**Features**

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

**Optional Features**

- 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.
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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
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.

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.

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 16)
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.

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.

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 38)
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 38)
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.

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.
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.

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.

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 49)
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

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.
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BASIC FRAMING DETAILS (CENTER - Outside Glazed - Stops Down)

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

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

**SCREW SPLINE**

**SHEAR BLOCK**

**STICK**

* HP Sill Flashing shown with optional gasket.

* HP Sill Flashing shown with optional gasket.
Trifab® VG 451/451T Framing System

PRE-GLAZED FRAMING DETAILS (CENTER - Outside Glazed - Stops Up)

Additional information and CAD details are available at www.kawneer.com
Trifab® VG 451/451T Framing System

EC 97911-236
PRE-GLAZED FRAMING DETAILS (CENTER - Inside Glazed - Stops Down)

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

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.
Trifab® VG 451/451T Framing System

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

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
Trifab® VG 451/451T Framing System
CURVING & TRIM DETAILS

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

Seal over Stool Trim fasteners to prevent water infiltration.

Seal over Stool Trim fasteners to prevent water infiltration.

STOOL TRIM CLIP FOR STICK ASSEMBLY

BRAKE METAL ADAPTOR AT VERTICAL

BRAKE METAL FILLERS

Seal over Stool Trim fasteners to prevent water infiltration.

STOOL TRIM CLIP WITH HIGH PERFORMANCE FLASHING

BRAKE METAL ADAPTOR AT HORIZONTAL

BRAKE METAL FILLERS

STOOL TRIM

069271

175186

175188

175190

175191

4-1/2"

[114.3]

TYPICAL

[451TVG150]

[451VG150]
Trifab® VG 451 FRAMING INCORPORATING KAWNEER® “190” DOORS.

DOOR FRAMING NON-THERMAL ONLY

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

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.

ELEVATIONS ARE NUMBER KEYED TO DETAILS

NOTE: OTHER TYPES OF KAWNEER DOORS MAY BE USED WITH THIS FRAMING SYSTEM. SEE ENTRANCE DETAILS FOR ADDITIONAL INFORMATION.
Trifab® VG 451 FRAMING INCORPORATING KAWNEER® “190” DOORS.

DOOR FRAMING NON-THERMAL ONLY

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

ELEVATIONS ARE NUMBER KEYED TO DETAILS

TRANSMOM HEAD

SINGLE ACTING

TRANSMOM BAR

DOUBLE ACTING

BOTTOM RAIL

NOTE: Sidelite mullions must be oriented to provide at least one (1) deep vertical pocket per lite to facilitate glazing.
Additional information and CAD details are available at www.kawneer.com

NOTE:
1. SERIES 250T NARROW STILE DOORS ARE DETAILED. MEDIUM STILE 350T DOORS AND WIDE STILE 500T DOORS ALSO MAY BE USED.
2. TRIFAB® VG 451T CENTER, 2" x 4-1/2" (50.8 x 114.3) FRAMING IS DETAILED WITH THE DOORS FOR REFERENCE. OTHER KAWNEER FRAMING SERIES OR CURTAIN WALL SYSTEMS MAY BE USED.

Trifab ® VG 451/451T Framing System
250T/350T/500T INSULPOUR® THERMAL ENTRANCES

ADMC040EN
AUGUST, 2020
EC 97911-236

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

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

* INSTALLER NOTE: Installer is responsible for all required compatibility review and approvals with the Structural Silicone Manufacturer and the Insulating Glass Unit Manufacturer.
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
Trifab® VG 451/451T Framing System

BASIC FRAMING DETAILS (CENTER - Outside Glazed)
LEVEL D - LARGE MISSILE IMPACT

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

SCREW SPLINE

1 HEAD

2 HORIZONTAL

3 SILL

5 VERTICAL

OPTIONAL FRAMING (CENTER)

135° CORNER

TWO POCKET OUTSIDE CORNER POST

TWO POCKET INSIDE CORNER POST

Hurricane Resistant Product

ELEVATION IS NUMBER KEYED TO DETAILS

NUMBERS IN BRACKETS ARE THERMALLY BROKEN MEMBERS

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

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Trifab® VG 451/451T Framing System

EC 97911-236

AUGUST, 2020

LEVEL D - LARGE MISSILE IMPACT

Hurricane Resistant Product

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

Trifab® VG 451 Framing Incorporating Kawneer® “350/500 IR” Doors (Dry Glazed).

Door Framing Non-Thermal Only

Note: Other Types of Kawneer Doors May Be Used With This Framing System. See Entrance Details For Additional Information.

Elevations Are Number Keyed To Details

1 2A 1

2A 1

1 2A 1

451G001

451G363

450022

451502

451502

450022

450022

451079

451079

451045

451049

451045

451049

451045

451049

SINGLE ACTING BOTTOM RAIL

Optional Bottom Rail Sweep

CONCEALED OVERHEAD CLOSERS

TRANSMOM HEAD

TRANSOM BAR

SINGLE ACTING HEADER

SINGLE ACTING TOP RAIL

TRIFAB® VG 451/451T FRAMING INCORPORATING KAWNEER® “350/500 IR” DOORS (DRY GLAZED).

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

SEE ENTRANCE DETAILS FOR ADDITIONAL INFORMATION.
Trifab® VG 451 Framing System

ENTRANCE FRAMING (CENTER)
LEVEL D - LARGE MISSILE IMPACT

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

Trifab® VG 451 Framing Incorporating Kawneer® “350/500 IR” Doors (Dry Glazed).

DOOR FRAMING NON-THERMAL ONLY

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

Hurricane Resistant Product

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Trifab® VG 451/451T Framing System

BASIC FRAMING DETAILS (FRONT - Outside Glazed)

ADMC040EN

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.
Trifab® VG 451/451T Framing System

BASIC FRAMING DETAILS (FRONT - Inside Glazed)

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

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<th>SHEAR BLOCK</th>
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<td><strong>4-vertical</strong></td>
<td><strong>2 HORIZONTAL</strong></td>
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<tr>
<td>[451TVG011]</td>
<td>[451TVG011]</td>
<td>[451TVG111]</td>
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</tbody>
</table>

* HP Sill Flashing shown with optional gasket.

NUMBERS IN BRACKETS ARE THERMALLY BROKEN MEMBERS

ELEVATION IS NUMBER KEYED TO DETAILS
Additional information and CAD details are available at www.kawneer.com

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.
Trifab® VG 451/451T Framing System

ELEVATION IS NUMBER KEYED TO DETAILS

NUMBERS IN BRACKETS ARE THERMALLY BROKEN MEMBERS

STICK (INSIDE GLAZED)

SSG RECEPTOR

1 HEAD

2 HORIZONTAL

3 SILL

Structural Silicone Sealant (by Others)*

* 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

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Trifab® VG 451/451T Framing System
BASIC FRAMING DETAILS (FRONT)
AUGUST, 2020
EC 97911-236

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

STICK (INSIDE GLAZED)
TWO COLOR OPTION

SSG RECEPTOR

Structural Silicone Sealant
(by Others)*

*INSTALLER NOTE: Installer is responsible for all required compatibility review and approvals with the Structural Silicone Manufacturer and the Insulating Glass Unit Manufacturer.
Trifab® VG 451/451T Framing System

ELEVATION IS NUMBER KEYED TO DETAILS

NUMBERS IN BRACKETS ARE THERMALLY BROKEN MEMBERS

CONTINUOUS HEAD AND SILL (INSIDE GLAZED)

PUNCHED OPENING

451VG101

[451TVG101]

451VG005

[451TVG005]

TYPICAL

2" (50.8)

(114.3)

4-1/2"

1 HEAD

HEAD

451VG104

[451TVG104]

451VG103

[451TVG103]

451VG111

[451TVG111]

451VG101

[451TVG101]

451VG104

[451TVG104]

1A HEAD

2 HORIZONTAL

3 SILL

451SSG425

ADMC040EN

ADMC040EN
Trifab® VG 451/451T Framing System

BASIC FRAMING DETAILS (FRONT)

ADMC040EN

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.
Additional information and CAD details are available at www.kawneer.com
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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 Anchor must be used. Consult Application Engineering.

NOTE:
Mullion Anchor not used with Lightweight Receptor.

Seal over Stool Trim fasteners to prevent water infiltration.

Seal over Stool Trim fasteners to prevent water infiltration.
Additional information and CAD details are available at www.kawneer.com
Additional information and CAD details are available at www.kawneer.com

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

Structural Silicone Sealant (by Others)*

*INSTALLER NOTE: Installer is responsible for all required compatibility review and approvals with the Structural Silicone Manufacturer and the Insulating Glass Unit Manufacturer.
Trifab® VG 451 FRAMING INCORPORATING KAWNEER® “190” DOORS.

DOOR FRAMING NON-THERMAL ONLY

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

ELEVATIONS ARE NUMBER KEYED TO DETAILS

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

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

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

*INSTALLER NOTE: Installer is responsible for all required compatibility review and approvals with the Structural Silicone Manufacturer and the Insulating Glass Unit Manufacturer.
Additioanl information and CAD details are available at www.kawneer.com
Trifab® VG 451/451T Framing System

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INDEX (BACK)
**Trifab® VG 451/451T Framing System**

**BASIC FRAMING DETAILS (BACK - Outside Glazed)**

Additional information and CAD details are available at [www.kawneer.com](http://www.kawneer.com)

---

**SCREW SPLINE**

1. HEAD
   451VG104
   451VG103 [451TVG103]

2. HORIZONTAL
   451VG111 [451TVG111]
   451VG104

3. SILL
   451BG004
   451BG014 [451TBG014]
   451VG005 [451TVG005]
   451VG006 [451TVG006]

4. JAMB
   451VG102 [451TVG102]
   451VG001 [451TVG001]

5. VERTICAL
   2" (50.8)
   4-1/2" (114.3)
   451VG020
   451VG012 [451TVG012]

---

**SHEAR BLOCK**

1. HEAD
   451VG104
   451VG103 [451TVG103]

2. HORIZONTAL
   451VG111 [451TVG111]
   451VG104

3. SILL
   451BG004
   451BG014 [451TBG014]
   451VG005 [451TVG005]
   451VG007 [451TVG007]

4. JAMB
   451VG102 [451TVG102]
   451VG001 [451TVG001]

5. VERTICAL
   2-1/4" (57.2)
   5" (127)
   451VG020
   451VG012 [451TVG012]

---

**STICK**

1. HEAD
   451VG104
   451VG103 [451TVG103]

2. HORIZONTAL
   451VG111 [451TVG111]
   451VG104

3. SILL
   451BG004
   451BG014 [451TBG014]
   451VG005 [451TVG005]
   451VG007 [451TVG007]

4. JAMB
   451VG102 [451TVG102]
   451VG001 [451TVG001]

5. VERTICAL
   2-1/4" (57.2)
   5" (127)
   451VG020
   451VG012 [451TVG012]

---

* HP Sill Flashing shown with optional gasket.

**ELEVATION IS NUMBER KEYED TO DETAILS**

NUMBERS IN BRACKETS ARE THERMALLY BROKEN MEMBERS

---

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

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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 Anchor must be used. Consult Application Engineering.

NOTE:
Mullion Anchor not used with Lightweight Receptor.

Seal over Stool Trim fasteners to prevent water infiltration.

Additional information and CAD details are available at www.kawneer.com
Trifab® VG 451/451T Framing System

Corners (Back)

Additional information and CAD details are available at www.kawneer.com
Trifab® VG 451 FRAMING INCORPORATING KAWNEER® “190” DOORS.

DOOR FRAMING NON-THERMAL ONLY

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

Additional information and CAD details are available at www.kawneer.com
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(See appropriate Center, Front or Back Section for Miscellaneous Details.)
Additional information and CAD details are available at www.kawneer.com

SCREW SPLINE ASSEMBLY

**SCREW SPLINE ASSEMBLY**

**ELEVATION IS NUMBER KEYED TO DETAILS**

**NUMBERS IN BRACKETS ARE THERMALLY BROKEN MEMBERS**

**FRONT**

See Pages 30 thru 43 for all FRONT details.

1 HEAD

4 HEAD

2 HORIZONTAL

5 HORIZONTAL

3 SILL

6 SILL

* HP Sill Flashing shown with optional gasket.

**BACK**

See Pages 46 thru 51 for all BACK details.

7 HEAD

8 HORIZONTAL

9 SILL

* HP Sill Flashing shown with optional gasket.

**CENTER**

See Pages 12 thru 27 for all CENTER details.

10 JAMB

11 VERTICAL

12 VERTICAL (THERMAL)

13 VERTICAL (THERMAL)

14 JAMB

* HP Sill Flashing shown with optional gasket.

**BASIC FRAMING DETAILS (MULTI-PLANE - Outside Glazed)**

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

* HP Sill Flashing shown with optional gasket.

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Kawneer reserves the right to change configuration without prior notice when deemed necessary for product improvement.
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 30 thru 43 for all FRONT details.

**BACK**
See Pages 46 thru 51 for all BACK details.

**CENTER**
See Pages 12 thru 27 for all CENTER details.

* HP Sill Flashing shown with optional gasket.
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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® VG 451/451T Framing System

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

SHEAR BLOCK ASSEMBLY

- FRONT
- BACK
- CENTER
- FRONT

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 30 thru 43 for all FRONT details.

1 HEAD
2 HORIZONTAL
3 SILL
4 HEAD
5 HORIZONTAL
6 SILL

* HP Sill Flashing shown with optional gasket.

BACK

See Pages 46 thru 51 for all BACK details.

7 HEAD
8 HORIZONTAL
9 SILL

* HP Sill Flashing shown with optional gasket.

CENTER

See Pages 12 thru 27 for all CENTER details.

7 HEAD
8 HORIZONTAL
9 SILL

* HP Sill Flashing shown with optional gasket.
Trifab® VG 451/451T Framing System

BASIC FRAMING DETAILS (MULTI-PLANE - Outside Glazed)

AUGUST, 2020

EC 97911-236

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**STICK ASSEMBLY**

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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 30 thru 43 for all FRONT details.

**BACK**

See Pages 46 thru 51 for all BACK details.

**CENTER**

See Pages 12 thru 27 for all CENTER details.

See Pages 46 thru 51 for all BACK details.

**FRONT**

1 HEAD

2 HORIZONTAL

3 SILL

**BACK**

4 HEAD

5 HORIZONTAL

6 SILL

**CENTER**

7 HEAD

8 HORIZONTAL

9 SILL

Additional information and CAD details are available at www.kawneer.com
Trifab® VG 451/451T Framing System

BASIC FRAMING DETAILS (MULTI-PLANE - Inside Glazed)

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

STICK ASSEMBLY

10 JAMB
11 VERTICAL
12 VERTICAL (THERMAL)
13 VERTICAL (THERMAL)
14 JAMB

1 FRONT
HEAD
HORIZONTAL
SILL

2 HORIZONTAL

3 SILL

4 HEAD

5 HORIZONTAL

6 SILL

7 HEAD

8 HORIZONTAL

9 SILL

10 HEAD

11 HEAD

12 HEAD

13 HEAD

ELEVATION IS NUMBER KEYED TO DETAILS

NUMBERS IN BRACKETS ARE THERMALLY BROKEN MEMBERS

Note: Transition verticals are required to be two piece

See Pages 30 thru 43 for all FRONT details.

See Pages 46 thru 51 for all BACK details.

See Pages 12 thru 27 for all CENTER details.

FRONT
BACK
CENTER

BASIC FRAMING DETAILS (MULTI-PLANE - Inside Glazed)

© 2018, Kawneer Company, Inc.

Additional information and CAD details are available at www.kawneer.com
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 Spectrurm™ 1 silicone sealant. For complete installation instructions of Tremco Proglaze® ETA products, contact your local Tremco representative or visit www.tremco.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.*
WIND LOAD CHARTS (CENTER)
- TF VG 451 (Non-Thermal) ...................................................... 63-67
- TF VG 451T (Thermal) .......................................................... 68-72

WIND LOAD CHARTS (FRONT or BACK)
- TF VG 451 (Non-Thermal) ...................................................... 73-76
- TF VG 451T (Thermal) .......................................................... 77-79

WIND LOAD CHARTS (FRONT or BACK)
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WIND LOAD CHARTS (MULTI PLANE)
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- TF VG 451/451T ................................................................. 83-84

DEADLOAD CHARTS
- TF VG 451/451T ................................................................. 85-86

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- TF VG 451 (CENTER – Non-Thermal) .................................... 89-91
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- TF VG 451T (CENTER) ......................................................... 95-97
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- TF VG 451T (FRONT – Thermal) .......................................... 101-103
- TF VG 451T (BACK – Thermal) ............................................ 104-106
- TF VG 451T with Steel (CENTER) ....................................... 107-109
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.
Trifab® VG 451 Framing System

WITH HORIZONTALS
WIDTH IN METERS

WITHOUT HORIZONTALS
WIDTH IN METERS

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

I = 3.237 (134.73 x 10^4)
S = 1.490 (24.42 x 10^5)

I = 3.137 (130.57 x 10^4)
S = 1.445 (23.68 x 10^5)
Trifab® VG 451 Framing System

WIND LOAD CHARTS (CENTER) Non-Thermal

JUNE, 2020

EC 97911-231

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kawneer.com

WITH HORIZONTALS

WIDTH IN METERS

ALLOWABLE STRESS DESIGN LOAD

LRFD ULTIMATE DESIGN LOAD

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

I = 5.907 (245.86 x 10^6)
S = 2.675 (43.84 x 10^3)

WITH HORIZONTALS

WIDTH IN METERS

I = 3.346 (139.27 x 10^3)
S = 1.535 (25.15 x 10^3)

WITH HORIZONTALS

WIDTH IN METERS

I = 3.346 (139.27 x 10^3)
S = 1.535 (25.15 x 10^3)

WITH HORIZONTALS

WIDTH IN METERS

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S = 1.535 (25.15 x 10^3)

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I = 3.346 (139.27 x 10^3)
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WITH HORIZONTALS

WIDTH IN METERS

I = 3.346 (139.27 x 10^3)
S = 1.535 (25.15 x 10^3)

WITH HORIZONTALS

WIDTH IN METERS

I = 3.346 (139.27 x 10^3)
S = 1.535 (25.15 x 10^3)
Trifab® VG 451 Framing System

WIND LOAD CHARTS (CENTER) Non-Thermal

WITH HORIZONTALS
WIDTH IN METERS

WIDTH IN FEET

HEIGHT IN FEET

HEIGHT IN METERS

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

WITH HORIZONTALS
WIDTH IN METERS

WIDTH IN FEET

HEIGHT IN FEET

HEIGHT IN METERS

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

WITH HORIZONTALS
WIDTH IN METERS

WIDTH IN FEET

HEIGHT IN FEET

HEIGHT IN METERS

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

WITH HORIZONTALS
WIDTH IN METERS

WIDTH IN FEET

HEIGHT IN FEET

HEIGHT IN METERS

A = 15 PSF (720)
B = 20 PSF (960)
C = 25 PSF (1200)
D = 30 PSF (1440)
E = 40 PSF (1920)
Trifab® VG 451 Framing System

WIND LOAD CHARTS (CENTER) Non-Thermal

**Allowable Stress Design Load**
- **A**: 15 PSF (720)
- **B**: 20 PSF (960)
- **C**: 25 PSF (1200)
- **D**: 30 PSF (1440)
- **E**: 40 PSF (1920)

**LRFD Ultimate Design Load**
- **A**: 25 PSF (1200)
- **B**: 33 PSF (1580)
- **C**: 42 PSF (2000)
- **D**: 50 PSF (2400)
- **E**: 67 PSF (3200)

---

**WITH HORIZONTALS**

**WIDTH IN METERS**

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<tr>
<td><strong>I</strong></td>
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<td>4.301 (179.02 x 10^4)</td>
<td>5.083 (211.57 x 10^4)</td>
<td>4.507 (187.59 x 10^4)</td>
<td>4.301 (179.02 x 10^4)</td>
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<tr>
<td><strong>S</strong></td>
<td>2.053 (33.64 x 10^3)</td>
<td>1.889 (30.96 x 10^3)</td>
<td>2.247 (36.82 x 10^3)</td>
<td>2.053 (33.64 x 10^3)</td>
<td>1.889 (30.96 x 10^3)</td>
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Trifab® VG 451T Framing System

WIND LOAD CHARTS (CENTER) Non-Thermal

WITH HORIZONTALS

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

I = 4.829 (201.00 x 10^4)
S = 2.146 (35.17 x 10^3)

WITH HORIZONTALS

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ALLOWABLE STRESS DESIGN LOAD

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

LRFD ULTIMATE DESIGN LOAD

A = 25 PSF (1200)
B = 33 PSF (1580)
C = 42 PSF (2000)
D = 50 PSF (2400)
E = 67 PSF (3200)

451CG081 / 451CG082

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

ADMC040EN
WITH HORIZONTALS

WIDTH IN METERS

HEIGHT IN FEET

WIDTH IN FEET

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

WITH HORIZONTALS

WIDTH IN METERS

HEIGHT IN FEET

WIDTH IN FEET

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

WITH HORIZONTALS

WIDTH IN METERS

HEIGHT IN FEET

WIDTH IN FEET

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

WITH HORIZONTALS

WIDTH IN METERS

HEIGHT IN FEET

WIDTH IN FEET

WIND LOAD CHARTS ARE BASED ON COMPOSITE PROPERTIES WHICH ARE CALCULATED IN ACCORDANCE WITH AAMA TIR-A8 AND AAMA 505
Trifab® VG 451T Framing System

WIND LOAD CHARTS (CENTER) Thermal

WITH HORIZONTALS
WIDTH IN METERS

Allowable Stress
Design Load
LRFD Ultimate
Design Load

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

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

451TCG112

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

WITH HORIZONTALS
WIDTH IN METERS

451TCG112 with 450110 STEEL

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

WITH HORIZONTALS
WIDTH IN METERS

451TCG005

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

WITHOUT HORIZONTALS
WIDTH IN METERS

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

ADMC040EN
WIND LOAD CHARTS ARE BASED ON COMPOSITE PROPERTIES WHICH ARE CALCULATED IN ACCORDANCE WITH AAMA TIR-A8 AND AAMA 505.

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**WITH HORIZONTALS**

**WIDTH IN METERS**

**WITHOUT HORIZONTALS**

**WIDTH IN METERS**
Trifab® VG 451T Framing System

WIND LOAD CHARTS (CENTER) Thermal

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

WITH HORIZONTALS

WIDTH IN METERS

WIDTH IN FEET

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451TCG010

451TCG010A

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
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Trifab® VG 451 Framing System

WIND LOAD CHARTS (FRONT/BACK) Non-Thermal

WITH HORIZONTALS
WIDTH IN METERS

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</tr>
<tr>
<td>E = 40 PSF (1920)</td>
<td>67 PSF (3200)</td>
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</tbody>
</table>

WITH HORIZONTALS
WIDTH IN FEET

I = 3.346 (139.27 x 10^4)
S = 1.447 (23.71 x 10^3)

WITHOUT HORIZONTALS
WIDTH IN METERS

I = 3.001 (124.91 x 10^4)
S = 1.323 (21.68 x 10^3)

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

451VG005

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kawneer.com

ADMC040EN
Trifab® VG 451 Framing System

WIND LOAD CHARTS (FRONT/BACK) Non-Thermal

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<td>E = 40 PSF (1920)</td>
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451VG005 with 1" x 2-1/4" STEEL BAR

451VG014 with 1" x 2" STEEL BAR

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WIND LOAD CHARTS (FRONT/BACK) Non-Thermal

WITH HORIZONTALS

WIDTH IN METERS

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Trifab® VG 451 Framing System

WIND LOAD CHARTS (FRONT/BACK) Non-Thermal

EC 97911-231

JUNE, 2020

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Trifab® VG 451T Framing System

WITH HORIZONTALS
WIDTH IN METERS

WITH HORIZONTALS
WIDTH IN METERS

WITH HORIZONTALS
WIDTH IN METERS

WITH HORIZONTALS
WIDTH IN METERS

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

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Allowable Stress

Design Load

LRFD Ultimate

Design Load

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<td>A</td>
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<td>E</td>
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WIND LOAD CHARTS (FRONT/BACK) Thermal

JUNE, 2020

EC 97911-231

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Allowable Stress Design Load | LRFD Ultimate Design Load
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WIND LOAD CHARTS ARE BASED ON COMPOSITE PROPERTIES WHICH ARE CALCULATED IN ACCORDANCE WITH AAMA TIR-A8 AND AAMA 505

WITH HORIZONTALS

WIDTH IN METERS

WITH HORIZONTALS

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WITH HORIZONTALS

WIDTH IN METERS
Trifab® VG 451T Framing System

WIND LOAD CHARTS (FRONT/BACK) Thermal

WITH HORIZONTALS
WIDTH IN METERS

WIDTH IN FEET

HEIGHT IN FEET

HEIGHT IN METERS

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

WITH HORIZONTALS
WIDTH IN METERS

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

WITHOUT HORIZONTALS
WIDTH IN METERS

WITHOUT HORIZONTALS
WIDTH IN FEET

HEIGHT IN FEET

HEIGHT IN METERS

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

Allowable Stress Design Load | LRFD Ultimate Design Load
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E = 40 PSF (1920) | 67 PSF (3200)
**Trifab® VG 451/451T Framing System**

**WIND LOAD CHARTS (FRONT/BACK) SSG Mullions**

**ADMC040EN**

**AUGUST, 2020 EC 97911-236**

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---

**WITH HORIZONTALS**

**WIDTH IN METERS**

![Diagram of wind load chart with horizontal bars]

**Allowable Stress Design Load**

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<tr>
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<th>15 PSF (720)</th>
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**LRFD Ultimate Design Load**

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<td>D</td>
<td>50 PSF (2400)</td>
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<tr>
<td>E</td>
<td>67 PSF (3200)</td>
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**WITH HORIZONTALS**

**WIDTH IN METERS**

![Diagram of wind load chart with horizontal bars]

**WITHOUT HORIZONTALS**

**WIDTH IN METERS**

![Diagram of wind load chart without horizontal bars]

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**WITH HORIZONTALS**

**WIDTH IN FEET**

![Diagram of wind load chart with horizontal bars]

**ALLOWABLE STRESS**

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<td>B</td>
<td>20 PSF (960)</td>
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<tr>
<td>C</td>
<td>25 PSF (1200)</td>
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<td>D</td>
<td>30 PSF (1440)</td>
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<td>E</td>
<td>40 PSF (1920)</td>
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**SAFETY FACTOR**

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<tr>
<th>A</th>
<th>1.527 (63.55 x 10⁴)</th>
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<tr>
<td>B</td>
<td>1.057 (17.32 x 10³)</td>
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<tr>
<td>C</td>
<td>0.667 (27.76 x 10³)</td>
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<tr>
<td>D</td>
<td>0.667 (10.93 x 10³)</td>
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<tr>
<td>E</td>
<td>1.527 (63.55 x 10⁴)</td>
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**WITHOUT HORIZONTALS**

**WIDTH IN FEET**

![Diagram of wind load chart without horizontal bars]

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**451SSG005**

- **I = 1.527 (63.55 x 10⁴)**
- **S = 1.057 (17.32 x 10³)**

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

- **I₁ = 0.667 (27.76 x 10³)**
- **S₁ = 0.667 (10.93 x 10³)**

---

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

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Trifab® VG 451 Framing System

WIND LOAD CHARTS (MULTI-PLANE) Non-Thermal

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<th>Allowable Stress Design Load</th>
<th>LRFD Ultimate Design Load</th>
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<tbody>
<tr>
<td>A = 15 PSF (720)</td>
<td>25 PSF (1200)</td>
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<tr>
<td>B = 20 PSF (960)</td>
<td>33 PSF (1580)</td>
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<tr>
<td>C = 25 PSF (1200)</td>
<td>42 PSF (2000)</td>
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<td>D = 30 PSF (1440)</td>
<td>50 PSF (2400)</td>
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<tr>
<td>E = 40 PSF (1920)</td>
<td>67 PSF (3200)</td>
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WIND LOAD CHARTS (MULTI-PLANE) Thermal

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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### Allowable Stress Design Load

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

### LRFD Ultimate Design Load

- **A** = 25 PSF (1200)
- **B** = 33 PSF (1580)
- **C** = 42 PSF (2000)
- **D** = 50 PSF (2400)
- **E** = 67 PSF (3200)
Trifab® VG 451/451T Framing System

WIND LOAD CHARTS (ENTRANCES) Non-Thermal

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Allowable Stress Design Load
LRFD Ultimate Design Load

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

I = 3.116 (129.7 x 10^4)
S = 1.385 (22.7 x 10^3)

I = 3.116 (129.7 x 10^4)
S = 1.385 (22.7 x 10^3)

I = 1.935 (80.54 x 10^3)
S = 0.938 (15.37 x 10^3)

I = 3.565 (148.39 x 10^4)
S = 1.622 (26.58 x 10^3)
Trifab® VG 451/451T Framing System

WIND LOAD CHARTS (ENTRANCES) Non-Thermal

AUGUST, 2020

EC 97911-236

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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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kawneer.com

EC 97911-236

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Allowable Stress Design Load | LRFD Ultimate Design Load
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A = 15 PSF (720) | 25 PSF (1200)
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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)
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.

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.
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.

**WITH HORIZONTALS**

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**WITHOUT HORIZONTALS**

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**500lbs. Max. End Reaction**

**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)
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
Notes for System U-Factor, SHGC and VT charts:
For glass values that are not listed, linear interpolation is permitted.
Glass properties are based on center of glass values and are obtained from your glass supplier.
Trifab® VG 451 (CENTER – Non-Thermal)

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

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

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<th>Glass U-Factor</th>
<th>Overall U-Factor</th>
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### Visible Transmittance

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#### NOTE:

1. U-Factors are determined in accordance with NFRC 100.
2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values and are obtained from your glass supplier.
4. Overall U-Factor, SHGC, and VT Matrices are based on the standard NFRC specimen size of 2,000 mm wide by 2,000 mm high (78-3/4" by 78-3/4").
Trifab® VG 451 Pre-Glazed (CENTER – Non-Thermal)

System U-factor vs Percent of Glass Area

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

Notes for System U-Factor, SHGC and VT charts:
For glass values that are not listed, linear interpolation is permitted.
Glass properties are based on center of glass values and are obtained from your glass supplier.
Trifab® VG 451 Pre-Glazed (CENTER – Non-Thermal)

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

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

#### Trifab® VG 451 Pre-Glazed (CENTER – Non-Thermal)

**Thermal Transmittance**

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**Visible Transmittance**

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

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4. Overall U-Factor, SHGC, and VT Matrices are based on the standard NFRC specimen size of 2,000 mm wide by 2,000 mm high (78-3/4" by 78-3/4").

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Kawneer reserves the right to change configuration without prior notice when deemed necessary for product improvement.
Trifab® VG 451T (CENTER – Thermal)

System U-factor vs Percent of Glass Area

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

Notes for System U-Factor, SHGC and VT charts:
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Trifab® VG 451T (CENTER – Thermal)

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

System Visible Transmittance (VT) vs Percent of Vision Area
## Trifab® VG 451T Framing System

### THERMAL PERFORMANCE MATRIX

#### Trifab® VG 451T

(CENTER – Thermal)

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

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Trifab® VG 451T Pre-Glazed (CENTER – Thermal)

System U-factor vs Percent of Glass Area

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

Notes for System U-Factor, SHGC and VT charts:
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Trifab® VG 451T Pre-Glazed (CENTER – Thermal)

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

System Visible Transmittance (VT) vs Percent of Vision Area
Kawneer reserves the right to change configuration without prior notice when deemed necessary for product improvement.

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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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**SHGC Matrix**

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**Visible Transmittance**

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Trifab® VG 451T (FRONT – Thermal)

System U-factor vs Percent of Glass Area

Notes for System U-Factor, SHGC and VT charts:
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**Trifab® VG 451T (FRONT – Thermal)**

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

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

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<th>Vision Area / Total Area (%)</th>
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### Thermal Transmittance ¹ (BTU/hr • ft² • °F)

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Trifab® VG 451T (BACK – Thermal)

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

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

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### Visible Transmittance

<table>
<thead>
<tr>
<th>Glass VT</th>
<th>Overall VT</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.75</td>
<td>0.66</td>
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<tr>
<td>0.70</td>
<td>0.61</td>
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<tr>
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<td>0.09</td>
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</table>

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

1. U-Factors are determined in accordance with NFRC 100.
2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values and are obtained from your glass supplier.
4. Overall U-Factor, SHGC, and VT Matrices are based on the standard NFRC specimen size of 2,000 mm wide by 2,000 mm high (78-3/4" by 78-3/4").
Trifab® VG 451T with Steel (CENTER)

System U-factor vs Percent of Glass Area

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

Notes for System U-Factor, SHGC and VT charts:
For glass values that are not listed, linear interpolation is permitted.
Glass properties are based on center of glass values and are obtained from your glass supplier.
Trifab® VG 451T with Steel (CENTER)

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

System Visible Transmittance (VT) vs Percent of Vision Area
Trifab® VG 451T Framing System

THERMAL PERFORMANCE MATRIX

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

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

1. U-Factors are determined in accordance with NFRC 100.
2. SHGC and VT values are determined in accordance with NFRC 200.
3. Glass properties are based on center of glass values and are obtained from your glass supplier.
4. Overall U-Factor, SHGC, and VT Matrices are based on the standard NFRC specimen size of 2,000 mm wide by 2,000 mm high (78-3/4" by 78-3/4").

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**Thermal Transmittance**

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<tr>
<th>Glass U-Factor</th>
<th>Overall U-Factor</th>
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**SHGC Matrix**

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<th>Glass SHGC</th>
<th>Overall SHGC</th>
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**Visible Transmittance**

<table>
<thead>
<tr>
<th>Glass VT</th>
<th>Overall VT</th>
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<tbody>
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