Technical Glass Products
The Fireframes® Curtainwall Series frame system allows for large, multi-story expanses of fire-rated glass and frames in both interior and exterior applications. Envision expansive window openings, with more glass and less frame. Along with exterior applications, lobbies and atriums are well suited to the use of fire rated curtain wall to provide uninterrupted views. Floor to ceiling fire-rated curtain walls can be used to divide interior spaces while offering security and aesthetic appeal as well as fire protection. In addition, Fireframes® Curtainwall Hurricane Series is available for hurricane applications. Fireframes Curtainwall is just one of the many expressions of creativity that are changing traditional thinking about fire-rated glass and framing. The future of fire safety has never looked so good.

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Figure 1 - System Exploded Assembly View
### Material Key Chart

#### Fasteners Provided With Fireframes Curtainwall Series

<table>
<thead>
<tr>
<th>Item(s)</th>
<th>Material</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>CONNECTING PLATE SCREW</td>
<td>Connecting plate screws (Torx T25) for connecting “T” and “X” type connecting plates over</td>
</tr>
<tr>
<td></td>
<td></td>
<td>mullion gasket intersections.</td>
</tr>
<tr>
<td>13</td>
<td>GLAZING PLATFORM SCREW</td>
<td>M6-1.0 x 16mm stainless steel flat head socket cap screws are provided for connecting bolt-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>on glazing platforms to horizontal mullions.</td>
</tr>
<tr>
<td>29</td>
<td>PRESSURE PLATE SCREW</td>
<td>Self-drilling screw (Torx T27) provided at appropriate length for connecting pressure plates</td>
</tr>
<tr>
<td></td>
<td></td>
<td>and temporary pressure plates to mullions.</td>
</tr>
<tr>
<td>18</td>
<td>PERIMETER SPACER SCREW</td>
<td>#12-11 stainless steel Phillips flat head sheet metal screws are provided for connecting</td>
</tr>
<tr>
<td></td>
<td></td>
<td>perimeter spacers to mullions.</td>
</tr>
<tr>
<td>10</td>
<td>SILL ANCHOR SCREW</td>
<td>Non-welded sill anchors will have an M6-1.0 x 25mm screw securing the anchor to the mullion.</td>
</tr>
<tr>
<td>4</td>
<td>SLIDING SHEAR CLIP SCREW</td>
<td>Frames using sliding shear clips have an M6-1.0 x 30mm screw used to lock the shear clip into</td>
</tr>
<tr>
<td></td>
<td></td>
<td>position once installed.</td>
</tr>
</tbody>
</table>

#### Components Provided With Fireframes Curtainwall Series

<table>
<thead>
<tr>
<th>Item(s)</th>
<th>Material</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1, 2, and 3</td>
<td>ANCHORS</td>
<td>Head and Sill anchors at vertical mullions are provided for jamb and intermediate mullion</td>
</tr>
<tr>
<td></td>
<td></td>
<td>conditions. For Hurricane applications, anchors are available for concrete, steel, or timber</td>
</tr>
<tr>
<td></td>
<td></td>
<td>surrounding conditions.</td>
</tr>
<tr>
<td>14 and 15</td>
<td>CONNECTING PLATE</td>
<td>Connecting plates, “T” and “X” styles, fit over freshly sealed mullion gasket joints at horizontal and vertical mullion intersections.</td>
</tr>
<tr>
<td>30 and 31</td>
<td>COVER CAP</td>
<td>Snap on cover caps are provided for horizontal and vertical members.</td>
</tr>
<tr>
<td>23 and 24</td>
<td>COVER PLATE</td>
<td>Cover plates, similar to the connection plates, are used at the horizontal and vertical pressure plate intersections and are applied to the exterior face of the glass under the pressure plates.</td>
</tr>
<tr>
<td>22</td>
<td>DIVERTER GASKET</td>
<td>The diverter gasket may be integral to the horizontal mullion gasket, or it may be supplied as a separate gasket. See Fireframes project drawings for details.</td>
</tr>
<tr>
<td>20</td>
<td>FIRE-RATED GLAZING MATERIAL</td>
<td>Refer to the Fire-Rated Glazing Options and Specifications, and Glazing Installation Instructions.</td>
</tr>
<tr>
<td>12</td>
<td>GLAZING PLATFORM</td>
<td>Bolt on glazing platforms are installed on sill and intermediate horizontal mullions.</td>
</tr>
<tr>
<td>25 and 28</td>
<td>GUIDE BUSHING</td>
<td>Guide Bushings and Bushing Separators are provided to help guide the pressure plate screws and protect the glass during installation.</td>
</tr>
<tr>
<td>21</td>
<td>INTUMESCENT TAPE</td>
<td>REQUIRED on all applications, fire-rated intumescent tape as supplied must be installed on the glass at each opening.</td>
</tr>
<tr>
<td>5, 6, and 8</td>
<td>MULLIONS</td>
<td>Vertical and horizontal mullions are cut to size and pre-machined.</td>
</tr>
<tr>
<td>11</td>
<td>MULLION GASKET</td>
<td>Black silicone gaskets for horizontal and vertical mullions may be shipped loose for field installation.</td>
</tr>
<tr>
<td>17</td>
<td>PERIMETER SPACER</td>
<td>Spacers are made of hardwood, and are typically supplied in stock lengths not exceeding 96” for field trimming.</td>
</tr>
<tr>
<td>27</td>
<td>PRESSURE PLATE</td>
<td>Pressure plate, gaskets, and guide bushings are provided.</td>
</tr>
<tr>
<td>26</td>
<td>PRESSURE PLATE GASKET</td>
<td>EPDM seal required for pressure plate.</td>
</tr>
<tr>
<td>19</td>
<td>SETTING BLOCKS</td>
<td>6 mm calcium silicate setting blocks shipped loose for field installation.  Hardware or silicone setting blocks are also allowable.</td>
</tr>
<tr>
<td>9</td>
<td>SHEAR CLIPS</td>
<td>Sliding shear clips (or welded shear clips) are provided for each horizontal mullion.</td>
</tr>
<tr>
<td>-</td>
<td>TEMPORARY PRESSURE PLATE</td>
<td>A quantity of temporary pressure plates are provided to aid in the installation of the glass.</td>
</tr>
</tbody>
</table>

Figure 2 - Provided by TGP Material Key Chart
# Material Key Chart

<table>
<thead>
<tr>
<th>Material</th>
<th>Required Material NOT PROVIDED With Fireframes Curtainwall Series</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANCHORS (Special)</td>
<td>If required per the approved Fireframes drawings, intermediate wind-load (dynamic) and/or dead load (fixed) anchors provided by other trades.</td>
</tr>
<tr>
<td>ANCHOR FASTENER</td>
<td>As constructions vary widely in design, perimeter fasteners (anchors) are supplied by others.</td>
</tr>
<tr>
<td>FINISH SEALANT</td>
<td>Sealant installed into the interior and exterior perimeter cavity. Select color for sealant to match frame or as directed by project architect.</td>
</tr>
<tr>
<td>FIRESAFING</td>
<td>REQUIRED on all applications, mineral wool and/or fire rated caulking must be installed between the perimeter frame and surrounding conditions. Intumescent sealant or firmly packed mineral wool must be installed in a continuous fashion between frame assembly and wall construction, being interrupted only by the perimeter anchor and/or anchor shims. Sealant manufacturers such as Tremco, Pemko and many others supply intumescent sealants.</td>
</tr>
<tr>
<td>SHIMS</td>
<td>Perimeter shims at anchor locations are to be of hardwood (oak) or non-combustible (steel) materials. Plastic shims may not be used.</td>
</tr>
<tr>
<td>WEEPS AND BAFFLES</td>
<td>When weeps or baffles are required at the sill condition of exterior applications, a 5/16” minimum inside diameter weep is recommended. A 30 ppi reticulated foam baffle, compressed to 50% original size is recommended.</td>
</tr>
<tr>
<td>WALL CONDITION</td>
<td>Rated wall construction by other trades.</td>
</tr>
</tbody>
</table>

*Figure 3 - Not Provided by TGP Material Key Chart*
General Information

This document is meant as a general description of typical installations. As such, it is the responsibility of the installer to ensure the frame materials are installed per the conditions that exist on any given project in accordance with these instructions and project drawings. TGP project drawings may detail modifications to the surrounding conditions required for a given project, (if architectural details or sketches were provided to TGP) and should be used in conjunction with these instructions. In the event of any conflict between these instructions and TGP project drawings, the TGP project drawings shall govern. TGP does not accept any warranty and/or liability for installations not in compliance with this document or other non-conforming use of the TGP products and/or system. Contact TGP with questions concerning these details as they apply to the particulars of a given project.

FEATURES

- Fire ratings of 45, 60, 90, and 120 minutes.
- Unrestricted glazing area for use in locations where total glazing exceeds 25% of wall area (except for 45 minute rating).
- Full-lite doors available in single leaf or double leaf design (see Fireframes Designer Series or Fireframes Heat Barrier Series).
- Narrow steel profiles.
- Air and water pressure tested and approved for exterior use.
- Easy installation; similar to typical pressure plate curtain wall.
- Frames supplied as “K.D.” (knock-down) for field installation.
- Pressure-glazed with EPDM or silicone gaskets.
- Can incorporate large individual panes of Pilkington Pyrostop® glass.
- Durable steel frames ensure low maintenance system.
- Custom cover caps (aluminum, stainless steel, etc.) to meet project needs.
- Factory finished to match desired color scheme.
- Fabricated in the U.S.A.
- Available for hurricane applications.

TESTING DATA

<table>
<thead>
<tr>
<th>Test Type</th>
<th>Per</th>
<th>Standards</th>
<th>Measured</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Infiltration</td>
<td>ASTM E283-91</td>
<td>CFM per square foot @ 1.57 PSF Reported to the second decimal TOTAL CFM</td>
<td>0.1</td>
<td>Passed</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.07</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3.93</td>
<td></td>
</tr>
<tr>
<td>Water Resistance</td>
<td>ASTM E547-00</td>
<td>@ 30.00 PSF leakage after:</td>
<td>None</td>
<td>Passed</td>
</tr>
<tr>
<td></td>
<td>ASTM E331-00</td>
<td>4 cycles of 5 minutes</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 cycle of 15 minutes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uniform Structural Load</td>
<td>ASTM E330-97</td>
<td>Damage from a load of:</td>
<td>None</td>
<td>Passed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>+125.00 PSF</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>-125.00 PSF</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Permanent Set Deflection</td>
<td>0.005&quot;</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.317&quot;</td>
<td></td>
</tr>
</tbody>
</table>
## CURTAINWALL HURRICANE TESTING DATA

<table>
<thead>
<tr>
<th>Test Type</th>
<th>Per</th>
<th>Standards</th>
<th>Measured</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level of Protection</td>
<td>ASTM E1996-09</td>
<td>Basic Protection</td>
<td>None</td>
<td>Passed</td>
</tr>
<tr>
<td>Wind Zone</td>
<td>ASTM E1996-09</td>
<td>Wind Zone 4 – Basic Wind Speed</td>
<td>&gt; 140 mph (63 m/s)</td>
<td>Passed</td>
</tr>
<tr>
<td>Design Pressure</td>
<td>ASTM E1886-05</td>
<td>Damage From a Load of:</td>
<td>No Damage</td>
<td>Passed</td>
</tr>
<tr>
<td></td>
<td>TAS 202-94</td>
<td>+110.00 PSF (+5267 Pa) &amp; -110.00 PSF (-5267 Pa)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air Infiltration</td>
<td>TAS 202-94</td>
<td>Tested at 6.24 PSF (299 Pa)</td>
<td>0.063 cfm/ft² (0.32 L/s*m²)</td>
<td>Passed</td>
</tr>
<tr>
<td>Water Penetration Pressure</td>
<td>TAS 202-94</td>
<td>Tested at 16.5 PSF (790 Pa)</td>
<td>No Leakage at 16.5 PSF (790 Pa)</td>
<td>Passed</td>
</tr>
<tr>
<td>Impact Testing (Large Missile)</td>
<td>TAS 201-94</td>
<td>Damage From a Load of:</td>
<td>No Openings</td>
<td>Passed</td>
</tr>
<tr>
<td></td>
<td>ASTM E1886-05</td>
<td>+110.00 PSF (+5267 Pa) &amp; -110.00 PSF (-5267 Pa)</td>
<td>Greater Than</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ASTM E1996-09</td>
<td>Damage From a Load of:</td>
<td>Anchors Fully</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>+110.00 PSF (+5267 Pa) &amp; -110.00 PSF (-5267 Pa)</td>
<td>Intact and No</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Damage From a Load of:</td>
<td>Openings Greater</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>+110.00 PSF (+5267 Pa) &amp; -110.00 PSF (-5267 Pa)</td>
<td>Than 130 mm x 1 mm</td>
<td></td>
</tr>
</tbody>
</table>

### LISTINGS

- Listed and labeled by Underwriters Laboratories, Inc.® as Design Number U537 and Underwriters Laboratories of Canada as W473.
- Frame tests performed in accordance with ASTM E-119 (60-120 minutes), NFPA 251, NFPA 257, UL 263, UL 9, UL 10C, ASTM E283, ASTM E330, ASTM E331, ASTM E547, AAMA 501.1, CAN/ULC-S101, and CAN4 S-106.
- Approved for use in Los Angeles – **LARR 25798**.
## General Information

### SIZING GUIDELINES

<table>
<thead>
<tr>
<th>Frame Rating</th>
<th>Maximum Exposed Glass Area Per Piece</th>
<th>Maximum Exposed Glass Single Dimension</th>
<th>Maximum Frame Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>45 Minutes *</td>
<td>31.25 sq. ft. 4,500 sq. in. 2.9 sq. m.</td>
<td>95-1/4” 2419 mm</td>
<td>Maximum area: 152 sq. ft. (22,888 sq.in.) 14.12 sq. m. Maximum single dimension: 13’-6” 4,115 mm</td>
</tr>
<tr>
<td>60 Minutes (Pyrostop 23 mm)</td>
<td>39 sq. ft. 5,616 sq. in. 3.62 sq. m.</td>
<td>96” 2,438 mm</td>
<td>n/a **</td>
</tr>
<tr>
<td>60 Minutes (Pyrostop ≥ 26 mm)</td>
<td>51.7 sq. ft. 7,442 sq. in. 4.8 sq. m.</td>
<td>Maximum width: 96” 2,438 mm Maximum height: 118-1/8” 3,000 mm</td>
<td>n/a **</td>
</tr>
<tr>
<td>120 Minutes</td>
<td>25.9 sq. ft. 3,730 sq. in. 2.41 sq. m.</td>
<td>111” 2,819 mm</td>
<td>n/a **</td>
</tr>
</tbody>
</table>

### Fireframes® Curtainwall Hurricane Series

<table>
<thead>
<tr>
<th>Frame Rating</th>
<th>Maximum Exposed Glass Area Per Piece</th>
<th>Maximum Exposed Glass Single Dimension</th>
<th>Maximum Frame Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>60 Minutes</td>
<td>39 sq. ft. 5,616 sq. in. 39 sq. ft.</td>
<td>96” 2,438 mm</td>
<td>n/a **</td>
</tr>
<tr>
<td>120 Minutes</td>
<td>25.9 sq. ft. 3,730 sq. in. 2.41 sq. m.</td>
<td>96” 2,438 mm</td>
<td>n/a **</td>
</tr>
</tbody>
</table>

**Sizing and Glazing Notes:** Refer to the rows above.

** Opening Protective – Limited size IBC Fire Window Assembly Fire Protection Rating Table 715.4
** 60 and 120 minute tests conducted per UL 263 / ASTM E119. Therefore assembly is classified as a wall assembly, and not subject to “opening” area limitations.

### AMERICANS WITH DISABILITY ACT STANDARDS ON FIRE PROTECTION DOORS

If fire doors were required to meet A.D.A. (Americans with Disability Act) Standards, many would not open or close with adequate force to prevent passage of flame and smoke. Recognizing this special fire safety need, NFPA 101 (National Fire Protection Association) allows operational features for fire doors (opening forces, closing speeds, etc.) that are different than for non-fire-rated doors. These fire “protective” steel doors carry ratings from 20-90 minutes for fire protection. Heat transfer through the door is not an issue, so they are constructed without interior insulation.
DOORS IN FIREFRAMES CURTAINWALL SERIES FRAMES
Fireframes Designer Series and Fireframes Heat Barrier Series door frames and doors may be installed into the Fireframes Curtainwall Series frames. For more details on installation, refer to those specific product’s Architectural Specification Manuals.

CONVENTIONAL WOOD OR HOLLOW METAL DOORS IN FIREFRAMES CURTAINWALL SERIES FRAMES
Fireframes® Designer Series or Fireframes® Heat Barrier Series doors are compatible with Fireframes Curtainwall Series framing. Additionally, conventional fire-rated wood or hollow metal doors can also be installed into Fireframes Curtainwall Series frames, but will require coordination with respect to preparation of door hardware. Prior to producing your shop drawings, TGP will need to evaluate relevant hardware schedule information. When ordering wood or hollow metal doors, you must supply our engineering staff with the manufacturer, model number, fabrication templates, door handing and, if required, physical samples. If TGP must prepare special fabrication drawings to accommodate your hardware needs, your project lead time may be extended.

FIRE-RATED GLAZING OPTIONS
Technical Glass Products provides a complete line of fire-rated glazing options to complement the Fireframes Curtainwall Series frame system. Refer to your Technical Glass Products SpeciFIRE® Selection Guide, available from your sales representative or online at www.fireglass.com.

Please consult your Technical Glass Products sales representative to determine the best option for your application.

<table>
<thead>
<tr>
<th>Glazing Product</th>
<th>Available Fire Rating (minutes)</th>
<th>Offers High Impact Safety</th>
<th>Passes Hose Stream Test</th>
<th>Reduces Heat Transfer</th>
<th>Complies with Energy Codes</th>
<th>Compatible with TGP Framing</th>
<th>Provides Acoustic Barrier</th>
<th>Advantages / Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pilkington Pyrostop® 45/60/120</td>
<td>●*</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>+ High clarity + Larger sizes - Can be heavy</td>
<td></td>
</tr>
<tr>
<td>Pilkington Pyrostop® IGU 45/60/120</td>
<td>●*</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>+ High clarity + Larger sizes - Can be heavy</td>
<td></td>
</tr>
</tbody>
</table>

Note: * Meets CPSC 16CFR1201: Category I and II.
GLAZING SPECIFICATIONS

Pilkington Pyrostop® fire resistant glass provides up to a two (2) hour fire rating. It can also be combined with other glazing products to achieve nearly any level of security protection and performance.

The Fireframes Curtainwall Series when combined with Pilkington Pyrostop at 60 minutes or greater, is classified and listed with UL as a transparent wall; a fire resistive assembly that blocks the transfer of radiant heat during a fire. Lower ratings (45 minute) are considered a window assembly.

<table>
<thead>
<tr>
<th>Manufacturer’s Designation</th>
<th>45-200</th>
<th>45-260 or *45-360</th>
<th>60-101</th>
<th>60-201</th>
<th>60-261 or *60-361</th>
<th>120-202</th>
<th>120-104</th>
<th>120-262 or *120-362</th>
<th>120-203 or 120-203 TI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire Rating (minutes)</td>
<td>45</td>
<td>45</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>120</td>
<td>120</td>
<td>120</td>
<td>120</td>
</tr>
<tr>
<td>Glazing Type</td>
<td>Single</td>
<td>IGU</td>
<td>Single</td>
<td>Single</td>
<td>IGU</td>
<td>Single</td>
<td>IGU</td>
<td>IGU</td>
<td>IGU</td>
</tr>
<tr>
<td>Application</td>
<td>Interior</td>
<td>Exterior</td>
<td>Interior</td>
<td>Exterior</td>
<td>Interior</td>
<td>Interior</td>
<td>Exterior</td>
<td>Interior</td>
<td>Interior</td>
</tr>
<tr>
<td>Nominal Thickness</td>
<td>3/4”</td>
<td>1-1/4”</td>
<td>7/8”</td>
<td>1-1/16”</td>
<td>1-5/8”</td>
<td>1-9/16”</td>
<td>2-1/8”</td>
<td>2-1/8” or 2-3/8”</td>
<td>2-3/8”</td>
</tr>
<tr>
<td>Daylight Transmission (approx.)</td>
<td>84%</td>
<td>75%</td>
<td>88%</td>
<td>88%</td>
<td>78%</td>
<td>85%</td>
<td>78%</td>
<td>75%</td>
<td>74% (74%)</td>
</tr>
<tr>
<td>STC Rating (dB) (approx.)</td>
<td>40</td>
<td>40</td>
<td>41</td>
<td>44</td>
<td>44</td>
<td>46</td>
<td>46</td>
<td>46</td>
<td>44</td>
</tr>
<tr>
<td>UL-752 Bullet Resistance Rating</td>
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NOTES:
- Exterior IGU is available with Low E or Solar Control coating.
- Opening Protective – Limited size IBC Fire Window Assembly Fire Protection Rating Table 715.4
- UL Listed as Wall Assembly as per UL 263 / ASTM E-119.
## General Information

<table>
<thead>
<tr>
<th>Manufacturer's Designation</th>
<th>60-260 HR Triple</th>
<th>60-260 TI HR Triple</th>
<th>60-360 HR Triple</th>
<th>60-360 TI HR Triple</th>
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<td>Fire Rating (minutes)</td>
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<td>Nominal Thickness</td>
<td>2-3/4” 69 mm</td>
<td>2-3/4” 69 mm</td>
<td>2-3/4” 69 mm</td>
<td>2-3/4” 69 mm</td>
<td>3-1/4” 82 mm</td>
<td>3-1/4” 82 mm</td>
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<td>Weight - Pounds per Sq. Ft. (approx.)</td>
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<td>22.22</td>
<td>22.22</td>
<td>22.22</td>
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### General Information

#### GLAZING SPECIFICATIONS

<table>
<thead>
<tr>
<th>60-101 – 60 Minute Interior Window</th>
<th>60-201 – 60 Minute Exterior Window</th>
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<tr>
<td><img src="image1.png" alt="Diagram" /></td>
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<th>120-104 – 120 Minute Interior Window</th>
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<th>120-202 – 120 Minute Exterior Window</th>
<th>120-262 / 120-362 – 120 Minute Exterior Window</th>
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<td><img src="image5.png" alt="Diagram" /></td>
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<th>45-200 – 45 Minute Interior Window</th>
<th>45-260 / 45-360 – 45 Minute Exterior Window</th>
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**General Information**

<table>
<thead>
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<th>Fireframes® Curtainwall Hurricane Series</th>
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<tr>
<td><strong>60-260 HR Triple / 60-260 TI HR Triple – 60 Minute</strong></td>
<td><strong>120-260 HR Triple / 120-360 HR Triple – 120 Minute</strong></td>
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<tr>
<td><strong>60-360 HR Triple / 60-360 TI HR Triple – 60 Minute</strong></td>
<td><strong>Exterior Window</strong></td>
</tr>
<tr>
<td><strong>Exterior Window</strong></td>
<td><strong>Exterior Window</strong></td>
</tr>
</tbody>
</table>

**ANGLE SEGMENTED FRAMES**

For interior and exterior applications utilizing the 60 mm wide profiles, the horizontals and glass can be angled up to a maximum of six degrees (6°) on either side of the shared vertical mullion (Figures 4 and 5). This configuration requires welded shear clips which have exposed fasteners on each side of the horizontal mullion. Angle segmented frames are not allowed in Fireframes® Curtainwall Hurricane Series.

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**Figure 4 - Segmented Frame Plan View**

**Figure 5 - Segmented Frame Detail**
Recommended Guidelines

1. REVIEW CONTRACT DOCUMENTS
Review architectural drawings, specifications, approved TGP project drawings, installation instructions, and shipping lists to become thoroughly familiar with the project. The TGP project drawings take precedence and include specific details for your installation. These installation instructions are of a general nature and cover most conditions.

2. BUILDING CODES
Due to the diversity in local, state / provincial, or federal laws and the codes that govern design and application of architectural products, it is the responsibility of the individual architect / owner and installer to ensure that products selected for use on projects comply with all the applicable building codes and laws. Technical Glass Products exercises no control over the use or application of its products, glazing materials, and operating hardware and assumes no responsibility thereof. Compliance of TGP project drawings with applicable codes for a given project shall be the responsibility of the Buyer.

3. COORDINATION WITH OTHER TRADES
Coordinate with the general contractor any sequence with other trades which impact installation (i.e. fire proofing, back-up walls, partitions, ceilings, mechanical ducts, converters etc.) or in which installation may impact the work of adjacent trades.

4. INSTALLATION
All materials are to be installed plumb and level.

5. BENCH MARKS
All work should start from bench marks and/or column lines as established by the architectural drawings and the general contractor with guaranteed accuracy. Using these datum points and lines, determine:
   a. The plane of the wall in reference to offset lines provided on each floor;
   b. The finish floor lines in reference to bench marks on the outer building columns; and
   c. Mullion spacing from both ends of openings to prevent dimensional build-up of daylight opening.

6. SURROUNDING CONDITIONS
Unless specifically contracted to do so, TGP does not draw or detail the project specific surrounding conditions (the area of the building that surrounds the TGP framing). Coordination of adjacent material and construction tolerances to TGP’s systems must be facilitated by the installer. TGP recommends that a professional engineer review the project drawings to verify the structural integrity of the installation. Please contact TGP if you would like a quote for fully detailed project drawings including surrounding details and or Professional Engineering (PE) services.
   a. Coordination of adjacent material and construction tolerances to TGP’s systems may be facilitated by TGP as part of preparing project drawings, and these drawings may indicate acceptable tolerances for critical dimensions. The installer should verify that surrounding construction is in accordance with the approved project drawings. Do not accept rough opening dimensions less than shown on project drawings. It is assumed that the minimal joint dimensions shown on the TGP project drawings match the field conditions. A frame may fit within a given opening but sealants may not perform as detailed if a smaller sealant joint is installed. Expansion / contraction issues may also be compromised. IF THE JOINTS ARE SMALLER THAN THAT SHOWN ON THE TGP PROJECT DRAWINGS, DO NOT PROCEED. Notify the General Contractor that the conditions are not as detailed and wait for corrective work to be completed before starting this work.
b. The installer MUST notify and receive approval from TGP and the general contractor when conditions are not in accordance with approved project drawings and/or change any aspect of the structural performance of the Fireframes Series before making any modifications to the TGP-furnished material or making changes which are different from those shown on the TGP project drawings. These conditions include, but are not limited to, anchor placement/location, changes in adjacent materials the anchor is being connected to or changes to dimensional relationships between framing, anchors and connection to adjacent materials.

c. TGP must review and approve in writing any changes required prior to the subcontractor installing any “corrective” work. These reviews may incur additional charges, which must be approved by the TGP customer prior to TGP’s review.

7. FRAME CONSTRUCTION VARIES
All frames are shipped “K-D” (knock-down) and are to be assembled on site. TGP does not pre-assemble frames prior to shipment as the method for doing so is not intended for long shipping distances. Component parts such as anchors, spacers, and gaskets are shipped loose. Depending on the installer’s preference, some of these components may be pre-assembled at your shop prior to transporting to job site.

8. FASTENING
Within the body of these instructions, “fastening” means any method of securing one part to another or to adjacent materials by means other than welding, adhering or using a mechanical fastener as shown on the approved details. Only those fasteners used within the system are specified in these instructions. Due to the varying perimeter conditions and performance requirements, perimeter and anchor fasteners are not specified in these instructions and are the responsibility of the installer.

9. SEALANTS
a. Sealants must be compatible with all materials they are in contact with, including other sealant surfaces. Consult with sealant manufacturer for recommendations relative to joint size, shelf life, compatibility, cleaning/priming, tooling, adhesion, etc.

b. The chemical compatibility and/or adhesion of all glazing materials and framing sealants with each other and with like materials used in glass and frame fabrication must be established by the installer. This is required on every project.

c. If required by the project specifications, it is the responsibility of the glazing contractor to submit any documentation or samples from the sealant manufacturer indicating that glass and glazing material has been tested for chemical compatibility and/or adhesion with glazing sealants. This applies to all TGP materials in contact with any sealant. TGP will furnish samples of these materials upon request.

d. The implementation of the test results is the responsibility of the installing contractor, and includes material performance and recommendations for primers and substrate preparation required to obtain adhesion.

10. PERIMETER JOINTS
Perimeter seals and/or expansion joints shown in these instructions and in the TGP project drawings are shown at nominal size. Actual dimensions may vary due to perimeter conditions and/or difference in metal temperature between the time of fabrication and the time of installation. Design and detailing have been based on a fabrication / installation temperature of 70° F (21° C). If extreme temperatures exist at time of installation, gaps between expansion members may require slight adjustment.
11. **CLAMPING SCREW TORQUE**
Edge pressure must not exceed 11.5 pounds per linear inch. This pressure is required on the Fireframes Curtainwall Series mullion gaskets. It must be uniformly applied by the exterior mounted pressure plate, through the glass, to the mullion gaskets. **Excessive or irregular edge pressure WILL CAUSE deformation and breakage.**

12. **WATER HOSE TEST**
Exterior installations may require a water test in accordance with AAMA 501.2. As soon as a representative amount of the wall has been glazed (500 square feet or 46.5 square meters) a water hose test should be conducted. This test should be repeated for every 500 square feet (46.5 square meters), or as stipulated by specification, after all components have been installed.

13. **FIELD ANCHORS**
Steel or stainless steel anchors that are welded to steel structure or are bolted to embed must be line set before mullions are placed. Outstanding leg of anchors must be at 90° to offset lines. Mullion spacing should be held to ±1/32” (0.8 mm). Anchors may vary per job conditions. On stainless steel mullion projects, stainless steel anchors may be used, therefore, proper welding procedures must be followed. Always refer to approved project drawings for specific job site conditions.

   a. AWS-certified welders are recommended to be used to install all field weld conditions called out in the TGP project drawings. The responsibility of using experienced, certified welders is the installing contractor’s, not TGP’s.

   b. All field welding must be adequately shielded to avoid any splatter on glass or frame components. Results of inadequately shielded field welding will be unsightly and/or structurally unsound. Advise general contractor and other trades accordingly.

   c. TGP typically finishes all steel material to protect from corrosion during shipping and storage on site prior to installation. For powder coated finishes, it is required to grind off the finish at the expected weld location prior to welding operations. The field weld must be re-finished with a zinc rich primer (in unexposed areas) or with touch-up paint (in exposed areas) after the welding is completed. Welds should never be left unpainted or unfinished. TGP can furnish small quantities of touch-up paint as required to match the original finish.

14. **STAINLESS STEEL**
On projects with stainless steel mullions specified, certain precautions must be taken for proper installation.

   a. When fastening any screw into the mullion, a constant torque tool such as a regular drill or screw gun must be used. Impact style “bit-drivers” must NOT be used as the increased torque will likely break the screws.

   b. If field drilling the mullions is required, sharp drill bits must be used with constant pressure maintained on the drill bit at all times to avoid work-hardening the hole. Lubrication, such as a cutting fluid, is recommended.

   **ATTENTION:** Stainless steel fasteners used on this system need special care during installation. Loctite® brand anti-seize must be used for all stainless steel fastener installation. If no lubrication is used, the fasteners have a higher chance of galling and seizing during installation; this will either strip or break fasteners. If the fastener seizes or strips, the fastener must be removed and replaced. Final fastener tightening should be done in accordance with other sections as described herein.
45 mm System Profile Options

45 mm Mullion Profile Options

- MULLION/TRANSOM PROFILE
  - 1/2" [2.5] STEEL
  - PRE-GALVANIZED
  - AVAILABLE IN 304 STAINLESS STEEL WITH #4 BRUSH FINISH

- Self Drilling Facade Screws
  - Creates secure fastening with extremely high pullout values

- Water Resistant Penetration
  - Prevents water infiltration

- Glass Pocket Bushing
  - Guided Drilling

- Seal
  - Aligns easily in profile grooves
  - Overlapping joinery creates secure facade seal

Pressure Plate and Gasket

Stainless Steel

Cover Cap, Pressure Plate and Gasket

Stainless Steel Cover Caps

Aluminum Cover Caps
45 mm System Interior Section Details

- FIRE-RATED GLASS
- COVER PLATE BETWEEN GASKET AND GLASS
- SETTING BLOCK
- PRESSURE PLATE
- COVER CAP
- PRESSURE PLATE GASKET
- INTUMESCENT TAPE
- CONNECTING PLATE
- MULLION GASKET
- SLIDING SHEAR CLIP
- LINE OF INTERIOR FINISH
- MULLION ANCHORS (SPECIAL) PER PROJECT REQUIREMENTS (TYP.)
- HORIZONTAL MULLION SECTION WITH MULLION ANCHOR AT SLAB EDGE
- VARES
- 4 HORIZONTAL MULLION SECTION WITH MULLION ANCHOR AT SLAB EDGE
- INTERIOR APPLICATION
45 mm System Interior Section Details

SLIDING PAD NOT PER PROJECT REQUIREMENTS (BY OTHERS)

BUILDING SLAB OR SUPPORT

ANCHOR BOLTS PER PROJECT REQUIREMENTS (BY OTHERS)

MULLION GASKET

FIRE-RATED GLASS

MULLION ANCHORS (SPECIAL) PER PROJECT REQUIREMENTS (BY OTHERS)

FACE OF HORIZONTAL COVER CAP

PRESSURE PLATE SCREW

COVER CAP

13/4 (45)

DETAILED SLIDING PAD NOT PER PROJECT REQUIREMENTS (BY OTHERS)

BUILDING SLAB OR SUPPORT

ANCHOR BOLTS PER PROJECT REQUIREMENTS (BY OTHERS)

MULLION ANCHORS (SPECIAL) PER PROJECT REQUIREMENTS (BY OTHERS)

FACE OF HORIZONTAL COVER CAP

PRESSURE PLATE GASKET

5 VERTICAL MULLION SECTION AT SLAB INTERIOR APPLICATION
45 mm System Interior Section Details

6 JAMB SECTION WITH WELDED SHEAR CLIP AT SILL
INTERIOR APPLICATION

- 1/4" THICK SILL ANCHOR
- SEALANT AND BACKER ROD (BY OTHERS)
- SILL ANCHOR SCREW
- PERIMETER SPACER SCREW
- MINERAL WOOL (BY OTHERS)
- SEALANT AND BACKER ROD (BY OTHERS)
- PERIMETER SPACER
- PRESSURE PLATE GASKET
- COVER CAP
- INTUMESCENT TAPE
- SEALSANT AND BACKER ROD (BY OTHERS)
- ROUGH OPENING (RO)
- FRAME DIMENSION (FD)
- FIRE-RATED GLASS

- 10GA WELDED SHEAR CLIP
- #10-24X1/2 UFHMS
- ANCHOR BOLT (BY OTHERS)
- PRESSURE PLATE SCREW
- PRESSURE PLATE
- CONNECTING PLATE
- COVER PLATE BETWEEN GASKET AND GLASS
- SETTING BLOCK
- PRESSURE PLATE
- PRESSURE PLATE SCREW
- COVER CAP
- PRESSURE PLATE GASKET
- PERIMETER SPACER
- MINERAL WOOL (BY OTHERS)

7 SILL SECTION WITH WELDED SHEAR CLIP
INTERIOR APPLICATION

- 1/4" THICK SILL ANCHOR
- ATTACHED TO END OF VERTICAL MULLION
- FIRE-RATED GLASS
- 10GA WELDED SHEAR CLIP
- #10-24X1/2 UFHMS
- ANCHOR BOLT (BY OTHERS)
- FULL BEARING SHIM (BY OTHERS)
- SEALANT AND BACKER ROD (BY OTHERS)
- ANCHOR BOLT (BY OTHERS)
45 mm System Interior Section Details

- **1/4" THICK SILL ANCHOR**
- **SEALANT AND BACKER ROD (BY OTHERS)**
- **SILL ANCHOR SCREW**
- **PERIMETER SPACER SCREW**
- **MINERAL WOOL (BY OTHERS)**
- **SEALANT AND BACKER ROD (BY OTHERS)**
- **PERIMETER SPACER**
- **PRESSURE PLATE GASKET**
- **COVER CAP**
- **SLIDING SHEAR CLIP**
- **ANCHOR BOLT (BY OTHERS)**
- **FIRE-RATED GLASS**
- **INTUMESCENT TAPE**
- **PRESSURE PLATE**
- **PRESSURE PLATE SCREW**
- **FRAME DIMENSION (FD)**
- **ROUGH OPENING (RO)**
- **CAULK JOINT**

**JAMB SECTION WITH SLIDING SHEAR CLIP AT SILL**

**INTERIOR APPLICATION**

**VERTICAL MULLION**

**INTERIOR APPLICATION**
45 mm System Interior Section Details - Doors

- **COVER PLATE BETWEEN GASKET AND GLASS**
- **SETTING BLOCK**
- **PRESSURE PLATE**
- **COVER CAP**
- **PRESSURE PLATE SCREW**
- **14GA DOOR ADAPTOR**
- **PULL SIDE SECURE SIDE**
- **COVER PLATE BETWEEN GASKET AND GLASS**
- **CONNECTING PLATE**
- **SLIDING SHEAR CLIP**
- **CLOSER**
- **ROUGH OPENING (RO)**
- **FRAME DIMENSION (FD)**
- **DOOR OPENING (DO)**
- **FACE OF VERTICAL COVER CAP**
- **GLAZING TAPE PROVIDED ON 90 MIN. RATED GLASS ONLY**
- **SETTING BLOCK**
- **SMOKE SEAL**
- **FINISHED FLOOR**

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45 mm System Interior Section Details - Doors

1/4" THICK ANCHOR
SEALANT AND BACKER ROD (BY OTHERS)
MINERAL WOOL (BY OTHERS)
PERIMETER SPACER SCREW
PRESSURE PLATE GASKET
COVER CAP

ANCHOR BOLT (BY OTHERS)
14GA DOOR ADAPTOR
EXIT DEVICE

WELD ON DOOR PIVOTS
PRESSURE PLATE
PRESSURE PLATE SCREW

GLAZING TAPE PROVIDED FOR 90 MIN.
GLASS ONLY

1/4" THICK ANCHOR
SEALANT AND BACKER ROD (BY OTHERS)
MINERAL WOOL (BY OTHERS)
ANCHOR BOLT (BY OTHERS)
PERIMETER SPACER SCREW
PERIMETER SPACER
SEALANT AND BACKER ROD (BY OTHERS)
PRESSURE PLATE GASKET
PRESSURE PLATE
PRESSURE PLATE SCREW
COVER CAP

GLAZING TAPE PROVIDED FOR 90 MIN.
GLASS ONLY

DOOR OPENING (DO)
FRAME DIMENSION (FD)
CAULK JOINT
ROUGH OPENING (RO)

VERTICAL MULLION WITH DOOR JAMB AT PIVOT
INTERIOR APPLICATION

VERTICAL MULLION WITH DOOR JAMB AT PIVOT
INTERIOR APPLICATION
45 mm System Interior Section Details - Doors

VERTICAL MULLION WITH SIDELITE DOOR JAMB AT PIVOT
INTERIOR APPLICATION

VERTICAL MULLION WITH SIDELITE DOOR JAMB AT LEVER
INTERIOR APPLICATION
**45 mm System Exterior Section Details**

**Diagram:**
- **Fire-Rated Glass**
- **Cover Plate Between Gasket and Glass**
- **Setting Block**
- **Pressure Plate**
- **Pressure Plate Screw**
- **Cover Cap**
- **Pressure Plate Gasket**
- **Diverter Gasket**
- **Intumescent Tape**
- **Connecting Plate**
- **Mullion Gasket**

**In-Fill Panel or Spandrel Unit:**
- **Building Slab or Support**
- **Mullion Anchors (Special) Per Project Requirements (TYP.)**

**Horizontal Mullion Section with Mullion Anchor at Slab Edge:**
- **Sliding Shear Clip**
- **Line of Interior Finish**
- **Varies**
45 mm System Exterior Section Details

- **SLIDING PAD**: Not per Project Requirements (by others)
- **BUILDING SLAB OR SUPPORT**: Embedded in the slab
- **ANCHOR BOLTS**: Per Project Requirements (by others)
- **MULLION ANCHORS**: Special per Project Requirements (by others)
- **FIRE-RATED GLASS**: See Exterior Glazing Options
- **IN-FILL PANEL OR SPANDREL UNIT**: Positioned in the section
- **PRESSURE PLATE SCREW**: Secures the pressure plate
- **COVER CAP**: Covers the vertical mullion section
- **DLO**: Distance between cover caps is specified
- **FACE OF HORIZONTAL COVER CAP**: Refers to the top surface of the cover cap
- **VERTICAL MULLION SECTION AT SLAB EXTERIOR APPLICATION**: Diagram indicates the vertical section at the slab exterior application

Dimensions and specifications vary depending on project requirements.
45 mm System Exterior Section Details

**JAMB SECTION WITH WELDED SHEAR CLIP AT SILL**

- **1/4" THICK SILL ANCHOR**
- **SEALANT AND BACKER ROD (BY OTHERS)**
- **SILL ANCHOR SCREW**
- **PERIMETER SPACER SCREW**
- **MINERAL WOOL (BY OTHERS)**
- **INTUMESCENT CAULK (BY OTHERS)**
- **FLEXIBLE SILICONE FLASHING SET IN SEALANT BED**
- **PERIMETER SPACER**
- **PRESSURE PLATE GASKET**
- **COVER CAP**

**FRAME DIMENSION (FD)**

**ROUGH OPENING (RO)**

**CAULK JOINT**

---

**SILL SECTION WITH WELDED SHEAR CLIP**

- **1/4" THICK SILL ANCHOR ATTACHED TO END OF VERTICAL MULLION**
- **10GA WELDED SHEAR CLIP**
- **#10-24X1/2 UFHMS**
- **ANCHOR BOLT (BY OTHERS)**
- **FIRE-RATED GLASS**
- **SEALANT AND BACKER ROD (BY OTHERS)**
- **MINERAL WOOL (BY OTHERS)**
- **SEALANT AND BACKER ROD (BY OTHERS)**
- **ANCHOR BOLT (BY OTHERS)**

**FRAME DIMENSION (FD)**

**ROUGH OPENING (RO)**

**CAULK JOINT**

---
**45 mm System Exterior Section Details**

1/4" THICK SILL ANCHOR
SEALANT AND BACKER ROD (BY OTHERS)
SILL ANCHOR SCREW
PERIMETER SPACER SCREW
MINERAL WOOL (BY OTHERS)
INTUMESCENT CAULK (BY OTHERS)
FLEXIBLE SILICONE FLASHING SET IN SEALANT BED
PERIMETER SPACER
PRESSURE PLATE GASKET
COVER CAP

1/4" THICK SILL ANCHOR SCREW
ANCHOR BOLT (BY OTHERS)
SLIDING SHEAR CLIP

CAULK JOINT
FRAME DIMENSION (FD)
ROUGH OPENING (RO)

13/4" [45] (DLO)

SLIDING SHEAR CLIP
ANCHOR BOLT (BY OTHERS)

FRAME DIMENSION (FD)
ROUGH OPENING (RO)

23 JAMB SECTION WITH SLIDING SHEAR CLIP AT SILL
EXTERIOR APPLICATION

24 VERTICAL MULLION
EXTERIOR APPLICATION

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45 mm System Exterior Section Details - Doors
45 mm System Exterior Section Details - Doors

1/4" THICK ANCHOR
SEALANT AND BACKER ROD (BY OTHERS)
MINERAL WOOL (BY OTHERS)
PERIMETER SPACER SCREW
INTUMESCENT CAULK (BY OTHERS)
FLEXIBLE SILICONE FLASHING SET IN SEALANT BED
SEALANT AND BACKER ROD (BY OTHERS)
PERIMETER SPACER
PRESSURE PLATE GASKET
COVER CAP
CAULK JOINT
FRAME DIMENSION (FD)
ROUGH OPENING (RO)

EXIT DEVICE
14GA DOOR ADAPTOR
GLAZING TAPE PROVIDED FOR 90 MIN. GLASS ONLY

VERTICAL MULLION WITH DOOR JAMB AT PIVOT
EXTERIOR APPLICATION

WELD ON DOOR PIVOTS
PRESSURE PLATE
PRESSURE PLATE SCREW
DOOR OPENING (DO)

1/4" THICK ANCHOR
SEALANT AND BACKER ROD (BY OTHERS)
MINERAL WOOL (BY OTHERS)
PERIMETER SPACER SCREW
INTUMESCENT CAULK (BY OTHERS)
FLEXIBLE SILICONE FLASHING SET IN SEALANT BED
SEALANT AND BACKER ROD (BY OTHERS)
PERIMETER SPACER
PRESSURE PLATE GASKET
COVER CAP
CAULK JOINT
FRAME DIMENSION (FD)
ROUGH OPENING (RO)

VERTICAL MULLION WITH DOOR JAMB AT PIVOT
EXTERIOR APPLICATION
45 mm System Exterior Section Details - Doors

1/4" THICK ANCHOR
PERIMETER SPACER SCREW
14GA DOOR ADAPTOR

ANCHOR BOLT (BY OTHERS)
FIRE-RATED GLASS
INTUMESCENT TAPE
PRESSURE PLATE
PRESSURE PLATE SCREW
SLIDING SHEAR CLIP
COVER CAP
PRESSURE PLATE GASKET
WELD ON DOOR PIVOTS
GLAZING TAPE PROVIDED FOR 90 MIN. GLASS ONLY
EXIT DEVICE (DLO)

FRAME DIMENSION (FD)
ROUGH OPENING (RO)

VERTICAL MULLION WITH SIDELITE DOOR JAMB AT PIVOT
39
EXTERIOR APPLICATION

VERTICAL MULLION WITH SIDELITE DOOR JAMB AT LEVER
30
EXTERIOR APPLICATION

DOOR OPENING (DO)

PRESSURE PLATE SCREW
1/4" THICK ANCHOR
PERIMETER SPACER SCREW
14GA DOOR ADAPTOR

ANCHOR BOLT (BY OTHERS)
FIRE-RATED GLASS
INTUMESCENT TAPE
PRESSURE PLATE
PRESSURE PLATE GASKET
SLIDING SHEAR CLIP
COVER CAP
PRESSURE PLATE GASKET
WELD ON DOOR PIVOTS
GLAZING TAPE PROVIDED FOR 90 MIN. GLASS ONLY
EXIT DEVICE (DLO)

FRAME DIMENSION (FD)
ROUGH OPENING (RO)

VERTICAL MULLION WITH SIDELITE DOOR JAMB AT PIVOT
39
EXTERIOR APPLICATION
60 mm MULLION PROFILE OPTIONS

MULLION/TRANSOM PROFILE
- 3/16" [2.5] STEEL
  - PRE-GALVANIZED
  - AVAILABLE IN 304 STAINLESS STEEL WITH #4 BRUSH FINISH

SELF DRILLING FACADE SCREWS
- CREATES SECURE FASTENING WITH EXTREMELY HIGH PULLOUT VALUES

WATER RESISTANT PENETRATION
- PREVENTS WATER INFILTRATION

GLASS POCKET BUSHING
- GUIDED DRILLING

SEAL
- ALIGNS EASILY IN PROFILE GROOVES
- OVERLAPPING JOINERY CREATES SECURE FACADE SEAL

FACE OF HORIZONTAL COVER CAP

PRESSURE PLATE AND GASKET
STAINLESS STEEL

COVER CAP, PRESSURE PLATE AND GASKET
STAINLESS STEEL COVER CAPS

ALUMINUM COVER CAPS
60 mm System Elevations

E Window and Single Designer Series Door

60 MM SYSTEM

In-fill Panel or Spandrel Unit

Building Slab or Support

Corner Details

G Active / Active Designer Series Door

60 MM SYSTEM

Active / Fixed Designer Series Door

60 MM SYSTEM

84" [2134] MAXIMUM DOOR OPENING

96" [2438] MAXIMUM DOOR OPENING

96" [2438] MAXIMUM DOOR OPENING

84" [2134] MAXIMUM DOOR OPENING

199121
60 mm System Elevations
Hurricane Application
60 mm System Interior Section Details

**Rough Opening (RO)**
- **Frame Dimension (FD)**
- **3 5/8" - 7 1/8" [91.5 - 181.5]**

**Head Section**
- **Cover Plate Between Gasket and Glass**
- **Pressure Plate**
- **Connecting Plate**
- **Cover Cap**
- **Intumescent Tape**
- **Pressure Plate Gasket**
- **Sliding Shear Clip**
- **Mullion Gasket**

**Horizontal Mullion Section**
- **Cover Plate Between Gasket and Glass**
- **Setting Block**
- **Pressure Plate**
- **Pressure Plate Screw**
- **Pressure Plate Gasket**
- **Intumescent Tape**
- **Connecting Plate**
- **Mullion Gasket**
- **Sliding Shear Clip**

**Sill Section**
- **Cover Plate Between Gasket and Glass**
- **Pressure Plate**
- **Connecting Plate**
- **Sill Anchor Screw**
- **1/4" Thick Sill Anchor Attached to End of Vertical Mullion**
- **Sliding Shear Clip**
- **Mineral Wool (By Others)**
- **Full Bearing Shim (By Others)**
- **Sealant and Backer Rod (By Others)**
- **Anchor Bolt (By Others)**
60 mm System Interior Section Details
60 mm System Interior Section Details

MULLION GASKET
PRESSURE PLATE GASKET
FIRE-RATED GLASS
PRESSURE PLATE
SCREW
COVER CAP

SLIDING PAD NOT PER PROJECT REQUIREMENTS (BY OTHERS)
ANCHOR BOLTS PER PROJECT REQUIREMENTS (BY OTHERS)
MULLION ANCHORS (SPECIAL) PER PROJECT REQUIREMENTS (BY OTHERS)

FACE OF HORIZONTAL COVER CAP
PRESSURE PLATE SCREW
COVER CAP

BUILDING SLAB OR SUPPORT

ANCHOR BOLTS PER PROJECT REQUIREMENTS (BY OTHERS)
MULLION ANCHORS (SPECIAL) PER PROJECT REQUIREMENTS (BY OTHERS)

FACE OF HORIZONTAL COVER CAP
PRESSURE PLATE GASKET

VERTICAL MULLION SECTION AT SLAB
INTERIOR APPLICATION

ANCHOR BOLTS PER PROJECT REQUIREMENTS (BY OTHERS)
MULLION ANCHORS (SPECIAL) PER PROJECT REQUIREMENTS (BY OTHERS)

FACE OF HORIZONTAL COVER CAP
PRESSURE PLATE GASKET

VERTICAL MULLION SECTION AT SLAB
INTERIOR APPLICATION

ANCHOR BOLTS PER PROJECT REQUIREMENTS (BY OTHERS)
MULLION ANCHORS (SPECIAL) PER PROJECT REQUIREMENTS (BY OTHERS)

FACE OF HORIZONTAL COVER CAP
PRESSURE PLATE GASKET

VERTICAL MULLION SECTION AT SLAB
INTERIOR APPLICATION

ANCHOR BOLTS PER PROJECT REQUIREMENTS (BY OTHERS)
MULLION ANCHORS (SPECIAL) PER PROJECT REQUIREMENTS (BY OTHERS)

FACE OF HORIZONTAL COVER CAP
PRESSURE PLATE GASKET

VERTICAL MULLION SECTION AT SLAB
INTERIOR APPLICATION
60 mm System Interior Section Details

**JAMB SECTION WITH WELDED SHEAR CLIP AT SILL**

INTERIOR APPLICATION

- **SEALANT AND BACKER ROD (BY OTHERS)**
- **1/4" THICK ANCHOR**
- **SILL ANCHOR SCREW**
- **PERIMETER SPACER SCREW**
- **MINERAL WOOL (BY OTHERS)**
- **PERIMETER SPACER**
- **PRESSURE PLATE GASKET**
- **COVER CAP**

**PRESSURE PLATE**

**PRESSURE PLATE SCREW (DLO)**

**FRAME DIMENSIONS (FD)**

**ROUGH OPENING (RO)**

**CAULK JOINT**

**VARIES**

**3 3/4" - 7 3/4" [91.5 - 181.5]**

**37 SILL SECTION WITH WELDED SHEAR CLIP**

INTERIOR APPLICATION

- **SILL ANCHOR SCREW**
- **1/4" THICK SILL ANCHOR ATTACHED TO END OF VERTICAL MULLION**
- **#10-24X1/2 UFHMS**
- **10GA WELDED SHEAR CLIP**
- **ANCHOR BOLT (BY OTHERS)**
- **FULL BEARING SHIM (BY OTHERS)**
- **SEALANT AND BACKER ROD (BY OTHERS)**

**CAULK JOINT**

**FRAME DIMENSION (FD)**

**ROUGH OPENING (RO)**

**VARIES**

**3 3/4" - 7 3/4" [91.5 - 181.5]**
60 mm System Interior Section Details - Doors

DOOR OPENING (DO)  ROUGH OPENING (RO)  FRAME DIMENSION (FD)

SEALANT AND BACKER ROD (BY OTHERS)  ANCHOR BOLT (BY OTHERS)
PERIMETER SPACER  MINERAL WOOL (BY OTHERS)
PERIMETER SPACER SCREW  SLIDING SHEAR CLIP
COVER CAP  1/4" THICK HEAD ANCHOR
PRESSURE PLATE  PRESSURE PLATE SCREW
PRESSURE PLATE  300381 COVER CAP
14GA DOOR ADAPTOR  300381 CAULK JOINT

FACE OF VERTICAL COVER CAP  FACE OF VERTICAL COVER CAP

VARIES

DOOR FIRE RATED GLASS
GLAZING TAPE PROVIDED ON 90 MIN. RATED GLASS ONLY
SETTING BLOCK
SMOKE SEAL

HORIZONTAL MULLION, DOOR HEADER, AND BOTTOM RAIL
INTERIOR APPLICATION
60 mm System Interior Section Details - Doors

- Door Opening (DO)
- Frame Dimension (FD)
- Rough Opening (RO)

Cover Plate Between Gasket and Glass
Setting Block
Pressure Plate
Cover Cap
Pressure Plate Screw
14G Door Adaptor

CLOSER

Cover Plate between Gasket and Glass
Fire-Rated Glass
Connecting Plate
Sliding Shear Clip

Glazing Tape Provided on 90 Min. Rated Glass Only
Setting Block
Smoke Seal

Door Header with Transom, Door Mid Rail, and Bottom Rail
Interior Application
60 mm System Interior Section Details - Doors

1/4" THICK ANCHOR
SEALANT AND BACKER
ROD (BY OTHERS)
MINERAL WOOL
(BY OTHERS)
PERIMETER SPACER SCREW
PERIMETER SPACER
PRESSURE PLATE
GASKET
COVER CAP
ANCHOR BOLT
(By Others)
14GA DOOR
ADAPTOR
EXIT DEVICE
WELD ON
DOOR PIVOTS
PRESSURE PLATE
PRESSURE PLATE SCREW
CAULK JOINT
FRAME DIMENSION (FD)
ROUGH OPENING (RO)

VERTICAL MULLION WITH DOOR JAMB AT PIVOT
INTERIOR APPLICATION

SEALANT AND BACKER
ROD (BY OTHERS)
1/4" THICK ANCHOR
MINERAL WOOL
(BY OTHERS)
ANCHOR BOLT
(BY OTHERS)
PERIMETER SPACER SCREW
PERIMETER SPACER
SEALANT AND BACKER
ROD (BY OTHERS)
PRESSURE PLATE
GASKET
PRESSURE PLATE
PRESSURE PLATE SCREW
COVER CAP
GLAZING TAPE
PROVIDED FOR 90 MIN.
GLASS ONLY

GLAZING TAPE
PROVIDED FOR 90 MIN.
GLASS ONLY

VERTICAL MULLION WITH DOOR JAMB AT PIVOT
INTERIOR APPLICATION
60 mm System Interior Section Details - Doors

- **1/4" Thick Anchor**
- **Perimeter Spacer Screw**
- **14GA Door Adaptor**
- **Exit Device**
- **Sliding Shear Clip**
- **Anchor Bolt (BY OTHERS)**
- **Pressure Plate Gasket**
- **Glazing Tape Provided for 90 Min. Glass Only**
- **Fire-Rated Glass**
- **Intumescent Tape**
- **Pressure Plate Screw**
- **Cover Cap**
- **Pressure Plate**
- **Frame Dimension (FD)**
- **Rough Opening (RO)**

**INTERIOR APPLICATION**
60 mm System Exterior Section Details

ROUGH OPENING (RO)
FRAME DIMENSION (FD)

PERIMETER SPACER
PERIMETER SPACER SCREW
COVER CAP
PRESSURE PLATE
CONNECTING PLATE
COVER PLATE BETWEEN GASKET AND GLASS
FIRE-RATED GLASS

ANCHOR BOLT
(MINERAL WOOL (BY OTHERS))
(SEALANT AND BACKER ROD (BY OTHERS))
(SLIDING SHEAR CLIP)
(1/4" THICK HEAD ANCHOR)

CAULK JOINT

HEAD SECTION
EXTERIOR APPLICATION

COVER PLATE BETWEEN GASKET AND GLASS
SETTING BLOCK
PRESSURE PLATE
PRESSURE PLATE SCREW
COVER CAP
DIVERTER GASKET
INTUMESCENT TAPE
CONNECTING PLATE
MULLION GASKET

ANCHOR BOLT
(MINERAL WOOL (BY OTHERS))
(SEALANT AND BACKER ROD (BY OTHERS))
(SLIDING SHEAR CLIP)
(1/4" THICK HEAD ANCHOR)

CAULK JOINT

HORIZONTAL MULLION SECTION
EXTERIOR APPLICATION

COVER PLATE BETWEEN GASKET AND GLASS
PRESSURE PLATE
FLEXIBLE SILICONE FLASHING SET IN SEALANT BED

1/4" THICK SILL ANCHOR ATTACHED TO END OF VERTICAL MULLION
SLIDING SHEAR CLIP
MINERAL WOOL (BY OTHERS)
FULL BEARING SHIM (BY OTHERS)
(SEALANT AND BACKER ROD (BY OTHERS))
(ANCHOR BOLT (BY OTHERS))

CAULK JOINT

SILL SECTION
EXTERIOR APPLICATION

COVER PLATE BETWEEN GASKET AND GLASS
PRESSURE PLATE
FULL BEARING SHIM (BY OTHERS)
SEALANT AND BACKER ROD (BY OTHERS)
ANCHOR BOLT (BY OTHERS)

CAULK JOINT
60 mm System Exterior Section Details

- FIRE-RATED GLASS
- COVER PLATE BETWEEN GASKET AND GLASS
- SETTING BLOCK
- PRESSURE PLATE
- PRESSURE PLATE SCREW
- COVER CAP
- PRESSURE PLATE GASKET
- DIVERTER GASKET
- INTUMESCENT TAPE
- CONNECTING PLATE
- MULLION GASKET
- SLIDING SHEAR CLIP
- LINE OF INTERIOR FINISH
- IN-FILL PANEL OR SPANDREL UNIT
- FACE OF VERTICAL COVER CAP
- BUILDING SLAB OR SUPPORT
- MULLION ANCHORS (SPECIAL) PER PROJECT REQUIREMENTS (TYP.)
- SLIDING SHEAR CLIP
- LINE OF INTERIOR FINISH
- V vertical
60 mm System Exterior Section Details

- Sliding pad not per project requirements (by others)
- Building slab or support
- Fire-rated glass, see exterior glazing options
- Anchor bolts per project requirements (by others)
- Mullion anchors (special) per project requirements (by others)
- Face of horizontal cover cap
- In-fill panel or spandrel unit
- PRESSURE PLATE SCREW
- COVER CAP
- DLO
- VERTICAL MULLION SECTION AT SLAB

50 60 mm System Exterior Section Details

VERTICAL MULLION SECTION AT SLAB

- Exterior application
53 SILL SECTION WITH WELDED SHEAR CLIP AT SILL EXTERIOR APPLICATION

51 JAMB SECTION WITH WELDED SHEAR CLIP AT SILL EXTERIOR APPLICATION

60 mm System Exterior Section Details

1/4" THICK ANCHOR
SEALANT AND BACKER ROD (BY OTHERS)
SILL ANCHOR SCREW
PERIMETER SPACER SCREW
MINERAL WOOL (BY OTHERS)
INTUMESCENT CAULK (BY OTHERS)
PERIMETER SPACER
FLEXIBLE SILICONE FLASHING SET IN SEALANT BED
PRESSURE PLATE GASKET
COVER CAP

INTUMESCENT TAPE
PRESSURE PLATE
PRESSURE PLATE SCREW (DLO)

FRAME DIMENSION (FD)
ROUGH OPENING (RO)

23 3/4" [60]

3 5/8" - 7 18" [91.5 - 181.5] VARIES

1/4" THICK SILL ANCHOR ATTACHED TO END OF VERTICAL MULLION
FIRE-RATED GLASS
10GA WELDED SHEAR CLIP
#10-24X1/2 UFHMS
ANCHOR BOLT (BY OTHERS)
FULL BEARING Shim (BY OTHERS)
MINERAL WOOL (BY OTHERS)
SEALANT AND BACKER ROD (BY OTHERS)

SILL ANCHOR SCREW
CONNECTING PLATE
COVER PLATE BETWEEN GASKET AND GLASS
SETTING BLOCK
PRESSURE PLATE
SELF-DRILING S.S. FACADE SCREW @ 12" O.C.
COVER CAP
PRESSURE PLATE GASKET
PERIMETER SPACER
FLEXIBLE SILICONE FLASHING SET IN SEALANT BED
INTUMESCENT CAULK (BY OTHERS)
60 mm System Exterior Section Details

- **Sill Anchor Screw**
- **Mineral Wool (by others)**
- **Perimeter Spacer Screw**
- **Intumescent Caulk (by others)**
- **Flexible Silicone Flashing Set in Sealant Bed**
- **Sealant and Backer Rod (by others)**
- **Intumescent Tape**
- **Caulk Joint**
- **Pressure Plate**
- **Pressure Plate Screw**
- **Frame Dimension (FD)**
- **Rough Opening (RO)**
- **Cover Cap**

**Jamb Section with Sliding Shear Clip at Sill**
60 mm System Exterior Section Details - Doors

ROUGH OPENING (RO)

FRAME DIMENSION (FD)

DOOR OPENING (DO)

COVER CAP

FACE OF VERTICAL COVER CAP

PRESSURE PLATE SCREW

14GA DOOR ADAPTOR

SETTING BLOCK

PRESSURE PLATE

COVER PLATE BETWEEN GASKET AND GLASS

FIRE-RATED GLASS

CONNECTING PLATE

SLIDING SHEAR CLIP

PRESSURE PLATE

GLAZING TAPE

PROVIDED ON 90 MIN. RATED GLASS ONLY

SETTING BLOCK

SMOKE SEAL

FINISHED FLOOR

DOOR HEADER WITH TRANSOM, DOOR MID RAIL, AND BOTTOM RAIL

EXTERIOR APPLICATION
60 mm System Exterior Section Details - Doors

1/4" THICK ANCHOR
SEALANT AND BACKER ROD (BY OTHERS)
ANCHOR BOLT (BY OTHERS)
MINERAL WOOL (BY OTHERS)
PERIMETER SPACER SCREW
INTUMESCENT CAULK (BY OTHERS)
PERIMETER SPACER
FLEXIBLE SILICONE FLASHING SET IN SEALANT BED
PRESSURE PLATE GASKET
COVER CAP

WELD ON DOOR PIVOTS
PRESSURE PLATE
PRESSURE PLATE SCREW
CAULK JOINT
FRAME DIMENSION (FD)
ROUGH OPENING (RO)

GLAZING TAPE PROVIDED FOR 90 MIN. GLASS ONLY

VERTICAL MULLION WITH DOOR JAMB AT PIVOT
EXTERIOR APPLICATION
60 mm System Exterior Section Details – Doors

- **Exit Device**
- **Weld On Door Pivots**
- **14GA Door Adaptor**
- **21 16" [53]**
- **59 Vertical Mullion With Sidelite Door Jamb At Pivot**
- **Frame Dimension (FD)**
- **Rough Opening (RO)**
- **1/4" Thick Anchor**
- **Perimeter Spacer Screw**
- **Pressure Plate Gasket**
- **Pressure Plate Screw**
- **Intumescent Tape**
- **Cover Cap**
- **Fire-Rated Glass**
- **Anchor Bolt (By Others)**
- **Pressures Plate Screw (DLO)**
- **23 8" [60]**
- **115 16" [50]**
- **Glazing Tape Provided For 90 Min. Glass Only**

**Architectural Specification Manual**

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60 mm System Exterior Section Details

Hurricane Application – Concrete Surrounding Condition

Diagram showing details of a curtain wall system with labels for various components such as:
- Fire-rated glass
- Mineral wool (N.B. TGP)
- Sealant and backer rod (N.B. TGP)
- Sliding shear clip
- 1/4" thick head anchor
- Full bearing shim (N.B. TGP)
- Anchor bolt (N.B. TGP)

Dimensions and labels for different sections of the wall are indicated, including:
- Rough opening (RO)
- Frame dimension (FD)
- Caulk joint

Annotations indicate variations and dimensions in millimeters.
60 mm System Exterior Section Details

Hurricane Application – Concrete Surrounding Condition

[Diagram showing various components and dimensions related to hurricane application in a concrete surrounding.]
60 mm System Exterior Section Details
Hurricane Application – Steel Surrounding Condition

- **SEPARATOR BUSHING**
- **PERIMETER SPACER**
- **PERIMETER SPACER SCREW**
- **DIVERTER GASKET**
- **COVER CAP**
- **PRESSURE PLATE**
- **PRESSURE PLATE SCREW**
- **CONNECTING PLATE**
- **COVER PLATE BETWEEN GASKET AND GLASS**
- **INTUMESCENT TAPE**
- **FIRE-RATED GLASS**
- **DIVERTER GASKET**
- **PRESSURE PLATE SCREW**
- **VARIES**
- **MINERAL WOOL (N.B. TGP)**
- **SEALANT AND BACKER ROD (N.B. TGP)**
- **SLIDING SHEAR CLIP**
- **1/4" THICK HEAD ANCHOR**
- **COVER PLATE BETWEEN GASKET AND GLASS**
- **PRESSURE PLATE**
- **SETTING BLOCK**
- **PERIMETER SPACER**
- **SEALANT AND BACKER ROD (N.B. TGP)**
- **FLEXIBLE SILICONE FLASHING SET IN SEALANT BED**
- **1/4" THICK SILL ANCHOR ATTACHED TO END OF VERTICAL MULLION**
- **SLIDING SHEAR CLIP**
- **MINERAL WOOL (N.B. TGP)**
- **FULL BEARING SHIM (N.B. TGP)**
- **SEALANT AND BACKER ROD (N.B. TGP)**
- **ANCHOR BOLT (N.B. TGP)**
60 mm System Exterior Section Details

Hurricane Application – Steel Surrounding Condition

Rough Opening (RO)

Frame Dimension (FD)

Pressure Plate

Pressure Plate Screw

Cover Cap

Intumescent Tape

Pressure Plate Gasket

Cover Plate Between Gasket and Glass

Vertical Mullion

Mullion Reinforcement

1/4" Thick Sill Anchor

Anchor Bolt (N.B. TGP)

Connecting Plate

Mullion Gasket

Sliding Shear Clip

Fire-Rated Glass

Separator Bushing

1/4" Thick Sill Anchor

Anchor Bolt (N.B. TGP)

Connecting Plate

Mullion Gasket

Sliding Shear Clip

Fire-Rated Glass

Separator Bushing

Cover Cap

Intumescent Tape

Pressure Plate Gasket

Frame Dimension (FD)

Rough Opening (RO)
60 mm System Exterior Section Details
Hurricane Application – Timber Surrounding Condition
Section Details - Doors

Fireframes Designer Series or Fireframes Heat Barrier Series doors, or appropriately rated door by others in a Fireframes Designer Series door frame may be used within the Fireframes Curtainwall Series frames. Doors must be installed before glazing.

NOTE: Refer to product specific Installation Manual for the door(s) supplied with your order.
Section Details – Doors

![Diagram of door sections with labeled parts:]

- **Exit Device**
- **Strike**
- **Glazing Bead**
- **Bead Lock Screw**
- **Bead Stud**
- **Fire-Rated Glass**
- **Lever**
- **Door Opening (DO)**
- **Frame Dimension (FD)**
- **Rough Opening (RO)**

**Dimensions:**
- **115**
- **16”** [50]
- **5 1/8”** [150]
Corner Details

CORNER MULLION (INTERIOR APPLICATIONS ONLY)

- Corner mullions MUST be installed before the glazing material.
- Corners may be inside or outside corners ranging from 10° to 135°.
- Corner mullion should be set and installed next to first vertical mullion before setting second vertical mullion.
Corner Detail

- Corner Detail
- Interior Application

- Disconnect plate and screws
- Vertical Mullion Gasket (dart removed at vertical flashing)
- Horizontal Mullion Gasket (dart removed at sill flashing)
- Flexible flashing
- Molded corner flashing
- Vertical Mullion
- Horizontal Mullion

Note: Remove dart on flexible flashing where shown.