

Features

- Trifab® VersaGlaze® 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 Continuous Head and Sill fabrication
- Screw Spline Pre-Glazed option
- SSG / Weatherseal option
- IsoLock® lanced and debridged thermal break option with Trifab® VersaGlaze® 451T
- Infill options up to 1-1/8" (28.6) thickness
- Permanodic® anodized finishes option
- 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 available

Product Applications

- Storefront, Ribbon Window, Punched Openings or Pre-Glazed
- 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.

Laws and building and safety codes governing the design and use of Kawneer products, such as glazed entrance, window, and 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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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:

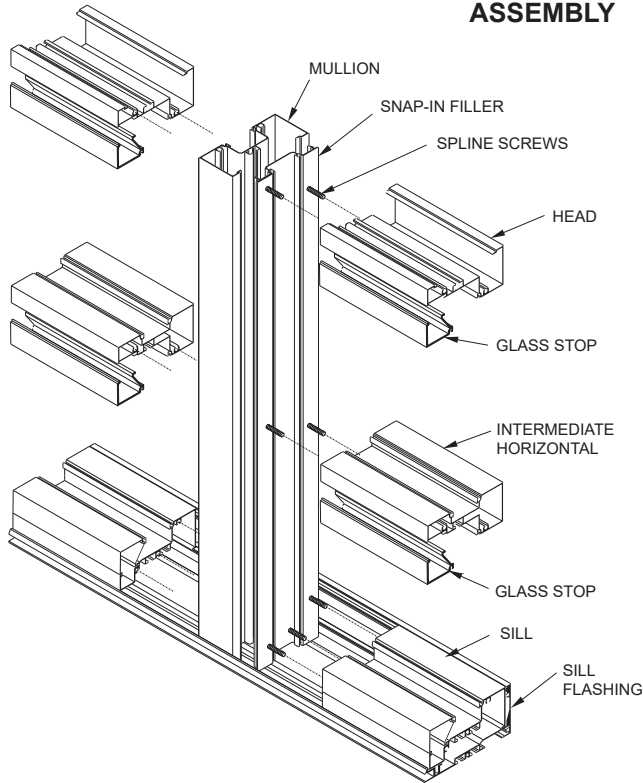
- m – meter
- cm – centimeter
- mm – millimeter
- s – second
- Pa – pascal
- MPa – megapascal

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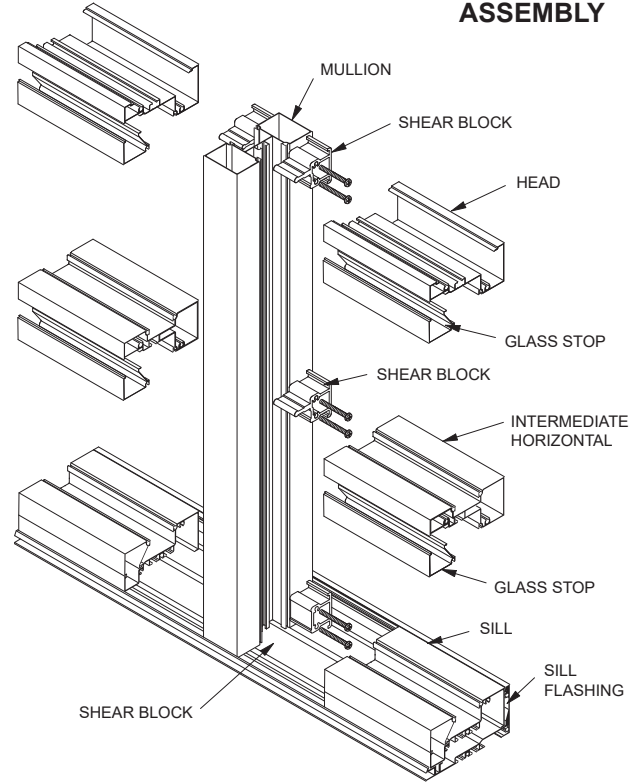
The split vertical in the **Screw Spine** system allows a frame to be installed from unitized assemblies. Screws are driven through the back of the verticals into splines extruded in the horizontal framing members. The individual units are then snapped together to form a complete frame.

SCREW SPLINE ASSEMBLY

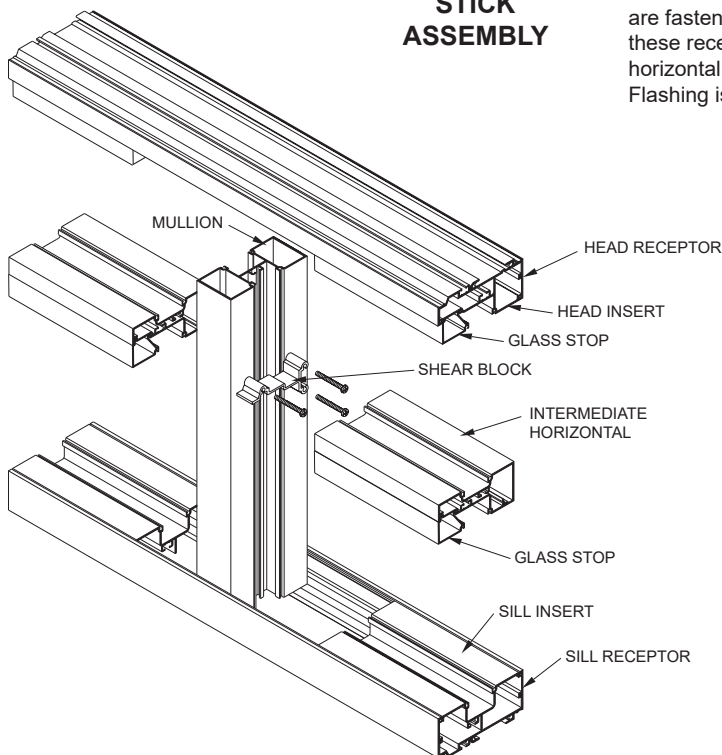


The **Shear Block** system of fabrication allows a frame to be pre-assembled as a single unit. Horizontals are attached to the verticals with shear blocks.

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:

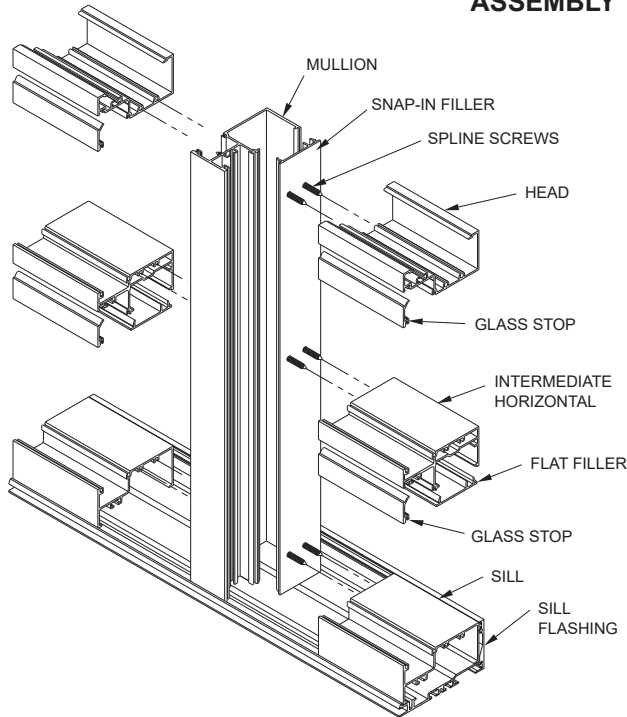
If the end reaction of the mullion (mullion spacing (ft.) times height (ft.) times specified wind load (psf) divided by two) is more than 500 lbs., the optional mullion anchors must be used. (See page 18)

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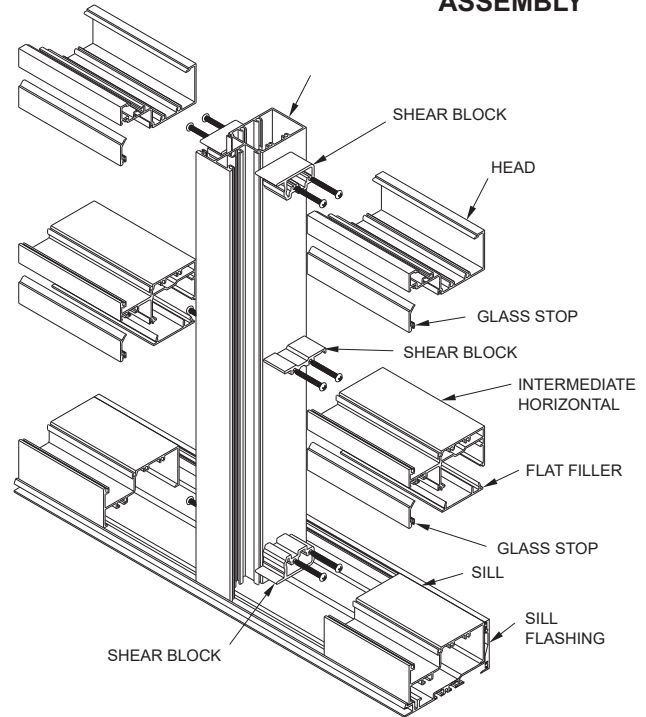
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SCREW SPLINE ASSEMBLY

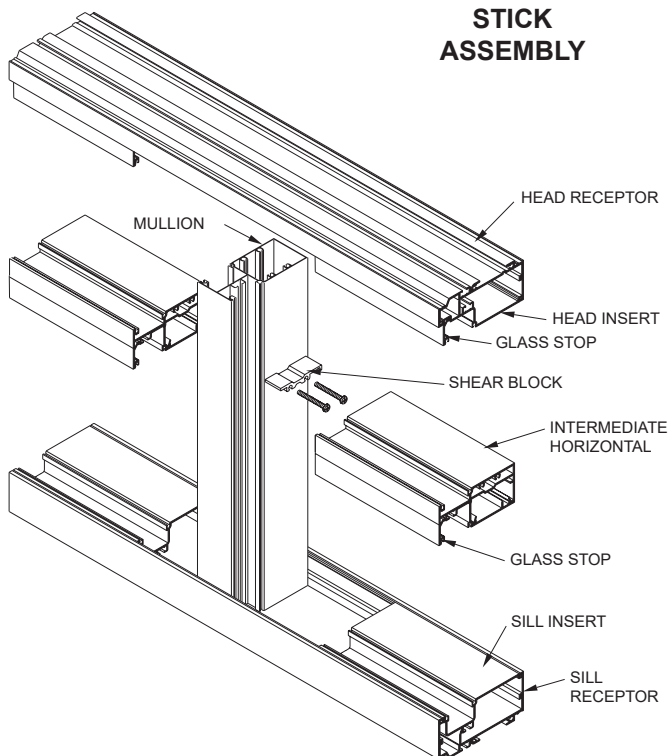


The **Shear Block** system of fabrication allows a frame to be pre-assembled as a single unit. Horizontals are attached to the verticals with shear blocks.

SHEAR BLOCK ASSEMBLY



STICK ASSEMBLY



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NOTE:

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. (See page 40)

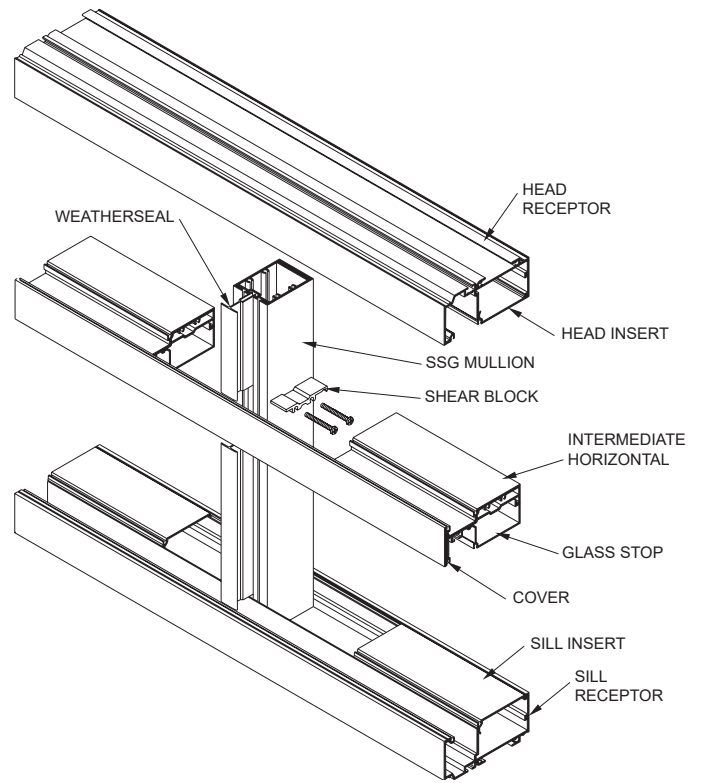
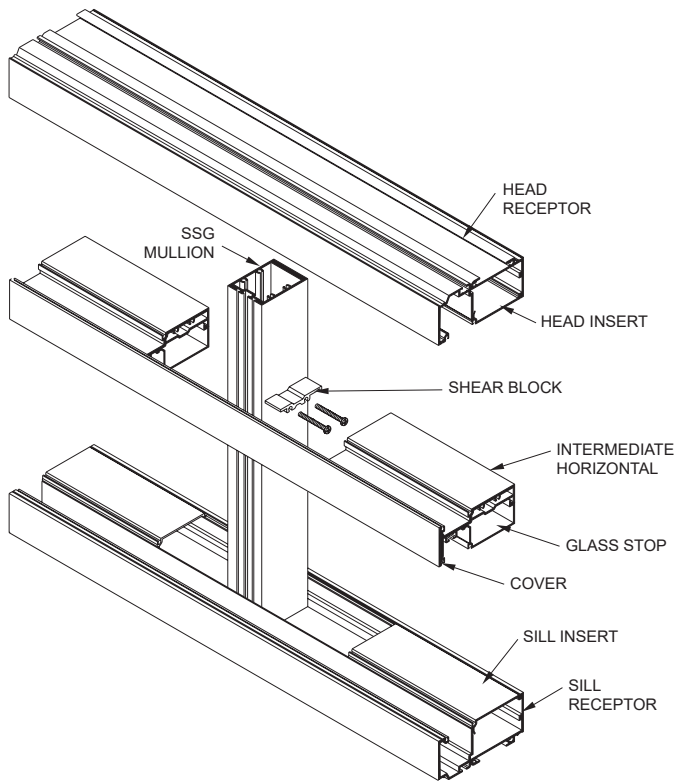
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STICK ASSEMBLY (SSG)

STICK ASSEMBLY (WEATHERSEAL)



NOTE:

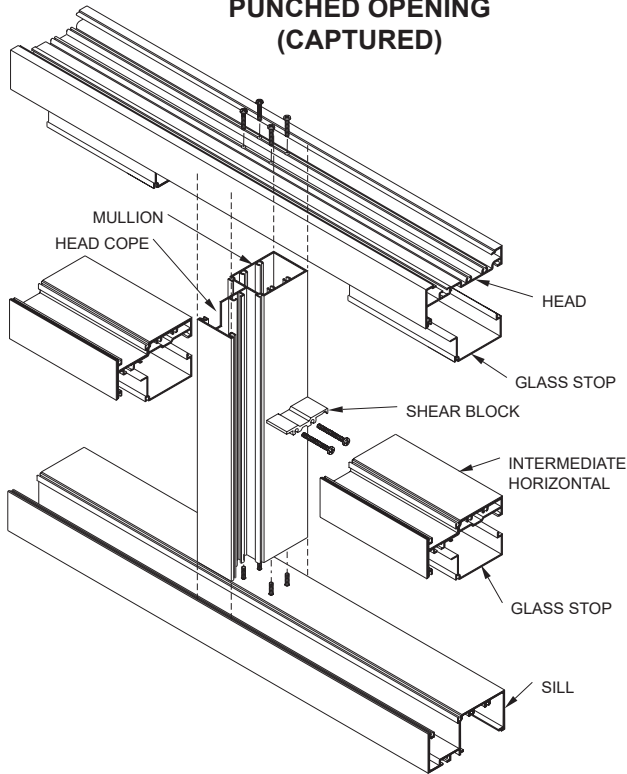
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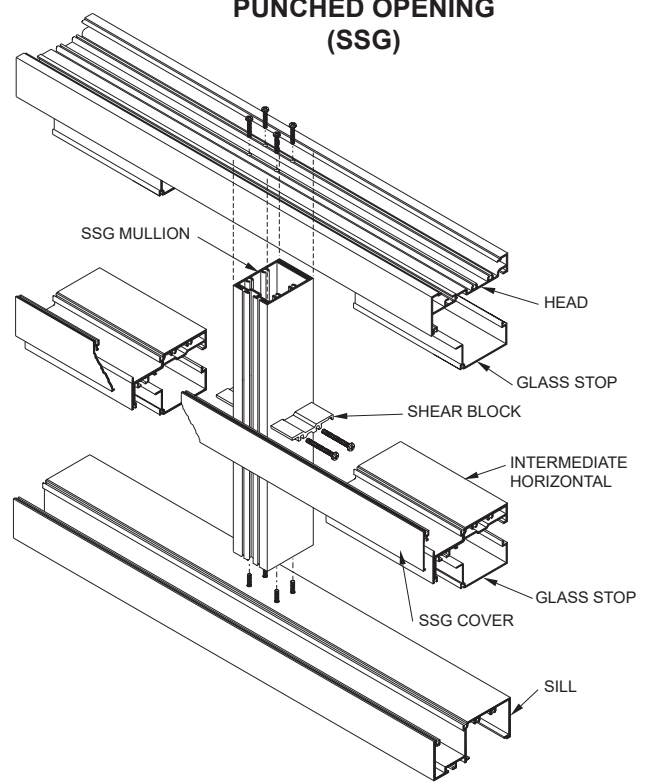
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The **CONTINUOUS HEAD AND SILL** punched opening fabrication allows a frame to be pre-assembled and installed as a single unit. Screws are driven through the back of the head and sill members into splines extruded in the vertical framing members. Intermediate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

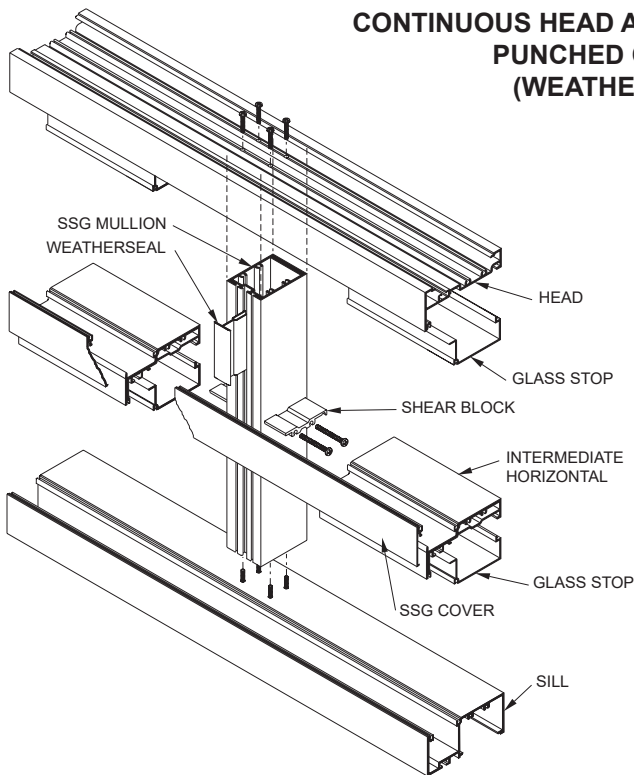
**CONTINUOUS HEAD AND SILL ASSEMBLY
PUNCHED OPENING
(CAPTURED)**



**CONTINUOUS HEAD AND SILL ASSEMBLY
PUNCHED OPENING
(SSG)**



**CONTINUOUS HEAD AND SILL ASSEMBLY
PUNCHED OPENING
(WEATHERSEAL)**



The **Punched Opening** fabrication allows a frame to be pre-punched 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.

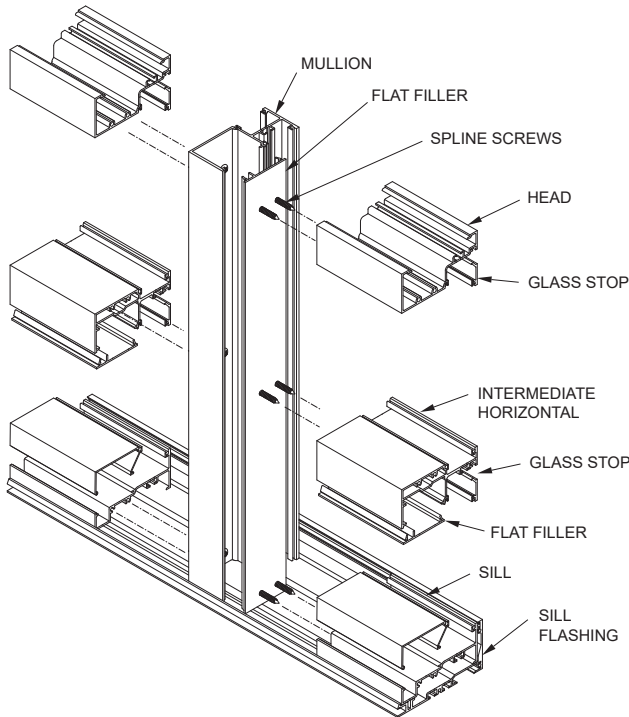
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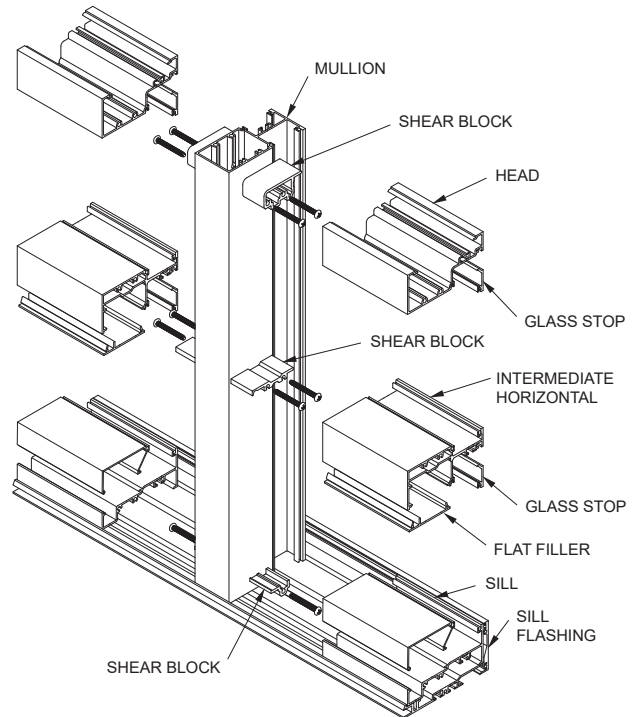
The split vertical in the **Screw Spine** system allows a frame to be installed from unitized assemblies. Screws are driven through the back of the verticals into splines extruded in the horizontal framing members. The Individual units are then snapped together to form a complete frame.

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.

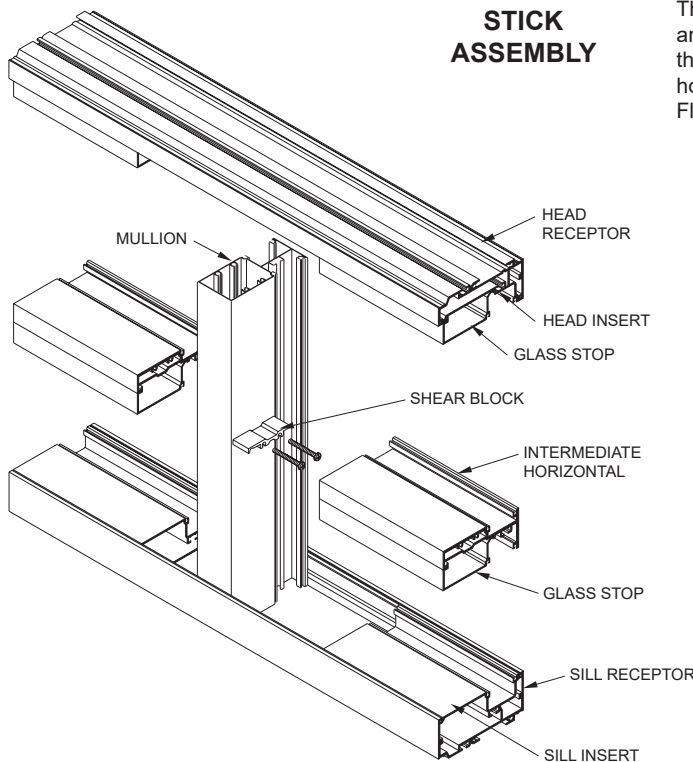
SCREW SPLINE ASSEMBLY



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:

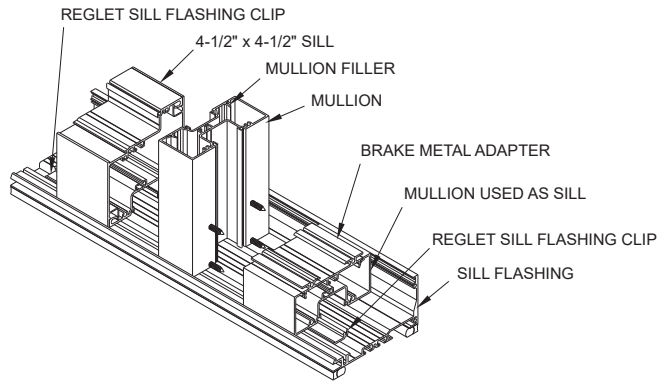
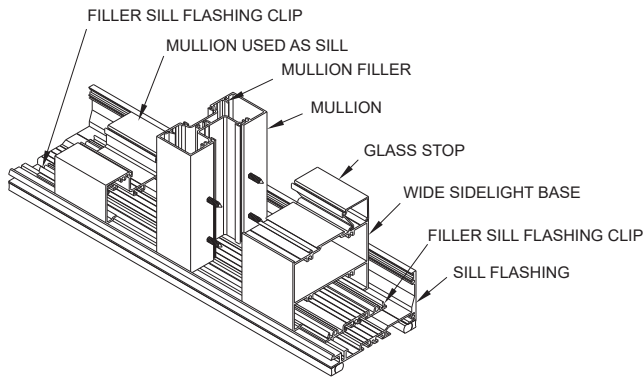
If the end reaction of the mullion (mullion spacing (ft.) times height (ft.) times specified wind load (psf) divided by two) is more than 500 lbs., the optional mullion anchors must be used. (See page 51)

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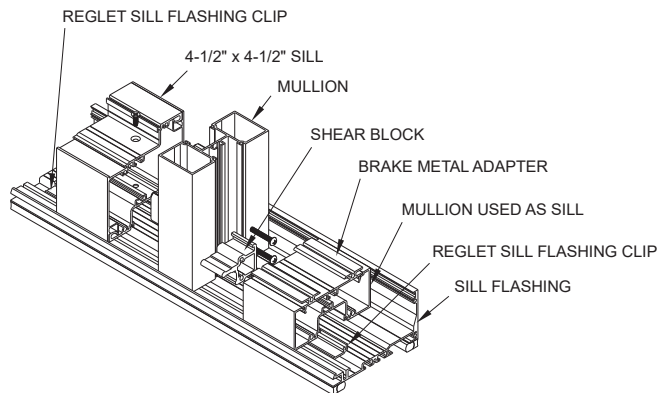
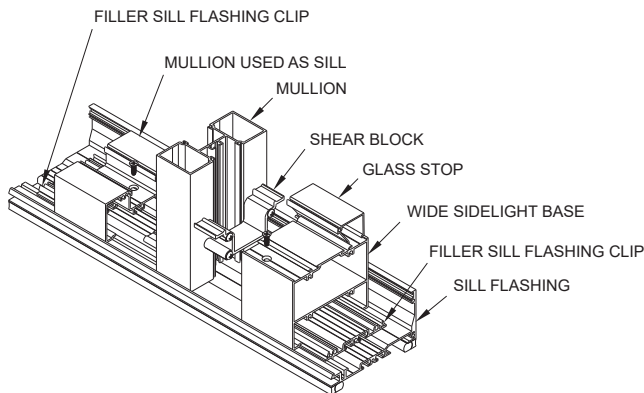
SCREW SPLINE ASSEMBLY

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 complete frame.



SHEAR BLOCK ASSEMBLY

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BASIC FRAMING DETAILS

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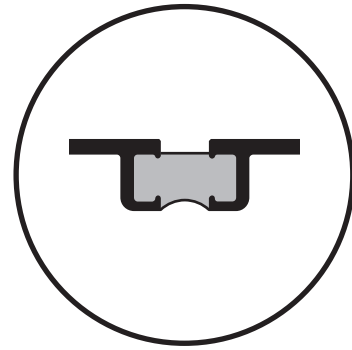
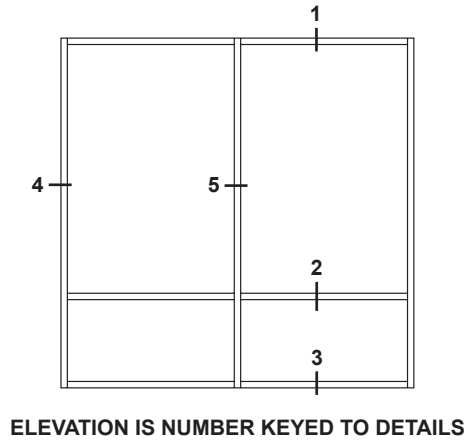
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Additional information and CAD details are available at www.kawneer.com

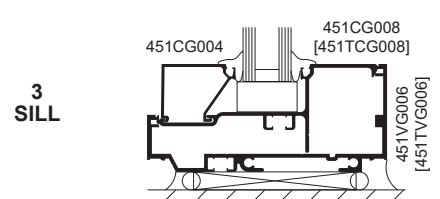
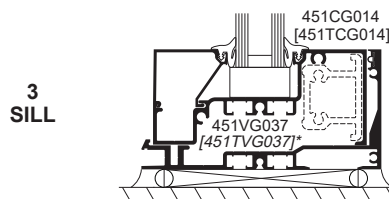
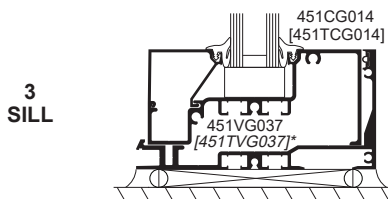
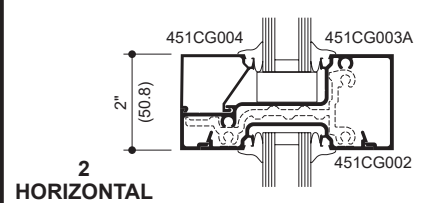
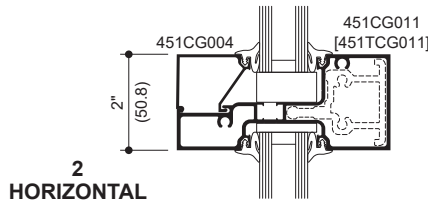
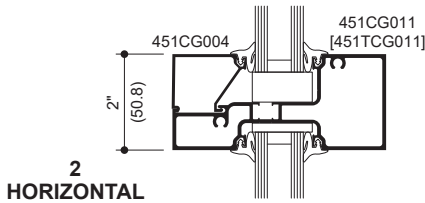
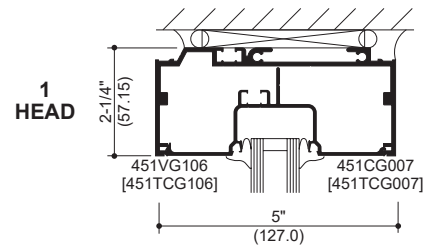
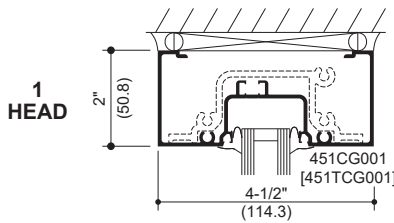
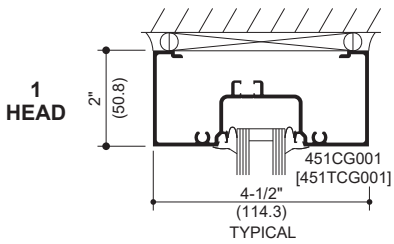
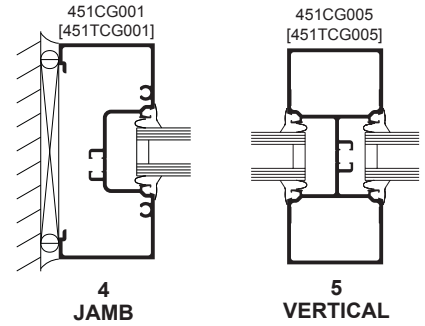
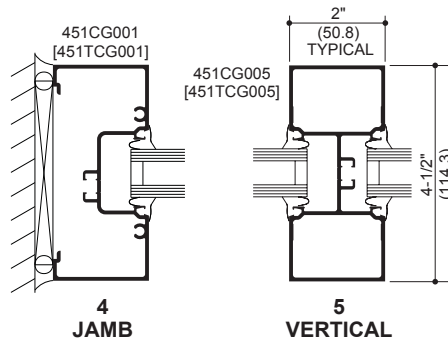
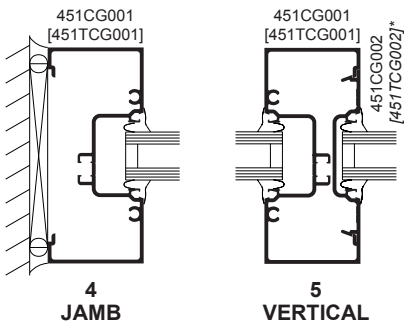


NUMBERS IN BRACKETS ARE THERMALLY BROKEN MEMBERS

SCREW SPLINE

SHEAR BLOCK

STICK



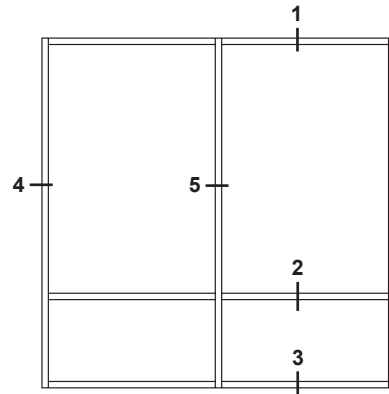
* HP Sill Flashing shown with optional gasket.

* HP Sill Flashing shown with optional gasket.

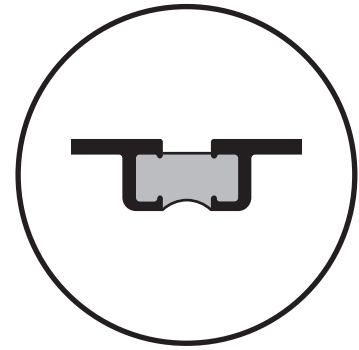
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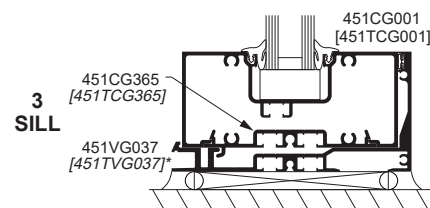
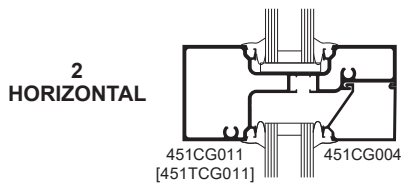
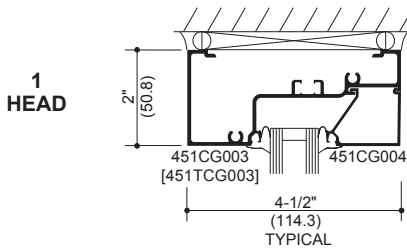
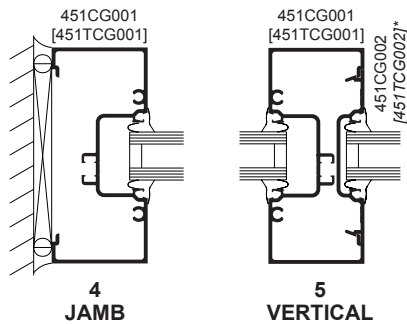


ELEVATION IS NUMBER KEYED TO DETAILS



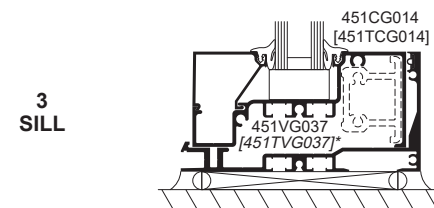
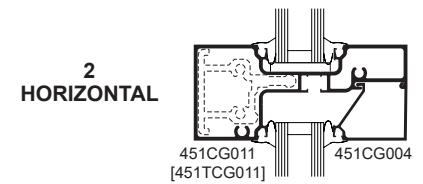
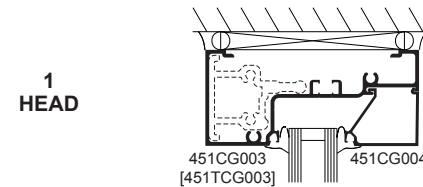
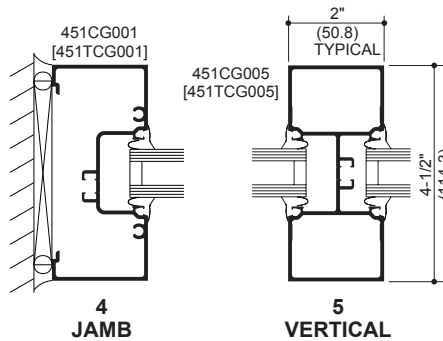
NUMBERS IN BRACKETS ARE THERMALLY BROKEN MEMBERS

SCREW SPLINE



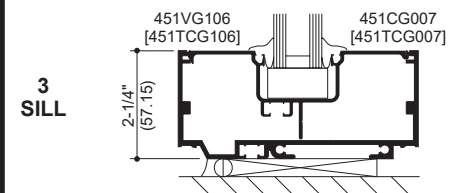
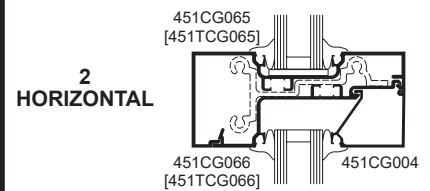
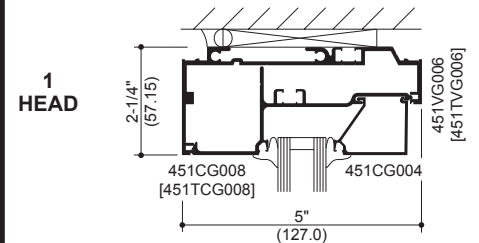
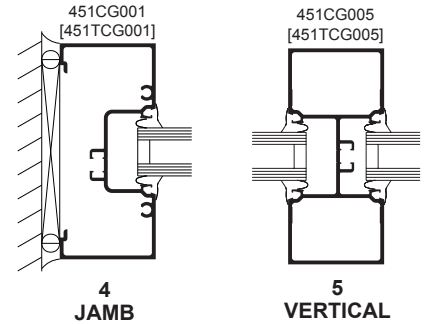
* HP Sill Flashing shown with optional gasket.

SHEAR BLOCK



* HP Sill Flashing shown with optional gasket.

STICK

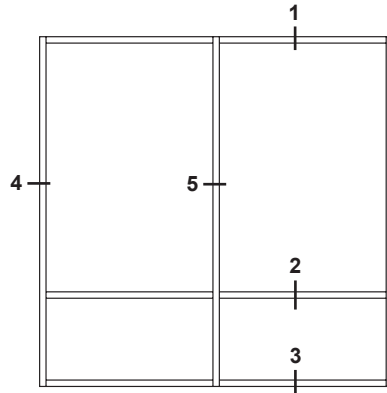


3 SILL

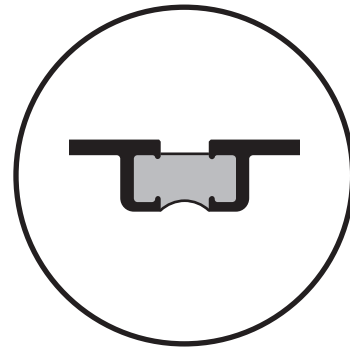
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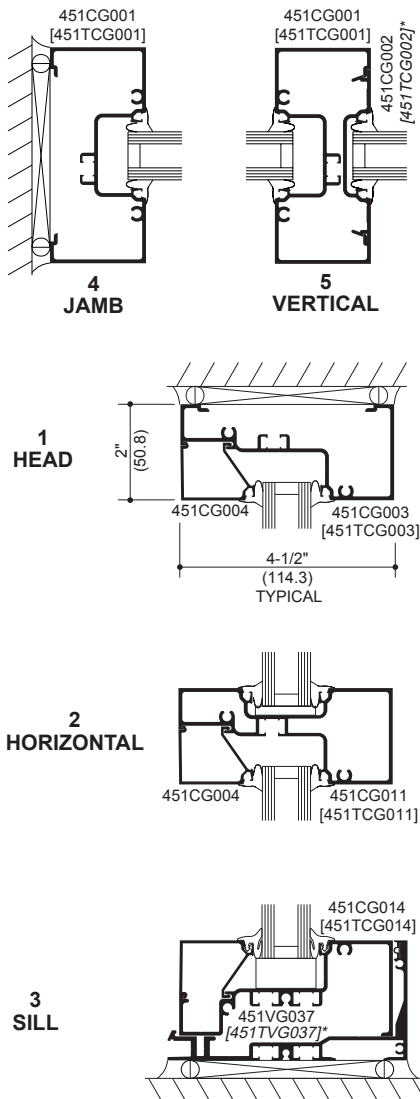


ELEVATION IS NUMBER KEYED TO DETAILS



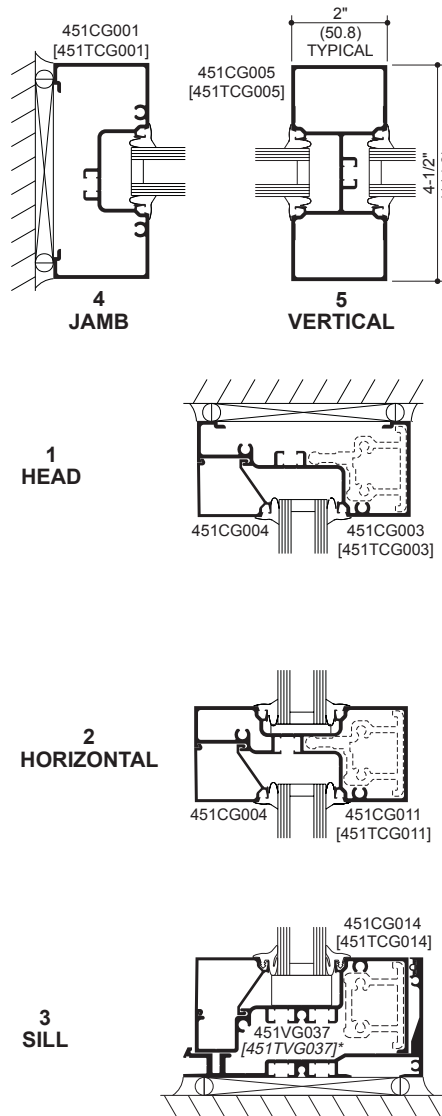
NUMBERS IN BRACKETS ARE THERMALLY BROKEN MEMBERS

SCREW SPLINE



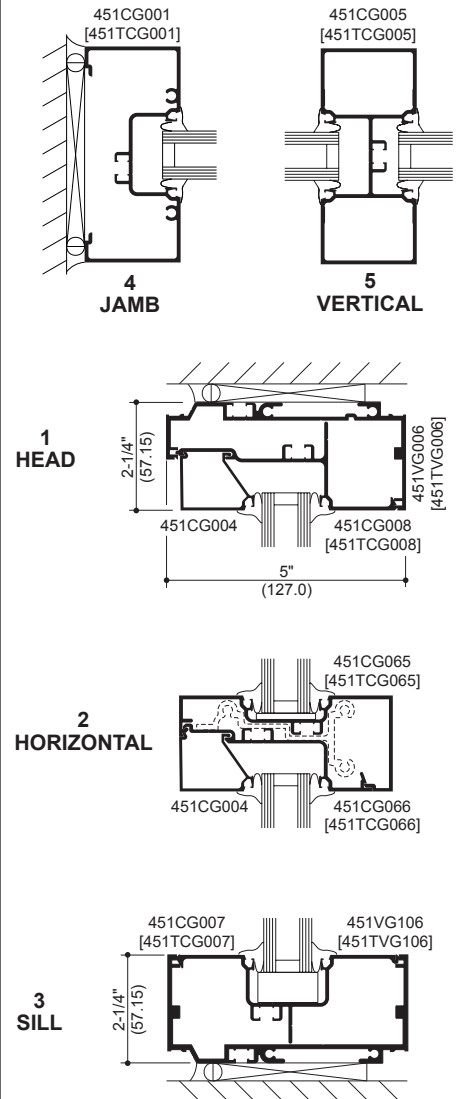
* HP Sill Flashing shown with optional gasket.

SHEAR BLOCK



* HP Sill Flashing shown with optional gasket.

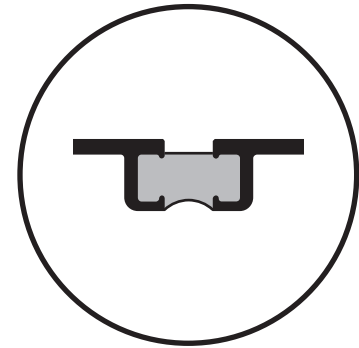
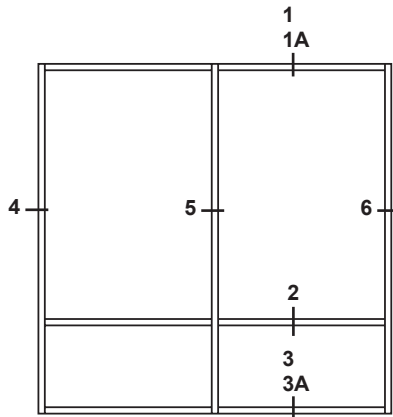
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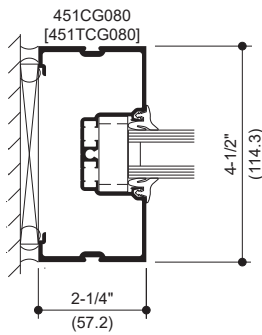
Additional information and CAD details are available at www.kawneer.com



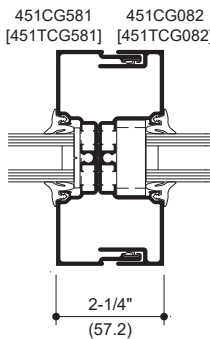
NUMBERS IN BRACKETS ARE THERMALLY BROKEN MEMBERS

ELEVATION IS NUMBER KEYED TO DETAILS

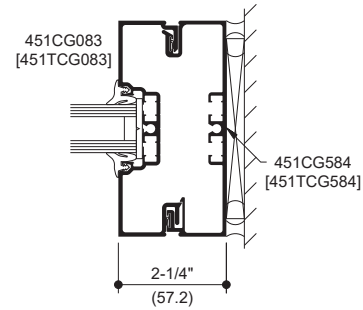
SCREW SPLINE



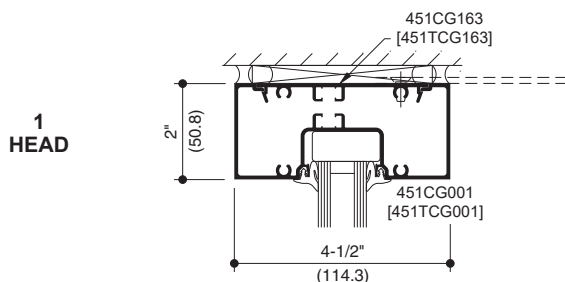
4 JAMB



5 VERTICAL

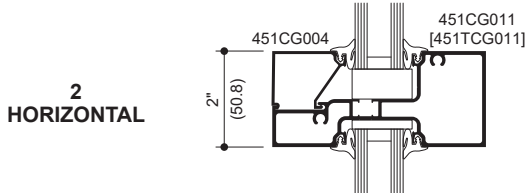
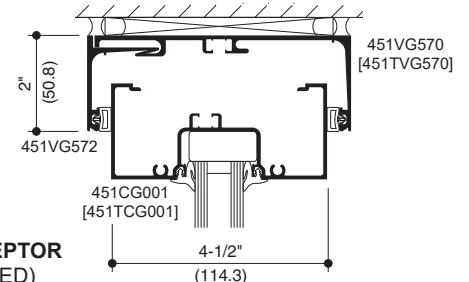


6 JAMB

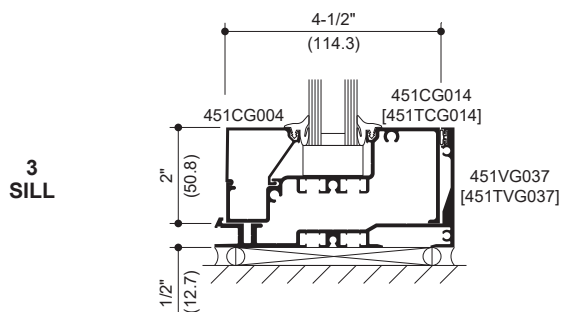


1 HEAD

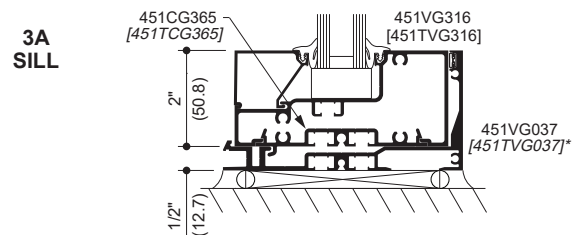
1A STANDARD HEAD COMPENSATING RECEPTOR (EXTERIOR INSTALLED)



2 HORIZONTAL



3 SILL

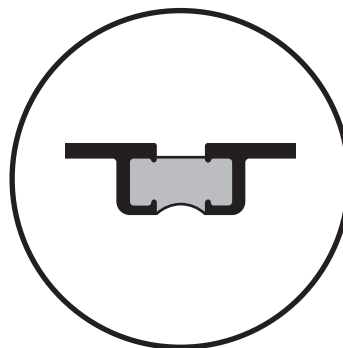
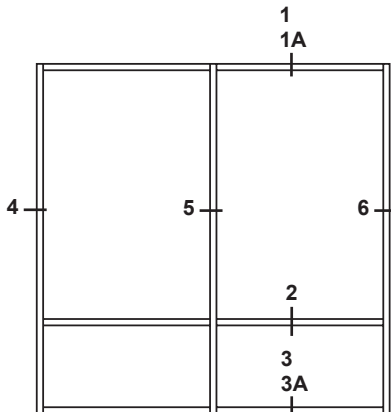


3A SILL

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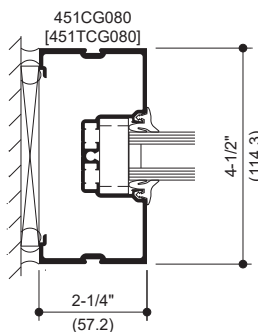
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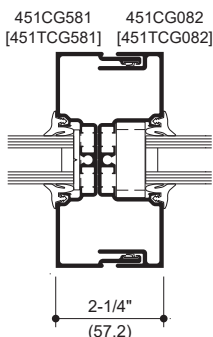
NUMBERS IN BRACKETS ARE THERMALLY BROKEN MEMBERS

ELEVATION IS NUMBER KEYED TO DETAILS

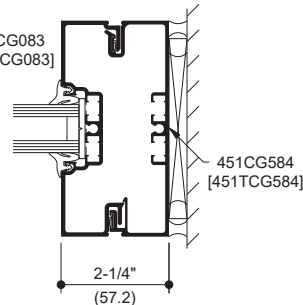
SCREW SPLINE



4 JAMB

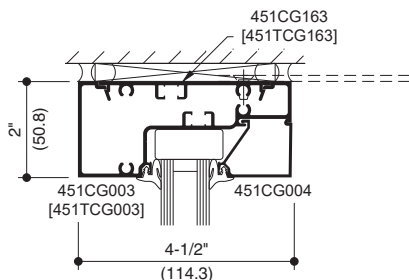


5 VERTICAL

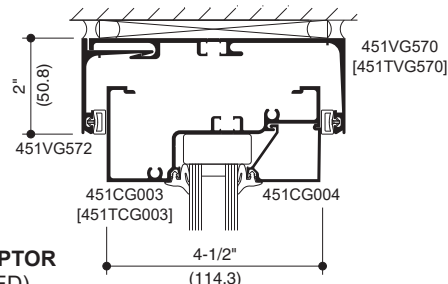


6 JAMB

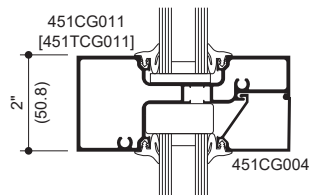
1 HEAD



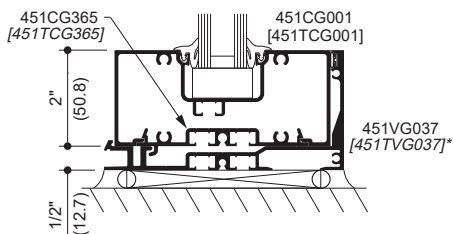
1A STANDARD HEAD COMPENSATING RECEPTOR (EXTERIOR INSTALLED)



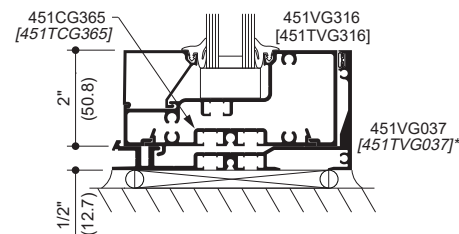
2 HORIZONTAL



3 SILL



3A SILL

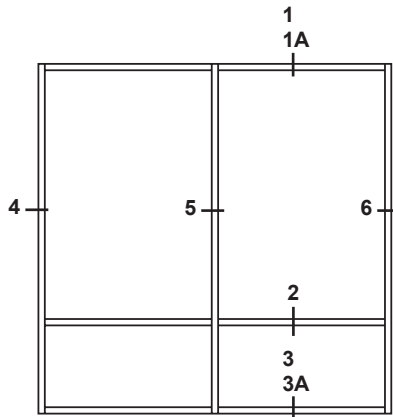


* HP Sill Flashing shown with optional gasket.

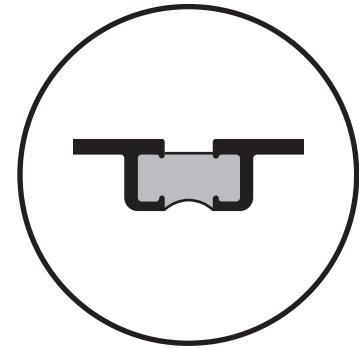
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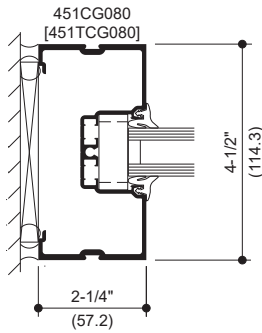


ELEVATION IS NUMBER KEYED TO DETAILS

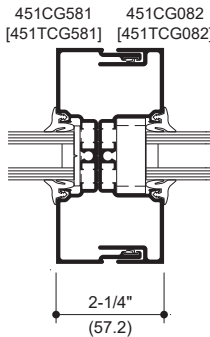


NUMBERS IN BRACKETS ARE THERMALLY BROKEN MEMBERS

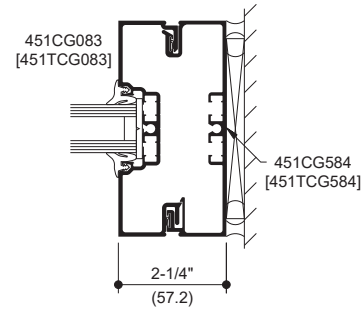
SCREW SPLINE



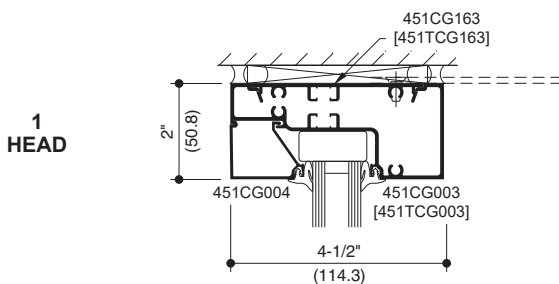
4 JAMB



5 VERTICAL

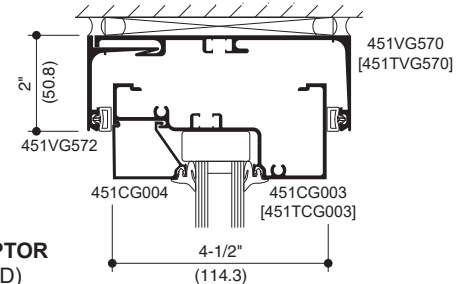


6 JAMB

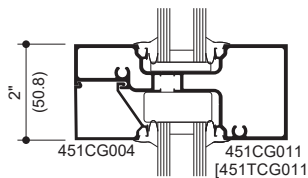


1 HEAD

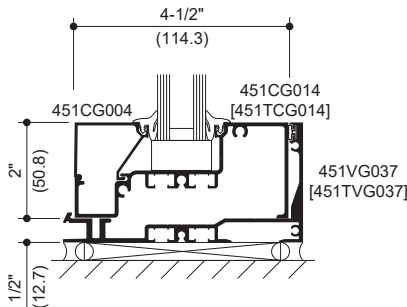
1A STANDARD HEAD COMPENSATING RECEPTOR (EXTERIOR INSTALLED)



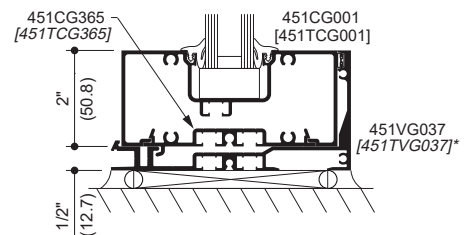
2 HORIZONTAL



3 SILL



3A SILL

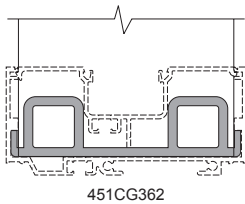
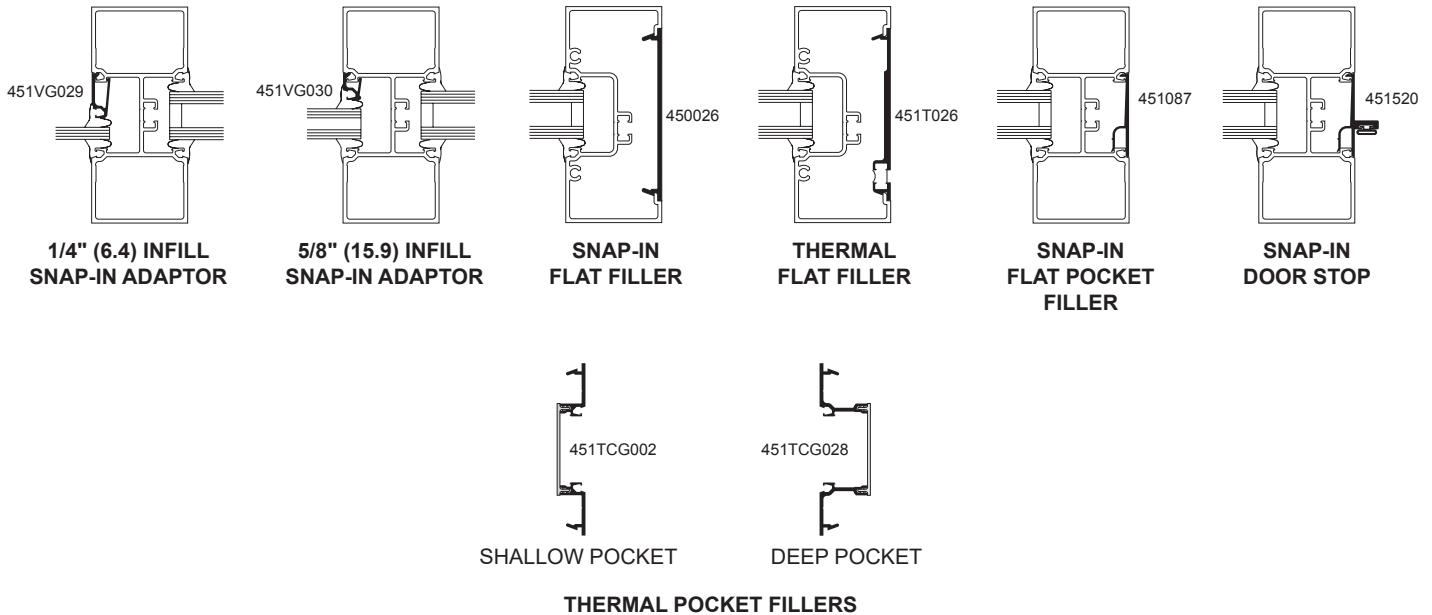
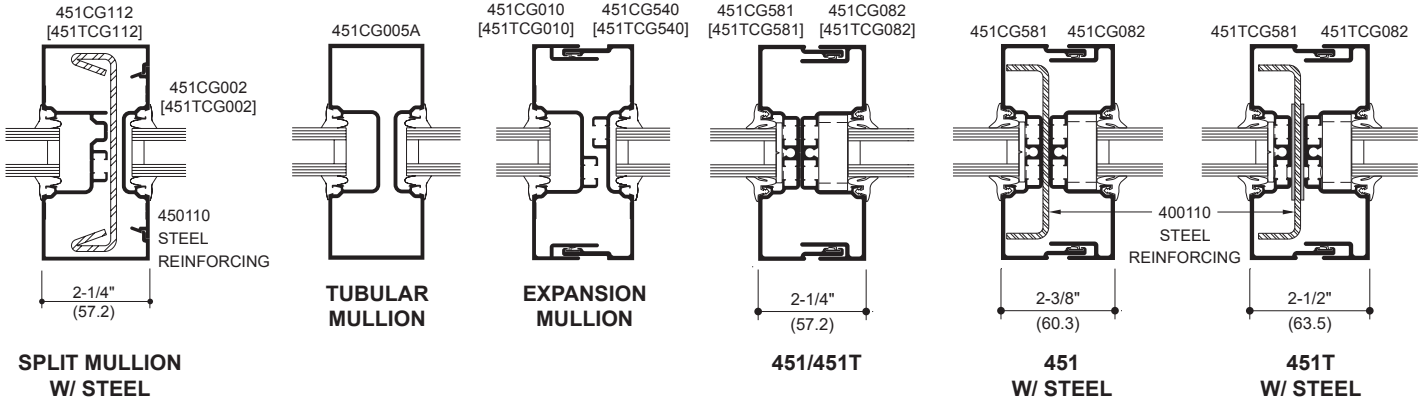


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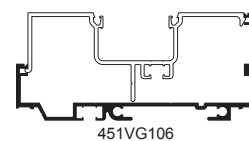
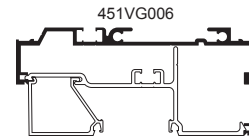
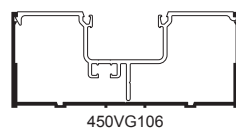
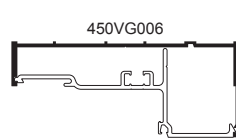
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PRE-GLAZED EXPANSION MULLIONS



NOTE:
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 anchor must be used. Consult Application Engineering.

NOTE:
Mullion Anchor not used with Lightweight Receptor.



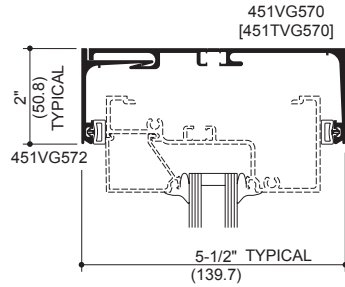
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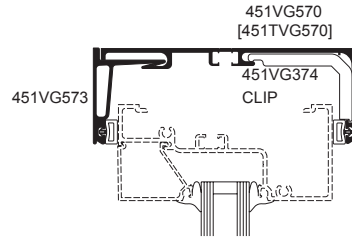
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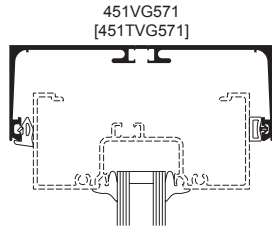
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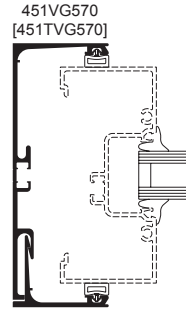
STANDARD HEAD COMPENSATING RECEPTOR
(EXTERIOR INSTALLED)



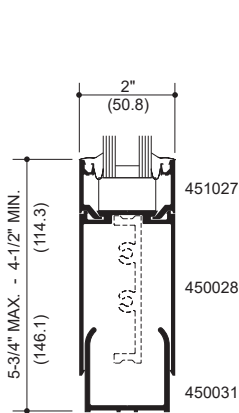
HEAVY WEIGHT HEAD COMPENSATING RECEPTOR
(EXTERIOR INSTALLED)



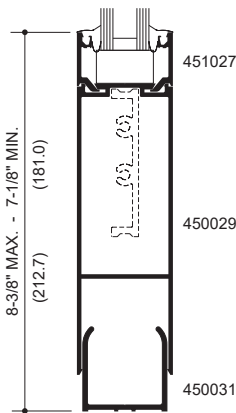
ONE PIECE HEAD COMPENSATING RECEPTOR



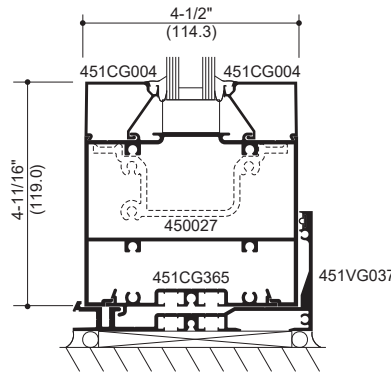
JAMB COMPENSATING RECEPTOR
(EXTERIOR INSTALLED)



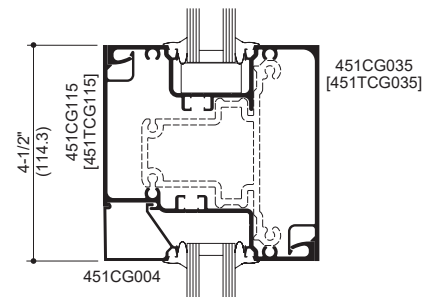
***NARROW SIDELITE BASE**



***NARROW SIDELITE BASE**



SIDELITE BASE



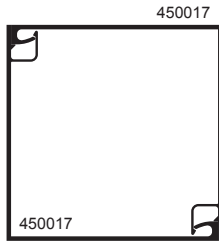
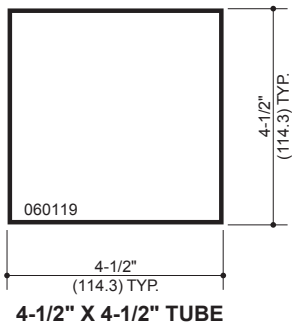
4-1/2" (114.3) x 4-1/2" (114.3) HORIZONTAL

SIDELITE BASES ARE NON-THERMAL APPLICATIONS

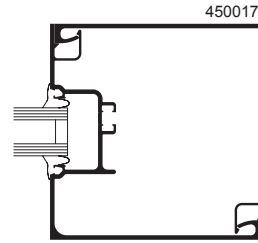
*NARROW SIDELITE BASES REQUIRE THE USE OF NON-THERMAL 2-PIECE VERTICALS ONLY.

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

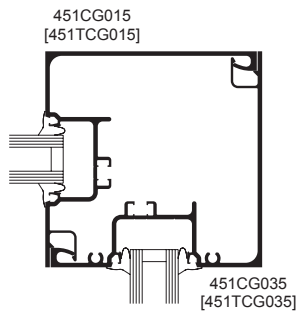
Additional information and CAD details are available at www.kawneer.com



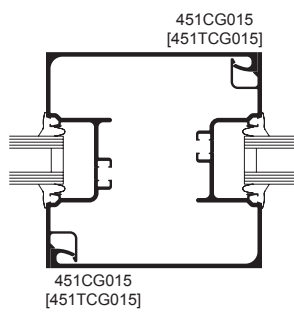
TWO PIECE NO POCKET CORNER



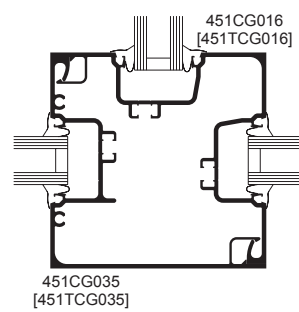
ONE POCKET CORNER



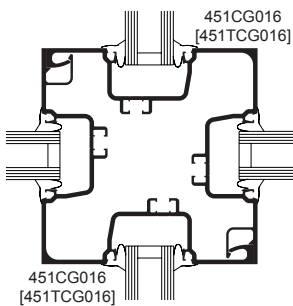
TWO POCKET 90° CORNER



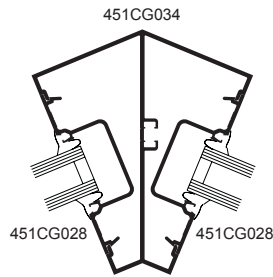
TWO POCKET CORNER POST



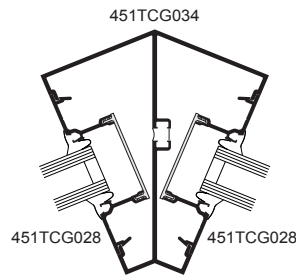
THREE POCKET 90° CORNER



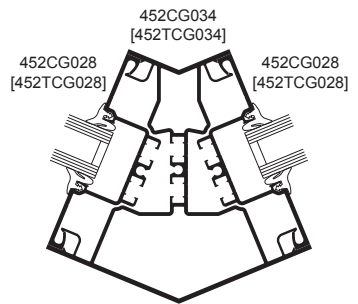
FOUR POCKET 90° CORNER



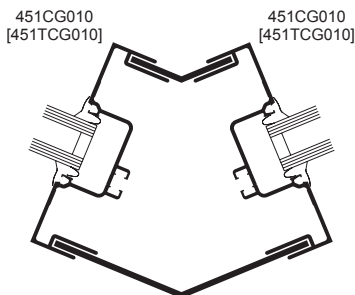
135° CORNER (NON-THERMAL)



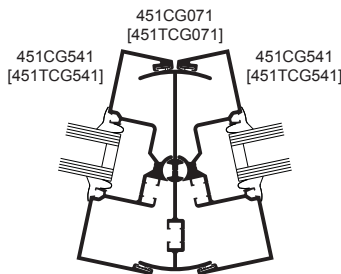
135° CORNER (THERMAL)



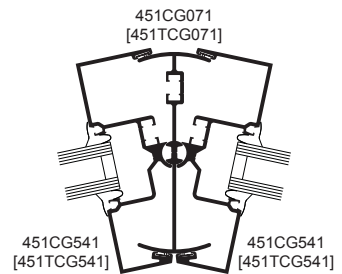
135° CORNER



VARIABLE DEGREE BRAKE METAL CORNER



155° TO 180° PIVOT MULLION (OUTSIDE CORNER)

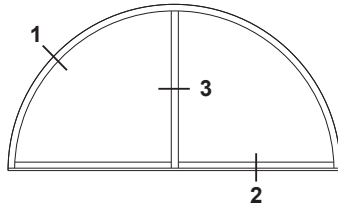


155° TO 180° PIVOT MULLION (INSIDE CORNER)

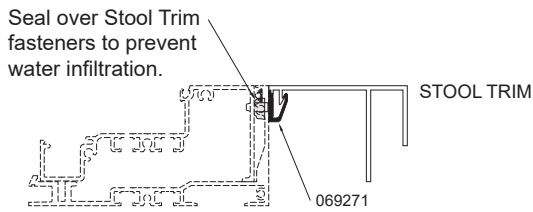
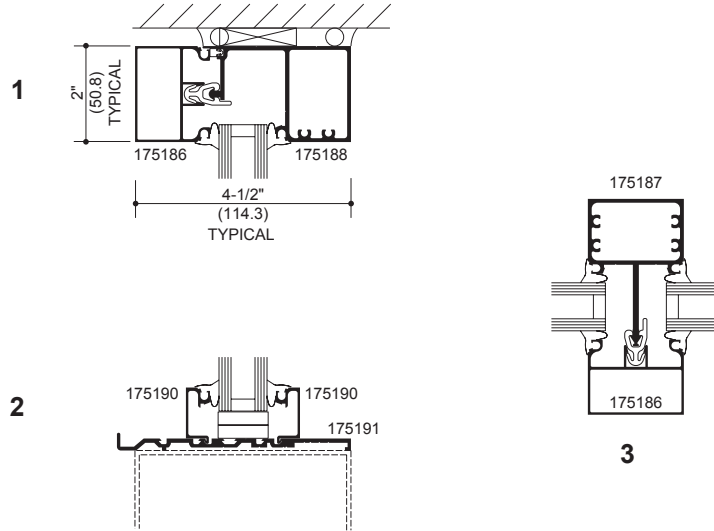
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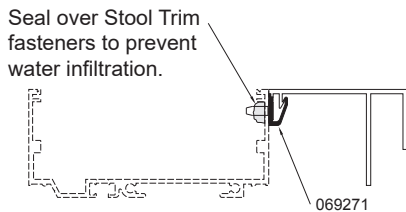
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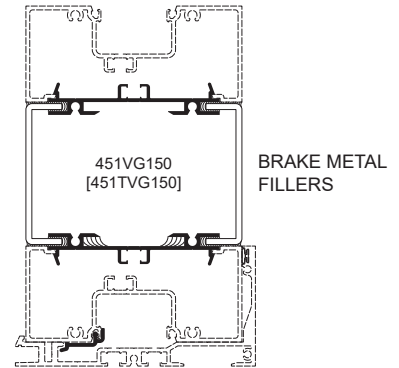
CURVING DETAILS
(Center Plane Only)



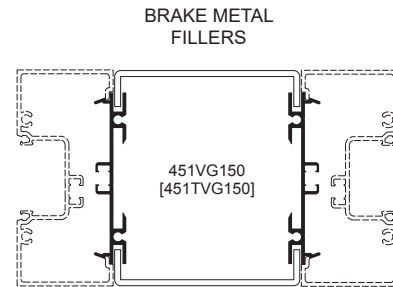
STOOL TRIM CLIP WITH HIGH PERFORMANCE FLASHING



STOOL TRIM CLIP FOR STICK ASSEMBLY



BRAKE METAL ADAPTOR AT HORIZONTAL



BRAKE METAL ADAPTOR AT VERTICAL

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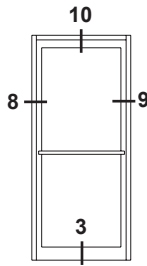
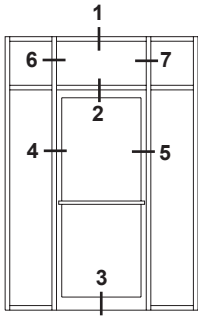
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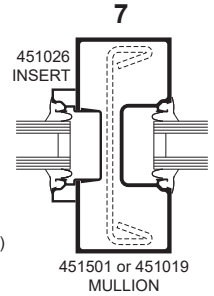
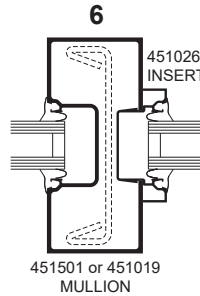
Trifab® VersaGlaze® 451 FRAMING INCORPORATING KAWNEER® “190” DOORS.

DOOR FRAMING NON-THERMAL ONLY

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

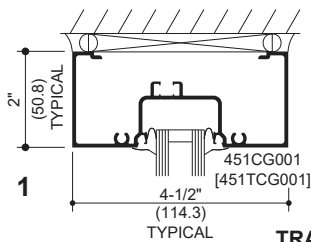


ELEVATIONS ARE NUMBER KEYED TO DETAILS

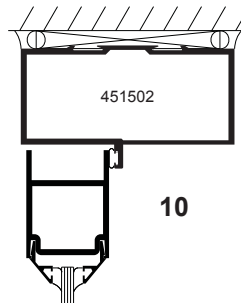
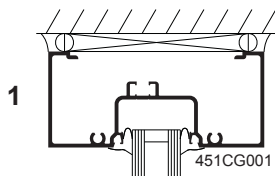


TRANSOM JAMBS

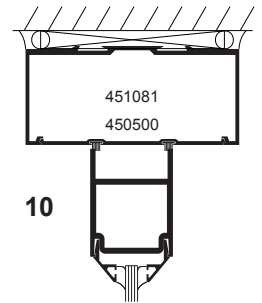
Transom area for both double or single acting doors with glass surround. Jambs above transom bar are routed out to accept glass holding insert with or without steel reinforcing.



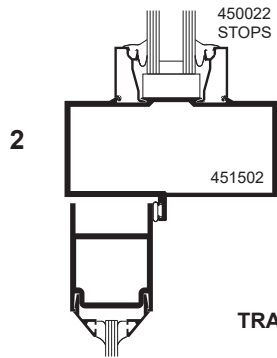
TRANSOM HEAD



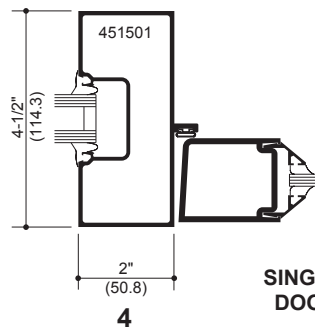
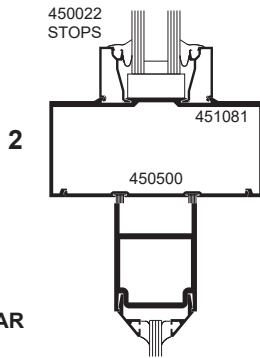
SINGLE ACTING HEADER



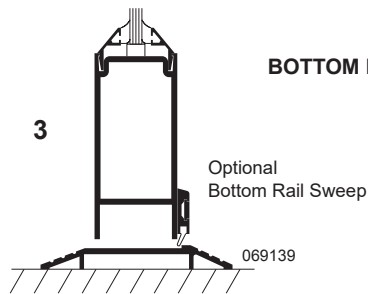
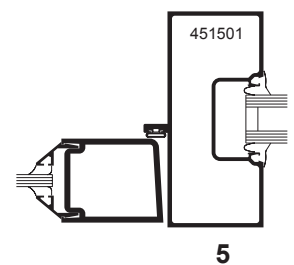
DOUBLE ACTING HEADER



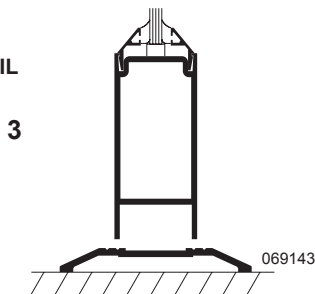
TRANSOM BAR



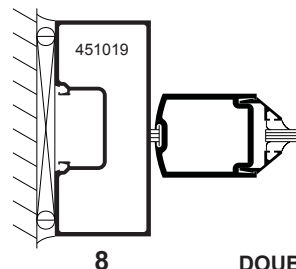
SINGLE ACTING DOOR JAMBS



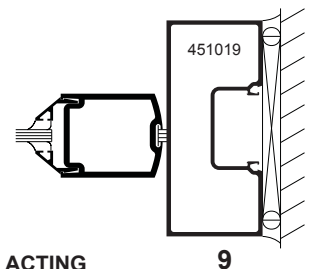
SINGLE ACTING



DOUBLE ACTING



DOUBLE ACTING DOOR JAMBS



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

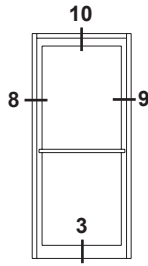
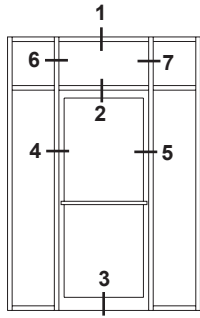
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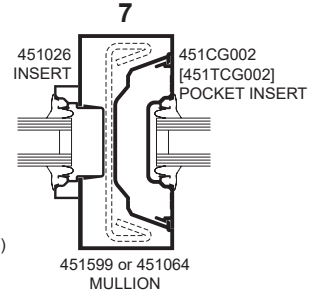
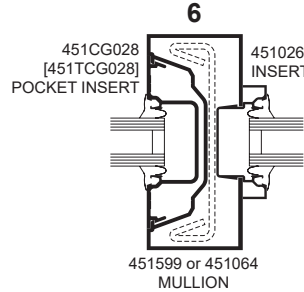
Trifab® VersaGlaze® 451 FRAMING INCORPORATING KAWNEER® "190" DOORS.

DOOR FRAMING NON-THERMAL ONLY

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

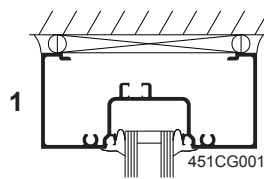
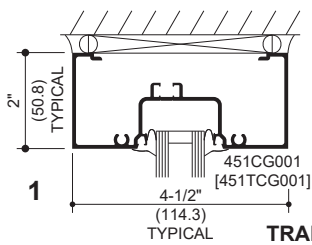


ELEVATIONS ARE NUMBER KEYED TO DETAILS

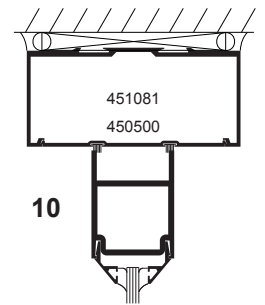
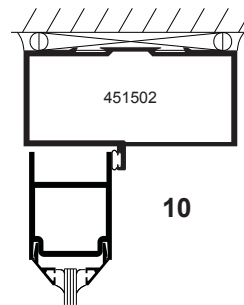


TRANSOM JAMBS

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.

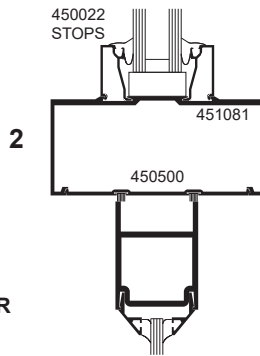
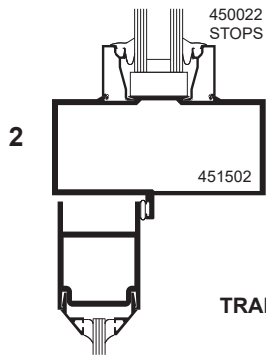


TRANSOM HEAD

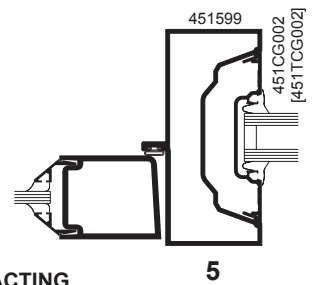
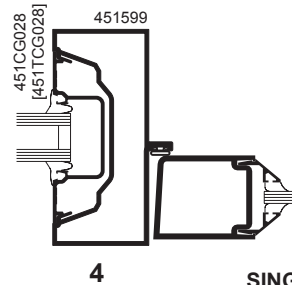


SINGLE ACTING HEADER

DOUBLE ACTING HEADER



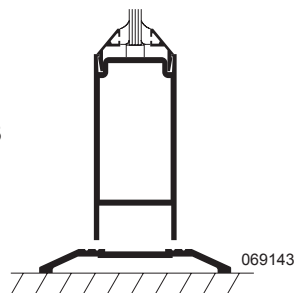
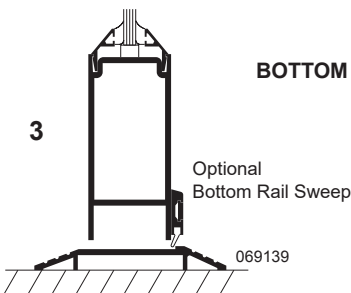
TRANSOM BAR



SINGLE ACTING DOOR JAMBS

5

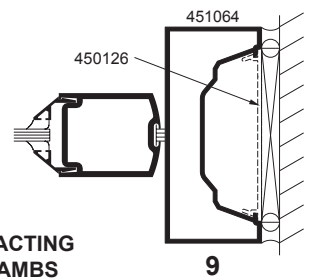
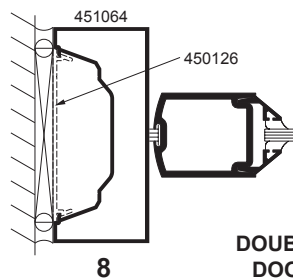
NOTE: Sidelite mullions must be oriented to provide at least one (1) deep vertical pocket per lite to facilitate glazing.



BOTTOM RAIL

SINGLE ACTING

DOUBLE ACTING



DOUBLE ACTING DOOR JAMBS

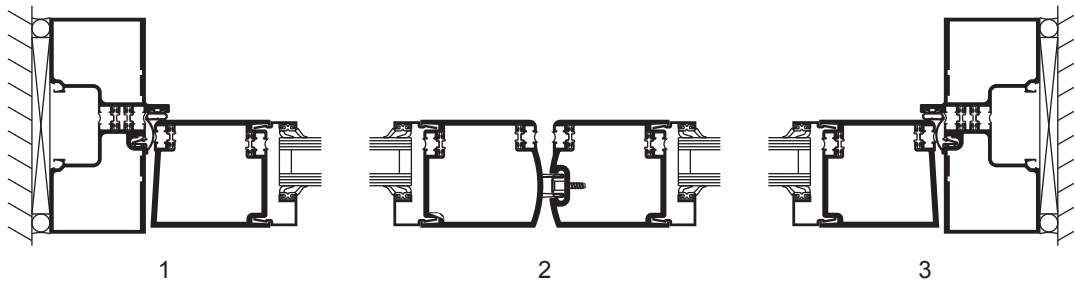
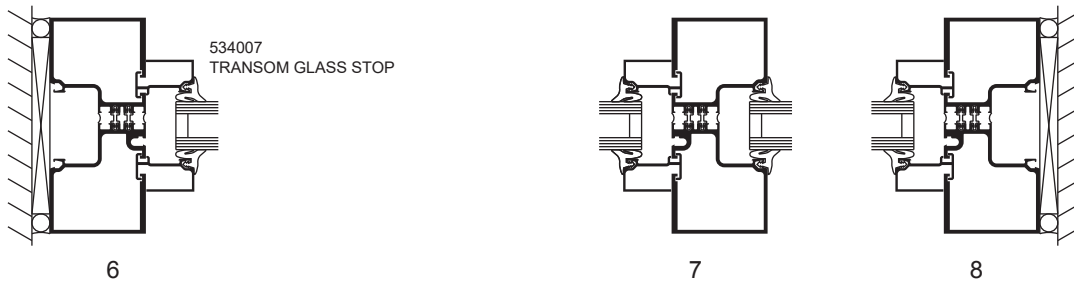
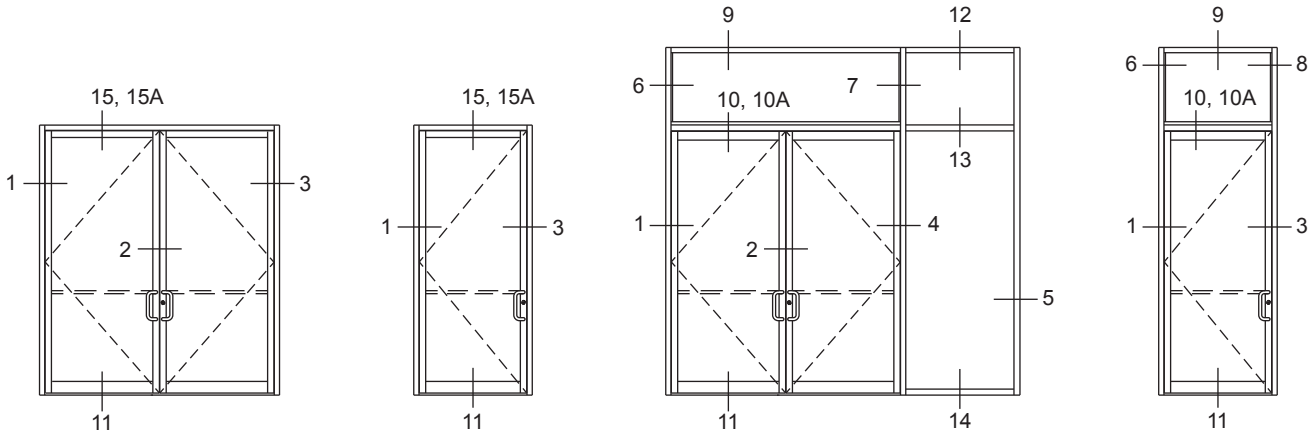
9

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

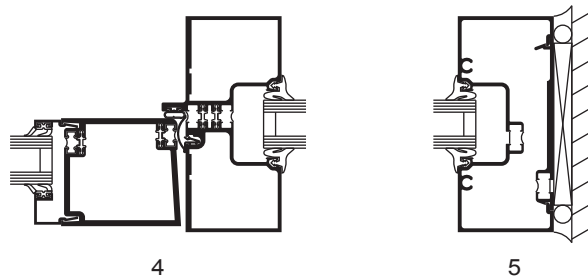
Kawneer reserves the right to change configuration without prior notice when deemed necessary for product improvement.
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Additional information and CAD details are available at www.kawneer.com

- NOTE:**
- SERIES 250T NARROW STILE DOORS ARE DETAILED, MEDIUM STILE 350T DOORS AND WIDE STILE 500T DOORS ALSO MAY BE USED.
 - TRIFAB® VERSAGLAZE® 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.



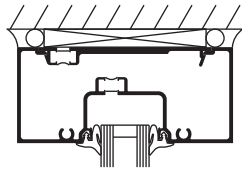
SINGLE ACTING DOORS



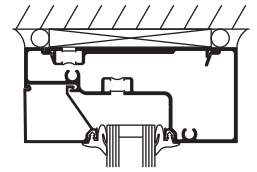
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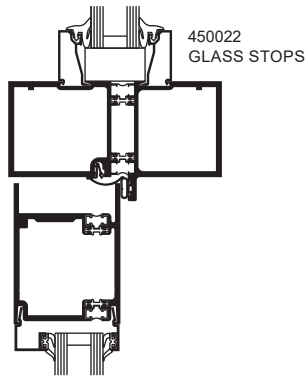
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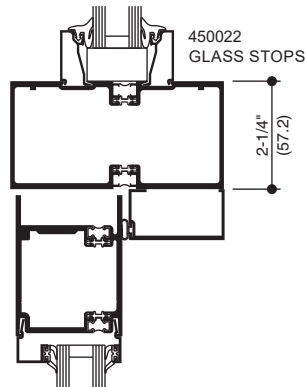
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SINGLE ACTING DOORS

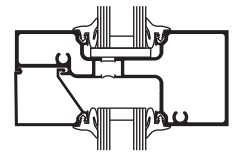
COC WITH SINGLE ACTING OFFSET ARM



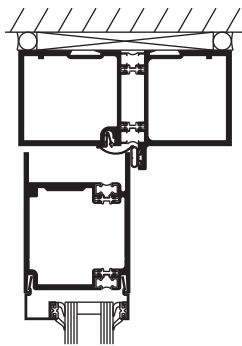
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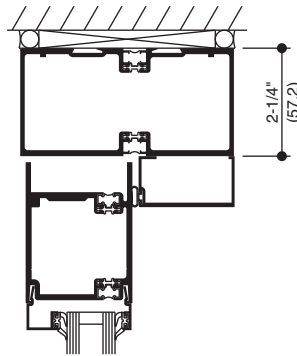
10A



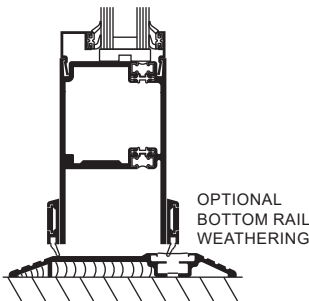
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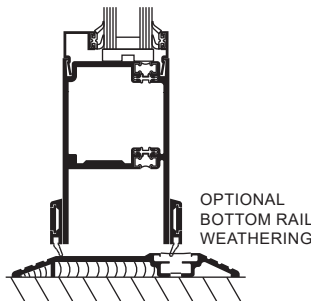
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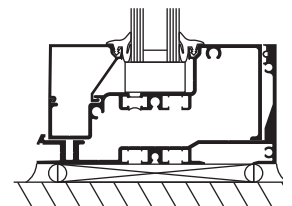
15A



11



11



14

SURFACE OVERHEAD CLOSER

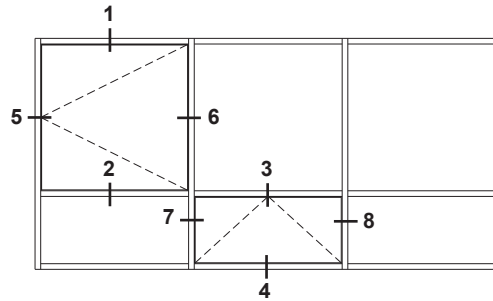
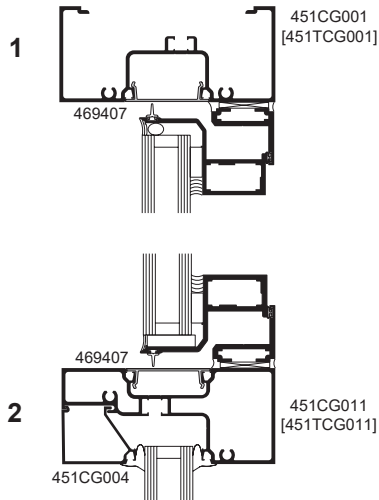
CONSEALED OVERHEAD CLOSER

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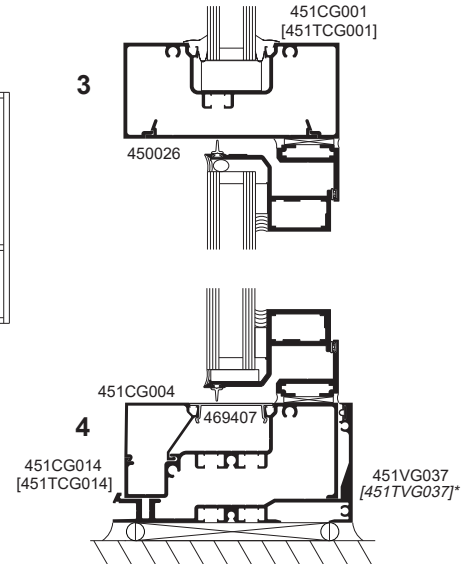
Additional information and CAD details are available at www.kawneer.com

**OUTSWING CASEMENT
VERTICAL SECTION**

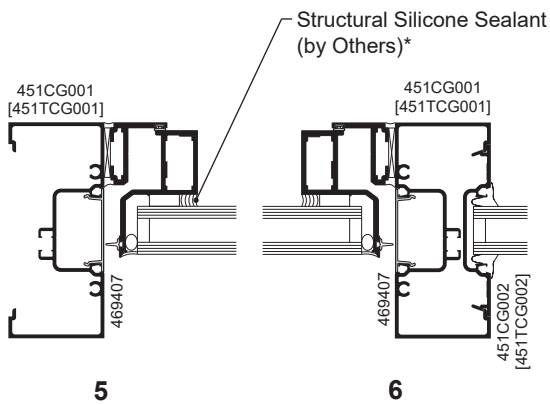


ELEVATION IS NUMBER KEYED TO DETAILS

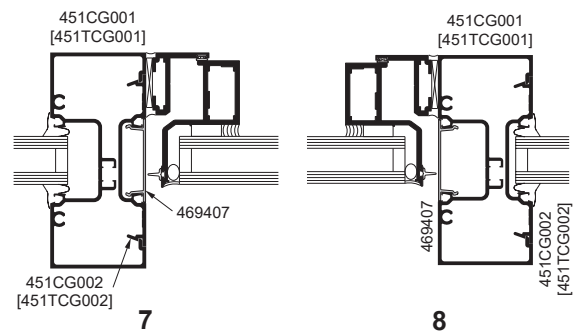
**PROJECT-OUT
VERTICAL SECTION**



**OUTSWING CASEMENT
HORIZONTAL SECTION**



**PROJECT-OUT
HORIZONTAL SECTION**



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

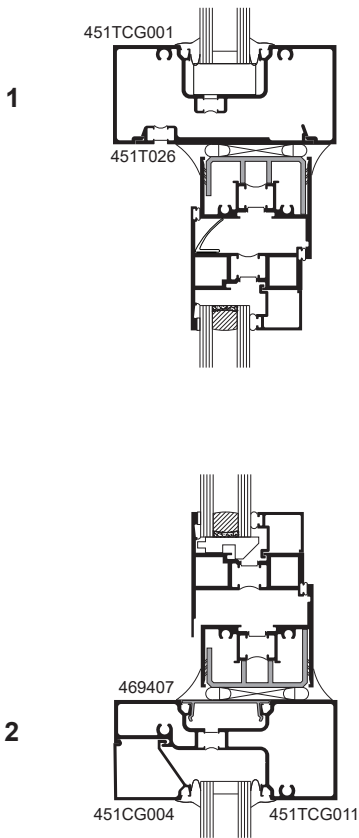
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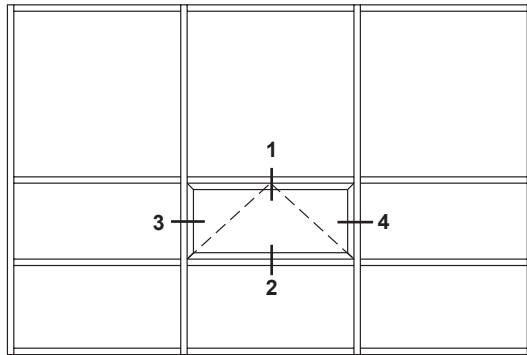
* **INSTALLER NOTE:** Installer is responsible for all required compatibility review and approvals with the Structural Silicone Manufacturer and the Insulating Glass Unit Manufacturer.

Additional information and CAD details are available at www.kawneer.com

PROJECT-OUT VERTICAL SECTION

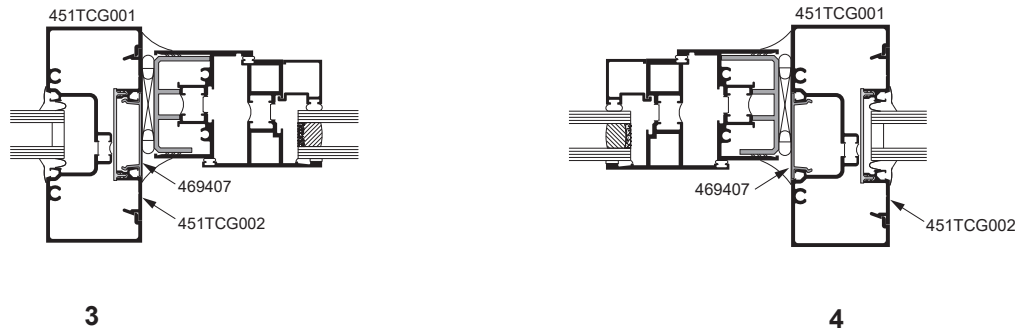


8225TL THERMAL WINDOWS SHOWN
NOTE: OTHER VENT TYPES CAN BE
ACCOMMODATED, CONSULT YOUR KAWNEER
REPRESENTATIVE FOR OTHER OPTIONS



ELEVATION IS NUMBER KEYED TO DETAILS

PROJECT-OUT HORIZONTAL SECTION

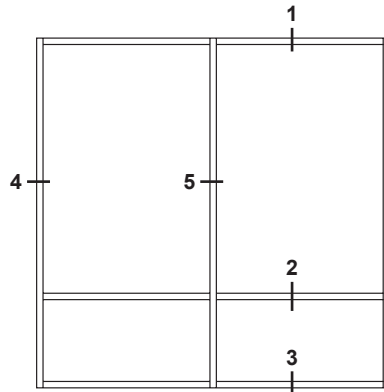


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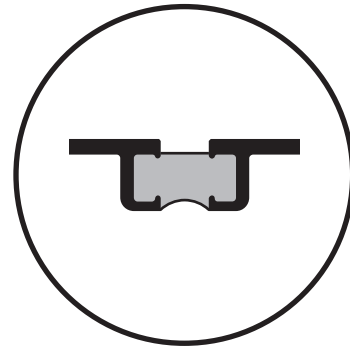
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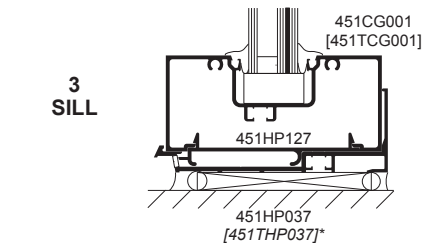
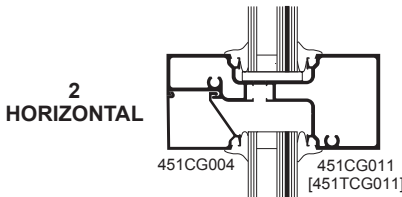
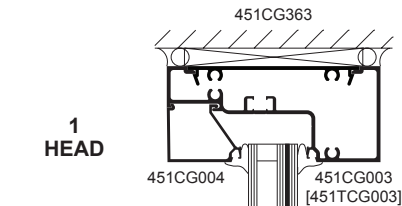
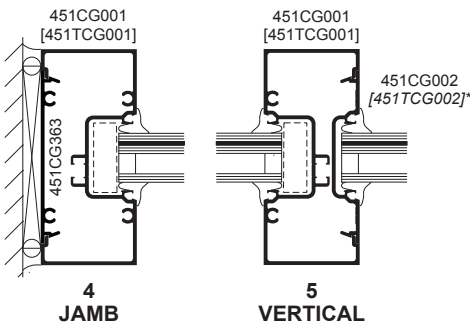


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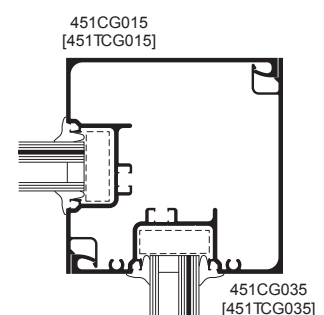
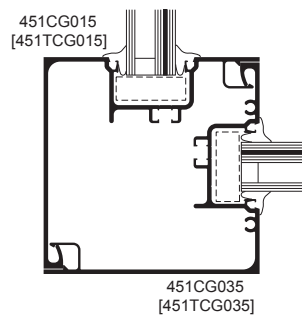
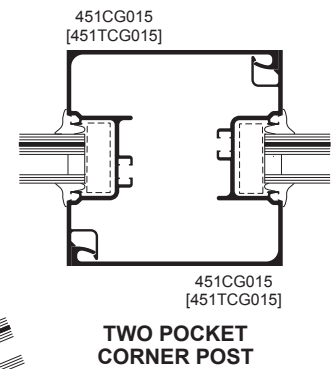
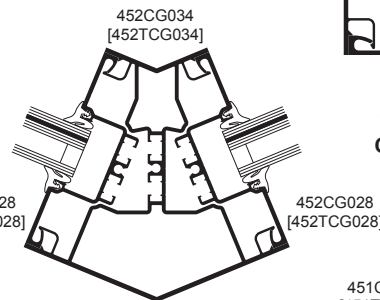
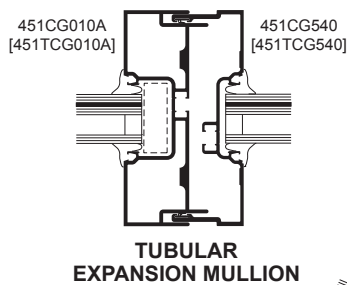
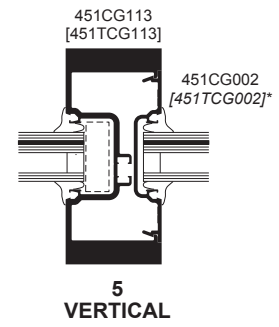
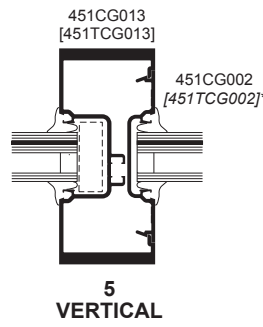
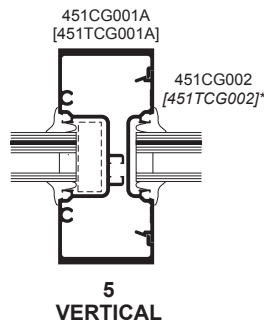


NUMBERS IN BRACKETS ARE THERMALLY BROKEN MEMBERS

SCREW SPLINE



OPTIONAL FRAMING (CENTER)



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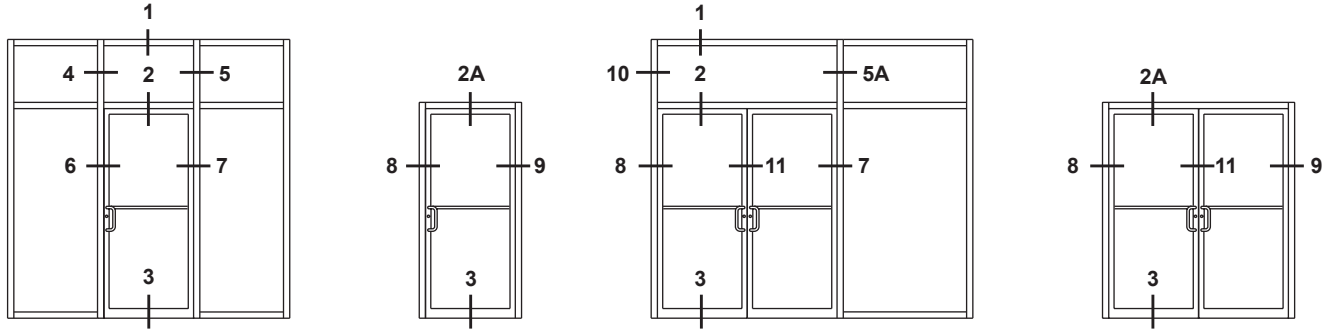
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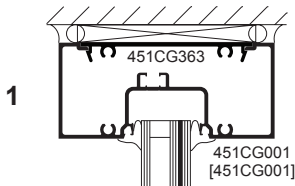
Trifab® VersaGlaze® 451 FRAMING INCORPORATING KAWNEER® “350/500 IR” DOORS (DRY GLAZED).

DOOR FRAMING NON-THERMAL ONLY

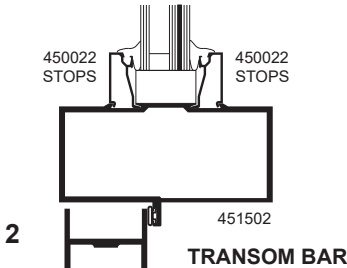
NOTE: OTHER TYPES OF KAWNEER DOORS MAY BE USED WITH THIS FRAMING SYSTEM.
SEE ENTRANCE DETAILS FOR ADDITIONAL INFORMATION.



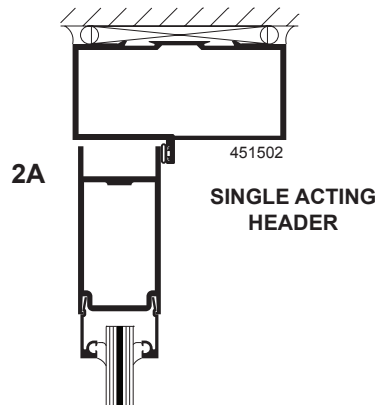
ELEVATIONS ARE NUMBER KEYED TO DETAILS



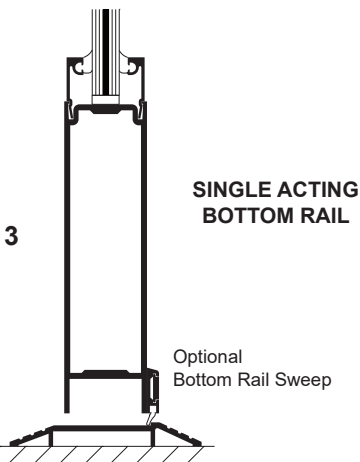
TRANSOM HEAD



TRANSOM BAR

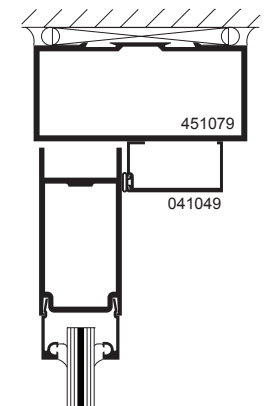
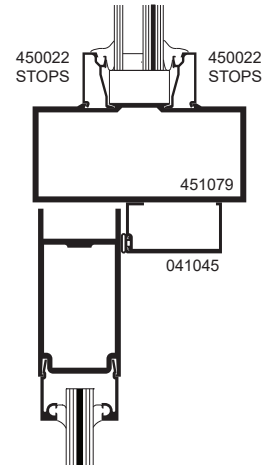


SINGLE ACTING HEADER



SINGLE ACTING BOTTOM RAIL

CONCEALED OVERHEAD CLOSERS



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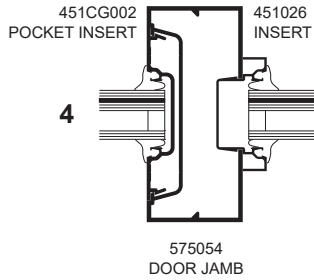
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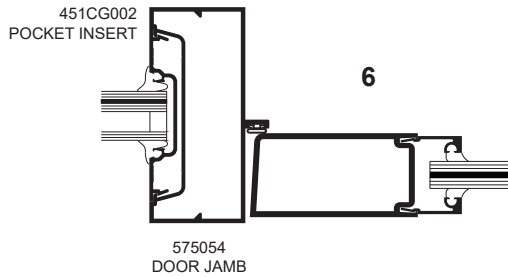
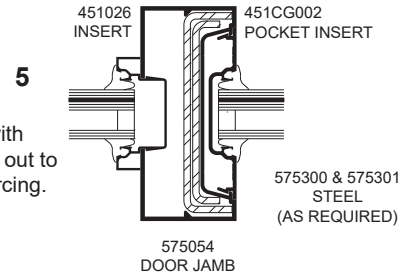
Trifab® VersaGlaze® 451 FRAMING INCORPORATING KAWNEER® “350/500 IR” DOORS (DRY GLAZED). DOOR FRAMING NON-THERMAL ONLY

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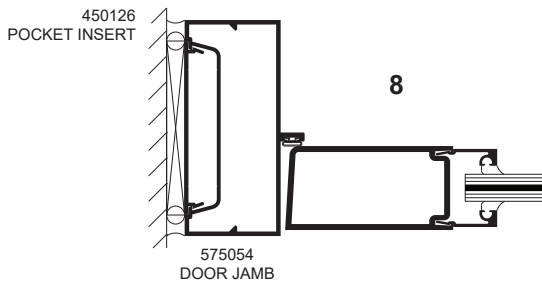
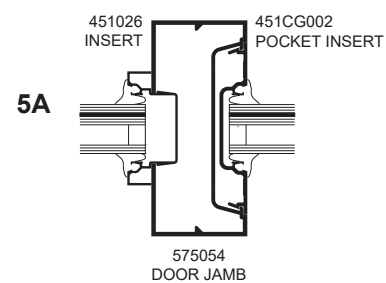
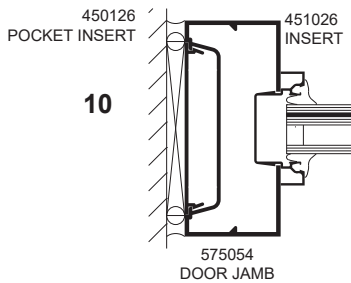
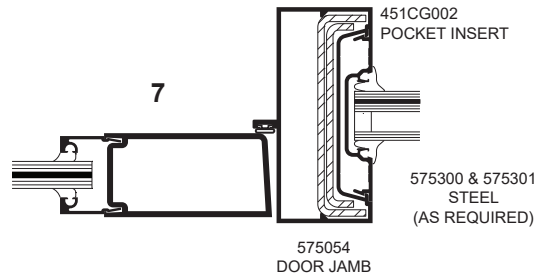


TRANSOM JAMBS

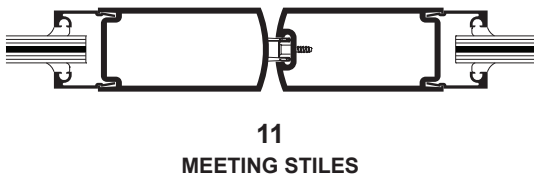
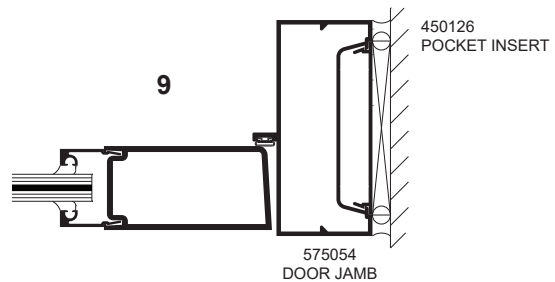
Transom area for both double or single acting doors with glass surround. Jamb above transom bar are routed out to accept glass holding insert with or without steel reinforcing.



SINGLE ACTING DOOR JAMBS



SINGLE ACTING DOOR JAMBS



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BASIC FRAMING DETAILS

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(FRONT - Outside Glazed - Stops Down)33

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PUNCHED OPENING 37-38

MISCELLANEOUS FRAMING..... 39-40

CORNERS..... 41-42

ENTRANCE FRAMING.....43

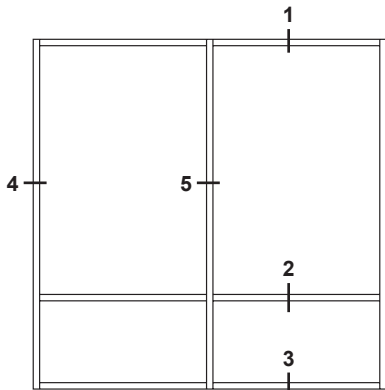
GLASSvent® WINDOW for STOREFRONT FRAMING44

8225TL THERMAL WINDOW DETAILS.....45

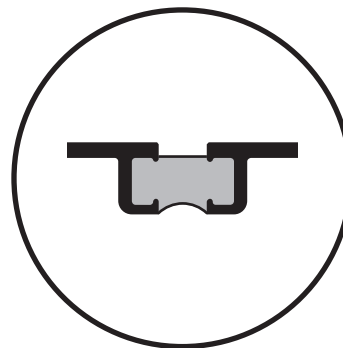
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ELEVATION IS NUMBER KEYED TO DETAILS

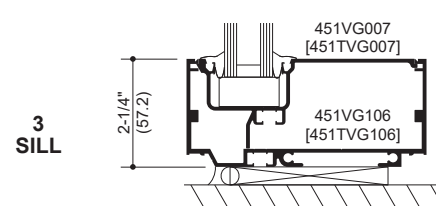
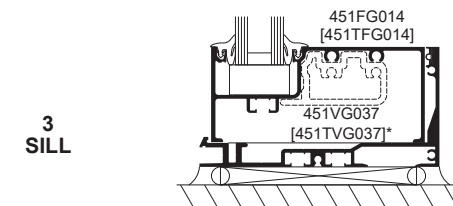
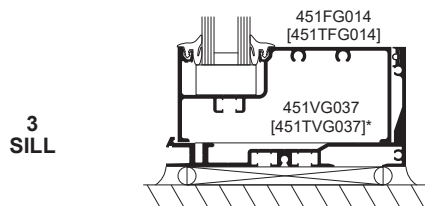
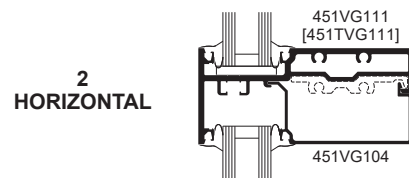
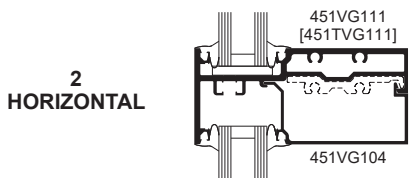
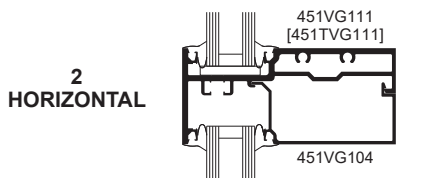
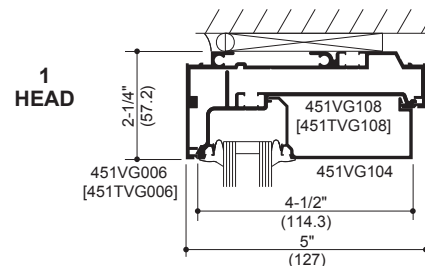
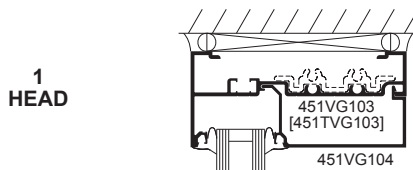
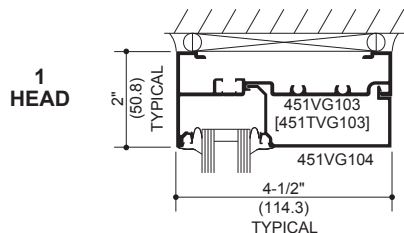
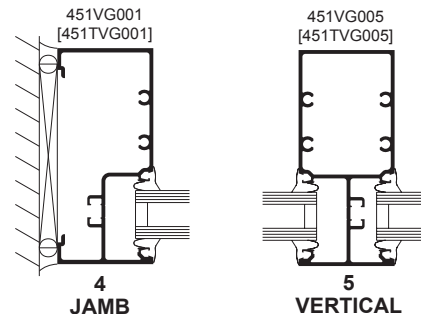
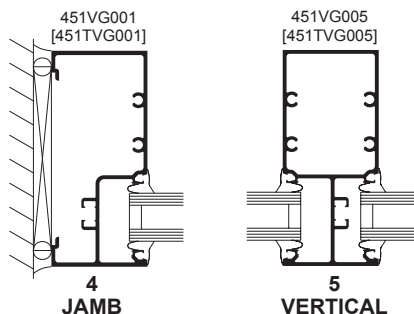
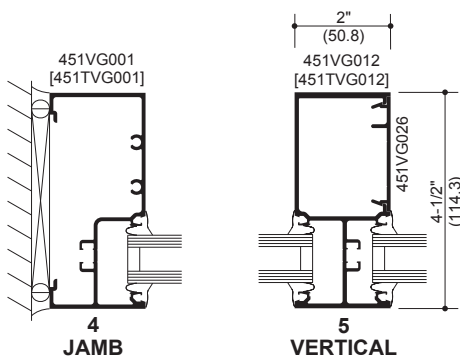


NUMBERS IN BRACKETS ARE THERMALLY BROKEN MEMBERS

SCREW SPLINE

SHEAR BLOCK

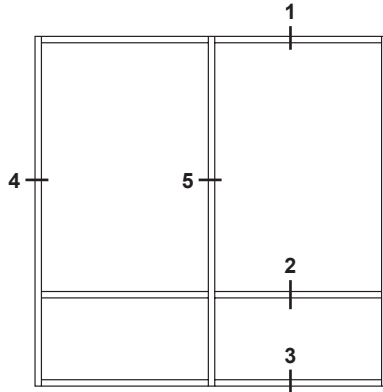
STICK



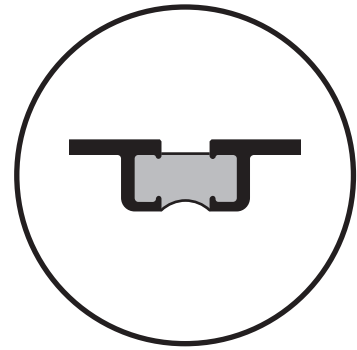
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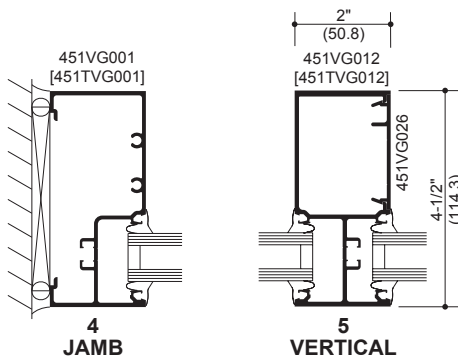


ELEVATION IS NUMBER KEYED TO DETAILS



NUMBERS IN BRACKETS ARE THERMALLY BROKEN MEMBERS

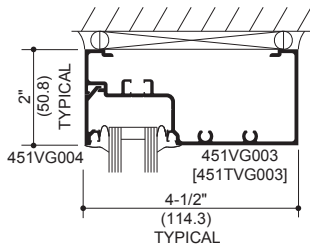
SCREW SPLINE



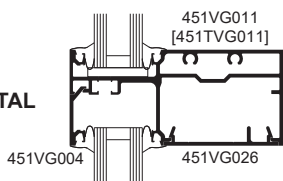
4 JAMB

5 VERTICAL

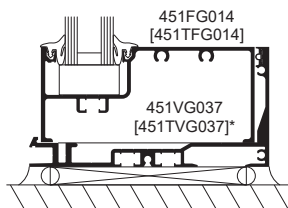
1 HEAD



2 HORIZONTAL

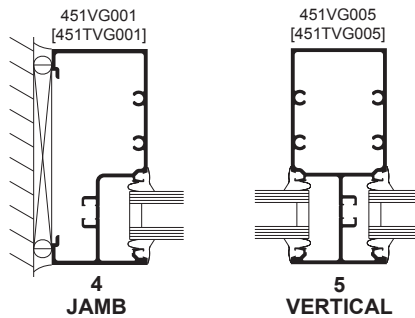


3 SILL



* HP Sill Flashing shown with optional gasket.

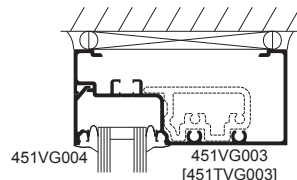
SHEAR BLOCK



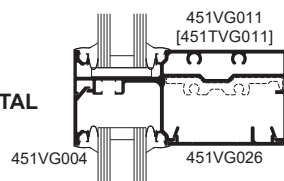
4 JAMB

5 VERTICAL

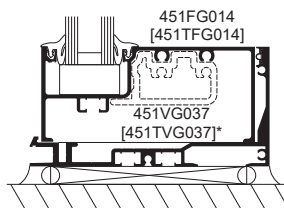
1 HEAD



2 HORIZONTAL

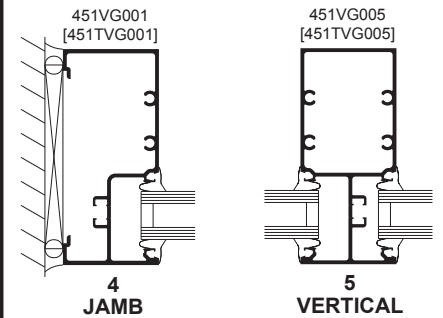


3 SILL



* HP Sill Flashing shown with optional gasket.

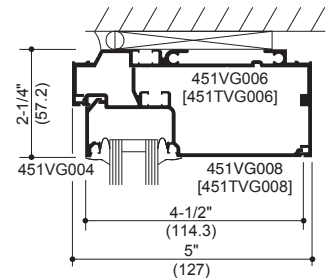
STICK



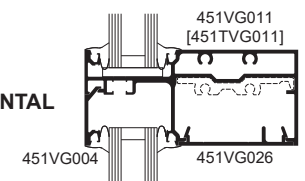
4 JAMB

5 VERTICAL

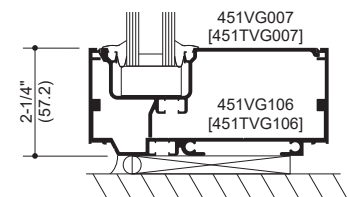
1 HEAD



2 HORIZONTAL



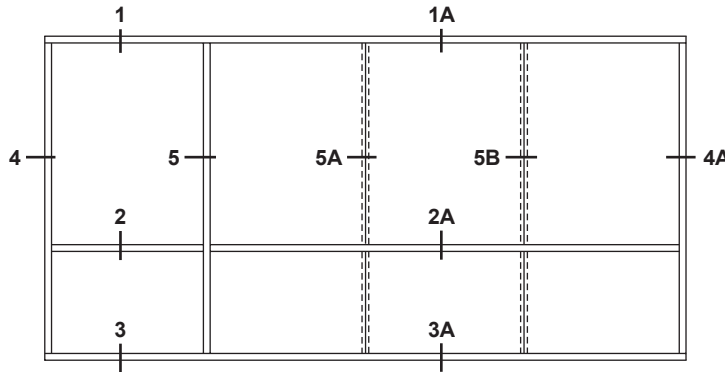
3 SILL



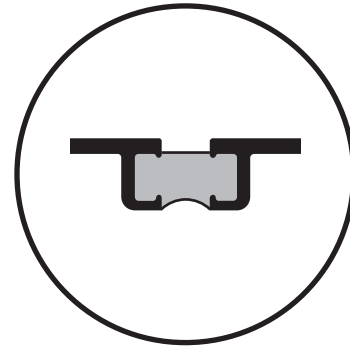
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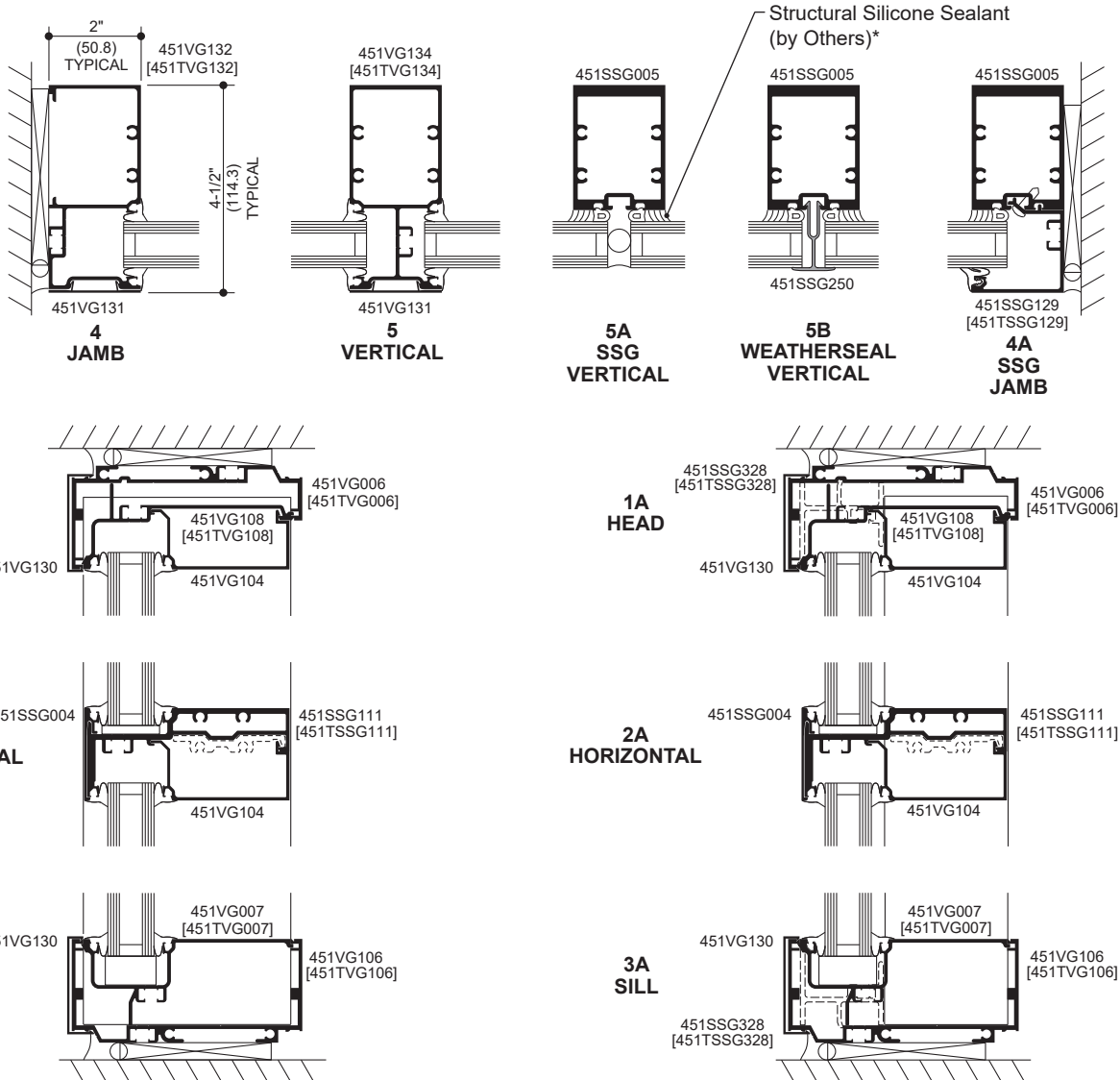
ELEVATION IS NUMBER KEYED TO DETAILS



NUMBERS IN BRACKETS ARE THERMALLY BROKEN MEMBERS

**STICK (INSIDE GLAZED)
TWO COLOR OPTION**

STANDARD RECEPTOR with SSG ADAPTOR

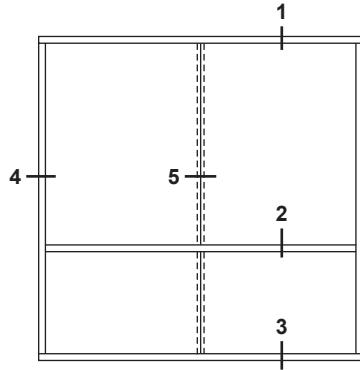


* INSTALLER NOTE: Installer is responsible for all required compatibility review and approvals with the Structural Silicone Manufacturer and the Insulating Glass Unit Manufacturer.

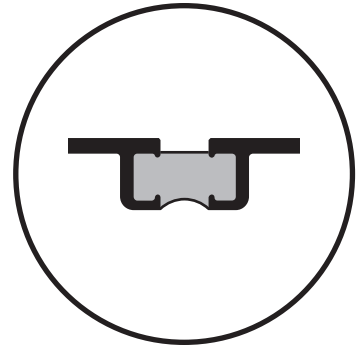
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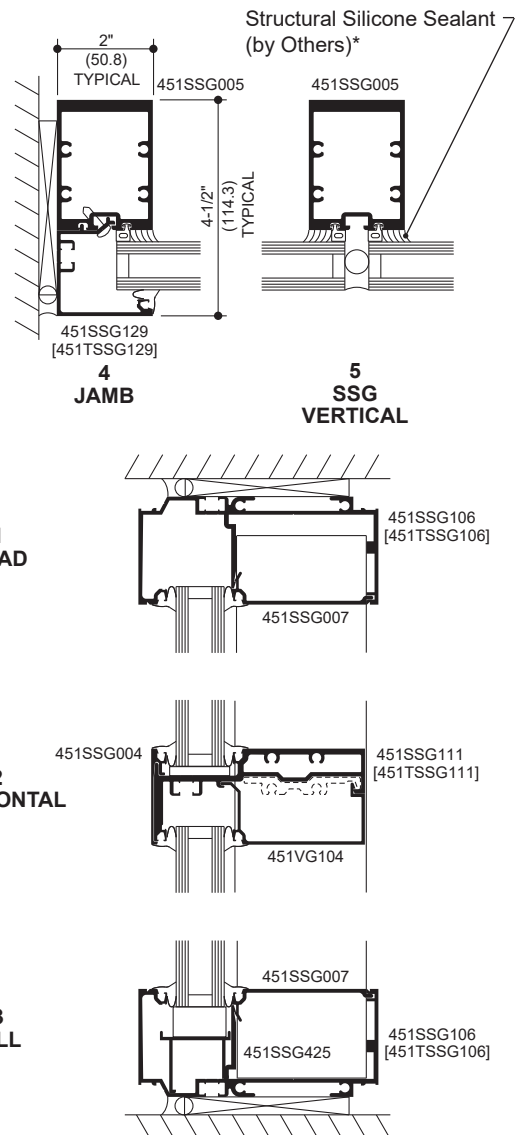
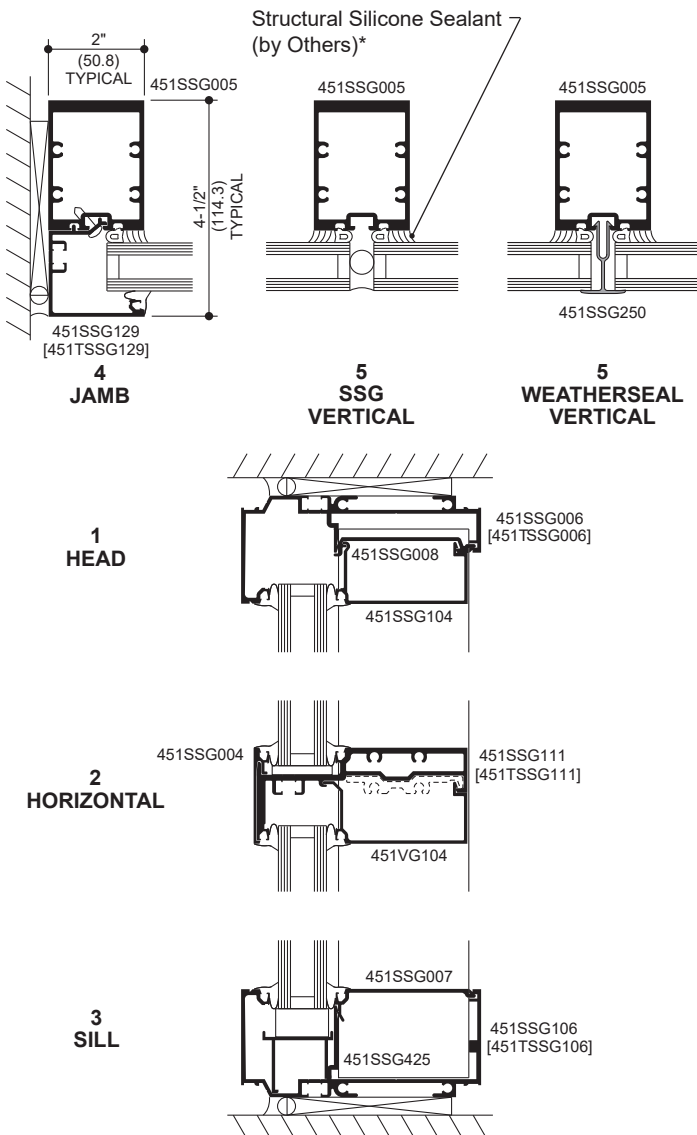
ELEVATION IS NUMBER KEYED TO DETAILS



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STICK (INSIDE GLAZED) SSG RECEPTOR

STICK (OUTSIDE GLAZED) SSG RECEPTOR

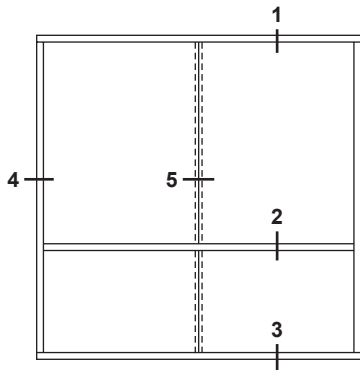


* INSTALLER NOTE: Installer is responsible for all required compatibility review and approvals with the Structural Silicone Manufacturer and the Insulating Glass Unit Manufacturer.

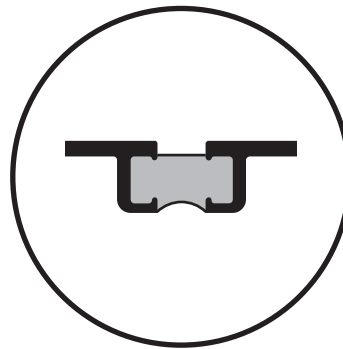
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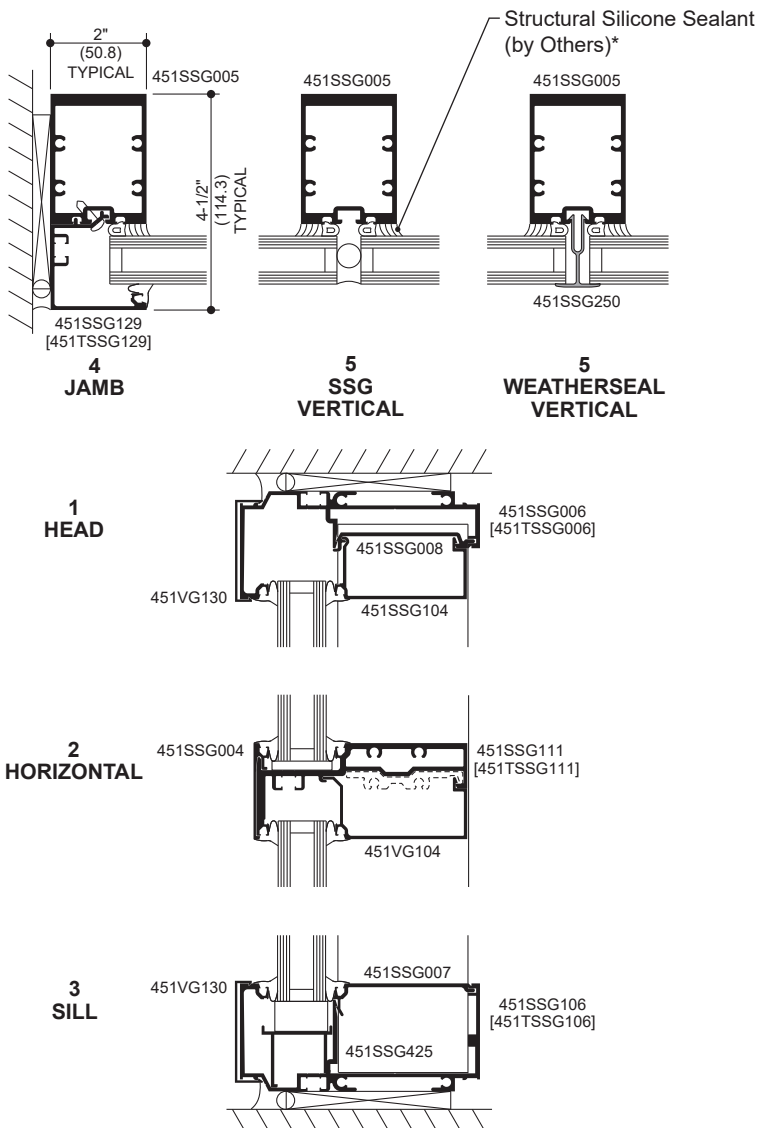
ELEVATION IS NUMBER KEYED TO DETAILS



NUMBERS IN BRACKETS ARE THERMALLY BROKEN MEMBERS

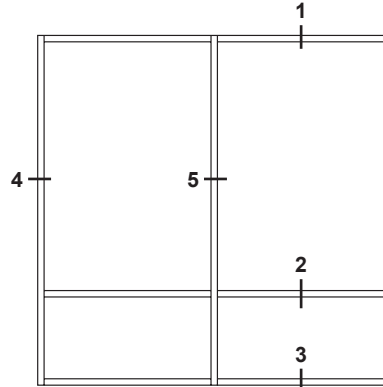
**STICK (INSIDE GLAZED)
TWO COLOR OPTION**

SSG RECEPTOR

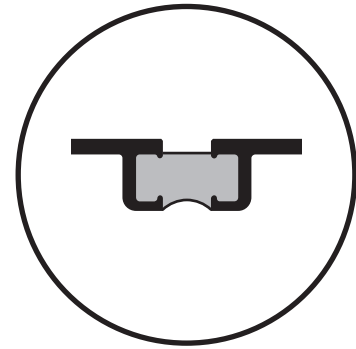


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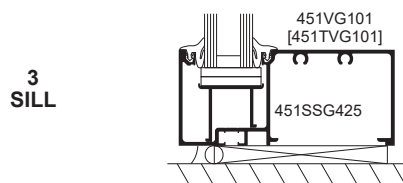
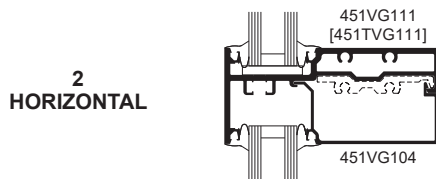
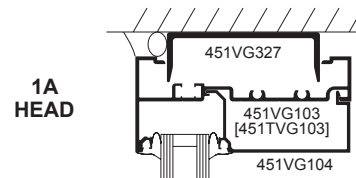
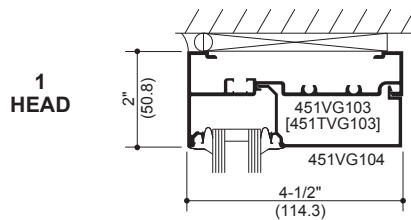
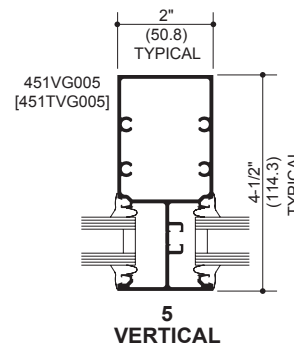
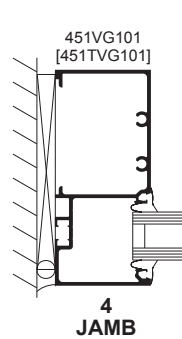
ELEVATION IS NUMBER KEYED TO DETAILS



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CONTINUOUS HEAD AND SILL (INSIDE GLAZED)

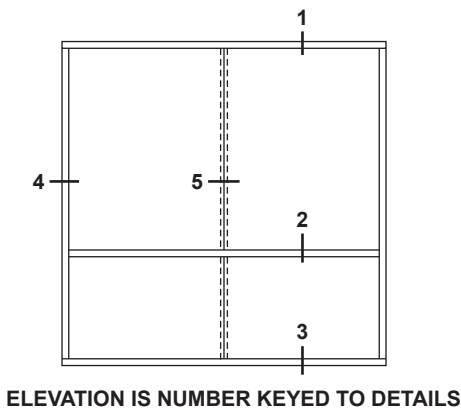
PUNCHED OPENING



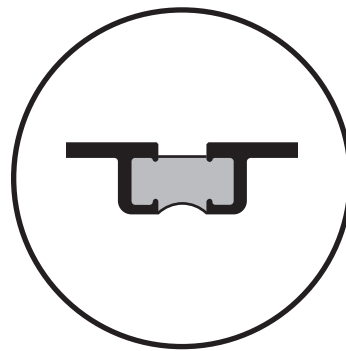
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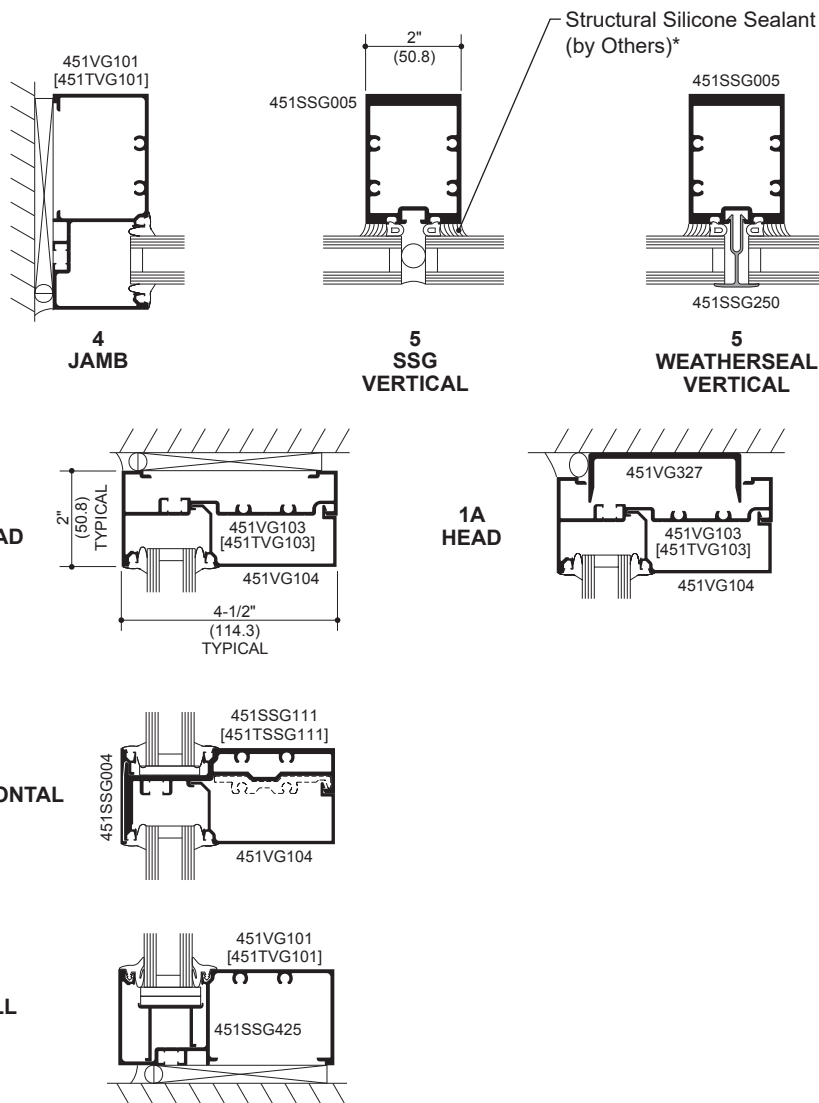


ELEVATION IS NUMBER KEYED TO DETAILS



NUMBERS IN BRACKETS ARE THERMALLY BROKEN MEMBERS

**CONTINUOUS HEAD AND SILL (INSIDE GLAZED)
SSG \ WEATHERSEAL
PUNCHED OPENING**



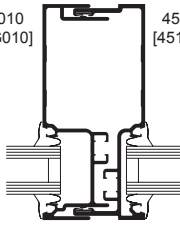
* INSTALLER NOTE: Installer is responsible for all required compatibility review and approvals with the Structural Silicone Manufacturer and the Insulating Glass Unit Manufacturer.

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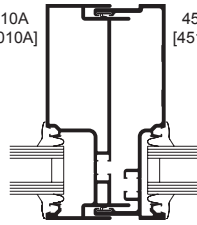
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451VG010
[451TVG010] 451VG540
[451TVG540]



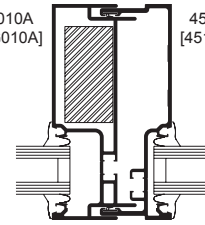
EXPANSION MULLION

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

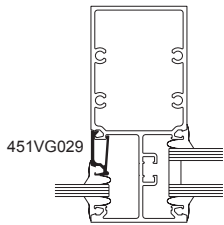


**TUBULAR
EXPANSION MULLION**

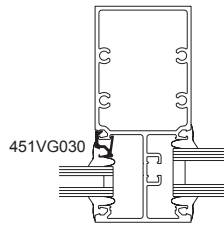
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[451TVG010A] 451VG540
[451TVG540]



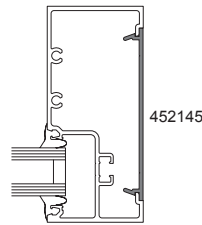
**TUBULAR
EXPANSION MULLION
WITH STEEL**



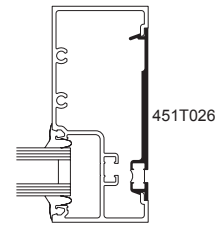
**1/4" (6.4) INFILL
SNAP-IN ADAPTOR**



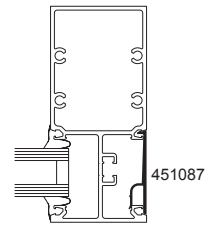
**5/8" (15.9) INFILL
SNAP-IN ADAPTOR**



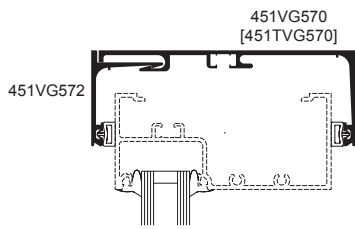
**PVC FLAT FILLER
(NON STRUCTURAL)**



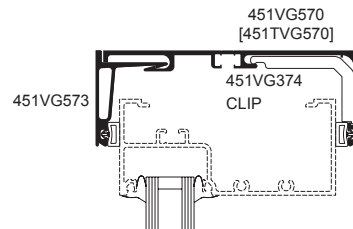
**THERMAL
FLAT FILLER**



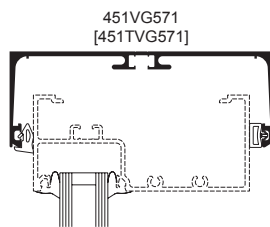
**SNAP-IN
FLAT FILLER**



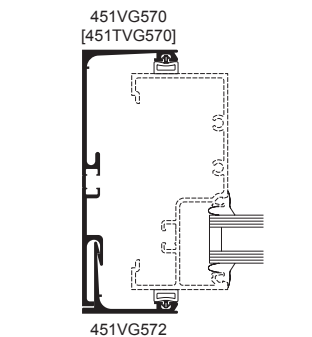
**STANDARD - HEAD
COMPENSATING RECEPTOR
(EXTERIOR INSTALLED)**



**HEAVY WEIGHT - HEAD
COMPENSATING RECEPTOR**



**ONE PIECE - HEAD
COMPENSATING RECEPTOR**

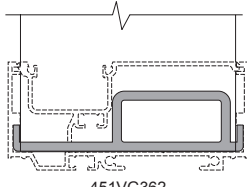


**JAMB
COMPENSATING RECEPTOR
(EXTERIOR INSTALLED)**

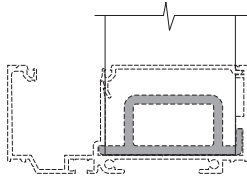
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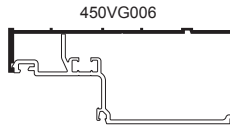
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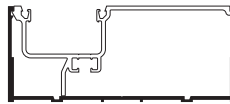
451VG362
MULLION ANCHOR



451SSG362
SSG MULLION ANCHOR

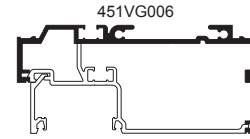


450VG006

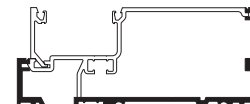


450VG106

**OPTIONAL LIGHTWEIGHT
CAN RECEPTORS**



451VG006



451VG106

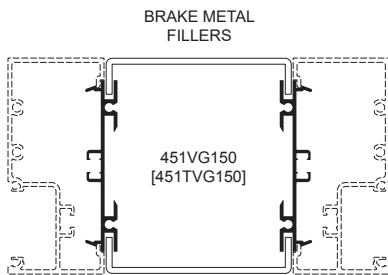
**OPTIONAL UNEQUAL LEG
CAN RECEPTORS**

NOTE:

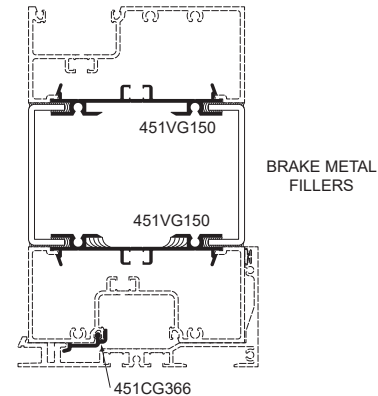
If the end reaction of the mullion (mullion spacing (ft.) times height (ft) times specified wind load (psf), divided by two) is more than 500 LBS., the optional Mullion Anchor must be used. Consult Application Engineering.

NOTE:

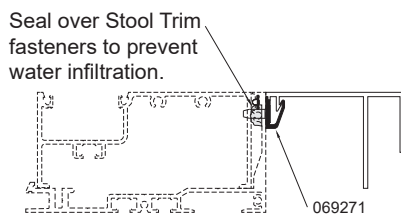
Mullion Anchor not used with Lightweight Receptor.



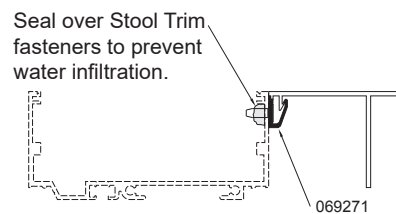
**BRAKE METAL
ADAPTOR**



**BRAKE METAL ADAPTOR
AT HORIZONTAL**



**STOOL TRIM CLIP
with HP FLASHING**

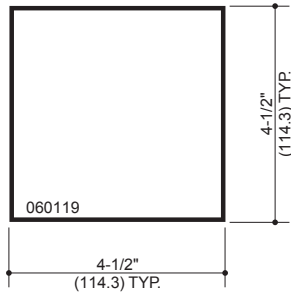


**STOOL TRIM CLIP
FOR STICK ASSEMBLY**

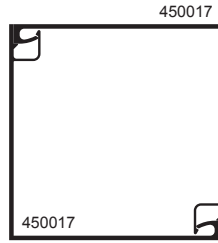
Laws and building and safety codes governing the design and use of Kawneer products, such as glazed entrance, window, and curtain wall products, vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

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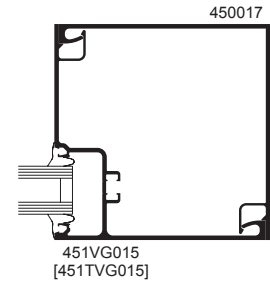
Additional information and CAD details are available at www.kawneer.com



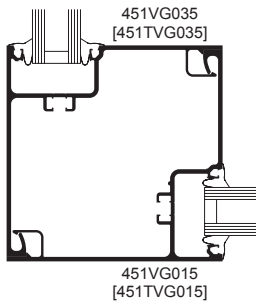
4-1/2" X 4-1/2" TUBE



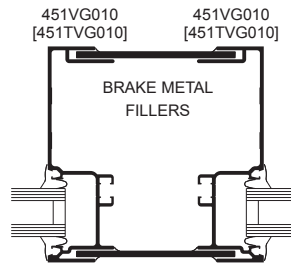
TWO PIECE NO POCKET CORNER



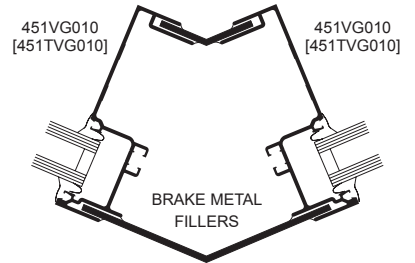
ONE POCKET CORNER



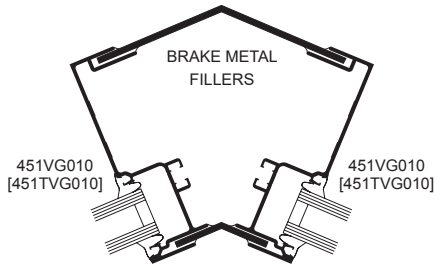
TWO POCKET 90° CORNER



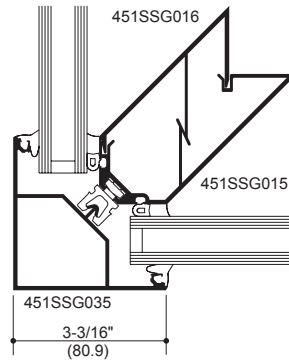
TWO POCKET CORNER POST



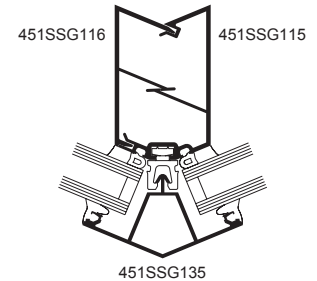
VARIABLE DEGREE BRAKE METAL OUTSIDE CORNER



VARIABLE DEGREE BRAKE METAL INSIDE CORNER



90° CORNER



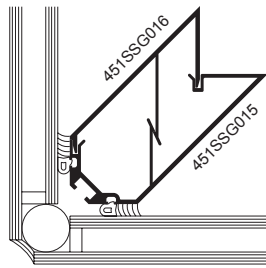
135° CORNER

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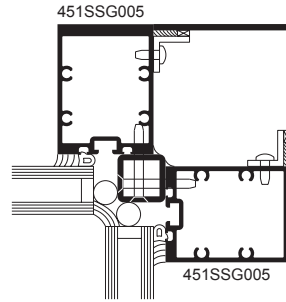
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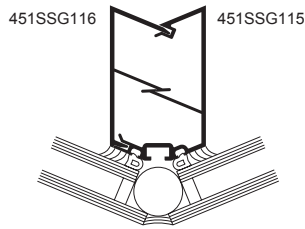
INSIDE GLAZED



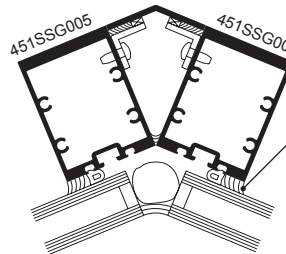
90° OUTSIDE CORNER



90° INSIDE CORNER

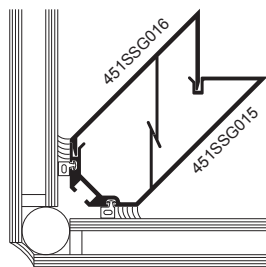


135° OUTSIDE CORNER

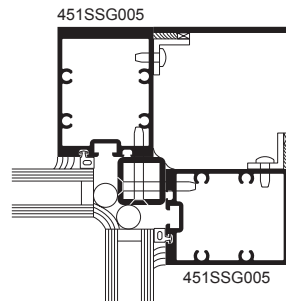


135° INSIDE CORNER

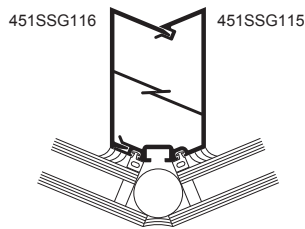
OUTSIDE GLAZED



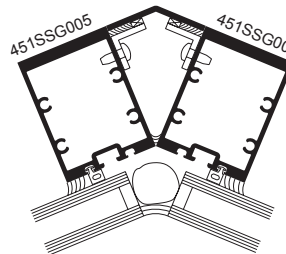
90° OUTSIDE CORNER



90° INSIDE CORNER



135° OUTSIDE CORNER



135° INSIDE CORNER

* **INSTALLER NOTE:** Installer is responsible for all required compatibility review and approvals with the Structural Silicone Manufacturer and the Insulating Glass Unit Manufacturer.

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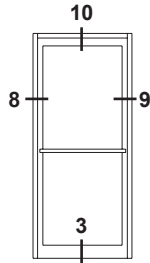
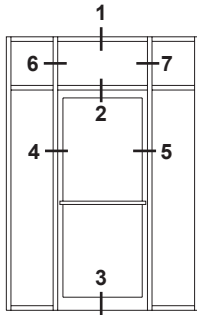
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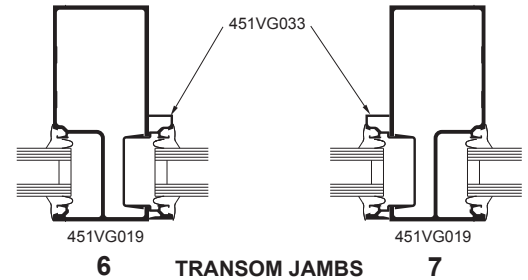
Trifab® VersaGlaze® 451 FRAMING INCORPORATING KAWNEER "190" DOORS.

DOOR FRAMING NON-THERMAL ONLY

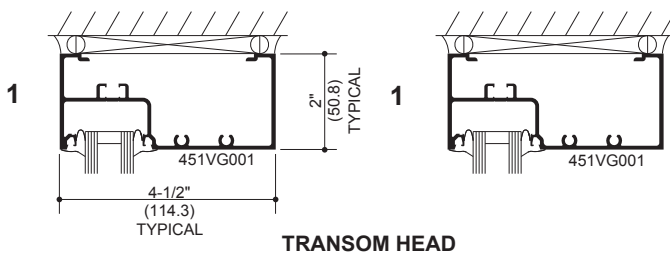
NOTE: OTHER TYPES OF KAWNEER DOORS MAY BE USED WITH THIS FRAMING SYSTEM. SEE ENTRANCE DETAILS FOR ADDITIONAL INFORMATION.



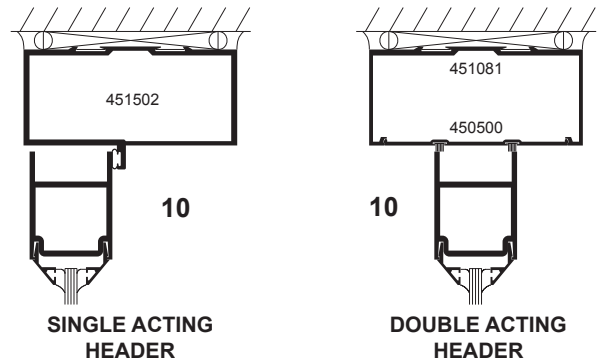
ELEVATIONS ARE NUMBER KEYED TO DETAILS



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

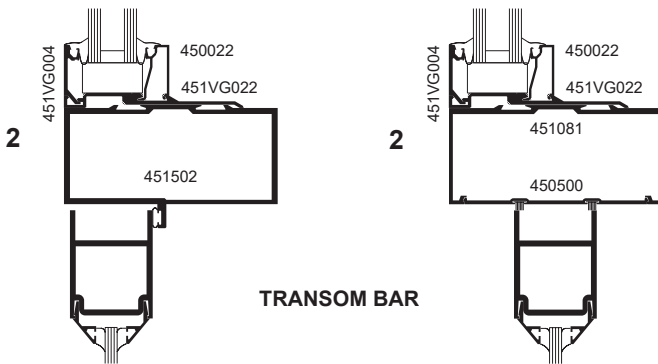


TRANSOM HEAD

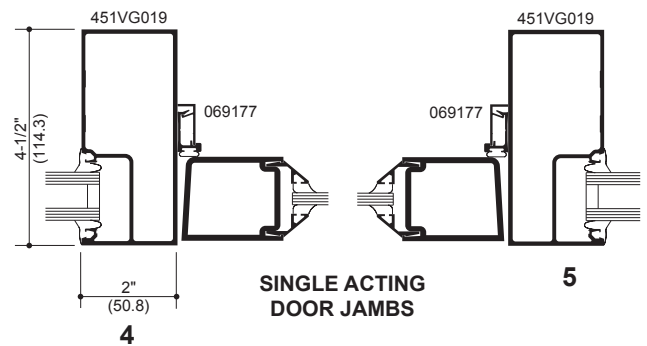


SINGLE ACTING HEADER

DOUBLE ACTING HEADER



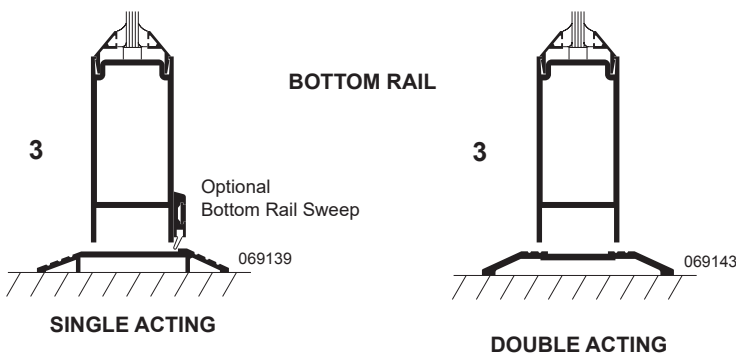
TRANSOM BAR



SINGLE ACTING DOOR JAMBS

5

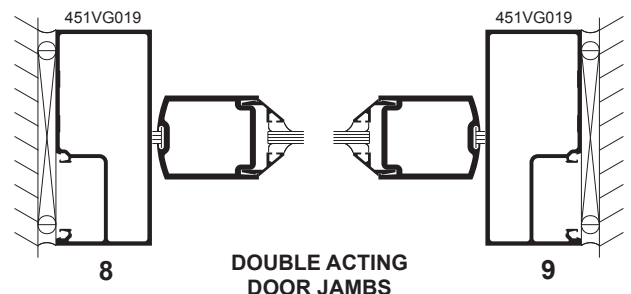
4



BOTTOM RAIL

SINGLE ACTING

DOUBLE ACTING



DOUBLE ACTING DOOR JAMBS

8

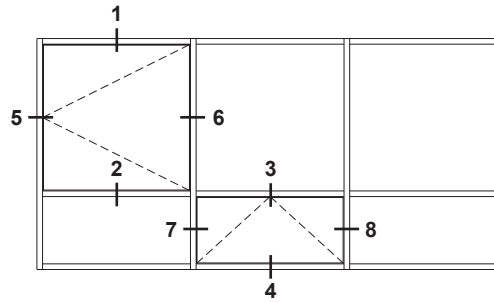
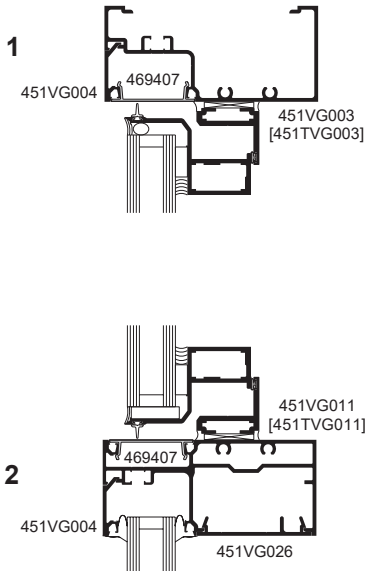
9

Laws and building and safety codes governing the design and use of Kawneer products, such as glazed entrance, window, and 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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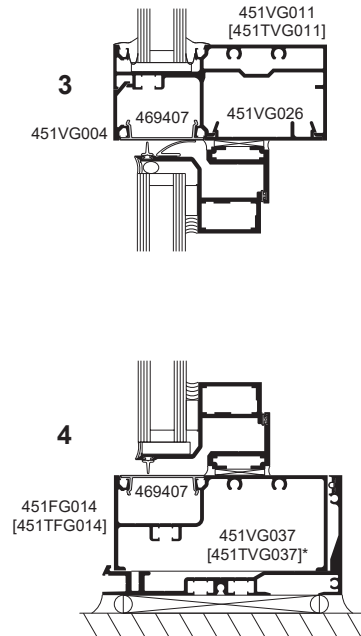
Additional information and CAD details are available at www.kawneer.com

**OUTSWING CASEMENT
VERTICAL SECTION**

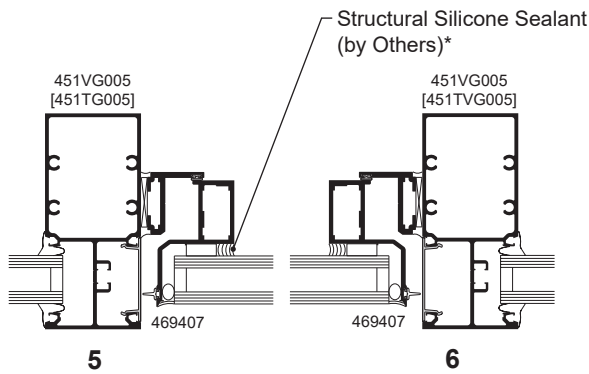


ELEVATION IS NUMBER KEYED TO DETAILS

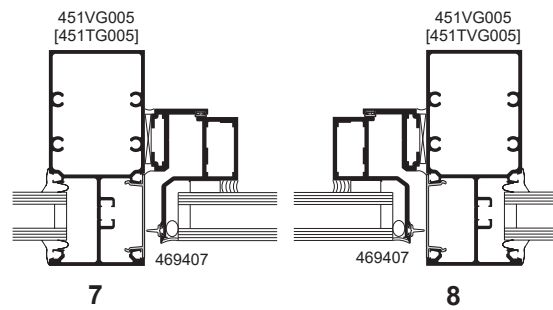
**PROJECT-OUT
VERTICAL SECTION**



**OUTSWING CASEMENT
HORIZONTAL SECTION**



**PROJECT-OUT
HORIZONTAL SECTION**



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

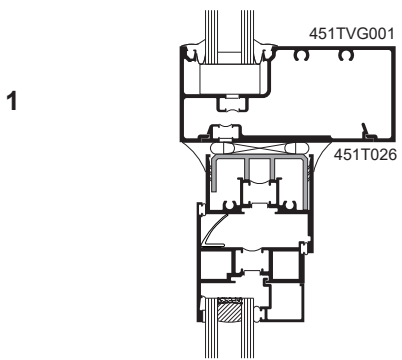
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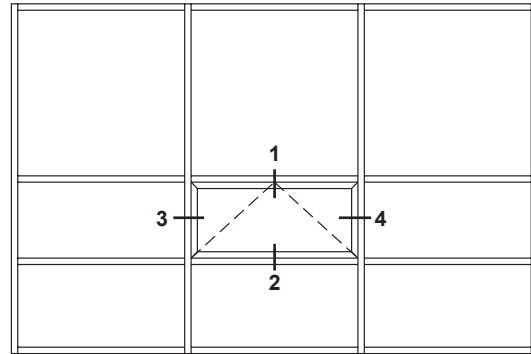
* **INSTALLER NOTE:** Installer is responsible for all required compatibility review and approvals with the Structural Silicone Manufacturer and the Insulating Glass Unit Manufacturer.

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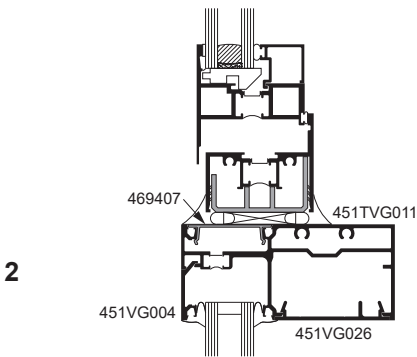
PROJECT-OUT VERTICAL SECTION



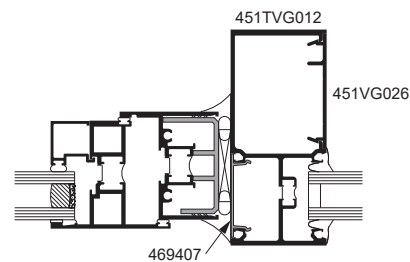
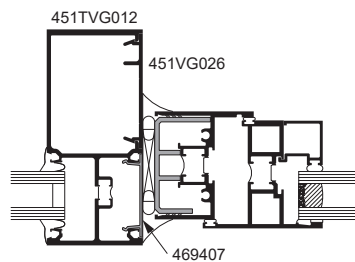
8225TL THERMAL WINDOWS SHOWN
NOTE: OTHER VENT TYPES CAN BE ACCOMMODATED, CONSULT YOUR KAWNEER REPRESENTATIVE FOR OTHER OPTIONS



ELEVATION IS NUMBER KEYED TO DETAILS



PROJECT-OUT HORIZONTAL SECTION



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BASIC FRAMING DETAILS

(BACK - Inside Glazed - Stops Down)48

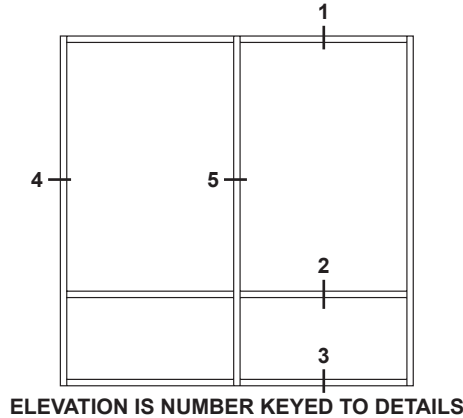
(BACK - Outside Glazed - Stops Down)49

MISCELLANEOUS FRAMING..... 50-51

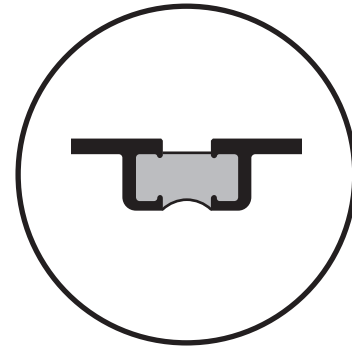
CORNERS.....52

ENTRANCE FRAMING.....53

Additional information and CAD details are available at www.kawneer.com



ELEVATION IS NUMBER KEYED TO DETAILS

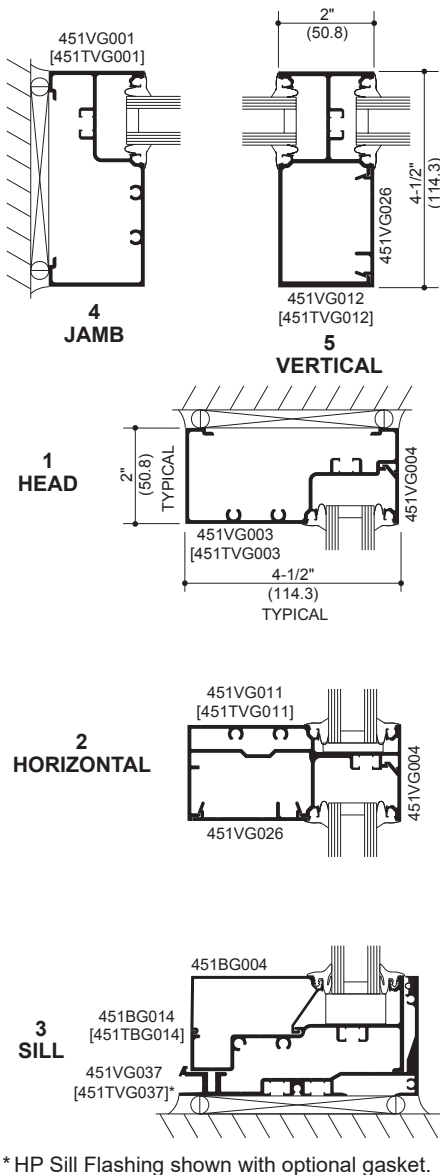


NUMBERS IN BRACKETS ARE THERMALLY BROKEN MEMBERS

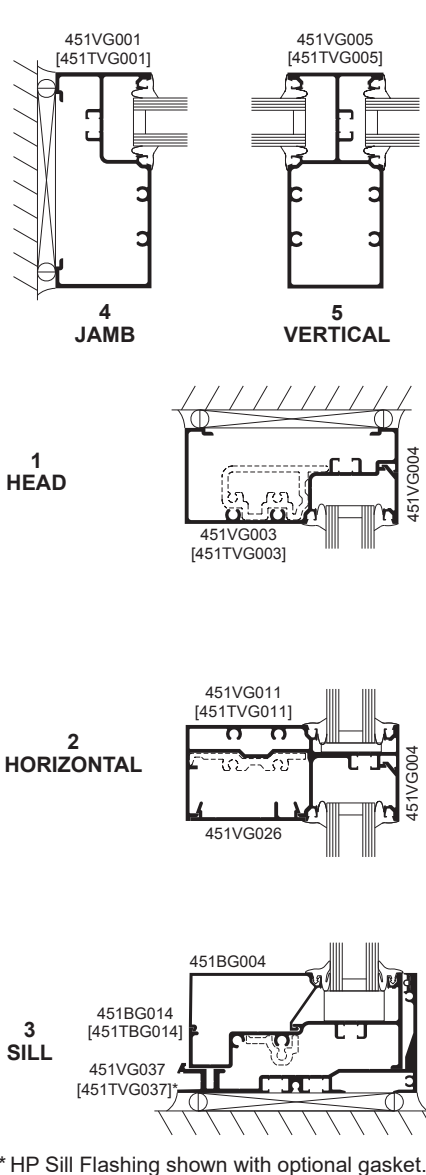
SCREW SPLINE

SHEAR BLOCK

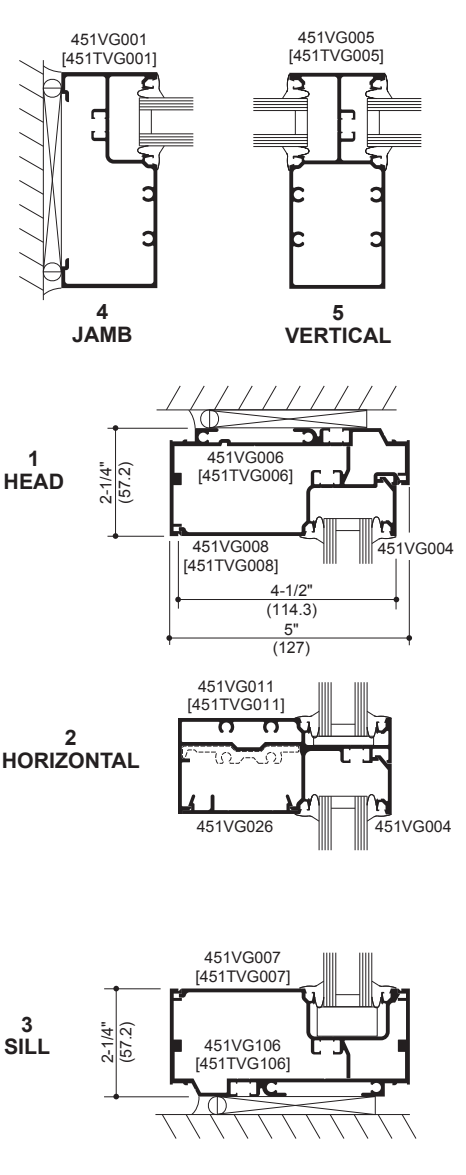
STICK



* HP Sill Flashing shown with optional gasket.



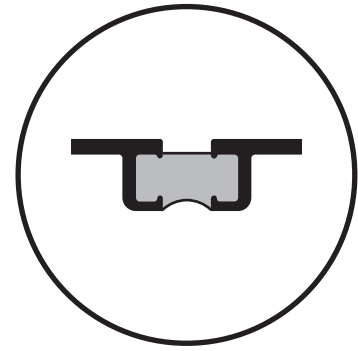
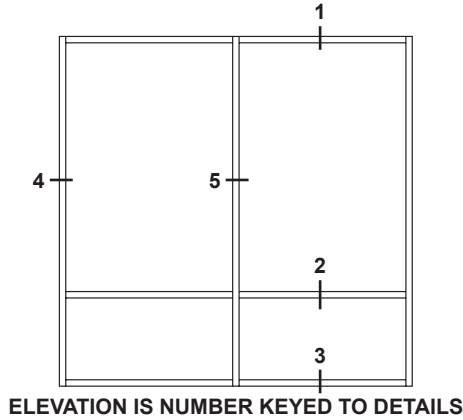
* HP Sill Flashing shown with optional gasket.



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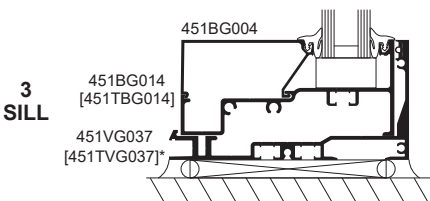
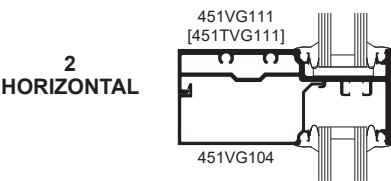
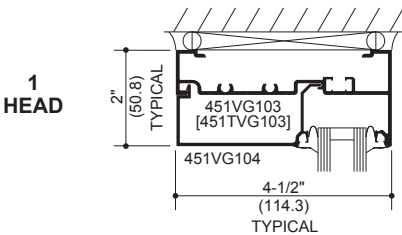
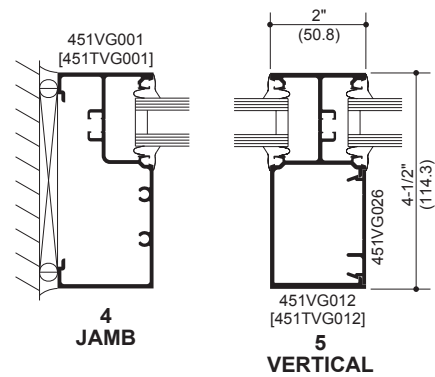
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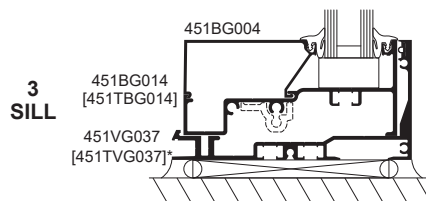
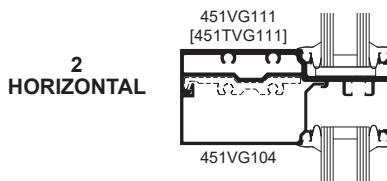
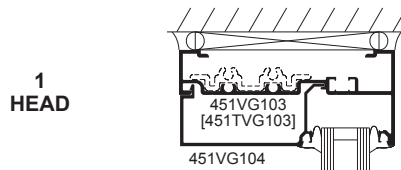
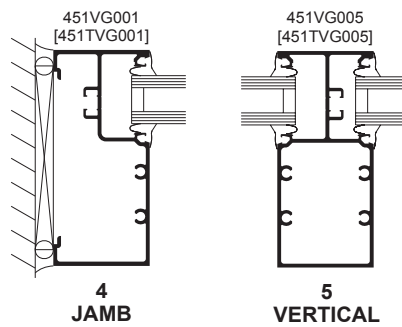
NUMBERS IN BRACKETS ARE THERMALLY BROKEN MEMBERS

SCREW SPLINE



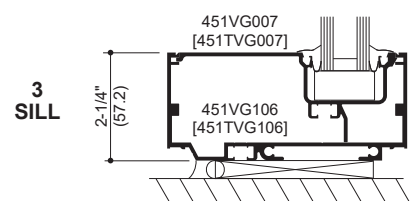
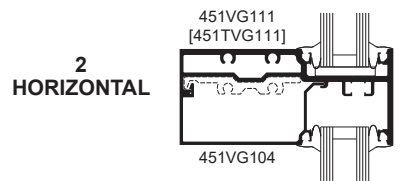
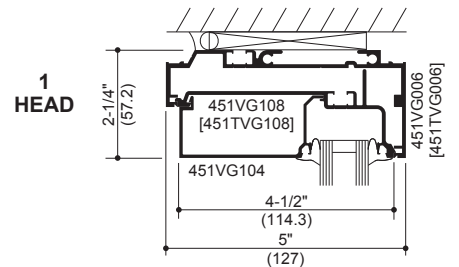
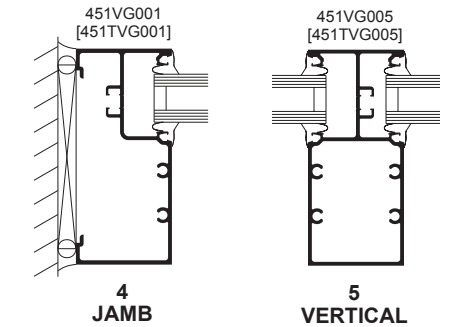
* HP Sill Flashing shown with optional gasket.

SHEAR BLOCK



* HP Sill Flashing shown with optional gasket.

STICK

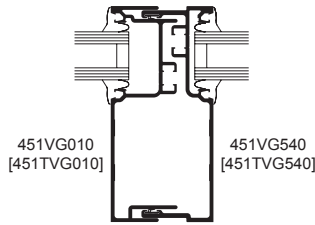


* HP Sill Flashing shown with optional gasket.

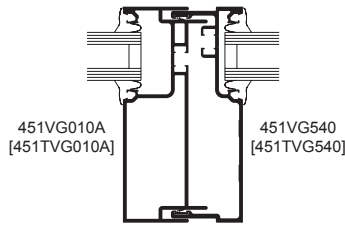
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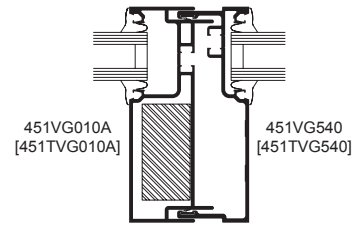
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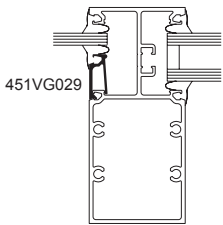
EXPANSION MULLION



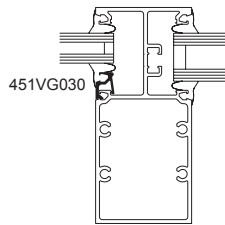
TUBULAR
EXPANSION MULLION



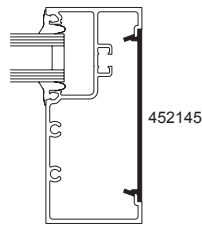
TUBULAR
EXPANSION MULLION
WITH STEEL



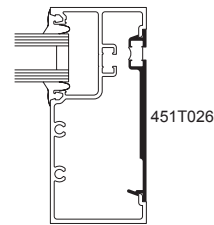
1/4" (6.4) INFILL
SNAP-IN ADAPTOR



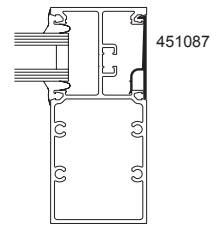
5/8" (15.9) INFILL
SNAP-IN ADAPTOR



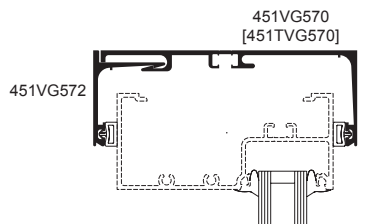
PVC FLAT FILLER
(NON STRUCTURAL)



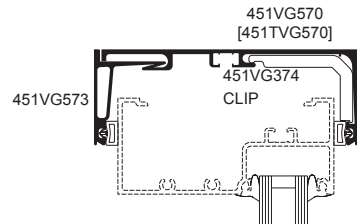
THERMAL
FLAT FILLER



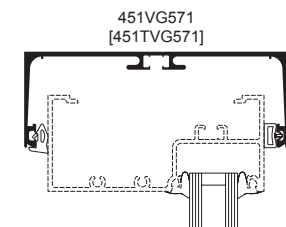
SNAP-IN
FLAT FILLER



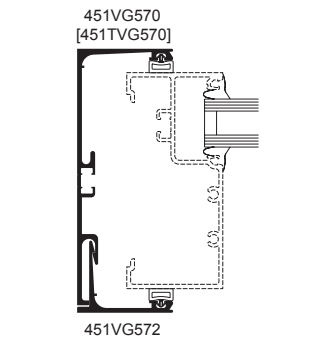
STANDARD - HEAD
COMPENSATING RECEPTOR



HEAVY WEIGHT - HEAD
COMPENSATING RECEPTOR
(EXTERIOR INSTALLED)



STANDARD - HEAD
COMPENSATING RECEPTOR

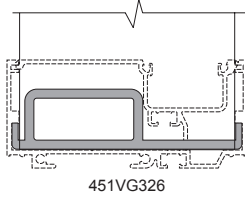


JAMB
COMPENSATING RECEPTOR
(EXTERIOR INSTALLED)

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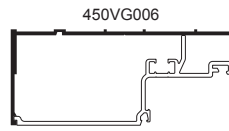
MULLION ANCHOR

NOTE:

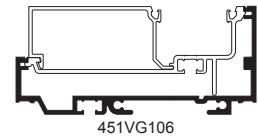
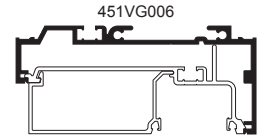
If the end reaction of the mullion (mullion spacing (ft.) times height (ft) times specified wind load (psf), divided by two) is more than 500 LBS., the optional Mullion Anchor must be used. Consult Application Engineering.

NOTE:

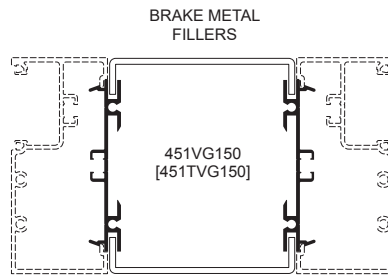
Mullion Anchor not used with Lightweight Receptor.



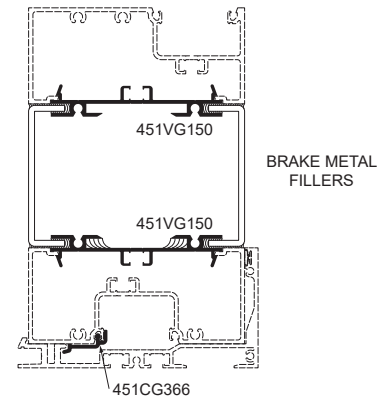
OPTIONAL LIGHTWEIGHT CAN RECEPTORS



OPTIONAL UNEQUAL LEG CAN RECEPTORS

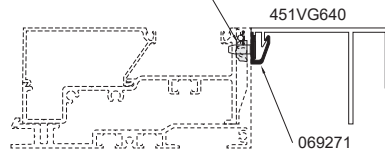


BRAKE METAL ADAPTOR



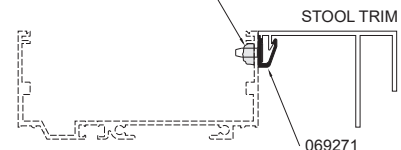
BRAKE METAL ADAPTOR AT HORIZONTAL

Seal over Stool Trim fasteners to prevent water infiltration.



STOOL TRIM CLIP with HP FLASHING

Seal over Stool Trim fasteners to prevent water infiltration.

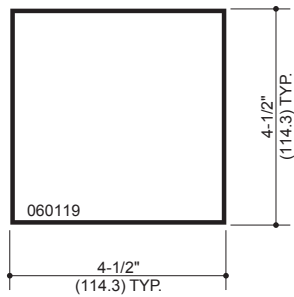


STOOL TRIM CLIP FOR STICK ASSEMBLY

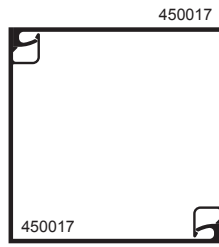
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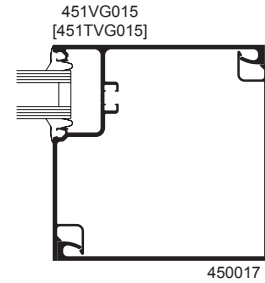
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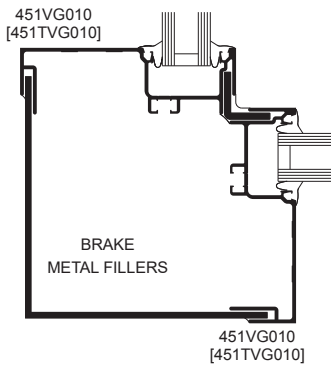
4-1/2" X 4-1/2" TUBE



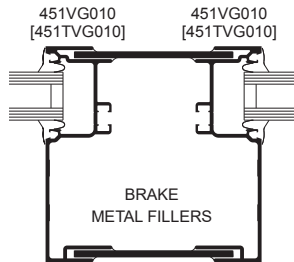
TWO PIECE NO POCKET CORNER



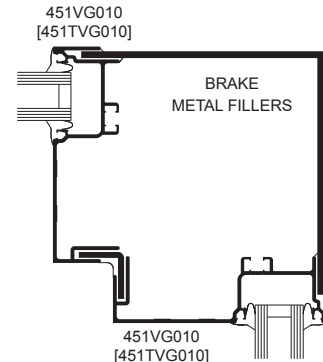
ONE POCKET CORNER



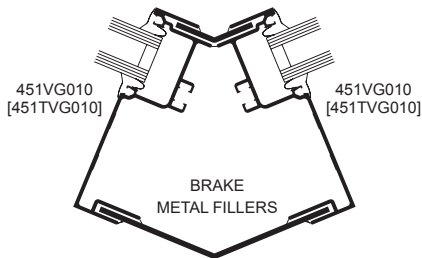
OUTSIDE 90° CORNER



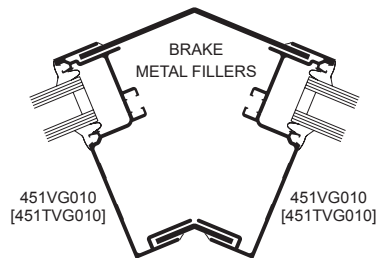
TWO POCKET CORNER POST



INSIDE 90° CORNER



135° OUTSIDE CORNER



135° INSIDE CORNER

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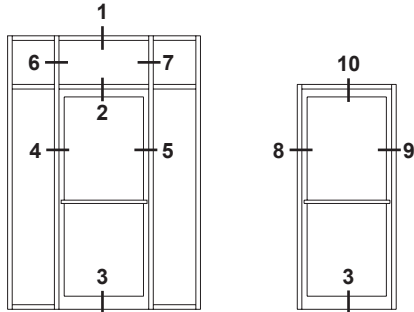
Additional information and CAD details are available at www.kawneer.com

TRIFAB® VersaGlaze® 451 FRAMING INCORPORATING KAWNEER “190” DOORS.

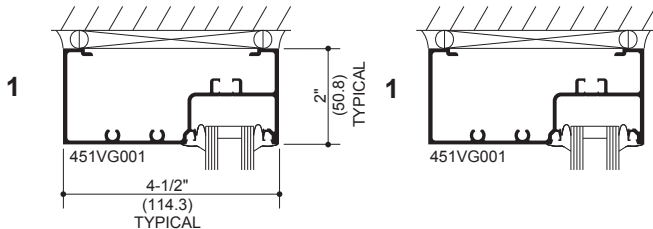
DOOR FRAMING NON-THERMAL ONLY

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

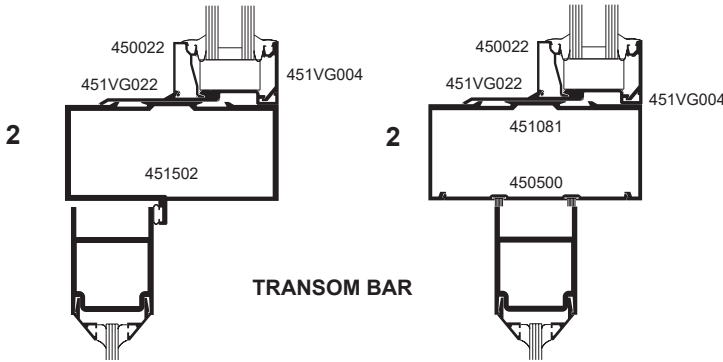
SEE ENTRANCE DETAILS FOR ADDITIONAL INFORMATION.



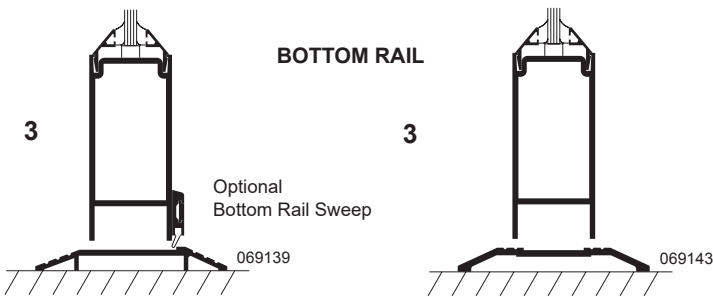
ELEVATIONS ARE NUMBER KEYED TO DETAILS



TRANSOM HEAD

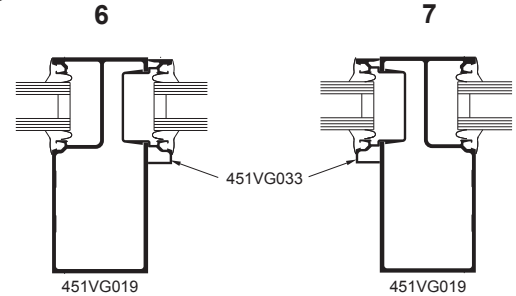


TRANSOM BAR



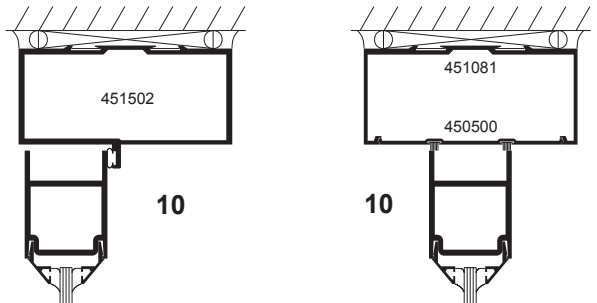
SINGLE ACTING

DOUBLE ACTING



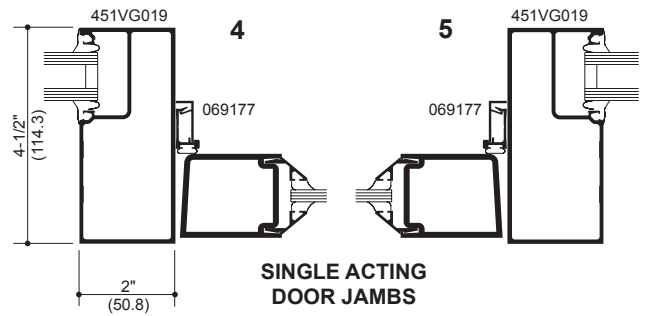
TRANSOM JAMBS

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

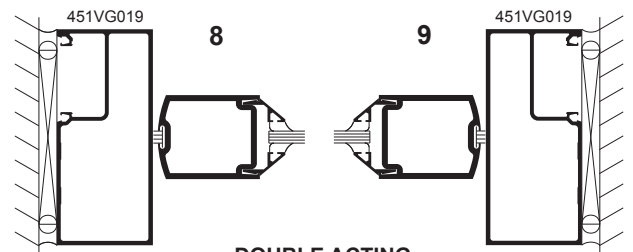


SINGLE ACTING HEADER

DOUBLE ACTING HEADER



SINGLE ACTING DOOR JAMBS



DOUBLE ACTING DOOR JAMBS

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BASIC FRAMING DETAILS

SCREW SPLINE SYSTEM

(MULTI-PLANE - Inside Glazed - Stops Down).....56

(MULTI-PLANE - Outside Glazed - Stops Down).....57

SHEAR BLOCK SYSTEM

(MULTI-PLANE - Inside Glazed - Stops Down).....58

(MULTI-PLANE - Outside Glazed - Stops Down).....59

STICK SYSTEM

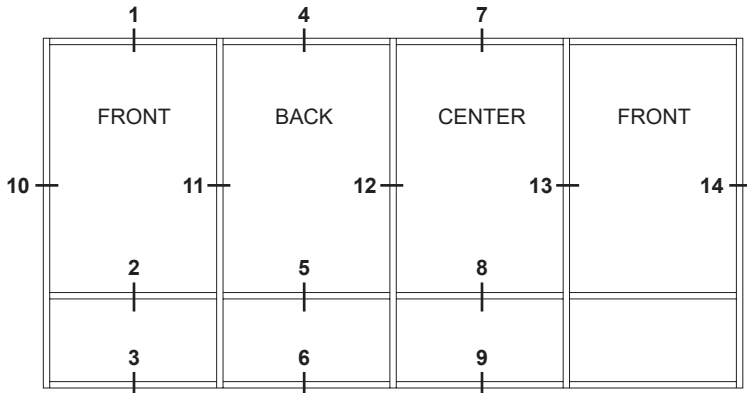
(MULTI-PLANE - Inside Glazed - Stops Down).....60

(MULTI-PLANE - Outside Glazed - Stops Down).....61

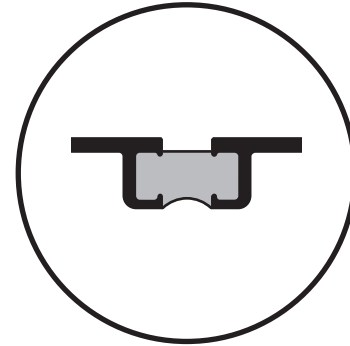
**(See appropriate Center, Front or Back Section
for Miscellaneous Details.)**

Additional information and CAD details are available at www.kawneer.com

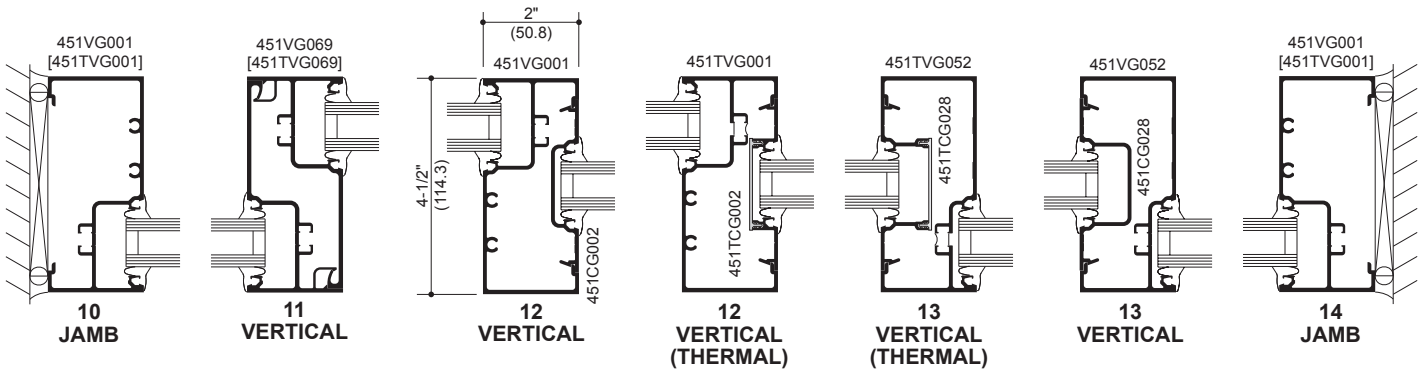
SCREW SPLINE ASSEMBLY



ELEVATION IS NUMBER KEYED TO DETAILS

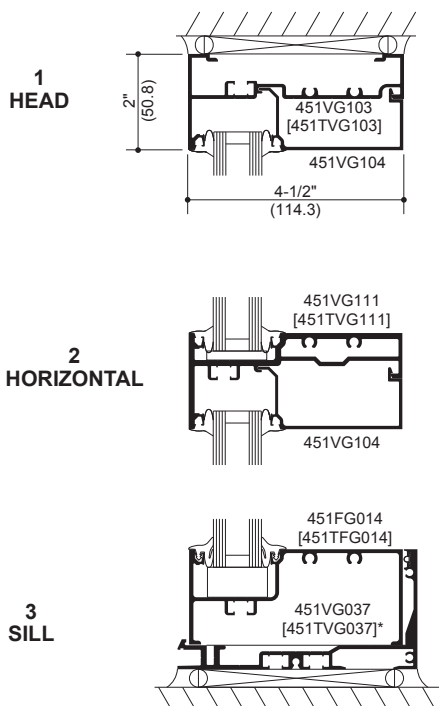


NUMBERS IN BRACKETS ARE THERMALLY BROKEN MEMBERS



FRONT

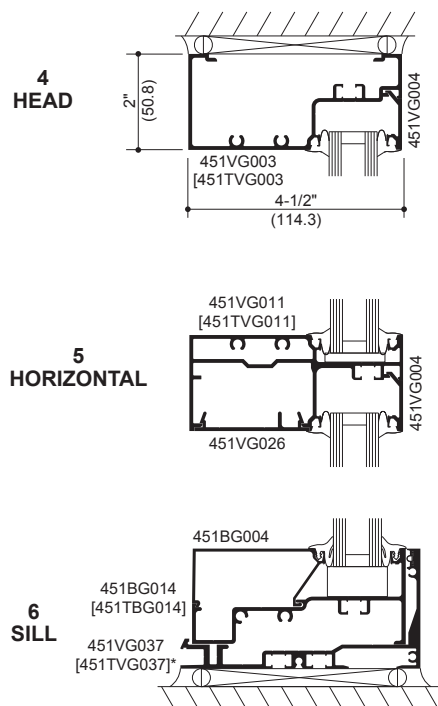
See Pages 32 thru 45 for all FRONT details.



* HP Sill Flashing shown with optional gasket.

BACK

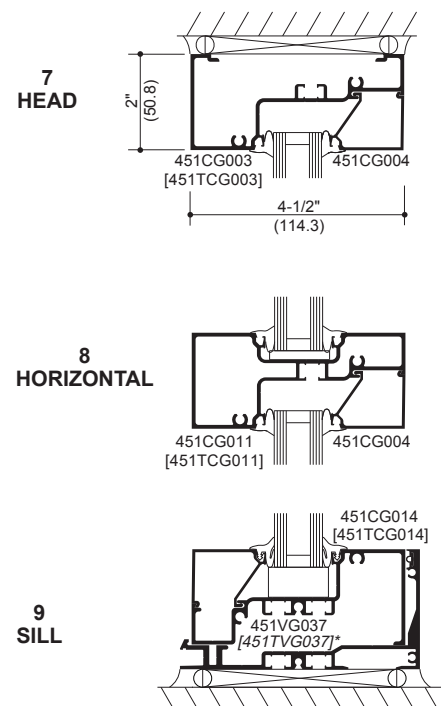
See Pages 48 thru 53 for all BACK details.



* HP Sill Flashing shown with optional gasket.

CENTER

See Pages 12 thru 30 for all CENTER details.



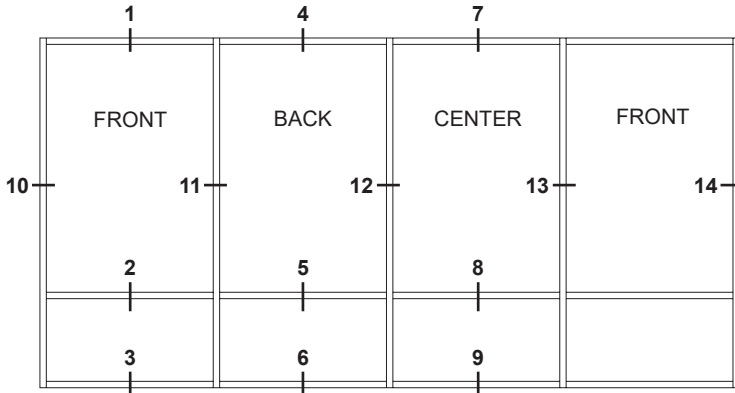
* HP Sill Flashing shown with optional gasket.

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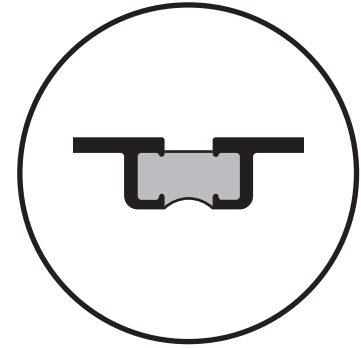
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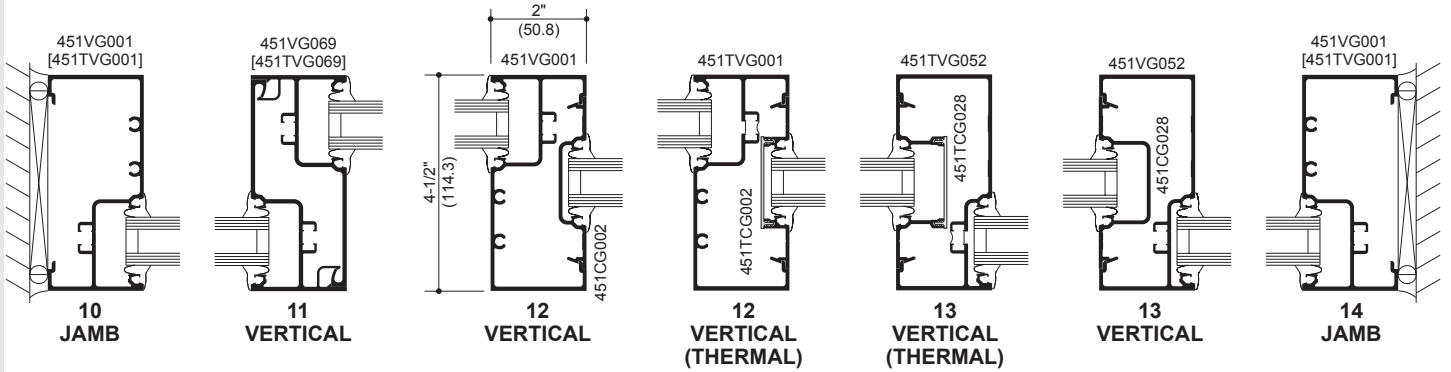
SCREW SPLINE ASSEMBLY



ELEVATION IS NUMBER KEYED TO DETAILS



NUMBERS IN BRACKETS ARE THERMALLY BROKEN MEMBERS

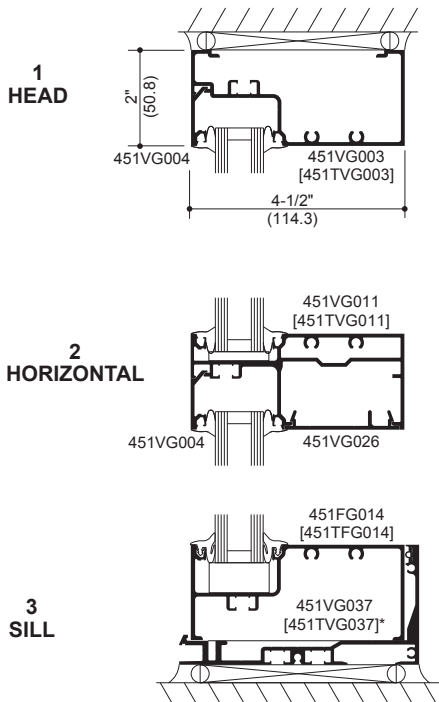


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FRONT

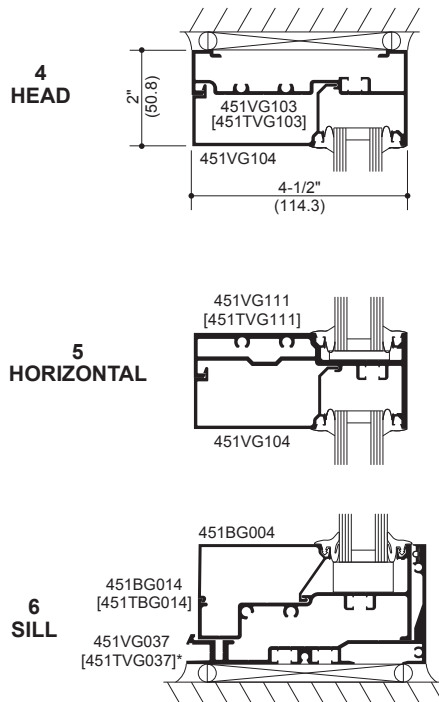
See Pages 32 thru 45 for all FRONT details.



* HP Sill Flashing shown with optional gasket.

BACK

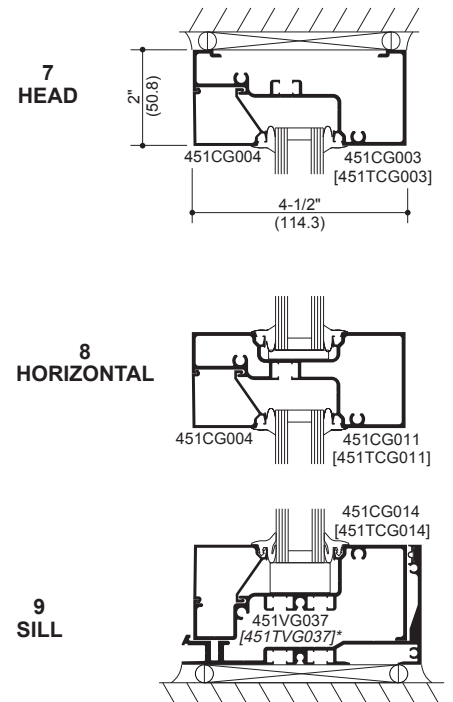
See Pages 48 thru 53 for all BACK details.



* HP Sill Flashing shown with optional gasket.

CENTER

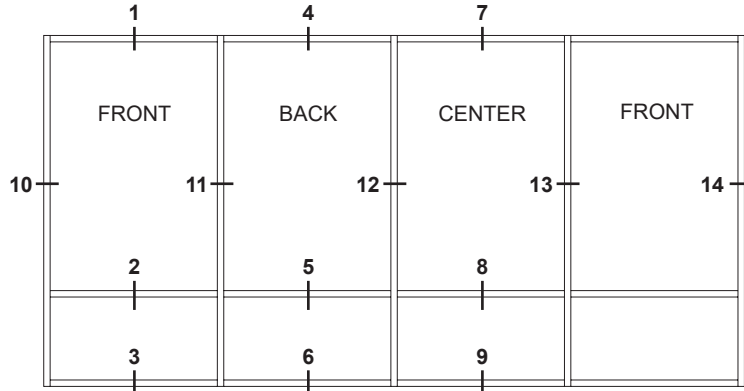
See Pages 12 thru 30 for all CENTER details.



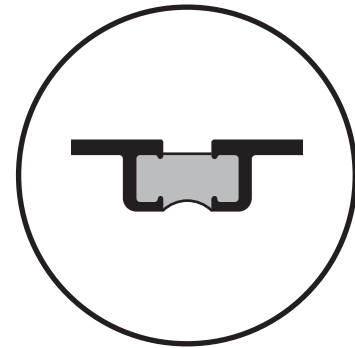
* HP Sill Flashing shown with optional gasket.

Additional information and CAD details are available at www.kawneer.com

SHEAR BLOCK ASSEMBLY

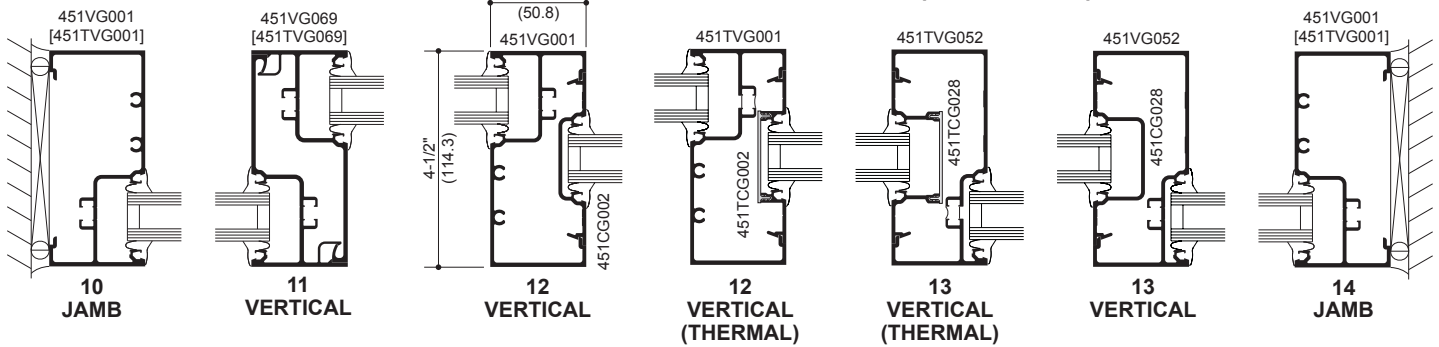


ELEVATION IS NUMBER KEYED TO DETAILS



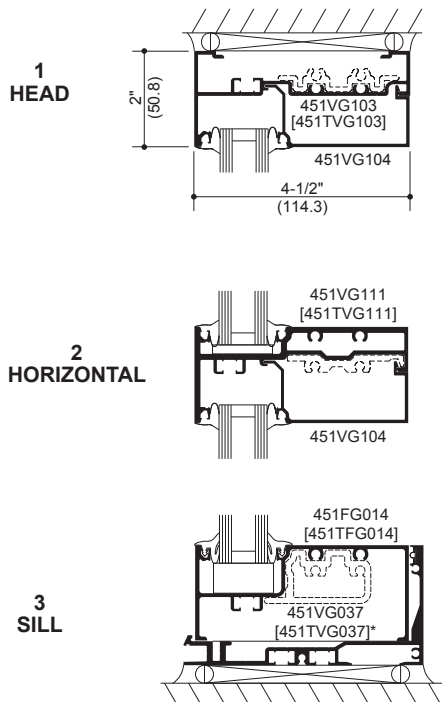
NUMBERS IN BRACKETS ARE THERMALLY BROKEN MEMBERS

Note: Transition verticals are required to be two piece



FRONT

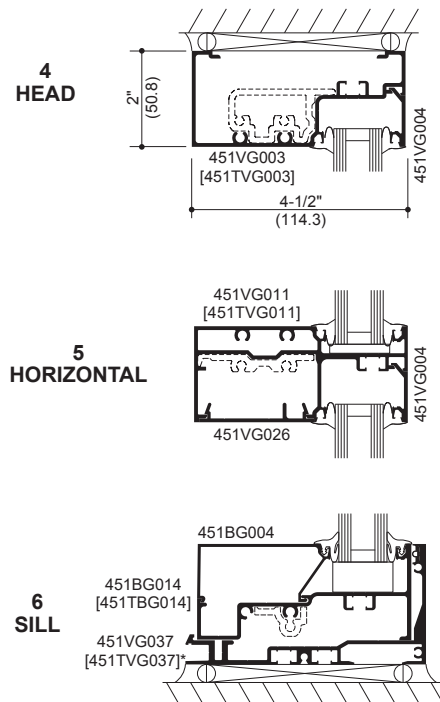
See Pages 32 thru 45 for all FRONT details.



* HP Sill Flashing shown with optional gasket.

BACK

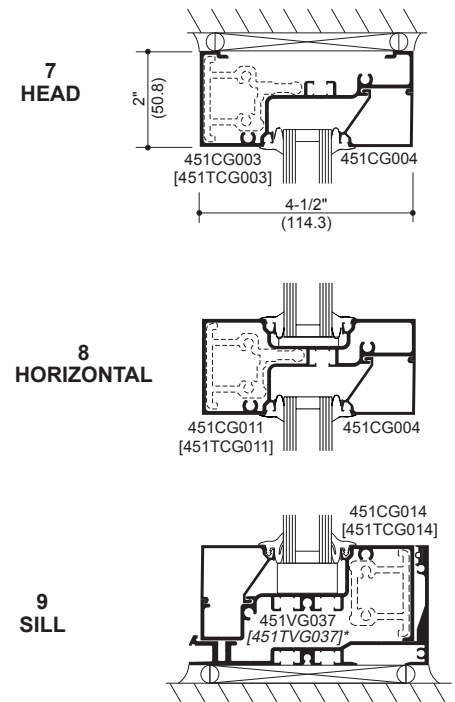
See Pages 48 thru 53 for all BACK details.



* HP Sill Flashing shown with optional gasket.

CENTER

See Pages 12 thru 30 for all CENTER details.



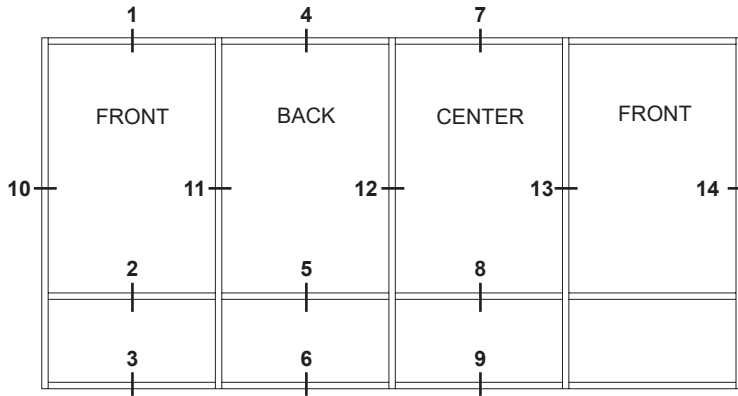
* HP Sill Flashing shown with optional gasket.

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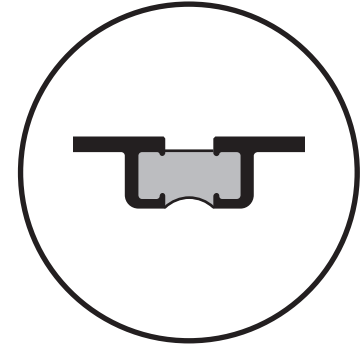
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SHEAR BLOCK ASSEMBLY

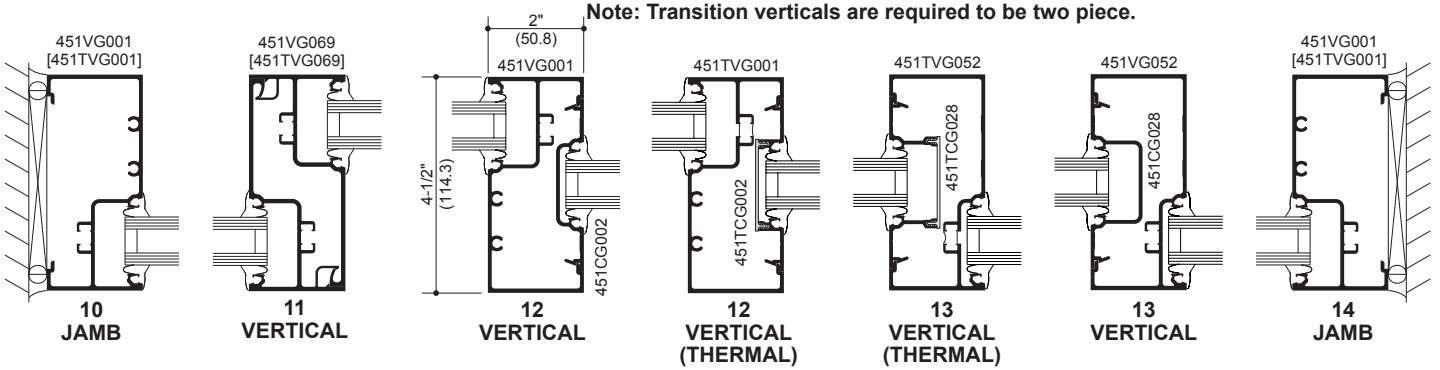


ELEVATION IS NUMBER KEYED TO DETAILS



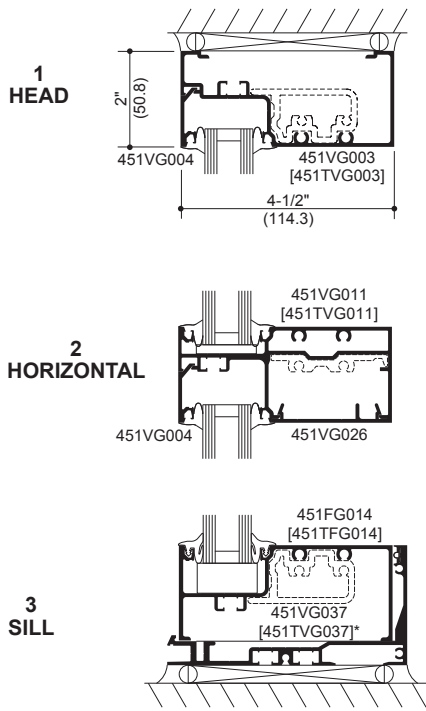
NUMBERS IN BRACKETS ARE THERMALLY BROKEN MEMBERS

Note: Transition verticals are required to be two piece.



FRONT

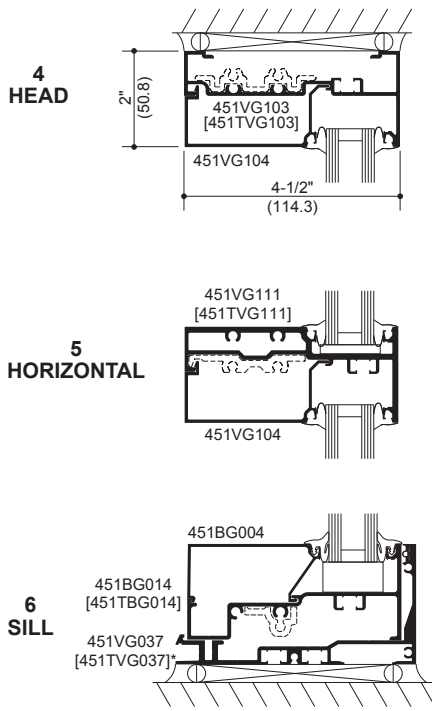
See Pages 32 thru 45 for all FRONT details.



* HP Sill Flashing shown with optional gasket.

BACK

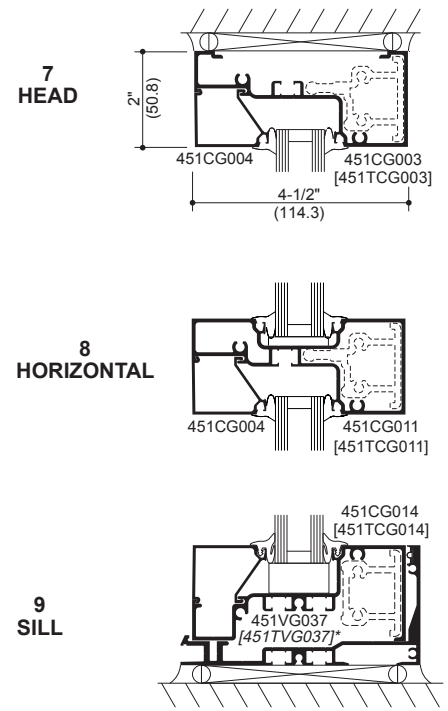
See Pages 48 thru 53 for all BACK details.



* HP Sill Flashing shown with optional gasket.

CENTER

See Pages 12 thru 30 for all CENTER details.



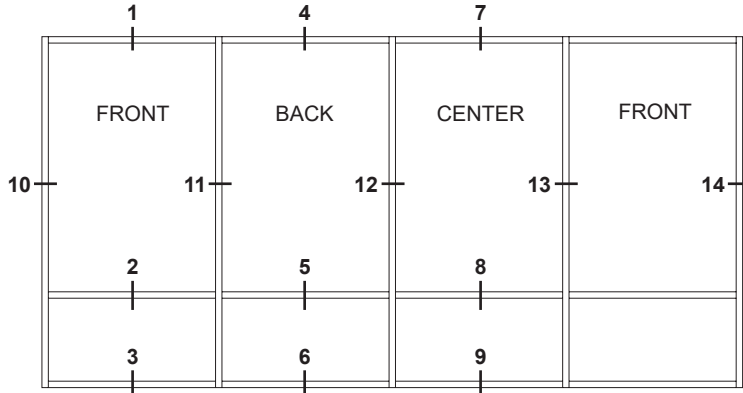
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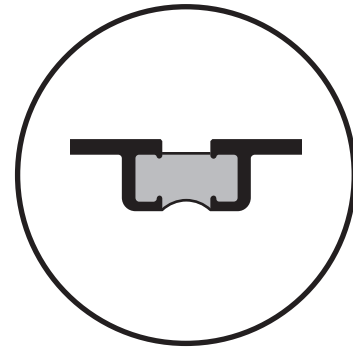
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STICK ASSEMBLY

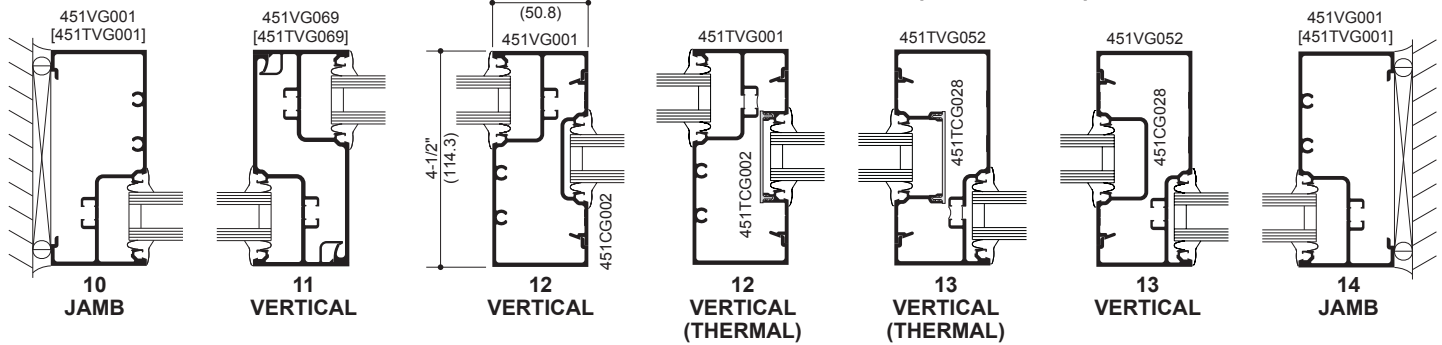


ELEVATION IS NUMBER KEYED TO DETAILS



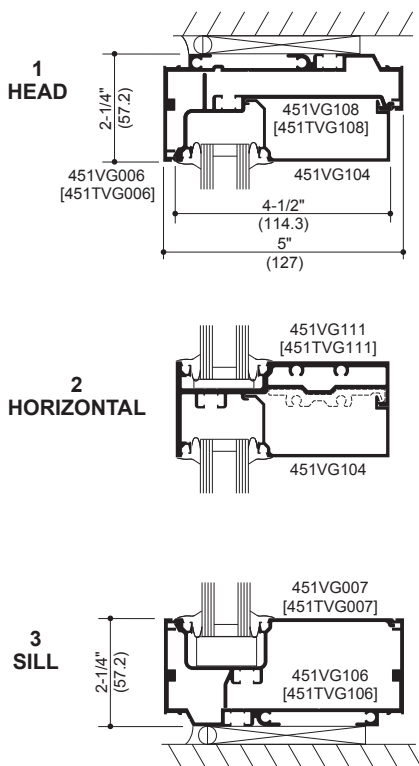
NUMBERS IN BRACKETS ARE THERMALLY BROKEN MEMBERS

Note: Transition verticals are required to be two piece



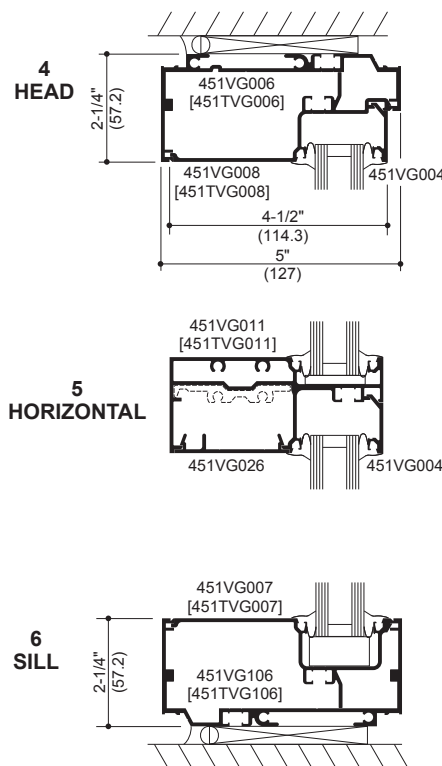
FRONT

See Pages 32 thru 45 for all FRONT details.



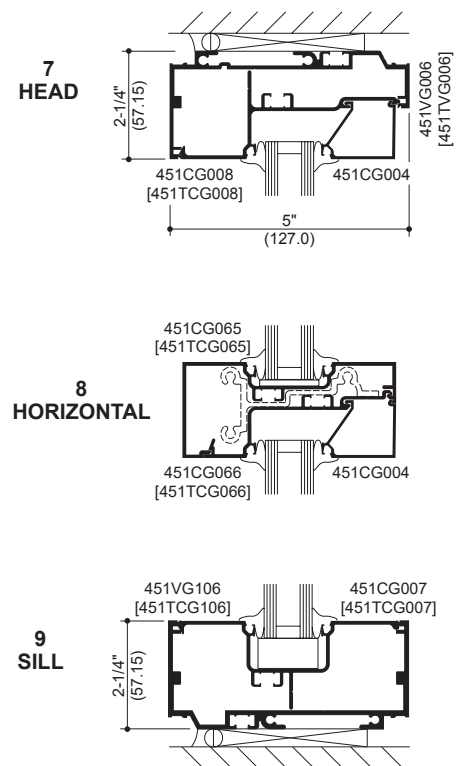
BACK

See Pages 48 thru 53 for all BACK details.



CENTER

See Pages 12 thru 30 for all CENTER details.

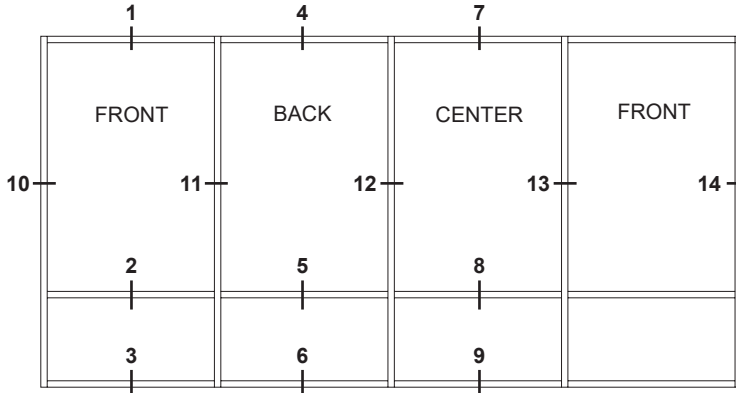


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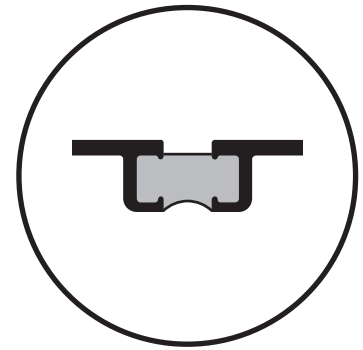
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STICK ASSEMBLY

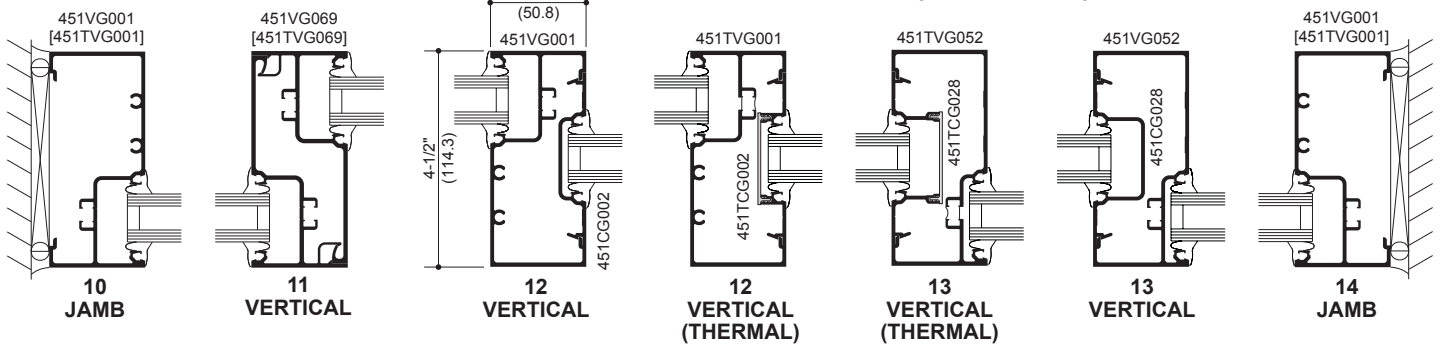


ELEVATION IS NUMBER KEYED TO DETAILS



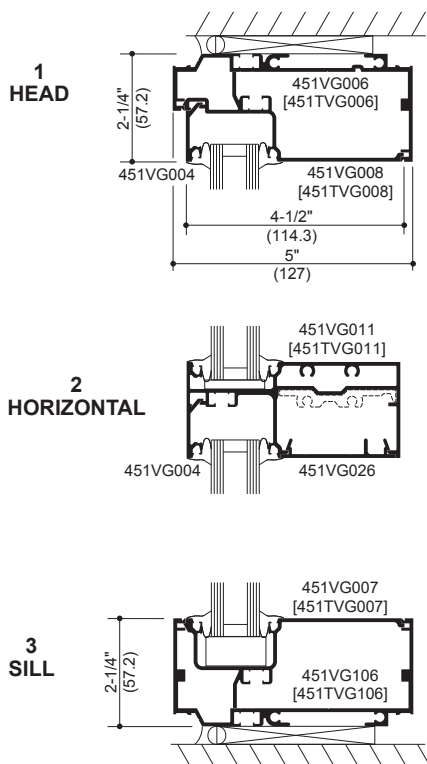
NUMBERS IN BRACKETS ARE THERMALLY BROKEN MEMBERS

Note: Transition verticals are required to be two piece.



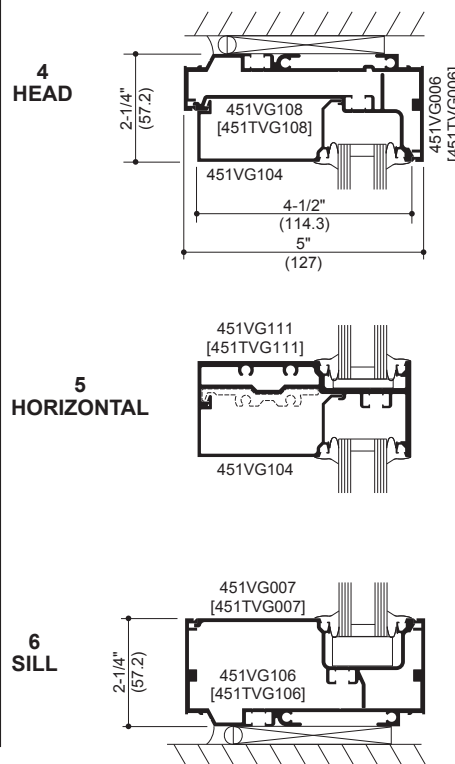
FRONT

See Pages 32 thru 45 for all FRONT details.



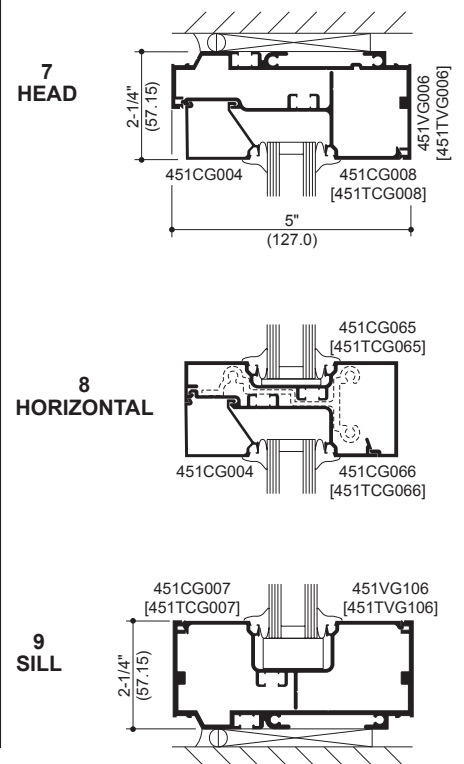
BACK

See Pages 48 thru 53 for all BACK details.



CENTER

See Pages 12 thru 30 for all CENTER details.



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The following applications utilize Tremco Proglaze® ETA Connections as the transition assembly from the wall air/vapor barrier membrane to the storefront framing perimeter. Corners are sealed with either Proglaze® ETA 3D molded silicone corners or lapped Proglaze® ETA silicone sheet material. Transition assembly components are set in Tremco Spectrem® 1 silicone sealant. For complete installation instructions of Tremco Proglaze® ETA products, contact your local Tremco representative or visit www.tremcosealants.com.

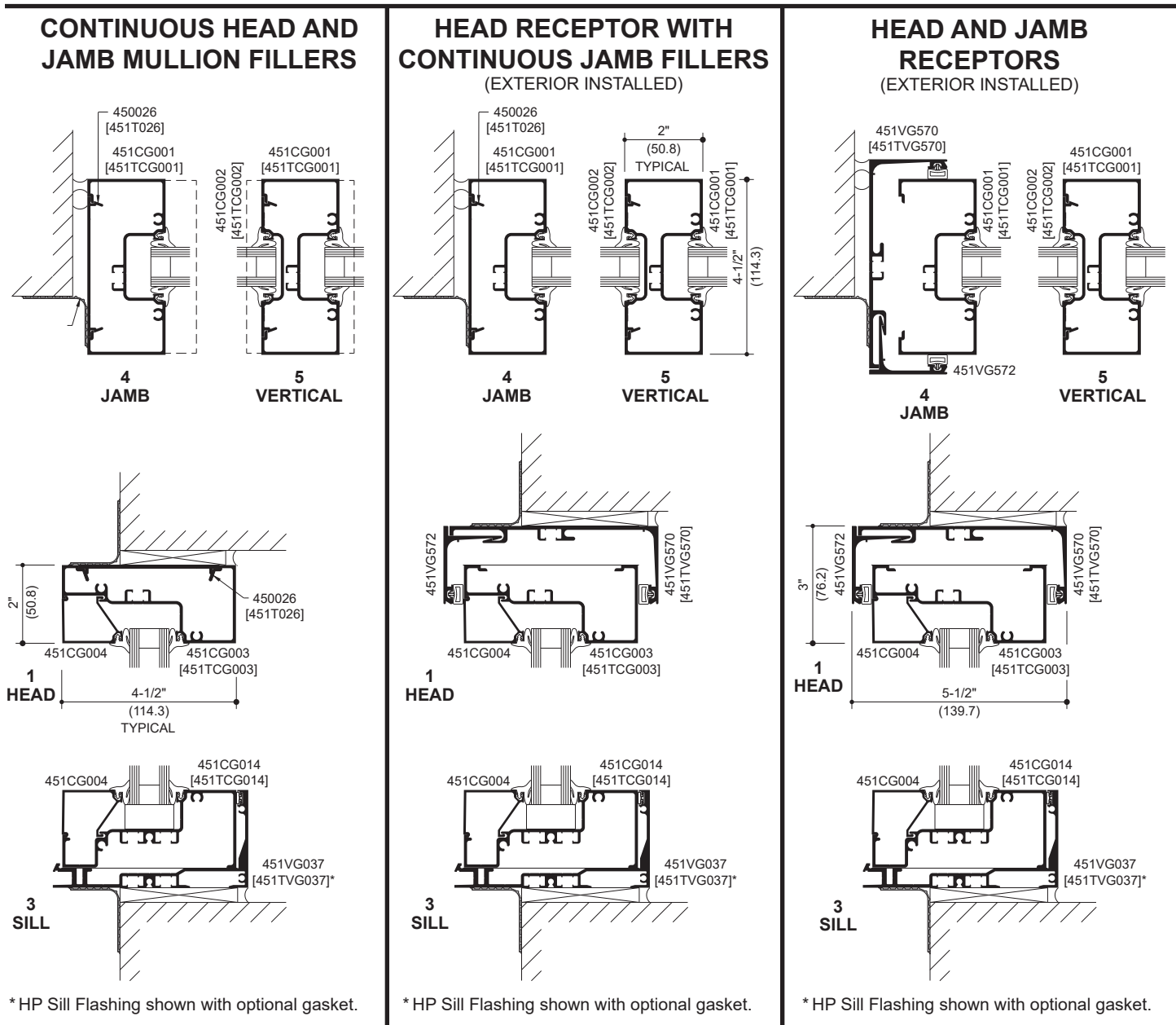
For integration of a silicone engineered transition assembly, the Trifab® storefront system must use continuous head and jamb mullion fillers, a head receptor with continuous jamb fillers or a head receptor with jamb receptors.

Reference air/vapor barrier installation instructions 451VG977EN. All storefront framing to be installed according to applicable Kawneer storefront system installation instructions, project specific plans, specifications and shop details.

Storefront installations require the sill to be structurally supported directly under the glass setting blocks and mullion locations, as well as where the sill is anchored to the substrate. Any projecting or cantilevered sill applications that are not supported must be reviewed by Kawneer application engineering.

Installer to independently confirm sealant compatibility and adhesion with all job specific storefront framing materials, silicone ETA sheet material and wall AVB material.

(451 center plane details shown, 451T and front/back/multi-plane 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 (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 Heavyweight Compensating Receptor Face/Reinforcing Clip (Screw Spline/Shear Block systems) or Mullion Anchors (Stick system) must be used. Consult Application Engineering. (*Mullion Anchor not used with Standard 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.

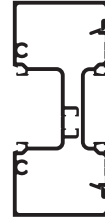
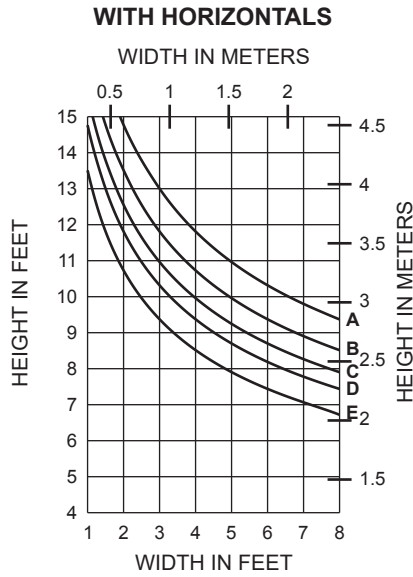
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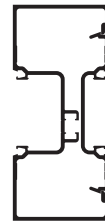
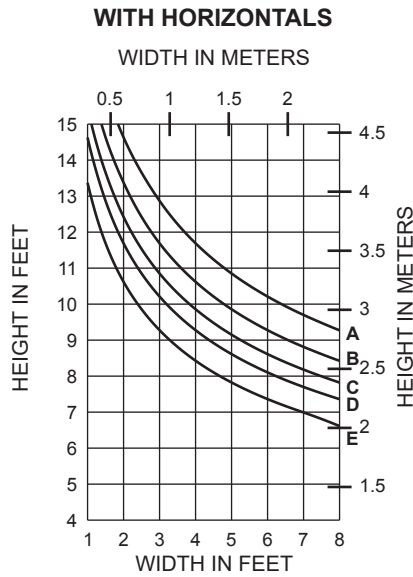
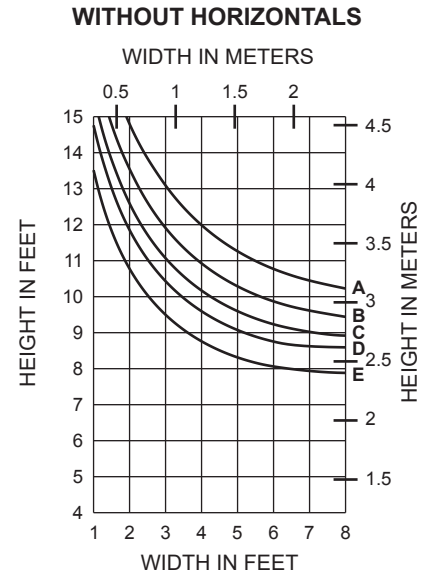
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	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	15 PSF (720)	25 PSF (1200)
B =	20 PSF (960)	33 PSF (1580)
C =	25 PSF (1200)	42 PSF (2000)
D =	30 PSF (1440)	50 PSF (2400)
E =	40 PSF (1920)	67 PSF (3200)



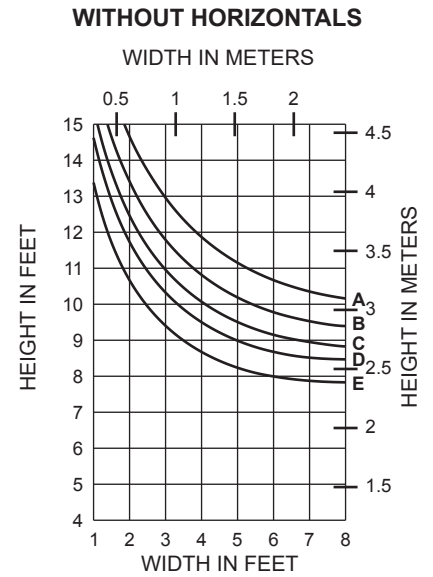
451CG001
451CG002

I = 3.237 (134.73 x 10⁴)
S = 1.431 (23.45 x 10³)

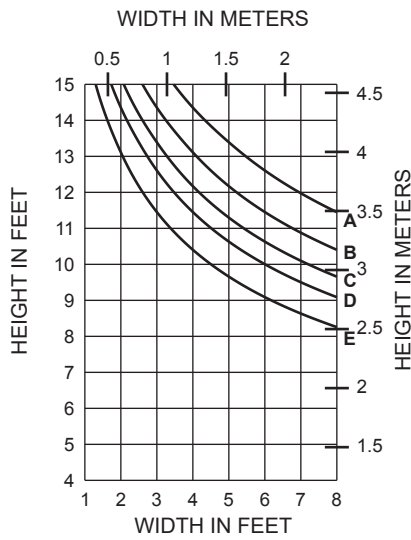


451CG012
451CG002

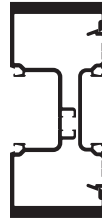
I = 3.137 (130.57 x 10⁴)
S = 1.384 (22.68 x 10³)



WITH HORIZONTALS



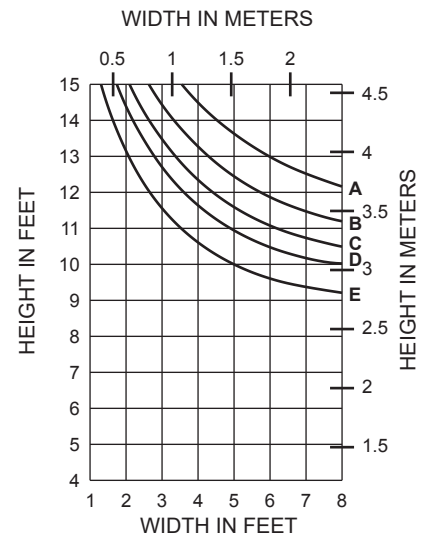
	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	15 PSF (720)	25 PSF (1200)
B =	20 PSF (960)	33 PSF (1580)
C =	25 PSF (1200)	42 PSF (2000)
D =	30 PSF (1440)	50 PSF (2400)
E =	40 PSF (1920)	67 PSF (3200)



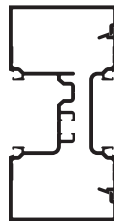
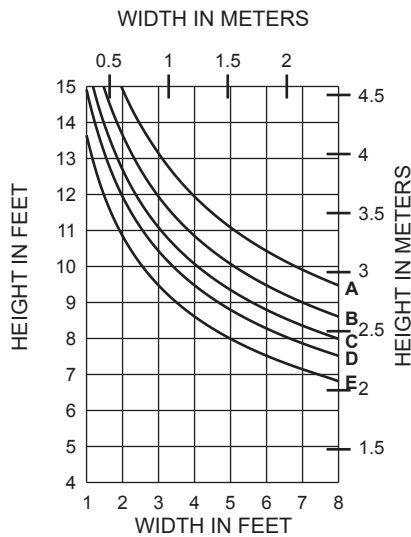
451CG013
451CG002

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

WITHOUT HORIZONTALS



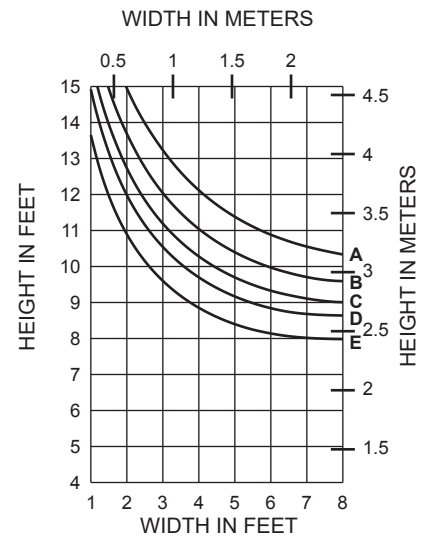
WITH HORIZONTALS



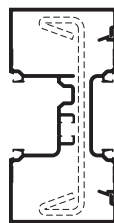
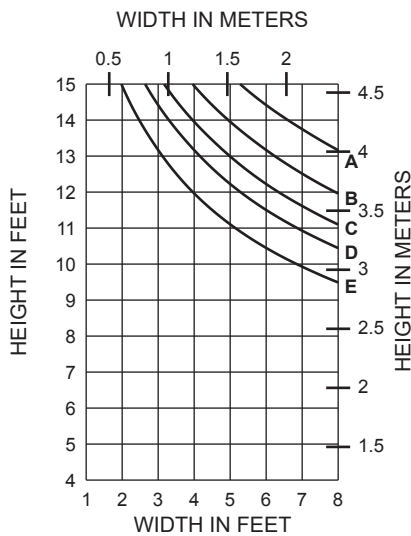
451CG112
451CG002

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

WITHOUT HORIZONTALS



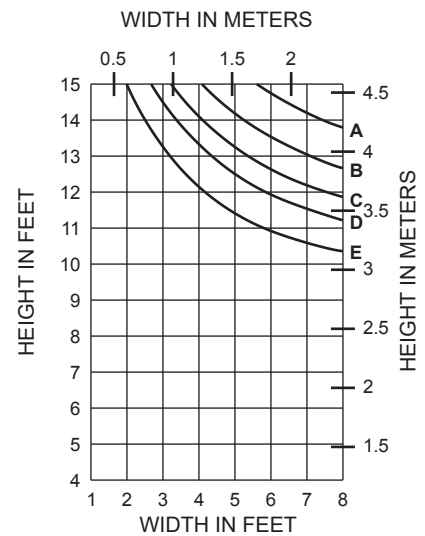
WITH HORIZONTALS



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

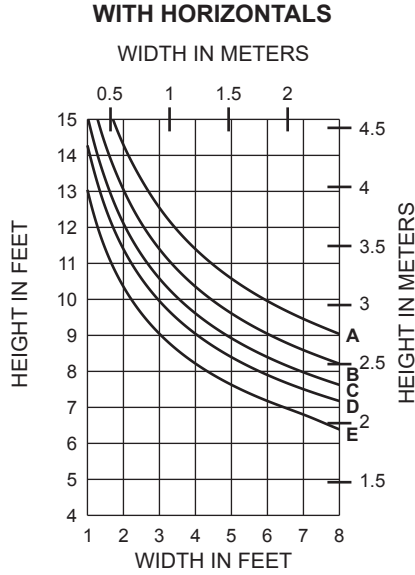


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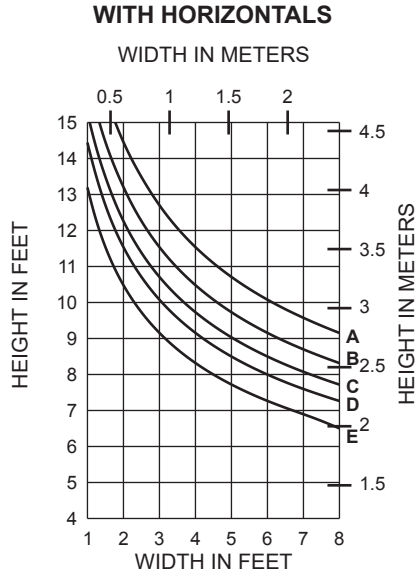
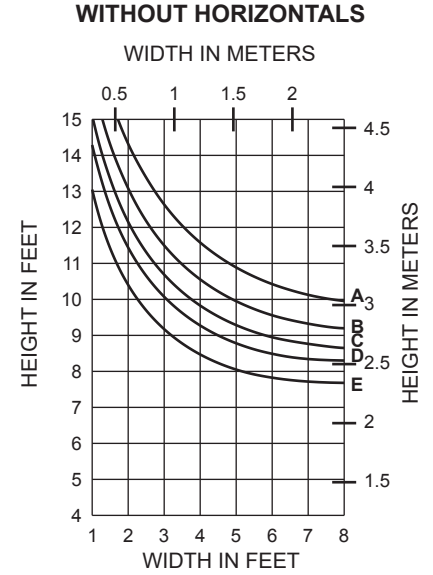


	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	15 PSF (720)	25 PSF (1200)
B =	20 PSF (960)	33 PSF (1580)
C =	25 PSF (1200)	42 PSF (2000)
D =	30 PSF (1440)	50 PSF (2400)
E =	40 PSF (1920)	67 PSF (3200)



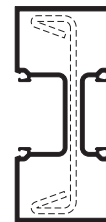
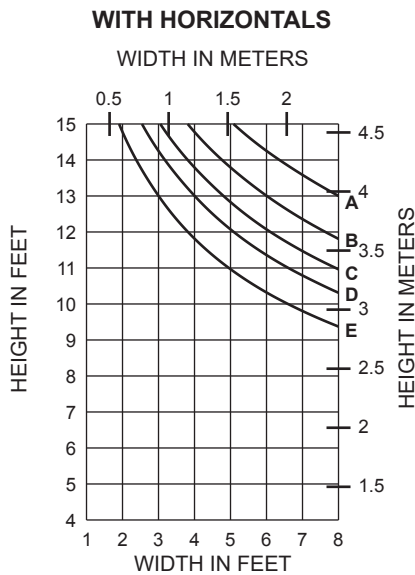
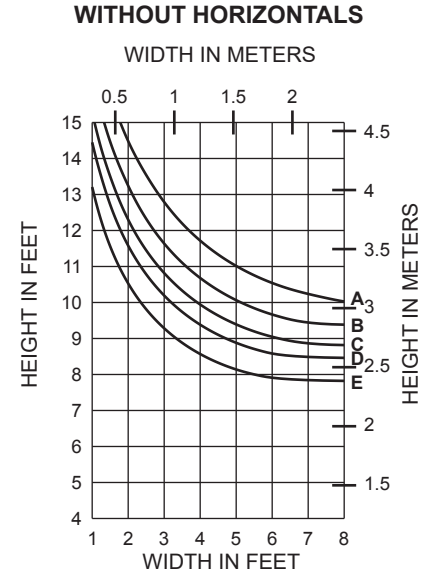
451CG005

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



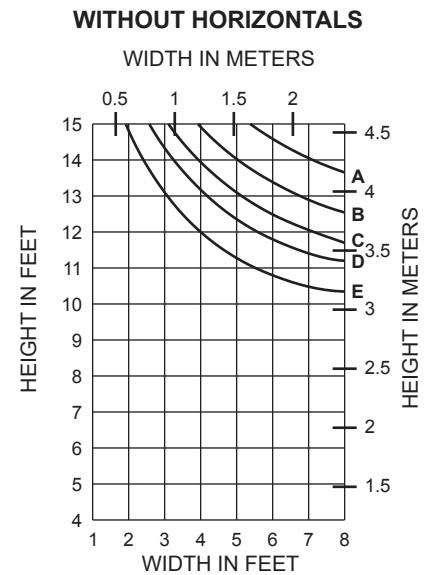
451CG005A

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

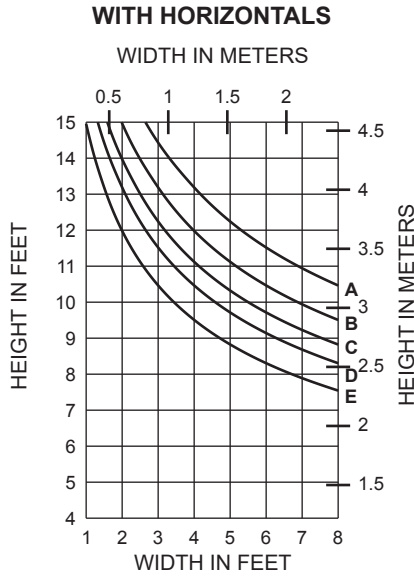


451CG005A with 450110 STEEL

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

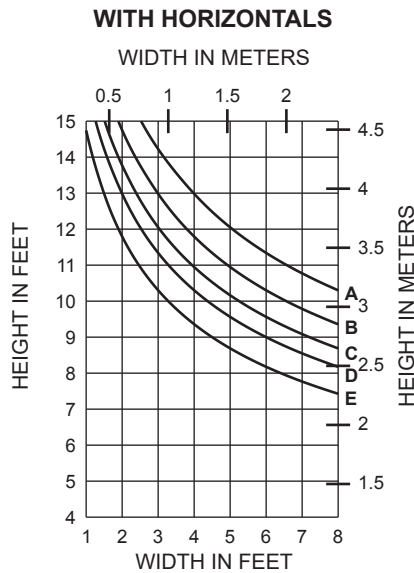
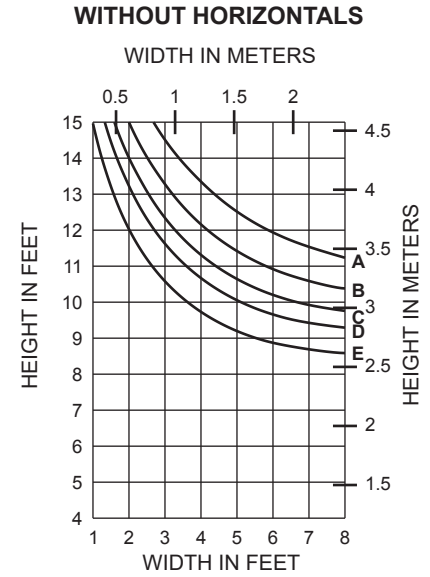


	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	15 PSF (720)	25 PSF (1200)
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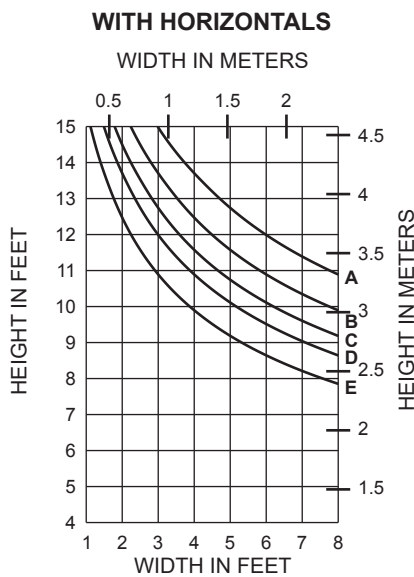
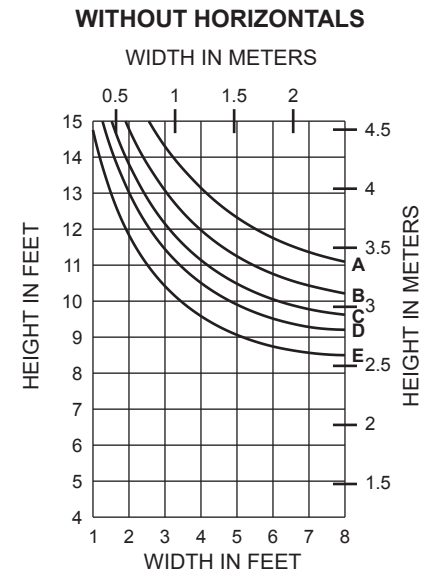
451CG001A
451CG002

I = 4.507 (187.59 x 10⁴)
S = 1.993 (32.66 x 10³)



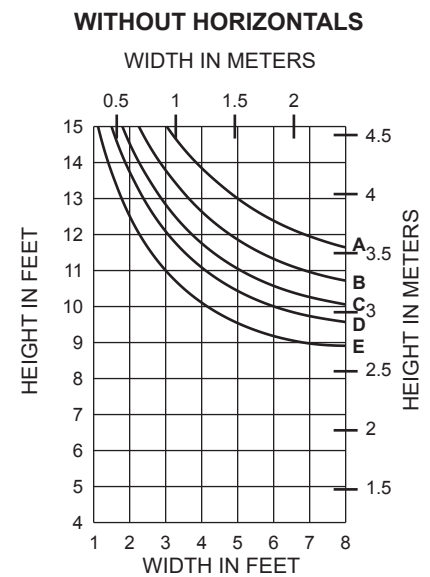
451CG010
451CG540

I = 4.301 (179.02 x 10⁴)
S = 1.886 (30.91 x 10³)



451CG010A
451CG540

I = 5.083 (211.57 x 10⁴)
S = 2.259 (37.02 x 10³)

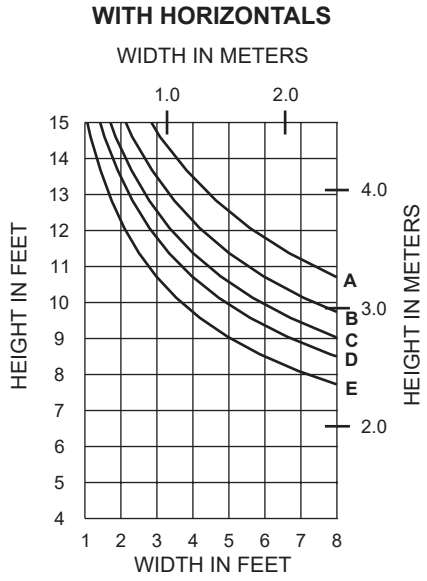


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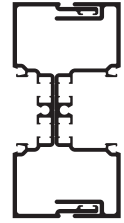
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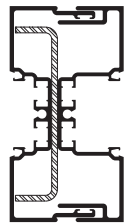
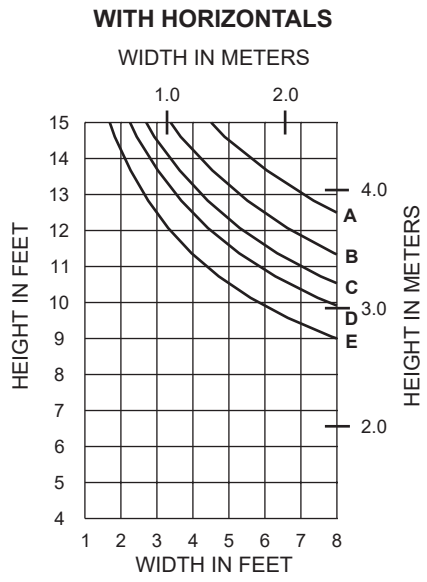
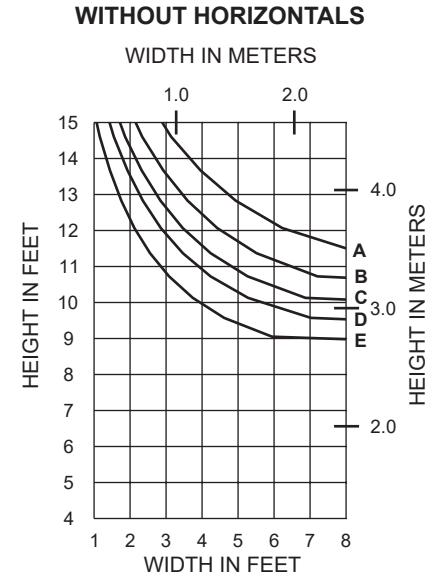
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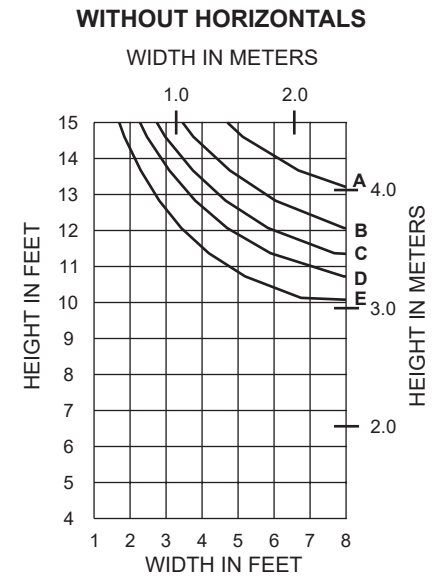


451CG081 / 451CG082
 $I = 4.829 (201.00 \times 10^4)$
 $S = 2.146 (35.17 \times 10^3)$

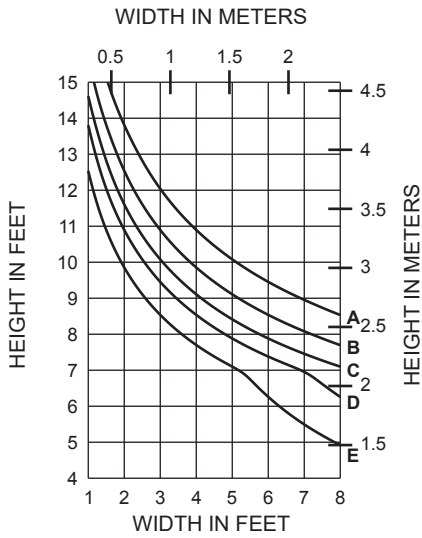


451CG081 / 451CG082 with 400110 STEEL

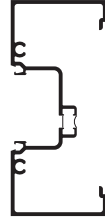
WIND LOAD CHARTS ARE BASED ON COMPOSITE PROPERTIES WHICH ARE CALCULATED IN ACCORDANCE WITH AAMA TIR-A8 AND AAMA 505



WITH HORIZONTALS



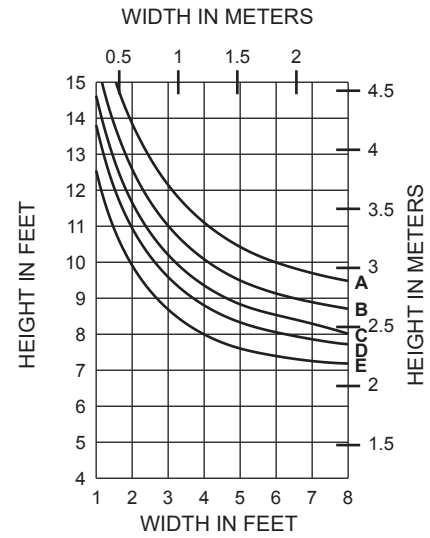
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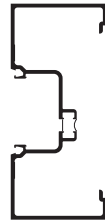
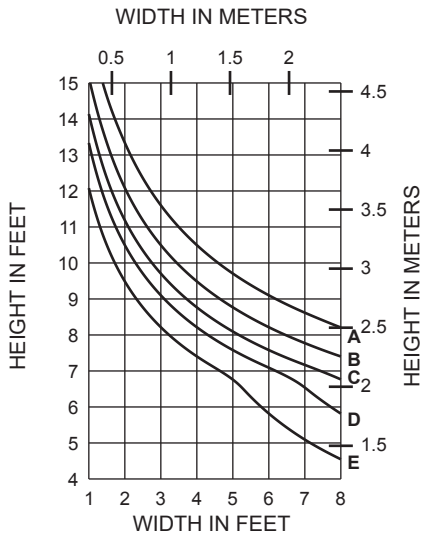
451TCG001

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

WITHOUT HORIZONTALS



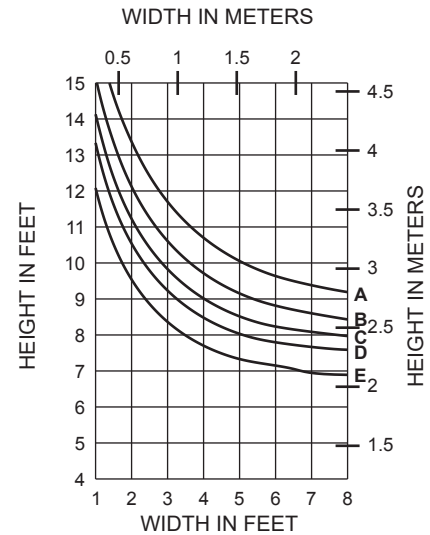
WITH HORIZONTALS



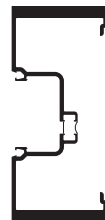
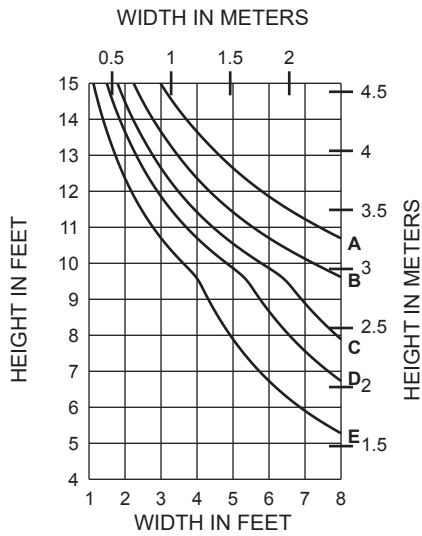
451TCG012

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

WITHOUT HORIZONTALS



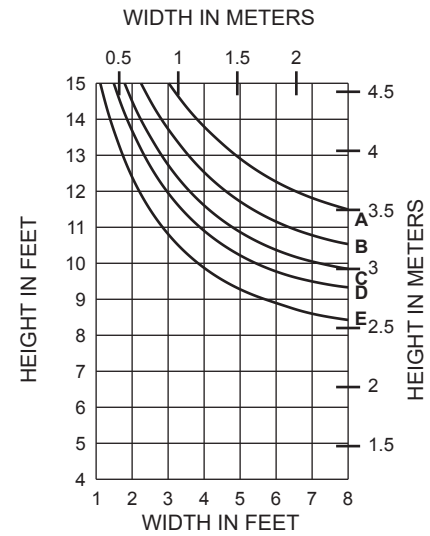
WITH HORIZONTALS



451TCG013

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

WITHOUT HORIZONTALS

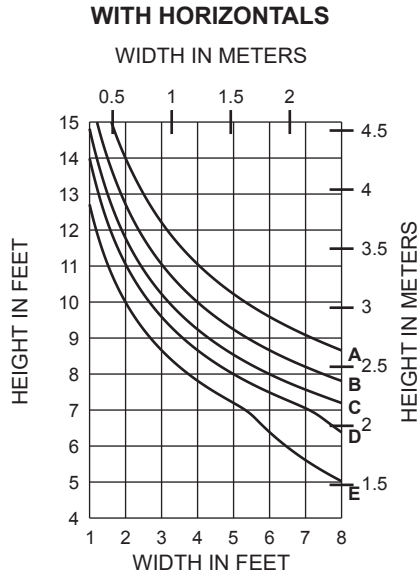


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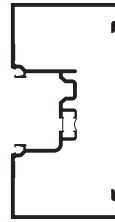
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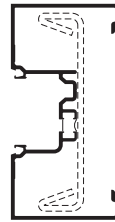
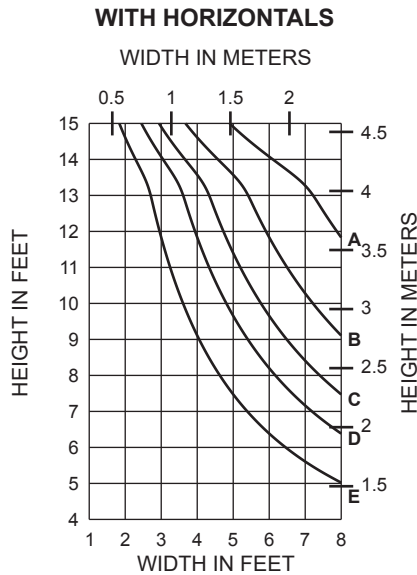
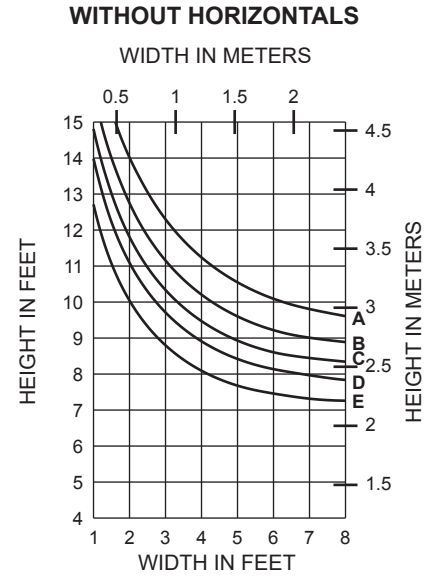


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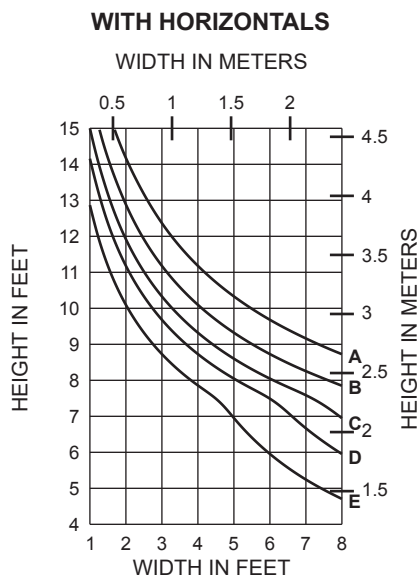
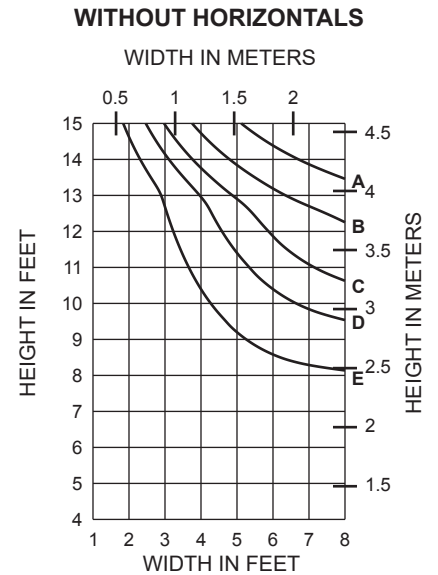
451TCG112

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



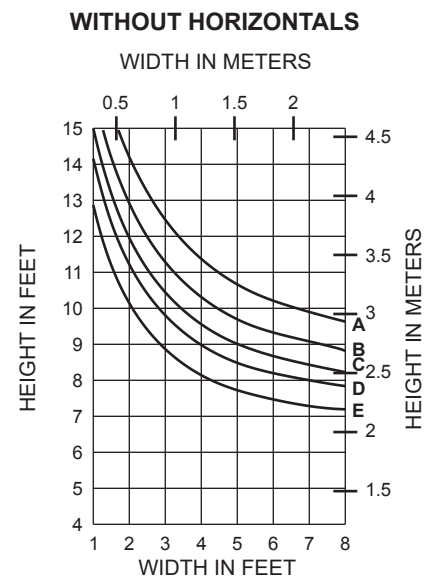
451TCG112 with 450110 STEEL

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

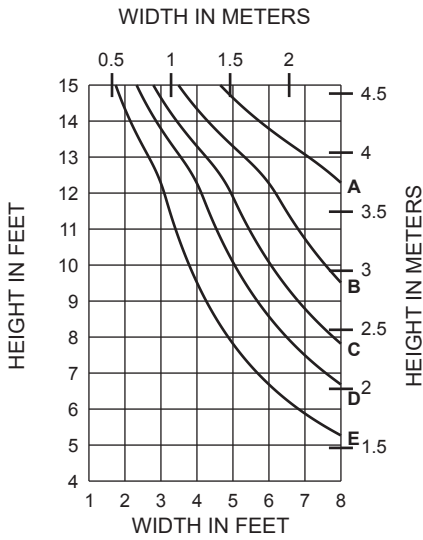


451TCG005

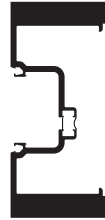
WIND LOAD CHARTS ARE BASED ON COMPOSITE PROPERTIES WHICH ARE CALCULATED IN ACCORDANCE WITH AAMA TIR-A8 AND AAMA 505



WITH HORIZONTALS



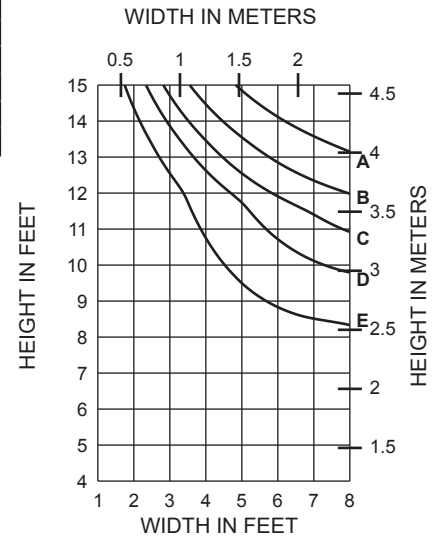
	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	15 PSF (720)	25 PSF (1200)
B =	20 PSF (960)	33 PSF (1580)
C =	25 PSF (1200)	42 PSF (2000)
D =	30 PSF (1440)	50 PSF (2400)
E =	40 PSF (1920)	67 PSF (3200)



451TCG113

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

WITHOUT HORIZONTALS

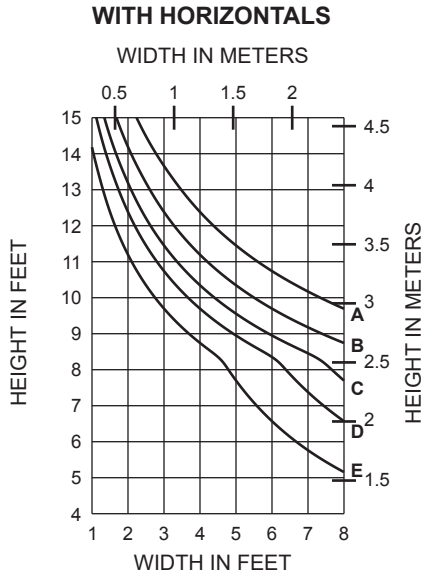


Laws and building and safety codes governing the design and use of Kawneer products, such as glazed entrance, window, and curtain wall products, vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

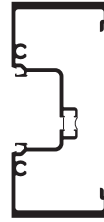
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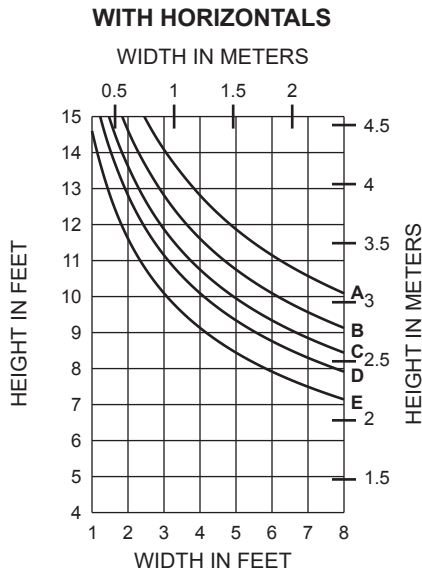
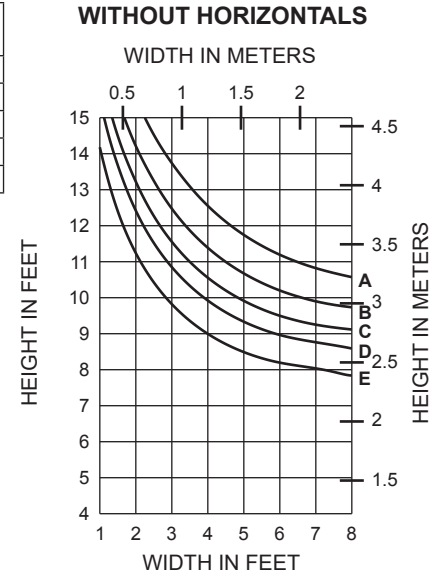


	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	15 PSF (720)	25 PSF (1200)
B =	20 PSF (960)	33 PSF (1580)
C =	25 PSF (1200)	42 PSF (2000)
D =	30 PSF (1440)	50 PSF (2400)
E =	40 PSF (1920)	67 PSF (3200)



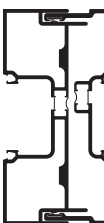
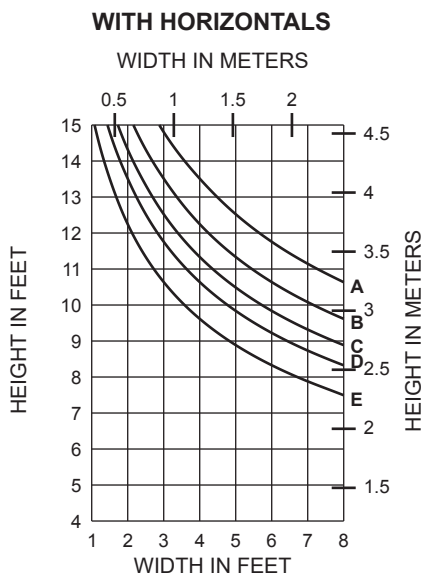
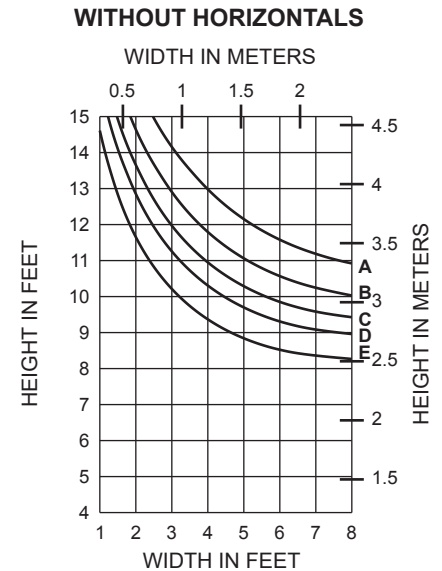
451TCG001A

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



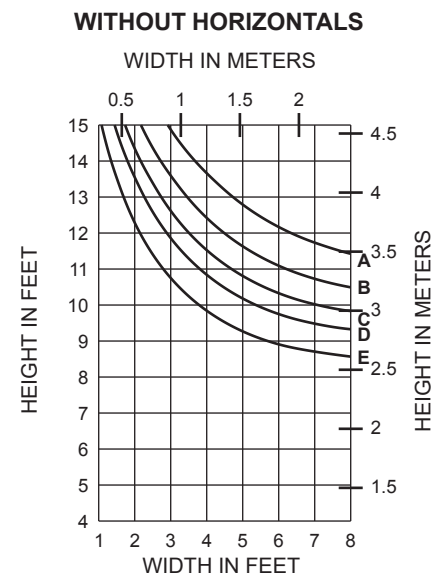
451TCG540
451TCG010

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

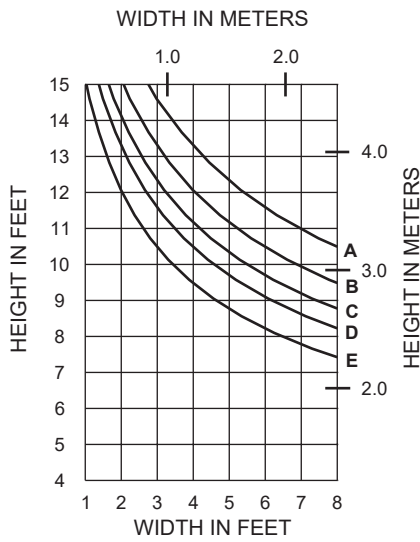


451TCG540
451TCG010A

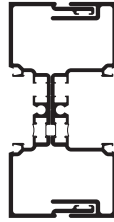
WIND LOAD CHARTS ARE BASED ON COMPOSITE PROPERTIES WHICH ARE CALCULATED IN ACCORDANCE WITH AAMA TIR-A8 AND AAMA 505



WITH HORIZONTALS



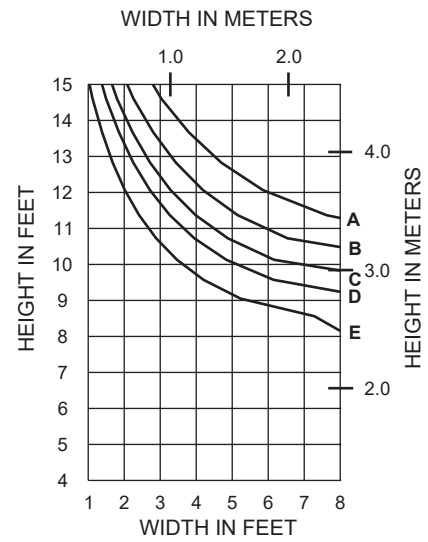
	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	15 PSF (720)	25 PSF (1200)
B =	20 PSF (960)	33 PSF (1580)
C =	25 PSF (1200)	42 PSF (2000)
D =	30 PSF (1440)	50 PSF (2400)
E =	40 PSF (1920)	67 PSF (3200)



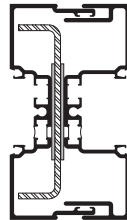
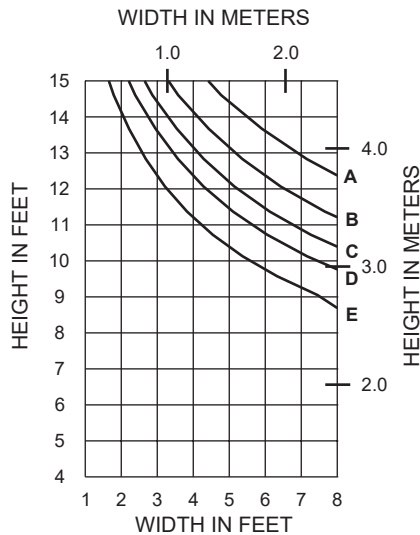
451TCG081 / 451TCG082

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

WITHOUT HORIZONTALS



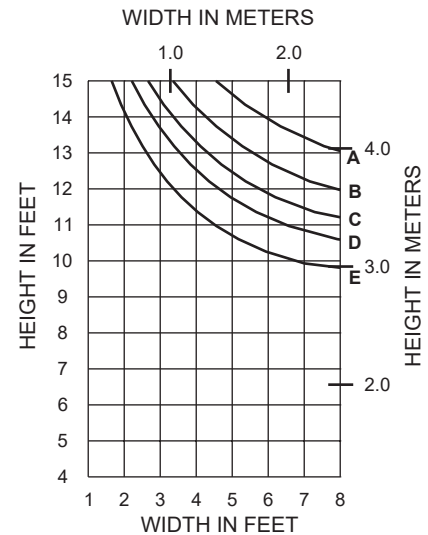
WITH HORIZONTALS



451TCG081 / 451TCG082 with 400110 STEEL

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

WITHOUT HORIZONTALS

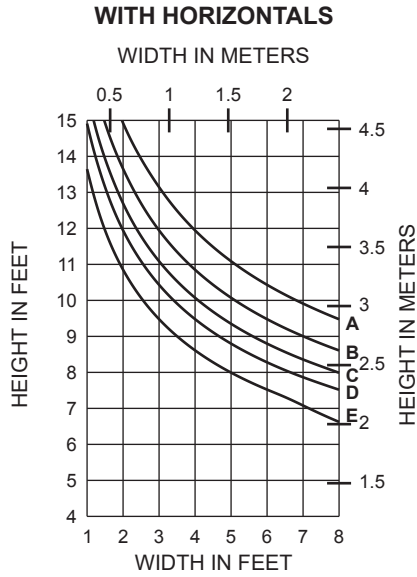


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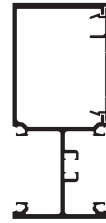
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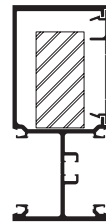
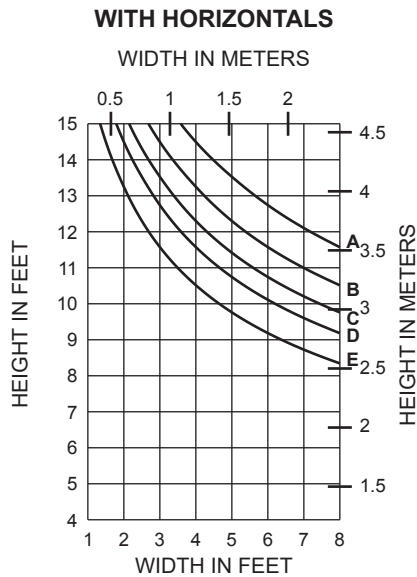
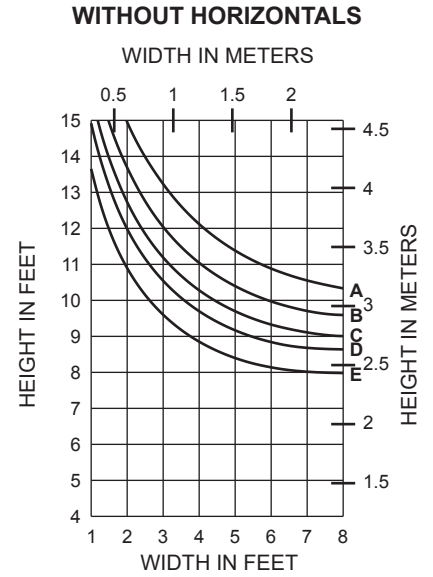


	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	15 PSF (720)	25 PSF (1200)
B =	20 PSF (960)	33 PSF (1580)
C =	25 PSF (1200)	42 PSF (2000)
D =	30 PSF (1440)	50 PSF (2400)
E =	40 PSF (1920)	67 PSF (3200)



451VG012
451VG026

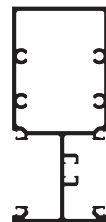
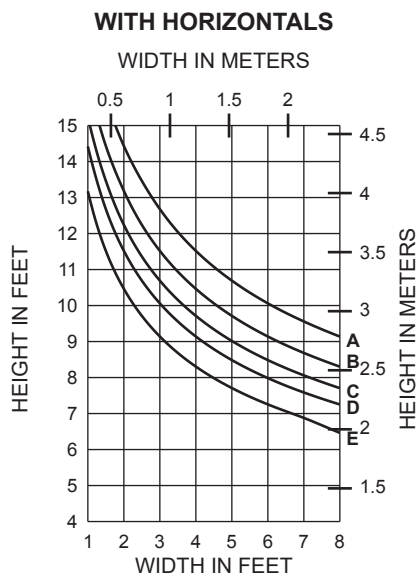
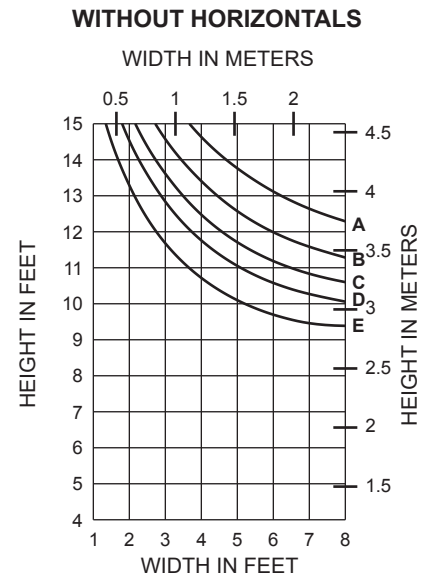
$I = 3.346 (139.27 \times 10^4)$
 $S = 1.447 (23.71 \times 10^3)$



451VG012
451VG026

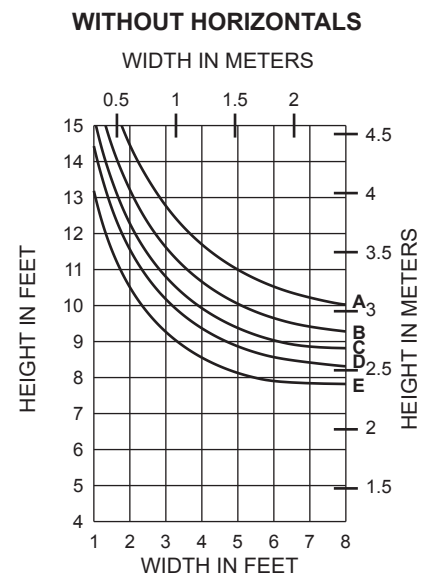
with 1" x 2-1/4" STEEL BAR

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

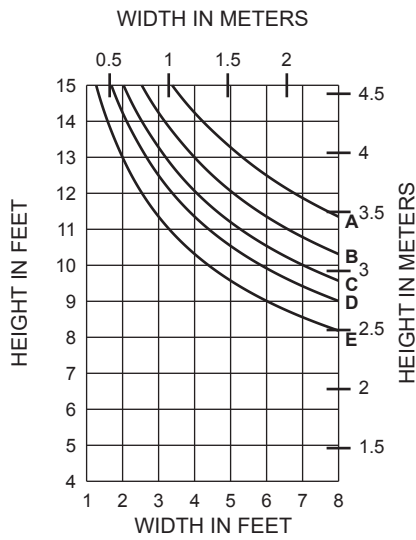


451VG005

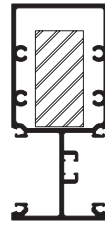
$I = 3.001 (124.91 \times 10^4)$
 $S = 1.323 (21.68 \times 10^3)$



WITH HORIZONTALS



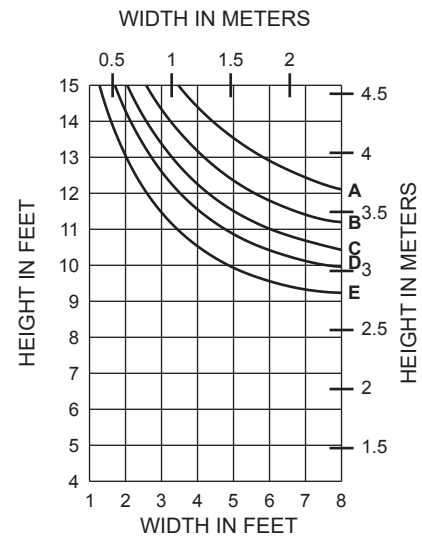
	Allowable Stress Design Load	LFRD Ultimate Design Load
A =	15 PSF (720)	25 PSF (1200)
B =	20 PSF (960)	33 PSF (1580)
C =	25 PSF (1200)	42 PSF (2000)
D =	30 PSF (1440)	50 PSF (2400)
E =	40 PSF (1920)	67 PSF (3200)



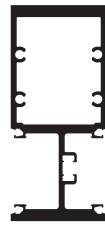
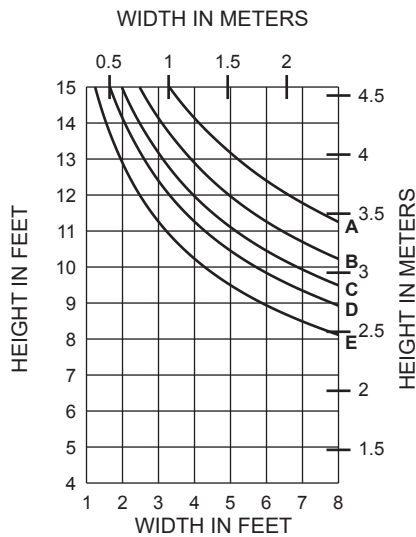
451VG005
with 1" x 2-1/4" STEEL BAR

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

WITHOUT HORIZONTALS



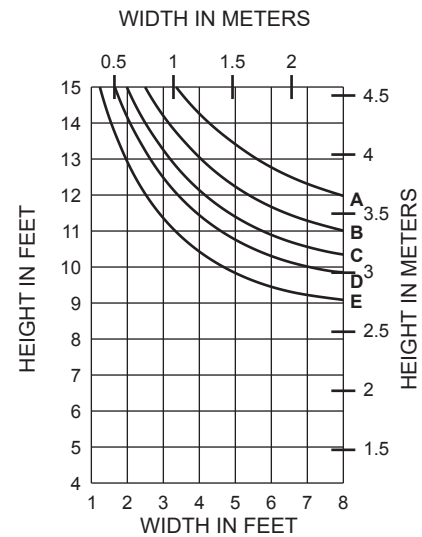
WITH HORIZONTALS



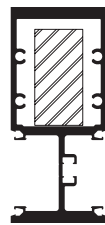
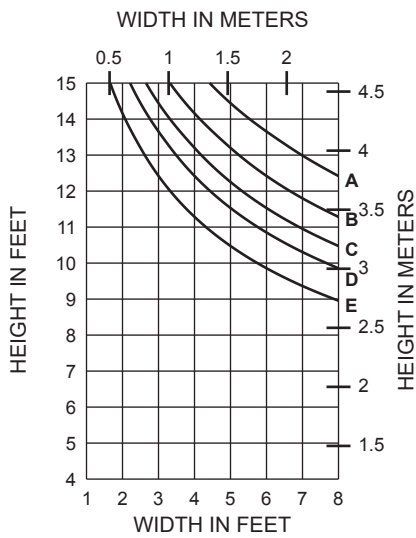
451VG014

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

WITHOUT HORIZONTALS



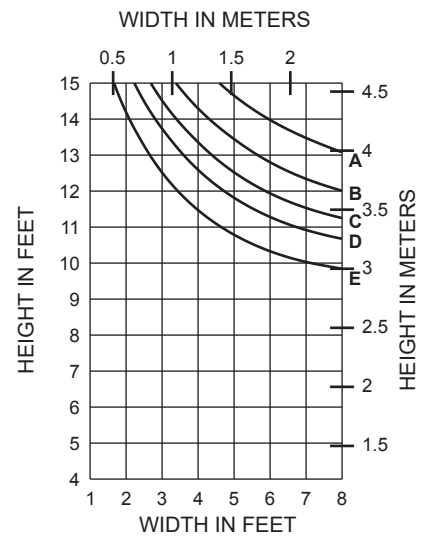
WITH HORIZONTALS



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

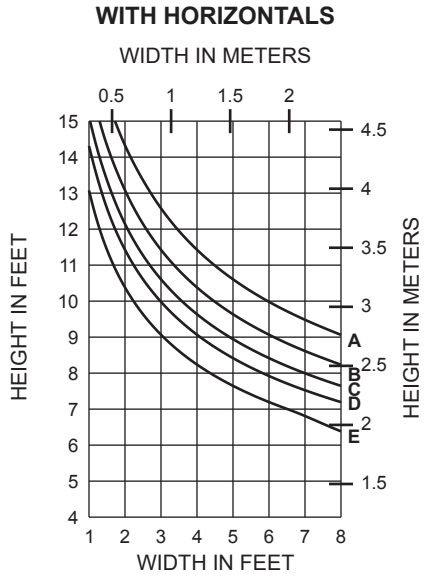


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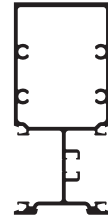
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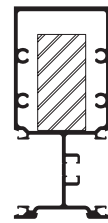
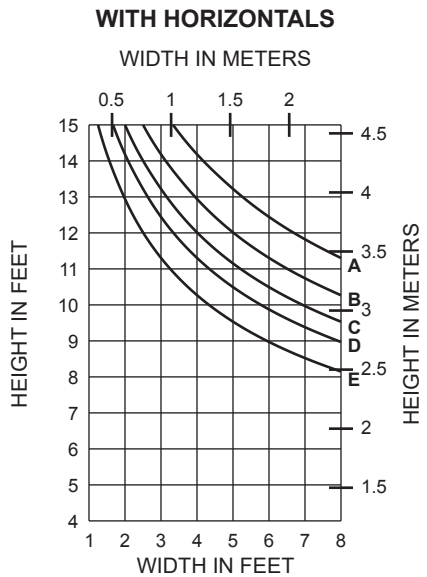
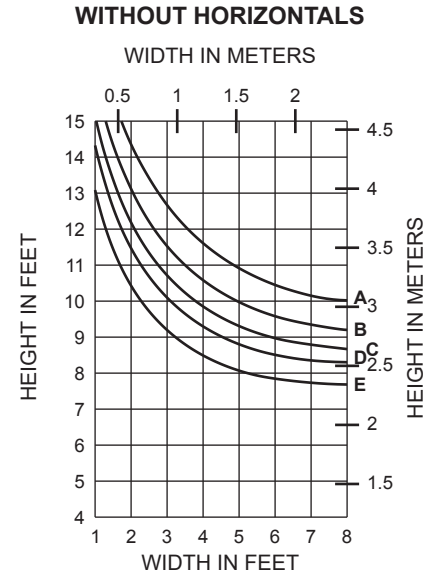


	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	15 PSF (720)	25 PSF (1200)
B =	20 PSF (960)	33 PSF (1580)
C =	25 PSF (1200)	42 PSF (2000)
D =	30 PSF (1440)	50 PSF (2400)
E =	40 PSF (1920)	67 PSF (3200)



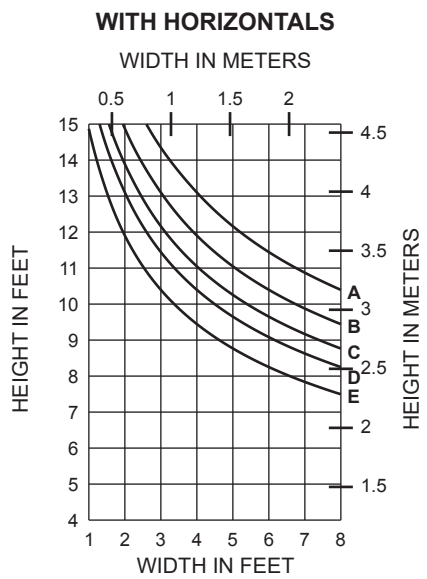
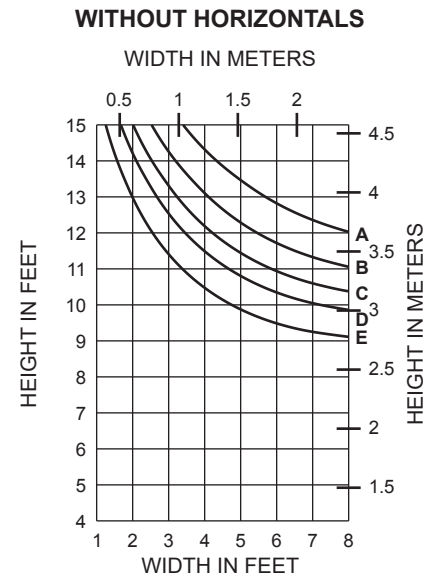
451VG134

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



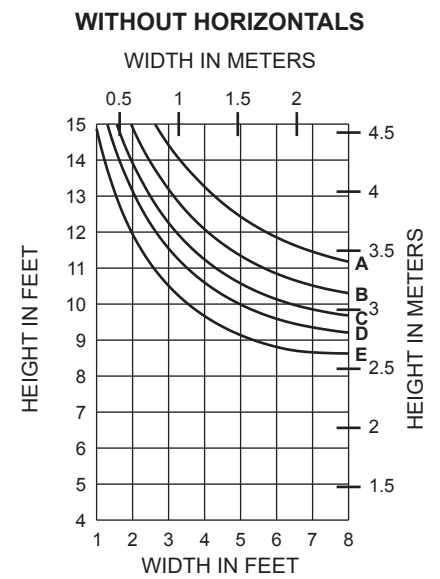
451VG134
with 1" x 2-1/4" STEEL BAR

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

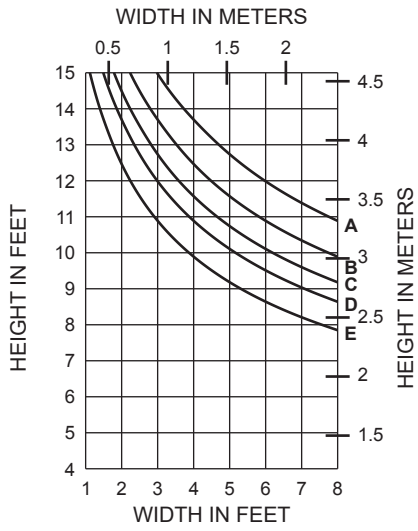


451VG010
451VG540

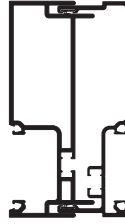
$I = 4.418 (183.89 \times 10^4)$
 $S = 1.798 (29.46 \times 10^3)$



WITH HORIZONTALS



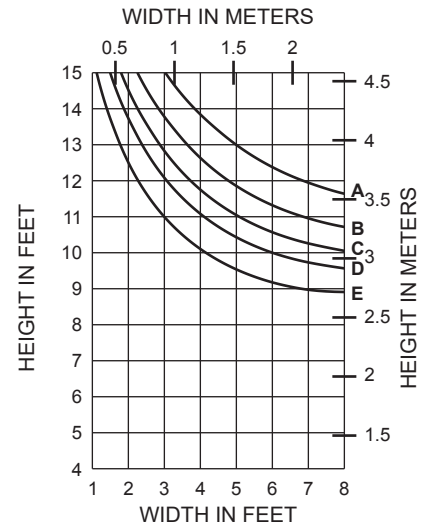
	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	15 PSF (720)	25 PSF (1200)
B =	20 PSF (960)	33 PSF (1580)
C =	25 PSF (1200)	42 PSF (2000)
D =	30 PSF (1440)	50 PSF (2400)
E =	40 PSF (1920)	67 PSF (3200)



451VG010A
451VG009

I = 5.076 (211.27 x 10⁴)
S = 2.066 (33.86 x 10³)

WITHOUT HORIZONTALS



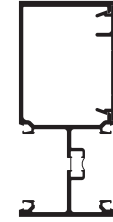
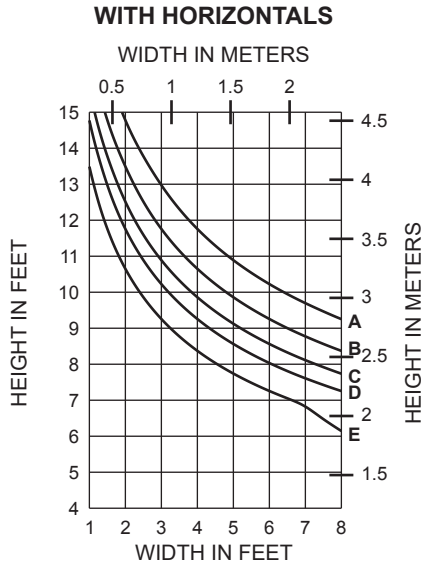
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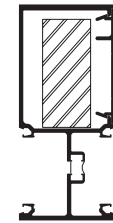
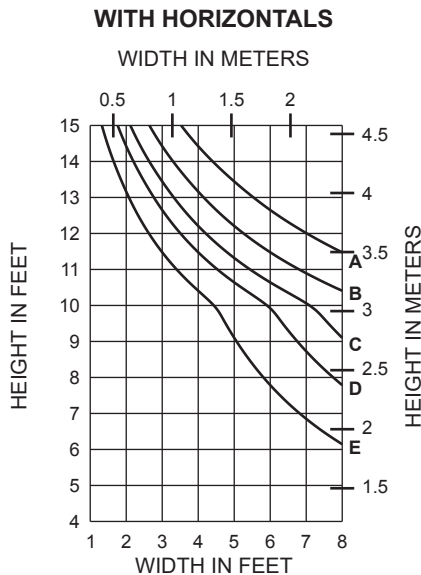
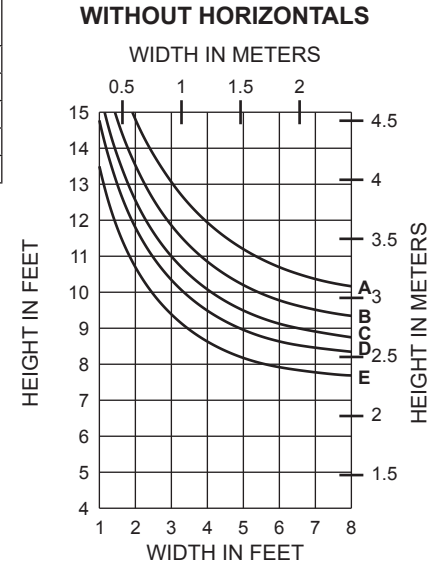
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	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	15 PSF (720)	25 PSF (1200)
B =	20 PSF (960)	33 PSF (1580)
C =	25 PSF (1200)	42 PSF (2000)
D =	30 PSF (1440)	50 PSF (2400)
E =	40 PSF (1920)	67 PSF (3200)



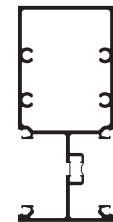
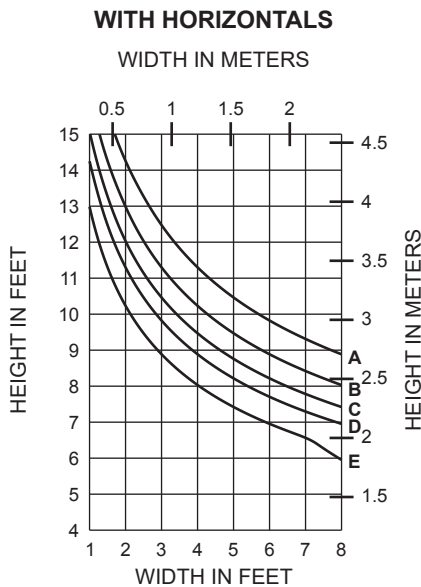
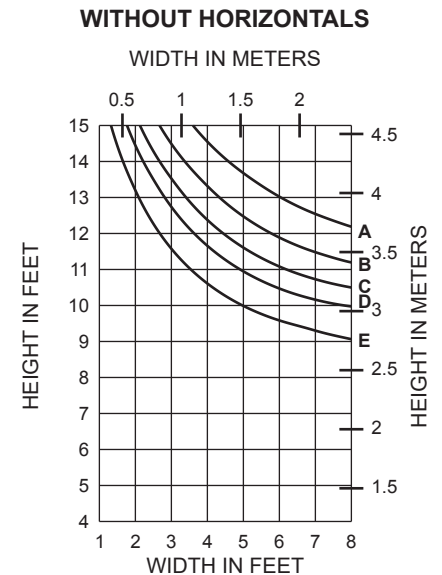
451TVG012
451VG026

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



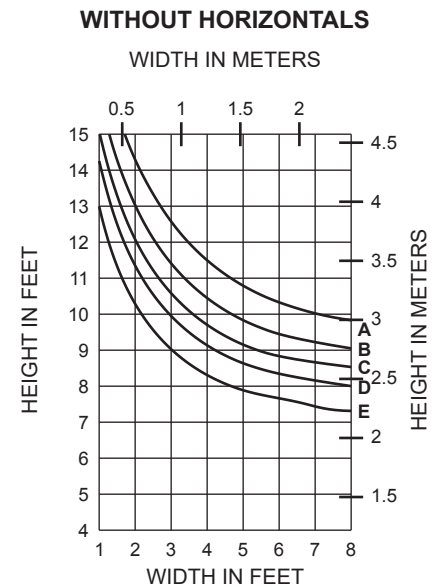
451TVG012
451VG026
with 1" x 2-1/4" STEEL BAR

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

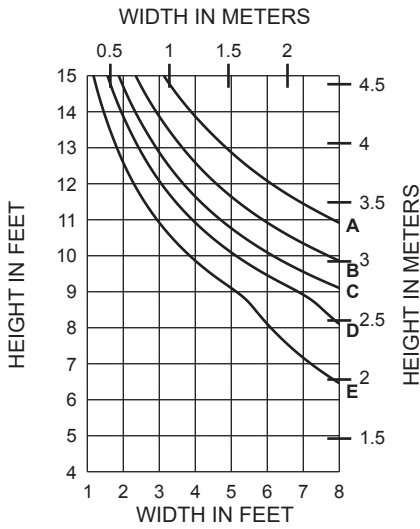


451TVG005

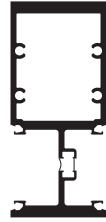
WIND LOAD CHARTS ARE BASED ON COMPOSITE PROPERTIES WHICH ARE CALCULATED IN ACCORDANCE WITH AAMA TIR-A8 AND AAMA 505



WITH HORIZONTALS



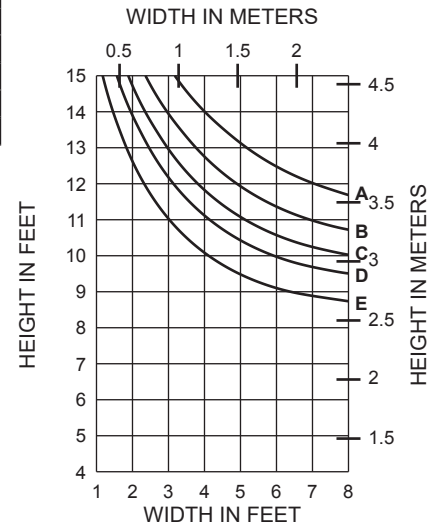
	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	15 PSF (720)	25 PSF (1200)
B =	20 PSF (960)	33 PSF (1580)
C =	25 PSF (1200)	42 PSF (2000)
D =	30 PSF (1440)	50 PSF (2400)
E =	40 PSF (1920)	67 PSF (3200)



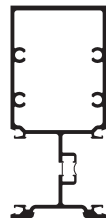
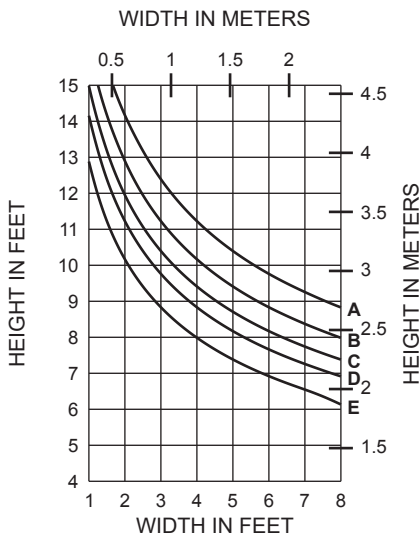
451TVG014

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

WITHOUT HORIZONTALS



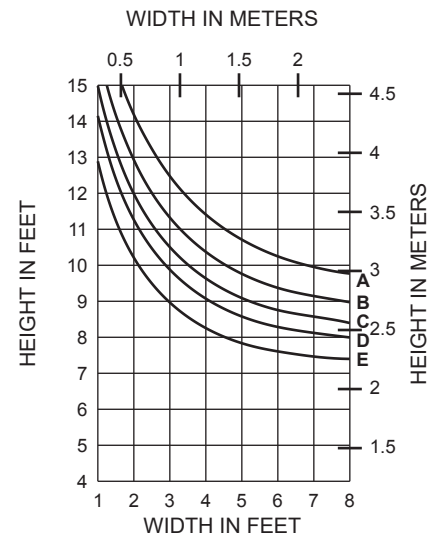
WITH HORIZONTALS



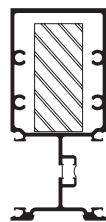
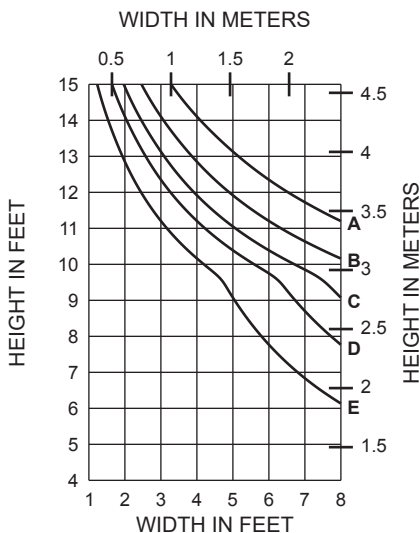
451TVG134

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

WITHOUT HORIZONTALS



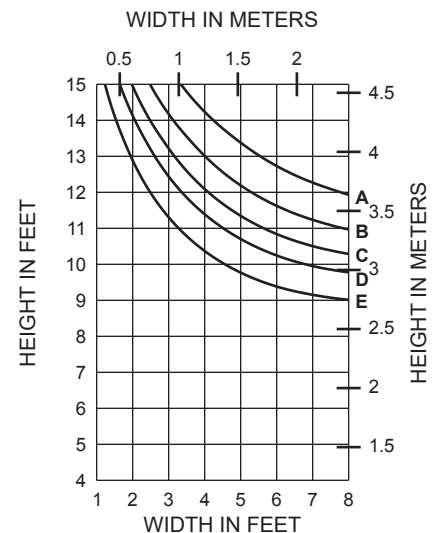
WITH HORIZONTALS



451TVG134 with 1" x 2-1/4" STEEL BAR

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

WITHOUT HORIZONTALS

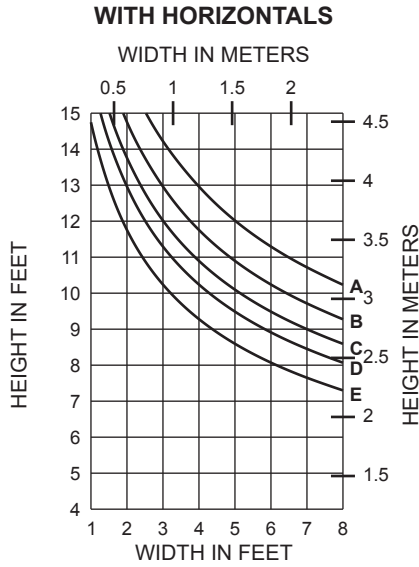


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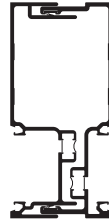
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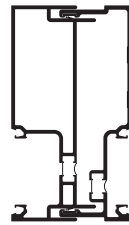
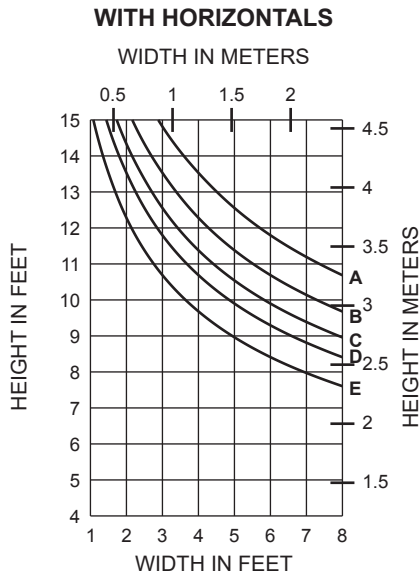
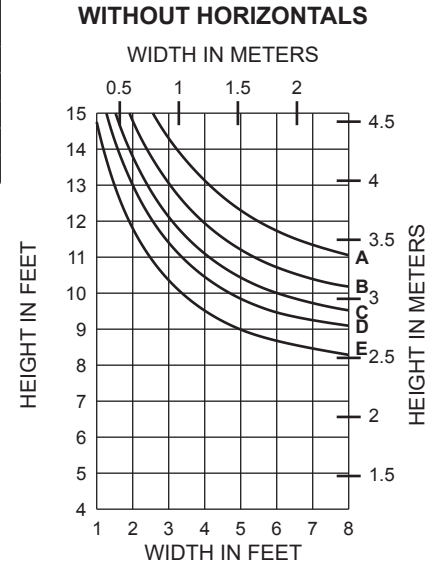


	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	15 PSF (720)	25 PSF (1200)
B =	20 PSF (960)	33 PSF (1580)
C =	25 PSF (1200)	42 PSF (2000)
D =	30 PSF (1440)	50 PSF (2400)
E =	40 PSF (1920)	67 PSF (3200)



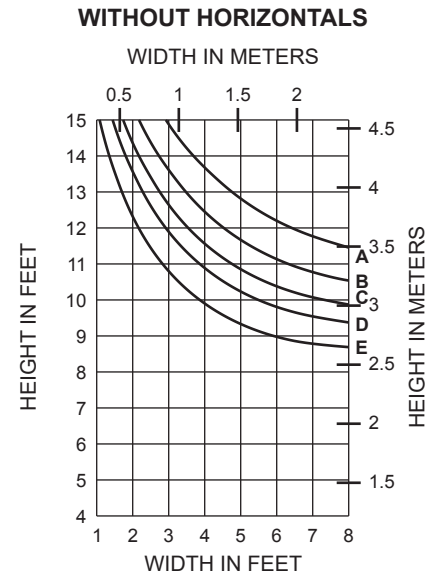
**451TVG540
451TVG010**

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

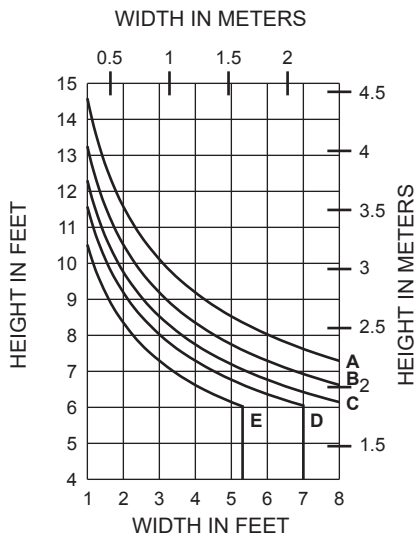


**451TVG540
451TVG010A**

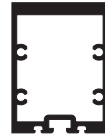
WIND LOAD CHARTS ARE BASED ON COMPOSITE PROPERTIES WHICH ARE CALCULATED IN ACCORDANCE WITH AAMA TIR-A8 AND AAMA 505



WITH HORIZONTALS



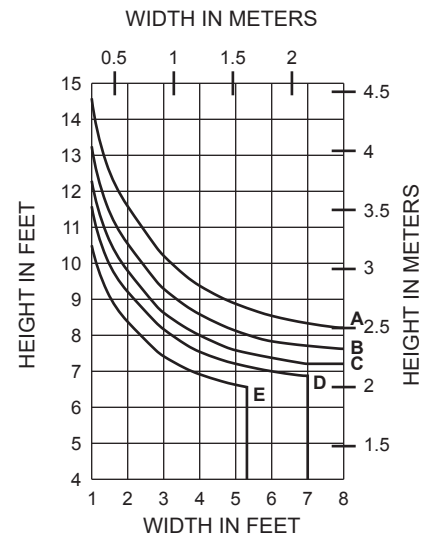
	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	15 PSF (720)	25 PSF (1200)
B =	20 PSF (960)	33 PSF (1580)
C =	25 PSF (1200)	42 PSF (2000)
D =	30 PSF (1440)	50 PSF (2400)
E =	40 PSF (1920)	67 PSF (3200)



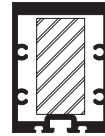
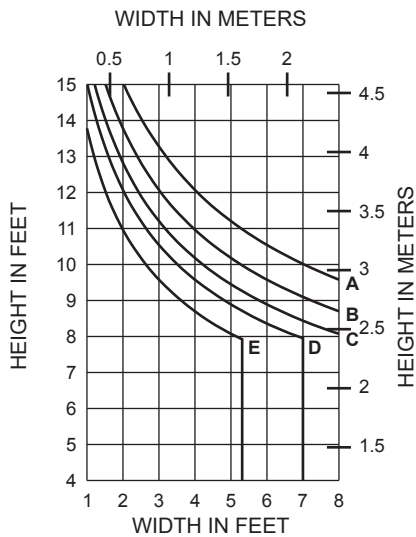
451SSG005

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

WITHOUT HORIZONTALS



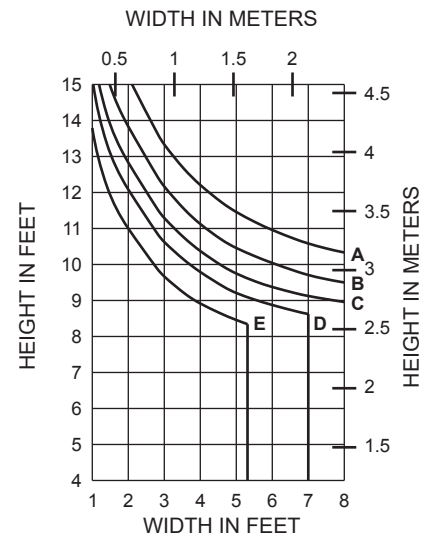
WITH HORIZONTALS



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

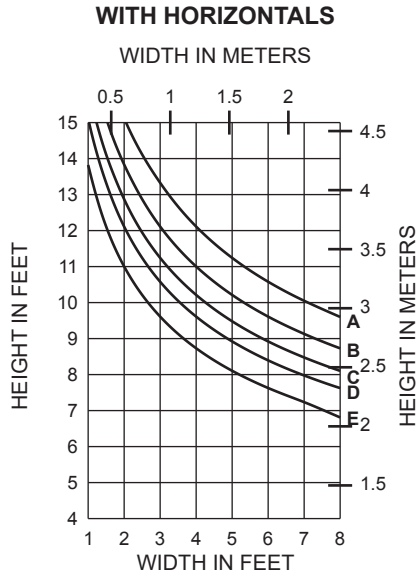


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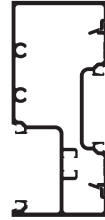
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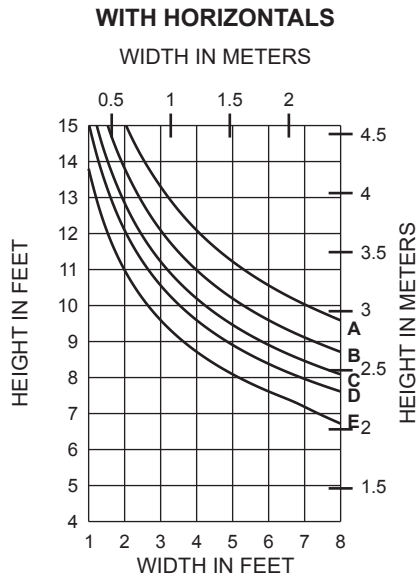
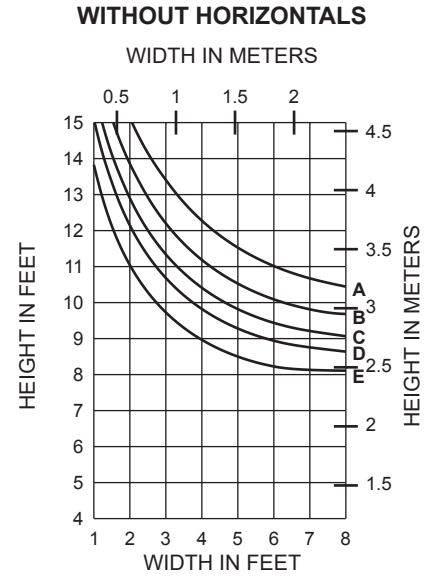


	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	15 PSF (720)	25 PSF (1200)
B =	20 PSF (960)	33 PSF (1580)
C =	25 PSF (1200)	42 PSF (2000)
D =	30 PSF (1440)	50 PSF (2400)
E =	40 PSF (1920)	67 PSF (3200)



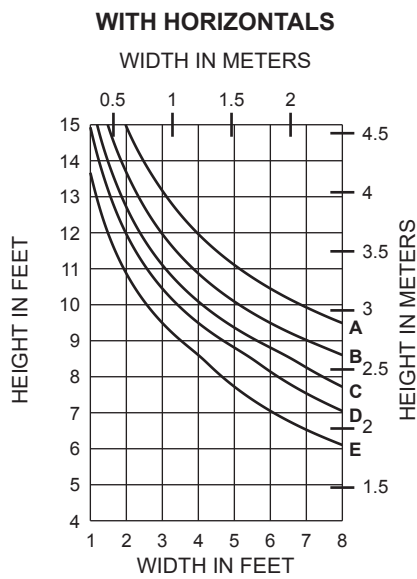
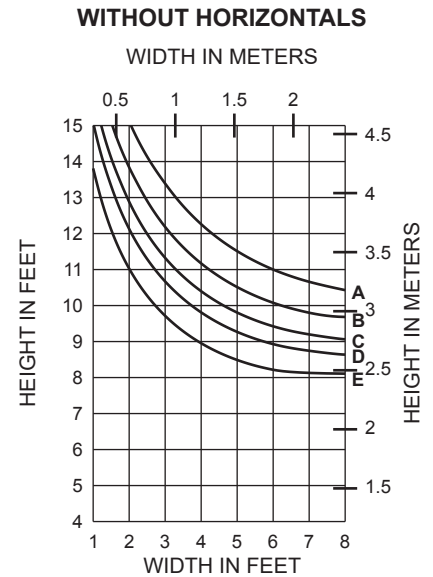
451VG001
451CG002

I = 3.485 (145.05 x 10⁴)
S = 1.468 (24.06 x 10³)



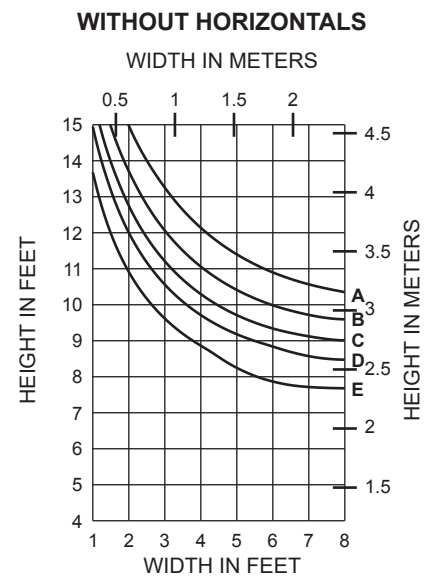
451VG052
451CG028

I = 3.470 (144.43 x 10⁴)
S = 1.431 (23.45 x 10³)

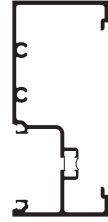
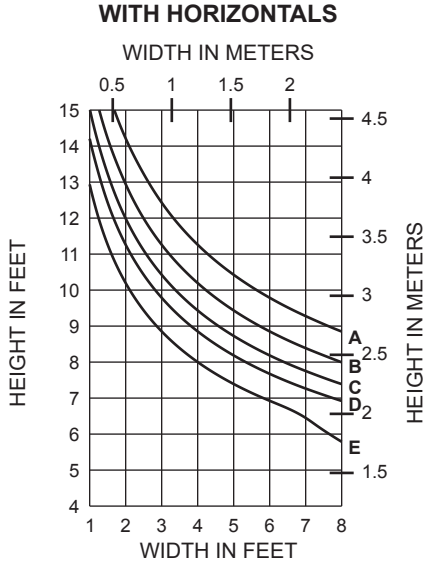


451VG069
451VG069

I = 3.362 (139.94 x 10⁴)
S = 1.181 (19.35 x 10³)

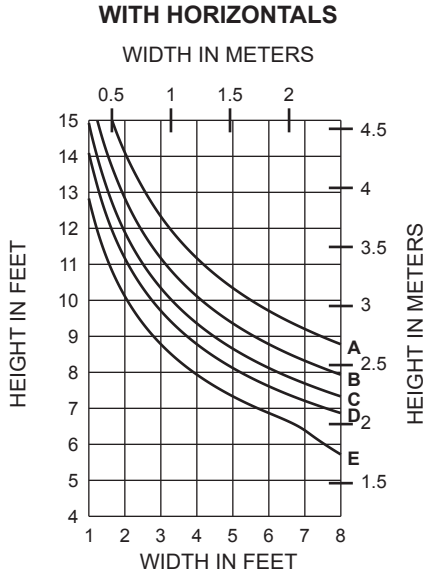
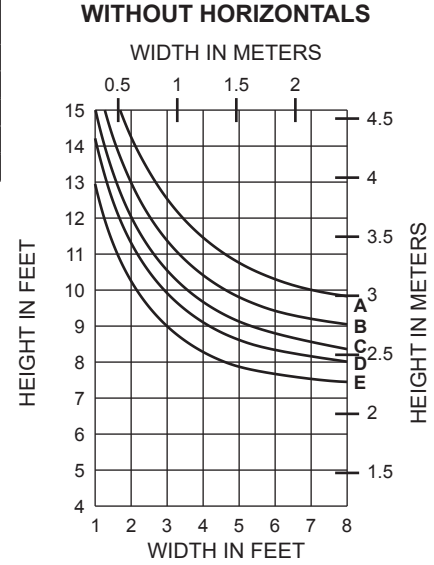


	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	15 PSF (720)	25 PSF (1200)
B =	20 PSF (960)	33 PSF (1580)
C =	25 PSF (1200)	42 PSF (2000)
D =	30 PSF (1440)	50 PSF (2400)
E =	40 PSF (1920)	67 PSF (3200)



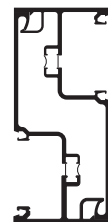
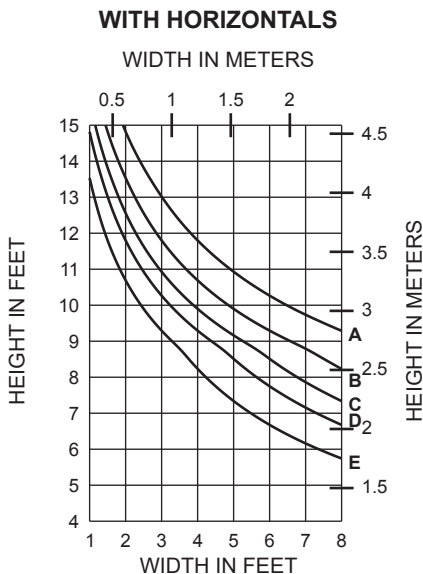
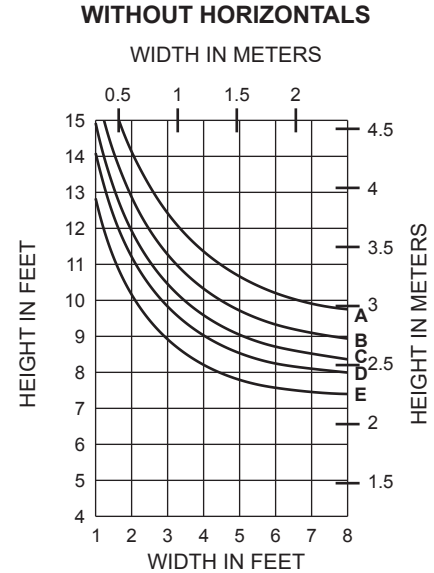
451TVG001

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



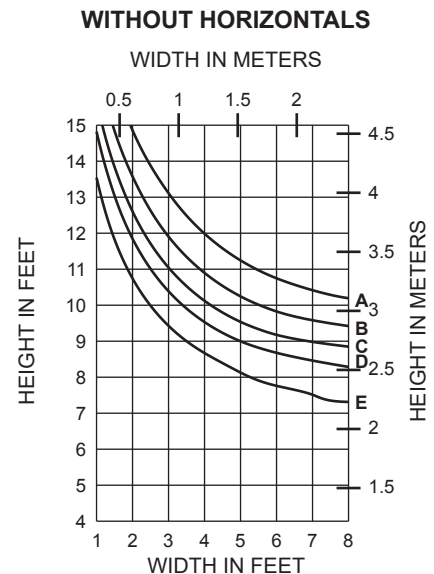
451TVG052

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



451TVG069
451TVG069

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

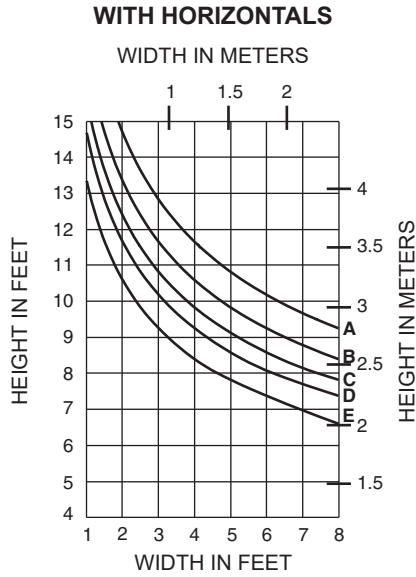


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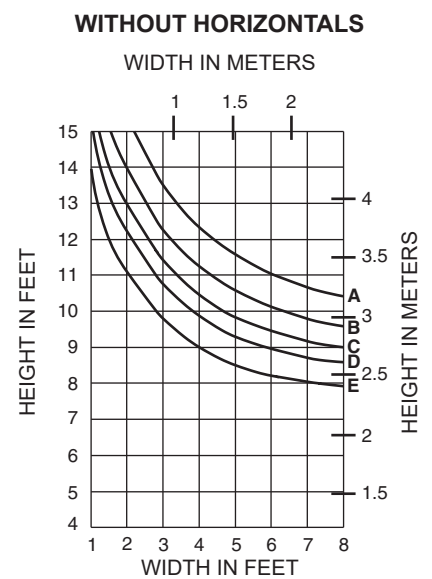
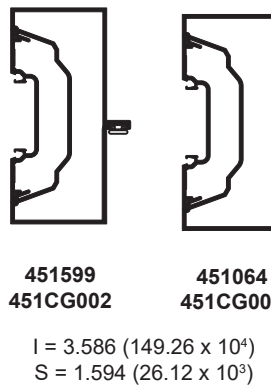
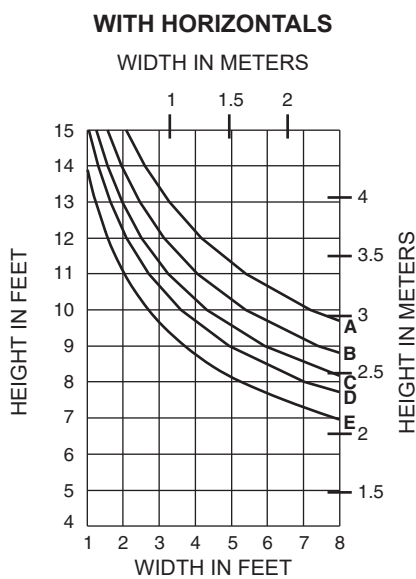
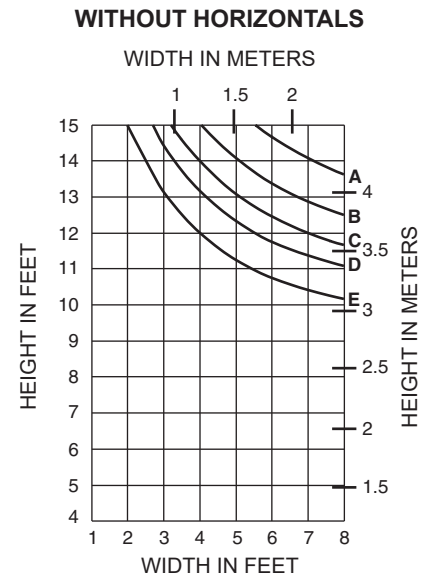
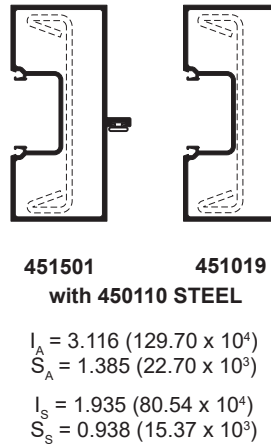
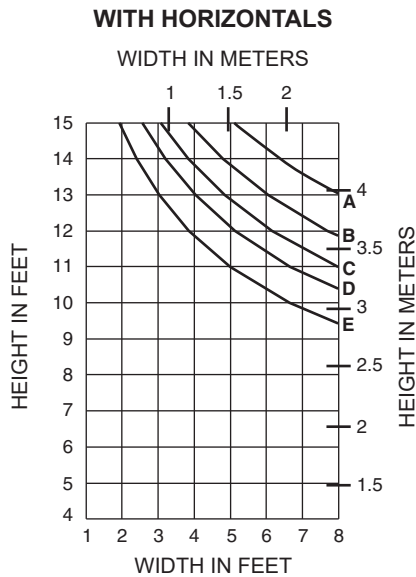
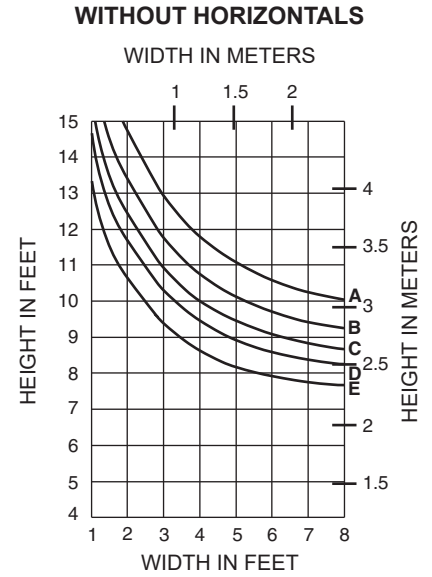
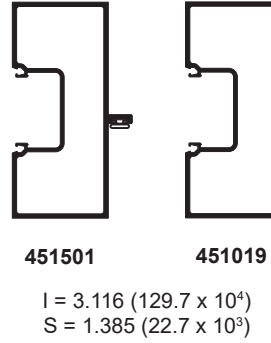
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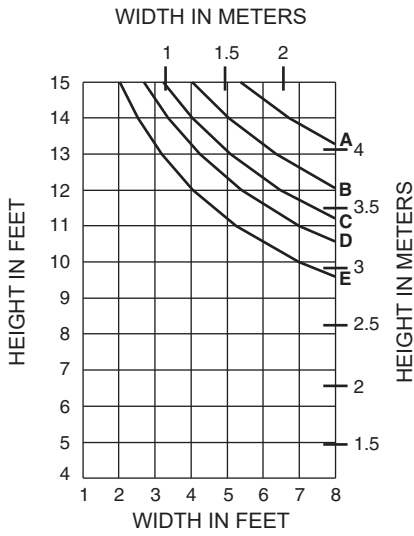
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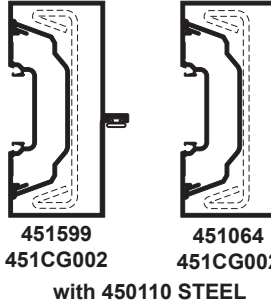
	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	15 PSF (720)	25 PSF (1200)
B =	20 PSF (960)	33 PSF (1580)
C =	25 PSF (1200)	42 PSF (2000)
D =	30 PSF (1440)	50 PSF (2400)
E =	40 PSF (1920)	67 PSF (3200)



WITH HORIZONTALS

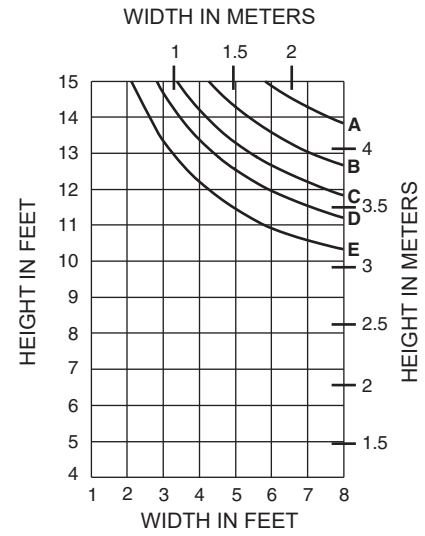


	Allowable Stress Design Load	LRFD Ultimate Design Load
A =	15 PSF (720)	25 PSF (1200)
B =	20 PSF (960)	33 PSF (1580)
C =	25 PSF (1200)	42 PSF (2000)
D =	30 PSF (1440)	50 PSF (2400)
E =	40 PSF (1920)	67 PSF (3200)

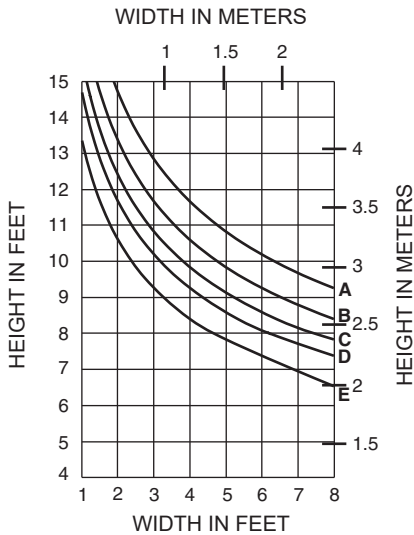


$I = 3.565 (148.39 \times 10^4)$
 $S = 1.622 (26.58 \times 10^3)$
 $I_s = 1.935 (80.54 \times 10^4)$
 $S_s = 0.938 (15.37 \times 10^3)$

WITHOUT HORIZONTALS

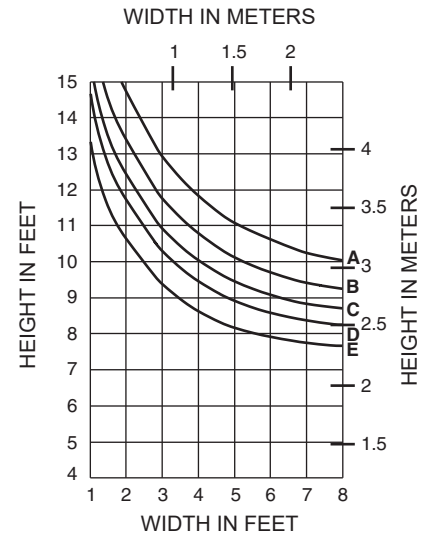


WITH HORIZONTALS

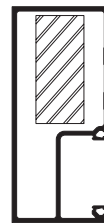
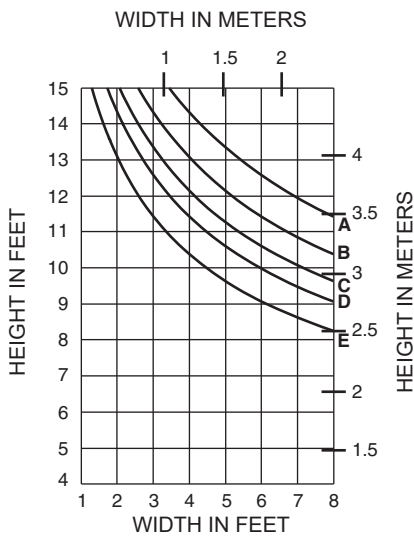


$I = 3.124 (130.03 \times 10^4)$
 $S = 1.333 (21.84 \times 10^3)$

WITHOUT HORIZONTALS



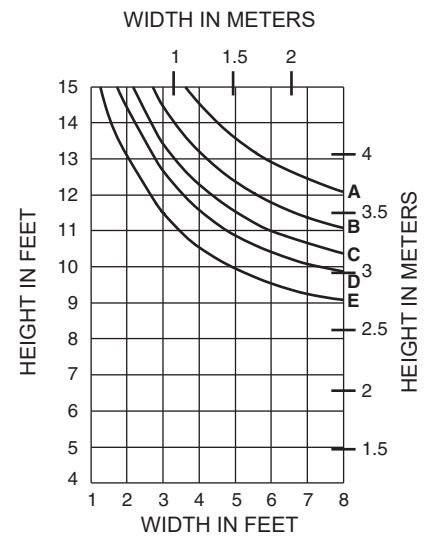
WITH HORIZONTALS



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



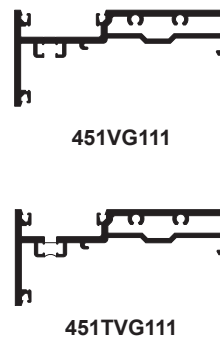
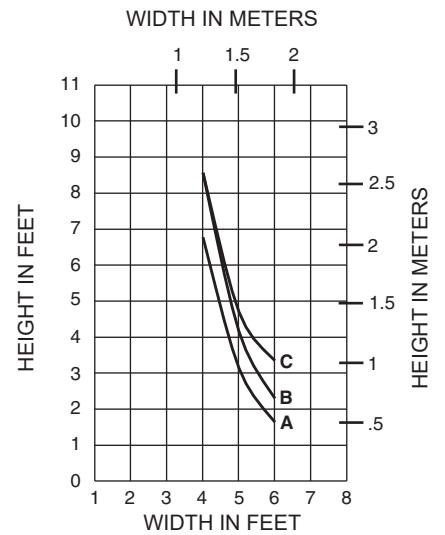
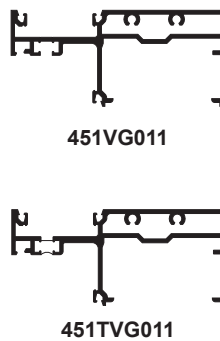
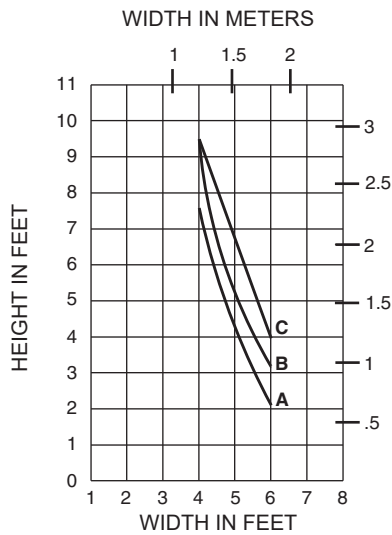
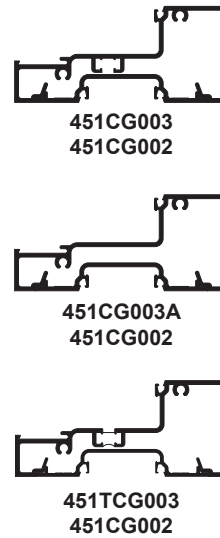
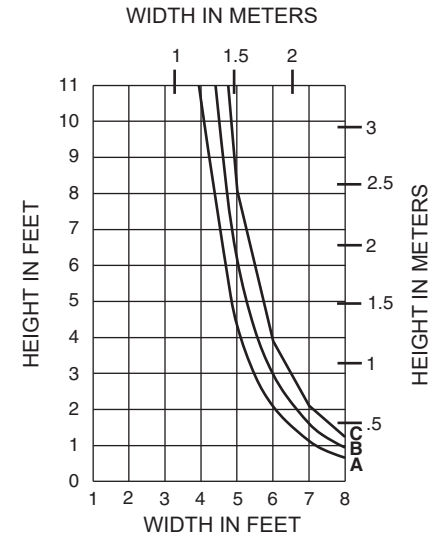
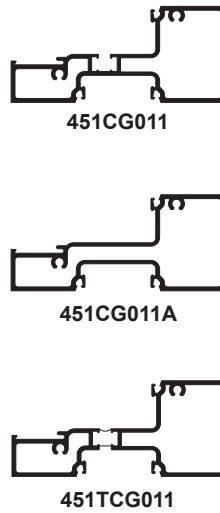
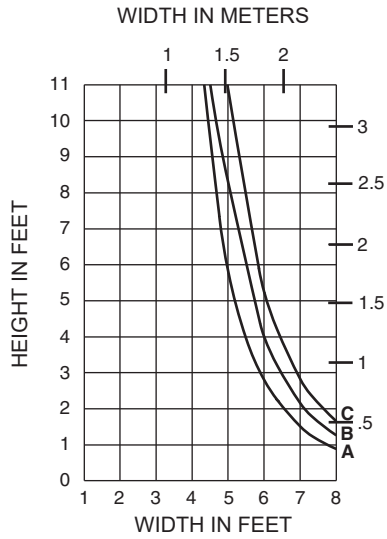
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Horizontal or deadload limitations are based upon 1/8" (3.2) maximum allowable deflection at the center of an intermediate horizontal member. The accompanying charts are calculated for 1" (25.4) thick insulating glass supported on two setting blocks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



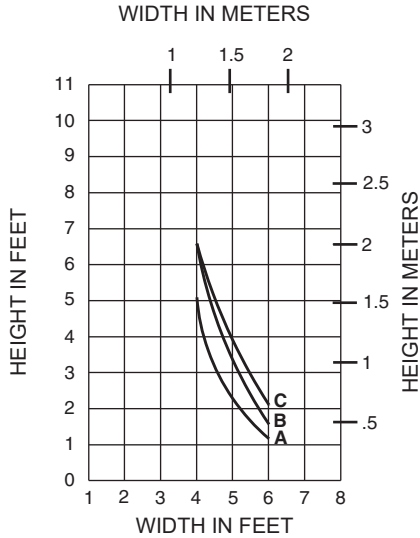
Vertical text on the left side: Laws and building and safety codes governing the design and use of Kawneer products, such as glazed entrance, window, and curtain wall products, vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and 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)



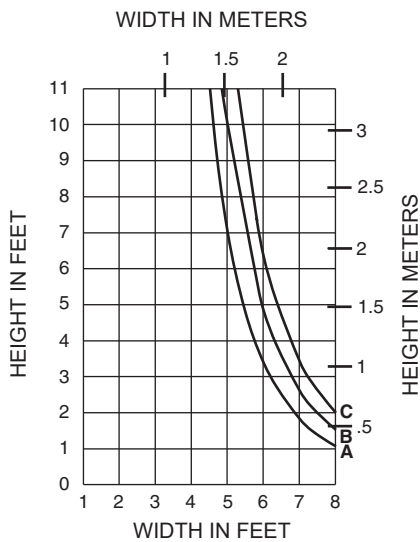
451SSG111



451TSSG111

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.

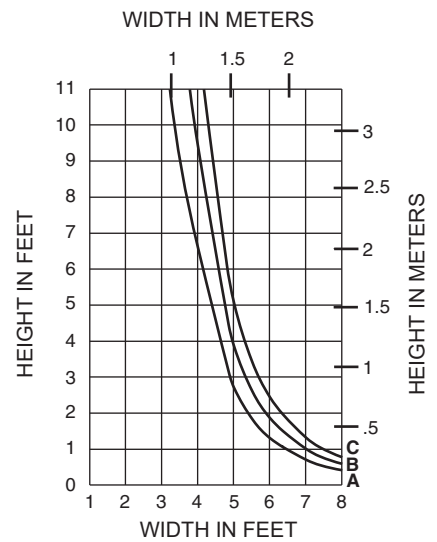
- A = (1/4 POINT LOADING)
- B = (1/6 POINT LOADING)
- C = (1/8 POINT LOADING)



451502
SINGLE ACTING
T-BAR



451081
DOUBLE ACTING
T-BAR



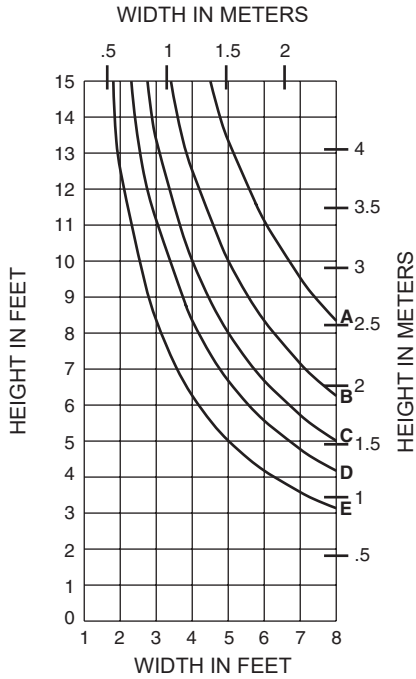
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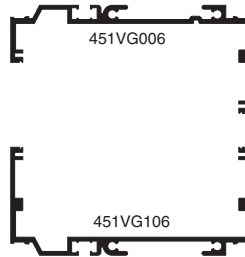
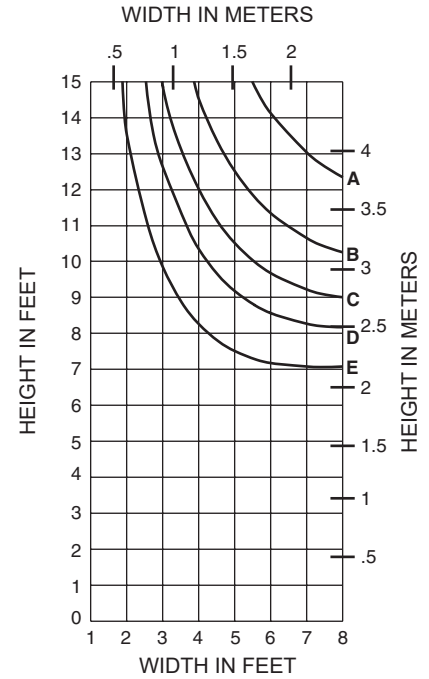
For each application, end reactions MUST be checked. These charts are used to verify that the end reactions at the head and sill receptors are 500 lbs. (2224N) or less and will meet the specified wind load.

- 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



WITHOUT HORIZONTALS

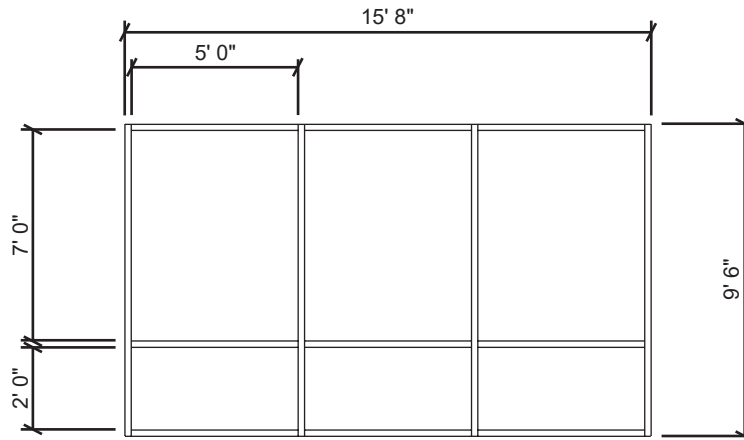


500lbs. Max. End Reaction

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



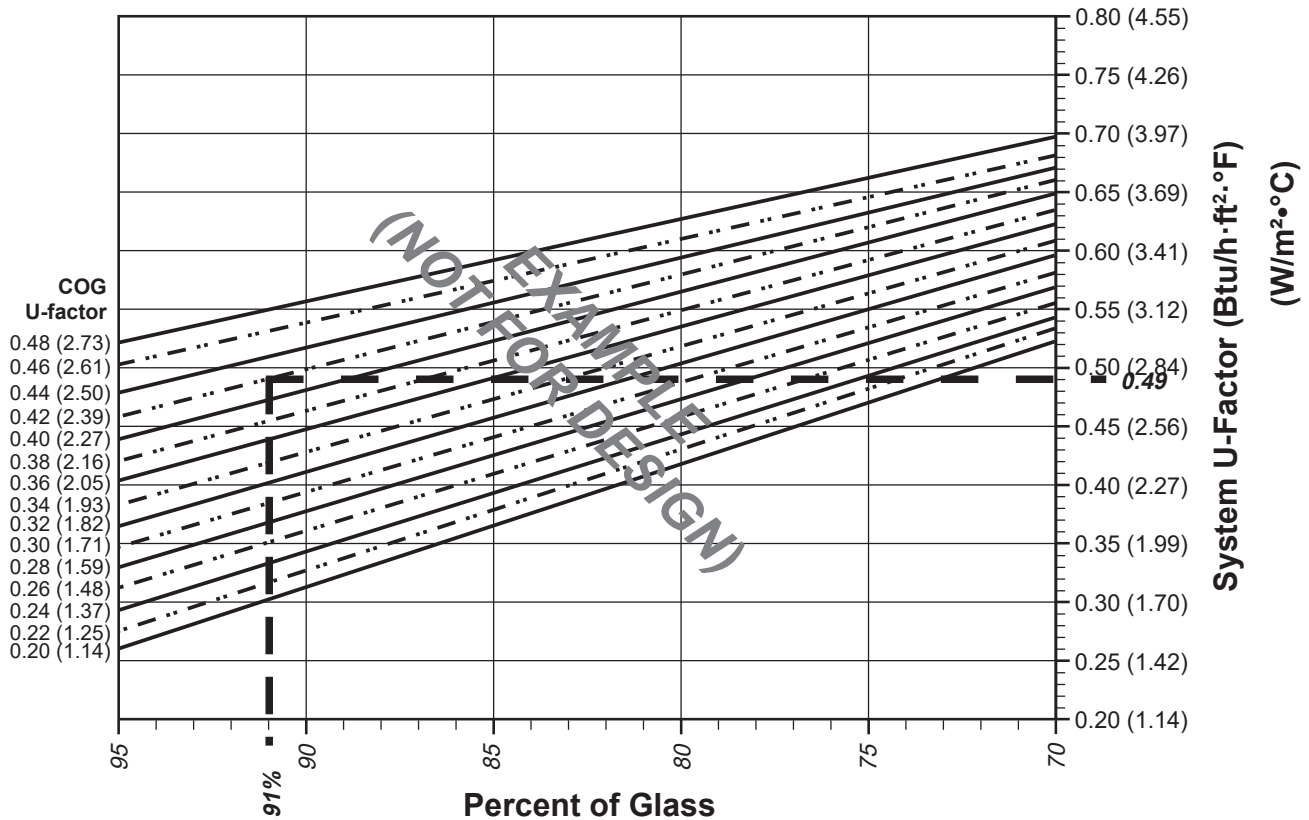
Example Glass U-factor = 0.42 Btu/hr·ft²·°F

Total Daylight Opening = 3(5' x 7') + 3(5' x 2') = 135ft²

Total Projected Area = (Total Daylight Opening + Total Area of Framing System)
 = 15' 8" x 9' 6" = 148.83ft²

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 ft² x °F

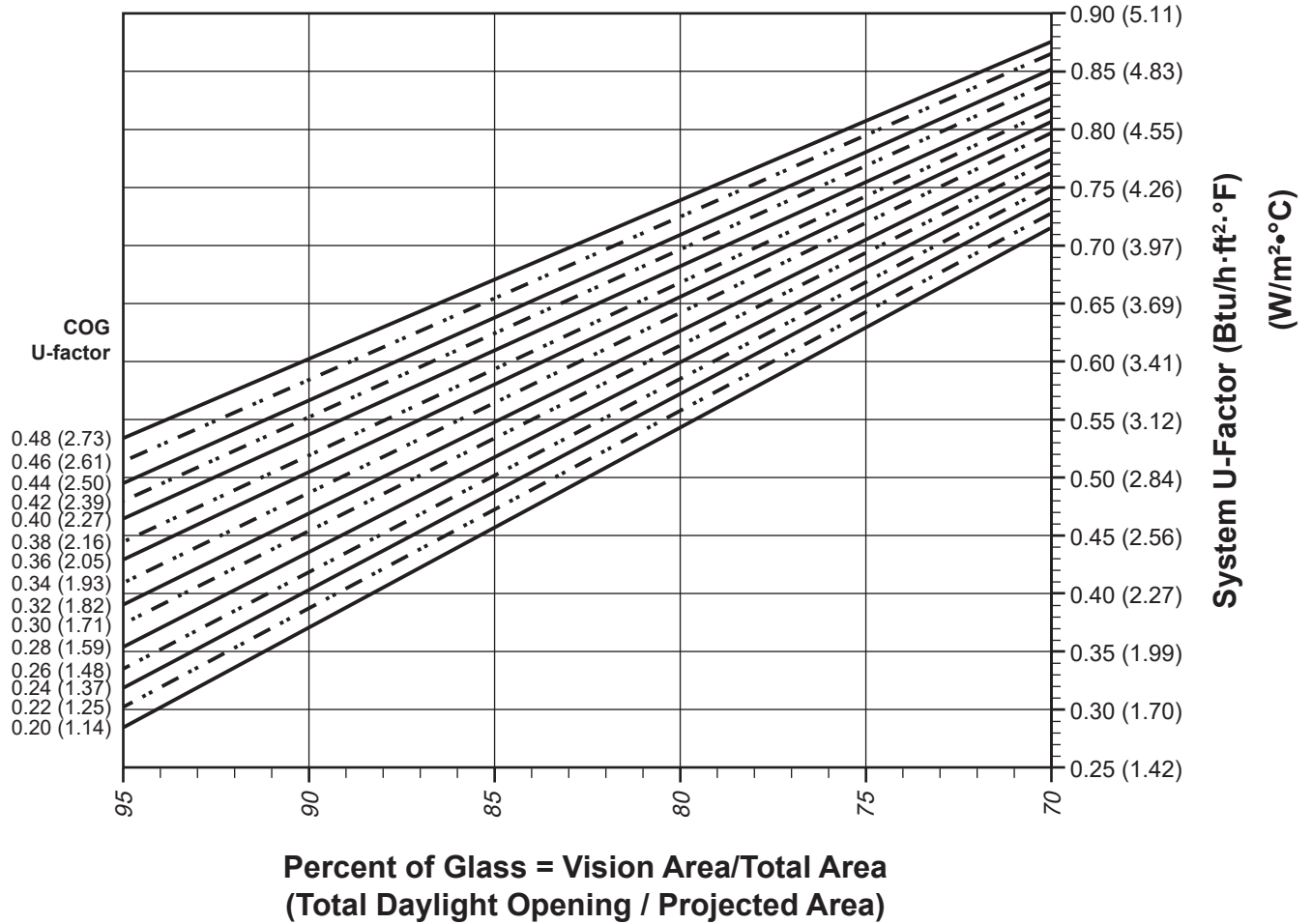
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Trifab® VersaGlaze® 451 (CENTER – Non-Thermal) Aluminum Glazing Spacer

Note:
Values in parentheses are metric.
COG=Center of Glass.
Charts are generated per AAMA 507.

System U-factor vs Percent of Glass Area



Notes for System U-factor, SHGC, and VT charts:
For glass values not listed, linear interpolation is permitted.
Glass Properties are based on center of glass values and are obtained from your glass supplier.

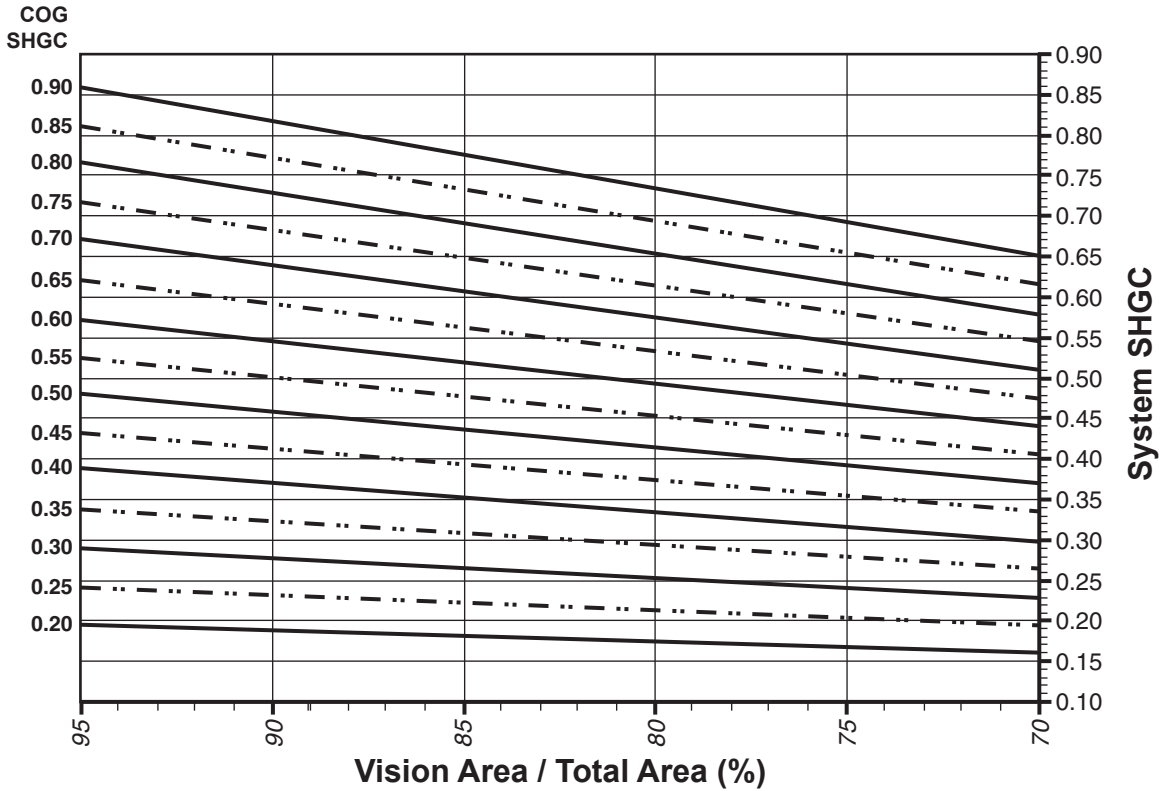
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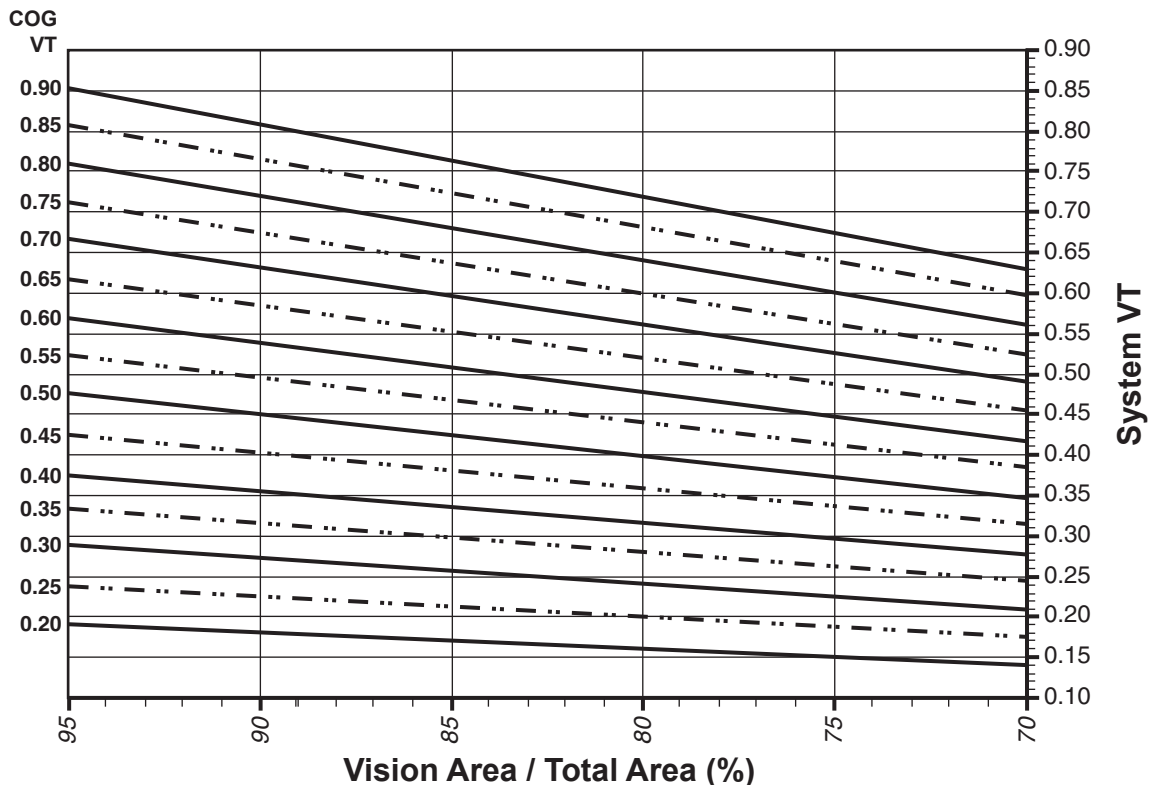
Trifab® VersaGlaze® 451 (CENTER – Non-Thermal)
Aluminum Glazing Spacer

Charts are generated per AAMA 507.

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 ¹ (BTU/hr • ft² • °F)

Glass U-Factor ³	Overall U-Factor ⁴
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® VersaGlaze® 451
(CENTER – Non-Thermal)**

Aluminum Glazing Spacer

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 ²

Glass SHGC ³	Overall SHGC ⁴
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 ²

Glass VT ³	Overall VT ⁴
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

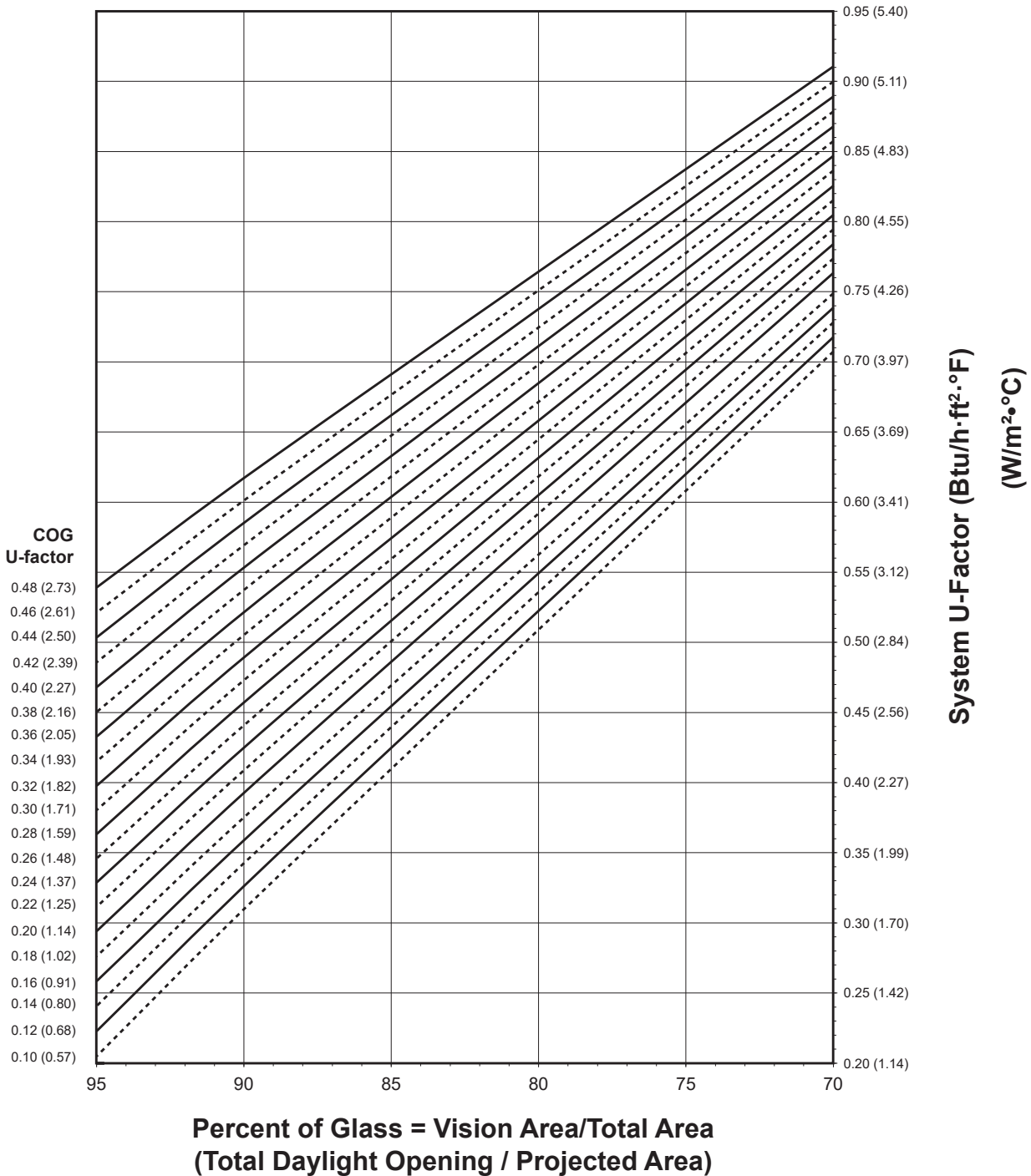
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Trifab® VersaGlaze® 451 Pre-Glazed (CENTER – Non-Thermal) Aluminum Glazing Spacer

Note:
Values in parentheses are metric.
COG=Center of Glass.
Charts are generated per AAMA 507.

System U-factor vs Percent of Glass Area



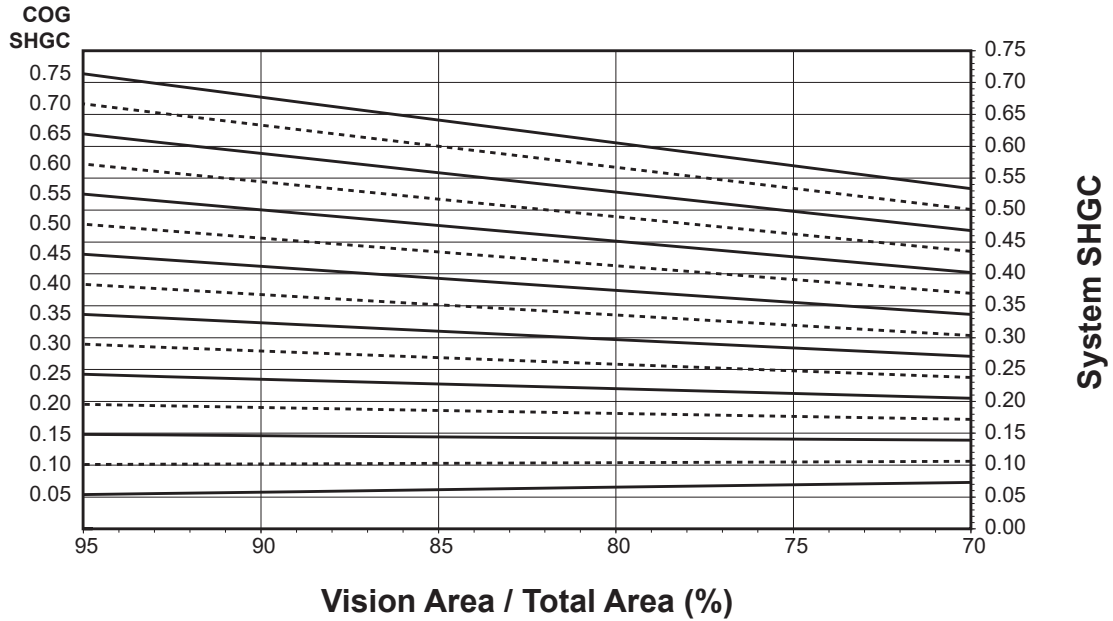
Notes for System U-factor, SHGC, and VT charts:
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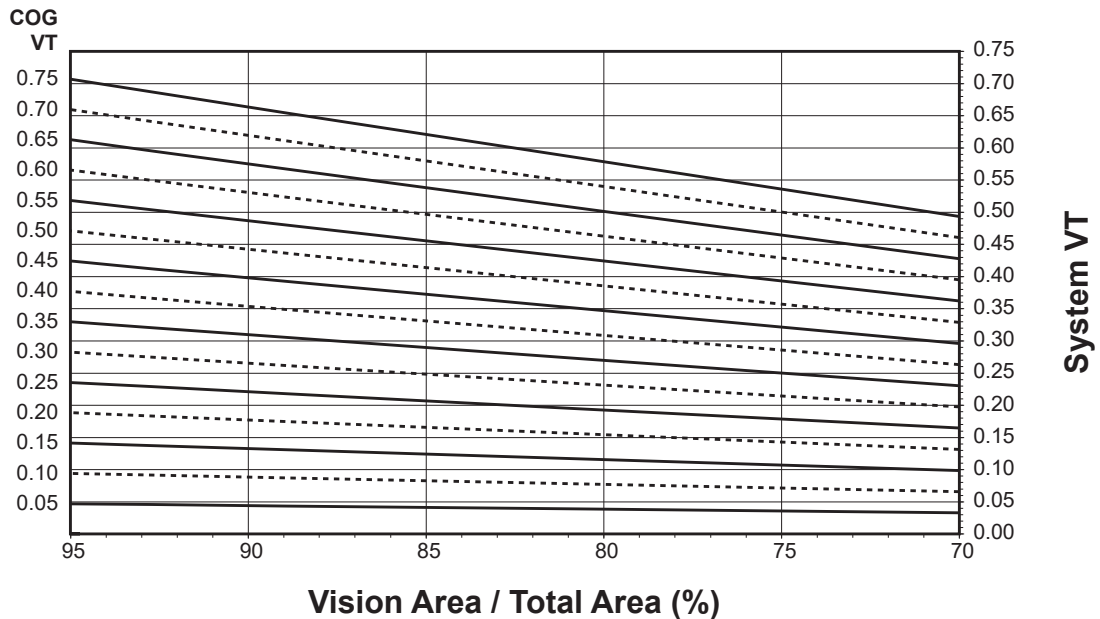
Trifab® VersaGlaze® 451 Pre-Glazed (CENTER – Non-Thermal)
Aluminum Glazing Spacer

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 ¹ (BTU/hr • ft² • °F)

Glass U-Factor ³	Overall U-Factor ⁴
0.48	0.63
0.46	0.62
0.44	0.60
0.42	0.59
0.40	0.57
0.38	0.56
0.36	0.54
0.34	0.52
0.32	0.51
0.30	0.49
0.28	0.48
0.26	0.46
0.24	0.45
0.22	0.43
0.20	0.41
0.18	0.40
0.16	0.38
0.14	0.36
0.12	0.35
0.10	0.33

Trifab® VersaGlaze® 451 Pre-Glazed (CENTER – Non-Thermal) Aluminum Glazing Spacer

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 ²

Glass SHGC ³	Overall SHGC ⁴
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	0.41
0.40	0.36
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 ²

Glass VT ³	Overall VT ⁴
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

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

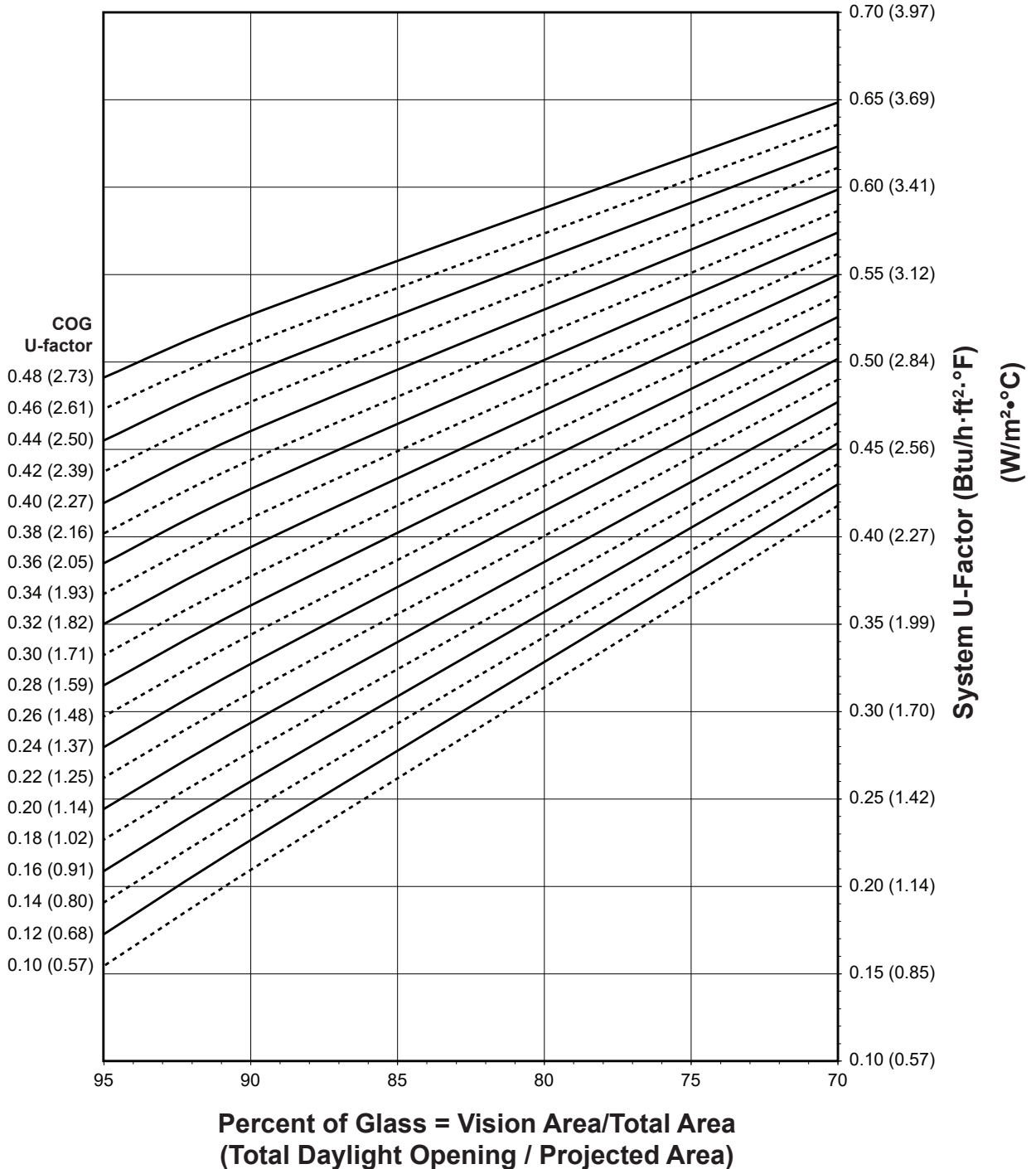
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Trifab® VersaGlaze® 451T (CENTER – Thermal)

Warm-Edge Glazing Spacer

Note:
 Values in parentheses are metric.
 COG=Center of Glass.
 Charts are generated per AAMA 507.

System U-factor vs Percent of Glass Area



Notes for System U-factor, SHGC, and VT charts:
 For glass values not listed, linear interpolation is permitted.
 Glass Properties are based on center of glass values and are obtained from your glass supplier.

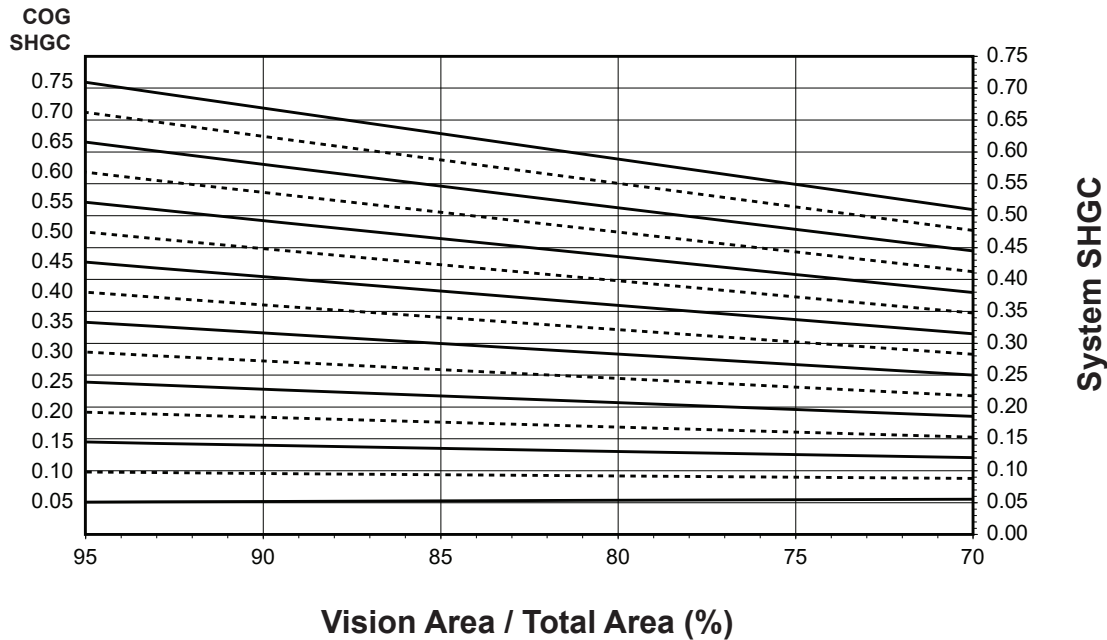
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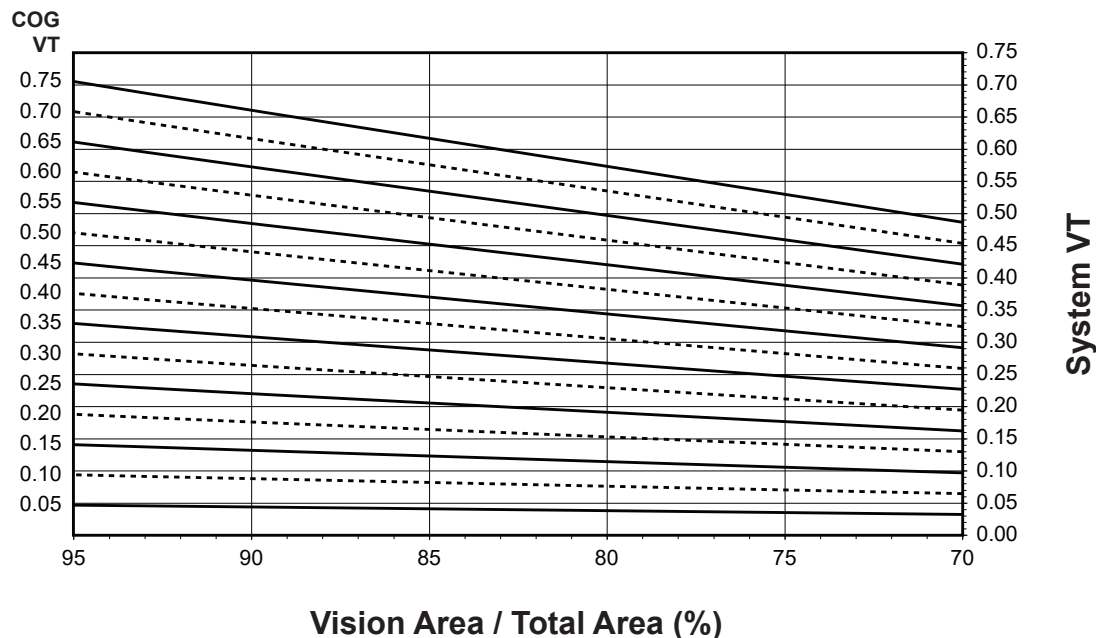
Warm-Edge Glazing Spacer

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 ¹ (BTU/hr • ft² • °F)

Glass U-Factor ³	Overall U-Factor ⁴
0.48	0.53
0.46	0.51
0.44	0.50
0.42	0.48
0.40	0.46
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	0.28
0.16	0.26
0.14	0.25
0.12	0.23
0.10	0.21

**Trifab® VersaGlaze® 451T
(CENTER – Thermal)
Warm-Edge Glazing Spacer**

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 ²

Glass SHGC ³	Overall SHGC ⁴
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 ²

Glass VT ³	Overall VT ⁴
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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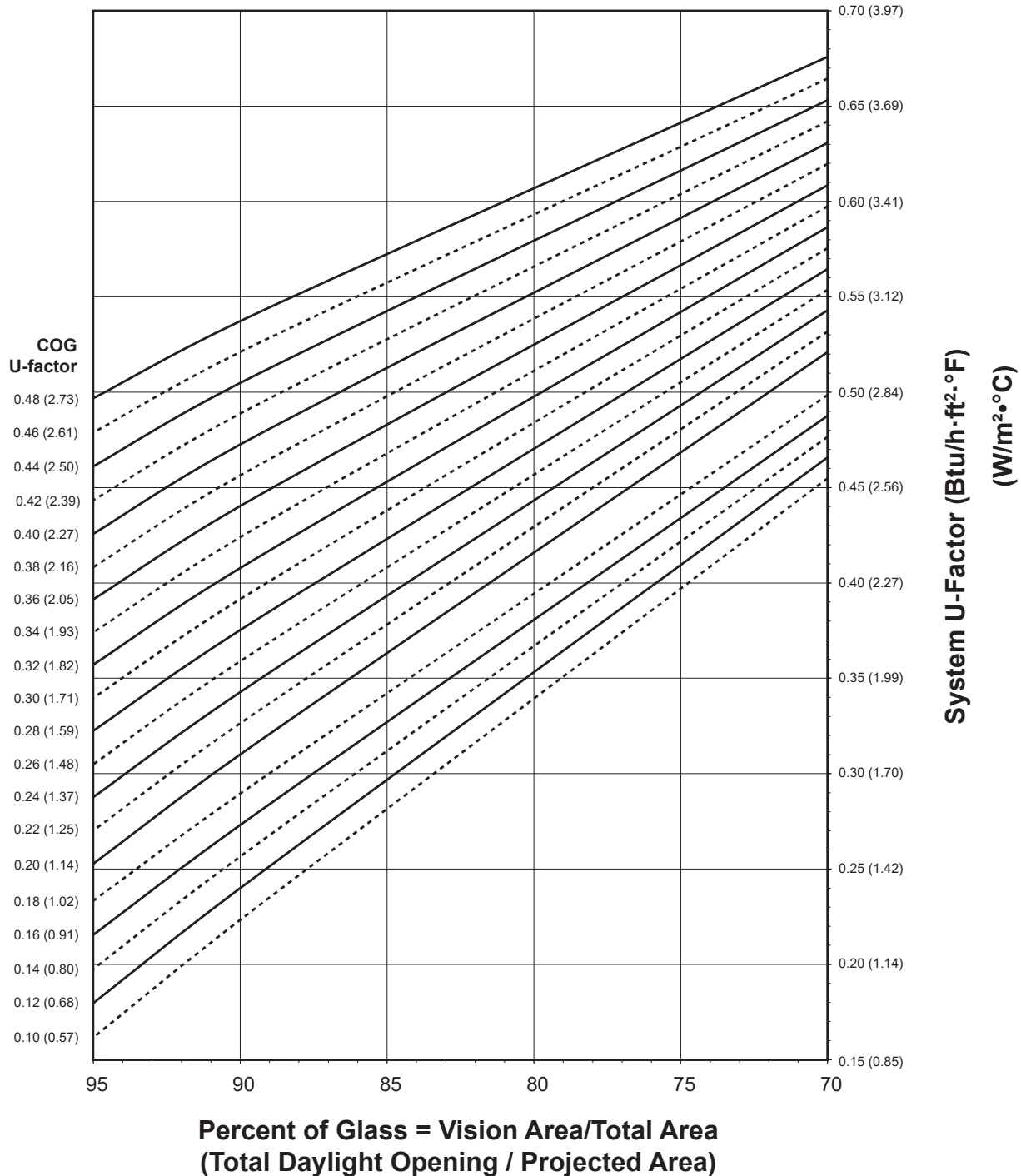
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Trifab® VersaGlaze® 451T (CENTER – Thermal)

Aluminum Glazing Spacer

Note:
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 COG=Center of Glass.
 Charts are generated per AAMA 507.

System U-factor vs Percent of Glass Area



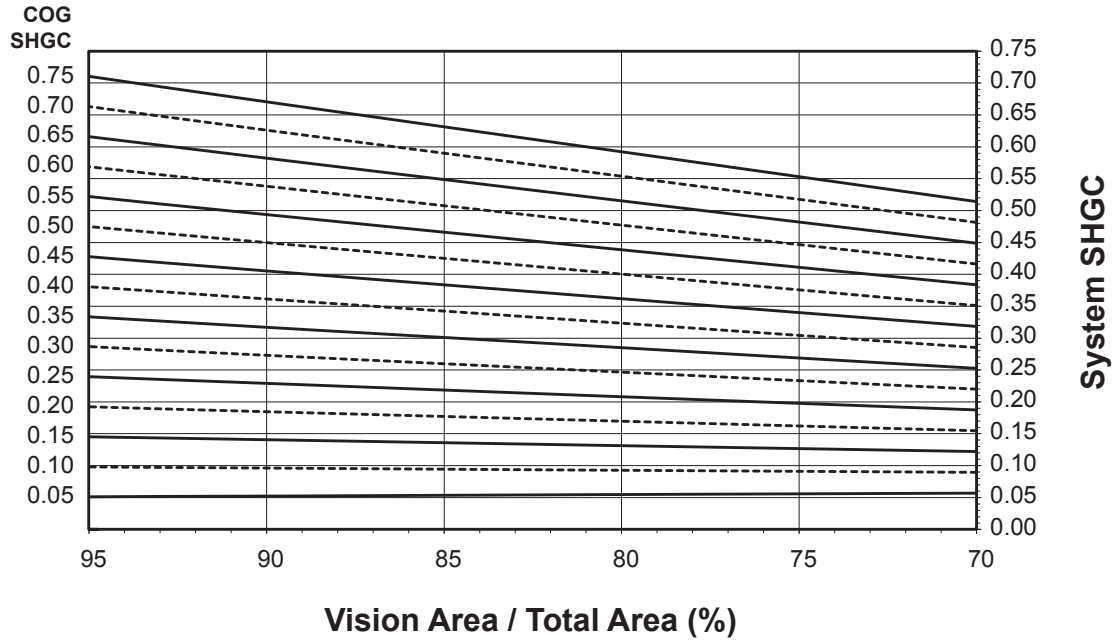
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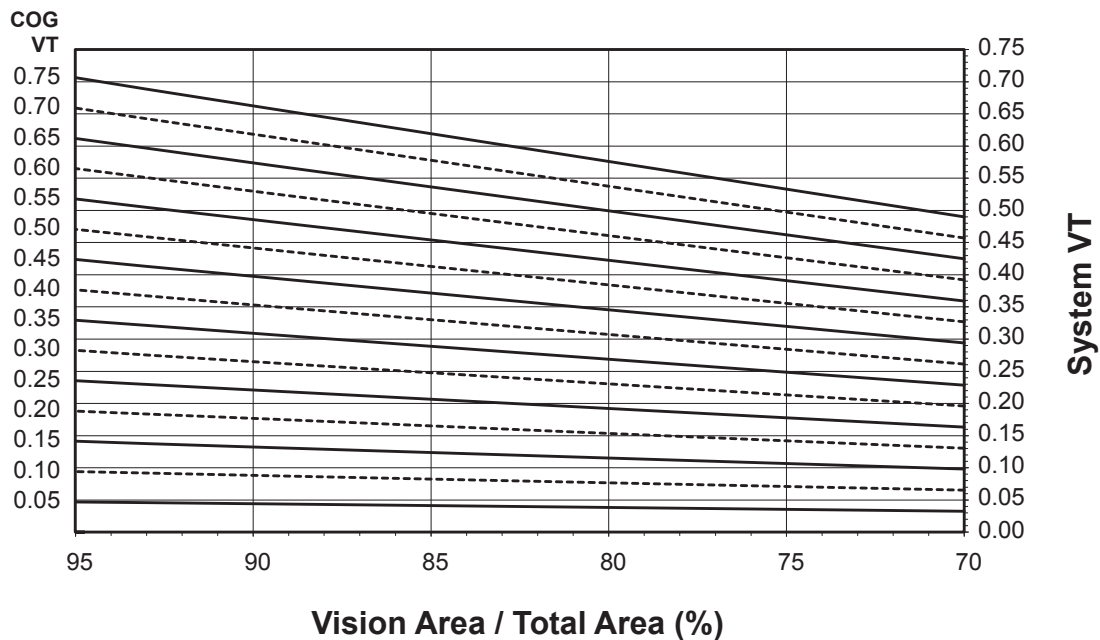
Trifab® VersaGlaze® 451T (CENTER – Thermal)
Aluminum Glazing Spacer

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 ¹ (BTU/hr • ft² • °F)

Glass U-Factor ³	Overall U-Factor ⁴
0.48	0.54
0.46	0.52
0.44	0.51
0.42	0.49
0.40	0.48
0.38	0.46
0.36	0.44
0.34	0.43
0.32	0.41
0.30	0.40
0.28	0.38
0.26	0.36
0.24	0.35
0.22	0.33
0.20	0.32
0.18	0.29
0.16	0.28
0.14	0.26
0.12	0.25
0.10	0.23

Trifab® VersaGlaze® 451T (CENTER – Thermal) Aluminum Glazing Spacer

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.
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SHGC Matrix ²

Glass SHGC ³	Overall SHGC ⁴
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	0.32
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 ²

Glass VT ³	Overall VT ⁴
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

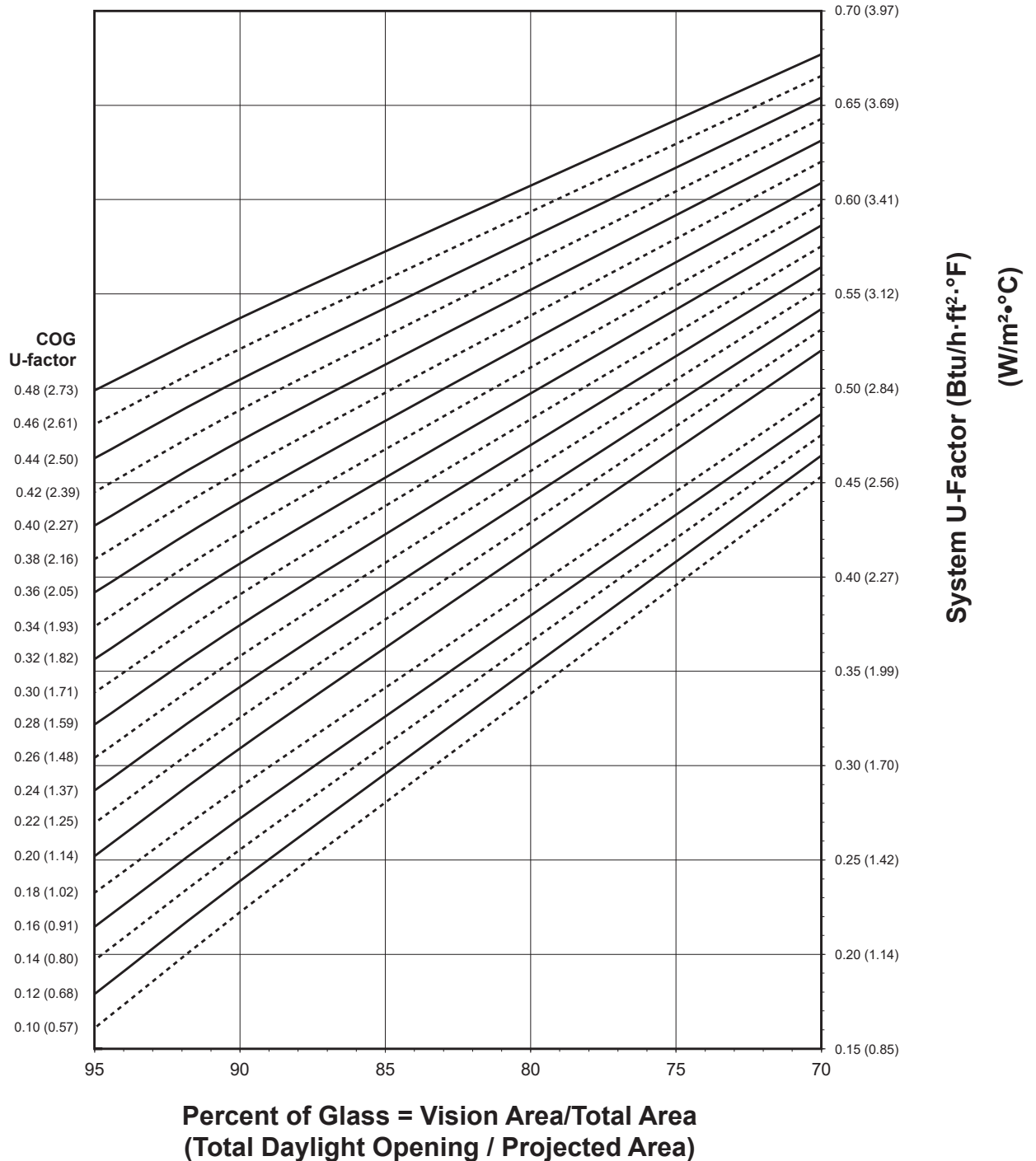
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Trifab® VersaGlaze® 451T Pre-Glazed (CENTER – Thermal)
Aluminum Glazing Spacer

Note:
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 COG=Center of Glass.
 Charts are generated per AAMA 507.

System U-factor vs Percent of Glass Area



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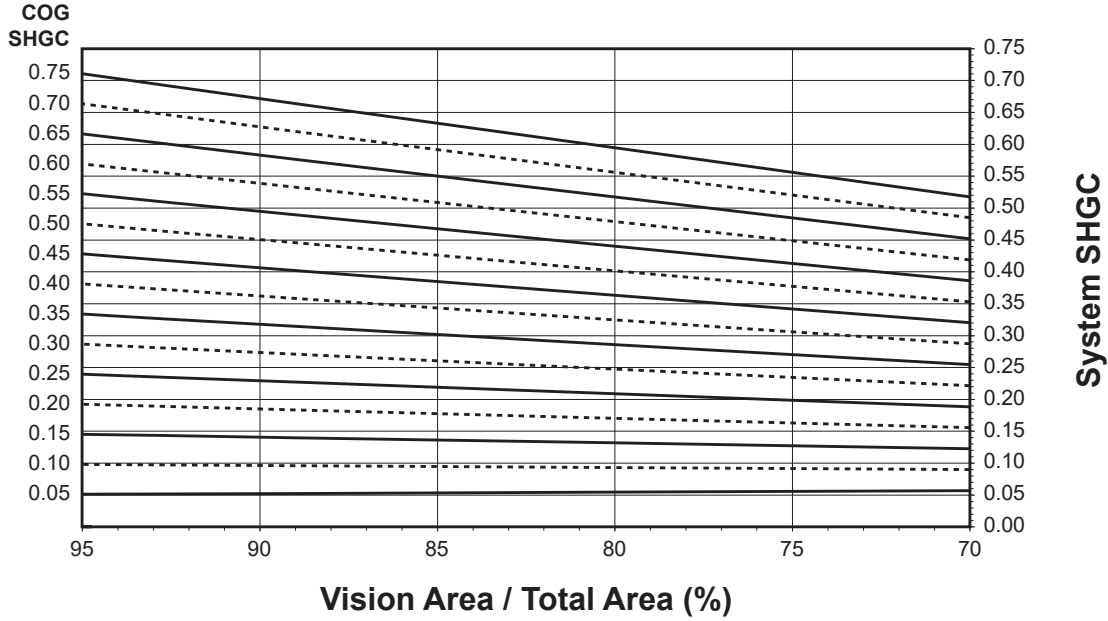
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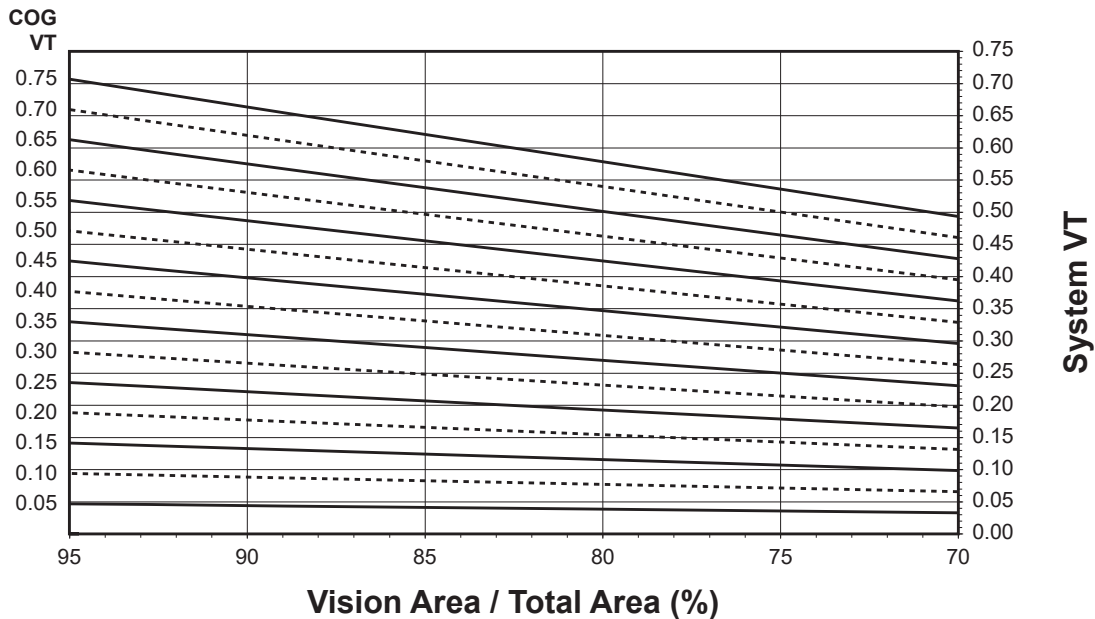
Aluminum Glazing Spacer

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 ¹ (BTU/hr • ft² • °F)

Glass U-Factor ³	Overall U-Factor ⁴
0.48	0.55
0.46	0.53
0.44	0.51
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	0.39
0.26	0.37
0.24	0.35
0.22	0.34
0.20	0.32
0.18	0.30
0.16	0.28
0.14	0.27
0.12	0.25
0.10	0.24

**Trifab® VersaGlaze® 451T
Pre-Glazed
(CENTER – Thermal)
Aluminum Glazing Spacer**

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

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SHGC Matrix ²

Glass SHGC ³	Overall SHGC ⁴
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	0.31
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 ²

Glass VT ³	Overall VT ⁴
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

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

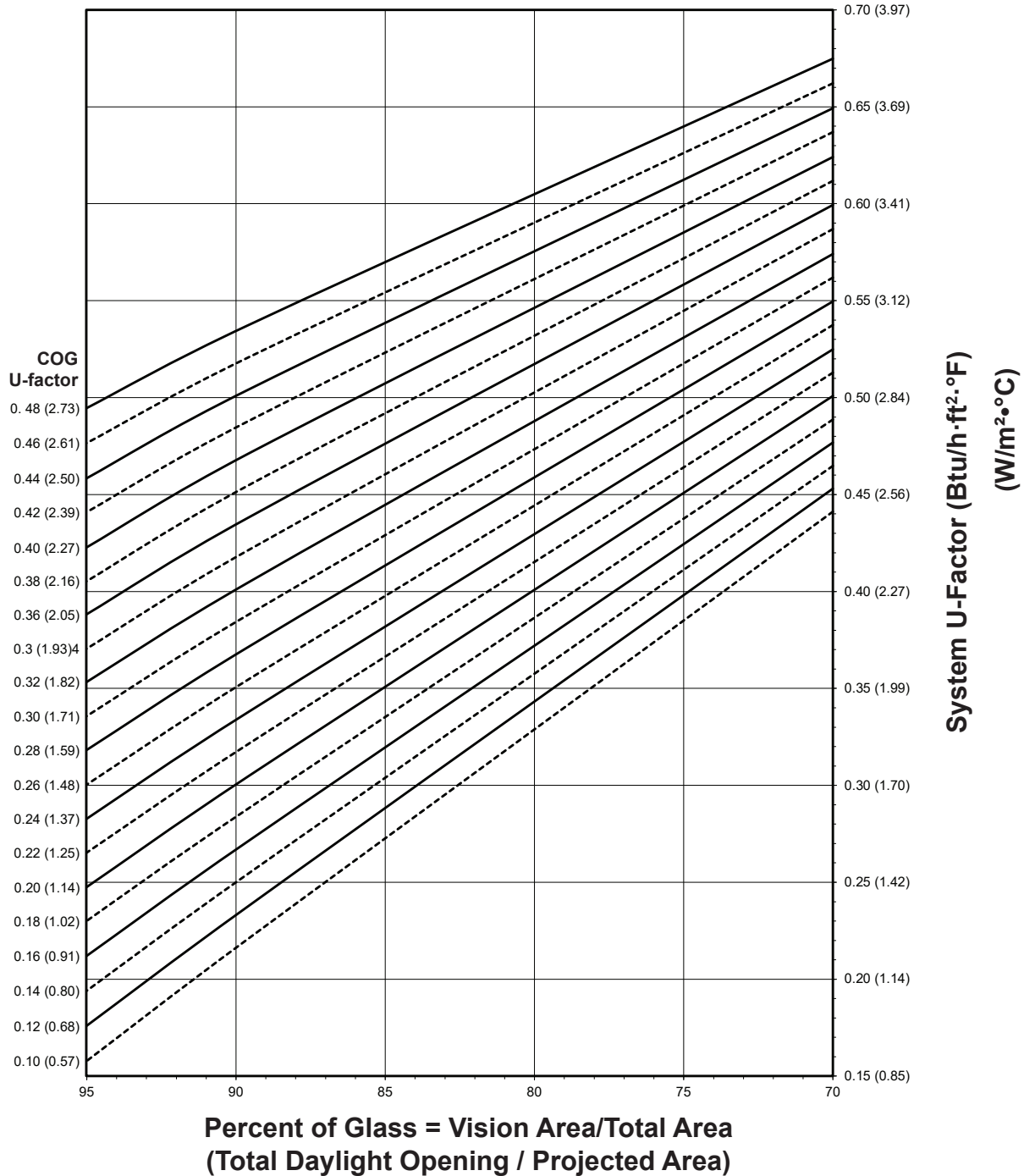
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Trifab® VersaGlaze® 451T (FRONT – Thermal)

Warm-Edge Glazing Spacer

Note:
 Values in parentheses are metric.
 COG=Center of Glass.
 Charts are generated per AAMA 507.

System U-factor vs Percent of Glass Area



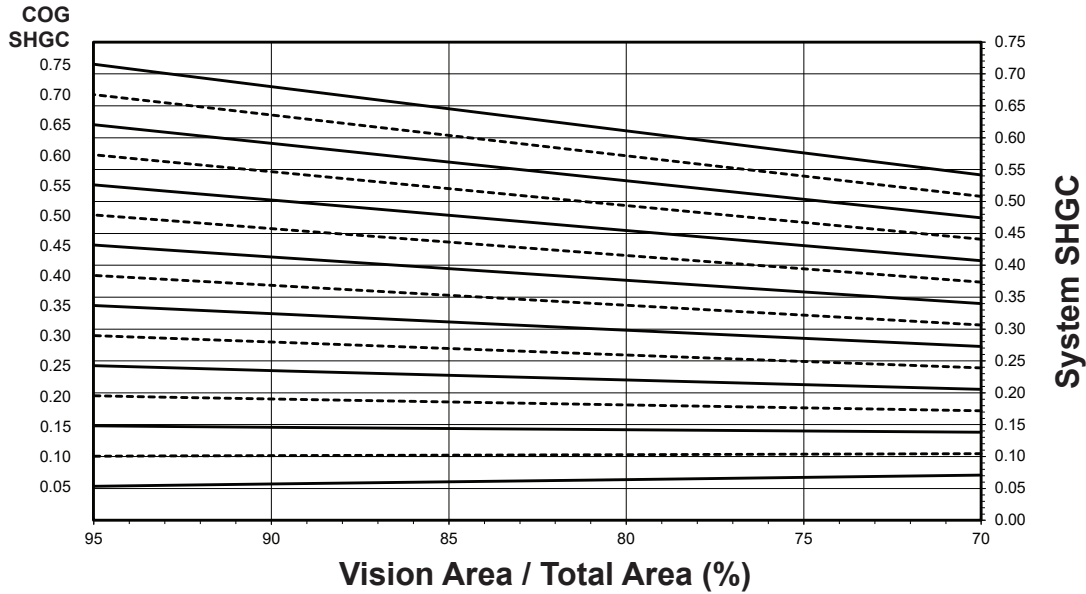
Notes for System U-factor, SHGC, and VT charts:
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 Glass Properties are based on center of glass values and are obtained from your glass supplier.

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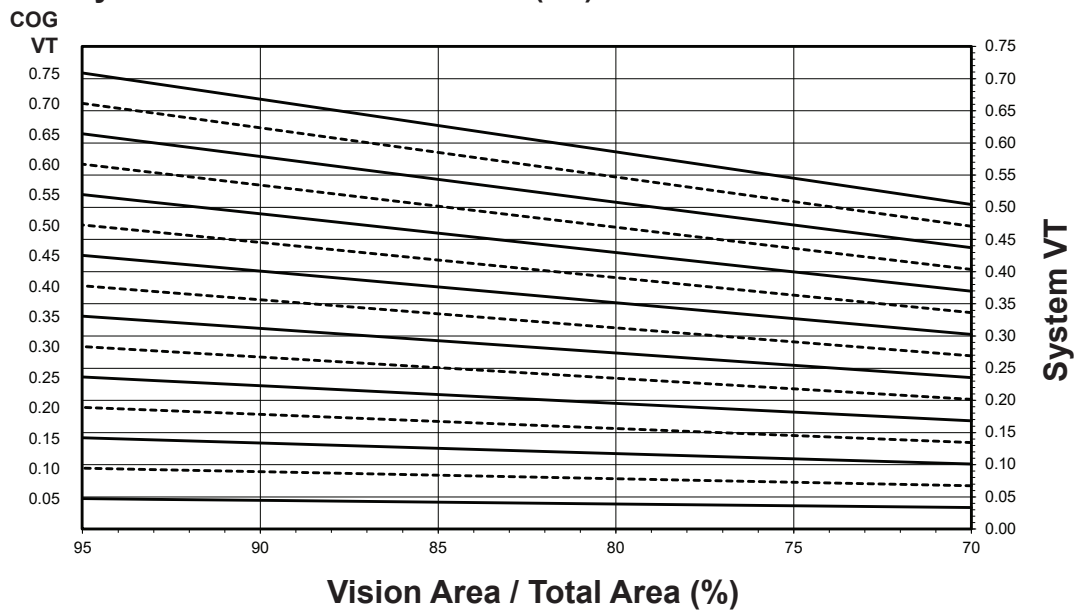
Trifab® VersaGlaze® 451T (FRONT – Thermal)
Warm-Edge Glazing Spacer

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 ¹ (BTU/hr • ft² • °F)

Glass U-Factor ³	Overall U-Factor ⁴
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	0.37
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	0.26
0.12	0.24
0.10	0.22

Trifab® VersaGlaze® 451T (FRONT – Thermal) Warm-Edge Glazing Spacer

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 ²

Glass SHGC ³	Overall SHGC ⁴
0.75	0.68
0.70	0.63
0.65	0.59
0.60	0.54
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 ²

Glass VT ³	Overall VT ⁴
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

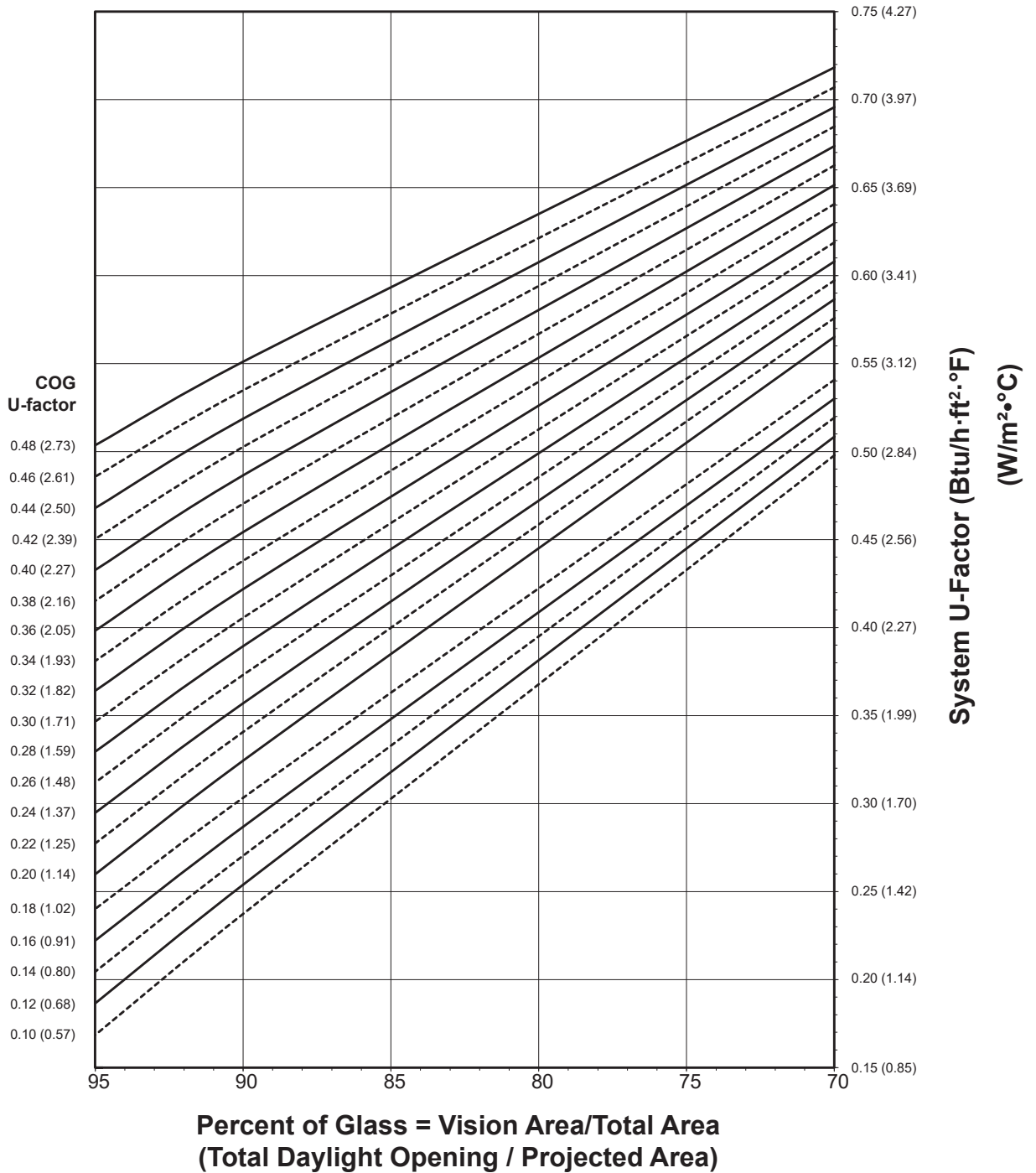
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Trifab® VersaGlaze® 451T (FRONT – Thermal)
Aluminum Glazing Spacer

Note:
Values in parentheses are metric.
COG=Center of Glass.
Charts are generated per AAMA 507.

System U-factor vs Percent of Glass Area



Notes for System U-factor, SHGC, and VT charts:
For glass values not listed, linear interpolation is permitted.
Glass Properties are based on center of glass values and are obtained from your glass supplier.

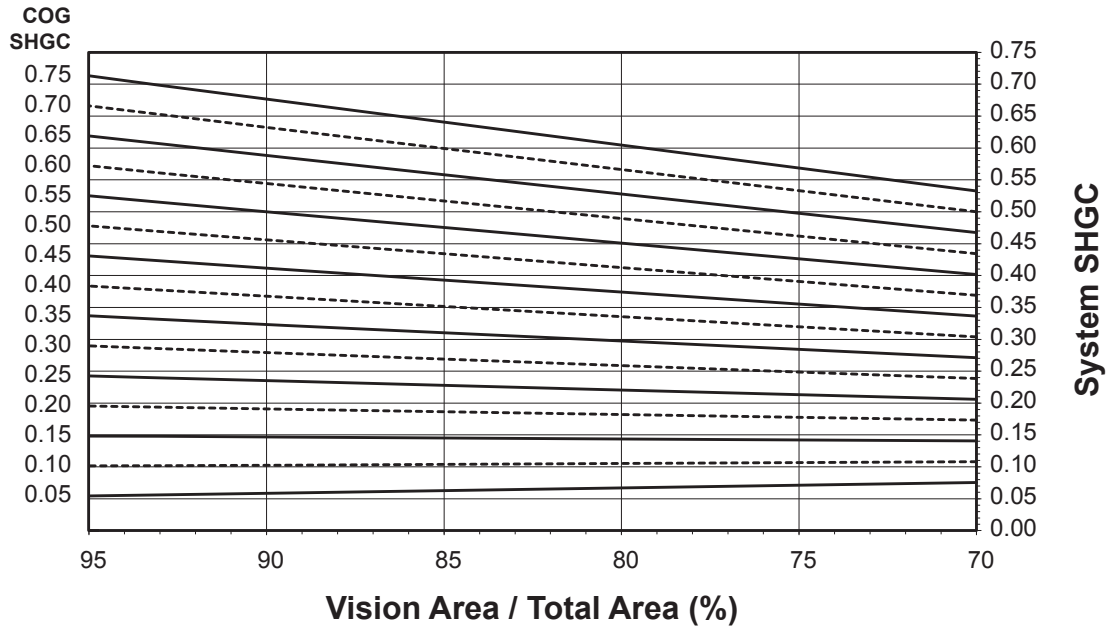
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Trifab® VersaGlaze® 451T (FRONT – Thermal)

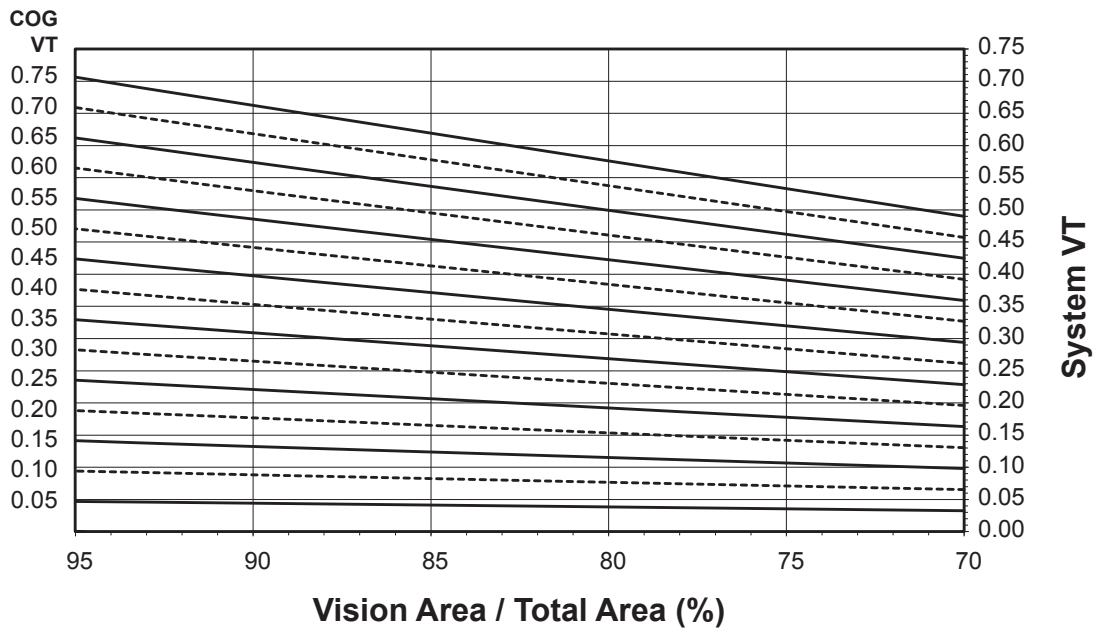
Aluminum Glazing Spacer

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 ¹ (BTU/hr • ft² • °F)

Glass U-Factor ³	Overall U-Factor ⁴
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	0.40
0.26	0.38
0.24	0.36
0.22	0.35
0.20	0.33
0.18	0.31
0.16	0.29
0.14	0.28
0.12	0.26
0.10	0.24

**Trifab® VersaGlaze® 451T
(FRONT – Thermal)
Aluminum Glazing Spacer**

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 ²

Glass SHGC ³	Overall SHGC ⁴
0.75	0.67
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
0.15	0.15
0.10	0.10
0.05	0.06

Visible Transmittance ²

Glass VT ³	Overall VT ⁴
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

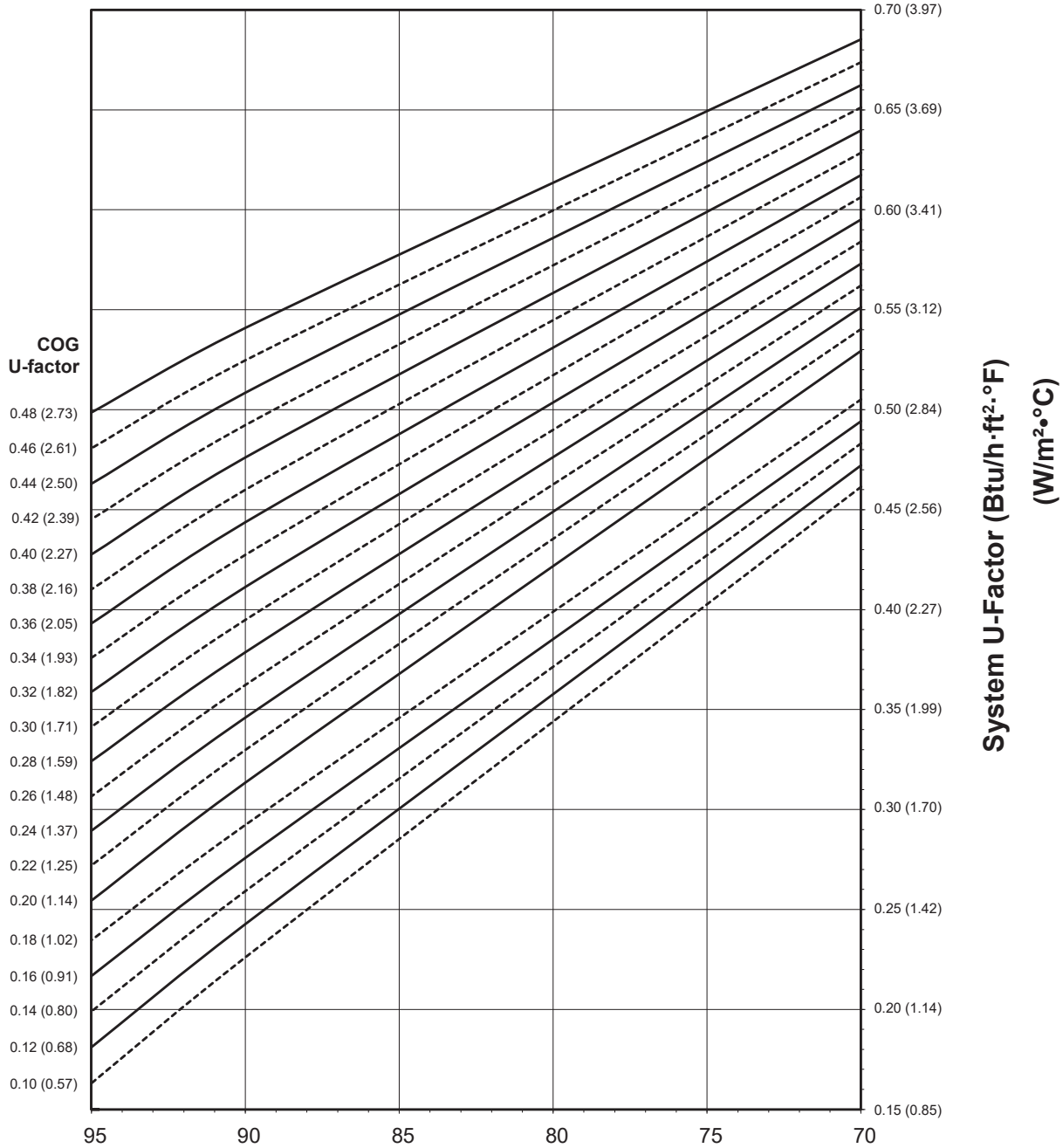
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Trifab® VersaGlaze® 451T (BACK – Thermal) Aluminum Glazing Spacer

Note:
Values in parentheses are metric.
COG=Center of Glass.
Charts are generated per AAMA 507.

System U-factor vs Percent of Glass Area



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

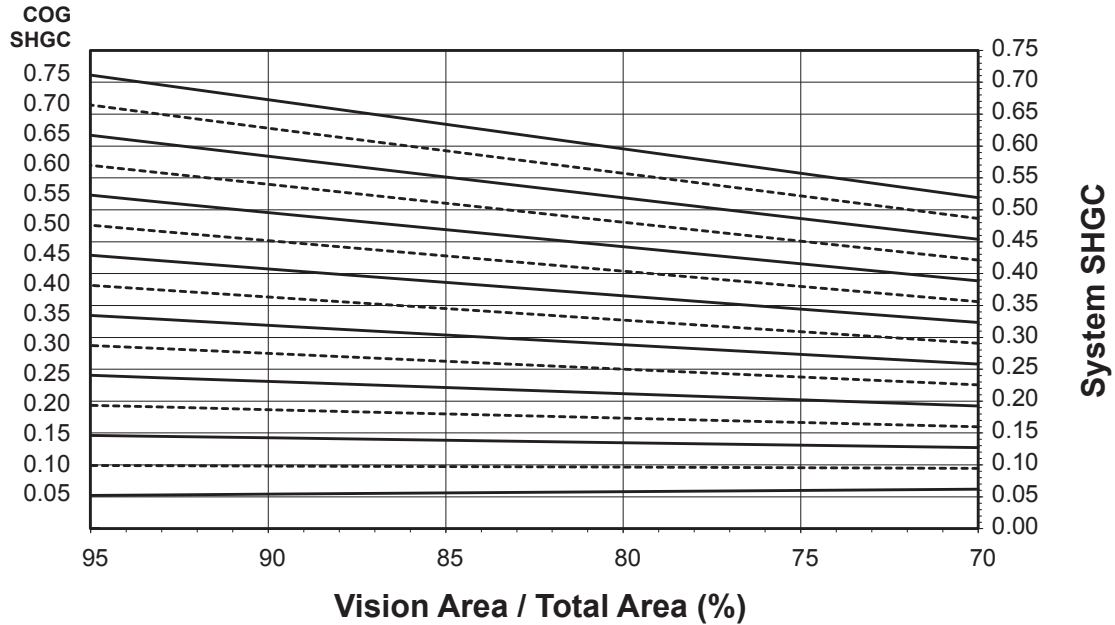
Notes for System U-factor, SHGC, and VT charts:
For glass values not listed, linear interpolation is permitted.
Glass Properties are based on center of glass values and are obtained from your glass supplier.

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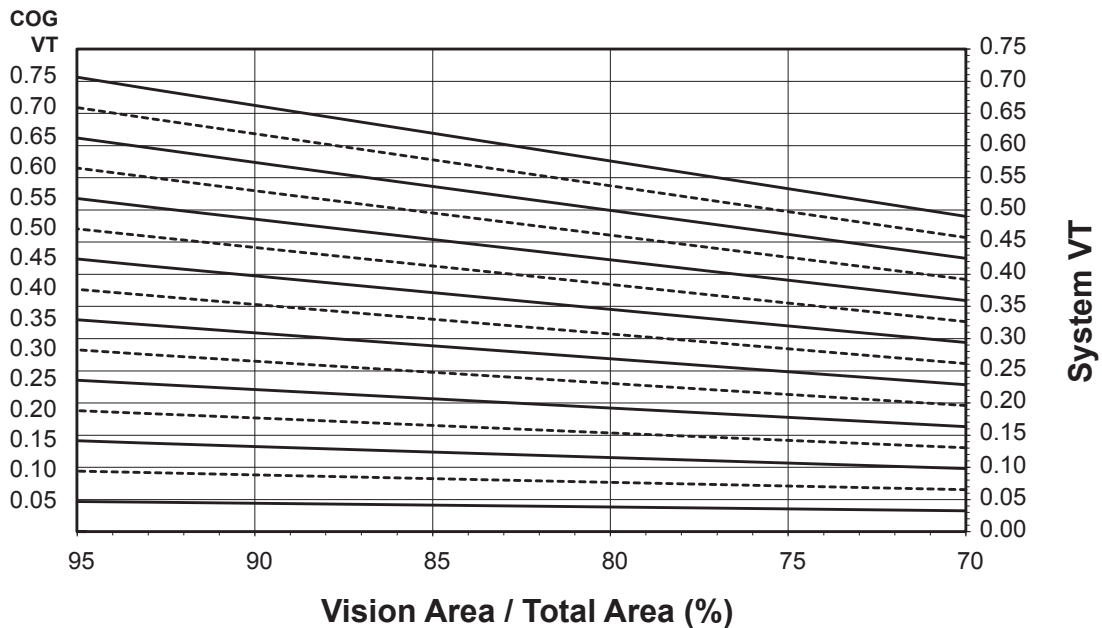
Trifab® VersaGlaze® 451T (BACK – Thermal)
Aluminum Glazing Spacer

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 ¹ (BTU/hr • ft² • °F)

Glass U-Factor ³	Overall U-Factor ⁴
0.48	0.54
0.46	0.53
0.44	0.51
0.42	0.50
0.40	0.48
0.38	0.46
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	0.30
0.16	0.28
0.14	0.26
0.12	0.25
0.10	0.23

Trifab® VersaGlaze® 451T (BACK – Thermal) Aluminum Glazing Spacer

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 ²

Glass SHGC ³	Overall SHGC ⁴
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	0.41
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 ²

Glass VT ³	Overall VT ⁴
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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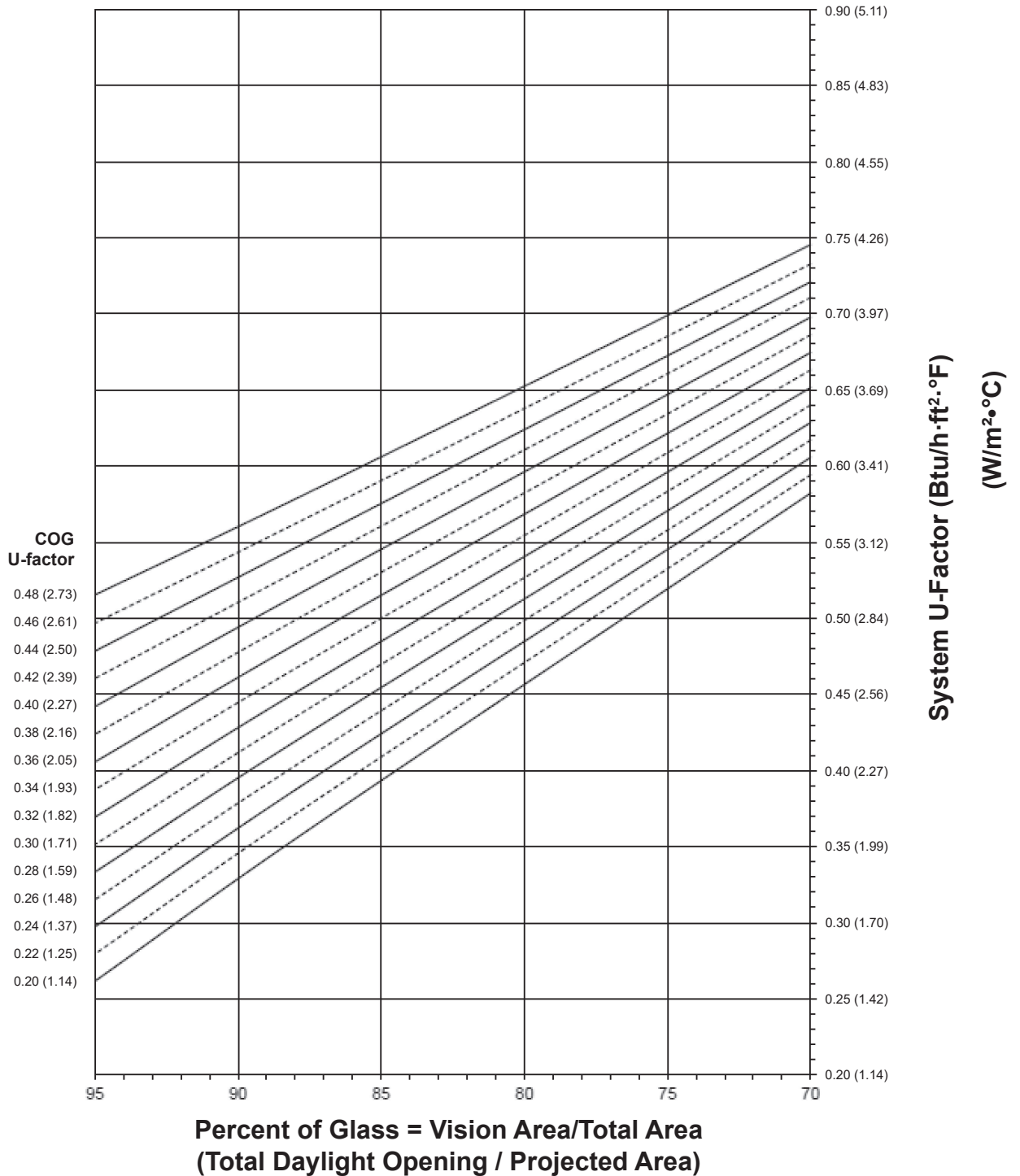
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Trifab® VersaGlaze® 451T with Steel (CENTER)

Aluminum Glazing Spacer

Note:
 Values in parentheses are metric.
 COG=Center of Glass.
 Charts are generated per AAMA 507.

System U-factor vs Percent of Glass Area



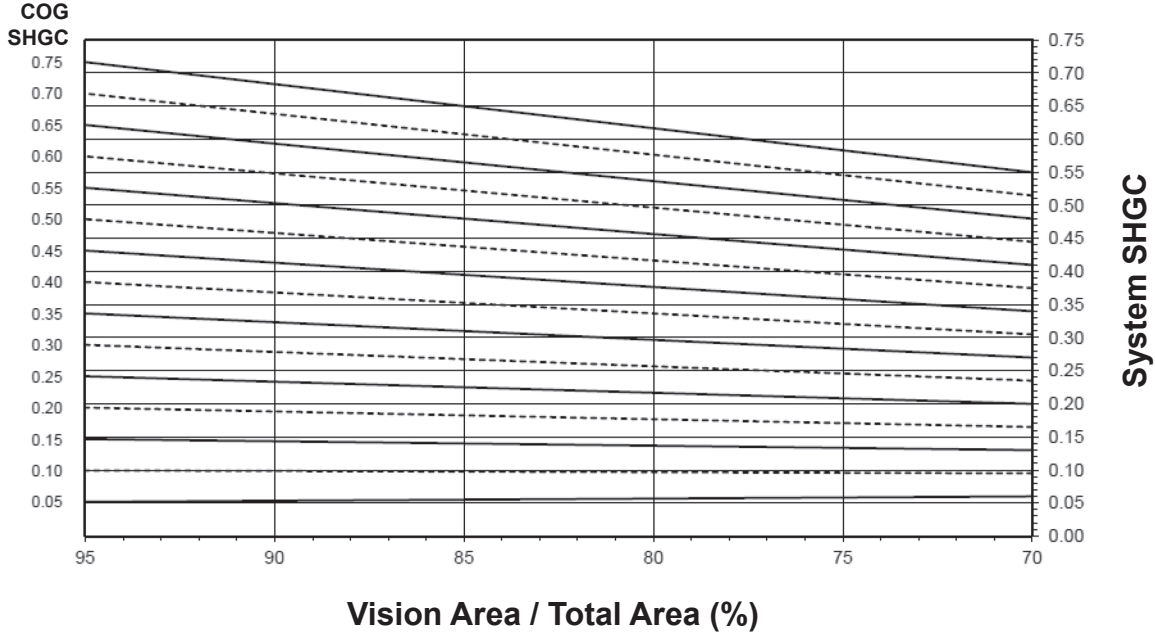
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Notes for System U-factor, SHGC, and VT charts:
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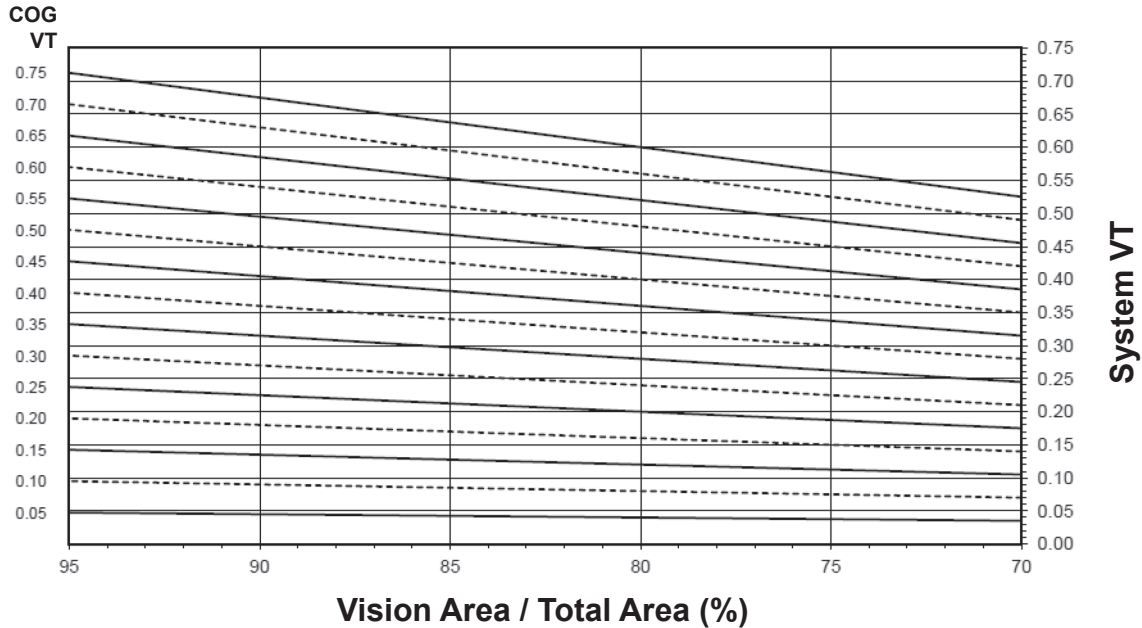
Trifab® VersaGlaze® 451T with Steel (CENTER)
Aluminum Glazing Spacer

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 ¹ (BTU/hr • ft ² • °F)

Glass U-Factor ³	Overall U-Factor ⁴
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® VersaGlaze® 451T
with Steel (CENTER)
Aluminum Glazing Spacer**

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 ²

Glass SHGC ³	Overall SHGC ⁴
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 ²

Glass VT ³	Overall VT ⁴
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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