric.  
 COG=Center of Glass.  
 Charts are generated per AAMA 507.

**1" GLAZING WITH FIBERGLASS PRESSURE PLATE**

**System U-Factor for Vision Glass**



**Notes for System U-Factor, SHGC and VT charts:**

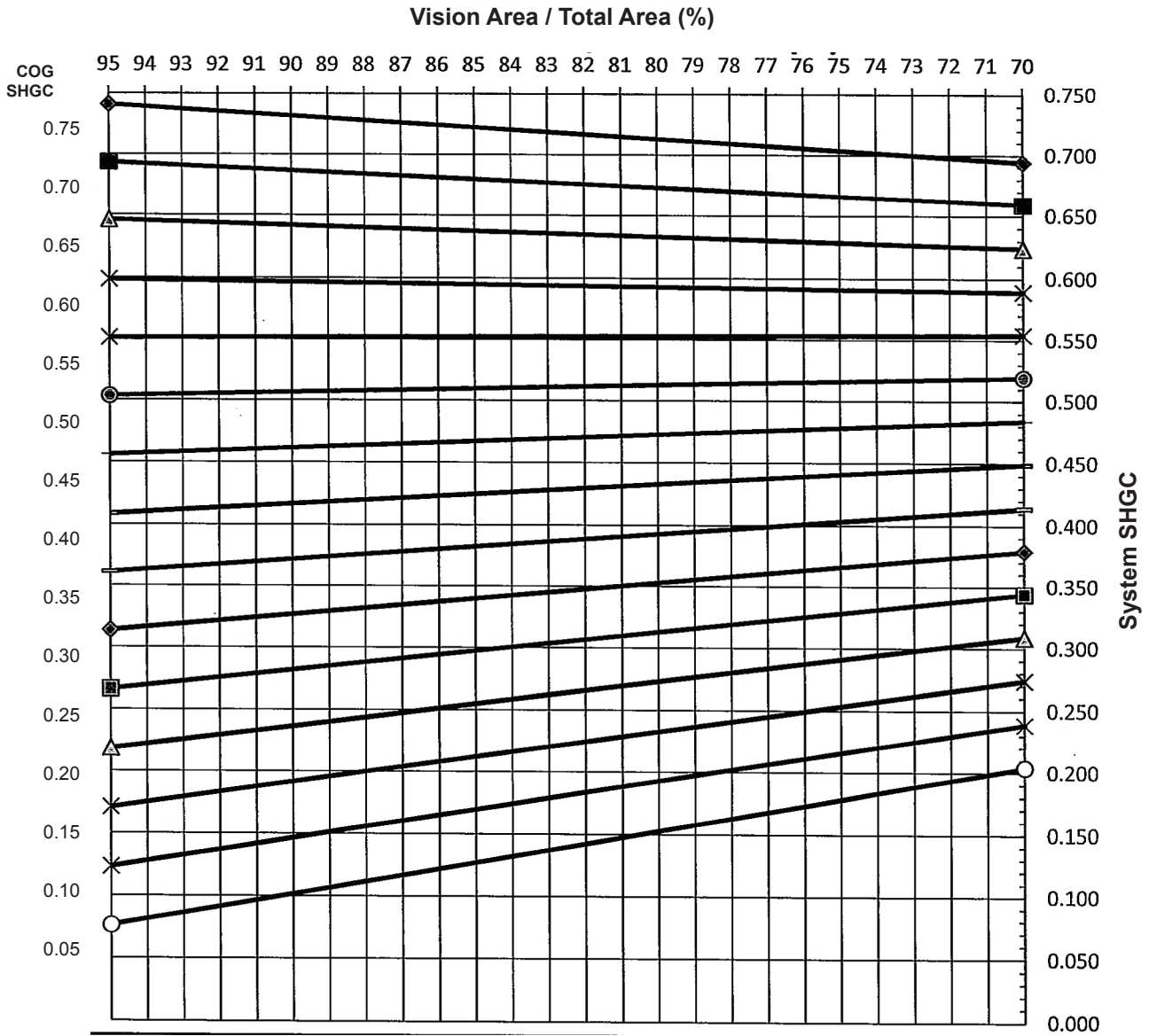
For glass values that are not listed, linear interpolation is permitted.  
 Glass properties are based on center of glass values (winter conditions) and are obtained from your glass supplier.

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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**1" GLAZING WITH FIBERGLASS PRESSURE PLATE**

System Solar Heat Gain Coefficient (SHGC) vs Percent of Vision Area



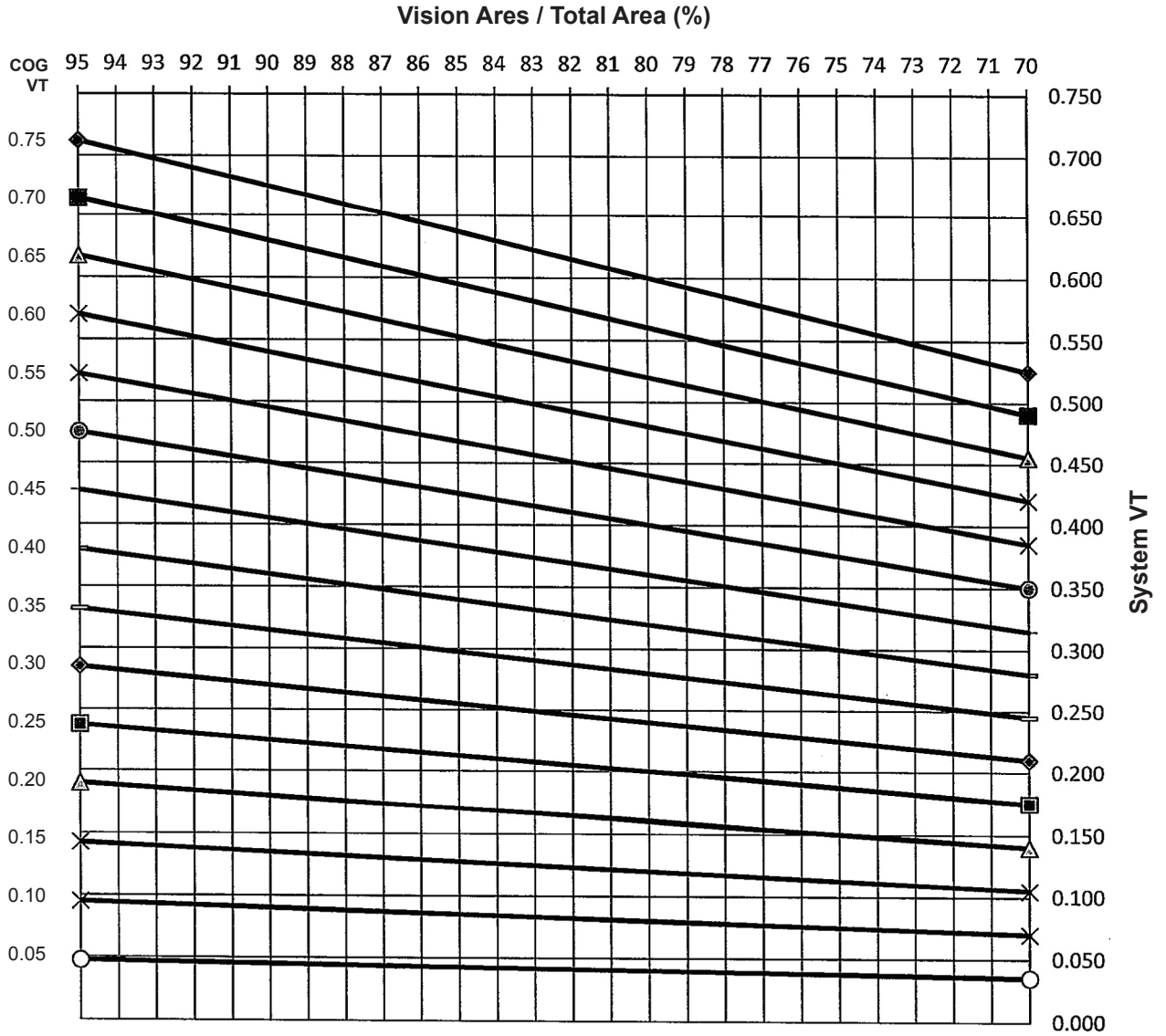
Charts are generated per AAMA 507.

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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**1" GLAZING WITH FIBERGLASS PRESSURE PLATE**

System Visible Transmittance (VT) vs Percent of Vision Area



Charts are generated per AAMA 507.

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**Thermal Transmittance** <sup>1</sup> (BTU/hr • ft<sup>2</sup> • °F)

Glass U-Factor <sup>3</sup>	Overall U-Factor <sup>4</sup>
0.48	0.54
0.46	0.53
0.44	0.51
0.42	0.49
0.40	0.48
0.38	0.46
0.36	0.44
0.34	0.42
0.32	0.41
0.30	0.39
0.28	0.37
0.26	0.36
0.24	0.34
0.22	0.32
0.20	0.31

**1" GLAZING WITH  
FIBERGLASS PRESSURE PLATE**

**NOTE:** For glass values that are not listed, linear interpolation is permitted.

1. U-Factors are determined in accordance with NFRC 100.
2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values and are obtained from your glass supplier.
4. Overall U-Factor, SHGC, and VT Matricies are based on the standard NFRC specimen size of 2000mm wide by 2000mm high (78-3/4" by 78-3/4").

**SHGC Matrix** <sup>2</sup>

Glass SHGC <sup>3</sup>	Overall SHGC <sup>4</sup>
0.75	0.73
0.70	0.69
0.65	0.64
0.60	0.60
0.55	0.55
0.50	0.51
0.45	0.46
0.40	0.42
0.35	0.37
0.30	0.33
0.25	0.28
0.20	0.24
0.15	0.19
0.10	0.15
0.05	0.10

**Visible Transmittance** <sup>2</sup>

Glass VT <sup>3</sup>	Overall VT <sup>4</sup>
0.75	0.68
0.70	0.63
0.65	0.59
0.60	0.54
0.55	0.50
0.50	0.45
0.45	0.41
0.40	0.36
0.35	0.32
0.30	0.27
0.25	0.23
0.20	0.18
0.15	0.14
0.10	0.09
0.05	0.05

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## **Features**

- 1600 Wall System™3 is an inside / outside glazed captured curtain wall
- 1600 Wall System™3 has a 2-1/2" (63.5) sight line
- Standard 6" (152.4) or 7-1/2" (190.5) depth systems are compatible with System™1 and System™2
- Inside glazed verticals utilize the IsoStrut™ thermal barrier to provide superior structural and thermal performance
- Integral vertical exterior cover and thermal barrier reduce installed cost
- Horizontals utilize a thermal separator and pressure plate to allow for glazing or re-glazing from the exterior
- Standard infill options are 1/8" (3.2), 1/4" (6.4) and 1" (25.4)
- Thermally Broken by means of a continuous 1/4" (6.4) low conductance spacer
- Concealed fastener joinery creates smooth, monolithic appearance
- Shear block fabrication method
- Standard 90 and 135 degree inside and outside corners available
- Offers integrated entrance framing systems
- Peroxide-cure high performance EPDM silicone compatible glazing materials for long-lasting seals
- Two color option
- Permanodic™ anodized finishes in seven choices
- Painted finishes in standard and custom choices

## **Optional Features**

- Steel reinforcing available
- Integrates with standard Kawneer windows and GLASSvent™ windows for curtain wall
- 1600 PowerWall™ solar photovoltaic (PV) infill in lieu of glass

## **Product Applications**

- Ideal for low-rise to high-rise curtain wall applications where inside glazing and high performance is desired

For specific product applications,  
Consult your Kawneer representative.

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**Architects** – Most extrusion and window types illustrated in this catalog are standard products for Kawneer. These concepts have been expanded and modified to afford you design freedom. Some miscellaneous details are non-standard and are intended to demonstrate how the system can be modified to expand design flexibility. Please contact your Kawneer representative for further assistance.

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LAWS AND BUILDING AND SAFETY CODES GOVERNING THE DESIGN AND USE OF GLAZED ENTRANCE, WINDOW, AND CURTAIN WALL PRODUCTS VARY WIDELY. KAWNEER DOES NOT CONTROL THE SELECTION OF PRODUCT CONFIGURATIONS, OPERATING HARDWARE, OR GLAZING MATERIALS, AND ASSUMES NO RESPONSIBILITY THEREFOR.

Metric (SI) conversion figures are included throughout these details for reference. Numbers in parentheses ( ) are millimeters unless otherwise noted.

The following metric (SI ) units are found in these details:

- m – meter
- cm – centimeter
- mm – millimeter
- s – second
- Pa – pascal
- MPa – megapascal

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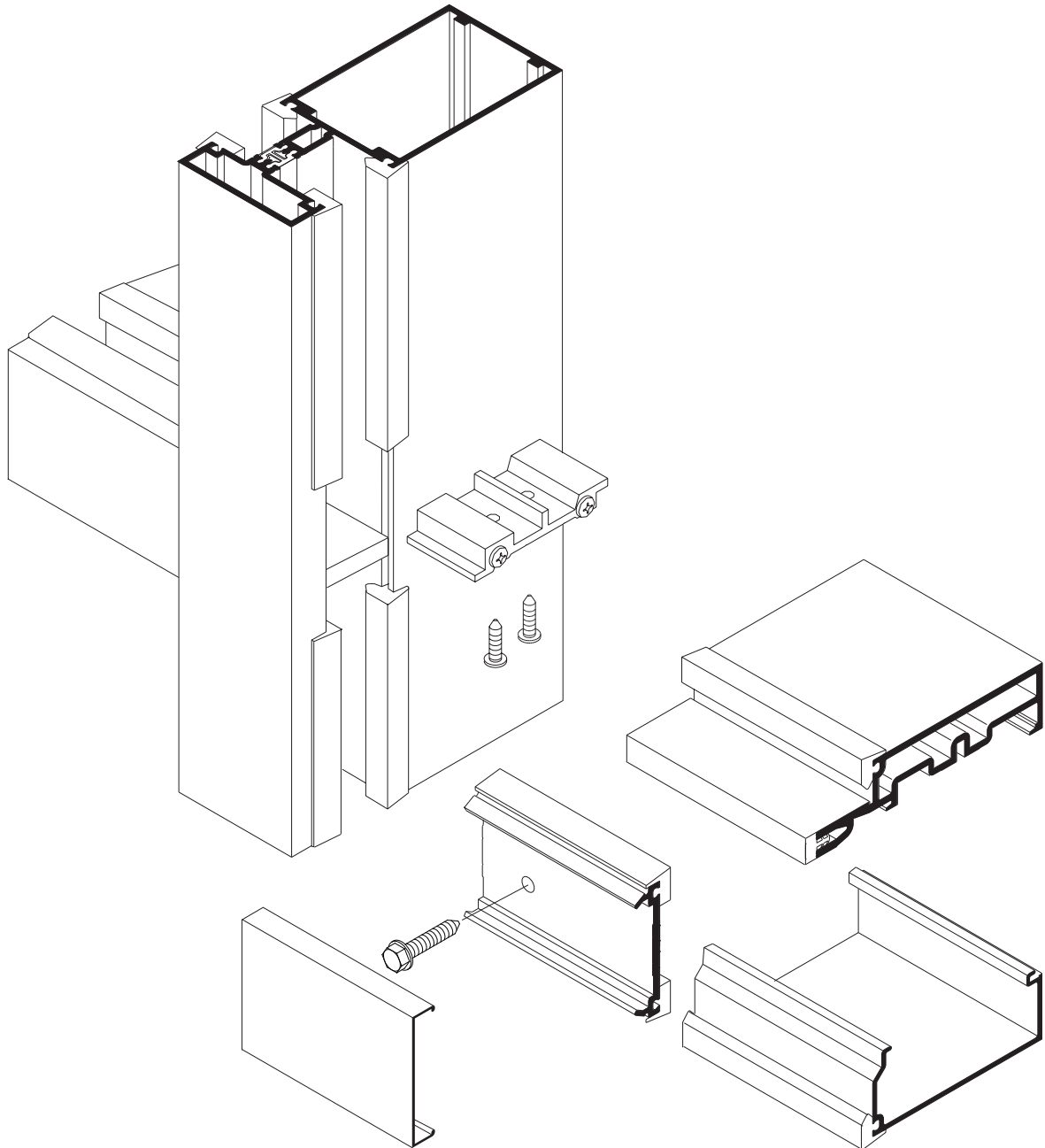
Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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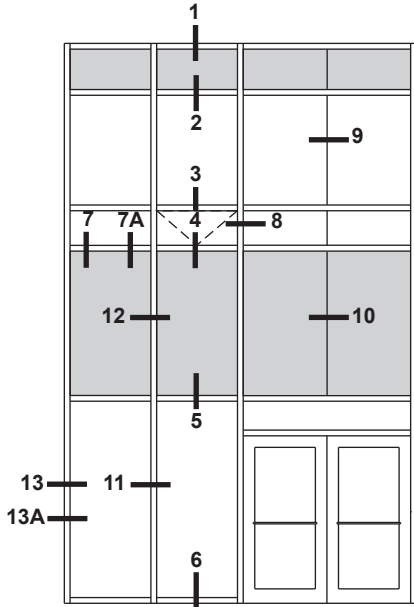
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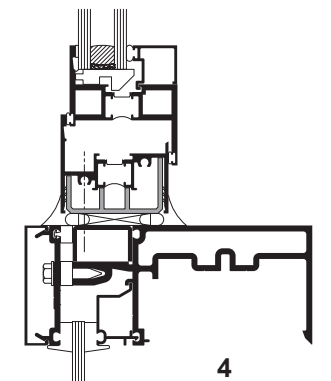
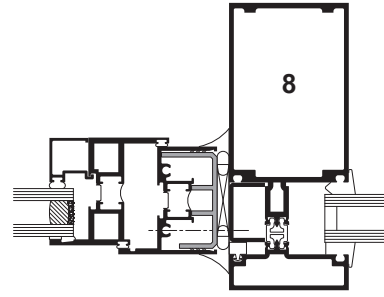
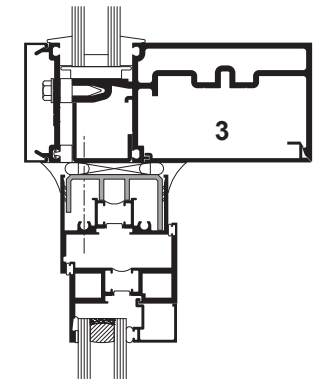
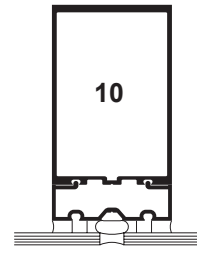
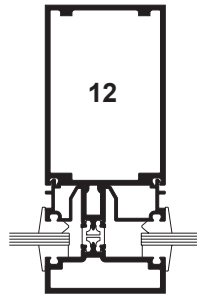
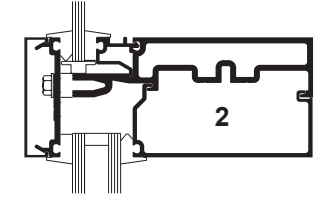
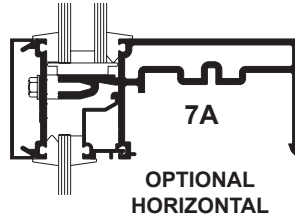
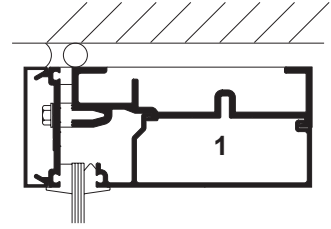
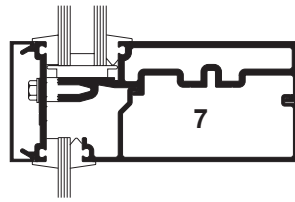
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SCALE 3" = 1'-0"

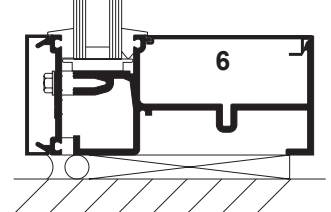
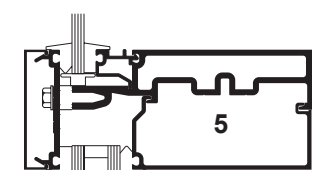
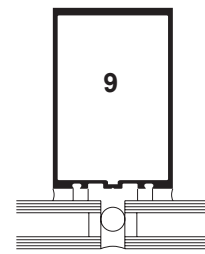
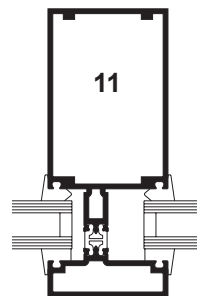
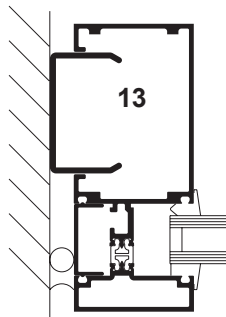
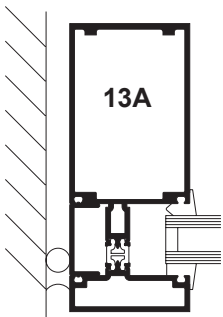


ELEVATION IS NUMBER KEYED TO DETAILS

**NOTE:**  
 6" SYSTEM SHOWN, 7-1/2" SIMILAR.  
 INSIDE GLAZED IsoStrut™ VERTICALS SHOWN.



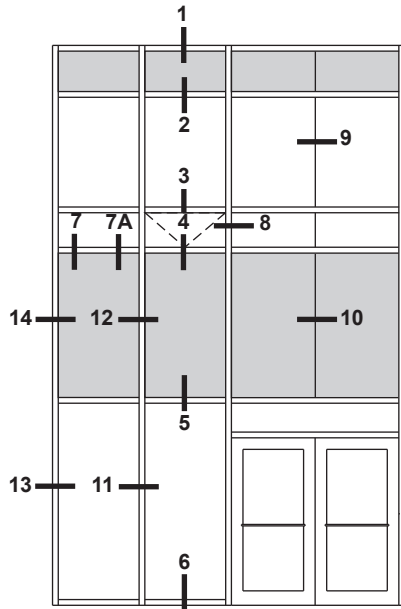
ALTERNATE JAMB



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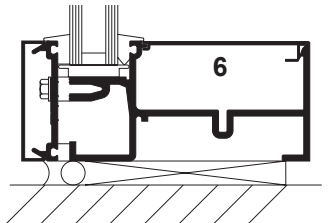
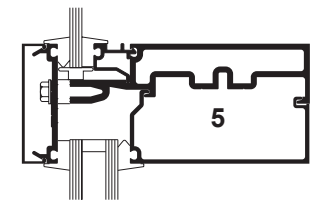
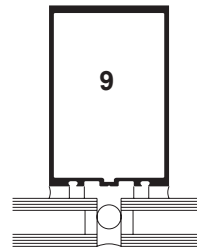
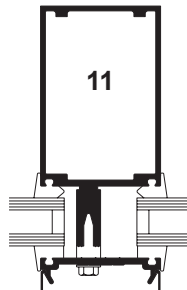
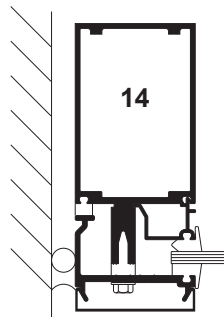
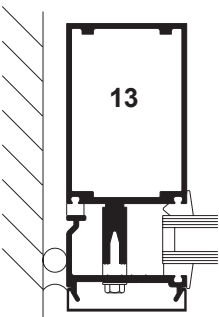
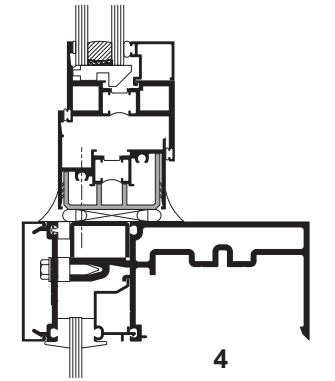
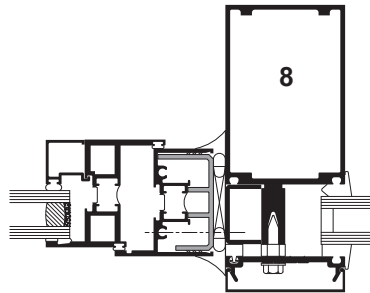
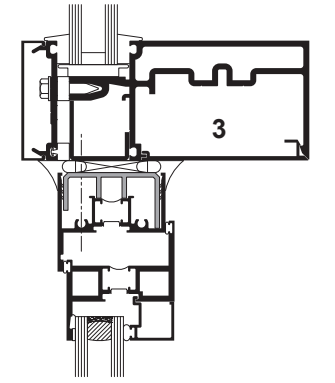
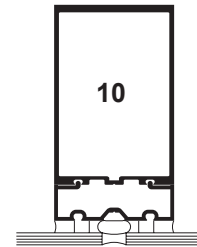
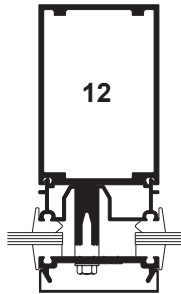
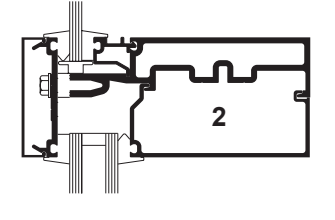
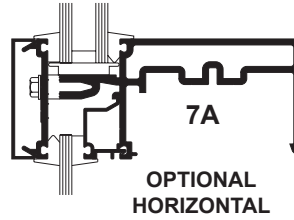
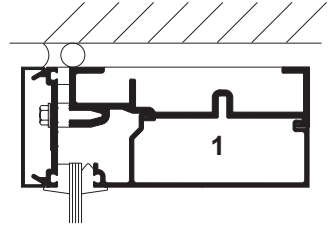
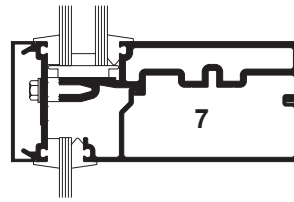
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SCALE 3" = 1'-0"



ELEVATION IS NUMBER KEYED TO DETAILS

**NOTES:**  
 6" SYSTEM SHOWN, 7-1/2" SIMILAR.  
 APPLIED PRESSURE PLATE OPTION SHOWN.

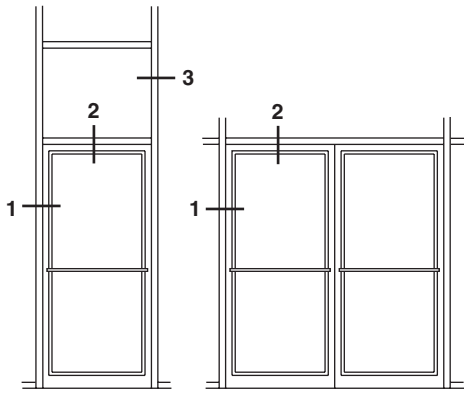


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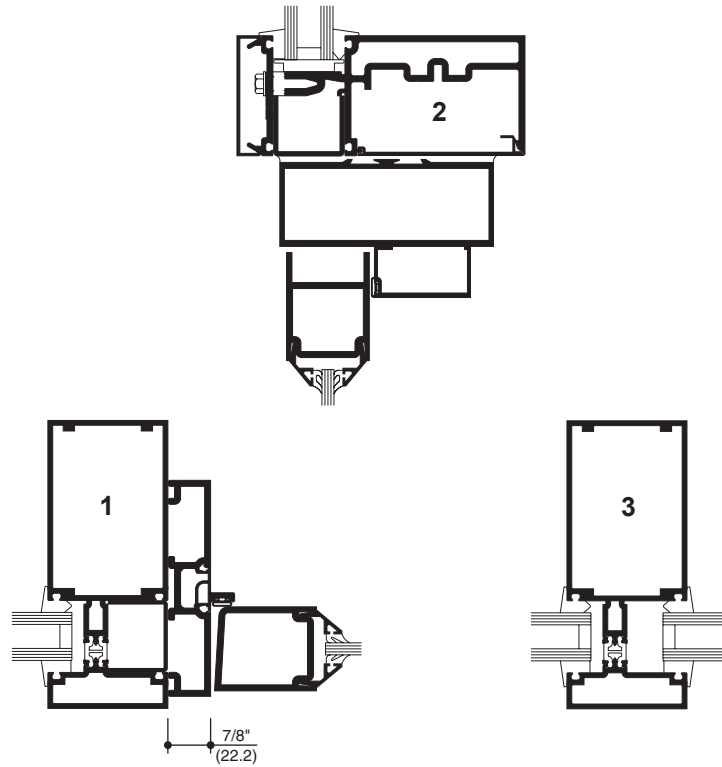
SCALE 3" = 1'-0"

## ENTRANCE ADAPTERS

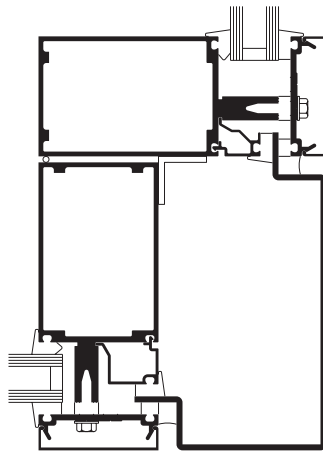


ELEVATION IS NUMBER KEYED TO DETAILS

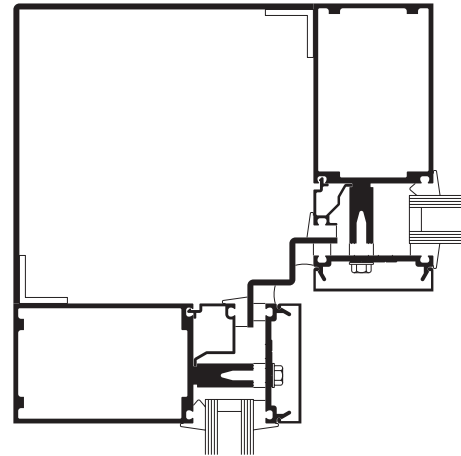
**NOTE:**  
OFFSET PIVOT/BUTT HUNG ENTRANCE SHOWN.  
ALSO AVAILABLE FOR CENTER HUNG



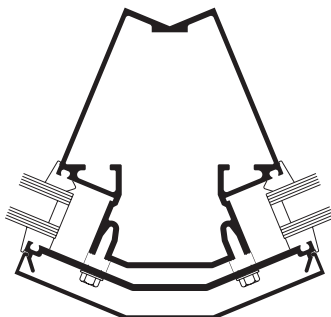
## CORNERS



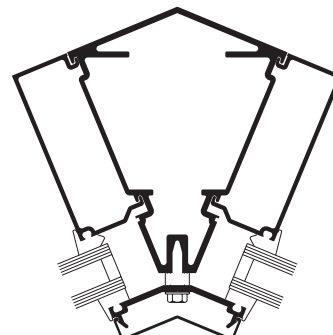
OUTSIDE 90° CORNER



INSIDE 90° CORNER



OUTSIDE 135° CORNER



INSIDE 135° CORNER

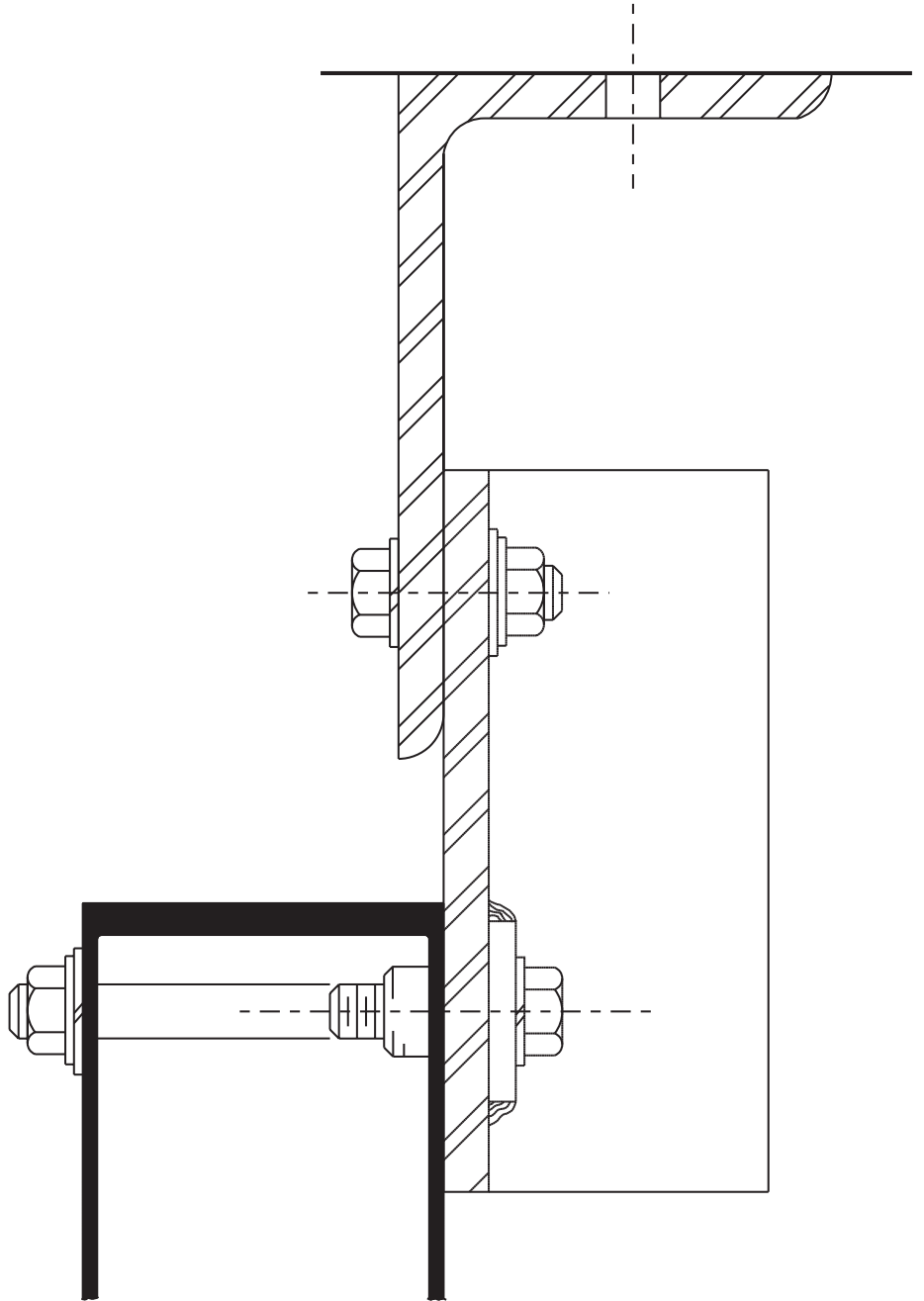
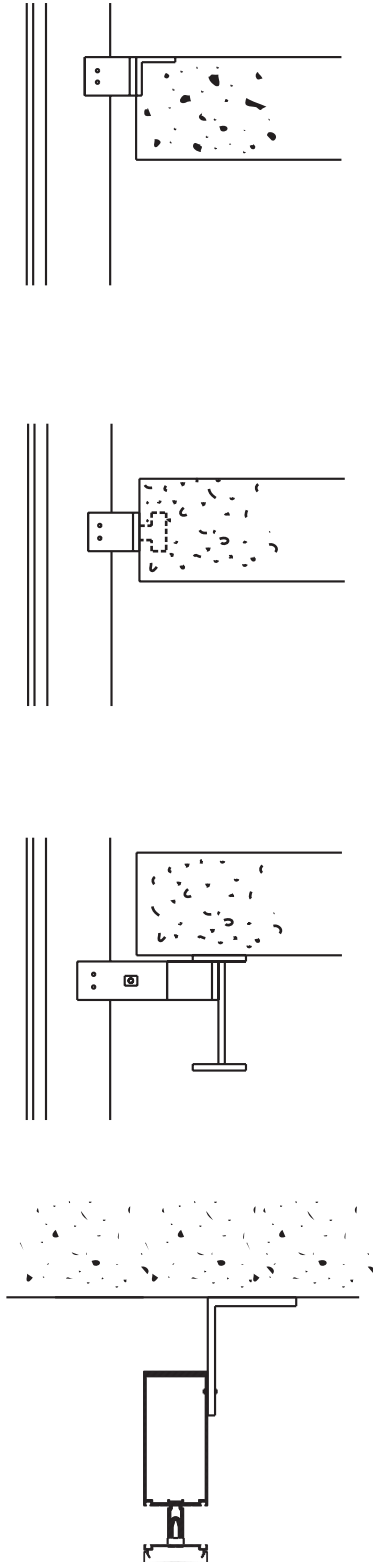
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## WIND LOAD CHARTS

Mullions are designed for deflection limitations in accordance with AAMA TIR-A11 of L/175 up to 13'-6" and L/240 +1/4" above 13'-6". These curves are for mullions WITH HORIZONTALS and are based on engineering calculations for stress and deflection. Allowable wind load stress for ALUMINUM 15,152 psi (104MPa), STEEL 30,000 psi (207MPa). Charted curves, in all cases are for the limiting value. Wind load charts contained herein are based upon nominal wind load utilized in allowable stress design. A conversion from Load Resistance Factor Design (LRFD) is provided. To convert ultimate wind loads to nominal loads, multiply ultimate wind loads by a factor of 0.6 per ASCE/SEI 7. A 4/3 increase in allowable stress has not been used to develop these curves. For special situations not covered by these curves, contact your Kawneer representative for additional information.

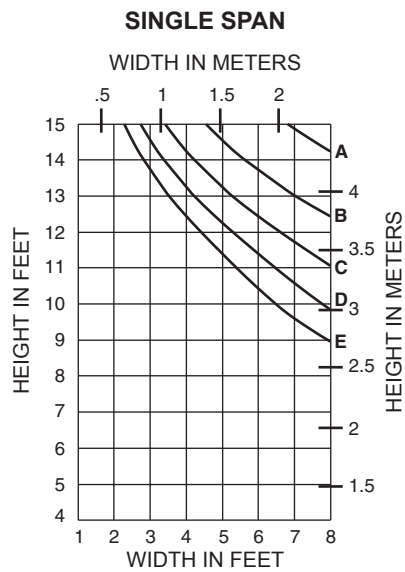
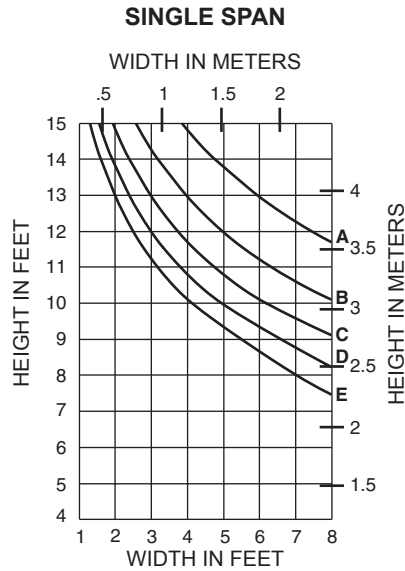
## DEADLOAD CHARTS

Horizontal or deadload limitations are based upon 1/8" (3.2) maximum allowable deflection at the center of an intermediate horizontal member. The accompanying charts are calculated for 1/4" (6.4) and 1" (25.4) thick glass supported on two setting blocks placed at the loading points shown.

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	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	20 PSF (960)	33 PSF (1580)
B =	30 PSF (1440)	50 PSF (2400)
C =	40 PSF (1920)	67 PSF (3200)
D =	50 PSF (2400)	83 PSF (4000)
E =	60 PSF (2880)	100 PSF (4790)

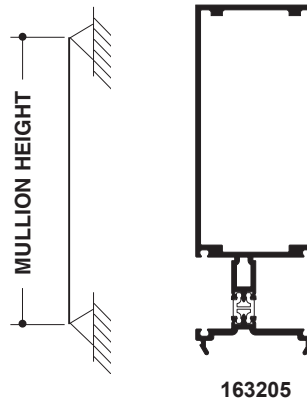
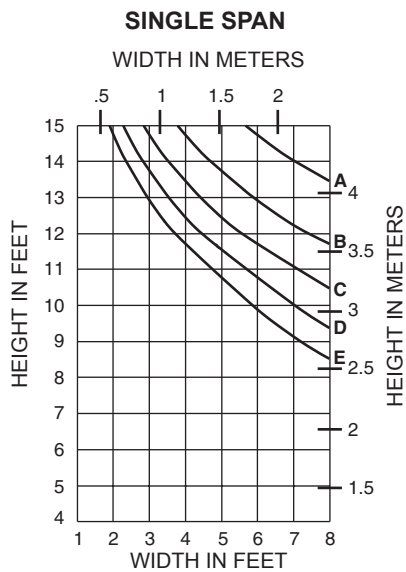
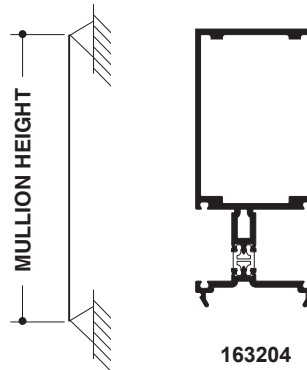
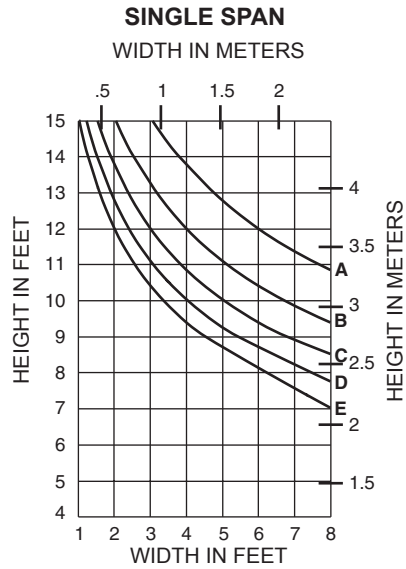


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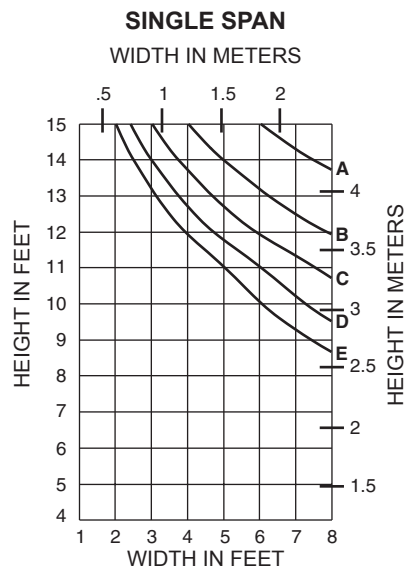
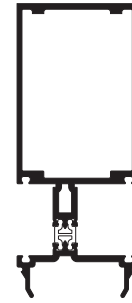
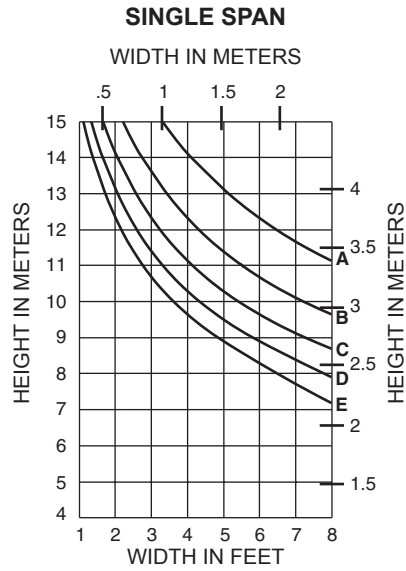
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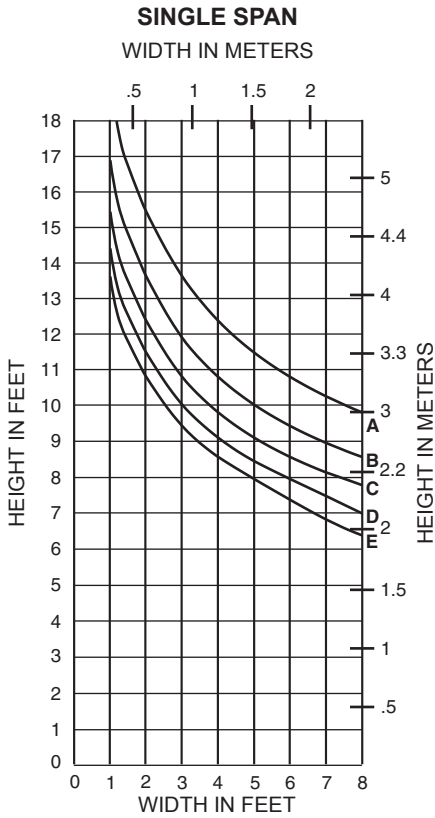
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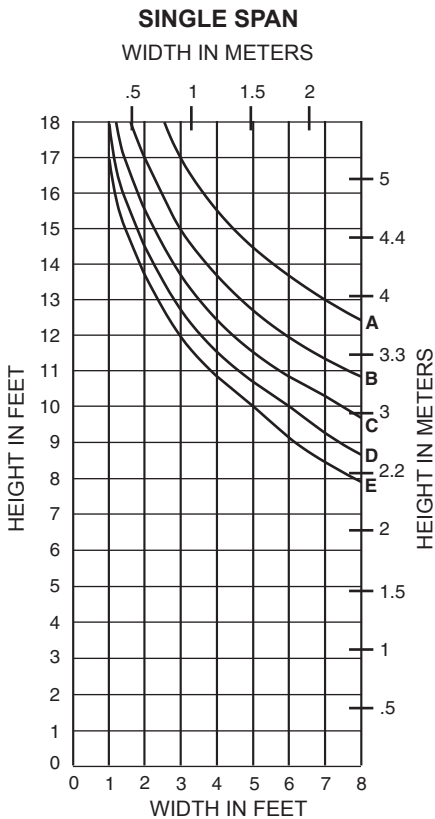
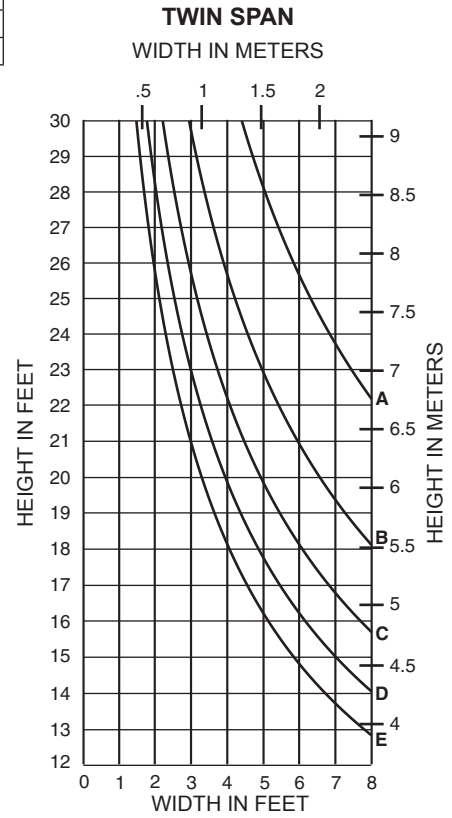
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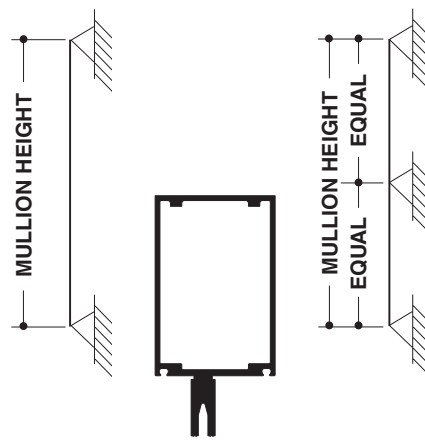
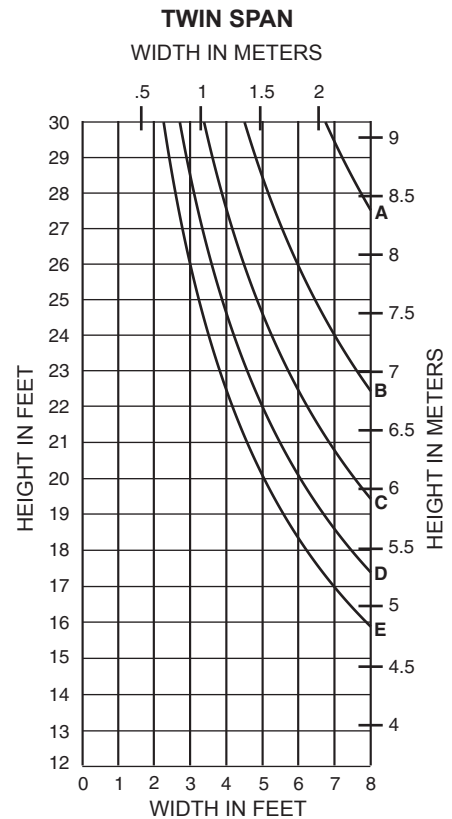
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E =	60 PSF (2880)	100 PSF (4790)



- A = 20 PSF (960 Pa)
- B = 30 PSF (1440 Pa)
- C = 40 PSF (1920 Pa)
- D = 50 PSF (2400 Pa)
- E = 60 PSF (2880 Pa)



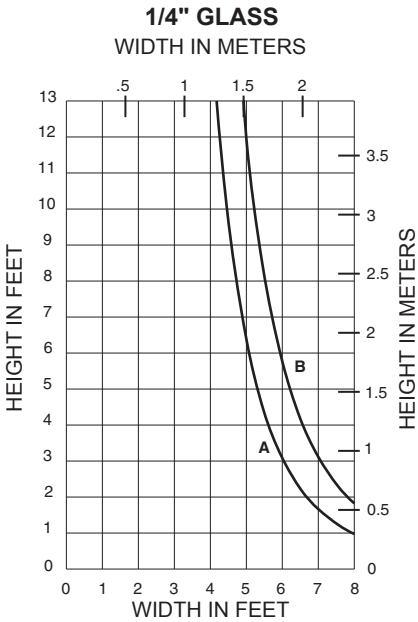
- A = 20 PSF (960 Pa)
- B = 30 PSF (1440 Pa)
- C = 40 PSF (1920 Pa)
- D = 50 PSF (2400 Pa)
- E = 60 PSF (2880 Pa)



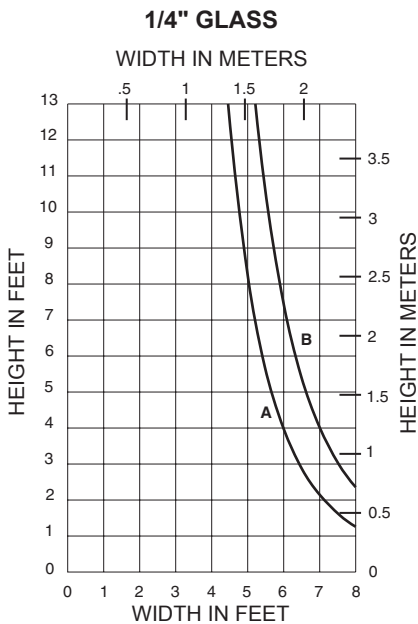
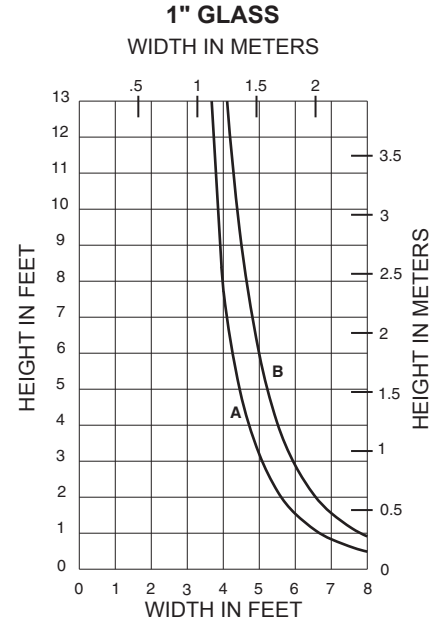
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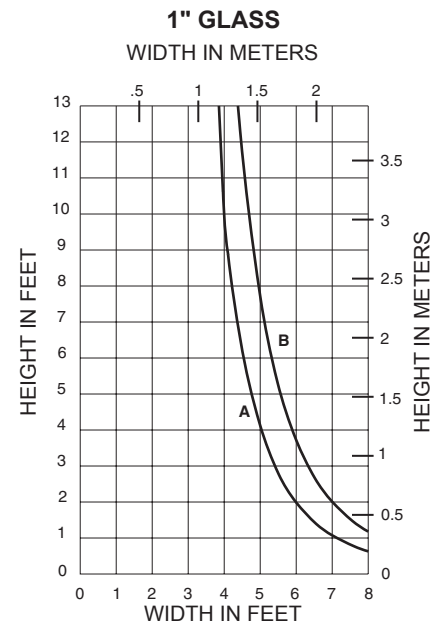
A = 1/4 POINT LOADING  
B = 1/8 POINT LOADING



163004



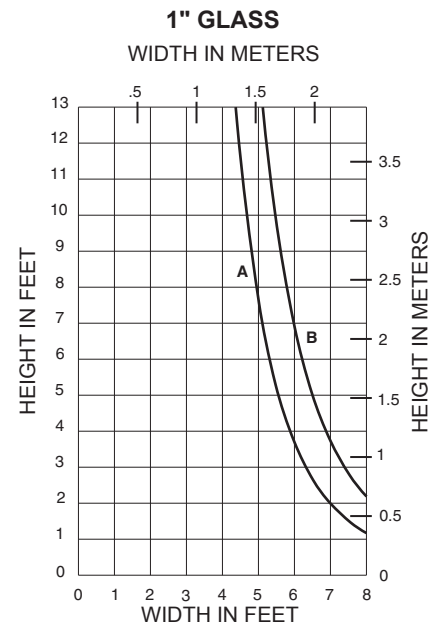
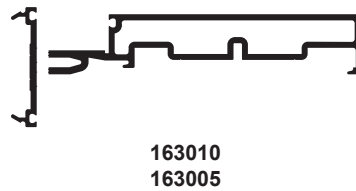
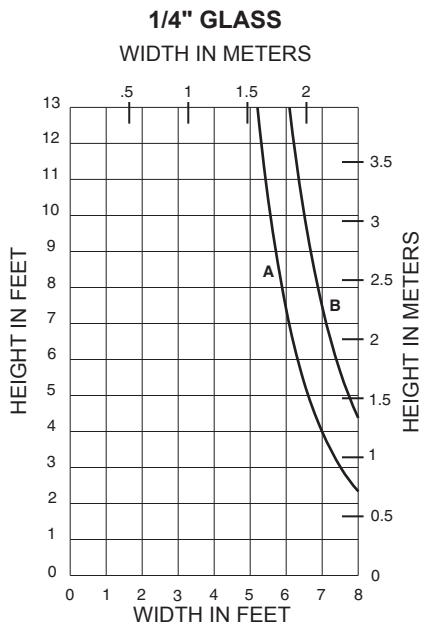
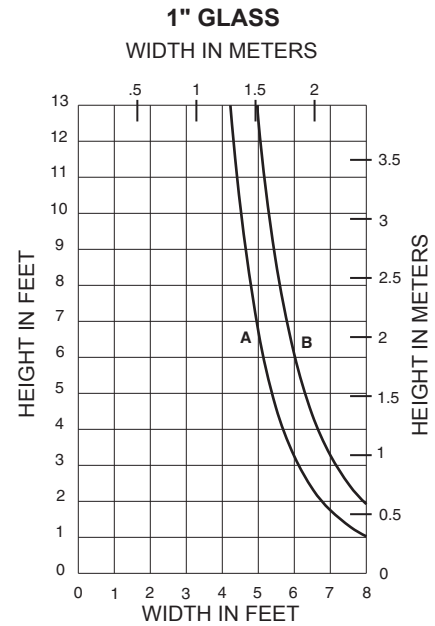
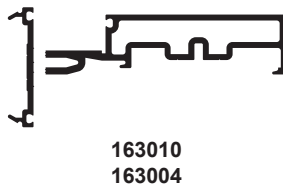
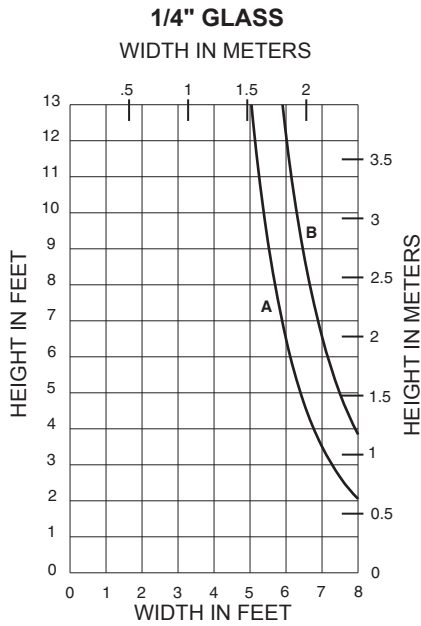
163005



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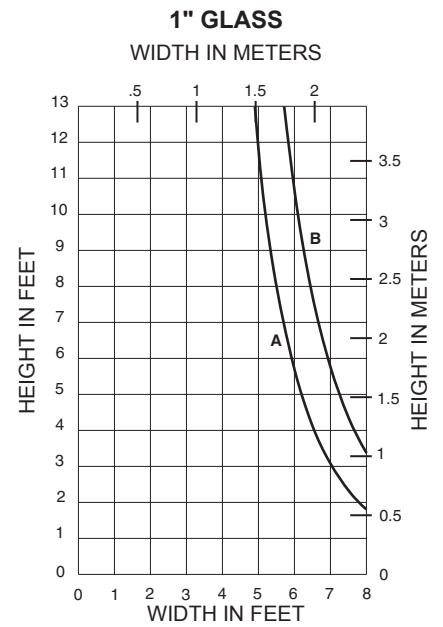
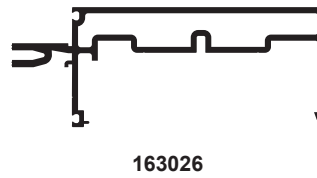
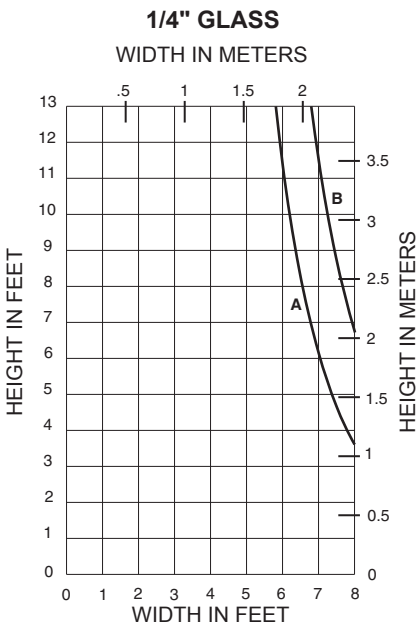
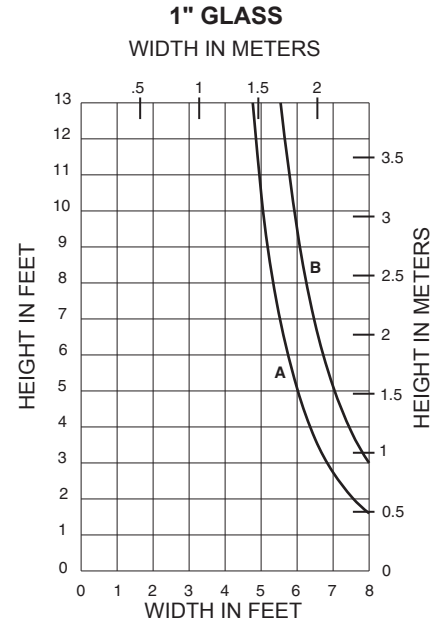
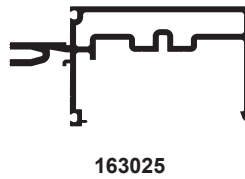
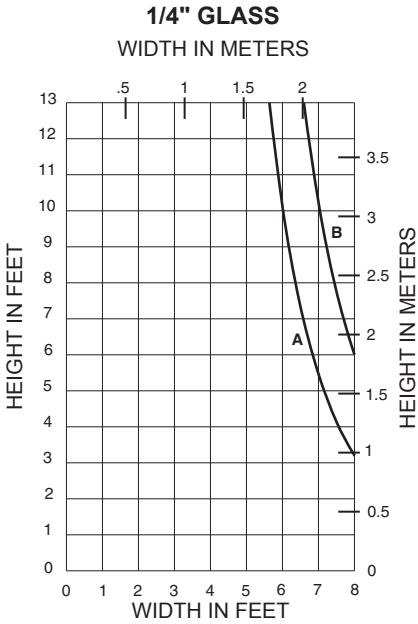
A = 1/4 POINT LOADING  
 B = 1/8 POINT LOADING



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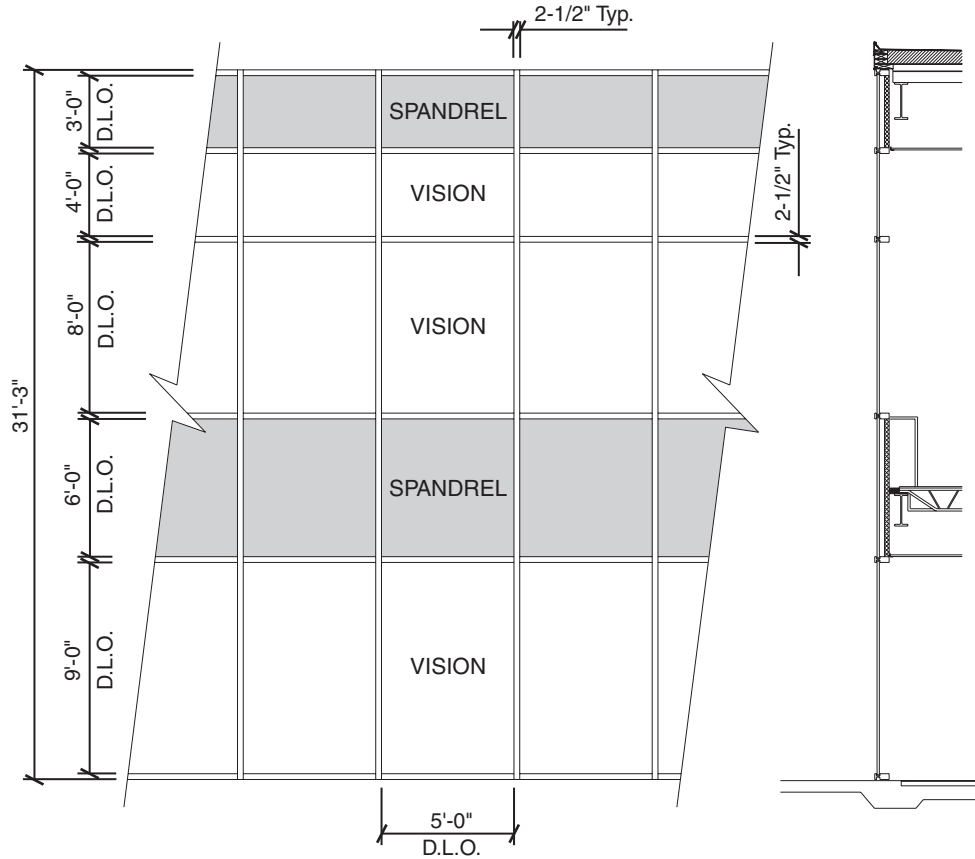
A = 1/4 POINT LOADING  
B = 1/8 POINT LOADING



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**Generic Project Specific U-factor Example Calculation**  
**(Percent of Glass will vary on specific products depending on sitelines)**  
 (Based on single bay of Curtain Wall/Window Wall)



### Vision Area

Example Glass U-factor	= 0.48 Btu/(ft <sup>2</sup> · h · °F)
Vision Area	= 5(9 + 8 + 4) = 105.0 ft <sup>2</sup>
Total Area (Vision)	= 5' 2-1/2" ( 9' 3-3/4" + 8' 2-1/2" + 4' 2-1/2" ) = 113.2 ft <sup>2</sup>
Percent of Vision Glass	= (Vision Area ÷ Total Area)100 = (105.0 ÷ 113.2)100 = 93%

### Spandrel Area

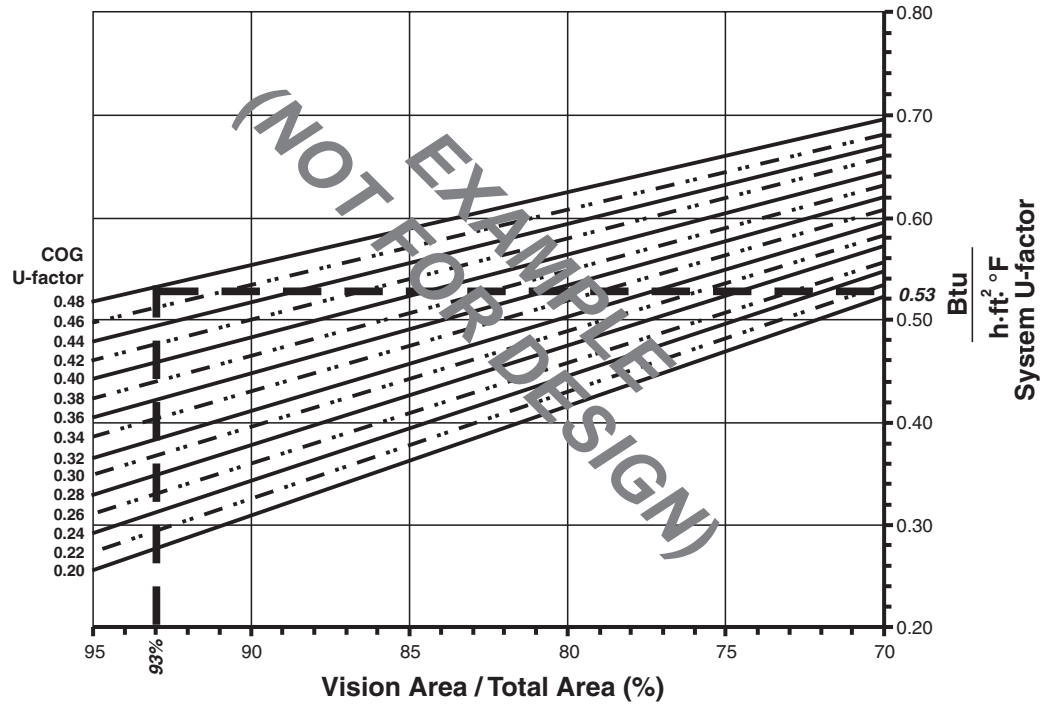
Example Spandrel R-value	= 15 (ft <sup>2</sup> · h · °F)/Btu
Spandrel Area	= 5(6 + 3) = 45.0 ft <sup>2</sup>
Total Area (Spandrel)	= 5' 2-1/2" (6' 2-1/2" + 3' 3-3/4" ) = 49.6 ft <sup>2</sup>
Percent of Spandrel	= (Spandrel Area ÷ Total Area)100 = (45.0 ÷ 49.6)100 = 91%

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Vision Area Chart

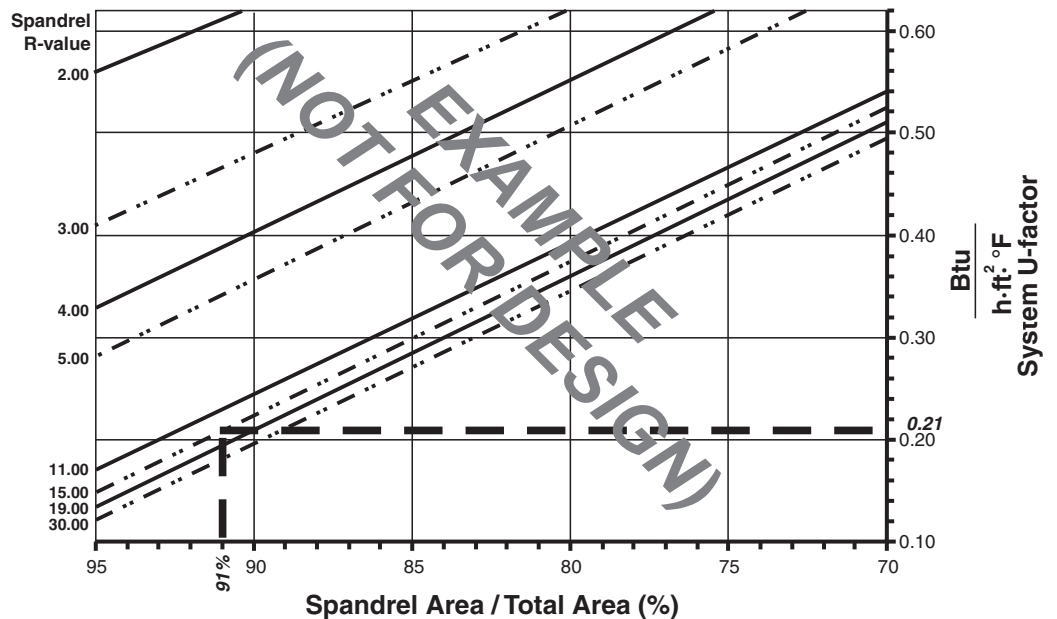
System U-factor vs Percent of Vision Area



Based on a single curtain wall bay of 93% vision glass and center of glass U-factor of 0.48, System U-factor is equal to 0.53 Btu/(h·ft<sup>2</sup>·°F)

Spandrel Area Chart

System U-factor vs Percent of Spandrel Area



Based on a single curtain wall bay of 91% spandrel and center of spandrel R-value of 15, system U-factor is equal to 0.21 Btu/(h·ft<sup>2</sup>·°F)

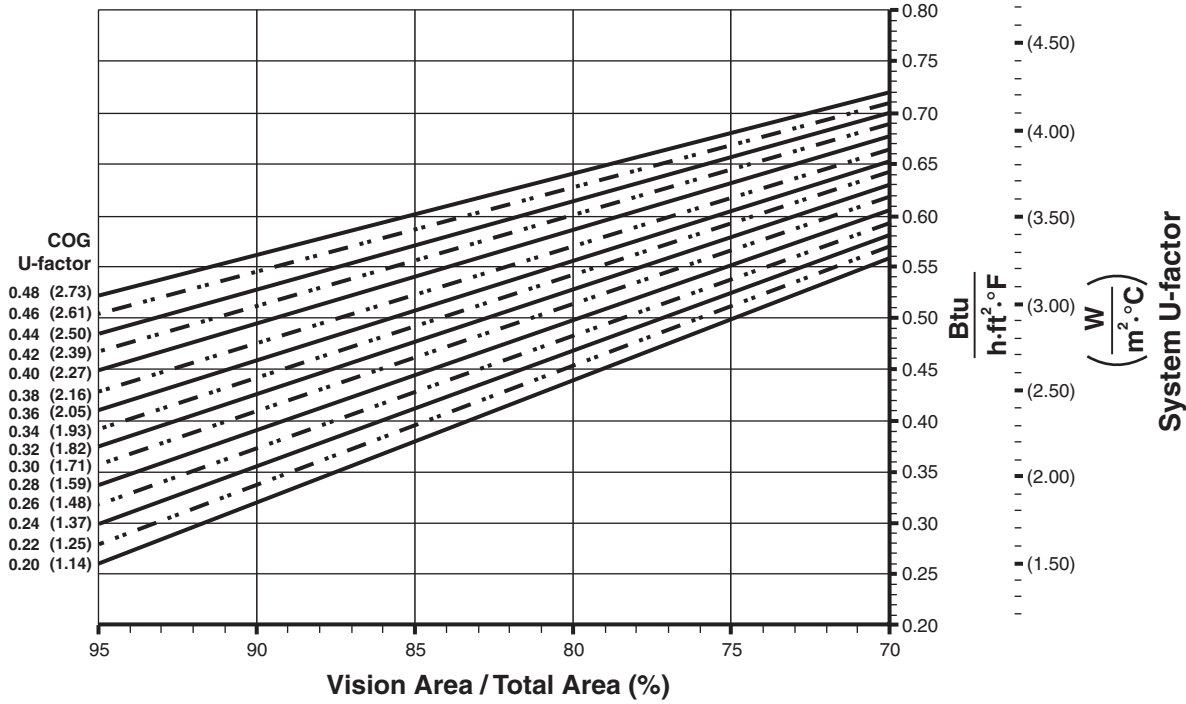
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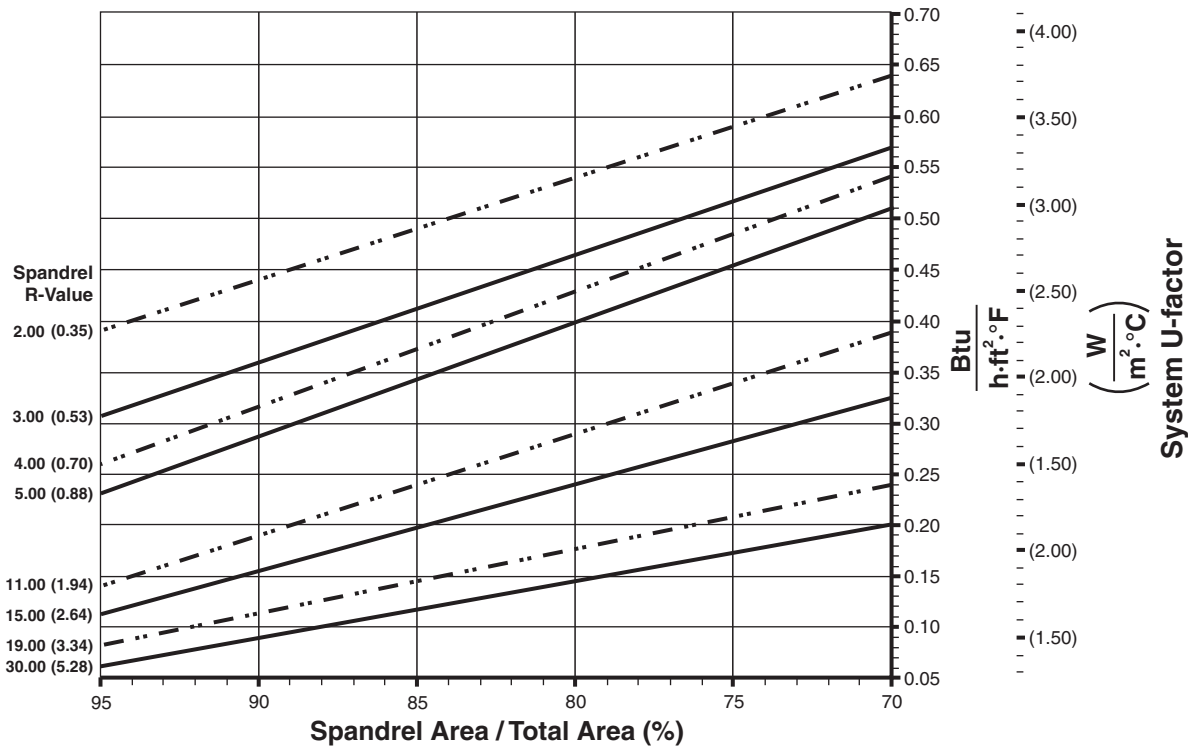


Note:  
 Values in parentheses are metric.  
 COG = Center Of Glass.  
 Charts are generated per AAMA 507.

### System U-Factors for Vision Glass



### System U-Factors for Spandrel Glass



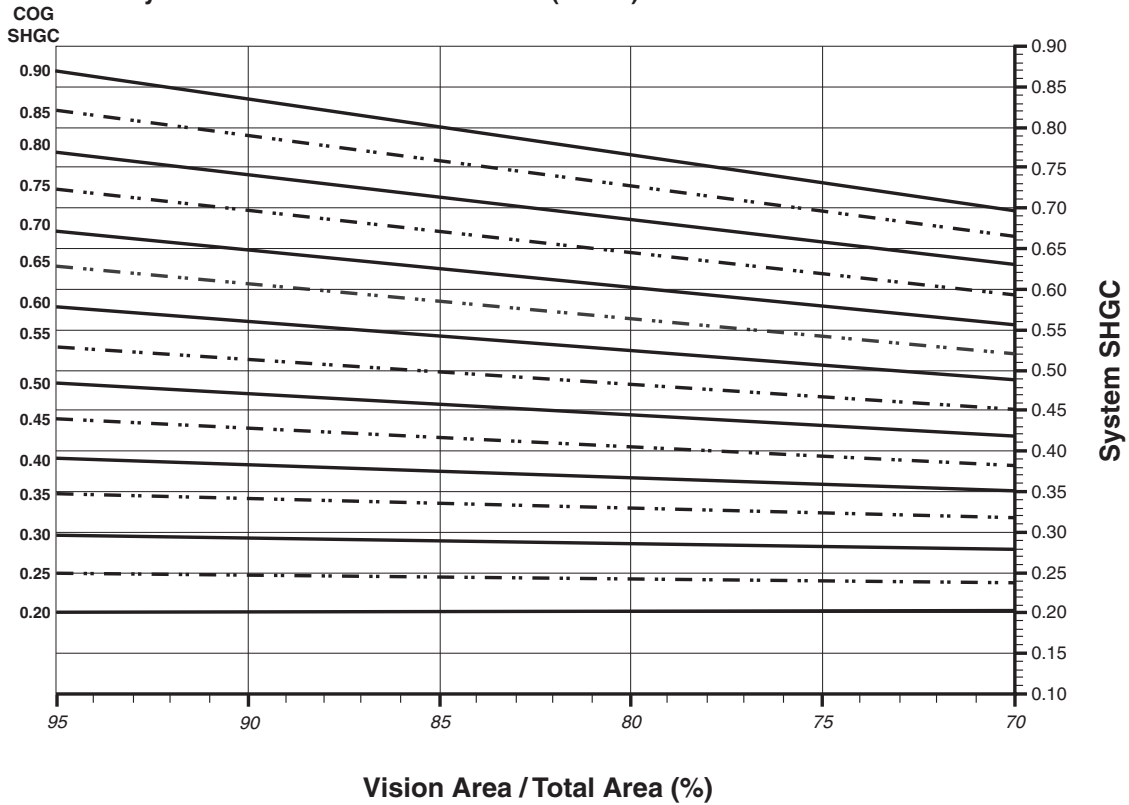
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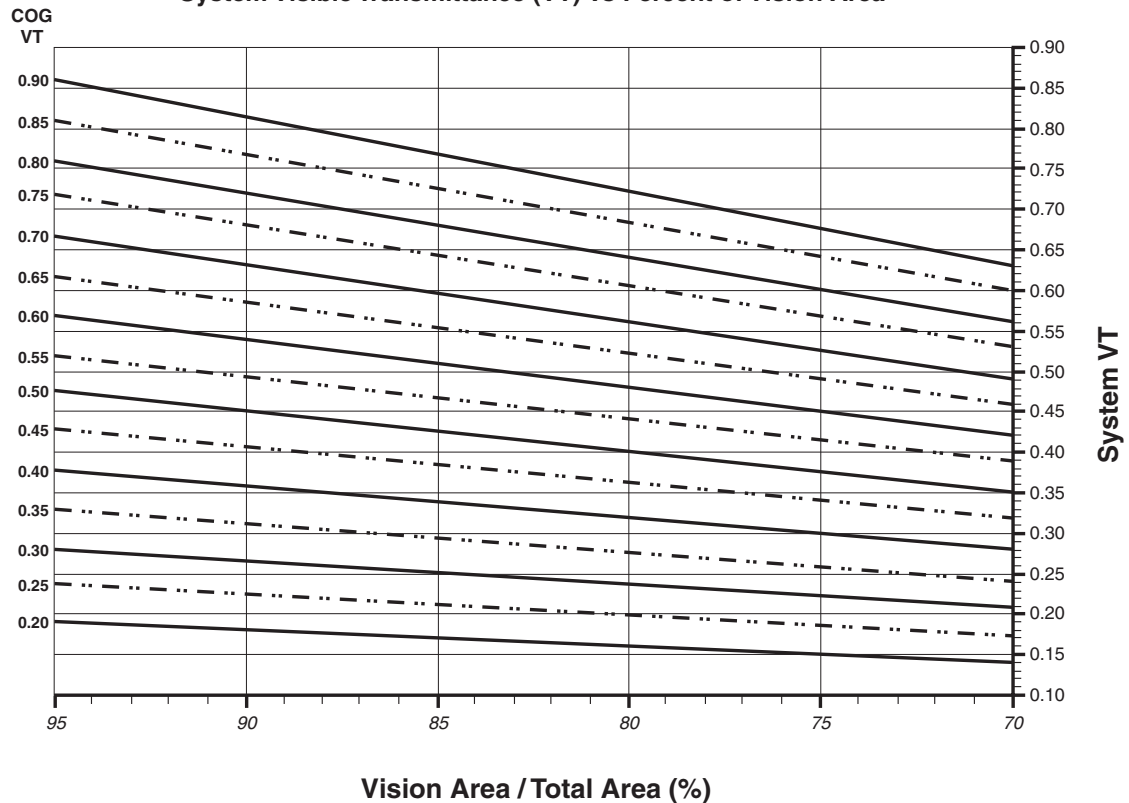
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### System Solar Heat Gain Coefficient (SHGC) vs Percent of Vision Area



Charts are generated per AAMA 507.

### System Visible Transmittance (VT) vs Percent of Vision Area



Charts are generated per AAMA 507.

**Thermal Transmittance**<sup>1</sup> (BTU/hr • ft<sup>2</sup> • °F)

Glass U-Factor <sup>3</sup>	Overall U-Factor <sup>4</sup>
0.48	0.56
0.46	0.55
0.44	0.53
0.42	0.51
0.40	0.49
0.38	0.48
0.36	0.46
0.34	0.44
0.32	0.43
0.30	0.41
0.28	0.39
0.26	0.37
0.24	0.36
0.22	0.34
0.20	0.32

**NOTE:** For glass values that are not listed, linear interpolation is permitted.

1. U-Factors are determined in accordance with NFRC 100.
2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values and are obtained from your glass supplier.
4. Overall U-Factor, SHGC, and VT Matricies are based on the standard NFRC specimen size of 2000mm wide by 2000mm high (78-3/4" by 78-3/4").

**SHGC Matrix**<sup>2</sup>

Glass SHGC <sup>3</sup>	Overall SHGC <sup>4</sup>
0.75	0.69
0.70	0.65
0.65	0.60
0.60	0.56
0.55	0.51
0.50	0.47
0.45	0.43
0.40	0.38
0.35	0.34
0.30	0.29
0.25	0.25
0.20	0.20
0.15	0.16
0.10	0.11
0.05	0.07

**Visible Transmittance**<sup>2</sup>

Glass VT <sup>3</sup>	Overall VT <sup>4</sup>
0.90	0.81
0.85	0.76
0.80	0.72
0.75	0.67
0.70	0.63
0.65	0.58
0.60	0.54
0.55	0.49
0.50	0.45
0.45	0.40
0.40	0.36
0.35	0.31
0.30	0.27
0.25	0.22
0.20	0.18

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## **Features**

- 1600 SS is an outside glazed captured or SSG curtain wall system
- 1600 SS has 2-1/2" (63.5) sight lines
- Standard 6" (152.4) or 7-1/2" (190.5) depth systems
- Infill options up to 1-1/8" (28.6)
- A pre-glazed option, 1600 SS (Preglazed), is also available
- Perimeter seal can be installed at the pressure plate or mullion shoulder
- 1600 SS can be supplied fabricated and KD or in stock lengths
- Interlocking mullion design eliminates need for anti-buckling clips
- Concealed fastener joinery creates smooth, monolithic appearance
- EPDM gaskets and thermal break
- Screw spline joinery method allows shop assembly of ladder sections, reducing field labor
- Corners available with shear block fabrication method
- Offers integrated entrance framing systems
- Silicone compatible glazing materials for long-lasting seals
- Two color option
- Permanodic™ anodized finishes in seven choices
- Painted finishes in standard and custom choices

## **Optional Features**

- Captured system thermal separator can be pre-installed into pressure plate
- Captured and SSG systems integrate with concealed GLASSvent™ for curtain wall
- Captured system Integrates with standard Kawneer windows
- Deep and bullnose covers available
- Integrates with Versoleil™ Sunshade Outrigger System and Horizontal or Vertical Single Blade System
- Profit\$Maker™ plus die sets available

## **Product Applications**

- Ideal for low to mid-rise applications where high performance is desired
- Most of the product assembly can be done in the shop rather than the field.  
This allows for better quality control and reduces expensive field labor.

For specific product applications,  
Consult your Kawneer representative.

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**Architects** - Most extrusion and window types illustrated in this catalog are standard products for Kawneer. These concepts have been expanded and modified to afford you design freedom. Some miscellaneous details are non-standard and are intended to demonstrate how the system can be modified to expand design flexibility. Please contact your Kawneer representative for further assistance.

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Metric (SI) conversion figures are included throughout these details for reference. Numbers in parentheses ( ) are millimeters unless otherwise noted.

The following metric (SI ) units are found in these details:

- m – meter
- cm – centimeter
- mm – millimeter
- s – second
- Pa – pascal
- MPa – megapascal

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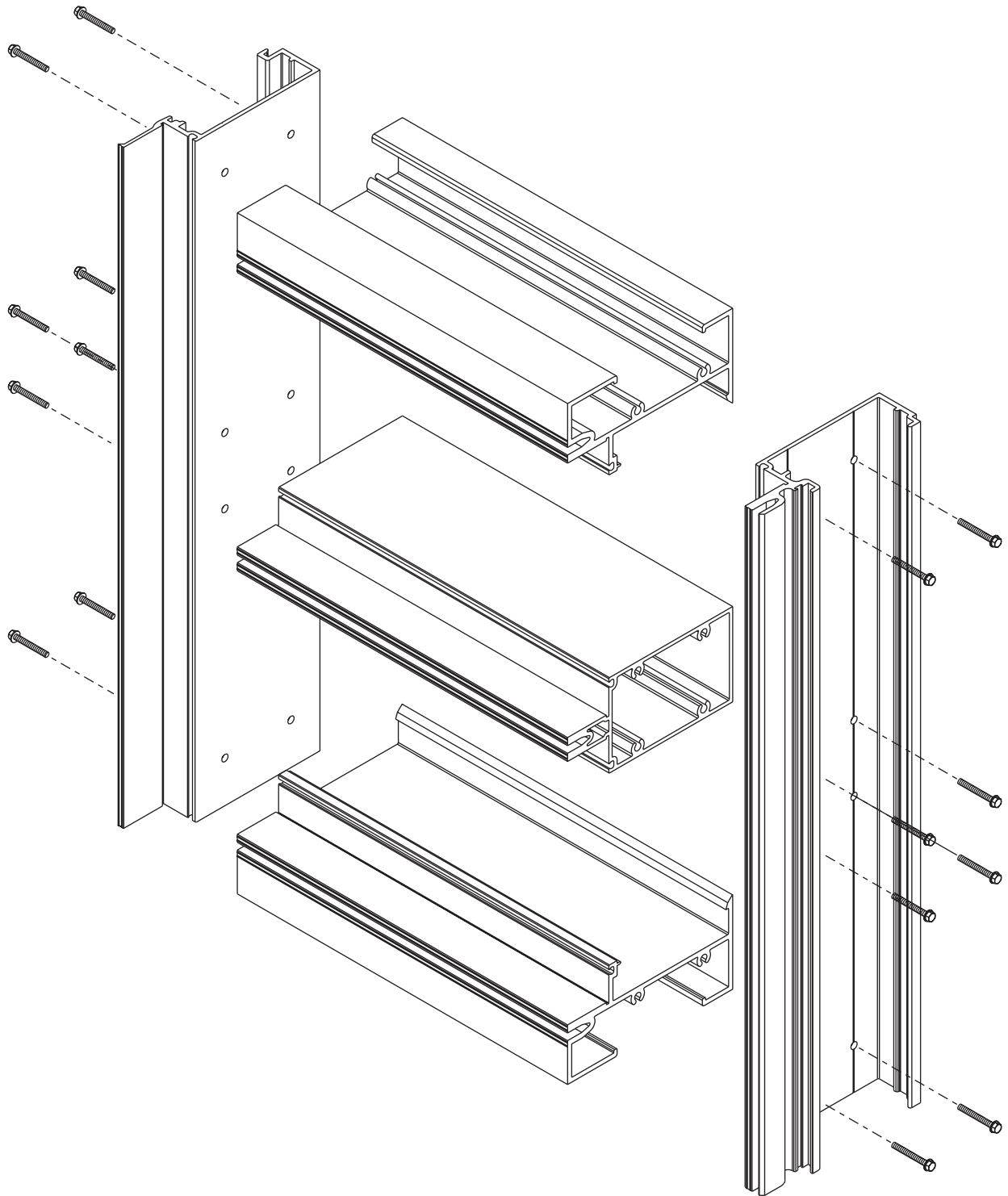
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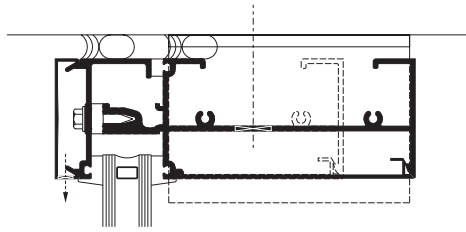
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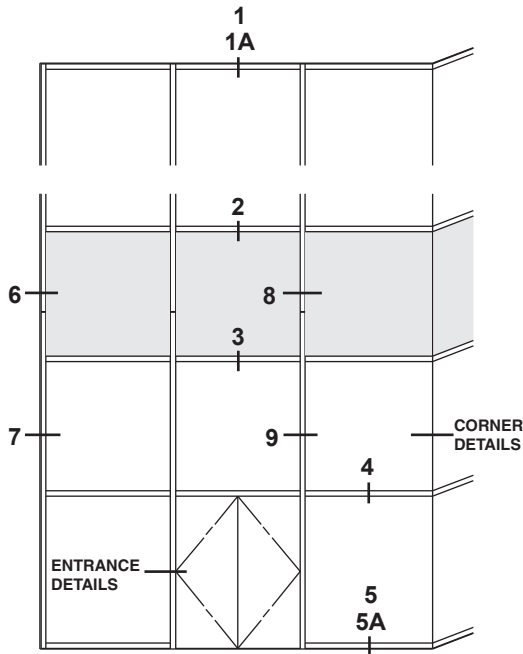
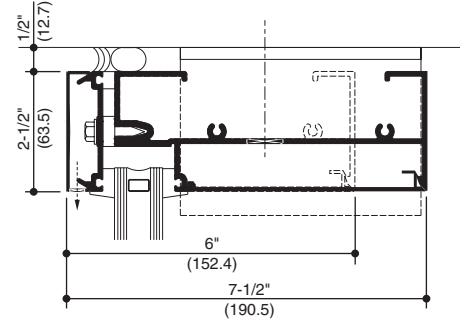
PERIMETER PRESSURE PLATE

1A HEAD



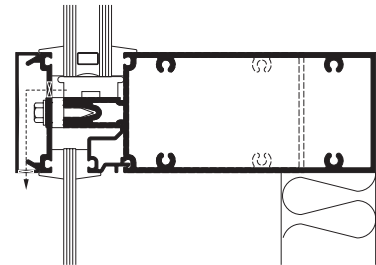
PERIMETER MULLION

1 HEAD

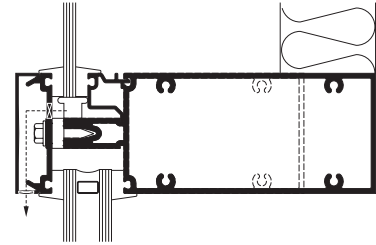


CAPTURED MULLION ELEVATION  
ELEVATION IS NUMBER KEYED TO DETAILS

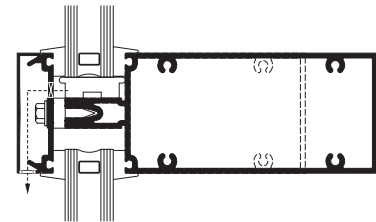
2 HORIZONTAL



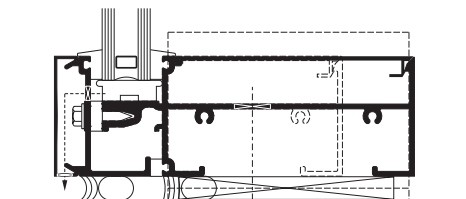
3 HORIZONTAL



4 HORIZONTAL

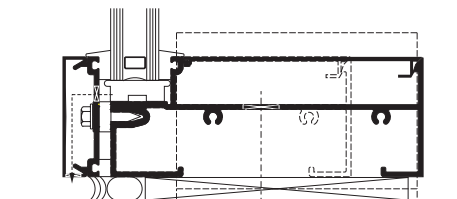


5A SILL



PERIMETER PRESSURE PLATE

5 SILL



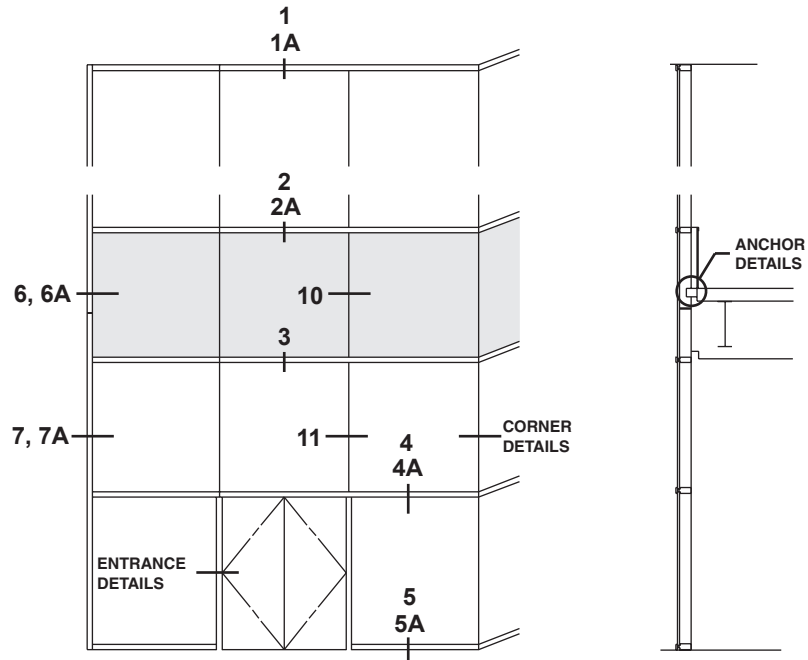
PERIMETER MULLION

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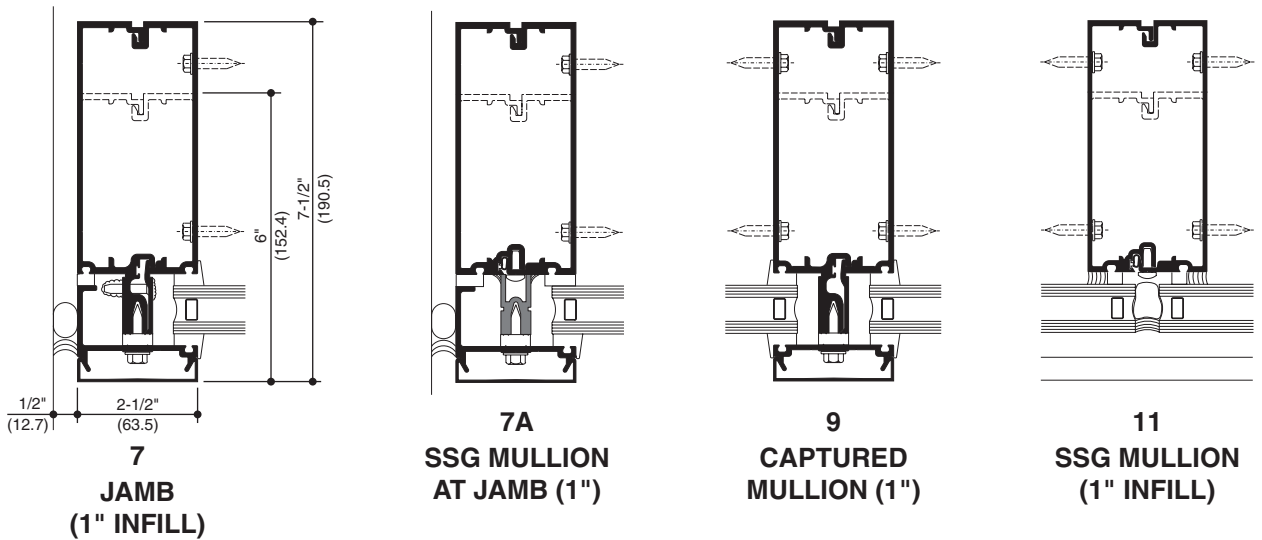
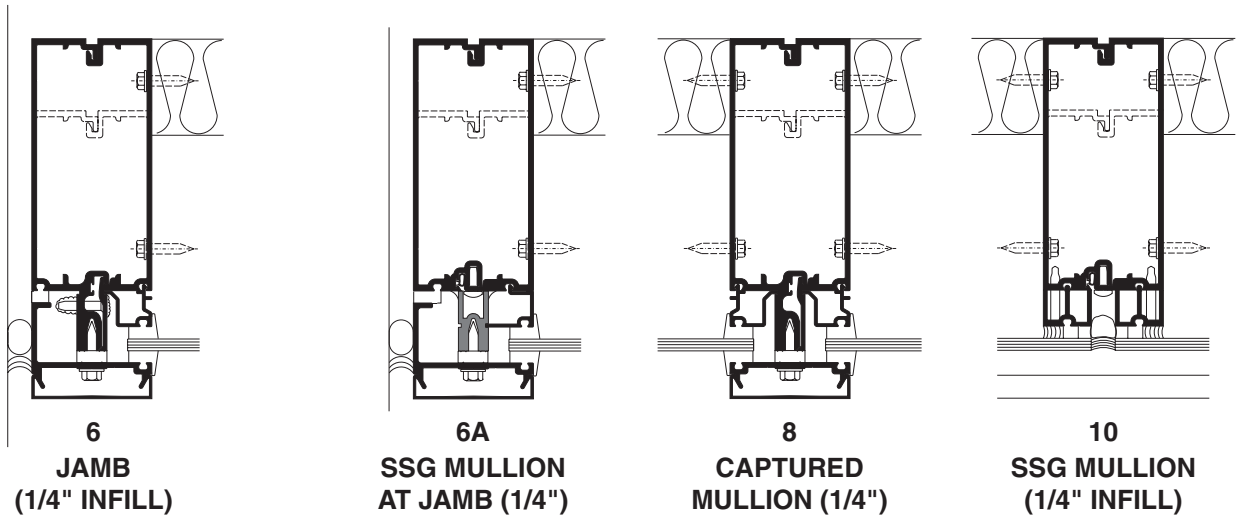
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SCALE 3" = 1'-0"



**SSG MULLION ELEVATION**

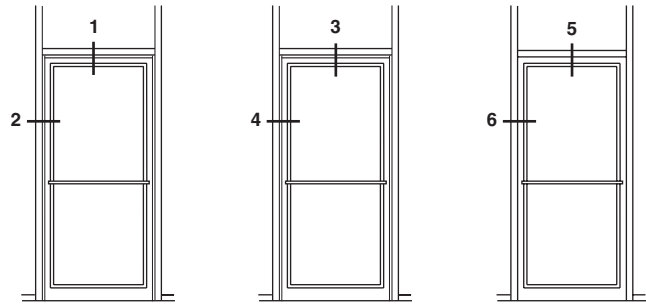
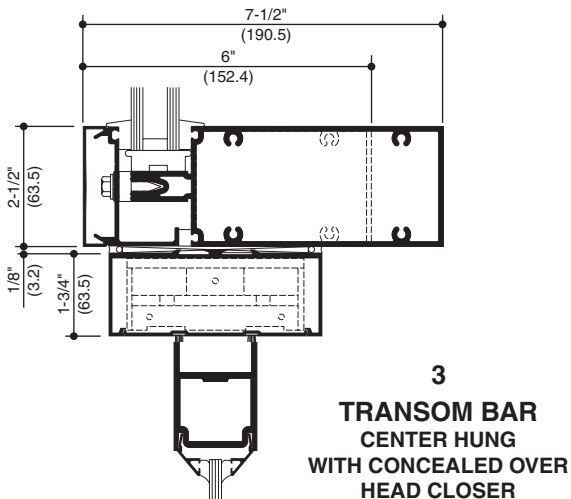
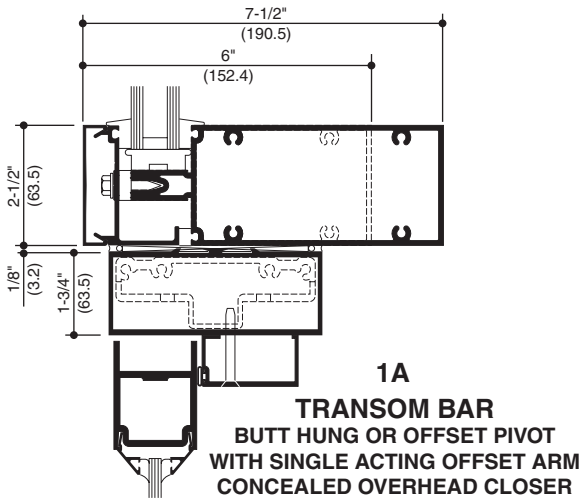
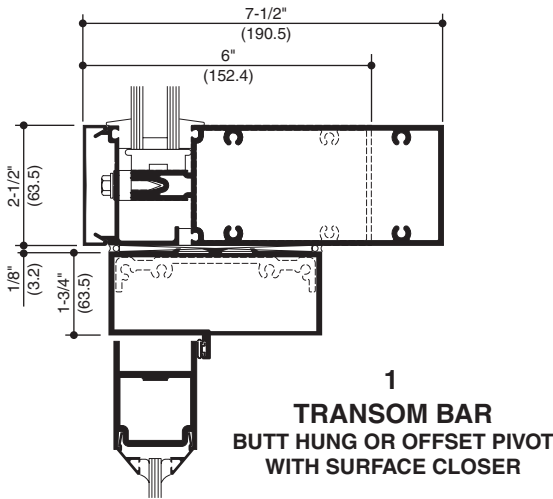
ELEVATION IS NUMBER KEYED TO DETAILS



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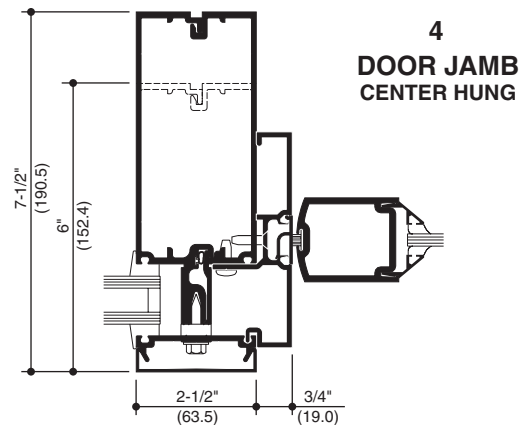
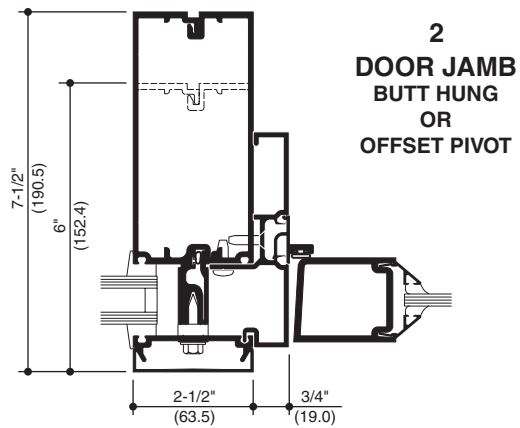


B/H or O/P

C/H

B/H or O/P

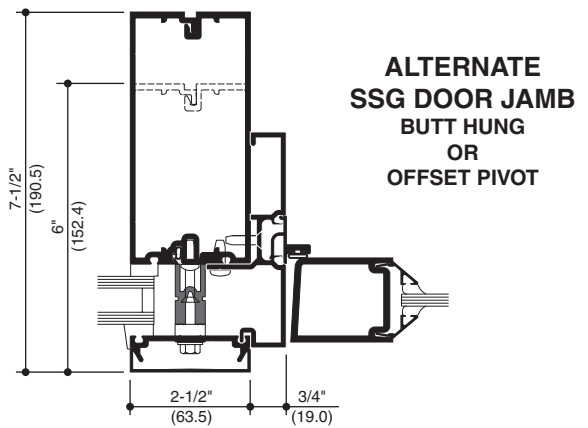
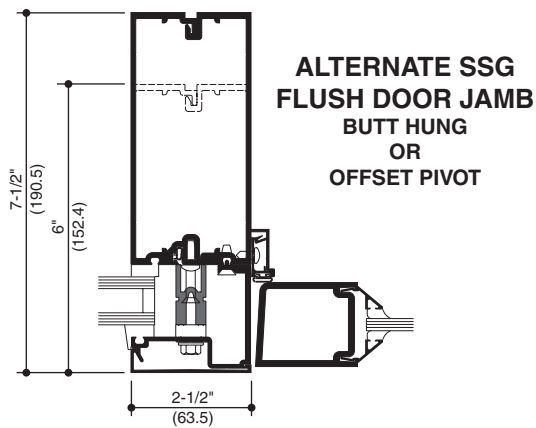
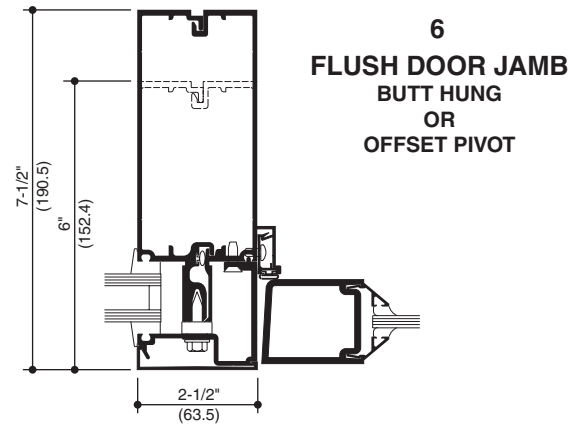
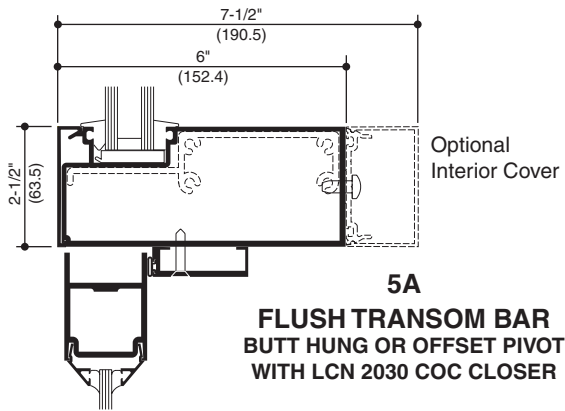
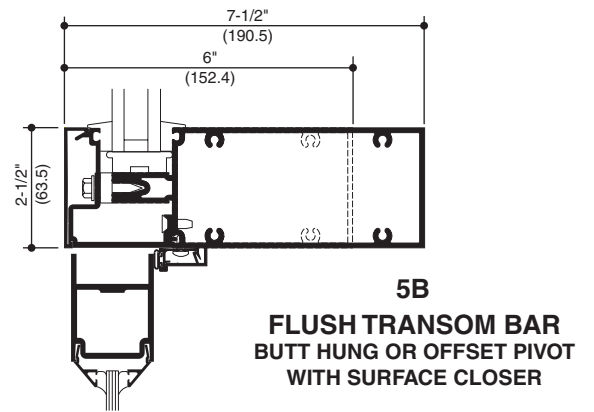
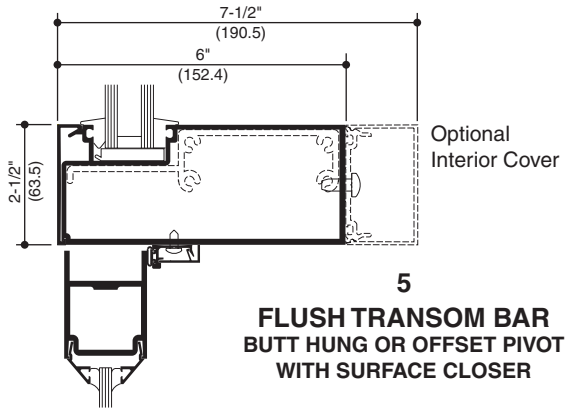
**ENTRANCE ELEVATION**  
ELEVATION IS NUMBER KEYED TO DETAILS



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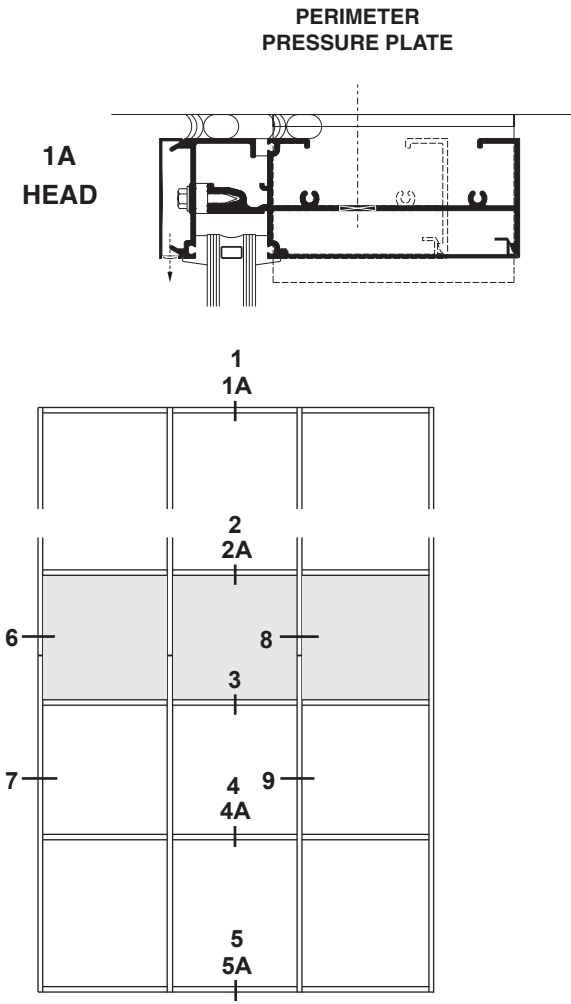


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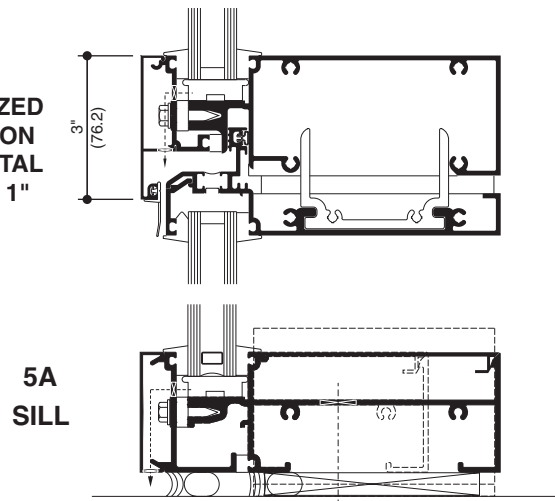
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SCALE 3" = 1'-0"

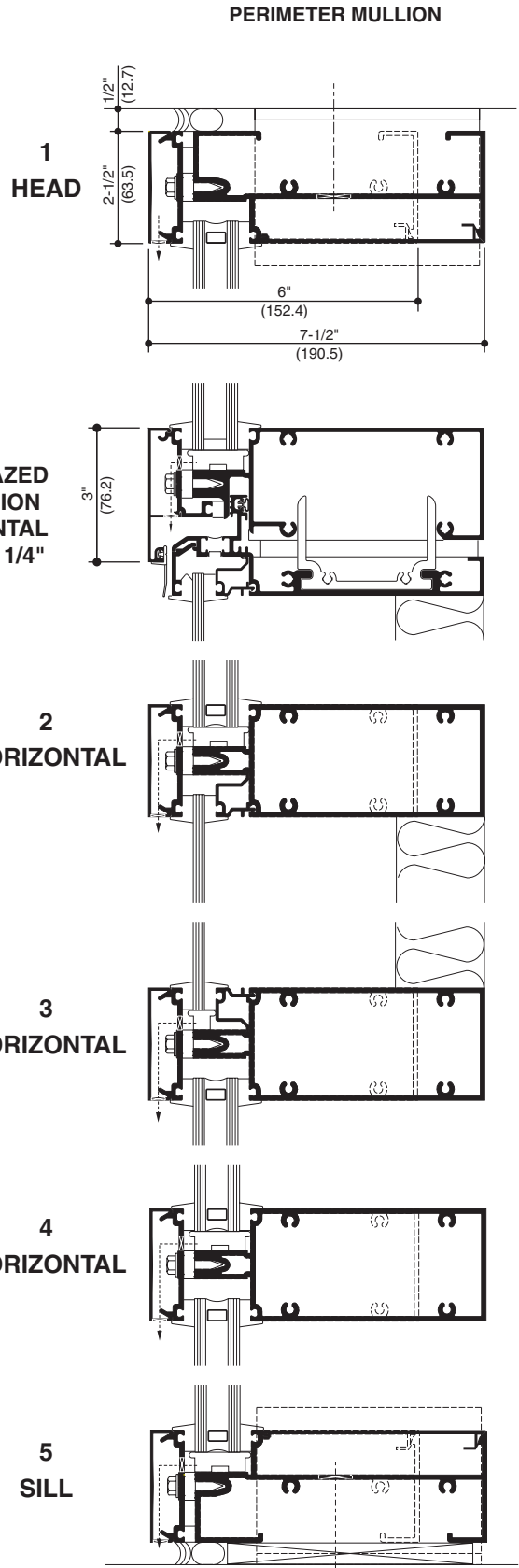
NOTE: SEE PAGE 7 FOR VERTICAL MULLION DETAILS



**UNIT WALL ELEVATION**  
ELEVATION IS NUMBER KEYED TO DETAILS



**PERIMETER PRESSURE PLATE**



**PERIMETER MULLION**

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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SCALE 3" = 1'-0"

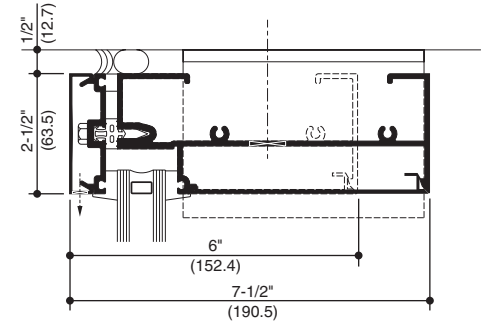
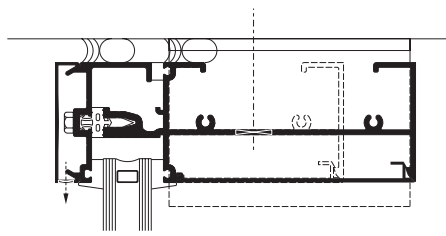
(RTS) - Reversed Thermal Separator

PERIMETER PRESSURE PLATE

PERIMETER MULLION

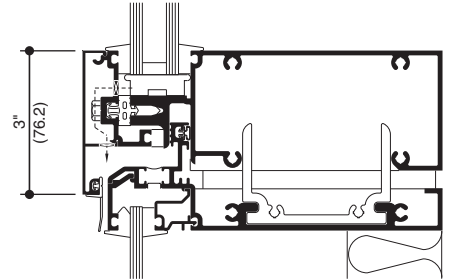
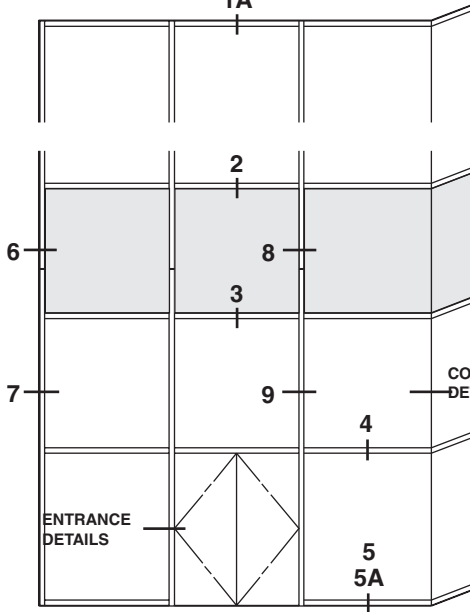
1A HEAD

1 HEAD

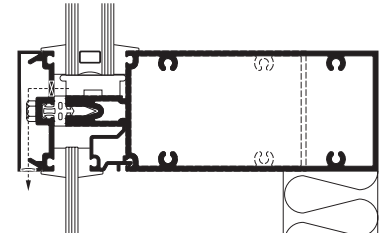


1 1A

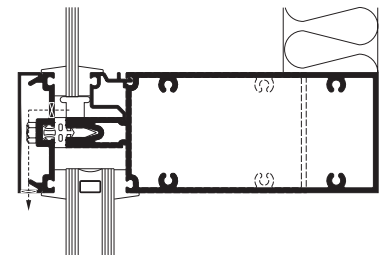
2A PRE-GLAZED EXPANSION HORIZONTAL 1" OVER 1/4"



2 HORIZONTAL



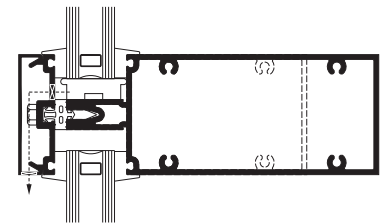
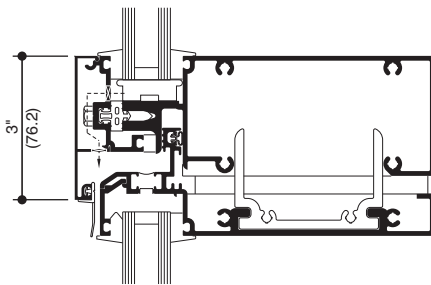
3 HORIZONTAL



(RTS) CAPTURED MULLION ELEVATION  
ELEVATION IS NUMBER KEYED TO DETAILS

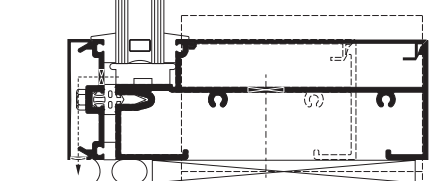
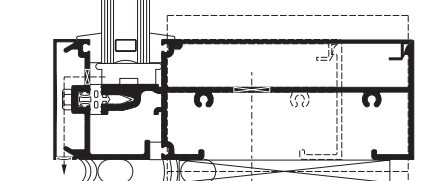
4A PRE-GLAZED EXPANSION HORIZONTAL 1" OVER 1"

4 HORIZONTAL



5A SILL

5 SILL



PERIMETER PRESSURE PLATE

PERIMETER MULLION

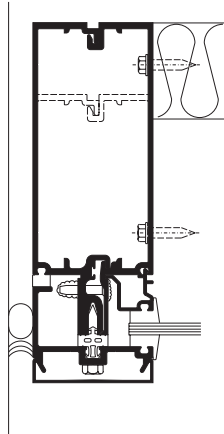
Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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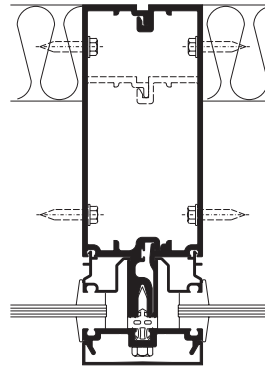
© Kawneer Company, Inc., 2013

SCALE 3" = 1'-0"

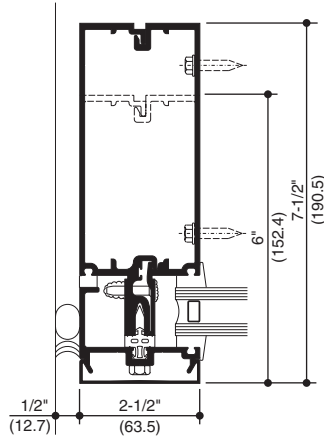
(RTS) - Reversed Thermal Separator



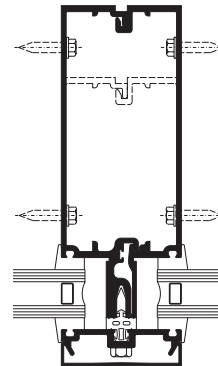
**6**  
**JAMB**  
**(1/4" INFILL)**



**8**  
**MULLION**



**7**  
**JAMB**  
**(1" INFILL)**



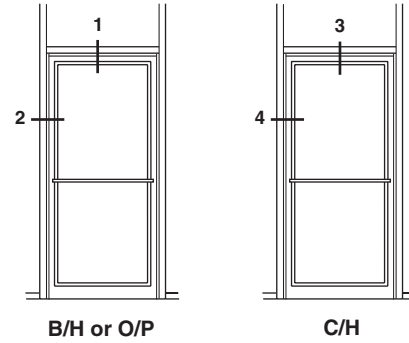
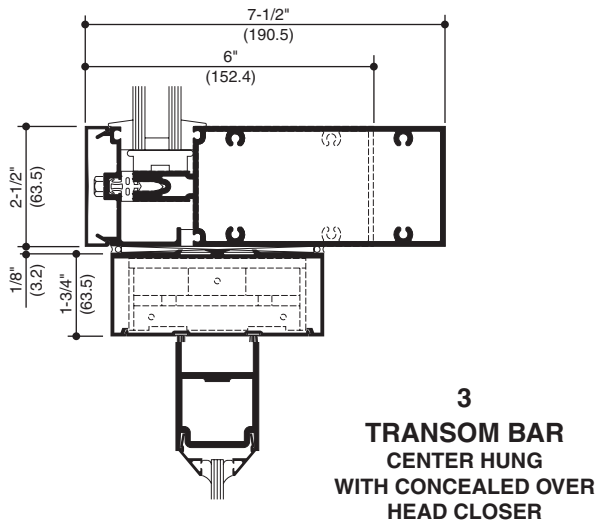
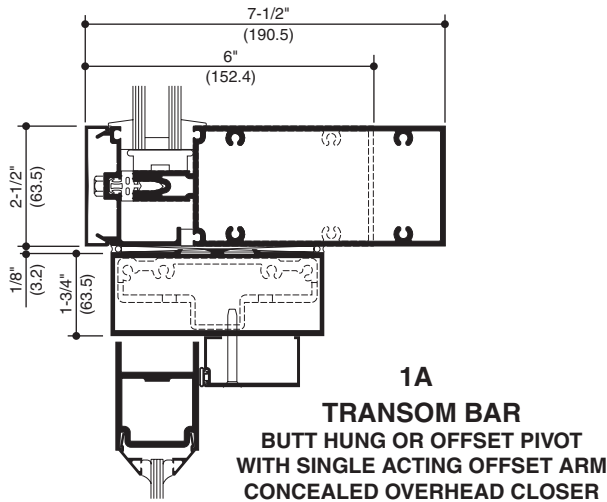
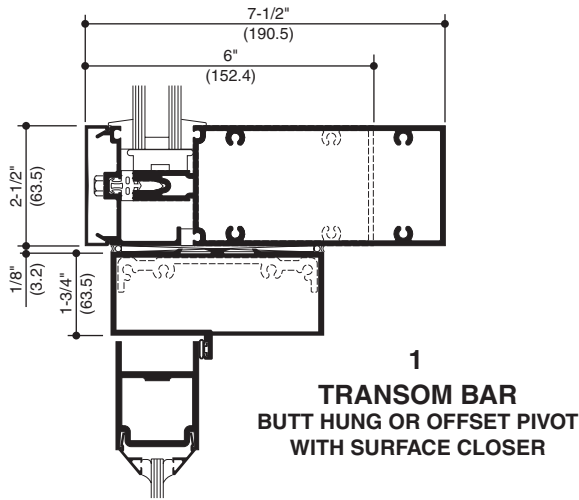
**9**  
**MULLION**

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

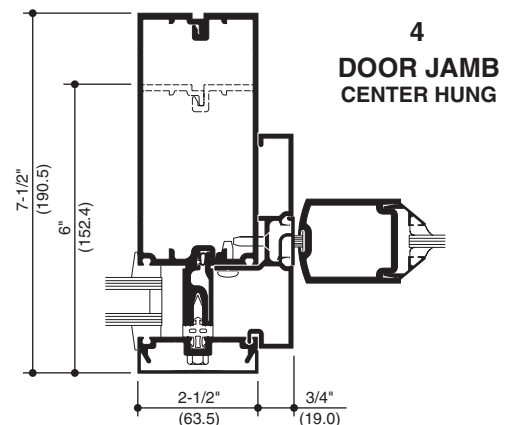
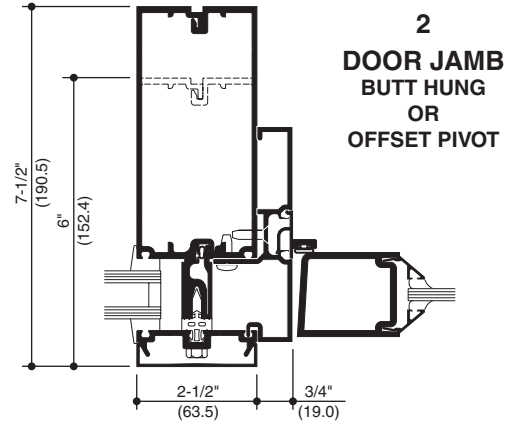
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SCALE 3" = 1'-0"

(RTS) - Reversed Thermal Separator



(RTS) ENTRANCE ELEVATION  
ELEVATION IS NUMBER KEYED TO DETAILS

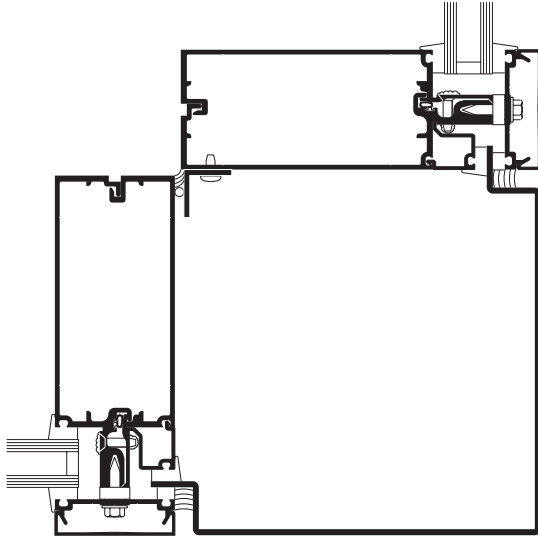


Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

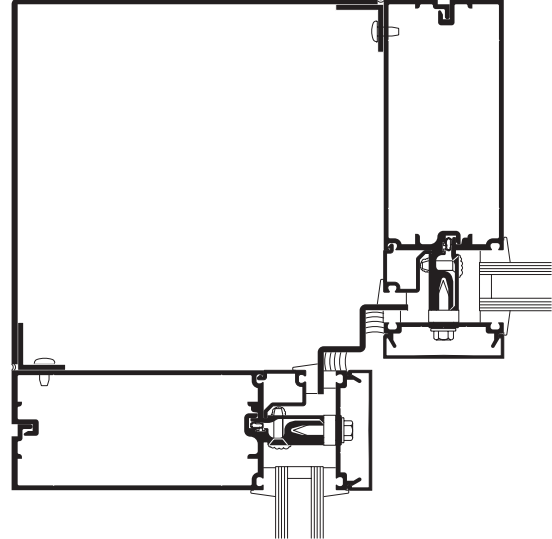
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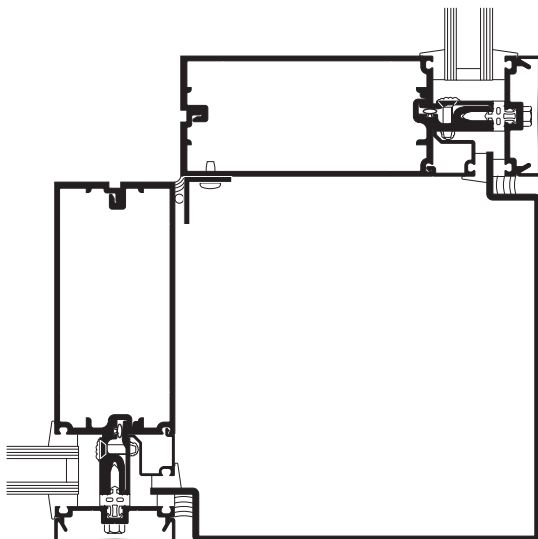
SCALE 3" = 1'-0"



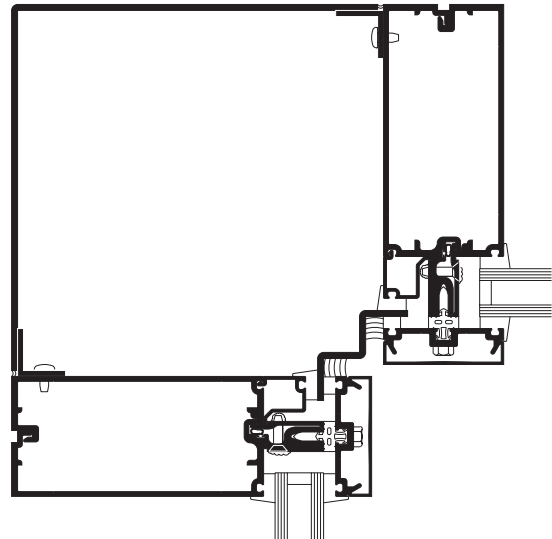
90° OUTSIDE CORNER



90° INSIDE CORNER



90° OUTSIDE CORNER (RTS)

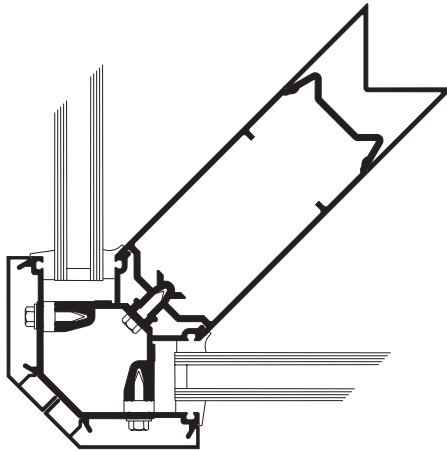


90° INSIDE CORNER (RTS)

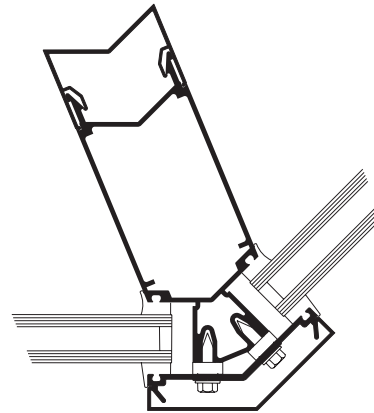
Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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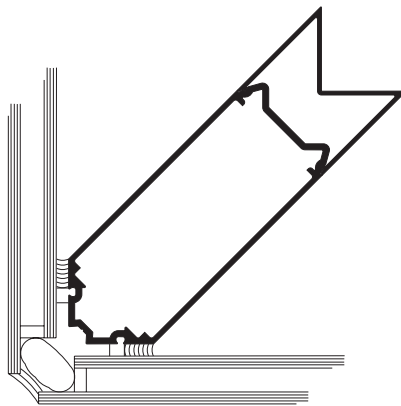
SCALE 3" = 1'-0"



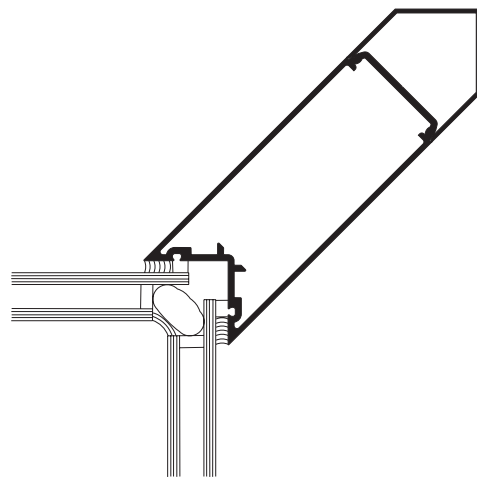
90° OUTSIDE CORNER



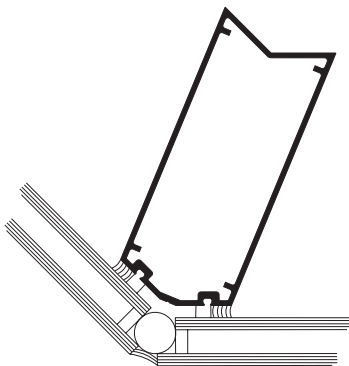
135° OUTSIDE CORNER



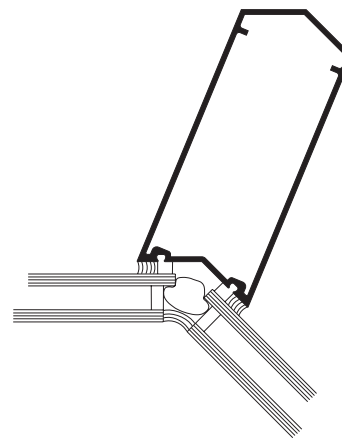
90° OUTSIDE SSG CORNER



90° INSIDE SSG CORNER



135° OUTSIDE SSG CORNER



135° INSIDE SSG CORNER

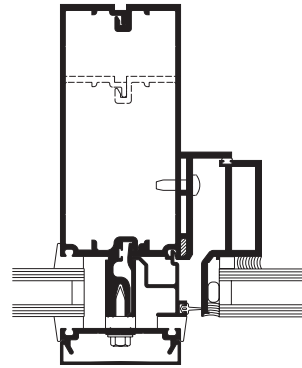
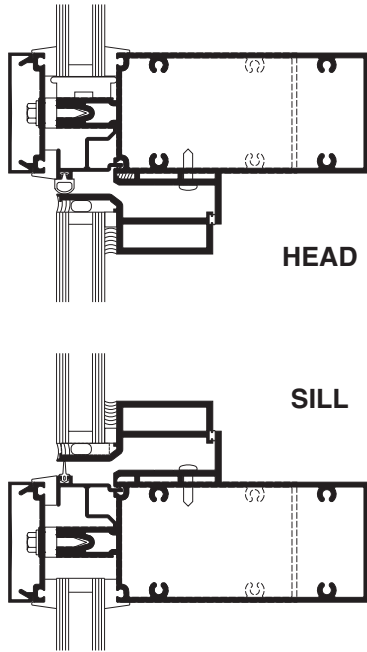
Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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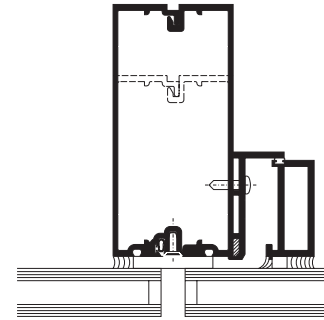
© Kawneer Company, Inc., 2013

SCALE 3" = 1'-0"

GLASSvent™ FOR CURTAIN WALL



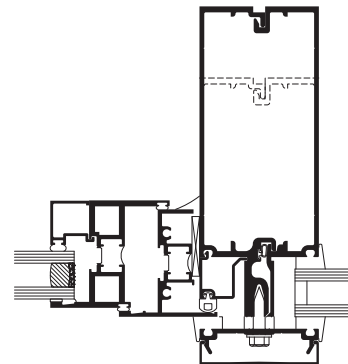
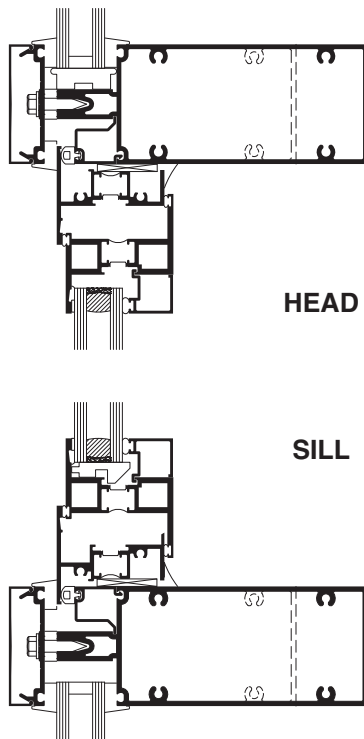
JAMB  
AT CAPTURED MULLION



JAMB  
AT SSG MULLION

8225TL IsoLock™ WINDOWS

NOTE: Other vent types can be accommodated. Contact your Kawneer representative for other options.

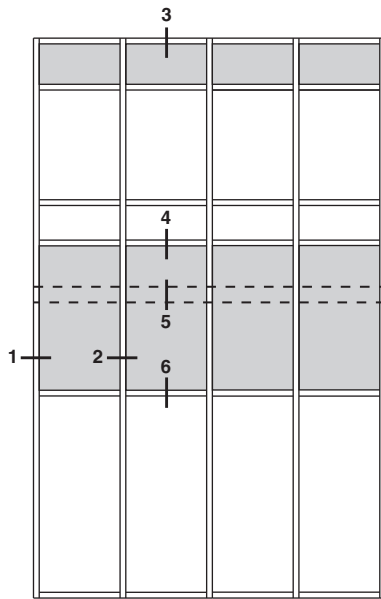


JAMB

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

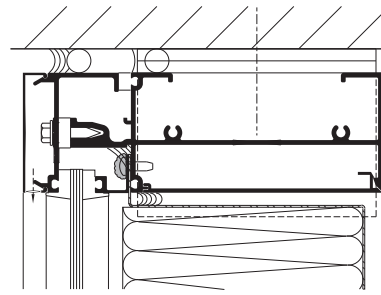
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SCALE 3" = 1'-0"

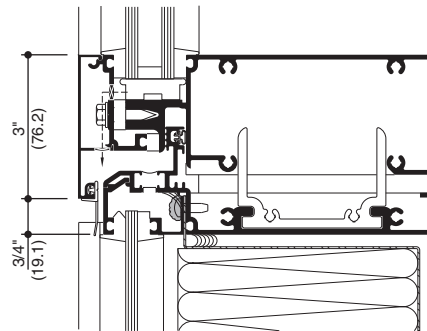


ELEVATION IS NUMBER KEYED TO DETAILS

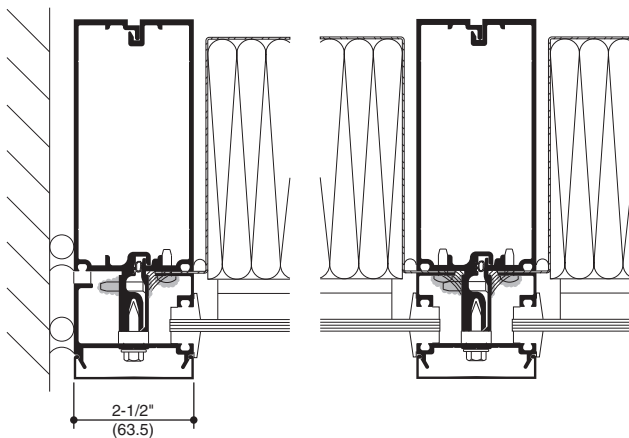
NOTE: 7-1/2" SYSTEM SHOWN, 6" SYSTEM SIMILAR



3  
HEAD

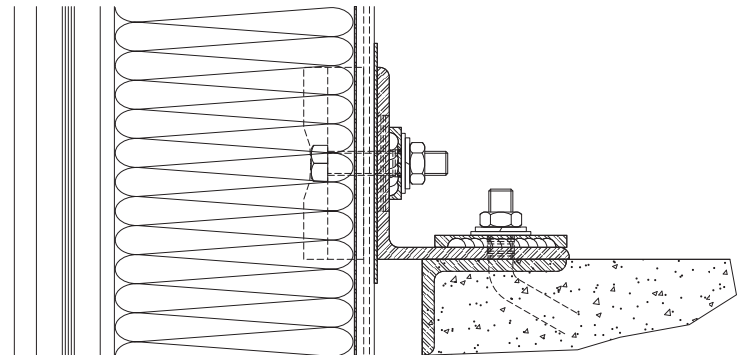


4  
EXPANSION JOINT

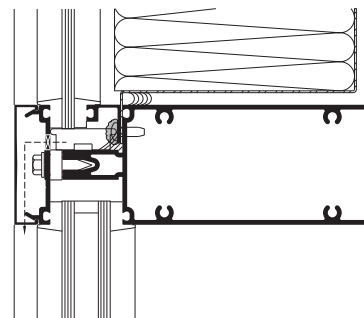


1  
JAMB MULLION  
AT SPANDREL

2  
MULLION AT SPANDREL



5  
TYPICAL DEADLOAD ANCHOR



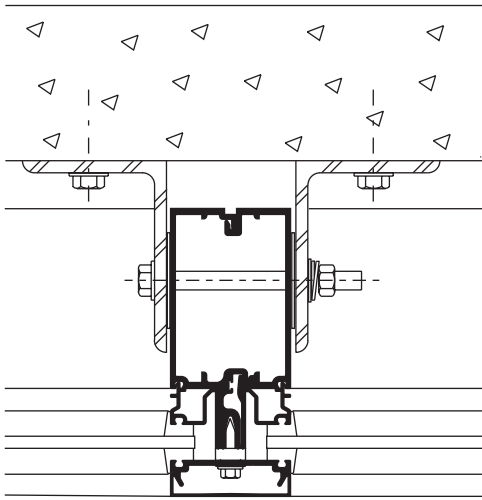
6  
TRANSOM - SPANDREL OVER VISION

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

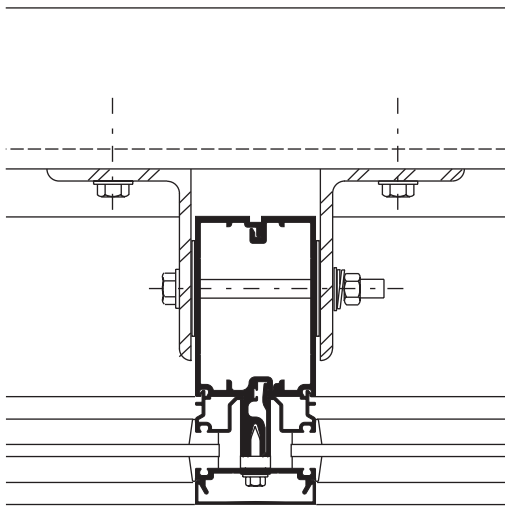
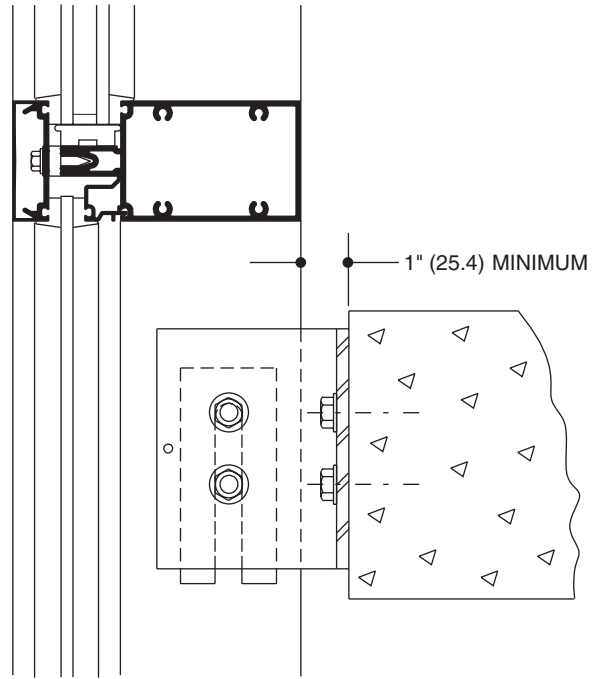
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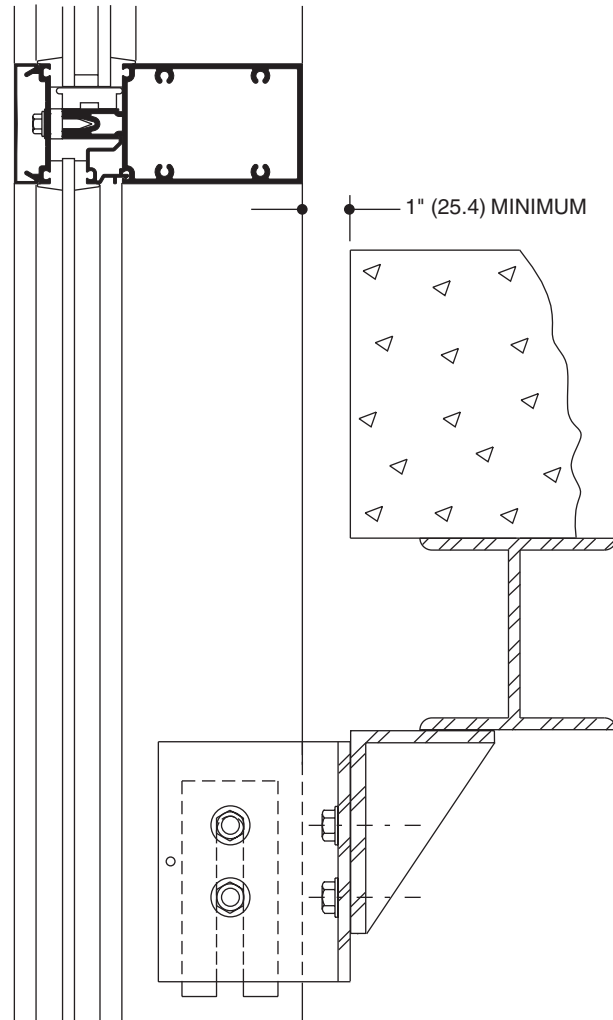
Actual project conditions will determine specific anchor design. Details on this page are for reference only.



ANCHORING TO FLOOR SLAB



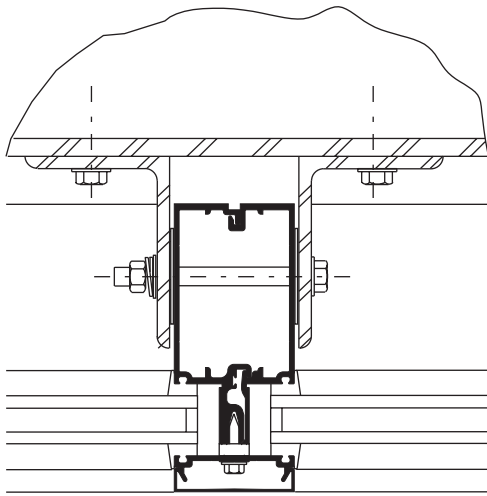
ANCHORING TO SUPPORT STEEL



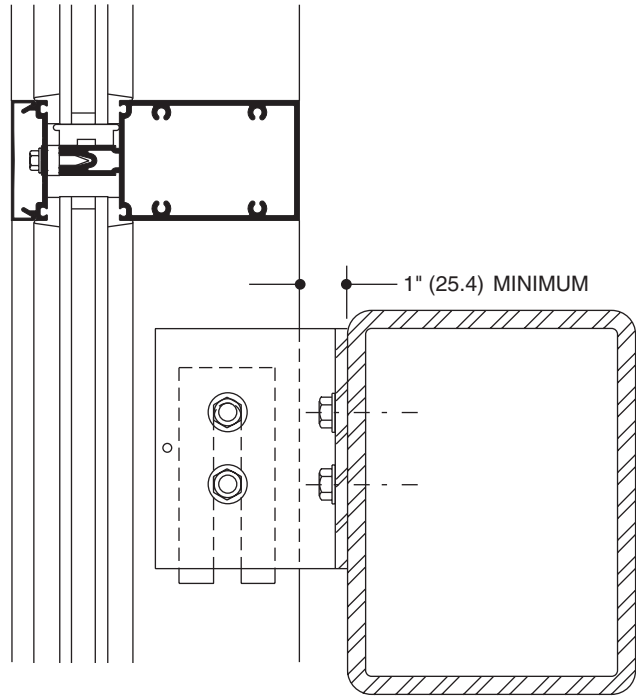
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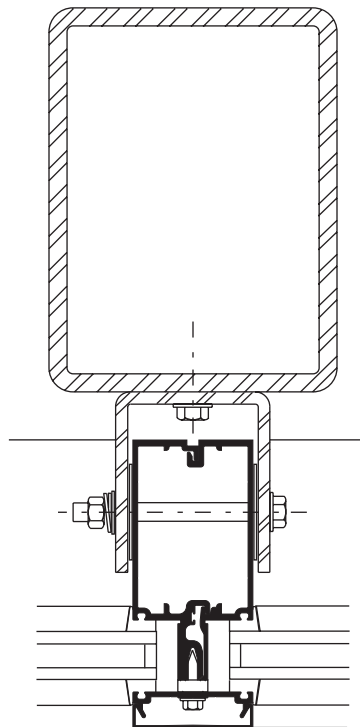
Actual project conditions will determine specific anchor design. Details on this page are for reference only.



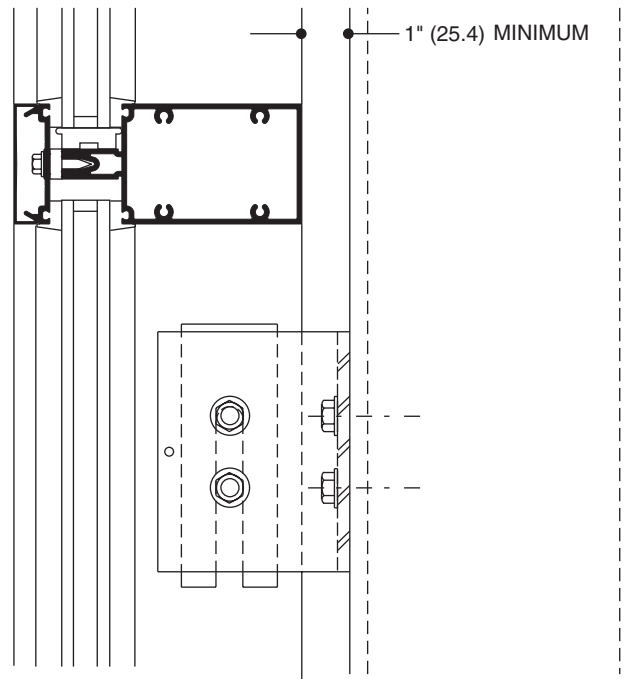
**ANCHORING TO HORIZONTAL STRUCTURAL STEEL**



Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.



**ANCHORING TO VERTICAL STRUCTURAL STEEL**



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## WIND LOAD CHARTS

Mullions are designed for deflection limitations in accordance with AAMA TIR-A11 of L/175 up to 13'-6" and L/240 +1/4" above 13'-6". These curves are for mullions WITH HORIZONTALS and are based on engineering calculations for stress and deflection. Allowable wind load stress for ALUMINUM 15,152 psi (104MPa), STEEL 30,000 psi (207MPa.). Charted curves, in all cases are for the limiting value. If the design wind load is determined through the analytical procedures of ASCE/SEI 7-10 or earlier editions, the load shall be based on the nominal loads used in allowable stress design. A 4/3 increase in allowable stress has not been used to develop these curves. For special situations not covered by these curves, contact your Kawneer representative for additional information.

## DEAD LOAD CHARTS

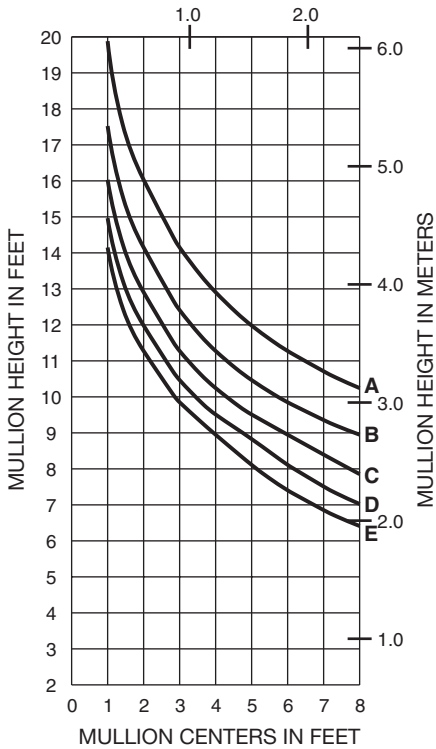
Horizontal or deadload limitations are based upon 1/8" (3.2), maximum allowable deflection at the center of an intermediate horizontal member. The accompanying charts are calculated for 1" (25) thick insulating glass or 1/4" (6) thick glass supported on two setting blocks placed at the loading points shown.

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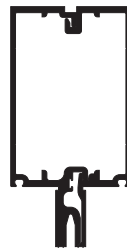
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**SINGLE SPAN**

MULLION CENTERS IN METERS



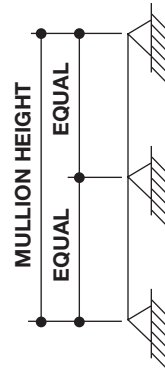
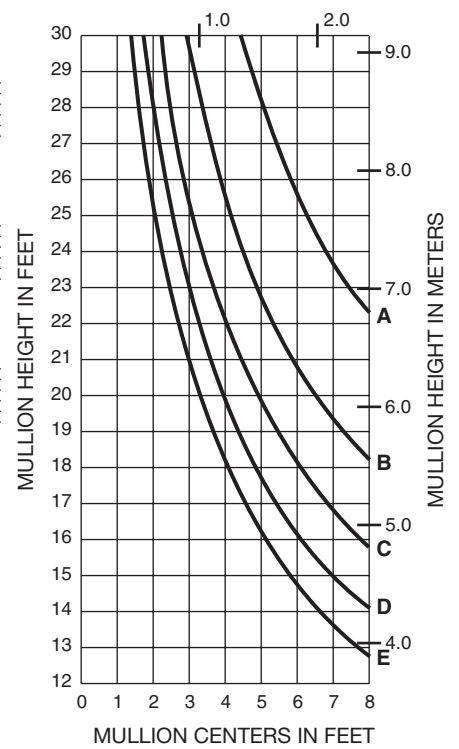
- A = 20 PSF (960)
- B = 30 PSF (1440)
- C = 40 PSF (1920)
- D = 50 PSF (2400)
- E = 60 PSF (2880)



**169001 169002**  
 $I = 5.652 (235.25 \times 10^4)$   
 $S = 1.954 (32.02 \times 10^3)$

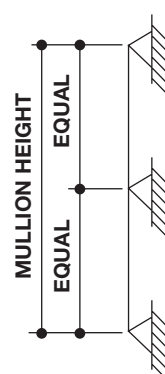
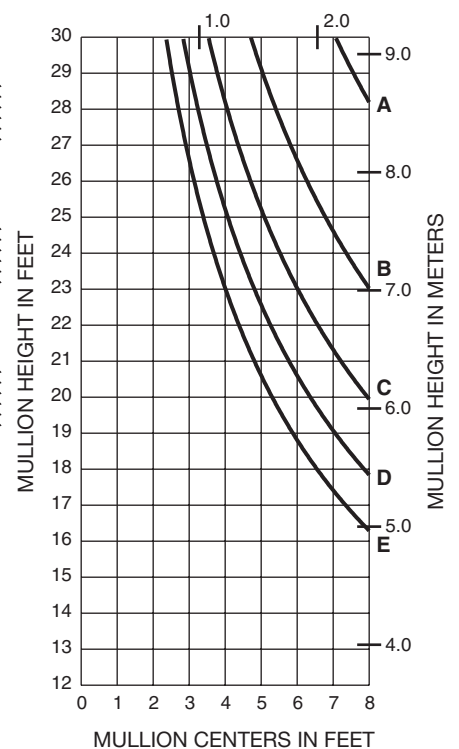
**TWIN SPAN**

MULLION CENTERS IN METERS



**TWIN SPAN**

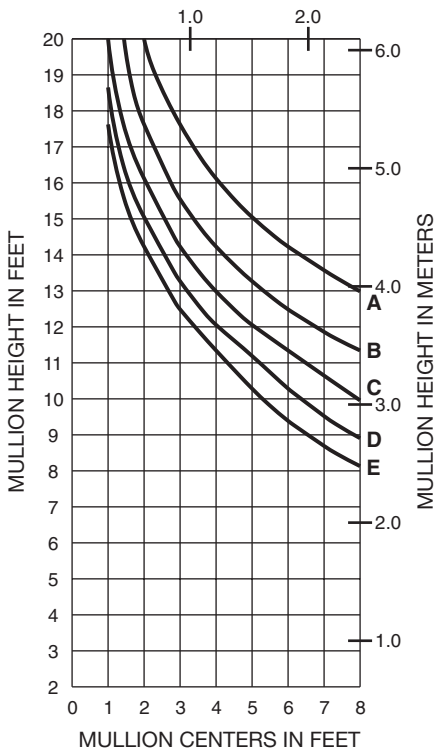
MULLION CENTERS IN METERS



**169003 169004**  
 $I = 11.512 (479.16 \times 10^4)$   
 $S = 3.141 (51.47 \times 10^3)$

**SINGLE SPAN**

MULLION CENTERS IN METERS



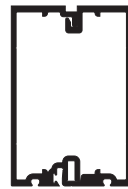
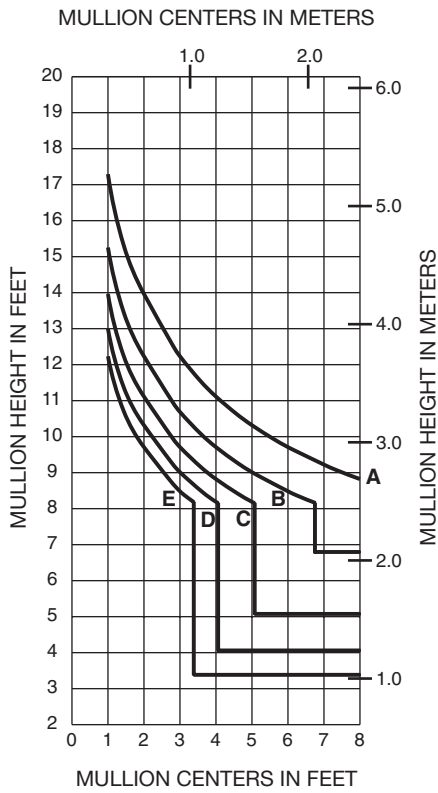
Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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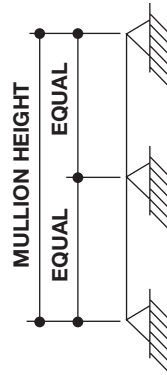
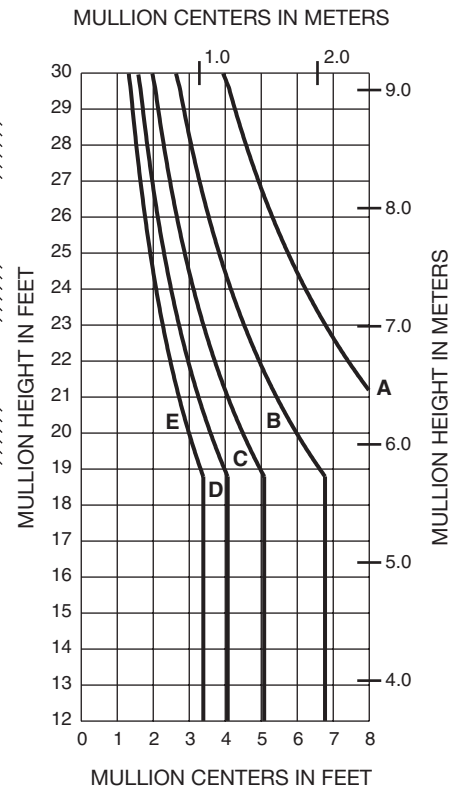
- A = 20 PSF (960)
- B = 30 PSF (1440)
- C = 40 PSF (1920)
- D = 50 PSF (2400)
- E = 60 PSF (2880)

**SINGLE SPAN**

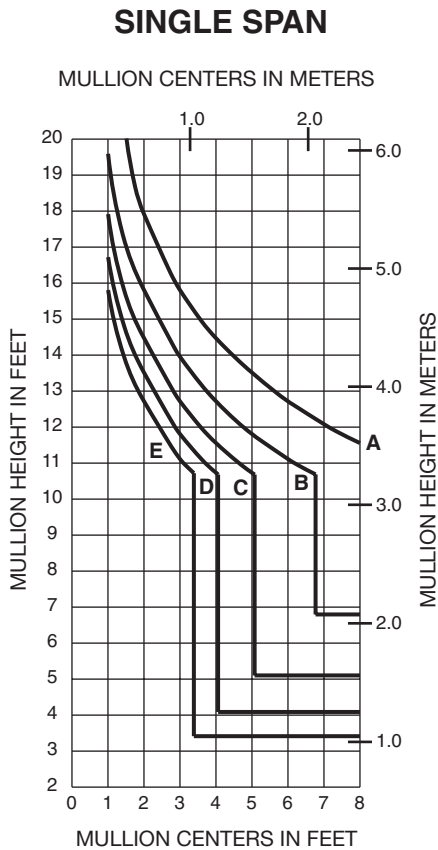


**169005 169006**  
 $I = 3.609 (150.22 \times 10^4)$   
 $S = 1.773 (29.05 \times 10^3)$

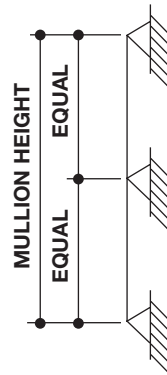
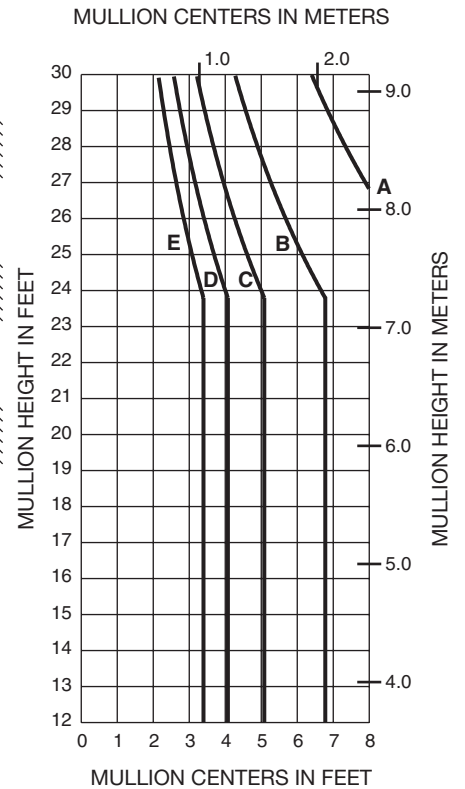
**TWIN SPAN**



**TWIN SPAN**



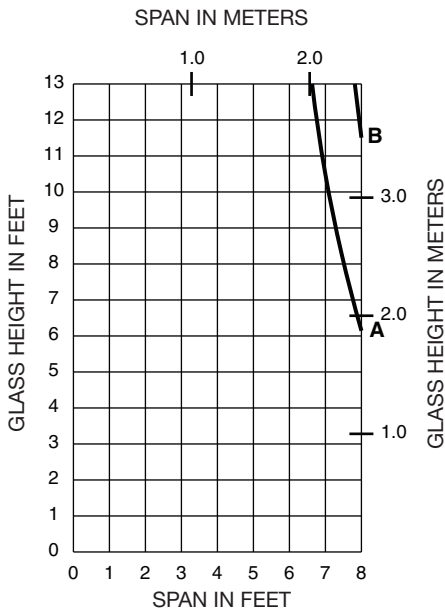
**169007 169008**  
 $I = 8.065 (335.69 \times 10^4)$   
 $S = 2.842 (46.57 \times 10^3)$



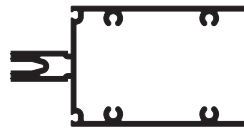
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**(1/4" INFILL)**



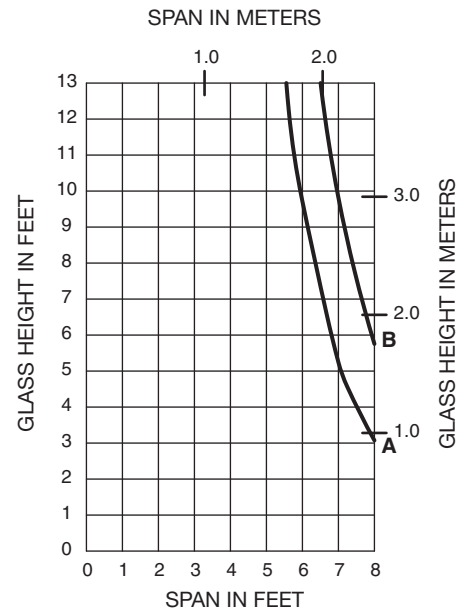
A = 1/4 POINT LOADING  
B = 1/8 POINT LOADING



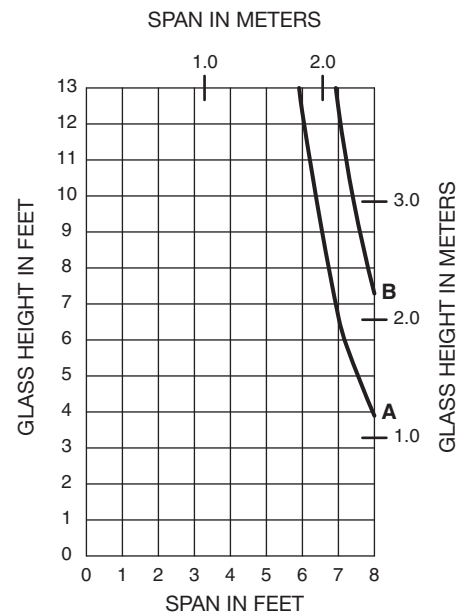
**169014**

I = 1.620 (67.43 x 10<sup>4</sup>)  
S = 1.296 (21.24 x 10<sup>3</sup>)

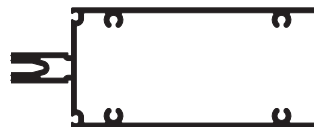
**(1" INFILL)**



**(1" INFILL)**



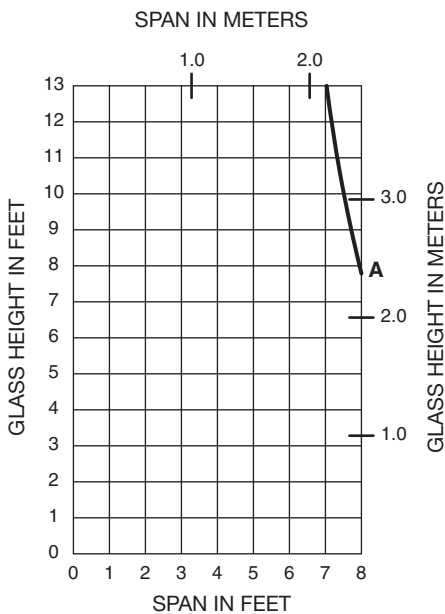
A = 1/4 POINT LOADING  
B = 1/8 POINT LOADING



**169017**

I = 2.052 (85.41 x 10<sup>4</sup>)  
S = 1.642 (26.91 x 10<sup>3</sup>)

**(1/4" INFILL)**

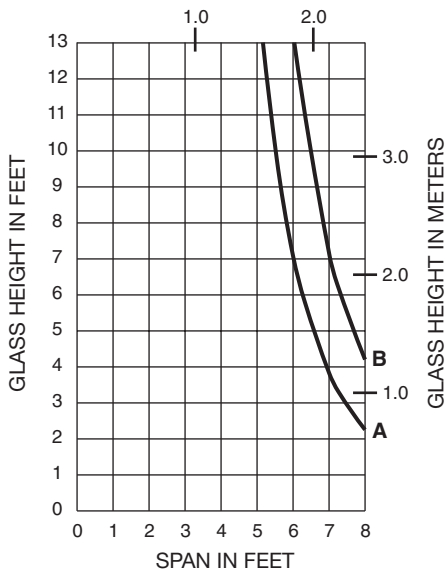


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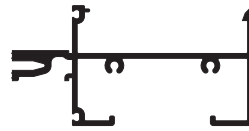
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**(1/4" INFILL)**

SPAN IN METERS



A = 1/4 POINT LOADING  
B = 1/8 POINT LOADING

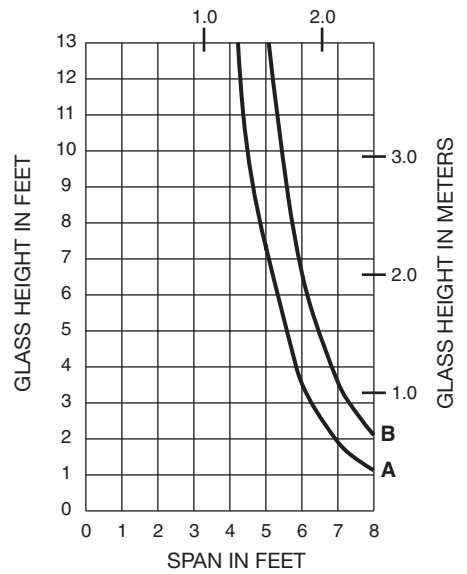


**169016**

I = 0.589 (24.52 x 10<sup>4</sup>)  
S = 0.456 (7.47 x 10<sup>3</sup>)

**(1" INFILL)**

SPAN IN METERS



A = 1/4 POINT LOADING  
B = 1/8 POINT LOADING

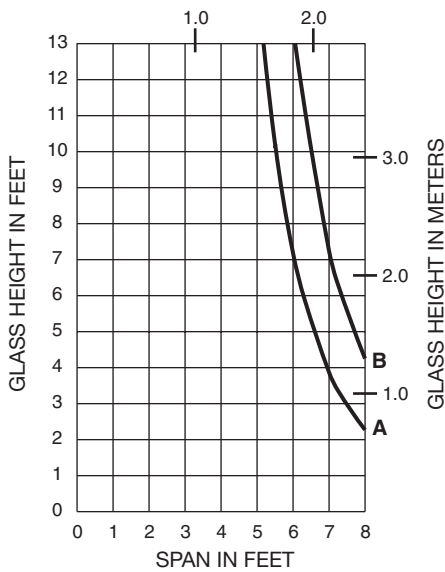


**169019**

I = 0.598 (24.89 x 10<sup>4</sup>)  
S = 0.470 (7.70 x 10<sup>3</sup>)

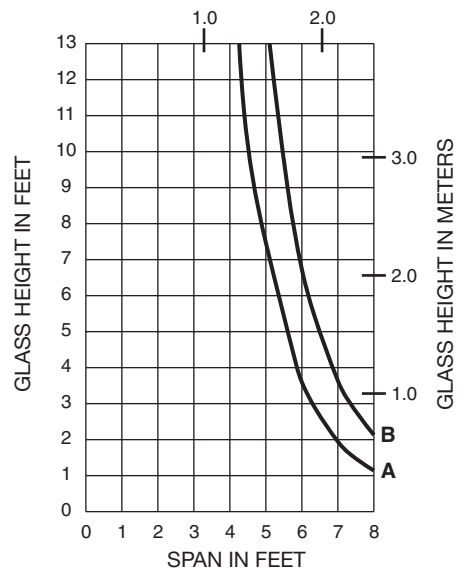
**(1/4" INFILL)**

SPAN IN METERS



**(1" INFILL)**

SPAN IN METERS

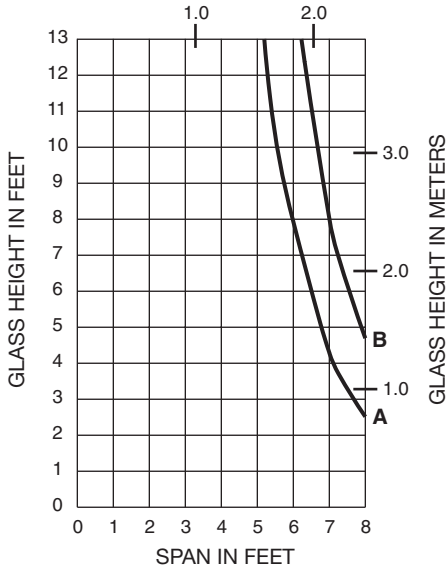


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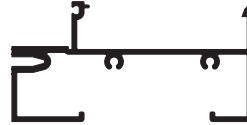
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(1/4" INFILL)

SPAN IN METERS



A = 1/4 POINT LOADING  
B = 1/8 POINT LOADING

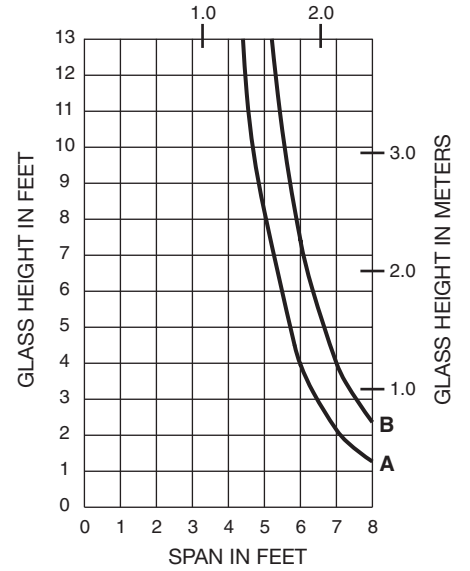


169015

I = 0.659 (27.43 x 10<sup>4</sup>)  
S = 0.496 (8.13 x 10<sup>3</sup>)

(1" INFILL)

SPAN IN METERS



A = 1/4 POINT LOADING  
B = 1/8 POINT LOADING

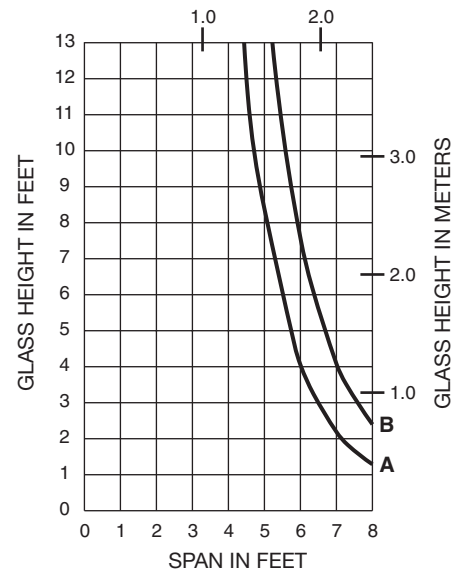


169018

I = 0.671 (27.93 x 10<sup>4</sup>)  
S = 0.514 (8.42 x 10<sup>3</sup>)

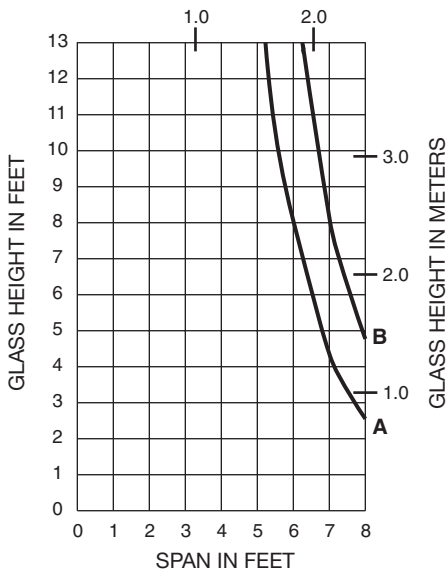
(1" INFILL)

SPAN IN METERS



(1/4" INFILL)

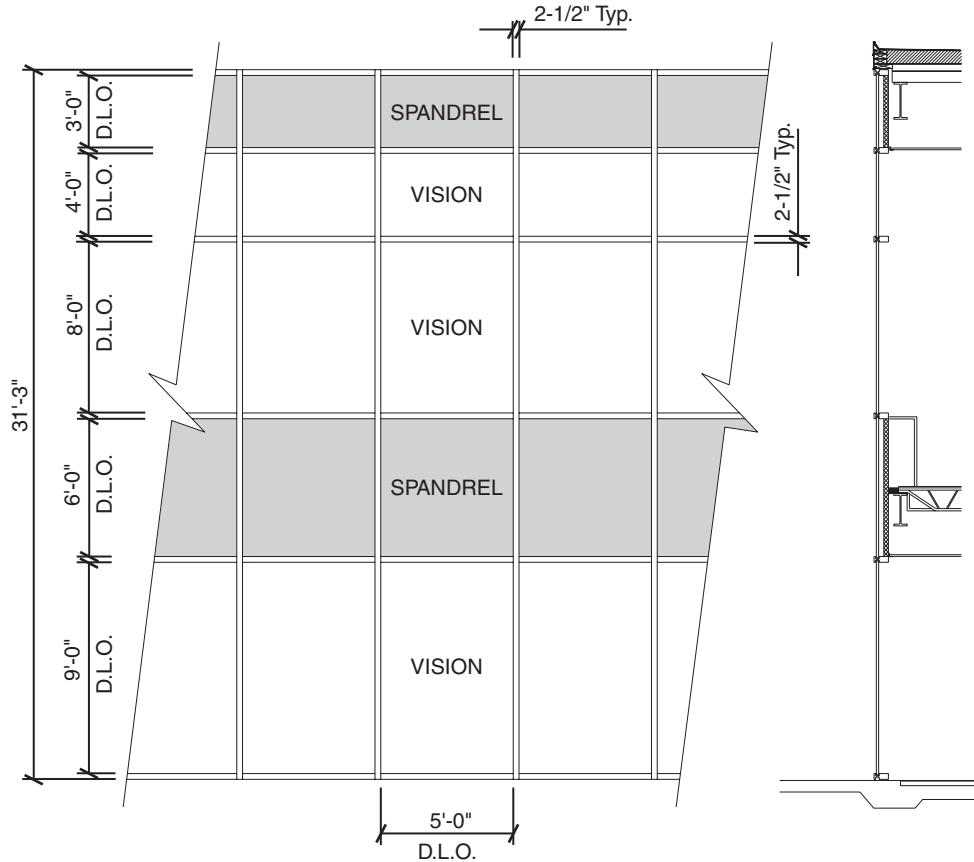
SPAN IN METERS



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**Project Specific U-factor  
Example Calculation**  
(Based on single bay of Curtain Wall/Window Wall)



### Vision Area

Example Glass U-factor	= 0.48 Btu/(ft <sup>2</sup> · h · °F)
Vision Area	= 5(9 + 8 + 4) = 105.0 ft <sup>2</sup>
Total Area (Vision)	= 5' 2-1/2" (9' 3-3/4" + 8' 2-1/2" + 4' 2-1/2") = 113.2 ft <sup>2</sup>
Percentage of Vision Glass	= (Vision Area ÷ Total Area)100 = (105.0 ÷ 113.2)100 = 93%

### Spandrel Area

Example Spandrel R-value	= 15 (ft <sup>2</sup> · h · °F)/Btu
Spandrel Area	= 5(6 + 3) = 45.0 ft <sup>2</sup>
Total Area (Spandrel)	= 5' 2-1/2" (6' 2-1/2" + 3' 3-3/4") = 49.6 ft <sup>2</sup>
Percent of Spandrel	= (Spandrel Area ÷ Total Area)100 = (49.0 ÷ 49.6)100 = 91%

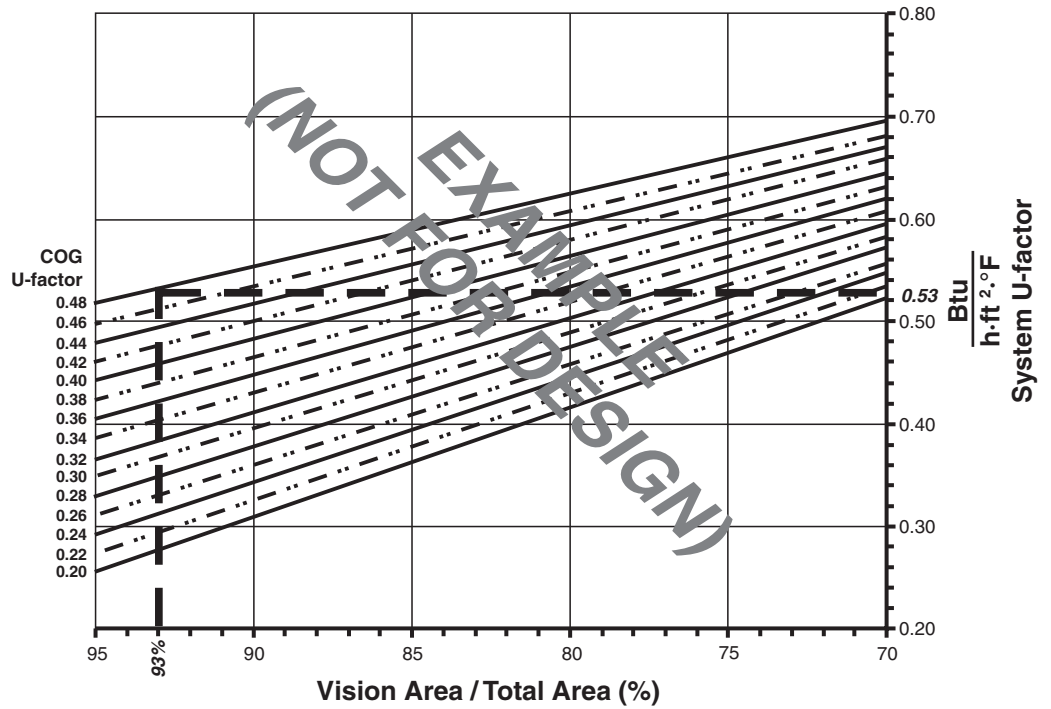
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Vision Area Chart

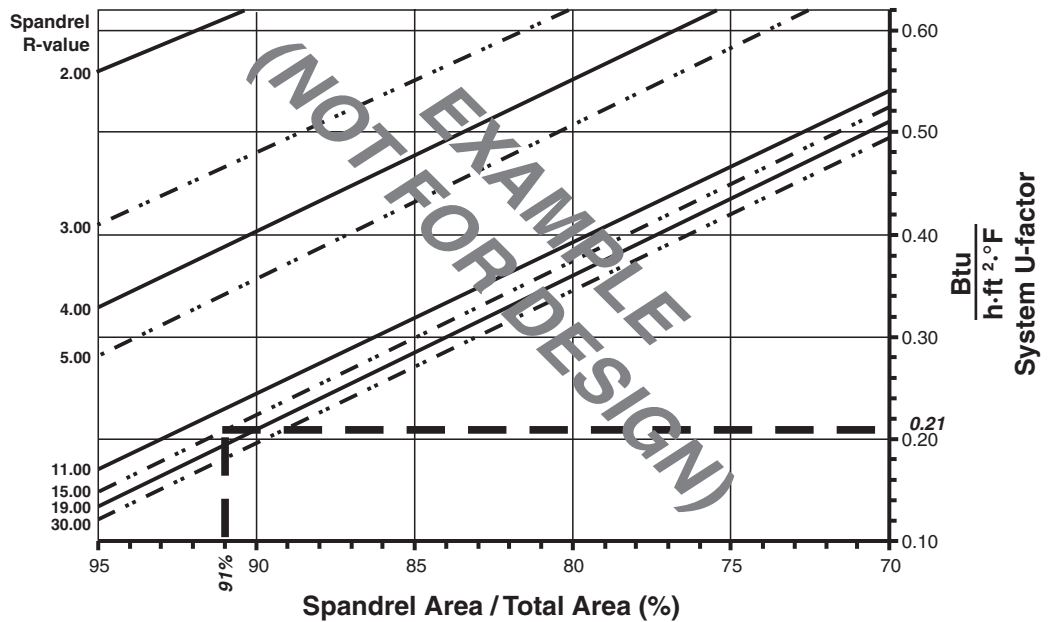
System U-factor vs Percent of Vision Area



Based on a single curtain wall bay of 93% vision glass and center of glass U-factor of 0.48, System U-factor is equal to 0.53 Btu/(h-ft<sup>2</sup>·°F)

Spandrel Area Chart

System U-factor vs Percent of Spandrel Area



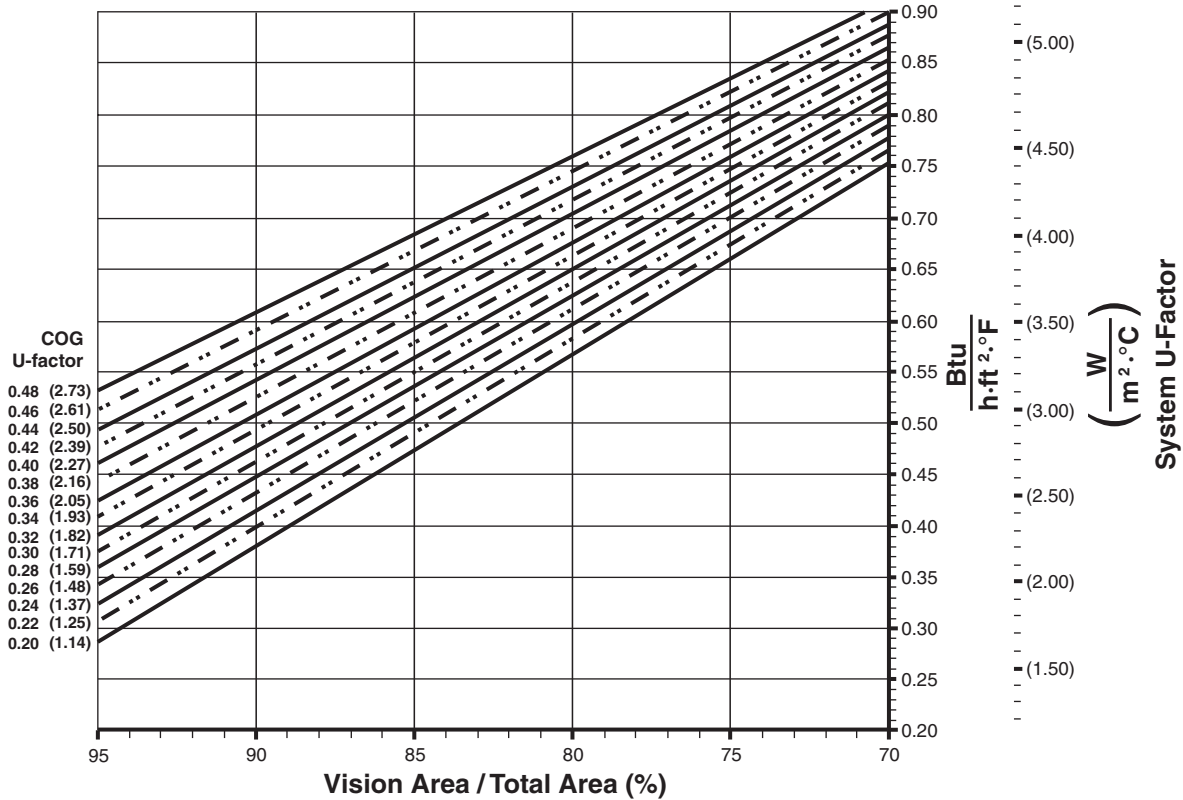
Based on a single curtain wall bay of 91% spandrel and center of spandrel R-value of 15, system U-factor is equal to 0.21 Btu/(h-ft<sup>2</sup>·°F)

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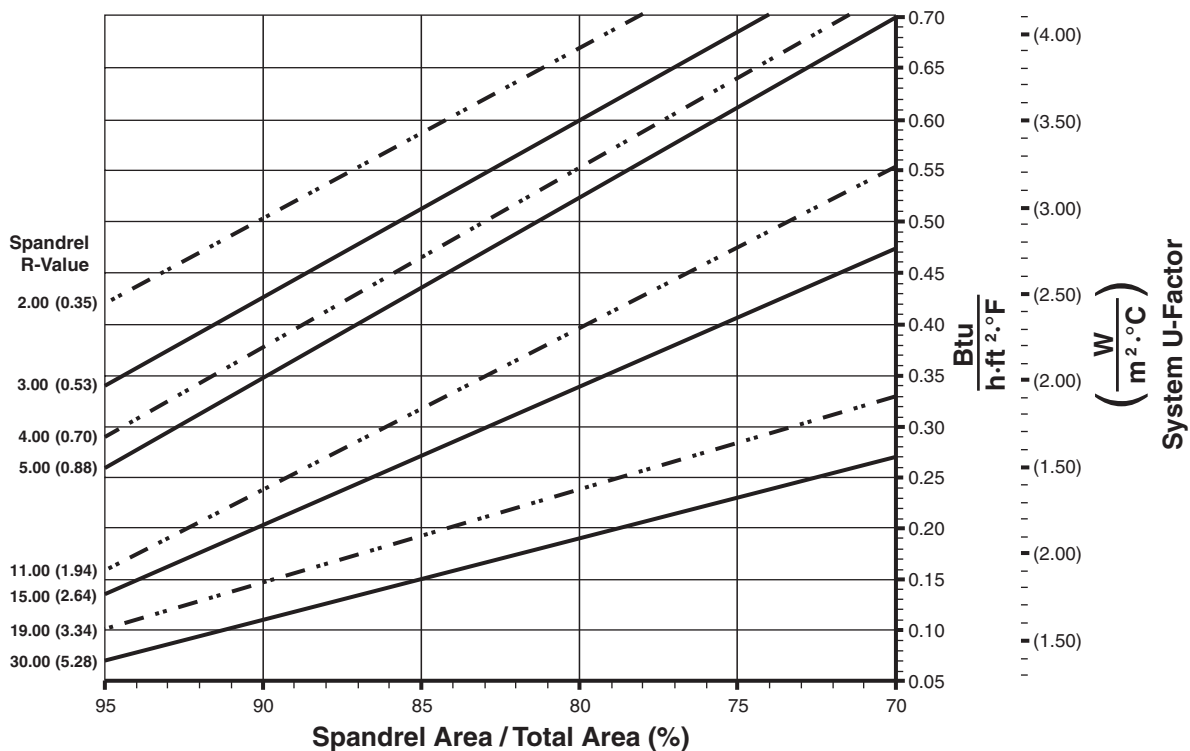
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Note:  
 Values in parentheses are metric.  
 COG=Center of Glass.  
 Charts are generated per AAMA 507.

**System U-Factor for Vision Glass**

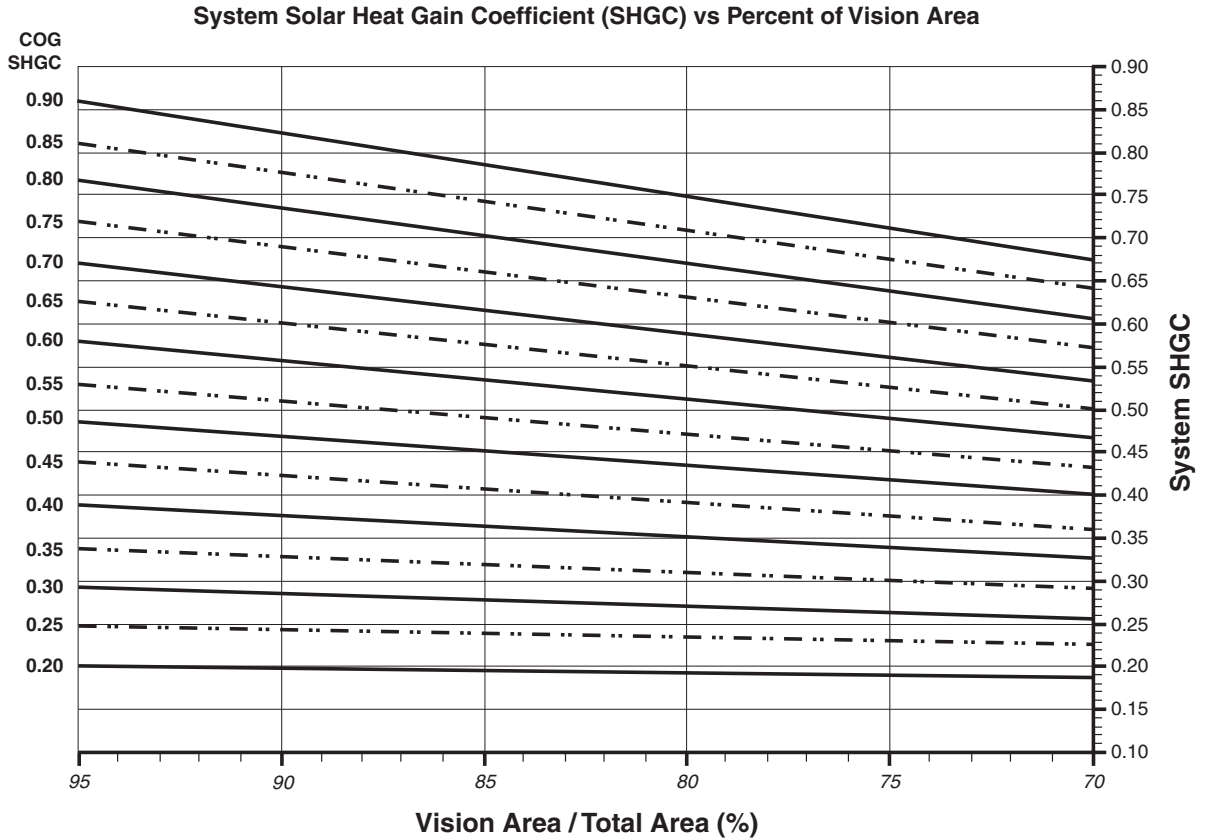


**System U-Factors for Spandrel Glass**

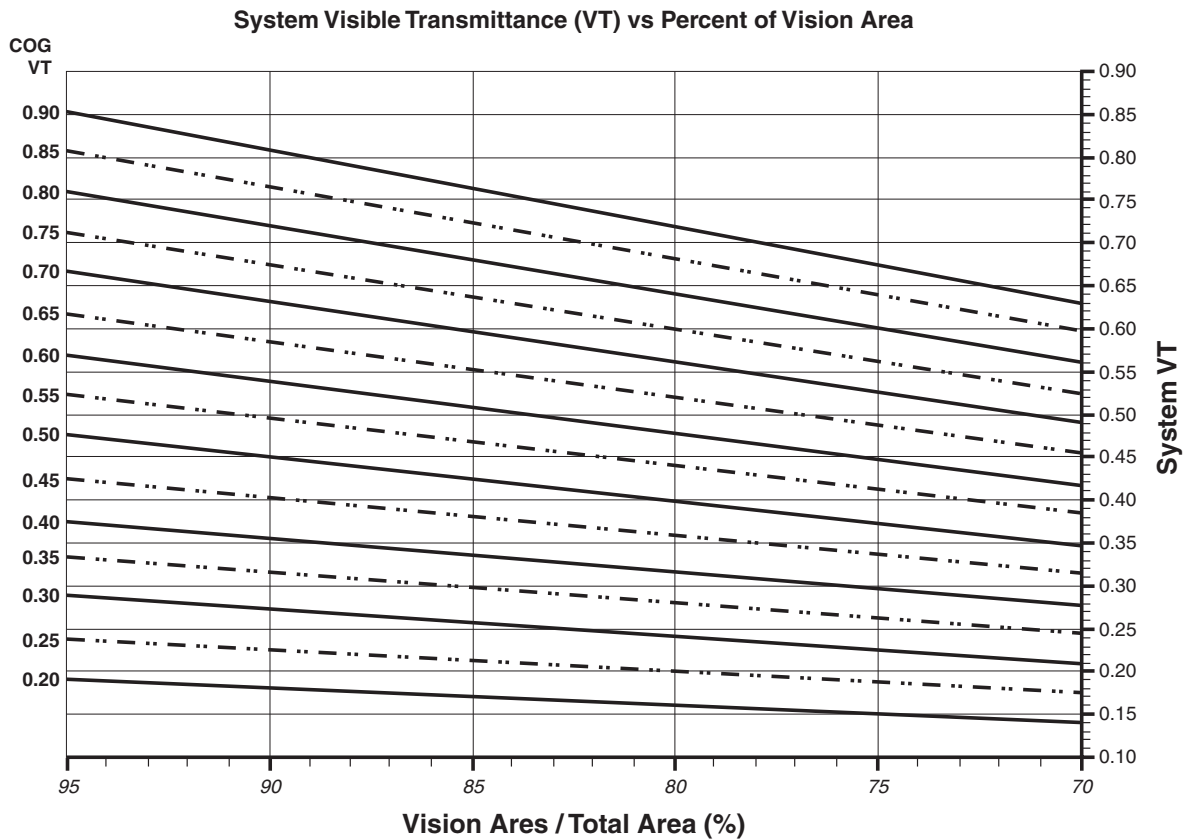


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Charts are generated per AAMA 507.



Charts are generated per AAMA 507.

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**Thermal Transmittance**<sup>1</sup> (BTU/hr • ft<sup>2</sup> • °F)

Glass U-Factor <sup>3</sup>	Overall U-Factor <sup>4</sup>
0.48	0.62
0.46	0.60
0.44	0.59
0.42	0.57
0.40	0.55
0.38	0.54
0.36	0.52
0.34	0.50
0.32	0.49
0.30	0.47
0.28	0.46
0.26	0.44
0.24	0.42
0.22	0.41
0.20	0.39

**SHGC Matrix**<sup>2</sup>

Glass SHGC <sup>3</sup>	Overall SHGC <sup>4</sup>
0.90	0.82
0.85	0.78
0.80	0.73
0.75	0.69
0.70	0.64
0.65	0.60
0.60	0.55
0.55	0.51
0.50	0.46
0.45	0.42
0.40	0.37
0.35	0.33
0.30	0.29
0.25	0.24
0.20	0.20

**Visible Transmittance**<sup>2</sup>

Glass VT <sup>3</sup>	Overall VT <sup>4</sup>
0.90	0.81
0.85	0.76
0.80	0.72
0.75	0.67
0.70	0.63
0.65	0.58
0.60	0.54
0.55	0.49
0.50	0.45
0.45	0.40
0.40	0.36
0.35	0.31
0.30	0.27
0.25	0.22
0.20	0.18

**NOTE:** For glass values that are not listed, linear interpolation is permitted.

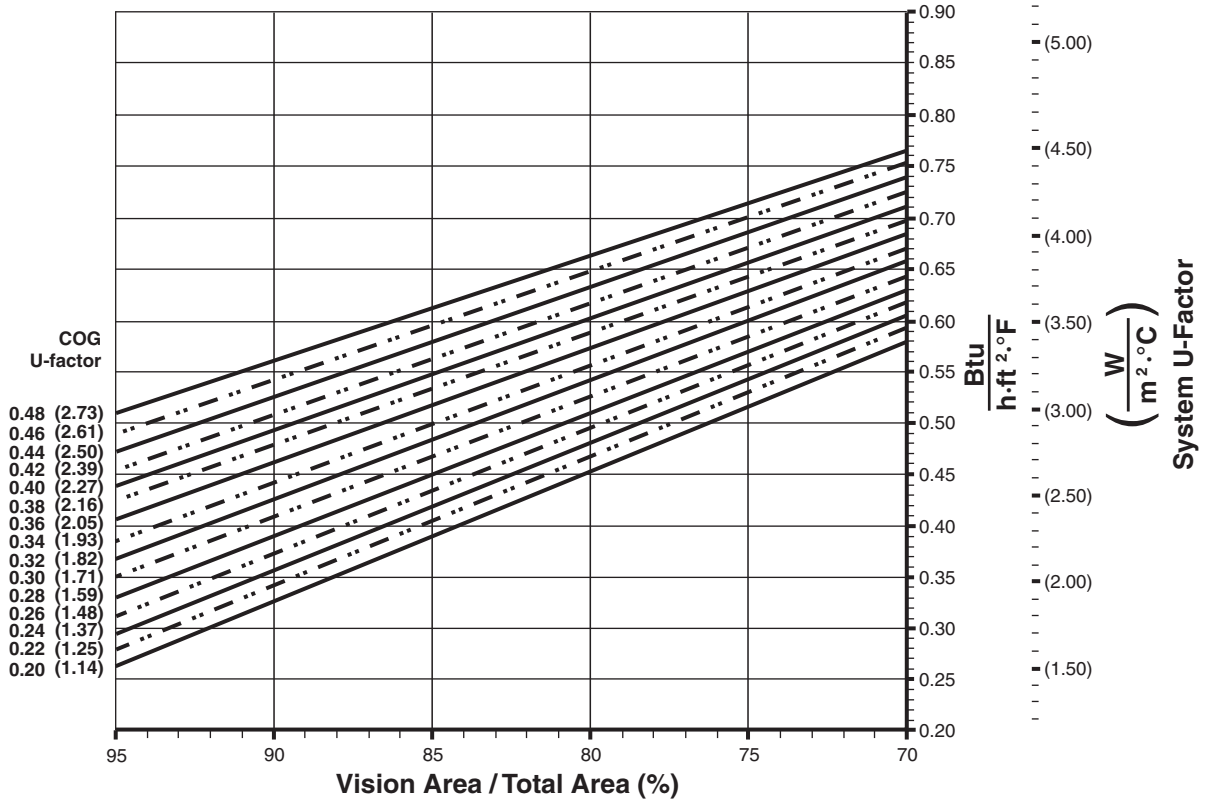
1. U-Factors are determined in accordance with NFRC 100.
2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values and are obtained from your glass supplier.
4. Overall U-Factor, SHGC, and VT Matrices are based on the standard NFRC specimen size of 2000mm wide by 2000mm high (78-3/4" by 78-3/4").

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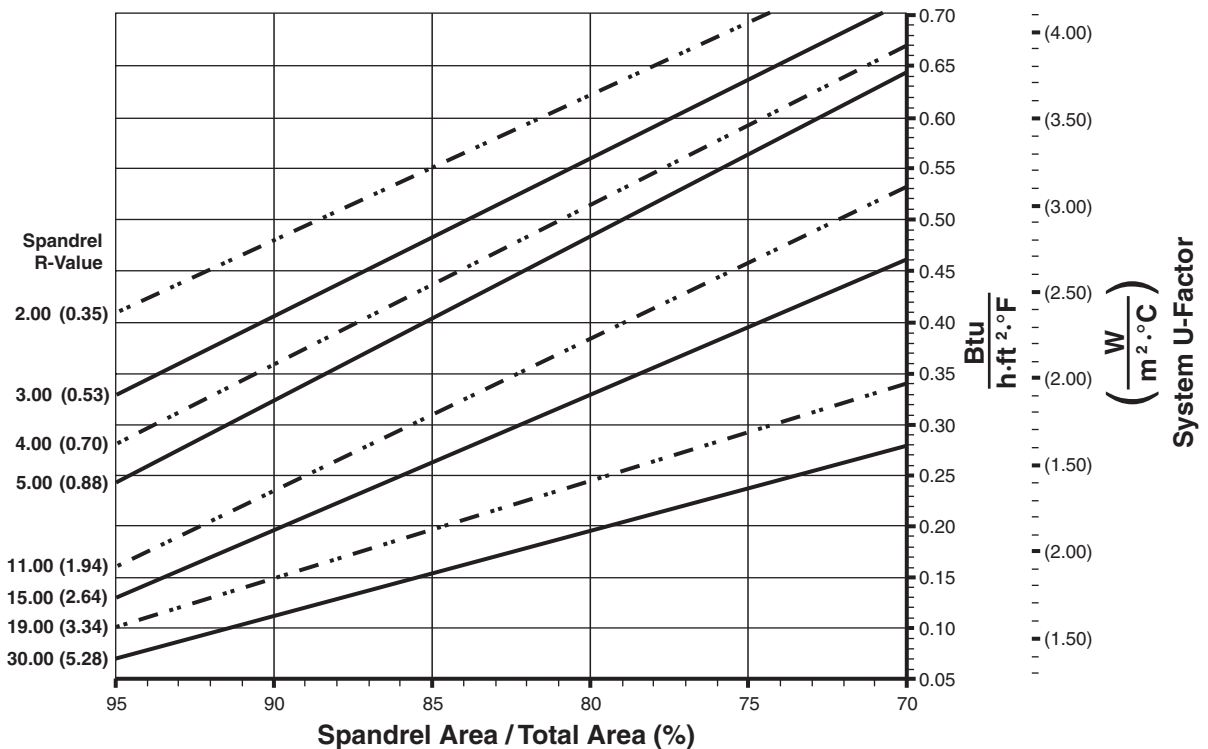
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Note:  
 Values in parentheses are metric.  
 COG=Center of Glass.  
 Charts are generated per AAMA 507.

**System U-Factor for Vision Glass**

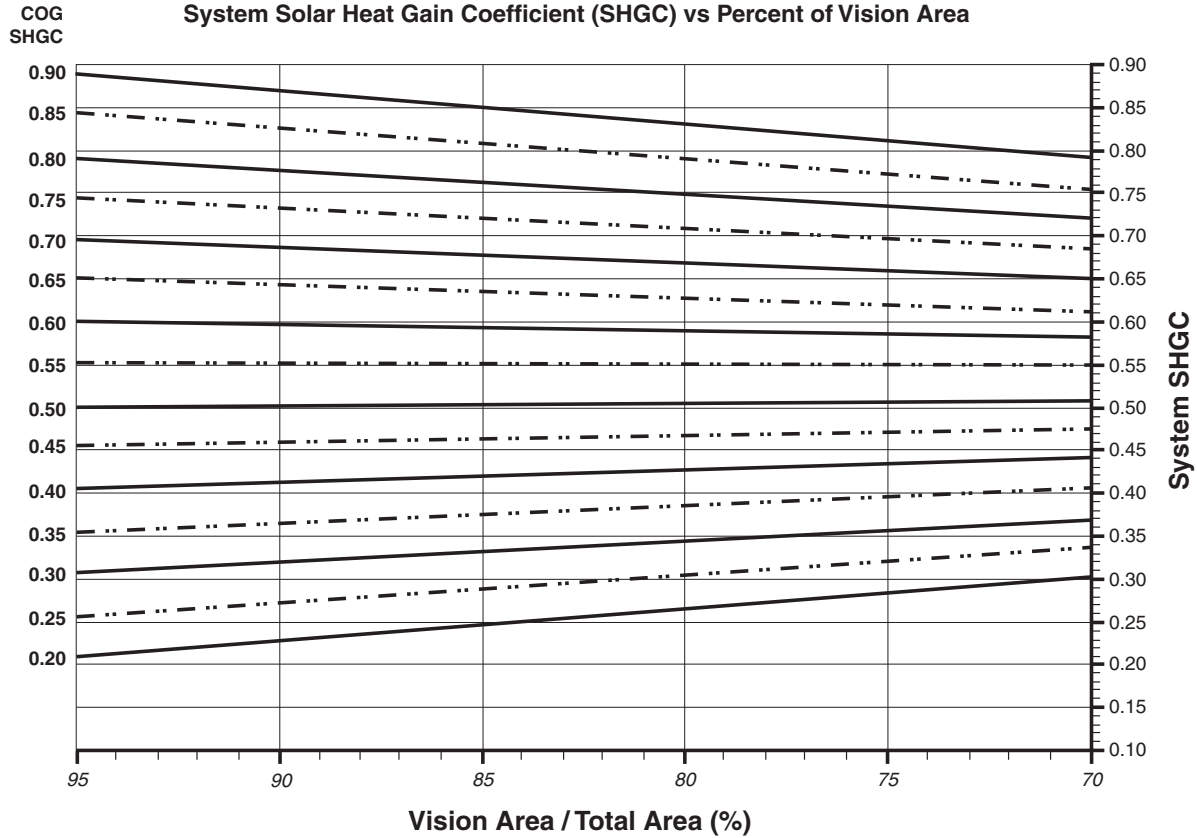


**System U-Factors for Spandrel Glass**

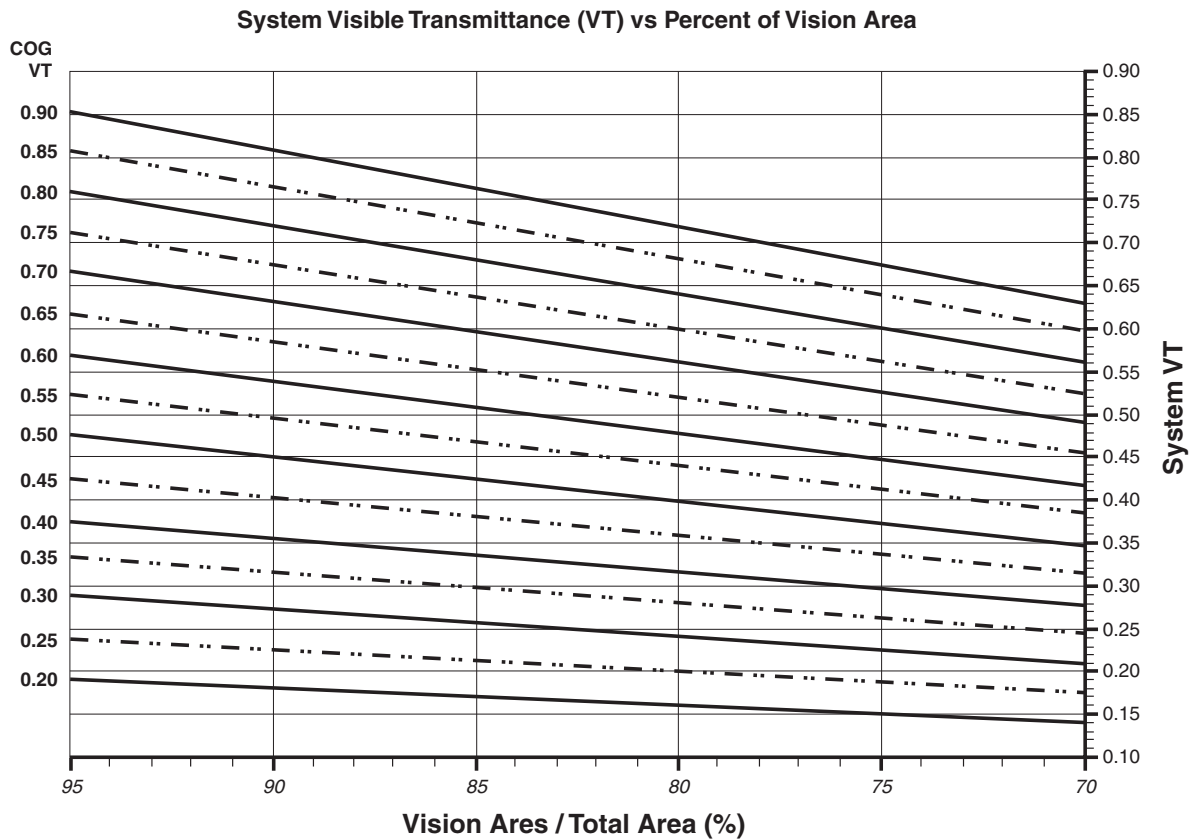


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Charts are generated per AAMA 507.



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**Thermal Transmittance** <sup>1</sup> (BTU/hr • ft <sup>2</sup> • °F)

Glass U-Factor <sup>3</sup>	Overall U-Factor <sup>4</sup>
0.48	0.56
0.46	0.54
0.44	0.53
0.42	0.51
0.40	0.49
0.38	0.48
0.36	0.46
0.34	0.44
0.32	0.42
0.30	0.41
0.28	0.39
0.26	0.37
0.24	0.36
0.22	0.34
0.20	0.32

**SHGC Matrix** <sup>2</sup>

Glass SHGC <sup>3</sup>	Overall SHGC <sup>4</sup>
0.90	0.87
0.85	0.82
0.80	0.77
0.75	0.73
0.70	0.68
0.65	0.64
0.60	0.59
0.55	0.55
0.50	0.50
0.45	0.46
0.40	0.41
0.35	0.37
0.30	0.32
0.25	0.28
0.20	0.23

**Visible Transmittance** <sup>2</sup>

Glass VT <sup>3</sup>	Overall VT <sup>4</sup>
0.90	0.81
0.85	0.77
0.80	0.72
0.75	0.68
0.70	0.63
0.65	0.59
0.60	0.54
0.55	0.50
0.50	0.45
0.45	0.41
0.40	0.36
0.35	0.32
0.30	0.27
0.25	0.23
0.20	0.18

**NOTE:** For glass values that are not listed, linear interpolation is permitted.

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**PROJECT-OUT WINDOW ..... 3-9**  
**OUTSWING CASEMENT WINDOW ..... 10-15**

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LAWS AND BUILDING AND SAFETY CODES GOVERNING THE DESIGN AND USE OF GLAZED ENTRANCE, WINDOW, AND CURTAIN WALL PRODUCTS VARY WIDELY. KAWNEER DOES NOT CONTROL THE SELECTION OF PRODUCT CONFIGURATIONS, OPERATING HARDWARE, OR GLAZING MATERIALS, AND ASSUMES NO RESPONSIBILITY THEREFOR.

Metric (SI) conversion figures are included throughout these details for reference. Numbers in parentheses ( ) are millimeters unless otherwise noted.

The following metric (SI) units are found in these details:

- m – meter
- cm – centimeter
- mm – millimeter
- s – second
- Pa – pascal
- MPa – megapascal

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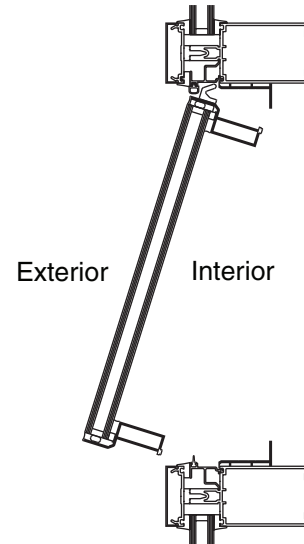
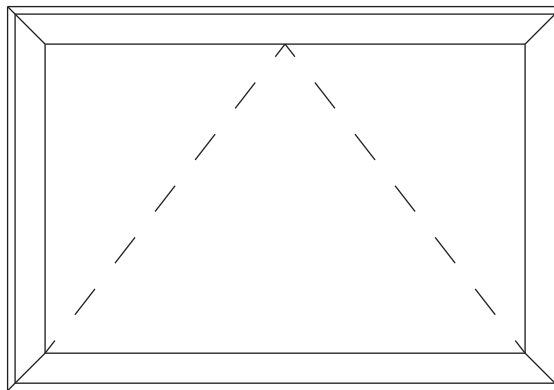
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**Features**

- Architectural Grade Window
- Tested to US and Canadian Standards
- 45° Mitered Vent and Frame Corners
- Staked Corner Joinery
- Architectural Anodized Finishes and Applied Coatings

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For specific product applications,  
Consult your Kawneer representative.



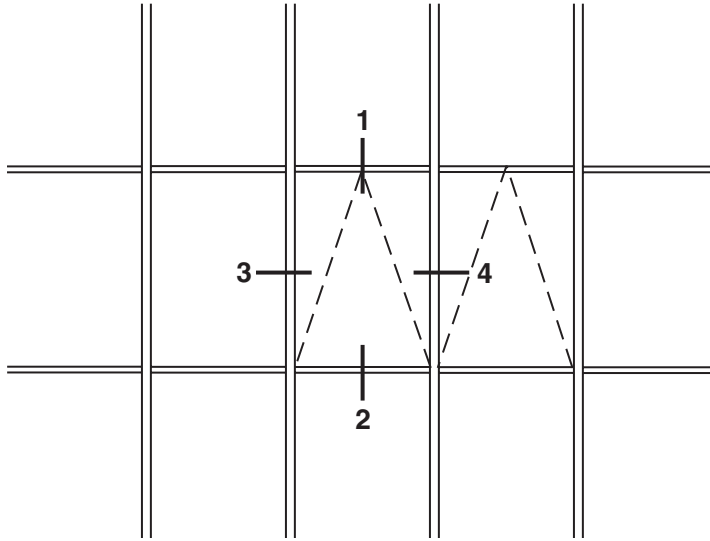
<b>CLASS and GRADE</b>	Architectural Grade AW-PG90 / AW-PG90C
<b>TESTING STANDARD</b>	AAMA / WDMA / CSA / 101 / I.S.2 / A440 (NAFS)
<b>SYSTEM DEPTH</b>	3-7/16" Overall System Depth (1" Infill) 2-11/16" Overall System Depth (1/4" Infill)
<b>TYPICAL WALL THICKNESS</b>	0.125 Nominal Frame
<b>TYPICAL MAX. VENT SIZE</b>	60" x 72"
<b>TYPICAL MIN. VENT SIZE</b>	12" x 12"
<b>INFILL OPTIONS</b>	1" and 1/4"
<b>STANDARD HARDWARE</b>	Stainless Steel 4-Bar Hinges Cast White Bronze Cam Lock 4-Bar Limit Stop 88SS Support Arms
<b>OPTIONAL HARDWARE</b>	Cam Lock with Pole Ring Sash Pole Pole Ring Access Control Lock Concealed Lock with removable key
<b>OTHER OPTIONS</b>	Insect Screens

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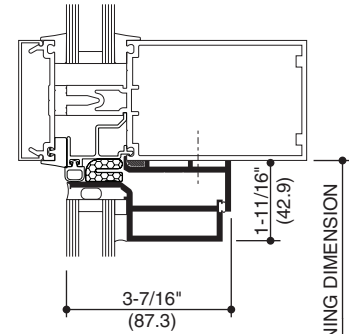
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**SCALE 3" = 1'-0"**

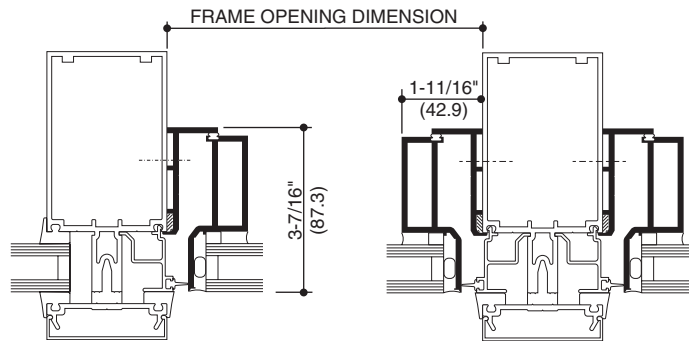
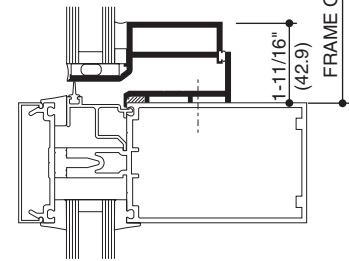
### 1" STRUCTURAL SILICONE GLAZING



**1 HEAD**



**2 SILL**



**3 JAMB**

**4 VERTICAL MULLION**

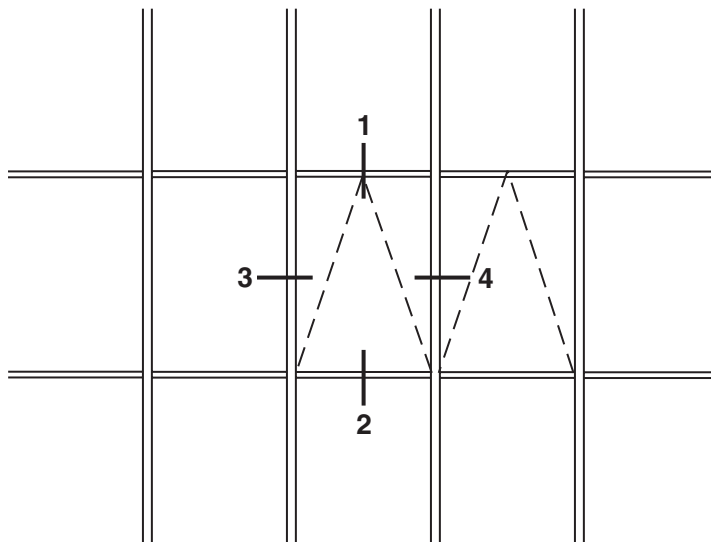
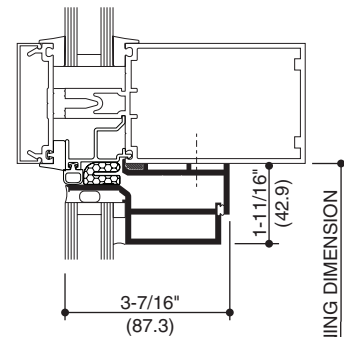
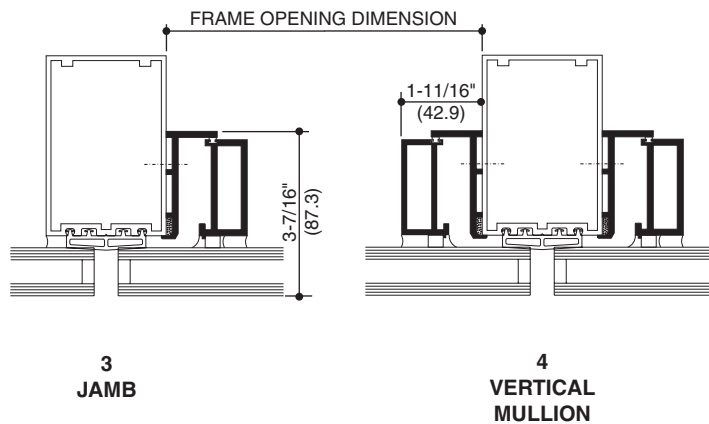
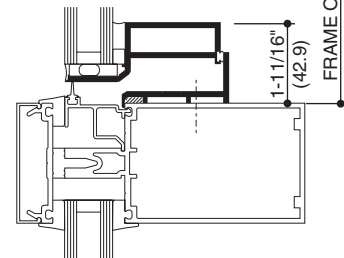
**NOTE:** THE KAWNEER GLASSvent™ WINDOW IS SHOWN IN THESE DETAILS WITH 1600 WALL SYSTEM™1 CURTAIN WALL FOR REFERENCE. OTHER KAWNEER SYSTEMS CAN BE USED. FOR PRODUCT SPECIFIC APPLICATIONS CONSULT YOUR KAWNEER REPRESENTATIVE.

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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SCALE 3" = 1'-0"

## 1" STRUCTURAL SILICONE GLAZING

1  
HEAD2  
SILL3  
JAMB4  
VERTICAL  
MULLION

**NOTE:** THE KAWNEER GLASSvent™ WINDOW IS SHOWN IN THESE DETAILS WITH 1600 WALL SYSTEM™2 CURTAIN WALL FOR REFERENCE. OTHER KAWNEER SYSTEMS CAN BE USED. FOR PRODUCT SPECIFIC APPLICATIONS CONSULT YOUR KAWNEER REPRESENTATIVE.

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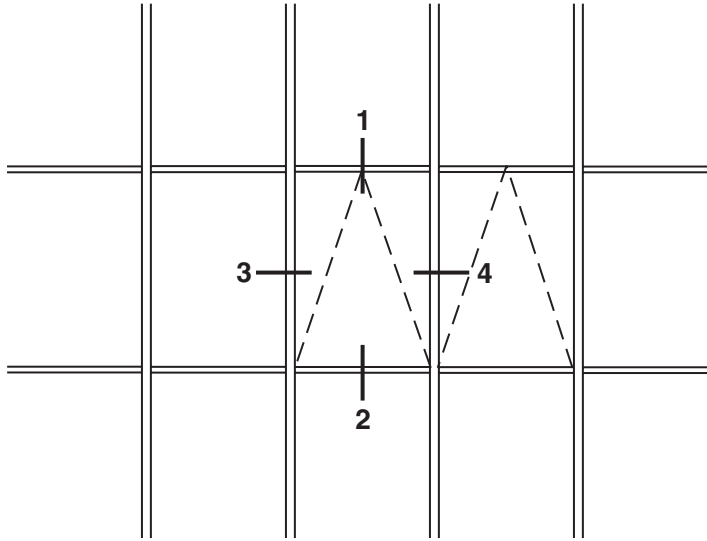
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**SCALE 3" = 1'-0"**

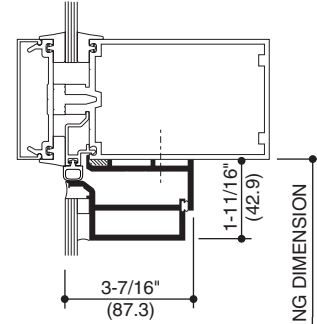
## 1/4" STRUCTURAL SILICONE GLAZING

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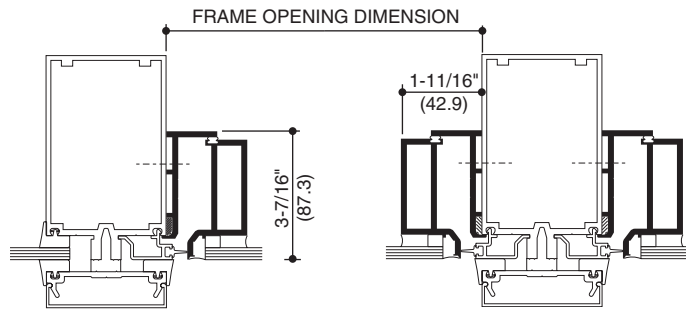
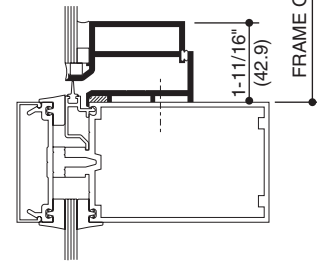
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**1**  
HEAD



**2**  
SILL



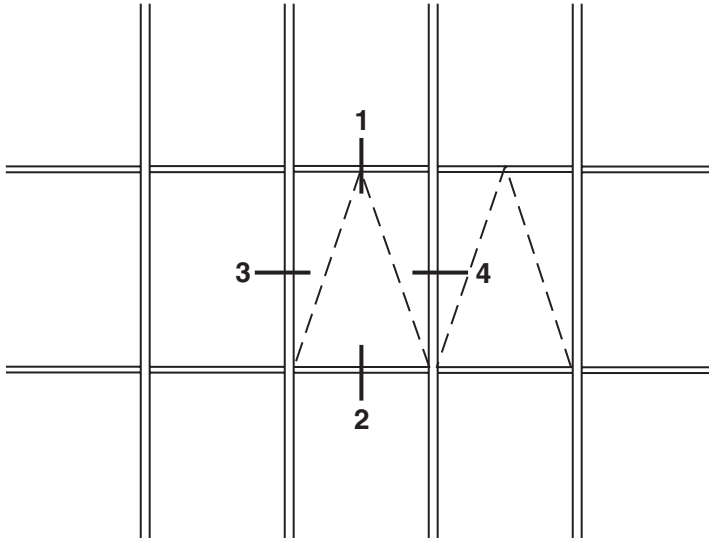
**3**  
JAMB

**4**  
VERTICAL  
MULLION

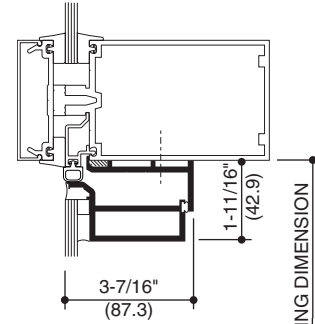
**NOTE:** THE KAWNEER GLASSvent™ WINDOW IS SHOWN IN THESE DETAILS WITH 1600 WALL SYSTEM™1 CURTAIN WALL FOR REFERENCE. OTHER KAWNEER SYSTEMS CAN BE USED. FOR PRODUCT SPECIFIC APPLICATIONS CONSULT YOUR KAWNEER REPRESENTATIVE.

SCALE 3" = 1'-0"

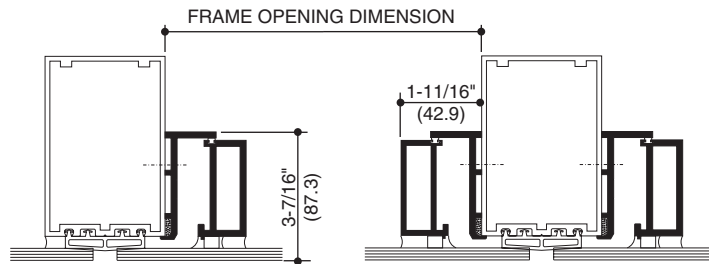
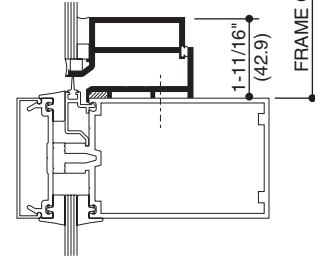
1/4" STRUCTURAL SILICONE GLAZING



1 HEAD



2 SILL



3 JAMB

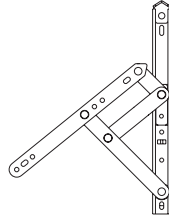
4 VERTICAL MULLION

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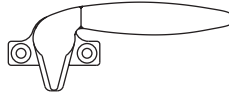
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**STAINLESS STEEL  
4 BAR HINGES**



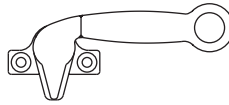
A standard hinge for ventilators providing approximately 45° to 60° openings depending on size. An optional limit stop is available to restrict hinge travel and limit vent opening.

**CAM HANDLE**



Cast white bronze cam handles are standard for the manual operation and locking of ventilators.

**CAM HANDLE  
WITH POLE RING**



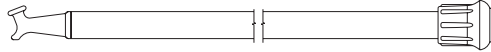
Cast white bronze cam handles with pole ring provide manual operation of ventilators located above reach. These handles are operated with a sash pole.

**POLE RING**



Cast white bronze pole ring is used in conjunction with locking hardware for sash pole operation of ventilators.

**SASH POLE**

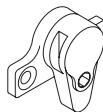
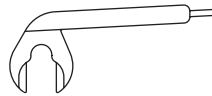


A 3/4" diameter aluminum sash pole with a cast white bronze pull down hook and black rubber tip. Available in 6 ft. and 12 ft. lengths with optional cast white bronze Pole Hanger.

**HANGER  
FOR SASH POLE**

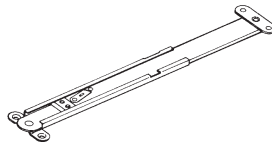


**ACCESS CONTROL  
LOCK**



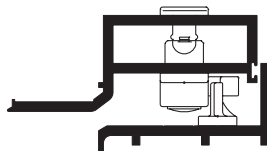
In lieu of cam handles cast white bronze access control locks are offered for managed control of vent operations. Lock is operated with a manganese bronze removable handle.

**88 SS SUPPORT  
ARMS**



Support Arms are used when the curtain wall day light opening height exceeds 48". When fully extended, the hardware automatically retains the ventilator in an open position.

**CONCEALED LOCK**



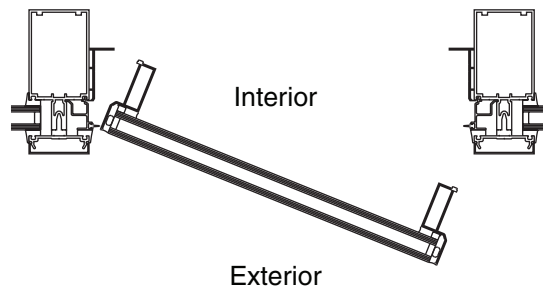
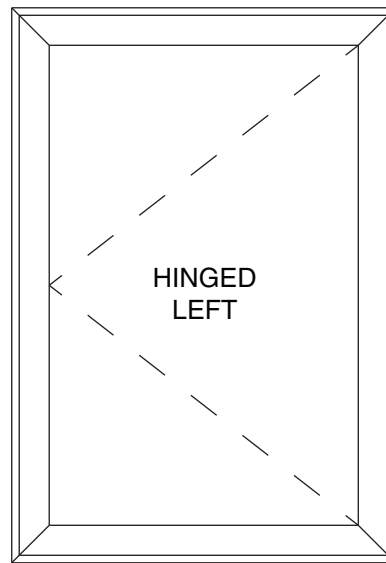
In lieu of cam handles cast white bronze concealed locks are offered for managed control of vent operations. Lock is operated with a removable key.

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## Features

- Architectural Grade Window
- Tested to US and Canadian Standards
- 45° Mitered Vent and Frame Corners
- Staked Corner Joinery
- Architectural Anodized Finishes and Applied Coatings



For specific product applications,  
Consult your Kawneer representative.

<b>CLASS and GRADE</b>	Architectural Grade AW-PG90 / AW-PG90C
<b>TESTING STANDARD</b>	AAMA / WDMA / CSA / 101 / I.S.2 / A440 (NAFS)
<b>SYSTEM DEPTH</b>	3-7/16" Overall System Depth (1" Infill) 2-11/16" Overall System Depth (1/4" Infill)
<b>TYPICAL WALL THICKNESS</b>	0.125 Nominal Frame
<b>TYPICAL MAX. VENT SIZE</b>	36" x 72"
<b>TYPICAL MIN. VENT SIZE</b>	14" x 14"
<b>INFILL OPTIONS</b>	1" and 1/4"
<b>STANDARD HARDWARE</b>	Stainless Steel 4-Bar Hinges Cast White Bronze Cam Handles
<b>OPTIONAL HARDWARE</b>	Cam Lock with Pole Ring SashPole Pole Ring Access Control Locks Multi-Point Lock Hook Bolt Lock Concealed Lock with removable key
<b>OTHER OPTIONS</b>	Insect Screens

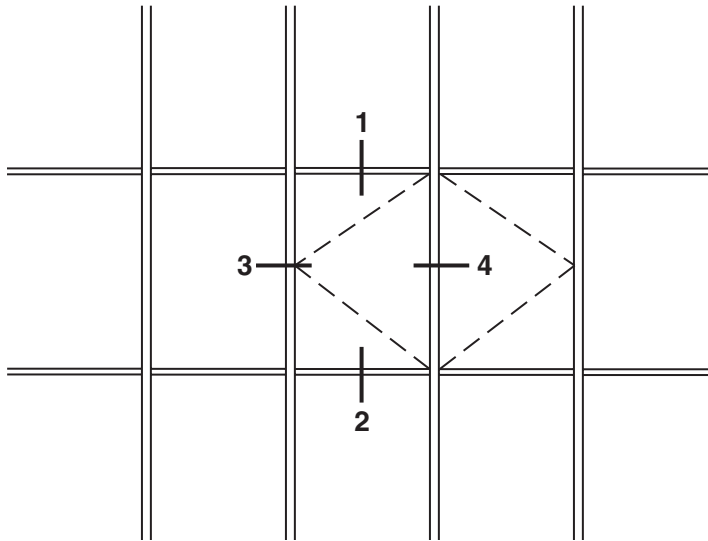
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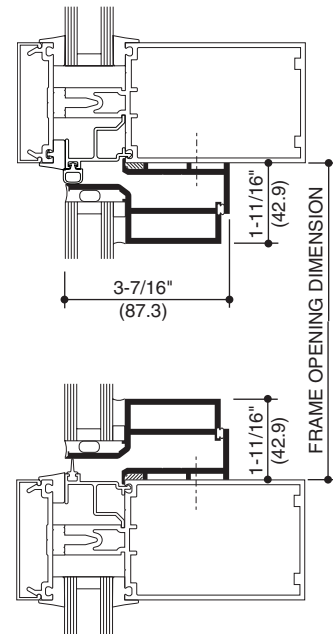
SCALE 3" = 1'-0"

1" STRUCTURAL SILICONE GLAZING

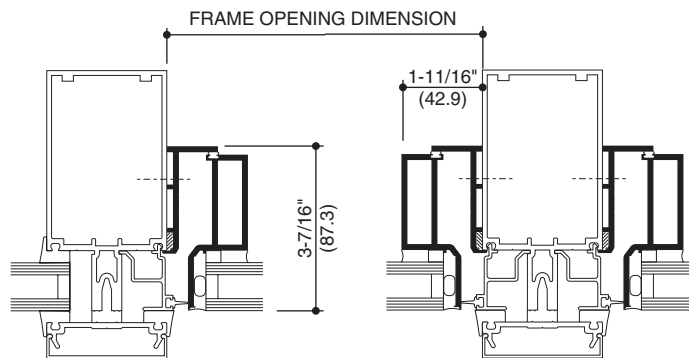


OUTSWING CASEMENT

1  
HEAD



2  
SILL



3  
JAMB

4  
VERTICAL  
MULLION

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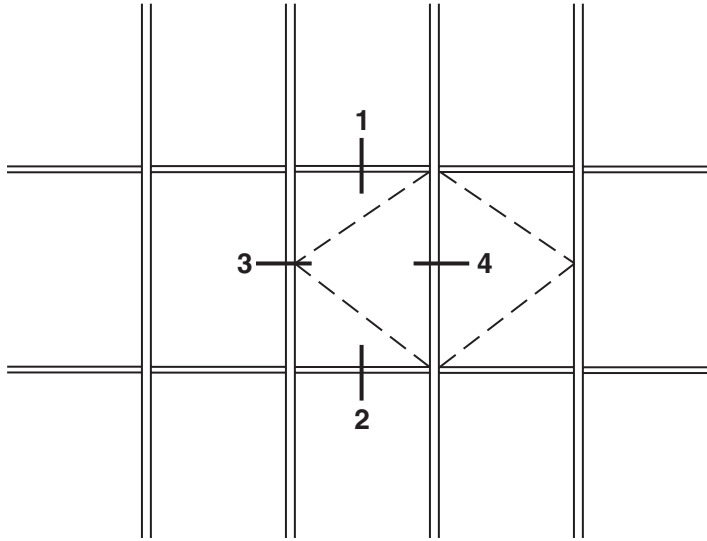
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**SCALE 3" = 1'-0"**

1/4" STRUCTURAL SILICONE GLAZING

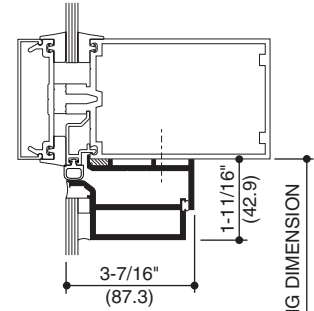
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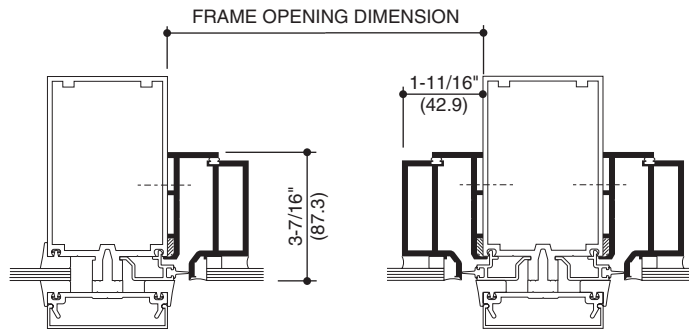
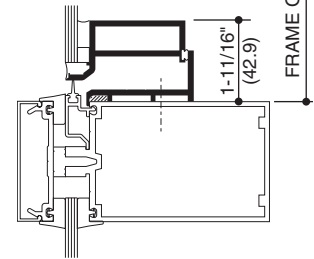


OUTSWING CASEMENT

**1**  
HEAD



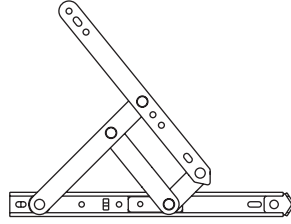
**2**  
SILL



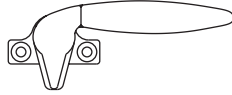
**3**  
JAMB

**4**  
VERTICAL  
MULLION

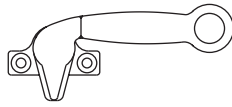
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**STAINLESS STEEL  
4 BAR HINGES**

A standard hinge for ventilators providing approximately 45° to 60° openings depending on size. An optional limit stop is available to restrict hinge travel and limit vent opening.

**CAM HANDLE**

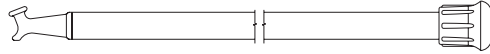
Cast white bronze cam handles are standard for the manual operation and locking of ventilators.

**CAM HANDLE  
WITH POLE RING**

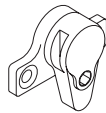
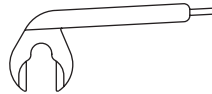
Cast white bronze cam handles with pole ring provide manual operation of ventilators located above reach. These handles are operated with a sash pole.

**POLE RING**

Cast white bronze pole ring is used in conjunction with locking hardware for sash pole operation of ventilators.

**SASH POLE**

A 3/4" diameter aluminum sash pole with a cast white bronze pull down hook and black rubber tip. Available in 6 ft. and 12 ft. lengths with optional cast white bronze Pole Hanger.

**HANGER  
FOR SASH POLE****ACCESS CONTROL  
LOCK**

In lieu of cam handles cast white bronze access control locks are offered for managed control of vent operations. Lock is operated with a manganese bronze removable handle.

**HOOK BOLT LOCK**

For use with pivot-shoe roto operator in lieu of cam handles. Standard finish shall be US-25-D clear white bronze.

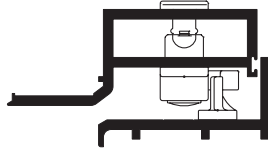
**MULTI-POINT LOCK**

Optional single locking handle for concealed multi-point locks located on the vertical frame. Standard finish shall be US-25-D clear white bronze.

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## CONCEALED LOCK



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## **Features**

- 1600UT System™1 is a high thermal performance, outside glazed, captured curtain wall system
- Innovative design delivers high thermal performance while leveraging 1600 Wall System architecture
- Multiple thermal performance levels resulting from a combination of:
  - 1" (25.4), 1-1/4" (31.8), 1-5/16" (33.34) double or 1-3/4" (44.5), triple glazed insulating glass units
  - Aluminum or fiberglass pressure plates
- Thermal barrier design ensures high thermal performance without being susceptible to thermal fatigue
- Offers integrated entrance framing systems
- Corners and splays available
- Comprehensively tested to latest high performance air, water, structural and thermal standards
- Glass chairs support insulating glass units enabling larger expanses of glass
- Pressure equalized system tested with vapor barrier
- Two color option
- Permanodic™ anodized finishes in seven choices
- Painted finishes in standard and custom choices

## **Optional Features**

- Steel reinforcing
- Rain screen and backpans
- Deep profile covers and bull nose covers
- Deep and heavy-weight mullions
- Integrates with standard Kawneer windows and GLASSvent™ Windows for curtain wall
- Profit\$Maker™ plus die sets available

## **Product Applications**

- Ideal for low to mid-rise applications where high thermal performance is desired
- High span applications

For specific product applications,  
Consult your Kawneer representative.

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**Architects** - Most extrusion and window types illustrated in this catalog are standard products for Kawneer. These concepts have been expanded and modified to afford you design freedom. Some miscellaneous details are non-standard and are intended to demonstrate how the system can be modified to expand design flexibility. Please contact your Kawneer representative for further assistance.

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**CORNERS .....9**

**SPLAYED MULLION OPTIONS .....10**

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LAWS AND BUILDING AND SAFETY CODES GOVERNING THE DESIGN AND USE OF GLAZED ENTRANCE, WINDOW, AND CURTAIN WALL PRODUCTS VARY WIDELY. KAWNEER DOES NOT CONTROL THE SELECTION OF PRODUCT CONFIGURATIONS, OPERATING HARDWARE, OR GLAZING MATERIALS, AND ASSUMES NO RESPONSIBILITY THEREFOR.

Metric (SI) conversion figures are included throughout these details for reference. Numbers in parentheses ( ) are millimeters unless otherwise noted.

The following metric (SI ) units are found in these details:

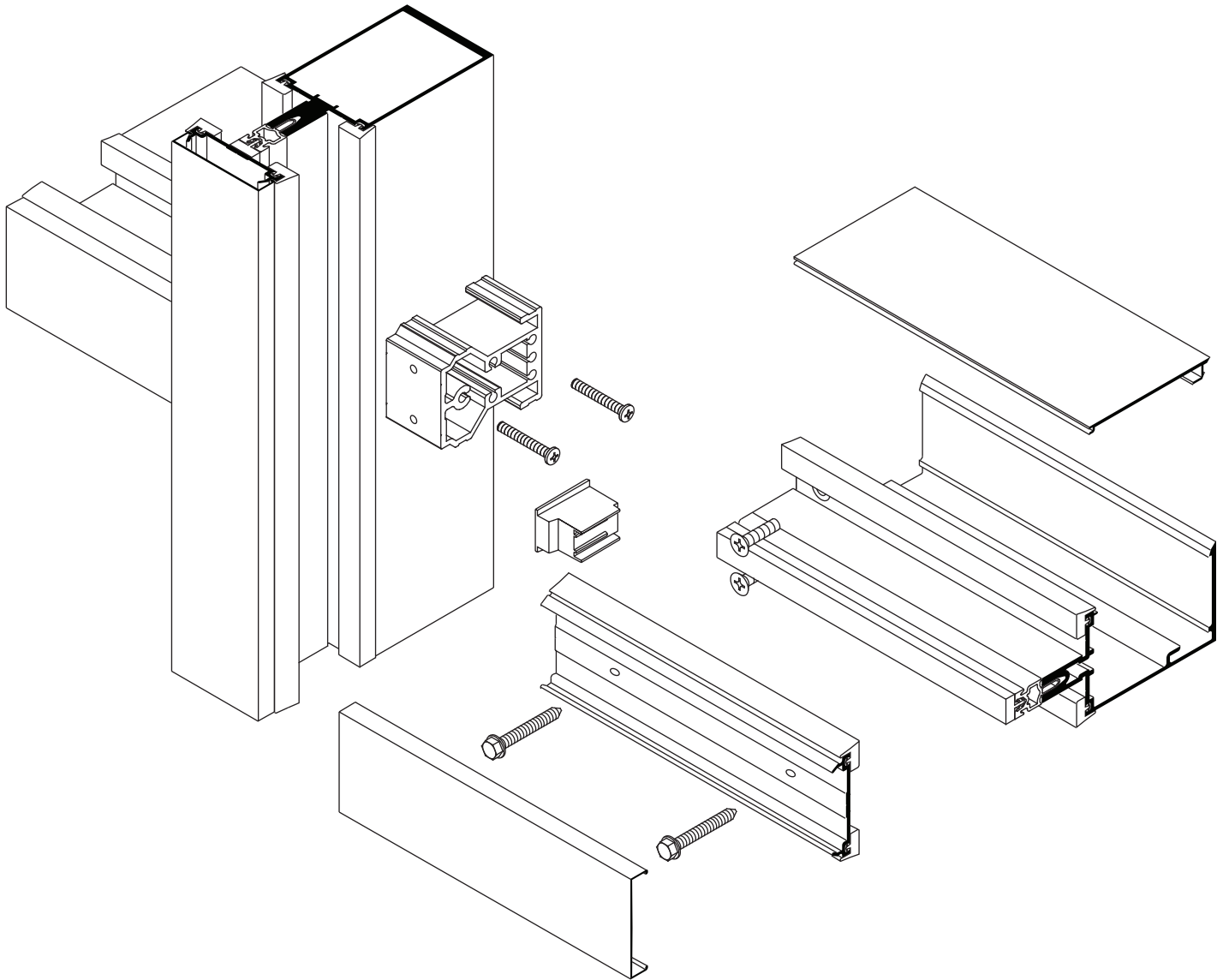
- m – meter
- cm – centimeter
- mm – millimeter
- s – second
- Pa – pascal
- MPa – megapascal

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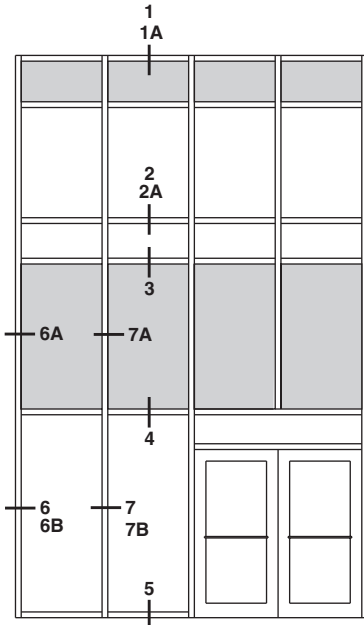




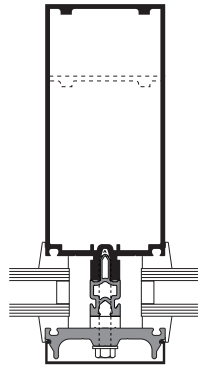
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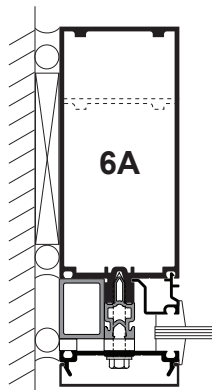
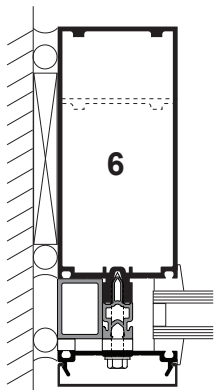
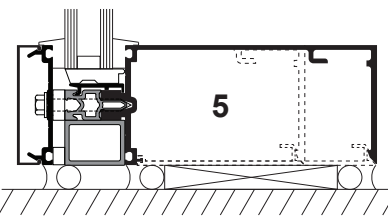
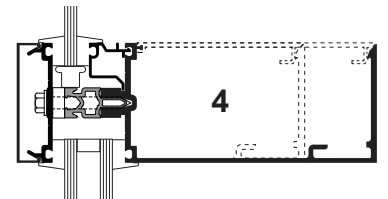
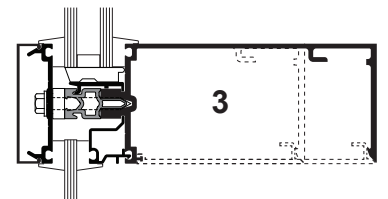
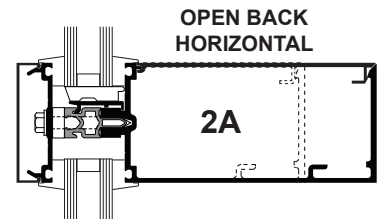
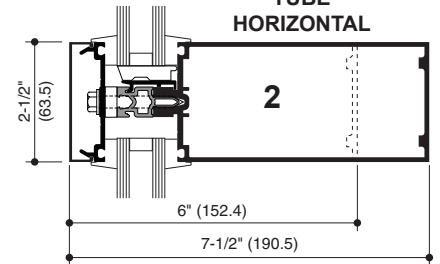
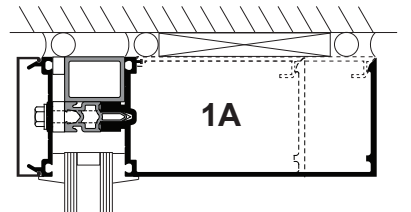
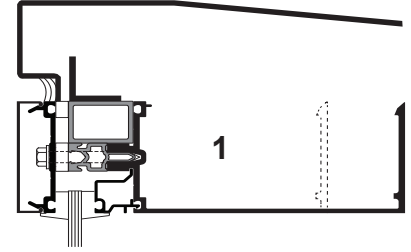
**SCALE 3" = 1'-0"**



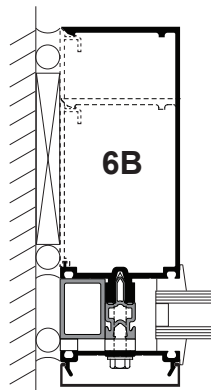
**ELEVATION IS NUMBER KEYED TO DETAILS**



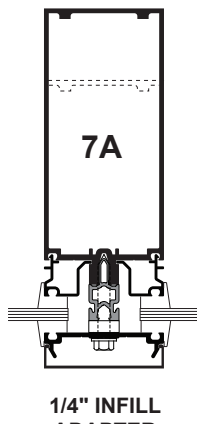
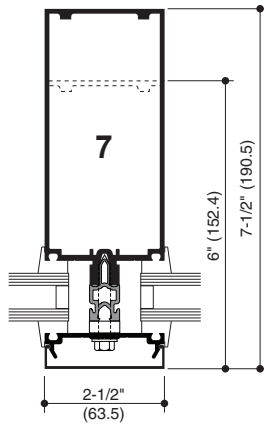
**OPTIONAL  
FIBERGLASS  
PRESSURE PLATE**



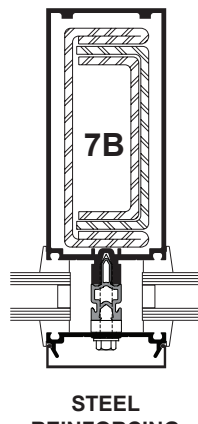
**1/4" INFILL  
ADAPTER**



**OPEN BACK JAMB**



**1/4" INFILL  
ADAPTER**

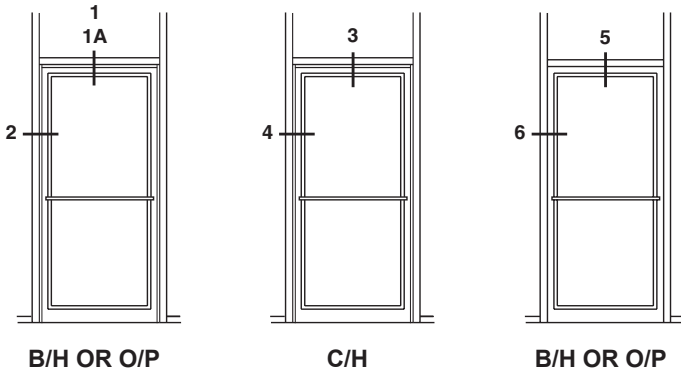


**STEEL  
REINFORCING  
AS REQUIRED**

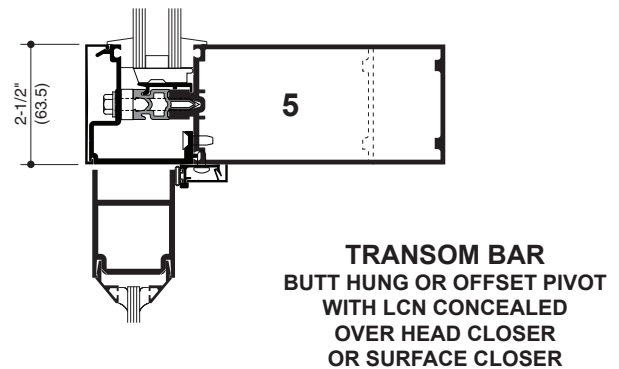
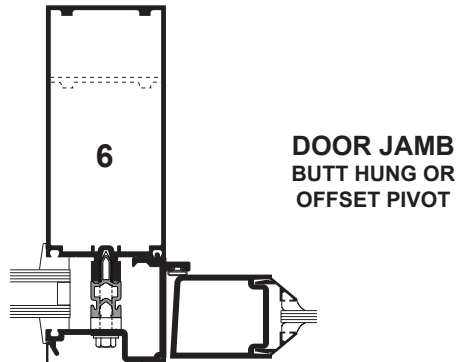
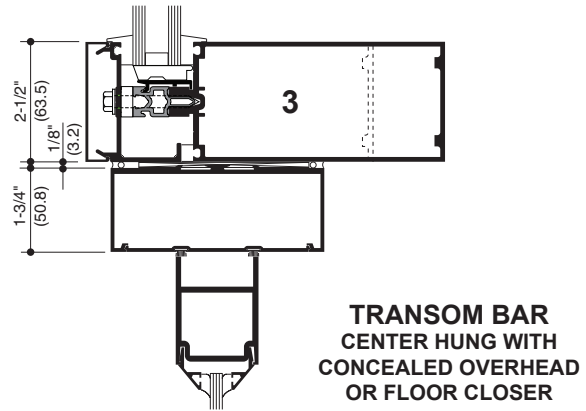
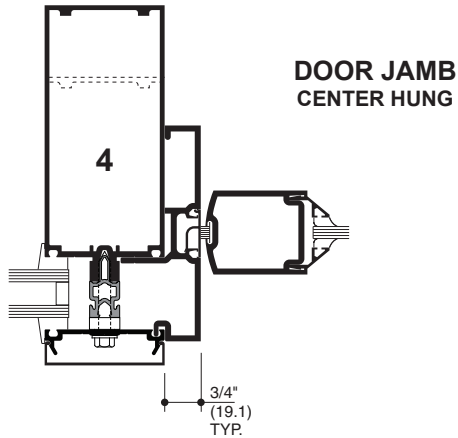
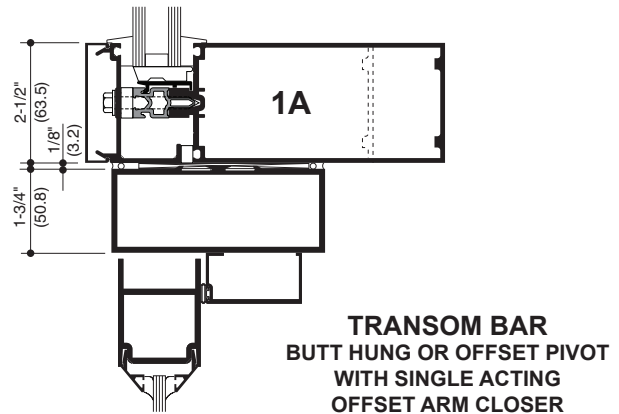
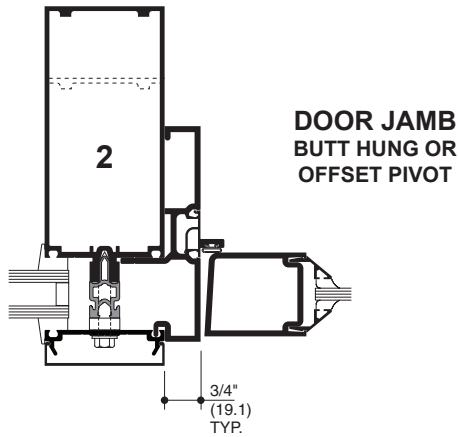
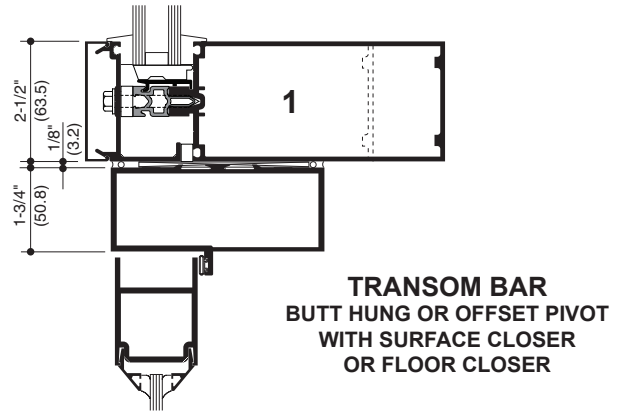
Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

Kawneer reserves the right to change configuration without prior notice when deemed necessary for product improvement.  
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SCALE 3" = 1'-0"



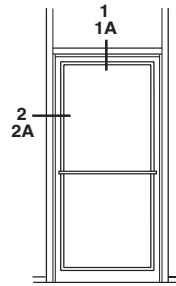
ELEVATION IS NUMBER KEYED TO DETAILS



Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

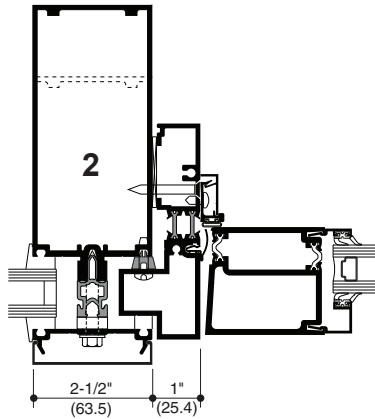
Kawneer reserves the right to change configuration without prior notice when deemed necessary for product improvement.  
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**SCALE 3" = 1'-0"**

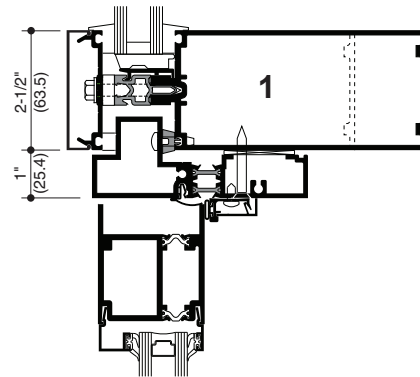


**B/H OR O/P**

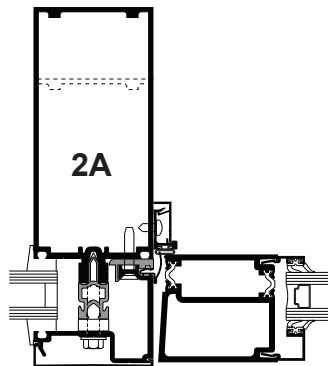
**ELEVATION IS NUMBER KEYED TO DETAILS**



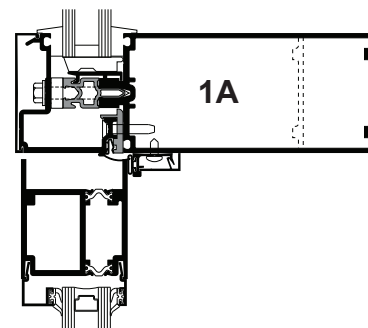
**DOOR JAMB  
BUTT HUNG OR  
OFFSET PIVOT**



**TRANSOM BAR  
BUTT HUNG OR  
OFFSET PIVOT WITH  
SURFACE CLOSER  
OR FLOOR CLOSER**



**DOOR JAMB  
BUTT HUNG OR  
OFFSET PIVOT**

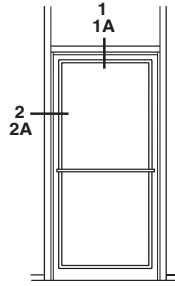


**TRANSOM BAR  
BUTT HUNG OR  
OFFSET PIVOT WITH  
SURFACE CLOSER  
OR FLOOR CLOSER**

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

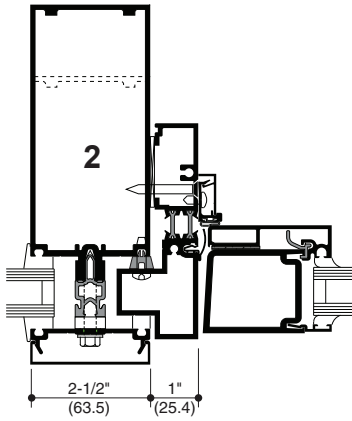
Kawneer reserves the right to change configuration without prior notice when deemed necessary for product improvement.  
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SCALE 3" = 1'-0"

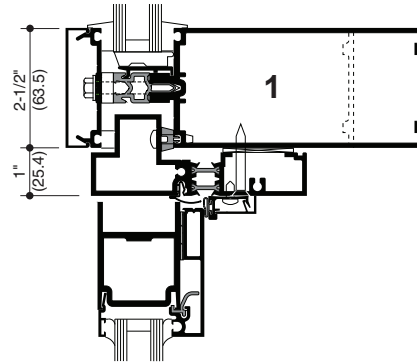


B/H OR O/P

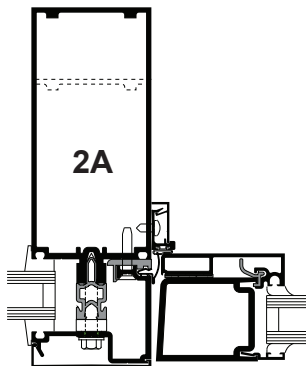
ELEVATION IS NUMBER KEYED TO DETAILS



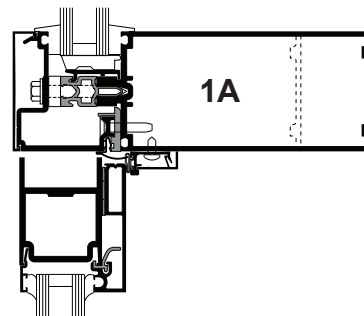
DOOR JAMB  
BUTT HUNG OR  
OFFSET PIVOT



TRANSOM BAR  
BUTT HUNG OR  
OFFSET PIVOT WITH  
SURFACE CLOSER  
OR FLOOR CLOSER



DOOR JAMB  
BUTT HUNG OR  
OFFSET PIVOT



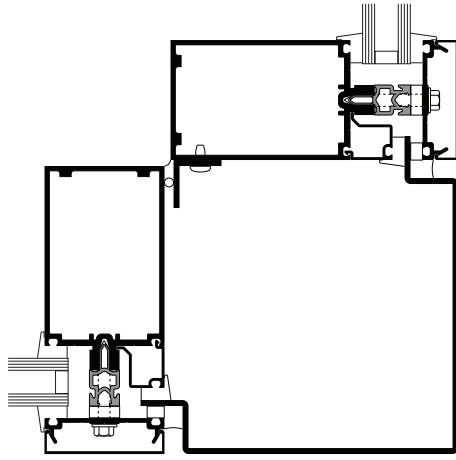
TRANSOM BAR  
BUTT HUNG OR  
OFFSET PIVOT WITH  
SURFACE CLOSER  
OR FLOOR CLOSER

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

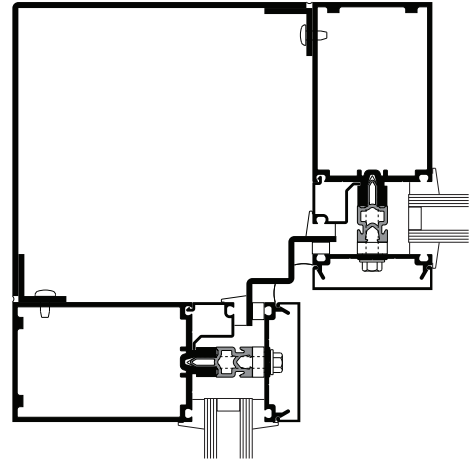
Kawneer reserves the right to change configuration without prior notice when deemed necessary for product improvement.

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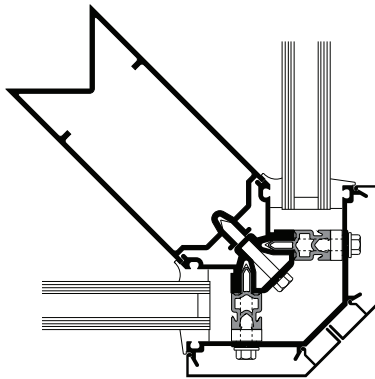
**SCALE 3" = 1'-0"**



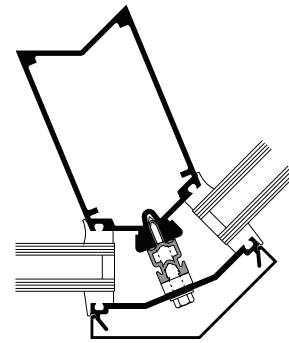
**90° OUTSIDE CORNER**



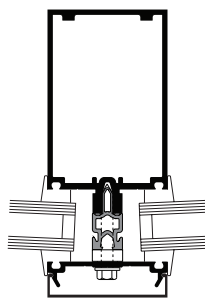
**90° INSIDE CORNER**



**90° OUTSIDE CORNER**

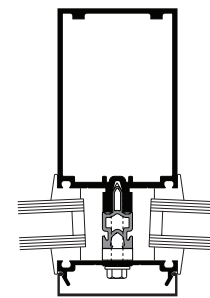


**135° OUTSIDE CORNER**



**0° TO 5°**

**OUTSIDE SPLAYED MULLIONS**



**0° TO 5°**

**INSIDE SPLAYED MULLIONS**

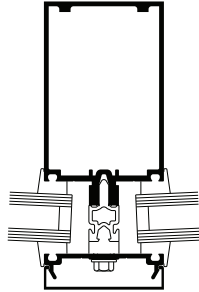
**OTHER SPLAY OPTIONS AVAILABLE**

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

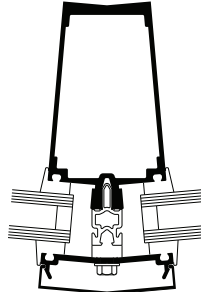
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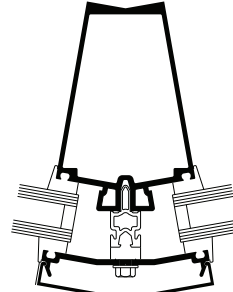
SCALE 3" = 1'-0"



0° TO 5°

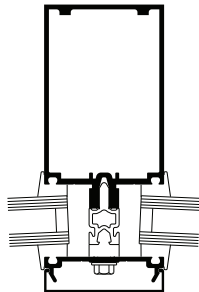


5° TO 15°

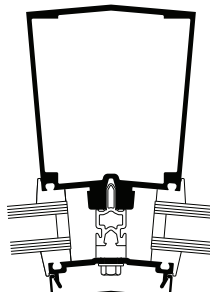


15° TO 25°

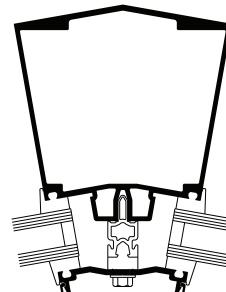
OUTSIDE SPLAYED MULLIONS



0° TO 5°



5° TO 15°



15° TO 25°

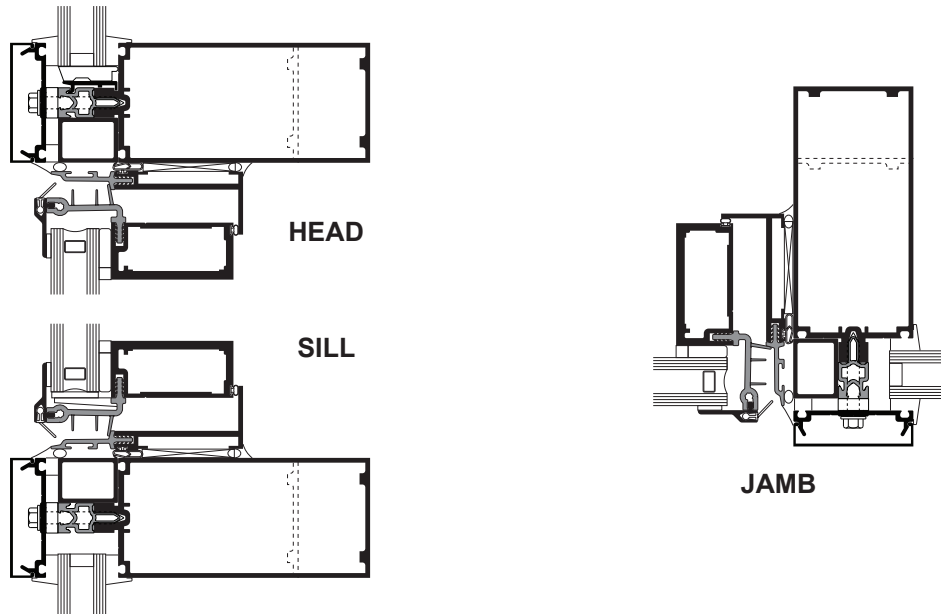
INSIDE SPLAYED MULLIONS

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

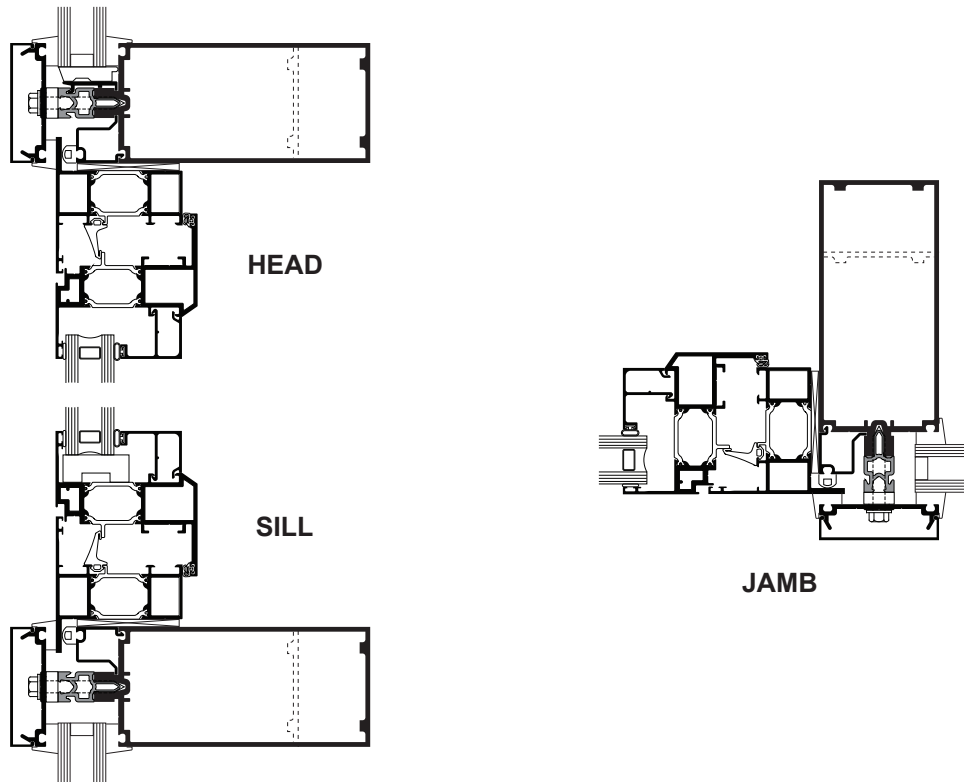
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SCALE 3" = 1'-0"

## GLASSvent™ UT Windows



## AA™900 Thermal Windows



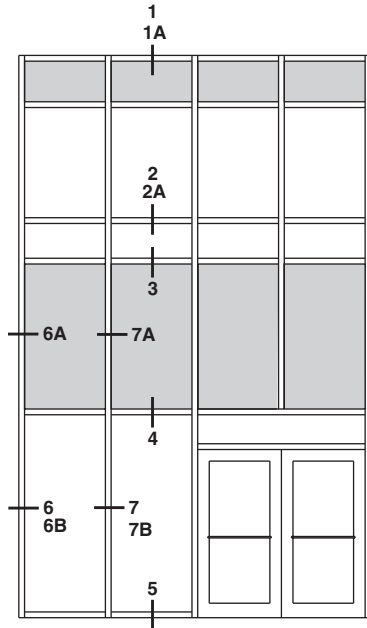
NOTE: AA™6400 vent can be accommodated.  
Contact your Kawneer representative for other options.

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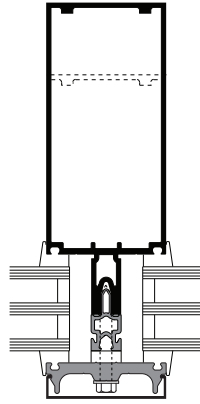
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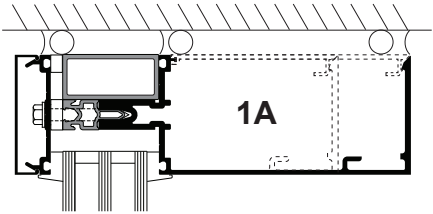
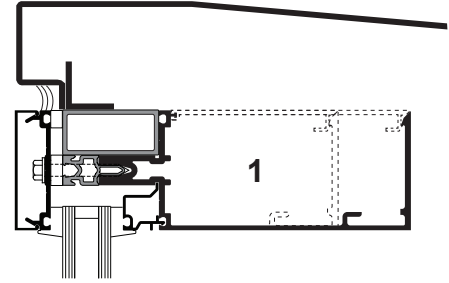
SCALE 3" = 1'-0"



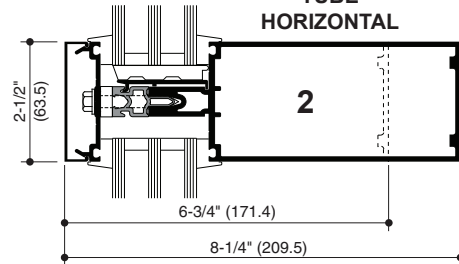
ELEVATION IS NUMBER KEYED TO DETAILS



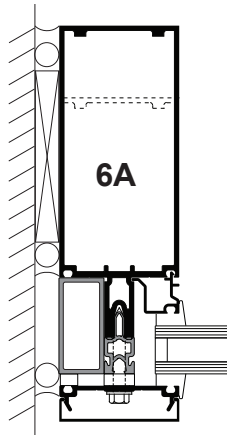
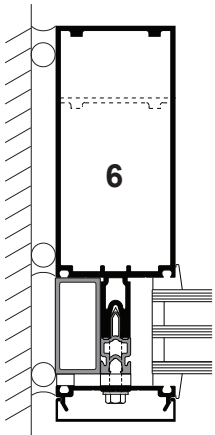
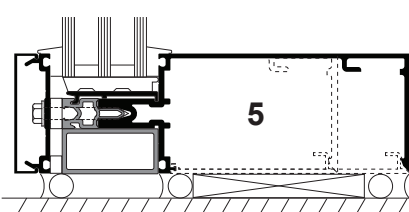
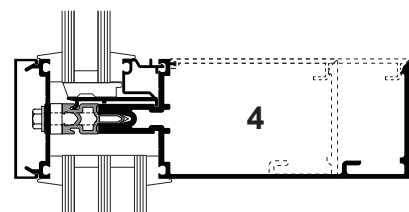
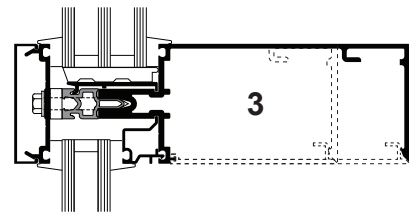
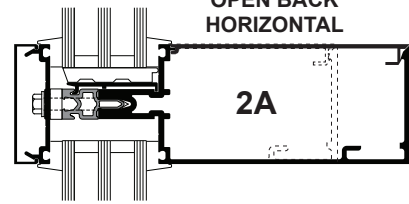
OPTIONAL FIBERGLASS PRESSURE PLATE



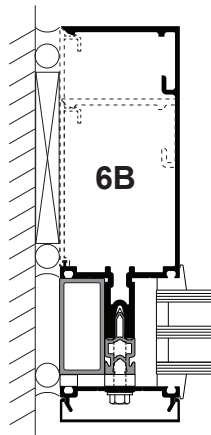
TUBE HORIZONTAL



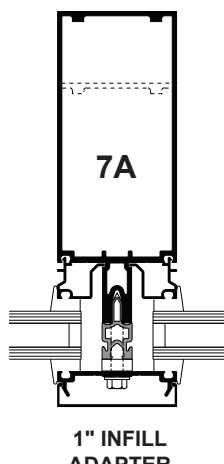
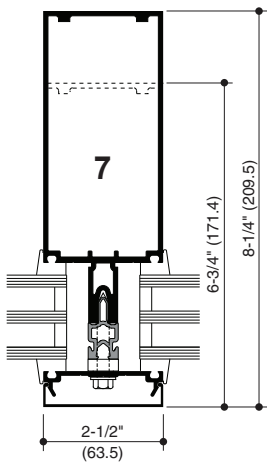
OPEN BACK HORIZONTAL



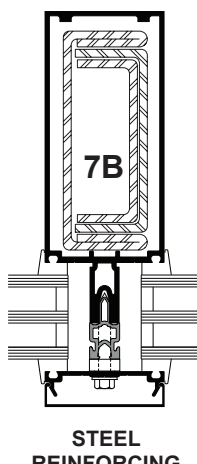
1" INFILL ADAPTER



OPEN BACK JAMB



1" INFILL ADAPTER



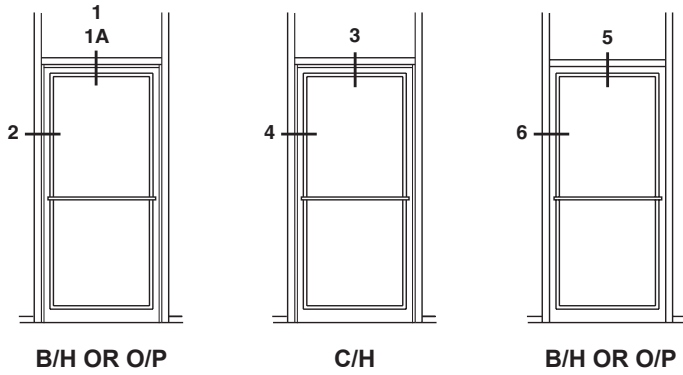
STEEL REINFORCING AS REQUIRED

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

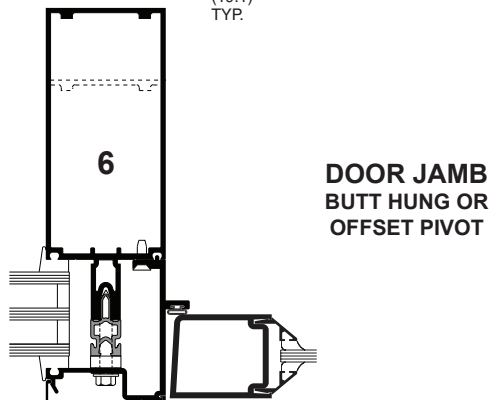
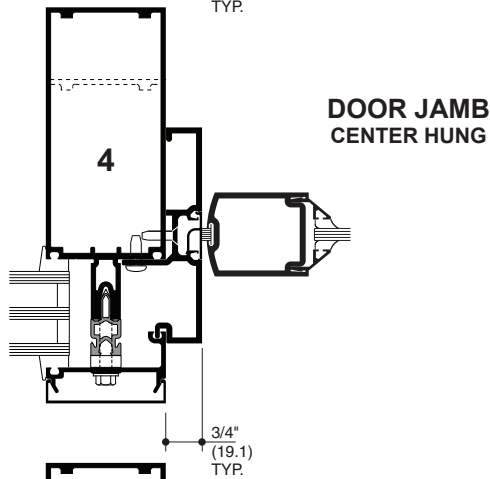
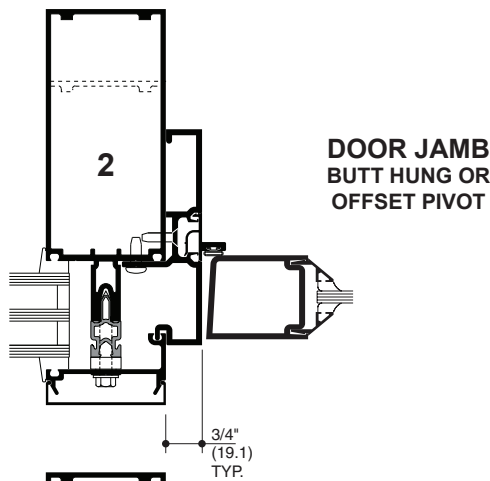
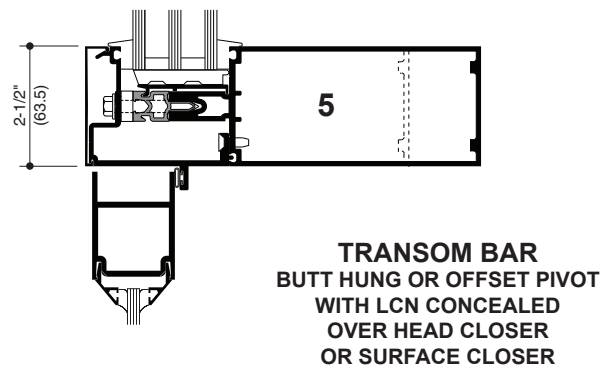
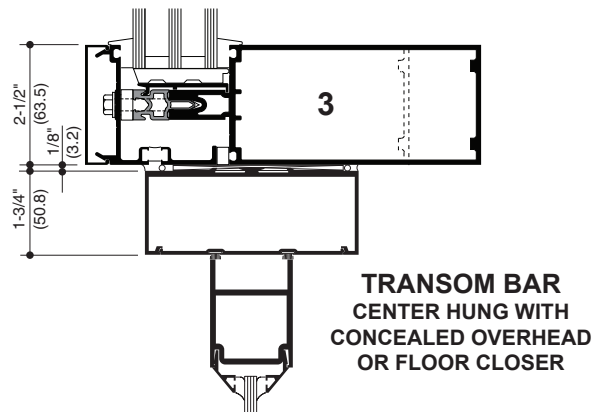
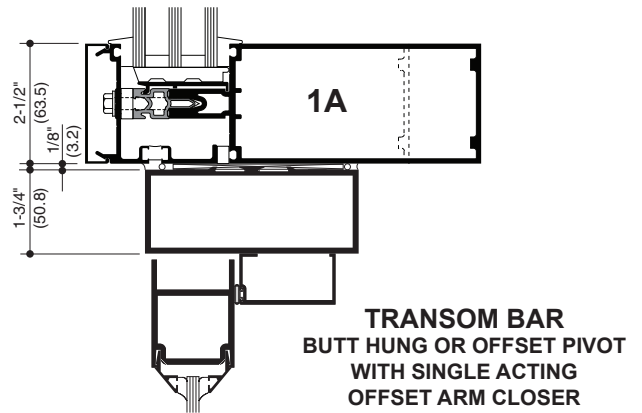
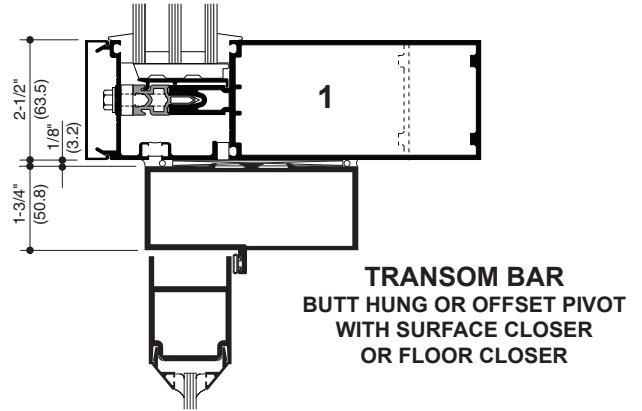
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SCALE 3" = 1'-0"



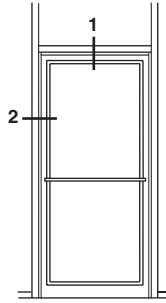
ELEVATION IS NUMBER KEYED TO DETAILS



Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

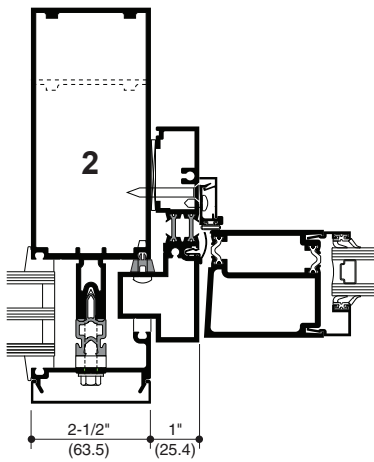
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SCALE 3" = 1'-0"

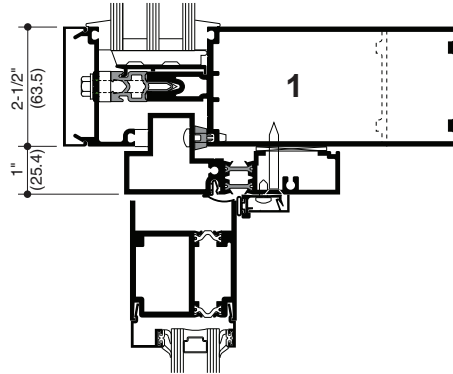


B/H OR O/P

ELEVATION IS NUMBER KEYED TO DETAILS



DOOR JAMB  
BUTT HUNG OR  
OFFSET PIVOT

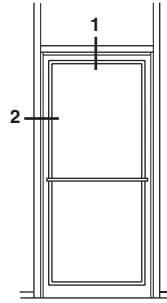


TRANSOM BAR  
BUTT HUNG OR  
OFFSET PIVOT WITH  
SURFACE CLOSER  
OR FLOOR CLOSER

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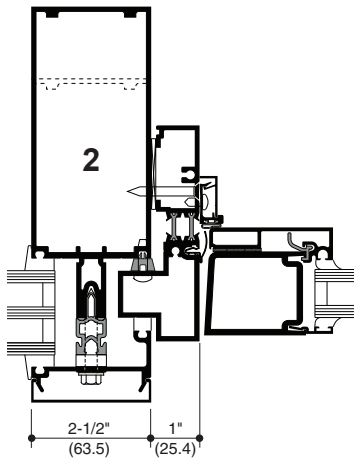
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**SCALE 3" = 1'-0"**

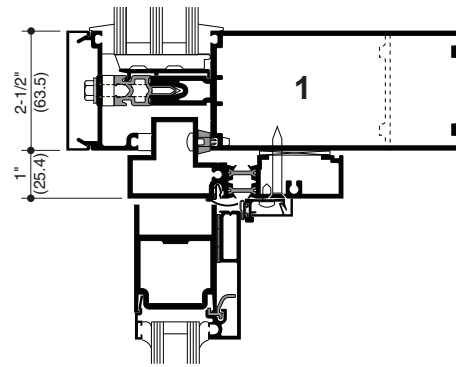


**B/H OR O/P**

**ELEVATION IS NUMBER KEYED TO DETAILS**



**DOOR JAMB  
BUTT HUNG OR  
OFFSET PIVOT**

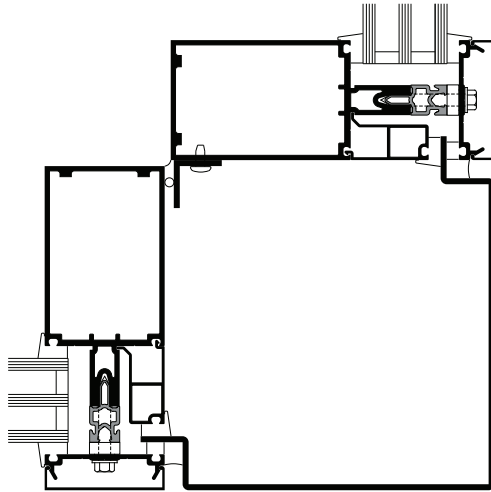


**TRANSOM BAR  
BUTT HUNG OR  
OFFSET PIVOT WITH  
SURFACE CLOSER  
OR FLOOR CLOSER**

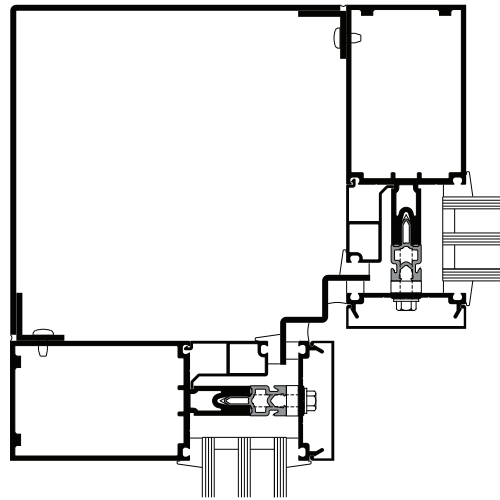
Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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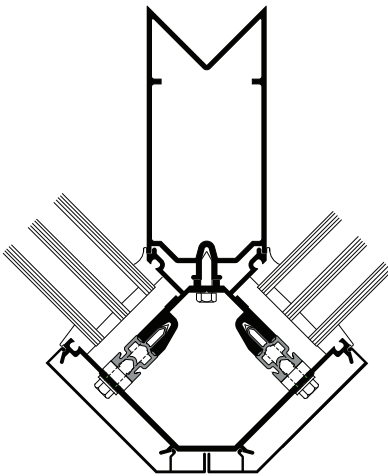
SCALE 3" = 1'-0"



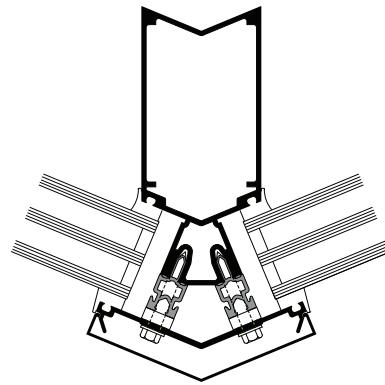
90° OUTSIDE CORNER



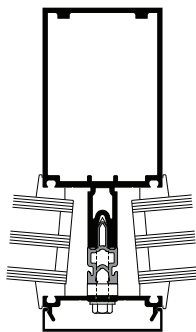
90° INSIDE CORNER



90° OUTSIDE CORNER

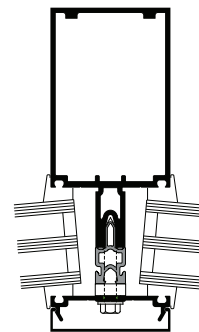


135° OUTSIDE CORNER



0° TO 5°

OUTSIDE SPLAYED MULLIONS



0° TO 5°

INSIDE SPLAYED MULLIONS

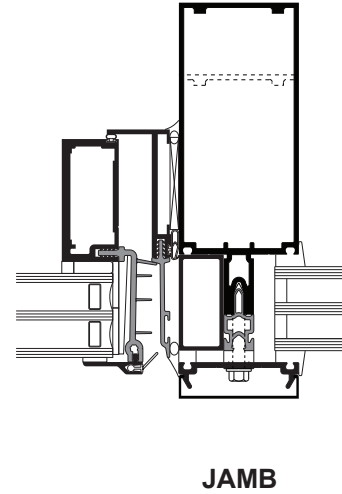
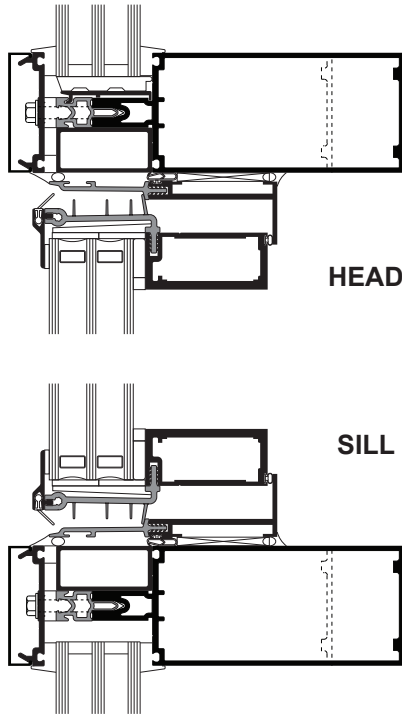
OTHER SPLAY OPTIONS AVAILABLE

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

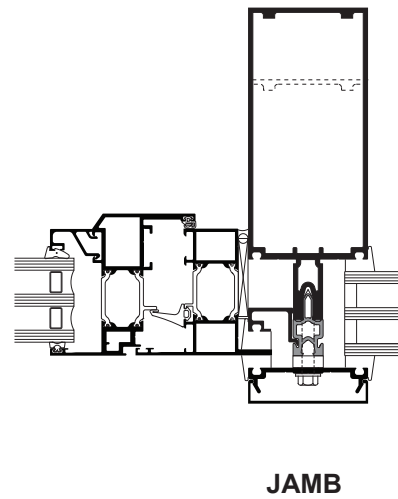
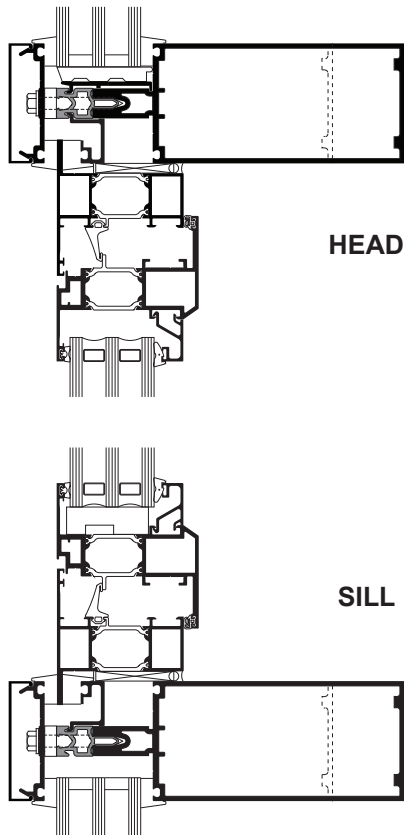
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SCALE 3" = 1'-0"

GLASSvent™ UT Windows



AA™900 Thermal Windows

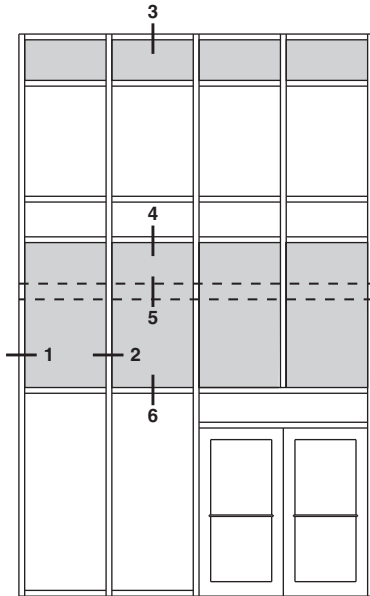


NOTE: AA™6400 vent can be accommodated. Contact your Kawneer representative for other options.

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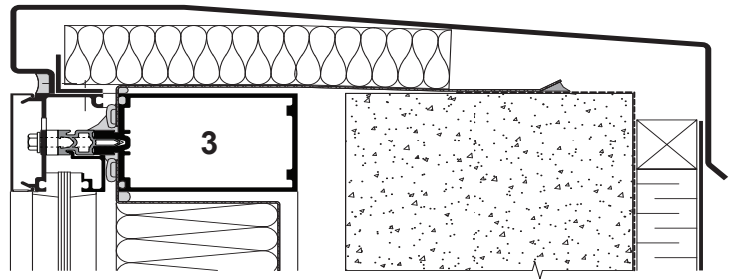
Kawneer reserves the right to change configuration without prior notice when deemed necessary for product improvement.  
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SCALE 3" = 1'-0"

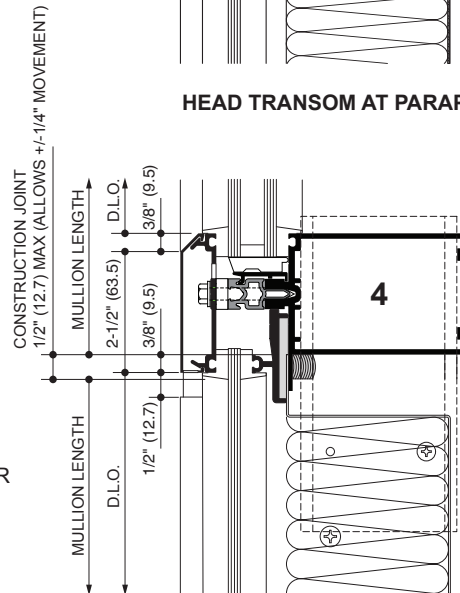


ELEVATION IS NUMBER KEYED TO DETAILS

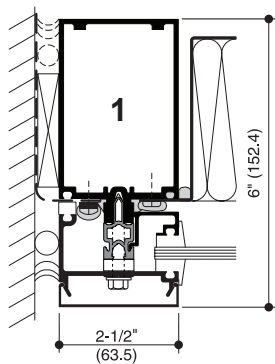
NOTE: 6" SYSTEM SHOWN, 7-1/2" SYSTEM SIMILAR



HEAD TRANSOM AT PARAPET FLASHING

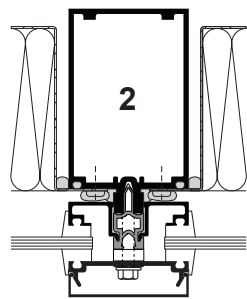


EXPANSION JOINT

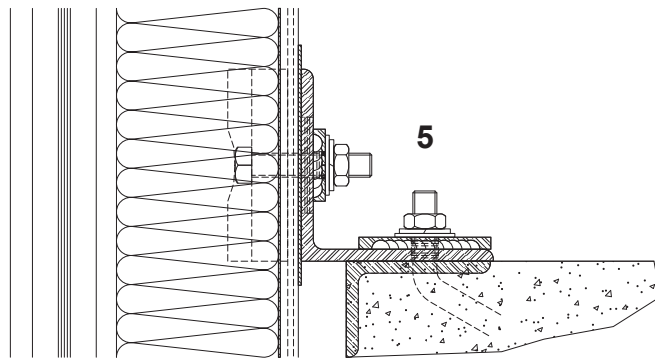


JAMB MULLION AT SPANDREL

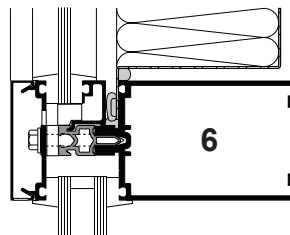
(With vapor barrier tie-in)



MULLION AT SPANDREL



TYPICAL DEADLOAD ANCHOR

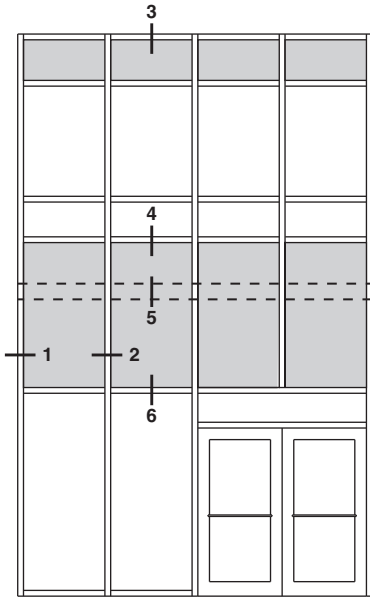


TRANSOM - SPANDREL OVER VISION

Law and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

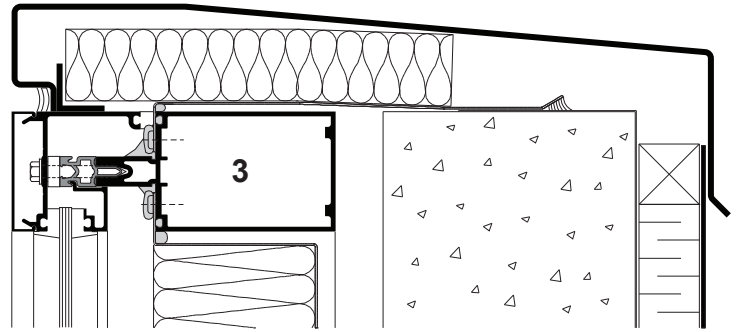
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**SCALE 3" = 1'-0"**

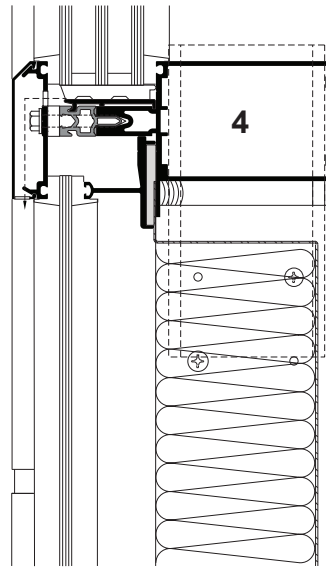


**ELEVATION IS NUMBER KEYED TO DETAILS**

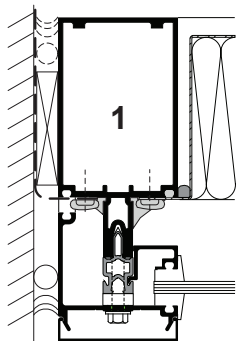
NOTE: 6" SYSTEM SHOWN, 7-1/2" SYSTEM SIMILAR



**HEAD TRANSOM AT PARAPET FLASHING**

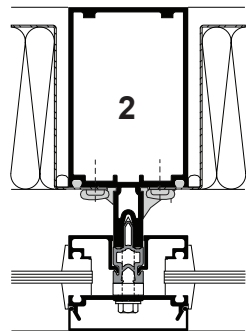


**EXPANSION JOINT**

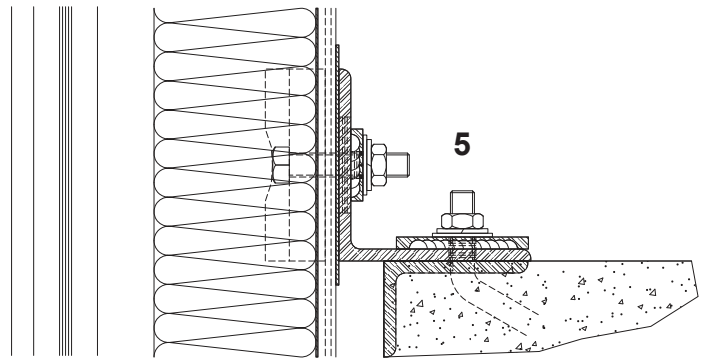


**JAMB MULLION AT SPANDREL**

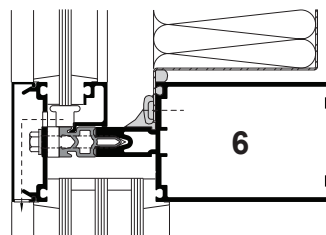
(With vapor barrier tie-in)



**MULLION AT SPANDREL**



**TYPICAL DEADLOAD ANCHOR**



**TRANSOM - SPANDREL OVER VISION**

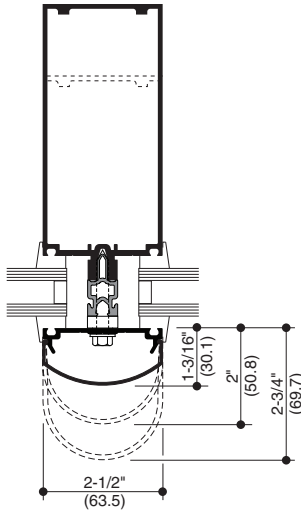
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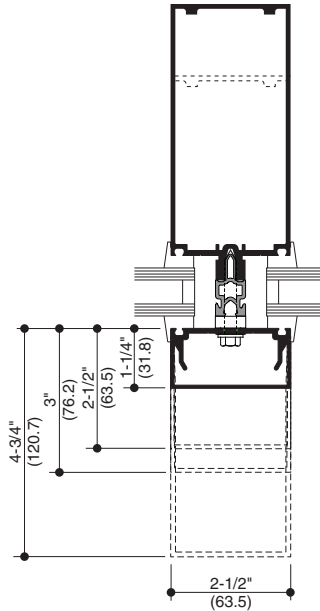


**SCALE 3" = 1'-0"**

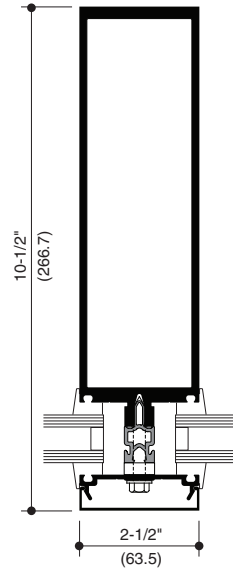
Architects – Most extrusion and window types illustrated in this catalog are standard products for Kawneer. These concepts have been expanded and modified to afford you design freedom. Some miscellaneous details are non-standard and are intended to demonstrate how the system can be modified to expand design flexibility. Please contact your Kawneer representative for further assistance.



**OPTIONAL  
BULL NOSE COVERS**

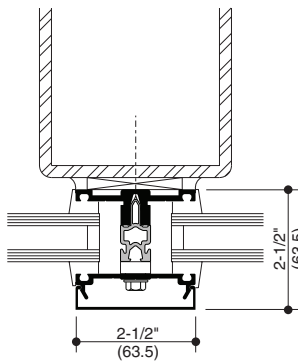


**OPTIONAL  
DEEP COVERS**

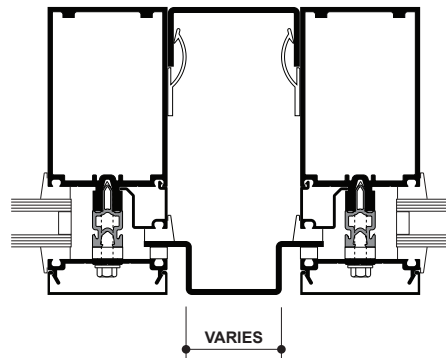
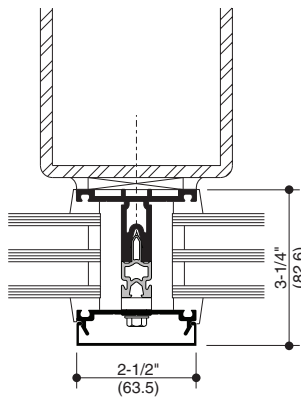


**DEEP MULLION**

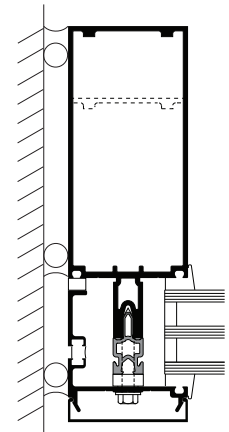
NOTE: 1-3/4" triple glazing similar.



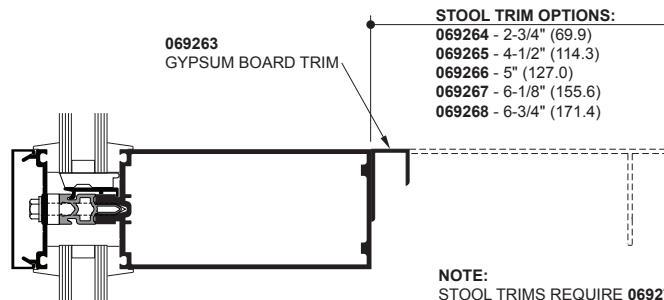
**VENEER SYSTEM**



**DOUBLE MULLION**



**THERMAL  
PERIMETER  
PRESSURE PLATE**



**INTERIOR STOOL TRIM**

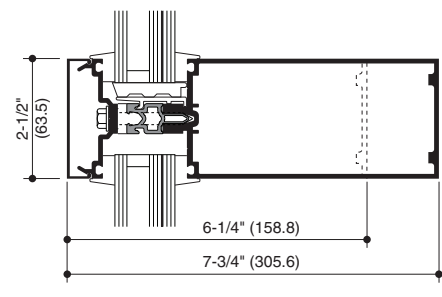
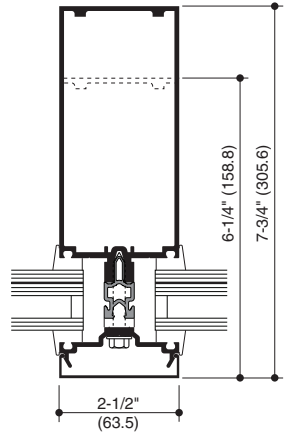
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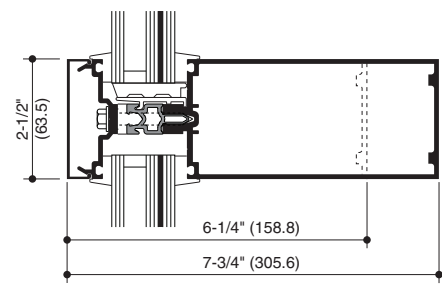
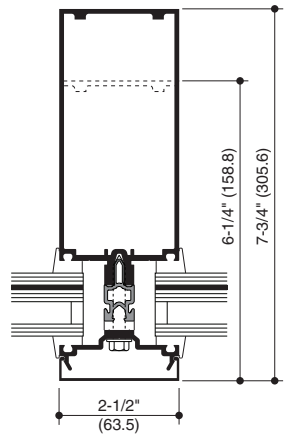
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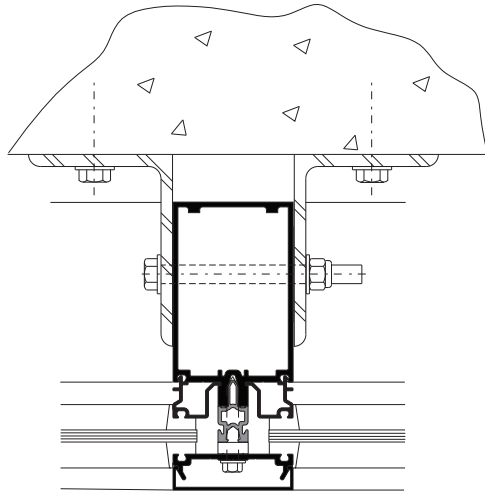
### 1-1/4" INFILL DETAILS



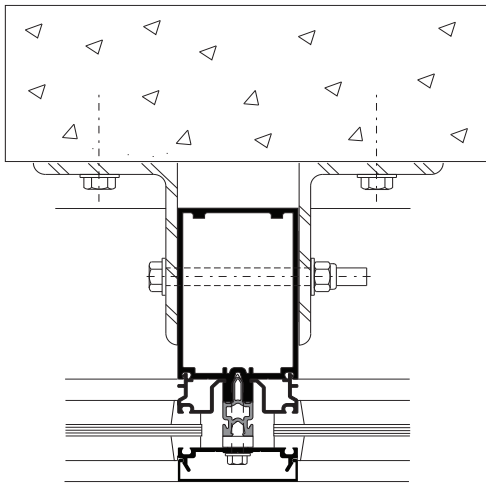
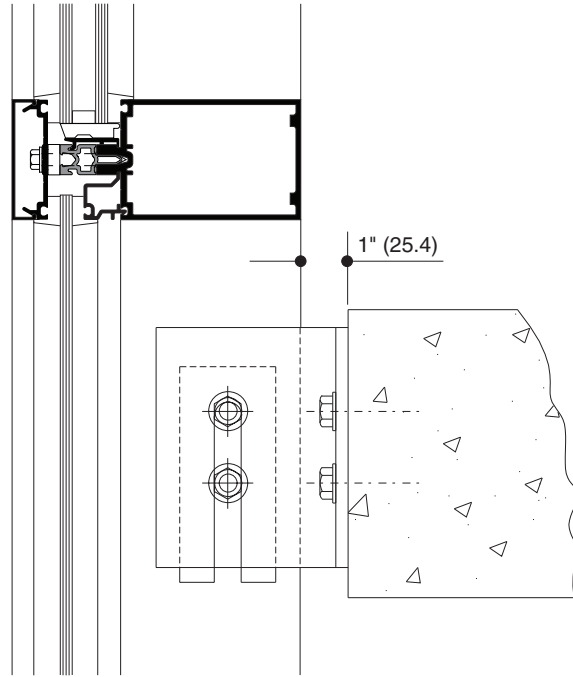
### 1-5/16" INFILL DETAILS



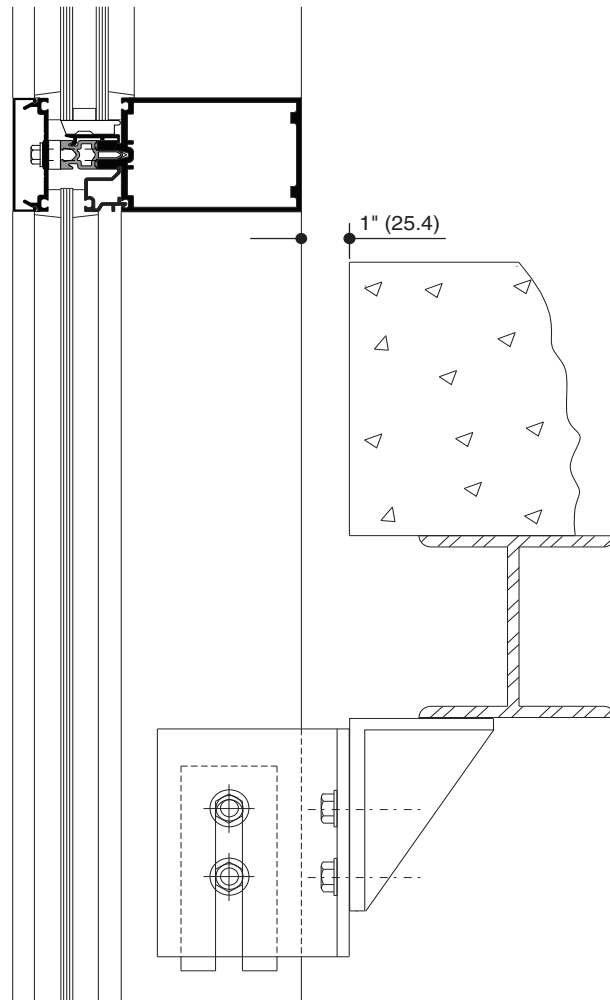
Actual project conditions will determine specific anchor design. Details on this page are for reference only.



**ANCHORING TO FLOOR SLAB**

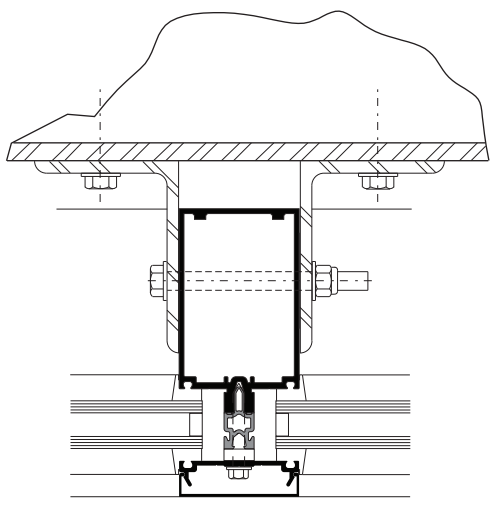


**ANCHORING TO SUPPORT STEEL**

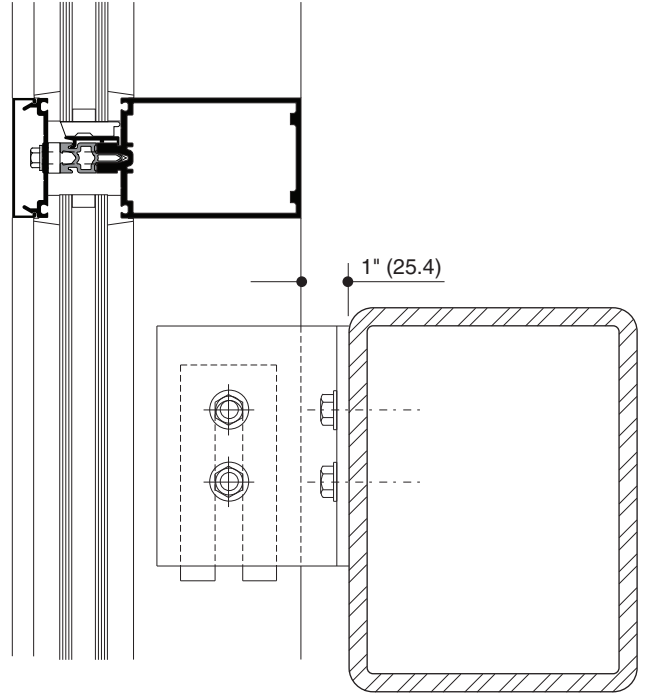


NOTE: 1-3/4" triple glazing similar.

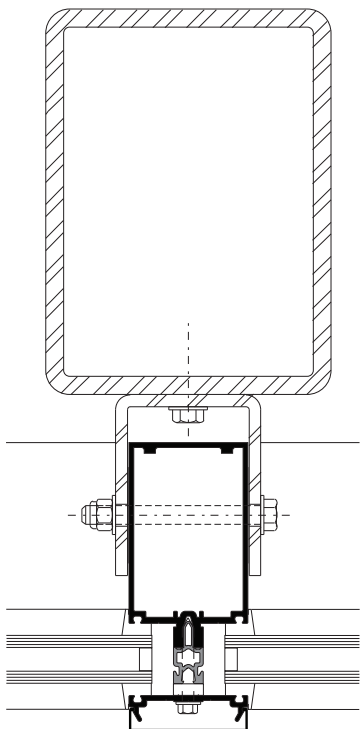
Actual project conditions will determine specific anchor design. Details on this page are for reference only.



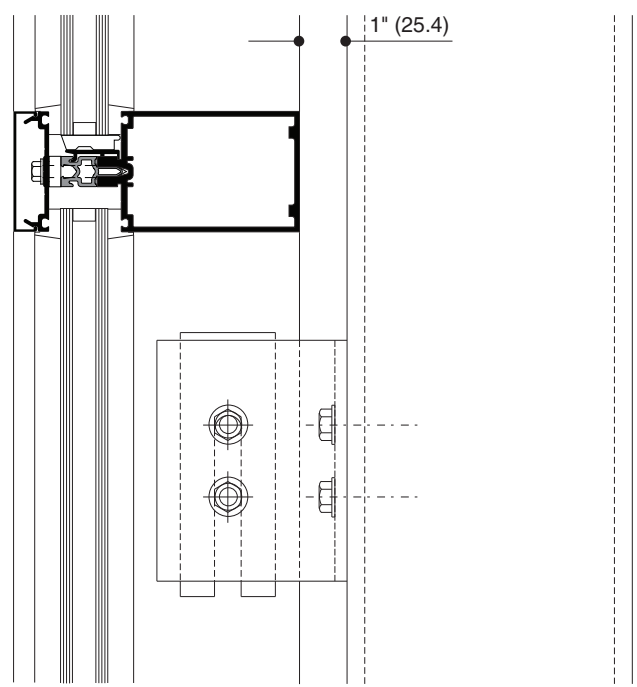
**ANCHORING TO HORIZONTAL  
STRUCTURAL STEEL**



NOTE: 1-3/4" triple glazing similar.



**ANCHORING TO VERTICAL  
STRUCTURAL STEEL**



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## WIND LOAD CHARTS

Mullions are designed for deflection limitations in accordance with AAMA TIR-A11 of L/175 up to 13'-6" and L/240 +1/4" above 13'-6". These curves are for mullions WITH HORIZONTALS and are based on engineering calculations for stress and deflection. Allowable wind load stress for ALUMINUM 15,152 psi (104MPa), STEEL 30,000 psi (207MPa). Charted curves, in all cases are for the limiting value. Wind load charts contained herein are based upon nominal wind load utilized in allowable stress design. A conversion from Load Resistance Factor Design (LRFD) is provided. To convert ultimate wind loads to nominal loads, multiply ultimate wind loads by a factor of 0.6 per ASCE/SEI 7. A 4/3 increase in allowable stress has not been used to develop these curves. For special situations not covered by these curves, contact your Kawneer representative for additional information.

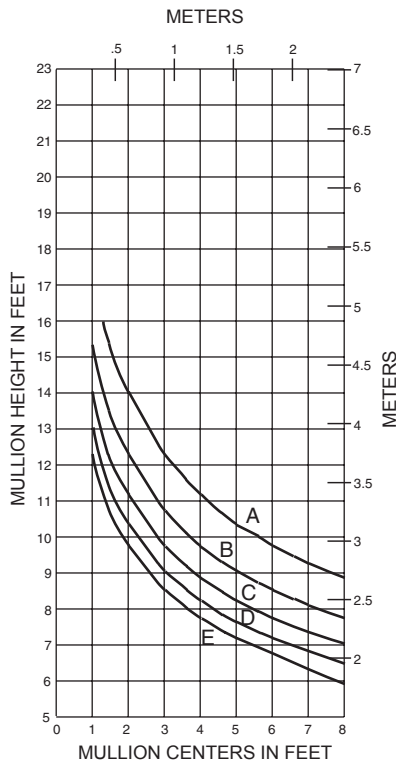
## DEADLOAD CHARTS

Horizontal or deadload limitations are based upon 1/8" (3.2), maximum allowable deflection at the center of an intermediate horizontal member. The accompanying charts are calculated for 1" (25.4) thick insulating glass or 1-3/4" (44.5) thick glass supported on two setting blocks placed at the loading points shown.

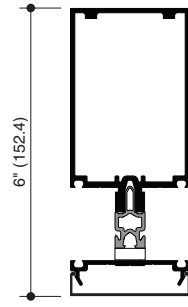
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**SINGLE SPAN**

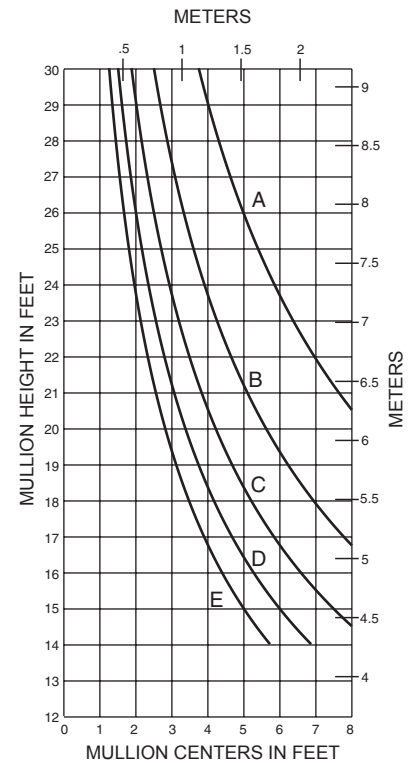


	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	20 PSF (960)	33 PSF (1580)
B =	30 PSF (1440)	50 PSF (2400)
C =	40 PSF (1920)	67 PSF (3200)
D =	50 PSF (2400)	83 PSF (4000)
E =	60 PSF (2880)	100 PSF (4790)

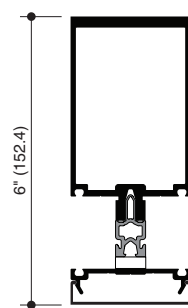
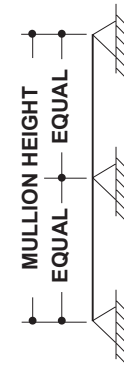
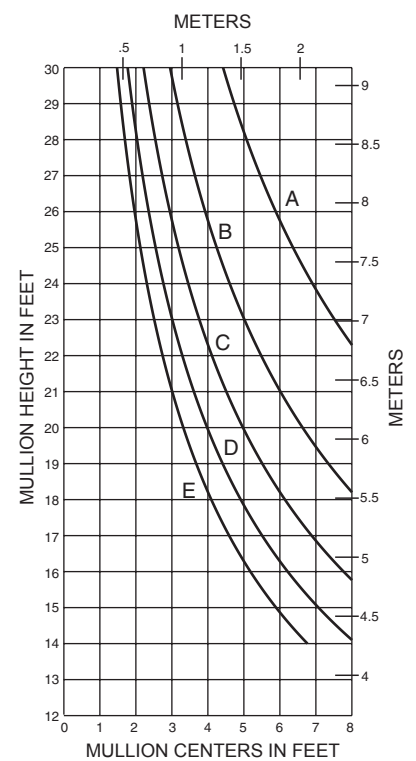


**171213**  
 $I = 3.662(152.42 \times 10^4)$   
 $S = 1.662(27.24 \times 10^3)$

**TWIN SPAN**

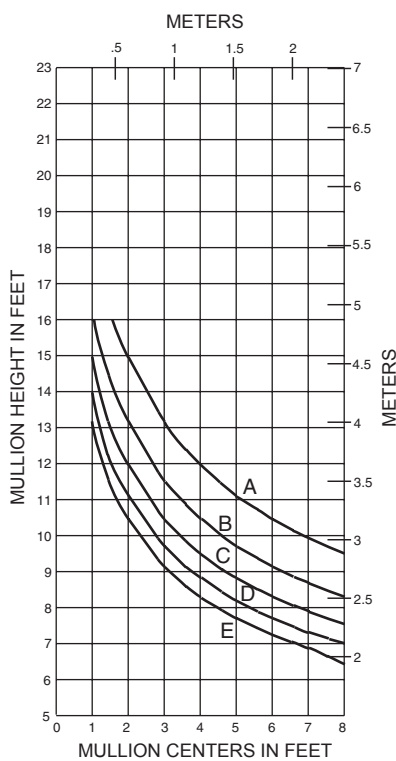


**TWIN SPAN**



**171214**  
 $I = 4.5071(87.60 \times 10^4)$   
 $S = 1.968(32.25 \times 10^3)$

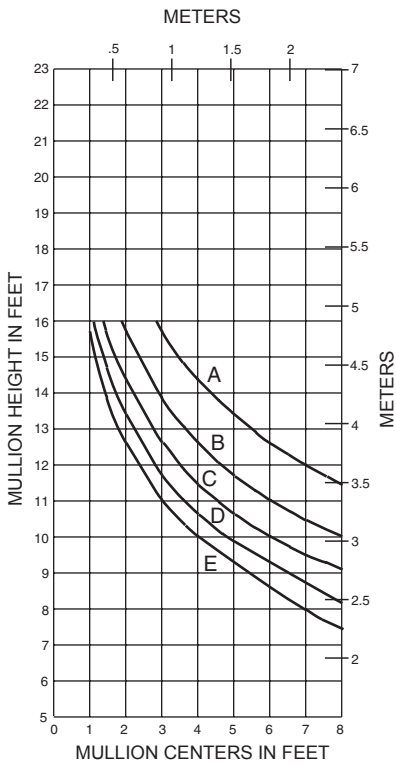
**SINGLE SPAN**



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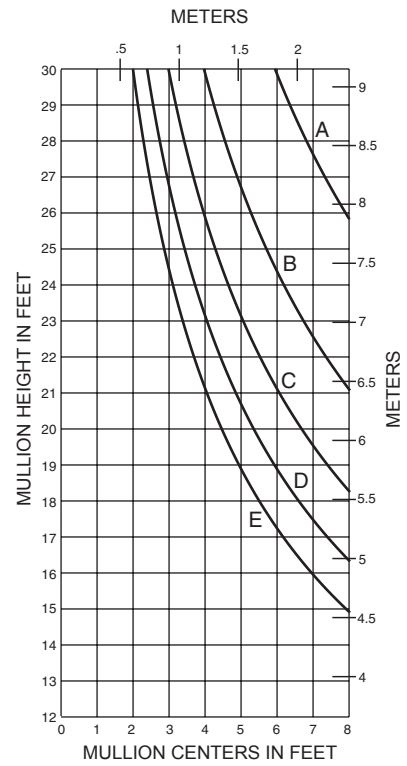
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## SINGLE SPAN

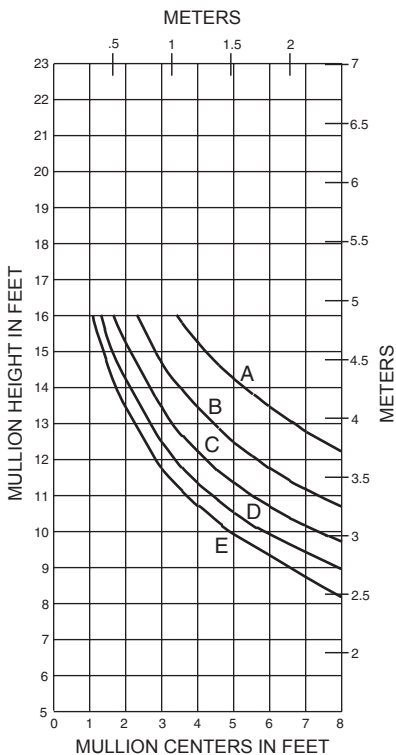


	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	20 PSF (960)	33 PSF (1580)
B =	30 PSF (1440)	50 PSF (2400)
C =	40 PSF (1920)	67 PSF (3200)
D =	50 PSF (2400)	83 PSF (4000)
E =	60 PSF (2880)	100 PSF (4790)

## TWIN SPAN

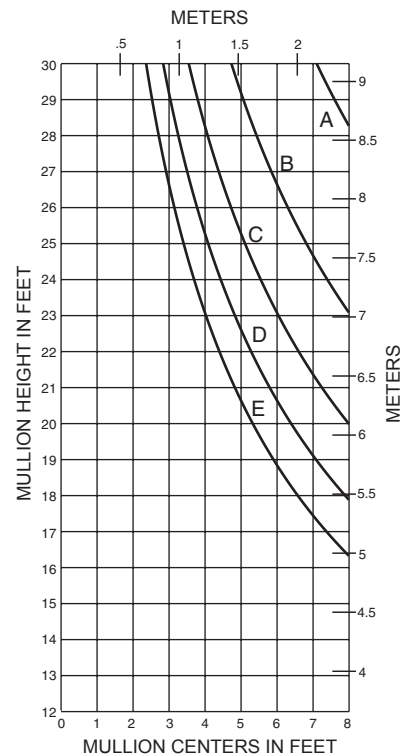


## SINGLE SPAN



**171216**  
 $I = 9.594(399.33 \times 10^4)$   
 $S = 3.163(51.83 \times 10^3)$

## TWIN SPAN

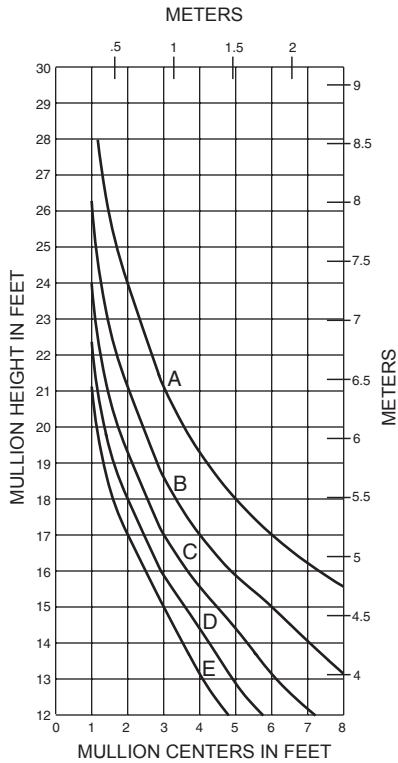


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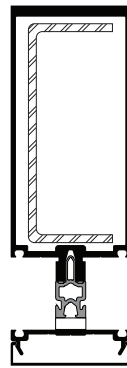
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## SINGLE SPAN

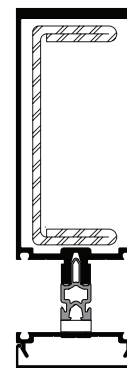
162016 W/162300



	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	20 PSF (960)	33 PSF (1580)
B =	30 PSF (1440)	50 PSF (2400)
C =	40 PSF (1920)	67 PSF (3200)
D =	50 PSF (2400)	83 PSF (4000)
E =	60 PSF (2880)	100 PSF (4790)



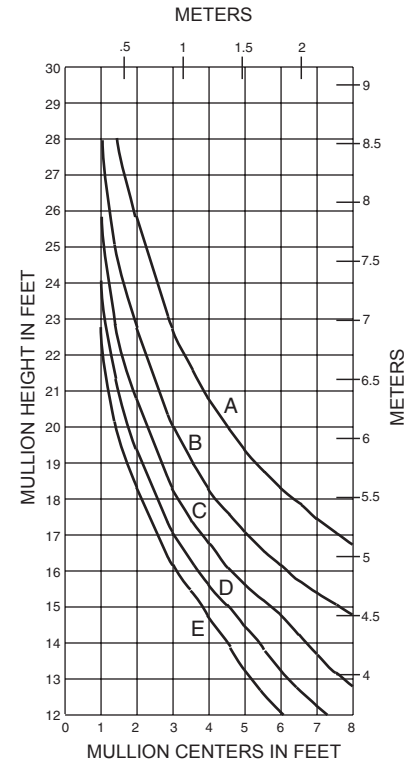
**171216  
W/162300**  
Ia = 9.594(399.33 x 10<sup>4</sup>)  
Sa = 3.163(51.83 x 10<sup>3</sup>)  
Is = 3.805(158.37 x 10<sup>4</sup>)  
Ss = 1.669(27.35 x 10<sup>3</sup>)



**171216  
W/162301**  
Ia = 9.594(399.33 x 10<sup>4</sup>)  
Sa = 3.163(51.83 x 10<sup>3</sup>)  
Is = 5.684(236.59 x 10<sup>4</sup>)  
Ss = 2.493(40.85 x 10<sup>3</sup>)

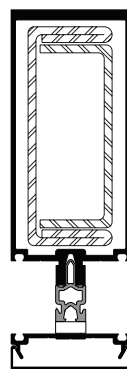
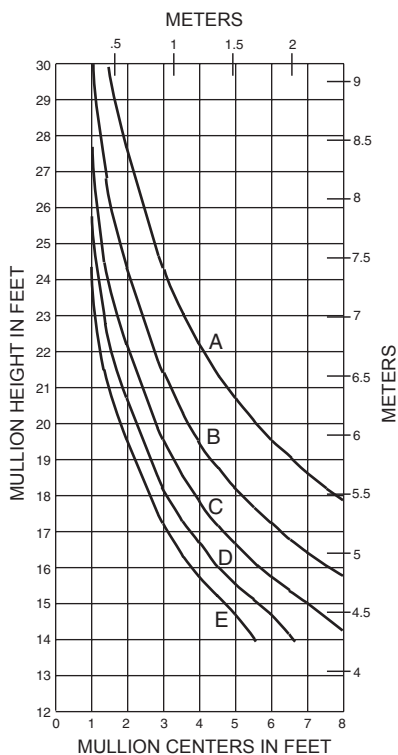
## SINGLE SPAN

162016 W/162301

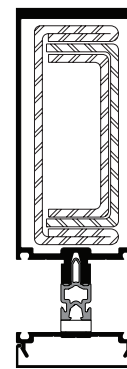


## SINGLE SPAN

162016 W/162301/302



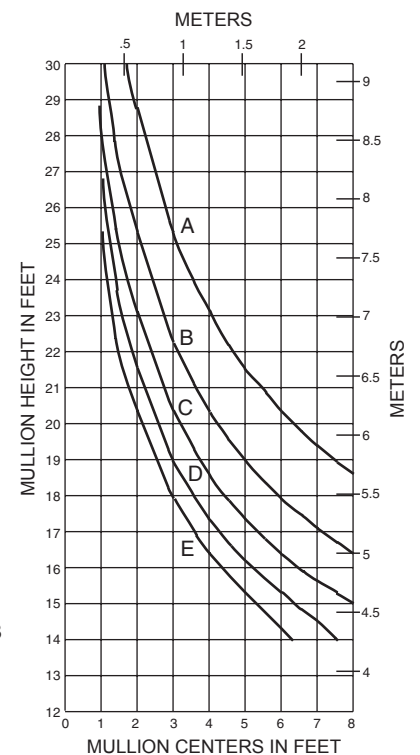
**171216  
W/162301/302**  
Ia = 9.594(399.33 x 10<sup>4</sup>)  
Sa = 3.163(51.83 x 10<sup>3</sup>)  
Is = 7.893(328.53 x 10<sup>4</sup>)  
Ss = 3.462(56.73 x 10<sup>3</sup>)



**171216  
W/162301/302/303**  
Ia = 9.594(399.33 x 10<sup>4</sup>)  
Sa = 3.163(51.83 x 10<sup>3</sup>)  
Is = 9.347(389.05 x 10<sup>4</sup>)  
Ss = 4.100(67.19 x 10<sup>3</sup>)

## SINGLE SPAN

162016 W/162301/302/303



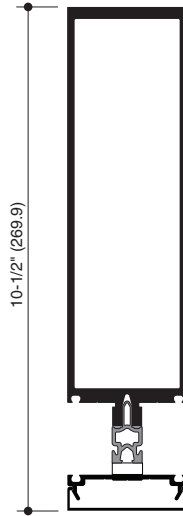
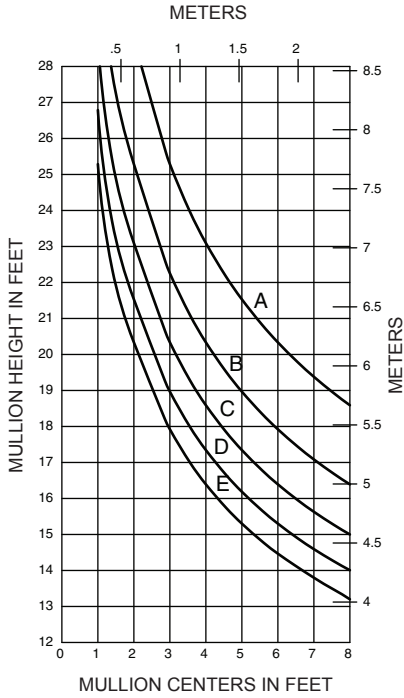
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B =	30 PSF (1440)	50 PSF (2400)
C =	40 PSF (1920)	67 PSF (3200)
D =	50 PSF (2400)	83 PSF (4000)
E =	60 PSF (2880)	100 PSF (4790)

## SINGLE SPAN

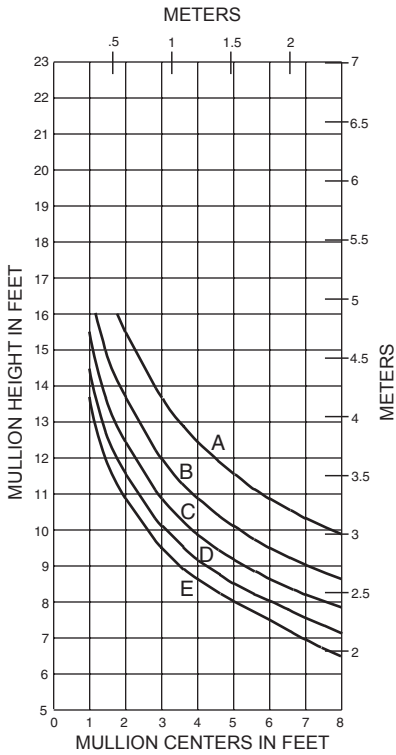


**171266**  
 $I = 36.451 (1517.20 \times 10^4)$   
 $S = 8.279 (135.67 \times 10^3)$

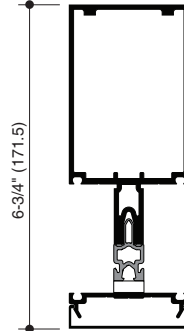
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## SINGLE SPAN



	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	20 PSF (960)	33 PSF (1580)
B =	30 PSF (1440)	50 PSF (2400)
C =	40 PSF (1920)	67 PSF (3200)
D =	50 PSF (2400)	83 PSF (4000)
E =	60 PSF (2880)	100 PSF (4790)

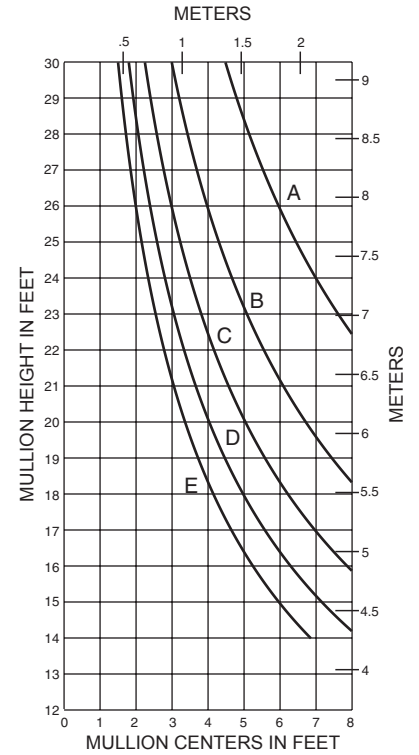


171201

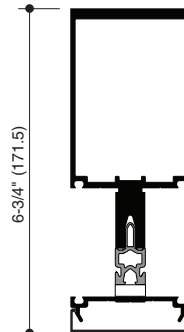
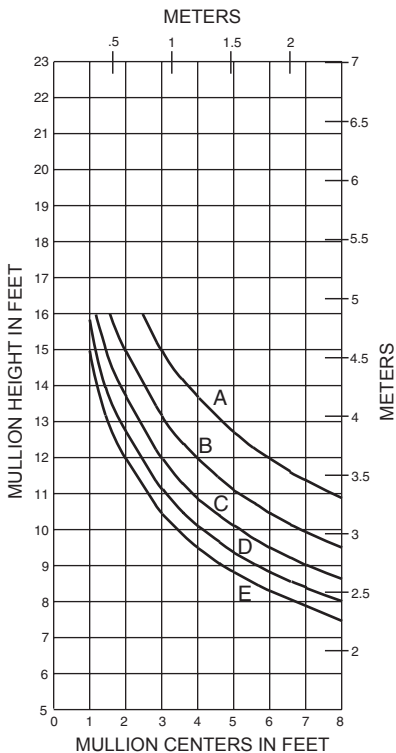
I = 5.035(209.57 x 10<sup>4</sup>)  
S = 1.993(32.66 x 10<sup>3</sup>)



## TWIN SPAN



## SINGLE SPAN

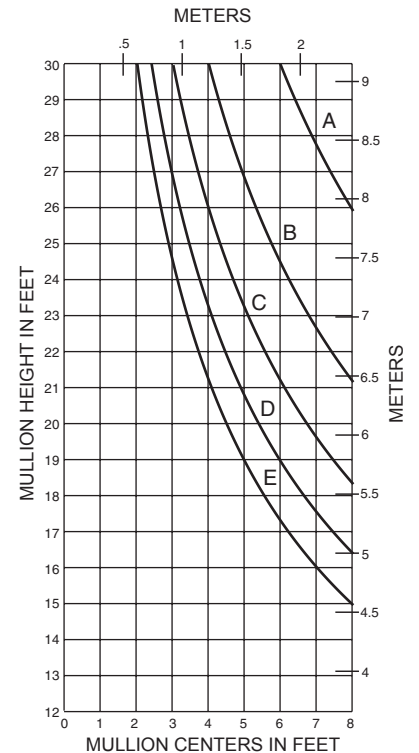


171202

I = 6.779(282.16 x 10<sup>4</sup>)  
S = 2.652(43.46 x 10<sup>3</sup>)



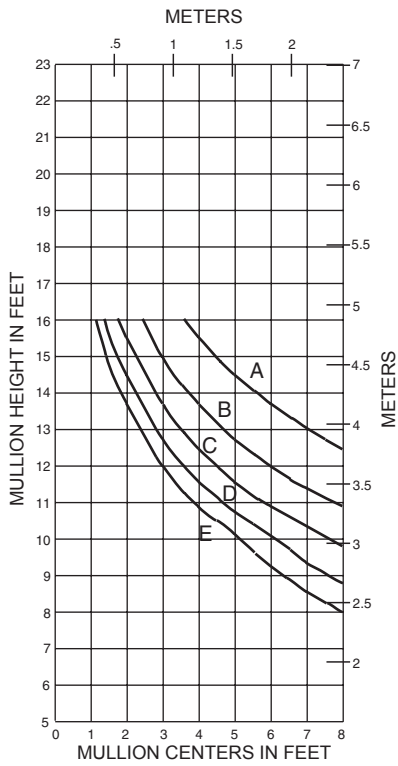
## TWIN SPAN



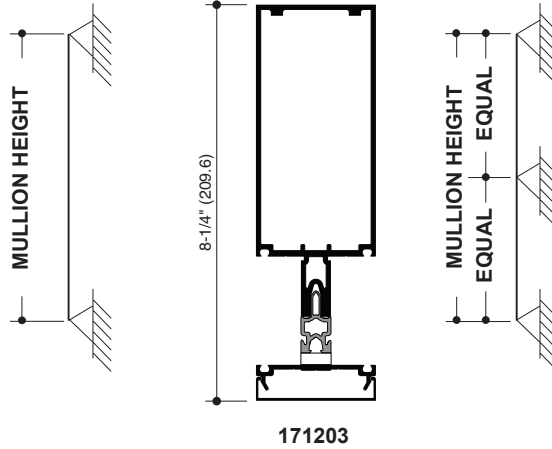
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## SINGLE SPAN

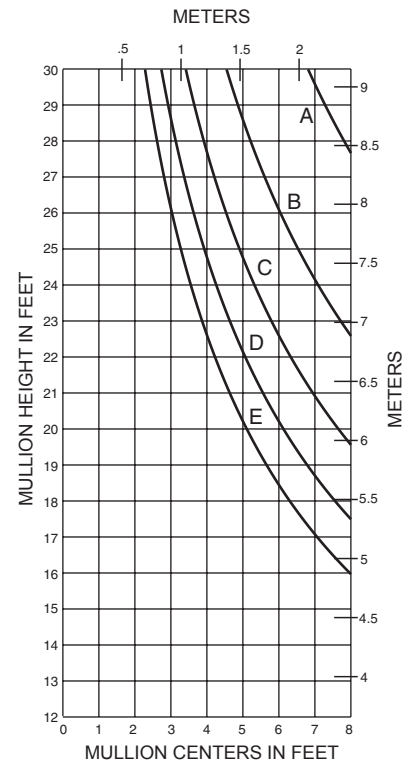


	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	20 PSF (960)	33 PSF (1580)
B =	30 PSF (1440)	50 PSF (2400)
C =	40 PSF (1920)	67 PSF (3200)
D =	50 PSF (2400)	83 PSF (4000)
E =	60 PSF (2880)	100 PSF (4790)

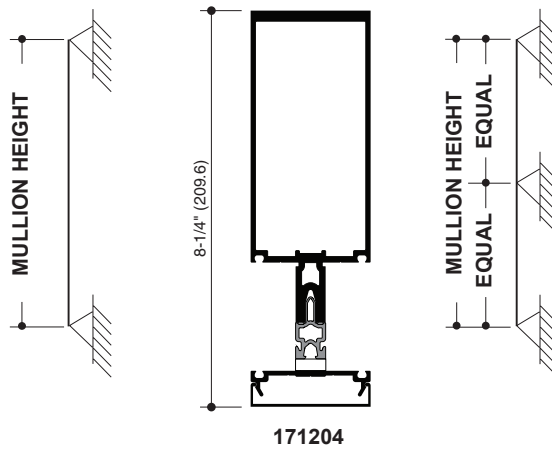
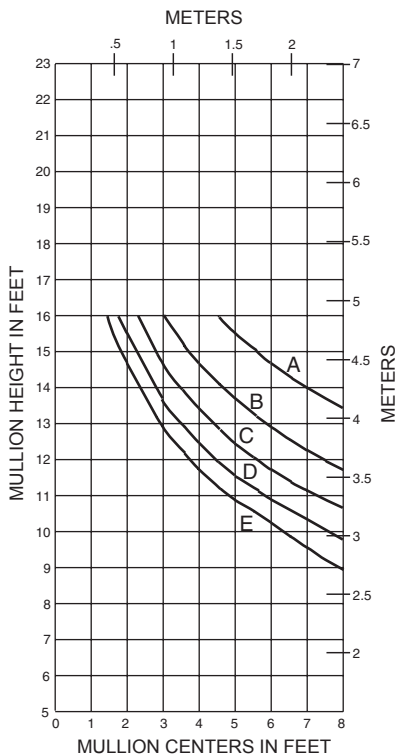


171203  
 $I = 10.135(421.85 \times 10^4)$   
 $S = 3.027(49.60 \times 10^3)$

## TWIN SPAN

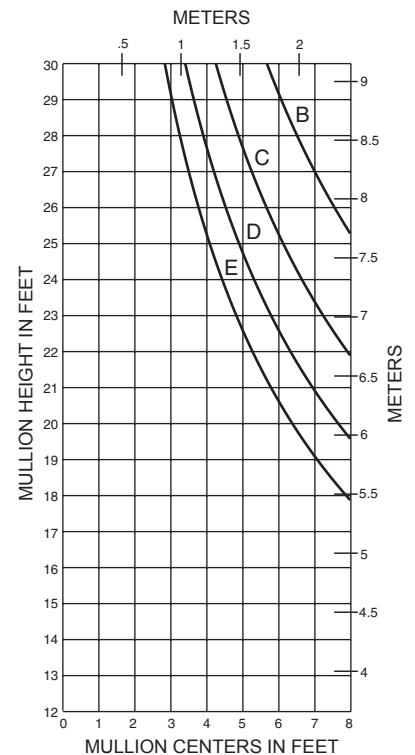


## SINGLE SPAN



171204  
 $I = 12.736(530.11 \times 10^4)$   
 $S = 3.791(62.12 \times 10^3)$

## TWIN SPAN

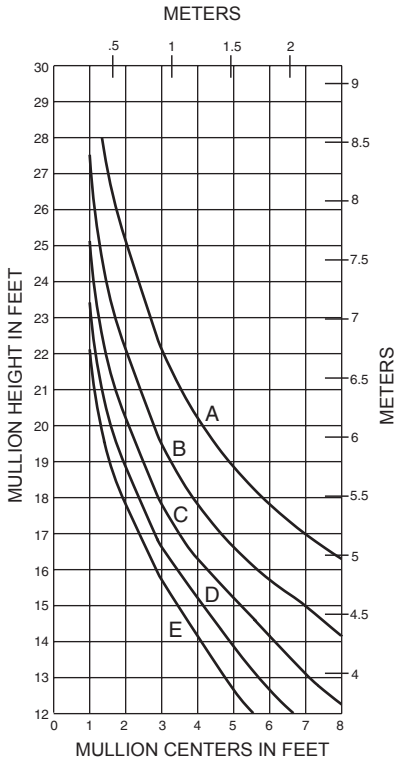


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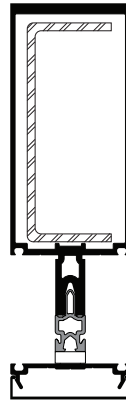
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## SINGLE SPAN

162004 W/162300

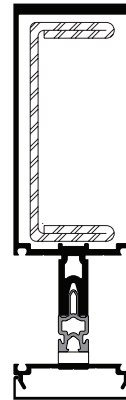


	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	20 PSF (960)	33 PSF (1580)
B =	30 PSF (1440)	50 PSF (2400)
C =	40 PSF (1920)	67 PSF (3200)
D =	50 PSF (2400)	83 PSF (4000)
E =	60 PSF (2880)	100 PSF (4790)



171204  
W/162300

la = 12.736(530.11 x 10<sup>4</sup>)  
Sa = 3.791(62.12 x 10<sup>3</sup>)  
ls = 3.805(158.37 x 10<sup>4</sup>)  
Ss = 1.669(27.35 x 10<sup>3</sup>)

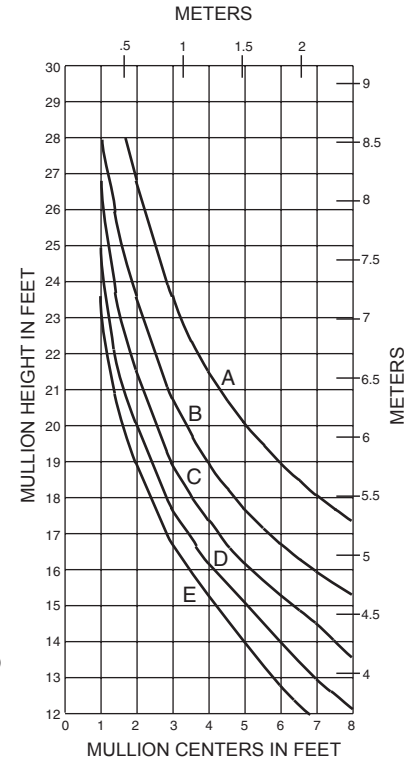


171204  
W/162301

la = 12.736(530.11 x 10<sup>4</sup>)  
Sa = 3.791(62.12 x 10<sup>3</sup>)  
ls = 5.684(236.59 x 10<sup>4</sup>)  
Ss = 2.493(40.85 x 10<sup>3</sup>)

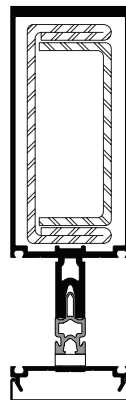
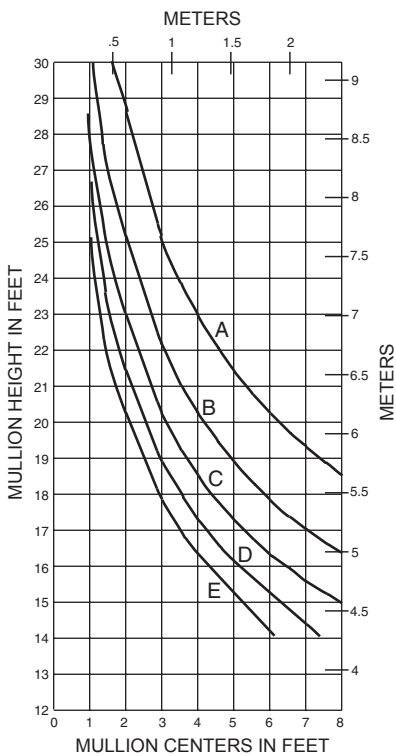
## SINGLE SPAN

162004 W/162301



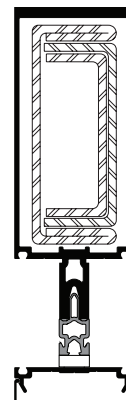
## SINGLE SPAN

162004 W/162301/302



171204  
W/162301/302

la = 12.736(530.11 x 10<sup>4</sup>)  
Sa = 3.791(62.12 x 10<sup>3</sup>)  
ls = 7.893(328.53 x 10<sup>4</sup>)  
Ss = 3.462(56.73 x 10<sup>3</sup>)

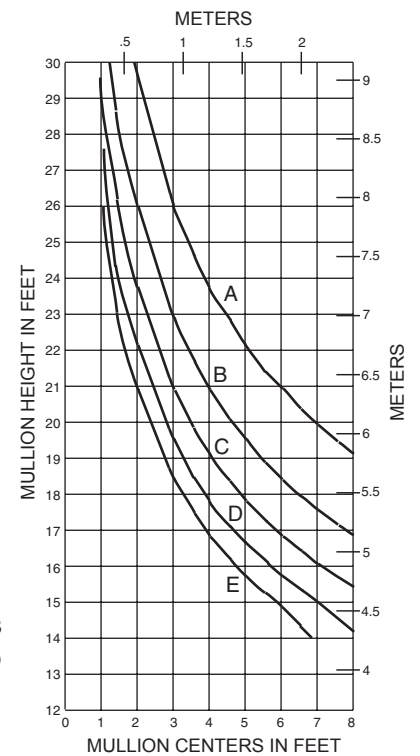


171204  
W/162301/302/303

la = 12.736(530.11 x 10<sup>4</sup>)  
Sa = 3.791(62.12 x 10<sup>3</sup>)  
ls = 9.347(389.05 x 10<sup>4</sup>)  
Ss = 4.100(67.19 x 10<sup>3</sup>)

## SINGLE SPAN

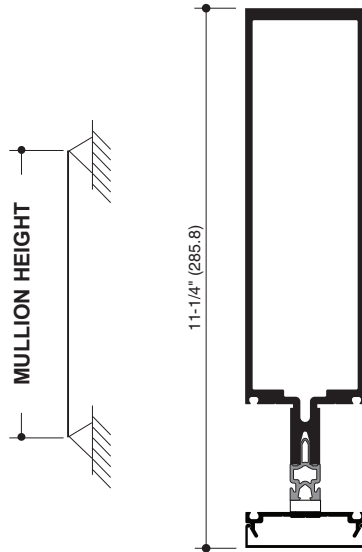
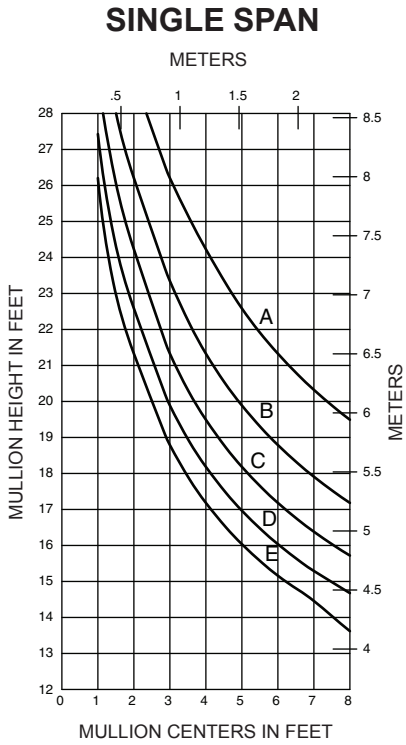
162004 W/162301/302/303



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	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	20 PSF (960)	33 PSF (1580)
B =	30 PSF (1440)	50 PSF (2400)
C =	40 PSF (1920)	67 PSF (3200)
D =	50 PSF (2400)	83 PSF (4000)
E =	60 PSF (2880)	100 PSF (4790)



**171264**

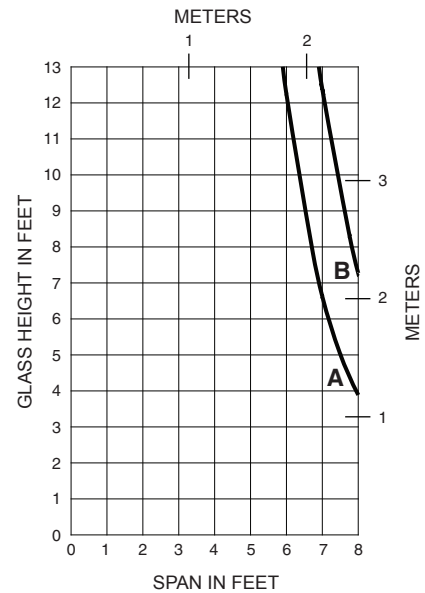
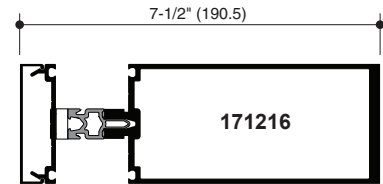
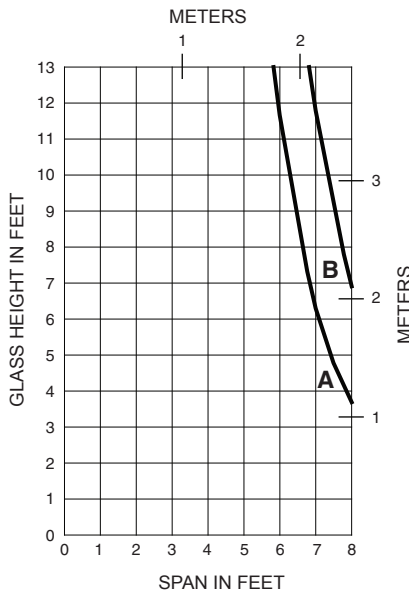
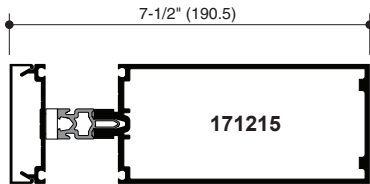
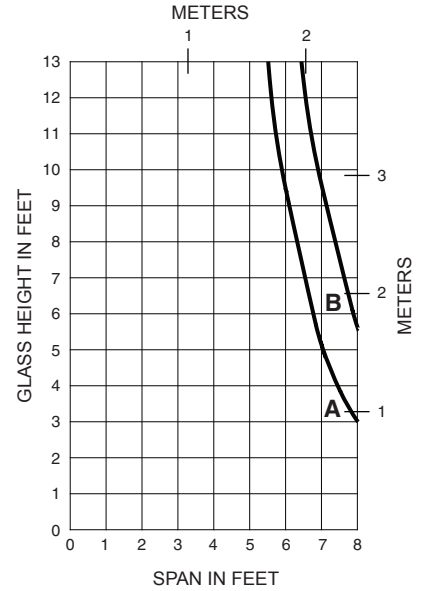
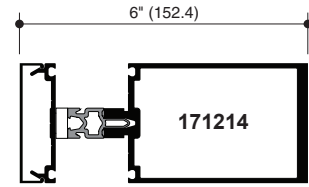
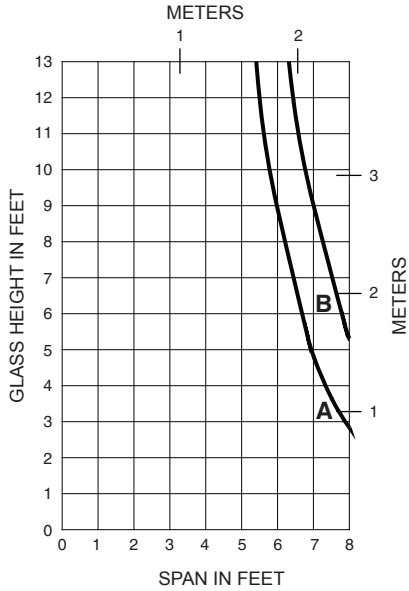
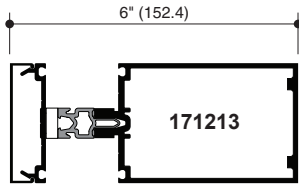
I = 42.441(1766.52 x 10<sup>4</sup>)  
 S = 8.816(144.47 x 10<sup>3</sup>)

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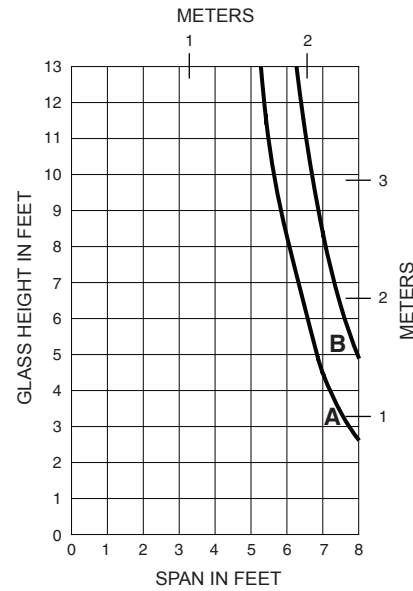
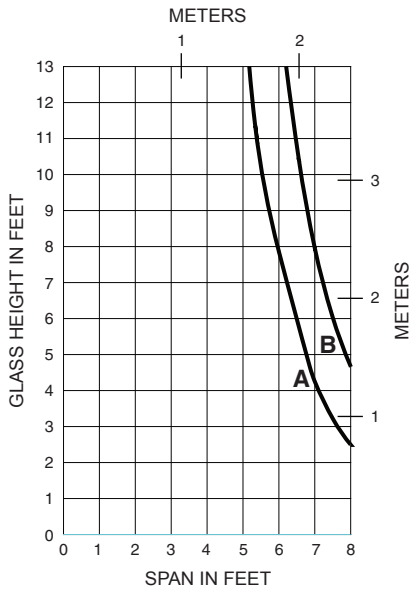
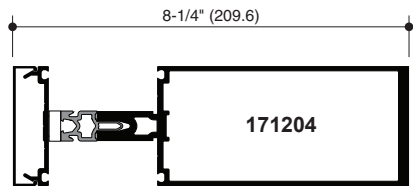
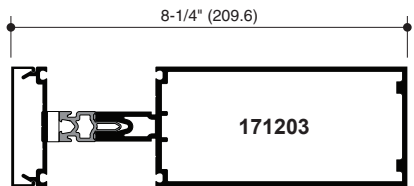
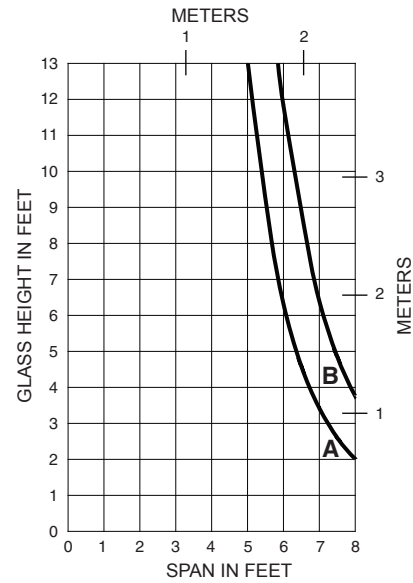
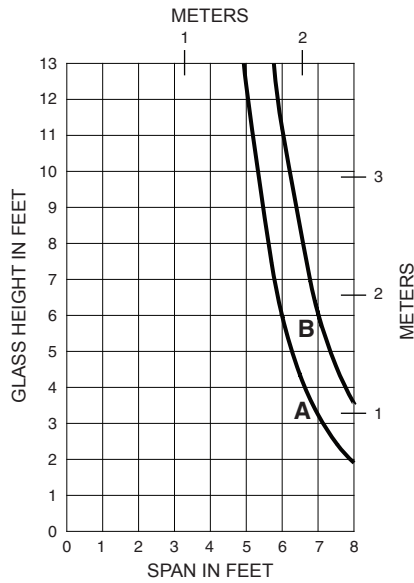
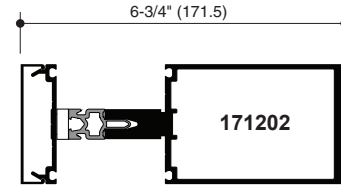
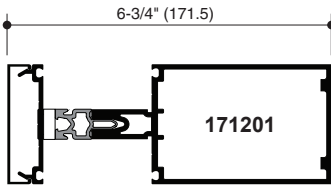
A - 1" GLASS (1/4 POINT LOADING)  
 B - 1" GLASS (1/8 POINT LOADING)



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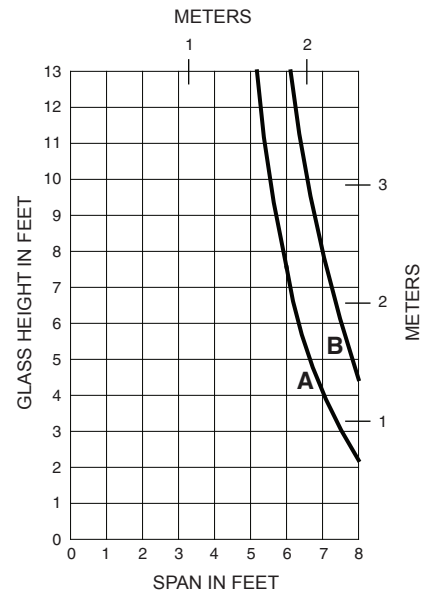
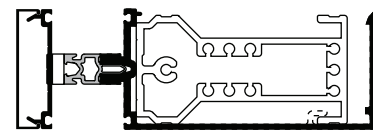
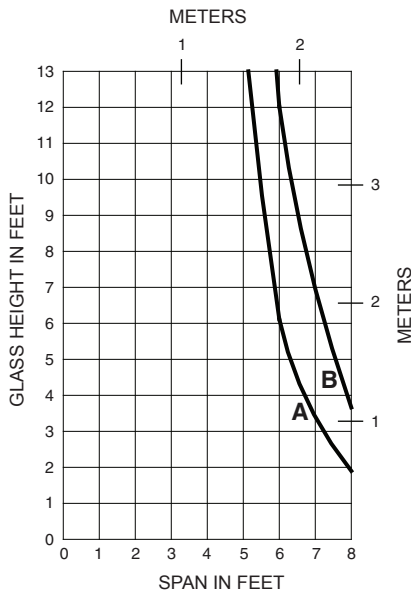
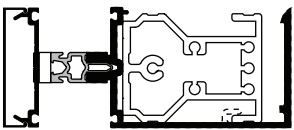
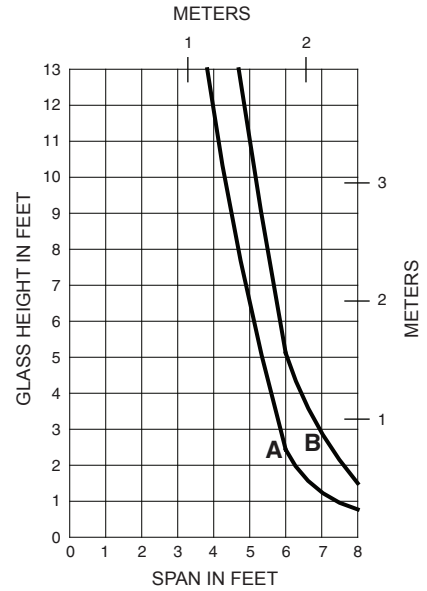
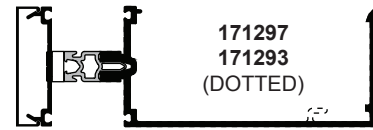
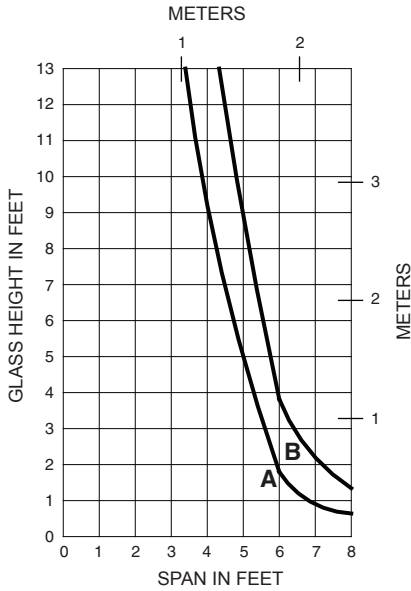
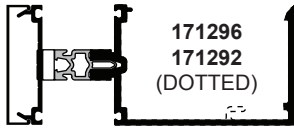
A - 1-3/4" GLASS (1/4 POINT LOADING)  
 B - 1-3/4" GLASS (1/8 POINT LOADING)



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A - 1" GLASS (1/4 POINT LOADING)  
B - 1" GLASS (1/8 POINT LOADING)

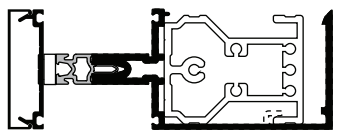
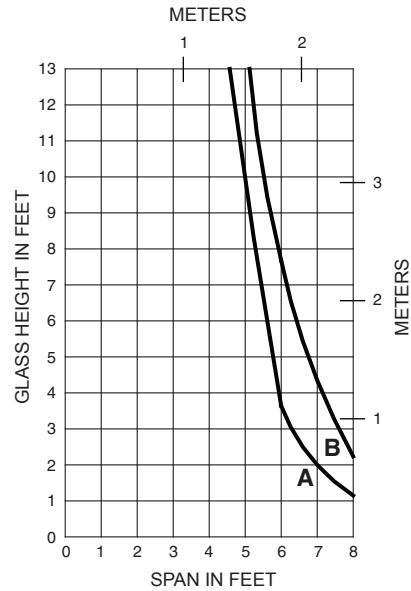
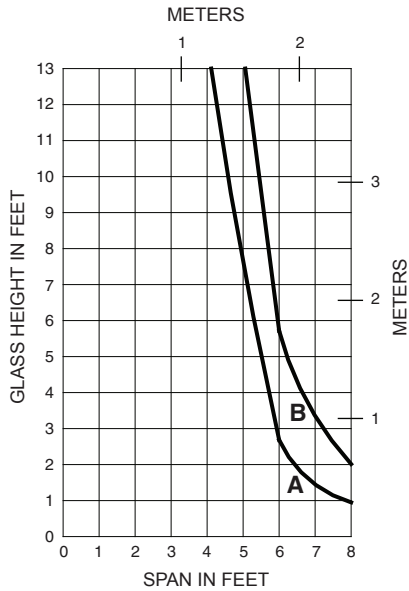
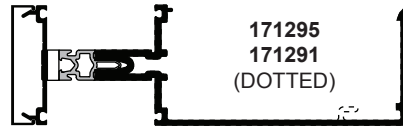
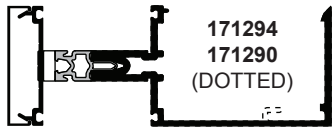


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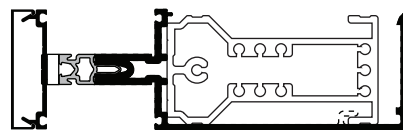
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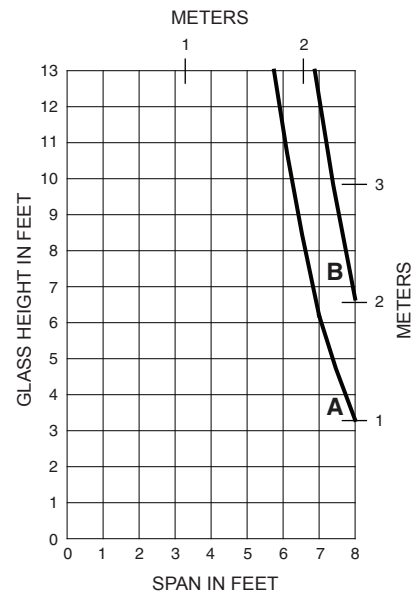
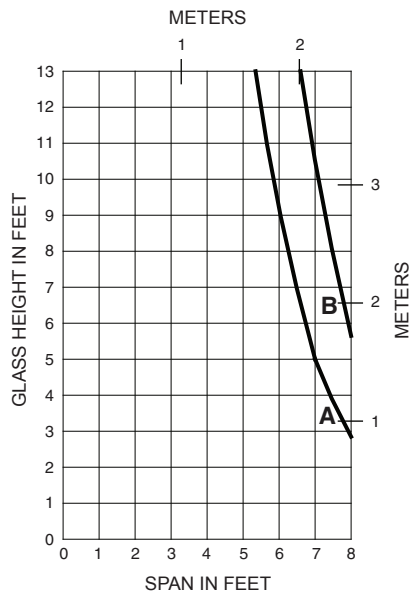
A - 1" GLASS (1/4 POINT LOADING)  
 B - 1" GLASS (1/8 POINT LOADING)



171294  
 171290  
 (DOTTED)  
 171077  
 REINF.



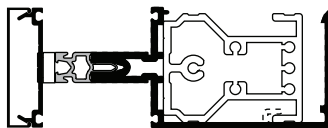
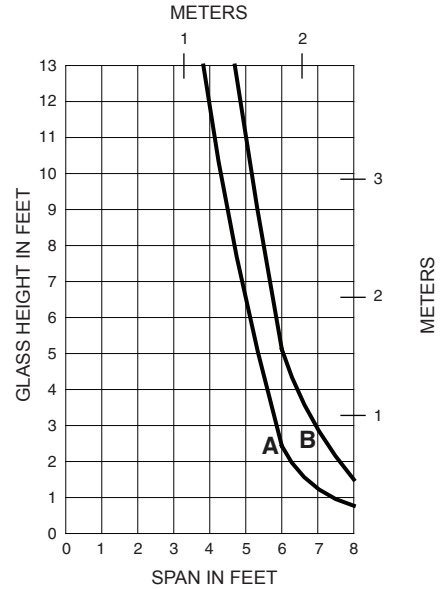
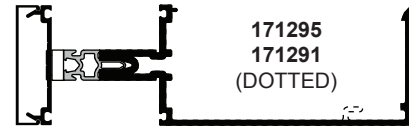
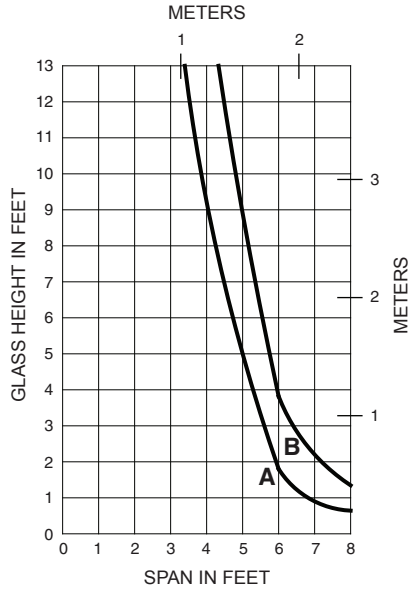
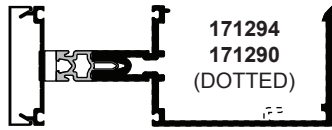
171295  
 171291  
 (DOTTED)  
 171078  
 REINF.



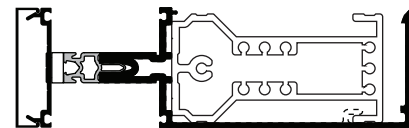
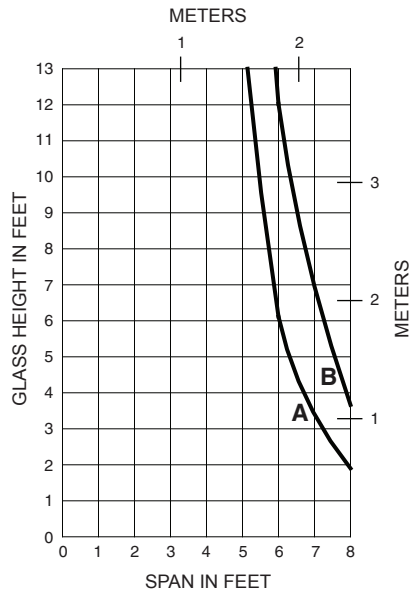
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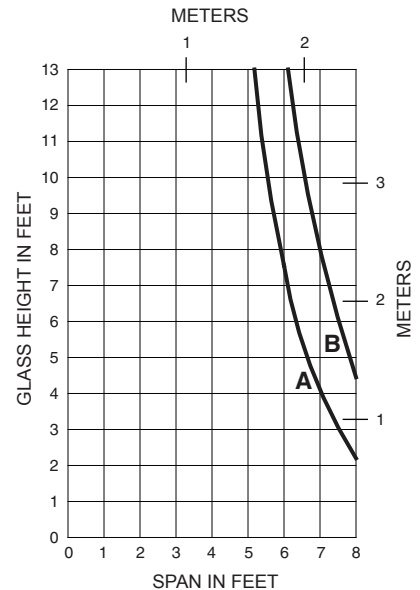
A - 1-3/4" GLASS (1/4 POINT LOADING)  
 B - 1-3/4" GLASS (1/8 POINT LOADING)



171294  
 171290  
 (DOTTED)  
 171077  
 REINF.



171295  
 171291  
 (DOTTED)  
 171078  
 REINF.



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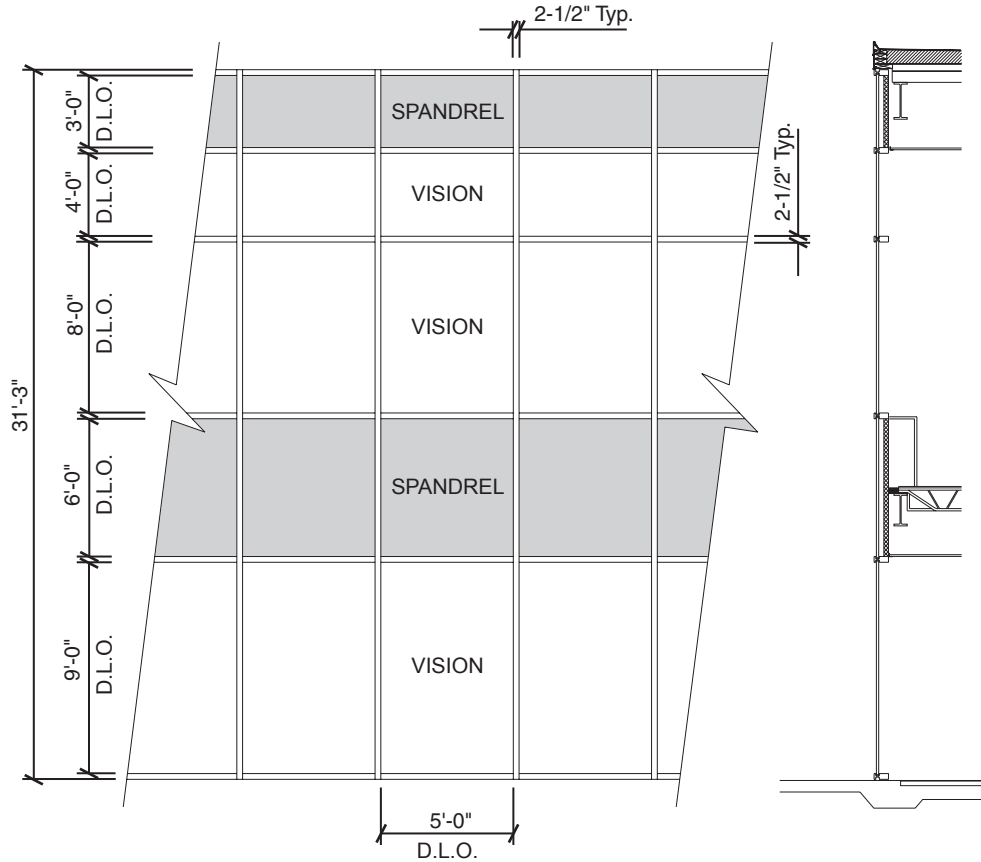
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**Generic Project Specific U-factor Example Calculation**  
**(Percent of Glass will vary on specific products depending on sitelines)**  
 (Based on single bay of Curtain Wall/Window Wall)



**Vision Area**

Example Glass U-factor	= 0.48 Btu/(ft <sup>2</sup> · h · °F)
Vision Area	= 5(9 + 8 + 4) = 105.0 ft <sup>2</sup>
Total Area (Vision)	= 5' 2-1/2" (9' 3-3/4" + 8' 2-1/2" + 4' 2-1/2") = 113.2 ft <sup>2</sup>
Percentage of Vision Glass	= (Vision Area ÷ Total Area)100 = (105.0 ÷ 113.2)100 = 93%

**Spandrel Area**

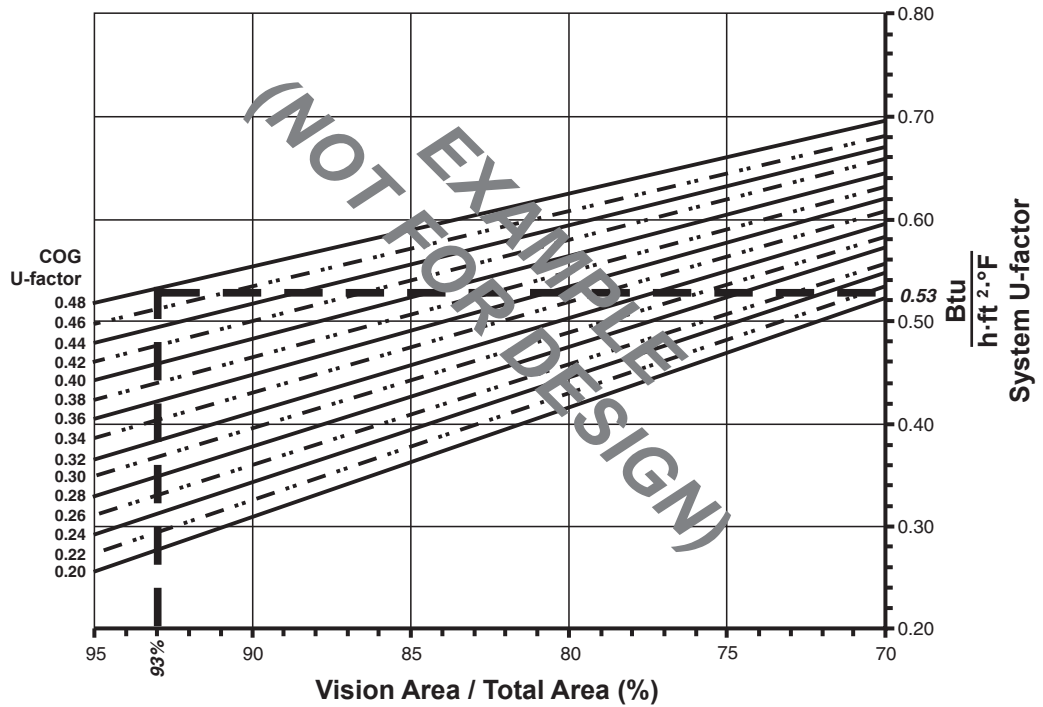
Example Spandrel R-value	= 15 (ft <sup>2</sup> · h · °F)/Btu
Spandrel Area	= 5(6 + 3) = 45.0 ft <sup>2</sup>
Total Area (Spandrel)	= 5' 2-1/2" (6' 2-1/2" + 3' 3-3/4") = 49.6 ft <sup>2</sup>
Percent of Spandrel	= (Spandrel Area ÷ Total Area)100 = (45.0 ÷ 49.6)100 = 91%

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Vision Area Chart

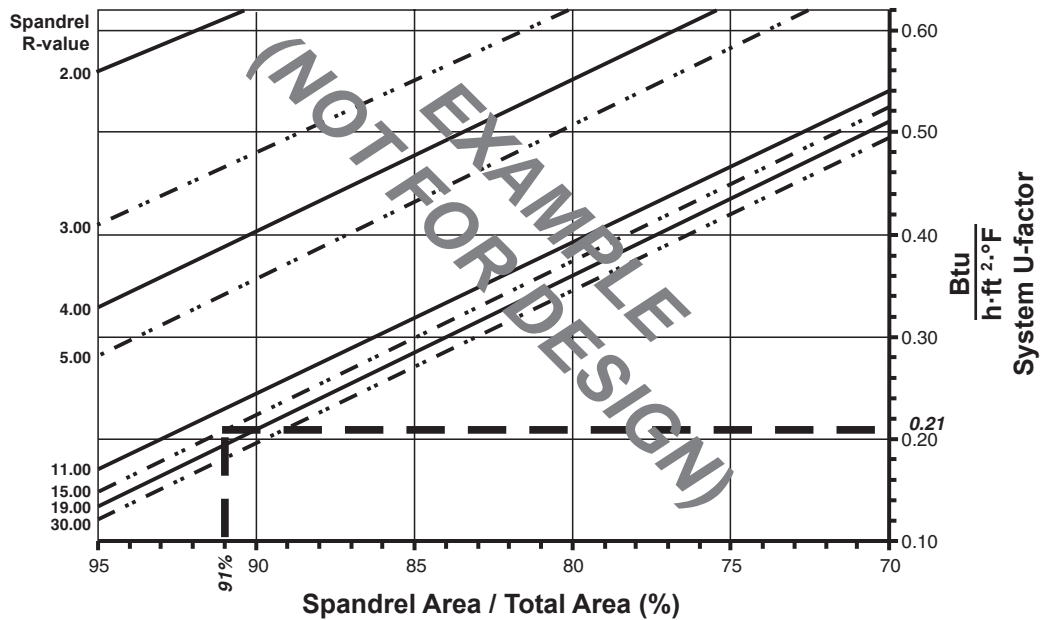
System U-factor vs Percent of Vision Area



Based on a single curtain wall bay of 93% vision glass and center of glass U-factor of 0.48, System U-factor is equal to 0.53 Btu/(h·ft<sup>2</sup>·°F)

Spandrel Area Chart

System U-factor vs Percent of Spandrel Area



Based on a single curtain wall bay of 91% spandrel and center of spandrel R-value of 15, system U-factor is equal to 0.21 Btu/(h·ft<sup>2</sup>·°F)

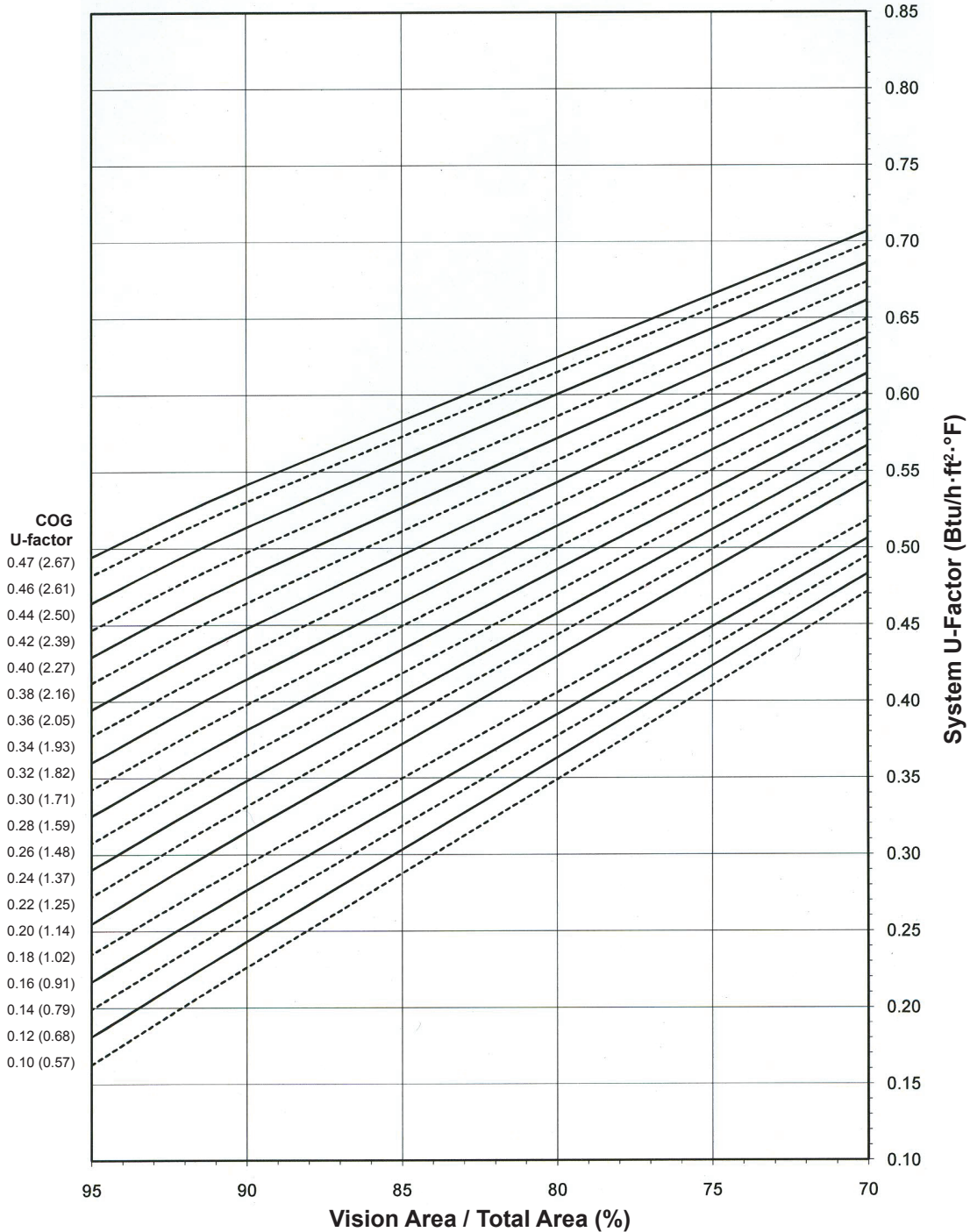
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Note:  
 Values in parentheses are metric.  
 COG=Center of Glass.  
 Charts are generated per AAMA 507.

**1" GLAZING WITH ALUMINUM PRESSURE PLATE**

**System U-Factor for Vision Glass**



**Notes for System U-Factor, SHGC and VT charts:**

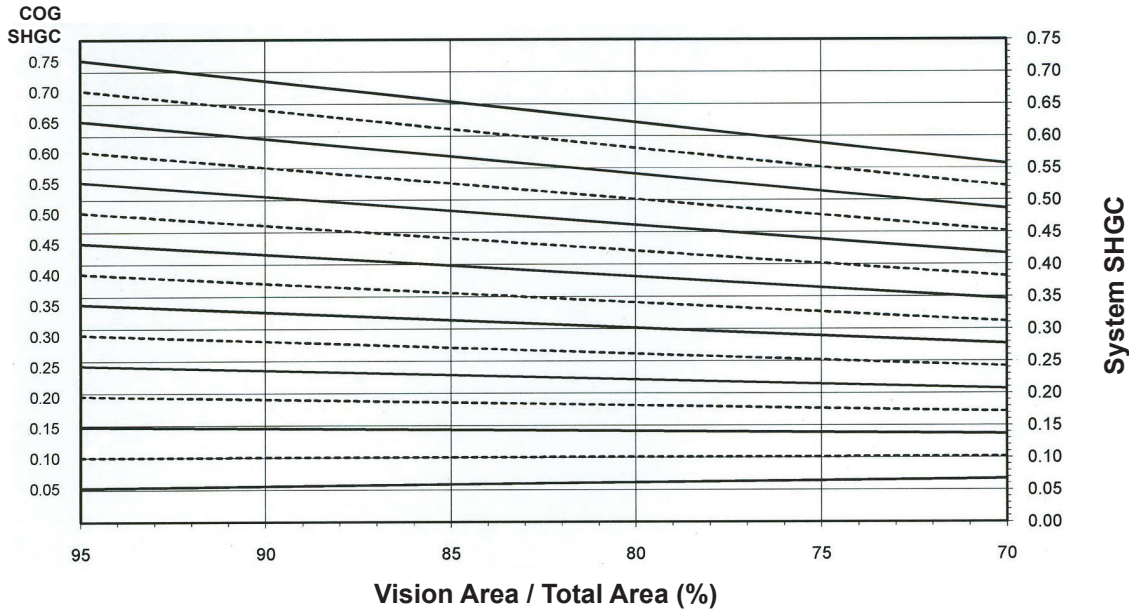
For glass values that are not listed, linear interpolation is permitted.  
 Glass properties are based on center of glass values (winter conditions) and are obtained from your glass supplier.

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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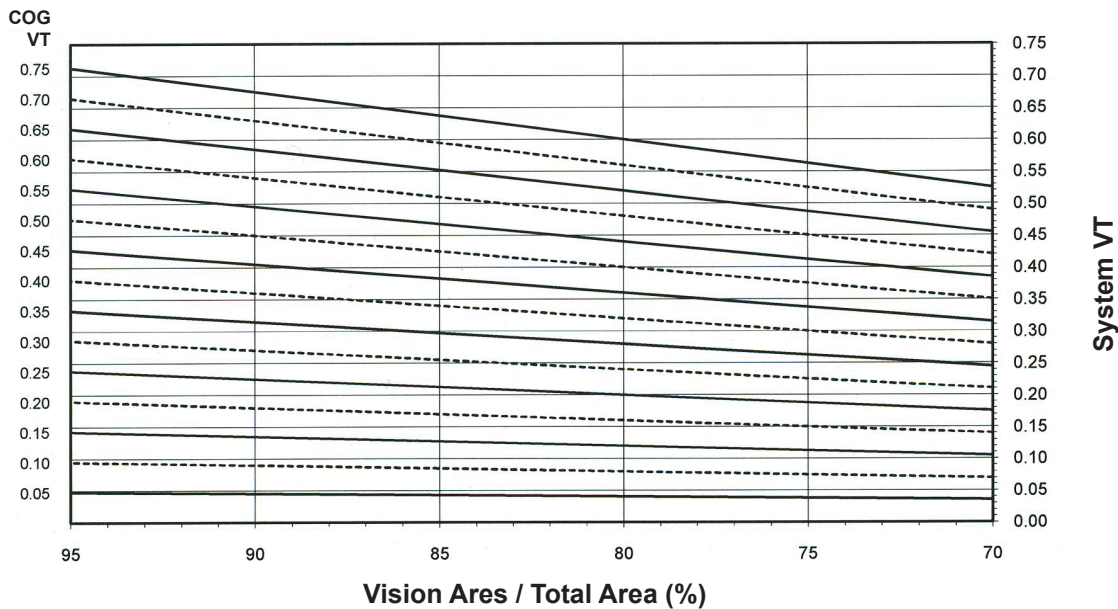
**1" GLAZING WITH ALUMINUM PRESSURE PLATE**

**System Solar Heat Gain Coefficient (SHGC) vs Percent of Vision Area**



Charts are generated per AAMA 507.

**System Visible Transmittance (VT) vs Percent of Vision Area**



Charts are generated per AAMA 507.

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### Thermal Transmittance <sup>1</sup> (BTU/hr • ft<sup>2</sup> • °F)

Glass U-Factor <sup>3</sup>	Overall U-Factor <sup>4</sup>
0.47	0.54
0.46	0.53
0.44	0.52
0.42	0.50
0.40	0.48
0.38	0.47
0.36	0.45
0.34	0.43
0.32	0.42
0.30	0.40
0.28	0.38
0.26	0.37
0.24	0.35
0.22	0.33
0.20	0.32
0.18	0.30
0.16	0.28
0.14	0.26
0.12	0.25
0.10	0.23

### 1" GLAZING WITH ALUMINUM PRESSURE PLATE

**NOTE:** For glass values that are not listed, linear interpolation is permitted.

1. U-Factors are determined in accordance with NFRC 100.
2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values and are obtained from your glass supplier.
4. Overall U-Factor, SHGC, and VT Matricies are based on the standard NFRC specimen size of 2000mm wide by 2000mm high (78-3/4" by 78-3/4").

### SHGC Matrix <sup>2</sup>

Glass SHGC <sup>3</sup>	Overall SHGC <sup>4</sup>
0.75	0.68
0.70	0.64
0.65	0.59
0.60	0.55
0.55	0.50
0.50	0.46
0.45	0.41
0.40	0.37
0.35	0.32
0.30	0.28
0.25	0.24
0.20	0.19
0.15	0.15
0.10	0.10
0.05	0.06

### Visible Transmittance <sup>2</sup>

Glass VT <sup>3</sup>	Overall VT <sup>4</sup>
0.75	0.67
0.70	0.63
0.65	0.58
0.60	0.54
0.55	0.49
0.50	0.45
0.45	0.40
0.40	0.36
0.35	0.31
0.30	0.27
0.25	0.22
0.20	0.18
0.15	0.13
0.10	0.09
0.05	0.04

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

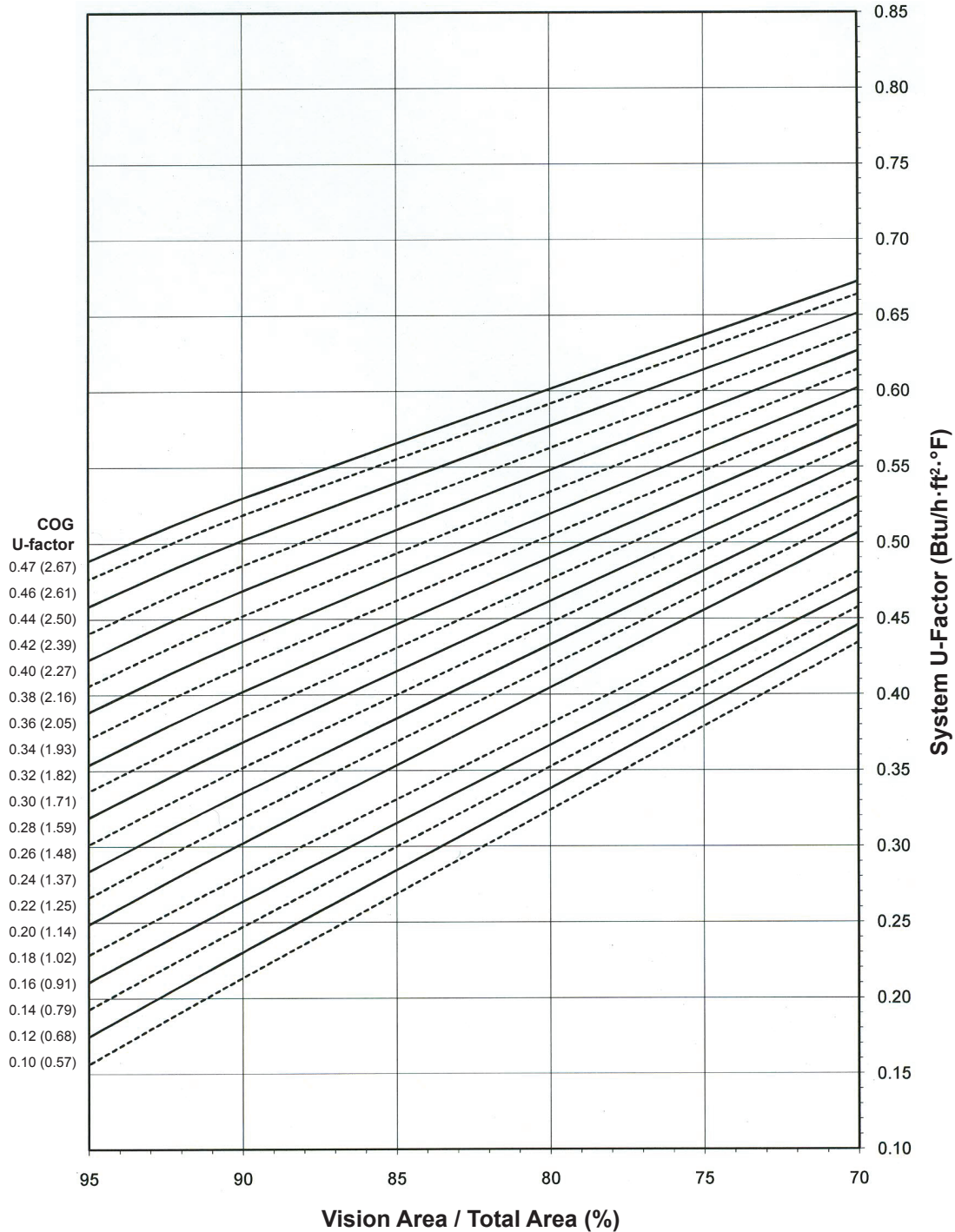
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Note:  
 Values in parentheses are metric.  
 COG=Center of Glass.  
 Charts are generated per AAMA 507.

**1" GLAZING WITH FIBERGLASS PRESSURE PLATE**

**System U-Factor for Vision Glass**



**Notes for System U-Factor, SHGC and VT charts:**

For glass values that are not listed, linear interpolation is permitted.  
 Glass properties are based on center of glass values (winter conditions) and are obtained from your glass supplier.

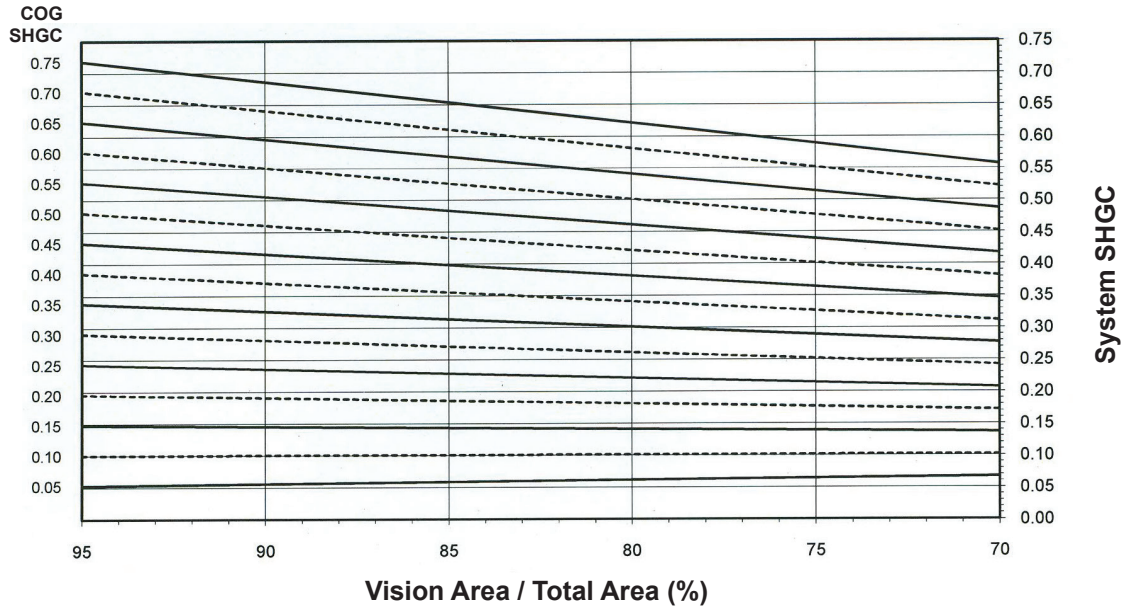
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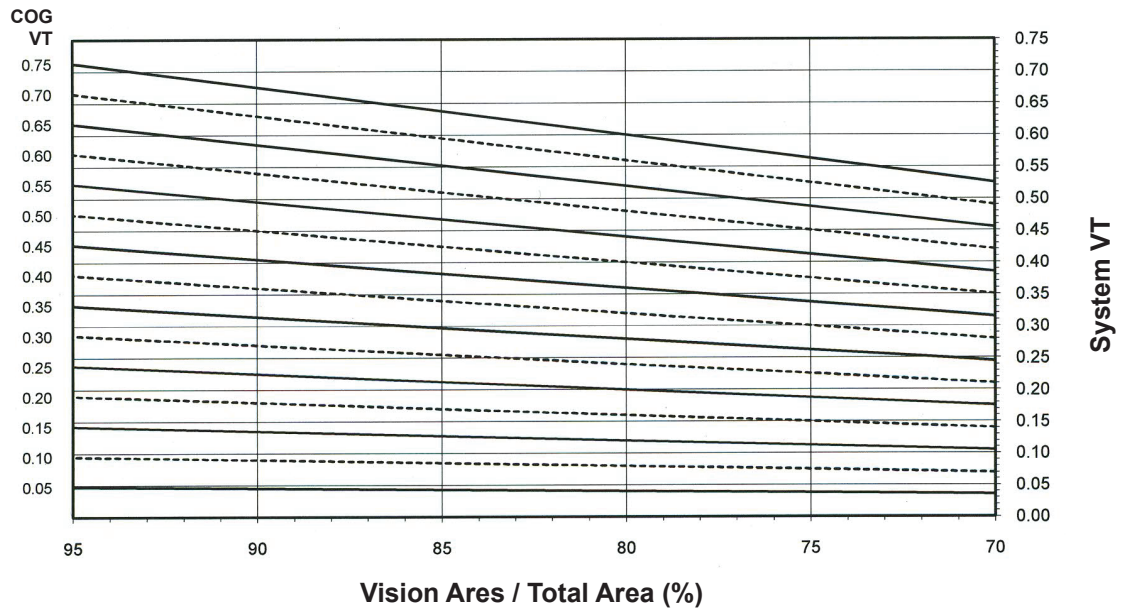
**1" GLAZING WITH FIBERGLASS PRESSURE PLATE**

**System Solar Heat Gain Coefficient (SHGC) vs Percent of Vision Area**



Charts are generated per AAMA 507.

**System Visible Transmittance (VT) vs Percent of Vision Area**



Charts are generated per AAMA 507.

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**Thermal Transmittance** <sup>1</sup> (BTU/hr • ft<sup>2</sup> • °F)

Glass U-Factor <sup>3</sup>	Overall U-Factor <sup>4</sup>
0.47	0.53
0.46	0.52
0.44	0.50
0.42	0.49
0.40	0.47
0.38	0.45
0.36	0.44
0.34	0.42
0.32	0.40
0.30	0.39
0.28	0.37
0.26	0.35
0.24	0.34
0.22	0.32
0.20	0.31
0.18	0.28
0.16	0.27
0.14	0.25
0.12	0.23
0.10	0.22

**1" GLAZING WITH  
FIBERGLASS PRESSURE PLATE**

**NOTE:** For glass values that are not listed, linear interpolation is permitted.

1. U-Factors are determined in accordance with NFRC 100.
2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values and are obtained from your glass supplier.
4. Overall U-Factor, SHGC, and VT Matricies are based on the standard NFRC specimen size of 2000mm wide by 2000mm high (78-3/4" by 78-3/4").

**SHGC Matrix** <sup>2</sup>

Glass SHGC <sup>3</sup>	Overall SHGC <sup>4</sup>
0.75	0.68
0.70	0.64
0.65	0.59
0.60	0.55
0.55	0.50
0.50	0.46
0.45	0.41
0.40	0.37
0.35	0.32
0.30	0.28
0.25	0.24
0.20	0.19
0.15	0.15
0.10	0.10
0.05	0.06

**Visible Transmittance** <sup>2</sup>

Glass VT <sup>3</sup>	Overall VT <sup>4</sup>
0.75	0.67
0.70	0.63
0.65	0.58
0.60	0.54
0.55	0.49
0.50	0.45
0.45	0.40
0.40	0.36
0.35	0.31
0.30	0.27
0.25	0.22
0.20	0.18
0.15	0.13
0.10	0.09
0.05	0.04

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

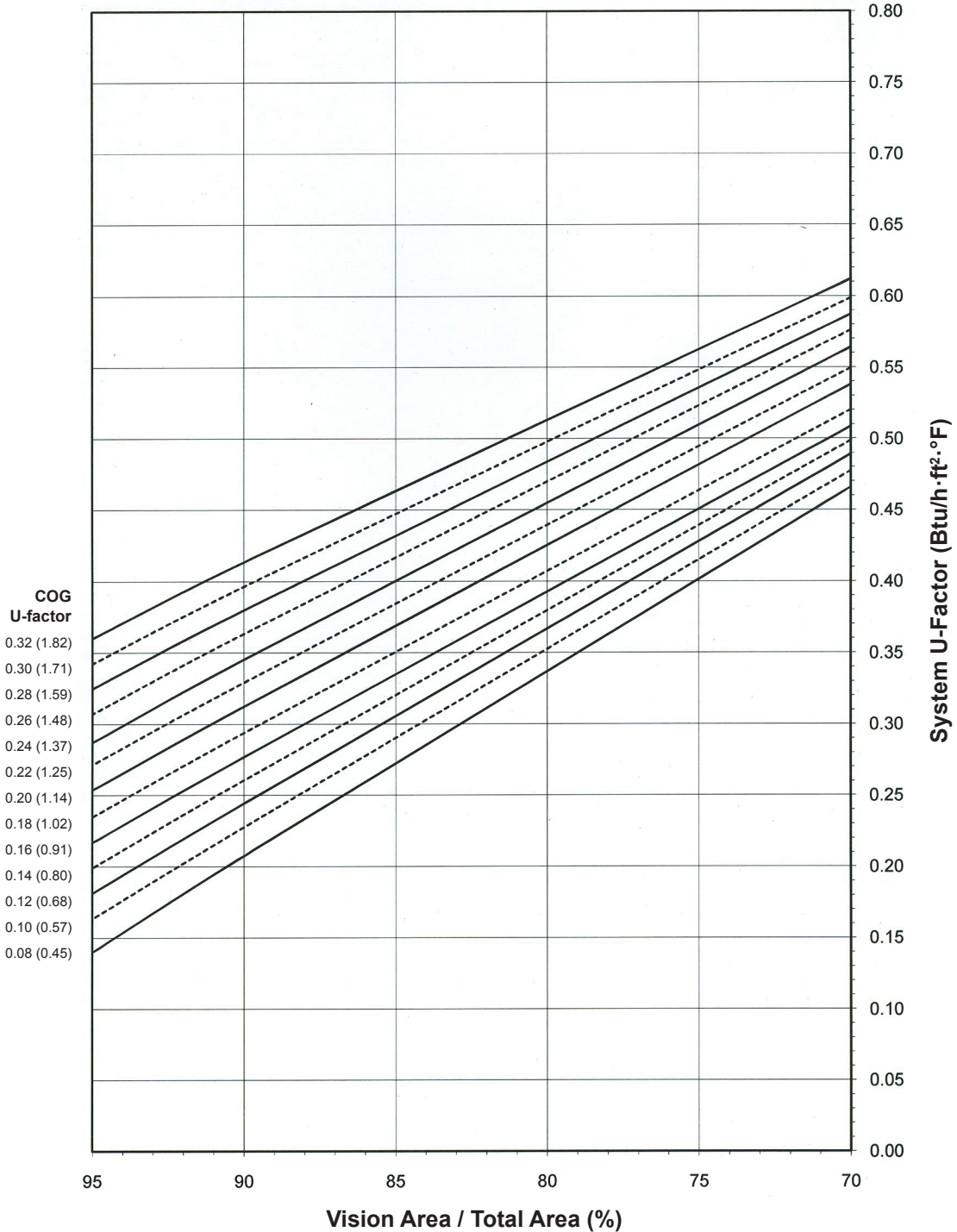
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Note:  
 Values in parentheses are metric.  
 COG=Center of Glass.  
 Charts are generated per AAMA 507.

**1-3/4" GLAZING WITH ALUMINUM PRESSURE PLATE**

**System U-Factor for Vision Glass**



**Notes for System U-Factor, SHGC and VT charts:**

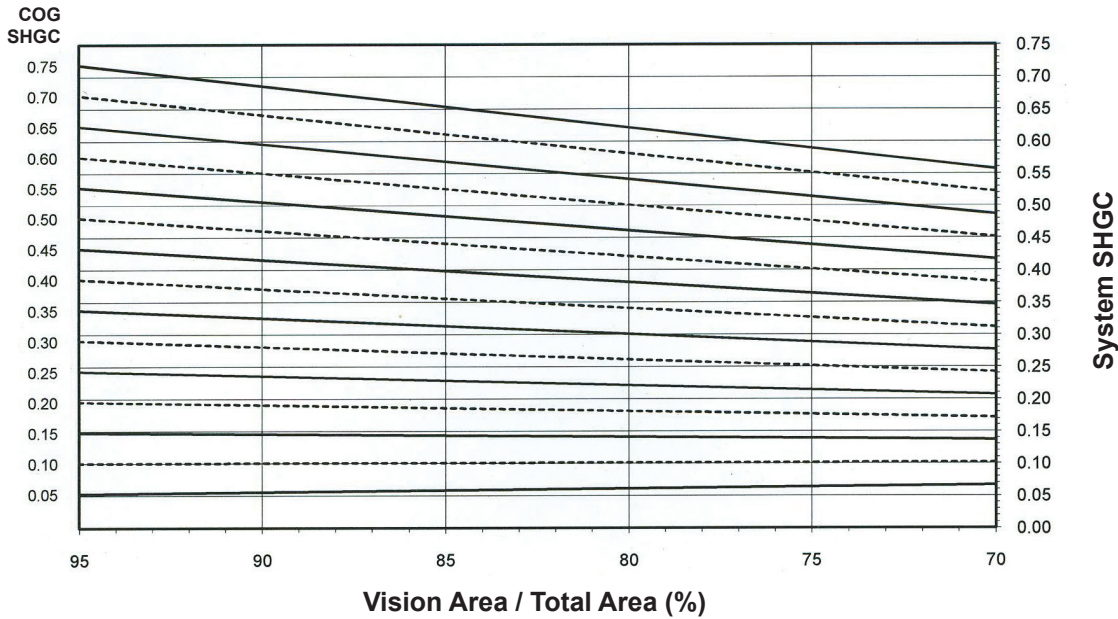
For glass values that are not listed, linear interpolation is permitted.  
 Glass properties are based on center of glass values (winter conditions) and are obtained from your glass supplier.

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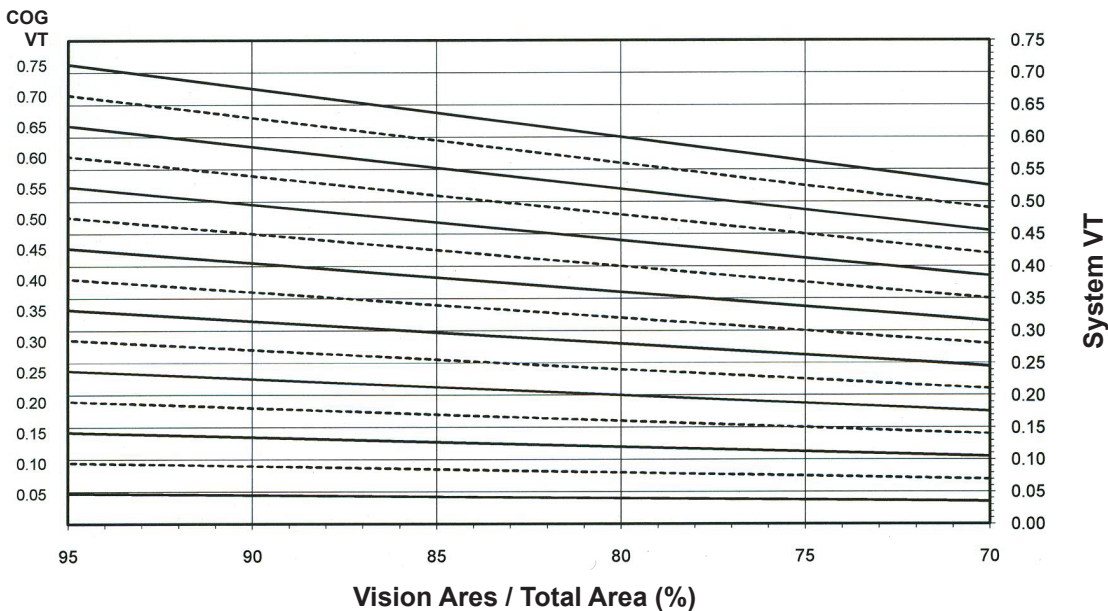
**1-3/4" GLAZING WITH ALUMINUM PRESSURE PLATE**

**System Solar Heat Gain Coefficient (SHGC) vs Percent of Vision Area**



Charts are generated per AAMA 507.

**System Visible Transmittance (VT) vs Percent of Vision Area**



Charts are generated per AAMA 507.

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### Thermal Transmittance <sup>1</sup> (BTU/hr • ft <sup>2</sup> • °F)

Glass U-Factor <sup>3</sup>	Overall U-Factor <sup>4</sup>
0.32	0.42
0.30	0.40
0.28	0.38
0.26	0.37
0.24	0.35
0.22	0.33
0.20	0.32
0.18	0.30
0.16	0.28
0.14	0.26
0.12	0.25
0.10	0.23
0.08	0.21

### 1-3/4" GLAZING WITH ALUMINUM PRESSURE PLATE

**NOTE:** For glass values that are not listed, linear interpolation is permitted.

1. U-Factors are determined in accordance with NFRC 100.
2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values and are obtained from your glass supplier.
4. Overall U-Factor, SHGC, and VT Matricies are based on the standard NFRC specimen size of 2000mm wide by 2000mm high (78-3/4" by 78-3/4").

### SHGC Matrix <sup>2</sup>

Glass SHGC <sup>3</sup>	Overall SHGC <sup>4</sup>
0.75	0.68
0.70	0.64
0.65	0.59
0.60	0.55
0.55	0.50
0.50	0.46
0.45	0.41
0.40	0.37
0.35	0.32
0.30	0.28
0.25	0.24
0.20	0.19
0.15	0.15
0.10	0.10
0.05	0.06

### Visible Transmittance <sup>2</sup>

Glass VT <sup>3</sup>	Overall VT <sup>4</sup>
0.75	0.67
0.70	0.63
0.65	0.58
0.60	0.54
0.55	0.49
0.50	0.45
0.45	0.40
0.40	0.36
0.35	0.31
0.30	0.27
0.25	0.22
0.20	0.18
0.15	0.13
0.10	0.09
0.05	0.04

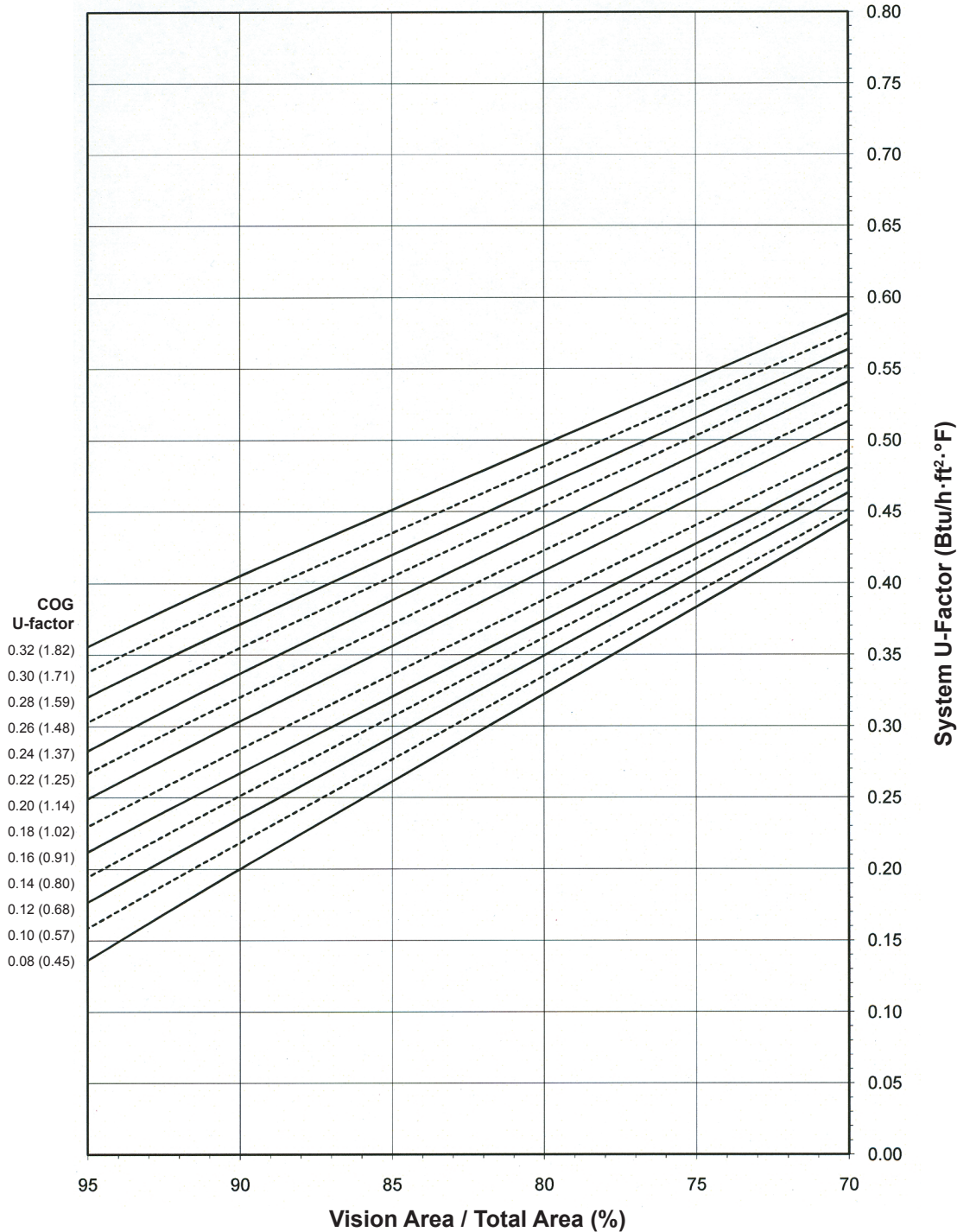
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Note:  
 Values in parentheses are metric.  
 COG=Center of Glass.  
 Charts are generated per AAMA 507.

**1-3/4" GLAZING WITH FIBERGLASS PRESSURE PLATE**

**System U-Factor for Vision Glass**



**Notes for System U-Factor, SHGC and VT charts:**

For glass values that are not listed, linear interpolation is permitted.  
 Glass properties are based on center of glass values (winter conditions) and are obtained from your glass supplier.

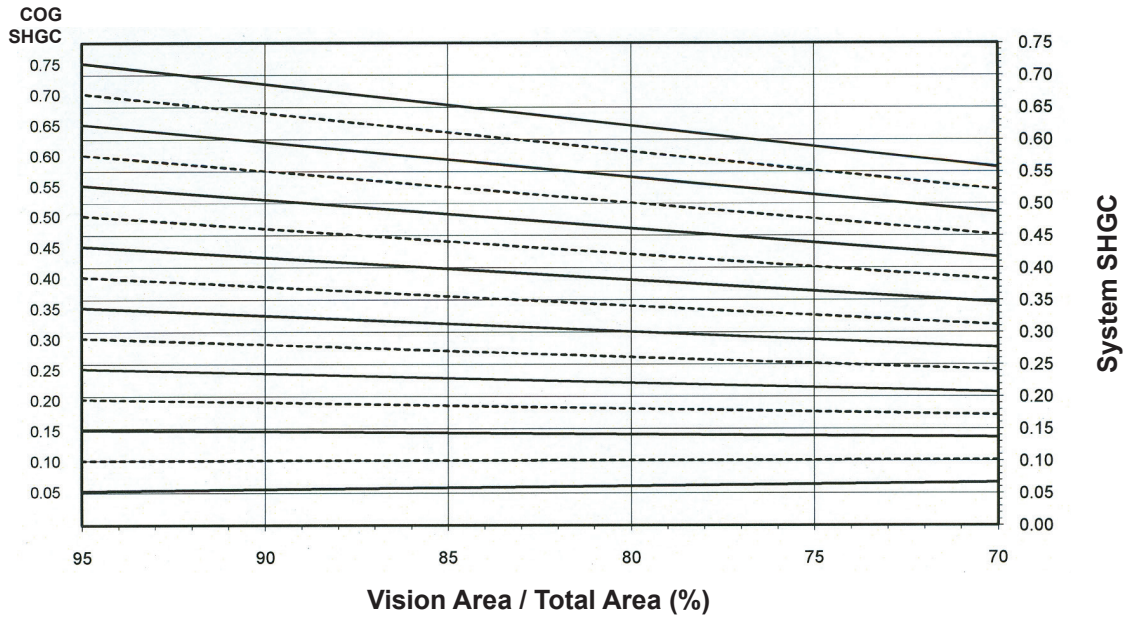
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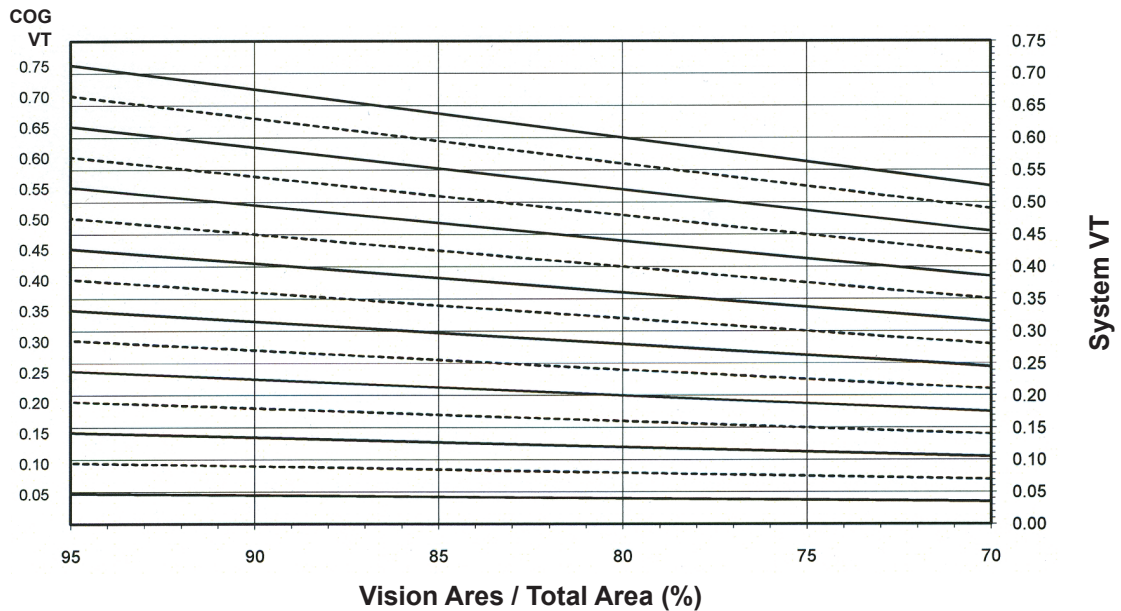
**1-3/4" GLAZING WITH FIBERGLASS PRESSURE PLATE**

**System Solar Heat Gain Coefficient (SHGC) vs Percent of Vision Area**



Charts are generated per AAMA 507.

**System Visible Transmittance (VT) vs Percent of Vision Area**



Charts are generated per AAMA 507.

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**Thermal Transmittance** <sup>1</sup> (BTU/hr • ft<sup>2</sup> • °F)

Glass U-Factor <sup>3</sup>	Overall U-Factor <sup>4</sup>
0.32	0.41
0.30	0.39
0.28	0.37
0.26	0.36
0.24	0.34
0.22	0.32
0.20	0.31
0.18	0.29
0.16	0.27
0.14	0.25
0.12	0.24
0.10	0.22
0.08	0.20

**1-3/4" GLAZING WITH  
FIBERGLASS PRESSURE PLATE**

**NOTE:** For glass values that are not listed, linear interpolation is permitted.

1. U-Factors are determined in accordance with NFRC 100.
2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values and are obtained from your glass supplier.
4. Overall U-Factor, SHGC, and VT Matricies are based on the standard NFRC specimen size of 2000mm wide by 2000mm high (78-3/4" by 78-3/4").

**SHGC Matrix** <sup>2</sup>

Glass SHGC <sup>3</sup>	Overall SHGC <sup>4</sup>
0.75	0.68
0.70	0.64
0.65	0.59
0.60	0.55
0.55	0.50
0.50	0.46
0.45	0.41
0.40	0.37
0.35	0.32
0.30	0.28
0.25	0.24
0.20	0.19
0.15	0.15
0.10	0.10
0.05	0.06

**Visible Transmittance** <sup>2</sup>

Glass VT <sup>3</sup>	Overall VT <sup>4</sup>
0.75	0.67
0.70	0.63
0.65	0.58
0.60	0.54
0.55	0.49
0.50	0.45
0.45	0.40
0.40	0.36
0.35	0.31
0.30	0.27
0.25	0.22
0.20	0.18
0.15	0.13
0.10	0.09
0.05	0.04

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**CONDENSATION RESISTANCE**

	PRESSURE PLATE TYPE	CRF		I-VALUE	
		FRAME	GLASS	FRAME	GLASS
1" DOUBLE GLAZING INFILL	ALUMINUM FIBERGLASS	79	76	71 76	67 68
1-3/4" TRIPLE GLAZING INFILL	ALUMINUM FIBERGLASS	82	81	74 76	77 78

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## **Features**

- 1600UT System™2 is a high thermal performance, structural silicone glazed curtain wall system
- Innovative design delivers high thermal performance while leveraging 1600 Wall System architecture
- Multiple thermal performance levels resulting from a combination of:
  - 1" (25.4), 1-1/4" (31.8), 1-5/16" (33.34) double or 1-3/4" (44.5), triple glazed insulating glass units
  - Aluminum or fiberglass pressure plates
- Thermal barrier design ensures high thermal performance without being susceptible to thermal fatigue
- Offers integrated entrance framing systems
- Corners and splays available
- Comprehensively tested to latest high performance air, water, structural and thermal standards
- Glass chairs support insulating glass units enabling larger expanses of glass
- Pressure equalized system tested with vapor barrier
- Two color option
- Permanodic™ anodized finishes in seven choices
- Painted finishes in standard and custom choices

## **Optional Features**

- Steel reinforcing
- Rain screen and backpans
- Deep profile covers and bull nose covers
- Deep and heavy-weight mullions
- Integrates with standard Kawneer windows and GLASSvent™ Windows for curtain wall
- Profit\$Maker™ plus die sets available

## **Product Applications**

- Ideal for low to mid-rise applications where high thermal performance is desired
- High span applications

For specific product applications,  
Consult your Kawneer representative.

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**Architects** - Most extrusion and window types illustrated in this catalog are standard products for Kawneer. These concepts have been expanded and modified to afford you design freedom. Some miscellaneous details are non-standard and are intended to demonstrate how the system can be modified to expand design flexibility. Please contact your Kawneer representative for further assistance.

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LAWS AND BUILDING AND SAFETY CODES GOVERNING THE DESIGN AND USE OF GLAZED ENTRANCE, WINDOW, AND CURTAIN WALL PRODUCTS VARY WIDELY. KAWNEER DOES NOT CONTROL THE SELECTION OF PRODUCT CONFIGURATIONS, OPERATING HARDWARE, OR GLAZING MATERIALS, AND ASSUMES NO RESPONSIBILITY THEREFOR.

Metric (SI) conversion figures are included throughout these details for reference. Numbers in parentheses ( ) are millimeters unless otherwise noted.

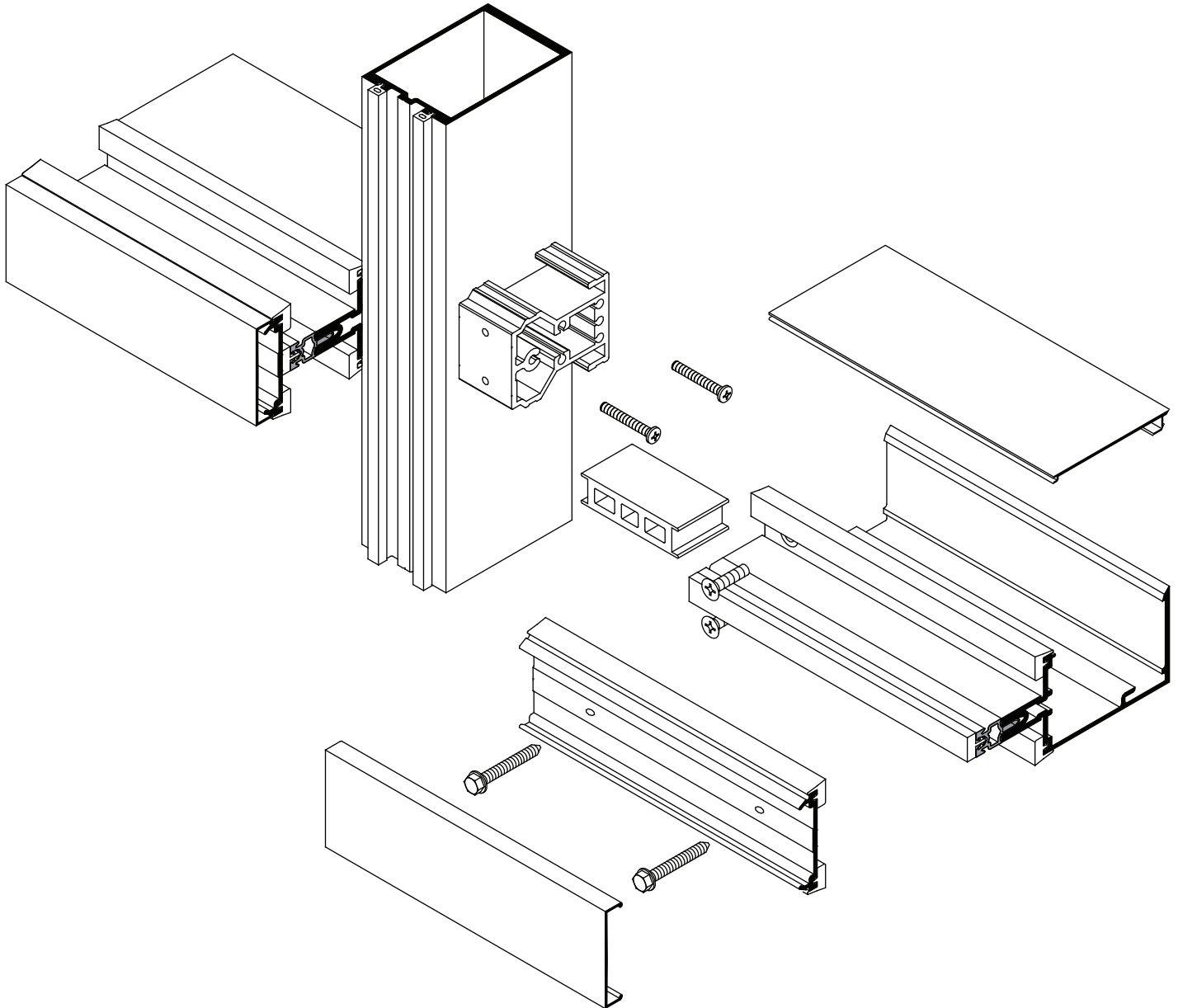
The following metric (SI ) units are found in these details:

- m – meter
- cm – centimeter
- mm – millimeter
- s – second
- Pa – pascal
- MPa – megapascal

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Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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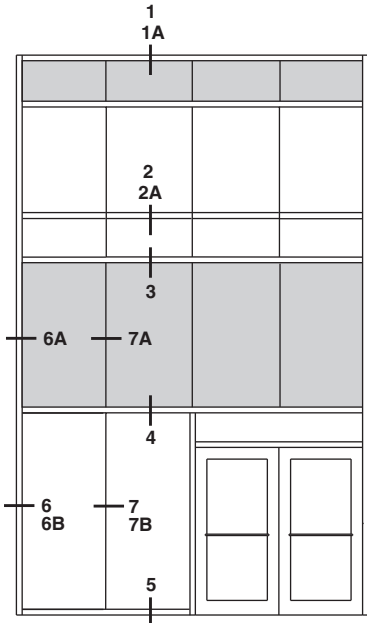


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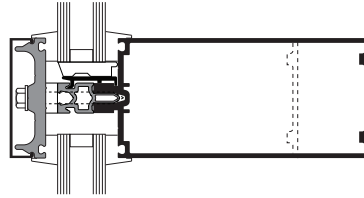
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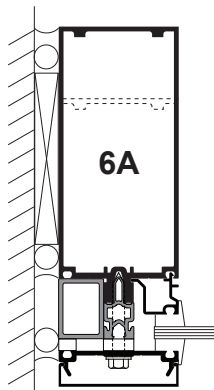
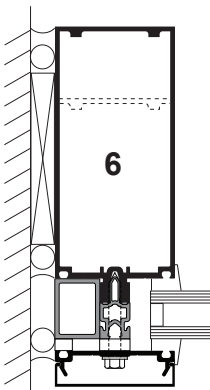
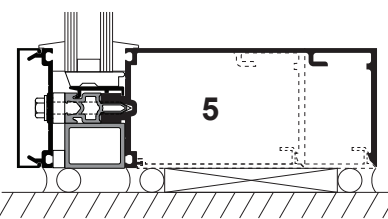
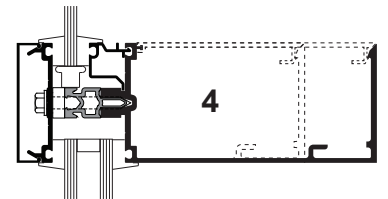
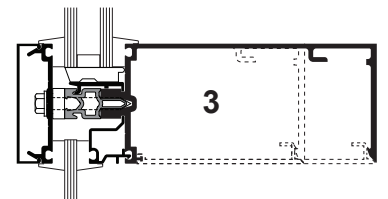
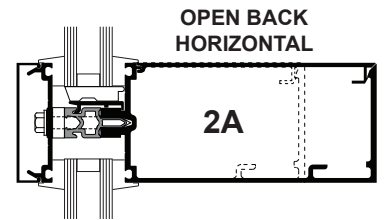
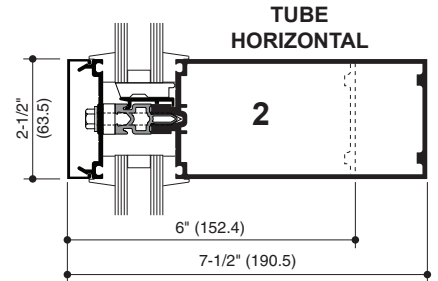
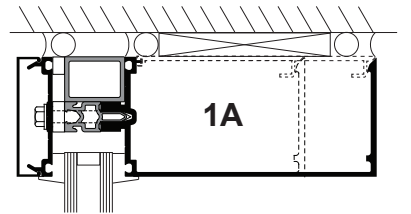
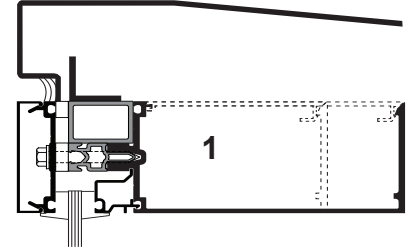
SCALE 3" = 1'-0"



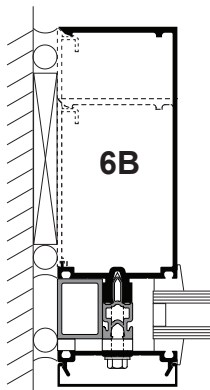
ELEVATION IS NUMBER KEYED TO DETAILS



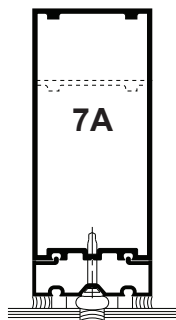
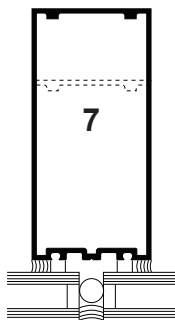
OPTIONAL  
FIBERGLASS  
PRESSURE PLATE



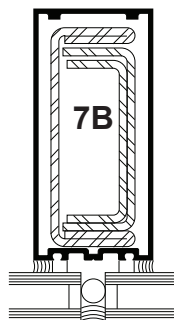
1/4" INFILL  
ADAPTER



OPEN BACK JAMB



1/4" INFILL  
ADAPTER



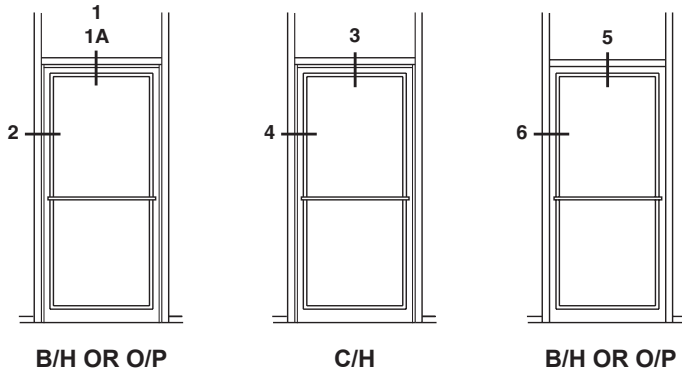
STEEL  
REINFORCING  
AS REQUIRED

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

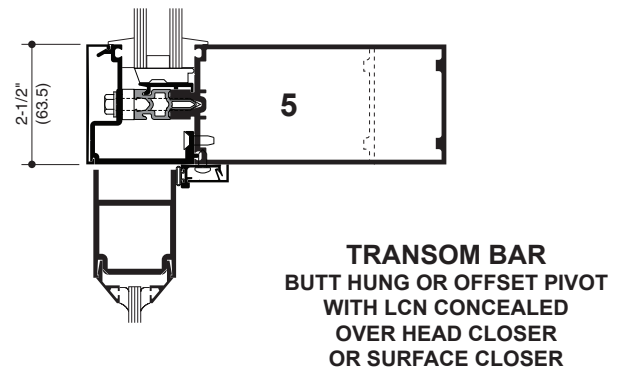
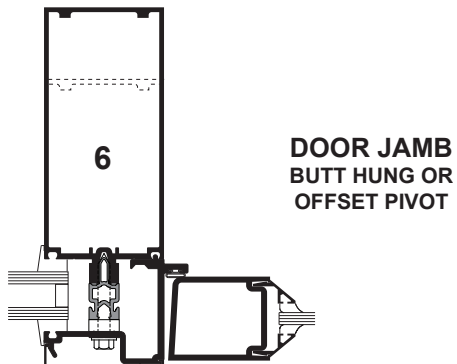
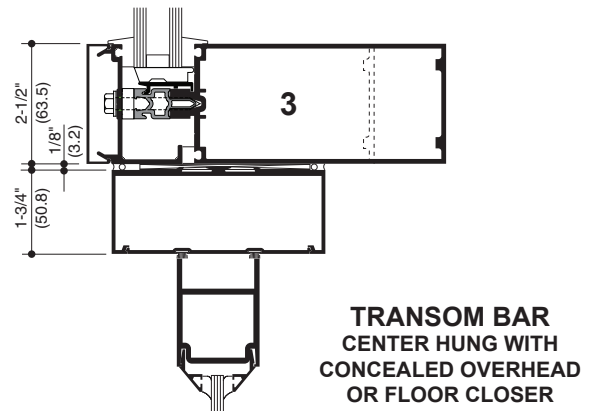
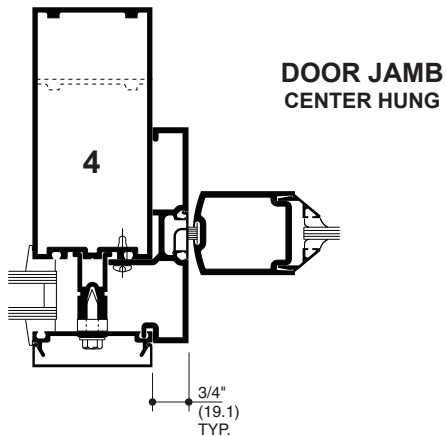
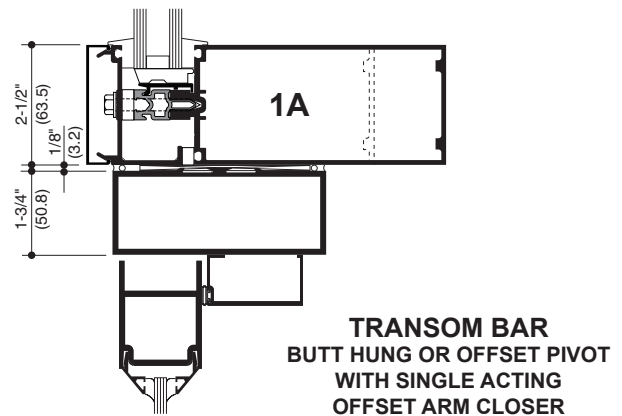
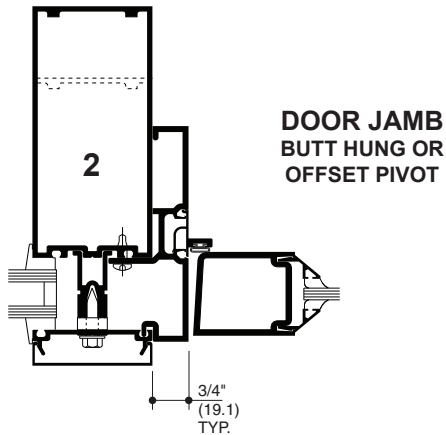
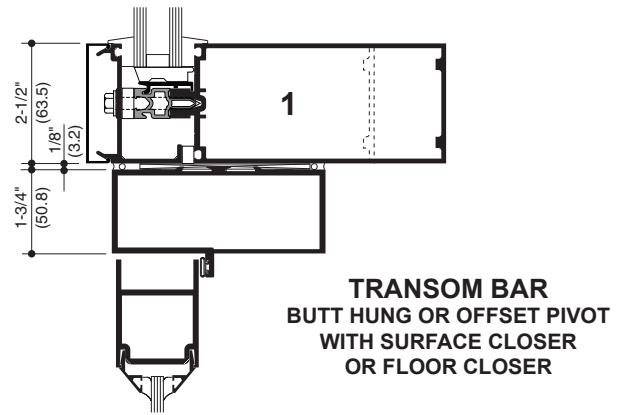
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SCALE 3" = 1'-0"



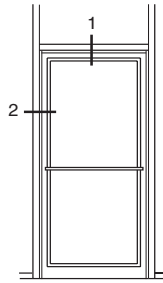
ELEVATION IS NUMBER KEYED TO DETAILS



Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

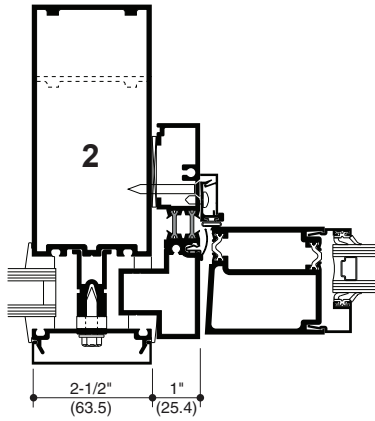
Kawneer reserves the right to change configuration without prior notice when deemed necessary for product improvement.  
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**SCALE 3" = 1'-0"**

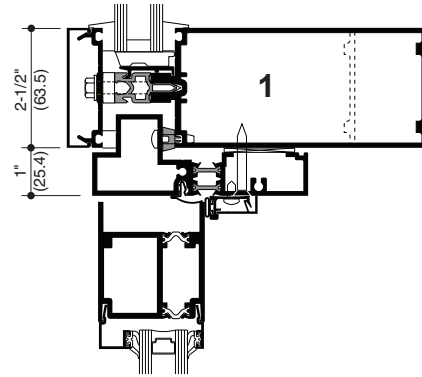


**B/H OR O/P**

**ELEVATION IS NUMBER KEYED TO DETAILS**



**DOOR JAMB  
BUTT HUNG OR  
OFFSET PIVOT**

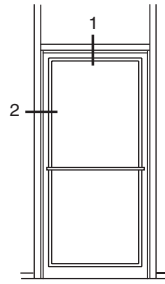


**TRANSOM BAR  
BUTT HUNG OR  
OFFSET PIVOT WITH  
SURFACE CLOSER  
OR FLOOR CLOSER**

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

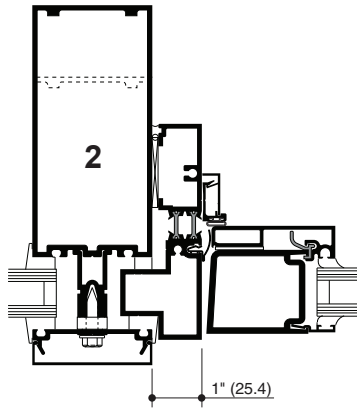
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SCALE 3" = 1'-0"

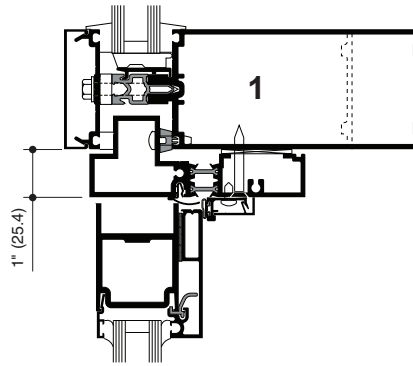


B/H OR O/P

ELEVATION IS NUMBER KEYED TO DETAILS



DOOR JAMB  
BUTT HUNG OR  
OFFSET PIVOT



TRANSOM BAR  
BUTT HUNG OR  
OFFSET PIVOT WITH  
SURFACE CLOSER  
OR FLOOR CLOSER

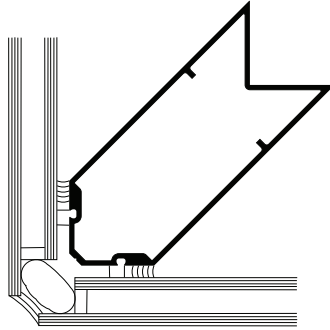
Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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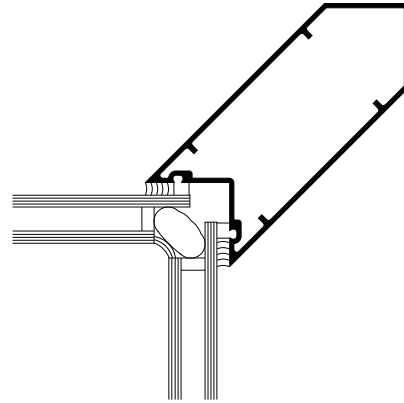
**SCALE 3" = 1'-0"**

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

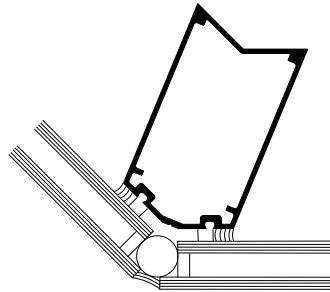
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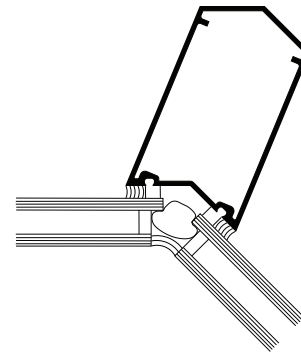
**90° OUTSIDE CORNER**



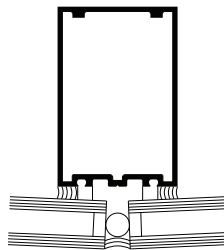
**90° INSIDE CORNER**



**135° OUTSIDE CORNER**

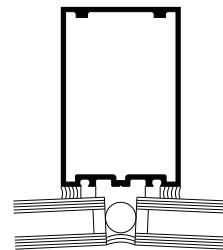


**135° INSIDE CORNER**



**0° TO 5°**

**OUTSIDE SPLAYED MULLIONS**

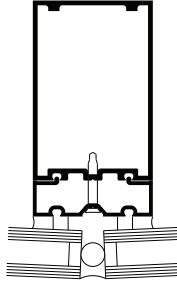


**0° TO 5°**

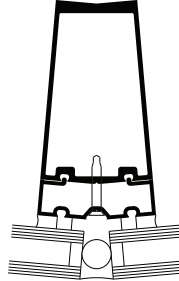
**INSIDE SPLAYED MULLIONS**

**OTHER SPLAY OPTIONS AVAILABLE**

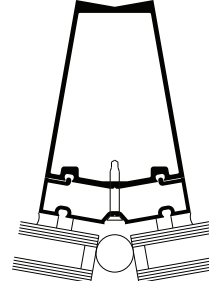
SCALE 3" = 1'-0"



0° TO 5°

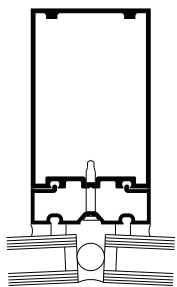


5° TO 15°

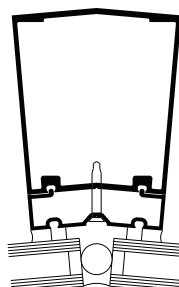


15° TO 25°

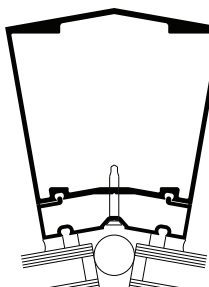
### OUTSIDE SPLAYED MULLIONS



0° TO 5°



5° TO 15°



15° TO 25°

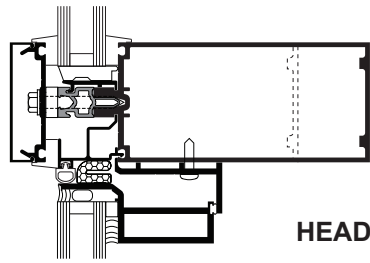
### INSIDE SPLAYED MULLIONS

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

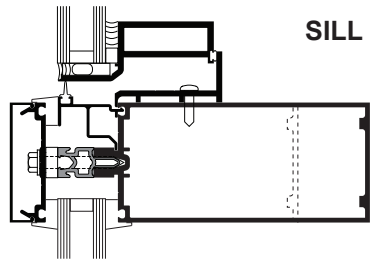
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SCALE 3" = 1'-0"

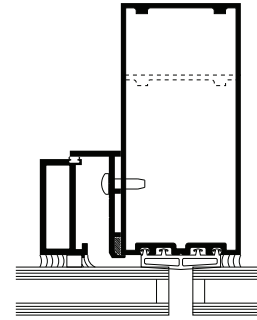
GLASSvent™ Windows for Curtain Wall



HEAD



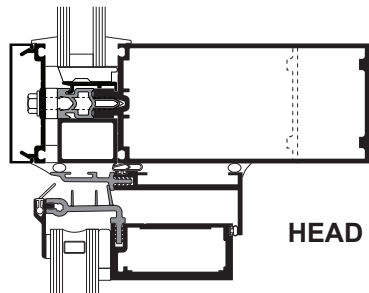
SILL



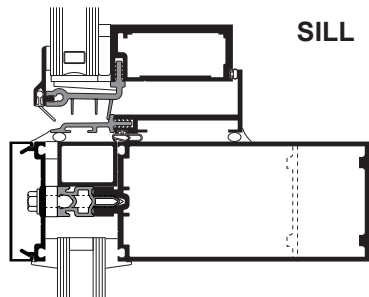
JAMB

NOTE: Project-out GLASSvent™ window shown

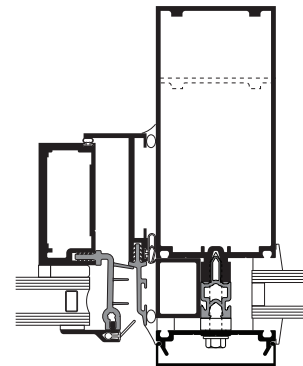
GLASSvent™ UT Windows



HEAD



SILL



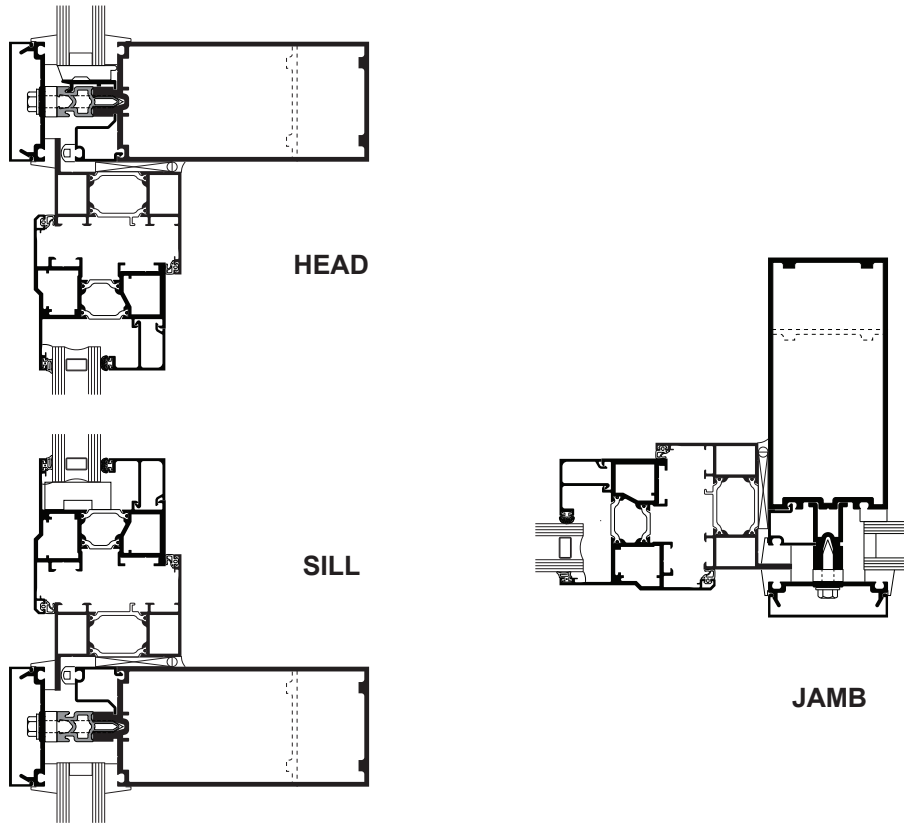
JAMB

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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SCALE 3" = 1'-0"

## AA™900 Thermal Windows

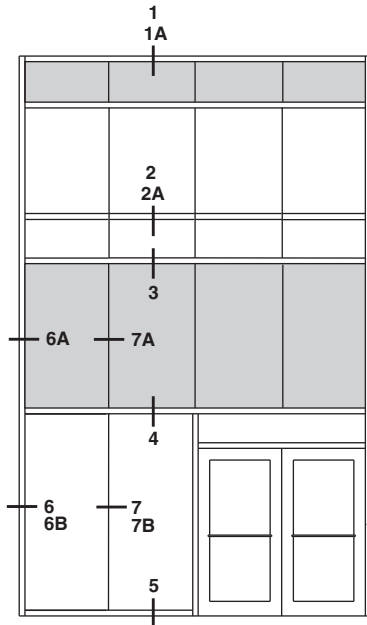


**NOTE: AA™6400 vent can be accommodated.  
Contact your Kawneer representative for other options.**

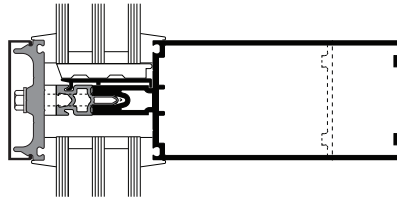
Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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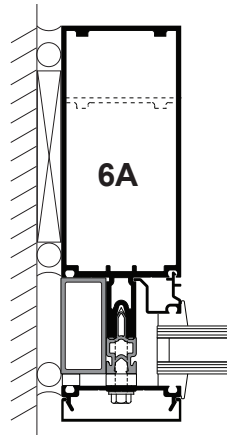
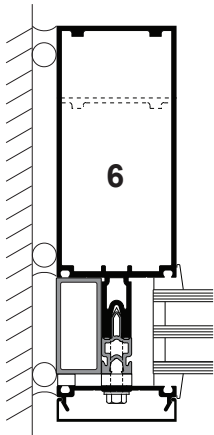
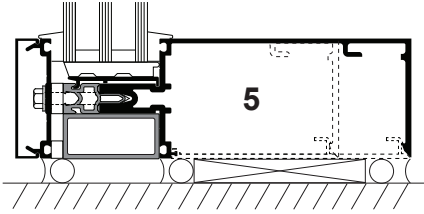
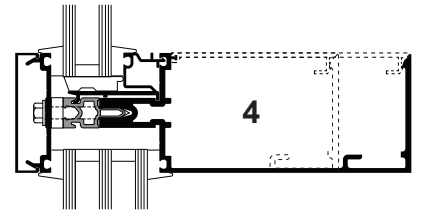
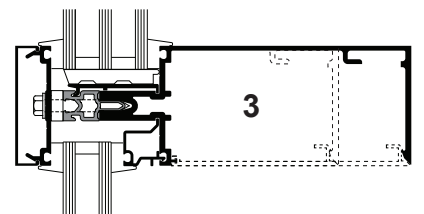
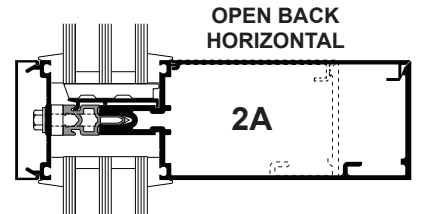
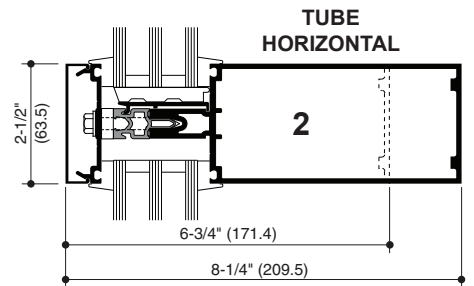
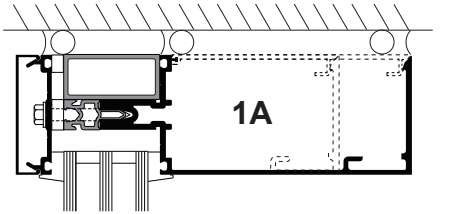
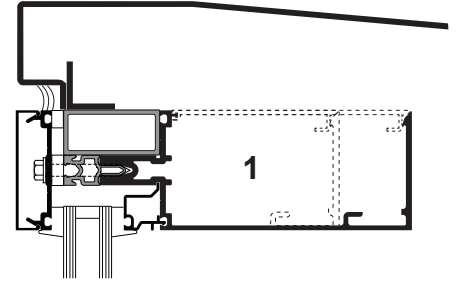
SCALE 3" = 1'-0"



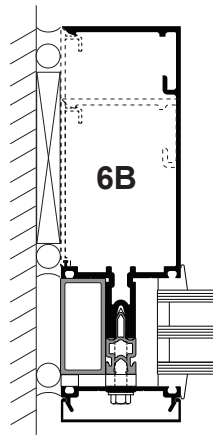
ELEVATION IS NUMBER KEYED TO DETAILS



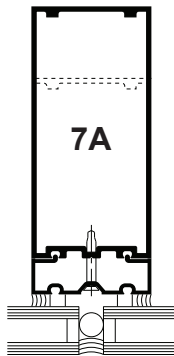
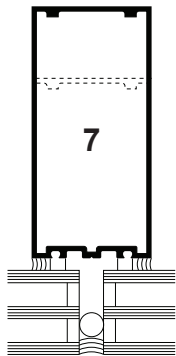
OPTIONAL  
FIBERGLASS  
PRESSURE PLATE



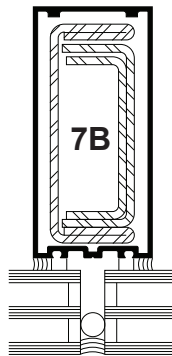
1" INFILL  
ADAPTER



OPEN BACK JAMB



1" INFILL  
ADAPTER



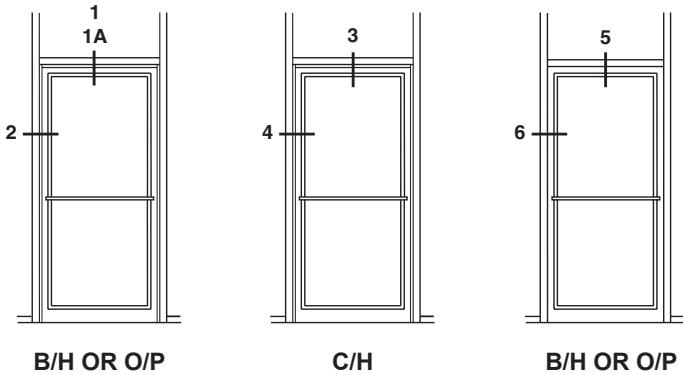
STEEL  
REINFORCING  
AS REQUIRED

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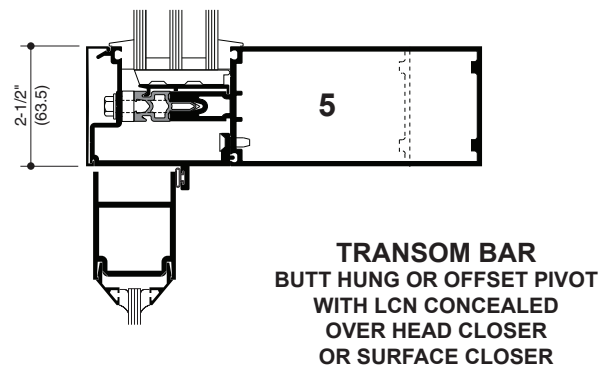
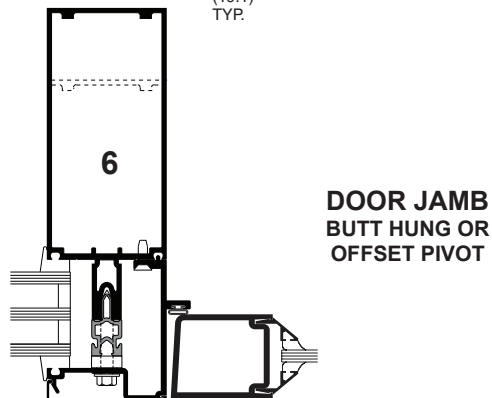
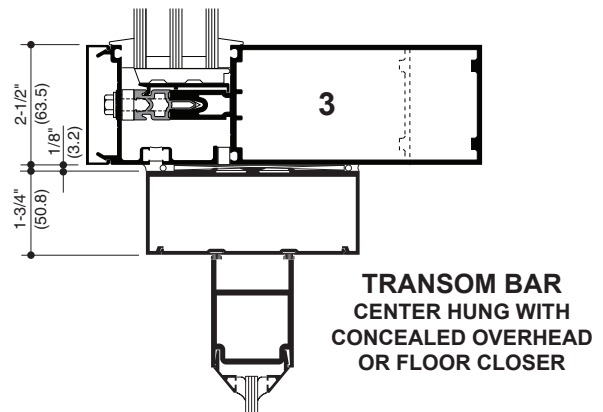
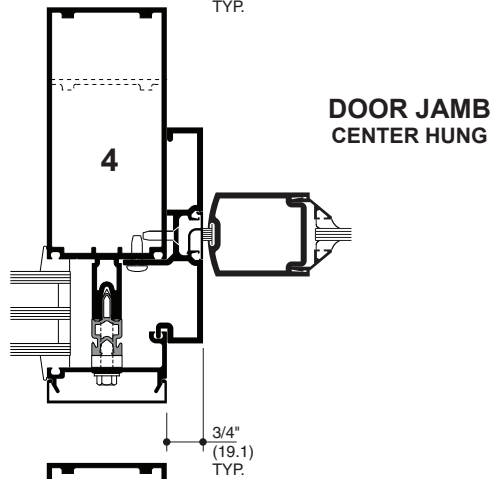
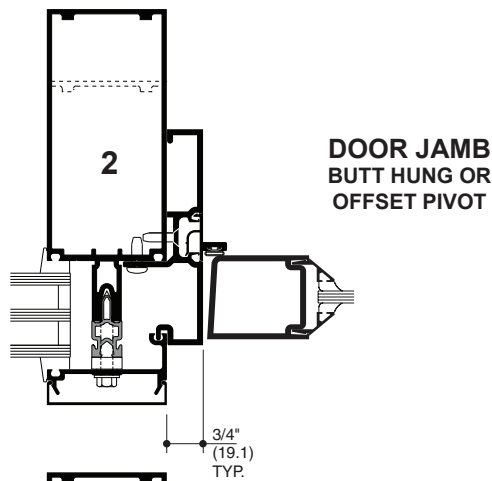
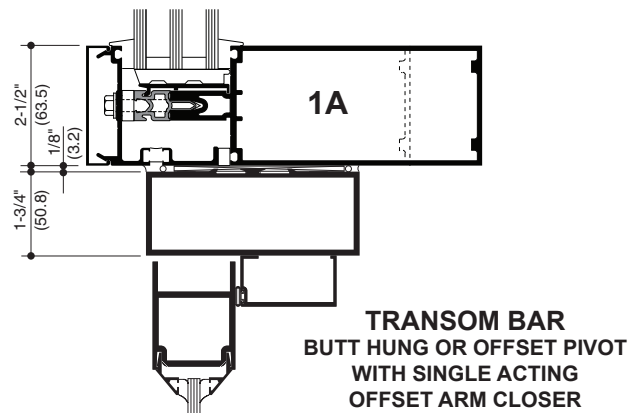
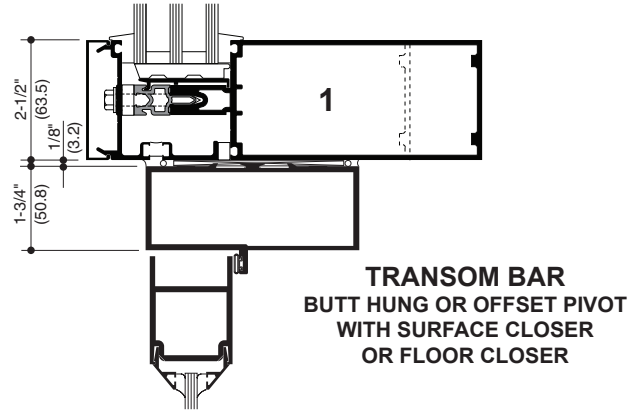
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SCALE 3" = 1'-0"



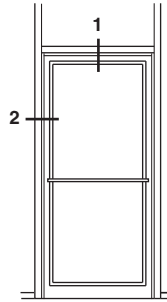
ELEVATION IS NUMBER KEYED TO DETAILS



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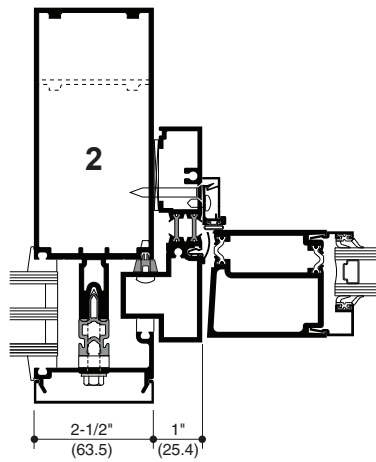
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**SCALE 3" = 1'-0"**

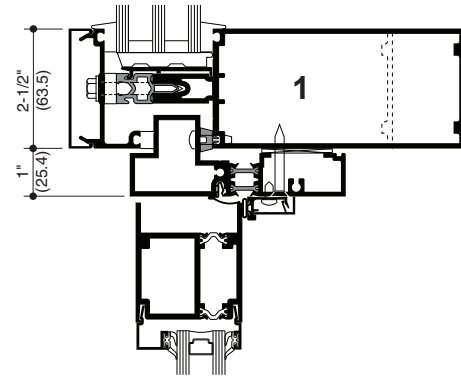


**B/H OR O/P**

**ELEVATION IS NUMBER KEYED TO DETAILS**



**DOOR JAMB  
BUTT HUNG OR  
OFFSET PIVOT**

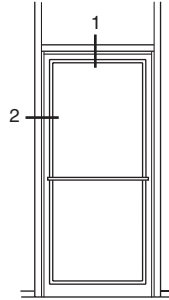


**TRANSOM BAR  
BUTT HUNG OR  
OFFSET PIVOT WITH  
SURFACE CLOSER  
OR FLOOR CLOSER**

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

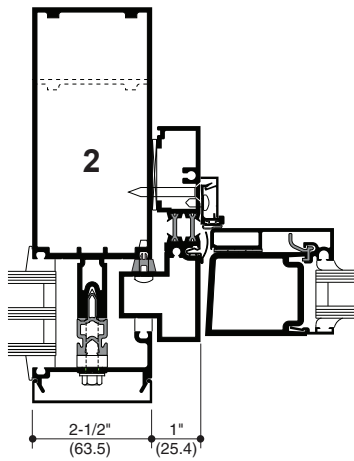
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**SCALE 3" = 1'-0"**

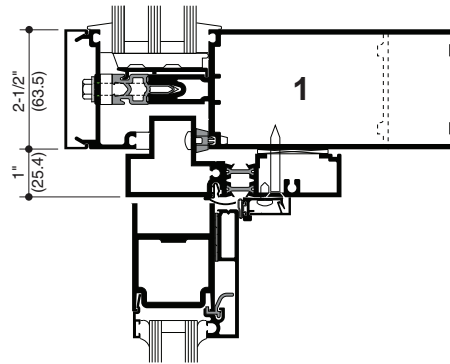


**B/H OR O/P**

**ELEVATION IS NUMBER KEYED TO DETAILS**



**DOOR JAMB  
BUTT HUNG OR  
OFFSET PIVOT**



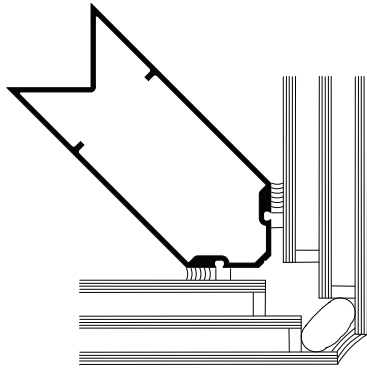
**TRANSOM BAR  
BUTT HUNG OR  
OFFSET PIVOT WITH  
SURFACE CLOSER  
OR FLOOR CLOSER**

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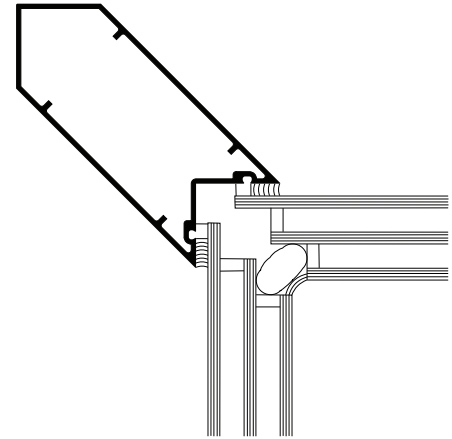
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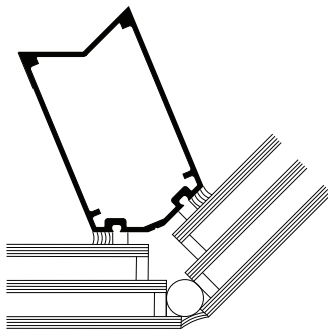
**SCALE 3" = 1'-0"**



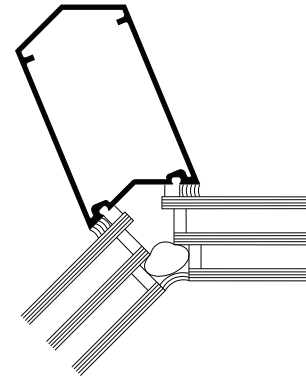
**90° OUTSIDE CORNER**



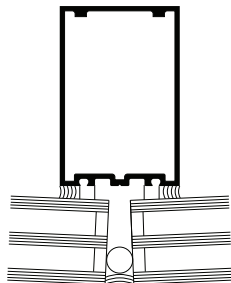
**90° INSIDE CORNER**



**135° OUTSIDE CORNER**

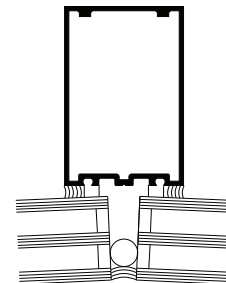


**135° INSIDE CORNER**



**0° TO 5°**

**OUTSIDE SPLAYED MULLIONS**



**0° TO 5°**

**INSIDE SPLAYED MULLIONS**

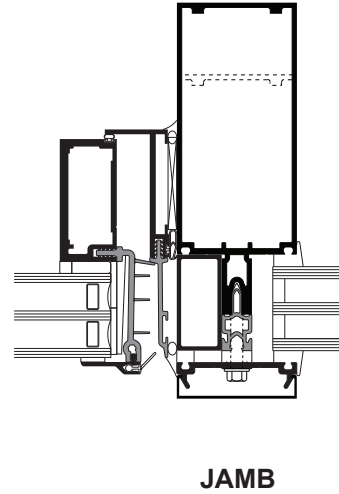
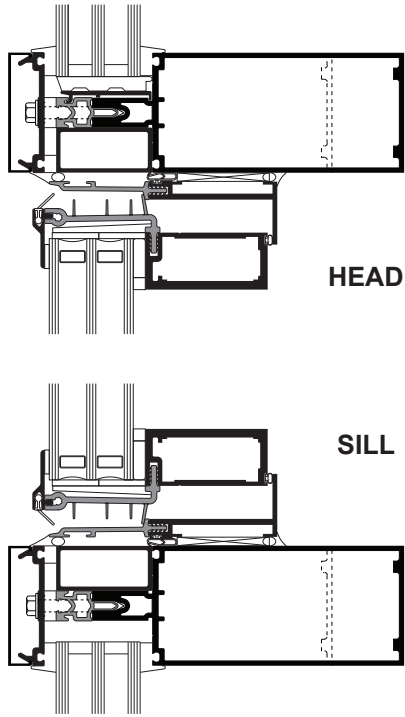
**OTHER SPLAY OPTIONS AVAILABLE**

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

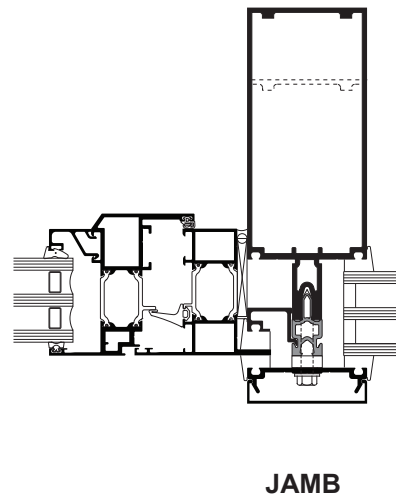
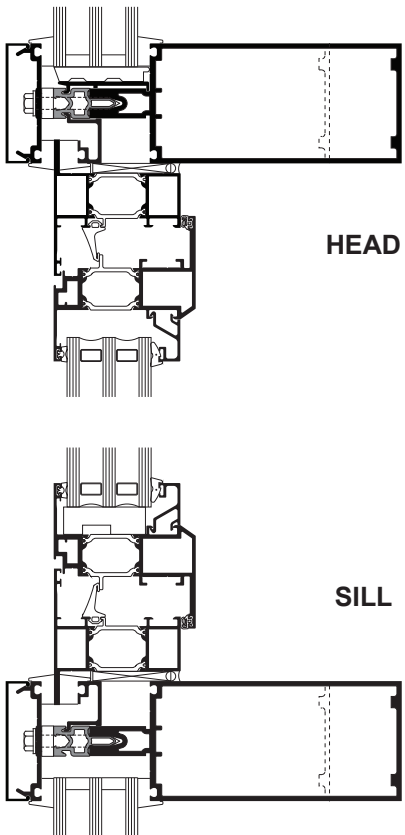
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SCALE 3" = 1'-0"

GLASSvent™ UT Windows



AA™900 Thermal Windows

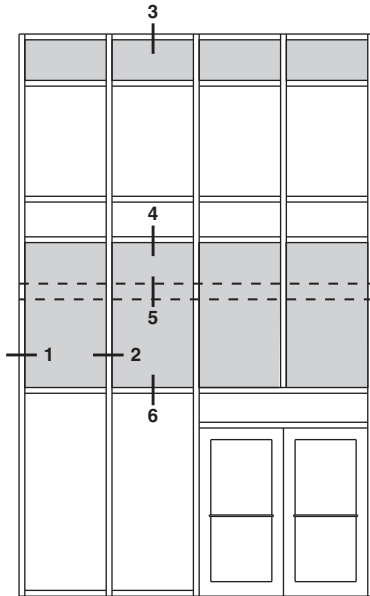


NOTE: AA™6400 vent can be accommodated.  
Contact your Kawneer representative for other options.

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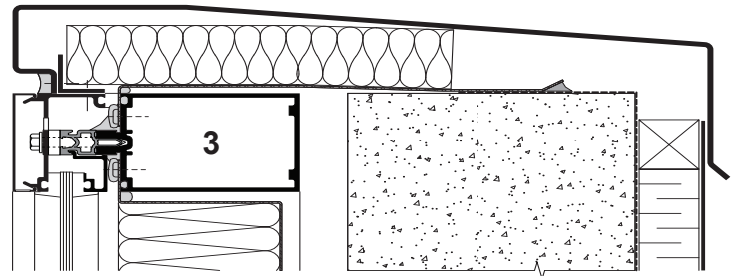
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**SCALE 3" = 1'-0"**

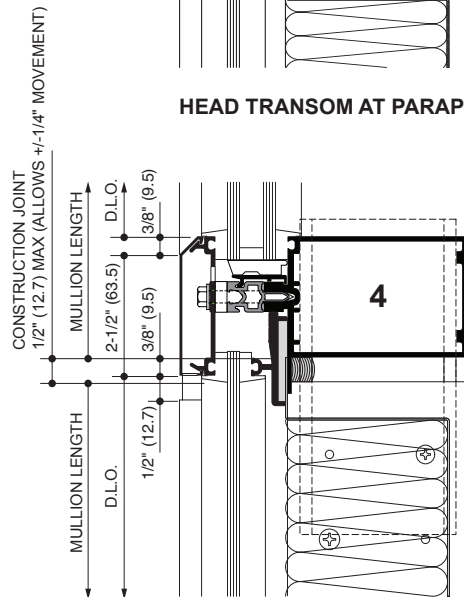


**ELEVATION IS NUMBER KEYED TO DETAILS**

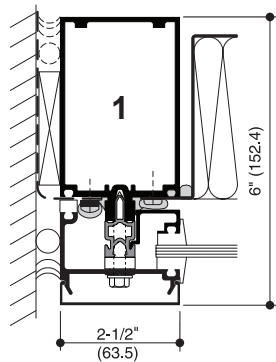
NOTE: 6" SYSTEM SHOWN, 7-1/2" SYSTEM SIMILAR



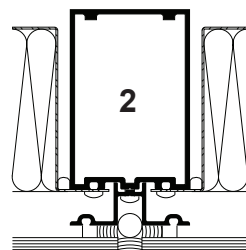
**HEAD TRANSOM AT PARAPET FLASHING**



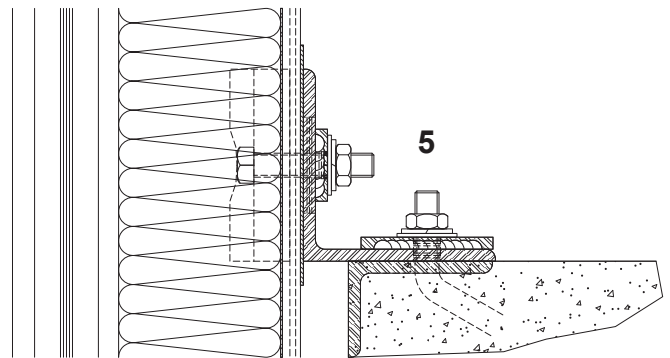
**EXPANSION JOINT**



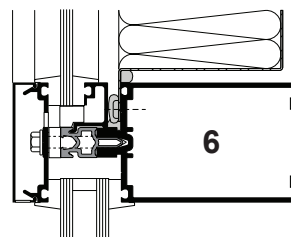
**JAMB MULLION AT SPANDEL**  
(With vapor barrier tie-in)



**MULLION AT SPANDEL**



**TYPICAL DEADLOAD ANCHOR**

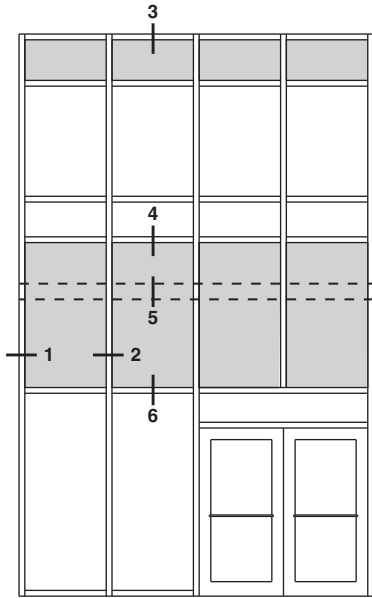


**TRANSOM - SPANDEL OVER VISION**

Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

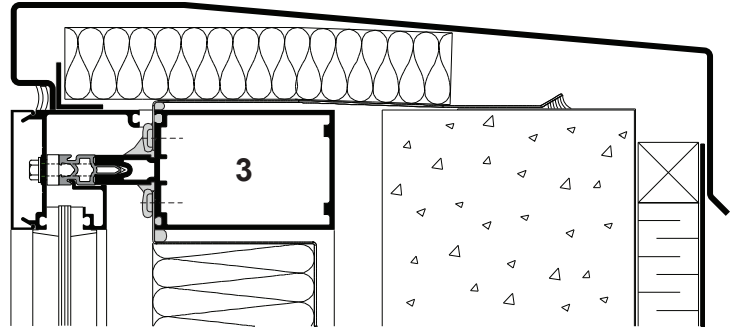
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SCALE 3" = 1'-0"

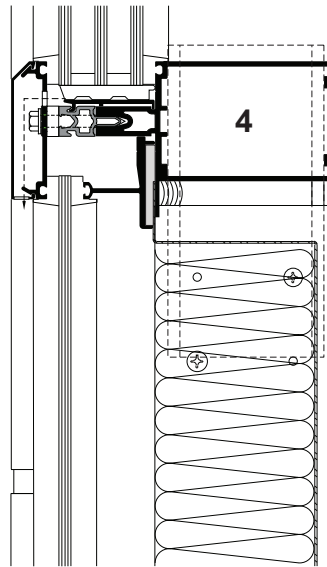


ELEVATION IS NUMBER KEYED TO DETAILS

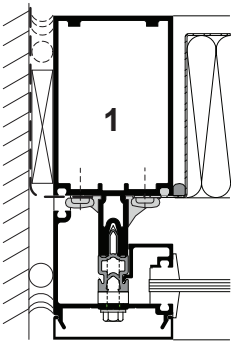
NOTE: 6" SYSTEM SHOWN, 7-1/2" SYSTEM SIMILAR



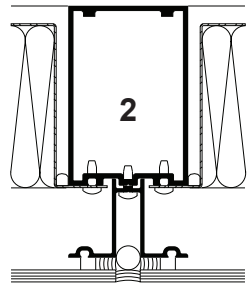
HEAD TRANSOM AT PARAPET FLASHING



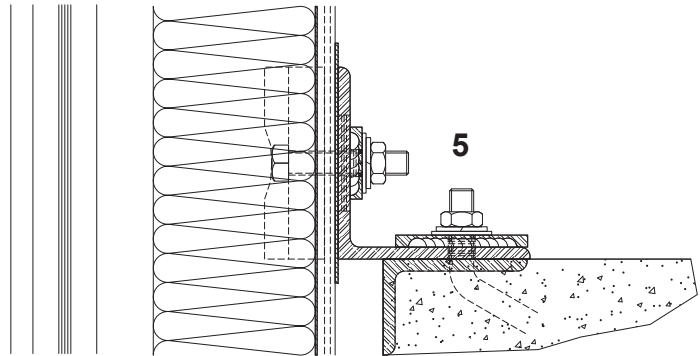
EXPANSION JOINT



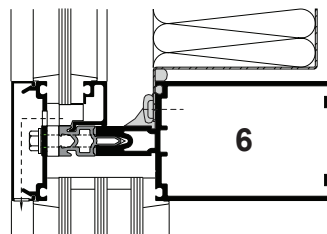
JAMB MULLION AT SPANDREL



MULLION AT SPANDREL



TYPICAL DEADLOAD ANCHOR



TRANSOM - SPANDREL OVER VISION

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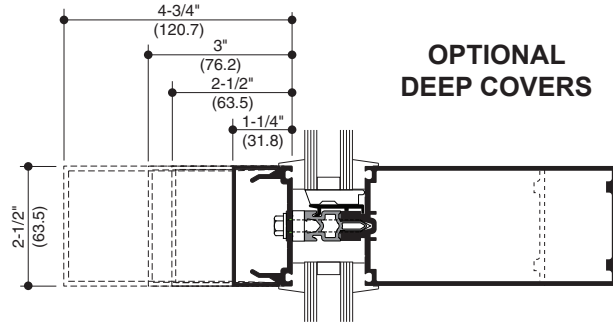
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**SCALE 3" = 1'-0"**

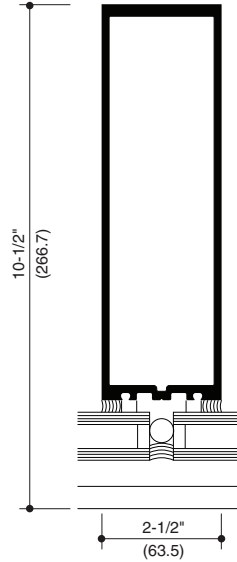
Architects – Most extrusion and window types illustrated in this catalog are standard products for Kawneer. These concepts have been expanded and modified to afford you design freedom. Some miscellaneous details are non-standard and are intended to demonstrate how the system can be modified to expand design flexibility. Please contact your Kawneer representative for further assistance.

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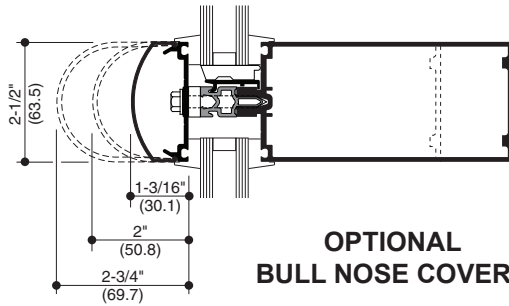
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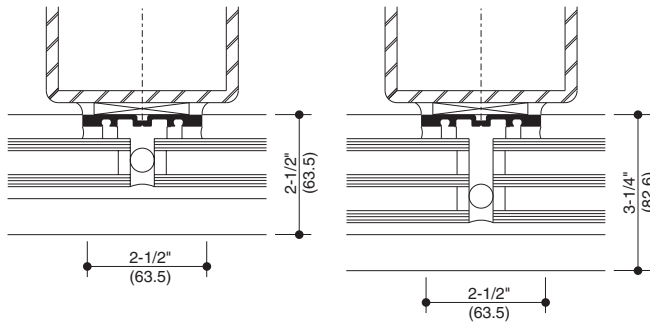
**OPTIONAL DEEP COVERS**



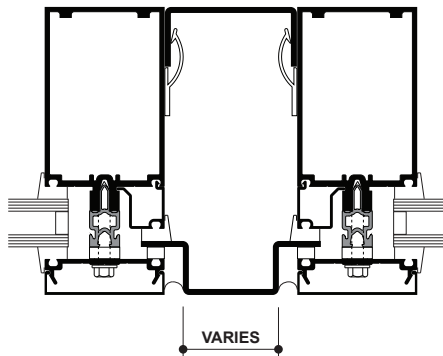
**DEEP MULLION**



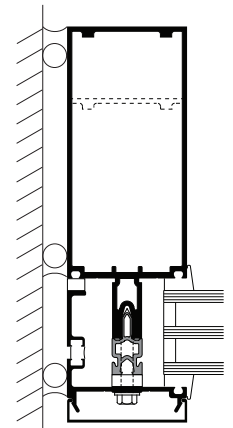
**OPTIONAL BULL NOSE COVERS**



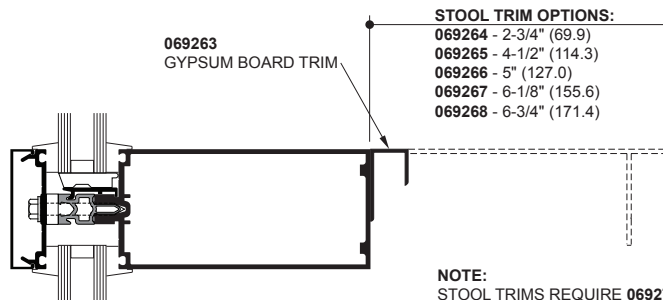
**VENEER SYSTEM**



**DOUBLE MULLION**



**THERMAL PERIMETER PRESSURE PLATE**



**STOOL TRIM OPTIONS:**

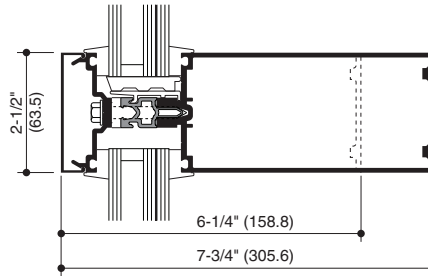
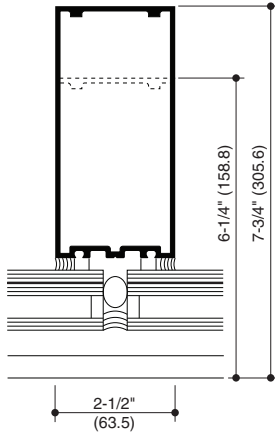
- 069264 - 2-3/4" (69.9)
- 069265 - 4-1/2" (114.3)
- 069266 - 5" (127.0)
- 069267 - 6-1/8" (155.6)
- 069268 - 6-3/4" (171.4)

**NOTE:**  
STOOL TRIMS REQUIRE 069271 TRIM CLIP PACKAGE

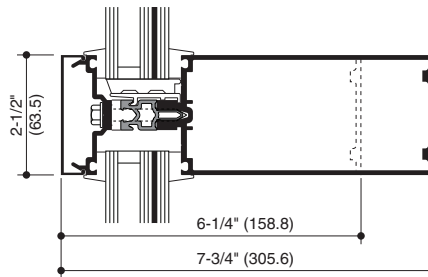
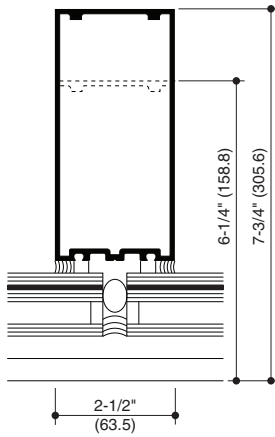
**INTERIOR STOOL TRIM**



1-1/4" INFILL DETAILS



1-5/16" INFILL DETAILS

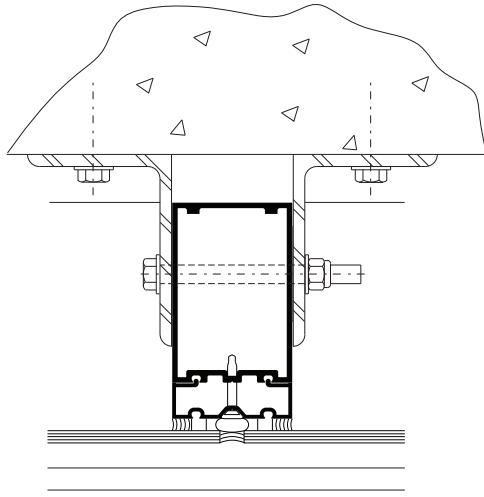


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Kawneer reserves the right to change configuration without prior notice when deemed necessary for product improvement.

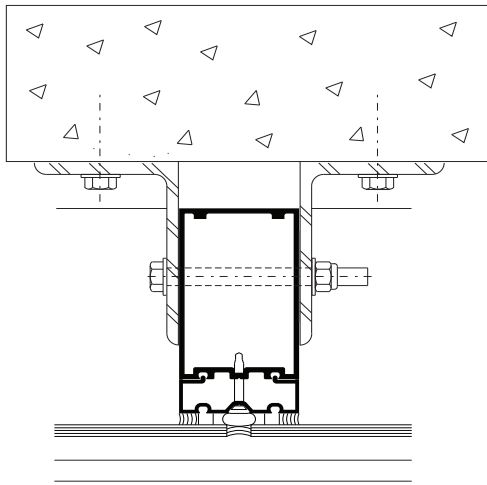
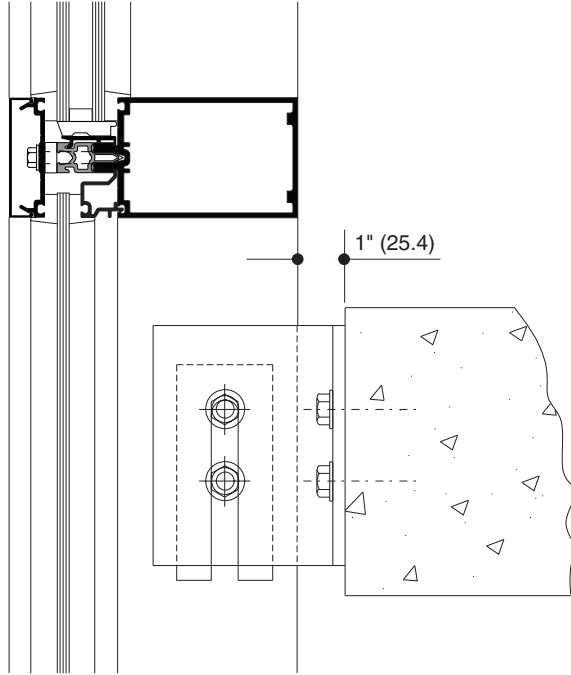
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Actual project conditions will determine specific anchor design. Details on this page are for reference only.



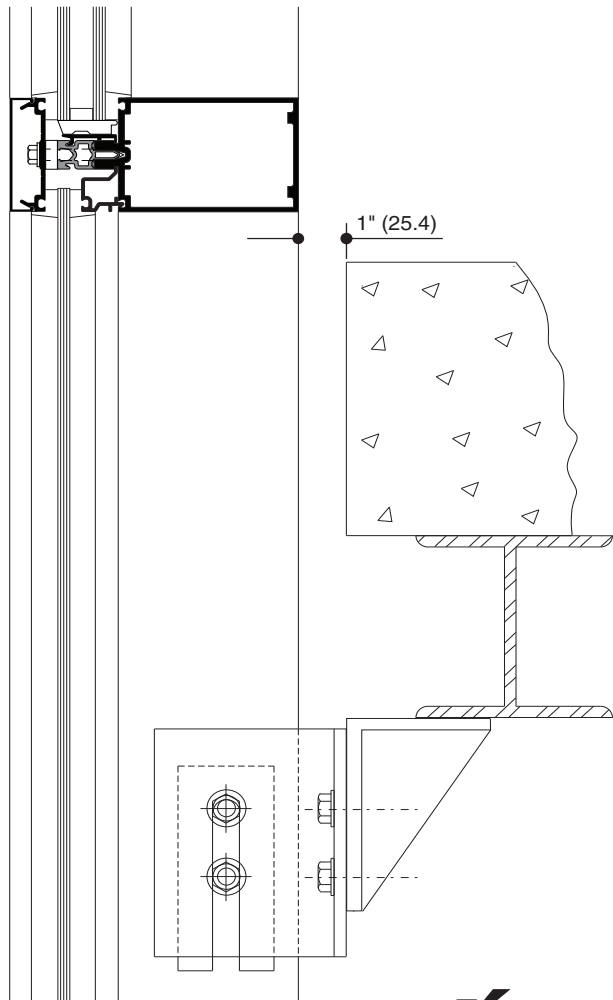
**ANCHORING TO FLOOR SLAB**

NOTE: 1-3/4" triple glazing similar.



**ANCHORING TO SUPPORT STEEL**

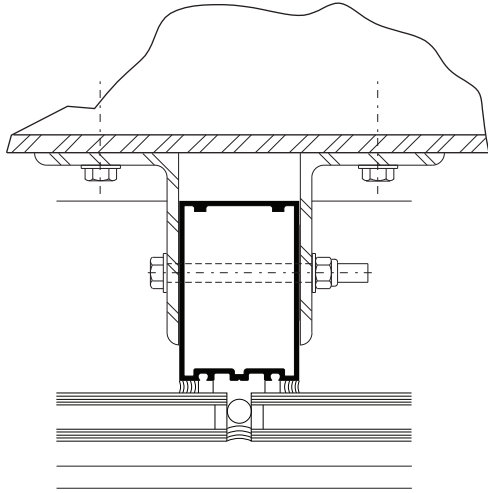
NOTE: 1-3/4" triple glazing similar.



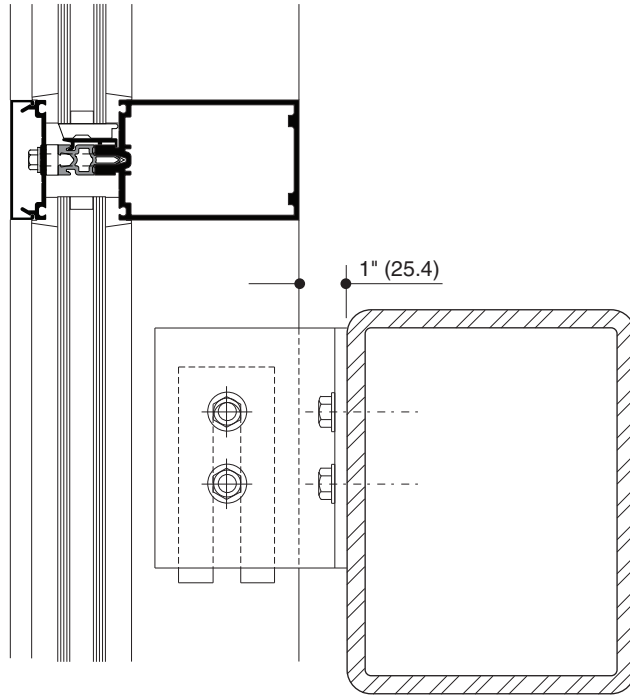
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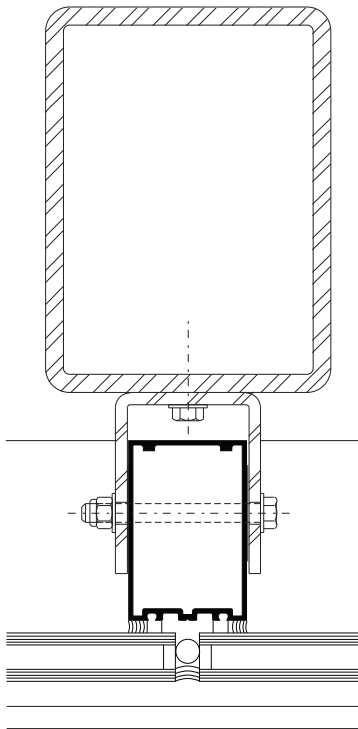
Actual project conditions will determine specific anchor design. Details on this page are for reference only.



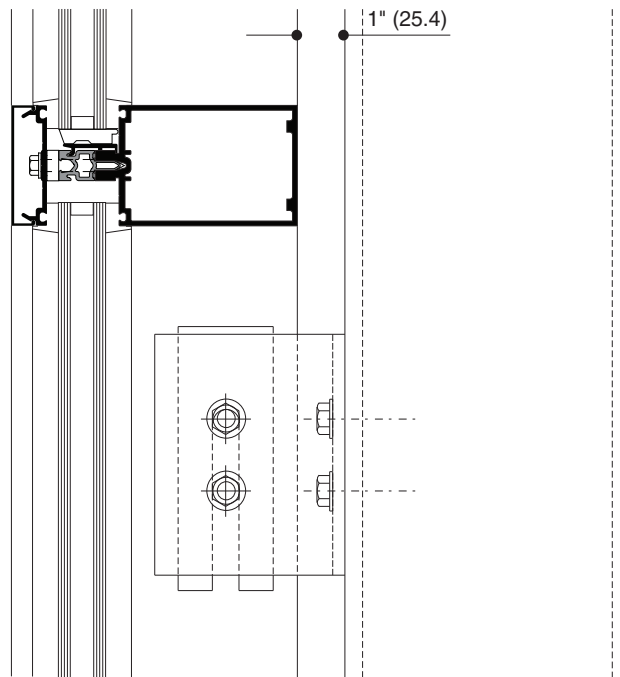
**ANCHORING TO HORIZONTAL STRUCTURAL STEEL**



NOTE: 1-3/4" triple glazing similar.



**ANCHORING TO VERTICAL STRUCTURAL STEEL**



NOTE: 1-3/4" triple glazing similar.

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## WIND LOAD CHARTS

Mullions are designed for deflection limitations in accordance with AAMA TIR-A11 of L/175 up to 13'-6" and L/240 +1/4" above 13'-6". These curves are for mullions WITH HORIZONTALS and are based on engineering calculations for stress and deflection. Allowable wind load stress for ALUMINUM 15,152 psi (104MPa), STEEL 30,000 psi (207MPa). Charted curves, in all cases are for the limiting value. Wind load charts contained herein are based upon nominal wind load utilized in allowable stress design. A conversion from Load Resistance Factor Design (LRFD) is provided. To convert ultimate wind loads to nominal loads, multiply ultimate wind loads by a factor of 0.6 per ASCE/SEI 7. A 4/3 increase in allowable stress has not been used to develop these curves. For special situations not covered by these curves, contact your Kawneer representative for additional information.

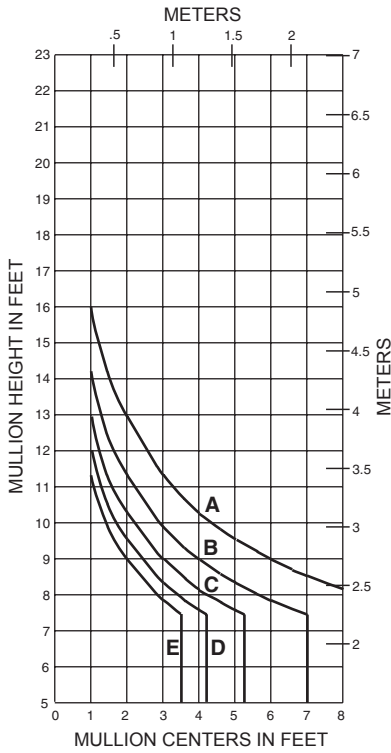
## DEADLOAD CHARTS

Horizontal or deadload limitations are based upon 1/8" (3.2), maximum allowable deflection at the center of an intermediate horizontal member. The accompanying charts are calculated for 1" (25.4) thick insulating glass or 1-3/4" (44.5) thick glass supported on two setting blocks placed at the loading points shown.

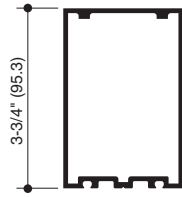
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## SINGLE SPAN



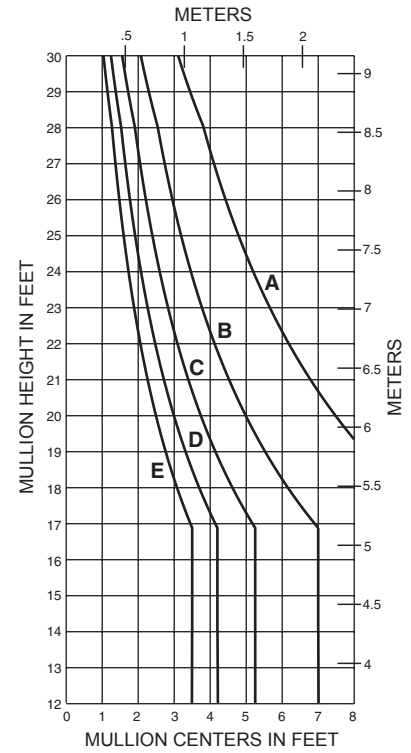
	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	20 PSF (960)	33 PSF (1580)
B =	30 PSF (1440)	50 PSF (2400)
C =	40 PSF (1920)	67 PSF (3200)
D =	50 PSF (2400)	83 PSF (4000)
E =	60 PSF (2880)	100 PSF (4790)



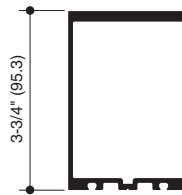
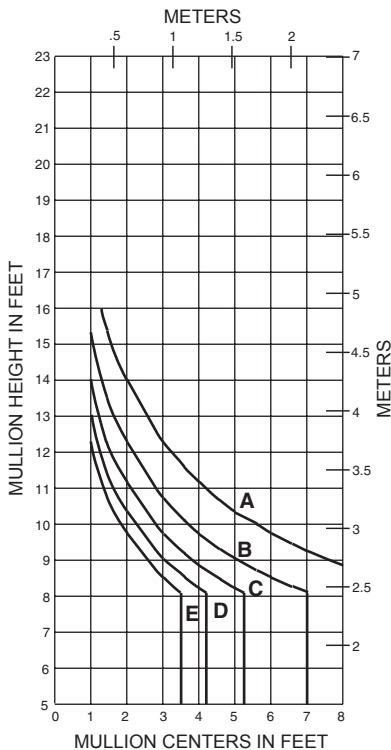
**162025**  
 $I = 2.860(119.04 \times 10^4)$   
 $S = 1.482(24.28 \times 10^3)$



## TWIN SPAN



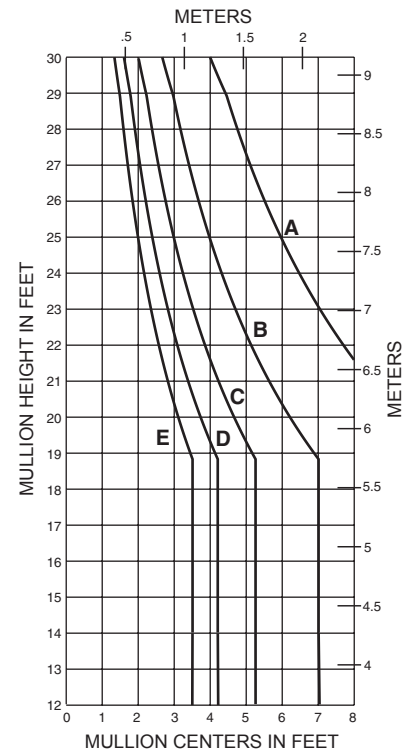
## SINGLE SPAN



**162026**  
 $I = 3.660(152.34 \times 10^4)$   
 $S = 1.840(30.15 \times 10^3)$



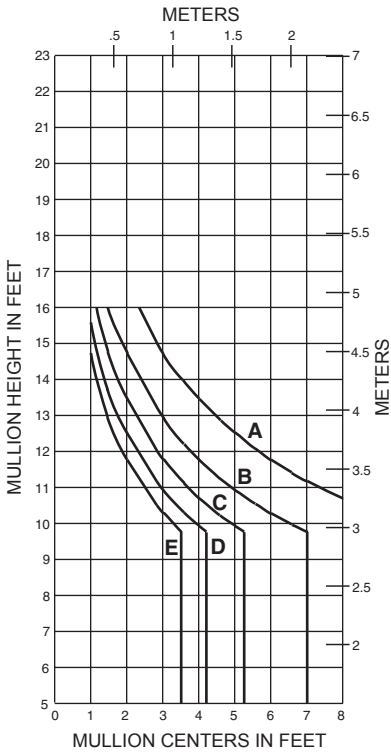
## TWIN SPAN



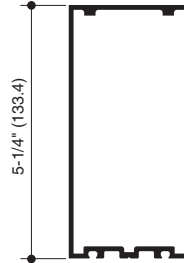
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**SINGLE SPAN**



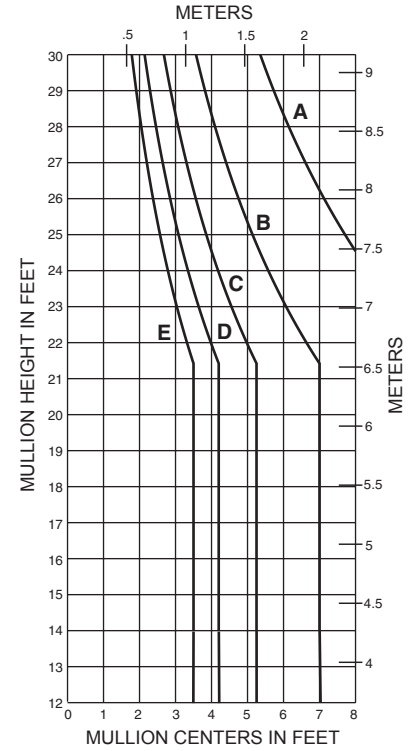
	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	20 PSF (960)	33 PSF (1580)
B =	30 PSF (1440)	50 PSF (2400)
C =	40 PSF (1920)	67 PSF (3200)
D =	50 PSF (2400)	83 PSF (4000)
E =	60 PSF (2880)	100 PSF (4790)



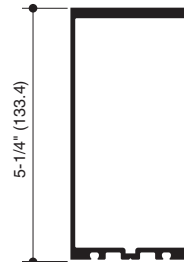
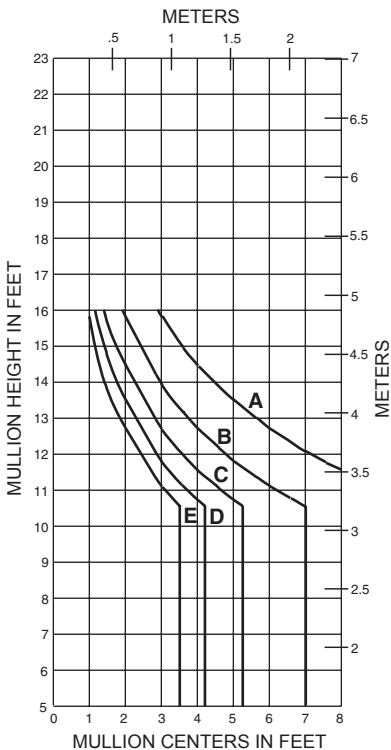
**162027**  
 $I = 6.424(267.38 \times 10^4)$   
 $S = 2.385(39.08 \times 10^3)$



**TWIN SPAN**



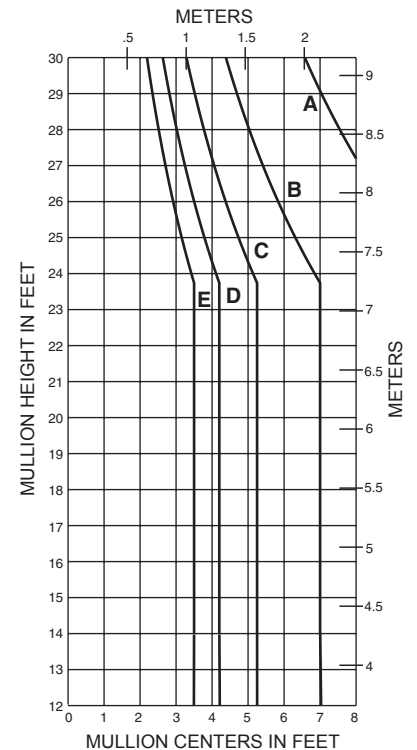
**SINGLE SPAN**



**162028**  
 $I = 8.088(336.64 \times 10^4)$   
 $S = 2.930(48.01 \times 10^3)$



**TWIN SPAN**

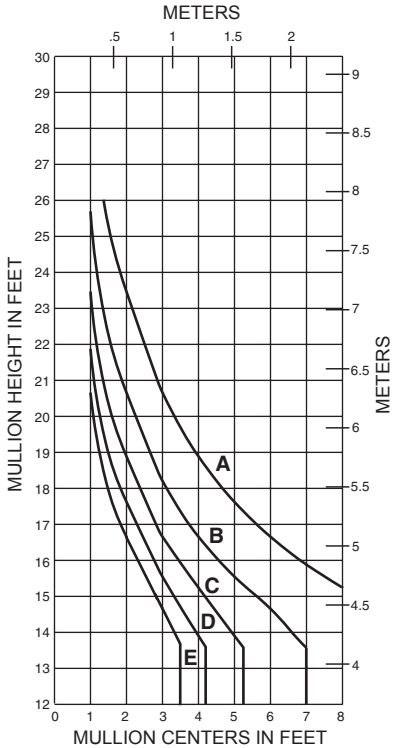


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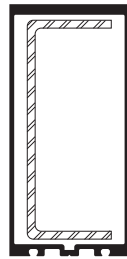
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## SINGLE SPAN

162028 W/162300

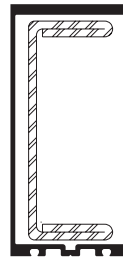


	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	20 PSF (960)	33 PSF (1580)
B =	30 PSF (1440)	50 PSF (2400)
C =	40 PSF (1920)	67 PSF (3200)
D =	50 PSF (2400)	83 PSF (4000)
E =	60 PSF (2880)	100 PSF (4790)



162028 W/162300

la = 8.088(336.64 x 10<sup>4</sup>)  
 Sa = 2.930(48.01 x 10<sup>3</sup>)  
 ls = 3.805(158.37 x 10<sup>4</sup>)  
 Ss = 1.669(27.35 x 10<sup>3</sup>)

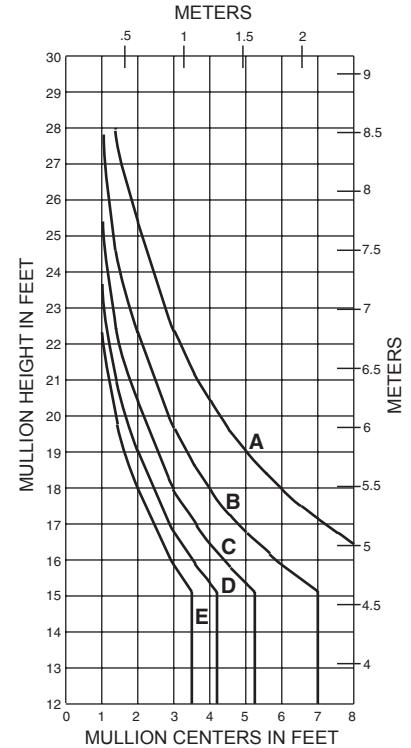


162028 W/162301

la = 8.088(336.64 x 10<sup>4</sup>)  
 Sa = 2.930(48.01 x 10<sup>3</sup>)  
 ls = 5.684(236.59 x 10<sup>4</sup>)  
 Ss = 2.493(40.85 x 10<sup>3</sup>)

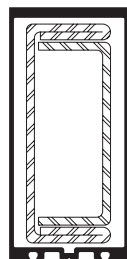
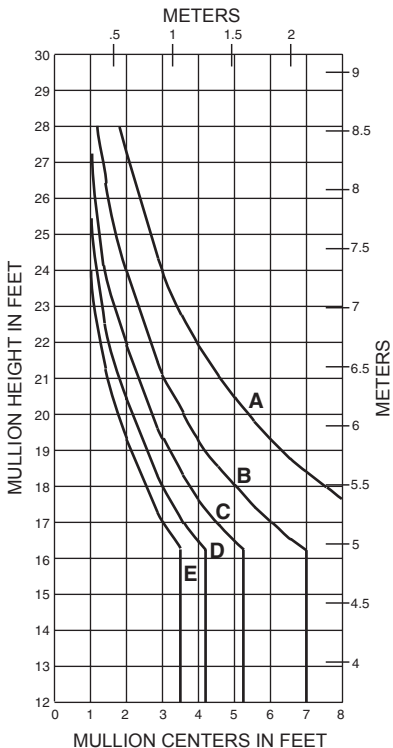
## SINGLE SPAN

162028 W/162301



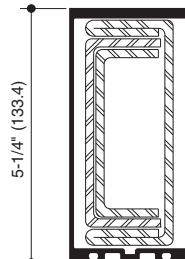
## SINGLE SPAN

162028 W/162301/302



162028 W/162301/302

la = 8.088(336.64 x 10<sup>4</sup>)  
 Sa = 2.930(48.01 x 10<sup>3</sup>)  
 ls = 7.893(328.53 x 10<sup>4</sup>)  
 Ss = 3.462(56.73 x 10<sup>3</sup>)

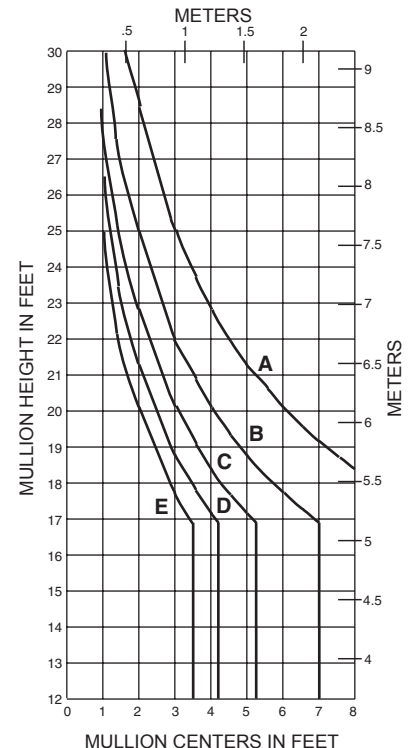


162028 W/162301/302/303

la = 8.088(336.64 x 10<sup>4</sup>)  
 Sa = 2.930(48.01 x 10<sup>3</sup>)  
 ls = 9.347(389.05 x 10<sup>4</sup>)  
 Ss = 4.100(67.19 x 10<sup>3</sup>)

## SINGLE SPAN

162028 W/162301/302/303

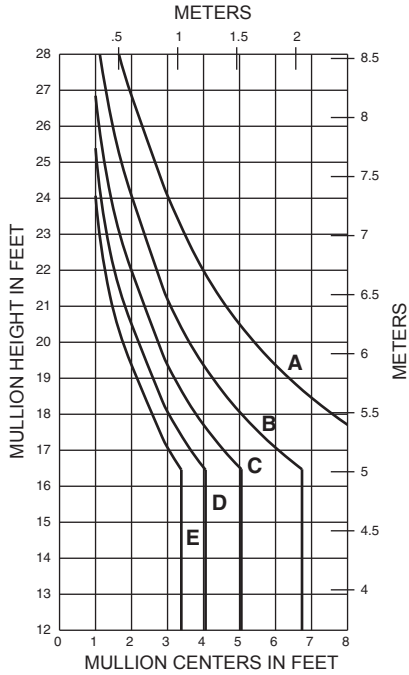


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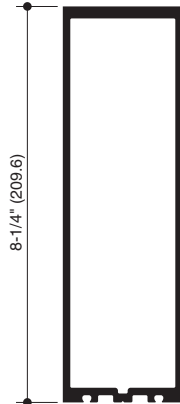
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## SINGLE SPAN

162028 W/162300

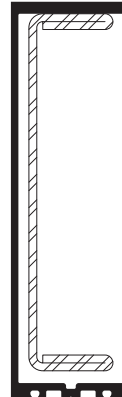


	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	20 PSF (960)	33 PSF (1580)
B =	30 PSF (1440)	50 PSF (2400)
C =	40 PSF (1920)	67 PSF (3200)
D =	50 PSF (2400)	83 PSF (4000)
E =	60 PSF (2880)	100 PSF (4790)



**162076**

$I = 31.174(1,297.56 \times 10^4)$   
 $S = 7.452(122.12 \times 10^3)$

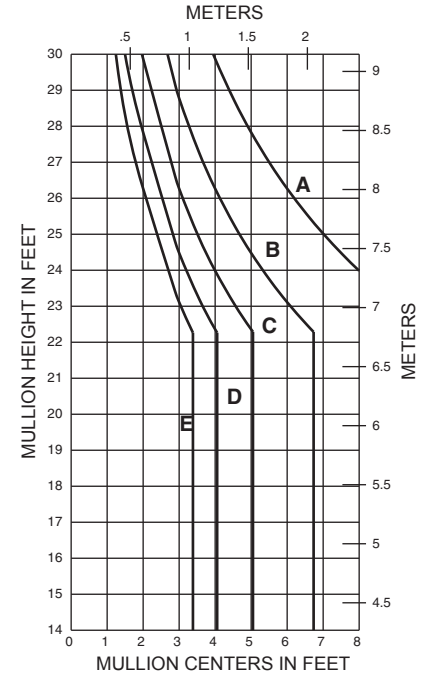


**162076**  
**W/162363**

$I_a = 31.174(1,297.56 \times 10^4)$   
 $S_a = 7.452(122.12 \times 10^3)$   
 $I_s = 17.600(732.56 \times 10^4)$   
 $S_s = 4.732(77.54 \times 10^3)$

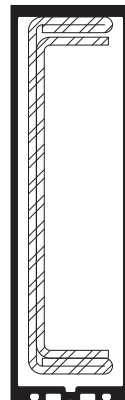
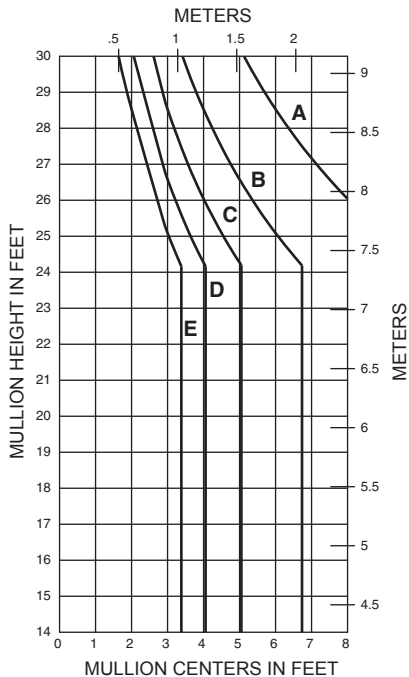
## SINGLE SPAN

162028 W/162301



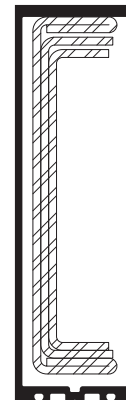
## SINGLE SPAN

162028 W/162301/302



**162076**  
**W/162363/364**

$I_a = 31.174(1,297.56 \times 10^4)$   
 $S_a = 7.452(122.12 \times 10^3)$   
 $I_s = 26.033(1,083.57 \times 10^4)$   
 $S_s = 7.000(114.71 \times 10^3)$

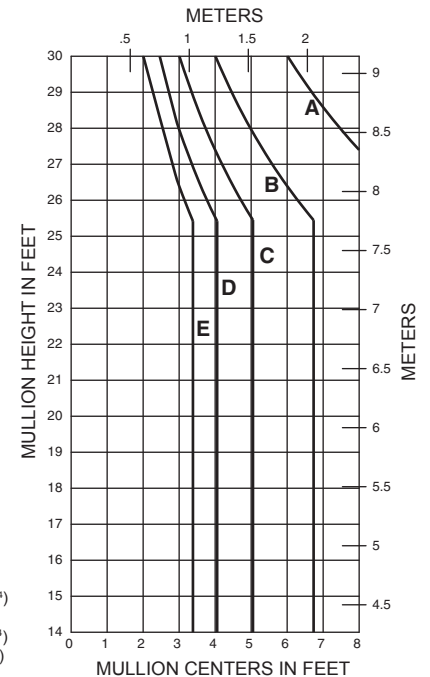


**162076**  
**W/162363/364/365**

$I_a = 31.174(1,297.56 \times 10^4)$   
 $S_a = 7.452(122.12 \times 10^3)$   
 $I_s = 32.432(1,349.92 \times 10^4)$   
 $S_s = 32.432(531.46 \times 10^3)$

## SINGLE SPAN

162028 W/162301/302/303



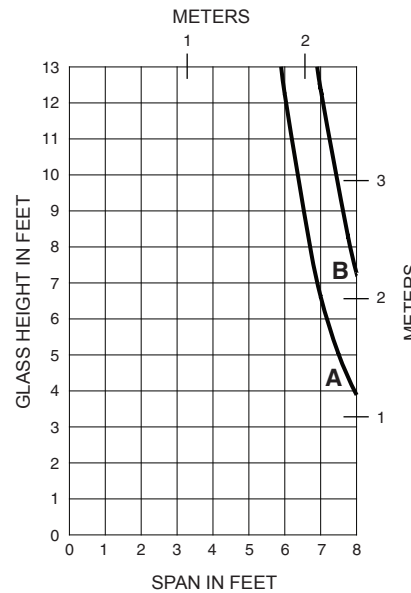
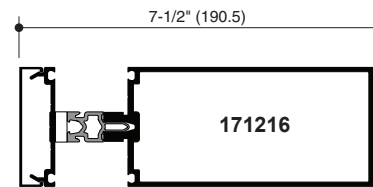
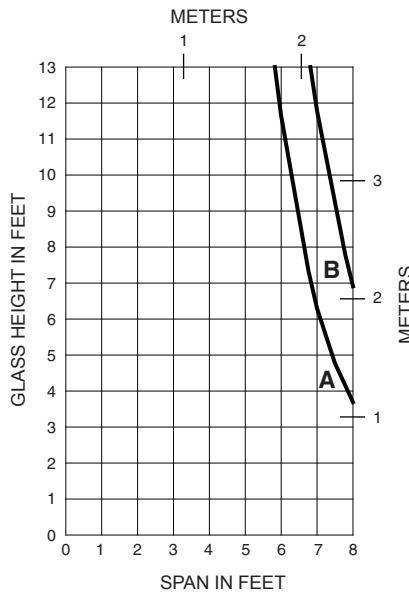
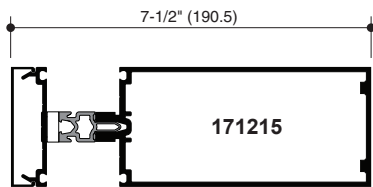
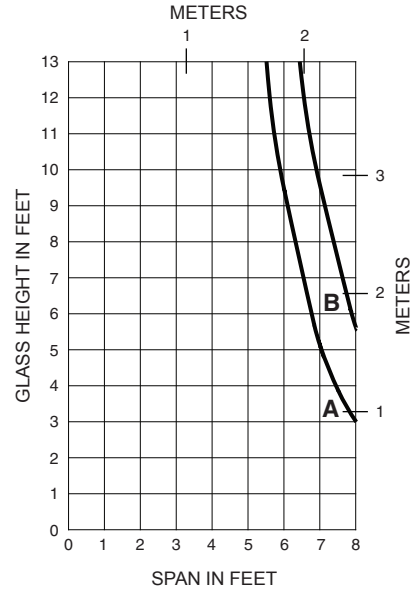
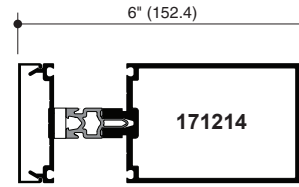
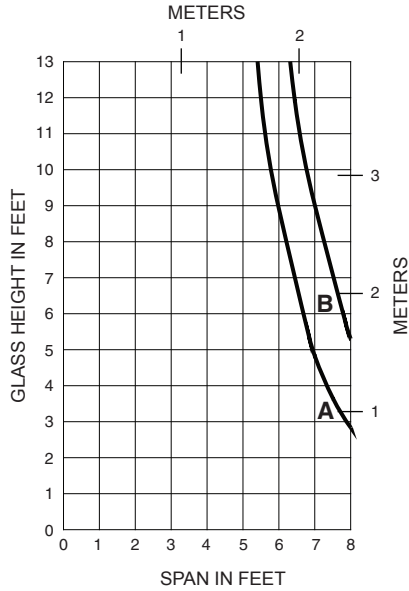
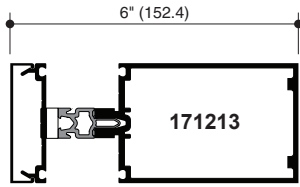
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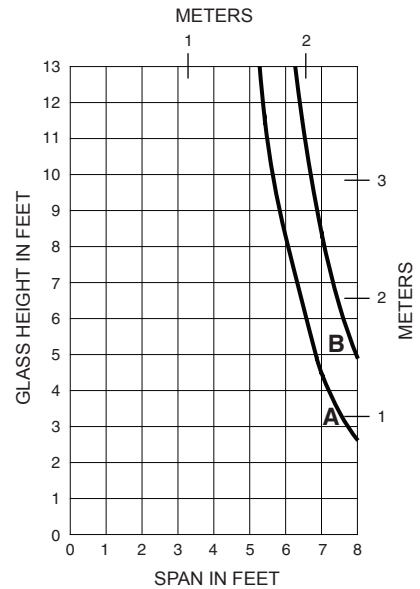
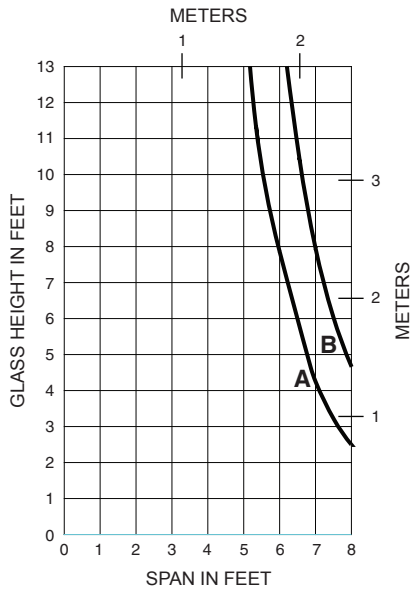
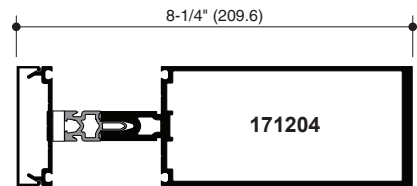
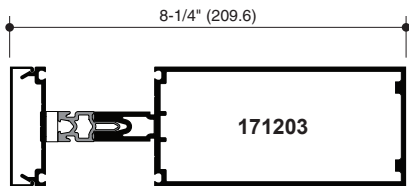
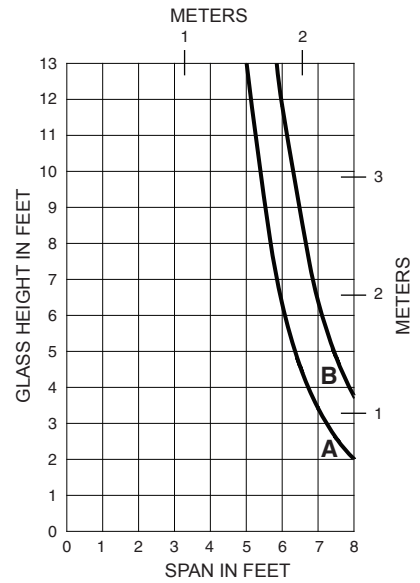
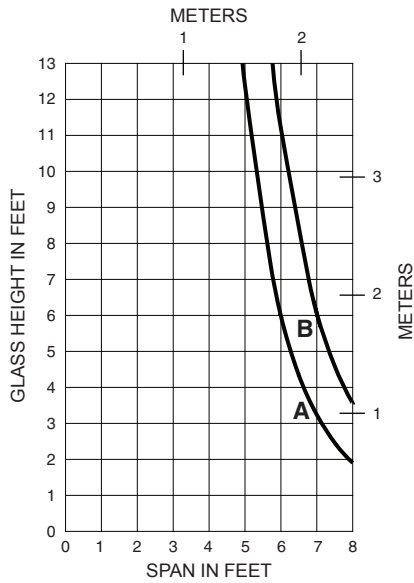
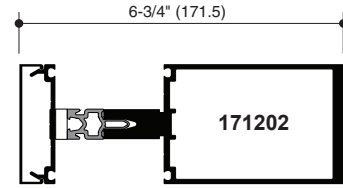
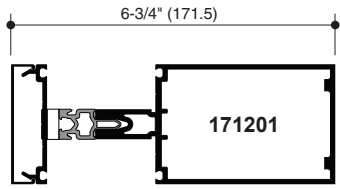
A - 1" GLASS (1/4 POINT LOADING)  
 B - 1" GLASS (1/8 POINT LOADING)



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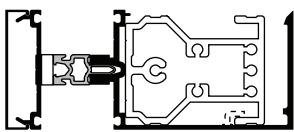
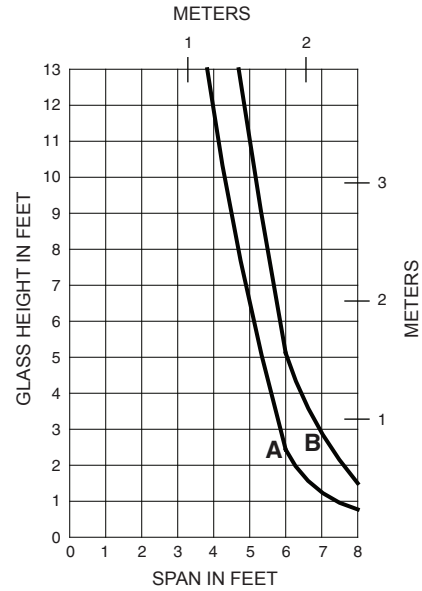
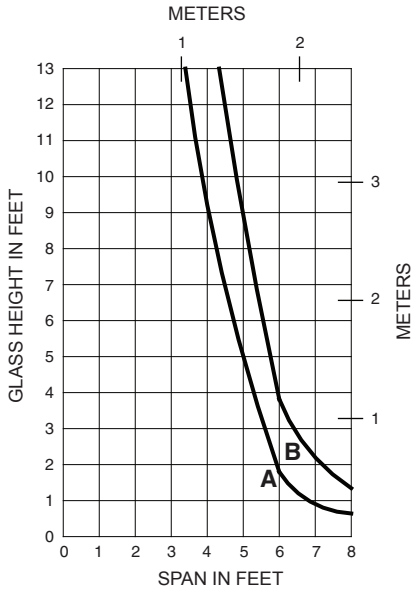
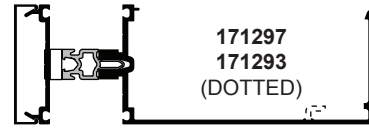
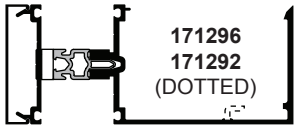
A - 1-3/4" GLASS (1/4 POINT LOADING)  
 B - 1-3/4" GLASS (1/8 POINT LOADING)



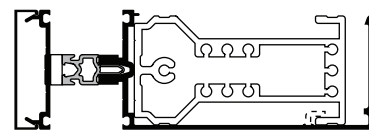
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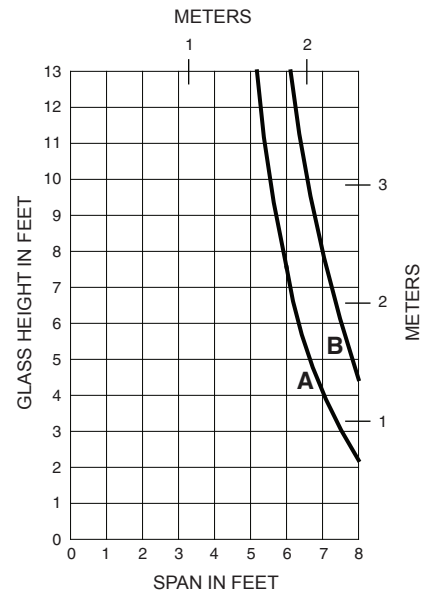
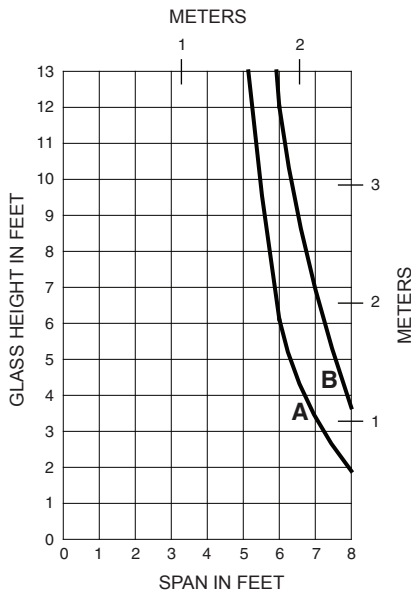
A - 1" GLASS (1/4 POINT LOADING)  
 B - 1" GLASS (1/8 POINT LOADING)



171296  
 171292  
 (DOTTED)  
 171077  
 REINF.



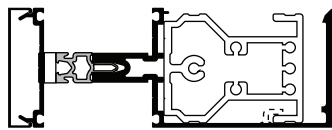
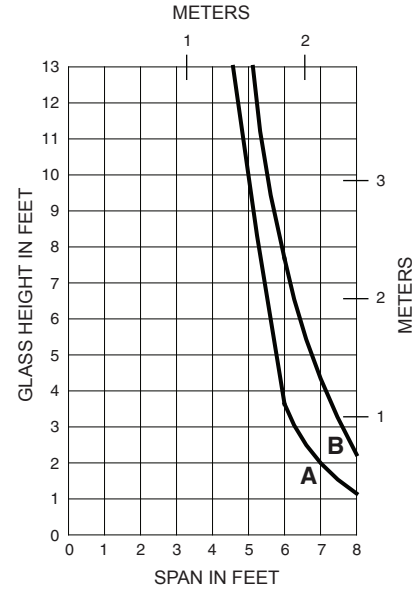
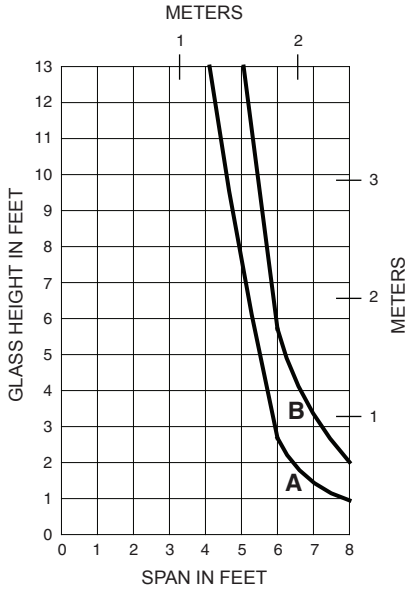
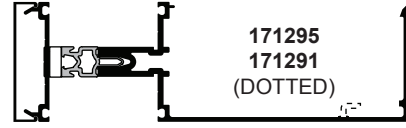
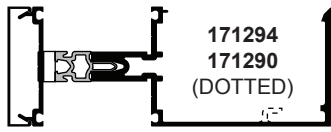
171297  
 171293  
 (DOTTED)  
 171078  
 REINF.



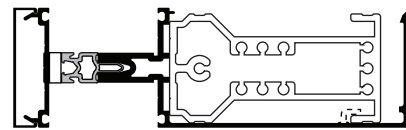
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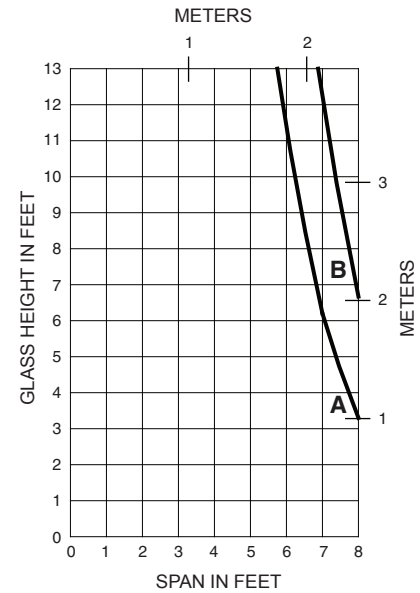
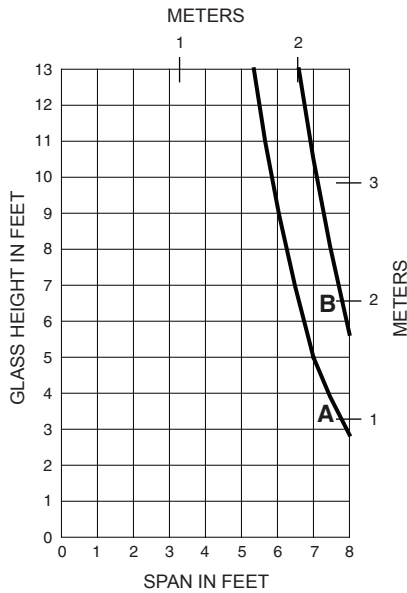
A - 1" GLASS (1/4 POINT LOADING)  
 B - 1" GLASS (1/8 POINT LOADING)



171294  
 171290  
 (DOTTED)  
 171077  
 REINF.



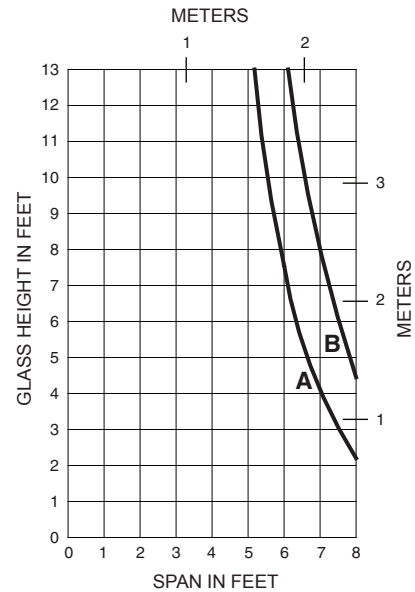
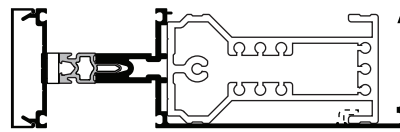
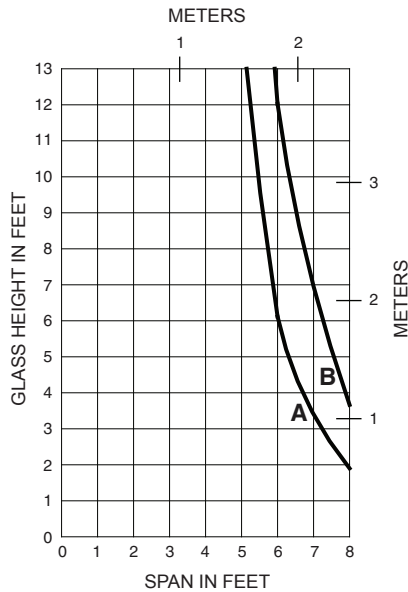
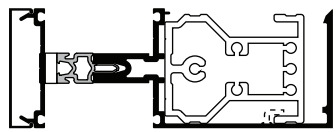
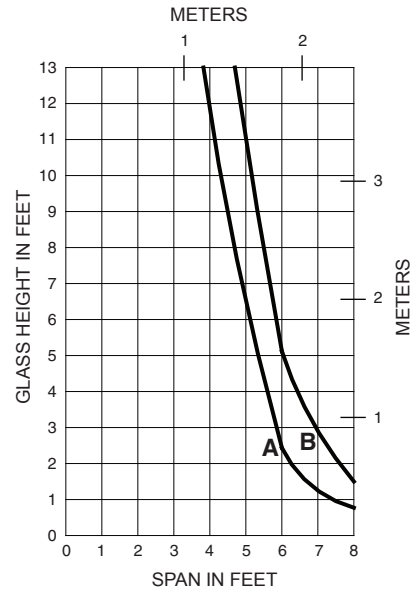
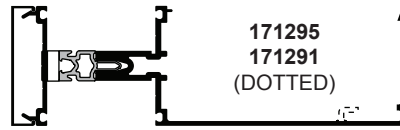
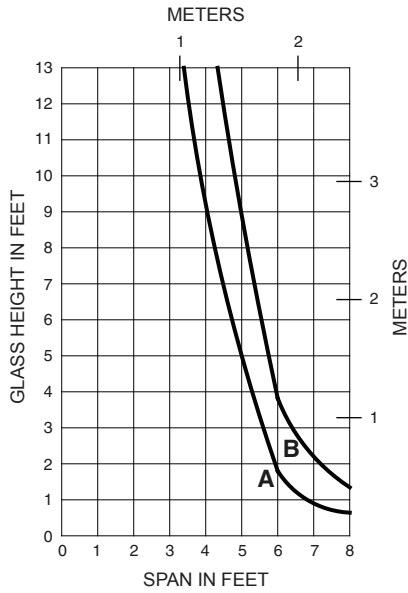
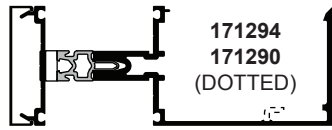
171295  
 171291  
 (DOTTED)  
 171078  
 REINF.



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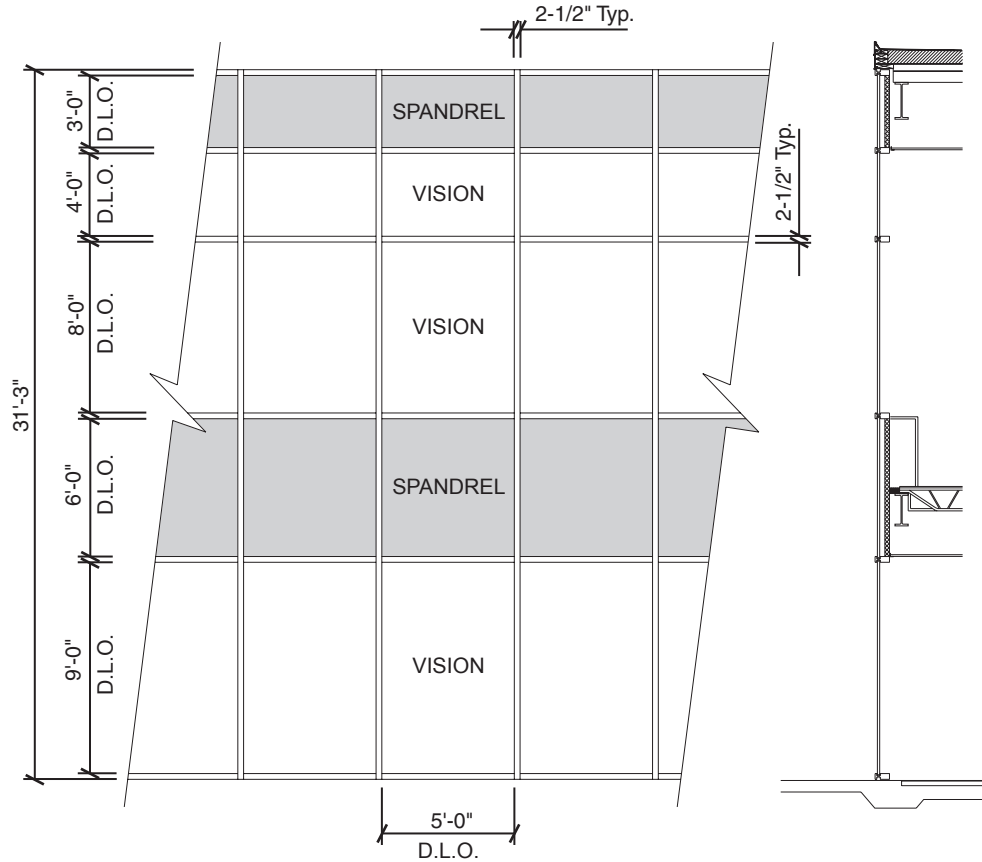
A - 1-3/4" GLASS (1/4 POINT LOADING)  
 B - 1-3/4" GLASS (1/8 POINT LOADING)



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**Generic Project Specific U-factor Example Calculation**  
**(Percent of Glass will vary on specific products depending on sitelines)**  
 (Based on single bay of Curtain Wall/Window Wall)



**Vision Area**

Example Glass U-factor	= 0.48 Btu/(ft <sup>2</sup> · h · °F)
Vision Area	= 5(9 + 8 + 4) = 105.0 ft <sup>2</sup>
Total Area (Vision)	= 5' 2-1/2" (9' 3-3/4" + 8' 2-1/2" + 4' 2-1/2") = 113.2 ft <sup>2</sup>
Percentage of Vision Glass	= (Vision Area ÷ Total Area)100 = (105.0 ÷ 113.2)100 = 93%

**Spandrel Area**

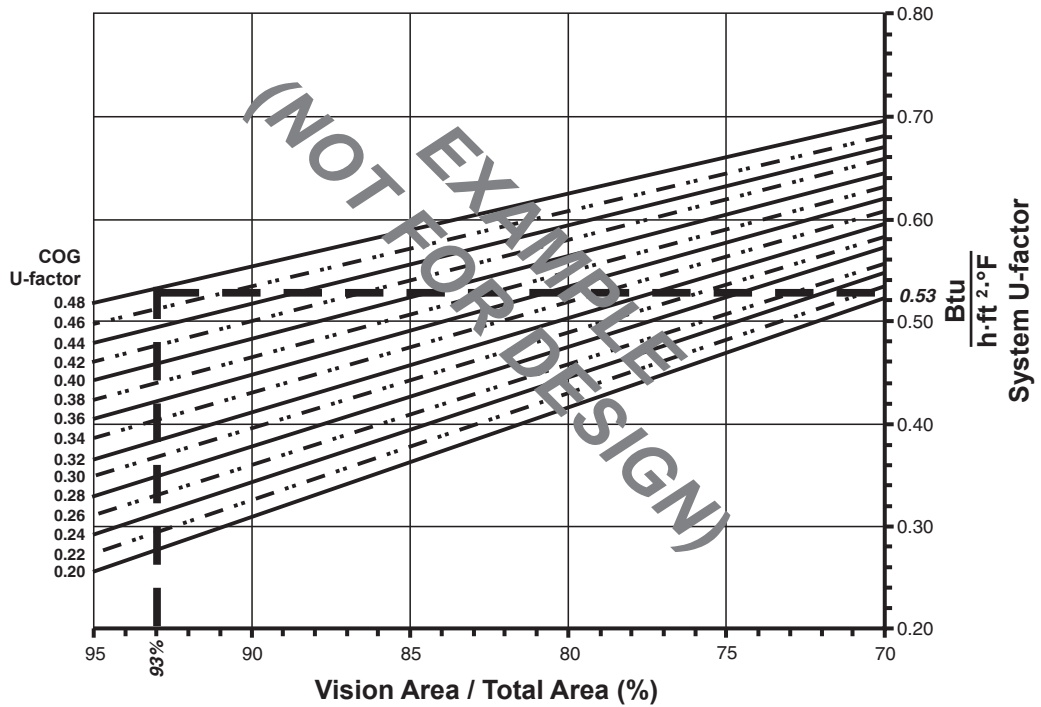
Example Spandrel R-value	= 15 (ft <sup>2</sup> · h · °F)/Btu
Spandrel Area	= 5(6 + 3) = 45.0 ft <sup>2</sup>
Total Area (Spandrel)	= 5' 2-1/2" (6' 2-1/2" + 3' 3-3/4") = 49.6 ft <sup>2</sup>
Percent of Spandrel	= (Spandrel Area ÷ Total Area)100 = (45.0 ÷ 49.6)100 = 91%

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Vision Area Chart

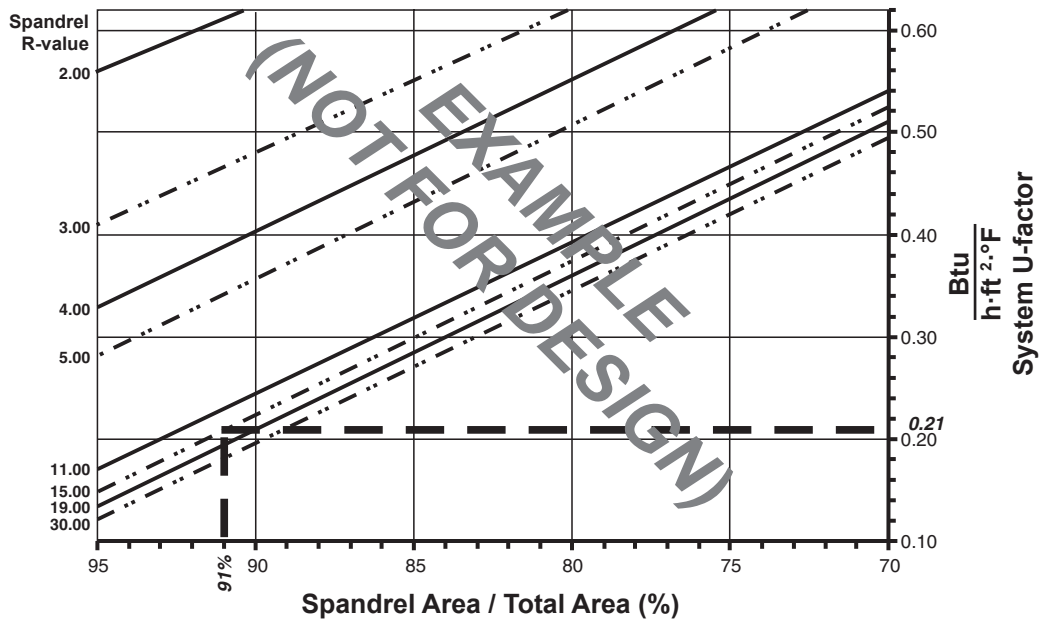
System U-factor vs Percent of Vision Area



Based on a single curtain wall bay of 93% vision glass and center of glass U-factor of 0.48, System U-factor is equal to 0.53 Btu/(h·ft<sup>2</sup>·°F)

Spandrel Area Chart

System U-factor vs Percent of Spandrel Area



Based on a single curtain wall bay of 91% spandrel and center of spandrel R-value of 15, system U-factor is equal to 0.21 Btu/(h·ft<sup>2</sup>·°F)

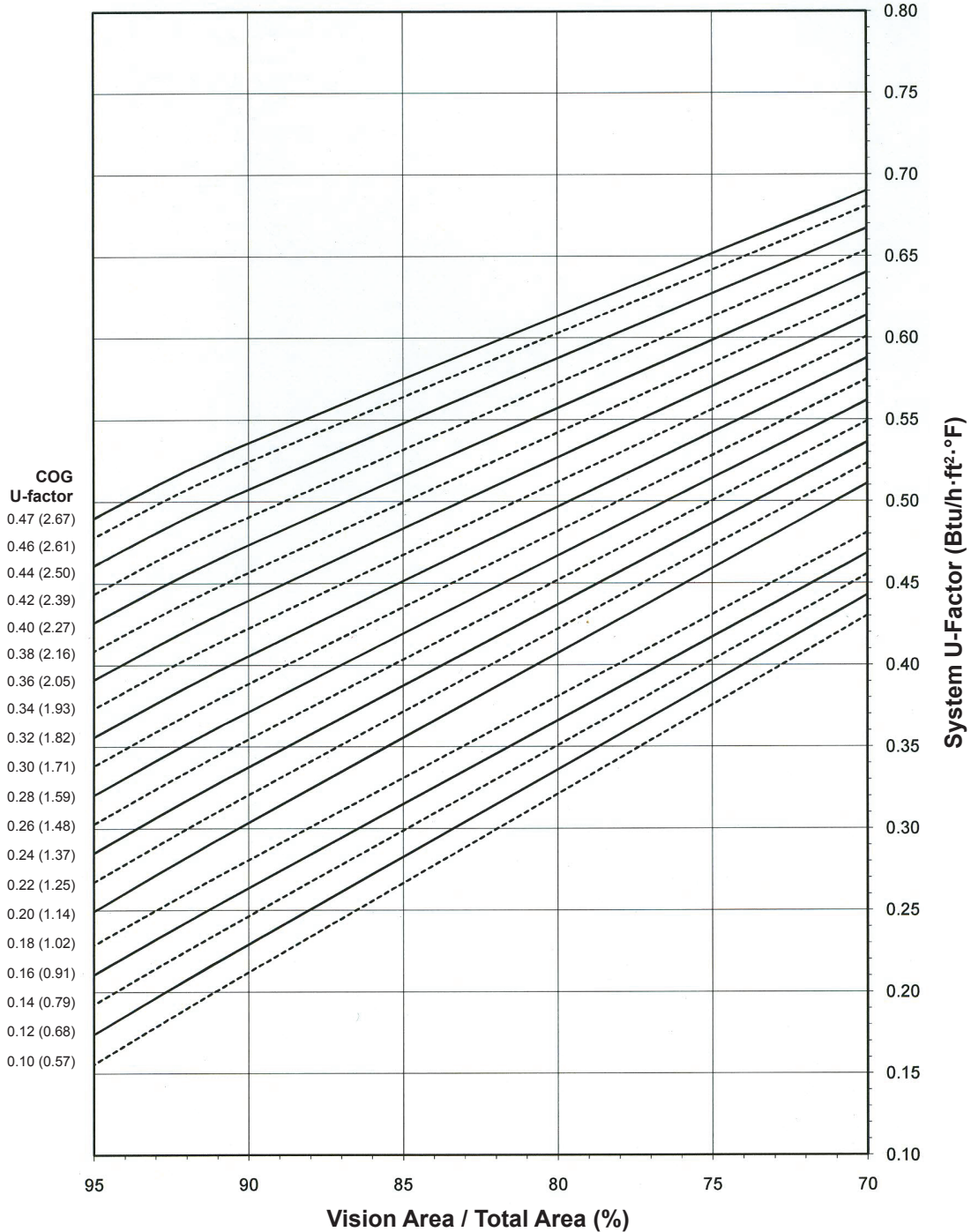
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Note:  
 Values in parentheses are metric.  
 COG=Center of Glass.  
 Charts are generated per AAMA 507.

**1" GLAZING WITH ALUMINUM PRESSURE PLATE**

**System U-Factor for Vision Glass**



**Notes for System U-Factor, SHGC and VT charts:**

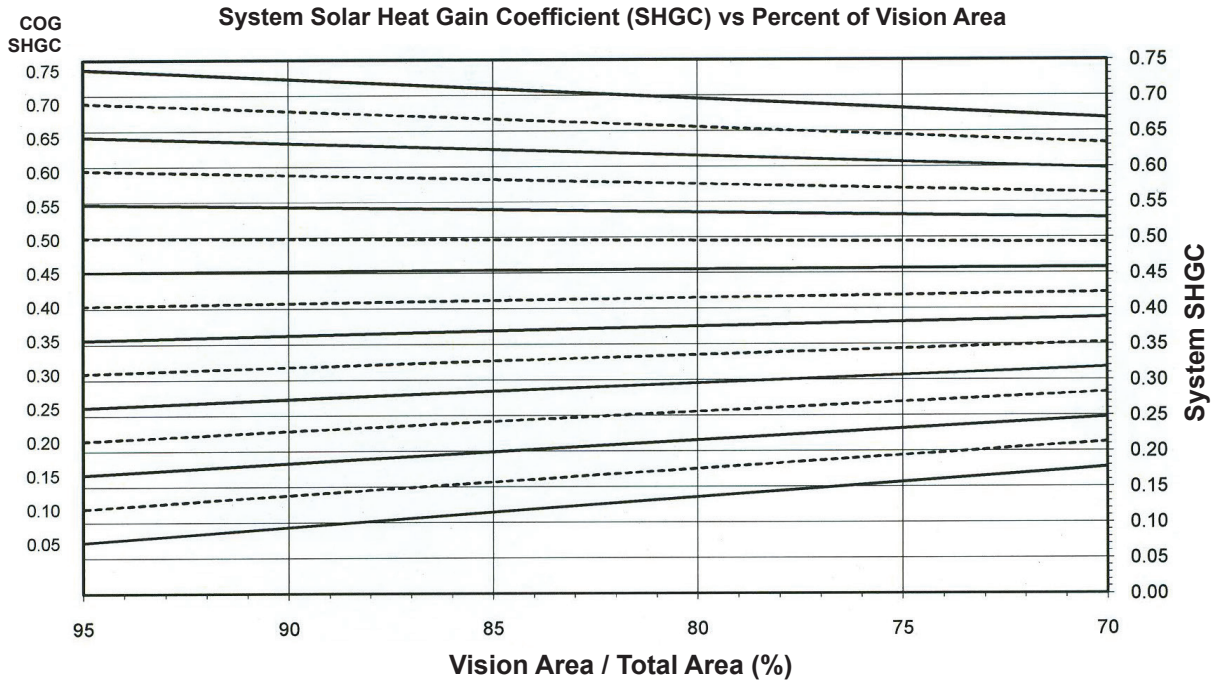
For glass values that are not listed, linear interpolation is permitted.  
 Glass properties are based on center of glass values (winter conditions) and are obtained from your glass supplier.

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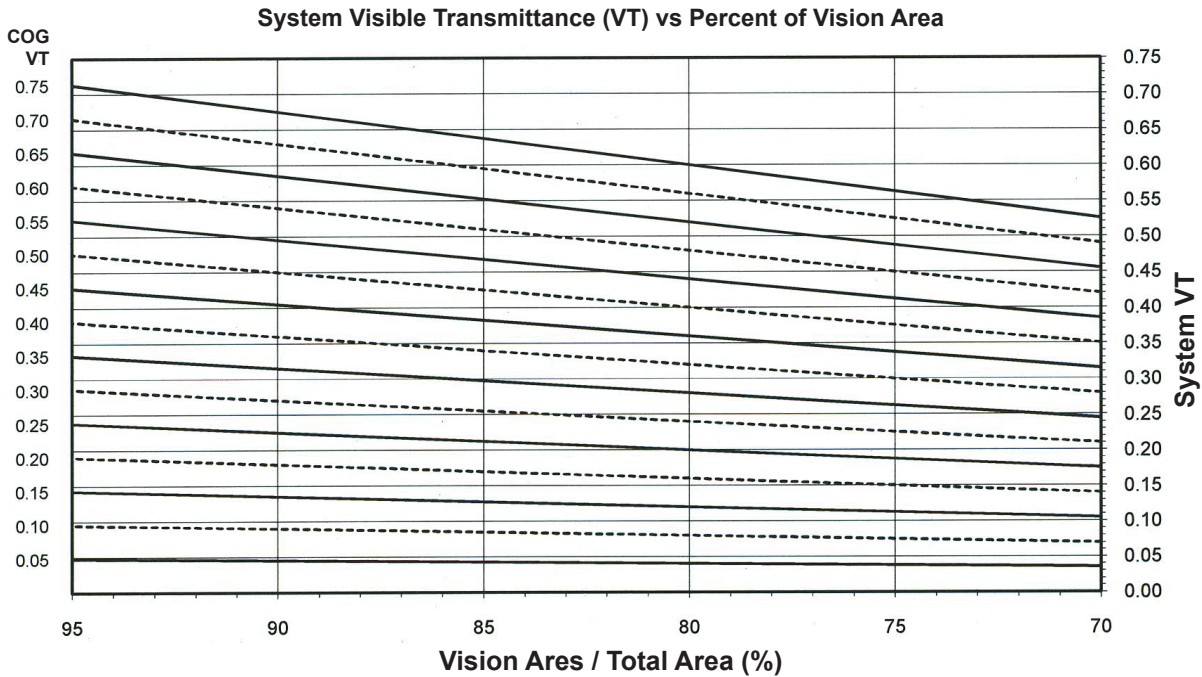
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**1" GLAZING WITH ALUMINUM PRESSURE PLATE**



Charts are generated per AAMA 507.



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**Thermal Transmittance <sup>1</sup> (BTU/hr • ft<sup>2</sup> • °F)**

Glass U-Factor <sup>3</sup>	Overall U-Factor <sup>4</sup>
0.47	0.53
0.46	0.52
0.44	0.50
0.42	0.49
0.40	0.47
0.38	0.45
0.36	0.44
0.34	0.42
0.32	0.40
0.30	0.39
0.28	0.37
0.26	0.35
0.24	0.33
0.22	0.32
0.20	0.30
0.18	0.28
0.16	0.26
0.14	0.24
0.12	0.23
0.10	0.21

**1" GLAZING WITH ALUMINUM PRESSURE PLATE**

**NOTE:** For glass values that are not listed, linear interpolation is permitted.

1. U-Factors are determined in accordance with NFRC 100.
2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values and are obtained from your glass supplier.
4. Overall U-Factor, SHGC, and VT Matricies are based on the standard NFRC specimen size of 2000mm wide by 2000mm high (78-3/4" by 78-3/4").

**SHGC Matrix <sup>2</sup>**

Glass SHGC <sup>3</sup>	Overall SHGC <sup>4</sup>
0.75	0.72
0.70	0.68
0.65	0.63
0.60	0.59
0.55	0.54
0.50	0.50
0.45	0.45
0.40	0.41
0.35	0.36
0.30	0.32
0.25	0.27
0.20	0.23
0.15	0.18
0.10	0.14
0.05	0.09

**Visible Transmittance <sup>2</sup>**

Glass VT <sup>3</sup>	Overall VT <sup>4</sup>
0.75	0.68
0.70	0.63
0.65	0.59
0.60	0.54
0.55	0.50
0.50	0.45
0.45	0.41
0.40	0.36
0.35	0.32
0.30	0.27
0.25	0.23
0.20	0.18
0.15	0.14
0.10	0.09
0.05	0.05

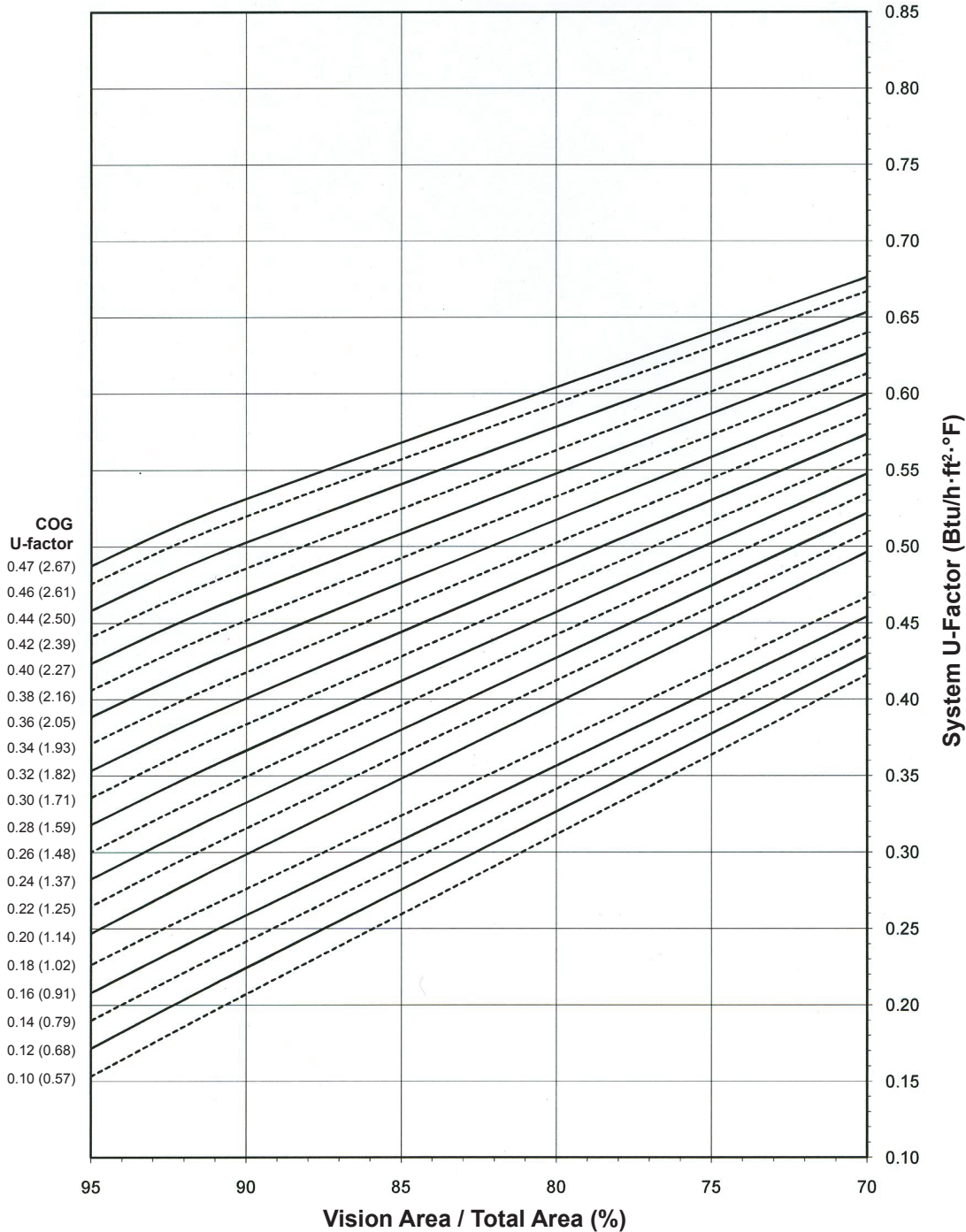
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Note:  
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 COG=Center of Glass.  
 Charts are generated per AAMA 507.

**1" GLAZING WITH FIBERGLASS PRESSURE PLATE**

**System U-Factor for Vision Glass**



**Notes for System U-Factor, SHGC and VT charts:**

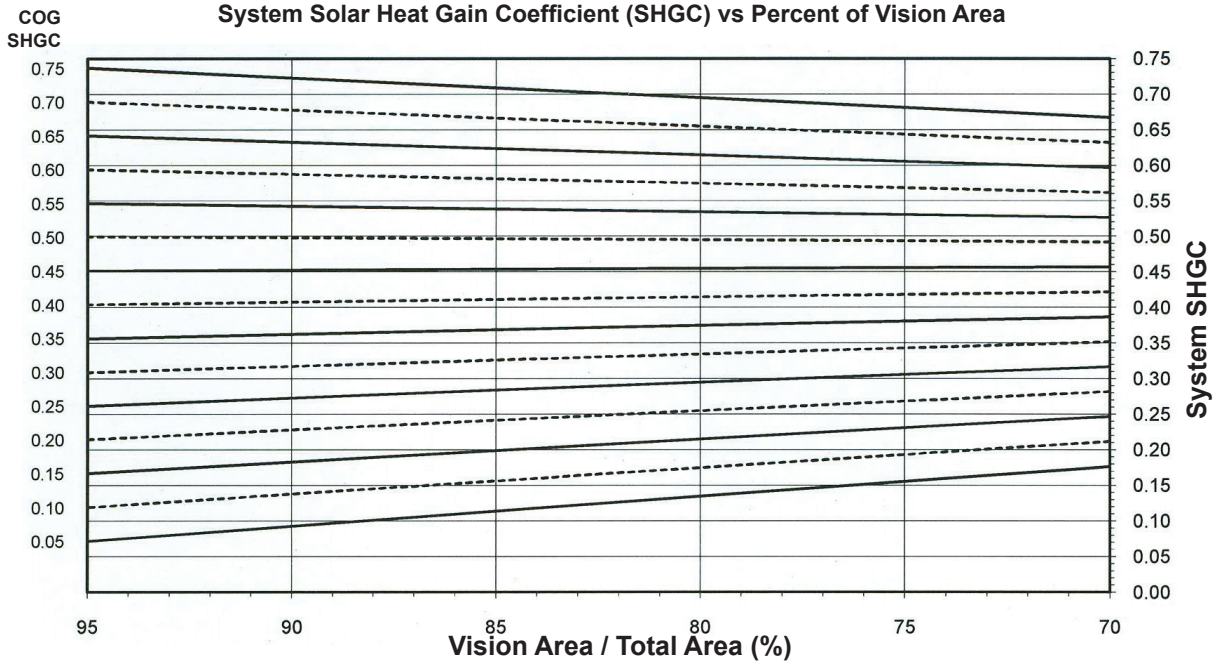
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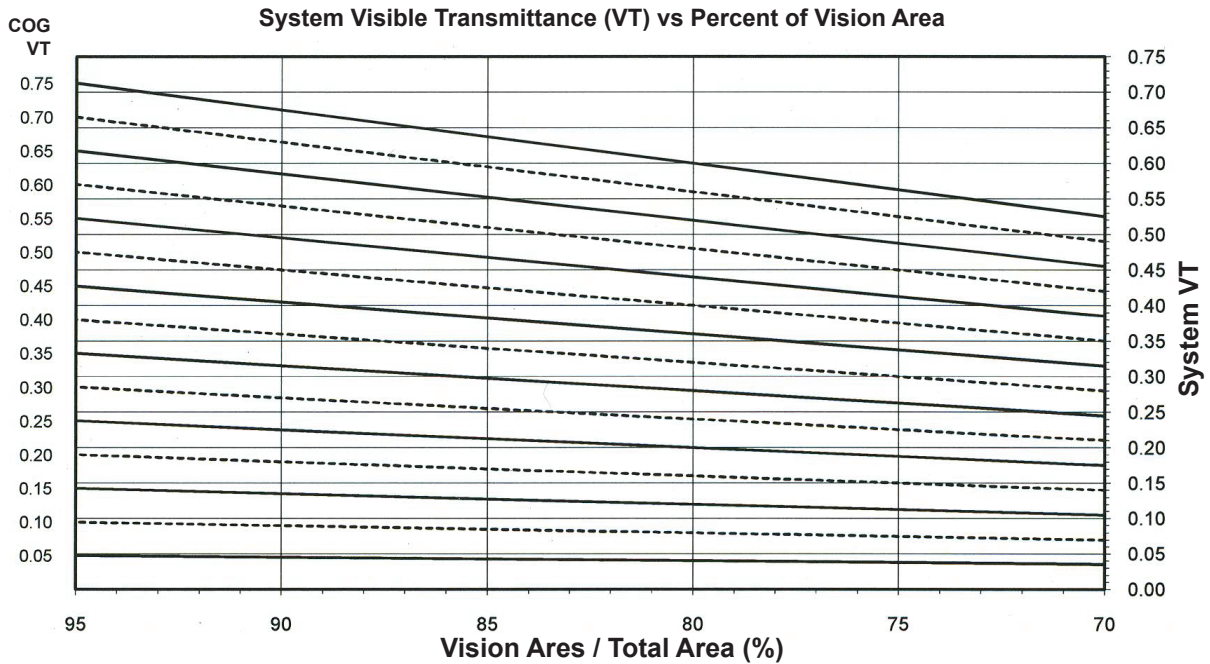
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**1" GLAZING WITH FIBERGLASS PRESSURE PLATE**



Charts are generated per AAMA 507.



Charts are generated per AAMA 507.

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**Thermal Transmittance**<sup>1</sup> (BTU/hr • ft<sup>2</sup> • °F)

Glass U-Factor <sup>3</sup>	Overall U-Factor <sup>4</sup>
0.47	0.53
0.46	0.52
0.44	0.50
0.42	0.48
0.40	0.47
0.38	0.45
0.36	0.43
0.34	0.41
0.32	0.40
0.30	0.38
0.28	0.36
0.26	0.35
0.24	0.33
0.22	0.31
0.20	0.30
0.18	0.27
0.16	0.26
0.14	0.24
0.12	0.22
0.10	0.20

**1" GLAZING WITH  
FIBERGLASS PRESSURE PLATE**

**NOTE:** For glass values that are not listed, linear interpolation is permitted.

1. U-Factors are determined in accordance with NFRC 100.
2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values and are obtained from your glass supplier.
4. Overall U-Factor, SHGC, and VT Matricies are based on the standard NFRC specimen size of 2000mm wide by 2000mm high (78-3/4" by 78-3/4").

**SHGC Matrix**<sup>2</sup>

Glass SHGC <sup>3</sup>	Overall SHGC <sup>4</sup>
0.75	0.72
0.70	0.68
0.65	0.63
0.60	0.59
0.55	0.54
0.50	0.50
0.45	0.45
0.40	0.41
0.35	0.36
0.30	0.32
0.25	0.27
0.20	0.23
0.15	0.18
0.10	0.14
0.05	0.09

**Visible Transmittance**<sup>2</sup>

Glass VT <sup>3</sup>	Overall VT <sup>4</sup>
0.75	0.68
0.70	0.63
0.65	0.59
0.60	0.54
0.55	0.50
0.50	0.45
0.45	0.41
0.40	0.36
0.35	0.32
0.30	0.27
0.25	0.23
0.20	0.18
0.15	0.14
0.10	0.09
0.05	0.05

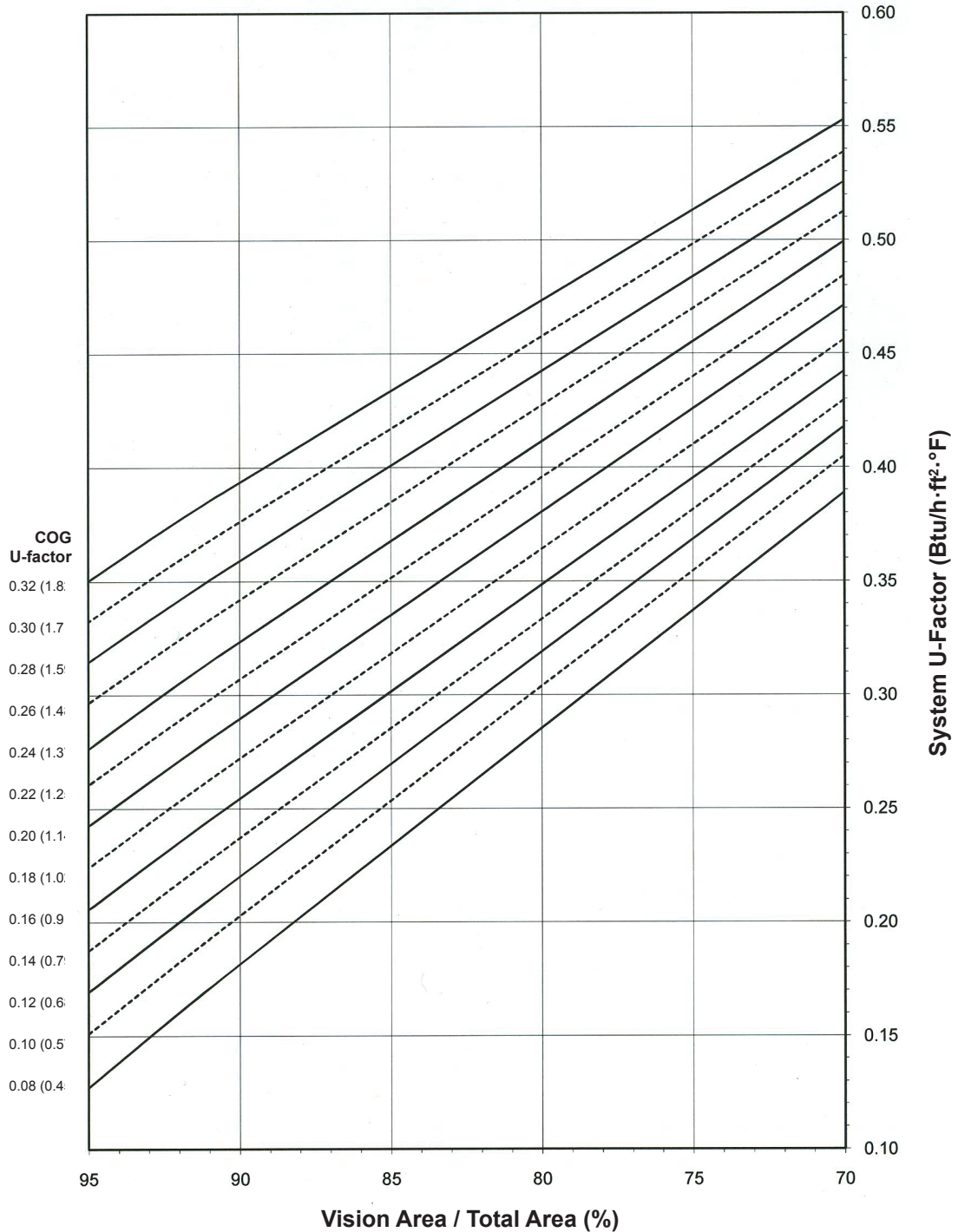
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Note:  
 Values in parentheses are metric.  
 COG=Center of Glass.  
 Charts are generated per AAMA 507.

**1-3/4" GLAZING WITH ALUMINUM PRESSURE PLATE**

**System U-Factor for Vision Glass**



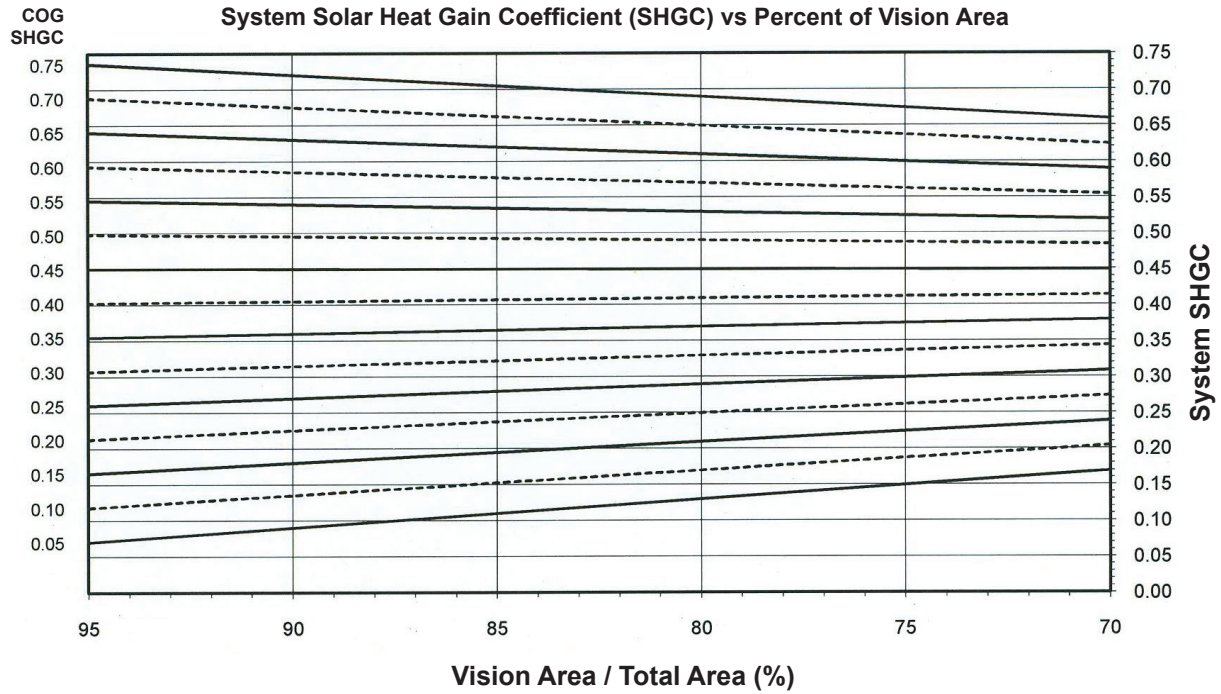
**Notes for System U-Factor, SHGC and VT charts:**

For glass values that are not listed, linear interpolation is permitted.  
 Glass properties are based on center of glass values (winter conditions) and are obtained from your glass supplier.

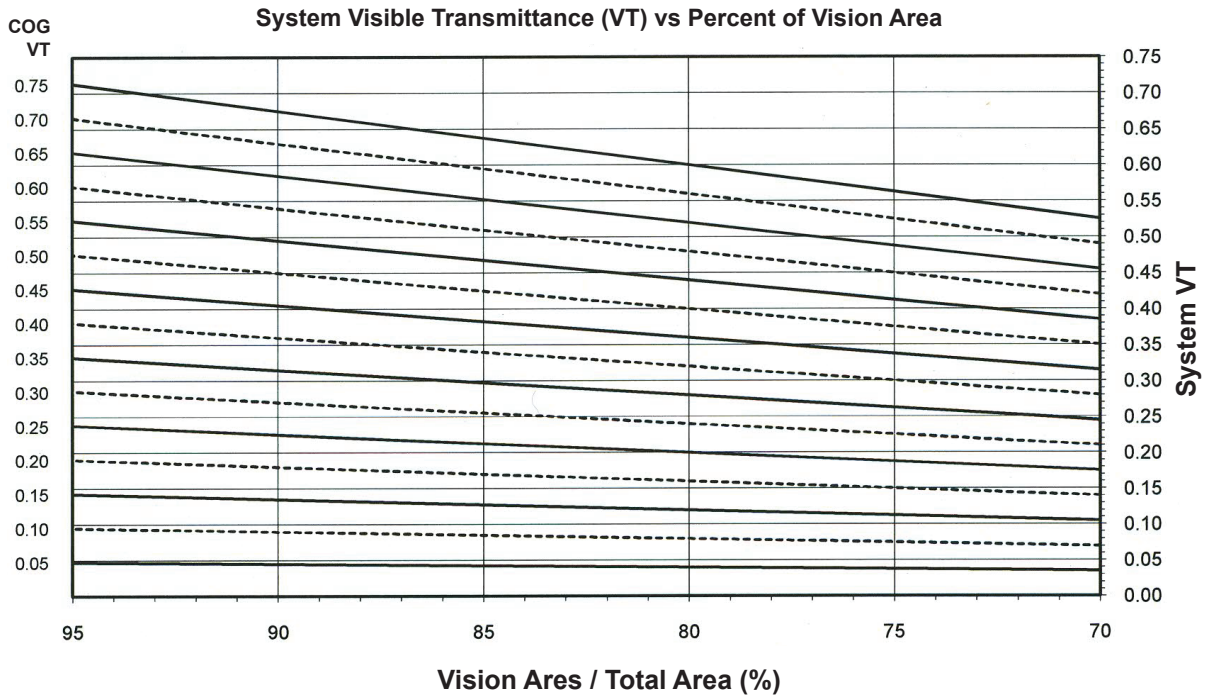
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**1-3/4" GLAZING WITH ALUMINUM PRESSURE PLATE**



Charts are generated per AAMA 507.



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**Thermal Transmittance <sup>1</sup> (BTU/hr • ft<sup>2</sup> • °F)**

Glass U-Factor <sup>3</sup>	Overall U-Factor <sup>4</sup>
0.32	0.39
0.30	0.37
0.28	0.36
0.26	0.34
0.24	0.32
0.22	0.30
0.20	0.29
0.18	0.27
0.16	0.25
0.14	0.23
0.12	0.22
0.10	0.20
0.08	0.18

**1-3/4" GLAZING WITH ALUMINUM PRESSURE PLATE**

**NOTE:** For glass values that are not listed, linear interpolation is permitted.

1. U-Factors are determined in accordance with NFRC 100.
2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values and are obtained from your glass supplier.
4. Overall U-Factor, SHGC, and VT Matricies are based on the standard NFRC specimen size of 2000mm wide by 2000mm high (78-3/4" by 78-3/4").

**SHGC Matrix <sup>2</sup>**

Glass SHGC <sup>3</sup>	Overall SHGC <sup>4</sup>
0.75	0.68
0.70	0.64
0.65	0.59
0.60	0.55
0.55	0.50
0.50	0.46
0.45	0.41
0.40	0.37
0.35	0.32
0.30	0.28
0.25	0.24
0.20	0.19
0.15	0.15
0.10	0.10
0.05	0.06

**Visible Transmittance <sup>2</sup>**

Glass VT <sup>3</sup>	Overall VT <sup>4</sup>
0.75	0.67
0.70	0.63
0.65	0.58
0.60	0.54
0.55	0.49
0.50	0.45
0.45	0.40
0.40	0.36
0.35	0.31
0.30	0.27
0.25	0.22
0.20	0.18
0.15	0.13
0.10	0.09
0.05	0.04

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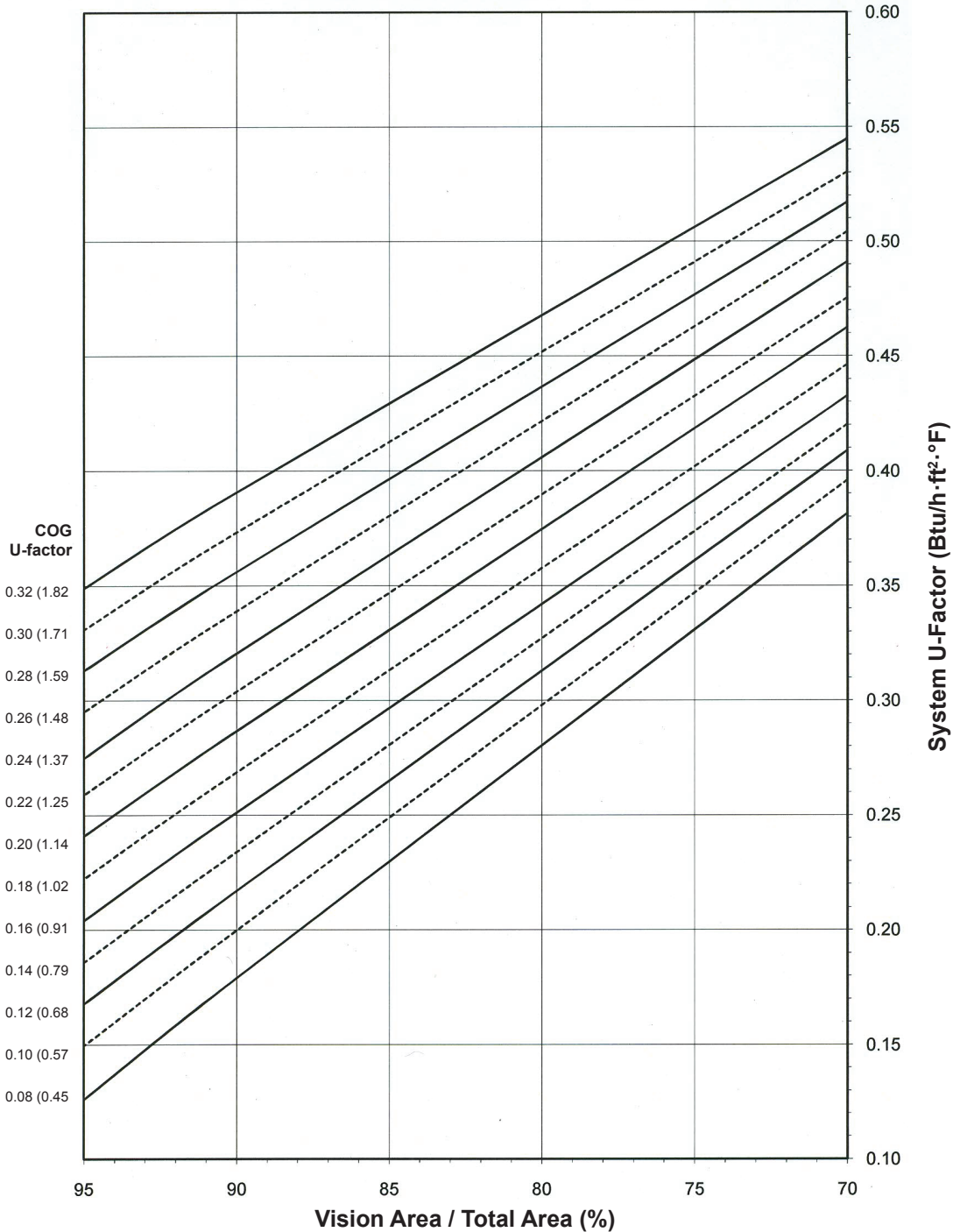
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Note:  
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 COG=Center of Glass.  
 Charts are generated per AAMA 507.

**1-3/4" GLAZING WITH FIBERGLASS PRESSURE PLATE**

**System U-Factor for Vision Glass**



**Notes for System U-Factor, SHGC and VT charts:**

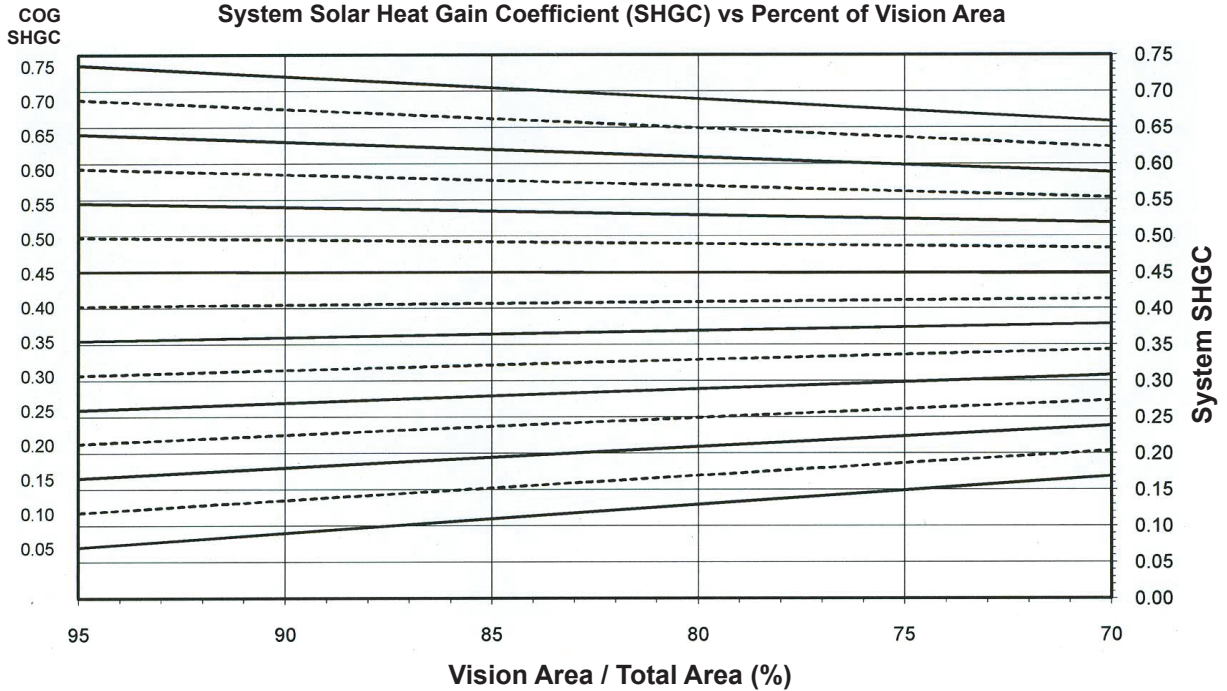
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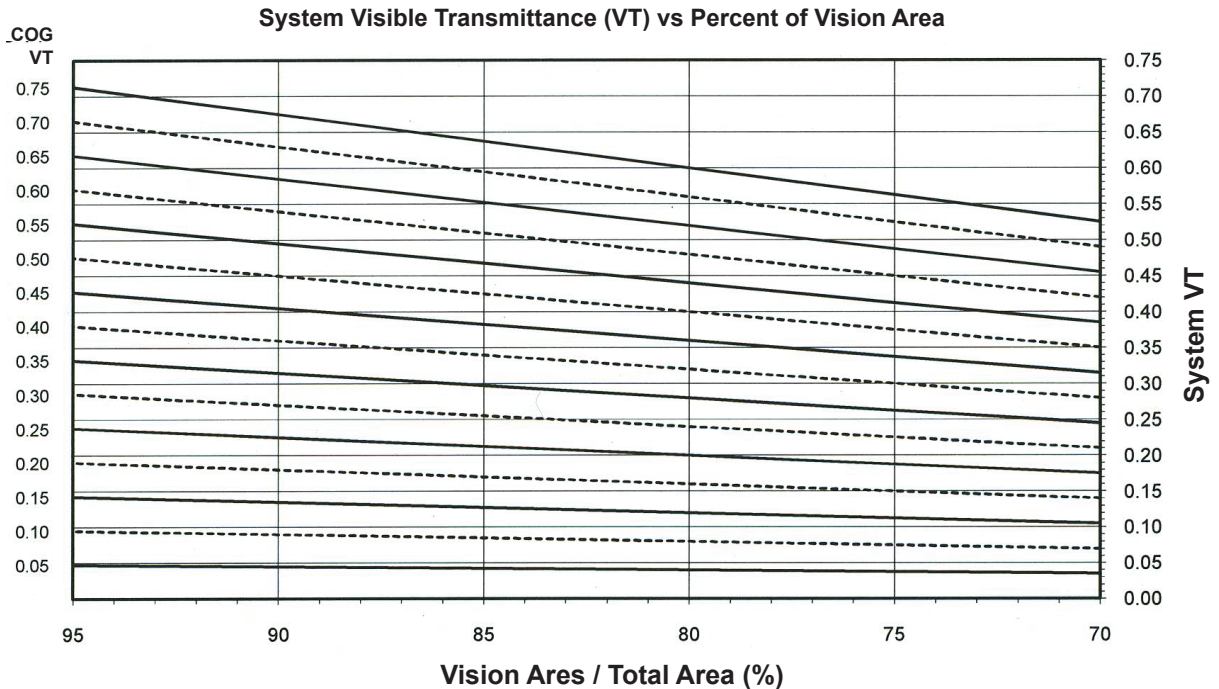
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**1-3/4" GLAZING WITH FIBERGLASS PRESSURE PLATE**



Charts are generated per AAMA 507.



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**Thermal Transmittance** <sup>1</sup> (BTU/hr • ft<sup>2</sup> • °F)

Glass U-Factor <sup>3</sup>	Overall U-Factor <sup>4</sup>
0.32	0.39
0.30	0.37
0.28	0.35
0.26	0.34
0.24	0.32
0.22	0.30
0.20	0.28
0.18	0.27
0.16	0.25
0.14	0.23
0.12	0.21
0.10	0.20
0.08	0.18

**1-3/4" GLAZING WITH  
FIBERGLASS PRESSURE PLATE**

**NOTE:** For glass values that are not listed, linear interpolation is permitted.

1. U-Factors are determined in accordance with NFRC 100.
2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values and are obtained from your glass supplier.
4. Overall U-Factor, SHGC, and VT Matricies are based on the standard NFRC specimen size of 2000mm wide by 2000mm high (78-3/4" by 78-3/4").

**SHGC Matrix** <sup>2</sup>

Glass SHGC <sup>3</sup>	Overall SHGC <sup>4</sup>
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**Visible Transmittance** <sup>2</sup>

Glass VT <sup>3</sup>	Overall VT <sup>4</sup>
0.75	0.67
0.70	0.63
0.65	0.58
0.60	0.54
0.55	0.49
0.50	0.45
0.45	0.40
0.40	0.36
0.35	0.31
0.30	0.27
0.25	0.22
0.20	0.18
0.15	0.13
0.10	0.09
0.05	0.04

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## **Features**

- 1630 SS IR is an outside glazed captured curtain wall system
- 1630 SS IR has a 3" (76.2 mm) sight line
- Standard 7-13/16" (198.4 mm) or 8-13/16" (223.8 mm) depth systems
- Infill 1-5/16" (33.3 mm)
- Thermally Broken by means of a continuous 1/4" (6.4 mm) low conductance spacer
- Perimeter seal can be installed at the pressure plate or mullion shoulder
- Frame options available to accommodate design pressures from 70 psf to 130 psf
- 1630 SS IR can be supplied fabricated and KD or in stock lengths
- Dry Glazing and Wet Glazing option
- Interlocking mullion design eliminates need for anti-buckling clips
- Concealed fastener joinery creates smooth, monolithic appearance
- EPDM gaskets and thermal break
- Screw spline joinery method allows shop assembly of ladder sections, reducing field labor
- Corners available with shear block fabrication method
- Offers entrance framing systems
- Silicone compatible glazing materials for long-lasting seals
- Two color option
- Permanodic™ anodized finishes in seven choices
- Painted finishes in standard and custom choices

## **Additional Features\***

- Large Missile and Small Missile Hurricane Impact tested
- Blast Mitigation tested

## **Product Applications**

- Ideal for low-rise applications where high performance is desired
- Most of the product assembly can be done in the shop rather than the field.  
This allows for better quality control and reduces expensive field labor.

\*See NOA product approval for specific features tested and approved for hurricane impact.

For specific product applications,  
Consult your Kawneer representative.

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**Architects** - Most extrusion and window types illustrated in this catalog are standard products for Kawneer. These concepts have been expanded and modified to afford you design freedom. Some miscellaneous details are non-standard and are intended to demonstrate how the system can be modified to expand design flexibility. Please contact your Kawneer representative for further assistance.

**PICTORIAL VIEW .....5**

**TYPICAL FRAMING DETAILS .....6, 7**

**HURRICANE IMPACT RESISTANT ENTRANCE**

**FRAMING DETAILS .....8, 9**

**CORNER DETAILS ..... 10-12**

**WINDOW INTEGRATION .....13**

**ANCHORING .....14, 15**

**WIND LOAD / DEADLOAD CHARTS ..... 16-19**

**THERMAL CHARTS ..... 20-24**

LAWS AND BUILDING AND SAFETY CODES GOVERNING THE DESIGN AND USE OF GLAZED ENTRANCE, WINDOW, AND CURTAIN WALL PRODUCTS VARY WIDELY. KAWNEER DOES NOT CONTROL THE SELECTION OF PRODUCT CONFIGURATIONS, OPERATING HARDWARE, OR GLAZING MATERIALS, AND ASSUMES NO RESPONSIBILITY THEREFOR.

Metric (SI) conversion figures are included throughout these details for reference. Numbers in parentheses ( ) are millimeters unless otherwise noted.

The following metric (SI ) units are found in these details:

- m – meter
- cm – centimeter
- mm – millimeter
- s – second
- Pa – pascal
- MPa – megapascal

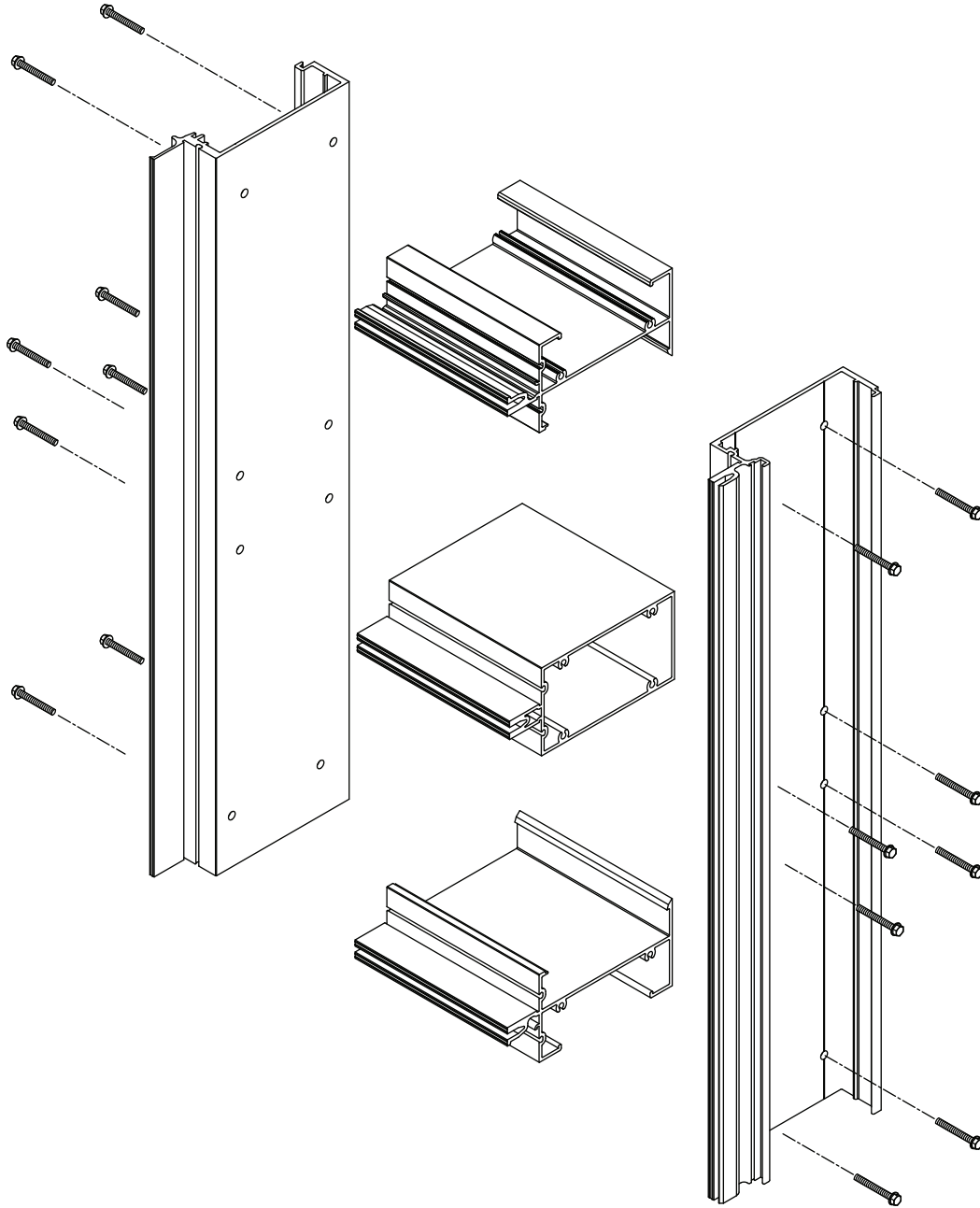
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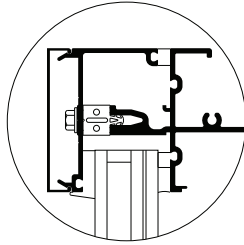


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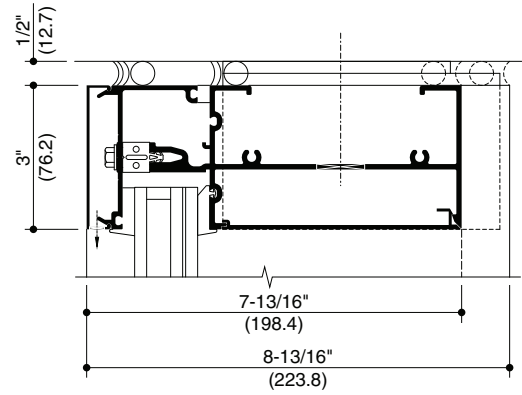
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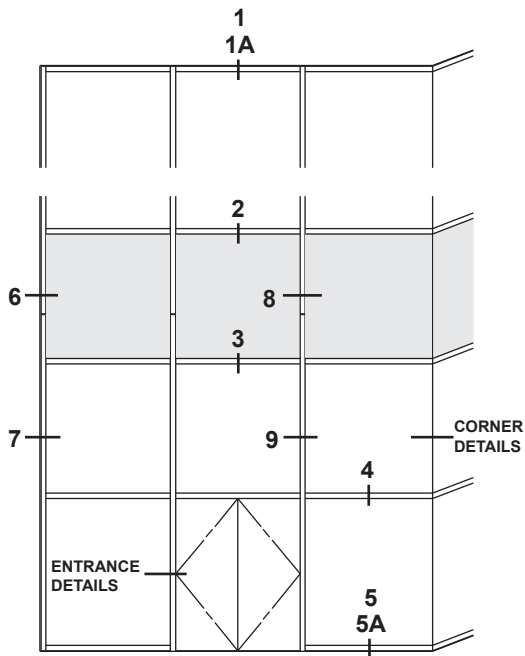
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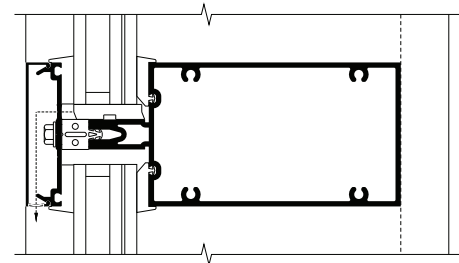
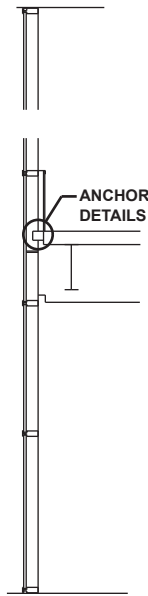
**OPTIONAL WET GLAZING  
LARGE MISSILE (LMI)**



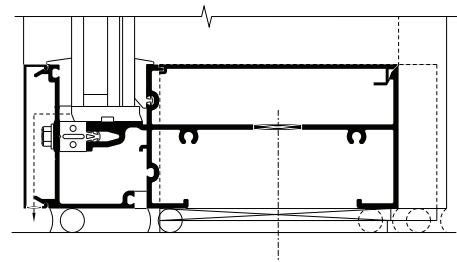
**1  
HEAD**



**TYPICAL ELEVATION**  
ELEVATION IS NUMBER KEYED TO DETAILS



**2  
HORIZONTAL**

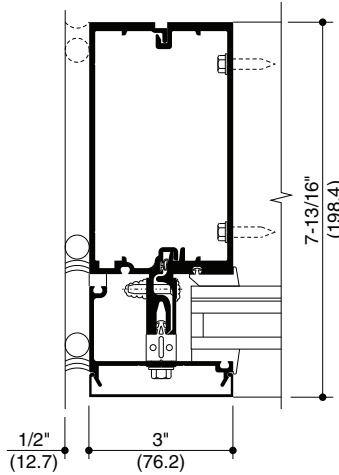


**5  
SILL**

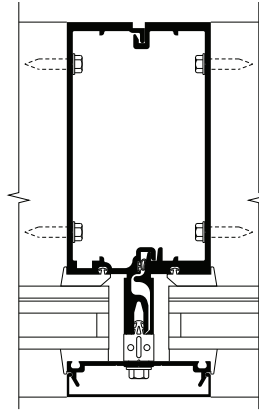
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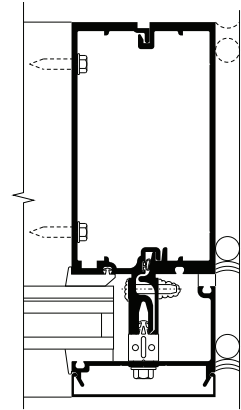
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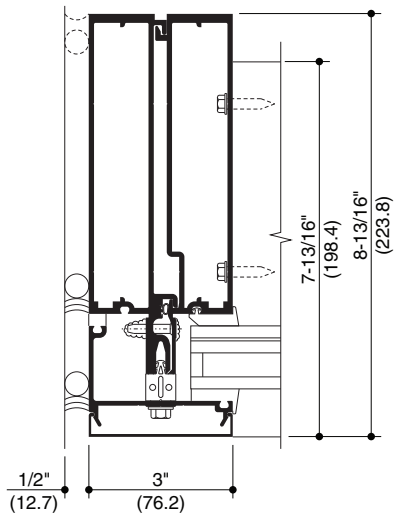
**6**  
**LEFT JAMB**  
**7-13/16" DEEP**



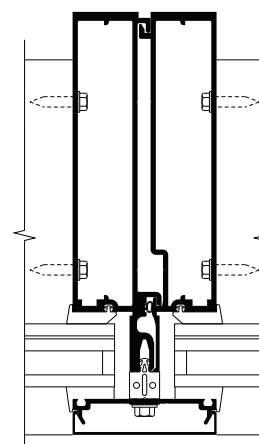
**8**  
**VERTICAL**  
**7-13/16" DEEP**



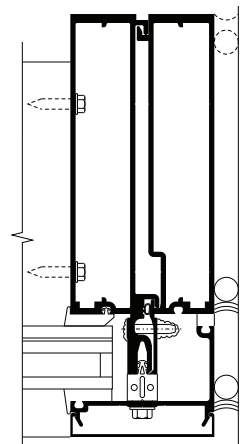
**6**  
**RIGHT JAMB**  
**7-13/16" DEEP**



**6**  
**LEFT JAMB**  
**8-13/16" DEEP**



**8**  
**VERTICAL**  
**8-13/16" DEEP**

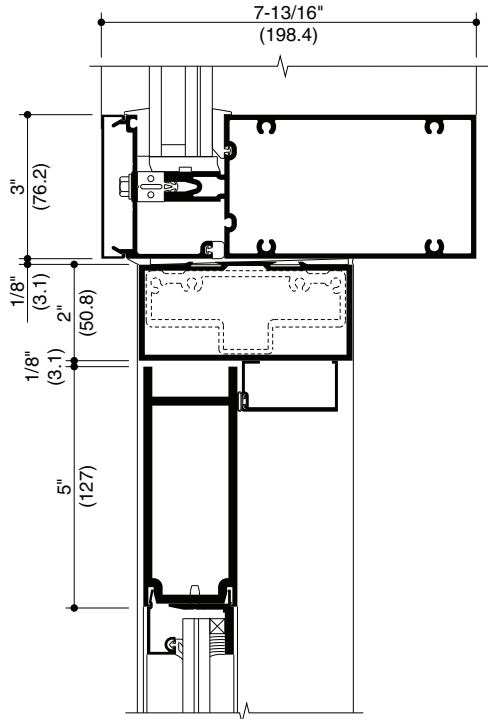


**6**  
**RIGHT JAMB**  
**8-13/16" DEEP**

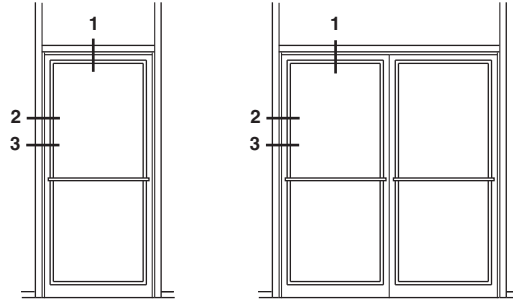
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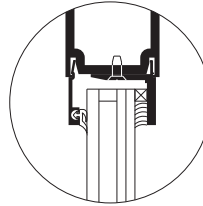
SCALE 3" = 1'-0"



**1**  
**TRANSOM BAR**  
 BUTT HUNG OR OFFSET PIVOT  
 WITH SINGLE ACTING OFFSET ARM  
 CONCEALED OVERHEAD CLOSER  
 LARGE MISSILE (LMI)

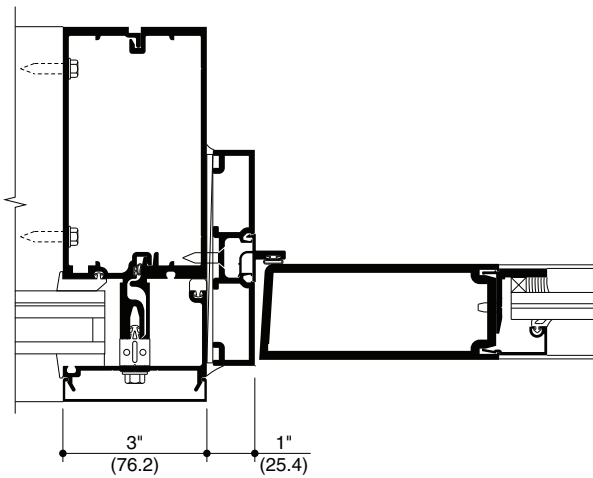


**ENTRANCE ELEVATION**  
 ELEVATION IS NUMBER KEYED TO DETAILS

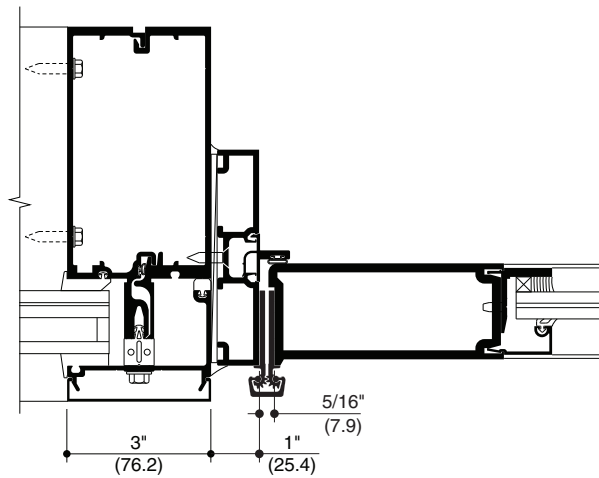


**OPTIONAL**  
**1" DOOR INFILL**  
 LARGE MISSILE (LMI)

**NOTE: DOORS SHOWN GLAZED**  
**WITH 9/16" INFILL**



**2**  
**DOOR JAMB**  
 BUTT HUNG  
 OR  
 OFFSET PIVOT  
 LARGE MISSILE (LMI)

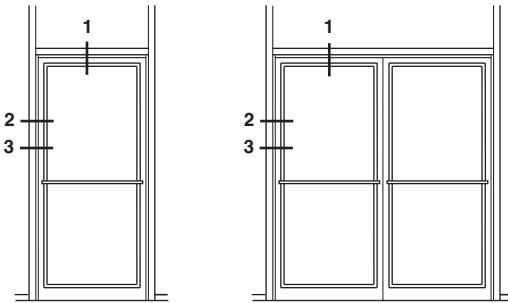
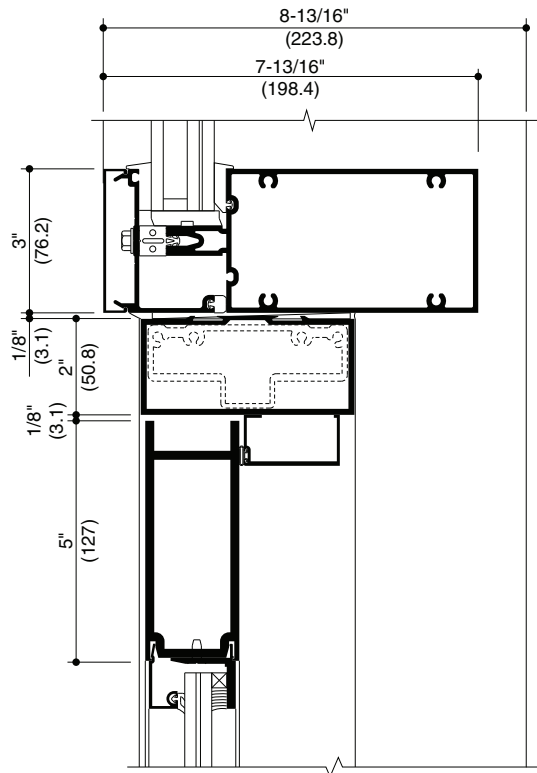


**3**  
**DOOR JAMB**  
 CONTINUOUS HINGE  
 LARGE MISSILE (LMI)

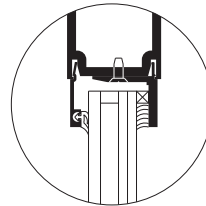
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SCALE 3" = 1'-0"



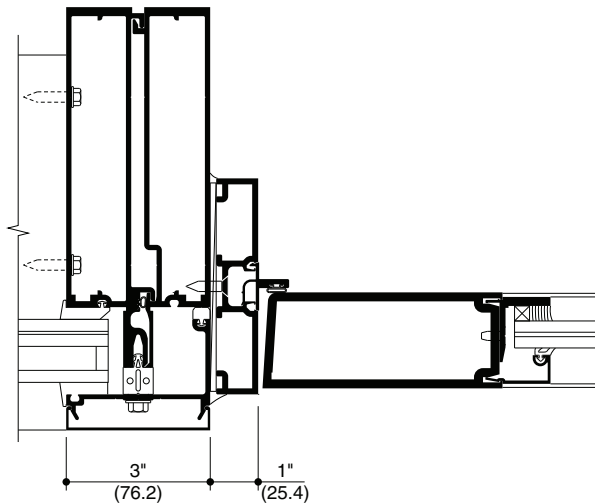
**ENTRANCE ELEVATION**  
ELEVATION IS NUMBER KEYED TO DETAILS



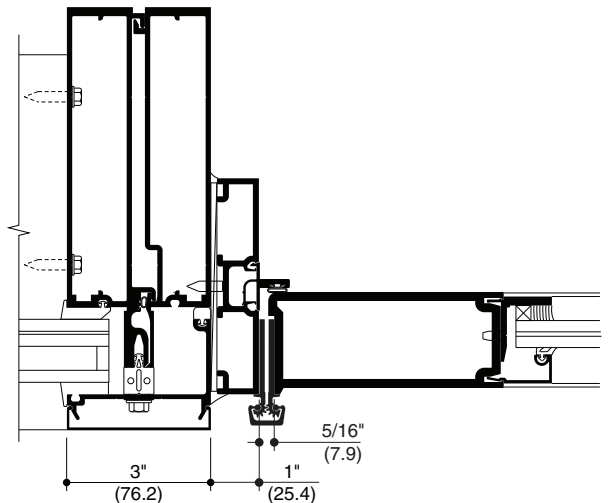
NOTE: DOORS SHOWN GLAZED WITH 9/16" INFILL

**1**  
**TRANSOM BAR**  
BUTT HUNG OR OFFSET PIVOT  
WITH SINGLE ACTING OFFSET ARM  
CONCEALED OVERHEAD CLOSER  
LARGE MISSILE (LMI)

**OPTIONAL**  
**1" DOOR INFILL**  
LARGE MISSILE (LMI)



**2**  
**DOOR JAMB**  
BUTT HUNG  
OR  
OFFSET PIVOT  
LARGE MISSILE (LMI)

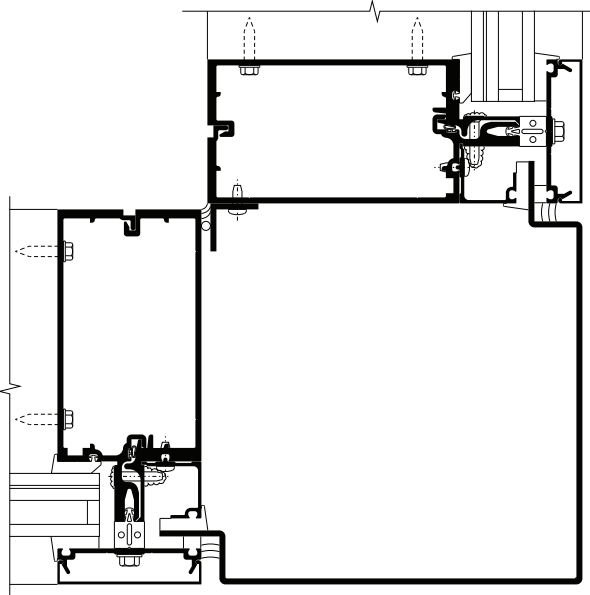


**3**  
**DOOR JAMB**  
CONTINUOUS HINGE  
LARGE MISSILE (LMI)

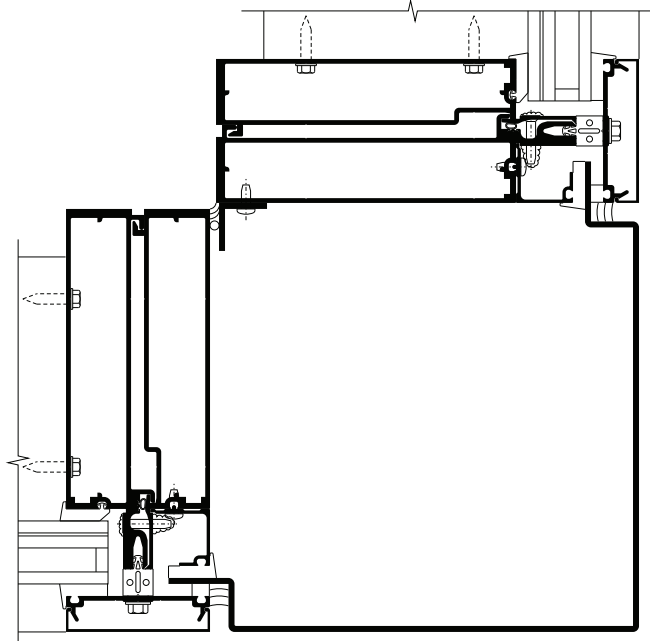
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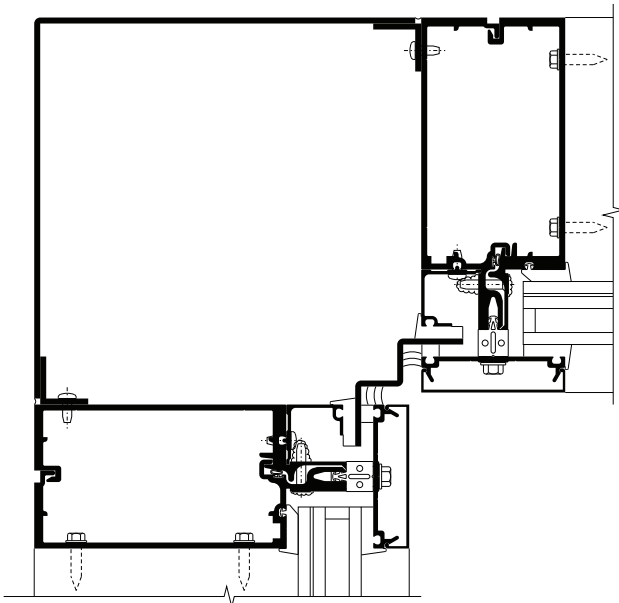
SCALE 3" = 1'-0"



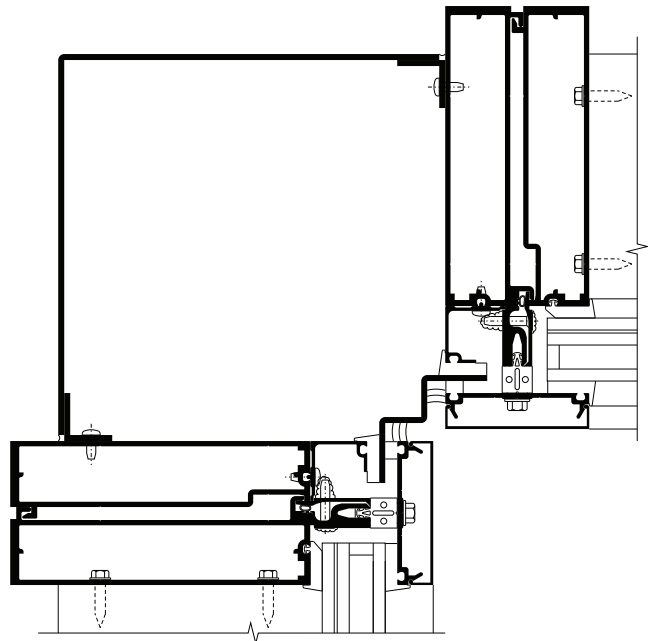
90° OUTSIDE CORNER  
7-13/16" DEEP



90° OUTSIDE CORNER  
8-13/16" DEEP



90° INSIDE CORNER  
7-13/16" DEEP



90° INSIDE CORNER  
8-13/16" DEEP

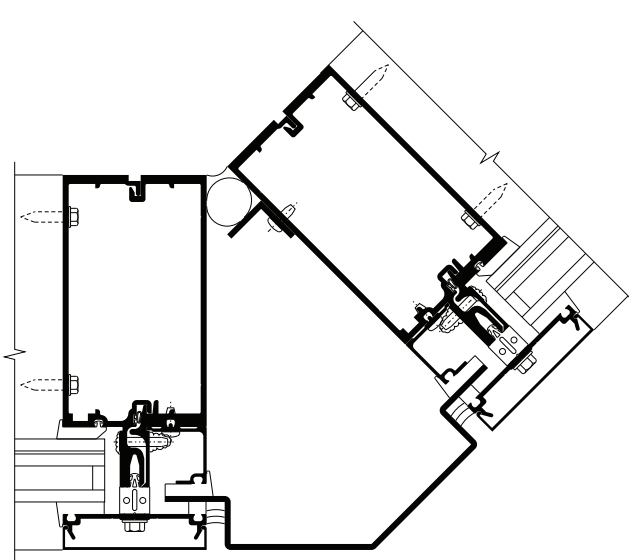
Laws and building and safety codes governing the design and use of glazed entrance, window, and curtain wall products vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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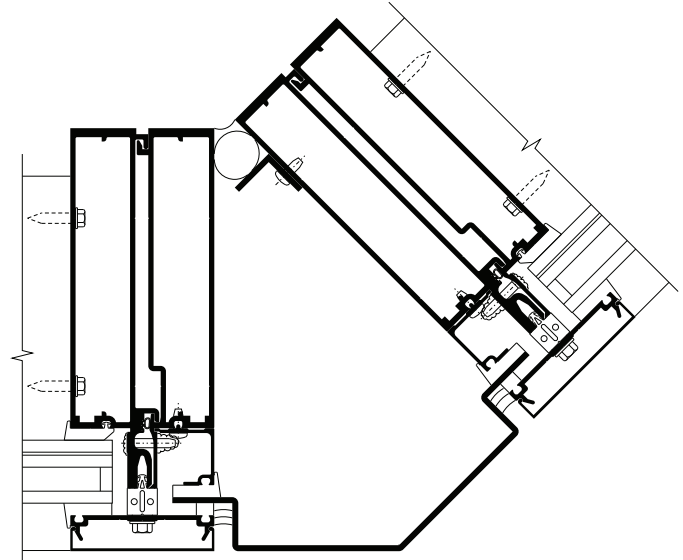
SCALE 3" = 1'-0"

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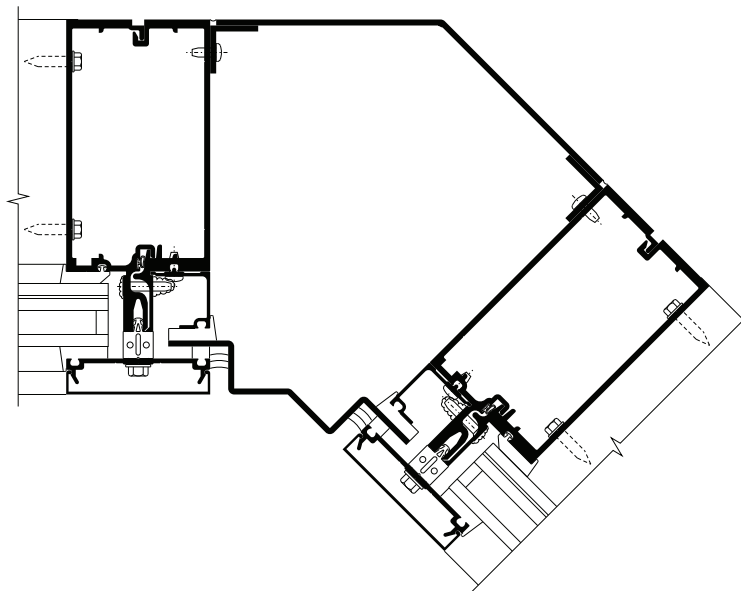
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**135° OUTSIDE CORNER**  
**7-13/16" DEEP**

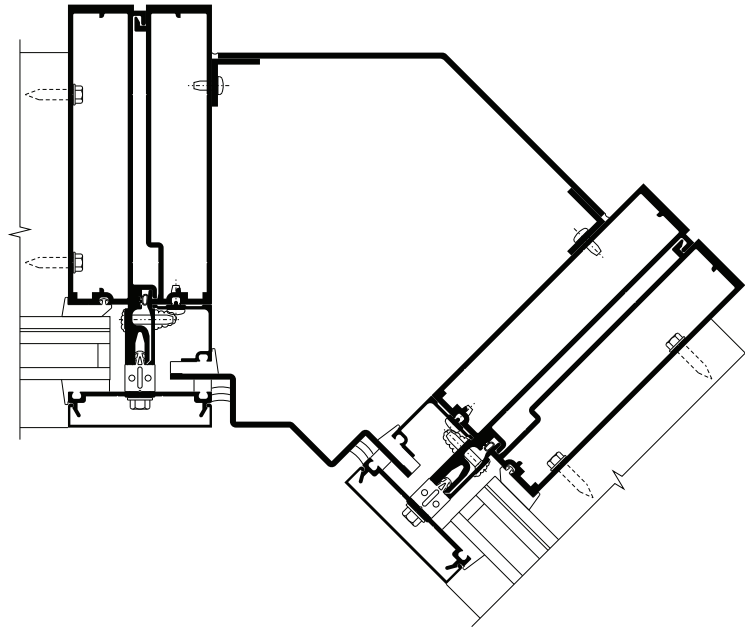


**135° OUTSIDE CORNER**  
**8-13/16" DEEP**

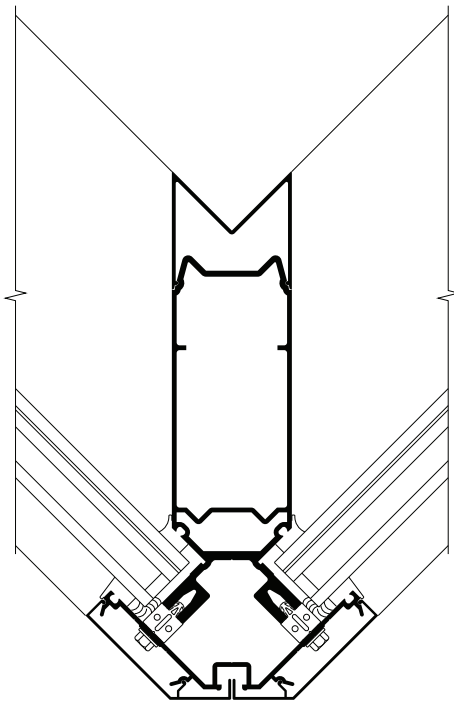


**135° INSIDE CORNER**  
**7-13/16" DEEP**

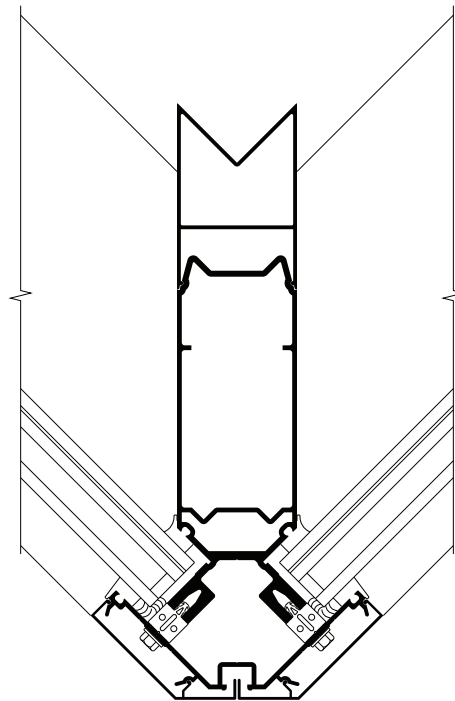
SCALE 3" = 1'-0"



**135° INSIDE CORNER**  
8-13/16" DEEP



**135° OUTSIDE CORNER**  
7-13/16" DEEP



**135° OUTSIDE CORNER**  
8-13/16" DEEP

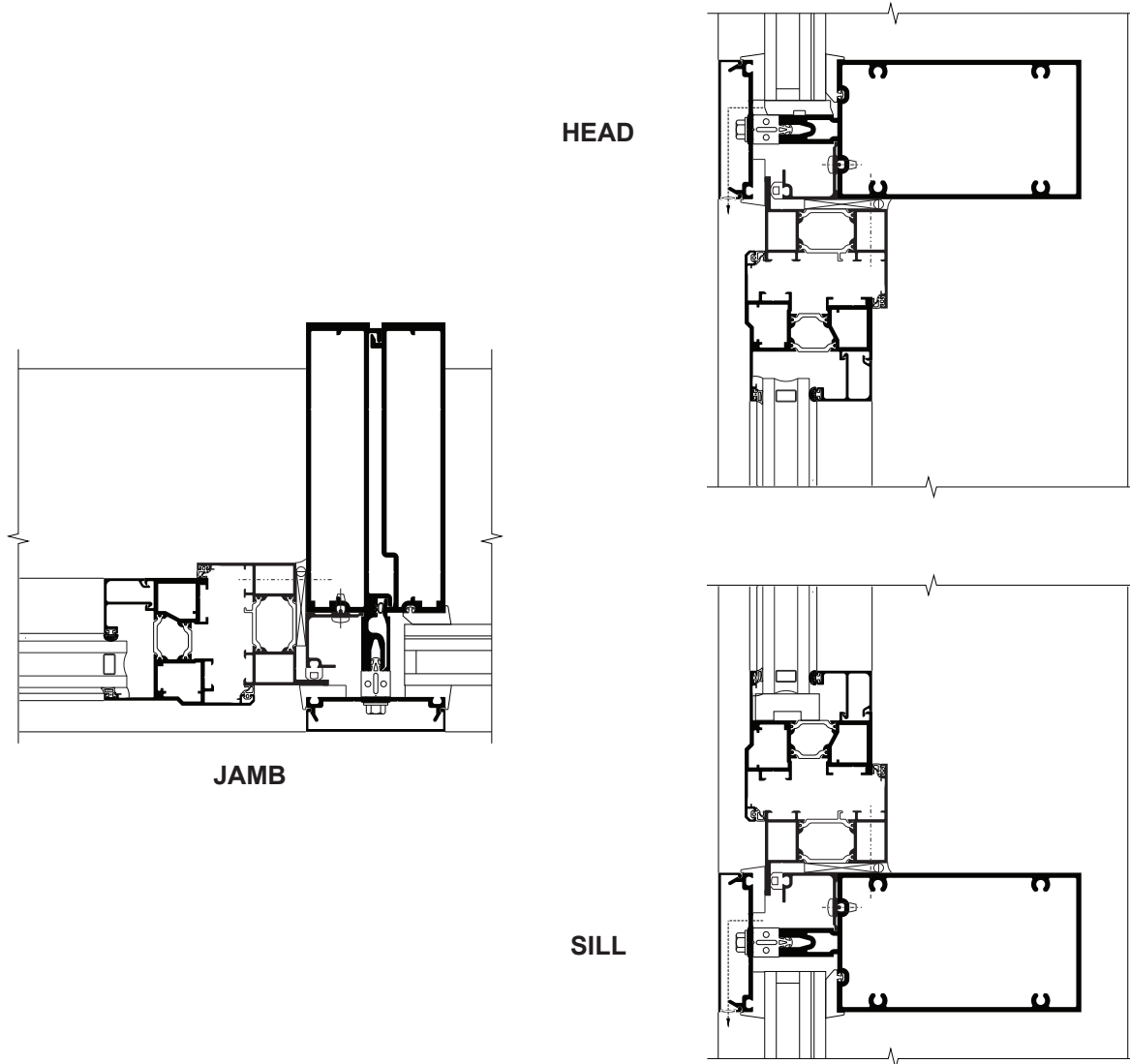
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**SCALE 3" = 1'-0"**

## Shown with AA™ 900 Thermal Window

**NOTE: Other vent types can be accommodated. Contact your Kawneer representative for other options.**

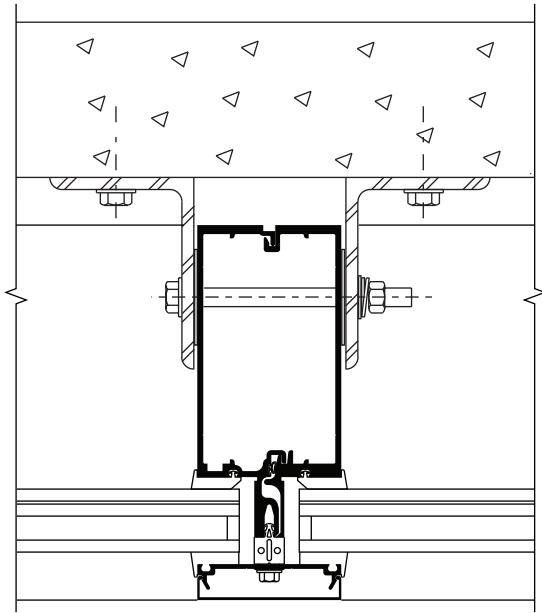


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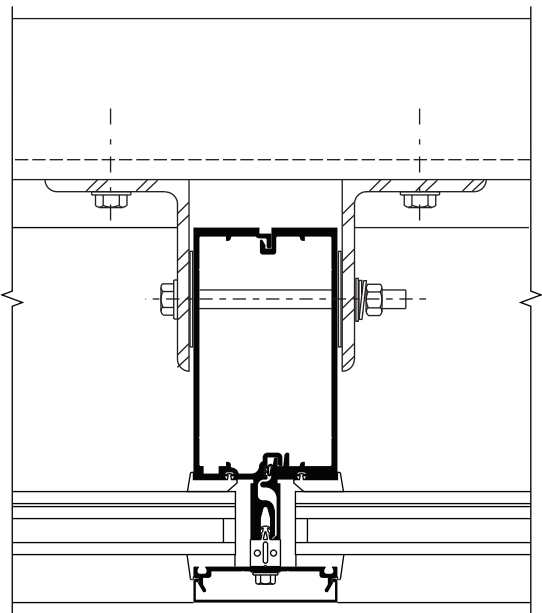
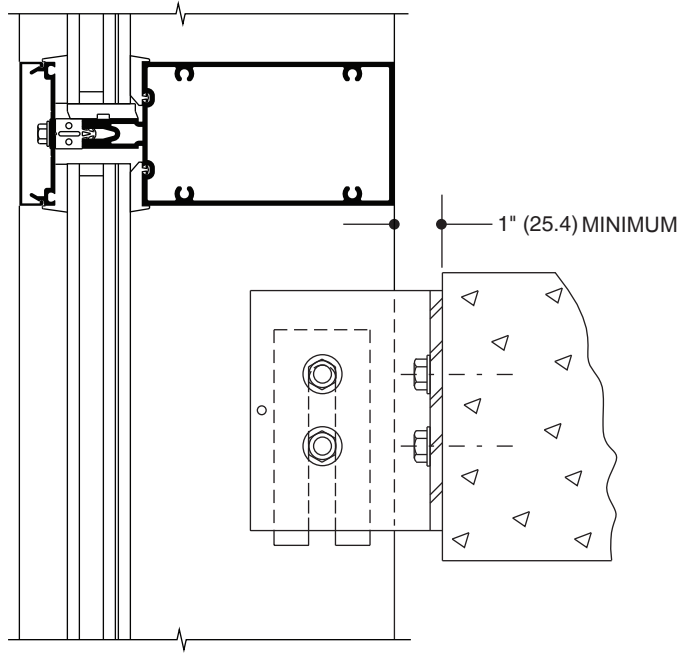
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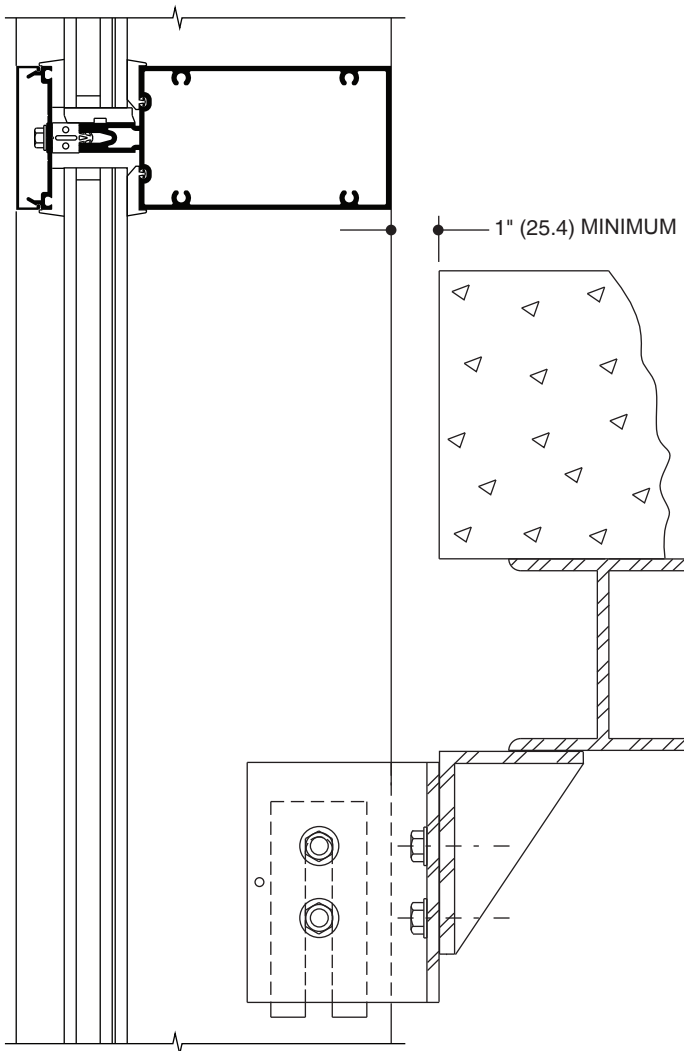
Actual project conditions will determine specific anchor design. Details on this page are for reference only.



**ANCHORING TO FLOOR SLAB**



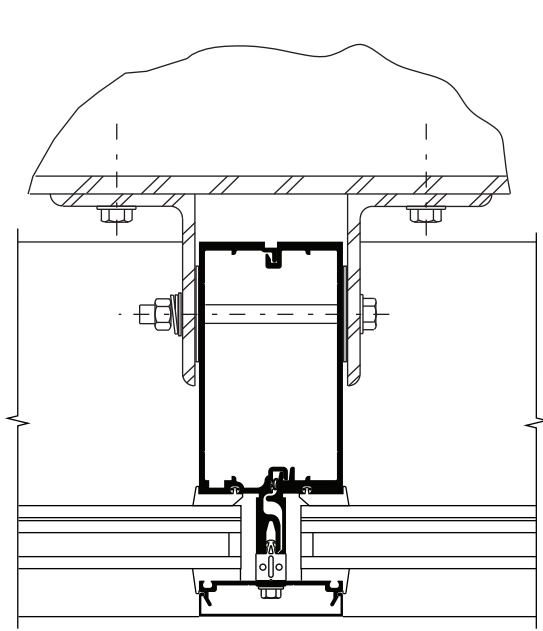
**ANCHORING TO SUPPORT STEEL**



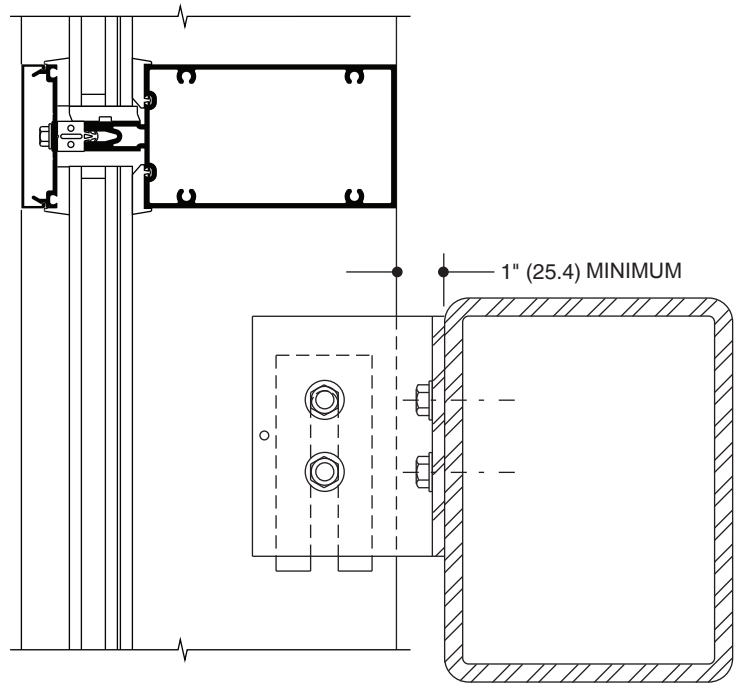
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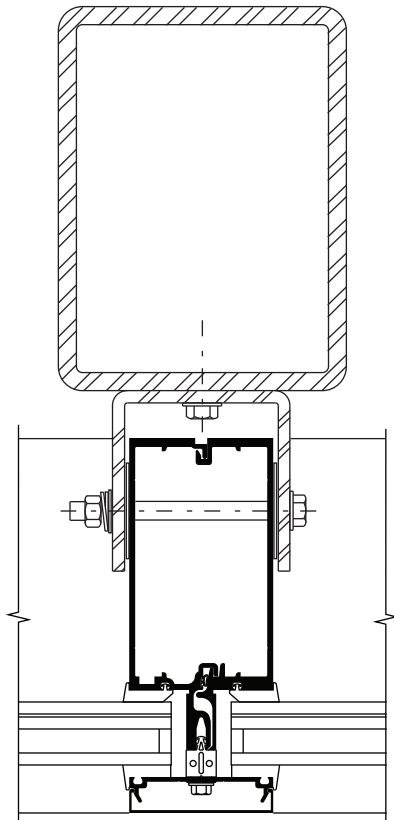
Actual project conditions will determine specific anchor design. Details on this page are for reference only.



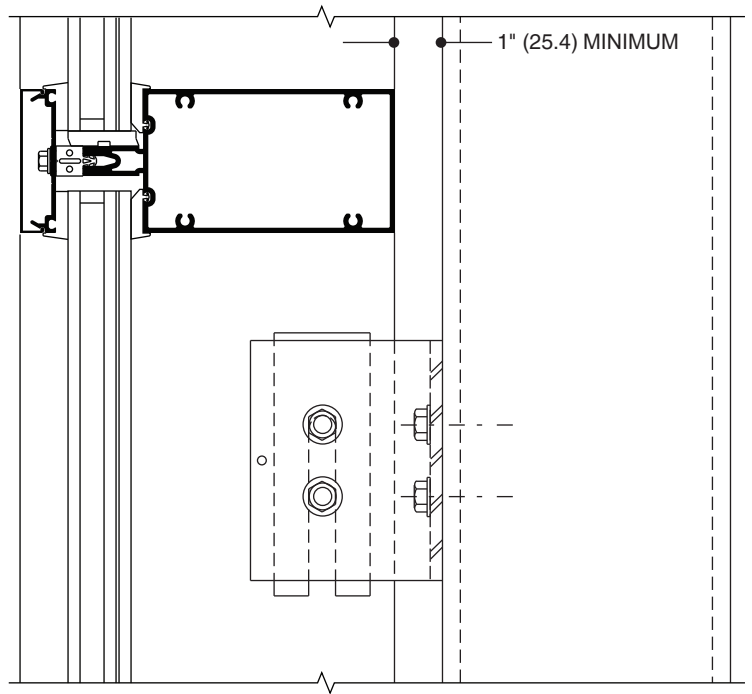
**ANCHORING TO HORIZONTAL  
STRUCTURAL STEEL**



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**ANCHORING TO VERTICAL  
STRUCTURAL STEEL**



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## WIND LOAD CHARTS

Mullions are designed for deflection limitations in accordance with AAMA TIR-A11 of L/175 up to 13'-6" and L/240 +1/4" above 13'-6". These curves are for mullions WITH HORIZONTALS and are based on engineering calculations for stress and deflection. Allowable wind load stress for ALUMINUM 15,152 psi (104MPa), STEEL 30,000 psi (207MPa). Charted curves, in all cases are for the limiting value. Wind load charts contained herein are based upon nominal wind load utilized in allowable stress design. A conversion from Load Resistance Factor Design (LRFD) is provided. To convert ultimate wind loads to nominal loads, multiply ultimate wind loads by a factor of 0.6 per ASCE/SEI 7. A 4/3 increase in allowable stress has not been used to develop these curves. For special situations not covered by these curves, contact your Kawneer representative for additional information.

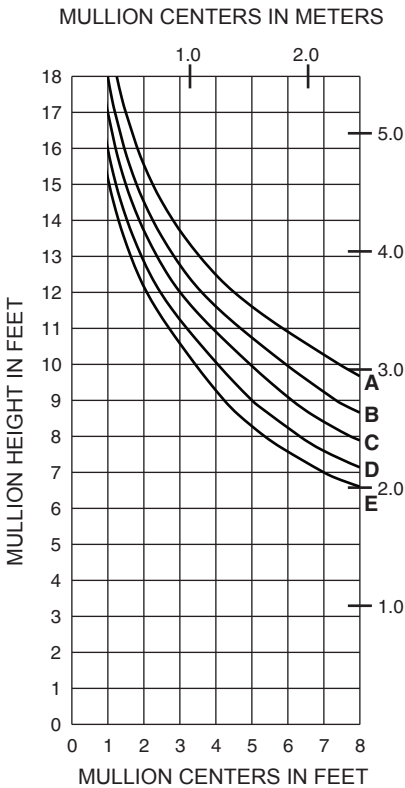
## DEADLOAD CHARTS

Horizontal or deadload limitations are based upon 1/8" (3.2), maximum allowable deflection at the center of an intermediate horizontal member. The accompanying charts are calculated for 1" (25.4) thick insulating glass or 1/4" (6.4) thick glass supported on two setting blocks placed at the loading points shown.

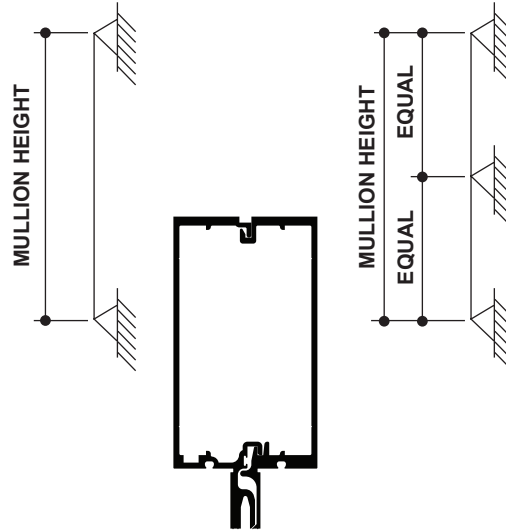
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## SINGLE SPAN

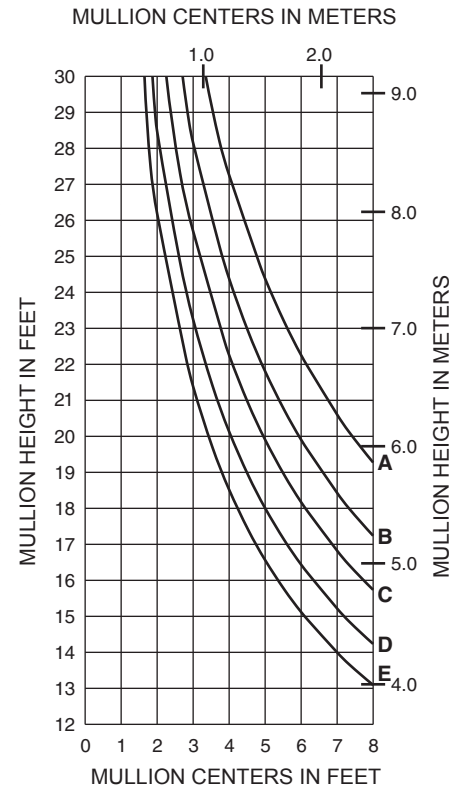


	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	60 PSF (2880)	100 PSF (4790)
B =	75 PSF (3600)	125 PSF (6000)
C =	90 PSF (4310)	150 PSF (7200)
D =	110 PSF (5270)	183 PSF (8770)
E =	130 PSF (6220)	217 PSF (10370)

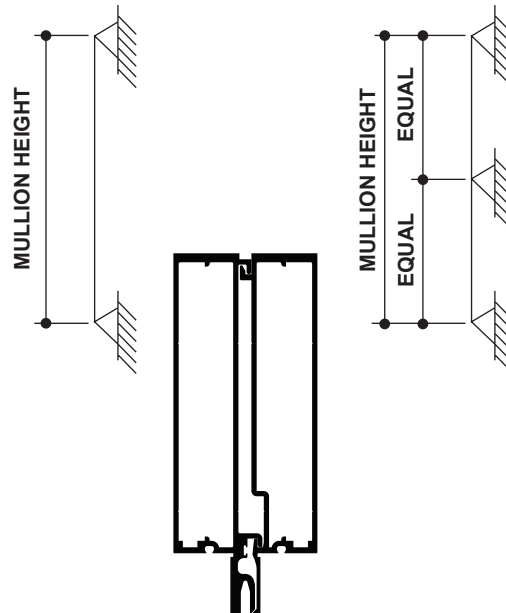
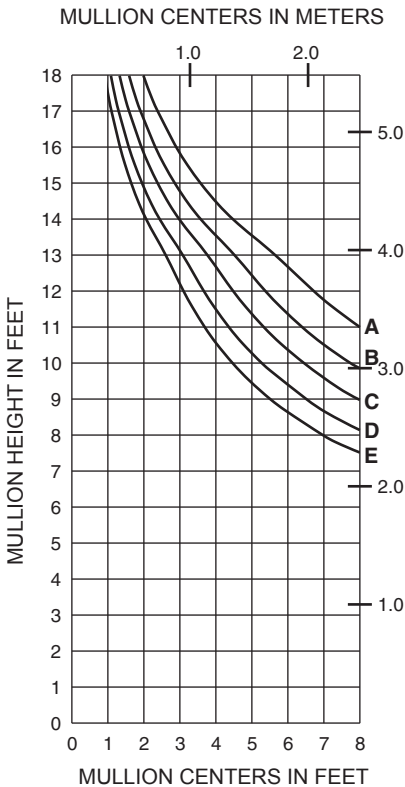


176001 176002  
 $I = 15.354 (639.08 \times 10^4)$   
 $S = 4.413 (72.32 \times 10^3)$

## TWIN SPAN

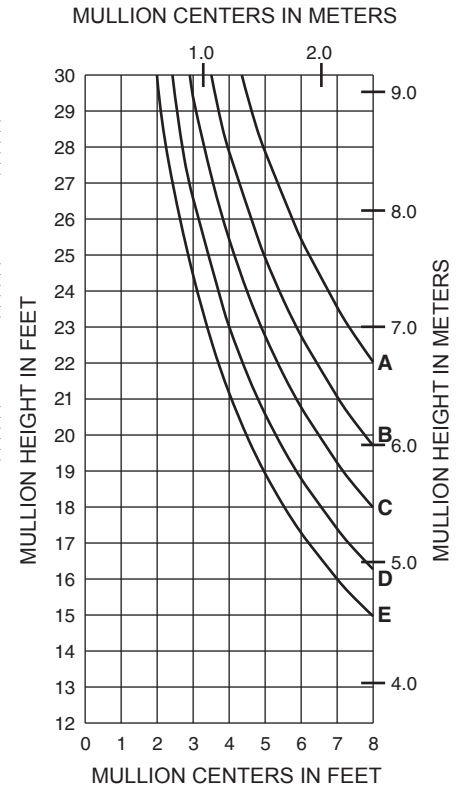


## SINGLE SPAN



176003 176004  
 $I = 24.511 (1020.22 \times 10^4)$   
 $S = 5.766 (94.49 \times 10^3)$

## TWIN SPAN

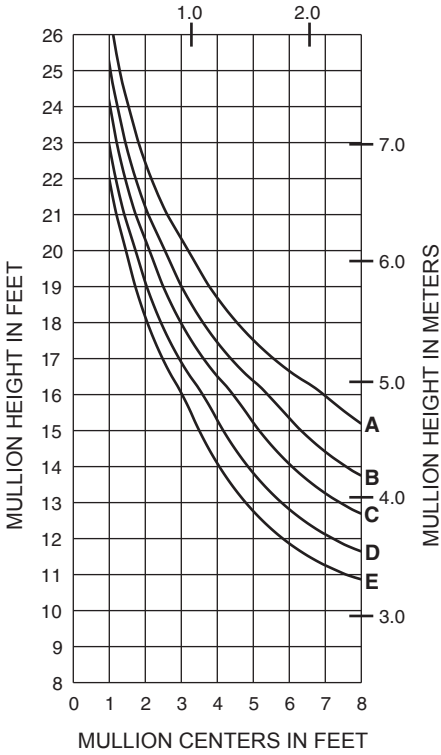


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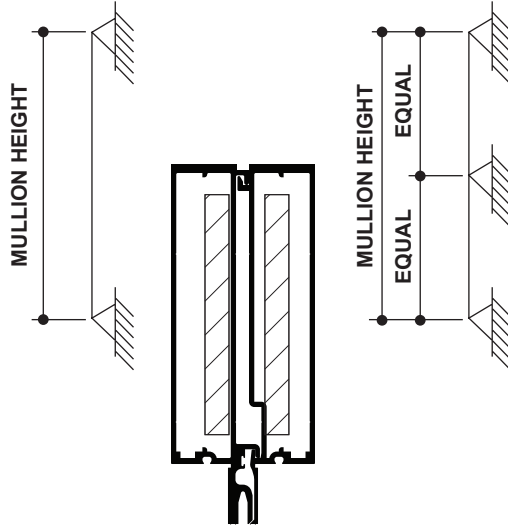
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## SINGLE SPAN

MULLION CENTERS IN METERS



	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	60 PSF (2880)	100 PSF (4790)
B =	75 PSF (3600)	125 PSF (6000)
C =	90 PSF (4310)	150 PSF (7200)
D =	110 PSF (5270)	183 PSF (8770)
E =	130 PSF (6220)	217 PSF (10370)

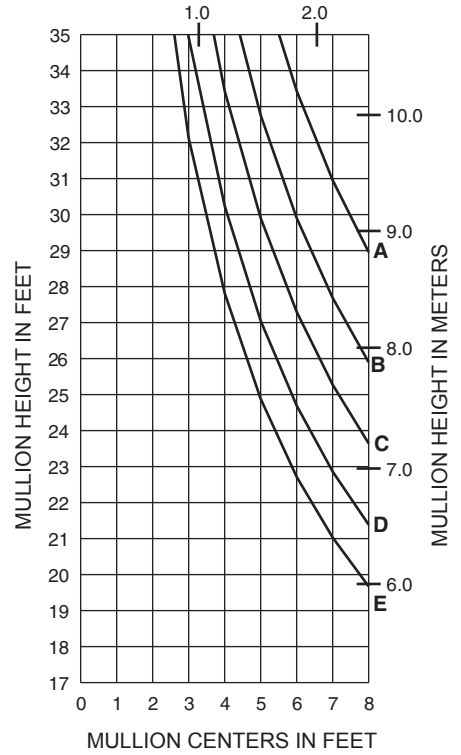


176003 176004  
With 176229 (1/2" x 5") Steel Bars

$I = 24.511 (1020.22 \times 10^4)$   
 $S = 6.180 (101.27 \times 10^3)$   
**Steel**  
 $I = 5.208 (216.77 \times 10^4)$   
 $S = 2.083 (34.13 \times 10^3)$

## TWIN SPAN

MULLION CENTERS IN METERS

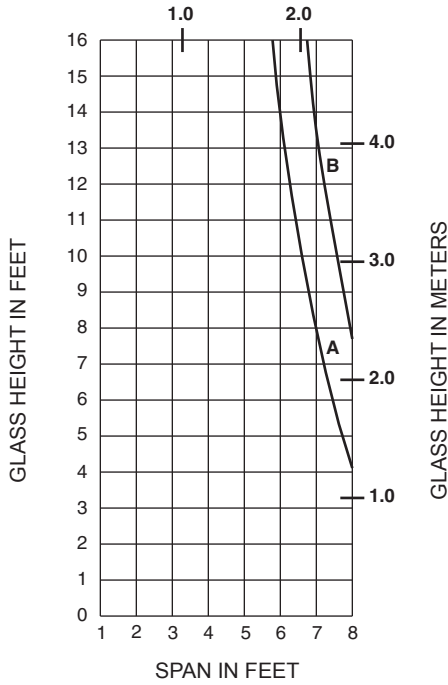


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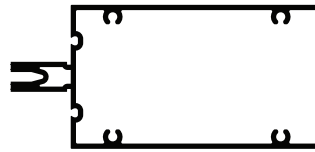
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### (1-5/16" INFILL)

SPAN IN METERS



A = 1/4 POINT LOADING  
B = 1/8 POINT LOADING



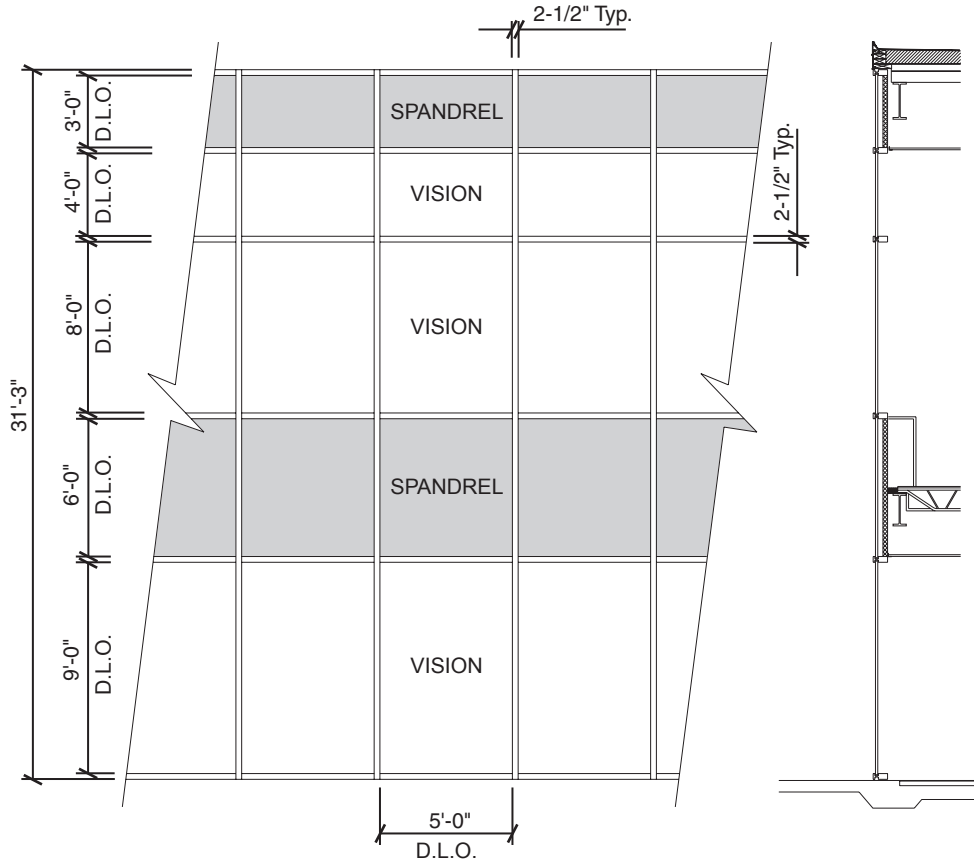
176007

I = 3.334 (138.77 x 10<sup>4</sup>)  
S = 2.222 (36.41 x 10<sup>3</sup>)

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**Generic Project Specific U-factor Example Calculation**  
**(Percent of Glass will vary on specific products depending on sitelines)**  
 (Based on single bay of Curtain Wall/Window Wall)



### Vision Area

Example Glass U-factor = 0.48 Btu/(ft<sup>2</sup> · h · °F)

Vision Area = 5(9 + 8 + 4) = 105.0 ft<sup>2</sup>

Total Area (Vision) = 5' 2-1/2" (9' 3-3/4" + 8' 2-1/2" + 4' 2-1/2") = 113.2 ft<sup>2</sup>

Percentage of Vision Glass = (Vision Area ÷ Total Area)100  
 = (105.0 ÷ 113.2)100 = 93%

### Spandrel Area

Example Spandrel R-value = 15 (ft<sup>2</sup> · h · °F)/Btu

Spandrel Area = 5(6 + 3) = 45.0 ft<sup>2</sup>

Total Area (Spandrel) = 5' 2-1/2" (6' 2-1/2" + 3' 3-3/4") = 49.6 ft<sup>2</sup>

Percent of Spandrel = (Spandrel Area ÷ Total Area)100  
 = (49.0 ÷ 49.6)100 = 91%

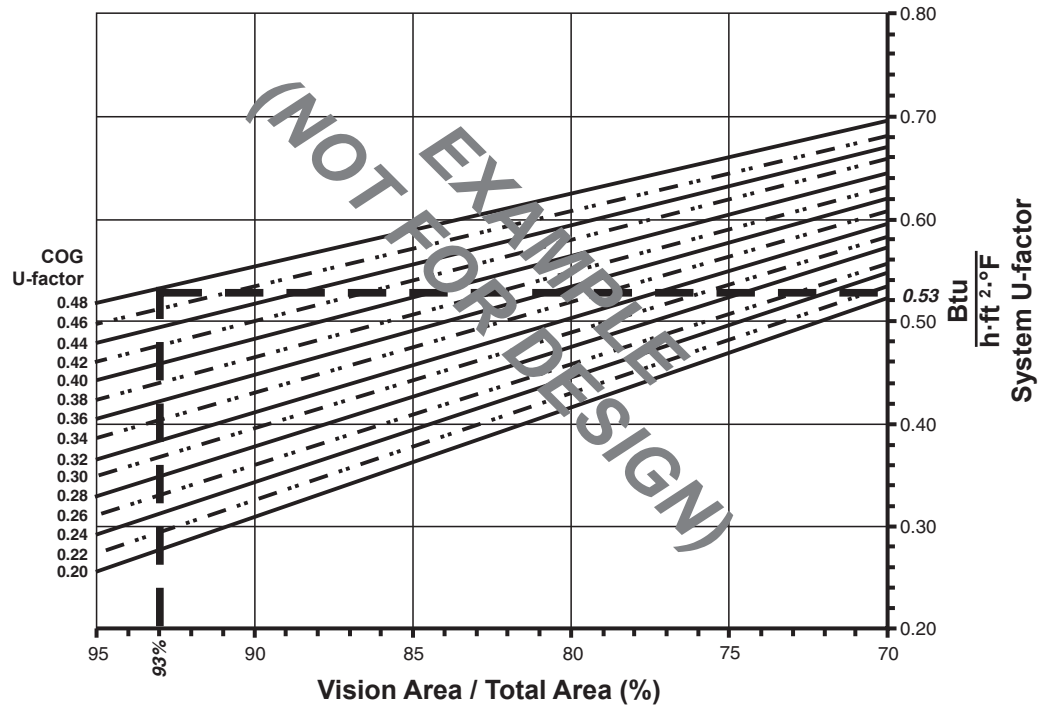
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Vision Area Chart

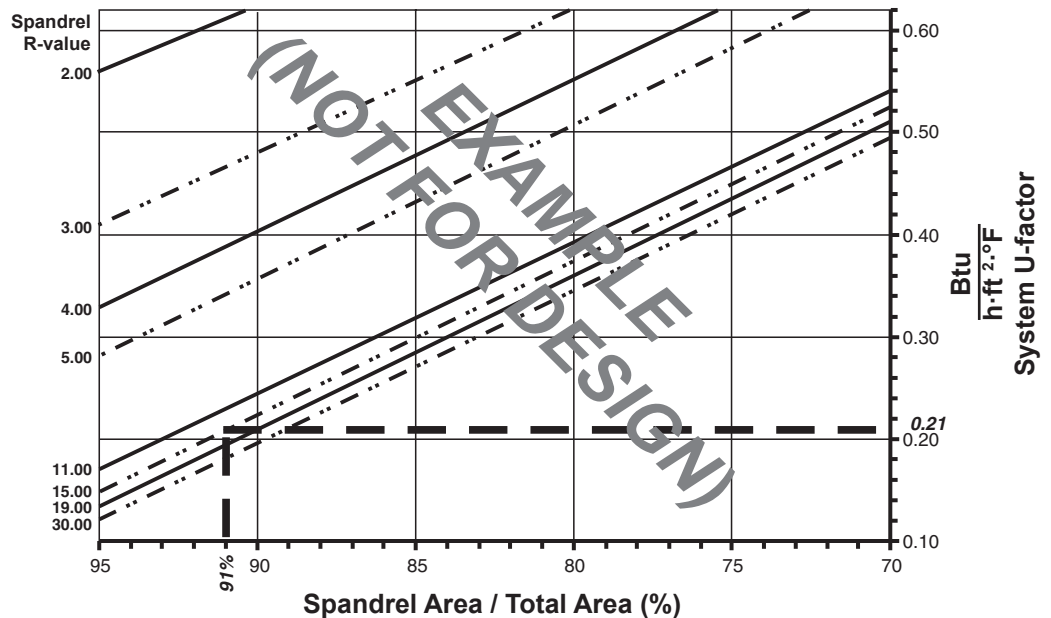
System U-factor vs Percent of Vision Area



Based on a single curtain wall bay of 93% vision glass and center of glass U-factor of 0.48, System U-factor is equal to 0.53 Btu/(h·ft<sup>2</sup>·°F)

Spandrel Area Chart

System U-factor vs Percent of Spandrel Area



Based on a single curtain wall bay of 91% spandrel and center of spandrel R-value of 15, system U-factor is equal to 0.21 Btu/(h·ft<sup>2</sup>·°F)

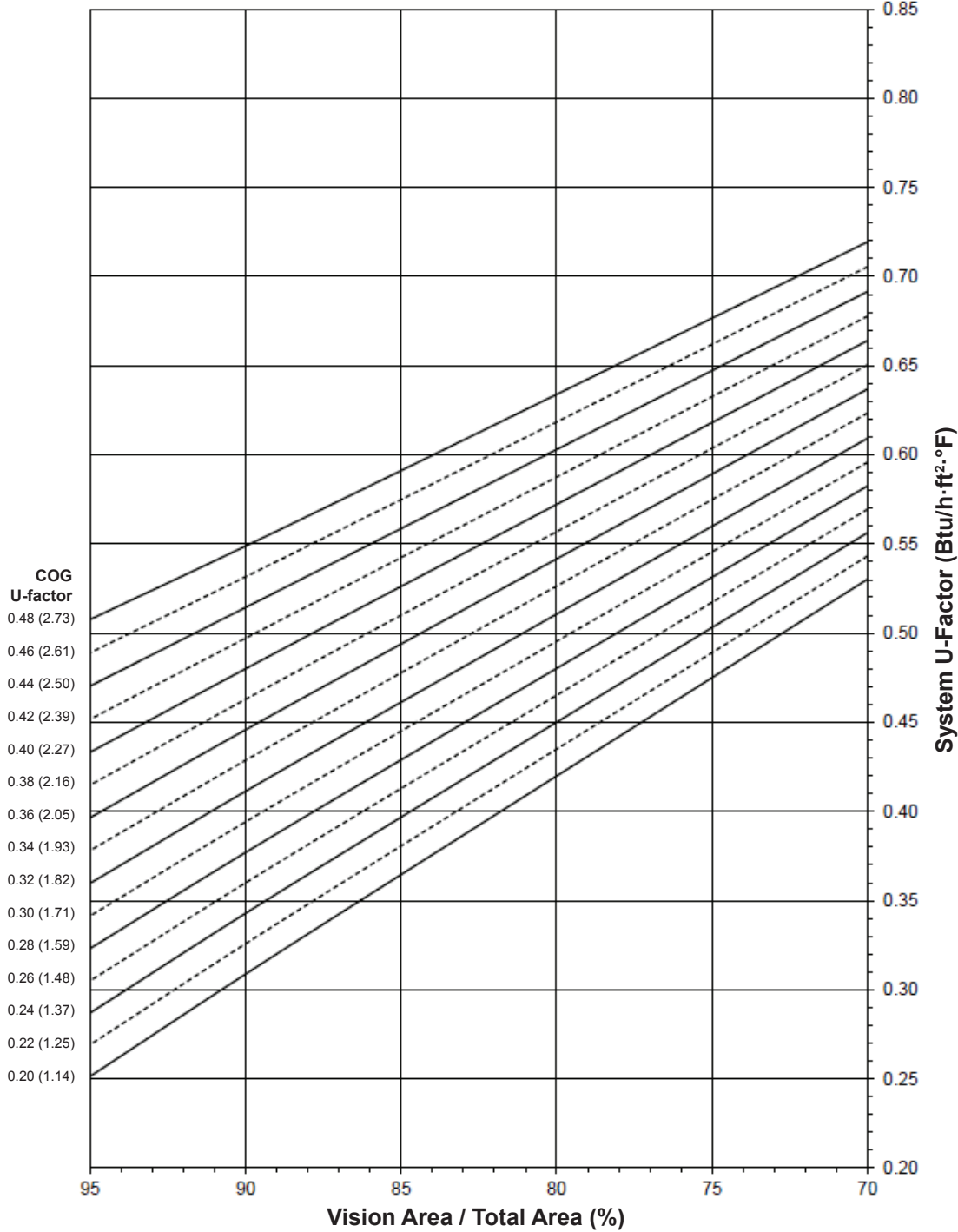
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Note:  
 Values in parentheses are metric.  
 COG=Center of Glass.  
 Charts are generated per AAMA 507.

**System U-Factor for Vision Glass**



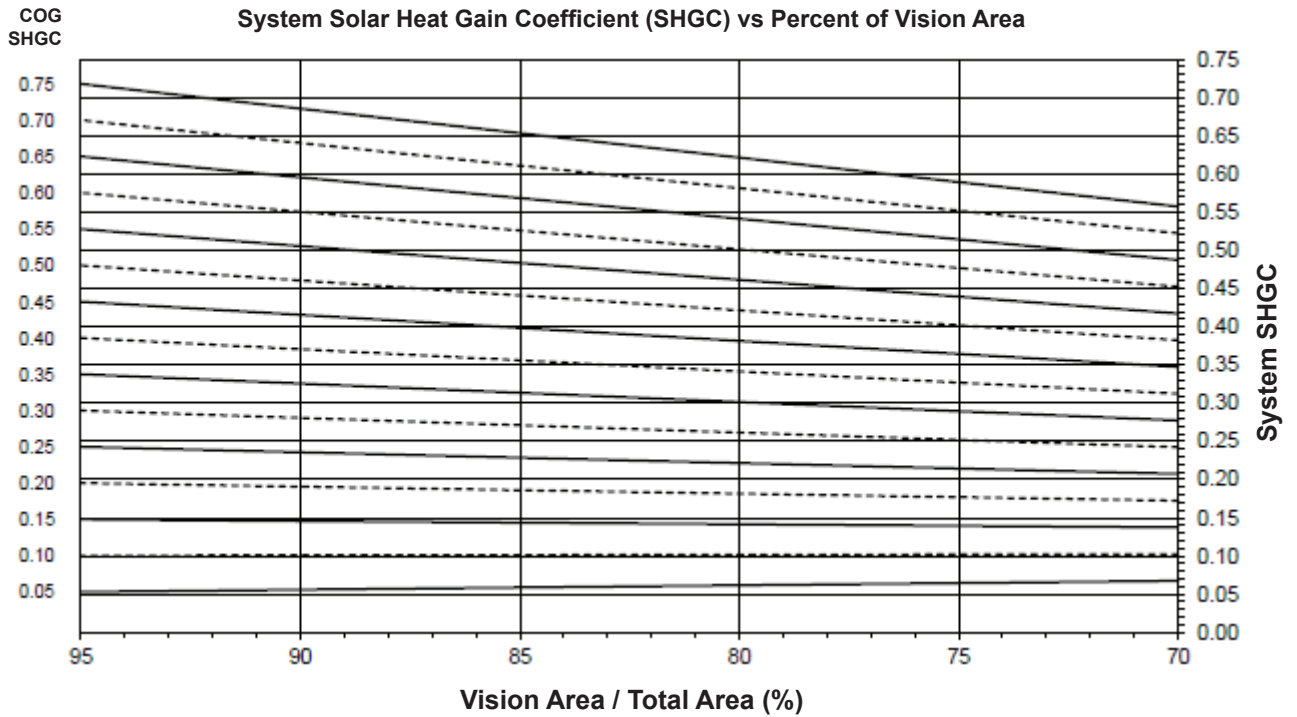
**Notes for System U-Factor, SHGC and VT charts:**

For glass values that are not listed, linear interpolation is permitted.  
 Glass properties are based on center of glass values (winter conditions) and are obtained from your glass supplier.

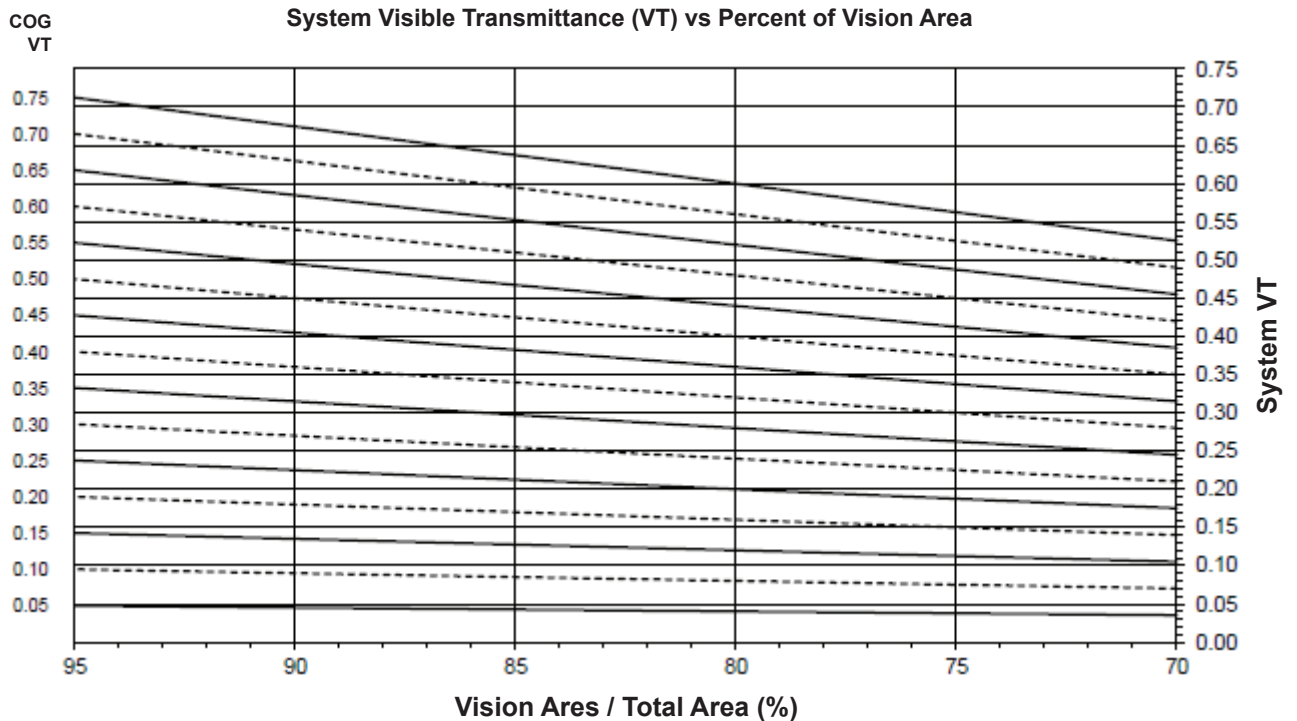
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Charts are generated per AAMA 507.



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**Thermal Transmittance**<sup>1</sup> (BTU/hr • ft<sup>2</sup> • °F)

Glass U-Factor <sup>3</sup>	Overall U-Factor <sup>4</sup>
0.48	0.57
0.46	0.55
0.44	0.53
0.42	0.52
0.40	0.50
0.38	0.48
0.36	0.47
0.34	0.45
0.32	0.43
0.30	0.42
0.28	0.40
0.26	0.38
0.24	0.37
0.22	0.35
0.20	0.33

**NOTE:** For glass values that are not listed, linear interpolation is permitted.

1. U-Factors are determined in accordance with NFRC 100.
2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values and are obtained from your glass supplier.
4. Overall U-Factor, SHGC, and VT Matricies are based on the standard NFRC specimen size of 2000mm wide by 2000mm high (78-3/4" by 78-3/4").

**SHGC Matrix**<sup>2</sup>

Glass SHGC <sup>3</sup>	Overall SHGC <sup>4</sup>
0.75	0.67
0.70	0.63
0.65	0.58
0.60	0.54
0.55	0.50
0.50	0.45
0.45	0.41
0.40	0.36
0.35	0.32
0.30	0.28
0.25	0.23
0.20	0.19
0.15	0.14
0.10	0.10
0.05	0.06

**Visible Transmittance**<sup>2</sup>

Glass VT <sup>3</sup>	Overall VT <sup>4</sup>
0.75	0.66
0.70	0.62
0.65	0.57
0.60	0.53
0.55	0.48
0.50	0.44
0.45	0.40
0.40	0.35
0.35	0.31
0.30	0.26
0.25	0.22
0.20	0.18
0.15	0.13
0.10	0.09
0.05	0.04

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